



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:

11/15/17 - 12/18/17

Test Site/Location:

PCTEST Lab, Columbia, MD, USA

Document Serial No.:

1M1711150299-01-R1.A3L

FCC ID:

A3LSMG9650

APPLICANT:

SAMSUNG ELECTRONICS CO., LTD.

DUT Type:

Portable Handset

Application Type:

Certification

FCC Rule Part(s):

CFR §2.1093

Model:

SM-G9650/DS

Additional Model(s):

SM-G9650

Equipment Class	Band & Mode	Tx Frequency	SAR			
			1g Head (W/kg)	1g Body-Worn (W/kg)	1g Hotspot (W/kg)	10g Phablet (W/kg)
PCE	Cell. CDMA/EVDO	824.70 - 848.31 MHz	0.41	0.54	0.94	N/A
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.24	0.28	0.45	N/A
PCE	UMTS 850	826.40 - 846.60 MHz	0.26	0.32	0.55	N/A
PCE	UMTS 1750	1712.4 - 1752.6 MHz	0.15	0.72	0.62	2.85
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	< 0.1	0.30	0.46	N/A
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.18	0.71	0.73	2.95
PCE	LTE Band 12	699.7 - 715.3 MHz	0.12	0.28	0.43	N/A
PCE	LTE Band 17	706.5 - 713.5 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 13	779.5 - 784.5 MHz	0.16	0.31	0.58	N/A
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.23	0.32	0.64	N/A
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.17	0.77	0.63	2.82
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.18	0.73	0.70	3.23
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 41	2498.5 - 2687.5 MHz	< 0.1	0.43	1.10	2.42
DTS	2.4 GHz WLAN	2412 - 2462 MHz	0.14	0.11	0.28	N/A
NIJ	U-NII-1	5180 - 5240 MHz	N/A	N/A	N/A	N/A
NIJ	U-NII-2A	5260 - 5320 MHz	0.17	0.14	N/A	1.24
NIJ	U-NII-2C	5500 - 5720 MHz	0.26	0.35	N/A	2.33
NIJ	U-NII-3	5745 - 5825 MHz	0.46	0.25	0.51	N/A
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.61	< 0.1	< 0.1	N/A
Simultaneous SAR per KDB 690783 D01v01r03:			1.22	1.39	1.59	3.73

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.

Note: This revised Test Report (S/N: 1M1711150299-01-R1.A3L) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

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



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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
Cell. CDMA/EVDO	Voice/Data	824.70 - 848.31 MHz
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.6 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
LTE Band 12	Voice/Data	699.7 - 715.3 MHz
LTE Band 17	Voice/Data	706.5 - 713.5 MHz
LTE Band 13	Voice/Data	779.5 - 784.5 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 41	Voice/Data	2498.5 - 2687.5 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2462 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

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. 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 was used as a guideline for selecting SAR test distances for this device when being used in phablet 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.

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1.3.1

Maximum PCE 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	33.5	33.5	31.0	29.0	27.0	27.5	25.5	23.5	21.5
	Nominal	33.0	33.0	30.5	28.5	26.5	27.0	25.0	23.0	21.0
GSM/GPRS/EDGE 1900	Maximum	30.5	30.5	27.5	25.5	24.5	26.0	24.5	22.5	20.5
	Nominal	30.0	30.0	27.0	25.0	24.0	25.5	24.0	22.0	20.0

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	3GPP HSDPA	3GPP HSUPA	3GPP DC-HSDPA
UMTS Band 5 (850 MHz)	Maximum	24.5	24.5	24.5	24.5
	Nominal	24.0	24.0	24.0	24.0
UMTS Band 4 (1750 MHz)	Maximum	24.5	24.5	24.5	24.5
	Nominal	24.0	24.0	24.0	24.0
UMTS Band 2 (1900 MHz)	Maximum	24.5	24.5	24.5	24.5
	Nominal	24.0	24.0	24.0	24.0

Mode / Band		Modulated Average (dBm)
Cell. CDMA/EVDO	Maximum	26.0
	Nominal	25.5

Mode / Band		Modulated Average (dBm)
LTE Band 12	Maximum	25.0
	Nominal	24.5
LTE Band 17	Maximum	25.0
	Nominal	24.5
LTE Band 13	Maximum	25.0
	Nominal	24.5
LTE Band 26 (Cell)	Maximum	25.0
	Nominal	24.5
LTE Band 5 (Cell)	Maximum	25.0
	Nominal	24.5
LTE Band 66 (AWS)	Maximum	25.0
	Nominal	24.5
LTE Band 4 (AWS)	Maximum	25.0
	Nominal	24.5
LTE Band 25 (PCS)	Maximum	24.5
	Nominal	24.0
LTE Band 2 (PCS)	Maximum	24.5
	Nominal	24.0
LTE Band 41	Maximum	24.5
	Nominal	24.0

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1.3.2

Reduced PCE Power – Hotspot Mode Activated

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
GSM/GPRS/EDGE 1900	Maximum	26.5	24.8	22.8	21.0	25.0	23.0	21.0	19.0
	Nominal	26.0	24.3	22.3	20.5	24.5	22.5	20.5	18.5

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

Mode / Band		Modulated Average (dBm)
LTE Band 66 (AWS)	Maximum	20.0
	Nominal	19.5
LTE Band 4 (AWS)	Maximum	20.0
	Nominal	19.5
LTE Band 25 (PCS)	Maximum	20.0
	Nominal	19.5
LTE Band 2 (PCS)	Maximum	20.0
	Nominal	19.5
LTE Band 41	Maximum	22.0
	Nominal	21.5

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1.3.3

Reduced PCE Power – Grip Sensor Activated

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

Mode / Band		Modulated Average (dBm)
LTE Band 66 (AWS)	Maximum	20.5
	Nominal	20.0
LTE Band 4 (AWS)	Maximum	20.5
	Nominal	20.0
LTE Band 25 (PCS)	Maximum	22.0
	Nominal	21.5
LTE Band 2 (PCS)	Maximum	22.0
	Nominal	21.5

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1.3.4

Maximum Bluetooth and SISO and MIMO WLAN Power

Mode / Band		Modulated Average - Single Tx Chain (dBm)- Antenna 1	
		Ch. 1	Ch. 2- 11
IEEE 802.11b (2.4 GHz)	Maximum	20.5	
	Nominal	20.0	
IEEE 802.11g (2.4 GHz)	Maximum	16.5	17.5
	Nominal	16.0	17.0
IEEE 802.11n (2.4 GHz)	Maximum	16.5	17.5
	Nominal	16.0	17.0

Mode / Band		Modulated Average - Single Tx Chain (dBm)- Antenna 2	
IEEE 802.11b (2.4 GHz)	Maximum	20.5	
	Nominal	20.0	
IEEE 802.11g (2.4 GHz)	Maximum	17.5	
	Nominal	17.0	
IEEE 802.11n (2.4 GHz)	Maximum	17.5	
	Nominal	17.0	

Mode / Band		Modulated Average - Single Tx Chain (dBm)				
		20 MHz Bandwidth	40 MHz Bandwidth		80 MHz Bandwidth	
			Ch. 62	Ch. 38-54, 102-159	Ch. 58, 106	Ch. 42, 122-155
IEEE 802.11a (5 GHz)	Maximum	17.5				
	Nominal	17.0				
IEEE 802.11n (5 GHz)	Maximum	17.5	16.0	17.5		
	Nominal	17.0	15.5	17.0		
IEEE 802.11ac (5 GHz)	Maximum	17.5	16.0	17.5	15.5	17.5
	Nominal	17.0	15.5	17.0	15.0	17.0

Mode / Band		Modulated Average - MIMO (dBm)	
		20 MHz Bandwidth	
		Ch. 1, 11	Ch. 2- 10
IEEE 802.11g (2.4 GHz)	Maximum	18.5	20.5
	Nominal	18.0	20.0
IEEE 802.11n (2.4 GHz)	Maximum	18.5	20.5
	Nominal	18.0	20.0

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Mode / Band		Modulated Average - MIMO (dBm)							
		20 MHz Bandwidth		40 MHz Bandwidth			80 MHz Bandwidth		
		Ch. 100-144	Ch. 36-64, 149-165	Ch. 38, 102-142	Ch. 62	Ch. 46, 54, 151, 159	Ch. 42, 58, 106	Ch. 122, 138	Ch. 155
IEEE 802.11a (5 GHz)	Maximum	19.5	20.5						
	Nominal	19.0	20.0						
IEEE 802.11n (5 GHz)	Maximum	19.5	20.5	19.5	18.5	20.5			
	Nominal	19.0	20.0	19.0	18.0	20.0			
IEEE 802.11ac (5 GHz)	Maximum	19.5	20.5	19.5	18.5	20.5	18.5	19.5	20.5
	Nominal	19.0	20.0	19.0	18.0	20.0	18.0	19.0	20.0

Mode / Band		Modulated Average - Single Tx Chain (dBm)
Bluetooth (1 Mbps)	Maximum	16.5
	Nominal	16.0
Bluetooth (EDR)	Maximum	7.5
	Nominal	7.0
Bluetooth LE	Maximum	10.0
	Nominal	9.5

1.3.5 Reduced SISO and MIMO WLAN Power

Mode / Band		Modulated Average - Single Tx Chain (dBm)
IEEE 802.11b (2.4 GHz)	Maximum	13.5
	Nominal	13.0
IEEE 802.11g (2.4 GHz)	Maximum	13.5
	Nominal	13.0
IEEE 802.11n (2.4 GHz)	Maximum	13.5
	Nominal	13.0

Mode / Band		Modulated Average - Single Tx Chain (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11a (5 GHz)	Maximum	12.5		
	Nominal	12.0		
IEEE 802.11n (5 GHz)	Maximum	12.5	12.5	
	Nominal	12.0	12.0	
IEEE 802.11ac (5 GHz)	Maximum	12.5	12.5	12.5
	Nominal	12.0	12.0	12.0

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Mode / Band		Modulated Average - MIMO (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11g (2.4 GHz)	Maximum	16.5		
	Nominal	16.0		
IEEE 802.11n (2.4 GHz)	Maximum	16.5		
	Nominal	16.0		
IEEE 802.11a (5 GHz)	Maximum	15.5		
	Nominal	15.0		
IEEE 802.11n (5 GHz)	Maximum	15.5	15.5	
	Nominal	15.0	15.0	
IEEE 802.11ac (5 GHz)	Maximum	15.5	15.5	15.5
	Nominal	15.0	15.0	15.0

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

	# Tx	5 GHz WiFi [dBm]		2.4 GHz WiFi [dBm]		802.11 Modes
		Ant1	Ant2	Ant1	Ant2	
2.4 GHz + 5 GHz	2	A	-	-	B	2.4 GHz: b,g,n 5 GHz: a,n,ac
	2	-	A	B	-	
	2	A	-	B	-	
	2	-	A	-	B	
	3	A	A	B	-	2.4 GHz: b, g, n 5 GHz: n, ac, a (CDD + STBC only)
	3	A	A	-	B	
	3	A	-	B	B	2.4 GHz: n, g (CDD + STBC only) 5 GHz: a, n, ac
	3	-	A	B	B	
	4	A	A	B	B	2.4 GHz: n, g (CDD + STBC only) 5 GHz: n, ac, a (CDD + STBC only)

A = 13 dBm

B = 16 dBm

2.4 GHz WLAN Channels 1 and 11 will operate with Single Tx target powers of 15.0 dBm.
(Upper tolerance: target + 0.5 dB)

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1.3.1 Reduced Output Power During Conditions with Simultaneous 2.4 GHz WLAN and 5 GHz WLAN

	# Tx	5 GHz WiFi [dBm]		2.4 GHz WiFi [dBm]		802.11 Modes
		Ant1	Ant2	Ant1	Ant2	
2.4 GHz + 5 GHz	2	A	-	-	B	2.4 GHz: b,g,n 5 GHz: a,n,ac
	2	-	A	B	-	
	2	A	-	B	-	
	2	-	A	-	B	
	3	A	A	B	-	2.4 GHz: b, g, n 5 GHz: n, ac, a (CDD + STBC only)
	3	A	A	-	B	
	3	A	-	B	B	2.4 GHz: n, g (CDD + STBC only) 5 GHz: a, n, ac
	3	-	A	B	B	
	4	A	A	B	B	2.4 GHz: n, g (CDD + STBC only) 5 GHz: n, ac, a (CDD + STBC only)

A = 12 dBm

B = 13 dBm

(Upper tolerance: target + 0.5 dB)

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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. Since the diagonal dimension of this device is > 160 mm and <200 mm, it is considered a “phablet.”

Table 1-1
Device Edges/Sides for SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
Cell. EVDO	Yes	Yes	No	Yes	Yes	Yes
GPRS 850	Yes	Yes	No	Yes	Yes	Yes
UMTS 850	Yes	Yes	No	Yes	Yes	Yes
UMTS 1750	Yes	Yes	No	Yes	Yes	Yes
GPRS 1900	Yes	Yes	No	Yes	Yes	Yes
UMTS 1900	Yes	Yes	No	Yes	Yes	Yes
LTE Band 12	Yes	Yes	No	Yes	Yes	Yes
LTE Band 13	Yes	Yes	No	Yes	Yes	Yes
LTE Band 26 (Cell)	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 41	Yes	Yes	No	Yes	No	Yes
2.4 GHz WLAN Ant 1	Yes	Yes	Yes	No	No	Yes
2.4 GHz WLAN Ant 2	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN Ant 1	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN Ant 2	Yes	Yes	Yes	No	No	Yes
Bluetooth	Yes	Yes	Yes	No	No	Yes

Note: Particular DUT edges were not required to be evaluated for wireless router SAR or phablet SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v02r01 Section III 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. Therefore, U-NII-1, U-NII-2A, U-NII-2C operations are not considered in this section.

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.

1.6 Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D01v06, transmitters are considered to be transmitting 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.

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Table 1-2
Simultaneous Transmission Scenarios

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

1. Bluetooth cannot transmit simultaneously with WLAN.
2. All licensed modes share the same antenna path and cannot transmit simultaneously.
3. 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.
4. 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.
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 supports CDD and STBC and 802.11n/ac additionally supports SDM.
7. This device supports BT Tethering.
8. This device supports VOLTE.
9. This device supports VoWIFI.

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1.7 Miscellaneous SAR Test Considerations

(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 802.11ac with the following features:

- a) Up to 80 MHz Bandwidth only
- b) No aggregate channel configurations
- c) 2 Tx antenna output
- d) 256 QAM is supported
- e) TDWR and Band gap channels are supported

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" 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, U-NII-3 WLAN, and Bluetooth operations since wireless router 1g SAR was < 1.2 W/kg.

(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 LTE CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive.

This device supports LTE Carrier Aggregation (CA) in the uplink for LTE Band 41 with two component carriers in the uplink. SAR measurements and conducted powers were evaluated per FCC Guidance.

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" 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.

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This device supports downlink 4x4 MIMO operations for some LTE Bands. Per May 2017 TCB Workshop Notes, SAR for downlink 4x4 MIMO was not needed since the maximum average output power in 4x4 downlink MIMO mode was not > 0.25 dB higher than the maximum output power with downlink 4x4 MIMO inactive.

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 64 QAM 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 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.

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 4x4 Downlink MIMO)
- Fall 2017 TCB Workshop Notes (LTE Carrier Aggregation)

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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LTE INFORMATION

LTE Information					
FCC ID	A3LSMG9650				
Form Factor	Portable Handset				
Frequency Range of each LTE transmission band	LTE Band 12 (699.7 - 715.3 MHz)				
	LTE Band 17 (706.5 - 713.5 MHz)				
	LTE Band 13 (779.5 - 784.5 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 41 (2498.5 - 2687.5 MHz)				
Channel Bandwidths	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 17: 5 MHz, 10 MHz				
	LTE Band 13: 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				
	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 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High	High
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 17: 5 MHz	706.5 (23755)		710 (23790)		713.5 (23825)
LTE Band 17: 10 MHz	709 (23780)		710 (23790)		711 (23800)
LTE Band 13: 5 MHz	779.5 (23205)		782 (23230)		784.5 (23255)
LTE Band 13: 10 MHz	N/A		782 (23230)		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 (20407)		836.5 (20525)		848.3 (20643)
LTE Band 5 (Cell): 3 MHz	825.5 (20415)		836.5 (20525)		847.5 (20635)
LTE Band 5 (Cell): 5 MHz	826.5 (20425)		836.5 (20525)		846.5 (20625)
LTE Band 5 (Cell): 10 MHz	829 (20450)		836.5 (20525)		844 (20600)
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 (26047)		1882.5 (26365)		1914.3 (26683)
LTE Band 25 (PCS): 3 MHz	1851.5 (26055)		1882.5 (26365)		1913.5 (26675)
LTE Band 25 (PCS): 5 MHz	1852.5 (26065)		1882.5 (26365)		1912.5 (26665)
LTE Band 25 (PCS): 10 MHz	1855 (26090)		1882.5 (26365)		1910 (26640)
LTE Band 25 (PCS): 15 MHz	1857.5 (26115)		1882.5 (26365)		1907.5 (26615)
LTE Band 25 (PCS): 20 MHz	1860 (26140)		1882.5 (26365)		1905 (26590)
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 41: 5 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
UE Category	DL UE Cat 18 (QPSK, 16QAM, 64 QAM, 256 QAM), UL UE Cat 13 (QPSK, 16 QAM, 64 QAM)				
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 features on 3GPP Release 14. It supports carrier aggregation and downlink MIMO features as shown in Section 9 and Appendix I. 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 eCIC, MDH, 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.

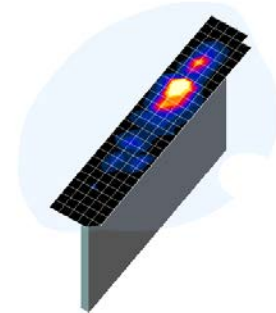


Figure 4-1
Sample SAR Area Scan

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) ($\Delta x_{\text{zoom}}, \Delta y_{\text{zoom}}$)	Maximum Zoom Scan Spatial Resolution (mm)			Minimum Zoom Scan Volume (mm) (x,y,z)
			Uniform Grid	Graded Grid		
			$\Delta z_{\text{zoom}}(n)$	$\Delta z_{\text{zoom}}(1)^*$	$\Delta z_{\text{zoom}}(n>1)^*$	
≤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].

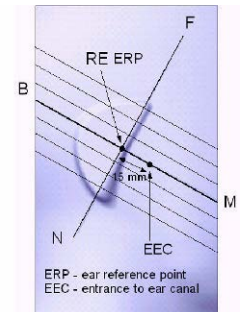


Figure 5-1
Close-Up Side view
of ERP

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

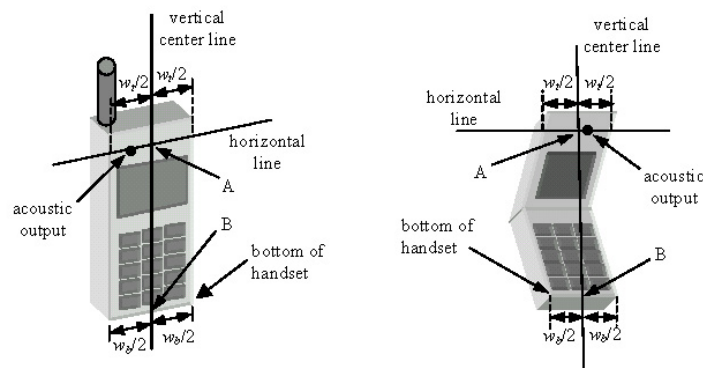


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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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.

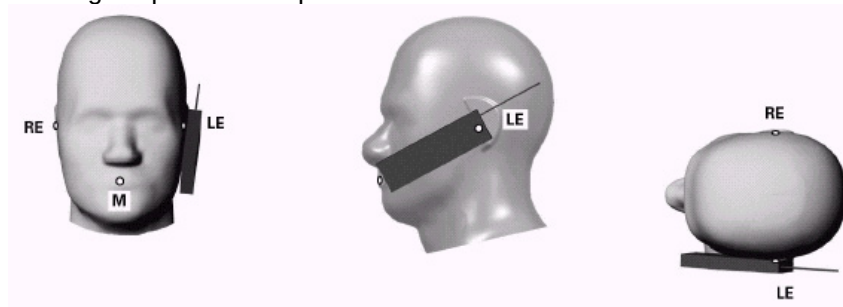


Figure 6-1 Front, Side and Top View of Cheek Position

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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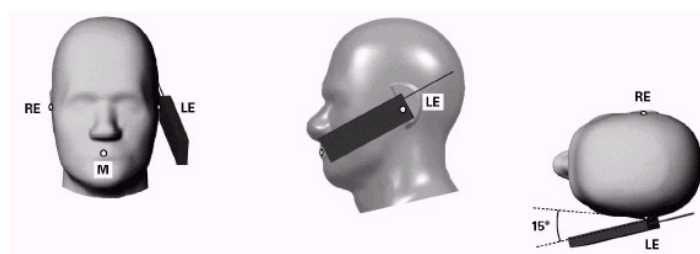


Figure 6-2 Front, Side and Top View of Ear/15° Tilt Position

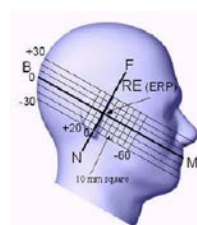


Figure 6-3 Side view w/ relevant markings

6.4 SAR Evaluations near the Mouth/Jaw Regions of the SAM Phantom

Antennas located near the bottom of a phone may require SAR measurements around the mouth and jaw regions of the SAM head phantom. This typically applies to clam-shell style phones that are generally longer in the unfolded normal use positions or to certain older style long rectangular phones. Per IEEE 1528-2013, a rotated SAM phantom is necessary to allow probe access to such regions. Both SAM heads of the TwinSAM-Chin20 are rotated 20 degrees around the NF line. Each head can be removed from the table for emptying and cleaning.

Under these circumstances, the following procedures apply, adopted from the FCC guidance on SAR handsets document FCC KDB Publication 648474 D04v01r03. The SAR required in these regions of SAM should be measured using a flat phantom. The phone should be positioned with a separation distance of 4 mm between the ear reference point (ERP) and the outer surface of the flat phantom shell. While maintaining this distance at the ERP location, the low (bottom) edge of the phone should be lowered from the phantom to establish the same separation distance between the peak SAR location identified by the truncated partial SAR distribution measured with the SAM phantom. The distance from the peak SAR location to the phone is determined by the straight line passing perpendicularly through the phantom surface. When it is not feasible to maintain 4 mm separation at the ERP while also establishing the required separation at the peak SAR location, the top edge of the phone will be allowed to touch the phantom with a separation < 4 mm at the ERP. The phone should not be tilted to the left or right while placed in this inclined position to the flat phantom.

6.5 Body-Worn Accessory Configurations

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 6-4). Per FCC KDB Publication 648474 D04v01r03, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

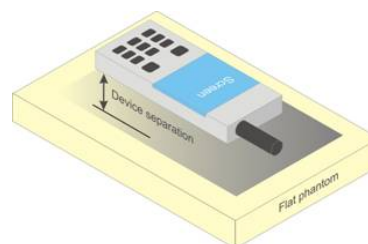


Figure 6-4 Sample Body-Worn Diagram

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not

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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 $> 150 \text{ mm}$ or an overall diagonal dimension $> 160 \text{ mm}$ that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, the phablets procedures outlined in KDB Publication 648474 D04v01r03

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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 Additional Test Positions due to Proximity Conditions

This device uses a sensor to reduce voice and data powers in extremity (hand-held) use conditions.

When the sensor detects a user is touching the device on or near to the antenna the device reduces the maximum allowed output power. However, the proximity sensor is not active when the device is moved beyond the sensor triggering distance and the maximum output power is no longer limited. Therefore, an additional exposure condition 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.

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

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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

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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.

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. For every supported combination of downlink only carrier aggregation, 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

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carrier aggregation configurations when the average output 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

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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.

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 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. 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	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)
Cellular	1013	824.7	25.33	25.32	25.39	25.37	25.38	25.40	25.42
	384	836.52	25.33	25.30	25.38	25.25	25.24	25.29	25.26
	777	848.31	25.09	25.06	25.14	24.97	24.97	25.00	25.01

Note:

1. RC1 is only applicable for IS-95 compatibility.
2. 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.



Figure 9-1
Power Measurement Setup

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9.2 GSM Conducted Powers

Table 9-2
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	33.08	33.07	30.28	28.42	26.48	26.81	24.59	22.74	20.79
	190	33.04	33.01	30.27	28.48	26.49	26.73	24.45	22.77	20.70
	251	32.46	32.42	29.61	27.42	26.23	26.30	24.37	22.11	19.51
GSM 1900	512	29.48	29.54	26.77	23.98	23.36	24.94	23.55	21.50	19.36
	661	29.47	29.52	26.92	24.15	23.23	24.88	23.42	21.43	19.17
	810	29.45	29.52	26.90	24.11	23.39	25.12	23.54	21.62	19.29

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	24.05	24.04	24.26	24.16	23.47	17.78	18.57	18.48	17.78
	190	24.01	23.98	24.25	24.22	23.48	17.70	18.43	18.51	17.69
	251	23.43	23.39	23.59	23.16	23.22	17.27	18.35	17.85	16.50
GSM 1900	512	20.45	20.51	20.75	19.72	20.35	15.91	17.53	17.24	16.35
	661	20.44	20.49	20.90	19.89	20.22	15.85	17.40	17.17	16.16
	810	20.42	20.49	20.88	19.85	20.38	16.09	17.52	17.36	16.28

GSM 850	Frame	23.97	23.97	24.48	24.24	23.49	17.97	18.98	18.74	17.99
GSM 1900	Avg.Targets:	20.97	20.97	20.98	20.74	20.99	16.47	17.98	17.74	16.99

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Table 9-3
Reduced Conducted Power

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	25.15	23.58	21.55	19.52	23.81	21.59	19.55	17.79
	661	25.39	23.57	21.59	19.68	23.67	21.82	19.65	17.91
	810	25.22	23.60	21.61	19.62	23.79	21.81	19.72	17.98

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	16.12	17.56	17.29	16.51	14.78	15.57	15.29	14.78
	661	16.36	17.55	17.33	16.67	14.64	15.80	15.39	14.90
	810	16.19	17.58	17.35	16.61	14.76	15.79	15.46	14.97

GSM 1900	Frame Avg.Targets:	16.97	18.28	18.04	17.49	15.47	16.48	16.24	15.49
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Note:

- 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.
- 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.
- 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.

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GSM Class: B
GPRS Multislot class: 33 (Max 4 Tx uplink slots)
EDGE Multislot class: 33 (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 9-4
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	24.24	24.17	23.95	23.95	23.96	24.10	23.64	23.76	23.89	-
99		12.2 kbps AMR	24.22	24.19	23.93	23.90	23.91	24.06	23.65	23.78	23.86	-
6	HSDPA	Subtest 1	23.13	23.06	22.85	23.05	22.86	22.96	22.89	22.90	22.98	0
6		Subtest 2	23.15	23.04	22.85	23.04	22.92	22.96	22.89	22.89	23.04	0
6		Subtest 3	22.65	22.61	22.32	22.56	22.40	22.43	22.49	22.35	22.48	0.5
6		Subtest 4	22.67	22.60	22.33	22.52	22.35	22.47	22.42	22.34	22.44	0.5
6	HSUPA	Subtest 1	23.19	23.19	22.83	23.03	22.87	22.94	22.89	22.85	23.01	0
6		Subtest 2	21.22	21.04	20.86	21.03	20.89	20.92	20.93	20.89	20.97	2
6		Subtest 3	22.18	22.05	21.84	22.03	21.87	21.92	21.92	21.89	22.00	1
6		Subtest 4	21.17	21.16	20.82	21.05	20.89	20.94	20.98	20.86	20.99	2
6		Subtest 5	23.17	23.08	22.83	23.09	22.88	22.94	22.90	22.91	23.05	0
8	DC-HSDPA	Subtest 1	23.21	23.12	22.88	23.25	23.07	23.15	22.94	22.79	22.93	0
8		Subtest 2	23.17	23.07	22.76	23.22	23.05	23.05	22.99	22.80	22.91	0
8		Subtest 3	22.70	22.72	22.33	22.68	22.57	22.59	22.40	22.24	22.34	0.5
8		Subtest 4	22.75	22.70	22.31	22.69	22.45	22.54	22.48	22.28	22.35	0.5

Table 9-5
Reduced Conducted Power – Hotspot Mode 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	19.00	18.97	19.05	18.64	18.76	18.88	-
99		12.2 kbps AMR	18.97	18.96	19.04	18.66	18.77	18.89	-
6	HSDPA	Subtest 1	18.06	17.96	18.02	17.90	17.91	18.00	0
6		Subtest 2	18.10	17.89	17.98	17.91	17.87	18.02	0
6		Subtest 3	17.59	17.53	17.49	17.46	17.40	17.57	0.5
6		Subtest 4	17.50	17.40	17.51	17.44	17.45	17.57	0.5
6	HSUPA	Subtest 1	18.03	17.88	18.03	17.90	17.89	17.99	0
6		Subtest 2	16.05	15.92	16.06	15.95	15.92	16.01	2
6		Subtest 3	17.05	16.91	17.05	16.91	16.88	17.06	1
6		Subtest 4	16.01	15.95	16.03	15.92	15.88	15.98	2
6		Subtest 5	18.05	17.90	18.00	17.89	17.86	18.04	0
8	DC-HSDPA	Subtest 1	18.20	18.07	18.21	17.93	17.77	17.86	0
8		Subtest 2	18.19	18.06	18.13	18.01	17.71	17.84	0
8		Subtest 3	17.71	17.51	17.64	17.40	17.27	17.35	0.5
8		Subtest 4	17.73	17.49	17.60	17.38	17.25	17.36	0.5

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Table 9-6
Reduced Conducted Power – Grip Sensor Mode 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	20.96	20.95	21.07	20.64	20.76	20.88	-
99		12.2 kbps AMR	20.95	20.96	21.06	20.64	20.78	20.90	-
6	HSDPA	Subtest 1	20.01	19.93	20.02	19.97	19.92	20.03	0
6		Subtest 2	20.03	19.90	20.04	19.96	19.84	20.02	0
6		Subtest 3	19.58	19.43	19.55	19.45	19.39	19.54	0.5
6		Subtest 4	19.50	19.40	19.51	19.45	19.40	19.48	0.5
6	HSUPA	Subtest 1	20.10	19.91	20.04	19.94	19.90	19.97	0
6		Subtest 2	18.05	17.94	18.03	17.93	17.89	17.99	2
6		Subtest 3	19.07	18.92	19.06	18.92	18.90	19.01	1
6		Subtest 4	18.04	17.94	18.04	17.92	17.89	18.00	2
6		Subtest 5	20.06	19.92	20.05	19.94	19.90	19.99	0
8	DC-HSDPA	Subtest 1	20.12	20.01	20.13	19.98	19.80	19.85	0
8		Subtest 2	19.87	19.84	20.07	19.97	19.80	19.78	0
8		Subtest 3	19.64	19.49	19.41	19.33	19.34	19.35	0.5
8		Subtest 4	19.60	19.41	19.37	19.25	19.21	19.29	0.5

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 12

Table 9-7
LTE Band 12 Conducted Powers - 10 MHz Bandwidth

LTE Band 12 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23095 (707.5 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	24.09	0	0
	1	25	24.05		0
	1	49	23.96		0
	25	0	23.13	0-1	1
	25	12	23.12		1
	25	25	23.02		1
	50	0	23.08		1
16QAM	1	0	23.36	0-1	1
	1	25	23.39		1
	1	49	23.38		1
	25	0	22.30	0-2	2
	25	12	22.32		2
	25	25	22.23		2
	50	0	22.27		2
64QAM	1	0	22.40	0-2	2
	1	25	22.36		2
	1	49	22.24		2
	25	0	21.35	0-3	3
	25	12	21.31		3
	25	25	21.24		3
	50	0	21.30		3

Note: LTE Band 12 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 9-8
LTE Band 12 Conducted Powers - 5 MHz Bandwidth

LTE Band 12 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23035 (701.5 MHz)	23095 (707.5 MHz)	23155 (713.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.14	24.07	24.03	0	0
	1	12	24.08	24.16	23.93		0
	1	24	24.14	24.08	23.89		0
	12	0	23.18	23.19	23.03	0-1	1
	12	6	23.19	23.20	22.96		1
	12	13	23.23	23.18	22.96		1
	25	0	23.28	23.17	23.03		1
16QAM	1	0	23.52	23.38	22.90	0-1	1
	1	12	23.39	23.35	22.82		1
	1	24	23.47	23.34	22.78		1
	12	0	22.25	22.28	22.07	0-2	2
	12	6	22.23	22.27	22.00		2
	12	13	22.32	22.22	21.93		2
	25	0	22.27	22.24	22.16		2
64QAM	1	0	22.33	22.48	22.02	0-2	2
	1	12	22.29	22.46	22.08		2
	1	24	22.42	22.45	21.88		2
	12	0	21.19	21.34	21.15	0-3	3
	12	6	21.31	21.36	21.10		3
	12	13	21.40	21.27	21.07		3
	25	0	21.27	21.20	21.18		3

Table 9-9
LTE Band 12 Conducted Powers - 3 MHz Bandwidth

LTE Band 12 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23025 (700.5 MHz)	23095 (707.5 MHz)	23165 (714.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.07	24.10	23.87	0	0
	1	7	24.18	24.08	23.97		0
	1	14	24.07	24.01	23.88		0
	8	0	23.10	23.11	22.87	0-1	1
	8	4	23.11	23.12	22.89		1
	8	7	23.10	23.07	22.88		1
	15	0	23.10	23.09	22.88		1
16QAM	1	0	23.07	23.46	23.21	0-1	1
	1	7	23.18	23.54	23.28		1
	1	14	23.07	23.41	23.20		1
	8	0	22.15	22.23	22.04	0-2	2
	8	4	22.15	22.22	21.90		2
	8	7	22.14	22.20	21.86		2
	15	0	22.18	22.18	21.99		2
64QAM	1	0	22.45	22.45	22.29	0-2	2
	1	7	22.51	22.53	22.19		2
	1	14	22.42	22.48	22.07		2
	8	0	21.15	21.14	20.99	0-3	3
	8	4	21.23	21.17	21.02		3
	8	7	21.23	21.14	20.97		3
	15	0	21.21	21.21	21.01		3

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Table 9-10
LTE Band 12 Conducted Powers -1.4 MHz Bandwidth

LTE Band 12 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23017 (699.7 MHz)	23095 (707.5 MHz)	23173 (715.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.98	23.89	23.82	0	0
	1	2	24.04	23.96	23.90		0
	1	5	23.95	23.86	23.80		0
	3	0	23.99	23.98	23.83		0
	3	2	24.06	24.01	23.84		0
	3	3	24.02	23.99	23.80		0
	6	0	22.98	23.03	22.82	0-1	1
16QAM	1	0	23.32	22.87	22.96	0-1	1
	1	2	23.41	22.92	23.01		1
	1	5	23.34	22.86	22.92		1
	3	0	23.18	23.12	22.89		1
	3	2	23.32	23.11	22.90		1
	3	3	23.29	23.08	22.87		1
	6	0	22.24	22.02	21.83	0-2	2
64QAM	1	0	22.42	22.35	21.95	0-2	2
	1	2	22.44	22.40	21.98		2
	1	5	22.24	22.32	21.89		2
	3	0	22.35	22.15	21.98		2
	3	2	22.39	22.22	21.98		2
	3	3	22.35	22.26	22.00		2
	6	0	21.11	21.03	21.05	0-3	3

9.4.2 LTE Band 13

Table 9-11
LTE Band 13 Conducted Powers - 10 MHz Bandwidth

LTE Band 13 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23230 (782.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	24.00	0	0
	1	25	23.99		0
	1	49	23.88		0
	25	0	23.09	0-1	1
	25	12	23.02		1
	25	25	22.98		1
	50	0	23.02		1
16QAM	1	0	23.29	0-1	1
	1	25	23.26		1
	1	49	23.30		1
	25	0	22.23	0-2	2
	25	12	22.19		2
	25	25	22.07		2
	50	0	22.15		2
64QAM	1	0	22.26	0-2	2
	1	25	22.35		2
	1	49	22.24		2
	25	0	21.29	0-3	3
	25	12	21.22		3
	25	25	21.15		3
	50	0	21.24		3

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Table 9-12
LTE Band 13 Conducted Powers - 5 MHz Bandwidth

LTE Band 13 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23230 (782.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	23.90	0	0
	1	12	23.85		0
	1	24	23.85		0
	12	0	22.95	0-1	1
	12	6	22.99		1
	12	13	22.94		1
	25	0	22.93		1
16QAM	1	0	23.04	0-1	1
	1	12	22.99		1
	1	24	22.98		1
	12	0	21.99	0-2	2
	12	6	22.00		2
	12	13	22.00		2
	25	0	22.05		2
64QAM	1	0	22.33	0-2	2
	1	12	22.27		2
	1	24	22.22		2
	12	0	21.15	0-3	3
	12	6	21.16		3
	12	13	21.14		3
	25	0	21.01		3

Note: LTE Band 13 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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LTE Band 26 (Cell)

Table 9-13
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	24.14	0	0
	1	36	24.11		0
	1	74	23.83		0
	36	0	23.18	0-1	1
	36	18	23.20		1
	36	37	23.06		1
	75	0	23.13		1
16QAM	1	0	23.46	0-1	1
	1	36	23.44		1
	1	74	23.23		1
	36	0	22.32	0-2	2
	36	18	22.27		2
	36	37	22.15		2
	75	0	22.21		2
64QAM	1	0	22.42	0-2	2
	1	36	22.40		2
	1	74	22.06		2
	36	0	21.35	0-3	3
	36	18	21.31		3
	36	37	21.17		3
	75	0	21.23		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.

Table 9-14
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	24.01	24.19	23.96	0	0
	1	25	24.07	24.12	23.89		0
	1	49	24.10	24.03	23.81		0
	25	0	23.14	23.21	22.98	0-1	1
	25	12	23.23	23.22	22.96		1
	25	25	23.19	23.14	22.89		1
	50	0	23.23	23.20	22.94		1
16QAM	1	0	23.18	23.38	23.14	0-1	1
	1	25	23.22	23.30	23.08		1
	1	49	23.26	23.22	23.02		1
	25	0	22.21	22.32	22.08	0-2	2
	25	12	22.30	22.33	22.05		2
	25	25	22.23	22.24	21.98		2
	50	0	22.29	22.28	22.01		2
64QAM	1	0	22.25	22.44	22.18	0-2	2
	1	25	22.30	22.39	22.15		2
	1	49	22.34	22.30	22.07		2
	25	0	21.24	21.33	21.05	0-3	3
	25	12	21.32	21.31	21.08		3
	25	25	21.26	21.22	20.98		3
	50	0	21.31	21.28	21.05		3

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Table 9-15
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	24.09	24.06	23.94	0	0
	1	12	24.11	23.99	23.89		0
	1	24	24.15	24.02	23.88		0
	12	0	23.21	23.24	22.96	0-1	1
	12	6	23.22	23.20	22.94		1
	12	13	23.17	23.17	22.92		1
	25	0	23.14	23.18	22.91		1
16QAM	1	0	23.55	23.25	23.14	0-1	1
	1	12	23.61	23.21	23.11		1
	1	24	23.61	23.17	23.07		1
	12	0	22.18	22.35	22.14	0-2	2
	12	6	22.17	22.34	22.12		2
	12	13	22.14	22.32	22.07		2
	25	0	22.28	22.29	21.99		2
64QAM	1	0	22.37	22.23	22.29	0-2	2
	1	12	22.39	22.34	22.16		2
	1	24	22.34	22.26	22.08		2
	12	0	21.29	21.34	21.06	0-3	3
	12	6	21.30	21.33	21.03		3
	12	13	21.25	21.26	21.00		3
	25	0	21.24	21.28	21.06		3

Table 9-16
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	24.02	24.08	23.77	0	0
	1	7	24.11	24.15	23.80		0
	1	14	24.09	24.04	23.74		0
	8	0	23.02	23.12	22.83	0-1	1
	8	4	23.05	23.18	22.89		1
	8	7	23.11	23.15	22.79		1
	15	0	23.15	23.19	22.88		1
16QAM	1	0	23.14	23.31	22.91	0-1	1
	1	7	23.19	23.41	22.94		1
	1	14	23.17	23.31	22.89		1
	8	0	22.26	22.42	21.99	0-2	2
	8	4	22.29	22.45	22.04		2
	8	7	22.34	22.41	21.98		2
	15	0	22.21	22.30	21.97		2
64QAM	1	0	22.35	22.40	22.16	0-2	2
	1	7	22.40	22.42	22.18		2
	1	14	22.36	22.34	22.02		2
	8	0	21.20	21.29	21.02	0-3	3
	8	4	21.18	21.36	21.06		3
	8	7	21.26	21.27	21.00		3
	15	0	21.22	21.24	20.97		3

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Table 9-17
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	23.90	24.01	23.73	0	0
	1	2	23.98	24.07	23.79		0
	1	5	23.88	23.98	23.69		0
	3	0	23.95	24.05	23.75		0
	3	2	23.99	24.06	23.79		0
	3	3	23.93	24.04	23.75		0
	6	0	22.97	23.06	22.77	0-1	1
16QAM	1	0	23.09	23.22	22.93	0-1	1
	1	2	23.15	23.27	22.99		1
	1	5	23.08	23.20	22.91		1
	3	0	23.09	23.19	22.91		1
	3	2	23.11	23.22	22.95		1
	3	3	23.07	23.17	22.90		1
	6	0	22.07	22.21	21.89	0-2	2
64QAM	1	0	22.16	22.33	22.02	0-2	2
	1	2	22.22	22.37	22.06		2
	1	5	22.14	22.29	21.99		2
	3	0	22.16	22.30	21.99		2
	3	2	22.19	22.33	22.03		2
	3	3	22.16	22.26	21.99		2
	6	0	21.05	21.20	20.91	0-3	3

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LTE Band 66 (AWS)

Table 9-18
LTE Band 66 (AWS) 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	24.25	24.40	24.32	0	0
	1	50	24.27	24.13	23.97		0
	1	99	24.19	24.02	23.98		0
	50	0	23.36	23.46	23.28	0-1	1
	50	25	23.33	23.28	23.06		1
	50	50	23.26	23.22	23.03		1
	100	0	23.30	23.22	23.22		1
16QAM	1	0	23.32	23.50	23.42	0-1	1
	1	50	23.44	23.35	23.12		1
	1	99	23.32	23.16	23.09		1
	50	0	22.39	22.43	22.29	0-2	2
	50	25	22.39	22.34	22.13		2
	50	50	22.30	22.26	22.11		2
	100	0	22.32	22.35	22.26		2
64QAM	1	0	22.45	22.50	22.45	0-2	2
	1	50	22.41	22.43	22.19		2
	1	99	22.41	22.23	22.26		2
	50	0	21.42	21.44	21.35	0-3	3
	50	25	21.36	21.38	21.16		3
	50	50	21.33	21.30	21.12		3
	100	0	21.34	21.35	21.26		3

Table 9-19
LTE Band 66 (AWS) 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	24.33	24.42	24.40	0	0
	1	36	24.18	24.37	24.32		0
	1	74	24.24	24.28	24.22		0
	36	0	23.62	23.63	23.25	0-1	1
	36	18	23.32	23.41	23.20		1
	36	37	23.34	23.38	23.15		1
	75	0	23.32	23.37	23.26		1
16QAM	1	0	23.46	23.57	23.20	0-1	1
	1	36	23.41	23.61	23.14		1
	1	74	23.31	23.54	23.09		1
	36	0	22.61	22.70	22.60	0-2	2
	36	18	22.42	22.59	22.37		2
	36	37	22.48	22.54	22.34		2
	75	0	22.43	22.47	22.27		2
64QAM	1	0	22.26	22.45	22.28	0-2	2
	1	36	22.15	22.28	22.12		2
	1	74	22.22	22.32	22.17		2
	36	0	21.13	21.24	21.04	0-3	3
	36	18	21.19	21.23	21.01		3
	36	37	21.12	21.20	21.06		3
	75	0	21.07	21.19	20.98		3

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Table 9-20
LTE Band 66 (AWS) 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	24.21	24.37	24.09	0	0	
	1	25	24.20	24.26	24.04		0	
	1	49	24.24	24.24	24.01		0	
	25	0	23.35	23.37	23.24	0-1	1	
	25	12	23.29	23.40	23.22		1	
	25	25	23.31	23.37	23.14		1	
16QAM	50	0	23.36	23.36	23.19	0-1	1	
	1	0	23.33	23.59	23.14		1	
	1	25	23.34	23.53	23.22		1	
	1	49	23.36	23.50	23.17	0-2	1	
	25	0	22.52	22.53	22.42		2	
	25	12	22.45	22.52	22.36		2	
64QAM	25	25	22.42	22.47	22.33	0-2	2	
	50	0	22.44	22.44	22.25		2	
	64QAM	1	0	22.12	22.41	22.22	0-2	2
		1	25	22.14	22.27	22.11		2
		1	49	22.22	22.30	22.12		2
		25	0	21.02	21.20	21.09	0-3	3
25		12	21.05	21.19	21.03	3		
25		25	21.13	21.18	20.96	3		
	50	0	21.12	21.19	21.00		3	

Table 9-21
LTE Band 66 (AWS) 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	24.30	24.29	24.18	0	0
	1	12	24.27	24.20	24.14		0
	1	24	24.26	24.21	24.17		0
	12	0	23.34	23.36	23.17	0-1	1
	12	6	23.29	23.33	23.17		1
	12	13	23.27	23.31	23.15		1
16QAM	25	0	23.29	23.37	23.16	0-1	1
	1	0	23.41	23.29	23.70		1
	1	12	23.47	23.36	23.66		1
	1	24	23.47	23.37	23.67	0-2	1
	12	0	22.52	22.47	22.15		2
	12	6	22.44	22.45	22.15		2
64QAM	12	13	22.40	22.42	22.12	0-2	2
	25	0	22.35	22.43	22.25		2
	1	0	22.29	22.35	22.13	0-2	2
	1	12	22.06	22.23	22.18		2
	1	24	22.11	22.20	22.12		2
	12	0	21.02	21.20	20.95	0-3	3
	12	6	21.01	21.23	20.99		3
	12	13	21.00	21.18	20.94		3
25	0	20.98	21.15	20.96	3		

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Table 9-22
LTE Band 66 (AWS) 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	24.08	24.22	24.07	0	0
	1	7	24.16	24.36	24.11		0
	1	14	24.09	24.25	24.03		0
	8	0	23.24	23.28	23.11	0-1	1
	8	4	23.22	23.33	23.12		1
	8	7	23.18	23.26	23.08		1
16QAM	15	0	23.26	23.32	23.07	0-1	1
	1	0	23.16	23.71	23.18		1
	1	7	23.31	23.82	23.40		1
	1	14	23.22	23.75	23.26	0-2	1
	8	0	22.36	22.48	22.35		2
	8	4	22.39	22.52	22.37		2
64QAM	8	7	22.35	22.45	22.33	0-2	2
	15	0	22.34	22.43	22.19		2
	1	0	22.03	22.30	22.07		0-2
	1	7	22.16	22.36	22.12	2	
	1	14	22.02	22.37	22.06	2	
	64QAM	8	0	20.98	21.16	20.96	0-3
8		4	21.02	21.19	20.98	3	
8		7	20.97	21.20	20.95	3	
15		0	21.08	21.16	20.93		3

Table 9-23
LTE Band 66 (AWS) 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	24.02	24.17	24.10	0	0
	1	2	24.04	24.24	24.21		0
	1	5	24.02	24.15	24.16		0
	3	0	24.09	24.20	24.02		0
	3	2	24.20	24.23	24.05		0
	3	3	24.14	24.22	23.99		0
	6	0	23.19	23.18	23.03	0-1	1
16QAM	1	0	23.11	23.25	22.85	0-1	1
	1	2	23.10	23.31	22.92		1
	1	5	23.11	23.27	22.85		1
	3	0	23.02	23.25	23.06		1
	3	2	23.10	23.30	23.14		1
	3	3	23.01	23.22	23.09		1
	6	0	22.24	22.38	22.08	0-2	2
64QAM	1	0	22.04	22.21	22.00	0-2	2
	1	2	22.07	22.26	22.06		2
	1	5	22.15	22.28	22.00		2
	3	0	21.97	22.16	21.97		2
	3	2	22.01	22.24	22.04		2
	3	3	21.99	22.16	22.02		2
	6	0	20.90	21.15	20.96	0-3	3

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Table 9-24
LTE Band 66 (AWS) Hotspot Reduced 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	19.31	19.33	19.30	0	0
	1	50	19.17	19.18	18.97		0
	1	99	19.20	19.13	18.93		0
	50	0	19.33	19.37	19.23	0-1	0
	50	25	19.27	19.25	19.06		0
	50	50	19.23	19.22	19.01		0
	100	0	19.21	19.29	19.20		0
16QAM	1	0	19.41	19.46	19.45	0-1	0
	1	50	19.22	19.36	19.07		0
	1	99	19.34	19.33	19.04		0
	50	0	19.40	19.44	19.30	0-2	0
	50	25	19.35	19.38	19.14		0
	50	50	19.32	19.33	19.05		0
	100	0	19.33	19.29	19.29		0
64QAM	1	0	19.48	19.49	19.48	0-2	0
	1	50	19.44	19.39	19.15		0
	1	99	19.41	19.45	19.28		0
	50	0	19.40	19.44	19.32	0-3	0
	50	25	19.32	19.41	19.14		0
	50	50	19.33	19.33	19.09		0
	100	0	19.42	19.34	19.28		0

Table 9-25
LTE Band 66 (AWS) Hotspot Reduced 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	19.12	19.19	19.07	0	0
	1	36	18.99	19.02	18.94		0
	1	74	19.06	18.99	19.05		0
	36	0	19.02	19.19	19.05	0-1	0
	36	18	19.07	19.20	19.07		0
	36	37	19.06	19.16	19.04		0
	75	0	19.07	19.18	19.07		0
16QAM	1	0	19.35	19.35	19.47	0-1	0
	1	36	19.27	19.17	19.36		0
	1	74	19.44	19.18	19.43		0
	36	0	19.13	19.31	19.05	0-2	0
	36	18	19.21	19.25	19.15		0
	36	37	19.17	19.25	19.11		0
	75	0	19.16	19.31	19.14		0
64QAM	1	0	19.32	19.49	19.34	0-2	0
	1	36	19.19	19.30	19.17		0
	1	74	19.29	19.26	19.13		0
	36	0	19.10	19.37	19.08	0-3	0
	36	18	19.14	19.33	19.12		0
	36	37	19.11	19.26	19.10		0
	75	0	19.11	19.27	19.14		0

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Table 9-26
LTE Band 66 (AWS) Hotspot Reduced 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	18.79	19.17	18.90	0	0
	1	25	18.71	19.06	18.76		0
	1	49	18.80	19.01	18.78		0
	25	0	18.87	19.17	18.95	0-1	0
	25	12	18.86	19.12	18.91		0
	25	25	18.89	19.03	18.94		0
16QAM	50	0	18.95	19.05	18.91	0	
	1	0	18.80	19.40	19.24	0-1	0
	1	25	18.79	19.27	19.20		0
	1	49	19.12	19.27	19.44		0
	25	0	18.90	19.15	18.98	0-2	0
	25	12	18.91	19.13	19.00		0
25	25	18.97	19.13	18.92	0		
64QAM	50	0	19.06	19.11	18.96	0	
	1	0	19.10	19.15	19.16	0-2	0
	1	25	18.88	19.07	18.88		0
	1	49	18.99	19.01	18.85		0
	25	0	19.04	19.19	19.00	0-3	0
	25	12	19.07	19.19	19.00		0
25	25	19.10	19.13	18.97	0		
	50	0	19.10	19.12	18.96		0

Table 9-27
LTE Band 66 (AWS) Hotspot Reduced 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	18.81	19.09	18.89	0	0
	1	12	18.78	18.94	18.87		0
	1	24	18.76	18.99	18.87		0
	12	0	18.86	19.12	18.93	0-1	0
	12	6	18.85	19.11	18.96		0
	12	13	18.83	19.07	18.90		0
	25	0	18.86	19.07	18.92		0
16QAM	1	0	19.50	19.11	19.07	0-1	0
	1	12	19.47	19.09	19.13		0
	1	24	19.47	19.06	19.07		0
	12	0	18.96	19.16	19.04	0-2	0
	12	6	18.96	19.20	19.05		0
	12	13	18.94	19.18	19.01		0
	25	0	18.97	19.15	18.94		0
64QAM	1	0	18.89	19.08	18.96	0-2	0
	1	12	18.86	19.06	18.95		0
	1	24	18.90	19.02	18.90		0
	12	0	18.93	19.15	19.01	0-3	0
	12	6	18.93	19.18	19.06		0
	12	13	18.91	19.19	19.00		0
	25	0	18.98	19.11	19.03		0

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Table 9-28
LTE Band 66 (AWS) Hotspot Reduced 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	18.78	19.03	18.89	0	0
	1	7	18.92	19.10	18.96		0
	1	14	18.78	18.96	18.82		0
	8	0	18.81	19.01	18.88	0-1	0
	8	4	18.81	19.08	18.90		0
	8	7	18.80	19.06	18.87		0
15	0	18.79	19.06	18.86			
16QAM	1	0	19.17	19.31	18.92	0-1	0
	1	7	19.29	19.23	18.98		0
	1	14	19.19	19.15	18.85		0
	8	0	19.00	19.09	18.94	0-2	0
	8	4	18.93	19.09	18.98		0
	8	7	18.89	19.10	18.97		0
15	0	18.86	19.20	18.86		0	
64QAM	1	0	18.91	19.04	18.99	0-2	0
	1	7	19.01	19.16	19.10		0
	1	14	18.88	19.19	19.01		0
	8	0	18.99	19.19	18.96	0-3	0
	8	4	18.94	19.23	18.96		0
	8	7	18.92	19.19	18.92		0
	15	0	18.83	19.13	18.96		0

Table 9-29
LTE Band 66 (AWS) Hotspot Reduced 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	18.82	19.07	18.85	0	0
	1	2	18.86	19.13	18.92		0
	1	5	18.80	19.04	18.86		0
	3	0	18.84	19.08	18.85		0
	3	2	18.89	19.11	18.88		0
	3	3	18.85	19.07	18.81		0
	6	0	18.83	19.08	18.88	0-1	0
16QAM	1	0	18.81	19.12	19.02	0-1	0
	1	2	18.86	19.26	19.12		0
	1	5	18.83	19.50	19.10		0
	3	0	18.84	19.34	19.18		0
	3	2	18.88	19.42	19.00		0
	3	3	18.85	19.32	18.93		0
	6	0	18.87	19.21	19.07	0-2	0
64QAM	1	0	18.95	19.35	19.02	0-2	0
	1	2	19.04	19.36	19.10		0
	1	5	18.95	19.28	19.01		0
	3	0	18.97	19.23	18.97		0
	3	2	19.00	19.28	19.05		0
	3	3	18.92	19.16	19.03		0
	6	0	18.95	19.09	19.01	0-3	0

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Table 9-30
LTE Band 66 (AWS) Grip Reduced 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	19.95	19.96	19.99	0	0
	1	50	19.74	19.72	19.68		0
	1	99	19.81	19.68	19.72		0
	50	0	19.91	19.94	19.89	0-1	0
	50	25	19.84	19.87	19.78		0
	50	50	19.89	19.76	19.76		0
	100	0	19.93	19.82	19.83		0
16QAM	1	0	20.07	20.11	20.12	0-1	0
	1	50	19.90	19.88	19.83		0
	1	99	19.97	19.80	19.81		0
	50	0	19.98	19.95	19.95	0-2	0
	50	25	19.91	19.89	19.89		0
	50	50	19.96	19.83	19.82		0
	100	0	20.01	19.87	19.86		0
64QAM	1	0	20.23	20.15	20.15	0-2	0
	1	50	19.95	19.93	19.88		0
	1	99	20.02	19.87	19.89		0
	50	0	19.99	19.97	19.95	0-3	0
	50	25	19.91	19.89	19.87		0
	50	50	19.97	19.86	19.84		0
	100	0	19.99	19.88	19.89		0

Table 9-31
LTE Band 66 (AWS) Grip Reduced 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	20.00	20.02	19.97	0	0
	1	36	19.83	19.86	19.79		0
	1	74	19.84	19.87	19.83		0
	36	0	19.97	20.00	19.92	0-1	0
	36	18	19.93	19.95	19.88		0
	36	37	19.89	19.91	19.84		0
	75	0	19.93	19.93	19.89		0
16QAM	1	0	20.07	20.14	20.15	0-1	0
	1	36	20.01	20.00	19.98		0
	1	74	20.04	20.05	20.00		0
	36	0	19.98	20.01	20.02	0-2	0
	36	18	19.99	20.00	19.94		0
	36	37	19.95	19.98	19.92		0
	75	0	19.97	19.99	19.94		0
64QAM	1	0	20.25	20.25	20.23	0-2	0
	1	36	20.04	20.10	19.97		0
	1	74	20.11	20.12	20.11		0
	36	0	20.07	20.06	20.07	0-3	0
	36	18	20.02	20.04	20.00		0
	36	37	20.00	19.98	20.01		0
	75	0	19.99	20.03	19.97		0

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Table 9-32
LTE Band 66 (AWS) Grip Reduced 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	19.92	19.98	19.86	0	0
	1	25	19.89	19.87	19.77		0
	1	49	19.85	19.85	19.78		0
	25	0	19.95	19.95	19.87	0-1	0
	25	12	19.95	19.96	19.86		0
	25	25	19.93	19.93	19.85		0
50	0	19.92	19.97	19.88	0		
16QAM	1	0	20.02	20.05	20.06	0-1	0
	1	25	20.04	19.97	20.00		0
	1	49	20.02	20.01	20.02		0
	25	0	19.99	20.02	19.99	0-2	0
	25	12	19.96	20.01	19.98		0
	25	25	19.96	20.01	19.99		0
50	0	19.98	20.03	19.97	0		
64QAM	1	0	20.17	20.24	20.15	0-2	0
	1	25	20.08	20.13	20.09		0
	1	49	20.10	20.12	20.08		0
	25	0	20.01	20.06	20.04	0-3	0
	25	12	20.02	20.04	20.03		0
	25	25	19.99	20.01	19.97		0
50	0	19.99	20.05	20.02	0		

Table 9-33
LTE Band 66 (AWS) Grip Reduced 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	19.90	19.91	19.88	0	0
	1	12	19.86	19.88	19.81		0
	1	24	19.85	19.87	19.84		0
	12	0	19.94	19.97	19.87	0-1	0
	12	6	19.94	19.98	19.90		0
	12	13	19.90	19.92	19.90		0
16QAM	25	0	19.86	19.94	19.89	0-1	0
	1	0	20.02	20.07	20.05		0
	1	12	19.95	20.03	19.98		0
	1	24	20.05	20.02	20.01	0-2	0
	12	0	19.96	19.98	19.95		0
	12	6	19.97	20.00	19.97		0
	12	13	19.94	19.97	19.93		0
64QAM	25	0	19.93	19.95	19.94	0-2	0
	1	0	20.14	20.19	20.17		0
	1	12	20.08	20.13	20.10		0
	1	24	20.06	20.08	20.12	0-3	0
	12	0	19.99	20.07	20.04		0
	12	6	20.01	20.07	20.02		0
	12	13	20.00	20.06	19.97		0
	25	0	19.98	20.01	20.00		0

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Table 9-34
LTE Band 66 (AWS) Grip Reduced 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	19.86	19.85	19.82	0	0
	1	7	19.96	19.95	19.92		0
	1	14	19.84	19.84	19.82		0
	8	0	19.88	19.92	19.87	0-1	0
	8	4	19.83	19.91	19.89		0
	8	7	19.89	19.89	19.85		0
	15	0	19.90	19.93	19.87		0
16QAM	1	0	19.90	20.01	19.97	0-1	0
	1	7	20.04	20.11	20.06		0
	1	14	19.97	19.99	19.95		0
	8	0	19.97	19.98	19.94	0-2	0
	8	4	19.94	20.00	19.97		0
	8	7	19.91	19.99	19.94		0
	15	0	19.96	20.00	19.94		0
64QAM	1	0	20.05	20.12	20.10	0-2	0
	1	7	20.18	20.17	20.19		0
	1	14	20.08	20.07	20.07		0
	8	0	19.96	20.00	19.96	0-3	0
	8	4	19.98	20.04	20.03		0
	8	7	19.93	20.03	19.96		0
	15	0	19.92	19.98	19.96		0

Table 9-35
LTE Band 66 (AWS) Grip Reduced 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	19.80	19.80	19.74	0	0
	1	2	19.85	19.84	19.80		0
	1	5	19.78	19.79	19.74		0
	3	0	19.81	19.83	19.76		0
	3	2	19.80	19.88	19.80		0
	3	3	19.79	19.83	19.76		0
	6	0	19.81	19.83	19.80	0-1	0
16QAM	1	0	19.83	19.93	19.91	0-1	0
	1	2	19.89	19.99	19.97		0
	1	5	19.85	19.97	19.89		0
	3	0	19.84	19.92	19.91		0
	3	2	19.89	19.94	19.94		0
	3	3	19.85	19.94	19.84		0
	6	0	19.88	19.95	19.87	0-2	0
64QAM	1	0	20.01	20.02	19.97	0-2	0
	1	2	19.99	20.05	20.04		0
	1	5	20.03	20.02	19.96		0
	3	0	19.98	20.06	20.02		0
	3	2	20.01	20.05	20.03		0
	3	3	19.97	20.03	19.97		0
	6	0	19.89	19.92	19.87	0-3	0

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LTE Band 25 (PCS)

Table 9-36
LTE Band 25 (PCS) 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	23.54	23.53	23.65	0	0
	1	50	23.23	23.21	23.45		0
	1	99	23.35	23.38	23.48		0
	50	0	22.37	22.36	22.62	0-1	1
	50	25	22.33	22.30	22.56		1
	50	50	22.29	22.26	22.55		1
	100	0	22.32	22.33	22.56		1
16QAM	1	0	22.78	22.75	22.82	0-1	1
	1	50	22.40	22.37	22.70		1
	1	99	22.52	22.55	22.65		1
	50	0	21.43	21.45	21.67	0-2	2
	50	25	21.36	21.38	21.64		2
	50	50	21.33	21.36	21.60		2
	100	0	21.40	21.45	21.59		2
64QAM	1	0	21.77	21.80	21.90	0-2	2
	1	50	21.39	21.48	21.70		2
	1	99	21.59	21.66	21.71		2
	50	0	20.42	20.46	20.68	0-3	3
	50	25	20.39	20.41	20.64		3
	50	50	20.38	20.39	20.61		3
	100	0	20.39	20.38	20.64		3

Table 9-37
LTE Band 25 (PCS) 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	23.45	23.58	23.74	0	0	
	1	36	23.32	23.44	23.58		0	
	1	74	23.34	23.39	23.58		0	
	36	0	22.42	22.58	22.75	0-1	1	
	36	18	22.37	22.35	22.70		1	
	36	37	22.34	22.33	22.68		1	
16QAM	75	0	22.37	22.38	22.72	0-1	1	
	1	0	22.55	22.35	23.05		0-1	1
	1	36	22.41	22.39	22.86			1
	1	74	22.40	22.38	22.85	0-2		1
	36	0	21.55	21.61	21.93		2	
	36	18	21.51	21.54	21.90		2	
64QAM	36	37	21.44	21.48	21.84	0-2	2	
	75	0	21.51	21.44	21.82		2	
	1	0	21.43	21.32	21.54		0-2	2
	1	36	21.28	21.24	21.45	2		
	1	74	21.32	21.21	21.44	0-3		2
	36	0	20.26	20.16	20.43		3	
36	18	20.23	20.15	20.37	3			
	36	37	20.19	20.12	20.40	0-3	3	
	75	0	20.17	20.10	20.36		3	

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Table 9-38
LTE Band 25 (PCS) 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	23.60	23.62	23.67	0	0
	1	25	23.37	23.27	23.62		0
	1	49	23.42	23.44	23.58		0
	25	0	22.40	22.38	22.74	0-1	1
	25	12	22.38	22.39	22.69		1
	25	25	22.37	22.36	22.67		1
	50	0	22.38	22.38	22.68		1
16QAM	1	0	22.63	22.82	22.75	0-1	1
	1	25	22.40	22.54	22.65		1
	1	49	22.52	22.68	22.69		1
	25	0	21.51	21.51	21.89	0-2	2
	25	12	21.52	21.50	21.82		2
	25	25	21.46	21.48	21.80		2
	50	0	21.45	21.48	21.79		2
64QAM	1	0	21.58	21.49	21.54	0-2	2
	1	25	21.33	21.44	21.44		2
	1	49	21.46	21.42	21.40		2
	25	0	20.22	20.16	20.39	0-3	3
	25	12	20.19	20.13	20.34		3
	25	25	20.25	20.08	20.31		3
	50	0	20.21	20.15	20.36		3

Table 9-39
LTE Band 25 (PCS) 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	23.32	23.41	23.68	0	0
	1	12	23.25	23.35	23.67		0
	1	24	23.29	23.34	23.65		0
	12	0	22.39	22.46	22.74	0-1	1
	12	6	22.28	22.40	22.78		1
	12	13	22.37	22.38	22.71		1
	25	0	22.42	22.39	22.70		1
16QAM	1	0	22.44	22.72	23.16	0-1	1
	1	12	22.40	22.63	23.14		1
	1	24	22.42	22.64	23.17		1
	12	0	21.54	21.65	21.67	0-2	2
	12	6	21.50	21.61	21.70		2
	12	13	21.47	21.57	21.65		2
	25	0	21.43	21.48	21.78		2
64QAM	1	0	21.40	21.23	21.48	0-2	2
	1	12	21.28	21.21	21.43		2
	1	24	21.32	21.20	21.41		2
	12	0	20.22	20.10	20.37	0-3	3
	12	6	20.23	20.12	20.39		3
	12	13	20.21	20.05	20.34		3
	25	0	20.17	20.06	20.33		3

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Table 9-40
LTE Band 25 (PCS) 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	23.30	23.31	23.56	0	0
	1	7	23.41	23.36	23.64		0
	1	14	23.29	23.26	23.53		0
	8	0	22.36	22.37	22.65	0-1	1
	8	4	22.34	22.36	22.66		1
	8	7	22.32	22.35	22.64		1
	15	0	22.38	22.34	22.69		1
16QAM	1	0	22.42	22.54	22.73	0-1	1
	1	7	22.51	22.63	22.74		1
	1	14	22.40	22.50	22.69		1
	8	0	21.60	21.62	21.80	0-2	2
	8	4	21.61	21.65	21.83		2
	8	7	21.58	21.59	21.80		2
	15	0	21.43	21.52	21.73		2
64QAM	1	0	21.29	21.20	21.41	0-2	2
	1	7	21.34	21.29	21.55		2
	1	14	21.26	21.14	21.50		2
	8	0	20.23	20.11	20.32	0-3	3
	8	4	20.21	20.12	20.36		3
	8	7	20.19	20.10	20.31		3
	15	0	20.21	20.05	20.29		3

Table 9-41
LTE Band 25 (PCS) 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	23.23	23.62	23.55	0	0
	1	2	23.32	23.68	23.62		0
	1	5	23.25	23.65	23.58		0
	3	0	23.23	23.51	23.53		0
	3	2	23.31	23.57	23.61		0
	3	3	23.24	23.51	23.56		0
	6	0	22.25	22.51	22.61	0-1	1
16QAM	1	0	22.31	22.35	22.57	0-1	1
	1	2	22.39	22.40	22.62		1
	1	5	22.34	22.35	22.58		1
	3	0	22.29	22.57	22.48		1
	3	2	22.39	22.64	22.56		1
	3	3	22.29	22.59	22.49		1
	6	0	21.48	21.79	21.72	0-2	2
64QAM	1	0	21.50	21.56	21.59	0-2	2
	1	2	21.51	21.63	21.60		2
	1	5	21.38	21.46	21.54		2
	3	0	21.37	21.50	21.55		2
	3	2	21.42	21.55	21.60		2
	3	3	21.37	21.52	21.57		2
	6	0	20.30	20.39	20.44	0-3	3

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Table 9-42
LTE Band 25 (PCS) Hotspot Reduced 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	19.03	19.06	19.19	0	0
	1	50	18.71	18.74	19.01		0
	1	99	18.88	18.82	19.02		0
	50	0	18.89	18.85	19.15	0-1	0
	50	25	18.78	18.79	19.13		0
	50	50	18.80	18.78	19.03		0
	100	0	18.83	18.82	19.12		0
16QAM	1	0	19.25	19.15	19.36	0-1	0
	1	50	18.86	18.89	19.22		0
	1	99	19.06	19.08	19.23		0
	50	0	18.96	18.95	19.26	0-2	0
	50	25	18.90	18.89	19.20		0
	50	50	18.88	18.84	19.16		0
	100	0	18.92	18.92	19.20		0
64QAM	1	0	19.29	19.30	19.44	0-2	0
	1	50	18.94	18.95	19.33		0
	1	99	19.09	19.09	19.26		0
	50	0	18.95	18.97	19.26	0-3	0
	50	25	18.91	18.96	19.16		0
	50	50	18.87	18.91	19.18		0
	100	0	18.93	18.92	19.19		0

Table 9-43
LTE Band 25 (PCS) Hotspot Reduced 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	18.91	18.96	19.33	0	0
	1	36	18.77	18.83	19.12		0
	1	74	18.78	18.82	19.15		0
	36	0	18.96	19.01	19.24	0-1	0
	36	18	18.93	18.95	19.24		0
	36	37	18.89	18.95	19.18		0
	75	0	18.89	18.97	19.21		0
16QAM	1	0	19.50	19.34	19.50	0-1	0
	1	36	19.49	19.18	19.46		0
	1	74	19.48	19.19	19.41		0
	36	0	19.05	19.04	19.31	0-2	0
	36	18	19.03	19.04	19.29		0
	36	37	18.95	19.03	19.28		0
	75	0	18.96	19.04	19.24		0
64QAM	1	0	19.25	19.05	19.45	0-2	0
	1	36	19.11	18.88	19.36		0
	1	74	19.11	18.88	19.34		0
	36	0	19.06	19.05	19.30	0-3	0
	36	18	19.04	19.02	19.28		0
	36	37	18.97	18.97	19.24		0
	75	0	19.01	19.03	19.25		0

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Table 9-44
LTE Band 25 (PCS) Hotspot Reduced 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	19.00	19.01	19.22	0	0
	1	25	18.75	18.73	19.15		0
	1	49	18.94	18.94	19.14		0
	25	0	18.86	18.92	19.17	0-1	0
	25	12	18.83	18.93	19.19		0
	25	25	18.81	18.89	19.14		0
	50	0	18.85	18.88	19.17		0
16QAM	1	0	19.37	19.27	19.45	0-1	0
	1	25	18.83	19.06	19.55		0
	1	49	19.05	19.24	19.41		0
	25	0	18.93	18.95	19.31	0-2	0
	25	12	18.94	18.92	19.27		0
	25	25	18.90	18.93	19.24		0
	50	0	18.91	18.96	19.26		0
64QAM	1	0	19.30	19.17	19.28	0-2	0
	1	25	19.01	18.90	19.35		0
	1	49	19.23	19.07	19.35		0
	25	0	18.94	19.04	19.24	0-3	0
	25	12	18.97	19.03	19.23		0
	25	25	18.95	19.00	19.19		0
	50	0	18.95	19.04	19.30		0

Table 9-45
LTE Band 25 (PCS) Hotspot Reduced 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	18.81	18.76	19.13	0	0
	1	12	18.76	18.73	19.10		0
	1	24	18.77	18.72	19.12		0
	12	0	18.82	18.91	19.13	0-1	0
	12	6	18.82	18.90	19.15		0
	12	13	18.80	18.85	19.13		0
	25	0	18.78	18.89	19.11		0
16QAM	1	0	19.14	18.85	19.23	0-1	0
	1	12	19.07	18.83	19.13		0
	1	24	18.85	19.09	19.13		0
	12	0	18.94	18.97	19.27	0-2	0
	12	6	18.97	19.03	19.29		0
	12	13	18.92	18.97	19.26		0
	25	0	18.93	18.88	19.22		0
64QAM	1	0	19.00	19.10	19.36	0-2	0
	1	12	18.95	19.04	19.34		0
	1	24	18.92	18.88	19.32		0
	12	0	18.94	19.00	19.27	0-3	0
	12	6	18.93	19.01	19.29		0
	12	13	18.91	18.96	19.25		0
	25	0	18.90	18.99	19.24		0

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Table 9-46
LTE Band 25 (PCS) Hotspot Reduced 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	18.65	18.73	18.95	0	0
	1	7	18.73	18.82	19.04		0
	1	14	18.62	18.69	18.95		0
	8	0	18.81	18.82	19.26	0-1	0
	8	4	18.84	18.86	19.29		0
	8	7	18.80	18.79	19.28		0
	15	0	18.74	18.83	19.09		0
16QAM	1	0	19.34	19.01	18.94	0-1	0
	1	7	19.43	19.15	19.05		0
	1	14	19.10	19.07	18.94		0
	8	0	18.97	18.88	19.17	0-2	0
	8	4	19.01	18.89	19.24		0
	8	7	18.97	18.89	19.22		0
	15	0	18.79	18.91	19.16		0
64QAM	1	0	18.92	18.76	19.21	0-2	0
	1	7	19.01	18.89	19.35		0
	1	14	18.88	18.71	19.15		0
	8	0	18.84	18.90	19.14	0-3	0
	8	4	18.87	18.91	19.19		0
	8	7	18.83	18.89	19.14		0
	15	0	18.82	18.81	19.10		0

Table 9-47
LTE Band 25 (PCS) Hotspot Reduced 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	18.70	18.91	19.00	0	0
	1	2	18.66	18.98	19.08		0
	1	5	18.57	18.94	18.99		0
	3	0	18.63	18.94	19.00		0
	3	2	18.69	18.99	19.01		0
	3	3	18.62	18.97	19.00		0
	6	0	18.66	18.94	19.04	0-1	0
16QAM	1	0	19.02	19.44	19.33	0-1	0
	1	2	19.40	19.50	19.40		0
	1	5	19.28	19.41	19.32		0
	3	0	18.80	19.19	19.14		0
	3	2	18.83	19.21	19.20		0
	3	3	18.79	19.17	19.16	0	
64QAM	6	0	18.87	19.18	19.25	0-2	0
	1	0	18.85	19.16	19.12	0-2	0
	1	2	18.92	19.01	19.17		0
	1	5	18.82	18.93	19.10		0
	3	0	18.84	19.02	19.23		0
	3	2	18.91	19.09	19.24		0
	3	3	18.84	19.04	19.22		0
6	0	18.83	19.02	19.23	0-3	0	

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Table 9-48
LTE Band 25 (PCS) Grip Reduced 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	21.70	21.53	21.71	0	0
	1	50	21.30	21.18	21.49		0
	1	99	21.36	21.39	21.47		0
	50	0	21.37	21.38	21.67	0-1	0
	50	25	21.33	21.30	21.60		0
	50	50	21.30	21.26	21.56		0
	100	0	21.32	21.32	21.61	0	
16QAM	1	0	21.63	21.63	21.85	0-1	0
	1	50	21.42	21.47	21.62		0
	1	99	21.50	21.48	21.63		0
	50	0	21.44	21.45	21.65	0-2	0
	50	25	21.36	21.39	21.70		0
	50	50	21.36	21.33	21.63		0
	100	0	21.39	21.40	21.70	0	
64QAM	1	0	21.74	21.76	21.91	0-2	0
	1	50	21.49	21.45	21.79		0
	1	99	21.58	21.61	21.72		0
	50	0	20.43	20.45	20.76	0-3	1
	50	25	20.38	20.40	20.68		1
	50	50	20.41	20.39	20.66		1
	100	0	20.39	20.40	20.71	1	

Table 9-49
LTE Band 25 (PCS) Grip Reduced 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	21.30	21.28	21.57	0	0
	1	36	21.33	21.13	21.45		0
	1	74	21.13	21.15	21.45		0
	36	0	21.25	21.27	21.58	0-1	0
	36	18	21.25	21.24	21.54		0
	36	37	21.20	21.16	21.46		0
	75	0	21.23	21.25	21.53	0	
16QAM	1	0	21.61	21.66	21.87	0-1	0
	1	36	21.37	21.42	21.77		0
	1	74	21.35	21.45	21.74		0
	36	0	21.38	21.34	21.63	0-2	0
	36	18	21.36	21.32	21.60		0
	36	37	21.28	21.29	21.55		0
	75	0	21.31	21.33	21.54	0	
64QAM	1	0	21.52	21.49	21.84	0-2	0
	1	36	21.29	21.33	21.66		0
	1	74	21.32	21.40	21.63		0
	36	0	20.31	20.34	20.66	0-3	1
	36	18	20.29	20.33	20.62		1
	36	37	20.27	20.30	20.57		1
	75	0	20.29	20.32	20.60	1	

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Table 9-50
LTE Band 25 (PCS) Grip Reduced 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	21.44	21.41	21.47	0	0
	1	25	21.12	21.12	21.41		0
	1	49	21.31	21.31	21.41		0
	25	0	21.24	21.25	21.50	0-1	0
	25	12	21.19	21.23	21.54		0
	25	25	21.16	21.19	21.47		0
	50	0	21.22	21.21	21.48		0
16QAM	1	0	21.72	21.67	21.82	0-1	0
	1	25	21.34	21.47	21.71		0
	1	49	21.51	21.51	21.73		0
	25	0	21.32	21.29	21.61	0-2	0
	25	12	21.28	21.27	21.53		0
	25	25	21.24	21.26	21.53		0
	50	0	21.23	21.28	21.58		0
64QAM	1	0	21.59	21.58	21.68	0-2	0
	1	25	21.27	21.34	21.62		0
	1	49	21.52	21.49	21.57		0
	25	0	20.35	20.31	20.63	0-3	1
	25	12	20.36	20.30	20.57		1
	25	25	20.29	20.31	20.54		1
	50	0	20.28	20.29	20.61		1

Table 9-51
LTE Band 25 (PCS) Grip Reduced 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	21.09	21.15	21.42	0	0
	1	12	21.05	21.08	21.40		0
	1	24	21.04	21.04	21.38		0
	12	0	21.14	21.11	21.47	0-1	0
	12	6	21.10	21.16	21.49		0
	12	13	21.06	21.15	21.46		0
	25	0	21.09	21.10	21.49		0
16QAM	1	0	21.43	21.48	21.80	0-1	0
	1	12	21.35	21.40	21.84		0
	1	24	21.30	21.43	21.68		0
	12	0	21.24	21.25	21.60	0-2	0
	12	6	21.19	21.26	21.60		0
	12	13	21.18	21.24	21.54		0
	25	0	21.16	21.22	21.55		0
64QAM	1	0	21.26	21.15	21.64	0-2	0
	1	12	21.19	21.11	21.65		0
	1	24	21.17	21.20	21.56		0
	12	0	20.15	20.24	20.59	0-3	1
	12	6	20.19	20.25	20.56		1
	12	13	20.17	20.20	20.55		1
	25	0	20.17	20.21	20.54		1

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Table 9-52
LTE Band 25 (PCS) Grip Reduced 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	21.23	21.22	21.45	0	0
	1	7	21.33	21.26	21.53		0
	1	14	21.20	21.19	21.40		0
	8	0	21.27	21.21	21.47	0-1	0
	8	4	21.30	21.26	21.48		0
	8	7	21.24	21.22	21.46		0
	15	0	21.29	21.22	21.48		0
16QAM	1	0	21.44	21.37	21.61	0-1	0
	1	7	21.48	21.46	21.70		0
	1	14	21.33	21.30	21.60		0
	8	0	21.35	21.31	21.57	0-2	0
	8	4	21.37	21.35	21.59		0
	8	7	21.36	21.32	21.53		0
	15	0	21.38	21.31	21.60		0
64QAM	1	0	21.48	21.44	21.70	0-2	0
	1	7	21.57	21.54	21.77		0
	1	14	21.43	21.43	21.65		0
	8	0	20.41	20.36	20.59	0-3	1
	8	4	20.40	20.37	20.60		1
	8	7	20.36	20.33	20.58		1
	15	0	20.35	20.30	20.54		1

Table 9-53
LTE Band 25 (PCS) Grip Reduced 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	21.15	21.32	21.40	0	0
	1	2	21.20	21.39	21.45		0
	1	5	21.16	21.32	21.36		0
	3	0	21.17	21.34	21.43		0
	3	2	21.19	21.38	21.46		0
	3	3	21.13	21.33	21.44		0
	6	0	21.21	21.38	21.47	0-1	0
16QAM	1	0	21.30	21.51	21.56	0-1	0
	1	2	21.37	21.57	21.59		0
	1	5	21.31	21.48	21.55		0
	3	0	21.31	21.50	21.53		0
	3	2	21.37	21.49	21.55		0
	3	3	21.31	21.48	21.55		0
	6	0	21.29	21.47	21.53	0-2	0
64QAM	1	0	21.42	21.60	21.61	0-2	0
	1	2	21.48	21.63	21.72		0
	1	5	21.40	21.56	21.70		0
	3	0	21.38	21.56	21.64		0
	3	2	21.39	21.62	21.62		0
	3	3	21.38	21.57	21.61		0
	6	0	20.24	20.47	20.49	0-3	1

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LTE Band 41

Table 9-54
LTE Band 41 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	23.55	23.66	23.67	23.71	23.84	0	0
	1	50	23.46	23.50	23.49	23.50	23.72		0
	1	99	23.48	23.43	23.46	23.54	23.66		0
	50	0	22.68	22.61	22.65	22.64	22.76	0-1	1
	50	25	22.58	22.56	22.58	22.57	22.71		1
	50	50	22.51	22.50	22.50	22.56	22.71		1
	100	0	22.54	22.58	22.53	22.58	22.70		1
16QAM	1	0	22.62	22.36	22.74	22.75	22.86	0-1	1
	1	50	22.51	22.16	22.52	22.55	22.71		1
	1	99	22.53	22.13	22.51	22.61	22.70		1
	50	0	21.66	21.69	21.70	21.70	21.81	0-2	2
	50	25	21.65	21.63	21.62	21.66	21.78		2
	50	50	21.59	21.58	21.60	21.60	21.82		2
	100	0	21.66	21.61	21.67	21.67	21.81		2
64QAM	1	0	21.61	21.92	21.72	21.72	21.87	0-2	2
	1	50	21.51	21.74	21.52	21.54	21.76		2
	1	99	21.55	21.73	21.47	21.61	21.74		2
	50	0	20.71	20.69	20.71	20.74	20.90	0-3	3
	50	25	20.68	20.64	20.68	20.73	20.81		3
	50	50	20.66	20.58	20.61	20.64	20.87		3
	100	0	20.63	20.66	20.65	20.65	20.81		3

Table 9-55
LTE Band 41 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	23.58	23.60	23.60	23.52	23.60	0	0
	1	36	23.40	23.40	23.37	23.34	23.53		0
	1	74	23.33	23.30	23.27	23.36	23.47		0
	36	0	22.56	22.53	22.53	22.49	22.56	0-1	1
	36	18	22.51	22.49	22.48	22.45	22.64		1
	36	37	22.44	22.39	22.40	22.39	22.54		1
	75	0	22.47	22.45	22.45	22.43	22.50		1
16QAM	1	0	22.88	22.84	22.86	22.81	22.86	0-1	1
	1	36	22.68	22.65	22.65	22.62	22.77		1
	1	74	22.57	22.59	22.56	22.64	22.71		1
	36	0	21.61	21.58	21.61	21.55	21.58	0-2	2
	36	18	21.57	21.55	21.53	21.50	21.65		2
	36	37	21.49	21.48	21.46	21.43	21.63		2
	75	0	21.57	21.54	21.56	21.49	21.58		2
64QAM	1	0	21.86	21.87	21.88	21.80	21.83	0-2	2
	1	36	21.67	21.65	21.68	21.63	21.74		2
	1	74	21.59	21.60	21.59	21.65	21.69		2
	36	0	20.65	20.63	20.62	20.57	20.61	0-3	3
	36	18	20.61	20.59	20.57	20.54	20.70		3
	36	37	20.51	20.49	20.49	20.47	20.66		3
	75	0	20.60	20.58	20.55	20.54	20.60		3

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Table 9-56
LTE Band 41 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	23.50	23.50	23.47	23.44	23.53	0	0
	1	25	23.40	23.41	23.34	23.35	23.52		0
	1	49	23.32	23.34	23.28	23.39	23.48		0
	25	0	22.50	22.48	22.45	22.43	22.51	0-1	1
	25	12	22.47	22.44	22.42	22.40	22.59		1
	25	25	22.42	22.36	22.35	22.36	22.54		1
	50	0	22.48	22.45	22.45	22.40	22.48		1
16QAM	1	0	22.81	22.79	22.76	22.71	22.80	0-1	1
	1	25	22.69	22.67	22.66	22.61	22.78		1
	1	49	22.63	22.62	22.58	22.65	22.77		1
	25	0	21.53	21.50	21.48	21.43	21.53	0-2	2
	25	12	21.52	21.48	21.45	21.41	21.62		2
	25	25	21.43	21.43	21.40	21.38	21.55		2
	50	0	21.57	21.56	21.54	21.48	21.59		2
64QAM	1	0	21.83	21.80	21.80	21.75	21.84	0-2	2
	1	25	21.71	21.70	21.68	21.63	21.81		2
	1	49	21.64	21.63	21.59	21.66	21.78		2
	25	0	20.65	20.60	20.60	20.58	20.65	0-3	3
	25	12	20.63	20.58	20.58	20.53	20.72		3
	25	25	20.54	20.53	20.52	20.48	20.67		3
	50	0	20.59	20.57	20.57	20.51	20.60		3

Table 9-57
LTE Band 41 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	23.42	23.43	23.41	23.43	23.51	0	0
	1	12	23.40	23.41	23.42	23.42	23.54		0
	1	24	23.35	23.32	23.36	23.34	23.47		0
	12	0	22.49	22.44	22.51	22.46	22.61	0-1	1
	12	6	22.46	22.45	22.49	22.44	22.63		1
	12	13	22.42	22.40	22.44	22.40	22.56		1
	25	0	22.45	22.43	22.49	22.43	22.60		1
16QAM	1	0	22.77	22.73	22.75	22.69	22.82	0-1	1
	1	12	22.70	22.67	22.70	22.66	22.79		1
	1	24	22.61	22.62	22.65	22.58	22.75		1
	12	0	21.53	21.61	21.56	21.49	21.64	0-2	2
	12	6	21.54	21.57	21.54	21.51	21.67		2
	12	13	21.51	21.55	21.52	21.46	21.63		2
	25	0	21.48	21.55	21.50	21.44	21.62		2
64QAM	1	0	21.72	21.82	21.80	21.71	21.84	0-2	2
	1	12	21.69	21.75	21.72	21.67	21.79		2
	1	24	21.64	21.73	21.67	21.61	21.76		2
	12	0	20.58	20.60	20.61	20.54	20.69	0-3	3
	12	6	20.57	20.62	20.59	20.52	20.70		3
	12	13	20.48	20.55	20.53	20.48	20.65		3
	25	0	20.61	20.67	20.64	20.57	20.74		3

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Table 9-58
LTE Band 41 Reduced 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	21.69	21.60	21.58	21.56	21.85	0	0
	1	50	21.56	21.40	21.38	21.39	21.67		0
	1	99	21.62	21.42	21.33	21.28	21.65		0
	50	0	21.67	21.63	21.57	21.55	21.69	0-1	0
	50	25	21.62	21.61	21.51	21.54	21.63		0
	50	50	21.63	21.54	21.44	21.49	21.71		0
	100	0	21.66	21.58	21.49	21.51	21.61		0
16QAM	1	0	21.70	21.89	21.66	21.85	21.45	0-1	0
	1	50	21.57	21.69	21.44	21.68	21.31		0
	1	99	21.66	21.65	21.43	21.74	21.32		0
	50	0	21.71	21.72	21.64	21.71	21.79	0-2	0
	50	25	21.72	21.66	21.60	21.64	21.73		0
	50	50	21.68	21.61	21.53	21.57	21.78		0
	100	0	21.71	21.61	21.63	21.60	21.69		0
64QAM	1	0	21.64	21.40	21.67	21.37	21.93	0-2	0
	1	50	21.56	21.22	21.50	21.20	21.92		0
	1	99	21.62	21.19	21.46	21.28	21.90		0
	50	0	20.69	20.75	20.70	20.72	20.78	0-3	1
	50	25	20.73	20.68	20.66	20.66	20.71		1
	50	50	20.69	20.61	20.59	20.61	20.75		1
	100	0	20.71	20.67	20.64	20.64	20.74		1

Table 9-59
LTE Band 41 Reduced 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	21.73	21.54	21.59	21.64	21.82	0	0	
	1	36	21.67	21.40	21.44	21.54	21.65		0-1	0
	1	74	21.59	21.51	21.37	21.47	21.58			0
	36	0	21.75	21.70	21.50	21.62	21.74	0		
	36	18	21.64	21.71	21.39	21.55	21.76	0		0
	36	37	21.66	21.65	21.41	21.48	21.66		0	
	75	0	21.67	21.41	21.44	21.51	21.70		0	
16QAM	1	0	21.63	21.69	21.50	21.64	21.62	0-1	0	
	1	36	21.42	21.57	21.42	21.58	21.53		0-2	0
	1	74	21.61	21.49	21.46	21.49	21.44			0
	36	0	21.74	21.62	21.58	21.75	21.91	0		
	36	18	21.76	21.54	21.56	21.67	21.88	0		0
	36	37	21.66	21.57	21.49	21.66	21.73		0	
	75	0	21.72	21.48	21.52	21.60	21.84		0	
64QAM	1	0	21.61	21.40	21.64	21.46	21.90	0-2	0	
	1	36	21.50	21.23	21.49	21.31	21.92		0-3	0
	1	74	21.57	21.21	21.40	21.39	21.86			0
	36	0	20.75	20.77	20.67	20.81	20.75	1		
	36	18	20.77	20.71	20.61	20.70	20.62	1		1
	36	37	20.72	20.62	20.51	20.62	20.68		1	
	75	0	20.76	20.65	20.62	20.64	20.70		1	

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Table 9-60
LTE Band 41 Reduced 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	21.58	21.55	21.48	21.38	21.55	0	0	
	1	25	21.53	21.50	21.35	21.35	21.53		0-1	0
	1	49	21.49	21.44	21.30	21.37	21.52			0
	25	0	21.56	21.58	21.47	21.44	21.49	0		
	25	12	21.57	21.58	21.46	21.42	21.58	0		0
	25	25	21.51	21.52	21.40	21.37	21.53		0	
	50	0	21.57	21.58	21.45	21.40	21.45		0	
16QAM	1	0	21.68	21.67	21.58	21.53	21.64	0-1	0	
	1	25	21.59	21.65	21.52	21.47	21.63		0-2	0
	1	49	21.56	21.57	21.43	21.50	21.57			0
	25	0	21.61	21.63	21.52	21.48	21.52	0		0
	25	12	21.58	21.59	21.50	21.47	21.61			0
	25	25	21.52	21.57	21.44	21.41	21.54		0	
	50	0	21.65	21.65	21.53	21.48	21.54	0		
64QAM	1	0	21.53	21.55	21.46	21.42	21.50	0-2	0	
	1	25	21.47	21.52	21.40	21.35	21.47		0-3	0
	1	49	21.40	21.44	21.31	21.37	21.42			0
	25	0	20.67	20.67	20.58	20.54	20.60	1		
	25	12	20.65	20.69	20.57	20.54	20.66	1		
	25	25	20.62	20.62	20.52	20.47	20.65	1		
	50	0	20.63	20.64	20.57	20.52	20.56	1		

Table 9-61
LTE Band 41 Reduced 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	21.59	21.54	21.50	21.22	21.51	0	0
	1	12	21.59	21.51	21.46	21.28	21.54		0
	1	24	21.53	21.47	21.44	21.25	21.45		0
	12	0	21.59	21.58	21.49	21.40	21.59	0-1	0
	12	6	21.62	21.60	21.45	21.49	21.61		0
	12	13	21.56	21.56	21.48	21.42	21.55		0
	25	0	21.58	21.60	21.46	21.45	21.59		0
16QAM	1	0	21.66	21.68	21.56	21.46	21.67	0-1	0
	1	12	21.63	21.65	21.52	21.42	21.66		0
	1	24	21.59	21.61	21.49	21.38	21.61		0
	12	0	21.65	21.69	21.55	21.42	21.69	0-2	0
	12	6	21.66	21.70	21.54	21.42	21.69		0
	12	13	21.65	21.67	21.54	21.43	21.63		0
	25	0	21.60	21.64	21.48	21.38	21.63		0
64QAM	1	0	21.48	21.54	21.46	21.37	21.54	0-2	0
	1	12	21.50	21.52	21.38	21.37	21.51		0
	1	24	21.47	21.49	21.35	21.23	21.46		0
	12	0	20.63	20.65	20.53	20.53	20.69	0-3	1
	12	6	20.64	20.67	20.52	20.52	20.70		1
	12	13	20.64	20.62	20.53	20.52	20.64		1
	25	0	20.70	20.70	20.55	20.58	20.72		1

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9.4.7 LTE Carrier Aggregation Conducted Powers

Table 9-62

LTE B12 Two Component Carrier Maximum Conducted Powers

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_2A-12A	LTE B12	5	23095	707.5	QPSK	1	12	5095	737.5	LTE B2	20	900	1960	24.24	24.16
CA_4A-12A (4)	LTE B12	5	23095	707.5	QPSK	1	12	5095	737.5	LTE B4	20	2175	2132.5	24.22	24.16

Table 9-63

LTE B12 Three Component Carrier Maximum Conducted Powers

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_12A-66A-66A	LTE B12	5	23095	707.5	QPSK	1	12	5095	737.5	LTE B66	20	66786	2145	LTE B66	20	67236	2190	24.21	24.16

Table 9-64

LTE B17 Two Component Carrier Maximum Conducted Powers

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_2A-17A	LTE B17	5	23765	707.5	QPSK	1	12	5765	737.5	LTE B2	10	900	1960	24.21	24.16
CA_4A-17A	LTE B17	5	23765	707.5	QPSK	1	12	5765	737.5	LTE B4	10	2175	2132.5	24.19	24.16

Table 9-65

LTE B13 Two Component Carrier Maximum Conducted Powers

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_2A-13A	LTE B13	10	23230	782	QPSK	1	0	5230	751	LTE B2	20	900	1960	23.86	24.00
CA_4A-13A	LTE B13	10	23230	782	QPSK	1	0	5230	751	LTE B4	20	2175	2132.5	23.93	24.00

Table 9-66

LTE B5 Two Component Carrier Maximum Conducted Powers

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_2A-5A	LTE B5	10	20475	831.5	QPSK	1	0	2475	876.5	LTE B2	20	900	1960	24.24	24.19
CA_4A-5A (1)	LTE B5	10	20475	831.5	QPSK	1	0	2475	876.5	LTE B4	20	2175	2132.5	24.26	24.19
CA_5A-41A	LTE B5	10	20475	831.5	QPSK	1	0	2475	876.5	LTE B41	20	40620	2593	24.21	24.19

Table 9-67

LTE B4 Two Component Carrier Maximum Conducted Powers

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_2A-4A (2)	LTE B4	15	20300	1745	QPSK	1	0	2300	2145	LTE B2	20	900	1960	24.50	24.42
CA_4A-4A	LTE B4	15	20300	1745	QPSK	1	0	2300	2145	LTE B4	20	2050	2120	24.47	24.42
CA_4A-5A (1)	LTE B4	15	20300	1745	QPSK	1	0	2300	2145	LTE B5	10	2525	881.5	24.49	24.42
CA_4A-12A (4)	LTE B4	15	20300	1745	QPSK	1	0	2300	2145	LTE B12	10	5095	737.5	24.48	24.42
CA_4A-13A	LTE B4	15	20300	1745	QPSK	1	0	2300	2145	LTE B13	10	5230	751	24.39	24.42
CA_4A-17A	LTE B4	10	20300	1745	QPSK	1	0	2300	2145	LTE B17	10	5790	740	24.39	24.37

Table 9-68

LTE B66 Two Component Carrier Maximum Conducted Powers

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_66B	LTE B66	15	132322	1745	QPSK	1	0	66786	2145	LTE B66	5	66693	2135.7	24.52	24.42
CA_66C	LTE B66	15	132322	1745	QPSK	1	0	66786	2145	LTE B66	20	66615	2127.9	24.55	24.42

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Table 9-69

LTE B66 Three Component Carrier Maximum Conducted Powers

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_12A-66A-66A	LTE B66	15	132322	1745	QPSK	1	0	66786	2145	LTE B66	20	67236	2190	LTE B12	10	5095	737.5	24.37	24.42

Table 9-70

LTE B2 Two Component Carrier Maximum Conducted Powers

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_2C	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B2	20	954	1965.4	23.76	23.74
CA_2A-4A (2)	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B4	20	2175	2132.5	23.64	23.74
CA_2A-5A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B5	10	2525	881.5	23.68	23.74
CA_2A-12A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B12	10	5095	737.5	23.66	23.74
CA_2A-13A	LTE B2	15	19125	1902.5	QPSK	1	0	1125	1982.5	LTE B13	10	5230	751	23.67	23.74
CA_2A-17A	LTE B2	5	19175	1907.5	QPSK	1	0	1175	1987.5	LTE B17	10	5790	740	23.71	23.68

Table 9-71

LTE B41 Two Component Carrier Maximum Conducted Powers

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41A-41A (1)	LTE B41	20	41490	2680	QPSK	1	0	41490	2680	LTE B41	20	39750	2506	23.85	23.84

Table 9-72

LTE B41 Three Component Carrier Maximum Conducted Powers

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41D	LTE B41	20	41490	2680	QPSK	1	0	41490	2680	LTE B41	20	41292	2660.2	LTE B41	20	41094	2640.4	23.87	23.84
CA_41A-41C	LTE B41	20	41490	2680	QPSK	1	0	41490	2680	LTE B41	20	39948	2525.8	LTE B41	20	39750	2506	23.88	23.84
CA_41C-41A	LTE B41	20	41490	2680	QPSK	1	0	41490	2680	LTE B41	20	41292	2660.2	LTE B41	20	39750	2506	23.89	23.84

Table 9-73

LTE B41 Four Component Carrier Maximum Conducted Powers

Combination	PCC Band	PCC BW [MHz]	PCC (UL) Channel	PCC (UL) Freq. [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41E	LTE B41	20	41490	2680	QPSK	1	0	41490	2680	LTE B41	20	41292	2660.2	LTE B41	20	41094	2640.4	23.83	23.84
CA_41C-41C	LTE B41	20	41490	2680	QPSK	1	0	41490	2680	LTE B41	20	41292	2660.2	LTE B41	20	39948	2525.8	23.78	23.84

Table 9-74

LTE B4 Two Component Carrier Reduced Conducted Powers – Hotspot Mode Active

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_2A-4A (2)	LTE B4	5	19975	1712.5	16QAM	1	0	1975	2112.5	LTE B2	20	900	1960	19.64	19.50
CA_4A-4A	LTE B4	5	19975	1712.5	16QAM	1	0	1975	2112.5	LTE B4	20	2300	2145	19.62	19.50
CA_4A-5A (1)	LTE B4	5	19975	1712.5	16QAM	1	0	1975	2112.5	LTE B5	10	2525	881.5	19.67	19.50
CA_4A-12A (4)	LTE B4	5	19975	1712.5	16QAM	1	0	1975	2112.5	LTE B12	10	5095	737.5	19.71	19.50
CA_4A-13A	LTE B4	5	19975	1712.5	16QAM	1	0	1975	2112.5	LTE B13	10	5230	751	19.69	19.50
CA_4A-17A	LTE B4	5	19975	1712.5	16QAM	1	0	1975	2112.5	LTE B17	10	5790	740	19.66	19.50

Table 9-75

LTE B66 Two Component Carrier Reduced Conducted Powers – Hotspot Mode Active

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_66B	LTE B66	5	131997	1712.5	16QAM	1	0	66461	2112.5	LTE B66	15	66554	2121.8	19.63	19.50
CA_66C	LTE B66	5	131997	1712.5	16QAM	1	0	66461	2112.5	LTE B66	20	66578	2124.2	19.65	19.50

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Table 9-76

LTE B66 Three Component Carrier Reduced Conducted Powers – Hotspot Mode Active

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_12A-66A-66A	LTE B66	5	131997	1712.5	16QAM	1	0	66461	2112.5	LTE B66	20	67236	2190	LTE B12	10	5095	737.5	19.41	19.50

Table 9-77

LTE B2 Two Component Carrier Reduced Conducted Powers – Hotspot Mode Active

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_2C	LTE B2	10	19150	1905	16QAM	1	25	1150	1985	LTE B2	20	1006	1970.6	19.64	19.55
CA_2A-4A (2)	LTE B2	10	19150	1905	16QAM	1	25	1150	1985	LTE B4	20	2175	2132.5	19.65	19.55
CA_2A-5A	LTE B2	10	19150	1905	16QAM	1	25	1150	1985	LTE B5	10	2525	881.5	19.62	19.55
CA_2A-12A	LTE B2	10	19150	1905	16QAM	1	25	1150	1985	LTE B12	10	5095	737.5	19.65	19.55
CA_2A-13A	LTE B2	10	19150	1905	16QAM	1	25	1150	1985	LTE B13	10	5230	751	19.67	19.55
CA_2A-17A	LTE B2	10	19150	1905	16QAM	1	25	1150	1985	LTE B17	10	5790	740	19.66	19.55

Table 9-78

LTE B41 Two Component Carrier Reduced Conducted Powers – Hotspot Mode Active

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41A-41A (1)	LTE B41	20	41490	2680	64QAM	1	0	41490	2680	LTE B41	20	39750	2506	21.97	21.93

Table 9-79

LTE B41 Three Component Carrier Reduced Conducted Powers – Hotspot Mode Active

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41D	LTE B41	20	41490	2680	64QAM	1	0	41490	2680	LTE B41	20	41292	2660.2	LTE B41	20	41094	2640.4	21.97	21.93
CA_41A-41C	LTE B41	20	41490	2680	64QAM	1	0	41490	2680	LTE B41	20	39948	2525.8	LTE B41	20	39750	2506	21.96	21.93
CA_41C-41A	LTE B41	20	41490	2680	64QAM	1	0	41490	2680	LTE B41	20	41292	2660.2	LTE B41	20	39750	2506	21.94	21.93

Table 9-80

LTE B41 Four Component Carrier Reduced Conducted Powers – Hotspot Mode Active

Combination	PCC Band	PCC BW [MHz]	PCC (UL) Channel	PCC (UL) Freq. [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41E	LTE B41	20	41490	2680	64QAM	1	0	41490	2680	LTE B41	20	41292	2660.2	LTE B41	20	41094	2640.4	LTE B41	20	40896	2620.6	21.98	21.93
CA_41C-41C	LTE B41	20	41490	2680	64QAM	1	0	41490	2680	LTE B41	20	41292	2660.2	LTE B41	20	39948	2525.8	LTE B41	20	39750	2506	21.95	21.93

Table 9-81

LTE B4 Two Component Carrier Reduced Conducted Powers – Grip Sensor Mode Active

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_2A-4A (2)	LTE B4	15	20025	1717.5	64QAM	1	0	2025	2117.5	LTE B2	20	900	1960	20.42	20.25
CA_4A-4A	LTE B4	15	20025	1717.5	64QAM	1	0	2025	2117.5	LTE B4	20	2300	2145	20.44	20.25
CA_4A-5A (1)	LTE B4	15	20025	1717.5	64QAM	1	0	2025	2117.5	LTE B5	10	2525	881.5	20.43	20.25
CA_4A-12A (4)	LTE B4	15	20025	1717.5	64QAM	1	0	2025	2117.5	LTE B12	10	5095	737.5	20.45	20.25
CA_4A-13A	LTE B4	15	20025	1717.5	64QAM	1	0	2025	2117.5	LTE B13	10	5230	751	20.49	20.25
CA_4A-17A	LTE B4	10	20300	1745	64QAM	1	0	2300	2145	LTE B17	10	5790	740	20.42	20.24

Table 9-82

LTE B66 Two Component Carrier Reduced Conducted Powers – Grip Sensor Mode Active

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_66B	LTE B66	15	132047	1717.5	64QAM	1	0	66511	2117.5	LTE B66	5	66604	2126.8	20.37	20.25
CA_66C	LTE B66	15	132047	1717.5	64QAM	1	0	66511	2117.5	LTE B66	20	66682	2134.6	20.33	20.25

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Table 9-83

LTE B66 Three Component Carrier Reduced Conducted Powers – Grip Sensor Mode Active

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL# RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_12A-66A-66A	LTE B66	15	132047	1717.5	64QAM	1	0	66511	2117.5	LTE B66	20	67236	2190	LTE B12	10	5095	737.5	20.17	20.25

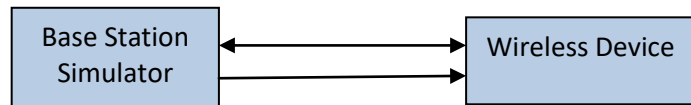
Table 9-84

LTE B2 Two Component Carrier Reduced Conducted Powers – Grip Sensor Mode Active

Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL# RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_2C	LTE B2	20	19100	1900	64QAM	1	0	1100	1980	LTE B2	20	902	1960.2	21.95	21.91
CA_2A-4A (2)	LTE B2	20	19100	1900	64QAM	1	0	1100	1980	LTE B4	20	2175	2132.5	21.71	21.91
CA_2A-5A	LTE B2	20	19100	1900	64QAM	1	0	1100	1980	LTE B5	10	2525	881.5	21.92	21.91
CA_2A-12A	LTE B2	20	19100	1900	64QAM	1	0	1100	1980	LTE B12	10	5095	737.5	21.96	21.91
CA_2A-13A	LTE B2	20	19100	1900	64QAM	1	0	1100	1980	LTE B13	10	5230	751	21.87	21.91
CA_2A-17A	LTE B2	5	19175	1907.5	16QAM	1	12	1175	1987.5	LTE B17	10	5790	740	21.99	21.84

Notes:

1. SAR test exclusion for LTE downlink Carrier Aggregation is determined by power measurements according to the number component carriers (CCs) supported by the product implementation. For those combinations required by FCC Guidance, power measurements were performed with 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.
2. Per KDB Publication 941225 D05Av01r02, SAR test for downlink only LTE CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive.
3. All control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
4. For downlink carrier aggregation combinations, PCC uplink channel was selected based on section C)3)b)ii) of KDB 941225 D05 V01r02. The downlink PCC channel was paired with the selected PCC uplink channel according to normal configurations without carrier aggregation. For inter-band CA, the SCC downlink channels were selected near the middle of their transmission bands. For contiguous intra-band CA, the downlink channel spacing between the component carriers was set to multiple of 300 kHz less than the nominal channel spacing defined in section 5.4.1A of 3GPP TS 36.521. For non-contiguous intra-band CA, the downlink channel spacing between the component carriers was set to be larger than the nominal channel spacing and provided maximum separation between the component carriers. All selected downlink channels remained fully within the downlink transmission band of the respective component carrier.
5. 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.

Figure 9-4
Power Measurement Setup

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9.4.8 LTE Uplink Carrier Aggregation Conducted Powers

Table 9-85

LTE Uplink Two Component Carrier Aggregation Maximum Conducted Powers

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	41490	2680.0	QPSK	1	0	LTE B41	20	41292	2660.2	QPSK	1	99	22.60	23.84

Table 9-86

LTE Uplink Two Component Carrier Aggregation Reduced Conducted Powers

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	41490	2680.0	QPSK	1	0	LTE B41	20	41292	2660.2	QPSK	1	99	20.40	21.85

Notes:

1. This device supports uplink carrier aggregation for LTE CA_41C with a maximum of two 20 MHz 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 Fall 2017 TCBC Workshop Notes, 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 9-5
Power Measurement Setup

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9.5 WLAN Conducted Powers

Table 9-87
2.4 GHz WLAN Maximum Average RF Power – Ant 1

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
		Average	Average	Average
2412	1	19.74	16.21	15.63
2437	6	20.04	17.08	17.04
2462	11	20.31	17.14	16.98

Table 9-88
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
		Average	Average	Average
2412	1	20.47	17.05	16.99
2437	6	20.45	17.32	17.24
2462	11	20.31	17.27	16.45

Table 9-89
5 GHz WLAN Maximum Average RF Power - Ant 1

5GHz (40MHz) Conducted Power [dBm]				5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode		Freq [MHz]	Channel	IEEE Transmission Mode
		802.11n	802.11ac			802.11ac
		Average	Average			Average
5190	38	16.64	16.75	5210	42	16.60
5230	46	16.70	16.79	5290	58	15.40
5270	54	16.60	16.52	5530	106	15.44
5310	62	15.29	15.70	5610	122	16.59
5510	102	16.77	16.67	5690	138	16.58
5590	118	16.73	16.66	5775	155	16.67
5630	126	16.49	16.42			
5710	142	16.43	16.51			
5755	151	16.64	16.75			
5795	159	16.66	16.62			

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Table 9-90
5 GHz WLAN Maximum Average RF Power - Ant 2

5GHz (40MHz) Conducted Power [dBm]				5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode		Freq [MHz]	Channel	IEEE Transmission Mode
		802.11n	802.11ac			
		Average	Average			
5190	38	17.44	17.03	5210	42	17.17
5230	46	17.33	17.23		58	14.79
5270	54	16.67	17.22		106	15.22
5310	62	15.71	15.80		122	16.84
5510	102	16.68	16.55		138	16.61
5590	118	16.65	16.59		155	17.44
5630	126	16.65	16.62			
5710	142	16.86	16.78			
5755	151	17.30	17.23			
5795	159	17.21	17.27			

Table 9-91
5 GHz WLAN Maximum Average RF Power – MIMO

5GHz (40MHz) 802.11n Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
5190	38	16.26	16.28	19.28
5230	46	16.70	17.33	20.04
5270	54	16.60	16.67	19.65
5310	62	15.16	15.34	18.26
5510	102	16.26	16.34	19.31
5590	118	15.55	16.49	19.06
5630	126	15.58	16.45	19.05
5710	142	15.48	16.30	18.92
5755	151	16.64	17.30	19.99
5795	159	16.66	17.21	19.95
5GHz (80MHz) 802.11ac Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
5210	42	15.15	15.20	18.19
5290	58	15.27	15.29	18.29
5530	106	15.44	15.22	18.34
5610	122	15.94	15.63	18.80
5690	138	16.07	15.51	18.81
5775	155	16.67	17.44	20.08

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Table 9-92
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	14.95	15.06
2417	2	15.76	15.70
2437	6	15.96	16.21
2457	10	16.07	15.95
2462	11	15.10	15.31
5GHz (80MHz) 802.11ac Conducted Power [dBm]			
Freq [MHz]	Channel	ANT1	ANT2
5210	42	13.30	13.47
5290	58	13.25	12.63
5530	106	13.15	13.15
5610	122	13.41	13.18
5690	138	12.89	12.79
5775	155	12.71	13.09

Table 9-93
2.4 GHz WLAN Reduced Average RF Power – Ant 1 (Held-to-ear)

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
		Average	Average	Average
2412	1	13.08	13.26	13.14
2437	6	13.22	13.49	13.31
2462	11	13.46	12.76	13.47

Table 9-94
2.4 GHz WLAN Reduced Average RF Power – Ant 2 (Held-to-ear)

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
		Average	Average	Average
2412	1	12.76	12.87	12.66
2437	6	13.20	13.43	13.27
2462	11	13.01	13.19	13.12

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Table 9-95
5 GHz WLAN Reduced Average RF Power – Ant 1 (Held-to-ear)

5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
		Average
5210	42	11.61
5290	58	11.79
5530	106	11.81
5610	122	11.71
5690	138	12.32
5775	155	12.29

Table 9-96
5 GHz WLAN Reduced Average RF Power – Ant 2 (Held-to-ear)

5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
		Average
5210	42	12.46
5290	58	12.38
5530	106	12.18
5610	122	12.24
5690	138	12.01
5775	155	12.49

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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.

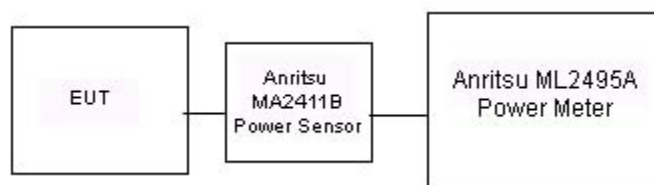


Figure 9-6

Power Measurement Setup for Bandwidths < 50 MHz

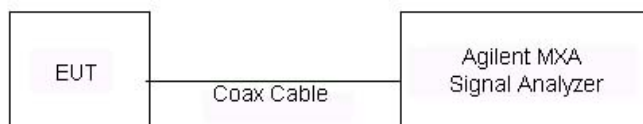


Figure 9-7

Power Measurement Setup for Bandwidths > 50 MHz

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9.6 Bluetooth Conducted Powers

Table 9-97
Bluetooth Average RF Power

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	16.19	41.592
2441	1.0	39	16.40	43.601
2480	1.0	78	14.95	31.268
2402	2.0	0	4.73	2.974
2441	2.0	39	7.20	5.251
2480	2.0	78	5.72	3.730
2402	3.0	0	4.92	3.102
2441	3.0	39	7.34	5.420
2480	3.0	78	5.82	3.819

Note: The bolded data rates and channel above were tested for SAR.

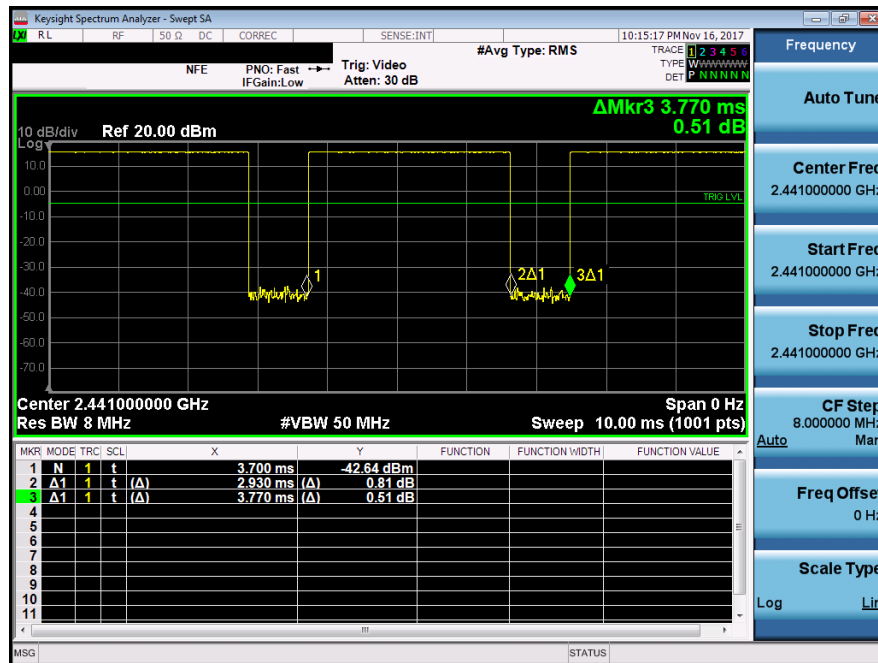


Figure 9-8
Bluetooth Transmission Plot

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Equation 9-1
Bluetooth Duty Cycle Calculation

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.93ms}{3.77ms} * 100\% = 77.7\%$$

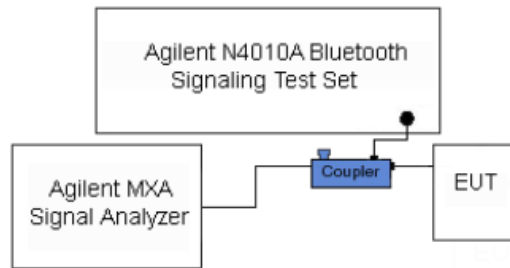


Figure 9-9
Power Measurement Setup

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10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured Head 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
11/20/2017	750H	20.4	700	0.871	42.157	0.889	42.201	-2.02%	-0.10%
			710	0.875	42.127	0.890	42.149	-1.69%	-0.05%
			740	0.886	42.072	0.893	41.994	-0.78%	0.19%
			755	0.891	42.030	0.894	41.916	-0.34%	0.27%
			770	0.895	41.980	0.895	41.838	0.00%	0.34%
11/20/2017	835H	22.2	785	0.900	41.936	0.896	41.760	0.45%	0.42%
			820	0.912	43.585	0.899	41.578	1.45%	4.83%
			835	0.926	43.414	0.900	41.500	2.89%	4.61%
			850	0.941	43.245	0.916	41.500	2.73%	4.20%
			820	0.884	41.140	0.899	41.578	-1.67%	-1.05%
11/29/2017	835H	21.3	835	0.898	40.954	0.900	41.500	-0.22%	-1.32%
			850	0.912	40.767	0.916	41.500	-0.44%	-1.77%
			820	0.896	41.928	0.899	41.578	-0.33%	0.84%
12/4/2017	835H	20.6	835	0.911	41.754	0.900	41.500	1.22%	0.61%
			850	0.926	41.574	0.916	41.500	1.09%	0.18%
			1710	1.347	38.751	1.348	40.142	-0.07%	-3.47%
12/4/2017	1750H	21.0	1750	1.386	38.546	1.371	40.079	1.09%	-3.82%
			1790	1.426	38.347	1.394	40.016	2.30%	-4.17%
			1850	1.383	39.844	1.400	40.000	-1.21%	-0.39%
11/15/2017	1900H	21.7	1880	1.415	39.750	1.400	40.000	1.07%	-0.63%
			1910	1.446	39.637	1.400	40.000	3.29%	-0.91%
			1850	1.388	40.784	1.400	40.000	-0.86%	1.96%
12/3/2017	1900H	22.5	1880	1.419	40.684	1.400	40.000	1.36%	1.71%
			1910	1.451	40.584	1.400	40.000	3.64%	1.46%
			2500	1.912	38.828	1.855	39.136	3.07%	-0.79%
			2550	1.966	38.635	1.909	39.073	2.99%	-1.12%
			2600	2.029	38.451	1.964	39.009	3.31%	-1.43%
11/18/2017	2450H	21.9	2650	2.084	38.259	2.018	38.945	3.27%	-1.76%
			2700	2.140	38.038	2.073	38.882	3.23%	-2.17%
			2400	1.807	38.161	1.756	39.289	2.90%	-2.87%
			2450	1.862	37.965	1.800	39.200	3.44%	-3.15%
			2500	1.916	37.745	1.855	39.136	3.29%	-3.55%
11/24/2017	2450H	21.9	2400	1.815	39.548	1.756	39.289	3.36%	0.66%
			2450	1.869	39.368	1.800	39.200	3.83%	0.43%
			2500	1.926	39.161	1.855	39.136	3.83%	0.06%
12/14/2017	2600H	22.5	2600	2.034	39.313	1.964	39.009	3.56%	0.78%
			2650	2.089	39.172	2.018	38.945	3.52%	0.58%
			2700	2.150	38.955	2.073	38.882	3.71%	0.19%
			5240	4.513	36.231	4.696	35.940	-3.90%	0.81%
			5260	4.538	36.190	4.717	35.917	-3.79%	0.76%
11/24/2017	5200H-5800H	20.6	5280	4.554	36.176	4.737	35.894	-3.86%	0.79%
			5300	4.571	36.159	4.758	35.871	-3.93%	0.80%
			5320	4.599	36.123	4.778	35.849	-3.75%	0.76%
			5500	4.776	35.879	4.963	35.643	-3.77%	0.66%
			5520	4.790	35.846	4.983	35.620	-3.87%	0.63%
			5540	4.821	35.846	5.004	35.597	-3.66%	0.70%
			5560	4.842	35.756	5.024	35.574	-3.62%	0.51%
			5580	4.864	35.780	5.045	35.551	-3.59%	0.64%
			5600	4.885	35.743	5.065	35.529	-3.55%	0.60%
			5620	4.909	35.711	5.086	35.506	-3.48%	0.58%
			5640	4.929	35.692	5.106	35.483	-3.47%	0.59%
			5660	4.952	35.645	5.127	35.460	-3.41%	0.52%
			5680	4.969	35.646	5.147	35.437	-3.46%	0.59%
			5700	4.997	35.565	5.168	35.414	-3.31%	0.43%
			5745	5.045	35.526	5.214	35.363	-3.24%	0.46%
			5765	5.057	35.504	5.234	35.340	-3.38%	0.46%
			5785	5.075	35.473	5.255	35.317	-3.43%	0.44%

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Table 10-2
Measured Body 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
11/19/2017	750B	21.2	700	0.922	55.467	0.959	55.726	-3.86%	-0.46%
			710	0.931	55.368	0.960	55.687	-3.02%	-0.57%
			740	0.958	55.086	0.963	55.570	-0.52%	-0.87%
			755	0.972	54.941	0.964	55.512	0.83%	-1.03%
			770	0.986	54.801	0.965	55.453	2.18%	-1.18%
			785	1.001	54.639	0.966	55.395	3.62%	-1.36%
11/15/2017	835B	21.6	820	0.957	52.994	0.969	55.258	-1.24%	-4.10%
			835	0.974	52.846	0.970	55.200	0.41%	-4.26%
			850	0.989	52.697	0.988	55.154	0.10%	-4.45%
11/24/2017	835B	20.8	820	0.984	53.647	0.969	55.258	1.55%	-2.92%
			835	0.998	53.511	0.970	55.200	2.89%	-3.06%
			850	1.012	53.364	0.988	55.154	2.43%	-3.25%
11/28/2017	835B	19.4	820	0.980	53.392	0.969	55.258	1.14%	-3.38%
			835	0.994	53.225	0.970	55.200	2.47%	-3.58%
			850	1.009	53.065	0.988	55.154	2.13%	-3.79%
12/4/2017	835B	21.0	820	0.963	54.701	0.969	55.258	-0.62%	-1.01%
			835	0.979	54.573	0.970	55.200	0.93%	-1.14%
			850	0.994	54.431	0.988	55.154	0.61%	-1.31%
11/20/2017	1750B	20.1	1710	1.486	52.557	1.463	53.537	1.57%	-1.83%
			1750	1.533	52.387	1.488	53.432	3.02%	-1.96%
			1790	1.579	52.205	1.514	53.326	4.29%	-2.10%
12/1/2017	1750B	21.3	1710	1.478	51.575	1.463	53.537	1.03%	-3.66%
			1750	1.525	51.401	1.488	53.432	2.49%	-3.80%
			1790	1.567	51.225	1.514	53.326	3.50%	-3.94%
12/14/2017	1750B	21.6	1710	1.467	51.108	1.463	53.537	0.27%	-4.54%
			1750	1.505	50.957	1.488	53.432	1.14%	-4.63%
			1790	1.557	50.769	1.514	53.326	2.84%	-4.80%
11/17/2017	1900B	22.5	1850	1.507	52.928	1.520	53.300	-0.86%	-0.70%
			1880	1.540	52.781	1.520	53.300	1.32%	-0.97%
			1910	1.575	52.641	1.520	53.300	3.62%	-1.24%
11/24/2017	1900B	22.5	1850	1.491	52.662	1.520	53.300	-1.91%	-1.20%
			1880	1.526	52.574	1.520	53.300	0.39%	-1.36%
			1910	1.561	52.475	1.520	53.300	2.70%	-1.55%
11/27/2017	1900B	22.5	1850	1.489	52.496	1.520	53.300	-2.04%	-1.51%
			1880	1.521	52.370	1.520	53.300	0.07%	-1.74%
			1910	1.563	52.266	1.520	53.300	2.83%	-1.94%
12/11/2017	1900B	21.1	1850	1.514	51.800	1.520	53.300	-0.39%	-2.81%
			1880	1.550	51.726	1.520	53.300	1.97%	-2.95%
			1910	1.585	51.627	1.520	53.300	4.28%	-3.14%
11/28/2017	2450B	22.5	2400	1.929	51.621	1.902	52.767	1.42%	-2.17%
			2450	1.996	51.436	1.950	52.700	2.36%	-2.40%
			2500	2.063	51.217	2.021	52.636	2.08%	-2.70%
			2550	2.130	51.029	2.092	52.573	1.82%	-2.94%
			2600	2.200	50.820	2.163	52.509	1.71%	-3.22%
			2650	2.267	50.631	2.234	52.445	1.48%	-3.46%
			2700	2.336	50.456	2.305	52.382	1.34%	-3.68%
12/7/2017	2450B	22.9	2400	1.937	51.541	1.902	52.767	1.84%	-2.32%
			2450	2.012	51.358	1.950	52.700	3.18%	-2.55%
			2500	2.076	51.134	2.021	52.636	2.72%	-2.85%
			2550	2.148	50.914	2.092	52.573	2.68%	-3.16%
			2600	2.218	50.723	2.163	52.509	2.54%	-3.40%
			2650	2.287	50.489	2.234	52.445	2.37%	-3.73%
12/18/2017	2450B	21.7	2700	2.353	50.292	2.305	52.382	2.08%	-3.99%
			2400	1.947	51.299	1.902	52.767	2.37%	-2.78%
			2450	2.019	51.149	1.950	52.700	3.54%	-2.94%
			2500	2.092	50.909	2.021	52.636	3.51%	-3.28%
			2550	2.162	50.703	2.092	52.573	3.35%	-3.56%
			2600	2.235	50.516	2.163	52.509	3.33%	-3.80%
			2650	2.304	50.281	2.234	52.445	3.13%	-4.13%
			2700	2.369	50.045	2.305	52.382	2.78%	-4.46%

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Table 10-3
Measured Body Tissue Properties (continued)

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
11/28/2017	5200B-5800B	22.9	5240	5.489	47.317	5.346	48.960	2.67%	-3.36%
			5260	5.522	47.269	5.369	48.933	2.85%	-3.40%
			5280	5.526	47.259	5.393	48.906	2.47%	-3.37%
			5300	5.551	47.205	5.416	48.879	2.49%	-3.42%
			5320	5.581	47.190	5.439	48.851	2.61%	-3.40%
			5500	5.822	46.877	5.650	48.607	3.04%	-3.56%
			5520	5.854	46.870	5.673	48.580	3.19%	-3.52%
			5540	5.885	46.808	5.696	48.553	3.32%	-3.59%
			5560	5.910	46.800	5.720	48.526	3.32%	-3.56%
			5580	5.925	46.760	5.743	48.499	3.17%	-3.59%
			5600	5.964	46.726	5.766	48.471	3.43%	-3.60%
			5620	5.998	46.698	5.790	48.444	3.59%	-3.60%
			5640	6.035	46.655	5.813	48.417	3.82%	-3.64%
			5660	6.042	46.623	5.837	48.390	3.51%	-3.65%
			5680	6.076	46.583	5.860	48.363	3.69%	-3.68%
			5700	6.109	46.571	5.883	48.336	3.84%	-3.65%
			5745	6.181	46.437	5.936	48.275	4.13%	-3.81%
			5765	6.198	46.421	5.959	48.248	4.01%	-3.79%
12/04/2017	5200B-5800B	21.6	5785	6.228	46.384	5.982	48.220	4.11%	-3.81%
			5240	5.453	47.289	5.346	48.960	2.00%	-3.41%
			5260	5.480	47.249	5.369	48.933	2.07%	-3.44%
			5280	5.494	47.232	5.393	48.906	1.87%	-3.42%
			5300	5.529	47.166	5.416	48.879	2.09%	-3.50%
			5320	5.552	47.133	5.439	48.851	2.08%	-3.52%
			5500	5.785	46.846	5.650	48.607	2.39%	-3.62%
			5520	5.805	46.808	5.673	48.580	2.33%	-3.65%
			5540	5.839	46.749	5.696	48.553	2.51%	-3.72%
			5560	5.868	46.756	5.720	48.526	2.59%	-3.65%
			5580	5.904	46.716	5.743	48.499	2.80%	-3.68%
			5600	5.924	46.669	5.766	48.471	2.74%	-3.72%
			5620	5.946	46.614	5.790	48.444	2.69%	-3.78%
			5640	5.981	46.575	5.813	48.417	2.89%	-3.80%
			5660	6.001	46.550	5.837	48.390	2.81%	-3.80%
			5680	6.043	46.528	5.860	48.363	3.12%	-3.79%
			5700	6.070	46.501	5.883	48.336	3.18%	-3.80%
12/11/2017	5200B-5800B	21.6	5745	6.134	46.423	5.936	48.275	3.34%	-3.84%
			5765	6.157	46.396	5.959	48.248	3.32%	-3.84%
			5785	6.183	46.348	5.982	48.220	3.36%	-3.88%
			5800	6.195	46.327	6.000	48.200	3.25%	-3.89%
			5805	6.201	46.319	6.006	48.193	3.25%	-3.89%
			5825	6.233	46.284	6.029	48.166	3.38%	-3.91%
			5240	5.462	47.473	5.346	48.960	2.17%	-3.04%
			5260	5.495	47.462	5.369	48.933	2.35%	-3.01%
			5280	5.525	47.434	5.393	48.906	2.45%	-3.01%
			5300	5.547	47.425	5.416	48.879	2.42%	-2.97%
			5320	5.575	47.371	5.439	48.851	2.50%	-3.03%
			5500	5.806	47.031	5.650	48.607	2.76%	-3.24%
			5520	5.842	47.043	5.673	48.580	2.98%	-3.16%
			5540	5.861	47.002	5.696	48.553	2.90%	-3.19%
			5560	5.892	46.976	5.720	48.526	3.01%	-3.19%
			5580	5.927	46.938	5.743	48.499	3.20%	-3.22%
			5600	5.939	46.905	5.766	48.471	3.00%	-3.23%
	5200B-5800B	21.6	5620	5.969	46.828	5.790	48.444	3.09%	-3.34%
			5640	6.016	46.791	5.813	48.417	3.49%	-3.36%
			5660	6.039	46.785	5.837	48.390	3.46%	-3.32%
			5680	6.065	46.783	5.860	48.363	3.50%	-3.27%
			5700	6.084	46.751	5.883	48.336	3.42%	-3.28%
			5745	6.163	46.626	5.936	48.275	3.82%	-3.42%
			5765	6.181	46.616	5.959	48.248	3.73%	-3.38%

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 10-4
System Verification Results – 1g

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} (%)
D	750	HEAD	11/20/2017	21.6	20.2	0.200	1054	3318	1.650	8.370	8.250	-1.43%
K	835	HEAD	11/20/2017	22.0	22.2	0.200	4d133	7406	1.910	9.520	9.550	0.32%
K	835	HEAD	11/29/2017	22.0	21.3	0.200	4d133	7406	1.920	9.520	9.600	0.84%
J	835	HEAD	12/04/2017	20.3	20.6	0.200	4d132	3209	2.050	9.520	10.250	7.67%
I	1750	HEAD	12/04/2017	21.9	21.0	0.100	1148	3213	3.670	36.400	36.700	0.82%
H	1900	HEAD	11/15/2017	23.6	21.0	0.100	5d148	7410	3.840	40.200	38.400	-4.48%
K	1900	HEAD	12/03/2017	21.5	21.0	0.100	5d149	7406	3.770	39.600	37.700	-4.80%
E	2450	HEAD	11/24/2017	21.5	20.7	0.100	981	3319	5.290	52.800	52.900	0.19%
E	2450	HEAD	11/27/2017	22.6	21.5	0.100	981	3319	5.460	52.800	54.600	3.41%
E	2600	HEAD	11/18/2017	23.0	21.9	0.100	1126	3319	5.940	56.400	59.400	5.32%
E	2600	HEAD	12/14/2017	23.1	21.5	0.100	1064	3319	5.270	57.000	52.700	-7.54%
H	5250	HEAD	11/24/2017	21.7	20.6	0.050	1057	3914	4.070	81.600	81.400	-0.25%
H	5600	HEAD	11/24/2017	21.7	20.6	0.050	1057	3914	3.930	83.700	78.600	-6.09%
H	5750	HEAD	11/24/2017	21.7	20.6	0.050	1057	3914	4.020	80.000	80.400	0.50%
G	750	BODY	11/19/2017	22.2	20.2	0.200	1161	3332	1.710	8.430	8.550	1.42%
J	835	BODY	11/15/2017	24.1	21.5	0.200	4d133	3209	1.960	9.410	9.800	4.14%
J	835	BODY	11/24/2017	20.1	20.7	0.200	4d047	3209	2.040	9.570	10.200	6.58%
H	835	BODY	11/28/2017	22.1	19.7	0.200	4d047	7410	2.020	9.570	10.100	5.54%
G	835	BODY	12/04/2017	21.0	21.0	0.200	4d132	3332	1.920	9.800	9.600	-2.04%
J	1750	BODY	11/20/2017	21.3	21.0	0.100	1148	3209	3.840	37.000	38.400	3.78%
H	1900	BODY	11/17/2017	24.0	22.5	0.100	5d148	7410	4.030	40.900	40.300	-1.47%
G	1900	BODY	11/24/2017	21.7	21.0	0.100	5d149	3332	3.730	40.100	37.300	-6.98%
G	1900	BODY	11/27/2017	22.9	21.1	0.100	5d149	3332	3.760	40.100	37.600	-6.23%
E	2450	BODY	11/28/2017	24.5	22.5	0.100	981	3319	5.320	50.800	53.200	4.72%
I	2450	BODY	12/07/2017	21.6	20.9	0.100	981	3213	5.450	50.800	54.500	7.28%
I	2600	BODY	12/07/2017	21.6	20.9	0.100	1126	3213	5.630	54.300	56.300	3.68%
K	2600	BODY	12/18/2017	22.0	21.7	0.100	1126	7406	5.230	54.300	52.300	-3.68%
J	5250	BODY	11/28/2017	21.3	21.9	0.050	1191	7357	3.690	77.000	73.800	-4.16%
J	5600	BODY	11/28/2017	21.3	21.9	0.050	1191	7357	3.810	79.200	76.200	-3.79%
J	5750	BODY	11/28/2017	21.3	21.9	0.050	1191	7357	3.720	76.100	74.400	-2.23%
D	5750	BODY	12/04/2017	22.3	20.4	0.050	1237	7308	3.670	77.100	73.400	-4.80%

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Table 10-5
System Verification Results – 10g

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} (%)
J	1750	BODY	11/20/2017	21.3	21.0	0.100	1148	3209	2.030	19.800	20.300	2.53%
I	1750	BODY	12/01/2017	23.8	21.1	0.100	1148	3213	2.050	19.800	20.500	3.54%
H	1750	BODY	12/14/2017	23.2	21.6	0.100	1148	7410	1.930	19.800	19.300	-2.53%
G	1900	BODY	11/27/2017	22.9	21.1	0.100	5d149	3332	1.950	21.300	19.500	-8.45%
J	1900	BODY	12/11/2017	21.0	21.1	0.100	5d149	3209	2.090	21.300	20.900	-1.88%
I	2450	BODY	12/07/2017	21.6	20.9	0.100	981	3213	2.470	23.800	24.700	3.78%
I	2600	BODY	12/07/2017	21.6	20.9	0.100	1126	3213	2.430	24.400	24.300	-0.41%
D	5250	BODY	12/11/2017	21.4	20.6	0.050	1237	7308	1.000	21.500	20.000	-6.98%
D	5600	BODY	12/11/2017	21.4	20.6	0.050	1237	7308	1.100	22.100	22.000	-0.45%
D	5750	BODY	12/11/2017	21.4	20.6	0.050	1237	7308	1.030	21.400	20.600	-3.74%

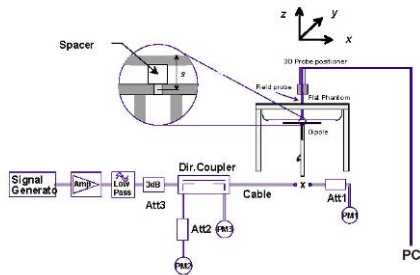


Figure 10-1
System Verification Setup Diagram



Figure 10-2
System Verification Setup Photo

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11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
Cell. CDMA Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	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)	
836.52	384	Cell. CDMA	RC3 / SO55	26.0	25.30	-0.04	Right	Cheek	2E76E	1:1	0.347	1.175	0.408	A1
836.52	384	Cell. CDMA	RC3 / SO55	26.0	25.30	0.00	Right	Tilt	2E76E	1:1	0.149	1.175	0.175	
836.52	384	Cell. CDMA	RC3 / SO55	26.0	25.30	0.01	Left	Cheek	2E76E	1:1	0.229	1.175	0.269	
836.52	384	Cell. CDMA	RC3 / SO55	26.0	25.30	0.00	Left	Tilt	2E76E	1:1	0.137	1.175	0.161	
836.52	384	Cell. CDMA	EVDO Rev. A	26.0	25.26	0.14	Right	Cheek	2E76E	1:1	0.319	1.186	0.378	
836.52	384	Cell. CDMA	EVDO Rev. A	26.0	25.26	0.15	Right	Tilt	2E76E	1:1	0.107	1.186	0.127	
836.52	384	Cell. CDMA	EVDO Rev. A	26.0	25.26	0.05	Left	Cheek	2E76E	1:1	0.206	1.186	0.244	
836.52	384	Cell. CDMA	EVDO Rev. A	26.0	25.26	0.10	Left	Tilt	2E76E	1:1	0.146	1.186	0.173	
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 850 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	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)	
824.20	128	GSM 850	GSM	33.5	33.08	-0.01	Right	Cheek	2E700	1:8.3	0.221	1.102	0.244	A2
824.20	128	GSM 850	GSM	33.5	33.08	0.02	Right	Tilt	2E700	1:8.3	0.094	1.102	0.104	
824.20	128	GSM 850	GSM	33.5	33.08	0.13	Left	Cheek	2E700	1:8.3	0.163	1.102	0.180	
824.20	128	GSM 850	GSM	33.5	33.08	0.11	Left	Tilt	2E700	1:8.3	0.095	1.102	0.105	
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 11-3
UMTS 850 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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)	
836.60	4183	UMTS 850	RMC	24.5	24.17	2	-0.05	Right	Cheek	2FEC8	1:1	0.242	1.079	0.261	A3
836.60	4183	UMTS 850	RMC	24.5	24.17	2	0.10	Right	Tilt	2FEC8	1:1	0.107	1.079	0.115	
836.60	4183	UMTS 850	RMC	24.5	24.17	2	0.06	Left	Cheek	2FEC8	1:1	0.195	1.079	0.210	
836.60	4183	UMTS 850	RMC	24.5	24.17	2	0.16	Left	Tilt	2FEC8	1:1	0.119	1.079	0.128	
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 11-4
UMTS 1750 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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)	
1732.40	1412	UMTS 1750	RMC	24.5	23.96	0	0.05	Right	Cheek	2FEC8	1:1	0.090	1.132	0.102	
1732.40	1412	UMTS 1750	RMC	24.5	23.96	0	0.09	Right	Tilt	2FEC8	1:1	0.106	1.132	0.120	
1732.40	1412	UMTS 1750	RMC	24.5	23.96	0	0.04	Left	Cheek	2FEC8	1:1	0.135	1.132	0.153	A4
1732.40	1412	UMTS 1750	RMC	24.5	23.96	0	0.05	Left	Tilt	2FEC8	1:1	0.118	1.132	0.134	
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 11-5
GSM 1900 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	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	30.5	29.47	0.10	Right	Cheek	2E9B0	1:8.3	0.046	1.268	0.058	
1880.00	661	GSM 1900	GSM	30.5	29.47	0.14	Right	Tilt	2E9B0	1:8.3	0.023	1.268	0.029	
1880.00	661	GSM 1900	GSM	30.5	29.47	0.15	Left	Cheek	2E9B0	1:8.3	0.064	1.268	0.081	A5
1880.00	661	GSM 1900	GSM	30.5	29.47	0.07	Left	Tilt	2E9B0	1:8.3	0.016	1.268	0.020	
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
UMTS 1900 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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	24.5	23.76	1	0.16	Right	Cheek	2E674	1:1	0.125	1.186	0.148	
1880.00	9400	UMTS 1900	RMC	24.5	23.76	1	0.15	Right	Tilt	2E674	1:1	0.072	1.186	0.085	
1880.00	9400	UMTS 1900	RMC	24.5	23.76	1	0.09	Left	Cheek	2E674	1:1	0.154	1.186	0.183	A6
1880.00	9400	UMTS 1900	RMC	24.5	23.76	1	0.18	Left	Tilt	2E674	1:1	0.071	1.186	0.084	
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 11-7
LTE Band 12 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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 #
																	(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.0	24.09	1	0.01	0	Right	Cheek	QPSK	1	0	2FEC5	1:1	0.100	1.233	0.123	A7
707.50	23095	Mid	LTE Band 12	10	24.0	23.13	1	0.06	1	Right	Cheek	QPSK	25	0	2FEC5	1:1	0.087	1.222	0.106	
707.50	23095	Mid	LTE Band 12	10	25.0	24.09	1	0.09	0	Right	Tilt	QPSK	1	0	2FEC5	1:1	0.047	1.233	0.058	
707.50	23095	Mid	LTE Band 12	10	24.0	23.13	1	0.05	1	Right	Tilt	QPSK	25	0	2FEC5	1:1	0.038	1.222	0.046	
707.50	23095	Mid	LTE Band 12	10	25.0	24.09	1	-0.01	0	Left	Cheek	QPSK	1	0	2FEC5	1:1	0.092	1.233	0.113	
707.50	23095	Mid	LTE Band 12	10	24.0	23.13	1	0.12	1	Left	Cheek	QPSK	25	0	2FEC5	1:1	0.079	1.222	0.097	
707.50	23095	Mid	LTE Band 12	10	25.0	24.09	1	0.16	0	Left	Tilt	QPSK	1	0	2FEC5	1:1	0.069	1.233	0.085	
707.50	23095	Mid	LTE Band 12	10	24.0	23.13	1	-0.03	1	Left	Tilt	QPSK	25	0	2FEC5	1:1	0.061	1.222	0.075	
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 11-8
LTE Band 13 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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)		
782.00	23230	Mid	LTE Band 13	10	25.0	24.00	51	0.01	0	Right	Cheek	QPSK	1	0	2FEC5	1:1	0.125	1.259	0.157	A8
782.00	23230	Mid	LTE Band 13	10	24.0	23.09	51	0.03	1	Right	Cheek	QPSK	25	0	2FEC5	1:1	0.098	1.233	0.121	
782.00	23230	Mid	LTE Band 13	10	25.0	24.00	51	0.11	0	Right	Tilt	QPSK	1	0	2FEC5	1:1	0.044	1.259	0.055	
782.00	23230	Mid	LTE Band 13	10	24.0	23.09	51	0.10	1	Right	Tilt	QPSK	25	0	2FEC5	1:1	0.038	1.233	0.047	
782.00	23230	Mid	LTE Band 13	10	25.0	24.00	51	0.11	0	Left	Cheek	QPSK	1	0	2FEC5	1:1	0.084	1.259	0.106	
782.00	23230	Mid	LTE Band 13	10	24.0	23.09	51	0.06	1	Left	Cheek	QPSK	25	0	2FEC5	1:1	0.074	1.233	0.091	
782.00	23230	Mid	LTE Band 13	10	25.0	24.00	51	0.12	0	Left	Tilt	QPSK	1	0	2FEC5	1:1	0.050	1.259	0.063	
782.00	23230	Mid	LTE Band 13	10	24.0	23.09	51	0.06	1	Left	Tilt	QPSK	25	0	2FEC5	1:1	0.043	1.233	0.053	
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 11-9
LTE Band 26 (Cell) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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)		
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.0	24.14	9	-0.07	0	Right	Cheek	QPSK	1	0	2FECA	1:1	0.189	1.219	0.230	A9
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.20	9	0.01	1	Right	Cheek	QPSK	36	18	2FECA	1:1	0.161	1.202	0.194	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.0	24.14	9	0.17	0	Right	Tilt	QPSK	1	0	2FECA	1:1	0.091	1.219	0.111	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.20	9	-0.01	1	Right	Tilt	QPSK	36	18	2FECA	1:1	0.064	1.202	0.077	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.0	24.14	9	0.07	0	Left	Cheek	QPSK	1	0	2FECA	1:1	0.139	1.219	0.169	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.20	9	0.08	1	Left	Cheek	QPSK	36	18	2FECA	1:1	0.114	1.202	0.137	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.0	24.14	9	0.12	0	Left	Tilt	QPSK	1	0	2FECA	1:1	0.105	1.219	0.128	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.20	9	0.07	1	Left	Tilt	QPSK	36	18	2FECA	1:1	0.085	1.202	0.102	
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 11-10
LTE Band 66 (AWS) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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)		
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.40	0	0.18	0	Right	Cheek	QPSK	1	0	2FEC8	1:1	0.110	1.148	0.126	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.46	0	0.06	1	Right	Cheek	QPSK	50	0	2FEC8	1:1	0.089	1.132	0.101	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.40	0	-0.05	0	Right	Tilt	QPSK	1	0	2FEC8	1:1	0.104	1.148	0.119	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.46	0	0.01	1	Right	Tilt	QPSK	50	0	2FEC8	1:1	0.085	1.132	0.096	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.40	0	0.07	0	Left	Cheek	QPSK	1	0	2FEC8	1:1	0.147	1.148	0.169	A10
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.46	0	0.05	1	Left	Cheek	QPSK	50	0	2FEC8	1:1	0.112	1.132	0.127	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.40	0	0.11	0	Left	Tilt	QPSK	1	0	2FEC8	1:1	0.110	1.148	0.126	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.46	0	-0.03	1	Left	Tilt	QPSK	50	0	2FEC8	1:1	0.095	1.132	0.108	
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 11-11
LTE Band 25 (PCS) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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 #
																	(W/kg)		(W/kg)	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.5	23.65	1	0.18	0	Right	Cheek	QPSK	1	0	2FECA	1:1	0.121	1.216	0.147	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	22.62	1	0.13	1	Right	Cheek	QPSK	50	0	2FECA	1:1	0.093	1.225	0.114	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.5	23.65	1	0.15	0	Right	Tilt	QPSK	1	0	2FECA	1:1	0.082	1.216	0.100	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	22.62	1	0.19	1	Right	Tilt	QPSK	50	0	2FECA	1:1	0.053	1.225	0.065	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.5	23.65	1	0.13	0	Left	Cheek	QPSK	1	0	2FECA	1:1	0.146	1.216	0.178	A11
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	22.62	1	0.11	1	Left	Cheek	QPSK	50	0	2FECA	1:1	0.098	1.225	0.120	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.5	23.65	1	0.20	0	Left	Tilt	QPSK	1	0	2FECA	1:1	0.043	1.216	0.052	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	22.62	1	0.19	1	Left	Tilt	QPSK	50	0	2FECA	1:1	0.020	1.225	0.025	
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 11-12
LTE Band 41 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	2680.00	41490	High	LTE Band 41	20	24.5	23.84	0.16	0	Right	Cheek	QPSK	1	0	2FEC5	1:1.58	0.030	1.164	0.035	
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	23.5	22.76	0.20	1	Right	Cheek	QPSK	50	0	2FEC5	1:1.58	0.024	1.186	0.028	
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	24.5	23.84	0.14	0	Right	Tilt	QPSK	1	0	2FEC5	1:1.58	0.040	1.164	0.047	
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	23.5	22.76	0.18	1	Right	Tilt	QPSK	50	0	2FEC5	1:1.58	0.033	1.186	0.039	
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	24.5	23.84	0.10	0	Left	Cheek	QPSK	1	0	2FEC5	1:1.58	0.073	1.164	0.085	A12
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	23.5	22.76	0.15	1	Left	Cheek	QPSK	50	0	2FEC5	1:1.58	0.040	1.186	0.047	
2 CC Uplink	PCC	2680.00	41490	High	LTE Band 41	20	24.5	22.60	0.18	0	Left	Cheek	QPSK	1	0	2FEC5	1:1.58	0.049	1.549	0.076	
	SCC	2660.20	41292	High	LTE Band 41	20							QPSK	1	99						
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	24.5	23.84	0.15	0	Left	Tilt	QPSK	1	0	2FEC5	1:1.58	0.026	1.164	0.030	
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	23.5	22.76	0.14	1	Left	Tilt	QPSK	50	0	2FEC5	1:1.58	0.021	1.186	0.025	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT												Head									
Spatial Peak												1.6 W/kg (mW/g)									
Uncontrolled Exposure/General Population												averaged over 1 gram									

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**Table 11-13
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	13.5	13.46	0.20	Right	Cheek	1	2EAC7	1	99.1	0.162	0.140	1.009	1.009	0.143	A13
2462	11	802.11b	DSSS	22	13.5	13.46	0.13	Right	Tilt	1	2EAC7	1	99.1	0.128	-	1.009	1.009	-	
2462	11	802.11b	DSSS	22	13.5	13.46	0.13	Left	Cheek	1	2EAC7	1	99.1	0.058	-	1.009	1.009	-	
2462	11	802.11b	DSSS	22	13.5	13.46	0.14	Left	Tilt	1	2EAC7	1	99.1	0.070	-	1.009	1.009	-	
2437	6	802.11b	DSSS	22	13.5	13.20	0.11	Right	Cheek	2	2EAC7	1	99.2	0.152	0.117	1.072	1.008	0.126	
2437	6	802.11b	DSSS	22	13.5	13.20	0.20	Right	Tilt	2	2EAC7	1	99.2	0.134	-	1.072	1.008	-	
2437	6	802.11b	DSSS	22	13.5	13.20	-0.20	Left	Cheek	2	2EAC7	1	99.2	0.087	-	1.072	1.008	-	
2437	6	802.11b	DSSS	22	13.5	13.20	0.17	Left	Tilt	2	2EAC7	1	99.2	0.065	-	1.072	1.008	-	
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 11-14
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)	
5290	58	802.11ac	OFDM	80	12.5	11.79	0.19	Right	Cheek	1	2F5E0	29.3	95.5	0.059	0.033	1.178	1.047	0.041	
5290	58	802.11ac	OFDM	80	12.5	11.79	0.20	Right	Tilt	1	2F5E0	29.3	95.5	0.038	-	1.178	1.047	-	
5290	58	802.11ac	OFDM	80	12.5	11.79	-0.19	Left	Cheek	1	2F5E0	29.3	95.5	0.026	-	1.178	1.047	-	
5290	58	802.11ac	OFDM	80	12.5	11.79	0.16	Left	Tilt	1	2F5E0	29.3	95.5	0.015	-	1.178	1.047	-	
5290	58	802.11ac	OFDM	80	12.5	12.38	0.14	Right	Cheek	2	2F5E0	29.3	94.6	0.262	0.155	1.028	1.057	0.168	
5290	58	802.11ac	OFDM	80	12.5	12.38	0.08	Right	Tilt	2	2F5E0	29.3	94.6	0.210	-	1.028	1.057	-	
5290	58	802.11ac	OFDM	80	12.5	12.38	0.17	Left	Cheek	2	2F5E0	29.3	94.6	0.112	-	1.028	1.057	-	
5290	58	802.11ac	OFDM	80	12.5	12.38	0.14	Left	Tilt	2	2F5E0	29.3	94.6	0.098	-	1.028	1.057	-	
5690	138	802.11ac	OFDM	80	12.5	12.32	0.12	Right	Cheek	1	2F5E0	29.3	95.5	0.167	0.063	1.042	1.047	0.069	
5690	138	802.11ac	OFDM	80	12.5	12.32	0.13	Right	Tilt	1	2F5E0	29.3	95.5	0.144	-	1.042	1.047	-	
5690	138	802.11ac	OFDM	80	12.5	12.32	0.16	Left	Cheek	1	2F5E0	29.3	95.5	0.057	-	1.042	1.047	-	
5690	138	802.11ac	OFDM	80	12.5	12.32	0.20	Left	Tilt	1	2F5E0	29.3	95.5	0.050	-	1.042	1.047	-	
5610	122	802.11ac	OFDM	80	12.5	12.24	0.07	Right	Cheek	2	2F5E0	29.3	94.6	0.602	0.234	1.062	1.057	0.263	
5610	122	802.11ac	OFDM	80	12.5	12.24	0.15	Right	Tilt	2	2F5E0	29.3	94.6	0.438	-	1.062	1.057	-	
5610	122	802.11ac	OFDM	80	12.5	12.24	0.12	Left	Cheek	2	2F5E0	29.3	94.6	0.156	-	1.062	1.057	-	
5610	122	802.11ac	OFDM	80	12.5	12.24	0.21	Left	Tilt	2	2F5E0	29.3	94.6	0.118	-	1.062	1.057	-	
5775	155	802.11ac	OFDM	80	12.5	12.29	0.16	Right	Cheek	1	2F5E0	29.3	95.5	0.139	0.078	1.050	1.047	0.086	
5775	155	802.11ac	OFDM	80	12.5	12.29	0.16	Right	Tilt	1	2F5E0	29.3	95.5	0.139	-	1.050	1.047	-	
5775	155	802.11ac	OFDM	80	12.5	12.29	0.17	Left	Cheek	1	2F5E0	29.3	95.5	0.074	-	1.050	1.047	-	
5775	155	802.11ac	OFDM	80	12.5	12.29	0.20	Left	Tilt	1	2F5E0	29.3	95.5	0.062	-	1.050	1.047	-	
5775	155	802.11ac	OFDM	80	12.5	12.49	0.18	Right	Cheek	2	2F5E0	29.3	94.6	0.926	0.434	1.002	1.057	0.460	A14
5775	155	802.11ac	OFDM	80	12.5	12.49	0.19	Right	Tilt	2	2F5E0	29.3	94.6	0.568	0.317	1.002	1.057	0.336	
5775	155	802.11ac	OFDM	80	12.5	12.49	0.16	Left	Cheek	2	2F5E0	29.3	94.6	0.441	-	1.002	1.057	-	
5775	155	802.11ac	OFDM	80	12.5	12.49	0.15	Left	Tilt	2	2F5E0	29.3	94.6	0.319	-	1.002	1.057	-	
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 11-15
DSS Head SAR**

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	Duty Cycle %	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2402.00	0	Bluetooth	FHSS	16.5	16.19	0.07	Right	Cheek	2E782	1	77.7	0.192	1.074	1.287	0.265	
2441.00	39	Bluetooth	FHSS	16.5	16.40	0.08	Right	Cheek	2E782	1	77.7	0.464	1.023	1.287	0.611	A15
2480.00	78	Bluetooth	FHSS	16.5	14.95	0.15	Right	Cheek	2E782	1	77.7	0.286	1.429	1.287	0.526	
2441.00	39	Bluetooth	FHSS	16.5	16.40	0.00	Right	Tilt	2E782	1	77.7	0.436	1.023	1.287	0.574	
2441.00	39	Bluetooth	FHSS	16.5	16.40	0.05	Left	Cheek	2E782	1	77.7	0.290	1.023	1.287	0.382	
2441.00	39	Bluetooth	FHSS	16.5	16.40	0.09	Left	Tilt	2E782	1	77.7	0.206	1.023	1.287	0.271	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram								

11.2 Standalone Body-Worn SAR Data

**Table 11-16
GSM/UMTS/CDMA Body-Worn SAR Data**

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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)	
836.52	384	Cell. CDMA	TDSO / SO32	26.0	25.24	N/A	0.21	15 mm	2F5E0	N/A	1:1	back	0.449	1.191	0.535	A16
824.20	128	GSM 850	GSM	33.5	33.08	N/A	-0.03	15 mm	2E76D	1	1:8.3	back	0.254	1.102	0.280	A18
836.60	4183	UMTS 850	RMC	24.5	24.17	18	0.02	15 mm	2E76E	N/A	1:1	back	0.296	1.079	0.319	A20
1712.40	1312	UMTS 1750	RMC	24.5	23.95	0	0.00	15 mm	2E674	N/A	1:1	back	0.622	1.135	0.706	
1732.40	1412	UMTS 1750	RMC	24.5	23.96	0	-0.02	15 mm	2E674	N/A	1:1	back	0.638	1.132	0.722	A22
1752.60	1513	UMTS 1750	RMC	24.5	24.10	0	0.00	15 mm	2E674	N/A	1:1	back	0.600	1.096	0.658	
1880.00	661	GSM 1900	GSM	30.5	29.47	N/A	0.01	15 mm	2E76D	1	1:8.3	back	0.233	1.268	0.295	A24
1852.40	9262	UMTS 1900	RMC	24.5	23.64	0	0.01	15 mm	2E9B0	N/A	1:1	back	0.583	1.219	0.711	
1880.00	9400	UMTS 1900	RMC	24.5	23.76	0	-0.01	15 mm	2E9B0	N/A	1:1	back	0.585	1.186	0.694	A26
1907.60	9538	UMTS 1900	RMC	24.5	23.89	0	0.01	15 mm	2E9B0	N/A	1:1	back	0.551	1.151	0.634	
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 11-17
LTE FDD Body-Worn SAR Data

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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)			
707.50	23095	Mid	LTE Band 12	10	25.0	24.09	0	0.01	0	2E700	QPSK	1	0	15 mm	back	1:1	0.223	1.233	0.275	A28
707.50	23095	Mid	LTE Band 12	10	24.0	23.13	0	-0.03	1	2E700	QPSK	25	0	15 mm	back	1:1	0.189	1.222	0.231	
782.00	23230	Mid	LTE Band 13	10	25.0	24.00	51	0.04	0	2E700	QPSK	1	0	15 mm	back	1:1	0.242	1.259	0.305	A30
782.00	23230	Mid	LTE Band 13	10	24.0	23.09	51	0.09	1	2E700	QPSK	25	0	15 mm	back	1:1	0.206	1.233	0.254	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.0	24.14	8	-0.05	0	2E674	QPSK	1	0	15 mm	back	1:1	0.262	1.219	0.319	A32
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.20	8	0.01	1	2E674	QPSK	36	18	15 mm	back	1:1	0.208	1.202	0.250	
1720.00	132072	Low	LTE Band 66 (AWS)	20	25.0	24.27	1	-0.04	0	2FECA	QPSK	1	50	15 mm	back	1:1	0.623	1.183	0.737	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.40	1	-0.06	0	2FECA	QPSK	1	0	15 mm	back	1:1	0.582	1.148	0.668	
1770.00	132572	High	LTE Band 66 (AWS)	20	25.0	24.32	1	-0.05	0	2FECA	QPSK	1	0	15 mm	back	1:1	0.654	1.169	0.765	A34
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.46	1	-0.04	1	2FECA	QPSK	50	0	15 mm	back	1:1	0.485	1.132	0.549	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.5	23.54	1	-0.03	0	2E9E7	QPSK	1	0	15 mm	back	1:1	0.578	1.247	0.721	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.5	23.53	1	0.05	0	2E9E7	QPSK	1	0	15 mm	back	1:1	0.584	1.250	0.730	A36
1905.00	26590	High	LTE Band 25 (PCS)	20	24.5	23.65	1	0.02	0	2E9E7	QPSK	1	0	15 mm	back	1:1	0.564	1.216	0.686	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	22.62	1	-0.05	1	2E9E7	QPSK	50	0	15 mm	back	1:1	0.439	1.225	0.538	
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 11-18
LTE TDD Body-Worn SAR Data

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	2680.00	41490	High	LTE Band 41	20	24.5	23.84	0.02	0	2FEC5	QPSK	1	0	15 mm	back	1:1.58	0.373	1.164	0.434	A38
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	23.5	22.76	0.00	1	2FEC5	QPSK	50	0	15 mm	back	1:1.58	0.207	1.186	0.246	
2 CC Uplink	PCC	2680.00	41490	High	LTE Band 41	20	24.5	22.60	0.05	0	2FEC5	QPSK	1	0	15 mm	back	1:1.58	0.266	1.549	0.412	
	SCC	2660.20	41292	High								QPSK	1	99							
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 11-19
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 (lg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (lg)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2462	11	802.11b	DSSS	22	20.5	20.31	-0.03	15 mm	1	2F5E0	1	back	99.1	0.121	0.102	1.045	1.009	0.108	
2412	1	802.11b	DSSS	22	20.5	20.47	-0.01	15 mm	2	2F5E0	1	back	99.2	0.131	0.111	1.007	1.008	0.113	A40
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 11-20
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 (lg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (lg)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5270	54	802.11n	OFDM	40	17.5	16.60	-0.10	15 mm	1	2E782	13.5	back	97.6	0.197	0.088	1.230	1.025	0.111	
5270	54	802.11n	OFDM	40	17.5	16.67	0.10	15 mm	2	2E782	13.5	back	97.2	0.264	0.112	1.211	1.029	0.140	
5610	122	802.11ac	OFDM	80	17.5	16.59	0.02	15 mm	1	2E782	29.3	back	95.5	0.578	0.267	1.233	1.047	0.345	A42
5610	122	802.11ac	OFDM	80	17.5	16.84	-0.20	15 mm	2	2E782	29.3	back	94.6	0.493	0.226	1.164	1.057	0.278	
5775	155	802.11ac	OFDM	80	17.5	16.67	-0.06	15 mm	1	2E782	29.3	back	95.5	0.405	0.191	1.211	1.047	0.242	
5775	155	802.11ac	OFDM	80	17.5	17.44	0.03	15 mm	2	2E782	29.3	back	94.6	0.514	0.232	1.014	1.057	0.249	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Body											
Spatial Peak																			
Uncontrolled Exposure/General Population								1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-21
NII MIMO Body-Worn SAR for Conditions 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 (W)	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
5290	58	802.11ac	OFDM	80	13.5	13.25	13.5	12.63	0.03	15 mm	MIMO	2E782	58.5	back	92.3	0.260	0.110	1.222	1.083	0.146	
5610	122	802.11ac	OFDM	80	13.5	13.41	13.5	13.18	0.13	15 mm	MIMO	2E782	58.5	back	92.3	0.596	0.251	1.076	1.083	0.292	
5775	155	802.11ac	OFDM	80	13.5	12.71	13.5	13.09	0.00	15 mm	MIMO	2E782	58.5	back	92.3	0.350	0.162	1.199	1.083	0.210	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT																					
Spatial Peak										Body											
Uncontrolled Exposure/General Population										1.6 W/kg (mW/g)											
										averaged over 1 gram											

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

Table 11-22
DSS Body-Worn SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	16.5	16.40	0.15	15 mm	2EAC7	1	back	77.7	0.010	1.023	1.287	0.013	A44
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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11.3 Standalone Hotspot SAR Data

Table 11-23
GPRS/UMTS/CDMA Hotspot SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	Spacing	Device Serial Number	# of GPRS Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
824.70	1013	Cell. CDMA	EVDO Rev. 0	26.0	25.40	N/A	0.01	10 mm	2F5E0	N/A	1:1	back	0.687	1.148	0.789	A17
836.52	384	Cell. CDMA	EVDO Rev. 0	26.0	25.29	N/A	-0.07	10 mm	2F5E0	N/A	1:1	back	0.773	1.178	0.911	
848.31	777	Cell. CDMA	EVDO Rev. 0	26.0	25.00	N/A	-0.06	10 mm	2F5E0	N/A	1:1	back	0.749	1.259	0.943	
824.70	1013	Cell. CDMA	EVDO Rev. 0	26.0	25.40	N/A	-0.01	10 mm	2F5E0	N/A	1:1	front	0.669	1.148	0.768	
836.52	384	Cell. CDMA	EVDO Rev. 0	26.0	25.29	N/A	-0.01	10 mm	2F5E0	N/A	1:1	front	0.678	1.178	0.799	
848.31	777	Cell. CDMA	EVDO Rev. 0	26.0	25.00	N/A	-0.03	10 mm	2F5E0	N/A	1:1	front	0.672	1.259	0.846	
836.52	384	Cell. CDMA	EVDO Rev. 0	26.0	25.29	N/A	-0.07	10 mm	2F5E0	N/A	1:1	bottom	0.489	1.178	0.576	
836.52	384	Cell. CDMA	EVDO Rev. 0	26.0	25.29	N/A	-0.06	10 mm	2F5E0	N/A	1:1	right	0.469	1.178	0.552	
836.52	384	Cell. CDMA	EVDO Rev. 0	26.0	25.29	N/A	0.00	10 mm	2F5E0	N/A	1:1	left	0.132	1.178	0.155	
836.60	190	GSM 850	GPRS	29.0	28.48	N/A	-0.17	10 mm	2E76D	3	1:2.76	back	0.399	1.127	0.450	A19
836.60	190	GSM 850	GPRS	29.0	28.48	N/A	-0.22	10 mm	2E76D	3	1:2.76	front	0.354	1.127	0.399	
836.60	190	GSM 850	GPRS	29.0	28.48	N/A	-0.06	10 mm	2E76D	3	1:2.76	bottom	0.289	1.127	0.326	
836.60	190	GSM 850	GPRS	29.0	28.48	N/A	-0.01	10 mm	2E76D	3	1:2.76	right	0.313	1.127	0.353	
836.60	190	GSM 850	GPRS	29.0	28.48	N/A	-0.10	10 mm	2E76D	3	1:2.76	left	0.109	1.127	0.123	
836.60	4183	UMTS 850	RMC	24.5	24.17	18	-0.09	10 mm	2E76E	N/A	1:1	back	0.506	1.079	0.546	A21
836.60	4183	UMTS 850	RMC	24.5	24.17	18	-0.03	10 mm	2E76E	N/A	1:1	front	0.434	1.079	0.468	
836.60	4183	UMTS 850	RMC	24.5	24.17	18	-0.06	10 mm	2E76E	N/A	1:1	bottom	0.331	1.079	0.357	
836.60	4183	UMTS 850	RMC	24.5	24.17	18	-0.08	10 mm	2E76E	N/A	1:1	right	0.322	1.079	0.347	
836.60	4183	UMTS 850	RMC	24.5	24.17	18	-0.04	10 mm	2E76E	N/A	1:1	left	0.123	1.079	0.133	
1732.40	1412	UMTS 1750	RMC	19.5	18.97	0	-0.02	10 mm	2E674	N/A	1:1	back	0.405	1.130	0.458	
1732.40	1412	UMTS 1750	RMC	19.5	18.97	0	-0.04	10 mm	2E674	N/A	1:1	front	0.261	1.130	0.295	
1712.40	1312	UMTS 1750	RMC	19.5	19.00	0	0.02	10 mm	2E674	N/A	1:1	bottom	0.503	1.122	0.564	
1732.40	1412	UMTS 1750	RMC	19.5	18.97	0	-0.16	10 mm	2E674	N/A	1:1	bottom	0.552	1.130	0.624	A23
1752.60	1513	UMTS 1750	RMC	19.5	19.05	0	0.03	10 mm	2E674	N/A	1:1	bottom	0.514	1.109	0.570	
1732.40	1412	UMTS 1750	RMC	19.5	18.97	0	0.01	10 mm	2E674	N/A	1:1	right	0.076	1.130	0.086	
1732.40	1412	UMTS 1750	RMC	19.5	18.97	0	-0.01	10 mm	2E674	N/A	1:1	left	0.054	1.130	0.061	
1880.00	661	GSM 1900	GPRS	22.8	21.59	N/A	-0.12	10 mm	2E76D	3	1:2.76	back	0.191	1.321	0.252	
1880.00	661	GSM 1900	GPRS	22.8	21.59	N/A	0.09	10 mm	2E76D	3	1:2.76	front	0.162	1.321	0.214	
1880.00	661	GSM 1900	GPRS	22.8	21.59	N/A	-0.08	10 mm	2E76D	3	1:2.76	bottom	0.351	1.321	0.464	A25
1880.00	661	GSM 1900	GPRS	22.8	21.59	N/A	-0.15	10 mm	2E76D	3	1:2.76	right	0.040	1.321	0.053	
1880.00	661	GSM 1900	GPRS	22.8	21.59	N/A	0.19	10 mm	2E76D	3	1:2.76	left	0.027	1.321	0.036	
1880.00	9400	UMTS 1900	RMC	19.5	18.76	0	0.01	10 mm	2E9B0	N/A	1:1	back	0.349	1.186	0.414	
1880.00	9400	UMTS 1900	RMC	19.5	18.76	0	0.01	10 mm	2E9B0	N/A	1:1	front	0.283	1.186	0.336	
1852.40	9262	UMTS 1900	RMC	19.5	18.64	0	-0.07	10 mm	2E9B0	N/A	1:1	bottom	0.596	1.219	0.727	A27
1880.00	9400	UMTS 1900	RMC	19.5	18.76	0	-0.05	10 mm	2E9B0	N/A	1:1	bottom	0.589	1.186	0.699	
1907.60	9538	UMTS 1900	RMC	19.5	18.88	0	-0.08	10 mm	2E9B0	N/A	1:1	bottom	0.596	1.153	0.687	
1880.00	9400	UMTS 1900	RMC	19.5	18.76	0	-0.15	10 mm	2E9B0	N/A	1:1	right	0.066	1.186	0.078	
1880.00	9400	UMTS 1900	RMC	19.5	18.76	0	0.05	10 mm	2E9B0	N/A	1:1	left	0.048	1.186	0.057	
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 11-24
LTE Band 12 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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)		
707.50	23095	Mid	LTE Band 12	10	25.0	24.09	0	0.00	0	2E700	QPSK	1	0	10 mm	back	1:1	0.349	1.233	0.430	A29
707.50	23095	Mid	LTE Band 12	10	24.0	23.13	0	0.01	1	2E700	QPSK	25	0	10 mm	back	1:1	0.306	1.222	0.374	
707.50	23095	Mid	LTE Band 12	10	25.0	24.09	0	-0.02	0	2E700	QPSK	1	0	10 mm	front	1:1	0.264	1.233	0.326	
707.50	23095	Mid	LTE Band 12	10	24.0	23.13	0	0.00	1	2E700	QPSK	25	0	10 mm	front	1:1	0.227	1.222	0.277	
707.50	23095	Mid	LTE Band 12	10	25.0	24.09	0	-0.01	0	2E700	QPSK	1	0	10 mm	bottom	1:1	0.196	1.233	0.242	
707.50	23095	Mid	LTE Band 12	10	24.0	23.13	0	-0.02	1	2E700	QPSK	25	0	10 mm	bottom	1:1	0.166	1.222	0.203	
707.50	23095	Mid	LTE Band 12	10	25.0	24.09	0	0.01	0	2E700	QPSK	1	0	10 mm	right	1:1	0.255	1.233	0.314	
707.50	23095	Mid	LTE Band 12	10	24.0	23.13	0	-0.07	1	2E700	QPSK	25	0	10 mm	right	1:1	0.211	1.222	0.258	
707.50	23095	Mid	LTE Band 12	10	25.0	24.09	0	-0.03	0	2E700	QPSK	1	0	10 mm	left	1:1	0.114	1.233	0.141	
707.50	23095	Mid	LTE Band 12	10	24.0	23.13	0	-0.01	1	2E700	QPSK	25	0	10 mm	left	1:1	0.091	1.222	0.111	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT																				
Spatial Peak									Body											
Uncontrolled Exposure/General Population									1.6 W/kg (mW/g)											
									averaged over 1 gram											

Table 11-25
LTE Band 13 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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)		
782.00	23230	Mid	LTE Band 13	10	25.0	24.00	51	0.00	0	2E700	QPSK	1	0	10 mm	back	1:1	0.460	1.259	0.579	A31
782.00	23230	Mid	LTE Band 13	10	24.0	23.09	51	0.06	1	2E700	QPSK	25	0	10 mm	back	1:1	0.391	1.233	0.482	
782.00	23230	Mid	LTE Band 13	10	25.0	24.00	51	-0.02	0	2E700	QPSK	1	0	10 mm	front	1:1	0.359	1.259	0.452	
782.00	23230	Mid	LTE Band 13	10	24.0	23.09	51	-0.03	1	2E700	QPSK	25	0	10 mm	front	1:1	0.301	1.233	0.371	
782.00	23230	Mid	LTE Band 13	10	25.0	24.00	51	-0.04	0	2E700	QPSK	1	0	10 mm	bottom	1:1	0.269	1.259	0.339	
782.00	23230	Mid	LTE Band 13	10	24.0	23.09	51	0.07	1	2E700	QPSK	25	0	10 mm	bottom	1:1	0.223	1.233	0.275	
782.00	23230	Mid	LTE Band 13	10	25.0	24.00	51	0.07	0	2E700	QPSK	1	0	10 mm	right	1:1	0.237	1.259	0.298	
782.00	23230	Mid	LTE Band 13	10	24.0	23.09	51	0.07	1	2E700	QPSK	25	0	10 mm	right	1:1	0.197	1.233	0.243	
782.00	23230	Mid	LTE Band 13	10	25.0	24.00	51	0.08	0	2E700	QPSK	1	0	10 mm	left	1:1	0.079	1.259	0.099	
782.00	23230	Mid	LTE Band 13	10	24.0	23.09	51	0.10	1	2E700	QPSK	25	0	10 mm	left	1:1	0.061	1.233	0.075	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT									Body 1.6 W/kg (mW/g) averaged over 1 gram											
Spatial Peak																				
Uncontrolled Exposure/General Population																				

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Table 11-26
LTE Band 26 (Cell) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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)		
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.0	24.14	8	0.00	0	2E674	QPSK	1	0	10 mm	back	1:1	0.525	1.219	0.640	A33
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.20	8	-0.04	1	2E674	QPSK	36	18	10 mm	back	1:1	0.445	1.202	0.535	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.0	24.14	8	-0.05	0	2E674	QPSK	1	0	10 mm	front	1:1	0.438	1.219	0.534	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.20	8	-0.01	1	2E674	QPSK	36	18	10 mm	front	1:1	0.364	1.202	0.438	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.0	24.14	8	-0.10	0	2E674	QPSK	1	0	10 mm	bottom	1:1	0.322	1.219	0.393	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.20	8	-0.15	1	2E674	QPSK	36	18	10 mm	bottom	1:1	0.271	1.202	0.326	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.0	24.14	8	-0.02	0	2E674	QPSK	1	0	10 mm	right	1:1	0.328	1.219	0.400	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.20	8	0.00	1	2E674	QPSK	36	18	10 mm	right	1:1	0.243	1.202	0.292	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.0	24.14	8	0.13	0	2E674	QPSK	1	0	10 mm	left	1:1	0.103	1.219	0.126	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.20	8	-0.03	1	2E674	QPSK	36	18	10 mm	left	1:1	0.068	1.202	0.082	
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 11-27
LTE Band 66 (AWS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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)		
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.0	19.33	1	-0.03	0	2FECA	QPSK	1	0	10 mm	back	1:1	0.367	1.167	0.428	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.0	19.37	1	0.00	0	2FECA	QPSK	50	0	10 mm	back	1:1	0.370	1.156	0.428	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.0	19.33	1	0.06	0	2FECA	QPSK	1	0	10 mm	front	1:1	0.291	1.167	0.340	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.0	19.37	1	0.01	0	2FECA	QPSK	50	0	10 mm	front	1:1	0.292	1.156	0.338	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.0	19.33	1	-0.04	0	2FECA	QPSK	1	0	10 mm	bottom	1:1	0.538	1.167	0.628	
1720.00	132072	Low	LTE Band 66 (AWS)	20	20.0	19.33	1	-0.04	0	2FECA	QPSK	50	0	10 mm	bottom	1:1	0.495	1.167	0.578	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.0	19.37	1	0.00	0	2FECA	QPSK	50	0	10 mm	bottom	1:1	0.544	1.156	0.629	A35
1770.00	132572	High	LTE Band 66 (AWS)	20	20.0	19.23	1	0.00	0	2FECA	QPSK	50	0	10 mm	bottom	1:1	0.475	1.194	0.567	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.0	19.33	1	0.02	0	2FECA	QPSK	1	0	10 mm	right	1:1	0.058	1.167	0.068	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.0	19.37	1	-0.10	0	2FECA	QPSK	50	0	10 mm	right	1:1	0.057	1.156	0.066	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.0	19.33	1	0.07	0	2FECA	QPSK	1	0	10 mm	left	1:1	0.050	1.167	0.058	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.0	19.37	1	0.08	0	2FECA	QPSK	50	0	10 mm	left	1:1	0.053	1.156	0.061	
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 11-28
LTE Band 25 (PCS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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)		
1905.00	26590	High	LTE Band 25 (PCS)	20	20.0	19.19	1	-0.01	0	2E9E7	QPSK	1	0	10 mm	back	1:1	0.340	1.205	0.410	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.0	19.15	1	-0.01	0	2E9E7	QPSK	50	0	10 mm	back	1:1	0.340	1.216	0.413	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.0	19.19	1	0.02	0	2E9E7	QPSK	1	0	10 mm	front	1:1	0.312	1.205	0.376	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.0	19.15	1	-0.02	0	2E9E7	QPSK	50	0	10 mm	front	1:1	0.308	1.216	0.375	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.0	19.19	1	-0.04	0	2E9E7	QPSK	1	0	10 mm	bottom	1:1	0.575	1.205	0.693	A37
1860.00	26140	Low	LTE Band 25 (PCS)	20	20.0	18.89	1	-0.05	0	2E9E7	QPSK	50	0	10 mm	bottom	1:1	0.528	1.291	0.682	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.0	18.85	1	-0.02	0	2E9E7	QPSK	50	0	10 mm	bottom	1:1	0.519	1.303	0.676	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.0	19.15	1	-0.04	0	2E9E7	QPSK	50	0	10 mm	bottom	1:1	0.574	1.216	0.698	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.0	19.19	1	0.12	0	2E9E7	QPSK	1	0	10 mm	right	1:1	0.068	1.205	0.082	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.0	19.15	1	-0.05	0	2E9E7	QPSK	50	0	10 mm	right	1:1	0.066	1.216	0.080	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.0	19.19	1	-0.09	0	2E9E7	QPSK	1	0	10 mm	left	1:1	0.045	1.205	0.054	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.0	19.15	1	0.04	0	2E9E7	QPSK	50	0	10 mm	left	1:1	0.047	1.216	0.057	
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 11-29
LTE Band 41 Hotspot 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 (g)	Plot #	
		MHz	Ch.														(W/kg)		(W/kg)		
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	22.0	21.85	-0.04	0	2FEC5	QPSK	1	0	10 mm	back	1:1.58	0.494	1.035	0.511	
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	22.0	21.71	0.01	0	2FEC5	QPSK	50	50	10 mm	back	1:1.58	0.370	1.069	0.396	
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	22.0	21.85	0.00	0	2FEC5	QPSK	1	0	10 mm	front	1:1.58	0.500	1.035	0.518	
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	22.0	21.71	0.00	0	2FEC5	QPSK	50	50	10 mm	front	1:1.58	0.331	1.069	0.354	
1 CC Uplink	N/A	2506.00	39750	Low	LTE Band 41	20	22.0	21.69	-0.01	0	2FEC5	QPSK	1	0	10 mm	bottom	1:1.58	0.384	1.074	0.412	
1 CC Uplink	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	22.0	21.60	-0.04	0	2FEC5	QPSK	1	0	10 mm	bottom	1:1.58	0.474	1.096	0.520	
1 CC Uplink	N/A	2593.00	40620	Mid	LTE Band 41	20	22.0	21.58	-0.03	0	2FEC5	QPSK	1	0	10 mm	bottom	1:1.58	0.580	1.102	0.639	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	22.0	21.56	-0.01	0	2FEC5	QPSK	1	0	10 mm	bottom	1:1.58	0.695	1.107	0.769	
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	22.0	21.85	-0.03	0	2FEC5	QPSK	1	0	10 mm	bottom	1:1.58	1.060	1.035	1.097	A39
1 CC Uplink	N/A	2506.00	39750	Low	LTE Band 41	20	22.0	21.67	0.01	0	2FEC5	QPSK	50	0	10 mm	bottom	1:1.58	0.382	1.079	0.412	
1 CC Uplink	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	22.0	21.63	-0.01	0	2FEC5	QPSK	50	0	10 mm	bottom	1:1.58	0.490	1.089	0.534	
1 CC Uplink	N/A	2593.00	40620	Mid	LTE Band 41	20	22.0	21.57	-0.02	0	2FEC5	QPSK	50	0	10 mm	bottom	1:1.58	0.579	1.104	0.639	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	22.0	21.55	0.01	0	2FEC5	QPSK	50	0	10 mm	bottom	1:1.58	0.685	1.109	0.760	
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	22.0	21.71	-0.03	0	2FEC5	QPSK	50	50	10 mm	bottom	1:1.58	0.741	1.069	0.792	
1 CC Uplink	N/A	2506.00	39750	Low	LTE Band 41	20	22.0	21.66	0.00	0	2FEC5	QPSK	100	0	10 mm	bottom	1:1.58	0.379	1.081	0.410	
2 CC Uplink	PCC	2680.00	41490	High	LTE Band 41	20	22.0	20.40	0.00	0	2FEC5	QPSK	1	0	10 mm	bottom	1:1.58	0.746	1.445	1.078	
	SCC	2660.20	41292	High								QPSK	1	99							
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	22.0	21.85	-0.03	0	2FEC5	QPSK	1	0	10 mm	left	1:1.58	0.313	1.035	0.324	
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	22.0	21.71	0.00	0	2FEC5	QPSK	50	50	10 mm	left	1:1.58	0.202	1.069	0.216	
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	22.0	21.85	-0.03	0	2FEC5	QPSK	1	0	10 mm	bottom	1:1.58	1.050	1.035	1.087	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT																					
Spatial Peak										Body											
Uncontrolled Exposure/General Population										1.6 W/kg (mW/g) averaged over 1 gram											

Note: Blue entry represents variability measurement.

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Table 11-30
WLAN SISO Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [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)	
2462	11	802.11b	DSSS	22	20.5	20.31	0.13	10 mm	1	2F5E0	1	back	99.1	0.230	-	1.045	1.009	-	
2462	11	802.11b	DSSS	22	20.5	20.31	0.19	10 mm	1	2F5E0	1	front	99.1	0.157	-	1.045	1.009	-	
2462	11	802.11b	DSSS	22	20.5	20.31	-0.04	10 mm	1	2F5E0	1	top	99.1	0.317	0.268	1.045	1.009	0.283	A41
2462	11	802.11b	DSSS	22	20.5	20.31	0.11	10 mm	1	2F5E0	1	left	99.1	0.095	-	1.045	1.009	-	
2412	1	802.11b	DSSS	22	20.5	20.47	0.18	10 mm	2	2F5E0	1	back	99.2	0.281	0.229	1.007	1.008	0.232	
2412	1	802.11b	DSSS	22	20.5	20.47	0.18	10 mm	2	2F5E0	1	front	99.2	0.256	-	1.007	1.008	-	
2412	1	802.11b	DSSS	22	20.5	20.47	0.04	10 mm	2	2F5E0	1	top	99.2	0.258	-	1.007	1.008	-	
2412	1	802.11b	DSSS	22	20.5	20.47	-0.06	10 mm	2	2F5E0	1	left	99.2	0.145	-	1.007	1.008	-	
5775	155	802.11ac	OFDM	80	17.5	16.67	0.19	10 mm	1	2E782	29.3	back	95.5	0.889	0.401	1.211	1.047	0.508	
5775	155	802.11ac	OFDM	80	17.5	16.67	0.15	10 mm	1	2E782	29.3	front	95.5	0.074	-	1.211	1.047	-	
5775	155	802.11ac	OFDM	80	17.5	16.67	-0.15	10 mm	1	2E782	29.3	top	95.5	0.381	0.155	1.211	1.047	0.197	
5775	155	802.11ac	OFDM	80	17.5	16.67	-0.02	10 mm	1	2E782	29.3	left	95.5	0.102	-	1.211	1.047	-	
5775	155	802.11ac	OFDM	80	17.5	17.44	0.04	10 mm	2	2E782	29.3	back	94.6	0.821	0.413	1.014	1.057	0.443	
5775	155	802.11ac	OFDM	80	17.5	17.44	0.20	10 mm	2	2E782	29.3	front	94.6	0.254	0.117	1.014	1.057	0.125	
5775	155	802.11ac	OFDM	80	17.5	17.44	-0.13	10 mm	2	2E782	29.3	top	94.6	0.142	-	1.014	1.057	-	
5775	155	802.11ac	OFDM	80	17.5	17.44	0.06	10 mm	2	2E782	29.3	left	94.6	0.142	-	1.014	1.057	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Body											
Spatial Peak								1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population								averaged over 1 gram											

Table 11-31
WLAN MIMO Hotspot 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)	
5775	155	802.11ac	OFDM	80	17.5	16.67	17.5	17.44	0.05	10 mm	MIMO	2E782	58.5	back	92.3	1.690	0.679	1.211	1.083	0.891	A43
5775	155	802.11ac	OFDM	80	17.5	16.67	17.5	17.44	0.20	10 mm	MIMO	2E782	58.5	front	92.3	0.312	0.120	1.211	1.083	0.157	
5775	155	802.11ac	OFDM	80	17.5	16.67	17.5	17.44	0.10	10 mm	MIMO	2E782	58.5	top	92.3	0.328	0.136	1.211	1.083	0.178	
5775	155	802.11ac	OFDM	80	17.5	16.67	17.5	17.44	0.19	10 mm	MIMO	2E782	58.5	left	92.3	0.213	-	1.211	1.083	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Body											
Spatial Peak										1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population										averaged over 1 gram											

Table 11-32
DTS MIMO Hotspot SAR for Conditions with 2.4 GHz and 5GHz 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)	
2437	6	802.11n	OFDM	20	16.5	15.96	16.5	16.21	0.18	10 mm	MIMO	2F5E0	13	back	97.8	0.128	-	1.132	1.022	-	
2437	6	802.11n	OFDM	20	16.5	15.96	16.5	16.21	0.20	10 mm	MIMO	2F5E0	13	front	97.8	0.121	-	1.132	1.022	-	
2437	6	802.11n	OFDM	20	16.5	15.96	16.5	16.21	0.04	10 mm	MIMO	2F5E0	13	top	97.8	0.218	0.178	1.132	1.022	0.206	
2437	6	802.11n	OFDM	20	16.5	15.96	16.5	16.21	0.10	10 mm	MIMO	2F5E0	13	left	97.8	0.079	-	1.132	1.022	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Body											
Spatial Peak										1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population										averaged over 1 gram											

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 11-33
NII MIMO Hotspot SAR for Conditions with 2.4 GHz and 5GHz 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)			
5775	155	802.11ac	OFDM	80	13.5	12.71	13.5	13.09	0.02	10 mm	MIMO	2E782	58.5	back	92.3	0.540	0.268	1.199	1.083	0.348	
5775	155	802.11ac	OFDM	80	13.5	12.71	13.5	13.09	0.11	10 mm	MIMO	2E782	58.5	front	92.3	0.174	-	1.199	1.083	-	
5775	155	802.11ac	OFDM	80	13.5	12.71	13.5	13.09	0.05	10 mm	MIMO	2E782	58.5	top	92.3	0.176	-	1.199	1.083	-	
5775	155	802.11ac	OFDM	80	13.5	12.71	13.5	13.09	0.15	10 mm	MIMO	2E782	58.5	left	92.3	0.089	-	1.199	1.083	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT										Body											
Spatial Peak										1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population										averaged over 1 gram											

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

Table 11-34
DSS Hotspot SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	16.5	16.40	0.04	10 mm	2EAC7	1	back	77.7	0.025	1.023	1.287	0.033	A45
2441	39	Bluetooth	FHSS	16.5	16.40	0.14	10 mm	2EAC7	1	front	77.7	0.022	1.023	1.287	0.029	
2441	39	Bluetooth	FHSS	16.5	16.40	-0.13	10 mm	2EAC7	1	top	77.7	0.017	1.023	1.287	0.022	
2441	39	Bluetooth	FHSS	16.5	16.40	0.16	10 mm	2EAC7	1	left	77.7	0.013	1.023	1.287	0.017	
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 11-35
UMTS Phablet SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	Spacing	Device Serial Number	Duty Cycle	Side	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1732.40	1412	UMTS 1750	RMC	24.5	23.96	0	-0.02	10 mm	2FECA	1:1	back	0.599	1.132	0.678	
1732.40	1412	UMTS 1750	RMC	24.5	23.96	0	0.02	7 mm	2FECA	1:1	front	0.647	1.132	0.732	
1732.40	1412	UMTS 1750	RMC	24.5	23.96	0	-0.01	11 mm	2FECA	1:1	bottom	0.778	1.132	0.881	
1732.40	1412	UMTS 1750	RMC	24.5	23.96	0	-0.06	0 mm	2FECA	1:1	right	0.393	1.132	0.445	
1732.40	1412	UMTS 1750	RMC	24.5	23.96	0	-0.10	0 mm	2FECA	1:1	left	0.299	1.132	0.338	
1732.40	1412	UMTS 1750	RMC	21.5	20.95	0	-0.02	0 mm	2E674	1:1	back	1.540	1.135	1.748	
1732.40	1412	UMTS 1750	RMC	21.5	20.95	0	-0.03	0 mm	2E674	1:1	front	1.270	1.135	1.441	
1712.40	1312	UMTS 1750	RMC	21.5	20.96	0	-0.13	0 mm	2E674	1:1	bottom	2.520	1.132	2.853	A46
1732.40	1412	UMTS 1750	RMC	21.5	20.95	0	-0.07	0 mm	2E674	1:1	bottom	2.440	1.135	2.769	
1752.60	1513	UMTS 1750	RMC	21.5	21.07	0	-0.14	0 mm	2E674	1:1	bottom	2.290	1.104	2.528	
1712.40	1312	UMTS 1750	RMC	21.5	20.96	0	-0.03	0 mm	2E674	1:1	bottom	2.510	1.132	2.841	
1880.00	9400	UMTS 1900	RMC	24.5	23.76	0	-0.01	10 mm	2E9B0	1:1	back	0.650	1.186	0.771	
1880.00	9400	UMTS 1900	RMC	24.5	23.76	0	-0.02	7 mm	2E9B0	1:1	front	0.807	1.186	0.957	
1880.00	9400	UMTS 1900	RMC	24.5	23.76	0	-0.06	11 mm	2E9B0	1:1	bottom	0.843	1.186	1.000	
1880.00	9400	UMTS 1900	RMC	24.5	23.76	0	-0.02	0 mm	2E9B0	1:1	right	0.445	1.186	0.528	
1880.00	9400	UMTS 1900	RMC	24.5	23.76	0	-0.15	0 mm	2E9B0	1:1	left	0.441	1.186	0.523	
1852.40	9262	UMTS 1900	RMC	21.5	20.64	0	0.00	0 mm	2E9B0	1:1	back	1.570	1.219	1.914	
1880.00	9400	UMTS 1900	RMC	21.5	20.76	0	0.03	0 mm	2E9B0	1:1	back	1.790	1.186	2.123	
1907.60	9538	UMTS 1900	RMC	21.5	20.88	0	0.02	0 mm	2E9B0	1:1	back	1.520	1.153	1.753	
1880.00	9400	UMTS 1900	RMC	21.5	20.76	0	0.02	0 mm	2E9B0	1:1	front	1.420	1.186	1.684	
1852.40	9262	UMTS 1900	RMC	21.5	20.64	0	0.02	0 mm	2E9B0	1:1	bottom	2.420	1.219	2.950	A47
1880.00	9400	UMTS 1900	RMC	21.5	20.76	0	-0.04	0 mm	2E9B0	1:1	bottom	2.110	1.186	2.502	
1907.60	9538	UMTS 1900	RMC	21.5	20.88	0	0.02	0 mm	2E9B0	1:1	bottom	1.890	1.153	2.179	
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 11-36
LTE FDD Phablet SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR	Plot #
MHz	Ch.	(W/kg)															(W/kg)			
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.40	1	0.05	0	2FECA	QPSK	1	0	10 mm	back	1:1	0.609	1.148	0.699	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.46	1	-0.05	1	2FECA	QPSK	50	0	10 mm	back	1:1	0.497	1.132	0.563	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.40	1	0.00	0	2FECA	QPSK	1	0	7 mm	front	1:1	0.631	1.148	0.724	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.46	1	-0.03	1	2FECA	QPSK	50	0	7 mm	front	1:1	0.525	1.132	0.594	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.40	1	-0.02	0	2FECA	QPSK	1	0	11 mm	bottom	1:1	0.751	1.148	0.862	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.46	1	0.01	1	2FECA	QPSK	50	0	11 mm	bottom	1:1	0.575	1.132	0.651	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.40	1	-0.05	0	2FECA	QPSK	1	0	0 mm	right	1:1	0.310	1.148	0.356	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.46	1	-0.20	1	2FECA	QPSK	50	0	0 mm	right	1:1	0.268	1.132	0.303	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.40	1	-0.11	0	2FECA	QPSK	1	0	0 mm	left	1:1	0.310	1.148	0.356	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.46	1	-0.03	1	2FECA	QPSK	50	0	0 mm	left	1:1	0.268	1.132	0.303	
1770.00	132572	High	LTE Band 66 (AWS)	20	20.5	19.99	1	-0.10	0	2FECA	QPSK	1	0	0 mm	back	1:1	1.620	1.125	1.823	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.5	19.94	1	-0.05	0	2FECA	QPSK	50	0	0 mm	back	1:1	1.570	1.138	1.787	
1770.00	132572	High	LTE Band 66 (AWS)	20	20.5	19.99	1	-0.05	0	2FECA	QPSK	1	0	0 mm	front	1:1	1.230	1.125	1.384	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.5	19.94	1	-0.05	0	2FECA	QPSK	50	0	0 mm	front	1:1	1.190	1.138	1.354	
1720.00	132072	Low	LTE Band 66 (AWS)	20	20.5	19.95	1	-0.01	0	2FECA	QPSK	1	0	0 mm	bottom	1:1	2.480	1.135	2.815	A48
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.5	19.96	1	-0.07	0	2FECA	QPSK	1	0	0 mm	bottom	1:1	2.360	1.132	2.672	
1770.00	132572	High	LTE Band 66 (AWS)	20	20.5	19.99	1	-0.03	0	2FECA	QPSK	1	0	0 mm	bottom	1:1	2.400	1.125	2.700	
1720.00	132072	Low	LTE Band 66 (AWS)	20	20.5	19.91	1	-0.09	0	2FECA	QPSK	50	0	0 mm	bottom	1:1	2.420	1.146	2.773	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.5	19.94	1	-0.04	0	2FECA	QPSK	50	0	0 mm	bottom	1:1	2.410	1.138	2.743	
1770.00	132572	High	LTE Band 66 (AWS)	20	20.5	19.89	1	-0.07	0	2FECA	QPSK	50	0	0 mm	bottom	1:1	2.390	1.151	2.751	
1720.00	132072	Low	LTE Band 66 (AWS)	20	20.5	19.93	1	-0.03	0	2FECA	QPSK	100	0	0 mm	bottom	1:1	2.320	1.140	2.645	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.5	23.65	1	0.03	0	2E9B0	QPSK	1	0	10 mm	back	1:1	0.598	1.216	0.727	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	22.62	1	0.07	1	2E9B0	QPSK	50	0	10 mm	back	1:1	0.466	1.225	0.571	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.5	23.65	1	-0.03	0	2E9B0	QPSK	1	0	7 mm	front	1:1	0.684	1.216	0.832	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	22.62	1	0.00	1	2E9B0	QPSK	50	0	7 mm	front	1:1	0.536	1.225	0.657	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.5	23.65	1	-0.01	0	2E9B0	QPSK	1	0	11 mm	bottom	1:1	0.925	1.216	1.125	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	22.62	1	0.00	1	2E9B0	QPSK	50	0	11 mm	bottom	1:1	0.692	1.225	0.848	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.5	23.65	1	-0.06	0	2E9B0	QPSK	1	0	0 mm	right	1:1	0.419	1.216	0.510	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	22.62	1	-0.02	1	2E9B0	QPSK	50	0	0 mm	right	1:1	0.322	1.225	0.394	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.5	23.65	1	-0.17	0	2E9B0	QPSK	1	0	0 mm	left	1:1	0.398	1.216	0.484	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	22.62	1	-0.12	1	2E9B0	QPSK	50	0	0 mm	left	1:1	0.325	1.225	0.398	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.0	21.70	1	-0.03	0	2E9B0	QPSK	1	0	0 mm	back	1:1	2.140	1.072	2.294	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.0	21.53	1	-0.02	0	2E9B0	QPSK	1	0	0 mm	back	1:1	2.140	1.114	2.384	
1905.00	26590	High	LTE Band 25 (PCS)	20	22.0	21.71	1	-0.05	0	2E9B0	QPSK	1	0	0 mm	back	1:1	1.900	1.069	2.031	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.0	21.37	1	-0.04	0	2E9B0	QPSK	50	0	0 mm	back	1:1	2.080	1.156	2.404	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.0	21.38	1	-0.03	0	2E9B0	QPSK	50	0	0 mm	back	1:1	2.050	1.153	2.364	
1905.00	26590	High	LTE Band 25 (PCS)	20	22.0	21.67	1	-0.13	0	2E9B0	QPSK	50	0	0 mm	back	1:1	1.890	1.079	2.039	
1905.00	26590	High	LTE Band 25 (PCS)	20	22.0	21.61	1	0.00	0	2E9B0	QPSK	100	0	0 mm	back	1:1	2.040	1.094	2.232	
1905.00	26590	High	LTE Band 25 (PCS)	20	22.0	21.71	1	0.00	0	2E9B0	QPSK	1	0	0 mm	front	1:1	1.670	1.069	1.785	
1905.00	26590	High	LTE Band 25 (PCS)	20	22.0	21.67	1	0.02	0	2E9B0	QPSK	50	0	0 mm	front	1:1	1.660	1.079	1.791	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.0	21.70	1	-0.16	0	2E9B0	QPSK	1	0	0 mm	bottom	1:1	2.770	1.072	2.969	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.0	21.53	1	-0.09	0	2E9B0	QPSK	1	0	0 mm	bottom	1:1	2.560	1.114	2.852	
1905.00	26590	High	LTE Band 25 (PCS)	20	22.0	21.71	1	-0.12	0	2E9B0	QPSK	1	0	0 mm	bottom	1:1	2.290	1.069	2.448	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.0	21.37	1	-0.11	0	2E9B0	QPSK	50	0	0 mm	bottom	1:1	2.630	1.156	3.040	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.0	21.38	1	-0.10	0	2E9B0	QPSK	50	0	0 mm	bottom	1:1	2.440	1.153	2.813	
1905.00	26590	High	LTE Band 25 (PCS)	20	22.0	21.67	1	-0.05	0	2E9B0	QPSK	50	0	0 mm	bottom	1:1	2.270	1.079	2.449	
1905.00	26590	High	LTE Band 25 (PCS)	20	22.0	21.61	1	-0.08	0	2E9B0	QPSK	100	0	0 mm	bottom	1:1	2.240	1.094	2.451	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.0	21.70	1	-0.10	0	2E9B0	QPSK	1	0	0 mm	bottom	1:1	3.010	1.072	3.227	A49
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 11-37
LTE TDD 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]	Device 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	2506.00	39750	Low	LTE Band 41	20	24.5	23.55	-0.07	0	2FEC5	QPSK	1	0	0 mm	bottom	1:1.58	1.830	1.245	2.278	
1 CC Uplink	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	24.5	23.66	-0.10	0	2FEC5	QPSK	1	0	0 mm	bottom	1:1.58	1.760	1.213	2.135	
1 CC Uplink	N/A	2593.00	40620	Mid	LTE Band 41	20	24.5	23.67	-0.08	0	2FEC5	QPSK	1	0	0 mm	bottom	1:1.58	1.610	1.211	1.950	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	24.5	23.71	-0.10	0	2FEC5	QPSK	1	0	0 mm	bottom	1:1.58	1.490	1.199	1.787	
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	24.5	23.84	-0.08	0	2FEC5	QPSK	1	0	0 mm	bottom	1:1.58	2.080	1.164	2.421	A50
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	23.5	22.76	-0.09	1	2FEC5	QPSK	50	0	0 mm	bottom	1:1.58	1.190	1.186	1.411	
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	23.5	22.70	-0.10	1	2FEC5	QPSK	100	0	0 mm	bottom	1:1.58	1.160	1.202	1.394	
2 CC Uplink	PCC	2680.00	41490	High	LTE Band 41	20	24.5	22.60	-0.08	0	2FEC5	QPSK	1	0	0 mm	bottom	1:1.58	1.500	1.549	2.324	
	SCC	2680.20	41292	High								QPSK	1	99							
1 CC Uplink	N/A	2680.00	41490	High	LTE Band 41	20	24.5	23.84	-0.08	0	2FEC5	QPSK	1	0	0 mm	bottom	1:1.58	2.080	1.164	2.421	
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.

Table 11-38
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 #
														W/kg	(W/kg)			(W/kg)	
5270	54	802.11n	OFDM	40	17.5	16.60	0.20	0 mm	1	2E782	13.5	back	97.6	3.192	0.985	1.230	1.025	1.242	
5270	54	802.11n	OFDM	40	17.5	16.60	0.19	0 mm	1	2E782	13.5	front	97.6	1.156	0.055	1.230	1.025	0.069	
5270	54	802.11n	OFDM	40	17.5	16.60	0.00	0 mm	1	2E782	13.5	top	97.6	0.934	-	1.230	1.025	-	
5270	54	802.11n	OFDM	40	17.5	16.60	0.21	0 mm	1	2E782	13.5	left	97.6	0.270	-	1.230	1.025	-	
5270	54	802.11n	OFDM	40	17.5	16.67	0.19	0 mm	2	2E782	13.5	back	97.2	7.054	0.776	1.211	1.029	0.967	
5270	54	802.11n	OFDM	40	17.5	16.67	0.00	0 mm	2	2E782	13.5	front	97.2	1.552	-	1.211	1.029	-	
5270	54	802.11n	OFDM	40	17.5	16.67	0.17	0 mm	2	2E782	13.5	top	97.2	1.424	-	1.211	1.029	-	
5270	54	802.11n	OFDM	40	17.5	16.67	0.15	0 mm	2	2E782	13.5	left	97.2	0.529	-	1.211	1.029	-	
5530	106	802.11ac	OFDM	80	15.5	15.44	0.20	0 mm	1	2E782	29.3	back	95.5	4.202	1.280	1.014	1.047	1.359	
5610	122	802.11ac	OFDM	80	17.5	16.59	0.00	0 mm	1	2E782	29.3	back	95.5	27.131	1.610	1.233	1.047	2.078	
5690	138	802.11ac	OFDM	80	17.5	16.58	0.00	0 mm	1	2E782	29.3	back	95.5	10.566	1.800	1.236	1.047	2.329	
5610	122	802.11ac	OFDM	80	17.5	16.59	0.20	0 mm	1	2E782	29.3	front	95.5	0.915	-	1.233	1.047	-	
5610	122	802.11ac	OFDM	80	17.5	16.59	0.00	0 mm	1	2E782	29.3	top	95.5	4.340	0.342	1.233	1.047	0.442	
5610	122	802.11ac	OFDM	80	17.5	16.59	0.19	0 mm	1	2E782	29.3	left	95.5	0.310	-	1.233	1.047	-	
5610	122	802.11ac	OFDM	80	17.5	16.84	0.19	0 mm	2	2E782	29.3	back	94.6	7.314	1.080	1.164	1.057	1.329	
5610	122	802.11ac	OFDM	80	17.5	16.84	0.00	0 mm	2	2E782	29.3	front	94.6	3.296	0.357	1.164	1.057	0.439	
5610	122	802.11ac	OFDM	80	17.5	16.84	0.21	0 mm	2	2E782	29.3	top	94.6	2.059	-	1.164	1.057	-	
5610	122	802.11ac	OFDM	80	17.5	16.84	0.07	0 mm	2	2E782	29.3	left	94.6	1.090	-	1.164	1.057	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT																			
Spatial Peak								Phablet											
Uncontrolled Exposure/General Population								4.0 W/kg (mW/g)											
								averaged over 10 grams											

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Table 11-39
WLAN MIMO Phablet 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)			(W/kg)	
5270	54	802.11n	OFDM	40	17.5	16.60	17.5	16.67	0.20	0 mm	MIMO	2E782	27	back	93.6	37.096	1.730	1.230	1.068	2.273	
5310	62	802.11n	OFDM	40	15.5	15.16	15.5	15.34	-0.11	0 mm	MIMO	2E782	27	back	93.6	30.938	1.270	1.081	1.068	1.466	
5270	54	802.11n	OFDM	40	17.5	16.60	17.5	16.67	0.13	0 mm	MIMO	2E782	27	front	93.6	2.933	0.351	1.230	1.068	0.461	
5270	54	802.11n	OFDM	40	17.5	16.60	17.5	16.67	0.08	0 mm	MIMO	2E782	27	top	93.6	1.947	-	1.230	1.068	-	
5270	54	802.11n	OFDM	40	17.5	16.60	17.5	16.67	0.10	0 mm	MIMO	2E782	27	left	93.6	0.729	-	1.230	1.068	-	
5530	106	802.11ac	OFDM	80	15.5	15.44	15.5	15.22	-0.01	0 mm	MIMO	2E782	58.5	back	92.3	32.084	2.070	1.067	1.083	2.392	
5610	122	802.11ac	OFDM	80	16.5	15.94	16.5	15.63	-0.02	0 mm	MIMO	2E782	58.5	back	92.3	37.891	2.080	1.222	1.083	2.753	A51
5690	138	802.11ac	OFDM	80	16.5	16.07	16.5	15.51	0.03	0 mm	MIMO	2E782	58.5	back	92.3	34.153	1.890	1.256	1.083	2.571	
5690	138	802.11ac	OFDM	80	16.5	16.07	16.5	15.51	0.17	0 mm	MIMO	2E782	58.5	front	92.3	6.424	0.423	1.256	1.083	0.575	
5690	138	802.11ac	OFDM	80	16.5	16.07	16.5	15.51	0.17	0 mm	MIMO	2E782	58.5	top	92.3	3.813	-	1.256	1.083	-	
5690	138	802.11ac	OFDM	80	16.5	16.07	16.5	15.51	0.02	0 mm	MIMO	2E782	58.5	left	92.3	1.248	-	1.256	1.083	-	
5610	122	802.11ac	OFDM	80	16.5	15.94	16.5	15.63	-0.16	0 mm	MIMO	2E782	58.5	back	92.3	46.174	2.040	1.222	1.083	2.700	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT																					
Spatial Peak										Phablet											
Uncontrolled Exposure/General Population										4.0 W/kg (mW/g)											
										averaged over 10 grams											

Note: Blue entry represents variability measurement.

11.5 SAR Test Notes

General Notes:

- 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.
- Batteries are fully charged at the beginning of the SAR measurements.
- Liquid tissue depth was at least 15.0 cm for all frequencies.
- 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.
- SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
- 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.
- 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.
- 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. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 13 for variability analysis.
- 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).
- Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" 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.
- This device supports dynamic antenna tuning for some bands. Per FCC Guidance, SAR was measured according to the normally required SAR measurement configurations with tuner active. The auto-tune state determined by the device was verified before and after each SAR measurement and is listed in tables above. Please see Section 14 for supplemental data.
- 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.

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13. Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds below.

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 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 (scaled) for LTE Band 41 SAR measured at the highest output power channel in a given a test configuration was > 0.6 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 dB higher than the maximum output power when downlink carrier aggregation was inactive.
7. For LTE Band 41, per Fall 2017 TCBC Workshop Notes, 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, and phablet operations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 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 ≤ 0.8 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) 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 ≤ 0.8 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 ≤ 1.20 W/kg for 1g evaluations or all test channels were measured.
6. When 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.
7. 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.

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Bluetooth Notes

1. Bluetooth SAR was measured with the device connected to a call box with hopping disabled with DH5 operation and Tx Tests test mode type. Per October 2016 TCB Workshop Notes, the reported SAR was scaled to the 100% transmission duty factor to determine compliance. See Section 9.6 for the time domain plot and calculation for the duty factor of the device.
2. Head and hotspot Bluetooth SAR was evaluated for BT BR tethering applications.

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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.

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.

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	Cell. CDMA/EVDO	0.408	0.143	0.126	0.551	0.534	0.677
	GSM 850	0.244	0.143	0.126	0.387	0.370	0.513
	UMTS 850	0.261	0.143	0.126	0.404	0.387	0.530
	UMTS 1750	0.153	0.143	0.126	0.296	0.279	0.422
	GSM 1900	0.081	0.143	0.126	0.224	0.207	0.350
	UMTS 1900	0.183	0.143	0.126	0.326	0.309	0.452
	LTE Band 12	0.123	0.143	0.126	0.266	0.249	0.392
	LTE Band 13	0.157	0.143	0.126	0.300	0.283	0.426
	LTE Band 26 (Cell)	0.230	0.143	0.126	0.373	0.356	0.499
	LTE Band 66 (AWS)	0.169	0.143	0.126	0.312	0.295	0.438
	LTE Band 25 (PCS)	0.178	0.143	0.126	0.321	0.304	0.447
	LTE Band 41	0.085	0.143	0.126	0.228	0.211	0.354

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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	Cell. CDMA/EVDO	0.408	0.086	0.460	0.494	0.868	0.954
	GSM 850	0.244	0.086	0.460	0.330	0.704	0.790
	UMTS 850	0.261	0.086	0.460	0.347	0.721	0.807
	UMTS 1750	0.153	0.086	0.460	0.239	0.613	0.699
	GSM 1900	0.081	0.086	0.460	0.167	0.541	0.627
	UMTS 1900	0.183	0.086	0.460	0.269	0.643	0.729
	LTE Band 12	0.123	0.086	0.460	0.209	0.583	0.669
	LTE Band 13	0.157	0.086	0.460	0.243	0.617	0.703
	LTE Band 26 (Cell)	0.230	0.086	0.460	0.316	0.690	0.776
	LTE Band 66 (AWS)	0.169	0.086	0.460	0.255	0.629	0.715
	LTE Band 25 (PCS)	0.178	0.086	0.460	0.264	0.638	0.724
	LTE Band 41	0.085	0.086	0.460	0.171	0.545	0.631

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	Cell. CDMA/EVDO	0.408	0.143	0.126	0.086	0.460	1.223
	GSM 850	0.244	0.143	0.126	0.086	0.460	1.059
	UMTS 850	0.261	0.143	0.126	0.086	0.460	1.076
	UMTS 1750	0.153	0.143	0.126	0.086	0.460	0.968
	GSM 1900	0.081	0.143	0.126	0.086	0.460	0.896
	UMTS 1900	0.183	0.143	0.126	0.086	0.460	0.998
	LTE Band 12	0.123	0.143	0.126	0.086	0.460	0.938
	LTE Band 13	0.157	0.143	0.126	0.086	0.460	0.972
	LTE Band 26 (Cell)	0.230	0.143	0.126	0.086	0.460	1.045
	LTE Band 66 (AWS)	0.169	0.143	0.126	0.086	0.460	0.984
	LTE Band 25 (PCS)	0.178	0.143	0.126	0.086	0.460	0.993
	LTE Band 41	0.085	0.143	0.126	0.086	0.460	0.900

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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	Cell. CDMA/EVDO	0.408	0.611	1.019
	GSM 850	0.244	0.611	0.855
	UMTS 850	0.261	0.611	0.872
	UMTS 1750	0.153	0.611	0.764
	GSM 1900	0.081	0.611	0.692
	UMTS 1900	0.183	0.611	0.794
	LTE Band 12	0.123	0.611	0.734
	LTE Band 13	0.157	0.611	0.768
	LTE Band 26 (Cell)	0.230	0.611	0.841
	LTE Band 66 (AWS)	0.169	0.611	0.780
	LTE Band 25 (PCS)	0.178	0.611	0.789
	LTE Band 41	0.085	0.611	0.696

12.4 Body-Worn Simultaneous Transmission Analysis

Table 12-5
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Body-Worn at 1.5 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
Body-Worn	Cell. CDMA	0.535	0.108	0.113	0.643	0.648	0.756
	GSM 850	0.280	0.108	0.113	0.388	0.393	0.501
	UMTS 850	0.319	0.108	0.113	0.427	0.432	0.540
	UMTS 1750	0.722	0.108	0.113	0.830	0.835	0.943
	GSM 1900	0.295	0.108	0.113	0.403	0.408	0.516
	UMTS 1900	0.711	0.108	0.113	0.819	0.824	0.932
	LTE Band 12	0.275	0.108	0.113	0.383	0.388	0.496
	LTE Band 13	0.305	0.108	0.113	0.413	0.418	0.526
	LTE Band 26 (Cell)	0.319	0.108	0.113	0.427	0.432	0.540
	LTE Band 66 (AWS)	0.765	0.108	0.113	0.873	0.878	0.986
	LTE Band 25 (PCS)	0.730	0.108	0.113	0.838	0.843	0.951
	LTE Band 41	0.434	0.108	0.113	0.542	0.547	0.655

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Table 12-6
Simultaneous Transmission Scenario with 5 GHz WLAN (Body-Worn at 1.5 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
Body-Worn	Cell. CDMA	0.535	0.345	0.278	0.880	0.813	1.158
	GSM 850	0.280	0.345	0.278	0.625	0.558	0.903
	UMTS 850	0.319	0.345	0.278	0.664	0.597	0.942
	UMTS 1750	0.722	0.345	0.278	1.067	1.000	1.345
	GSM 1900	0.295	0.345	0.278	0.640	0.573	0.918
	UMTS 1900	0.711	0.345	0.278	1.056	0.989	1.334
	LTE Band 12	0.275	0.345	0.278	0.620	0.553	0.898
	LTE Band 13	0.305	0.345	0.278	0.650	0.583	0.928
	LTE Band 26 (Cell)	0.319	0.345	0.278	0.664	0.597	0.942
	LTE Band 66 (AWS)	0.765	0.345	0.278	1.110	1.043	1.388
	LTE Band 25 (PCS)	0.730	0.345	0.278	1.075	1.008	1.353
	LTE Band 41	0.434	0.345	0.278	0.779	0.712	1.057

Table 12-7
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 5 GHz WLAN MIMO (Body-Worn at 1.5 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)	5 GHz WLAN MIMO at 13 dBm SAR (W/kg)	Σ SAR (W/kg)			
		1	2	3	4	1+2	1+3	1+2+3	1+2+3+4
Body-Worn	Cell. CDMA	0.535	0.108	0.113	0.292	0.643	0.648	0.756	1.048
	GSM 850	0.280	0.108	0.113	0.292	0.388	0.393	0.501	0.793
	UMTS 850	0.319	0.108	0.113	0.292	0.427	0.432	0.540	0.832
	UMTS 1750	0.722	0.108	0.113	0.292	0.830	0.835	0.943	1.235
	GSM 1900	0.295	0.108	0.113	0.292	0.403	0.408	0.516	0.808
	UMTS 1900	0.711	0.108	0.113	0.292	0.819	0.824	0.932	1.224
	LTE Band 12	0.275	0.108	0.113	0.292	0.383	0.388	0.496	0.788
	LTE Band 13	0.305	0.108	0.113	0.292	0.413	0.418	0.526	0.818
	LTE Band 26 (Cell)	0.319	0.108	0.113	0.292	0.427	0.432	0.540	0.832
	LTE Band 66 (AWS)	0.765	0.108	0.113	0.292	0.873	0.878	0.986	1.278
	LTE Band 25 (PCS)	0.730	0.108	0.113	0.292	0.838	0.843	0.951	1.243
	LTE Band 41	0.434	0.108	0.113	0.292	0.542	0.547	0.655	0.947

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Table 12-8
Simultaneous Transmission Scenario with Bluetooth (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body-Worn	Cell. CDMA	0.535	0.013	0.548
	GSM 850	0.280	0.013	0.293
	UMTS 850	0.319	0.013	0.332
	UMTS 1750	0.722	0.013	0.735
	GSM 1900	0.295	0.013	0.308
	UMTS 1900	0.711	0.013	0.724
	LTE Band 12	0.275	0.013	0.288
	LTE Band 13	0.305	0.013	0.318
	LTE Band 26 (Cell)	0.319	0.013	0.332
	LTE Band 66 (AWS)	0.765	0.013	0.778
	LTE Band 25 (PCS)	0.730	0.013	0.743
	LTE Band 41	0.434	0.013	0.447

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12.5 Hotspot SAR Simultaneous Transmission Analysis

(*) For test positions that were not required to be evaluated for WLAN SAR per FCC FDB Publication 248227, the worst case WLAN SAR result was used for 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 (“-”).

Table 12-9
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	Cell. EVDO	0.943	0.283	0.232	1.226	1.175	1.458
	GPRS 850	0.450	0.283	0.232	0.733	0.682	0.965
	UMTS 850	0.546	0.283	0.232	0.829	0.778	1.061
	UMTS 1750	0.624	0.283	0.232	0.907	0.856	1.139
	GPRS 1900	0.464	0.283	0.232	0.747	0.696	0.979
	UMTS 1900	0.727	0.283	0.232	1.010	0.959	1.242
	LTE Band 12	0.430	0.283	0.232	0.713	0.662	0.945
	LTE Band 13	0.579	0.283	0.232	0.862	0.811	1.094
	LTE Band 26 (Cell)	0.640	0.283	0.232	0.923	0.872	1.155
	LTE Band 66 (AWS)	0.629	0.283	0.232	0.912	0.861	1.144
	LTE Band 25 (PCS)	0.698	0.283	0.232	0.981	0.930	1.213
	LTE Band 41	1.097	0.283	0.232	1.380	1.329	See Table Below

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+3
Hotspot SAR	Back	0.511	0.283*	0.232	1.026
	Front	0.518	0.283*	0.232*	1.033
	Top	-	0.283	0.232*	0.515
	Bottom	1.097	-	-	1.097
	Right	-	-	-	-
	Left	0.324	0.283*	0.232*	0.839

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Table 12-10
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
Hotspot SAR	Cell. EVDO	0.943	0.508	0.443	1.451	1.386
	GPRS 850	0.450	0.508	0.443	0.958	0.893
	UMTS 850	0.546	0.508	0.443	1.054	0.989
	UMTS 1750	0.624	0.508	0.443	1.132	1.067
	GPRS 1900	0.464	0.508	0.443	0.972	0.907
	UMTS 1900	0.727	0.508	0.443	1.235	1.170
	LTE Band 12	0.430	0.508	0.443	0.938	0.873
	LTE Band 13	0.579	0.508	0.443	1.087	1.022
	LTE Band 26 (Cell)	0.640	0.508	0.443	1.148	1.083
	LTE Band 66 (AWS)	0.629	0.508	0.443	1.137	1.072
	LTE Band 25 (PCS)	0.698	0.508	0.443	1.206	1.141
	LTE Band 41	1.097	0.508	0.443	See Table Below	1.540

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	Back	0.511	0.508	1.019
	Front	0.518	0.508*	1.026
	Top	-	0.197	0.197
	Bottom	1.097	-	1.097
	Right	-	-	-
	Left	0.324	0.508*	0.832

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Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	Cell. EVDO	0.943	0.891	See Table Below
	GPRS 850	0.450	0.891	1.341
	UMTS 850	0.546	0.891	1.437
	UMTS 1750	0.624	0.891	1.515
	GPRS 1900	0.464	0.891	1.355
	UMTS 1900	0.727	0.891	See Table Below
	LTE Band 12	0.430	0.891	1.321
	LTE Band 13	0.579	0.891	1.470
	LTE Band 26 (Cell)	0.640	0.891	1.531
	LTE Band 66 (AWS)	0.629	0.891	1.520
	LTE Band 25 (PCS)	0.698	0.891	1.589
	LTE Band 41	1.097	0.891	See Table Below

Simult Tx	Configuration	Cell. EVDO 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
Hotspot SAR	Back	0.943	0.891	See Note 1	0.02	Hotspot SAR	Back	0.414	0.891	1.305
	Front	0.846	0.157	1.003	N/A		Front	0.336	0.157	0.493
	Top	-	0.178	0.178	N/A		Top	-	0.178	0.178
	Bottom	0.576	-	0.576	N/A		Bottom	0.727	-	0.727
	Right	0.552	-	0.552	N/A		Right	0.078	-	0.078
	Left	0.155	0.891*	1.046	N/A		Left	0.057	0.891*	0.948

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	Back	0.511	0.891	1.402
	Front	0.518	0.157	0.675
	Top	-	0.178	0.178
	Bottom	1.097	-	1.097
	Right	-	-	-
	Left	0.324	0.891*	1.215

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Table 12-11
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 5 GHz WLAN MIMO (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO at 16 dBm SAR (W/kg)	5 GHz WLAN MIMO at 13 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Cell. EVDO	0.943	0.206	0.348	1.149	1.291	1.497
	GPRS 850	0.450	0.206	0.348	0.656	0.798	1.004
	UMTS 850	0.546	0.206	0.348	0.752	0.894	1.100
	UMTS 1750	0.624	0.206	0.348	0.830	0.972	1.178
	GPRS 1900	0.464	0.206	0.348	0.670	0.812	1.018
	UMTS 1900	0.727	0.206	0.348	0.933	1.075	1.281
	LTE Band 12	0.430	0.206	0.348	0.636	0.778	0.984
	LTE Band 13	0.579	0.206	0.348	0.785	0.927	1.133
	LTE Band 26 (Cell)	0.640	0.206	0.348	0.846	0.988	1.194
	LTE Band 66 (AWS)	0.629	0.206	0.348	0.835	0.977	1.183
	LTE Band 25 (PCS)	0.698	0.206	0.348	0.904	1.046	1.252
	LTE Band 41	1.097	0.206	0.348	1.303	1.445	See Table Below

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN MIMO at 16 dBm SAR (W/kg)	5 GHz WLAN MIMO at 13 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.511	0.206*	0.348	1.065
	Front	0.518	0.206*	0.348*	1.072
	Top	-	0.206	0.348*	0.554
	Bottom	1.097	-	-	1.097
	Right	-	-	-	0.000
	Left	0.324	0.206*	0.348*	0.878

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Table 12-12
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	Cell. EVDO	0.943	0.033	0.976
	GPRS 850	0.450	0.033	0.483
	UMTS 850	0.546	0.033	0.579
	UMTS 1750	0.624	0.033	0.657
	GPRS 1900	0.464	0.033	0.497
	UMTS 1900	0.727	0.033	0.760
	LTE Band 12	0.430	0.033	0.463
	LTE Band 13	0.579	0.033	0.612
	LTE Band 26 (Cell)	0.640	0.033	0.673
	LTE Band 66 (AWS)	0.629	0.033	0.662
	LTE Band 25 (PCS)	0.698	0.033	0.731
	LTE Band 41	1.097	0.033	1.130

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 12.7 for detailed SPLS ratio analysis.

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12.6 Phablet Simultaneous Transmission Analysis

(*) For test positions that were not required to be evaluated for WLAN SAR per FCC FDB Publication 248227, the worst case WLAN SAR result was used for 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 (“-”).

When scaled to the maximum target, LTE B41 bottom edge hotspot 1g SAR > 1.2 W/kg. Phablet SAR was tested for LTE B41 bottom 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 12-13
Simultaneous Transmission Scenario with 5 GHz WLAN (Phablet)

Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		SPLSR	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)		SPLSR
		1	2	3	1+2	1+3	1+2			1	2	3	1+2	1+3	1+2
Phablet SAR	Back	1.748	2.329	1.329	See Note 1	3.077	0.05	Phablet SAR	Back	2.123	2.329	1.329	See Note 1	3.452	0.06
	Front	1.441	0.069	0.439	1.510	1.880	N/A		Front	1.684	0.069	0.439	1.753	2.123	N/A
	Top	-	0.442	1.329*	0.442	1.329	N/A		Top	-	0.442	1.329*	0.442	1.329	N/A
	Bottom	2.853	-	-	2.853	2.853	N/A		Bottom	2.950	-	-	2.950	2.950	N/A
	Right	0.445	-	-	0.445	0.445	N/A		Right	0.528	-	-	0.528	0.528	N/A
	Left	0.338	2.329*	1.329*	2.667	1.667	N/A		Left	0.523	2.329*	1.329*	2.852	1.852	N/A
Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		SPLSR	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)		SPLSR
		1	2	3	1+2	1+3	1+2			1	2	3	1+2	1+3	1+2
Phablet SAR	Back	1.823	2.329	1.329	See Note 1	3.152	0.06	Phablet SAR	Back	2.404	2.329	1.329	See Note 1	3.733	0.07
	Front	1.384	0.069	0.439	1.453	1.823	N/A		Front	1.791	0.069	0.439	1.860	2.230	N/A
	Top	-	0.442	1.329*	0.442	1.329	N/A		Top	-	0.442	1.329*	0.442	1.329	N/A
	Bottom	2.815	-	-	2.815	2.815	N/A		Bottom	3.227	-	-	3.227	3.227	N/A
	Right	0.356	-	-	0.356	0.356	N/A		Right	0.510	-	-	0.510	0.510	N/A
	Left	0.356	2.329*	1.329*	2.685	1.685	N/A		Left	0.484	2.329*	1.329*	2.813	1.813	N/A
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)		SPLSR	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)		SPLSR
		1	2	3	1+2	1+3				1	2	3	1+2	1+3	
Phablet SAR	Back	-	2.329	1.329	2.329	1.329		Phablet SAR	Back	-	2.329	1.329	2.329	1.329	
	Front	-	0.069	0.439	0.069	0.439			Front	-	0.069	0.439	0.069	0.439	
	Top	-	0.442	1.329*	0.442	1.329			Top	-	0.442	1.329*	0.442	1.329	
	Bottom	2.421	-	-	2.421	2.421			Bottom	2.421	-	-	2.421	2.421	
	Right	-	-	-	-	-			Right	-	-	-	-	-	
	Left	-	2.329*	1.329*	2.329	1.329			Left	-	2.329*	1.329*	2.329	1.329	

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Table 12-14
Simultaneous Transmission Scenario with 5 GHz WLAN MIMO (Phablet)

Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Phablet SAR	Back	1.748	2.753	See Note 1	0.06
	Front	1.441	0.575	2.016	N/A
	Top	-	2.753*	2.753	N/A
	Bottom	2.853	-	2.853	N/A
	Right	0.445	-	0.445	N/A
	Left	0.338	2.753*	3.091	N/A
Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Phablet SAR	Back	1.823	2.753	See Note 1	0.06
	Front	1.384	0.575	1.959	N/A
	Top	-	2.753*	2.753	N/A
	Bottom	2.815	-	2.815	N/A
	Right	0.356	-	0.356	N/A
	Left	0.356	2.753*	3.109	N/A

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Phablet SAR	Back	2.123	2.753	See Note 1	0.07
	Front	1.684	0.575	2.259	N/A
	Top	-	2.753*	2.753	N/A
	Bottom	2.950	-	2.950	N/A
	Right	0.528	-	0.528	N/A
	Left	0.523	2.753*	3.276	N/A
Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Phablet SAR	Back	2.404	2.753	See Note 1	0.08
	Front	1.791	0.575	2.366	N/A
	Top	-	2.753*	2.753	N/A
	Bottom	3.227	-	3.227	N/A
	Right	0.510	-	0.510	N/A
	Left	0.484	2.753*	3.237	N/A

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Phablet SAR	Back	-	2.753	2.753
	Front	-	0.575	0.575
	Top	-	2.753*	2.753
	Bottom	2.421	-	2.421
	Right	-	-	-
	Left	-	2.753*	2.753

Notes:

1. 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 12.7 for detailed SPLS ratio analysis.
2. 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.

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12.7 SPLSR Evaluation and Analysis

Per FCC KDB Publication 447498 D01v06, when the sum of the standalone transmitters is more 1.6 W/kg for 1g, 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, simultaneous SAR evaluation is not required. The distance between the transmitters was calculated using the following formula.

Per FCC KDB Publication 447498 D01v06, when the sum of the standalone transmitters is more than 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 ≤ 0.10 for 10g, simultaneous SAR evaluation is not required. The distance between the transmitters was calculated using the following formula.

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

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

12.7.1 Hotspot Back Side SPLSR Evaluation and Analysis

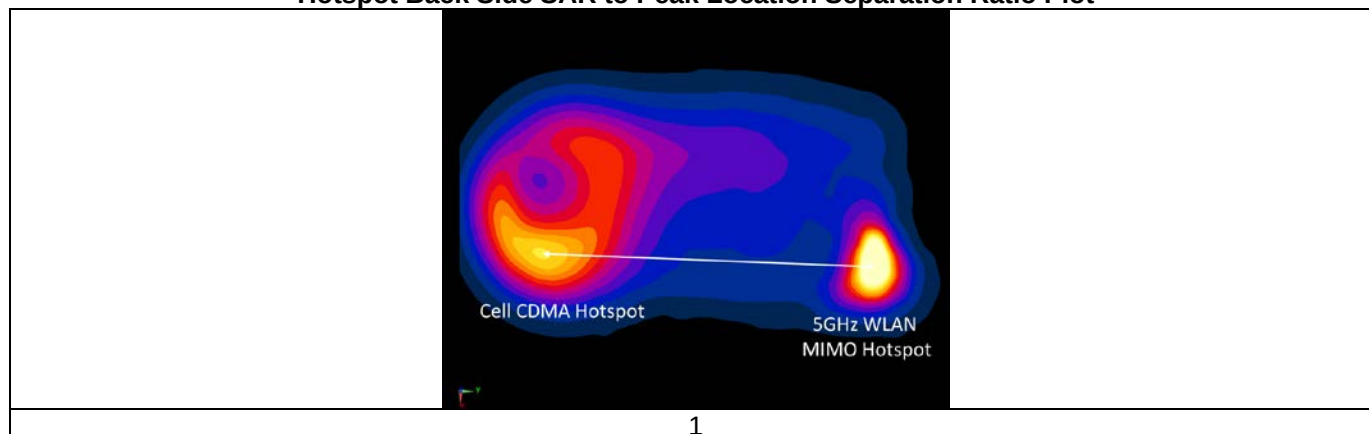
Table 12-15
Peak SAR Locations for Hotspot Back Side

Mode/Band	x (mm)	y (mm)	Reported SAR (W/kg)
5 GHz WLAN MIMO	3.00	65.00	0.891
Cell. EVDO	-10.00	-80.00	0.943

Table 12-16
Hotspot Back Side SAR to Peak Location Separation Ratio Calculation

Antenna Pair		Standalone 1g 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	Cell. EVDO	0.891	0.943	1.834	145.58	0.02	1

Table 12-17
Hotspot Back Side SAR to Peak Location Separation Ratio Plot



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12.7.2 Phablet Back Side SPLSR Evaluation and Analysis

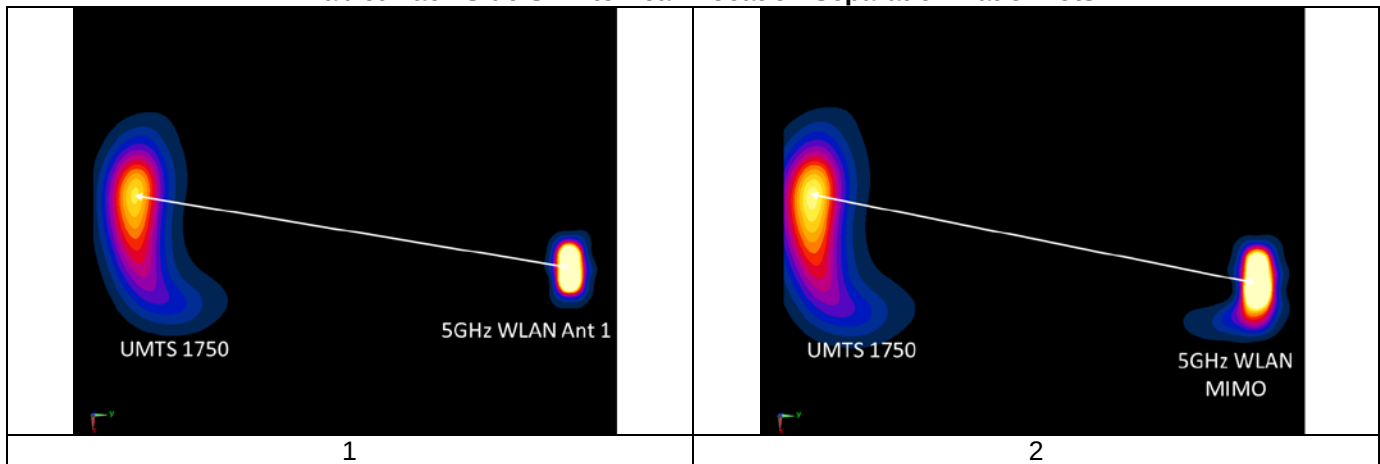
Table 12-18
Peak SAR Locations for Phablet Back Side

Mode/Band	x (mm)	y (mm)	Reported SAR (W/kg)
5 GHz WLAN Ant 1	0.00	74.00	2.329
5 GHz WLAN MIMO	2.00	74.00	2.753
UMTS 1750	-27.50	-75.00	1.748
UMTS 1900	-26.50	-84.00	2.123
LTE Band 66 (AWS)	-24.50	-76.50	1.823
LTE Band 25 (PCS)	-8.50	-79.50	2.404

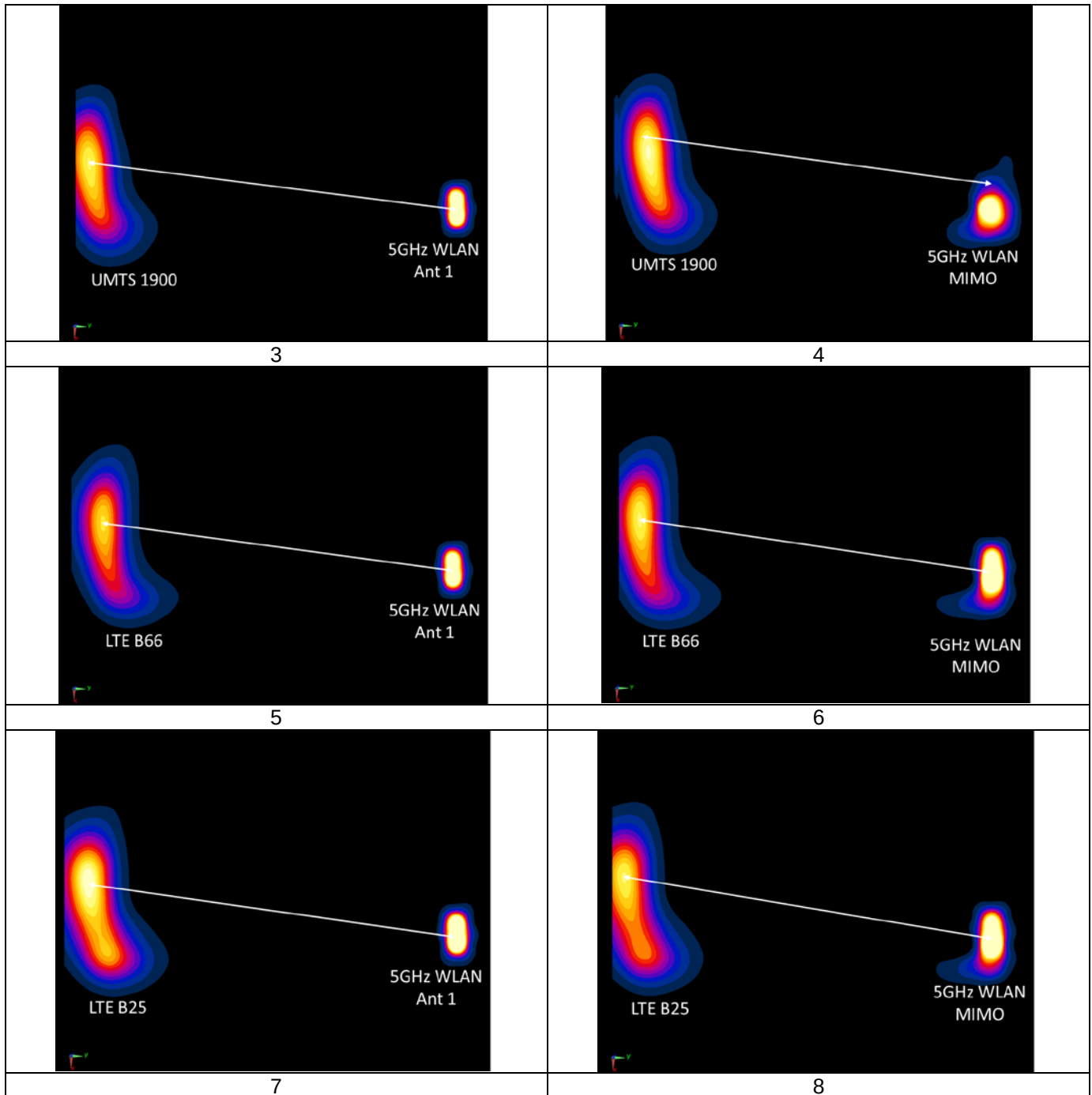
Table 12-19
Phablet Back Side SAR to Peak Location Separation Ratio Calculations

Antenna Pair		Standalone 10g 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}	$(a+b)^{1.5}/D_{a-b}$	
UMTS 1750	5 GHz WLAN Ant 1	1.748	2.329	4.077	151.52	0.05	1
UMTS 1750	5 GHz WLAN MIMO	1.748	2.753	4.501	151.89	0.06	2
UMTS 1900	5 GHz WLAN Ant 1	2.123	2.329	4.452	160.21	0.06	3
UMTS 1900	5 GHz WLAN MIMO	2.123	2.753	4.876	160.55	0.07	4
LTE Band 66 (AWS)	5 GHz WLAN Ant 1	1.823	2.329	4.152	152.48	0.06	5
LTE Band 66 (AWS)	5 GHz WLAN MIMO	1.823	2.753	4.576	152.82	0.06	6
LTE Band 25 (PCS)	5 GHz WLAN Ant 1	2.404	2.329	4.733	153.74	0.07	7
LTE Band 25 (PCS)	5 GHz WLAN MIMO	2.404	2.753	5.157	153.86	0.08	8

Table 12-20
Phablet Back Side SAR to Peak Location Separation Ratio Plots



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12.8 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.

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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 (~ 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
Body SAR Measurement Variability Results

BODY VARIABILITY RESULTS													
Band	FREQUENCY		Mode	Service	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)	
2600	2680.00	41490	LTE Band 41, 20 MHz Bandwidth	QPSK, 1 RB, 0 RB Offset	bottom	10 mm	1.060	1.050	1.01	N/A	N/A	N/A	N/A
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 13-2
Phablet SAR Measurement Variability Results

PHABLET VARIABILITY RESULTS														
Band	FREQUENCY		Mode	Service	Data Rate (Mbps)	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)	
1750	1712.40	1312	UMTS 1750	RMC	N/A	bottom	0 mm	2.520	2.510	1.00	N/A	N/A	N/A	N/A
1900	1860.00	26140	LTE Band 25 (PCS), 20 MHz Bandwidth	QPSK, 1 RB, 0 RB Offset	N/A	bottom	0 mm	2.770	3.010	1.09	N/A	N/A	N/A	N/A
2600	2680.00	41490	LTE Band 41, 20 MHz Bandwidth	QPSK, 1 RB, 0 RB Offset	N/A	bottom	0 mm	2.080	2.080	1.00	N/A	N/A	N/A	N/A
5600	5610.00	122	802.11ac, 80 MHz Bandwidth	OFDM, MIMO	58.5	back	0 mm	2.080	2.040	1.02	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT							Phablet							
Spatial Peak							4.0 W/kg (mW/g)							
Uncontrolled Exposure/General Population							averaged over 10 grams							

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13.2 Measurement Uncertainty

The measured SAR was <1.5 W/kg 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 Tuner Testing

The following test procedures were followed to demonstrate that the SAR results in Section 11 represented the appropriate SAR test conditions. For bands with dynamic tuning implemented, SAR was measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. Additional single point SAR time-sweep measurements were evaluated for other tuner states to determine that the other tuner configurations would result in equivalent or lower SAR values. The additional tuner hardware has no influence to the antenna characteristics, other than impedance matching.

To evaluate all of the tuner states, the 80 tuner states were divided among the aggregate band, mode and exposure combinations so that each combination was evaluated for at least 20 tuner states and also so that at least 3 single point SAR measurements were made for every available tuner state. Single point time-sweep measurements were performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state was able to be established remotely so that the device was not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe remained stationary at the same position throughout the entire series of single point measurements for each combination. When the single point SAR or 1g SAR was > 1.2 W/kg for a particular band/mode/exposure condition, point SAR measurements were made for all 80 states.

Per FCC Guidance, several bands/modes were combined to be treated as a single aggregate band. For the LTE Band 5 and 26 pair, the highest reported SAR configuration per exposure condition was evaluated. Additionally, LTE bands 12/17 and 13 were considered as an aggregated band to select single point measurement configurations. The wireless configuration and exposure condition combinations were divided evenly among the three bands (i.e., the number of required single point measurements (at least 20) apply to the aggregated band). All other bands were treated independently.

The operational description contains more information about the design and implementation of the dynamic antenna tuning.

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Table 14-1
UMTS Supplemental Head SAR Data

Supplemental Head SAR Data					
UMTS 850		UMTS 1750		UMTS 1900	
RMC		RMC		RMC	
Test Position	Right Cheek	Test Position	Left Cheek	Test Position	Left Cheek
Frequency (MHz)	836.6	Frequency (MHz)	1732.4	Frequency (MHz)	1880
Channel	4183	Channel	1412	Channel	9400
Measured 1g SAR (W/kg)	0.242	Measured 1g SAR (W/kg)	0.135	Measured 1g SAR (W/kg)	0.154
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 2)	0.291	Auto-tune (State 0)	0.181	Auto-tune (State 1)	0.207
Default (State 17)	0.295	Default (State 1)	0.172	Default (State 1)	0.208
State 0	0.278	State 0	0.175	State 0	0.210
State 2	0.293	State 1	0.172	State 1	0.208
State 5	0.292	State 7	0.141	State 4	0.187
State 15	0.089	State 8	0.142	State 6	0.176
State 17	0.295	State 10	0.123	State 9	0.160
State 18	0.288	State 11	0.111	State 14	0.083
State 22	0.277	State 18	0.120	State 24	0.135
State 25	0.255	State 24	0.106	State 29	0.069
State 28	0.174	State 27	0.078	State 30	0.056
State 33	0.210	State 30	0.047	State 33	0.013
State 35	0.170	State 36	0.011	State 42	0.008
State 38	0.153	State 42	0.008	State 44	0.004
State 40	0.143	State 45	0.003	State 47	0.000
State 43	0.085	State 48	0.010	State 52	0.009
State 48	0.191	State 52	0.009	State 57	0.007
State 49	0.194	State 55	0.008	State 61	0.002
State 53	0.191	State 58	0.006	State 66	0.008
State 63	0.022	State 64	0.161	State 70	0.013
State 68	0.282	State 70	0.001	State 72	0.199
State 71	0.192	State 73	0.136	State 75	0.007
State 76	0.281	State 76	0.170	State 78	0.013

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Table 14-2
LTE Supplemental Head SAR Data

Supplemental Head SAR Data									
LTE Band 12		LTE Band 13		LTE Band 26		LTE Band 66		LTE Band 25	
QPSK, 10MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 10MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 15MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 20MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 20MHz Bandwidth, 1 RB, 0 RB Offsets	
Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Left Cheek	Test Position	Left Cheek
Frequency (MHz)	707.5	Frequency (MHz)	782	Frequency (MHz)	831.5	Frequency (MHz)	1745	Frequency (MHz)	1905
Channel	23095	Channel	23230	Channel	26865	Channel	132322	Channel	26590
Measured 1g SAR (W/kg)	0.100	Measured 1g SAR (W/kg)	0.125	Measured 1g SAR (W/kg)	0.189	Measured 1g SAR (W/kg)	0.147	Measured 1g SAR (W/kg)	0.146
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 1)	0.155	Auto-tune (State 51)	0.153	Auto-tune (State 9)	0.259	Auto-tune (State 0)	0.184	Auto-tune (State 1)	0.180
Default (State 17)	0.155	Default (State 17)	0.112	Default (State 17)	0.246	Default (State 1)	0.160	Default (State 1)	0.161
State 1	0.161	State 8	0.092	State 3	0.257	State 0	0.170	State 1	0.161
State 2	0.152	State 16	0.112	State 6	0.258	State 1	0.160	State 3	0.141
State 12	0.085	State 17	0.112	State 9	0.256	State 4	0.134	State 5	0.136
State 17	0.155	State 24	0.095	State 10	0.236	State 5	0.133	State 10	0.109
State 22	0.132	State 32	0.147	State 13	0.122	State 11	0.092	State 14	0.077
State 34	0.079	State 40	0.131	State 17	0.246	State 15	0.046	State 23	0.102
State 40	0.055	State 48	0.155	State 19	0.255	State 19	0.106	State 28	0.056
State 54	0.056	State 50	0.160	State 26	0.203	State 20	0.103	State 34	0.011
State 62	0.008	State 51	0.160	State 30	0.083	State 21	0.101	State 35	0.010
State 68	0.160	State 55	0.140	State 37	0.083	State 25	0.080	State 38	0.008
State 79	0.105	State 67	0.153	State 38	0.085	State 31	0.027	State 41	0.008
				State 41	0.060	State 37	0.012	State 46	0.001
				State 44	0.029	State 39	0.009	State 51	0.008
				State 51	0.087	State 43	0.005	State 56	0.008
				State 54	0.072	State 49	0.013	State 60	0.003
				State 58	0.041	State 53	0.010	State 62	0.001
				State 65	0.248	State 56	0.009	State 64	0.143
				State 66	0.156	State 59	0.004	State 66	0.008
				State 69	0.243	State 65	0.128	State 69	0.117
				State 72	0.228	State 71	0.013	State 74	0.008
				State 79	0.144	State 77	0.137	State 79	0.010

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Table 14-3
UMTS Supplemental Body SAR Data

Supplemental Body SAR Data					
UMTS 850		UMTS 1750		UMTS 1900	
RMC		RMC		RMC	
Test Position	Back Side	Test Position	Back Side	Test Position	Bottom Edge
Spacing	10 mm	Spacing	15 mm	Spacing	10 mm
Frequency (MHz)	836.6	Frequency (MHz)	1732.4	Frequency (MHz)	1852.4
Channel	4183	Channel	1412	Channel	9262
Measured 1g SAR (W/kg)	0.506	Measured 1g SAR (W/kg)	0.638	Measured 1g SAR (W/kg)	0.596
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 18)	0.685	Auto-tune (State 0)	0.815	Auto-tune (State 0)	0.778
Default (State 17)	0.644	Default (State 1)	0.818	Default (State 1)	0.765
State 4	0.658	State 0	0.825	State 0	0.771
State 7	0.641	State 1	0.818	State 1	0.765
State 11	0.485	State 3	0.739	State 3	0.687
State 14	0.244	State 7	0.684	State 5	0.675
State 16	0.642	State 9	0.641	State 10	0.554
State 17	0.644	State 12	0.481	State 15	0.265
State 18	0.660	State 23	0.510	State 18	0.536
State 24	0.630	State 27	0.375	State 21	0.510
State 27	0.473	State 29	0.272	State 25	0.431
State 31	0.169	State 35	0.053	State 32	0.043
State 34	0.462	State 41	0.040	State 36	0.040
State 42	0.283	State 43	0.027	State 39	0.034
State 45	0.145	State 45	0.016	State 42	0.031
State 49	0.498	State 51	0.045	State 48	0.037
State 52	0.408	State 52	0.043	State 51	0.034
State 55	0.356	State 57	0.033	State 53	0.034
State 59	0.209	State 63	0.005	State 58	0.026
State 62	0.096	State 67	0.041	State 60	0.016
State 70	0.533	State 69	0.660	State 64	0.030
State 73	0.643	State 73	0.662	State 67	0.672
State 77	0.650	State 75	0.045	State 76	0.754

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Table 14-4
LTE Supplemental Body SAR Data

Supplemental Body SAR Data									
LTE Band 12		LTE Band 13		LTE Band 26		LTE Band 66		LTE Band 25	
QPSK, 10MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 10MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 15MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 20MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 20MHz Bandwidth, 1 RB, 0 RB Offsets	
Test Position	Back Side	Test Position	Back Side	Test Position	Back Side	Test Position	Back Side	Test Position	Back Side
Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	Spacing	15 mm	Spacing	15 mm
Frequency (MHz)	707.5	Frequency (MHz)	782	Frequency (MHz)	831.5	Frequency (MHz)	1770	Frequency (MHz)	1882.5
Channel	23095	Channel	23230	Channel	26865	Channel	132572	Channel	26365
Measured 1g SAR (W/kg)	0.349	Measured 1g SAR (W/kg)	0.460	Measured 1g SAR (W/kg)	0.525	Measured 1g SAR (W/kg)	0.654	Measured 1g SAR (W/kg)	0.584
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 0)	0.400	Auto-tune (State 51)	0.583	Auto-tune (State 8)	0.627	Auto-tune (State 1)	0.777	Auto-tune (State 1)	0.657
Default (State 17)	0.397	Default (State 17)	0.487	Default (State 17)	0.587	Default (State 1)	0.800	Default (State 1)	0.645
State 0	0.397	State 6	0.430	State 8	0.617	State 1	0.800	State 1	0.645
State 2	0.390	State 13	0.088	State 9	0.574	State 2	0.736	State 6	0.507
State 7	0.383	State 17	0.487	State 12	0.300	State 8	0.666	State 11	0.384
State 17	0.397	State 21	0.463	State 17	0.587	State 14	0.362	State 13	0.288
State 21	0.358	State 26	0.243	State 18	0.599	State 16	0.613	State 19	0.410
State 23	0.328	State 33	0.556	State 20	0.592	State 20	0.503	State 26	0.304
State 31	0.090	State 44	0.149	State 26	0.440	State 22	0.469	State 30	0.153
State 47	0.022	State 51	0.588	State 29	0.221	State 28	0.291	State 33	0.035
State 50	0.187	State 61	0.114	State 32	0.487	State 32	0.046	State 37	0.030
State 59	0.066	State 72	0.439	State 34	0.340	State 37	0.041	State 39	0.025
State 66	0.289	State 78	0.554	State 36	0.310	State 38	0.038	State 46	0.008
				State 47	0.032	State 40	0.040	State 49	0.030
				State 50	0.321	State 46	0.012	State 54	0.022
				State 56	0.213	State 56	0.034	State 58	0.019
				State 57	0.166	State 63	0.006	State 61	0.009
				State 59	0.100	State 65	0.489	State 63	0.004
				State 60	0.069	State 68	0.666	State 65	0.401
				State 64	0.584	State 71	0.037	State 72	0.608
				State 67	0.473	State 74	0.035	State 74	0.024
				State 75	0.475	State 76	0.668	State 75	0.021
				State 78	0.487	State 79	0.037	State 77	0.478

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15 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	E8257D	(250kHz-20GHz) Signal Generator	3/22/2017	Annual	3/22/2018	MY45470194
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
Amplifier Research	1551G6	Amplifier	CBT	N/A	CBT	433971
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Rohde & Schwarz	CMU200	Base Station Simulator	5/22/2017	Annual	5/22/2018	109892
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
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
Mitutoyo	CD-6"CSX	Digital Caliper	3/2/2016	Biennial	3/2/2018	13264162
SPEAG	CD2600V3	Dipole	6/14/2017	Biennial	6/14/2019	1013
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
Agilent	E4438C	ESG Vector Signal Generator	3/24/2017	Biennial	3/24/2019	MY42082385
Agilent	E4432B	ESG-D Series Signal Generator	3/24/2017	Annual	3/24/2018	US40053896
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	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
Agilent	N9020A	MXA Signal Analyzer	12/28/2016	Annual	12/28/2017	US46470561
Agilent	N5182A	MXG Vector Signal Generator	2/28/2017	Annual	2/28/2018	MY47420800
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	7/11/2017	Annual	7/11/2018	1039
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Anritsu	ML2496A	Power Meter	3/28/2017	Annual	3/28/2018	1351001
Anritsu	ML2496A	Power Meter	4/20/2017	Annual	4/20/2018	1306009
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	MT8820C	Radio Communication Analyzer	5/23/2017	Annual	5/23/2018	6201240328
Anritsu	MT8821C	Radio Communication Analyzer	7/25/2017	Annual	7/25/2018	6201664756
Rohde & Schwarz	CMW500	Radio Communication Tester	5/4/2017	Annual	5/4/2018	101699
COMTECH	AR85729-5/57598	Solid State Amplifier	CBT	N/A	CBT	M3W1A00-1002
Agilent	8753ES	S-Parameter Network Analyzer	9/14/2017	Annual	9/14/2018	US39170118
Agilent	8753ES	S-Parameter Vector Network Analyzer	8/17/2017	Annual	8/17/2018	MY40003841
Control Company	4040	Therm./Clock/Humidity Monitor	3/1/2017	Biennial	3/1/2019	170152009
Control Company	4040	Therm./Clock/Humidity Monitor	3/31/2017	Biennial	3/31/2019	170232394
Pasternack	NC-100	Torque Wrench	3/8/2017	Annual	3/8/2018	N/A
Pasternack	PE5011-1	Torque Wrench	7/19/2017	Biennial	7/19/2019	N/A
Seekonk	NC-100	Torque Wrench (8" lb)	9/1/2016	Biennial	9/1/2018	21053
Seekonk	NC-100	Torque Wrench 5/16", 8" lbs	3/2/2016	Biennial	3/2/2018	N/A
Control Company	4352	Ultra Long Stem Thermometer	5/2/2017	Biennial	5/2/2019	170330156
Control Company	4352	Ultra Long Stem Thermometer	3/3/2017	Biennial	3/3/2019	170155534
Anritsu	MA24106A	USB Power Sensor	6/7/2017	Annual	6/7/2018	1231538
Anritsu	MA24106A	USB Power Sensor	6/7/2017	Annual	6/7/2018	1231535
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	7/20/2017	Annual	7/20/2018	132885
Agilent	E5515C	Wireless Communications Test Set	5/31/2017	Annual	5/31/2018	GB43304278
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
SPEAG	D1750V2	1750 MHz SAR Dipole	5/9/2017	Annual	5/9/2018	1148
SPEAG	D1900V2	1900 MHz SAR Dipole	7/11/2017	Annual	7/11/2018	5d149
SPEAG	D1900V2	1900 MHz SAR Dipole	2/9/2017	Annual	2/9/2018	5d148
SPEAG	D2450V2	2450 MHz SAR Dipole	7/25/2016	Biennial	7/25/2018	981
SPEAG	D2600V2	2600 MHz SAR Dipole	6/7/2017	Annual	6/7/2018	1064
SPEAG	D2600V2	2600 MHz SAR Dipole	7/10/2017	Annual	7/10/2018	1126
SPEAG	D5GHzV2	5 GHz SAR Dipole	1/20/2017	Annual	1/20/2018	1057
SPEAG	D5GHzV2	5 GHz SAR Dipole	9/21/2016	Biennial	9/21/2018	1191
SPEAG	D5GHzV2	5 GHz SAR Dipole	8/15/2017	Annual	8/15/2018	1237
SPEAG	D750V3	750 MHz Dipole	3/7/2017	Annual	3/7/2018	1054
SPEAG	D750V3	750 MHz SAR Dipole	7/13/2016	Biennial	7/13/2018	1161
SPEAG	D835V2	835 MHz SAR Dipole	7/13/2016	Biennial	7/13/2018	4d047
SPEAG	D835V2	835 MHz SAR Dipole	7/11/2017	Annual	7/11/2018	4d133
SPEAG	D835V2	835 MHz SAR Dipole	1/11/2017	Annual	1/11/2018	4d132
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2017	Annual	2/9/2018	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2017	Annual	2/9/2018	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/9/2017	Annual	8/9/2018	1323
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/13/2017	Annual	7/13/2018	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/14/2017	Annual	6/14/2018	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/8/2017	Annual	3/8/2018	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/13/2017	Annual	3/13/2018	1415
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/11/2017	Annual	4/11/2018	1407
SPEAG	ES3DV3	SAR Probe	2/10/2017	Annual	2/10/2018	3213
SPEAG	ES3DV3	SAR Probe	3/14/2017	Annual	3/14/2018	3209
SPEAG	ES3DV3	SAR Probe	9/22/2017	Annual	9/22/2018	3318
SPEAG	EX3DV4	SAR Probe	2/13/2017	Annual	2/13/2018	3914
SPEAG	ES3DV3	SAR Probe	3/14/2017	Annual	3/14/2018	3319
SPEAG	ES3DV3	SAR Probe	8/14/2017	Annual	8/14/2018	3332
SPEAG	EX3DV4	SAR Probe	8/16/2017	Annual	8/16/2018	7308
SPEAG	EX3DV4	SAR Probe	4/20/2017	Annual	4/20/2018	7357
SPEAG	EX3DV4	SAR Probe	4/18/2017	Annual	4/18/2018	7406
SPEAG	EX3DV4	SAR Probe	7/17/2017	Annual	7/17/2018	7410

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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FCC ID: A3LSMG9650		SAR EVALUATION REPORT		Approved by: Quality Manager
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APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E76E

Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.913 \text{ S/m}$; $\epsilon_r = 41.736$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 12-04-2017; Ambient Temp: 20.3°C; Tissue Temp: 20.6°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: 1800

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: Cell. CDMA, Right Head, Cheek, Mid.ch

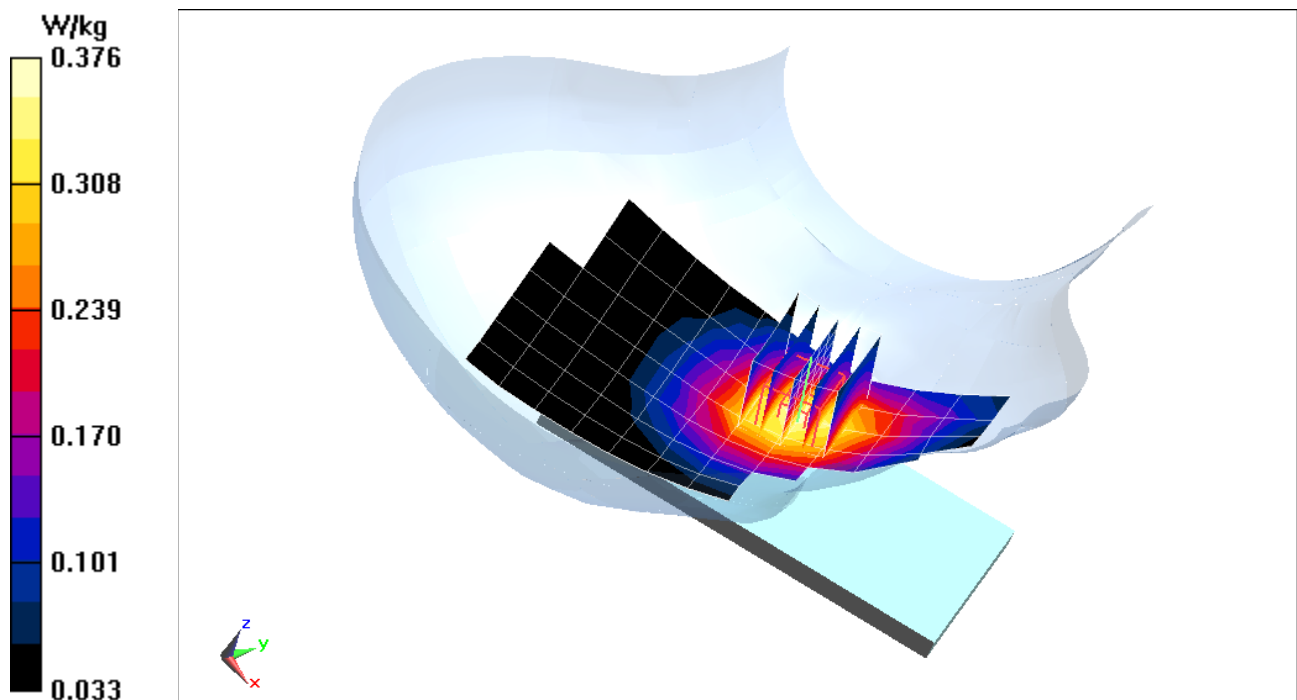
Area Scan (8x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 19.98 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.439 W/kg

SAR(1 g) = 0.347 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E700

Communication System: UID 0, GSM; Frequency: 824.2 MHz; Duty Cycle: 1:8.3

Medium: 835 Head Medium parameters used (interpolated):

$f = 824.2$ MHz; $\sigma = 0.916$ S/m; $\epsilon_r = 43.537$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Test Date: 11-20-2017; Ambient Temp: 22.0°C; Tissue Temp: 22.2°C

Probe: EX3DV4 - SN7406; ConvF(9.97, 9.97, 9.97); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: GSM 850, Right Head, Cheek, Low.ch

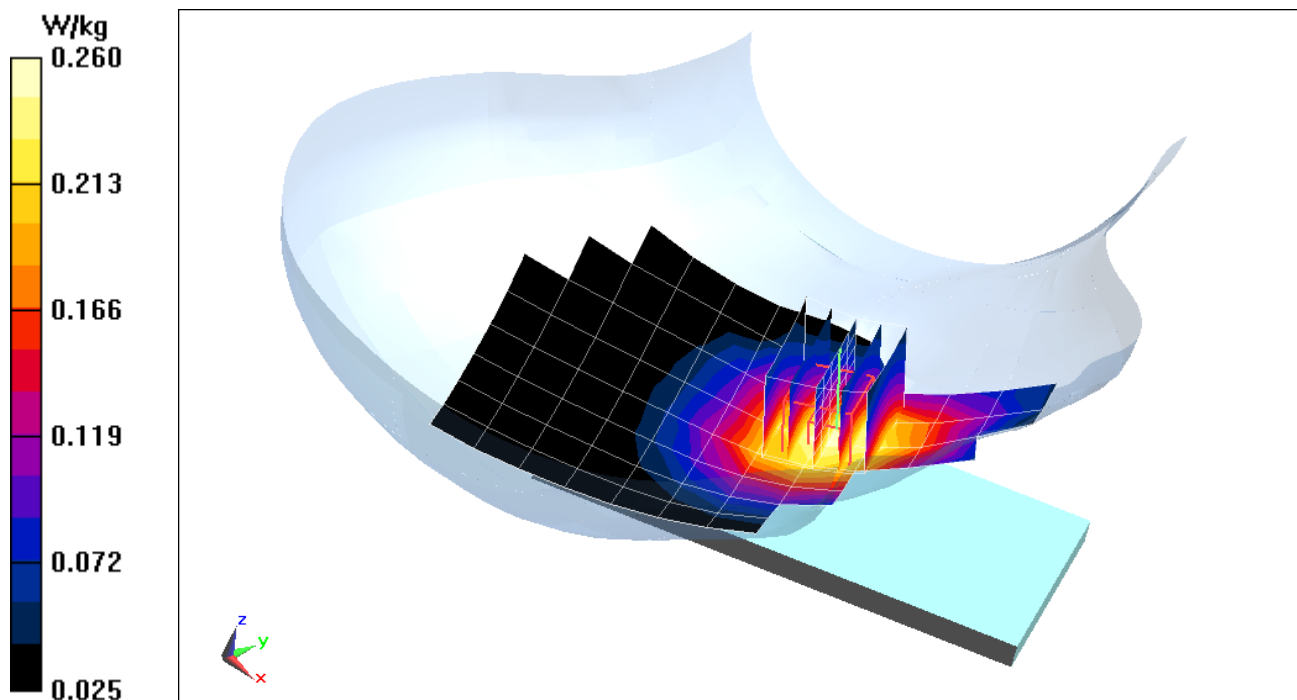
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.87 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.281 W/kg

SAR(1 g) = 0.221 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2FEC8

Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.928 \text{ S/m}$; $\epsilon_r = 43.396$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-20-2017; Ambient Temp: 22.0°C; Tissue Temp: 22.2°C

Probe: EX3DV4 - SN7406; ConvF(9.97, 9.97, 9.97); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 850, Right Head, Cheek, Mid.ch

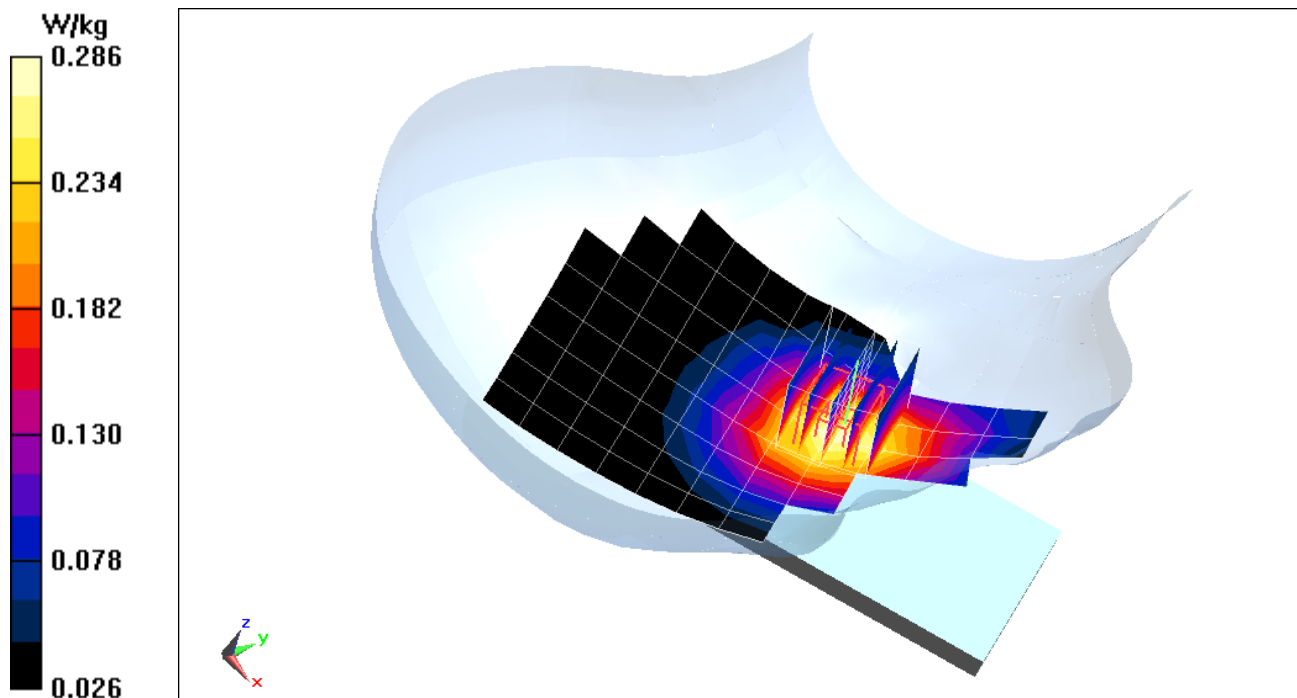
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 16.39 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.313 W/kg

SAR(1 g) = 0.242 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2FEC8

Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.4 \text{ MHz}$; $\sigma = 1.369 \text{ S/m}$; $\epsilon_r = 38.636$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 12-04-2017; Ambient Temp: 21.9°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3213; ConvF(5.49, 5.49, 5.49); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1750, Left Head, Cheek, Mid.ch

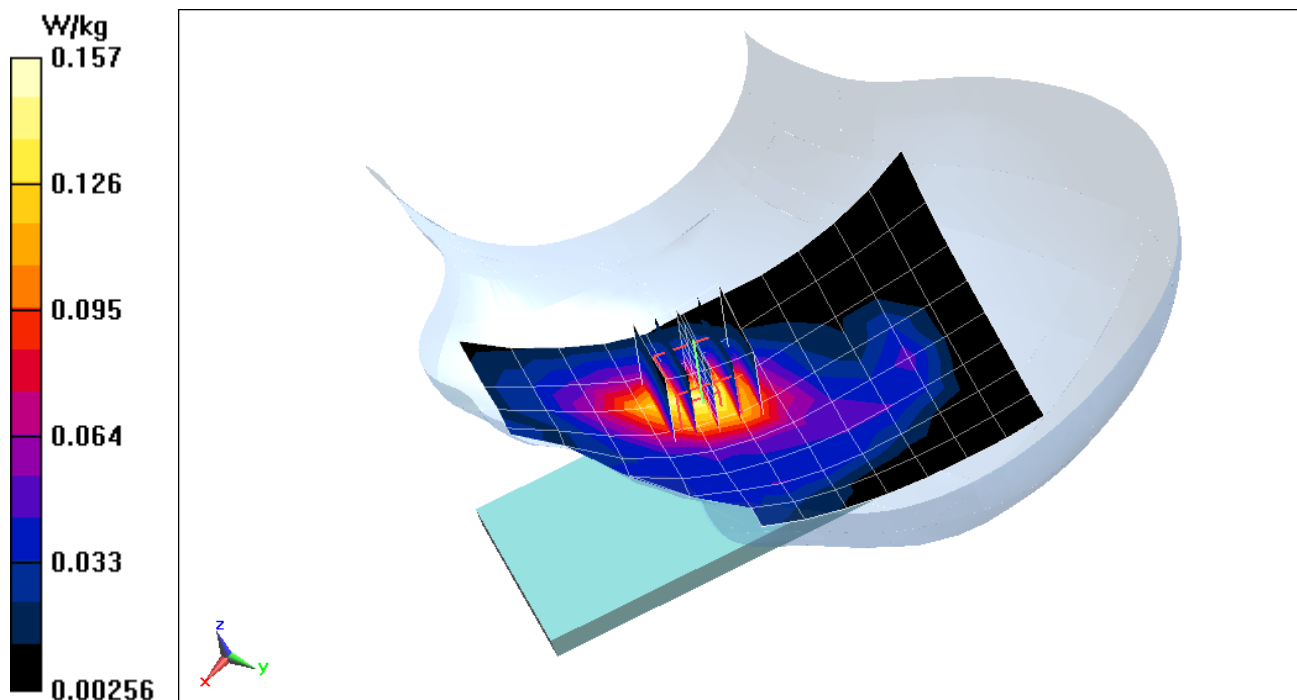
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 10.52 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.200 W/kg

SAR(1 g) = 0.135 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E9B0

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

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.415 \text{ S/m}$; $\epsilon_r = 39.75$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 11-15-2017; Ambient Temp: 23.6°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7410; ConvF(8.37, 8.37, 8.37); Calibrated: 7/17/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/13/2017

Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

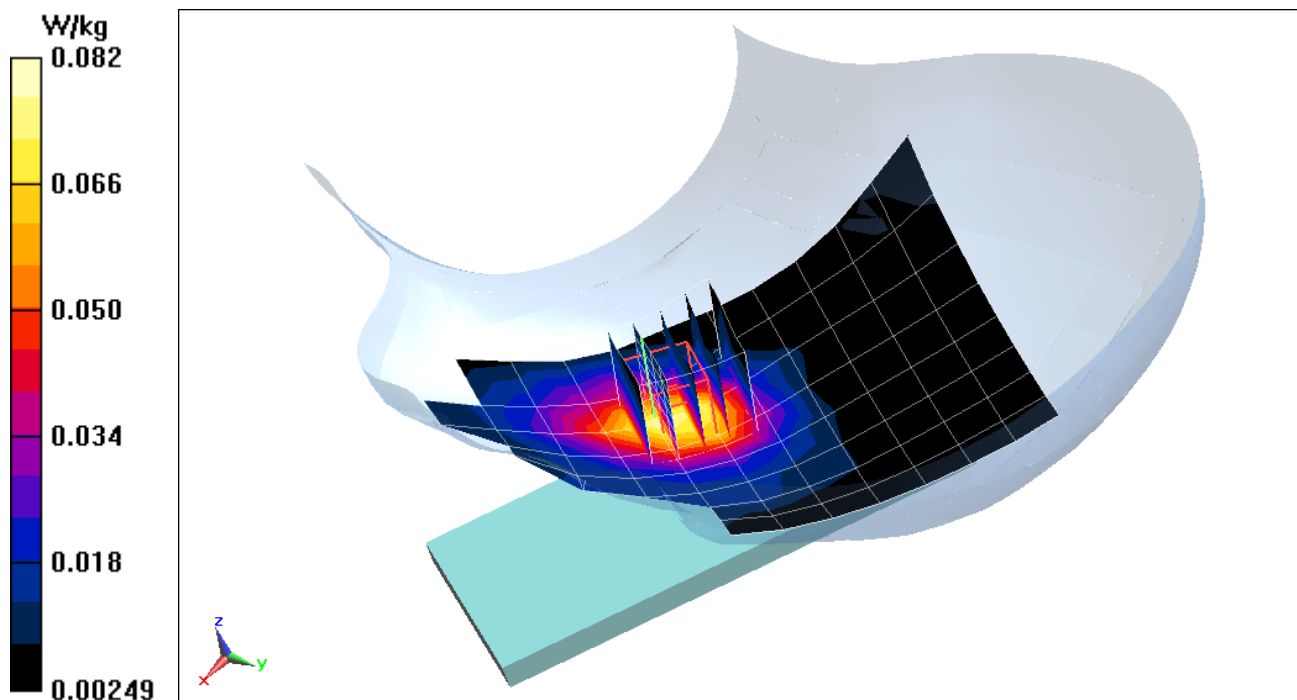
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 6.973 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.0960 W/kg

SAR(1 g) = 0.064 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E674

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

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.419 \text{ S/m}$; $\epsilon_r = 40.684$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 12-03-2017; Ambient Temp: 21.5°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7406; ConvF(8.4, 8.4, 8.4); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

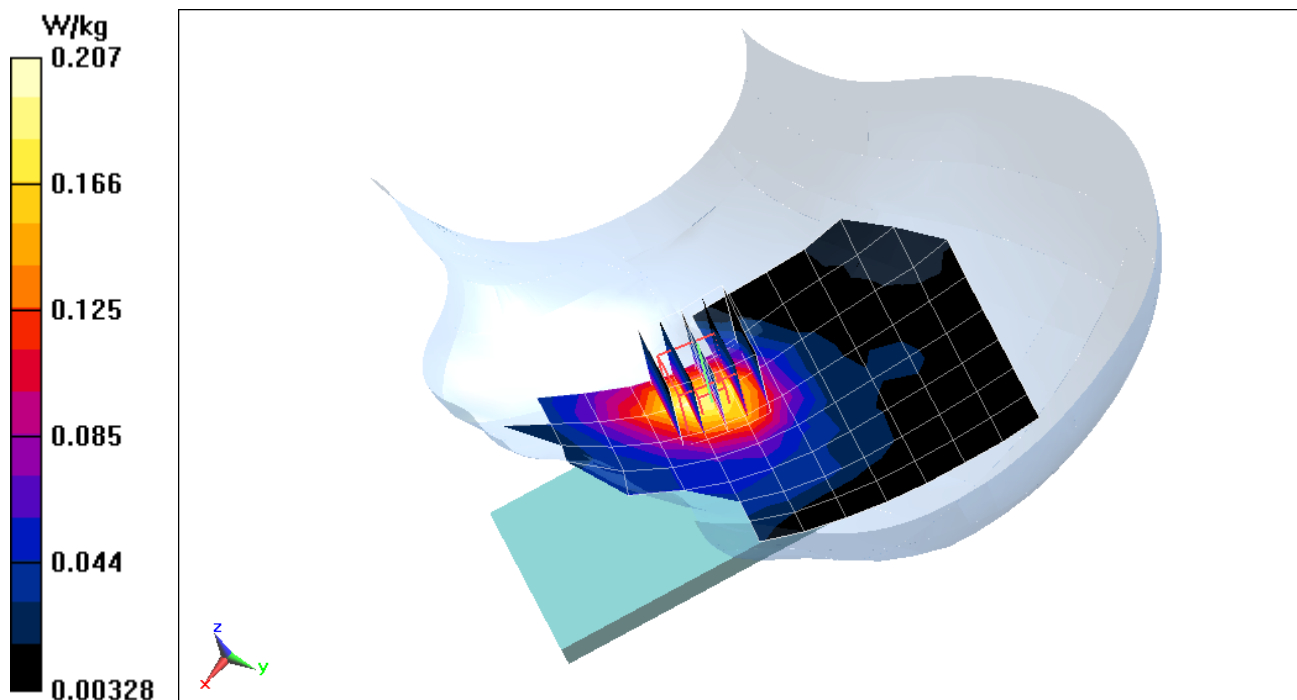
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 10.79 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.248 W/kg

SAR(1 g) = 0.154 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2FEC5

Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium: 750 Head Medium parameters used (interpolated):

$f = 707.5$ MHz; $\sigma = 0.874$ S/m; $\epsilon_r = 42.135$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Test Date: 11-20-2017; Ambient Temp: 21.6°C; Tissue Temp: 20.2°C

Probe: ES3DV3 - SN3318; ConvF(6.72, 6.72, 6.72); Calibrated: 9/22/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/14/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 12, Right Head, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

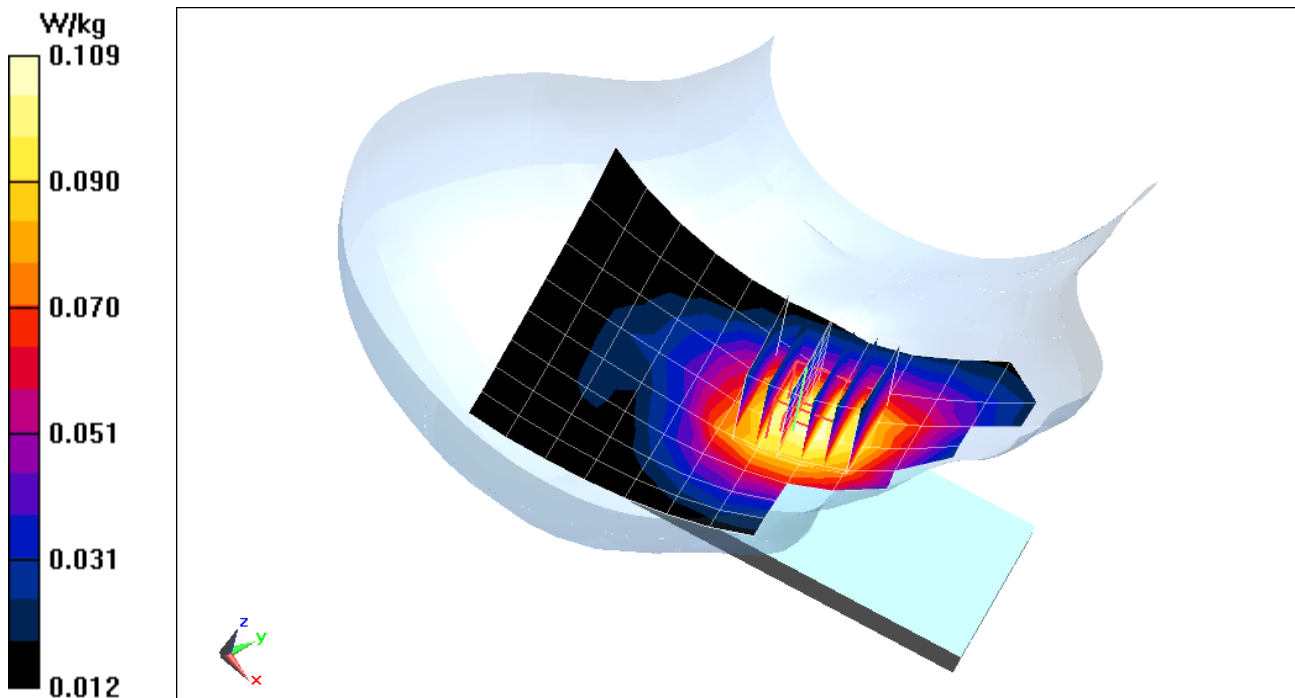
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 11.50 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.127 W/kg

SAR(1 g) = 0.100 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2FEC5

Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: 750 Head Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 0.899 \text{ S/m}$; $\epsilon_r = 41.945$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-20-2017; Ambient Temp: 21.6°C; Tissue Temp: 20.2°C

Probe: ES3DV3 - SN3318; ConvF(6.72, 6.72, 6.72); Calibrated: 9/22/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/14/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 13, Right Head, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

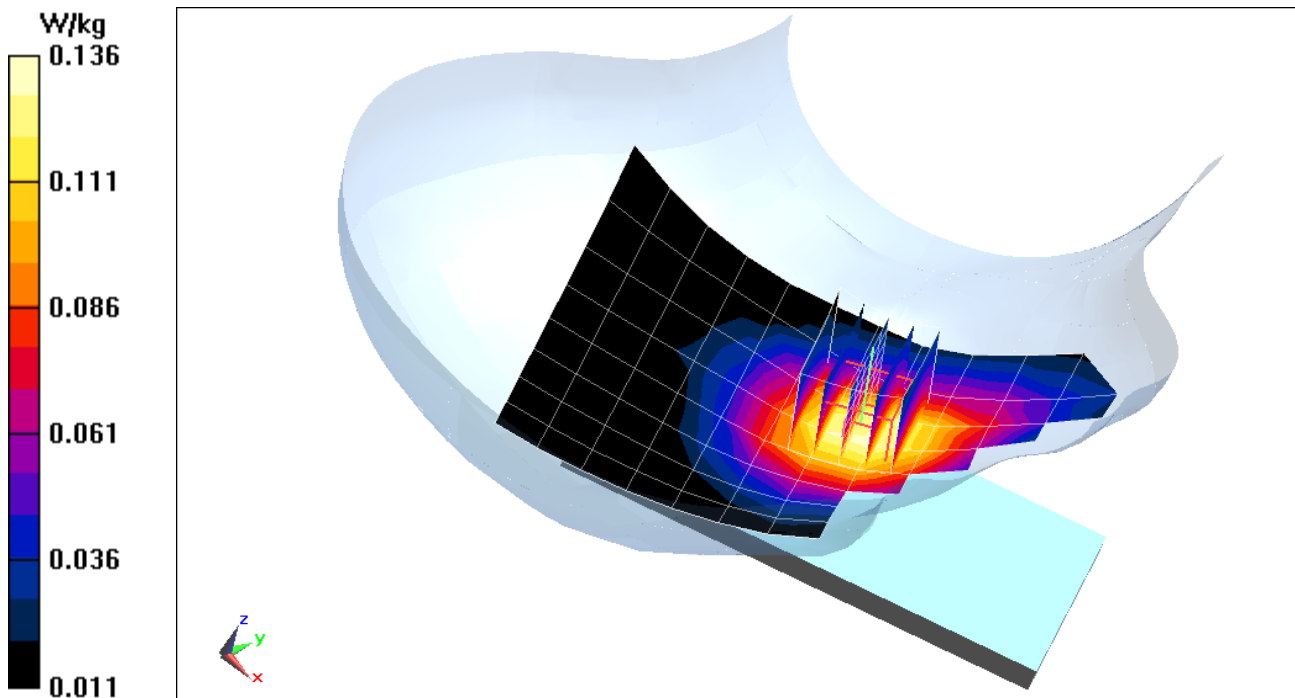
Area Scan (9x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 12.66 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.160 W/kg

SAR(1 g) = 0.125 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2FECA

Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 831.5 \text{ MHz}$; $\sigma = 0.895 \text{ S/m}$; $\epsilon_r = 40.997$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-29-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7406; ConvF(9.97, 9.97, 9.97); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM with CRP v5.0, Right; Type: QD000P40CD; Serial: TP:7535

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 26 (Cell.), Right Head, Cheek, Mid.ch,
15 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

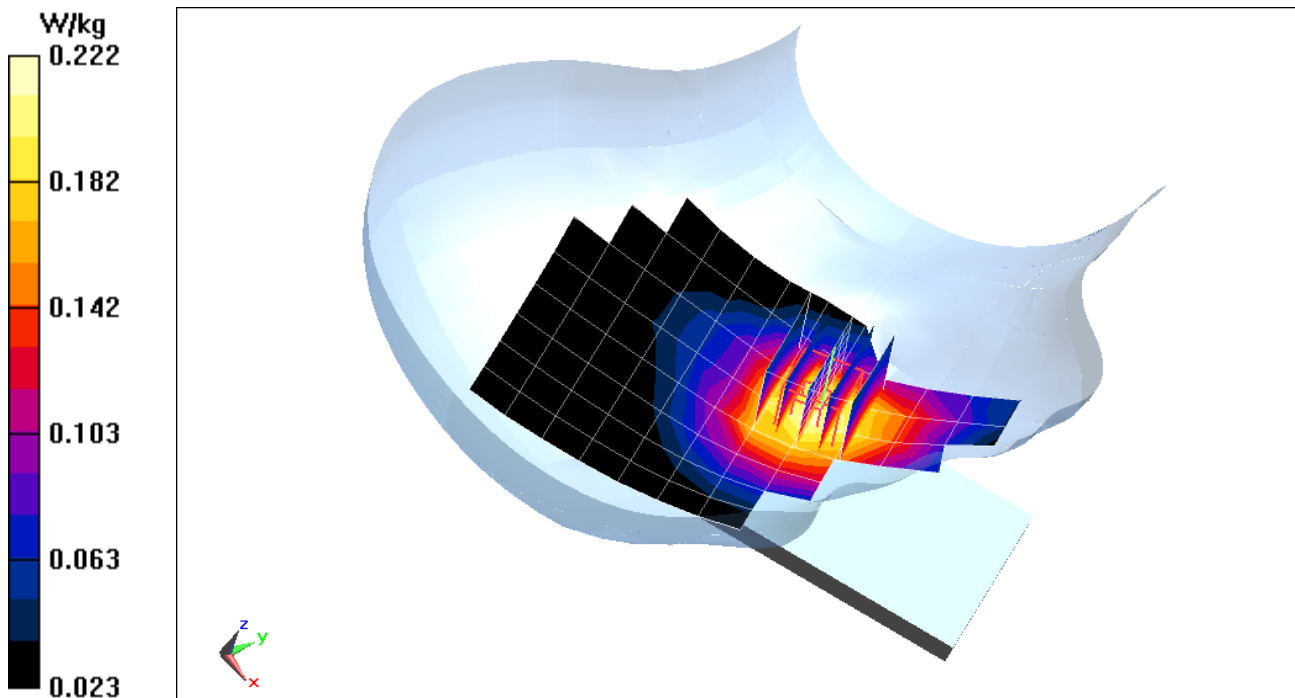
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 15.21 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.242 W/kg

SAR(1 g) = 0.189 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2FEC8

Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1745 \text{ MHz}$; $\sigma = 1.381 \text{ S/m}$; $\epsilon_r = 38.572$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 12-04-2017; Ambient Temp: 21.9°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3213; ConvF(5.49, 5.49, 5.49); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 66 (AWS), Left Head, Cheek, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

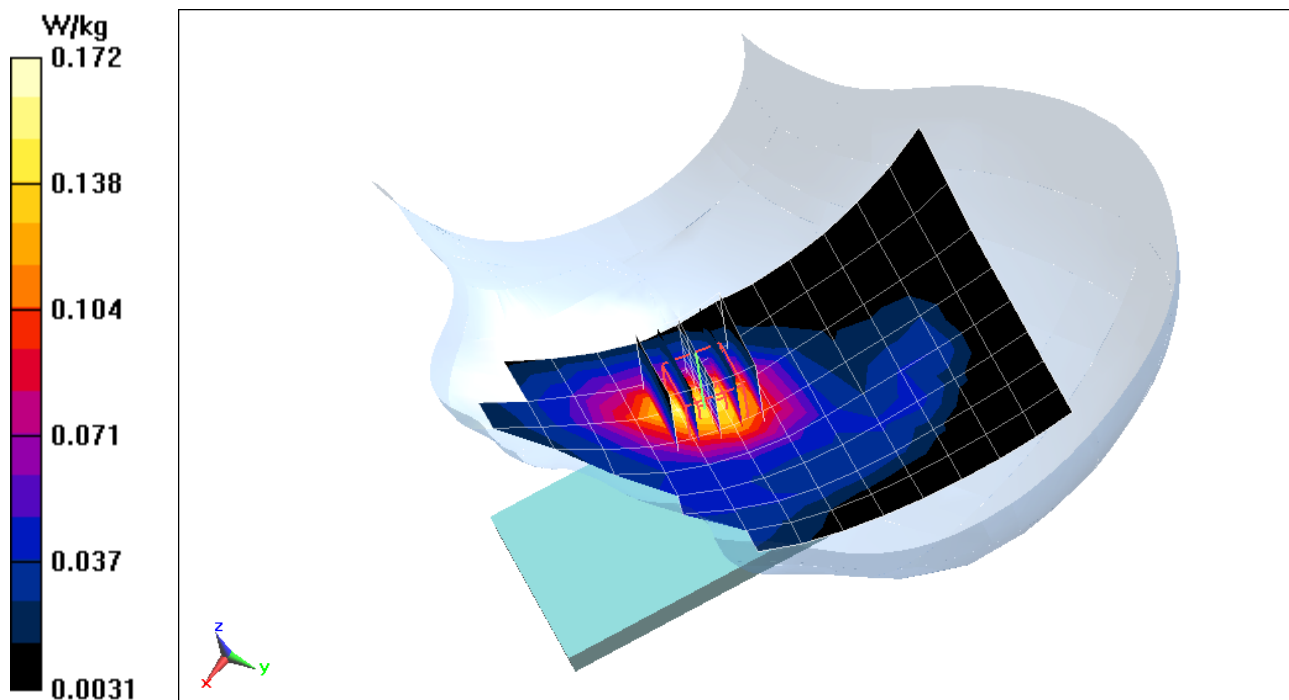
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.46 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.220 W/kg

SAR(1 g) = 0.147 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2FECA

Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1905 \text{ MHz}$; $\sigma = 1.446 \text{ S/m}$; $\epsilon_r = 40.601$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 12-03-2017; Ambient Temp: 21.5°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7406; ConvF(8.4, 8.4, 8.4); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP:1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

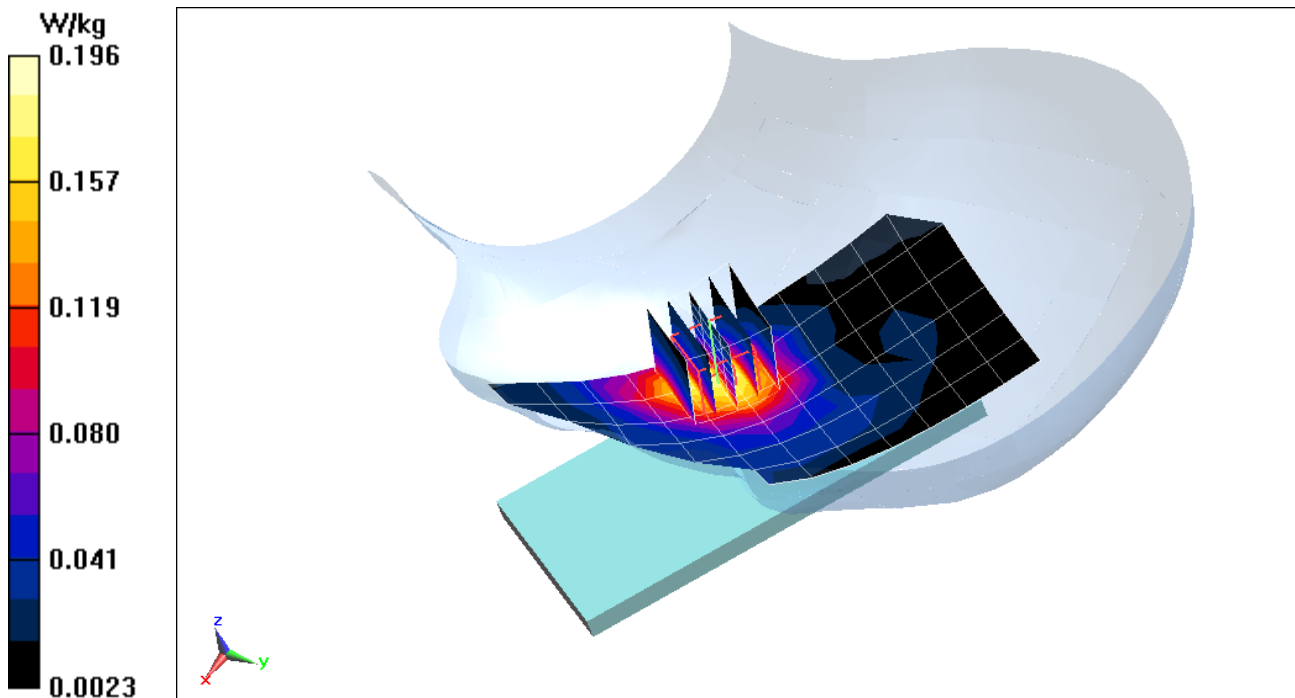
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 10.40 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.233 W/kg

SAR(1 g) = 0.146 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2FEC5

Communication System: UID 0, LTE Band 41; Frequency: 2680 MHz; Duty Cycle: 1:1.58

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2680 \text{ MHz}$; $\sigma = 2.126 \text{ S/m}$; $\epsilon_r = 39.042$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 12-14-2017; Ambient Temp: 23.1°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3319; ConvF(4.41, 4.41, 4.41); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 41, Left Head, Cheek, High.ch, QPSK,
20 MHz Bandwidth, 1 RB, 0 RB Offset**

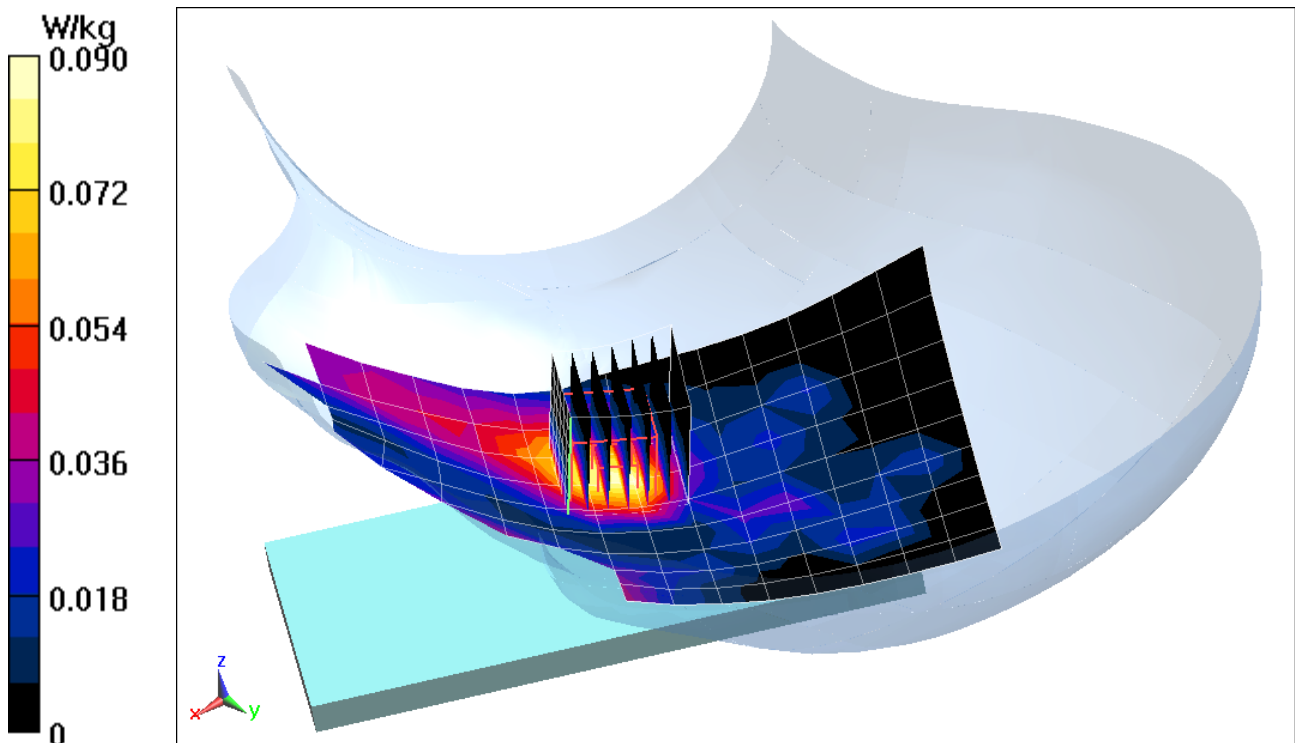
Area Scan (10x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 6.680 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.137 W/kg

SAR(1 g) = 0.073 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2EAC7

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

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.883 \text{ S/m}$; $\epsilon_r = 39.318$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-27-2017; Ambient Temp: 22.6°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3319; ConvF(4.6, 4.6, 4.6); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: 1648

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11b, 22 MHz Bandwidth, Right Head, Cheek, Ch 11, 1 Mbps, Antenna 1

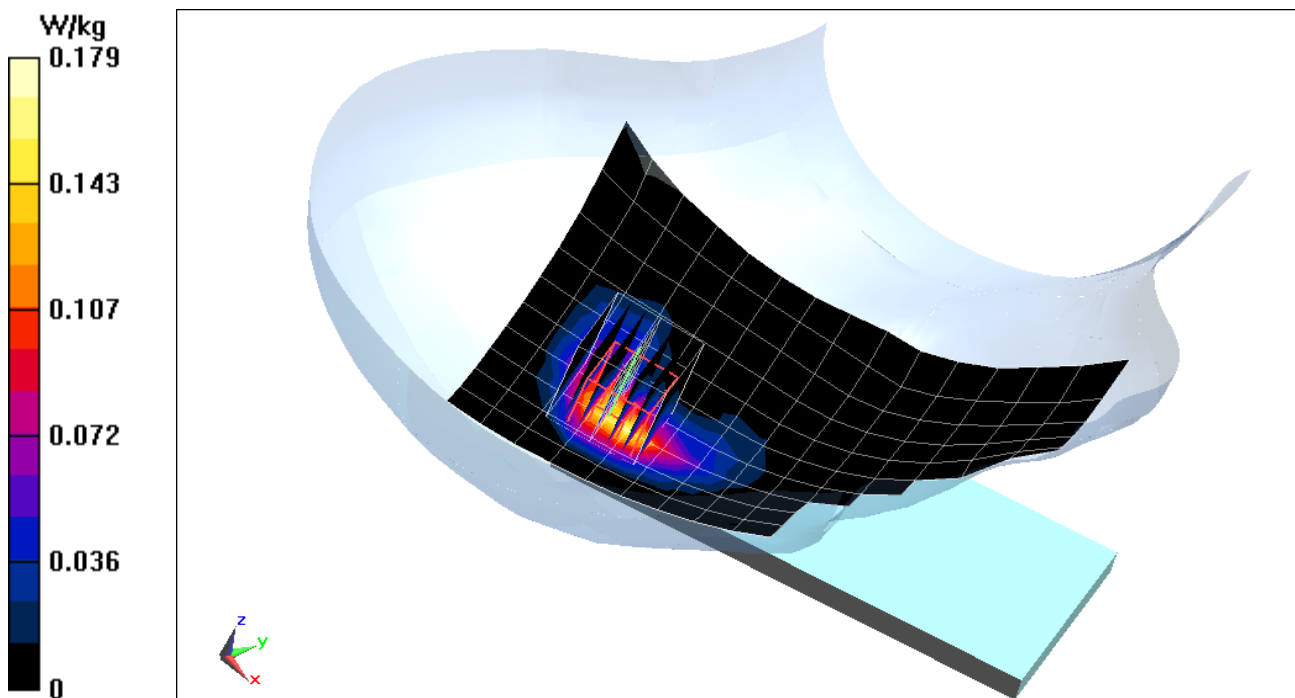
Area Scan (11x18x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 5.422 V/m; Power Drift = 0.20 dB

Peak SAR (extrapolated) = 0.267 W/kg

SAR(1 g) = 0.140 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2F5E0

Communication System: UID 0, 802.11ac 5.2-5.8 GHz Band; Frequency: 5775 MHz; Duty Cycle: 1:1

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

$f = 5775 \text{ MHz}$; $\sigma = 5.066 \text{ S/m}$; $\epsilon_r = 35.489$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-24-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN3914; ConvF(4.91, 4.91, 4.91); Calibrated: 2/13/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/9/2017

Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: IEEE 802.11ac, U-NII-3, 80 MHz Bandwidth, Right Head, Cheek,
Ch 155, 29.3 Mbps, Antenna 2**

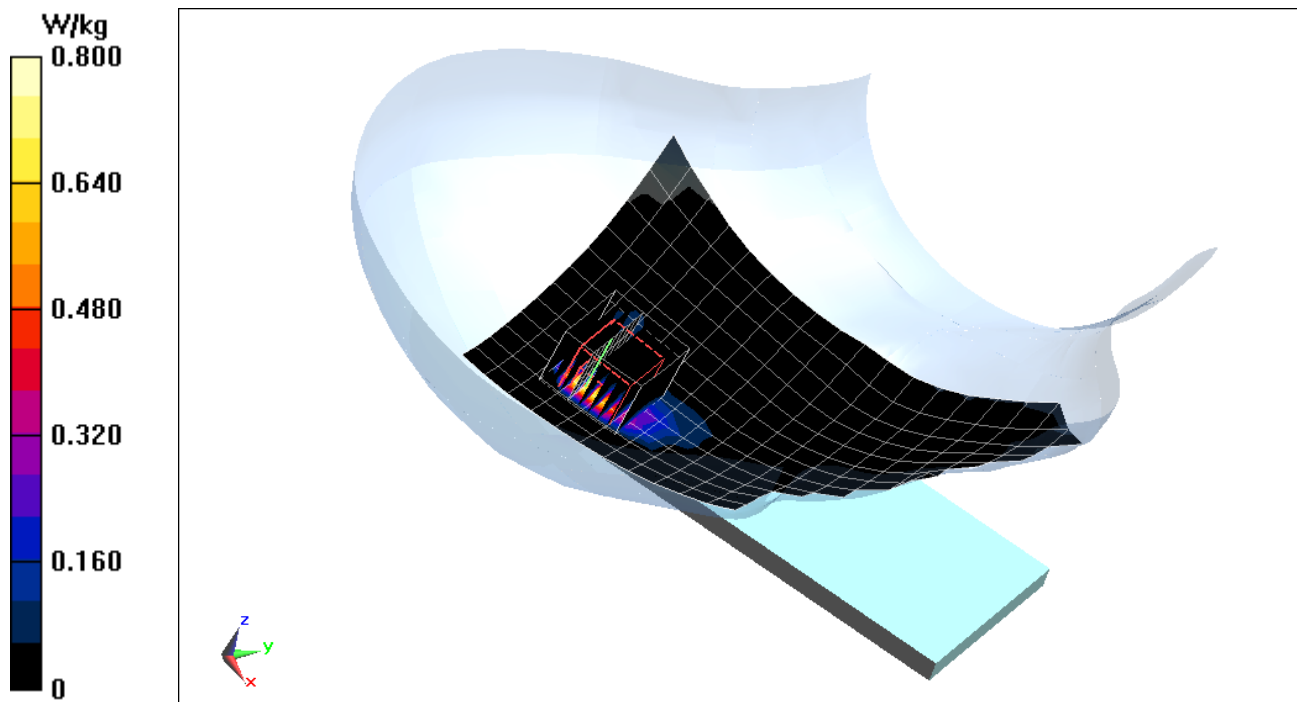
Area Scan (13x22x1): Measurement grid: dx=10mm, dy=10mm

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

Reference Value = 1.345 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 2.90 W/kg

SAR(1 g) = 0.434 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E782

Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.287

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2441 \text{ MHz}$; $\sigma = 1.852 \text{ S/m}$; $\epsilon_r = 38$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-24-2017; Ambient Temp: 21.5°C; Tissue Temp: 20.7°C

Probe: ES3DV3 - SN3319; ConvF(4.6, 4.6, 4.6); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: 1648

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: Bluetooth, Right Head, Cheek, Ch 39, 1 Mbps

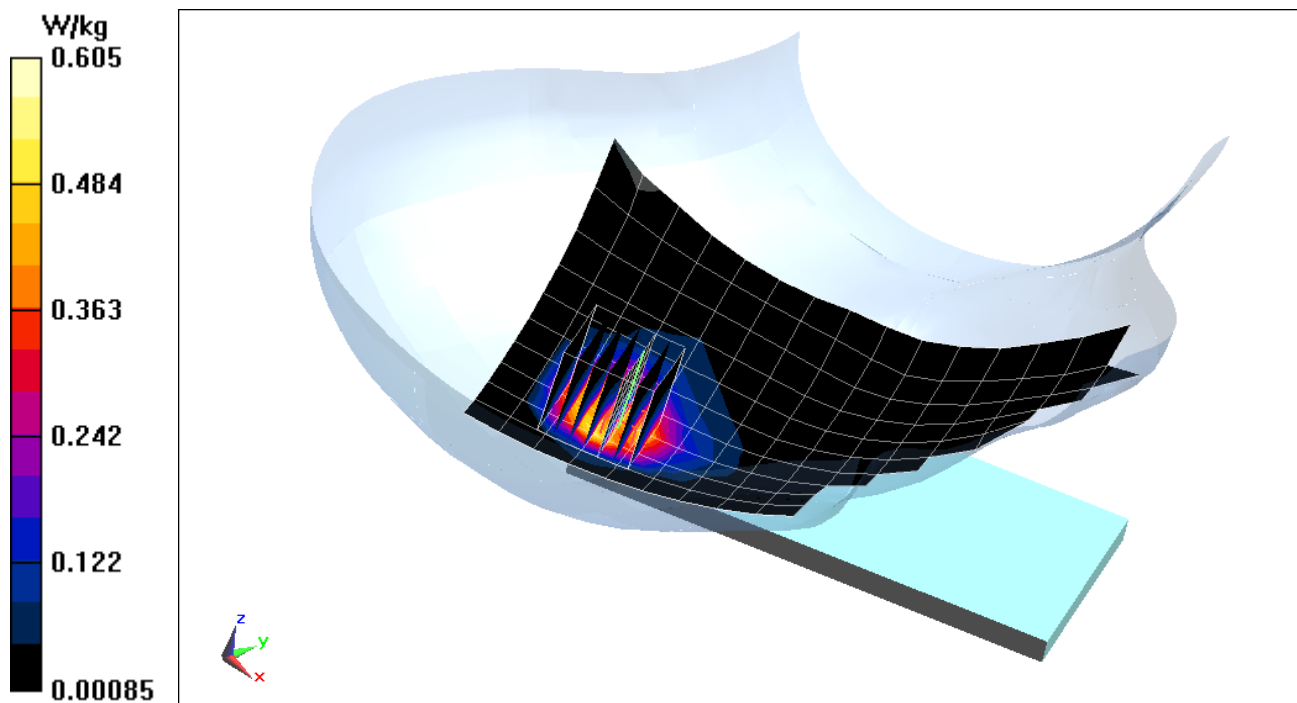
Area Scan (11x19x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 16.56 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 1.11 W/kg

SAR(1 g) = 0.464 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2F5E0

Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.981 \text{ S/m}$; $\epsilon_r = 54.559$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-04-2017; Ambient Temp: 21.0°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3332; ConvF(6.47, 6.47, 6.47); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: Cell. CDMA, Body SAR, Back side, Mid.ch

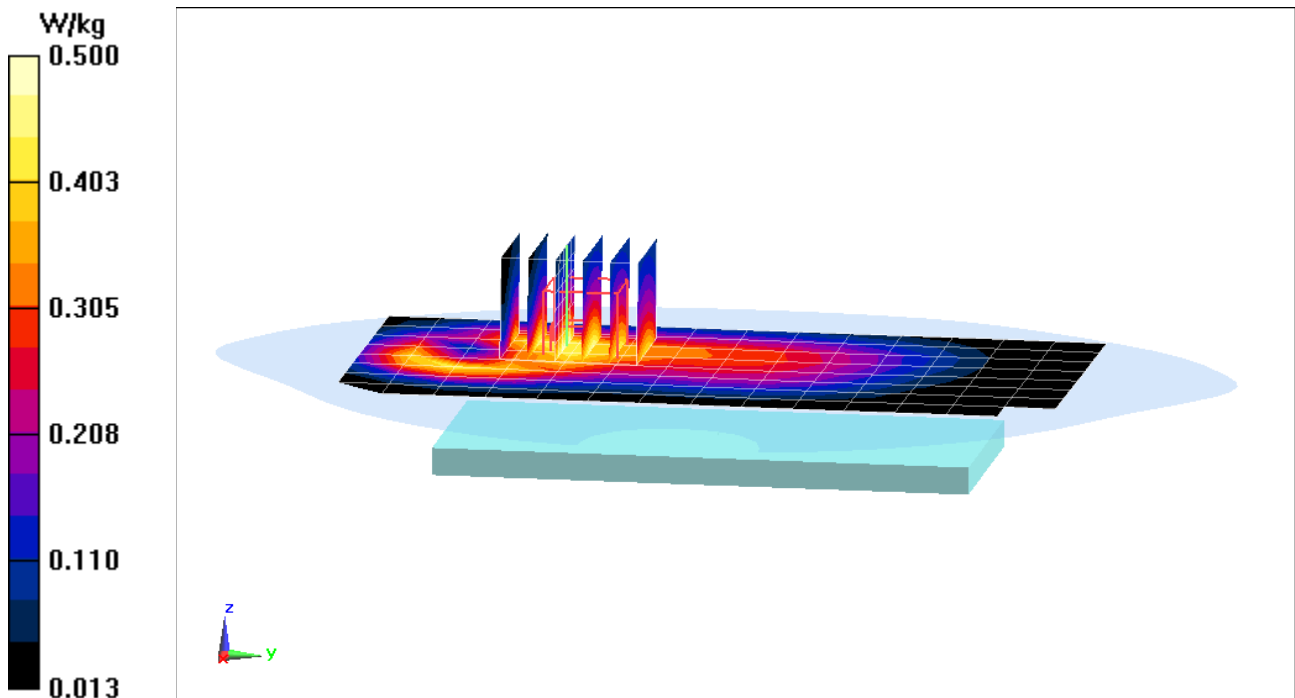
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 21.29 V/m; Power Drift = 0.21 dB

Peak SAR (extrapolated) = 0.586 W/kg

SAR(1 g) = 0.449 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2F5E0

Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.981 \text{ S/m}$; $\epsilon_r = 54.559$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-04-2017; Ambient Temp: 21.0°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3332; ConvF(6.47, 6.47, 6.47); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: Cell. EVDO, Body SAR, Back side, Mid.ch

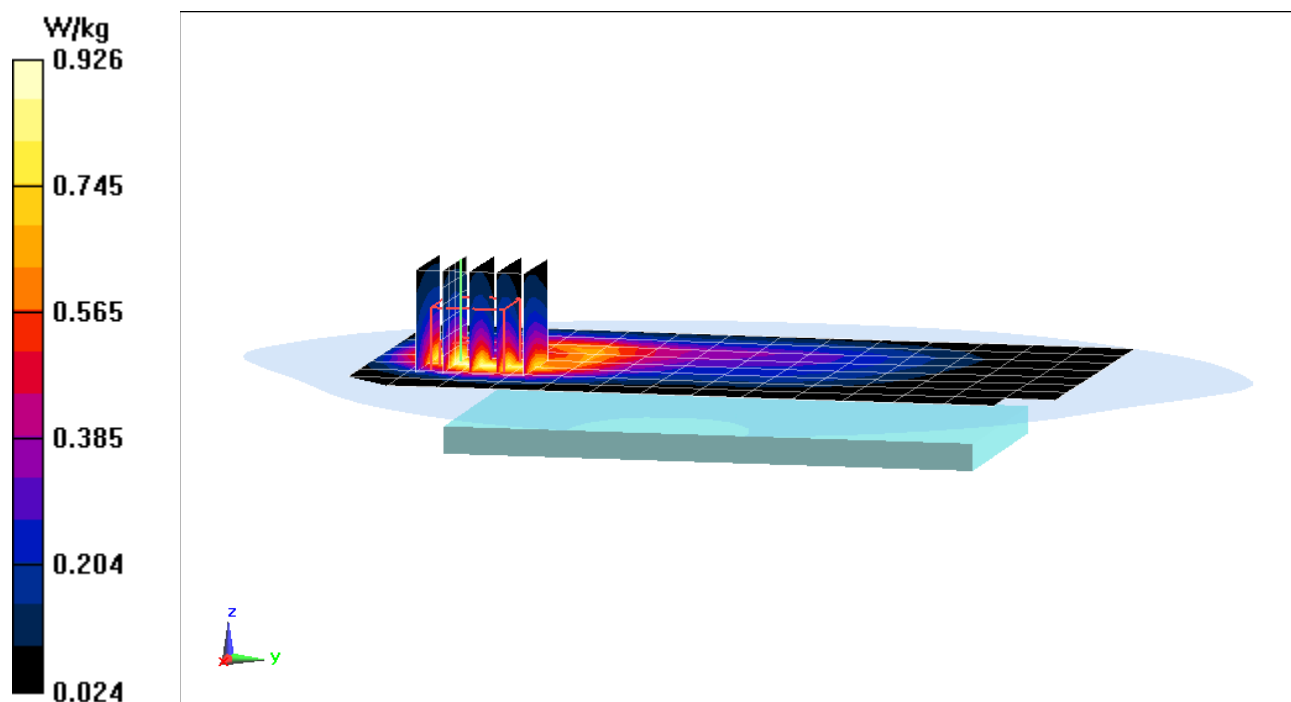
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 29.25 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 1.28 W/kg

SAR(1 g) = 0.773 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E76D

Communication System: UID 0, GSM; Frequency: 824.2 MHz; Duty Cycle: 1:8.3

Medium: 835 Body Medium parameters used (interpolated):

$f = 824.2 \text{ MHz}$; $\sigma = 0.962 \text{ S/m}$; $\epsilon_r = 52.953$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-15-2017; Ambient Temp: 24.1°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: 1800

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: GSM 850, Body SAR, Back side, Low.ch

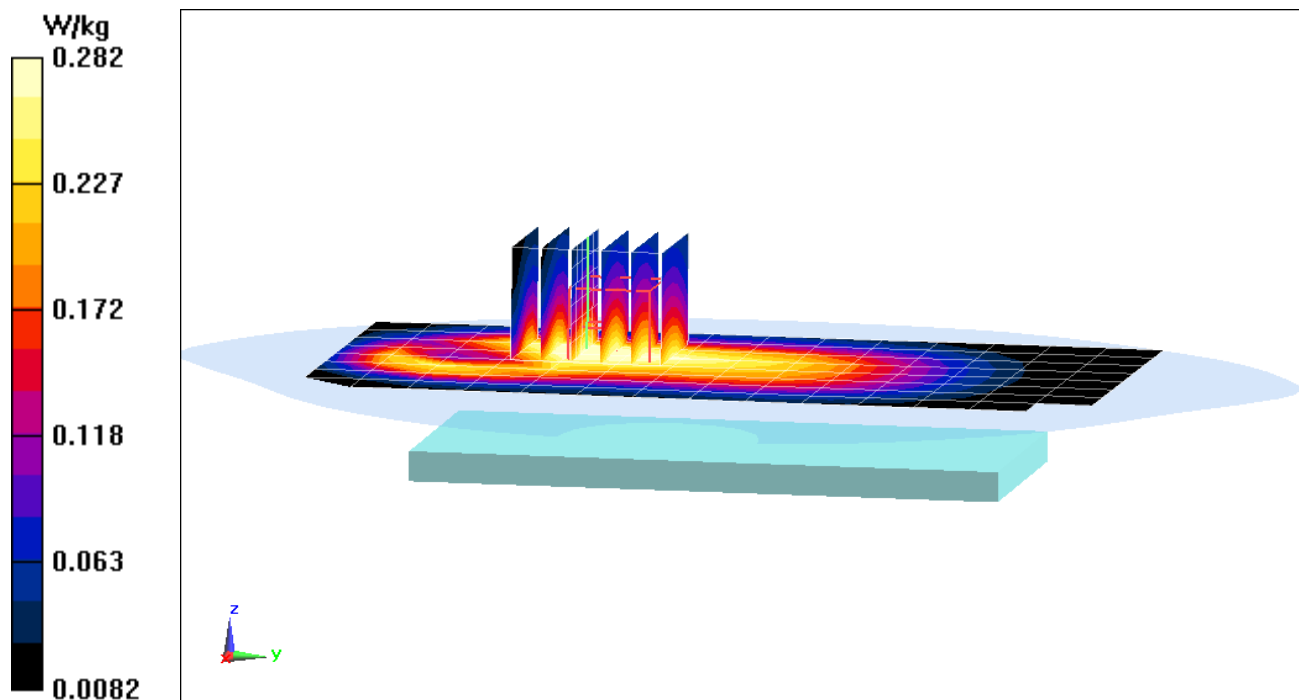
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 16.93 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.327 W/kg

SAR(1 g) = 0.254 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E76D

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):

$f = 836.6$ MHz; $\sigma = 0.976$ S/m; $\epsilon_r = 52.83$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-15-2017; Ambient Temp: 24.1°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: 1800

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: GPRS 850, Body SAR, Back side, Mid.ch, 3 Tx Slots

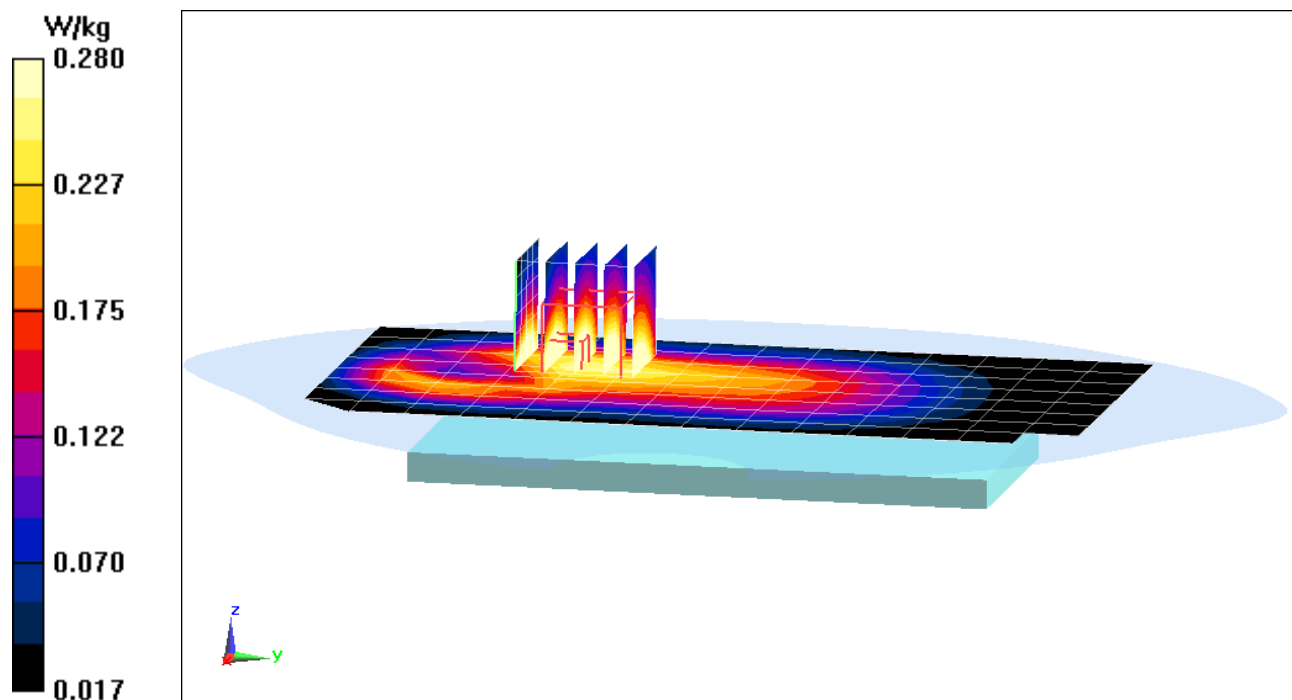
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.11 V/m; Power Drift = -0.17 dB

Peak SAR (extrapolated) = 0.529 W/kg

SAR(1 g) = 0.399 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E76E

Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.999 \text{ S/m}$; $\epsilon_r = 53.495$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-24-2017; Ambient Temp: 20.1°C; Tissue Temp: 20.7°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: 1800

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 850, Body SAR, Back side, Mid.ch

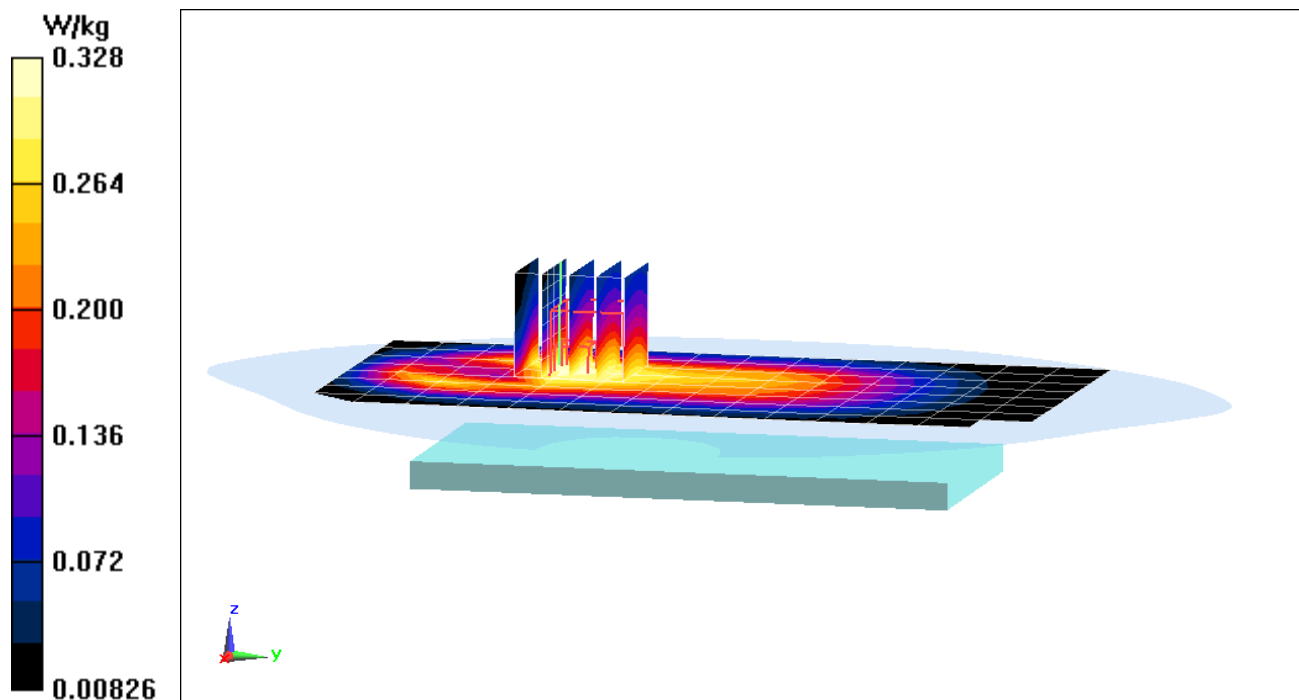
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 17.71 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.396 W/kg

SAR(1 g) = 0.296 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E76E

Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.999 \text{ S/m}$; $\epsilon_r = 53.495$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-24-2017; Ambient Temp: 20.1°C; Tissue Temp: 20.7°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: 1800

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 850, Body SAR, Back side, Mid.ch

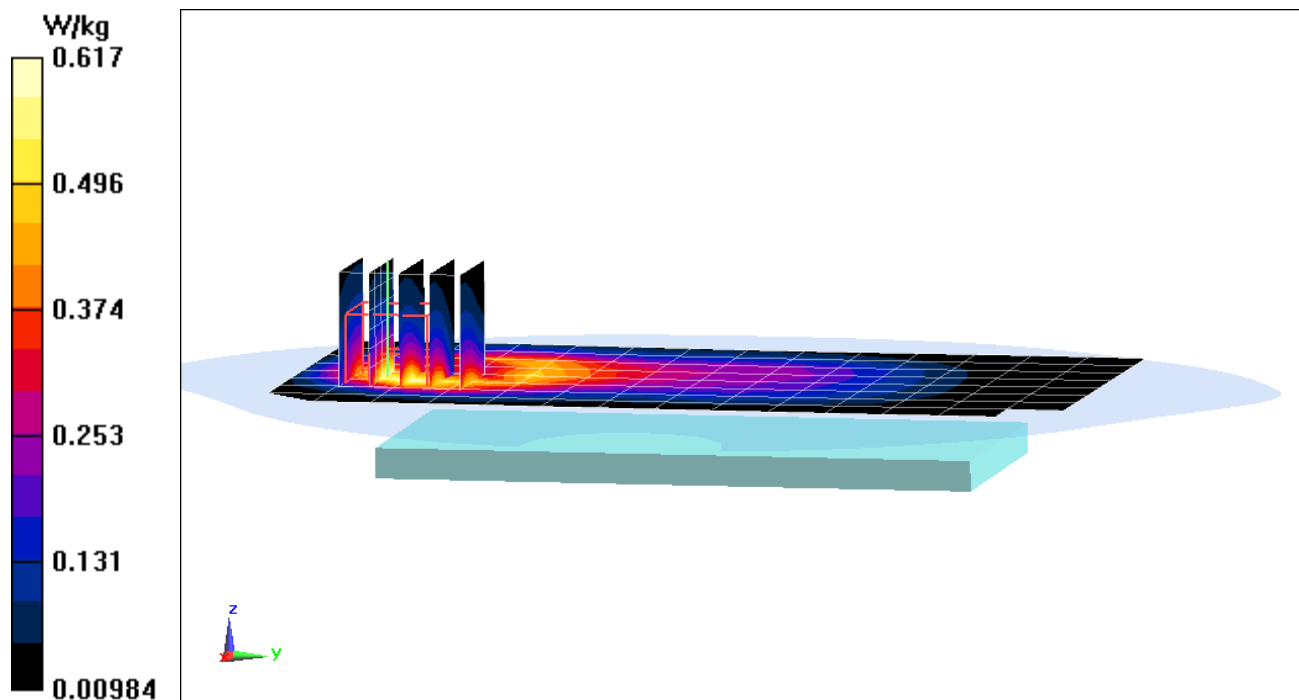
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 23.27 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.863 W/kg

SAR(1 g) = 0.506 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E674

Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.4 \text{ MHz}$; $\sigma = 1.512 \text{ S/m}$; $\epsilon_r = 52.462$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-20-2017; Ambient Temp: 21.3°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(5.13, 5.13, 5.13); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Left; Type: QD000P40CD; Serial: 1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1750, Body SAR, Back side, Mid.ch

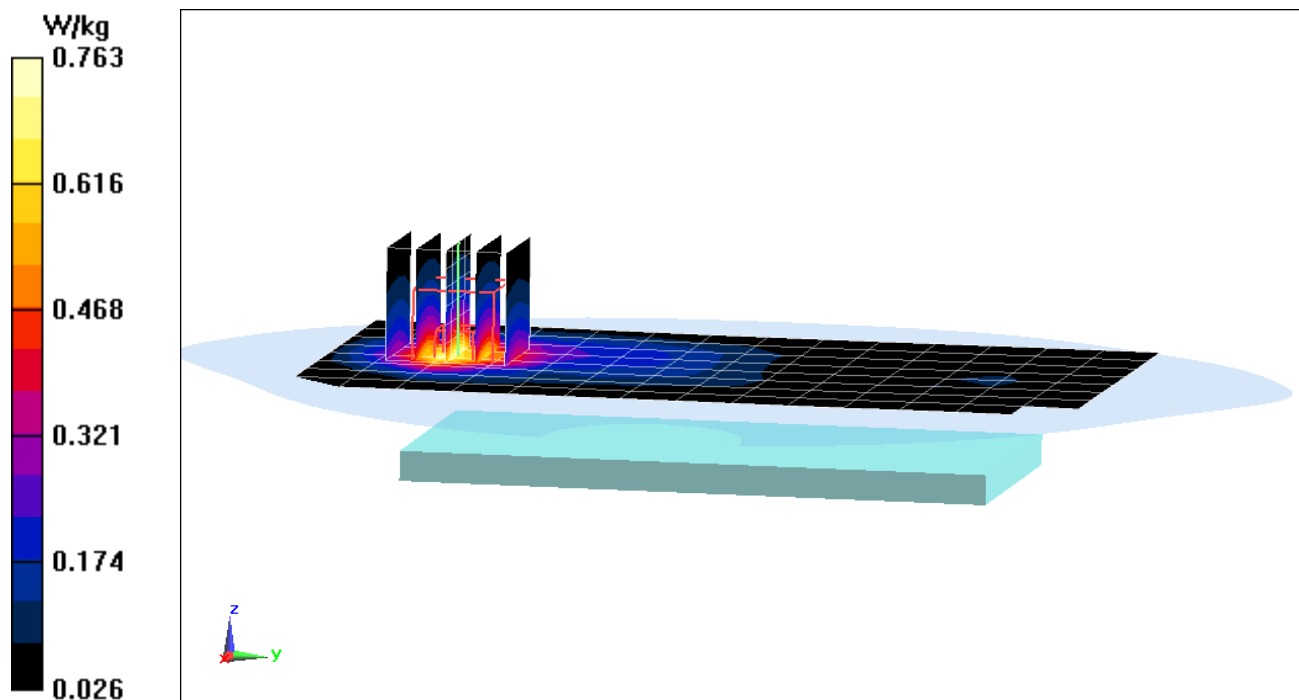
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 22.01 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.983 W/kg

SAR(1 g) = 0.638 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E674

Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.4 \text{ MHz}$; $\sigma = 1.512 \text{ S/m}$; $\epsilon_r = 52.462$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-20-2017; Ambient Temp: 21.3°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(5.13, 5.13, 5.13); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Left; Type: QD000P40CD; Serial: 1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1750, Body SAR, Bottom Edge, Mid.ch

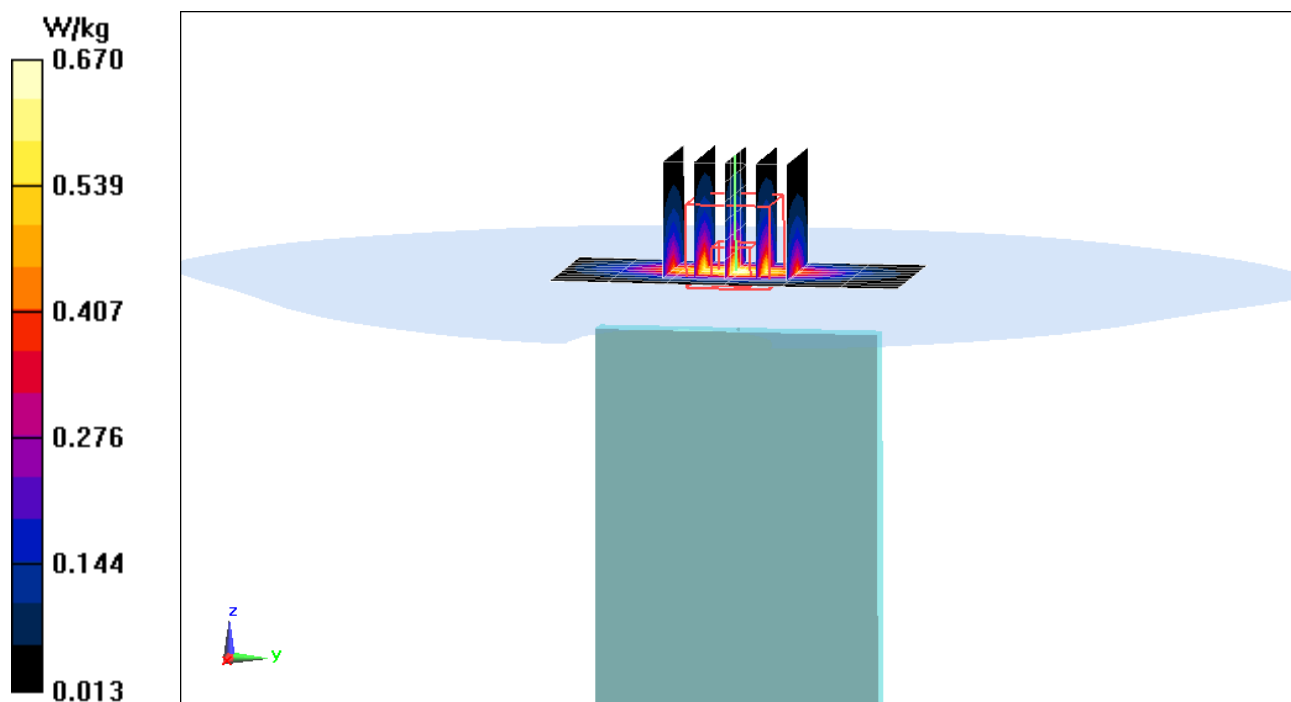
Area Scan (10x7x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 20.60 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 0.921 W/kg

SAR(1 g) = 0.552 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E76D

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.54 \text{ S/m}$; $\epsilon_r = 52.781$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-17-2017; Ambient Temp: 24.0°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN7410; ConvF(7.98, 7.98, 7.98); Calibrated: 7/17/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/13/2017

Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

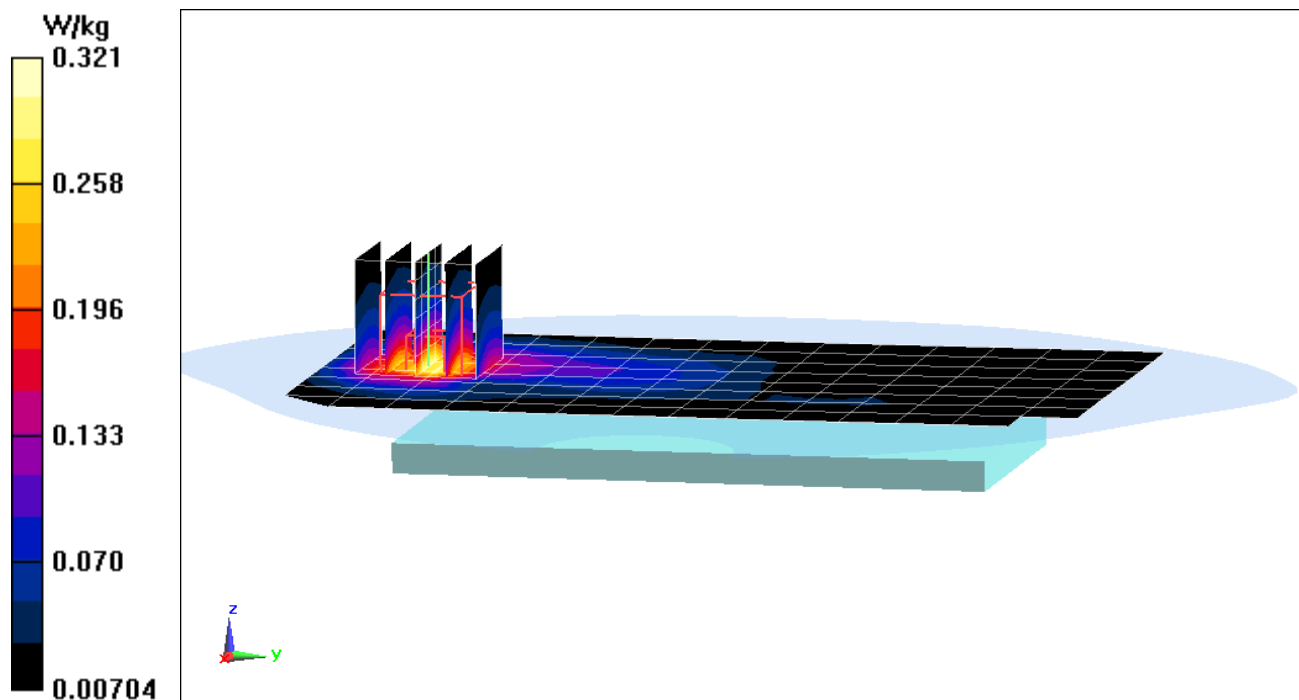
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 12.98 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.363 W/kg

SAR(1 g) = 0.233 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E76D

Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.76

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.526 \text{ S/m}$; $\epsilon_r = 52.574$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-24-2017; Ambient Temp: 21.7°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3332; ConvF(4.95, 4.95, 4.95); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

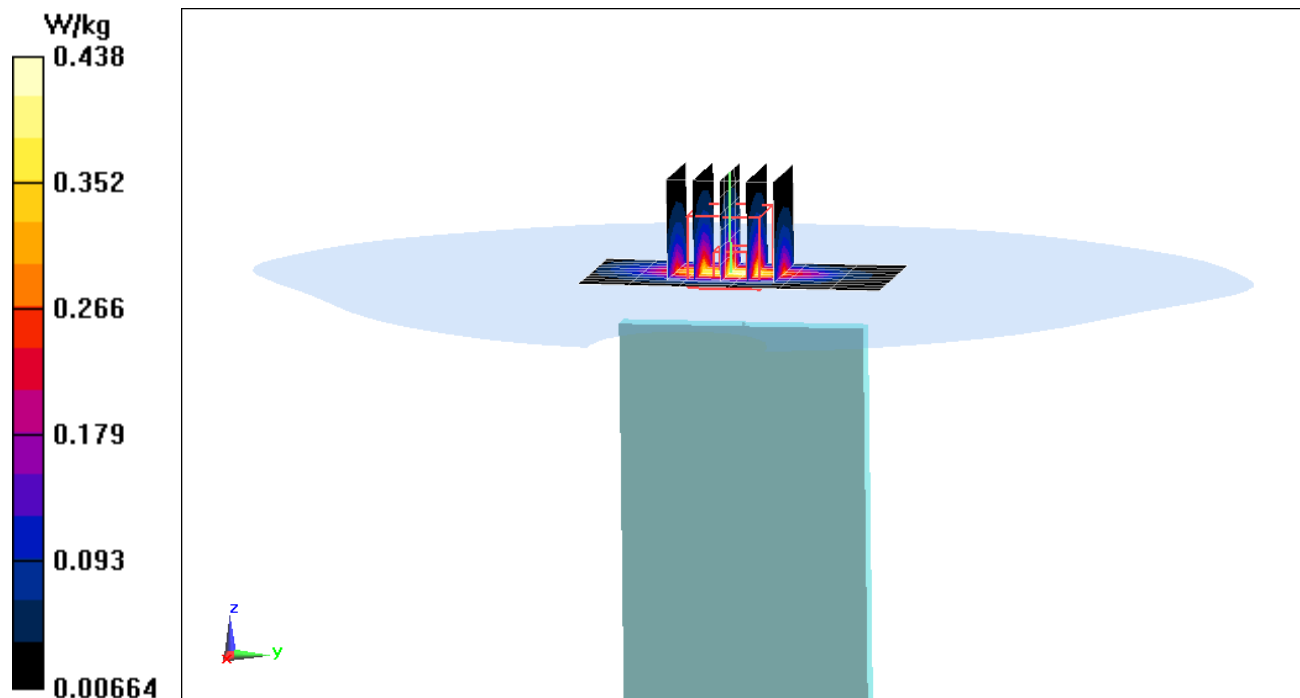
Area Scan (10x7x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 16.57 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.588 W/kg

SAR(1 g) = 0.351 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E9B0

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

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.521 \text{ S/m}$; $\epsilon_r = 52.37$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-27-2017; Ambient Temp: 22.9°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3332; ConvF(4.95, 4.95, 4.95); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

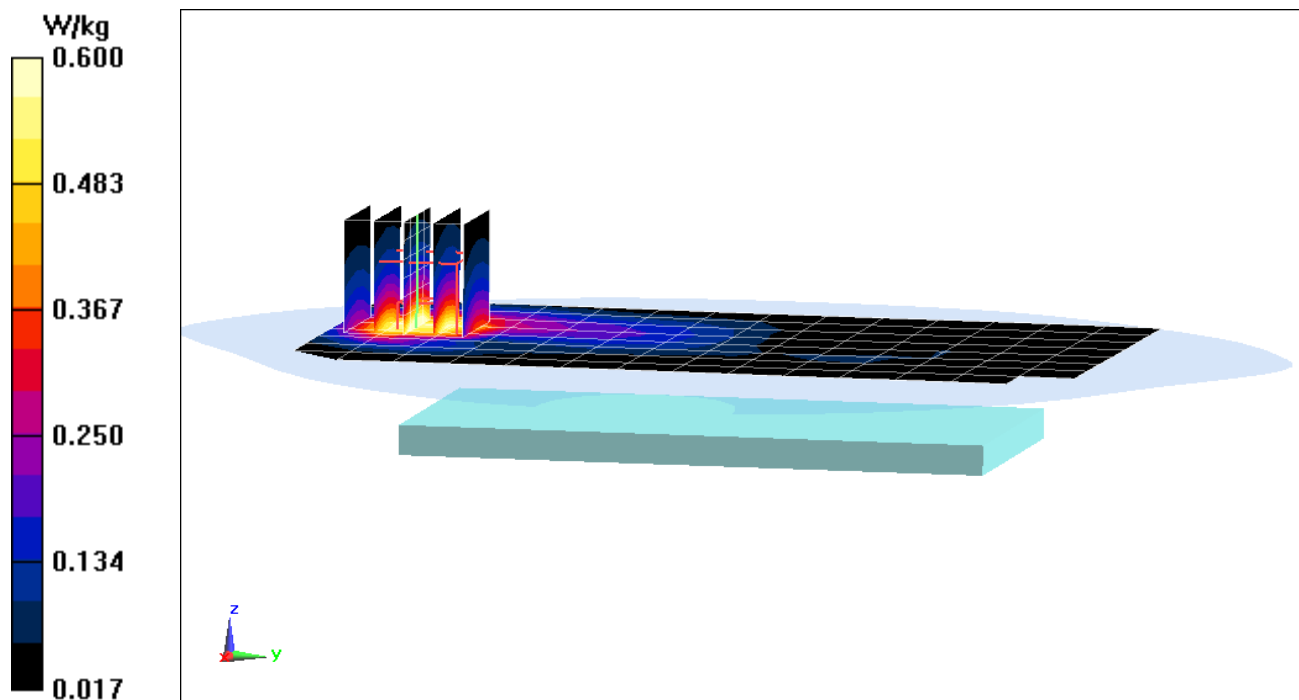
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 21.05 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.915 W/kg

SAR(1 g) = 0.585 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E9B0

Communication System: UID 0, UMTS; Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1852.4 \text{ MHz}$; $\sigma = 1.492 \text{ S/m}$; $\epsilon_r = 52.486$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-27-2017; Ambient Temp: 22.9°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3332; ConvF(4.95, 4.95, 4.95); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1900, Body SAR, Bottom Edge, Low.ch

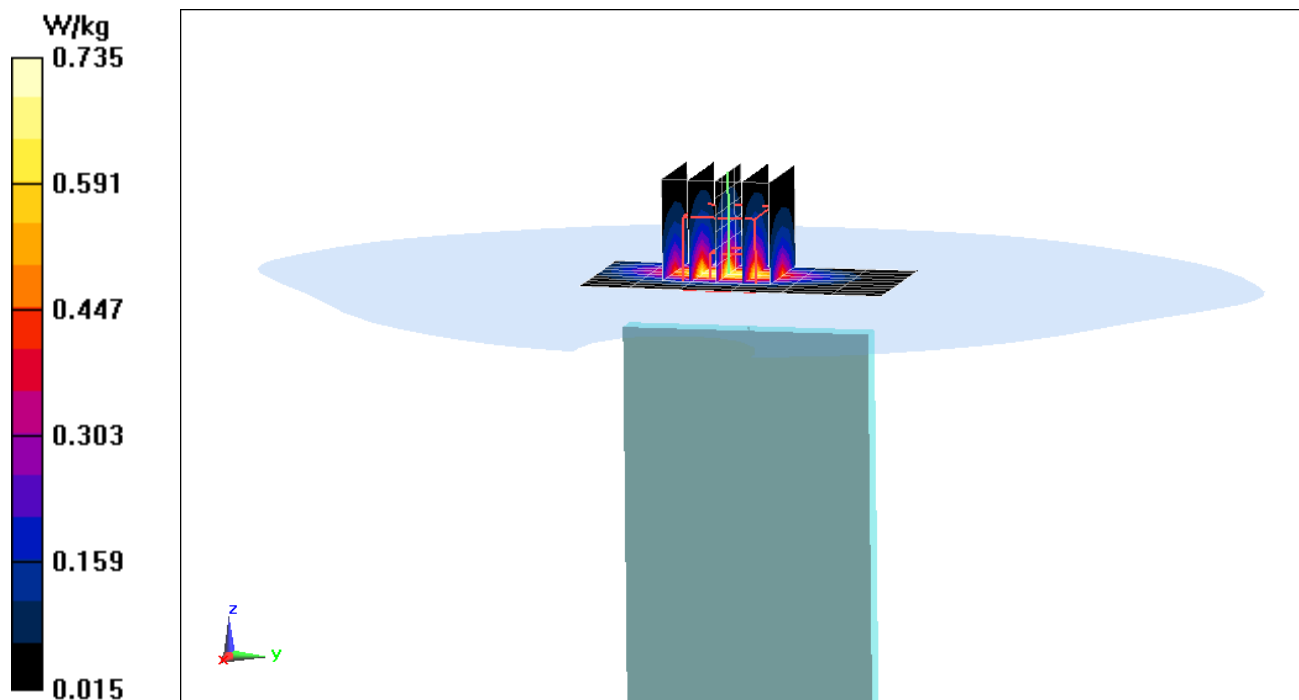
Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.69 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.987 W/kg

SAR(1 g) = 0.596 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E700

Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium: 750 Body Medium parameters used (interpolated):

$f = 707.5 \text{ MHz}$; $\sigma = 0.929 \text{ S/m}$; $\epsilon_r = 55.393$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-19-2017; Ambient Temp: 22.2°C; Tissue Temp: 20.2°C

Probe: ES3DV3 - SN3332; ConvF(6.54, 6.54, 6.54); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 12, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

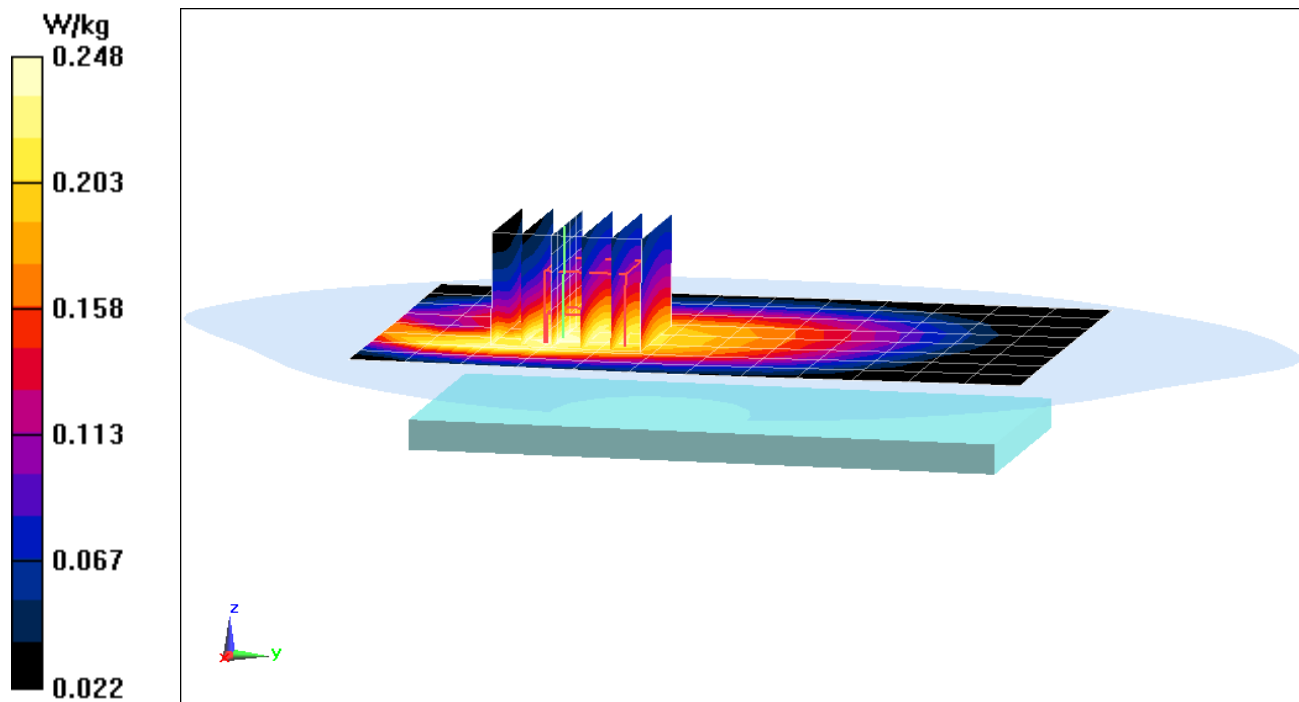
Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 16.13 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.300 W/kg

SAR(1 g) = 0.223 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E700

Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium: 750 Body Medium parameters used (interpolated):

$f = 707.5 \text{ MHz}$; $\sigma = 0.929 \text{ S/m}$; $\epsilon_r = 55.393$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-19-2017; Ambient Temp: 22.2°C; Tissue Temp: 20.2°C

Probe: ES3DV3 - SN3332; ConvF(6.54, 6.54, 6.54); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 12, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

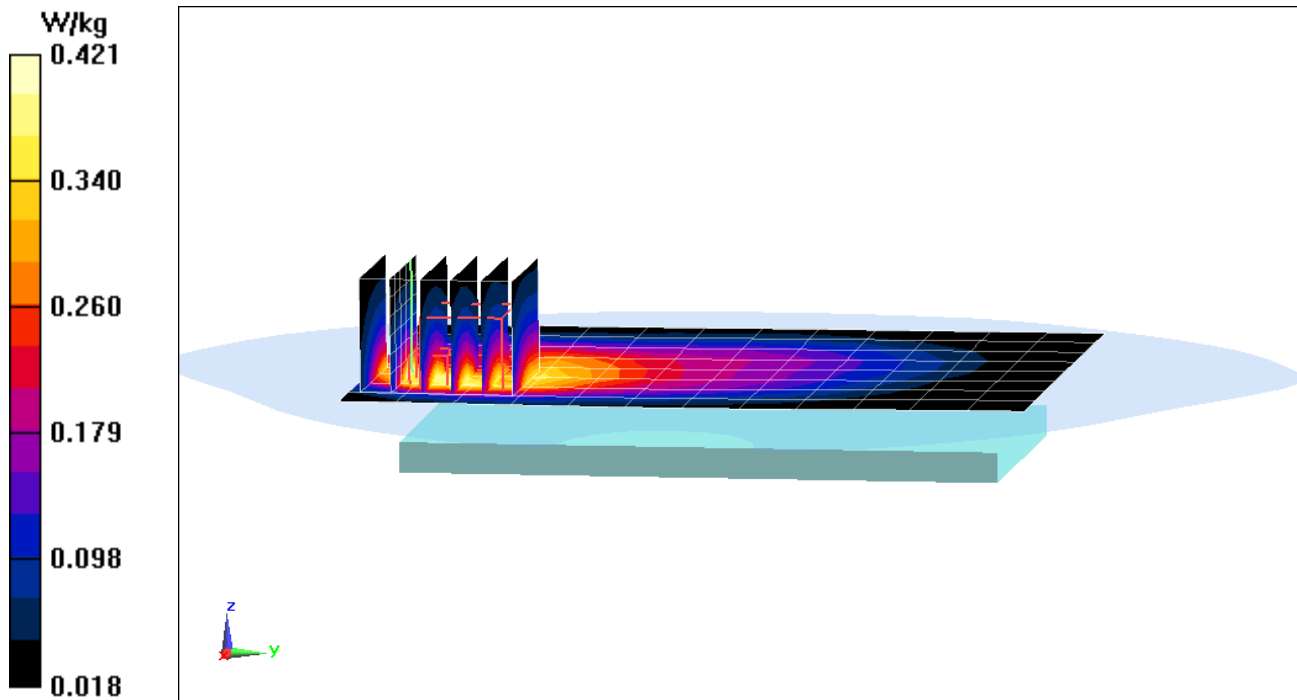
Area Scan (9x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 20.51 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.586 W/kg

SAR(1 g) = 0.349 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E700

Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: 750 Body Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 0.998 \text{ S/m}$; $\epsilon_r = 54.671$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-19-2017; Ambient Temp: 22.2°C; Tissue Temp: 20.2°C

Probe: ES3DV3 - SN3332; ConvF(6.54, 6.54, 6.54); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 13, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

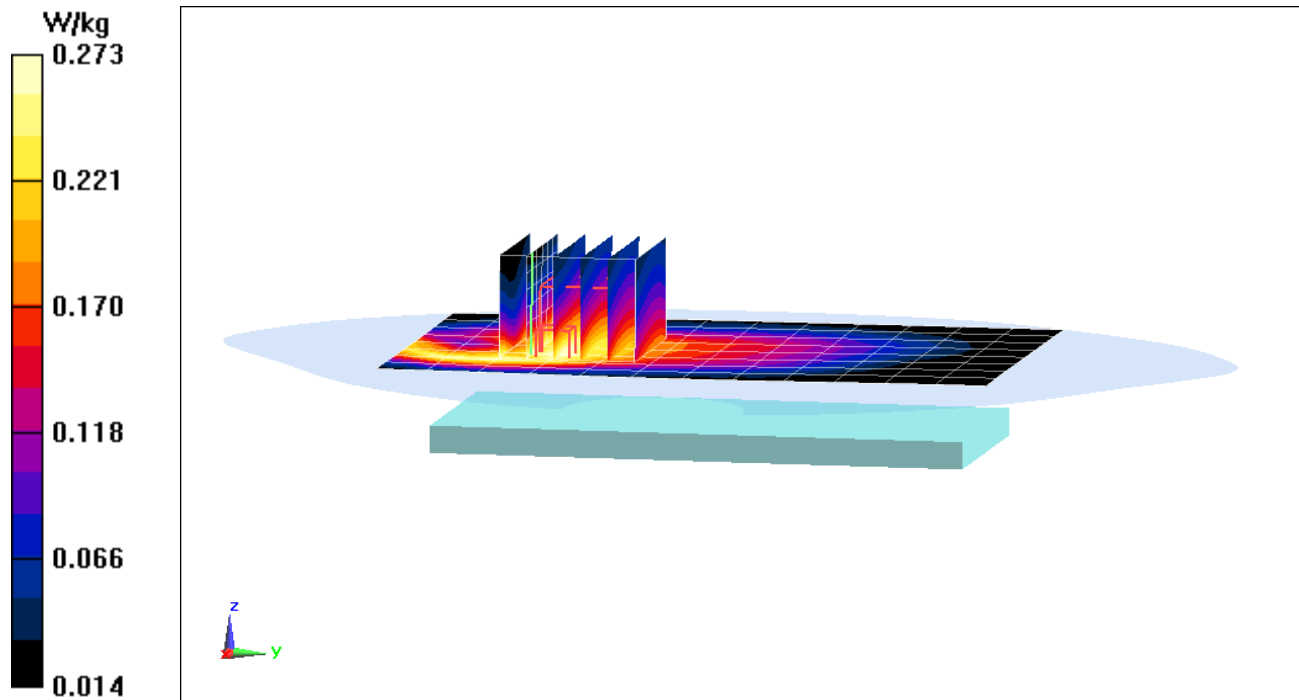
Area Scan (9x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (7x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 16.22 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.342 W/kg

SAR(1 g) = 0.242 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E700

Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: 750 Body Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 0.998 \text{ S/m}$; $\epsilon_r = 54.671$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-19-2017; Ambient Temp: 22.2°C; Tissue Temp: 20.2°C

Probe: ES3DV3 - SN3332; ConvF(6.54, 6.54, 6.54); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 13, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

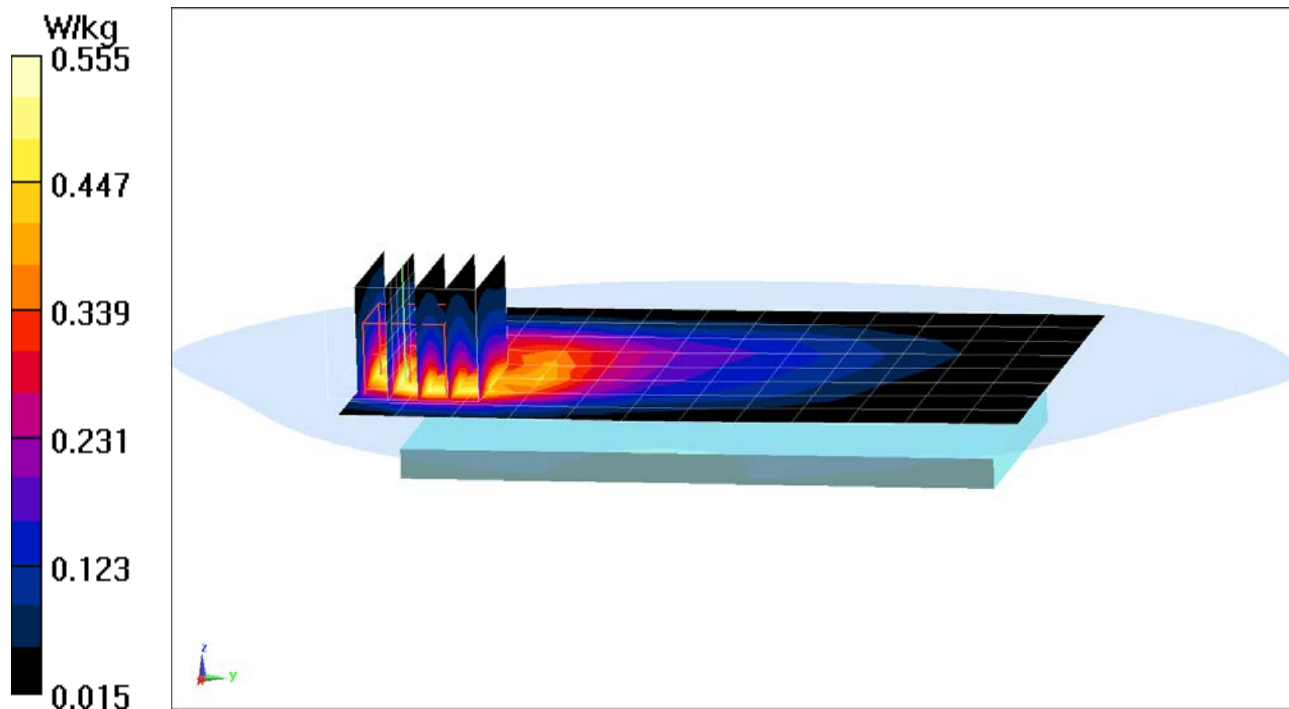
Area Scan (9x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 21.95 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.782 W/kg

SAR(1 g) = 0.460 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E674

Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 831.5 \text{ MHz}$; $\sigma = 0.991 \text{ S/m}$; $\epsilon_r = 53.264$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-28-2017; Ambient Temp: 22.1°C; Tissue Temp: 19.7°C

Probe: EX3DV4 - SN7410; ConvF(9.95, 9.95, 9.95); Calibrated: 7/17/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/13/2017

Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**LTE Band 26 (Cell.), Body SAR, Back side, Mid.ch,
15 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

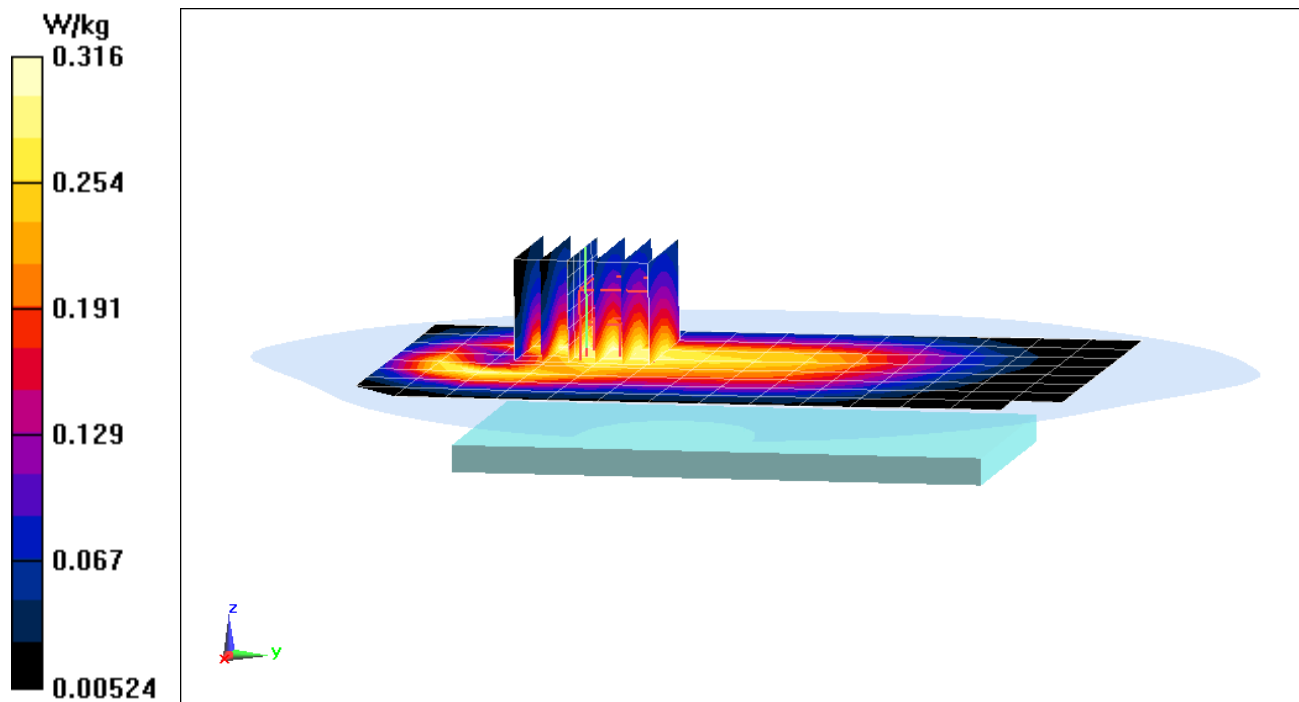
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 16.64 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.345 W/kg

SAR(1 g) = 0.262 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E674

Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 831.5$ MHz; $\sigma = 0.995$ S/m; $\epsilon_r = 53.543$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-24-2017; Ambient Temp: 20.1°C; Tissue Temp: 20.7°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: 1800

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 26 (Cell.), Body SAR, Back side, Mid.ch,
15 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

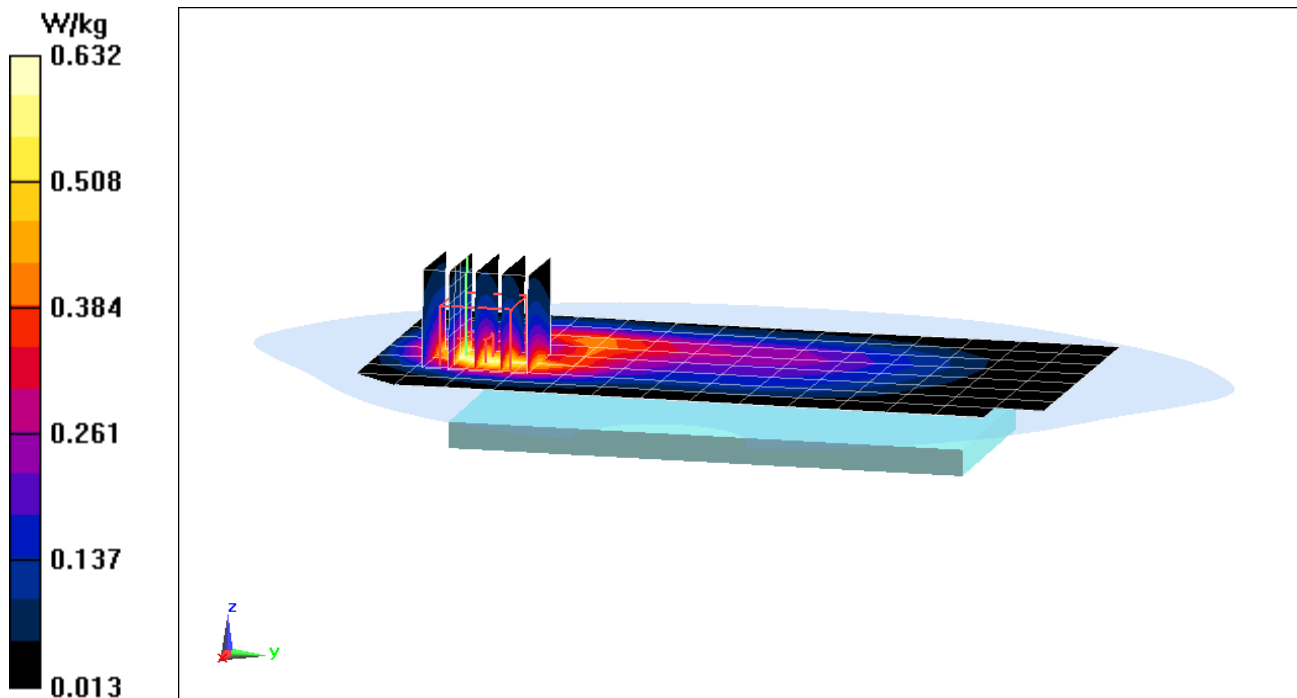
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.98 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.895 W/kg

SAR(1 g) = 0.525 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2FECA

Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1770 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1770 \text{ MHz}$; $\sigma = 1.556 \text{ S/m}$; $\epsilon_r = 52.296$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-20-2017; Ambient Temp: 21.3°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(5.13, 5.13, 5.13); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Left; Type: QD000P40CD; Serial: 1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 66 (AWS), Body SAR, Back side, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

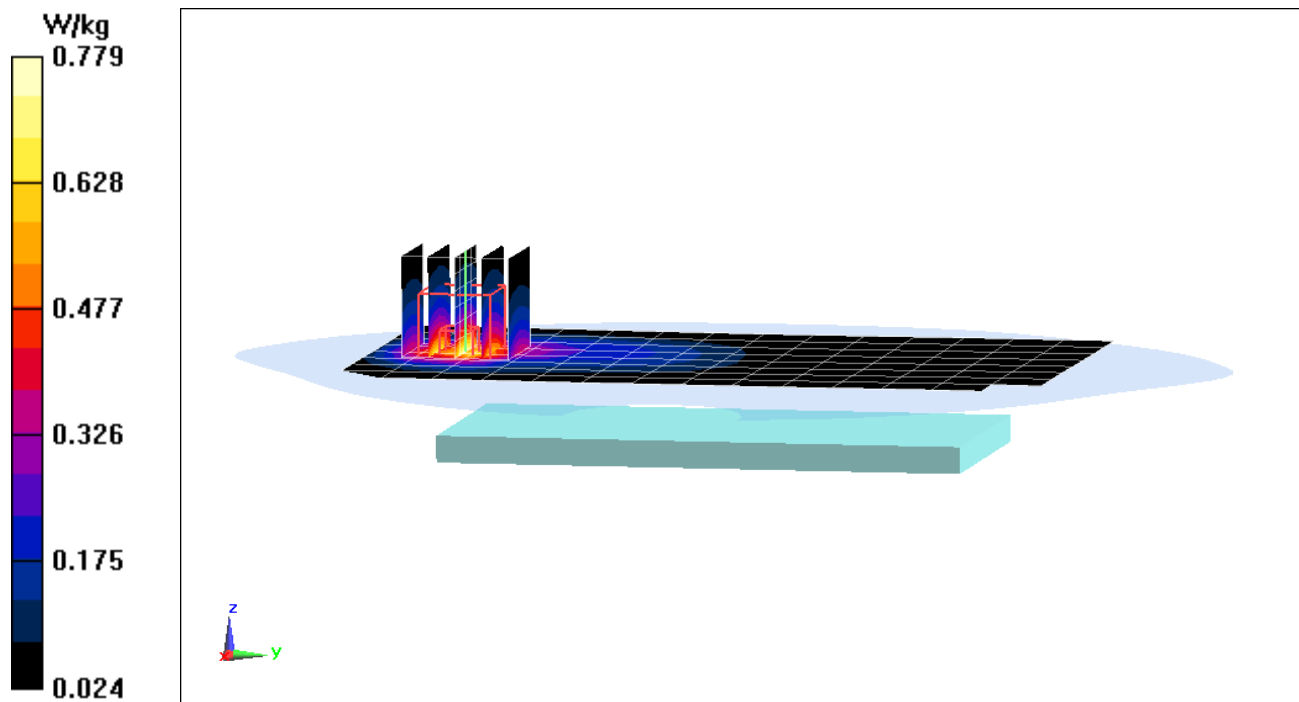
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.83 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.02 W/kg

SAR(1 g) = 0.654 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2FECA

Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1745 \text{ MHz}$; $\sigma = 1.527 \text{ S/m}$; $\epsilon_r = 52.408$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-20-2017; Ambient Temp: 21.3°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(5.13, 5.13, 5.13); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Left; Type: QD000P40CD; Serial: 1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 66 (AWS), Body SAR, Bottom Edge, Mid.ch,
20 MHz Bandwidth, QPSK, 50 RB, 0 RB Offset**

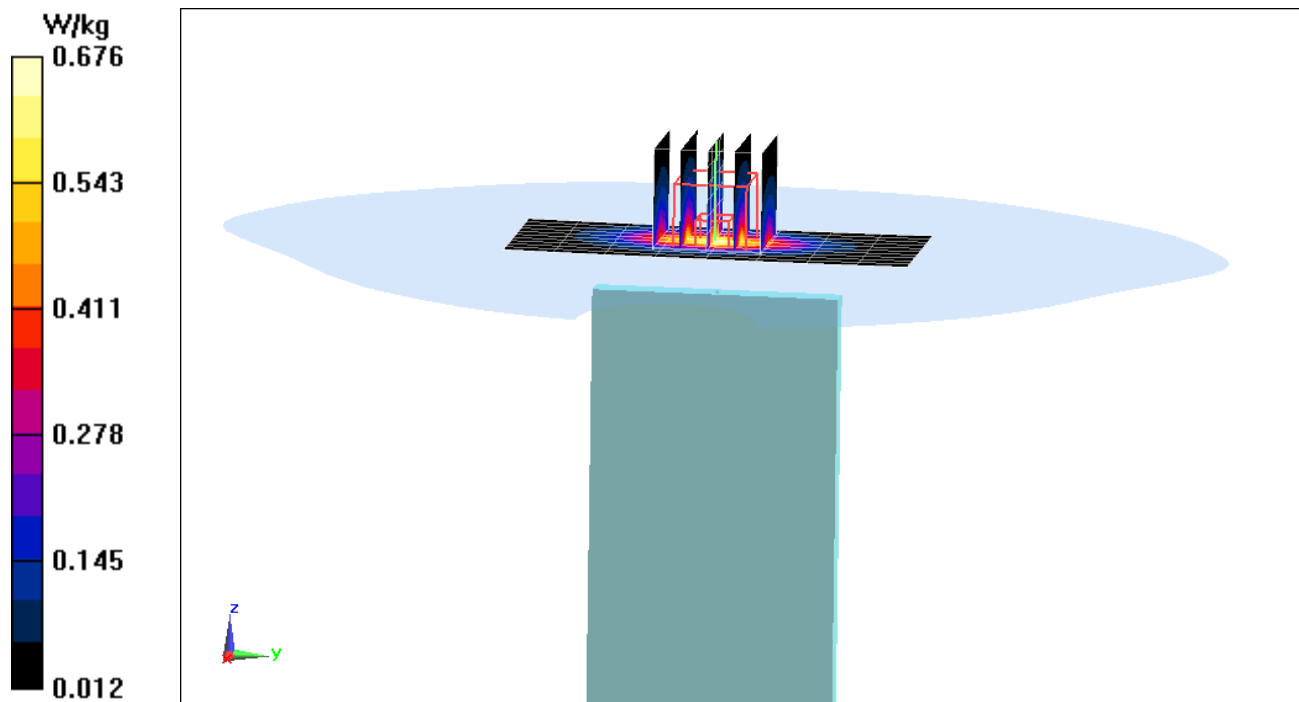
Area Scan (11x9x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.35 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.908 W/kg

SAR(1 g) = 0.544 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E9E7

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

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1882.5 \text{ MHz}$; $\sigma = 1.529 \text{ S/m}$; $\epsilon_r = 52.566$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-24-2017; Ambient Temp: 21.7°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3332; ConvF(4.95, 4.95, 4.95); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 25 (PCS), Body SAR, Back side, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

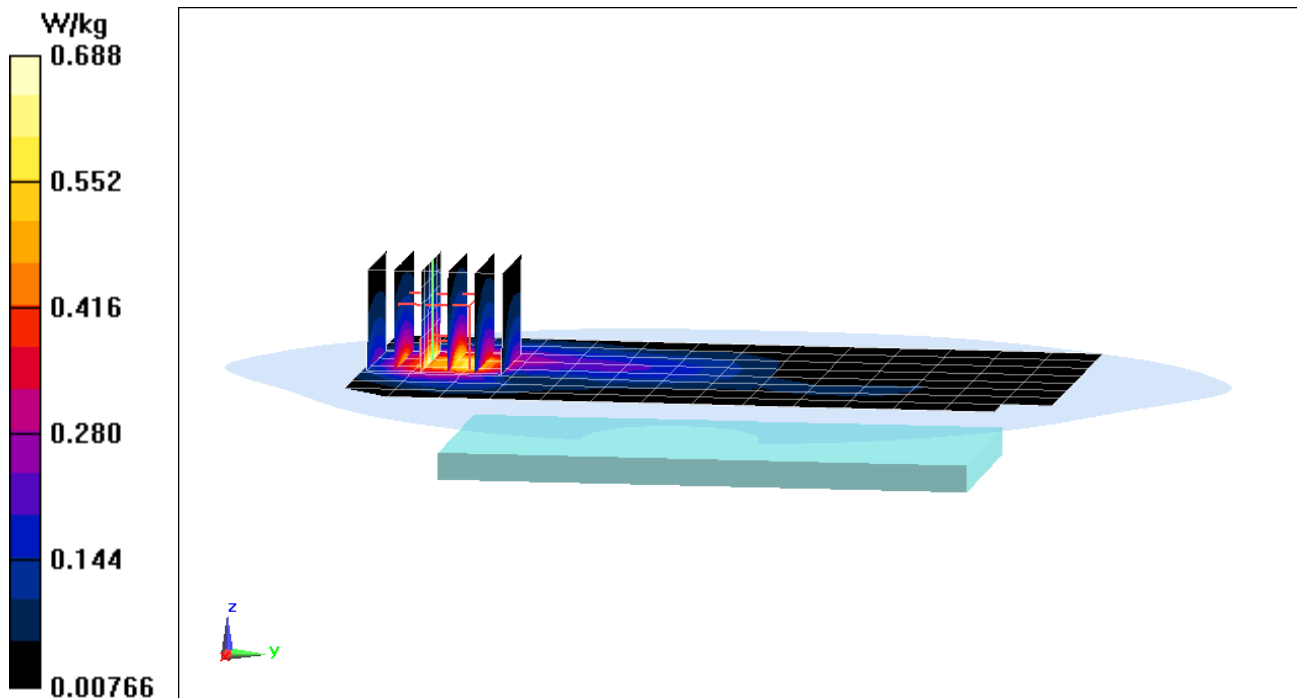
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 19.01 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.920 W/kg

SAR(1 g) = 0.584 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E9E7

Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1905$ MHz; $\sigma = 1.555$ S/m; $\epsilon_r = 52.491$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-24-2017; Ambient Temp: 21.7°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3332; ConvF(4.95, 4.95, 4.95); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 25 (PCS), Body SAR, Bottom Edge, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

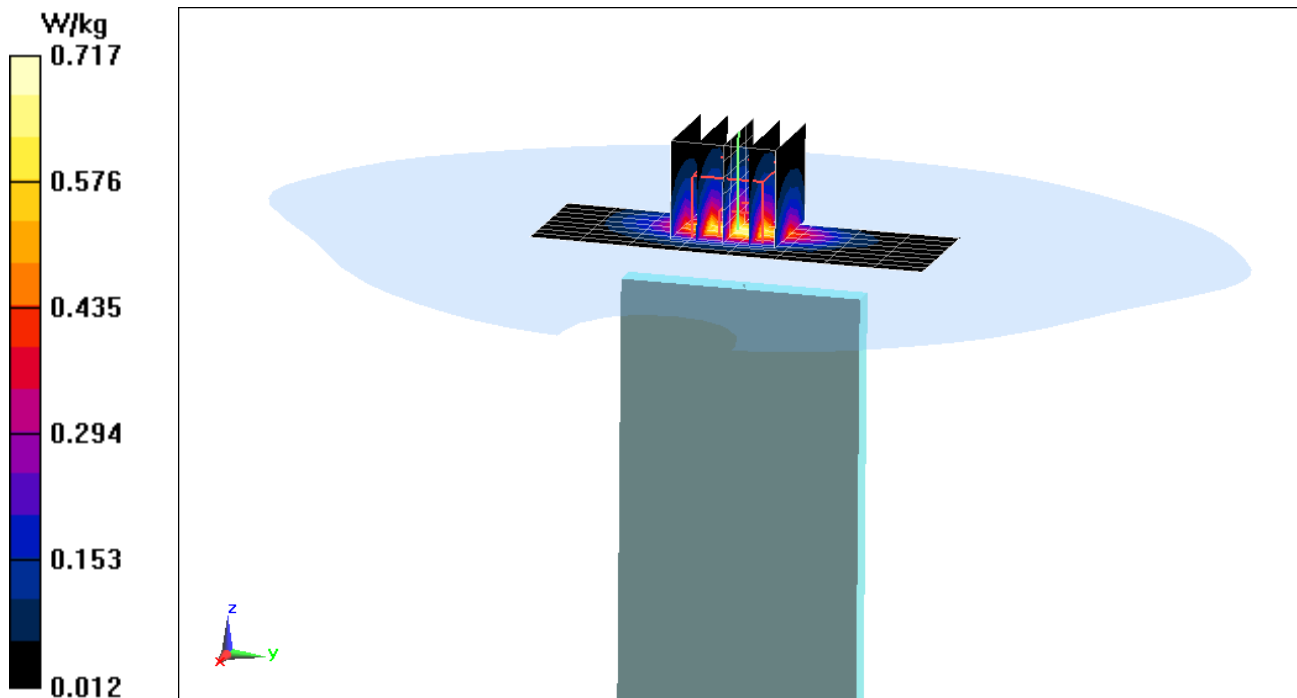
Area Scan (9x9x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.85 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.971 W/kg

SAR(1 g) = 0.575 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2FEC5

Communication System: UID 0, LTE Band 41; Frequency: 2680 MHz; Duty Cycle: 1:1.58

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2680$ MHz; $\sigma = 2.327$ S/m; $\epsilon_r = 50.371$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-07-2017; Ambient Temp: 21.6°C; Tissue Temp: 20.9°C

Probe: ES3DV3 - SN3213; ConvF(4.32, 4.32, 4.32); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 41, Body SAR, Back side, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

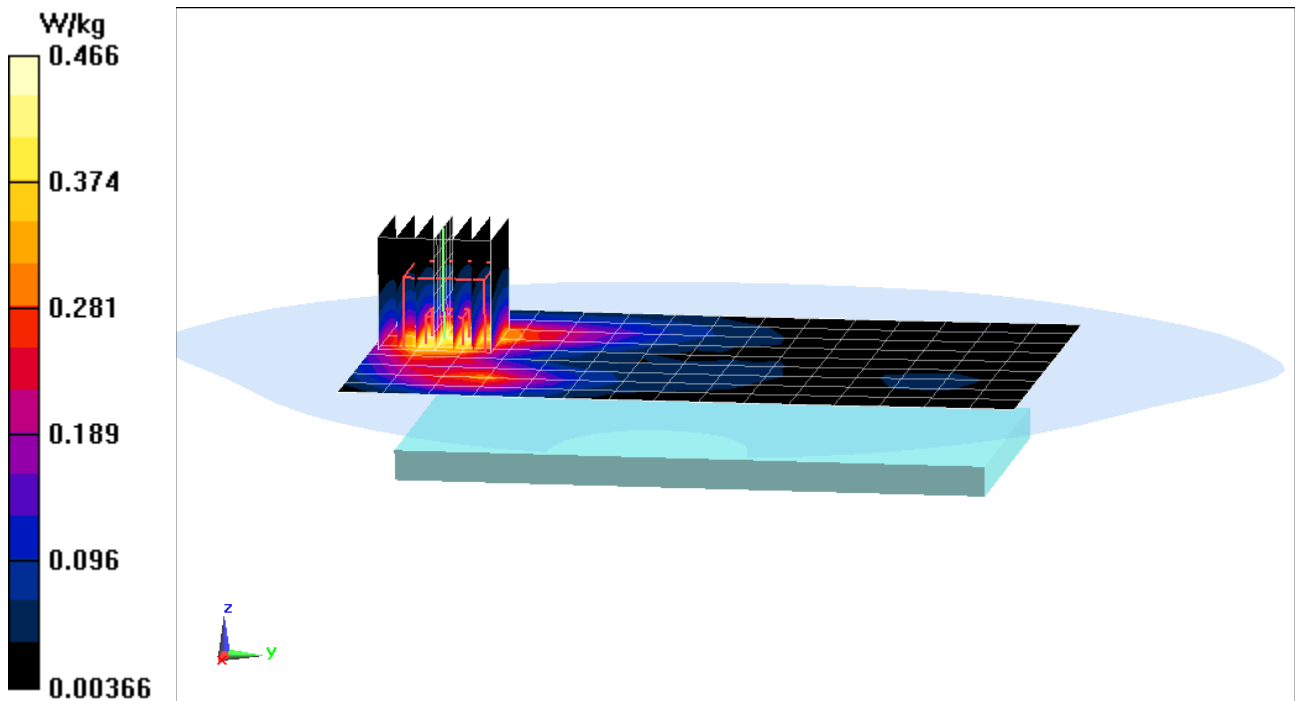
Area Scan (10x16x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.35 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.750 W/kg

SAR(1 g) = 0.373 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2FEC5

Communication System: UID 0, LTE Band 41; Frequency: 2680 MHz; Duty Cycle: 1:1.58

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2680 \text{ MHz}$; $\sigma = 2.327 \text{ S/m}$; $\epsilon_r = 50.371$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-07-2017; Ambient Temp: 21.6°C; Tissue Temp: 20.9°C

Probe: ES3DV3 - SN3213; ConvF(4.32, 4.32, 4.32); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 41, Body SAR, Bottom Edge, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

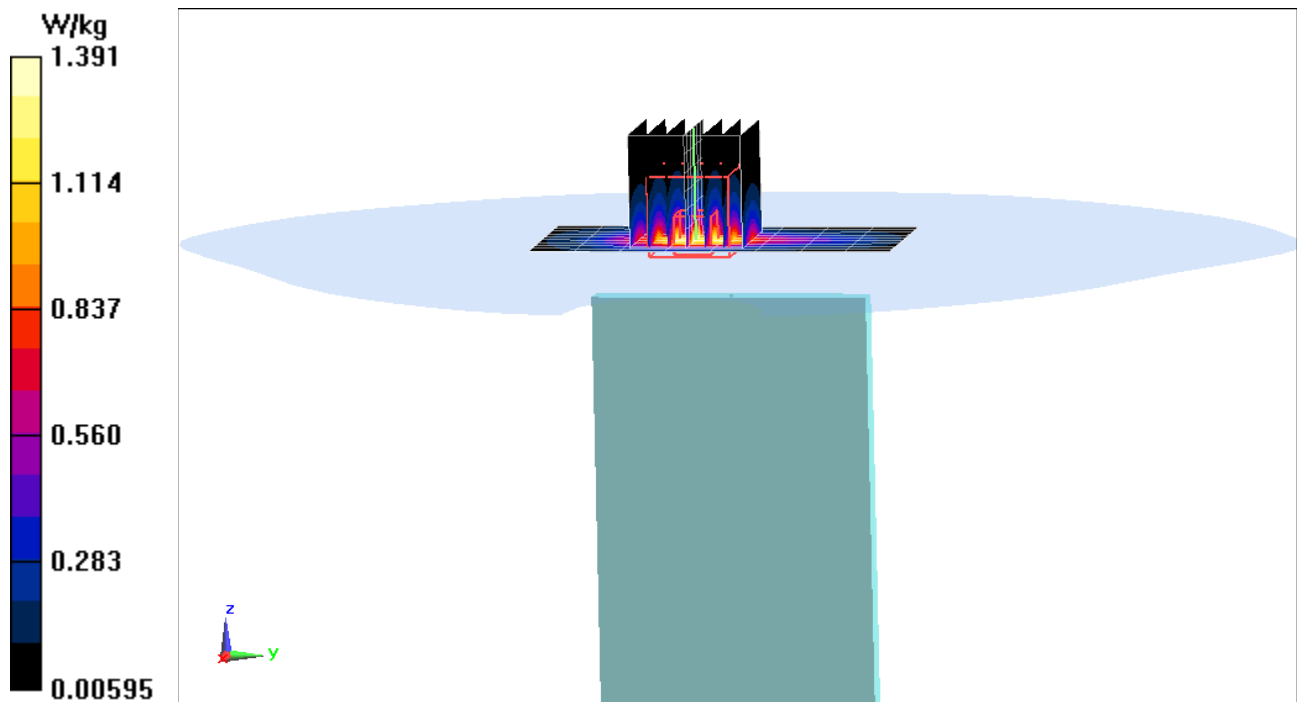
Area Scan (10x9x1): Measurement grid: dx=5mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 23.09 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 2.28 W/kg

SAR(1 g) = 1.06 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2F5E0

Communication System: UID 0, IEEE 802.11b; Frequency: 2412 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2412 \text{ MHz}$; $\sigma = 1.945 \text{ S/m}$; $\epsilon_r = 51.577$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-28-2017; Ambient Temp: 24.5°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.42, 4.42, 4.42); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11b, 22 MHz Bandwidth, Body SAR, Ch 1, 1 Mbps, Back Side, Antenna 2

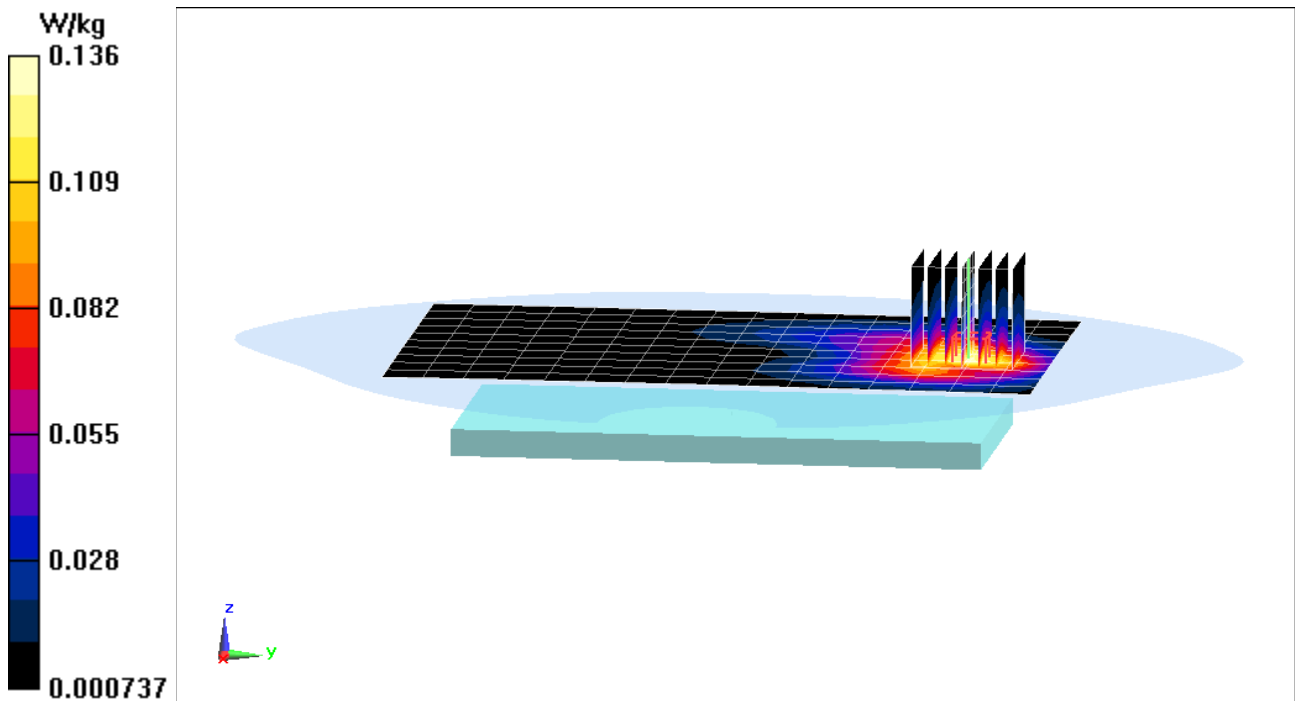
Area Scan (11x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 8.080 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.198 W/kg

SAR(1 g) = 0.111 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2F5E0

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

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 2.012 \text{ S/m}$; $\epsilon_r = 51.383$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-28-2017; Ambient Temp: 24.5°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.42, 4.42, 4.42); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11b, 22 MHz Bandwidth, Body SAR, Ch 11, 1 Mbps, Top Edge, Antenna 1

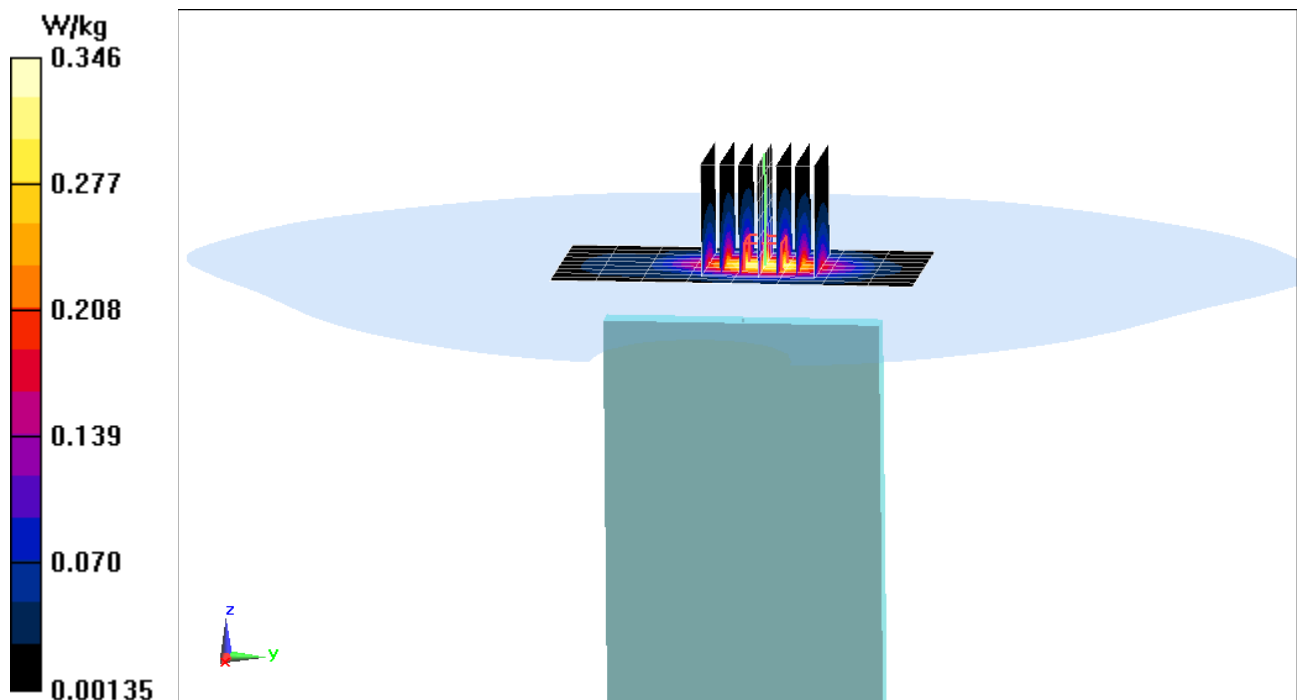
Area Scan (10x9x1): Measurement grid: $dx=5\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 12.05 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.524 W/kg

SAR(1 g) = 0.268 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E782

Communication System: UID 0, 802.11ac 5.2-5.8 GHz Band; Frequency: 5610 MHz; Duty Cycle: 1:1

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

$f = 5610 \text{ MHz}$; $\sigma = 5.981 \text{ S/m}$; $\epsilon_r = 46.712$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-28-2017; Ambient Temp: 21.3°C; Tissue Temp: 21.9°C

Probe: EX3DV4 - SN7357; ConvF(4.21, 4.21, 4.21); Calibrated: 4/20/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Left; Type: QD000P40CD; Serial: 1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: IEEE 802.11ac, UNII-2C, 80 MHz Bandwidth,
Body SAR, Ch 122, 29.3 Mbps, Back Side, Antenna 1**

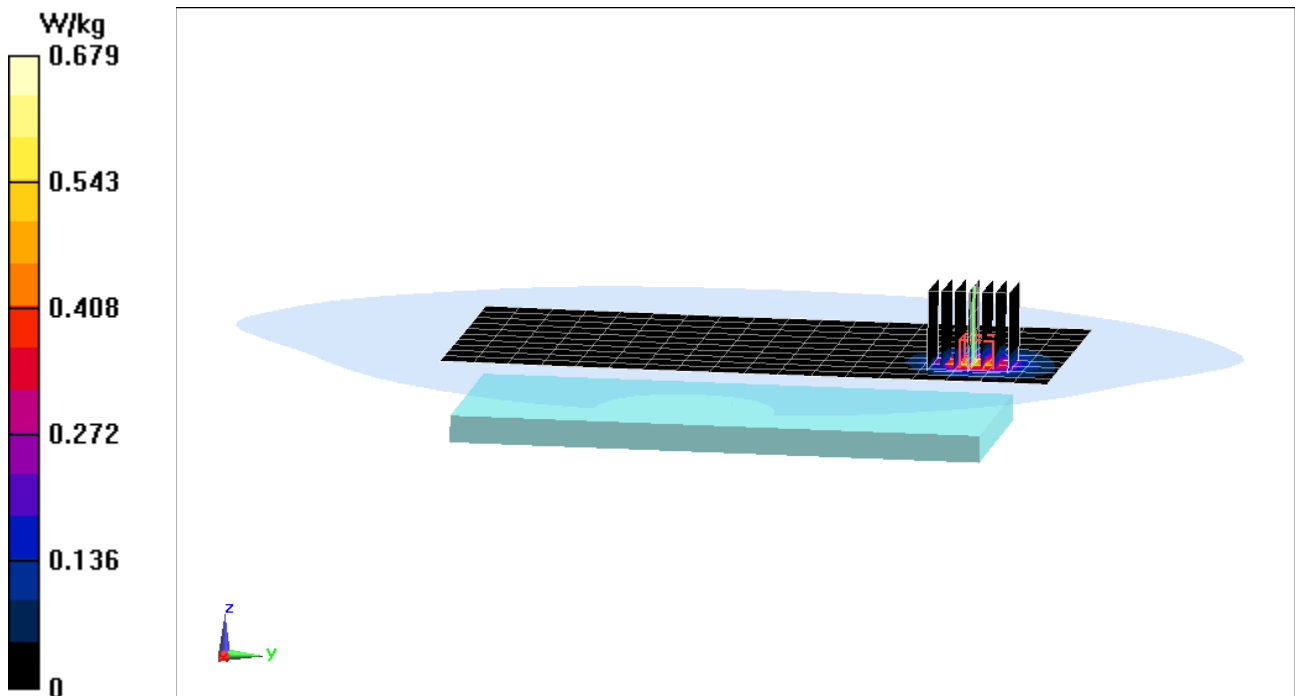
Area Scan (11x19x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Reference Value = 6.924 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 2.32 W/kg

SAR(1 g) = 0.267 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E782

Communication System: UID 0, 802.11ac 5.2-5.8 GHz Band; Frequency: 5775 MHz; Duty Cycle: 1:1

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

$f = 5775 \text{ MHz}$; $\sigma = 6.17 \text{ S/m}$; $\epsilon_r = 46.372$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-04-2017; Ambient Temp: 22.3°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7308; ConvF(4.5, 4.5, 4.5); Calibrated: 8/16/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/14/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: IEEE 802.11ac, UNII-3, 80 MHz Bandwidth,
Body SAR, Ch 155, 58.5 Mbps, Back Side, MIMO**

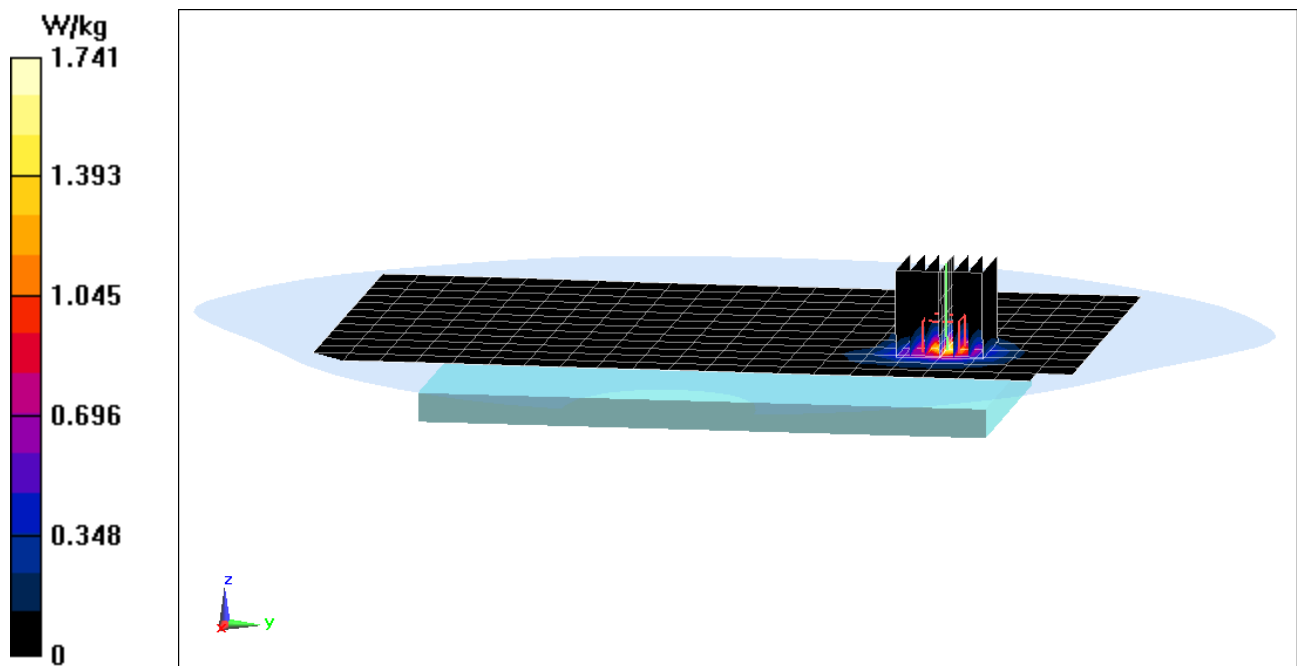
Area Scan (13x22x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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 = 10.84 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 3.27 W/kg

SAR(1 g) = 0.679 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2EAC7

Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.287

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2441 \text{ MHz}$; $\sigma = 1.984 \text{ S/m}$; $\epsilon_r = 51.469$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-28-2017; Ambient Temp: 24.5°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.42, 4.42, 4.42); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: Bluetooth, Body SAR, Ch 39, 1 Mbps, Back Side

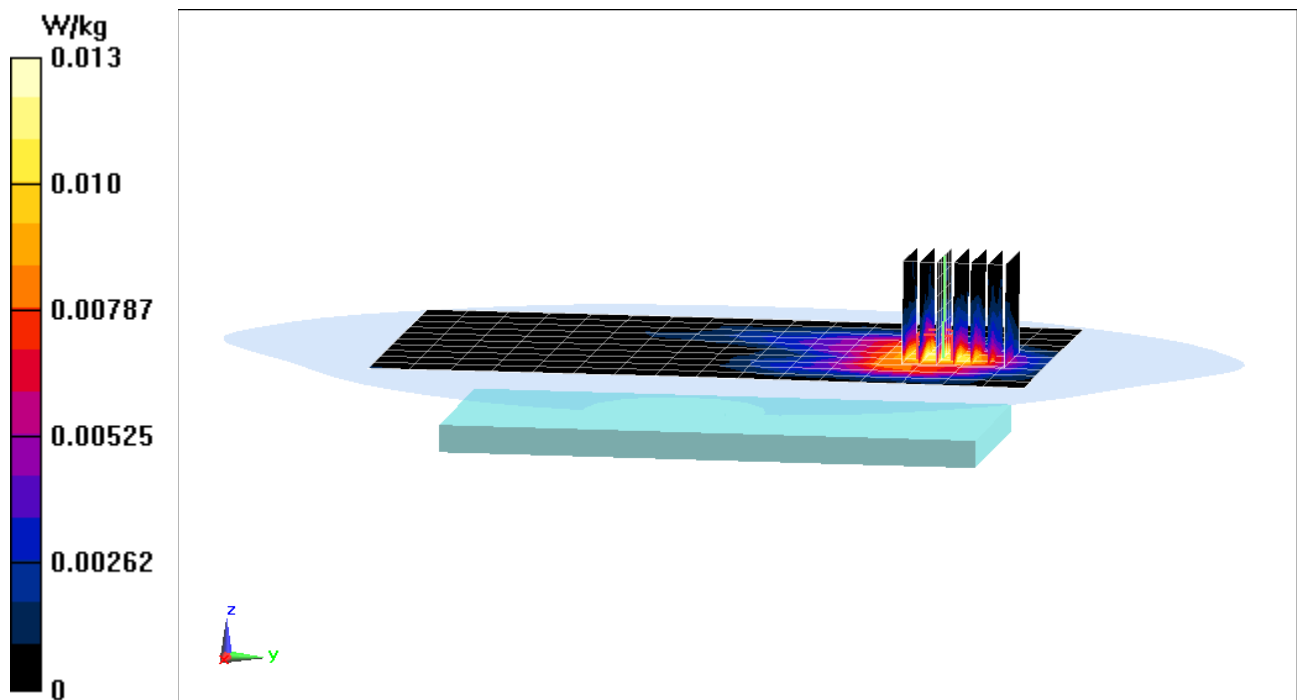
Area Scan (11x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 2.329 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.0190 W/kg

SAR(1 g) = 0.010 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2EAC7

Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.287

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2441$ MHz; $\sigma = 1.984$ S/m; $\epsilon_r = 51.469$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-28-2017; Ambient Temp: 24.5°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.42, 4.42, 4.42); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: Bluetooth, Body SAR, Ch 39, 1 Mbps, Back Side

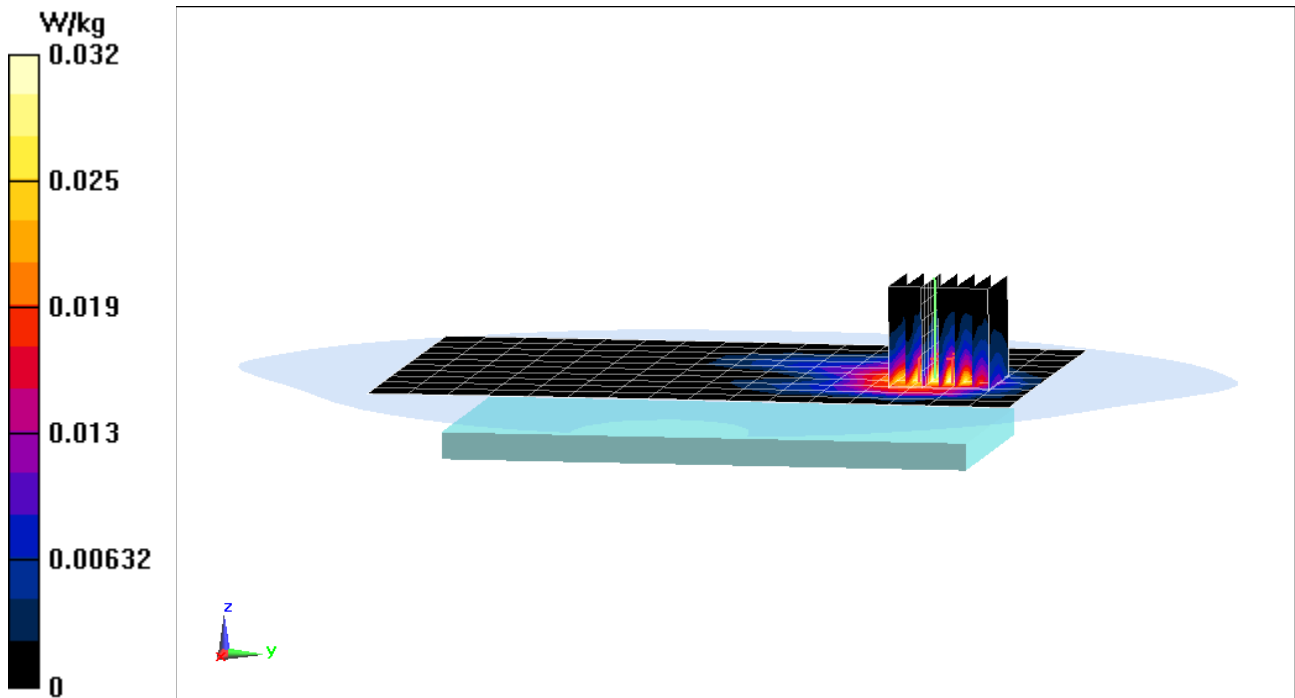
Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.788 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.0510 W/kg

SAR(1 g) = 0.025 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E674

Communication System: UID 0, UMTS, Frequency: 1712.4 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1712.4 \text{ MHz}$; $\sigma = 1.481 \text{ S/m}$; $\epsilon_r = 51.565$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-01-2017; Ambient Temp: 23.8°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3213; ConvF(5.09, 5.09, 5.09); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1750, Phablet SAR, Bottom Edge, Low.ch

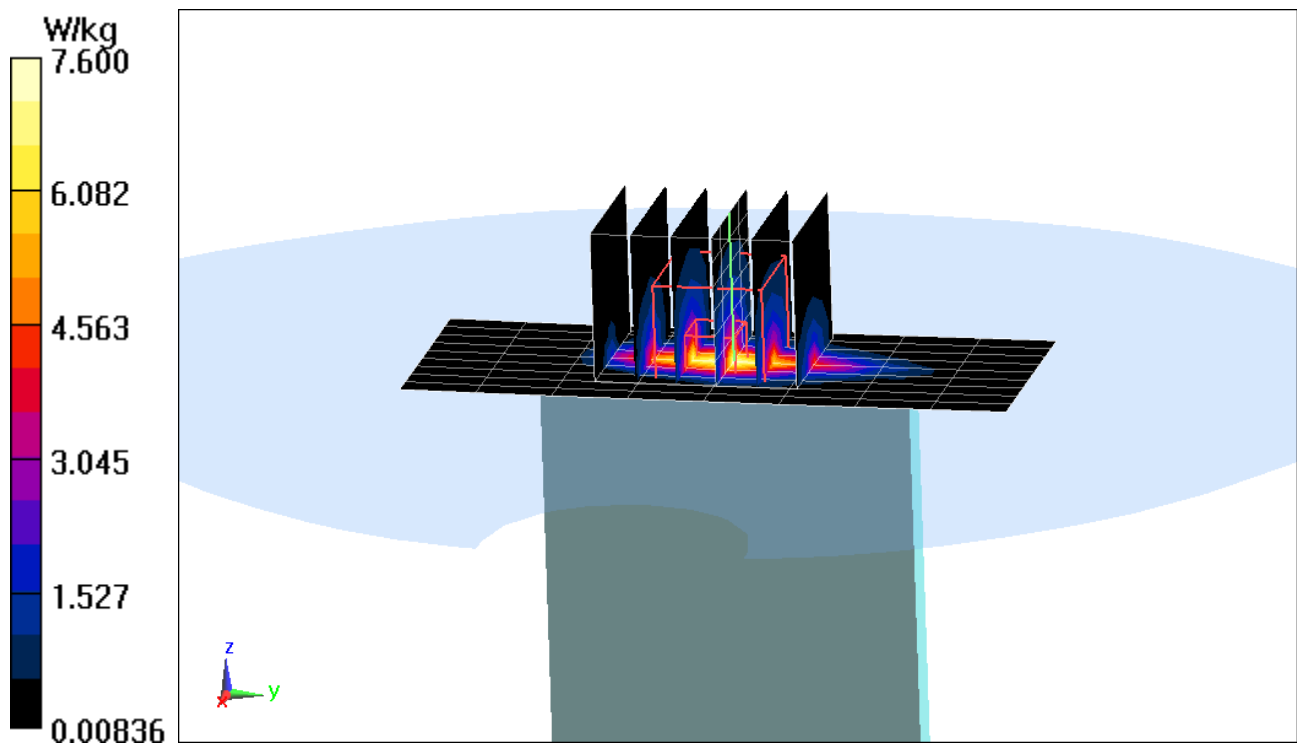
Area Scan (10x9x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 65.40 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 11.6 W/kg

SAR(10 g) = 2.52 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E9B0

Communication System: UID 0, UMTS; Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1852.4 \text{ MHz}$; $\sigma = 1.492 \text{ S/m}$; $\epsilon_r = 52.486$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 11-27-2017; Ambient Temp: 22.9°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3332; ConvF(4.95, 4.95, 4.95); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1900, Phablet SAR, Bottom Edge, Low.ch

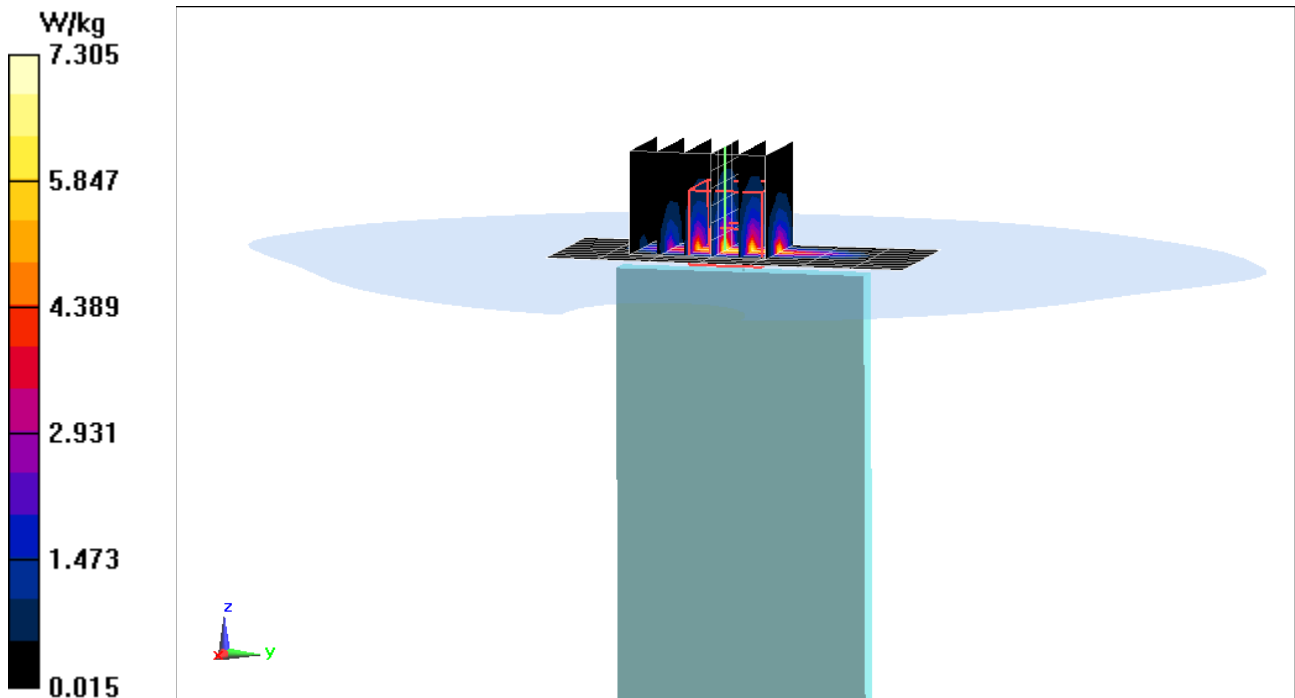
Area Scan (10x8x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 59.61 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 10.4 W/kg

SAR(10 g) = 2.42 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2FECA

Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1720 \text{ MHz}$; $\sigma = 1.498 \text{ S/m}$; $\epsilon_r = 52.514$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 11-20-2017; Ambient Temp: 21.3°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(5.13, 5.13, 5.13); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Left; Type: QD000P40CD; Serial: 1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 66 (AWS), Phablet SAR, Bottom Edge, Low.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

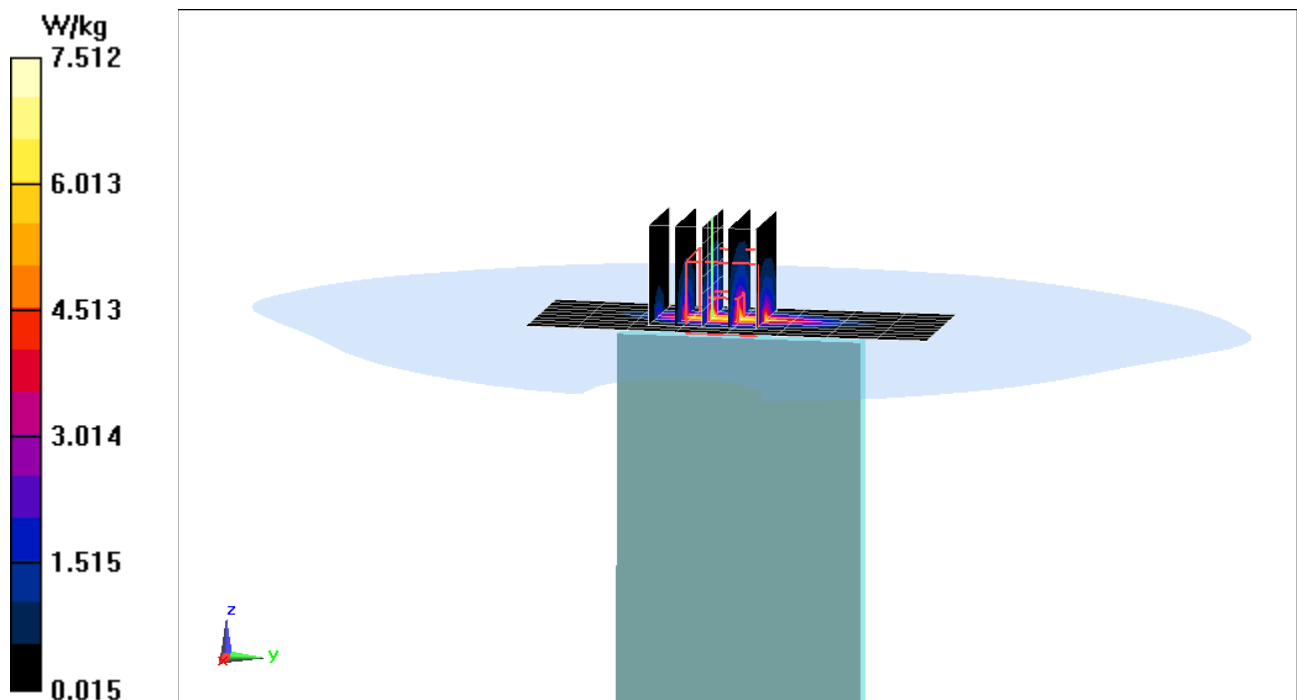
Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 66.79 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 11.1 W/kg

SAR(10 g) = 2.48 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E9B0

Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1860$ MHz; $\sigma = 1.526$ S/m; $\epsilon_r = 51.775$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-11-2017; Ambient Temp: 21.0°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: 1800

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 25 (PCS), Phablet SAR, Bottom Edge, Low.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

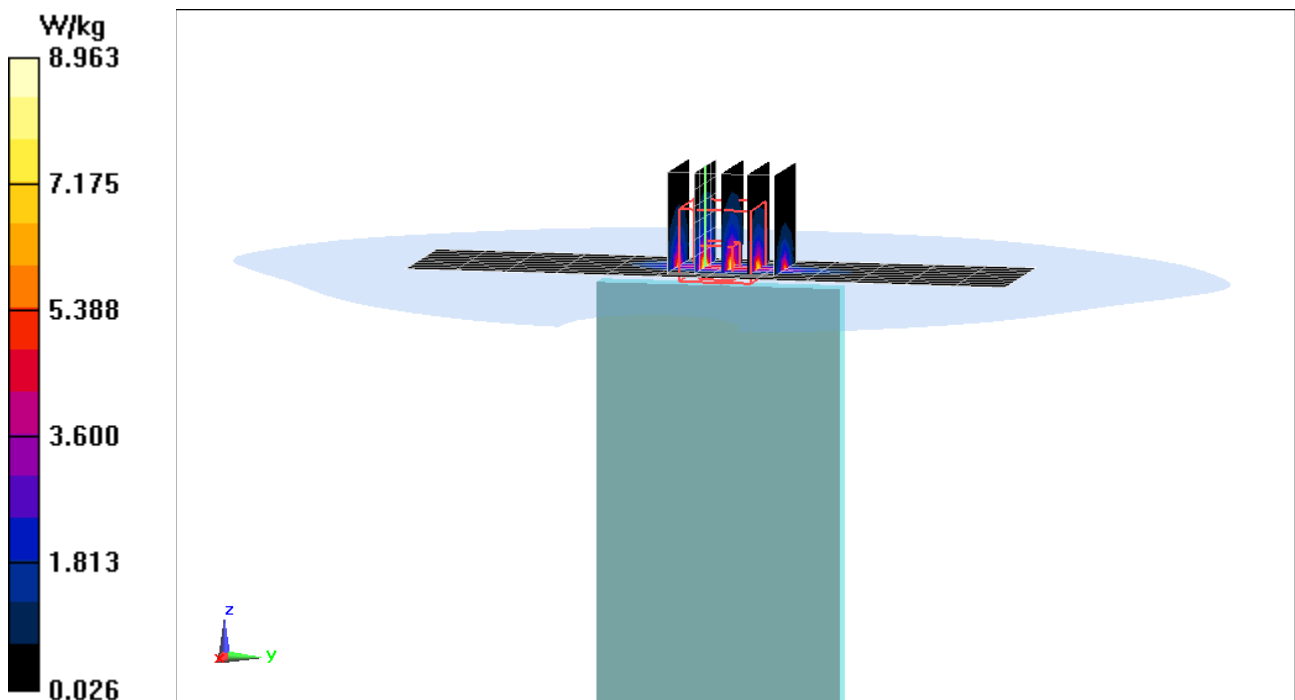
Area Scan (10x13x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 72.11 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 13.5 W/kg

SAR(10 g) = 3.01 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2FEC5

Communication System: UID 0, LTE Band 41; Frequency: 2680 MHz; Duty Cycle: 1:1.58

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2680 \text{ MHz}$; $\sigma = 2.327 \text{ S/m}$; $\epsilon_r = 50.371$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-07-2017; Ambient Temp: 21.6°C; Tissue Temp: 20.9°C

Probe: ES3DV3 - SN3213; ConvF(4.32, 4.32, 4.32); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 41, Phablet SAR, Bottom Edge, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

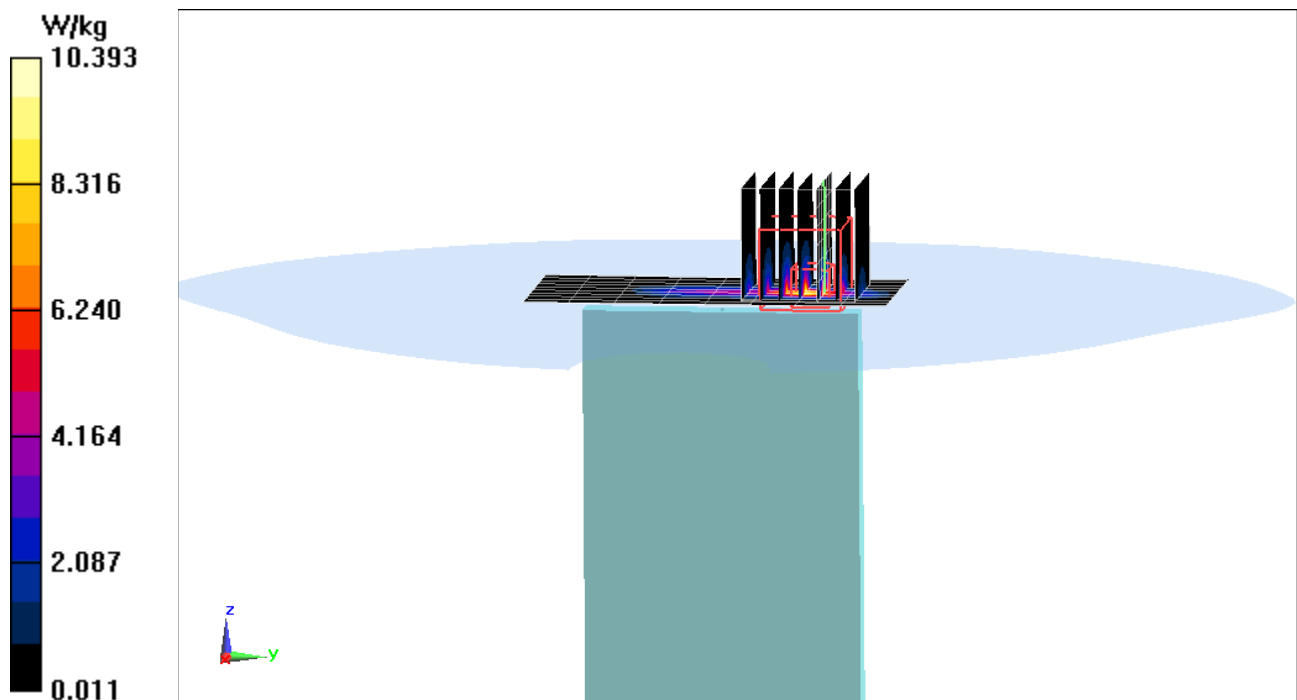
Area Scan (10x9x1): Measurement grid: dx=5mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 59.81 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 23.6 W/kg

SAR(10 g) = 2.08 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG9650; Type: Portable Handset; Serial: 2E782

Communication System: UID 0, IEEE 802.11ac; Frequency: 5610 MHz; Duty Cycle: 1:1

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

$f = 5610 \text{ MHz}$; $\sigma = 5.954 \text{ S/m}$; $\epsilon_r = 46.867$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-11-2017; Ambient Temp: 21.4°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7308; ConvF(4.23, 4.23, 4.23); Calibrated: 8/16/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/14/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: IEEE 802.11ac, U-NII-2C, 80 MHz Bandwidth,
Phablet SAR, Ch 122, 58.5 Mbps, Back Side, MIMO**

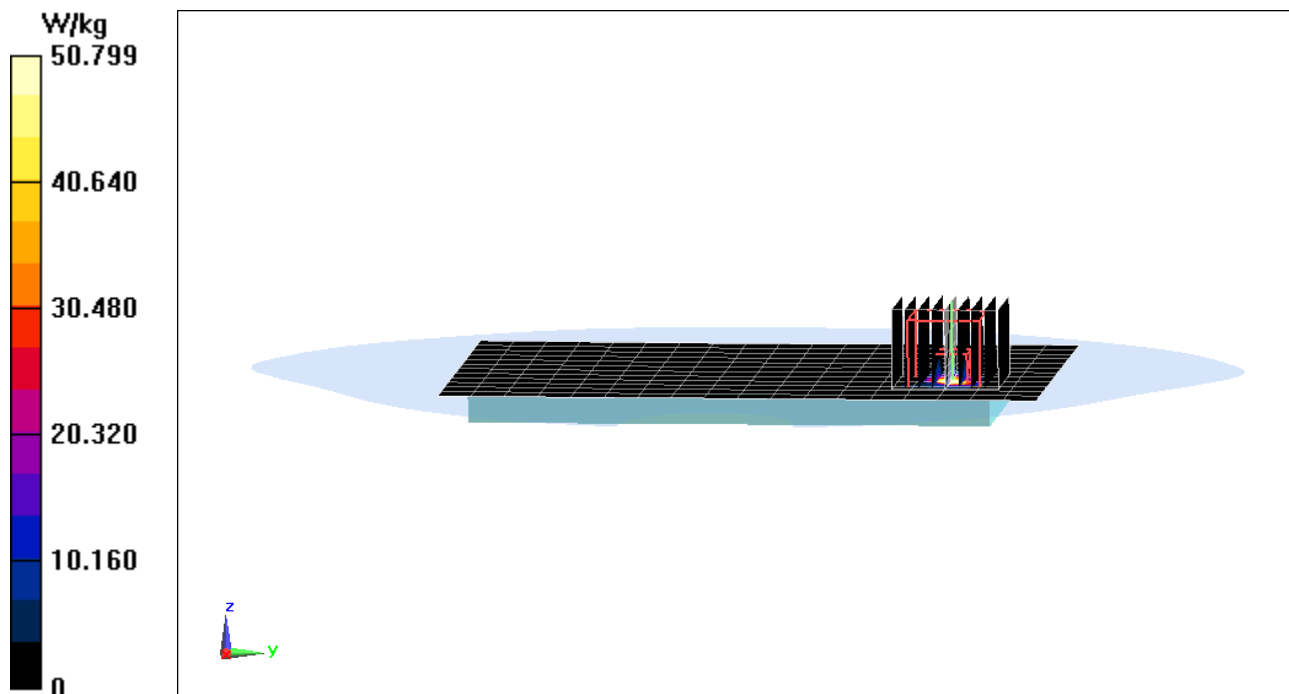
Area Scan (13x9x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

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 = 46.60 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 131 W/kg

SAR(10 g) = 2.08 W/kg



APPENDIX B: SYSTEM VERIFICATION

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1054

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: 750 Head Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.889 \text{ S/m}$; $\epsilon_r = 42.044$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-20-2017; Ambient Temp: 21.6°C; Tissue Temp: 20.2°C

Probe: ES3DV3 - SN3318; ConvF(6.72, 6.72, 6.72); Calibrated: 9/22/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/14/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

750 MHz System Verification at 23.0 dBm (200 mW)

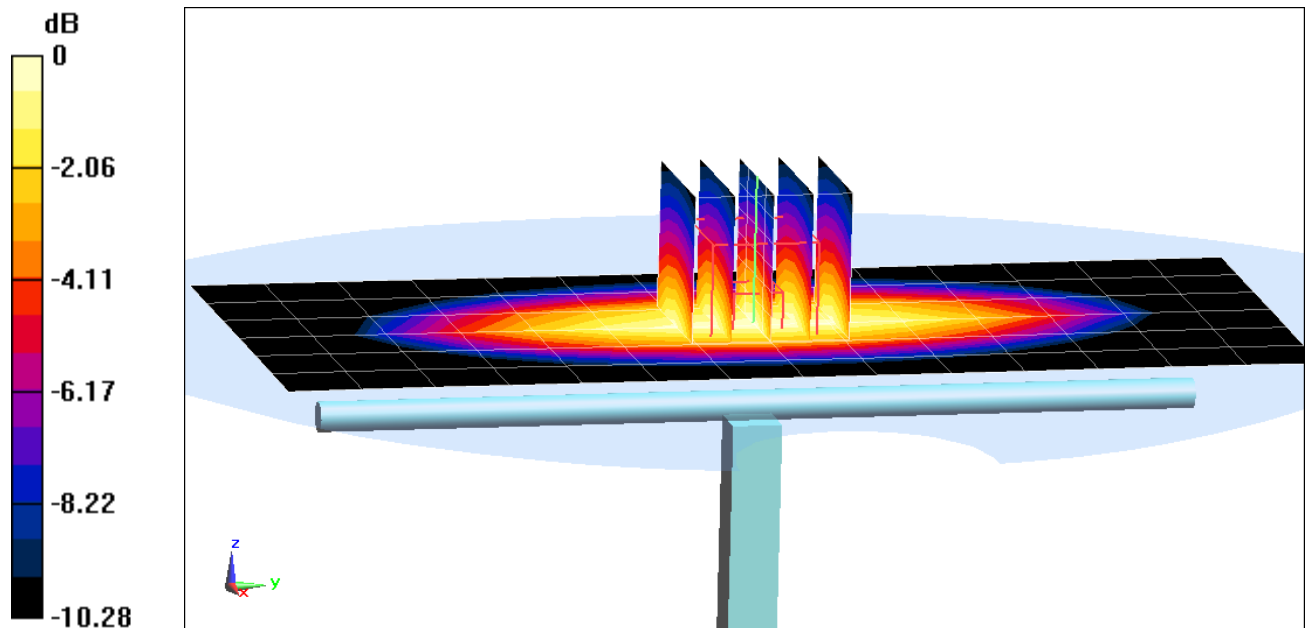
Area Scan (7x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 2.45 W/kg

SAR(1 g) = 1.65 W/kg

Deviation(1 g) = -1.43%



0 dB = 1.92 W/kg = 2.83 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d133

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.898 \text{ S/m}$; $\epsilon_r = 40.954$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-29-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7406; ConvF(9.97, 9.97, 9.97); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM with CRP v5.0, Right; Type: QD000P40CD; Serial: TP:7535

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

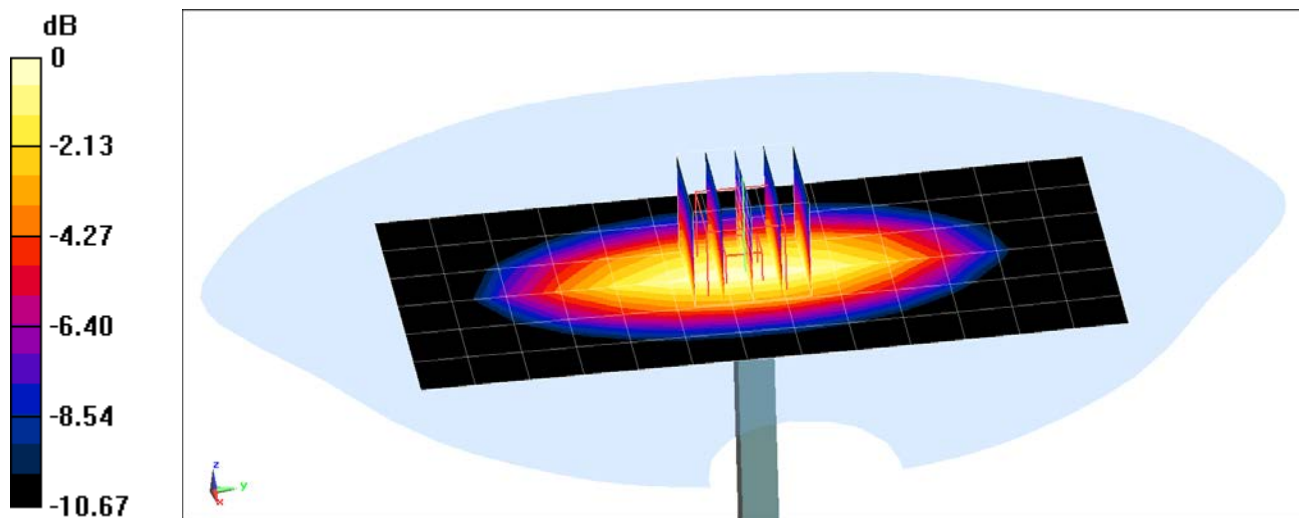
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 2.88 W/kg

SAR(1 g) = 1.92 W/kg

Deviation(1 g) = 0.84%



0 dB = 2.56 W/kg = 4.08 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d132

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.911 \text{ S/m}$; $\epsilon_r = 41.754$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-04-2017; Ambient Temp: 20.3°C; Tissue Temp: 20.6°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: 1800

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

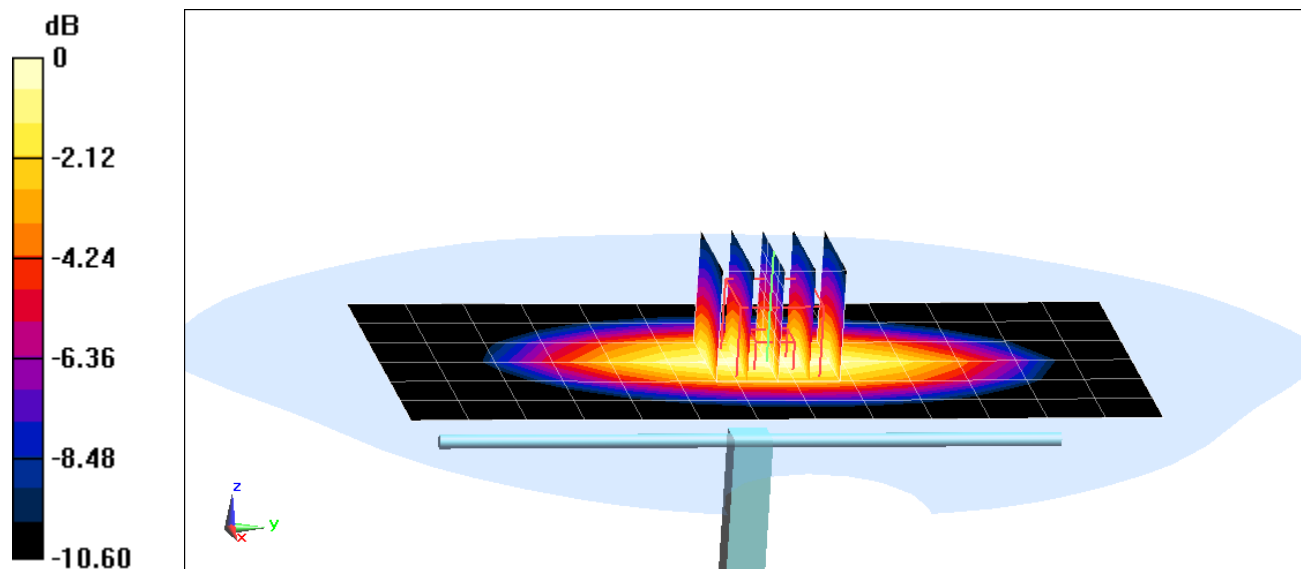
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 3.03 W/kg

SAR(1 g) = 2.05 W/kg

Deviation(1 g) = 7.67%



0 dB = 2.40 W/kg = 3.80 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1148

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.386 \text{ S/m}$; $\epsilon_r = 38.546$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-04-2017; Ambient Temp: 21.9°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3213; ConvF(5.49, 5.49, 5.49); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

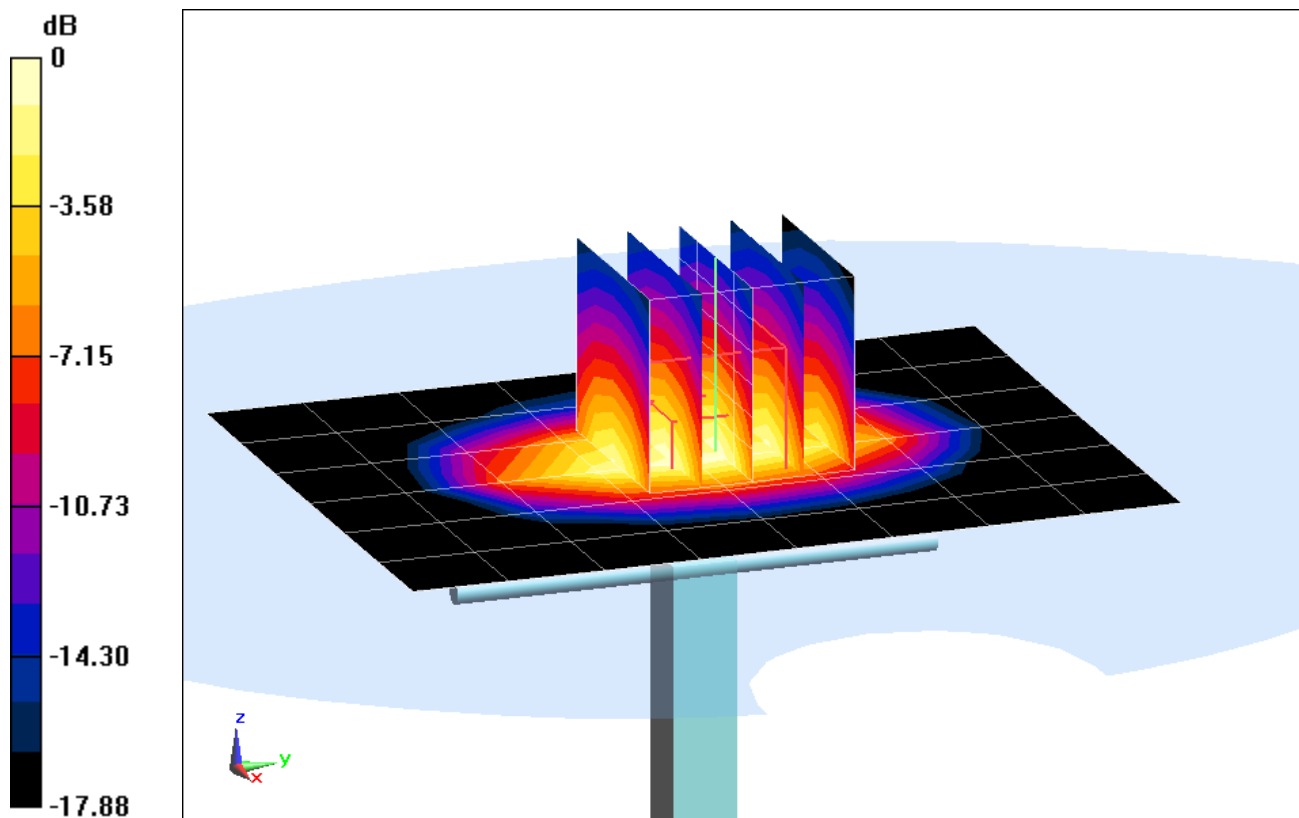
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Peak SAR (extrapolated) = 6.68 W/kg

SAR(1 g) = 3.67 W/kg

Deviation(1 g) = 0.82%



0 dB = 4.60 W/kg = 6.63 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):

$f = 1900 \text{ MHz}$; $\sigma = 1.436 \text{ S/m}$; $\epsilon_r = 39.675$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-15-2017; Ambient Temp: 23.6°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7410; ConvF(8.37, 8.37, 8.37); Calibrated: 7/17/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/13/2017

Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

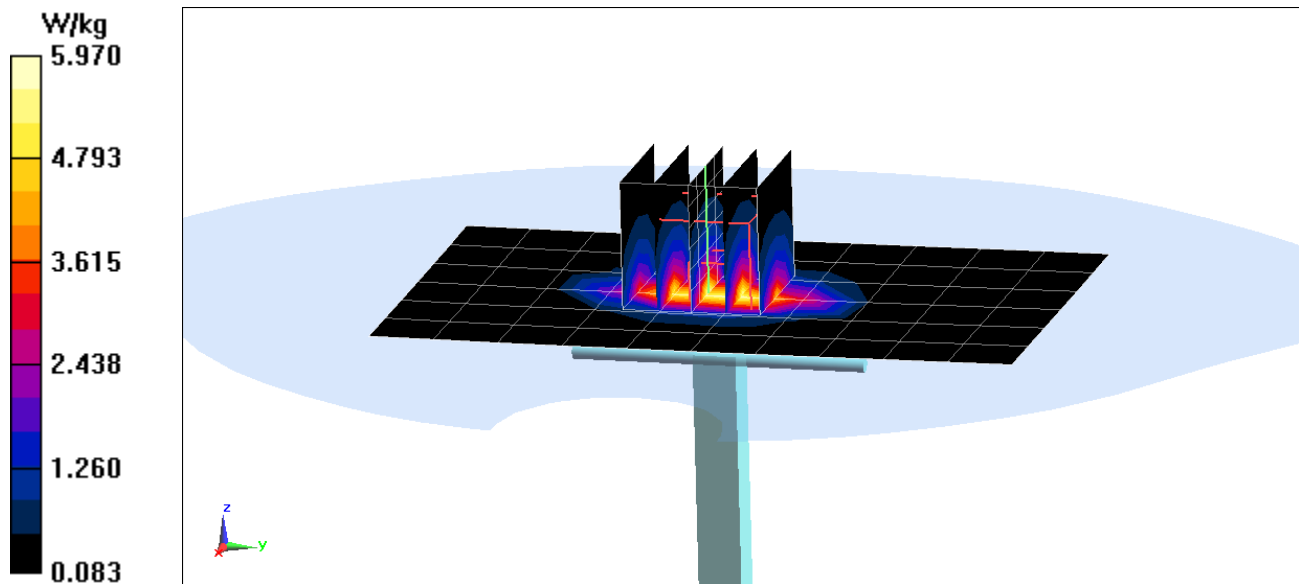
Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 7.07 W/kg

SAR(1 g) = 3.84 W/kg

Deviation(1 g) = -4.48%



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):

$f = 1900 \text{ MHz}$; $\sigma = 1.44 \text{ S/m}$; $\epsilon_r = 40.617$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-03-2017; Ambient Temp: 21.5°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7406; ConvF(8.4, 8.4, 8.4); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

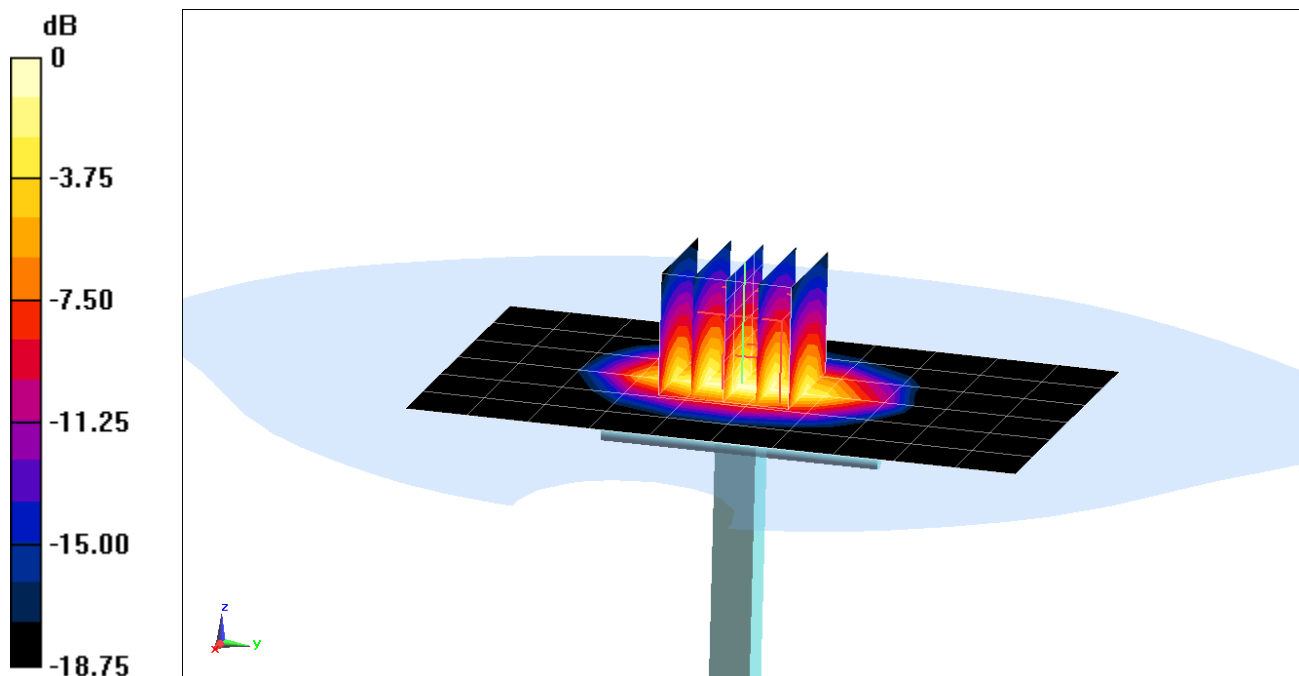
Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 7.30 W/kg

SAR(1 g) = 3.77 W/kg

Deviation(1 g) = -4.80%



0 dB = 6.02 W/kg = 7.80 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 Head Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.869 \text{ S/m}$; $\epsilon_r = 39.368$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-27-2017; Ambient Temp: 22.6°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3319; ConvF(4.6, 4.6, 4.6); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: 1648

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

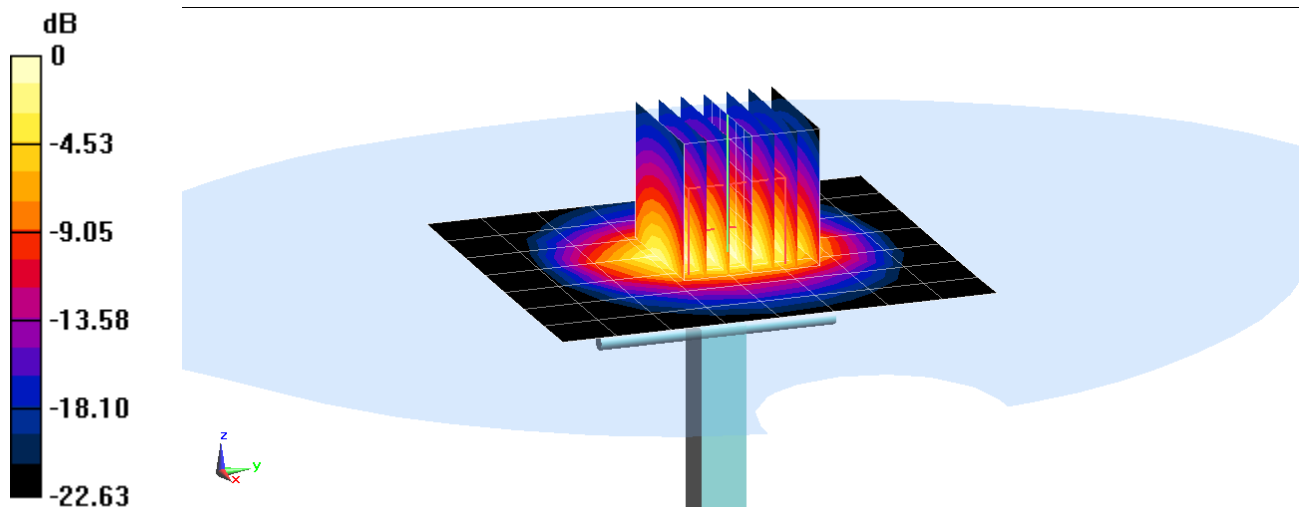
Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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) = 5.46 W/kg

Deviation(1 g) = 3.41%



0 dB = 7.14 W/kg = 8.54 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:

$f = 2600$ MHz; $\sigma = 2.029$ S/m; $\epsilon_r = 38.451$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-18-2017; Ambient Temp: 23.0°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3319; ConvF(4.41, 4.41, 4.41); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: 1648

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

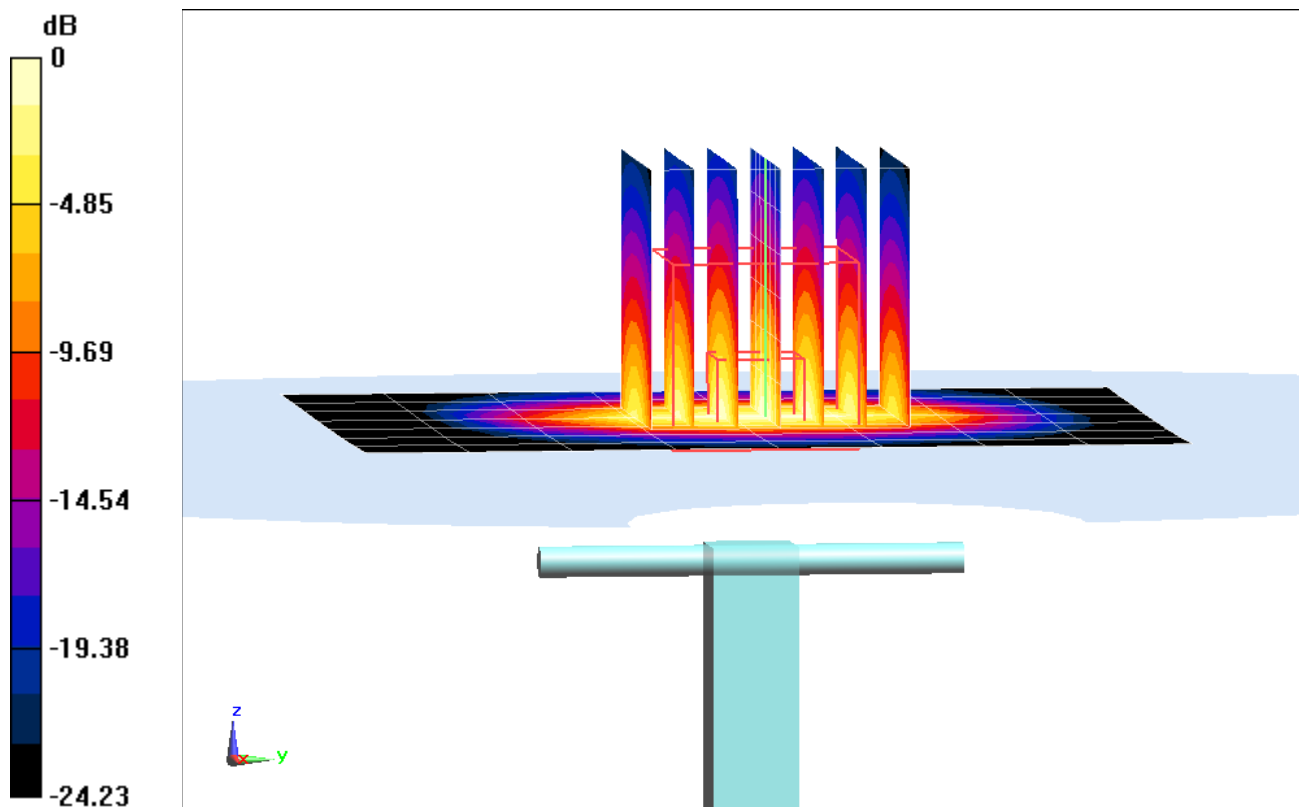
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Peak SAR (extrapolated) = 12.9 W/kg

SAR(1 g) = 5.94 W/kg;

Deviation(1 g) = 5.32%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1064

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used:

$f = 2600$ MHz; $\sigma = 2.034$ S/m; $\epsilon_r = 39.313$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-14-2017; Ambient Temp: 23.1°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3319; ConvF(4.41, 4.41, 4.41); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

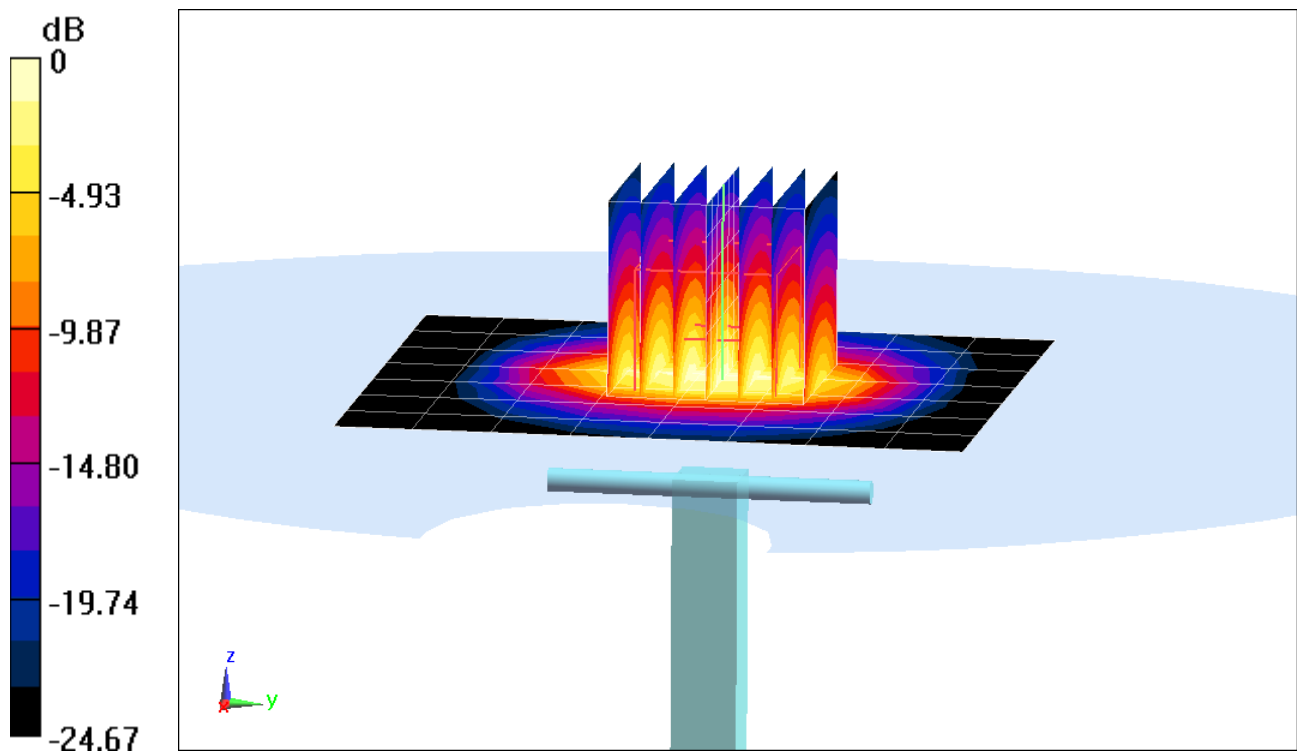
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Peak SAR (extrapolated) = 11.5 W/kg

SAR(1 g) = 5.27 W/kg

Deviation(1 g) = -7.54%



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: 5 GHz Head Medium parameters used (interpolated):

$f = 5250 \text{ MHz}$; $\sigma = 4.525 \text{ S/m}$; $\epsilon_r = 36.211$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-24-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN3914; ConvF(5.49, 5.49, 5.49); Calibrated: 2/13/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/9/2017

Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

5250 MHz System Verification at 17.0 dBm (50 mW)

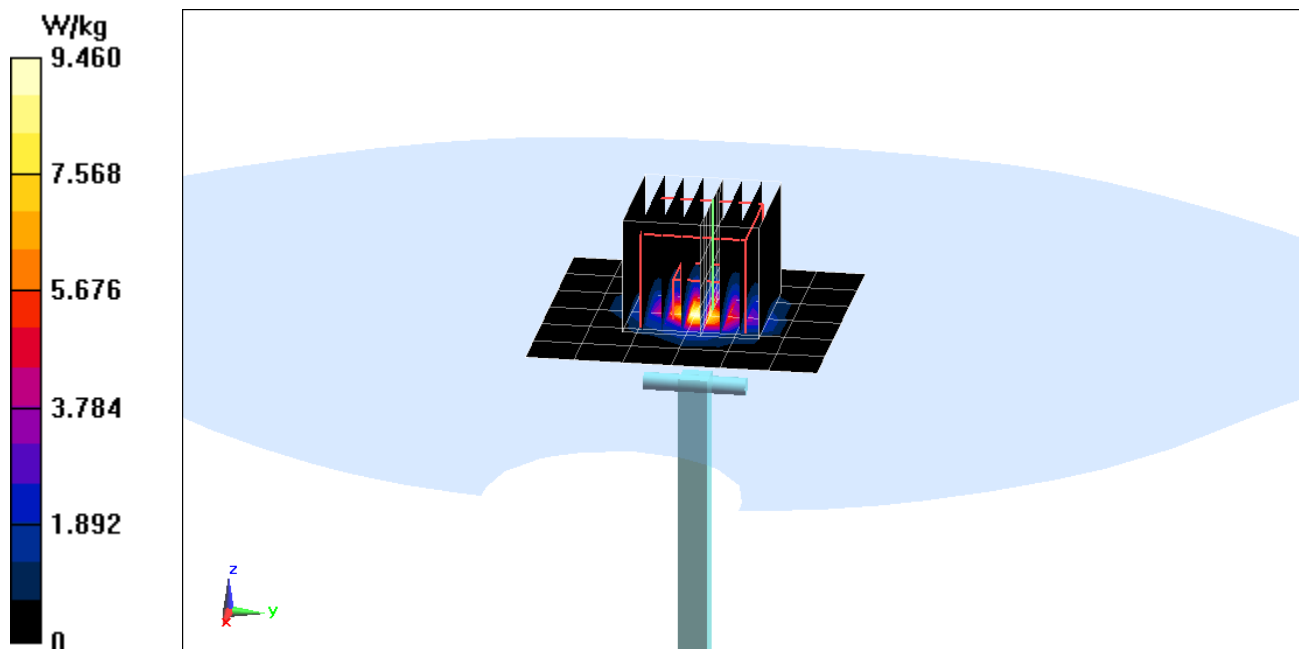
Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Peak SAR (extrapolated) = 17.5 W/kg

SAR(1 g) = 4.07 W/kg

Deviation(1 g) = -0.25%



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: 5 GHz Head Medium parameters used:

$f = 5600 \text{ MHz}$; $\sigma = 4.885 \text{ S/m}$; $\epsilon_r = 35.743$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-24-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN3914; ConvF(4.94, 4.94, 4.94); Calibrated: 2/13/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/9/2017

Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715

Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5600 MHz System Verification at 17.0 dBm (50 mW)

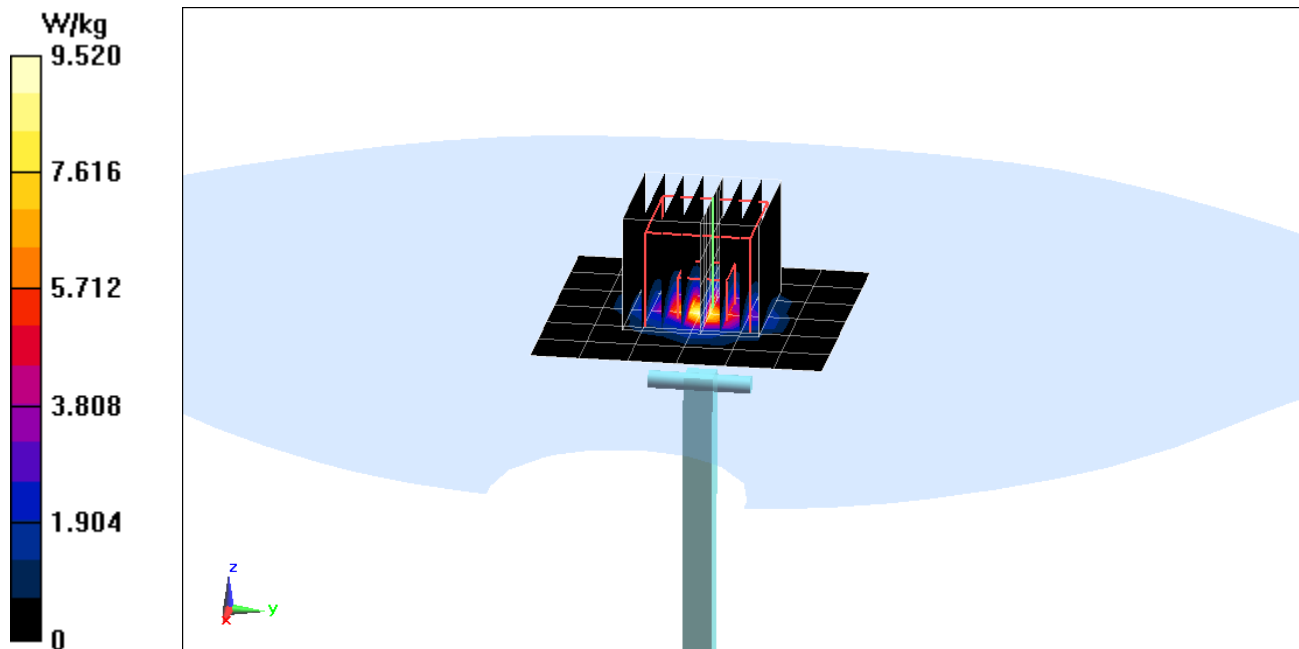
Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Peak SAR (extrapolated) = 17.1 W/kg

SAR(1 g) = 3.93 W/kg

Deviation(1 g) = -6.09%



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: 5 GHz Head Medium parameters used (interpolated):

$f = 5750 \text{ MHz}$; $\sigma = 5.048 \text{ S/m}$; $\epsilon_r = 35.521$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-24-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN3914; ConvF(4.91, 4.91, 4.91); Calibrated: 2/13/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/9/2017

Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715

Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5750 MHz System Verification at 17.0 dBm (50 mW)

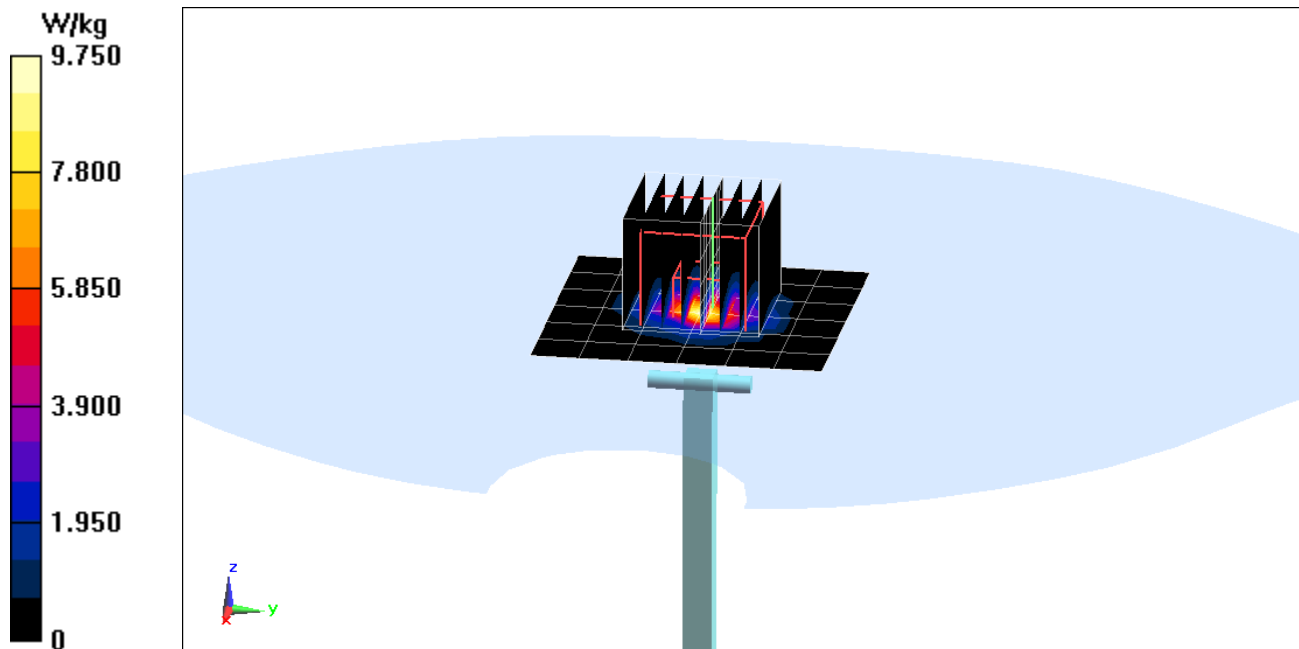
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 18.2 W/kg

SAR(1 g) = 4.02 W/kg

Deviation(1 g) = 0.50%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1161

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: 750 Body Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.967 \text{ S/m}$; $\epsilon_r = 54.989$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-19-2017; Ambient Temp: 22.2°C; Tissue Temp: 20.2°C

Probe: ES3DV3 - SN3332; ConvF(6.54, 6.54, 6.54); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

750 MHz System Verification at 23.0 dBm (200 mW)

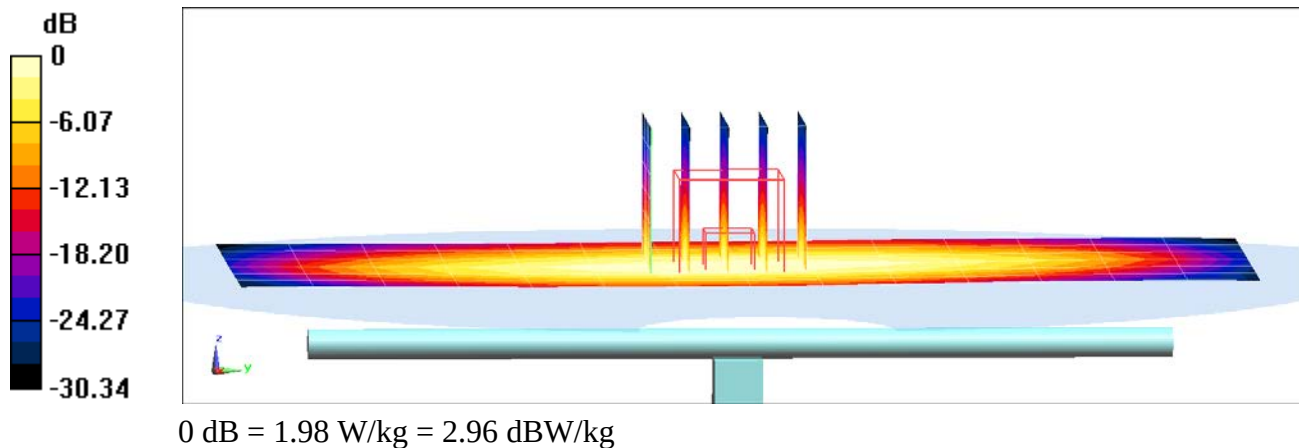
Area Scan (7x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 2.50 W/kg

SAR(1 g) = 1.71 W/kg

Deviation(1 g) = 1.42%;



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d133

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.974 \text{ S/m}$; $\epsilon_r = 52.846$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-15-2017; Ambient Temp: 24.1°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: 1800

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

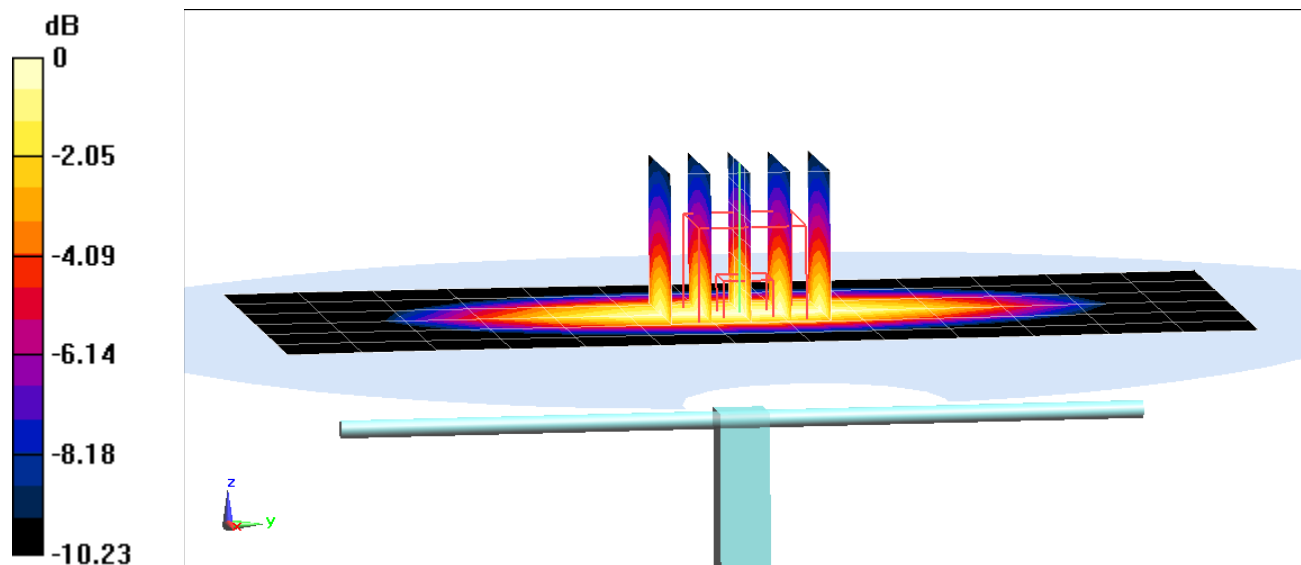
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 2.82 W/kg

SAR(1 g) = 1.96 W/kg

Deviation(1 g) = 4.14%



0 dB = 2.26 W/kg = 3.54 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:

$f = 835 \text{ MHz}$; $\sigma = 0.998 \text{ S/m}$; $\epsilon_r = 53.511$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-24-2017; Ambient Temp: 20.1°C; Tissue Temp: 20.7°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: 1800

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

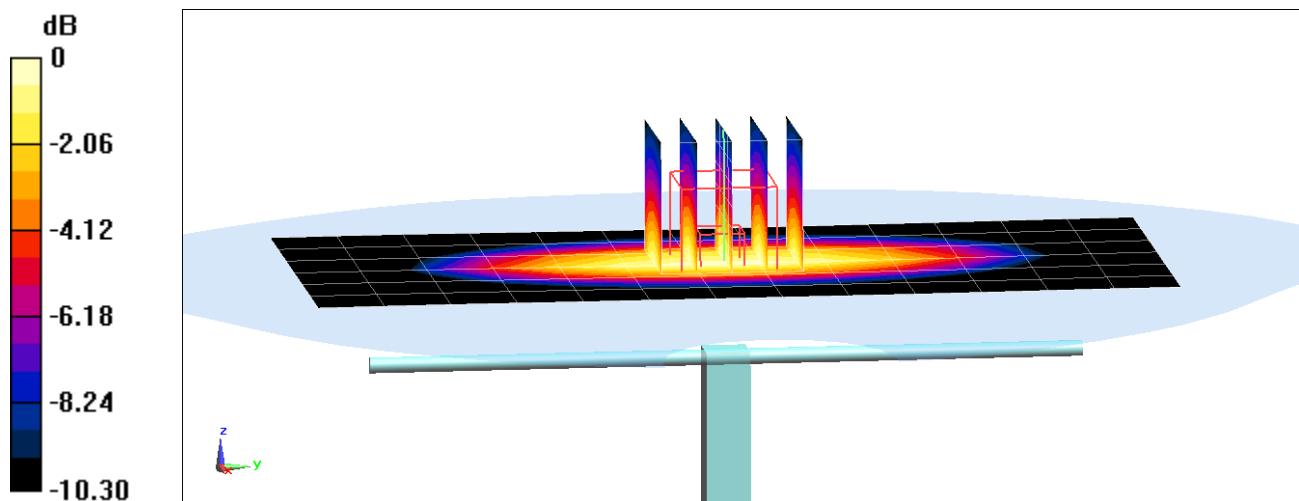
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 2.97 W/kg

SAR(1 g) = 2.04 W/kg

Deviation(1 g) = 6.58%



0 dB = 2.38 W/kg = 3.77 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:

$f = 835 \text{ MHz}$; $\sigma = 0.994 \text{ S/m}$; $\epsilon_r = 53.225$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-28-2017; Ambient Temp: 22.1°C; Tissue Temp: 19.7°C

Probe: EX3DV4 - SN7410; ConvF(9.95, 9.95, 9.95); Calibrated: 7/17/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/13/2017

Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

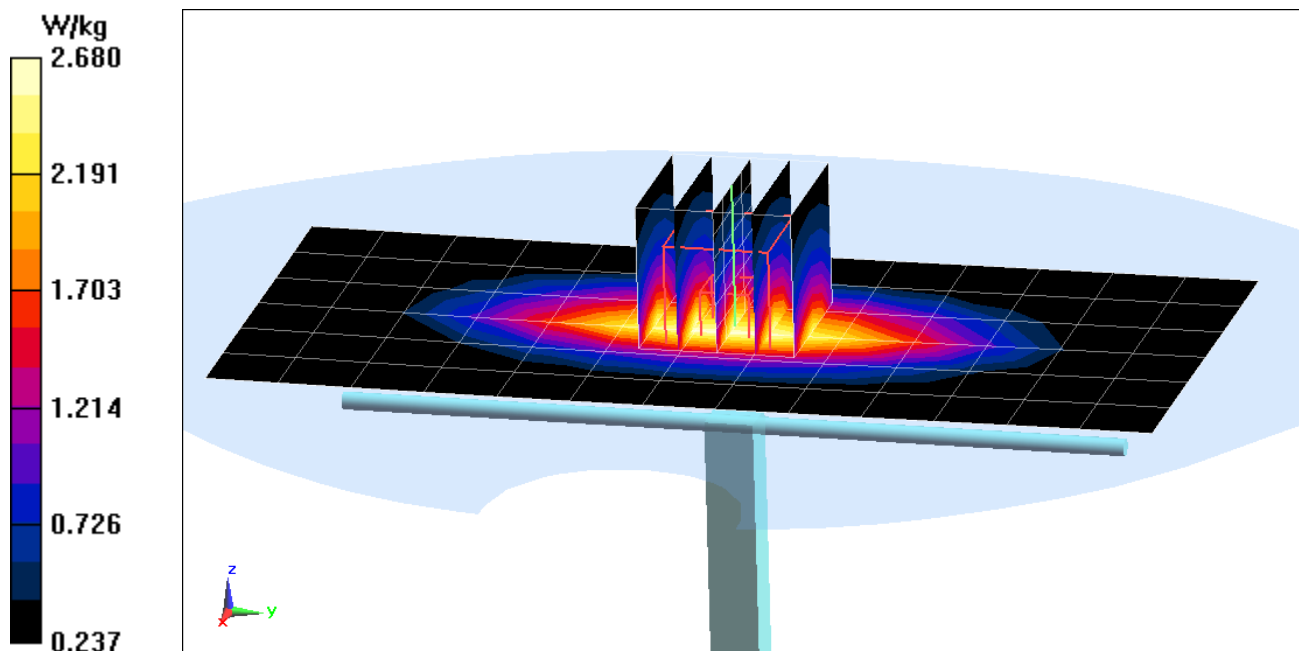
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 3.00 W/kg

SAR(1 g) = 2.02 W/kg

Deviation(1 g) = 5.54%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d132

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.979 \text{ S/m}$; $\epsilon_r = 54.573$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-04-2017; Ambient Temp: 21.0°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3332; ConvF(6.47, 6.47, 6.47); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

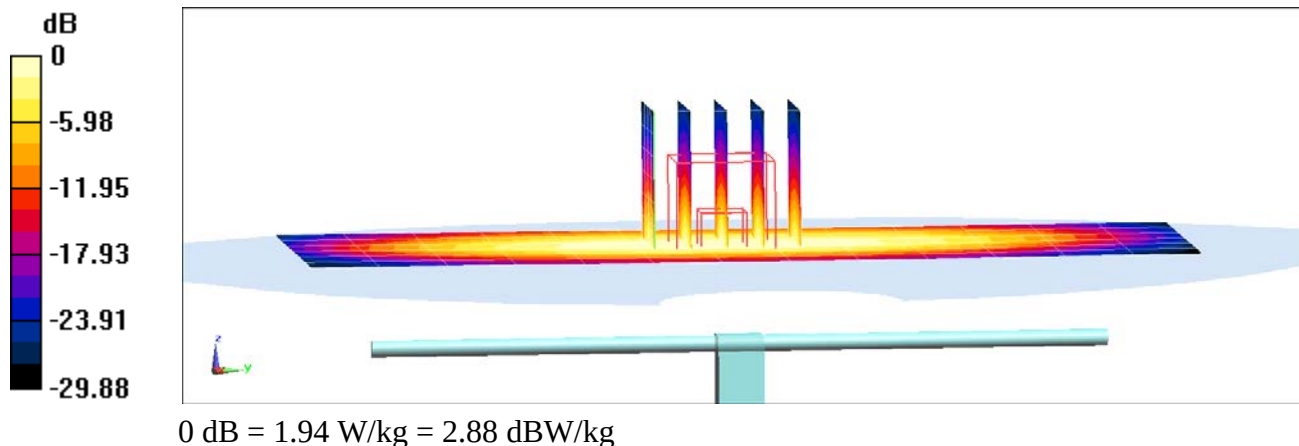
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 2.77 W/kg

SAR(1 g) = 1.92 W/kg;

Deviation(1 g) = -2.04%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1148

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.533 \text{ S/m}$; $\epsilon_r = 52.387$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-20-2017; Ambient Temp: 21.3°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(5.13, 5.13, 5.13); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Left; Type: QD000P40CD; Serial: 1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

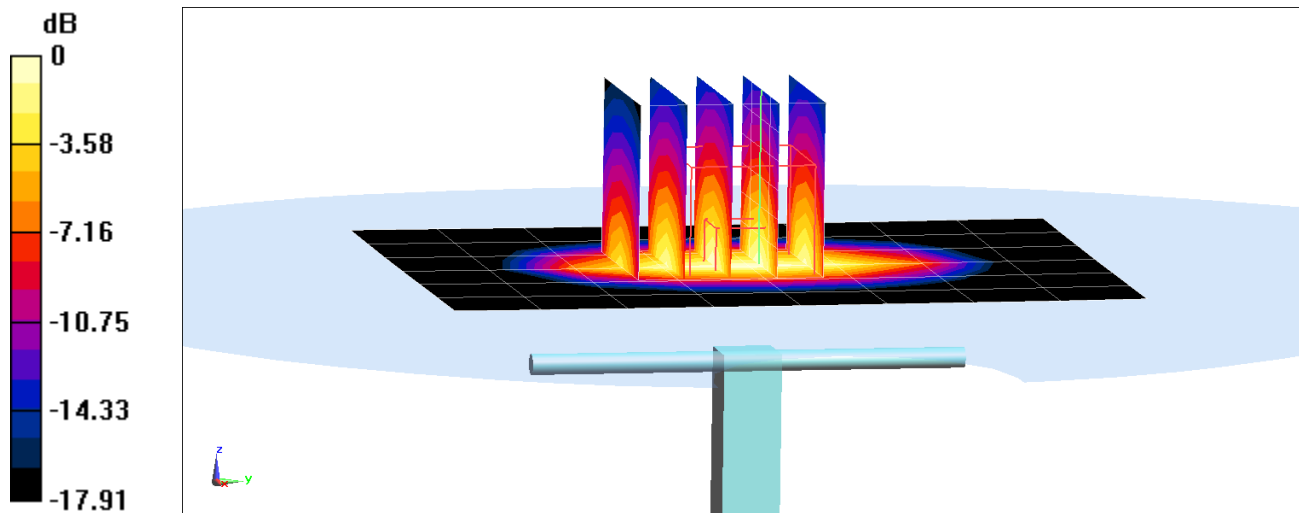
Area Scan (7x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 6.76 W/kg

SAR(1 g) = 3.84 W/kg; SAR(10 g) = 2.03 W/kg

Deviation(1 g) = 3.78%; Deviation(10 g) = 2.53%



0 dB = 4.78 W/kg = 6.79 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1148

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used:

$f = 1750$ MHz; $\sigma = 1.525$ S/m; $\epsilon_r = 51.401$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-01-2017; Ambient Temp: 23.8°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3213; ConvF(5.09, 5.09, 5.09); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Right; Type: SAM; Serial: 1757

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

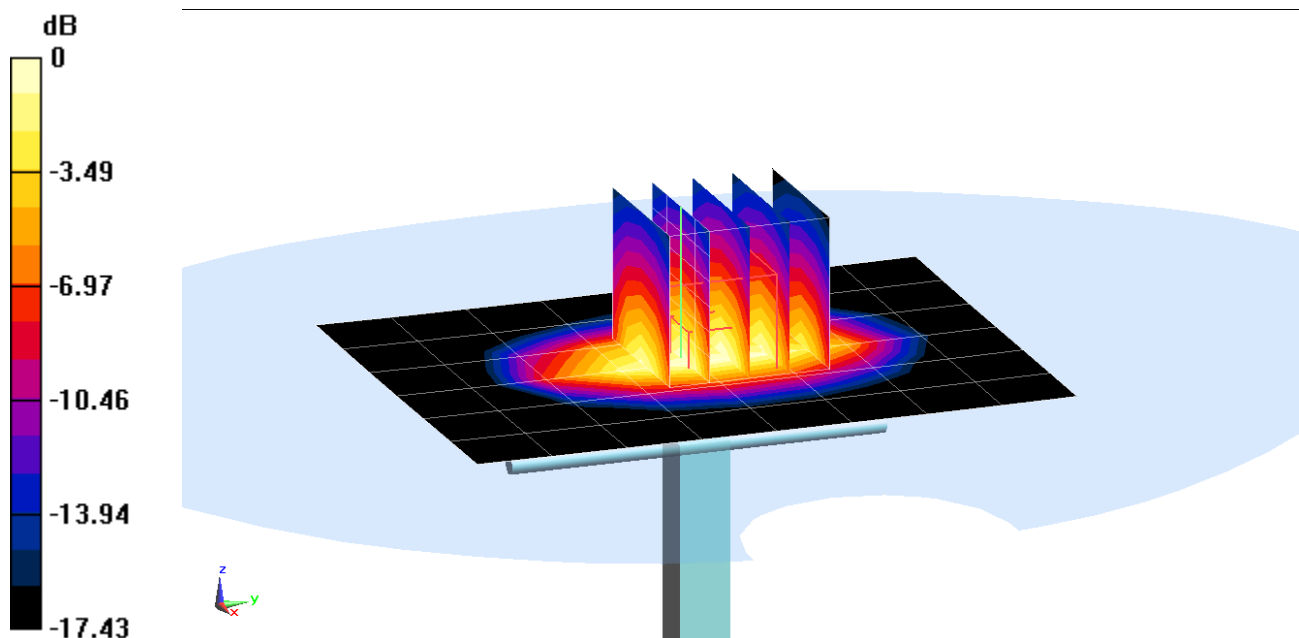
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Peak SAR (extrapolated) = 6.84 W/kg

SAR(10 g) = 2.05 W/kg

Deviation(10 g) = 3.54%



0 dB = 4.75 W/kg = 6.77 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1148

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.505 \text{ S/m}$; $\epsilon_r = 50.957$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-14-2017; Ambient Temp: 23.2°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7410; ConvF(8.32, 8.32, 8.32); Calibrated: 7/17/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/13/2017

Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

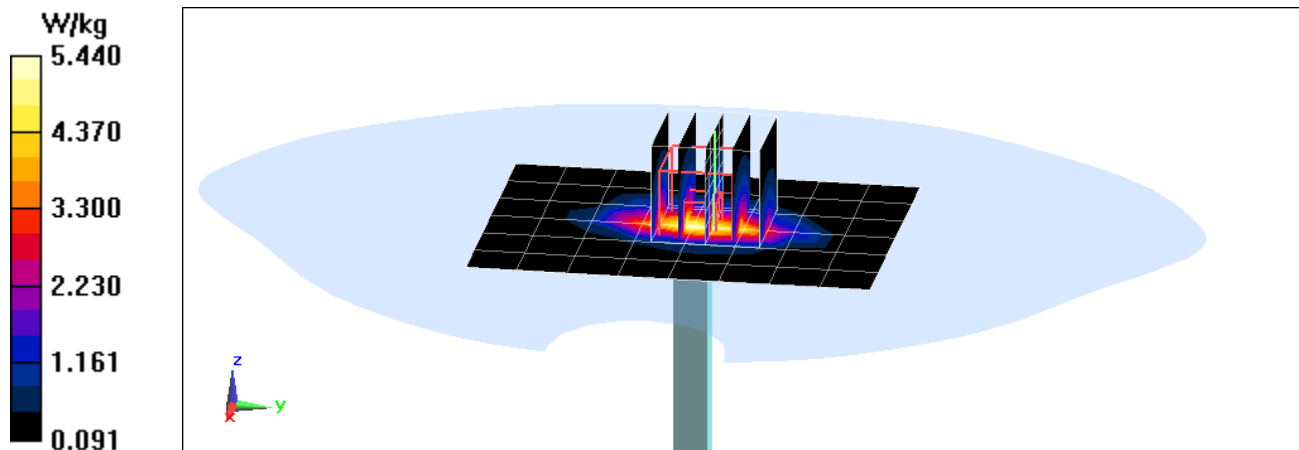
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Peak SAR (extrapolated) = 6.43 W/kg

SAR(10 g) = 1.93 W/kg

Deviation(10 g) = -2.53%



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):

$f = 1900 \text{ MHz}$; $\sigma = 1.563 \text{ S/m}$; $\epsilon_r = 52.688$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-17-2017; Ambient Temp: 24.0°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN7410; ConvF(7.98, 7.98, 7.98); Calibrated: 7/17/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/13/2017

Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

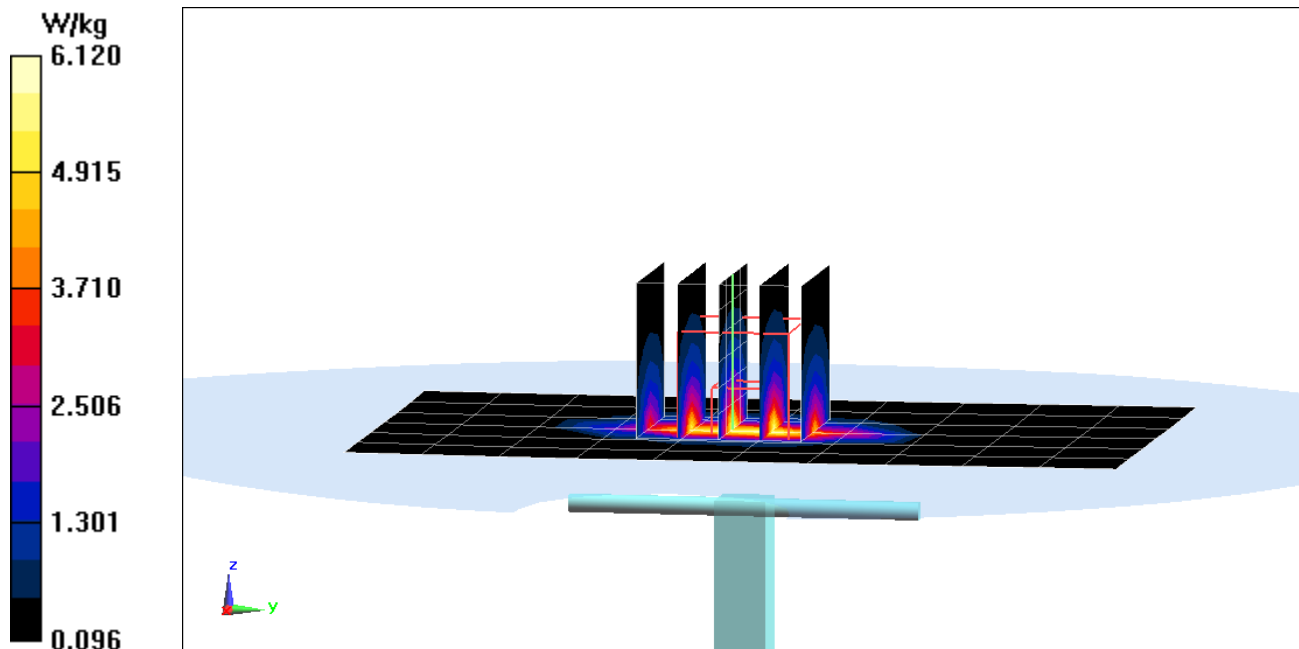
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Peak SAR (extrapolated) = 7.12 W/kg

SAR(1 g) = 4.03 W/kg

Deviation(1 g) = -1.47%



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):

$f = 1900 \text{ MHz}$; $\sigma = 1.549 \text{ S/m}$; $\epsilon_r = 52.508$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-24-2017; Ambient Temp: 21.7°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3332; ConvF(4.95, 4.95, 4.95); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

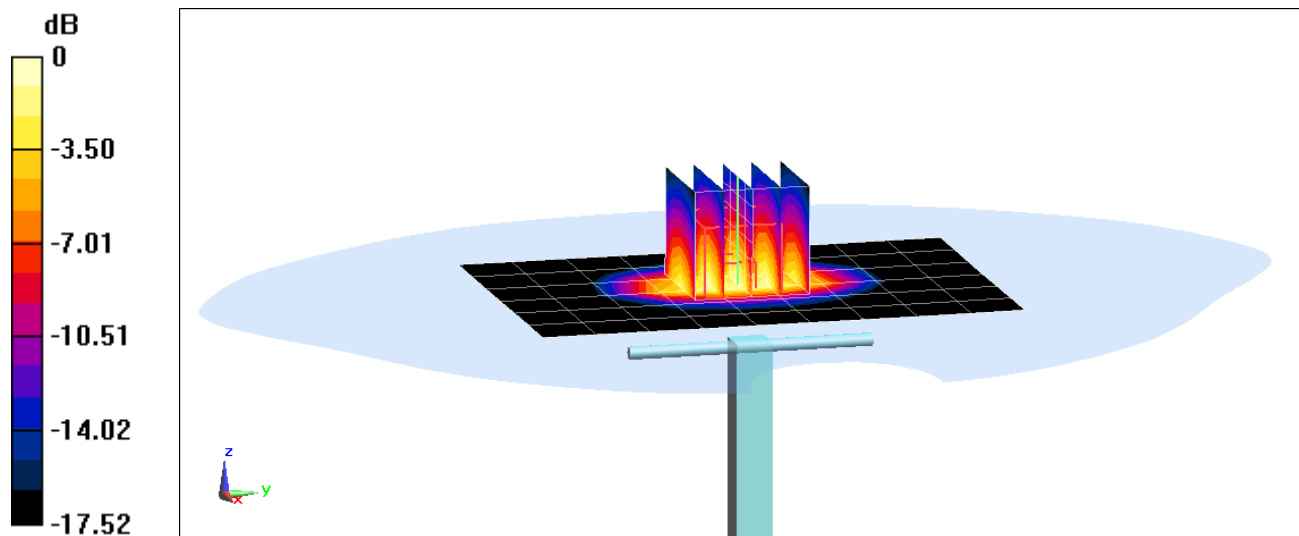
Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Peak SAR (extrapolated) = 6.60 W/kg

SAR(1 g) = 3.73 W/kg

Deviation(1 g) = -6.98%



0 dB = 4.73 W/kg = 6.75 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):

$f = 1900 \text{ MHz}$; $\sigma = 1.549 \text{ S/m}$; $\epsilon_r = 52.301$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-27-2017; Ambient Temp: 22.9°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3332; ConvF(4.95, 4.95, 4.95); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

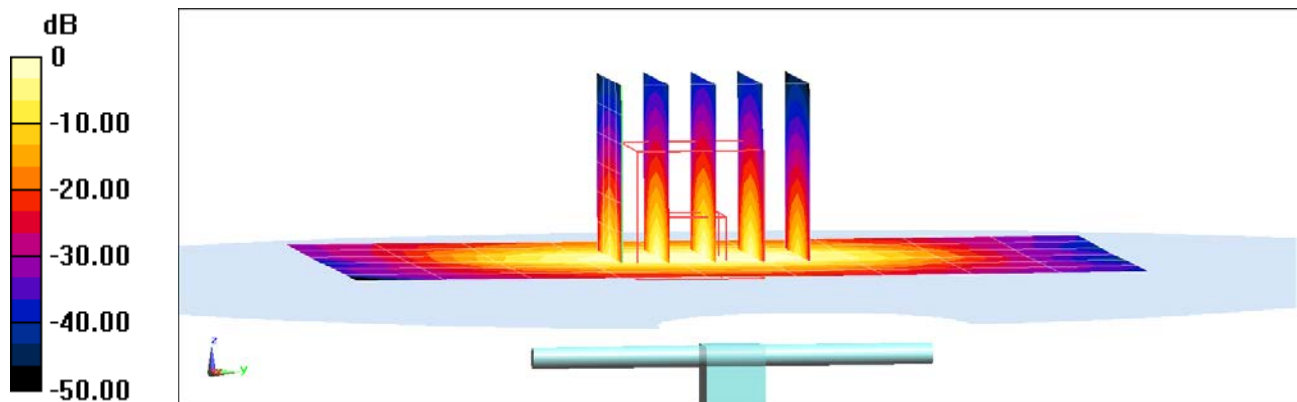
Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Peak SAR (extrapolated) = 6.68 W/kg

SAR(1 g) = 3.76 W/kg, SAR(10 g) = 1.95 W/kg

Deviation(1 g) = -6.23%, Deviation(10 g) = -8.45%



0 dB = 3.57 W/kg = 5.53 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):

$f = 1900 \text{ MHz}$; $\sigma = 1.573 \text{ S/m}$; $\epsilon_r = 51.66$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-11-2017; Ambient Temp: 21.0°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: 1800

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

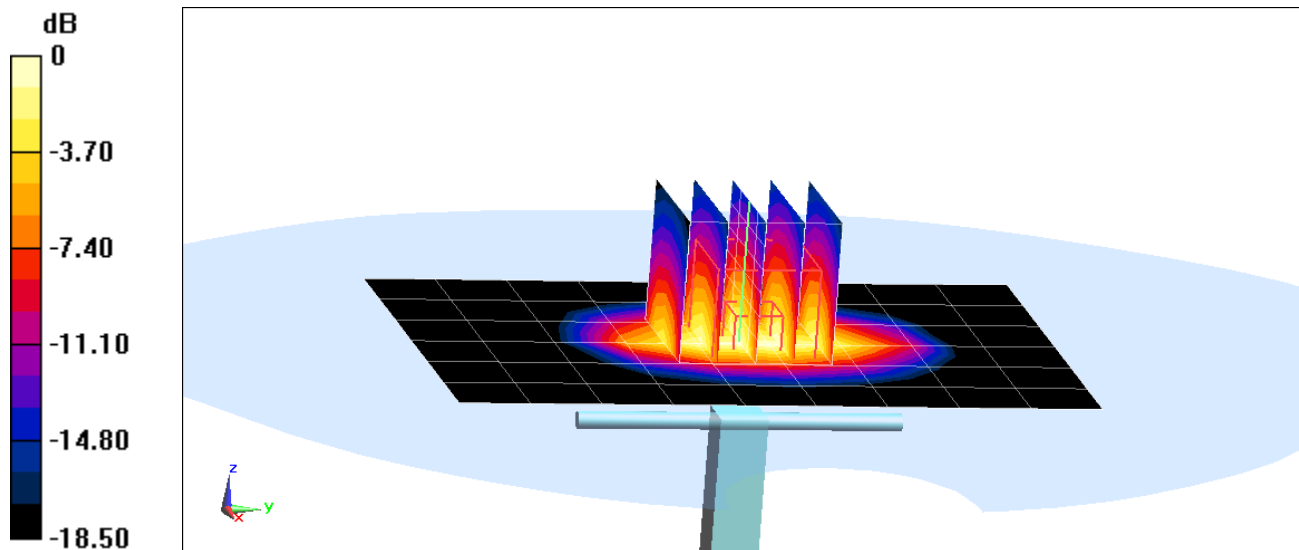
Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Peak SAR (extrapolated) = 7.33 W/kg

SAR(10 g) = 2.09 W/kg

Deviation(10 g) = -1.88%



0 dB = 5.10 W/kg = 7.08 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:

$f = 2450 \text{ MHz}$; $\sigma = 1.996 \text{ S/m}$; $\epsilon_r = 51.436$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-28-2017; Ambient Temp: 24.5°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.42, 4.42, 4.42); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

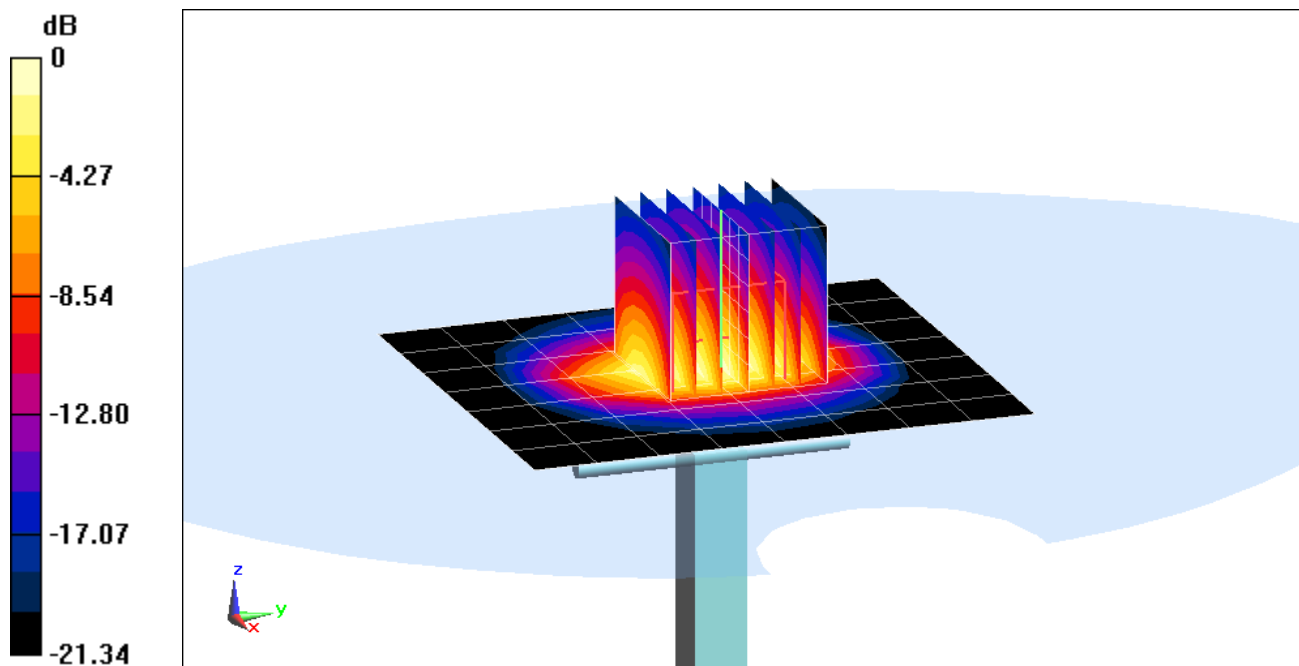
Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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) = 5.32 W/kg

Deviation(1 g) = 4.72%



0 dB = 6.88 W/kg = 8.38 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:

$f = 2450 \text{ MHz}$; $\sigma = 2.012 \text{ S/m}$; $\epsilon_r = 51.358$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-07-2017; Ambient Temp: 21.6°C; Tissue Temp: 20.9°C

Probe: ES3DV3 - SN3213; ConvF(4.53, 4.53, 4.53); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

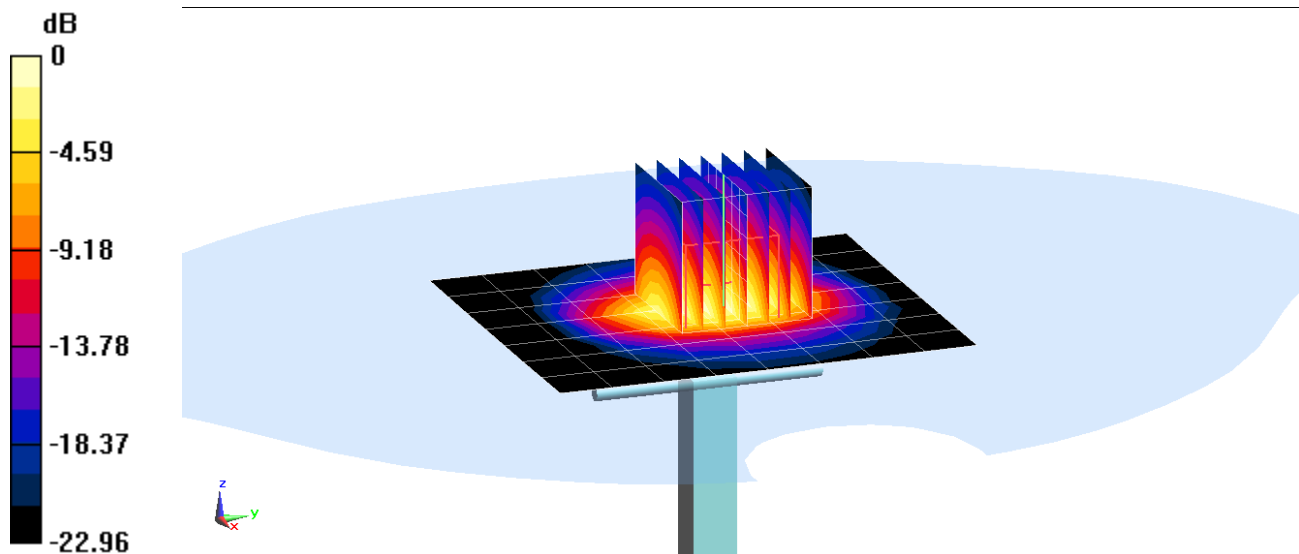
Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Peak SAR (extrapolated) = 11.7 W/kg

SAR(1 g) = 5.45 W/kg; SAR(10 g) = 2.47 W/kg

Deviation(1 g) = 7.28%; Deviation(10 g) = 3.78%



0 dB = 7.22 W/kg = 8.59 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 Body Medium parameters used:

$f = 2600$ MHz; $\sigma = 2.218$ S/m; $\epsilon_r = 50.723$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-07-2017; Ambient Temp: 21.6°C; Tissue Temp: 20.9°C

Probe: ES3DV3 - SN3213; ConvF(4.32, 4.32, 4.32); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

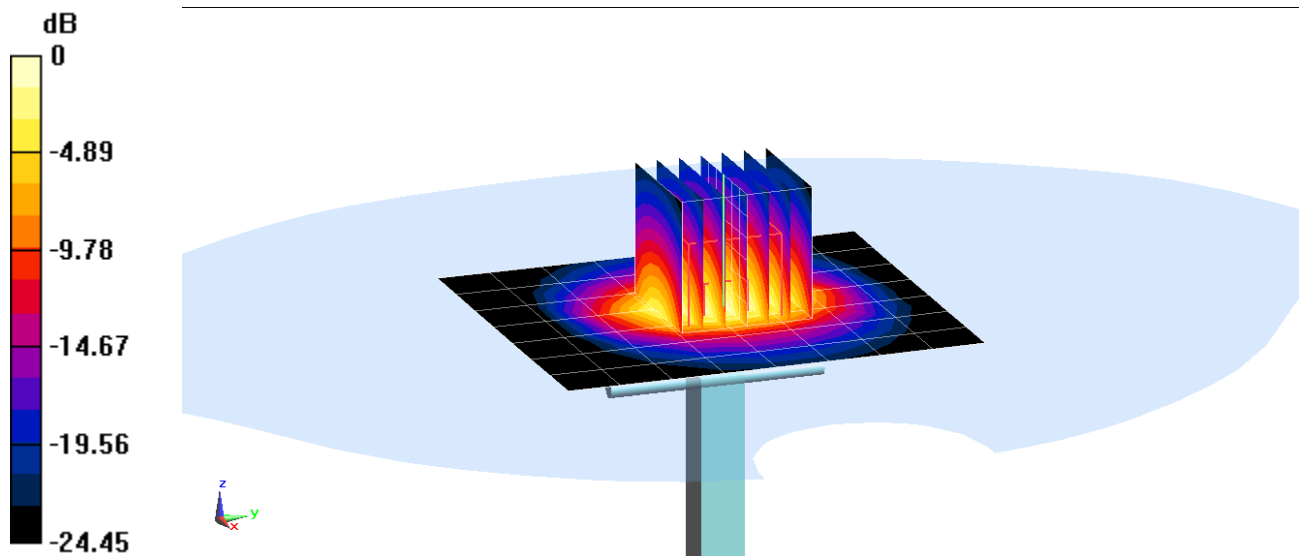
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Peak SAR (extrapolated) = 12.8 W/kg

SAR(1 g) = 5.63 W/kg; SAR(10 g) = 2.43 W/kg

Deviation(1 g) = 3.68%; Deviation(10 g) = -0.41%



0 dB = 7.57 W/kg = 8.79 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 Body Medium parameters used:

$f = 2600 \text{ MHz}$; $\sigma = 2.235 \text{ S/m}$; $\epsilon_r = 50.516$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-18-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7406; ConvF(7.31, 7.31, 7.31); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM with CRP v5.0, Right; Type: QD000P40CD; Serial: TP:7535

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

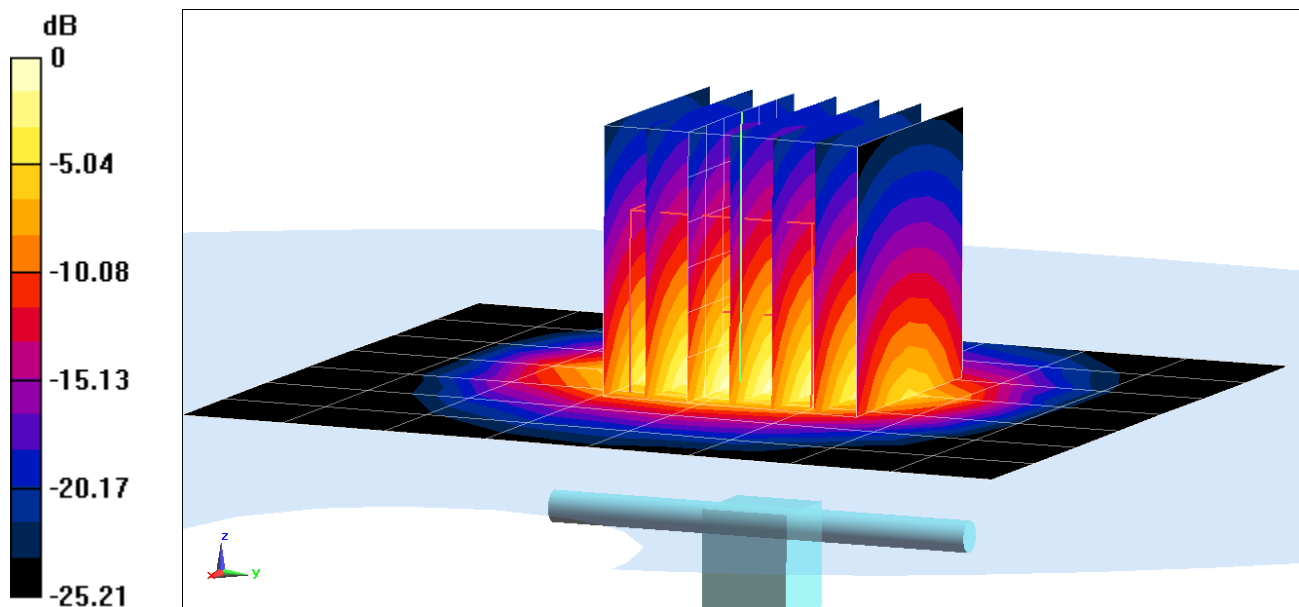
Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Peak SAR (extrapolated) = 11.9 W/kg

SAR(1 g) = 5.23 W/kg

Deviation(1 g) = -3.68%



0 dB = 9.16 W/kg = 9.62 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: 5250-5750 Body Medium parameters used (interpolated):

$f = 5250 \text{ MHz}$; $\sigma = 5.505 \text{ S/m}$; $\epsilon_r = 47.293$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-28-2017; Ambient Temp: 21.3°C; Tissue Temp: 21.9°C

Probe: EX3DV4 - SN7357; ConvF(4.92, 4.92, 4.92); Calibrated: 4/20/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Left; Type: QD000P40CD; Serial: 1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

5250 MHz System Verification at 17.0 dBm (50 mW)

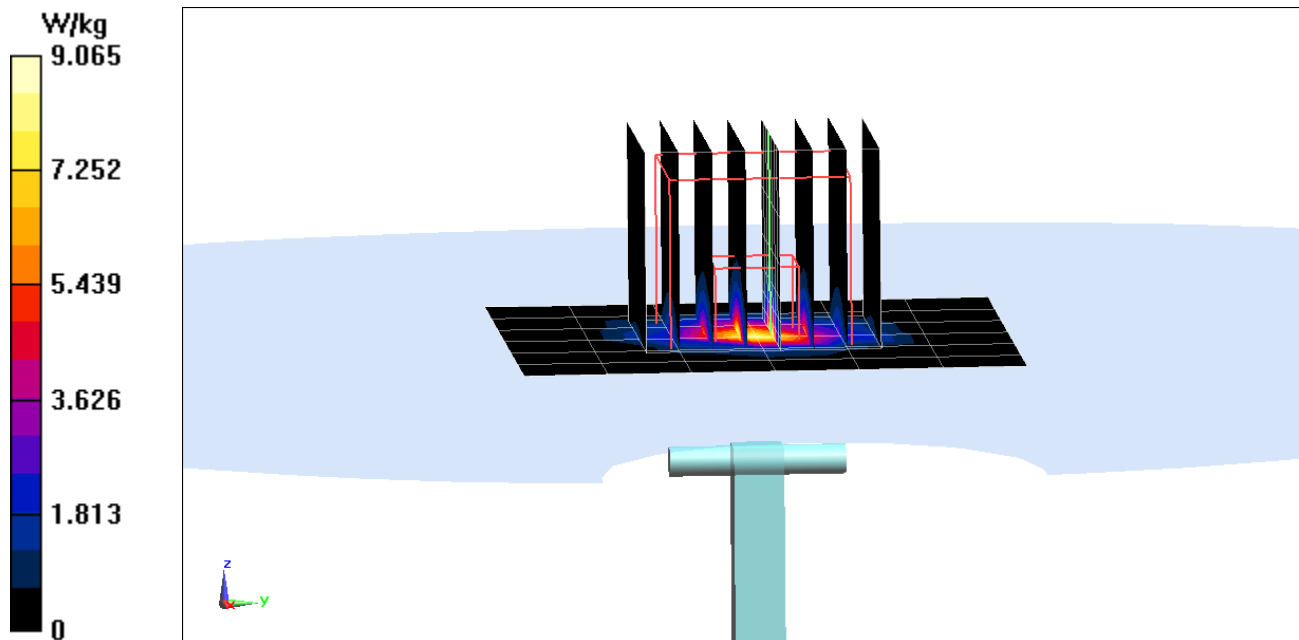
Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Peak SAR (extrapolated) = 16.5 W/kg

SAR(1 g) = 3.69 W/kg

Deviation(1 g) = -4.16%



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: 5 GHz Body Medium parameters used:

$f = 5600 \text{ MHz}$; $\sigma = 5.964 \text{ S/m}$; $\epsilon_r = 46.726$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-28-2017; Ambient Temp: 21.3°C; Tissue Temp: 21.9°C

Probe: EX3DV4 - SN7357; ConvF(4.21, 4.21, 4.21); Calibrated: 4/20/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Left; Type: QD000P40CD; Serial: 1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

5600 MHz System Verification at 17.0 dBm (50 mW)

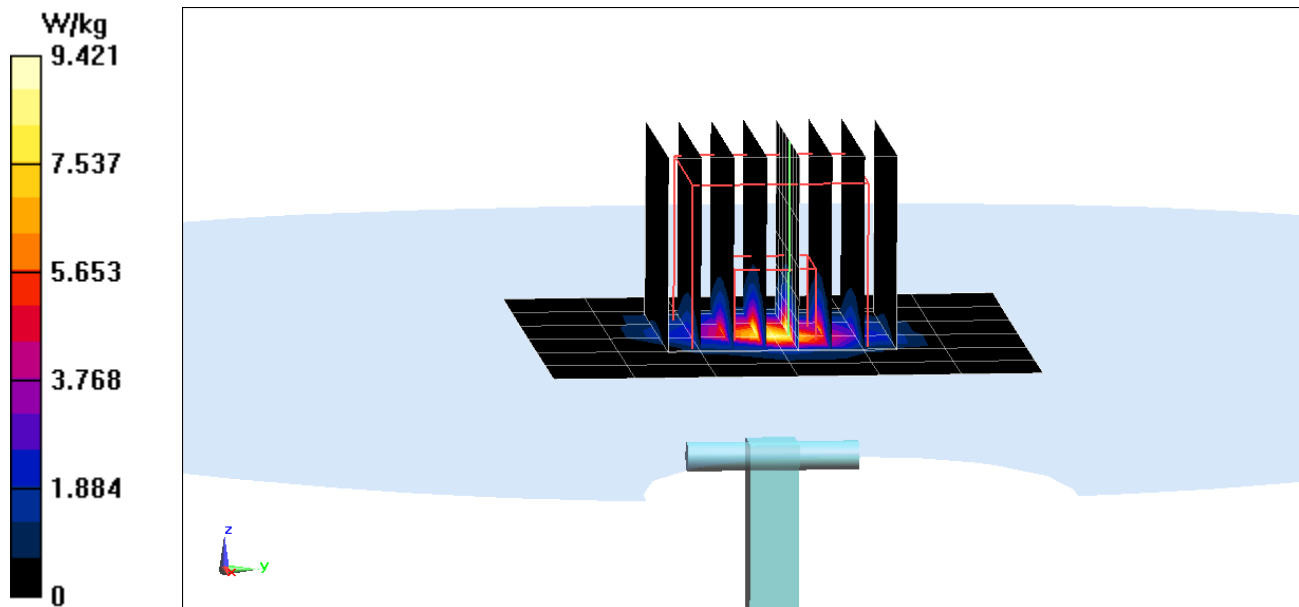
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 18.3 W/kg

SAR(1 g) = 3.81 W/kg

Deviation(1 g) = -3.79%



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: 5 GHz Body Medium parameters used (interpolated):

$f = 5750 \text{ MHz}$; $\sigma = 6.185 \text{ S/m}$; $\epsilon_r = 46.433$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-28-2017; Ambient Temp: 21.3°C; Tissue Temp: 21.9°C

Probe: EX3DV4 - SN7357; ConvF(4.3, 4.3, 4.3); Calibrated: 4/20/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Left; Type: QD000P40CD; Serial: 1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

5750 MHz System Verification at 17.0 dBm (50 mW)

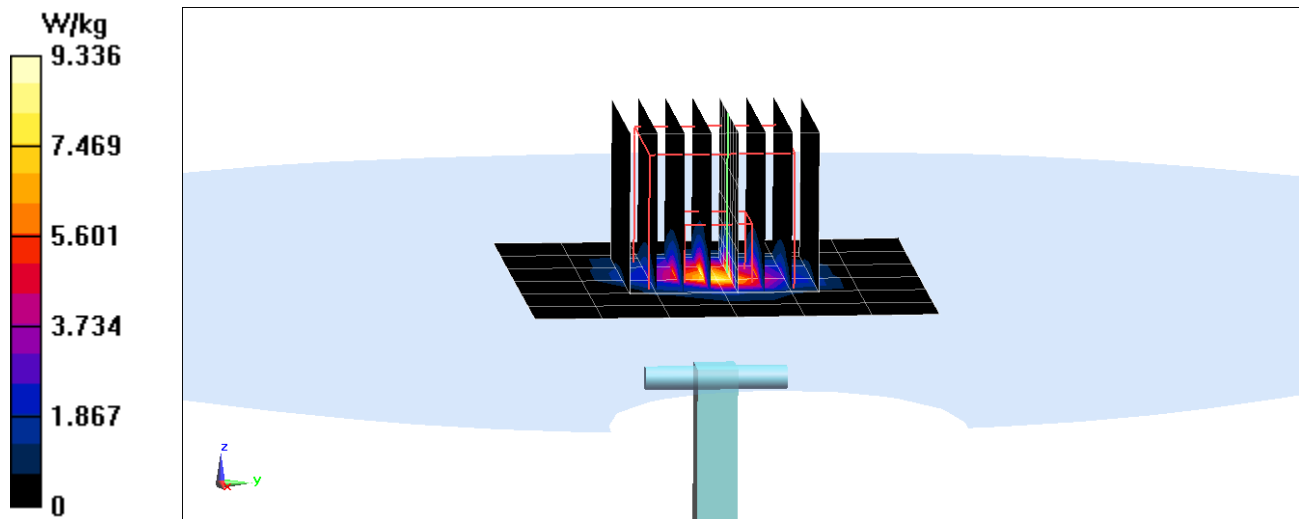
Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Peak SAR (extrapolated) = 17.9 W/kg

SAR(1 g) = 3.72 W/kg

Deviation(1 g) = -2.23%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237

Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1

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

$f = 5750 \text{ MHz}$; $\sigma = 6.14 \text{ S/m}$; $\epsilon_r = 46.416$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-04-2017; Ambient Temp: 22.3°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7308; ConvF(4.5, 4.5, 4.5); Calibrated: 8/16/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/14/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5750 MHz System Verification at 17.0 dBm (50 mW)

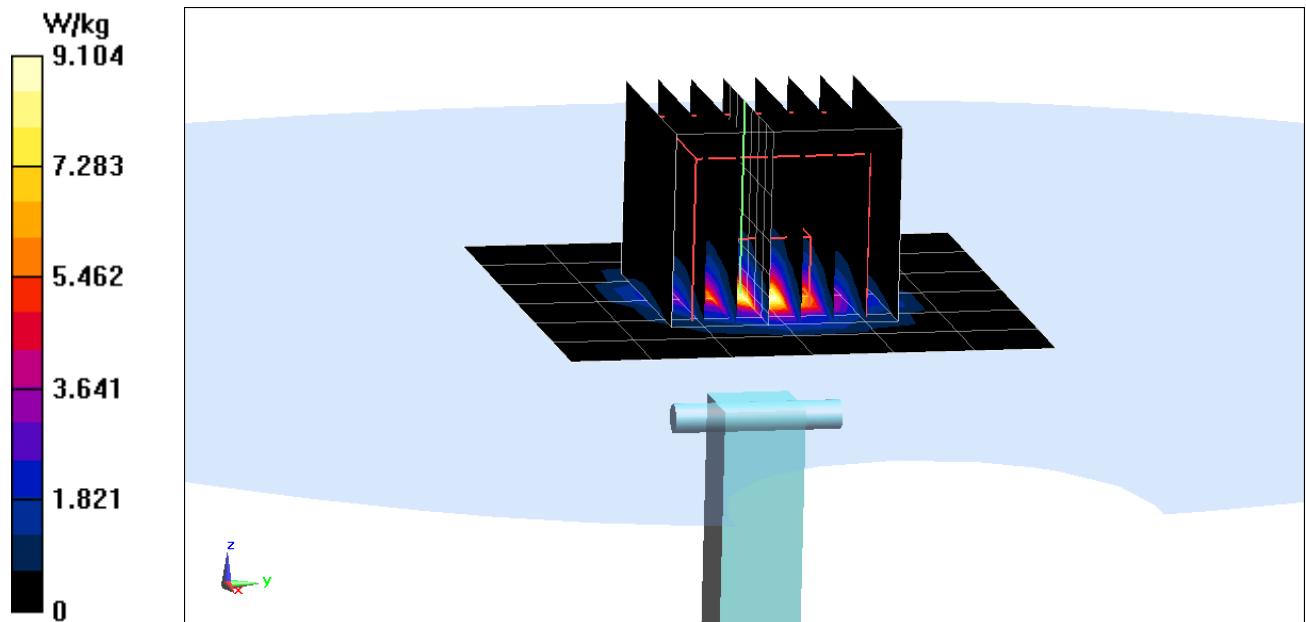
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 18.9 W/kg

SAR(1 g) = 3.67 W/kg

Deviation(1 g) = -4.80%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237

Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1

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

$f = 5250 \text{ MHz}$; $\sigma = 5.478 \text{ S/m}$; $\epsilon_r = 47.468$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-11-2017; Ambient Temp: 21.4°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7308; ConvF(4.84, 4.84, 4.84); Calibrated: 8/16/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/14/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

5250 MHz System Verification at 17.0 dBm (50 mW)

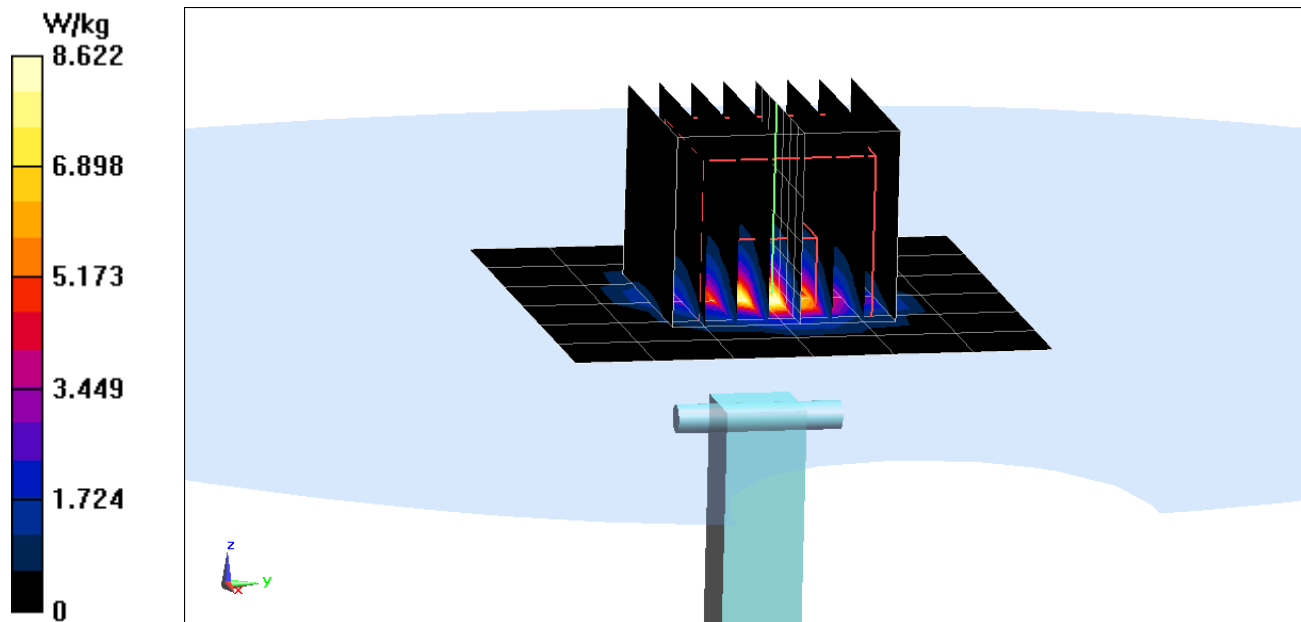
Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Peak SAR (extrapolated) = 16.5 W/kg

SAR(10 g) = 1 W/kg

Deviation(10 g) = -6.98%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237

Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used:

$f = 5600 \text{ MHz}$; $\sigma = 5.939 \text{ S/m}$; $\epsilon_r = 46.905$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-11-2017; Ambient Temp: 21.4°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7308; ConvF(4.23, 4.23, 4.23); Calibrated: 8/16/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/14/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

5600 MHz System Verification at 17.0 dBm (50 mW)

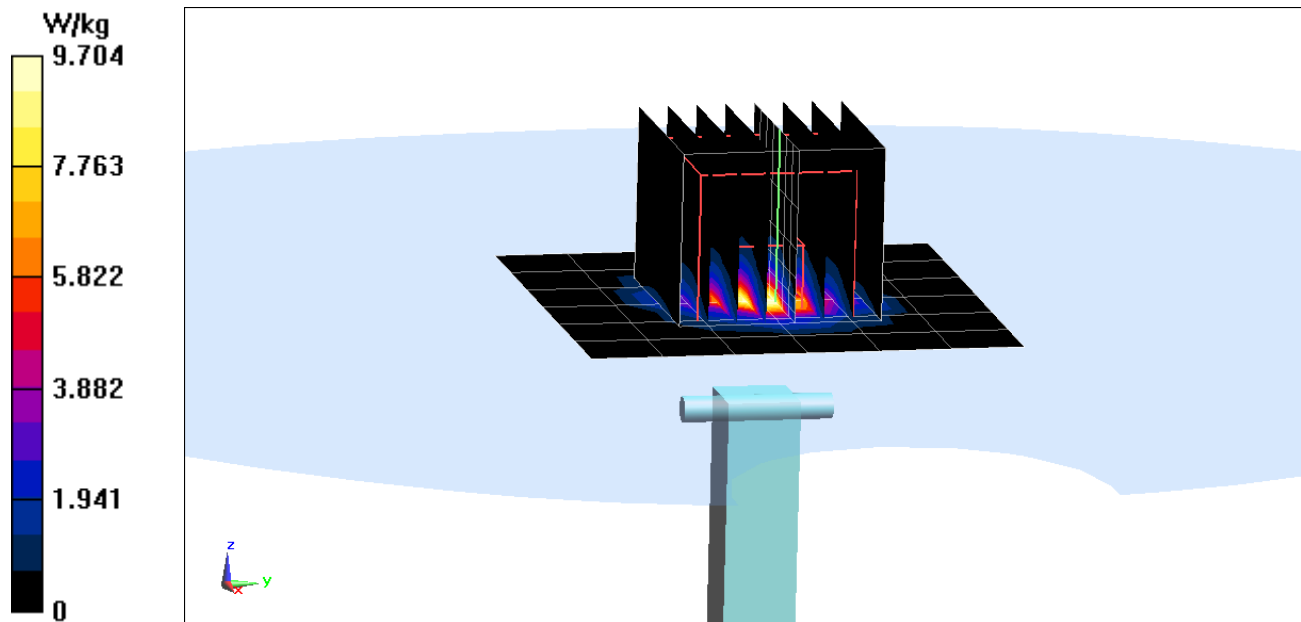
Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Peak SAR (extrapolated) = 18.9 W/kg

SAR(10 g) = 1.1 W/kg

Deviation(10 g) = -0.45%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237

Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1

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

$f = 5750 \text{ MHz}$; $\sigma = 6.167 \text{ S/m}$; $\epsilon_r = 46.624$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-11-2017; Ambient Temp: 21.4°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7308; ConvF(4.5, 4.5, 4.5); Calibrated: 8/16/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/14/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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) = 18.6 W/kg

SAR(10 g) = 1.03 W/kg

Deviation(10 g) = -3.74%

