



SAR EVALUATION REPORT

Applicant Name:

Samsung Electronics Co., Ltd.
129, Samsung-ro, Maetan dong,
Yeongtong-gu, Suwon-si
Gyeonggi-do, 16677, Korea

Date of Testing:

06/26/19 - 08/05/19

Test Site/Location:

PCTEST Lab, Columbia, MD, USA

Document Serial No.:

1M1907090119-01.A3L

FCC ID:

A3LSMF900U

APPLICANT:

SAMSUNG ELECTRONICS CO., LTD.

DUT Type:

Portable Handset

Application Type:

Class II Permissive Change

FCC Rule Part(s):

CFR §2.1093

Model:

SM-F900U

Additional Model(s):

SM-F900U1; SM-F900W; SM-F9000; SCV44

Original Grant Date:

04/05/2019

Permissive Change(s):

See FCC Change Document

Equipment Class	Band & Mode	Tx Frequency	SAR					
			1g Head (W/kg)	1g Body-Worn (W/kg)	1g Hotspot (W/kg)	10g Phablet (W/kg)	1g UMPC Body (W/kg)	10g UMPC Extremity (W/kg)
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	N/A	N/A	N/A	N/A	0.97	2.12
PCE	UMTS 850	826.40 - 846.60 MHz	N/A	N/A	N/A	N/A	N/A	1.70
PCE	UMTS 1750	1712.4 - 1752.6 MHz	N/A	N/A	N/A	N/A	0.84	0.41
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	0.11	N/A	1.09	3.23	0.81	3.00
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.15	0.38	N/A	3.16	1.23	0.70
PCE	PCS CDMA/EVDO	1851.25 - 1908.75 MHz	0.23	0.43	0.98	2.15	0.87	2.43
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	N/A	N/A	N/A	N/A	N/A	1.79
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	N/A	N/A	N/A	N/A	N/A	1.64
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	N/A	N/A	N/A	1.44	0.74	0.36
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A	N/A	N/A	N/A	N/A
PCE	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.17	0.49	0.99	2.59	0.74	2.81
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	N/A	N/A	N/A	N/A	N/A	N/A
PCE	LTE Band 30	2307.5 - 2312.5 MHz	N/A	N/A	N/A	2.48	0.86	2.74
PCE	LTE Band 7	2502.5 - 2567.5 MHz	N/A	N/A	N/A	0.67	0.92	0.47
PCE	LTE Band 38	2572.5 - 2617.5 MHz	0.11	0.16	0.76	2.84	0.96	2.85
PCE	LTE Band 41	2498.5 - 2687.5 MHz	0.13	0.10	1.18	2.32	0.76	0.77
DTS	2.4 GHz WLAN	2412 - 2472 MHz	0.10	0.12	0.36	N/A	0.23	1.83
NII	U-NII-1	5180 - 5240 MHz	N/A	N/A	N/A	N/A	N/A	N/A
NII	U-NII-2A	5260 - 5320 MHz	< 0.1	< 0.1	N/A	0.91	0.33	1.14
NII	U-NII-2C	5500 - 5720 MHz	< 0.1	0.15	N/A	1.22	0.20	0.66
NII	U-NII-3	5745 - 5825 MHz	< 0.1	0.16	0.26	N/A	0.18	0.62
Simultaneous SAR per KDB 690783 D01v01r03:			0.54	1.29	1.57	3.98	1.59	3.99

Note: The table above shows test data evaluated for the current test report. Please refer to RF Exposure Technical Report S/N: 1M1901160007-01-R1.A3L for original compliance evaluation.

This wireless portable device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE C95.1-1992 and has been tested in accordance with the measurement procedures specified in Section 1.8 of this report; for North American frequency bands only.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them. Test results reported herein relate only to the item(s) tested.


Randy Ortanez
President



The SAR Tick is an initiative of the Mobile & Wireless Forum (MWF). While a product may be considered eligible, use of the SAR Tick logo requires an agreement with the MWF. Further details can be obtained by emailing: sartick@mwfai.info.

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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
CDMA/EVDO BC10 (§90S)	Voice/Data	817.90 - 823.10 MHz
CDMA/EVDO BC0 (§22H)	Voice/Data	824.70 - 848.31 MHz
PCS CDMA/EVDO	Voice/Data	1851.25 - 1908.75 MHz
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.6 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
LTE Band 71	Voice/Data	665.5 - 695.5 MHz
LTE Band 12	Voice/Data	699.7 - 715.3 MHz
LTE Band 13	Voice/Data	779.5 - 784.5 MHz
LTE Band 14	Voice/Data	790.5 - 795.5 MHz
LTE Band 26 (Cell)	Voice/Data	814.7 - 848.3 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 848.3 MHz
LTE Band 66 (AWS)	Voice/Data	1710.7 - 1779.3 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 25 (PCS)	Voice/Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 30	Voice/Data	2307.5 - 2312.5 MHz
LTE Band 7	Voice/Data	2502.5 - 2567.5 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
LTE Band 38	Voice/Data	2572.5 - 2617.5 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2472 MHz
U-NII-1	Voice/Data	5180 - 5240 MHz
U-NII-2A	Voice/Data	5260 - 5320 MHz
U-NII-2C	Voice/Data	5500 - 5720 MHz
U-NII-3	Voice/Data	5745 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz
ANT+	Data	2402 - 2480 MHz
MST	Data	555 Hz - 8.33 kHz

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1.2 Power Reduction for SAR

This device utilizes a power reduction mechanism for some wireless modes and bands for SAR compliance under portable hotspot conditions and under some conditions when the device is being used in close proximity to the user's hand, and when headphones are inserted. All hotspot SAR evaluations for this device were performed at the maximum allowed output power when hotspot is enabled. FCC KDB Publication 616217 D04v01r02 Section 6 and FCC KDB Publication 941225 D07v01r02 were used as a guideline for selecting SAR test distances for this device when being used in phablet and UMPC mini-tablet use conditions. Detailed descriptions of the power reduction mechanism are included in the operational description.

This device uses an independent fixed level power reduction mechanism for WLAN operations during voice or VoIP held to ear scenarios. Per FCC Guidance, the held-to-ear exposure conditions were evaluated at reduced power according to the head SAR positions described in IEEE 1528-2013. Detailed descriptions of the power reduction mechanism are included in the operational description.

1.3 Nominal and Maximum Output Power Specifications

This device operates using the following maximum and nominal output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v06.

1.3.1 PCE Maximum Output Power

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slot	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots
GSM/GPRS/EDGE 850	Maximum	34.0	34.0	33.0	31.0	28.5	28.0	26.5	24.5	23.5
	Nominal	33.0	33.0	32.0	30.0	27.5	27.0	25.5	23.5	22.5
GSM/GPRS/EDGE 1900	Maximum	31.5	31.5	30.5	28.0	26.0	27.0	25.5	23.5	22.5
	Nominal	30.5	30.5	29.5	27.0	25.0	26.0	24.5	22.5	21.5

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	3GPP HSDPA	3GPP HSUPA	3GPP DC-HSDPA
UMTS Band 5 (850 MHz)	Maximum	25.5	24.5	24.5	24.5
	Nominal	24.5	23.5	23.5	23.5
UMTS Band 4 (1750 MHz)	Maximum	25.5	24.5	24.5	24.5
	Nominal	24.5	23.5	23.5	23.5
UMTS Band 2 (1900 MHz)	Maximum	25.5	24.5	24.5	24.5
	Nominal	24.5	23.5	23.5	23.5

Mode / Band		Modulated Average (dBm)
CDMA/EVDO BC10 (\$90S)	Maximum	26.0
	Nominal	25.0
CDMA/EVDO BC0 (\$22H)	Maximum	26.0
	Nominal	25.0
PCS CDMA/EVDO	Maximum	25.5
	Nominal	24.5

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Mode / Band		Modulated Average (dBm)
LTE Band 71	Maximum	25.5
	Nominal	24.5
LTE Band 12	Maximum	25.5
	Nominal	24.5
LTE Band 13	Maximum	25.5
	Nominal	24.5
LTE Band 14	Maximum	25.5
	Nominal	24.5
LTE Band 26 (Cell)	Maximum	25.5
	Nominal	24.5
LTE Band 5 (Cell)	Maximum	25.5
	Nominal	24.5
LTE Band 66 (AWS)	Maximum	25.0
	Nominal	24.0
LTE Band 4 (AWS)	Maximum	25.0
	Nominal	24.0
LTE Band 25 (PCS)	Maximum	25.0
	Nominal	24.0
LTE Band 2 (PCS)	Maximum	25.0
	Nominal	24.0
LTE Band 30	Maximum	25.0
	Nominal	24.0
LTE Band 7	Maximum	25.0
	Nominal	24.0
LTE Band 38	Maximum	25.0
	Nominal	24.0
LTE Band 41 (PC3)	Maximum	24.0
	Nominal	23.0
LTE Band 41 (PC2)	Maximum	27.0
	Nominal	26.0

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1.3.2 PCE Reduced Output Power – Hotspot Mode Active

Mode / Band		Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots
GPRS/EDGE 1900	Maximum	28.5	27.5	26.0	24.0	27.0	25.5	23.5	22.5
	Nominal	27.5	26.5	25.0	23.0	26.0	24.5	22.5	21.5

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	3GPP HSDPA	3GPP HSUPA	3GPP DC-HSDPA
UMTS Band 4 (1750 MHz)	Maximum	21.0	20.0	20.0	20.0
	Nominal	20.0	19.0	19.0	19.0
UMTS Band 2 (1900 MHz)	Maximum	21.5	20.5	20.5	20.5
	Nominal	20.5	19.5	19.5	19.5

Mode / Band		Modulated Average (dBm)
PCS CDMA/EVDO	Maximum	20.5
	Nominal	19.5
Mode / Band		Modulated Average (dBm)
LTE Band 66 (AWS)	Maximum	20.5
	Nominal	19.5
LTE Band 4 (AWS)	Maximum	20.5
	Nominal	19.5
LTE Band 25 (PCS)	Maximum	21.0
	Nominal	20.0
LTE Band 2 (PCS)	Maximum	21.0
	Nominal	20.0
LTE Band 30	Maximum	21.0
	Nominal	20.0
LTE Band 7	Maximum	20.5
	Nominal	19.5
LTE Band 38	Maximum	21.0
	Nominal	20.0
LTE Band 41 (PC3)	Maximum	22.5
	Nominal	21.5
LTE Band 41 (PC2)	Maximum	22.5
	Nominal	21.5

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1.3.3 PCE Reduced Output Power – Grip Sensor Active

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slot	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots
GSM/GPRS/EDGE 1900	Maximum	27.5	27.5	26.5	25.0	23.0	27.0	25.5	23.5	22.5
	Nominal	26.5	26.5	25.5	24.0	22.0	26.0	24.5	22.5	21.5

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	3GPP HSDPA	3GPP HSUPA	3GPP DC-HSDPA
UMTS Band 4 (1750 MHz)	Maximum	20.5	19.5	19.5	19.5
	Nominal	19.5	18.5	18.5	18.5
UMTS Band 2 (1900 MHz)	Maximum	20.0	19.0	19.0	19.0
	Nominal	19.0	18.0	18.0	18.0

Mode / Band		Modulated Average (dBm)
PCS CDMA/EVDO	Maximum	19.5
	Nominal	18.5
Mode / Band		Modulated Average (dBm)
LTE Band 66 (AWS)	Maximum	20.0
	Nominal	19.0
LTE Band 4 (AWS)	Maximum	20.0
	Nominal	19.0
LTE Band 25 (PCS)	Maximum	20.0
	Nominal	19.0
LTE Band 2 (PCS)	Maximum	20.0
	Nominal	19.0
LTE Band 30	Maximum	20.0
	Nominal	19.0
LTE Band 7	Maximum	19.5
	Nominal	18.5
LTE Band 38	Maximum	21.0
	Nominal	20.0
LTE Band 41 (PC3)	Maximum	21.5
	Nominal	20.5
LTE Band 41 (PC2)	Maximum	21.5
	Nominal	20.5

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1.3.4 PCE Reduced Output Power – Earjack Mode Active

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slot	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots
GSM/GPRS/EDGE 1900	Maximum	29.5	29.5	28.5	26.0	24.0	27.0	25.5	23.5	22.5
	Nominal	28.5	28.5	27.5	25.0	23.0	26.0	24.5	22.5	21.5

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	3GPP HSDPA	3GPP HSUPA	3GPP DC-HSDPA
UMTS Band 4 (1750 MHz)	Maximum	21.5	20.5	20.5	20.5
	Nominal	20.5	19.5	19.5	19.5
UMTS Band 2 (1900 MHz)	Maximum	22.0	21.0	21.0	21.0
	Nominal	21.0	20.0	20.0	20.0

Mode / Band		Modulated Average (dBm)
PCS CDMA	Maximum	22.5
	Nominal	21.5

Mode / Band		Modulated Average (dBm)
LTE Band 66 (AWS)	Maximum	21.0
	Nominal	20.0
LTE Band 4 (AWS)	Maximum	21.0
	Nominal	20.0
LTE Band 25 (PCS)	Maximum	21.0
	Nominal	20.0
LTE Band 2 (PCS)	Maximum	21.0
	Nominal	20.0
LTE Band 30	Maximum	22.0
	Nominal	21.0
LTE Band 7	Maximum	22.0
	Nominal	21.0
LTE Band 38	Maximum	22.0
	Nominal	21.0
LTE Band 41 (PC2)	Maximum	24.0
	Nominal	23.0

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1.3.5 Maximum Bluetooth and WLAN Output Power

Targets for 802.11ax RU operations can be found in RF Exposure Technical Report S/N: 1M1901160007-01-R1.A3L Appendix I

Mode / Band		Modulated Average - Single Tx Chain Antenna 1 (dBm)									Mode / Band		Modulated Average - Single Tx Chain Antenna 2 (dBm)								
Channel		1	2	3	4 - 9	10	11	12	13	Channel		1	2	3	4 - 9	10	11	12	13		
IEEE 802.11b (2.4 GHz)	Maximum	20.0							19.0	15.5	IEEE 802.11b (2.4 GHz)	Maximum	20.0							18.5	
	Nominal	19.0							18.0	14.5		Nominal	19.0							17.5	
IEEE 802.11g (2.4 GHz)	Maximum	18.0				17.5	15.5	12.0	6.5	IEEE 802.11g (2.4 GHz)	Maximum	18.0				17.5	15.5	12.0	6.5		
	Nominal	17.0				16.5	14.5	11.0	5.5		Nominal	17.0				16.5	14.5	11.0	5.5		
IEEE 802.11n (2.4 GHz)	Maximum	18.0				17.5	15.5	12.0	6.5	IEEE 802.11n (2.4 GHz)	Maximum	18.0				17.5	15.5	12.0	6.5		
	Nominal	17.0				16.5	14.5	11.0	5.5		Nominal	17.0				16.5	14.5	11.0	5.5		
IEEE 802.11ax (SU) (2.4 GHz)	Maximum	13.5	14.5	16.0	17.0	15.5	14.5	14.5	10.0	IEEE 802.11ax (SU) (2.4 GHz)	Maximum	17.0							16.0	13.5	
	Nominal	12.5	13.5	15.0	16.0	14.5	13.5	13.5	9.0		Nominal	16.0							15.0	12.5	

Mode / Band		Modulated Average - MIMO (dBm)							
Channel		1	2	3	4 - 9	10	11	12	13
IEEE 802.11g (2.4 GHz)	Maximum	21.0			20.5		18.5	15.0	9.5
	Nominal	20.0			19.5		17.5	14.0	8.5
IEEE 802.11n (2.4 GHz)	Maximum	21.0			20.5		18.5	15.0	9.5
	Nominal	20.0			19.5		17.5	14.0	8.5
IEEE 802.11ax (SU) (2.4 GHz)	Maximum	17.0						14.0	14.0
	Nominal	16.0						13.0	13.0

Mode / Band		Modulated Average - Single Tx Chain (dBm)																	
		20 MHz Bandwidth										40 MHz Bandwidth							
Channel		36	40-60	64	100	104-140	144	149	153-161	165	38	46-54	62	102	110-134	142	151	159	42
IEEE 802.11a (5 GHz)	Maximum	18.0																	
	Nominal	17.0																	
IEEE 802.11n (5 GHz)	Maximum	18.0										15.0	17.0	15.5	15.5	17.0	17.0	17.0	17.0
	Nominal	17.0										14.0	16.0	14.5	14.5	16.0	16.0	16.0	16.0
IEEE 802.11ac (5 GHz)	Maximum	18.0										15.0	17.0	15.5	15.5	17.0	17.0	17.0	13.0
	Nominal	17.0										14.0	16.0	14.5	14.5	16.0	16.0	16.0	12.0
IEEE 802.11ax (SU) (5 GHz)	Maximum	16.0										14.0							
	Nominal	15.0										13.0							

Mode / Band		Modulated Average - MIMO (dBm)																	
		20 MHz Bandwidth										40 MHz Bandwidth							
Channel		36	40-60	64	100	104-140	144	149	153-161	165	38	46-54	62	102	110-134	142	151	159	42
IEEE 802.11a (5 GHz)	Maximum	21.0																	
	Nominal	20.0																	
IEEE 802.11n (5 GHz)	Maximum	21.0										18.0	20.0	18.5	18.5	20.0	20.0	20.0	20.0
	Nominal	20.0										17.0	19.0	17.5	17.5	19.0	19.0	19.0	19.0
IEEE 802.11ac (5 GHz)	Maximum	21.0										18.0	20.0	18.5	18.5	20.0	20.0	20.0	13.0
	Nominal	20.0										17.0	19.0	17.5	17.5	19.0	19.0	19.0	12.0
IEEE 802.11ax (SU) (5 GHz)	Maximum	16.0										14.0							
	Nominal	15.0										13.0							

Mode/Band		Modulated Average (dBm)	
Bluetooth	Maximum	16.5	
	Nominal	15.5	
Bluetooth EDR	Maximum	10.5	
	Nominal	9.5	
Bluetooth LE 2Mbps	Maximum	7.0	
	Nominal	6.0	
Bluetooth LE 1Mbps, 125/500kbps	Maximum	5.5	
	Nominal	4.5	

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1.3.6 Reduced WLAN Output Power

Targets for 802.11ax RU operations can be found in RF Exposure Technical Report S/N: 1M1901160007-01-R1.A3L Appendix I

Mode / Band		Modulated Average - Antenna 1 (dBm)								Mode / Band		Modulated Average - Antenna 2 (dBm)							
Channel		1	2	3	4 - 9	10	11	12	13	Channel		1	2	3	4 - 9	10	11	12	13
IEEE 802.11b (2.4 GHz)	Maximum	17.0							17.0	15.5	IEEE 802.11b (2.4 GHz)	Maximum	17.0						
	Nominal	16.0							16.0	14.5		Nominal	16.0						
IEEE 802.11g (2.4 GHz)	Maximum	17.0							15.5	12.0	6.5	IEEE 802.11g (2.4 GHz)	Maximum	17.0					
	Nominal	16.0							14.5	11.0	5.5		Nominal	16.0					
IEEE 802.11n (2.4 GHz)	Maximum	17.0							15.5	12.0	6.5	IEEE 802.11n (2.4 GHz)	Maximum	17.0					
	Nominal	16.0							14.5	11.0	5.5		Nominal	16.0					
IEEE 802.11ax (SU) (2.4 GHz)	Maximum	13.5	14.5	16.0	17.0	15.5	14.5	14.5	10.0	IEEE 802.11ax (SU) (2.4 GHz)	Maximum	17.0							16.0
	Nominal	12.5	13.5	15.0	16.0	14.5	13.5	13.5	9.0		Nominal	16.0							15.0

Mode / Band		Modulated Average - MIMO (dBm)							
Channel		1	2	3	4 - 9	10	11	12	13
IEEE 802.11g (2.4 GHz)	Maximum	20.0							18.5
	Nominal	19.0							17.5
IEEE 802.11n (2.4 GHz)	Maximum	20.0							18.5
	Nominal	19.0							17.5
IEEE 802.11ax (SU) (2.4 GHz)	Maximum	17.0							14.0
	Nominal	16.0							13.0

Mode / Band		Modulated Average - Single Tx Chain (dBm)																							
		20 MHz Bandwidth										40 MHz Bandwidth								80 MHz Bandwidth					
	Channel	36	40-60	64	100	104-140	144	149	153-161	165	38	46-54	62	102	110-134	142	151	159	42	58	106	122	138	155	
IEEE 802.11a (5 GHz)	Maximum	14.0																							
	Nominal	13.0																							
IEEE 802.11n (5 GHz)	Maximum	14.0										14.0													
	Nominal	13.0										13.0													
IEEE 802.11ac (5 GHz)	Maximum	14.0										14.0								13.0		14.0			
	Nominal	13.0										13.0								12.0		13.0			
IEEE 802.11ax (SU) (5 GHz)	Maximum	14.0										14.0								13.0					
	Nominal	13.0										13.0								12.0					
Mode / Band		Modulated Average - MIMO (dBm)																							
		20 MHz Bandwidth										40 MHz Bandwidth								80 MHz Bandwidth					
	Channel	36	40-60	64	100	104-140	144	149	153-161	165	38	46-54	62	102	110-134	142	151	159	42	58	106	122	138	155	
IEEE 802.11a (5 GHz)	Maximum	17.0																							
	Nominal	16.0																							
IEEE 802.11n (5 GHz)	Maximum	17.0										17.0													
	Nominal	16.0										16.0													
IEEE 802.11ac (5 GHz)	Maximum	17.0										17.0								13.0		17.0			
	Nominal	16.0										16.0								12.0		16.0			
IEEE 802.11ax (SU) (5 GHz)	Maximum	16.0										14.0								13.0					
	Nominal	15.0										13.0								12.0					

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1.3.7 Maximum Output Power During Conditions with Simultaneous 2.4 GHz WLAN and 5 GHz WLAN

Targets for 802.11ax RU operations can be found in RF Exposure Technical Report S/N: 1M1901160007-01-R1.A3L Appendix I

Mode / Band		Modulated Average - Antenna 1 (dBm)								Modulated Average - Antenna 2 (dBm)								Modulated Average - MIMO (dBm)										
Channel		1	2	3	4 - 9	10	11	12	13	1	2	3	4 - 9	10	11	12	13	1	2	3	4 - 9	10	11	12	13			
IEEE 802.11b (2.4 GHz)	Maximum	17.0						17.0	15.5	17.0						N/A												
	Nominal	16.0						16.0	14.5	16.0						N/A												
IEEE 802.11g (2.4 GHz)	Maximum	17.0				15.5	12.0	6.5	17.0			15.5	12.0	6.5	20.0			18.5	15.0	9.5								
	Nominal	16.0				14.5	11.0	5.5	16.0			14.5	11.0	5.5	19.0			17.5	14.0	8.5								
IEEE 802.11n (2.4 GHz)	Maximum	17.0				15.5	12.0	6.5	17.0			15.5	12.0	6.5	20.0			18.5	15.0	9.5								
	Nominal	16.0				14.5	11.0	5.5	16.0			14.5	11.0	5.5	19.0			17.5	14.0	8.5								
IEEE 802.11ax (SU) (2.4 GHz)	Maximum	13.5	14.5	16.0	17.0	15.5	14.5	14.5	10.0	17.0			16.0	13.5	17.0			14.0	14.0	14.0								
	Nominal	12.5	13.5	15.0	16.0	14.5	13.5	13.5	9.0	16.0			15.0	12.5	16.0			13.0	13.0									
Mode / Band		Modulated Average - Antenna 1 (dBm)								Modulated Average - Antenna 2 (dBm)								Modulated Average - MIMO (dBm)										
		20 MHz Bandwidth								20 MHz Bandwidth								20 MHz Bandwidth										
	Channel	36 -165								36 -165								36	40-60	64	100 -165							
IEEE 802.11a (5 GHz)	Maximum	14.0								14.0								17.0										
	Nominal	13.0								13.0								16.0										
IEEE 802.11n (5 GHz)	Maximum	14.0								14.0								17.0										
	Nominal	13.0								13.0								16.0										
IEEE 802.11ac (5 GHz)	Maximum	14.0								14.0								17.0										
	Nominal	13.0								13.0								16.0										
IEEE 802.11ax(SU) (5 GHz)	Maximum	14.0								14.0								16.0										
	Nominal	13.0								13.0								15.0										
Mode / Band		Modulated Average - Antenna 1 (dBm)								Modulated Average - Antenna 2 (dBm)								Modulated Average - MIMO (dBm)										
		40 MHz Bandwidth								40 MHz Bandwidth								40 MHz Bandwidth										
	Channel	38	46-54	62	102	110-159			38	46-54	62	102	110-159			38	46-54	62	102	110-159								
IEEE 802.11n (5 GHz)	Maximum	14.0								14.0								17.0										
	Nominal	13.0								13.0								16.0										
IEEE 802.11ac (5 GHz)	Maximum	14.0								14.0								17.0										
	Nominal	13.0								13.0								16.0										
IEEE 802.11ax(SU) (5 GHz)	Maximum	14.0								14.0								14.0										
	Nominal	13.0								13.0								13.0										
Mode / Band		Modulated Average - Antenna 1 (dBm)								Modulated Average - Antenna 2 (dBm)								Modulated Average - MIMO (dBm)										
		80 MHz Bandwidth								80 MHz Bandwidth								80 MHz Bandwidth										
	Channel	42	58	106	122 - 155				42	58	106	122 - 155				42	58	106	122 - 155									
IEEE 802.11ac (5 GHz)	Maximum	13.0	13.0	14.0				13.0	13.0	14.0				13.0	13.0	17.0												
	Nominal	12.0	12.0	13.0				12.0	12.0	13.0				12.0	12.0	16.0												
IEEE 802.11ax(SU) (5 GHz)	Maximum	13.0								13.0								13.0										
	Nominal	12.0								12.0								12.0										

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1.4 DUT Antenna Locations

The overall dimensions of this device are > 9 x 5 cm. A diagram showing the location of the device antennas can be found in Appendix F. This device is considered a "phablet" when it is in closed configuration and a "UMPC mini-tablet" when it is in open configuration. Exact antenna dimensions and separation distances are shown in the Technical Descriptions in the FCC filing.

Table 1-1
Device Edges/Sides for Closed Configuration SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
UMTS 1750	Yes	Yes	No	Yes	Yes	Yes
UMTS 1900	Yes	Yes	No	Yes	Yes	Yes
GPRS 1900	Yes	Yes	No	Yes	Yes	Yes
PCS EVDO	Yes	Yes	No	Yes	Yes	Yes
LTE Band 66 (AWS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 25 (PCS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 30	Yes	Yes	No	Yes	Yes	Yes
LTE Band 7	Yes	Yes	No	Yes	Yes	Yes
LTE Band 38	Yes	Yes	No	Yes	Yes	Yes
LTE Band 41	Yes	Yes	No	Yes	Yes	Yes
2.4 GHz WLAN Ant 2	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN Ant 2	Yes	Yes	Yes	No	No	Yes

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Table 1-2
Device Edges/Sides for Open Configuration SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
GPRS 850	Yes	Yes	No	Yes	Yes	No
UMTS 850	Yes	Yes	No	Yes	Yes	No
UMTS 1750	Yes	Yes	No	Yes	Yes	No
GPRS 1900	Yes	Yes	No	Yes	Yes	No
UMTS 1900	Yes	Yes	No	Yes	Yes	No
PCS EVDO	Yes	Yes	No	Yes	Yes	No
LTE Band 26 (Cell)	Yes	Yes	No	Yes	Yes	No
LTE Band 5 (Cell)	Yes	Yes	No	Yes	Yes	No
LTE Band 66 (AWS)	Yes	Yes	No	Yes	Yes	No
LTE Band 25 (PCS)	Yes	Yes	No	Yes	Yes	No
LTE Band 30	Yes	Yes	No	Yes	Yes	No
LTE Band 7	Yes	Yes	No	Yes	Yes	No
LTE Band 38	Yes	Yes	No	Yes	Yes	No
LTE Band 41	Yes	Yes	No	Yes	Yes	No
2.4 GHz WLAN Ant 2	Yes	Yes	Yes	No	No	No
2.4 GHz WLAN MIMO	Yes	Yes	Yes	No	Yes	No
5 GHz WLAN Ant 2	Yes	Yes	Yes	No	No	No
5 GHz WLAN MIMO	Yes	Yes	Yes	No	Yes	No

Note: 1) Particular DUT edges were not required to be evaluated for wireless router SAR, phablet SAR or UMPC mini-tablet SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v02r01 Section III, FCC KDB Publication 941225 D07v01r02 and FCC KDB Publication 648474 D04v01r03. The distances between the transmit antennas and the edges of the device are included in the filing. When wireless router mode is enabled, U-NII-1, U-NII-2A, U-NII-2C operations are disabled.

2) Testing edges were evaluated for the current report. Please refer to RF Exposure Technical Report S/N: 1M1901160007-01-R1.A3L for original compliance evaluation.

1.5 Near Field Communications (NFC) Antenna

This DUT has NFC operations. The NFC antenna is integrated into the device for this model. Therefore, all SAR tests were performed with the device which already incorporates the NFC antenna. A diagram showing the location of the NFC antenna can be found in Appendix F.

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1.6 Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D01v06, transmitters are considered to be operating simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds.

This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to FCC KDB Publication 447498 D01v06 4.3.2 procedures.

**Table 1-3
Simultaneous Transmission Scenarios**

No.	Capable Transmit Configuration	Head	Body-Worn Accessory	Wireless Router	Phablet	Mini Tablet	Notes
1	1x CDMA voice + 2.4 GHz Wi-Fi	Yes	Yes	N/A	Yes	Yes	
2	1x CDMA voice + 5 GHz Wi-Fi	Yes	Yes	N/A	Yes	Yes	
3	1x CDMA voice + 2.4 GHz Bluetooth	Yes ^a	Yes	N/A	Yes	Yes	^a Bluetooth Tethering is considered
4	1x CDMA voice + 2.4 GHz Bluetooth + 5 GHz Wi-Fi	Yes ^a	Yes	N/A	Yes	Yes	^a Bluetooth Tethering is considered
5	1x CDMA voice + 2.4 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	Yes	
6	1x CDMA voice + 5 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	Yes	
7	1x CDMA voice + 2.4 GHz Wi-Fi + 5 GHz Wi-Fi	Yes	Yes	N/A	Yes	Yes	
8	1x CDMA voice + 2.4 GHz Wi-Fi MIMO + 5 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	Yes	
9	1x CDMA voice + 2.4 GHz Bluetooth + 5 GHz Wi-Fi MIMO	Yes ^a	Yes	N/A	Yes	Yes	^a Bluetooth Tethering is considered
10	GSM voice + 2.4 GHz Wi-Fi	Yes	Yes	N/A	Yes	Yes	
11	GSM voice + 5 GHz Wi-Fi	Yes	Yes	N/A	Yes	Yes	
12	GSM voice + 2.4 GHz Bluetooth	Yes ^a	Yes	N/A	Yes	Yes	^a Bluetooth Tethering is considered
13	GSM voice + 2.4 GHz Bluetooth + 5 GHz Wi-Fi	Yes ^a	Yes	N/A	Yes	Yes	^a Bluetooth Tethering is considered
14	GSM voice + 2.4 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	Yes	
15	GSM voice + 5 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	Yes	
16	GSM voice + 2.4 GHz Wi-Fi + 5 GHz Wi-Fi	Yes	Yes	N/A	Yes	Yes	
17	GSM voice + 2.4 GHz Wi-Fi MIMO + 5 GHz Wi-Fi MIMO	Yes	Yes	N/A	Yes	Yes	
18	GSM voice + 2.4 GHz Bluetooth + 5 GHz Wi-Fi MIMO	Yes ^a	Yes	N/A	Yes	Yes	^a Bluetooth Tethering is considered
19	UMTS + 2.4 GHz Wi-Fi	Yes	Yes	Yes	Yes	Yes	
20	UMTS + 5 GHz Wi-Fi	Yes	Yes	Yes	Yes	Yes	
21	UMTS + 2.4 GHz Bluetooth	Yes ^a	Yes	Yes ^a	Yes	Yes	^a Bluetooth Tethering is considered
22	UMTS + 2.4 GHz Bluetooth + 5 GHz Wi-Fi	Yes ^a	Yes	Yes ^a	Yes	Yes	^a Bluetooth Tethering is considered
23	UMTS + 2.4 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	Yes	
24	UMTS + 5 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	Yes	
25	UMTS + 2.4 GHz Wi-Fi + 5 GHz Wi-Fi	Yes	Yes	Yes	Yes	Yes	
26	UMTS + 2.4 GHz Wi-Fi MIMO + 5 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	Yes	
27	UMTS + 2.4 GHz Bluetooth + 5 GHz Wi-Fi MIMO	Yes ^a	Yes	Yes ^a	Yes	Yes	^a Bluetooth Tethering is considered
28	LTE + 2.4 GHz Wi-Fi	Yes	Yes	Yes	Yes	Yes	
29	LTE + 5 GHz Wi-Fi	Yes	Yes	Yes	Yes	Yes	
30	LTE + 2.4 GHz Bluetooth	Yes ^a	Yes	Yes ^a	Yes	Yes	^a Bluetooth Tethering is considered
31	LTE + 2.4 GHz Bluetooth + 5 GHz Wi-Fi	Yes ^a	Yes	Yes ^a	Yes	Yes	^a Bluetooth Tethering is considered
32	LTE + 2.4 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	Yes	
33	LTE + 5 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	Yes	
34	LTE + 2.4 GHz Wi-Fi + 5 GHz Wi-Fi	Yes	Yes	Yes	Yes	Yes	
35	LTE + 2.4 GHz Wi-Fi MIMO + 5 GHz Wi-Fi MIMO	Yes	Yes	Yes	Yes	Yes	
36	LTE + 2.4 GHz Bluetooth + 5 GHz Wi-Fi MIMO	Yes ^a	Yes	Yes ^a	Yes	Yes	^a Bluetooth Tethering is considered
37	CDMA/EVDO data + 2.4 GHz Wi-Fi	Yes*	Yes*	Yes	Yes	Yes	* Pre-installed VOIP applications are considered
38	CDMA/EVDO data + 5 GHz Wi-Fi	Yes*	Yes*	Yes	Yes	Yes	* Pre-installed VOIP applications are considered
39	CDMA/EVDO data + 2.4 GHz Bluetooth	Yes ^{a*}	Yes*	Yes ^a	Yes	Yes	* Pre-installed VOIP applications are considered ^a Bluetooth Tethering is considered
40	CDMA/EVDO data + 2.4 GHz Bluetooth + 5 GHz Wi-Fi	Yes ^{a*}	Yes*	Yes ^a	Yes	Yes	* Pre-installed VOIP applications are considered ^a Bluetooth Tethering is considered
41	CDMA/EVDO data + 2.4 GHz Wi-Fi MIMO	Yes*	Yes*	Yes	Yes	Yes	* Pre-installed VOIP applications are considered
42	CDMA/EVDO data + 5 GHz Wi-Fi MIMO	Yes*	Yes*	Yes	Yes	Yes	* Pre-installed VOIP applications are considered
43	CDMA/EVDO data + 2.4 GHz Wi-Fi + 5 GHz Wi-Fi	Yes*	Yes*	Yes	Yes	Yes	* Pre-installed VOIP applications are considered
44	CDMA/EVDO data + 2.4 GHz Wi-Fi MIMO + 5 GHz Wi-Fi MIMO	Yes*	Yes*	Yes	Yes	Yes	* Pre-installed VOIP applications are considered
45	CDMA/EVDO data + 2.4 GHz Bluetooth + 5 GHz Wi-Fi MIMO	Yes ^{a*}	Yes*	Yes ^a	Yes	Yes	* Pre-installed VOIP applications are considered ^a Bluetooth Tethering is considered
46	GPRS/EDGE + 2.4 GHz Wi-Fi	N/A	N/A	Yes	Yes	Yes	
47	GPRS/EDGE + 5 GHz Wi-Fi	N/A	N/A	Yes	Yes	Yes	
48	GPRS/EDGE + 2.4 GHz Bluetooth	N/A	N/A	Yes ^a	Yes	Yes	^a Bluetooth Tethering is considered
49	GPRS/EDGE + 2.4 GHz Bluetooth + 5 GHz Wi-Fi	N/A	N/A	Yes ^a	Yes	Yes	^a Bluetooth Tethering is considered
50	GPRS/EDGE + 2.4 GHz Wi-Fi MIMO	N/A	N/A	Yes	Yes	Yes	
51	GPRS/EDGE + 5 GHz Wi-Fi MIMO	N/A	N/A	Yes	Yes	Yes	
52	GPRS/EDGE + 2.4 GHz Wi-Fi + 5 GHz Wi-Fi	N/A	N/A	Yes	Yes	Yes	
53	GPRS/EDGE + 2.4 GHz Wi-Fi MIMO + 5 GHz Wi-Fi MIMO	N/A	N/A	Yes	Yes	Yes	
54	GPRS/EDGE + 2.4 GHz Bluetooth + 5 GHz Wi-Fi MIMO	N/A	N/A	Yes ^a	Yes	Yes	^a Bluetooth Tethering is considered

- 2.4 GHz WLAN and 2.4 GHz Bluetooth share the same antenna path and cannot transmit simultaneously.
- All licensed modes share the same antenna path and cannot transmit simultaneously.
- When the user utilizes multiple services in UMTS 3G mode it uses multi-Radio Access Bearer or multi-RAB. The power control is based on a physical control channel (Dedicated Physical Control Channel [DPCCH]) and power control will be adjusted to meet the needs of both services. Therefore, the UMTS+WLAN scenario also represents the UMTS Voice/DATA + WLAN Hotspot scenario.
- Per the manufacturer, WIFI Direct is not expected to be used in conjunction with a held-to-ear or body-worn accessory voice call. Therefore, there are no simultaneous transmission scenarios involving WIFI direct beyond that listed in the above table.

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5. 5 GHz Wireless Router is only supported for the U-NII-3 by S/W, therefore U-NII-1, U-NII2A, and U-NII2C were not evaluated for wireless router conditions.
6. This device supports 2x2 MIMO Tx for WLAN 802.11a/g/n/ac/ax. 802.11a/g/n/ac/ax supports CDD and STBC and 802.11n/ac/ax additionally supports SDM. Each WLAN antenna can transmit independently or together when operating with MIMO.
7. This device supports VOLTE.
8. This device supports VoWIFI.
9. This device supports Bluetooth Tethering.

1.7 Miscellaneous SAR Test Considerations

This test report evaluates bands/modes impacted by the permissive change in this filing. Other bands and modes were confirmed to not have changed from the original filing. Please see RF Exposure Technical Report SN 1M1901160007-01-R1.A3L for original compliance evaluation.

(A) WIFI/BT

Since U-NII-1 and U-NII-2A bands have the same maximum output power and the highest reported SAR for U-NII-2A is less than 1.2 W/kg, SAR is not required for U-NII-1 band according to FCC KDB Publication 248227 D01v02r02.

Since Wireless Router operations are not allowed by the chipset firmware using U-NII-1, U-NII-2A & U-NII-2C WIFI, only 2.4 GHz and U-NII-3 WIFI Hotspot SAR tests and combinations are considered for SAR with respect to Wireless Router configurations according to FCC KDB 941225 D06v02r01.

This device supports IEEE 802.11ax with the following features:

- a) Up to 80 MHz Bandwidth only for 5GHz
- b) Up to 20MHz Bandwidth only for 2.4 GHz
- c) No aggregate channel configurations
- d) 2 Tx antenna output
- e) Up to 1024 QAM is supported
- f) TDWR and Band gap channels are supported for 5 GHz
- g) MU – MIMO UL Operations are not supported

This device supports channel 1-13 for 2.4 GHz WLAN. However, due to the reduced output power for channels 12 and 13, channels 1, 6, and 11 were considered for SAR testing per KDB 248227 D01v02r02.

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" when it is in a closed configuration since the diagonal dimension is greater than 160mm and less than 200mm. Phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg. Because wireless router operations are not supported for U-NII-1, U-NII-2A & U-NII-2C WLAN, phablet SAR tests were performed. Phablet SAR was not evaluated for 2.4 GHz WLAN, 2.4 GHz Bluetooth, and U-NII-3 WLAN operations since wireless router 1g SAR was < 1.2 W/kg.

Per April 2019 TCB Workshop Notes, SAR testing was not required for 802.11ax when applying the initial test configuration procedures of KDB 248227, with 802.11ax considered a higher order 802.11 mode.

This device supports 2x2 MIMO Tx for WLAN 802.11a/g/n/ac/ax. 802.11a/g/n/ac/ax supports CDD and STBC and 802.11n/ac/ax additionally supports SDM.

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(B) Licensed Transmitter(s)

GSM/GPRS/EDGE DTM is not supported for US bands. Therefore, the GSM Voice modes in this report do not transmit simultaneously with GPRS/EDGE Data.

This device is only capable of QPSK HSUPA in the uplink. Therefore, no additional SAR tests are required beyond that described for devices with HSUPA in KDB 941225 D01v03r01.

LTE SAR for the higher modulations and lower bandwidths were not tested since the maximum average output power of all required channels and configurations was not more than 0.5 dB higher than the highest bandwidth; and the reported LTE SAR for the highest bandwidth was less than 1.45 W/kg for all configurations according to FCC KDB 941225 D05v02r04.

CDMA 1X Advanced technology was not required for SAR since the maximum allowed output powers for 1x Advanced was not more than 0.25 dB higher than the maximum powers for 1x and the measured SAR in any 1x mode exposure conditions was not greater than 1.2 W/kg per FCC KDB Publication 941225 D01v03r01.

This device supports LTE Carrier Aggregation (CA) in the downlink. All uplink communications are identical to Release 8 specifications. Per FCC KDB Publication 941225 D05A v01r02, SAR for downlink only LTE CA operations was not needed since the maximum average output power in downlink only LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive. The downlink carrier aggregation exclusion analysis can be found in Appendix H for the current report. LTE Downlink Carrier Aggregation was fully addressed in the RF Exposure Technical Report S/N: 1M1901160007-01-R1.A3L. Per FCC Guidance, no additional measurements were required when there were no changes to the downlink CA implementation for some modes.

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" when it is closed configuration since the diagonal dimension is greater than 160mm and less than 200mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg. Additional SAR tests for phablet SAR were evaluated per KDB 616217 Section 6 (See Section 6.9 for more information)

This device supports LTE capabilities with overlapping transmission frequency ranges. When the supported frequency range of an LTE Band falls completely within an LTE band with a larger transmission frequency range, both LTE bands have the same target power (or the band with the larger transmission frequency range has a higher target power), and both LTE bands share the same transmission path and signal characteristics, SAR was only assessed for the band with the larger transmission frequency range.

This device supports 64QAM on the uplink and 256QAM on the downlink for LTE Operations. Conducted powers for 64QAM uplink configurations were measured per Section 5.1 of FCC KDB Publication 941225 D05v02r05. SAR was not required for 64QAM since the highest maximum output power for 64QAM is $\leq \frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg, per Section 5.2.4 of FCC KDB Publication 941225 D05v02r05.

This device supports both Power Class 2 (PC2) and Power Class 3 (PC3) for LTE Band 41. Per May 2017 TCB Workshop Notes, SAR tests were performed with Power Class 3 (given the specific UL/DL limitations for Power Class 2). Additionally, SAR testing for the power class condition was evaluated for the highest configuration in Power Class 3 for each test configuration to confirm the results were scalable linearly (See Section 14.1).

This device supports LTE Carrier Aggregation (CA) for LTE Band 5, LTE Band 66, LTE Band 38 and LTE Band 41 with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per 2017 Fall TCB Workshop Notes.

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1.8 Guidance Applied

- IEEE 1528-2013
- FCC KDB Publication 941225 D01v03r01, D05v02r04, D05Av01r02, D06v02r01 (2G/3G/4G and Hotspot)
- FCC KDB Publication 248227 D01v02r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v06 (General SAR Guidance)
- FCC KDB Publication 865664 D01v01r04, D02v01r02 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 648474 D04v01r03 (Phablet Procedures)
- FCC KDB Publication 616217 D04v01r02 (Proximity Sensor)
- October 2013 TCB Workshop Notes (GPRS Testing Considerations)
- May 2017 TCB Workshop Notes (LTE Band 41 Power Class 2/3)
- April 2018 TCB Workshop Notes (LTE Carrier Aggregation)
- FCC KDB Publication 941225 D07v01r02 (UMPC Mini-Tablet Devices)

1.9 Device Serial Numbers

Several samples with identical hardware were used to support SAR testing. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units. The serial numbers used for each test are indicated alongside the results in Section 11.

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2

LTE INFORMATION

LTE Information				
Form Factor	Portable Handset			
Frequency Range of each LTE transmission band	LTE Band 71 (665.5 - 695.5 MHz)			
	LTE Band 12 (695.7 - 715.3 MHz)			
	LTE Band 13 (779.5 - 784.5 MHz)			
	LTE Band 14 (790.5 - 795.5 MHz)			
	LTE Band 26 (Cell) (814.7 - 848.3 MHz)			
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)			
	LTE Band 66 (AWS) (1710.7 - 1779.3 MHz)			
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)			
	LTE Band 25 (PCS) (1850.7 - 1914.3 MHz)			
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)			
	LTE Band 30 (2307.5 - 2312.5 MHz)			
	LTE Band 7 (2502.5 - 2567.5 MHz)			
	LTE Band 41 (2498.5 - 2687.5 MHz)			
	LTE Band 38 (2572.5 - 2617.5 MHz)			
Channel Bandwidths	LTE Band 71: 5 MHz, 10 MHz, 15 MHz, 20 MHz			
	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz			
	LTE Band 13: 5 MHz, 10 MHz			
	LTE Band 14: 5 MHz, 10 MHz			
	LTE Band 26 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz			
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz			
	LTE Band 66 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz			
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz			
	LTE Band 25 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz			
	LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz			
	LTE Band 30: 5 MHz, 10 MHz			
	LTE Band 7: 5 MHz, 10 MHz, 15 MHz, 20 MHz			
	LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz			
	LTE Band 38: 5 MHz, 10 MHz, 15 MHz, 20 MHz			
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High
	High			
LTE Band 71: 5 MHz	665.5 (133147)	680.5 (133297)	695.5 (133447)	
LTE Band 71: 10 MHz	668 (133172)	680.5 (133297)	693 (133422)	
LTE Band 71: 15 MHz	670.5 (133197)	680.5 (133297)	690.5 (133397)	
LTE Band 71: 20 MHz	673 (133222)	680.5 (133297)	688 (133372)	
LTE Band 12: 1.4 MHz	699.7 (23017)	707.5 (23095)	715.3 (23173)	
LTE Band 12: 3 MHz	700.5 (23025)	707.5 (23095)	714.5 (23165)	
LTE Band 12: 5 MHz	701.5 (23035)	707.5 (23095)	713.5 (23155)	
LTE Band 12: 10 MHz	704 (23060)	707.5 (23095)	711 (23130)	
LTE Band 13: 5 MHz	779.5 (23205)	782 (23230)	784.5 (23235)	
LTE Band 13: 10 MHz	N/A	782 (23230)	N/A	
LTE Band 14: 5 MHz	790.5 (23305)	793 (23330)	795.5 (23355)	
LTE Band 14: 10 MHz	N/A	793 (23330)	N/A	
LTE Band 26 (Cell): 1.4 MHz	814.7 (26697)	831.5 (26865)	848.3 (27033)	
LTE Band 26 (Cell): 3 MHz	815.5 (26705)	831.5 (26865)	847.5 (27025)	
LTE Band 26 (Cell): 5 MHz	816.5 (26715)	831.5 (26865)	846.5 (27015)	
LTE Band 26 (Cell): 10 MHz	819 (26740)	831.5 (26865)	844 (26990)	
LTE Band 26 (Cell): 15 MHz	821.5 (26765)	831.5 (26865)	841.5 (26965)	
LTE Band 5 (Cell): 1.4 MHz	824.7 (26847)	836.5 (26955)	848.3 (26943)	
LTE Band 5 (Cell): 3 MHz	825.5 (26845)	836.5 (26955)	847.5 (26935)	
LTE Band 5 (Cell): 5 MHz	826.5 (26845)	836.5 (26955)	846.5 (26925)	
LTE Band 5 (Cell): 10 MHz	829 (26840)	836.5 (26955)	844 (26900)	
LTE Band 66 (AWS): 1.4 MHz	1710.7 (131979)	1745 (132322)	1779.3 (132665)	
LTE Band 66 (AWS): 3 MHz	1711.5 (131987)	1745 (132322)	1778.5 (132657)	
LTE Band 66 (AWS): 5 MHz	1712.5 (131997)	1745 (132322)	1777.5 (132647)	
LTE Band 66 (AWS): 10 MHz	1715 (132022)	1745 (132322)	1775 (132622)	
LTE Band 66 (AWS): 15 MHz	1717.5 (132047)	1745 (132322)	1772.5 (132597)	
LTE Band 66 (AWS): 20 MHz	1720 (132072)	1745 (132322)	1770 (132572)	
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)	1732.5 (20175)	1754.3 (20393)	
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)	1732.5 (20175)	1753.5 (20385)	
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)	1732.5 (20175)	1752.5 (20375)	
LTE Band 4 (AWS): 10 MHz	1715 (20000)	1732.5 (20175)	1750 (20350)	
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)	1732.5 (20175)	1747.5 (20325)	
LTE Band 4 (AWS): 20 MHz	1720 (20050)	1732.5 (20175)	1745 (20300)	
LTE Band 25 (PCS): 1.4 MHz	1850.7 (26847)	1882.5 (26365)	1914.3 (26883)	
LTE Band 25 (PCS): 3 MHz	1851.5 (26855)	1882.5 (26365)	1913.5 (26875)	
LTE Band 25 (PCS): 5 MHz	1852.5 (26865)	1882.5 (26365)	1912.5 (26865)	
LTE Band 25 (PCS): 10 MHz	1855 (26900)	1882.5 (26365)	1910 (26840)	
LTE Band 25 (PCS): 15 MHz	1857.5 (26915)	1882.5 (26365)	1907.5 (26815)	
LTE Band 25 (PCS): 20 MHz	1860 (26940)	1882.5 (26365)	1905 (26790)	
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)	1880 (18900)	1909.3 (19193)	
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)	1880 (18900)	1908.5 (19185)	
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)	1880 (18900)	1907.5 (19175)	
LTE Band 2 (PCS): 10 MHz	1855 (18650)	1880 (18900)	1905 (19150)	
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)	1880 (18900)	1902.5 (19125)	
LTE Band 2 (PCS): 20 MHz	1860 (18700)	1880 (18900)	1900 (19100)	
LTE Band 30: 5 MHz	2307.5 (27685)	2310 (27710)	2312.5 (27735)	
LTE Band 30: 10 MHz	N/A	2310 (27710)	N/A	
LTE Band 7: 5 MHz	2502.5 (20775)	2535 (21100)	2567.5 (21425)	
LTE Band 7: 10 MHz	2505 (20800)	2535 (21100)	2565 (21400)	
LTE Band 7: 15 MHz	2507.5 (20825)	2535 (21100)	2562.5 (21375)	
LTE Band 7: 20 MHz	2510 (20850)	2535 (21100)	2560 (21350)	
LTE Band 41: 5 MHz	2506 (39750)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2506 (39750)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2506 (39750)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2506 (39750)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 38: 5 MHz	2572.5 (37775)	2595 (38000)	2617.5 (38225)	
LTE Band 38: 10 MHz	2575 (37800)	2595 (38000)	2615 (38200)	
LTE Band 38: 15 MHz	2577.5 (37825)	2595 (38000)	2612.5 (38175)	
LTE Band 38: 20 MHz	2580 (37850)	2595 (38000)	2610 (38150)	
UE Category	DL UE Cat 18 (QPSK, 16QAM, 64QAM, 256QAM); UL UE Cat 13 (QPSK, 16QAM, 64QAM)			
Modulations Supported in UL	QPSK, 16QAM, 64QAM			
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3-6.2.5? (manufacturer attestation to be provided)	YES			
A-MPR (Additional MPR) disabled for SAR Testing?	YES			
LTE Carrier Aggregation Possible Combinations	The technical description includes all the possible carrier aggregation combinations			
LTE Additional Information	This device does not support full CA features on 3GPP Release 14. It supports carrier aggregation as shown in Section 9 and Appendix H. All other uplink communications are identical to the Release 8 specifications. Uplink communications are done on the PCC unless otherwise specified. The following LTE Release 14 Features are not supported: Relay, HetNet, Enhanced eICIC, MDR, eMBMS, Cross-Carrier Scheduling, Enhanced SC-FDMA.			

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3 INTRODUCTION

The FCC and Innovation, Science, and Economic Development Canada have adopted the guidelines for evaluating the environmental effects of radio frequency (RF) radiation in ET Docket 93-62 on Aug. 6, 1996 and Health Canada Safety Code 6 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices. [1]

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz [3] and Health Canada RF Exposure Guidelines Safety Code 6 [22]. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave [4] is used for guidance in measuring the Specific Absorption Rate (SAR) due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the International Committee for Non-Ionizing Radiation Protection (ICNIRP) in Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields,” Report No. Vol 74. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

3.1 SAR Definition

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (dU) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Equation 3-1).

Equation 3-1
SAR Mathematical Equation

$$SAR = \frac{d}{dt} \left(\frac{dU}{dm} \right) = \frac{d}{dt} \left(\frac{dU}{\rho dv} \right)$$

SAR is expressed in units of Watts per Kilogram (W/kg).

$$SAR = \frac{\sigma \cdot E^2}{\rho}$$

where:

- σ = conductivity of the tissue-simulating material (S/m)
- ρ = mass density of the tissue-simulating material (kg/m³)
- E = Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relation to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.[6]

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4 DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

The evaluation was performed using the following procedure compliant to FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013:

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01r04 (See Table 4-1) and IEEE 1528-2013.
2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1g/10g cube evaluation. SAR at this fixed point was measured and used as a reference value.
3. Based on the area scan data, the peak of the region with maximum SAR was determined by spline interpolation. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB Publication 865664 D01v01r04 (See Table 4-1) and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):
 - a. SAR values at the inner surface of the phantom are extrapolated from the measured values along the line away from the surface with spacing no greater than that in Table 4-1. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).
 - b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot" condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.
 - c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

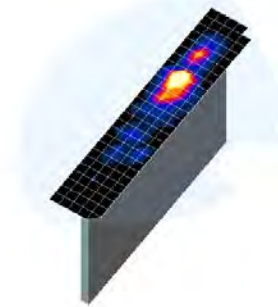


Figure 4-1
Sample SAR Area Scan

Table 4-1
Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01r04*

Frequency	Maximum Area Scan Resolution (mm) ($\Delta x_{\text{area}}, \Delta y_{\text{area}}$)	Maximum Zoom Scan Resolution (mm) ($\Delta x_{\text{zoomTV}}, \Delta y_{\text{zoom}}$)	Maximum Zoom Scan Spatial Resolution (mm)			Minimum Zoom Scan Volume (mm) (x,y,z)
			Uniform Grid	Graded Grid		
				$\Delta z_{\text{zoom}}(n)$	$\Delta z_{\text{zoom}}(1)^*$	
≤2 GHz	≤15	≤8	≤5	≤4	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥30
2-3 GHz	≤12	≤5	≤5	≤4	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥30
3-4 GHz	≤12	≤5	≤4	≤3	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥28
4-5 GHz	≤10	≤4	≤3	≤2.5	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥25
5-6 GHz	≤10	≤4	≤2	≤2	≤1.5* $\Delta z_{\text{zoom}}(n-1)$	≥22

*Also compliant to IEEE 1528-2013 Table 6

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5 DEFINITION OF REFERENCE POINTS

5.1 EAR REFERENCE POINT

Figure 5-2 shows the front, back and side views of the SAM Twin Phantom. The point “M” is the reference point for the center of the mouth, “LE” is the left ear reference point (ERP), and “RE” is the right ERP. The ERP is 15mm posterior to the entrance to the ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 5-1. The plane passing through the two ear canals and M is defined as the Reference Plane. The line N-F (Neck-Front), also called the Reference Pivoting Line, is not perpendicular to the reference plane (see Figure 5-1). Line B-M is perpendicular to the N-F line. Both N-F and B-M lines are marked on the external phantom shell to facilitate handset positioning [5].

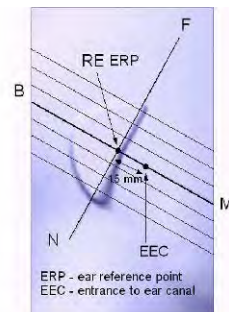


Figure 5-1
Close-Up Side view
of ERP

5.2 HANDSET REFERENCE POINTS

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The test device was placed in a normal operating position with the acoustic output located along the “vertical centerline” on the front of the device aligned to the “ear reference point” (See Figure 5-3). The acoustic output was then located at the same level as the center of the ear reference point. The test device was positioned so that the “vertical centerline” was bisecting the front surface of the handset at its top and bottom edges, positioning the “ear reference point” on the outer surface of the both the left and right head phantoms on the ear reference point.



Figure 5-2
Front, back and side view of SAM Twin Phantom

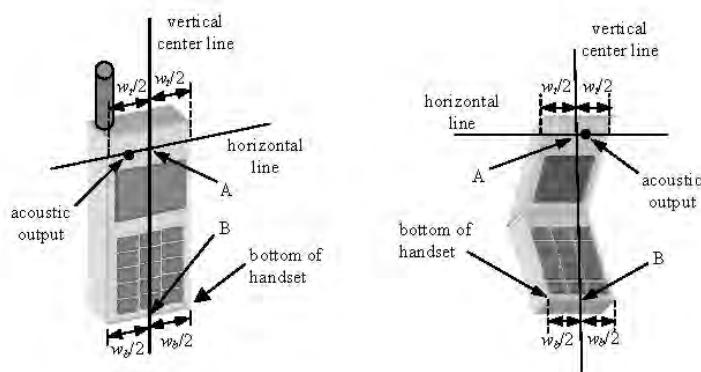


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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6 TEST CONFIGURATION POSITIONS

6.1 Device Holder

The device holder is made out of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon = 3$ and loss tangent $\delta = 0.02$.

6.2 Positioning for Cheek

1. The test device was positioned with the device close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 6-1), such that the plane defined by the vertical center line and the horizontal line of the phone is approximately parallel to the sagittal plane of the phantom.



Figure 6-1 Front, Side and Top View of Cheek Position

2. The handset was translated towards the phantom along the line passing through RE & LE until the handset touches the pinna.
3. While maintaining the handset in this plane, the handset was rotated around the LE-RE line until the vertical centerline was in the reference plane.
4. The phone was then rotated around the vertical centerline until the phone (horizontal line) was symmetrical with respect to the line NF.
5. While maintaining the vertical centerline in the reference plane, keeping point A on the line passing through RE and LE, and maintaining the device contact with the ear, the device was rotated about the NF line until any point on the handset made contact with a phantom point below the ear (cheek) (See Figure 6-2).

6.3 Positioning for Ear / 15° Tilt

With the test device aligned in the “Cheek Position”:

1. While maintaining the orientation of the phone, the phone was retracted parallel to the reference plane far enough to enable a rotation of the phone by 15 degrees.
2. The phone was then rotated around the horizontal line by 15 degrees.
3. While maintaining the orientation of the phone, the phone was moved parallel to the reference plane until any part of the handset touched the head. (In this position, point A was located on the line RE-LE). The tilted position is obtained when the contact is on the pinna. If the contact was at any location other than the pinna, the angle of the phone would then be reduced. In this situation, the tilted position was obtained when any part of the phone was in contact of the ear as well as a second part of the phone was in contact with the head (see Figure 6-2).

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contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented.

Transmitters that are designed to operate in front of a person's face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

6.6 Extremity Exposure Configurations

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions; i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user's body, SAR compliance for the body is also required. The 1g body and 10g extremity SAR Exclusion Thresholds found in KDB Publication 447498 D01v06 should be applied to determine SAR test requirements.

Per KDB Publication 447498 D01v06, Cell phones (handsets) are not normally designed to be used on extremities or operated in extremity only exposure conditions. The maximum output power levels of handsets generally do not require extremity SAR testing to show compliance. Therefore, extremity SAR was not evaluated for this device.

6.7 Wireless Router Configurations

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06v02r01 where SAR test considerations for handsets ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) are based on a composite test separation distance of 10 mm from the front, back and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 procedures. The "Portable Hotspot" feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

6.8 Phablet Configurations

For smart phones with a display diagonal dimension > 150 mm or an overall diagonal dimension > 160 mm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that

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support voice calls next to the ear, the phablets procedures outlined in KDB Publication 648474 D04v01r03 should be applied to evaluate SAR compliance. A device marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance. In addition to the normally required head and body-worn accessory SAR test procedures required for handsets, the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna ≤ 25 mm from that surface or edge, in direct contact with the phantom, for 10g SAR. The UMPC mini-tablet 1g SAR at 5 mm is not required. When hotspot mode applies, 10g SAR is required only for the surfaces and edges with hotspot mode 1g SAR > 1.2 W/kg.

6.9 Proximity Sensor Considerations

This device uses a power reduction mechanism to reduce output powers in certain use conditions when the device is used close to the user's body.

When the device's antenna is within a certain distance of the user, the sensor activates and reduces the maximum allowed output power. However, the sensor is not active when the device is moved beyond the sensor triggering distance and the maximum output power is no longer limited. Therefore, additional evaluation is needed in the vicinity of the triggering distance to ensure SAR is compliant when the device is allowed to operate at a non-reduced output power level. FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device at these additional test positions. Sensor triggering distance summary data is included in Appendix G.

The sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the sensor entirely covers the antennas.

6.10 UMPC Mini-Tablet Configurations

Small hand-held tablets (and devices of similar form factors that are designed primarily for interactive hand-held use next to or near the body of users) require body SAR and extremity SAR evaluation. These types of mini-tablets are normally optimized for mobile web access and multimedia use. UMPC test procedures are applicable for devices with displays and overall diagonal dimension ≤ 20 cm. Devices are to be set up according to KDB publication 941225 D07v01r02 requirements and are configured with maximum output power during SAR assessment for a worst case SAR evaluation.

Per KDB Publication 941225 D07v01r02, UMPC mini-tablet devices must be tested for all surfaces and edges ≤ 25 mm from a transmitting antenna. A test separation distance of 10 mm may be considered for 1g SAR, with the addition of 10g SAR measurement at 0 mm test separation distance for all measured 1g SAR (at 10 mm) configurations to address hand exposure. For certain conditions when a proximity sensor was used that was triggered at 10 mm, the procedures in KDB 616217 were used to select a secondary test distance at maximum power. See Section 6.9 for more details.

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7 RF EXPOSURE LIMITS

7.1 Uncontrolled Environment

UNCONTROLLED ENVIRONMENTS are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

7.2 Controlled Environment

CONTROLLED ENVIRONMENTS are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Table 7-1
SAR Human Exposure Specified in ANSI/IEEE C95.1-1992 and Health Canada Safety Code 6

HUMAN EXPOSURE LIMITS		
	UNCONTROLLED ENVIRONMENT <i>General Population</i> (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT <i>Occupational</i> (W/kg) or (mW/g)
Peak Spatial Average SAR Head	1.6	8.0
Whole Body SAR	0.08	0.4
Peak Spatial Average SAR Hands, Feet, Ankle, Wrists, etc.	4.0	20

1. The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
2. The Spatial Average value of the SAR averaged over the whole body.
3. The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

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8 FCC MEASUREMENT PROCEDURES

Power measurements for licensed transmitters are performed using a base station simulator under digital average power.

8.1 Measured and Reported SAR

Per FCC KDB Publication 447498 D01v06, when SAR is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance. For simultaneous transmission, the measured aggregate SAR must be scaled according to the sum of the differences between the maximum tune-up tolerance and actual power used to test each transmitter. When SAR is measured at or scaled to the maximum tune-up tolerance limit, the results are referred to as *reported* SAR. The highest *reported* SAR results are identified on the grant of equipment authorization according to procedures in KDB 690783 D01v01r03.

8.2 3G SAR Test Reduction Procedure

In FCC KDB Publication 941225 D01v03r01, certain transmission modes within a frequency band and wireless mode evaluated for SAR are defined as primary modes. The equivalent modes considered for SAR test reduction are denoted as secondary modes. When the maximum output power including tune-up tolerance specified for production units in a secondary mode is ≤ 0.25 dB higher than the primary mode or when the highest reported SAR of the primary mode, scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode, is ≤ 1.2 W/kg, SAR measurements are not required for the secondary mode. These criteria are referred to as the 3G SAR test reduction procedure. When the 3G SAR test reduction procedure is not satisfied, SAR measurements are additionally required for the secondary mode.

8.3 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB Publication 941225 D01v03r01 “3G SAR Measurement Procedures.”

The device is placed into a simulated call using a base station simulator in a RF shielded chamber. Establishing connections in this manner ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. Devices under test are evaluated prior to testing, with a fully charged battery and were configured to operate at maximum output power. In order to verify that the device is tested throughout the SAR test at maximum output power, the SAR measurement system measures a “point SAR” at an arbitrary reference point at the start and end of the 1 gram SAR evaluation, to assess for any power drifts during the evaluation. If the power drift deviates by more than 5%, the SAR test and drift measurements are repeated.

8.4 SAR Measurement Conditions for CDMA2000

The following procedures were performed according to FCC KDB Publication 941225 D01v03r01 “3G SAR Measurement Procedures.”

8.4.1 Output Power Verification

See 3GPP2 C.S0011/TIA-98-E as recommended by FCC KDB Publication 941225 D01v03r01 “3G SAR Measurement Procedures.” Maximum output power is verified on the High, Middle and Low channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. SO55 tests were measured with power control bits in the “All Up” condition.

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1. If the mobile station (MS) supports Reverse TCH RC 1 and Forward TCH RC 1, set up a call using Fundamental Channel Test Mode 1 (RC=1/1) with 9600 bps data rate only.
2. Under RC1, C.S0011 Table 4.4.5.2-1, Table 8-1 parameters were applied.
3. If the MS supports the RC 3 Reverse FCH, RC3 Reverse SCH₀ and demodulation of RC 3,4, or 5, set up a call using Supplemental Channel Test Mode 3 (RC 3/3) with 9600 bps Fundamental Channel and 9600 bps SCH₀ data rate.
4. Under RC3, C.S0011 Table 4.4.5.2-2, Table 8-2 was applied.

Table 8-1
Parameters for Max. Power for RC1

Parameter	Units	Value
I_{or}	dBm/1.23 MHz	-104
$\frac{Pilot E_c}{I_{or}}$	dB	-7
$\frac{Traffic E_c}{I_{or}}$	dB	-7.4

Table 8-2
Parameters for Max. Power for RC3

Parameter	Units	Value
I_{or}	dBm/1.23 MHz	-86
$\frac{Pilot E_c}{I_{or}}$	dB	-7
$\frac{Traffic E_c}{I_{or}}$	dB	-7.4

5. FCHs were configured at full rate for maximum SAR with “All Up” power control bits.

8.4.2 Head SAR Measurements

SAR for next to the ear head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55. The 3G SAR test reduction procedure is applied to RC1 with RC3 as the primary mode; otherwise, SAR is required for the channel with maximum measured output in RC1 using the head exposure configuration that results in the highest reported SAR in RC3.

Head SAR is additionally evaluated using EVDO Rev. A to support compliance for VoIP operations. See Section 8.4.5 for EVDO Rev. A configuration parameters.

8.4.3 Body-worn SAR Measurements

SAR for body-worn exposure configurations is measured in RC3 with the DUT configured to transmit at full rate on FCH with all other code channels disabled using TDSO / SO32. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCH_n), with FCH only as the primary mode. Otherwise, SAR is required for multiple code channel configuration (FCH + SCH_n), with FCH at full rate and SCH₀ enabled at 9600 bps, using the highest reported SAR configuration for FCH only. When multiple code channels are enabled, the transmitter output can shift by more than 0.5 dB and may lead to higher SAR drifts and SCH dropouts.

The 3G SAR test reduction procedure is applied to body-worn accessory SAR in RC1 with RC3 as the primary mode. Otherwise, SAR is required for RC1, with SO55 and full rate, using the highest reported SAR configuration for body-worn accessory exposure in RC3.

8.4.4 Body-worn SAR Measurements for EVDO Devices

For handsets with EVDO capabilities, the 3G SAR test reduction procedure is applied to EVDO Rev. 0 with 1x RTT RC3 as the primary mode to determine body-worn accessory test requirements. Otherwise, body-worn accessory SAR is required for Rev. 0, at 153.6 kbps, using the highest reported SAR configuration for body-worn accessory exposure in RC3.

The 3G SAR test reduction procedure is applied to Rev. A, with Rev. 0 as the primary mode to determine body-worn accessory SAR test requirements. When SAR is not required for Rev. 0, the 3G SAR test reduction is applied with 1x RTT RC3 as the primary mode.

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When SAR is required for EVDO Rev. A, SAR is measured with a Reverse Data Channel payload size of 4096 bits and a Termination Target of 16 slots defined for Subtype 2 Physical Layer configurations, using the highest reported SAR configuration for body-worn accessory exposure in Rev. 0 or 1x RTT RC3, as appropriate.

8.4.5 Body SAR Measurements for EVDO Hotspot

Hotspot Body SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0. The 3G SAR test reduction procedure is applied to Rev. A, Subtype 2 Physical layer configuration, with Rev. 0 as the primary mode; otherwise, SAR is measured for Rev. A using the highest reported SAR configuration for body-worn accessory exposure in Rev. 0. The AT is tested with a Reverse Data Channel rate of 153.6 kbps in Subtype 0/1 Physical Layer configurations; and a Reverse Data Channel payload size of 4096 bits and Termination Target of 16 slots in Subtype 2 Physical Layer configurations.

For EVDO data devices that also support 1x RTT voice and/or data operations, the 3G SAR test reduction procedure is applied to 1x RTT RC3 and RC1 with EVDO Rev. 0 and Rev. A as the respective primary modes. Otherwise, the 'Body-Worn Accessory SAR' procedures in the '3GPP2 CDMA 2000 1x Handsets' section are applied.

8.4.6 CDMA2000 1x Advanced

This device additionally supports 1x Advanced. Conducted powers are measured using SO75 with RC8 on the uplink and RC11 on the downlink per FCC KDB Publication 941225 D01v03r01. Smart blanking is disabled for all measurements. The EUT is configured with forward power control Mode 000 and reverse power control at 400 bps. Conducted powers are measured on an Agilent 8960 Series 10 Wireless Communications Test Set, Model E5515C using the CDMA2000 1x Advanced application, Option E1962B-410.

The 3G SAR test reduction procedure is applied to the 1x-Advanced transmission mode with 1x RTT RC3 as the primary mode. When SAR measurement is required, the 1x-Advanced power measurement configurations are used. The 1x Advanced SAR procedures are applied separately to head, body-worn accessory and other exposure conditions.

8.5 SAR Measurement Conditions for UMTS

8.5.1 Output Power Verification

Maximum output power is verified on the High, Middle and Low channels according to the general descriptions in section 5.2 of 3GPP TS 34.121, using the appropriate RMC with TPC (transmit power control) set to all "1s" or applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HS-DPCCH etc) are tabulated in this test report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations are identified.

8.5.2 Head SAR Measurements

SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1s". The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for 12.2 kbps AMR in 3.4 kbps SRB (signaling radio bearer) using the highest reported SAR configuration in 12.2 kbps RMC for head exposure.

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8.5.3 Body SAR Measurements

SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits all “1s”. The 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCH_n configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using an applicable RMC configuration with the corresponding spreading code or DPDCH_n, for the highest reported SAR configuration in 12.2 kbps RMC.

8.5.4 SAR Measurements with Rel 5 HSDPA

The 3G SAR test reduction procedure is applied to HSDPA body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, for the highest reported SAR configuration in 12.2 kbps RMC without HSDPA. Handsets with both HSDPA and HSUPA are tested according to Release 6 HSPA test procedures.

8.5.5 SAR Measurements with Rel 6 HSUPA

The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA.

When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing.

8.5.6 SAR Measurement Conditions for DC-HSDPA

SAR is required for Rel. 8 DC-HSDPA when SAR is required for Rel. 5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

8.6 SAR Measurement Conditions for LTE

LTE modes are tested according to FCC KDB 941225 D05v02r04 publication. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 or Anritsu MT8820C simulators are used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

8.6.1 Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

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8.6.2 MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

8.6.3 A-MPR

A-MPR (Additional MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.

8.6.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r04:

- a. Per Section 5.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
 - i. The required channel and offset combination with the highest maximum output power is required for SAR.
 - ii. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
 - iii. When the reported SAR for a required test channel is > 1.45 W/kg, SAR is required for all RB offset configurations for that channel.
- b. Per Section 5.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Section 5.2.1.
- c. Per Section 5.2.3, QPSK SAR is not required for the 100% allocation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is < 0.8 W/kg.
- d. Per Section 5.2.4 and 5.3, SAR tests for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sections 5.2.1 through 5.2.3 is less than or equal to $\frac{1}{2}$ dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is < 1.45 W/kg.

8.6.5 TDD

LTE TDD testing is performed using the SAR test guidance provided in FCC KDB 941225 D05v02r04. TDD is tested at the highest duty factor using UL-DL configuration 0 with special subframe configuration 6 and applying the FDD LTE procedures in KDB 941225 D05v02r04. SAR testing is performed using the extended cyclic prefix listed in 3GPP TS 36.211 Section 4.

8.6.6 Downlink Only Carrier Aggregation

Conducted power measurements with LTE Carrier Aggregation (CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s) (SCC) on the downlink only. All uplink communications and acknowledgements remain identical to specifications when downlink carrier aggregation is inactive on the PCC. Additional conducted output powers are measured with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band. Per FCC KDB Publication 941225 D05Av01r02, no SAR measurements are required for downlink only carrier aggregation configurations when the average output

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power with downlink only carrier aggregation active is not more than 0.25 dB higher than the average output power with downlink only carrier aggregation inactive.

8.7 SAR Testing with 802.11 Transmitters

The normal network operating configurations of 802.11 transmitters are not suitable for SAR measurements. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure the results are consistent and reliable. See KDB Publication 248227 D01v02r02 for more details.

8.7.1 General Device Setup

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters.

A periodic duty factor is required for current generation SAR systems to measure SAR. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92 - 96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. The reported SAR is scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

8.7.2 U-NII-1 and U-NII-2A

For devices that operate in both U-NII-1 and U-NII-2A bands, when the same maximum output power is specified for both bands, SAR measurement using OFDM SAR test procedures is not required for U-NII-1 unless the highest reported SAR for U-NII-2A is > 1.2 W/kg. When different maximum output powers are specified for the bands, SAR measurement for the U-NII band with the lower maximum output power is not required unless the highest reported SAR for the U-NII band with the higher maximum output power, adjusted by the ratio of lower to higher specified maximum output power for the two bands, is > 1.2 W/kg. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.7.3 U-NII-2C and U-NII-3

The frequency range covered by U-NII-2C and U-NII-3 is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, the channels at 5.60 – 5.65 GHz in U-NII-2C band must be disabled with acceptable mechanisms and documented in the equipment certification. Unless band gap channels are permanently disabled, SAR must be considered for these channels. Each band is tested independently according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

8.7.4 Initial Test Position Procedure

For exposure conditions with multiple test positions, such as handset operating next to the ear, devices with hotspot mode or UMPC mini-tablet, procedures for initial test position can be applied. Using the transmission mode determined by the DSSS procedure or initial test configuration, area scans are measured for all positions in an exposure condition. The test position with the highest extrapolated (peak) SAR is used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining test positions is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

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8.7.5 2.4 GHz SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either the fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

- 1) When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
- 2) When the reported SAR is > 0.8 W/kg, SAR is required for that position using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

2.4 GHz 802.11 g/n/ax OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power, is > 1.2 W/kg. When SAR is required for OFDM modes in 2.4 GHz band, the Initial Test Configuration Procedures should be followed. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.7.6 OFDM Transmission Mode and SAR Test Channel Selection

When the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration with the largest channel bandwidth, lowest order modulation and lowest data rate. When the maximum output power of a channel is the same for equivalent OFDM configurations; for example, 802.11a, 802.11n and 802.11ac or 802.11g and 802.11n with the same channel bandwidth, modulation and data rate etc., the lower order 802.11 mode i.e., 802.11a, then 802.11n and 802.11ac or 802.11g then 802.11n, is used for SAR measurement. Per FCC Guidance, 802.11ax was considered a higher order 802.11 mode when compared to a/b/g/n/ac to apply KDB Publication 248227 Guidance. When the maximum output power are the same for multiple test channels, either according to the default or additional power measurement requirements, SAR is measured using the channel closest to the middle of the frequency band or aggregated band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

8.7.7 Initial Test Configuration Procedure

For OFDM, an initial test configuration is determined for each frequency band and aggregated band, according to the transmission mode with the highest maximum output power specified for SAR measurements. When the same maximum output power is specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration(s) with the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order IEEE 802.11 mode. The channel of the transmission mode with the highest average RF output conducted power will be the initial test configuration.

When the reported SAR is ≤ 0.8 W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is ≤ 1.2 W/kg or all channels are measured. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest 802.11 mode is considered for SAR measurements (See Section 8.7.6). When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

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8.7.8 Subsequent Test Configuration Procedures

For OFDM configurations in each frequency band and aggregated band, SAR is evaluated for initial test configuration using the fixed test position or the initial test position procedure. When the highest reported SAR (for the initial test configuration), adjusted by the ratio of the specified maximum output power of the subsequent test configuration to initial test configuration, is ≤ 1.2 W/kg, no additional SAR tests for the subsequent test configurations are required. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.7.9 MIMO SAR considerations

Per KDB Publication 248227 D01v02r02, the simultaneous SAR provisions in KDB Publication 447498 D01v06 should be applied to determine simultaneous transmission SAR test exclusion for WIFI MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6 W/kg, no additional SAR measurements for MIMO are required. Alternatively, SAR for MIMO can be measured with all antennas transmitting simultaneously at the specified maximum output power of MIMO operation. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

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9 RF CONDUCTED POWERS

9.1 CDMA Conducted Powers

Table 9-1
Maximum Conducted Power

Band	Channel	Rule Part	Frequency	SO55 [dBm]	SO55 [dBm]	SO75 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC		MHz	RC1	RC3	RC11	FCH+SCH	FCH	(RTAP)	(RETAP)
PCS	25	24E	1851.25	24.31	24.33	24.30	24.29	24.30	24.16	24.10
	600	24E	1880	24.40	24.41	24.41	24.42	24.33	24.25	24.22
	1175	24E	1908.75	24.21	24.22	24.16	24.21	24.15	24.05	23.99

Table 9-2
Reduced Conducted Power – Hotspot Mode Active

Band	Channel	Rule Part	Frequency	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC		MHz	FCH+SCH	FCH	(RTAP)	(RETAP)
PCS	25	24E	1851.25	20.05	20.01	20.06	20.12
	600	24E	1880	20.13	20.14	20.19	20.20
	1175	24E	1908.75	19.97	19.92	20.02	20.02

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Table 9-3
Reduced Conducted Power – Grip Sensor Active

Band	Channel	Rule Part	Frequency	SO55 [dBm]	SO55 [dBm]	SO75 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC		MHz	RC1	RC3	RC11	FCH+SCH	FCH	(RTAP)	(RETAP)
PCS	25	24E	1851.25	19.05	19.04	19.05	19.06	19.06	19.09	19.13
	600	24E	1880	19.13	19.12	19.10	19.17	19.15	19.18	19.22
	1175	24E	1908.75	18.97	18.94	18.95	18.98	19.00	19.02	19.07

Note: RC1 is only applicable for IS-95 compatibility.



Figure 9-1
Power Measurement Setup

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9.2 GSM Conducted Powers

Table 9-4
Maximum Conducted Power

Maximum Burst-Averaged Output Power										
		Voice	GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 850	128	33.14	33.11	31.89	29.80	27.70	26.92	25.20	23.30	22.30
	190	32.92	32.91	31.57	29.88	27.67	26.81	25.26	23.35	22.25
	251	33.04	33.03	31.50	29.70	27.52	26.80	25.10	22.97	22.20
GSM 1900	512	30.13	30.14	28.60	26.65	24.60	25.55	24.02	21.93	21.10
	661	30.30	30.09	28.58	26.55	24.60	25.79	24.13	22.14	21.23
	810	30.22	30.11	28.62	26.45	24.67	25.64	23.96	22.03	21.30

Calculated Maximum Frame-Averaged Output Power										
		Voice	GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 850	128	24.11	24.08	25.87	25.54	24.69	17.89	19.18	19.04	19.29
	190	23.89	23.88	25.55	25.62	24.66	17.78	19.24	19.09	19.24
	251	24.01	24.00	25.48	25.44	24.51	17.77	19.08	18.71	19.19
GSM 1900	512	21.10	21.11	22.58	22.39	21.59	16.52	18.00	17.67	18.09
	661	21.27	21.06	22.56	22.29	21.59	16.76	18.11	17.88	18.22
	810	21.19	21.08	22.60	22.19	21.66	16.61	17.94	17.77	18.29

GSM 850	Frame	23.97	23.97	25.98	25.74	24.49	17.97	19.48	19.24	19.49
GSM 1900	Avg.Targets:	21.47	21.47	23.48	22.74	21.99	16.97	18.48	18.24	18.49

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Table 9-5
Reduced Conducted Power – Hotspot Mode Active

Maximum Burst-Averaged Output Power									
		GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
Band	Channel	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 1900	512	27.85	26.98	24.95	22.98	26.10	24.16	22.10	21.34
	661	27.71	27.10	25.05	22.96	26.02	24.28	21.91	21.41
	810	27.67	26.65	24.70	22.62	25.81	23.92	22.27	20.76

Calculated Maximum Frame-Averaged Output Power									
		GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
Band	Channel	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 1900	512	18.82	20.96	20.69	19.97	17.07	18.14	17.84	18.33
	661	18.68	21.08	20.79	19.95	16.99	18.26	17.65	18.40
	810	18.64	20.63	20.44	19.61	16.78	17.90	18.01	17.75

GSM 1900	Frame Avg. Targets:	18.47	20.48	20.74	19.99	16.97	18.48	18.24	18.49
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Table 9-6
Reduced Conducted Power – Grip Sensor Active

Maximum Burst-Averaged Output Power										
		Voice	GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 1900	512	27.07	26.92	25.85	23.62	21.90	25.89	24.48	22.46	21.42
	661	27.18	27.09	26.05	23.75	21.83	25.89	24.63	22.17	21.52
	810	26.68	26.62	25.75	23.50	21.50	25.71	24.08	22.30	21.03

Calculated Maximum Frame-Averaged Output Power										
		Voice	GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 1900	512	18.04	17.89	19.83	19.36	18.89	16.86	18.46	18.20	18.41
	661	18.15	18.06	20.03	19.49	18.82	16.86	18.61	17.91	18.51
	810	17.65	17.59	19.73	19.24	18.49	16.68	18.06	18.04	18.02

GSM 1900	Frame Avg. Targets:	17.47	17.47	19.48	19.74	18.99	16.97	18.48	18.24	18.49
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Note:

1. Both burst-averaged and calculated frame-averaged powers are included. Frame-averaged power was calculated from the measured burst-averaged power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
2. GPRS/EDGE (GMSK) output powers were measured with coding scheme setting of 1 (CS1) on the base station simulator. CS1 was configured to measure GPRS output power measurements and SAR to ensure GMSK modulation in the signal. Our Investigation has shown that CS1 - CS4 settings do not have any impact on the output levels or modulation in the GPRS modes.
3. EDGE (8-PSK) output powers were measured with MCS7 on the base station simulator. MCS7 coding scheme was used to measure the output powers for EDGE since investigation has shown that choosing MCS7 coding scheme will ensure 8-PSK modulation. It has been shown that MCS levels that produce 8PSK modulation do not have an impact on output power.

GSM Class: B
GPRS Multislot class: 12 (Max 4 Tx uplink slots)
EDGE Multislot class: 12 (Max 4 Tx uplink slots)
DTM Multislot Class: N/A



Figure 9-2
Power Measurement Setup

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9.3 UMTS Conducted Powers

Table 9-7
Maximum Conducted Power

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	24.28	24.35	24.25	24.00	24.06	23.89	23.50	23.61	23.64	-
99		12.2 kbps AMR	24.31	24.36	24.27	24.01	24.10	23.95	23.51	23.63	23.50	-
6	HSDPA	Subtest 1	23.32	23.35	23.27	22.76	22.83	22.61	22.54	22.64	22.33	0
6		Subtest 2	23.28	23.38	23.25	22.77	22.83	22.65	22.50	22.64	22.28	0
6		Subtest 3	22.81	22.89	22.73	22.25	22.35	22.19	22.01	22.12	21.82	0.5
6		Subtest 4	22.80	22.90	22.75	22.26	22.36	22.14	22.03	22.18	21.78	0.5
6	HSUPA	Subtest 1	23.23	23.32	23.19	22.70	22.80	22.61	22.54	22.60	22.31	0
6		Subtest 2	21.30	21.32	21.21	20.75	20.80	20.65	20.45	20.67	20.32	2
6		Subtest 3	22.25	22.39	22.18	21.75	21.83	21.62	21.60	21.65	21.33	1
6		Subtest 4	21.32	21.40	21.28	20.80	20.83	20.68	20.49	20.53	20.40	2
6		Subtest 5	23.39	23.46	23.32	22.77	22.89	22.72	22.55	22.74	22.40	0
8	DC-HSDPA	Subtest 1	23.15	23.32	23.18	22.80	22.87	22.68	22.61	22.68	22.41	0
8		Subtest 2	23.25	23.29	23.17	22.83	22.88	22.72	22.57	22.77	22.40	0
8		Subtest 3	22.75	22.81	22.62	22.36	22.37	22.21	22.13	22.27	21.92	0.5
8		Subtest 4	22.69	22.80	22.56	22.32	22.39	22.17	22.17	22.21	21.95	0.5

Table 9-8
Reduced Conducted Power – Grip Sensor Active

3GPP Release Version	Mode	3GPP 34.121 Subtest	AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	19.31	19.40	19.21	19.06	19.23	19.00	-
99		12.2 kbps AMR	19.26	19.34	19.16	19.03	19.22	19.01	-
6	HSDPA	Subtest 1	18.42	18.50	18.29	18.19	18.32	18.00	0
6		Subtest 2	18.40	18.49	18.30	18.22	18.29	18.04	0
6		Subtest 3	17.89	17.98	17.80	17.65	17.84	17.50	0.5
6		Subtest 4	17.88	18.00	17.81	17.70	17.83	17.50	0.5
6	HSUPA	Subtest 1	18.38	18.50	18.30	18.17	18.33	18.00	0
6		Subtest 2	16.39	16.50	16.30	16.19	16.35	16.00	2
6		Subtest 3	17.38	17.50	17.30	17.20	17.35	17.02	1
6		Subtest 4	16.40	16.47	16.30	16.22	16.31	16.00	2
6		Subtest 5	18.40	18.50	18.33	18.20	18.34	18.04	0
8	DC-HSDPA	Subtest 1	18.40	18.51	18.28	18.09	18.31	18.01	0
8		Subtest 2	18.44	18.51	18.33	18.26	18.35	18.04	0
8		Subtest 3	17.92	18.04	17.83	17.77	17.80	17.52	0.5
8		Subtest 4	18.12	18.02	17.82	17.78	17.85	17.52	0.5

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DC-HSDPA considerations

- 3GPP Specification 34.121-1 Release 8 Ver 8.10.0 was used for DC-HSDPA guidance
- H-Set 12 (QPSK) was confirmed to be used during DC-HSDPA measurements
- The DUT supports UE category 24 for HSDPA

It is expected by the manufacturer that MPR for some HSPA subtests may be up to 2 dB more than specified by 3GPP, but also as low as 0 dB according to the chipset implementation in this model.

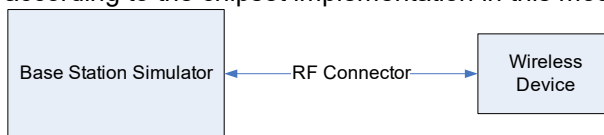


Figure 9-3
Power Measurement Setup

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9.4 LTE Conducted Powers

9.4.1 LTE Band 26 (Cell)

Table 9-9
LTE Band 26 (Cell) Conducted Powers - 15 MHz Bandwidth

LTE Band 26 (Cell) 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26865 (831.5 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	24.85	0	0
	1	36	24.82		0
	1	74	24.61		0
	36	0	23.93	0-1	1
	36	18	23.92		1
	36	37	23.85		1
	75	0	23.90		1
16QAM	1	0	24.02	0-1	1
	1	36	24.01		1
	1	74	23.83		1
	36	0	22.93	0-2	2
	36	18	22.92		2
	36	37	22.85		2
	75	0	22.90		2
64QAM	1	0	23.14	0-2	2
	1	36	23.02		2
	1	74	22.91		2
	36	0	22.12	0-3	3
	36	18	22.15		3
	36	37	22.02		3
	75	0	22.04		3

Note: LTE Band 26 (Cell) at 15 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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Table 9-10
LTE Band 26 (Cell) Conducted Powers - 10 MHz Bandwidth

LTE Band 26 (Cell) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26740 (819.0 MHz)	26865 (831.5 MHz)	26990 (844.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.77	24.70	24.86	0	0
	1	25	24.56	24.77	24.57		0
	1	49	24.65	24.72	24.57		0
	25	0	23.88	23.94	23.87	0-1	1
	25	12	23.90	23.91	23.87		1
	25	25	23.90	23.89	23.82		1
16QAM	50	0	23.91	23.94	23.86	0-1	1
	1	0	23.50	23.99	23.97		1
	1	25	23.31	24.13	23.74		1
	1	49	23.57	24.08	23.86	0-2	1
	25	0	22.94	22.98	22.88		2
	25	12	22.98	23.03	22.89		2
64QAM	25	25	22.93	23.00	22.88	0-2	2
	50	0	22.90	22.97	22.85		2
	1	0	22.87	23.21	23.18		0-2
	1	25	22.60	23.24	23.19	2	
	1	49	22.78	23.06	23.10	2	
	25	0	21.94	21.98	21.89	0-3	3
25	12	21.94	21.96	21.90	3		
25	25	21.90	21.97	21.87	3		
	50	0	21.86	21.98	21.85		3

Table 9-11
LTE Band 26 (Cell) Conducted Powers - 5 MHz Bandwidth

LTE Band 26 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26715 (816.5 MHz)	26865 (831.5 MHz)	27015 (846.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.58	24.85	24.57	0	0
	1	12	24.78	24.93	24.65		0
	1	24	24.81	24.94	24.61		0
	12	0	23.79	23.85	23.75	0-1	1
	12	6	23.96	23.92	23.81		1
	12	13	23.89	23.96	23.77		1
16QAM	25	0	23.88	23.86	23.76	0-1	1
	1	0	23.63	24.00	23.79		1
	1	12	23.72	24.09	23.83		1
	1	24	23.76	24.06	23.70	0-2	1
	12	0	22.87	22.94	22.84		2
	12	6	22.94	22.94	22.88		2
64QAM	12	13	22.94	22.93	22.84	0-2	2
	25	0	22.89	22.87	22.78		2
	1	0	22.93	23.30	23.09		0-2
	1	12	23.06	23.42	23.12	2	
	1	24	23.06	23.35	23.00	2	
	64QAM	12	0	21.87	21.89	21.78	0-3
12		6	21.94	21.95	21.89	3	
12		13	21.94	21.92	21.83	3	
25		0	21.86	21.85	21.80		3

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Table 9-12
LTE Band 26 (Cell) Conducted Powers - 3 MHz Bandwidth

LTE Band 26 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26705 (815.5 MHz)	26865 (831.5 MHz)	27025 (847.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.61	24.77	24.61	0	0
	1	7	24.64	24.77	24.54		0
	1	14	24.65	24.74	24.45		0
	8	0	23.78	23.82	23.80	0-1	1
	8	4	23.89	23.93	23.82		1
	8	7	23.81	23.88	23.75		1
16QAM	15	0	23.86	23.83	23.77	0-1	1
	1	0	23.81	23.53	23.82		1
	1	7	23.88	23.58	23.87		1
	1	14	23.83	23.53	23.79	0-2	1
	8	0	22.68	22.73	22.90		2
	8	4	22.78	22.83	22.90		2
64QAM	8	7	22.76	22.77	22.85	0-2	2
	15	0	22.87	22.83	22.91		2
	1	0	23.09	22.84	23.20	0-2	2
	1	7	23.21	22.84	23.15		2
	1	14	23.16	22.84	23.07		2
	8	0	21.68	21.73	21.89	0-3	3
8	4	21.77	21.83	21.89	3		
8	7	21.77	21.79	21.85	3		
15	0	21.88	21.80	21.87		3	

Table 9-13
LTE Band 26 (Cell) Conducted Powers -1.4 MHz Bandwidth

LTE Band 26 (Cell) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26697 (814.7 MHz)	26865 (831.5 MHz)	27033 (848.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.55	24.65	24.66	0	0
	1	2	24.67		24.72		0
	1	5	24.56	24.68	24.60		0
	3	0	24.68	24.69	24.62		0
	3	2	24.74	24.81	24.62		0
	3	3	24.63	24.75	24.56		0
	6	0	23.78	23.77	23.69	0-1	1
16QAM	1	0	23.76	23.37	23.76	0-1	1
	1	2	23.85	23.55	23.84		1
	1	5	23.78	23.51	23.66		1
	3	0	23.67	23.77	23.67		1
	3	2	23.77	23.90	23.75		1
	3	3	23.70	23.87	23.73	1	
6	0	22.79	22.72	22.67	0-2	2	
64QAM	1	0	23.07	22.97	23.04	0-2	2
	1	2	23.15	22.84	23.09		2
	1	5	23.08	22.82	23.01		2
	3	0	22.67	22.79	22.70		2
	3	2	22.75	22.90	22.74		2
	3	3	22.68	22.87	22.71		2
	6	0	21.80	21.72	21.63	0-3	3

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9.4.2 LTE Band 5 (Cell)

Table 9-14
LTE Band 5 (Cell) Conducted Powers - 10 MHz Bandwidth

LTE Band 5 (Cell) 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20525 (836.5 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	24.82	0	0
	1	25	24.72		0
	1	49	24.68		0
	25	0	23.90	0-1	1
	25	12	23.88		1
	25	25	23.82		1
	50	0	23.85		1
16QAM	1	0	24.09	0-1	1
	1	25	23.99		1
	1	49	23.91		1
	25	0	22.90	0-2	2
	25	12	22.86		2
	25	25	22.82		2
	50	0	22.85		2
64QAM	1	0	23.09	0-2	2
	1	25	23.02		2
	1	49	23.00		2
	25	0	21.91	0-3	3
	25	12	21.88		3
	25	25	21.87		3
	50	0	21.89		3

Note: LTE Band 5 (Cell) at 10 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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Table 9-15
LTE Band 5 (Cell) Conducted Powers - 5 MHz Bandwidth

LTE Band 5 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20425 (826.5 MHz)	20525 (836.5 MHz)	20625 (846.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.76	24.87	24.60	0	0
	1	12	24.91	24.96	24.69		0
	1	24	24.90	25.05	24.68		0
	12	0	23.95	23.95	23.79	0-1	1
	12	6	24.01	24.07	23.85		1
	12	13	24.04	24.04	23.92		1
	25	0	24.02	23.99	23.84		1
16QAM	1	0	23.75	24.07	23.81	0-1	1
	1	12	23.87	24.15	23.90		1
	1	24	23.91	24.13	23.83		1
	12	0	22.95	22.96	22.85	0-2	2
	12	6	23.10	23.07	22.89		2
	12	13	23.07	23.11	22.96		2
	25	0	23.01	23.05	22.87		2
64QAM	1	0	23.07	23.23	23.12	0-2	2
	1	12	23.17	23.46	23.18		2
	1	24	23.19	23.40	23.09		2
	12	0	21.95	21.99	21.85	0-3	3
	12	6	22.08	22.09	21.93		3
	12	13	22.07	22.11	21.95		3
	25	0	21.99	22.07	21.86		3

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Table 9-16
LTE Band 5 (Cell) Conducted Powers - 3 MHz Bandwidth

LTE Band 5 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20415 (825.5 MHz)	20525 (836.5 MHz)	20635 (847.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.68	24.81	24.56	0	0
	1	7	24.80	24.80	24.63		0
	1	14	24.87	24.88	24.57		0
	8	0	23.83	23.89	23.76	0-1	1
	8	4	23.97	24.01	23.85		1
	8	7	23.98	23.99	23.88		1
	15	0	23.98	23.99	23.83		1
16QAM	1	0	23.91	23.58	23.83	0-1	1
	1	7	24.02	23.60	23.91		1
	1	14	24.08	23.63	23.88		1
	8	0	22.78	22.75	22.86	0-2	2
	8	4	22.92	22.90	22.94		2
	8	7	22.89	22.92	23.00		2
	15	0	23.02	22.99	22.92		2
64QAM	1	0	23.25	22.89	23.08	0-2	2
	1	7	23.27	22.88	23.28		2
	1	14	23.40	22.94	23.21		2
	8	0	21.80	21.76	21.85	0-3	3
	8	4	21.92	21.89	21.90		3
	8	7	21.88	21.92	21.95		3
	15	0	22.04	21.97	21.93		3

Table 9-17
LTE Band 5 (Cell) Conducted Powers -1.4 MHz Bandwidth

LTE Band 5 (Cell) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20407 (824.7 MHz)	20525 (836.5 MHz)	20643 (848.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.88	24.73	24.62	0	0
	1	2	24.95	24.83	24.65		0
	1	5	24.89	24.81	24.66		0
	3	0	24.77	24.80	24.67		0
	3	2	24.83	24.90	24.73		0
	3	3	24.81	24.84	24.67		0
	6	0	23.89	23.93	23.75	0-1	1
16QAM	1	0	23.81	23.97	23.37	0-1	1
	1	2	24.01	24.04	23.50		1
	1	5	24.00	24.00	23.51		1
	3	0	23.82	23.82	23.76		1
	3	2	23.91	23.90	23.87		1
	3	3	23.91	23.87	23.79		1
	6	0	22.85	22.94	22.70	0-2	2
64QAM	1	0	23.10	23.24	22.71	0-2	2
	1	2	23.29	23.34	22.78		2
	1	5	23.29	23.34	22.78		2
	3	0	22.84	22.79	22.76		2
	3	2	22.92	22.92	22.85		2
	3	3	22.91	22.84	22.83		2
	6	0	21.83	21.98	21.72	0-3	3

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9.4.3 LTE Band 66 (AWS)

Table 9-18
LTE Band 66 (AWS) Maximum Conducted Powers - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132072 (1720.0 MHz)	132322 (1745.0 MHz)	132572 (1770.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.19	24.22	24.21	0	0
	1	50	24.14	24.15	23.94		0
	1	99	24.16	24.20	23.97		0
	50	0	23.28	23.37	23.26	0-1	1
	50	25	23.24	23.35	23.25		1
	50	50	23.26	23.36	23.20		1
	100	0	23.26	23.34	23.21		1
16QAM	1	0	23.50	23.45	23.49	0-1	1
	1	50	23.47	23.47	23.30		1
	1	99	23.39	23.50	23.32		1
	50	0	22.25	22.37	22.29	0-2	2
	50	25	22.27	22.35	22.43		2
	50	50	22.28	22.31	22.35		2
	100	0	22.27	22.37	22.32		2
64QAM	1	0	22.42	22.51	22.30	0-2	2
	1	50	22.32	22.41	22.42		2
	1	99	22.44	22.34	22.28		2
	50	0	21.23	21.26	21.22	0-3	3
	50	25	21.28	21.37	21.40		3
	50	50	21.22	21.37	21.26		3
	100	0	21.25	21.35	21.33		3

Table 9-19
LTE Band 66 (AWS) Maximum Conducted Powers - 15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132047 (1717.5 MHz)	132322 (1745.0 MHz)	132597 (1772.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.16	24.28	24.26	0	0
	1	36	24.23	24.37	24.34		0
	1	74	24.24	24.33	24.31		0
	36	0	23.38	23.41	23.33	0-1	1
	36	18	23.46	23.56	23.35		1
	36	37	23.48	23.58	23.44		1
	75	0	23.46	23.55	23.37	1	
16QAM	1	0	23.16	23.47	23.57	0-1	1
	1	36	23.29	23.53	23.70		1
	1	74	23.30	23.50	23.59		1
	36	0	22.40	22.41	22.38	0-2	2
	36	18	22.49	22.49	22.44		2
	36	37	22.50	22.55	22.49		2
	75	0	22.54	22.42	22.37	2	
64QAM	1	0	22.47	22.66	22.46	0-2	2
	1	36	22.44	22.57	22.52		2
	1	74	22.50	22.61	22.45		2
	36	0	21.35	21.45	21.37	0-3	3
	36	18	21.48	21.59	21.44		3
	36	37	21.50	21.55	21.48		3
	75	0	21.43	21.34	21.42	3	

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Table 9-20
LTE Band 66 (AWS) Maximum Conducted Powers - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132022 (1715.0 MHz)	132322 (1745.0 MHz)	132622 (1775.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.18	24.12	24.00	0	0
	1	25	24.16	24.17	24.17		0
	1	49	24.20	24.25	24.23		0
	25	0	23.46	23.59	23.44	0-1	1
	25	12	23.43	23.61	23.45		1
	25	25	23.42	23.58	23.41		1
50	0	23.42	23.59	23.44		1	
16QAM	1	0	23.05	23.52	23.62	0-1	1
	1	25	22.96	23.57	23.51		1
	1	49	23.09	23.58	23.58		1
	25	0	22.50	22.54	22.44	0-2	2
	25	12	22.50	22.52	22.44		2
	25	25	22.47	22.52	22.39		2
50	0	22.43	22.51	22.40		2	
64QAM	1	0	22.39	22.54	22.39	0-2	2
	1	25	22.42	22.42	22.48		2
	1	49	22.47	22.49	22.45		2
	25	0	21.58	21.65	21.45	0-3	3
	25	12	21.55	21.65	21.40		3
	25	25	21.51	21.62	21.35		3
	50	0	21.52	21.49	21.40		3

Table 9-21
LTE Band 66 (AWS) Maximum Conducted Powers - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131997 (1712.5 MHz)	132322 (1745.0 MHz)	132647 (1777.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.17	24.24	24.09	0	0
	1	12	24.24	24.31	24.18		0
	1	24	24.35	24.34	24.08		0
	12	0	23.34	23.45	23.34	0-1	1
	12	6	23.36	23.47	23.37		1
	12	13	23.38	23.47	23.33		1
16QAM	25	0	23.37	23.45	23.34	0-1	1
	1	0	23.37	23.45	23.32		1
	1	12	23.53	23.44	23.34		1
	1	24	23.54	23.50	23.35	0-2	1
	12	0	22.41	22.49	22.39		2
	12	6	22.46	22.53	22.43		2
64QAM	12	13	22.44	22.52	22.38	0-2	2
	25	0	22.38	22.49	22.36		2
	1	0	22.57	22.60	22.36	0-2	2
	1	12	22.42	22.57	22.40		2
	1	24	22.44	22.61	22.41		2
	12	0	21.41	21.49	21.31	0-3	3
	12	6	21.48	21.56	21.34		3
	12	13	21.43	21.53	21.32		3
	25	0	21.47	21.45	21.38		3

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Table 9-22
LTE Band 66 (AWS) Maximum Conducted Powers - 3 MHz Bandwidth

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131987 (1711.5 MHz)	132322 (1745.0 MHz)	132657 (1778.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.11	24.27	24.15	0	0
	1	7	24.12	24.33	24.22		0
	1	14	24.15	24.34	24.16		0
	8	0	23.27	23.41	23.30	0-1	1
	8	4	23.34	23.46	23.37		1
	8	7	23.29	23.48	23.31		1
16QAM	15	0	23.34	23.43	23.33	0-1	1
	1	0	23.18	23.51	23.40		1
	1	7	23.19	23.58	23.44		1
	1	14	23.25	23.61	23.39	0-2	1
	8	0	22.46	22.33	22.39		2
	8	4	22.54	22.39	22.42		2
64QAM	8	7	22.49	22.41	22.39	0-2	2
	15	0	22.61	22.50	22.43		2
	1	0	22.49	22.41	22.88		0-2
	1	7	22.38	22.47	22.91	2	
	1	14	22.45	22.50	22.88	0-3	
	8	0	21.42	21.45	21.46		3
	8	4	21.44	21.50	21.51		3
	8	7	21.43	21.52	21.45		3
	15	0	21.43	21.48	21.40		3

Table 9-23
LTE Band 66 (AWS) Maximum Conducted Powers -1.4 MHz Bandwidth

LTE Band 66 (AWS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131979 (1710.7 MHz)	132322 (1745.0 MHz)	132665 (1779.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.08	24.21	24.28	0	0
	1	2	24.17	24.31	24.38		0
	1	5	24.15	24.30	24.34		0
	3	0	24.17	24.37	24.25		0
	3	2	24.24	24.43	24.27		0
	3	3	24.17	24.39	24.24		0
	6	0	23.22	23.42	23.21	0-1	1
16QAM	1	0	23.07	23.53	23.36	0-1	1
	1	2	23.16	23.55	23.40		1
	1	5	23.19	23.55	23.37		1
	3	0	23.29	23.43	23.32		1
	3	2	23.34	23.48	23.38		1
	3	3	23.28	23.42	23.35	1	
64QAM	6	0	22.45	22.48	22.19	0-2	2
	1	0	22.41	22.40	22.69	0-2	2
	1	2	22.34	22.44	22.81		2
	1	5	22.51	22.44	22.64		2
	3	0	22.46	22.35	22.34		2
	3	2	22.45	22.44	22.39		2
	3	3	22.40	22.42	22.33	2	
6	0	21.39	21.46	21.30	0-3	3	

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Table 9-24
LTE Band 66 (AWS) Reduced Conducted Powers - 20 MHz Bandwidth – Grip Sensor Active

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132072 (1720.0 MHz)	132322 (1745.0 MHz)	132572 (1770.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.98	19.96	19.80	0	0
	1	50	19.90	19.97	19.89		0
	1	99	19.99	19.98	19.89		0
	50	0	19.92	19.93	19.87	0-1	0
	50	25	19.90	19.93	19.88		0
	50	50	19.94	19.91	19.82		0
	100	0	19.93	19.92	19.85		0
16QAM	1	0	19.85	19.89	19.82	0-1	0
	1	50	19.89	19.87	19.96		0
	1	99	20.00	19.95	19.92		0
	50	0	19.99	19.97	19.94	0-2	0
	50	25	19.95	19.94	19.91		0
	50	50	19.96	19.99	19.99		0
	100	0	19.95	19.98	19.97		0
64QAM	1	0	19.99	19.87	19.94	0-2	0
	1	50	19.94	19.92	19.98		0
	1	99	20.00	19.97	19.99		0
	50	0	19.78	19.82	19.65	0-3	0
	50	25	19.68	19.71	19.63		0
	50	50	19.66	19.70	19.64		0
	100	0	19.65	19.73	19.60		0

Table 9-25
LTE Band 66 (AWS) Reduced Conducted Powers - 15 MHz Bandwidth – Grip Sensor Active

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132047 (1717.5 MHz)	132322 (1745.0 MHz)	132597 (1772.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.78	19.91	19.83	0	0
	1	36	19.74	19.86	19.72		0
	1	74	19.77	19.91	19.63		0
	36	0	19.84	19.98	19.79	0-1	0
	36	18	19.80	19.96	19.77		0
	36	37	19.80	19.95	19.72		0
	75	0	19.81	19.95	19.75		0
16QAM	1	0	19.97	19.96	19.90	0-1	0
	1	36	19.94	19.95	19.71		0
	1	74	19.94	19.97	19.81		0
	36	0	19.83	19.87	19.89	0-2	0
	36	18	19.82	19.99	19.86		0
	36	37	19.78	19.97	19.78		0
	75	0	19.79	19.97	19.81		0
64QAM	1	0	19.60	19.84	19.71	0-2	0
	1	36	19.63	19.82	19.81		0
	1	74	19.79	19.84	19.67		0
	36	0	19.88	19.91	19.88	0-3	0
	36	18	19.78	19.74	19.87		0
	36	37	19.80	19.84	19.82		0
	75	0	19.80	19.82	19.86		0

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Table 9-26
LTE Band 66 (AWS) Reduced Conducted Powers - 10 MHz Bandwidth – Grip Sensor Active

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132022 (1715.0 MHz)	132322 (1745.0 MHz)	132622 (1775.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.86	19.85	19.83	0	0
	1	25	19.73	19.71	19.69		0
	1	49	19.81	19.94	19.60		0
	25	0	19.84	19.83	19.70	0-1	0
	25	12	19.82	19.85	19.72		0
	25	25	19.80	19.77	19.68		0
16QAM	50	0	19.79	19.79	19.69	0-1	0
	1	0	19.84	19.93	19.78		0
	1	25	19.66	19.74	19.68		0
	1	49	19.92	19.99	19.74	0-2	0
	25	0	19.82	19.86	19.70		0
	25	12	19.82	19.88	19.70		0
64QAM	25	25	19.75	19.86	19.67	0-2	0
	50	0	19.78	19.84	19.70		0
	1	0	19.87	19.86	19.51		0-2
	1	25	19.73	19.68	19.38	0	
	1	49	19.82	19.61	19.63	0-3	
	25	0	19.64	19.67	19.72		0
25	12	19.59	19.82	19.72	0		
	25	25	19.58	19.72	19.71	0-3	0
	50	0	19.76	19.82	19.70		0

Table 9-27
LTE Band 66 (AWS) Reduced Conducted Powers - 5 MHz Bandwidth – Grip Sensor Active

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131997 (1712.5 MHz)	132322 (1745.0 MHz)	132647 (1777.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.72	19.77	19.69	0	0
	1	12	19.81	19.89	19.71		0
	1	24	19.77	19.83	19.71		0
	12	0	19.63	19.71	19.66	0-1	0
	12	6	19.65	19.78	19.70		0
	12	13	19.66	19.74	19.65		0
	25	0	19.67	19.79	19.64		0
16QAM	1	0	19.65	19.53	19.84	0-1	0
	1	12	19.77	19.67	19.86		0
	1	24	19.79	19.70	19.88		0
	12	0	19.70	19.77	19.70	0-2	0
	12	6	19.74	19.83	19.75		0
	12	13	19.71	19.79	19.71		0
	25	0	19.68	19.87	19.72		0
64QAM	1	0	19.91	19.59	19.82	0-2	0
	1	12	19.81	19.77	19.79		0
	1	24	19.82	19.83	19.83		0
	12	0	19.80	19.77	19.72	0-3	0
	12	6	19.82	19.80	19.77		0
	12	13	19.75	19.80	19.75		0
	25	0	19.70	19.75	19.76		0

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Table 9-28

LTE Band 66 (AWS) Reduced Conducted Powers - 3 MHz Bandwidth – Grip Sensor Active

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131987 (1711.5 MHz)	132322 (1745.0 MHz)	132657 (1778.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.67	19.64	19.61	0	0
	1	7	19.73	19.72	19.63		0
	1	14	19.72	19.74	19.65		0
	8	0	19.67	19.76	19.61	0-1	0
	8	4	19.70	19.74	19.65		0
	8	7	19.70	19.83	19.59		0
	15	0	19.64	19.73	19.65		0
16QAM	1	0	19.58	19.80	19.54	0-1	0
	1	7	19.66	19.89	19.59		0
	1	14	19.69	19.89	19.56		0
	8	0	19.65	19.58	19.67	0-2	0
	8	4	19.70	19.67	19.70		0
	8	7	19.65	19.68	19.63		0
	15	0	19.60	19.76	19.74		0
64QAM	1	0	19.75	19.87	19.47	0-2	0
	1	7	19.79	19.68	19.50		0
	1	14	19.79	19.75	19.51		0
	8	0	19.66	19.82	19.59	0-3	0
	8	4	19.71	19.88	19.67		0
	8	7	19.66	19.94	19.60		0
	15	0	19.80	19.73	19.68		0

Table 9-29

LTE Band 66 (AWS) Reduced Conducted Powers -1.4 MHz Bandwidth – Grip Sensor Active

LTE Band 66 (AWS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131979 (1710.7 MHz)	132322 (1745.0 MHz)	132665 (1779.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.63	19.63	19.62	0	0
	1	2	19.77	19.71	19.73		0
	1	5	19.73	19.62	19.65		0
	3	0	19.63	19.69	19.48		0
	3	2	19.70	19.77	19.50		0
	3	3	19.63	19.65	19.46		0
	6	0	19.75	19.72	19.64	0-1	0
16QAM	1	0	19.63	19.79	19.70	0-1	0
	1	2	19.70	19.94	19.80		0
	1	5	19.65	19.84	19.71		0
	3	0	19.44	19.75	19.64		0
	3	2	19.52	19.78	19.70		0
	3	3	19.47	19.67	19.63		0
	6	0	19.75	19.74	19.67	0-2	0
64QAM	1	0	19.86	19.66	19.88	0-2	0
	1	2	19.97	19.74	19.79		0
	1	5	19.93	19.64	19.85		0
	3	0	19.48	19.70	19.52		0
	3	2	19.57	19.67	19.54		0
	3	3	19.57	19.63	19.46		0
	6	0	19.65	19.63	19.63	0-3	0

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9.4.4 LTE Band 25 (PCS)

Table 9-30
LTE Band 25 (PCS) Maximum Conducted Powers - 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26140 (1860.0 MHz)	26365 (1882.5 MHz)	26590 (1905.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.24	23.43	23.30	0	0
	1	50	23.21	23.42	23.29		0
	1	99	23.22	23.36	23.27		0
	50	0	22.35	22.35	22.25	0-1	1
	50	25	22.34	22.50	22.24		1
	50	50	22.36	22.36	22.27		1
	100	0	22.37	22.49	22.28		1
16QAM	1	0	22.41	22.48	22.42	0-1	1
	1	50	22.50	22.50	22.41		1
	1	99	22.44	22.42	22.43		1
	50	0	21.34	21.38	21.32	0-2	2
	50	25	21.33	21.42	21.27		2
	50	50	21.38	21.44	21.46		2
	100	0	21.45	21.40	21.40		2
64QAM	1	0	21.45	21.49	21.50	0-2	2
	1	50	21.50	21.50	21.49		2
	1	99	21.44	21.43	21.50		2
	50	0	20.39	20.44	20.39	0-3	3
	50	25	20.48	20.49	20.39		3
	50	50	20.47	20.48	20.45		3
	100	0	20.43	20.46	20.38		3

Table 9-31
LTE Band 25 (PCS) Maximum Conducted Powers - 15 MHz Bandwidth

LTE Band 25 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26115 (1857.5 MHz)	26365 (1882.5 MHz)	26615 (1907.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.33	23.56	23.31	0	0
	1	36	23.45	23.52	23.23		0
	1	74	23.55	23.53	23.35		0
	36	0	22.50	22.49	22.34	0-1	1
	36	18	22.55	22.56	22.42		1
	36	37	22.59	22.58	22.48		1
	75	0	22.54	22.56	22.42		1
16QAM	1	0	22.51	22.66	22.15	0-1	1
	1	36	22.60	22.68	22.14		1
	1	74	22.69	22.63	22.22		1
	36	0	21.53	21.56	21.39	0-2	2
	36	18	21.61	21.63	21.45		2
	36	37	21.63	21.60	21.49		2
	75	0	21.57	21.53	21.44		2
64QAM	1	0	21.50	21.64	21.16	0-2	2
	1	36	21.60	21.67	21.12		2
	1	74	21.68	21.64	21.25		2
	36	0	20.50	20.56	20.39	0-3	3
	36	18	20.61	20.63	20.47		3
	36	37	20.63	20.63	20.48		3
	75	0	20.58	20.53	20.45		3

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Table 9-32
LTE Band 25 (PCS) Maximum Conducted Powers - 10 MHz Bandwidth

LTE Band 25 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26090 (1855.0 MHz)	26365 (1882.5 MHz)	26640 (1910.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.13	23.24	23.07	0	0
	1	25	22.92	23.32	23.30		0
	1	49	23.16	23.09	23.10		0
	25	0	22.36	22.37	22.24	0-1	1
	25	12	22.36	22.43	22.25		1
	25	25	22.37	22.43	22.30		1
	50	0	22.38	22.40	22.24		1
16QAM	1	0	22.46	22.06	22.33	0-1	1
	1	25	22.47	22.12	22.59		1
	1	49	22.48	22.05	22.35		1
	25	0	21.38	21.42	21.27	0-2	2
	25	12	21.40	21.49	21.33		2
	25	25	21.41	21.48	21.36		2
	50	0	21.37	21.44	21.31		2
64QAM	1	0	21.23	21.41	21.18	0-2	2
	1	25	21.29	21.63	21.28		2
	1	49	21.31	21.59	21.25		2
	25	0	20.38	20.39	20.27	0-3	3
	25	12	20.46	20.54	20.36		3
	25	25	20.49	20.49	20.35		3
	50	0	20.42	20.38	20.30		3

Table 9-33
LTE Band 25 (PCS) Maximum Conducted Powers - 5 MHz Bandwidth

LTE Band 25 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26065 (1852.5 MHz)	26365 (1882.5 MHz)	26665 (1912.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.19	23.26	22.96	0	0
	1	12	23.34	23.38	23.05		0
	1	24	23.35	23.44	23.04		0
	12	0	22.32	22.34	22.22	0-1	1
	12	6	22.45	22.48	22.30		1
	12	13	22.42	22.47	22.31		1
	25	0	22.41	22.39	22.29		1
16QAM	1	0	22.23	22.48	22.18	0-1	1
	1	12	22.28	22.65	22.29		1
	1	24	22.31	22.59	22.26		1
	12	0	21.38	21.39	21.26	0-2	2
	12	6	21.45	21.53	21.34		2
	12	13	21.47	21.51	21.34		2
	25	0	21.41	21.39	21.31		2
64QAM	1	0	21.23	21.41	21.18	0-2	2
	1	12	21.29	21.63	21.28		2
	1	24	21.31	21.59	21.25		2
	12	0	20.38	20.39	20.27	0-3	3
	12	6	20.46	20.54	20.36		3
	12	13	20.49	20.49	20.35		3
	25	0	20.42	20.38	20.30		3

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Table 9-34
LTE Band 25 (PCS) Maximum Conducted Powers - 3 MHz Bandwidth

LTE Band 25 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26055 (1851.5 MHz)	26365 (1882.5 MHz)	26675 (1913.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.07	23.17	22.97	0	0
	1	7	23.12	23.25	23.10		0
	1	14	23.18	23.26	23.08		0
	8	0	22.34	22.33	22.20	0-1	1
	8	4	22.39	22.40	22.28		1
	8	7	22.35	22.41	22.25		1
	15	0	22.36	22.40	22.24		1
16QAM	1	0	22.36	22.02	22.21	0-1	1
	1	7	22.42	22.03	22.39		1
	1	14	22.41	22.05	22.31		1
	8	0	21.23	21.25	21.31	0-2	2
	8	4	21.29	21.34	21.34		2
	8	7	21.28	21.30	21.36		2
	15	0	21.38	21.42	21.34		2
64QAM	1	0	21.36	21.03	21.20	0-2	2
	1	7	21.42	21.04	21.38		2
	1	14	21.41	21.05	21.30		2
	8	0	20.25	20.26	20.33	0-3	3
	8	4	20.30	20.34	20.38		3
	8	7	20.28	20.28	20.36		3
	15	0	20.41	20.39	20.37		3

Table 9-35
LTE Band 25 (PCS) Maximum Conducted Powers -1.4 MHz Bandwidth

LTE Band 25 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26047 (1850.7 MHz)	26365 (1882.5 MHz)	26683 (1914.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.03	23.18	23.14	0	0
	1	2	23.13	23.27	23.29		0
	1	5	23.09	23.22	23.20		0
	3	0	23.21	23.25	23.15		0
	3	2	23.25	23.34	23.22		0
	3	3	23.23	23.30	23.16		0
	6	0	22.31	22.34	22.19	0-1	1
16QAM	1	0	22.32	21.99	22.21	0-1	1
	1	2	22.40	22.02	22.32		1
	1	5	22.41	22.00	22.26		1
	3	0	22.24	22.36	22.20		1
	3	2	22.28	22.46	22.29		1
	3	3	22.26	22.40	22.29	1	
6	0	21.35	21.29	21.16	0-2	2	
64QAM	1	0	21.31	20.98	21.25	0-2	2
	1	2	21.44	21.06	21.33		2
	1	5	21.41	21.00	21.26		2
	3	0	21.23	21.35	21.26		2
	3	2	21.28	21.46	21.33		2
	3	3	21.26	21.39	21.29		2
	6	0	20.31	20.27	20.17	0-3	3

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Table 9-36
LTE Band 25 (PCS) Reduced Conducted Powers - 20 MHz Bandwidth – Hotspot Mode Active

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26140 (1860.0 MHz)	26365 (1882.5 MHz)	26590 (1905.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.65	20.65	20.51	0	0
	1	50	20.62	20.71	20.52		0
	1	99	20.60	20.59	20.54		0
	50	0	20.61	20.61	20.53	0-1	0
	50	25	20.74	20.75	20.56		0
	50	50	20.71	20.70	20.63		0
	100	0	20.67	20.70	20.54		0
16QAM	1	0	20.95	20.98	20.85	0-1	0
	1	50	20.90	20.97	20.87		0
	1	99	20.96	20.80	20.85		0
	50	0	20.57	20.67	20.69	0-2	0
	50	25	20.61	20.72	20.58		0
	50	50	20.66	20.75	20.61		0
	100	0	20.68	20.93	20.64		0
64QAM	1	0	20.79	20.70	20.79	0-2	0
	1	50	20.78	20.68	20.78		0
	1	99	20.79	20.59	20.75		0
	50	0	20.66	20.75	20.75	0-3	0
	50	25	20.67	20.79	20.68		0
	50	50	20.74	20.76	20.77		0
	100	0	20.75	20.74	20.63		0

Table 9-37
LTE Band 25 (PCS) Reduced Conducted Powers - 15 MHz Bandwidth – Hotspot Mode Active

LTE Band 25 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26115 (1857.5 MHz)	26365 (1882.5 MHz)	26615 (1907.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.55	20.49	20.50	0	0
	1	36	20.67	20.47	20.46		0
	1	74	20.74	20.45	20.56		0
	36	0	20.79	20.63	20.47	0-1	0
	36	18	20.85	20.69	20.55		0
	36	37	20.88	20.70	20.57		0
	75	0	20.87	20.67	20.53		0
16QAM	1	0	20.68	20.68	20.69	0-1	0
	1	36	20.82	20.70	20.65		0
	1	74	20.87	20.65	20.74		0
	36	0	20.58	20.64	20.54	0-2	0
	36	18	20.65	20.72	20.59		0
	36	37	20.64	20.72	20.65		0
	75	0	20.62	20.68	20.55		0
64QAM	1	0	20.77	20.55	20.61	0-2	0
	1	36	20.78	20.57	20.55		0
	1	74	20.76	20.51	20.61		0
	36	0	20.66	20.76	20.54	0-3	0
	36	18	20.69	20.79	20.62		0
	36	37	20.71	20.79	20.63		0
	75	0	20.67	20.70	20.58		0

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Table 9-38
LTE Band 25 (PCS) Reduced Conducted Powers - 10 MHz Bandwidth - Hotspot Mode Active

LTE Band 25 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26090 (1855.0 MHz)	26365 (1882.5 MHz)	26640 (1910.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.53	20.46	20.40	0	0
	1	25	20.40	20.32	20.32		0
	1	49	20.59	20.40	20.51		0
	25	0	20.61	20.69	20.63	0-1	0
	25	12	20.67	20.70	20.68		0
	25	25	20.67	20.72	20.71		0
	50	0	20.64	20.69	20.65		0
16QAM	1	0	20.51	20.84	20.59	0-1	0
	1	25	20.46	20.75	20.55		0
	1	49	20.52	20.83	20.70		0
	25	0	20.61	20.72	20.61	0-2	0
	25	12	20.65	20.75	20.67		0
	25	25	20.65	20.77	20.71		0
	50	0	20.66	20.73	20.55		0
64QAM	1	0	20.80	20.61	20.47	0-2	0
	1	25	20.64	20.65	20.46		0
	1	49	20.80	20.58	20.50		0
	25	0	20.59	20.64	20.68	0-3	0
	25	12	20.63	20.66	20.76		0
	25	25	20.66	20.69	20.76		0
	50	0	20.64	20.69	20.64		0

Table 9-39
LTE Band 25 (PCS) Reduced Conducted Powers - 5 MHz Bandwidth - Hotspot Mode Active

LTE Band 25 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26065 (1852.5 MHz)	26365 (1882.5 MHz)	26665 (1912.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.51	20.47	20.44	0	0
	1	12	20.56	20.59	20.53		0
	1	24	20.60	20.61	20.50		0
	12	0	20.64	20.61	20.55	0-1	0
	12	6	20.73	20.78	20.62		0
	12	13	20.68	20.81	20.61		0
	25	0	20.69	20.70	20.52		0
16QAM	1	0	20.75	20.43	20.74	0-1	0
	1	12	20.82	20.64	20.85		0
	1	24	20.84	20.71	20.87		0
	12	0	20.72	20.69	20.59	0-2	0
	12	6	20.77	20.83	20.67		0
	12	13	20.79	20.83	20.68		0
	25	0	20.75	20.80	20.67		0
64QAM	1	0	20.74	20.87	20.50	0-2	0
	1	12	20.81	20.77	20.57		0
	1	24	20.84	20.81	20.59		0
	12	0	20.63	20.89	20.42	0-3	0
	12	6	20.69	20.63	20.51		0
	12	13	20.67	20.64	20.50		0
	25	0	20.46	20.51	20.48		0

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Table 9-40
LTE Band 25 (PCS) Reduced Conducted Powers - 3 MHz Bandwidth - Hotspot Mode Active

LTE Band 25 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26055 (1851.5 MHz)	26365 (1882.5 MHz)	26675 (1913.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.44	20.42	20.25	0	0
	1	7	20.54	20.43	20.24		0
	1	14	20.55	20.45	20.24		0
	8	0	20.58	20.67	20.42	0-1	0
	8	4	20.66	20.74	20.53		0
	8	7	20.58	20.74	20.49		0
	15	0	20.57	20.68	20.45		0
16QAM	1	0	20.50	20.72	20.34	0-1	0
	1	7	20.63	20.90	20.49		0
	1	14	20.63	20.80	20.44		0
	8	0	20.57	20.52	20.46	0-2	0
	8	4	20.66	20.64	20.56		0
	8	7	20.62	20.61	20.52		0
	15	0	20.56	20.71	20.55		0
64QAM	1	0	20.58	20.85	20.41	0-2	0
	1	7	20.71	20.79	20.50		0
	1	14	20.67	20.87	20.57		0
	8	0	20.49	20.60	20.29	0-3	0
	8	4	20.54	20.67	20.47		0
	8	7	20.50	20.61	20.37		0
	15	0	20.60	20.43	20.41		0

Table 9-41
LTE Band 25 (PCS) Reduced Conducted Powers -1.4 MHz Bandwidth - Hotspot Mode Active

LTE Band 25 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26047 (1850.7 MHz)	26365 (1882.5 MHz)	26683 (1914.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.37	20.34	20.26	0	0
	1	2	20.44	20.27	20.36		0
	1	5	20.34	20.23	20.36		0
	3	0	20.31	20.36	20.17		0
	3	2	20.35	20.45	20.27		0
	3	3	20.28	20.39	20.19		0
	6	0	20.45	20.52	20.30	0-1	0
16QAM	1	0	20.41	20.57	20.31	0-1	0
	1	2	20.58	20.72	20.46		0
	1	5	20.49	20.62	20.40		0
	3	0	20.13	20.52	20.37		0
	3	2	20.25	20.59	20.44		0
	3	3	20.18	20.52	20.40		0
	6	0	20.44	20.52	20.34	0-2	0
64QAM	1	0	20.56	20.61	20.64	0-2	0
	1	2	20.70	20.55	20.83		0
	1	5	20.56	20.71	20.69		0
	3	0	20.55	20.49	20.43		0
	3	2	20.25	20.51	20.49		0
	3	3	20.18	20.46	20.43		0
	6	0	20.51	20.36	20.38	0-3	0

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Table 9-42
LTE Band 25 (PCS) Reduced Conducted Powers - 20 MHz Bandwidth – Grip Sensor Active

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26140 (1860.0 MHz)	26365 (1882.5 MHz)	26590 (1905.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	18.79	19.04	18.73	0	0
	1	50	18.89	18.90	18.77		0
	1	99	18.96	18.82	18.79		0
	50	0	18.94	18.93	18.81	0-1	0
	50	25	19.03	19.07	18.88		0
	50	50	19.04	19.05	18.86		0
	100	0	18.98	19.00	18.88		0
16QAM	1	0	19.20	19.11	19.03	0-1	0
	1	50	19.17	19.17	18.98		0
	1	99	18.99	19.15	19.12		0
	50	0	18.88	18.93	18.76	0-2	0
	50	25	18.92	19.03	18.86		0
	50	50	18.97	19.03	18.83		0
	100	0	18.94	18.96	18.81		0
64QAM	1	0	19.13	18.86	19.04	0-2	0
	1	50	19.09	18.96	19.04		0
	1	99	19.01	18.98	19.03		0
	50	0	18.89	18.78	18.84	0-3	0
	50	25	19.05	18.87	18.92		0
	50	50	19.00	18.86	18.92		0
	100	0	18.95	18.77	18.87		0

Table 9-43
LTE Band 25 (PCS) Reduced Conducted Powers - 15 MHz Bandwidth - Grip Sensor Active

LTE Band 25 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26115 (1857.5 MHz)	26365 (1882.5 MHz)	26615 (1907.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	18.97	18.93	18.82	0	0
	1	36	18.97	19.01	18.83		0
	1	74	19.06	19.01	18.87		0
	36	0	18.96	19.00	18.86	0-1	0
	36	18	19.06	19.05	18.92		0
	36	37	19.06	19.06	18.95		0
	75	0	18.99	19.04	18.88		0
16QAM	1	0	18.98	18.65	18.99	0-1	0
	1	36	19.07	18.67	18.94		0
	1	74	19.19	18.69	19.00		0
	36	0	19.01	19.00	18.86	0-2	0
	36	18	19.05	19.04	18.99		0
	36	37	19.06	19.08	18.99		0
	75	0	18.97	19.05	18.92		0
64QAM	1	0	18.98	18.75	18.98	0-2	0
	1	36	19.12	18.77	18.95		0
	1	74	19.19	18.79	19.00		0
	36	0	18.99	19.00	18.85	0-3	0
	36	18	19.05	19.04	18.95		0
	36	37	19.08	19.07	18.97		0
	75	0	18.96	19.07	18.91		0

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Table 9-44
LTE Band 25 (PCS) Reduced Conducted Powers - 10 MHz Bandwidth - Grip Sensor Active

LTE Band 25 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26090 (1855.0 MHz)	26365 (1882.5 MHz)	26640 (1910.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	18.77	18.79	18.74	0	0
	1	25	18.83	18.68	18.67		0
	1	49	18.64	18.89	18.78		0
	25	0	18.83	18.88	18.68	0-1	0
	25	12	18.85	18.88	18.70		0
	25	25	18.86	18.90	18.75		0
	50	0	18.86	18.87	18.69		0
16QAM	1	0	18.93	18.55	18.71	0-1	0
	1	25	18.72	18.59	18.78		0
	1	49	18.90	18.42	18.90		0
	25	0	18.81	18.91	18.71	0-2	0
	25	12	18.85	18.91	18.71		0
	25	25	18.85	18.93	18.77		0
	50	0	18.81	18.86	18.76		0
64QAM	1	0	18.87	18.69	18.90	0-2	0
	1	25	18.76	18.73	18.87		0
	1	49	19.13	18.64	18.97		0
	25	0	18.98	19.07	18.86	0-3	0
	25	12	19.03	19.06	18.92		0
	25	25	19.02	19.09	18.93		0
	50	0	18.98	19.01	18.93		0

Table 9-45
LTE Band 25 (PCS) Reduced Conducted Powers - 5 MHz Bandwidth - Grip Sensor Active

LTE Band 25 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26065 (1852.5 MHz)	26365 (1882.5 MHz)	26665 (1912.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	18.77	18.73	18.72	0	0
	1	12	18.81	18.90	18.78		0
	1	24	18.86	18.89	18.83		0
	12	0	18.83	18.79	18.66	0-1	0
	12	6	18.93	18.95	18.74		0
	12	13	18.92	18.93	18.77		0
	25	0	18.89	18.81	18.74		0
16QAM	1	0	18.69	18.94	18.62	0-1	0
	1	12	18.78	19.10	18.74		0
	1	24	18.81	19.12	18.72		0
	12	0	18.87	18.84	18.69	0-2	0
	12	6	18.92	18.94	18.75		0
	12	13	18.92	18.93	18.77		0
	25	0	18.87	18.84	18.74		0
64QAM	1	0	18.69	18.78	18.64	0-2	0
	1	12	18.78	18.92	18.73		0
	1	24	18.85	18.97	18.71		0
	12	0	18.85	18.83	18.70	0-3	0
	12	6	18.93	18.98	18.78		0
	12	13	18.92	18.98	18.78		0
	25	0	18.86	18.84	18.71		0

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Table 9-46

LTE Band 25 (PCS) Reduced Conducted Powers - 3 MHz Bandwidth - Grip Sensor Active

LTE Band 25 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26055 (1851.5 MHz)	26365 (1882.5 MHz)	26675 (1913.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	18.68	18.69	18.68	0	0
	1	7	18.70	18.74	18.67		0
	1	14	18.69	18.81	18.67		0
	8	0	18.80	18.85	18.70	0-1	0
	8	4	18.86	18.91	18.79		0
	8	7	18.84	18.88	18.77		0
	15	0	18.85	18.85	18.72		0
16QAM	1	0	18.89	18.47	18.67	0-1	0
	1	7	18.89	18.52	18.86		0
	1	14	18.92	18.53	18.81		0
	8	0	18.72	18.71	18.76	0-2	0
	8	4	18.80	18.81	18.82		0
	8	7	18.75	18.78	18.82		0
	15	0	18.88	18.86	18.79		0
64QAM	1	0	18.85	18.72	18.73	0-2	0
	1	7	18.93	18.79	18.80		0
	1	14	18.92	18.77	18.79		0
	8	0	18.70	18.70	18.74	0-3	0
	8	4	18.81	18.79	18.81		0
	8	7	18.74	18.83	18.83		0
	15	0	18.86	18.84	18.80		0

Table 9-47

LTE Band 25 (PCS) Reduced Conducted Powers -1.4 MHz Bandwidth - Grip Sensor Active

LTE Band 25 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26047 (1850.7 MHz)	26365 (1882.5 MHz)	26683 (1914.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	18.66	18.75	18.72	0	0
	1	2	18.76	18.82	18.86		0
	1	5	18.77	18.79	18.85		0
	3	0	18.67	18.69	18.59		0
	3	2	18.75	18.75	18.64		0
	3	3	18.64	18.69	18.59		0
	6	0	18.79	18.81	18.67	0-1	0
16QAM	1	0	18.85	18.45	18.67	0-1	0
	1	2	18.89	18.51	18.74		0
	1	5	18.89	18.48	18.75		0
	3	0	18.60	18.79	18.62		0
	3	2	18.70	18.88	18.79		0
	3	3	18.62	18.82	18.73		0
	6	0	18.78	18.77	18.64	0-2	0
64QAM	1	0	18.83	18.70	18.75	0-2	0
	1	2	18.88	18.80	18.78		0
	1	5	18.88	18.78	18.74		0
	3	0	18.62	18.77	18.62		0
	3	2	18.69	18.91	18.73		0
	3	3	18.63	18.81	18.72		0
	6	0	18.78	18.75	18.63	0-3	0

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9.4.5 LTE Band 30

Table 9-48
LTE Band 30 Maximum Conducted Powers - 10 MHz Bandwidth

LTE Band 30 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			27710 (2310.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	24.28	0	0
	1	25	24.19		0
	1	49	24.22		0
	25	0	23.35	0-1	1
	25	12	23.34		1
	25	25	23.32		1
	50	0	23.34		1
16QAM	1	0	23.40	0-1	1
	1	25	23.37		1
	1	49	23.42		1
	25	0	22.66	0-2	2
	25	12	22.60		2
	25	25	22.57		2
	50	0	22.55		2
64QAM	1	0	22.77	0-2	2
	1	25	22.68		2
	1	49	22.70		2
	25	0	21.59	0-3	3
	25	12	21.56		3
	25	25	21.55		3
	50	0	21.52		3

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Table 9-49
LTE Band 30 Maximum Conducted Powers - 5 MHz Bandwidth

LTE Band 30 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			27710 (2310.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	24.41	0	0
	1	12	24.46		0
	1	24	24.43		0
	12	0	23.62	0-1	1
	12	6	23.65		1
	12	13	23.61		1
	25	0	23.64		1
16QAM	1	0	23.64	0-1	1
	1	12	23.71		1
	1	24	23.68		1
	12	0	22.73	0-2	2
	12	6	22.70		2
	12	13	22.69		2
	25	0	22.64		2
64QAM	1	0	22.54	0-2	2
	1	12	22.60		2
	1	24	22.55		2
	12	0	21.64	0-3	3
	12	6	21.69		3
	12	13	21.65		3
	25	0	21.57		3

Note: LTE Band 30 at 5 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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Table 9-50
LTE Band 30 Reduced Conducted Powers - 10 MHz Bandwidth - Grip Sensor Mode Active

LTE Band 30 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			27710 (2310.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	19.56	0	0
	1	25	19.41		0
	1	49	19.37		0
	25	0	19.56	0-1	0
	25	12	19.60		0
	25	25	19.56		0
	50	0	19.50		0
16QAM	1	0	19.57	0-1	0
	1	25	19.66		0
	1	49	19.72		0
	25	0	19.53	0-2	0
	25	12	19.56		0
	25	25	19.52		0
	50	0	19.53		0
64QAM	1	0	19.83	0-2	0
	1	25	19.62		0
	1	49	19.69		0
	25	0	19.55	0-3	0
	25	12	19.58		0
	25	25	19.50		0
	50	0	19.56		0

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Table 9-51
LTE Band 30 Reduced Conducted Powers - 5 MHz Bandwidth - Grip Sensor Active

LTE Band 30 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			27710 (2310.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	19.30	0	0
	1	12	19.41		0
	1	24	19.39		0
	12	0	19.52	0-1	0
	12	6	19.54		0
	12	13	19.60		0
	25	0	19.61		0
16QAM	1	0	19.48	0-1	0
	1	12	19.56		0
	1	24	19.52		0
	12	0	19.56	0-2	0
	12	6	19.60		0
	12	13	19.59		0
	25	0	19.60		0
64QAM	1	0	19.47	0-2	0
	1	12	19.57		0
	1	24	19.52		0
	12	0	19.55	0-3	0
	12	6	19.59		0
	12	13	19.58		0
	25	0	19.61		0

Note: LTE Band 30 at 5 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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9.4.6 LTE Band 7

Table 9-52
LTE Band 7 Maximum Conducted Powers - 20 MHz Bandwidth

LTE Band 7 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20850 (2510.0 MHz)	21100 (2535.0 MHz)	21350 (2560.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.60	24.48	24.35	0	0
	1	50	24.70	24.35	24.31		0
	1	99	24.72	24.21	24.34		0
	50	0	23.76	23.48	23.60	0-1	1
	50	25	23.68	23.39	23.59		1
	50	50	23.75	23.35	23.58		1
	100	0	23.55	23.35	23.54		1
16QAM	1	0	23.99	23.78	23.66	0-1	1
	1	50	23.79	23.67	23.85		1
	1	99	23.89	23.60	23.91		1
	50	0	22.78	22.63	22.62	0-2	2
	50	25	22.56	22.86	22.63		2
	50	50	22.55	22.46	22.61		2
	100	0	22.57	22.44	22.60		2
64QAM	1	0	22.74	22.66	22.55	0-2	2
	1	50	22.49	22.58	22.59		2
	1	99	22.45	22.51	22.58		2
	50	0	21.58	21.52	21.36	0-3	3
	50	25	21.44	21.55	21.25		3
	50	50	21.45	21.44	21.31		3
	100	0	21.55	21.43	21.22		3

Table 9-53
LTE Band 7 Maximum Conducted Powers - 15 MHz Bandwidth

LTE Band 7 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20825 (2507.5 MHz)	21100 (2535.0 MHz)	21375 (2562.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.49	24.25	24.37	0	0
	1	36	24.45	24.25	24.47		0
	1	74	24.62	24.23	24.69		0
	36	0	23.60	23.40	23.57	0-1	1
	36	18	23.69	23.41	23.60		1
	36	37	23.73	23.30	23.63		1
	75	0	23.65	23.33	23.62		1
16QAM	1	0	23.76	23.59	23.46	0-1	1
	1	36	23.69	23.51	23.53		1
	1	74	23.73	23.55	23.73		1
	36	0	22.61	22.45	22.61	0-2	2
	36	18	22.72	22.46	22.66		2
	36	37	22.78	22.33	22.69		2
	75	0	22.71	22.40	22.58		2
64QAM	1	0	22.68	22.55	22.41	0-2	2
	1	36	22.50	22.46	22.36		2
	1	74	22.61	22.42	22.53		2
	36	0	21.63	21.53	21.22	0-3	3
	36	18	21.79	21.47	21.33		3
	36	37	21.83	21.40	21.32		3
	75	0	21.76	21.35	21.28		3

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Table 9-54
LTE Band 7 Maximum Conducted Powers - 10 MHz Bandwidth

LTE Band 7 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20800 (2505.0 MHz)	21100 (2535.0 MHz)	21400 (2565.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.37	24.12	24.26	0	0
	1	25	24.26	24.27	24.46		0
	1	49	24.35	24.10	24.47		0
	25	0	23.57	23.22	23.43	0-1	1
	25	12	23.58	23.19	23.46		1
	25	25	23.56	23.18	23.49		1
16QAM	50	0	23.57	23.20	23.46	0-1	1
	1	0	23.52	22.87	23.50		1
	1	25	23.79	22.60	23.77		1
	1	49	23.69	22.83	23.68	0-2	1
	25	0	22.60	22.31	22.55		2
	25	12	22.63	22.24	22.54		2
64QAM	25	25	22.60	22.26	22.61	0-2	2
	50	0	22.56	22.22	22.52		2
	1	0	22.48	22.44	22.47		0-2
	1	25	22.52	22.53	22.52	2	
	1	49	22.66	22.36	22.63	0-3	
	25	0	21.47	21.34	21.19		3
25	12	21.67	21.35	21.44	3		
25	25	21.75	21.30	21.46	3		
50	0	21.47	21.31	21.17		3	

Table 9-55
LTE Band 7 Maximum Conducted Powers - 5 MHz Bandwidth

LTE Band 7 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20775 (2502.5 MHz)	21100 (2535.0 MHz)	21425 (2567.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.47	24.14	24.14	0	0
	1	12	24.50	24.26	24.35		0
	1	24	24.50	24.27	24.42		0
	12	0	23.57	23.26	23.41	0-1	1
	12	6	23.63	23.28	23.58		1
	12	13	23.59	23.31	23.57		1
	25	0	23.59	23.24	23.51		1
16QAM	1	0	23.58	23.36	23.39	0-1	1
	1	12	23.51	23.42	23.59		1
	1	24	23.65	23.42	23.62		1
	12	0	22.60	22.26	22.49	0-2	2
	12	6	22.71	22.36	22.63		2
	12	13	22.61	22.32	22.66		2
	25	0	22.64	22.27	22.52		2
64QAM	1	0	22.69	22.50	22.49	0-2	2
	1	12	22.86	22.59	22.54		2
	1	24	22.81	22.56	22.51		2
	12	0	21.37	21.29	21.41	0-3	3
	12	6	21.52	21.34	21.45		3
	12	13	21.55	21.33	21.43		3
	25	0	21.37	21.33	21.23		3

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Table 9-56
LTE Band 7 Reduced Conducted Powers - 20 MHz Bandwidth – Grip Sensor Active

LTE Band 7 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20850 (2510.0 MHz)	21100 (2535.0 MHz)	21350 (2560.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.14	18.87	18.80	0	0
	1	50	19.18	18.86	18.69		0
	1	99	19.19	18.80	18.79		0
	50	0	19.20	19.03	18.86	0-1	0
	50	25	19.22	18.85	18.84		0
	50	50	19.32	18.81	18.85		0
	100	0	19.17	18.78	18.90		0
16QAM	1	0	19.42	19.33	19.28	0-1	0
	1	50	19.50	19.27	19.28		0
	1	99	19.41	19.21	19.49		0
	50	0	19.18	19.15	18.98	0-2	0
	50	25	19.12	18.82	18.96		0
	50	50	19.26	18.84	18.97		0
	100	0	19.25	18.82	18.96		0
64QAM	1	0	19.48	19.26	19.47	0-2	0
	1	50	19.46	18.95	19.44		0
	1	99	19.42	19.04	19.48		0
	50	0	19.15	18.88	19.02	0-3	0
	50	25	19.24	18.90	19.05		0
	50	50	19.22	18.86	18.99		0
	100	0	19.25	18.85	18.97		0

Table 9-57
LTE Band 7 Reduced Conducted Powers - 15 MHz Bandwidth – Grip Sensor Active

LTE Band 7 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20825 (2507.5 MHz)	21100 (2535.0 MHz)	21375 (2562.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.10	18.70	18.64	0	0
	1	36	19.09	18.64	18.72		0
	1	74	19.23	18.70	18.81		0
	36	0	19.08	18.91	18.99	0-1	0
	36	18	19.15	18.87	19.01		0
	36	37	19.21	18.80	19.02		0
	75	0	19.18	18.82	19.00	0	
16QAM	1	0	19.21	19.02	18.88	0-1	0
	1	36	19.27	18.99	19.00		0
	1	74	19.38	19.03	19.13		0
	36	0	19.16	18.86	18.98	0-2	0
	36	18	19.24	18.86	19.05		0
	36	37	19.31	18.75	19.08		0
	75	0	19.18	18.83	19.01	0	
64QAM	1	0	19.39	19.36	19.10	0-2	0
	1	36	19.41	19.35	18.89		0
	1	74	19.43	19.40	19.01		0
	36	0	19.15	18.89	19.10	0-3	0
	36	18	19.25	18.90	19.10		0
	36	37	19.33	18.80	19.06		0
	75	0	19.19	18.85	19.06	0	

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Table 9-58
LTE Band 7 Reduced Conducted Powers - 10 MHz Bandwidth – Grip Sensor Active

LTE Band 7 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20800 (2505.0 MHz)	21100 (2535.0 MHz)	21400 (2565.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	18.80	18.71	18.72	0	0
	1	25	18.81	18.75	18.81		0
	1	49	18.91	18.81	18.93		0
	25	0	19.07	18.80	18.89	0-1	0
	25	12	19.06	18.78	18.94		0
	25	25	19.08	18.77	18.97		0
	50	0	19.07	18.77	18.90		0
16QAM	1	0	19.22	18.87	18.86	0-1	0
	1	25	19.10	18.79	18.90		0
	1	49	19.20	18.86	19.12		0
	25	0	19.05	18.74	18.91	0-2	0
	25	12	19.06	18.71	18.96		0
	25	25	19.06	18.67	18.96		0
	50	0	19.03	18.67	18.96		0
64QAM	1	0	19.49	19.13	18.80	0-2	0
	1	25	19.40	19.02	19.01		0
	1	49	19.37	19.06	19.17		0
	25	0	18.95	18.79	18.87	0-3	0
	25	12	19.01	18.74	18.89		0
	25	25	18.97	18.71	18.93		0
	50	0	19.04	18.72	18.92		0

Table 9-59
LTE Band 7 Reduced Conducted Powers - 5 MHz Bandwidth – Grip Sensor Active

LTE Band 7 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20775 (2502.5 MHz)	21100 (2535.0 MHz)	21425 (2567.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	18.92	18.60	18.79	0	0
	1	12	19.00	18.64	19.00		0
	1	24	18.91	18.64	19.04		0
	12	0	19.04	18.74	18.90	0-1	0
	12	6	19.09	18.81	19.06		0
	12	13	19.02	18.81	19.07		0
	25	0	19.07	18.77	18.98		0
16QAM	1	0	19.15	18.84	19.11	0-1	0
	1	12	19.23	18.73	19.33		0
	1	24	19.11	18.79	19.34		0
	12	0	19.11	18.77	18.93	0-2	0
	12	6	19.18	18.83	19.13		0
	12	13	19.14	18.84	19.12		0
	25	0	19.08	18.85	18.98		0
64QAM	1	0	19.41	19.35	19.05	0-2	0
	1	12	19.36	19.31	19.21		0
	1	24	19.39	19.28	19.27		0
	12	0	19.20	18.77	18.98	0-3	0
	12	6	19.27	18.82	19.15		0
	12	13	19.21	18.81	19.13		0
	25	0	19.04	18.80	19.09		0

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9.4.1 LTE Band 38

Table 9-60
LTE Band 38 Maximum Conducted Powers - 20 MHz Bandwidth

LTE Band 38 20 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			38000 (2595.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	24.26	0	0
	1	50	24.11		0
	1	99	24.23		0
	50	0	23.33	0-1	1
	50	25	23.38		1
	50	50	23.30		1
	100	0	23.36		1
16QAM	1	0	23.45	0-1	1
	1	50	23.30		1
	1	99	23.39		1
	50	0	22.37	0-2	2
	50	25	22.35		2
	50	50	22.28		2
	100	0	22.34		2
64QAM	1	0	22.22	0-2	2
	1	50	22.11		2
	1	99	22.18		2
	50	0	21.37	0-3	3
	50	25	21.38		3
	50	50	21.33		3
	100	0	21.37		3

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Table 9-61
LTE Band 38 Maximum Conducted Powers - 15 MHz Bandwidth

LTE Band 38 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			37825 (2577.5 MHz)	38000 (2595.0 MHz)	38175 (2612.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.07	24.12	24.17	0	0
	1	36	24.26	24.25	24.46		0
	1	74	24.30	24.35	24.38		0
	36	0	23.48	23.28	23.45	0-1	1
	36	18	23.50	23.34	23.51		1
	36	37	23.48	23.32	23.49		1
	75	0	23.45	23.29	23.46		1
16QAM	1	0	23.97	23.25	23.71	0-1	1
	1	36	23.76	23.18	23.59		1
	1	74	23.65	23.26	23.62		1
	36	0	22.51	22.35	22.47	0-2	2
	36	18	22.57	22.39	22.51		2
	36	37	22.53	22.38	22.50		2
	75	0	22.43	22.32	22.45		2
64QAM	1	0	22.61	22.12	22.33	0-2	2
	1	36	22.31	22.04	22.31		2
	1	74	22.34	22.13	22.30		2
	36	0	21.47	21.36	21.45	0-3	3
	36	18	21.44	21.34	21.42		3
	36	37	21.52	21.37	21.45		3
	75	0	21.44	21.32	21.48		3

Table 9-62
LTE Band 38 Maximum Conducted Powers - 10 MHz Bandwidth

LTE Band 38 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			37800 (2575.0 MHz)	38000 (2595.0 MHz)	38200 (2615.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.42	24.16	24.31	0	0
	1	25	24.30	24.03	24.12		0
	1	49	24.43	24.17	24.25		0
	25	0	23.53	23.12	23.35	0-1	1
	25	12	23.59	23.20	23.37		1
	25	25	23.58	23.17	23.35		1
	50	0	23.48	23.18	23.35		1
16QAM	1	0	23.64	22.98	23.39	0-1	1
	1	25	23.65	22.92	23.44		1
	1	49	23.64	22.90	23.33		1
	25	0	22.47	22.15	22.26	0-2	2
	25	12	22.49	22.23	22.34		2
	25	25	22.38	22.19	22.27		2
	50	0	22.56	22.21	22.34		2
64QAM	1	0	22.56	22.32	22.18	0-2	2
	1	25	22.60	22.11	22.43		2
	1	49	22.53	22.31	22.18		2
	25	0	21.59	21.17	21.28	0-3	3
	25	12	21.56	21.22	21.31		3
	25	25	21.48	21.17	21.27		3
	50	0	21.52	21.13	21.40		3

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Table 9-63
LTE Band 38 Maximum Conducted Powers - 5 MHz Bandwidth

LTE Band 38 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			37775 (2572.5 MHz)	38000 (2595.0 MHz)	38225 (2617.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.49	23.98	24.22	0	0
	1	12	24.50	24.08	24.42		0
	1	24	24.54	24.11	24.41		0
	12	0	23.59	23.10	23.27	0-1	1
	12	6	23.57	23.19	23.37		1
	12	13	23.52	23.24	23.43		1
	25	0	23.57	23.19	23.34		1
16QAM	1	0	23.55	22.78	22.96	0-1	1
	1	12	23.48	22.87	23.09		1
	1	24	23.47	22.93	23.11		1
	12	0	22.63	22.15	22.37	0-2	2
	12	6	22.68	22.28	22.46		2
	12	13	22.60	22.30	22.49		2
	25	0	22.47	22.21	22.33		2
64QAM	1	0	22.89	22.05	22.20	0-2	2
	1	12	22.83	22.14	22.38		2
	1	24	22.85	22.23	22.36		2
	12	0	21.52	21.06	21.40	0-3	3
	12	6	21.59	21.18	21.44		3
	12	13	21.54	21.21	21.49		3
	25	0	21.49	21.13	21.34		3

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Table 9-64

LTE Band 38 Reduced Conducted Powers - 20 MHz Bandwidth – Hotspot/Grip Sensor Mode Active

LTE Band 38 20 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			38000 (2595.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	19.84	0	0
	1	50	19.71		0
	1	99	19.76		0
	50	0	19.89	0-1	0
	50	25	19.94		0
	50	50	19.96		0
	100	0	19.83		0
16QAM	1	0	20.08	0-1	0
	1	50	20.06		0
	1	99	20.12		0
	50	0	19.95	0-2	0
	50	25	20.03		0
	50	50	19.96		0
	100	0	19.89		0
64QAM	1	0	19.97	0-2	0
	1	50	19.90		0
	1	99	19.94		0
	50	0	20.16	0-3	0
	50	25	20.18		0
	50	50	20.14		0
	100	0	20.10		0

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Table 9-65

LTE Band 38 Reduced Conducted Powers - 15 MHz Bandwidth – Hotspot/Grip Sensor Mode Active

LTE Band 38 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			37825 (2577.5 MHz)	38000 (2595.0 MHz)	38175 (2612.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.16	19.88	19.98	0	0
	1	36	20.06	19.86	20.02		0
	1	74	19.90	19.94	19.94		0
	36	0	20.22	19.88	20.04	0-1	0
	36	18	20.00	19.91	20.08		0
	36	37	20.11	19.80	20.02		0
	75	0	20.15	19.83	20.00		0
16QAM	1	0	20.12	20.05	20.13	0-1	0
	1	36	20.16	20.09	20.30		0
	1	74	20.00	20.16	20.15		0
	36	0	20.22	19.94	20.16	0-2	0
	36	18	20.17	19.98	20.19		0
	36	37	20.12	19.93	20.17		0
	75	0	20.18	19.96	20.11		0
64QAM	1	0	20.10	20.30	20.03	0-2	0
	1	36	19.97	20.11	19.90		0
	1	74	19.83	20.08	19.99		0
	36	0	20.28	19.92	20.10	0-3	0
	36	18	20.40	19.93	20.20		0
	36	37	20.23	19.91	20.13		0
	75	0	20.17	20.04	20.14		0

Table 9-66

LTE Band 38 Reduced Conducted Powers - 10 MHz Bandwidth - Hotspot/Grip Sensor Mode Active

LTE Band 38 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			37800 (2575.0 MHz)	38000 (2595.0 MHz)	38200 (2615.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.05	19.74	20.07	0	0
	1	25	20.14	19.78	19.86		0
	1	49	20.03	19.69	20.00		0
	25	0	20.11	19.82	20.01	0-1	0
	25	12	20.15	19.89	20.03		0
	25	25	20.12	19.84	20.01		0
	50	0	20.17	19.83	20.03		0
16QAM	1	0	19.91	19.67	20.06	0-1	0
	1	25	19.88	19.91	20.13		0
	1	49	19.96	19.76	20.17		0
	25	0	20.15	19.80	20.00	0-2	0
	25	12	20.20	19.84	20.06		0
	25	25	20.16	19.79	19.99		0
	50	0	20.18	19.85	20.02		0
64QAM	1	0	20.07	19.70	19.69	0-2	0
	1	25	20.21	19.99	19.74		0
	1	49	20.08	19.67	19.69		0
	25	0	20.31	19.80	20.03	0-3	0
	25	12	20.20	19.88	20.16		0
	25	25	20.07	19.83	20.11		0
	50	0	20.06	19.92	20.08		0

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Table 9-67

LTE Band 38 Reduced Conducted Powers - 5 MHz Bandwidth - Hotspot/Grip Sensor Mode Active

LTE Band 38 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			37775 (2572.5 MHz)	38000 (2595.0 MHz)	38225 (2617.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.13	19.69	19.91	0	0
	1	12	20.10	19.77	20.03		0
	1	24	20.09	19.83	20.05		0
	12	0	20.11	19.77	19.91	0-1	0
	12	6	20.12	19.87	20.01		0
	12	13	20.09	19.91	20.06		0
	25	0	20.15	19.94	20.00		0
16QAM	1	0	20.17	19.77	19.89	0-1	0
	1	12	20.22	19.85	19.92		0
	1	24	20.09	19.78	19.96		0
	12	0	20.17	19.85	20.00	0-2	0
	12	6	20.06	19.99	20.02		0
	12	13	20.15	20.02	20.13		0
	25	0	20.16	19.89	20.00		0
64QAM	1	0	20.17	19.76	19.84	0-2	0
	1	12	20.04	19.90	20.01		0
	1	24	20.02	19.92	20.03		0
	12	0	20.04	19.77	20.03	0-3	0
	12	6	20.08	19.90	20.09		0
	12	13	20.11	19.93	20.16		0
	25	0	20.13	19.88	20.00		0

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9.4.2 LTE Band 41

Table 9-68
LTE Band 41 PC3 Maximum Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	23.45	23.40	23.08	23.20	23.10	0	0
	1	50	23.54	23.31	23.04	23.04	23.26		0
	1	99	23.62	23.28	22.99	22.90	23.39		0
	50	0	22.79	22.45	22.26	22.39	22.45	0-1	1
	50	25	22.80	22.47	22.32	22.14	22.54		1
	50	50	22.83	22.45	22.27	22.25	22.66		1
	100	0	22.76	22.48	22.26	22.32	22.50		1
16QAM	1	0	22.97	22.53	22.30	22.46	22.45	0-1	1
	1	50	22.80	22.30	22.33	22.32	22.49		1
	1	99	22.84	22.47	22.30	22.01	22.72		1
	50	0	21.81	21.46	21.28	21.41	21.51	0-2	2
	50	25	21.80	21.58	21.30	21.26	21.53		2
	50	50	21.85	21.45	21.29	21.27	21.61		2
	100	0	21.92	21.49	21.30	21.34	21.54		2
64QAM	1	0	21.66	21.34	21.13	21.25	21.24	0-2	2
	1	50	21.65	21.28	21.15	21.16	21.30		2
	1	99	21.65	21.28	21.04	21.10	21.52		2
	50	0	20.84	20.61	20.36	20.44	20.51	0-3	3
	50	25	20.87	20.51	20.37	20.47	20.57		3
	50	50	20.87	20.52	20.33	20.33	20.57		3
	100	0	20.82	20.48	20.29	20.32	20.55		3

Table 9-69
LTE Band 41 PC3 Maximum Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	23.60	23.32	23.16	23.53	23.32	0	0
	1	36	23.62	23.32	23.13	23.41	23.44		0
	1	74	23.73	23.28	23.17	23.21	23.58		0
	36	0	22.74	22.47	22.27	22.51	22.50	0-1	1
	36	18	22.76	22.48	22.34	22.52	22.56		1
	36	37	22.77	22.43	22.33	22.45	22.57		1
	75	0	22.73	22.47	22.28	22.47	22.55		1
16QAM	1	0	22.87	22.31	22.42	22.76	22.52	0-1	1
	1	36	22.79	22.32	22.32	22.68	22.56		1
	1	74	22.85	22.30	22.43	22.64	22.74		1
	36	0	21.70	21.54	21.27	21.55	21.50	0-2	2
	36	18	21.75	21.57	21.30	21.53	21.55		2
	36	37	21.75	21.55	21.28	21.50	21.58		2
	75	0	21.73	21.49	21.28	21.49	21.55		2
64QAM	1	0	21.83	21.26	21.37	21.37	21.43	0-2	2
	1	36	21.83	21.33	21.39	21.33	21.67		2
	1	74	21.82	21.27	21.30	21.26	21.57		2
	36	0	20.66	20.57	20.22	20.53	20.42	0-3	3
	36	18	20.72	20.55	20.25	20.52	20.50		3
	36	37	20.71	20.53	20.27	20.47	20.47		3
	75	0	20.83	20.50	20.37	20.50	20.62		3

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Table 9-70
LTE Band 41 PC3 Maximum Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	23.65	23.33	23.23	23.21	23.38	0	0
	1	25	23.47	23.39	23.04	23.28	23.42		0
	1	49	23.52	23.30	23.20	23.19	23.32		0
	25	0	22.63	22.44	22.21	22.35	22.40	0-1	1
	25	12	22.65	22.48	22.19	22.35	22.41		1
	25	25	22.63	22.43	22.18	22.30	22.40		1
	50	0	22.59	22.44	22.18	22.37	22.39		1
16QAM	1	0	22.45	22.60	21.95	22.34	22.17	0-1	1
	1	25	22.38	22.54	21.94	22.41	22.18		1
	1	49	22.45	22.59	21.91	22.28	22.10		1
	25	0	21.61	21.42	21.21	21.30	21.41	0-2	2
	25	12	21.68	21.45	21.26	21.33	21.43		2
	25	25	21.67	21.43	21.23	21.24	21.39		2
	50	0	21.66	21.48	21.22	21.31	21.45		2
64QAM	1	0	21.63	21.23	21.18	21.45	21.36	0-2	2
	1	25	21.69	21.27	21.12	21.52	21.32		2
	1	49	21.60	21.30	21.14	21.40	21.45		2
	25	0	20.66	20.50	20.19	20.29	20.46	0-3	3
	25	12	20.72	20.55	20.24	20.30	20.48		3
	25	25	20.64	20.50	20.21	20.26	20.42		3
	50	0	20.65	20.49	20.17	20.40	20.41		3

Table 9-71
LTE Band 41 PC3 Maximum Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	23.65	23.44	23.19	23.24	23.40	0	0
	1	12	23.66	23.37	23.21	23.25	23.38		0
	1	24	23.67	23.43	23.24	23.33	23.48		0
	12	0	22.61	22.43	22.13	22.30	22.32	0-1	1
	12	6	22.66	22.45	22.19	22.34	22.44		1
	12	13	22.64	22.47	22.22	22.38	22.46		1
	25	0	22.69	22.45	22.16	22.30	22.42		1
16QAM	1	0	22.63	22.21	22.19	22.06	22.46	0-1	1
	1	12	22.62	22.14	22.17	22.04	22.47		1
	1	24	22.64	22.19	22.25	22.10	22.51		1
	12	0	21.77	21.50	21.26	21.36	21.46	0-2	2
	12	6	21.76	21.55	21.28	21.41	21.54		2
	12	13	21.76	21.48	21.33	21.46	21.54		2
	25	0	21.62	21.47	21.14	21.34	21.37		2
64QAM	1	0	21.98	21.42	21.52	21.29	21.75	0-2	2
	1	12	21.85	21.41	21.64	21.34	21.71		2
	1	24	21.79	21.44	21.60	21.40	21.84		2
	12	0	20.68	20.52	20.17	20.28	20.39	0-3	3
	12	6	20.71	20.56	20.24	20.32	20.45		3
	12	13	20.68	20.54	20.27	20.39	20.46		3
	25	0	20.58	20.46	20.09	20.31	20.43		3

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Table 9-72
LTE Band 41 PC2 Maximum Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	26.55	26.25	26.00	26.12	26.33	0	0
	1	50	26.41	26.16	25.95	26.03	26.27		0
	1	99	26.22	26.20	25.88	25.84	26.25		0
	50	0	25.57	25.38	25.15	25.27	25.43	0-1	1
	50	25	25.59	25.37	25.12	25.25	25.50		1
	50	50	25.57	25.30	25.12	25.15	25.53		1
	100	0	25.57	25.32	25.13	25.24	25.47		1
16QAM	1	0	25.70	25.42	25.23	25.38	25.50	0-1	1
	1	50	25.62	25.36	25.16	25.26	25.51		1
	1	99	25.62	25.40	25.04	25.27	25.66		1
	50	0	24.64	24.38	24.21	24.30	24.43	0-2	2
	50	25	24.61	24.37	24.19	24.26	24.51		2
	50	50	24.60	24.33	24.14	24.18	24.53		2
	100	0	24.62	24.34	24.16	24.24	24.52		2
64QAM	1	0	24.54	24.73	24.29	24.19	24.29	0-2	2
	1	50	24.43	24.66	24.28	24.07	24.32		2
	1	99	24.42	24.68	24.21	24.08	24.51		2
	50	0	23.64	23.38	23.21	23.35	23.57	0-3	3
	50	25	23.64	23.43	23.21	23.34	23.43		3
	50	50	23.61	23.34	23.18	23.23	23.48		3
	100	0	23.60	23.39	23.17	23.22	23.26		3

Table 9-73
LTE Band 41 PC2 Maximum Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	26.75	26.33	26.26	26.19	26.43	0	0
	1	36	26.70	26.35	26.26	26.09	26.48		0
	1	74	26.81	26.28	26.29	25.97	26.62		0
	36	0	25.67	25.43	25.23	25.20	25.46	0-1	1
	36	18	25.72	25.42	25.27	25.20	25.51		1
	36	37	25.75	25.38	25.26	25.14	25.52		1
	75	0	25.68	25.38	25.25	25.14	25.44		1
16QAM	1	0	25.92	25.73	25.40	25.57	25.63	0-1	1
	1	36	25.86	25.68	25.40	25.45	25.64		1
	1	74	25.92	25.62	25.43	25.33	25.78		1
	36	0	24.74	24.36	24.29	24.17	24.52	0-2	2
	36	18	24.79	24.39	24.36	24.17	24.59		2
	36	37	24.82	24.36	24.33	24.09	24.58		2
	75	0	24.70	24.38	24.28	24.12	24.49		2
64QAM	1	0	24.82	24.85	24.37	24.30	24.32	0-2	2
	1	36	24.82	24.85	24.37	24.16	24.47		2
	1	74	24.91	24.80	24.40	24.08	24.61		2
	36	0	23.70	23.35	23.32	23.11	23.34	0-3	3
	36	18	23.74	23.38	23.31	23.12	23.46		3
	36	37	23.73	23.29	23.34	23.05	23.56		3
	75	0	23.65	23.48	23.30	23.21	23.41		3

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Table 9-74
LTE Band 41 PC2 Maximum Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	26.52	26.27	26.00	26.17	26.33	0	0
	1	25	26.39	26.27	25.97	26.12	26.14		0
	1	49	26.55	26.33	26.08	26.15	26.29		0
	25	0	25.56	25.37	25.15	25.30	25.38	0-1	1
	25	12	25.58	25.38	25.13	25.33	25.40		1
	25	25	25.55	25.34	25.11	25.26	25.35		1
	50	0	25.59	25.38	25.14	25.29	25.34		1
16QAM	1	0	25.85	25.59	25.37	25.86	25.87	0-1	1
	1	25	25.71	25.62	25.37	25.70	25.83		1
	1	49	25.89	25.61	25.35	25.80	25.85		1
	25	0	24.51	24.42	24.17	24.32	24.39	0-2	2
	25	12	24.54	24.47	24.21	24.31	24.40		2
	25	25	24.53	24.40	24.14	24.28	24.33		2
	50	0	24.55	24.42	24.18	24.32	24.40		2
64QAM	1	0	24.65	24.67	24.45	24.15	24.39	0-2	2
	1	25	24.56	24.68	24.35	24.16	24.25		2
	1	49	24.69	24.66	24.43	24.08	24.36		2
	25	0	23.52	23.40	23.17	23.36	23.40	0-3	3
	25	12	23.57	23.45	23.19	23.36	23.43		3
	25	25	23.49	23.37	23.14	23.34	23.38		3
	50	0	23.56	23.39	23.18	23.35	23.38		3

Table 9-75
LTE Band 41 PC2 Maximum Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	26.44	26.34	25.96	26.19	26.22	0	0
	1	12	26.46	26.26	25.96	26.17	26.21		0
	1	24	26.49	26.31	26.01	26.25	26.30		0
	12	0	25.55	25.38	25.08	25.24	25.31	0-1	1
	12	6	25.57	25.40	25.11	25.22	25.38		1
	12	13	25.55	25.39	25.13	25.29	25.39		1
	25	0	25.60	25.40	25.12	25.24	25.35		1
16QAM	1	0	25.61	25.67	25.11	25.18	25.59	0-1	1
	1	12	25.65	25.62	25.14	25.19	25.61		1
	1	24	25.60	25.70	25.19	25.22	25.67		1
	12	0	24.66	24.49	24.19	24.28	24.39	0-2	2
	12	6	24.66	24.54	24.22	24.32	24.50		2
	12	13	24.66	24.52	24.26	24.38	24.48		2
	25	0	24.63	24.34	24.15	24.23	24.34		2
64QAM	1	0	24.87	24.84	24.42	24.24	24.55	0-2	2
	1	12	24.82	24.92	24.46	24.29	24.62		2
	1	24	24.86	24.88	24.49	24.33	24.92		2
	12	0	23.60	23.43	23.11	23.30	23.37	0-3	3
	12	6	23.63	23.46	23.14	23.33	23.45		3
	12	13	23.61	23.48	23.17	23.36	23.40		3
	25	0	23.57	23.35	23.05	23.24	23.28		3

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Table 9-76

LTE Band 41 PC3 Reduced Conducted Powers - 20 MHz Bandwidth – Hotspot Mode Active

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	21.94	21.80	21.62	21.77	21.77	0	0
	1	50	21.93	21.79	21.60	21.78	21.77		0
	1	99	22.15	21.79	21.59	21.57	21.92		0
	50	0	22.09	21.92	21.70	21.90	21.92	0-1	0
	50	25	22.16	21.94	21.71	21.83	22.00		0
	50	50	22.19	21.88	21.70	21.74	22.05		0
	100	0	22.14	21.90	21.55	21.82	21.98		0
16QAM	1	0	21.94	21.91	21.58	21.67	21.78	0-1	0
	1	50	21.92	21.80	21.51	21.63	21.74		0
	1	99	21.98	21.71	21.49	21.67	21.96		0
	50	0	21.69	21.54	21.36	21.29	21.55	0-2	0.5
	50	25	21.75	21.57	21.37	21.35	21.60		0.5
	50	50	21.78	21.47	21.34	21.34	21.67		0.5
	100	0	21.76	21.53	21.36	21.35	21.63		0.5
64QAM	1	0	21.63	21.10	21.41	21.09	21.25	0-2	0.5
	1	50	21.62	21.03	21.35	21.04	21.29		0.5
	1	99	21.68	20.98	21.30	21.13	21.48		0.5
	50	0	20.74	20.57	20.42	20.32	20.60	0-3	1.5
	50	25	20.79	20.58	20.41	20.30	20.64		1.5
	50	50	20.83	20.50	20.41	20.34	20.70		1.5
	100	0	20.76	20.51	20.39	20.36	20.60		1.5

Table 9-77

LTE Band 41 PC3 Reduced Conducted Powers - 15 MHz Bandwidth – Hotspot Mode Active

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	21.81	21.67	21.65	21.73	21.56	0	0
	1	36	21.73	21.65	21.56	21.60	21.68		0
	1	74	21.94	21.72	21.56	21.56	21.85		0
	36	0	21.94	21.76	21.50	21.71	21.78	0-1	0
	36	18	21.98	21.79	21.54	21.71	21.86		0
	36	37	22.02	21.75	21.51	21.64	21.90		0
	75	0	21.95	21.75	21.51	21.66	21.82		0
16QAM	1	0	22.06	21.68	21.52	21.93	21.81	0-1	0
	1	36	22.02	21.66	21.56	21.85	21.84		0
	1	74	22.07	21.66	21.62	21.83	22.02		0
	36	0	21.50	21.44	21.06	21.35	21.39	0-2	0.5
	36	18	21.55	21.46	21.06	21.31	21.42		0.5
	36	37	21.55	21.42	21.09	21.29	21.48		0.5
	75	0	21.54	21.38	21.09	21.28	21.43		0.5
64QAM	1	0	21.59	21.18	21.36	21.20	21.20	0-2	0.5
	1	36	21.54	21.20	21.39	21.16	21.10		0.5
	1	74	21.62	21.20	21.44	20.99	21.21		0.5
	36	0	20.46	20.46	20.37	20.32	20.45	0-3	1.5
	36	18	20.52	20.49	20.32	20.32	20.46		1.5
	36	37	20.52	20.39	20.32	20.25	20.49		1.5
	75	0	20.63	20.40	20.31	20.30	20.63		1.5

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Table 9-78

LTE Band 41 PC3 Reduced Conducted Powers - 10 MHz Bandwidth – Hotspot Mode Active

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	21.84	21.57	21.48	21.63	21.60	0	0
	1	25	21.85	21.57	21.52	21.61	21.62		0
	1	49	21.85	21.55	21.60	21.63	21.52		0
	25	0	21.84	21.65	21.57	21.54	21.63	0-1	0
	25	12	21.86	21.67	21.50	21.54	21.64		0
	25	25	21.86	21.63	21.55	21.54	21.59		0
	50	0	21.86	21.65	21.61	21.55	21.60		0
16QAM	1	0	21.71	21.84	21.62	21.65	21.73	0-1	0
	1	25	21.63	21.82	21.64	21.50	21.53		0
	1	49	21.64	21.82	21.67	21.71	21.69		0
	25	0	21.44	21.25	21.54	21.60	21.66	0-2	0.5
	25	12	21.48	21.28	21.12	21.24	21.69		0.5
	25	25	21.45	21.24	21.37	21.44	21.42		0.5
	50	0	21.50	21.31	21.32	21.15	21.28		0.5
64QAM	1	0	21.42	21.37	21.45	21.34	21.27	0-2	0.5
	1	25	21.38	21.30	21.41	21.31	21.35		0.5
	1	49	21.44	21.33	21.36	21.28	21.32		0.5
	25	0	20.46	20.31	20.25	20.29	20.31	0-3	1.5
	25	12	20.52	20.38	20.27	20.21	20.37		1.5
	25	25	20.47	20.31	20.26	20.18	20.35		1.5
	50	0	20.43	20.35	20.22	20.21	20.33		1.5

Table 9-79

LTE Band 41 PC3 Reduced Conducted Powers - 5 MHz Bandwidth – Hotspot Mode Active

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	21.89	21.75	21.51	21.55	21.62	0	0
	1	12	21.91	21.68	21.52	21.59	21.59		0
	1	24	21.92	21.74	21.59	21.63	21.71		0
	12	0	21.88	21.75	21.56	21.61	21.57	0-1	0
	12	6	21.85	21.79	21.53	21.65	21.66		0
	12	13	21.89	21.77	21.56	21.71	21.66		0
	25	0	21.88	21.77	21.50	21.63	21.66		0
16QAM	1	0	21.85	21.56	21.54	21.62	21.63	0-1	0
	1	12	21.89	21.51	21.58	21.56	21.64		0
	1	24	21.90	21.53	21.62	21.67	21.71		0
	12	0	21.55	21.41	21.18	21.31	21.28	0-2	0.5
	12	6	21.57	21.46	21.19	21.31	21.36		0.5
	12	13	21.59	21.44	21.23	21.35	21.34		0.5
	25	0	21.40	21.40	21.05	21.26	21.19		0.5
64QAM	1	0	21.58	21.44	21.48	21.26	21.59	0-2	0.5
	1	12	21.65	21.31	21.44	21.35	21.61		0.5
	1	24	21.57	21.32	21.55	21.35	21.53		0.5
	12	0	20.55	20.43	20.30	20.19	20.20	0-3	1.5
	12	6	20.57	20.45	20.41	20.42	20.28		1.5
	12	13	20.55	20.47	20.23	20.31	20.25		1.5
	25	0	20.42	20.38	20.22	20.18	20.27		1.5

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Table 9-80

LTE Band 41 PC2 Reduced Conducted Powers - 20 MHz Bandwidth – Hotspot Mode Active

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	21.57	21.52	21.21	21.60	21.61	0	0
	1	50	21.49	21.55	21.28	21.52	21.64		0
	1	99	21.56	21.52	21.32	21.34	21.84		0
	50	0	21.71	21.51	21.48	21.65	21.63	0-1	0
	50	25	21.73	21.52	21.52	21.61	21.67		0
	50	50	21.74	21.50	21.53	21.53	21.75		0
	100	0	21.66	21.45	21.50	21.59	21.62		0
16QAM	1	0	21.85	22.00	21.55	22.01	21.83	0-1	0
	1	50	21.79	22.07	21.57	21.94	21.89		0
	1	99	21.85	22.06	21.58	21.75	22.15		0
	50	0	21.73	21.61	21.48	21.67	21.64	0-2	0
	50	25	21.78	21.59	21.50	21.65	21.65		0
	50	50	21.78	21.57	21.52	21.55	21.69		0
	100	0	21.71	21.54	21.49	21.62	21.69		0
64QAM	1	0	22.16	21.68	21.79	21.89	21.79	0-2	0
	1	50	22.09	21.65	21.86	21.79	21.82		0
	1	99	22.16	21.75	21.81	21.66	22.00		0
	50	0	21.72	21.58	21.47	21.80	21.68	0-3	0
	50	25	21.74	21.59	21.49	21.75	21.75		0
	50	50	21.76	21.55	21.53	21.65	21.80		0
	100	0	21.78	21.57	21.55	21.66	21.77		0

Table 9-81

LTE Band 41 PC2 Reduced Conducted Powers - 15 MHz Bandwidth – Hotspot Mode Active

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	21.78	21.59	21.39	21.58	21.48	0	0
	1	36	21.72	21.58	21.40	21.45	21.54		0
	1	74	21.82	21.51	21.46	21.38	21.67		0
	36	0	21.86	21.60	21.41	21.63	21.60	0-1	0
	36	18	21.88	21.59	21.43	21.61	21.65		0
	36	37	21.88	21.55	21.42	21.55	21.69		0
	75	0	21.84	21.55	21.33	21.58	21.63		0
16QAM	1	0	22.19	21.76	21.58	21.89	21.76	0-1	0
	1	36	22.09	21.74	21.58	21.81	21.82		0
	1	74	22.13	21.70	21.61	21.68	22.01		0
	36	0	21.82	21.63	21.45	21.58	21.55	0-2	0
	36	18	21.85	21.69	21.53	21.59	21.61		0
	36	37	21.88	21.63	21.53	21.48	21.61		0
	75	0	21.86	21.58	21.43	21.54	21.58		0
64QAM	1	0	22.30	21.72	21.56	22.10	21.97	0-2	0
	1	36	22.27	21.77	21.54	21.97	22.02		0
	1	74	22.33	21.74	21.60	21.89	22.18		0
	36	0	21.81	21.66	21.41	21.58	21.51	0-3	0
	36	18	21.84	21.63	21.47	21.54	21.58		0
	36	37	21.85	21.61	21.47	21.48	21.62		0
	75	0	21.96	21.58	21.42	21.63	21.69		0

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Table 9-82

LTE Band 41 PC2 Reduced Conducted Powers - 10 MHz Bandwidth – Hotspot Mode Active

LTE Band 41 10 MHz Bandwidth										
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]	
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)			
			Conducted Power [dBm]							
QPSK	1	0	21.69	21.52	21.29	21.42	21.43	0	0	
	1	25	21.68	21.43	21.16	21.35	21.26		0-1	0
	1	49	21.66	21.44	21.13	21.39	21.42			0
	25	0	21.75	21.56	21.32	21.44	21.52	0		
	25	12	21.76	21.57	21.30	21.45	21.56	0		0
	25	25	21.72	21.52	21.25	21.43	21.49		0	
	50	0	21.76	21.53	21.29	21.46	21.50		0	
16QAM	1	0	22.03	21.76	21.48	21.69	22.01	0-1	0	
	1	25	21.82	21.71	21.51	21.55	21.93		0-2	0
	1	49	21.98	21.75	21.47	21.68	21.94			0
	25	0	21.69	21.57	21.26	21.49	21.54	0		0
	25	12	21.71	21.60	21.26	21.49	21.51			0
	25	25	21.68	21.57	21.24	21.43	21.48		0	
	50	0	21.70	21.61	21.27	21.45	21.52	0		
64QAM	1	0	22.14	21.86	21.61	21.82	21.33	0-2	0	
	1	25	22.14	21.88	21.74	21.67	21.37		0-3	0
	1	49	22.13	21.86	21.73	21.81	21.25			0
	25	0	21.72	21.57	21.27	21.49	21.57	0		
	25	12	21.76	21.61	21.33	21.53	21.60	0		
	25	25	21.69	21.57	21.23	21.48	21.53		0	
	50	0	21.78	21.59	21.35	21.48	21.54		0	

Table 9-83

LTE Band 41 PC2 Reduced Conducted Powers - 5 MHz Bandwidth – Hotspot Mode Active

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	21.68	21.55	21.23	21.30	21.43	0	0
	1	12	21.72	21.47	21.29	21.30	21.42		0
	1	24	21.71	21.52	21.28	21.39	21.48		0
	12	0	21.76	21.53	21.27	21.36	21.46	0-1	0
	12	6	21.76	21.60	21.31	21.41	21.55		0
	12	13	21.77	21.63	21.33	21.46	21.54		0
	25	0	21.75	21.56	21.27	21.41	21.50		0
16QAM	1	0	21.69	21.54	21.59	21.41	21.41	0-1	0
	1	12	21.72	21.45	21.57	21.41	21.37		0
	1	24	21.72	21.52	21.64	21.46	21.45		0
	12	0	21.81	21.63	21.38	21.46	21.55	0-2	0
	12	6	21.83	21.67	21.39	21.53	21.64		0
	12	13	21.82	21.66	21.46	21.55	21.57		0
	25	0	21.75	21.57	21.25	21.42	21.52		0
64QAM	1	0	22.08	21.96	22.19	22.07	21.84	0-2	0
	1	12	22.13	21.94	22.21	22.10	21.89		0
	1	24	22.14	21.94	22.23	22.12	21.90		0
	12	0	21.86	21.67	21.35	21.42	21.55	0-3	0
	12	6	21.88	21.69	21.40	21.44	21.63		0
	12	13	21.88	21.67	21.44	21.49	21.63		0
	25	0	21.79	21.59	21.26	21.39	21.52		0

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Table 9-84

LTE Band 41 PC3 Reduced Conducted Powers - 20 MHz Bandwidth – Grip Sensor Active

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	20.31	19.98	19.63	20.00	20.04	0	0
	1	50	20.13	20.04	19.70	19.92	20.06		0
	1	99	20.18	19.99	19.68	19.74	20.17		0
	50	0	20.37	20.23	19.96	20.16	20.20	0-1	0
	50	25	20.41	20.19	19.98	20.08	20.25		0
	50	50	20.46	20.25	19.97	19.94	20.31		0
	100	0	20.30	20.20	19.97	20.10	20.30		0
16QAM	1	0	20.27	20.07	19.92	20.05	20.00	0-1	0
	1	50	20.27	20.11	19.94	20.04	20.09		0
	1	99	20.24	19.99	19.99	20.09	20.28		0
	50	0	20.39	20.25	20.05	20.15	20.37	0-2	0
	50	25	20.41	20.29	20.03	20.10	20.36		0
	50	50	20.44	20.20	19.99	20.00	20.41		0
	100	0	20.43	20.05	20.03	20.17	20.39		0
64QAM	1	0	20.15	20.02	19.75	19.98	20.10	0-2	0
	1	50	20.12	20.03	19.78	19.85	20.05		0
	1	99	20.10	20.05	19.78	19.85	20.23		0
	50	0	20.45	20.32	20.06	20.20	20.20	0-3	0.5
	50	25	20.51	20.31	20.12	20.10	20.30		0.5
	50	50	20.48	20.24	20.04	20.06	20.33		0.5
	100	0	20.43	20.24	20.02	20.09	20.28		0.5

Table 9-85

LTE Band 41 PC3 Reduced Conducted Powers - 15 MHz Bandwidth – Grip Sensor Active

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	20.46	20.22	19.80	20.19	20.25	0	0
	1	36	20.40	20.13	19.81	20.13	20.23		0
	1	74	20.46	20.13	19.84	20.08	20.39		0
	36	0	20.48	20.26	19.87	20.30	20.30	0-1	0
	36	18	20.51	20.26	19.91	20.28	20.37		0
	36	37	20.54	20.21	19.90	20.22	20.35		0
	75	0	20.50	20.27	19.87	20.23	20.36		0
16QAM	1	0	20.39	20.31	19.91	20.25	20.11	0-1	0
	1	36	20.34	20.29	19.91	20.35	20.17		0
	1	74	20.45	20.22	19.95	20.26	20.30		0
	36	0	20.56	20.27	20.14	20.26	20.37	0-2	0
	36	18	20.58	20.31	20.17	20.24	20.43		0
	36	37	20.62	20.27	20.20	20.18	20.46		0
	75	0	20.56	20.23	20.13	20.25	20.37		0
64QAM	1	0	20.28	20.09	19.99	20.22	20.10	0-2	0
	1	36	20.27	20.14	19.83	20.07	20.16		0
	1	74	20.39	20.10	19.85	20.15	20.29		0
	36	0	20.57	20.27	20.13	20.24	20.38	0-3	0.5
	36	18	20.63	20.32	20.20	20.23	20.44		0.5
	36	37	20.66	20.28	20.21	20.16	20.45		0.5
	75	0	20.63	20.27	20.15	20.19	20.39		0.5

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LTE Band 41 PC3 Reduced Conducted Powers - 10 MHz Bandwidth – Grip Sensor Active

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	20.31	20.31	20.04	20.28	20.15	0	0
	1	25	20.40	20.29	20.03	20.25	20.23		0
	1	49	20.38	20.29	20.11	20.27	20.18		0
	25	0	20.47	20.23	20.08	20.24	20.26	0-1	0
	25	12	20.50	20.35	20.07	20.25	20.28		0
	25	25	20.45	20.30	20.05	20.19	20.24		0
	50	0	20.50	20.33	20.09	20.23	20.29		0
16QAM	1	0	20.39	20.12	20.05	20.38	20.27	0-1	0
	1	25	20.58	20.02	19.95	20.35	19.99		0
	1	49	20.38	20.03	20.23	20.40	20.06		0
	25	0	20.43	20.33	20.05	20.25	20.23	0-2	0
	25	12	20.50	20.36	20.06	20.25	20.25		0
	25	25	20.43	20.32	20.01	20.20	20.19		0
	50	0	20.50	20.33	20.06	20.26	20.27		0
64QAM	1	0	20.36	20.21	20.13	20.31	20.21	0-2	0
	1	25	20.30	20.17	20.09	20.36	20.09		0
	1	49	20.33	20.25	20.16	20.41	20.40		0
	25	0	20.45	20.37	20.01	20.30	20.20	0-3	0.5
	25	12	20.50	20.42	20.05	20.29	20.24		0.5
	25	25	20.44	20.38	19.99	20.29	20.20		0.5
	50	0	20.53	20.31	20.14	20.30	20.34		0.5

Table 9-87

LTE Band 41 PC3 Reduced Conducted Powers - 5 MHz Bandwidth – Grip Sensor Active

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	20.30	20.11	19.99	19.88	20.09	0	0
	1	12	20.31	20.07	20.02	19.94	20.13		0
	1	24	20.33	20.09	20.05	19.96	20.18		0
	12	0	20.31	20.09	19.92	19.98	20.06	0-1	0
	12	6	20.34	20.20	19.99	20.02	20.15		0
	12	13	20.33	20.13	20.04	20.07	20.12		0
	25	0	20.35	20.17	19.97	20.03	20.14		0
16QAM	1	0	20.38	19.94	20.02	20.23	20.12	0-1	0
	1	12	20.42	19.89	19.99	20.28	20.07		0
	1	24	20.41	19.88	20.03	20.35	20.14		0
	12	0	20.41	20.20	20.03	20.06	20.16	0-2	0
	12	6	20.46	20.20	20.06	20.11	20.25		0
	12	13	20.44	20.21	20.10	20.16	20.20		0
	25	0	20.30	20.14	19.91	20.06	20.11		0
64QAM	1	0	20.47	20.14	20.25	20.16	20.23	0-2	0
	1	12	20.46	20.09	20.17	20.19	20.39		0
	1	24	20.37	20.14	20.20	20.11	20.45		0
	12	0	20.39	20.19	20.00	20.01	20.09	0-3	0.5
	12	6	20.39	20.26	20.02	20.01	20.20		0.5
	12	13	20.37	20.26	20.08	20.07	20.17		0.5
	25	0	20.27	20.18	19.90	19.99	20.26		0.5

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Approved by:
Quality Manager

Document S/N:

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9.4.3 LTE Uplink Carrier Aggregation Conducted Powers

Table 9-88
LTE Band 5 Uplink Carrier Aggregation Conducted Powers

	PCC									SCC									Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC UL Channel	PCC UL Frequency [MHz]	PCC DL Channel	PCC DL Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC UL Channel	SCC UL Frequency [MHz]	SCC DL Channel	SCC DL Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_5B	LTE B5	10	20525	836.5	2525	881.5	QPSK	1	0	LTE B5	5	20453	829.3	2453	874.3	QPSK	1	24	24.98	24.82

Table 9-89
LTE Band 66 Maximum Uplink Carrier Aggregation Conducted Powers

	PCC									SCC									Power		
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	PCC DL Channel	PCC DL Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)	
CA_66C	LTE B66	20	132322	1745.0	66786	2145.0	QPSK	1	0	LTE B66	20	132124	1725.2	66588	2125.2	QPSK	1	99		24.33	24.22
CA_66C	LTE B66	20	132572	1770.0	67036	2170.0	QPSK	1	0	LTE B66	20	132374	1750.2	66838	2150.2	QPSK	1	99		23.99	24.21
CA_66B	LTE B66	10	132322	1745.0	66786	2145.0	QPSK	1	0	LTE B66	10	132223	1735.1	66687	2135.1	QPSK	1	49		24.43	24.12
CA_66B	LTE B66	10	132622	1775.0	67086	2175.0	QPSK	1	0	LTE B66	10	132523	1765.1	66987	2165.1	QPSK	1	49		24.40	24.00

Table 9-90
LTE Band 38 Maximum Uplink Carrier Aggregation Conducted Powers

	PCC							SCC						Power		
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA 38C	LTE B38	15	38000	2595.0	QPSK	1	0	LTE B38	15	37850	2580	QPSK	1	74	24.18	24.12

Table 9-91
LTE Band 38 Reduced Uplink Carrier Aggregation Conducted Powers – Hotspot/Grip Sensor Mode Active

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC				SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	Power	
				PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset								LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_38C	LTE B38	15	38000	2595.0	QPSK	1	0	LTE B38	15	37850	2580.0	QPSK	1	74	20.31	19.88

Table 9-92
LTE Band 41 PC3 Maximum Uplink Carrier Aggregation Conducted Powers

	PCC							SCC							Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41C	LTE B41	20	39750	2506.0	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	23.98	23.62

Table 9-93
LTE Band 41 PC2 Maximum Uplink Carrier Aggregation Conducted Powers

Combination	PCC							SCC							Power	
	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41C	LTE B41 PC2	20	39750	2506.0	QPSK	1	99	LTE B41 PC2	20	39948	2525.8	QPSK	1	0	26.69	26.22

Table 9-94
LTE Band 41 PC3 Reduced Uplink Carrier Aggregation Conducted Powers – Hotspot Mode Active

LTE Band 41C Reduced Primary Carrier Aggregation Secondary Power Not Allowed																
Combination	PCC Band	PCC						SCC						Power		
		PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA 41C	LTE B41	20	39750	2506.0	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	22.50	22.15

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Table 9-95
LTE Band 41 PC2 Reduced Uplink Carrier Aggregation Conducted Powers – Hotspot Mode Active

Combination	PCC							SCC							Power	
	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41C	LTE B41 PC2	20	39750	2506.0	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	22.10	21.56

Notes:

1. This device supports uplink carrier aggregation for LTE CA_5B, LTE CA_66C, LTE CA_66B, LTE CA_38C, and LTE CA_41C with a maximum of two component carriers. For intraband contiguous carrier aggregation scenarios, 3GPP 36.101 Table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when non-contiguous RB allocation is implemented. The conducted powers and MPR settings in this device are permanently implemented per the above 3GPP requirements.
2. Per FCC Guidance, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.

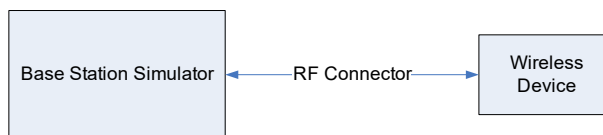


Figure 9-4
Power Measurement Setup

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9.5 WLAN Conducted Powers

Table 9-96
2.4 GHz WLAN Maximum Average RF Power – Ant 2

2.4GHz Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ax(SU)
		Average	Average	Average	Average
2412	1	19.98	17.97	17.95	16.54
2437	6	19.95	17.66	17.89	16.60
2452	9	N/A	17.38	17.85	16.98
2462	11	19.75	15.10	15.45	16.91

Table 9-97
2.4 GHz WLAN Maximum Average RF Power – MIMO

2.4GHz 802.11n Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
2412	1	17.70	17.95	20.84
2437	6	17.85	17.89	20.88
2452	9	17.96	17.85	20.92
2462	11	15.48	15.45	18.48

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Table 9-98
5 GHz WLAN Maximum Average RF Power – Ant 2

5GHz (20MHz) Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11a	802.11n	802.11ac	802.11ax(SU)
		Average	Average	Average	Average
5180	36	17.79	17.76	17.73	15.62
5200	40	17.85	17.88	17.94	15.67
5220	44	17.92	17.95	17.97	15.77
5240	48	17.98	17.98	17.99	15.96
5260	52	17.87	17.91	17.89	15.74
5280	56	17.99	17.99	17.98	15.83
5300	60	17.68	17.69	17.66	15.98
5320	64	17.65	17.62	17.97	15.94
5500	100	17.84	17.86	17.82	15.71
5600	120	17.68	17.74	17.73	15.89
5620	124	17.76	17.71	17.69	15.92
5720	144	17.98	17.96	17.98	15.84
5745	149	17.73	17.66	17.81	15.97
5785	157	17.86	17.84	17.78	15.64
5825	165	17.76	17.77	17.76	15.98

Table 9-99
5 GHz WLAN Maximum Average RF Power – MIMO

5GHz (20MHz) 802.11n Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
5180	36	17.94	17.76	20.86
5200	40	17.98	17.88	20.94
5220	44	17.99	17.95	20.98
5240	48	17.68	17.98	20.84
5260	52	17.76	17.91	20.85
5280	56	17.90	17.99	20.96
5300	60	17.89	17.69	20.80
5320	64	17.77	17.62	20.71
5500	100	17.94	17.86	20.91
5600	120	17.66	17.74	20.71
5620	124	17.72	17.71	20.73
5720	144	17.82	17.96	20.90
5745	149	17.89	17.66	20.79
5785	157	17.91	17.84	20.89
5825	165	17.93	17.77	20.86

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Table 9-100
Maximum Output Powers During Conditions with 2.4 GHz and 5 GHz WLAN

2.4GHz 802.11n Conducted Power [dBm]			
Freq [MHz]	Channel	ANT1	ANT2
2412	1	16.43	16.55
2437	6	16.60	16.75
2457	10	16.76	16.62
2462	11	15.48	15.45
5GHz (40MHz) 802.11n Conducted Power [dBm]			
Freq [MHz]	Channel	ANT1	ANT2
5190	38	13.63	13.65
5230	46	13.68	13.74
5270	54	13.76	13.92
5310	62	13.87	13.94
5GHz (80MHz) 802.11ac Conducted Power [dBm]			
Freq [MHz]	Channel	ANT1	ANT2
5530	106	12.86	12.80
5610	122	12.78	12.86
5690	138	12.82	12.36
5775	155	12.58	12.85

Table 9-101
2.4 GHz WLAN Reduced Average RF Power – Ant 2

2.4GHz Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ax(SU)
		Average	Average	Average	Average
2412	1	16.68	16.61	16.55	16.81
2437	6	16.55	16.84	16.75	16.93
2462	11	16.82	15.10	15.45	16.75

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Table 9-102
5 GHz WLAN Reduced Average RF Power – Ant 2

5GHz (40MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11n	802.11ac	802.11ax(SU)
		Average	Average	Average
5190	38	13.65	13.60	13.95
5230	46	13.74	13.76	13.64
5270	54	13.92	13.55	13.76
5310	62	13.94	13.95	13.61

5GHz (80MHz) Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11ac	802.11ax(SU)
		Average	Average
5530	106	12.80	12.56
5610	122	12.86	12.47
5690	138	12.36	12.68
5775	155	12.85	12.79

Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02:

- Power measurements were performed for the transmission mode configuration with the highest maximum output power specified for production units.
- For transmission modes with the same maximum output power specification, powers were measured for the largest channel bandwidth, lowest order modulation and lowest data rate.
- For transmission modes with identical maximum specified output power, channel bandwidth, modulation and data rates, power measurements were required for all identical configurations.
- For each transmission mode configuration, powers were measured for the highest and lowest channels; and at the mid-band channel(s) when there were at least 3 channels supported. For configurations with multiple mid-band channels, due to an even number of channels, both channels were measured.
- The bolded data rate and channel above were tested for SAR.

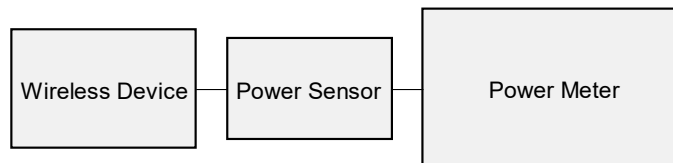


Figure 9-5
Power Measurement Setup

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10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ϵ	% dev σ	% dev ϵ
7/1/2019	1900H	21.3	1850	1.414	40.748	1.400	40.000	1.00%	1.87%
			1880	1.433	40.707	1.400	40.000	2.36%	1.77%
			1910	1.452	40.667	1.400	40.000	3.71%	1.67%
7/15/2019	1900H	20.7	1850	1.425	39.413	1.400	40.000	1.79%	-1.47%
			1880	1.443	39.370	1.400	40.000	3.07%	-1.58%
			1910	1.462	39.348	1.400	40.000	4.43%	-1.63%
7/22/2019	1900H	21.3	1850	1.414	39.864	1.400	40.000	1.00%	-0.34%
			1880	1.431	39.822	1.400	40.000	2.21%	-0.44%
			1910	1.451	39.791	1.400	40.000	3.64%	-0.52%
7/1/2019	2450H	21.3	2400	1.771	39.484	1.756	39.289	0.85%	0.50%
			2450	1.808	39.401	1.800	39.200	0.44%	0.51%
			2500	1.847	39.328	1.855	39.136	-0.43%	0.49%
			2550	1.886	39.251	1.909	39.073	-1.20%	0.46%
			2600	1.926	39.163	1.964	39.009	-1.93%	0.39%
			2650	1.967	39.092	2.018	38.945	-2.53%	0.38%
			2700	2.007	39.002	2.073	38.882	-3.18%	0.31%
7/5/2019	2450H	21.3	2400	1.819	40.234	1.756	39.289	3.59%	2.41%
			2450	1.859	40.148	1.800	39.200	3.28%	2.42%
07/12/2019	5200H-5800H	22.5	2500	1.901	40.081	1.855	39.136	2.48%	2.41%
			5240	4.516	35.195	4.696	35.940	-3.83%	-2.07%
			5260	4.538	35.150	4.717	35.917	-3.79%	-2.14%
			5300	4.582	35.078	4.758	35.871	-3.70%	-2.21%
			5320	4.604	35.049	4.778	35.849	-3.64%	-2.23%
			5600	4.908	34.560	5.065	35.529	-3.10%	-2.73%
			5620	4.930	34.524	5.086	35.506	-3.07%	-2.77%
			5745	5.073	34.320	5.214	35.363	-2.70%	-2.95%
			5765	5.094	34.287	5.234	35.340	-2.67%	-2.98%
			5785	5.116	34.258	5.255	35.317	-2.65%	-3.00%
			820	0.971	54.295	0.969	55.258	0.21%	-1.74%
			835	0.977	54.261	0.970	55.200	0.72%	-1.70%
7/22/2019	835B	19.8	850	0.983	54.221	0.988	55.154	-0.51%	-1.69%
			820	0.953	54.329	0.969	55.258	-1.65%	-1.68%
7/25/2019	835B	20.6	835	0.959	54.297	0.970	55.200	-1.13%	-1.64%
			850	0.965	54.256	0.988	55.154	-2.33%	-1.63%
7/29/2019	835B	21.6	820	0.995	53.754	0.969	55.258	2.68%	-2.72%
			835	1.001	53.721	0.970	55.200	3.20%	-2.68%
			850	1.006	53.677	0.988	55.154	1.82%	-2.68%
6/26/2019	1750B	21.7	1710	1.451	52.834	1.463	53.537	-0.82%	-1.31%
			1750	1.497	52.681	1.488	53.432	0.60%	-1.41%
			1790	1.539	52.515	1.514	53.326	1.65%	-1.52%
7/8/2019	1750B	22.4	1710	1.421	52.883	1.463	53.537	-2.87%	-1.22%
			1750	1.467	52.748	1.488	53.432	-1.41%	-1.28%
			1790	1.509	52.593	1.514	53.326	-0.33%	-1.37%
7/24/2019	1750B	21.3	1710	1.466	51.748	1.463	53.537	0.21%	-3.34%
			1750	1.509	51.575	1.488	53.432	1.41%	-3.48%
			1790	1.551	51.409	1.514	53.326	2.44%	-3.59%
6/27/2019	1900B	20.0	1850	1.528	54.713	1.520	53.300	0.53%	2.65%
			1880	1.550	54.658	1.520	53.300	1.97%	2.55%
			1910	1.572	54.616	1.520	53.300	3.42%	2.47%
6/29/2019	1900B	20.5	1850	1.516	54.547	1.520	53.300	-0.26%	2.34%
			1880	1.536	54.512	1.520	53.300	1.05%	2.27%
			1910	1.558	54.487	1.520	53.300	2.50%	2.23%
7/1/2019	1900B	22.7	1850	1.503	51.182	1.520	53.300	-1.12%	-3.97%
			1880	1.536	51.067	1.520	53.300	1.05%	-4.19%
			1910	1.570	50.971	1.520	53.300	3.29%	-4.37%
7/8/2019	1900B	22.6	1850	1.526	52.767	1.520	53.300	0.39%	-1.00%
			1880	1.561	52.673	1.520	53.300	2.70%	-1.18%
			1910	1.594	52.587	1.520	53.300	4.87%	-1.34%
7/15/2019	1900B	22.4	1850	1.501	52.550	1.520	53.300	-1.25%	-1.41%
			1880	1.536	52.441	1.520	53.300	1.05%	-1.61%
			1910	1.573	52.361	1.520	53.300	3.49%	-1.76%
7/15/2019	1900B	22.6	1850	1.519	53.790	1.520	53.300	-0.07%	0.92%
			1880	1.553	53.697	1.520	53.300	2.17%	0.74%
			1910	1.587	53.615	1.520	53.300	4.41%	0.59%
7/17/2019	1900B	23.6	1850	1.509	53.843	1.520	53.300	-0.72%	1.02%
			1880	1.544	53.746	1.520	53.300	1.58%	0.84%
			1910	1.578	53.659	1.520	53.300	3.82%	0.67%
7/22/2019	1900B	23.0	1850	1.506	54.206	1.520	53.300	-0.92%	1.70%
			1880	1.540	54.118	1.520	53.300	1.32%	1.53%
			1910	1.575	54.030	1.520	53.300	3.62%	1.37%
7/25/2019	1900B	23.2	1850	1.518	53.199	1.520	53.300	-0.13%	-0.19%
			1880	1.552	53.125	1.520	53.300	2.11%	-0.33%
			1910	1.582	53.016	1.520	53.300	4.08%	-0.53%
7/31/2019	1900B	23.9	1850	1.504	53.836	1.520	53.300	-1.05%	1.01%
			1880	1.537	53.726	1.520	53.300	1.12%	0.80%
			1910	1.569	53.643	1.520	53.300	3.22%	0.64%
8/5/2019	1900B	23.8	1850	1.512	52.711	1.520	53.300	-0.53%	-1.11%
			1880	1.547	52.602	1.520	53.300	1.78%	-1.31%
			1910	1.580	52.499	1.520	53.300	3.95%	-1.50%

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Table 10-2
Measured Tissue Properties – Body

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ϵ	% dev σ	% dev ϵ
7/1/2019	2450B	22.6	2450	2.044	51.603	1.950	52.700	4.82%	-2.08%
			2500	2.107	51.457	2.021	52.636	4.26%	-2.24%
			2550	2.171	51.313	2.092	52.573	3.78%	-2.40%
7/7/2019	2450B	23.2	2300	1.840	51.645	1.809	52.900	1.71%	-2.37%
			2310	1.850	51.617	1.816	52.887	1.87%	-2.40%
			2320	1.862	51.590	1.826	52.873	1.97%	-2.43%
7/11/2019	2450B	20.6	2300	1.865	52.774	1.809	52.900	3.10%	-0.24%
			2310	1.875	52.758	1.816	52.887	3.25%	-0.24%
			2320	1.884	52.738	1.826	52.873	3.18%	-0.26%
7/14/2019	2450B	20.5	2450	2.038	53.861	1.950	52.700	4.51%	2.20%
			2500	2.084	53.793	2.021	52.636	3.12%	2.20%
			2550	2.135	53.693	2.092	52.573	2.06%	2.13%
			2600	2.184	53.624	2.163	52.509	0.97%	2.12%
			2650	2.234	53.528	2.234	52.445	0.00%	2.07%
			2700	2.284	53.444	2.305	52.382	-0.91%	2.03%
7/18/2019	2450B	22.8	2400	1.983	51.640	1.902	52.767	4.26%	-2.14%
			2450	2.041	51.486	1.950	52.700	4.67%	-2.30%
			2500	2.103	51.332	2.021	52.636	4.06%	-2.48%
			2550	2.161	51.181	2.092	52.573	3.30%	-2.65%
7/22/2019	2450B	21.6	2550	2.111	52.650	2.092	52.573	0.91%	0.15%
			2600	2.158	52.579	2.163	52.509	-0.23%	0.13%
			2650	2.205	52.497	2.234	52.445	-1.30%	0.10%
7/24/2019	2450B	23.2	2450	2.020	51.266	1.950	52.700	3.59%	-2.72%
			2500	2.074	51.124	2.021	52.636	2.62%	-2.87%
			2550	2.138	50.984	2.092	52.573	2.20%	-3.02%
			2600	2.190	50.860	2.163	52.509	1.25%	-3.14%
7/29/2019	2450B	22.8	2400	1.979	51.667	1.902	52.767	4.05%	-2.08%
			2450	2.035	51.510	1.950	52.700	4.36%	-2.26%
			2500	2.092	51.347	2.021	52.636	3.51%	-2.45%
07/16/2019	5200B-5800B	21.6	5700	5.813	47.662	5.883	48.336	-1.19%	-1.39%
			5745	5.875	47.580	5.936	48.275	-1.03%	-1.44%
			5765	5.904	47.528	5.959	48.248	-0.92%	-1.49%
			5785	5.936	47.497	5.982	48.220	-0.77%	-1.50%
07/24/2019	5200B-5800B	21.6	5240	5.417	47.797	5.346	48.960	1.33%	-2.38%
			5260	5.447	47.770	5.369	48.933	1.45%	-2.38%
			5280	5.472	47.720	5.393	48.906	1.46%	-2.43%
			5300	5.496	47.676	5.416	48.879	1.48%	-2.46%
			5320	5.526	47.647	5.439	48.851	1.60%	-2.46%
			5500	5.785	47.315	5.650	48.607	2.39%	-2.66%
			5520	5.812	47.259	5.673	48.580	2.45%	-2.72%
			5540	5.842	47.227	5.696	48.553	2.56%	-2.73%
			5560	5.884	47.193	5.720	48.526	2.87%	-2.75%
			5580	5.915	47.150	5.743	48.499	2.99%	-2.78%
			5600	5.941	47.105	5.766	48.471	3.04%	-2.82%
			5620	5.962	47.066	5.790	48.444	2.97%	-2.84%
			5640	5.995	47.052	5.813	48.417	3.13%	-2.82%
			5660	6.028	46.988	5.837	48.390	3.27%	-2.90%
			5680	6.059	46.947	5.860	48.363	3.40%	-2.93%
			5700	6.095	46.919	5.883	48.336	3.60%	-2.93%
			5745	6.161	46.859	5.936	48.275	3.79%	-2.93%
			5765	6.192	46.796	5.959	48.248	3.91%	-3.01%
			5785	6.226	46.767	5.982	48.220	4.08%	-3.01%

The above measured tissue parameters were used in the DASY software. The DASY software was used to perform interpolation to determine the dielectric parameters at the SAR test device frequencies (per KDB Publication 865664 D01v01r04 and IEEE 1528-2013 6.6.1.2). The tissue parameters listed in the SAR test plots may slightly differ from the table above due to significant digit rounding in the software.

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10.2 Test System Verification

Prior to SAR assessment, the system is verified to $\pm 10\%$ of the SAR measurement on the reference dipole at the time of calibration by the calibration facility. Full system validation status and result summary can be found in Appendix E.

Table 10-3
System Verification Results – 1g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR _{1g} (W/kg)	1 W Target SAR _{1g} (W/kg)	1 W Normalized SAR _{1g} (W/kg)	Deviation _{1g} (%)
G	1900	HEAD	07/01/2019	22.0	21.3	0.100	5d149	7410	3.990	39.300	39.900	1.53%
E	1900	HEAD	07/15/2019	21.4	20.7	0.100	5d080	3589	4.110	39.800	41.100	3.27%
G	1900	HEAD	07/22/2019	21.6	21.3	0.100	5d148	7409	4.130	39.100	41.300	5.63%
E	2450	HEAD	07/01/2019	22.1	21.3	0.100	797	3589	5.320	52.700	53.200	0.95%
E	2450	HEAD	07/05/2019	22.5	21.3	0.100	797	3589	5.330	52.700	53.300	1.14%
E	2600	HEAD	07/01/2019	22.1	21.3	0.100	1126	3589	5.750	54.500	57.500	5.50%
H	5250	HEAD	07/12/2019	23.2	22.5	0.050	1191	7406	3.630	78.900	72.600	-7.98%
H	5600	HEAD	07/12/2019	23.2	22.5	0.050	1191	7406	4.010	83.600	80.200	-4.07%
H	5750	HEAD	07/12/2019	23.2	22.5	0.050	1191	7406	3.660	79.100	73.200	-7.46%
O	835	BODY	07/29/2019	20.5	20.6	0.200	4d047	7538	2.060	9.470	10.300	8.76%
I	1750	BODY	07/24/2019	23.0	21.3	0.100	1150	7357	3.550	36.600	35.500	-3.01%
J	1900	BODY	06/27/2019	20.9	20.0	0.100	5d149	7488	4.060	39.400	40.600	3.05%
J	1900	BODY	06/29/2019	20.3	20.5	0.100	5d149	7488	4.220	39.400	42.200	7.11%
J	1900	BODY	07/01/2019	20.7	22.7	0.100	5d080	7488	4.080	39.200	40.800	4.08%
I	1900	BODY	07/15/2019	19.6	20.6	0.100	5d148	7357	4.020	39.100	40.200	2.81%
J	1900	BODY	07/15/2019	19.3	22.6	0.100	5d080	7488	4.140	39.200	41.400	5.61%
J	1900	BODY	07/17/2019	20.3	23.6	0.100	5d080	7488	4.160	39.200	41.600	6.12%
J	1900	BODY	07/22/2019	19.5	23.0	0.100	5d080	7488	4.190	39.200	41.900	6.89%
J	1900	BODY	07/25/2019	19.7	23.2	0.100	5d080	7488	4.170	39.200	41.700	6.38%
J	1900	BODY	08/05/2019	19.7	23.8	0.100	5d080	7488	4.200	39.200	42.000	7.14%
K	2300	BODY	07/07/2019	23.0	22.1	0.100	1073	7417	4.960	47.700	49.600	3.98%
K	2450	BODY	07/01/2019	23.2	22.6	0.100	719	7417	5.050	50.100	50.500	0.80%
L	2450	BODY	07/14/2019	20.9	20.0	0.100	981	7308	5.200	50.900	52.000	2.16%
K	2450	BODY	07/18/2019	22.6	22.2	0.100	719	7417	5.220	50.100	52.200	4.19%
K	2450	BODY	07/24/2019	22.5	22.8	0.100	719	7417	5.270	50.100	52.700	5.19%
K	2450	BODY	07/29/2019	22.7	21.8	0.100	719	7417	5.190	50.100	51.900	3.59%
L	2600	BODY	07/14/2019	20.9	20.0	0.100	1071	7308	5.540	54.200	55.400	2.21%
K	2600	BODY	07/24/2019	22.5	22.8	0.100	1004	7417	5.380	54.800	53.800	-1.82%
L	5250	BODY	07/24/2019	22.6	21.8	0.050	1057	7308	3.500	75.900	70.000	-7.77%
L	5600	BODY	07/24/2019	22.6	21.8	0.050	1057	7308	3.950	79.900	79.000	-1.13%
L	5750	BODY	07/16/2019	23.0	20.1	0.050	1057	7308	3.470	76.700	69.400	-9.52%
L	5750	BODY	07/24/2019	22.6	21.8	0.050	1057	7308	3.550	76.700	71.000	-7.43%

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Table 10-4
System Verification Results – 10g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR _{10g} (W/kg)	1 W Target SAR _{10g} (W/kg)	1 W Normalized SAR _{10g} (W/kg)	Deviation _{10g} (%)
O	835	BODY	07/22/2019	20.3	19.7	0.200	4d047	7538	1.350	6.270	6.750	7.66%
O	835	BODY	07/25/2019	20.5	20.6	0.200	4d047	7538	1.330	6.270	6.650	6.06%
I	1750	BODY	06/26/2019	21.2	21.7	0.100	1150	7357	2.080	19.400	20.800	7.22%
I	1750	BODY	07/08/2019	22.3	21.6	0.100	1150	7357	2.010	19.400	20.100	3.61%
J	1900	BODY	07/08/2019	20.1	22.6	0.100	5d080	7488	2.140	20.600	21.400	3.88%
I	1900	BODY	07/15/2019	19.6	20.6	0.100	5d148	7357	2.050	20.500	20.500	0.00%
J	1900	BODY	07/15/2019	19.3	22.6	0.100	5d080	7488	2.110	20.600	21.100	2.43%
J	1900	BODY	07/17/2019	20.3	23.6	0.100	5d080	7488	2.120	20.600	21.200	2.91%
J	1900	BODY	07/22/2019	19.5	23.0	0.100	5d080	7488	2.130	20.600	21.300	3.40%
J	1900	BODY	07/25/2019	19.7	23.2	0.100	5d080	7488	2.120	20.600	21.200	2.91%
J	1900	BODY	07/31/2019	20.5	23.9	0.100	5d080	7488	2.110	20.600	21.100	2.43%
K	2300	BODY	07/07/2019	23.0	22.1	0.100	1073	7417	2.370	23.200	23.700	2.16%
L	2300	BODY	07/11/2019	22.2	20.6	0.100	1073	7308	2.400	23.200	24.000	3.45%
L	2450	BODY	07/14/2019	20.9	20.0	0.100	981	7308	2.400	24.200	24.000	-0.83%
K	2450	BODY	07/18/2019	22.6	22.2	0.100	719	7417	2.390	23.700	23.900	0.84%
K	2450	BODY	07/24/2019	22.5	22.8	0.100	719	7417	2.400	23.700	24.000	1.27%
K	2450	BODY	07/29/2019	22.7	21.8	0.100	719	7417	2.400	23.700	24.000	1.27%
L	2600	BODY	07/14/2019	20.9	20.0	0.100	1071	7308	2.470	24.500	24.700	0.82%
L	2600	BODY	07/22/2019	21.6	20.6	0.100	1071	7308	2.340	24.500	23.400	-4.49%
K	2600	BODY	07/24/2019	22.5	22.8	0.100	1004	7417	2.380	24.700	23.800	-3.64%
L	5250	BODY	07/24/2019	22.6	21.8	0.050	1057	7308	0.987	21.100	19.740	-6.45%
L	5600	BODY	07/24/2019	22.6	21.8	0.050	1057	7308	1.100	22.300	22.000	-1.35%
L	5750	BODY	07/16/2019	23.0	20.1	0.050	1057	7308	0.965	21.200	19.300	-8.96%
L	5750	BODY	07/24/2019	22.6	21.8	0.050	1057	7308	0.992	21.200	19.840	-6.42%

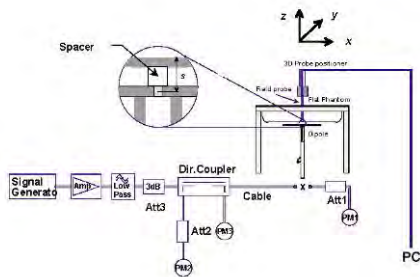


Figure 10-1
System Verification Setup Diagram



Figure 10-2
System Verification Setup Photo

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11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
UMTS 1900 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	25.5	23.61	0.11	Right	Cheek	0370S	1:1	0.050	1.545	0.077	
1880.00	9400	UMTS 1900	RMC	25.5	23.61	0.13	Right	Tilt	0370S	1:1	0.062	1.545	0.096	
1880.00	9400	UMTS 1900	RMC	25.5	23.61	-0.09	Left	Cheek	0370S	1:1	0.094	1.545	0.145	A1
1880.00	9400	UMTS 1900	RMC	25.5	23.61	0.17	Left	Tilt	0370S	1:1	0.041	1.545	0.063	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-2
GSM 1900 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GSM	31.5	30.30	0.12	Right	Cheek	0366S	1:8.3	0.046	1.318	0.061	
1880.00	661	GSM 1900	GSM	31.5	30.30	-0.20	Right	Tilt	0366S	1:8.3	0.066	1.318	0.087	
1880.00	661	GSM 1900	GSM	31.5	30.30	-0.03	Left	Cheek	0366S	1:8.3	0.080	1.318	0.105	A2
1880.00	661	GSM 1900	GSM	31.5	30.30	-0.08	Left	Tilt	0366S	1:8.3	0.035	1.318	0.046	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

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Table 11-3
PCS CDMA Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	600	PCS CDMA	RC3 / SO55	25.5	24.41	-0.03	Right	Cheek	0366S	1:1	0.078	1.285	0.100	
1880.00	600	PCS CDMA	RC3 / SO55	25.5	24.41	-0.16	Right	Tilt	0366S	1:1	0.101	1.285	0.130	
1880.00	600	PCS CDMA	RC3 / SO55	25.5	24.41	-0.03	Left	Cheek	0366S	1:1	0.178	1.285	0.229	A3
1880.00	600	PCS CDMA	RC3 / SO55	25.5	24.41	0.10	Left	Tilt	0366S	1:1	0.059	1.285	0.076	
1880.00	600	PCS CDMA	EVDO Rev. A	25.5	24.22	0.12	Right	Cheek	0365S	1:1	0.069	1.343	0.093	
1880.00	600	PCS CDMA	EVDO Rev. A	25.5	24.22	0.16	Right	Tilt	0365S	1:1	0.080	1.343	0.107	
1880.00	600	PCS CDMA	EVDO Rev. A	25.5	24.22	0.14	Left	Cheek	0365S	1:1	0.136	1.343	0.183	
1880.00	600	PCS CDMA	EVDO Rev. A	25.5	24.22	0.17	Left	Tilt	0365S	1:1	0.068	1.343	0.091	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11-4
LTE Band 25 (PCS) Head SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.0	23.43	0.17	0	Right	Cheek	QPSK	1	0	0365S	1:1	0.068	1.435	0.098	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	22.50	0.02	1	Right	Cheek	QPSK	50	25	0365S	1:1	0.053	1.413	0.075	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.0	23.43	0.17	0	Right	Tilt	QPSK	1	0	0365S	1:1	0.075	1.435	0.108	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	22.50	0.13	1	Right	Tilt	QPSK	50	25	0365S	1:1	0.066	1.413	0.093	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.0	23.43	0.12	0	Left	Cheek	QPSK	1	0	0365S	1:1	0.118	1.435	0.169	A4
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	22.50	0.10	1	Left	Cheek	QPSK	50	25	0365S	1:1	0.099	1.413	0.140	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.0	23.43	-0.20	0	Left	Tilt	QPSK	1	0	0365S	1:1	0.072	1.435	0.103	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	22.50	0.00	1	Left	Tilt	QPSK	50	25	0365S	1:1	0.066	1.413	0.093	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram									

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Table 11-5
LTE Band 38 Head SAR

MEASUREMENT RESULTS																					
1 CC Uplink 2 CC Uplink	Component Carrier	FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
		MHz	Ch.														(W/kg)		(W/kg)		
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	25.0	24.26	0.10	0	Right	Cheek	QPSK	1	0	0370S	1:1.58	0.058	1.186	0.069	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	24.0	23.38	-0.06	1	Right	Cheek	QPSK	50	25	0370S	1:1.58	0.042	1.153	0.048	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	25.0	24.26	0.15	0	Right	Tilt	QPSK	1	0	0370S	1:1.58	0.044	1.186	0.052	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	24.0	23.38	0.12	1	Right	Tilt	QPSK	50	25	0370S	1:1.58	0.031	1.153	0.036	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	25.0	24.26	0.14	0	Left	Cheek	QPSK	1	0	0370S	1:1.58	0.078	1.186	0.093	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	15	25.0	24.12	-0.06	0	Left	Cheek	QPSK	1	0	0370S	1:1.58	0.087	1.225	0.107	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	24.0	23.38	0.21	1	Left	Cheek	QPSK	50	25	0370S	1:1.58	0.066	1.153	0.076	
2 CC Uplink	PCC	2595.00	38000	Mid	LTE Band 38	15	25.0	24.18	0.02	0	Left	Cheek	QPSK	1	0	0370S	1:1.58	0.089	1.208	0.108	A5
	SCC	2580.00	37850	Mid	LTE Band 38	15								1	74						
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	25.0	24.26	0.15	0	Left	Tilt	QPSK	1	0	0370S	1:1.58	0.030	1.186	0.036	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	24.0	23.38	0.12	1	Left	Tilt	QPSK	50	25	0370S	1:1.58	0.024	1.153	0.028	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Head 1.6 W/kg (mW/g) averaged over 1 gram									

Table 11-6
LTE Band 41 Head SAR

MEASUREMENT RESULTS																					
1 CC Uplink 2 CC Uplink, Power Class	Component Carrier	FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
		MHz	Ch.	(W/kg)														(W/kg)			
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.0	23.62	-0.16	0	Right	Cheek	QPSK	1	99	0370S	1:1.58	0.090	1.091	0.098	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.83	0.02	1	Right	Cheek	QPSK	50	50	0370S	1:1.58	0.065	1.040	0.068	
1 CC Uplink - Power Class 2	N/A	2506.00	39750	Low	LTE Band 41	20	27.0	26.22	0.06	0	Right	Cheek	QPSK	1	99	0370S	1:2.31	0.101	1.197	0.121	
2 CC Uplink - Power Class 3	PCC	2506.00	39750	Low	LTE Band 41	20	24.0	23.98	0.05	0	Right	Cheek	QPSK	1	99	0370S	1:1.58	0.093	1.005	0.093	
	SCC	2525.80	39948	Low	LTE Band 41	20								1	0						
2 CC Uplink - Power Class 2	PCC	2506.00	39750	Low	LTE Band 41	20	27.0	26.69	0.06	0	Right	Cheek	QPSK	1	99	0370S	1:2.31	0.118	1.074	0.127	A6
	SCC	2525.80	39948	Low	LTE Band 41	20								1	0						
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.0	23.62	0.16	0	Right	Tilt	QPSK	1	99	0370S	1:1.58	0.043	1.091	0.047	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.83	0.14	1	Right	Tilt	QPSK	50	50	0370S	1:1.58	0.028	1.040	0.029	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.0	23.62	0.08	0	Left	Cheek	QPSK	1	99	0370S	1:1.58	0.077	1.091	0.084	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.83	0.16	1	Left	Cheek	QPSK	50	50	0370S	1:1.58	0.065	1.040	0.068	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.0	23.62	-0.06	0	Left	Tilt	QPSK	1	99	0370S	1:1.58	0.039	1.091	0.043	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.83	0.12	1	Left	Tilt	QPSK	50	50	0370S	1:1.58	0.027	1.040	0.028	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Head 1.6 W/kg (mW/g) averaged over 1 gram									

Table 11-7
DTS Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2462	11	802.11b	DSSS	22	17.0	16.82	0.10	Right	Cheek	2	0365S	1	99.9	0.157	-	1.042	1.001	-	
2462	11	802.11b	DSSS	22	17.0	16.82	0.13	Right	Tilt	2	0365S	1	99.9	0.167	0.097	1.042	1.001	0.101	A7
2462	11	802.11b	DSSS	22	17.0	16.82	0.03	Left	Cheek	2	0365S	1	99.9	0.092	-	1.042	1.001	-	
2462	11	802.11b	DSSS	22	17.0	16.82	0.15	Left	Tilt	2	0365S	1	99.9	0.155	-	1.042	1.001	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram									

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**Table 11-8
NII Head SAR**

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5310	62	802.11n	OFDM	40	14.0	13.94	0.04	Right	Cheek	2	0370S	13.5	97.2	0.072	0.032	1.014	1.029	0.033	A8
5310	62	802.11n	OFDM	40	14.0	13.94	0.18	Right	Tilt	2	0370S	13.5	97.2	0.059	-	1.014	1.029	-	
5310	62	802.11n	OFDM	40	14.0	13.94	-0.19	Left	Cheek	2	0370S	13.5	97.2	0.046	-	1.014	1.029	-	
5310	62	802.11n	OFDM	40	14.0	13.94	0.16	Left	Tilt	2	0370S	13.5	97.2	0.052	-	1.014	1.029	-	
5610	122	802.11ac	OFDM	80	14.0	12.86	0.10	Right	Cheek	2	0370S	29.3	96.2	0.017	-	1.300	1.040	-	
5610	122	802.11ac	OFDM	80	14.0	12.86	0.19	Right	Tilt	2	0370S	29.3	96.2	0.039	0.011	1.300	1.040	0.015	
5610	122	802.11ac	OFDM	80	14.0	12.86	0.14	Left	Cheek	2	0370S	29.3	96.2	0.016	-	1.300	1.040	-	
5610	122	802.11ac	OFDM	80	14.0	12.86	-0.11	Left	Tilt	2	0370S	29.3	96.2	0.028	-	1.300	1.040	-	
5775	155	802.11ac	OFDM	80	14.0	12.85	-0.14	Right	Cheek	2	0370S	29.3	96.2	0.032	-	1.303	1.040	-	
5775	155	802.11ac	OFDM	80	14.0	12.85	0.17	Right	Tilt	2	0370S	29.3	96.2	0.038	-	1.303	1.040	-	
5775	155	802.11ac	OFDM	80	14.0	12.85	0.12	Left	Cheek	2	0370S	29.3	96.2	0.039	-	1.303	1.040	-	
5775	155	802.11ac	OFDM	80	14.0	12.85	0.15	Left	Tilt	2	0370S	29.3	96.2	0.048	0.013	1.303	1.040	0.018	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Head 1.6 W/kg (mW/g) averaged over 1 gram											
Spatial Peak Uncontrolled Exposure/General Population																			

11.2 Standalone Body-Worn SAR Data

**Table 11-9
UMTS/CDMA Body-Worn SAR Data**

MEASUREMENT RESULTS														
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	25.5	23.61	0.14	15 mm	0366S	1:1	back	0.248	1.545	0.383	A9
1880.00	600	PCS CDMA	TDSO / SO32	25.5	24.33	-0.03	15 mm	0366S	1:1	back	0.328	1.309	0.429	A11
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram							

**Table 11-10
LTE Body-Worn SAR**

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.0	23.43	-0.09	0	0367S	QPSK	1	0	15 mm	back	1:1	0.341	1.435	0.489	A13
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	22.50	-0.02	1	0367S	QPSK	50	25	15 mm	back	1:1	0.276	1.413	0.390	
2595.00	38000	Mid	LTE Band 38	20	25.0	24.26	0.07	0	0367S	QPSK	1	0	15 mm	back	1:1.58	0.132	1.186	0.157	A15
2595.00	38000	Mid	LTE Band 38	20	24.0	23.38	-0.04	1	0367S	QPSK	50	25	15 mm	back	1:1.58	0.106	1.153	0.122	
2506.00	39750	Low	LTE Band 41	20	24.0	23.62	0.04	0	0368S	QPSK	1	99	15 mm	back	1:1.58	0.090	1.091	0.098	A17
2506.00	39750	Low	LTE Band 41	20	23.0	22.83	0.14	1	0368S	QPSK	50	50	15 mm	back	1:1.58	0.075	1.040	0.078	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Body 1.6 W/kg (mW/g) averaged over 1 gram										

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**Table 11-11
DTS Body-Worn SAR**

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	20.0	19.98	0.10	15 mm	2	0370S	1	back	99.9	0.181	0.123	1.005	1.001	0.124	A19
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

**Table 11-12
NII Body-Worn SAR**

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5280	56	802.11a	OFDM	20	18.0	17.99	-0.13	15 mm	2	0367S	6	back	98.7	0.120	0.046	1.002	1.013	0.047	
5720	144	802.11a	OFDM	20	18.0	17.98	-0.17	15 mm	2	0367S	6	back	98.7	0.344	0.148	1.005	1.013	0.151	
5785	157	802.11a	OFDM	20	18.0	17.86	0.18	15 mm	2	0367S	6	back	98.7	0.378	0.149	1.033	1.013	0.156	A21
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

11.3 Standalone Hotspot SAR Data

**Table 11-13
GPRS/ CDMA Hotspot SAR Data**

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GPRS	26.0	25.05	-0.14	10 mm	0366S	3	1:2.76	back	0.305	1.245	0.380	
1880.00	661	GSM 1900	GPRS	26.0	25.05	-0.13	10 mm	0366S	3	1:2.76	front	0.176	1.245	0.219	
1850.20	512	GSM 1900	GPRS	26.0	24.95	-0.08	10 mm	0366S	3	1:2.76	bottom	0.690	1.274	0.879	
1880.00	661	GSM 1900	GPRS	26.0	25.05	-0.03	10 mm	0366S	3	1:2.76	bottom	0.783	1.245	0.975	
1909.80	810	GSM 1900	GPRS	26.0	24.70	0.13	10 mm	0366S	3	1:2.76	bottom	0.809	1.349	1.091	A10
1880.00	661	GSM 1900	GPRS	26.0	25.05	0.11	10 mm	0366S	3	1:2.76	right	0.131	1.245	0.163	
1880.00	661	GSM 1900	GPRS	26.0	25.05	-0.13	10 mm	0366S	3	1:2.76	left	0.082	1.245	0.102	
1880.00	600	PCS CDMA	EVDO Rev. 0	20.5	20.19	-0.09	10 mm	0368S	N/A	1:1	back	0.372	1.074	0.400	
1880.00	600	PCS CDMA	EVDO Rev. 0	20.5	20.19	-0.10	10 mm	0368S	N/A	1:1	front	0.184	1.074	0.198	
1851.25	25	PCS CDMA	EVDO Rev. 0	20.5	20.06	-0.11	10 mm	0368S	N/A	1:1	bottom	0.782	1.107	0.866	
1880.00	600	PCS CDMA	EVDO Rev. 0	20.5	20.19	0.02	10 mm	0368S	N/A	1:1	bottom	0.868	1.074	0.932	
1908.75	1175	PCS CDMA	EVDO Rev. 0	20.5	20.02	-0.06	10 mm	0368S	N/A	1:1	bottom	0.876	1.117	0.978	A12
1880.00	600	PCS CDMA	EVDO Rev. 0	20.5	20.19	-0.14	10 mm	0368S	N/A	1:1	right	0.110	1.074	0.118	
1880.00	600	PCS CDMA	EVDO Rev. 0	20.5	20.19	0.04	10 mm	0368S	N/A	1:1	left	0.084	1.074	0.090	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram								

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Table 11-14
LTE Band 25 (PCS) Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.0	20.71	-0.10	0	0369S	QPSK	1	50	10 mm	back	1:1	0.350	1.069	0.374	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.0	20.75	-0.08	0	0369S	QPSK	50	25	10 mm	back	1:1	0.361	1.059	0.382	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.0	20.71	-0.14	0	0369S	QPSK	1	50	10 mm	front	1:1	0.192	1.069	0.205	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.0	20.75	-0.10	0	0369S	QPSK	50	25	10 mm	front	1:1	0.198	1.059	0.210	
1860.00	26140	Low	LTE Band 25 (PCS)	20	21.0	20.65	-0.10	0	0369S	QPSK	1	0	10 mm	bottom	1:1	0.792	1.084	0.859	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.0	20.71	-0.05	0	0369S	QPSK	1	50	10 mm	bottom	1:1	0.809	1.069	0.865	
1905.00	26590	High	LTE Band 25 (PCS)	20	21.0	20.54	-0.07	0	0369S	QPSK	1	99	10 mm	bottom	1:1	0.878	1.112	0.976	
1860.00	26140	Low	LTE Band 25 (PCS)	20	21.0	20.74	-0.08	0	0369S	QPSK	50	25	10 mm	bottom	1:1	0.836	1.062	0.888	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.0	20.75	-0.06	0	0369S	QPSK	50	25	10 mm	bottom	1:1	0.857	1.059	0.908	
1905.00	26590	High	LTE Band 25 (PCS)	20	21.0	20.63	-0.07	0	0369S	QPSK	50	50	10 mm	bottom	1:1	0.911	1.089	0.992	A14
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.0	20.70	-0.07	0	0369S	QPSK	100	0	10 mm	bottom	1:1	0.849	1.072	0.910	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.0	20.71	0.01	0	0369S	QPSK	1	50	10 mm	right	1:1	0.111	1.069	0.119	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.0	20.75	-0.09	0	0369S	QPSK	50	25	10 mm	right	1:1	0.116	1.059	0.123	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.0	20.71	0.09	0	0369S	QPSK	1	50	10 mm	left	1:1	0.088	1.069	0.094	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.0	20.75	-0.01	0	0369S	QPSK	50	25	10 mm	left	1:1	0.090	1.059	0.095	
1905.00	26590	High	LTE Band 25 (PCS)	20	21.0	20.63	-0.07	0	0369S	QPSK	50	50	10 mm	bottom	1:1	0.856	1.089	0.932	
								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Note: Blue entry represents variability measurement.

Table 11-15
LTE Band 38 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
2595.00	38000	Mid	LTE Band 38	20	21.0	19.84	-0.08	0	0367S	QPSK	1	0	10 mm	back	1:1.58	0.106	1.306	0.138	
2595.00	38000	Mid	LTE Band 38	20	21.0	19.96	-0.03	0	0367S	QPSK	50	50	10 mm	back	1:1.58	0.101	1.271	0.128	
2595.00	38000	Mid	LTE Band 38	20	21.0	19.84	0.02	0	0367S	QPSK	1	0	10 mm	front	1:1.58	0.241	1.306	0.315	
2595.00	38000	Mid	LTE Band 38	20	21.0	19.96	0.04	0	0367S	QPSK	50	50	10 mm	front	1:1.58	0.239	1.271	0.304	
2595.00	38000	Mid	LTE Band 38	20	21.0	19.84	-0.15	0	0367S	QPSK	1	0	10 mm	bottom	1:1.58	0.582	1.306	0.760	A16
2595.00	38000	Mid	LTE Band 38	20	21.0	19.96	-0.14	0	0367S	QPSK	50	50	10 mm	bottom	1:1.58	0.560	1.271	0.712	
2595.00	38000	Mid	LTE Band 38	20	21.0	19.83	-0.20	0	0367S	QPSK	100	0	10 mm	bottom	1:1.58	0.553	1.309	0.724	
2595.00	38000	Mid	LTE Band 38	20	21.0	19.84	-0.07	0	0367S	QPSK	1	0	10 mm	right	1:1.58	0.046	1.306	0.060	
2595.00	38000	Mid	LTE Band 38	20	21.0	19.96	-0.08	0	0367S	QPSK	50	50	10 mm	right	1:1.58	0.047	1.271	0.060	
2595.00	38000	Mid	LTE Band 38	20	21.0	19.84	-0.14	0	0367S	QPSK	1	0	10 mm	left	1:1.58	0.020	1.306	0.026	
2595.00	38000	Mid	LTE Band 38	20	21.0	19.96	0.15	0	0367S	QPSK	50	50	10 mm	left	1:1.58	0.019	1.271	0.024	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

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Table 11-16
LTE Band 41 Hotspot SAR

MEASUREMENT RESULTS																					
1 CC Uplink / 2 CC Uplink, Power Class	Component Carrier	FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
		MHz	Ch.														(W/kg)		(W/kg)		
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	22.5	22.15	-0.05	0	0367S	QPSK	1	99	10 mm	back	1:1.58	0.163	1.084	0.177	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	22.5	22.19	-0.01	0	0367S	QPSK	50	50	10 mm	back	1:1.58	0.162	1.074	0.174	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	22.5	22.15	0.00	0	0367S	QPSK	1	99	10 mm	front	1:1.58	0.404	1.084	0.438	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	22.5	22.19	0.01	0	0367S	QPSK	50	50	10 mm	front	1:1.58	0.397	1.074	0.426	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	22.5	22.15	-0.08	0	0367S	QPSK	1	99	10 mm	bottom	1:1.58	1.070	1.084	1.160	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	22.5	21.80	-0.14	0	0367S	QPSK	1	0	10 mm	bottom	1:1.58	0.842	1.175	0.989	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	22.5	21.62	-0.19	0	0367S	QPSK	1	0	10 mm	bottom	1:1.58	0.795	1.225	0.974	
1 CC Uplink - Power Class 3	N/A	2636.50	41055	Mid-High	LTE Band 41	20	22.5	21.78	-0.18	0	0367S	QPSK	1	50	10 mm	bottom	1:1.58	0.766	1.180	0.904	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	22.5	21.92	-0.15	0	0367S	QPSK	1	99	10 mm	bottom	1:1.58	0.681	1.143	0.778	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	22.5	22.19	-0.14	0	0367S	QPSK	50	50	10 mm	bottom	1:1.58	1.020	1.074	1.095	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	22.5	21.94	-0.13	0	0367S	QPSK	50	25	10 mm	bottom	1:1.58	0.954	1.138	1.086	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	22.5	21.71	-0.18	0	0367S	QPSK	50	25	10 mm	bottom	1:1.58	0.815	1.199	0.977	
1 CC Uplink - Power Class 3	N/A	2636.50	41055	Mid-High	LTE Band 41	20	22.5	21.90	-0.11	0	0367S	QPSK	50	0	10 mm	bottom	1:1.58	0.783	1.148	0.899	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	22.5	22.05	-0.19	0	0367S	QPSK	50	50	10 mm	bottom	1:1.58	0.714	1.109	0.792	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	22.5	22.14	-0.10	0	0367S	QPSK	100	0	10 mm	bottom	1:1.58	1.020	1.086	1.108	
1 CC Uplink - Power Class 2	N/A	2506.00	39750	Low	LTE Band 41	20	22.5	21.56	-0.03	0	0367S	QPSK	1	99	10 mm	bottom	1:2.31	0.637	1.242	0.791	
2 CC Uplink - Power Class 3	PCC	2506.00	39750	Low	LTE Band 41	20	22.5	22.50	-0.09	0	0367S	QPSK	1	99	10 mm	bottom	1:1.58	1.180	1.000	1.180	A18
	SCC	2525.80	39948	Low	LTE Band 41								1	0							
2 CC Uplink - Power Class 2	PCC	2506.00	39750	Low	LTE Band 41	20	22.5	22.10	-0.10	0	0367S	QPSK	1	99	10 mm	bottom	1:2.31	0.703	1.096	0.770	
	SCC	2525.80	39948	Low	LTE Band 41								1	0							
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	22.5	22.15	0.18	0	0367S	QPSK	1	99	10 mm	right	1:1.58	0.051	1.084	0.055	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	22.5	22.19	0.08	0	0367S	QPSK	50	50	10 mm	right	1:1.58	0.051	1.074	0.055	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	22.5	22.15	-0.05	0	0367S	QPSK	1	99	10 mm	left	1:1.58	0.042	1.084	0.046	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	22.5	22.19	0.11	0	0367S	QPSK	50	50	10 mm	left	1:1.58	0.045	1.074	0.048	
2 CC Uplink - Power Class 3	PCC	2506.00	39750	Low	LTE Band 41	20	22.5	22.50	0.01	0	0367S	QPSK	1	99	10 mm	bottom	1:1.58	1.170	1.000	1.170	
	SCC	2525.80	39948	Low	LTE Band 41								1	0							
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	22.5	21.94	0.18	0	0367S	QPSK	50	25	10 mm	bottom	1:1.58	0.846	1.138	0.963	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Body											
Spatial Peak										1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population										averaged over 1 gram											

Note: Blue entry represents variability measurement.

Table 11-17
WLAN Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	20.0	19.98	0.15	10 mm	2	0370S	1	back	99.9	0.382	-	1.005	1.001	-	
2412	1	802.11b	DSSS	22	20.0	19.98	0.16	10 mm	2	0370S	1	front	99.9	0.099	-	1.005	1.001	-	
2412	1	802.11b	DSSS	22	20.0	19.98	0.11	10 mm	2	0370S	1	top	99.9	0.554	0.353	1.005	1.001	0.355	A20
2412	1	802.11b	DSSS	22	20.0	19.98	0.13	10 mm	2	0370S	1	left	99.9	0.083	-	1.005	1.001	-	
5785	157	802.11a	OFDM	20	18.0	17.86	-0.07	10 mm	2	0367S	6	back	98.7	0.492	0.252	1.033	1.013	0.264	A22
5785	157	802.11a	OFDM	20	18.0	17.86	0.19	10 mm	2	0367S	6	front	98.7	0.029	-	1.033	1.013	-	
5785	157	802.11a	OFDM	20	18.0	17.86	-0.16	10 mm	2	0367S	6	top	98.7	0.247	-	1.033	1.013	-	
5785	157	802.11a	OFDM	20	18.0	17.86	0.12	10 mm	2	0367S	6	left	98.7	0.104	-	1.033	1.013	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Body											
Spatial Peak								1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population								averaged over 1 gram											

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11.4 Standalone Phablet SAR Data

Table 11-18
GPRS/UMTS/CDMA Phablet SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1732.40	1412	UMTS 1750	RMC	25.5	24.06	0.00	11 mm	0366S	N/A	1:1	back	0.507	1.393	0.706	
1732.40	1412	UMTS 1750	RMC	25.5	24.06	0.01	13 mm	0366S	N/A	1:1	bottom	0.699	1.393	0.974	A23
1880.00	9400	UMTS 1900	RMC	25.5	23.61	-0.08	11 mm	0366S	N/A	1:1	back	0.278	1.545	0.430	
1880.00	9400	UMTS 1900	RMC	25.5	23.61	-0.15	0 mm	0366S	N/A	1:1	front	0.782	1.545	1.208	
1880.00	9400	UMTS 1900	RMC	25.5	23.61	-0.11	13 mm	0366S	N/A	1:1	bottom	0.523	1.545	0.808	
1880.00	9400	UMTS 1900	RMC	25.5	23.61	0.15	0 mm	0366S	N/A	1:1	right	0.445	1.545	0.688	
1880.00	9400	UMTS 1900	RMC	25.5	23.61	-0.07	0 mm	0366S	N/A	1:1	left	0.247	1.545	0.382	
1880.00	9400	UMTS 1900	RMC	20.0	19.23	-0.19	0 mm	0369S	N/A	1:1	back	0.863	1.194	1.030	
1852.40	9262	UMTS 1900	RMC	20.0	19.06	-0.16	0 mm	0369S	N/A	1:1	bottom	2.500	1.242	3.105	
1880.00	9400	UMTS 1900	RMC	20.0	19.23	-0.18	0 mm	0369S	N/A	1:1	bottom	2.610	1.194	3.116	A24
1907.60	9538	UMTS 1900	RMC	20.0	19.00	-0.14	0 mm	0369S	N/A	1:1	bottom	2.510	1.259	3.160	
1880.00	9400	UMTS 1900	RMC	20.0	19.23	-0.11	0 mm	0369S	N/A	1:1	bottom	2.530	1.194	3.021	
1880.00	661	GSM 1900	GPRS	30.5	28.58	-0.19	11 mm	0369S	2	1:4.15	back	0.145	1.556	0.226	
1880.00	661	GSM 1900	GPRS	30.5	28.58	0.01	13 mm	0369S	2	1:4.15	bottom	0.489	1.556	0.761	
1880.00	661	GSM 1900	GPRS	25.0	23.75	0.07	0 mm	0369S	3	1:2.76	back	1.070	1.334	1.427	
1850.20	512	GSM 1900	GPRS	25.0	23.62	-0.14	0 mm	0369S	3	1:2.76	bottom	1.900	1.374	2.611	
1880.00	661	GSM 1900	GPRS	25.0	23.75	-0.18	0 mm	0369S	3	1:2.76	bottom	2.420	1.334	3.228	A25
1909.80	810	GSM 1900	GPRS	25.0	23.50	-0.16	0 mm	0369S	3	1:2.76	bottom	2.100	1.413	2.967	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.5	24.25	-0.11	11 mm	0365S	N/A	1:1	back	0.292	1.334	0.390	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.5	24.25	0.03	0 mm	0365S	N/A	1:1	front	0.831	1.334	1.109	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.5	24.25	-0.05	13 mm	0365S	N/A	1:1	bottom	0.631	1.334	0.842	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.5	24.25	-0.15	0 mm	0365S	N/A	1:1	right	0.465	1.334	0.620	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.5	24.25	0.05	0 mm	0365S	N/A	1:1	left	0.299	1.334	0.399	
1880.00	600	PCS CDMA	EVDO Rev. 0	19.5	19.18	-0.10	0 mm	0365S	N/A	1:1	back	0.893	1.076	0.961	
1851.25	25	PCS CDMA	EVDO Rev. 0	19.5	19.09	-0.12	0 mm	0365S	N/A	1:1	bottom	1.820	1.099	2.000	
1880.00	600	PCS CDMA	EVDO Rev. 0	19.5	19.18	-0.10	0 mm	0365S	N/A	1:1	bottom	1.960	1.076	2.109	A26
1908.75	1175	PCS CDMA	EVDO Rev. 0	19.5	19.02	-0.19	0 mm	0365S	N/A	1:1	bottom	1.920	1.117	2.145	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Phablet 4.0 W/kg (mW/g) averaged over 10 grams								

Note: Blue entry represents variability measurement.

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Table 11-19
LTE Band 66 (AWS) Phablet SAR

MEASUREMENT RESULTS																					
1 CC Uplink 2 CC Uplink	Component Carrier	FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
		MHz	Ch.	(W/kg)														(W/kg)			
1 CC Uplink	N/A	1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.22	0.01	0	0368S	QPSK	1	0	11 mm	back	1:1	0.496	1.197	0.594	
1 CC Uplink	N/A	1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.37	0.02	1	0368S	QPSK	50	0	11 mm	back	1:1	0.397	1.156	0.459	
1 CC Uplink	N/A	1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.22	-0.03	0	0368S	QPSK	1	0	0 mm	front	1:1	1.120	1.197	1.341	
1 CC Uplink	N/A	1745.00	132322	Mid	LTE Band 66 (AWS)	10	25.0	24.12	-0.06	0	0368S	QPSK	1	0	0 mm	front	1:1	1.160	1.225	1.421	
1 CC Uplink	N/A	1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.37	-0.05	1	0368S	QPSK	50	0	0 mm	front	1:1	0.878	1.156	1.015	
2 CC Uplink CA_66C	PCC	1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.33	-0.08	0	0368S	QPSK	1	0	0 mm	front	1:1	1.160	1.167	1.354	
	SCC	1725.20	132124	Mid	LTE Band 66 (AWS)	20							1	99							
2 CC Uplink CA_66B	PCC	1745.00	132322	Mid	LTE Band 66 (AWS)	10	25.0	24.43	0.15	0	0368S	QPSK	1	0	0 mm	front	1:1	1.260	1.140	1.436	A27
	SCC	1735.10	132223	Mid	LTE Band 66 (AWS)	10							1	49							
1 CC Uplink	N/A	1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.22	-0.04	0	0368S	QPSK	1	0	13 mm	bottom	1:1	0.654	1.197	0.783	
1 CC Uplink	N/A	1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.37	-0.02	1	0368S	QPSK	50	0	13 mm	bottom	1:1	0.531	1.156	0.614	
1 CC Uplink	N/A	1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.22	-0.01	0	0368S	QPSK	1	0	0 mm	right	1:1	0.619	1.197	0.741	
1 CC Uplink	N/A	1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.37	0.02	1	0368S	QPSK	50	0	0 mm	right	1:1	0.524	1.156	0.606	
1 CC Uplink	N/A	1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.22	0.03	0	0368S	QPSK	1	0	0 mm	left	1:1	0.433	1.197	0.518	
1 CC Uplink	N/A	1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.37	-0.01	1	0368S	QPSK	50	0	0 mm	left	1:1	0.372	1.156	0.430	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT																					
Spatial Peak										Phablet											
Uncontrolled Exposure/General Population										4.0 W/kg (mW/g)											
										averaged over 10 grams											

Table 11-20
LTE Band 25 (PCS) Phablet SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.0	23.43	-0.07	0	0369S	QPSK	1	0	11 mm	back	1:1	0.298	1.435	0.428	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	22.50	-0.08	1	0369S	QPSK	50	25	11 mm	back	1:1	0.235	1.413	0.332	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.0	23.43	-0.16	0	0369S	QPSK	1	0	0 mm	front	1:1	0.933	1.435	1.339	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	22.50	-0.15	1	0369S	QPSK	50	25	0 mm	front	1:1	0.767	1.413	1.084	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.0	23.43	-0.01	0	0369S	QPSK	1	0	13 mm	bottom	1:1	0.521	1.435	0.748	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	22.50	-0.04	1	0369S	QPSK	50	25	13 mm	bottom	1:1	0.441	1.413	0.623	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.0	23.43	-0.06	0	0369S	QPSK	1	0	0 mm	right	1:1	0.492	1.435	0.706	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	22.50	-0.10	1	0369S	QPSK	50	25	0 mm	right	1:1	0.401	1.413	0.567	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.0	23.43	-0.01	0	0369S	QPSK	1	0	0 mm	left	1:1	0.237	1.435	0.340	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	22.50	0.04	1	0369S	QPSK	50	25	0 mm	left	1:1	0.191	1.413	0.270	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.0	19.04	-0.12	0	0369S	QPSK	1	0	0 mm	back	1:1	0.936	1.247	1.167	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.0	19.07	-0.15	0	0369S	QPSK	50	25	0 mm	back	1:1	0.939	1.239	1.163	
1860.00	26140	Low	LTE Band 25 (PCS)	20	20.0	18.96	-0.16	0	0369S	QPSK	1	99	0 mm	bottom	1:1	1.790	1.271	2.275	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.0	19.04	-0.13	0	0369S	QPSK	1	0	0 mm	bottom	1:1	1.930	1.247	2.407	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.0	18.79	-0.15	0	0369S	QPSK	1	99	0 mm	bottom	1:1	1.860	1.321	2.457	
1860.00	26140	Low	LTE Band 25 (PCS)	20	20.0	19.04	-0.13	0	0369S	QPSK	50	50	0 mm	bottom	1:1	1.910	1.247	2.382	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.0	19.07	-0.14	0	0369S	QPSK	50	25	0 mm	bottom	1:1	2.010	1.239	2.490	A28
1905.00	26590	High	LTE Band 25 (PCS)	20	20.0	18.88	-0.14	0	0369S	QPSK	50	25	0 mm	bottom	1:1	2.000	1.294	2.588	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.0	19.00	-0.15	0	0369S	QPSK	100	0	0 mm	bottom	1:1	2.000	1.259	2.518	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Phablet 4.0 W/kg (mW/g) averaged over 10 grams									

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Table 11-21
LTE Band 30 Phablet SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2310.00	27710	Mid	LTE Band 30	10	25.0	24.28	-0.09	0	0366S	QPSK	1	0	11 mm	back	1:1	0.345	1.180	0.407	
2310.00	27710	Mid	LTE Band 30	10	24.0	23.35	-0.09	1	0366S	QPSK	25	0	11 mm	back	1:1	0.283	1.161	0.329	
2310.00	27710	Mid	LTE Band 30	10	25.0	24.28	-0.05	0	0366S	QPSK	1	0	13 mm	bottom	1:1	0.565	1.180	0.667	
2310.00	27710	Mid	LTE Band 30	10	24.0	23.35	-0.04	1	0366S	QPSK	25	0	13 mm	bottom	1:1	0.468	1.161	0.543	
2310.00	27710	Mid	LTE Band 30	10	20.0	19.56	-0.01	0	0366S	QPSK	1	0	0 mm	back	1:1	0.874	1.107	0.968	
2310.00	27710	Mid	LTE Band 30	10	20.0	19.60	0.00	0	0366S	QPSK	25	12	0 mm	back	1:1	0.908	1.096	0.995	
2310.00	27710	Mid	LTE Band 30	10	20.0	19.56	-0.19	0	0366S	QPSK	1	0	0 mm	bottom	1:1	2.090	1.107	2.314	
2310.00	27710	Mid	LTE Band 30	10	20.0	19.60	-0.16	0	0366S	QPSK	25	12	0 mm	bottom	1:1	2.220	1.096	2.433	A29
2310.00	27710	Mid	LTE Band 30	10	20.0	19.50	-0.15	0	0366S	QPSK	50	0	0 mm	bottom	1:1	2.210	1.122	2.480	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Phablet 4.0 W/kg (mW/g) averaged over 10 grams											

Table 11-22
LTE Band 7 Phablet SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2510.00	20850	Low	LTE Band 7	20	25.0	24.72	0.03	0	0367S	QPSK	1	99	11 mm	back	1:1	0.168	1.067	0.179	
2510.00	20850	Low	LTE Band 7	20	24.0	23.76	-0.01	1	0367S	QPSK	50	0	11 mm	back	1:1	0.141	1.057	0.149	
2510.00	20850	Low	LTE Band 7	20	25.0	24.72	-0.06	0	0367S	QPSK	1	99	13 mm	bottom	1:1	0.625	1.067	0.667	A30
2510.00	20850	Low	LTE Band 7	20	24.0	23.76	0.16	1	0367S	QPSK	50	0	13 mm	bottom	1:1	0.481	1.057	0.508	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Phablet 4.0 W/kg (mW/g) averaged over 10 grams											

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Table 11-23
LTE Band 38 Phablet SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.	(W/kg)														(W/kg)			
2595.00	38000	Mid	LTE Band 38	20	25.0	24.26	0.06	0	0367S	QPSK	1	0	11 mm	back	1:1.58	0.123	1.186	0.146	
2595.00	38000	Mid	LTE Band 38	20	24.0	23.38	0.00	1	0367S	QPSK	50	25	11 mm	back	1:1.58	0.098	1.153	0.113	
2595.00	38000	Mid	LTE Band 38	20	25.0	24.26	-0.13	0	0367S	QPSK	1	0	0 mm	front	1:1.58	2.060	1.186	2.443	
2595.00	38000	Mid	LTE Band 38	20	24.0	23.38	-0.13	1	0367S	QPSK	50	25	0 mm	front	1:1.58	1.710	1.153	1.972	
2595.00	38000	Mid	LTE Band 38	20	24.0	23.36	-0.19	1	0367S	QPSK	100	0	0 mm	front	1:1.58	1.580	1.159	1.831	
2595.00	38000	Mid	LTE Band 38	20	25.0	24.26	-0.06	0	0367S	QPSK	1	0	13 mm	bottom	1:1.58	0.392	1.186	0.465	
2595.00	38000	Mid	LTE Band 38	20	24.0	23.38	-0.09	1	0367S	QPSK	50	25	13 mm	bottom	1:1.58	0.306	1.153	0.353	
2595.00	38000	Mid	LTE Band 38	20	25.0	24.26	-0.15	0	0367S	QPSK	1	0	0 mm	right	1:1.58	0.559	1.186	0.663	
2595.00	38000	Mid	LTE Band 38	20	24.0	23.38	-0.12	1	0367S	QPSK	50	25	0 mm	right	1:1.58	0.449	1.153	0.518	
2595.00	38000	Mid	LTE Band 38	20	25.0	24.26	0.03	0	0367S	QPSK	1	0	0 mm	left	1:1.58	0.074	1.186	0.088	
2595.00	38000	Mid	LTE Band 38	20	24.0	23.38	-0.06	1	0367S	QPSK	50	25	0 mm	left	1:1.58	0.059	1.153	0.068	
2595.00	38000	Mid	LTE Band 38	20	21.0	19.84	-0.19	0	0367S	QPSK	1	0	0 mm	back	1:1.58	0.453	1.306	0.592	
2595.00	38000	Mid	LTE Band 38	20	21.0	19.96	-0.09	0	0367S	QPSK	50	50	0 mm	back	1:1.58	0.437	1.271	0.555	
2595.00	38000	Mid	LTE Band 38	20	21.0	19.84	-0.13	0	0367S	QPSK	1	0	0 mm	bottom	1:1.58	2.060	1.306	2.690	
2595.00	38000	Mid	LTE Band 38	20	21.0	19.96	-0.10	0	0367S	QPSK	50	50	0 mm	bottom	1:1.58	2.180	1.271	2.771	A31
2595.00	38000	Mid	LTE Band 38	20	21.0	19.83	-0.09	0	0367S	QPSK	100	0	0 mm	bottom	1:1.58	2.170	1.309	2.841	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Phablet 4.0 W/kg (mW/g) averaged over 10 grams											

Table 11-24
LTE Band 41 Phablet SAR

MEASUREMENT RESULTS																					
1 CC Uplink 2 CC Uplink, Power Class	Component Carrier	FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
		MHz		Ch.														(W/kg)		(W/kg)	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.0	23.62	0.03	0	0368S	QPSK	1	99	11 mm	back	1:1.58	0.093	1.091	0.101	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.83	-0.08	1	0368S	QPSK	50	50	11 mm	back	1:1.58	0.079	1.040	0.082	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.0	23.62	0.01	0	0368S	QPSK	1	99	0 mm	front	1:1.58	1.440	1.091	1.571	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	24.0	23.40	-0.18	0	0368S	QPSK	1	0	0 mm	front	1:1.58	1.250	1.148	1.435	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Md	LTE Band 41	20	24.0	23.08	0.00	0	0368S	QPSK	1	0	0 mm	front	1:1.58	1.160	1.236	1.434	
1 CC Uplink - Power Class 3	N/A	2636.50	41055	Mid-High	LTE Band 41	20	24.0	23.20	0.03	0	0368S	QPSK	1	0	0 mm	front	1:1.58	1.210	1.202	1.454	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	24.0	23.39	0.02	0	0368S	QPSK	1	99	0 mm	front	1:1.58	1.150	1.151	1.324	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.83	0.00	1	0368S	QPSK	50	50	0 mm	front	1:1.58	1.120	1.040	1.165	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.76	0.00	1	0368S	QPSK	100	0	0 mm	front	1:1.58	1.130	1.057	1.194	
1 CC Uplink - Power Class 2	N/A	2506.00	39750	Low	LTE Band 41	20	27.0	26.22	0.07	0	0368S	QPSK	1	99	0 mm	front	1:2.31	1.900	1.197	2.274	
2 CC Uplink - Power Class 3	PCC	2506.00	39750	Low	LTE Band 41	20	24.0	23.98	-0.13	0	0368S	QPSK	1	99	0 mm	front	1:1.58	1.620	1.005	1.628	
	SCC	2525.80	39948	Low	LTE Band 41								1	0							
2 CC Uplink - Power Class 2	PCC	2506.00	39750	Low	LTE Band 41	20	27.0	26.69	-0.10	0	0368S	QPSK	1	99	0 mm	front	1:2.31	2.160	1.074	2.320	A32
	SCC	2525.80	39948	Low	LTE Band 41								1	0							
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.0	23.62	-0.20	0	0368S	QPSK	1	99	13 mm	bottom	1:1.58	0.378	1.091	0.412	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.83	-0.11	1	0368S	QPSK	50	50	13 mm	bottom	1:1.58	0.321	1.040	0.334	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.0	23.62	-0.12	0	0368S	QPSK	1	99	0 mm	right	1:1.58	0.337	1.091	0.368	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.83	-0.10	1	0368S	QPSK	50	50	0 mm	right	1:1.58	0.218	1.040	0.227	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.0	23.62	-0.14	0	0368S	QPSK	1	99	0 mm	left	1:1.58	0.198	1.091	0.216	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.83	-0.18	1	0368S	QPSK	50	50	0 mm	left	1:1.58	0.165	1.040	0.172	
2 CC Uplink - Power Class 2	PCC	2506.00	39750	Low	LTE Band 41	20	27.0	26.69	-0.15	0	0368S	QPSK	1	99	0 mm	front	1:2.31	2.160	1.074	2.320	
	SCC	2525.80	39948	Low	LTE Band 41								1	0							
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Phablet											
Spatial Peak										4.0 W/kg (mW/g)											
Uncontrolled Exposure/General Population										averaged over 10 grams											

Note: Blue entry represents variability measurement.

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Table 11-25
WLAN Phablet SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5280	56	802.11a	OFDM	20	18.0	17.99	0.08	0 mm	2	0367S	6	back	98.7	5.614	0.893	1.002	1.013	0.906	
5280	56	802.11a	OFDM	20	18.0	17.99	-0.18	0 mm	2	0367S	6	front	98.7	0.384	-	1.002	1.013	-	
5280	56	802.11a	OFDM	20	18.0	17.99	-0.14	0 mm	2	0367S	6	top	98.7	3.489	-	1.002	1.013	-	
5280	56	802.11a	OFDM	20	18.0	17.99	-0.10	0 mm	2	0367S	6	left	98.7	0.273	-	1.002	1.013	-	
5720	144	802.11a	OFDM	20	18.0	17.98	0.01	0 mm	2	0367S	6	back	98.7	9.262	1.200	1.005	1.013	1.222	A33
5720	144	802.11a	OFDM	20	18.0	17.98	0.00	0 mm	2	0367S	6	front	98.7	0.249	-	1.005	1.013	-	
5720	144	802.11a	OFDM	20	18.0	17.98	-0.19	0 mm	2	0367S	6	top	98.7	6.015	0.523	1.005	1.013	0.532	
5720	144	802.11a	OFDM	20	18.0	17.98	0.10	0 mm	2	0367S	6	left	98.7	0.387	-	1.005	1.013	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Phablet 4.0 W/kg (mW/g) averaged over 10 grams											

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11.5 Standalone UMPC Body SAR

Table 11-26
GPRS/UMTS/CDMA UMPC Body SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
824.20	128	GSM 850	GPRS	31.0	29.80	-0.11	10 mm	0365S	3	1:2.76	back	0.626	1.318	0.825	
836.60	190	GSM 850	GPRS	31.0	29.88	-0.10	10 mm	0365S	3	1:2.76	back	0.617	1.294	0.798	
848.80	251	GSM 850	GPRS	31.0	29.70	-0.10	10 mm	0365S	3	1:2.76	back	0.715	1.349	0.965	A34
836.60	190	GSM 850	GPRS	31.0	29.88	0.02	10 mm	0365S	3	1:2.76	front	0.563	1.294	0.729	
836.60	190	GSM 850	GPRS	31.0	29.88	-0.09	10 mm	0365S	3	1:2.76	bottom	0.568	1.294	0.735	
836.60	190	GSM 850	GPRS	31.0	29.88	0.02	10 mm	0365S	3	1:2.76	right	0.406	1.294	0.525	
1732.40	1412	UMTS 1750	RMC	25.5	24.06	0.02	12 mm	0366S	N/A	1:1	back	0.525	1.393	0.731	
1732.40	1412	UMTS 1750	RMC	20.5	19.40	0.15	10 mm	0366S	N/A	1:1	back	0.275	1.288	0.354	
1712.40	1312	UMTS 1750	RMC	25.5	24.00	0.17	11 mm	0366S	N/A	1:1	front	0.508	1.413	0.718	
1732.40	1412	UMTS 1750	RMC	25.5	24.06	0.01	11 mm	0366S	N/A	1:1	front	0.529	1.393	0.737	
1752.60	1513	UMTS 1750	RMC	25.5	23.89	0.02	11 mm	0366S	N/A	1:1	front	0.582	1.449	0.843	A35
1732.40	1412	UMTS 1750	RMC	20.5	19.40	0.04	10 mm	0366S	N/A	1:1	front	0.254	1.288	0.327	
1732.40	1412	UMTS 1750	RMC	25.5	24.06	0.03	16 mm	0366S	N/A	1:1	bottom	0.476	1.393	0.663	
1880.00	661	GSM 1900	GPRS	30.5	28.58	0.09	12 mm	0368S	2	1:4.15	back	0.274	1.556	0.426	
1880.00	661	GSM 1900	GPRS	25.0	23.75	-0.06	10 mm	0369S	3	1:2.76	back	0.225	1.334	0.300	
1880.00	661	GSM 1900	GPRS	30.5	28.58	0.01	11 mm	0368S	2	1:4.15	front	0.285	1.556	0.443	
1880.00	661	GSM 1900	GPRS	25.0	23.75	-0.11	10 mm	0369S	3	1:2.76	front	0.263	1.334	0.351	
1880.00	661	GSM 1900	GPRS	30.5	28.58	-0.08	16 mm	0368S	2	1:4.15	bottom	0.203	1.556	0.316	
1850.20	512	GSM 1900	GPRS	25.0	23.62	-0.04	10 mm	0369S	3	1:2.76	bottom	0.496	1.374	0.682	
1880.00	661	GSM 1900	GPRS	25.0	23.75	0.18	10 mm	0369S	3	1:2.76	bottom	0.548	1.334	0.731	
1909.80	810	GSM 1900	GPRS	25.0	23.50	-0.11	10 mm	0369S	3	1:2.76	bottom	0.574	1.413	0.811	A36
1852.40	9262	UMTS 1900	RMC	25.5	23.50	0.02	12 mm	0369S	N/A	1:1	back	0.406	1.585	0.644	
1880.00	9400	UMTS 1900	RMC	25.5	23.61	-0.02	12 mm	0369S	N/A	1:1	back	0.569	1.545	0.879	
1907.60	9538	UMTS 1900	RMC	25.5	23.64	0.00	12 mm	0369S	N/A	1:1	back	0.430	1.535	0.660	
1880.00	9400	UMTS 1900	RMC	20.0	19.23	-0.02	10 mm	0366S	N/A	1:1	back	0.355	1.194	0.424	
1852.40	9262	UMTS 1900	RMC	25.5	23.50	0.02	11 mm	0369S	N/A	1:1	front	0.617	1.585	0.978	
1880.00	9400	UMTS 1900	RMC	25.5	23.61	-0.05	11 mm	0369S	N/A	1:1	front	0.546	1.545	0.844	
1907.60	9538	UMTS 1900	RMC	25.5	23.64	-0.01	11 mm	0369S	N/A	1:1	front	0.465	1.535	0.714	
1880.00	9400	UMTS 1900	RMC	20.0	19.23	-0.01	10 mm	0366S	N/A	1:1	front	0.308	1.194	0.368	
1852.40	9262	UMTS 1900	RMC	25.5	23.50	0.00	16 mm	0366S	N/A	1:1	bottom	0.756	1.585	1.198	
1880.00	9400	UMTS 1900	RMC	25.5	23.61	-0.03	16 mm	0366S	N/A	1:1	bottom	0.797	1.545	1.231	A37
1907.60	9538	UMTS 1900	RMC	25.5	23.64	0.00	16 mm	0366S	N/A	1:1	bottom	0.729	1.535	1.119	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.5	24.25	-0.02	12 mm	0366S	N/A	1:1	back	0.486	1.334	0.648	
1880.00	600	PCS CDMA	EVDO Rev. 0	19.5	19.18	-0.11	10 mm	0370S	N/A	1:1	back	0.226	1.076	0.243	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.5	24.25	0.01	11 mm	0366S	N/A	1:1	front	0.586	1.334	0.782	
1880.00	600	PCS CDMA	EVDO Rev. 0	19.5	19.18	0.00	10 mm	0370S	N/A	1:1	front	0.190	1.076	0.204	
1851.25	25	PCS CDMA	EVDO Rev. 0	25.5	24.16	0.02	16 mm	0366S	N/A	1:1	bottom	0.596	1.361	0.811	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.5	24.25	-0.01	16 mm	0366S	N/A	1:1	bottom	0.612	1.334	0.816	
1908.75	1175	PCS CDMA	EVDO Rev. 0	25.5	24.05	-0.05	16 mm	0366S	N/A	1:1	bottom	0.624	1.396	0.871	A38
1880.00	600	PCS CDMA	EVDO Rev. 0	19.5	19.18	-0.14	10 mm	0370S	N/A	1:1	bottom	0.465	1.076	0.500	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.5	24.25	0.01	10 mm	0366S	N/A	1:1	right	0.197	1.334	0.263	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak							UMPC Body 1.6 W/kg (mW/g) averaged over 1 gram								
Uncontrolled Exposure/General Population															

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Table 11-27
LTE Band 66 (AWS) UMPC Body SAR

MEASUREMENT RESULTS																					
1 CC Uplink 2 CC Uplink	Component Carrier	FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
		MHz	Ch.														(W/kg)		(W/kg)		
1 CC Uplink	N/A	1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.22	0.01	0	0366S	QPSK	1	0	12 mm	back	1:1	0.485	1.197	0.581	
1 CC Uplink	N/A	1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.37	0.01	1	0366S	QPSK	50	0	12 mm	back	1:1	0.398	1.156	0.460	
1 CC Uplink	N/A	1720.00	132072	Low	LTE Band 66 (AWS)	20	20.0	19.99	0.04	0	0366S	QPSK	1	99	10 mm	back	1:1	0.268	1.002	0.269	
1 CC Uplink	N/A	1720.00	132072	Low	LTE Band 66 (AWS)	20	20.0	19.94	0.00	0	0366S	QPSK	50	50	10 mm	back	1:1	0.266	1.014	0.270	
1 CC Uplink	N/A	1720.00	132072	Low	LTE Band 66 (AWS)	20	25.0	24.19	0.02	0	0366S	QPSK	1	0	11 mm	front	1:1	0.504	1.205	0.607	
1 CC Uplink	N/A	1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.22	0.00	0	0366S	QPSK	1	0	11 mm	front	1:1	0.555	1.197	0.664	
1 CC Uplink	N/A	1770.00	132572	High	LTE Band 66 (AWS)	20	25.0	24.21	0.00	0	0366S	QPSK	1	0	11 mm	front	1:1	0.602	1.199	0.722	
1 CC Uplink	N/A	1775.00	132622	High	LTE Band 66 (AWS)	10	25.0	24.00	-0.03	0	0366S	QPSK	1	0	11 mm	front	1:1	0.575	1.259	0.724	
1 CC Uplink	N/A	1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.37	0.01	1	0366S	QPSK	50	0	11 mm	front	1:1	0.454	1.156	0.525	
1 CC Uplink	N/A	1720.00	132072	Low	LTE Band 66 (AWS)	20	20.0	19.99	0.00	0	0366S	QPSK	1	99	10 mm	front	1:1	0.245	1.002	0.245	
1 CC Uplink	N/A	1720.00	132072	Low	LTE Band 66 (AWS)	20	20.0	19.94	0.03	0	0366S	QPSK	50	50	10 mm	front	1:1	0.240	1.014	0.243	
2 CC Uplink CA_66C	PCC	1770.00	132572	High	LTE Band 66 (AWS)	20	25.0	23.99	-0.05	0	0366S	QPSK	1	0	11 mm	front	1:1	0.588	1.262	0.742	
	SCC	1750.20	132374	High	LTE Band 66 (AWS)	20							1	99							
2 CC Uplink CA_66B	PCC	1775.00	132622	High	LTE Band 66 (AWS)	10	25.0	24.40	-0.03	0	0366S	QPSK	1	0	11 mm	front	1:1	0.645	1.148	0.740	A39
	SCC	1765.10	132523	High	LTE Band 66 (AWS)	10							1	49							
1 CC Uplink	N/A	1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.22	0.04	0	0366S	QPSK	1	0	16 mm	bottom	1:1	0.466	1.197	0.558	
1 CC Uplink	N/A	1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.37	-0.03	1	0366S	QPSK	50	0	16 mm	bottom	1:1	0.403	1.156	0.466	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										UMPC Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-28
LTE Band 25 (PCS) UMPC Body SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.	(W/kg)														(W/kg)			
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.0	23.43	-0.08	0	0369S	QPSK	1	0	12 mm	back	1:1	0.461	1.435	0.662	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	22.50	-0.06	1	0369S	QPSK	50	25	12 mm	back	1:1	0.370	1.413	0.523	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.0	19.04	-0.01	0	0369S	QPSK	1	0	10 mm	back	1:1	0.205	1.247	0.256	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.0	19.07	0.06	0	0369S	QPSK	50	25	10 mm	back	1:1	0.206	1.239	0.255	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	23.24	0.02	0	0369S	QPSK	1	0	11 mm	front	1:1	0.475	1.500	0.713	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.0	23.43	-0.02	0	0369S	QPSK	1	0	11 mm	front	1:1	0.517	1.435	0.742	A40
1905.00	26590	High	LTE Band 25 (PCS)	20	25.0	23.30	0.00	0	0369S	QPSK	1	0	11 mm	front	1:1	0.456	1.479	0.674	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	22.50	0.01	1	0369S	QPSK	50	25	11 mm	front	1:1	0.418	1.413	0.591	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.0	19.04	-0.02	0	0369S	QPSK	1	0	10 mm	front	1:1	0.209	1.247	0.261	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.0	19.07	-0.01	0	0369S	QPSK	50	25	10 mm	front	1:1	0.212	1.239	0.263	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.0	23.43	0.05	0	0369S	QPSK	1	0	16 mm	bottom	1:1	0.505	1.435	0.725	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	22.50	-0.06	1	0369S	QPSK	50	25	16 mm	bottom	1:1	0.414	1.413	0.585	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.0	19.04	-0.05	0	0369S	QPSK	1	0	10 mm	bottom	1:1	0.451	1.247	0.562	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.0	19.07	-0.03	0	0369S	QPSK	50	25	10 mm	bottom	1:1	0.481	1.239	0.596	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								UMPC Body											
Spatial Peak								1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population								averaged over 1 gram											

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Table 11-29
LTE Band 30 UMPC Body SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.	(W/kg)														(W/kg)			
2310.00	27710	Mid	LTE Band 30	10	25.0	24.28	-0.12	0	0367S	QPSK	1	0	12 mm	back	1:1	0.591	1.180	0.697	
2310.00	27710	Mid	LTE Band 30	10	24.0	23.35	0.18	1	0367S	QPSK	25	0	12 mm	back	1:1	0.493	1.161	0.572	
2310.00	27710	Mid	LTE Band 30	10	20.0	19.56	-0.01	0	0367S	QPSK	1	0	10 mm	back	1:1	0.244	1.107	0.270	
2310.00	27710	Mid	LTE Band 30	10	20.0	19.60	-0.05	0	0367S	QPSK	25	12	10 mm	back	1:1	0.255	1.096	0.279	
2310.00	27710	Mid	LTE Band 30	10	25.0	24.28	0.01	0	0367S	QPSK	1	0	11 mm	front	1:1	0.698	1.180	0.824	
2310.00	27710	Mid	LTE Band 30	10	24.0	23.35	-0.09	1	0367S	QPSK	25	0	11 mm	front	1:1	0.572	1.161	0.664	
2310.00	27710	Mid	LTE Band 30	10	24.0	23.34	-0.02	1	0367S	QPSK	50	0	11 mm	front	1:1	0.566	1.164	0.659	
2310.00	27710	Mid	LTE Band 30	10	20.0	19.56	0.02	0	0367S	QPSK	1	0	10 mm	front	1:1	0.237	1.107	0.262	
2310.00	27710	Mid	LTE Band 30	10	20.0	19.60	-0.04	0	0367S	QPSK	25	12	10 mm	front	1:1	0.243	1.096	0.266	
2310.00	27710	Mid	LTE Band 30	10	25.0	24.28	0.02	0	0367S	QPSK	1	0	16 mm	bottom	1:1	0.728	1.180	0.859	A41
2310.00	27710	Mid	LTE Band 30	10	24.0	23.35	-0.01	1	0367S	QPSK	25	0	16 mm	bottom	1:1	0.610	1.161	0.708	
2310.00	27710	Mid	LTE Band 30	10	24.0	23.34	-0.01	1	0367S	QPSK	50	0	16 mm	bottom	1:1	0.607	1.164	0.707	
2310.00	27710	Mid	LTE Band 30	10	20.0	19.56	-0.06	0	0367S	QPSK	1	0	10 mm	bottom	1:1	0.533	1.107	0.590	
2310.00	27710	Mid	LTE Band 30	10	20.0	19.60	-0.04	0	0367S	QPSK	25	12	10 mm	bottom	1:1	0.563	1.096	0.617	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								UMPC Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-30
LTE Band 7 UMPC Body SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.	(W/kg)														(W/kg)			
2510.00	20850	Low	LTE Band 7	20	25.0	24.72	-0.02	0	0367S	QPSK	1	99	12 mm	back	1:1	0.716	1.067	0.764	
2510.00	20850	Low	LTE Band 7	20	24.0	23.76	-0.04	1	0367S	QPSK	50	0	12 mm	back	1:1	0.533	1.057	0.563	
2510.00	20850	Low	LTE Band 7	20	19.5	19.19	-0.06	0	0367S	QPSK	1	99	10 mm	back	1:1	0.329	1.074	0.353	
2510.00	20850	Low	LTE Band 7	20	19.5	19.32	-0.10	0	0367S	QPSK	50	50	10 mm	back	1:1	0.332	1.042	0.346	
2510.00	20850	Low	LTE Band 7	20	25.0	24.72	-0.09	0	0367S	QPSK	1	99	11 mm	front	1:1	0.842	1.067	0.898	
2535.00	21100	Mid	LTE Band 7	20	25.0	24.48	-0.09	0	0367S	QPSK	1	0	11 mm	front	1:1	0.722	1.127	0.814	
2560.00	21350	High	LTE Band 7	20	25.0	24.35	-0.04	0	0367S	QPSK	1	0	11 mm	front	1:1	0.588	1.161	0.683	
2510.00	20850	Low	LTE Band 7	20	24.0	23.76	-0.06	1	0367S	QPSK	50	0	11 mm	front	1:1	0.629	1.057	0.665	
2510.00	20850	Low	LTE Band 7	20	24.0	23.55	-0.08	1	0367S	QPSK	100	0	11 mm	front	1:1	0.650	1.109	0.721	
2510.00	20850	Low	LTE Band 7	20	19.5	19.19	0.00	0	0367S	QPSK	1	99	10 mm	front	1:1	0.301	1.074	0.323	
2510.00	20850	Low	LTE Band 7	20	19.5	19.32	0.02	0	0367S	QPSK	50	50	10 mm	front	1:1	0.303	1.042	0.316	
2510.00	20850	Low	LTE Band 7	20	25.0	24.72	-0.16	0	0367S	QPSK	1	99	16 mm	bottom	1:1	0.858	1.067	0.915	A42
2535.00	21100	Mid	LTE Band 7	20	25.0	24.48	-0.13	0	0367S	QPSK	1	0	16 mm	bottom	1:1	0.744	1.127	0.838	
2560.00	21350	High	LTE Band 7	20	25.0	24.35	-0.04	0	0367S	QPSK	1	0	16 mm	bottom	1:1	0.570	1.161	0.662	
2510.00	20850	Low	LTE Band 7	20	24.0	23.76	-0.10	1	0367S	QPSK	50	0	16 mm	bottom	1:1	0.645	1.057	0.682	
2510.00	20850	Low	LTE Band 7	20	24.0	23.55	-0.14	1	0367S	QPSK	100	0	16 mm	bottom	1:1	0.669	1.109	0.742	
2510.00	20850	Low	LTE Band 7	20	19.5	19.19	-0.05	0	0367S	QPSK	1	99	10 mm	bottom	1:1	0.670	1.074	0.720	
2510.00	20850	Low	LTE Band 7	20	19.5	19.32	-0.03	0	0367S	QPSK	50	50	10 mm	bottom	1:1	0.683	1.042	0.712	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								UMPC Body 1.6 W/kg (mW/g) averaged over 1 gram											

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Table 11-31
LTE Band 38 UMPC Body SAR

MEASUREMENT RESULTS																					
1 CC Uplink 2 CC Uplink	Component Carrier	FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
		MHz	Ch.														(W/kg)		(W/kg)		
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	25.0	24.26	0.01	0	0367S	QPSK	1	0	12 mm	back	1:1.58	0.644	1.186	0.764	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	24.0	23.38	-0.02	1	0367S	QPSK	50	25	12 mm	back	1:1.58	0.512	1.153	0.590	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	24.0	23.36	-0.05	1	0367S	QPSK	100	0	12 mm	back	1:1.58	0.511	1.159	0.592	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	21.0	19.84	-0.07	0	0367S	QPSK	1	0	10 mm	back	1:1.58	0.373	1.306	0.487	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	21.0	19.96	-0.07	0	0367S	QPSK	50	50	10 mm	back	1:1.58	0.370	1.271	0.470	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	25.0	24.26	-0.10	0	0367S	QPSK	1	0	11 mm	front	1:1.58	0.684	1.186	0.811	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	24.0	23.38	-0.06	1	0367S	QPSK	50	25	11 mm	front	1:1.58	0.547	1.153	0.631	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	24.0	23.36	-0.07	1	0367S	QPSK	100	0	11 mm	front	1:1.58	0.544	1.159	0.630	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	21.0	19.84	-0.02	0	0367S	QPSK	1	0	10 mm	front	1:1.58	0.316	1.306	0.413	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	21.0	19.96	-0.04	0	0367S	QPSK	50	50	10 mm	front	1:1.58	0.313	1.271	0.398	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	25.0	24.26	-0.04	0	0367S	QPSK	1	0	16 mm	bottom	1:1.58	0.808	1.186	0.958	A43
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	15	25.0	24.12	-0.10	0	0367S	QPSK	1	0	16 mm	bottom	1:1.58	0.769	1.225	0.942	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	24.0	23.38	-0.10	1	0367S	QPSK	50	25	16 mm	bottom	1:1.58	0.636	1.153	0.733	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	24.0	23.36	-0.10	1	0367S	QPSK	100	0	16 mm	bottom	1:1.58	0.632	1.159	0.732	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	21.0	19.84	-0.08	0	0367S	QPSK	1	0	10 mm	bottom	1:1.58	0.591	1.306	0.772	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	21.0	19.96	-0.10	0	0367S	QPSK	50	50	10 mm	bottom	1:1.58	0.593	1.271	0.754	
2 CC Uplink	PCC	2595.00	38000	Mid	LTE Band 38	15	25.0	24.18	-0.18	0	0367S	QPSK	1	0	16 mm	bottom	1:1.58	0.789	1.208	0.953	
	SCC	2580.00	37850	Mid	LTE Band 38	15							1	74							
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	25.0	24.26	-0.05	0	0367S	QPSK	1	0	10 mm	right	1:1.58	0.326	1.186	0.387	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	24.0	23.38	-0.08	1	0367S	QPSK	50	25	10 mm	right	1:1.58	0.275	1.153	0.317	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										UMPC Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-32
LTE Band 41 UMPC Body SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.	(W/kg)														(W/kg)			
2506.00	39750	Low	LTE Band 41	20	24.0	23.62	-0.01	0	0367S	QPSK	1	99	12 mm	back	1:1.58	0.476	1.091	0.519	
2506.00	39750	Low	LTE Band 41	20	23.0	22.83	-0.04	1	0367S	QPSK	50	50	12 mm	back	1:1.58	0.386	1.040	0.401	
2506.00	39750	Low	LTE Band 41	20	21.5	20.31	-0.10	0	0367S	QPSK	1	0	10 mm	back	1:1.58	0.320	1.315	0.421	
2506.00	39750	Low	LTE Band 41	20	21.5	20.46	-0.09	0	0367S	QPSK	50	50	10 mm	back	1:1.58	0.339	1.271	0.431	
2506.00	39750	Low	LTE Band 41	20	24.0	23.62	-0.04	0	0367S	QPSK	1	99	11 mm	front	1:1.58	0.506	1.091	0.552	
2506.00	39750	Low	LTE Band 41	20	23.0	22.83	-0.02	1	0367S	QPSK	50	50	11 mm	front	1:1.58	0.413	1.040	0.430	
2506.00	39750	Low	LTE Band 41	20	21.5	20.31	-0.02	0	0367S	QPSK	1	0	10 mm	front	1:1.58	0.285	1.315	0.375	
2506.00	39750	Low	LTE Band 41	20	21.5	20.46	0.01	0	0367S	QPSK	50	50	10 mm	front	1:1.58	0.295	1.271	0.375	
2506.00	39750	Low	LTE Band 41	20	24.0	23.62	-0.07	0	0367S	QPSK	1	99	16 mm	bottom	1:1.58	0.573	1.091	0.625	
2549.50	40185	Low-Mid	LTE Band 41	20	24.0	23.40	0.00	0	0367S	QPSK	1	0	16 mm	bottom	1:1.58	0.593	1.148	0.681	
2593.00	40620	Mid	LTE Band 41	20	24.0	23.08	-0.05	0	0367S	QPSK	1	0	16 mm	bottom	1:1.58	0.615	1.236	0.760	
2636.50	41055	Mid-High	LTE Band 41	20	24.0	23.20	-0.09	0	0367S	QPSK	1	0	16 mm	bottom	1:1.58	0.628	1.202	0.755	A44
2680.00	41490	High	LTE Band 41	20	24.0	23.39	-0.05	0	0367S	QPSK	1	99	16 mm	bottom	1:1.58	0.569	1.151	0.655	
2506.00	39750	Low	LTE Band 41	20	23.0	22.83	-0.06	1	0367S	QPSK	50	50	16 mm	bottom	1:1.58	0.454	1.040	0.472	
2506.00	39750	Low	LTE Band 41	20	23.0	22.76	-0.06	1	0367S	QPSK	100	0	16 mm	bottom	1:1.58	0.449	1.057	0.475	
2506.00	39750	Low	LTE Band 41	20	24.0	23.62	0.00	0	0367S	QPSK	1	99	10 mm	right	1:1.58	0.221	1.091	0.241	
2506.00	39750	Low	LTE Band 41	20	23.0	22.83	-0.06	1	0367S	QPSK	50	50	10 mm	right	1:1.58	0.178	1.040	0.185	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								UMPC Body											
Spatial Peak								1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population								averaged over 1 gram											

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Table 11-33
WLAN UMPC Body SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	20.0	19.98	-0.10	10 mm	2	0370S	1	back	99.9	0.234	-	1.005	1.001	-	
2412	1	802.11b	DSSS	22	20.0	19.98	0.17	10 mm	2	0370S	1	front	99.9	0.190	-	1.005	1.001	-	
2412	1	802.11b	DSSS	22	20.0	19.98	0.14	10 mm	2	0370S	1	top	99.9	0.361	0.227	1.005	1.001	0.228	
5280	56	802.11a	OFDM	20	18.0	17.99	-0.11	10 mm	2	0367S	6	back	98.7	0.375	-	1.002	1.013	-	
5280	56	802.11a	OFDM	20	18.0	17.99	-0.19	10 mm	2	0367S	6	front	98.7	0.219	-	1.002	1.013	-	
5280	56	802.11a	OFDM	20	18.0	17.99	-0.15	10 mm	2	0367S	6	top	98.7	0.740	0.320	1.002	1.013	0.325	
5720	144	802.11a	OFDM	20	18.0	17.98	-0.10	10 mm	2	0367S	6	back	98.7	0.333	-	1.005	1.013	-	
5720	144	802.11a	OFDM	20	18.0	17.98	0.01	10 mm	2	0367S	6	front	98.7	0.117	-	1.005	1.013	-	
5720	144	802.11a	OFDM	20	18.0	17.98	-0.18	10 mm	2	0367S	6	top	98.7	0.462	0.193	1.005	1.013	0.196	
5785	157	802.11a	OFDM	20	18.0	17.86	-0.15	10 mm	2	0367S	6	back	98.7	0.440	-	1.033	1.013	-	
5785	157	802.11a	OFDM	20	18.0	17.86	-0.11	10 mm	2	0367S	6	front	98.7	0.111	-	1.033	1.013	-	
5785	157	802.11a	OFDM	20	18.0	17.86	-0.17	10 mm	2	0367S	6	top	98.7	0.441	0.173	1.033	1.013	0.181	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								UMPC Body											
Spatial Peak								1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population								averaged over 1 gram											

Table 11-34
DTS WLAN MIMO UMPC Body SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
2452	9	802.11n	OFDM	20	18.0	17.96	18.0	17.85	-0.03	10 mm	MIMO	0370S	13	back	98.7	0.460	0.301	1.035	1.013	0.316	
2452	9	802.11n	OFDM	20	18.0	17.96	18.0	17.85	0.10	10 mm	MIMO	0370S	13	front	98.7	0.315	0.204	1.035	1.013	0.214	
2452	9	802.11n	OFDM	20	18.0	17.96	18.0	17.85	0.12	10 mm	MIMO	0370S	13	top	98.7	0.807	0.527	1.035	1.013	0.553	A45
2452	9	802.11n	OFDM	20	18.0	17.96	18.0	17.85	0.03	10 mm	MIMO	0370S	13	right	98.7	0.342	0.235	1.035	1.013	0.246	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										UMPC Body											
Spatial Peak										1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population										averaged over 1 gram											

Note: To achieve the 21.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 18.0 dBm.

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Table 11-35
NII WLAN MIMO UMPC Body SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.															W/kg	(W/kg)				
5280	56	802.11n	OFDM	20	18.0	17.90	18.0	17.99	-0.17	10 mm	MIMO	0367S	13	back	98.6	0.940	0.439	1.023	1.014	0.455	
5280	56	802.11n	OFDM	20	18.0	17.90	18.0	17.99	-0.14	10 mm	MIMO	0367S	13	front	98.6	0.410	0.184	1.023	1.014	0.191	
5280	56	802.11n	OFDM	20	18.0	17.90	18.0	17.99	-0.10	10 mm	MIMO	0367S	13	top	98.6	0.794	0.363	1.023	1.014	0.377	
5280	56	802.11n	OFDM	20	18.0	17.90	18.0	17.99	-0.18	10 mm	MIMO	0367S	13	right	98.6	0.153	0.059	1.023	1.014	0.061	
5500	100	802.11n	OFDM	20	18.0	17.94	18.0	17.86	-0.07	10 mm	MIMO	0366S	13	back	98.6	1.348	0.646	1.033	1.014	0.677	A46
5620	124	802.11n	OFDM	20	18.0	17.72	18.0	17.71	0.12	10 mm	MIMO	0366S	13	back	98.6	1.184	0.600	1.069	1.014	0.650	
5720	144	802.11n	OFDM	20	18.0	17.82	18.0	17.96	-0.20	10 mm	MIMO	0366S	13	back	98.6	0.786	0.395	1.042	1.014	0.417	
5500	100	802.11n	OFDM	20	18.0	17.94	18.0	17.86	-0.10	10 mm	MIMO	0366S	13	front	98.6	0.512	0.206	1.033	1.014	0.216	
5500	100	802.11n	OFDM	20	18.0	17.94	18.0	17.86	0.12	10 mm	MIMO	0366S	13	top	98.6	0.891	0.410	1.033	1.014	0.429	
5500	100	802.11n	OFDM	20	18.0	17.94	18.0	17.86	-0.11	10 mm	MIMO	0366S	13	right	98.6	0.210	0.090	1.033	1.014	0.094	
5785	157	802.11n	OFDM	20	18.0	17.91	18.0	17.84	-0.16	10 mm	MIMO	0366S	13	back	98.6	1.163	0.507	1.038	1.014	0.534	
5785	157	802.11n	OFDM	20	18.0	17.91	18.0	17.84	-0.14	10 mm	MIMO	0366S	13	front	98.6	0.733	0.316	1.038	1.014	0.333	
5785	157	802.11n	OFDM	20	18.0	17.91	18.0	17.84	-0.19	10 mm	MIMO	0366S	13	top	98.6	1.068	0.432	1.038	1.014	0.455	
5785	157	802.11n	OFDM	20	18.0	17.91	18.0	17.84	-0.12	10 mm	MIMO	0366S	13	right	98.6	0.335	0.144	1.038	1.014	0.152	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										UMPC Body											
Spatial Peak										1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population										averaged over 1 gram											

Note: To achieve the 21.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 18.0 dBm.

Table 11-36
2.4 GHz WLAN UMPC Body SAR with 2.4 GHz and 5 GHz WLAN SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.															W/kg	(W/kg)		(W/kg)	(W/kg)	
2457	10	802.11n	OFDM	20	17.0	16.76	17.0	16.62	-0.11	10 mm	MIMO	0370S	13	back	98.7	0.305	0.181	1.091	1.013	0.200	
2457	10	802.11n	OFDM	20	17.0	16.76	17.0	16.62	0.07	10 mm	MIMO	0370S	13	front	98.7	0.291	-	1.091	1.013	-	
2457	10	802.11n	OFDM	20	17.0	16.76	17.0	16.62	0.10	10 mm	MIMO	0370S	13	top	98.7	0.585	0.387	1.091	1.013	0.428	
2457	10	802.11n	OFDM	20	17.0	16.76	17.0	16.62	0.12	10 mm	MIMO	0370S	13	right	98.7	0.265	-	1.091	1.013	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										UMPC Body											
Spatial Peak										1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population										averaged over 1 gram											

Note: DTS MIMO was additionally evaluated at the maximum allowed output power during operations with Simultaneous 2.4 GHz and 5 GHz WLAN. 5 GHz WIFI was not transmitting during the above evaluations.

Table 11-37
5 GHz WLAN UMPC Body SAR with 2.4 GHz and 5 GHz WLAN SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.															W/kg	(W/kg)		(W/kg)		
5310	62	802.11n	OFDM	40	14.0	13.87	14.0	13.94	-0.03	10 mm	MIMO	0367S	27	back	97.3	0.408	0.207	1.030	1.028	0.219	
5310	62	802.11n	OFDM	40	14.0	13.87	14.0	13.94	0.19	10 mm	MIMO	0367S	27	front	97.3	0.185	0.078	1.030	1.028	0.083	
5310	62	802.11n	OFDM	40	14.0	13.87	14.0	13.94	-0.14	10 mm	MIMO	0367S	27	top	97.3	0.404	-	1.030	1.028	-	
5310	62	802.11n	OFDM	40	14.0	13.87	14.0	13.94	-0.17	10 mm	MIMO	0367S	27	right	97.3	0.064	-	1.030	1.028	-	
5530	106	802.11ac	OFDM	80	14.0	12.86	14.0	12.80	-0.14	10 mm	MIMO	0366S	58.5	back	90.7	0.576	0.292	1.318	1.103	0.424	
5530	106	802.11ac	OFDM	80	14.0	12.86	14.0	12.80	-0.17	10 mm	MIMO	0366S	58.5	front	90.7	0.228	0.102	1.318	1.103	0.148	
5530	106	802.11ac	OFDM	80	14.0	12.86	14.0	12.80	-0.12	10 mm	MIMO	0366S	58.5	top	90.7	0.491	0.211	1.318	1.103	0.307	
5530	106	802.11ac	OFDM	80	14.0	12.86	14.0	12.80	0.16	10 mm	MIMO	0366S	58.5	right	90.7	0.107	-	1.318	1.103	-	
5775	155	802.11ac	OFDM	80	14.0	12.58	14.0	12.85	-0.17	10 mm	MIMO	0367S	58.5	back	90.7	0.501	0.223	1.387	1.103	0.341	
5775	155	802.11ac	OFDM	80	14.0	12.58	14.0	12.85	-0.13	10 mm	MIMO	0367S	58.5	front	90.7	0.215	0.084	1.387	1.103	0.129	
5775	155	802.11ac	OFDM	80	14.0	12.58	14.0	12.85	-0.12	10 mm	MIMO	0367S	58.5	top	90.7	0.363	-	1.387	1.103	-	
5775	155	802.11ac	OFDM	80	14.0	12.58	14.0	12.85	-0.18	10 mm	MIMO	0367S	58.5	right	90.7	0.109	-	1.387	1.103	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										UMPC Body											
Spatial Peak										1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population										averaged over 1 gram											

Note: NII MIMO was additionally evaluated at the maximum allowed output power during operations with Simultaneous 2.4 GHz and 5 GHz WLAN. 2.4 GHz WIFI was not transmitting during the above evaluations.

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11.6 Standalone UMPC Extremity SAR

Table 11-38
GPRS/UMTS/CDMA UMPC Extremity SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
824.20	128	GSM 850	GPRS	31.0	29.80	0.04	0 mm	0368S	3	1:2.76	back	1.420	1.318	1.872	
836.60	190	GSM 850	GPRS	31.0	29.88	0.04	0 mm	0368S	3	1:2.76	back	1.640	1.294	2.122	A47
848.80	251	GSM 850	GPRS	31.0	29.70	-0.01	0 mm	0368S	3	1:2.76	back	1.340	1.349	1.808	
836.60	190	GSM 850	GPRS	31.0	29.88	-0.01	0 mm	0368S	3	1:2.76	front	1.440	1.294	1.863	
836.60	190	GSM 850	GPRS	31.0	29.88	0.12	0 mm	0368S	3	1:2.76	bottom	0.896	1.294	1.159	
836.60	190	GSM 850	GPRS	31.0	29.88	-0.12	0 mm	0368S	3	1:2.76	right	0.624	1.294	0.807	
836.60	4183	UMTS 850	RMC	25.5	24.35	0.15	0 mm	0368S	N/A	1:1	back	1.170	1.303	1.525	
826.40	4132	UMTS 850	RMC	25.5	24.28	-0.05	0 mm	0368S	N/A	1:1	front	1.280	1.324	1.695	A48
836.60	4183	UMTS 850	RMC	25.5	24.35	-0.03	0 mm	0368S	N/A	1:1	front	1.200	1.303	1.564	
846.60	4233	UMTS 850	RMC	25.5	24.25	-0.02	0 mm	0368S	N/A	1:1	front	1.270	1.334	1.694	
836.60	4183	UMTS 850	RMC	25.5	24.35	-0.09	0 mm	0368S	N/A	1:1	bottom	0.494	1.303	0.644	
836.60	4183	UMTS 850	RMC	25.5	24.35	-0.04	0 mm	0368S	N/A	1:1	right	0.564	1.303	0.735	
1732.40	1412	UMTS 1750	RMC	25.5	24.06	0.02	12 mm	0366S	N/A	1:1	back	0.293	1.393	0.408	A49
1732.40	1412	UMTS 1750	RMC	25.5	24.06	0.01	11 mm	0366S	N/A	1:1	front	0.285	1.393	0.397	
1732.40	1412	UMTS 1750	RMC	25.5	24.06	0.03	16 mm	0366S	N/A	1:1	bottom	0.261	1.393	0.364	
1880.00	661	GSM 1900	GPRS	30.5	28.58	0.09	12 mm	0368S	2	1:4.15	back	0.159	1.556	0.247	
1880.00	661	GSM 1900	GPRS	30.5	28.58	0.01	11 mm	0368S	2	1:4.15	front	0.156	1.556	0.243	
1880.00	661	GSM 1900	GPRS	30.5	28.58	-0.08	16 mm	0368S	2	1:4.15	bottom	0.110	1.556	0.171	
1880.00	661	GSM 1900	GPRS	25.0	23.75	-0.11	0 mm	0369S	3	1:2.76	back	1.030	1.334	1.374	
1880.00	661	GSM 1900	GPRS	25.0	23.75	-0.01	0 mm	0369S	3	1:2.76	front	1.200	1.334	1.601	
1850.20	512	GSM 1900	GPRS	25.0	23.62	-0.14	0 mm	0369S	3	1:2.76	bottom	2.100	1.374	2.885	
1880.00	661	GSM 1900	GPRS	25.0	23.75	-0.13	0 mm	0369S	3	1:2.76	bottom	2.250	1.334	3.002	A50
1909.80	810	GSM 1900	GPRS	25.0	23.50	-0.14	0 mm	0369S	3	1:2.76	bottom	2.100	1.413	2.967	
1880.00	9400	UMTS 1900	RMC	25.5	23.61	-0.02	12 mm	0369S	N/A	1:1	back	0.322	1.545	0.497	
1880.00	9400	UMTS 1900	RMC	25.5	23.61	-0.05	11 mm	0369S	N/A	1:1	front	0.297	1.545	0.459	
1880.00	9400	UMTS 1900	RMC	25.5	23.61	-0.03	16 mm	0366S	N/A	1:1	bottom	0.450	1.545	0.695	A51
1880.00	600	PCS CDMA	EVDO Rev. 0	25.5	24.25	-0.02	12 mm	0366S	N/A	1:1	back	0.283	1.334	0.378	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.5	24.25	0.01	11 mm	0366S	N/A	1:1	front	0.319	1.334	0.426	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.5	24.25	-0.01	16 mm	0366S	N/A	1:1	bottom	0.338	1.334	0.451	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.5	24.25	-0.10	0 mm	0366S	N/A	1:1	right	0.598	1.334	0.798	
1880.00	600	PCS CDMA	EVDO Rev. 0	19.5	19.18	-0.03	0 mm	0366S	N/A	1:1	back	0.981	1.076	1.056	
1880.00	600	PCS CDMA	EVDO Rev. 0	19.5	19.18	0.01	0 mm	0366S	N/A	1:1	front	1.070	1.076	1.151	
1851.25	25	PCS CDMA	EVDO Rev. 0	19.5	19.09	0.13	0 mm	0366S	N/A	1:1	bottom	2.210	1.099	2.429	
1880.00	600	PCS CDMA	EVDO Rev. 0	19.5	19.18	-0.08	0 mm	0366S	N/A	1:1	bottom	2.250	1.076	2.421	A52
1908.75	1175	PCS CDMA	EVDO Rev. 0	19.5	19.02	0.14	0 mm	0366S	N/A	1:1	bottom	2.130	1.117	2.379	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							UMPC Extremity 4.0 W/kg (mW/g) averaged over 10 grams								

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Table 11-39
LTE Band 26 (Cell) UMPC Extremity SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	24.85	-0.18	0	0368S	QPSK	1	0	0 mm	back	1:1	1.330	1.161	1.544	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	23.93	-0.19	1	0368S	QPSK	36	0	0 mm	back	1:1	1.100	1.140	1.254	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	24.85	-0.02	0	0368S	QPSK	1	0	0 mm	front	1:1	1.540	1.161	1.788	A53
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	23.93	0.00	1	0368S	QPSK	36	0	0 mm	front	1:1	1.310	1.140	1.493	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	24.85	-0.11	0	0368S	QPSK	1	0	0 mm	bottom	1:1	0.684	1.161	0.794	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	23.93	-0.06	1	0368S	QPSK	36	0	0 mm	bottom	1:1	0.596	1.140	0.679	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	24.85	-0.07	0	0368S	QPSK	1	0	0 mm	right	1:1	1.080	1.161	1.254	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	23.93	-0.01	1	0368S	QPSK	36	0	0 mm	right	1:1	0.885	1.140	1.009	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								UMPC Extremity 4.0 W/kg (mW/g) averaged over 10 grams											

Table 11-40
LTE Band 5 (Cell) UMPC Extremity SAR

MEASUREMENT RESULTS																					
1 CC Uplink 2 CC Uplink	Component Carrier	FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #	
		MHz	Ch.														(W/kg)		(W/kg)		
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.82	-0.08	0	0368S	QPSK	1	0	0 mm	back	1:1	1.400	1.169	1.637	A54
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.90	-0.09	1	0368S	QPSK	25	0	0 mm	back	1:1	1.110	1.148	1.274	
2 CC Uplink	PCC	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.98	-0.08	0	0368S	QPSK	1	0	0 mm	back	1:1	1.400	1.127	1.578	
	SCC	829.30	20453	Mid	LTE Band 5 (Cell)	5							24								
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.82	-0.02	0	0368S	QPSK	1	0	0 mm	front	1:1	1.130	1.169	1.321	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.90	-0.02	1	0368S	QPSK	25	0	0 mm	front	1:1	0.926	1.148	1.063	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.82	0.21	0	0368S	QPSK	1	0	0 mm	bottom	1:1	0.712	1.169	0.832	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.90	0.02	1	0368S	QPSK	25	0	0 mm	bottom	1:1	0.598	1.148	0.687	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.82	-0.10	0	0368S	QPSK	1	0	0 mm	right	1:1	1.020	1.169	1.192	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.90	-0.01	1	0368S	QPSK	25	0	0 mm	right	1:1	0.655	1.148	0.752	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										UMPC Extremity 4.0 W/kg (mW/g) averaged over 10 grams											

Table 11-41
LTE Band 66 (AWS) UMPC Extremity SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.22	0.01	0	0366S	QPSK	1	0	12 mm	back	1:1	0.274	1.197	0.328	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.37	0.01	1	0366S	QPSK	50	0	12 mm	back	1:1	0.225	1.156	0.260	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.22	0.00	0	0366S	QPSK	1	0	11 mm	front	1:1	0.297	1.197	0.356	A55
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.37	0.01	1	0366S	QPSK	50	0	11 mm	front	1:1	0.244	1.156	0.282	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.22	0.04	0	0366S	QPSK	1	0	16 mm	bottom	1:1	0.255	1.197	0.305	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.37	-0.03	1	0366S	QPSK	50	0	16 mm	bottom	1:1	0.221	1.156	0.255	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								UMPC Extremity 4.0 W/kg (mW/g) averaged over 10 grams											

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Table 11-42
LTE Band 25 (PCS) UMPC Extremity SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.0	23.43	-0.08	0	0369S	QPSK	1	0	12 mm	back	1:1	0.263	1.435	0.377	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	22.50	-0.06	1	0369S	QPSK	50	25	12 mm	back	1:1	0.212	1.413	0.300	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.0	23.43	-0.02	0	0369S	QPSK	1	0	11 mm	front	1:1	0.277	1.435	0.397	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	22.50	0.01	1	0369S	QPSK	50	25	11 mm	front	1:1	0.224	1.413	0.317	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.0	23.43	0.05	0	0369S	QPSK	1	0	16 mm	bottom	1:1	0.278	1.435	0.399	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	22.50	-0.06	1	0369S	QPSK	50	25	16 mm	bottom	1:1	0.228	1.413	0.322	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.0	19.04	-0.13	0	0369S	QPSK	1	0	0 mm	back	1:1	0.752	1.247	0.938	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.0	19.07	-0.12	0	0369S	QPSK	50	25	0 mm	back	1:1	0.753	1.239	0.933	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.0	19.04	0.00	0	0369S	QPSK	1	0	0 mm	front	1:1	1.090	1.247	1.359	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.0	19.07	0.01	0	0369S	QPSK	50	25	0 mm	front	1:1	1.100	1.239	1.363	
1860.00	26140	Low	LTE Band 25 (PCS)	20	20.0	18.96	-0.14	0	0369S	QPSK	1	99	0 mm	bottom	1:1	2.140	1.271	2.720	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.0	19.04	-0.07	0	0369S	QPSK	1	0	0 mm	bottom	1:1	2.130	1.247	2.656	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.0	18.79	-0.16	0	0369S	QPSK	1	99	0 mm	bottom	1:1	2.090	1.321	2.761	
1860.00	26140	Low	LTE Band 25 (PCS)	20	20.0	19.04	-0.12	0	0369S	QPSK	50	50	0 mm	bottom	1:1	2.230	1.247	2.781	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.0	19.07	-0.04	0	0369S	QPSK	50	25	0 mm	bottom	1:1	2.180	1.239	2.701	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.0	18.88	-0.11	0	0369S	QPSK	50	25	0 mm	bottom	1:1	2.150	1.294	2.782	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.0	19.00	-0.14	0	0369S	QPSK	100	0	0 mm	bottom	1:1	2.230	1.259	2.808	A56
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								UMPC Extremity 4.0 W/kg (mW/g) averaged over 10 grams											

Table 11-43
LTE Band 30 UMPC Extremity SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.	(W/kg)														(W/kg)			
2310.00	27710	Mid	LTE Band 30	10	25.0	24.28	-0.12	0	0367S	QPSK	1	0	12 mm	back	1:1	0.308	1.180	0.363	
2310.00	27710	Mid	LTE Band 30	10	24.0	23.35	0.18	1	0367S	QPSK	25	0	12 mm	back	1:1	0.256	1.161	0.297	
2310.00	27710	Mid	LTE Band 30	10	25.0	24.28	0.01	0	0367S	QPSK	1	0	11 mm	front	1:1	0.351	1.180	0.414	
2310.00	27710	Mid	LTE Band 30	10	24.0	23.35	-0.09	1	0367S	QPSK	25	0	11 mm	front	1:1	0.287	1.161	0.333	
2310.00	27710	Mid	LTE Band 30	10	25.0	24.28	0.02	0	0367S	QPSK	1	0	16 mm	bottom	1:1	0.382	1.180	0.451	
2310.00	27710	Mid	LTE Band 30	10	24.0	23.35	-0.01	1	0367S	QPSK	25	0	16 mm	bottom	1:1	0.319	1.161	0.370	
2310.00	27710	Mid	LTE Band 30	10	20.0	19.56	-0.12	0	0367S	QPSK	1	0	0 mm	back	1:1	0.782	1.107	0.866	
2310.00	27710	Mid	LTE Band 30	10	20.0	19.60	-0.09	0	0367S	QPSK	25	12	0 mm	back	1:1	0.830	1.096	0.910	
2310.00	27710	Mid	LTE Band 30	10	20.0	19.56	-0.07	0	0367S	QPSK	1	0	0 mm	front	1:1	0.989	1.107	1.095	
2310.00	27710	Mid	LTE Band 30	10	20.0	19.60	-0.07	0	0367S	QPSK	25	12	0 mm	front	1:1	1.050	1.096	1.151	
2310.00	27710	Mid	LTE Band 30	10	20.0	19.56	-0.15	0	0367S	QPSK	1	0	0 mm	bottom	1:1	2.280	1.107	2.524	
2310.00	27710	Mid	LTE Band 30	10	20.0	19.60	-0.21	0	0367S	QPSK	25	12	0 mm	bottom	1:1	2.460	1.096	2.696	A57
2310.00	27710	Mid	LTE Band 30	10	20.0	19.50	-0.16	0	0367S	QPSK	50	0	0 mm	bottom	1:1	2.440	1.122	2.738	
2310.00	27710	Mid	LTE Band 30	10	20.0	19.60	-0.20	0	0367S	QPSK	25	12	0 mm	bottom	1:1	2.280	1.096	2.499	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								UMPC Extremity 4.0 W/kg (mW/g) averaged over 10 grams											

Note: Blue entry represents variability measurement.

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Table 11-44
LTE Band 7 UMPC Extremity SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2510.00	20850	Low	LTE Band 7	20	25.0	24.72	-0.02	0	0367S	QPSK	1	99	12 mm	back	1:1	0.369	1.067	0.394	
2510.00	20850	Low	LTE Band 7	20	24.0	23.76	-0.04	1	0367S	QPSK	50	0	12 mm	back	1:1	0.275	1.057	0.291	
2510.00	20850	Low	LTE Band 7	20	25.0	24.72	-0.09	0	0367S	QPSK	1	99	11 mm	front	1:1	0.412	1.067	0.440	
2510.00	20850	Low	LTE Band 7	20	24.0	23.76	-0.06	1	0367S	QPSK	50	0	11 mm	front	1:1	0.308	1.057	0.326	
2510.00	20850	Low	LTE Band 7	20	25.0	24.72	-0.16	0	0367S	QPSK	1	99	16 mm	bottom	1:1	0.443	1.067	0.473	A58
2510.00	20850	Low	LTE Band 7	20	24.0	23.76	-0.10	1	0367S	QPSK	50	0	16 mm	bottom	1:1	0.334	1.057	0.353	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								UMPC Extremity 4.0 W/kg (mW/g) averaged over 10 grams											

Table 11-45
LTE Band 38 UMPC Extremity SAR

MEASUREMENT RESULTS																					
1 CC Uplink / 2 CC Uplink	Component Carrier	FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #	
		MHz	Ch.														(W/kg)		(W/kg)		
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	25.0	24.26	0.01	0	0369S	QPSK	1	0	12 mm	back	1:1.58	0.329	1.186	0.390	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	24.0	23.38	-0.02	1	0369S	QPSK	50	25	12 mm	back	1:1.58	0.260	1.153	0.300	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	25.0	24.26	-0.10	0	0369S	QPSK	1	0	11 mm	front	1:1.58	0.333	1.186	0.395	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	24.0	23.38	-0.06	1	0369S	QPSK	50	25	11 mm	front	1:1.58	0.266	1.153	0.307	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	25.0	24.26	-0.04	0	0369S	QPSK	1	0	16 mm	bottom	1:1.58	0.408	1.186	0.484	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	24.0	23.38	-0.10	1	0369S	QPSK	50	25	16 mm	bottom	1:1.58	0.320	1.153	0.369	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	25.0	24.26	-0.08	0	0369S	QPSK	1	0	0 mm	right	1:1.58	1.090	1.186	1.293	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	24.0	23.38	-0.19	1	0369S	QPSK	50	25	0 mm	right	1:1.58	0.893	1.153	1.030	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	21.0	19.84	-0.02	0	0369S	QPSK	1	0	0 mm	back	1:1.58	0.876	1.306	1.144	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	21.0	19.96	-0.08	0	0369S	QPSK	50	50	0 mm	back	1:1.58	0.848	1.271	1.078	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	21.0	19.84	0.06	0	0369S	QPSK	1	0	0 mm	front	1:1.58	0.924	1.306	1.207	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	21.0	19.96	0.09	0	0369S	QPSK	50	50	0 mm	front	1:1.58	0.940	1.271	1.195	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	21.0	19.84	0.08	0	0369S	QPSK	1	0	0 mm	bottom	1:1.58	2.180	1.306	2.847	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	15	21.0	19.88	0.18	0	0369S	QPSK	1	0	0 mm	bottom	1:1.58	2.090	1.294	2.704	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	21.0	19.96	-0.02	0	0369S	QPSK	50	50	0 mm	bottom	1:1.58	2.230	1.271	2.834	
1 CC Uplink	N/A	2595.00	38000	Mid	LTE Band 38	20	21.0	19.83	-0.13	0	0369S	QPSK	100	0	0 mm	bottom	1:1.58	2.170	1.309	2.841	
2 CC Uplink	PCC	2595.00	38000	Mid	LTE Band 38	15	21.0	20.31	0.16	0	0369S	QPSK	1	0	0 mm	bottom	1:1.58	2.410	1.172	2.825	A59
	SCC	2580.00	37850	Mid	LTE Band 38	15							1	74							
2 CC Uplink	PCC	2595.00	38000	Mid	LTE Band 38	15	21.0	20.31	0.11	0	0369S	QPSK	1	0	0 mm	bottom	1:1.58	2.400	1.172	2.813	
	SCC	2580.00	37850	Mid	LTE Band 38	15							1	74							
ANSI / IEEE C95.1 1992 - SAFETY LIMIT											UMPC Extremity										
Spatial Peak											4.0 W/kg (mW/g)										
Uncontrolled Exposure/General Population											averaged over 10 grams										

Note: Blue entry represents variability measurement.

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Table 11-46
LTE Band 41 UMPC Extremity SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2506.00	39750	Low	LTE Band 41	20	24.0	23.62	-0.01	0	0367S	QPSK	1	99	12 mm	back	1:1.58	0.244	1.091	0.266	
2506.00	39750	Low	LTE Band 41	20	23.0	22.83	-0.04	1	0367S	QPSK	50	50	12 mm	back	1:1.58	0.198	1.040	0.206	
2506.00	39750	Low	LTE Band 41	20	24.0	23.62	-0.04	0	0367S	QPSK	1	99	11 mm	front	1:1.58	0.249	1.091	0.272	
2506.00	39750	Low	LTE Band 41	20	23.0	22.83	-0.02	1	0367S	QPSK	50	50	11 mm	front	1:1.58	0.202	1.040	0.210	
2506.00	39750	Low	LTE Band 41	20	24.0	23.62	-0.07	0	0367S	QPSK	1	99	16 mm	bottom	1:1.58	0.292	1.091	0.319	
2506.00	39750	Low	LTE Band 41	20	23.0	22.83	-0.06	1	0367S	QPSK	50	50	16 mm	bottom	1:1.58	0.232	1.040	0.241	
2506.00	39750	Low	LTE Band 41	20	24.0	23.62	-0.15	0	0367S	QPSK	1	99	0 mm	right	1:1.58	0.708	1.091	0.772	A60
2506.00	39750	Low	LTE Band 41	20	23.0	22.83	-0.11	1	0367S	QPSK	50	50	0 mm	right	1:1.58	0.563	1.040	0.586	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								UMPC Extremity 4.0 W/kg (mW/g) averaged over 10 grams											

Table 11-47
WLAN UMPC Extremity SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	20.0	19.98	-0.17	0 mm	2	0370S	1	back	99.9	9.159	1.820	1.005	1.001	1.831	
2437	6	802.11b	DSSS	22	20.0	19.95	-0.17	0 mm	2	0370S	1	back	99.9	8.204	1.420	1.012	1.001	1.438	
2462	11	802.11b	DSSS	22	20.0	19.75	-0.15	0 mm	2	0370S	1	back	99.9	7.297	1.690	1.059	1.001	1.791	
2412	1	802.11b	DSSS	22	20.0	19.98	0.12	0 mm	2	0370S	1	front	99.9	2.140	-	1.005	1.001	-	
2412	1	802.11b	DSSS	22	20.0	19.98	0.15	0 mm	2	0370S	1	top	99.9	10.758	1.500	1.005	1.001	1.509	
5280	56	802.11a	OFDM	20	18.0	17.99	-0.15	0 mm	2	0367S	6	back	98.7	7.960	0.872	1.002	1.013	0.885	
5280	56	802.11a	OFDM	20	18.0	17.99	-0.10	0 mm	2	0367S	6	front	98.7	6.895	-	1.002	1.013	-	
5280	56	802.11a	OFDM	20	18.0	17.99	-0.18	0 mm	2	0367S	6	top	98.7	15.731	1.120	1.002	1.013	1.137	
5720	144	802.11a	OFDM	20	18.0	17.98	-0.13	0 mm	2	0367S	6	back	98.7	4.064	-	1.005	1.013	-	
5720	144	802.11a	OFDM	20	18.0	17.98	0.18	0 mm	2	0367S	6	front	98.7	3.866	-	1.005	1.013	-	
5720	144	802.11a	OFDM	20	18.0	17.98	-0.13	0 mm	2	0367S	6	top	98.7	8.664	0.651	1.005	1.013	0.663	
5785	157	802.11a	OFDM	20	18.0	17.86	-0.20	0 mm	2	0367S	6	back	98.7	6.302	-	1.033	1.013	-	
5785	157	802.11a	OFDM	20	18.0	17.86	-0.12	0 mm	2	0367S	6	front	98.7	3.284	-	1.033	1.013	-	
5785	157	802.11a	OFDM	20	18.0	17.86	-0.18	0 mm	2	0367S	6	top	98.7	7.689	0.596	1.033	1.013	0.624	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								UMPC Extremity 4.0 W/kg (mW/g) averaged over 10 grams											

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Table 11-48
DTS WLAN MIMO UMPC Extremity SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.															W/kg	(W/kg)				
2452	9	802.11n	OFDM	20	18.0	17.96	18.0	17.85	-0.14	0 mm	MIMO	0370S	13	back	98.7	7.515	1.360	1.035	1.013	1.426	
2452	9	802.11n	OFDM	20	18.0	17.96	18.0	17.85	-0.12	0 mm	MIMO	0370S	13	front	98.7	6.087	1.840	1.035	1.013	1.929	
2412	1	802.11n	OFDM	20	18.0	17.70	18.0	17.95	-0.15	0 mm	MIMO	0370S	13	top	98.7	6.774	1.380	1.072	1.013	1.499	
2437	6	802.11n	OFDM	20	18.0	17.85	18.0	17.89	0.21	0 mm	MIMO	0370S	13	top	98.7	6.655	1.230	1.035	1.013	1.290	
2452	9	802.11n	OFDM	20	18.0	17.96	18.0	17.85	0.16	0 mm	MIMO	0370S	13	top	98.7	9.164	1.900	1.035	1.013	1.992	A61
2452	9	802.11n	OFDM	20	18.0	17.96	18.0	17.85	-0.05	0 mm	MIMO	0370S	13	right	98.7	3.142	0.567	1.035	1.013	0.594	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT											UMPC Extremity										
Spatial Peak											4.0 W/kg (mW/g)										
Uncontrolled Exposure/General Population											averaged over 10 grams										

Note: To achieve the 21.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 18.0 dBm.

Table 11-49
NII WLAN MIMO UMPC Extremity SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Ana Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.															W/kg	(W/kg)				
5280	56	802.11n	OFDM	20	18.0	17.90	18.0	17.99	-0.14	0 mm	MIMO	0367S	13	back	98.6	11.608	1.450	1.023	1.014	1.504	
5280	56	802.11n	OFDM	20	18.0	17.90	18.0	17.99	-0.20	0 mm	MIMO	0367S	13	front	98.6	9.425	0.939	1.023	1.014	0.974	
5280	56	802.11n	OFDM	20	18.0	17.90	18.0	17.99	-0.08	0 mm	MIMO	0367S	13	top	98.6	18.002	1.440	1.023	1.014	1.494	
5280	56	802.11n	OFDM	20	18.0	17.90	18.0	17.99	-0.18	0 mm	MIMO	0367S	13	right	98.6	0.923	-	1.023	1.014	-	
5500	100	802.11n	OFDM	20	18.0	17.94	18.0	17.86	-0.15	0 mm	MIMO	0367S	13	back	98.6	14.004	1.590	1.033	1.014	1.665	
5500	100	802.11n	OFDM	20	18.0	17.94	18.0	17.86	-0.13	0 mm	MIMO	0367S	13	front	98.6	10.755	0.986	1.033	1.014	1.033	
5500	100	802.11n	OFDM	20	18.0	17.94	18.0	17.86	-0.18	0 mm	MIMO	0367S	13	top	98.6	16.183	1.370	1.033	1.014	1.435	
5500	100	802.11n	OFDM	20	18.0	17.94	18.0	17.86	0.10	0 mm	MIMO	0367S	13	right	98.6	1.220	-	1.033	1.014	-	
5745	149	802.11n	OFDM	20	18.0	17.89	18.0	17.66	0.13	0 mm	MIMO	0366S	13	back	98.6	14.310	1.100	1.081	1.014	1.206	
5785	157	802.11n	OFDM	20	18.0	17.91	18.0	17.84	0.11	0 mm	MIMO	0366S	13	back	98.6	24.093	1.640	1.038	1.014	1.726	A62
5825	165	802.11n	OFDM	20	18.0	17.93	18.0	17.77	-0.17	0 mm	MIMO	0366S	13	back	98.6	20.277	1.440	1.054	1.014	1.539	
5785	157	802.11n	OFDM	20	18.0	17.91	18.0	17.84	0.20	0 mm	MIMO	0367S	13	front	98.6	8.592	0.946	1.038	1.014	0.996	
5785	157	802.11n	OFDM	20	18.0	17.91	18.0	17.84	-0.11	0 mm	MIMO	0367S	13	top	98.6	13.272	1.390	1.038	1.014	1.463	
5785	157	802.11n	OFDM	20	18.0	17.91	18.0	17.84	0.14	0 mm	MIMO	0367S	13	right	98.6	1.225	-	1.038	1.014	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT											UMPC Extremity										
Spatial Peak											4.0 W/kg (mW/g)										
Uncontrolled Exposure/General Population											averaged over 10 grams										

Note: To achieve the 21.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 18.0 dBm.

Table 11-50
2.4 GHz WLAN UMPC Extremity SAR with 2.4 GHz and 5 GHz WLAN SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g) (W/kg)	Plot #
MHz	Ch.															W/kg	(W/kg)				
2457	10	802.11n	OFDM	20	17.0	16.76	17.0	16.62	0.03	0 mm	MIMO	0370S	13	back	98.7	2.640	0.601	1.091	1.013	0.664	
2457	10	802.11n	OFDM	20	17.0	16.76	17.0	16.62	0.02	0 mm	MIMO	0370S	13	front	98.7	4.392	1.080	1.091	1.013	1.194	
2457	10	802.11n	OFDM	20	17.0	16.76	17.0	16.62	0.13	0 mm	MIMO	0370S	13	top	98.7	3.730	0.557	1.091	1.013	0.616	
2457	10	802.11n	OFDM	20	17.0	16.76	17.0	16.62	0.03	0 mm	MIMO	0370S	13	right	98.7	1.952	0.332	1.091	1.013	0.387	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT											UMPC Extremity										
Spatial Peak											4.0 W/kg (mW/g)										
Uncontrolled Exposure/General Population											averaged over 10 grams										

Note: DTS MIMO was additionally evaluated at the maximum allowed output power during operations with Simultaneous 2.4 GHz and 5 GHz WLAN. 5 GHz WIFI was not transmitting during the above evaluations.

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Table 11-51
5 GHz WLAN UMPC Extremity SAR with 2.4 GHz and 5 GHz WLAN SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Pilot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
5310	62	802.11n	OFDM	40	14.0	13.87	14.0	13.94	0.10	0 mm	MIMO	0367S	27	back	97.3	9.894	0.618	1.030	1.028	0.654	
5310	62	802.11n	OFDM	40	14.0	13.87	14.0	13.94	-0.19	0 mm	MIMO	0367S	27	front	97.3	2.244	0.415	1.030	1.028	0.439	
5310	62	802.11n	OFDM	40	14.0	13.87	14.0	13.94	-0.16	0 mm	MIMO	0367S	27	top	97.3	7.287	-	1.030	1.028	-	
5310	62	802.11n	OFDM	40	14.0	13.87	14.0	13.94	-0.15	0 mm	MIMO	0367S	27	right	97.3	0.411	-	1.030	1.028	-	
5530	106	802.11ac	OFDM	80	14.0	12.86	14.0	12.80	-0.16	0 mm	MIMO	0367S	58.5	back	90.7	5.652	-	1.318	1.103	-	
5530	106	802.11ac	OFDM	80	14.0	12.86	14.0	12.80	-0.15	0 mm	MIMO	0367S	58.5	front	90.7	4.875	0.418	1.318	1.103	0.608	
5530	106	802.11ac	OFDM	80	14.0	12.86	14.0	12.80	-0.13	0 mm	MIMO	0367S	58.5	top	90.7	6.588	0.613	1.318	1.103	0.891	
5530	106	802.11ac	OFDM	80	14.0	12.86	14.0	12.80	-0.11	0 mm	MIMO	0367S	58.5	right	90.7	0.553	-	1.318	1.103	-	
5775	155	802.11ac	OFDM	80	14.0	12.58	14.0	12.85	-0.18	0 mm	MIMO	0367S	58.5	back	90.7	5.310	0.650	1.387	1.103	0.994	
5775	155	802.11ac	OFDM	80	14.0	12.58	14.0	12.85	-0.14	0 mm	MIMO	0367S	58.5	front	90.7	2.436	0.279	1.387	1.103	0.427	
5775	155	802.11ac	OFDM	80	14.0	12.58	14.0	12.85	-0.17	0 mm	MIMO	0367S	58.5	top	90.7	4.825	-	1.387	1.103	-	
5775	155	802.11ac	OFDM	80	14.0	12.58	14.0	12.85	0.12	0 mm	MIMO	0367S	58.5	right	90.7	0.350	-	1.387	1.103	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										UMPC Extremity											
Spatial Peak										4.0 W/kg (mW/g)											
Uncontrolled Exposure/General Population										averaged over 10 grams											

Note: NII MIMO was additionally evaluated at the maximum allowed output power during operations with Simultaneous 2.4 GHz and 5 GHz WLAN. 2.4 GHz WIFI was not transmitting during the above evaluations.

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11.7 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, and FCC KDB Publication 447498 D01v06.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 15 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
7. Per FCC KDB Publication 648474 D04v01r03, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported body-worn SAR was ≤ 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were required.
8. Per FCC KDB 865664 D01v01r04, variability SAR tests were performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg for 1g SAR and 2.0 W/kg for 10g SAR. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 13 for variability analysis.
9. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v02r01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.7 for more details).
10. Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" when it is in closed configuration since the diagonal dimension is > 160 mm and < 200 mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg. Additional SAR tests for phablet SAR were evaluated per KDB 616217 Section 6 (See Section 6.9 for more information)
11. This device supports dynamic antenna tuning for some bands. Please see RF Exposure Technical Report SN 1M1901160007-01-R1.A3L for original full DAT compliance.
12. This device utilizes power reduction for some wireless modes and technologies, as outlined in Section 1.3. The maximum output power allowed for each transmitter and exposure condition was evaluated for SAR compliance based on expected use conditions and simultaneous transmission scenarios.
13. Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds below.
14. Per FCC KDB Publication 941225 D07v01r02, this device is considered a "UMPC mini-tablet" when it is in open configuration. UMPC body 1g SAR tests are required on all surfaces and edges ≤ 25 mm from a transmitting antenna. Therefore, to address hand exposure, UMPC extremity 10g SAR tests are required at a test separation distance of 0 mm for all measured 1g SAR (at 10 mm) configurations.
15. Additional SAR tests for phablet SAR were evaluated per KDB 616217 Section 6 (See Section 6.9 for more information).

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GSM Test Notes:

1. Body-Worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
2. Justification for reduced test configurations per KDB Publication 941225 D01v03r01 and October 2013 TCB Workshop Notes: The source-based frame-averaged output power was evaluated for all GPRS/EDGE slot configurations. The configuration with the highest target frame averaged output power was evaluated for hotspot SAR. When the maximum frame-averaged powers are equivalent across two or more slots (within 0.25 dB), the configuration with the most number of time slots was tested.
3. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel was used.

CDMA Notes:

1. Head SAR for CDMA2000 mode was tested under RC3/SO55 per FCC KDB Publication 941225 D01v03r01.
2. Body-Worn SAR was tested with 1x RTT with TDSO / SO32 FCH Only. EVDO Rev0 and RevA and TDSO / SO32 FCH+SCH SAR tests were not required per the 3G SAR Test Reduction Procedure in FCC KDB Publication 941225 D01v03r01.
3. CDMA Wireless Router SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0 according to KDB 941225 D01v03r01 procedures for data devices. Wireless Router SAR tests for Subtype 2 of Rev.A and 1x RTT configurations were not required per the 3G SAR Test Reduction Policy in KDB Publication 941225 D01v03r01.
4. Head SAR was additionally evaluated using EVDO Rev. A to determine compliance for VoIP operations.
5. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel was used.
6. CDMA 1X Advanced technology was not required for SAR since the maximum allowed output powers for 1X Advanced was not more than 0.25 dB higher than the maximum powers for 1X.

UMTS Notes:

1. UMTS mode in was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03r01. AMR and HSPA SAR was not required per the 3G Test Reduction Procedure in KDB Publication 941225 D01v03r01.
2. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel was used.

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r04. The general test procedures used for testing can be found in Section 8.6.4.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

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3. A-MPR was disabled for all SAR tests by setting NS=01 and MCC=001 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
4. Per FCC KDB Publication 447498 D01v06, when the reported LTE Band 41 SAR measured at the highest output power channel in a given a test configuration was $> 0.6 \text{ W/kg}$ for 1g evaluations, testing at the other channels was required for such test configurations.
5. TDD LTE was tested per the guidance provided in FCC KDB Publication 941225 D05v02r04. Testing was performed using UL-DL configuration 0 with 6 UL subframes and 2 S subframes using extended cyclic prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633.
6. Per KDB Publication 941225 D05Av01r02, SAR for downlink only LTE CA operations was not needed since the maximum average output power in LTE CA mode was not $> 0.25 \text{ dB}$ higher than the maximum output power when downlink carrier aggregation was inactive.
7. This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per FCC Guidance, all SAR tests were performed using Power Class 3. SAR with power class 2 at the available duty factor was additionally performed for the power class 3 configuration with the highest SAR configuration for each exposure conditions. Please see Section 14 for linearity results.
8. This device supports ULCA active with Power Class 2. Highest SAR test configuration for each exposure condition in Power Class 3 with ULCA active was repeated with Power Class 2 with ULCA active.
9. For LTE Band 5, LTE Band 66, LTE Band 38 and LTE Band 41, per FCC guidance, SAR was first measured with only a single carrier active in the uplink (carrier aggregation not active). For each exposure condition, the uplink CA scenario with two component carriers was additionally tested for the configuration with the highest SAR when carrier aggregation was not active. The SCC was configured with the closest available contiguous channel. The two component carriers were configured so the resource blocks are physically allocated side by side to achieve the maximum output power.

WLAN Notes:

1. For held-to-ear, hotspot, phablet, and UMPC mini-tablet operations, the initial test position procedures were applied. When reported SAR for the initial test position is $\leq 0.4 \text{ W/kg}$ for 1g evaluations, no additional testing for the remaining test positions was required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is $\leq 0.8 \text{ W/kg}$ or all test positions are measured.
2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 2.4 GHz WIFI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n/ax) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 8.7.5 for more information.
3. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 5 GHz WIFI single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg for 1g evaluations. See Section 8.7.6 for more information.
4. Per KDB Publication 248227 D01v02r02, SAR for MIMO was evaluated by following the simultaneous SAR provisions from KDB Publication 447498 D01v06 by either evaluating the sum of the 1g SAR values of each antenna transmitting independently or making a SAR measurement with both antennas transmitting simultaneously. Please see Section 12 for complete analysis.
5. When the maximum reported 1g averaged SAR is $\leq 0.8 \text{ W/kg}$, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was $\leq 1.20 \text{ W/kg}$ for 1g evaluations or all test channels were measured.

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6. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated EMC test reports.
7. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

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12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Introduction

The following procedures adopted from FCC KDB Publication 447498 D01v06 are applicable to devices with built-in unlicensed transmitters such as 802.11 and Bluetooth devices which may simultaneously transmit with the licensed transmitter.

Please see the original compliance evaluation in RF Exposure Technical Report S/N: 1M1901160007-01-R1.A3L for the standalone reported SAR for modes and bands not evaluated for this permissive change.

12.2 Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore, simultaneous transmission analysis is required. Per FCC KDB Publication 447498 D01v06 4.3.2 and IEEE 1528-2013 Section 6.3.4.1.2, simultaneous transmission SAR test exclusion may be applied when the sum of the 1g SAR for all the simultaneous transmitting antennas in a specific physical test configuration is ≤ 1.6 W/kg. The different test positions in an exposure condition may be considered collectively to determine SAR test exclusion according to the sum of 1g or 10g SAR.

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12.3 Head SAR Simultaneous Transmission Analysis

Table 12-1
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	UMTS 1900	0.145	0.076	0.101	0.221	0.246	0.322
	GSM 1900	0.105	0.076	0.101	0.181	0.206	0.282
	PCS CDMA/EVDO	0.229	0.076	0.101	0.305	0.330	0.406
	LTE Band 25 (PCS)	0.169	0.076	0.101	0.245	0.270	0.346
	LTE Band 38	0.108	0.076	0.101	0.184	0.209	0.285
	LTE Band 41	0.127	0.076	0.101	0.203	0.228	0.304

Table 12-2
Simultaneous Transmission Scenario with 5 GHz WLAN (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	UMTS 1900	0.145	0.099	0.033	0.244	0.178	0.277
	GSM 1900	0.105	0.099	0.033	0.204	0.138	0.237
	PCS CDMA/EVDO	0.229	0.099	0.033	0.328	0.262	0.361
	LTE Band 25 (PCS)	0.169	0.099	0.033	0.268	0.202	0.301
	LTE Band 38	0.108	0.099	0.033	0.207	0.141	0.240
	LTE Band 41	0.127	0.099	0.033	0.226	0.160	0.259

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Table 12-3
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 5 GHz WLAN MIMO (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Head SAR	UMTS 1900	0.145	0.076	0.101	0.099	0.033	0.454
	GSM 1900	0.105	0.076	0.101	0.099	0.033	0.414
	PCS CDMA/EVDO	0.229	0.076	0.101	0.099	0.033	0.538
	LTE Band 25 (PCS)	0.169	0.076	0.101	0.099	0.033	0.478
	LTE Band 38	0.108	0.076	0.101	0.099	0.033	0.417
	LTE Band 41	0.127	0.076	0.101	0.099	0.033	0.436

Table 12-4
Simultaneous Transmission Scenario with Bluetooth (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	UMTS 1900	0.145	0.061	0.206
	GSM 1900	0.105	0.061	0.166
	PCS CDMA/EVDO	0.229	0.061	0.290
	LTE Band 25 (PCS)	0.169	0.061	0.230
	LTE Band 38	0.108	0.061	0.169
	LTE Band 41	0.127	0.061	0.188

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Table 12-5
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN Antenna 1(Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	UMTS 1900	0.145	0.061	0.099	0.305
	GSM 1900	0.105	0.061	0.099	0.265
	PCS CDMA/EVDO	0.229	0.061	0.099	0.389
	LTE Band 25 (PCS)	0.169	0.061	0.099	0.329
	LTE Band 38	0.108	0.061	0.099	0.268
	LTE Band 41	0.127	0.061	0.099	0.287

Table 12-6
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN Antenna 2(Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	UMTS 1900	0.145	0.061	0.033	0.239
	GSM 1900	0.105	0.061	0.033	0.199
	PCS CDMA/EVDO	0.229	0.061	0.033	0.323
	LTE Band 25 (PCS)	0.169	0.061	0.033	0.263
	LTE Band 38	0.108	0.061	0.033	0.202
	LTE Band 41	0.127	0.061	0.033	0.221

Table 12-7
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN MIMO(Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Head SAR	UMTS 1900	0.145	0.061	0.099	0.033	0.338
	GSM 1900	0.105	0.061	0.099	0.033	0.298
	PCS CDMA/EVDO	0.229	0.061	0.099	0.033	0.422
	LTE Band 25 (PCS)	0.169	0.061	0.099	0.033	0.362
	LTE Band 38	0.108	0.061	0.099	0.033	0.301
	LTE Band 41	0.127	0.061	0.099	0.033	0.320

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12.4 Body-Worn Simultaneous Transmission Analysis

Table 12-8
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Body-Worn at 1.5 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	UMTS 1900	0.383	0.112	0.124	0.495	0.507	0.619
	PCS CDMA	0.429	0.112	0.124	0.541	0.553	0.665
	LTE Band 25 (PCS)	0.489	0.112	0.124	0.601	0.613	0.725
	LTE Band 38	0.157	0.112	0.124	0.269	0.281	0.393
	LTE Band 41	0.098	0.112	0.124	0.210	0.222	0.334

Table 12-9
Simultaneous Transmission Scenario with 5 GHz WLAN (Body-Worn at 1.5 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	UMTS 1900	0.383	0.405	0.156	0.788	0.539	0.944
	PCS CDMA	0.429	0.405	0.156	0.834	0.585	0.990
	LTE Band 25 (PCS)	0.489	0.405	0.156	0.894	0.645	1.050
	LTE Band 38	0.157	0.405	0.156	0.562	0.313	0.718
	LTE Band 41	0.098	0.405	0.156	0.503	0.254	0.659

Table 12-10
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 5 GHz WLAN MIMO (Body-Worn at 1.5 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Body-Worn	UMTS 1900	0.383	0.112	0.124	0.405	0.156	1.180
	PCS CDMA	0.429	0.112	0.124	0.405	0.156	1.226
	LTE Band 25 (PCS)	0.489	0.112	0.124	0.405	0.156	1.286
	LTE Band 38	0.157	0.112	0.124	0.405	0.156	0.954
	LTE Band 41	0.098	0.112	0.124	0.405	0.156	0.895

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Table 12-11
Simultaneous Transmission Scenario with Bluetooth (Body-Worn at 1.5 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body-Worn	UMTS 1900	0.383	0.017	0.400
	PCS CDMA	0.429	0.017	0.446
	LTE Band 25 (PCS)	0.489	0.017	0.506
	LTE Band 38	0.157	0.017	0.174
	LTE Band 41	0.098	0.017	0.115

Table 12-12
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN Antenna 1 (Body-Worn at 1.5 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Body-Worn	UMTS 1900	0.383	0.017	0.405	0.805
	PCS CDMA	0.429	0.017	0.405	0.851
	LTE Band 25 (PCS)	0.489	0.017	0.405	0.911
	LTE Band 38	0.157	0.017	0.405	0.579
	LTE Band 41	0.098	0.017	0.405	0.520

Table 12-13
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN Antenna 2 (Body-Worn at 1.5 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Body-Worn	UMTS 1900	0.383	0.017	0.156	0.556
	PCS CDMA	0.429	0.017	0.156	0.602
	LTE Band 25 (PCS)	0.489	0.017	0.156	0.662
	LTE Band 38	0.157	0.017	0.156	0.330
	LTE Band 41	0.098	0.017	0.156	0.271

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Table 12-14
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN MIMO (Body-Worn at 1.5 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Body-Worn	UMTS 1900	0.383	0.017	0.405	0.156	0.961
	PCS CDMA	0.429	0.017	0.405	0.156	1.007
	LTE Band 25 (PCS)	0.489	0.017	0.405	0.156	1.067
	LTE Band 38	0.157	0.017	0.405	0.156	0.735
	LTE Band 41	0.098	0.017	0.405	0.156	0.676

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12.5 Hotspot SAR Simultaneous Transmission Analysis

Per FCC KDB Publication 941225 D06v02r01, the devices edges with antennas more than 2.5 cm from edge are not required to be evaluated for SAR (“-”).

(*) For test positions that were not required to be evaluated for WLAN SAR per FCC KDB publication 248227, the worst case WLAN SAR result for the applicable exposure conditions was used for simultaneous transmission analysis.

Table 12-15
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 1900	1.091	0.280	0.355	1.371	1.446	See Table Below
	PCS EVDO	0.978	0.280	0.355	1.258	1.333	See Table Below
	LTE Band 25 (PCS)	0.992	0.280	0.355	1.272	1.347	See Table Below
	LTE Band 38	0.760	0.280	0.355	1.040	1.115	1.395
	LTE Band 41	1.180	0.280	0.355	1.460	1.535	See Table Below

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.380	0.280	0.355*	0.660	0.735	1.015
	Front	0.219	0.280*	0.355*	0.499	0.574	0.854
	Top	-	0.280*	0.355	0.280	0.355	0.635
	Bottom	1.091	-	-	1.091	1.091	1.091
	Right	0.163	0.280*	-	0.443	0.163	0.443
	Left	0.102	-	0.355*	0.102	0.457	0.457

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.382	0.280	0.355*	0.662	0.737	1.017
	Front	0.210	0.280*	0.355*	0.490	0.565	0.845
	Top	-	0.280*	0.355	0.280	0.355	0.635
	Bottom	0.992	-	-	0.992	0.992	0.992
	Right	0.123	0.280*	-	0.403	0.123	0.403
	Left	0.095	-	0.355*	0.095	0.450	0.450

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.400	0.280	0.355*	0.680	0.755	1.035
	Front	0.198	0.280*	0.355*	0.478	0.553	0.833
	Top	-	0.280*	0.355	0.280	0.355	0.635
	Bottom	0.978	-	-	0.978	0.978	0.978
	Right	0.118	0.280*	-	0.398	0.118	0.398
	Left	0.090	-	0.355*	0.090	0.445	0.445

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.177	0.280	0.355*	0.457	0.532	0.812
	Front	0.438	0.280*	0.355*	0.718	0.793	1.073
	Top	-	0.280*	0.355	0.280	0.355	0.635
	Bottom	1.180	-	-	1.180	1.180	1.180
	Right	0.055	0.280*	-	0.335	0.055	0.335
	Left	0.048	-	0.355*	0.048	0.403	0.403

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Table 12-16
Simultaneous Transmission Scenario with 5 GHz WLAN (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 1900	1.091	0.211	0.264	1.302	1.355	1.566
	PCS EVDO	0.978	0.211	0.264	1.189	1.242	1.453
	LTE Band 25 (PCS)	0.992	0.211	0.264	1.203	1.256	1.467
	LTE Band 38	0.760	0.211	0.264	0.971	1.024	1.235
	LTE Band 41	1.180	0.211	0.264	1.391	1.444	See Table Below

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.177	0.211	0.264	0.388	0.441	0.652
	Front	0.438	0.211*	0.264*	0.649	0.702	0.913
	Top	-	0.211*	0.264*	0.211	0.264	0.475
	Bottom	1.180	-	-	1.180	1.180	1.180
	Right	0.055	0.211*	-	0.266	0.055	0.266
	Left	0.048	-	0.264*	0.048	0.312	0.312

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Table 12-17
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 5 GHz WLAN MIMO (Hotspot at 1.0 cm)

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	Back	0.380	0.280	0.355*	0.211	0.264	1.490
	Front	0.219	0.280*	0.355*	0.211*	0.264*	1.329
	Top	-	0.280*	0.355	0.211*	0.264*	1.110
	Bottom	1.091	-	-	-	-	1.091
	Right	0.163	0.280*	-	0.211*	-	0.654
	Left	0.102	-	0.355*	-	0.264*	0.721
Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	Back	0.400	0.280	0.355*	0.211	0.264	1.510
	Front	0.198	0.280*	0.355*	0.211*	0.264*	1.308
	Top	-	0.280*	0.355	0.211*	0.264*	1.110
	Bottom	0.978	-	-	-	-	0.978
	Right	0.118	0.280*	-	0.211*	-	0.609
	Left	0.090	-	0.355*	-	0.264*	0.709
Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	Back	0.382	0.280	0.355*	0.211	0.264	1.492
	Front	0.210	0.280*	0.355*	0.211*	0.264*	1.320
	Top	-	0.280*	0.355	0.211*	0.264*	1.110
	Bottom	0.992	-	-	-	-	0.992
	Right	0.123	0.280*	-	0.211*	-	0.614
	Left	0.095	-	0.355*	-	0.264*	0.714
Simult Tx	Configuration	LTE Band 38 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	Back	0.138	0.280	0.355*	0.211	0.264	1.248
	Front	0.315	0.280*	0.355*	0.211*	0.264*	1.425
	Top	-	0.280*	0.355	0.211*	0.264*	1.110
	Bottom	0.760	-	-	-	-	0.760
	Right	0.060	0.280*	-	0.211*	-	0.551
	Left	0.026	-	0.355*	-	0.264*	0.645
Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	Back	0.177	0.280	0.355*	0.211	0.264	1.287
	Front	0.438	0.280*	0.355*	0.211*	0.264*	1.548
	Top	-	0.280*	0.355	0.211*	0.264*	1.110
	Bottom	1.180	-	-	-	-	1.180
	Right	0.055	0.280*	-	0.211*	-	0.546
	Left	0.048	-	0.355*	-	0.264*	0.667

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Table 12-18
Simultaneous Transmission Scenario with Bluetooth (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	GPRS 1900	1.091	0.045	1.136
	PCS EVDO	0.978	0.045	1.023
	LTE Band 25 (PCS)	0.992	0.045	1.037
	LTE Band 38	0.760	0.045	0.805
	LTE Band 41	1.180	0.045	1.225

Table 12-19
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN Antenna 1 (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	GPRS 1900	1.091	0.045	0.211	1.347
	PCS EVDO	0.978	0.045	0.211	1.234
	LTE Band 25 (PCS)	0.992	0.045	0.211	1.248
	LTE Band 38	0.760	0.045	0.211	1.016
	LTE Band 41	1.180	0.045	0.211	1.436

Table 12-20
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN Antenna 2 (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	GPRS 1900	1.091	0.045	0.264	1.400
	PCS EVDO	0.978	0.045	0.264	1.287
	LTE Band 25 (PCS)	0.992	0.045	0.264	1.301
	LTE Band 38	0.760	0.045	0.264	1.069
	LTE Band 41	1.180	0.045	0.264	1.489

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Table 12-21

Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN MIMO (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Hotspot SAR	GPRS 1900	1.091	0.045	0.211	0.264	See Table Below
	PCS EVDO	0.978	0.045	0.211	0.264	1.498
	LTE Band 25 (PCS)	0.992	0.045	0.211	0.264	1.512
	LTE Band 38	0.760	0.045	0.211	0.264	1.280
	LTE Band 41	1.180	0.045	0.211	0.264	See Table Below

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Hotspot SAR	Back	0.380	0.045	0.211	0.264	0.900
	Front	0.219	0.007	0.211*	0.264*	0.701
	Top	-	0.033	0.211*	0.264*	0.508
	Bottom	1.091	-	-	-	1.091
	Right	0.163	0.029	0.211*	-	0.403
	Left	0.102	-	-	0.264*	0.366
Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Hotspot SAR	Back	0.177	0.045	0.211	0.264	0.697
	Front	0.438	0.007	0.211*	0.264*	0.920
	Top	-	0.033	0.211*	0.264*	0.508
	Bottom	1.180	-	-	-	1.180
	Right	0.055	0.029	0.211*	-	0.295
	Left	0.048	-	-	0.264*	0.312

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12.6 Phablet Simultaneous Transmission Analysis

Per FCC KDB Publication 941225 D06v02r01, the devices edges with antennas more than 2.5 cm from edge are not required to be evaluated for SAR (“-”).

(*) For test positions that were not required to be evaluated for WLAN SAR per FCC KDB publication 248227, the worst case WLAN SAR result for the applicable exposure conditions was used for simultaneous transmission analysis.

For SAR summation, the highest reported SAR across all test distances was used as the most conservative evaluation for simultaneous transmission analysis for each device edge.

Per FCC KDB Publication 648474 D04 Handset SAR, Phablet SAR tests were not required if wireless router 1g SAR (scaled to the maximum output power, including tolerance) < 1.2 W/kg. Therefore no further analysis beyond the tables included in this section was required to determine that possible simultaneous transmission scenarios would not exceed the SAR limit.

Table 12-22
Simultaneous Transmission Scenario with 5 GHz WLAN (Phablet)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Phablet SAR	UMTS 1750	0.974	0.752	1.222	1.726	2.196	2.948
	UMTS 1900	3.160	0.752	1.222	3.912	See Table Below	See Table Below
	GPRS 1900	3.228	0.752	1.222	3.980	See Table Below	See Table Below
	PCS EVDO	2.145	0.752	1.222	2.897	3.367	See Table Below
	LTE Band 66 (AWS)	1.436	0.752	1.222	2.188	2.658	3.410
	LTE Band 25 (PCS)	2.588	0.752	1.222	3.340	3.810	See Table Below
	LTE Band 30	2.480	0.752	1.222	3.232	3.702	See Table Below
	LTE Band 7	0.667	0.752	1.222	1.419	1.889	2.641
	LTE Band 38	2.841	0.752	1.222	3.593	See Table Below	See Table Below
LTE Band 41	2.320	0.752	1.222	3.072	3.542	See Table Below	

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+3	1+2+3			1	2	3	1+3	1+2+3
Phablet SAR	Back	1.030	0.752	1.222	2.252	3.004	Phablet SAR	Back	1.427	0.752	1.222	2.649	3.401
	Front	1.208	0.028	1.222*	2.430	2.458		Front	-	0.028	1.222*	1.222	1.250
	Top	-	0.304	0.532	0.532	0.836		Top	-	0.304	0.532	0.532	0.836
	Bottom	3.160	-	-	3.160	3.160		Bottom	3.228	-	-	3.228	3.228
	Right	0.688	0.752*	-	0.688	1.440		Right	-	0.752*	-	-	0.752
	Left	0.382	-	1.222*	1.604	1.604		Left	-	-	1.222*	1.222	1.222

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Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
Phablet SAR	Back	0.961	0.752	1.222	2.935	Phablet SAR	Back	1.167	0.752	1.222	3.141
	Front	1.109	0.028	1.222*	2.359		Front	1.339	0.028	1.222*	2.589
	Top	-	0.304	0.532	0.836		Top	-	0.304	0.532	0.836
	Bottom	2.145	-	-	2.145		Bottom	2.588	-	-	2.588
	Right	0.620	0.752*	-	1.372		Right	0.706	0.752*	-	1.458
	Left	0.399	-	1.222*	1.621		Left	0.340	-	1.222*	1.562

Simult Tx	Configuration	LTE Band 30 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 38 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2+3			1	2	3	1+2	1+3	1+2+3
Phablet SAR	Back	0.995	0.752	1.222	2.969	Phablet SAR	Back	0.592	0.752	1.222	1.344	1.814	2.566
	Front	-	0.028	1.222*	1.250		Front	2.443	0.028	1.222*	2.471	3.665	3.693
	Top	-	0.304	0.532	0.836		Top	-	0.304	0.532	0.304	0.532	0.836
	Bottom	2.480	-	-	2.480		Bottom	2.841	-	-	2.841	2.841	2.841
	Right	-	0.752*	-	0.752		Right	0.663	0.752*	-	1.415	0.663	1.415
	Left	-	-	1.222*	1.222		Left	0.088	-	1.222*	0.088	1.310	1.310

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Phablet SAR	Back	0.101	0.752	1.222	2.075
	Front	2.320	0.028	1.222*	3.570
	Top	-	0.304	0.532	0.836
	Bottom	0.412	-	-	0.412
	Right	0.368	0.752*	-	1.120
	Left	0.216	-	1.222*	1.438

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12.7 UMPC Body Simultaneous Transmission Analysis

Per FCC KDB Publication 941225 D06v02r01, the devices edges with antennas more than 2.5 cm from edge are not required to be evaluated for SAR (“-”).

(*) For test positions that were not required to be evaluated for WLAN SAR per FCC KDB publication 248227, the worst case WLAN SAR result for the applicable exposure conditions was used for simultaneous transmission analysis.

Table 12-23
Simultaneous Transmission Scenario with 2.4 GHz WLAN (UMPC Body)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
UMPC Body SAR	GPRS 850	0.965	0.461	0.228	1.426	1.193
	UMTS 1750	0.843	0.461	0.228	1.304	1.071
	GPRS 1900	0.811	0.461	0.228	1.272	1.039
	UMTS 1900	1.231	0.461	0.228	See Table Below	1.459
	PCS EVDO	0.871	0.461	0.228	1.332	1.099
	LTE Band 66 (AWS)	0.742	0.461	0.228	1.203	0.970
	LTE Band 25 (PCS)	0.742	0.461	0.228	1.203	0.970
	LTE Band 30	0.859	0.461	0.228	1.320	1.087
	LTE Band 7	0.915	0.461	0.228	1.376	1.143
	LTE Band 38	0.958	0.461	0.228	1.419	1.186
	LTE Band 41	0.760	0.461	0.228	1.221	0.988

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
UMPC Body SAR	Back	0.879	0.362	1.241
	Front	0.978	0.395	1.373
	Top	-	0.461	0.461
	Bottom	1.231	-	1.231
	Right	-	0.461*	0.461

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Table 12-24
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO (UMPC Body)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
UMPC Body SAR	GPRS 850	0.965	0.553	1.518
	UMTS 1750	0.843	0.553	1.396
	GPRS 1900	0.811	0.553	1.364
	UMTS 1900	1.231	0.553	See Table Below
	PCS EVDO	0.871	0.553	1.424
	LTE Band 66 (AWS)	0.742	0.553	1.295
	LTE Band 25 (PCS)	0.742	0.553	1.295
	LTE Band 30	0.859	0.553	1.412
	LTE Band 7	0.915	0.553	1.468
	LTE Band 38	0.958	0.553	1.511
	LTE Band 41	0.760	0.553	1.313
Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
UMPC Body SAR	Back	0.879	0.316	1.195
	Front	0.978	0.214	1.192
	Top	-	0.553	0.553
	Bottom	1.231	-	1.231
	Right	-	0.246	0.246

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Table 12-25
Simultaneous Transmission Scenario with 5 GHz WLAN (UMPC Body)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
UMPC Body SAR	GPRS 850	0.965	0.729	0.325	See Table Below	1.290
	UMTS 1750	0.843	0.729	0.325	1.572	1.168
	GPRS 1900	0.811	0.729	0.325	1.540	1.136
	UMTS 1900	1.231	0.729	0.325	See Table Below	1.556
	PCS EVDO	0.871	0.729	0.325	See Table Below	1.196
	LTE Band 66 (AWS)	0.742	0.729	0.325	1.471	1.067
	LTE Band 25 (PCS)	0.742	0.729	0.325	1.471	1.067
	LTE Band 30	0.859	0.729	0.325	1.588	1.184
	LTE Band 7	0.915	0.729	0.325	See Table Below	1.240
	LTE Band 38	0.958	0.729	0.325	See Table Below	1.283
	LTE Band 41	0.760	0.729	0.325	1.489	1.085

Simult Tx	Configuration	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
UMPC Body SAR	Back	0.965	0.729	See Note 1	0.02
	Front	0.729	0.152	0.881	N/A
	Top	-	0.166	0.166	N/A
	Bottom	0.735	-	0.735	N/A
	Right	0.525	0.729*	1.254	N/A

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	SPLSR	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2	1+2			1	2	1+2
UMPC Body SAR	Back	0.879	0.729	See Note 1	0.01	UMPC Body SAR	Back	0.648	0.729	1.377
	Front	0.978	0.152	1.130	N/A		Front	0.782	0.152	0.934
	Top	-	0.166	0.166	N/A		Top	-	0.166	0.166
	Bottom	1.231	-	1.231	N/A		Bottom	0.871	-	0.871
	Right	-	0.729*	0.729	N/A		Right	0.263	0.729*	0.992

Simult Tx	Configuration	LTE Band 7 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 38 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
UMPC Body SAR	Back	0.764	0.729	1.493	UMPC Body SAR	Back	0.764	0.729	1.493
	Front	0.898	0.152	1.050		Front	0.811	0.152	0.963
	Top	-	0.166	0.166		Top	-	0.166	0.166
	Bottom	0.915	-	0.915		Bottom	0.958	-	0.958
	Right	-	0.729*	0.729		Right	0.387	0.729*	1.116

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Table 12-26
Simultaneous Transmission Scenario with 5 GHz WLAN MIMO (UMPC Body)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	
		1	2	1+2	
UMPC Body SAR	GPRS 850	0.965	0.677	See Table Below	
	UMTS 1750	0.843	0.677	1.520	
	GPRS 1900	0.811	0.677	1.488	
	UMTS 1900	1.231	0.677	See Table Below	
	PCS EVDO	0.871	0.677	1.548	
	LTE Band 66 (AWS)	0.742	0.677	1.419	
	LTE Band 25 (PCS)	0.742	0.677	1.419	
	LTE Band 30	0.859	0.677	1.536	
	LTE Band 7	0.915	0.677	1.592	
	LTE Band 38	0.958	0.677	See Table Below	
	LTE Band 41	0.760	0.677	1.437	

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2	1+2			1	2	1+2
UMPC Body SAR	Back	0.965	0.677	See Note 1	0.02	UMPC Body SAR	Back	0.879	0.677	1.556
	Front	0.729	0.333	1.062	N/A		Front	0.978	0.333	1.311
	Top	-	0.455	0.455	N/A		Top	-	0.455	0.455
	Bottom	0.735	-	0.735	N/A		Bottom	1.231	-	1.231
	Right	0.525	0.152	0.677	N/A		Right	-	0.152	0.152

Simult Tx	Configuration	LTE Band 38 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
UMPC Body SAR	Back	0.764	0.677	1.441
	Front	0.811	0.333	1.144
	Top	-	0.455	0.455
	Bottom	0.958	-	0.958
	Right	0.387	0.152	0.539

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Table 12-27

Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 5 GHz WLAN MIMO (UMPC Body)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR	Back	0.965	0.200	0.424	1.589
	Front	0.729	0.428*	0.148	1.305
	Top	-	0.428	0.307	0.735
	Bottom	0.735	-	-	0.735
	Right	0.525	0.428*	0.424*	1.377
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR	Back	0.426	0.200	0.424	1.050
	Front	0.443	0.428*	0.148	1.019
	Top	-	0.428	0.307	0.735
	Bottom	0.811	-	-	0.811
	Right	-	0.428*	0.424*	0.852
Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR	Back	0.648	0.200	0.424	1.272
	Front	0.782	0.428*	0.148	1.358
	Top	-	0.428	0.307	0.735
	Bottom	0.871	-	-	0.871
	Right	0.263	0.428*	0.424*	1.115
Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR	Back	0.662	0.200	0.424	1.286
	Front	0.742	0.428*	0.148	1.318
	Top	-	0.428	0.307	0.735
	Bottom	0.725	-	-	0.725
	Right	-	0.428*	0.424*	0.852
Simult Tx	Configuration	LTE Band 7 SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR	Back	0.764	0.200	0.424	1.388
	Front	0.898	0.428*	0.148	1.474
	Top	-	0.428	0.307	0.735
	Bottom	0.915	-	-	0.915
	Right	-	0.428*	0.424*	0.852
Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR	Back	0.731	0.200	0.424	1.355
	Front	0.843	0.428*	0.148	1.419
	Top	-	0.428	0.307	0.735
	Bottom	0.663	-	-	0.663
	Right	-	0.428*	0.424*	0.852
Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR	Back	0.879	0.200	0.424	1.503
	Front	0.978	0.428*	0.148	1.554
	Top	-	0.428	0.307	0.735
	Bottom	1.231	-	-	1.231
	Right	-	0.428*	0.424*	0.852
Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR	Back	0.581	0.200	0.424	1.205
	Front	0.742	0.428*	0.148	1.318
	Top	-	0.428	0.307	0.735
	Bottom	0.558	-	-	0.558
	Right	-	0.428*	0.424*	0.852
Simult Tx	Configuration	LTE Band 30 SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR	Back	0.697	0.200	0.424	1.321
	Front	0.824	0.428*	0.148	1.400
	Top	-	0.428	0.307	0.735
	Bottom	0.859	-	-	0.859
	Right	-	0.428*	0.424*	0.852
Simult Tx	Configuration	LTE Band 38 SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR	Back	0.764	0.200	0.424	1.388
	Front	0.811	0.428*	0.148	1.387
	Top	-	0.428	0.307	0.735
	Bottom	0.958	-	-	0.958
	Right	0.387	0.428*	0.424*	1.239
Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR	Back	0.519	0.200	0.424	1.143
	Front	0.552	0.428*	0.148	1.128
	Top	-	0.428	0.307	0.735
	Bottom	0.760	-	-	0.760
	Right	0.241	0.428*	0.424*	1.093

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Table 12-28
Simultaneous Transmission Scenario with Bluetooth (UMPC Body)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
UMPC Body SAR	GPRS 850	0.965	0.127	1.092
	UMTS 1750	0.843	0.127	0.970
	GPRS 1900	0.811	0.127	0.938
	UMTS 1900	1.231	0.127	1.358
	PCS EVDO	0.871	0.127	0.998
	LTE Band 66 (AWS)	0.742	0.127	0.869
	LTE Band 25 (PCS)	0.742	0.127	0.869
	LTE Band 30	0.859	0.127	0.986
	LTE Band 7	0.915	0.127	1.042
	LTE Band 38	0.958	0.127	1.085
	LTE Band 41	0.760	0.127	0.887

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Table 12-29
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN Antenna 1 (UMPC Body)

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
		1	2	3	1+2+3	1+2	1+3	2+3
UMPC Body SAR	Back	0.965	0.105	0.729	See Note 1	0.01	0.02	0.04
	Front	0.729	0.127	0.152	1.008	N/A	N/A	N/A
	Top	-	0.124	0.166	0.290	N/A	N/A	N/A
	Bottom	0.735	-	-	0.735	N/A	N/A	N/A
	Right	0.525	0.113	0.729*	1.367	N/A	N/A	N/A

Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
UMPC Body SAR	Back	0.731	0.105	0.729	1.565	UMPC Body SAR	Back	0.426	0.105	0.729	1.260
	Front	0.843	0.127	0.152	1.122		Front	0.443	0.127	0.152	0.722
	Top	-	0.124	0.166	0.290		Top	-	0.124	0.166	0.290
	Bottom	0.663	-	-	0.663		Bottom	0.811	-	-	0.811
	Right	-	0.113	0.729*	0.842		Right	-	0.113	0.729*	0.842

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
		1	2	3	1+2+3	1+2	1+3	2+3
UMPC Body SAR	Back	0.879	0.105	0.729	See Note 1	0.01	0.01	0.04
	Front	0.978	0.127	0.152	1.257	N/A	N/A	N/A
	Top	-	0.124	0.166	0.290	N/A	N/A	N/A
	Bottom	1.231	-	-	1.231	N/A	N/A	N/A
	Right	-	0.113	0.729*	0.842	N/A	N/A	N/A

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
UMPC Body SAR	Back	0.648	0.105	0.729	1.482	UMPC Body SAR	Back	0.581	0.105	0.729	1.415
	Front	0.782	0.127	0.152	1.061		Front	0.742	0.127	0.152	1.021
	Top	-	0.124	0.166	0.290		Top	-	0.124	0.166	0.290
	Bottom	0.871	-	-	0.871		Bottom	0.558	-	-	0.558
	Right	0.263	0.113	0.729*	1.105		Right	-	0.113	0.729*	0.842
Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 30 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
UMPC Body SAR	Back	0.662	0.105	0.729	1.496	UMPC Body SAR	Back	0.697	0.105	0.729	1.531
	Front	0.742	0.127	0.152	1.021		Front	0.824	0.127	0.152	1.103
	Top	-	0.124	0.166	0.290		Top	-	0.124	0.166	0.290
	Bottom	0.725	-	-	0.725		Bottom	0.859	-	-	0.859
	Right	-	0.113	0.729*	0.842		Right	-	0.113	0.729*	0.842

Simult Tx	Configuration	LTE Band 7 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
		1	2	3	1+2+3	1+2	1+3	2+3
UMPC Body SAR	Back	0.764	0.105	0.729	See Note 1	0.00	0.01	0.04
	Front	0.898	0.127	0.152	1.177	N/A	N/A	N/A
	Top	-	0.124	0.166	0.290	N/A	N/A	N/A
	Bottom	0.915	-	-	0.915	N/A	N/A	N/A
	Right	-	0.113	0.729*	0.842	N/A	N/A	N/A

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Simult Tx	Configuration	LTE Band 38 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
		1	2	3	1+2+3	1+2	1+3	2+3
UMPC Body SAR	Back	0.764	0.105	0.729	See Note 1	0.00	0.01	0.04
	Front	0.811	0.127	0.152	1.090	N/A	N/A	N/A
	Top	-	0.124	0.166	0.290	N/A	N/A	N/A
	Bottom	0.958	-	-	0.958	N/A	N/A	N/A
	Right	0.387	0.113	0.729*	1.229	N/A	N/A	N/A

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR	Back	0.519	0.105	0.729	1.353
	Front	0.552	0.127	0.152	0.831
	Top	-	0.124	0.166	0.290
	Bottom	0.760	-	-	0.760
	Right	0.241	0.113	0.729*	1.083

Table 12-30
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN Antenna 2 (UMPC Body)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR	GPRS 850	0.965	0.127	0.325	1.417
	UMTS 1750	0.843	0.127	0.325	1.295
	GPRS 1900	0.811	0.127	0.325	1.263
	UMTS 1900	1.231	0.127	0.325	See Table Below
	PCS EVDO	0.871	0.127	0.325	1.323
	LTE Band 66 (AWS)	0.742	0.127	0.325	1.194
	LTE Band 25 (PCS)	0.742	0.127	0.325	1.194
	LTE Band 30	0.859	0.127	0.325	1.311
	LTE Band 7	0.915	0.127	0.325	1.367
	LTE Band 38	0.958	0.127	0.325	1.410
	LTE Band 41	0.760	0.127	0.325	1.212

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR	Back	0.879	0.105	0.325*	1.309
	Front	0.978	0.127	0.325*	1.430
	Top	-	0.124	0.325	0.449
	Bottom	1.231	-	-	1.231
	Right	-	0.113	-	0.113

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Table 12-31
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN MIMO (UMPC Body)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Body SAR	GPRS 850	0.965	0.127	0.677	See Table Below
	UMTS 1750	0.843	0.127	0.677	See Table Below
	GPRS 1900	0.811	0.127	0.677	See Table Below
	UMTS 1900	1.231	0.127	0.677	See Table Below
	PCS EVDO	0.871	0.127	0.677	See Table Below
	LTE Band 66 (AWS)	0.742	0.127	0.677	1.546
	LTE Band 25 (PCS)	0.742	0.127	0.677	1.546
	LTE Band 30	0.859	0.127	0.677	See Table Below
	LTE Band 7	0.915	0.127	0.677	See Table Below
	LTE Band 38	0.958	0.127	0.677	See Table Below
	LTE Band 41	0.760	0.127	0.677	1.564

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
		1	2	3	1+2+3	1+2	1+3	2+3
UMPC Body SAR	Back	0.965	0.105	0.677	See Note 1	0.01	0.02	0.04
	Front	0.729	0.127	0.333	1.189	N/A	N/A	N/A
	Top	-	0.124	0.455	0.579	N/A	N/A	N/A
	Bottom	0.735	-	-	0.735	N/A	N/A	N/A
	Right	0.525	0.113	0.152	0.790	N/A	N/A	N/A

Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
UMPC Body SAR	Back	0.731	0.105	0.677	1.513	UMPC Body SAR	Back	0.426	0.105	0.677	1.208
	Front	0.843	0.127	0.333	1.303		Front	0.443	0.127	0.333	0.903
	Top	-	0.124	0.455	0.579		Top	-	0.124	0.455	0.579
	Bottom	0.663	-	-	0.663		Bottom	0.811	-	-	0.811
	Right	-	0.113	0.152	0.265		Right	-	0.113	0.152	0.265

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
		1	2	3	1+2+3	1+2	1+3	2+3
UMPC Body SAR	Back	0.879	0.105	0.677	See Note 1	0.01	0.01	0.04
	Front	0.978	0.127	0.333	1.438	N/A	N/A	N/A
	Top	-	0.124	0.455	0.579	N/A	N/A	N/A
	Bottom	1.231	-	-	1.231	N/A	N/A	N/A
	Right	-	0.113	0.152	0.265	N/A	N/A	N/A

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Simult Tx	Configuration	PCS EVDO SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 30 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
UMPC Body SAR	Back	0.648	0.105	0.677	1.430	UMPC Body SAR	Back	0.697	0.105	0.677	1.479
	Front	0.782	0.127	0.333	1.242		Front	0.824	0.127	0.333	1.284
	Top	-	0.124	0.455	0.579		Top	-	0.124	0.455	0.579
	Bottom	0.871	-	-	0.871		Bottom	0.859	-	-	0.859
	Right	0.263	0.113	0.152	0.528		Right	-	0.113	0.152	0.265
Simult Tx	Configuration	LTE Band 7 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 38 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
UMPC Body SAR	Back	0.764	0.105	0.677	1.546	UMPC Body SAR	Back	0.764	0.105	0.677	1.546
	Front	0.898	0.127	0.333	1.358		Front	0.811	0.127	0.333	1.271
	Top	-	0.124	0.455	0.579		Top	-	0.124	0.455	0.579
	Bottom	0.915	-	-	0.915		Bottom	0.958	-	-	0.958
	Right	-	0.113	0.152	0.265		Right	0.387	0.113	0.152	0.652

Notes:

1. No evaluation was performed to determine the aggregate 1g SAR for these configurations as the SPLS ratio between the antenna pairs was not greater than 0.04 per FCC KDB 447498 D01v06. See Section 12.9 for detailed SPLS ratio analysis.

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12.8 UMPC Extremity Simultaneous Transmission Analysis

Per FCC KDB Publication 941225 D06v02r01, the devices edges with antennas more than 2.5 cm from edge are not required to be evaluated for SAR (“-”).

(*) For test positions that were not required to be evaluated for WLAN SAR per FCC KDB publication 248227, the worst case WLAN SAR result for the applicable exposure conditions was used for simultaneous transmission analysis.

Table 12-32
Simultaneous Transmission Scenario with 2.4 GHz WLAN (UMPC Extremity)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
UMPC Extremity SAR	GPRS 850	2.122	2.701	1.831	See Table Below	3.953
	UMTS 850	1.695	2.701	1.831	See Table Below	3.526
	UMTS 1750	0.408	2.701	1.831	3.109	2.239
	GPRS 1900	3.002	2.701	1.831	See Table Below	See Table Below
	UMTS 1900	0.695	2.701	1.831	3.396	2.526
	PCS EVDO	2.429	2.701	1.831	See Table Below	See Table Below
	LTE Band 26 (Cell)	1.788	2.701	1.831	See Table Below	3.619
	LTE Band 5 (Cell)	1.637	2.701	1.831	See Table Below	3.468
	LTE Band 66 (AWS)	0.356	2.701	1.831	3.057	2.187
	LTE Band 25 (PCS)	2.808	2.701	1.831	See Table Below	See Table Below
	LTE Band 30	2.738	2.701	1.831	See Table Below	See Table Below
	LTE Band 7	0.473	2.701	1.831	3.174	2.304
	LTE Band 38	2.847	2.701	1.831	See Table Below	See Table Below
	LTE Band 41	0.772	2.701	1.831	3.473	2.603

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
UMPC Extremity SAR	Back	2.122	1.653	3.775	N/A
	Front	1.863	2.701	See Note 1	0.08
	Top	-	1.976	1.976	N/A
	Bottom	1.159	-	1.159	N/A
	Right	0.807	2.701*	3.508	N/A

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Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)		SPLSR
		1	2	1+2	1+2	
UMPC Extremity SAR	Back	1.525	1.653	3.178		N/A
	Front	1.695	2.701	See Note 1		0.06
	Top	-	1.976	1.976		N/A
	Bottom	0.644	-	0.644		N/A
	Right	0.735	2.701*	3.436		N/A

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		SPLSR
		1	2	3	1+2	1+3	
UMPC Extremity SAR	Back	1.374	1.653	1.831	3.027	3.205	N/A
	Front	1.601	2.701	1.831*	See Note 1	3.432	0.06
	Top	-	1.976	1.509	1.976	1.509	N/A
	Bottom	3.002	-	-	3.002	3.002	N/A
	Right	-	2.701*	-	2.701	-	N/A

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
UMPC Extremity SAR	Back	1.056	1.653	1.831	2.709	2.887
	Front	1.151	2.701	1.831*	3.852	2.982
	Top	-	1.976	1.509	1.976	1.509
	Bottom	2.429	-	-	2.429	2.429
	Right	0.798	2.701*	-	3.499	0.798

Simult Tx	Configuration	LTE Band 26 (Cell) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)		SPLSR
		1	2	1+2	1+2	
UMPC Extremity SAR	Back	1.544	1.653	3.197		N/A
	Front	1.788	2.701	See Note 1		0.07
	Top	-	1.976	1.976		N/A
	Bottom	0.794	-	0.794		N/A
	Right	1.254	2.701*	3.955		N/A

Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)		SPLSR
		1	2	1+2	1+2	
UMPC Extremity SAR	Back	1.637	1.653	3.290		N/A
	Front	1.321	2.701	See Note 1		0.05
	Top	-	1.976	1.976		N/A
	Bottom	0.832	-	0.832		N/A
	Right	1.192	2.701*	3.893		N/A

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Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		SPLSR
		1	2	3	1+2	1+3	
UMPC Extremity SAR	Back	0.938	1.653	1.831	2.591	2.769	N/A
	Front	1.363	2.701	1.831*	See Note 1	3.194	0.05
	Top	-	1.976	1.509	1.976	1.509	N/A
	Bottom	2.808	-	-	2.808	2.808	N/A
	Right	-	2.701*	-	2.701	-	N/A

Simult Tx	Configuration	LTE Band 30 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
UMPC Extremity SAR	Back	0.910	1.653	1.831	2.563	2.741
	Front	1.151	2.701	1.831*	3.852	2.982
	Top	-	1.976	1.509	1.976	1.509
	Bottom	2.738	-	-	2.738	2.738
	Right	-	2.701*	-	2.701	-
Simult Tx	Configuration	LTE Band 38 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
UMPC Extremity SAR	Back	1.144	1.653	1.831	2.797	2.975
	Front	1.207	2.701	1.831*	3.908	3.038
	Top	-	1.976	1.509	1.976	1.509
	Bottom	2.847	-	-	2.847	2.847
	Right	1.293	2.701*	-	3.994	1.293

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Table 12-33
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO (UMPC Extremity)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
UMPC Extremity SAR	GPRS 850	2.122	1.992	See Table Below
	UMTS 850	1.695	1.992	3.687
	UMTS 1750	0.408	1.992	2.400
	GPRS 1900	3.002	1.992	See Table Below
	UMTS 1900	0.695	1.992	2.687
	PCS EVDO	2.429	1.992	See Table Below
	LTE Band 26 (Cell)	1.788	1.992	3.780
	LTE Band 5 (Cell)	1.637	1.992	3.629
	LTE Band 66 (AWS)	0.356	1.992	2.348
	LTE Band 25 (PCS)	2.808	1.992	See Table Below
	LTE Band 30	2.738	1.992	See Table Below
	LTE Band 7	0.473	1.992	2.465
	LTE Band 38	2.847	1.992	See Table Below
	LTE Band 41	0.772	1.992	2.764

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
UMPC Extremity SAR	Back	2.122	1.426	3.548	UMPC Extremity SAR	Back	1.374	1.426	2.800
	Front	1.863	1.929	3.792		Front	1.601	1.929	3.530
	Top	-	1.992	1.992		Top	-	1.992	1.992
	Bottom	1.159	-	1.159		Bottom	3.002	-	3.002
	Right	0.807	0.594	1.401		Right	-	0.594	0.594

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
UMPC Extremity SAR	Back	1.056	1.426	2.482	UMPC Extremity SAR	Back	0.938	1.426	2.364
	Front	1.151	1.929	3.080		Front	1.363	1.929	3.292
	Top	-	1.992	1.992		Top	-	1.992	1.992
	Bottom	2.429	-	2.429		Bottom	2.808	-	2.808
	Right	0.798	0.594	1.392		Right	-	0.594	0.594

Simult Tx	Configuration	LTE Band 30 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 38 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
UMPC Extremity SAR	Back	0.910	1.426	2.336	UMPC Extremity SAR	Back	1.144	1.426	2.570
	Front	1.151	1.929	3.080		Front	1.207	1.929	3.136
	Top	-	1.992	1.992		Top	-	1.992	1.992
	Bottom	2.738	-	2.738		Bottom	2.847	-	2.847
	Right	-	0.594	0.594		Right	1.293	0.594	1.887

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Table 12-34
Simultaneous Transmission Scenario with 5 GHz WLAN (UMPC Extremity)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
UMPC Extremity SAR	GPRS 850	2.122	0.894	1.137	3.016	3.259
	UMTS 850	1.695	0.894	1.137	2.589	2.832
	UMTS 1750	0.408	0.894	1.137	1.302	1.545
	GPRS 1900	3.002	0.894	1.137	3.896	See Table Below
	UMTS 1900	0.695	0.894	1.137	1.589	1.832
	PCS EVDO	2.429	0.894	1.137	3.323	3.566
	LTE Band 26 (Cell)	1.788	0.894	1.137	2.682	2.925
	LTE Band 5 (Cell)	1.637	0.894	1.137	2.531	2.774
	LTE Band 66 (AWS)	0.356	0.894	1.137	1.250	1.493
	LTE Band 25 (PCS)	2.808	0.894	1.137	3.702	3.945
	LTE Band 30	2.738	0.894	1.137	3.632	3.875
	LTE Band 7	0.473	0.894	1.137	1.367	1.610
	LTE Band 38	2.847	0.894	1.137	3.741	3.984
	LTE Band 41	0.772	0.894	1.137	1.666	1.909

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
UMPC Extremity SAR	Back	1.374	0.885	2.259
	Front	1.601	1.137*	2.738
	Top	-	1.137	1.137
	Bottom	3.002	-	3.002

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Table 12-35
Simultaneous Transmission Scenario with 5 GHz WLAN (UMPC Extremity)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
UMPC Extremity SAR	GPRS 850	2.122	1.726	3.848
	UMTS 850	1.695	1.726	3.421
	UMTS 1750	0.408	1.726	2.134
	GPRS 1900	3.002	1.726	See Table Below
	UMTS 1900	0.695	1.726	2.421
	PCS EVDO	2.429	1.726	See Table Below
	LTE Band 26 (Cell)	1.788	1.726	3.514
	LTE Band 5 (Cell)	1.637	1.726	3.363
	LTE Band 66 (AWS)	0.356	1.726	2.082
	LTE Band 25 (PCS)	2.808	1.726	See Table Below
	LTE Band 30	2.738	1.726	See Table Below
	LTE Band 7	0.473	1.726	2.199
	LTE Band 38	2.847	1.726	See Table Below
	LTE Band 41	0.772	1.726	2.498

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
UMPC Extremity SAR	Back	1.374	1.726	3.100	UMPC Extremity SAR	Back	1.056	1.726	2.782
	Front	1.601	1.033	2.634		Front	1.151	1.033	2.184
	Top	-	1.494	1.494		Top	-	1.494	1.494
	Bottom	3.002	-	3.002		Bottom	2.429	-	2.429
	Right	-	1.726*	1.726		Right	0.798	1.726*	2.524

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 30 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
UMPC Extremity SAR	Back	0.938	1.726	2.664	UMPC Extremity SAR	Back	0.910	1.726	2.636
	Front	1.363	1.033	2.396		Front	1.151	1.033	2.184
	Top	-	1.494	1.494		Top	-	1.494	1.494
	Bottom	2.808	-	2.808		Bottom	2.738	-	2.738
	Right	-	1.726*	1.726		Right	-	1.726*	1.726

Simult Tx	Configuration	LTE Band 38 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
UMPC Extremity SAR	Back	1.144	1.726	2.870
	Front	1.207	1.033	2.240
	Top	-	1.494	1.494
	Bottom	2.847	-	2.847
	Right	1.293	1.726*	3.019

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Table 12-36
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 5 GHz WLAN MIMO (UMPC Extremity)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	GPRS 850	2.122	1.194	0.994	See Table Below
	UMTS 850	1.695	1.194	0.994	3.883
	UMTS 1750	0.408	1.194	0.994	2.596
	GPRS 1900	3.002	1.194	0.994	See Table Below
	UMTS 1900	0.695	1.194	0.994	2.883
	PCS EVDO	2.429	1.194	0.994	See Table Below
	LTE Band 26 (Cell)	1.788	1.194	0.994	3.976
	LTE Band 5 (Cell)	1.637	1.194	0.994	3.825
	LTE Band 66 (AWS)	0.356	1.194	0.994	2.544
	LTE Band 25 (PCS)	2.808	1.194	0.994	See Table Below
	LTE Band 30	2.738	1.194	0.994	See Table Below
	LTE Band 7	0.473	1.194	0.994	2.661
	LTE Band 38	2.847	1.194	0.994	See Table Below
	LTE Band 41	0.772	1.194	0.994	2.960

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	2.122	0.664	0.994	3.780
	Front	1.863	1.194	0.608	3.665
	Top	-	0.616	0.891	1.507
	Bottom	1.159	-	-	1.159
	Right	0.807	0.367	0.994*	2.168
Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	1.056	0.664	0.994	2.714
	Front	1.151	1.194	0.608	2.953
	Top	-	0.616	0.891	1.507
	Bottom	2.429	-	-	2.429
	Right	0.798	0.367	0.994*	2.159
Simult Tx	Configuration	LTE Band 30 SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	0.910	0.664	0.994	2.568
	Front	1.151	1.194	0.608	2.953
	Top	-	0.616	0.891	1.507
	Bottom	2.738	-	-	2.738
	Right	-	0.367	0.994*	1.361

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	1.374	0.664	0.994	3.032
	Front	1.601	1.194	0.608	3.403
	Top	-	0.616	0.891	1.507
	Bottom	3.002	-	-	3.002
	Right	-	0.367	0.994*	1.361
Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	0.938	0.664	0.994	2.596
	Front	1.363	1.194	0.608	3.165
	Top	-	0.616	0.891	1.507
	Bottom	2.808	-	-	2.808
	Right	-	0.367	0.994*	1.361
Simult Tx	Configuration	LTE Band 38 SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	1.144	0.664	0.994	2.802
	Front	1.207	1.194	0.608	3.009
	Top	-	0.616	0.891	1.507
	Bottom	2.847	-	-	2.847
	Right	1.293	0.367	0.994*	2.654

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Table 12-37
Simultaneous Transmission Scenario with Bluetooth (UMPC Extremity)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
UMPC Extremity SAR	GPRS 850	2.122	0.932	3.054
	UMTS 850	1.695	0.932	2.627
	UMTS 1750	0.408	0.932	1.340
	GPRS 1900	3.002	0.932	3.934
	UMTS 1900	0.695	0.932	1.627
	PCS EVDO	2.429	0.932	3.361
	LTE Band 26 (Cell)	1.788	0.932	2.720
	LTE Band 5 (Cell)	1.637	0.932	2.569
	LTE Band 66 (AWS)	0.356	0.932	1.288
	LTE Band 25 (PCS)	2.808	0.932	3.740
	LTE Band 30	2.738	0.932	3.670
	LTE Band 7	0.473	0.932	1.405
	LTE Band 38	2.847	0.932	3.779
	LTE Band 41	0.772	0.932	1.704

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Table 12-38
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN Antenna 1 (UMPC Extremity)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	GPRS 850	2.122	0.932	0.894	3.948
	UMTS 850	1.695	0.932	0.894	3.521
	UMTS 1750	0.408	0.932	0.894	2.234
	GPRS 1900	3.002	0.932	0.894	See Table Below
	UMTS 1900	0.695	0.932	0.894	2.521
	PCS EVDO	2.429	0.932	0.894	See Table Below
	LTE Band 26 (Cell)	1.788	0.932	0.894	3.614
	LTE Band 5 (Cell)	1.637	0.932	0.894	3.463
	LTE Band 66 (AWS)	0.356	0.932	0.894	2.182
	LTE Band 25 (PCS)	2.808	0.932	0.894	See Table Below
	LTE Band 30	2.738	0.932	0.894	See Table Below
	LTE Band 7	0.473	0.932	0.894	2.299
	LTE Band 38	2.847	0.932	0.894	See Table Below
	LTE Band 41	0.772	0.932	0.894	2.598

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	1.374	0.456	0.894	2.724
	Front	1.601	0.932	0.894*	3.427
	Top	-	0.596	0.894*	1.490
	Bottom	3.002	-	-	3.002
	Right	-	0.282	0.894*	1.176
Simult Tx	Configuration	PCS EVDO SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	1.056	0.456	0.894	2.406
	Front	1.151	0.932	0.894*	2.977
	Top	-	0.596	0.894*	1.490
	Bottom	2.429	-	-	2.429
	Right	0.798	0.282	0.894*	1.974

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	0.938	0.456	0.894	2.288
	Front	1.363	0.932	0.894*	3.189
	Top	-	0.596	0.894*	1.490
	Bottom	2.808	-	-	2.808
	Right	-	0.282	0.894*	1.176
Simult Tx	Configuration	LTE Band 30 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	0.910	0.456	0.894	2.260
	Front	1.151	0.932	0.894*	2.977
	Top	-	0.596	0.894*	1.490
	Bottom	2.738	-	-	2.738
	Right	-	0.282	0.894*	1.176

Simult Tx	Configuration	LTE Band 38 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	1.144	0.456	0.894	2.494
	Front	1.207	0.932	0.894*	3.033
	Top	-	0.596	0.894*	1.490
	Bottom	2.847	-	-	2.847
	Right	1.293	0.282	0.894*	2.469

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Table 12-39
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN Antenna 2 (UMPC Extremity)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	GPRS 850	2.122	0.932	1.137	See Table Below
	UMTS 850	1.695	0.932	1.137	3.764
	UMTS 1750	0.408	0.932	1.137	2.477
	GPRS 1900	3.002	0.932	1.137	See Table Below
	UMTS 1900	0.695	0.932	1.137	2.764
	PCS EVDO	2.429	0.932	1.137	See Table Below
	LTE Band 26 (Cell)	1.788	0.932	1.137	3.857
	LTE Band 5 (Cell)	1.637	0.932	1.137	3.706
	LTE Band 66 (AWS)	0.356	0.932	1.137	2.425
	LTE Band 25 (PCS)	2.808	0.932	1.137	See Table Below
	LTE Band 30	2.738	0.932	1.137	See Table Below
	LTE Band 7	0.473	0.932	1.137	2.542
	LTE Band 38	2.847	0.932	1.137	See Table Below
	LTE Band 41	0.772	0.932	1.137	2.841

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	2.122	0.456	0.885	3.463
	Front	1.863	0.932	1.137*	3.932
	Top	-	0.596	1.137	1.733
	Bottom	1.159	-	-	1.159
	Right	0.807	0.282	-	1.089
Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	1.374	0.456	0.885	2.715
	Front	1.601	0.932	1.137*	3.670
	Top	-	0.596	1.137	1.733
	Bottom	3.002	-	-	3.002
	Right	-	0.282	-	0.282

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	1.056	0.456	0.885	2.397
	Front	1.151	0.932	1.137*	3.220
	Top	-	0.596	1.137	1.733
	Bottom	2.429	-	-	2.429
	Right	0.798	0.282	-	1.080
Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	0.938	0.456	0.885	2.279
	Front	1.363	0.932	1.137*	3.432
	Top	-	0.596	1.137	1.733
	Bottom	2.808	-	-	2.808
	Right	-	0.282	-	0.282
Simult Tx	Configuration	LTE Band 30 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	0.910	0.456	0.885	2.251
	Front	1.151	0.932	1.137*	3.220
	Top	-	0.596	1.137	1.733
	Bottom	2.738	-	-	2.738
	Right	-	0.282	-	0.282
Simult Tx	Configuration	LTE Band 38 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	1.144	0.456	0.885	2.485
	Front	1.207	0.932	1.137*	3.276
	Top	-	0.596	1.137	1.733
	Bottom	2.847	-	-	2.847
	Right	1.293	0.282	-	1.575

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Table 12-40
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN MIMO (UMPC Extremity)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	GPRS 850	2.122	0.932	1.726	See Table Below
	UMTS 850	1.695	0.932	1.726	See Table Below
	UMTS 1750	0.408	0.932	1.726	3.066
	GPRS 1900	3.002	0.932	1.726	See Table Below
	UMTS 1900	0.695	0.932	1.726	3.353
	PCS EVDO	2.429	0.932	1.726	See Table Below
	LTE Band 26 (Cell)	1.788	0.932	1.726	See Table Below
	LTE Band 5 (Cell)	1.637	0.932	1.726	See Table Below
	LTE Band 66 (AWS)	0.356	0.932	1.726	3.014
	LTE Band 25 (PCS)	2.808	0.932	1.726	See Table Below
	LTE Band 30	2.738	0.932	1.726	See Table Below
	LTE Band 7	0.473	0.932	1.726	3.131
	LTE Band 38	2.847	0.932	1.726	See Table Below
	LTE Band 41	0.772	0.932	1.726	3.430

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
		1	2	3	1+2+3	1+2	1+3	2+3
UMPC Extremity SAR	Back	2.122	0.456	1.726	See Note 1	0.03	0.05	0.09
	Front	1.863	0.932	1.033	3.828	N/A	N/A	N/A
	Top	-	0.596	1.494	2.090	N/A	N/A	N/A
	Bottom	1.159	-	-	1.159	N/A	N/A	N/A
	Right	0.807	0.282	1.726*	2.815	N/A	N/A	N/A

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
UMPC Extremity SAR	Back	1.525	0.456	1.726	3.707	UMPC Extremity SAR	Back	1.374	0.456	1.726	3.556
	Front	1.695	0.932	1.033	3.660		Front	1.601	0.932	1.033	3.566
	Top	-	0.596	1.494	2.090		Top	-	0.596	1.494	2.090
	Bottom	0.644	-	-	0.644		Bottom	3.002	-	-	3.002
	Right	0.735	0.282	1.726*	2.743		Right	-	0.282	1.726*	2.008

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 26 (Cell) SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
UMPC Extremity SAR	Back	1.056	0.456	1.726	3.238	UMPC Extremity SAR	Back	1.544	0.456	1.726	3.726
	Front	1.151	0.932	1.033	3.116		Front	1.788	0.932	1.033	3.753
	Top	-	0.596	1.494	2.090		Top	-	0.596	1.494	2.090
	Bottom	2.429	-	-	2.429		Bottom	0.794	-	-	0.794
	Right	0.798	0.282	1.726*	2.806		Right	1.254	0.282	1.726*	3.262

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Simult Tx	Configuration	LTE Band 5 (Cell) SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	1.637	0.456	1.726	3.819
	Front	1.321	0.932	1.033	3.286
	Top	-	0.596	1.494	2.090
	Bottom	0.832	-	-	0.832
	Right	1.192	0.282	1.726*	3.200
Simult Tx	Configuration	LTE Band 30 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	0.910	0.456	1.726	3.092
	Front	1.151	0.932	1.033	3.116
	Top	-	0.596	1.494	2.090
	Bottom	2.738	-	-	2.738
	Right	-	0.282	1.726*	2.008

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	0.938	0.456	1.726	3.120
	Front	1.363	0.932	1.033	3.328
	Top	-	0.596	1.494	2.090
	Bottom	2.808	-	-	2.808
	Right	-	0.282	1.726*	2.008
Simult Tx	Configuration	LTE Band 38 SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
UMPC Extremity SAR	Back	1.144	0.456	1.726	3.326
	Front	1.207	0.932	1.033	3.172
	Top	-	0.596	1.494	2.090
	Bottom	2.847	-	-	2.847
	Right	1.293	0.282	1.726*	3.301

Notes:

- No evaluation was performed to determine the aggregate 10g SAR for these configurations as the SPLS ratio between the antenna pairs was not greater than 0.10 per FCC KDB 447498 D01v06. See Section 12.9 for detailed SPLS ratio analysis.

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12.9 SPLSR Evaluation and Analysis

Per FCC KDB Publication 447498 D01v06, when the sum of the standalone transmitters is more than 1.6 W/kg for 1g and 4 W/kg for 10g, the SAR sum to peak locations can be analyzed to determine SAR distribution overlaps. When the SAR peak to location ratio (shown below) for each pair of antennas is ≤ 0.04 for 1g and ≤ 0.10 for 10g, simultaneous SAR evaluation is not required. The distance between the transmitters was calculated using the following formula.

$$\text{Distance}_{\text{Tx1} - \text{Tx2}} = R_i = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2} \text{ (Mini-Tablet)}$$

$$\text{SPLS Ratio} = \frac{(SAR_1 + SAR_2)^{1.5}}{R_i}$$

12.9.1 Back Side UMPC Body SPLSR Evaluation and Analysis

Table 12-41
Peak SAR Locations for Back Side UMPC Body

Mode/Band	x (mm)	y (mm)
Bluetooth	-58.80	82.80
5 GHz WLAN MIMO	-45.00	73.00
5 GHz WLAN Ant 1	-44.00	72.00
GPRS 850	-60.50	-65.50
UMTS 1900	-56.50	-78.50
LTE Band 7	-55.40	-82.20
LTE Band 38	-53.40	-82.20

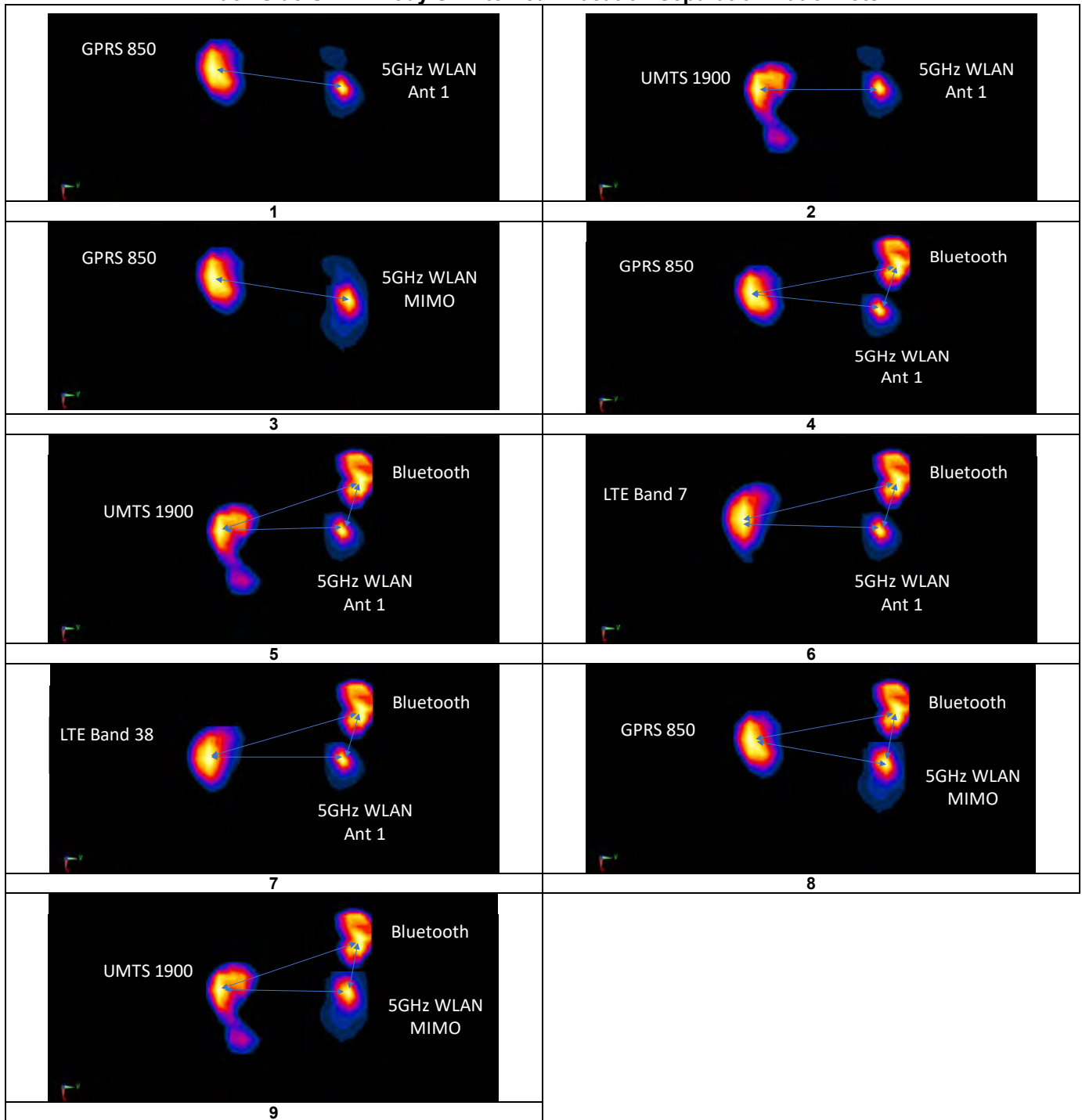
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Table 12-42
Back Side UMPC Body SAR to Peak Location Separation Ratio Calculations

Antenna Pair		Standalone SAR (W/kg)		Standalone SAR Sum (W/kg)	Peak SAR Separation Distance (mm)	SPLS Ratio	Plot Number
Ant "a"	Ant "b"	a	b	a+b	D_{a-b}	$(a+b)^{1.5}/D_{a-b}$	
GPRS 850	5 GHz WLAN Ant 1	0.965	0.729	1.694	138.49	0.02	1
UMTS 1900	5 GHz WLAN Ant 1	0.879	0.729	1.608	151.02	0.01	2
GPRS 850	5 GHz WLAN MIMO	0.965	0.677	1.642	139.36	0.02	3
5 GHz WLAN Ant 1	Bluetooth	0.729	0.105	0.834	18.32	0.04	4
GPRS 850	Bluetooth	0.965	0.105	1.07	148.31	0.01	
GPRS 850	5 GHz WLAN Ant 1	0.965	0.729	1.694	138.49	0.02	
5 GHz WLAN Ant 1	Bluetooth	0.729	0.105	0.834	18.32	0.04	5
UMTS 1900	Bluetooth	0.879	0.105	0.984	161.32	0.01	
UMTS 1900	5 GHz WLAN Ant 1	0.879	0.729	1.608	151.02	0.01	
5 GHz WLAN Ant 1	Bluetooth	0.729	0.105	0.834	18.32	0.04	6
LTE Band 7	Bluetooth	0.764	0.105	0.869	165.04	0.00	
LTE Band 7	5 GHz WLAN Ant 1	0.764	0.729	1.493	154.62	0.01	
5 GHz WLAN Ant 1	Bluetooth	0.729	0.105	0.834	18.32	0.04	7
LTE Band 38	Bluetooth	0.764	0.105	0.869	165.09	0.00	
LTE Band 38	5 GHz WLAN Ant 1	0.764	0.729	1.493	154.49	0.01	
5 GHz WLAN MIMO	Bluetooth	0.677	0.105	0.782	16.93	0.04	8
GPRS 850	Bluetooth	0.965	0.105	1.07	148.31	0.01	
GPRS 850	5 GHz WLAN MIMO	0.965	0.677	1.642	139.36	0.02	
5 GHz WLAN MIMO	Bluetooth	0.677	0.105	0.782	16.93	0.04	9
UMTS 1900	Bluetooth	0.879	0.105	0.984	161.32	0.01	
UMTS 1900	5 GHz WLAN MIMO	0.879	0.677	1.556	151.94	0.01	

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Table 12-43
Back Side UMPC Body SAR to Peak Location Separation Ratio Plots



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12.9.2 Back Side UMPC Extremity SPLSR Evaluation and Analysis

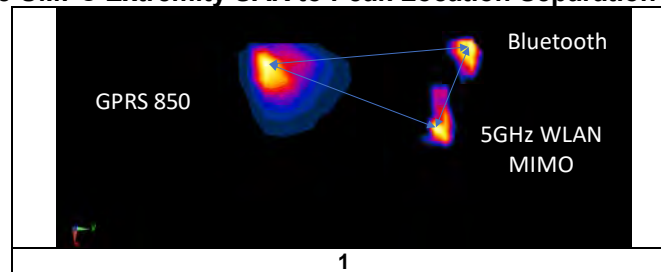
Table 12-44
Peak SAR Locations for Back Side UMPC Extremity

Mode/Band	x (mm)	y (mm)
Bluetooth	-70.20	79.20
5 GHz WLAN MIMO	-35.00	71.00
GPRS 850	-74.00	-72.00

Table 12-45
Back Side UMPC Extremity SAR to Peak Location Separation Ratio Calculations

Antenna Pair		Standalone SAR (W/kg)		Standalone SAR Sum (W/kg)	Peak SAR Separation Distance (mm)	SPLS Ratio	Plot Number
Ant "a"	Ant "b"	a	b	a+b	D _{a-b}	$(a+b)^{1.5}/D_{a-b}$	
5 GHz WLAN MIMO	Bluetooth	1.726	0.456	2.182	36.14	0.09	1
GPRS 850	5 GHz WLAN MIMO	2.122	1.726	3.848	148.22	0.05	
GPRS 850	Bluetooth	2.122	0.456	2.578	151.25	0.03	

Table 12-46
Back Side UMPC Extremity SAR to Peak Location Separation Ratio Plots



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12.9.3 Front Side UMPC Extremity SPLSR Evaluation and Analysis

Table 12-47
Peak SAR Locations for Front Side UMPC Extremity

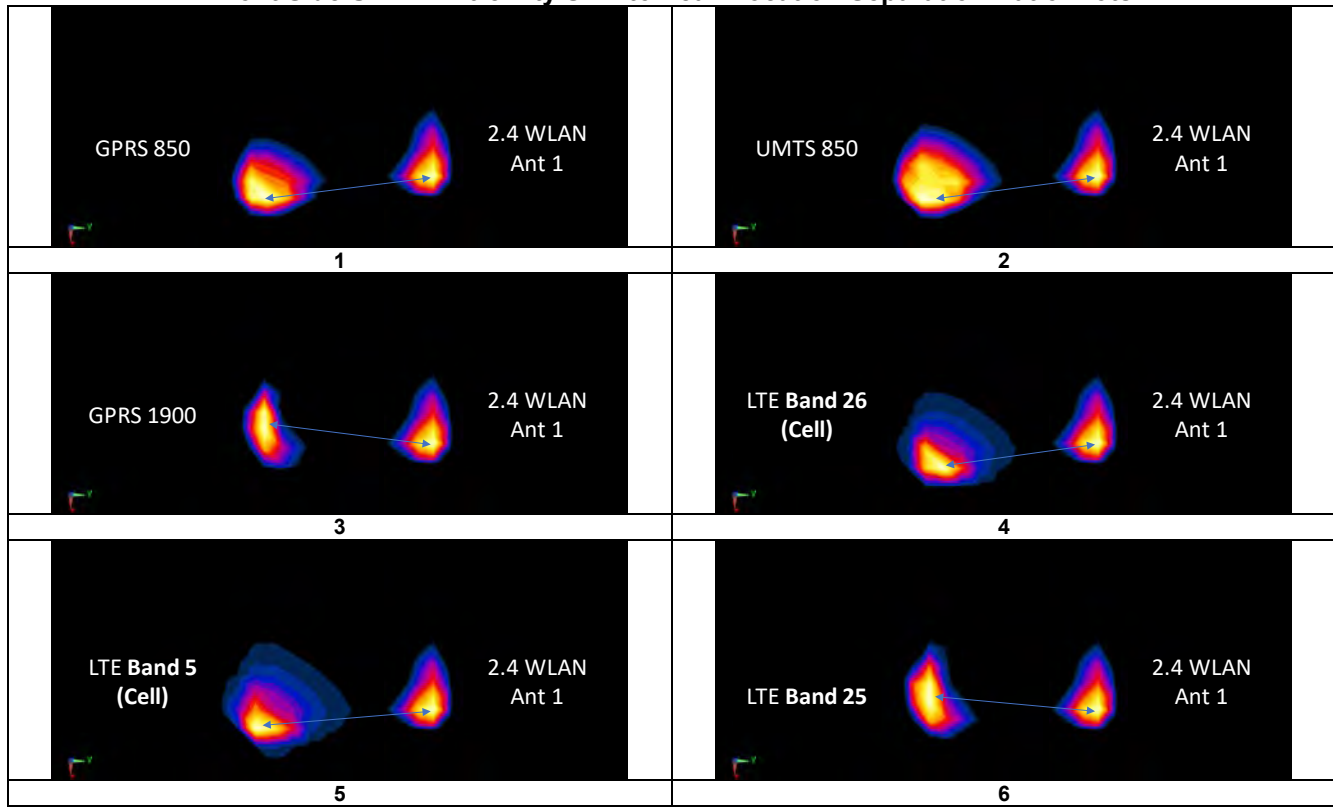
Mode/Band	x (mm)	y (mm)
2.4 GHz WLAN Ant 1	18.60	75.60
GPRS 850	30.50	-53.00
UMTS 850	24.00	-80.00
GPRS 1900	3.50	-75.00
LTE Band 26 (Cell)	30.50	-53.00
LTE Band 5 (Cell)	32.00	-72.00
LTE Band 25 (PCS)	2.50	-76.50

Table 12-48
Front Side UMPC Extremity SAR to Peak Location Separation Ratio Calculations

Antenna Pair		Standalone SAR (W/kg)		Standalone SAR Sum (W/kg)	Peak SAR Separation Distance (mm)	SPLS Ratio	Plot Number
Ant "a"	Ant "b"	a	b	a+b	D_{a-b}	$(a+b)^{1.5}/D_{a-b}$	
GPRS 850	2.4 GHz WLAN Ant 1	1.863	2.701	4.564	129.15	0.08	1
UMTS 850	2.4 GHz WLAN Ant 1	1.695	2.701	4.396	155.69	0.06	2
GPRS 1900	2.4 GHz WLAN Ant 1	1.601	2.701	4.302	151.36	0.06	3
LTE Band 26 (Cell)	2.4 GHz WLAN Ant 1	1.788	2.701	4.489	129.15	0.07	4
LTE Band 5 (Cell)	2.4 GHz WLAN Ant 1	1.321	2.701	4.022	148.21	0.05	5
LTE Band 25 (PCS)	2.4 GHz WLAN Ant 1	1.363	2.701	4.064	152.95	0.05	6

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Table 12-49
Front Side UMPC Extremity SAR to Peak Location Separation Ratio Plots



12.10 Simultaneous Transmission Conclusion

The above numerical summed SAR results and SPLSR analysis are sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v06 and IEEE 1528- 2013 Section 6.3.4.1.2. Additionally, it was determined that all other combinations for bands/modes not addressed in this report are compliant.

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13 SAR MEASUREMENT VARIABILITY

13.1 Measurement Variability

Per FCC KDB Publication 865664 D01v01r04, SAR measurement variability was assessed for each frequency band, which was determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media were required for SAR measurements in a frequency band, the variability measurement procedures were applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. These additional measurements were repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device was returned to ambient conditions (normal room temperature) with the battery fully charged before it was re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR Measurement Variability was assessed using the following procedures for each frequency band:

- 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
- 2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1g SAR limit).
- 3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .
- 4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg
- 5) When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

Table 13-1
1g Body/1g UMPC Body SAR Measurement Variability Results

BODY VARIABILITY RESULTS														
Band	FREQUENCY		Mode	Service	Configuration	Side	Spacing	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.						(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1900	1905.00	26590	LTE Band 25 (PCS), 20 MHz Bandwidth	QPSK, 50 RB, 50 RB Offset	Closed	bottom	10 mm	0.911	0.856	1.06	N/A	N/A	N/A	N/A
2450	PCC: 2506.00	39750	LTE Band 41, ULCA, 20 MHz Bandwidth	QPSK, 1 RB, 99 RB Offset	Closed	bottom	10 mm	1.180	1.170	1.01	N/A	N/A	N/A	N/A
	SCC: 2525.80	39948		QPSK, 1 RB, 0 RB Offset										
2600	2549.50	40185	LTE Band 41, 20 MHz Bandwidth	QPSK, 50 RB, 25 RB Offset	Closed	bottom	10 mm	0.954	0.846	1.13	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT							Body/UMPC Body							
Spatial Peak							1.6 W/kg (mW/g)							
Uncontrolled Exposure/General Population							averaged over 1 gram							

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Table 13-2
10g Body/10g UMPC Extremity SAR Measurement Variability Results

BODY VARIABILITY RESULTS														
Band	FREQUENCY		Mode	Service	Configuration	Side	Spacing	Measured SAR (10g)	1st Repeated SAR (10g)	Ratio	2nd Repeated SAR (10g)	Ratio	3rd Repeated SAR (10g)	Ratio
	MHz	Ch.						(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1900	1880.00	9400	UMTS 1900	RMC	Closed	bottom	0 mm	2.610	2.530	1.03	N/A	N/A	N/A	N/A
2300	2310.00	27710	LTE Band 30, 10 MHz Bandwidth	QPSK, 25 RB, 12 RB Offset	Open	bottom	0 mm	2.460	2.280	1.08	N/A	N/A	N/A	N/A
2450	PCC: 2506.00	39750	LTE Band 41 PC2 with ULCA, 20 MHz Bandwidth	QPSK, 1 RB, 99 RB Offset	Closed	front	0 mm	2.160	2.160	1.00	N/A	N/A	N/A	N/A
	SCC: 2525.80	39948		QPSK, 1 RB, 0 RB Offset										
2600	PCC: 2595.00	38000	LTE Band 38 ULCA, 15 MHz Bandwidth	QPSK, 1 RB, 0 RB Offset	Open	bottom	0 mm	2.410	2.400	1.00	N/A	N/A	N/A	N/A
	SCC: 2580.00	37850		QPSK, 1 RB, 74 RB Offset										
ANSI / IEEE C95.1 1992 - SAFETY LIMIT							Phablet/UMPC Extremity							
Spatial Peak							4.0 W/kg (mW/g)							
Uncontrolled Exposure/General Population							averaged over 10 grams							

13.2 Measurement Uncertainty

The measured SAR was <1.5 W/kg for 1g and <3.75 W/kg for 10g for all frequency bands. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncertainty analysis per IEEE 1528-2013 was not required.

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14 ADDITIONAL TESTING PER FCC GUIDANCE

14.1 LTE Band 41 Power Class 2 and Power Class 3 Linearity

This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per May 2017 TCB Workshop Notes based on the device behavior, all SAR tests were performed using Power Class 3. SAR with Power Class 2 at the highest power and available duty factor was additionally performed for the Power Class 3 configuration with the highest SAR for each exposure condition. The linearity between the Power Class 2 and Power Class 3 SAR results and the respective frame averaged powers was calculated to determine that the results were linear. When ULCA is active, the linearity between the Power Class 2 with ULCA active and Power Class 3 with ULCA active SAR results and the respective frame averaged powers was calculated to determine that the results were linear. Per May 2017 TCB Workshop, no additional SAR measurements were required since the linearity between power classes was < 10% and all reported SAR values were < 1.4 W/kg for 1g and < 3.5 W/kg for 10g.

LTE Band 41 SAR testing with power class 2 at the highest power and available duty factor was additionally performed for the power class 3 configuration with the highest SAR for each exposure condition.

Table 14-1
LTE Band 41 Standalone Head Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	24.0	27.0
Measured Output Power (dBm)	23.62	26.22
Measured SAR (W/kg)	0.090	0.101
Measured Power (mW)	230.14	418.79
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	145.68	181.34
% deviation from expected linearity		-9.94%

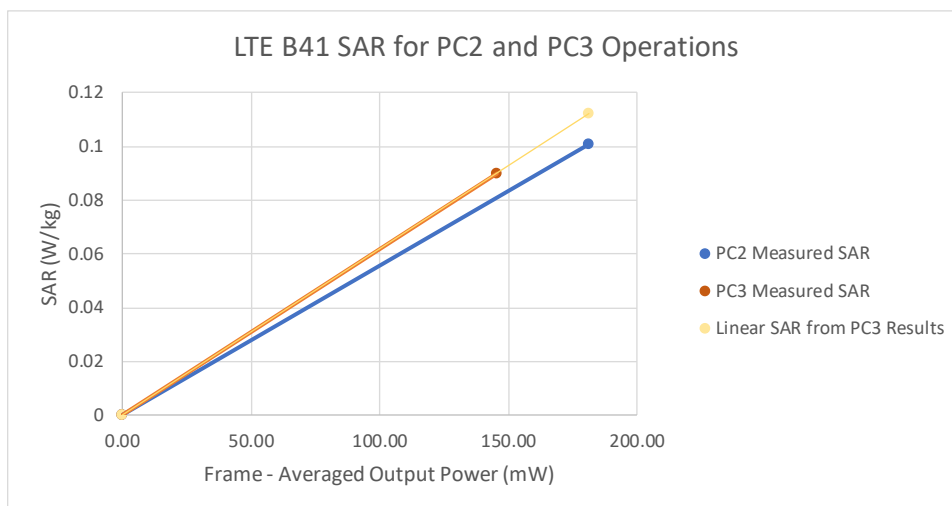


Figure 14-1
LTE Band 41 Standalone Head Linearity

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Table 14-2
LTE Band 41 ULCA Head Linearity Data

	LTE Band 41 PC3 ULCA	LTE Band 41 PC2 ULCA
Maximum Allowed Output Power (dBm)	24.0	27.0
Measured Output Power (dBm)	23.98	26.69
Measured SAR (W/kg)	0.093	0.118
Measured Power (mW)	250.03	466.66
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	158.27	202.06
% deviation from expected linearity		-0.19%

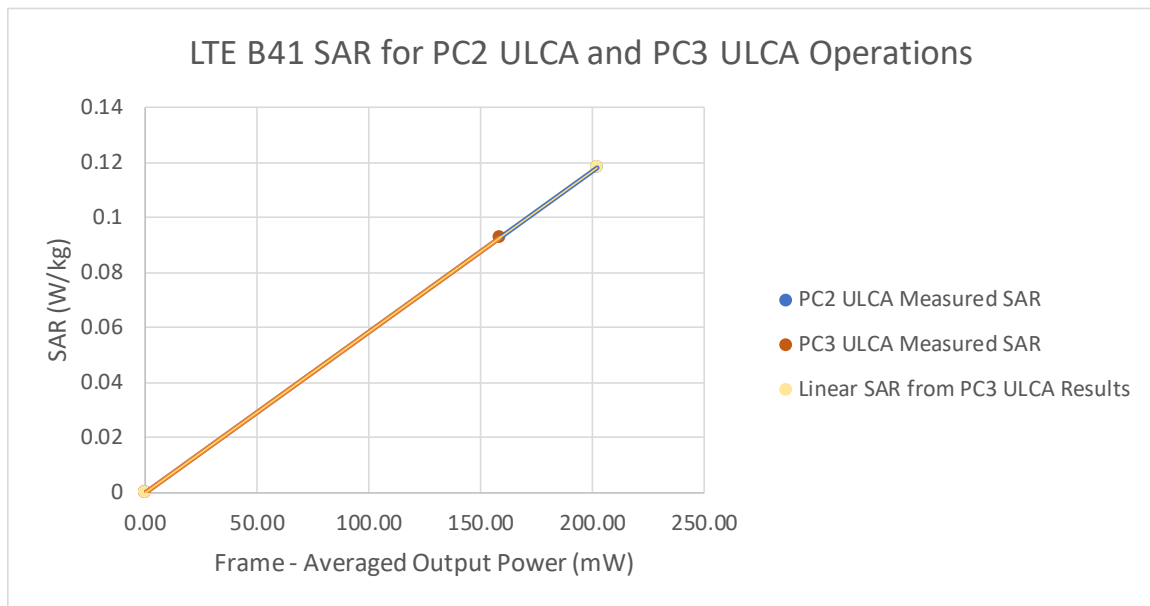


Figure 14-2
LTE Band 41 ULCA Head Linearity

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Table 14-3
LTE Band 41 Standalone 1g Body Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	22.5	22.5
Measured Output Power (dBm)	22.15	21.56
Measured SAR (W/kg)	1.07	0.637
Measured Power (mW)	164.06	143.22
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	103.85	62.01
% deviation from expected linearity		-0.31%

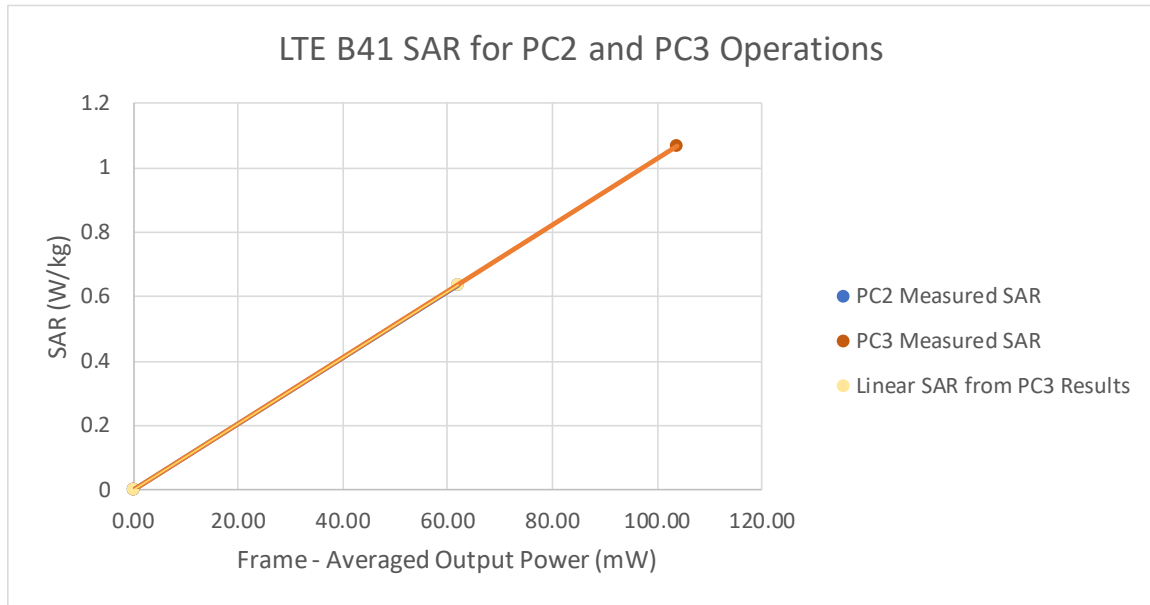


Figure 14-3
LTE Band 41 Standalone 1g Body Linearity

FCC ID: A3LSMF900U	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Approved by: Quality Manager
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Table 14-4
LTE Band 41 ULCA 1g Body Linearity Data

	LTE Band 41 PC3 ULCA	LTE Band 41 PC2 ULCA
Maximum Allowed Output Power (dBm)	22.5	22.5
Measured Output Power (dBm)	22.50	22.10
Measured SAR (W/kg)	1.18	0.703
Measured Power (mW)	177.83	162.18
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	112.57	70.22
% deviation from expected linearity		-4.50%

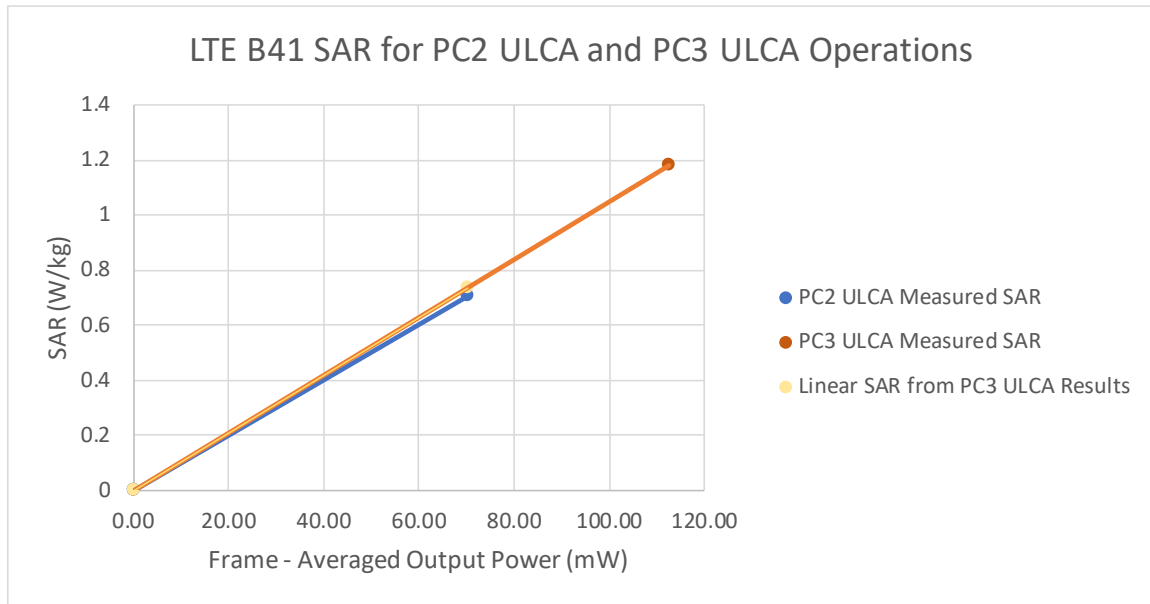


Figure 14-4
LTE Band 41 ULCA 1g Body Linearity

FCC ID: A3LSMF900U	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Approved by: Quality Manager
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Table 14-5
LTE Band 41 Standalone 10g Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	24.0	27
Measured Output Power (dBm)	23.62	26.22
Measured SAR (W/kg)	1.44	1.90
Measured Power (mW)	230.14	418.79
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	145.68	181.34
% deviation from expected linearity		6.00%

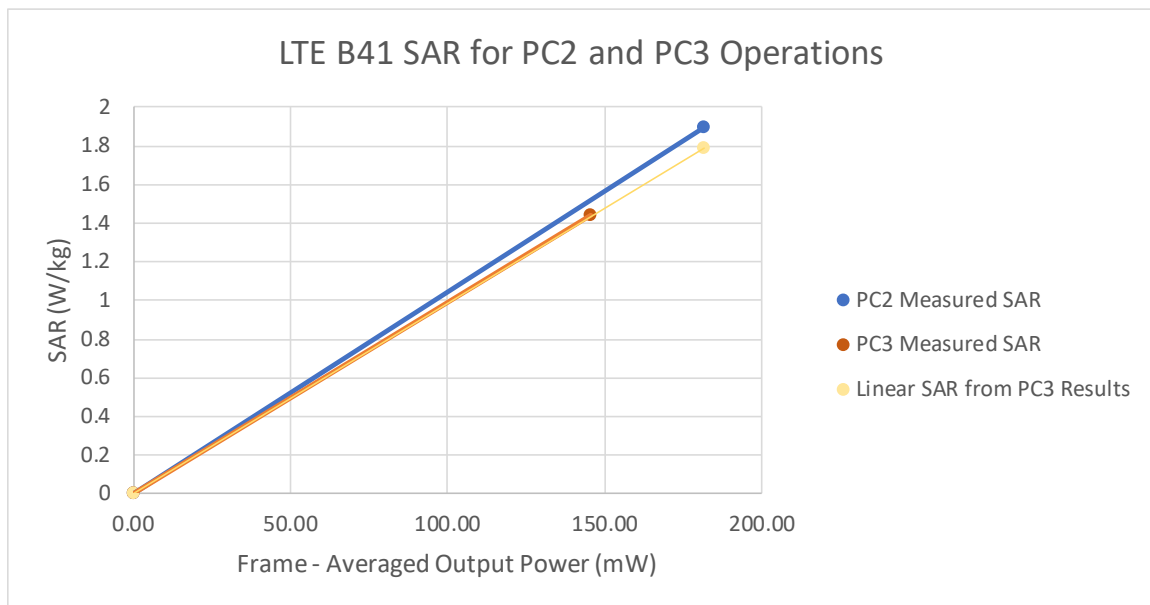


Figure 14-5
LTE Band 41 Standalone 10g Linearity

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Table 14-6
LTE Band 41 ULCA 10g Linearity Data

	LTE Band 41 PC3 ULCA	LTE Band 41 PC2 ULCA
Maximum Allowed Output Power (dBm)	24	27
Measured Output Power (dBm)	23.98	26.69
Measured SAR (W/kg)	1.62	2.16
Measured Power (mW)	250.03	466.66
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	158.27	202.06
% deviation from expected linearity		4.44%

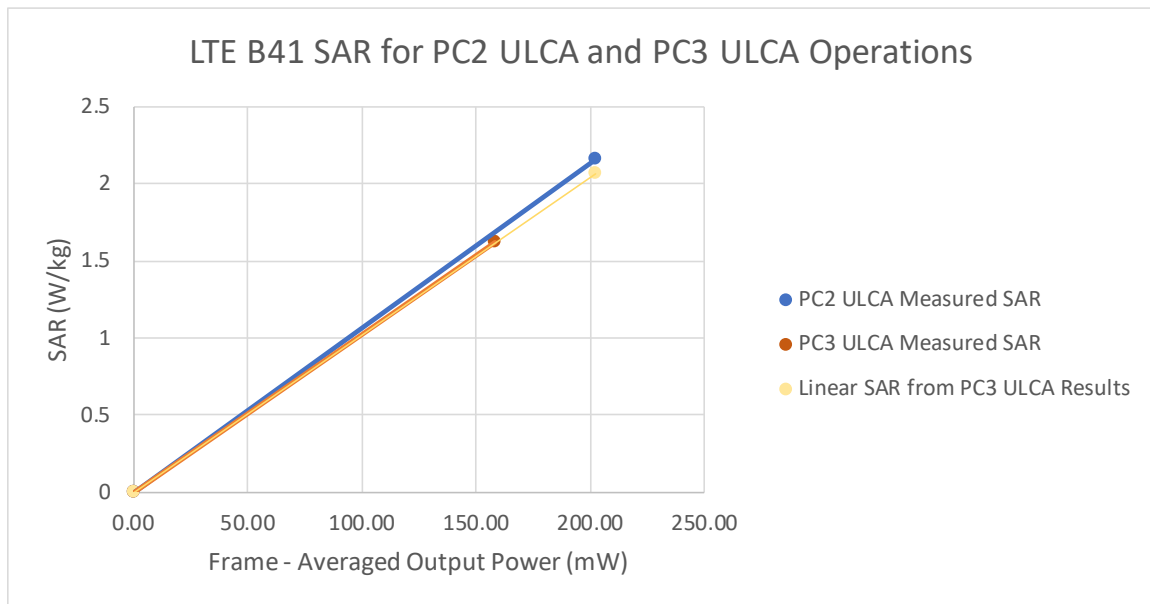


Figure 14-6
LTE Band 41 ULCA 10g Linearity

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15 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	85033E	3.5mm Standard Calibration Kit	8/13/2018	Annual	8/13/2019	MY53402352
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	CBT	N/A	CBT	3051A00187
Agilent	8753E	(30kHz-6GHz) Network Analyzer	9/28/2018	Annual	9/28/2019	JP38020182
Agilent	8753ES	Network Analyzer	3/19/2019	Annual	3/19/2020	MY40001472
Agilent	8753ES	S-Parameter Network Analyzer	10/2/2018	Annual	10/2/2019	US39170118
Agilent	8753ES	S-Parameter Vector Network Analyzer	8/30/2018	Annual	8/30/2019	MY40003841
Agilent	E4438C	ESG Vector Signal Generator	5/22/2019	Annual	5/22/2020	MY45091346
Agilent	E4440A	PSA Series Spectrum Analyzer	11/14/2018	Annual	11/14/2019	MY46186272
Agilent	E5515C	8960 Series 10 Wireless Communications Test Set	12/18/2018	Annual	12/18/2019	GB42230325
Agilent	E5515C	Wireless Communications Test Set	2/28/2018	Biennial	2/28/2020	GB41450275
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB44450273
Agilent	N5182A	MMG Vector Signal Generator	11/28/2018	Annual	11/28/2019	MY47420603
Agilent	N9020A	MKA Signal Analyzer	4/20/2019	Annual	4/20/2020	US46470561
Agilent	N9030A	PXA Signal Analyzer (44GHz)	6/12/2019	Annual	6/12/2020	MY52350166
Amplifier Research	150A100C	Amplifier	CBT	N/A	CBT	350132
Anritsu	MA24106A	USB Power Sensor	9/20/2018	Annual	9/20/2019	1344545
Anritsu	MA24106A	USB Power Sensor	9/20/2018	Annual	9/20/2019	1344559
Anritsu	MA2411B	Pulse Power Sensor	10/30/2018	Annual	10/30/2019	1126066
Anritsu	MA2411B	Pulse Power Sensor	10/30/2018	Annual	10/30/2019	1207470
Anritsu	ML2495A	Power Meter	10/21/2018	Annual	10/21/2019	941001
Anritsu	MT8820C	Radio Communication Analyzer	3/29/2019	Annual	3/29/2020	6201300731
Anritsu	MT8821C	Radio Communication Analyzer	7/24/2018	Annual	7/24/2019	6201664756
Control Company	4040	Therm./ Clock/ Humidity Monitor	1/8/2019	Annual	1/8/2020	160473909
Control Company	4040	Therm./ Clock/ Humidity Monitor	1/8/2019	Annual	1/8/2020	160574418
Control Company	4352	Ultra Long Stem Thermometer	2/28/2018	Biennial	2/28/2020	170330160
Control Company	4352	Ultra Long Stem Thermometer	2/28/2018	Biennial	2/28/2020	170330158
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
Mini Circuits	PWR-SEN-4GH5	USB Power Sensor	4/19/2019	Annual	4/19/2020	11401010036
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mitutoyo	CD-6"CSX	Digital Caliper	4/18/2018	Biennial	4/18/2020	13264165
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-53W2	Attenuator (3dB)	CBT	N/A	CBT	120
Pasternack	NC-100	Torque Wrench	11/1/2017	Biennial	11/1/2019	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	CMW500	Radio Communication Tester	10/12/2018	Annual	10/12/2019	166462
Rohde & Schwarz	CMW500	Radio Communication Tester	11/14/2018	Annual	11/14/2019	100976
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Annual	10/23/2019	5d149
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Annual	10/23/2019	5d080
SPEAG	D1900V2	1900 MHz SAR Dipole	2/21/2019	Annual	2/21/2020	5d148
SPEAG	D2450V2	2450 MHz SAR Dipole	9/11/2017	Biennial	9/11/2019	797
SPEAG	D2600V2	2600 MHz SAR Dipole	8/13/2018	Annual	8/13/2019	1126
SPEAG	D5GHzV2	5 GHz SAR Dipole	9/21/2016	Triennial	9/21/2019	1191
SPEAG	D835V2	835 MHz SAR Dipole	3/13/2019	Annual	3/13/2020	4d047
SPEAG	D1750V2	1750 MHz SAR Dipole	10/22/2018	Annual	10/22/2019	1150
SPEAG	D2300V2	2300 MHz SAR Dipole	8/13/2018	Annual	8/13/2019	1073
SPEAG	D2450V2	2450 MHz SAR Dipole	8/17/2017	Biennial	8/17/2019	719
SPEAG	D2450V2	2450 MHz SAR Dipole	8/16/2018	Annual	8/16/2019	981
SPEAG	D2600V2	2600 MHz SAR Dipole	9/13/2016	Triennial	9/13/2019	1071
SPEAG	D2600V2	2600 MHz SAR Dipole	4/11/2018	Biennial	4/11/2020	1004
SPEAG	D5GHzV2	5 GHz SAR Dipole	1/16/2018	Biennial	1/16/2020	1057
SPEAG	EX3DV4	SAR Probe	7/20/2018	Annual	7/20/2019	7410
SPEAG	EX3DV4	SAR Probe	1/25/2019	Annual	1/25/2020	3589
SPEAG	EX3DV4	SAR Probe	6/19/2019	Annual	6/19/2020	7409
SPEAG	EX3DV4	SAR Probe	5/16/2019	Annual	5/16/2020	7406
SPEAG	EX3DV4	SAR Probe	5/16/2019	Annual	5/16/2020	7538
SPEAG	EX3DV4	SAR Probe	4/24/2019	Annual	4/24/2020	7357
SPEAG	EX3DV4	SAR Probe	1/24/2019	Annual	1/24/2020	7488
SPEAG	EX3DV4	SAR Probe	2/19/2019	Annual	2/19/2020	7417
SPEAG	EX3DV4	SAR Probe	8/23/2018	Annual	8/23/2019	7308
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/11/2018	Annual	7/11/2019	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/22/2018	Annual	8/22/2019	1450
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/20/2019	Annual	6/20/2020	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/8/2019	Annual	5/8/2020	859
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/8/2019	Annual	5/8/2020	728
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/18/2019	Annual	4/18/2020	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/15/2019	Annual	1/15/2020	1530
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/13/2019	Annual	2/13/2020	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	10/3/2018	Annual	10/3/2019	1558
SPEAG	DAK-3.5	Dielectric Assessment Kit	9/11/2018	Annual	9/11/2019	1091

All equipment was used solely within its calibration period.

Note: CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. This calibration verification procedure applies to the system verification and output power measurements. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurements.

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16 MEASUREMENT UNCERTAINTIES

a	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	Tol. (± %)	Prob. Dist.	Div.	c _i 1gm	c _i 10 gms	1gm u _i (± %)	10gms u _i (± %)	v _i
Measurement System								
Probe Calibration	6.55	N	1	1.0	1.0	6.6	6.6	∞
Axial Isotropy	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	1.3	N	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	2.0	R	1.73	1.0	1.0	1.2	1.2	∞
Linearity	0.3	N	1	1.0	1.0	0.3	0.3	∞
System Detection Limits	0.25	R	1.73	1.0	1.0	0.1	0.1	∞
Readout Electronics	0.3	N	1	1.0	1.0	0.3	0.3	∞
Response Time	0.8	R	1.73	1.0	1.0	0.5	0.5	∞
Integration Time	2.6	R	1.73	1.0	1.0	1.5	1.5	∞
RF Ambient Conditions - Noise	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
RF Ambient Conditions - Reflections	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	0.4	R	1.73	1.0	1.0	0.2	0.2	∞
Probe Positioning w/ respect to Phantom	6.7	R	1.73	1.0	1.0	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	4.0	R	1.73	1.0	1.0	2.3	2.3	∞
Test Sample Related								
Test Sample Positioning	2.7	N	1	1.0	1.0	2.7	2.7	35
Device Holder Uncertainty	1.67	N	1	1.0	1.0	1.7	1.7	5
Output Power Variation - SAR drift measurement	5.0	R	1.73	1.0	1.0	2.9	2.9	∞
SAR Scaling	0.0	R	1.73	1.0	1.0	0.0	0.0	∞
Phantom & Tissue Parameters								
Phantom Uncertainty (Shape & Thickness tolerances)	7.6	R	1.73	1.0	1.0	4.4	4.4	∞
Liquid Conductivity - measurement uncertainty	4.2	N	1	0.78	0.71	3.3	3.0	10
Liquid Permittivity - measurement uncertainty	4.1	N	1	0.23	0.26	1.0	1.1	10
Liquid Conductivity - Temperature Uncertainty	3.4	R	1.73	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Uncertainty	0.6	R	1.73	0.23	0.26	0.1	0.1	∞
Liquid Conductivity - deviation from target values	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Permittivity - deviation from target values	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Combined Standard Uncertainty (k=1)						RSS	11.5	11.3
Expanded Uncertainty (95% CONFIDENCE LEVEL)						k=2	23.0	22.6

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17 CONCLUSION

17.1 Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of the FCC and Innovation, Science, and Economic Development Canada, with respect to all parameters subject to this test. These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables. [3]

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APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0370S

Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.433 \text{ S/m}$; $\epsilon_r = 40.707$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 07-01-2019; Ambient Temp: 22.0°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7410; ConvF(8.16, 8.16, 8.16) @ 1880 MHz; Calibrated: 7/20/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2018

Phantom: Front; Type: QD 000 P40 CD; Serial: 1686

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 1900, Left Head, Cheek, Mid.ch

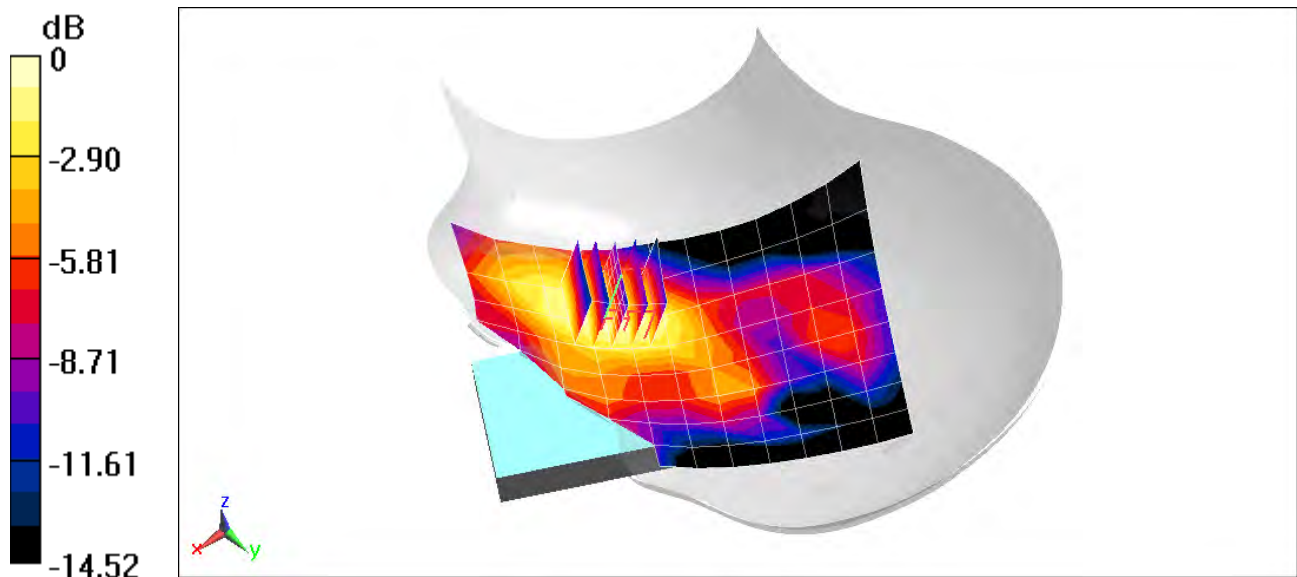
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 8.497 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.143 W/kg

SAR(1 g) = 0.094 W/kg



0 dB = 0.128 W/kg = -8.93 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0366S

Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.431 \text{ S/m}$; $\epsilon_r = 39.822$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 07-22-2019; Ambient Temp: 21.6°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7409; ConvF(8.01, 8.01, 8.01) @ 1880 MHz; Calibrated: 6/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/20/2019

Phantom: Front; Type: QD 000 P40 CD; Serial: 1686

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: GSM 1900, Left Head, Cheek, Mid.ch

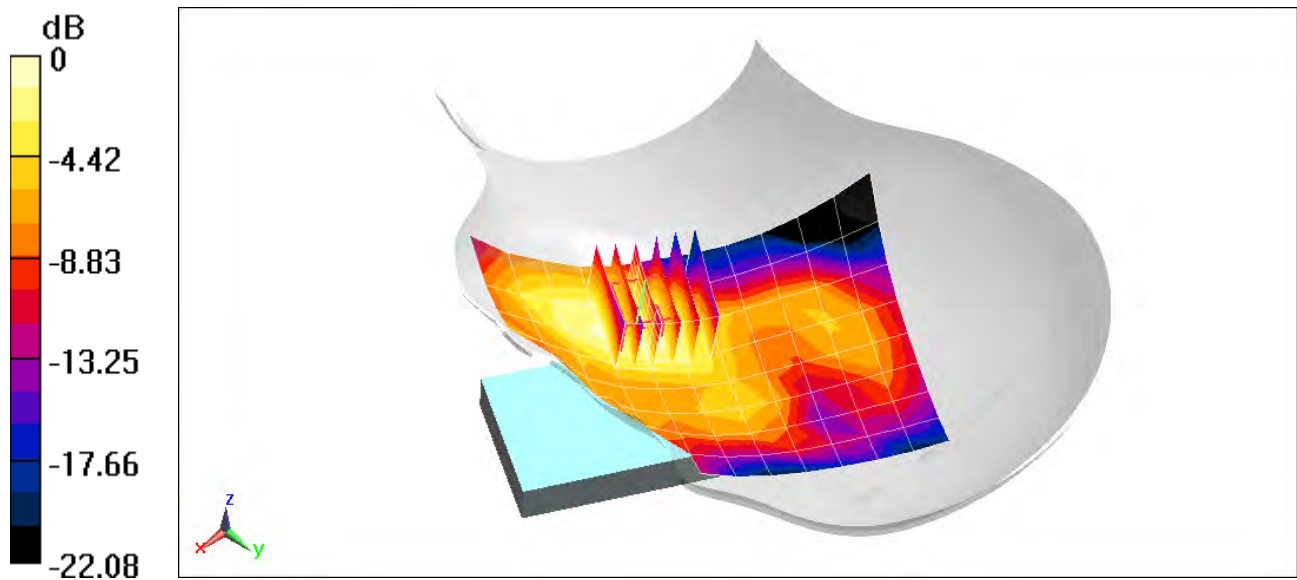
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 7.504 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.131 W/kg

SAR(1 g) = 0.080 W/kg



0 dB = 0.105 W/kg = -9.79 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0366S

Communication System: UID 0, PCS CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 835 to 2450 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.443 \text{ S/m}$; $\epsilon_r = 39.37$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 07-15-2019; Ambient Temp: 21.4°C; Tissue Temp: 20.7°C

Probe: EX3DV4 - SN3589; ConvF(7.08, 7.08, 7.08) @ 1880 MHz; Calibrated: 1/25/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1450; Calibrated: 8/22/2018

Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: PCS CDMA, Left Head, Cheek, Mid.ch

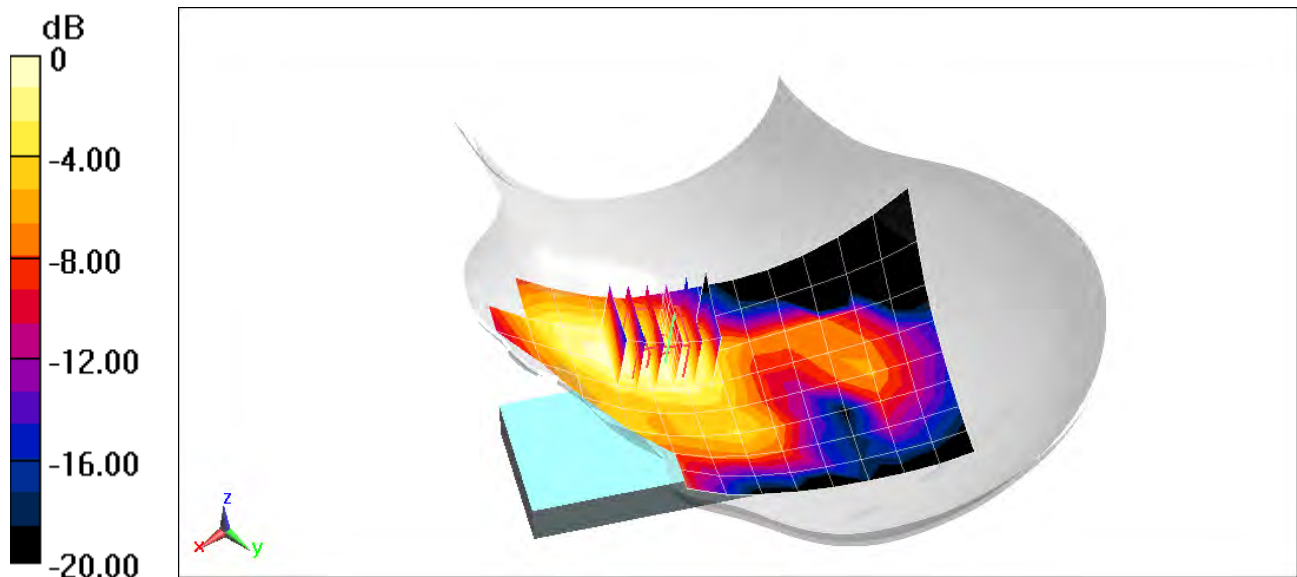
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 11.28 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.281 W/kg

SAR(1 g) = 0.178 W/kg



0 dB = 0.234 W/kg = -6.31 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0365S

Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1882.5 \text{ MHz}$; $\sigma = 1.435 \text{ S/m}$; $\epsilon_r = 40.704$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 07-01-2019; Ambient Temp: 22.0°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7410; ConvF(8.16, 8.16, 8.16) @ 1882.5 MHz; Calibrated: 7/20/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2018

Phantom: Front; Type: QD 000 P40 CD; Serial: 1686

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 25 (PCS), Left Head, Cheek, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

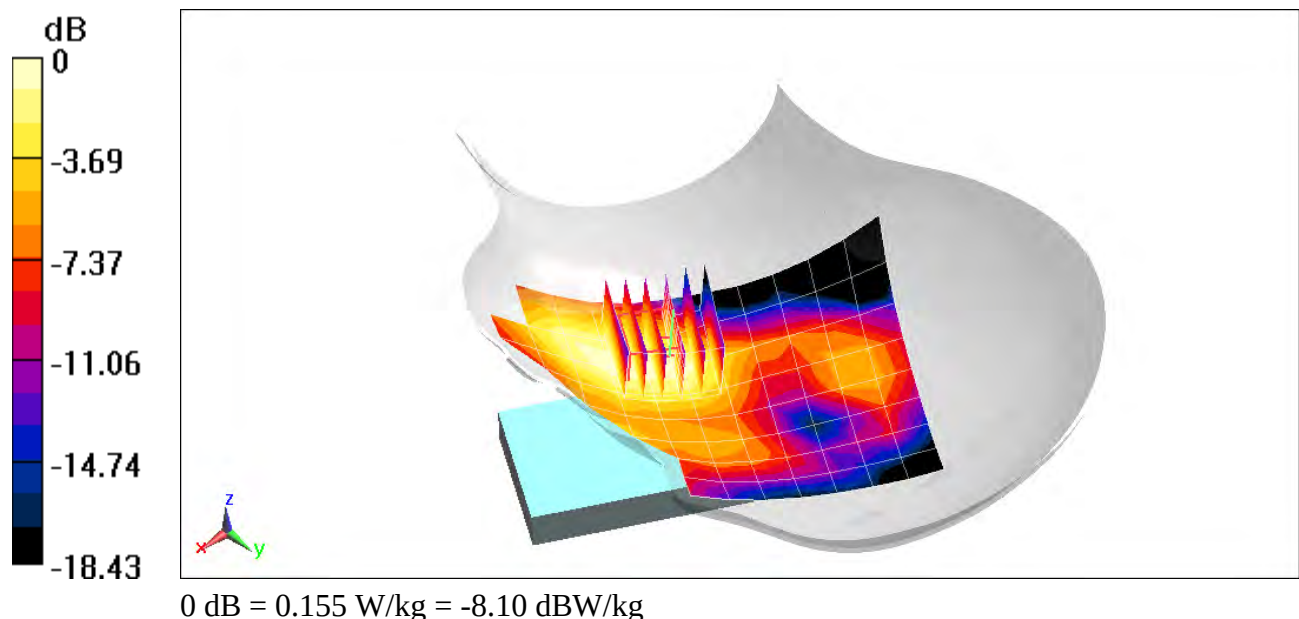
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.192 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.176 W/kg

SAR(1 g) = 0.118 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0370S

Communication System: UID 0, _LTE Band 38; Frequency: 2595 MHz; Duty Cycle: 1:1.58

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2595 \text{ MHz}$; $\sigma = 1.922 \text{ S/m}$; $\epsilon_r = 39.172$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 07-01-2019; Ambient Temp: 22.1°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN3589; ConvF(6.25, 6.25, 6.25) @ 2595 MHz; Calibrated: 1/25/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1450; Calibrated: 8/22/2018

Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 38, ULCA, Left Head, Cheek, Mid.ch,

PCC: 15 MHz Bandwidth, QPSK, Ch. 38000 1 RB, 0 RB Offset

SCC: 15 MHz Bandwidth, QPSK, Ch. 37850 1 RB, 74 RB Offset

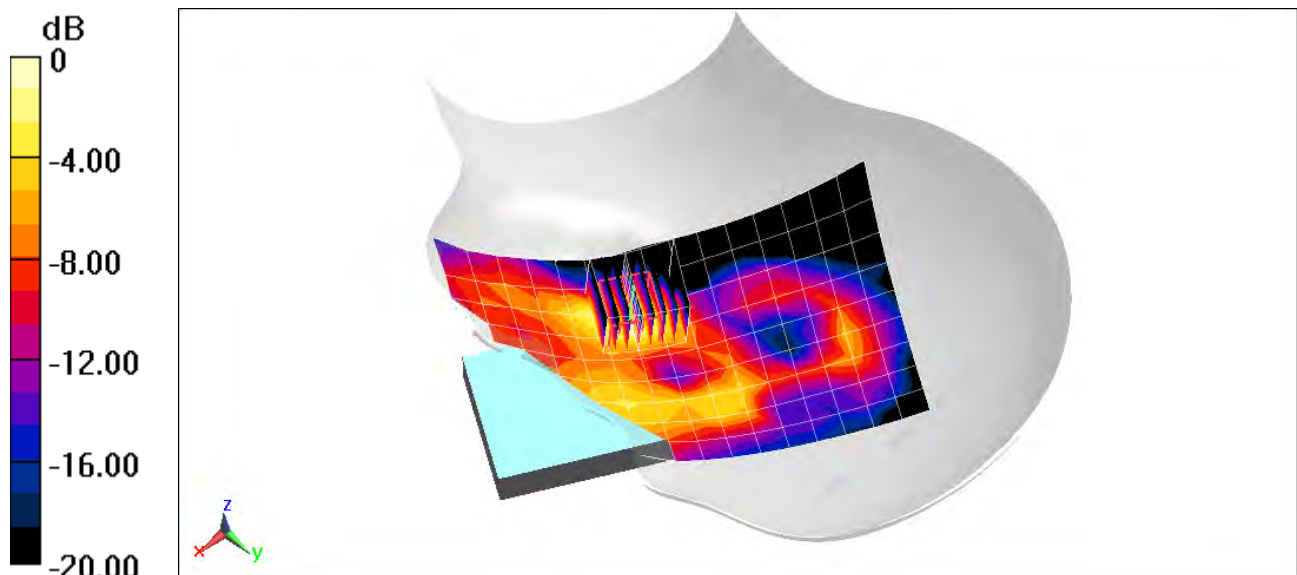
Area Scan (10x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x8x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 7.716 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.210 W/kg

SAR(1 g) = 0.089 W/kg



0 dB = 0.162 W/kg = -7.90 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0370S

Communication System: UID 0, _LTE Band 41 (Class 2); Frequency: 2506 MHz; Duty Cycle: 1:2.31

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2506 \text{ MHz}$; $\sigma = 1.852 \text{ S/m}$; $\epsilon_r = 39.319$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 07-01-2019; Ambient Temp: 22.1°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN3589; ConvF(6.46, 6.46, 6.46) @ 2506 MHz; Calibrated: 1/25/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1450; Calibrated: 8/22/2018

Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 41, PC2 with ULCA, Right Head, Cheek, Low.ch,

PCC: 20 MHz Bandwidth, QPSK, Ch. 39750, 1 RB, 99 RB Offset

SCC: 20 MHz Bandwidth, QPSK, Ch. 39948, 1 RB, 0 RB Offset

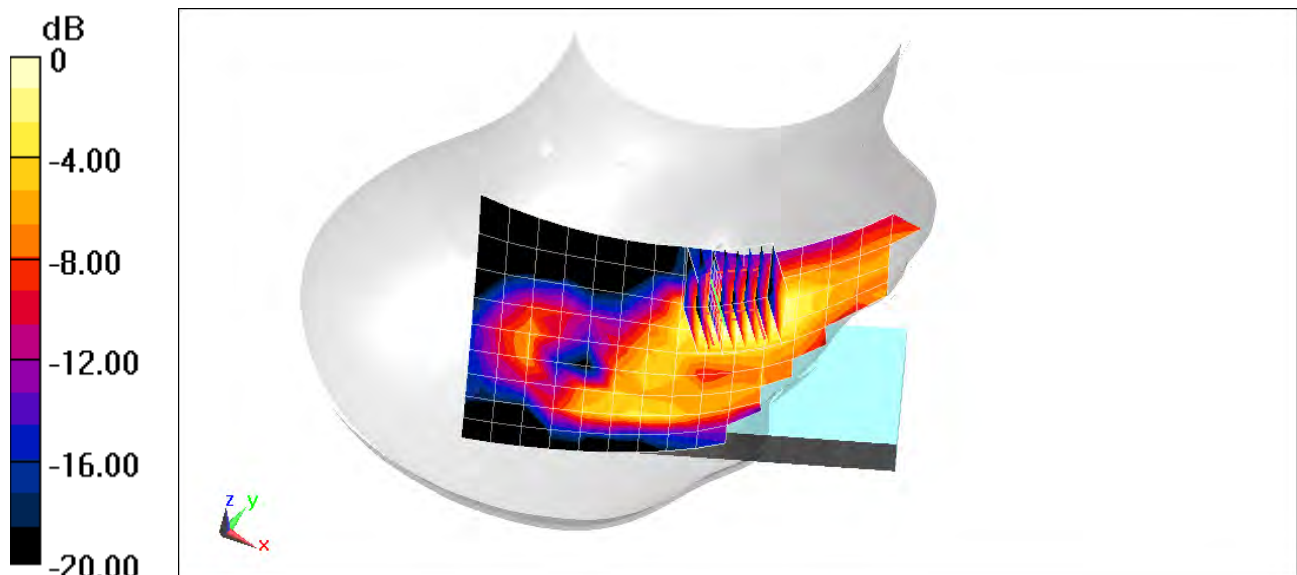
Area Scan (10x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x8x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 9.005 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.224 W/kg

SAR(1 g) = 0.118 W/kg



0 dB = 0.183 W/kg = -7.38 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0365S

Communication System: UID 0, _IEEE 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.869 \text{ S/m}$; $\epsilon_r = 40.132$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 07-05-2019; Ambient Temp: 22.5°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN3589; ConvF(6.46, 6.46, 6.46) @ 2462 MHz; Calibrated: 1/25/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1450; Calibrated: 8/22/2018

Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

**Mode: IEEE 802.11b, Ant 2, 22 MHz Bandwidth,
Right Head, Tilt, Ch 11, 1 Mbps**

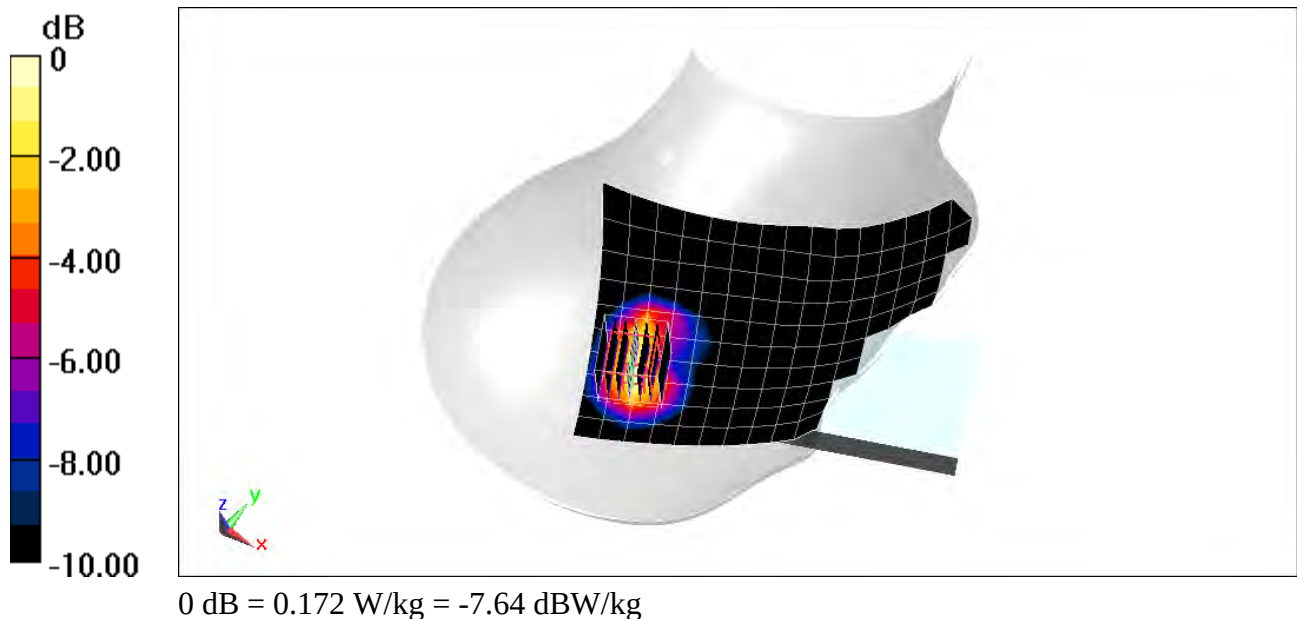
Area Scan (11x18x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 4.034 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.242 W/kg

SAR(1 g) = 0.097 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0370S

Communication System: UID 0, _IEEE 802.11n; Frequency: 5310 MHz; Duty Cycle: 1:1

Medium: 5GHz Head Medium parameters used (interpolated):

$f = 5310 \text{ MHz}$; $\sigma = 4.593 \text{ S/m}$; $\epsilon_r = 35.063$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 07-12-2019; Ambient Temp: 23.2°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN7406; ConvF(5.54, 5.54, 5.54) @ 5310 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/8/2019

Phantom: Twin-SAM V5.0 Right 20; Type: QD 000 P40 CD; Serial: 1759

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

**Mode: IEEE 802.11n, U-NII-2A, Antenna 2, 40 MHz Bandwidth,
Right Head, Cheek, Ch 62, 13.5 Mbps**

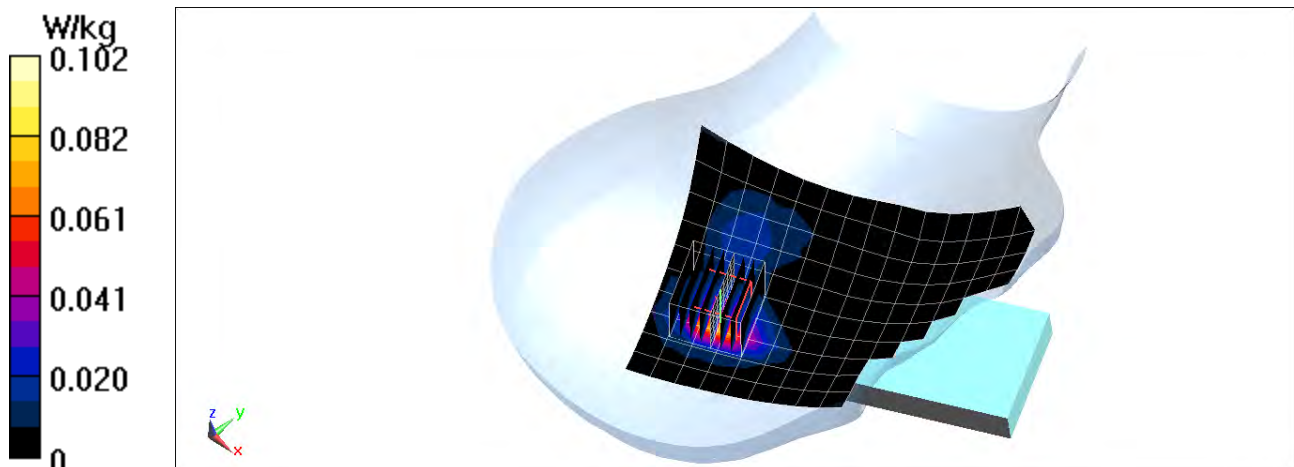
Area Scan (13x11x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (9x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 0.5690 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.161 W/kg

SAR(1 g) = 0.032 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0366S

Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.55 \text{ S/m}$; $\epsilon_r = 54.658$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-27-2019; Ambient Temp: 20.9°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1880 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 1900, Body SAR, Back side, Mid.ch

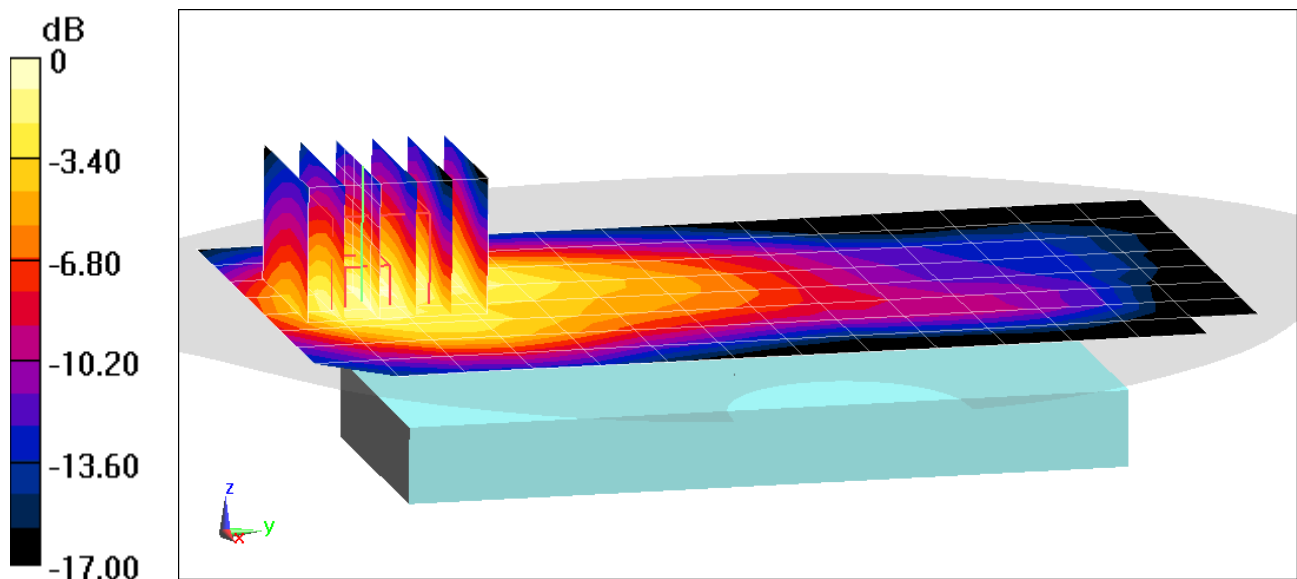
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 12.67 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.413 W/kg

SAR(1 g) = 0.248 W/kg



0 dB = 0.360 W/kg = -4.44 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0366S

Communication System: UID 0, _GSM GPRS; 3 Tx slots; Frequency: 1909.8 MHz; Duty Cycle: 1:2.76

Medium: 1900 Body; Medium parameters used:

$f = 1910 \text{ MHz}$; $\sigma = 1.58 \text{ S/m}$; $\epsilon_r = 52.499$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-05-2019; Ambient Temp: 19.7°C; Tissue Temp: 23.8°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1909.8 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: GPRS 1900, Body SAR, Bottom Edge, High.ch, 3 Tx Slots

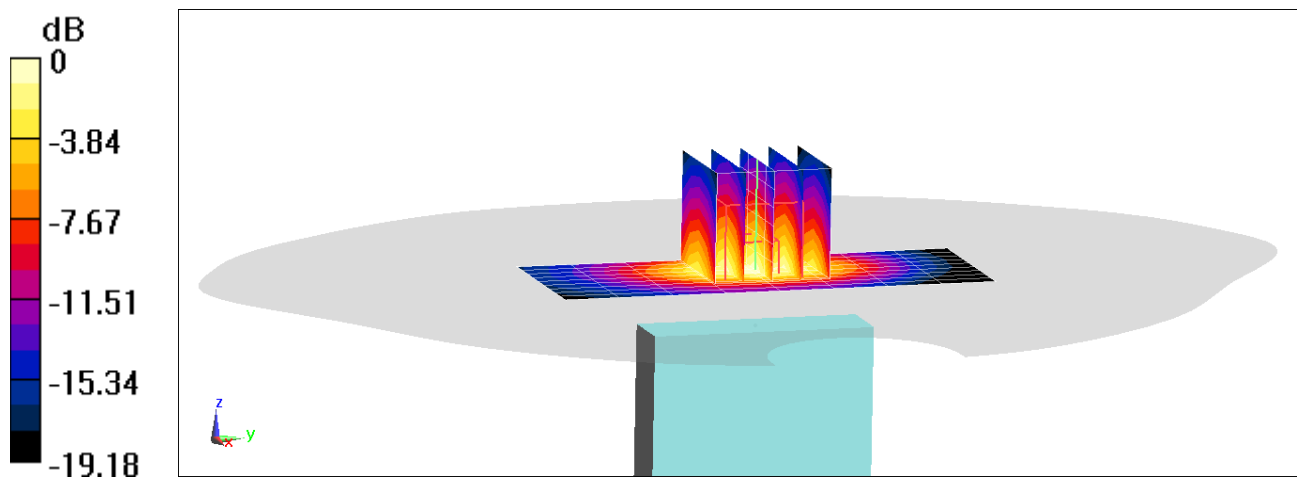
Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.53 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 1.48 W/kg

SAR(1 g) = 0.809 W/kg



0 dB = 1.24 W/kg = 0.93 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0366S

Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.544 \text{ S/m}$; $\epsilon_r = 53.746$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-17-2019; Ambient Temp: 20.3°C; Tissue Temp: 23.6°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1880 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: PCS CDMA, Body SAR, Back side, Mid.ch

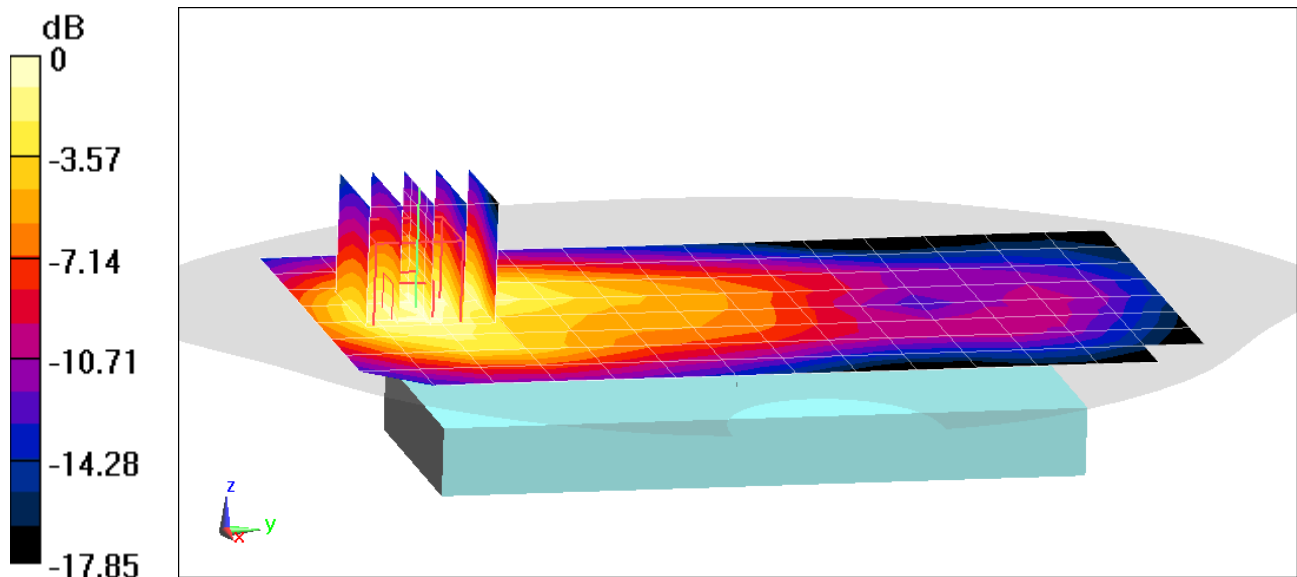
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.03 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.539 W/kg

SAR(1 g) = 0.328 W/kg



0 dB = 0.458 W/kg = -3.39 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0368S

Communication System: UID 0, CDMA; Frequency: 1908.75 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1908.75 \text{ MHz}$; $\sigma = 1.569 \text{ S/m}$; $\epsilon_r = 50.975$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-01-2019; Ambient Temp: 20.7°C; Tissue Temp: 22.7°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1908.75 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: PCS EVDO, Body SAR, Bottom Edge, High.ch

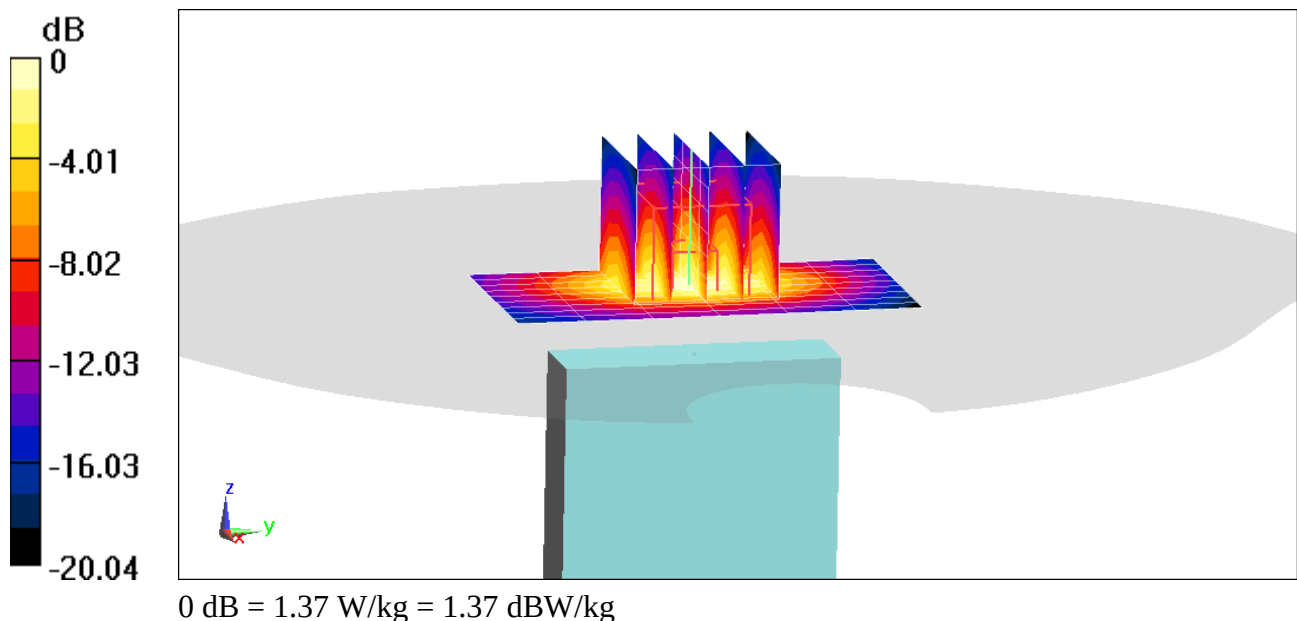
Area Scan (10x7x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 25.15 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 1.63 W/kg

SAR(1 g) = 0.876 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0367S

Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1882.5 \text{ MHz}$; $\sigma = 1.538 \text{ S/m}$; $\epsilon_r = 54.51$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-29-2019; Ambient Temp: 20.3°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1882.5 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 25 (PCS), Body SAR, Back side, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

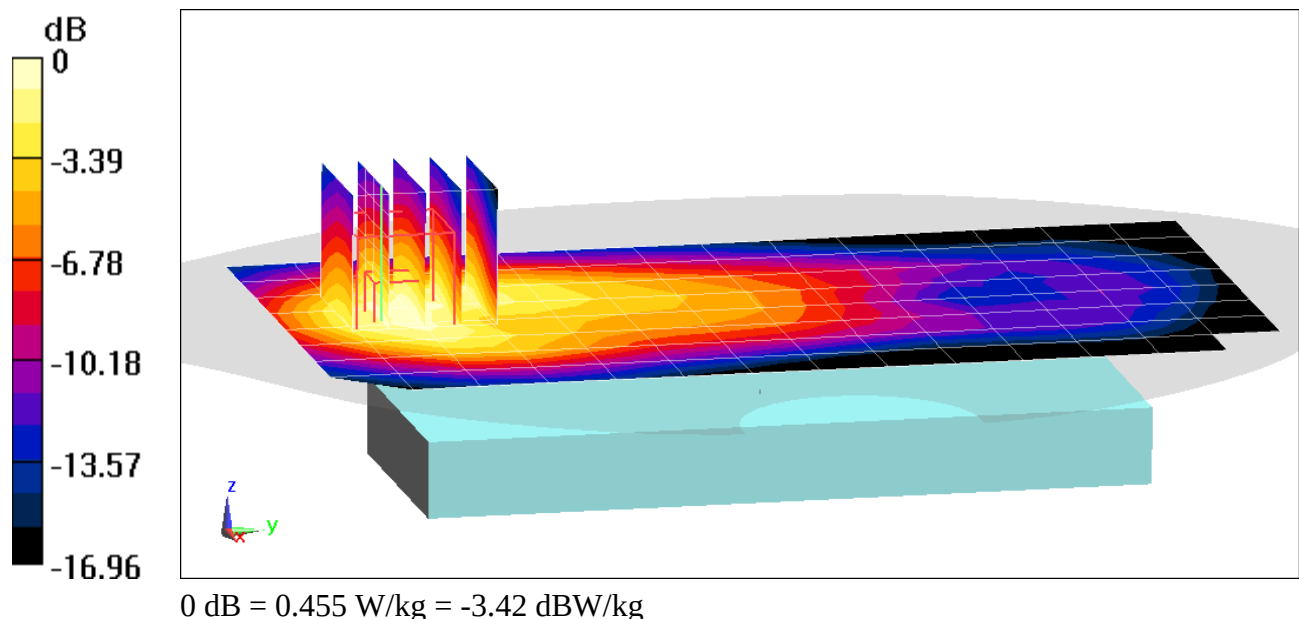
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.25 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.553 W/kg

SAR(1 g) = 0.341 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0369S

Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1905 \text{ MHz}$; $\sigma = 1.569 \text{ S/m}$; $\epsilon_r = 54.045$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-22-2019; Ambient Temp: 19.5°C; Tissue Temp: 23.0°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1905 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 25 (PCS), Body SAR, Bottom Edge,
High.ch, 20 MHz Bandwidth, QPSK, 50 RB, 50 RB Offset**

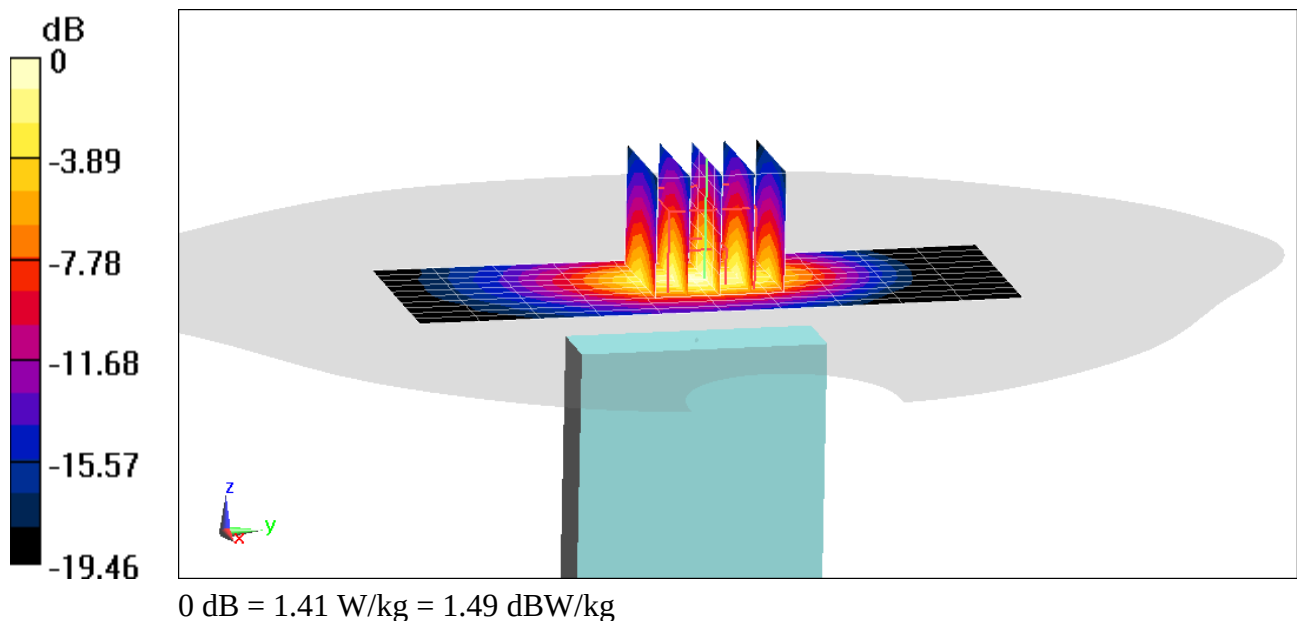
Area Scan (11x11x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 25.55 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 1.67 W/kg

SAR(1 g) = 0.911 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0367S

Communication System: UID 0, _LTE Band 38; Frequency: 2595 MHz; Duty Cycle: 1:1.58

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2595 \text{ MHz}$; $\sigma = 2.179 \text{ S/m}$; $\epsilon_r = 53.631$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-14-2019; Ambient Temp: 20.9°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN7308; ConvF(7.4, 7.4, 7.4) @ 2595 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 38, Body SAR, Back side, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

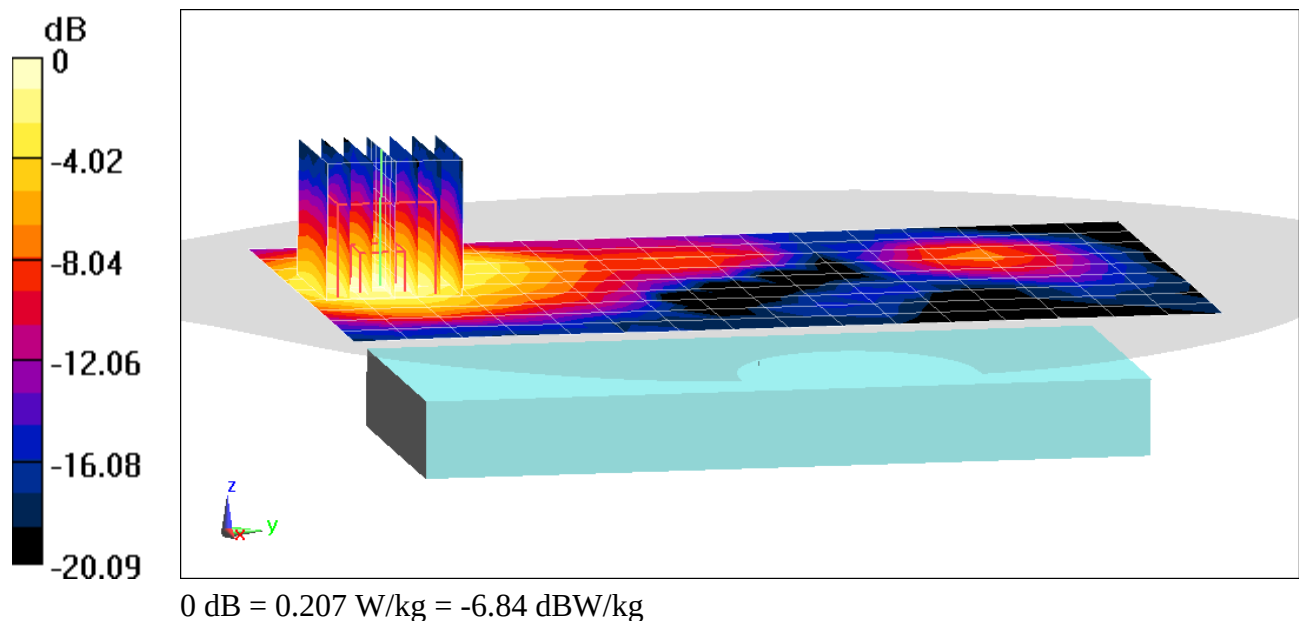
Area Scan (10x17x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.017 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.260 W/kg

SAR(1 g) = 0.132 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0367S

Communication System: UID 0, _LTE Band 38; Frequency: 2595 MHz; Duty Cycle: 1:1.58

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2595 \text{ MHz}$; $\sigma = 2.179 \text{ S/m}$; $\epsilon_r = 53.631$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-14-2019; Ambient Temp: 20.9°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN7308; ConvF(7.4, 7.4, 7.4) @ 2595 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 38, Body SAR, Bottom Edge, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

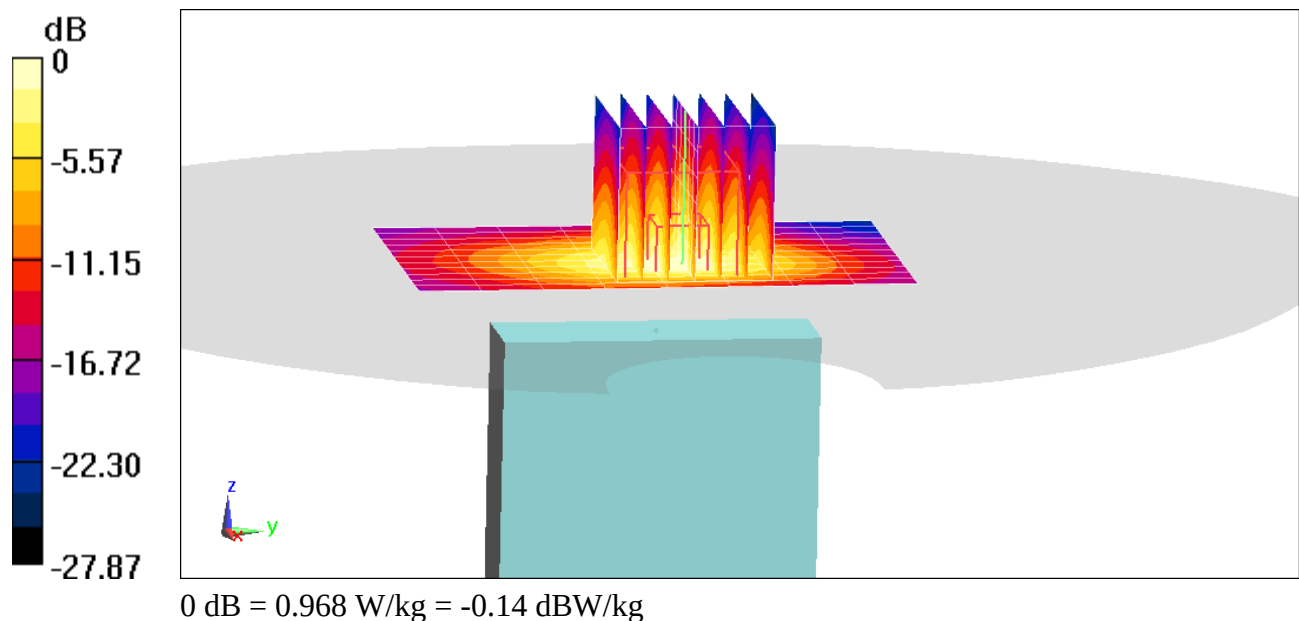
Area Scan (12x9x1): Measurement grid: dx=5mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.54 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 1.19 W/kg

SAR(1 g) = 0.582 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0368S

Communication System: UID 0, LTE Band 41; Frequency: 2506 MHz; Duty Cycle: 1:1.58

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2506 \text{ MHz}$; $\sigma = 2.115 \text{ S/m}$; $\epsilon_r = 51.44$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-01-2019; Ambient Temp: 23.2°C; Tissue Temp: 22.6°C

Probe: EX3DV4 - SN7417; ConvF(7.51, 7.51, 7.51) @ 2506 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 41, Body SAR, Back side, Low.ch,
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset**

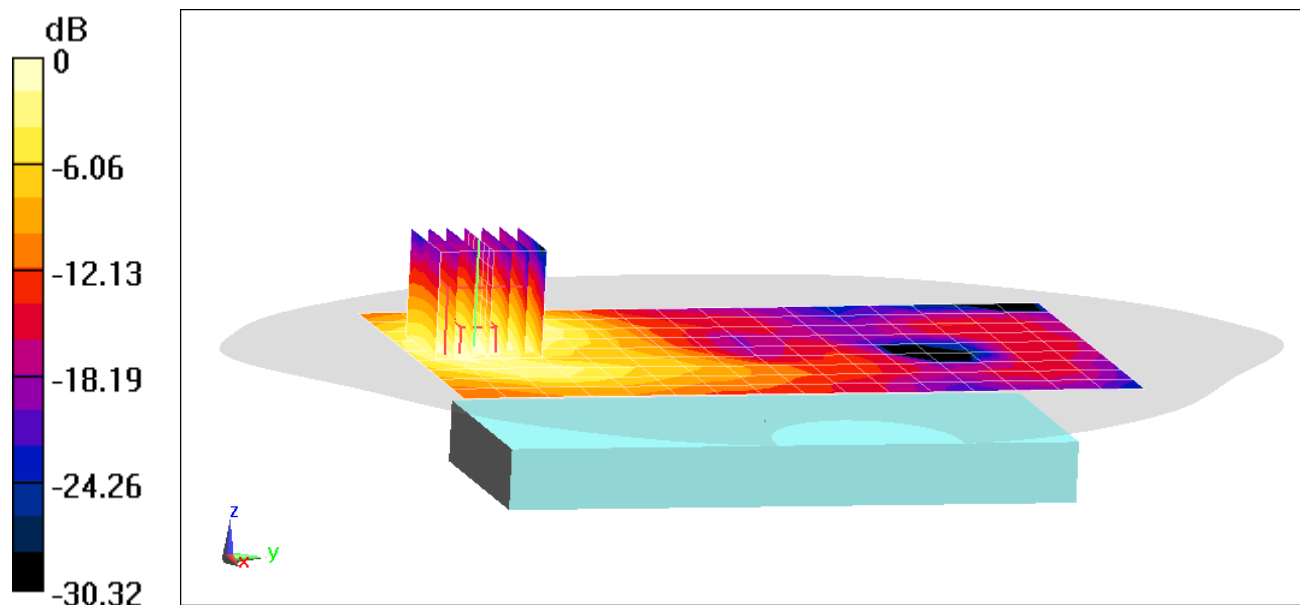
Area Scan (10x16x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.055 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.186 W/kg

SAR(1 g) = 0.090 W/kg



0 dB = 0.212 W/kg = -6.74 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0367S

Communication System: UID 0, _LTE Band 41; Frequency: 2506 MHz; Duty Cycle: 1:1.58

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2506 \text{ MHz}$; $\sigma = 2.082 \text{ S/m}$; $\epsilon_r = 51.107$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-24-2019; Ambient Temp: 22.5°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN7417; ConvF(7.51, 7.51, 7.51) @ 2506 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 41 ULCA, Body SAR, Bottom Edge,
PCC: 20 MHz Bandwidth, QPSK, Ch. 39750, 1 RB, 99 RB Offset
SCC: 20 MHz Bandwidth, QPSK, Ch. 39948, 1 RB, 0 RB Offset

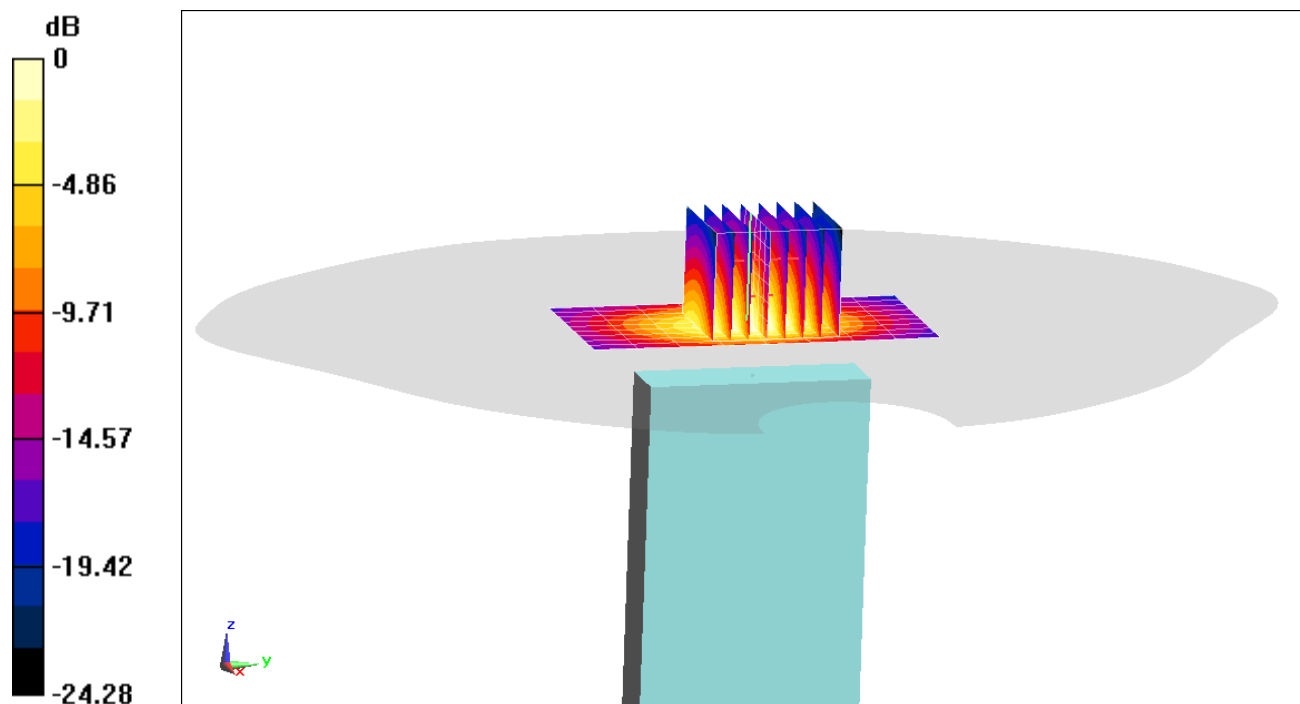
Area Scan (10x9x1): Measurement grid: $dx=5\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x8x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 24.34 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 2.38 W/kg

SAR(1 g) = 1.18 W/kg



0 dB = 1.74 W/kg = 2.41 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0370S

Communication System: UID 0, _IEEE 802.11b; Frequency: 2412 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2412 \text{ MHz}$; $\sigma = 1.997 \text{ S/m}$; $\epsilon_r = 51.603$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-18-2019; Ambient Temp: 22.6°C; Tissue Temp: 22.2°C

Probe: EX3DV4 - SN7417; ConvF(7.51, 7.51, 7.51) @ 2412 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: IEEE 802.11b, Ant 2, 22 MHz Bandwidth,
Body SAR, Ch 1, 1 Mbps, Back Side**

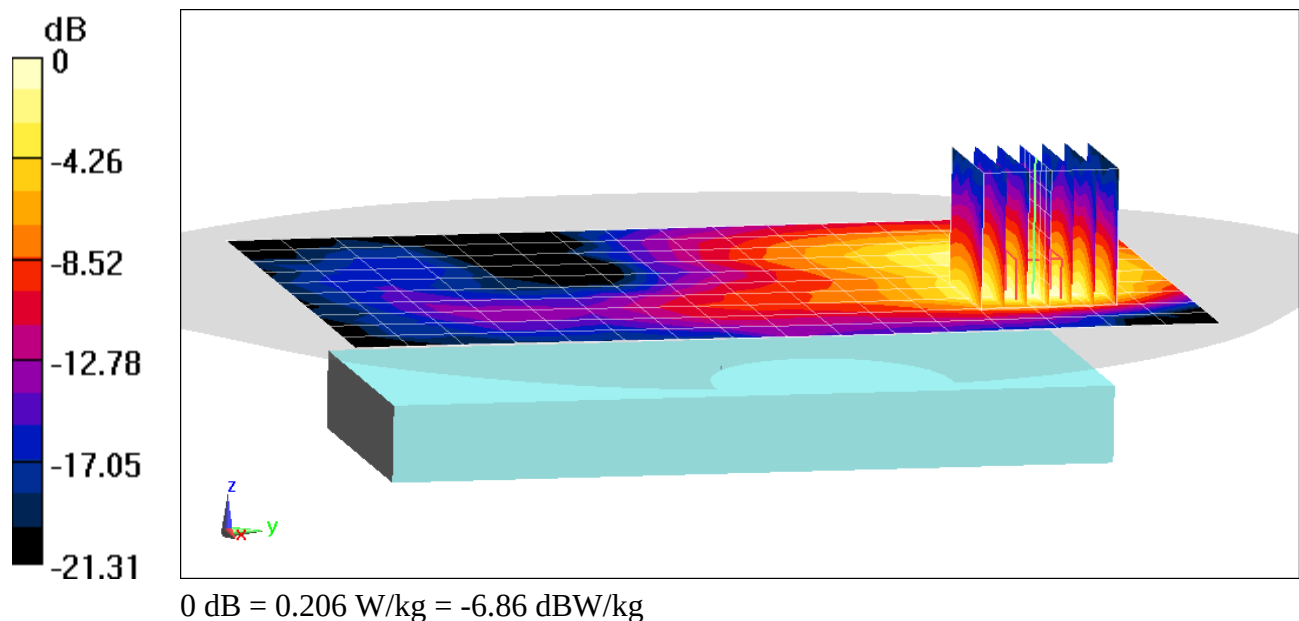
Area Scan (11x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 8.423 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.259 W/kg

SAR(1 g) = 0.123 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0370S

Communication System: UID 0, _IEEE 802.11b; Frequency: 2412 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2412 \text{ MHz}$; $\sigma = 1.997 \text{ S/m}$; $\epsilon_r = 51.603$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-18-2019; Ambient Temp: 22.6°C; Tissue Temp: 22.2°C

Probe: EX3DV4 - SN7417; ConvF(7.51, 7.51, 7.51) @ 2412 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: IEEE 802.11b, Ant 2, 22 MHz Bandwidth,
Body SAR, Ch 1, 1 Mbps, Top Edge**

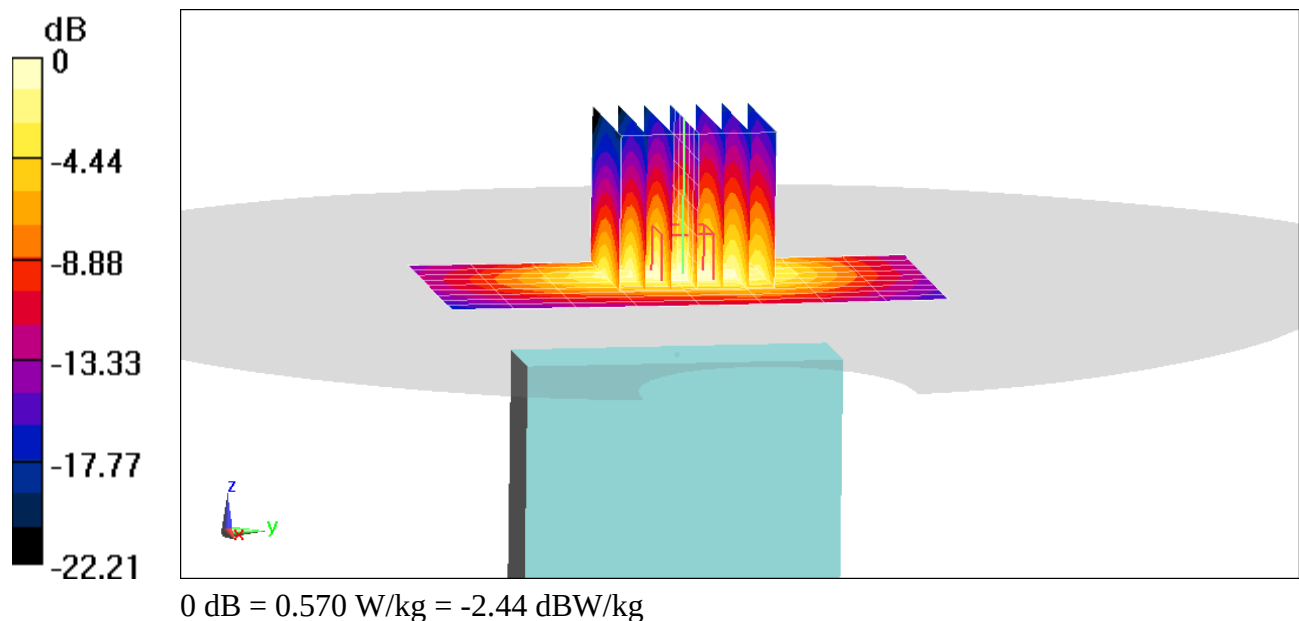
Area Scan (10x9x1): Measurement grid: dx=5mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.98 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.700 W/kg

SAR(1 g) = 0.353 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0367S

Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: 5GHz Body Medium parameters used:

$f = 5785 \text{ MHz}$; $\sigma = 5.936 \text{ S/m}$; $\epsilon_r = 47.497$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-16-2019; Ambient Temp: 23.0°C; Tissue Temp: 20.1°C

Probe: EX3DV4 - SN7308; ConvF(4.18, 4.18, 4.18) @ 5785 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: IEEE 802.11a, Ant 2, UNII-3, 20 MHz Bandwidth,
Body SAR, Ch 157, 6 Mbps, Back Side**

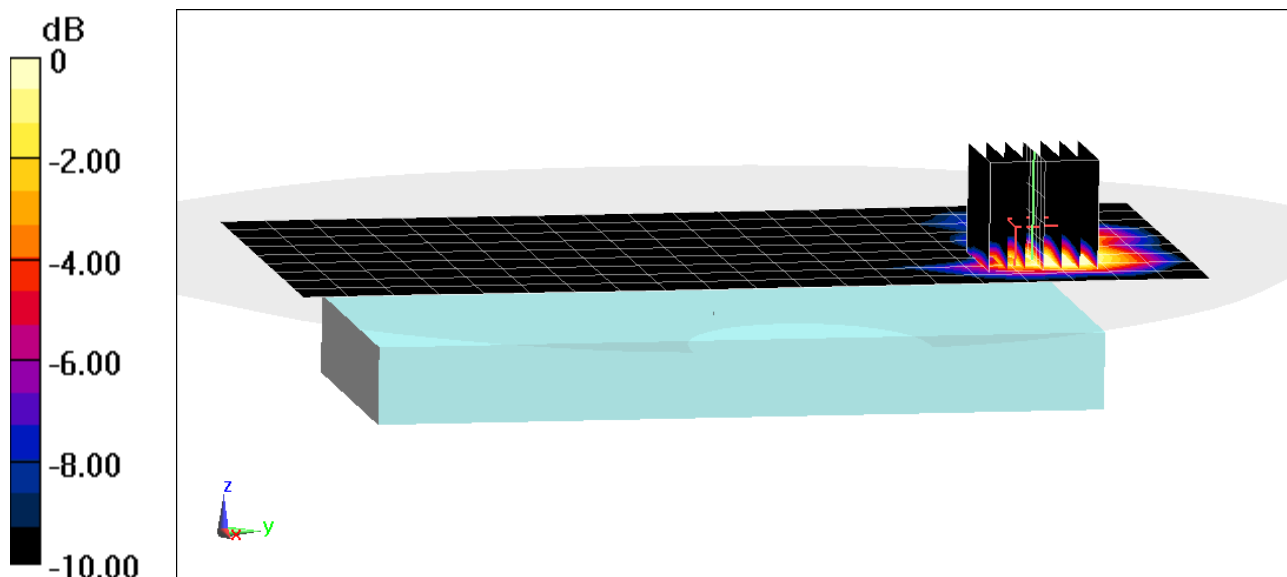
Area Scan (10x21x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Reference Value = 5.386 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 0.598 W/kg

SAR(1 g) = 0.149 W/kg



0 dB = 0.417 W/kg = -3.80 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0367S

Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: 5GHz Body Medium parameters used:

$f = 5785 \text{ MHz}$; $\sigma = 5.936 \text{ S/m}$; $\epsilon_r = 47.497$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-16-2019; Ambient Temp: 23.0°C; Tissue Temp: 20.1°C

Probe: EX3DV4 - SN7308; ConvF(4.18, 4.18, 4.18) @ 5785 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: IEEE 802.11a, Ant 2, UNII-3, 20 MHz Bandwidth,
Body SAR, Ch 157, 6 Mbps, Back Side**

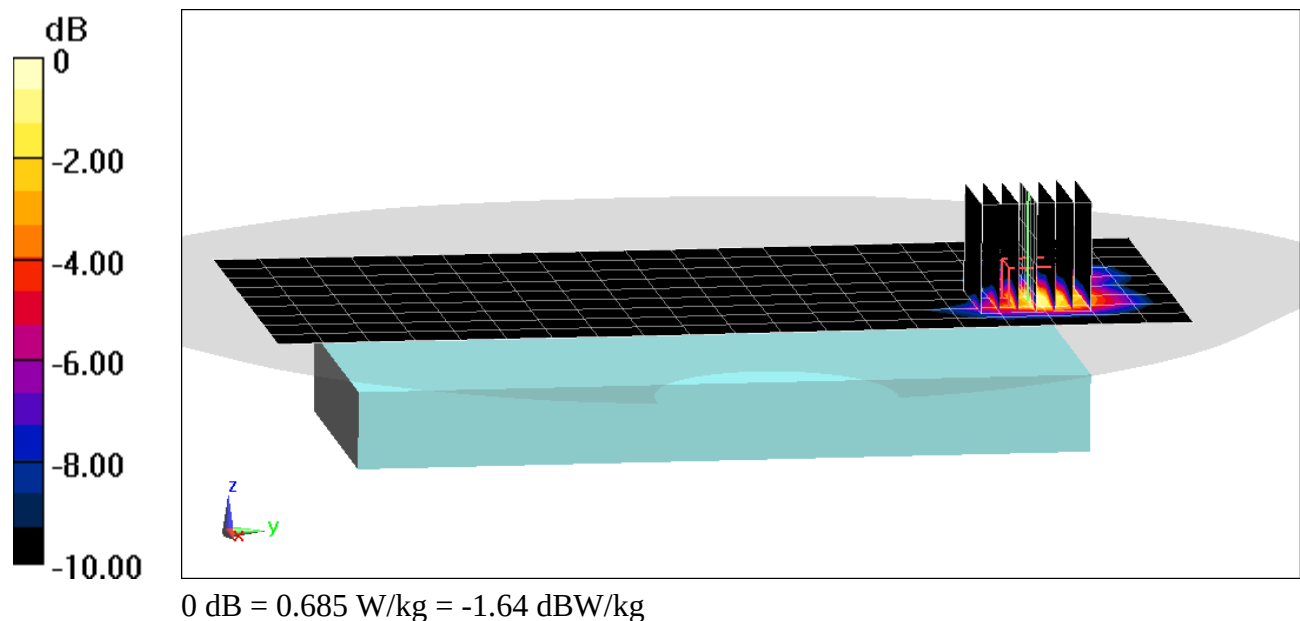
Area Scan (10x21x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Reference Value = 7.009 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 1.16 W/kg

SAR(1 g) = 0.252 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0366S

Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used (interpolated):

$f = 1732.4 \text{ MHz}$; $\sigma = 1.447 \text{ S/m}$; $\epsilon_r = 52.807$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.3 cm

Test Date: 07-08-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1732.4 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 1750, Phablet SAR, Bottom side, Mid.ch

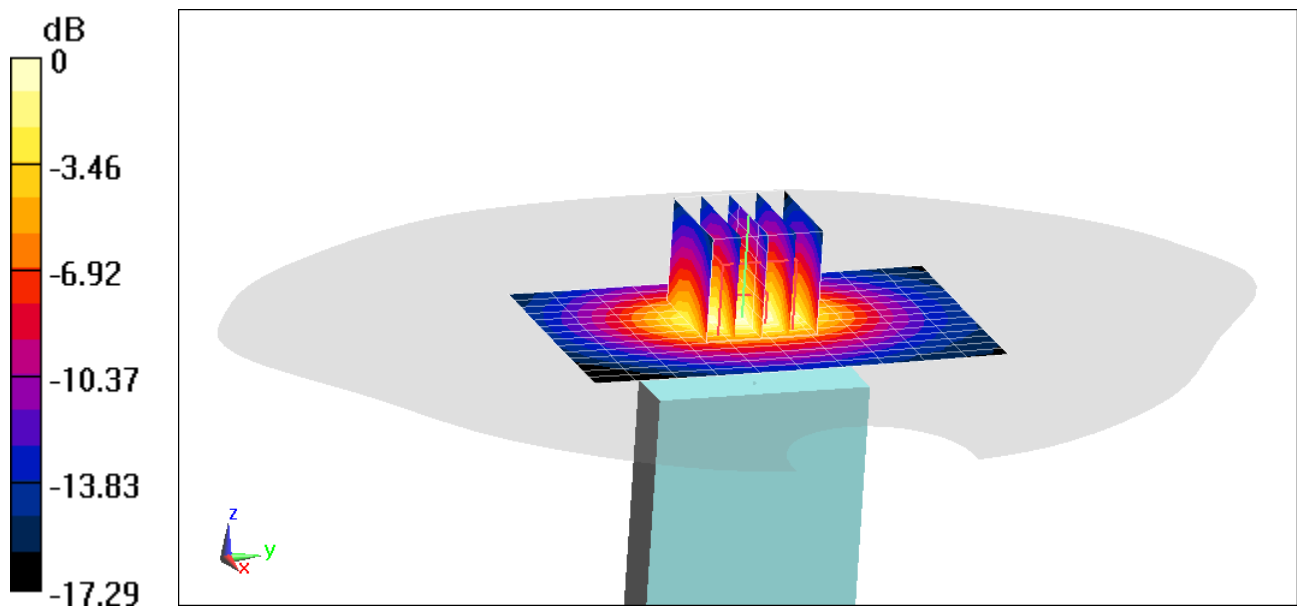
Area Scan (15x11x1): Measurement grid: dx=5mm, dy=12mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 31.17 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 2.19 W/kg

SAR(10 g) = 0.699 W/kg



0 dB = 1.87 W/kg = 2.72 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0369S

Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.54 \text{ S/m}$; $\epsilon_r = 54.118$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-22-2019; Ambient Temp: 19.5°C; Tissue Temp: 23.0°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1880 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 1900, Phablet SAR, Bottom Edge, Mid.ch

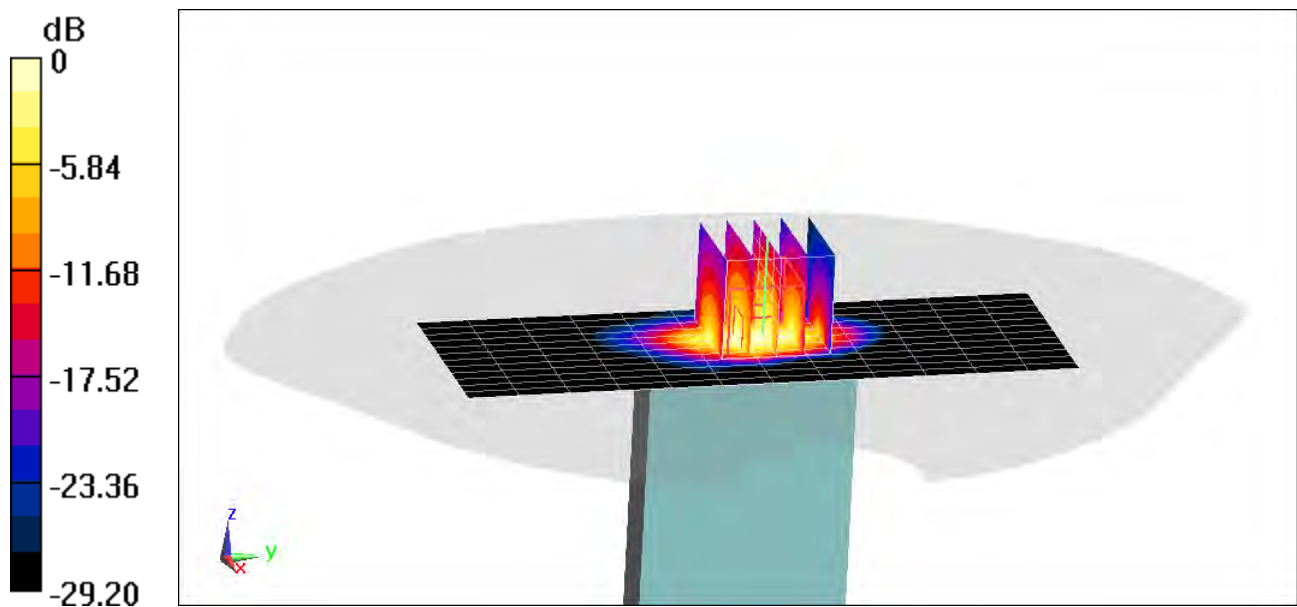
Area Scan (13x13x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 66.27 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 14.6 W/kg

SAR(10 g) = 2.61 W/kg



0 dB = 10.6 W/kg = 10.25 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0369S

Communication System: UID 0, _GSM GPRS; 3 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.76

Medium: 1900 Body; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.537 \text{ S/m}$; $\epsilon_r = 53.726$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-31-2019; Ambient Temp: 20.5°C; Tissue Temp: 23.9°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1880 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: GPRS 1900, Phablet SAR, Bottom Edge, Mid.ch, 3 Tx Slots

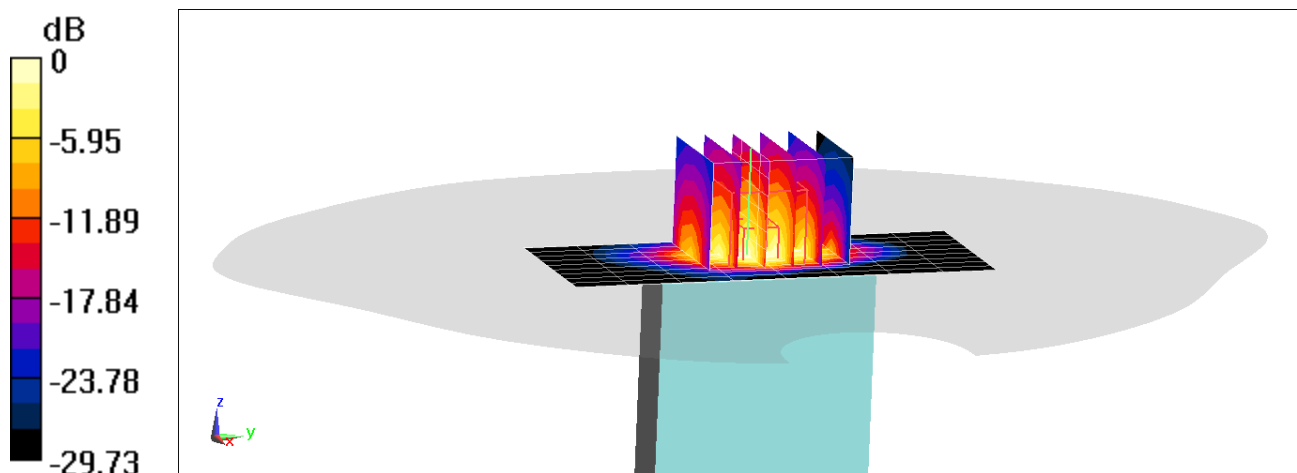
Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 65.41 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 13.0 W/kg

SAR(10 g) = 2.42 W/kg



0 dB = 10.1 W/kg = 10.04 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0365S

Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.561 \text{ S/m}$; $\epsilon_r = 52.673$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-08-2019; Ambient Temp: 20.1°C; Tissue Temp: 22.6°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1880 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: PCS EVDO, Phablet SAR, Bottom Edge, Mid.ch

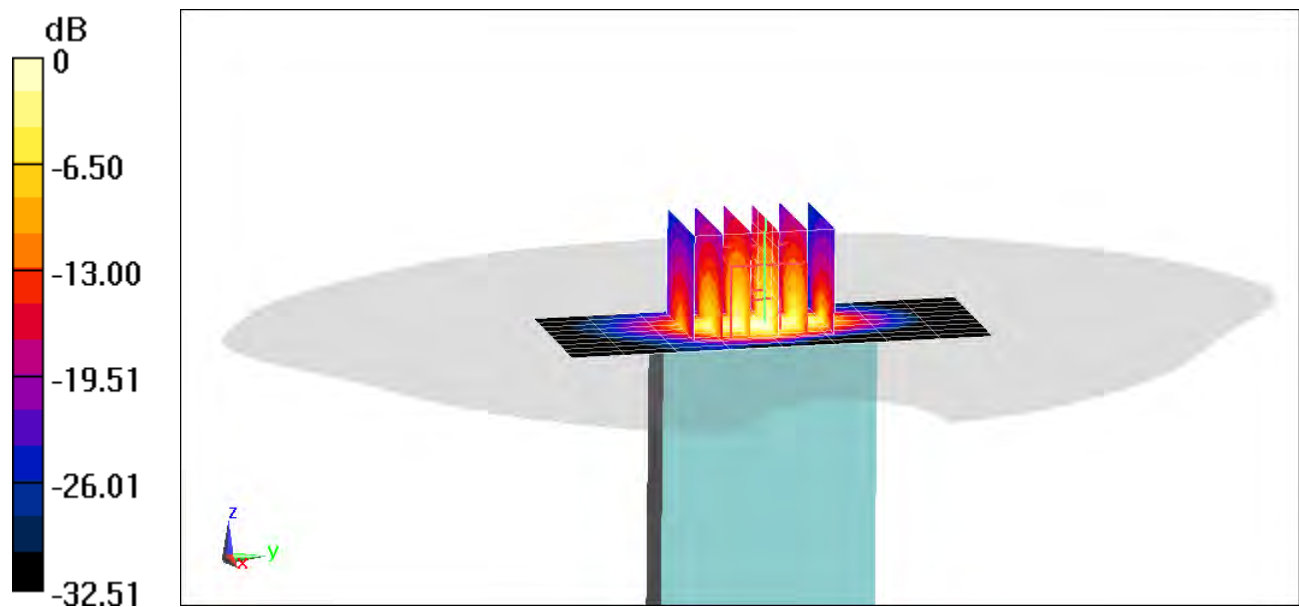
Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 57.37 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 11.4 W/kg

SAR(10 g) = 1.96 W/kg



0 dB = 8.31 W/kg = 9.20 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0368S

Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used (interpolated):

$f = 1745 \text{ MHz}$; $\sigma = 1.491 \text{ S/m}$; $\epsilon_r = 52.7$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 06-26-2019; Ambient Temp: 21.2°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1745 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Twin-SAM V5.0 Back Right; Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 66 (AWS) ULCA, Phablet SAR, Front side, Mid.ch,

PCC: 10 MHz Bandwidth, QPSK, Ch. 132322, 1 RB, 0 RB Offset

SCC: 10 MHz Bandwidth, QPSK, Ch. 132223, 1 RB, 49 RB Offset

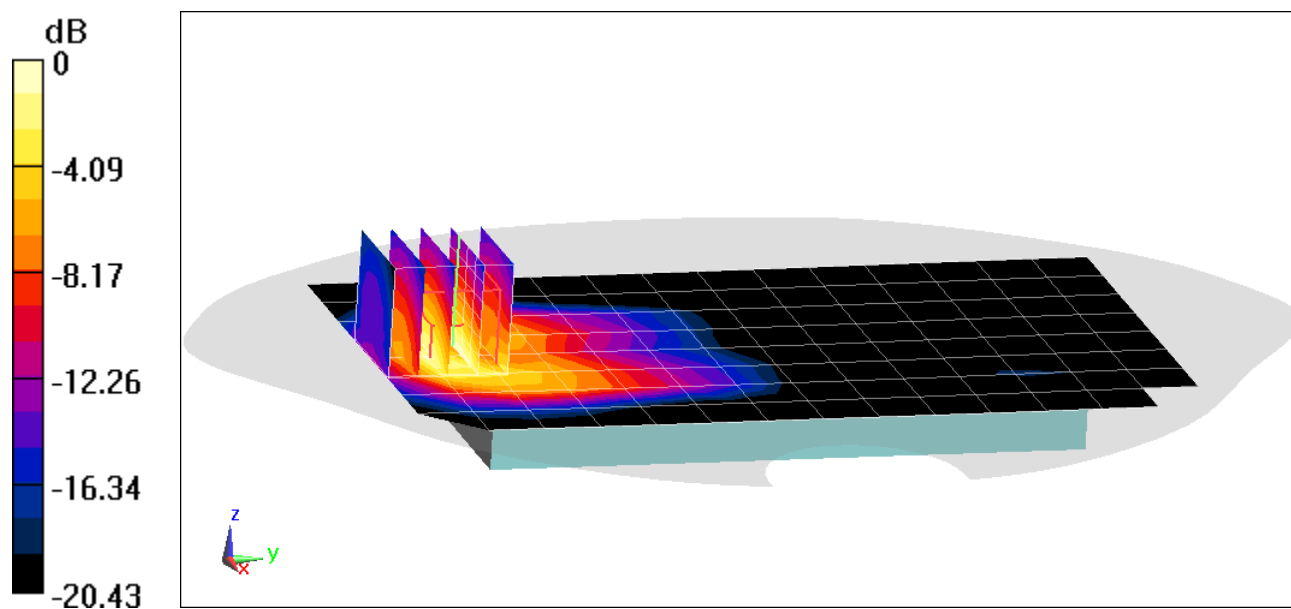
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 37.74 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 5.04 W/kg

SAR(10 g) = 1.26 W/kg



0 dB = 3.73 W/kg = 5.72 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0369S

Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used (interpolated):

$f = 1882.5 \text{ MHz}$; $\sigma = 1.556 \text{ S/m}$; $\epsilon_r = 53.69$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-15-2019; Ambient Temp: 19.3°C; Tissue Temp: 22.6°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1882.5 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 25 (PCS), Phablet SAR, Bottom Edge, Mid.ch,
20 MHz Bandwidth, QPSK, 50 RB, 25 RB Offset**

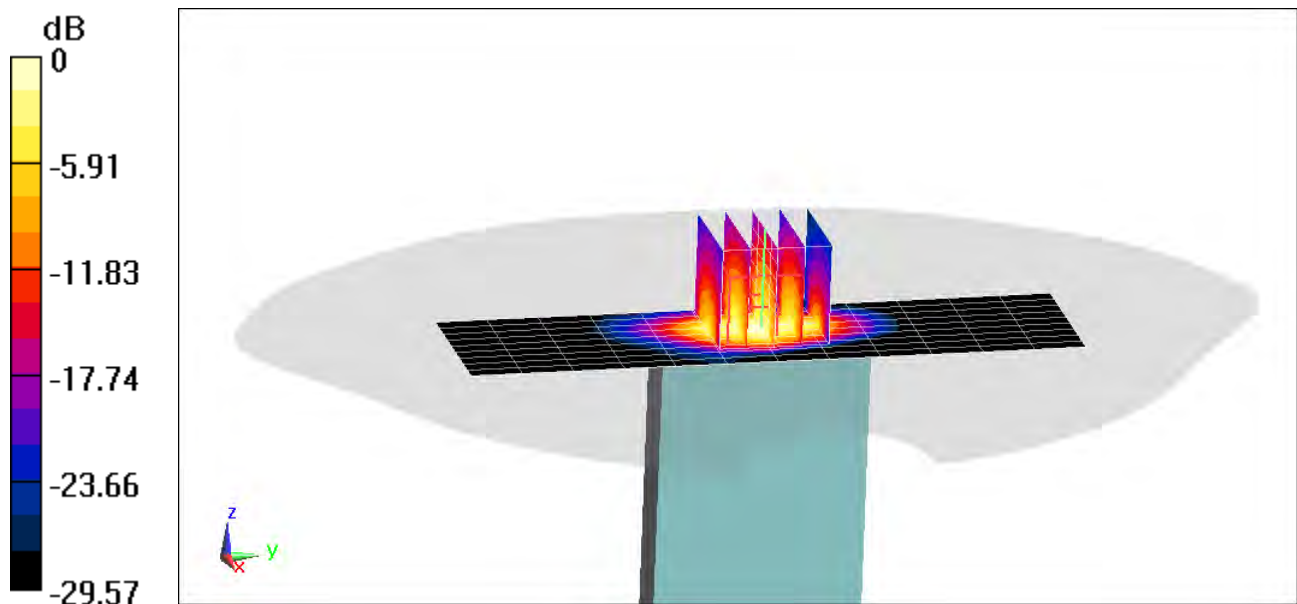
Area Scan (10x13x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 59.13 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 11.4 W/kg

SAR(10 g) = 2.01 W/kg



0 dB = 8.72 W/kg = 9.41 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0366S

Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used:

$f = 2310 \text{ MHz}$; $\sigma = 1.875 \text{ S/m}$; $\epsilon_r = 52.758$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-11-2019; Ambient Temp: 22.2°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7308; ConvF(7.73, 7.73, 7.73) @ 2310 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 30, Phablet SAR, Bottom Edge, Mid.ch,
10 MHz Bandwidth, QPSK, 25 RB, 12 RB Offset**

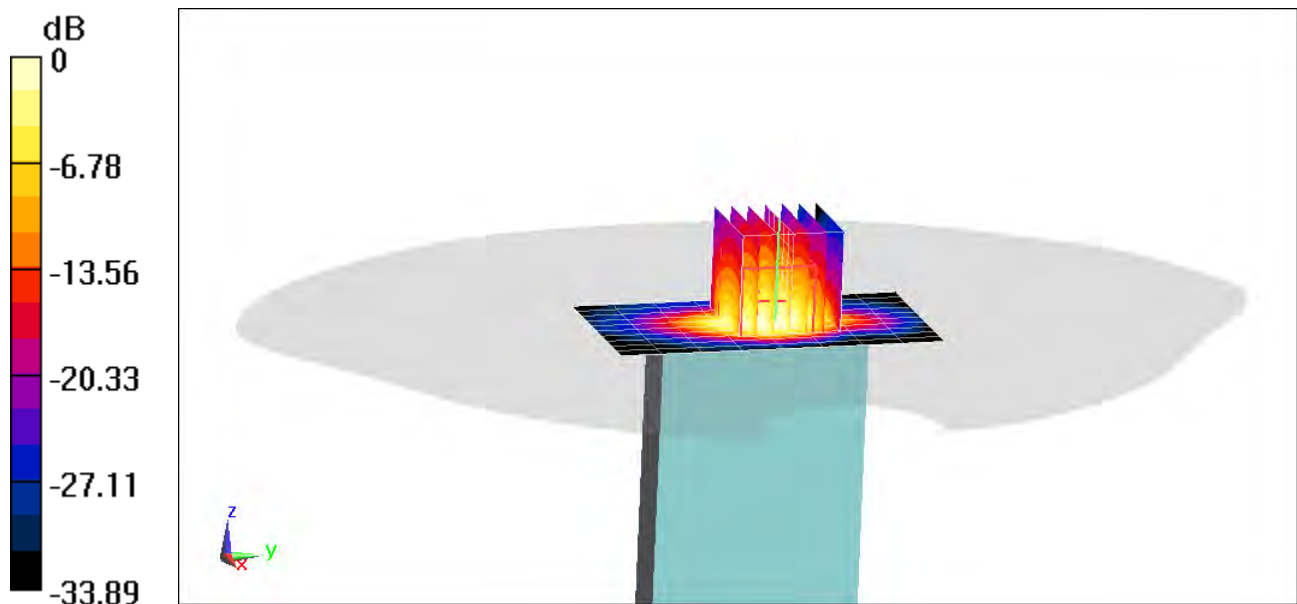
Area Scan (11x9x1): Measurement grid: dx=5mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 51.17 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 12.8 W/kg

SAR(10 g) = 2.22 W/kg



0 dB = 8.98 W/kg = 9.53 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0367S

Communication System: UID 0, LTE Band 7; Frequency: 2510 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2510 \text{ MHz}$; $\sigma = 2.115 \text{ S/m}$; $\epsilon_r = 51.302$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.3 cm

Test Date: 07-18-2019; Ambient Temp: 22.6°C; Tissue Temp: 22.2°C

Probe: EX3DV4 - SN7417; ConvF(7.51, 7.51, 7.51) @ 2510 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 7, Phablet SAR, Bottom Edge, Low.ch,
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset**

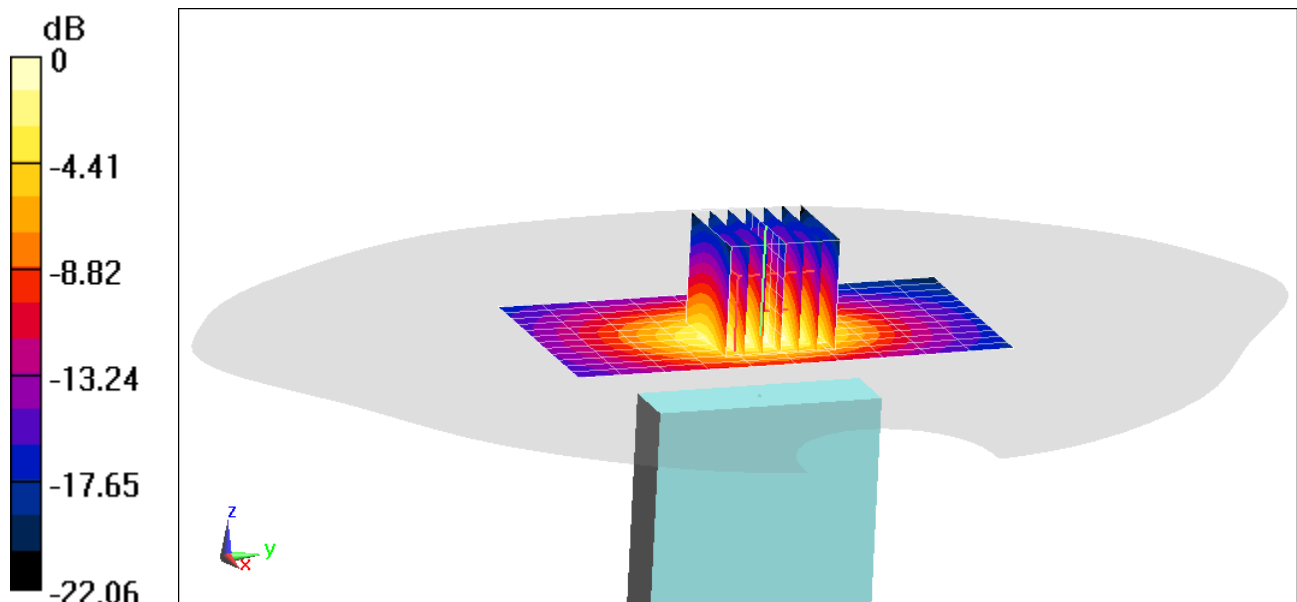
Area Scan (13x11x1): Measurement grid: dx=5mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 26.10 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 2.49 W/kg

SAR(10 g) = 0.625 W/kg



0 dB = 2.03 W/kg = 3.07 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0367S

Communication System: UID 0, _LTE Band 38; Frequency: 2595 MHz; Duty Cycle: 1:1.58

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2595 \text{ MHz}$; $\sigma = 2.179 \text{ S/m}$; $\epsilon_r = 53.631$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-14-2019; Ambient Temp: 20.9°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN7308; ConvF(7.4, 7.4, 7.4) @ 2595 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 38, Phablet SAR, Bottom Edge, Mid.ch,
20 MHz Bandwidth, QPSK, 50 RB, 50 RB Offset**

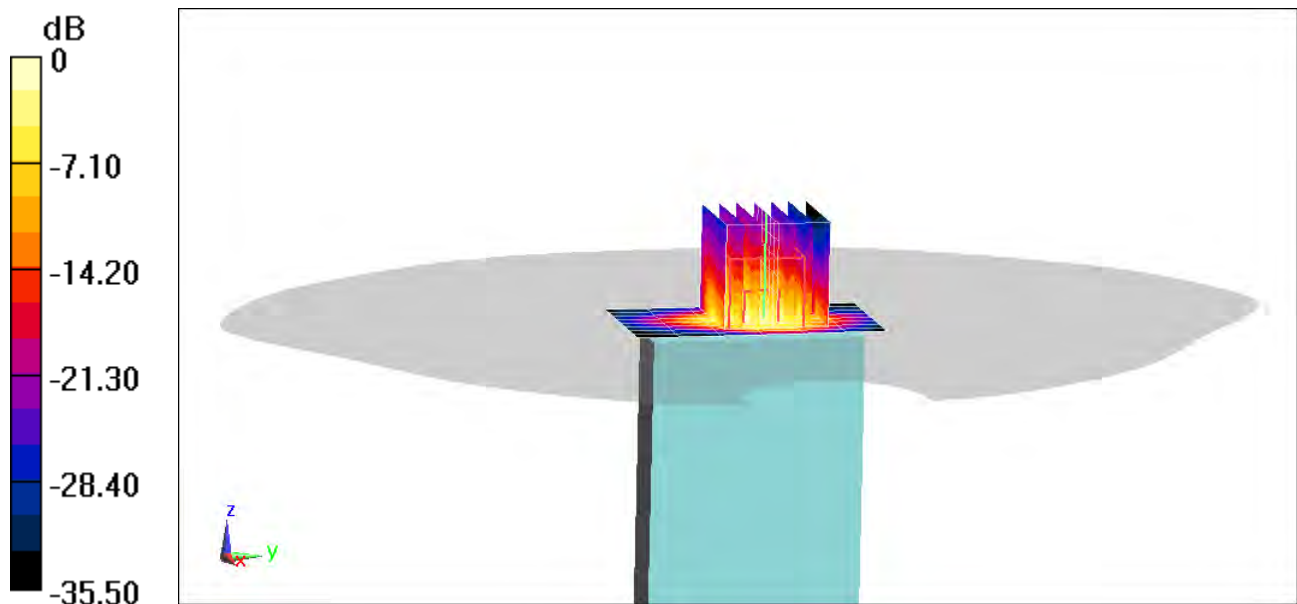
Area Scan (9x7x1): Measurement grid: dx=5mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 58.83 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 20.4 W/kg

SAR(10 g) = 2.18 W/kg



0 dB = 14.9 W/kg = 11.73 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0368S

Communication System: UID 0, LTE Band 41 (Class 2); Frequency: 2506 MHz; Duty Cycle: 1:2.31

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2506 \text{ MHz}$; $\sigma = 2.082 \text{ S/m}$; $\epsilon_r = 51.107$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-24-2019; Ambient Temp: 22.5°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN7417; ConvF(7.51, 7.51, 7.51) @ 2506 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 41 PC2 with ULCA, Phablet SAR, Front side,
PCC: 20 MHz Bandwidth, QPSK, Ch. 39750, 1 RB, 99 RB Offset
SCC: 20 MHz Bandwidth, QPSK, Ch. 39948, 1 RB, 0 RB Offset

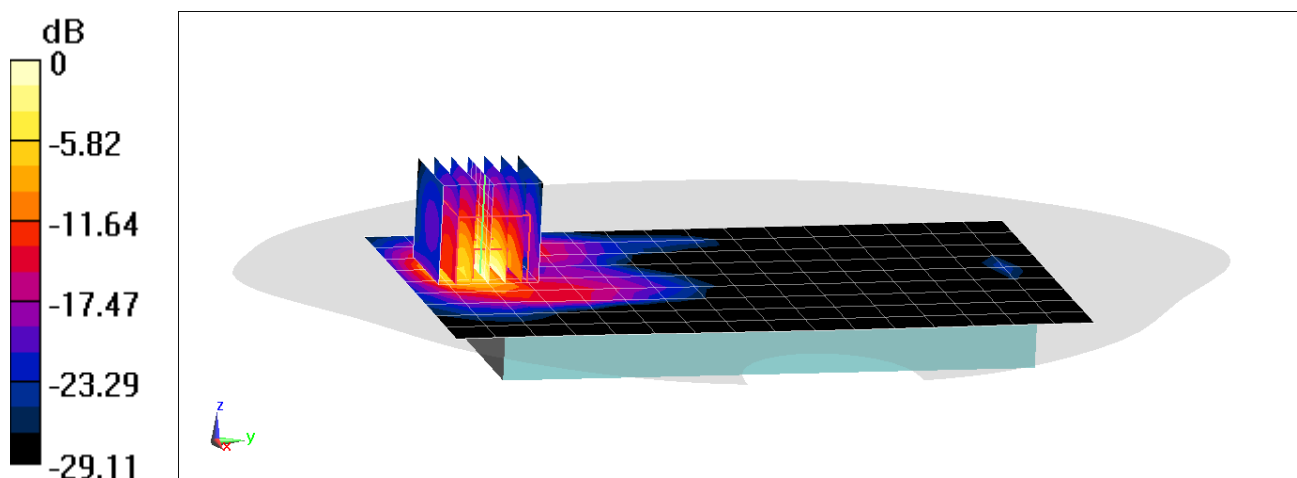
Area Scan (10x17x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 63.25 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 19.8 W/kg

SAR(10 g) = 2.16 W/kg



0 dB = 12.2 W/kg = 10.86 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0367S

Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5720 MHz; Duty Cycle: 1:1

Medium: 5GHz Body; Medium parameters used (interpolated):

$f = 5720 \text{ MHz}$; $\sigma = 5.841 \text{ S/m}$; $\epsilon_r = 47.626$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-16-2019; Ambient Temp: 23.0°C; Tissue Temp: 20.1°C

Probe: EX3DV4 - SN7308; ConvF(4.18, 4.18, 4.18) @ 5720 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: IEEE 802.11a, Ant 2, U-NII-2C, 20 MHz Bandwidth,
Phablet SAR, Ch 144, 6 Mbps, Back Side**

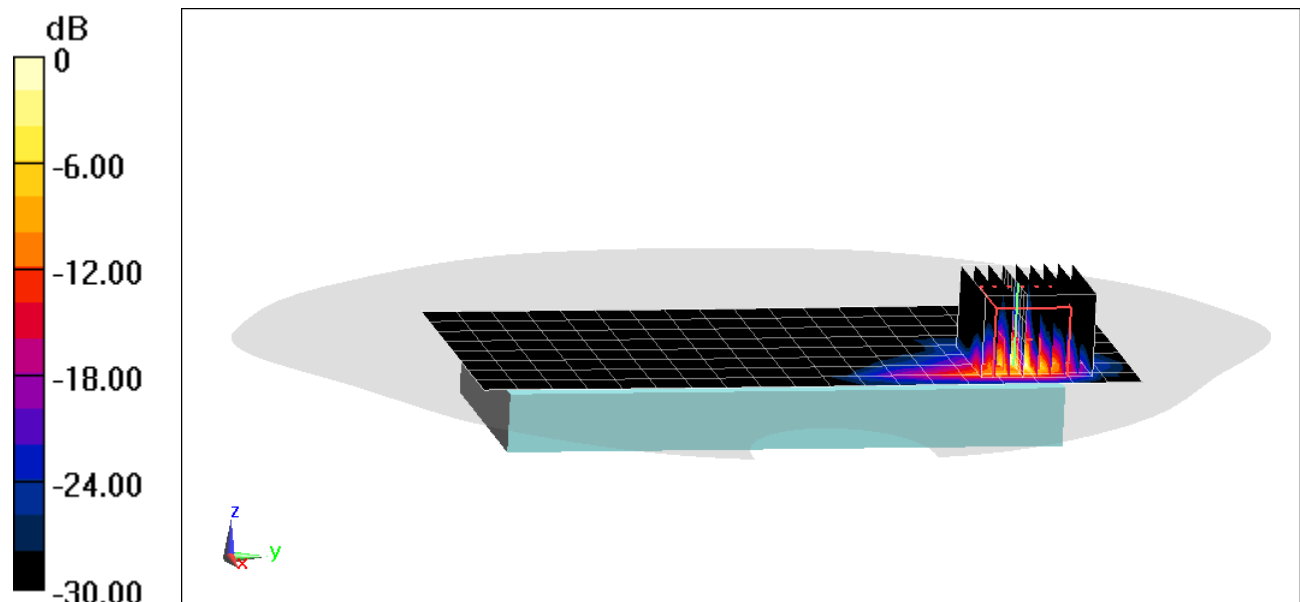
Area Scan (9x20x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (9x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 35.62 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 67.4 W/kg

SAR(10 g) = 1.2 W/kg



0 dB = 28.1 W/kg = 14.49 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0365S

Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 848.8 MHz; Duty Cycle: 1:2.76

Medium: 835 Body; Medium parameters used (interpolated):

$f = 848.8 \text{ MHz}$; $\sigma = 1.006 \text{ S/m}$; $\epsilon_r = 53.681$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-29-2019; Ambient Temp: 20.5°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7538; ConvF(9.85, 9.85, 9.85) @ 848.8 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn728; Calibrated: 5/8/2019

Phantom: Left Twin-SAM V5.0 30; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: GPRS 850, UMPC Body SAR, Back side, High.ch, 3 Tx Slots

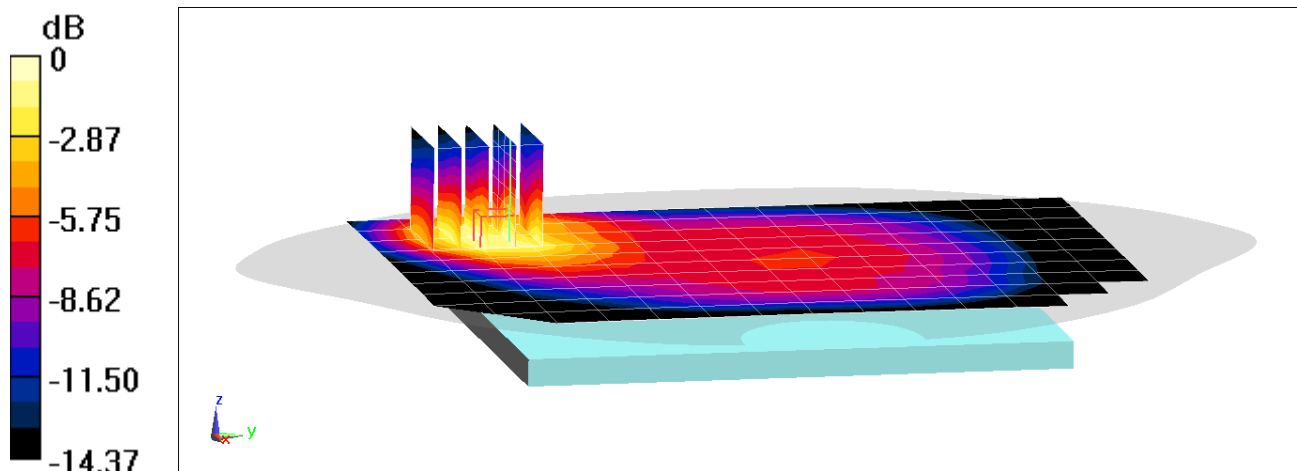
Area Scan (11x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 26.55 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 1.25 W/kg

SAR(1 g) = 0.715 W/kg



0 dB = 0.988 W/kg = -0.05 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0366S

Communication System: UID 0, UMTS; Frequency: 1752.6 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used (interpolated):

$f = 1752.6 \text{ MHz}$; $\sigma = 1.512 \text{ S/m}$; $\epsilon_r = 51.564$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.1 cm

Test Date: 07-24-2019; Ambient Temp: 23.0°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1752.6 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 1750, UMPC Body SAR, Front side, High.ch

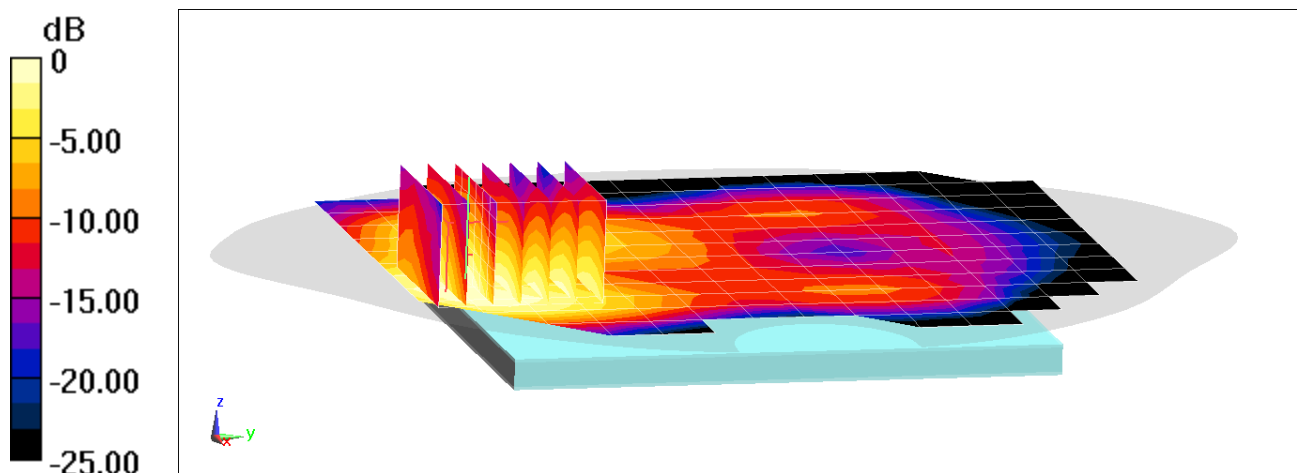
Area Scan (13x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.72 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 1.02 W/kg

SAR(1 g) = 0.582 W/kg



0 dB = 0.784 W/kg = -1.06 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0369S

Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 1909.8 MHz; Duty Cycle: 1:2.76

Medium: 1900 Body; Medium parameters used:

$f = 1910 \text{ MHz}$; $\sigma = 1.582 \text{ S/m}$; $\epsilon_r = 53.016$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-25-2019; Ambient Temp: 19.7°C; Tissue Temp: 23.2°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1909.8 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: GPRS 1900, UMPC Body SAR, Bottom Edge, High.ch, 3 Tx Slots

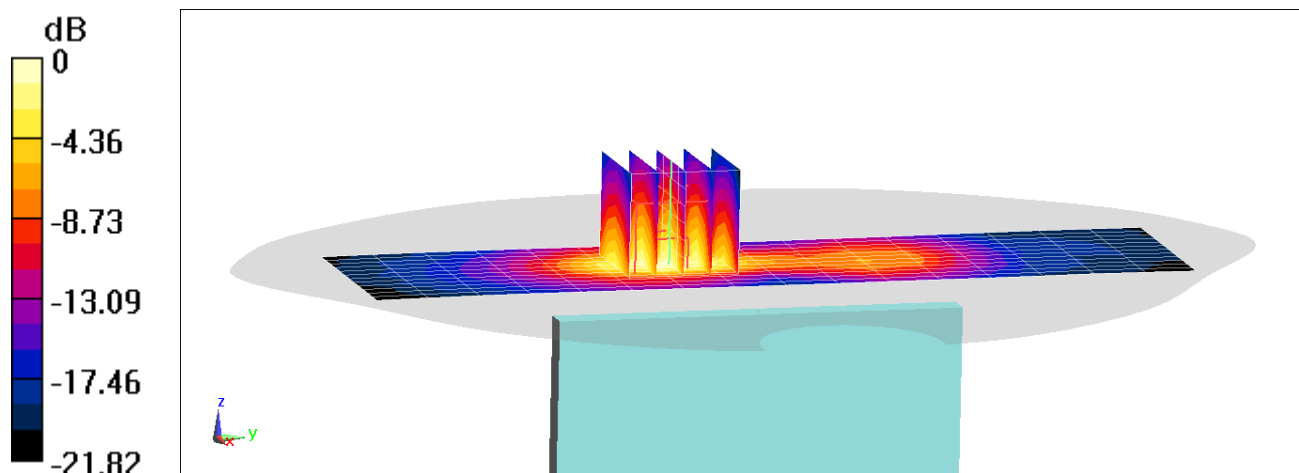
Area Scan (13x17x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.43 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 1.05 W/kg

SAR(1 g) = 0.574 W/kg



0 dB = 0.903 W/kg = -0.44 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0366S

Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.536 \text{ S/m}$; $\epsilon_r = 52.441$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.6 cm

Test Date: 07-15-2019; Ambient Temp: 19.6°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7357; ConvF(7.93, 7.93, 7.93) @ 1880 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 1900, UMPC Body SAR, Bottom Edge, Mid.ch

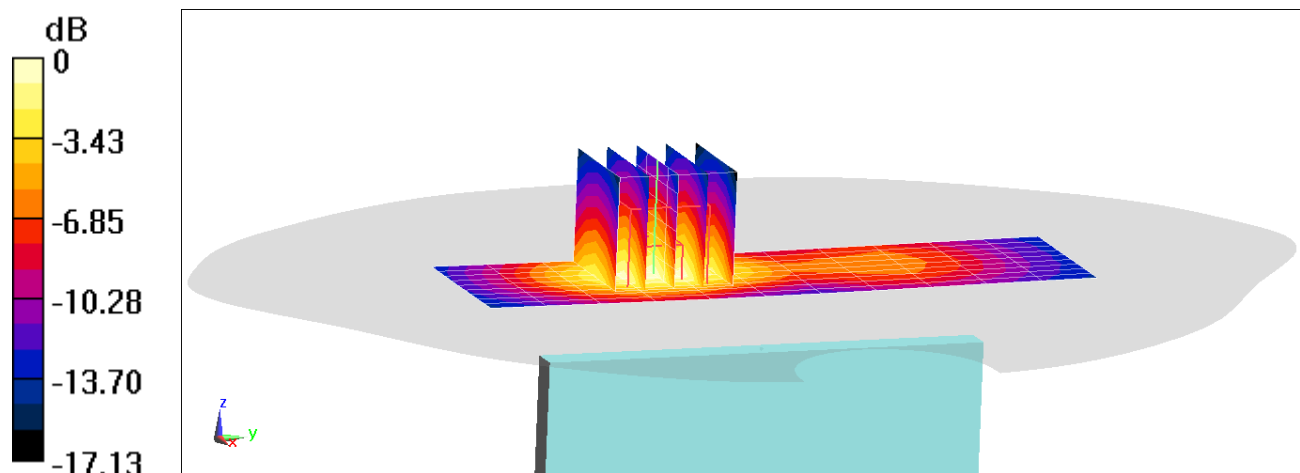
Area Scan (10x12x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.98 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 1.34 W/kg

SAR(1 g) = 0.797 W/kg



0 dB = 1.15 W/kg = 0.61 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0366S

Communication System: UID 0, CDMA; Frequency: 1908.75 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used (interpolated):

$f = 1908.75 \text{ MHz}$; $\sigma = 1.577 \text{ S/m}$; $\epsilon_r = 53.663$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.6 cm

Test Date: 07-17-2019; Ambient Temp: 20.3°C; Tissue Temp: 23.6°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1908.75 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: PCS EVDO, UMPC Body SAR, Bottom Edge, High.ch

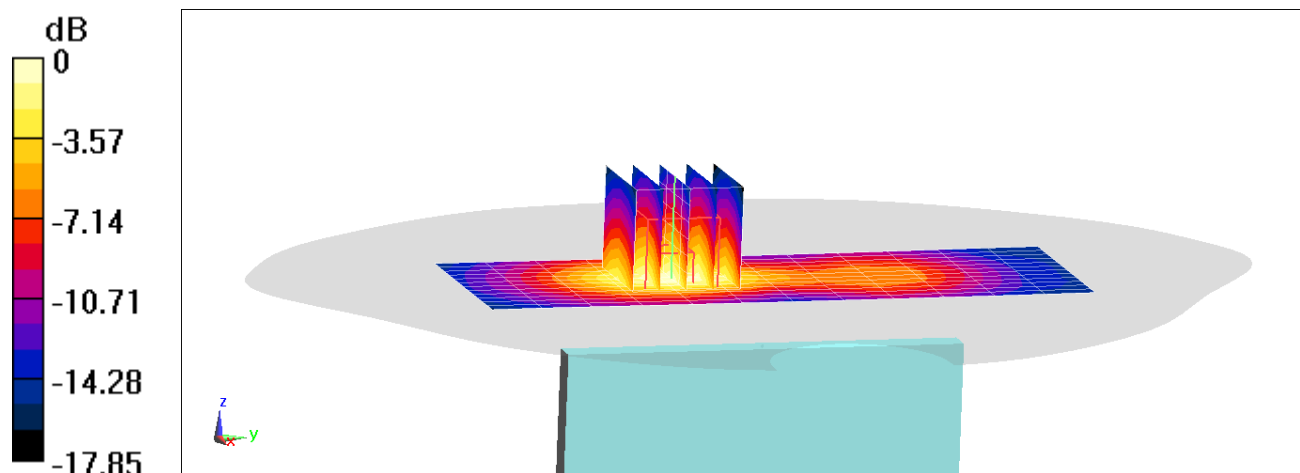
Area Scan (13x13x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.04 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.07 W/kg

SAR(1 g) = 0.624 W/kg



0 dB = 0.913 W/kg = -0.40 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0366S

Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1775 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used (interpolated):

$f = 1775 \text{ MHz}$; $\sigma = 1.535 \text{ S/m}$; $\epsilon_r = 51.471$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.1 cm

Test Date: 07-24-2019; Ambient Temp: 23.0°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1775 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 66 (AWS) ULCA, UMPC Body SAR, Front side,

PCC: 10 MHz Bandwidth, QPSK, Ch. 132622, 1 RB, 0 RB Offset

SCC: 10 MHz Bandwidth, QPSK, Ch. 132523, 1 RB, 49 RB Offset

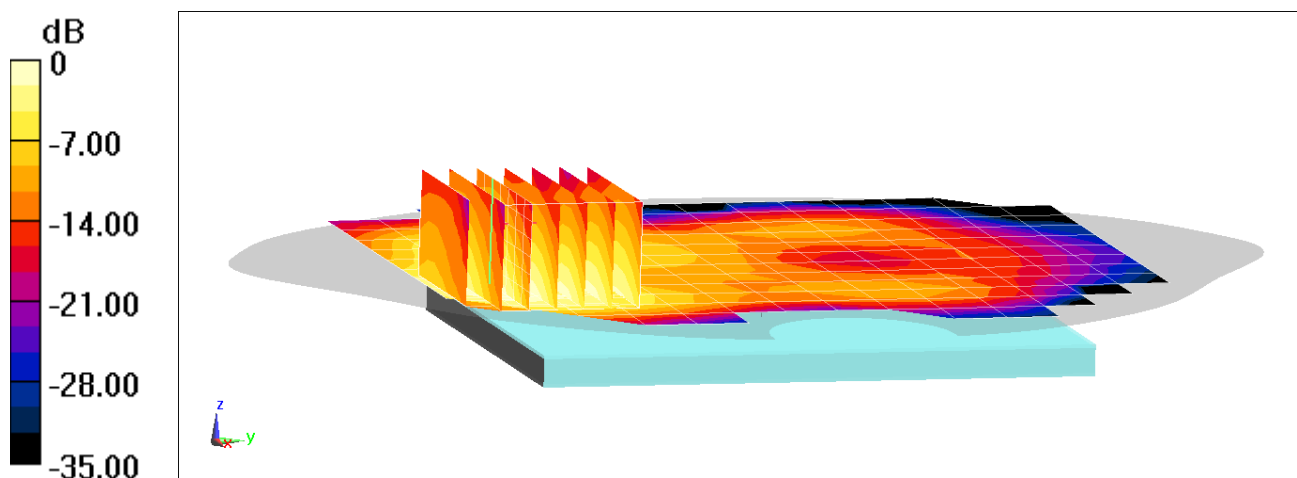
Area Scan (13x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.08 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 1.13 W/kg

SAR(1 g) = 0.645 W/kg



0 dB = 0.957 W/kg = -0.19 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0369S

Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used (interpolated):

$f = 1882.5 \text{ MHz}$; $\sigma = 1.556 \text{ S/m}$; $\epsilon_r = 53.69$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.1 cm

Test Date: 07-15-2019; Ambient Temp: 19.3°C; Tissue Temp: 22.6°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1882.5 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 25 (PCS), UMPC Body SAR, Front side, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

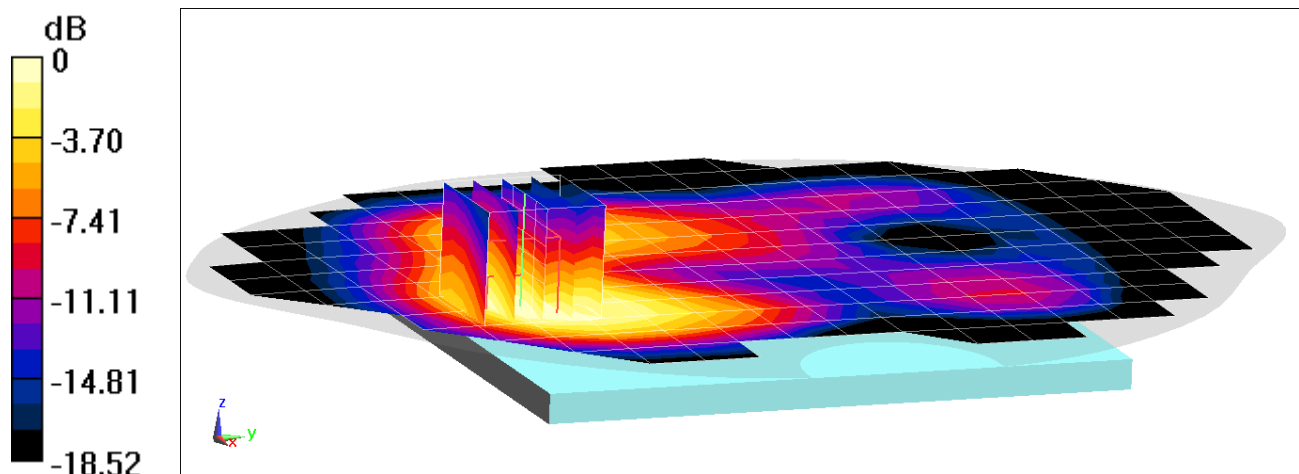
Area Scan (15x19x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.53 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.888 W/kg

SAR(1 g) = 0.517 W/kg



0 dB = 0.704 W/kg = -1.52 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0367S

Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used:

$f = 2310 \text{ MHz}$; $\sigma = 1.85 \text{ S/m}$; $\epsilon_r = 51.617$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.6 cm

Test Date: 07-07-2019; Ambient Temp: 23.0°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN7417; ConvF(7.64, 7.64, 7.64) @ 2310 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 30, UMPC Body SAR, Bottom Edge, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

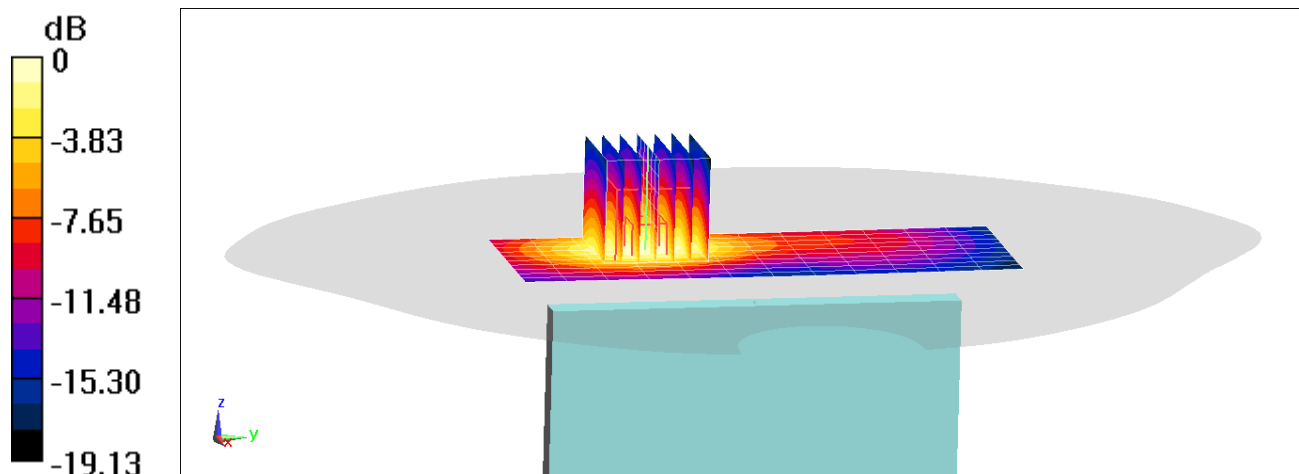
Area Scan (11x13x1): Measurement grid: dx=5mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.99 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 1.33 W/kg

SAR(1 g) = 0.728 W/kg



0 dB = 1.11 W/kg = 0.45 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0367S

Communication System: UID 0, LTE Band 7; Frequency: 2510 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2510 \text{ MHz}$; $\sigma = 2.094 \text{ S/m}$; $\epsilon_r = 53.773$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.6 cm

Test Date: 07-14-2019; Ambient Temp: 20.9°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN7308; ConvF(7.57, 7.57, 7.57) @ 2510 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 7, UMPC Body SAR, Bottom Edge, Low.ch,
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset**

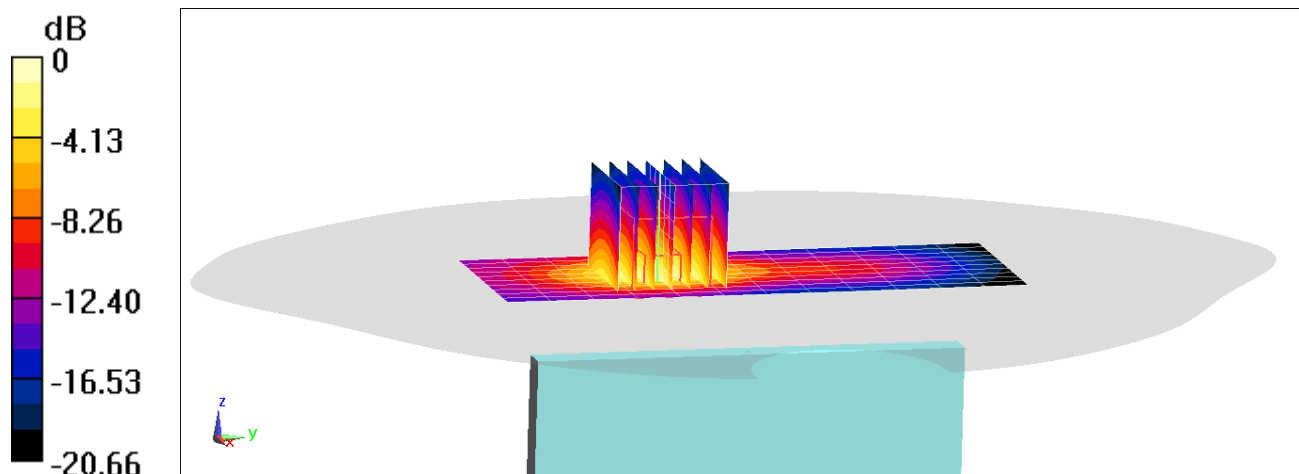
Area Scan (10x11x1): Measurement grid: dx=5mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 21.36 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 1.67 W/kg

SAR(1 g) = 0.858 W/kg



0 dB = 1.35 W/kg = 1.30 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0367S

Communication System: UID 0, _LTE Band 38; Frequency: 2595 MHz; Duty Cycle: 1:1.58

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2595 \text{ MHz}$; $\sigma = 2.179 \text{ S/m}$; $\epsilon_r = 53.631$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.6 cm

Test Date: 07-14-2019; Ambient Temp: 20.9°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN7308; ConvF(7.4, 7.4, 7.4) @ 2595 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 38, UMPC Body SAR, Bottom Edge, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

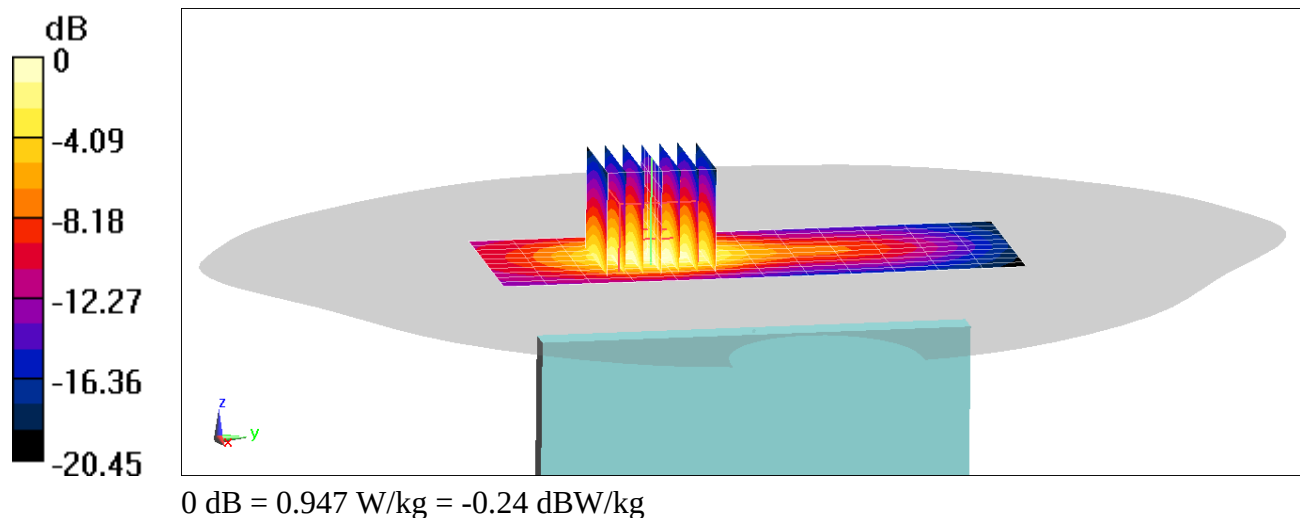
Area Scan (9x6x1): Measurement grid: dx=5mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.10 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.60 W/kg

SAR(1 g) = 0.808 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0367S

Communication System: UID 0, _LTE Band 41; Frequency: 2636.5 MHz; Duty Cycle: 1:1.58

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2636.5 \text{ MHz}$; $\sigma = 2.221 \text{ S/m}$; $\epsilon_r = 53.554$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.6 cm

Test Date: 07-14-2019; Ambient Temp: 20.9°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN7308; ConvF(7.4, 7.4, 7.4) @ 2636.5 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 41, UMPC Body SAR, Bottom Edge, Mid-High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

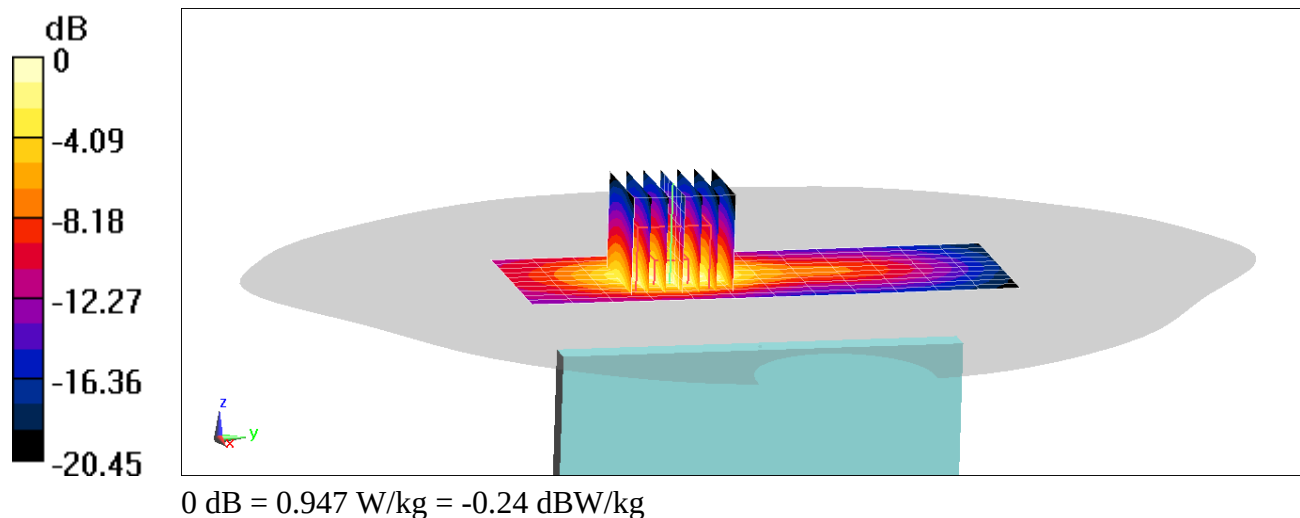
Area Scan (9x6x1): Measurement grid: dx=5mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.60 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 1.25 W/kg

SAR(1 g) = 0.628 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0370S

Communication System: UID 0, _IEEE 802.11n; Frequency: 2452 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2452 \text{ MHz}$; $\sigma = 2.037 \text{ S/m}$; $\epsilon_r = 51.503$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-29-2019; Ambient Temp: 22.7°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7417; ConvF(7.51, 7.51, 7.51) @ 2452 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: IEEE 802.11n, MIMO, 20 MHz Bandwidth,
UMPC Body SAR, Ch 9, 13 Mbps, Top Edge**

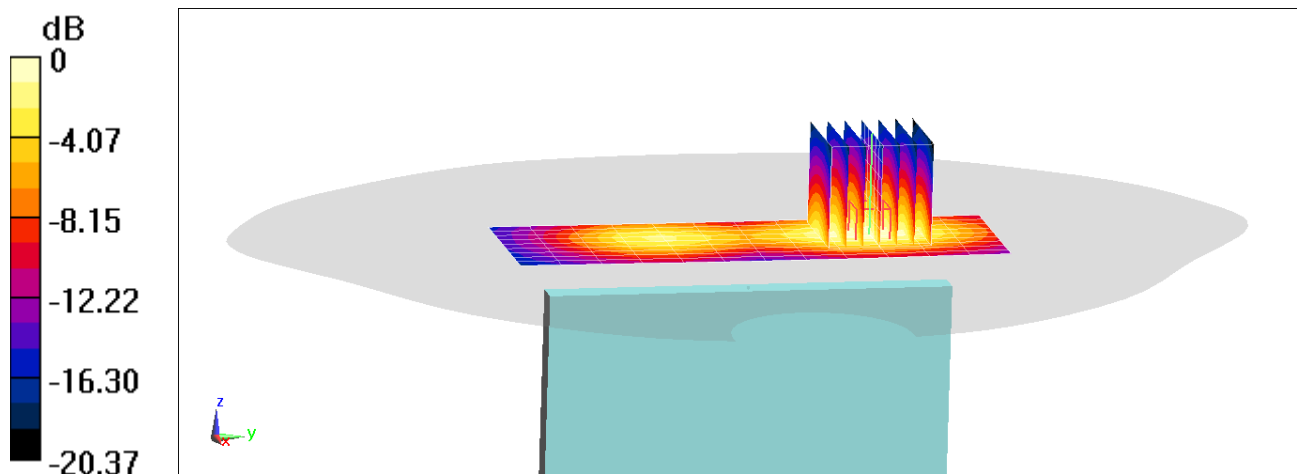
Area Scan (10x13x1): Measurement grid: dx=5mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.148 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 1.03 W/kg

SAR(1 g) = 0.527 W/kg



0 dB = 0.839 W/kg = -0.76 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0366S

Communication System: UID 0, 802.11n 5.2-5.8 GHz Band; Frequency: 5500 MHz; Duty Cycle: 1:1

Medium: 5GHz Body; Medium parameters used:

$f = 5500 \text{ MHz}$; $\sigma = 5.785 \text{ S/m}$; $\epsilon_r = 47.315$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-24-2019; Ambient Temp: 22.6°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7308; ConvF(4, 4, 4) @ 5500 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

**Mode: IEEE 802.11n, MIMO, UNII-2C, 20 MHz Bandwidth,
UMPC Body SAR, Ch 100, 13 Mbps, Back Side**

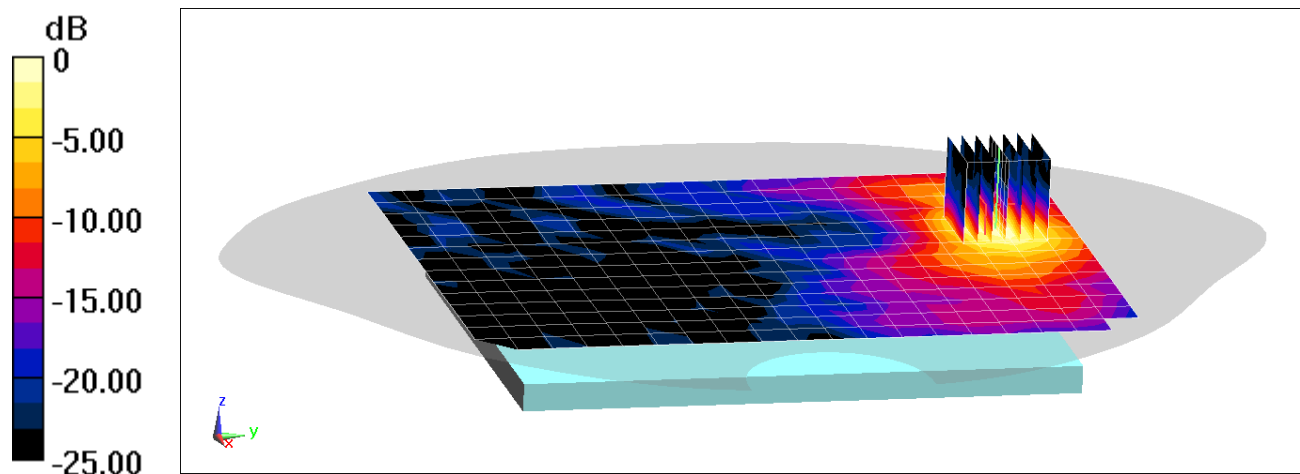
Area Scan (8x8x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 10.43 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 2.55 W/kg

SAR(1 g) = 0.646 W/kg



0 dB = 2.02 W/kg = 3.05 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0368S

Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.76

Medium: 835 Body; Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.96 \text{ S/m}$; $\epsilon_r = 54.293$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-25-2019; Ambient Temp: 20.5°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7538; ConvF(9.85, 9.85, 9.85) @ 836.6 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn728; Calibrated: 5/8/2019

Phantom: Left Twin-SAM V5.0 30; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: GPRS 850, UMPC Extremity SAR, Back side, Mid.ch, 3 Tx Slots

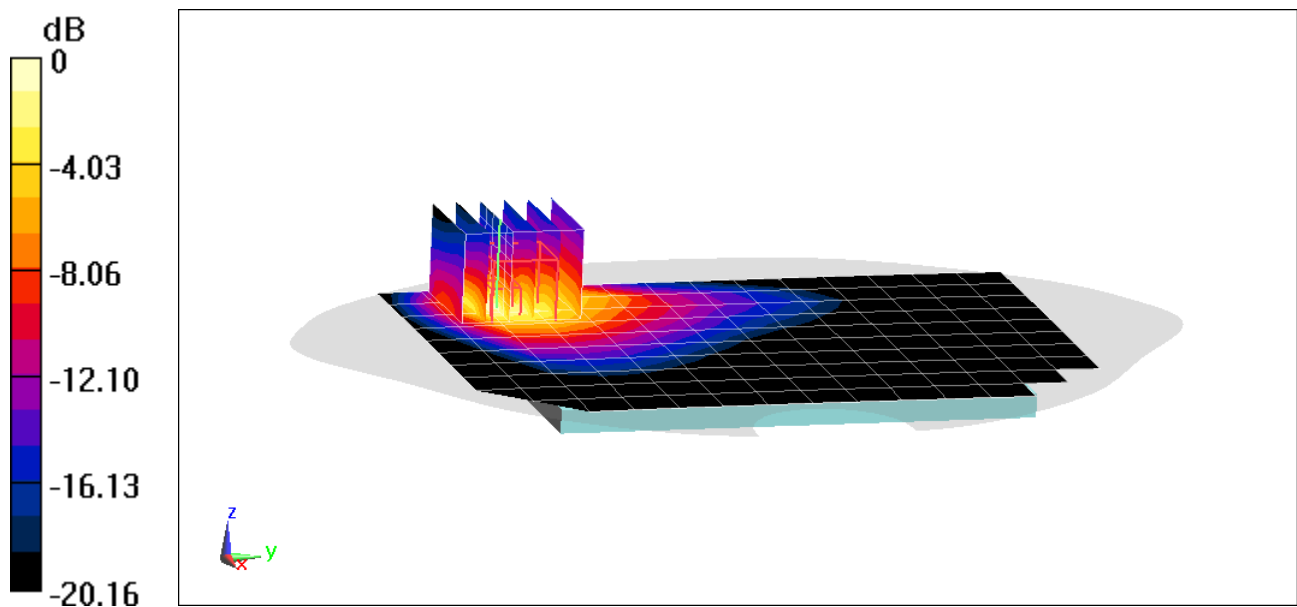
Area Scan (11x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 52.33 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 8.58 W/kg

SAR(10 g) = 1.64 W/kg



0 dB = 6.49 W/kg = 8.12 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0368S

Communication System: UID 0, UMTS; Frequency: 836.6 MHz, Frequency: 826.4 MHz; Duty Cycle: 1:1

Medium: 835 Body; Medium parameters used (interpolated):

$f = 826.4 \text{ MHz}$; $\sigma = 0.956 \text{ S/m}$; $\epsilon_r = 54.315$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-25-2019; Ambient Temp: 20.5°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7538; ConvF(9.85, 9.85, 9.85) @ 826.4 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn728; Calibrated: 5/8/2019

Phantom: Left Twin-SAM V5.0 30; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 850, UMPC Extremity SAR, Front side, Low.ch

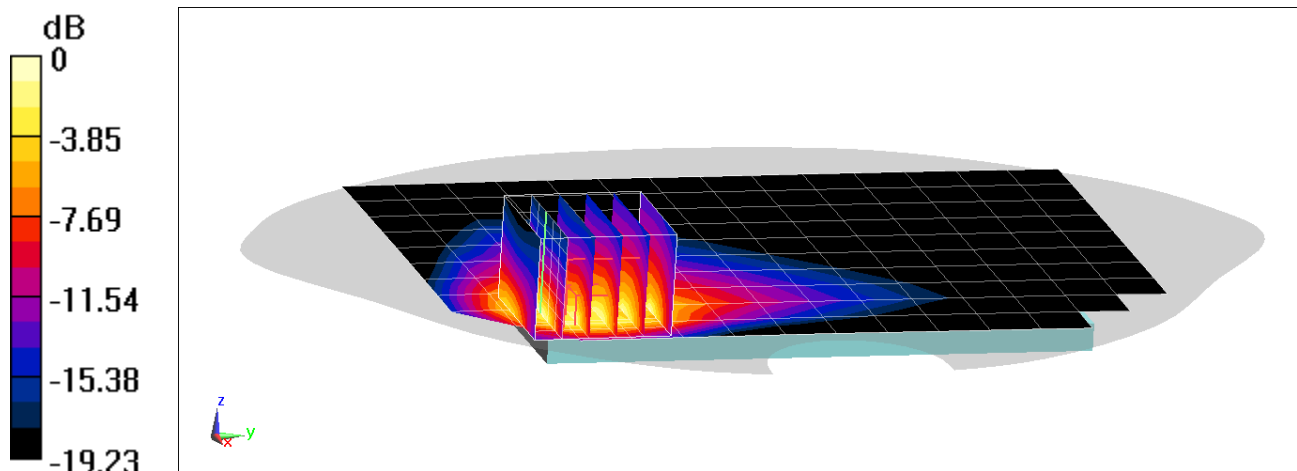
Area Scan (11x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 54.19 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 6.75 W/kg

SAR(10 g) = 1.28 W/kg



0 dB = 4.82 W/kg = 6.83 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0366S

Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used (interpolated):

$f = 1732.4 \text{ MHz}$; $\sigma = 1.447 \text{ S/m}$; $\epsilon_r = 52.807$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.2 cm

Test Date: 07-08-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1732.4 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 1750, UMPC Extremity SAR, Back side, Mid.ch

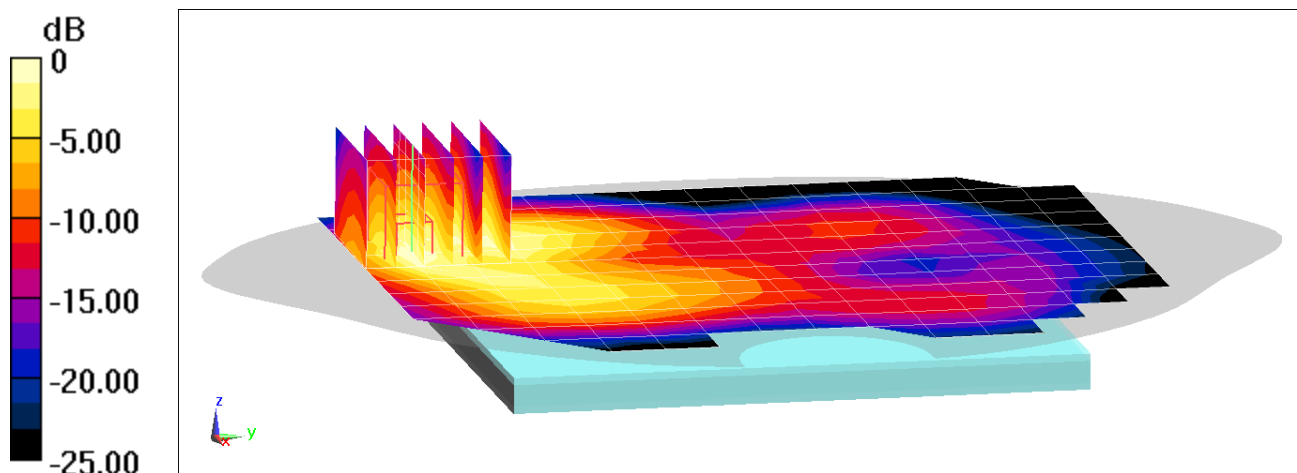
Area Scan (13x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.20 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.898 W/kg

SAR(10 g) = 0.293 W/kg



0 dB = 0.974 W/kg = -0.11 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0369S

Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.76

Medium: 1900 Body; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.552 \text{ S/m}$; $\epsilon_r = 53.125$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-25-2019; Ambient Temp: 19.7°C; Tissue Temp: 23.2°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1880 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Mode: GPRS 1900, UMPC Extremity SAR, Bottom Edge, Mid.ch, 3 Tx Slots

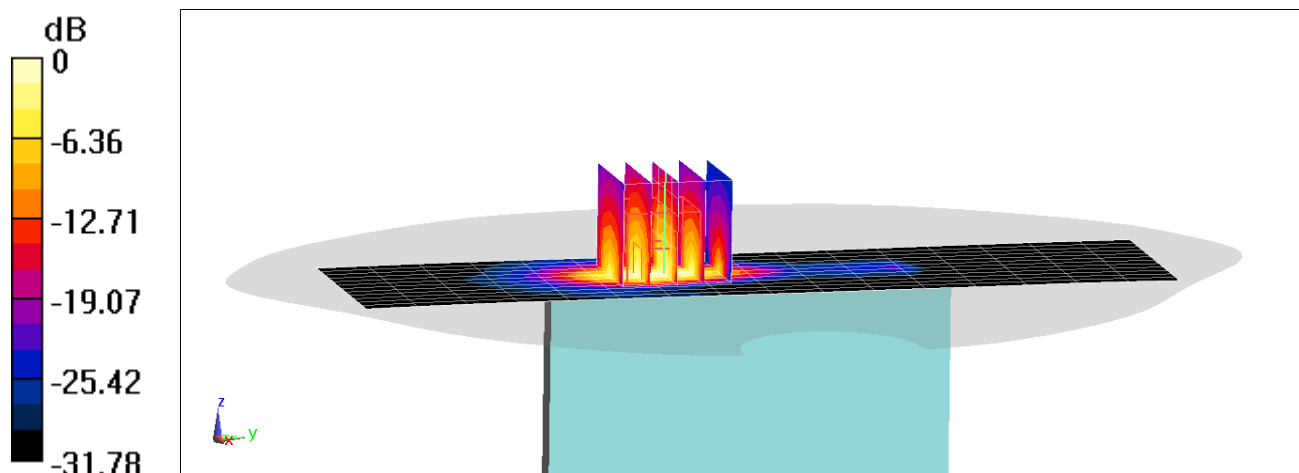
Area Scan (13x17x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 65.99 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 13.0 W/kg

SAR(10 g) = 2.25 W/kg



0 dB = 11.8 W/kg = 10.72 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0366S

Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.536 \text{ S/m}$; $\epsilon_r = 52.441$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.6 cm

Test Date: 07-15-2019; Ambient Temp: 19.6°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7357; ConvF(7.93, 7.93, 7.93) @ 1880 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 1900, UMPC Extremity SAR, Bottom Edge, Mid.ch

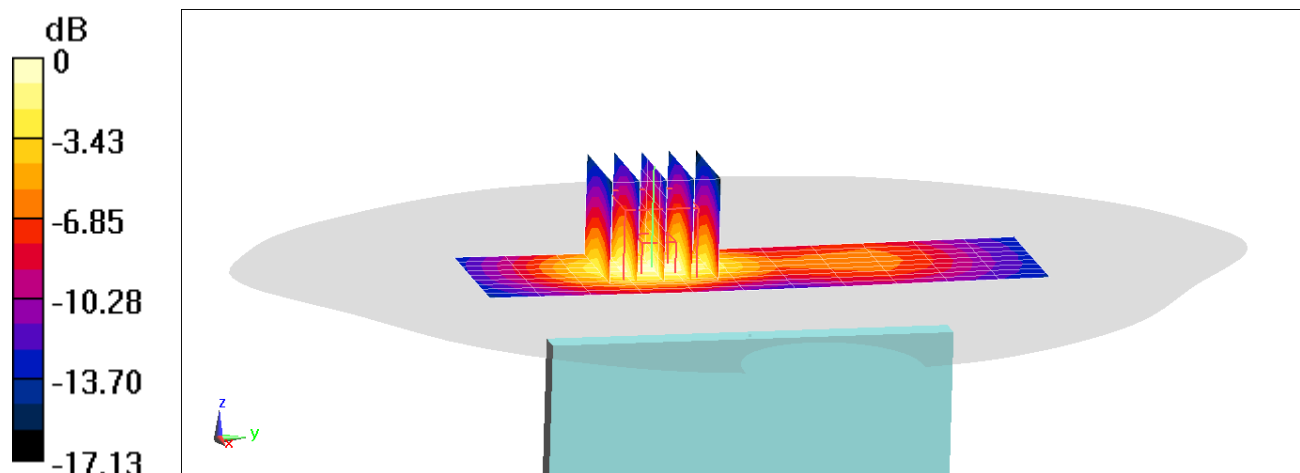
Area Scan (10x12x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.98 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 1.34 W/kg

SAR(10 g) = 0.450 W/kg



0 dB = 1.15 W/kg = 0.61 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0366S

Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.544 \text{ S/m}$; $\epsilon_r = 53.746$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-17-2019; Ambient Temp: 20.3°C; Tissue Temp: 23.6°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1880 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: PCS EVDO, UMPC Extremity SAR, Bottom Edge, Mid.ch

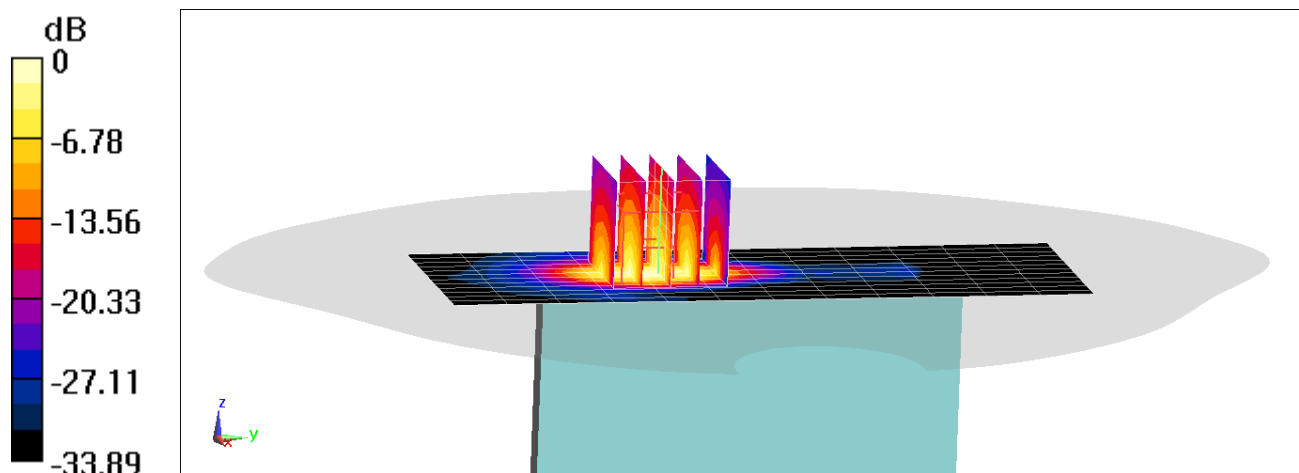
Area Scan (13x13x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 67.52 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 14.2 W/kg

SAR(10 g) = 2.25 W/kg



0 dB = 11.5 W/kg = 10.61 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0368S

Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1

Medium: 835 Body; Medium parameters used (interpolated):

$f = 831.5 \text{ MHz}$; $\sigma = 0.976 \text{ S/m}$; $\epsilon_r = 54.269$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-22-2019; Ambient Temp: 20.3°C; Tissue Temp: 19.7°C

Probe: EX3DV4 - SN7538; ConvF(9.85, 9.85, 9.85) @ 831.5 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn728; Calibrated: 5/8/2019

Phantom: Left Twin-SAM V5.0 30; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 26 (Cell.), UMPC Extremity SAR, Front side, Mid.ch,
15 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

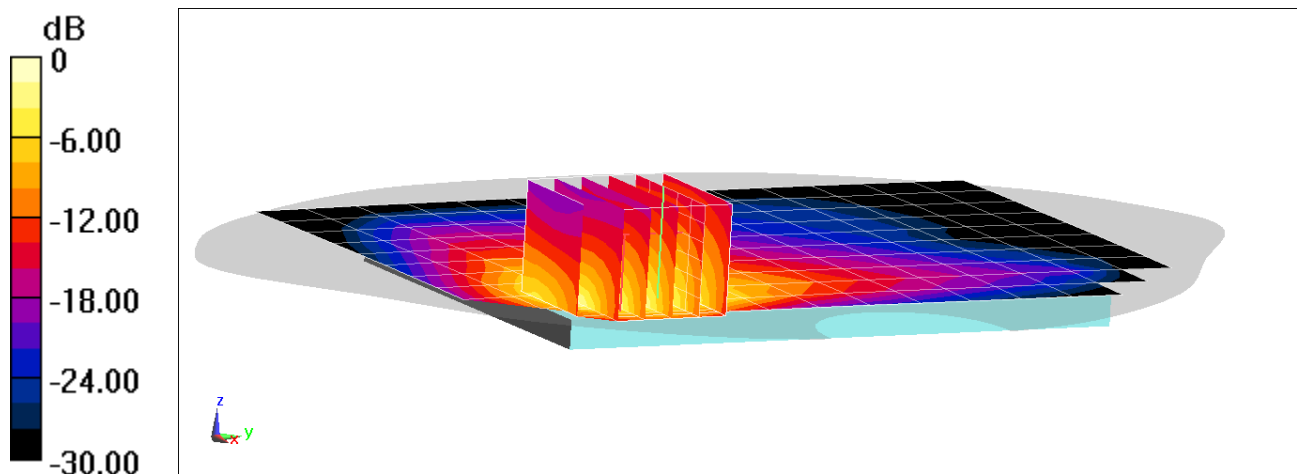
Area Scan (11x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 53.17 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 8.50 W/kg

SAR(10 g) = 1.54 W/kg



0 dB = 6.03 W/kg = 7.80 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0368S

Communication System: UID 0, LTE Band 5; Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Body; Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 0.978 \text{ S/m}$; $\epsilon_r = 54.257$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-22-2019; Ambient Temp: 20.3°C; Tissue Temp: 19.7°C

Probe: EX3DV4 - SN7538; ConvF(9.85, 9.85, 9.85) @ 836.5 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn728; Calibrated: 5/8/2019

Phantom: Left Twin-SAM V5.0 30; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 5 (Cell.), UMPC Extremity SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

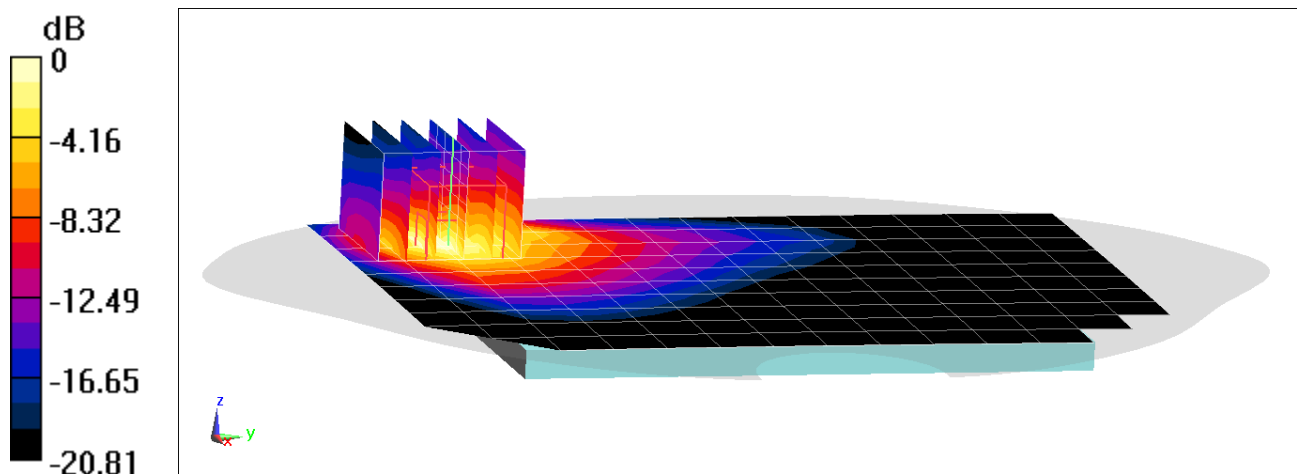
Area Scan (11x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 37.30 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 8.00 W/kg

SAR(10 g) = 1.4 W/kg



0 dB = 5.21 W/kg = 7.17 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0366S

Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used (interpolated):

$f = 1745 \text{ MHz}$; $\sigma = 1.461 \text{ S/m}$; $\epsilon_r = 52.765$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.1 cm

Test Date: 07-08-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1745 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 66 (AWS), UMPC Extremity SAR, Front side, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

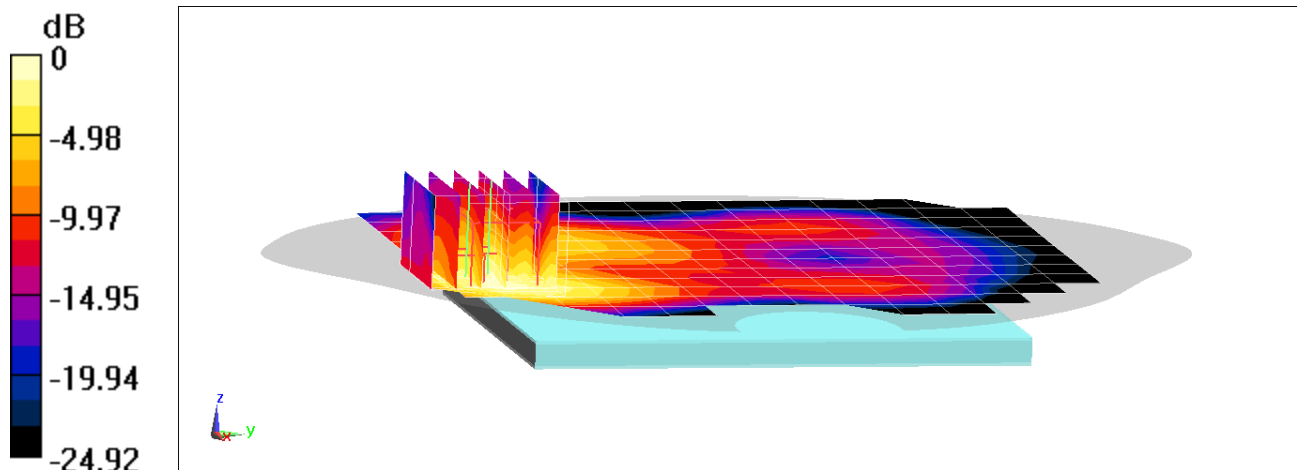
Area Scan (13x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.61 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.955 W/kg

SAR(10 g) = 0.297 W/kg



0 dB = 0.986 W/kg = -0.06 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0369S

Communication System: UID 0, _LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used (interpolated):

$f = 1882.5 \text{ MHz}$; $\sigma = 1.556 \text{ S/m}$; $\epsilon_r = 53.69$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-15-2019; Ambient Temp: 19.3°C; Tissue Temp: 22.6°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1882.5 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 25 (PCS), UMPC Extremity SAR, Bottom Edge, Mid.ch,
20 MHz Bandwidth, QPSK, 100 RB, 0 RB Offset**

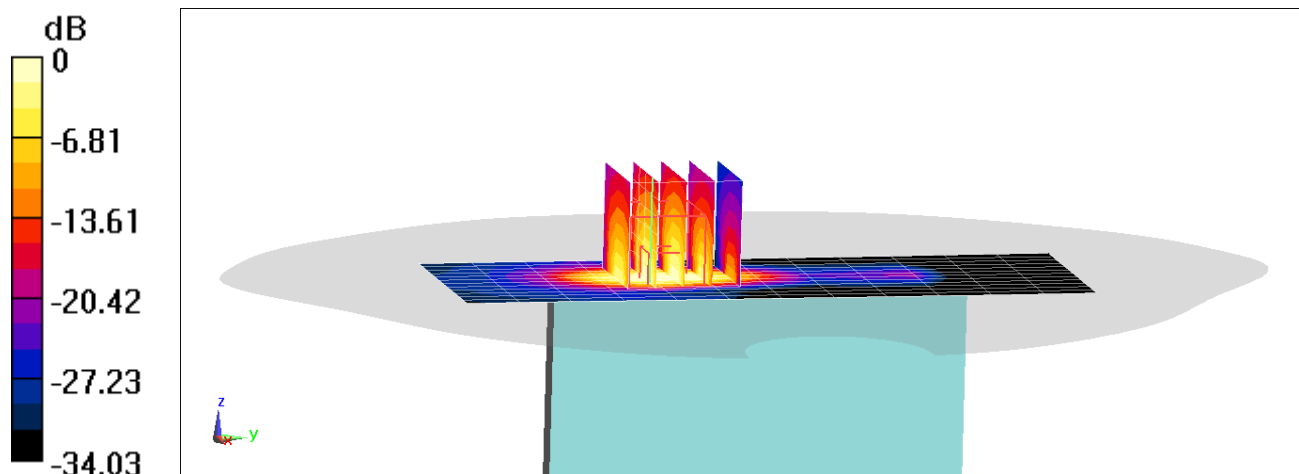
Area Scan (13x13x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 57.64 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 13.7 W/kg

SAR(10 g) = 2.23 W/kg



0 dB = 7.58 W/kg = 8.80 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0367S

Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used:

$f = 2310 \text{ MHz}$; $\sigma = 1.85 \text{ S/m}$; $\epsilon_r = 51.617$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-07-2019; Ambient Temp: 23.0°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN7417; ConvF(7.64, 7.64, 7.64) @ 2310 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 30, UMPC Extremity SAR, Bottom Edge, Mid.ch,
10 MHz Bandwidth, QPSK, 25 RB, 12 RB Offset**

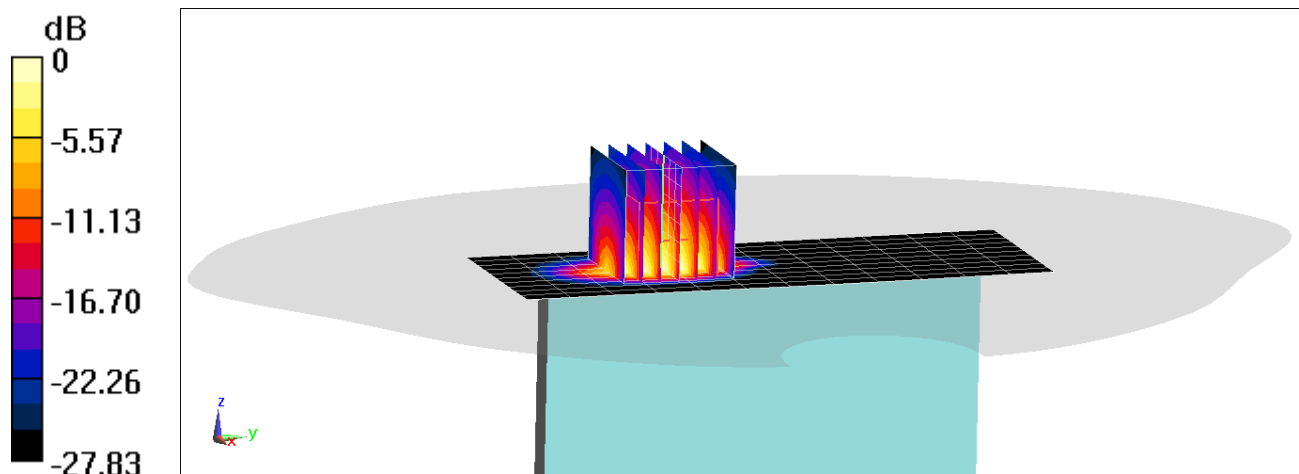
Area Scan (11x13x1): Measurement grid: dx=5mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 68.57 V/m; Power Drift = -0.21 dB

Peak SAR (extrapolated) = 19.0 W/kg

SAR(10 g) = 2.46 W/kg



0 dB = 14.1 W/kg = 11.49 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0367S

Communication System: UID 0, LTE Band 7; Frequency: 2510 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2510 \text{ MHz}$; $\sigma = 2.094 \text{ S/m}$; $\epsilon_r = 53.773$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.6 cm

Test Date: 07-14-2019; Ambient Temp: 20.9°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN7308; ConvF(7.57, 7.57, 7.57) @ 2510 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 7, UMPC Extremity SAR, Bottom Edge, Low.ch,
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset**

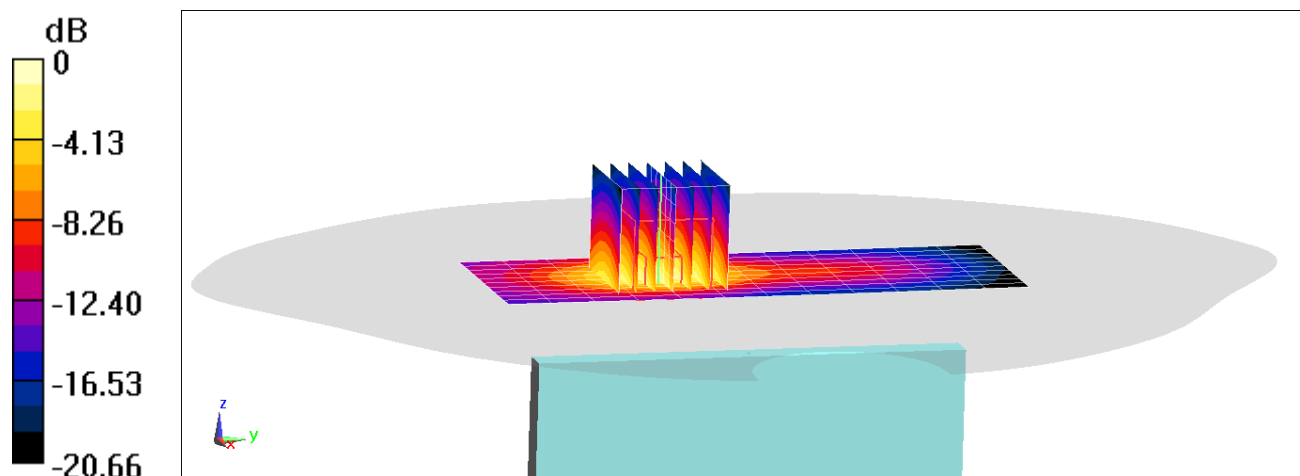
Area Scan (10x11x1): Measurement grid: dx=5mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 21.36 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 1.67 W/kg

SAR(10 g) = 0.443 W/kg



0 dB = 1.35 W/kg = 1.30 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0369S

Communication System: UID 0, _LTE Band 38; Frequency: 2595 MHz; Duty Cycle: 1:1.58

Medium: 2450MHz Body; Medium parameters used (interpolated):

$f = 2595 \text{ MHz}$; $\sigma = 2.153 \text{ S/m}$; $\epsilon_r = 52.586$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-22-2019; Ambient Temp: 21.6°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7308; ConvF(7.4, 7.4, 7.4) @ 2595 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 38 ULCA, UMPC Extremity SAR, Bottom Edge,

PCC: 15 MHz, QPSK, Ch. 38000, 1 RB, 0 RB Offset

SCC: 15 MHz, QPSK, Ch. 37850, 1 RB, 74 RB Offset

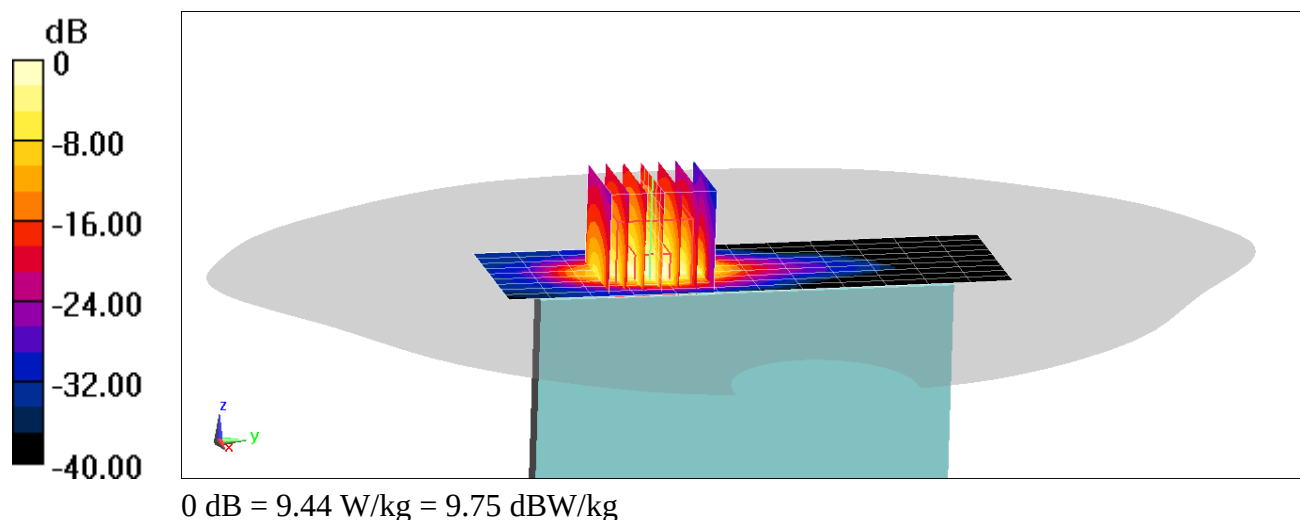
Area Scan (9x6x1): Measurement grid: $dx=5\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 62.37 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 21.4 W/kg

SAR(10 g) = 2.41 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0367S

Communication System: UID 0, _LTE Band 41; Frequency: 2506 MHz; Duty Cycle: 1:1.58

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2506 \text{ MHz}$; $\sigma = 2.09 \text{ S/m}$; $\epsilon_r = 53.781$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-14-2019; Ambient Temp: 20.9°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN7308; ConvF(7.57, 7.57, 7.57) @ 2506 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: LTE Band 41, UMPC Extremity SAR, Right Edge, Low.ch,
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset**

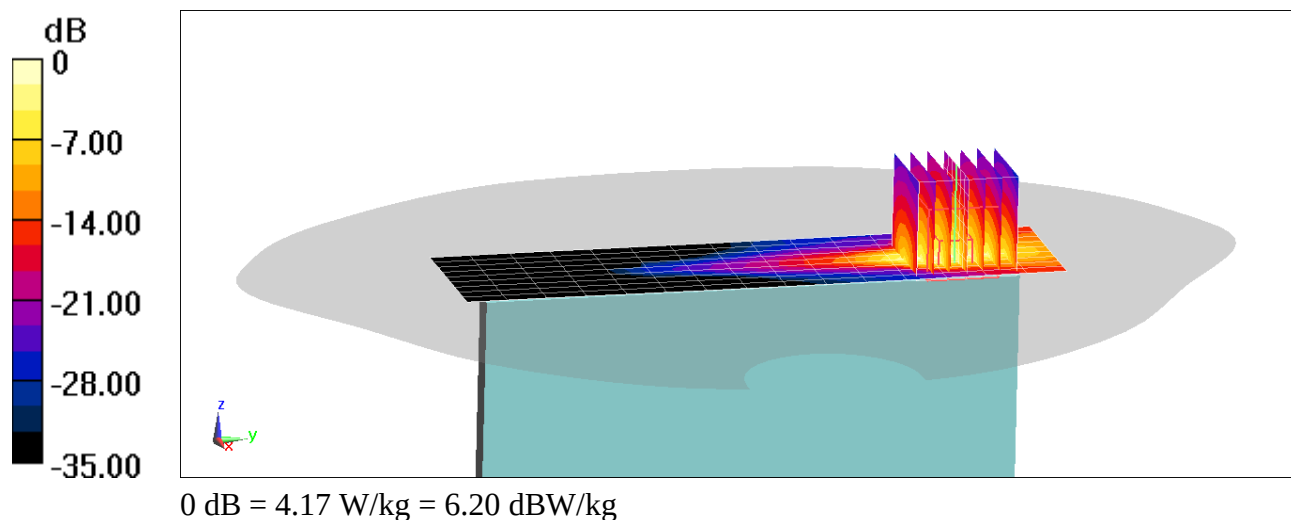
Area Scan (9x6x1): Measurement grid: dx=5mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 33.27 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 5.76 W/kg

SAR(10 g) = 0.708 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0370S

Communication System: UID 0, _IEEE 802.11n; Frequency: 2452 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2452 \text{ MHz}$; $\sigma = 2.037 \text{ S/m}$; $\epsilon_r = 51.503$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-29-2019; Ambient Temp: 22.7°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7417; ConvF(7.51, 7.51, 7.51) @ 2452 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: IEEE 802.11n, MIMO, 20 MHz Bandwidth,
UMPC Extremity SAR, Ch 9, 13 Mbps, Top Edge**

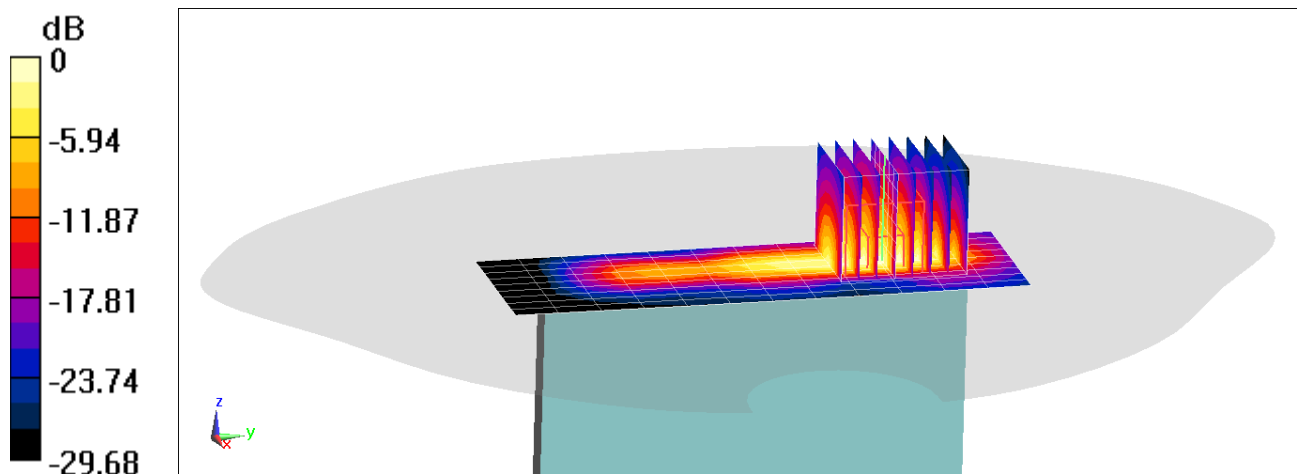
Area Scan (10x13x1): Measurement grid: dx=5mm, dy=12mm

Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 24.47 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 14.0 W/kg

SAR(10 g) = 1.9 W/kg



0 dB = 10.8 W/kg = 10.33 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF900U; Type: Portable Handset; Serial: 0366S

Communication System: UID 0, 802.11n 5.2-5.8 GHz Band; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: 5GHz Body; Medium parameters used:

$f = 5785 \text{ MHz}$; $\sigma = 6.226 \text{ S/m}$; $\epsilon_r = 46.767$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-24-2019; Ambient Temp: 22.6°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7308; ConvF(4.18, 4.18, 4.18) @ 5785 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

**Mode: IEEE 802.11n, MIMO, U-NII-3, 20 MHz Bandwidth,
UMPC Extremity SAR, Ch 157, 13 Mbps, Back Side**

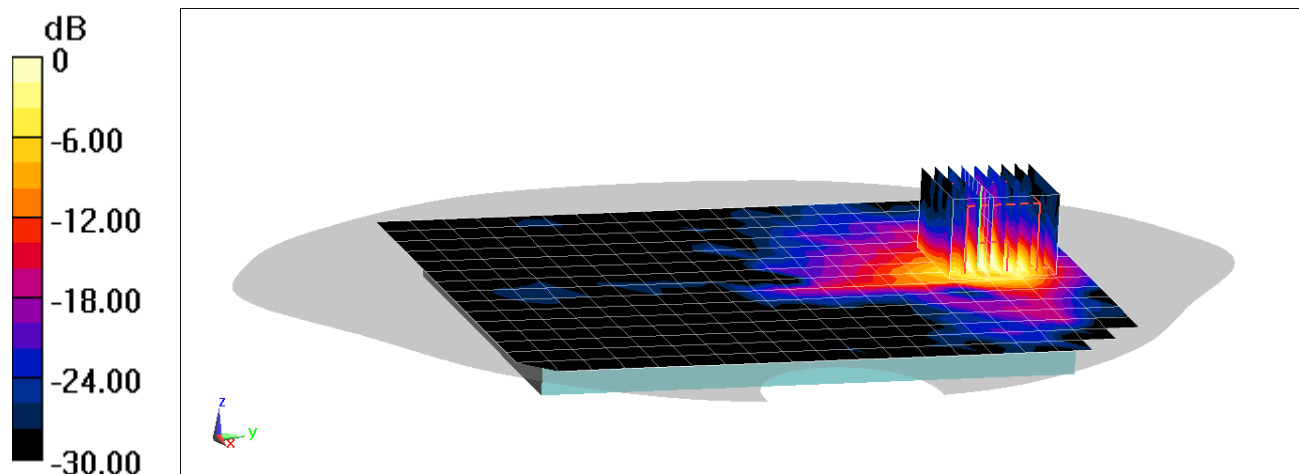
Area Scan (6x6x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Reference Value = 1.224 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 62.6 W/kg

SAR(10 g) = 1.64 W/kg



0 dB = 6.36 W/kg = 8.03 dBW/kg

APPENDIX B: SYSTEM VERIFICATION

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.446 \text{ S/m}$; $\epsilon_r = 40.68$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-01-2019; Ambient Temp: 22.0°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7410; ConvF(8.16, 8.16, 8.16) @ 1900 MHz; Calibrated: 7/20/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2018

Phantom: Front; Type: QD 000 P40 CD; Serial: 1686

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

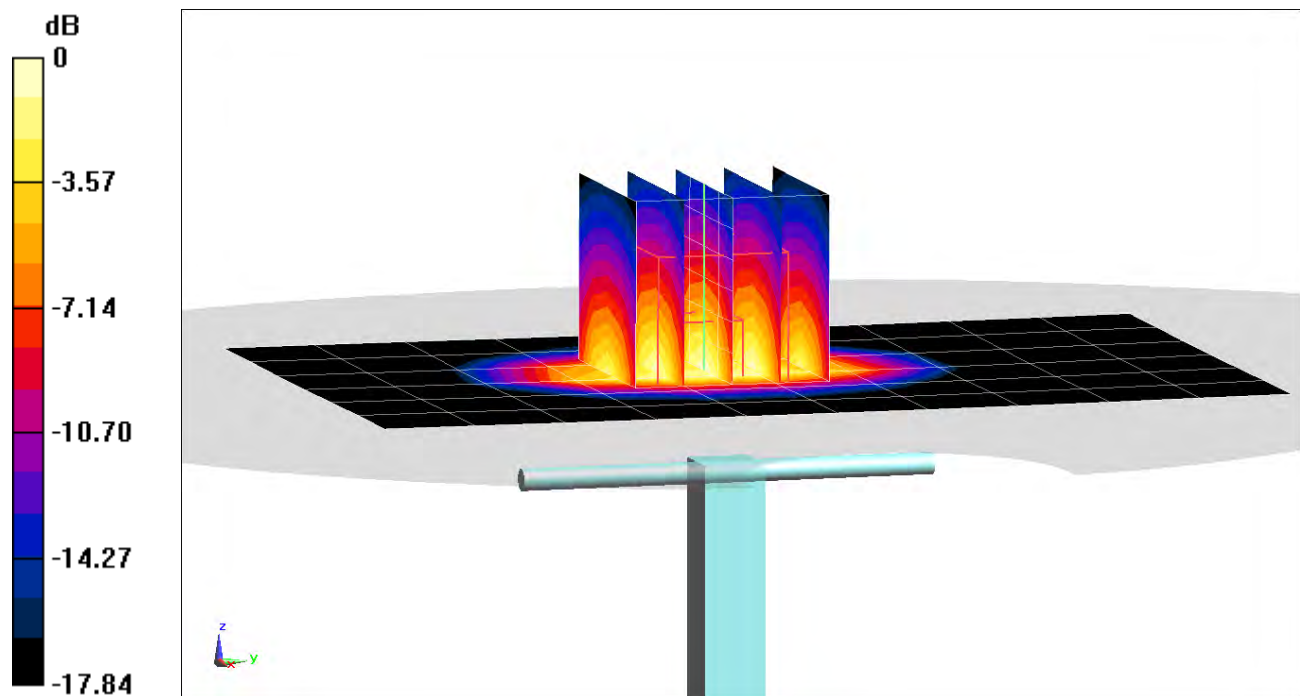
Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 7.11 W/kg

SAR(1 g) = 3.99 W/kg

Deviation(1 g) = 1.53%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.456 \text{ S/m}$; $\epsilon_r = 39.355$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-15-2019; Ambient Temp: 21.4°C; Tissue Temp: 20.7°C

Probe: EX3DV4 - SN3589; ConvF(7.08, 7.08, 7.08) @ 1900 MHz; Calibrated: 1/25/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1450; Calibrated: 8/22/2018

Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

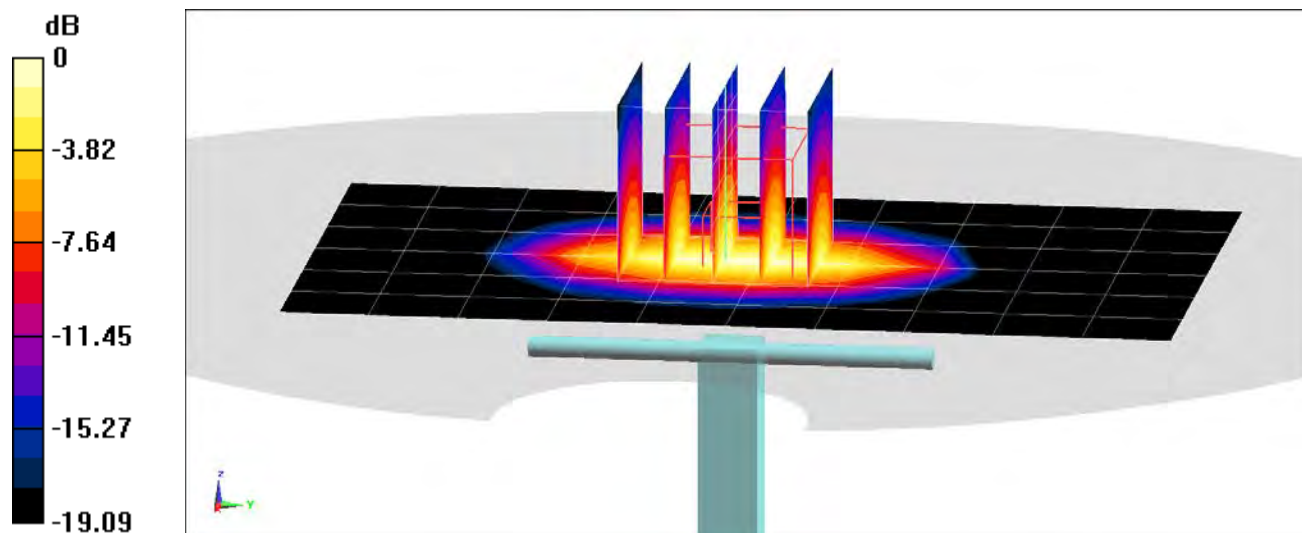
Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 7.90 W/kg

SAR(1 g) = 4.11 W/kg

Deviation(1 g) = 3.27%



0 dB = 6.49 W/kg = 8.12 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.444 \text{ S/m}$; $\epsilon_r = 39.801$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-22-2019; Ambient Temp: 21.6°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7409; ConvF(8.01, 8.01, 8.01) @ 1900 MHz; Calibrated: 6/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/20/2019

Phantom: Front; Type: QD 000 P40 CD; Serial: 1686

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

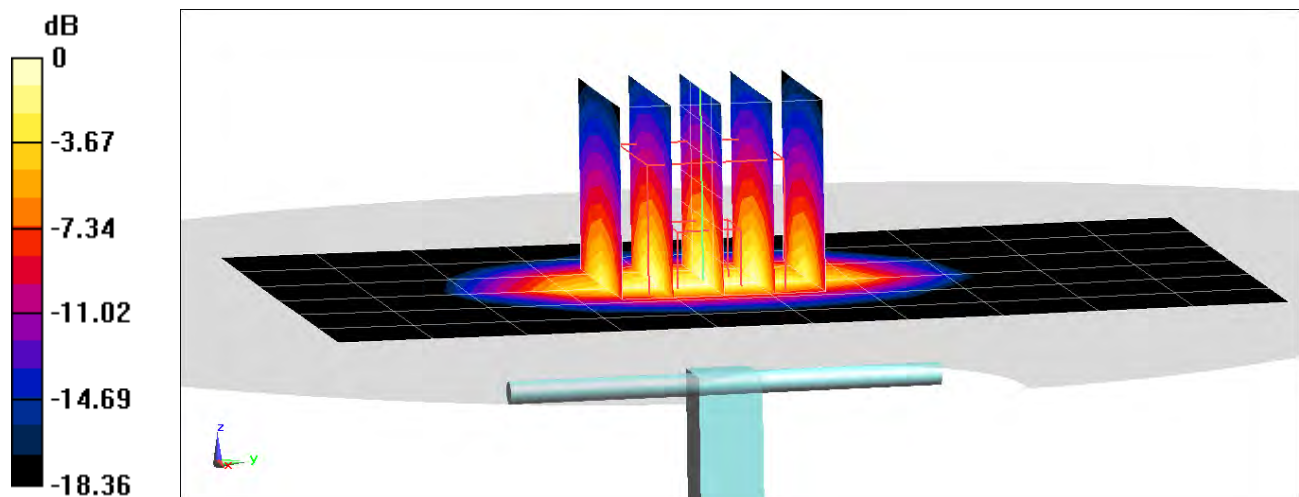
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Peak SAR (extrapolated) = 8.07 W/kg

SAR(1 g) = 4.13 W/kg

Deviation(1 g) = 5.63%



0 dB = 6.65 W/kg = 8.23 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.808 \text{ S/m}$; $\epsilon_r = 39.401$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-01-2019; Ambient Temp: 22.1°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN3589; ConvF(6.46, 6.46, 6.46) @ 2450 MHz; Calibrated: 1/25/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1450; Calibrated: 8/22/2018

Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

2450 MHz System Verification at 20.0 dBm (100 mW)

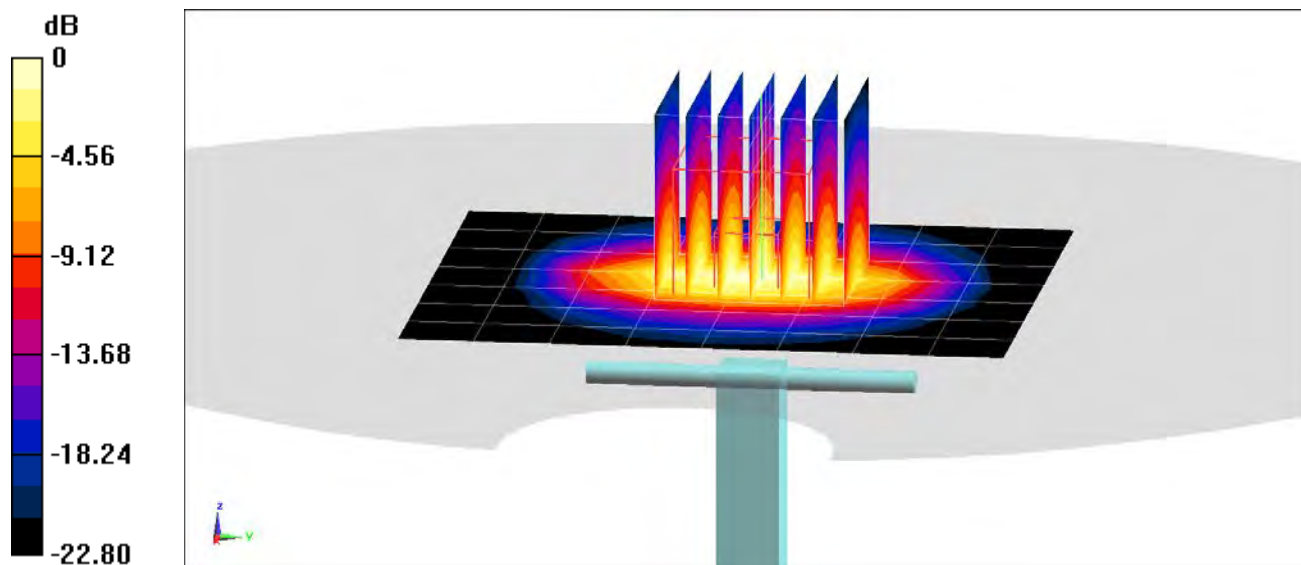
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Peak SAR (extrapolated) = 11.4 W/kg

SAR(1 g) = 5.32 W/kg

Deviation(1 g) = 0.95%



0 dB = 9.00 W/kg = 9.54 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.859 \text{ S/m}$; $\epsilon_r = 40.148$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-05-2019; Ambient Temp: 22.5°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN3589; ConvF(6.46, 6.46, 6.46) @ 2450 MHz; Calibrated: 1/25/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1450; Calibrated: 8/22/2018

Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

2450 MHz System Verification at 20.0 dBm (100 mW)

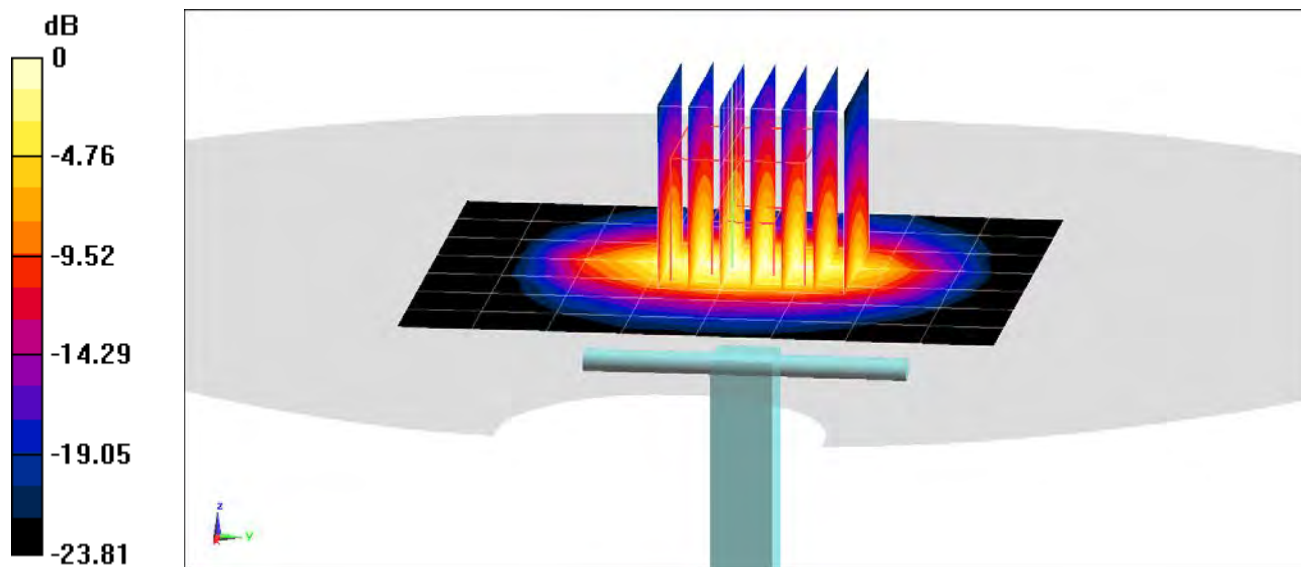
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Peak SAR (extrapolated) = 11.6 W/kg

SAR(1 g) = 5.33 W/kg

Deviation(1 g) = 1.14%



0 dB = 9.05 W/kg = 9.57 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1126

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used:

$f = 2600 \text{ MHz}$; $\sigma = 1.926 \text{ S/m}$; $\epsilon_r = 39.163$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-01-2019; Ambient Temp: 22.1°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN3589; ConvF(6.25, 6.25, 6.25) @ 2600 MHz; Calibrated: 1/25/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1450; Calibrated: 8/22/2018

Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

2600 MHz System Verification at 20.0 dBm (100 mW)

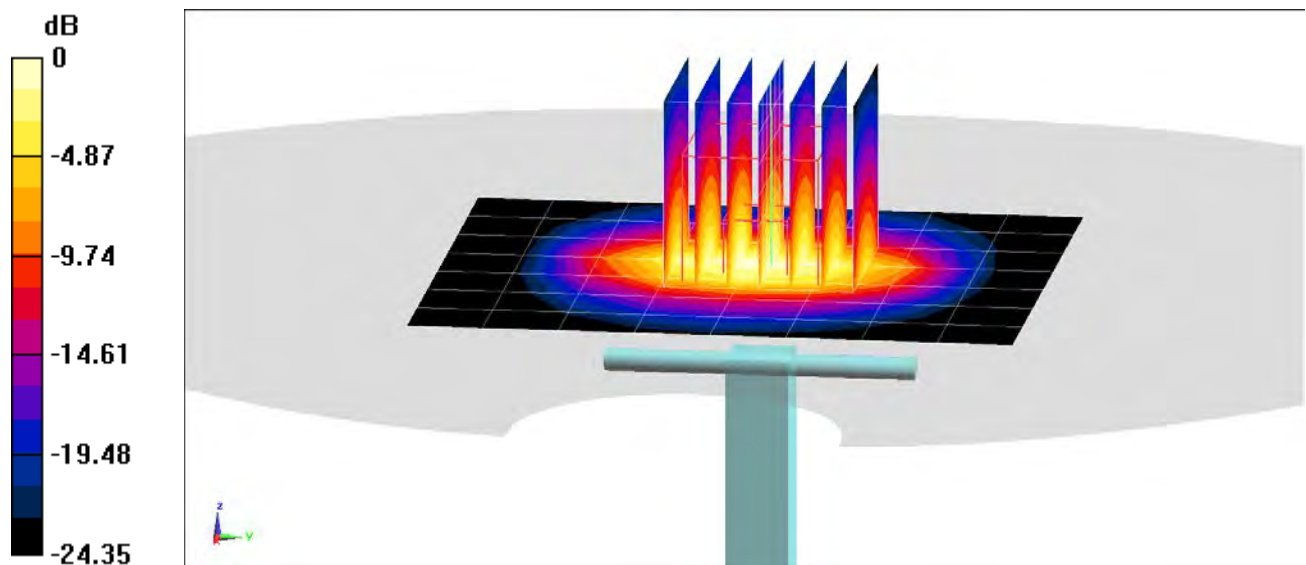
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Peak SAR (extrapolated) = 12.6 W/kg

SAR(1 g) = 5.75 W/kg

Deviation(1 g) = 5.50%



0 dB = 9.89 W/kg = 9.95 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191

Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1

Medium: 5GHz Head; Medium parameters used (interpolated):

$f = 5250 \text{ MHz}$; $\sigma = 4.527 \text{ S/m}$; $\epsilon_r = 35.172$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-12-2019; Ambient Temp: 23.2°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN7406; ConvF(5.54, 5.54, 5.54) @ 5250 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/8/2019

Phantom: Twin-SAM V5.0 Right 20; Type: QD 000 P40 CD; Serial: 1759

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

5250 MHz System Verification at 17.0 dBm (50 mW)

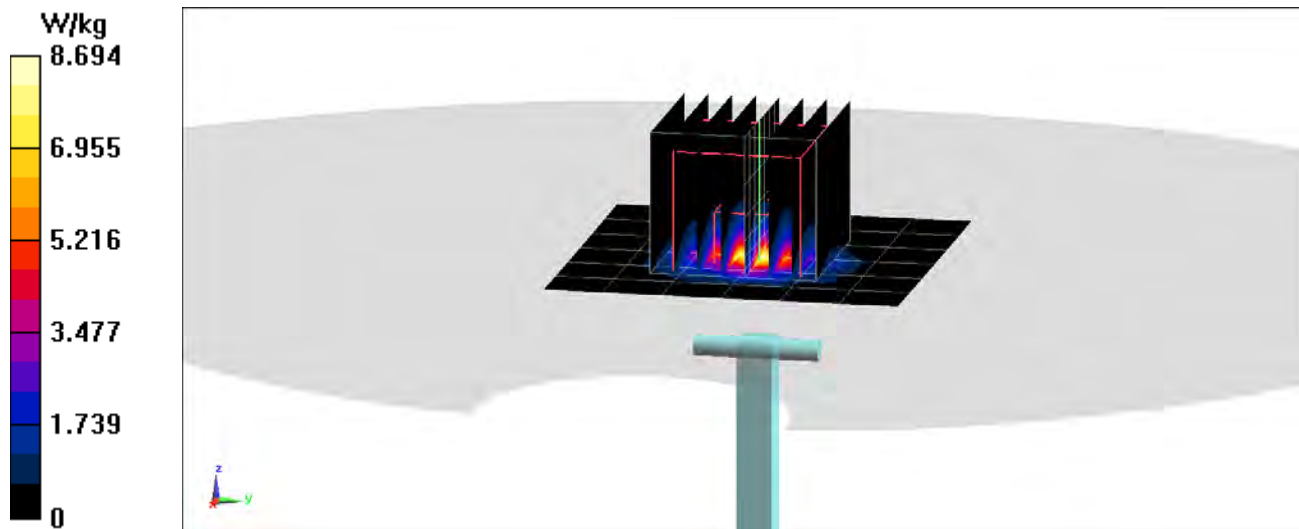
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 14.8 W/kg

SAR(1 g) = 3.63 W/kg

Deviation(1 g) = -7.98%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191

Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: 5GHz Head; Medium parameters used:

$f = 5600 \text{ MHz}$; $\sigma = 4.908 \text{ S/m}$; $\epsilon_r = 34.56$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-12-2019; Ambient Temp: 23.2°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN7406; ConvF(4.94, 4.94, 4.94) @ 5600 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/8/2019

Phantom: Twin-SAM V5.0 Right 20; Type: QD 000 P40 CD; Serial: 1759

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

5600 MHz System Verification at 17.0 dBm (50 mW)

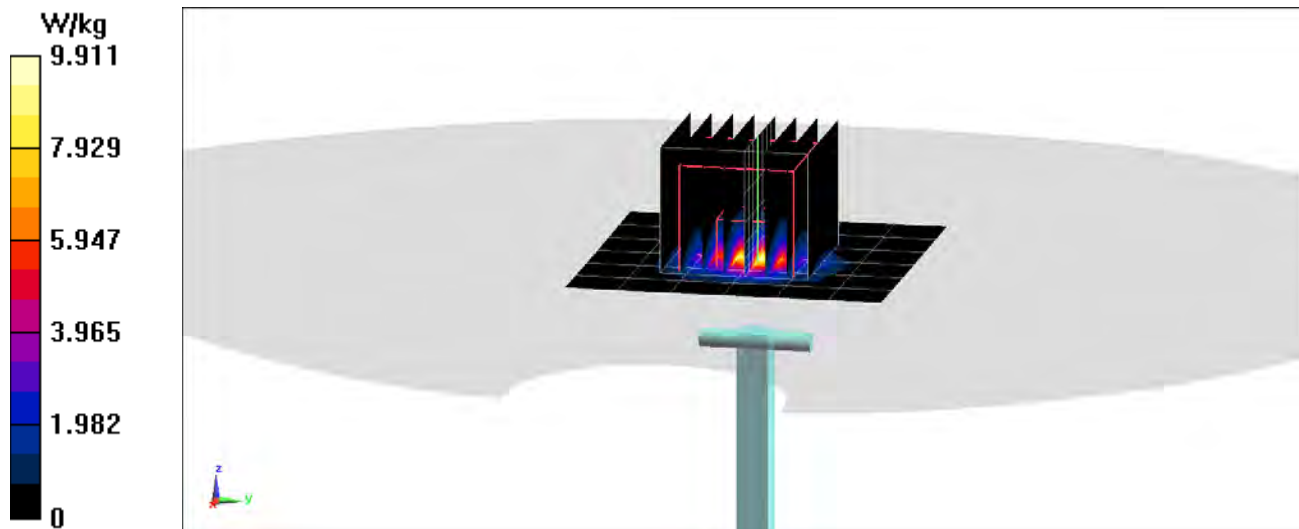
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 17.9 W/kg

SAR(1 g) = 4.01 W/kg

Deviation(1 g) = -4.07%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191

Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: 5GHz Head; Medium parameters used (interpolated):

$f = 5750 \text{ MHz}$; $\sigma = 5.078 \text{ S/m}$; $\epsilon_r = 34.312$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-12-2019; Ambient Temp: 23.2°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN7406; ConvF(5.23, 5.23, 5.23) @ 5750 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn859; Calibrated: 5/8/2019

Phantom: Twin-SAM V5.0 Right 20; Type: QD 000 P40 CD; Serial: 1759

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

5750 MHz System Verification at 17.0 dBm (50 mW)

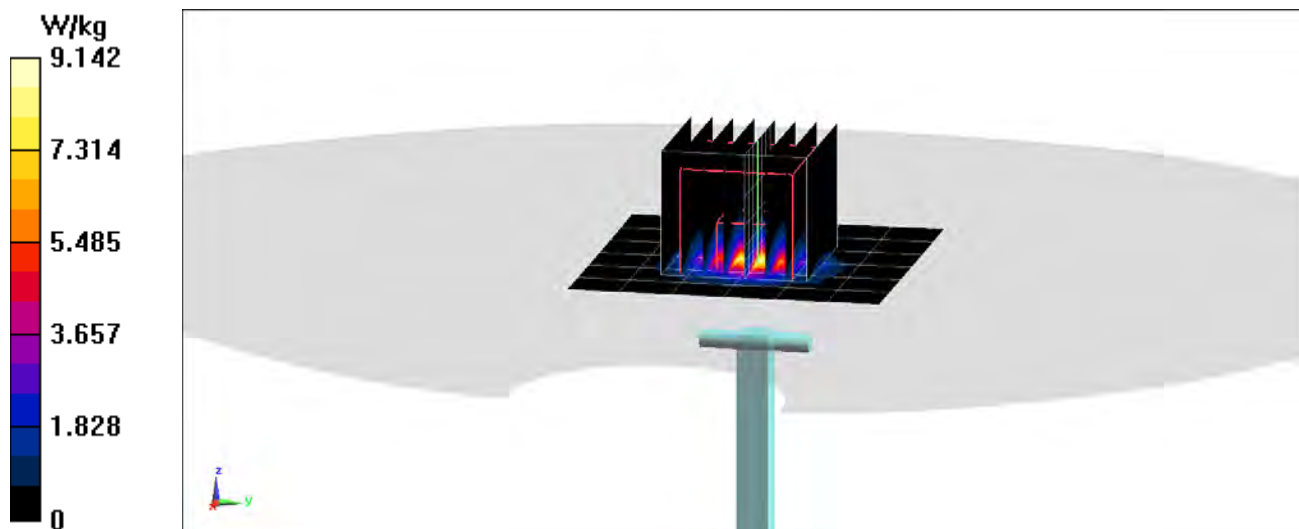
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 17.1 W/kg

SAR(1 g) = 3.66 W/kg

Deviation(1 g) = -7.46%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.977 \text{ S/m}$; $\epsilon_r = 54.261$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-22-2019; Ambient Temp: 20.3°C; Tissue Temp: 19.7°C

Probe: EX3DV4 - SN7538; ConvF(9.85, 9.85, 9.85) @ 835 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn728; Calibrated: 5/8/2019

Phantom: Left Twin-SAM V5.0 30; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

835 MHz System Verification at 23.0 dBm (200 mW)

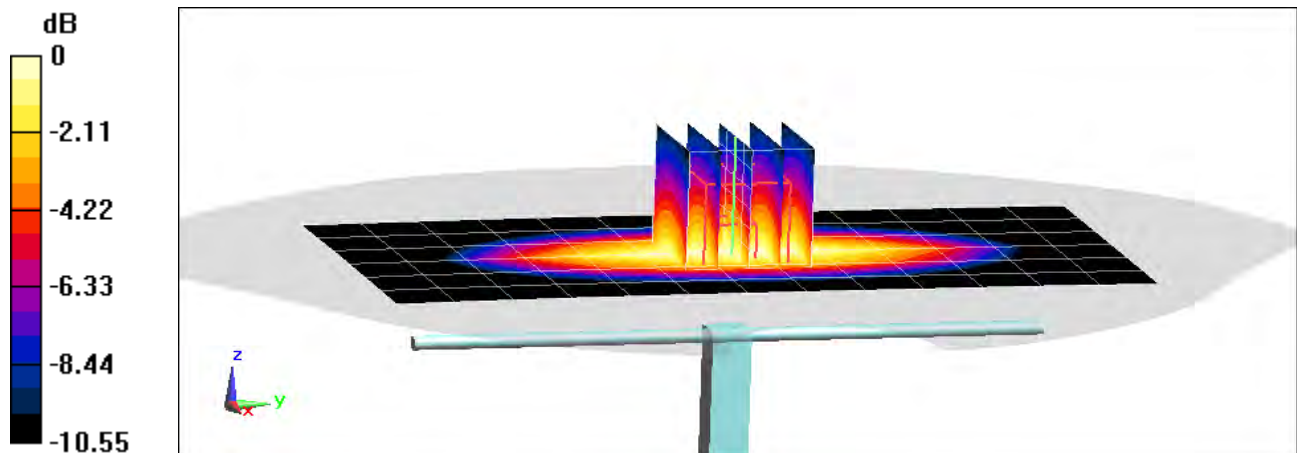
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Peak SAR (extrapolated) = 3.13 W/kg

SAR(10 g) = 1.35 W/kg

Deviation(10 g) = 7.66%



0 dB = 2.75 W/kg = 4.39 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.959 \text{ S/m}$; $\epsilon_r = 54.297$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-25-2019; Ambient Temp: 20.5°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7538; ConvF(9.85, 9.85, 9.85) @ 835 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn728; Calibrated: 5/8/2019

Phantom: Left Twin-SAM V5.0 30; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

835 MHz System Verification at 23.0 dBm (200 mW)

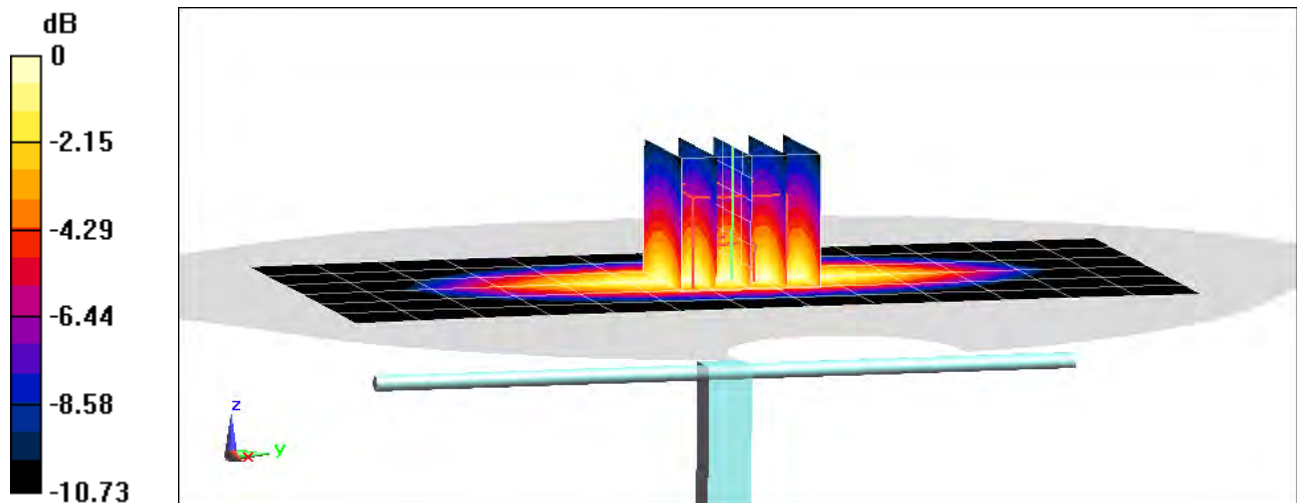
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Peak SAR (extrapolated) = 3.22 W/kg

SAR(10 g) = 1.33 W/kg

Deviation(10 g) = 6.06%



0 dB = 2.76 W/kg = 4.41 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 1.001 \text{ S/m}$; $\epsilon_r = 53.721$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-29-2019; Ambient Temp: 20.5°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7538; ConvF(9.85, 9.85, 9.85) @ 835 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn728; Calibrated: 5/8/2019

Phantom: Left Twin-SAM V5.0 30; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

835 MHz System Verification at 23.0 dBm (200 mW)

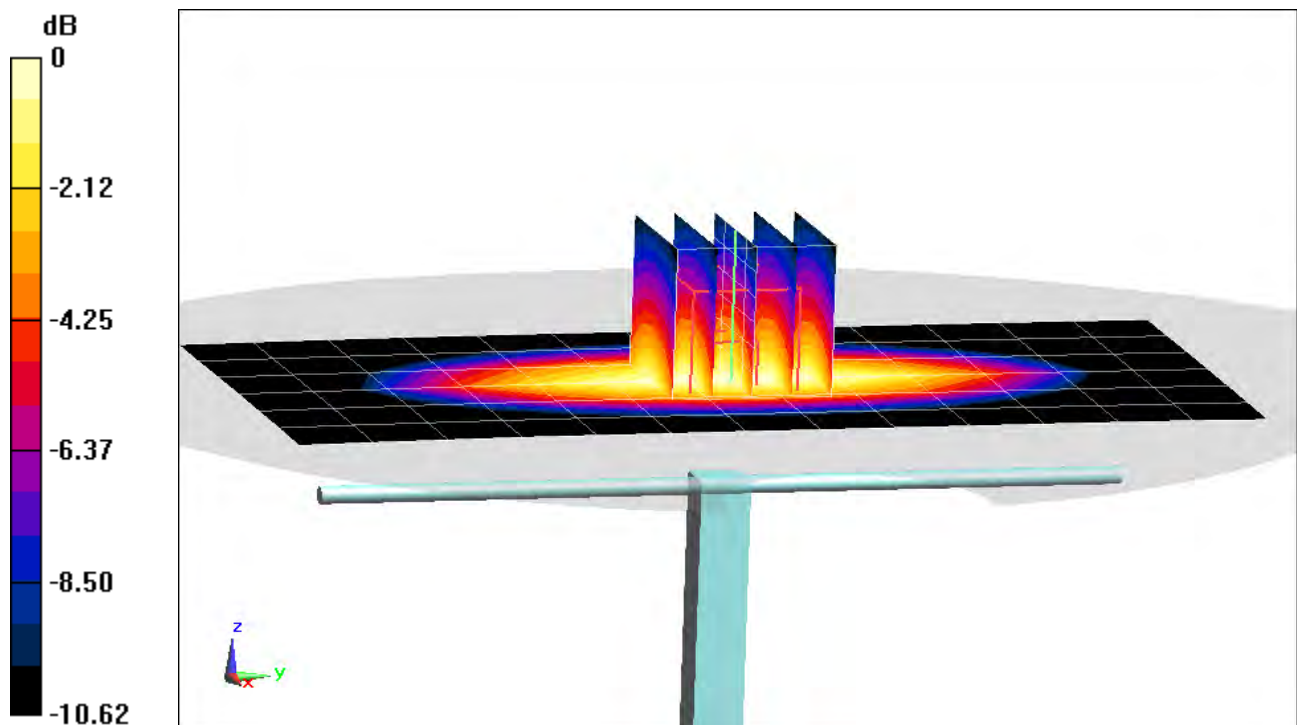
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 3.26 W/kg

SAR(1 g) = 2.06 W/kg

Deviation(1 g) = 8.76%



0 dB = 2.81 W/kg = 4.49 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1150

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.497 \text{ S/m}$; $\epsilon_r = 52.681$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-26-2019; Ambient Temp: 21.2°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1750 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Twin-SAM V5.0 Back Right; Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

1750 MHz System Verification at 20.0 dBm (100 mW)

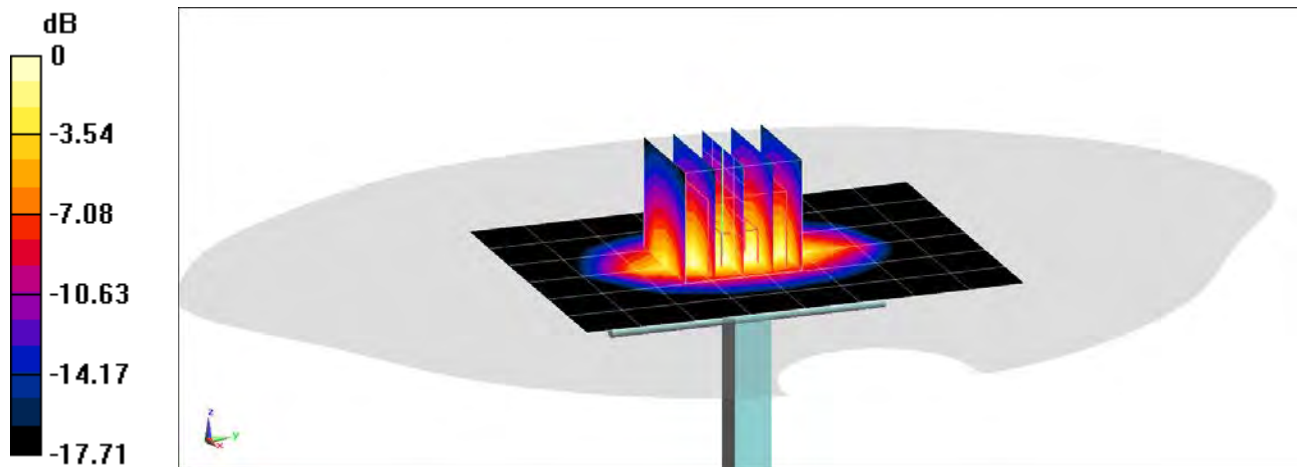
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Peak SAR (extrapolated) = 7.23 W/kg

SAR(10 g) = 2.08 W/kg

Deviation(10 g) = 7.22%



0 dB = 6.04 W/kg = 7.81 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1150

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.467 \text{ S/m}$; $\epsilon_r = 52.748$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-08-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1750 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

1750 MHz System Verification at 20.0 dBm (100 mW)

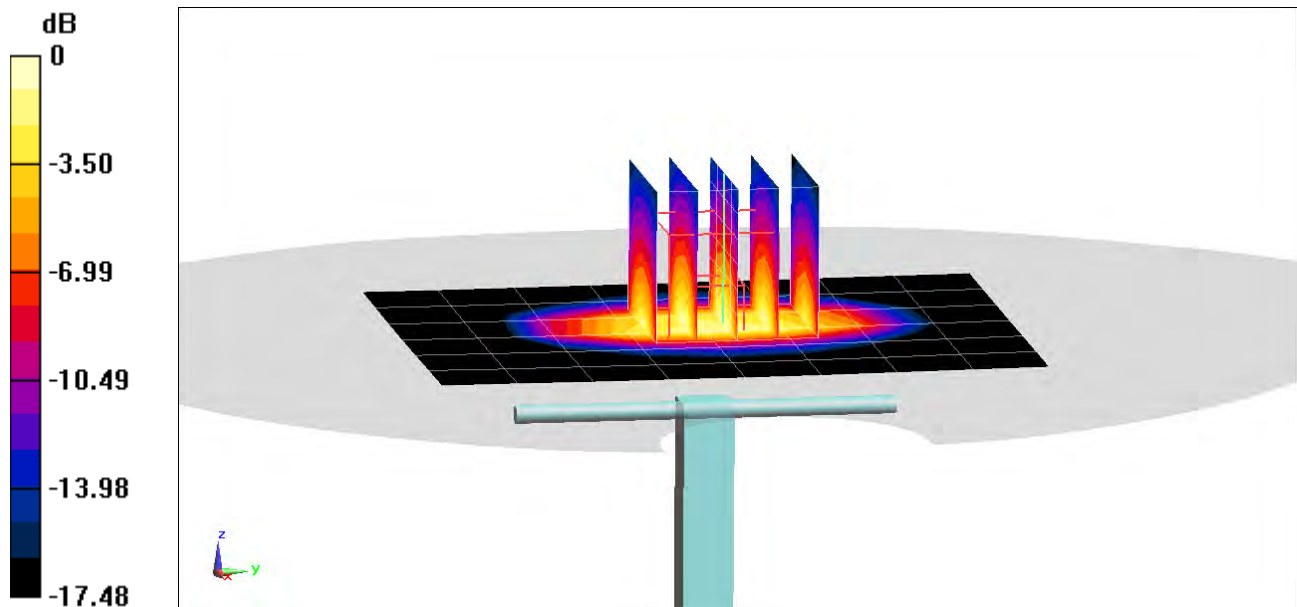
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Peak SAR (extrapolated) = 7.17 W/kg

SAR(10 g) = 2.01 W/kg

Deviation(10 g) = 3.61%



0 dB = 5.92 W/kg = 7.72 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1150

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.509 \text{ S/m}$; $\epsilon_r = 51.575$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-24-2019; Ambient Temp: 23.0°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1750 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

1750 MHz System Verification at 20.0 dBm (100 mW)

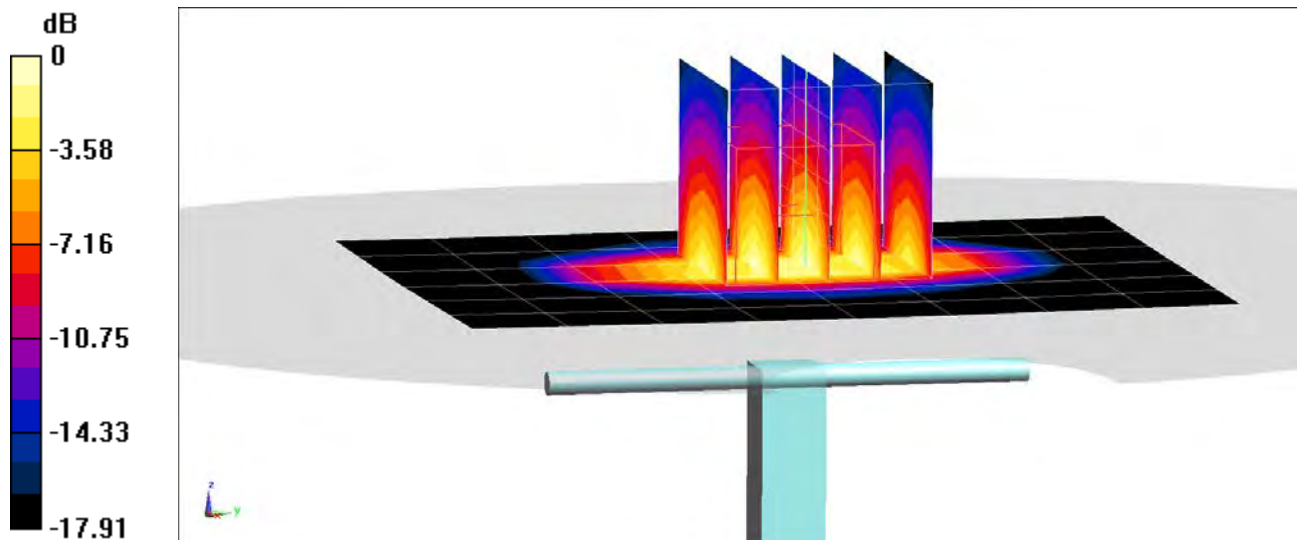
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Peak SAR (extrapolated) = 6.59 W/kg

SAR(1 g) = 3.55 W/kg

Deviation(1 g) = -3.01%



0 dB = 5.49 W/kg = 7.40 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.565 \text{ S/m}$; $\epsilon_r = 54.63$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2019; Ambient Temp: 20.9°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1900 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

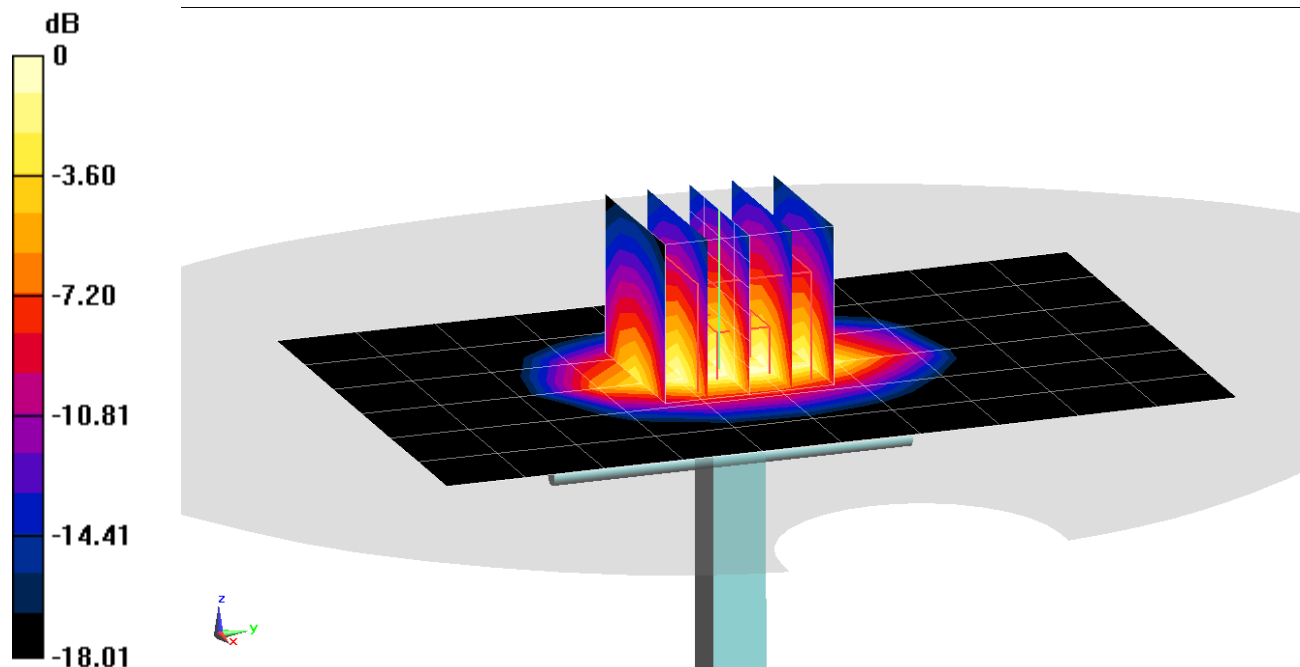
Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 7.44 W/kg

SAR(1 g) = 4.06 W/kg

Deviation(1 g) = 3.05%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.551 \text{ S/m}$; $\epsilon_r = 54.495$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-29-2019; Ambient Temp: 20.3°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1900 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

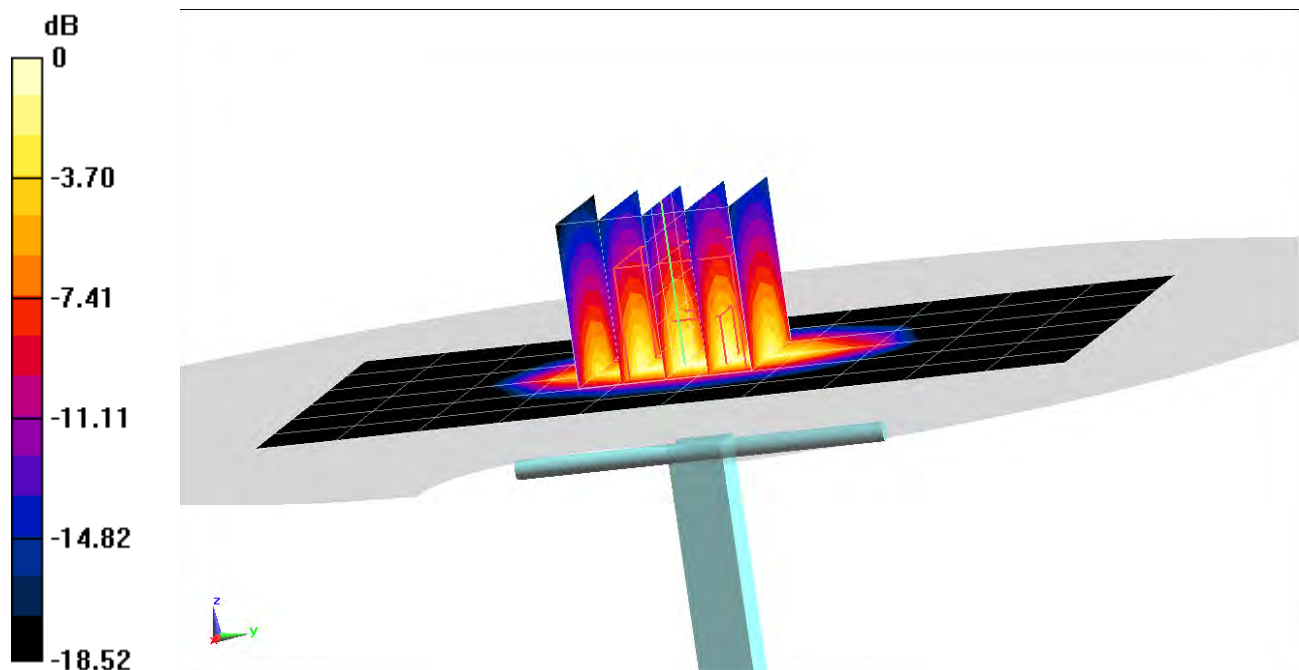
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Peak SAR (extrapolated) = 7.67 W/kg

SAR(1 g) = 4.22 W/kg

Deviation(1 g) = 7.11%



0 dB = 6.34 W/kg = 8.02 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.559 \text{ S/m}$; $\epsilon_r = 51.003$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-01-2019; Ambient Temp: 20.7°C; Tissue Temp: 22.7°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1900 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

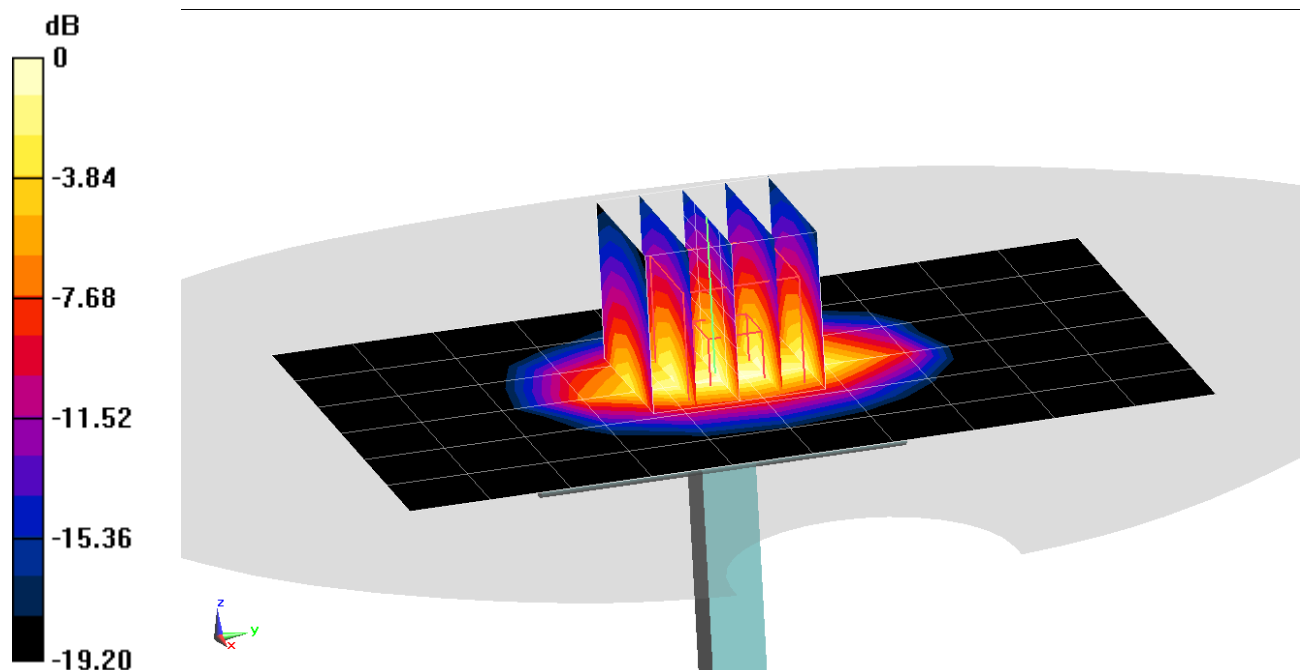
Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 7.84 W/kg

SAR(1 g) = 4.08 W/kg

Deviation(1 g) = 4.08%



0 dB = 6.39 W/kg = 8.06 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.583 \text{ S/m}$; $\epsilon_r = 52.616$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-08-2019; Ambient Temp: 20.1°C; Tissue Temp: 22.6°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1900 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

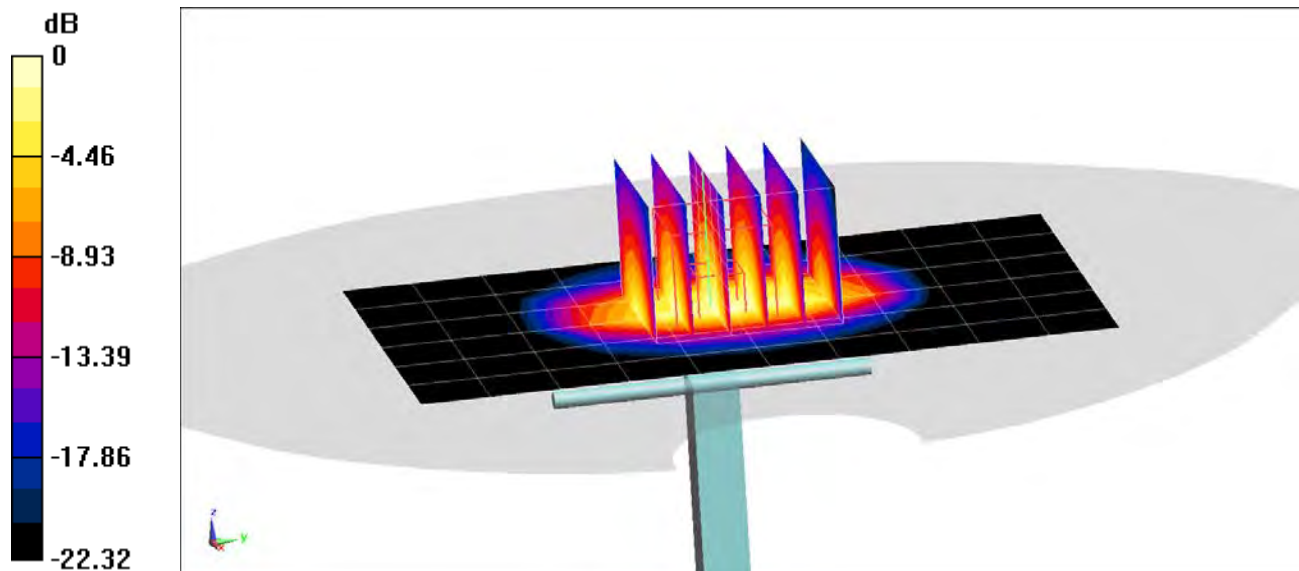
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Peak SAR (extrapolated) = 7.70 W/kg

SAR(10 g) = 2.14 W/kg

Deviation(10 g) = 3.88%



0 dB = 6.30 W/kg = 7.99 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.561 \text{ S/m}$; $\epsilon_r = 52.388$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-15-2019; Ambient Temp: 19.6°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7357; ConvF(7.93, 7.93, 7.93) @ 1900 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

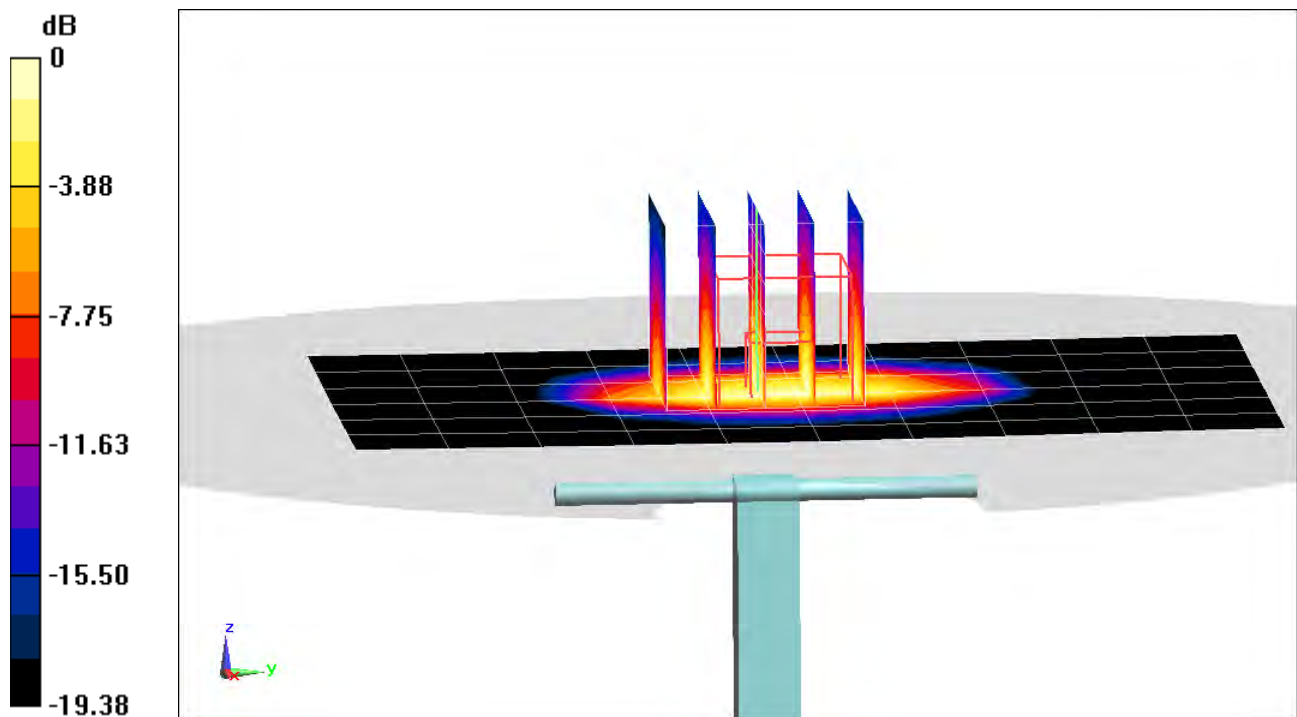
Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 7.52 W/kg

SAR(1 g) = 4.02 W/kg; SAR(10 g) = 2.05 W/kg

Deviation(1 g) = 2.81%; Deviation(10 g) = 0.00%



0 dB = 6.19 W/kg = 7.92 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.576 \text{ S/m}$; $\epsilon_r = 53.642$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-15-2019; Ambient Temp: 19.3°C; Tissue Temp: 22.6°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1900 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

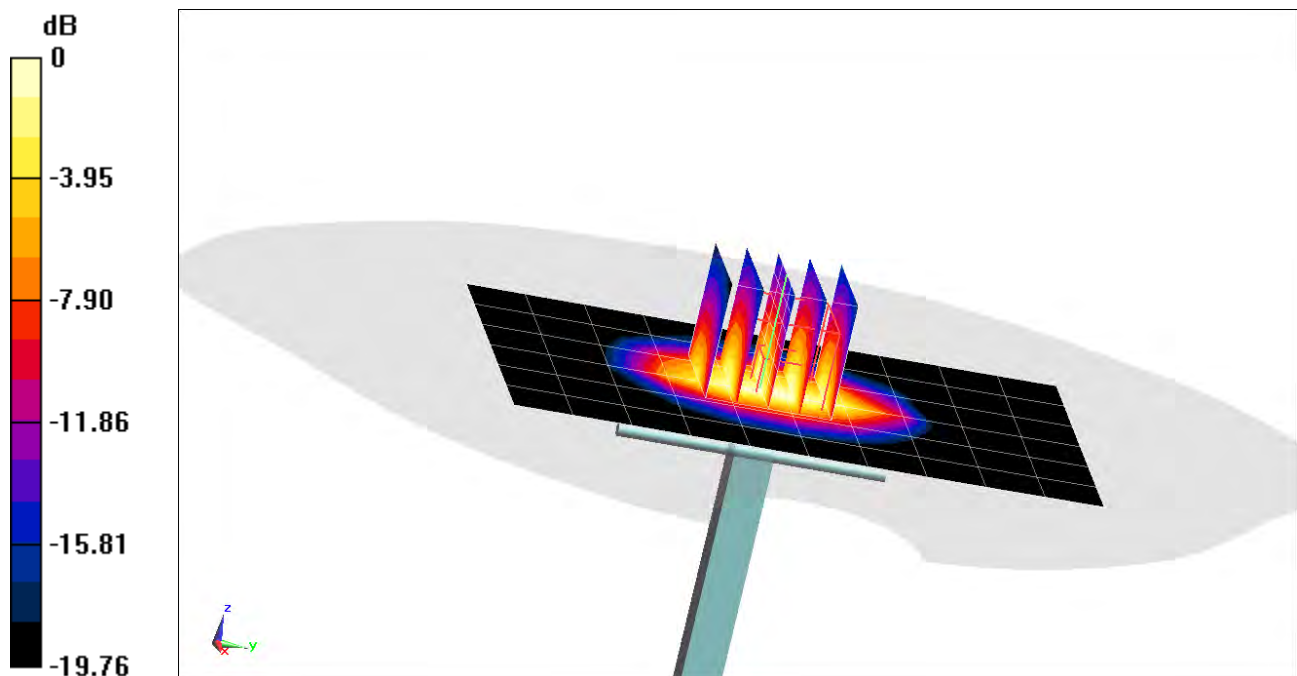
Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 7.89 W/kg

SAR(1 g) = 4.14 W/kg; SAR(10 g) = 2.11 W/kg

Deviation(1 g) = 5.61%; Deviation(10 g) = 2.43%



0 dB = 6.22 W/kg = 7.94 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.567 \text{ S/m}$; $\epsilon_r = 53.688$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-17-2019; Ambient Temp: 20.3°C; Tissue Temp: 23.6°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1900 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

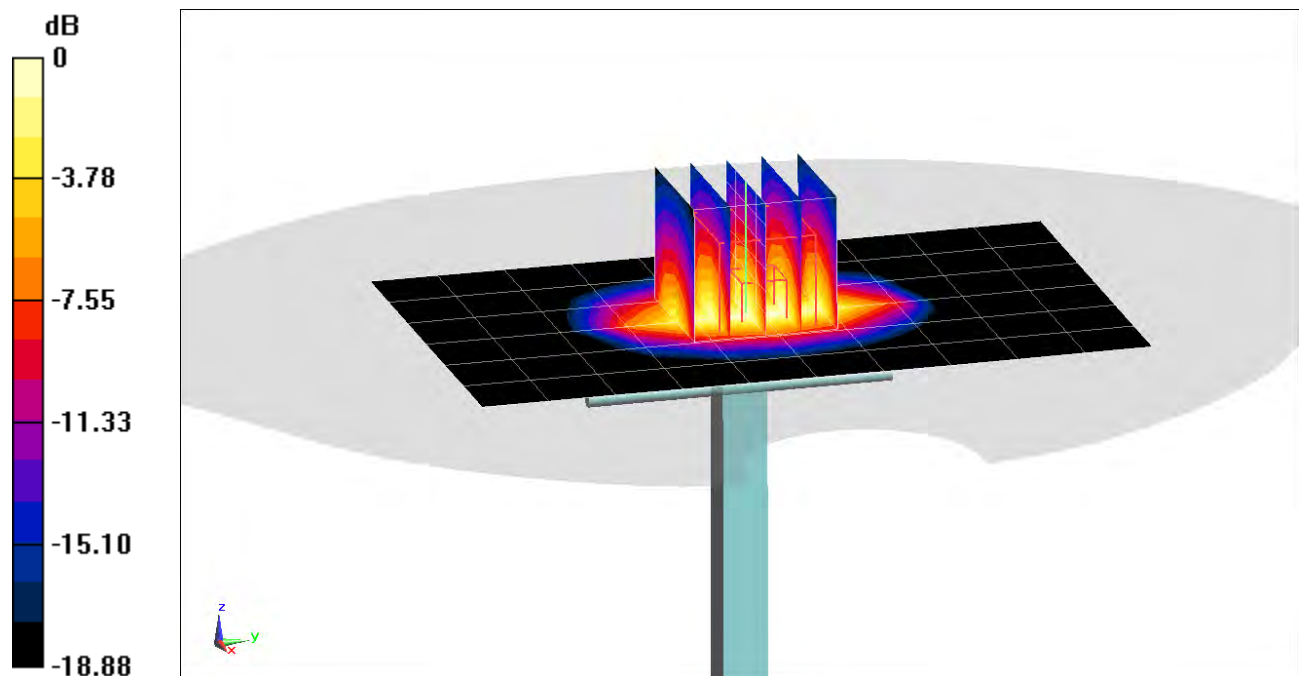
Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 7.76 W/kg

SAR(1 g) = 4.16 W/kg; SAR(10 g) = 2.12 W/kg

Deviation(1 g) = 6.12%; Deviation(10 g) = 2.91%



0 dB = 6.44 W/kg = 8.09 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.563 \text{ S/m}$; $\epsilon_r = 54.059$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-22-2019; Ambient Temp: 19.5°C; Tissue Temp: 23.0°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1900 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

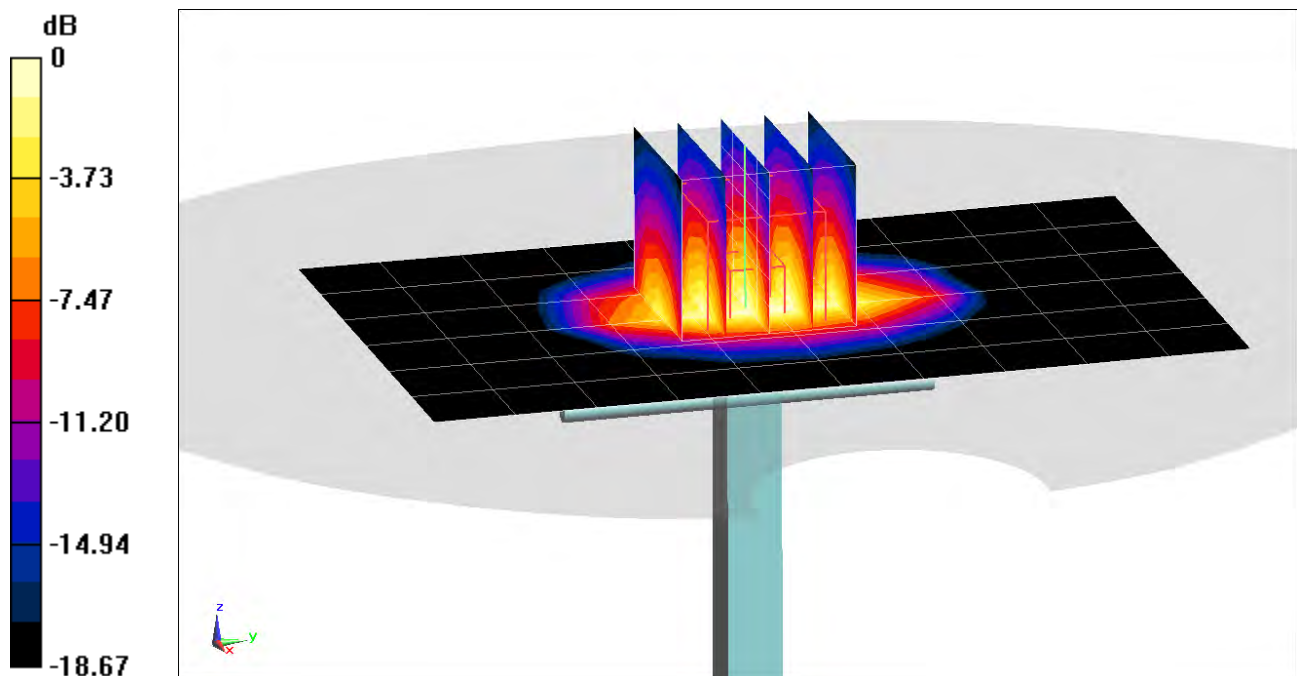
Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 7.89 W/kg

SAR(1 g) = 4.19 W/kg; SAR(10 g) = 2.13 W/kg

Deviation(1 g) = 6.89%; Deviation(10 g) = 3.40%



0 dB = 6.62 W/kg = 8.21 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900$ MHz; $\sigma = 1.572$ S/m; $\epsilon_r = 53.052$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-25-2019; Ambient Temp: 19.7°C; Tissue Temp: 23.2°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1900 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

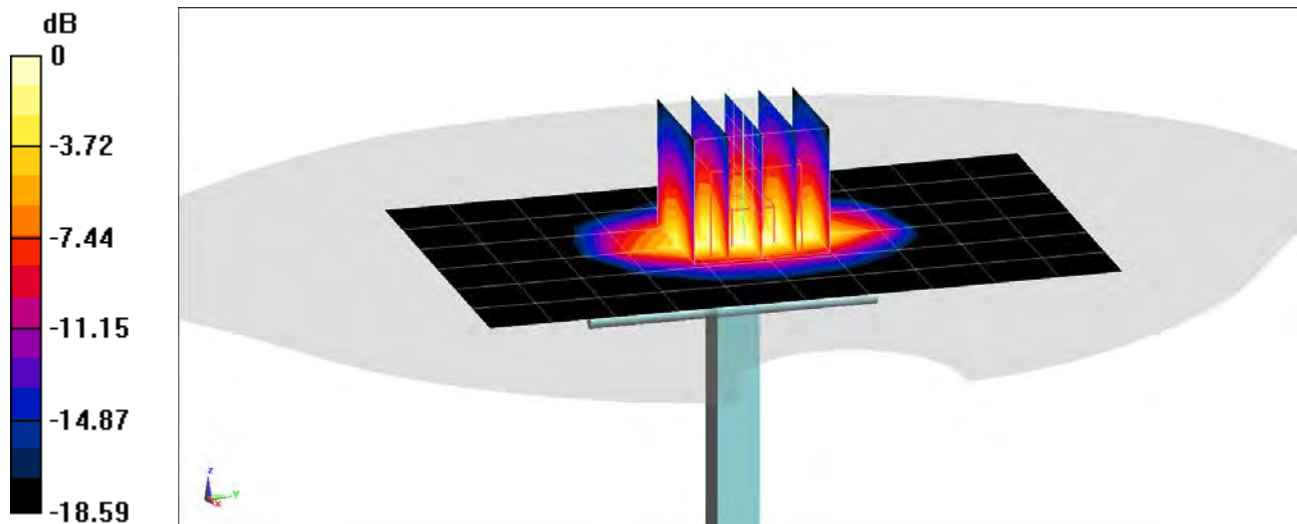
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Peak SAR (extrapolated) = 7.83 W/kg

SAR(1 g) = 4.17 W/kg; SAR(10 g) = 2.12 W/kg

Deviation(1 g) = 6.38%; Deviation(10 g) = 2.91%



0 dB = 6.58 W/kg = 8.18 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.569 \text{ S/m}$; $\epsilon_r = 52.533$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-05-2019; Ambient Temp: 19.7°C; Tissue Temp: 23.8°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1900 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

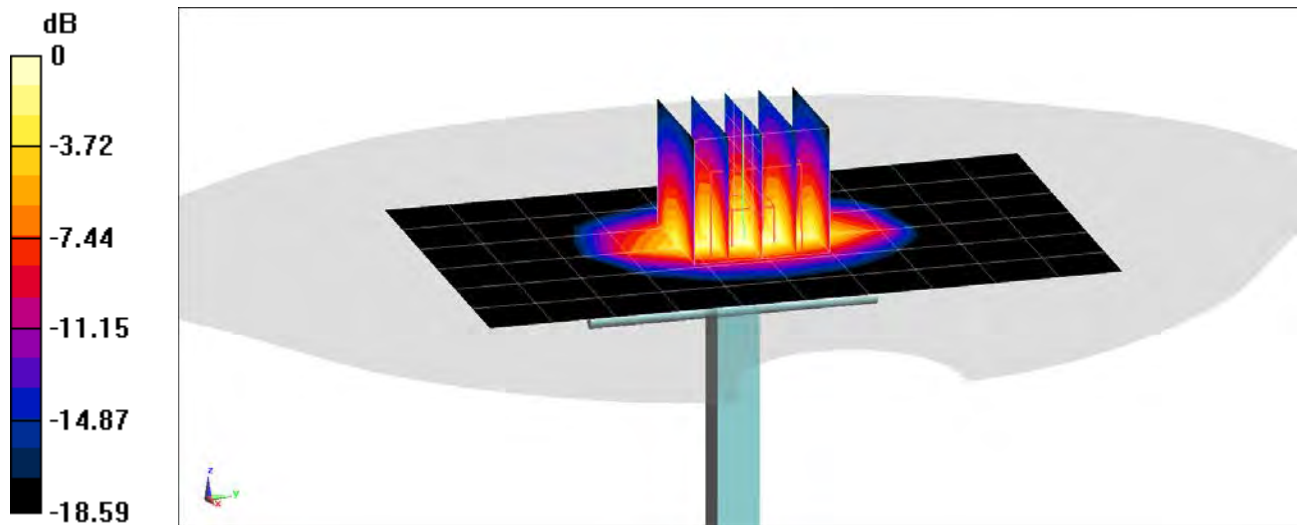
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Peak SAR (extrapolated) = 7.91 W/kg

SAR(1 g) = 4.2 W/kg

Deviation(1 g) = 7.14%



0 dB = 6.61 W/kg = 8.20 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.558 \text{ S/m}$; $\epsilon_r = 53.671$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-31-2019; Ambient Temp: 20.5°C; Tissue Temp: 23.9°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1900 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

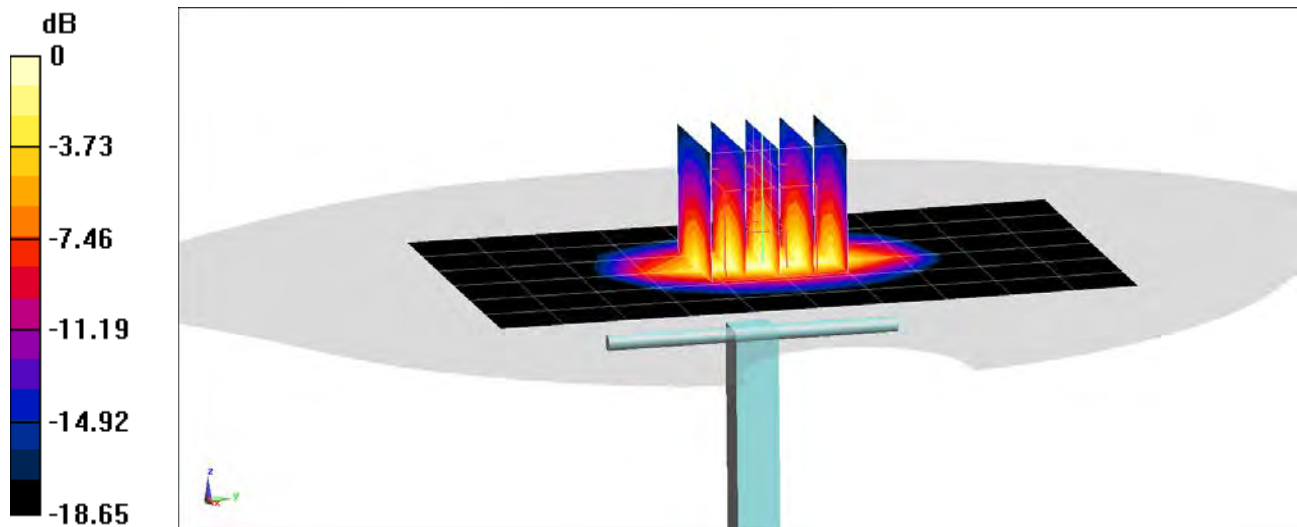
Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 7.91 W/kg

SAR(10 g) = 2.11 W/kg

Deviation(10 g) = 2.43%



0 dB = 6.57 W/kg = 8.18 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2300 MHz; Type: D2300V2; Serial: 1073

Communication System: UID 0, CW; Frequency: 2300 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used:

$f = 2300 \text{ MHz}$; $\sigma = 1.84 \text{ S/m}$; $\epsilon_r = 51.645$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-07-2019; Ambient Temp: 23.0°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN7417; ConvF(7.64, 7.64, 7.64) @ 2300 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

2300 MHz System Verification at 20.0 dBm (100 mW)

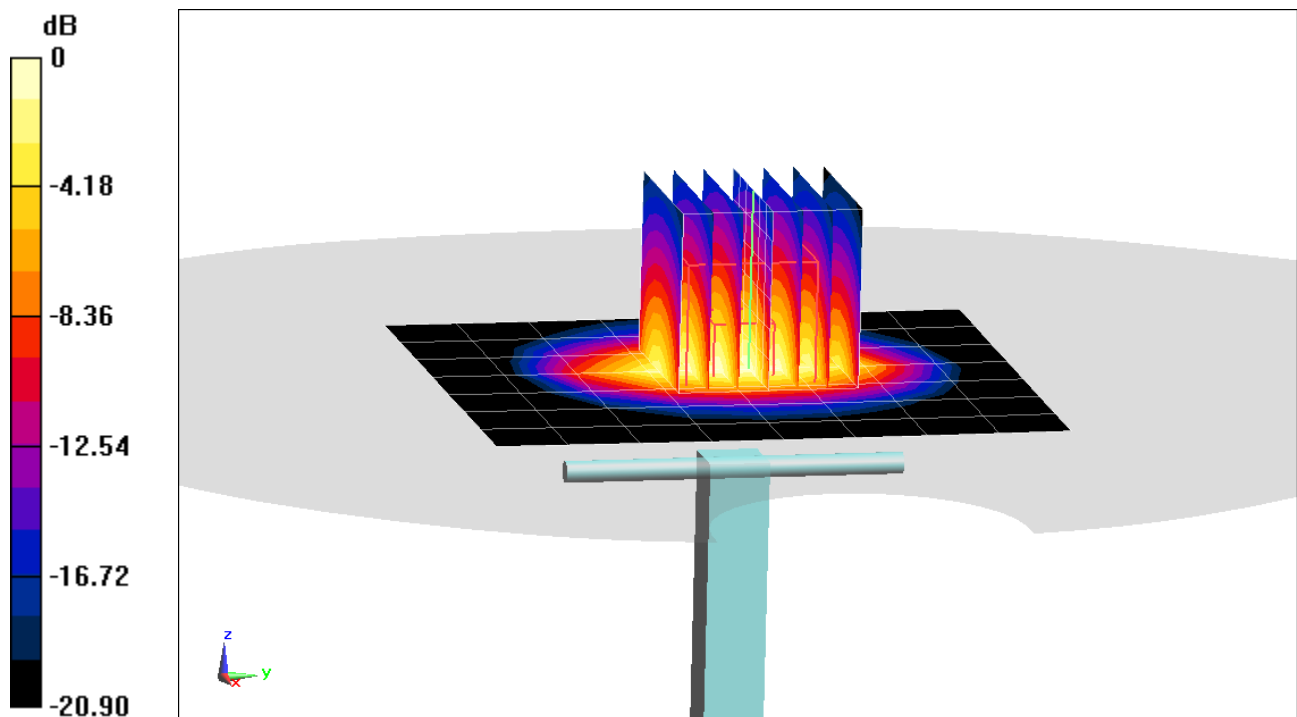
Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 9.81 W/kg

SAR(1 g) = 4.96 W/kg; SAR(10 g) = 2.37 W/kg

Deviation(1 g) = 3.98%; Deviation(10 g) = 2.16%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2300 MHz; Type: D2300V2; Serial: 1073

Communication System: UID 0, CW; Frequency: 2300 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used:

$f = 2300 \text{ MHz}$; $\sigma = 1.865 \text{ S/m}$; $\epsilon_r = 52.774$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-11-2019; Ambient Temp: 22.2°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7308; ConvF(7.73, 7.73, 7.73) @ 2300 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

2300 MHz System Verification at 20.0 dBm (100 mW)

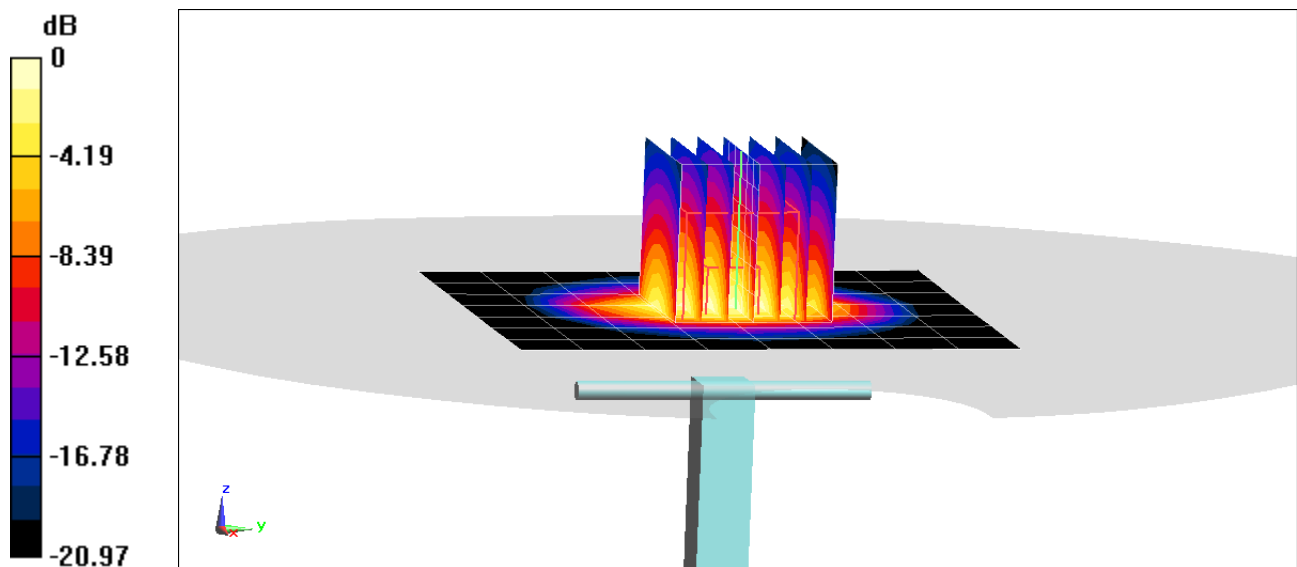
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Peak SAR (extrapolated) = 10.4 W/kg

SAR(10 g) = 2.4 W/kg

Deviation(10 g) = 3.45%



0 dB = 8.29 W/kg = 9.19 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 719

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 2.044 \text{ S/m}$; $\epsilon_r = 51.603$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-01-2019; Ambient Temp: 23.2°C; Tissue Temp: 22.6°C

Probe: EX3DV4 - SN7417; ConvF(7.51, 7.51, 7.51) @ 2450 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

2450 MHz System Verification at 20.0 dBm (100 mW)

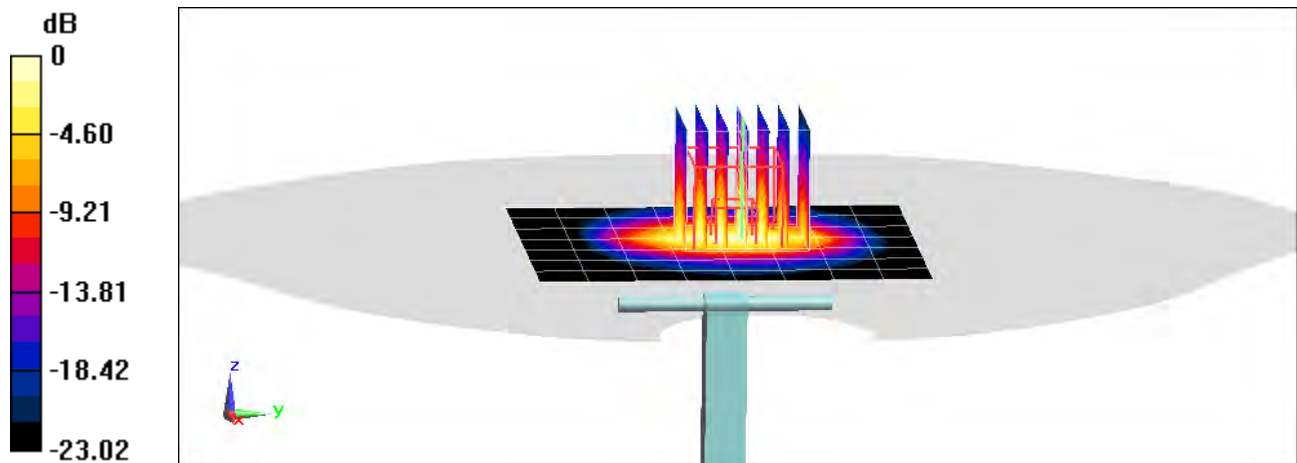
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Peak SAR (extrapolated) = 10.5 W/kg

SAR(1 g) = 5.05 W/kg

Deviation(1 g) = 0.80%



0 dB = 8.38 W/kg = 9.23 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 981

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 2.038 \text{ S/m}$; $\epsilon_r = 53.861$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-14-2019; Ambient Temp: 20.9°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN7308; ConvF(7.57, 7.57, 7.57) @ 2450 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

2450 MHz System Verification at 20.0 dBm (100 mW)

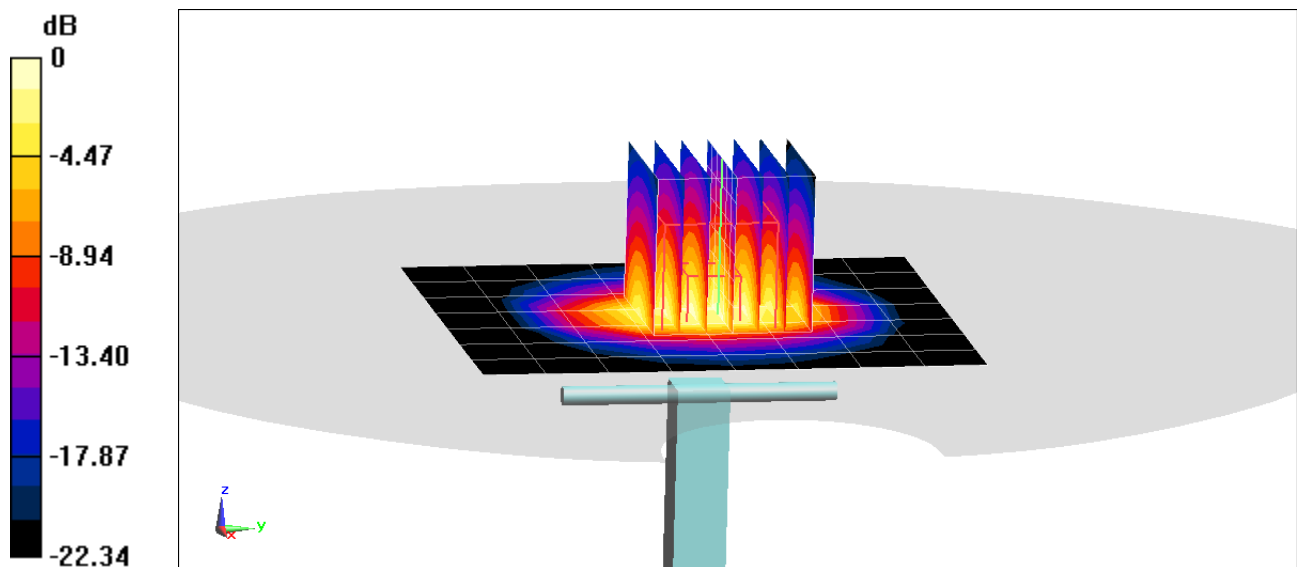
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Peak SAR (extrapolated) = 10.8 W/kg

SAR(1 g) = 5.2 W/kg; SAR(10 g) = 2.4 W/kg

Deviation(1 g) = 2.16%; Deviation(10 g) = -0.83%



0 dB = 8.61 W/kg = 9.35 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 719

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 2.041 \text{ S/m}$; $\epsilon_r = 51.486$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-18-2019; Ambient Temp: 22.6°C; Tissue Temp: 22.2°C

Probe: EX3DV4 - SN7417; ConvF(7.51, 7.51, 7.51) @ 2450 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

2450 MHz System Verification at 20.0 dBm (100 mW)

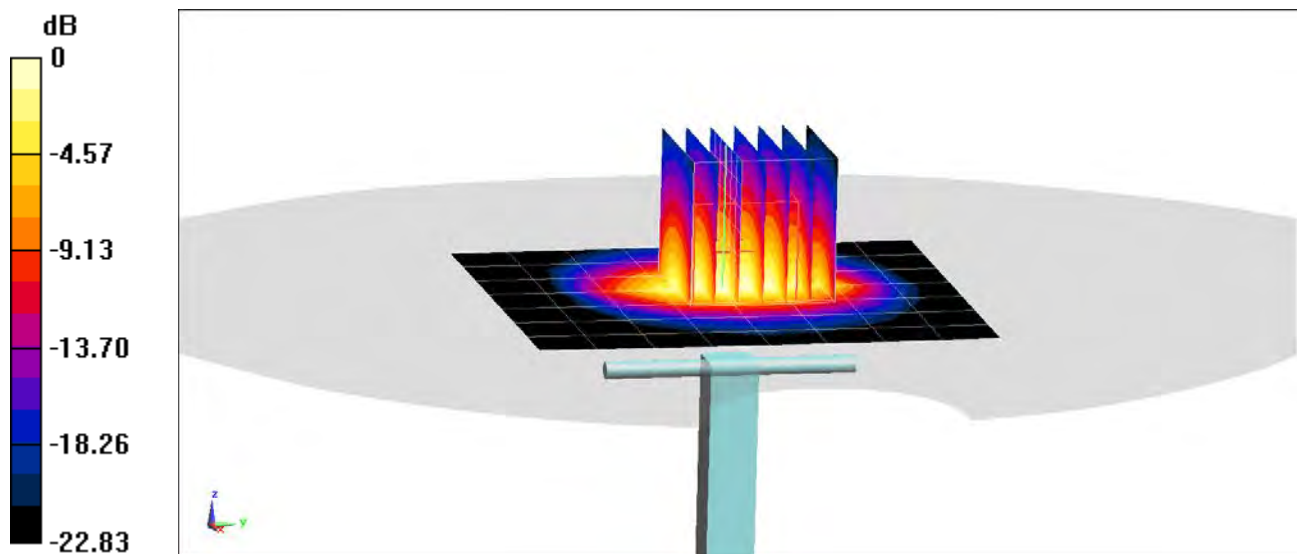
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Peak SAR (extrapolated) = 10.9 W/kg

SAR(1 g) = 5.22 W/kg; SAR(10 g) = 2.39 W/kg

Deviation(1 g) = 4.19%; Deviation(10 g) = 0.84%



0 dB = 8.71 W/kg = 9.40 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 719

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 2.02 \text{ S/m}$; $\epsilon_r = 51.266$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-24-2019; Ambient Temp: 22.5°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN7417; ConvF(7.51, 7.51, 7.51) @ 2450 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

2450 MHz System Verification at 20.0 dBm (100 mW)

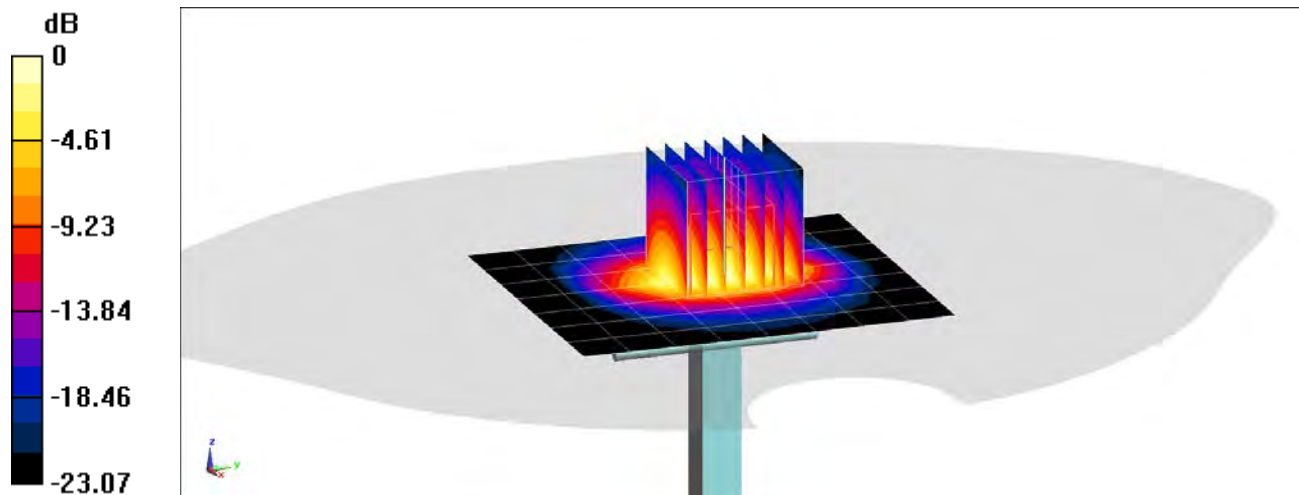
Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 11.4 W/kg

SAR(1 g) = 5.27 W/kg; SAR(10 g) = 2.4 W/kg

Deviation(1 g) = 5.19%; Deviation(10 g) = 1.27%



0 dB = 8.95 W/kg = 9.52 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 719

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 2.035 \text{ S/m}$; $\epsilon_r = 51.51$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-29-2019; Ambient Temp: 22.7°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7417; ConvF(7.51, 7.51, 7.51) @ 2450 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

2450 MHz System Verification at 20.0 dBm (100 mW)

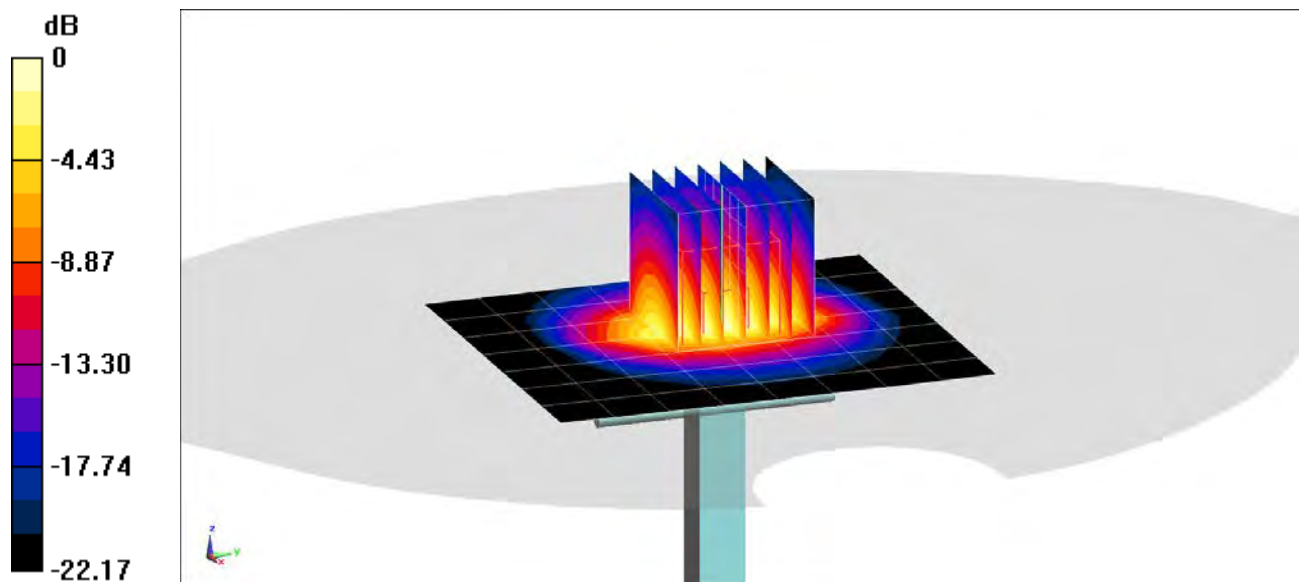
Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 10.6 W/kg

SAR(1 g) = 5.19 W/kg; SAR(10 g) = 2.4 W/kg

Deviation(1 g) = 3.59%; Deviation(10 g) = 1.27%



0 dB = 8.61 W/kg = 9.35 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1071

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used:

$f = 2600 \text{ MHz}$; $\sigma = 2.184 \text{ S/m}$; $\epsilon_r = 53.624$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-14-2019; Ambient Temp: 20.9°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN7308; ConvF(7.4, 7.4, 7.4) @ 2600 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

2600 MHz System Verification at 20.0 dBm (100 mW)

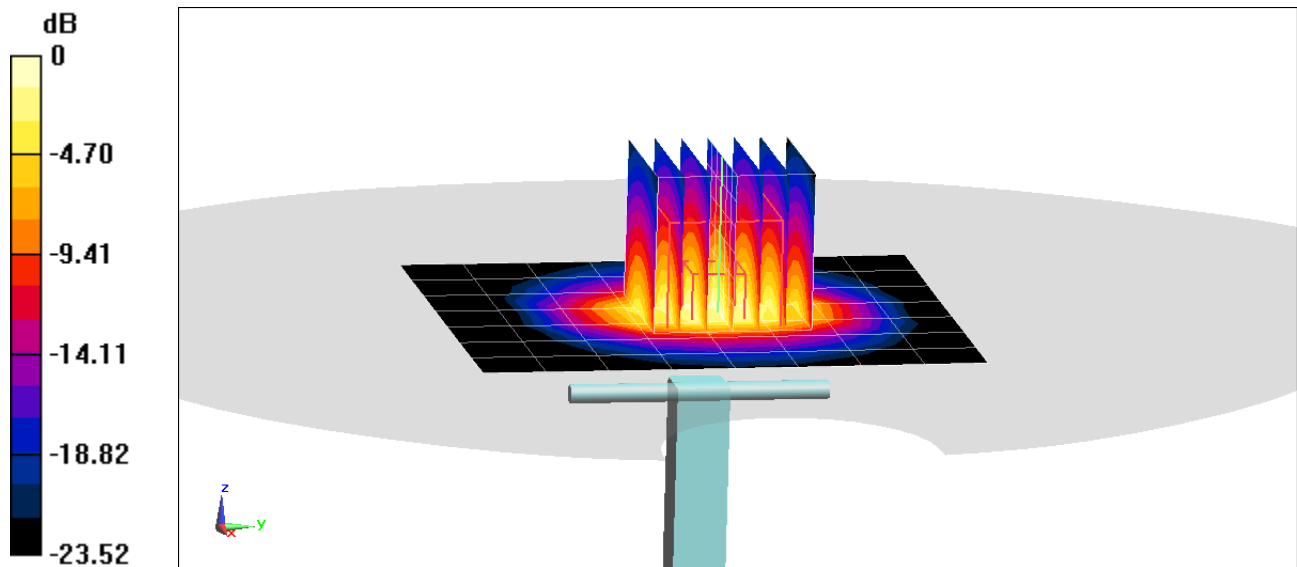
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Peak SAR (extrapolated) = 12.1 W/kg

SAR(1 g) = 5.54 W/kg; SAR(10 g) = 2.47 W/kg

Deviation(1 g) = 2.21%; Deviation(10 g) = 0.82%



0 dB = 9.53 W/kg = 9.79 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1071

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: 2450MHz Body Medium parameters used:

$f = 2600 \text{ MHz}$; $\sigma = 2.158 \text{ S/m}$; $\epsilon_r = 52.579$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-22-2019; Ambient Temp: 21.6°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7308; ConvF(7.4, 7.4, 7.4) @ 2600 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

2600 MHz System Verification at 20.0 dBm (100 mW)

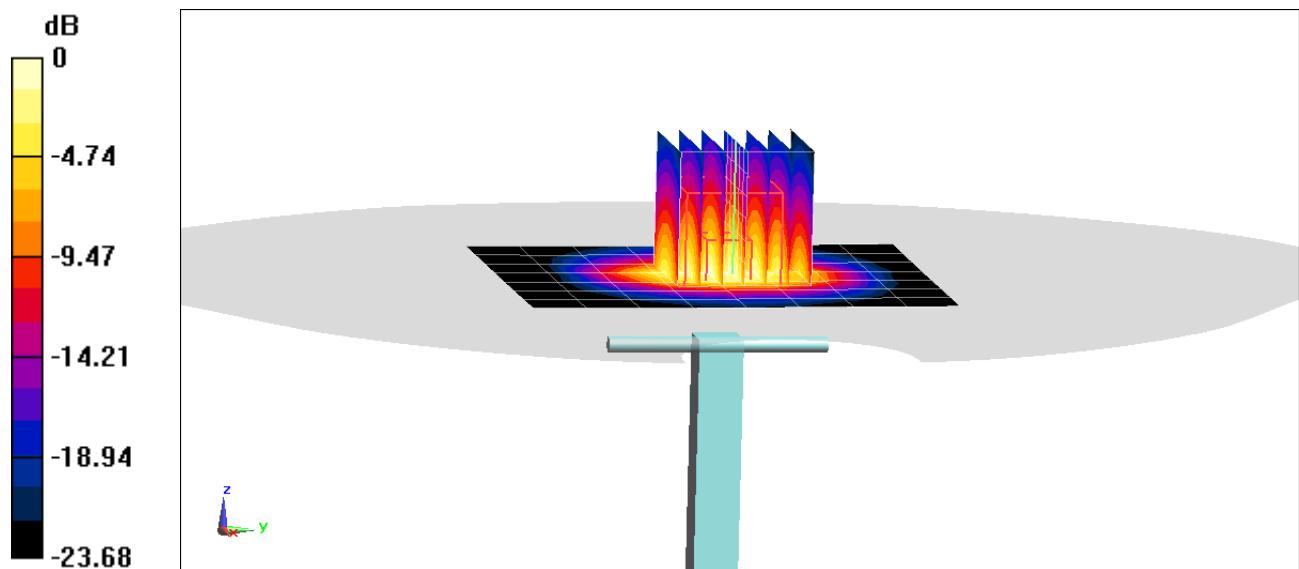
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Peak SAR (extrapolated) = 11.6 W/kg

SAR(10 g) = 2.34 W/kg

Deviation(10 g) = -4.49%



0 dB = 8.96 W/kg = 9.52 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1004

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used:

$f = 2600 \text{ MHz}$; $\sigma = 2.19 \text{ S/m}$; $\epsilon_r = 50.86$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-24-2019; Ambient Temp: 22.5°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN7417; ConvF(7.37, 7.37, 7.37) @ 2600 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

2600 MHz System Verification at 20.0 dBm (100 mW)

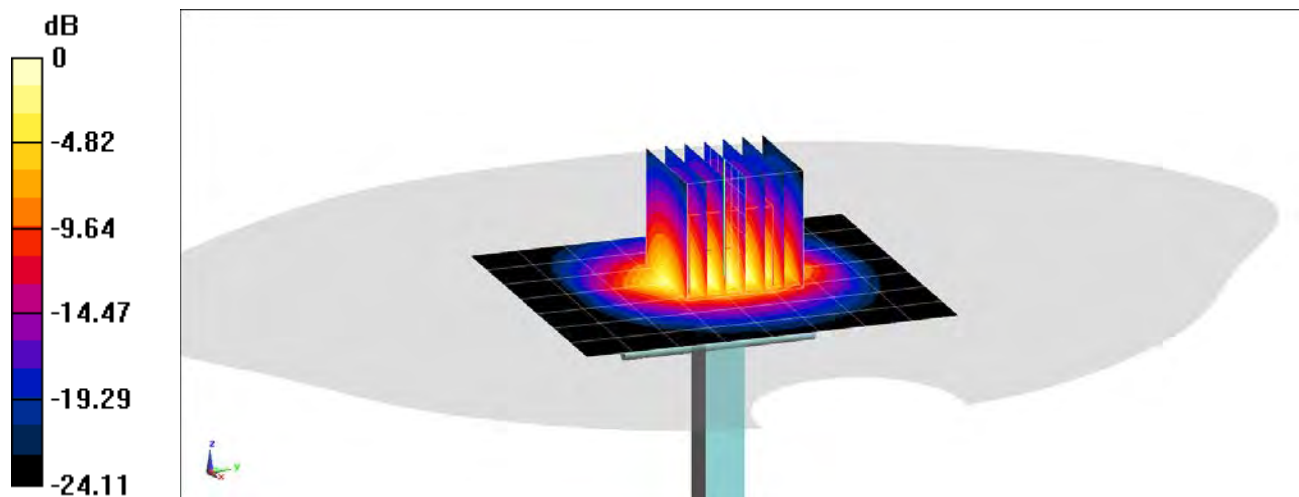
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Peak SAR (extrapolated) = 11.6 W/kg

SAR(1 g) = 5.38 W/kg; SAR(10 g) = 2.38 W/kg

Deviation(1 g) = -1.82%; Deviation(10 g) = -3.64%



0 dB = 9.15 W/kg = 9.61 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1

Medium: 5GHz Body Medium parameters used (interpolated):

$f = 5250 \text{ MHz}$; $\sigma = 5.432 \text{ S/m}$; $\epsilon_r = 47.784$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-24-2019; Ambient Temp: 22.6°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7308; ConvF(4.48, 4.48, 4.48) @ 5250 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

5250 MHz System Verification at 17.0 dBm (50 mW)

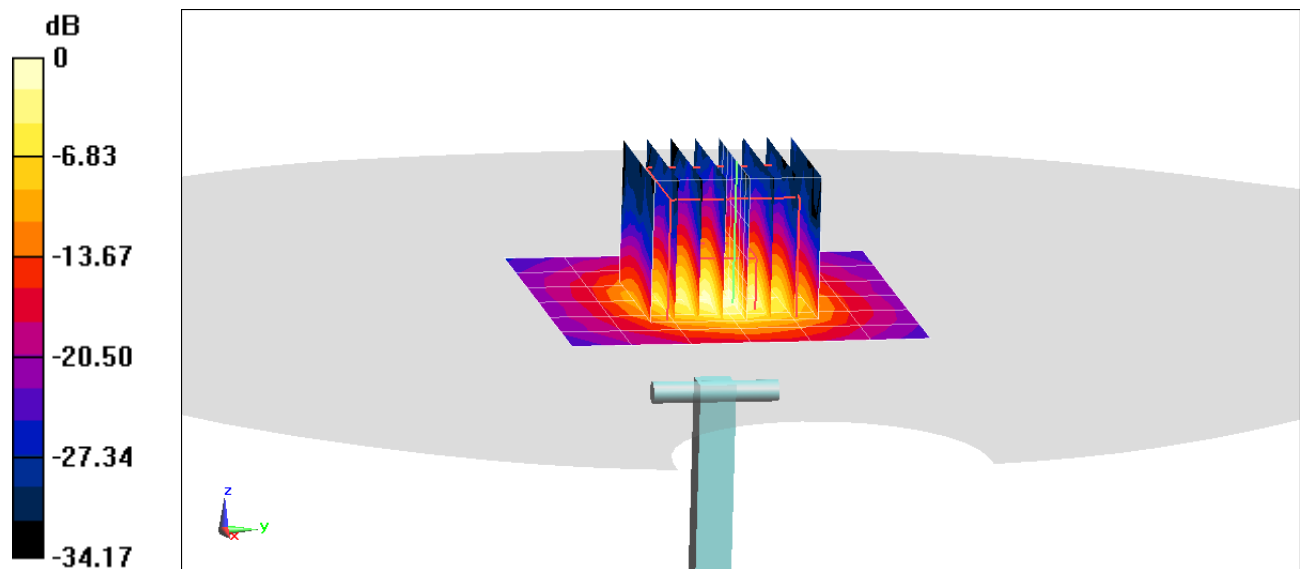
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 14.2 W/kg

SAR(1 g) = 3.5 W/kg; SAR(10 g) = 0.987 W/kg

Deviation(1 g) = -7.77%; Deviation(10 g) = -6.45%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: 5GHz Body Medium parameters used:

$f = 5600 \text{ MHz}$; $\sigma = 5.941 \text{ S/m}$; $\epsilon_r = 47.105$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-24-2019; Ambient Temp: 22.6°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7308; ConvF(4, 4, 4) @ 5600 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

5600 MHz System Verification at 17.0 dBm (50 mW)

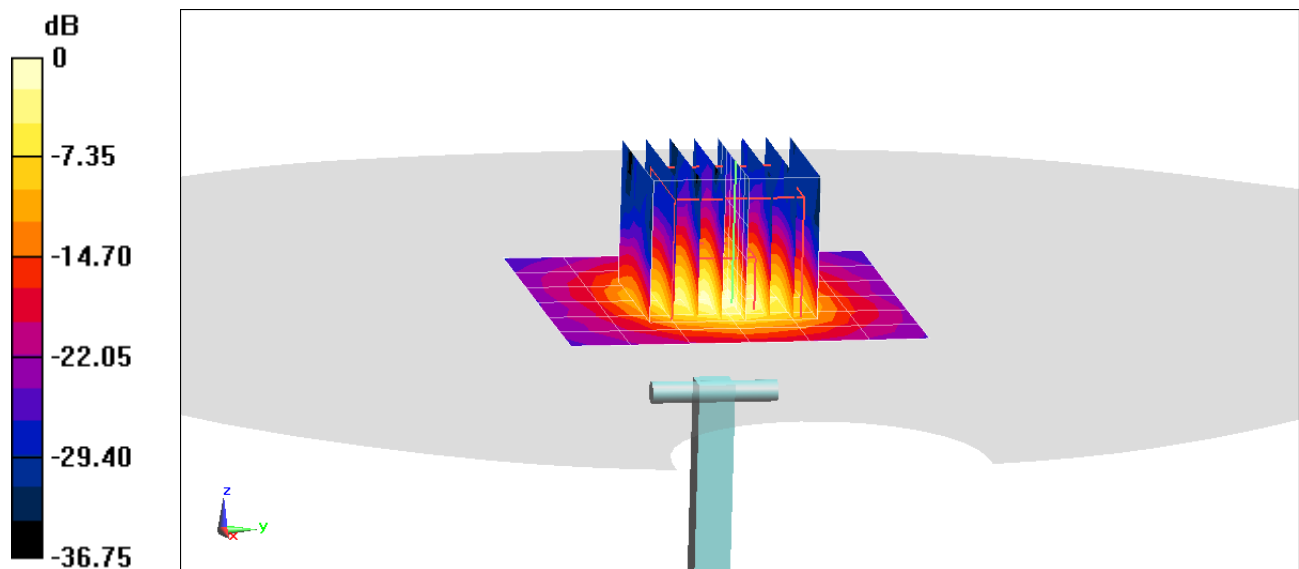
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 17.6 W/kg

SAR(1 g) = 3.95 W/kg; SAR(10 g) = 1.1 W/kg

Deviation(1 g) = -1.13%; Deviation(10 g) = -1.35%



0 dB = 9.80 W/kg = 9.91 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: 5GHz Body Medium parameters used (interpolated):

$f = 5750 \text{ MHz}$; $\sigma = 5.882 \text{ S/m}$; $\epsilon_r = 47.567$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-16-2019; Ambient Temp: 23.0°C; Tissue Temp: 20.1°C

Probe: EX3DV4 - SN7308; ConvF(4.18, 4.18, 4.18) @ 5750 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

5750 MHz System Verification at 17.0 dBm (50 mW)

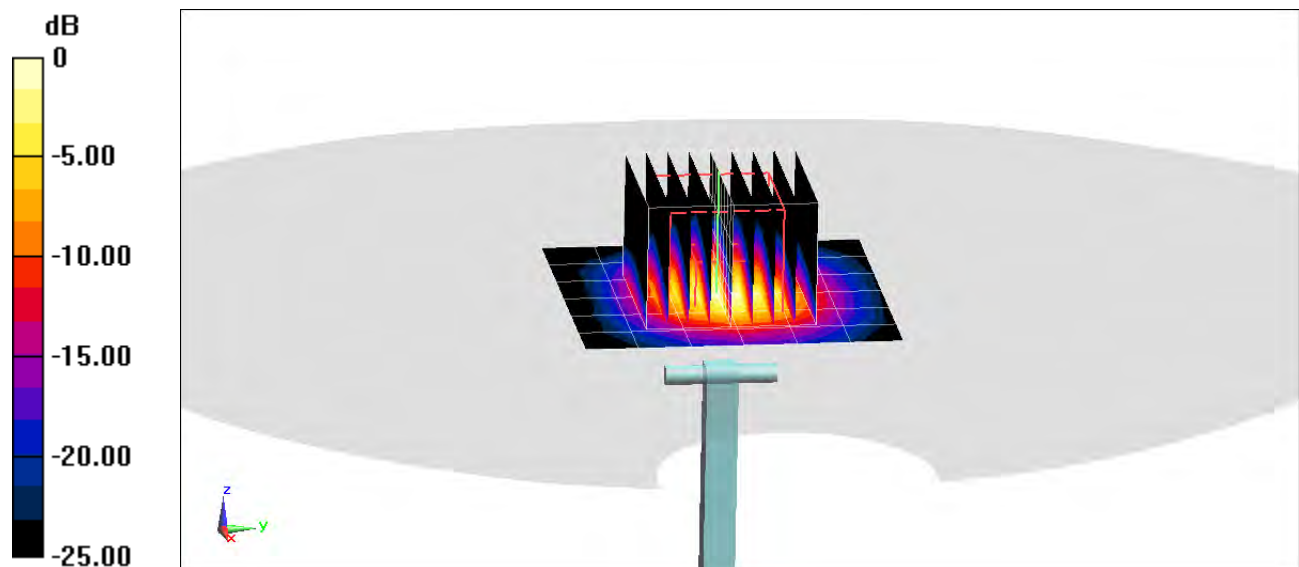
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 16.0 W/kg

SAR(1 g) = 3.47 W/kg; SAR(10 g) = 0.965 W/kg

Deviation(1 g) = -9.52%; Deviation(10 g) = -8.96%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1057

Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: 5GHz Body Medium parameters used (interpolated):

$f = 5750 \text{ MHz}$; $\sigma = 6.169 \text{ S/m}$; $\epsilon_r = 46.843$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-24-2019; Ambient Temp: 22.6°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7308; ConvF(4.18, 4.18, 4.18) @ 5750 MHz; Calibrated: 8/23/2018

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1558; Calibrated: 10/3/2018

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

5750 MHz System Verification at 17.0 dBm (50 mW)

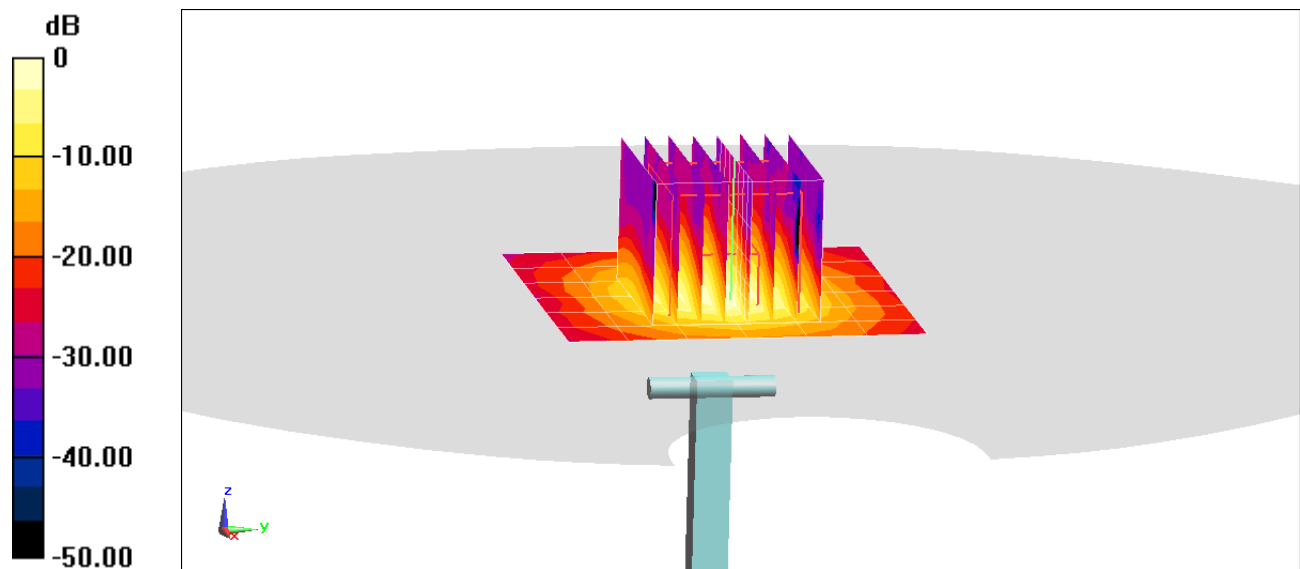
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (9x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 16.7 W/kg

SAR(1 g) = 3.55 W/kg; SAR(10 g) = 0.992 W/kg

Deviation(1 g) = -7.43%; Deviation(10 g) = -6.42%



0 dB = 8.76 W/kg = 9.43 dBW/kg

APPENDIX C: PROBE CALIBRATION



Accredited by the Swiss Accreditation Service (SAS)
 The Swiss Accreditation Service is one of the signatories to the EA
 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D1900V2-5d149_Oct18**

CALIBRATION CERTIFICATE

Object **D1900V2 - SN:5d149**

Calibration procedure(s) **QA CAL-05.v10**
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: **October 23, 2018**

BNV
10-30-2018

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
 The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 7349	30-Dec-17 (No. EX3-7349_Dec17)	Dec-18
DAE4	SN: 601	04-Oct-18 (No. DAE4-601_Oct18)	Oct-19
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

Calibrated by: **Jeton Kastrati** **Laboratory Technician**

Approved by: **Katja Pokovic** **Technical Manager**

Signature

Issued: October 23, 2018

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



Accredited by the Swiss Accreditation Service (SAS)

The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	40.3 $\pm$ 6 %	1.40 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.80 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	39.3 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.11 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	20.5 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	52.9 $\pm$ 6 %	1.47 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.68 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	39.4 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.11 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	20.7 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$52.9\ \Omega + 6.3\ j\Omega$
Return Loss	- 23.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$48.5\ \Omega + 8.2\ j\Omega$
Return Loss	- 21.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.193 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 11, 2011

DASY5 Validation Report for Head TSL

Date: 23.10.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d149

Communication System: UID 0 - CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.4$ S/m; $\epsilon_r = 40.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.18, 8.18, 8.18) @ 1900 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

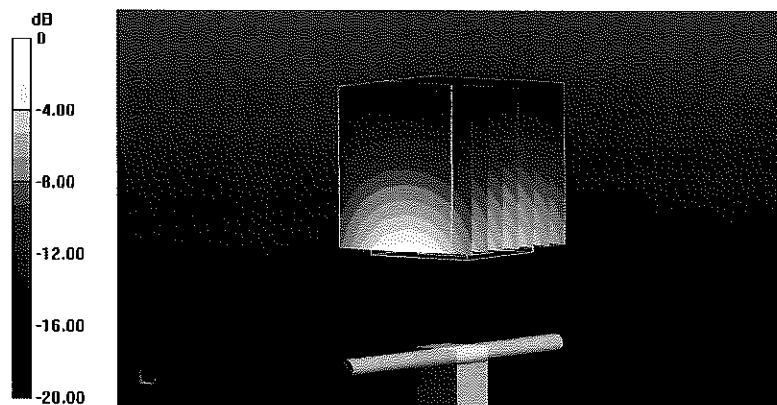
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 110.0 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 18.5 W/kg

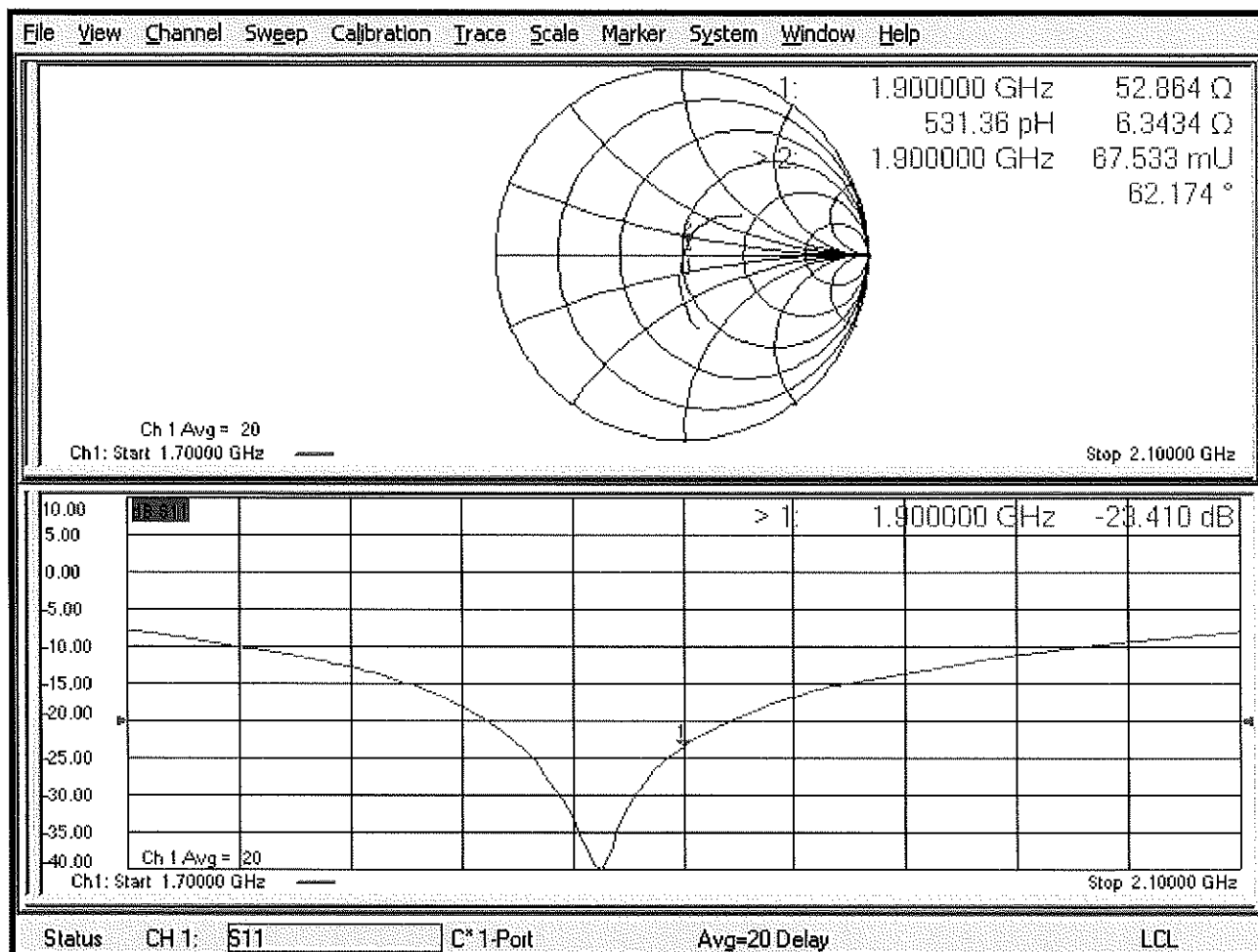
SAR(1 g) = 9.8 W/kg; SAR(10 g) = 5.11 W/kg

Maximum value of SAR (measured) = 15.4 W/kg



0 dB = 15.4 W/kg = 11.88 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 23.10.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d149

Communication System: UID 0 - CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.47$ S/m; $\epsilon_r = 52.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.15, 8.15, 8.15) @ 1900 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

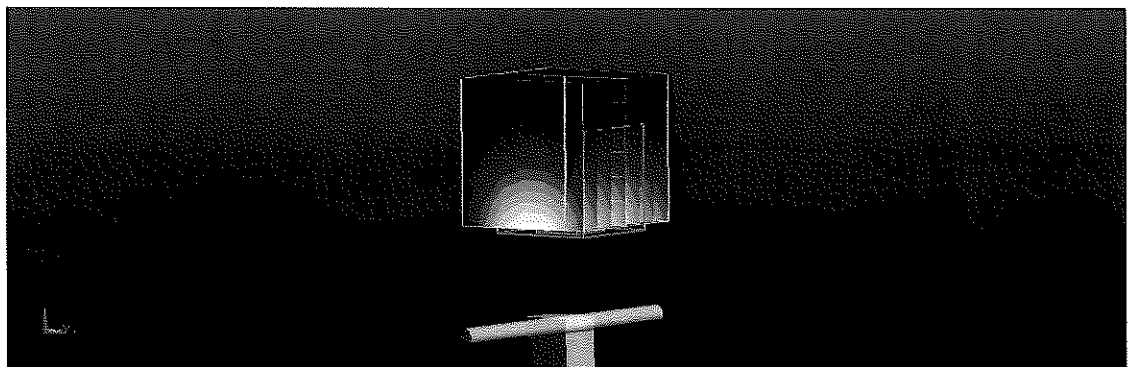
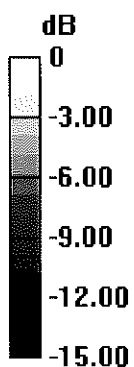
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 103.1 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 17.5 W/kg

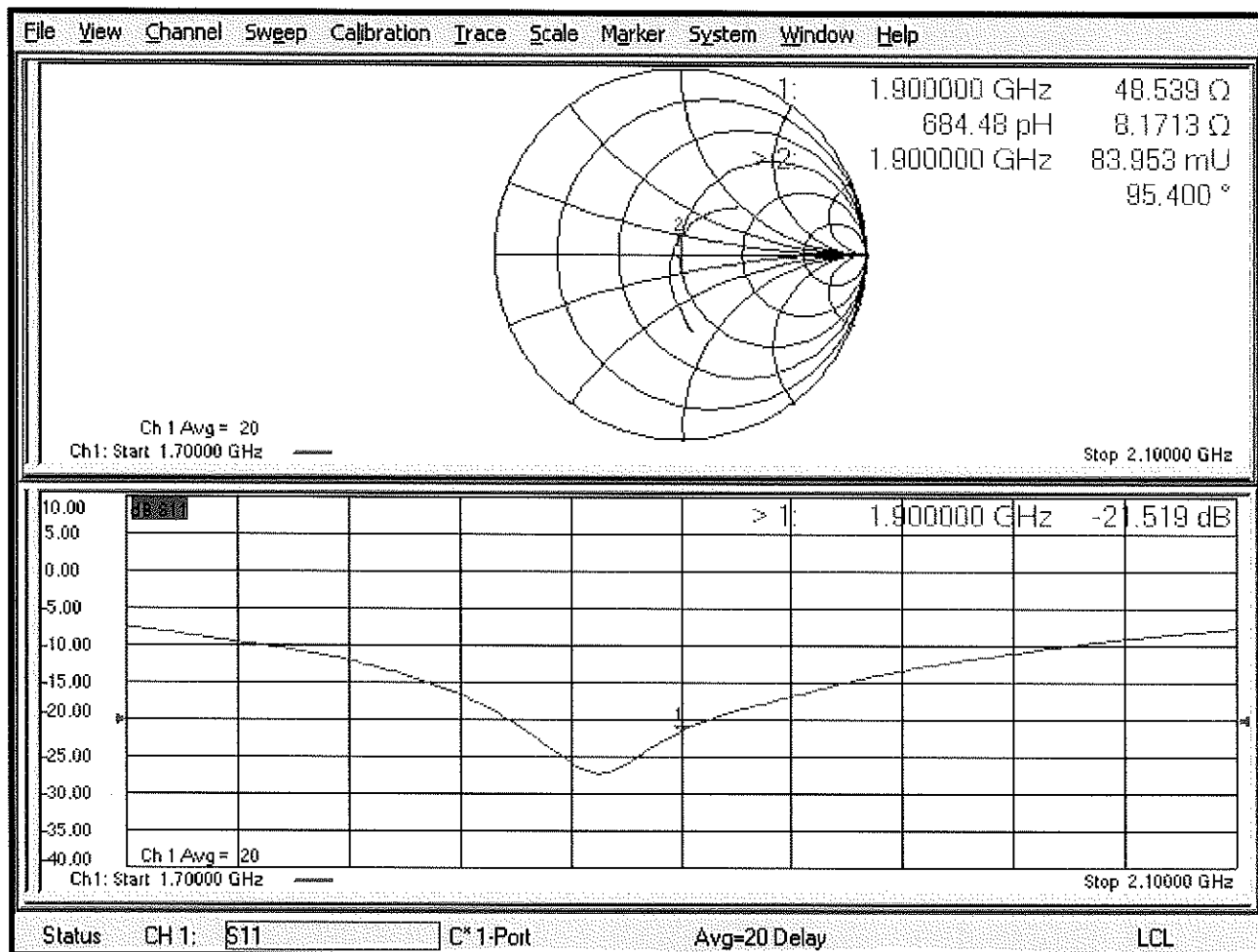
SAR(1 g) = 9.68 W/kg; SAR(10 g) = 5.11 W/kg

Maximum value of SAR (measured) = 14.2 W/kg



0 dB = 14.2 W/kg = 11.52 dBW/kg

Impedance Measurement Plot for Body TSL





Accredited by the Swiss Accreditation Service (SAS)
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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D1900V2-5d080_Oct18**

CALIBRATION CERTIFICATE

Object **D1900V2 - SN:5d080**

Calibration procedure(s) **QA CAL-05.v10
Calibration procedure for dipole validation kits above 700 MHz**

Calibration date: **October 23, 2018**

*BN ✓
10-30-2018*

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 7349	30-Dec-17 (No. EX3-7349_Dec17)	Dec-18
DAE4	SN: 601	04-Oct-18 (No. DAE4-601_Oct18)	Oct-19
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

Calibrated by: **Jeton Kastrati** Function: **Laboratory Technician** Signature: *[Signature]*

Approved by: **Katja Pokovic** Technical Manager

Issued: October 23, 2018

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



Accredited by the Swiss Accreditation Service (SAS)

The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	40.3 $\pm$ 6 %	1.40 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.93 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	39.8 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.18 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	20.7 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	52.9 $\pm$ 6 %	1.47 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.62 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	39.2 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.09 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	20.6 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.5 Ω + 7.9 j Ω
Return Loss	- 21.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.1 Ω + 8.1 j Ω
Return Loss	- 21.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.193 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	June 28, 2006

DASY5 Validation Report for Head TSL

Date: 23.10.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d080

Communication System: UID 0 - CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.4$ S/m; $\epsilon_r = 40.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.18, 8.18, 8.18) @ 1900 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

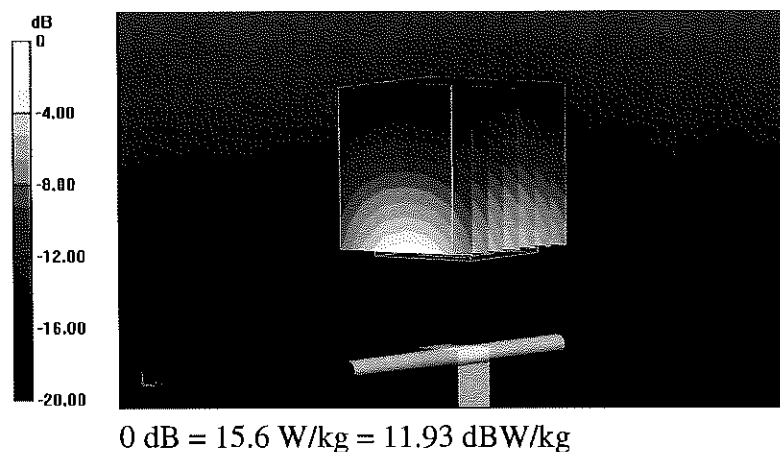
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 110.0 V/m; Power Drift = -0.05 dB

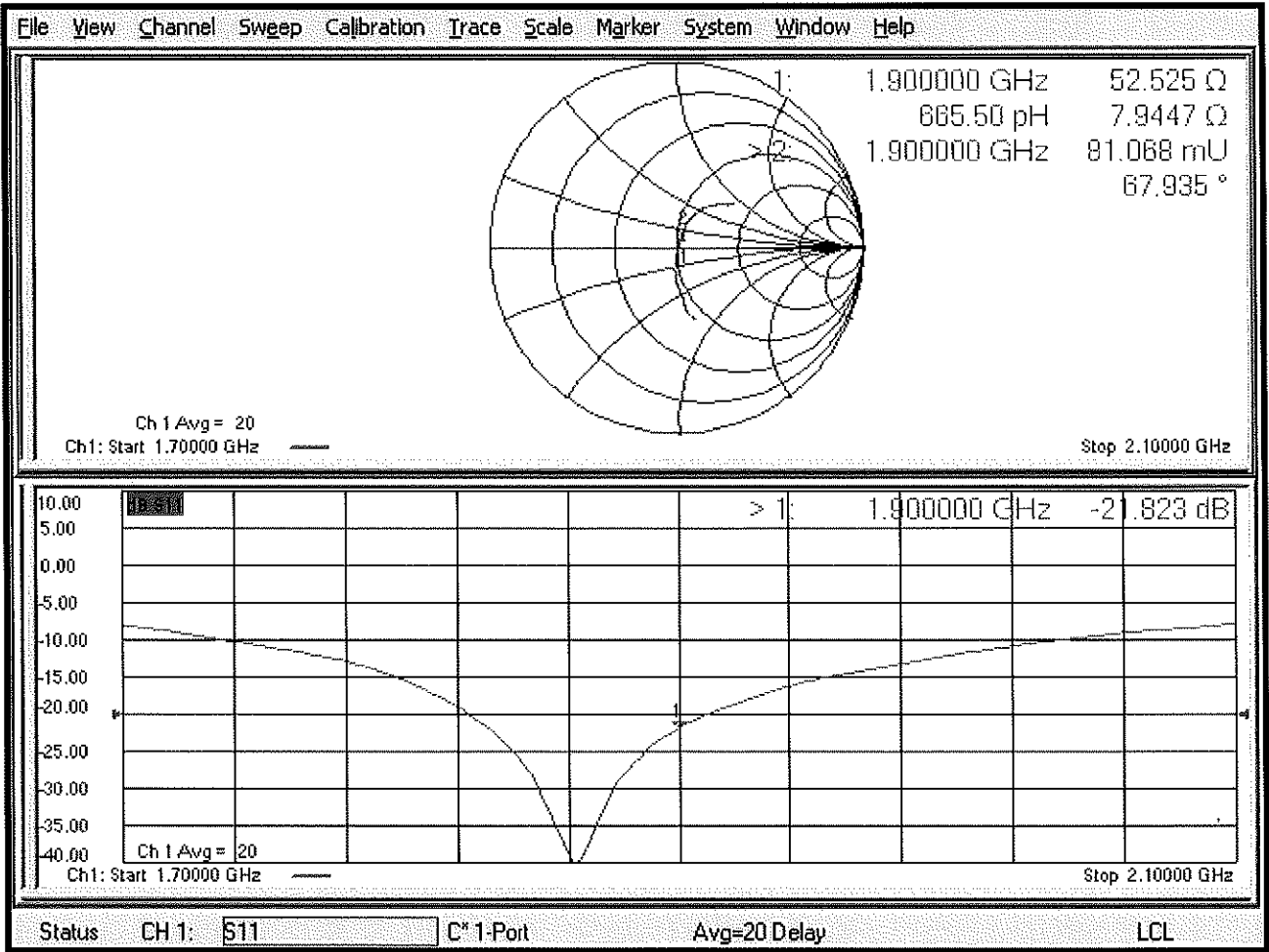
Peak SAR (extrapolated) = 18.7 W/kg

SAR(1 g) = 9.93 W/kg; SAR(10 g) = 5.18 W/kg

Maximum value of SAR (measured) = 15.6 W/kg



Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 23.10.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d080

Communication System: UID 0 - CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.47$ S/m; $\epsilon_r = 52.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.15, 8.15, 8.15) @ 1900 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

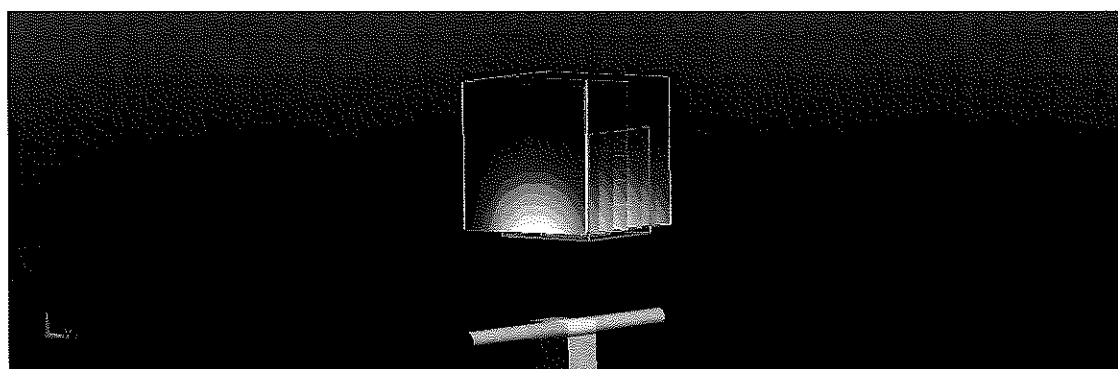
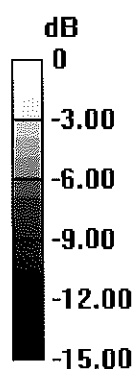
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 99.86 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 17.3 W/kg

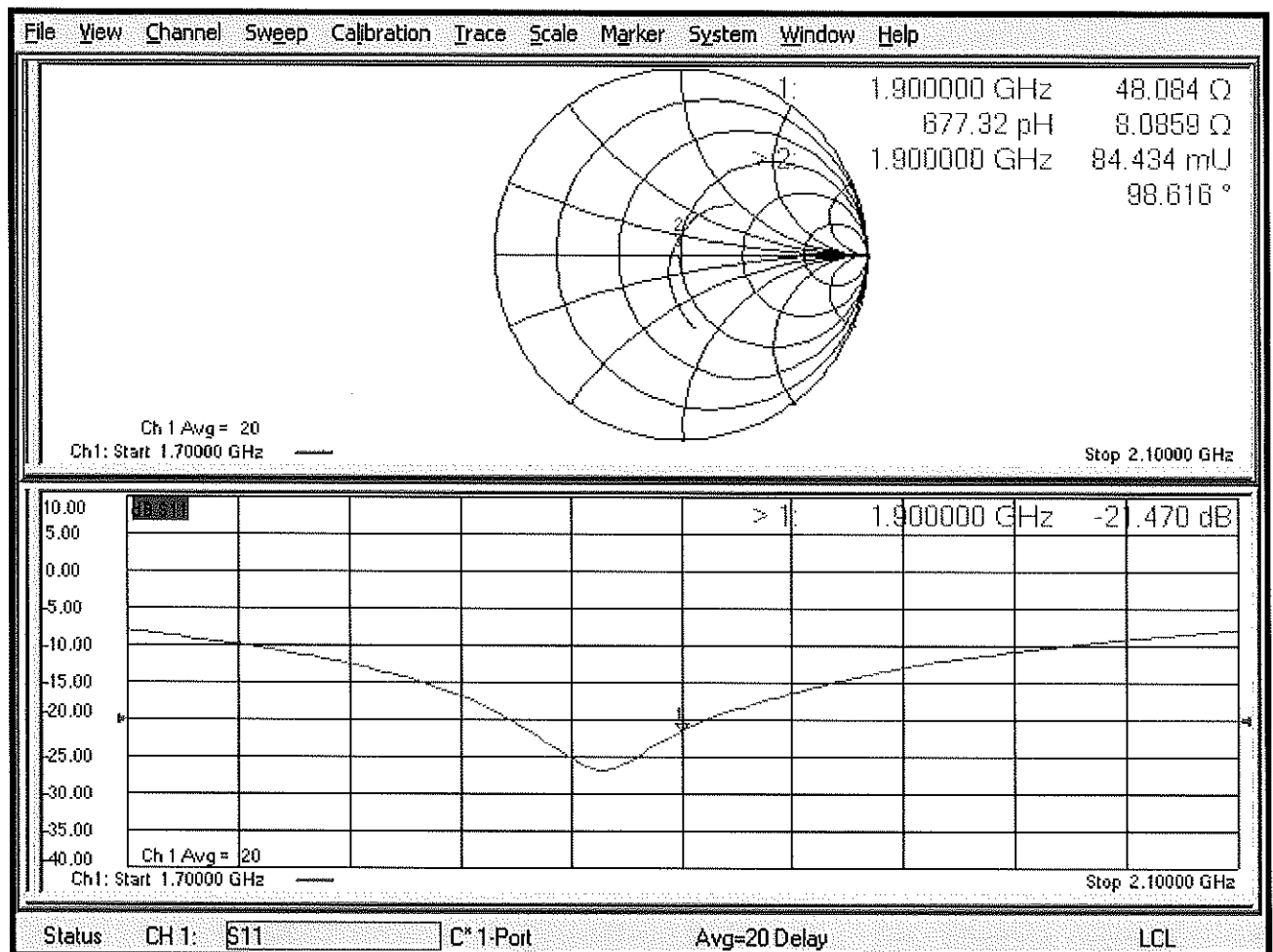
SAR(1 g) = 9.62 W/kg; SAR(10 g) = 5.09 W/kg

Maximum value of SAR (measured) = 14.1 W/kg



0 dB = 14.1 W/kg = 11.49 dBW/kg

Impedance Measurement Plot for Body TSL





Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D1900V2-5d148_Feb19**

CALIBRATION CERTIFICATE

Object **D1900V2 - SN:5d148**

Calibration procedure(s) **QA CAL-05.v11
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz**

Calibration date: **February 21, 2019**

*BNV
05-01-19*

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 7349	31-Dec-18 (No. EX3-7349_Dec18)	Dec-19
DAE4	SN: 601	04-Oct-18 (No. DAE4-601_Oct18)	Oct-19
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	07-Oct-15 (in house check Feb-19)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

Calibrated by: **Manu Seitz** Name: **Manu Seitz** Function: **Laboratory Technician**

Approved by: **Katja Pokovic** Name: **Katja Pokovic** Technical Manager

[Signatures]

Issued: February 21, 2019

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



Accredited by the Swiss Accreditation Service (SAS)

The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	40.9 $\pm$ 6 %	1.38 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.65 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	39.1 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.05 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	20.4 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	53.6 $\pm$ 6 %	1.47 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.56 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	39.1 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.05 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	20.5 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$51.8 \Omega + 6.8 j\Omega$
Return Loss	- 23.2 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$48.4 \Omega + 7.8 j\Omega$
Return Loss	- 21.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.170 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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DASY5 Validation Report for Head TSL

Date: 21.02.2019

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d148

Communication System: UID 0 - CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.38$ S/m; $\epsilon_r = 40.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.26, 8.26, 8.26) @ 1900 MHz; Calibrated: 31.12.2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

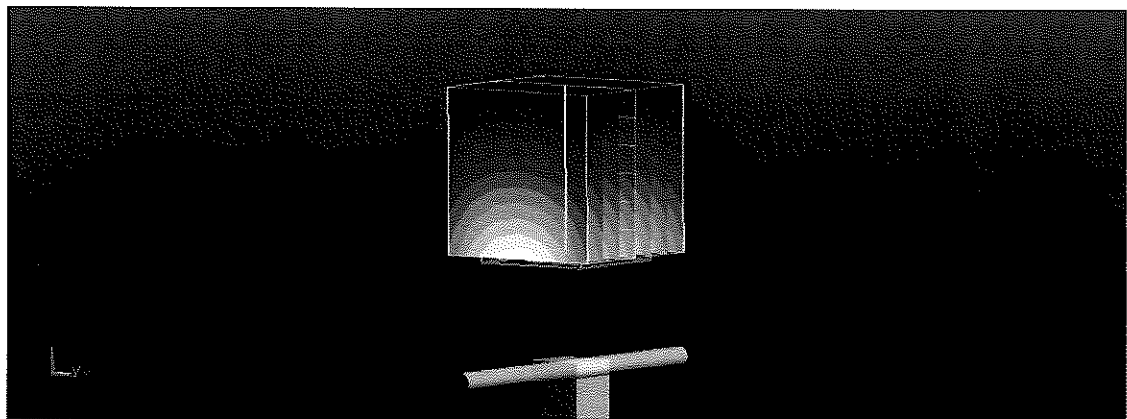
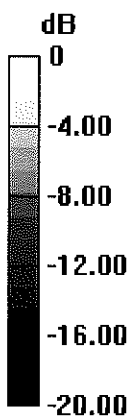
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 109.4 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 17.8 W/kg

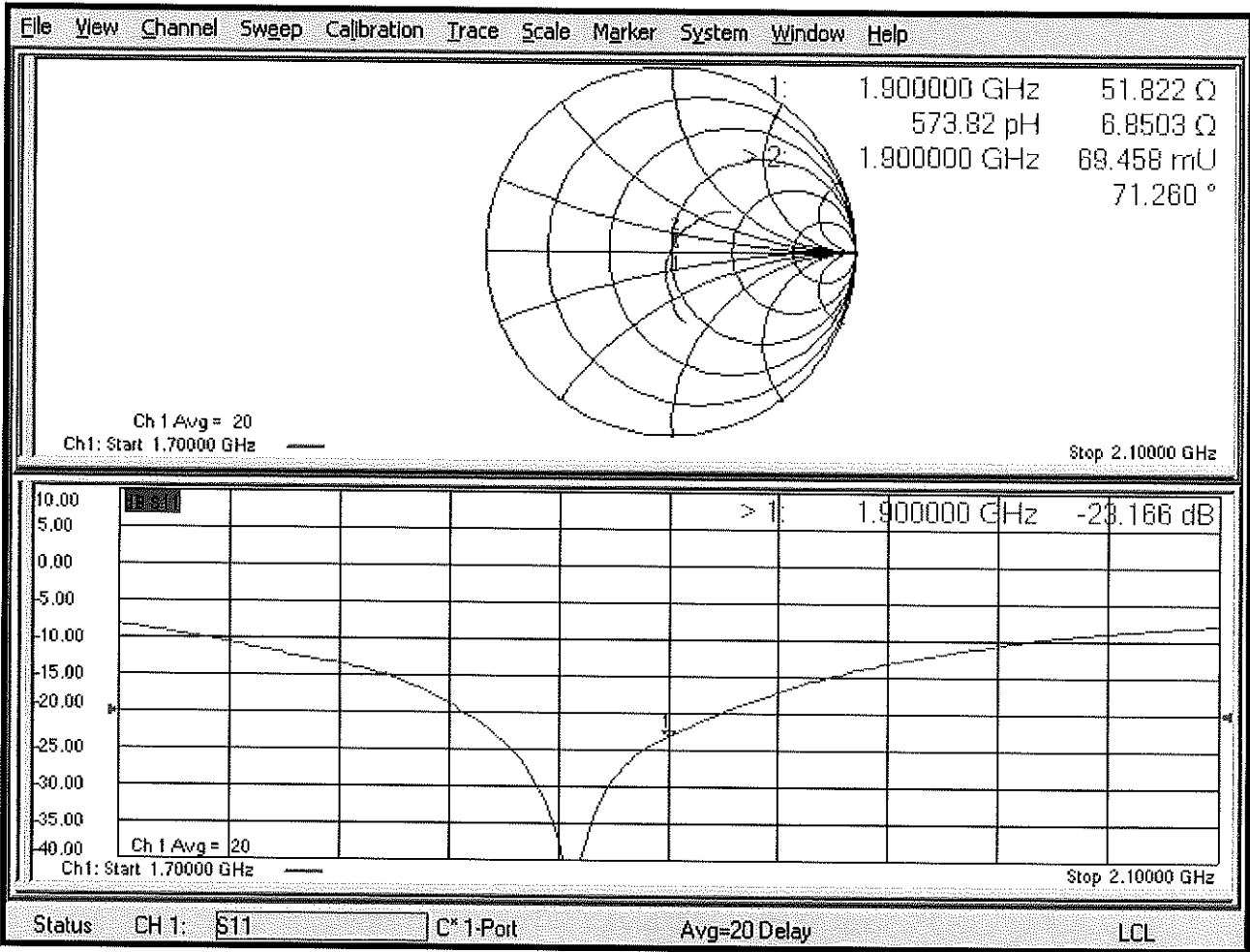
SAR(1 g) = 9.65 W/kg; SAR(10 g) = 5.05 W/kg

Maximum value of SAR (measured) = 15.0 W/kg



0 dB = 15.0 W/kg = 11.76 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 21.02.2019

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d148

Communication System: UID 0 - CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.47$ S/m; $\epsilon_r = 53.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.23, 8.23, 8.23) @ 1900 MHz; Calibrated: 31.12.2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

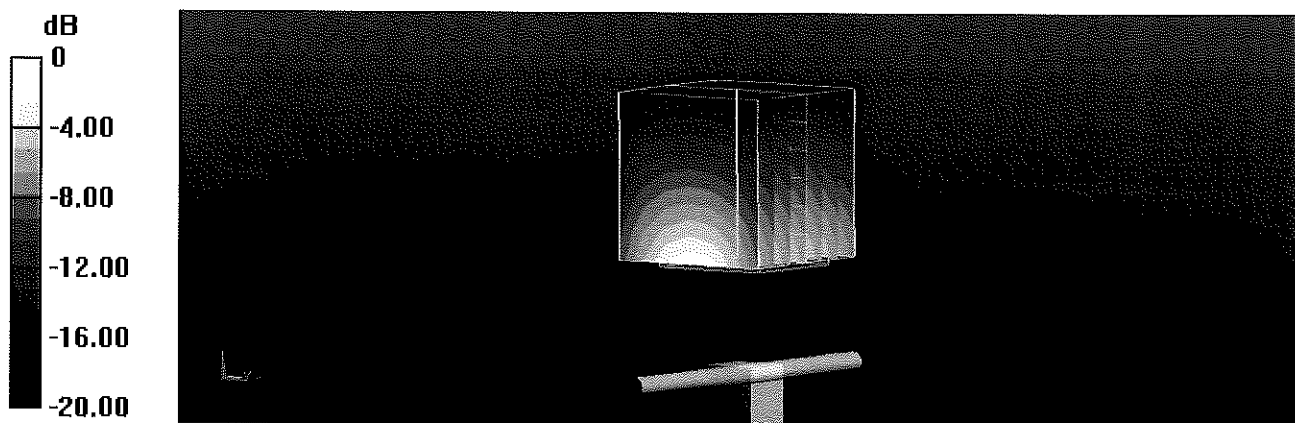
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 103.7 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 17.0 W/kg

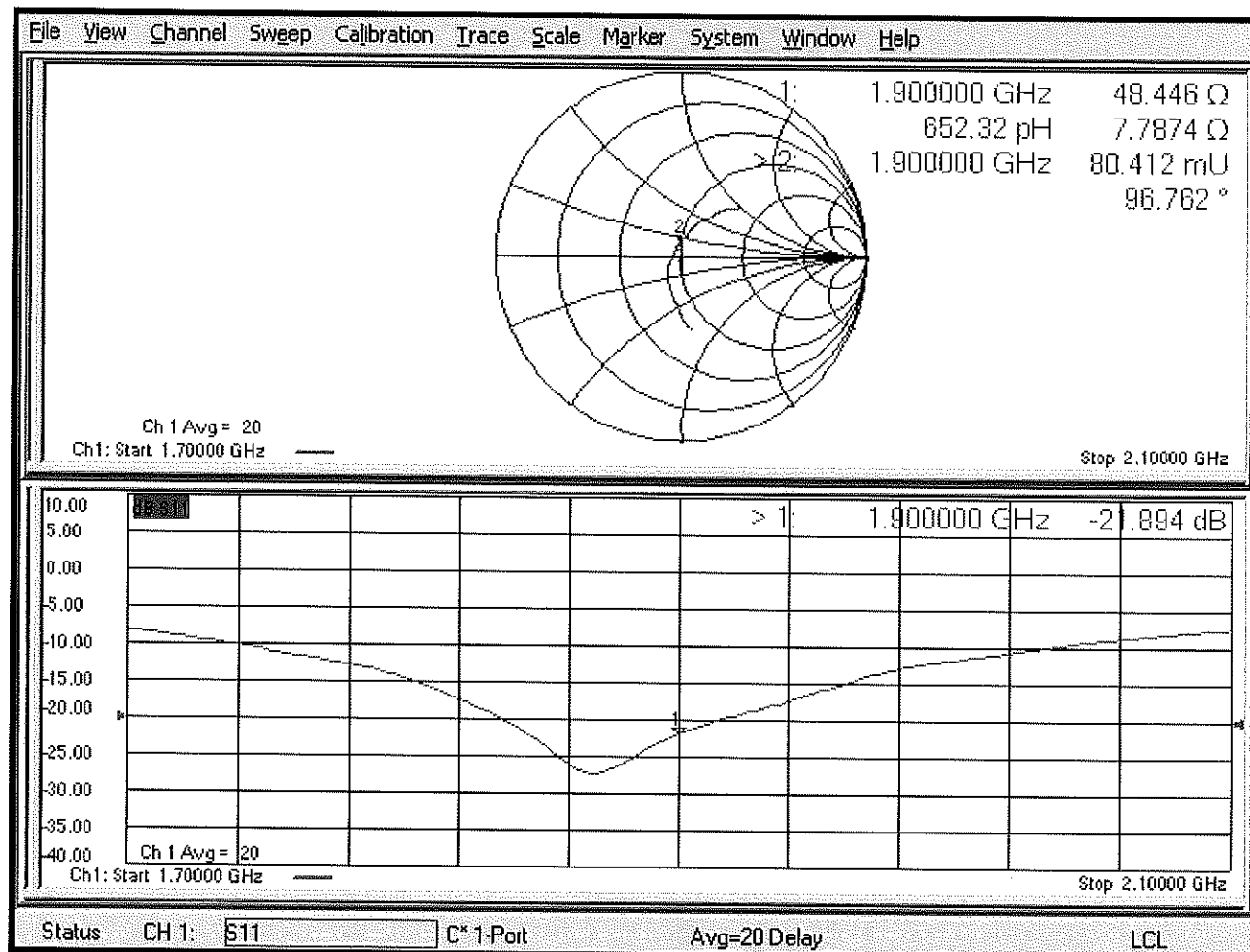
SAR(1 g) = 9.56 W/kg; SAR(10 g) = 5.05 W/kg

Maximum value of SAR (measured) = 14.4 W/kg



0 dB = 14.4 W/kg = 11.58 dBW/kg

Impedance Measurement Plot for Body TSL





Accredited by the Swiss Accreditation Service (SAS)
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 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D2450V2-797_Sep17**

CALIBRATION CERTIFICATE

Object **D2450V2 - SN:797**

Calibration procedure(s) **QA CAL-05.v9**
 Calibration procedure for dipole validation kits above 700 MHz

Calibration date: **September 11, 2017**

SCV
 10/03/2017

Extended PMV
 9/20/2018

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
 The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenuator	SN: 5058 (20k)	07-Apr-17 (No. 217-02528)	Apr-18
Type-N mismatch combination	SN: 5047.2 / 08327	07-Apr-17 (No. 217-02529)	Apr-18
Reference Probe EX3DV4	SN: 7349	31-May-17 (No. EX3-7349_May17)	May-18
DAE4	SN: 601	28-Mar-17 (No. DAE4-601_Mar17)	Mar-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-08	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

Calibrated by: **Michael Weber** Name: **Michael Weber** Function: **Laboratory Technician**

Approved by: **Katja Pokovic** Name: **Katja Pokovic** Technical Manager

Signature

Issued: September 11, 2017

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	37.8 $\pm$ 6 %	1.86 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	---	---

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.5 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	52.7 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.28 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.8 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	51.9 $\pm$ 6 %	2.04 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	---	---

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.1 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	51.1 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.14 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	24.2 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$53.8 \Omega + 7.4 j\Omega$
Return Loss	- 21.9 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$49.7 \Omega + 9.1 j\Omega$
Return Loss	- 20.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.152 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	January 24, 2006

DASY5 Validation Report for Head TSL

Date: 11.09.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 797

Communication System: UID 0 - CW; Frequency: 2450 MHz

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.86$ S/m; $\epsilon_r = 37.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.12, 8.12, 8.12); Calibrated: 31.05.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

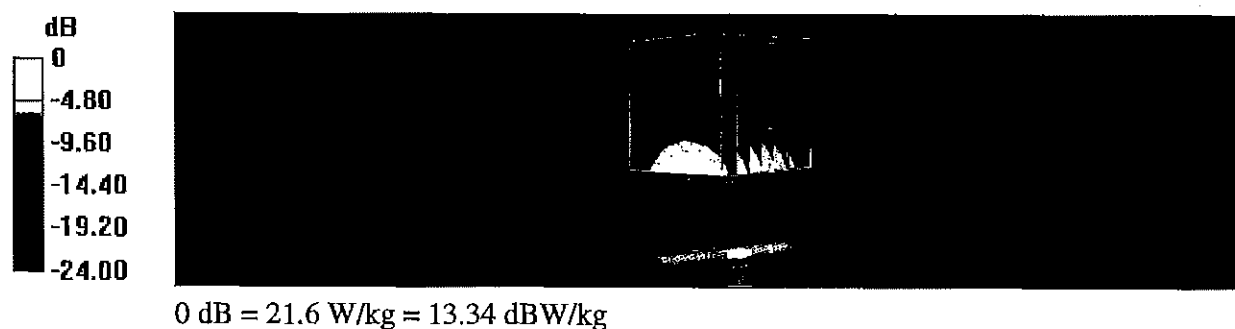
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 113.5 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 26.9 W/kg

SAR(1 g) = 13.5 W/kg; SAR(10 g) = 6.28 W/kg

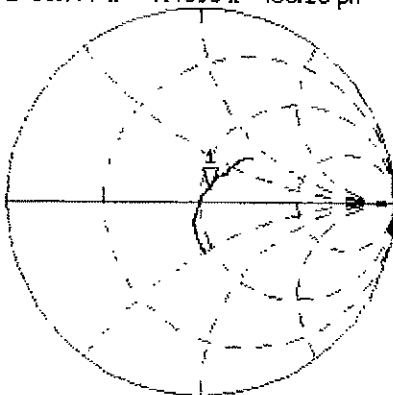
Maximum value of SAR (measured) = 21.6 W/kg



Impedance Measurement Plot for Head TSL

11 Sep 2017 11:52:57
 CH1 S11 1 U FS 1: 53.777 Ω 7.4395 Ω 483.28 μ H 2 450.000 000 MHz

*
 Del
 CA



Avg
 16

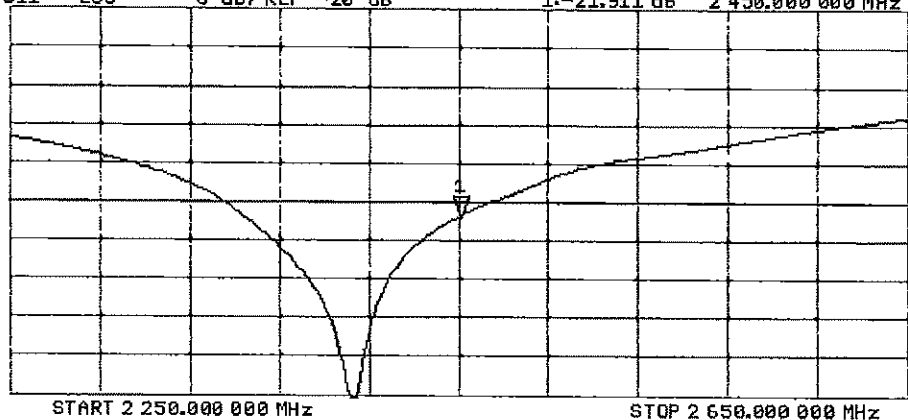
H1d

CH2 S11 LOG 5 dB/REF -20 dB 1: -21.911 dB 2 450.000 000 MHz

CA

Avg
 16

H1d



DASY5 Validation Report for Body TSL

Date: 11.09.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 797

Communication System: UID 0 - CW; Frequency: 2450 MHz

Medium parameters used: $f = 2450$ MHz; $\sigma = 2.04$ S/m; $\epsilon_r = 51.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.1, 8.1, 8.1); Calibrated: 31.05.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAB4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

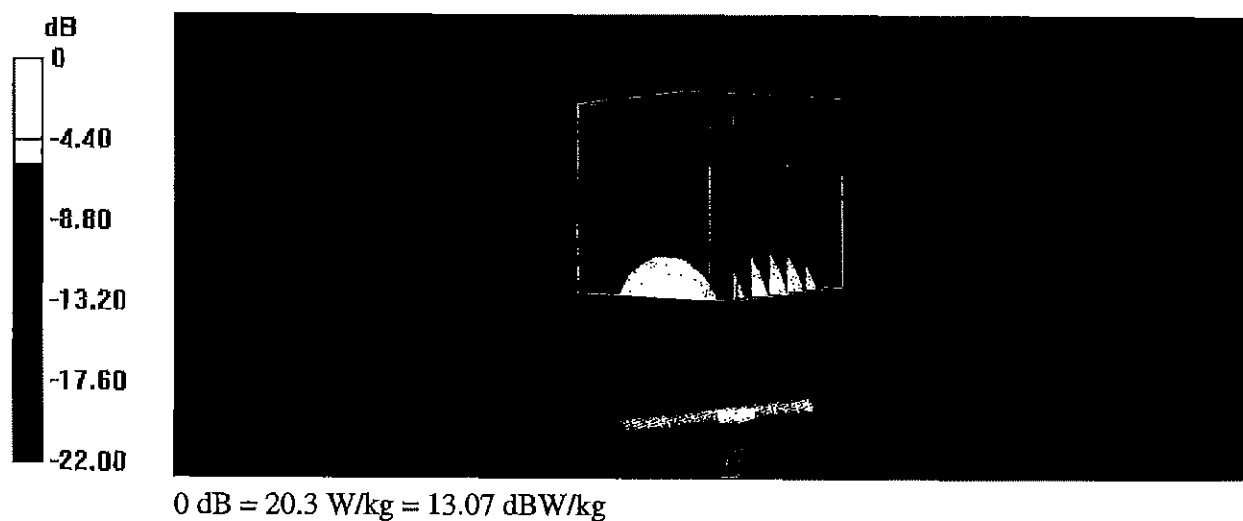
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 105.4 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 25.6 W/kg

SAR(1 g) = 13.1 W/kg; SAR(10 g) = 6.14 W/kg

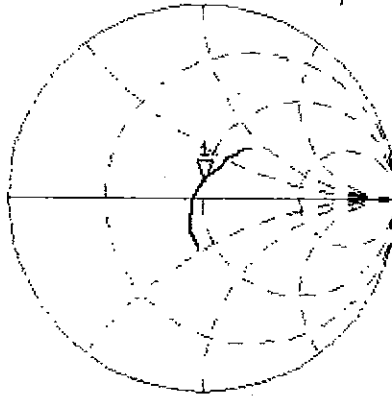
Maximum value of SAR (measured) = 20.3 W/kg



Impedance Measurement Plot for Body TSL

11 Sep 2017 11:52:10
 CH1 S11 1 U FS 1: 49.725 Ω 9.0703 Ω 589.22 pH 2 450.000 000 MHz

 Del
 CA



Avg
 16

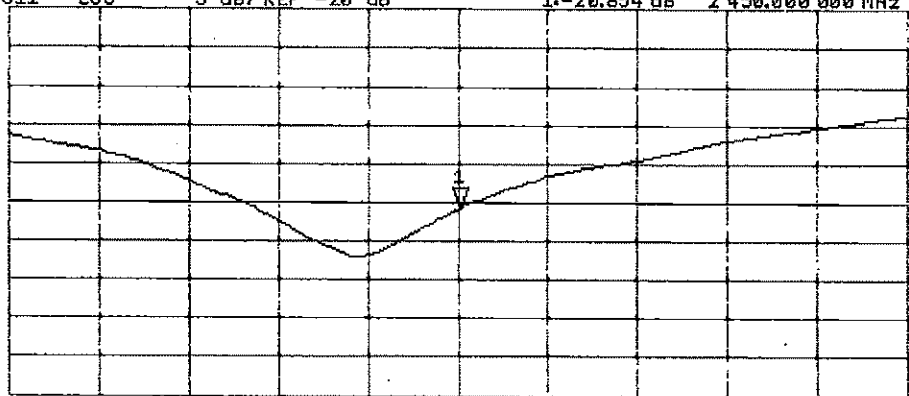
H1d

CH2 S11 LOG 5 dB/REF -20 dB 1:-20.854 dB 2 450.000 000 MHz

CA

Avg
 16

H1d



START 2 250.000 000 MHz

STOP 2 650.000 000 MHz

Certification of Calibration

Object: D2450V2 – SN: 797

Calibration procedure(s): Procedure for Calibration Extension for SAR Dipoles.

Extended Calibration date: September 11, 2018

Description: SAR Validation Dipole at 2450 MHz.

Calibration Equipment used:

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Control Company	4040	Therm./Clock/Humidity Monitor	3/31/2017	Biennial	3/31/2019	170232394
Control Company	4352	Ultra Long Stem Thermometer	5/2/2017	Biennial	5/2/2019	170330156
Amplifier Research	1551G6	Amplifier	CBT	N/A	CBT	433971
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
Keysight Technologies	85033E	Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm)	6/4/2018	Annual	6/4/2019	MY53401181
Agilent	8753ES	S-Parameter Vector Network Analyzer	8/30/2018	Annual	8/30/2019	MY40003841
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/15/2018	Annual	5/15/2019	1070
SPEAG	EX3DV4	SAR Probe	7/20/2018	Annual	7/20/2019	7410
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/11/2018	Annual	7/11/2019	1322
SPEAG	ES3DV3	SAR Probe	3/13/2018	Annual	3/13/2019	3319
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/7/2018	Annual	3/7/2019	1368
Anritsu	MA2411B	Pulse Power Sensor	3/2/2018	Annual	3/2/2019	1207364
Anritsu	MA2411B	Pulse Power Sensor	3/2/2018	Annual	3/2/2019	1339018
Anritsu	ML2495A	Power Meter	10/22/2017	Annual	10/22/2018	1328004
Agilent	NS182A	MXG Vector Signal Generator	4/18/2018	Annual	4/18/2019	MY47420800
Seekonk	NC-100	Torque Wrench	7/11/2018	Annual	7/11/2019	N/A
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A

Note: CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path.

Measurement Uncertainty = $\pm 23\%$ (k=2)

	Name	Function	Signature
Calibrated By:	Brodie Halfoster	Team Lead Engineer	<i>BRODIE HALFOSTER</i>
Approved By:	Kaitlin O'Keefe	Senior Technical Manager	<i>KOK</i>

DIPOLE CALIBRATION EXTENSION

Per KDB 865664 D01, calibration intervals of up to three years may be considered for reference dipoles when it is demonstrated that the SAR target, impedance and return loss of a dipole have remained stable according to the following requirements:

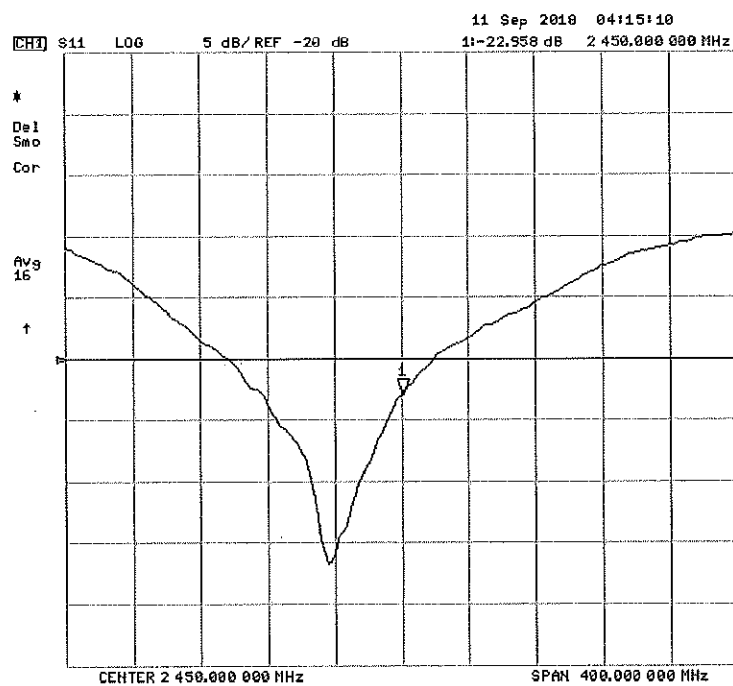
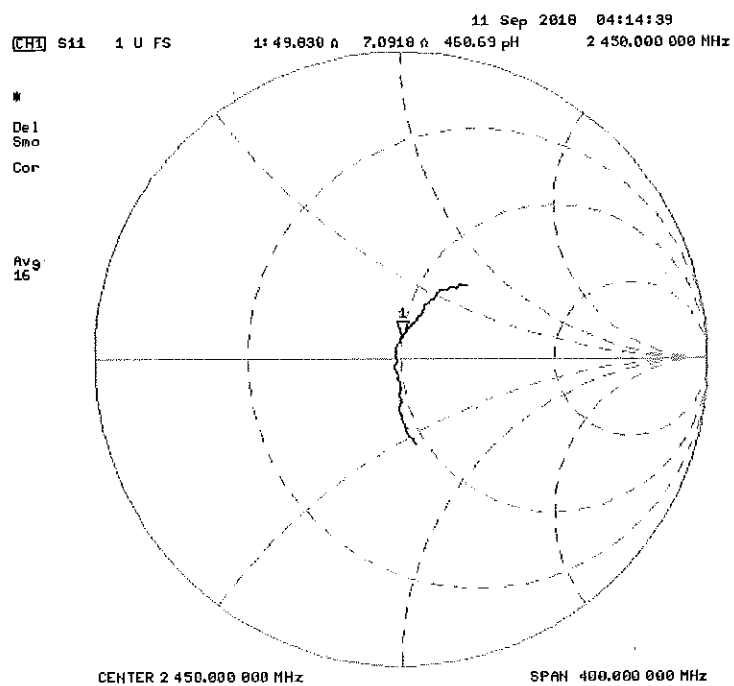
1. The measured SAR does not deviate more than 10% from the target on the calibration certificate.
2. The return-loss does not deviate more than 20% from the previous measurement and meets the required 20dB minimum return-loss requirement.
3. The measurement of real or imaginary parts of impedance does not deviate more than 5Ω from the previous measurement.

The following dipole was checked to pass the above 3 requirements to have 2-year calibration period from the calibration date:

Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Head (1g) W/kg @ 20.0 dBm	Measured Head SAR (1g) W/kg @ 20.0 dBm	Deviation 1g (%)	Certificate SAR Target Head (10g) W/kg @ 20.0 dBm	Measured Head SAR (10g) W/kg @ 20.0 dBm	Deviation 10g (%)	Certificate Impedance Head (Ohm) Real	Measured Impedance Head (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Head (Ohm) Imaginary	Measured Impedance Head (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Head (dB)	Measured Return Loss Head (dB)	Deviation (%)	PASS/FAIL
9/11/2017	9/11/2018	1.152	5.27	5.52	4.74%	2.48	2.54	2.42%	53.8	49.8	4	7.4	7.1	0.3	-21.9	-23	-4.80%	PASS

Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Body (1g) W/kg @ 20.0 dBm	Measured Body SAR (1g) W/kg @ 20.0 dBm	Deviation 1g (%)	Certificate SAR Target Body (10g) W/kg @ 20.0 dBm	Measured Body SAR (10g) W/kg @ 20.0 dBm	Deviation 10g (%)	Certificate Impedance Body (Ohm) Real	Measured Impedance Body (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Body (Ohm) Imaginary	Measured Impedance Body (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Body (dB)	Measured Return Loss Body (dB)	Deviation (%)	PASS/FAIL
9/11/2017	9/11/2018	1.152	5.11	5.17	1.17%	2.42	2.37	-2.07%	49.7	49.8	0.1	9.1	7.2	1.9	-20.9	-22.6	-8.20%	PASS

Impedance & Return-Loss Measurement Plot for Head TSL



Object:

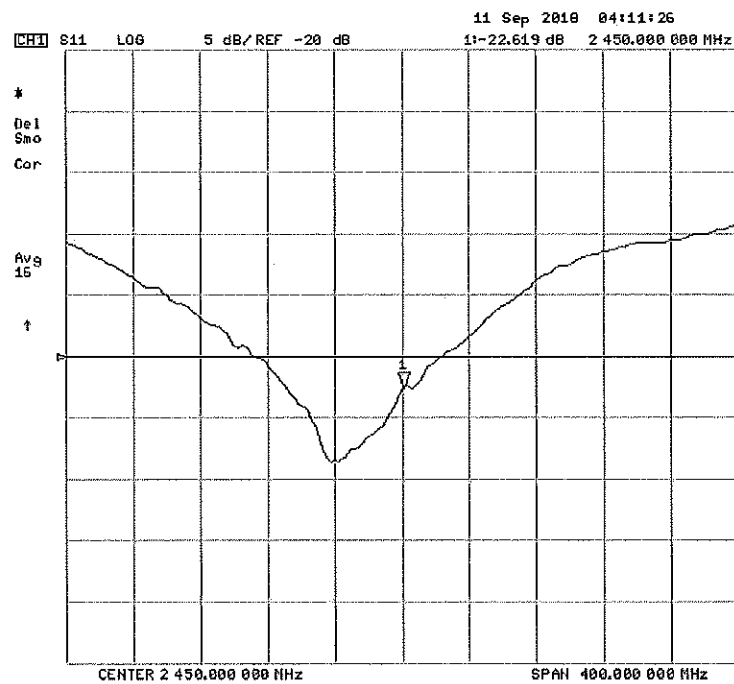
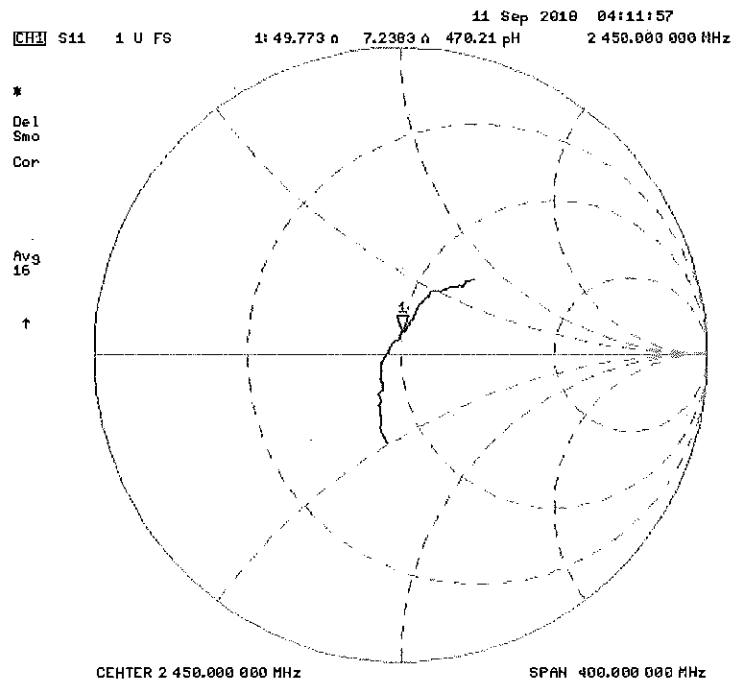
D2450V2 -- SN: 797

Date Issued:

09/11/2018

Page 3 of 4

Impedance & Return-Loss Measurement Plot for Body TSL





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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D2600V2-1126_Aug18**

CALIBRATION CERTIFICATE

Object **D2600V2 - SN:1126**

Calibration procedure(s) **QA CAL-05.v10**
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: **August 13, 2018**

BN ✓
09-06/2018

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 7349	30-Dec-17 (No. EX3-7349_Dec17)	Dec-18
DAE4	SN: 601	26-Oct-17 (No. DAE4-601_Oct17)	Oct-18
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-17)	In house check: Oct-18

Calibrated by: **Michael Weber** Function: **Laboratory Technician**

Signature

M. Weber

Approved by: **Katja Pokovic** Technical Manager

K. Pokovic

Issued: August 13, 2018

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.1
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2600 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.0	1.96 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	37.1 $\pm$ 6 %	2.03 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.0 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	54.5 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.25 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.6 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.5	2.16 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	51.3 $\pm$ 6 %	2.20 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.7 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	54.1 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.15 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	24.4 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	48.3 Ω - 8.0 j Ω
Return Loss	- 21.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	44.7 Ω - 5.8 j Ω
Return Loss	- 21.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.154 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	October 22, 2015

DASY5 Validation Report for Head TSL

Date: 13.08.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1126

Communication System: UID 0 - CW; Frequency: 2600 MHz

Medium parameters used: $f = 2600$ MHz; $\sigma = 2.03$ S/m; $\epsilon_r = 37.1$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.7, 7.7, 7.7) @ 2600 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

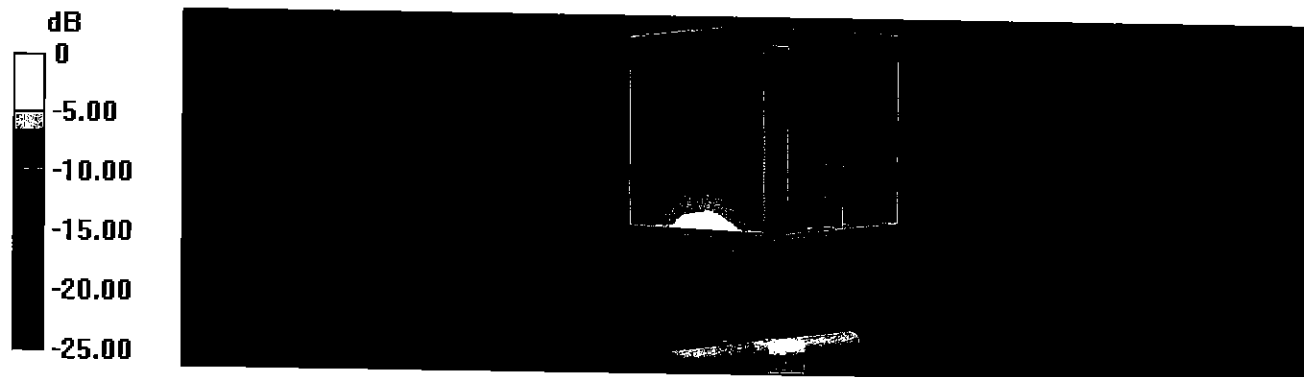
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 117.1 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 28.0 W/kg

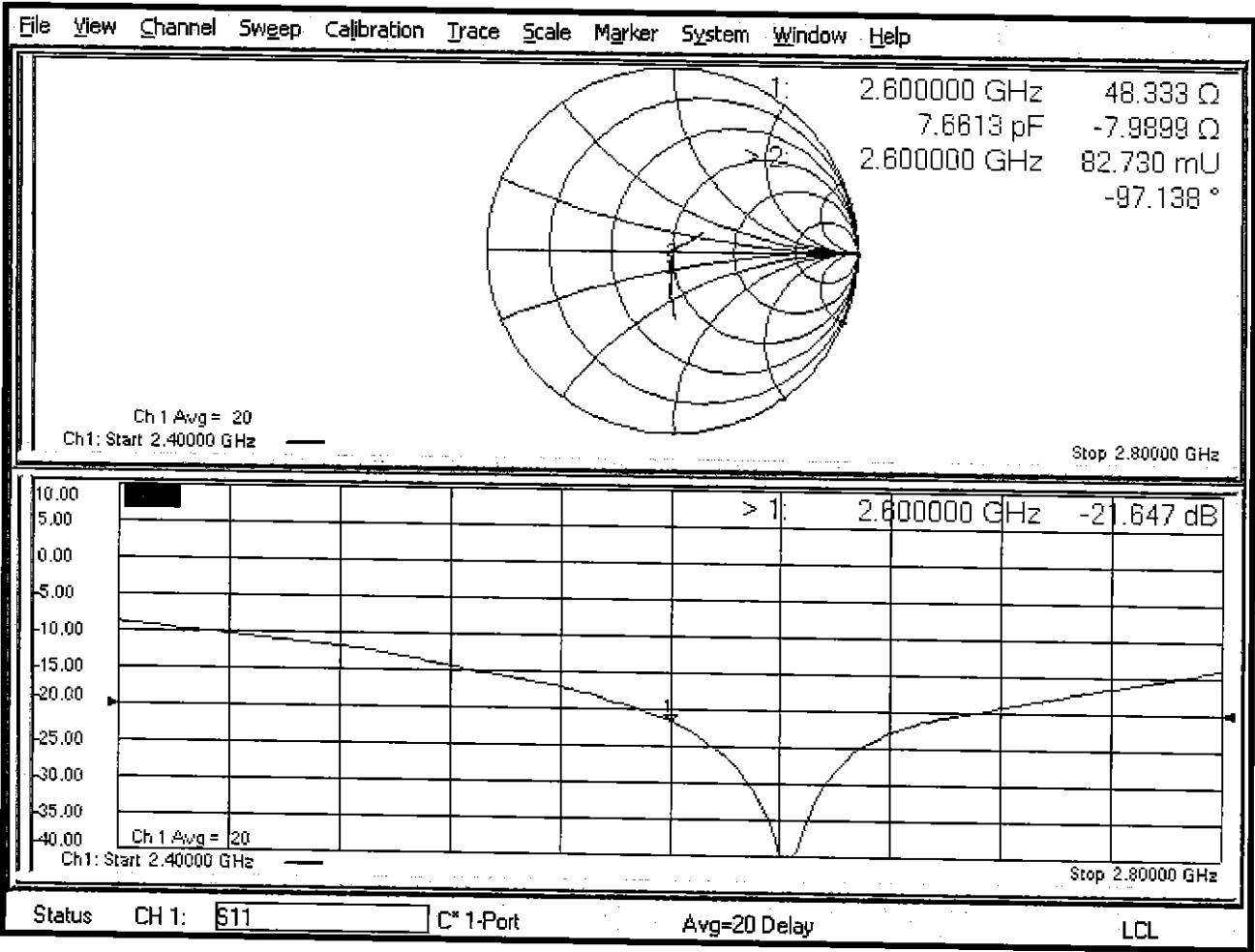
SAR(1 g) = 14 W/kg; SAR(10 g) = 6.25 W/kg

Maximum value of SAR (measured) = 23.5 W/kg



0 dB = 23.5 W/kg = 13.71 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 13.08.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1126

Communication System: UID 0 - CW; Frequency: 2600 MHz

Medium parameters used: $f = 2600$ MHz; $\sigma = 2.2$ S/m; $\epsilon_r = 51.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.81, 7.81, 7.81) @ 2600 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

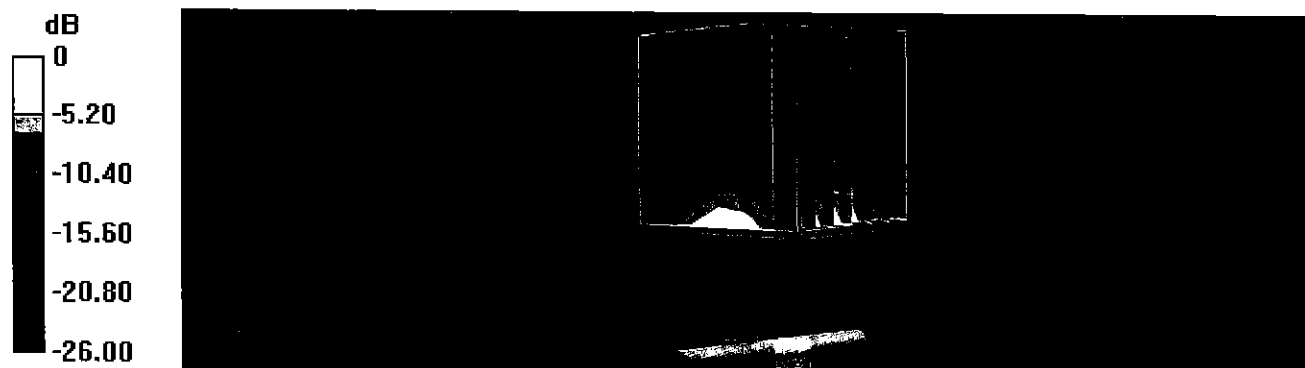
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 107.2 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 28.0 W/kg

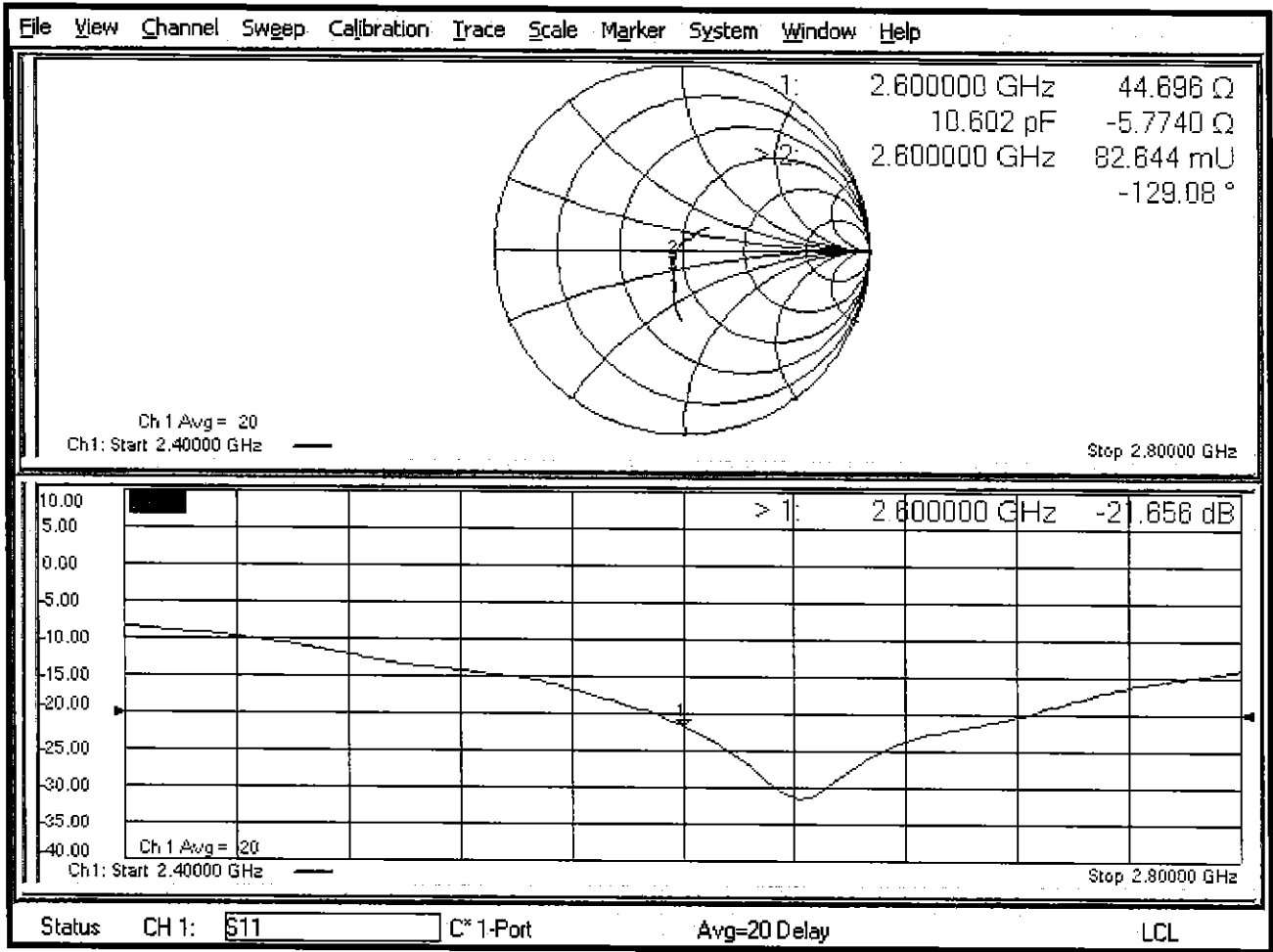
SAR(1 g) = 13.7 W/kg; SAR(10 g) = 6.15 W/kg

Maximum value of SAR (measured) = 22.4 W/kg



0 dB = 22.4 W/kg = 13.50 dBW/kg

Impedance Measurement Plot for Body TSL





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Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D5GHzV2-1191_Sep16**

CALIBRATION CERTIFICATE

Object **D5GHzV2 - SN:1191**

Calibration procedure(s) **QA CAL-22.v2**
Calibration procedure for dipole validation kits between 3-6 GHz

Calibration date: **September 21, 2016**

BNV
09-28-2016

Extended PMV
9/20/2018

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature $(22 \pm 3)^{\circ}\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	08-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 5058 (20k)	05-Apr-16 (No. 217-02282)	Apr-17
Type-N mismatch combination	SN: 5047.2 / 06327	05-Apr-16 (No. 217-02295)	Apr-17
Reference Probe EX3DV4	SN: 3503	30-Jun-16 (No. EX3-3503_Jun16)	Jun-17
DAE4	SN: 601	30-Dec-15 (No. DAE4-601_Dec15)	Dec-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (No. 217-02223)	In house check: Oct-16
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Jun-15)	In house check: Oct-16
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

Calibrated by: **Leif Klysner** Name: **Leif Klysner** Function: **Laboratory Technician**

Approved by: **Katja Pokovic** Name: **Katja Pokovic** Technical Manager

Signature

Leif Klysner

Katja Pokovic

Issued: September 22, 2016

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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5250 MHz $\pm$ 1 MHz 5600 MHz $\pm$ 1 MHz 5750 MHz $\pm$ 1 MHz	

Head TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.9	4.71 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	34.5 $\pm$ 6 %	4.59 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5250 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.96 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	78.9 W/kg $\pm$ 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.29 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	22.6 W/kg $\pm$ 19.5 % (k=2)

Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.0 ± 6 %	4.93 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.45 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	83.6 W / kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.41 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.8 W/kg ± 19.5 % (k=2)

Head TSL parameters at 5750 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.4	5.22 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	33.8 ± 6 %	5.08 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5750 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.99 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	79.1 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.27 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	22.4 W/kg ± 19.5 % (k=2)

Body TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.9	5.36 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.4 ± 6 %	5.52 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5250 MHz

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.74 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	77.0 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.17 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	21.6 W/kg ± 19.5 % (k=2)

Body TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.5	5.77 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.8 ± 6 %	6.00 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5600 MHz

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.96 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	79.2 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.24 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	22.2 W/kg ± 19.5 % (k=2)

Body TSL parameters at 5750 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.3	5.94 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.5 ± 6 %	6.21 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5750 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.65 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	76.1 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.14 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	21.2 W/kg ± 19.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 5250 MHz

Impedance, transformed to feed point	55.7 Ω - 4.3 j Ω
Return Loss	- 23.4 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	58.3 Ω - 3.2 j Ω
Return Loss	- 21.8 dB

Antenna Parameters with Head TSL at 5750 MHz

Impedance, transformed to feed point	58.1 Ω + 4.8 j Ω
Return Loss	- 21.2 dB

Antenna Parameters with Body TSL at 5250 MHz

Impedance, transformed to feed point	56.1 Ω - 3.7 j Ω
Return Loss	- 23.4 dB

Antenna Parameters with Body TSL at 5600 MHz

Impedance, transformed to feed point	58.9 Ω - 1.7 j Ω
Return Loss	- 21.7 dB

Antenna Parameters with Body TSL at 5750 MHz

Impedance, transformed to feed point	59.5 Ω + 6.9 j Ω
Return Loss	- 19.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.204 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	August 28, 2003

DASY5 Validation Report for Head TSL

Date: 21.09.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1191

Communication System: UID 0 - CW; Frequency: 5250 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz
Medium parameters used: $f = 5250$ MHz; $\sigma = 4.59$ S/m; $\epsilon_r = 34.5$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 5600$ MHz; $\sigma = 4.93$ S/m; $\epsilon_r = 34$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 5750$ MHz; $\sigma = 5.08$ S/m; $\epsilon_r = 33.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.42, 5.42, 5.42); Calibrated: 30.06.2016, ConvF(4.89, 4.89, 4.89); Calibrated: 30.06.2016, ConvF(4.85, 4.85, 4.85); Calibrated: 30.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 68.49 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 28.6 W/kg

SAR(1 g) = 7.96 W/kg; SAR(10 g) = 2.29 W/kg

Maximum value of SAR (measured) = 18.2 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 69.34 V/m; Power Drift = -0.00 dB

Peak SAR (extrapolated) = 32.9 W/kg

SAR(1 g) = 8.45 W/kg; SAR(10 g) = 2.41 W/kg

Maximum value of SAR (measured) = 20.0 W/kg

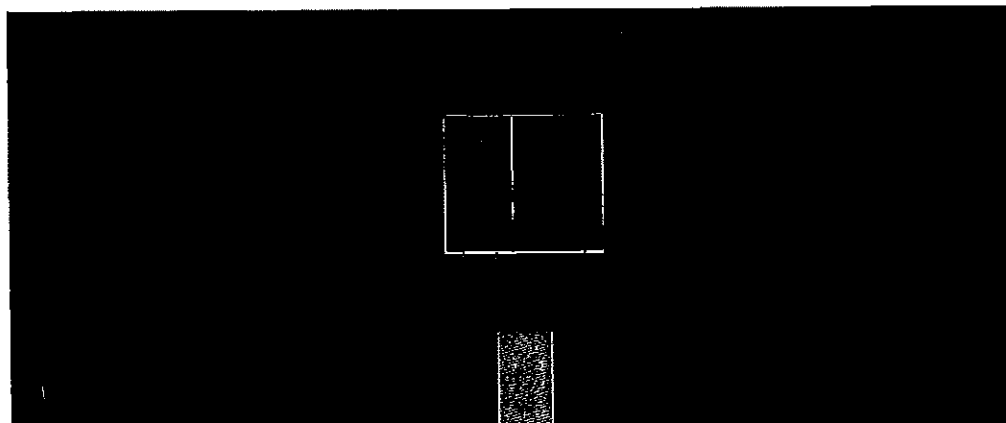
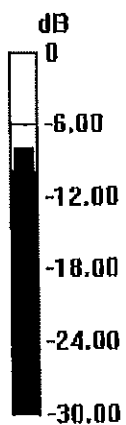
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 67.15 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 32.3 W/kg

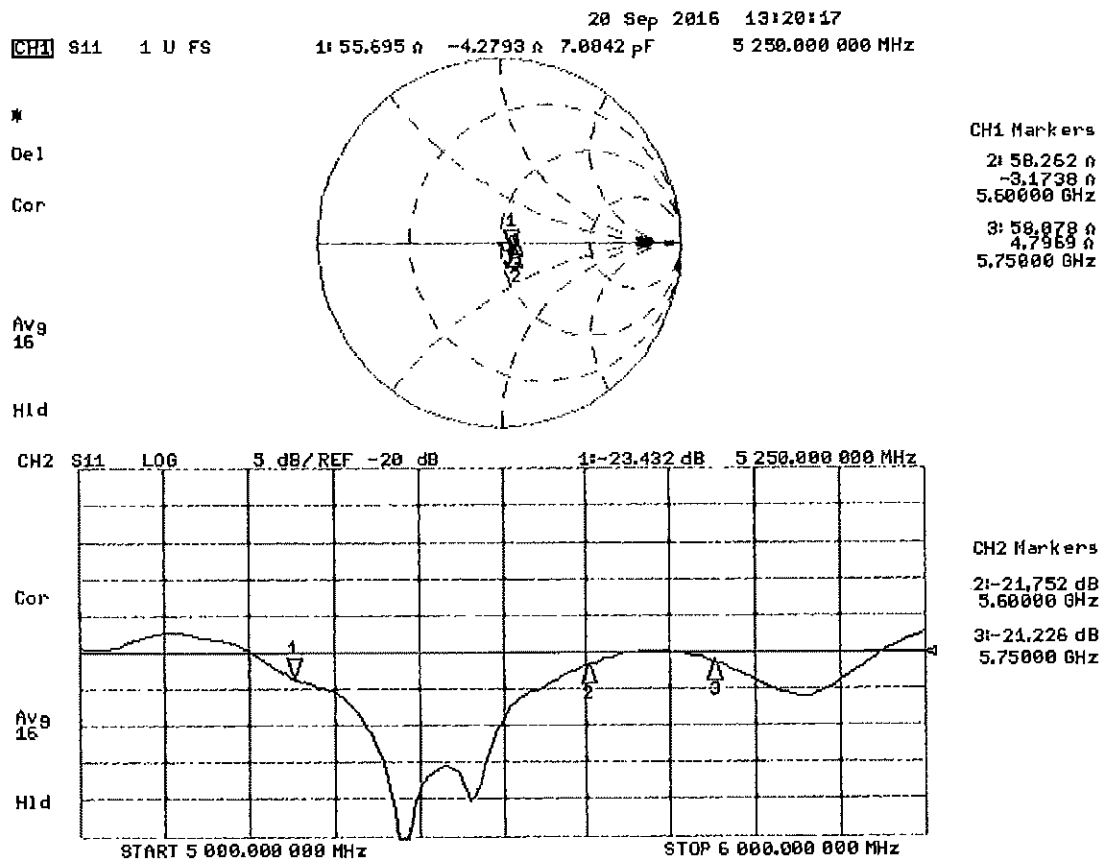
SAR(1 g) = 7.99 W/kg; SAR(10 g) = 2.27 W/kg

Maximum value of SAR (measured) = 19.3 W/kg



0 dB = 18.2 W/kg = 12.60 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 20.09.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1191

Communication System: UID 0 - CW; Frequency: 5250 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz
Medium parameters used: $f = 5250$ MHz; $\sigma = 5.52$ S/m; $\epsilon_r = 47.4$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 5600$ MHz; $\sigma = 6$ S/m; $\epsilon_r = 46.8$; $\rho = 1000$ kg/m³, Medium parameters used: $f = 5750$ MHz; $\sigma = 6.21$ S/m; $\epsilon_r = 46.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(4.85, 4.85, 4.85); Calibrated: 30.06.2016, ConvF(4.35, 4.35, 4.35); Calibrated: 30.06.2016, ConvF(4.3, 4.3, 4.3); Calibrated: 30.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5250MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 66.49 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 29.1 W/kg

SAR(1 g) = 7.74 W/kg; SAR(10 g) = 2.17 W/kg

Maximum value of SAR (measured) = 17.7 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 65.85 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 32.5 W/kg

SAR(1 g) = 7.96 W/kg; SAR(10 g) = 2.24 W/kg

Maximum value of SAR (measured) = 18.8 W/kg

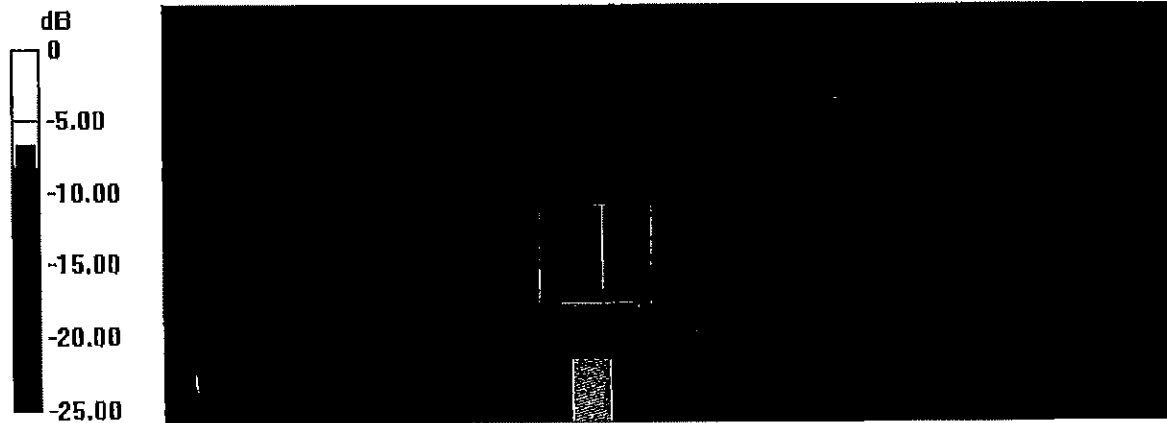
Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 64.21 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 32.7 W/kg

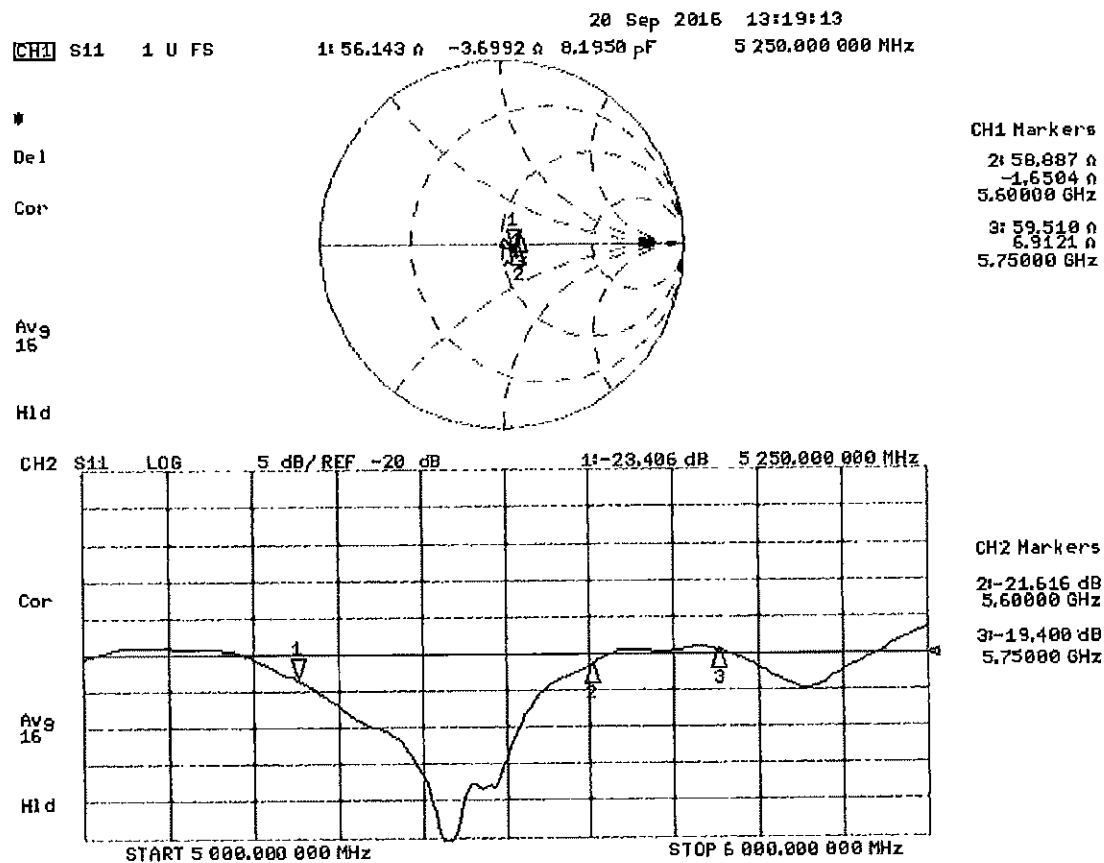
SAR(1 g) = 7.65 W/kg; SAR(10 g) = 2.14 W/kg

Maximum value of SAR (measured) = 18.5 W/kg



0 dB = 17.7 W/kg = 12.48 dBW/kg

Impedance Measurement Plot for Body TSL



Certification of Calibration

Object: D5GHzV2 – SN: 1191

Calibration procedure(s): Procedure for Calibration Extension for SAR Dipoles.

Extension Calibration date: 9/19/2017

Description: SAR Validation Dipole at 5250, 5600, and 5750 MHz.

Calibration Equipment used:

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Control Company	4040	Therm./Clock/Humidity Monitor	3/31/2017	Biennial	3/31/2019	170232394
Control Company	4352	Ultra Long Stem Thermometer	5/2/2017	Biennial	5/2/2019	170330156
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Keysight	7720	Dual Directional Coupler	CBT	N/A	CBT	MYS2180215
Keysight Technologies	85033E	Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm)	6/1/2017	Annual	6/1/2018	MYS3401181
Agilent	8753ES	S-Parameter Network Analyzer	10/26/2016	Annual	10/26/2017	US39170118
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/10/2017	Annual	5/10/2018	1070
SPEAG	EX3DV4	SAR Probe	1/13/2017	Annual	1/13/2018	3589
SPEAG	EX3DV4	SAR Probe	2/13/2017	Annual	2/13/2018	3914
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/16/2017	Annual	1/16/2018	1466
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2017	Annual	2/9/2018	665
Anritsu	MA2411B	Pulse Power Sensor	2/10/2017	Annual	2/10/2018	1207364
Anritsu	MA2411B	Pulse Power Sensor	2/10/2017	Annual	2/10/2018	1339018
Anritsu	ML2495A	Power Meter	10/16/2015	Biennial	10/16/2017	941001
Agilent	N5182A	MXG Vector Signal Generator	2/28/2017	Annual	2/28/2018	MY47420800
Seekonk	NC-100	Torque Wrench	11/6/2015	Biennial	11/6/2017	N/A
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A

Measurement Uncertainty = $\pm 23\%$ (k=2)

	Name	Function	Signature
Calibrated By:	Brodie Halfoster	Test Engineer	<i>BRODIE HALFOSTER</i>
Approved By:	Kaitlin O'Keefe	Senior Technical Manager	<i>KOK</i>

DIPOLE CALIBRATION EXTENSION

Per KDB 865664 D01, calibration intervals of up to three years may be considered for reference dipoles when it is demonstrated that the SAR target, impedance and return loss of a dipole have remained stable according to the following requirements:

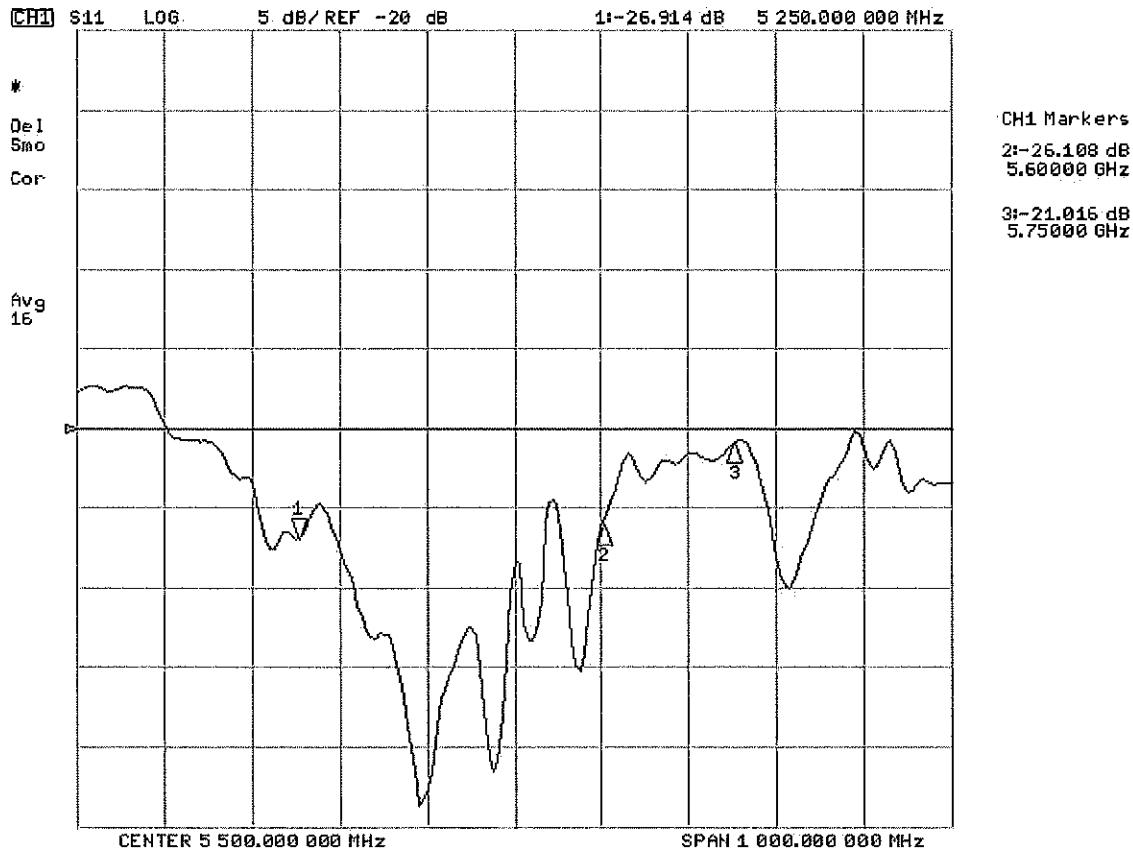
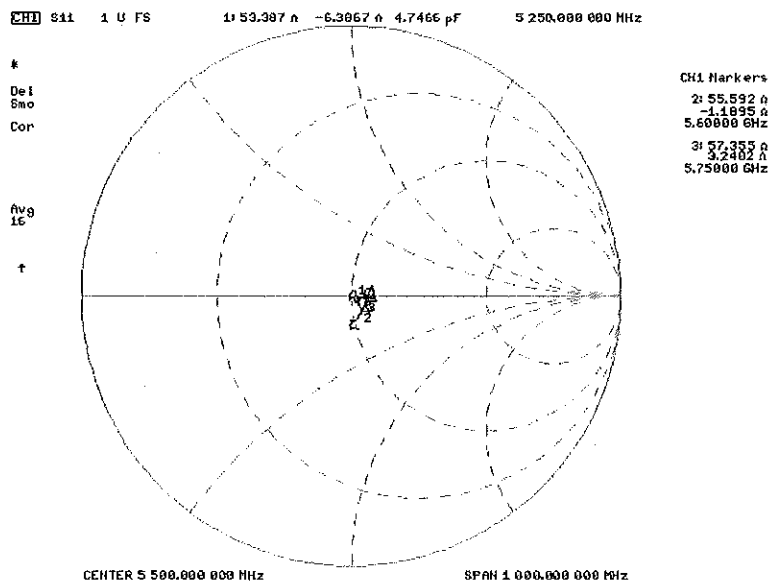
1. The measured SAR does not deviate more than 10% from the target on the calibration certificate.
2. The return-loss does not deviate more than 20% from the previous measurement and meets the required 20dB minimum return-loss requirement.
3. The measurement of real or imaginary parts of impedance does not deviate more than 5Ω from the previous measurement.

The following dipole was checked to pass the above 3 requirements to have 2-year calibration period from the calibration date:

Frequency (MHz)	Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Head (1g W/kg @ 17.0 dBm)	Measured Head SAR (1g W/kg @ 17.0 dBm)	Deviation 1g (%)	Certificate SAR Target Head (10g W/kg @ 17.0 dBm)	Measured Head SAR (10g W/kg @ 17.0 dBm)	Deviation 10g (%)	Certificate Impedance Head (Ohm) Real	Measured Impedance Head (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Head (Ohm) Imaginary	Measured Impedance Head (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Head (dB)	Measured Return Loss Head (dB)	Deviation (%)	PASS/FAIL
6250	9/21/2016	9/19/2017	1.204	3.95	3.70	-6.21%	1.13	1.05	-7.08%	55.7	53.4	2.3	-4.3	-6.4	2.1	-23.4	-26.9	-15.00%	PASS
5600	9/21/2016	9/19/2017	1.204	4.18	4.03	-3.59%	1.19	1.13	-5.04%	58.3	55.6	2.7	-3.2	-1.2	2.0	-21.8	-26.1	-19.80%	PASS
8750	9/21/2016	9/19/2017	1.204	3.96	3.94	-0.38%	1.12	1.10	-1.79%	58.1	57.4	0.7	4.8	3.2	1.6	-21.2	-21.0	0.90%	PASS

Frequency (MHz)	Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Body (1g W/kg @ 17.0 dBm)	Measured Body SAR (1g W/kg @ 17.0 dBm)	Deviation 1g (%)	Certificate SAR Target Body (10g W/kg @ 17.0 dBm)	Measured Body SAR (10g W/kg @ 17.0 dBm)	Deviation 10g (%)	Certificate Impedance Body (Ohm) Real	Measured Impedance Body (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Body (Ohm) Imaginary	Measured Impedance Body (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Body (dB)	Measured Return Loss Body (dB)	Deviation (%)	PASS/FAIL
6250	9/21/2016	9/19/2017	1.204	3.85	3.80	-1.30%	1.08	1.06	-1.85%	55.1	54.0	2.1	-3.7	-3.3	0.4	-23.4	-26.0	-11.10%	PASS
5600	9/21/2016	9/19/2017	1.204	3.96	4.06	2.53%	1.11	1.13	1.80%	58.9	56.5	2.4	-1.7	0.5	2.2	-21.7	-24.5	-12.80%	PASS
8750	9/21/2016	9/19/2017	1.204	3.81	3.66	-3.81%	1.06	1.02	-3.77%	59.5	58.0	1.5	6.9	5.2	1.7	-19.4	-21.1	-8.70%	PASS

Impedance & Return-Loss Measurement Plot for Head TSL

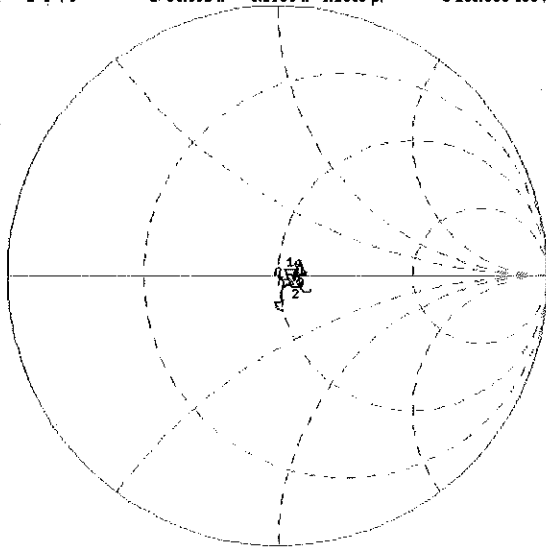


Impedance & Return-Loss Measurement Plot for Body TSL

[CH1] S11 1 U FS 1: 53.982 Ω -3.2930 Ω 9.2060 pF 5 250.000 000 MHz

*
Del
Smo
Cor

Avg
16
†

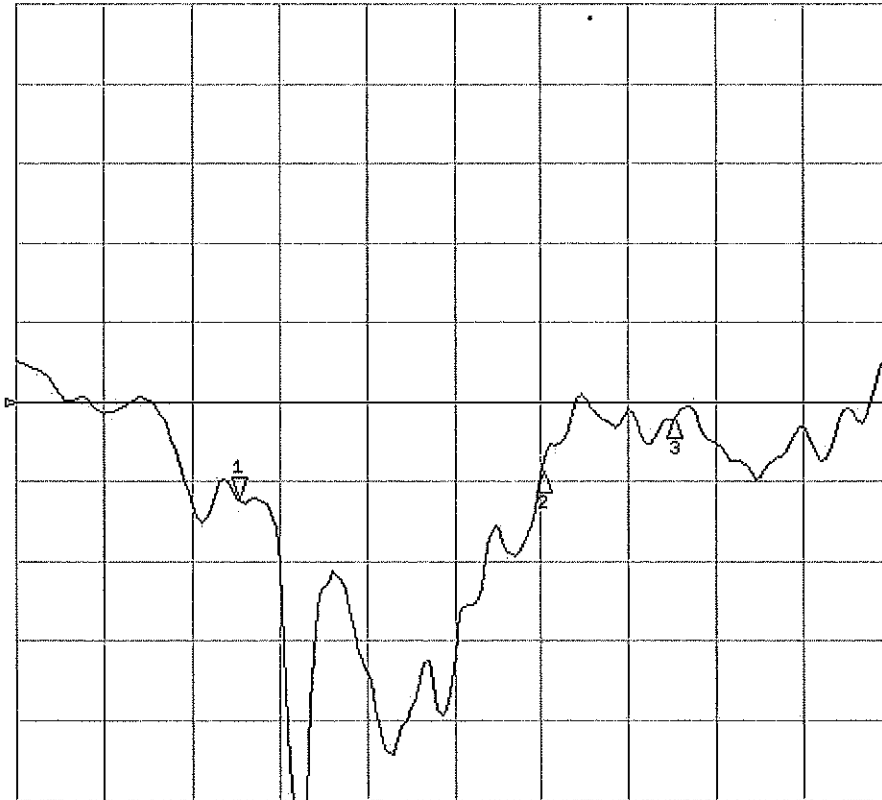


CH1 Markers
2: 55.500 Ω
0.4727 Ω
5.60000 GHz
3: 57.965 Ω
5.1660 Ω
5.75000 GHz

[CH1] S11 LOG 5 dB/ REF -20 dB 1: -25.991 dB 5 250.000 000 MHz

*
Del
Smo
Cor

Avg
16



CH1 Markers
2: -24.481 dB
5.60000 GHz
3: -21.092 dB
5.75000 GHz

Certification of Calibration

Object: D5GHzV2 – SN: 1191

Calibration procedure(s): Procedure for Calibration Extension for SAR Dipoles.

Extension Calibration date: 9/11/2018

Description: SAR Validation Dipole at 5250, 5600, and 5750 MHz.

Calibration Equipment used:

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Control Company	4040	Therm./Clock/Humidity Monitor	3/31/2017	Biennial	3/31/2019	170232394
Control Company	4352	Ultra Long Stem Thermometer	5/2/2017	Biennial	5/2/2019	170330156
Amplifier Research	1551G6	Amplifier	CBT	N/A	CBT	433971
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
Keysight Technologies	85033E	Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm)	6/4/2018	Annual	6/4/2019	MY53401181
Agilent	8753ES	S-Parameter Vector Network Analyzer	8/30/2018	Annual	8/30/2019	MY40003841
Mini-Circuits	BW-N20WS+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/15/2018	Annual	5/15/2019	1070
SPEAG	EX3DV4	SAR Probe	6/25/2018	Annual	6/25/2019	7409
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/18/2018	Annual	6/18/2019	1334
SPEAG	EX3DV4	SAR Probe	4/18/2018	Annual	4/18/2019	7357
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/11/2018	Annual	4/11/2019	1407
Anritsu	MA2411B	Pulse Power Sensor	3/2/2018	Annual	3/2/2019	1207364
Anritsu	MA2411B	Pulse Power Sensor	3/2/2018	Annual	3/2/2019	1339018
Anritsu	ML2495A	Power Meter	10/22/2017	Annual	10/22/2018	1328004
Agilent	N5182A	MXG Vector Signal Generator	4/18/2018	Annual	4/18/2019	MY47420800
Seekonk	NC-100	Torque Wrench	7/11/2018	Annual	7/11/2019	N/A
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A

Note: CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path.

Measurement Uncertainty = $\pm 23\%$ (k=2)

	Name	Function	Signature
Calibrated By:	Brodie Halbfoster	Test Engineer	<i>BRODIE HALBFOSTER</i>
Approved By:	Kaitlin O'Keefe	Senior Technical Manager	<i>KOK</i>

DIPOLE CALIBRATION EXTENSION

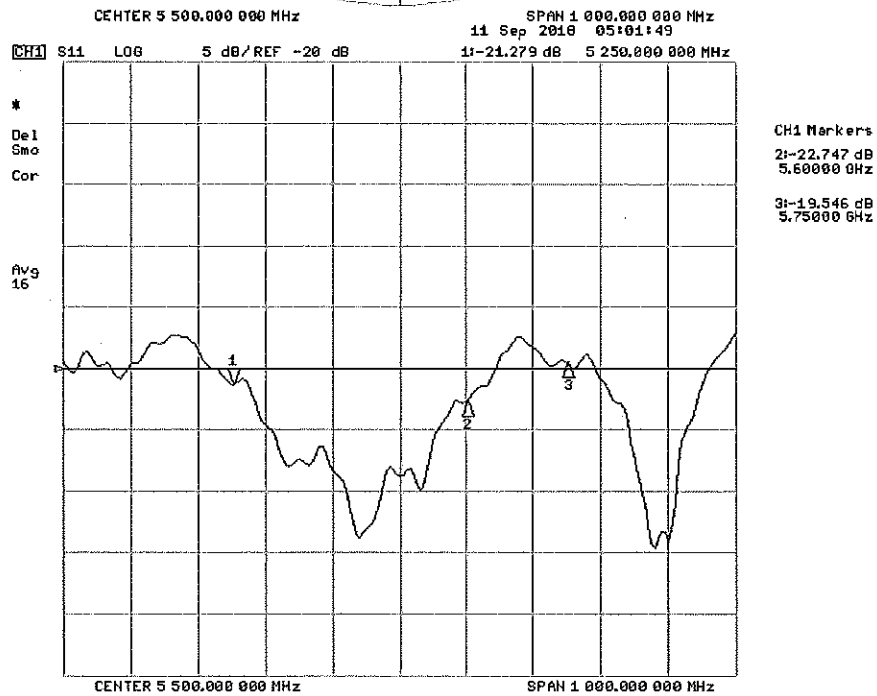
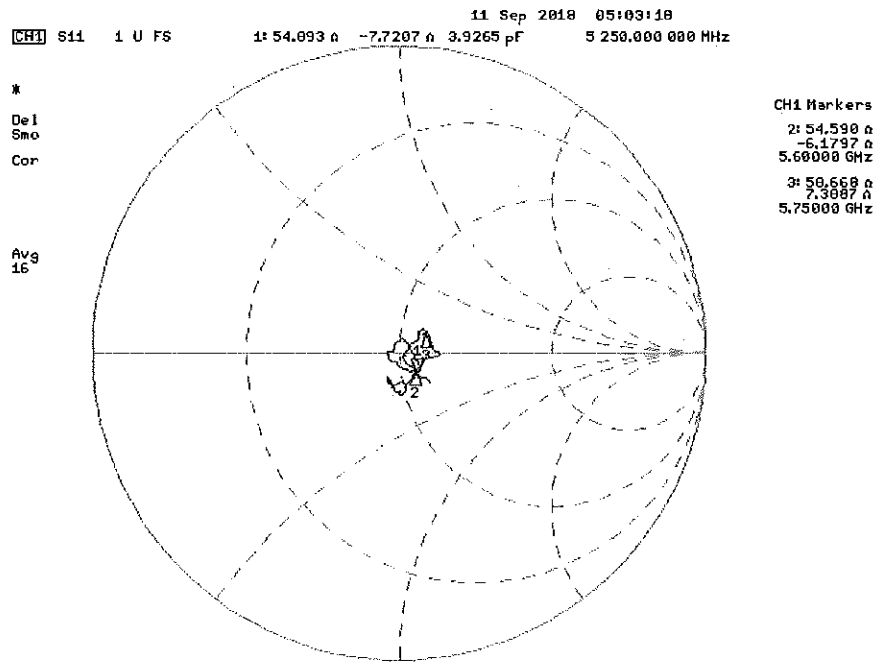
Per KDB 865664 D01, calibration intervals of up to three years may be considered for reference dipoles when it is demonstrated that the SAR target, impedance and return loss of a dipole have remained stable according to the following requirements:

1. The measured SAR does not deviate more than 10% from the target on the calibration certificate.
2. The return-loss does not deviate more than 20% from the previous measurement and meets the required 20dB minimum return-loss requirement.
3. The measurement of real or imaginary parts of impedance does not deviate more than 5Ω from the previous measurement.

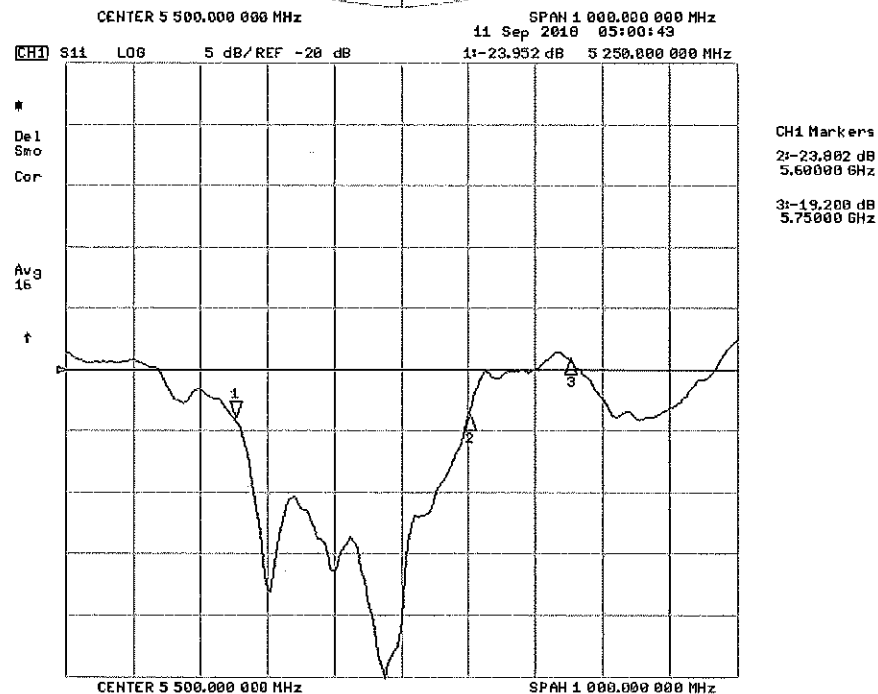
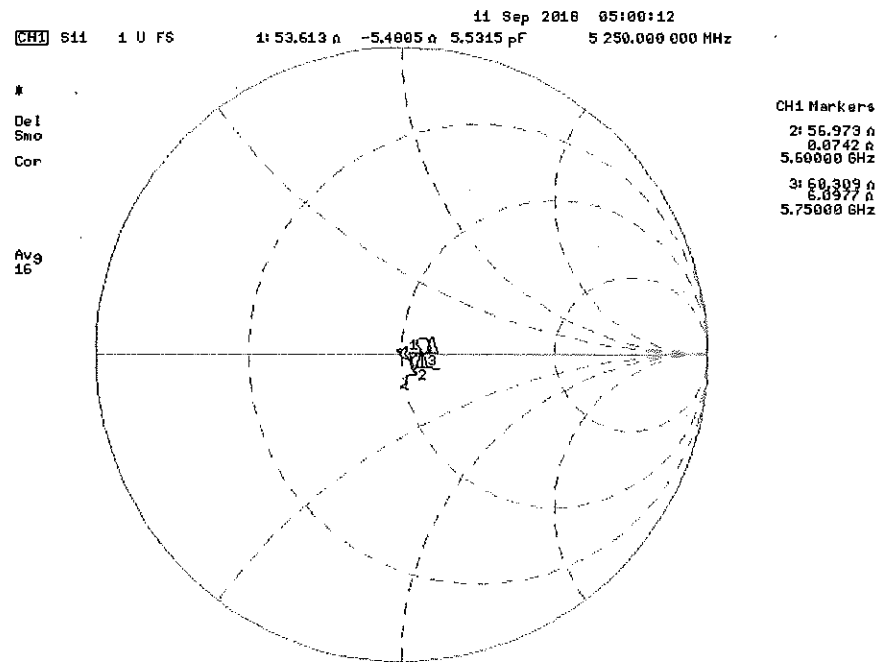
The following dipole was checked to pass the above 3 requirements to have 3-year calibration period from the calibration date:

Frequency (MHz)	Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Head (1g) W/kg @ 17.0 dBm	Measured Head SAR (1g) W/kg @ 17.0 dBm	Deviation 1g (%)	Certificate SAR Target Head (10g) W/kg @ 17.0 dBm	Measured Head SAR (10g) W/kg @ 17.0 dBm	Deviation 10g (%)	Certificate Impedance Head (Ohm) Real	Measured Impedance Head (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Head (Ohm) Imaginary	Measured Impedance Head (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Head (dB)	Measured Return Loss Head (dB)	Deviation (%)	PASS/FAIL
5250	9/21/2016	9/11/2018	1.204	3.945	3.9	-1.14%	1.13	1.11	-1.77%	55.7	54.9	0.8	-4.3	-7.7	3.4	-23.4	-21.3	9.10%	PASS
5600	9/21/2016	9/11/2018	1.204	4.18	4.19	0.24%	1.19	1.18	-0.84%	58.3	54.6	3.7	-3.2	-6.2	3	-21.8	-22.7	-4.30%	PASS
5750	9/21/2016	9/11/2018	1.204	3.955	3.82	-3.41%	1.12	1.08	-3.57%	58.1	58.7	0.6	4.8	7.4	2.6	-21.2	-19.5	7.80%	PASS
Frequency (MHz)	Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Body (1g) W/kg @ 17.0 dBm	Measured Body SAR (1g) W/kg @ 17.0 dBm	Deviation 1g (%)	Certificate SAR Target Body (10g) W/kg @ 17.0 dBm	Measured Body SAR (10g) W/kg @ 17.0 dBm	Deviation 10g (%)	Certificate Impedance Body (Ohm) Real	Measured Impedance Body (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Body (Ohm) Imaginary	Measured Impedance Body (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Body (dB)	Measured Return Loss Body (dB)	Deviation (%)	PASS/FAIL
5250	9/21/2016	9/11/2018	1.204	3.85	3.6	-6.49%	1.08	1.01	-6.48%	56.1	53.6	2.5	-3.7	-5.5	1.8	-23.4	-24	-2.40%	PASS
5600	9/21/2016	9/11/2018	1.204	3.96	4.01	1.26%	1.11	1.1	-0.90%	58.9	57	1.9	-1.7	0.1	1.8	-21.7	-23.8	-9.70%	PASS
5750	9/21/2016	9/11/2018	1.204	3.805	3.88	1.97%	1.06	1.06	0.00%	59.5	60.3	0.8	6.9	6.1	0.8	-19.4	-19.2	1.00%	PASS

Impedance & Return-Loss Measurement Plot for Head TSL



Impedance & Return-Loss Measurement Plot for Body TSL





Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Client **PC Test**

Certificate No: **D835V2-4d047_Mar19**

CALIBRATION CERTIFICATE

Object **D835V2 - SN:4d047**

Calibration procedure(s) **QA CAL-05.v11
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz**

Calibration date: **March 13, 2019**

BN ✓
04-12-2019

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature $(22 \pm 3)^{\circ}\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 7349	31-Dec-18 (No. EX3-7349_Dec18)	Dec-19
DAE4	SN: 601	04-Oct-18 (No. DAE4-601_Oct18)	Oct-19

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	07-Oct-15 (in house check Feb-19)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

Calibrated by:	Name Manu Seitz	Function Laboratory Technician	Signature
Approved by:	Katja Pokovic	Technical Manager	

Issued: March 13, 2019

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



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Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	41.9 $\pm$ 6 %	0.91 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.37 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	9.42 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.54 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	6.13 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	54.3 $\pm$ 6 %	1.01 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.45 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	9.47 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.61 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	6.27 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.4 Ω - 2.6 j Ω
Return Loss	- 30.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.8 Ω - 6.1 j Ω
Return Loss	- 22.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.387 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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