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SAR EVALUATION REPORT

Applicant Name:
LG Electronics U.S.A., Inc.
1000 Sylvan Avenue
Englewood Cliffs, NJ 07632
United States

Date of Testing:
12/05/18 - 01/10/19
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
1M1811300215-01-R1.ZNF

FCC ID: **ZNFG820UM**

APPLICANT: **LG ELECTRONICS U.S.A., INC.**

DUT Type: Portable Handset
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model: LM-G820UM
Additional Model(s): LMG820UM, G820UM, LM-G820TM, LMG820TM, G820TM, LM-G820QM, LMG820QM, G820QM

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	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.28	0.78	0.78	N/A
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	0.28	0.54	0.84	N/A
PCE	UMTS 850	826.40 - 846.60 MHz	0.92	0.48	0.48	N/A
PCE	UMTS 1750	1712.4 - 1752.6 MHz	0.50	0.80	1.00	2.85
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.36	0.44	0.97	1.41
PCE	CDMA/EVDO BC10 (§90S)	817.90 - 823.10 MHz	0.65	0.61	0.72	N/A
PCE	CDMA/EVDO BC0 (§22H)	824.70 - 848.31 MHz	0.98	0.95	0.94	N/A
PCE	PCS CDMA/EVDO	1851.25 - 1908.75 MHz	0.46	0.79	1.24	2.37
PCE	LTE Band 71	665.5 - 695.5 MHz	0.38	0.55	0.55	N/A
PCE	LTE Band 12	699.7 - 715.3 MHz	0.23	0.36	0.36	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	0.49	0.65	0.65	N/A
PCE	LTE Band 14	790.5 - 795.5 MHz	0.32	0.39	0.39	N/A
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	0.28	0.55	0.55	N/A
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.71	0.51	0.51	N/A
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.53	0.55	0.86	2.38
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	0.45	0.90	1.29	2.68
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 30	2307.5 - 2312.5 MHz	0.17	0.29	0.39	N/A
PCE	LTE Band 7	2502.5 - 2567.5 MHz	0.22	0.26	0.33	N/A
CBE	LTE Band 48	3552.5 - 3697.5 MHz	0.20	0.12	0.22	N/A
PCE	LTE Band 41	2498.5 - 2687.5 MHz	0.29	0.39	0.39	N/A
DTS	2.4 GHz WLAN	2412 - 2462 MHz	0.70	0.28	0.34	N/A
NII	U-NII-1	5180 - 5240 MHz	N/A	N/A	0.17	N/A
NII	U-NII-2A	5260 - 5320 MHz	0.32	0.25	N/A	1.43
NII	U-NII-2C	5500 - 5720 MHz	0.47	0.46	N/A	1.44
NII	U-NII-3	5745 - 5825 MHz	0.11	0.59	0.59	N/A
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.14	< 0.1	< 0.1	N/A
Simultaneous SAR per KDB 690783 D01v01r03:			1.59	1.54	1.59	3.88

Note: This revised Test Report (S/N: 1M1811300215-01-R1.ZNF) 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.

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

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

Randy Ortanez
President

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

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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.6 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
CDMA/EVDO BC10 (§90S)	Voice/Data	817.90 - 823.10 MHz
CDMA/EVDO BC0 (§22H)	Voice/Data	824.70 - 848.31 MHz
PCS CDMA/EVDO	Voice/Data	1851.25 - 1908.75 MHz
LTE Band 71	Voice/Data	665.5 - 695.5 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 14	Voice/Data	790.5 - 795.5 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 848.3 MHz
LTE Band 26 (Cell)	Voice/Data	814.7 - 848.3 MHz
LTE Band 66 (AWS)	Voice/Data	1710.7 - 1779.3 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 25 (PCS)	Voice/Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 30	Voice/Data	2307.5 - 2312.5 MHz
LTE Band 7	Voice/Data	2502.5 - 2567.5 MHz
LTE Band 48	Voice/Data	3552.5 - 3697.5 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
WMC	Data	500 Hz - 4 kHz
MST	Data	555 Hz - 8.33 kHz

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1.2 Power Reduction for SAR

This device uses a power reduction mechanism for SAR compliance. The power reduction mechanism is activated when the device is used in close proximity to the user's body. FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device. Detailed descriptions of the power reduction mechanism are included in the operational description.

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

1.3 Nominal and Maximum Output Power Specifications

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

1.3.1 2G/3G/4G Maximum Output Power

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slot	*1 TX Slots*	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*	*1 TX Slots*	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*
GSM/GPRS/EDGE 850	Maximum	**34.2**	**34.2**	**33.2**	**31.2**	**29.2**	**26.7**	**26.7**	**25.7**	**25.7**
	Nominal	**33.7**	**33.7**	**32.7**	**30.7**	**28.7**	**26.2**	**26.2**	**25.2**	**25.2**
GSM/GPRS/EDGE 1900	Maximum	**31.2**	**31.2**	**30.2**	**28.2**	**26.2**	**26.2**	**26.2**	**25.2**	**25.2**
	Nominal	**30.7**	**30.7**	**29.7**	**27.7**	**25.7**	**25.7**	**25.7**	**24.7**	**24.7**

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	*3GPP HSDPA*	*3GPP HSUPA*	*3GPP DC-HSDPA*
UMTS Band 5 (850 MHz)	Maximum	**25.5**	**24.5**	**24.5**	**24.5**
	Nominal	**25.0**	**24.0**	**24.0**	**24.0**
UMTS Band 4 (1750 MHz)	Maximum	**25.5**	**24.5**	**24.5**	**24.5**
	Nominal	**25.0**	**24.0**	**24.0**	**24.0**
UMTS Band 2 (1900 MHz)	Maximum	**25.2**	**24.2**	**24.2**	**24.2**
	Nominal	**24.7**	**23.7**	**23.7**	**23.7**

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Mode / Band		Modulated Average (dBm)
CDMA/EVDO BC10 (§90S)	Maximum	**25.5**
	Nominal	**25.0**
CDMA/EVDO BC0 (§22H)	Maximum	**25.5**
	Nominal	**25.0**
PCS CDMA/EVDO	Maximum	**25.2**
	Nominal	**24.7**

Mode / Band		Modulated Average (dBm)
LTE Band 71	Maximum	**25.5**
	Nominal	**25.0**
LTE Band 12	Maximum	**25.5**
	Nominal	**25.0**
LTE Band 17	Maximum	**25.5**
	Nominal	**25.0**
LTE Band 13	Maximum	**25.5**
	Nominal	**25.0**
LTE Band 14	Maximum	**25.5**
	Nominal	**25.0**
LTE Band 5 (Cell)	Maximum	**25.5**
	Nominal	**25.0**
LTE Band 26 (Cell)	Maximum	**25.5**
	Nominal	**25.0**
LTE Band 66 (AWS)	Maximum	**25.5**
	Nominal	**25.0**
LTE Band 4 (AWS)	Maximum	**25.5**
	Nominal	**25.0**
LTE Band 25 (PCS)	Maximum	**25.2**
	Nominal	**24.7**
LTE Band 2 (PCS)	Maximum	**25.2**
	Nominal	**24.7**
LTE Band 30	Maximum	**23.7**
	Nominal	**23.2**
LTE Band 7	Maximum	**23.7**
	Nominal	**23.2**
LTE Band 48	Maximum	**22.7**
	Nominal	**22.2**
LTE Band 41 (PC3)	Maximum	**25.2**
	Nominal	**24.7**
LTE Band 41 (PC2)	Maximum	**27.7**
	Nominal	**27.2**

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1.3.2 2G/3G/4G Reduced Output Power

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	*3GPP HSDPA*	*3GPP HSUPA*	*3GPP DC-HSDPA*
UMTS Band 4 (1750 MHz)	Maximum	**23.5**	**22.5**	**22.5**	**22.5**
	Nominal	**23.0**	**22.0**	**22.0**	**22.0**
UMTS Band 2 (1900 MHz)	Maximum	**23.2**	**22.2**	**22.2**	**22.2**
	Nominal	**22.7**	**21.7**	**21.7**	**21.7**

Mode / Band		Modulated Average (dBm)
PCS CDMA/EVDO	Maximum	**23.2**
	Nominal	**22.7**
Mode / Band		**Modulated Average (dBm)**
LTE Band 66 (AWS)	Maximum	**23.5**
	Nominal	**23.0**
LTE Band 4 (AWS)	Maximum	**23.5**
	Nominal	**23.0**
LTE Band 25 (PCS)	Maximum	**23.2**
	Nominal	**22.7**
LTE Band 2 (PCS)	Maximum	**23.2**
	Nominal	**22.7**

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1.3.3 WLAN Bluetooth Maximum Output Power

Mode / Band		Modulated Average - Single Tx Chain (dBm)		
	Channel	1-2	3-9	10-11
IEEE 802.11b (2.4 GHz)	Maximum	**20.5**	**20.5**	**20.5**
	Nominal	**19.5**	**19.5**	**19.5**
IEEE 802.11g (2.4 GHz)	Maximum	**17.0**	**19.5**	**17.0**
	Nominal	**16.0**	**18.5**	**16.0**
IEEE 802.11n (2.4 GHz)	Maximum	**16.0**	**18.5**	**16.0**
	Nominal	**15.0**	**17.5**	**15.0**
IEEE 802.11ac (2.4 GHz)	Maximum	**16.0**	**18.5**	**16.0**
	Nominal	**15.0**	**17.5**	**15.0**

Mode / Band		Modulated Average - Single Tx Chain (dBm)													
		20 MHz Bandwidth							40 MHz Bandwidth				80 MHz Bandwidth		
	Channel	36	40	44-52	56	60-153	157-161	165	38	46-54	62-102	110-159	42	58	106-155
IEEE 802.11a (5 GHz)	Maximum	**17.0**	**19.0**	**17.0**	**19.0**	**17.0**	**19.0**	**18.0**							
	Nominal	**16.0**	**18.0**	**16.0**	**18.0**	**16.0**	**18.0**	**17.0**							
IEEE 802.11n (5 GHz)	Maximum	**17.0**	**19.0**	**17.0**	**19.0**	**17.0**	**19.0**	**18.0**	**13.0**	**16.0**	**13.0**	**16.0**			
	Nominal	**16.0**	**18.0**	**16.0**	**18.0**	**16.0**	**18.0**	**17.0**	**12.0**	**15.0**	**12.0**	**15.0**			
IEEE 802.11ac (5 GHz)	Maximum	**17.0**	**19.0**	**17.0**	**19.0**	**17.0**	**19.0**	**18.0**	**13.0**	**16.0**	**13.0**	**16.0**	**14.0**	**11.0**	**14.0**
	Nominal	**16.0**	**18.0**	**16.0**	**18.0**	**16.0**	**18.0**	**17.0**	**12.0**	**15.0**	**12.0**	**15.0**	**13.0**	**10.0**	**13.0**

Mode / Band		Modulated Average - MIMO (dBm)		
	Channel	1-2	3-9	10-11
IEEE 802.11b (2.4 GHz)	Maximum	**23.5**	**23.5**	**23.5**
	Nominal	**22.5**	**22.5**	**22.5**
IEEE 802.11g (2.4 GHz)	Maximum	**20.0**	**22.5**	**20.0**
	Nominal	**19.0**	**21.5**	**19.0**
IEEE 802.11n (2.4 GHz)	Maximum	**19.0**	**21.5**	**19.0**
	Nominal	**18.0**	**20.5**	**18.0**
IEEE 802.11ac (2.4 GHz)	Maximum	**19.0**	**21.5**	**19.0**
	Nominal	**18.0**	**20.5**	**18.0**

Mode / Band		Modulated Average - MIMO (dBm)													
		20 MHz Bandwidth							40 MHz Bandwidth				80 MHz Bandwidth		
	Channel	36	40	44-52	56	60-153	157-161	165	38	46-54	62-102	110-159	42	58	106-155
IEEE 802.11a (5 GHz)	Maximum	**20.0**	**22.0**	**20.0**	**22.0**	**20.0**	**22.0**	**21.0**							
	Nominal	**19.0**	**21.0**	**19.0**	**21.0**	**19.0**	**21.0**	**20.0**							
IEEE 802.11n (5 GHz)	Maximum	**20.0**	**22.0**	**20.0**	**22.0**	**20.0**	**22.0**	**21.0**	**16.0**	**19.0**	**16.0**	**19.0**			
	Nominal	**19.0**	**21.0**	**19.0**	**21.0**	**19.0**	**21.0**	**20.0**	**15.0**	**18.0**	**15.0**	**18.0**			
IEEE 802.11ac (5 GHz)	Maximum	**20.0**	**22.0**	**20.0**	**22.0**	**20.0**	**22.0**	**21.0**	**16.0**	**19.0**	**16.0**	**19.0**	**17.0**	**14.0**	**17.0**
	Nominal	**19.0**	**21.0**	**19.0**	**21.0**	**19.0**	**21.0**	**20.0**	**15.0**	**18.0**	**15.0**	**18.0**	**16.0**	**13.0**	**16.0**

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Mode/Band		Modulated Average (dBm)
Bluetooth	Maximum	**12.0**
	Nominal	**11.0**
Bluetooth LE	Maximum	**8.0**
	Nominal	**7.0**

1.3.4 WLAN Reduced Output Power

Mode / Band		Modulated Average - Single Tx Chain (dBm)		
	Channel	1-2	3-9	10-11
IEEE 802.11b (2.4 GHz)	Maximum	**19.0**	**19.0**	**19.0**
	Nominal	**18.0**	**18.0**	**18.0**
IEEE 802.11g (2.4 GHz)	Maximum	**17.0**	**19.0**	**17.0**
	Nominal	**16.0**	**18.0**	**16.0**
IEEE 802.11n (2.4 GHz)	Maximum	**16.0**	**18.5**	**16.0**
	Nominal	**15.0**	**17.5**	**15.0**
IEEE 802.11ac (2.4 GHz)	Maximum	**16.0**	**18.5**	**16.0**
	Nominal	**15.0**	**17.5**	**15.0**

Mode / Band		Modulated Average - Single Tx Chain (dBm)													
		20 MHz Bandwidth							40 MHz Bandwidth				80 MHz Bandwidth		
	Channel	36	40	44-52	56	60-153	157-161	165	38	46-54	62-102	110-159	42	58	106-155
IEEE 802.11a (5 GHz)	Maximum	**14.5**	**14.5**	**14.5**	**14.5**	**14.5**	**14.5**	**14.5**							
	Nominal	**13.5**	**13.5**	**13.5**	**13.5**	**13.5**	**13.5**	**13.5**							
IEEE 802.11n (5 GHz)	Maximum	**14.5**	**14.5**	**14.5**	**14.5**	**14.5**	**14.5**	**14.5**	**13.0**	**14.5**	**13.0**	**14.5**			
	Nominal	**13.5**	**13.5**	**13.5**	**13.5**	**13.5**	**13.5**	**13.5**	**12.0**	**13.5**	**12.0**	**13.5**			
IEEE 802.11ac (5 GHz)	Maximum	**14.5**	**14.5**	**14.5**	**14.5**	**14.5**	**14.5**	**14.5**	**13.0**	**14.5**	**13.0**	**14.5**	**14.0**	**11.0**	**14.0**
	Nominal	**13.5**	**13.5**	**13.5**	**13.5**	**13.5**	**13.5**	**13.5**	**12.0**	**13.5**	**12.0**	**13.5**	**13.0**	**10.0**	**13.0**

Mode / Band		Modulated Average - MIMO (dBm)		
	Channel	1-2	3-9	10-11
IEEE 802.11b (2.4 GHz)	Maximum	**22.0**	**22.0**	**22.0**
	Nominal	**21.0**	**21.0**	**21.0**
IEEE 802.11g (2.4 GHz)	Maximum	**20.0**	**22.0**	**20.0**
	Nominal	**19.0**	**21.0**	**19.0**
IEEE 802.11n (2.4 GHz)	Maximum	**19.0**	**21.5**	**19.0**
	Nominal	**18.0**	**20.5**	**18.0**
IEEE 802.11ac (2.4 GHz)	Maximum	**19.0**	**21.5**	**19.0**
	Nominal	**18.0**	**20.5**	**18.0**

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Mode / Band		Modulated Average - MIMO (dBm)													
		20 MHz Bandwidth							40 MHz Bandwidth				80 MHz Bandwidth		
	Channel	36	40	44-52	56	60-153	157-161	165	38	46-54	62-102	110-159	42	58	106-155
IEEE 802.11a (5 GHz)	Maximum	**17.5**	**17.5**	**17.5**	**17.5**	**17.5**	**17.5**	**17.5**							
	Nominal	**16.5**	**16.5**	**16.5**	**16.5**	**16.5**	**16.5**	**16.5**							
IEEE 802.11n (5 GHz)	Maximum	**17.5**	**17.5**	**17.5**	**17.5**	**17.5**	**17.5**	**17.5**	**16.0**	**17.5**	**16.0**	**17.5**			
	Nominal	**16.5**	**16.5**	**16.5**	**16.5**	**16.5**	**16.5**	**16.5**	**15.0**	**16.5**	**15.0**	**16.5**			
IEEE 802.11ac (5 GHz)	Maximum	**17.5**	**17.5**	**17.5**	**17.5**	**17.5**	**17.5**	**17.5**	**16.0**	**17.5**	**16.0**	**17.5**	**17.0**	**14.0**	**17.0**
	Nominal	**16.5**	**16.5**	**16.5**	**16.5**	**16.5**	**16.5**	**16.5**	**15.0**	**16.5**	**15.0**	**16.5**	**16.0**	**13.0**	**16.0**

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
GPRS 850	Yes	Yes	No	Yes	Yes	No
GPRS 1900	Yes	Yes	No	Yes	Yes	Yes
UMTS 850	Yes	Yes	No	Yes	Yes	No
UMTS 1750	Yes	Yes	No	Yes	Yes	Yes
UMTS 1900	Yes	Yes	No	Yes	Yes	Yes
EVDO BC10 (§90S)	Yes	Yes	No	Yes	Yes	No
EVDO BC0 (§22H)	Yes	Yes	No	Yes	Yes	No
PCS EVDO	Yes	Yes	No	Yes	Yes	Yes
LTE Band 71	Yes	Yes	No	Yes	Yes	No
LTE Band 12	Yes	Yes	No	Yes	Yes	No
LTE Band 13	Yes	Yes	No	Yes	Yes	No
LTE Band 14	Yes	Yes	No	Yes	Yes	No
LTE Band 5 (Cell)	Yes	Yes	No	Yes	Yes	No
LTE Band 26 (Cell)	Yes	Yes	No	Yes	Yes	No
LTE Band 66 (AWS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 25 (PCS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 30	Yes	Yes	No	Yes	No	Yes
LTE Band 7	Yes	Yes	No	Yes	No	Yes
LTE Band 48	Yes	Yes	No	Yes	Yes	No
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
5 GHz WLAN MIMO	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-2A and U-NII-2C operations are disabled.

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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 operating simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds.

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

Table 1-2
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 Ant 1 + 5 GHz WI-FI Ant 2	Yes	Yes	N/A	Yes	
7	GSM voice + 2.4 GHz WI-FI	Yes	Yes	N/A	Yes	
8	GSM voice + 5 GHz WI-FI	Yes	Yes	N/A	Yes	
9	GSM voice + 2.4 GHz Bluetooth	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
10	GSM voice + 2.4 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
11	GSM voice + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
12	GSM voice + 2.4 GHz WI-FI Ant 1 + 5 GHz WI-FI Ant 2	Yes	Yes	N/A	Yes	
13	UMTS + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes	
14	UMTS + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
15	UMTS + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
16	UMTS + 2.4 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
17	UMTS + 5 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
18	UMTS + 2.4 GHz WI-FI Ant 1 + 5 GHz WI-FI Ant 2	Yes	Yes	Yes	Yes	
19	LTE + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes	
20	LTE + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
21	LTE + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
22	LTE + 2.4 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
23	LTE + 5 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
24	LTE + 2.4 GHz WI-FI Ant 1 + 5 GHz WI-FI Ant 2	Yes	Yes	Yes	Yes	
25	CDMA/EVDO data + 2.4 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
26	CDMA/EVDO data + 5 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
27	CDMA/EVDO data + 2.4 GHz Bluetooth	Yes*^	Yes*	Yes^	Yes	* Pre-installed VOIP applications are considered ^ Bluetooth Tethering is considered
28	CDMA/EVDO data + 2.4 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
29	CDMA/EVDO data + 5 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
30	CDMA/EVDO data + 2.4 GHz WI-FI Ant 1 + 5 GHz WI-FI Ant 2	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
31	GPRS/EDGE + 2.4 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
32	GPRS/EDGE + 5 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
33	GPRS/EDGE + 2.4 GHz Bluetooth	Yes*^	Yes*	Yes^	Yes	* Pre-installed VOIP applications are considered ^ Bluetooth Tethering is considered
34	GPRS/EDGE + 2.4 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
35	GPRS/EDGE + 5 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
36	GPRS/EDGE + 2.4 GHz WI-FI Ant 1 + 5 GHz WI-FI Ant 2	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered

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1. Bluetooth cannot transmit simultaneously with 2.4 GHz 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 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-1, U-NII-3 by S/W, therefore 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. 802.11a/g/n/ac supports CDD and STBC and 802.11n/ac additionally supports SDM. Each WLAN antenna can transmit independently or together when operating with MIMO.
7. This device supports VOLTE and VOWIFI.
8. This device supports Bluetooth Tethering.

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-2A & U-NII-2C WIFI, only 2.4 GHz, U-NII-1 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-2A & U-NII-2C WLAN, phablet SAR tests were performed. Phablet SAR was not evaluated for 2.4 GHz WLAN, U-NII-1 WLAN, U-NII-3 WLAN, and 2.4 GHz 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.

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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. The downlink carrier aggregation exclusion analysis can be found in Appendix H.

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.

This device supports downlink 4x4 MIMO operations for some LTE Bands. Per May 2017 TCB Workshop Guidance, 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 LTE capabilities with overlapping transmission frequency ranges. When the supported frequency range of an LTE Band falls completely within an LTE band with a larger transmission frequency range, both LTE bands have the same target power (or the band with the larger transmission frequency range has a higher target power), and both LTE bands share the same transmission path and signal characteristics, SAR was only assessed for the band with the larger transmission frequency range.

This device supports 64QAM on the uplink and 256QAM on the downlink for LTE Operations. Conducted powers for 64QAM 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 ≤ ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg, per Section 5.2.4 of FCC KDB Publication 941225 D05v02r05.

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

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

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)

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- 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, LTE Band 41 Power Class 2/3)
- April 2018 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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2 LTE INFORMATION

LTE Information					
Form Factor	Portable Handset				
Frequency Range of each LTE transmission band	LTE Band 71 (665.5 - 695.5 MHz)				
	LTE Band 12 (699.7 - 715.3 MHz)				
	LTE Band 17 (706.5 - 713.5 MHz)				
	LTE Band 13 (779.5 - 784.5 MHz)				
	LTE Band 14 (790.5 - 795.5 MHz)				
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)				
	LTE Band 26 (Cell) (814.7 - 848.3 MHz)				
	LTE Band 66 (AWS) (1710.7 - 1779.3 MHz)				
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)				
	LTE Band 25 (PCS) (1850.7 - 1914.3 MHz)				
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)				
	LTE Band 30 (2307.5 - 2312.5 MHz)				
	LTE Band 7 (2502.5 - 2567.5 MHz)				
	LTE Band 48 (3552.5 - 3697.5 MHz)				
	LTE Band 41 (2498.5 - 2687.5 MHz)				
Channel Bandwidths	LTE Band 71: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 17: 5 MHz, 10 MHz				
	LTE Band 13: 5 MHz, 10 MHz				
	LTE Band 14: 5 MHz, 10 MHz				
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 26 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz				
	LTE Band 66 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 25 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 30: 5 MHz, 10 MHz				
	LTE Band 7: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 48: 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 71: 5 MHz	665.5 (133147)		680.5 (133297)	695.5 (133447)	
LTE Band 71: 10 MHz	668 (133172)		680.5 (133297)	693 (133422)	
LTE Band 71: 15 MHz	670.5 (133197)		680.5 (133297)	690.5 (133397)	
LTE Band 71: 20 MHz	673 (133222)		680.5 (133297)	688 (133372)	
LTE Band 12: 1.4 MHz	699.7 (23017)		707.5 (23095)	715.3 (23173)	
LTE Band 12: 3 MHz	700.5 (23025)		707.5 (23095)	714.5 (23165)	
LTE Band 12: 5 MHz	701.5 (23035)		707.5 (23095)	713.5 (23155)	
LTE Band 12: 10 MHz	704 (23060)		707.5 (23095)	711 (23130)	
LTE Band 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 14: 5 MHz	790.5 (23305)		793 (23330)	795.5 (23355)	
LTE Band 14: 10 MHz	N/A		793 (23330)	N/A	
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 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 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 30: 5 MHz	2307.5 (27685)		2310 (27710)	2312.5 (27735)	
LTE Band 30: 10 MHz	N/A		2310 (27710)	N/A	
LTE Band 7: 5 MHz	2502.5 (20775)		2535 (21100)	2567.5 (21425)	
LTE Band 7: 10 MHz	2505 (20800)		2535 (21100)	2565 (21400)	
LTE Band 7: 15 MHz	2507.5 (20825)		2535 (21100)	2562.5 (21375)	
LTE Band 7: 20 MHz	2510 (20850)		2535 (21100)	2560 (21350)	
LTE Band 48: 5 MHz	3552.5 (55265)	3600.8 (55748)	N/A	3649.2 (56232)	3697.5 (56715)
LTE Band 48: 10 MHz	3555 (55290)	3601.7 (55757)	N/A	3648.3 (56223)	3695 (56690)
LTE Band 48: 15 MHz	3557.5 (55315)	3602.5 (55765)	N/A	3647.5 (56215)	3692.5 (56665)
LTE Band 48: 20 MHz	3560 (55340)	3603.3 (55773)	N/A	3646.7 (56207)	3690 (56640)
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 19, UL UE Cat 13				
Modulations Supported in UL	QPSK, 16QAM, 64QAM				
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestation to be provided)	YES				
A-MPR (Additional MPR) disabled for SAR Testing?	YES				
LTE Carrier Aggregation Possible Combinations	The technical description includes all the possible carrier aggregation combinations				
LTE Additional Information	This device does not support full CA features on 3GPP Release 14. It supports carrier aggregation, downlink MIMO, LAA features as shown in Section 9 and Appendix H. All other uplink communications are identical to the Release 8 specifications. Uplink communications are done on the PCC unless otherwise specified. The following LTE Release 14 Features are not supported: Relay, HetNet, Enhanced eICIC, 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/m^3)
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:

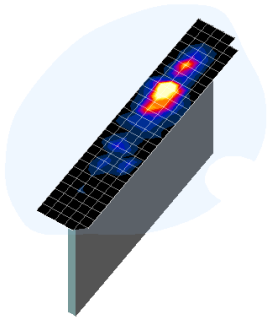

Figure 4-1 Sample SAR Area Scan

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.

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

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

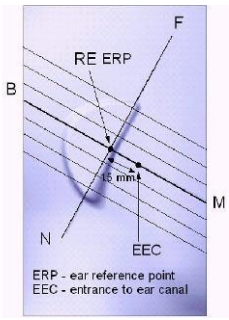

Figure 5-1
Close-Up Side view of ERP

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 than 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

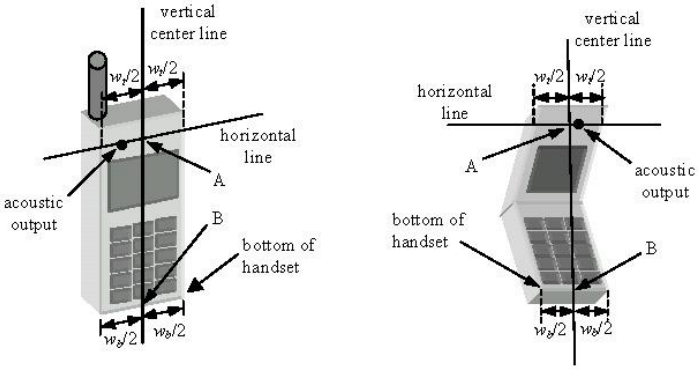

Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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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 ε = 3 and loss tangent δ = 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 was 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 / 15º 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 15degrees.
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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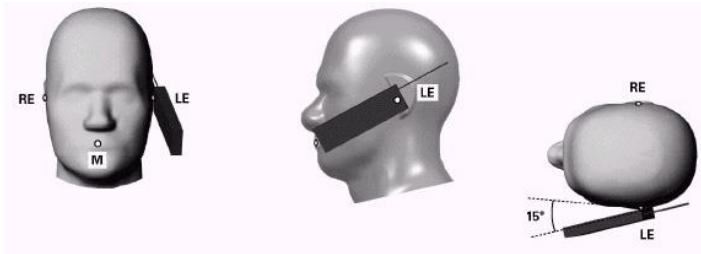

Figure 6-2 Front, Side and Top View of Ear/15º Tilt Position

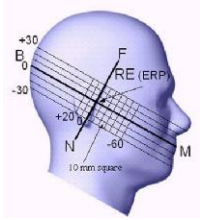

Figure 6-3
Side view w/ relevant markings

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.

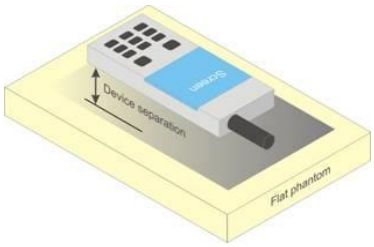

Figure 6-4
Sample Body-Worn Diagram

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 x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10 mm from the front, back and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

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

6.8 Phablet Configurations

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

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

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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 *General Population* (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT *Occupational* (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 SCH_0 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
$\hat{I}_{or}$	dBm/1.23 MHz	-104
$\frac{\text{Pilot } E_c}{I_{or}}$	dB	-7
$\frac{\text{Traffic } E_c}{I_{or}}$	dB	-7.4

Table 8-2
Parameters for Max. Power for RC3

Parameter	Units	Value
$\hat{I}_{or}$	dBm/1.23 MHz	-86
$\frac{\text{Pilot } E_c}{I_{or}}$	dB	-7
$\frac{\text{Traffic } E_c}{I_{or}}$	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 fullrate 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+SCHn), with FCH only as the primary mode. Otherwise, SAR is required for multiple code channel configuration (FCH + SCHn), 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. The1x 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 "1's". 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 ½ dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is <1.45 W/kg.

8.6.5 TDD

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

8.6.6 Downlink Only Carrier Aggregation

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

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measurements are required for downlink only 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

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remaining test positions is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

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	Rule Part	Frequency	SO55 [dBm]	SO55 [dBm]	SO75 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC		MHz	RC1	RC3	RC11	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	564	90S	820.1	25.30	25.29	25.28	25.29	25.28	25.13	25.11
Cellular	1013	22H	824.7	25.28	25.30	25.28	25.31	25.29	25.19	25.18
	384	22H	836.52	25.31	25.31	25.27	25.29	25.28	25.17	25.11
	777	22H	848.31	25.29	25.28	25.27	25.27	25.28	25.10	25.16
PCS	25	24E	1851.25	24.70	24.71	24.72	24.70	24.71	25.01	25.02
	600	24E	1880	24.95	24.94	24.93	24.92	24.94	25.19	25.20
	1175	24E	1908.75	25.00	25.01	24.98	24.99	25.01	25.18	25.20

Table 9-2
Reduced Conducted Power

Band	Channel	Rule Part	Frequency	SO55 [dBm]	SO55 [dBm]	SO75 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC		MHz	RC1	RC3	RC11	FCH+SCH	FCH	(RTAP)	(RETAP)
PCS	25	24E	1851.25	23.06	23.10	23.18	22.98	22.80	23.03	22.99
	600	24E	1880	23.10	23.14	23.14	22.85	22.97	23.20	23.20
	1175	24E	1908.75	23.15	23.08	23.11	23.00	23.04	23.14	23.14

Note: RC1 is only applicable for IS-95 compatibility. For FCC Rule Part 90S, Per FCC KDB Publication 447498 D01v06 4.1.g), only one channel is required since the device operates within the transmission range of 817.90 – 823.10 MHz.

Figure 9-1
Power Measurement Setup

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9.2 GSM Conducted Powers

Table 9-3
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	33.60	33.47	32.30	**30.32**	27.90	26.57	26.28	25.02	25.00
	190	33.56	33.86	32.32	**30.11**	28.03	26.50	26.15	25.15	24.76
	251	33.56	33.70	32.78	**30.49**	28.52	26.42	26.22	25.02	24.98
GSM 1900	512	30.74	30.85	29.84	**26.83**	25.86	25.78	25.51	24.72	24.24
	661	30.70	30.67	30.18	**27.32**	25.45	25.69	25.47	24.69	24.21
	810	30.25	30.21	30.00	**27.22**	25.89	25.72	25.53	24.82	24.33
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	24.57	24.44	26.28	**26.06**	24.89	17.54	20.26	20.76	21.99
	190	24.53	24.83	26.30	**25.85**	25.02	17.47	20.13	20.89	21.75
	251	24.53	24.67	26.76	**26.23**	25.51	17.39	20.20	20.76	21.97
GSM 1900	512	21.71	21.82	23.82	**22.57**	22.85	16.75	19.49	20.46	21.23
	661	21.67	21.64	24.16	**23.06**	22.44	16.66	19.45	20.43	21.20
	810	21.22	21.18	23.98	**22.96**	22.88	16.69	19.51	20.56	21.32
GSM 850	**Frame Avg.Targets:**	24.67	24.67	26.68	**26.44**	25.69	17.17	20.18	20.94	22.19
GSM 1900		21.67	21.67	23.68	**23.44**	22.69	16.67	19.68	20.44	21.69

Note:

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

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

Figure 9-2
Power Measurement Setup

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9.3 UMTS Conducted Powers

Table 9-4
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	25.33	25.37	25.39	24.88	24.99	25.17	24.90	25.10	25.16	-
99		12.2 kbps AMR	25.33	25.37	25.36	24.92	25.17	25.17	25.04	25.09	25.19	-
6	HSDPA	Subtest 1	24.04	24.15	24.14	23.73	24.15	24.00	23.78	24.05	24.05	0
6		Subtest 2	24.06	24.04	24.04	23.63	23.86	23.94	23.69	23.84	24.02	0
6		Subtest 3	23.56	23.57	23.65	23.18	23.40	23.45	23.25	23.35	23.42	0.5
6		Subtest 4	23.52	23.56	23.75	23.26	23.26	23.54	23.28	23.30	23.49	0.5
6	HSUPA	Subtest 1	24.08	24.13	24.17	23.74	23.90	24.28	23.77	23.86	24.16	0
6		Subtest 2	22.12	22.11	22.24	21.96	22.07	22.28	21.86	22.01	22.20	2
6		Subtest 3	23.13	23.14	23.15	22.91	22.81	23.22	22.80	22.88	23.13	1
6		Subtest 4	22.06	22.15	22.22	21.67	21.88	22.21	21.75	21.84	22.10	2
6		Subtest 5	24.07	24.18	24.17	23.74	23.95	24.10	23.86	23.99	24.13	0
8	DC-HSDPA	Subtest 1	24.10	24.04	24.12	23.81	24.12	24.04	23.66	23.91	23.99	0
8		Subtest 2	24.01	24.08	24.07	23.60	23.74	23.90	23.65	23.89	24.10	0
8		Subtest 3	23.42	23.58	23.62	23.06	23.40	23.37	23.13	23.39	23.42	0.5
8		Subtest 4	23.48	23.55	23.77	23.17	23.17	23.56	23.25	23.30	23.45	0.5

Table 9-5
Reduced Conducted Power

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	22.83	23.01	23.26	22.95	23.13	23.16	-
99		12.2 kbps AMR	22.84	23.18	23.21	23.03	23.15	23.18	-
6	HSDPA	Subtest 1	21.56	22.26	22.08	21.85	22.08	22.10	0
6		Subtest 2	21.77	21.76	22.01	21.77	21.86	21.96	0
6		Subtest 3	21.11	21.38	21.54	21.27	21.42	21.46	0.5
6		Subtest 4	21.17	21.29	21.56	21.38	21.30	21.55	0.5
6	HSUPA	Subtest 1	21.75	21.93	22.27	21.66	21.80	22.13	0
6		Subtest 2	20.04	20.22	20.22	19.79	19.91	20.18	2
6		Subtest 3	21.01	20.75	21.36	20.85	20.92	21.09	1
6		Subtest 4	19.63	19.94	20.30	19.74	19.87	20.20	2
6		Subtest 5	21.79	22.06	22.12	21.79	21.99	22.04	0
8	DC-HSDPA	Subtest 1	21.79	22.12	22.04	21.59	21.98	21.99	0
8		Subtest 2	21.62	21.74	21.89	21.56	21.77	22.11	0
8		Subtest 3	21.15	21.41	21.37	21.17	21.43	21.41	0.5
8		Subtest 4	21.11	21.07	21.52	21.23	21.30	21.31	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

Figure 9-3
Power Measurement Setup

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9.4 LTE Conducted Powers

9.4.1 LTE Band 71

Table 9-6
LTE Band 71 Conducted Powers - 20 MHz Bandwidth

LTE Band 71 20 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 133297 (680.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	**25.50**	0	0
	1	50	25.37		0
	1	99	25.36		0
	50	0	**24.48**	0-1	1
	50	25	24.46		1
	50	50	24.30		1
	100	0	24.46		1
16QAM	1	0	24.39	0-1	1
	1	50	24.38		1
	1	99	24.38		1
	50	0	23.34	0-2	2
	50	25	23.34		2
	50	50	23.33		2
	100	0	23.45		2
64QAM	1	0	23.25	0-2	2
	1	50	23.33		2
	1	99	23.24		2
	50	0	22.14	0-3	3
	50	25	22.28		3
	50	50	22.16		3
	100	0	22.17		3

Note: LTE Band 71 at 20 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 9-7
LTE Band 71 Conducted Powers - 15 MHz Bandwidth

LTE Band 71 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 133297 (680.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	25.46	0	0
	1	36	25.44		0
	1	74	25.44		0
	36	0	24.40	0-1	1
	36	18	24.30		1
	36	37	24.38		1
	75	0	24.37		1
16QAM	1	0	24.31	0-1	1
	1	36	24.32		1
	1	74	24.32		1
	36	0	23.48	0-2	2
	36	18	23.45		2
	36	37	23.49		2
	75	0	23.43		2
64QAM	1	0	23.25	0-2	2
	1	36	23.30		2
	1	74	23.30		2
	36	0	22.33	0-3	3
	36	18	22.32		3
	36	37	22.40		3
	75	0	22.27		3

Note: LTE Band 71 at 15 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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Table 9-8
LTE Band 71 Conducted Powers - 10 MHz Bandwidth

LTE Band 71 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 133172 (668.0 MHz)	Mid Channel 133297 (680.5 MHz)	High Channel 133422 (693.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.35	25.42	25.33	0	0
	1	25	25.32	25.41	25.36		0
	1	49	25.33	25.41	25.35		0
	25	0	24.46	24.32	24.34	0-1	1
	25	12	24.42	24.31	24.32		1
	25	25	24.44	24.32	24.34		1
	50	0	24.38	24.44	24.44		1
16QAM	1	0	24.36	24.47	24.40	0-1	1
	1	25	24.36	24.47	24.37		1
	1	49	24.36	24.47	24.39		1
	25	0	23.41	23.32	23.35	0-2	2
	25	12	23.40	23.34	23.37		2
	25	25	23.41	23.34	23.37		2
	50	0	23.34	23.35	23.44		2
64QAM	1	0	23.27	23.40	23.28	0-2	2
	1	25	23.27	23.33	23.22		2
	1	49	23.24	23.30	23.27		2
	25	0	22.29	22.31	22.31	0-3	3
	25	12	22.22	22.21	22.20		3
	25	25	22.38	22.30	22.29		3
	50	0	22.32	22.35	22.30		3

Table 9-9
LTE Band 71 Conducted Powers - 5 MHz Bandwidth

LTE Band 71 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 133147 (665.5 MHz)	Mid Channel 133297 (680.5 MHz)	High Channel 133447 (695.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.31	25.37	25.35	0	0
	1	12	25.31	25.34	25.24		0
	1	24	25.23	25.31	25.38		0
	12	0	24.20	24.44	24.28	0-1	1
	12	6	24.49	24.42	24.37		1
	12	13	24.38	24.40	24.33		1
	25	0	24.48	24.34	24.29		1
16QAM	1	0	24.45	24.47	24.50	0-1	1
	1	12	24.49	24.33	24.35		1
	1	24	24.30	24.40	24.33		1
	12	0	23.35	23.36	23.45	0-2	2
	12	6	23.31	23.31	23.37		2
	12	13	23.49	23.36	23.37		2
	25	0	23.43	23.40	23.34		2
64QAM	1	0	23.28	23.30	23.21	0-2	2
	1	12	23.22	23.38	23.18		2
	1	24	23.20	23.33	23.21		2
	12	0	22.26	22.16	22.33	0-3	3
	12	6	22.37	22.29	22.36		3
	12	13	22.26	22.19	22.37		3
	25	0	22.20	22.34	22.43		3

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9.4.2 LTE Band 12

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

LTE Band 12 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23095 (707.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	25.31	0	0
	1	25	25.33		0
	1	49	**25.34**		0
	25	0	24.33	0-1	1
	25	12	24.35		1
	25	25	**24.36**		1
	50	0	24.30		1
16QAM	1	0	24.35	0-1	1
	1	25	24.31		1
	1	49	24.33		1
	25	0	23.47	0-2	2
	25	12	23.47		2
	25	25	23.48		2
	50	0	23.48		2
64QAM	1	0	23.19	0-2	2
	1	25	23.12		2
	1	49	23.31		2
	25	0	22.41	0-3	3
	25	12	22.34		3
	25	25	22.41		3
	50	0	22.33		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.

Table 9-11
LTE Band 12 Conducted Powers - 5 MHz Bandwidth

LTE Band 12 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23035 (701.5 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23155 (713.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.38	25.41	25.37	0	0
	1	12	25.44	25.41	25.36		0
	1	24	25.39	25.44	25.40		0
	12	0	24.45	24.39	24.45	0-1	1
	12	6	24.48	24.36	24.42		1
	12	13	24.40	24.37	24.46		1
	25	0	24.42	24.43	24.36		1
16QAM	1	0	24.33	24.49	24.46	0-1	1
	1	12	24.47	24.38	24.30		1
	1	24	24.40	24.34	24.44		1
	12	0	23.30	23.32	23.33	0-2	2
	12	6	23.41	23.46	23.40		2
	12	13	23.42	23.50	23.43		2
	25	0	23.41	23.50	23.41		2
64QAM	1	0	23.31	23.48	23.41	0-2	2
	1	12	23.32	23.24	23.24		2
	1	24	23.34	23.23	23.26		2
	12	0	22.16	22.19	22.17	0-3	3
	12	6	22.39	22.29	22.34		3
	12	13	22.32	22.39	22.43		3
	25	0	22.36	22.47	22.25		3

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

LTE Band 12 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23025 (700.5 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23165 (714.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.43	25.31	25.47	0	0
	1	7	25.38	25.38	25.39		0
	1	14	25.36	25.48	25.30		0
	8	0	24.42	24.43	24.46	0-1	1
	8	4	24.47	24.41	24.30		1
	8	7	24.42	24.49	24.47		1
	15	0	24.39	24.39	24.34		1
16QAM	1	0	24.31	24.47	24.31	0-1	1
	1	7	24.30	24.33	24.42		1
	1	14	24.32	24.33	24.43		1
	8	0	23.30	23.32	23.42	0-2	2
	8	4	23.34	23.47	23.39		2
	8	7	23.34	23.47	23.37		2
	15	0	23.45	23.44	23.48		2
64QAM	1	0	23.26	23.36	23.12	0-2	2
	1	7	23.22	23.16	23.30		2
	1	14	23.28	23.15	23.28		2
	8	0	22.18	22.22	22.32	0-3	3
	8	4	22.26	22.42	22.32		3
	8	7	22.14	22.35	22.36		3
	15	0	22.43	22.39	22.42		3

Table 9-13
LTE Band 12 Conducted Powers -1.4 MHz Bandwidth

LTE Band 12 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23017 (699.7 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23173 (715.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.41	25.35	25.36	0	0
	1	2	25.40	25.38	25.42		0
	1	5	25.30	25.32	25.48		0
	3	0	25.31	25.40	25.46		0
	3	2	25.38	25.34	25.47		0
	3	3	25.30	25.50	25.30		0
	6	0	24.34	24.47	24.49	0-1	1
16QAM	1	0	24.35	24.34	24.44	0-1	1
	1	2	24.46	24.38	24.49		1
	1	5	24.49	24.44	24.44		1
	3	0	24.34	24.38	24.42		1
	3	2	24.33	24.38	24.41		1
	3	3	24.44	24.46	24.47		1
	6	0	23.32	23.46	23.37	0-2	2
64QAM	1	0	23.29	23.23	23.34	0-2	2
	1	2	23.28	23.30	23.44		2
	1	5	23.44	23.27	23.28		2
	3	0	23.19	23.26	23.33		2
	3	2	23.23	23.31	23.38		2
	3	3	23.40	23.43	23.41		2
	6	0	22.21	22.36	22.36	0-3	3

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9.4.3 LTE Band 13

Table 9-14
LTE Band 13 Conducted Powers - 10 MHz Bandwidth

LTE Band 13 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	25.31	0	0
	1	25	**25.49**		0
	1	49	25.48		0
	25	0	24.34	0-1	1
	25	12	24.34		1
	25	25	**24.38**		1
	50	0	24.37		1
16QAM	1	0	24.49	0-1	1
	1	25	24.48		1
	1	49	24.48		1
	25	0	23.32	0-2	2
	25	12	23.36		2
	25	25	23.34		2
	50	0	23.35		2
64QAM	1	0	23.34	0-2	2
	1	25	23.39		2
	1	49	23.42		2
	25	0	22.32	0-3	3
	25	12	22.33		3
	25	25	22.30		3
	50	0	22.33		3

Table 9-15
LTE Band 13 Conducted Powers - 5 MHz Bandwidth

LTE Band 13 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	25.41	0	0
	1	12	25.40		0
	1	24	25.35		0
	12	0	24.35	0-1	1
	12	6	24.33		1
	12	13	24.39		1
	25	0	24.36		1
16QAM	1	0	24.38	0-1	1
	1	12	24.38		1
	1	24	24.39		1
	12	0	23.33	0-2	2
	12	6	23.31		2
	12	13	23.44		2
	25	0	23.44		2
64QAM	1	0	23.21	0-2	2
	1	12	23.25		2
	1	24	23.25		2
	12	0	22.14	0-3	3
	12	6	22.23		3
	12	13	22.32		3
	25	0	22.29		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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9.4.4 LTE Band 14

Table 9-16
LTE Band 14 Conducted Powers - 10 MHz Bandwidth

LTE Band 14 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23330 (793.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	25.42	0	0
	1	25	25.43		0
	1	49	25.42		0
	25	0	24.48	0-1	1
	25	12	24.45		1
	25	25	24.45		1
	50	0	24.41		1
16QAM	1	0	24.36	0-1	1
	1	25	24.36		1
	1	49	24.35		1
	25	0	23.37	0-2	2
	25	12	23.37		2
	25	25	23.47		2
	50	0	23.35		2
64QAM	1	0	23.22	0-2	2
	1	25	23.30		2
	1	49	23.32		2
	25	0	22.35	0-3	3
	25	12	22.20		3
	25	25	22.44		3
	50	0	22.19		3

Table 9-17
LTE Band 14 Conducted Powers - 5 MHz Bandwidth

LTE Band 14 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23330 (793.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	25.44	0	0
	1	12	25.34		0
	1	24	25.43		0
	12	0	24.49	0-1	1
	12	6	24.41		1
	12	13	24.37		1
	25	0	24.37		1
16QAM	1	0	24.39	0-1	1
	1	12	24.42		1
	1	24	24.45		1
	12	0	23.44	0-2	2
	12	6	23.49		2
	12	13	23.42		2
	25	0	23.41		2
64QAM	1	0	23.34	0-2	2
	1	12	23.38		2
	1	24	23.43		2
	12	0	22.34	0-3	3
	12	6	22.44		3
	12	13	22.41		3
	25	0	22.39		3

Note: LTE Band 14 at 5 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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9.4.5 LTE Band 5 (Cell)

Table 9-18
LTE Band 5 (Cell) Conducted Powers - 10 MHz Bandwidth

LTE Band 5 (Cell) 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 20525 (836.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	**25.40**	0	0
	1	25	25.21		0
	1	49	25.37		0
	25	0	24.21	0-1	1
	25	12	24.28		1
	25	25	**24.40**		1
	50	0	24.27		1
16QAM	1	0	24.12	0-1	1
	1	25	24.39		1
	1	49	24.27		1
	25	0	23.17	0-2	2
	25	12	23.07		2
	25	25	23.02		2
	50	0	23.15		2
64QAM	1	0	23.25	0-2	2
	1	25	23.02		2
	1	49	23.31		2
	25	0	22.34	0-3	3
	25	12	22.36		3
	25	25	22.10		3
	50	0	22.13		3

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

Table 9-19
LTE Band 5 (Cell) Conducted Powers - 5 MHz Bandwidth

LTE Band 5 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20425 (826.5 MHz)	Mid Channel 20525 (836.5 MHz)	High Channel 20625 (846.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.07	25.18	25.10	0	0
	1	12	25.16	25.21	25.16		0
	1	24	25.18	25.38	25.27		0
	12	0	24.08	24.11	24.23	0-1	1
	12	6	24.34	24.39	24.01		1
	12	13	24.08	24.21	24.31		1
	25	0	24.38	24.14	24.21		1
16QAM	1	0	24.34	24.38	24.18	0-1	1
	1	12	24.13	24.12	24.03		1
	1	24	24.26	24.09	24.11		1
	12	0	23.40	23.16	23.16	0-2	2
	12	6	23.11	23.32	23.17		2
	12	13	23.00	23.22	23.31		2
	25	0	23.10	23.20	23.13		2
64QAM	1	0	23.18	23.28	23.35	0-2	2
	1	12	23.16	23.10	23.35		2
	1	24	23.32	23.21	23.30		2
	12	0	22.25	22.13	22.30	0-3	3
	12	6	22.26	22.33	22.19		3
	12	13	22.20	22.33	22.11		3
	25	0	22.29	22.25	22.00		3

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Table 9-20
LTE Band 5 (Cell) Conducted Powers - 3 MHz Bandwidth

LTE Band 5 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20415 (825.5 MHz)	Mid Channel 20525 (836.5 MHz)	High Channel 20635 (847.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.07	25.07	25.16	0	0
	1	7	25.20	25.13	25.36		0
	1	14	25.07	25.21	25.26		0
	8	0	24.27	24.15	24.29	0-1	1
	8	4	24.12	24.23	24.17		1
	8	7	24.07	24.18	24.32		1
	15	0	24.04	24.15	24.08		1
16QAM	1	0	24.11	24.30	24.34	0-1	1
	1	7	24.04	24.35	24.39		1
	1	14	24.23	24.39	24.01		1
	8	0	23.29	23.04	23.38	0-2	2
	8	4	23.21	23.39	23.00		2
	8	7	23.39	23.06	23.12		2
	15	0	23.37	23.38	23.25		2
64QAM	1	0	23.25	23.12	23.19	0-2	2
	1	7	23.01	23.04	23.32		2
	1	14	23.26	23.06	23.12		2
	8	0	22.05	22.15	22.13	0-3	3
	8	4	22.22	22.01	22.02		3
	8	7	22.38	22.28	22.30		3
	15	0	22.38	22.38	22.11		3

Table 9-21
LTE Band 5 (Cell) Conducted Powers -1.4 MHz Bandwidth

LTE Band 5 (Cell) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20407 (824.7 MHz)	Mid Channel 20525 (836.5 MHz)	High Channel 20643 (848.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.35	25.03	25.04	0	0
	1	2	25.14	25.04	25.29		0
	1	5	25.11	25.14	25.07		0
	3	0	25.07	25.34	25.31		0
	3	2	25.04	25.23	25.39		0
	3	3	25.39	25.31	25.28		0
	6	0	24.19	24.08	24.13	0-1	1
16QAM	1	0	24.19	24.25	24.16	0-1	1
	1	2	24.38	24.29	24.15		1
	1	5	24.25	24.17	24.11		1
	3	0	24.11	24.11	24.22		1
	3	2	24.15	24.22	24.28		1
	3	3	24.08	24.31	24.02		1
	6	0	23.31	23.10	23.31	0-2	2
64QAM	1	0	23.21	23.40	23.23	0-2	2
	1	2	23.31	23.22	23.27		2
	1	5	23.32	23.08	23.28		2
	3	0	23.10	23.36	23.37		2
	3	2	23.40	23.18	23.29		2
	3	3	23.39	23.26	23.30		2
	6	0	22.35	22.26	22.04	0-3	3

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9.4.6 LTE Band 26 (Cell)

Table 9-22
LTE Band 26 (Cell) Conducted Powers - 15 MHz Bandwidth

LTE Band 26 (Cell) 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 26865 (831.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	25.46	0	0
	1	36	**25.47**		0
	1	74	25.46		0
	36	0	24.39	0-1	1
	36	18	**24.40**		1
	36	37	24.38		1
	75	0	24.35		1
16QAM	1	0	24.43	0-1	1
	1	36	24.44		1
	1	74	24.44		1
	36	0	23.41	0-2	2
	36	18	23.38		2
	36	37	23.39		2
	75	0	23.39		2
64QAM	1	0	23.24	0-2	2
	1	36	23.36		2
	1	74	23.38		2
	36	0	22.22	0-3	3
	36	18	22.29		3
	36	37	22.20		3
	75	0	22.39		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 9-23
LTE Band 26 (Cell) Conducted Powers - 10 MHz Bandwidth

LTE Band 26 (Cell) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26740 (819.0 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 26990 (844.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.46	25.30	25.45	0	0
	1	25	25.43	25.30	25.42		0
	1	49	25.41	25.39	25.40		0
	25	0	24.30	24.34	24.34	0-1	1
	25	12	24.32	24.34	24.35		1
	25	25	24.31	24.34	24.35		1
	50	0	24.32	24.32	24.33		1
16QAM	1	0	24.49	24.38	24.44	0-1	1
	1	25	24.48	24.39	24.43		1
	1	49	24.47	24.38	24.46		1
	25	0	23.42	23.38	23.40	0-2	2
	25	12	23.43	23.40	23.42		2
	25	25	23.42	23.39	23.38		2
	50	0	23.38	23.34	23.36		2
64QAM	1	0	23.34	23.24	23.28	0-2	2
	1	25	23.37	23.36	23.27		2
	1	49	23.30	23.20	23.32		2
	25	0	22.38	22.34	22.21	0-3	3
	25	12	22.38	22.28	22.24		3
	25	25	22.38	22.39	22.26		3
	50	0	22.31	22.25	22.25		3

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Table 9-24
LTE Band 26 (Cell) Conducted Powers - 5 MHz Bandwidth

LTE Band 26 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26715 (816.5 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27015 (846.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.37	25.36	25.44	0	0
	1	12	25.36	25.47	25.33		0
	1	24	25.33	25.45	25.42		0
	12	0	24.42	24.38	24.43	0-1	1
	12	6	24.50	24.31	24.42		1
	12	13	24.50	24.42	24.44		1
	25	0	24.48	24.41	24.37		1
16QAM	1	0	24.44	24.36	24.44	0-1	1
	1	12	24.41	24.36	24.44		1
	1	24	24.48	24.41	24.34		1
	12	0	23.44	23.35	23.39	0-2	2
	12	6	23.33	23.47	23.33		2
	12	13	23.30	23.41	23.49		2
	25	0	23.34	23.44	23.34		2
64QAM	1	0	23.30	23.17	23.40	0-2	2
	1	12	23.24	23.35	23.36		2
	1	24	23.31	23.40	23.33		2
	12	0	22.39	22.15	22.35	0-3	3
	12	6	22.27	22.29	22.26		3
	12	13	22.29	22.26	22.42		3
	25	0	22.33	22.31	22.19		3

Table 9-25
LTE Band 26 (Cell) Conducted Powers - 3 MHz Bandwidth

LTE Band 26 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26705 (815.5 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27025 (847.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.36	25.37	25.43	0	0
	1	7	25.38	25.38	25.40		0
	1	14	25.36	25.33	25.35		0
	8	0	24.49	24.41	24.37	0-1	1
	8	4	24.43	24.42	24.45		1
	8	7	24.46	24.50	24.43		1
	15	0	24.41	24.47	24.46		1
16QAM	1	0	24.42	24.42	24.34	0-1	1
	1	7	24.35	24.36	24.43		1
	1	14	24.46	24.34	24.38		1
	8	0	23.48	23.34	23.48	0-2	2
	8	4	23.31	23.44	23.33		2
	8	7	23.48	23.30	23.40		2
	15	0	23.48	23.31	23.38		2
64QAM	1	0	23.38	23.32	23.25	0-2	2
	1	7	23.29	23.23	23.28		2
	1	14	23.44	23.31	23.29		2
	8	0	22.43	22.25	22.44	0-3	3
	8	4	22.12	22.38	22.32		3
	8	7	22.47	22.23	22.31		3
	15	0	22.41	22.14	22.33		3

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Table 9-26
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 26697 (814.7 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27033 (848.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.49	25.31	25.40	0	0
	1	2	25.41	25.44	25.42		0
	1	5	25.42	25.33	25.39		0
	3	0	25.42	25.41	25.43		0
	3	2	25.43	25.35	25.44		0
	3	3	25.41	25.34	25.44		0
	6	0	24.41	24.43	24.28	0-1	1
16QAM	1	0	24.29	24.30	24.38	0-1	1
	1	2	24.34	24.44	24.48		1
	1	5	24.33	24.43	24.32		1
	3	0	24.36	24.34	24.31		1
	3	2	24.30	24.44	24.34		1
	3	3	24.31	24.39	24.43		1
	6	0	23.46	23.47	23.41	0-2	2
64QAM	1	0	23.26	23.29	23.24	0-2	2
	1	2	23.19	23.31	23.44		2
	1	5	23.23	23.24	23.14		2
	3	0	23.19	23.25	23.23		2
	3	2	23.16	23.43	23.33		2
	3	3	23.26	23.20	23.38		2
	6	0	22.27	22.42	22.38	0-3	3

9.4.7 Maximum LTE Band 66 (AWS)

Table 9-27
LTE Band 66 (AWS) Conducted Powers - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132072 (1720.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132572 (1770.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.16	25.20	25.07	0	0
	1	50	25.15	**25.29**	25.15		0
	1	99	25.18	25.18	25.04		0
	50	0	24.41	24.39	24.36	0-1	1
	50	25	24.44	24.39	24.31		1
	50	50	24.33	24.39	**24.45**		1
	100	0	24.37	24.35	24.21		1
16QAM	1	0	24.48	24.41	24.48	0-1	1
	1	50	24.48	24.41	24.47		1
	1	99	24.48	24.40	24.47		1
	50	0	23.35	23.49	23.39	0-2	2
	50	25	23.31	23.42	23.35		2
	50	50	23.34	23.32	23.34		2
	100	0	23.35	23.38	23.38		2
64QAM	1	0	23.47	23.37	23.35	0-2	2
	1	50	23.36	23.23	23.45		2
	1	99	23.29	23.21	23.35		2
	50	0	22.29	22.46	22.23	0-3	3
	50	25	22.12	22.33	22.17		3
	50	50	22.30	22.13	22.28		3
	100	0	22.17	22.22	22.35		3

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Table 9-28
LTE Band 66 (AWS) Conducted Powers - 15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132047 (1717.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132597 (1772.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.17	25.11	25.10	0	0
	1	36	25.17	25.22	25.09		0
	1	74	25.17	25.12	25.09		0
	36	0	24.46	24.45	24.40	0-1	1
	36	18	24.44	24.45	24.49		1
	36	37	24.45	24.42	24.32		1
	75	0	24.31	24.41	24.40		1
16QAM	1	0	24.49	24.36	24.35	0-1	1
	1	36	24.33	24.34	24.46		1
	1	74	24.44	24.33	24.47		1
	36	0	23.33	23.43	23.31	0-2	2
	36	18	23.34	23.33	23.30		2
	36	37	23.31	23.34	23.43		2
	75	0	23.37	23.22	23.38		2
64QAM	1	0	23.48	23.30	23.20	0-2	2
	1	36	23.13	23.24	23.41		2
	1	74	23.39	23.17	23.42		2
	36	0	22.14	22.41	22.27	0-3	3
	36	18	22.21	22.14	22.29		3
	36	37	22.14	22.27	22.24		3
	75	0	22.17	22.22	22.18		3

Table 9-29
LTE Band 66 (AWS) Conducted Powers - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132022 (1715.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132622 (1775.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.25	25.22	25.12	0	0
	1	25	25.28	25.19	25.11		0
	1	49	25.11	25.20	25.10		0
	25	0	24.31	24.36	24.35	0-1	1
	25	12	24.37	24.44	24.49		1
	25	25	24.36	24.44	24.43		1
	50	0	24.37	24.46	24.45		1
16QAM	1	0	24.42	24.39	24.44	0-1	1
	1	25	24.43	24.40	24.44		1
	1	49	24.40	24.32	24.44		1
	25	0	23.32	23.35	23.48	0-2	2
	25	12	23.30	23.39	23.35		2
	25	25	23.30	23.37	23.36		2
	50	0	23.38	23.38	23.35		2
64QAM	1	0	23.25	23.23	23.43	0-2	2
	1	25	23.34	23.24	23.36		2
	1	49	23.28	23.29	23.33		2
	25	0	22.12	22.15	22.32	0-3	3
	25	12	22.20	22.30	22.26		3
	25	25	22.11	22.26	22.26		3
	50	0	22.31	22.36	22.23		3

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Table 9-30
LTE Band 66 (AWS) Conducted Powers - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131997 (1712.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132647 (1777.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.16	25.19	25.16	0	0
	1	12	25.18	25.20	25.07		0
	1	24	25.13	25.23	25.15		0
	12	0	24.41	24.40	24.42	0-1	1
	12	6	24.35	24.50	24.42		1
	12	13	24.35	24.44	24.39		1
	25	0	24.32	24.41	24.38		1
16QAM	1	0	24.33	24.30	24.40	0-1	1
	1	12	24.30	24.38	24.37		1
	1	24	24.45	24.43	24.43		1
	12	0	23.23	23.30	23.48	0-2	2
	12	6	23.23	23.31	23.46		2
	12	13	23.35	23.31	23.48		2
	25	0	23.42	23.48	23.34		2
64QAM	1	0	23.22	23.19	23.38	0-2	2
	1	12	23.27	23.32	23.26		2
	1	24	23.30	23.30	23.36		2
	12	0	22.04	22.16	22.48	0-3	3
	12	6	22.18	22.17	22.43		3
	12	13	22.16	22.23	22.33		3
	25	0	22.32	22.32	22.19		3

Table 9-31
LTE Band 66 (AWS) Conducted Powers - 3 MHz Bandwidth

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131987 (1711.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132657 (1778.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.18	25.18	25.39	0	0
	1	7	25.10	25.18	25.41		0
	1	14	25.17	25.16	25.30		0
	8	0	24.34	24.31	24.39	0-1	1
	8	4	24.36	24.35	24.34		1
	8	7	24.36	24.41	24.39		1
	15	0	24.37	24.44	24.36		1
16QAM	1	0	24.40	24.30	24.33	0-1	1
	1	7	24.46	24.40	24.41		1
	1	14	24.41	24.48	24.37		1
	8	0	23.36	23.44	23.31	0-2	2
	8	4	23.35	23.47	23.32		2
	8	7	23.33	23.44	23.36		2
	15	0	23.37	23.38	23.36		2
64QAM	1	0	23.23	23.13	23.24	0-2	2
	1	7	23.33	23.40	23.32		2
	1	14	23.27	23.43	23.28		2
	8	0	22.33	22.42	22.19	0-3	3
	8	4	22.31	22.27	22.18		3
	8	7	22.26	22.40	22.21		3
	15	0	22.30	22.20	22.28		3

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Table 9-32
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 131979 (1710.7 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132665 (1779.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.19	25.16	25.11	0	0
	1	2	25.12	25.16	25.12		0
	1	5	25.25	25.28	25.13		0
	3	0	25.19	25.14	25.16		0
	3	2	25.15	25.19	25.17		0
	3	3	25.10	25.15	25.12		0
	6	0	24.47	24.38	24.44	0-1	1
16QAM	1	0	24.46	24.44	24.32	0-1	1
	1	2	24.46	24.46	24.46		1
	1	5	24.43	24.47	24.40		1
	3	0	24.45	24.33	24.47		1
	3	2	24.31	24.42	24.44		1
	3	3	24.32	24.33	24.45		1
	6	0	23.48	23.36	23.43	0-2	2
64QAM	1	0	23.36	23.38	23.19	0-2	2
	1	2	23.36	23.45	23.44		2
	1	5	23.29	23.35	23.39		2
	3	0	23.27	23.30	23.36		2
	3	2	23.30	23.37	23.42		2
	3	3	23.15	23.26	23.29		2
	6	0	22.33	22.27	22.23	0-3	3

9.4.8 Reduced LTE Band 66 (AWS)

Table 9-33
LTE Band 66 (AWS) Conducted Powers - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132072 (1720.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132572 (1770.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	**23.41**	23.37	23.33	0	0
	1	50	23.30	23.20	23.39		0
	1	99	23.33	23.28	23.31		0
	50	0	23.19	**23.49**	23.45	0-1	0
	50	25	23.46	23.35	23.47		0
	50	50	23.34	23.31	23.24		0
	100	0	23.28	23.21	23.37		0
16QAM	1	0	23.32	23.34	23.42	0-1	0
	1	50	23.45	23.47	23.34		0
	1	99	23.39	23.23	23.20		0
	50	0	23.22	23.49	23.41	0-2	0
	50	25	23.41	23.33	23.46		0
	50	50	23.49	23.45	23.19		0
	100	0	23.28	23.34	23.37		0
64QAM	1	0	23.35	23.19	23.23	0-2	0
	1	50	23.33	23.36	23.20		0
	1	99	23.49	23.37	23.17		0
	50	0	22.20	22.30	22.37	0-3	1
	50	25	22.32	22.47	22.38		1
	50	50	22.17	22.31	22.45		1
	100	0	22.42	22.19	22.43		1

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Table 9-34
LTE Band 66 (AWS) Conducted Powers - 15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132047 (1717.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132597 (1772.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.43	23.43	23.35	0	0
	1	36	23.28	23.50	23.47		0
	1	74	23.42	23.27	23.22		0
	36	0	23.26	23.29	23.48	0-1	0
	36	18	23.47	23.25	23.26		0
	36	37	23.47	23.28	23.44		0
	75	0	23.39	23.25	23.45		0
16QAM	1	0	23.40	23.21	23.36	0-1	0
	1	36	23.46	23.18	23.47		0
	1	74	23.26	23.17	23.29		0
	36	0	23.27	23.29	23.44	0-2	0
	36	18	23.40	23.18	23.39		0
	36	37	23.21	23.18	23.37		0
	75	0	23.20	23.49	23.48		0
64QAM	1	0	23.44	23.31	23.42	0-2	0
	1	36	23.43	23.43	23.34		0
	1	74	23.25	23.30	23.50		0
	36	0	22.34	22.47	22.28	0-3	1
	36	18	22.34	22.33	22.44		1
	36	37	22.35	22.36	22.35		1
	75	0	22.33	22.31	22.32		1

Table 9-35
LTE Band 66 (AWS) Conducted Powers - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132022 (1715.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132622 (1775.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.35	23.25	23.30	0	0
	1	25	23.41	23.48	23.37		0
	1	49	23.47	23.34	23.32		0
	25	0	23.42	23.29	23.36	0-1	0
	25	12	23.22	23.18	23.18		0
	25	25	23.18	23.44	23.41		0
	50	0	23.33	23.31	23.44		0
16QAM	1	0	23.42	23.25	23.40	0-1	0
	1	25	23.30	23.50	23.34		0
	1	49	23.19	23.42	23.32		0
	25	0	23.49	23.47	23.32	0-2	0
	25	12	23.44	23.28	23.24		0
	25	25	23.41	23.45	23.18		0
	50	0	23.26	23.19	23.32		0
64QAM	1	0	23.38	23.44	23.47	0-2	0
	1	25	23.45	23.49	23.38		0
	1	49	23.29	23.25	23.24		0
	25	0	22.45	22.28	22.22	0-3	1
	25	12	22.40	22.48	22.28		1
	25	25	22.48	22.32	22.37		1
	50	0	22.31	22.40	22.47		1

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Table 9-36
LTE Band 66 (AWS) Conducted Powers - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131997 (1712.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132647 (1777.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.23	23.49	23.17	0	0
	1	12	23.31	23.35	23.43		0
	1	24	23.41	23.32	23.45		0
	12	0	23.45	23.30	23.45	0-1	0
	12	6	23.49	23.32	23.21		0
	12	13	23.26	23.30	23.26		0
	25	0	23.27	23.46	23.50		0
16QAM	1	0	23.20	23.48	23.34	0-1	0
	1	12	23.23	23.22	23.23		0
	1	24	23.32	23.18	23.18		0
	12	0	23.49	23.19	23.31	0-2	0
	12	6	23.46	23.31	23.47		0
	12	13	23.28	23.22	23.36		0
	25	0	23.38	23.20	23.31		0
64QAM	1	0	23.34	23.34	23.45	0-2	0
	1	12	23.29	23.26	23.34		0
	1	24	23.30	23.26	23.19		0
	12	0	22.32	22.49	22.30	0-3	1
	12	6	22.22	22.19	22.29		1
	12	13	22.44	22.38	22.36		1
	25	0	22.34	22.25	22.18		1

Table 9-37
LTE Band 66 (AWS) Conducted Powers - 3 MHz Bandwidth

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131987 (1711.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132657 (1778.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.18	23.35	23.38	0	0
	1	7	23.33	23.46	23.33		0
	1	14	23.38	23.28	23.35		0
	8	0	23.18	23.47	23.40	0-1	0
	8	4	23.38	23.30	23.23		0
	8	7	23.22	23.17	23.22		0
	15	0	23.39	23.45	23.19		0
16QAM	1	0	23.21	23.30	23.29	0-1	0
	1	7	23.46	23.39	23.31		0
	1	14	23.48	23.33	23.28		0
	8	0	23.22	23.17	23.35	0-2	0
	8	4	23.49	23.19	23.42		0
	8	7	23.18	23.39	23.46		0
	15	0	23.29	23.46	23.21		0
64QAM	1	0	23.40	23.17	23.27	0-2	0
	1	7	23.33	23.18	23.35		0
	1	14	23.49	23.34	23.21		0
	8	0	22.23	22.23	22.45	0-3	1
	8	4	22.27	22.26	22.36		1
	8	7	22.26	22.35	22.38		1
	15	0	22.21	22.26	22.24		1

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Table 9-38
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 131979 (1710.7 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132665 (1779.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.41	23.33	23.24	0	0
	1	2	23.38	23.17	23.34		0
	1	5	23.46	23.48	23.23		0
	3	0	23.20	23.47	23.28		0
	3	2	23.47	23.33	23.30		0
	3	3	23.36	23.47	23.48		0
	6	0	23.34	23.35	23.25	0-1	0
16QAM	1	0	23.18	23.20	23.31	0-1	0
	1	2	23.37	23.38	23.36		0
	1	5	23.42	23.45	23.48		0
	3	0	23.41	23.35	23.26		0
	3	2	23.18	23.48	23.44		0
	3	3	23.29	23.30	23.30		0
	6	0	23.43	23.45	23.49	0-2	0
64QAM	1	0	23.22	23.38	23.48	0-2	0
	1	2	23.26	23.33	23.36		0
	1	5	23.23	23.38	23.49		0
	3	0	23.49	23.28	23.29		0
	3	2	23.27	23.20	23.31		0
	3	3	23.28	23.32	23.18		0
	6	0	22.32	22.28	22.22	0-3	1

9.4.9 Maximum LTE Band 25 (PCS)

Table 9-39
LTE Band 25 (PCS) Conducted Powers - 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.02	**25.19**	24.91	0	0
	1	50	24.98	25.05	25.00		0
	1	99	25.02	25.04	25.14		0
	50	0	24.14	24.15	24.16	0-1	1
	50	25	24.10	**24.19**	24.16		1
	50	50	24.09	24.13	24.09		1
	100	0	24.09	24.15	24.12		1
16QAM	1	0	24.01	24.11	24.07	0-1	1
	1	50	24.16	24.11	24.09		1
	1	99	24.09	24.11	24.19		1
	50	0	23.00	23.19	23.17	0-2	2
	50	25	23.03	23.12	23.00		2
	50	50	23.04	23.12	23.16		2
	100	0	23.10	23.18	23.10		2
64QAM	1	0	22.95	23.06	22.90	0-2	2
	1	50	23.09	22.98	22.97		2
	1	99	23.01	23.06	23.15		2
	50	0	21.98	22.00	21.98	0-3	3
	50	25	21.83	22.03	21.95		3
	50	50	21.85	22.03	22.15		3
	100	0	22.09	22.02	22.04		3

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Table 9-40
LTE Band 25 (PCS) Conducted Powers - 15 MHz Bandwidth

LTE Band 25 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26115 (1857.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26615 (1907.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.17	25.09	25.16	0	0
	1	36	25.17	25.10	25.15		0
	1	74	25.17	25.10	25.15		0
	36	0	24.06	24.15	24.20	0-1	1
	36	18	24.04	24.15	24.19		1
	36	37	24.05	24.12	24.11		1
	75	0	24.11	24.17	24.15		1
16QAM	1	0	24.14	24.02	24.06	0-1	1
	1	36	24.13	24.20	24.07		1
	1	74	24.14	24.19	24.08		1
	36	0	23.03	23.13	22.97	0-2	2
	36	18	23.04	23.13	22.96		2
	36	37	23.01	23.14	22.99		2
	75	0	23.07	23.18	23.18		2
64QAM	1	0	23.04	22.91	22.97	0-2	2
	1	36	23.08	23.05	22.89		2
	1	74	23.07	23.17	22.95		2
	36	0	21.90	21.99	21.97	0-3	3
	36	18	21.92	22.09	21.77		3
	36	37	21.82	22.01	21.96		3
	75	0	21.97	22.05	22.00		3

Table 9-41
LTE Band 25 (PCS) Conducted Powers - 10 MHz Bandwidth

LTE Band 25 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26090 (1855.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26640 (1910.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.15	25.02	25.02	0	0
	1	25	25.18	24.99	25.01		0
	1	49	25.11	25.00	25.00		0
	25	0	24.11	24.06	24.15	0-1	1
	25	12	24.07	24.04	24.15		1
	25	25	24.12	24.04	24.13		1
	50	0	24.13	24.06	24.15		1
16QAM	1	0	24.07	24.19	24.14	0-1	1
	1	25	24.08	24.20	24.14		1
	1	49	24.05	24.12	24.14		1
	25	0	23.02	23.05	23.18	0-2	2
	25	12	23.00	23.09	23.15		2
	25	25	23.00	23.07	23.16		2
	50	0	23.14	23.08	23.15		2
64QAM	1	0	22.96	23.14	23.12	0-2	2
	1	25	22.96	23.12	23.08		2
	1	49	22.99	22.96	23.12		2
	25	0	21.94	21.89	22.00	0-3	3
	25	12	21.86	22.04	22.02		3
	25	25	21.93	21.98	21.96		3
	50	0	22.04	22.00	22.13		3

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Table 9-42
LTE Band 25 (PCS) Conducted Powers - 5 MHz Bandwidth

LTE Band 25 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26065 (1852.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26665 (1912.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.16	25.19	25.06	0	0
	1	12	25.08	25.20	25.17		0
	1	24	25.14	25.13	25.15		0
	12	0	24.19	24.20	24.12	0-1	1
	12	6	24.08	24.00	24.12		1
	12	13	24.13	24.14	24.09		1
	25	0	24.05	24.11	24.08		1
16QAM	1	0	24.06	24.10	24.20	0-1	1
	1	12	24.03	24.18	24.17		1
	1	24	24.18	24.13	24.13		1
	12	0	23.11	23.07	23.18	0-2	2
	12	6	23.11	23.06	23.06		2
	12	13	23.08	23.06	23.08		2
	25	0	23.20	23.03	23.14		2
64QAM	1	0	23.05	22.98	23.03	0-2	2
	1	12	22.99	23.17	23.15		2
	1	24	23.12	23.12	23.02		2
	12	0	21.92	21.89	22.07	0-3	3
	12	6	21.96	21.97	21.87		3
	12	13	21.91	21.93	22.04		3
	25	0	22.13	21.88	22.09		3

Table 9-43
LTE Band 25 (PCS) Conducted Powers - 3 MHz Bandwidth

LTE Band 25 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26055 (1851.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26675 (1913.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.18	25.08	25.19	0	0
	1	7	25.10	24.98	25.11		0
	1	14	25.17	25.16	25.10		0
	8	0	24.04	24.01	24.09	0-1	1
	8	4	24.06	24.05	24.04		1
	8	7	24.06	24.11	24.09		1
	15	0	24.07	24.14	24.06		1
16QAM	1	0	24.10	24.00	24.13	0-1	1
	1	7	24.16	24.20	24.11		1
	1	14	24.11	24.18	24.17		1
	8	0	23.16	22.94	23.01	0-2	2
	8	4	23.15	23.17	23.02		2
	8	7	23.13	23.14	23.06		2
	15	0	23.17	23.08	23.16		2
64QAM	1	0	23.08	22.93	23.05	0-2	2
	1	7	23.15	23.12	23.02		2
	1	14	23.08	23.03	23.09		2
	8	0	22.06	21.85	21.86	0-3	3
	8	4	22.11	22.14	21.87		3
	8	7	22.01	21.94	22.02		3
	15	0	22.11	21.91	22.16		3

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Table 9-44
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 26047 (1850.7 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26683 (1914.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.09	25.06	25.16	0	0
	1	2	25.12	25.06	25.17		0
	1	5	25.05	25.18	25.08		0
	3	0	25.19	25.14	25.11		0
	3	2	25.15	25.19	25.12		0
	3	3	25.20	25.15	25.07		0
	6	0	24.07	24.18	24.19	0-1	1
16QAM	1	0	24.16	24.14	24.17	0-1	1
	1	2	24.16	24.16	24.11		1
	1	5	24.03	24.17	24.15		1
	3	0	24.15	24.13	24.12		1
	3	2	24.01	24.12	24.19		1
	3	3	24.12	24.13	24.20		1
	6	0	23.18	23.16	23.18	0-2	2
64QAM	1	0	23.02	22.95	23.17	0-2	2
	1	2	23.05	23.09	22.93		2
	1	5	22.87	23.05	23.06		2
	3	0	23.08	23.00	23.07		2
	3	2	22.93	23.08	22.99		2
	3	3	23.11	23.02	23.20		2
	6	0	22.04	22.10	22.01	0-3	3

9.4.10 Reduced LTE Band 25 (PCS)

Table 9-45
LTE Band 25 (PCS) Conducted Powers - 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.06	22.96	23.05	0	0
	1	50	22.91	23.11	**23.14**		0
	1	99	23.07	22.87	22.93		0
	50	0	23.11	22.96	**23.12**	0-1	0
	50	25	23.06	23.02	22.93		0
	50	50	22.92	22.98	22.97		0
	100	0	22.99	22.98	23.09		0
16QAM	1	0	22.88	23.17	23.02	0-1	0
	1	50	22.89	23.10	23.16		0
	1	99	23.17	22.97	23.19		0
	50	0	22.97	23.15	23.19	0-2	0
	50	25	23.20	23.03	23.06		0
	50	50	23.06	22.93	23.04		0
	100	0	23.03	23.13	23.04		0
64QAM	1	0	23.04	23.08	23.06	0-2	0
	1	50	23.05	23.01	23.05		0
	1	99	22.89	23.04	23.07		0
	50	0	22.15	22.17	21.97	0-3	1
	50	25	21.92	22.08	22.14		1
	50	50	22.16	21.91	22.20		1
	100	0	22.02	22.13	22.18		1

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Table 9-46
LTE Band 25 (PCS) Conducted Powers - 15 MHz Bandwidth

LTE Band 25 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26115 (1857.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26615 (1907.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.11	23.13	23.02	0	0
	1	36	23.11	22.94	22.92		0
	1	74	23.08	22.90	23.04		0
	36	0	23.00	23.09	23.17	0-1	0
	36	18	23.00	23.13	23.13		0
	36	37	23.08	23.02	22.95		0
	75	0	23.17	23.06	23.09		0
16QAM	1	0	23.08	22.93	22.93	0-1	0
	1	36	22.98	23.05	23.08		0
	1	74	22.89	22.98	23.18		0
	36	0	23.01	22.99	22.96	0-2	0
	36	18	23.02	23.02	23.13		0
	36	37	22.95	23.05	22.88		0
	75	0	22.95	22.87	23.13		0
64QAM	1	0	22.99	23.17	22.99	0-2	0
	1	36	23.04	23.05	22.89		0
	1	74	22.92	22.94	23.06		0
	36	0	22.06	22.06	22.14	0-3	1
	36	18	21.94	21.99	22.16		1
	36	37	21.95	22.10	21.96		1
	75	0	22.15	22.14	21.95		1

Table 9-47
LTE Band 25 (PCS) Conducted Powers - 10 MHz Bandwidth

LTE Band 25 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26090 (1855.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26640 (1910.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.13	23.12	22.97	0	0
	1	25	23.19	23.20	22.93		0
	1	49	23.13	23.08	23.18		0
	25	0	23.16	23.07	23.19	0-1	0
	25	12	23.16	22.96	23.01		0
	25	25	22.98	23.17	22.94		0
	50	0	22.87	23.03	22.88		0
16QAM	1	0	23.06	23.03	22.98	0-1	0
	1	25	23.00	23.06	22.98		0
	1	49	23.00	22.98	23.13		0
	25	0	23.05	23.06	22.92	0-2	0
	25	12	23.11	22.97	23.05		0
	25	25	23.17	23.04	23.15		0
	50	0	22.88	22.92	22.91		0
64QAM	1	0	23.07	23.09	23.13	0-2	0
	1	25	23.04	22.92	22.96		0
	1	49	23.14	23.13	23.14		0
	25	0	22.10	22.02	22.08	0-3	1
	25	12	22.14	22.11	21.93		1
	25	25	21.99	22.18	22.08		1
	50	0	22.19	22.15	22.01		1

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Table 9-48
LTE Band 25 (PCS) Conducted Powers - 5 MHz Bandwidth

LTE Band 25 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26065 (1852.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26665 (1912.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.15	23.13	22.96	0	0
	1	12	22.92	22.91	22.92		0
	1	24	22.96	23.01	23.18		0
	12	0	22.92	23.12	22.91	0-1	0
	12	6	22.95	23.16	23.03		0
	12	13	23.00	22.90	22.90		0
	25	0	23.17	23.07	22.90		0
16QAM	1	0	22.94	23.20	23.00	0-1	0
	1	12	23.11	22.96	23.01		0
	1	24	23.02	22.93	23.18		0
	12	0	22.96	23.00	23.09	0-2	0
	12	6	23.07	22.89	22.98		0
	12	13	23.06	23.12	23.10		0
	25	0	23.08	23.07	23.10		0
64QAM	1	0	23.15	22.99	23.09	0-2	0
	1	12	23.08	23.13	22.90		0
	1	24	22.99	23.09	23.03		0
	12	0	21.93	21.93	22.00	0-3	1
	12	6	22.07	21.94	22.18		1
	12	13	22.18	22.06	21.97		1
	25	0	22.20	22.17	22.20		1

Table 9-49
LTE Band 25 (PCS) Conducted Powers - 3 MHz Bandwidth

LTE Band 25 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26055 (1851.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26675 (1913.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.12	22.98	23.15	0	0
	1	7	22.99	22.92	22.99		0
	1	14	23.19	23.12	23.18		0
	8	0	23.04	23.02	23.00	0-1	0
	8	4	23.04	23.17	22.99		0
	8	7	23.10	23.12	22.88		0
	15	0	23.03	23.16	23.02		0
16QAM	1	0	22.96	22.98	22.92	0-1	0
	1	7	22.92	22.94	23.17		0
	1	14	23.03	23.14	23.03		0
	8	0	23.19	23.05	23.15	0-2	0
	8	4	23.09	23.09	22.99		0
	8	7	22.98	23.08	23.19		0
	15	0	23.00	23.16	22.89		0
64QAM	1	0	22.91	22.97	23.16	0-2	0
	1	7	23.17	23.10	22.92		0
	1	14	23.04	23.08	23.18		0
	8	0	22.11	21.93	21.94	0-3	1
	8	4	22.16	21.95	22.13		1
	8	7	21.99	21.88	22.05		1
	15	0	21.96	22.19	21.99		1

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Table 9-50
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 26047 (1850.7 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26683 (1914.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.03	22.93	23.09	0	0
	1	2	22.99	22.95	23.10		0
	1	5	22.99	23.16	23.08		0
	3	0	22.90	23.08	22.88		0
	3	2	22.89	23.08	22.93		0
	3	3	22.96	22.90	22.91		0
	6	0	23.07	22.94	23.03	0-1	0
16QAM	1	0	22.93	23.02	23.04	0-1	0
	1	2	23.08	23.15	23.16		0
	1	5	22.93	23.06	23.12		0
	3	0	22.89	22.89	23.11		0
	3	2	22.94	23.03	22.94		0
	3	3	23.02	22.88	23.06		0
	6	0	22.95	22.93	22.89	0-2	0
64QAM	1	0	23.14	22.94	22.97	0-2	0
	1	2	22.95	23.07	23.00		0
	1	5	22.99	23.13	22.98		0
	3	0	23.05	22.99	23.15		0
	3	2	23.00	22.99	23.17		0
	3	3	23.05	23.06	23.10		0
	6	0	22.09	21.88	22.10	0-3	1

9.4.11 LTE Band 30

Table 9-51
LTE Band 30 Conducted Powers - 10 MHz Bandwidth

LTE Band 30 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 27710 (2310.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	23.62	0	0
	1	25	23.60		0
	1	49	**23.64**		0
	25	0	22.57	0-1	1
	25	12	22.58		1
	25	25	**22.68**		1
	50	0	22.65		1
16QAM	1	0	22.63	0-1	1
	1	25	22.61		1
	1	49	22.60		1
	25	0	21.65	0-2	2
	25	12	21.64		2
	25	25	21.64		2
	50	0	21.62		2
64QAM	1	0	21.59	0-2	2
	1	25	21.50		2
	1	49	21.48		2
	25	0	20.51	0-3	3
	25	12	20.60		3
	25	25	20.52		3
	50	0	20.49		3

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Table 9-52
LTE Band 30 Conducted Powers - 5 MHz Bandwidth

LTE Band 30 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 27710 (2310.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	23.64	0	0
	1	12	23.52		0
	1	24	23.59		0
	12	0	22.59	0-1	1
	12	6	22.50		1
	12	13	22.50		1
	25	0	22.56		1
16QAM	1	0	22.57	0-1	1
	1	12	22.58		1
	1	24	22.55		1
	12	0	21.66	0-2	2
	12	6	21.64		2
	12	13	21.61		2
	25	0	21.66		2
64QAM	1	0	21.46	0-2	2
	1	12	21.47		2
	1	24	21.55		2
	12	0	20.50	0-3	3
	12	6	20.60		3
	12	13	20.57		3
	25	0	20.66		3

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

9.4.12 LTE Band 7

Table 9-53
LTE Band 7 Conducted Powers - 20 MHz Bandwidth

LTE Band 7 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20850 (2510.0 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21350 (2560.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.68	23.69	23.62	0	0
	1	50	23.66	23.60	**23.70**		0
	1	99	23.68	23.64	23.69		0
	50	0	22.59	22.52	**22.61**	0-1	1
	50	25	22.58	22.53	22.60		1
	50	50	22.59	22.52	22.57		1
	100	0	22.60	22.58	22.60		1
16QAM	1	0	22.61	22.50	22.68	0-1	1
	1	50	22.63	22.52	22.67		1
	1	99	22.61	22.50	22.62		1
	50	0	21.58	21.69	21.60	0-2	2
	50	25	21.59	21.70	21.63		2
	50	50	21.59	21.69	21.62		2
	100	0	21.57	21.70	21.57		2
64QAM	1	0	21.45	21.49	21.53	0-2	2
	1	50	21.54	21.50	21.66		2
	1	99	21.52	21.40	21.49		2
	50	0	20.57	20.67	20.50	0-3	3
	50	25	20.49	20.53	20.48		3
	50	50	20.56	20.68	20.61		3
	100	0	20.44	20.57	20.51		3

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Table 9-54
LTE Band 7 Conducted Powers - 15 MHz Bandwidth

LTE Band 7 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20825 (2507.5 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21375 (2562.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.68	23.67	23.68	0	0
	1	36	23.66	23.60	23.66		0
	1	74	23.66	23.65	23.66		0
	36	0	22.58	22.68	22.68	0-1	1
	36	18	22.59	22.65	22.65		1
	36	37	22.57	22.70	22.66		1
	75	0	22.63	22.64	22.66		1
16QAM	1	0	22.58	22.52	22.63	0-1	1
	1	36	22.56	22.56	22.66		1
	1	74	22.54	22.50	22.62		1
	36	0	21.68	21.66	21.69	0-2	2
	36	18	21.69	21.64	21.66		2
	36	37	21.51	21.65	21.68		2
	75	0	21.58	21.65	21.66		2
64QAM	1	0	21.45	21.49	21.54	0-2	2
	1	36	21.53	21.54	21.64		2
	1	74	21.43	21.33	21.46		2
	36	0	20.51	20.56	20.55	0-3	3
	36	18	20.52	20.58	20.48		3
	36	37	20.34	20.58	20.59		3
	75	0	20.58	20.64	20.56		3

Table 9-55
LTE Band 7 Conducted Powers - 10 MHz Bandwidth

LTE Band 7 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20800 (2505.0 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21400 (2565.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.61	23.67	23.61	0	0
	1	25	23.56	23.63	23.62		0
	1	49	23.57	23.65	23.63		0
	25	0	22.68	22.58	22.53	0-1	1
	25	12	22.67	22.56	22.55		1
	25	25	22.67	22.59	22.55		1
	50	0	22.65	22.56	22.50		1
16QAM	1	0	22.63	22.69	22.63	0-1	1
	1	25	22.64	22.69	22.62		1
	1	49	22.64	22.67	22.63		1
	25	0	21.51	21.60	21.55	0-2	2
	25	12	21.68	21.61	21.55		2
	25	25	21.51	21.63	21.55		2
	50	0	21.54	21.54	21.53		2
64QAM	1	0	21.58	21.64	21.48	0-2	2
	1	25	21.62	21.51	21.60		2
	1	49	21.47	21.66	21.55		2
	25	0	20.38	20.49	20.36	0-3	3
	25	12	20.65	20.46	20.50		3
	25	25	20.41	20.51	20.42		3
	50	0	20.50	20.44	20.36		3

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Table 9-56
LTE Band 7 Conducted Powers - 5 MHz Bandwidth

LTE Band 7 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20775 (2502.5 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21425 (2567.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.55	23.53	23.56	0	0
	1	12	23.51	23.57	23.53		0
	1	24	23.56	23.53	23.66		0
	12	0	22.58	22.65	22.66	0-1	1
	12	6	22.54	22.57	22.52		1
	12	13	22.56	22.66	22.54		1
	25	0	22.67	22.61	22.61		1
16QAM	1	0	22.64	22.61	22.63	0-1	1
	1	12	22.66	22.55	22.55		1
	1	24	22.64	22.50	22.51		1
	12	0	21.66	21.67	21.65	0-2	2
	12	6	21.56	21.56	21.64		2
	12	13	21.62	21.51	21.68		2
	25	0	21.69	21.68	21.53		2
64QAM	1	0	21.53	21.54	21.46	0-2	2
	1	12	21.62	21.63	21.49		2
	1	24	21.46	21.50	21.53		2
	12	0	20.39	20.56	20.46	0-3	3
	12	6	20.66	20.55	20.47		3
	12	13	20.48	20.43	20.42		3
	25	0	20.45	20.40	20.35		3

9.4.13 LTE Band 48

Table 9-57
LTE Band 48 Conducted Powers - 20 MHz Bandwidth

LTE Band 48 20 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel 55340 (3560.0 MHz)	Low-Mid Channel 55773 (3603.3 MHz)	Mid-High Channel 56207 (3646.7 MHz)	High Channel 56640 (3690.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]					
QPSK	1	0	22.63	22.60	**22.66**	22.58	0	0
	1	50	22.63	22.61	22.59	22.46		0
	1	99	22.61	22.65	22.57	22.33		0
	50	0	21.62	21.64	21.53	21.45	0-1	1
	50	25	21.45	21.65	21.54	21.48		1
	50	50	21.47	**21.70**	21.55	21.45		1
	100	0	21.64	21.52	21.62	21.40		1
16QAM	1	0	21.70	21.65	21.55	21.55	0-1	1
	1	50	21.64	21.66	21.53	21.47		1
	1	99	21.53	21.61	21.53	21.54		1
	50	0	20.55	20.63	20.50	20.36	0-2	2
	50	25	20.64	20.62	20.42	20.44		2
	50	50	20.56	20.64	20.40	20.41		2
	100	0	20.60	20.56	20.41	20.51		2
64QAM	1	0	20.53	20.57	20.45	20.48	0-2	2
	1	50	20.55	20.61	20.50	20.25		2
	1	99	20.53	20.42	20.50	20.24		2
	50	0	19.55	19.54	19.32	19.19	0-3	3
	50	25	19.50	19.56	19.49	19.33		3
	50	50	19.39	19.69	19.31	19.29		3
	100	0	19.45	19.54	19.43	19.37		3

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Table 9-58
LTE Band 48 Conducted Powers - 15 MHz Bandwidth

LTE Band 48 15 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel 55315 (3557.5 MHz)	Low-Mid Channel 55765 (3602.5 MHz)	Mid-High Channel 56215 (3647.5 MHz)	High Channel 56665 (3692.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]					
QPSK	1	0	22.63	22.56	22.52	22.52	0	0
	1	36	22.59	22.59	22.62	22.60		0
	1	74	22.65	22.58	22.56	22.40		0
	36	0	21.51	21.54	21.51	21.44	0-1	1
	36	18	21.47	21.51	21.62	21.54		1
	36	37	21.47	21.64	21.53	21.47		1
	75	0	21.46	21.54	21.60	21.46		1
16QAM	1	0	21.51	21.61	21.63	21.57	0-1	1
	1	36	21.58	21.69	21.55	21.49		1
	1	74	21.67	21.62	21.51	21.44		1
	36	0	20.45	20.55	20.48	20.47	0-2	2
	36	18	20.41	20.48	20.58	20.43		2
	36	37	20.50	20.49	20.50	20.36		2
	75	0	20.65	20.54	20.53	20.52		2
64QAM	1	0	20.49	20.54	20.56	20.56	0-2	2
	1	36	20.43	20.55	20.57	20.36		2
	1	74	20.63	20.61	20.33	20.42		2
	36	0	19.23	19.37	19.56	19.34	0-3	3
	36	18	19.34	19.31	19.34	19.31		3
	36	37	19.42	19.40	19.43	19.34		3
	75	0	19.59	19.49	19.42	19.44		3

Table 9-59
LTE Band 48 Conducted Powers - 10 MHz Bandwidth

LTE Band 48 10 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel 55290 (3555.0 MHz)	Low-Mid Channel 55773 (3601.7 MHz)	Mid-High Channel 56207 (3648.3 MHz)	High Channel 56690 (3695.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]					
QPSK	1	0	22.58	22.52	22.54	22.53	0	0
	1	25	22.61	22.57	22.58	22.45		0
	1	49	22.61	22.46	22.49	22.45		0
	25	0	21.63	21.40	21.59	21.57	0-1	1
	25	12	21.49	21.50	21.63	21.60		1
	25	25	21.64	21.43	21.67	21.64		1
	50	0	21.54	21.55	21.63	21.47		1
16QAM	1	0	21.67	21.55	21.62	21.42	0-1	1
	1	25	21.50	21.49	21.61	21.44		1
	1	49	21.65	21.64	21.58	21.51		1
	25	0	20.70	20.49	20.46	20.39	0-2	2
	25	12	20.66	20.57	20.64	20.50		2
	25	25	20.66	20.52	20.45	20.47		2
	50	0	20.57	20.58	20.60	20.51		2
64QAM	1	0	20.63	20.52	20.46	20.40	0-2	2
	1	25	20.69	20.55	20.37	20.47		2
	1	49	20.63	20.35	20.37	20.35		2
	25	0	19.49	19.43	19.36	19.14	0-3	3
	25	12	19.46	19.43	19.57	19.36		3
	25	25	19.41	19.42	19.51	19.38		3
	50	0	19.55	19.53	19.64	19.54		3

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Table 9-60
LTE Band 48 Conducted Powers - 5 MHz Bandwidth

LTE Band 48 5 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel 55265 (3552.5 MHz)	Low-Mid Channel 55773 (3600.8 MHz)	Mid-High Channel 56207 (3649.2 MHz)	High Channel 56715 (3697.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]					
QPSK	1	0	22.60	22.49	22.61	22.50	0	0
	1	12	22.70	22.62	22.45	22.54		0
	1	24	22.65	22.58	22.51	22.27		0
	12	0	21.65	21.54	21.63	21.56	0-1	1
	12	6	21.50	21.53	21.57	21.45		1
	12	13	21.55	21.54	21.70	21.58		1
	25	0	21.63	21.46	21.60	21.57		1
16QAM	1	0	21.60	21.68	21.58	21.67	0-1	1
	1	12	21.60	21.61	21.55	21.51		1
	1	24	21.52	21.62	21.51	21.51		1
	12	0	20.62	20.66	20.57	20.38	0-2	2
	12	6	20.56	20.53	20.58	20.47		2
	12	13	20.57	20.51	20.52	20.44		2
	25	0	20.62	20.52	20.69	20.48		2
64QAM	1	0	20.46	20.68	20.53	20.39	0-2	2
	1	12	20.49	20.51	20.58	20.41		2
	1	24	20.56	20.57	20.60	20.46		2
	12	0	19.42	19.56	19.58	19.43	0-3	3
	12	6	19.33	19.47	19.53	19.62		3
	12	13	19.38	19.67	19.45	19.26		3
	25	0	19.64	19.32	19.47	19.26		3

9.4.14 LTE Band 41 Power Class 3

Table 9-61
LTE Band 41 Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	25.13	**25.18**	25.09	25.16	25.17	0	0
	1	50	25.15	25.15	25.10	25.10	25.14		0
	1	99	25.05	25.14	25.13	25.14	25.12		0
	50	0	24.07	23.99	24.00	24.06	24.11	0-1	1
	50	25	24.09	**24.17**	24.10	24.12	24.11		1
	50	50	24.11	24.16	24.00	24.10	24.11		1
	100	0	24.10	24.12	23.97	24.07	24.16		1
16QAM	1	0	24.15	24.12	24.09	24.14	24.10	0-1	1
	1	50	24.14	24.12	24.09	24.19	24.19		1
	1	99	24.11	24.10	24.08	24.16	24.19		1
	50	0	23.06	22.97	22.97	23.19	23.16	0-2	2
	50	25	23.02	23.07	23.09	22.93	23.06		2
	50	50	23.02	23.02	23.05	22.99	23.14		2
	100	0	23.08	23.18	23.04	22.94	23.13		2
64QAM	1	0	22.99	22.97	22.93	23.13	22.99	0-2	2
	1	50	23.13	22.95	23.02	23.16	23.07		2
	1	99	23.02	23.01	23.00	23.13	23.12		2
	50	0	22.00	21.93	21.95	22.09	21.98	0-3	3
	50	25	21.84	22.06	21.93	21.81	21.87		3
	50	50	21.89	21.90	21.97	21.92	21.98		3
	100	0	21.99	22.11	21.90	21.77	22.12		3

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Table 9-62
LTE Band 41 Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	25.12	25.10	25.10	25.18	25.12	0	0
	1	36	25.08	25.11	25.12	25.16	25.09		0
	1	74	25.13	25.11	25.14	25.18	25.08		0
	36	0	24.07	24.09	24.11	24.11	24.02	0-1	1
	36	18	24.02	24.09	23.96	24.12	24.09		1
	36	37	24.10	24.13	24.08	24.01	24.15		1
	75	0	24.09	24.01	24.18	23.95	24.08		1
16QAM	1	0	24.12	24.07	24.16	24.14	24.14	0-1	1
	1	36	24.11	24.08	24.09	24.13	24.17		1
	1	74	24.10	24.09	24.13	24.16	24.15		1
	36	0	23.02	23.06	23.05	22.95	22.97	0-2	2
	36	18	23.13	23.12	23.01	23.08	22.95		2
	36	37	23.01	23.06	23.13	23.10	23.05		2
	75	0	23.13	23.12	23.15	23.06	23.12		2
64QAM	1	0	23.04	22.94	23.04	23.01	23.06	0-2	2
	1	36	23.09	22.94	23.02	23.07	23.06		2
	1	74	23.03	22.92	23.08	23.02	22.99		2
	36	0	21.85	22.05	21.98	21.79	21.77	0-3	3
	36	18	22.08	22.11	21.85	22.05	21.92		3
	36	37	21.84	22.00	22.07	22.07	21.94		3
	75	0	22.09	21.95	22.00	22.03	22.03		3

Table 9-63
LTE Band 41 Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	25.10	25.18	25.18	25.06	25.05	0	0
	1	25	25.10	25.15	25.17	25.03	25.04		0
	1	49	25.16	25.13	25.16	24.98	25.04		0
	25	0	24.17	24.09	24.12	24.13	24.09	0-1	1
	25	12	24.14	24.08	24.11	24.14	24.04		1
	25	25	24.11	24.09	24.08	24.17	24.03		1
	50	0	24.16	24.07	24.06	24.12	24.04		1
16QAM	1	0	24.19	24.01	24.17	24.16	24.04	0-1	1
	1	25	24.17	24.00	24.18	24.13	24.16		1
	1	49	24.09	24.00	24.16	24.14	24.17		1
	25	0	23.05	23.12	23.03	23.16	23.02	0-2	2
	25	12	23.07	23.12	23.01	23.08	23.10		2
	25	25	23.09	23.15	23.19	23.18	23.08		2
	50	0	23.02	23.07	23.15	23.19	23.10		2
64QAM	1	0	23.12	22.90	23.08	22.96	22.96	0-2	2
	1	25	22.99	23.00	23.12	23.09	23.04		2
	1	49	22.95	22.95	23.08	22.99	23.09		2
	25	0	21.98	21.93	21.90	22.12	21.89	0-3	3
	25	12	21.93	22.05	21.90	21.99	21.97		3
	25	25	22.06	22.08	22.05	22.15	21.97		3
	50	0	22.00	22.04	22.08	22.16	21.95		3

Table 9-64
LTE Band 41 Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	25.07	24.97	25.00	25.03	25.06	0	0
	1	12	24.92	25.00	25.06	25.07	25.08		0
	1	24	24.89	25.14	24.97	24.98	25.17		0
	12	0	24.07	24.15	24.23	24.17	24.24	0-1	1
	12	6	24.10	24.13	24.16	24.12	24.07		1
	12	13	24.09	24.14	24.12	24.05	24.18		1
	25	0	24.12	23.98	24.19	24.21	24.12		1
16QAM	1	0	24.01	24.04	24.27	24.19	24.09	0-1	1
	1	12	24.12	23.92	24.09	24.13	24.13		1
	1	24	24.17	23.98	24.10	24.21	24.10		1
	12	0	23.19	23.02	23.13	23.11	23.14	0-2	2
	12	6	22.99	23.16	23.15	23.17	23.12		2
	12	13	23.13	23.05	23.14	23.16	23.18		2
	25	0	23.06	23.17	23.11	23.07	23.09		2
64QAM	1	0	22.99	22.93	23.25	23.07	22.99	0-2	2
	1	12	23.02	22.82	23.06	23.08	23.05		2
	1	24	23.13	22.93	23.05	23.15	23.10		2
	12	0	22.15	21.91	22.12	21.99	21.97	0-3	3
	12	6	21.81	21.97	22.14	22.17	22.01		3
	12	13	22.04	21.88	21.97	21.97	21.98		3
	25	0	21.97	22.00	22.06	22.02	22.02		3

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9.4.1 LTE Band 41 Power Class 2

Table 9-65
LTE Band 41 Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	27.60	27.68	27.61	27.59	27.58	0	0
	1	50	27.58	27.58	27.60	27.58	27.58		0
	1	99	27.57	27.58	27.59	27.57	27.57		0
	50	0	26.55	26.64	26.57	26.54	26.58	0-1	1
	50	25	26.52	26.66	26.62	26.51	26.62		1
	50	50	26.54	26.10	26.56	26.54	26.58		1
	100	0	26.53	26.39	26.63	26.50	26.48		1
16QAM	1	0	26.65	26.65	26.62	26.61	26.66	0-1	1
	1	50	26.68	26.66	26.65	26.60	26.65		1
	1	99	26.54	26.61	26.69	26.55	26.66		1
	50	0	25.54	25.68	25.69	25.58	25.64	0-2	2
	50	25	25.58	25.68	25.67	25.60	25.66		2
	50	50	25.59	25.66	25.59	25.61	25.64		2
	100	0	25.52	25.65	25.63	25.61	25.62		2
64QAM	1	0	25.65	25.58	25.58	25.52	25.52	0-2	2
	1	50	25.61	25.47	25.46	25.45	25.60		2
	1	99	25.48	25.59	25.60	25.45	25.57		2
	50	0	24.45	24.68	24.51	24.41	24.61	0-3	3
	50	25	24.57	24.59	24.50	24.58	24.61		3
	50	50	24.41	24.60	24.44	24.46	24.49		3
	100	0	24.44	24.60	24.47	24.52	24.43		3

Table 9-66
LTE Band 41 Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	27.64	27.67	27.60	27.53	27.57	0	0
	1	36	27.61	27.66	27.59	27.50	27.56		0
	1	74	27.59	27.64	27.58	27.48	27.54		0
	36	0	26.61	26.54	26.44	26.53	26.59	0-1	1
	36	18	26.62	26.65	26.46	26.62	26.61		1
	36	37	26.68	26.54	26.43	26.62	26.58		1
	75	0	26.00	26.61	26.58	26.49	26.63		1
16QAM	1	0	26.70	26.57	26.62	26.64	26.66	0-1	1
	1	36	26.62	26.70	26.64	26.63	26.68		1
	1	74	26.61	26.63	26.58	26.63	26.61		1
	36	0	25.60	25.64	25.52	25.46	25.58	0-2	2
	36	18	25.59	25.66	25.43	25.50	25.65		2
	36	37	25.62	25.59	25.56	25.56	25.54		2
	75	0	25.64	25.51	25.52	25.62	25.57		2
64QAM	1	0	25.60	25.50	25.43	25.59	25.57	0-2	2
	1	36	25.53	25.70	25.63	25.51	25.52		2
	1	74	25.44	25.57	25.45	25.54	25.56		2
	36	0	24.48	24.63	24.35	24.30	24.44	0-3	3
	36	18	24.50	24.58	24.27	24.32	24.61		3
	36	37	24.56	24.42	24.39	24.52	24.41		3
	75	0	24.60	24.32	24.36	24.61	24.52		3

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Table 9-67
LTE Band 41 Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	27.50	27.50	27.63	27.57	27.68	0	0
	1	25	27.65	27.49	27.61	27.56	27.67		0
	1	49	27.69	27.48	27.60	27.55	27.66		0
	25	0	26.50	26.62	26.51	26.68	26.64	0-1	1
	25	12	26.52	26.69	26.63	26.67	26.65		1
	25	25	26.50	26.51	26.49	26.56	26.64		1
	50	0	26.62	26.56	26.41	26.49	26.58		1
16QAM	1	0	26.65	26.63	26.62	26.69	26.54	0-1	1
	1	25	26.57	26.64	26.56	26.60	26.48		1
	1	49	26.67	26.40	26.58	26.69	26.63		1
	25	0	25.56	25.64	25.57	25.67	25.52	0-2	2
	25	12	25.52	25.68	25.56	25.66	25.63		2
	25	25	25.58	25.66	25.57	25.67	25.62		2
	50	0	25.56	25.58	25.56	25.57	25.60		2
64QAM	1	0	25.52	25.57	25.47	25.63	25.54	0-2	2
	1	25	25.46	25.60	25.47	25.49	25.32		2
	1	49	25.62	25.31	25.55	25.65	25.45		2
	25	0	24.42	24.54	24.39	24.49	24.43	0-3	3
	25	12	24.40	24.51	24.37	24.64	24.59		3
	25	25	24.54	24.56	24.39	24.52	24.43		3
	50	0	24.43	24.47	24.38	24.45	24.47		3

Table 9-68
LTE Band 41 Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	27.64	27.68	27.52	27.59	27.58	0	0
	1	12	27.62	27.67	27.46	27.58	27.57		0
	1	24	27.61	27.67	27.43	27.58	27.56		0
	12	0	26.53	26.50	26.52	26.33	26.65	0-1	1
	12	6	26.45	26.66	26.52	26.31	26.67		1
	12	13	26.44	26.40	26.52	26.32	26.62		1
	25	0	26.41	26.54	26.42	26.33	26.67		1
16QAM	1	0	26.55	26.49	26.63	26.69	26.62	0-1	1
	1	12	26.46	26.55	26.61	26.68	26.64		1
	1	24	26.42	26.64	26.63	26.68	26.66		1
	12	0	25.42	25.65	25.63	25.54	25.61	0-2	2
	12	6	25.44	25.51	25.64	25.45	25.63		2
	12	13	25.44	25.60	25.66	25.55	25.60		2
	25	0	25.54	25.54	25.44	25.46	25.62		2
64QAM	1	0	25.35	25.37	25.59	25.55	25.60	0-2	2
	1	12	25.31	25.55	25.41	25.65	25.57		2
	1	24	25.29	25.49	25.46	25.55	25.61		2
	12	0	24.27	24.65	24.46	24.39	24.59	0-3	3
	12	6	24.40	24.40	24.64	24.43	24.60		3
	12	13	24.28	24.53	24.54	24.52	24.42		3
	25	0	24.50	24.36	24.25	24.26	24.51		3

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REV 21.2 M
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9.4.2 LTE Uplink Carrier Aggregation Conducted Powers

Table 9-69
LTE Uplink Carrier Aggregation Conducted Powers

	PCC									SCC									Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC UL Channel	PCC UL Frequency [MHz]	PCC DL Channel	PCC DL Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC UL Channel	SCC UL Frequency [MHz]	SCC DL Channel	SCC DL Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_5B	LTE B5	10	20525	836.5	2525	881.5	QPSK	1	0	LTE B5	5	20453	829.3	2453	874.3	QPSK	1	24	24.80	25.40

	PCC							SCC							Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41C (1)	LTE B41	20	40185	2549.5	QPSK	1	0	LTE B41	20	39987	2529.7	QPSK	1	99	24.47	25.18

Notes:

1. This device supports uplink carrier aggregation for LTE CA_5B and LTE CA_41C (1). For intraband contiguous carrier aggregation scenarios, 3GPP 36.101 Table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when non-contiguous RB allocation is implemented. The conducted powers and MPR settings in this device are permanently implemented per the above 3GPP requirements.
2. Per FCC Guidance, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.
3. Uplink carrier aggregation is only possible when the device is operating with Power Class 3 for LTE Band 41.

Figure 9-4
Power Measurement Setup

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9.5 WLAN Conducted Powers

Table 9-70
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	802.11ac
		Average	Average	Average	Average
2412	1	20.47	16.89	15.67	15.64
2422	3	N/A	19.48	18.23	18.21
2437	6	20.49	19.49	18.46	18.48
2452	9	N/A	19.06	17.91	17.89
2462	11	20.45	16.83	15.61	15.58

Table 9-71
2.4 GHz WLAN Maximum Average RF Power – Ant 2

2.4GHz Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ac
		Average	Average	Average	Average
2412	1	20.03	16.95	15.81	15.80
2422	3	N/A	19.49	18.49	18.48
2437	6	20.44	19.47	18.49	18.48
2452	9	N/A	18.83	17.72	17.65
2462	11	20.04	16.80	15.60	15.60

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Table 9-72
5 GHz WLAN Maximum Average RF Power – Ant 1

5GHz (20MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
		Average	Average	Average
5180	36	16.53	16.54	16.43
5200	40	18.91	18.83	18.71
5220	44	16.61	16.53	16.47
5240	48	16.16	16.13	16.05
5260	52	16.23	16.17	16.14
5280	56	18.77	18.64	18.60
5300	60	16.71	16.53	16.48
5320	64	16.18	16.18	16.10
5500	100	16.31	16.44	16.21
5600	120	16.65	16.58	16.54
5620	124	16.79	16.43	16.33
5720	144	16.49	16.47	16.48
5745	149	16.64	16.51	16.54
5785	157	18.83	18.61	18.05
5805	161	18.57	18.28	18.32
5825	165	17.85	17.61	17.62

Table 9-73
5 GHz WLAN Maximum Average RF Power – Ant 2

5GHz (20MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
		Average	Average	Average
5180	36	16.41	16.31	16.24
5200	40	18.84	18.79	18.02
5220	44	16.45	16.26	16.26
5240	48	16.46	16.33	16.30
5260	52	16.26	16.11	16.07
5280	56	18.77	18.65	18.12
5300	60	16.73	16.02	16.52
5320	64	16.28	16.19	16.13
5500	100	16.81	16.66	16.65
5600	120	16.23	16.12	16.13
5620	124	16.34	16.17	16.20
5720	144	16.53	16.40	16.35
5745	149	16.60	16.45	16.44
5785	157	18.96	18.97	18.04
5805	161	18.71	18.57	18.61
5825	165	17.94	17.88	17.82

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Table 9-74
5 GHz WLAN Maximum Average RF Power – MIMO

5GHz (20MHz) 802.11n Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
5180	36	16.54	16.31	19.44
5200	40	18.83	18.79	21.82
5220	44	16.53	16.26	19.41
5240	48	16.13	16.33	19.24
5260	52	16.17	16.11	19.15
5280	56	18.64	18.65	21.66
5300	60	16.53	16.02	19.29
5320	64	16.18	16.19	19.20
5500	100	16.44	16.66	19.56
5600	120	16.58	16.12	19.37
5620	124	16.43	16.17	19.31
5720	144	16.47	16.40	19.45
5745	149	16.51	16.45	19.49
5785	157	18.61	18.97	21.80
5805	161	18.28	18.57	21.44
5825	165	17.61	17.88	20.76

Table 9-75
2.4 GHz WLAN Reduced Average RF Power – Ant 1

2.4GHz Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ac
		Average	Average	Average	Average
2412	1	18.91	16.82	15.61	15.57
2422	3	N/A	18.92	18.22	18.22
2437	6	18.94	18.97	18.48	18.46
2452	9	N/A	18.65	18.06	18.04
2462	11	19.00	16.81	15.56	15.54

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Table 9-76
2.4 GHz WLAN Reduced Average RF Power – Ant 2

2.4GHz Conducted Power [dBm]					
Freq [MHz]	Channel	IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ac
		Average	Average	Average	Average
2412	1	18.57	16.87	15.77	15.69
2422	3	N/A	18.98	18.36	18.39
2437	6	18.98	18.99	18.47	18.46
2452	9	N/A	18.26	17.66	17.66
2462	11	18.79	16.75	15.56	15.58

Table 9-77
5 GHz WLAN Reduced Average RF Power – Ant 1

5GHz (40MHz) Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11n	802.11ac
		Average	Average
5190	38	13.07	13.08
5230	46	14.14	14.12
5270	54	13.99	14.02
5310	62	12.54	12.49
5510	102	12.98	12.98
5550	110	14.49	14.45
5590	118	14.47	14.37
5630	126	14.15	14.17
5710	142	14.14	14.16
5755	151	14.26	14.41
5795	159	14.23	14.25

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Table 9-78
5 GHz WLAN Reduced Average RF Power – Ant 2

5GHz (40MHz) Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11n	802.11ac
		Average	Average
5190	38	13.18	13.23
5230	46	14.34	14.34
5270	54	14.45	14.48
5310	62	12.41	12.46
5510	102	12.30	12.34
5550	110	14.14	14.19
5590	118	14.09	14.17
5630	126	14.49	14.06
5710	142	14.10	14.08
5755	151	14.30	14.35
5795	159	14.34	14.32

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.

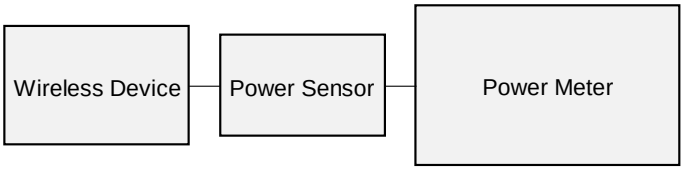

Figure 9-5
Power Measurement Setup

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9.6 Bluetooth Conducted Powers

Table 9-79
Bluetooth Average RF Power

Frequency [MHz]	Data Rate [Mbps]	Mod.	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	1.0	GFSK	0	10.91	12.322
2441	1.0	GFSK	39	11.73	14.889
2480	1.0	GFSK	78	10.51	11.246
2402	2.0	π/4-DQPSK	0	10.21	10.486
2441	2.0	π/4-DQPSK	39	11.38	13.728
2480	2.0	π/4-DQPSK	78	9.91	9.788
2402	3.0	8DPSK	0	10.34	10.824
2441	3.0	8DPSK	39	11.46	13.981
2480	3.0	8DPSK	78	10.01	10.016

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

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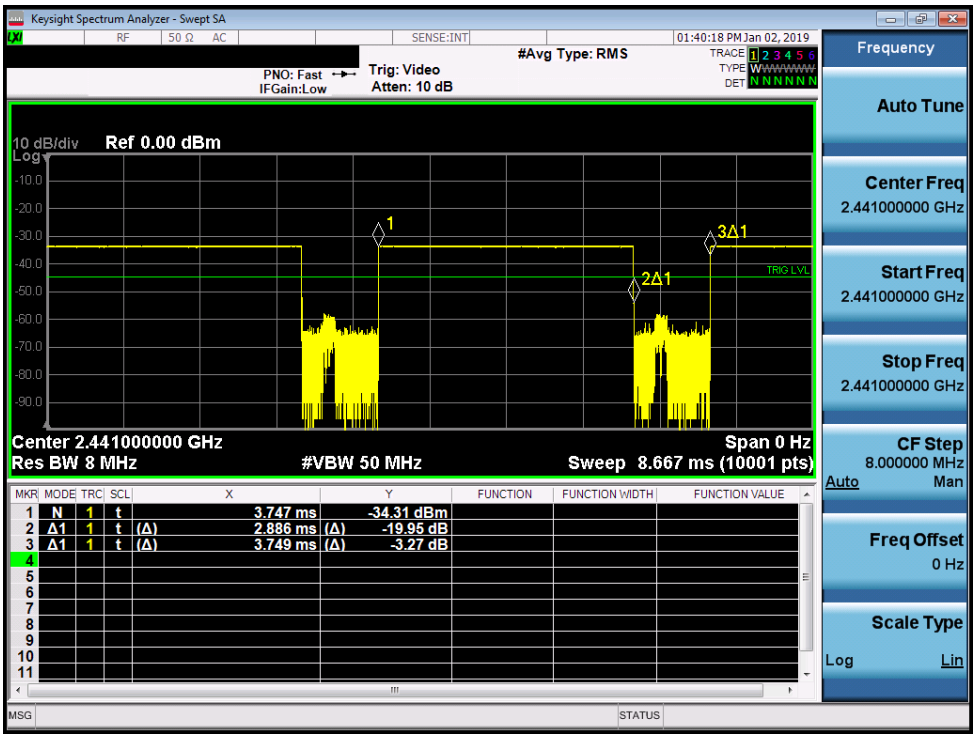

Figure 9-6
Bluetooth Transmission Plot

Equation 9-1
Bluetooth Duty Cycle Calculation

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.886ms}{3.749ms} * 100\% = 77.0\%$$

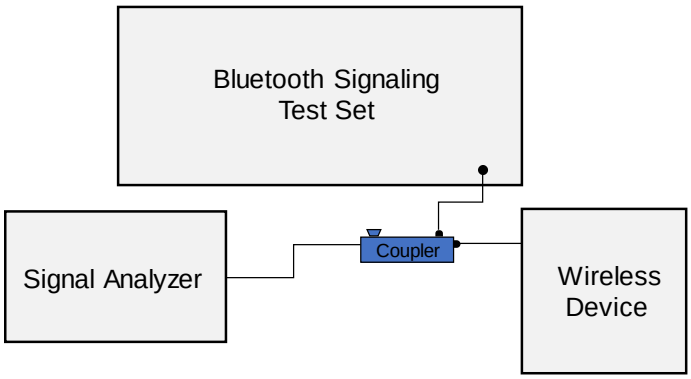

Figure 9-7
Power Measurement Setup

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10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Head Measured Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (˚C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
12/26/2018	750H	20.8	680	0.882	41.387	0.888	42.305	-0.68%	-2.17%
			695	0.887	41.350	0.889	42.227	-0.22%	-2.08%
			700	0.889	41.338	0.889	42.201	0.00%	-2.04%
			710	0.893	41.296	0.890	42.149	0.34%	-2.02%
			740	0.903	41.205	0.893	41.994	1.12%	-1.88%
			755	0.908	41.156	0.894	41.916	1.57%	-1.81%
			770	0.914	41.103	0.895	41.838	2.12%	-1.76%
			785	0.920	41.048	0.896	41.760	2.68%	-1.70%
			800	0.925	40.998	0.897	41.682	3.12%	-1.64%
12/19/2018	835H	21.9	820	0.914	43.153	0.899	41.578	1.67%	3.79%
			835	0.929	42.966	0.900	41.500	3.22%	3.53%
			850	0.944	42.786	0.916	41.500	3.06%	3.10%
12/28/2018	835H	21.0	820	0.898	42.819	0.899	41.578	-0.11%	2.98%
			835	0.913	42.618	0.900	41.500	1.44%	2.69%
			850	0.927	42.413	0.916	41.500	1.20%	2.20%
12/31/2018	835H	21.0	820	0.898	41.747	0.899	41.578	-0.11%	0.41%
			835	0.913	41.535	0.900	41.500	1.44%	0.08%
			850	0.929	41.340	0.916	41.500	1.42%	-0.39%
1/2/2019	835H	20.7	820	0.897	42.154	0.899	41.578	-0.22%	1.39%
			835	0.910	41.959	0.900	41.500	1.11%	1.11%
			850	0.926	41.774	0.916	41.500	1.09%	0.66%
12/25/2018	1750H	20.8	1710	1.356	39.031	1.348	40.142	0.59%	-2.77%
			1750	1.382	38.985	1.371	40.079	0.80%	-2.73%
			1790	1.405	38.885	1.394	40.016	0.79%	-2.83%
12/28/2018	1900H	22.5	1850	1.380	39.428	1.400	40.000	-1.43%	-1.43%
			1880	1.411	39.306	1.400	40.000	0.79%	-1.74%
			1910	1.445	39.156	1.400	40.000	3.21%	-2.11%
1/7/2019	1900H	19.4	1850	1.399	38.393	1.400	40.000	-0.07%	-4.02%
			1880	1.421	38.341	1.400	40.000	1.50%	-4.15%
			1910	1.441	38.276	1.400	40.000	2.93%	-4.31%
1/6/2019	2450H	22.0	2300	1.742	38.286	1.670	39.500	4.31%	-3.07%
			2310	1.749	38.280	1.679	39.480	4.17%	-3.04%
			2320	1.756	38.272	1.687	39.460	4.09%	-3.01%
12/28/2018	2450H	21.6	2400	1.831	39.274	1.756	39.289	4.27%	-0.04%
			2450	1.885	39.093	1.800	39.200	4.72%	-0.27%
			2500	1.942	38.878	1.855	39.136	4.69%	-0.66%
			2550	1.999	38.700	1.909	39.073	4.71%	-0.95%
			2600	2.057	38.521	1.964	39.009	4.74%	-1.25%
			2650	2.114	38.316	2.018	38.945	4.76%	-1.62%
			2700	2.173	38.130	2.073	38.882	4.82%	-1.93%
12/10/2018	2450H	22.7	2400	1.746	39.573	1.756	39.289	-0.57%	0.72%
			2450	1.803	39.414	1.800	39.200	0.17%	0.55%
			2500	1.856	39.231	1.855	39.136	0.05%	0.24%
			2550	1.912	39.084	1.909	39.073	0.16%	0.03%
			2600	1.966	38.905	1.964	39.009	0.10%	-0.27%
			2650	2.026	38.725	2.018	38.945	0.40%	-0.56%
			2700	2.075	38.549	2.073	38.882	0.10%	-0.86%
1/2/2019	2450H	20.8	2400	1.818	40.565	1.756	39.289	3.53%	3.25%
			2450	1.860	40.485	1.800	39.200	3.33%	3.28%
			2500	1.892	40.373	1.855	39.136	1.99%	3.16%
			2550	1.937	40.304	1.909	39.073	1.47%	3.15%
			2600	1.982	40.241	1.964	39.009	0.92%	3.16%
			2650	2.030	40.184	2.018	38.945	0.59%	3.18%
			2700	2.069	40.032	2.073	38.882	-0.19%	2.96%
12/14/2018	3500H	20.2	3500	2.925	37.402	2.913	37.929	0.41%	-1.39%
			3550	2.961	37.340	2.964	37.871	-0.10%	-1.40%
			3600	2.998	37.242	3.015	37.814	-0.56%	-1.51%
			3645	3.037	37.176	3.061	37.763	-0.78%	-1.55%
			3685	3.075	37.133	3.102	37.717	-0.87%	-1.55%
			3725	3.101	37.069	3.143	37.671	-1.34%	-1.60%
01/02/2019	5200H-5800H	21.7	5240	4.597	35.346	4.696	35.940	-2.11%	-1.65%
			5260	4.622	35.319	4.717	35.917	-2.01%	-1.66%
			5280	4.653	35.267	4.737	35.894	-1.77%	-1.75%
			5300	4.663	35.269	4.758	35.871	-2.00%	-1.68%
			5320	4.684	35.251	4.778	35.849	-1.97%	-1.67%
			5500	4.874	35.044	4.963	35.643	-1.79%	-1.68%
			5520	4.891	34.992	4.983	35.620	-1.85%	-1.76%
			5540	4.919	34.920	5.004	35.597	-1.70%	-1.90%
			5560	4.948	34.920	5.024	35.574	-1.51%	-1.84%
			5580	4.962	34.910	5.045	35.551	-1.65%	-1.80%
			5600	4.976	34.865	5.065	35.529	-1.76%	-1.87%
			5620	4.994	34.825	5.086	35.506	-1.81%	-1.92%
			5640	5.015	34.765	5.106	35.483	-1.78%	-2.02%
			5660	5.049	34.777	5.127	35.460	-1.52%	-1.93%
			5680	5.064	34.750	5.147	35.437	-1.61%	-1.94%
			5700	5.083	34.721	5.168	35.414	-1.64%	-1.96%
			5745	5.144	34.617	5.214	35.363	-1.34%	-2.11%
			5765	5.157	34.575	5.234	35.340	-1.47%	-2.16%

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Table 10-2
Body Measured Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
12/17/2018	750B	20.5	680	0.916	54.719	0.958	55.804	-4.38%	-1.94%
			695	0.922	54.669	0.959	55.745	-3.86%	-1.93%
			710	0.928	54.624	0.960	55.687	-3.33%	-1.91%
			740	0.940	54.506	0.963	55.570	-2.39%	-1.91%
			755	0.946	54.462	0.964	55.512	-1.87%	-1.89%
			770	0.952	54.432	0.965	55.453	-1.35%	-1.84%
			785	0.958	54.398	0.966	55.395	-0.83%	-1.80%
			800	0.965	54.367	0.967	55.336	-0.21%	-1.75%
12/19/2018	750B	20.1	680	0.915	54.166	0.958	55.804	-4.49%	-2.94%
			695	0.922	54.336	0.959	55.745	-3.86%	-2.53%
			710	0.927	54.253	0.960	55.687	-3.44%	-2.58%
			740	0.940	54.191	0.963	55.570	-2.39%	-2.48%
			755	0.944	54.125	0.964	55.512	-2.07%	-2.50%
			770	0.951	54.009	0.965	55.453	-1.45%	-2.60%
			785	0.956	53.943	0.966	55.395	-1.04%	-2.62%
12/29/2018	750B	22.5	700	0.915	54.706	0.959	55.726	-4.59%	-1.83%
			710	0.921	54.629	0.960	55.687	-4.06%	-1.90%
			740	0.958	54.278	0.963	55.570	-0.52%	-2.32%
			755	0.968	54.093	0.964	55.512	0.41%	-2.56%
			770	0.985	53.904	0.965	55.453	2.07%	-2.79%
			785	0.998	53.778	0.966	55.395	3.31%	-2.92%
			800	1.012	53.588	0.967	55.336	4.65%	-3.16%
12/17/2018	835B	20.5	820	0.990	52.657	0.969	55.258	2.17%	-4.71%
			835	0.995	52.605	0.970	55.200	2.58%	-4.70%
			850	1.001	52.547	0.988	55.154	1.32%	-4.73%
12/26/2018	835B	19.1	820	0.959	53.645	0.969	55.258	-1.03%	-2.92%
			835	0.965	53.598	0.970	55.200	-0.52%	-2.90%
			850	0.972	53.536	0.988	55.154	-1.62%	-2.93%
1/2/2019	835B	20.4	820	0.961	55.480	0.969	55.258	-0.83%	0.40%
			835	0.968	55.401	0.970	55.200	-0.21%	0.36%
			850	0.975	55.398	0.988	55.154	-1.32%	0.44%
1/2/2019	1750B	21.5	1710	1.464	52.622	1.463	53.537	0.07%	-1.71%
			1750	1.512	52.517	1.488	53.432	1.61%	-1.71%
			1790	1.556	52.347	1.514	53.326	2.77%	-1.84%
12/5/2018	1900B	23.5	1850	1.517	51.165	1.520	53.300	-0.20%	-4.01%
			1880	1.550	51.085	1.520	53.300	1.97%	-4.16%
			1910	1.583	50.992	1.520	53.300	4.14%	-4.33%
12/9/2018	1900B	22.4	1850	1.505	52.898	1.520	53.300	-0.99%	-0.75%
			1880	1.542	52.822	1.520	53.300	1.45%	-0.90%
			1910	1.576	52.692	1.520	53.300	3.68%	-1.14%
1/2/2019	1900B	19.7	1850	1.550	52.596	1.520	53.300	1.97%	-1.32%
			1880	1.566	52.530	1.520	53.300	3.03%	-1.44%
			1910	1.590	52.480	1.520	53.300	4.61%	-1.54%
1/2/2019	1900B	22.3.	1850	1.488	52.635	1.520	53.300	-2.11%	-1.25%
			1880	1.521	52.539	1.520	53.300	0.07%	-1.43%
			1910	1.554	52.423	1.520	53.300	2.24%	-1.65%
1/4/2019	1900B	22.1	1850	1.498	51.636	1.520	53.300	-1.45%	-3.12%
			1880	1.532	51.518	1.520	53.300	0.79%	-3.34%
			1910	1.565	51.393	1.520	53.300	2.96%	-3.58%
1/10/2019	1900B	22.5	1850	1.513	53.481	1.520	53.300	-0.46%	0.34%
			1880	1.550	53.385	1.520	53.300	1.97%	0.16%
			1910	1.588	53.273	1.520	53.300	4.47%	-0.05%
1/2/2019	2450B	23.0	2300	1.877	51.509	1.809	52.900	3.76%	-2.63%
			2310	1.888	51.471	1.816	52.887	3.96%	-2.68%
			2320	1.898	51.441	1.826	52.873	3.94%	-2.71%
			2400	1.988	51.197	1.902	52.767	4.52%	-2.98%
			2450	2.043	51.083	1.950	52.700	4.77%	-3.07%
			2500	2.099	50.917	2.021	52.636	3.86%	-3.27%
			2550	2.161	50.776	2.092	52.573	3.30%	-3.42%
			2600	2.222	50.633	2.163	52.509	2.73%	-3.57%
1/2/2019	2450B	23.1	2400	1.941	52.795	1.902	52.767	2.05%	0.05%
			2450	2.011	52.581	1.950	52.700	3.13%	-0.23%
			2500	2.083	52.400	2.021	52.636	3.07%	-0.45%
12/28/2018	3500B	19.8	3500	3.170	50.085	3.314	51.321	-4.35%	-2.41%
			3550	3.219	49.977	3.372	51.254	-4.54%	-2.49%
			3600	3.294	49.761	3.431	51.186	-3.99%	-2.78%
			3645	3.326	49.758	3.483	51.125	-4.51%	-2.67%
			3685	3.408	49.710	3.530	51.070	-3.46%	-2.66%
			3725	3.429	49.607	3.577	51.016	-4.14%	-2.76%
12/26/2018	5200B-5800B	21.9	5180	5.315	48.067	5.276	49.041	0.74%	-1.99%
			5200	5.346	48.007	5.299	49.014	0.89%	-2.05%
			5220	5.370	48.002	5.323	48.987	0.88%	-2.01%
			5240	5.403	47.944	5.346	48.960	1.07%	-2.08%
			5260	5.439	47.943	5.369	48.933	1.30%	-2.02%
			5280	5.466	47.832	5.393	48.906	1.35%	-2.20%
			5300	5.490	47.824	5.416	48.879	1.37%	-2.16%
			5320	5.519	47.811	5.439	48.851	1.47%	-2.13%
			5500	5.789	47.465	5.650	48.607	2.46%	-2.35%
			5520	5.807	47.430	5.673	48.580	2.36%	-2.37%
			5540	5.851	47.372	5.696	48.553	2.72%	-2.43%
			5560	5.877	47.365	5.720	48.526	2.74%	-2.39%
			5580	5.909	47.298	5.743	48.499	2.89%	-2.48%
			5600	5.939	47.285	5.766	48.471	3.00%	-2.45%
			5620	5.959	47.254	5.790	48.444	2.92%	-2.46%
			5640	5.989	47.225	5.813	48.417	3.03%	-2.46%
			5660	6.032	47.158	5.837	48.390	3.34%	-2.55%
			5680	6.071	47.118	5.860	48.363	3.60%	-2.57%
			5700	6.085	47.116	5.883	48.336	3.43%	-2.52%
			5745	6.147	47.016	5.936	48.275	3.55%	-2.61%
			5765	6.176	46.990	5.959	48.248	3.64%	-2.61%
			5785	6.219	46.931	5.982	48.220	3.96%	-2.67%
			5800	6.241	46.875	6.000	48.200	4.02%	-2.75%
			5805	6.243	46.872	6.006	48.193	3.95%	-2.74%
			5825	6.274	46.853	6.029	48.166	4.06%	-2.73%

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 ±10% of the SAR measurement on the reference dipole at the time of calibration by the calibration facility. Full system validation status and result summary can be found in Appendix E.

Table 10-3
System Verification Results – 1g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR_{1g} (W/kg)	1 W Target SAR_{1g} (W/kg)	1 W Normalized SAR_{1g} (W/kg)	$Deviation_{1g}$ (%)
M	750	HEAD	12/26/2018	22.5	19.8	0.200	1003	3287	1.670	8.280	8.350	0.85%
G	835	HEAD	12/19/2018	23.0	22.1	0.200	4d047	7410	2.040	9.470	10.200	7.71%
G	835	HEAD	12/28/2018	22.9	21.0	0.200	4d047	7410	2.020	9.470	10.100	6.65%
G	835	HEAD	12/31/2018	21.7	21.0	0.200	4d047	7410	2.000	9.470	10.000	5.60%
G	835	HEAD	01/02/2019	21.7	20.7	0.200	4d047	7410	1.980	9.470	9.900	4.54%
M	1750	HEAD	12/25/2018	19.8	19.8	0.100	1148	3287	3.660	36.400	36.600	0.55%
H	1900	HEAD	12/28/2018	21.1	20.9	0.100	5d149	7409	3.970	39.300	39.700	1.02%
I	2300	HEAD	01/06/2019	20.9	21.0	0.100	1064	7406	4.530	47.600	45.300	-4.83%
G	2450	HEAD	12/10/2018	22.0	22.1	0.100	981	7410	5.240	52.300	52.400	0.19%
I	2450	HEAD	01/02/2019	20.3	20.5	0.100	797	7406	5.180	52.700	51.800	-1.71%
I	2600	HEAD	12/28/2018	20.7	20.0	0.100	1064	7406	5.820	57.000	58.200	2.11%
I	2600	HEAD	01/02/2019	20.3	20.5	0.100	1071	7406	5.800	56.300	58.000	3.02%
H	3700	HEAD	12/14/2018	21.1	20.2	0.100	1002	3949	7.070	67.900	70.700	4.12%
H	5250	HEAD	01/02/2019	20.5	20.5	0.050	1057	7409	3.630	79.200	72.600	-8.33%
H	5600	HEAD	01/02/2019	20.5	20.5	0.050	1057	7409	3.840	84.100	76.800	-8.68%
H	5750	HEAD	01/02/2019	20.5	20.5	0.050	1057	7409	3.760	80.500	75.200	-6.58%
I	750	BODY	12/17/2018	20.1	20.1	0.200	1054	7406	1.780	8.610	8.900	3.37%
I	750	BODY	12/19/2018	21.1	19.7	0.200	1054	7406	1.760	8.610	8.800	2.21%
G	750	BODY	12/29/2018	23.0	23.5	0.200	1054	7410	1.760	8.610	8.800	2.21%
J	835	BODY	12/17/2018	20.1	20.5	0.200	4d047	3347	1.970	9.710	9.850	1.44%
J	835	BODY	12/26/2018	19.9	19.1	0.200	4d133	3347	1.960	9.750	9.800	0.51%
H	835	BODY	01/02/2019	21.1	20.4	0.200	4d047	7409	2.060	9.710	10.300	6.08%
D	1750	BODY	01/02/2019	22.3	21.5	0.100	1150	7357	3.710	36.600	37.100	1.37%
E	1900	BODY	12/05/2018	24.5	23.3	0.100	5d148	3332	4.150	39.600	41.500	4.80%
E	1900	BODY	12/09/2018	21.6	21.1	0.100	5d148	3332	4.140	39.600	41.400	4.55%
E	1900	BODY	01/02/2019	22.9	22.4	0.100	5d080	3332	3.860	39.200	38.600	-1.53%
E	1900	BODY	01/04/2019	21.9	22.1	0.100	5d149	3332	4.060	39.400	40.600	3.05%
M	1900	BODY	01/10/2019	23.0	20.8	0.100	5d148	3287	4.260	39.600	42.600	7.58%
K	2300	BODY	01/02/2019	22.1	22.6	0.100	1073	3319	4.860	47.700	48.600	1.89%
J	2450	BODY	01/02/2019	21.7	21.9	0.100	719	3347	4.940	50.100	49.400	-1.40%
K	2600	BODY	01/02/2019	22.1	22.6	0.100	1004	3319	5.640	54.800	56.400	2.92%
L	3700	BODY	12/28/2018	22.4	20.3	0.100	1002	3914	6.150	65.000	61.500	-5.38%
L	5250	BODY	12/26/2018	21.3	21.5	0.050	1191	7308	3.600	77.000	72.000	-6.49%
L	5600	BODY	12/26/2018	21.3	21.5	0.050	1191	7308	3.890	79.200	77.800	-1.77%
L	5750	BODY	12/26/2018	21.3	21.5	0.050	1191	7308	3.470	76.100	69.400	-8.80%

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Table 10-4
System Verification Results – 10g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR_{10g} (W/kg)	1 W Target SAR_{10g} (W/kg)	1 W Normalized SAR_{10g} (W/kg)	$Deviation_{10g}$ (%)
D	1750	BODY	01/02/2019	22.3	21.5	0.100	1150	7357	1.960	19.400	19.600	1.03%
L	1900	BODY	01/02/2019	22.0	19.7	0.100	5d148	7308	2.140	20.900	21.400	2.39%
E	1900	BODY	01/04/2019	21.9	22.1	0.100	5d149	3332	2.100	20.700	21.000	1.45%
L	5250	BODY	12/26/2018	21.3	21.5	0.050	1191	7308	1.000	21.600	20.000	-7.41%
L	5600	BODY	12/26/2018	21.3	21.5	0.050	1191	7308	1.070	22.200	21.400	-3.60%

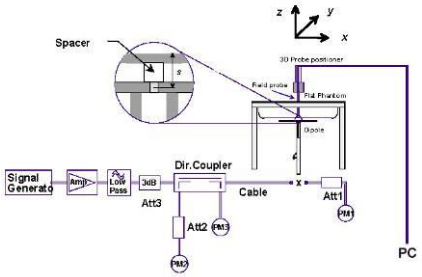

Figure 10-1
System Verification Setup Diagram

Figure 10-2
System Verification Setup Photo

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11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
GSM 850 Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Position	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	34.2	33.56	0.15	Right	Cheek	1	03302	1	1:8.3	0.158	1.159	0.183	
836.60	190	GSM 850	GSM	34.2	33.56	0.07	Right	Tilt	1	03302	1	1:8.3	0.062	1.159	0.072	
836.60	190	GSM 850	GSM	34.2	33.56	-0.05	Left	Cheek	1	03302	1	1:8.3	0.157	1.159	0.182	
836.60	190	GSM 850	GSM	34.2	33.56	0.06	Left	Tilt	1	03302	1	1:8.3	0.083	1.159	0.096	
836.60	190	GSM 850	GPRS	31.2	30.11	-0.13	Right	Cheek	1	03302	3	1:2.76	0.178	1.285	0.229	
836.60	190	GSM 850	GPRS	31.2	30.11	0.13	Right	Tilt	1	03302	3	1:2.76	0.117	1.285	0.150	
836.60	190	GSM 850	GPRS	31.2	30.11	-0.01	Left	Cheek	1	03302	3	1:2.76	0.191	1.285	0.245	
836.60	190	GSM 850	GPRS	31.2	30.11	-0.20	Left	Cheek	2	03302	3	1:2.76	0.219	1.285	0.281	A1
836.60	190	GSM 850	GPRS	31.2	30.11	-0.02	Left	Cheek	3	03302	3	1:2.76	0.208	1.285	0.267	
836.60	190	GSM 850	GPRS	31.2	30.11	0.01	Left	Tilt	1	03302	3	1:2.76	0.094	1.285	0.121	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram									

Table 11-2
GSM 1900 Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Position	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GSM	31.2	30.70	0.02	Right	Cheek	1	03302	1	1:8.3	0.110	1.122	0.123	
1880.00	661	GSM 1900	GSM	31.2	30.70	0.12	Right	Tilt	1	03302	1	1:8.3	0.027	1.122	0.030	
1880.00	661	GSM 1900	GSM	31.2	30.70	-0.03	Left	Cheek	1	03302	1	1:8.3	0.073	1.122	0.082	
1880.00	661	GSM 1900	GSM	31.2	30.70	-0.11	Left	Tilt	1	03302	1	1:8.3	0.051	1.122	0.057	
1880.00	661	GSM 1900	GPRS	28.2	27.32	0.05	Right	Cheek	1	03302	3	1:2.76	0.135	1.225	0.165	
1880.00	661	GSM 1900	GPRS	28.2	27.32	0.08	Right	Cheek	2	03302	3	1:2.76	0.230	1.225	0.282	A2
1880.00	661	GSM 1900	GPRS	28.2	27.32	0.14	Right	Cheek	3	03302	3	1:2.76	0.208	1.225	0.255	
1880.00	661	GSM 1900	GPRS	28.2	27.32	0.10	Right	Tilt	1	03302	3	1:2.76	0.023	1.225	0.028	
1880.00	661	GSM 1900	GPRS	28.2	27.32	0.12	Left	Cheek	1	03302	3	1:2.76	0.075	1.225	0.092	
1880.00	661	GSM 1900	GPRS	28.2	27.32	-0.02	Left	Tilt	1	03302	3	1:2.76	0.056	1.225	0.069	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram									

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Table 11-3
UMTS 850 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	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	25.5	25.37	-0.11	Right	Cheek	1	03302	1:1	0.293	1.030	0.302	
836.60	4183	UMTS 850	RMC	25.5	25.37	-0.04	Right	Cheek	2	03302	1:1	0.888	1.030	0.915	A3
836.60	4183	UMTS 850	RMC	25.5	25.37	0.07	Right	Cheek	3	03302	1:1	0.794	1.030	0.818	
836.60	4183	UMTS 850	RMC	25.5	25.37	0.04	Right	Tilt	1	03302	1:1	0.143	1.030	0.147	
836.60	4183	UMTS 850	RMC	25.5	25.37	0.06	Left	Cheek	1	03302	1:1	0.280	1.030	0.288	
836.60	4183	UMTS 850	RMC	25.5	25.37	0.06	Left	Tilt	1	03302	1:1	0.130	1.030	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 11-4
UMTS 1750 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	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	25.5	24.99	0.07	Right	Cheek	1	03294	1:1	0.220	1.125	0.248	
1732.40	1412	UMTS 1750	RMC	25.5	24.99	0.04	Right	Cheek	2	03294	1:1	0.441	1.125	0.496	A4
1732.40	1412	UMTS 1750	RMC	25.5	24.99	0.10	Right	Cheek	3	03294	1:1	0.404	1.125	0.455	
1732.40	1412	UMTS 1750	RMC	25.5	24.99	0.09	Right	Tilt	1	03294	1:1	0.080	1.125	0.090	
1732.40	1412	UMTS 1750	RMC	25.5	24.99	0.04	Left	Cheek	1	03294	1:1	0.135	1.125	0.152	
1732.40	1412	UMTS 1750	RMC	25.5	24.99	0.07	Left	Tilt	1	03294	1:1	0.064	1.125	0.072	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram								

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Table 11-5
UMTS 1900 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	25.2	25.10	-0.06	Right	Cheek	1	03302	1:1	0.161	1.023	0.165	
1880.00	9400	UMTS 1900	RMC	25.2	25.10	-0.12	Right	Cheek	2	03302	1:1	0.354	1.023	0.362	A5
1880.00	9400	UMTS 1900	RMC	25.2	25.10	0.07	Right	Cheek	3	03302	1:1	0.325	1.023	0.332	
1880.00	9400	UMTS 1900	RMC	25.2	25.10	0.12	Right	Tilt	1	03302	1:1	0.039	1.023	0.040	
1880.00	9400	UMTS 1900	RMC	25.2	25.10	0.13	Left	Cheek	1	03302	1:1	0.110	1.023	0.113	
1880.00	9400	UMTS 1900	RMC	25.2	25.10	0.14	Left	Tilt	1	03302	1:1	0.071	1.023	0.073	
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
CDMA BC10 (§90S) Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.5	25.29	0.13	Right	Cheek	1	03302	1:1	0.161	1.050	0.169	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.5	25.29	0.08	Right	Tilt	1	03302	1:1	0.102	1.050	0.107	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.5	25.29	0.14	Left	Cheek	1	03302	1:1	0.149	1.050	0.156	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.5	25.29	0.10	Left	Tilt	1	03302	1:1	0.087	1.050	0.091	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.5	25.11	-0.03	Right	Cheek	1	03302	1:1	0.173	1.094	0.189	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.5	25.11	-0.03	Right	Cheek	2	03302	1:1	0.590	1.094	0.645	A6
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.5	25.11	0.05	Right	Cheek	3	03302	1:1	0.500	1.094	0.547	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.5	25.11	0.05	Right	Tilt	1	03302	1:1	0.089	1.094	0.097	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.5	25.11	0.03	Left	Cheek	1	03302	1:1	0.151	1.094	0.165	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.5	25.11	0.05	Left	Tilt	1	03302	1:1	0.075	1.094	0.082	
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
CDMA BC0 (§22H) Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.5	25.31	-0.11	Right	Cheek	1	03302	1:1	0.228	1.045	0.238	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.5	25.31	-0.07	Right	Tilt	1	03302	1:1	0.139	1.045	0.145	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.5	25.31	0.18	Left	Cheek	1	03302	1:1	0.217	1.045	0.227	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.5	25.31	0.21	Left	Tilt	1	03302	1:1	0.115	1.045	0.120	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.5	25.11	-0.03	Right	Cheek	1	03294	1:1	0.302	1.094	0.330	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.5	25.11	0.06	Right	Cheek	2	03294	1:1	0.894	1.094	**0.978**	A7
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.5	25.11	0.05	Right	Cheek	3	03294	1:1	0.750	1.094	0.821	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.5	25.11	-0.08	Right	Tilt	1	03294	1:1	0.144	1.094	0.158	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.5	25.11	0.06	Left	Cheek	1	03294	1:1	0.245	1.094	0.268	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.5	25.11	0.06	Left	Tilt	1	03294	1:1	0.120	1.094	0.131	
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
PCS CDMA Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	600	PCS CDMA	RC3 / SO55	25.2	24.94	-0.08	Right	Cheek	1	03302	1:1	0.210	1.062	0.223	
1880.00	600	PCS CDMA	RC3 / SO55	25.2	24.94	-0.07	Right	Cheek	2	03302	1:1	0.436	1.062	0.463	A8
1880.00	600	PCS CDMA	RC3 / SO55	25.2	24.94	0.01	Right	Cheek	3	03302	1:1	0.409	1.062	0.434	
1880.00	600	PCS CDMA	RC3 / SO55	25.2	24.94	-0.21	Right	Tilt	1	03302	1:1	0.044	1.062	0.047	
1880.00	600	PCS CDMA	RC3 / SO55	25.2	24.94	0.08	Left	Cheek	1	03302	1:1	0.118	1.062	0.125	
1880.00	600	PCS CDMA	RC3 / SO55	25.2	24.94	0.05	Left	Tilt	1	03302	1:1	0.081	1.062	0.086	
1880.00	600	PCS CDMA	EVDO Rev. A	25.2	25.20	-0.05	Right	Cheek	1	03302	1:1	0.201	1.000	0.201	
1880.00	600	PCS CDMA	EVDO Rev. A	25.2	25.20	-0.16	Right	Tilt	1	03302	1:1	0.047	1.000	0.047	
1880.00	600	PCS CDMA	EVDO Rev. A	25.2	25.20	0.03	Left	Cheek	1	03302	1:1	0.132	1.000	0.132	
1880.00	600	PCS CDMA	EVDO Rev. A	25.2	25.20	0.13	Left	Tilt	1	03302	1:1	0.081	1.000	0.081	
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 11-9
LTE Band 71 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Position	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)	
680.50	133297	Mid	LTE Band 71	20	1	25.5	25.50	-0.05	0	Right	Cheek	QPSK	1	0	03260	1:1	0.164	1.000	0.164	
680.50	133297	Mid	LTE Band 71	20	2	25.5	25.50	0.07	0	Right	Cheek	QPSK	1	0	03260	1:1	0.375	1.000	0.375	A9
680.50	133297	Mid	LTE Band 71	20	3	25.5	25.50	0.07	0	Right	Cheek	QPSK	1	0	03260	1:1	0.341	1.000	0.341	
680.50	133297	Mid	LTE Band 71	20	1	24.5	24.48	0.02	1	Right	Cheek	QPSK	50	0	03260	1:1	0.155	1.005	0.156	
680.50	133297	Mid	LTE Band 71	20	1	25.5	25.50	-0.11	0	Right	Tilt	QPSK	1	0	03260	1:1	0.105	1.000	0.105	
680.50	133297	Mid	LTE Band 71	20	1	24.5	24.48	-0.02	1	Right	Tilt	QPSK	50	0	03260	1:1	0.100	1.005	0.101	
680.50	133297	Mid	LTE Band 71	20	1	25.5	25.50	-0.12	0	Left	Cheek	QPSK	1	0	03260	1:1	0.139	1.000	0.139	
680.50	133297	Mid	LTE Band 71	20	1	24.5	24.48	-0.02	1	Left	Cheek	QPSK	50	0	03260	1:1	0.113	1.005	0.114	
680.50	133297	Mid	LTE Band 71	20	1	25.5	25.50	-0.10	0	Left	Tilt	QPSK	1	0	03260	1:1	0.138	1.000	0.138	
680.50	133297	Mid	LTE Band 71	20	1	24.5	24.48	0.01	1	Left	Tilt	QPSK	50	0	03260	1:1	0.110	1.005	0.111	
										Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-10
LTE Band 12 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Position	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)	
707.50	23095	Mid	LTE Band 12	10	1	25.5	25.34	-0.05	0	Right	Cheek	QPSK	1	49	03260	1:1	0.154	1.038	0.160	
707.50	23095	Mid	LTE Band 12	10	2	25.5	25.34	0.05	0	Right	Cheek	QPSK	1	49	03260	1:1	0.225	1.038	0.234	A10
707.50	23095	Mid	LTE Band 12	10	3	25.5	25.34	0.00	0	Right	Cheek	QPSK	1	49	03260	1:1	0.216	1.038	0.224	
707.50	23095	Mid	LTE Band 12	10	1	24.5	24.36	0.01	1	Right	Cheek	QPSK	25	25	03260	1:1	0.102	1.033	0.105	
707.50	23095	Mid	LTE Band 12	10	1	25.5	25.34	-0.10	0	Right	Tilt	QPSK	1	49	03260	1:1	0.114	1.038	0.118	
707.50	23095	Mid	LTE Band 12	10	1	24.5	24.36	0.07	1	Right	Tilt	QPSK	25	25	03260	1:1	0.076	1.033	0.079	
707.50	23095	Mid	LTE Band 12	10	1	25.5	25.34	0.00	0	Left	Cheek	QPSK	1	49	03260	1:1	0.128	1.038	0.133	
707.50	23095	Mid	LTE Band 12	10	1	24.5	24.36	0.02	1	Left	Cheek	QPSK	25	25	03260	1:1	0.081	1.033	0.084	
707.50	23095	Mid	LTE Band 12	10	1	25.5	25.34	0.10	0	Left	Tilt	QPSK	1	49	03260	1:1	0.055	1.038	0.057	
707.50	23095	Mid	LTE Band 12	10	1	24.5	24.36	0.05	1	Left	Tilt	QPSK	25	25	03260	1:1	0.040	1.033	0.041	
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 11-11
LTE Band 13 Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Position	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)	
782.00	23230	Mid	LTE Band 13	10	1	25.5	25.49	0.07	0	Right	Cheek	QPSK	1	25	03260	1:1	0.123	1.002	0.123	
782.00	23230	Mid	LTE Band 13	10	2	25.5	25.49	0.05	0	Right	Cheek	QPSK	1	25	03260	1:1	0.485	1.002	0.486	A11
782.00	23230	Mid	LTE Band 13	10	3	25.5	25.49	0.04	0	Right	Cheek	QPSK	1	25	03260	1:1	0.466	1.002	0.467	
782.00	23230	Mid	LTE Band 13	10	1	24.5	24.38	0.03	1	Right	Cheek	QPSK	25	25	03260	1:1	0.098	1.028	0.101	
782.00	23230	Mid	LTE Band 13	10	1	25.5	25.49	0.16	0	Right	Tilt	QPSK	1	25	03260	1:1	0.034	1.002	0.034	
782.00	23230	Mid	LTE Band 13	10	1	24.5	24.38	0.05	1	Right	Tilt	QPSK	25	25	03260	1:1	0.024	1.028	0.025	
782.00	23230	Mid	LTE Band 13	10	1	25.5	25.49	0.15	0	Left	Cheek	QPSK	1	25	03260	1:1	0.044	1.002	0.044	
782.00	23230	Mid	LTE Band 13	10	1	24.5	24.38	0.03	1	Left	Cheek	QPSK	25	25	03260	1:1	0.031	1.028	0.032	
782.00	23230	Mid	LTE Band 13	10	1	25.5	25.49	0.03	0	Left	Tilt	QPSK	1	25	03260	1:1	0.078	1.002	0.078	
782.00	23230	Mid	LTE Band 13	10	1	24.5	24.38	0.05	1	Left	Tilt	QPSK	25	25	03260	1:1	0.061	1.028	0.063	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-12
LTE Band 14 Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Position	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)	
793.00	23330	Mid	LTE Band 14	10	1	25.5	25.43	0.00	0	Right	Cheek	QPSK	1	25	03260	1:1	0.105	1.016	0.107	
793.00	23330	Mid	LTE Band 14	10	2	25.5	25.43	0.01	0	Right	Cheek	QPSK	1	25	03260	1:1	0.312	1.016	0.317	A12
793.00	23330	Mid	LTE Band 14	10	3	25.5	25.43	-0.02	0	Right	Cheek	QPSK	1	25	03260	1:1	0.295	1.016	0.300	
793.00	23330	Mid	LTE Band 14	10	1	24.5	24.48	0.04	1	Right	Cheek	QPSK	25	0	03260	1:1	0.099	1.005	0.099	
793.00	23330	Mid	LTE Band 14	10	1	25.5	25.43	0.02	0	Right	Tilt	QPSK	1	25	03260	1:1	0.073	1.016	0.074	
793.00	23330	Mid	LTE Band 14	10	1	24.5	24.48	-0.09	1	Right	Tilt	QPSK	25	0	03260	1:1	0.063	1.005	0.063	
793.00	23330	Mid	LTE Band 14	10	1	25.5	25.43	0.10	0	Left	Cheek	QPSK	1	25	03260	1:1	0.104	1.016	0.106	
793.00	23330	Mid	LTE Band 14	10	1	24.5	24.48	0.03	1	Left	Cheek	QPSK	25	0	03260	1:1	0.097	1.005	0.097	
793.00	23330	Mid	LTE Band 14	10	1	25.5	25.43	0.18	0	Left	Tilt	QPSK	1	25	03260	1:1	0.100	1.016	0.102	
793.00	23330	Mid	LTE Band 14	10	1	24.5	24.48	0.02	1	Left	Tilt	QPSK	25	0	03260	1:1	0.097	1.005	0.097	
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 11-13
LTE Band 5 (Cell) Head SAR

MEASUREMENT RESULTS																						
1 CC Uplink	Component Carrier	FREQUENCY			Mode	Bandwidth [MHz]	Position	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	836.50	20525	Mid	LTE Band 5 (Cell)	10	1	25.5	25.40	0.00	0	Right	Cheek	QPSK	1	0	03302	1:1	0.151	1.023	0.154	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	1	24.5	24.40	0.06	1	Right	Cheek	QPSK	25	25	03302	1:1	0.127	1.023	0.130	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	1	25.5	25.40	0.04	0	Right	Tilt	QPSK	1	0	03302	1:1	0.092	1.023	0.094	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	1	24.5	24.40	0.21	1	Right	Tilt	QPSK	25	25	03302	1:1	0.077	1.023	0.079	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	1	25.5	25.40	-0.15	0	Left	Cheek	QPSK	1	0	03302	1:1	0.166	1.023	0.170	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	2	25.5	25.40	-0.02	0	Left	Cheek	QPSK	1	0	03302	1:1	0.270	1.023	0.276	A13
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	3	25.5	25.40	0.07	0	Left	Cheek	QPSK	1	0	03302	1:1	0.247	1.023	0.253	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	1	24.5	24.40	0.04	1	Left	Cheek	QPSK	25	25	03302	1:1	0.122	1.023	0.125	
2 CC Uplink	PCC	836.50	20525	Mid	LTE Band 5 (Cell)	10	2	25.5	24.80	-0.02	0	Left	Cheek	QPSK	1	0	03302	1:1	0.240	1.175	0.282	
	SCC	829.30	20453	Mid	LTE Band 5 (Cell)	5									1	24						
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	1	25.5	25.40	0.08	0	Left	Tilt	QPSK	1	0	03302	1:1	0.089	1.023	0.091	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	1	24.5	24.40	0.05	1	Left	Tilt	QPSK	25	25	03302	1:1	0.069	1.023	0.071	
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
LTE Band 26 (Cell) Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Position	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)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	1	25.5	25.47	0.01	0	Right	Cheek	QPSK	1	36	03302	1:1	0.165	1.007	0.166	
831.50	26865	Mid	LTE Band 26 (Cell)	15	2	25.5	25.47	-0.03	0	Right	Cheek	QPSK	1	36	03302	1:1	0.701	1.007	0.706	A14
831.50	26865	Mid	LTE Band 26 (Cell)	15	3	25.5	25.47	0.04	0	Right	Cheek	QPSK	1	36	03302	1:1	0.612	1.007	0.616	
831.50	26865	Mid	LTE Band 26 (Cell)	15	1	24.5	24.40	-0.01	1	Right	Cheek	QPSK	36	18	03302	1:1	0.139	1.023	0.142	
831.50	26865	Mid	LTE Band 26 (Cell)	15	1	25.5	25.47	0.00	0	Right	Tilt	QPSK	1	36	03302	1:1	0.114	1.007	0.115	
831.50	26865	Mid	LTE Band 26 (Cell)	15	1	24.5	24.40	0.12	1	Right	Tilt	QPSK	36	18	03302	1:1	0.092	1.023	0.094	
831.50	26865	Mid	LTE Band 26 (Cell)	15	1	25.5	25.47	-0.14	0	Left	Cheek	QPSK	1	36	03302	1:1	0.156	1.007	0.157	
831.50	26865	Mid	LTE Band 26 (Cell)	15	1	24.5	24.40	0.07	1	Left	Cheek	QPSK	36	18	03302	1:1	0.142	1.023	0.145	
831.50	26865	Mid	LTE Band 26 (Cell)	15	1	25.5	25.47	0.05	0	Left	Tilt	QPSK	1	36	03302	1:1	0.091	1.007	0.092	
831.50	26865	Mid	LTE Band 26 (Cell)	15	1	24.5	24.40	0.08	1	Left	Tilt	QPSK	36	18	03302	1:1	0.077	1.023	0.079	
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
LTE Band 66 (AWS) Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Position	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)	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	1	25.5	25.29	0.05	0	Right	Cheek	QPSK	1	50	03294	1:1	0.276	1.050	0.290	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	2	25.5	25.29	0.11	0	Right	Cheek	QPSK	1	50	03294	1:1	0.507	1.050	0.532	A15
1745.00	132322	Mid	LTE Band 66 (AWS)	20	3	25.5	25.29	0.07	0	Right	Cheek	QPSK	1	50	03294	1:1	0.465	1.050	0.488	
1770.00	132572	High	LTE Band 66 (AWS)	20	1	24.5	24.45	0.03	1	Right	Cheek	QPSK	50	50	03294	1:1	0.273	1.012	0.276	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	1	25.5	25.29	0.11	0	Right	Tilt	QPSK	1	50	03294	1:1	0.262	1.050	0.275	
1770.00	132572	High	LTE Band 66 (AWS)	20	1	24.5	24.45	0.07	1	Right	Tilt	QPSK	50	50	03294	1:1	0.272	1.012	0.275	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	1	25.5	25.29	0.04	0	Left	Cheek	QPSK	1	50	03294	1:1	0.178	1.050	0.187	
1770.00	132572	High	LTE Band 66 (AWS)	20	1	24.5	24.45	0.00	1	Left	Cheek	QPSK	50	50	03294	1:1	0.195	1.012	0.197	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	1	25.5	25.29	0.08	0	Left	Tilt	QPSK	1	50	03294	1:1	0.086	1.050	0.090	
1770.00	132572	High	LTE Band 66 (AWS)	20	1	24.5	24.45	0.05	1	Left	Tilt	QPSK	50	50	03294	1:1	0.096	1.012	0.097	
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 11-16
LTE Band 25 (PCS) Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Position	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	1	25.2	25.19	-0.01	0	Right	Cheek	QPSK	1	0	03286	1:1	0.192	1.002	0.192	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	2	25.2	25.19	-0.06	0	Right	Cheek	QPSK	1	0	03286	1:1	0.450	1.002	0.451	A16
1882.50	26365	Mid	LTE Band 25 (PCS)	20	3	25.2	25.19	0.09	0	Right	Cheek	QPSK	1	0	03286	1:1	0.404	1.002	0.405	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	1	24.2	24.19	0.04	1	Right	Cheek	QPSK	50	25	03286	1:1	0.176	1.002	0.176	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	1	25.2	25.19	-0.05	0	Right	Tilt	QPSK	1	0	03286	1:1	0.032	1.002	0.032	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	1	24.2	24.19	-0.08	1	Right	Tilt	QPSK	50	25	03286	1:1	0.028	1.002	0.028	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	1	25.2	25.19	0.04	0	Left	Cheek	QPSK	1	0	03286	1:1	0.131	1.002	0.131	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	1	24.2	24.19	0.01	1	Left	Cheek	QPSK	50	25	03286	1:1	0.119	1.002	0.119	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	1	25.2	25.19	0.10	0	Left	Tilt	QPSK	1	0	03286	1:1	0.053	1.002	0.053	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	1	24.2	24.19	0.14	1	Left	Tilt	QPSK	50	25	03286	1:1	0.051	1.002	0.051	
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 11-17
LTE Band 30 Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Position	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)	
2310.00	27710	Mid	LTE Band 30	10	1	23.7	23.64	-0.12	0	Right	Cheek	QPSK	1	49	03310	1:1	0.074	1.014	0.075	
2310.00	27710	Mid	LTE Band 30	10	1	22.7	22.68	0.19	1	Right	Cheek	QPSK	25	25	03310	1:1	0.064	1.005	0.064	
2310.00	27710	Mid	LTE Band 30	10	1	23.7	23.64	0.12	0	Right	Tilt	QPSK	1	49	03310	1:1	0.048	1.014	0.049	
2310.00	27710	Mid	LTE Band 30	10	1	22.7	22.68	0.13	1	Right	Tilt	QPSK	25	25	03310	1:1	0.044	1.005	0.044	
2310.00	27710	Mid	LTE Band 30	10	1	23.7	23.64	0.20	0	Left	Cheek	QPSK	1	49	03310	1:1	0.084	1.014	0.085	
2310.00	27710	Mid	LTE Band 30	10	2	23.7	23.64	0.12	0	Left	Cheek	QPSK	1	49	03310	1:1	0.166	1.014	0.168	A17
2310.00	27710	Mid	LTE Band 30	10	3	23.7	23.64	0.00	0	Left	Cheek	QPSK	1	49	03310	1:1	0.146	1.014	0.148	
2310.00	27710	Mid	LTE Band 30	10	1	22.7	22.68	0.01	1	Left	Cheek	QPSK	25	25	03310	1:1	0.079	1.005	0.079	
2310.00	27710	Mid	LTE Band 30	10	1	23.7	23.64	0.14	0	Left	Tilt	QPSK	1	49	03310	1:1	0.028	1.014	0.028	
2310.00	27710	Mid	LTE Band 30	10	1	22.7	22.68	0.16	1	Left	Tilt	QPSK	25	25	03310	1:1	0.027	1.005	0.027	
										Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-18
LTE Band 7 Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Position	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)	
2560.00	21350	High	LTE Band 7	20	1	23.7	23.70	0.15	0	Right	Cheek	QPSK	1	50	03260	1:1	0.049	1.000	0.049	
2560.00	21350	High	LTE Band 7	20	1	22.7	22.61	0.11	1	Right	Cheek	QPSK	50	0	03260	1:1	0.046	1.021	0.047	
2560.00	21350	High	LTE Band 7	20	1	23.7	23.70	0.12	0	Right	Tilt	QPSK	1	50	03260	1:1	0.039	1.000	0.039	
2560.00	21350	High	LTE Band 7	20	1	22.7	22.61	0.12	1	Right	Tilt	QPSK	50	0	03260	1:1	0.035	1.021	0.036	
2560.00	21350	High	LTE Band 7	20	1	23.7	23.70	0.12	0	Left	Cheek	QPSK	1	50	03260	1:1	0.074	1.000	0.074	
2560.00	21350	High	LTE Band 7	20	2	23.7	23.70	0.03	0	Left	Cheek	QPSK	1	50	03260	1:1	0.221	1.000	0.221	A18
2560.00	21350	High	LTE Band 7	20	3	23.7	23.70	-0.05	0	Left	Cheek	QPSK	1	50	03260	1:1	0.204	1.000	0.204	
2560.00	21350	High	LTE Band 7	20	1	22.7	22.61	0.05	1	Left	Cheek	QPSK	50	0	03260	1:1	0.071	1.021	0.072	
2560.00	21350	High	LTE Band 7	20	1	23.7	23.70	0.13	0	Left	Tilt	QPSK	1	50	03260	1:1	0.018	1.000	0.018	
2560.00	21350	High	LTE Band 7	20	1	22.7	22.61	0.12	1	Left	Tilt	QPSK	50	0	03260	1:1	0.015	1.021	0.015	
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 11-19
LTE Band 48 Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Position	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)	
3646.70	56207	Mid-High	LTE Band 48	20	1	22.7	22.66	0.08	0	Right	Cheek	QPSK	1	0	03286	1:1.58	0.099	1.009	0.100	
3646.70	56207	Mid-High	LTE Band 48	20	2	22.7	22.66	0.20	0	Right	Cheek	QPSK	1	0	03286	1:1.58	0.194	1.009	**0.196**	A19
3646.70	56207	Mid-High	LTE Band 48	20	3	22.7	22.66	0.04	0	Right	Cheek	QPSK	1	0	03286	1:1.58	0.188	1.009	0.190	
3603.30	55773	Low-Mid	LTE Band 48	20	1	21.7	21.70	0.10	1	Right	Cheek	QPSK	50	50	03286	1:1.58	0.084	1.000	0.084	
3646.70	56207	Mid-High	LTE Band 48	20	1	22.7	22.66	0.20	0	Right	Tilt	QPSK	1	0	03286	1:1.58	0.036	1.009	0.036	
3603.30	55773	Low-Mid	LTE Band 48	20	1	21.7	21.70	0.13	1	Right	Tilt	QPSK	50	50	03286	1:1.58	0.027	1.000	0.027	
3646.70	56207	Mid-High	LTE Band 48	20	1	22.7	22.66	0.12	0	Left	Cheek	QPSK	1	0	03286	1:1.58	0.042	1.009	0.042	
3603.30	55773	Low-Mid	LTE Band 48	20	1	21.7	21.70	0.17	1	Left	Cheek	QPSK	50	50	03286	1:1.58	0.031	1.000	0.031	
3646.70	56207	Mid-High	LTE Band 48	20	1	22.7	22.66	0.13	0	Left	Tilt	QPSK	1	0	03286	1:1.58	0.033	1.009	0.033	
3603.30	55773	Low-Mid	LTE Band 48	20	1	21.7	21.70	0.13	1	Left	Tilt	QPSK	50	50	03286	1:1.58	0.032	1.000	0.032	
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 11-20
LTE Band 41 Head SAR

MEASUREMENT RESULTS																							
1 CC Uplink | 2 CC Uplink, Power Class	Component Carrier	FREQUENCY			Mode	Bandwidth [MHz]	Position	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
		MHz	Ch.																(W/kg)		(W/kg)	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	1	25.2	25.18	0.01	0	Right	Cheek	QPSK	1	0	03310	1:1.58	0.061	1.005	0.061	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	1	24.2	24.17	0.16	1	Right	Cheek	QPSK	50	25	03310	1:1.58	0.057	1.007	0.057	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	1	25.2	25.18	0.13	0	Right	Tilt	QPSK	1	0	03310	1:1.58	0.045	1.005	0.045	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	1	24.2	24.17	0.13	1	Right	Tilt	QPSK	50	25	03310	1:1.58	0.041	1.007	0.041	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	1	25.2	25.18	0.17	0	Left	Cheek	QPSK	1	0	03310	1:1.58	0.075	1.005	0.075	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	2	25.2	25.18	-0.18	0	Left	Cheek	QPSK	1	0	03310	1:1.58	0.230	1.005	0.231	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	3	25.2	25.18	-0.06	0	Left	Cheek	QPSK	1	0	03310	1:1.58	0.140	1.005	0.141	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	1	24.2	24.17	0.17	1	Left	Cheek	QPSK	50	25	03310	1:1.58	0.065	1.007	0.065	
1 CC Uplink - Power Class 2	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	2	27.7	27.68	-0.19	0	Left	Cheek	QPSK	1	0	03310	1:2.31	0.290	1.005	0.291	A20
2 CC Uplink - Power Class 3	PCC	2549.50	40185	Low-Mid	LTE Band 41	20	2	25.2	24.47	0.13	0	Left	Cheek	QPSK	1	0	03310	1:1.58	0.205	1.183	0.243	
	SCC	2529.70	39987	Low-Mid	LTE Band 41	20								QPSK	1	99						
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	1	25.2	25.18	0.14	0	Left	Tilt	QPSK	1	0	03310	1:1.58	0.018	1.005	0.018	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	1	24.2	24.17	0.13	1	Left	Tilt	QPSK	50	25	03310	1:1.58	0.018	1.007	0.018	
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 11-21
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.	Position	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)	
2412	1	802.11b	DSSS	22	19.0	18.91	0.12	Right	Cheek	1	1	03336	1	99.3	0.753	0.557	1.021	1.007	0.573	
2437	6	802.11b	DSSS	22	19.0	18.94	0.18	Right	Cheek	1	1	03336	1	99.3	0.666	0.482	1.014	1.007	0.492	
2462	11	802.11b	DSSS	22	19.0	19.00	0.10	Right	Cheek	1	1	03336	1	99.3	1.034	0.696	1.000	1.007	**0.701**	A21
2462	11	802.11b	DSSS	22	19.0	19.00	0.17	Right	Cheek	1	2	03336	1	99.3	0.562	0.382	1.000	1.007	0.385	
2462	11	802.11b	DSSS	22	19.0	19.00	-0.16	Right	Cheek	1	3	03336	1	99.3	0.680	0.418	1.000	1.007	0.421	
2462	11	802.11b	DSSS	22	19.0	19.00	0.14	Right	Tilt	1	1	03336	1	99.3	0.429	0.289	1.000	1.007	0.291	
2462	11	802.11b	DSSS	22	19.0	19.00	-0.16	Left	Cheek	1	1	03336	1	99.3	0.344	0.233	1.000	1.007	0.235	
2462	11	802.11b	DSSS	22	19.0	19.00	0.19	Left	Tilt	1	1	03336	1	99.3	0.128	0.068	1.000	1.007	0.068	
2437	6	802.11b	DSSS	22	19.0	18.98	0.13	Right	Cheek	2	1	03336	1	99.1	0.636	0.334	1.005	1.009	0.339	
2437	6	802.11b	DSSS	22	19.0	18.98	0.03	Right	Cheek	2	2	03336	1	99.1	0.248	0.157	1.005	1.009	0.159	
2437	6	802.11b	DSSS	22	19.0	18.98	0.10	Right	Cheek	2	3	03336	1	99.1	0.228	0.163	1.005	1.009	0.165	
2437	6	802.11b	DSSS	22	19.0	18.98	0.11	Right	Tilt	2	1	03336	1	99.1	0.855	0.482	1.005	1.009	0.489	
2437	6	802.11b	DSSS	22	19.0	18.98	0.17	Right	Tilt	2	2	03336	1	99.1	0.816	0.595	1.005	1.009	0.603	
2437	6	802.11b	DSSS	22	19.0	18.98	0.18	Right	Tilt	2	3	03336	1	99.1	0.636	0.520	1.005	1.009	0.527	
2437	6	802.11b	DSSS	22	19.0	18.98	0.14	Left	Cheek	2	1	03336	1	99.1	0.284	0.261	1.005	1.009	0.265	
2437	6	802.11b	DSSS	22	19.0	18.98	0.07	Left	Tilt	2	1	03336	1	99.1	0.418	0.385	1.005	1.009	0.390	
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 11-22
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.	Position	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)	
5270	54	802.11n	OFDM	40	14.5	13.99	0.19	Right	Cheek	1	1	03328	13.5	97.3	0.020	-	1.125	1.028	-	
5270	54	802.11n	OFDM	40	14.5	13.99	0.19	Right	Tilt	1	1	03328	13.5	97.3	0.041	0.010	1.125	1.028	0.012	
5270	54	802.11n	OFDM	40	14.5	13.99	0.12	Left	Cheek	1	1	03328	13.5	97.3	0.015	-	1.125	1.028	-	
5270	54	802.11n	OFDM	40	14.5	13.99	0.19	Left	Tilt	1	1	03328	13.5	97.3	0.015	-	1.125	1.028	-	
5270	54	802.11n	OFDM	40	14.5	14.45	0.13	Right	Cheek	2	1	03328	13.5	97.2	0.539	0.265	1.012	1.029	0.276	
5270	54	802.11n	OFDM	40	14.5	14.45	0.18	Right	Tilt	2	1	03328	13.5	97.2	0.595	0.311	1.012	1.029	0.324	
5270	54	802.11n	OFDM	40	14.5	14.45	0.17	Left	Cheek	2	1	03328	13.5	97.2	0.199	-	1.012	1.029	-	
5270	54	802.11n	OFDM	40	14.5	14.45	-0.19	Left	Tilt	2	1	03328	13.5	97.2	0.229	-	1.012	1.029	-	
5550	110	802.11n	OFDM	40	14.5	14.49	0.12	Right	Cheek	1	1	03328	13.5	97.3	0.326	-	1.002	1.028	-	
5550	110	802.11n	OFDM	40	14.5	14.49	0.17	Right	Tilt	1	1	03328	13.5	97.3	0.337	0.144	1.002	1.028	0.148	
5550	110	802.11n	OFDM	40	14.5	14.49	0.19	Right	Tilt	1	2	03328	13.5	97.3	0.467	0.201	1.002	1.028	0.207	
5550	110	802.11n	OFDM	40	14.5	14.49	0.19	Right	Tilt	1	3	03328	13.5	97.3	0.382	0.209	1.002	1.028	0.215	
5550	110	802.11n	OFDM	40	14.5	14.49	0.16	Left	Cheek	1	1	03328	13.5	97.3	0.277	-	1.002	1.028	-	
5550	110	802.11n	OFDM	40	14.5	14.49	0.19	Left	Tilt	1	1	03328	13.5	97.3	0.271	-	1.002	1.028	-	
5630	126	802.11n	OFDM	40	14.5	14.49	0.12	Right	Cheek	2	1	03328	13.5	97.2	0.502	0.302	1.002	1.029	0.311	
5630	126	802.11n	OFDM	40	14.5	14.49	0.13	Right	Cheek	2	2	03328	13.5	97.2	0.168	0.076	1.002	1.029	0.078	
5630	126	802.11n	OFDM	40	14.5	14.49	0.06	Right	Cheek	2	3	03328	13.5	97.2	0.153	0.076	1.002	1.029	0.078	
5630	126	802.11n	OFDM	40	14.5	14.49	0.18	Right	Tilt	2	1	03328	13.5	97.2	0.674	0.361	1.002	1.029	0.372	
5630	126	802.11n	OFDM	40	14.5	14.49	0.12	Right	Tilt	2	2	03328	13.5	97.2	0.969	0.457	1.002	1.029	**0.471**	A22
5630	126	802.11n	OFDM	40	14.5	14.49	0.16	Right	Tilt	2	3	03328	13.5	97.2	0.938	0.410	1.002	1.029	0.423	
5630	126	802.11n	OFDM	40	14.5	14.49	0.19	Left	Cheek	2	1	03328	13.5	97.2	0.175	-	1.002	1.029	-	
5630	126	802.11n	OFDM	40	14.5	14.49	0.19	Left	Tilt	2	1	03328	13.5	97.2	0.208	-	1.002	1.029	-	
5755	151	802.11n	OFDM	40	14.5	14.26	0.12	Right	Cheek	1	1	03328	13.5	97.3	0.051	-	1.057	1.028	-	
5755	151	802.11n	OFDM	40	14.5	14.26	0.20	Right	Tilt	1	1	03328	13.5	97.3	0.076	0.019	1.057	1.028	0.021	
5755	151	802.11n	OFDM	40	14.5	14.26	0.12	Left	Cheek	1	1	03328	13.5	97.3	0.035	-	1.057	1.028	-	
5755	151	802.11n	OFDM	40	14.5	14.26	0.19	Left	Tilt	1	1	03328	13.5	97.3	0.020	-	1.057	1.028	-	
5795	159	802.11n	OFDM	40	14.5	14.34	0.19	Right	Cheek	2	1	03328	13.5	97.2	0.135	0.090	1.038	1.029	0.096	
5795	159	802.11n	OFDM	40	14.5	14.34	0.19	Right	Tilt	2	1	03328	13.5	97.2	0.175	0.100	1.038	1.029	0.107	
5795	159	802.11n	OFDM	40	14.5	14.34	0.00	Left	Cheek	2	1	03328	13.5	97.2	0.034	-	1.038	1.029	-	
5795	159	802.11n	OFDM	40	14.5	14.34	0.19	Left	Tilt	2	1	03328	13.5	97.2	0.050	-	1.038	1.029	-	
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 11-23
DSS Head SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	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)	
2441.00	39	Bluetooth	FHSS	12.0	11.73	-0.04	Right	Cheek	1	03278	1	77	0.101	1.064	1.299	**0.140**	A23
2441.00	39	Bluetooth	FHSS	12.0	11.73	0.05	Right	Cheek	2	03278	1	77	0.056	1.064	1.299	0.077	
2441.00	39	Bluetooth	FHSS	12.0	11.73	0.12	Right	Cheek	3	03278	1	77	0.063	1.064	1.299	0.087	
2441.00	39	Bluetooth	FHSS	12.0	11.73	0.08	Right	Tilt	1	03278	1	77	0.048	1.064	1.299	0.066	
2441.00	39	Bluetooth	FHSS	12.0	11.73	0.21	Left	Cheek	1	03278	1	77	0.037	1.064	1.299	0.051	
2441.00	39	Bluetooth	FHSS	12.0	11.73	0.13	Left	Tilt	1	03278	1	77	0.018	1.064	1.299	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									

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11.2 Standalone Body-Worn SAR Data

Table 11-24
GSM/UMTS/CDMA Body-Worn SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	34.2	33.56	0.15	10 mm	03302	1	1:8.3	back	0.530	1.159	0.614	
824.20	128	GSM 850	GPRS	31.2	30.32	-0.10	10 mm	03302	3	1:2.76	back	0.633	1.225	0.775	A24
836.60	190	GSM 850	GPRS	31.2	30.11	0.11	10 mm	03302	3	1:2.76	back	0.589	1.285	0.757	
848.80	251	GSM 850	GPRS	31.2	30.49	-0.14	10 mm	03302	3	1:2.76	back	0.583	1.178	0.687	
1880.00	661	GSM 1900	GSM	31.2	30.70	-0.02	10 mm	03302	1	1:8.3	back	0.326	1.122	0.366	
1880.00	661	GSM 1900	GPRS	28.2	27.32	-0.03	10 mm	03302	3	1:2.76	back	0.439	1.225	0.538	A25
836.60	4183	UMTS 850	RMC	25.5	25.37	-0.05	10 mm	03278	N/A	1:1	back	0.465	1.030	0.479	A27
1712.40	1312	UMTS 1750	RMC	25.5	24.88	0.03	10 mm	03286	N/A	1:1	back	0.594	1.153	0.685	
1732.40	1412	UMTS 1750	RMC	25.5	24.99	0.01	10 mm	03286	N/A	1:1	back	0.677	1.125	0.762	
1752.60	1513	UMTS 1750	RMC	25.5	25.17	-0.02	10 mm	03286	N/A	1:1	back	0.740	1.079	0.798	A28
1880.00	9400	UMTS 1900	RMC	25.2	25.10	-0.03	10 mm	03294	N/A	1:1	back	0.431	1.023	0.441	A30
820.10	564	CDMA BC10 (§90S)	TDSO / SO32	25.5	25.28	-0.06	10 mm	03302	N/A	1:1	back	0.583	1.052	0.613	A32
824.70	1013	CDMA BC0 (§22H)	TDSO / SO32	25.5	25.29	0.05	10 mm	03302	N/A	1:1	back	0.566	1.050	0.594	
836.52	384	CDMA BC0 (§22H)	TDSO / SO32	25.5	25.28	-0.14	10 mm	03302	N/A	1:1	back	0.900	1.052	0.947	A34
848.31	777	CDMA BC0 (§22H)	TDSO / SO32	25.5	25.28	-0.06	10 mm	03302	N/A	1:1	back	0.775	1.052	0.815	
836.52	384	CDMA BC0 (§22H)	TDSO / SO32	25.5	25.28	0.00	10 mm	03302	N/A	1:1	back	0.853	1.052	0.897	
1851.25	25	PCS CDMA	TDSO / SO32	25.2	24.71	0.05	10 mm	03302	N/A	1:1	back	0.707	1.119	0.791	A36
1880.00	600	PCS CDMA	TDSO / SO32	25.2	24.94	0.06	10 mm	03302	N/A	1:1	back	0.619	1.062	0.657	
1908.75	1175	PCS CDMA	TDSO / SO32	25.2	25.01	0.05	10 mm	03302	N/A	1:1	back	0.470	1.045	0.491	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram								

Note: Blue entry represent variability measurement.

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Table 11-25
LTE Body-Worn SAR

MEASUREMENT RESULTS																					
1 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	680.50	133297	Mid	LTE Band 71	20	25.5	25.50	-0.11	0	03278	QPSK	1	0	10 mm	back	1:1	0.545	1.000	0.545	A38
1 CC Uplink	N/A	680.50	133297	Mid	LTE Band 71	20	24.5	24.48	-0.01	1	03278	QPSK	50	0	10 mm	back	1:1	0.434	1.005	0.436	
1 CC Uplink	N/A	707.50	23095	Mid	LTE Band 12	10	25.5	25.34	-0.08	0	03260	QPSK	1	49	10 mm	back	1:1	0.346	1.038	0.359	A39
1 CC Uplink	N/A	707.50	23095	Mid	LTE Band 12	10	24.5	24.36	-0.11	1	03260	QPSK	25	25	10 mm	back	1:1	0.258	1.033	0.267	
1 CC Uplink	N/A	782.00	23230	Mid	LTE Band 13	10	25.5	25.49	-0.11	0	03286	QPSK	1	25	10 mm	back	1:1	0.652	1.002	0.653	A40
1 CC Uplink	N/A	782.00	23230	Mid	LTE Band 13	10	24.5	24.38	0.10	1	03286	QPSK	25	25	10 mm	back	1:1	0.615	1.028	0.632	
1 CC Uplink	N/A	793.00	23330	Mid	LTE Band 14	10	25.5	25.43	-0.05	0	03260	QPSK	1	25	10 mm	back	1:1	0.386	1.016	0.392	A41
1 CC Uplink	N/A	793.00	23330	Mid	LTE Band 14	10	24.5	24.48	0.00	1	03260	QPSK	25	0	10 mm	back	1:1	0.344	1.005	0.346	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.40	-0.07	0	03278	QPSK	1	0	10 mm	back	1:1	0.519	1.023	0.531	A42
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.40	-0.02	1	03278	QPSK	25	25	10 mm	back	1:1	0.367	1.023	0.375	
2 CC Uplink	PCC	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.80	0.01	0	03278	QPSK	1	0	10 mm	back	1:1	0.469	1.175	0.551	
	SCC	829.30	20453	Mid	LTE Band 5 (Cell)	5							1	24							
1 CC Uplink	N/A	831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.47	-0.06	0	03286	QPSK	1	36	10 mm	back	1:1	0.510	1.007	0.514	A43
1 CC Uplink	N/A	831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.40	-0.04	1	03286	QPSK	36	18	10 mm	back	1:1	0.481	1.023	0.492	
1 CC Uplink	N/A	1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.5	25.29	-0.06	0	03278	QPSK	1	50	10 mm	back	1:1	0.525	1.050	0.551	A44
1 CC Uplink	N/A	1770.00	132572	High	LTE Band 66 (AWS)	20	24.5	24.45	-0.09	1	03278	QPSK	50	50	10 mm	back	1:1	0.415	1.012	0.420	
1 CC Uplink	N/A	1860.00	26140	Low	LTE Band 25 (PCS)	20	25.2	25.02	-0.06	0	03924	QPSK	1	0	10 mm	back	1:1	0.863	1.042	0.899	
1 CC Uplink	N/A	1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.19	0.00	0	03924	QPSK	1	0	10 mm	back	1:1	0.897	1.002	0.899	A46
1 CC Uplink	N/A	1905.00	26590	High	LTE Band 25 (PCS)	20	25.2	25.14	-0.10	0	03924	QPSK	1	99	10 mm	back	1:1	0.716	1.014	0.726	
1 CC Uplink	N/A	1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.19	0.01	1	03924	QPSK	50	25	10 mm	back	1:1	0.735	1.002	0.736	
1 CC Uplink	N/A	1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.15	0.03	1	03924	QPSK	100	0	10 mm	back	1:1	0.789	1.012	0.798	
1 CC Uplink	N/A	2310.00	27710	Mid	LTE Band 30	10	23.7	23.64	-0.15	0	03294	QPSK	1	49	10 mm	back	1:1	0.290	1.014	0.294	A48
1 CC Uplink	N/A	2310.00	27710	Mid	LTE Band 30	10	22.7	22.68	-0.01	1	03294	QPSK	25	25	10 mm	back	1:1	0.197	1.005	0.198	
1 CC Uplink	N/A	2560.00	21350	High	LTE Band 7	20	23.7	23.70	-0.09	0	03310	QPSK	1	50	10 mm	back	1:1	0.259	1.000	0.259	A50
1 CC Uplink	N/A	2560.00	21350	High	LTE Band 7	20	22.7	22.61	-0.07	1	03310	QPSK	50	0	10 mm	back	1:1	0.202	1.021	0.206	
1 CC Uplink	N/A	3646.70	56207	Mid-High	LTE Band 48	20	22.7	22.66	-0.08	0	03278	QPSK	1	0	10 mm	back	1:1.58	0.117	1.009	0.118	A52
1 CC Uplink	N/A	3603.30	55773	Low-Mid	LTE Band 48	20	21.7	21.70	0.12	1	03278	QPSK	50	50	10 mm	back	1:1.58	0.067	1.000	0.067	
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 11-26
LTE Band 41 Body-Worn SAR

MEASUREMENT RESULTS																					
1 CC Uplink | 2 CC Uplink, Power Class	Component Carrier	FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
		MHz	Ch.															(W/kg)		(W/kg)	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	25.2	25.18	-0.10	0	03310	QPSK	1	0	10 mm	back	1:1.58	0.337	1.005	0.339	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	24.2	24.17	-0.18	1	03310	QPSK	50	25	10 mm	back	1:1.58	0.226	1.007	0.228	
1 CC Uplink - Power Class 2	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	27.7	27.68	0.05	0	03310	QPSK	1	0	10 mm	back	1:2.31	0.389	1.005	0.391	A54
2 CC Uplink - Power Class 3	PCC	2549.50	40185	Low-Mid	LTE Band 41	20	25.2	24.47	-0.16	0	03310	QPSK	1	0	10 mm	back	1:1.58	0.268	1.183	0.317	
	SCC	2529.70	39987	Low-Mid								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										

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Table 11-27
DTS Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2437	6	802.11b	DSSS	22	20.5	20.49	-0.12	10 mm	1	03336	1	back	99.3	0.303	0.280	1.002	1.007	**0.283**	A55
2437	6	802.11b	DSSS	22	20.5	20.44	0.16	10 mm	2	03336	1	back	99.1	0.179	0.143	1.014	1.009	0.146	
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 11-28
NII Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5280	56	802.11a	OFDM	20	19.0	18.77	0.05	10 mm	1	03336	6	back	98.3	0.487	0.230	1.054	1.017	0.247	
5280	56	802.11a	OFDM	20	19.0	18.77	-0.21	10 mm	2	03336	6	back	98.3	0.321	0.117	1.054	1.017	0.125	
5620	124	802.11a	OFDM	20	17.0	16.79	-0.02	10 mm	1	03336	6	back	98.3	0.792	0.434	1.050	1.017	0.463	
5500	100	802.11a	OFDM	20	17.0	16.81	0.19	10 mm	2	03336	6	back	98.3	0.518	0.230	1.045	1.017	0.244	
5785	157	802.11a	OFDM	20	19.0	18.83	0.05	10 mm	1	03336	6	back	98.3	1.088	0.561	1.040	1.017	**0.593**	A57
5785	157	802.11a	OFDM	20	19.0	18.96	0.00	10 mm	2	03336	6	back	98.3	0.430	0.150	1.009	1.017	0.154	
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
NII MIMO Body-Worn 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)	
5280	56	802.11n	OFDM	20	19.0	18.64	19.0	18.65	0.12	10 mm	MIMO	03336	13	back	98.1	0.588	0.238	1.086	1.019	0.263	
5500	100	802.11n	OFDM	20	17.0	16.44	17.0	16.66	-0.01	10 mm	MIMO	03336	13	back	98.1	0.827	0.338	1.138	1.019	0.392	
5785	157	802.11n	OFDM	20	19.0	18.61	19.0	18.97	0.15	10 mm	MIMO	03336	13	back	98.1	1.265	0.528	1.094	1.019	0.589	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									**Body 1.6 W/kg (mW/g)** averaged over 1 gram												

To achieve the 22.0 dBm (ch. 56, 157) and 20.0 dBm (ch. 100) maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 19.0 dBm (ch. 56, 157) and 17.0 dBm (ch.100).

Table 11-30
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	12.0	11.73	0.17	10 mm	03336	1	back	77	0.017	1.064	1.299	**0.023**	A58
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 11-31
GPRS/UMTS/CDMA Hotspot SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	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)	
824.20	128	GSM 850	GPRS	31.2	30.32	-0.10	10 mm	03302	3	1:2.76	back	0.633	1.225	0.775	A24
836.60	190	GSM 850	GPRS	31.2	30.11	0.11	10 mm	03302	3	1:2.76	back	0.589	1.285	0.757	
848.80	251	GSM 850	GPRS	31.2	30.49	-0.14	10 mm	03302	3	1:2.76	back	0.583	1.178	0.687	
836.60	190	GSM 850	GPRS	31.2	30.11	-0.09	10 mm	03302	3	1:2.76	front	0.464	1.285	0.596	
836.60	190	GSM 850	GPRS	31.2	30.11	0.06	10 mm	03302	3	1:2.76	bottom	0.214	1.285	0.275	
836.60	190	GSM 850	GPRS	31.2	30.11	-0.17	10 mm	03302	3	1:2.76	right	0.254	1.285	0.326	
1880.00	661	GSM 1900	GPRS	28.2	27.32	-0.03	10 mm	03302	3	1:2.76	back	0.439	1.225	0.538	
1880.00	661	GSM 1900	GPRS	28.2	27.32	-0.11	10 mm	03302	3	1:2.76	front	0.332	1.225	0.407	
1850.20	512	GSM 1900	GPRS	28.2	26.83	-0.13	10 mm	03302	3	1:2.76	bottom	0.615	1.371	0.843	A26
1880.00	661	GSM 1900	GPRS	28.2	27.32	-0.03	10 mm	03302	3	1:2.76	bottom	0.514	1.225	0.630	
1909.80	810	GSM 1900	GPRS	28.2	27.22	-0.15	10 mm	03302	3	1:2.76	bottom	0.479	1.253	0.600	
1880.00	661	GSM 1900	GPRS	28.2	27.32	-0.09	10 mm	03302	3	1:2.76	right	0.102	1.225	0.125	
1880.00	661	GSM 1900	GPRS	28.2	27.32	0.04	10 mm	03302	3	1:2.76	left	0.054	1.225	0.066	
836.60	4183	UMTS 850	RMC	25.5	25.37	-0.05	10 mm	03278	N/A	1:1	back	0.465	1.030	0.479	A27
836.60	4183	UMTS 850	RMC	25.5	25.37	-0.04	10 mm	03278	N/A	1:1	front	0.379	1.030	0.390	
836.60	4183	UMTS 850	RMC	25.5	25.37	0.05	10 mm	03278	N/A	1:1	bottom	0.200	1.030	0.206	
836.60	4183	UMTS 850	RMC	25.5	25.37	0.07	10 mm	03278	N/A	1:1	right	0.242	1.030	0.249	
1712.40	1312	UMTS 1750	RMC	25.5	24.88	0.03	10 mm	03286	N/A	1:1	back	0.594	1.153	0.685	
1732.40	1412	UMTS 1750	RMC	25.5	24.99	0.01	10 mm	03286	N/A	1:1	back	0.677	1.125	0.762	
1752.60	1513	UMTS 1750	RMC	25.5	25.17	-0.02	10 mm	03286	N/A	1:1	back	0.740	1.079	0.798	
1732.40	1412	UMTS 1750	RMC	25.5	24.99	-0.05	10 mm	03286	N/A	1:1	front	0.533	1.125	0.600	
1712.40	1312	UMTS 1750	RMC	25.5	24.88	-0.05	10 mm	03286	N/A	1:1	bottom	0.717	1.153	0.827	
1732.40	1412	UMTS 1750	RMC	25.5	24.99	-0.04	10 mm	03286	N/A	1:1	bottom	0.840	1.125	0.945	
1752.60	1513	UMTS 1750	RMC	25.5	25.17	-0.05	10 mm	03286	N/A	1:1	bottom	0.929	1.079	1.002	A29
1732.40	1412	UMTS 1750	RMC	25.5	24.99	0.05	10 mm	03286	N/A	1:1	right	0.166	1.125	0.187	
1732.40	1412	UMTS 1750	RMC	25.5	24.99	-0.01	10 mm	03286	N/A	1:1	left	0.083	1.125	0.093	
1752.60	1513	UMTS 1750	RMC	25.5	25.17	-0.02	10 mm	03286	N/A	1:1	bottom	0.924	1.079	0.997	
1880.00	9400	UMTS 1900	RMC	25.2	25.10	-0.03	10 mm	03294	N/A	1:1	back	0.431	1.023	0.441	
1880.00	9400	UMTS 1900	RMC	25.2	25.10	0.03	10 mm	03294	N/A	1:1	front	0.322	1.023	0.329	
1852.40	9262	UMTS 1900	RMC	25.2	24.90	-0.05	10 mm	03294	N/A	1:1	bottom	0.900	1.072	0.965	A31
1880.00	9400	UMTS 1900	RMC	25.2	25.10	-0.05	10 mm	03294	N/A	1:1	bottom	0.780	1.023	0.798	
1907.60	9538	UMTS 1900	RMC	25.2	25.16	-0.08	10 mm	03294	N/A	1:1	bottom	0.596	1.009	0.601	
1880.00	9400	UMTS 1900	RMC	25.2	25.10	0.00	10 mm	03294	N/A	1:1	right	0.112	1.023	0.115	
1880.00	9400	UMTS 1900	RMC	25.2	25.10	0.01	10 mm	03294	N/A	1:1	left	0.044	1.023	0.045	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.5	25.13	0.02	10 mm	03302	N/A	1:1	back	0.662	1.089	0.721	A33
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.5	25.13	0.06	10 mm	03302	N/A	1:1	front	0.476	1.089	0.518	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.5	25.13	-0.06	10 mm	03302	N/A	1:1	bottom	0.253	1.089	0.276	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.5	25.13	0.07	10 mm	03302	N/A	1:1	right	0.292	1.089	0.318	
824.70	1013	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.19	-0.04	10 mm	03302	N/A	1:1	back	0.554	1.074	0.595	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.17	-0.09	10 mm	03302	N/A	1:1	back	0.872	1.079	0.941	A35
848.31	777	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.10	-0.09	10 mm	03302	N/A	1:1	back	0.766	1.096	0.840	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.17	-0.02	10 mm	03302	N/A	1:1	front	0.632	1.079	0.682	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.17	-0.04	10 mm	03302	N/A	1:1	bottom	0.361	1.079	0.390	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.17	0.00	10 mm	03302	N/A	1:1	right	0.399	1.079	0.431	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.19	0.01	10 mm	03286	N/A	1:1	back	0.510	1.002	0.511	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.19	-0.07	10 mm	03286	N/A	1:1	front	0.395	1.002	0.396	
1851.25	25	PCS CDMA	EVDO Rev. 0	25.2	25.01	0.03	10 mm	03286	N/A	1:1	bottom	1.190	1.045	1.244	A37
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.19	-0.03	10 mm	03286	N/A	1:1	bottom	0.965	1.002	0.967	
1908.75	1175	PCS CDMA	EVDO Rev. 0	25.2	25.18	0.05	10 mm	03286	N/A	1:1	bottom	0.841	1.005	0.845	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.19	-0.03	10 mm	03286	N/A	1:1	right	0.153	1.002	0.153	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.19	0.05	10 mm	03286	N/A	1:1	left	0.077	1.002	0.077	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram							

Note: Blue entry represents variability measurement.

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Table 11-32
LTE Band 71 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
680.50	133297	Mid	LTE Band 71	20	25.5	25.50	-0.11	0	03278	QPSK	1	0	10 mm	back	1:1	0.545	1.000	0.545	A38
680.50	133297	Mid	LTE Band 71	20	24.5	24.48	-0.01	1	03278	QPSK	50	0	10 mm	back	1:1	0.434	1.005	0.436	
680.50	133297	Mid	LTE Band 71	20	25.5	25.50	0.00	0	03278	QPSK	1	0	10 mm	front	1:1	0.306	1.000	0.306	
680.50	133297	Mid	LTE Band 71	20	24.5	24.48	0.03	1	03278	QPSK	50	0	10 mm	front	1:1	0.269	1.005	0.270	
680.50	133297	Mid	LTE Band 71	20	25.5	25.50	0.07	0	03278	QPSK	1	0	10 mm	bottom	1:1	0.108	1.000	0.108	
680.50	133297	Mid	LTE Band 71	20	24.5	24.48	0.08	1	03278	QPSK	50	0	10 mm	bottom	1:1	0.099	1.005	0.099	
680.50	133297	Mid	LTE Band 71	20	25.5	25.50	0.02	0	03278	QPSK	1	0	10 mm	right	1:1	0.404	1.000	0.404	
680.50	133297	Mid	LTE Band 71	20	24.5	24.48	0.02	1	03278	QPSK	50	0	10 mm	right	1:1	0.341	1.005	0.343	
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 11-33
LTE Band 12 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.5	25.34	-0.08	0	03260	QPSK	1	49	10 mm	back	1:1	0.346	1.038	0.359	A39
707.50	23095	Mid	LTE Band 12	10	24.5	24.36	-0.11	1	03260	QPSK	25	25	10 mm	back	1:1	0.258	1.033	0.267	
707.50	23095	Mid	LTE Band 12	10	25.5	25.34	0.02	0	03260	QPSK	1	49	10 mm	front	1:1	0.217	1.038	0.225	
707.50	23095	Mid	LTE Band 12	10	24.5	24.36	0.07	1	03260	QPSK	25	25	10 mm	front	1:1	0.167	1.033	0.173	
707.50	23095	Mid	LTE Band 12	10	25.5	25.34	-0.12	0	03260	QPSK	1	49	10 mm	bottom	1:1	0.099	1.038	0.103	
707.50	23095	Mid	LTE Band 12	10	24.5	24.36	-0.11	1	03260	QPSK	25	25	10 mm	bottom	1:1	0.069	1.033	0.071	
707.50	23095	Mid	LTE Band 12	10	25.5	25.34	-0.07	0	03260	QPSK	1	49	10 mm	right	1:1	0.189	1.038	0.196	
707.50	23095	Mid	LTE Band 12	10	24.5	24.36	0.07	1	03260	QPSK	25	25	10 mm	right	1:1	0.146	1.033	0.151	
								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-34
LTE Band 13 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
782.00	23230	Mid	LTE Band 13	10	25.5	25.49	-0.11	0	03286	QPSK	1	25	10 mm	back	1:1	0.652	1.002	0.653	A40
782.00	23230	Mid	LTE Band 13	10	24.5	24.38	0.10	1	03286	QPSK	25	25	10 mm	back	1:1	0.615	1.028	0.632	
782.00	23230	Mid	LTE Band 13	10	25.5	25.49	-0.11	0	03286	QPSK	1	25	10 mm	front	1:1	0.384	1.002	0.385	
782.00	23230	Mid	LTE Band 13	10	24.5	24.38	-0.02	1	03286	QPSK	25	25	10 mm	front	1:1	0.345	1.028	0.355	
782.00	23230	Mid	LTE Band 13	10	25.5	25.49	0.04	0	03286	QPSK	1	25	10 mm	bottom	1:1	0.204	1.002	0.204	
782.00	23230	Mid	LTE Band 13	10	24.5	24.38	0.16	1	03286	QPSK	25	25	10 mm	bottom	1:1	0.201	1.028	0.207	
782.00	23230	Mid	LTE Band 13	10	25.5	25.49	0.00	0	03286	QPSK	1	25	10 mm	right	1:1	0.213	1.002	0.213	
782.00	23230	Mid	LTE Band 13	10	24.5	24.38	-0.15	1	03286	QPSK	25	25	10 mm	right	1:1	0.195	1.028	0.200	
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 11-35
LTE Band 14 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
793.00	23330	Mid	LTE Band 14	10	25.5	25.43	-0.05	0	03260	QPSK	1	25	10 mm	back	1:1	0.386	1.016	0.392	A41
793.00	23330	Mid	LTE Band 14	10	24.5	24.48	0.00	1	03260	QPSK	25	0	10 mm	back	1:1	0.344	1.005	0.346	
793.00	23330	Mid	LTE Band 14	10	25.5	25.43	0.03	0	03260	QPSK	1	25	10 mm	front	1:1	0.254	1.016	0.258	
793.00	23330	Mid	LTE Band 14	10	24.5	24.48	0.01	1	03260	QPSK	25	0	10 mm	front	1:1	0.229	1.005	0.230	
793.00	23330	Mid	LTE Band 14	10	25.5	25.43	0.00	0	03260	QPSK	1	25	10 mm	bottom	1:1	0.107	1.016	0.109	
793.00	23330	Mid	LTE Band 14	10	24.5	24.48	0.00	1	03260	QPSK	25	0	10 mm	bottom	1:1	0.095	1.005	0.095	
793.00	23330	Mid	LTE Band 14	10	25.5	25.43	-0.01	0	03260	QPSK	1	25	10 mm	right	1:1	0.146	1.016	0.148	
793.00	23330	Mid	LTE Band 14	10	24.5	24.48	-0.07	1	03260	QPSK	25	0	10 mm	right	1:1	0.101	1.005	0.102	
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 11-36
LTE Band 5 (Cell) Hotspot SAR

MEASUREMENT RESULTS																				
1 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	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.40	-0.07	0	03278	QPSK	1	0	10 mm	back	1:1	0.519	1.023	0.531	A42
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.40	-0.02	1	03278	QPSK	25	25	10 mm	back	1:1	0.367	1.023	0.375	
2 CC Uplink	PCC	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.80	0.01	0	03278	QPSK	1	0	10 mm	back	1:1	0.469	1.175	0.551	
	SCC	829.30	20453	Mid	LTE Band 5 (Cell)	5							1	24							
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.40	-0.03	0	03278	QPSK	1	0	10 mm	front	1:1	0.379	1.023	0.388	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.40	-0.01	1	03278	QPSK	25	25	10 mm	front	1:1	0.265	1.023	0.271	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.40	0.00	0	03278	QPSK	1	0	10 mm	bottom	1:1	0.197	1.023	0.202	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.40	-0.02	1	03278	QPSK	25	25	10 mm	bottom	1:1	0.154	1.023	0.158	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.40	-0.02	0	03278	QPSK	1	0	10 mm	right	1:1	0.268	1.023	0.274	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.40	0.04	1	03278	QPSK	25	25	10 mm	right	1:1	0.194	1.023	0.198	
		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 11-37
LTE Band 26 (Cell) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.47	-0.06	0	03286	QPSK	1	36	10 mm	back	1:1	0.510	1.007	0.514	A43
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.40	-0.04	1	03286	QPSK	36	18	10 mm	back	1:1	0.481	1.023	0.492	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.47	0.00	0	03286	QPSK	1	36	10 mm	front	1:1	0.327	1.007	0.329	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.40	0.00	1	03286	QPSK	36	18	10 mm	front	1:1	0.308	1.023	0.315	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.47	-0.01	0	03286	QPSK	1	36	10 mm	bottom	1:1	0.185	1.007	0.186	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.40	-0.03	1	03286	QPSK	36	18	10 mm	bottom	1:1	0.169	1.023	0.173	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.47	-0.03	0	03286	QPSK	1	36	10 mm	right	1:1	0.193	1.007	0.194	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.40	0.00	1	03286	QPSK	36	18	10 mm	right	1:1	0.176	1.023	0.180	
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 11-38
LTE Band 66 (AWS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.5	25.29	-0.06	0	03278	QPSK	1	50	10 mm	back	1:1	0.525	1.050	0.551	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.5	24.45	-0.09	1	03278	QPSK	50	50	10 mm	back	1:1	0.415	1.012	0.420	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.5	25.29	-0.07	0	03278	QPSK	1	50	10 mm	front	1:1	0.442	1.050	0.464	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.5	24.45	-0.03	1	03278	QPSK	50	50	10 mm	front	1:1	0.359	1.012	0.363	
1720.00	132072	Low	LTE Band 66 (AWS)	20	25.5	25.18	0.01	0	03278	QPSK	1	99	10 mm	bottom	1:1	0.669	1.076	0.720	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.5	25.29	-0.02	0	03278	QPSK	1	50	10 mm	bottom	1:1	0.823	1.050	0.864	A45
1770.00	132572	High	LTE Band 66 (AWS)	20	25.5	25.15	-0.14	0	03278	QPSK	1	50	10 mm	bottom	1:1	0.703	1.084	0.762	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.5	24.45	-0.02	1	03278	QPSK	50	50	10 mm	bottom	1:1	0.678	1.012	0.686	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.5	24.37	0.01	1	03278	QPSK	100	0	10 mm	bottom	1:1	0.572	1.030	0.589	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.5	25.29	-0.09	0	03278	QPSK	1	50	10 mm	right	1:1	0.105	1.050	0.110	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.5	24.45	0.14	1	03278	QPSK	50	50	10 mm	right	1:1	0.094	1.012	0.095	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.5	25.29	0.03	0	03278	QPSK	1	50	10 mm	left	1:1	0.068	1.050	0.071	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.5	24.45	0.08	1	03278	QPSK	50	50	10 mm	left	1:1	0.066	1.012	0.067	
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 11-39
LTE Band 25 (PCS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.2	25.02	-0.06	0	03924	QPSK	1	0	10 mm	back	1:1	0.863	1.042	0.899	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.19	0.00	0	03924	QPSK	1	0	10 mm	back	1:1	0.897	1.002	0.899	
1905.00	26590	High	LTE Band 25 (PCS)	20	25.2	25.14	-0.10	0	03924	QPSK	1	99	10 mm	back	1:1	0.716	1.014	0.726	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.19	0.01	1	03924	QPSK	50	25	10 mm	back	1:1	0.735	1.002	0.736	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.15	0.03	1	03924	QPSK	100	0	10 mm	back	1:1	0.789	1.012	0.798	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.19	0.00	0	03924	QPSK	1	0	10 mm	front	1:1	0.661	1.002	0.662	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.19	0.01	1	03924	QPSK	50	25	10 mm	front	1:1	0.562	1.002	0.563	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.2	25.02	-0.05	0	03924	QPSK	1	0	10 mm	bottom	1:1	1.240	1.042	**1.292**	A47
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.19	-0.12	0	03924	QPSK	1	0	10 mm	bottom	1:1	1.010	1.002	1.012	
1905.00	26590	High	LTE Band 25 (PCS)	20	25.2	25.14	-0.12	0	03924	QPSK	1	99	10 mm	bottom	1:1	0.751	1.014	0.762	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.2	24.14	-0.07	1	03924	QPSK	50	0	10 mm	bottom	1:1	1.110	1.014	1.126	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.19	-0.07	1	03924	QPSK	50	25	10 mm	bottom	1:1	0.892	1.002	0.894	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.16	-0.01	1	03924	QPSK	50	0	10 mm	bottom	1:1	0.622	1.009	0.628	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.15	-0.05	1	03924	QPSK	100	0	10 mm	bottom	1:1	0.919	1.012	0.930	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.19	-0.02	0	03924	QPSK	1	0	10 mm	right	1:1	0.167	1.002	0.167	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.19	-0.02	1	03924	QPSK	50	25	10 mm	right	1:1	0.158	1.002	0.158	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.19	-0.01	0	03924	QPSK	1	0	10 mm	left	1:1	0.092	1.002	0.092	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.19	0.01	1	03924	QPSK	50	25	10 mm	left	1:1	0.094	1.002	0.094	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.2	25.02	-0.09	0	03924	QPSK	1	0	10 mm	bottom	1:1	1.150	1.042	1.198	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Body 1.6 W/kg (mW/g) averaged over 1 gram														

Note: Blue entry represents variability measurement.

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Table 11-40
LTE Band 30 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.64	-0.15	0	03294	QPSK	1	49	10 mm	back	1:1	0.290	1.014	0.294	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.68	-0.01	1	03294	QPSK	25	25	10 mm	back	1:1	0.197	1.005	0.198	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.64	-0.10	0	03294	QPSK	1	49	10 mm	front	1:1	0.294	1.014	0.298	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.68	-0.01	1	03294	QPSK	25	25	10 mm	front	1:1	0.207	1.005	0.208	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.64	0.01	0	03294	QPSK	1	49	10 mm	bottom	1:1	0.386	1.014	0.391	A49
2310.00	27710	Mid	LTE Band 30	10	22.7	22.68	-0.01	1	03294	QPSK	25	25	10 mm	bottom	1:1	0.273	1.005	0.274	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.64	-0.06	0	03294	QPSK	1	49	10 mm	left	1:1	0.112	1.014	0.114	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.68	-0.04	1	03294	QPSK	25	25	10 mm	left	1:1	0.081	1.005	0.081	
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 11-41
LTE Band 7 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2560.00	21350	High	LTE Band 7	20	23.7	23.70	-0.09	0	03310	QPSK	1	50	10 mm	back	1:1	0.259	1.000	0.259	
2560.00	21350	High	LTE Band 7	20	22.7	22.61	-0.07	1	03310	QPSK	50	0	10 mm	back	1:1	0.202	1.021	0.206	
2560.00	21350	High	LTE Band 7	20	23.7	23.70	0.00	0	03310	QPSK	1	50	10 mm	front	1:1	0.286	1.000	0.286	
2560.00	21350	High	LTE Band 7	20	22.7	22.61	-0.01	1	03310	QPSK	50	0	10 mm	front	1:1	0.229	1.021	0.234	
2560.00	21350	High	LTE Band 7	20	23.7	23.70	-0.02	0	03310	QPSK	1	50	10 mm	bottom	1:1	0.331	1.000	0.331	A51
2560.00	21350	High	LTE Band 7	20	22.7	22.61	-0.02	1	03310	QPSK	50	0	10 mm	bottom	1:1	0.258	1.021	0.263	
2560.00	21350	High	LTE Band 7	20	23.7	23.70	-0.04	0	03310	QPSK	1	50	10 mm	left	1:1	0.116	1.000	0.116	
2560.00	21350	High	LTE Band 7	20	22.7	22.61	-0.10	1	03310	QPSK	50	0	10 mm	left	1:1	0.089	1.021	0.091	
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 11-42
LTE Band 48 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
3646.70	56207	Mid-High	LTE Band 48	20	22.7	22.66	-0.08	0	03278	QPSK	1	0	10 mm	back	1:1.58	0.117	1.009	0.118	
3603.30	55773	Low-Mid	LTE Band 48	20	21.7	21.70	0.12	1	03278	QPSK	50	50	10 mm	back	1:1.58	0.067	1.000	0.067	
3646.70	56207	Mid-High	LTE Band 48	20	22.7	22.66	-0.12	0	03278	QPSK	1	0	10 mm	front	1:1.58	0.074	1.009	0.075	
3603.30	55773	Low-Mid	LTE Band 48	20	21.7	21.70	0.12	1	03278	QPSK	50	50	10 mm	front	1:1.58	0.040	1.000	0.040	
3646.70	56207	Mid-High	LTE Band 48	20	22.7	22.66	0.06	0	03278	QPSK	1	0	10 mm	bottom	1:1.58	0.080	1.009	0.081	
3603.30	55773	Low-Mid	LTE Band 48	20	21.7	21.70	0.13	1	03278	QPSK	50	50	10 mm	bottom	1:1.58	0.048	1.000	0.048	
3646.70	56207	Mid-High	LTE Band 48	20	22.7	22.66	-0.17	0	03278	QPSK	1	0	10 mm	right	1:1.58	0.217	1.009	0.219	A53
3603.30	55773	Low-Mid	LTE Band 48	20	21.7	21.70	0.17	1	03278	QPSK	50	50	10 mm	right	1:1.58	0.128	1.000	0.128	
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 11-43
LTE Band 41 Hotspot SAR

MEASUREMENT RESULTS																					
1 CC Uplink | 2 CC Uplink, Power Class	Component Carrier	FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
		MHz	Ch.															(W/kg)		(W/kg)	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	25.2	25.18	-0.10	0	03310	QPSK	1	0	10 mm	back	1:1.58	0.337	1.005	0.339	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	24.2	24.17	-0.18	1	03310	QPSK	50	25	10 mm	back	1:1.58	0.226	1.007	0.228	
1 CC Uplink - Power Class 2	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	27.7	27.68	0.05	0	03310	QPSK	1	0	10 mm	back	1:2.31	0.389	1.005	0.391	A54
2 CC Uplink - Power Class 3	PCC	2549.50	40185	Low-Mid	LTE Band 41	20	25.2	24.47	-0.16	0	03310	QPSK	1	0	10 mm	back	1:1.58	0.268	1.183	0.317	
2 CC Uplink - Power Class 3	SCC	2529.70	39987	Low-Mid								QPSK	1	99							
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	25.2	25.18	0.00	0	03310	QPSK	1	0	10 mm	front	1:1.58	0.200	1.005	0.201	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	24.2	24.17	0.10	1	03310	QPSK	50	25	10 mm	front	1:1.58	0.190	1.007	0.191	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	25.2	25.18	-0.02	0	03310	QPSK	1	0	10 mm	bottom	1:1.58	0.191	1.005	0.192	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	24.2	24.17	0.02	1	03310	QPSK	50	25	10 mm	bottom	1:1.58	0.176	1.007	0.177	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	25.2	25.18	-0.09	0	03310	QPSK	1	0	10 mm	left	1:1.58	0.076	1.005	0.076	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	24.2	24.17	0.01	1	03310	QPSK	50	25	10 mm	left	1:1.58	0.072	1.007	0.073	
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 11-44
WLAN Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2437	6	802.11b	DSSS	22	20.5	20.49	-0.12	10 mm	1	03336	1	back	99.3	0.303	0.280	1.002	1.007	0.283	
2437	6	802.11b	DSSS	22	20.5	20.49	0.19	10 mm	1	03336	1	front	99.3	0.178	-	1.002	1.007	-	
2437	6	802.11b	DSSS	22	20.5	20.49	0.13	10 mm	1	03336	1	top	99.3	0.041	-	1.002	1.007	-	
2437	6	802.11b	DSSS	22	20.5	20.49	0.18	10 mm	1	03336	1	left	99.3	0.408	0.336	1.002	1.007	**0.339**	A56
2437	6	802.11b	DSSS	22	20.5	20.44	0.16	10 mm	2	03336	1	back	99.1	0.179	0.143	1.014	1.009	0.146	
2437	6	802.11b	DSSS	22	20.5	20.44	0.13	10 mm	2	03336	1	front	99.1	0.155	-	1.014	1.009	-	
2437	6	802.11b	DSSS	22	20.5	20.44	0.06	10 mm	2	03336	1	top	99.1	0.265	0.211	1.014	1.009	0.216	
2437	6	802.11b	DSSS	22	20.5	20.44	0.12	10 mm	2	03336	1	left	99.1	0.045	-	1.014	1.009	-	
5200	40	802.11a	OFDM	20	19.0	18.91	0.11	10 mm	1	03336	6	back	98.3	0.304	0.142	1.021	1.017	0.147	
5200	40	802.11a	OFDM	20	19.0	18.91	0.00	10 mm	1	03336	6	front	98.3	0.064	-	1.021	1.017	-	
5200	40	802.11a	OFDM	20	19.0	18.91	0.18	10 mm	1	03336	6	top	98.3	0.090	-	1.021	1.017	-	
5200	40	802.11a	OFDM	20	19.0	18.91	0.12	10 mm	1	03336	6	left	98.3	0.161	-	1.021	1.017	-	
5200	40	802.11a	OFDM	20	19.0	18.84	-0.19	10 mm	2	03336	6	back	98.3	0.238	-	1.038	1.017	-	
5200	40	802.11a	OFDM	20	19.0	18.84	-0.10	10 mm	2	03336	6	front	98.3	0.414	0.163	1.038	1.017	0.172	
5200	40	802.11a	OFDM	20	19.0	18.84	0.00	10 mm	2	03336	6	top	98.3	0.110	-	1.038	1.017	-	
5200	40	802.11a	OFDM	20	19.0	18.84	-0.13	10 mm	2	03336	6	left	98.3	0.063	-	1.038	1.017	-	
5785	157	802.11a	OFDM	20	19.0	18.83	0.05	10 mm	1	03336	6	back	98.3	1.088	0.561	1.040	1.017	**0.593**	A57
5785	157	802.11a	OFDM	20	19.0	18.83	-0.19	10 mm	1	03336	6	front	98.3	0.157	-	1.040	1.017	-	
5785	157	802.11a	OFDM	20	19.0	18.83	-0.16	10 mm	1	03336	6	top	98.3	0.203	-	1.040	1.017	-	
5785	157	802.11a	OFDM	20	19.0	18.83	0.05	10 mm	1	03336	6	left	98.3	0.506	0.192	1.040	1.017	0.203	
5785	157	802.11a	OFDM	20	19.0	18.96	0.00	10 mm	2	03336	6	back	98.3	0.430	0.150	1.009	1.017	0.154	
5785	157	802.11a	OFDM	20	19.0	18.96	-0.19	10 mm	2	03336	6	front	98.3	0.356	-	1.009	1.017	-	
5785	157	802.11a	OFDM	20	19.0	18.96	0.16	10 mm	2	03336	6	top	98.3	0.147	-	1.009	1.017	-	
5785	157	802.11a	OFDM	20	19.0	18.96	-0.19	10 mm	2	03336	6	left	98.3	0.171	-	1.009	1.017	-	
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 11-45
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)	
5200	40	802.11n	OFDM	20	19.0	18.83	19.0	18.79	0.13	10 mm	MIMO	03336	13	back	98.1	0.349	-	1.050	1.019	-	
5200	40	802.11n	OFDM	20	19.0	18.83	19.0	18.79	-0.14	10 mm	MIMO	03336	13	front	98.1	0.489	0.172	1.050	1.019	0.184	
5200	40	802.11n	OFDM	20	19.0	18.83	19.0	18.79	0.12	10 mm	MIMO	03336	13	top	98.1	0.168	-	1.050	1.019	-	
5200	40	802.11n	OFDM	20	19.0	18.83	19.0	18.79	-0.13	10 mm	MIMO	03336	13	left	98.1	0.165	-	1.050	1.019	-	
5785	157	802.11n	OFDM	20	19.0	18.61	19.0	18.97	0.15	10 mm	MIMO	03336	13	back	98.1	1.265	0.528	1.094	1.019	0.589	
5785	157	802.11n	OFDM	20	19.0	18.61	19.0	18.97	-0.19	10 mm	MIMO	03336	13	front	98.1	0.447	-	1.094	1.019	-	
5785	157	802.11n	OFDM	20	19.0	18.61	19.0	18.97	-0.14	10 mm	MIMO	03336	13	top	98.1	0.424	-	1.094	1.019	-	
5785	157	802.11n	OFDM	20	19.0	18.61	19.0	18.97	0.13	10 mm	MIMO	03336	13	left	98.1	0.669	0.266	1.094	1.019	0.297	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Body 1.6 W/kg (mW/g) averaged over 1 gram					

To achieve the 22.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 19.0 dBm.

Table 11-46
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	12.0	11.73	0.17	10 mm	03336	1	back	77	0.017	1.064	1.299	**0.023**	A58
2441	39	Bluetooth	FHSS	12.0	11.73	-0.14	10 mm	03336	1	front	77	0.008	1.064	1.299	0.011	
2441	39	Bluetooth	FHSS	12.0	11.73	-0.12	10 mm	03336	1	top	77	0.002	1.064	1.299	0.003	
2441	39	Bluetooth	FHSS	12.0	11.73	0.07	10 mm	03336	1	left	77	0.015	1.064	1.299	**0.021**	
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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11.4 Standalone Phablet SAR Data

Table 11-47
UMTS/CDMA Phablet SAR Data

MEASUREMENT RESULTS														
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Duty Cycle	Side	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1732.40	1412	UMTS 1750	RMC	25.5	24.99	-0.09	2 mm	03286	1:1	back	1.400	1.125	1.575	
1712.40	1312	UMTS 1750	RMC	25.5	24.88	0.03	0 mm	03286	1:1	front	1.720	1.153	1.983	
1732.40	1412	UMTS 1750	RMC	25.5	24.99	-0.05	0 mm	03286	1:1	front	2.030	1.125	2.284	
1752.60	1513	UMTS 1750	RMC	25.5	25.17	0.01	0 mm	03286	1:1	front	2.130	1.079	2.298	
1732.40	1412	UMTS 1750	RMC	25.5	24.99	-0.14	3 mm	03286	1:1	bottom	1.620	1.125	1.823	
1732.40	1412	UMTS 1750	RMC	25.5	24.99	-0.14	0 mm	03286	1:1	right	0.564	1.125	0.635	
1732.40	1412	UMTS 1750	RMC	25.5	24.99	-0.01	0 mm	03286	1:1	left	0.359	1.125	0.404	
1732.40	1412	UMTS 1750	RMC	23.5	23.01	0.05	0 mm	03286	1:1	back	1.780	1.119	1.992	
1712.40	1312	UMTS 1750	RMC	23.5	22.83	-0.05	0 mm	03286	1:1	bottom	2.150	1.167	2.509	
1732.40	1412	UMTS 1750	RMC	23.5	23.01	-0.03	0 mm	03286	1:1	bottom	2.310	1.119	2.585	
1752.60	1513	UMTS 1750	RMC	23.5	23.26	-0.13	0 mm	03286	1:1	bottom	2.700	1.057	**2.854**	A59
1752.60	1513	UMTS 1750	RMC	23.5	23.26	-0.13	0 mm	03286	1:1	bottom	2.700	1.057	**2.854**	
1880.00	9400	UMTS 1900	RMC	25.2	25.10	-0.21	2 mm	03294	1:1	back	0.781	1.023	0.799	
1880.00	9400	UMTS 1900	RMC	25.2	25.10	0.06	0 mm	03294	1:1	front	0.929	1.023	0.950	
1880.00	9400	UMTS 1900	RMC	25.2	25.10	-0.13	3 mm	03294	1:1	bottom	1.260	1.023	1.289	
1880.00	9400	UMTS 1900	RMC	25.2	25.10	-0.10	0 mm	03294	1:1	right	0.494	1.023	0.505	
1880.00	9400	UMTS 1900	RMC	25.2	25.10	0.14	0 mm	03294	1:1	left	0.175	1.023	0.179	
1880.00	9400	UMTS 1900	RMC	23.2	23.13	-0.06	0 mm	03294	1:1	back	0.987	1.016	1.003	
1880.00	9400	UMTS 1900	RMC	23.2	23.13	0.01	0 mm	03294	1:1	bottom	1.390	1.016	1.412	A60
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.19	-0.17	2 mm	03286	1:1	back	1.300	1.002	1.303	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.19	-0.21	0 mm	03286	1:1	front	1.300	1.002	1.303	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.19	-0.04	3 mm	03286	1:1	bottom	1.690	1.002	1.693	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.19	-0.03	0 mm	03286	1:1	right	0.635	1.002	0.636	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.19	-0.10	0 mm	03286	1:1	left	0.197	1.002	0.197	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.2	23.20	-0.01	0 mm	03286	1:1	back	1.180	1.000	1.180	
1851.25	25	PCS CDMA	EVDO Rev. 0	23.2	23.03	-0.14	0 mm	03286	1:1	bottom	2.280	1.040	2.371	A61
1880.00	600	PCS CDMA	EVDO Rev. 0	23.2	23.20	-0.07	0 mm	03286	1:1	bottom	1.790	1.000	1.790	
1908.75	1175	PCS CDMA	EVDO Rev. 0	23.2	23.14	-0.09	0 mm	03286	1:1	bottom	1.770	1.014	1.795	
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 11-48
LTE Phablet SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.5	25.29	-0.14	0	03278	QPSK	1	50	2 mm	back	1:1	1.080	1.050	1.134	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.5	24.45	-0.08	1	03278	QPSK	50	50	2 mm	back	1:1	1.060	1.012	1.073	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.5	25.29	0.15	0	03278	QPSK	1	50	0 mm	front	1:1	1.430	1.050	1.502	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.5	24.45	0.15	1	03278	QPSK	50	50	0 mm	front	1:1	1.270	1.012	1.285	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.5	25.29	-0.08	0	03278	QPSK	1	50	3 mm	bottom	1:1	1.420	1.050	1.491	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.5	24.45	-0.06	1	03278	QPSK	50	50	3 mm	bottom	1:1	1.390	1.012	1.407	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.5	25.29	-0.07	0	03278	QPSK	1	50	0 mm	right	1:1	0.405	1.050	0.425	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.5	24.45	-0.08	1	03278	QPSK	50	50	0 mm	right	1:1	0.395	1.012	0.400	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.5	25.29	-0.02	0	03278	QPSK	1	50	0 mm	left	1:1	0.283	1.050	0.297	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.5	24.45	-0.02	1	03278	QPSK	50	50	0 mm	left	1:1	0.266	1.012	0.269	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	23.41	-0.09	0	03278	QPSK	1	0	0 mm	back	1:1	0.983	1.021	1.004	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.5	23.49	-0.03	0	03278	QPSK	50	0	0 mm	back	1:1	1.070	1.002	1.072	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	23.41	0.00	0	03278	QPSK	1	0	0 mm	bottom	1:1	1.590	1.021	1.623	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	23.46	0.03	0	03278	QPSK	50	25	0 mm	bottom	1:1	1.520	1.009	1.534	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.5	23.49	0.01	0	03278	QPSK	50	0	0 mm	bottom	1:1	2.010	1.002	2.014	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	23.47	0.01	0	03278	QPSK	50	25	0 mm	bottom	1:1	2.360	1.007	2.377	A62
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	23.37	0.20	0	03278	QPSK	100	0	0 mm	bottom	1:1	1.900	1.030	1.957	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.19	-0.10	0	03260	QPSK	1	0	2 mm	back	1:1	1.280	1.002	1.283	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.19	-0.03	1	03260	QPSK	50	25	2 mm	back	1:1	1.200	1.002	1.202	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.19	0.21	0	03260	QPSK	1	0	0 mm	front	1:1	1.520	1.002	1.523	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.19	-0.03	1	03260	QPSK	50	25	0 mm	front	1:1	1.460	1.002	1.463	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.19	-0.04	0	03260	QPSK	1	0	3 mm	bottom	1:1	1.990	1.002	1.994	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.19	0.03	1	03260	QPSK	50	25	3 mm	bottom	1:1	1.800	1.002	1.804	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.19	-0.11	0	03260	QPSK	1	0	0 mm	right	1:1	0.822	1.002	0.824	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.19	-0.03	1	03260	QPSK	50	25	0 mm	right	1:1	0.732	1.002	0.733	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	25.19	-0.02	0	03260	QPSK	1	0	0 mm	left	1:1	0.399	1.002	0.400	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.19	0.00	1	03260	QPSK	50	25	0 mm	left	1:1	0.342	1.002	0.343	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.2	23.14	0.01	0	03286	QPSK	1	50	0 mm	back	1:1	1.000	1.014	1.014	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.2	23.12	-0.08	0	03286	QPSK	50	0	0 mm	back	1:1	1.360	1.019	1.386	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.2	23.14	-0.09	0	03286	QPSK	1	50	0 mm	bottom	1:1	1.590	1.014	1.612	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.2	23.11	-0.05	0	03286	QPSK	50	0	0 mm	bottom	1:1	1.740	1.021	1.777	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.2	23.02	-0.05	0	03286	QPSK	50	25	0 mm	bottom	1:1	2.570	1.042	2.678	A63
1905.00	26590	High	LTE Band 25 (PCS)	20	23.2	23.12	-0.12	0	03286	QPSK	50	0	0 mm	bottom	1:1	2.130	1.019	2.170	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.2	23.09	-0.08	0	03286	QPSK	100	0	0 mm	bottom	1:1	1.880	1.026	1.929	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.2	23.02	-0.08	0	03286	QPSK	50	25	0 mm	bottom	1:1	2.230	1.042	2.324	
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 11-49
WLAN Phablet SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5280	56	802.11a	OFDM	20	19.0	18.77	0.15	0 mm	1	03336	6	back	98.3	9.657	1.330	1.054	1.017	1.426	
5280	56	802.11a	OFDM	20	19.0	18.77	0.15	0 mm	1	03336	6	front	98.3	1.589	0.200	1.054	1.017	0.214	
5280	56	802.11a	OFDM	20	19.0	18.77	-0.14	0 mm	1	03336	6	top	98.3	1.022	-	1.054	1.017	-	
5280	56	802.11a	OFDM	20	19.0	18.77	0.00	0 mm	1	03336	6	left	98.3	3.977	0.436	1.054	1.017	0.467	
5280	56	802.11a	OFDM	20	19.0	18.77	0.16	0 mm	2	03336	6	back	98.3	6.959	0.666	1.054	1.017	0.714	
5280	56	802.11a	OFDM	20	19.0	18.77	0.10	0 mm	2	03336	6	front	98.3	8.106	0.956	1.054	1.017	1.025	
5280	56	802.11a	OFDM	20	19.0	18.77	-0.19	0 mm	2	03336	6	top	98.3	2.039	-	1.054	1.017	-	
5280	56	802.11a	OFDM	20	19.0	18.77	0.00	0 mm	2	03336	6	left	98.3	2.644	-	1.054	1.017	-	
5620	124	802.11a	OFDM	20	17.0	16.79	0.12	0 mm	1	03336	6	back	98.3	9.677	1.350	1.050	1.017	1.442	A64
5620	124	802.11a	OFDM	20	17.0	16.79	0.11	0 mm	1	03336	6	front	98.3	1.027	0.125	1.050	1.017	0.133	
5620	124	802.11a	OFDM	20	17.0	16.79	0.12	0 mm	1	03336	6	top	98.3	0.595	-	1.050	1.017	-	
5620	124	802.11a	OFDM	20	17.0	16.79	0.19	0 mm	1	03336	6	left	98.3	3.270	0.378	1.050	1.017	0.404	
5500	100	802.11a	OFDM	20	17.0	16.81	0.18	0 mm	2	03336	6	back	98.3	7.667	0.741	1.045	1.017	0.788	
5500	100	802.11a	OFDM	20	17.0	16.81	0.15	0 mm	2	03336	6	front	98.3	8.084	0.878	1.045	1.017	0.933	
5500	100	802.11a	OFDM	20	17.0	16.81	0.00	0 mm	2	03336	6	top	98.3	4.594	-	1.045	1.017	-	
5500	100	802.11a	OFDM	20	17.0	16.81	0.00	0 mm	2	03336	6	left	98.3	4.440	-	1.045	1.017	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Phablet 4.0 W/kg (mW/g) averaged over 10 grams									

Table 11-50
WLAN Phablet MIMO 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)	
5280	56	802.11n	OFDM	20	19.0	18.64	19.0	18.65	0.12	0 mm	MIMO	03336	13	back	98.1	6.010	1.100	1.086	1.019	1.217	
5280	56	802.11n	OFDM	20	19.0	18.64	19.0	18.65	0.00	0 mm	MIMO	03336	13	front	98.1	7.108	1.050	1.086	1.019	1.162	
5280	56	802.11n	OFDM	20	19.0	18.64	19.0	18.65	0.19	0 mm	MIMO	03336	13	top	98.1	3.045	-	1.086	1.019	-	
5280	56	802.11n	OFDM	20	19.0	18.64	19.0	18.65	0.19	0 mm	MIMO	03336	13	left	98.1	4.590	-	1.086	1.019	-	
5500	100	802.11n	OFDM	20	17.0	16.44	17.0	16.66	0.14	0 mm	MIMO	03336	13	back	98.1	9.289	1.290	1.138	1.019	1.496	
5500	100	802.11n	OFDM	20	17.0	16.44	17.0	16.66	0.00	0 mm	MIMO	03336	13	front	98.1	7.347	1.000	1.138	1.019	1.160	
5500	100	802.11n	OFDM	20	17.0	16.44	17.0	16.66	0.19	0 mm	MIMO	03336	13	top	98.1	4.598	-	1.138	1.019	-	
5500	100	802.11n	OFDM	20	17.0	16.44	17.0	16.66	0.19	0 mm	MIMO	03336	13	left	98.1	3.631	-	1.138	1.019	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Phablet 4.0 W/kg (mW/g) averaged over 10 grams											

For channel 56, to achieve the 22.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 19.0 dBm.

For channel 100, to achieve the 20.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 17.0 dBm.

11.5 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, and FCC KDB Publication 447498 D01v06.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.

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5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 10 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
7. Per FCC KDB Publication 648474 D04v01r03, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported body-worn SAR was ≤ 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were required.
8. Per FCC KDB 865664 D01v01r04, variability SAR tests were performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 13 for variability analysis.
9. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v02r01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.7 for more details).
10. Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" 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.
11. Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds below.
12. This device utilizes power reduction for some wireless modes and technologies, as outlined in Section 1.3. The maximum output power allowed for each transmitter and exposure condition was evaluated for SAR compliance based on expected use conditions and simultaneous transmission scenarios.
13. Additional SAR tests for phablet SAR were evaluated per KDB 616217 Section 6 (See Section 6.8 for more information).

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 > ½ dB, instead of the middle channel, the highest output power channel was used.
4. GPRS was additionally evaluated for head and body-worn exposure conditions to address possible VoIP scenarios.

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.

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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 > ½ 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 > ½ 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.
3. A-MPR was disabled for all SAR tests by setting NS=01 and MCC=001 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
4. Per FCC KDB Publication 447498 D01v06, when the reported LTE Band 41 and LTE Band 48 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. This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per FCC Guidance, all SAR tests were performed using Power Class 3. SAR with power class 2 at the available duty factor was additionally performed for the power class 3 configuration with the highest SAR configuration for each exposure conditions. Please see Section 14 for linearity results.
8. For LTE Band 41 and LTE Band 5, per FCC guidance, SAR was first measured with only a single carrier active in the uplink (carrier aggregation not active). For each exposure condition, the uplink CA scenario with two component carriers was additionally tested for the configuration with the highest SAR when carrier aggregation was not active. The SCC was configured with the closest available contiguous channel. The two component carriers were configured so the resource blocks are physically allocated side by side to achieve the maximum output power.

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

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 0 for the time domain plot and calculation for the duty factor of the device.
2. Head and hotspot Bluetooth SAR were 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 a 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

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

Table 12-1
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	GSM/GPRS 850	0.281	0.701	0.603	0.982	0.884	1.585
	GSM/GPRS 1900	0.282	0.701	0.603	0.983	0.885	**1.586**
	UMTS 850	0.915	0.701	0.603	See Table Below	1.518	See Table Below
	UMTS 1750	0.496	0.701	0.603	1.197	1.099	See Table Below
	UMTS 1900	0.362	0.701	0.603	1.063	0.965	See Table Below
	CDMA/EVDO BC10 (§90S)	0.645	0.701	0.603	1.346	1.248	See Table Below
	CDMA/EVDO BC0 (§22H)	0.978	0.701	0.603	See Table Below	1.581	See Table Below
	PCS CDMA/EVDO	0.463	0.701	0.603	1.164	1.066	See Table Below
	LTE Band 71	0.375	0.701	0.603	1.076	0.978	See Table Below
	LTE Band 12	0.234	0.701	0.603	0.935	0.837	1.538
	LTE Band 13	0.486	0.701	0.603	1.187	1.089	See Table Below
	LTE Band 14	0.317	0.701	0.603	1.018	0.920	See Table Below
	LTE Band 5 (Cell)	0.282	0.701	0.603	0.983	0.885	**1.586**
	LTE Band 26 (Cell)	0.706	0.701	0.603	1.407	1.309	See Table Below
	LTE Band 66 (AWS)	0.532	0.701	0.603	1.233	1.135	See Table Below
	LTE Band 25 (PCS)	0.451	0.701	0.603	1.152	1.054	See Table Below
	LTE Band 30	0.168	0.701	0.603	0.869	0.771	1.472
	LTE Band 7	0.221	0.701	0.603	0.922	0.824	1.525
	LTE Band 48	0.196	0.701	0.603	0.897	0.799	1.500
	LTE Band 41	0.291	0.701	0.603	0.992	0.894	See Table Below

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Simult Tx	Configuration	UMTS 850 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	Right Cheek	0.915	0.701	0.339	See Table Below	**1.254**	See Table Below
	Right Tilt	0.147	0.291	0.603	0.438	0.750	1.041
	Left Cheek	0.288	0.235	0.265	0.523	0.553	0.788
	Left Tilt	0.134	0.068	0.390	0.202	0.524	0.592

Simult Tx	Configuration	UMTS 1750 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	Right Cheek	0.496	0.701	0.339	1.197	0.835	**1.536**
	Right Tilt	0.090	0.291	0.603	0.381	0.693	0.984
	Left Cheek	0.152	0.235	0.265	0.387	0.417	0.652
	Left Tilt	0.072	0.068	0.390	0.140	0.462	0.530

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.362	0.701	0.339	1.063	0.701	**1.402**
	Right Tilt	0.040	0.291	0.603	0.331	0.643	0.934
	Left Cheek	0.113	0.235	0.265	0.348	0.378	0.613
	Left Tilt	0.073	0.068	0.390	0.141	0.463	0.531

Simult Tx	Configuration	CDMA BC10 (§90S) 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	Right Cheek	0.169	0.701	0.339	0.870	0.508	**1.209**
	Right Tilt	0.107	0.291	0.603	0.398	0.710	1.001
	Left Cheek	0.156	0.235	0.265	0.391	0.421	0.656
	Left Tilt	0.091	0.068	0.390	0.159	0.481	0.549

Simult Tx	Configuration	EVDO BC10 (§90S) 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	Right Cheek	0.645	0.701	0.339	**1.346**	0.984	See Table Below
	Right Tilt	0.097	0.291	0.603	0.388	0.700	0.991
	Left Cheek	0.165	0.235	0.265	0.400	0.430	0.665
	Left Tilt	0.082	0.068	0.390	0.150	0.472	0.540

Simult Tx	Configuration	CDMA BC0 (§22H) 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	Right Cheek	0.238	0.701	0.339	0.939	0.577	**1.278**
	Right Tilt	0.145	0.291	0.603	0.436	0.748	1.039
	Left Cheek	0.227	0.235	0.265	0.462	0.492	0.727
	Left Tilt	0.120	0.068	0.390	0.188	0.510	0.578

Simult Tx	Configuration	EVDO BC0 (§22H) 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	Right Cheek	0.978	0.701	0.339	See Table Below	**1.317**	See Table Below
	Right Tilt	0.158	0.291	0.603	0.449	0.761	1.052
	Left Cheek	0.268	0.235	0.265	0.503	0.533	0.768
	Left Tilt	0.131	0.068	0.390	0.199	0.521	0.589

Simult Tx	Configuration	PCS CDMA 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	Right Cheek	0.463	0.701	0.339	1.164	0.802	**1.503**
	Right Tilt	0.047	0.291	0.603	0.338	0.650	0.941
	Left Cheek	0.125	0.235	0.265	0.360	0.390	0.625
	Left Tilt	0.086	0.068	0.390	0.154	0.476	0.544

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.201	0.701	0.339	0.902	0.540	**1.241**
	Right Tilt	0.047	0.291	0.603	0.338	0.650	0.941
	Left Cheek	0.132	0.235	0.265	0.367	0.397	0.632
	Left Tilt	0.081	0.068	0.390	0.149	0.471	0.539

Simult Tx	Configuration	LTE Band 71 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	Right Cheek	0.375	0.701	0.339	1.076	0.714	**1.415**
	Right Tilt	0.105	0.291	0.603	0.396	0.708	0.999
	Left Cheek	0.139	0.235	0.265	0.374	0.404	0.639
	Left Tilt	0.138	0.068	0.390	0.206	0.528	0.596

Simult Tx	Configuration	LTE Band 13 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	Right Cheek	0.486	0.701	0.339	1.187	0.825	**1.526**
	Right Tilt	0.034	0.291	0.603	0.325	0.637	0.928
	Left Cheek	0.044	0.235	0.265	0.279	0.309	0.544
	Left Tilt	0.078	0.068	0.390	0.146	0.468	0.536

Simult Tx	Configuration	LTE Band 14 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	Right Cheek	0.317	0.701	0.339	1.018	0.656	**1.357**
	Right Tilt	0.074	0.291	0.603	0.365	0.677	0.968
	Left Cheek	0.106	0.235	0.265	0.341	0.371	0.606
	Left Tilt	0.102	0.068	0.390	0.170	0.492	0.560

Simult Tx	Configuration	LTE Band 26 (Cell) 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	Right Cheek	0.706	0.701	0.339	**1.407**	1.045	See Table Below
	Right Tilt	0.115	0.291	0.603	0.406	0.718	1.009
	Left Cheek	0.157	0.235	0.265	0.392	0.422	0.657
	Left Tilt	0.092	0.068	0.390	0.160	0.482	0.550

Simult Tx	Configuration	LTE Band 66 (AWS) 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	Right Cheek	0.532	0.701	0.339	1.233	0.871	**1.572**
	Right Tilt	0.275	0.291	0.603	0.566	0.878	1.169
	Left Cheek	0.197	0.235	0.265	0.432	0.462	0.697
	Left Tilt	0.097	0.068	0.390	0.165	0.487	0.555

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.451	0.701	0.339	1.152	0.790	**1.491**
	Right Tilt	0.032	0.291	0.603	0.323	0.635	0.926
	Left Cheek	0.131	0.235	0.265	0.366	0.396	0.631
	Left Tilt	0.053	0.068	0.390	0.121	0.443	0.511

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.061	0.701	0.339	0.762	0.400	**1.101**
	Right Tilt	0.045	0.291	0.603	0.336	0.648	0.939
	Left Cheek	0.291	0.235	0.265	0.526	0.556	0.791
	Left Tilt	0.018	0.068	0.390	0.086	0.408	0.476

Simultaneous Transmission Scenario with 2.4 GHz WLAN (Held to Ear) Right Cheek Position 1

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	UMTS 850	0.302	0.701	0.339	1.003	0.641	1.342
	CDMA/EVDO BC10 (§90S)	0.189	0.701	0.339	0.890	0.528	1.229
	CDMA/EVDO BC0 (§22H)	0.330	0.701	0.339	1.031	0.669	**1.370**
	LTE Band 26 (Cell)	0.166	0.701	0.339	0.867	0.505	1.206

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Simultaneous Transmission Scenario with 2.4 GHz WLAN (Held to Ear) Right Cheek Position 2

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	UMTS 850	0.915	0.385	0.159	1.300	1.074	1.459
	CDMA/EVDO BC10 (§90S)	0.645	0.385	0.159	1.030	0.804	1.189
	CDMA/EVDO BC0 (§22H)	0.978	0.385	0.159	1.363	1.137	**1.522**
	LTE Band 26 (Cell)	0.706	0.385	0.159	1.091	0.865	1.250

Simultaneous Transmission Scenario with 2.4 GHz WLAN (Held to Ear) Right Cheek Position 3

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	UMTS 850	0.818	0.421	0.165	1.239	0.983	1.404
	CDMA/EVDO BC10 (§90S)	0.547	0.421	0.165	0.968	0.712	1.133
	CDMA/EVDO BC0 (§22H)	0.821	0.421	0.165	1.242	0.986	**1.407**
	LTE Band 26 (Cell)	0.616	0.421	0.165	1.037	0.781	1.202

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	GSM/GPRS 850	0.281	0.215	0.471	0.496	0.752	0.967
	GSM/GPRS 1900	0.282	0.215	0.471	0.497	0.753	0.968
	UMTS 850	0.915	0.215	0.471	1.130	1.386	See Table Below
	UMTS 1750	0.496	0.215	0.471	0.711	0.967	1.182
	UMTS 1900	0.362	0.215	0.471	0.577	0.833	1.048
	CDMA/EVDO BC10 (§90S)	0.645	0.215	0.471	0.860	1.116	1.331
	CDMA/EVDO BC0 (§22H)	0.978	0.215	0.471	1.193	**1.449**	See Table Below
	PCS CDMA/EVDO	0.463	0.215	0.471	0.678	0.934	1.149
	LTE Band 71	0.375	0.215	0.471	0.590	0.846	1.061
	LTE Band 12	0.234	0.215	0.471	0.449	0.705	0.920
	LTE Band 13	0.486	0.215	0.471	0.701	0.957	1.172
	LTE Band 14	0.317	0.215	0.471	0.532	0.788	1.003
	LTE Band 5 (Cell)	0.282	0.215	0.471	0.497	0.753	0.968
	LTE Band 26 (Cell)	0.706	0.215	0.471	0.921	1.177	1.392
	LTE Band 66 (AWS)	0.532	0.215	0.471	0.747	1.003	1.218
	LTE Band 25 (PCS)	0.451	0.215	0.471	0.666	0.922	1.137
	LTE Band 30	0.168	0.215	0.471	0.383	0.639	0.854
	LTE Band 7	0.221	0.215	0.471	0.436	0.692	0.907
	LTE Band 48	0.196	0.215	0.471	0.411	0.667	0.882
	LTE Band 41	0.291	0.215	0.471	0.506	0.762	0.977

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Simult Tx	Configuration	UMTS 850 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	Right Cheek	0.915	0.215*	0.311	1.130	1.226	**1.441**
	Right Tilt	0.147	0.215	0.471	0.362	0.618	0.833
	Left Cheek	0.288	0.215*	0.471*	0.503	0.759	0.974
	Left Tilt	0.134	0.215*	0.471*	0.349	0.605	0.820

Simult Tx	Configuration	CDMA BC0 (§22H) 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	Right Cheek	0.238	0.215*	0.311	0.453	0.549	0.764
	Right Tilt	0.145	0.215	0.471	0.360	0.616	0.831
	Left Cheek	0.227	0.215*	0.471*	0.442	0.698	**0.913**
	Left Tilt	0.120	0.215*	0.471*	0.335	0.591	0.806

Simult Tx	Configuration	EVDO BC0 (§22H) 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	Right Cheek	0.978	0.215*	0.311	1.193	1.289	**1.504**
	Right Tilt	0.158	0.215	0.471	0.373	0.629	0.844
	Left Cheek	0.268	0.215*	0.471*	0.483	0.739	0.954
	Left Tilt	0.131	0.215*	0.471*	0.346	0.602	0.817

Table 12-3
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 and 5 GHz WLAN Ant 2 (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	GSM/GPRS 850	0.281	0.701	0.471	1.453
	GSM/GPRS 1900	0.282	0.701	0.471	1.454
	UMTS 850	0.915	0.701	0.471	See Table Below
	UMTS 1750	0.496	0.701	0.471	See Table Below
	UMTS 1900	0.362	0.701	0.471	1.534
	CDMA/EVDO BC10 (§90S)	0.645	0.701	0.471	See Table Below
	CDMA/EVDO BC0 (§22H)	0.978	0.701	0.471	See Table Below
	PCS CDMA/EVDO	0.463	0.701	0.471	See Table Below
	LTE Band 71	0.375	0.701	0.471	**1.547**
	LTE Band 12	0.234	0.701	0.471	1.406
	LTE Band 13	0.486	0.701	0.471	See Table Below
	LTE Band 14	0.317	0.701	0.471	1.489
	LTE Band 5 (Cell)	0.282	0.701	0.471	1.454
	LTE Band 26 (Cell)	0.706	0.701	0.471	See Table Below
	LTE Band 66 (AWS)	0.532	0.701	0.471	See Table Below
	LTE Band 25 (PCS)	0.451	0.701	0.471	See Table Below
	LTE Band 30	0.168	0.701	0.471	1.340
	LTE Band 7	0.221	0.701	0.471	1.393
	LTE Band 48	0.196	0.701	0.471	1.368
	LTE Band 41	0.291	0.701	0.471	1.463

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	Right Cheek	0.915	0.701	0.311	See Table Below
	Right Tilt	0.147	0.291	0.471	0.909
	Left Cheek	0.288	0.235	0.471*	**0.994**
	Left Tilt	0.134	0.068	0.471*	0.673

Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	Right Cheek	0.496	0.701	0.311	**1.508**
	Right Tilt	0.090	0.291	0.471	0.852
	Left Cheek	0.152	0.235	0.471*	0.858
	Left Tilt	0.072	0.068	0.471*	0.611

Simult Tx	Configuration	CDMA BC10 (§90S) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	Right Cheek	0.169	0.701	0.311	**1.181**
	Right Tilt	0.107	0.291	0.471	0.869
	Left Cheek	0.156	0.235	0.471*	0.862
	Left Tilt	0.091	0.068	0.471*	0.630

Simult Tx	Configuration	EVDO BC10 (§90S) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	Right Cheek	0.645	0.701	0.311	See Table Below
	Right Tilt	0.097	0.291	0.471	0.859
	Left Cheek	0.165	0.235	0.471*	**0.871**
	Left Tilt	0.082	0.068	0.471*	0.621

Simult Tx	Configuration	CDMA BC0 (§22H) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	Right Cheek	0.238	0.701	0.311	**1.250**
	Right Tilt	0.145	0.291	0.471	0.907
	Left Cheek	0.227	0.235	0.471*	0.933
	Left Tilt	0.120	0.068	0.471*	0.659

Simult Tx	Configuration	EVDO BC0 (§22H) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	Right Cheek	0.978	0.701	0.311	See Table Below
	Right Tilt	0.158	0.291	0.471	0.920
	Left Cheek	0.268	0.235	0.471*	**0.974**
	Left Tilt	0.131	0.068	0.471*	0.670

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Simult Tx	Configuration	PCS CDMA SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	Right Cheek	0.463	0.701	0.311	**1.475**
	Right Tilt	0.047	0.291	0.471	0.809
	Left Cheek	0.125	0.235	0.471*	0.831
	Left Tilt	0.086	0.068	0.471*	0.625

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	Right Cheek	0.201	0.701	0.311	**1.213**
	Right Tilt	0.047	0.291	0.471	0.809
	Left Cheek	0.132	0.235	0.471*	0.838
	Left Tilt	0.081	0.068	0.471*	0.620

Simult Tx	Configuration	LTE Band 13 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	Right Cheek	0.486	0.701	0.311	**1.498**
	Right Tilt	0.034	0.291	0.471	0.796
	Left Cheek	0.044	0.235	0.471*	0.750
	Left Tilt	0.078	0.068	0.471*	0.617

Simult Tx	Configuration	LTE Band 26 (Cell) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	Right Cheek	0.706	0.701	0.311	See Table Below
	Right Tilt	0.115	0.291	0.471	**0.877**
	Left Cheek	0.157	0.235	0.471*	0.863
	Left Tilt	0.092	0.068	0.471*	0.631

Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	Right Cheek	0.532	0.701	0.311	**1.544**
	Right Tilt	0.275	0.291	0.471	1.037
	Left Cheek	0.197	0.235	0.471*	0.903
	Left Tilt	0.097	0.068	0.471*	0.636

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	Right Cheek	0.451	0.701	0.311	**1.463**
	Right Tilt	0.032	0.291	0.471	0.794
	Left Cheek	0.131	0.235	0.471*	0.837
	Left Tilt	0.053	0.068	0.471*	0.592

Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 and 5 GHz WLAN Ant 2 (Held to Ear) Right Cheek Position 1

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	UMTS 850	0.302	0.701	0.311	1.003	0.613	1.314
	CDMA/EVDO BC10 (§90S)	0.189	0.701	0.311	0.890	0.500	1.201
	CDMA/EVDO BC0 (§22H)	0.330	0.701	0.311	1.031	0.641	**1.342**
	LTE Band 26 (Cell)	0.166	0.701	0.311	0.867	0.477	1.178

Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 and 5 GHz WLAN Ant 2 (Held to Ear) Right Cheek Position 2

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	UMTS 850	0.915	0.385	0.078	1.300	0.993	1.378
	CDMA/EVDO BC10 (§90S)	0.645	0.385	0.078	1.030	0.723	1.108
	CDMA/EVDO BC0 (§22H)	0.978	0.385	0.078	1.363	1.056	**1.441**
	LTE Band 26 (Cell)	0.706	0.385	0.078	1.091	0.784	1.169

Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 and 5 GHz WLAN Ant 2 (Held to Ear) Right Cheek Position 3

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	UMTS 850	0.818	0.421	0.078	1.239	0.896	1.317
	CDMA/EVDO BC10 (§90S)	0.547	0.421	0.078	0.968	0.625	1.046
	CDMA/EVDO BC0 (§22H)	0.821	0.421	0.078	1.242	0.899	**1.320**
	LTE Band 26 (Cell)	0.616	0.421	0.078	1.037	0.694	1.115

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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	GSM/GPRS 850	0.281	0.140	0.421
	GSM/GPRS 1900	0.282	0.140	0.422
	UMTS 850	0.915	0.140	1.055
	UMTS 1750	0.496	0.140	0.636
	UMTS 1900	0.362	0.140	0.502
	CDMA/EVDO BC10 (§90S)	0.645	0.140	0.785
	CDMA/EVDO BC0 (§22H)	0.978	0.140	**1.118**
	PCS CDMA/EVDO	0.463	0.140	0.603
	LTE Band 71	0.375	0.140	0.515
	LTE Band 12	0.234	0.140	0.374
	LTE Band 13	0.486	0.140	0.626
	LTE Band 14	0.317	0.140	0.457
	LTE Band 5 (Cell)	0.282	0.140	0.422
	LTE Band 26 (Cell)	0.706	0.140	0.846
	LTE Band 66 (AWS)	0.532	0.140	0.672
	LTE Band 25 (PCS)	0.451	0.140	0.591
	LTE Band 30	0.168	0.140	0.308
	LTE Band 7	0.221	0.140	0.361
	LTE Band 48	0.196	0.140	0.336
	LTE Band 41	0.291	0.140	0.431

12.4 Body-Worn Simultaneous Transmission Analysis

Table 12-5
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Body-Worn 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
Body-Worn	GSM/GPRS 850	0.775	0.283	0.146	1.058	0.921	1.204
	GSM/GPRS 1900	0.538	0.283	0.146	0.821	0.684	0.967
	UMTS 850	0.479	0.283	0.146	0.762	0.625	0.908
	UMTS 1750	0.798	0.283	0.146	1.081	0.944	1.227
	UMTS 1900	0.441	0.283	0.146	0.724	0.587	0.870
	CDMA BC10 (§90S)	0.613	0.283	0.146	0.896	0.759	1.042
	CDMA BC0 (§22H)	0.947	0.283	0.146	1.230	1.093	**1.376**
	PCS CDMA	0.791	0.283	0.146	1.074	0.937	1.220
	LTE Band 71	0.545	0.283	0.146	0.828	0.691	0.974
	LTE Band 12	0.359	0.283	0.146	0.642	0.505	0.788
	LTE Band 13	0.653	0.283	0.146	0.936	0.799	1.082
	LTE Band 14	0.392	0.283	0.146	0.675	0.538	0.821
	LTE Band 5 (Cell)	0.551	0.283	0.146	0.834	0.697	0.980
	LTE Band 26 (Cell)	0.514	0.283	0.146	0.797	0.660	0.943
	LTE Band 66 (AWS)	0.551	0.283	0.146	0.834	0.697	0.980
	LTE Band 25 (PCS)	0.899	0.283	0.146	1.182	1.045	1.328
	LTE Band 30	0.294	0.283	0.146	0.577	0.440	0.723
	LTE Band 7	0.259	0.283	0.146	0.542	0.405	0.688
	LTE Band 48	0.118	0.283	0.146	0.401	0.264	0.547
	LTE Band 41	0.391	0.283	0.146	0.674	0.537	0.820

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Table 12-6
Simultaneous Transmission Scenario with 5 GHz WLAN (Body-Worn 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
Body-Worn	GSM/GPRS 850	0.775	0.593	0.244	1.368	1.019
	GSM/GPRS 1900	0.538	0.593	0.244	1.131	0.782
	UMTS 850	0.479	0.593	0.244	1.072	0.723
	UMTS 1750	0.798	0.593	0.244	1.391	1.042
	UMTS 1900	0.441	0.593	0.244	1.034	0.685
	CDMA BC10 (§90S)	0.613	0.593	0.244	1.206	0.857
	CDMA BC0 (§22H)	0.947	0.593	0.244	**1.540**	1.191
	PCS CDMA	0.791	0.593	0.244	1.384	1.035
	LTE Band 71	0.545	0.593	0.244	1.138	0.789
	LTE Band 12	0.359	0.593	0.244	0.952	0.603
	LTE Band 13	0.653	0.593	0.244	1.246	0.897
	LTE Band 14	0.392	0.593	0.244	0.985	0.636
	LTE Band 5 (Cell)	0.551	0.593	0.244	1.144	0.795
	LTE Band 26 (Cell)	0.514	0.593	0.244	1.107	0.758
	LTE Band 66 (AWS)	0.551	0.593	0.244	1.144	0.795
	LTE Band 25 (PCS)	0.899	0.593	0.244	1.492	1.143
	LTE Band 30	0.294	0.593	0.244	0.887	0.538
	LTE Band 7	0.259	0.593	0.244	0.852	0.503
	LTE Band 48	0.118	0.593	0.244	0.711	0.362
	LTE Band 41	0.391	0.593	0.244	0.984	0.635

Table 12-7
Simultaneous Transmission Scenario with 5 GHz WLAN MIMO (Body-Worn at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body-Worn	GSM/GPRS 850	0.775	0.589	1.364
	GSM/GPRS 1900	0.538	0.589	1.127
	UMTS 850	0.479	0.589	1.068
	UMTS 1750	0.798	0.589	1.387
	UMTS 1900	0.441	0.589	1.030
	CDMA BC10 (§90S)	0.613	0.589	1.202
	CDMA BC0 (§22H)	0.947	0.589	**1.536**
	PCS CDMA	0.791	0.589	1.380
	LTE Band 71	0.545	0.589	1.134
	LTE Band 12	0.359	0.589	0.948
	LTE Band 13	0.653	0.589	1.242
	LTE Band 14	0.392	0.589	0.981
	LTE Band 5 (Cell)	0.551	0.589	1.140
	LTE Band 26 (Cell)	0.514	0.589	1.103
	LTE Band 66 (AWS)	0.551	0.589	1.140
	LTE Band 25 (PCS)	0.899	0.589	1.488
	LTE Band 30	0.294	0.589	0.883
	LTE Band 7	0.259	0.589	0.848
	LTE Band 48	0.118	0.589	0.707
	LTE Band 41	0.391	0.589	0.980

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Table 12-8
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 and 5 GHz WLAN Ant 2 (Body-Worn at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 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	GSM/GPRS 850	0.775	0.283	0.244	1.058	1.019	1.302
	GSM/GPRS 1900	0.538	0.283	0.244	0.821	0.782	1.065
	UMTS 850	0.479	0.283	0.244	0.762	0.723	1.006
	UMTS 1750	0.798	0.283	0.244	1.081	1.042	1.325
	UMTS 1900	0.441	0.283	0.244	0.724	0.685	0.968
	CDMA BC10 (§90S)	0.613	0.283	0.244	0.896	0.857	1.140
	CDMA BC0 (§22H)	0.947	0.283	0.244	1.230	1.191	**1.474**
	PCS CDMA	0.791	0.283	0.244	1.074	1.035	1.318
	LTE Band 71	0.545	0.283	0.244	0.828	0.789	1.072
	LTE Band 12	0.359	0.283	0.244	0.642	0.603	0.886
	LTE Band 13	0.653	0.283	0.244	0.936	0.897	1.180
	LTE Band 14	0.392	0.283	0.244	0.675	0.636	0.919
	LTE Band 5 (Cell)	0.551	0.283	0.244	0.834	0.795	1.078
	LTE Band 26 (Cell)	0.514	0.283	0.244	0.797	0.758	1.041
	LTE Band 66 (AWS)	0.551	0.283	0.244	0.834	0.795	1.078
	LTE Band 25 (PCS)	0.899	0.283	0.244	1.182	1.143	1.426
	LTE Band 30	0.294	0.283	0.244	0.577	0.538	0.821
	LTE Band 7	0.259	0.283	0.244	0.542	0.503	0.786
	LTE Band 48	0.118	0.283	0.244	0.401	0.362	0.645
	LTE Band 41	0.391	0.283	0.244	0.674	0.635	0.918

Table 12-9
Simultaneous Transmission Scenario with Bluetooth (Body-Worn 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
Body-Worn	GSM/GPRS 850	0.775	0.023	0.798
	GSM/GPRS 1900	0.538	0.023	0.561
	UMTS 850	0.479	0.023	0.502
	UMTS 1750	0.798	0.023	0.821
	UMTS 1900	0.441	0.023	0.464
	CDMA BC10 (§90S)	0.613	0.023	0.636
	CDMA BC0 (§22H)	0.947	0.023	**0.970**
	PCS CDMA	0.791	0.023	0.814
	LTE Band 71	0.545	0.023	0.568
	LTE Band 12	0.359	0.023	0.382
	LTE Band 13	0.653	0.023	0.676
	LTE Band 14	0.392	0.023	0.415
	LTE Band 5 (Cell)	0.551	0.023	0.574
	LTE Band 26 (Cell)	0.514	0.023	0.537
	LTE Band 66 (AWS)	0.551	0.023	0.574
	LTE Band 25 (PCS)	0.899	0.023	0.922
	LTE Band 30	0.294	0.023	0.317
	LTE Band 7	0.259	0.023	0.282
	LTE Band 48	0.118	0.023	0.141
	LTE Band 41	0.391	0.023	0.414

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12.5 Hotspot SAR Simultaneous Transmission Analysis

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

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

Table 12-10
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	0.775	0.339	0.216	1.114	0.991	1.330
	GPRS 1900	0.843	0.339	0.216	1.182	1.059	1.398
	UMTS 850	0.479	0.339	0.216	0.818	0.695	1.034
	UMTS 1750	1.002	0.339	0.216	1.341	1.218	1.557
	UMTS 1900	0.965	0.339	0.216	1.304	1.181	1.520
	EVDO BC10 (§90S)	0.721	0.339	0.216	1.060	0.937	1.276
	EVDO BC0 (§22H)	0.941	0.339	0.216	1.280	1.157	1.496
	PCS EVDO	1.244	0.339	0.216	**1.583**	1.460	See Table Below
	LTE Band 71	0.545	0.339	0.216	0.884	0.761	1.100
	LTE Band 12	0.359	0.339	0.216	0.698	0.575	0.914
	LTE Band 13	0.653	0.339	0.216	0.992	0.869	1.208
	LTE Band 14	0.392	0.339	0.216	0.731	0.608	0.947
	LTE Band 5 (Cell)	0.551	0.339	0.216	0.890	0.767	1.106
	LTE Band 26 (Cell)	0.514	0.339	0.216	0.853	0.730	1.069
	LTE Band 66 (AWS)	0.864	0.339	0.216	1.203	1.080	1.419
	LTE Band 25 (PCS)	1.292	0.339	0.216	See Table Below	1.508	See Table Below
	LTE Band 30	0.391	0.339	0.216	0.730	0.607	0.946
	LTE Band 7	0.331	0.339	0.216	0.670	0.547	0.886
	LTE Band 48	0.219	0.339	0.216	0.558	0.435	0.774
	LTE Band 41	0.391	0.339	0.216	0.730	0.607	0.946

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.511	0.283	0.146	0.794	0.657	0.940
	Front	0.396	0.339*	0.216*	0.735	0.612	0.951
	Top	-	0.339*	0.216	0.339	0.216	0.555
	Bottom	1.244	-	-	**1.244**	**1.244**	**1.244**
	Right	0.153	-	-	0.153	0.153	0.153
	Left	0.077	0.339	0.216*	0.416	0.293	0.632

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.899	0.283	0.146	1.182	1.045	**1.328**
	Front	0.662	0.339*	0.216*	1.001	0.878	1.217
	Top	-	0.339*	0.216	0.339	0.216	0.555
	Bottom	1.292	-	-	1.292	1.292	1.292
	Right	0.167	-	-	0.167	0.167	0.167
	Left	0.094	0.339	0.216*	0.433	0.310	0.649

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Table 12-11
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	GPRS 850	0.775	0.593	0.172	1.368	0.947
	GPRS 1900	0.843	0.593	0.172	1.436	1.015
	UMTS 850	0.479	0.593	0.172	1.072	0.651
	UMTS 1750	1.002	0.593	0.172	See Table Below	1.174
	UMTS 1900	0.965	0.593	0.172	**1.558**	1.137
	EVDO BC10 (§90S)	0.721	0.593	0.172	1.314	0.893
	EVDO BC0 (§22H)	0.941	0.593	0.172	1.534	1.113
	PCS EVDO	1.244	0.593	0.172	See Table Below	1.416
	LTE Band 71	0.545	0.593	0.172	1.138	0.717
	LTE Band 12	0.359	0.593	0.172	0.952	0.531
	LTE Band 13	0.653	0.593	0.172	1.246	0.825
	LTE Band 14	0.392	0.593	0.172	0.985	0.564
	LTE Band 5 (Cell)	0.551	0.593	0.172	1.144	0.723
	LTE Band 26 (Cell)	0.514	0.593	0.172	1.107	0.686
	LTE Band 66 (AWS)	0.864	0.593	0.172	1.457	1.036
	LTE Band 25 (PCS)	1.292	0.593	0.172	See Table Below	1.464
	LTE Band 30	0.391	0.593	0.172	0.984	0.563
	LTE Band 7	0.331	0.593	0.172	0.924	0.503
	LTE Band 48	0.219	0.593	0.172	0.812	0.391
	LTE Band 41	0.391	0.593	0.172	0.984	0.563

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)	
		1	2	3	1+2	1+3
Hotspot SAR	Back	0.798	0.593	0.154	**1.391**	0.952
	Front	0.600	0.593*	0.172	1.193	0.772
	Top	-	0.593*	0.172*	0.593	0.172
	Bottom	1.002	-	-	1.002	1.002
	Right	0.187	-	-	0.187	0.187
	Left	0.093	0.203	0.172*	0.296	0.265

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Hotspot SAR	Back	0.511	0.593	0.154	1.104	0.665
	Front	0.396	0.593*	0.172	0.989	0.568
	Top	-	0.593*	0.172*	0.593	0.172
	Bottom	1.244	-	-	**1.244**	**1.244**
	Right	0.153	-	-	0.153	0.153
	Left	0.077	0.203	0.172*	0.280	0.249

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Hotspot SAR	Back	0.899	0.593	0.154	**1.492**	1.053
	Front	0.662	0.593*	0.172	1.255	0.834
	Top	-	0.593*	0.172*	0.593	0.172
	Bottom	1.292	-	-	1.292	1.292
	Right	0.167	-	-	0.167	0.167
	Left	0.094	0.203	0.172*	0.297	0.266

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2
Hotspot SAR	GPRS 850	0.775	0.589	0.000	1.364
	GPRS 1900	0.843	0.589	0.000	1.432
	UMTS 850	0.479	0.589	0.000	1.068
	UMTS 1750	1.002	0.589	0.000	**1.591**
	UMTS 1900	0.965	0.589	0.000	1.554
	EVDO BC10 (§90S)	0.721	0.589	0.000	1.310
	EVDO BC0 (§22H)	0.941	0.589	0.000	1.530
	PCS EVDO	1.244	0.589	0.000	See Table Below
	LTE Band 71	0.545	0.589	0.000	1.134
	LTE Band 12	0.359	0.589	0.000	0.948
	LTE Band 13	0.653	0.589	0.000	1.242
	LTE Band 14	0.392	0.589	0.000	0.981
	LTE Band 5 (Cell)	0.551	0.589	0.000	1.140
	LTE Band 26 (Cell)	0.514	0.589	0.000	1.103
	LTE Band 66 (AWS)	0.864	0.589	0.000	1.453
	LTE Band 25 (PCS)	1.292	0.589	0.000	See Table Below
	LTE Band 30	0.391	0.589	0.000	0.980
	LTE Band 7	0.331	0.589	0.000	0.920
	LTE Band 48	0.219	0.589	0.000	0.808
	LTE Band 41	0.391	0.589	0.000	0.980

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
Hotspot SAR	Back	0.511	0.589	1.100	Hotspot SAR	Back	0.899	0.589	**1.488**
	Front	0.396	0.184	0.580		Front	0.662	0.184	0.846
	Top	-	0.589*	0.589		Top	-	0.589*	0.589
	Bottom	1.244	-	**1.244**		Bottom	1.292	-	1.292
	Right	0.153	-	0.153		Right	0.167	-	0.167
	Left	0.077	0.297	0.374		Left	0.094	0.297	0.391

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Table 12-13
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 and 5 GHz WLAN Ant 2 (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	0.775	0.339	0.172	1.114	0.947	1.286
	GPRS 1900	0.843	0.339	0.172	1.182	1.015	1.354
	UMTS 850	0.479	0.339	0.172	0.818	0.651	0.990
	UMTS 1750	1.002	0.339	0.172	1.341	1.174	1.513
	UMTS 1900	0.965	0.339	0.172	1.304	1.137	1.476
	EVDO BC10 (§90S)	0.721	0.339	0.172	1.060	0.893	1.232
	EVDO BC0 (§22H)	0.941	0.339	0.172	1.280	1.113	1.452
	PCS EVDO	1.244	0.339	0.172	**1.583**	1.416	See Table Below
	LTE Band 71	0.545	0.339	0.172	0.884	0.717	1.056
	LTE Band 12	0.359	0.339	0.172	0.698	0.531	0.870
	LTE Band 13	0.653	0.339	0.172	0.992	0.825	1.164
	LTE Band 14	0.392	0.339	0.172	0.731	0.564	0.903
	LTE Band 5 (Cell)	0.551	0.339	0.172	0.890	0.723	1.062
	LTE Band 26 (Cell)	0.514	0.339	0.172	0.853	0.686	1.025
	LTE Band 66 (AWS)	0.864	0.339	0.172	1.203	1.036	1.375
	LTE Band 25 (PCS)	1.292	0.339	0.172	See Table Below	1.464	See Table Below
	LTE Band 30	0.391	0.339	0.172	0.730	0.563	0.902
	LTE Band 7	0.331	0.339	0.172	0.670	0.503	0.842
	LTE Band 48	0.219	0.339	0.172	0.558	0.391	0.730
	LTE Band 41	0.391	0.339	0.172	0.730	0.563	0.902

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.511	0.283	0.154	0.794	0.665	0.948
	Front	0.396	0.339*	0.172	0.735	0.568	0.907
	Top	-	0.339*	0.172*	0.339	0.172	0.511
	Bottom	1.244	-	-	**1.244**	**1.244**	**1.244**
	Right	0.153	-	-	0.153	0.153	0.153
	Left	0.077	0.339	0.172*	0.416	0.249	0.588

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.899	0.283	0.154	1.182	1.053	**1.336**
	Front	0.662	0.339*	0.172	1.001	0.834	1.173
	Top	-	0.339*	0.172*	0.339	0.172	0.511
	Bottom	1.292	-	-	1.292	1.292	1.292
	Right	0.167	-	-	0.167	0.167	0.167
	Left	0.094	0.339	0.172*	0.433	0.266	0.605

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Table 12-14
Simultaneous Transmission Scenario with Bluetooth (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	GPRS 850	0.775	0.023	0.798
	GPRS 1900	0.843	0.023	0.866
	UMTS 850	0.479	0.023	0.502
	UMTS 1750	1.002	0.023	1.025
	UMTS 1900	0.965	0.023	0.988
	EVDO BC10 (§90S)	0.721	0.023	0.744
	EVDO BC0 (§22H)	0.941	0.023	0.964
	PCS EVDO	1.244	0.023	1.267
	LTE Band 71	0.545	0.023	0.568
	LTE Band 12	0.359	0.023	0.382
	LTE Band 13	0.653	0.023	0.676
	LTE Band 14	0.392	0.023	0.415
	LTE Band 5 (Cell)	0.551	0.023	0.574
	LTE Band 26 (Cell)	0.514	0.023	0.537
	LTE Band 66 (AWS)	0.864	0.023	0.887
	LTE Band 25 (PCS)	1.292	0.023	**1.315**
	LTE Band 30	0.391	0.023	0.414
	LTE Band 7	0.331	0.023	0.354
	LTE Band 48	0.219	0.023	0.242
	LTE Band 41	0.391	0.023	0.414

12.6 Phablet Simultaneous Transmission Analysis

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

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

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.

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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Table 12-15
Simultaneous Transmission Scenario with 5 GHz WLAN (Phablet)

Exposure Condition	Mode	3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Phablet SAR	UMTS 1750	2.854	1.442	1.025	See Table Below	**3.879**
	UMTS 1900	1.412	1.442	1.025	2.854	2.437
	PCS EVDO	2.371	1.442	1.025	3.813	3.396
	LTE Band 66 (AWS)	2.377	1.442	1.025	3.819	3.402
	LTE Band 25 (PCS)	2.678	1.442	1.025	See Table Below	3.703

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)	
		1	2	3	1+2	1+3
Phablet SAR	Back	1.992	1.442	0.788	3.434	2.780
	Front	2.298	0.214	1.025	2.512	3.323
	Top	-	1.442*	1.025*	1.442	1.025
	Bottom	2.854	-	-	2.854	2.854
	Right	0.635	-	-	0.635	0.635
	Left	0.404	0.467	1.025*	0.871	1.429

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Phablet SAR	Back	1.386	1.442	0.788	2.828	2.174
	Front	1.523	0.214	1.025	1.737	2.548
	Top	-	1.442*	1.025*	1.442	1.025
	Bottom	2.678	-	-	2.678	2.678
	Right	0.824	-	-	0.824	0.824
	Left	0.400	0.467	1.025*	0.867	1.425

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Table 12-16
Simultaneous Transmission Scenario with 5 GHz WLAN MIMO (Phablet)

Exposure Condition	Mode	3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Phablet SAR	UMTS 1750	2.854	1.496	See Table Below
	UMTS 1900	1.412	1.496	2.908
	PCS EVDO	2.371	1.496	3.867
	LTE Band 66 (AWS)	2.377	1.496	**3.873**
	LTE Band 25 (PCS)	2.678	1.496	See Table Below

Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
Phablet SAR	Back	1.992	1.496	**3.488**	Phablet SAR	Back	1.386	1.496	**2.882**
	Front	2.298	1.162	3.460		Front	1.523	1.162	2.685
	Top	-	1.496*	1.496		Top	-	1.496*	1.496
	Bottom	2.854	-	2.854		Bottom	2.678	-	2.678
	Right	0.635	-	0.635		Right	0.824	-	0.824
	Left	0.404	1.496*	1.900		Left	0.400	1.496*	1.896

12.7 Simultaneous Transmission Conclusion

The above numerical summed SAR results is 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)	
1750	1752.60	1513	UMTS 1750	RMC	bottom	10 mm	0.929	0.924	1.01	N/A	N/A	N/A	N/A
835	836.52	384	CDMA BC0 (§22H)	TDSO / SO32	back	10 mm	0.900	0.853	1.06	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	bottom	10 mm	1.240	1.150	1.08	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	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	1752.60	1513	UMTS 1750	RMC	bottom	0 mm	2.700	2.700	1.00	N/A	N/A	N/A	N/A
1900	1882.50	26365	LTE Band 25 (PCS), 20 MHz Bandwidth	QPSK, 50 RB, 25 RB Offset	bottom	0 mm	2.570	2.230	1.15	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					Phablet 4.0 W/kg (mW/g) averaged over 10 grams								

13.2 Measurement Uncertainty

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

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14 ADDITIONAL TESTING PER FCC GUIDANCE

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

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

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

Table 14-1
LTE Band 41 Head Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.2	27.7
Measured Output Power (dBm)	25.18	27.68
Measured SAR (W/kg)	0.23	0.29
Measured Power (mW)	329.61	586.14
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	208.64	253.80
% deviation from expected linearity		3.65%

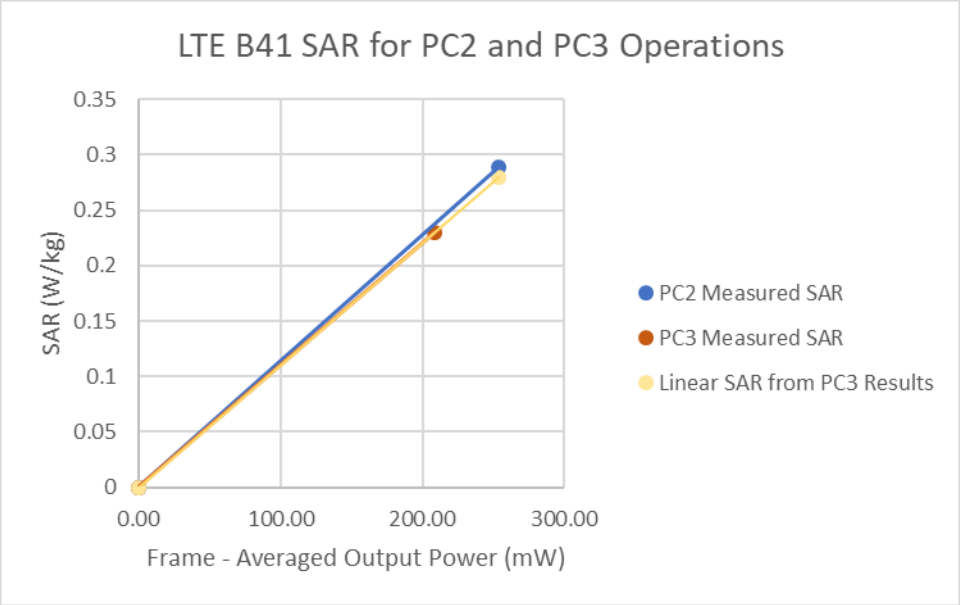

Figure 14-1
LTE Band 41 Head Linearity

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Table 14-2
LTE Band 41 Body-Worn and Hotspot Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.2	27.7
Measured Output Power (dBm)	25.18	27.68
Measured SAR (W/kg)	0.337	0.389
Measured Power (mW)	329.61	586.14
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	208.64	253.80
% deviation from expected linearity		-5.11%

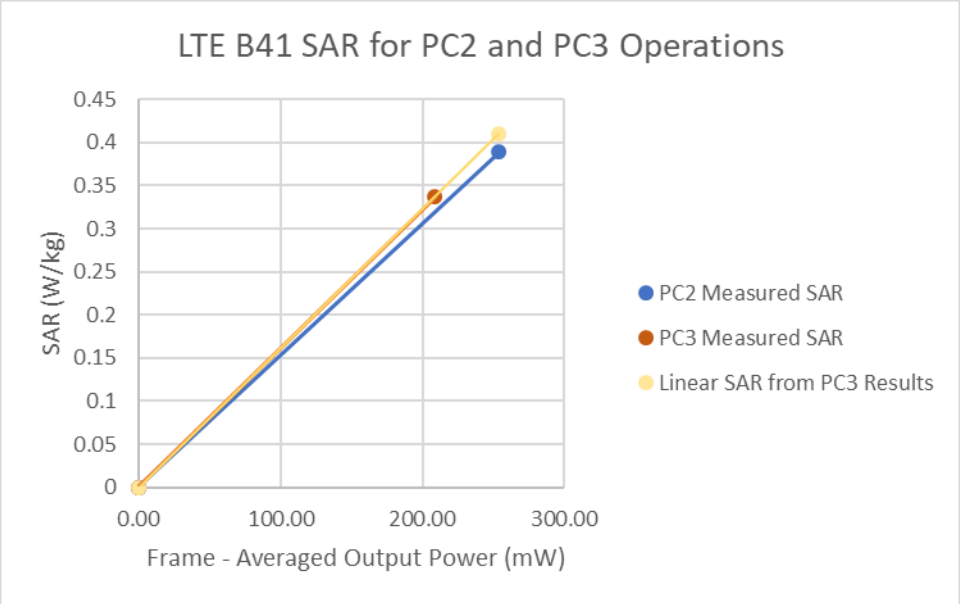

Figure 14-2
LTE Band 41 Body-Worn Linearity

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15 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	85033E	3.5mm Standard Calibration Kit	8/13/2018	Annual	8/13/2019	MY53402352
Agilent	E4404B	Spectrum Analyzer	N/A	N/A	N/A	MY45113238
Agilent	8753E	(30kHz-6GHz) Network Analyzer	9/28/2018	Annual	9/28/2019	JP38020182
Agilent	8753ES	S-Parameter Network Analyzer	2/8/2018	Annual	2/8/2019	US39170122
Agilent	8753ES	Network Analyzer	2/21/2018	Annual	2/21/2019	MY40001472
Agilent	8753ES	S-Parameter Network Analyzer	7/30/2018	Annual	7/30/2019	MY40000670
Agilent	8753ES	S-Parameter Vector Network Analyzer	8/30/2018	Annual	8/30/2019	MY40003841
Agilent	E4432B	ESG-D Series Signal Generator	4/19/2018	Annual	4/19/2019	US40053896
Agilent	E4438C	ESG Vector Signal Generator	3/21/2017	Biennial	3/21/2019	MY45090700
Agilent	E4440A	PSA Series Spectrum Analyzer	11/14/2018	Annual	11/14/2019	MY46186272
Agilent	E5515C	Wireless Communications Test Set	1/24/2018	Annual	1/24/2019	GB44400860
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB44450273
Agilent	N5182A	MXG Vector Signal Generator	1/24/2018	Annual	1/24/2019	MY47420651
Agilent	N5182A	MXG Vector Signal Generator	4/18/2018	Annual	4/18/2019	MY47420800
Agilent	N5182A	MXG Vector Signal Generator	6/15/2018	Annual	6/15/2019	MY47420837
Agilent	N5182A	MXG Vector Signal Generator	11/28/2018	Annual	11/28/2019	MY47420603
Agilent	N5182A-506	MXG Vector Signal Generator	6/19/2018	Annual	6/19/2019	MY48180366
Agilent	N9020A	MXA Signal Analyzer	1/24/2018	Annual	1/24/2019	US46470561
Agilent	N9030A	PXA Signal Analyzer (44GHz)	5/25/2018	Annual	5/25/2019	MY52350166
Amplifier Research	150A100C	Amplifier	CBT	N/A	CBT	350132
Anritsu	MA24106A	USB Power Sensor	7/17/2018	Annual	7/17/2019	1827527
Anritsu	MA24106A	USB Power Sensor	1/19/2018	Annual	1/19/2019	1349509
Anritsu	MA2411B	Pulse Power Sensor	3/2/2018	Annual	3/2/2019	1339018
Anritsu	MA2411B	Pulse Power Sensor	10/30/2018	Annual	10/30/2019	1126066
Anritsu	ML2495A	Power Meter	10/21/2018	Annual	10/21/2019	941001
Anritsu	ML2495A	Power Meter	11/20/2018	Annual	11/20/2019	1039008
Anritsu	MT8820C	Radio Communication Analyzer	3/20/2018	Annual	3/20/2019	6201144419
Anritsu	MT8821C	Radio Communication Analyzer	7/24/2018	Annual	7/24/2019	6201664756
Anritsu	MT8821C	Radio Communication Analyzer	7/26/2018	Annual	7/26/2019	6201144418
Anritsu	MT8821C	Radio Communication Analyzer	11/6/2018	Annual	11/6/2019	6200901190
Anritsu	MT8862A	Wireless Connectivity Test Set	7/3/2018	Annual	7/3/2019	6261782395
Control Company	4040	Therm./ Clock/ Humidity Monitor	1/8/2018	Annual	1/8/2019	160574418
Control Company	4040	Therm./ Clock/ Humidity Monitor	10/9/2018	Biennial	10/9/2020	181647812
Control Company	4352	Ultra Long Stem Thermometer	1/8/2018	Annual	1/8/2019	160508097
Control Company	4352	Ultra Long Stem Thermometer	6/6/2018	Biennial	6/6/2020	181334694
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
Keysight Technologies	85033E	Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm)	6/4/2018	Annual	6/4/2019	MY53401181
Keysight Technologies	U3401A	Digital Multimeter	5/17/2018	Annual	5/17/2019	MY57201470
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
MiniCircuits	VLF-6000+	Low Pass Filter	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
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mitutoyo	CD-6"CSX	Digital Caliper	4/18/2018	Biennial	4/18/2020	13264165
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
Pasternack	NC-100	Torque Wrench	4/18/2018	Annual	4/18/2019	N/A
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	5/18/2018	Annual	5/18/2019	109892
Rohde & Schwarz	CMW500	Radio Communication Tester	4/5/2018	Annual	4/5/2019	128633
Rohde & Schwarz	CMW500	Radio Communication Tester	4/20/2018	Annual	4/20/2019	128635
SPEAG	D750V3	750 MHz SAR Dipole	1/15/2018	Annual	1/15/2019	1003
SPEAG	D835V2	835 MHz SAR Dipole	10/19/2018	Annual	10/19/2019	4d047
SPEAG	D1750V2	1750 MHz SAR Dipole	5/9/2017	Biennial	5/9/2019	1148
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Annual	10/23/2019	5d149
SPEAG	D2300V2	2300 MHz SAR Dipole	11/8/2017	Biennial	11/8/2019	1064
SPEAG	D2450V2	2450 MHz SAR Dipole	8/16/2018	Annual	8/16/2019	981
SPEAG	D2450V2	2450 MHz SAR Dipole	9/11/2017	Biennial	9/11/2019	797
SPEAG	D2600V2	2600 MHz SAR Dipole	6/7/2017	Biennial	6/7/2019	1064
SPEAG	D3700V2	3700 MHz SAR Dipole	9/13/2018	Annual	9/13/2019	1002
SPEAG	D5GHzV2	5 GHz SAR Dipole	1/16/2018	Annual	1/16/2019	1057
SPEAG	D750V3	750 MHz Dipole	3/7/2017	Biennial	3/7/2019	1054
SPEAG	D835V2	835 MHz SAR Dipole	10/19/2018	Annual	10/19/2019	4d133
SPEAG	D1750V2	1750 MHz SAR Dipole	10/22/2018	Annual	10/22/2019	1150
SPEAG	D1900V2	1900 MHz SAR Dipole	2/7/2018	Annual	2/7/2019	5d148
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Annual	10/23/2019	5d080
SPEAG	D2300V2	2300 MHz SAR Dipole	8/13/2018	Annual	8/13/2019	1073
SPEAG	D2450V2	2450 MHz SAR Dipole	8/17/2017	Biennial	8/17/2019	719
SPEAG	D2600V2	2600 MHz SAR Dipole	9/13/2016	Triennial	9/13/2019	1071
SPEAG	D2600V2	2600 MHz SAR Dipole	4/11/2018	Annual	4/11/2019	1004
SPEAG	D5GHzV2	5 GHz SAR Dipole	9/21/2016	Triennial	9/21/2019	1191
SPEAG	ES3DV3	SAR Probe	10/22/2018	Annual	10/22/2019	3287
SPEAG	EX3DV4	SAR Probe	7/20/2018	Annual	7/20/2019	7410
SPEAG	EX3DV4	SAR Probe	6/25/2018	Annual	6/25/2019	7409
SPEAG	EX3DV4	SAR Probe	5/22/2018	Annual	5/22/2019	7406
SPEAG	EX3DV4	SAR Probe	8/24/2018	Annual	8/24/2019	3949
SPEAG	ES3DV3	SAR Probe	3/27/2018	Annual	3/27/2019	3347
SPEAG	EX3DV4	SAR Probe	4/18/2018	Annual	4/18/2019	7357
SPEAG	ES3DV3	SAR Probe	8/22/2018	Annual	8/22/2019	3332
SPEAG	ES3DV3	SAR Probe	3/13/2018	Annual	3/13/2019	3319
SPEAG	EX3DV4	SAR Probe	2/14/2018	Annual	2/14/2019	3914
SPEAG	EX3DV4	SAR Probe	8/23/2018	Annual	8/23/2019	7308
SPEAG	DAE4	Dasy Data Acquisition Electronics	10/18/2018	Annual	10/18/2019	1333
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/11/2018	Annual	7/11/2019	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/18/2018	Annual	6/18/2019	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/22/2018	Annual	5/22/2019	859
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/15/2018	Annual	2/15/2019	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/11/2018	Annual	4/11/2019	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2018	Annual	2/9/2019	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/7/2018	Annual	3/7/2019	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	10/3/2018	Annual	10/3/2019	1558
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/15/2018	Annual	5/15/2019	1070

Note 1: 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.
Note 2: Each equipment item was used solely within its respective calibration period.

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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 Unceritainty	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	60
Expanded Uncertainty (95% CONFIDENCE LEVEL)		k=2				23.0	22.6	

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12/05/2018

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17 CONCLUSION

17.1 Measurement Conclusion

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

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

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APPENDIX A: SAR TEST DATA

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PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03302

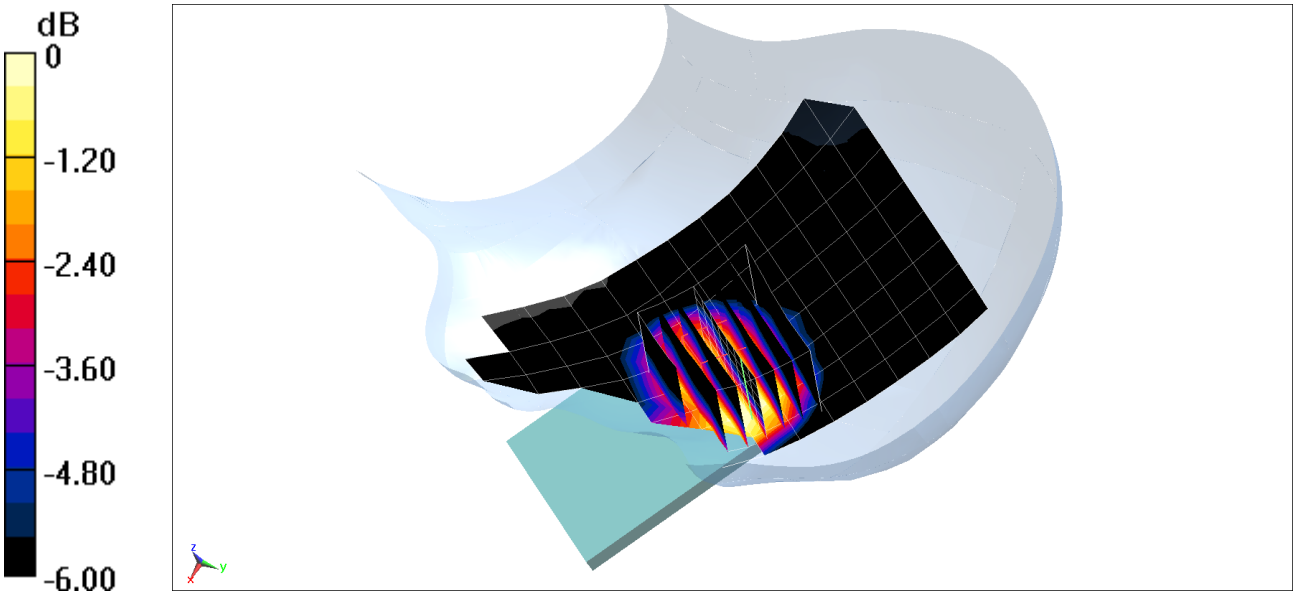
Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.76
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.915 S/m; ε_r = 41.514; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 12-31-2018; Ambient Temp: 21.7°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7410; ConvF(9.81, 9.81, 9.81) @ 836.6 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: GPRS 850, Left Head Position 2, Cheek, Mid.ch, 3 Tx slots

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (9x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.02 V/m; Power Drift = -0.20 dB
Peak SAR (extrapolated) = 0.321 W/kg
SAR(1 g) = 0.219 W/kg



0 dB = 0.282 W/kg = -5.50 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03302

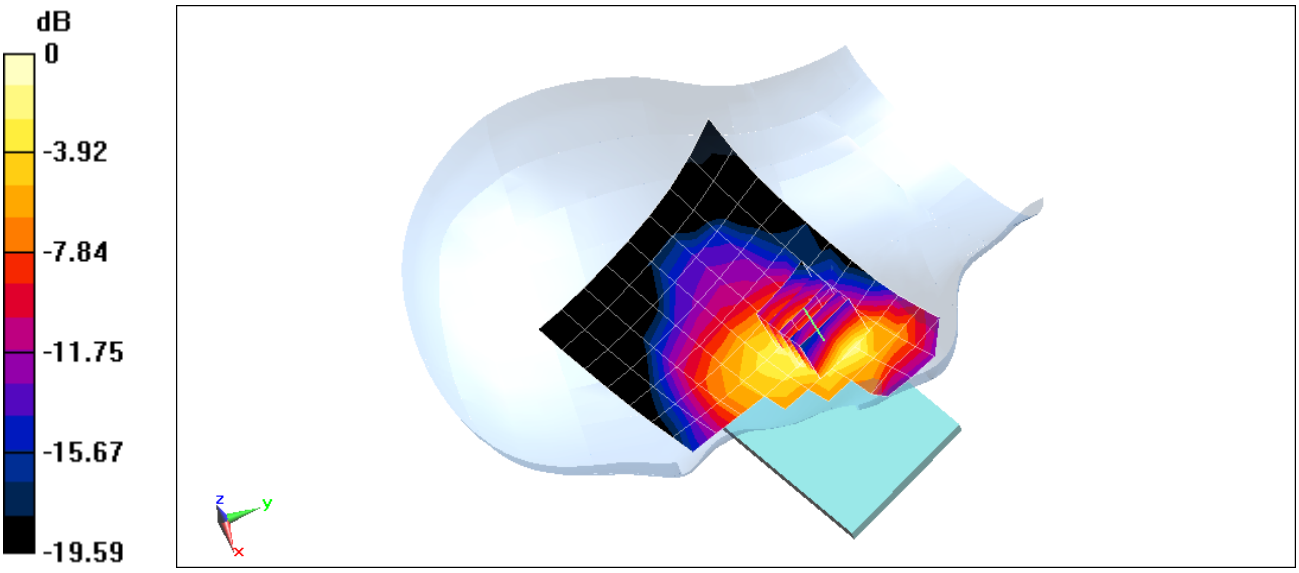
Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.76
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.411 S/m; ε_r = 39.306; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 12-28-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7409; ConvF(8.05, 8.05, 8.05) @ 1880 MHz; Calibrated: 6/25/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: GPRS 1900, Right Head Position 2, Cheek, 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 = 13.99 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.399 W/kg
SAR(1 g) = 0.230 W/kg



0 dB = 0.347 W/kg = -4.60 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03302

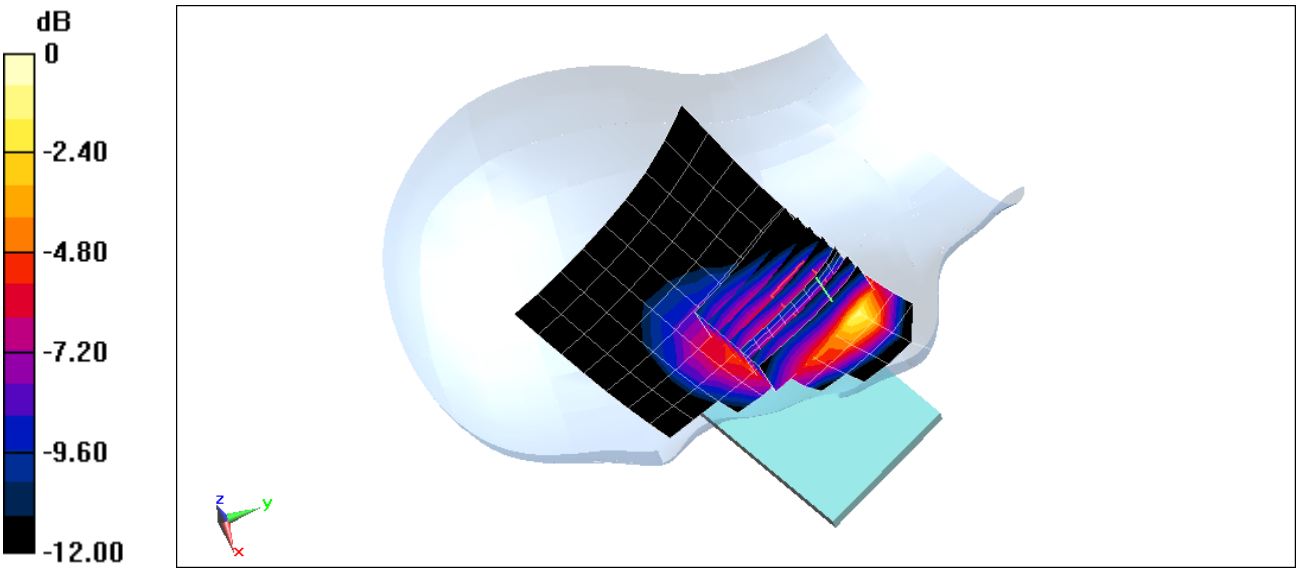
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.931 S/m; ε_r = 42.947; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 12-19-2018; Ambient Temp: 23.0°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN7410; ConvF(9.81, 9.81, 9.81) @ 836.6 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 850, Right Head Position 2, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (9x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 32.45 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.58 W/kg
SAR(1 g) = 0.888 W/kg



0 dB = 1.32 W/kg = 1.21 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03294

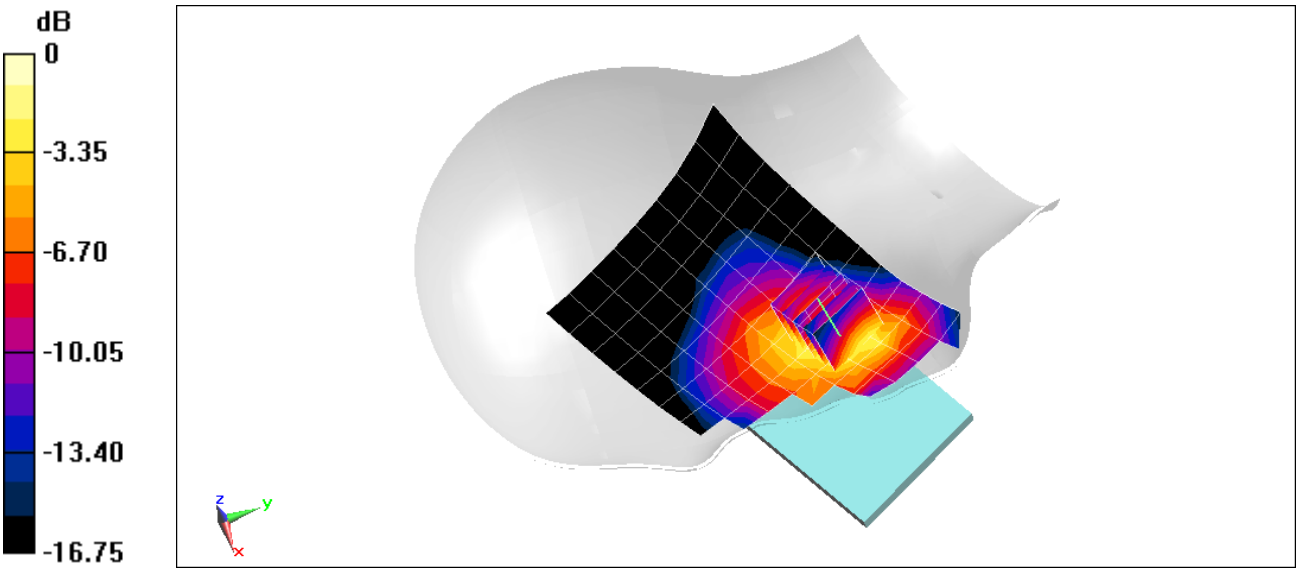
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.371 S/m; ε_r = 39.005; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 12-25-2018; Ambient Temp: 19.8°C; Tissue Temp: 19.8°C

Probe: ES3DV3 - SN3287; ConvF(5.48, 5.48, 5.48) @ 1732.4 MHz; Calibrated: 10/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 10/18/2018
Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 1750, Right Head Position 2, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.95 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.676 W/kg
SAR(1 g) = 0.441 W/kg



0 dB = 0.518 W/kg = -2.86 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03302

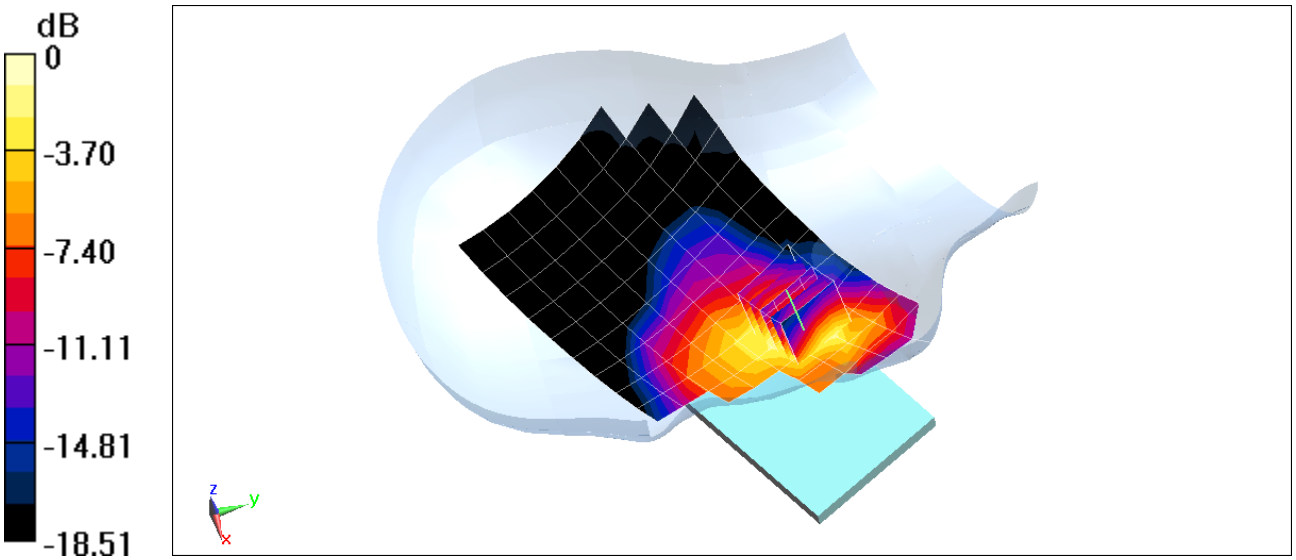
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.411 S/m; ε_r = 39.306; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 12-28-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7409; ConvF(8.05, 8.05, 8.05) @ 1880 MHz; Calibrated: 6/25/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 1900, Right Head Position 2, Cheek, Mid.ch

Area Scan (9x17x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.66 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.560 W/kg
SAR(1 g) = 0.354 W/kg



0 dB = 0.489 W/kg = -3.11 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03302

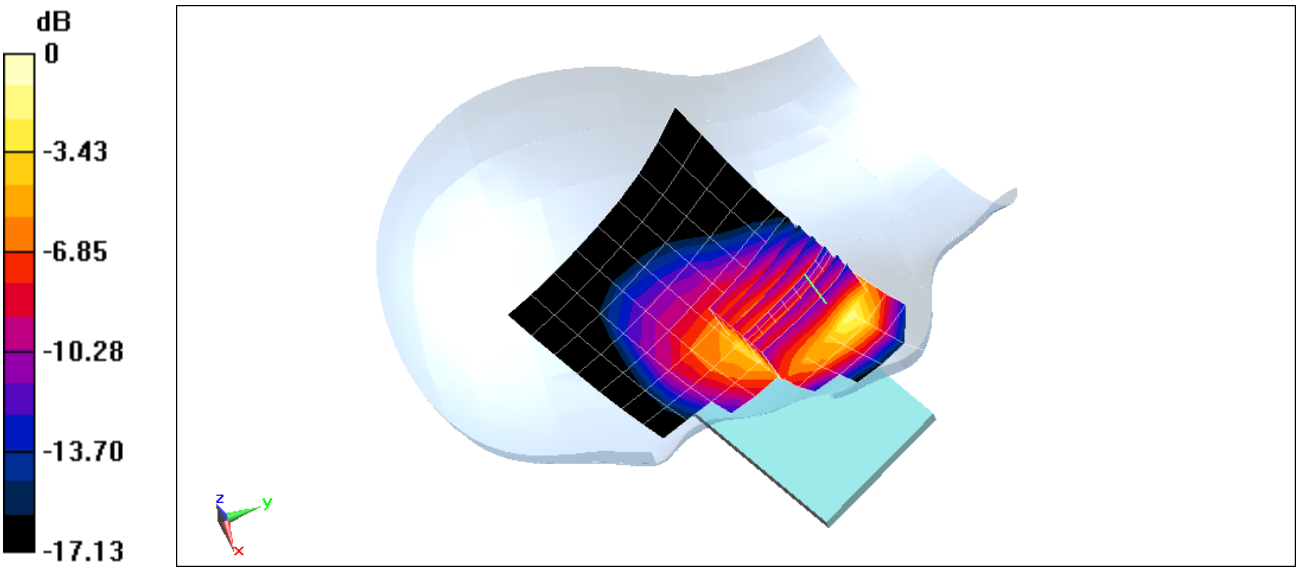
Communication System: UID 0, Cellular CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 820.1 MHz; σ = 0.897 S/m; ε_r = 42.153; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 01-02-2019; Ambient Temp: 21.7°C; Tissue Temp: 20.7°C

Probe: EX3DV4 - SN7410; ConvF(9.81, 9.81, 9.81) @ 820.1 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: Cell. EVDO Rev. A, Rule Part 90S, Right Head Position 2, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (8x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.84 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.590 W/kg



0 dB = 0.910 W/kg = -0.41 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03294

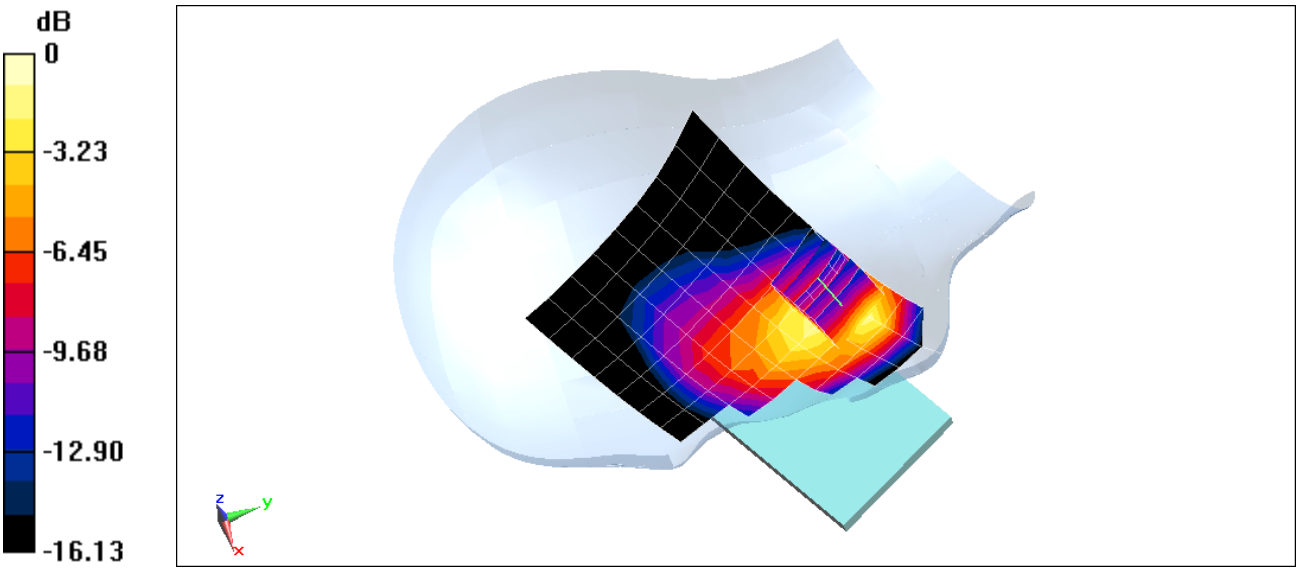
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.912 S/m; ε_r = 41.94; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 01-02-2019; Ambient Temp: 21.7°C; Tissue Temp: 20.7°C

Probe: EX3DV4 - SN7410; ConvF(9.81, 9.81, 9.81) @ 836.52 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: Cell. EVDO Rev. A, Rule Part 22H, Right Head Position 2, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 32.80 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.66 W/kg
SAR(1 g) = 0.894 W/kg



0 dB = 1.39 W/kg = 1.43 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03302

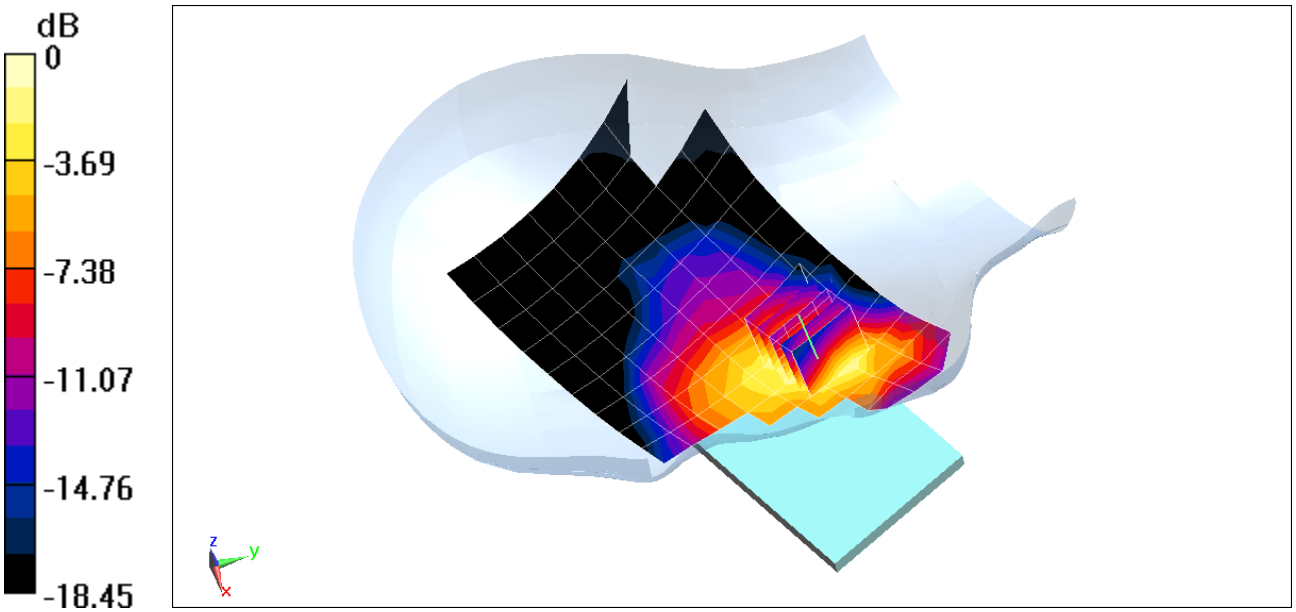
Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.411 S/m; ε_r = 39.306; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 12-28-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7409; ConvF(8.05, 8.05, 8.05) @ 1880 MHz; Calibrated: 6/25/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: PCS CDMA, Right Head Position 2, Cheek, Mid.ch

Area Scan (9x17x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.59 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.686 W/kg
SAR(1 g) = 0.436 W/kg



0 dB = 0.595 W/kg = -2.25 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03260

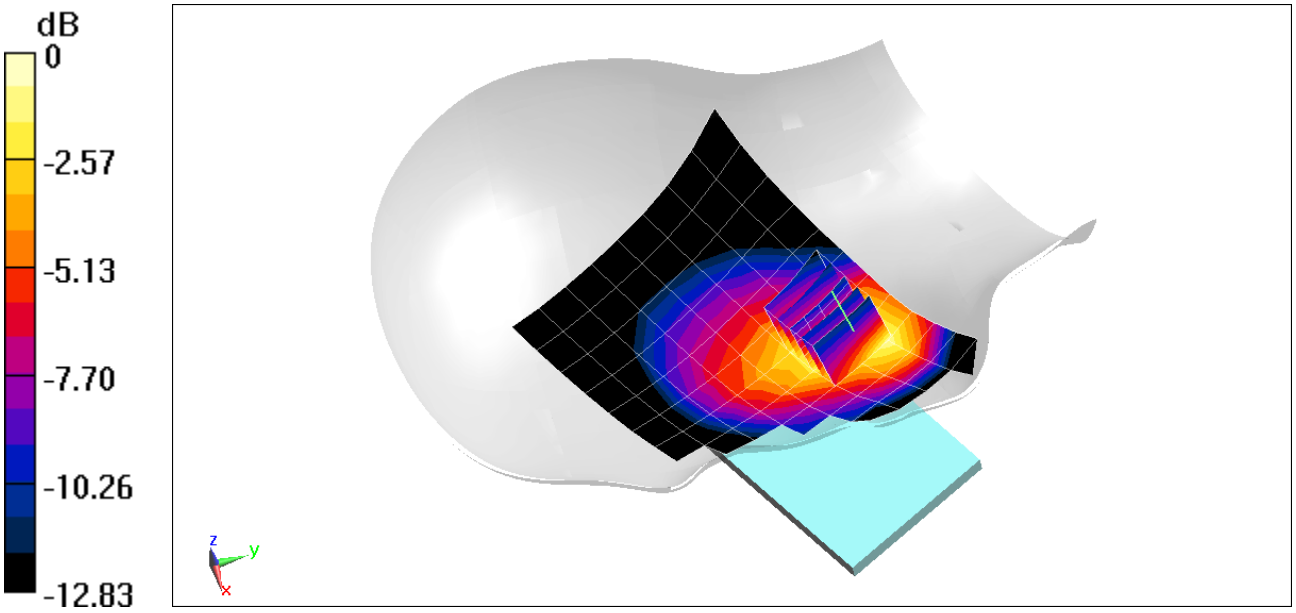
Communication System: UID 0, LTE Band 71; Frequency: 680.5 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 680.5 MHz; σ = 0.882 S/m; ε_r = 41.386; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 12-26-2018; Ambient Temp: 22.5°C; Tissue Temp: 19.8°C

Probe: ES3DV3 - SN3287; ConvF(6.76, 6.76, 6.76) @ 680.5 MHz; Calibrated: 10/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 10/18/2018
Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 71, Right Head Position 2, 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 = 21.87 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.623 W/kg
SAR(1 g) = 0.375 W/kg



0 dB = 0.453 W/kg = -3.44 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03260

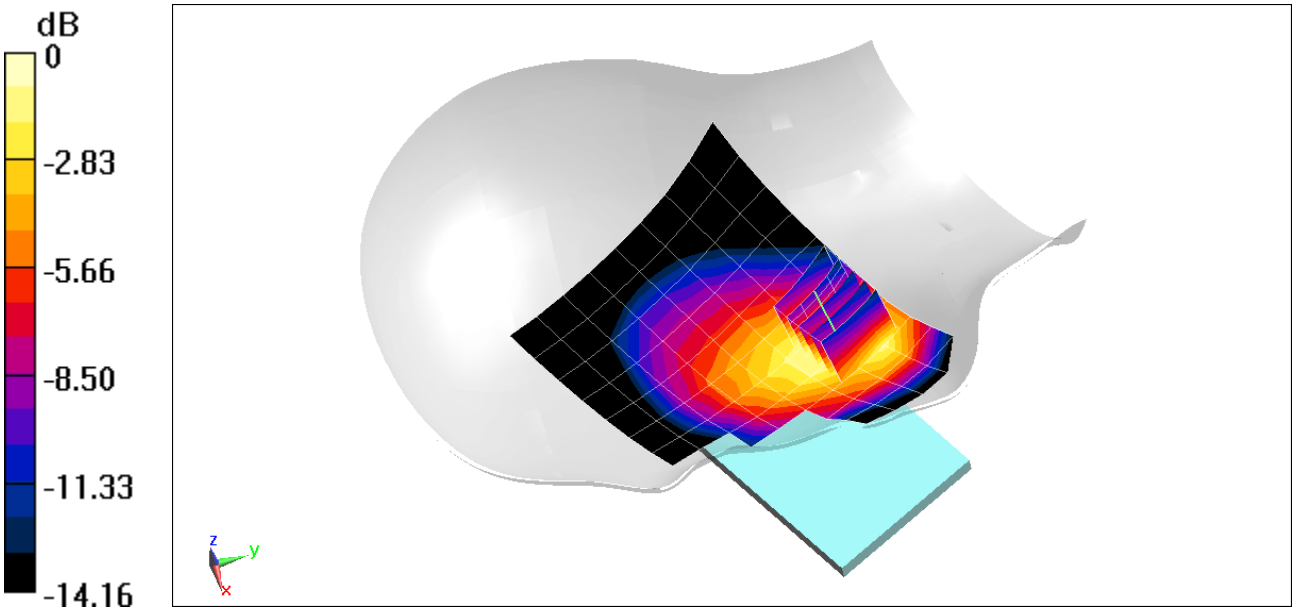
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.892 S/m; ε_r = 41.306; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 12-26-2018; Ambient Temp: 22.5°C; Tissue Temp: 19.8°C

Probe: ES3DV3 - SN3287; ConvF(6.76, 6.76, 6.76) @ 707.5 MHz; Calibrated: 10/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 10/18/2018
Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 12, Right Head Position 2, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.36 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.371 W/kg
SAR(1 g) = 0.225 W/kg



0 dB = 0.262 W/kg = -5.82 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03260

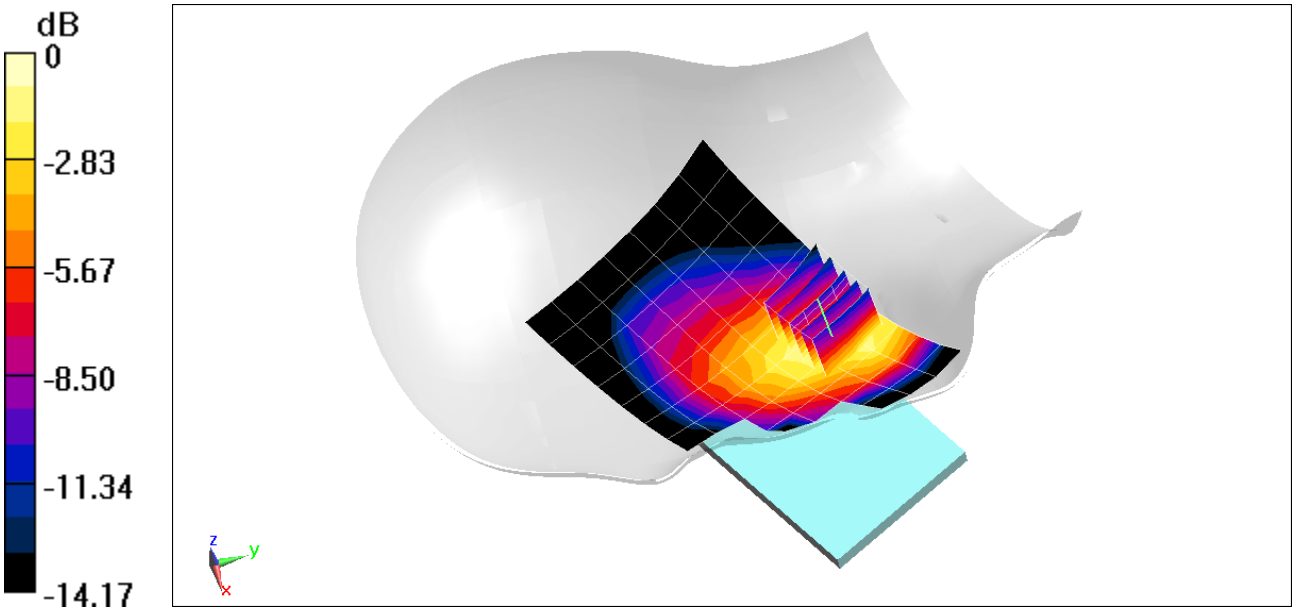
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 782 MHz; σ = 0.919 S/m; ε_r = 41.059; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 12-26-2018; Ambient Temp: 22.5°C; Tissue Temp: 19.8°C

Probe: ES3DV3 - SN3287; ConvF(6.76, 6.76, 6.76) @ 782 MHz; Calibrated: 10/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 10/18/2018
Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 13, Right Head Position 2, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.51 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.820 W/kg
SAR(1 g) = 0.485 W/kg



0 dB = 0.570 W/kg = -2.44 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03260

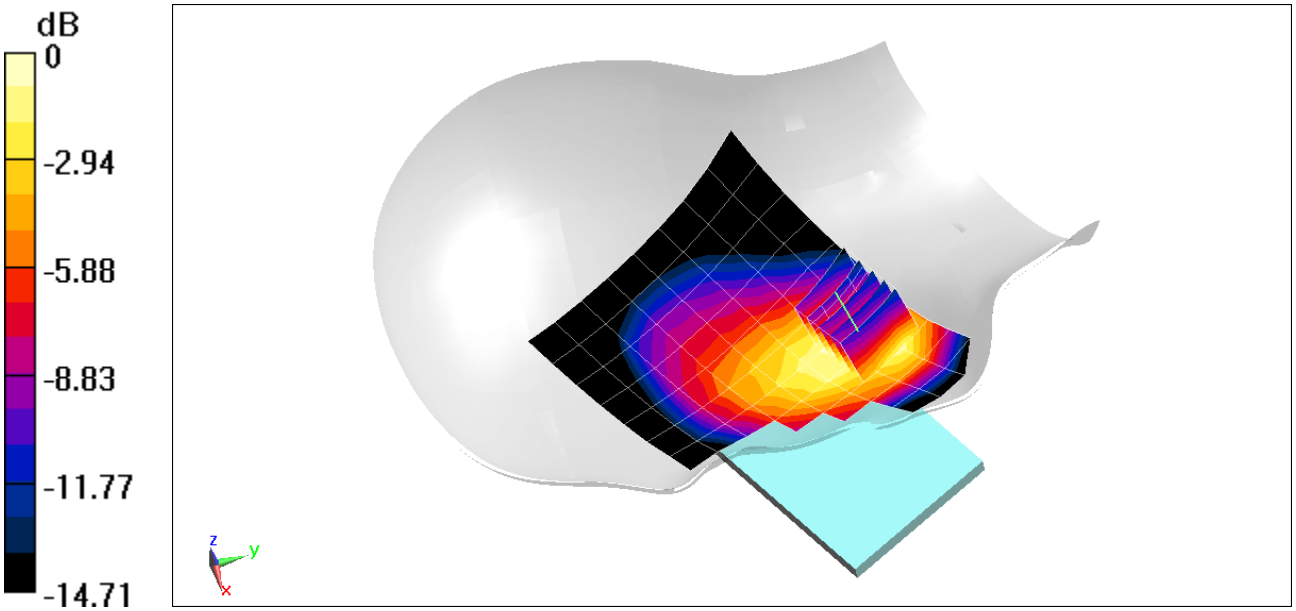
Communication System: UID 0, LTE Band 14; Frequency: 793 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 793 MHz; σ = 0.923 S/m; ε_r = 41.021; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 12-26-2018; Ambient Temp: 22.5°C; Tissue Temp: 19.8°C

Probe: ES3DV3 - SN3287; ConvF(6.76, 6.76, 6.76) @ 793 MHz; Calibrated: 10/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 10/18/2018
Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 14, Right Head Position 2, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.27 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.524 W/kg
SAR(1 g) = 0.312 W/kg



0 dB = 0.365 W/kg = -4.38 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03302

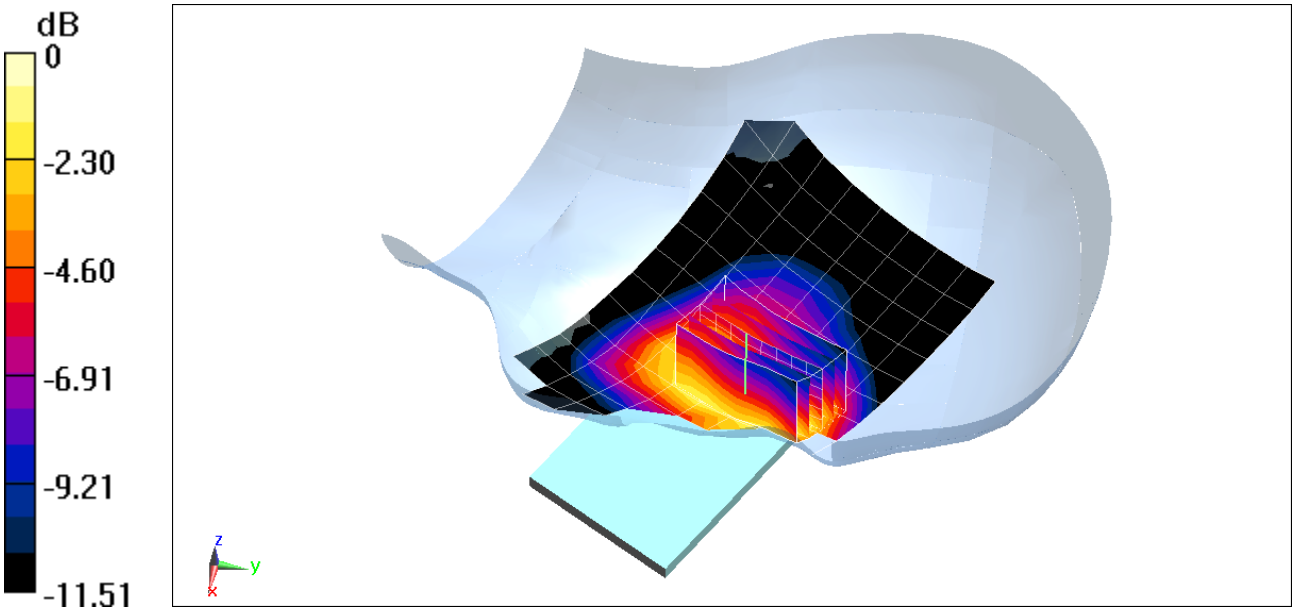
Communication System: UID 0, LTE Band 5 (Cell.); Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.5 MHz; σ = 0.914 S/m; ε_r = 42.598; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 12-28-2018; Ambient Temp: 22.9°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7410; ConvF(9.81, 9.81, 9.81) @ 836.5 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 5 (Cell.), Left Head Position 2, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (9x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.84 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.363 W/kg
SAR(1 g) = 0.270 W/kg



0 dB = 0.324 W/kg = -4.89 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03302

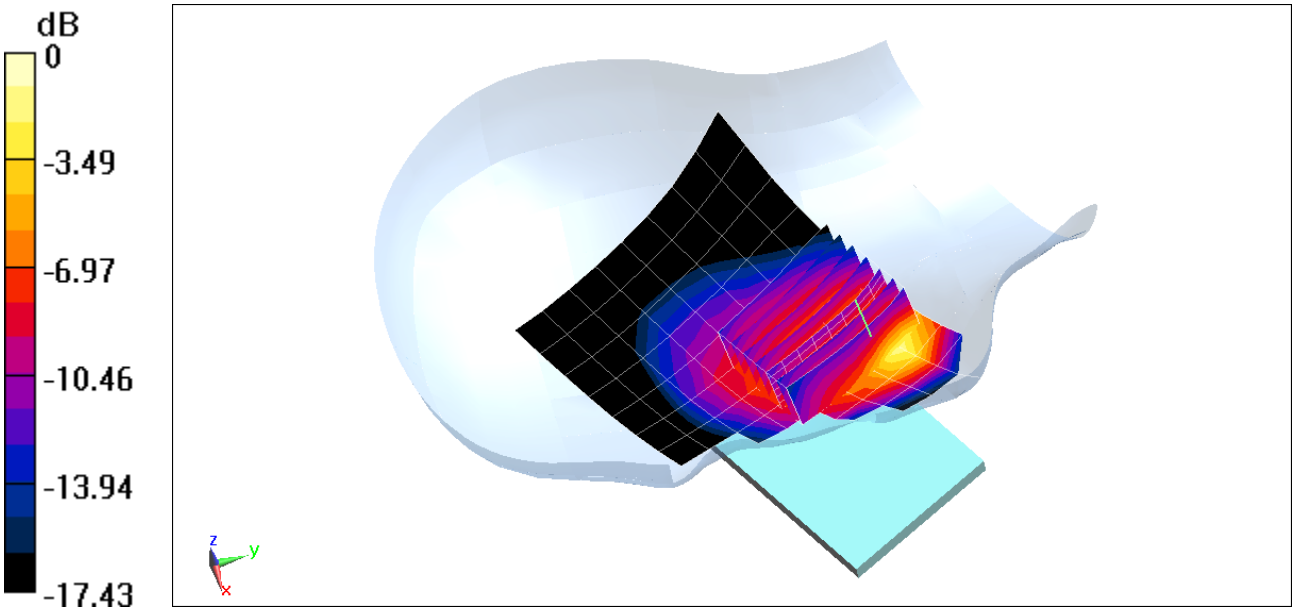
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 831.5 MHz; σ = 0.91 S/m; ε_r = 42.665; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 12-28-2018; Ambient Temp: 22.9°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7410; ConvF(9.81, 9.81, 9.81) @ 831.5 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 26 (Cell.), Right Head Position 2, Cheek, Mid.ch, 15 MHz Bandwidth, QPSK, 1 RB, 36 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (9x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.95 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.24 W/kg
SAR(1 g) = 0.701 W/kg



0 dB = 1.06 W/kg = 0.25 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03294

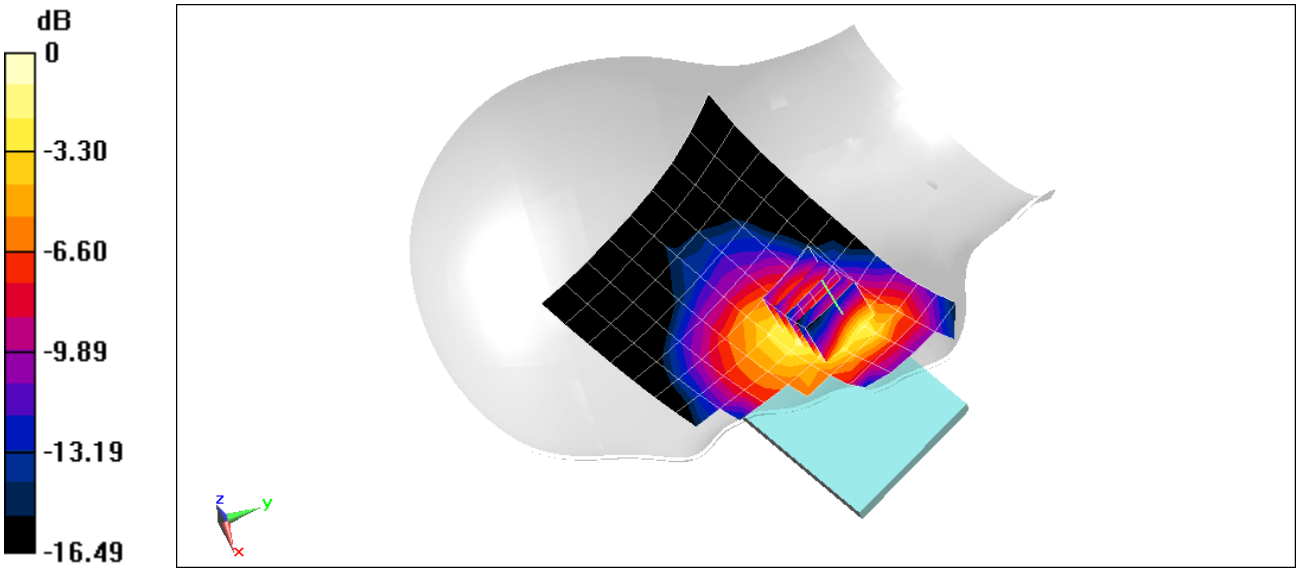
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
f = 1745 MHz; σ = 1.379 S/m; ε_r = 38.991; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 12-25-2018; Ambient Temp: 19.8°C; Tissue Temp: 19.8°C

Probe: ES3DV3 - SN3287; ConvF(5.48, 5.48, 5.48) @ 1745 MHz; Calibrated: 10/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 10/18/2018
Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 66 (AWS), Right Head Position 2, Cheek, Mid.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 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 = 20.69 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.767 W/kg
SAR(1 g) = 0.507 W/kg



0 dB = 0.564 W/kg = -2.49 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03286

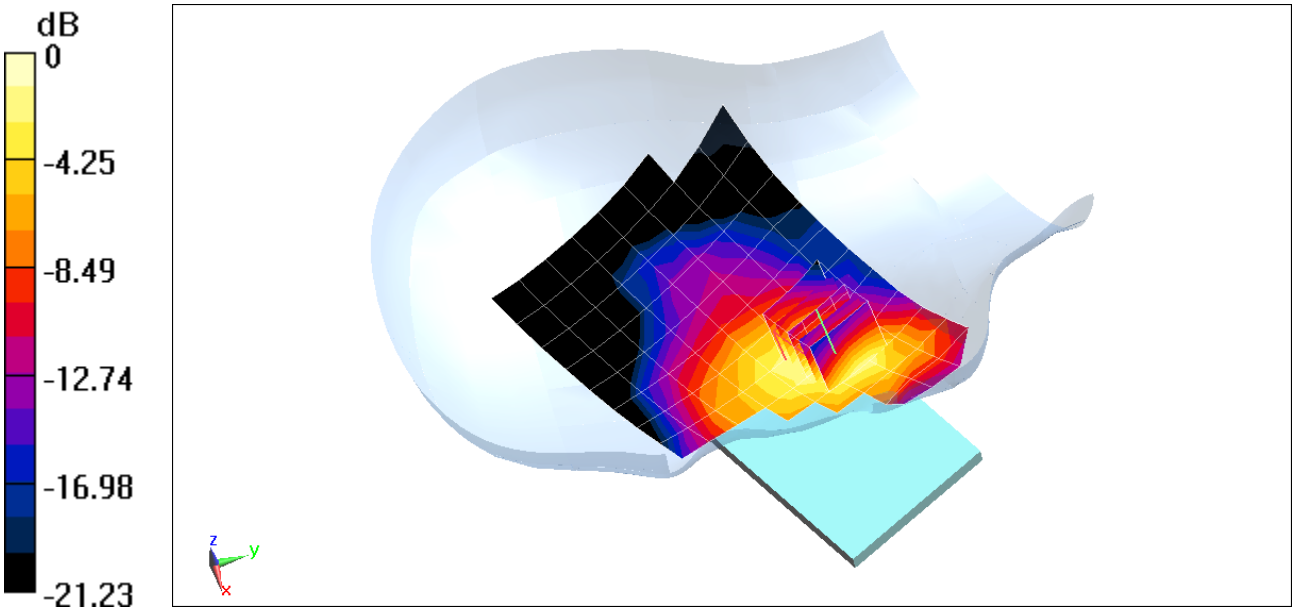
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1882.5 MHz; σ = 1.414 S/m; ε_r = 39.294; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 12-28-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7409; ConvF(8.05, 8.05, 8.05) @ 1882.5 MHz; Calibrated: 6/25/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 25 (PCS), Right Head Position 2, Cheek, Mid.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x16x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.54 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.711 W/kg
SAR(1 g) = 0.450 W/kg



0 dB = 0.620 W/kg = -2.08 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03310

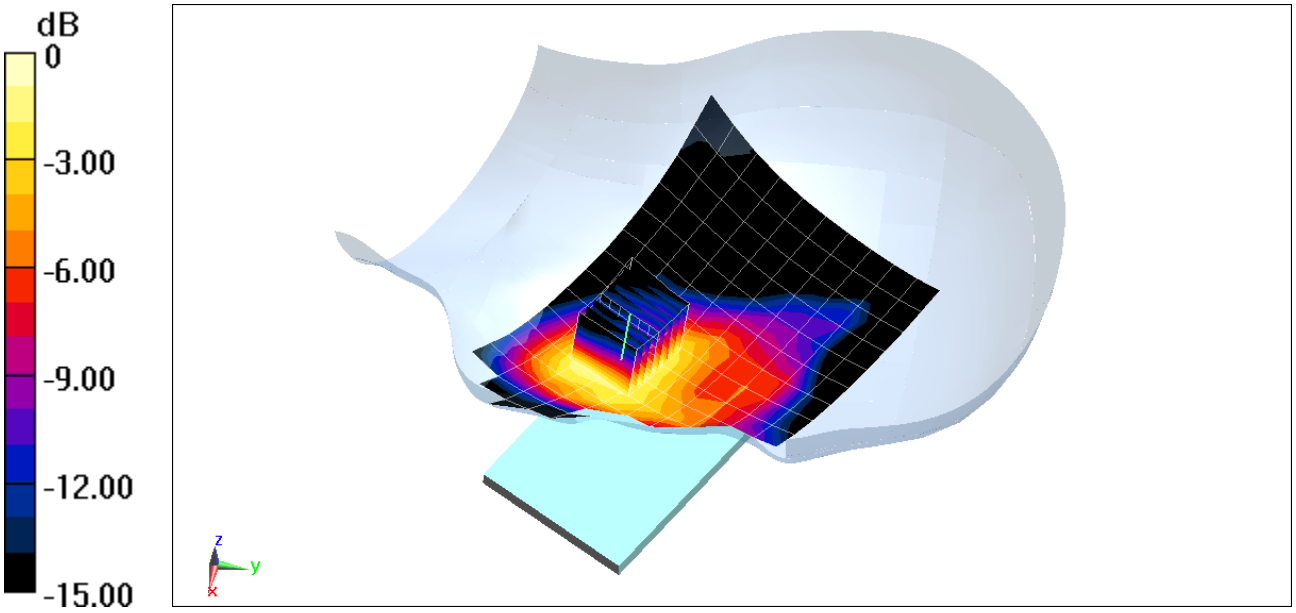
Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1
Medium: 2300 Head Medium parameters used:
f = 2310 MHz; σ = 1.749 S/m; ε_r = 38.28; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 01-06-2019; Ambient Temp: 20.9°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7406; ConvF(7.95, 7.95, 7.95) @ 2310 MHz; Calibrated: 5/22/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 30, Left Head Position 2, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.2690 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.283 W/kg
SAR(1 g) = 0.166 W/kg



0 dB = 0.320 W/kg = -4.95 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03260

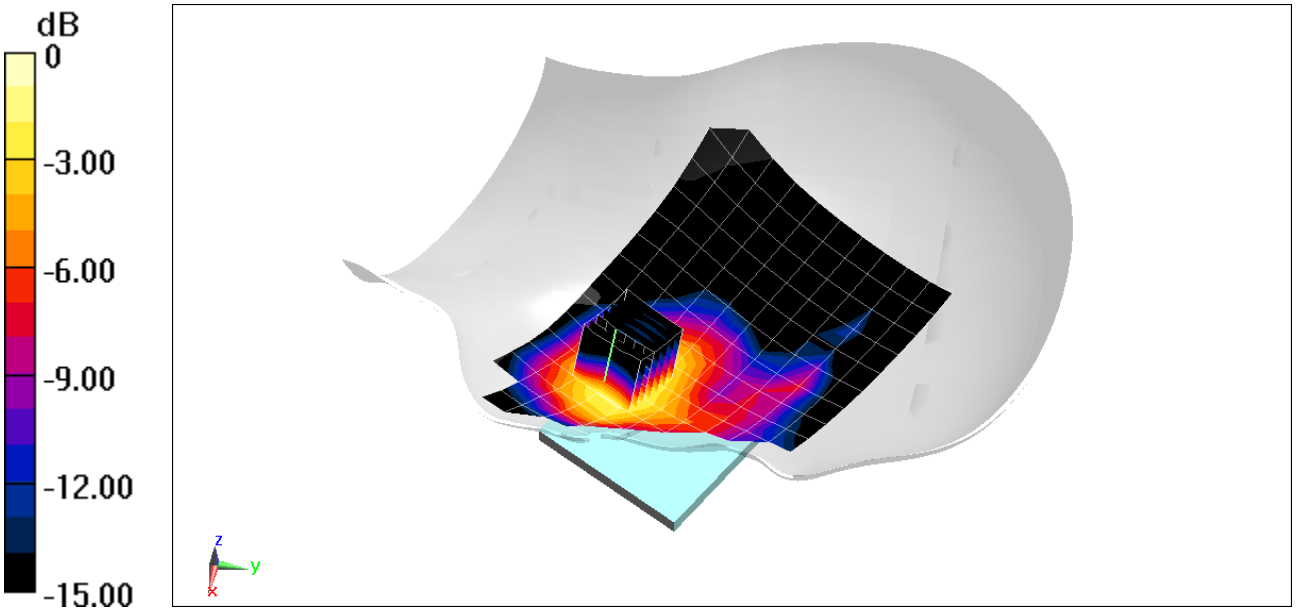
Communication System: UID 0, LTE Band 7; Frequency: 2560 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used (interpolated):
f = 2560 MHz; σ = 2.011 S/m; ε_r = 38.664; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 12-28-2018; Ambient Temp: 20.7°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN7406; ConvF(7.4, 7.4, 7.4) @ 2560 MHz; Calibrated: 5/22/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 7, Left Head Position 2, Cheek, High.ch, QPSK, 20 MHz Bandwidth, 1 RB, 50 RB Offset

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.73 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.428 W/kg
SAR(1 g) = 0.221 W/kg



0 dB = 0.343 W/kg = -4.65 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03286

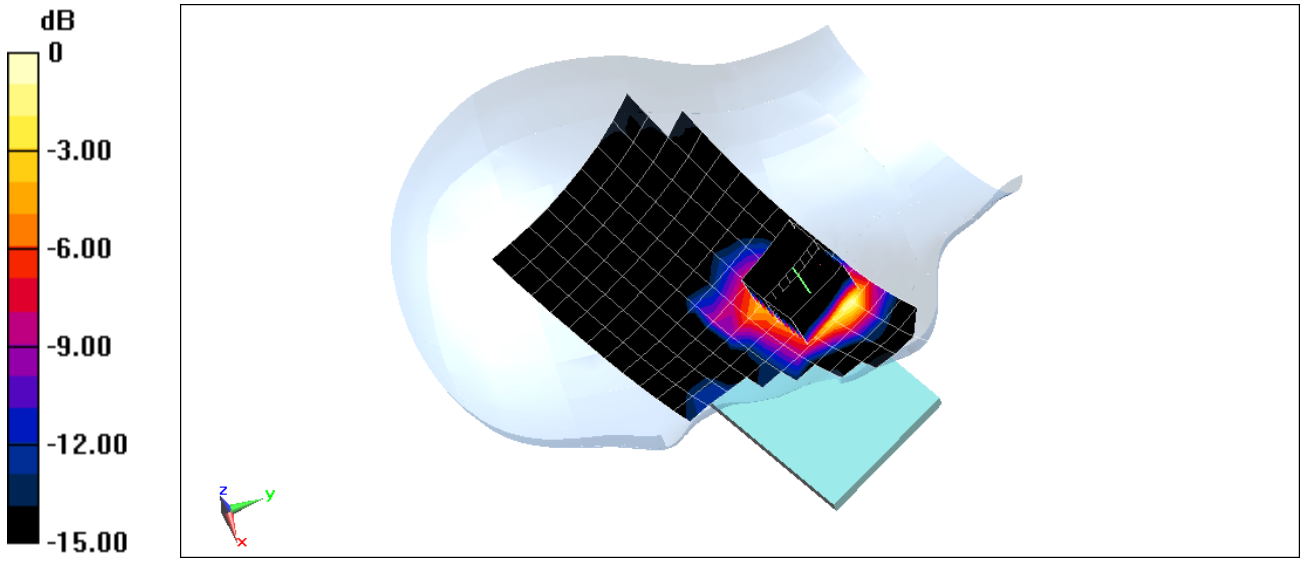
Communication System: UID 0, LTE Band 48; Frequency: 3646.7 MHz; Duty Cycle: 1:1.58
Medium: 3500-3700 MHz Head Medium parameters used (interpolated):
f = 3646.7 MHz; σ = 3.039 S/m; ε_r = 37.174; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 12-14-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.2°C

Probe: EX3DV4 - SN3949; ConvF(7.24, 7.24, 7.24) @ 3646.7 MHz; Calibrated: 8/24/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 48, Right Head Position 2, Cheek, Mid-High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (10x20x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 9.034 V/m; Power Drift = 0.20 dB
Peak SAR (extrapolated) = 1.23 W/kg
SAR(1 g) = 0.194 W/kg



0 dB = 0.367 W/kg = -4.35 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03310

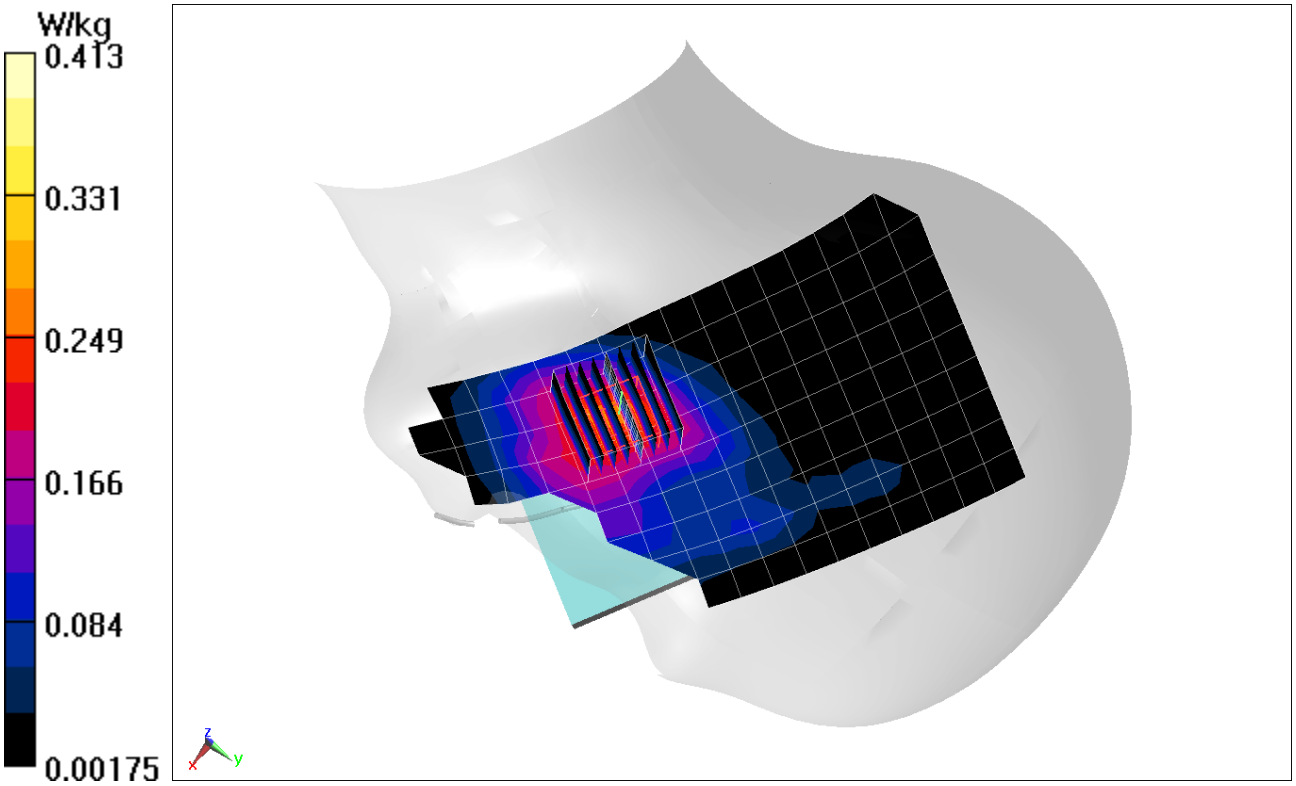
Communication System: UID 0, LTE Band 41 (Class 2); Frequency: 2549.5 MHz; Duty Cycle: 1:2.31
Medium: 2450 Head Medium parameters used:
f = 2550 MHz; σ = 1.937 S/m; ε_r = 40.304; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 01-02-2019; Ambient Temp: 20.3°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7406; ConvF(7.4, 7.4, 7.4) @ 2549.5 MHz; Calibrated: 5/22/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 41 PC2, Left Head Position 2, Cheek, Low-Mid.ch, QPSK, 20 MHz Bandwidth, 1 RB, 0 RB Offset

Area Scan (10x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.60 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.490 W/kg
SAR(1 g) = 0.290 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03336

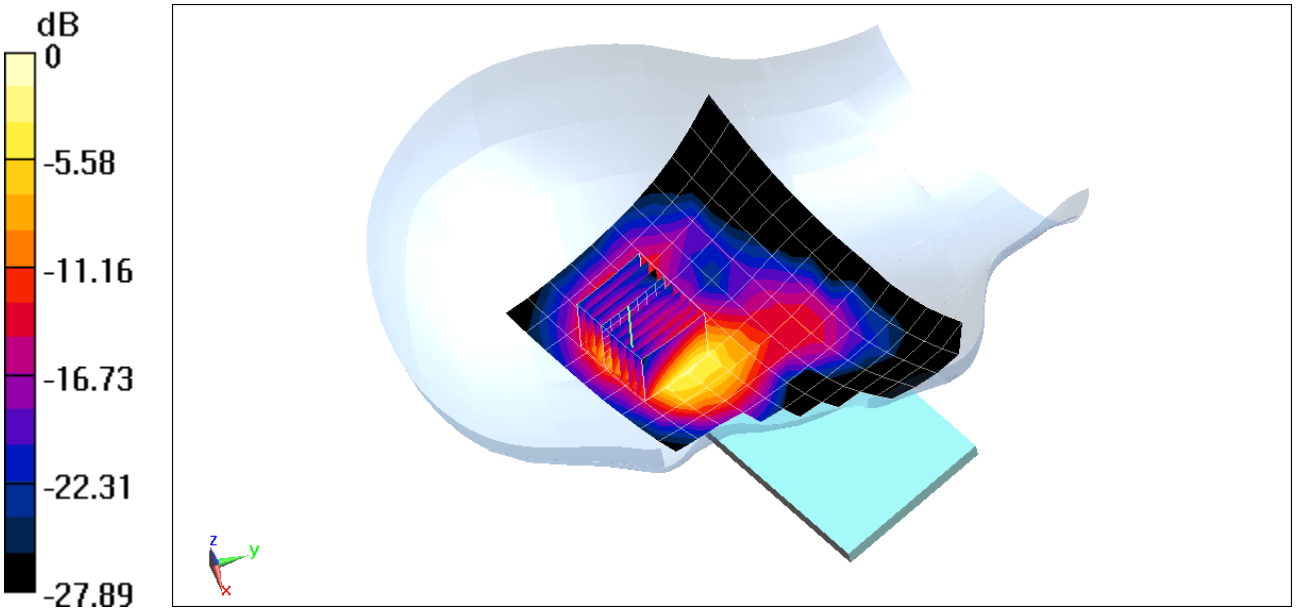
Communication System: UID 0, IEEE 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used (interpolated):
f = 2462 MHz; σ = 1.816 S/m; ε_r = 39.37; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 12-10-2018; Ambient Temp: 22.0°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN7410; ConvF(7.5, 7.5, 7.5) @ 2462 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

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

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (8x9x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.565 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 1.88 W/kg
SAR(1 g) = 0.696 W/kg



0 dB = 1.40 W/kg = 1.46 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03328

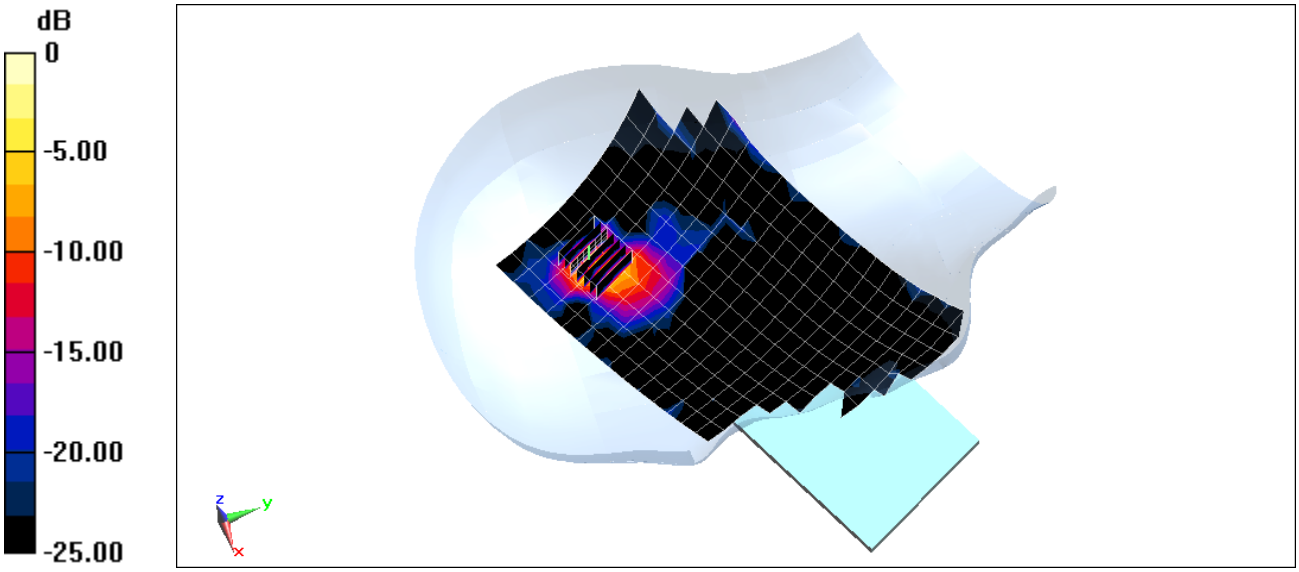
Communication System: UID 0, 802.11n 5.2-5.8 GHz Band; Frequency: 5630 MHz; Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used (interpolated):
f = 5630 MHz; σ = 5.005 S/m; ε_r = 34.795; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 01-02-2019; Ambient Temp: 20.5°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7409; ConvF(4.77, 4.77, 4.77) @ 5630 MHz; Calibrated: 6/25/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: IEEE 802.11n Antenna 2, U-NII-2C, 40 MHz Bandwidth,
Right Head Position 2, Tilt, Ch 126, 13.5 Mbps

Area Scan (13x25x1): 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 = 1.348 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 2.70 W/kg
SAR(1 g) = 0.457 W/kg



0 dB = 1.44 W/kg = 1.58 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03278

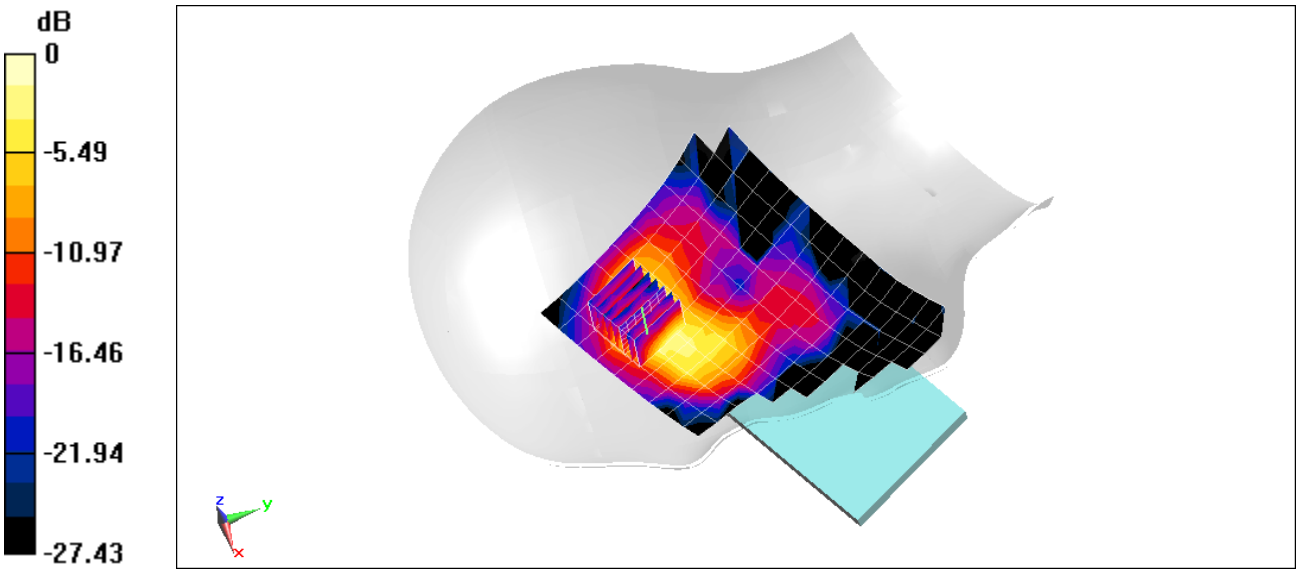
Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.299
Medium: 2450 Head Medium parameters used (interpolated):
f = 2441 MHz; σ = 1.852 S/m; ε_r = 40.499; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 01-02-2019; Ambient Temp: 20.3°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7406; ConvF(7.54, 7.54, 7.54) @ 2441 MHz; Calibrated: 5/22/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

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

Area Scan (11x19x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.007 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.274 W/kg
SAR(1 g) = 0.101 W/kg



0 dB = 0.198 W/kg = -7.03 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03302

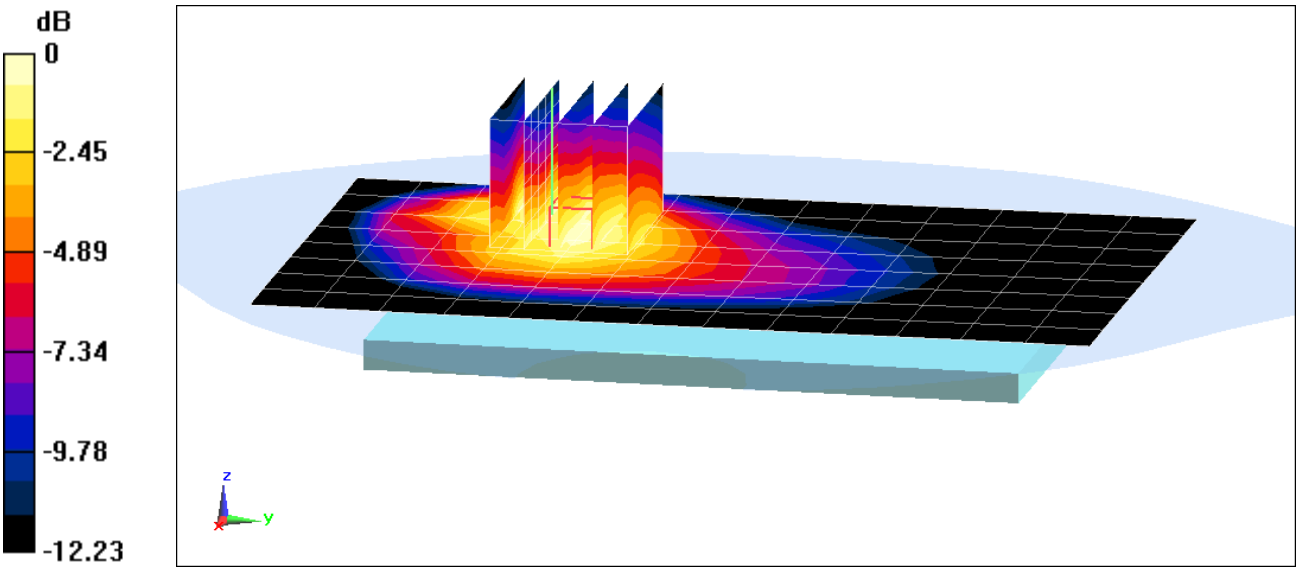
Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 824.2 MHz; Duty Cycle: 1:2.76
Medium: 835 Body Medium parameters used (interpolated):
f = 824.2 MHz; σ = 0.963 S/m; ε_r = 55.458; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 21.1°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7409; ConvF(9.63, 9.63, 9.63) @ 824.2 MHz; Calibrated: 6/25/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.53 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 1.06 W/kg
SAR(1 g) = 0.633 W/kg



0 dB = 0.868 W/kg = -0.61 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03302

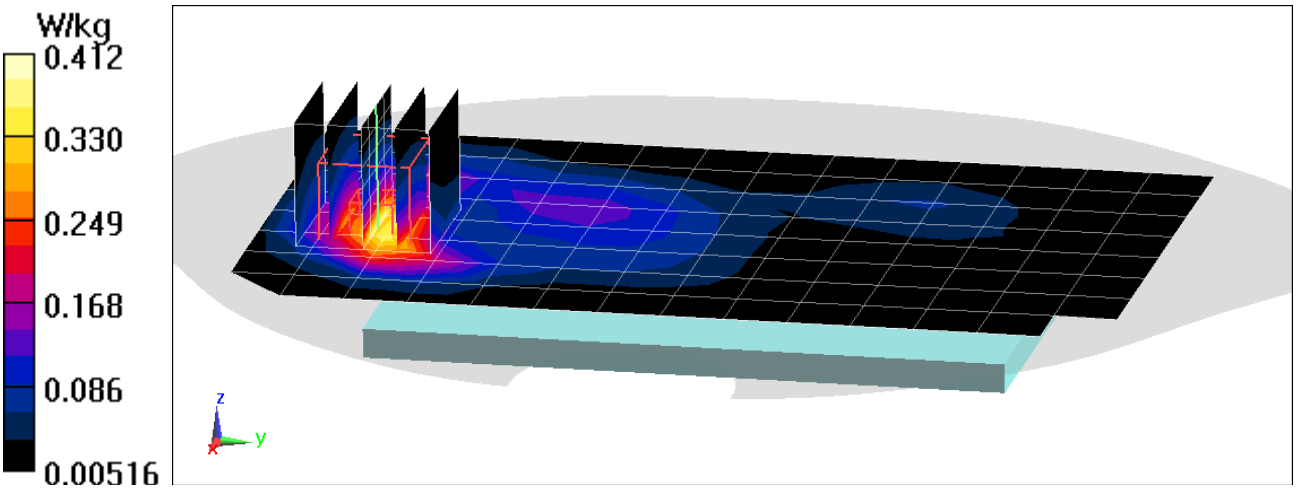
Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.76
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.55 S/m; ε_r = 53.385; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-10-2019; Ambient Temp: 23.0°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3287; ConvF(4.83, 4.83, 4.83) @ 1880 MHz; Calibrated: 10/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 10/18/2018
Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: GPRS 1900, Body SAR, Back side, Mid.ch, 3 Tx Slots

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (7x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.88 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.809 W/kg
SAR(1 g) = 0.439 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03302

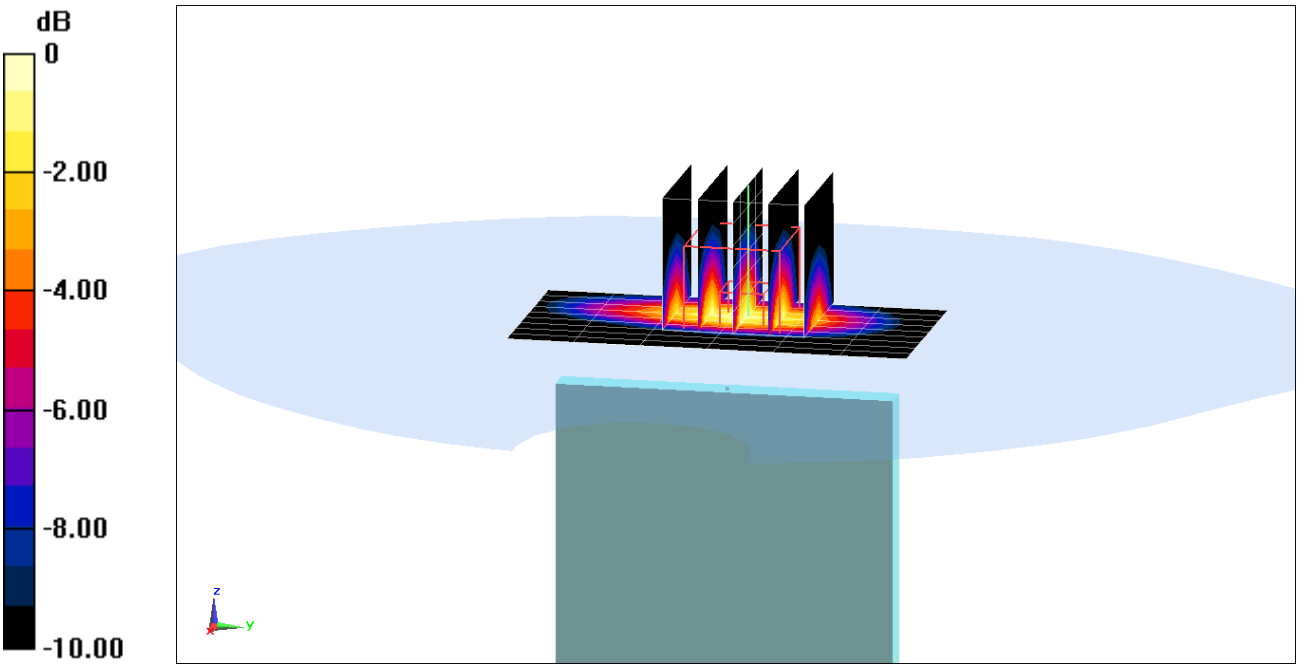
Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 1850.2 MHz; Duty Cycle: 1:2.76
Medium: 1900 Body Medium parameters used (interpolated):
f = 1850.2 MHz; σ = 1.505 S/m; ε_r = 52.897; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-09-2018; Ambient Temp: 21.6°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3332; ConvF(4.77, 4.77, 4.77) @ 1850.2 MHz; Calibrated: 8/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

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

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.77 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 1.08 W/kg
SAR(1 g) = 0.615 W/kg



0 dB = 0.747 W/kg = -1.27 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03278

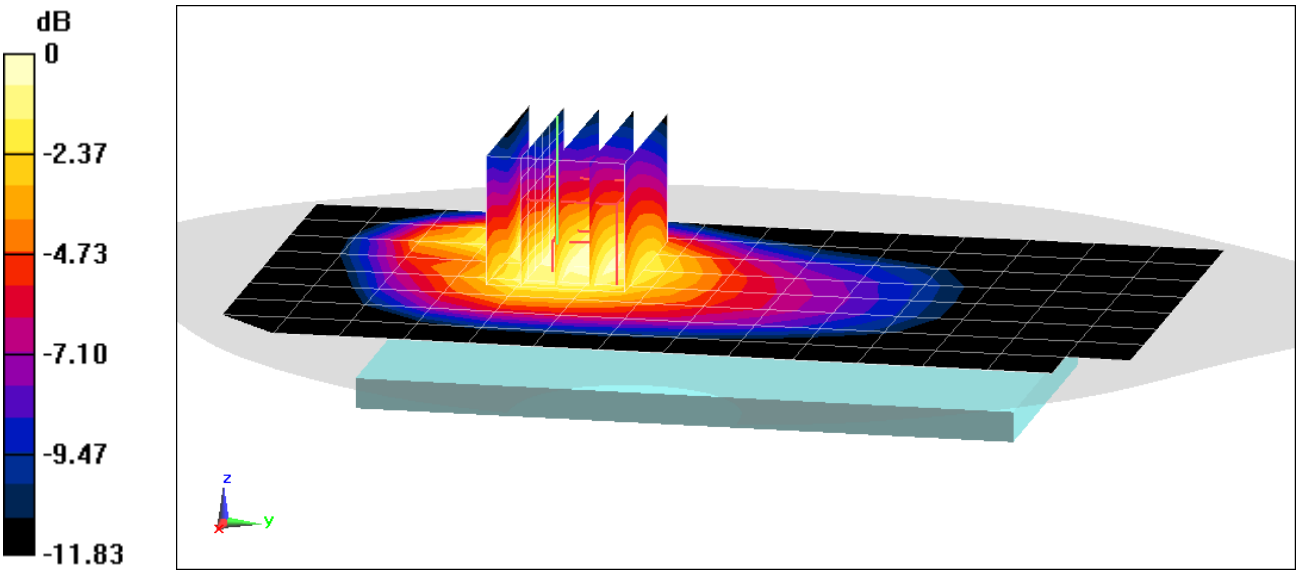
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.966 S/m; ε_r = 53.591; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-26-2018; Ambient Temp: 19.9°C; Tissue Temp: 19.1°C

Probe: ES3DV3 - SN3347; ConvF(6.37, 6.37, 6.37) @ 836.6 MHz; Calibrated: 3/27/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (7x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.77 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.741 W/kg
SAR(1 g) = 0.465 W/kg



0 dB = 0.543 W/kg = -2.65 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03286

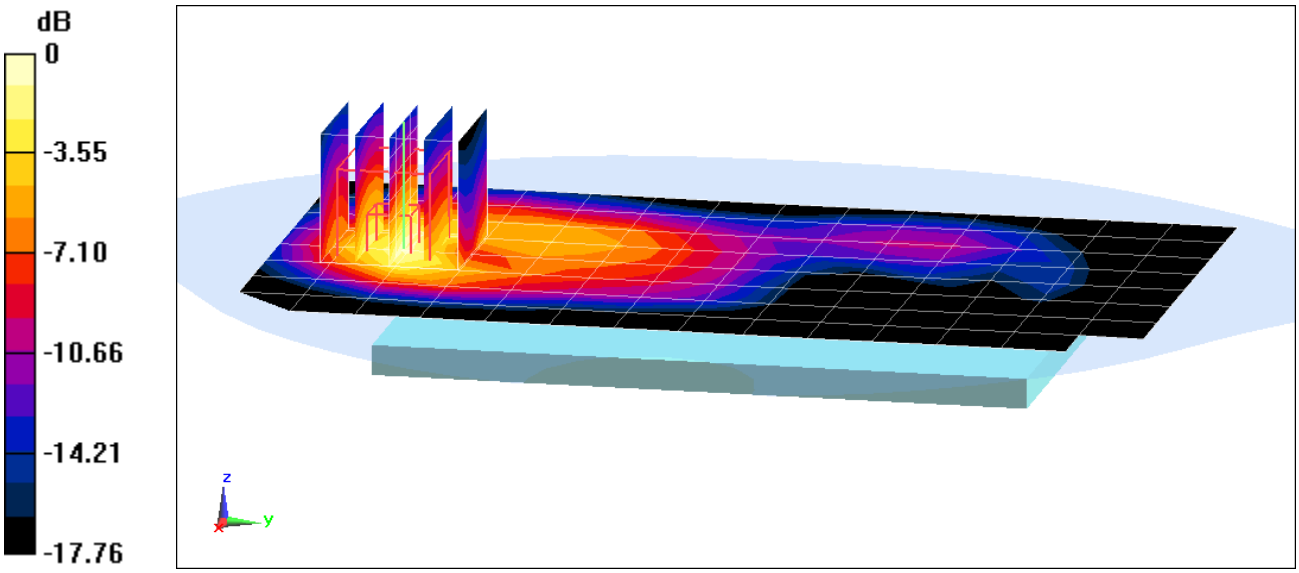
Communication System: UID 0, UMTS; Frequency: 1752.6 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1752.6 MHz; σ = 1.515 S/m; ε_r = 52.506; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7357; ConvF(8.43, 8.43, 8.43) @ 1752.6 MHz; Calibrated: 4/18/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.21 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.34 W/kg
SAR(1 g) = 0.740 W/kg



0 dB = 1.11 W/kg = 0.45 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03286

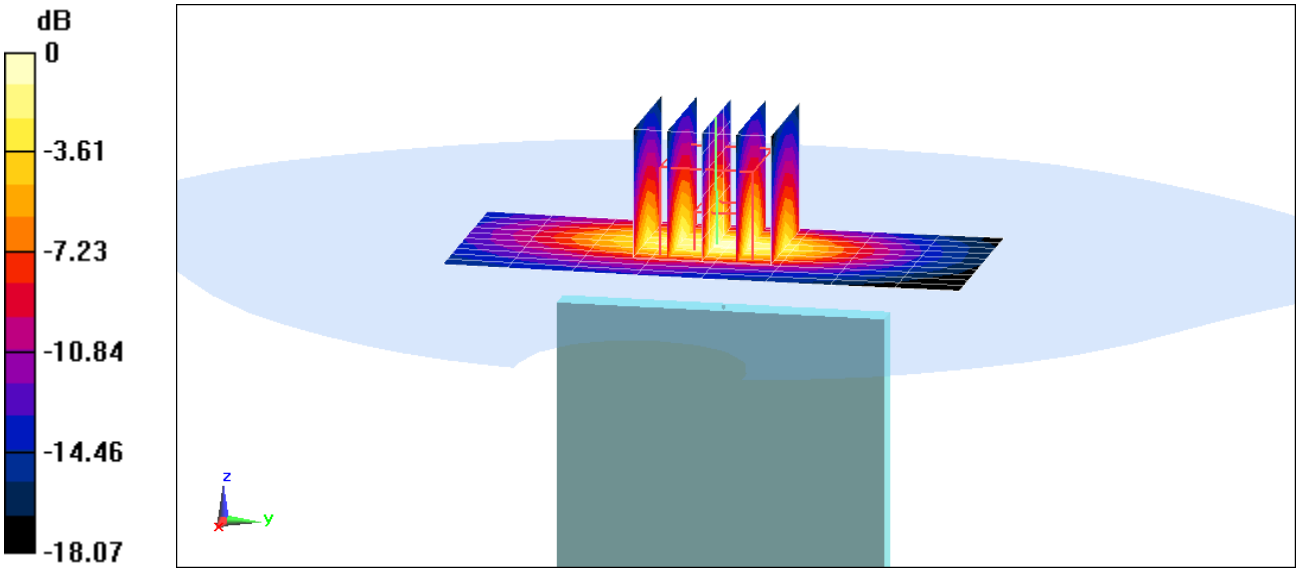
Communication System: UID 0, UMTS; Frequency: 1752.6 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1752.6 MHz; σ = 1.515 S/m; ε_r = 52.506; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7357; ConvF(8.43, 8.43, 8.43) @ 1752.6 MHz; Calibrated: 4/18/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

UMTS 1750, Body SAR, Bottom Edge, High.ch

Area Scan (11x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.41 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.68 W/kg
SAR(1 g) = 0.929 W/kg



0 dB = 1.43 W/kg = 1.55 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03294

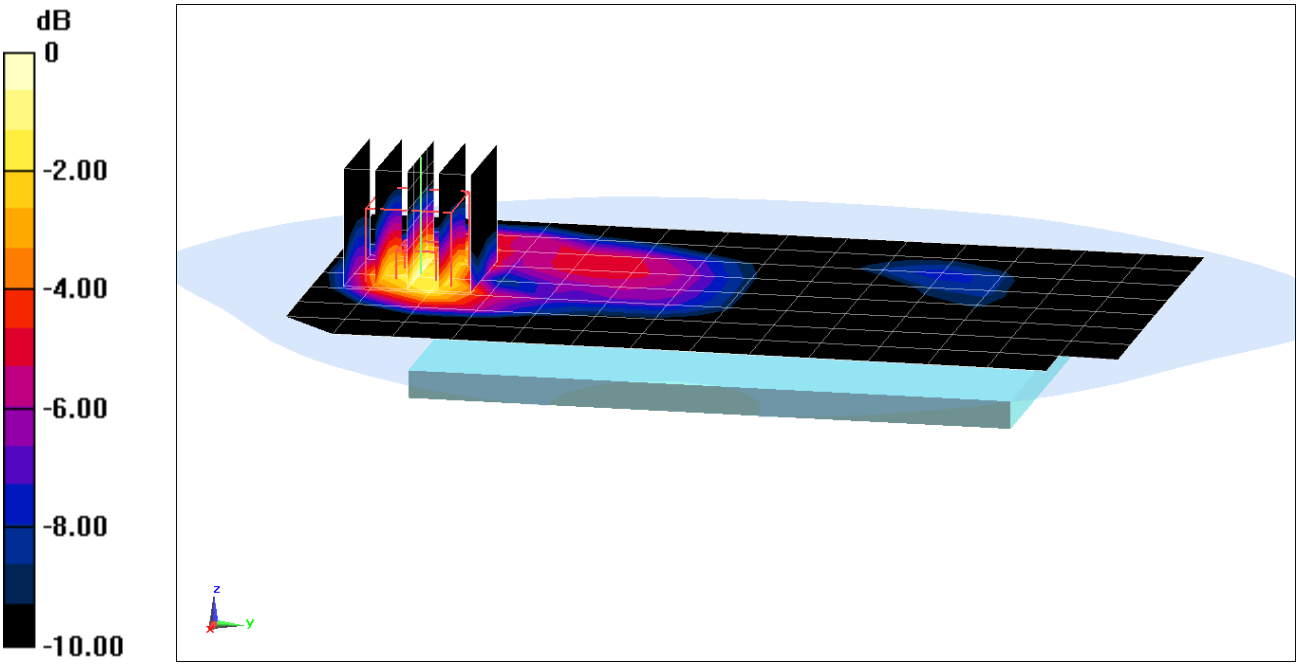
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.55 S/m; ε_r = 51.085; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-05-2018; Ambient Temp: 24.5°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3332; ConvF(4.77, 4.77, 4.77) @ 1880 MHz; Calibrated: 8/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.27 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.752 W/kg
SAR(1 g) = 0.431 W/kg



0 dB = 0.546 W/kg = -2.63 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03294

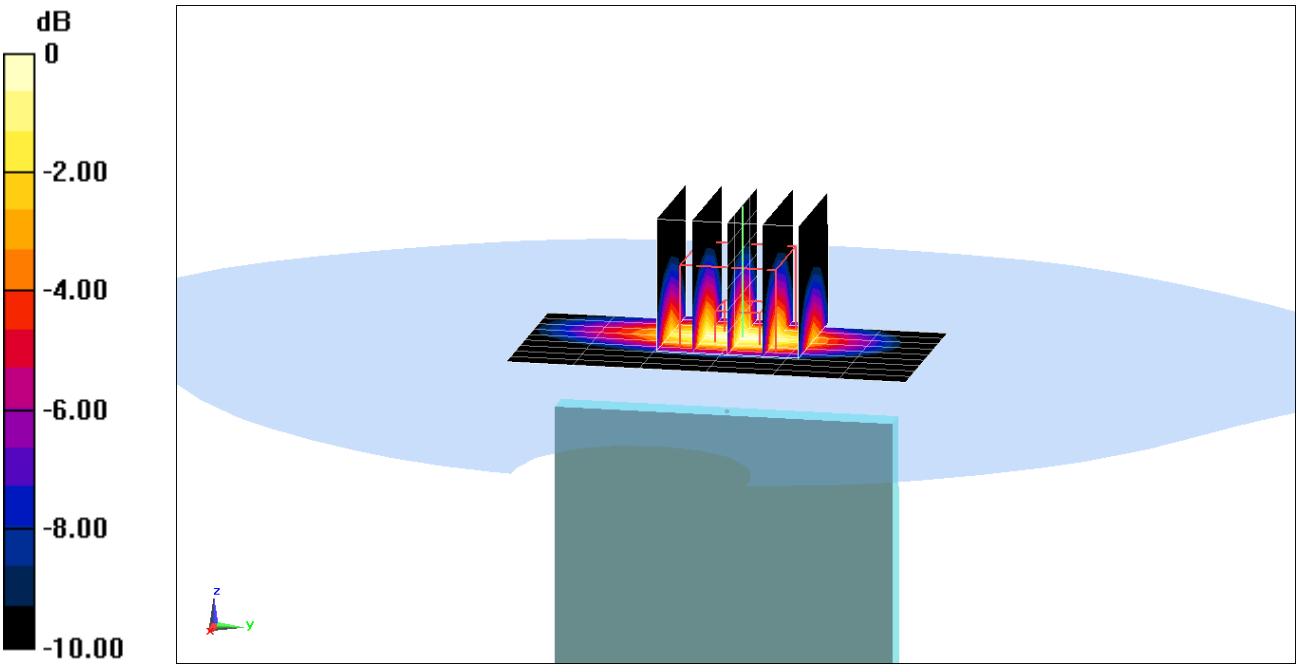
Communication System: UID 0, UMTS; Frequency: 1852.4 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1852.4 MHz; σ = 1.52 S/m; ε_r = 51.159; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-05-2018; Ambient Temp: 24.5°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3332; ConvF(4.77, 4.77, 4.77) @ 1852.4 MHz; Calibrated: 8/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

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 = 26.53 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.57 W/kg
SAR(1 g) = 0.900 W/kg



0 dB = 1.14 W/kg = 0.57 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03302

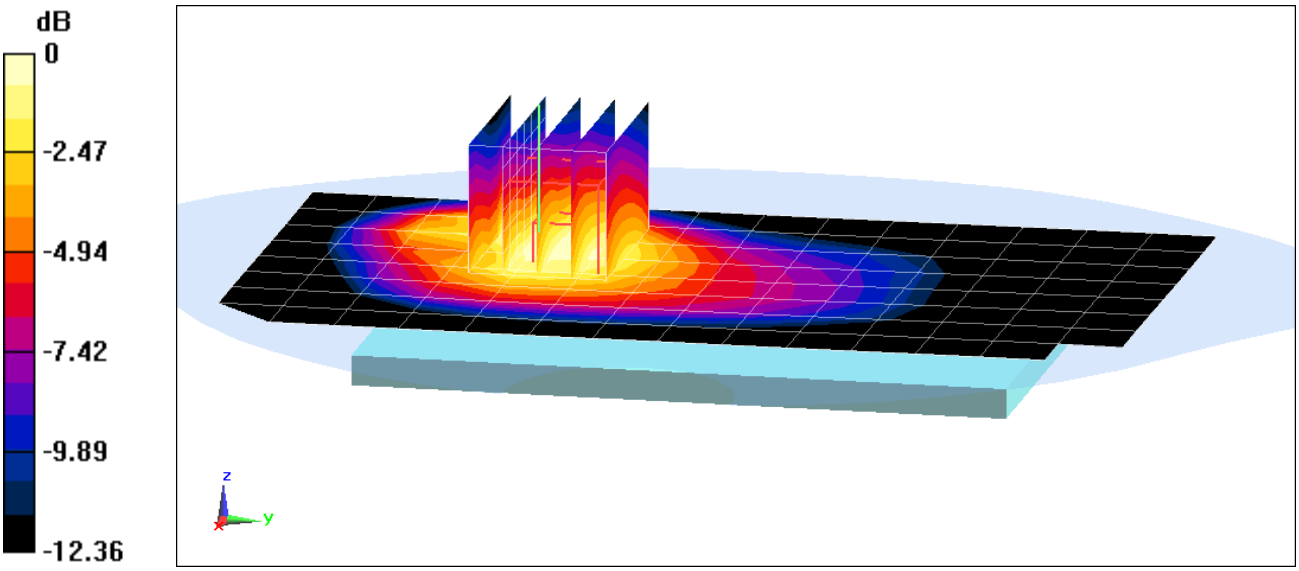
Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 820.1 MHz; σ = 0.961 S/m; ε_r = 55.479; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 21.1°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7409; ConvF(9.63, 9.63, 9.63) @ 820.1 MHz; Calibrated: 6/25/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode Cell. CDMA BC10, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (7x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.93 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.955 W/kg
SAR(1 g) = 0.583 W/kg



0 dB = 0.783 W/kg = -1.06 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03302

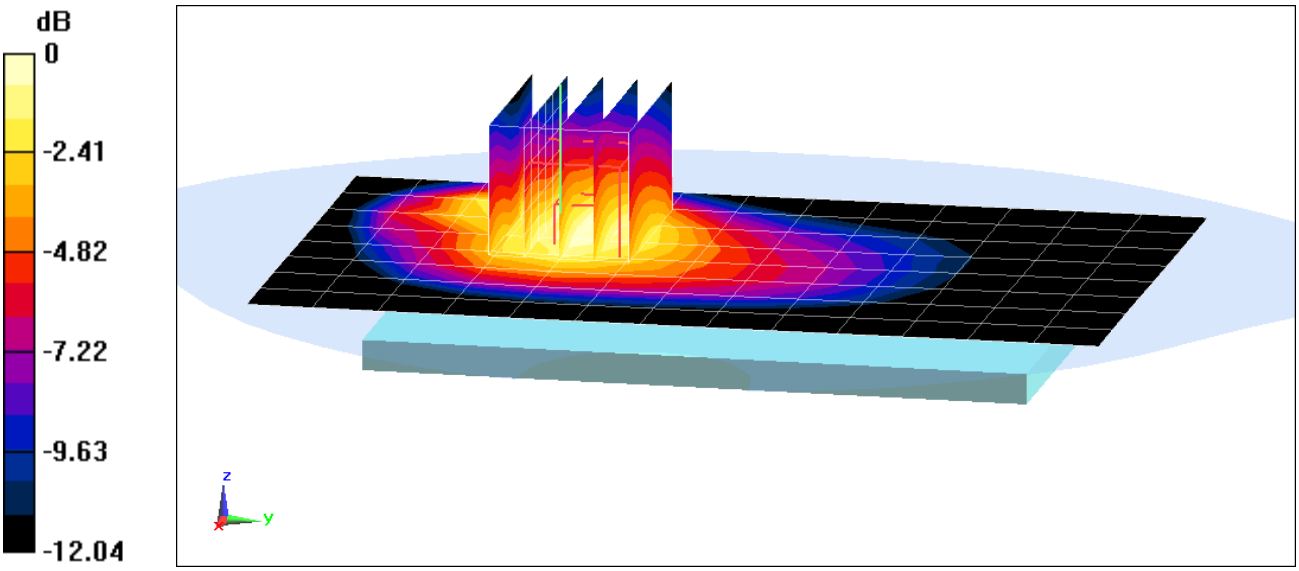
Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 820.1 MHz; σ = 0.961 S/m; ε_r = 55.479; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 21.1°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7409; ConvF(9.63, 9.63, 9.63) @ 820.1 MHz; Calibrated: 6/25/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: Cell. EVDO Rev.0 BC10, Body SAR, Back side, Mid.ch

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (7x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.16 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.07 W/kg
SAR(1 g) = 0.662 W/kg



0 dB = 0.885 W/kg = -0.53 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03302

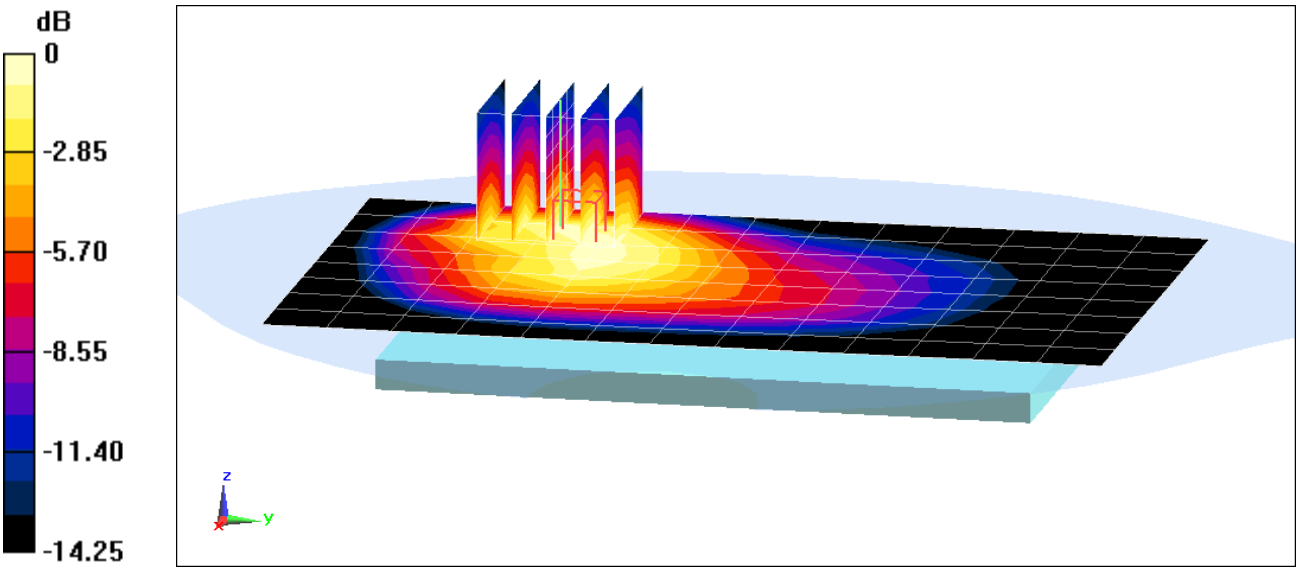
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.969 S/m; ε_r = 55.401; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 21.1°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7409; ConvF(9.63, 9.63, 9.63) @ 836.52 MHz; Calibrated: 6/25/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: Cell. CDMA BC0, Body SAR, Back side, Mid.ch

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.94 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 1.57 W/kg
SAR(1 g) = 0.900 W/kg



0 dB = 1.26 W/kg = 1.00 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03302

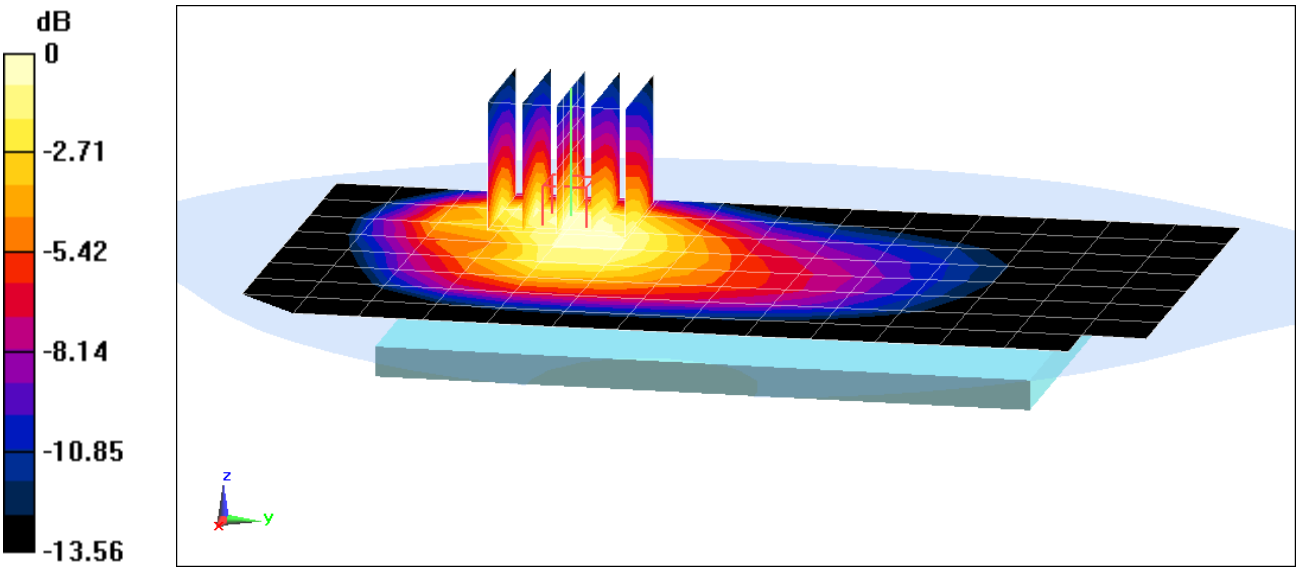
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.969 S/m; ε_r = 55.401; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 21.1°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7409; ConvF(9.63, 9.63, 9.63) @ 836.52 MHz; Calibrated: 6/25/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: Cell. EVDO Rev.0 BC0, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.30 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.53 W/kg
SAR(1 g) = 0.872 W/kg



0 dB = 1.27 W/kg = 1.04 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03302

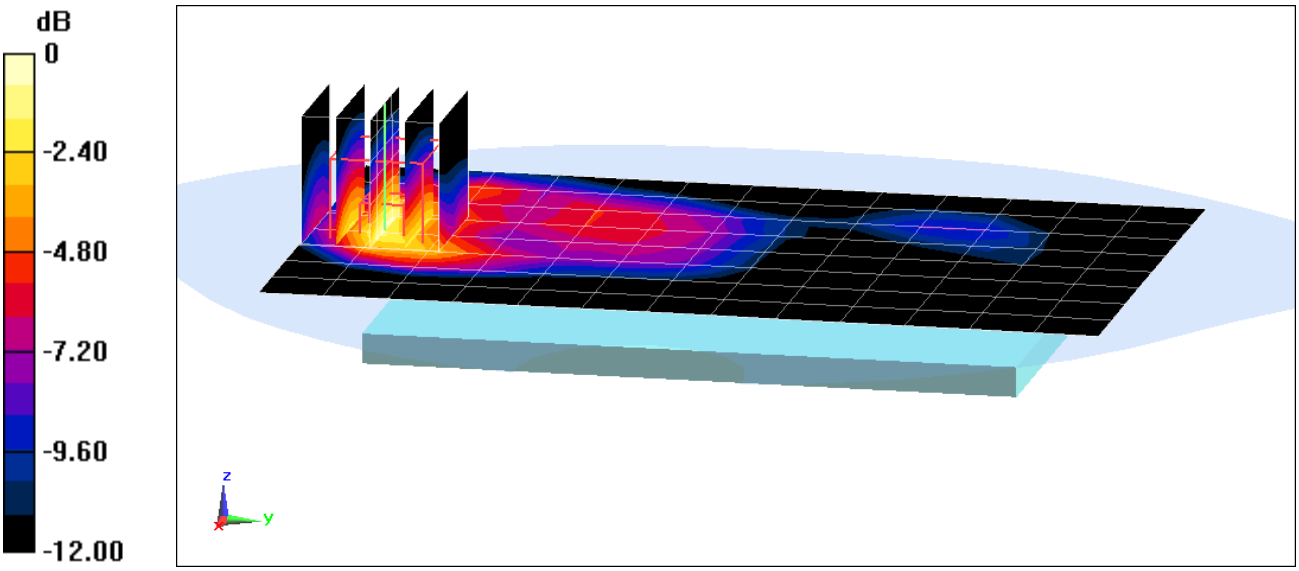
Communication System: UID 0, CDMA; Frequency: 1851.25 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1851.25 MHz; σ = 1.489 S/m; ε_r = 52.631; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 22.9°C; Tissue Temp: 22.4°C

Probe: ES3DV3 - SN3332; ConvF(4.77, 4.77, 4.77) @ 1851.25 MHz; Calibrated: 8/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: PCS CDMA, Body SAR, Back side, Low.ch

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.77 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.19 W/kg
SAR(1 g) = 0.707 W/kg



0 dB = 0.888 W/kg = -0.52 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03286

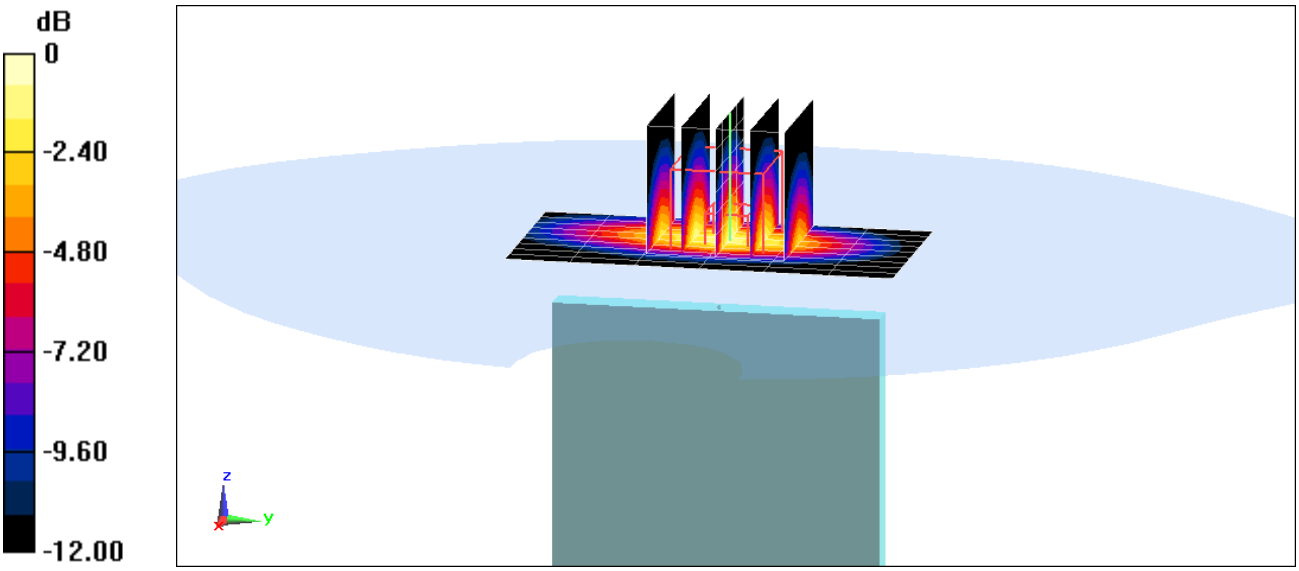
Communication System: UID 0, CDMA; Frequency: 1851.25 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1851.25 MHz; σ = 1.499 S/m; ε_r = 51.631; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-04-2019; Ambient Temp: 21.9°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3332; ConvF(4.77, 4.77, 4.77) @ 1851.25 MHz; Calibrated: 8/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: PCS EVDO Rev.0, 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 = 30.65 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 2.06 W/kg
SAR(1 g) = 1.19 W/kg



0 dB = 1.51 W/kg = 1.79 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03278

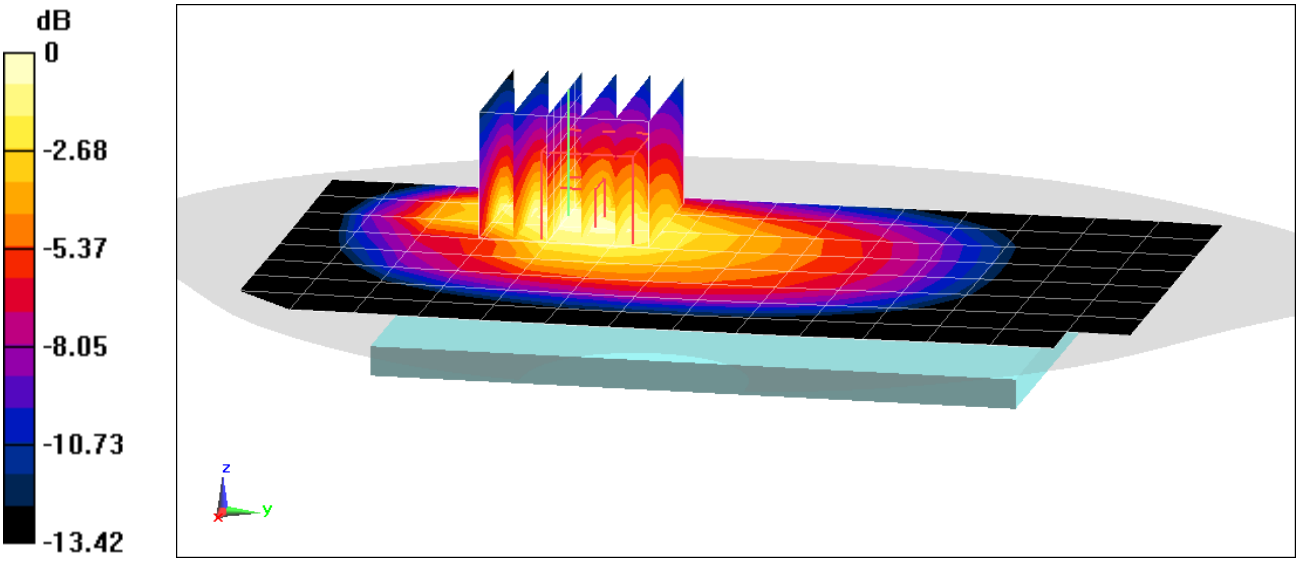
Communication System: UID 0, LTE Band 71; Frequency: 680.5 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 680.5 MHz; σ = 0.916 S/m; ε_r = 54.717; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-17-2018; Ambient Temp: 20.1°C; Tissue Temp: 20.1°C

Probe: EX3DV4 - SN7406; ConvF(9.91, 9.91, 9.91) @ 680.5 MHz; Calibrated: 5/22/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 71, 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 = 25.13 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.909 W/kg
SAR(1 g) = 0.545 W/kg



0 dB = 0.772 W/kg = -1.12 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03260

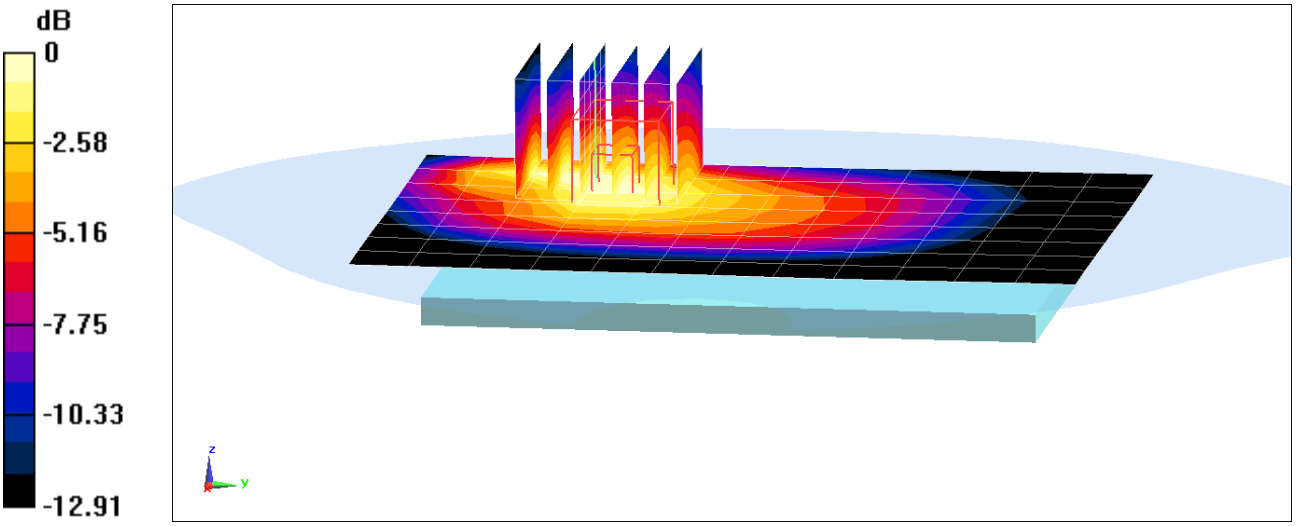
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.919 S/m; ε_r = 54.648; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-29-2018; Ambient Temp: 23.0°C; Tissue Temp: 23.5°C

Probe: EX3DV4 - SN7410; ConvF(9.87, 9.87, 9.87) @ 707.5 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 12, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 49 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 = 20.02 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.554 W/kg
SAR(1 g) = 0.346 W/kg



0 dB = 0.479 W/kg = -3.20 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03286

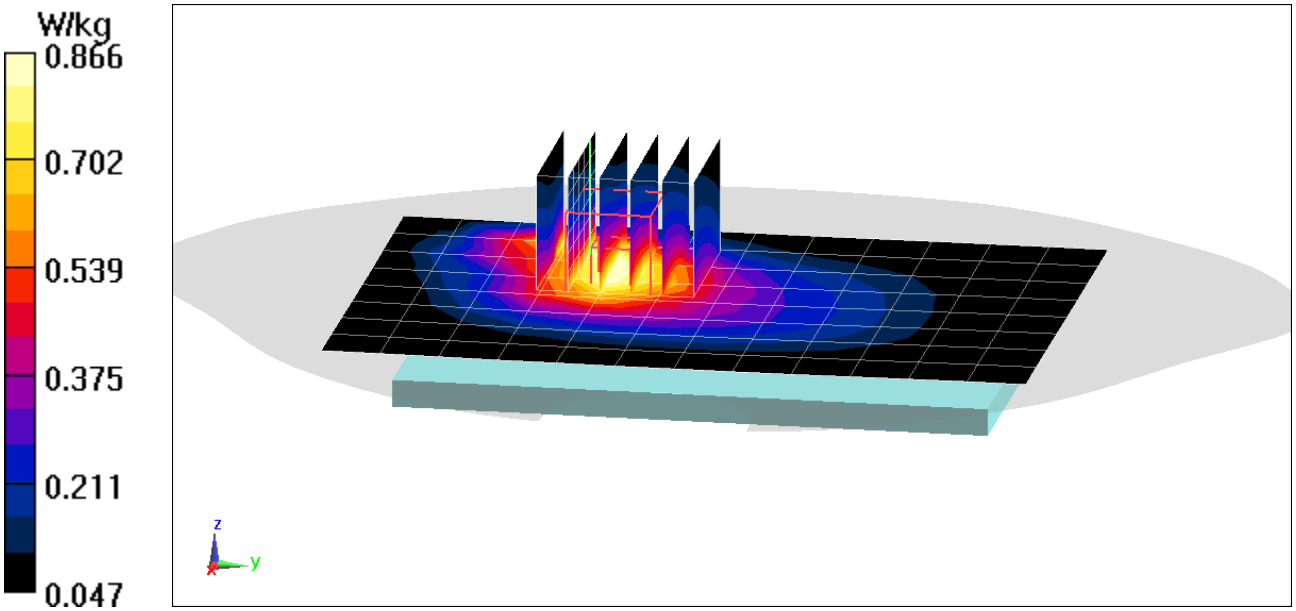
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 782 MHz; σ = 0.955 S/m; ε_r = 53.956; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-19-2018; Ambient Temp: 21.1°C; Tissue Temp: 19.7°C

Probe: EX3DV4 - SN7406; ConvF(9.91, 9.91, 9.91) @ 782 MHz; Calibrated: 5/22/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 13, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 25 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 = 26.46 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.05 W/kg
SAR(1 g) = 0.652 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03260

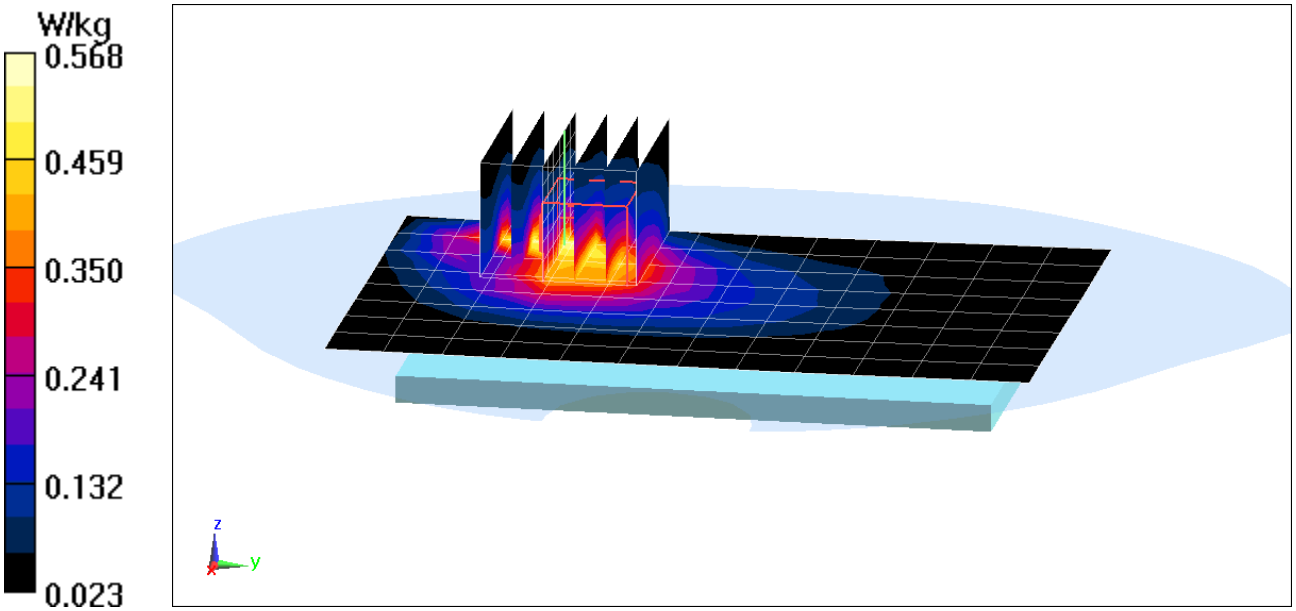
Communication System: UID 0, LTE Band 14; Frequency: 793 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 793 MHz; σ = 1.005 S/m; ε_r = 53.677; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-29-2018; Ambient Temp: 23.0°C; Tissue Temp: 23.5°C

Probe: EX3DV4 - SN7410; ConvF(9.87, 9.87, 9.87) @ 793 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 14, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (7x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.57 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.668 W/kg
SAR(1 g) = 0.386 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03278

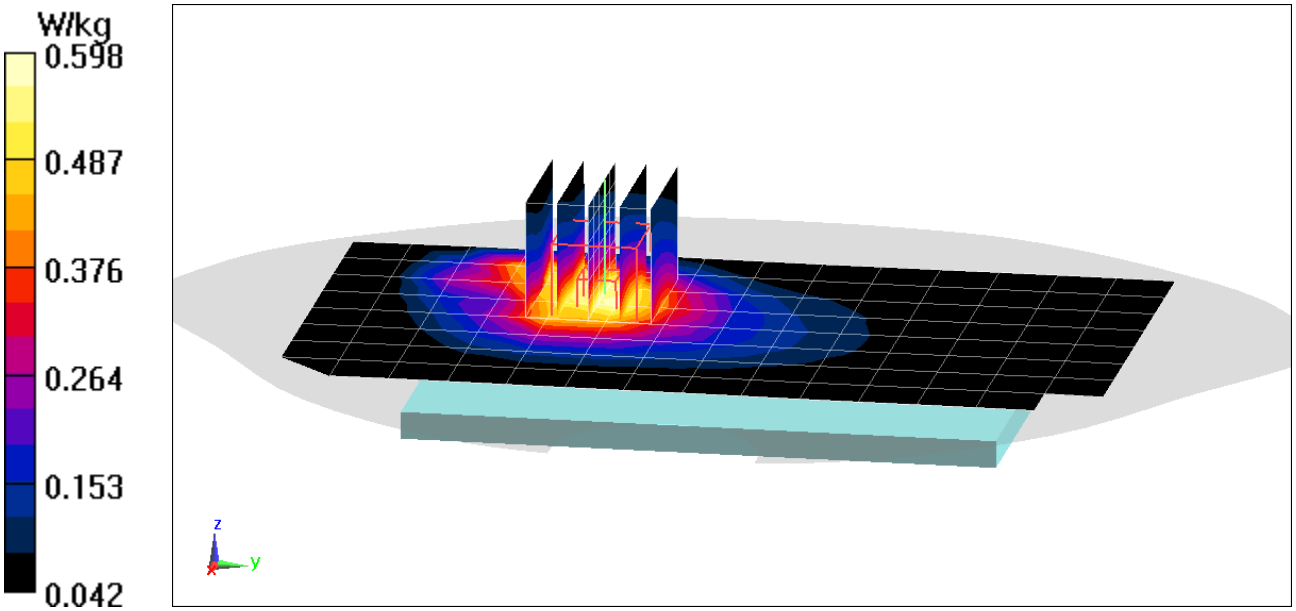
Communication System: UID 0, LTE Band 5; Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.5 MHz; σ = 0.966 S/m; ε_r = 53.592; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-26-2018; Ambient Temp: 19.9°C; Tissue Temp: 19.1°C

Probe: ES3DV3 - SN3347; ConvF(6.37, 6.37, 6.37) @ 836.5 MHz; Calibrated: 3/27/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 5 (Cell.), Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.16 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.836 W/kg
SAR(1 g) = 0.519 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03286

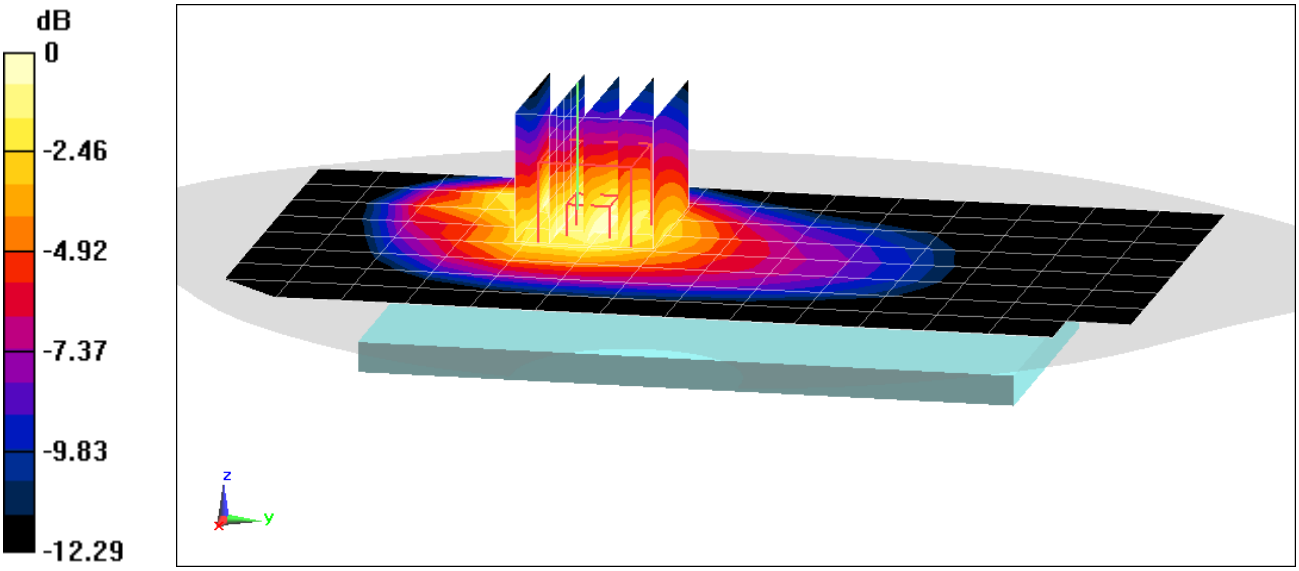
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 MHz Body Medium parameters used (interpolated):
f = 831.5 MHz; σ = 0.994 S/m; ε_r = 52.617; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-17-2018; Ambient Temp: 20.1°C; Tissue Temp: 20.5°C

Probe: ES3DV3 - SN3347; ConvF(6.37, 6.37, 6.37) @ 831.5 MHz; Calibrated: 3/27/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 26 (Cell.), Body SAR, Back side, Mid.ch,
15 MHz Bandwidth, QPSK, 1 RB, 36 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.47 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.861 W/kg
SAR(1 g) = 0.510 W/kg



0 dB = 0.604 W/kg = -2.19 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03278

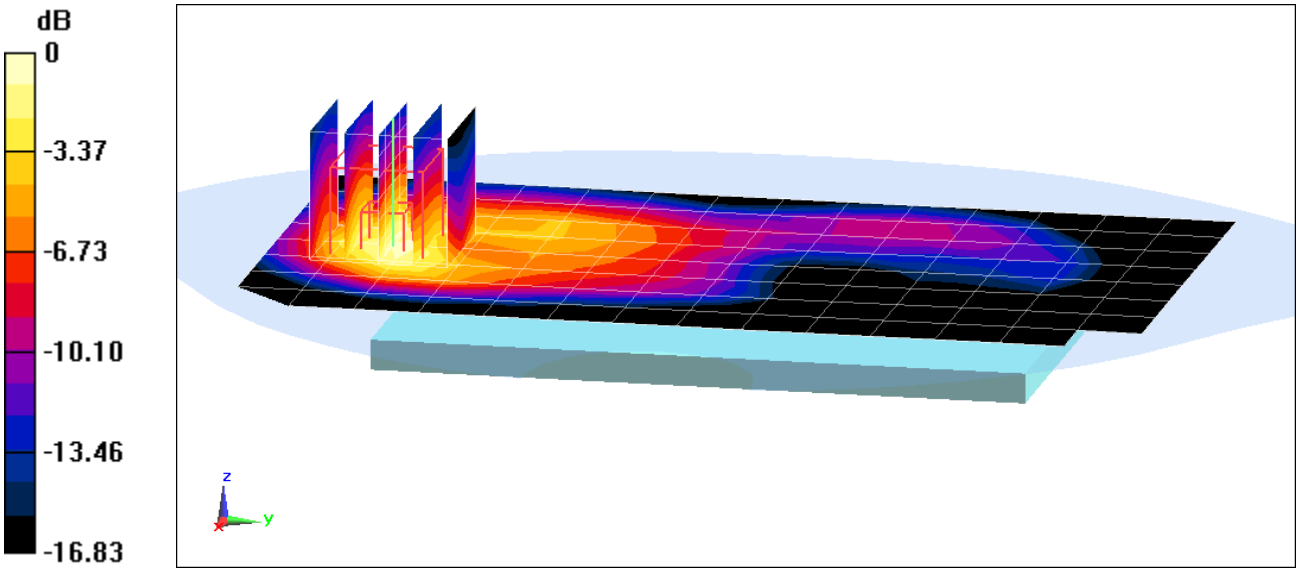
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1745 MHz; σ = 1.506 S/m; ε_r = 52.53; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7357; ConvF(8.43, 8.43, 8.43) @ 1745 MHz; Calibrated: 4/18/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 66 (AWS), Body SAR, Back side, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 50 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 = 19.70 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.917 W/kg
SAR(1 g) = 0.525 W/kg



0 dB = 0.769 W/kg = -1.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03278

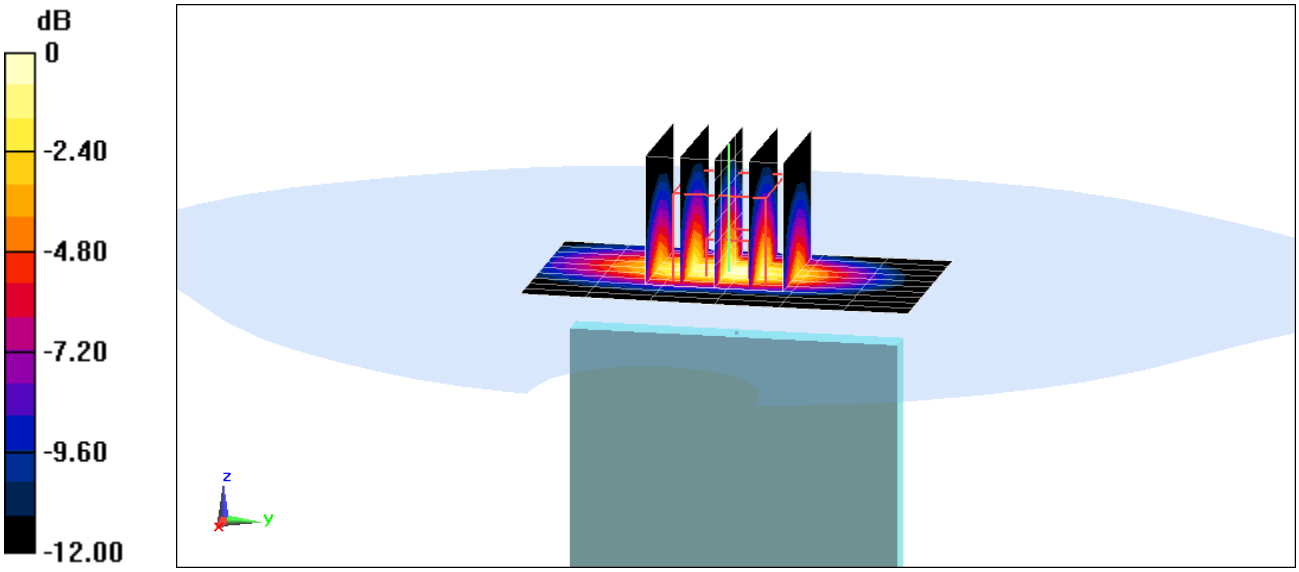
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1745 MHz; σ = 1.506 S/m; ε_r = 52.53; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7357; ConvF(8.43, 8.43, 8.43) @ 1745 MHz; Calibrated: 4/18/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 66 (AWS), Body SAR, Bottom Edge, Mid.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

Area Scan (11x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.88 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.46 W/kg
SAR(1 g) = 0.823 W/kg



0 dB = 1.25 W/kg = 0.97 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03924

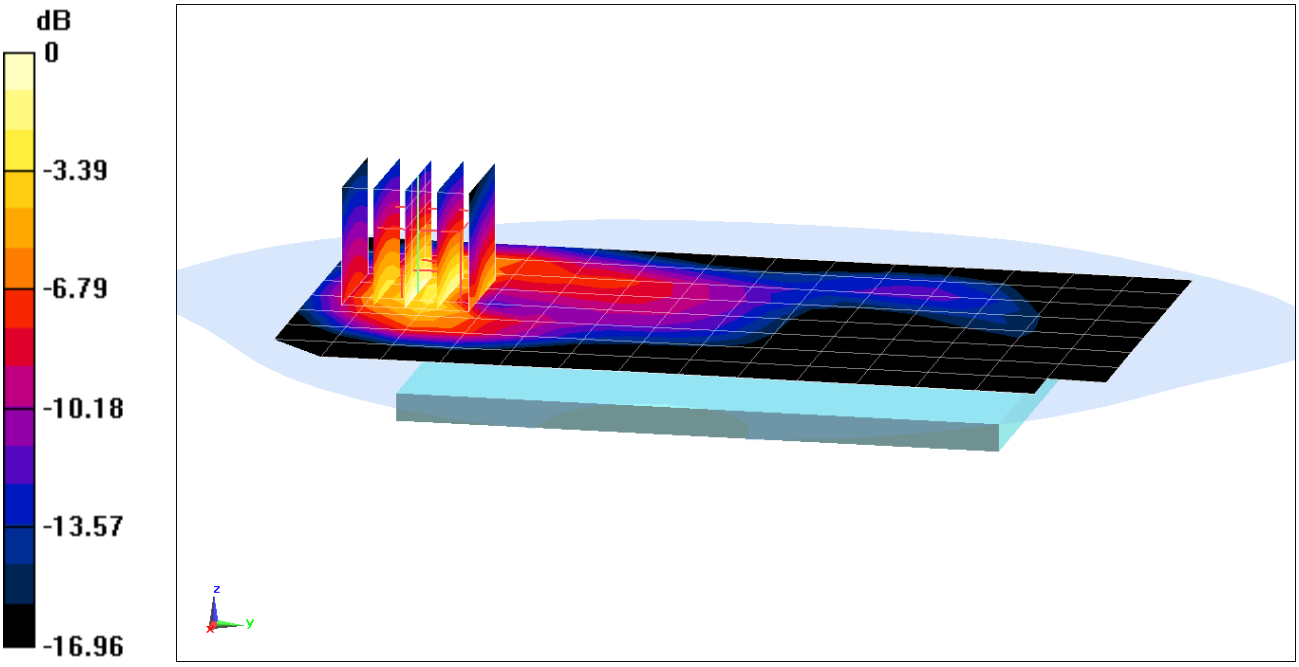
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1882.5 MHz; σ = 1.553 S/m; ε_r = 51.077; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-05-2018; Ambient Temp: 24.5°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3332; ConvF(4.77, 4.77, 4.77) @ 1882.5 MHz; Calibrated: 8/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.81 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.52 W/kg
SAR(1 g) = 0.897 W/kg



0 dB = 1.09 W/kg = 0.37 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03924

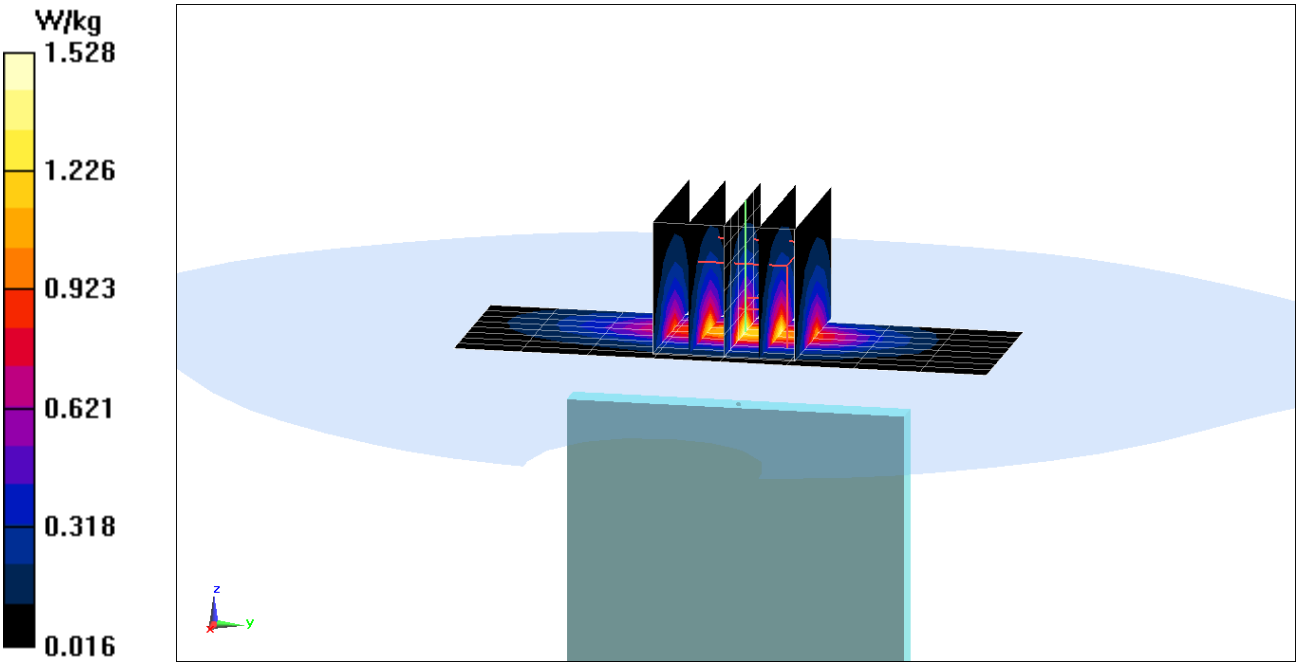
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1860 MHz; σ = 1.528 S/m; ε_r = 51.138; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-05-2018; Ambient Temp: 24.5°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3332; ConvF(4.77, 4.77, 4.77) @ 1860 MHz; Calibrated: 8/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

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

Area Scan (9x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.32 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 2.16 W/kg
SAR(1 g) = 1.24 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03294

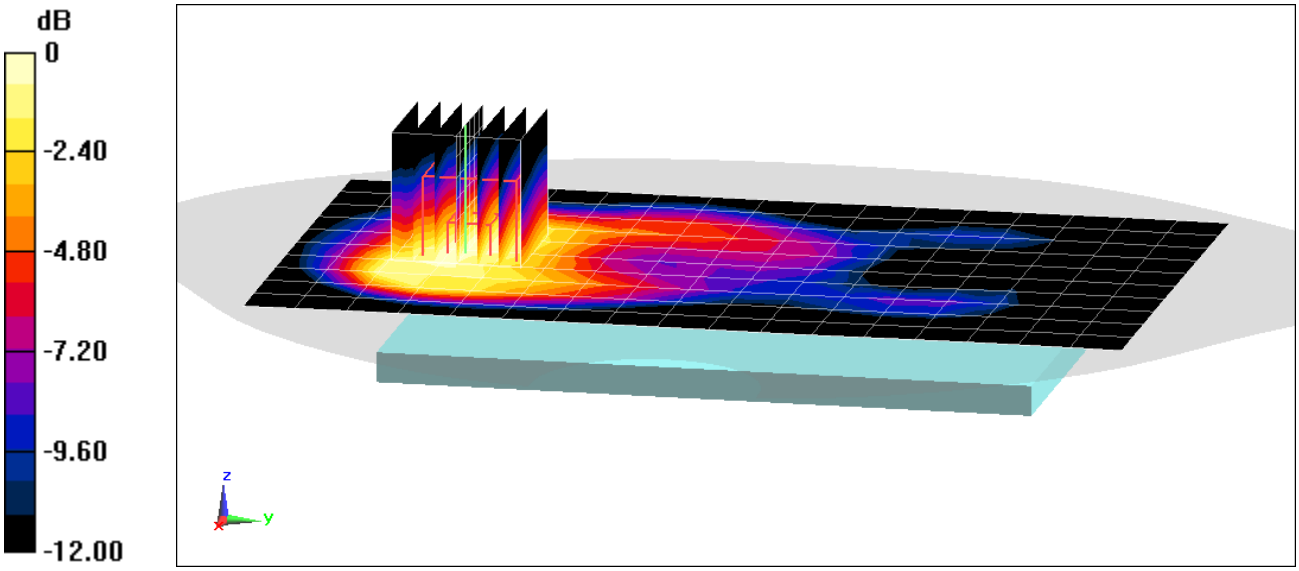
Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2310 MHz; σ = 1.888 S/m; ε_r = 51.471; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 22.1°C; Tissue Temp: 22.6°C

Probe: ES3DV3 - SN3319; ConvF(4.63, 4.63, 4.63) @ 2310 MHz; Calibrated: 3/13/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 30, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.38 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.504 W/kg
SAR(1 g) = 0.290 W/kg



0 dB = 0.352 W/kg = -4.53 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03294

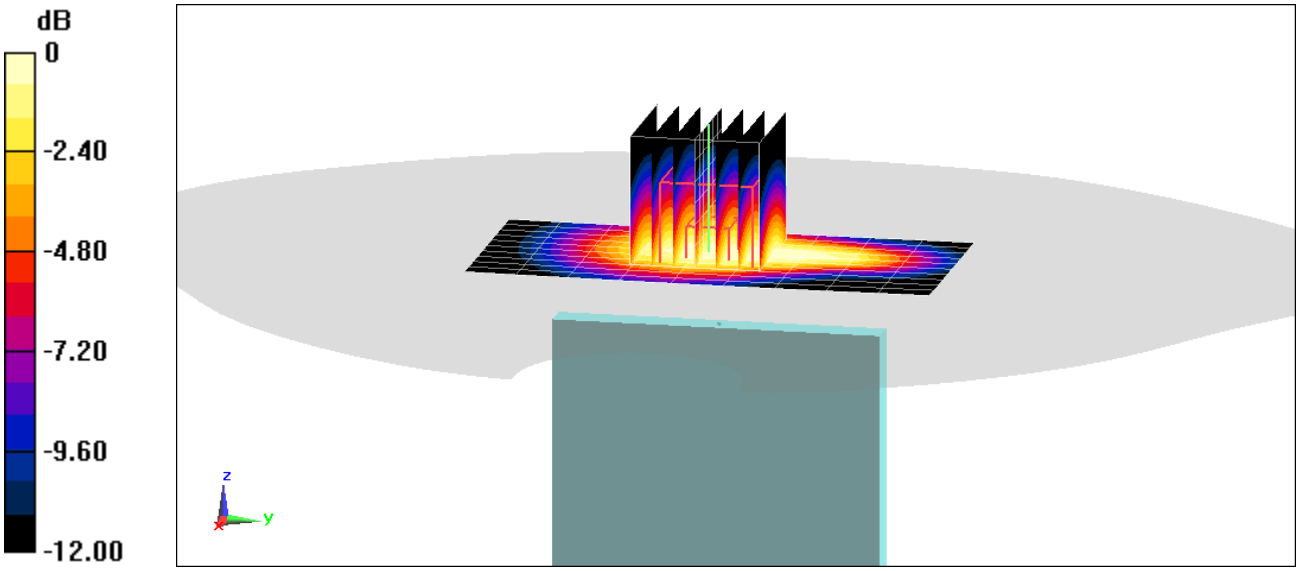
Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2310 MHz; σ = 1.888 S/m; ε_r = 51.471; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 22.1°C; Tissue Temp: 22.6°C

Probe: ES3DV3 - SN3319; ConvF(4.63, 4.63, 4.63) @ 2310 MHz; Calibrated: 3/13/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 30, Body SAR, Bottom Edge, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (11x10x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.26 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.688 W/kg
SAR(1 g) = 0.386 W/kg



0 dB = 0.470 W/kg = -3.28 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03310

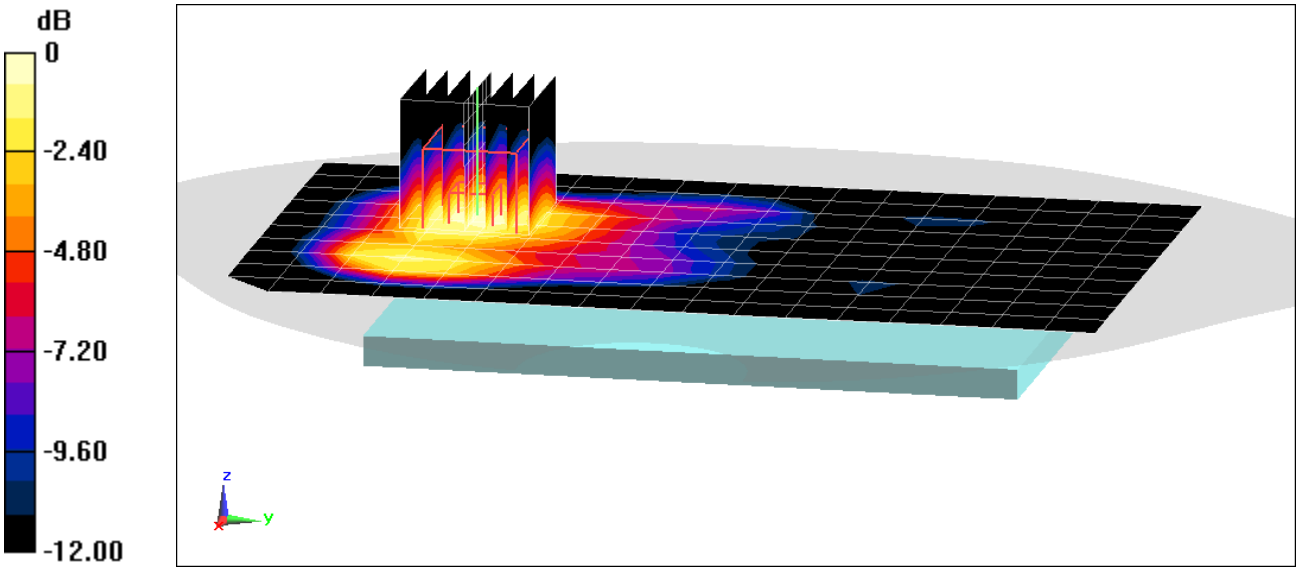
Communication System: UID 0, LTE Band 7; Frequency: 2560 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2560 MHz; σ = 2.173 S/m; ε_r = 50.747; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 22.1°C; Tissue Temp: 22.6°C

Probe: ES3DV3 - SN3319; ConvF(4.33, 4.33, 4.33) @ 2560 MHz; Calibrated: 3/13/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 7, Body SAR, Back side, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.62 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.482 W/kg
SAR(1 g) = 0.259 W/kg



0 dB = 0.319 W/kg = -4.96 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03310

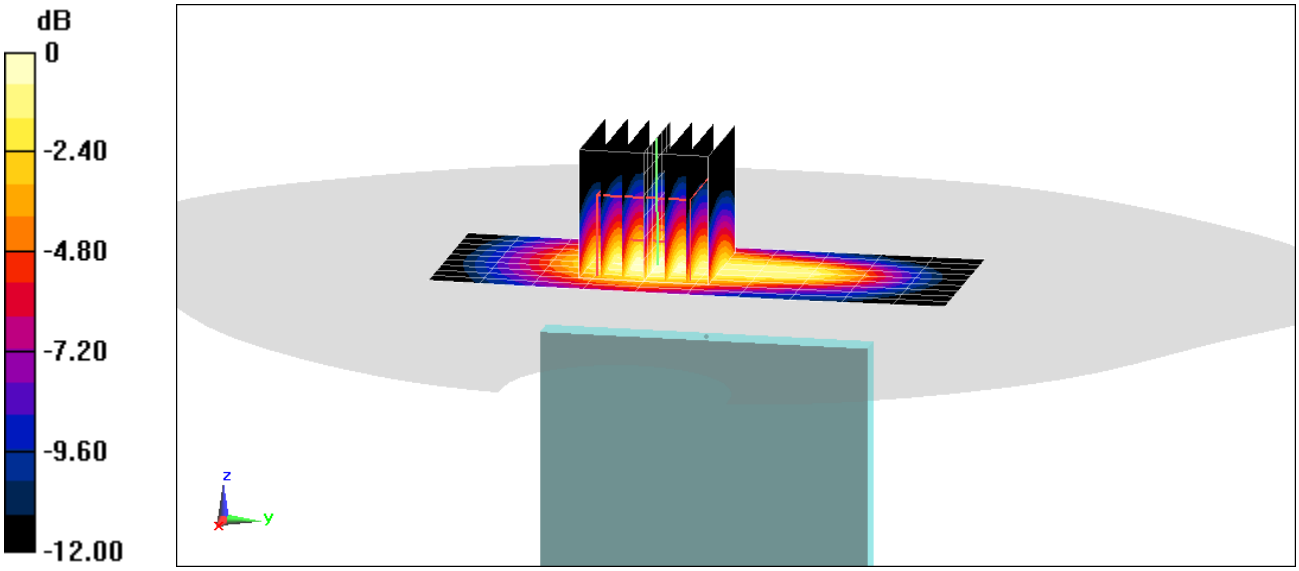
Communication System: UID 0, LTE Band 7; Frequency: 2560 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2560 MHz; σ = 2.173 S/m; ε_r = 50.747; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 22.1°C; Tissue Temp: 22.6°C

Probe: ES3DV3 - SN3319; ConvF(4.33, 4.33, 4.33) @ 2560 MHz; Calibrated: 3/13/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 7, Body SAR, Bottom Edge, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

Area Scan (10x11x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.06 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.633 W/kg
SAR(1 g) = 0.331 W/kg



0 dB = 0.411 W/kg = -3.86 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03278

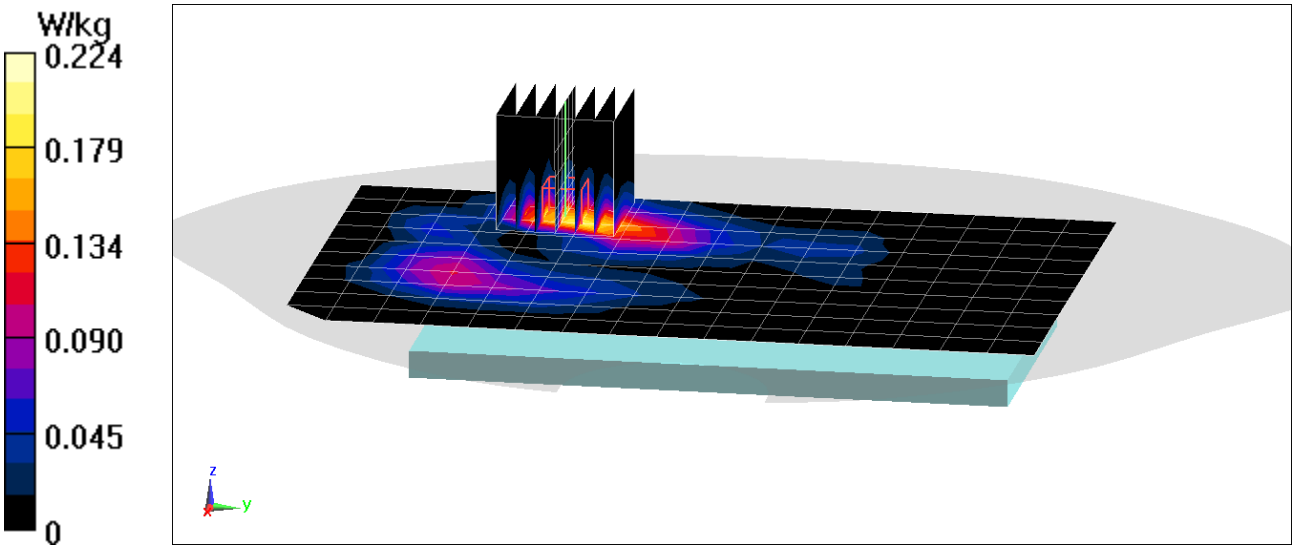
Communication System: UID 0, LTE Band 48; Frequency: 3646.7 MHz; Duty Cycle: 1:1.58
Medium: 3500-3700 Body Medium parameters used (interpolated):
f = 3646.7 MHz; σ = 3.329 S/m; ε_r = 49.756; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-28-2018; Ambient Temp: 22.4°C; Tissue Temp: 20.3°C

Probe: EX3DV4 - SN3914; ConvF(6.64, 6.64, 6.64) @ 3646.7 MHz; Calibrated: 2/14/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1558; Calibrated: 10/3/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 48, Body SAR, Back side, Mid-High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x8)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 6.461 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.308 W/kg
SAR(1 g) = 0.117 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03278

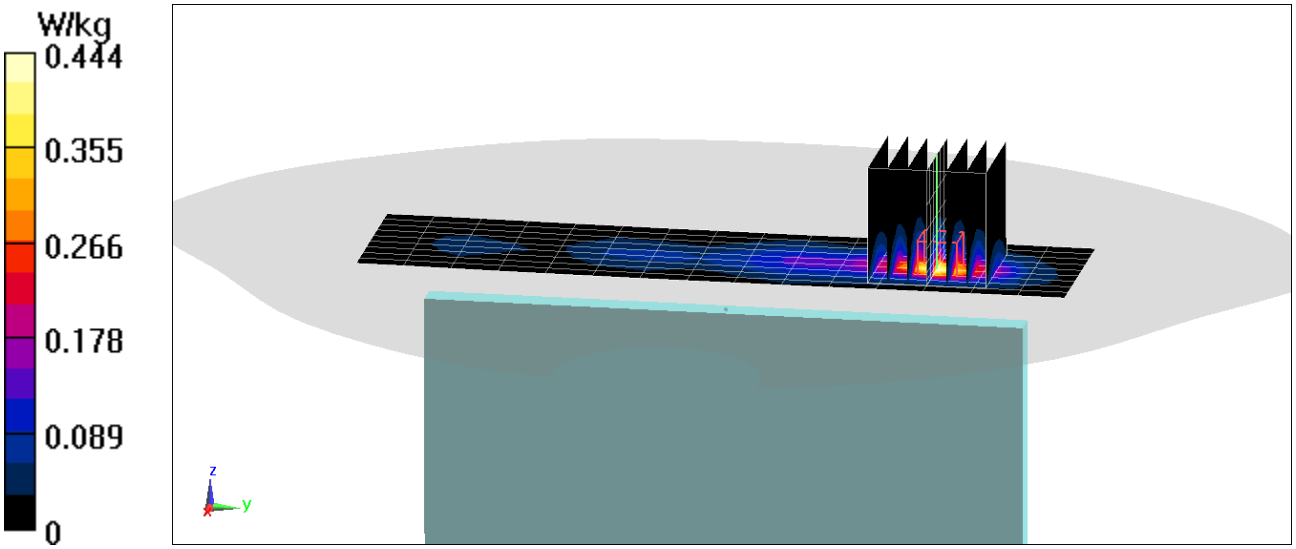
Communication System: UID 0, LTE Band 48; Frequency: 3646.7 MHz; Duty Cycle: 1:1.58
Medium: 3500-3700 Body Medium parameters used (interpolated):
f = 3646.7 MHz; σ = 3.329 S/m; ε_r = 49.756; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-28-2018; Ambient Temp: 22.4°C; Tissue Temp: 20.3°C

Probe: EX3DV4 - SN3914; ConvF(6.64, 6.64, 6.64) @ 3646.7 MHz; Calibrated: 2/14/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1558; Calibrated: 10/3/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 48, Body SAR, Right Edge, Mid-High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (10x16x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x8)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 8.873 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 0.623 W/kg
SAR(1 g) = 0.217 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03310

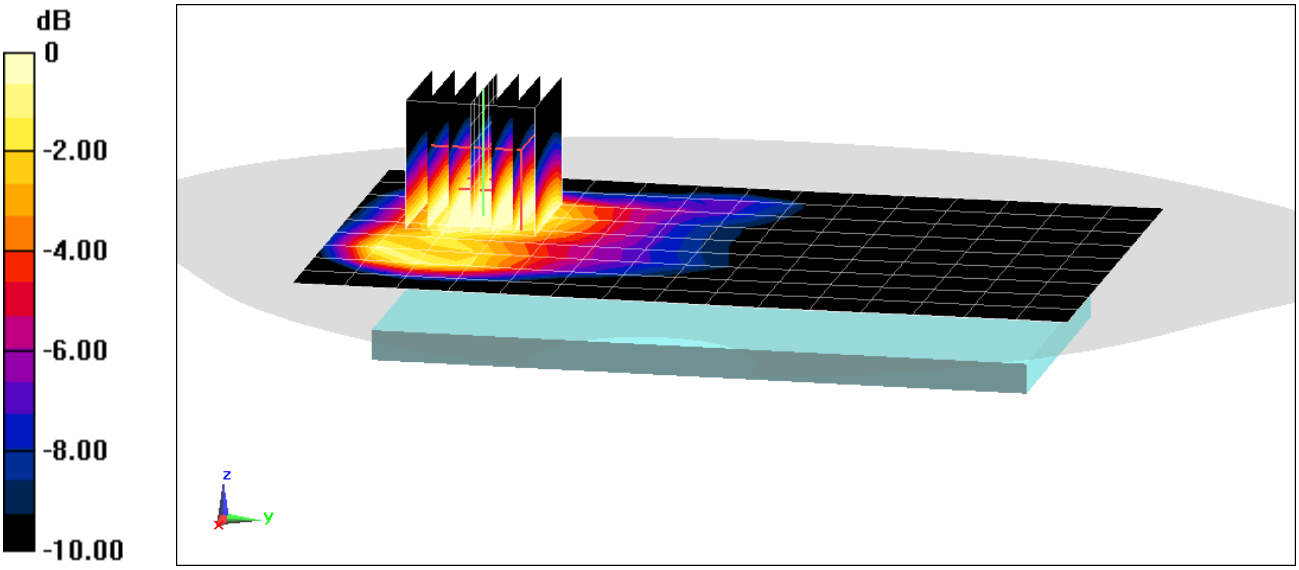
Communication System: UID 0, LTE Band 41 (Class 2), Frequency: 2549.5 MHz; Duty Cycle: 1:2.31
Medium: 2450 Body Medium parameters used:
f = 2550 MHz; σ = 2.161 S/m; ε_r = 50.776; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 22.1°C; Tissue Temp: 22.6°C

Probe: ES3DV3 - SN3319; ConvF(4.33, 4.33, 4.33) @ 2549.5 MHz; Calibrated: 3/13/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 41 PC2, Body SAR, Back side, Low-Mid.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 = 14.92 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.735 W/kg
SAR(1 g) = 0.389 W/kg



0 dB = 0.271 W/kg = -5.67 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03336

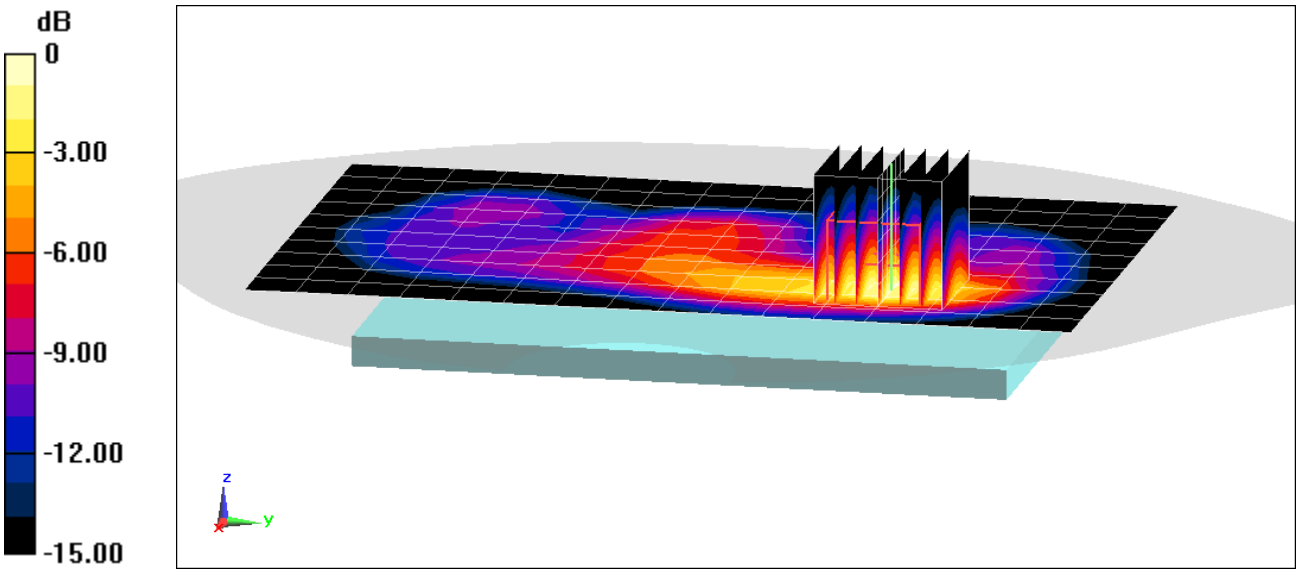
Communication System: UID 0, IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2437 MHz; σ = 1.993 S/m; ε_r = 52.637; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 21.7°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3347; ConvF(4.64, 4.64, 4.64) @ 2437 MHz; Calibrated: 3/27/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: IEEE 802.11b Antenna 1, 22 MHz Bandwidth, Body SAR, Ch 06, 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 = 6.362 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.589 W/kg
SAR(1 g) = 0.280 W/kg



0 dB = 0.369 W/kg = -4.33 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03336

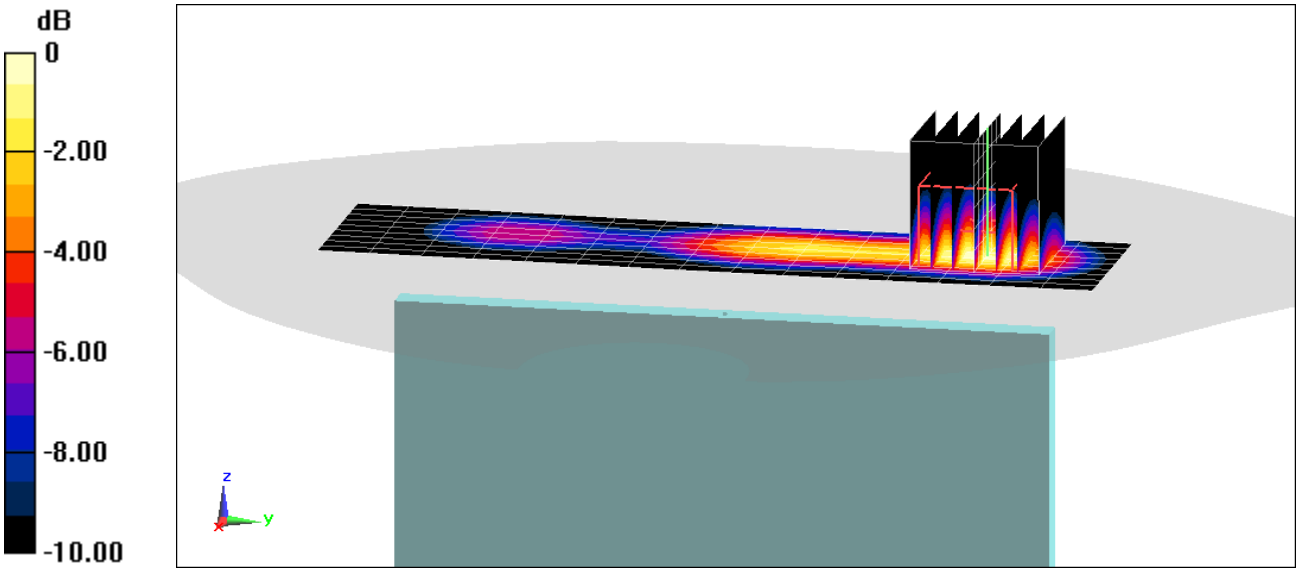
Communication System: UID 0, IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2437 MHz; σ = 1.993 S/m; ε_r = 52.637; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 21.7°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3347; ConvF(4.64, 4.64, 4.64) @ 2437 MHz; Calibrated: 3/27/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: IEEE 802.11b Antenna 1, 22 MHz Bandwidth,
Body SAR, Ch 06, 1 Mbps, Left Edge SAR

Area Scan (10x16x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.677 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.694 W/kg
SAR(1 g) = 0.336 W/kg



0 dB = 0.438 W/kg = -3.59 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03336

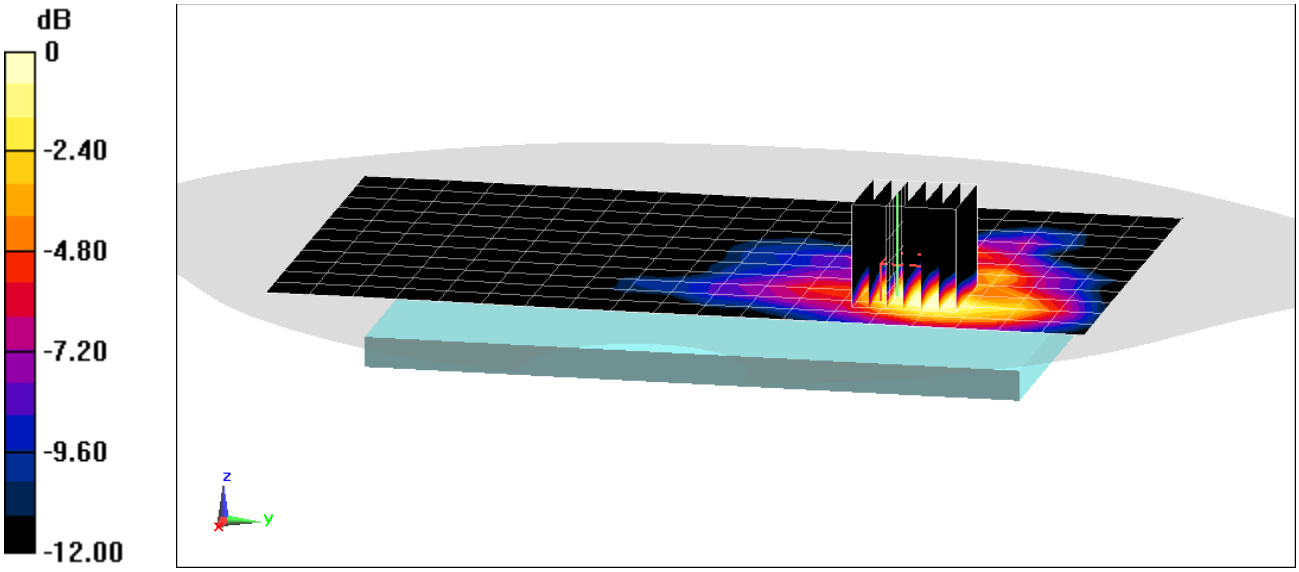
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5785 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5785 MHz; σ = 6.219 S/m; ε_r = 46.931; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-26-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7308; ConvF(4.18, 4.18, 4.18) @ 5785 MHz; Calibrated: 8/23/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1558; Calibrated: 10/3/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: IEEE 802.11a Antenna 1, UNII-3, 20 MHz Bandwidth, Body SAR, Ch 157, 6 Mbps, Back Side

Area Scan (12x20x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 9.727 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 2.50 W/kg
SAR(1 g) = 0.561 W/kg



0 dB = 1.29 W/kg = 1.11 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03336

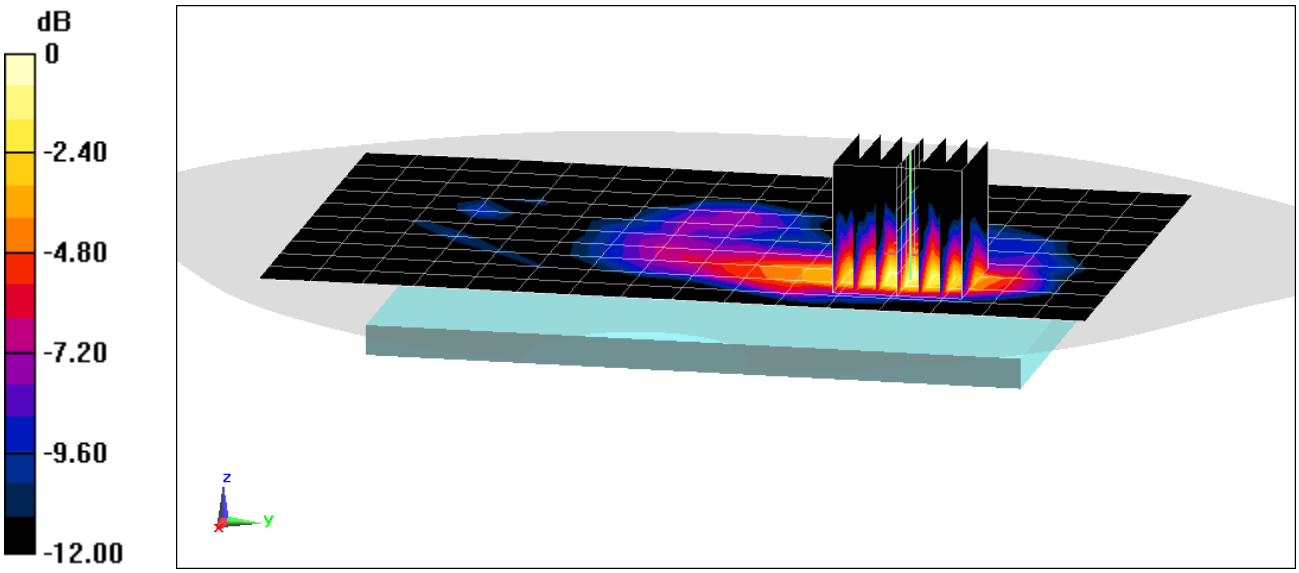
Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.299
Medium: 2450 Body Medium parameters used (interpolated):
f = 2441 MHz; σ = 1.998 S/m; ε_r = 52.62; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 21.7°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3347; ConvF(4.64, 4.64, 4.64) @ 2441 MHz; Calibrated: 3/27/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: 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 = 3.100 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.0390 W/kg
SAR(1 g) = 0.017 W/kg



0 dB = 0.0224 W/kg = -16.50 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03286

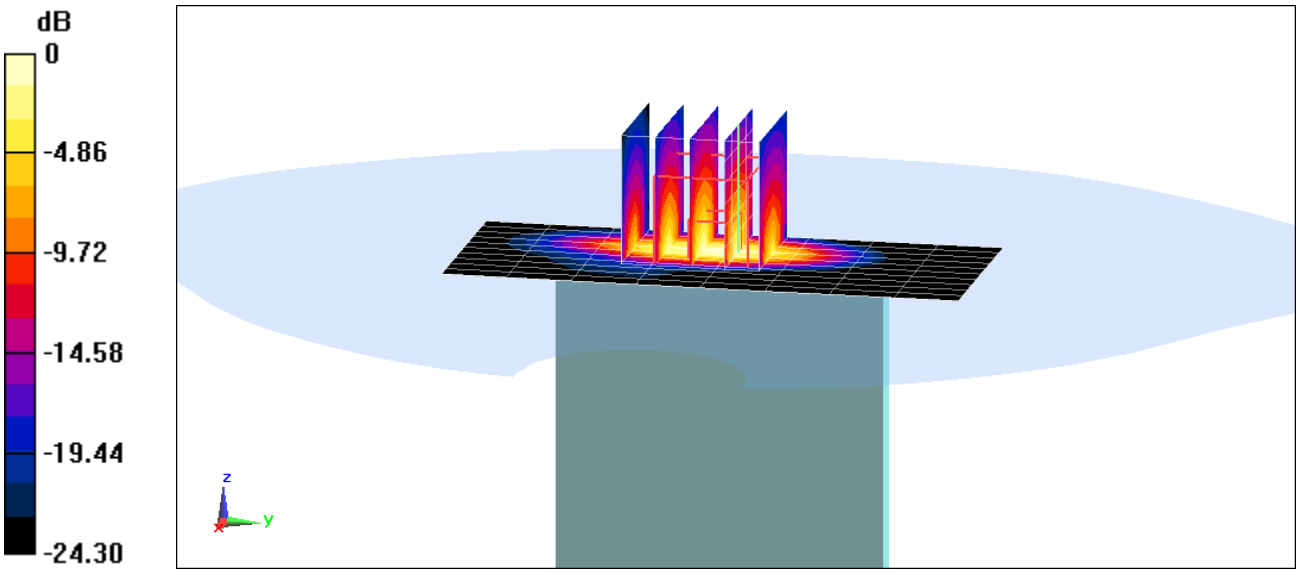
Communication System: UID 0, UMTS; Frequency: 1752.6 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1752.6 MHz; σ = 1.515 S/m; ε_r = 52.506; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 01-02-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7357; ConvF(8.43, 8.43, 8.43) @ 1752.6 MHz; Calibrated: 4/18/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 1750, Phablet SAR, Bottom Edge, High.ch

Area Scan (11x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 69.67 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 15.1 W/kg
SAR(10 g) = 2.7 W/kg



0 dB = 11.2 W/kg = 10.49 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03294

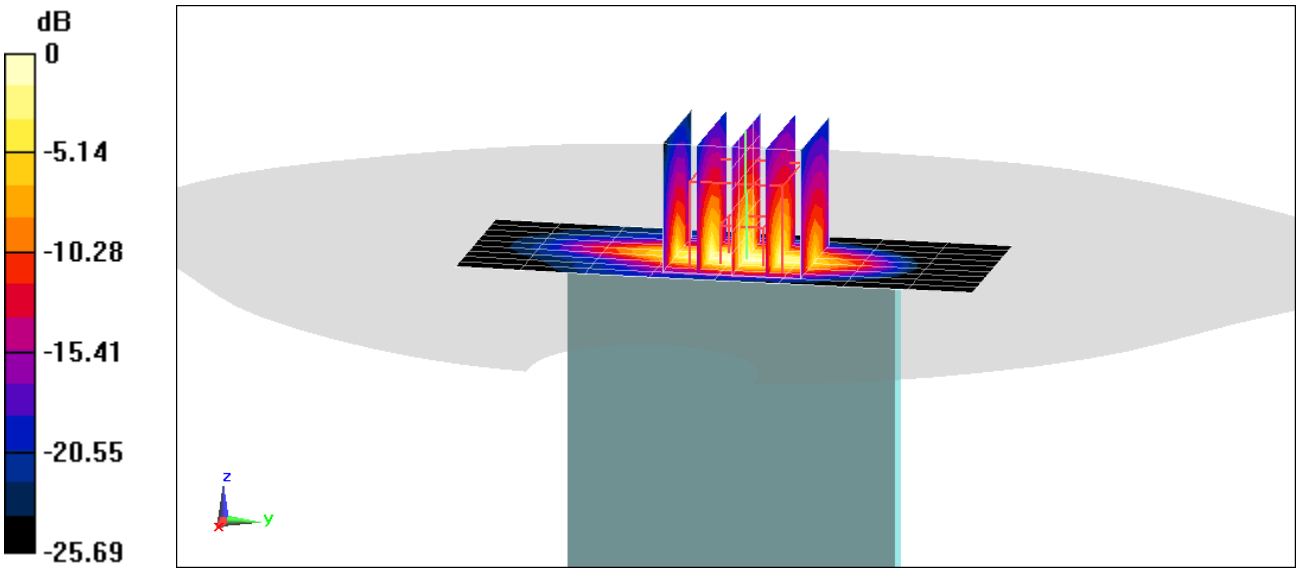
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.566 S/m; ε_r = 52.53; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 01-02-2019; Ambient Temp: 22.0°C; Tissue Temp: 19.7°C

Probe: EX3DV4 - SN7308; ConvF(7.79, 7.79, 7.79) @ 1880 MHz; Calibrated: 8/23/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1558; Calibrated: 10/3/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 1900, Phablet SAR, Bottom Edge, Mid.ch

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 50.53 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 8.22 W/kg
SAR(10 g) = 1.39 W/kg



0 dB = 6.66 W/kg = 8.23 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03286

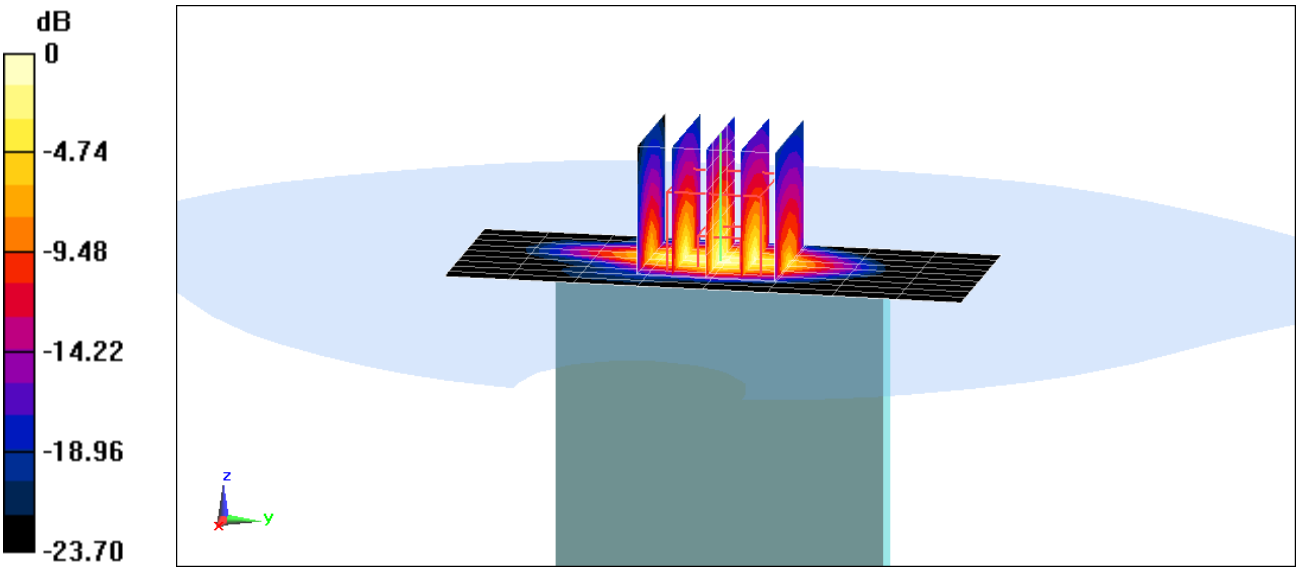
Communication System: UID 0, CDMA; Frequency: 1851.25 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1851.25 MHz; σ = 1.499 S/m; ε_r = 51.631; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 01-04-2019; Ambient Temp: 21.9°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3332; ConvF(4.77, 4.77, 4.77) @ 1851.25 MHz; Calibrated: 8/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: PCS EVDO Rev.0 , Body SAR, Bottom Edge, Low.ch

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 68.17 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 12.5 W/kg
SAR(10 g) = 2.28 W/kg



0 dB = 7.89 W/kg = 8.97 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03278

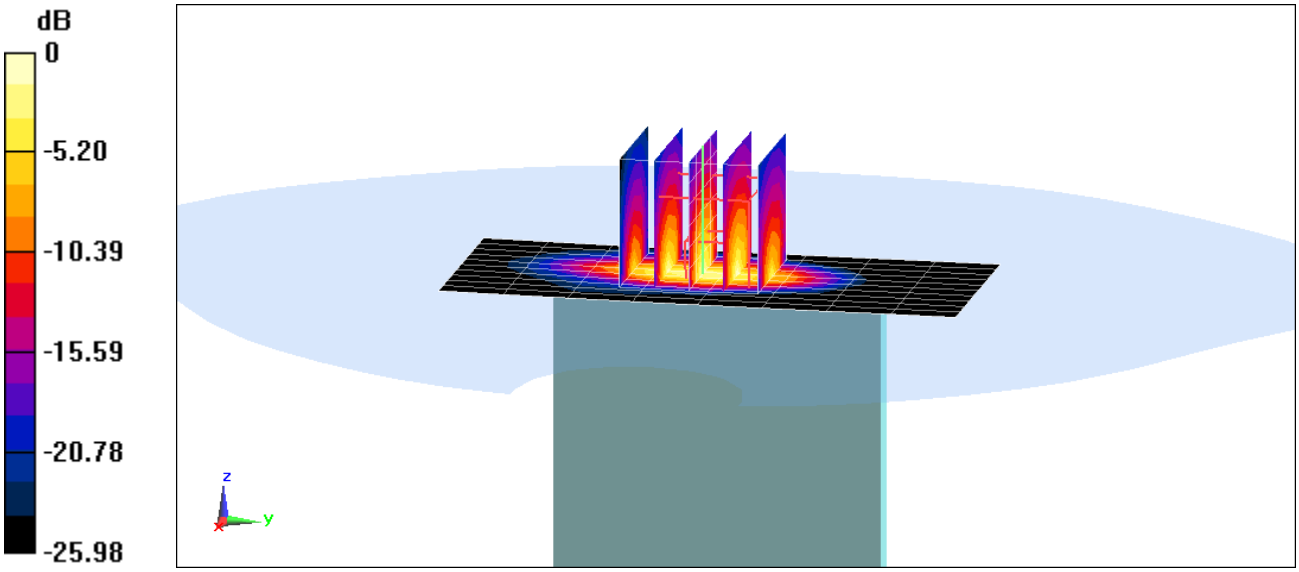
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1770 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1770 MHz; σ = 1.534 S/m; ε_r = 52.432; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 01-02-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7357; ConvF(8.43, 8.43, 8.43) @ 1770 MHz; Calibrated: 4/18/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 66 (AWS), Phablet SAR, Bottom Edge, High.ch, 20 MHz Bandwidth, QPSK, 50 RB, 25 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 = 67.28 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 14.1 W/kg
SAR(10 g) = 2.36 W/kg



0 dB = 11.4 W/kg = 10.57 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03286

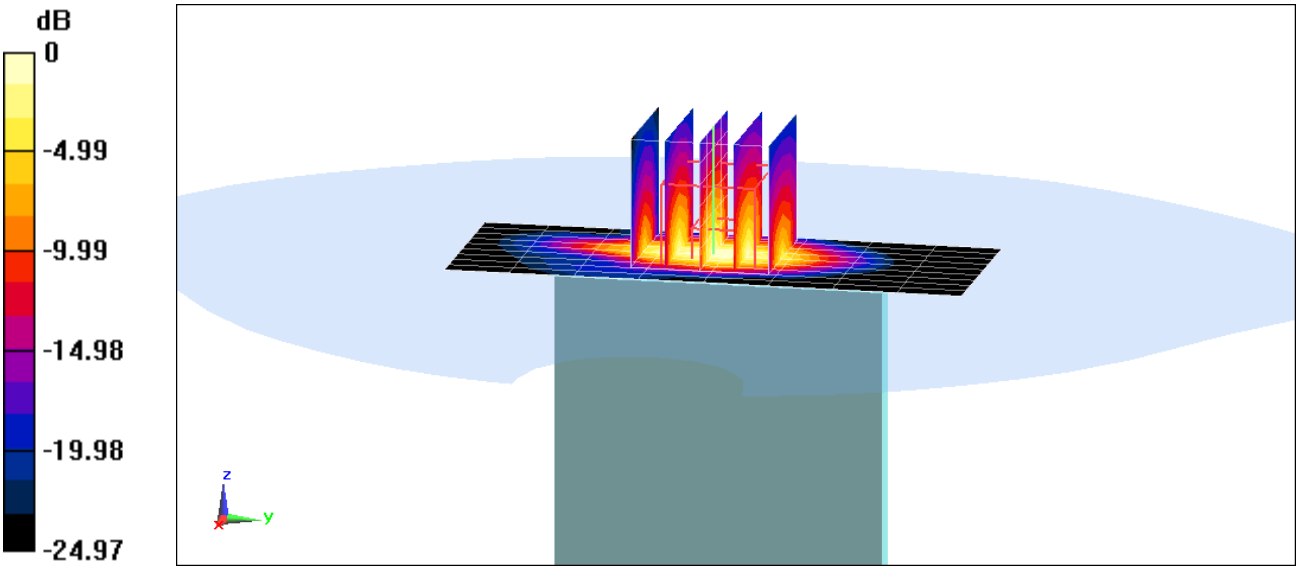
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1882.5 MHz; σ = 1.535 S/m; ε_r = 51.508; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 01-04-2019; Ambient Temp: 21.9°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3332; ConvF(4.77, 4.77, 4.77) @ 1882.5 MHz; Calibrated: 8/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 25 (PCS), Phablet SAR, Bottom Edge, Mid.ch, 20 MHz Bandwidth, QPSK, 50 RB, 25 RB Offset

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 72.29 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 14.2 W/kg
SAR(10 g) = 2.57 W/kg



0 dB = 9.09 W/kg = 9.59 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG820UM; Type: Portable Handset; Serial: 03336

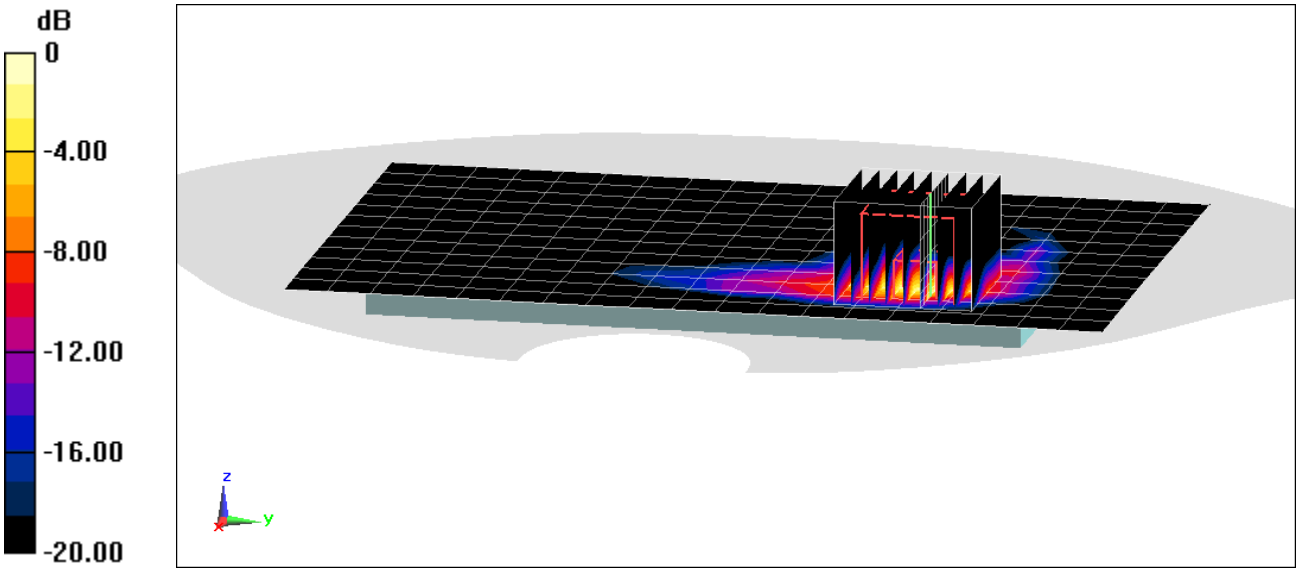
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5620 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5620 MHz; σ = 5.959 S/m; ε_r = 47.254; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-26-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7308; ConvF(4, 4, 4) @ 5620 MHz; Calibrated: 8/23/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1558; Calibrated: 10/3/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: IEEE 802.11a Antenna 1, U-NII-2C, 20 MHz Bandwidth, Phablet SAR, Ch 124, 6 Mbps, Back Side

Area Scan (13x20x1): 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 = 3.232 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 29.7 W/kg
SAR(10 g) = 1.35 W/kg



0 dB = 14.2 W/kg = 11.52 dBW/kg

APPENDIX B: SYSTEM VERIFICATION

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PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1003

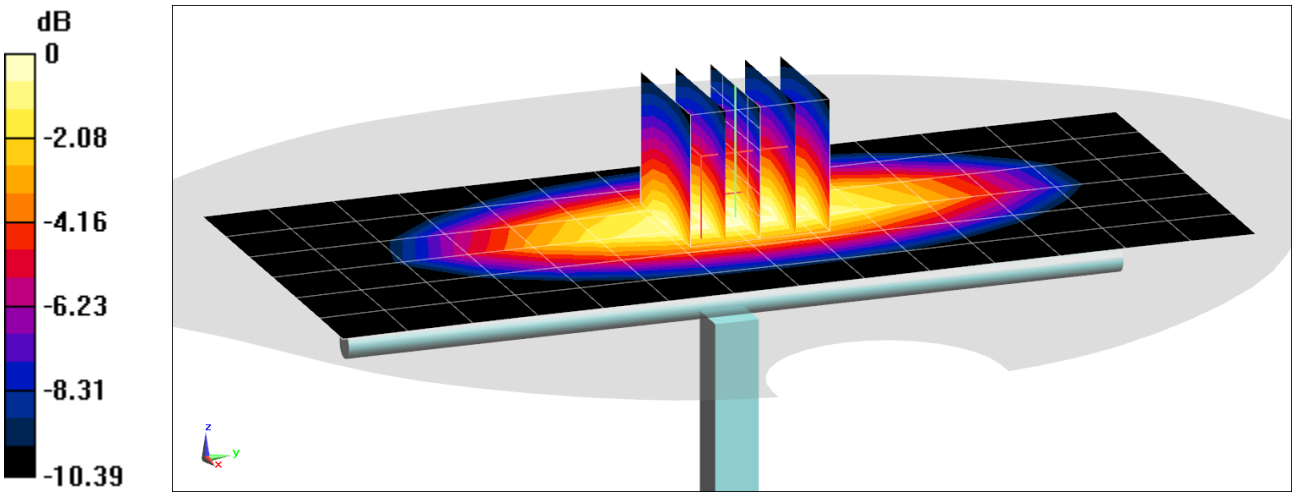
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Head; Medium parameters used (interpolated):
f = 750 MHz; σ = 0.906 S/m; ε_r = 41.172; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-26-2018; Ambient Temp: 22.5°C; Tissue Temp: 19.8°C

Probe: ES3DV3 - SN3287; ConvF(6.76, 6.76, 6.76) @ 750 MHz; Calibrated: 10/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 10/18/2018
Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

750 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.52 W/kg
SAR(1 g) = 1.67 W/kg
Deviation(1 g) = 0.85%



0 dB = 1.96 W/kg = 2.92 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

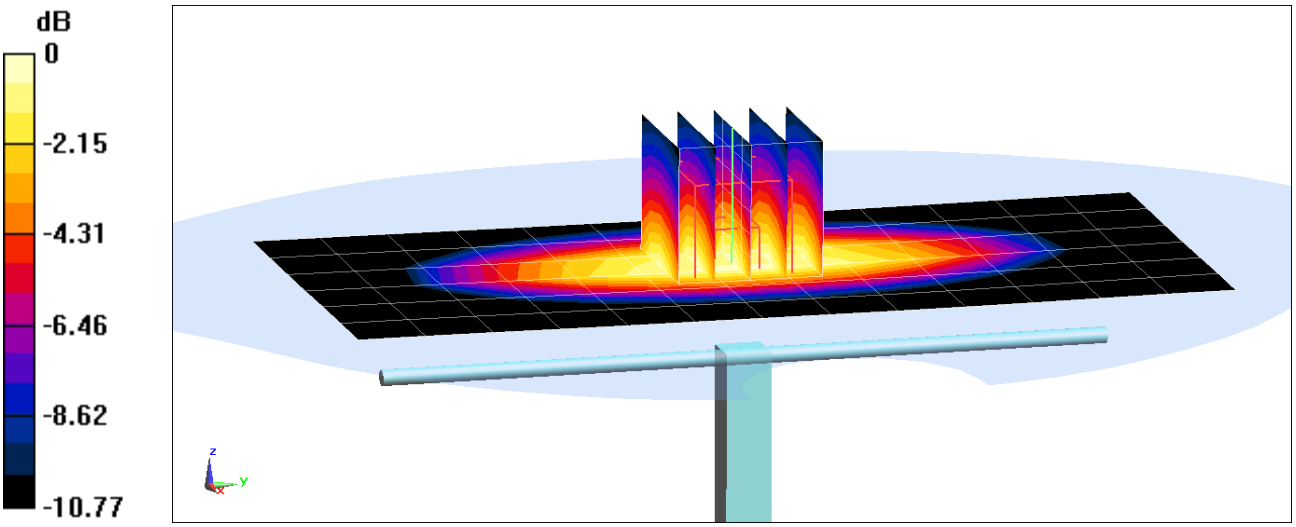
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used:
f = 835 MHz; σ = 0.929 S/m; ε_r = 42.966; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-19-2018; Ambient Temp: 23.0°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN7410; ConvF(9.81, 9.81, 9.81) @ 835 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 3.05 W/kg
SAR(1 g) = 2.04 W/kg
Deviation(1 g) = 7.71%



0 dB = 2.71 W/kg = 4.33 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1148

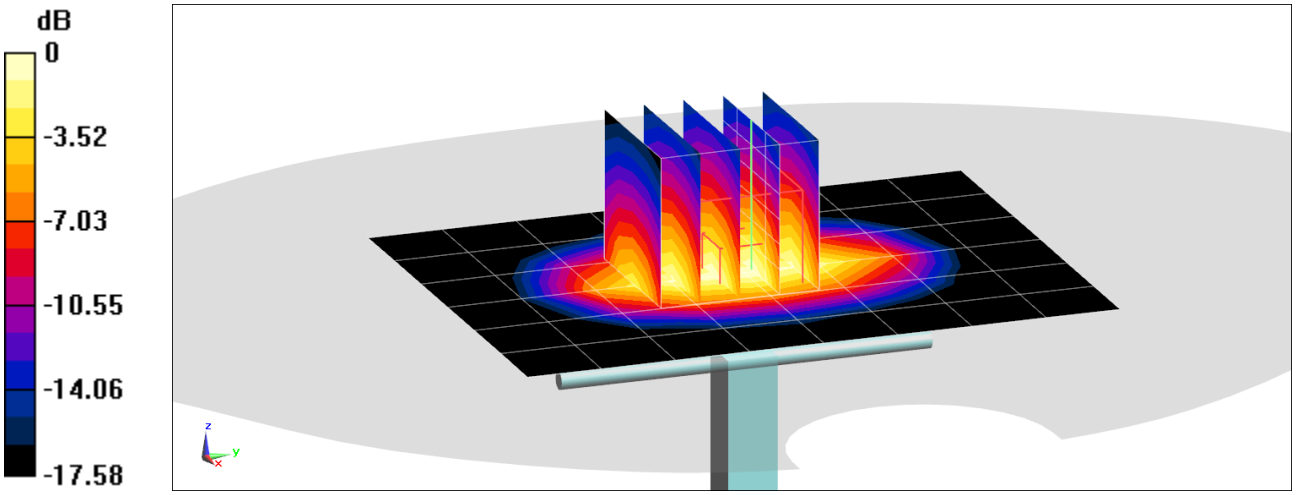
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Head; Medium parameters used:
f = 1750 MHz; σ = 1.382 S/m; ε_r = 38.985; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-25-2018; Ambient Temp: 19.8°C; Tissue Temp: 19.8°C

Probe: ES3DV3 - SN3287; ConvF(5.48, 5.48, 5.48) @ 1750 MHz; Calibrated: 10/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 10/18/2018
Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.60 W/kg
SAR(1 g) = 3.66 W/kg
Deviation(1 g) = 0.55%



0 dB = 4.53 W/kg = 6.56 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

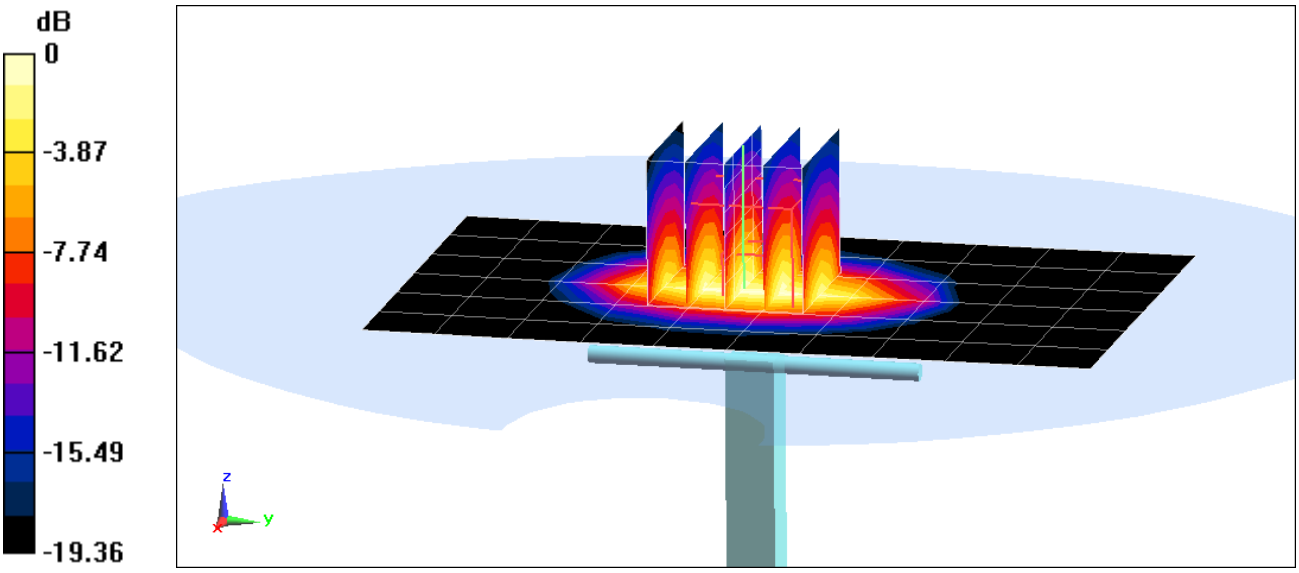
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.434 S/m; ε_r = 39.206; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-28-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7409; ConvF(8.05, 8.05, 8.05) @ 1900 MHz; Calibrated: 6/25/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.71 W/kg
SAR(1 g) = 3.97 W/kg
Deviation(1 g) = 1.02%



0 dB = 6.32 W/kg = 8.01 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2300 MHz; Type: D2300V2; Serial: 1064

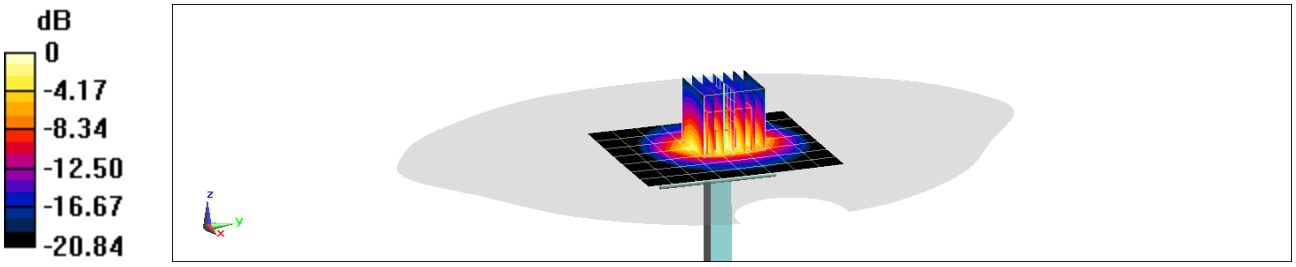
Communication System: UID 0, CW; Frequency: 2300 MHz; Duty Cycle: 1:1
Medium: 2300 Head; Medium parameters used:
f = 2300 MHz; σ = 1.742 S/m; ε_r = 38.286; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-06-2019; Ambient Temp: 20.9°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7406; ConvF(7.95, 7.95, 7.95) @ 2300 MHz; Calibrated: 5/22/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

2300 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 9.31 W/kg
SAR(1 g) = 4.53 W/kg
Deviation(1 g) = -4.83%



0 dB = 7.50 W/kg = 8.75 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 981

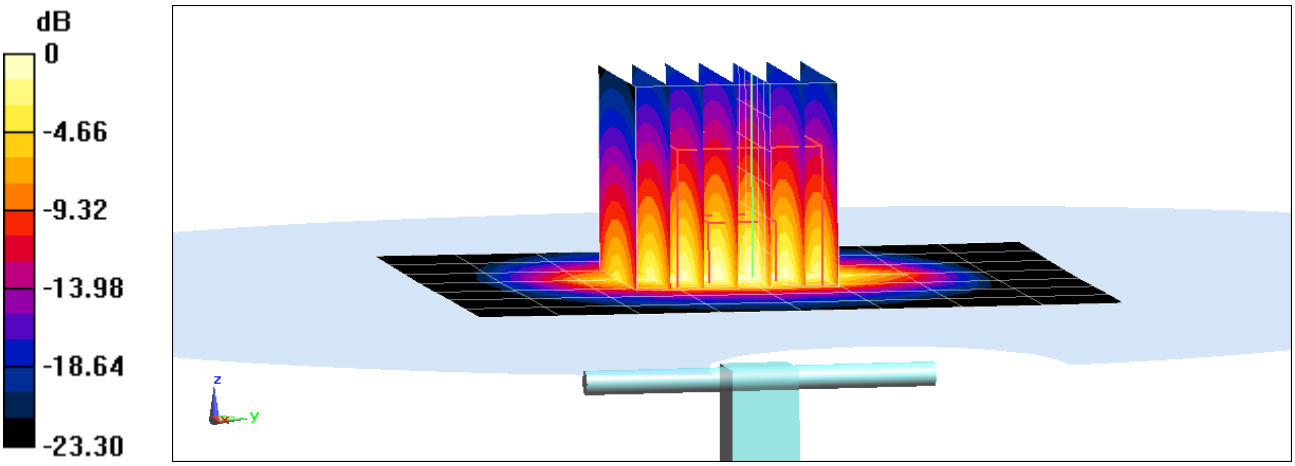
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; σ = 1.803 S/m; ε_r = 39.414; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-10-2018; Ambient Temp: 22.0°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN7410; ConvF(7.5, 7.5, 7.5) @ 2450 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.1 W/kg
SAR(1 g) = 5.24 W/kg
Deviation(1 g) = 0.19%



0 dB = 8.75 W/kg = 9.42 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

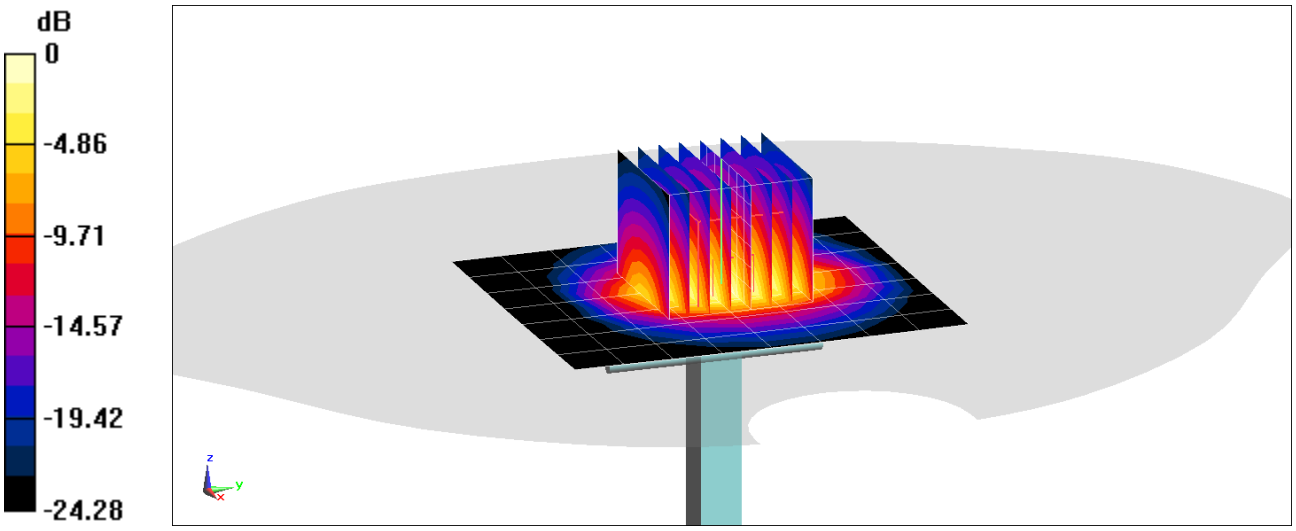
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head; Medium parameters used:
f = 2450 MHz; σ = 1.86 S/m; ε_r = 40.485; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 20.3°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7406; ConvF(7.54, 7.54, 7.54) @ 2450 MHz; Calibrated: 5/22/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.9 W/kg
SAR(1 g) = 5.18 W/kg;
Deviation(1 g) = -1.71%



0 dB = 8.22 W/kg = 9.15 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1064

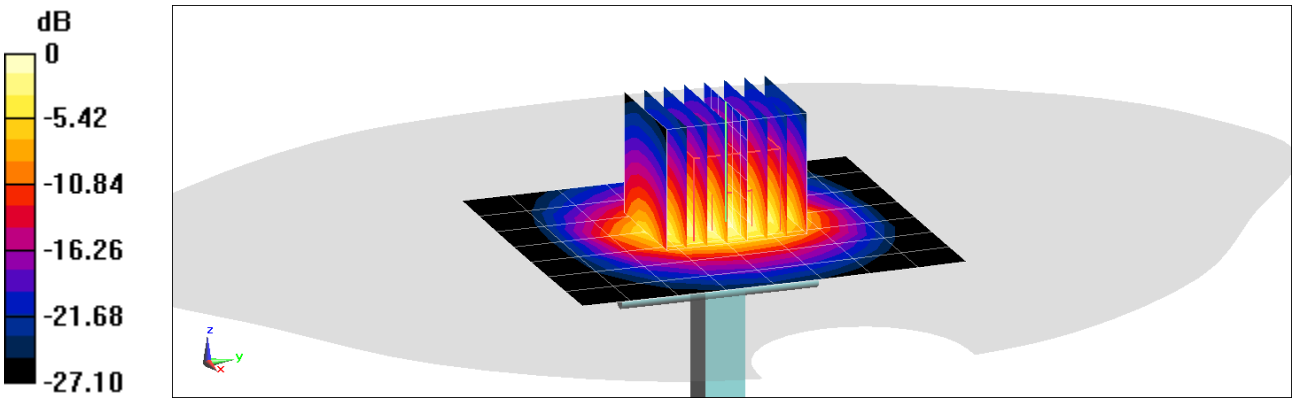
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2450 Head; Medium parameters used:
f = 2600 MHz; σ = 2.057 S/m; εr = 38.521; ρ = 1000 kg/m3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-28-2018; Ambient Temp: 20.7°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN7406; ConvF(7.4, 7.4, 7.4) @ 2600 MHz; Calibrated: 12/28/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

2600 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 13.6 W/kg
SAR(1 g) = 5.82 W/kg
Deviation(1 g) = 2.11%



0 dB = 11.2 W/kg = 10.49 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1071

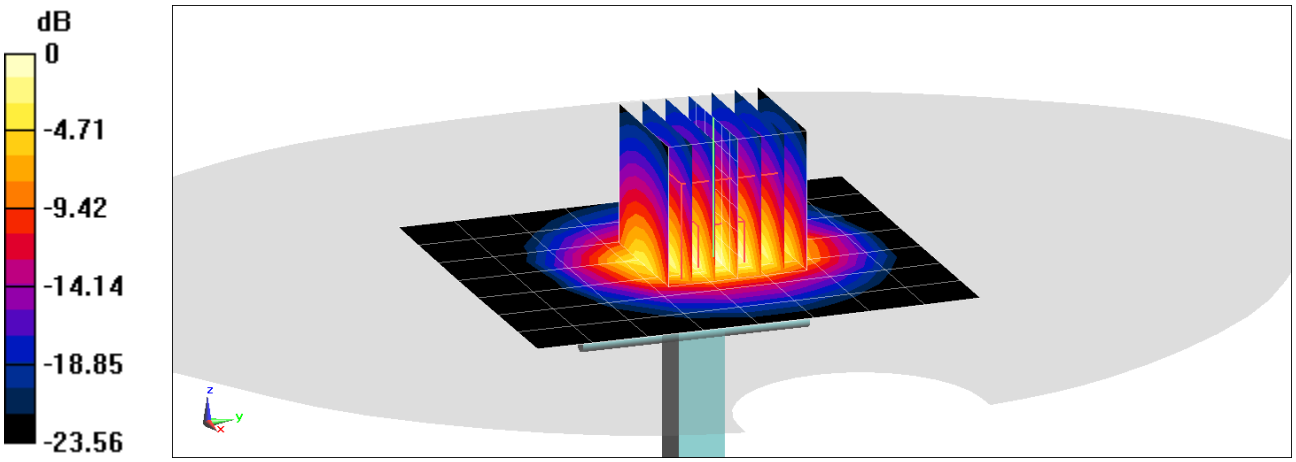
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used:
f = 2600 MHz; σ = 1.982 S/m; ε_r = 40.241; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 20.3°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7406; ConvF(7.4, 7.4, 7.4) @ 2600 MHz; Calibrated: 5/22/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

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) = 5.8 W/kg
Deviation(1 g) = 3.02%



0 dB = 10.1 W/kg = 10.04 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 3700 MHz; Type: D3700V2; Serial: 1002

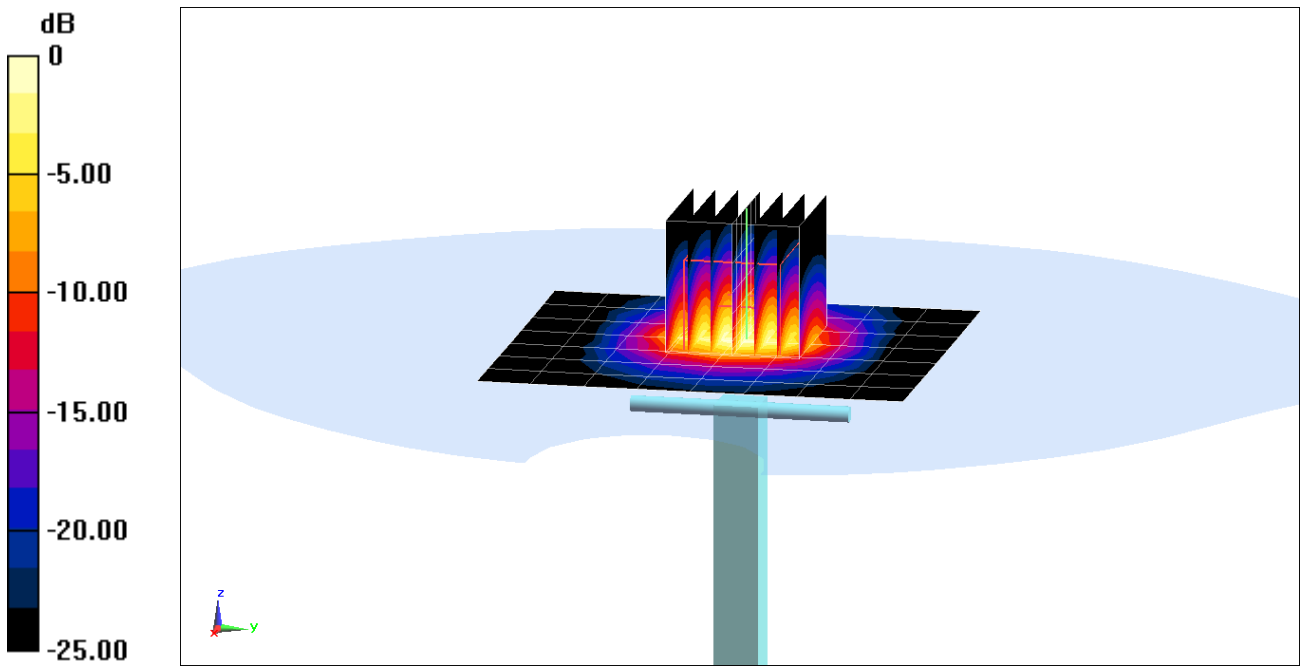
Communication System: UID 0, CW; Frequency: 3700 MHz; Duty Cycle: 1:1
Medium: 3500-3700 MHz Head Medium parameters used (interpolated):
f = 3700 MHz; σ = 3.085 S/m; ε_r = 37.109; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-14-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.2°C

Probe: EX3DV4 - SN3949; ConvF(7.24, 7.24, 7.24) @ 3700 MHz; Calibrated: 8/24/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

3700 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x8)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 22.0 W/kg
SAR(1 g) = 7.07 W/kg
Deviation(1 g) = 4.12%



0 dB = 14.7 W/kg = 11.67 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1057

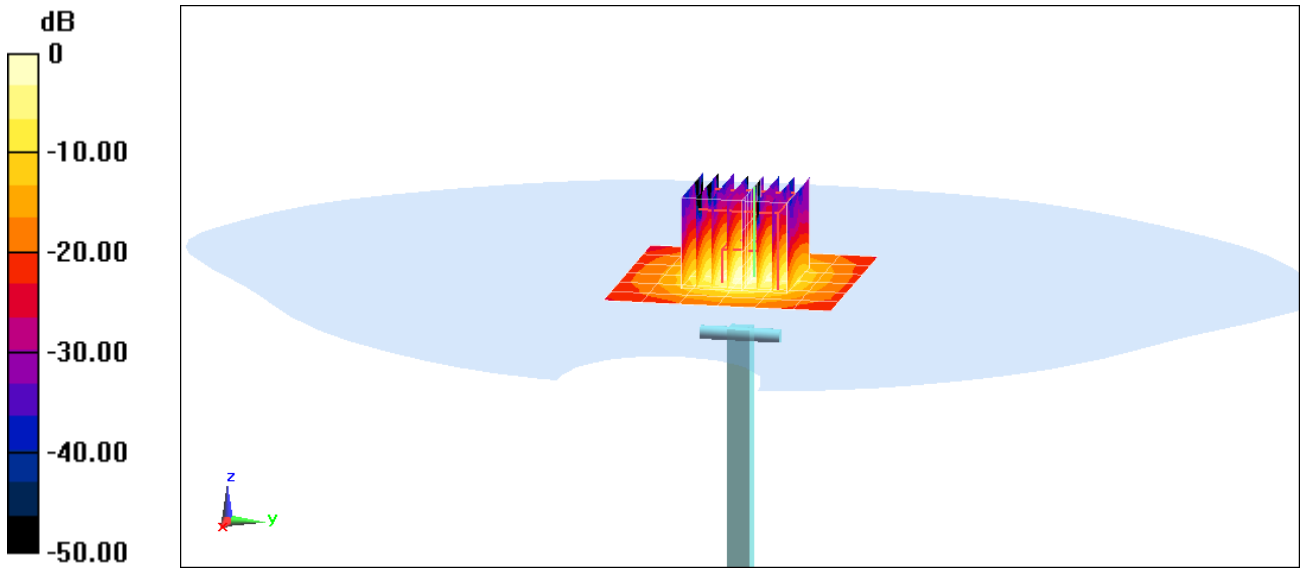
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used (interpolated):
f = 5250 MHz; σ = 4.609 S/m; ε_r = 35.333; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 20.5°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7409; ConvF(5.2, 5.2, 5.2) @ 5250 MHz; Calibrated: 6/25/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

5250 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 15.4 W/kg
SAR(1 g) = 3.63 W/kg.
Deviation(1 g) = -8.33%



0 dB = 8.55 W/kg = 9.32 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1057

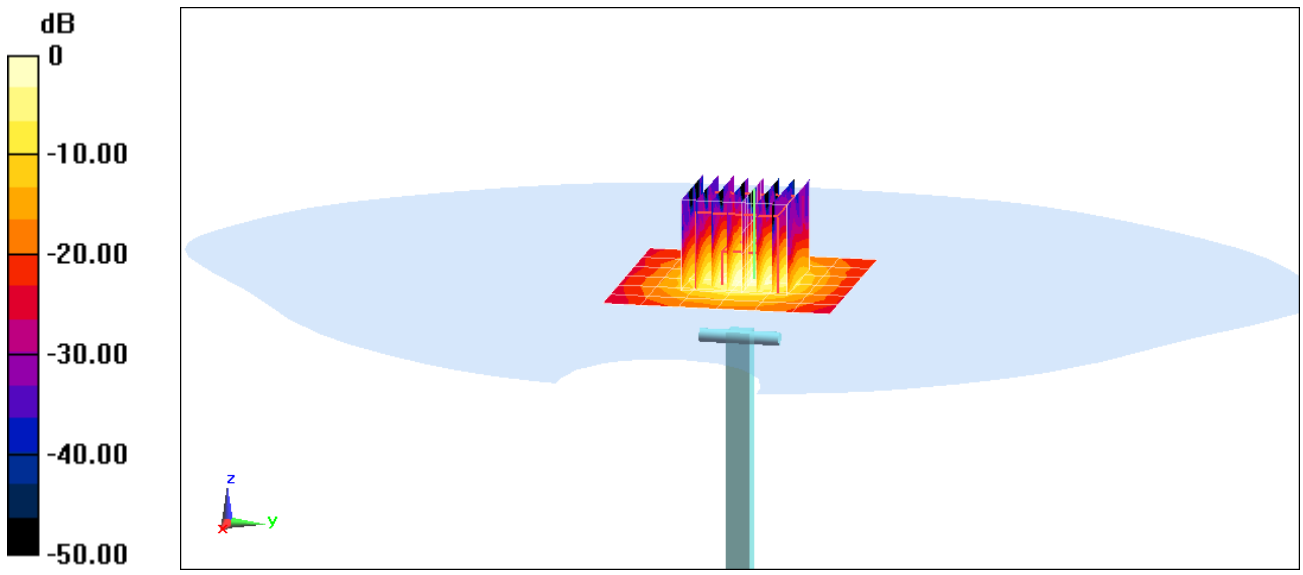
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used:
f = 5600 MHz; σ = 4.976 S/m; ε_r = 34.865; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 20.5°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7409; ConvF(4.77, 4.77, 4.77) @ 5600 MHz; Calibrated: 6/25/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

5600 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 17.6 W/kg
SAR(1 g) = 3.84 W/kg
Deviation(1 g) = -8.68%



0 dB = 9.28 W/kg = 9.68 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1057

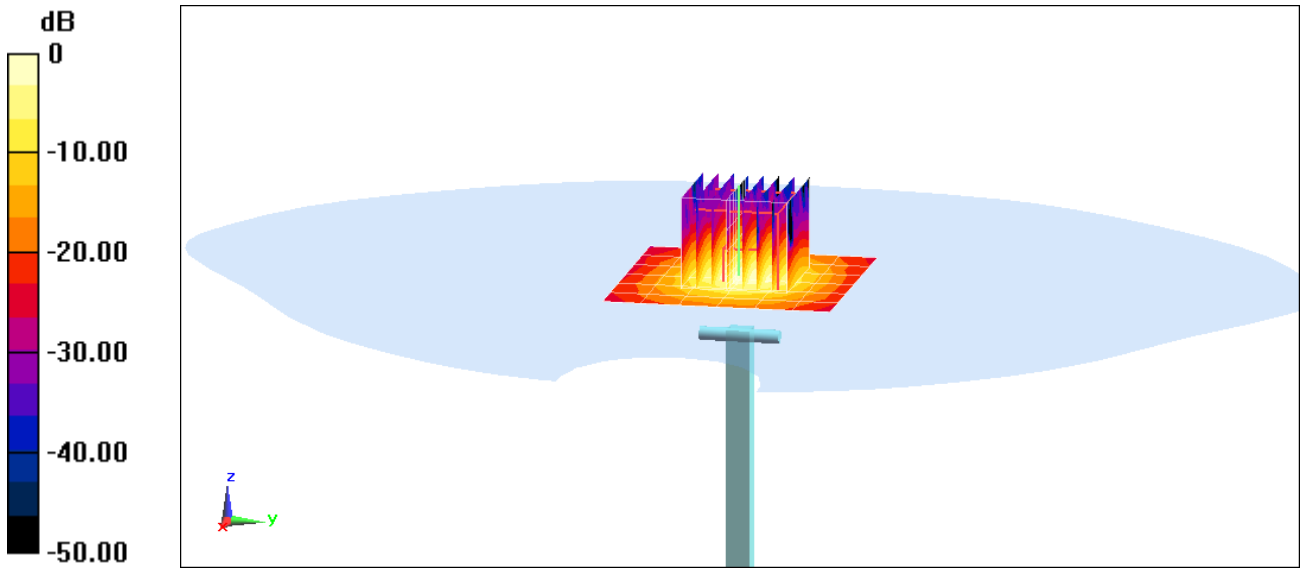
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used (interpolated):
f = 5750 MHz; σ = 5.147 S/m; ε_r = 34.606; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 20.5°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7409; ConvF(4.82, 4.82, 4.82) @ 5750 MHz; Calibrated: 6/25/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

5750 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 18.0 W/kg
SAR(1 g) = 3.76 W/kg
Deviation(1 g) = -6.58%



0 dB = 9.42 W/kg = 9.74 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1054

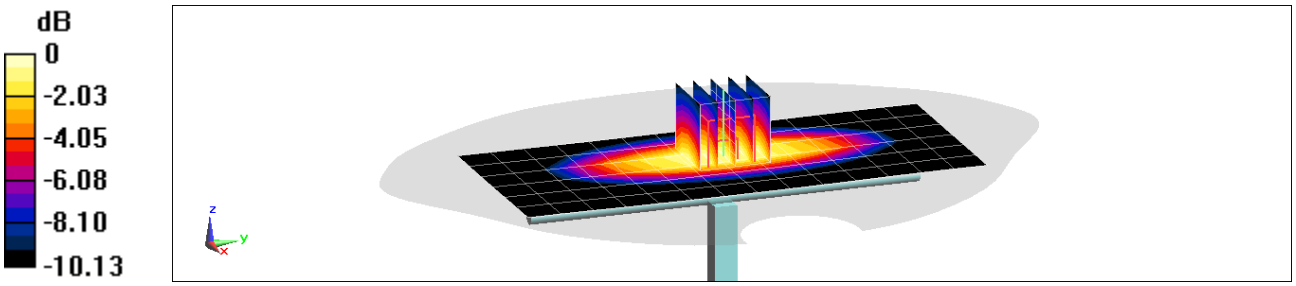
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 750 MHz; σ = 0.944 S/m; ε_r = 54.477; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-17-2018; Ambient Temp: 20.1°C; Tissue Temp: 20.1°C

Probe: EX3DV4 - SN7406; ConvF(9.91, 9.91, 9.91) @ 750 MHz; Calibrated: 5/22/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0 Front Right; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

750 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.68 W/kg
SAR(1 g) = 1.78 W/kg
Deviation(1 g) = 3.37%



0 dB = 2.37 W/kg = 3.75 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1054

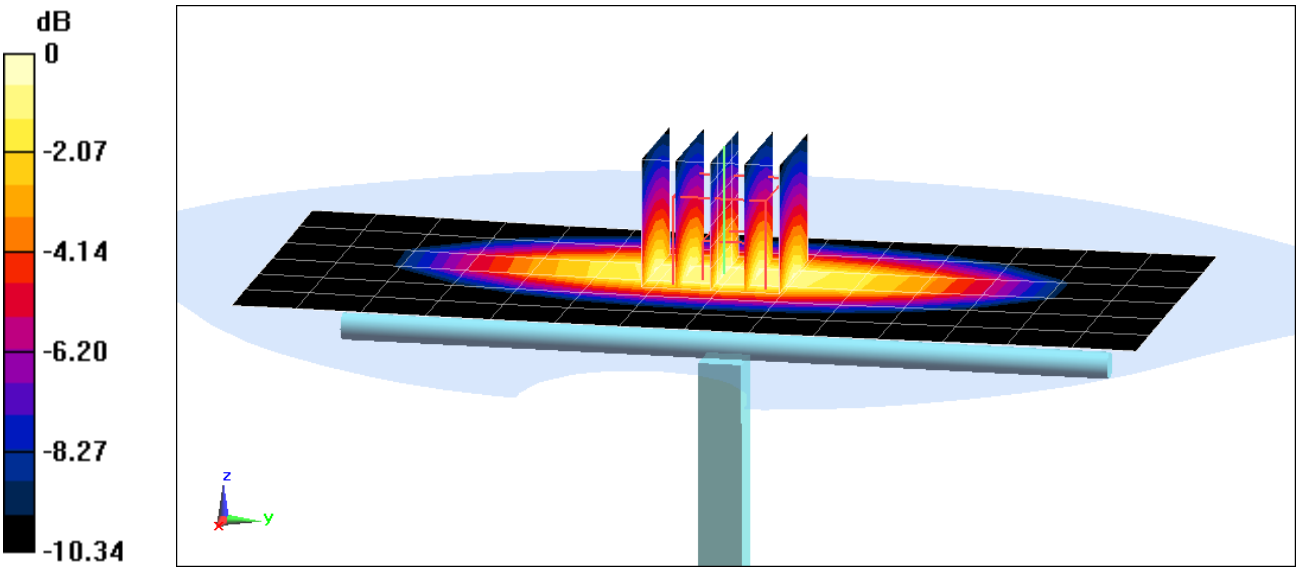
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 750 MHz; σ = 0.965 S/m; ε_r = 54.155; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-29-2018; Ambient Temp: 23.0°C; Tissue Temp: 23.5°C

Probe: EX3DV4 - SN7410; ConvF(9.87, 9.87, 9.87) @ 750 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

750 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.61 W/kg
SAR(1 g) = 1.76 W/kg
Deviation(1 g) = 2.21%



0 dB = 2.33 W/kg = 3.67 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

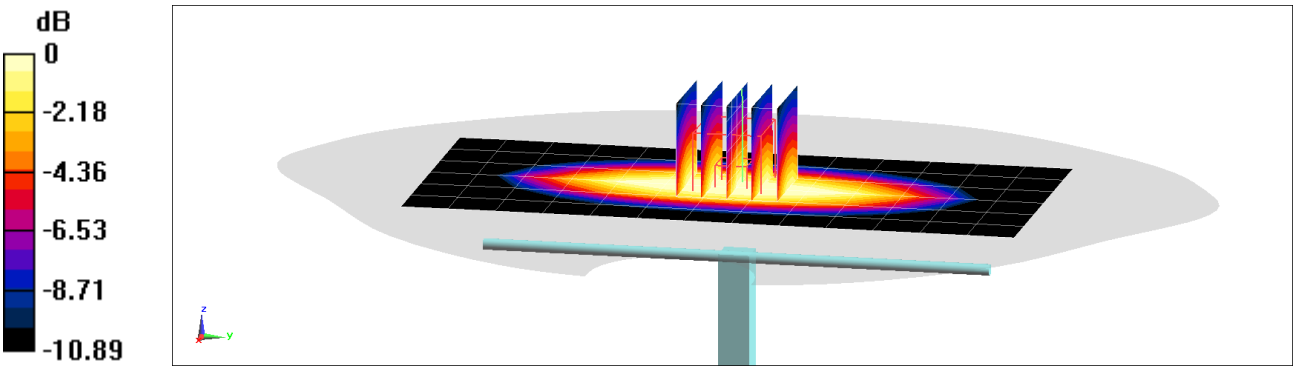
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 MHz Body Medium parameters used:
f = 835 MHz; σ = 0.995 S/m; ε_r = 52.605; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-17-2018; Ambient Temp: 20.1°C; Tissue Temp: 20.5°C

Probe: ES3DV3 - SN3347; ConvF(6.37, 6.37, 6.37) @ 835 MHz; Calibrated: 3/27/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.95 W/kg
SAR(1 g) = 1.97 W/kg;
Deviation(1 g) = 1.44%



0 dB = 2.24 W/kg = 3.50 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d133

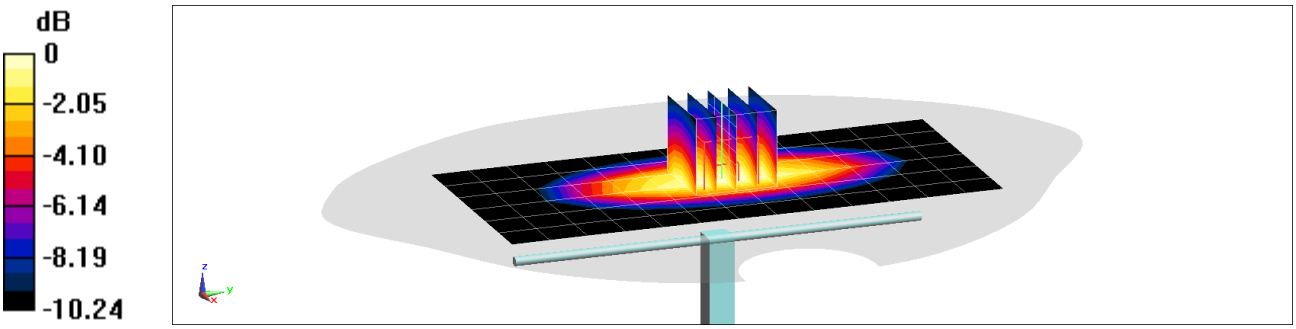
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.965 S/m; ε_r = 53.598; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-26-2018; Ambient Temp: 19.9°C; Tissue Temp: 19.1°C

Probe: ES3DV3 - SN3347; ConvF(6.37, 6.37, 6.37) @ 835 MHz; Calibrated: 3/27/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.85 W/kg
SAR(1 g) = 1.96 W/kg
Deviation(1 g) = 0.51%



0 dB = 2.28 W/kg = 3.58 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

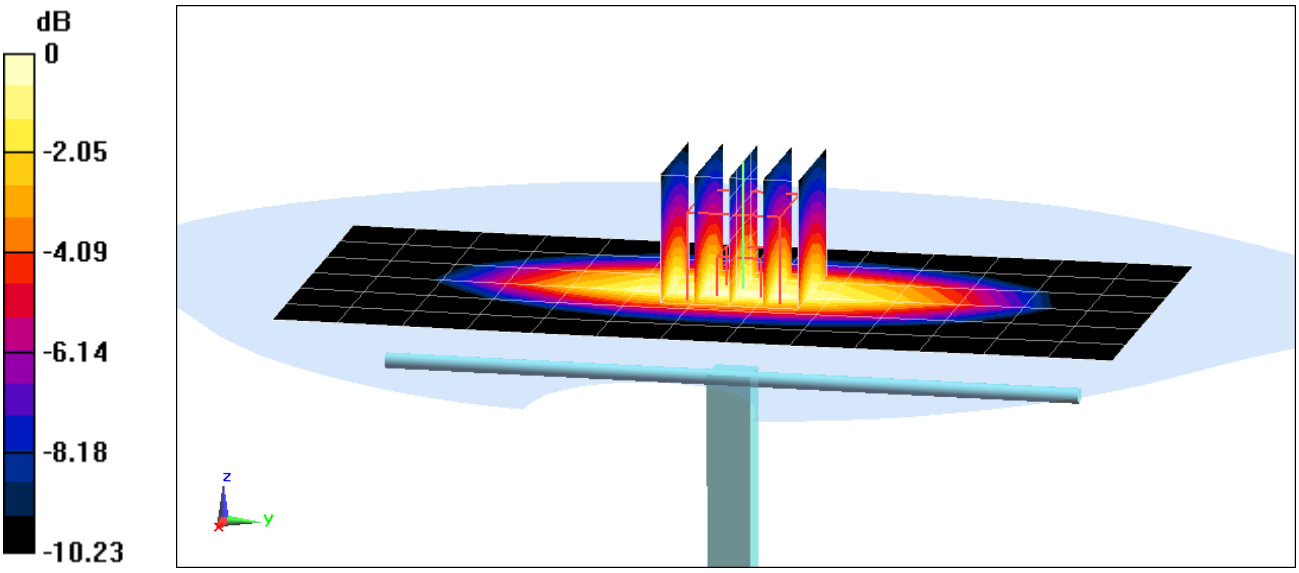
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.968 S/m; ε_r = 55.401; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 01-02-2019; Ambient Temp: 21.1°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7409; ConvF(9.63, 9.63, 9.63) @ 835 MHz; Calibrated: 6/25/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 3.10 W/kg
SAR(1 g) = 2.06 W/kg
Deviation(1 g) = 6.08%



0 dB = 2.74 W/kg = 4.38 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1150

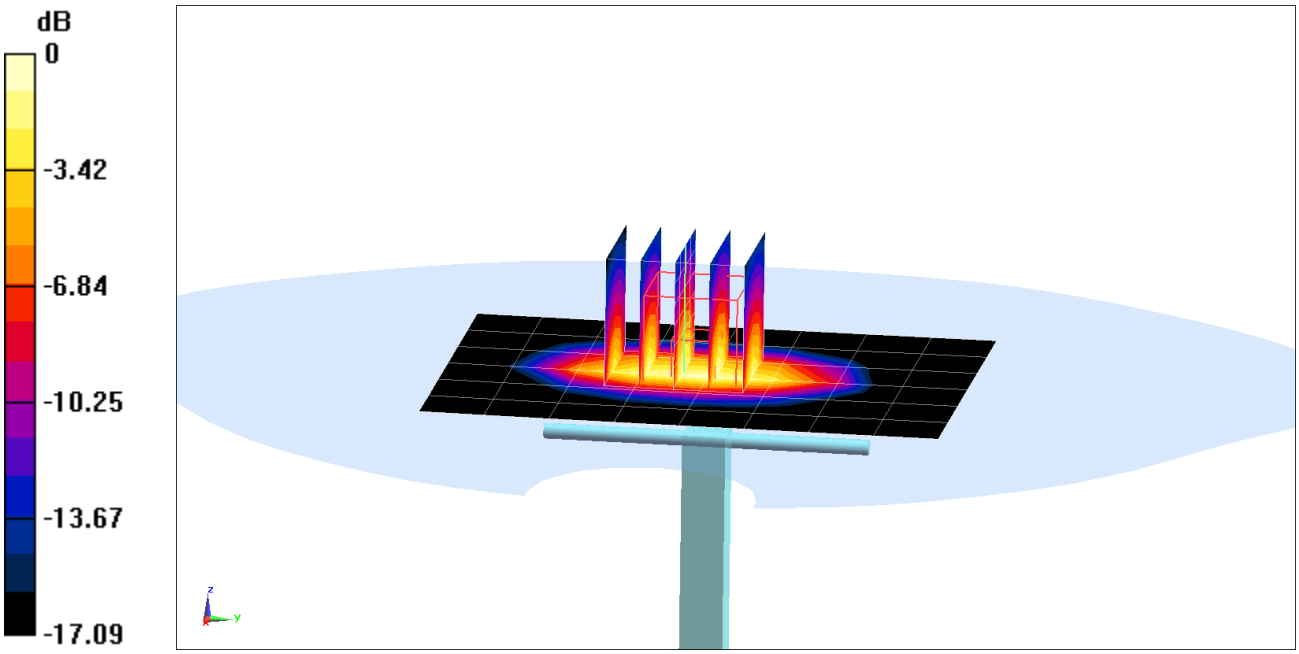
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used:
f = 1750 MHz; σ = 1.512 S/m; ε_r = 52.517; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7357; ConvF(8.43, 8.43, 8.43) @ 1750 MHz; Calibrated: 4/18/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.70 W/kg
SAR(1 g) = 3.71 W/kg; SAR(10 g) = 1.96 W/kg
Deviation(1 g) = 1.37%; Deviation(10 g) = 1.03%



0 dB = 5.64 W/kg = 7.51 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

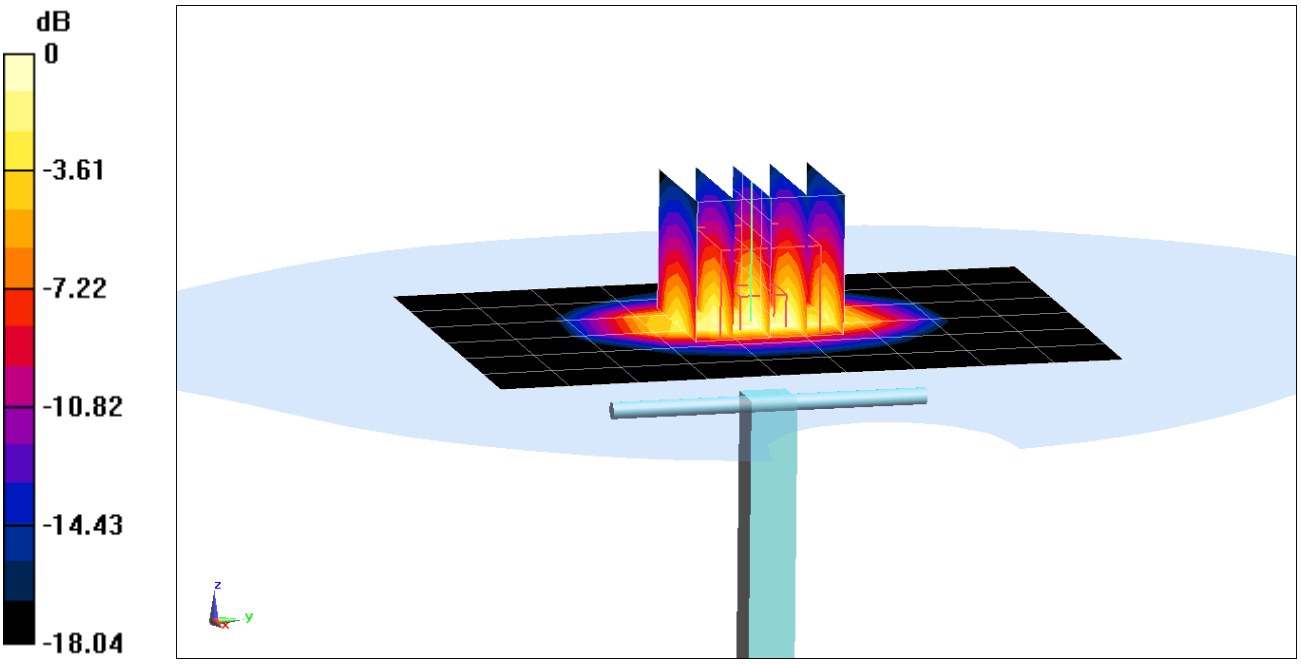
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.572 S/m; ε_r = 51.023; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-05-2018; Ambient Temp: 24.5°C; Tissue Temp: 23.3°C

Probe: ES3DV3 - SN3332; ConvF(4.77, 4.77, 4.77) @ 1900 MHz; Calibrated: 8/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.40 W/kg
SAR(1 g) = 4.15 W/kg
Deviation(1 g) = 4.80%



0 dB = 5.18 W/kg = 7.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

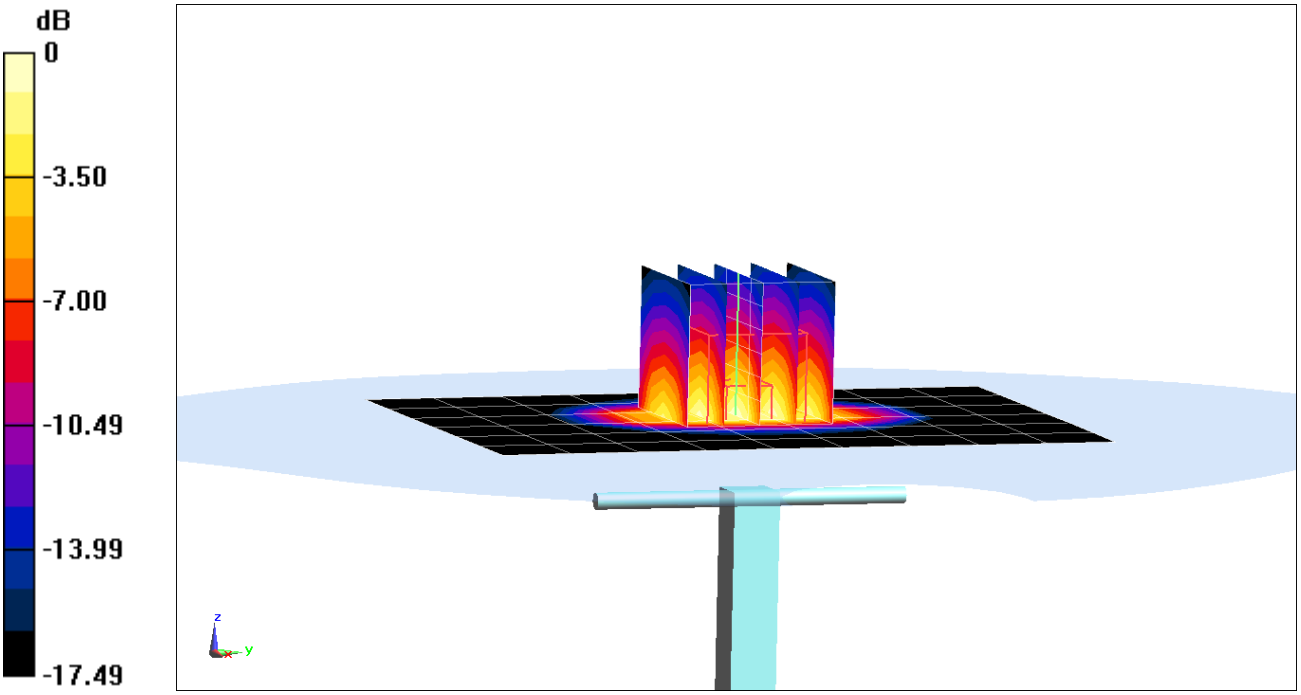
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.543 S/m; ε_r = 52.462; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 22.9°C; Tissue Temp: 22.4°C

Probe: ES3DV3 - SN3332; ConvF(4.77, 4.77, 4.77) @ 1900 MHz; Calibrated: 8/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.81 W/kg
SAR(1 g) = 3.86 W/kg
Deviation(1 g) = -1.53%



0 dB = 4.90 W/kg = 6.90 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

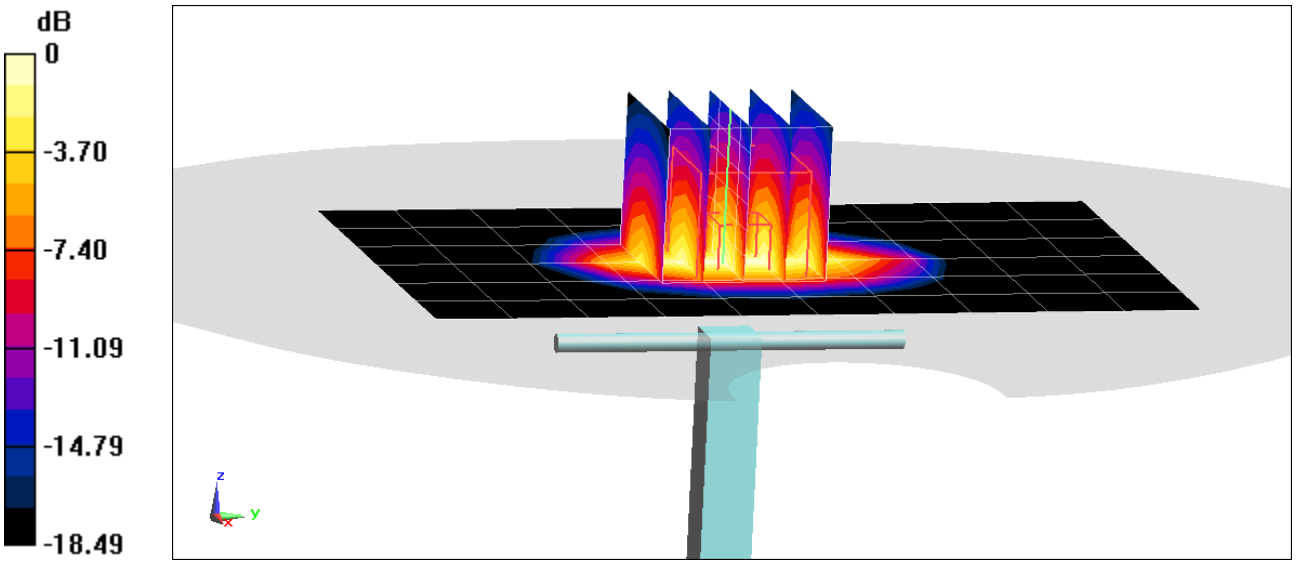
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.582 S/m; ε_r = 52.497; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 22.0°C; Tissue Temp: 19.7°C

Probe: EX3DV4 - SN7308; ConvF(7.79, 7.79, 7.79) @ 1900 MHz; Calibrated: 8/23/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1558; Calibrated: 10/3/2018
Phantom: Twin-SAM V5.0 ; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

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) = 7.76 W/kg
SAR(10 g) = 2.14 W/kg
Deviation(10 g) = 2.39%



0 dB = 6.49 W/kg = 8.12 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

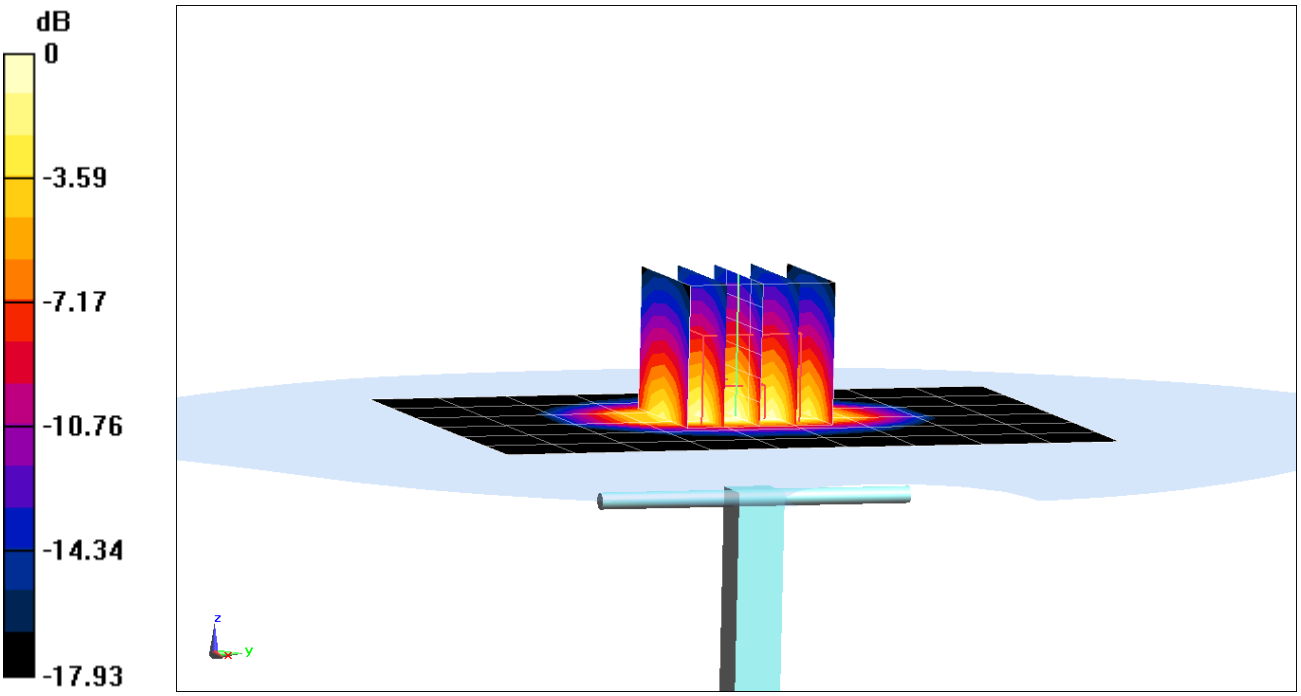
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.554 S/m; ε_r = 51.435; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-04-2019; Ambient Temp: 21.9°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3332; ConvF(4.77, 4.77, 4.77) @ 1900 MHz; Calibrated: 8/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.21 W/kg
SAR(1 g) = 4.06 W/kg; SAR(10 g) = 2.1 W/kg
Deviation(1 g) = 3.05%; Deviation(10 g) = 1.45%



0 dB = 5.17 W/kg = 7.13 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

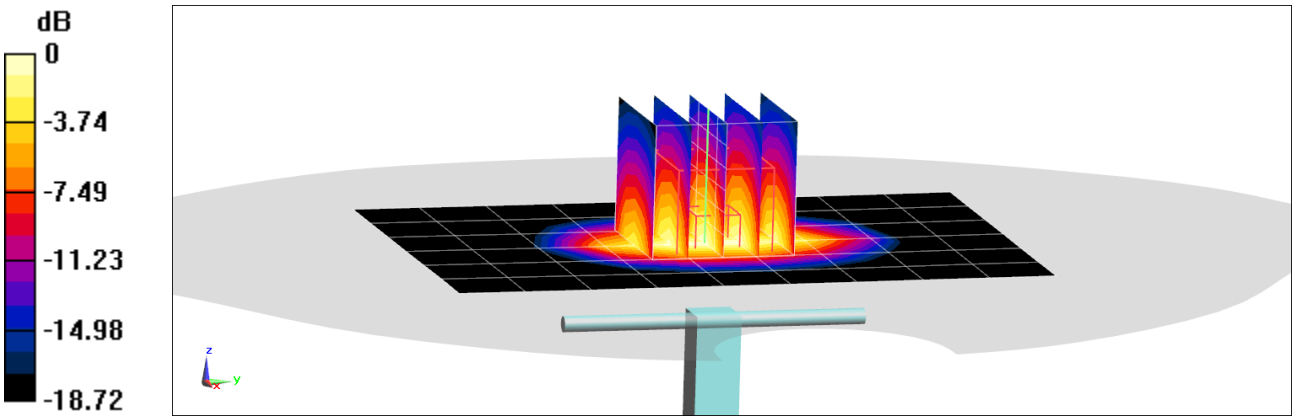
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.575 S/m; ε_r = 53.31; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-10-2019; Ambient Temp: 23.0°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3287; ConvF(4.83, 4.83, 4.83) @ 1900 MHz; Calibrated: 10/22/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 10/18/2018
Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.87 W/kg
SAR(1 g) = 4.26 W/kg
Deviation(1 g) = 7.58%



0 dB = 5.39 W/kg = 7.32 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2300 MHz; Type: D2300V2; Serial: 1073

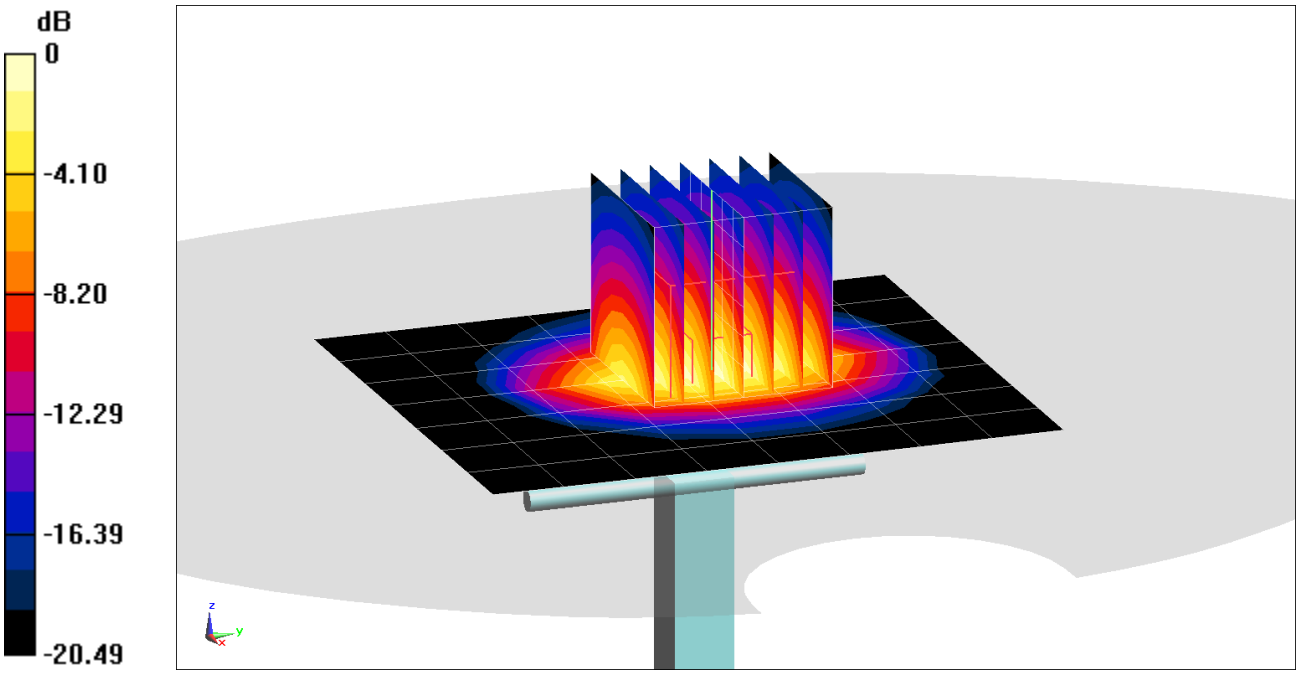
Communication System: UID 0, CW; Frequency: 2300 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2300 MHz; σ = 1.877 S/m; ε_r = 51.509; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 22.1°C; Tissue Temp: 22.6°C

Probe: ES3DV3 - SN3319; ConvF(4.63, 4.63, 4.63) @ 2300 MHz; Calibrated: 3/13/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

2300 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 9.45 W/kg
SAR(1 g) = 4.86 W/kg
Deviation(1 g) = 1.89%



0 dB = 6.37 W/kg = 8.04 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 719

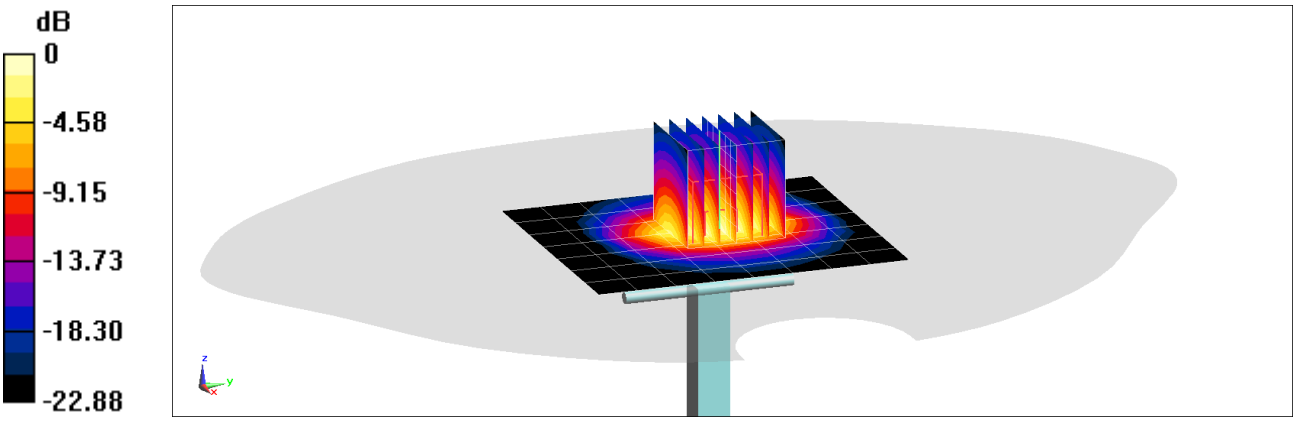
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; σ = 2.011 S/m; ε_r = 52.581; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 21.7°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3347; ConvF(4.64, 4.64, 4.64) @ 2450 MHz; Calibrated: 3/27/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.7 W/kg
SAR(1 g) = 4.94 W/kg
Deviation(1 g) = -1.40%



0 dB = 6.56 W/kg = 8.17 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1004

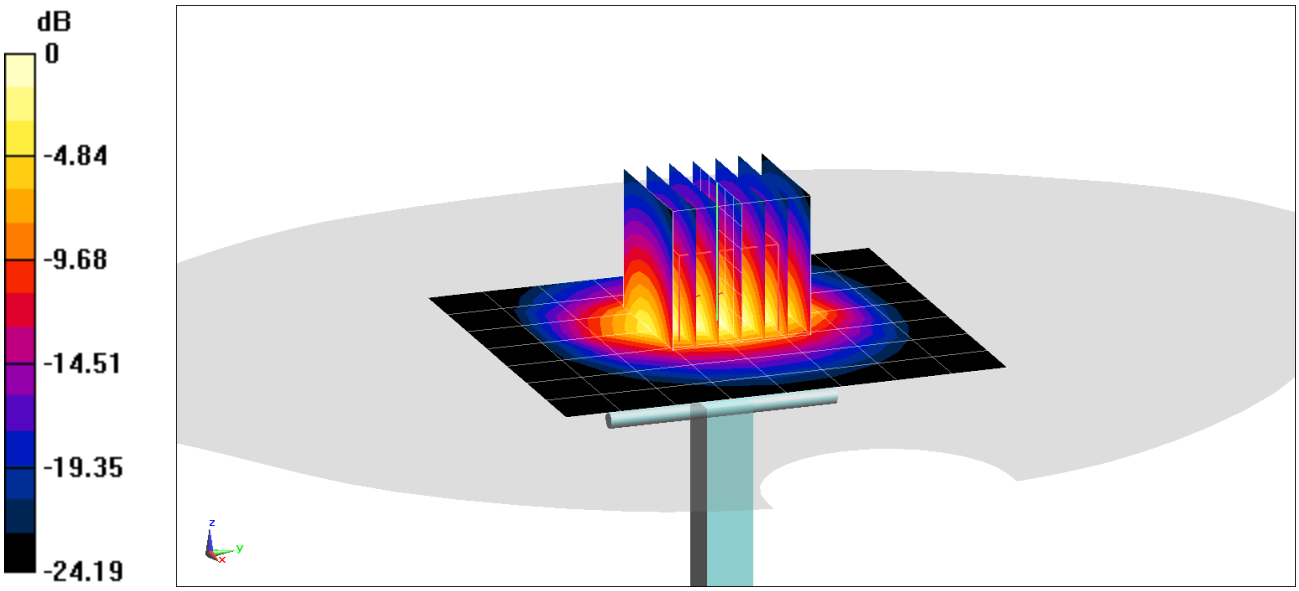
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2600 MHz; σ = 2.222 S/m; ε_r = 50.633; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-02-2019; Ambient Temp: 22.1°C; Tissue Temp: 22.6°C

Probe: ES3DV3 - SN3319; ConvF(4.33, 4.33, 4.33) @ 2600 MHz; Calibrated: 3/13/2018
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

2600 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 12.4 W/kg
SAR(1 g) = 5.64 W/kg
Deviation(1 g) = 2.92%



0 dB = 7.47 W/kg = 8.73 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 3700 MHz; Type: D3700V2; Serial: 1002

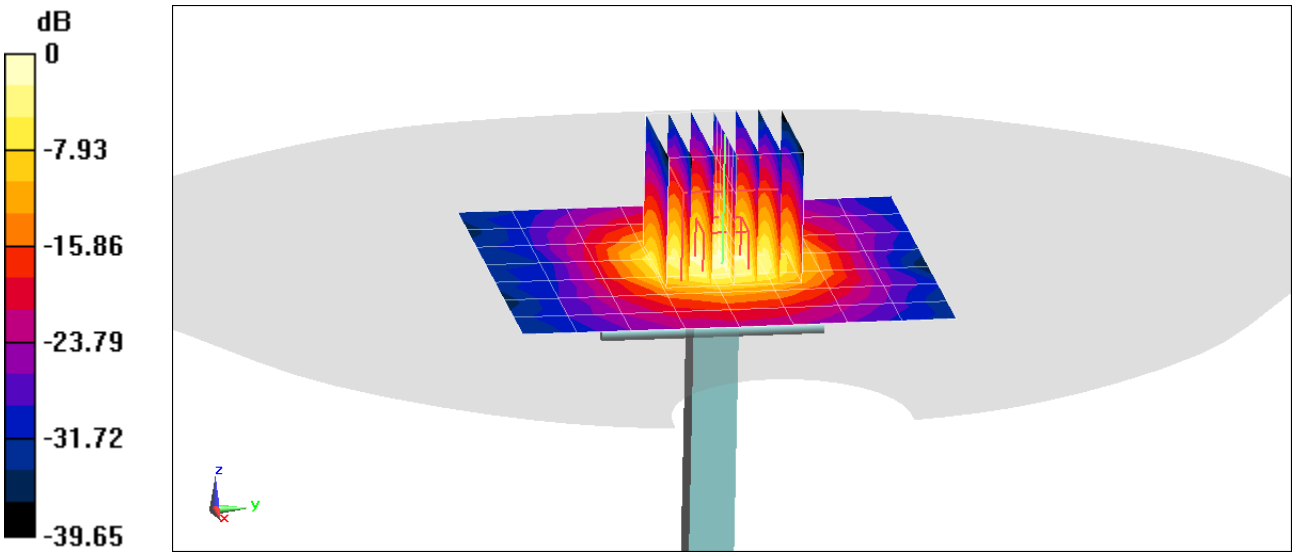
Communication System: UID 0, CW; Frequency: 3700 MHz; Duty Cycle: 1:1
Medium: 3500-3700 Body Medium parameters used (interpolated):
f = 3700 MHz; σ = 3.416 S/m; ε_r = 49.671; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-28-2018; Ambient Temp: 22.4°C; Tissue Temp: 20.3°C

Probe: EX3DV4 - SN3914; ConvF(6.64, 6.64, 6.64) @ 3700 MHz; Calibrated: 2/14/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1558; Calibrated: 10/3/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

3700 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x8)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 18.4 W/kg
SAR(1 g) = 6.15 W/kg
Deviation(1 g) = -5.38%



0 dB = 12.7 W/kg = 11.04 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191

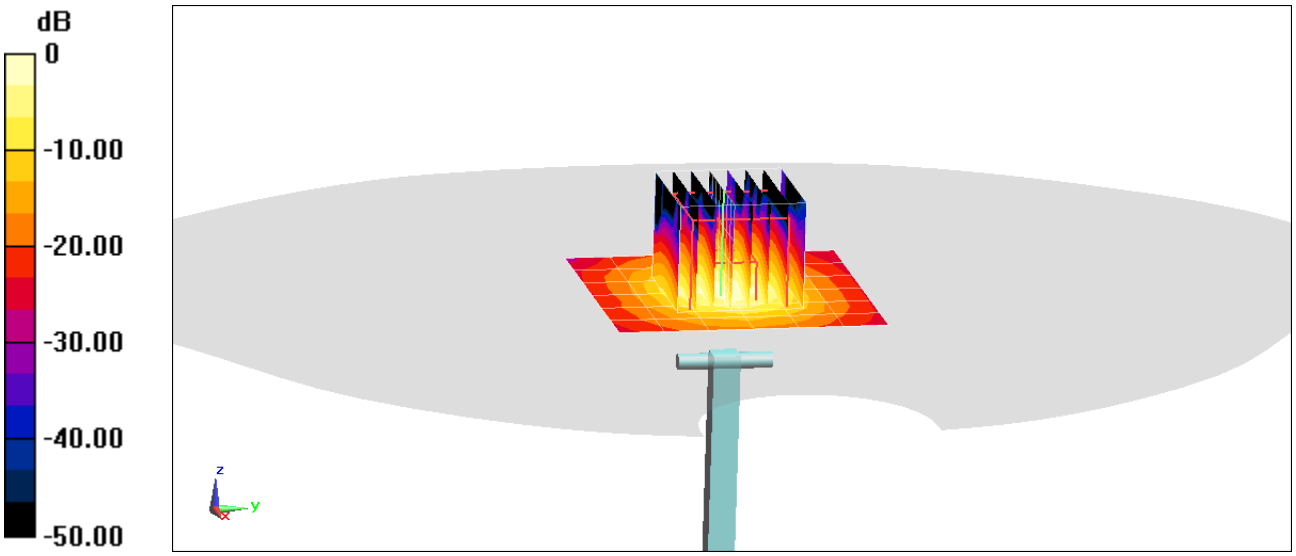
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used (interpolated):
f = 5250 MHz; σ = 5.421 S/m; ε_r = 47.944; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-26-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7308; ConvF(4.48, 4.48, 4.48) @ 5250 MHz; Calibrated: 8/23/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1558; Calibrated: 10/3/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

5250 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 14.6 W/kg
SAR(1 g) = 3.6 W/kg; SAR(10 g) = 1 W/kg
Deviation(1 g) = -6.49%; Deviation(10 g) = -7.41%



0 dB = 8.56 W/kg = 9.32 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191

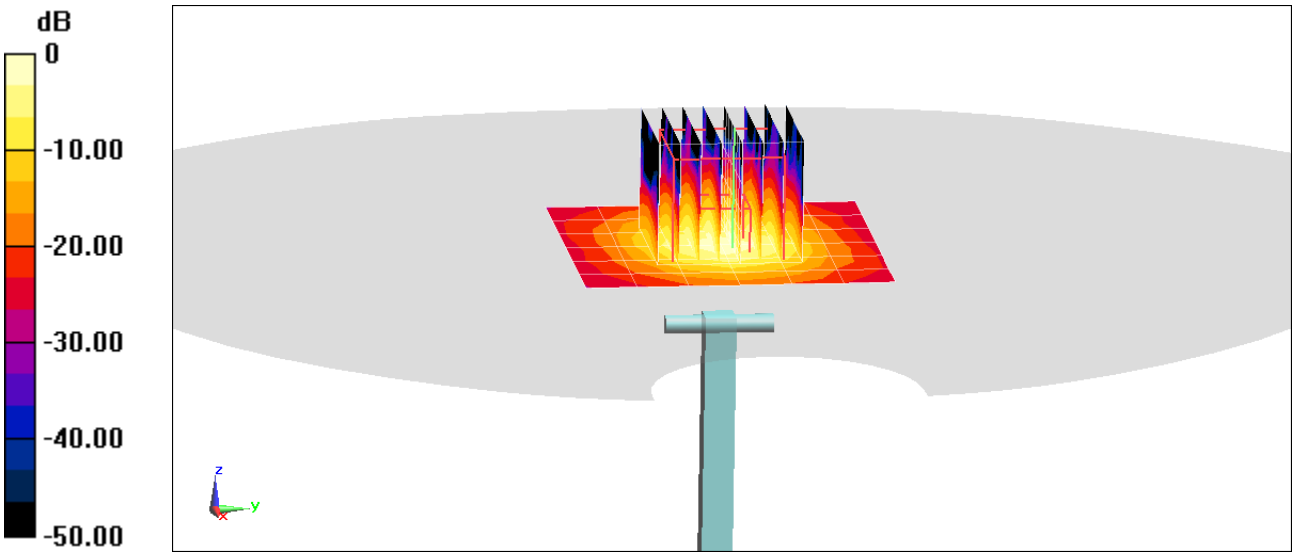
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5600 MHz; σ = 5.939 S/m; ε_r = 47.285; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-26-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7308; ConvF(4, 4, 4) @ 5600 MHz; Calibrated: 8/23/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1558; Calibrated: 10/3/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

5600 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 17.5 W/kg
SAR(1 g) = 3.89 W/kg; SAR(10 g) = 1.07 W/kg
Deviation(1 g) = -1.77%; Deviation(10 g) = -3.60%



0 dB = 9.63 W/kg = 9.84 dBW/kg