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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:
03/18/19 - 04/11/19
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
1M1903140039-01-R1.ZNF

FCC ID: **ZNFQ720PS**

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

DUT Type: Portable Handset
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model: LM-Q720PS
Additional Model(s): LMQ720PS, Q720PS

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	0.15	0.49	0.49	N/A
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	< 0.1	0.22	0.56	N/A
PCE	UMTS 850	826.40 - 846.60 MHz	0.19	0.55	0.55	N/A
PCE	UMTS 1750	1712.4 - 1752.6 MHz	0.12	0.65	1.12	2.34
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.16	0.49	1.30	2.65
PCE	CDMA/EVDO BC10 (§90S)	817.90 - 823.10 MHz	0.16	0.43	0.41	N/A
PCE	CDMA/EVDO BC0 (§22H)	824.70 - 848.31 MHz	0.15	0.43	0.49	N/A
PCE	PCS CDMA/EVDO	1851.25 - 1908.75 MHz	0.13	0.34	0.98	1.89
PCE	LTE Band 71	665.5 - 695.5 MHz	0.25	0.58	0.58	N/A
PCE	LTE Band 12	699.7 - 715.3 MHz	0.18	0.45	0.45	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	0.13	0.47	0.47	N/A
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.13	0.51	0.51	N/A
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.15	0.54	1.10	2.79
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	0.16	0.56	1.19	2.47
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 41	2498.5 - 2687.5 MHz	0.11	0.43	0.63	N/A
DTS	2.4 GHz WLAN	2412 - 2462 MHz	1.01	0.51	0.51	N/A
NII	U-NII-1	5180 - 5240 MHz	N/A	N/A	0.52	N/A
NII	U-NII-2A	5260 - 5320 MHz	0.71	0.64	N/A	1.93
NII	U-NII-2C	5500 - 5700 MHz	1.00	0.54	N/A	1.55
NII	U-NII-3	5745 - 5825 MHz	0.71	0.53	0.53	N/A
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.15	< 0.1	< 0.1	N/A
Simultaneous SAR per KDB 690783 D01v01r03:			1.39	1.34	1.56	3.82

Note: This revised Test Report (S/N: 1M1903140039-01-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 1.7 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 26 (Cell)	Voice/Data	814.7 - 848.3 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 848.3 MHz
LTE Band 66 (AWS)	Voice/Data	1710.7 - 1779.3 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 25 (PCS)	Voice/Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2462 MHz
U-NII-1	Voice/Data	5180 - 5240 MHz
U-NII-2A	Voice/Data	5260 - 5320 MHz
U-NII-2C	Voice/Data	5500 - 5700 MHz
U-NII-3	Voice/Data	5745 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz

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.

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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 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*	*1 TX Slots*	*2 TX Slots*
GSM/GPRS/EDGE 850	Maximum	**33.7**	**33.7**	**32.2**	**27.7**	**27.7**
	Nominal	**33.2**	**33.2**	**31.7**	**27.2**	**27.2**
GSM/GPRS/EDGE 1900	Maximum	**30.7**	**30.7**	**29.2**	**26.2**	**26.2**
	Nominal	**30.2**	**30.2**	**28.7**	**25.7**	**25.7**

Mode / Band		Modulated Average (dBm)		
		3GPP WCDMA	*3GPP HSDPA*	*3GPP HSUPA*
UMTS Band 5 (850 MHz)	Maximum	**25.5**	**25.5**	**25.5**
	Nominal	**25.0**	**25.0**	**25.0**
UMTS Band 4 (1750 MHz)	Maximum	**25.0**	**25.0**	**25.0**
	Nominal	**24.5**	**24.5**	**24.5**
UMTS Band 2 (1900 MHz)	Maximum	**25.0**	**25.0**	**25.0**
	Nominal	**24.5**	**24.5**	**24.5**

Mode / Band		Modulated Average (dBm)
CDMA/EVDO BC10 (§90S)	Maximum	**25.0**
	Nominal	**24.5**
CDMA/EVDO BC0 (§22H)	Maximum	**25.0**
	Nominal	**24.5**
PCS CDMA/EVDO	Maximum	**24.7**
	Nominal	**24.2**

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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 26 (Cell)	Maximum	**25.5**
	Nominal	**25.0**
LTE Band 5 (Cell)	Maximum	**25.5**
	Nominal	**25.0**
LTE Band 66 (AWS)	Maximum	**25.0**
	Nominal	**24.5**
LTE Band 4 (AWS)	Maximum	**25.0**
	Nominal	**24.5**
LTE Band 25 (PCS)	Maximum	**25.0**
	Nominal	**24.5**
LTE Band 2 (PCS)	Maximum	**25.0**
	Nominal	**24.5**
LTE Band 41 (PC3)	Maximum	**25.0**
	Nominal	**24.5**
LTE Band 41 (PC2)	Maximum	**27.7**
	Nominal	**27.2**

Mode / Band		Modulated Average (dBm)
IEEE 802.11b (2.4 GHz)	Maximum	**21.0**
	Nominal	**20.0**
IEEE 802.11g (2.4 GHz)	Maximum	**17.5**
	Nominal	**16.5**
IEEE 802.11n (2.4 GHz)	Maximum	**17.5**
	Nominal	**16.5**

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Mode / Band		Modulated Average (dBm)
Bluetooth	Maximum	**11.0**
	Nominal	**10.0**
Bluetooth LE	Maximum	**2.0**
	Nominal	**1.0**

Mode / Band		Modulated Average (dBm)								
		20 MHz Bandwidth			40 MHz Bandwidth			80 MHz Bandwidth		
		Ch. 36, 64-100	Ch. 40-60, 104-136, 153-161	Ch. 140-149, 165	Ch. 38, 62-102	Ch. 46-54, 110, 118-126	Ch. 134, 151-159	Ch. 42, 106	Ch. 58	Ch. 122-155
IEEE 802.11a (5 GHz)	Maximum	**17.0**	**19.5**	**17.5**						
	Nominal	**16.0**	**18.5**	**16.5**						
IEEE 802.11n (5 GHz)	Maximum	**17.0**	**19.5**	**17.5**	**14.0**	**16.0**	**16.0**			
	Nominal	**16.0**	**18.5**	**16.5**	**13.0**	**15.0**	**15.0**			
IEEE 802.11ac (5 GHz)	Maximum	**14.0**	**16.5**	**14.5**	**12.0**	**14.0**	**14.0**	**11.0**	**12.0**	**13.0**
	Nominal	**13.0**	**15.5**	**13.5**	**11.0**	**13.0**	**13.0**	**10.0**	**11.0**	**12.0**

1.3.2 Reduced Output Power

Mode / Band		Modulated Average (dBm)		
		3GPP WCDMA	*3GPP HSDPA*	*3GPP HSUPA*
UMTS Band 4 (1750 MHz)	Maximum	**24.0**	**24.0**	**24.0**
	Nominal	**23.5**	**23.5**	**23.5**
UMTS Band 2 (1900 MHz)	Maximum	**24.0**	**24.0**	**24.0**
	Nominal	**23.5**	**23.5**	**23.5**

Mode / Band		Modulated Average (dBm)
PCS CDMA/EVDO	Maximum	**23.7**
	Nominal	**23.2**

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Mode / Band		Modulated Average (dBm)
LTE Band 66 (AWS)	Maximum	**24.0**
	Nominal	**23.5**
LTE Band 4 (AWS)	Maximum	**24.0**
	Nominal	**23.5**
LTE Band 25 (PCS)	Maximum	**24.0**
	Nominal	**23.5**
LTE Band 2 (PCS)	Maximum	**24.0**
	Nominal	**23.5**
LTE Band 41 (PC2)	Maximum	**26.2**
	Nominal	**25.7**

Mode / Band		Modulated Average (dBm)
IEEE 802.11b (2.4 GHz)	Maximum	**19.0**
	Nominal	**18.0**
IEEE 802.11g (2.4 GHz)	Maximum	**17.5**
	Nominal	**16.5**
IEEE 802.11n (2.4 GHz)	Maximum	**17.5**
	Nominal	**16.5**

Mode / Band		Modulated Average (dBm)									
		20 MHz Bandwidth				40 MHz Bandwidth			80 MHz Bandwidth		
		Ch. 36, 64-100	Ch. 40-60, 104-136, 153-161	Ch. 140-149	Ch. 165	Ch. 38, 62-102	Ch. 46-54, 110, 118-126	Ch. 134, 151-159	Ch. 42, 106	Ch. 58	Ch. 122-155
IEEE 802.11a (5 GHz)	Maximum	**16.0**	**18.5**	**16.5**	**17.0**						
	Nominal	**15.0**	**17.5**	**15.5**	**16.0**						
IEEE 802.11n (5 GHz)	Maximum	**16.0**	**18.5**	**16.5**	**17.0**	**14.0**	**16.0**	**16.0**			
	Nominal	**15.0**	**17.5**	**15.5**	**16.0**	**13.0**	**15.0**	**15.0**			
IEEE 802.11ac (5 GHz)	Maximum	**14.0**	**16.5**	**14.5**	**14.5**	**12.0**	**14.0**	**14.0**	**11.0**	**12.0**	**13.0**
	Nominal	**13.0**	**15.5**	**13.5**	**13.5**	**11.0**	**13.0**	**13.0**	**10.0**	**11.0**	**12.0**

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1.4 DUT Antenna Locations

The overall dimensions of this device are > 9 x 5 cm. A diagram showing the location of the device antennas can be found in Appendix F. 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

Device Sides/Edges for SAR Testing						
Mode	Back	Front	Top	Bottom	Right	Left
GPRS 850	Yes	Yes	No	Yes	No	Yes
GPRS 1900	Yes	Yes	No	Yes	Yes	No
UMTS 850	Yes	Yes	No	Yes	No	Yes
UMTS 1750	Yes	Yes	No	Yes	Yes	No
UMTS 1900	Yes	Yes	No	Yes	Yes	No
EVDO BC10 (§90S)	Yes	Yes	No	Yes	No	Yes
EVDO BC0 (§22H)	Yes	Yes	No	Yes	No	Yes
PCS EVDO	Yes	Yes	No	Yes	Yes	No
LTE Band 71	Yes	Yes	No	Yes	No	Yes
LTE Band 12	Yes	Yes	No	Yes	No	Yes
LTE Band 13	Yes	Yes	No	Yes	No	Yes
LTE Band 26 (Cell)	Yes	Yes	No	Yes	No	Yes
LTE Band 66 (AWS)	Yes	Yes	No	Yes	Yes	No
LTE Band 25 (PCS)	Yes	Yes	No	Yes	Yes	No
LTE Band 41	Yes	Yes	No	Yes	Yes	No
2.4 GHz WLAN	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN	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 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 Bluetooth + 5 GHz WI-FI	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
5	GSM voice + 2.4 GHz WI-FI	Yes	Yes	N/A	Yes	
6	GSM voice + 5 GHz WI-FI	Yes	Yes	N/A	Yes	
7	GSM voice + 2.4 GHz Bluetooth	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
8	GSM voice + 2.4 GHz Bluetooth + 5 GHz WI-FI	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
9	UMTS + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes	
10	UMTS + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
11	UMTS + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
12	UMTS + 2.4 GHz Bluetooth + 5 GHz WI-FI	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
13	LTE + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes	
14	LTE + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
15	LTE + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
16	LTE + 2.4 GHz Bluetooth + 5 GHz WI-FI	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
17	CDMA/EVDO data + 2.4 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
18	CDMA/EVDO data + 5 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
19	CDMA/EVDO data + 2.4 GHz Bluetooth	Yes*^	Yes*	Yes^	Yes	* Pre-installed VOIP applications are considered ^ Bluetooth Tethering is considered
20	CDMA/EVDO data + 2.4 GHz Bluetooth + 5 GHz WI-FI	Yes*^	Yes*	Yes^	Yes	* Pre-installed VOIP applications are considered ^ Bluetooth Tethering is considered
21	GPRS/EDGE + 2.4 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
22	GPRS/EDGE + 5 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
23	GPRS/EDGE + 2.4 GHz Bluetooth	Yes*^	Yes*	Yes^	Yes	* Pre-installed VOIP applications are considered ^ Bluetooth Tethering is considered
24	GPRS/EDGE + 2.4 GHz Bluetooth + 5 GHz WI-FI	Yes*^	Yes*	Yes^	Yes	* Pre-installed VOIP applications are considered ^ Bluetooth Tethering is considered

1. 2.4 GHz WLANand 2.4 GHz Bluetooth share the same antenna path and cannot transmit simultaneously.
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 U-NII-1 and U-NII-3 by S/W, therefore U-NII2A and U-NII2C were not evaluated for wireless router conditions.
6. This device supports VOLTE and VOWIFI.
7. This device supports Bluetooth Tethering.

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1.6 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 WIFI, 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) 1 Tx antenna output
d) 256 QAM is supported
e) TDWR 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 Bluetooth operations since wireless router 1g SAR was < 1.2 W/kg.

(B) Licensed Transmitter(s)

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

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

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

This device supports 64QAM on the uplink 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 $\leq \frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is $\leq$ 1.45 W/kg, per Section 5.2.4 of FCC KDB Publication 941225 D05v02r05.

This device supports LTE Carrier Aggregation (CA) in the downlink only. 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.

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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. Additional SAR tests for phablet SAR were evaluated per KDB 616217 Section 6 (See Section 6.9 for more information).

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

This device supports 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).

1.7 Guidance Applied

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

1.8 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 26 (Cell) (814.7 - 848.3 MHz)				
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)				
	LTE Band 66 (AWS) (1710.7 - 1779.3 MHz)				
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)				
	LTE Band 25 (PCS) (1850.7 - 1914.3 MHz)				
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)				
	LTE Band 41 (2498.5 - 2687.5 MHz)				
Channel Bandwidths	LTE Band 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 26 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz				
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 66 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 25 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 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 26 (Cell): 1.4 MHz	814.7 (26697)		831.5 (26865)	848.3 (27033)	
LTE Band 26 (Cell): 3 MHz	815.5 (26705)		831.5 (26865)	847.5 (27025)	
LTE Band 26 (Cell): 5 MHz	816.5 (26715)		831.5 (26865)	846.5 (27015)	
LTE Band 26 (Cell): 10 MHz	819 (26740)		831.5 (26865)	844 (26990)	
LTE Band 26 (Cell): 15 MHz	821.5 (26765)		831.5 (26865)	841.5 (26965)	
LTE Band 5 (Cell): 1.4 MHz	824.7 (20407)		836.5 (20525)	848.3 (20643)	
LTE Band 5 (Cell): 3 MHz	825.5 (20415)		836.5 (20525)	847.5 (20635)	
LTE Band 5 (Cell): 5 MHz	826.5 (20425)		836.5 (20525)	846.5 (20625)	
LTE Band 5 (Cell): 10 MHz	829 (20450)		836.5 (20525)	844 (20600)	
LTE Band 66 (AWS): 1.4 MHz	1710.7 (131979)		1745 (132322)	1779.3 (132665)	
LTE Band 66 (AWS): 3 MHz	1711.5 (131987)		1745 (132322)	1778.5 (132657)	
LTE Band 66 (AWS): 5 MHz	1712.5 (131997)		1745 (132322)	1777.5 (132647)	
LTE Band 66 (AWS): 10 MHz	1715 (132022)		1745 (132322)	1775 (132622)	
LTE Band 66 (AWS): 15 MHz	1717.5 (132047)		1745 (132322)	1772.5 (132597)	
LTE Band 66 (AWS): 20 MHz	1720 (132072)		1745 (132322)	1770 (132572)	
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)		1732.5 (20175)	1754.3 (20393)	
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)		1732.5 (20175)	1753.5 (20385)	
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)		1732.5 (20175)	1752.5 (20375)	
LTE Band 4 (AWS): 10 MHz	1715 (20000)		1732.5 (20175)	1750 (20350)	
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)		1732.5 (20175)	1747.5 (20325)	
LTE Band 4 (AWS): 20 MHz	1720 (20050)		1732.5 (20175)	1745 (20300)	
LTE Band 25 (PCS): 1.4 MHz	1850.7 (26047)		1882.5 (26365)	1914.3 (26683)	
LTE Band 25 (PCS): 3 MHz	1851.5 (26055)		1882.5 (26365)	1913.5 (26675)	
LTE Band 25 (PCS): 5 MHz	1852.5 (26065)		1882.5 (26365)	1912.5 (26665)	
LTE Band 25 (PCS): 10 MHz	1855 (26090)		1882.5 (26365)	1910 (26640)	
LTE Band 25 (PCS): 15 MHz	1857.5 (26115)		1882.5 (26365)	1907.5 (26615)	
LTE Band 25 (PCS): 20 MHz	1860 (26140)		1882.5 (26365)	1905 (26590)	
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)		1880 (18900)	1909.3 (19193)	
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)		1880 (18900)	1908.5 (19185)	
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)		1880 (18900)	1907.5 (19175)	
LTE Band 2 (PCS): 10 MHz	1855 (18650)		1880 (18900)	1905 (19150)	
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)		1880 (18900)	1902.5 (19125)	
LTE Band 2 (PCS): 20 MHz	1860 (18700)		1880 (18900)	1900 (19100)	
LTE Band 41: 5 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
UE Category	DL UE Cat 6, UL UE Cat 5				
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 10. It supports carrier aggregation feature as shown in 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 10 Features are not supported: Wi-Fi offloading, 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:

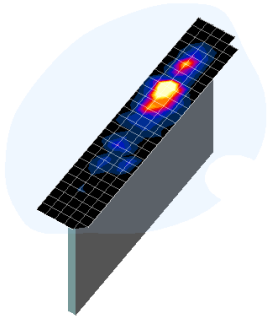

Figure 4-1
Sample SAR Area Scan

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].

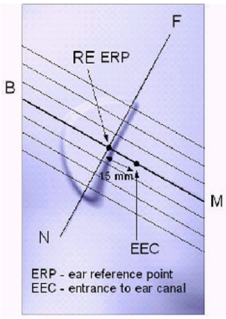

Figure 5-1
Close-Up Side view of ERP

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.

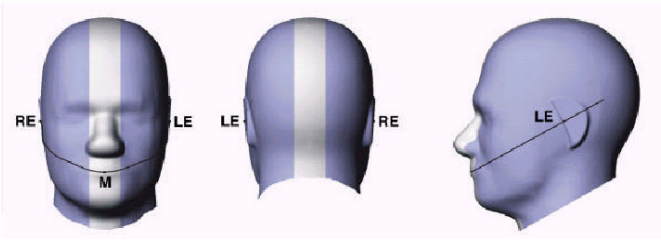

Figure 5-2
Front, back and side view of SAM Twin Phantom

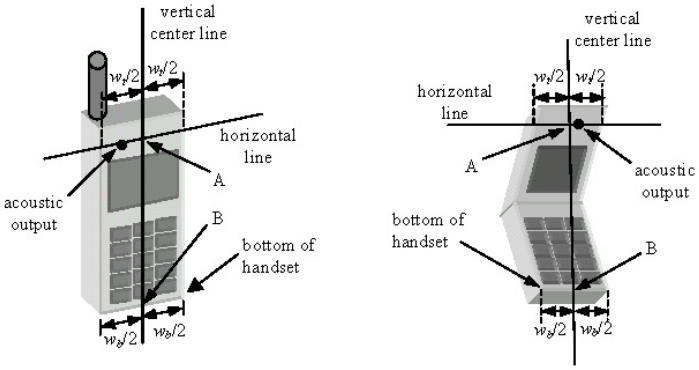

Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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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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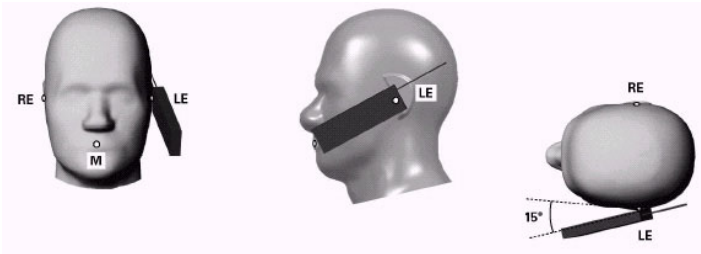

Figure 6-2 Front, Side and Top View of Ear/15º Tilt Position

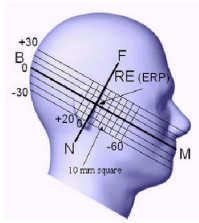

Figure 6-3
Side view w/ relevant markings

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.

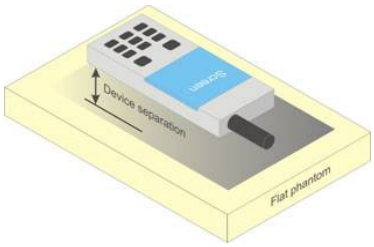

Figure 6-4
Sample Body-Worn Diagram

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 support voice calls next to the ear, the phablets procedures outlined in KDB Publication 648474 D04v01r03

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

6.9 Proximity Sensor Considerations

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

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

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

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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.

8.5 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 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

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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.

8.6 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.

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.

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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 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.

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

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

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

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

8.7.4 Initial Test Position Procedure

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

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.

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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.

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.

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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]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC		MHz	RC1	RC3	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	564	90S	820.1	24.39	24.45	24.48	24.62	24.50	24.67
Cellular	1013	22H	824.7	24.88	24.55	24.49	24.55	24.79	24.54
	384	22H	836.52	24.80	24.47	24.48	24.63	24.57	24.44
	777	22H	848.31	24.53	24.62	24.60	24.49	24.80	24.65
PCS	25	24E	1851.25	24.27	24.27	24.54	24.34	24.48	24.56
	600	24E	1880	24.38	24.35	24.37	24.50	24.66	24.58
	1175	24E	1908.75	24.25	24.44	24.48	24.29	24.52	24.46

Table 9-2
Reduced Conducted Power

Band	Channel	Rule Part	Frequency	SO55 [dBm]	SO55 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC		MHz	RC1	RC3	FCH+SCH	FCH	(RTAP)	(RETAP)
PCS	25	24E	1851.25	23.30	23.20	23.54	23.38	23.53	23.54
	600	24E	1880	23.28	23.33	23.28	23.50	23.62	23.56
	1175	24E	1908.75	23.24	23.39	23.57	23.21	23.46	23.51

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.

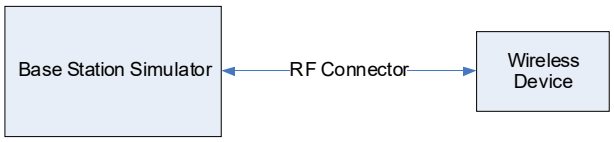

Figure 9-1
Power Measurement Setup

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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**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**
GSM 850	128	33.62	33.26	**31.99**	27.50	27.46
	190	33.59	33.39	**32.08**	27.56	27.50
	251	33.46	33.50	**32.06**	27.31	27.30
GSM 1900	512	30.50	30.49	**29.11**	25.99	25.78
	661	30.59	30.61	**29.08**	25.89	25.89
	810	30.62	30.66	**29.03**	25.94	25.86

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**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**
GSM 850	128	24.59	24.23	**25.97**	18.47	21.44
	190	24.56	24.36	**26.06**	18.53	21.48
	251	24.43	24.47	**26.04**	18.28	21.28
GSM 1900	512	21.47	21.46	**23.09**	16.96	19.76
	661	21.56	21.58	**23.06**	16.86	19.87
	810	21.59	21.63	**23.01**	16.91	19.84

GSM 850	**Frame Avg.Targets:**	24.17	24.17	**25.68**	18.17	21.18
GSM 1900		21.17	21.17	**22.68**	16.67	19.68

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Note:

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

GSM Class: B
GPRS Multislot class: 10 (Max 2 Tx uplink slots)
EDGE Multislot class: 10 (Max 2 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	25.04	25.09	25.05	24.68	24.89	24.85	24.87	24.84	24.82	-
99		12.2 kbps AMR	25.30	25.24	25.07	24.68	24.63	24.69	24.53	24.71	24.68	-
6	HSDPA	Subtest 1	25.03	25.01	25.14	24.54	24.54	24.62	24.90	24.57	24.80	0
6		Subtest 2	25.01	25.15	25.05	24.65	24.57	24.78	24.56	24.76	24.62	0
6		Subtest 3	24.78	24.90	24.82	24.37	24.22	24.11	24.09	24.15	24.10	0.5
6		Subtest 4	24.87	24.89	24.85	24.37	24.40	24.36	24.14	24.03	24.26	0.5
6	HSUPA	Subtest 1	25.15	25.19	25.08	24.82	24.73	24.73	24.69	24.87	24.72	0
6		Subtest 2	23.13	23.21	23.13	22.85	22.59	22.53	22.51	22.69	22.57	2
6		Subtest 3	24.39	24.07	24.32	23.79	23.51	23.80	23.89	23.58	23.87	1
6		Subtest 4	23.03	23.08	23.21	22.84	22.58	22.68	22.50	22.89	22.83	2
6		Subtest 5	25.32	25.27	25.11	24.83	24.83	24.81	24.84	24.74	24.60	0

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	23.77	23.98	23.92	23.72	23.76	23.90	-
99		12.2 kbps AMR	23.63	23.59	23.65	23.56	23.67	23.69	-
6	HSDPA	Subtest 1	23.52	23.45	23.66	23.86	23.68	23.81	0
6		Subtest 2	23.63	23.52	23.79	23.52	23.71	23.57	0
6		Subtest 3	23.46	23.25	23.12	23.16	23.07	23.00	0.5
6		Subtest 4	23.34	23.36	23.33	23.12	23.11	23.22	0.5
6	HSUPA	Subtest 1	23.86	23.82	23.78	23.73	23.91	23.68	0
6		Subtest 2	21.81	21.52	21.41	21.48	21.68	21.65	2
6		Subtest 3	22.81	22.49	22.80	22.86	22.63	22.86	1
6		Subtest 4	21.79	21.57	21.75	21.58	21.93	21.82	2
6		Subtest 5	23.77	23.82	23.85	23.92	23.72	23.64	0

This device does not support DC-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	24.86	0	0
	1	50	25.12		0
	1	99	**25.25**		0
	50	0	24.09	0-1	1
	50	25	23.98		1
	50	50	**24.26**		1
	100	0	24.17		1
16QAM	1	0	23.96	0-1	1
	1	50	24.13		1
	1	99	24.00		1
	50	0	22.86	0-2	2
	50	25	23.15		2
	50	50	22.89		2
	100	0	23.18		2
64QAM	1	0	23.05	0-2	2
	1	50	23.14		2
	1	99	22.84		2
	50	0	21.81	0-3	3
	50	25	22.06		3
	50	50	22.16		3
	100	0	21.92		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.

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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	25.25	0	0
	1	36	25.19		0
	1	74	25.19		0
	36	0	24.28	0-1	1
	36	18	23.87		1
	36	37	23.90		1
	75	0	23.80		1
16QAM	1	0	23.95	0-1	1
	1	36	23.88		1
	1	74	24.00		1
	36	0	22.89	0-2	2
	36	18	23.24		2
	36	37	22.84		2
	75	0	23.07		2
64QAM	1	0	23.18	0-2	2
	1	36	22.93		2
	1	74	23.15		2
	36	0	22.05	0-3	3
	36	18	22.18		3
	36	37	21.83		3
	75	0	22.14		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	25.08	25.26	24.81	0	0
	1	25	25.02	24.98	24.83		0
	1	49	25.23	25.22	24.90		0
	25	0	24.19	23.81	24.02	0-1	1
	25	12	24.00	24.23	24.11		1
	25	25	24.30	23.87	24.18		1
	50	0	24.24	24.00	24.17		1
16QAM	1	0	24.02	23.91	24.21	0-1	1
	1	25	23.84	23.99	24.22		1
	1	49	24.06	23.85	24.08		1
	25	0	22.86	22.94	23.17	0-2	2
	25	12	22.93	22.81	23.25		2
	25	25	23.26	23.24	22.93		2
	50	0	23.23	22.81	23.01		2
64QAM	1	0	23.10	22.97	22.93	0-2	2
	1	25	23.15	23.17	22.89		2
	1	49	22.86	22.85	23.07		2
	25	0	22.27	22.11	22.06	0-3	3
	25	12	22.19	22.04	21.98		3
	25	25	22.13	22.28	21.99		3
	50	0	22.18	21.99	22.03		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	25.11	25.03	25.02	0	0
	1	12	25.22	25.10	25.03		0
	1	24	25.27	25.25	25.02		0
	12	0	24.11	24.23	24.27	0-1	1
	12	6	23.91	24.06	24.19		1
	12	13	24.19	24.08	23.82		1
	25	0	23.91	24.09	23.88		1
16QAM	1	0	23.87	23.86	24.09	0-1	1
	1	12	23.85	23.89	24.01		1
	1	24	24.06	23.91	23.90		1
	12	0	22.91	23.01	23.06	0-2	2
	12	6	22.95	22.86	22.86		2
	12	13	23.04	22.92	23.23		2
	25	0	22.87	22.91	22.87		2
64QAM	1	0	23.27	23.18	23.01	0-2	2
	1	12	23.25	22.99	23.06		2
	1	24	22.98	22.98	23.13		2
	12	0	22.08	22.28	21.92	0-3	3
	12	6	21.88	22.21	22.26		3
	12	13	22.08	21.81	22.10		3
	25	0	21.90	22.07	22.11		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	**25.23**	0	0
	1	25	25.08		0
	1	49	24.88		0
	25	0	24.21	0-1	1
	25	12	24.16		1
	25	25	**24.22**		1
	50	0	24.10		1
16QAM	1	0	23.95	0-1	1
	1	25	24.19		1
	1	49	23.86		1
	25	0	23.26	0-2	2
	25	12	23.05		2
	25	25	22.95		2
	50	0	23.22		2
64QAM	1	0	23.19	0-2	2
	1	25	23.27		2
	1	49	23.09		2
	25	0	22.05	0-3	3
	25	12	22.16		3
	25	25	22.24		3
	50	0	21.83		3

Note: LTE Band 12 at 10 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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Table 9-11
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	25.12	25.13	25.08	0	0
	1	12	24.86	25.09	25.00		0
	1	24	24.80	25.21	24.87		0
	12	0	23.89	24.07	24.15	0-1	1
	12	6	23.87	23.90	24.15		1
	12	13	24.29	23.98	23.97		1
	25	0	24.08	24.03	24.28		1
16QAM	1	0	24.11	24.13	23.90	0-1	1
	1	12	24.20	24.19	23.80		1
	1	24	24.24	24.25	24.00		1
	12	0	23.07	22.91	22.93	0-2	2
	12	6	23.16	22.80	23.23		2
	12	13	23.23	23.27	23.02		2
	25	0	23.18	22.81	23.14		2
64QAM	1	0	22.98	23.26	22.83	0-2	2
	1	12	23.29	23.11	22.85		2
	1	24	22.92	23.13	22.85		2
	12	0	22.28	22.12	21.90	0-3	3
	12	6	22.17	22.21	22.14		3
	12	13	21.80	21.89	21.87		3
	25	0	22.18	22.18	21.80		3

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	24.88	25.09	24.99	0	0
	1	7	24.86	25.19	25.24		0
	1	14	24.86	24.87	24.89		0
	8	0	24.21	24.09	24.10	0-1	1
	8	4	24.29	23.99	24.12		1
	8	7	24.25	23.80	24.20		1
	15	0	24.09	24.28	24.17		1
16QAM	1	0	24.21	24.10	24.10	0-1	1
	1	7	24.05	24.12	24.12		1
	1	14	24.09	24.00	24.04		1
	8	0	23.20	22.81	23.28	0-2	2
	8	4	23.12	23.17	23.05		2
	8	7	23.23	22.97	22.81		2
	15	0	22.94	22.97	23.16		2
64QAM	1	0	22.96	22.83	23.15	0-2	2
	1	7	22.94	22.88	23.28		2
	1	14	23.19	23.22	22.94		2
	8	0	22.22	22.27	21.94	0-3	3
	8	4	21.90	22.20	22.08		3
	8	7	22.14	22.07	22.29		3
	15	0	22.14	22.18	21.97		3

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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	25.09	25.21	24.86	0	0
	1	2	25.01	24.82	24.95		0
	1	5	25.01	24.94	24.94		0
	3	0	25.07	25.21	25.01		0
	3	2	24.88	24.92	24.84		0
	3	3	25.27	24.86	24.97		0
	6	0	24.01	24.05	24.29	0-1	1
16QAM	1	0	23.98	24.09	23.94	0-1	1
	1	2	24.12	24.15	23.93		1
	1	5	24.26	24.05	24.00		1
	3	0	23.81	24.05	23.95		1
	3	2	24.12	24.20	24.07		1
	3	3	24.16	24.04	24.27		1
	6	0	22.89	22.97	23.11	0-2	2
64QAM	1	0	23.14	23.17	23.19	0-2	2
	1	2	23.05	23.19	23.19		2
	1	5	23.20	23.23	23.24		2
	3	0	23.22	22.98	22.94		2
	3	2	22.97	23.29	22.89		2
	3	3	23.29	22.95	23.26		2
	6	0	22.17	22.13	21.92	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	**25.30**	0	0
	1	25	25.21		0
	1	49	24.99		0
	25	0	**24.16**	0-1	1
	25	12	23.90		1
	25	25	23.96		1
	50	0	24.01		1
16QAM	1	0	23.82	0-1	1
	1	25	24.19		1
	1	49	24.05		1
	25	0	22.93	0-2	2
	25	12	22.91		2
	25	25	22.98		2
	50	0	22.88		2
64QAM	1	0	23.22	0-2	2
	1	25	23.14		2
	1	49	23.28		2
	25	0	22.16	0-3	3
	25	12	22.15		3
	25	25	22.06		3
	50	0	22.08		3

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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	25.16	0	0
	1	12	25.00		0
	1	24	25.23		0
	12	0	23.86	0-1	1
	12	6	24.29		1
	12	13	24.10		1
	25	0	24.00		1
16QAM	1	0	24.04	0-1	1
	1	12	23.98		1
	1	24	24.07		1
	12	0	23.17	0-2	2
	12	6	23.15		2
	12	13	22.91		2
	25	0	23.25		2
64QAM	1	0	23.09	0-2	2
	1	12	23.21		2
	1	24	23.05		2
	12	0	21.84	0-3	3
	12	6	21.87		3
	12	13	22.28		3
	25	0	21.98		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 26 (Cell)

Table 9-16
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	24.96	0	0
	1	36	**25.14**		0
	1	74	24.81		0
	36	0	23.82	0-1	1
	36	18	24.05		1
	36	37	**24.12**		1
	75	0	23.92		1
16QAM	1	0	24.06	0-1	1
	1	36	24.05		1
	1	74	24.01		1
	36	0	23.13	0-2	2
	36	18	23.23		2
	36	37	23.29		2
	75	0	23.26		2
64QAM	1	0	23.08	0-2	2
	1	36	23.14		2
	1	74	22.92		2
	36	0	21.81	0-3	3
	36	18	22.07		3
	36	37	22.30		3
	75	0	22.26		3

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

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Table 9-17
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	25.14	25.05	25.27	0	0
	1	25	25.13	24.99	24.80		0
	1	49	25.05	25.08	25.08		0
	25	0	24.17	24.05	24.01	0-1	1
	25	12	24.25	24.03	23.83		1
	25	25	24.17	23.91	23.91		1
	50	0	24.22	24.24	24.24		1
16QAM	1	0	23.99	24.24	24.19	0-1	1
	1	25	24.27	23.83	24.16		1
	1	49	24.22	24.05	24.23		1
	25	0	23.16	22.94	22.81	0-2	2
	25	12	22.94	23.21	23.10		2
	25	25	23.01	23.07	23.19		2
	50	0	23.22	22.98	22.93		2
64QAM	1	0	22.82	23.06	23.20	0-2	2
	1	25	23.29	23.24	22.95		2
	1	49	23.00	22.87	23.20		2
	25	0	21.82	21.89	21.86	0-3	3
	25	12	22.26	22.06	22.16		3
	25	25	22.05	22.27	22.28		3
	50	0	22.17	22.14	21.92		3

Table 9-18
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	24.88	25.14	24.90	0	0
	1	12	24.95	25.11	25.00		0
	1	24	25.19	24.80	24.82		0
	12	0	24.03	24.02	24.05	0-1	1
	12	6	23.99	24.20	24.12		1
	12	13	23.91	24.24	24.15		1
	25	0	24.06	24.15	23.84		1
16QAM	1	0	23.92	24.22	24.08	0-1	1
	1	12	24.05	23.86	23.93		1
	1	24	23.97	24.10	23.85		1
	12	0	22.97	22.96	23.09	0-2	2
	12	6	23.15	23.30	22.80		2
	12	13	23.29	23.06	22.85		2
	25	0	22.98	22.95	22.86		2
64QAM	1	0	22.83	22.85	23.06	0-2	2
	1	12	23.21	23.02	22.91		2
	1	24	22.81	23.07	22.84		2
	12	0	22.21	21.95	21.84	0-3	3
	12	6	22.02	21.82	22.10		3
	12	13	22.23	21.80	21.99		3
	25	0	21.92	21.94	22.12		3

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Table 9-19
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	24.89	25.06	25.24	0	0
	1	7	25.30	24.95	25.17		0
	1	14	25.30	25.06	24.83		0
	8	0	24.29	24.28	24.28	0-1	1
	8	4	24.21	23.95	24.13		1
	8	7	24.13	23.88	24.04		1
	15	0	24.01	23.81	24.28		1
16QAM	1	0	24.21	24.30	24.13	0-1	1
	1	7	24.05	24.08	24.28		1
	1	14	23.93	24.09	24.13		1
	8	0	22.93	22.83	23.22	0-2	2
	8	4	23.02	23.27	22.91		2
	8	7	22.95	23.27	23.23		2
	15	0	23.21	23.19	23.21		2
64QAM	1	0	22.92	22.92	23.29	0-2	2
	1	7	22.87	22.87	23.27		2
	1	14	23.16	22.90	23.08		2
	8	0	22.20	22.22	22.14	0-3	3
	8	4	22.09	21.83	22.08		3
	8	7	21.95	22.19	21.90		3
	15	0	21.96	22.15	21.85		3

Table 9-20
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	24.97	25.05	25.25	0	0
	1	2	25.28	25.29	24.96		0
	1	5	25.16	25.17	25.01		0
	3	0	24.84	24.97	25.18		0
	3	2	24.95	24.96	24.93		0
	3	3	24.99	25.30	25.00		0
	6	0	24.09	24.27	24.11	0-1	1
16QAM	1	0	24.14	23.93	23.89	0-1	1
	1	2	24.08	24.00	23.98		1
	1	5	24.16	24.25	23.81		1
	3	0	24.15	23.82	24.15		1
	3	2	24.30	24.25	24.00		1
	3	3	23.99	24.17	24.02		1
	6	0	23.03	22.98	22.81	0-2	2
64QAM	1	0	23.16	23.15	22.83	0-2	2
	1	2	23.12	23.00	22.89		2
	1	5	23.00	22.88	22.90		2
	3	0	23.22	23.09	22.84		2
	3	2	23.06	22.81	22.91		2
	3	3	23.13	22.97	22.83		2
	6	0	22.18	21.89	22.24	0-3	3

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9.4.5 LTE Band 66 (AWS)

Table 9-21
LTE Band 66 (AWS) Maximum 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	**25.00**	24.99	24.75	0	0
	1	50	24.74	24.92	24.68		0
	1	99	24.79	24.89	24.94		0
	50	0	**23.99**	23.77	23.89	0-1	1
	50	25	23.84	23.84	23.73		1
	50	50	23.77	23.86	23.91		1
	100	0	23.94	23.79	23.76		1
16QAM	1	0	23.90	23.73	23.74	0-1	1
	1	50	24.00	23.81	23.71		1
	1	99	23.86	23.75	23.81		1
	50	0	22.73	22.89	22.71	0-2	2
	50	25	22.70	22.68	22.78		2
	50	50	22.73	22.86	22.97		2
	100	0	22.77	22.72	22.89		2
64QAM	1	0	22.85	22.82	22.79	0-2	2
	1	50	22.99	22.82	22.86		2
	1	99	22.73	22.71	22.99		2
	50	0	21.69	21.73	21.77	0-3	3
	50	25	21.76	21.71	21.87		3
	50	50	21.97	21.73	21.70		3
	100	0	21.82	21.78	21.75		3

Table 9-22
LTE Band 66 (AWS) Maximum 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	24.80	24.81	24.76	0	0
	1	36	24.75	24.79	24.94		0
	1	74	24.91	24.71	24.90		0
	36	0	23.83	23.80	23.88	0-1	1
	36	18	23.96	23.71	23.79		1
	36	37	23.83	23.83	23.67		1
	75	0	23.79	23.75	23.70		1
16QAM	1	0	23.99	23.76	24.00	0-1	1
	1	36	23.95	23.96	23.98		1
	1	74	23.87	23.86	23.77		1
	36	0	22.74	22.97	22.90	0-2	2
	36	18	22.72	22.87	22.96		2
	36	37	22.70	22.78	22.97		2
	75	0	22.89	22.74	22.98		2
64QAM	1	0	22.78	22.90	22.93	0-2	2
	1	36	22.74	22.74	22.82		2
	1	74	22.91	23.00	22.96		2
	36	0	21.83	21.78	21.93	0-3	3
	36	18	21.81	21.88	21.98		3
	36	37	21.84	21.72	21.85		3
	75	0	21.93	21.71	21.74		3

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Table 9-23
LTE Band 66 (AWS) Maximum 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	24.86	24.76	24.79	0	0
	1	25	24.82	24.88	24.70		0
	1	49	24.95	24.92	24.99		0
	25	0	23.78	23.91	23.93	0-1	1
	25	12	23.80	23.70	23.90		1
	25	25	23.72	23.84	23.77		1
	50	0	23.75	23.97	23.80		1
16QAM	1	0	23.78	23.97	23.81	0-1	1
	1	25	23.81	23.76	23.80		1
	1	49	23.90	23.86	23.80		1
	25	0	22.80	22.90	22.88	0-2	2
	25	12	22.86	22.78	22.84		2
	25	25	22.88	22.82	22.80		2
	50	0	22.74	22.92	22.98		2
64QAM	1	0	22.81	22.90	22.84	0-2	2
	1	25	22.96	22.70	22.74		2
	1	49	22.81	22.88	22.91		2
	25	0	21.90	21.69	21.74	0-3	3
	25	12	21.74	21.92	21.90		3
	25	25	21.88	21.72	21.75		3
	50	0	21.82	21.69	21.76		3

Table 9-24
LTE Band 66 (AWS) Maximum 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	24.91	24.86	24.85	0	0
	1	12	24.78	24.70	24.95		0
	1	24	24.93	24.76	24.79		0
	12	0	23.99	23.75	23.68	0-1	1
	12	6	23.92	23.98	23.78		1
	12	13	23.95	23.70	23.68		1
	25	0	23.69	23.69	23.74		1
16QAM	1	0	23.69	23.68	23.85	0-1	1
	1	12	23.88	23.95	23.99		1
	1	24	23.98	23.75	23.86		1
	12	0	22.77	22.95	22.87	0-2	2
	12	6	22.83	22.92	22.67		2
	12	13	22.92	22.98	22.98		2
	25	0	22.70	22.91	22.68		2
64QAM	1	0	22.79	22.88	22.97	0-2	2
	1	12	22.73	22.67	22.72		2
	1	24	22.97	22.81	22.70		2
	12	0	21.86	21.88	21.97	0-3	3
	12	6	21.83	21.93	21.81		3
	12	13	21.68	21.76	21.72		3
	25	0	21.92	21.89	21.75		3

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Table 9-25
LTE Band 66 (AWS) Maximum 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	24.98	24.84	24.96	0	0
	1	7	24.83	24.91	24.73		0
	1	14	24.83	24.98	24.70		0
	8	0	23.91	23.94	23.70	0-1	1
	8	4	23.77	23.83	23.84		1
	8	7	23.90	23.93	23.83		1
	15	0	23.98	23.88	23.76		1
16QAM	1	0	23.77	23.85	23.71	0-1	1
	1	7	23.69	23.94	23.78		1
	1	14	23.95	23.89	23.90		1
	8	0	22.90	22.77	22.75	0-2	2
	8	4	22.82	22.89	22.86		2
	8	7	22.97	22.95	22.98		2
	15	0	22.80	22.75	22.96		2
64QAM	1	0	22.94	22.75	22.74	0-2	2
	1	7	22.92	22.94	22.78		2
	1	14	22.99	22.83	22.67		2
	8	0	21.92	22.00	21.80	0-3	3
	8	4	21.93	21.72	21.76		3
	8	7	21.69	21.97	21.83		3
	15	0	21.71	21.69	21.72		3

Table 9-26
LTE Band 66 (AWS) Maximum Conducted Powers -1.4 MHz Bandwidth

LTE Band 66 (AWS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 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	24.92	24.98	24.83	0	0
	1	2	24.85	24.99	24.77		0
	1	5	24.89	24.80	24.84		0
	3	0	24.72	24.84	24.76		0
	3	2	24.82	24.75	24.84		0
	3	3	24.69	24.74	24.78		0
	6	0	23.85	23.68	23.69	0-1	1
16QAM	1	0	23.99	23.92	23.96	0-1	1
	1	2	23.74	23.78	23.99		1
	1	5	23.72	23.97	23.74		1
	3	0	23.99	23.98	23.69		1
	3	2	23.85	23.96	23.94		1
	3	3	23.86	23.95	23.80		1
	6	0	22.80	22.74	22.78	0-2	2
64QAM	1	0	22.80	22.93	22.72	0-2	2
	1	2	22.86	22.84	22.84		2
	1	5	22.79	22.69	22.88		2
	3	0	22.94	22.75	22.67		2
	3	2	22.99	22.85	22.82		2
	3	3	22.78	22.81	22.95		2
	6	0	21.95	21.72	21.67	0-3	3

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Table 9-27
LTE Band 66 (AWS) Reduced 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	23.65	23.65	23.78	0	0
	1	50	23.85	23.82	**23.90**		0
	1	99	23.72	23.72	23.76		0
	50	0	23.81	23.77	23.86	0-1	0
	50	25	23.68	23.76	23.68		0
	50	50	23.67	**23.99**	23.63		0
	100	0	23.62	23.80	23.60		0
16QAM	1	0	23.72	23.69	23.97	0-1	0
	1	50	23.67	23.80	23.72		0
	1	99	23.73	23.62	23.97		0
	50	0	22.77	22.97	22.79	0-2	1
	50	25	22.80	22.83	22.76		1
	50	50	22.95	22.67	22.89		1
	100	0	22.68	22.98	22.72		1
64QAM	1	0	22.86	22.97	22.72	0-2	1
	1	50	22.66	22.61	22.73		1
	1	99	22.79	22.88	22.64		1
	50	0	21.79	21.90	21.95	0-3	2
	50	25	21.68	21.93	21.90		2
	50	50	21.79	21.70	21.70		2
	100	0	21.84	21.95	21.94		2

Table 9-28
LTE Band 66 (AWS) Reduced 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	23.81	23.76	23.98	0	0
	1	36	23.63	23.90	23.65		0
	1	74	23.85	23.79	23.76		0
	36	0	23.73	23.92	23.71	0-1	0
	36	18	23.63	23.94	23.82		0
	36	37	23.90	23.62	23.78		0
	75	0	23.76	23.82	23.64		0
16QAM	1	0	23.64	23.94	23.96	0-1	0
	1	36	23.96	23.61	23.66		0
	1	74	23.90	23.84	23.96		0
	36	0	22.95	22.84	22.99	0-2	1
	36	18	22.83	22.74	23.00		1
	36	37	22.76	22.78	22.76		1
	75	0	22.73	22.77	22.78		1
64QAM	1	0	22.99	22.97	22.96	0-2	1
	1	36	22.64	22.78	22.67		1
	1	74	22.69	22.68	22.95		1
	36	0	21.79	21.78	21.68	0-3	2
	36	18	21.80	21.91	21.81		2
	36	37	21.86	21.95	21.99		2
	75	0	21.84	21.90	21.72		2

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Table 9-29
LTE Band 66 (AWS) Reduced 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	23.96	23.77	23.61	0	0
	1	25	23.82	23.82	23.71		0
	1	49	23.80	23.69	23.83		0
	25	0	23.98	23.73	23.77	0-1	0
	25	12	23.81	23.84	23.85		0
	25	25	23.75	23.66	23.96		0
	50	0	24.00	23.78	23.95		0
16QAM	1	0	23.66	23.72	23.69	0-1	0
	1	25	23.89	23.99	23.65		0
	1	49	23.77	23.76	23.93		0
	25	0	22.92	22.99	22.89	0-2	1
	25	12	22.70	22.67	22.66		1
	25	25	22.90	22.61	22.98		1
	50	0	22.96	22.69	22.83		1
64QAM	1	0	22.83	22.90	22.71	0-2	1
	1	25	22.77	22.87	22.75		1
	1	49	22.85	22.97	22.81		1
	25	0	21.69	21.74	21.89	0-3	2
	25	12	21.96	21.64	21.68		2
	25	25	21.65	21.62	21.92		2
	50	0	21.84	21.92	21.68		2

Table 9-30
LTE Band 66 (AWS) Reduced 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	23.63	23.99	23.76	0	0
	1	12	23.81	23.94	23.90		0
	1	24	23.87	23.87	24.00		0
	12	0	23.95	23.97	23.74	0-1	0
	12	6	23.67	23.88	23.89		0
	12	13	23.82	23.80	23.99		0
	25	0	23.61	23.87	23.69		0
16QAM	1	0	23.89	23.91	23.71	0-1	0
	1	12	23.84	23.90	23.80		0
	1	24	23.72	23.87	23.98		0
	12	0	22.92	22.91	22.99	0-2	1
	12	6	22.78	22.75	22.80		1
	12	13	22.77	22.83	22.82		1
	25	0	22.96	22.95	22.88		1
64QAM	1	0	22.87	22.81	22.65	0-2	1
	1	12	22.88	22.70	22.70		1
	1	24	22.63	22.62	22.84		1
	12	0	21.95	21.72	21.65	0-3	2
	12	6	21.86	21.92	22.00		2
	12	13	21.79	21.82	21.92		2
	25	0	21.97	21.68	21.88		2

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Table 9-31
LTE Band 66 (AWS) Reduced 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	23.96	23.90	23.82	0	0
	1	7	23.63	23.70	23.70		0
	1	14	23.74	23.92	23.86		0
	8	0	23.77	23.68	23.61	0-1	0
	8	4	23.90	23.85	23.84		0
	8	7	23.79	23.94	23.98		0
	15	0	23.97	23.98	23.71		0
16QAM	1	0	23.73	23.66	23.80	0-1	0
	1	7	23.86	23.85	23.64		0
	1	14	23.77	23.78	23.71		0
	8	0	22.84	22.63	22.78	0-2	1
	8	4	22.66	22.88	22.79		1
	8	7	22.84	22.85	22.67		1
	15	0	22.62	22.78	22.74		1
64QAM	1	0	22.85	22.98	22.72	0-2	1
	1	7	22.61	22.91	22.87		1
	1	14	22.98	22.91	22.63		1
	8	0	21.94	21.92	21.88	0-3	2
	8	4	21.71	21.65	21.67		2
	8	7	21.79	21.61	21.75		2
	15	0	21.62	21.67	21.72		2

Table 9-32
LTE Band 66 (AWS) Reduced 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	23.75	23.78	23.92	0	0
	1	2	23.64	23.93	23.70		0
	1	5	23.93	23.82	23.95		0
	3	0	23.93	23.95	23.72		0
	3	2	23.73	23.79	23.91		0
	3	3	23.83	23.85	23.72		0
	6	0	23.64	23.86	23.80	0-1	0
16QAM	1	0	23.62	23.68	23.82	0-1	0
	1	2	23.93	23.79	23.89		0
	1	5	23.89	23.93	23.68		0
	3	0	23.95	23.92	23.69		0
	3	2	23.66	23.91	23.99		0
	3	3	23.72	23.87	23.64		0
	6	0	22.88	22.74	22.87	0-2	1
64QAM	1	0	22.78	22.92	22.79	0-2	1
	1	2	22.68	22.81	22.91		1
	1	5	22.97	22.67	22.81		1
	3	0	22.94	22.68	22.98		1
	3	2	22.63	22.66	22.63		1
	3	3	22.69	22.65	23.00		1
	6	0	21.60	21.89	21.64	0-3	2

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9.4.6 LTE Band 25 (PCS)

Table 9-33
LTE Band 25 (PCS) Maximum 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	**24.99**	24.67	24.73	0	0
	1	50	24.82	24.94	24.78		0
	1	99	24.73	24.53	24.53		0
	50	0	**23.92**	23.82	23.79	0-1	1
	50	25	23.67	23.88	23.76		1
	50	50	23.78	23.91	23.62		1
	100	0	23.53	23.76	23.68		1
16QAM	1	0	23.98	23.86	23.73	0-1	1
	1	50	23.52	23.50	23.60		1
	1	99	23.58	23.69	23.70		1
	50	0	22.85	22.70	22.68	0-2	2
	50	25	22.96	22.69	22.84		2
	50	50	22.80	22.58	22.84		2
	100	0	22.84	22.70	22.98		2
64QAM	1	0	22.70	22.98	22.87	0-2	2
	1	50	22.97	22.70	22.90		2
	1	99	22.94	22.91	22.53		2
	50	0	21.52	21.61	21.84	0-3	3
	50	25	21.80	21.82	21.87		3
	50	50	21.67	21.87	21.82		3
	100	0	21.60	21.52	21.57		3

Table 9-34
LTE Band 25 (PCS) Maximum 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	24.62	24.51	24.72	0	0
	1	36	24.71	24.82	24.92		0
	1	74	24.76	24.99	24.92		0
	36	0	23.71	23.79	23.54	0-1	1
	36	18	23.55	23.96	23.94		1
	36	37	23.85	23.85	23.54		1
	75	0	23.61	23.75	23.73		1
16QAM	1	0	23.85	23.86	23.94	0-1	1
	1	36	23.76	23.59	23.78		1
	1	74	23.72	23.71	23.92		1
	36	0	22.91	22.89	22.98	0-2	2
	36	18	22.62	22.78	22.84		2
	36	37	22.81	22.68	22.61		2
	75	0	22.86	22.94	22.99		2
64QAM	1	0	22.87	22.99	22.67	0-2	2
	1	36	22.63	22.93	22.65		2
	1	74	22.93	22.90	22.52		2
	36	0	21.74	21.98	21.51	0-3	3
	36	18	21.76	21.51	21.96		3
	36	37	21.55	21.63	21.55		3
	75	0	21.60	21.55	21.96		3

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Table 9-35
LTE Band 25 (PCS) Maximum 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	24.61	24.99	24.71	0	0
	1	25	24.64	24.87	24.95		0
	1	49	24.84	24.55	24.82		0
	25	0	23.69	23.95	23.60	0-1	1
	25	12	23.79	23.71	23.64		1
	25	25	23.64	23.82	23.56		1
	50	0	23.96	23.52	23.73		1
16QAM	1	0	24.00	23.66	23.64	0-1	1
	1	25	23.68	23.65	23.64		1
	1	49	23.88	23.78	23.89		1
	25	0	22.56	22.63	22.98	0-2	2
	25	12	22.85	22.52	22.90		2
	25	25	22.77	22.55	22.90		2
	50	0	22.84	22.57	22.90		2
64QAM	1	0	22.56	22.62	22.63	0-2	2
	1	25	22.64	22.69	22.54		2
	1	49	22.79	22.88	22.50		2
	25	0	21.99	21.87	21.94	0-3	3
	25	12	21.89	21.71	21.83		3
	25	25	21.56	21.66	21.74		3
	50	0	21.70	21.80	21.93		3

Table 9-36
LTE Band 25 (PCS) Maximum 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	24.65	24.50	24.59	0	0
	1	12	24.65	25.00	24.56		0
	1	24	24.60	24.57	24.81		0
	12	0	23.84	23.82	23.94	0-1	1
	12	6	23.71	23.56	23.56		1
	12	13	23.73	23.92	23.99		1
	25	0	23.65	23.52	23.54		1
16QAM	1	0	23.61	23.90	23.93	0-1	1
	1	12	23.90	23.94	23.92		1
	1	24	23.85	23.99	23.81		1
	12	0	22.76	22.52	22.91	0-2	2
	12	6	22.97	22.97	22.63		2
	12	13	22.52	22.89	22.94		2
	25	0	22.85	22.91	22.56		2
64QAM	1	0	22.95	22.63	22.55	0-2	2
	1	12	22.85	22.90	22.97		2
	1	24	22.77	22.78	22.76		2
	12	0	21.96	21.60	21.71	0-3	3
	12	6	21.97	21.94	21.77		3
	12	13	21.88	21.97	21.78		3
	25	0	21.56	21.65	21.58		3

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Table 9-37
LTE Band 25 (PCS) Maximum 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	24.78	24.52	24.61	0	0
	1	7	24.61	24.92	24.59		0
	1	14	24.68	24.75	24.55		0
	8	0	23.83	23.78	23.99	0-1	1
	8	4	23.76	23.77	23.96		1
	8	7	23.69	23.98	23.79		1
	15	0	23.91	23.90	23.58		1
16QAM	1	0	23.65	23.51	23.94	0-1	1
	1	7	23.83	23.97	23.77		1
	1	14	23.91	23.87	23.65		1
	8	0	22.54	22.59	22.87	0-2	2
	8	4	22.92	22.60	22.98		2
	8	7	22.64	22.93	23.00		2
	15	0	22.58	22.75	22.70		2
64QAM	1	0	22.94	22.77	22.74	0-2	2
	1	7	22.86	22.81	22.99		2
	1	14	22.96	22.83	22.92		2
	8	0	21.81	21.55	21.86	0-3	3
	8	4	21.89	21.56	21.83		3
	8	7	21.72	21.71	22.00		3
	15	0	21.66	21.70	21.99		3

Table 9-38
LTE Band 25 (PCS) Maximum Conducted Powers -1.4 MHz Bandwidth

LTE Band 25 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 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	24.58	24.91	24.57	0	0
	1	2	24.94	24.90	24.81		0
	1	5	24.75	25.00	24.85		0
	3	0	24.97	24.83	24.91		0
	3	2	24.85	24.58	24.96		0
	3	3	24.87	24.70	24.86		0
	6	0	23.93	23.97	23.74	0-1	1
16QAM	1	0	23.87	23.89	23.90	0-1	1
	1	2	23.65	23.63	23.93		1
	1	5	23.74	23.98	23.81		1
	3	0	23.77	23.87	23.94		1
	3	2	23.86	23.53	23.80		1
	3	3	23.87	23.68	23.78		1
	6	0	22.66	22.78	22.92	0-2	2
64QAM	1	0	22.92	22.95	22.87	0-2	2
	1	2	22.51	22.95	22.83		2
	1	5	22.73	22.83	22.52		2
	3	0	22.98	22.56	22.61		2
	3	2	22.79	22.70	22.64		2
	3	3	22.96	22.76	22.63		2
	6	0	21.97	21.79	21.84	0-3	3

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Table 9-39
LTE Band 25 (PCS) Reduced 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	23.75	23.62	23.65	0	0
	1	50	**23.93**	23.86	23.92		0
	1	99	23.88	23.77	23.67		0
	50	0	**23.98**	23.85	23.97	0-1	0
	50	25	23.85	23.92	23.75		0
	50	50	23.95	23.71	23.75		0
	100	0	23.80	23.70	23.62		0
16QAM	1	0	23.90	23.87	23.61	0-1	0
	1	50	23.72	23.88	23.80		0
	1	99	23.79	23.92	23.60		0
	50	0	22.78	23.00	22.81	0-2	1
	50	25	22.79	22.60	22.65		1
	50	50	22.64	22.64	22.90		1
	100	0	22.89	22.75	22.93		1
64QAM	1	0	22.89	22.67	22.89	0-2	1
	1	50	22.74	22.67	22.81		1
	1	99	22.68	22.76	22.79		1
	50	0	21.85	21.80	21.62	0-3	2
	50	25	21.73	21.91	21.82		2
	50	50	21.63	21.66	21.96		2
	100	0	21.71	21.78	21.88		2

Table 9-40
LTE Band 25 (PCS) Reduced 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	23.77	23.95	23.78	0	0
	1	36	23.75	23.63	23.70		0
	1	74	23.88	23.92	23.73		0
	36	0	23.80	23.63	23.94	0-1	0
	36	18	23.79	23.93	23.61		0
	36	37	23.82	23.70	23.85		0
	75	0	23.71	23.77	23.76		0
16QAM	1	0	23.95	23.92	23.96	0-1	0
	1	36	23.63	23.91	23.87		0
	1	74	23.85	23.92	23.80		0
	36	0	22.62	22.72	22.63	0-2	1
	36	18	22.91	22.78	22.69		1
	36	37	22.86	22.60	22.78		1
	75	0	22.87	22.73	22.92		1
64QAM	1	0	22.81	22.61	22.80	0-2	1
	1	36	22.97	22.77	22.81		1
	1	74	22.74	22.82	22.89		1
	36	0	21.60	21.95	21.89	0-3	2
	36	18	21.65	21.79	21.67		2
	36	37	21.86	21.80	21.64		2
	75	0	21.69	21.62	21.78		2

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Table 9-41
LTE Band 25 (PCS) Reduced 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	23.86	23.65	24.00	0	0
	1	25	23.61	23.83	23.78		0
	1	49	23.71	23.73	23.71		0
	25	0	23.79	23.62	23.65	0-1	0
	25	12	23.77	23.61	23.73		0
	25	25	23.93	23.99	23.93		0
	50	0	23.67	23.82	23.98		0
16QAM	1	0	23.87	23.71	23.63	0-1	0
	1	25	23.91	23.75	23.90		0
	1	49	23.98	23.71	23.86		0
	25	0	22.84	22.61	22.91	0-2	1
	25	12	22.85	22.61	22.96		1
	25	25	22.91	22.91	22.61		1
	50	0	22.93	22.82	22.68		1
64QAM	1	0	22.91	22.77	22.98	0-2	1
	1	25	22.64	22.78	22.65		1
	1	49	22.88	22.96	22.75		1
	25	0	21.88	21.71	21.63	0-3	2
	25	12	21.72	22.00	21.75		2
	25	25	21.67	21.84	21.82		2
	50	0	21.61	21.98	21.60		2

Table 9-42
LTE Band 25 (PCS) Reduced 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	23.89	23.70	23.93	0	0
	1	12	23.88	23.90	23.75		0
	1	24	23.68	23.63	23.74		0
	12	0	23.93	23.73	23.80	0-1	0
	12	6	23.72	23.67	23.79		0
	12	13	23.83	23.67	23.68		0
	25	0	23.96	23.76	23.69		0
16QAM	1	0	23.84	23.63	23.77	0-1	0
	1	12	23.94	23.83	23.80		0
	1	24	23.62	23.60	23.69		0
	12	0	22.95	22.81	22.71	0-2	1
	12	6	22.85	22.68	22.76		1
	12	13	22.85	22.95	22.88		1
	25	0	22.95	22.72	22.96		1
64QAM	1	0	22.83	22.77	22.94	0-2	1
	1	12	22.87	22.91	22.77		1
	1	24	22.66	22.93	22.68		1
	12	0	21.78	21.99	21.64	0-3	2
	12	6	21.93	21.95	21.88		2
	12	13	21.69	21.73	21.74		2
	25	0	21.92	21.98	21.79		2

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Table 9-43
LTE Band 25 (PCS) Reduced 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	23.64	23.81	23.61	0	0
	1	7	23.81	23.87	23.70		0
	1	14	23.98	23.75	23.90		0
	8	0	23.78	23.91	23.98	0-1	0
	8	4	23.84	23.81	23.89		0
	8	7	23.89	23.96	23.92		0
	15	0	23.63	23.63	23.83		0
16QAM	1	0	23.85	23.90	23.76	0-1	0
	1	7	23.93	23.69	23.85		0
	1	14	23.99	23.83	23.76		0
	8	0	22.69	22.88	22.71	0-2	1
	8	4	22.97	22.83	22.68		1
	8	7	22.79	22.71	22.91		1
	15	0	22.65	22.68	22.67		1
64QAM	1	0	22.67	22.85	22.80	0-2	1
	1	7	22.69	22.90	22.87		1
	1	14	22.87	22.63	22.81		1
	8	0	21.66	21.65	21.85	0-3	2
	8	4	21.66	21.78	21.70		2
	8	7	21.74	21.91	21.98		2
	15	0	21.76	21.71	21.97		2

Table 9-44
LTE Band 25 (PCS) Reduced 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	23.75	23.99	23.95	0	0
	1	2	23.73	23.60	23.90		0
	1	5	23.83	23.74	23.94		0
	3	0	23.83	23.94	23.85		0
	3	2	23.68	23.63	23.76		0
	3	3	23.96	23.72	23.96		0
	6	0	23.82	23.89	23.81	0-1	0
16QAM	1	0	23.71	23.87	23.93	0-1	0
	1	2	23.95	23.89	23.78		0
	1	5	23.76	23.66	23.73		0
	3	0	23.79	23.64	23.92		0
	3	2	23.62	23.75	23.90		0
	3	3	23.70	23.76	23.91		0
	6	0	22.68	22.64	22.77	0-2	1
64QAM	1	0	23.00	22.60	22.82	0-2	1
	1	2	22.66	22.92	22.96		1
	1	5	22.79	22.61	22.87		1
	3	0	22.93	22.80	22.66		1
	3	2	22.95	22.82	22.84		1
	3	3	22.91	22.74	22.71		1
	6	0	21.93	21.82	21.65	0-3	2

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9.4.7 LTE Band 41

Table 9-45
LTE Band 41 PC3 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	24.65	24.91	24.68	24.93	24.71	0	0
	1	50	24.87	24.61	24.76	**25.00**	24.89		0
	1	99	24.96	24.58	24.79	24.67	24.72		0
	50	0	23.88	23.89	23.60	23.52	23.97	0-1	1
	50	25	23.72	23.87	23.92	23.75	23.82		1
	50	50	23.59	23.65	23.58	**23.98**	23.87		1
	100	0	23.82	23.63	23.83	23.91	23.84		1
16QAM	1	0	23.95	23.93	23.65	23.99	23.64	0-1	1
	1	50	23.85	23.80	23.71	23.98	23.73		1
	1	99	23.56	23.82	23.83	23.53	23.62		1
	50	0	22.57	22.85	22.82	22.79	22.53	0-2	2
	50	25	22.85	22.92	22.59	22.51	22.59		2
	50	50	22.92	22.77	22.52	22.75	22.61		2
	100	0	22.77	22.57	22.71	22.66	22.62		2
64QAM	1	0	22.51	22.97	22.60	22.58	22.55	0-2	2
	1	50	22.98	22.61	22.70	22.68	22.54		2
	1	99	22.91	22.99	22.69	22.87	22.67		2
	50	0	21.72	21.76	21.66	22.00	21.52	0-3	3
	50	25	21.70	21.96	21.89	21.97	21.99		3
	50	50	21.74	21.80	21.63	21.66	21.84		3
	100	0	21.67	21.66	21.84	21.64	21.95		3

Table 9-46
LTE Band 41 PC3 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	24.59	24.56	24.82	24.68	24.65	0	0
	1	36	24.77	24.68	24.92	24.57	24.97		0
	1	74	24.66	24.61	24.94	24.57	24.64		0
	36	0	23.81	23.67	23.76	23.66	23.50	0-1	1
	36	18	23.74	23.60	23.78	23.54	23.59		1
	36	37	23.56	23.61	23.70	23.53	23.97		1
	75	0	23.80	23.95	23.73	23.61	23.72		1
16QAM	1	0	23.76	23.97	23.68	23.69	23.55	0-1	1
	1	36	24.00	23.97	23.90	23.80	23.79		1
	1	74	23.73	23.95	23.62	23.90	23.73		1
	36	0	22.84	22.53	22.74	22.85	22.74	0-2	2
	36	18	22.85	22.81	22.83	22.74	22.80		2
	36	37	22.61	22.74	22.58	22.58	22.81		2
	75	0	22.61	22.54	22.97	22.91	22.82		2
64QAM	1	0	22.70	22.89	22.70	22.76	22.62	0-2	2
	1	36	22.77	22.53	22.62	22.65	22.86		2
	1	74	22.72	22.88	22.99	22.53	22.81		2
	36	0	21.83	21.85	21.77	21.60	21.54	0-3	3
	36	18	21.58	21.68	21.81	21.83	21.84		3
	36	37	21.79	21.62	21.58	21.74	21.65		3
	75	0	21.65	21.67	21.54	21.86	21.70		3

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Table 9-47
LTE Band 41 PC3 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	24.79	24.54	24.95	24.93	24.97	0	0
	1	25	24.79	24.73	24.80	24.64	24.63		0
	1	49	24.76	24.69	24.78	24.66	24.51		0
	25	0	23.94	23.61	23.78	23.59	23.68	0-1	1
	25	12	23.53	23.78	23.51	23.69	23.74		1
	25	25	23.69	23.54	23.86	23.75	23.77		1
	50	0	23.78	23.70	23.87	23.74	23.59		1
16QAM	1	0	23.87	23.94	23.96	23.62	23.98	0-1	1
	1	25	23.81	23.68	23.53	23.80	23.79		1
	1	49	23.67	23.80	23.82	23.83	23.58		1
	25	0	22.75	22.80	22.62	22.76	22.77	0-2	2
	25	12	22.71	22.63	23.00	22.67	22.58		2
	25	25	22.60	22.90	22.59	22.51	22.65		2
	50	0	22.90	22.71	22.71	22.79	22.77		2
64QAM	1	0	22.85	22.88	22.81	22.54	22.50	0-2	2
	1	25	22.97	22.83	22.94	22.65	22.80		2
	1	49	22.54	22.96	22.80	22.89	22.97		2
	25	0	21.78	21.53	21.92	21.73	21.90	0-3	3
	25	12	21.71	21.64	21.83	21.82	21.95		3
	25	25	21.79	21.79	21.70	21.79	21.99		3
	50	0	21.89	21.86	22.00	21.96	21.72		3

Table 9-48
LTE Band 41 PC3 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	24.84	24.89	24.78	24.59	24.50	0	0
	1	12	24.88	24.78	24.87	24.58	24.96		0
	1	24	24.59	24.82	24.99	24.91	24.90		0
	12	0	23.75	23.98	23.92	23.99	23.57	0-1	1
	12	6	23.55	23.96	24.00	23.95	23.65		1
	12	13	23.81	23.81	23.66	23.73	23.97		1
	25	0	23.68	23.99	23.56	23.57	23.62		1
16QAM	1	0	23.74	23.86	23.85	23.83	23.62	0-1	1
	1	12	23.74	23.80	23.83	23.67	23.72		1
	1	24	23.98	23.65	23.88	23.96	23.78		1
	12	0	22.70	22.87	22.67	22.87	22.57	0-2	2
	12	6	22.73	22.73	22.91	22.98	22.79		2
	12	13	23.00	22.93	22.86	22.53	22.56		2
	25	0	22.51	22.64	22.64	22.70	22.71		2
64QAM	1	0	22.94	22.82	22.69	22.59	22.79	0-2	2
	1	12	22.74	22.75	22.93	22.64	22.55		2
	1	24	22.73	22.75	22.97	22.60	22.88		2
	12	0	21.67	21.90	21.53	21.82	21.87	0-3	3
	12	6	21.81	21.60	21.92	21.53	21.92		3
	12	13	21.95	21.61	21.54	21.88	21.73		3
	25	0	22.00	21.54	21.60	21.72	21.79		3

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Table 9-49
LTE Band 41 PC2 Maximum 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	27.63	27.35	27.67	27.31	27.62	0	0
	1	50	27.56	27.24	27.63	**27.67**	27.29		0
	1	99	27.38	27.37	27.61	27.36	27.53		0
	50	0	26.68	26.27	26.20	26.40	26.52	0-1	1
	50	25	26.56	26.67	26.59	26.67	26.51		1
	50	50	26.42	26.34	26.39	26.49	26.61		1
	100	0	26.57	26.45	26.46	26.45	26.32		1
16QAM	1	0	26.51	26.64	26.41	26.53	26.62	0-1	1
	1	50	26.21	26.54	26.68	26.21	26.31		1
	1	99	26.61	26.37	26.48	26.21	26.67		1
	50	0	25.55	25.47	25.69	25.63	25.70	0-2	2
	50	25	25.39	25.61	25.55	25.50	25.25		2
	50	50	25.49	25.59	25.24	25.37	25.59		2
	100	0	25.48	25.64	25.32	25.38	25.24		2
64QAM	1	0	25.21	25.62	25.40	25.65	25.47	0-2	2
	1	50	25.56	25.68	25.61	25.39	25.34		2
	1	99	25.41	25.26	25.39	25.25	25.63		2
	50	0	24.39	24.48	24.32	24.58	24.34	0-3	3
	50	25	24.40	24.28	24.33	24.33	24.66		3
	50	50	24.32	24.51	24.59	24.20	24.64		3
	100	0	24.24	24.46	24.50	24.67	24.36		3

Table 9-50
LTE Band 41 PC2 Maximum 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	27.38	27.30	27.50	27.50	27.58	0	0
	1	36	27.41	27.38	27.45	27.43	27.69		0
	1	74	27.29	27.33	27.52	27.22	27.51		0
	36	0	26.47	26.69	26.21	26.54	26.38	0-1	1
	36	18	26.29	26.53	26.61	26.44	26.28		1
	36	37	26.33	26.56	26.30	26.30	26.58		1
	75	0	26.59	26.35	26.22	26.36	26.34		1
16QAM	1	0	26.58	26.55	26.26	26.22	26.40	0-1	1
	1	36	26.65	26.39	26.36	26.37	26.27		1
	1	74	26.22	26.60	26.23	26.50	26.56		1
	36	0	25.25	25.67	25.54	25.46	25.69	0-2	2
	36	18	25.57	25.61	25.55	25.29	25.39		2
	36	37	25.61	25.37	25.48	25.48	25.49		2
	75	0	25.33	25.63	25.64	25.60	25.60		2
64QAM	1	0	25.39	25.51	25.31	25.60	25.67	0-2	2
	1	36	25.64	25.26	25.59	25.54	25.53		2
	1	74	25.25	25.57	25.56	25.66	25.49		2
	36	0	24.34	24.64	24.54	24.43	24.70	0-3	3
	36	18	24.67	24.51	24.55	24.53	24.40		3
	36	37	24.29	24.31	24.43	24.37	24.70		3
	75	0	24.21	24.56	24.23	24.62	24.50		3

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Table 9-51
LTE Band 41 PC2 Maximum 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	27.35	27.27	27.69	27.48	27.28	0	0
	1	25	27.61	27.38	27.53	27.63	27.25		0
	1	49	27.34	27.67	27.40	27.52	27.32		0
	25	0	26.60	26.34	26.69	26.29	26.50	0-1	1
	25	12	26.21	26.55	26.60	26.24	26.40		1
	25	25	26.30	26.57	26.34	26.33	26.21		1
	50	0	26.28	26.29	26.64	26.26	26.57		1
16QAM	1	0	26.33	26.69	26.64	26.68	26.56	0-1	1
	1	25	26.35	26.59	26.22	26.57	26.48		1
	1	49	26.67	26.25	26.52	26.68	26.30		1
	25	0	25.63	25.45	25.28	25.65	25.54	0-2	2
	25	12	25.43	25.59	25.67	25.24	25.42		2
	25	25	25.23	25.59	25.30	25.53	25.44		2
	50	0	25.54	25.64	25.49	25.29	25.63		2
64QAM	1	0	25.66	25.54	25.35	25.58	25.43	0-2	2
	1	25	25.53	25.47	25.48	25.57	25.23		2
	1	49	25.33	25.23	25.67	25.38	25.61		2
	25	0	24.53	24.51	24.29	24.24	24.53	0-3	3
	25	12	24.48	24.31	24.49	24.53	24.49		3
	25	25	24.49	24.70	24.44	24.35	24.22		3
	50	0	24.65	24.35	24.55	24.22	24.50		3

Table 9-52
LTE Band 41 PC2 Maximum 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	27.32	27.26	27.46	27.46	27.68	0	0
	1	12	27.53	27.23	27.40	27.43	27.68		0
	1	24	27.31	27.21	27.35	27.69	27.26		0
	12	0	26.28	26.52	26.23	26.47	26.58	0-1	1
	12	6	26.26	26.64	26.56	26.61	26.55		1
	12	13	26.66	26.33	26.48	26.52	26.37		1
	25	0	26.40	26.64	26.65	26.34	26.21		1
16QAM	1	0	26.51	26.25	26.33	26.50	26.41	0-1	1
	1	12	26.36	26.39	26.31	26.52	26.46		1
	1	24	26.38	26.44	26.34	26.59	26.65		1
	12	0	25.42	25.36	25.32	25.47	25.46	0-2	2
	12	6	25.65	25.43	25.64	25.37	25.57		2
	12	13	25.53	25.21	25.58	25.27	25.58		2
	25	0	25.49	25.70	25.38	25.56	25.64		2
64QAM	1	0	25.66	25.47	25.49	25.33	25.68	0-2	2
	1	12	25.65	25.52	25.32	25.66	25.28		2
	1	24	25.34	25.26	25.44	25.55	25.38		2
	12	0	24.46	24.24	24.37	24.31	24.28	0-3	3
	12	6	24.65	24.22	24.26	24.33	24.49		3
	12	13	24.44	24.50	24.21	24.54	24.65		3
	25	0	24.31	24.36	24.26	24.22	24.42		3

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Table 9-53
LTE Band 41 PC2 Reduced 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	25.90	26.01	25.85	26.14	25.91	0	0
	1	50	26.10	26.04	26.18	26.14	25.85		0
	1	99	25.75	25.79	25.90	**26.19**	25.89		0
	50	0	25.98	25.94	26.02	**26.16**	25.78	0-1	0
	50	25	26.06	25.96	25.96	25.83	26.08		0
	50	50	25.85	25.83	26.11	26.11	25.77		0
	100	0	25.81	25.88	25.81	25.77	26.02		0
16QAM	1	0	25.88	26.20	25.83	26.08	26.08	0-1	0
	1	50	25.70	25.95	26.07	25.75	26.17		0
	1	99	25.78	26.07	25.87	26.14	26.14		0
	50	0	25.10	25.18	25.01	25.17	25.17	0-2	0.5
	50	25	24.88	24.80	24.94	24.95	25.02		0.5
	50	50	25.09	24.71	25.11	25.15	24.85		0.5
	100	0	24.96	24.87	24.77	24.95	25.12		0.5
64QAM	1	0	24.99	24.90	24.91	24.96	24.96	0-2	0.5
	1	50	25.02	24.86	24.74	24.91	25.04		0.5
	1	99	24.76	24.76	24.82	24.75	25.16		0.5
	50	0	23.90	23.94	23.87	24.10	24.15	0-3	1.5
	50	25	23.90	24.04	23.88	24.02	23.80		1.5
	50	50	24.11	23.75	23.89	24.06	23.71		1.5
	100	0	24.13	24.01	24.07	23.78	23.84		1.5

Table 9-54
LTE Band 41 PC2 Reduced 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	25.71	25.76	26.02	25.83	26.08	0	0
	1	36	25.83	25.99	26.00	25.72	25.78		0
	1	74	25.76	25.96	25.99	25.86	26.04		0
	36	0	26.02	25.76	25.88	26.04	26.14	0-1	0
	36	18	25.71	25.82	25.99	26.17	25.72		0
	36	37	25.78	26.10	25.88	26.01	25.96		0
	75	0	25.87	25.82	25.89	25.84	26.03		0
16QAM	1	0	25.90	26.02	26.04	26.17	25.76	0-1	0
	1	36	25.78	26.08	26.19	25.84	26.01		0
	1	74	25.97	26.16	25.76	26.07	25.90		0
	36	0	24.73	24.73	25.19	24.82	24.77	0-2	0.5
	36	18	24.84	24.90	25.16	24.72	24.98		0.5
	36	37	24.85	24.85	24.75	24.88	24.79		0.5
	75	0	24.74	24.95	24.97	24.86	24.95		0.5
64QAM	1	0	24.71	24.76	25.13	24.97	25.08	0-2	0.5
	1	36	24.86	24.85	24.96	25.06	24.83		0.5
	1	74	24.86	25.17	25.03	24.81	25.05		0.5
	36	0	23.76	24.17	23.89	23.75	23.72	0-3	1.5
	36	18	23.96	23.85	24.04	23.75	24.16		1.5
	36	37	24.00	24.15	23.96	23.98	23.99		1.5
	75	0	23.73	23.70	23.80	23.76	23.91		1.5

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Table 9-55
LTE Band 41 PC2 Reduced 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	26.14	25.75	25.96	26.01	25.88	0	0
	1	25	25.90	26.07	25.92	26.08	26.06		0
	1	49	25.83	25.83	25.92	25.89	25.75		0
	25	0	26.04	26.10	25.87	25.84	26.17	0-1	0
	25	12	25.77	26.00	25.79	25.76	25.70		0
	25	25	25.95	25.86	25.92	26.07	25.82		0
	50	0	26.19	25.99	25.77	25.85	25.92		0
16QAM	1	0	26.19	26.15	25.89	25.90	25.83	0-1	0
	1	25	26.03	25.93	26.14	25.72	25.81		0
	1	49	26.06	25.81	25.94	25.87	25.75		0
	25	0	24.82	24.83	24.70	25.03	24.96	0-2	0.5
	25	12	24.94	24.84	24.92	25.18	24.91		0.5
	25	25	25.12	25.13	25.00	25.04	24.92		0.5
	50	0	24.87	24.77	25.14	24.93	24.93		0.5
64QAM	1	0	25.05	24.81	25.13	25.06	25.14	0-2	0.5
	1	25	24.70	24.72	24.86	25.08	25.02		0.5
	1	49	24.85	25.02	24.85	25.16	25.13		0.5
	25	0	24.06	24.13	23.88	23.71	23.99	0-3	1.5
	25	12	24.05	23.87	24.13	23.87	23.78		1.5
	25	25	24.02	24.15	24.18	24.03	24.08		1.5
	50	0	24.05	23.72	24.08	24.18	24.04		1.5

Table 9-56
LTE Band 41 PC2 Reduced 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	25.98	25.87	25.88	25.95	26.09	0	0
	1	12	26.02	26.19	25.89	25.77	26.01		0
	1	24	26.12	25.82	25.98	25.96	26.18		0
	12	0	26.19	26.08	26.01	25.96	25.90	0-1	0
	12	6	25.85	26.07	25.82	25.75	25.85		0
	12	13	25.82	26.13	26.08	25.79	26.09		0
	25	0	25.87	25.89	26.01	25.72	26.12		0
16QAM	1	0	25.99	25.86	26.19	25.91	25.71	0-1	0
	1	12	25.90	26.14	26.18	25.78	26.01		0
	1	24	25.71	26.13	26.09	25.93	25.75		0
	12	0	24.87	25.03	25.07	24.81	24.86	0-2	0.5
	12	6	25.08	25.19	24.97	24.72	24.89		0.5
	12	13	25.11	24.74	24.82	25.05	25.01		0.5
	25	0	24.77	25.15	24.73	24.81	24.84		0.5
64QAM	1	0	25.17	25.19	25.06	25.02	25.04	0-2	0.5
	1	12	24.91	24.86	24.74	24.93	25.20		0.5
	1	24	25.04	24.92	25.15	25.02	24.83		0.5
	12	0	23.95	23.84	23.97	23.86	24.15	0-3	1.5
	12	6	24.11	24.14	23.79	24.13	23.80		1.5
	12	13	23.76	24.17	23.76	23.91	23.74		1.5
	25	0	23.86	23.82	24.08	23.91	24.14		1.5

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9.5 WLAN Conducted Powers

Table 9-57
2.4 GHz WLAN Maximum Average RF Power

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
		Average	Average	Average
2412	1	**20.78**	17.44	17.31
2437	6	20.28	17.28	17.17
2462	11	20.34	16.57	16.63

Table 9-58
5 GHz WLAN Maximum Average RF Power

5GHz (20MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
		Average	Average	Average
5180	36	16.53	16.76	13.60
5200	40	**19.39**	19.36	16.49
5220	44	19.22	19.29	16.41
5240	48	19.21	19.16	16.33
5260	52	19.06	19.05	16.24
5280	56	19.12	19.08	16.32
5300	60	**19.15**	19.04	16.29
5320	64	16.11	16.15	13.15
5500	100	16.07	16.17	13.10
5520	104	18.98	18.99	15.98
5600	120	18.82	18.95	15.87
5680	136	**18.99**	18.91	15.99
5700	140	16.93	16.91	13.99
5745	149	16.85	17.12	14.10
5765	153	18.91	18.93	15.98
5785	157	18.89	18.99	15.91
5805	161	**18.95**	18.90	15.98
5825	165	17.25	17.48	14.38

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Table 9-59
2.4 GHz WLAN Reduced Average RF Power

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
		Average	Average	Average
2412	1	**18.11**	17.44	17.31
2437	6	18.07	17.28	17.17
2462	11	18.01	16.57	16.63

Table 9-60
5 GHz WLAN Reduced Average RF Power

5GHz (20MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
		Average	Average	Average
5180	36	15.82	15.85	13.60
5200	40	18.48	18.49	16.49
5220	44	18.31	18.44	16.41
5240	48	18.24	18.22	16.33
5260	52	18.03	18.12	16.24
5280	56	18.09	18.11	16.32
5300	60	**18.10**	18.13	16.29
5320	64	15.37	15.33	13.15
5500	100	15.40	15.43	13.10
5520	104	**18.22**	18.18	15.98
5600	120	17.92	17.96	15.87
5680	136	18.18	18.26	15.99
5700	140	16.14	16.34	13.99
5745	149	16.20	16.23	14.10
5765	153	**18.20**	18.12	15.98
5785	157	18.11	18.11	15.91
5805	161	17.99	18.11	15.98
5825	165	16.68	16.61	14.38

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.

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- The bolded data rate and channel above were tested for SAR.

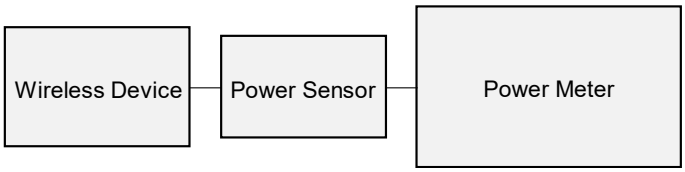

Figure 9-4
Power Measurement Setup

9.6 Bluetooth Conducted Powers

Table 9-61
Bluetooth Average RF Power

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	9.17	8.265
2441	1.0	39	**10.70**	11.753
2480	1.0	78	9.40	8.713
2402	2.0	0	8.49	7.066
2441	2.0	39	10.09	10.209
2480	2.0	78	8.71	7.426
2402	3.0	0	8.47	7.025
2441	3.0	39	10.09	10.205
2480	3.0	78	8.76	7.519

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

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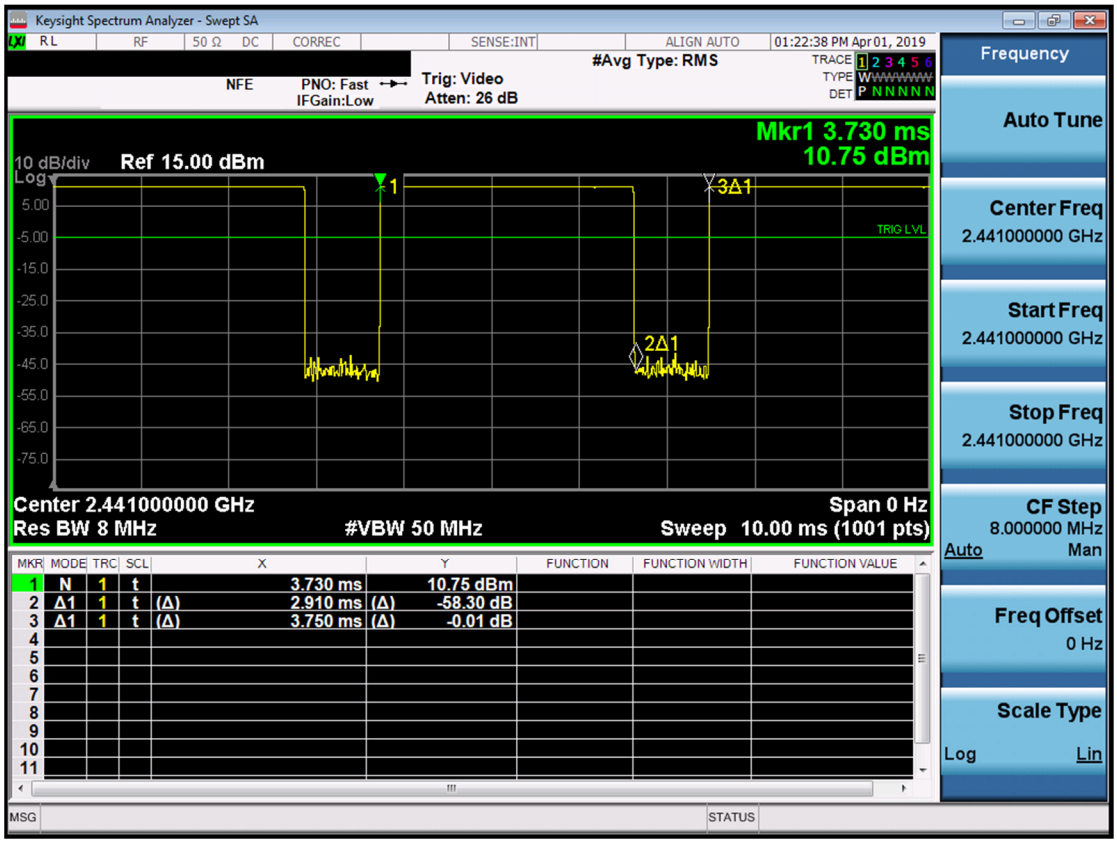

Figure 9-5
Bluetooth Transmission Plot

Equation 9-1
Bluetooth Duty Cycle Calculation

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.910ms}{3.750ms} * 100\% = 77.6\%$$

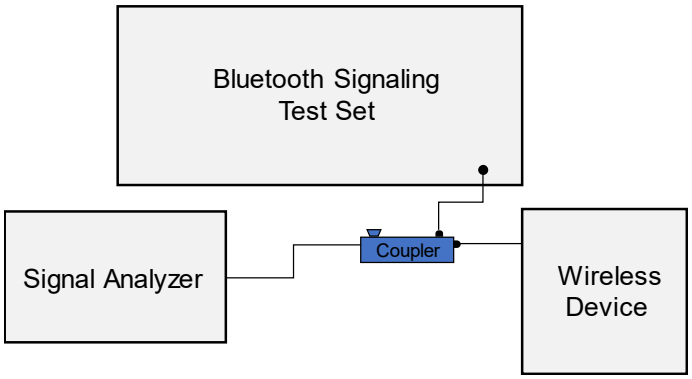

Figure 9-6
Power Measurement Setup

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10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured Tissue Properties - Head

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
3/28/2019	750H	22.1	680	0.845	41.152	0.888	42.305	-4.84%	-2.73%
			695	0.849	41.107	0.889	42.227	-4.50%	-2.65%
			700	0.851	41.094	0.889	42.201	-4.27%	-2.62%
			710	0.854	41.066	0.890	42.149	-4.04%	-2.57%
			720	0.857	41.038	0.891	42.097	-3.82%	-2.52%
			740	0.863	40.977	0.893	41.994	-3.36%	-2.42%
			755	0.868	40.931	0.894	41.916	-2.91%	-2.35%
			770	0.874	40.893	0.895	41.838	-2.35%	-2.26%
			785	0.879	40.860	0.896	41.760	-1.90%	-2.16%
4/1/2019	835H	21.3	820	0.901	42.635	0.899	41.578	0.22%	2.54%
			835	0.916	42.450	0.900	41.500	1.78%	2.29%
			850	0.931	42.268	0.916	41.500	1.64%	1.85%
3/24/2019	1750H	20.4	1710	1.332	38.501	1.348	40.142	-1.19%	-4.09%
			1750	1.356	38.434	1.371	40.079	-1.09%	-4.10%
			1790	1.379	38.357	1.394	40.016	-1.08%	-4.15%
4/10/2019	1750H	22.7	1710	1.325	38.729	1.348	40.142	-1.71%	-3.52%
			1750	1.350	38.660	1.371	40.079	-1.53%	-3.54%
			1790	1.373	38.604	1.394	40.016	-1.51%	-3.53%
4/3/2019	1900H	20.5	1850	1.413	41.443	1.400	40.000	0.93%	3.61%
			1880	1.432	41.408	1.400	40.000	2.29%	3.52%
			1910	1.450	41.373	1.400	40.000	3.57%	3.43%
4/8/2019	1900H	21.5	1850	1.401	40.131	1.400	40.000	0.07%	0.33%
			1880	1.432	40.000	1.400	40.000	2.29%	0.00%
			1910	1.463	39.889	1.400	40.000	4.50%	-0.28%
3/21/2019	2450H	21.3	2400	1.789	38.279	1.756	39.289	1.88%	-2.57%
			2450	1.825	38.176	1.800	39.200	1.39%	-2.61%
			2500	1.867	38.123	1.855	39.136	0.65%	-2.59%
4/3/2019	2450H	21.6	2400	1.770	37.922	1.756	39.289	0.80%	-3.48%
			2450	1.808	37.823	1.800	39.200	0.44%	-3.51%
			2500	1.849	37.750	1.855	39.136	-0.32%	-3.54%
4/9/2019	2450H	21.9	2400	1.778	37.609	1.756	39.289	1.25%	-4.28%
			2450	1.814	37.503	1.800	39.200	0.78%	-4.33%
			2500	1.853	37.445	1.855	39.136	-0.11%	-4.32%
3/26/2019	2450H	21.8	2400	1.770	38.422	1.756	39.289	0.80%	-2.21%
			2450	1.809	38.338	1.800	39.200	0.50%	-2.20%
			2500	1.849	38.259	1.855	39.136	-0.32%	-2.24%
			2550	1.887	38.172	1.909	39.073	-1.15%	-2.31%
			2600	1.927	38.085	1.964	39.009	-1.88%	-2.37%
			2650	1.967	38.004	2.018	38.945	-2.53%	-2.42%
			2700	2.007	37.905	2.073	38.882	-3.18%	-2.51%
03/25/2019	5200H-5800H	21.0	5180	4.463	34.788	4.635	36.009	-3.71%	-3.39%
			5200	4.484	34.746	4.655	35.986	-3.67%	-3.45%
			5220	4.505	34.706	4.676	35.963	-3.66%	-3.50%
			5240	4.525	34.672	4.696	35.940	-3.64%	-3.53%
			5260	4.547	34.620	4.717	35.917	-3.60%	-3.61%
			5280	4.570	34.586	4.737	35.894	-3.53%	-3.64%
			5300	4.592	34.555	4.758	35.871	-3.49%	-3.67%
			5320	4.613	34.535	4.778	35.849	-3.45%	-3.67%
			5500	4.810	34.220	4.963	35.643	-3.08%	-3.99%
			5520	4.835	34.184	4.983	35.620	-2.97%	-4.03%
			5540	4.861	34.147	5.004	35.597	-2.86%	-4.07%
			5560	4.883	34.112	5.024	35.574	-2.81%	-4.11%
			5580	4.902	34.077	5.045	35.551	-2.83%	-4.15%
			5600	4.924	34.044	5.065	35.529	-2.78%	-4.18%
			5620	4.951	34.001	5.086	35.506	-2.65%	-4.24%
			5640	4.978	33.971	5.106	35.483	-2.51%	-4.26%
			5660	4.998	33.933	5.127	35.460	-2.52%	-4.31%
			5680	5.021	33.919	5.147	35.437	-2.45%	-4.28%
			5700	5.040	33.887	5.168	35.414	-2.48%	-4.31%
			5745	5.096	33.790	5.214	35.363	-2.26%	-4.45%
			5765	5.118	33.761	5.234	35.340	-2.22%	-4.47%
			5785	5.139	33.733	5.255	35.317	-2.21%	-4.49%
			5800	5.153	33.710	5.270	35.300	-2.22%	-4.50%
			5805	5.158	33.701	5.275	35.294	-2.22%	-4.51%
			5825	5.180	33.661	5.296	35.271	-2.19%	-4.56%

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Table 10-2
Measured Tissue Properties - Body

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
4/1/2019	750B	19.7	680	0.929	54.217	0.958	55.804	-3.03%	-2.84%
			695	0.935	54.207	0.959	55.745	-2.50%	-2.76%
			700	0.936	54.200	0.959	55.726	-2.40%	-2.74%
			710	0.940	54.178	0.960	55.687	-2.08%	-2.71%
			720	0.944	54.148	0.961	55.648	-1.77%	-2.70%
			725	0.946	54.129	0.961	55.629	-1.56%	-2.70%
			740	0.951	54.063	0.963	55.570	-1.25%	-2.71%
			755	0.955	54.005	0.964	55.512	-0.93%	-2.71%
			770	0.960	53.943	0.965	55.453	-0.52%	-2.72%
			785	0.965	53.870	0.966	55.395	-0.10%	-2.75%
3/18/2019	835B	20.2	820	0.953	53.385	0.969	55.258	-1.65%	-3.39%
			835	0.968	53.245	0.970	55.200	-0.21%	-3.54%
			850	0.983	53.096	0.988	55.154	-0.51%	-3.73%
3/20/2019	835B	21.2	820	0.961	53.731	0.969	55.258	-0.83%	-2.76%
			835	0.976	53.581	0.970	55.200	0.62%	-2.93%
			850	0.991	53.434	0.988	55.154	0.30%	-3.12%
3/25/2019	835B	21.4	820	0.966	54.929	0.969	55.258	-0.31%	-0.60%
			835	0.980	54.807	0.970	55.200	1.03%	-0.71%
			850	0.995	54.686	0.988	55.154	0.71%	-0.85%
3/18/2019	1750B	20.0	1710	1.491	51.490	1.463	53.537	1.91%	-3.82%
			1750	1.536	51.333	1.488	53.432	3.23%	-3.93%
			1790	1.584	51.178	1.514	53.326	4.62%	-4.03%
4/1/2019	1750B	20.3	1710	1.496	51.798	1.463	53.537	2.26%	-3.25%
			1750	1.540	51.617	1.488	53.432	3.49%	-3.40%
			1790	1.582	51.447	1.514	53.326	4.49%	-3.52%
4/4/2019	1750B	21.8	1710	1.478	51.662	1.463	53.537	1.03%	-3.50%
			1750	1.524	51.502	1.488	53.432	2.42%	-3.61%
			1790	1.569	51.330	1.514	53.326	3.63%	-3.74%
4/11/2019	1750B	21.5	1710	1.451	51.678	1.463	53.537	-0.82%	-3.47%
			1750	1.495	51.531	1.488	53.432	0.47%	-3.56%
			1790	1.536	51.374	1.514	53.326	1.45%	-3.66%
3/18/2019	1900B	21.5	1850	1.510	51.668	1.520	53.300	-0.66%	-3.06%
			1880	1.545	51.564	1.520	53.300	1.64%	-3.26%
			1910	1.577	51.469	1.520	53.300	3.75%	-3.44%
3/25/2019	1900B	22.9	1850	1.516	52.881	1.520	53.300	-0.26%	-0.79%
			1880	1.549	52.779	1.520	53.300	1.91%	-0.98%
			1910	1.584	52.688	1.520	53.300	4.21%	-1.15%
3/27/2019	1900B	22.9	1850	1.517	52.153	1.520	53.300	-0.20%	-2.15%
			1880	1.551	52.047	1.520	53.300	2.04%	-2.35%
			1910	1.585	51.946	1.520	53.300	4.28%	-2.54%
4/3/2019	1900B	23.0	1850	1.512	52.296	1.520	53.300	-0.53%	-1.88%
			1880	1.546	52.196	1.520	53.300	1.71%	-2.07%
			1910	1.580	52.108	1.520	53.300	3.95%	-2.24%
4/10/2019	1900B	22.8	1850	1.511	52.096	1.520	53.300	-0.59%	-2.26%
			1880	1.546	51.994	1.520	53.300	1.71%	-2.45%
			1910	1.581	51.896	1.520	53.300	4.01%	-2.63%
4/8/2019	2450B	22.4	2400	1.982	52.154	1.902	52.767	4.21%	-1.16%
			2450	2.040	52.022	1.950	52.700	4.62%	-1.29%
			2500	2.098	51.888	2.021	52.636	3.81%	-1.42%
			2550	2.160	51.739	2.092	52.573	3.25%	-1.59%
			2600	2.221	51.594	2.163	52.509	2.68%	-1.74%
			2650	2.283	51.432	2.234	52.445	2.19%	-1.93%
			2700	2.345	51.269	2.305	52.382	1.74%	-2.12%
03/25/2019	5200B-5800B	20.3	5180	5.327	48.912	5.276	49.041	0.97%	-0.26%
			5200	5.357	48.877	5.299	49.014	1.09%	-0.28%
			5220	5.386	48.832	5.323	48.987	1.18%	-0.32%
			5240	5.418	48.772	5.346	48.960	1.35%	-0.38%
			5260	5.447	48.732	5.369	48.933	1.45%	-0.41%
			5280	5.474	48.727	5.393	48.906	1.50%	-0.37%
			5300	5.502	48.688	5.416	48.879	1.59%	-0.39%
			5320	5.527	48.656	5.439	48.851	1.62%	-0.40%
			5500	5.793	48.321	5.650	48.607	2.53%	-0.59%
			5520	5.822	48.291	5.673	48.580	2.63%	-0.59%
			5540	5.861	48.238	5.696	48.553	2.90%	-0.65%
			5560	5.891	48.194	5.720	48.526	2.99%	-0.68%
			5580	5.925	48.146	5.743	48.499	3.17%	-0.73%
			5600	5.947	48.114	5.766	48.471	3.14%	-0.74%
			5620	5.973	48.078	5.790	48.444	3.16%	-0.76%
			5640	6.008	48.033	5.813	48.417	3.35%	-0.79%
			5660	6.039	48.005	5.837	48.390	3.46%	-0.80%
			5680	6.075	47.948	5.860	48.363	3.67%	-0.86%
			5700	6.104	47.932	5.883	48.336	3.76%	-0.84%
			5745	6.170	47.857	5.936	48.275	3.94%	-0.87%
			5765	6.202	47.802	5.959	48.248	4.08%	-0.92%
			5785	6.233	47.755	5.982	48.220	4.20%	-0.96%
			5800	6.257	47.732	6.000	48.200	4.28%	-0.97%
			5805	6.266	47.726	6.006	48.193	4.33%	-0.97%
			5825	6.298	47.713	6.029	48.166	4.46%	-0.94%

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)	$Deviation_{1g}$ (%)
E	750	HEAD	03/28/2019	23.1	21.1	0.200	1161	3589	1.510	8.030	7.550	-5.98%
D	835	HEAD	04/01/2019	22.4	21.3	0.200	4d133	7357	1.920	9.430	9.600	1.80%
E	1750	HEAD	03/24/2019	21.9	20.3	0.100	1150	3589	3.630	36.500	36.300	-0.55%
L	1750	HEAD	04/10/2019	23.0	22.7	0.100	1150	7308	3.590	36.500	35.900	-1.64%
H	1900	HEAD	04/03/2019	21.5	20.5	0.100	5d080	7409	4.030	39.800	40.300	1.26%
D	1900	HEAD	04/08/2019	22.3	21.5	0.100	5d149	7357	4.070	39.300	40.700	3.56%
E	2450	HEAD	03/21/2019	23.1	20.8	0.100	797	3589	5.170	52.700	51.700	-1.90%
E	2450	HEAD	04/03/2019	24.0	21.6	0.100	797	3589	5.310	52.700	53.100	0.76%
E	2450	HEAD	04/09/2019	23.5	21.9	0.100	981	3589	5.250	52.300	52.500	0.38%
E	2600	HEAD	03/26/2019	24.3	21.8	0.100	1064	3589	5.830	57.000	58.300	2.28%
H	5250	HEAD	03/25/2019	20.7	21.0	0.050	1057	7409	3.750	79.200	75.000	-5.30%
H	5600	HEAD	03/25/2019	20.7	21.0	0.050	1057	7409	4.100	84.100	82.000	-2.50%
H	5750	HEAD	03/25/2019	20.7	21.0	0.050	1057	7409	3.870	80.500	77.400	-3.85%
L	750	BODY	04/01/2019	21.7	19.7	0.200	1161	7308	1.700	8.430	8.500	0.83%
D	835	BODY	03/18/2019	20.8	20.2	0.200	4d133	7357	2.060	9.750	10.300	5.64%
D	835	BODY	03/20/2019	21.7	21.2	0.200	4d133	7357	1.920	9.750	9.600	-1.54%
D	835	BODY	03/25/2019	22.1	21.4	0.200	4d133	7357	1.880	9.750	9.400	-3.59%
J	1750	BODY	03/18/2019	20.2	20.0	0.100	1150	7488	3.830	36.600	38.300	4.64%
J	1750	BODY	04/01/2019	20.6	20.3	0.100	1148	7488	3.390	37.000	33.900	-8.38%
J	1750	BODY	04/11/2019	22.5	21.5	0.100	1008	7488	3.600	37.400	36.000	-3.74%
G	1900	BODY	03/18/2019	23.0	21.5	0.100	5d080	7410	4.050	39.200	40.500	3.32%
G	1900	BODY	03/25/2019	22.2	21.0	0.100	5d080	7410	4.170	39.200	41.700	6.38%
G	1900	BODY	03/27/2019	22.4	22.9	0.100	5d080	7410	4.220	39.200	42.200	7.65%
G	1900	BODY	04/03/2019	22.2	22.5	0.100	5d080	7410	4.210	39.200	42.100	7.40%
G	1900	BODY	04/10/2019	22.4	21.7	0.100	5d149	7410	4.160	39.400	41.600	5.58%
K	2450	BODY	04/08/2019	23.0	22.4	0.100	797	7417	5.060	51.100	50.600	-0.98%
K	2600	BODY	04/08/2019	23.0	22.4	0.100	1126	7417	5.360	54.100	53.600	-0.92%
L	5250	BODY	03/25/2019	22.8	20.5	0.050	1191	7308	3.720	77.000	74.400	-3.38%
L	5600	BODY	03/25/2019	22.8	20.5	0.050	1191	7308	3.910	79.200	78.200	-1.26%
L	5750	BODY	03/25/2019	22.8	20.5	0.050	1191	7308	3.500	76.100	70.000	-8.02%

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Table 10-4
System Verification Results – 10g

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)	$Deviation_{10g}$ (%)
J	1750	BODY	03/18/2019	20.2	20.0	0.100	1150	7488	2.000	19.400	20.000	3.09%
J	1750	BODY	04/04/2019	20.8	19.9	0.100	1148	7488	1.990	19.800	19.900	0.51%
G	1900	BODY	03/27/2019	22.4	22.9	0.100	5d080	7410	2.180	20.600	21.800	5.83%
G	1900	BODY	04/03/2019	22.2	22.5	0.100	5d080	7410	2.180	20.600	21.800	5.83%
L	5250	BODY	03/25/2019	22.8	20.5	0.050	1191	7308	1.030	21.600	20.600	-4.63%
L	5750	BODY	03/25/2019	22.8	20.5	0.050	1191	7308	0.973	21.200	19.460	-8.21%

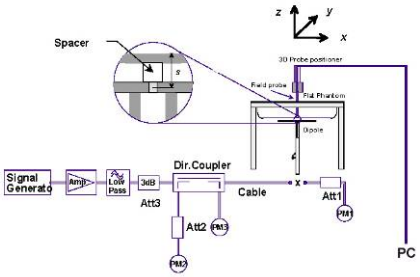

Figure 10-1
System Verification Setup Diagram

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	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	33.7	33.59	0.04	Right	Cheek	00530	1	1:8.3	0.119	1.026	0.122	
836.60	190	GSM 850	GSM	33.7	33.59	0.02	Right	Tilt	00530	1	1:8.3	0.067	1.026	0.069	
836.60	190	GSM 850	GSM	33.7	33.59	0.05	Left	Cheek	00530	1	1:8.3	0.112	1.026	0.115	
836.60	190	GSM 850	GSM	33.7	33.59	0.10	Left	Tilt	00530	1	1:8.3	0.072	1.026	0.074	
836.60	190	GSM 850	GPRS	32.2	32.08	0.10	Right	Cheek	00530	2	1:4.15	0.143	1.028	0.147	A1
836.60	190	GSM 850	GPRS	32.2	32.08	0.12	Right	Tilt	00530	2	1:4.15	0.076	1.028	0.078	
836.60	190	GSM 850	GPRS	32.2	32.08	0.13	Left	Cheek	00530	2	1:4.15	0.134	1.028	0.138	
836.60	190	GSM 850	GPRS	32.2	32.08	0.08	Left	Tilt	00530	2	1:4.15	0.091	1.028	0.094	
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	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	30.7	30.59	0.02	Right	Cheek	00532	1	1:8.3	0.073	1.026	0.075	
1880.00	661	GSM 1900	GSM	30.7	30.59	0.08	Right	Tilt	00532	1	1:8.3	0.025	1.026	0.026	
1880.00	661	GSM 1900	GSM	30.7	30.59	-0.09	Left	Cheek	00532	1	1:8.3	0.058	1.026	0.060	
1880.00	661	GSM 1900	GSM	30.7	30.59	0.07	Left	Tilt	00532	1	1:8.3	0.034	1.026	0.035	
1880.00	661	GSM 1900	GPRS	29.2	29.08	0.15	Right	Cheek	00532	2	1:4.15	0.080	1.028	0.082	A2
1880.00	661	GSM 1900	GPRS	29.2	29.08	-0.11	Right	Tilt	00532	2	1:4.15	0.030	1.028	0.031	
1880.00	661	GSM 1900	GPRS	29.2	29.08	0.11	Left	Cheek	00532	2	1:4.15	0.065	1.028	0.067	
1880.00	661	GSM 1900	GPRS	29.2	29.08	-0.05	Left	Tilt	00532	2	1:4.15	0.037	1.028	0.038	
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	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	25.09	-0.04	Right	Cheek	00530	1:1	0.173	1.099	0.190	A3
836.60	4183	UMTS 850	RMC	25.5	25.09	0.03	Right	Tilt	00530	1:1	0.128	1.099	0.141	
836.60	4183	UMTS 850	RMC	25.5	25.09	0.02	Left	Cheek	00530	1:1	0.164	1.099	0.180	
836.60	4183	UMTS 850	RMC	25.5	25.09	0.09	Left	Tilt	00530	1:1	0.145	1.099	0.159	
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	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	25.0	24.89	0.08	Right	Cheek	00530	1:1	0.102	1.026	0.105	
1732.40	1412	UMTS 1750	RMC	25.0	24.89	0.19	Right	Tilt	00530	1:1	0.080	1.026	0.082	
1732.40	1412	UMTS 1750	RMC	25.0	24.89	-0.03	Left	Cheek	00530	1:1	0.116	1.026	0.119	A4
1732.40	1412	UMTS 1750	RMC	25.0	24.89	0.03	Left	Tilt	00530	1:1	0.041	1.026	0.042	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-5
UMTS 1900 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	25.0	24.84	-0.05	Right	Cheek	00532	1:1	0.150	1.038	0.156	A5
1880.00	9400	UMTS 1900	RMC	25.0	24.84	0.19	Right	Tilt	00532	1:1	0.071	1.038	0.074	
1880.00	9400	UMTS 1900	RMC	25.0	24.84	0.03	Left	Cheek	00532	1:1	0.111	1.038	0.115	
1880.00	9400	UMTS 1900	RMC	25.0	24.84	0.16	Left	Tilt	00532	1:1	0.054	1.038	0.056	
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 11-6
CDMA BC10 (§90S) Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	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	25.0	24.45	0.11	Right	Cheek	00530	1:1	0.142	1.135	0.161	A6
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.0	24.45	0.10	Right	Tilt	00530	1:1	0.102	1.135	0.116	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.0	24.45	0.13	Left	Cheek	00530	1:1	0.134	1.135	0.152	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.0	24.45	0.15	Left	Tilt	00530	1:1	0.132	1.135	0.150	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.0	24.67	0.10	Right	Cheek	00530	1:1	0.118	1.079	0.127	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.0	24.67	0.13	Right	Tilt	00530	1:1	0.087	1.079	0.094	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.0	24.67	0.08	Left	Cheek	00530	1:1	0.110	1.079	0.119	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.0	24.67	0.18	Left	Tilt	00530	1:1	0.108	1.079	0.117	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-7
CDMA BC0 (§22H) Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.0	24.47	0.14	Right	Cheek	00530	1:1	0.129	1.130	0.146	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.0	24.47	0.12	Right	Tilt	00530	1:1	0.098	1.130	0.111	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.0	24.47	0.04	Left	Cheek	00530	1:1	0.129	1.130	0.146	A7
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.0	24.47	0.16	Left	Tilt	00530	1:1	0.127	1.130	0.144	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.0	24.44	0.07	Right	Cheek	00530	1:1	0.121	1.138	0.138	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.0	24.44	0.12	Right	Tilt	00530	1:1	0.091	1.138	0.104	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.0	24.44	0.09	Left	Cheek	00530	1:1	0.110	1.138	0.125	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.0	24.44	0.07	Left	Tilt	00530	1:1	0.112	1.138	0.127	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

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Table 11-8
PCS CDMA Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	600	PCS CDMA	RC3 / SO55	24.7	24.35	-0.11	Right	Cheek	00532	1:1	0.109	1.084	0.118	
1880.00	600	PCS CDMA	RC3 / SO55	24.7	24.35	0.13	Right	Tilt	00532	1:1	0.050	1.084	0.054	
1880.00	600	PCS CDMA	RC3 / SO55	24.7	24.35	0.02	Left	Cheek	00532	1:1	0.087	1.084	0.094	
1880.00	600	PCS CDMA	RC3 / SO55	24.7	24.35	0.12	Left	Tilt	00532	1:1	0.054	1.084	0.059	
1880.00	600	PCS CDMA	EVDO Rev. A	24.7	24.58	-0.16	Right	Cheek	00532	1:1	0.122	1.028	0.125	A8
1880.00	600	PCS CDMA	EVDO Rev. A	24.7	24.58	0.17	Right	Tilt	00532	1:1	0.031	1.028	0.032	
1880.00	600	PCS CDMA	EVDO Rev. A	24.7	24.58	0.15	Left	Cheek	00532	1:1	0.086	1.028	0.088	
1880.00	600	PCS CDMA	EVDO Rev. A	24.7	24.58	0.13	Left	Tilt	00532	1:1	0.054	1.028	0.056	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-9
LTE Band 71 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
680.50	133297	Mid	LTE Band 71	20	25.5	25.25	0.14	0	Right	Cheek	QPSK	1	99	00531	1:1	0.189	1.059	0.200	
680.50	133297	Mid	LTE Band 71	20	24.5	24.26	0.07	1	Right	Cheek	QPSK	50	50	00531	1:1	0.120	1.057	0.127	
680.50	133297	Mid	LTE Band 71	20	25.5	25.25	0.13	0	Right	Tilt	QPSK	1	99	00531	1:1	0.073	1.059	0.077	
680.50	133297	Mid	LTE Band 71	20	24.5	24.26	-0.03	1	Right	Tilt	QPSK	50	50	00531	1:1	0.047	1.057	0.050	
680.50	133297	Mid	LTE Band 71	20	25.5	25.25	0.10	0	Left	Cheek	QPSK	1	99	00531	1:1	0.233	1.059	**0.247**	A9
680.50	133297	Mid	LTE Band 71	20	24.5	24.26	0.11	1	Left	Cheek	QPSK	50	50	00531	1:1	0.118	1.057	0.125	
680.50	133297	Mid	LTE Band 71	20	25.5	25.25	0.10	0	Left	Tilt	QPSK	1	99	00531	1:1	0.105	1.059	0.111	
680.50	133297	Mid	LTE Band 71	20	24.5	24.26	0.01	1	Left	Tilt	QPSK	50	50	00531	1:1	0.052	1.057	0.055	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

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Table 11-10
LTE Band 12 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.5	25.23	0.14	0	Right	Cheek	QPSK	1	0	00531	1:1	0.166	1.064	0.177	A10
707.50	23095	Mid	LTE Band 12	10	24.5	24.22	0.08	1	Right	Cheek	QPSK	25	25	00531	1:1	0.137	1.067	0.146	
707.50	23095	Mid	LTE Band 12	10	25.5	25.23	0.10	0	Right	Tilt	QPSK	1	0	00531	1:1	0.097	1.064	0.103	
707.50	23095	Mid	LTE Band 12	10	24.5	24.22	0.00	1	Right	Tilt	QPSK	25	25	00531	1:1	0.075	1.067	0.080	
707.50	23095	Mid	LTE Band 12	10	25.5	25.23	0.12	0	Left	Cheek	QPSK	1	0	00531	1:1	0.155	1.064	0.165	
707.50	23095	Mid	LTE Band 12	10	24.5	24.22	0.03	1	Left	Cheek	QPSK	25	25	00531	1:1	0.126	1.067	0.134	
707.50	23095	Mid	LTE Band 12	10	25.5	25.23	0.04	0	Left	Tilt	QPSK	1	0	00531	1:1	0.099	1.064	0.105	
707.50	23095	Mid	LTE Band 12	10	24.5	24.22	0.00	1	Left	Tilt	QPSK	25	25	00531	1:1	0.086	1.067	0.092	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-11
LTE Band 13 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
782.00	23230	Mid	LTE Band 13	10	25.5	25.30	0.01	0	Right	Cheek	QPSK	1	0	00531	1:1	0.125	1.047	0.131	A11
782.00	23230	Mid	LTE Band 13	10	24.5	24.16	0.09	1	Right	Cheek	QPSK	25	0	00531	1:1	0.096	1.081	0.104	
782.00	23230	Mid	LTE Band 13	10	25.5	25.30	0.13	0	Right	Tilt	QPSK	1	0	00531	1:1	0.052	1.047	0.054	
782.00	23230	Mid	LTE Band 13	10	24.5	24.16	0.15	1	Right	Tilt	QPSK	25	0	00531	1:1	0.042	1.081	0.045	
782.00	23230	Mid	LTE Band 13	10	25.5	25.30	0.02	0	Left	Cheek	QPSK	1	0	00531	1:1	0.120	1.047	0.126	
782.00	23230	Mid	LTE Band 13	10	24.5	24.16	0.00	1	Left	Cheek	QPSK	25	0	00531	1:1	0.088	1.081	0.095	
782.00	23230	Mid	LTE Band 13	10	25.5	25.30	-0.09	0	Left	Tilt	QPSK	1	0	00531	1:1	0.075	1.047	0.079	
782.00	23230	Mid	LTE Band 13	10	24.5	24.16	0.16	1	Left	Tilt	QPSK	25	0	00531	1:1	0.050	1.081	0.054	
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 26 (Cell) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.14	0.08	0	Right	Cheek	QPSK	1	36	00531	1:1	0.121	1.086	0.131	A12
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.12	0.01	1	Right	Cheek	QPSK	36	37	00531	1:1	0.116	1.091	0.127	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.14	0.13	0	Right	Tilt	QPSK	1	36	00531	1:1	0.099	1.086	0.108	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.12	-0.05	1	Right	Tilt	QPSK	36	37	00531	1:1	0.094	1.091	0.103	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.14	0.04	0	Left	Cheek	QPSK	1	36	00531	1:1	0.109	1.086	0.118	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.12	0.18	1	Left	Cheek	QPSK	36	37	00531	1:1	0.107	1.091	0.117	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.14	-0.11	0	Left	Tilt	QPSK	1	36	00531	1:1	0.117	1.086	0.127	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.12	0.05	1	Left	Tilt	QPSK	36	37	00531	1:1	0.116	1.091	0.127	
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 66 (AWS) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1720.00	132072	Low	LTE Band 66 (AWS)	20	25.0	25.00	0.03	0	Right	Cheek	QPSK	1	0	00531	1:1	0.152	1.000	0.152	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.0	23.99	0.11	1	Right	Cheek	QPSK	50	0	00531	1:1	0.127	1.002	0.127	
1720.00	132072	Low	LTE Band 66 (AWS)	20	25.0	25.00	0.05	0	Right	Tilt	QPSK	1	0	00531	1:1	0.115	1.000	0.115	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.0	23.99	-0.11	1	Right	Tilt	QPSK	50	0	00531	1:1	0.102	1.002	0.102	
1720.00	132072	Low	LTE Band 66 (AWS)	20	25.0	25.00	0.12	0	Left	Cheek	QPSK	1	0	00531	1:1	0.153	1.000	0.153	A13
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.0	23.99	0.14	1	Left	Cheek	QPSK	50	0	00531	1:1	0.130	1.002	0.130	
1720.00	132072	Low	LTE Band 66 (AWS)	20	25.0	25.00	0.08	0	Left	Tilt	QPSK	1	0	00531	1:1	0.058	1.000	0.058	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.0	23.99	0.14	1	Left	Tilt	QPSK	50	0	00531	1:1	0.047	1.002	0.047	
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 25 (PCS) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	0.01	0	Right	Cheek	QPSK	1	0	00531	1:1	0.153	1.002	0.153	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.92	0.18	1	Right	Cheek	QPSK	50	0	00531	1:1	0.109	1.019	0.111	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	0.13	0	Right	Tilt	QPSK	1	0	00531	1:1	0.073	1.002	0.073	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.92	0.12	1	Right	Tilt	QPSK	50	0	00531	1:1	0.053	1.019	0.054	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	0.11	0	Left	Cheek	QPSK	1	0	00531	1:1	0.162	1.002	0.162	A14
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.92	0.14	1	Left	Cheek	QPSK	50	0	00531	1:1	0.119	1.019	0.121	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	0.07	0	Left	Tilt	QPSK	1	0	00531	1:1	0.070	1.002	0.070	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.92	0.02	1	Left	Tilt	QPSK	50	0	00531	1:1	0.052	1.019	0.053	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-15
LTE Band 41 Head SAR

MEASUREMENT RESULTS																				
Power Class	FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
	MHz	Ch.															(W/kg)		(W/kg)	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	25.0	25.00	-0.09	0	Right	Cheek	QPSK	1	50	00531	1:1.58	0.090	1.000	0.090	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	24.0	23.98	0.16	1	Right	Cheek	QPSK	50	50	00531	1:1.58	0.067	1.005	0.067	
Power Class 2	2636.50	41055	Mid-High	LTE Band 41	20	27.7	27.67	0.12	0	Right	Cheek	QPSK	1	50	00531	1:2.31	0.105	1.007	0.106	A15
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	25.0	25.00	0.03	0	Right	Tilt	QPSK	1	50	00531	1:1.58	0.031	1.000	0.031	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	24.0	23.98	-0.08	1	Right	Tilt	QPSK	50	50	00531	1:1.58	0.024	1.005	0.024	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	25.0	25.00	0.10	0	Left	Cheek	QPSK	1	50	00531	1:1.58	0.057	1.000	0.057	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	24.0	23.98	0.10	1	Left	Cheek	QPSK	50	50	00531	1:1.58	0.042	1.005	0.042	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	25.0	25.00	-0.17	0	Left	Tilt	QPSK	1	50	00531	1:1.58	0.048	1.000	0.048	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	24.0	23.98	0.00	1	Left	Tilt	QPSK	50	50	00531	1:1.58	0.039	1.005	0.039	
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 11-16
DTS Head SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test 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	18.11	0.09	Right	Cheek	00547	1	99.9	1.517	0.810	1.227	1.001	0.995	A16
2437	6	802.11b	DSSS	22	19.0	18.07	0.03	Right	Cheek	00547	1	99.9	1.403	0.799	1.239	1.001	0.991	
2462	11	802.11b	DSSS	22	19.0	18.01	0.12	Right	Cheek	00547	1	99.9	1.329	0.805	1.256	1.001	1.012	
2412	1	802.11b	DSSS	22	19.0	18.11	0.12	Right	Tilt	00547	1	99.9	1.018	0.697	1.227	1.001	0.856	
2437	6	802.11b	DSSS	22	19.0	18.07	-0.02	Right	Tilt	00547	1	99.9	0.878	0.697	1.239	1.001	0.864	
2412	1	802.11b	DSSS	22	19.0	18.11	0.05	Left	Cheek	00547	1	99.9	0.312	-	1.227	1.001	-	
2412	1	802.11b	DSSS	22	19.0	18.11	-0.13	Left	Tilt	00547	1	99.9	0.332	0.228	1.227	1.001	0.280	
2412	1	802.11b	DSSS	22	19.0	18.11	0.07	Right	Cheek	00547	1	99.9	1.258	0.771	1.227	1.001	0.947	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram										

Note: Blue entry represents variability measurement.

Table 11-17
NII Head SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test 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)	
5300	60	802.11a	OFDM	20	18.5	18.10	-0.12	Right	Cheek	00547	6	99.2	1.062	0.644	1.096	1.008	0.711	
5300	60	802.11a	OFDM	20	18.5	18.10	0.05	Right	Tilt	00547	6	99.2	0.749	0.295	1.096	1.008	0.326	
5300	60	802.11a	OFDM	20	18.5	18.10	-0.12	Left	Cheek	00547	6	99.2	0.325	-	1.096	1.008	-	
5300	60	802.11a	OFDM	20	18.5	18.10	0.14	Left	Tilt	00547	6	99.2	0.302	-	1.096	1.008	-	
5520	104	802.11a	OFDM	20	18.5	18.22	0.16	Right	Cheek	00547	6	99.2	1.506	0.926	1.067	1.008	0.996	A17
5600	120	802.11a	OFDM	20	18.5	17.92	0.02	Right	Cheek	00547	6	99.2	1.322	0.769	1.143	1.008	0.886	
5680	136	802.11a	OFDM	20	18.5	18.18	0.07	Right	Cheek	00547	6	99.2	1.587	0.847	1.076	1.008	0.919	
5520	104	802.11a	OFDM	20	18.5	18.22	0.14	Right	Tilt	00547	6	99.2	0.730	0.311	1.067	1.008	0.334	
5520	104	802.11a	OFDM	20	18.5	18.22	0.06	Left	Cheek	00547	6	99.2	0.398	-	1.067	1.008	-	
5520	104	802.11a	OFDM	20	18.5	18.22	-0.14	Left	Tilt	00547	6	99.2	0.378	-	1.067	1.008	-	
5520	104	802.11a	OFDM	20	18.5	18.22	0.08	Right	Cheek	00547	6	99.2	1.753	0.800	1.067	1.008	0.860	
5765	153	802.11a	OFDM	20	18.5	18.20	0.01	Right	Cheek	00547	6	99.2	1.218	0.656	1.072	1.008	0.709	
5765	153	802.11a	OFDM	20	18.5	18.20	0.12	Right	Tilt	00547	6	99.2	0.943	0.342	1.072	1.008	0.370	
5765	153	802.11a	OFDM	20	18.5	18.20	-0.17	Left	Cheek	00547	6	99.2	0.654	-	1.072	1.008	-	
5765	153	802.11a	OFDM	20	18.5	18.20	0.17	Left	Tilt	00547	6	99.2	0.563	-	1.072	1.008	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram										

Note: Blue entry represents variability measurement.

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Table 11-18
DSS Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441.00	39	Bluetooth	FHSS	11.0	10.70	0.01	Right	Cheek	00548	1	77.6	0.107	1.072	1.289	**0.148**	A18
2441.00	39	Bluetooth	FHSS	11.0	10.70	0.13	Right	Tilt	00548	1	77.6	0.078	1.072	1.289	0.108	
2441.00	39	Bluetooth	FHSS	11.0	10.70	0.07	Left	Cheek	00548	1	77.6	0.030	1.072	1.289	0.041	
2441.00	39	Bluetooth	FHSS	11.0	10.70	0.08	Left	Tilt	00548	1	77.6	0.026	1.072	1.289	0.036	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							**Head 1.6 W/kg (mW/g)** averaged over 1 gram									

11.2 Standalone Body-Worn SAR Data

Table 11-19
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	33.7	33.59	0.02	10 mm	00532	1	1:8.3	back	0.384	1.026	0.394	
836.60	190	GSM 850	GPRS	32.2	32.08	-0.02	10 mm	00532	2	1:4.15	back	0.480	1.028	0.493	A19
1880.00	661	GSM 1900	GSM	30.7	30.59	0.01	10 mm	00530	1	1:8.3	back	0.196	1.026	0.201	
1880.00	661	GSM 1900	GPRS	29.2	29.08	0.06	10 mm	00530	2	1:4.15	back	0.217	1.028	0.223	A20
836.60	4183	UMTS 850	RMC	25.5	25.09	-0.02	10 mm	00532	N/A	1:1	back	0.504	1.099	0.554	A22
1712.40	1312	UMTS 1750	RMC	25.0	24.68	-0.02	10 mm	00530	N/A	1:1	back	0.580	1.076	0.624	
1732.40	1412	UMTS 1750	RMC	25.0	24.89	-0.04	10 mm	00530	N/A	1:1	back	0.599	1.026	0.615	
1752.60	1513	UMTS 1750	RMC	25.0	24.85	-0.03	10 mm	00530	N/A	1:1	back	0.624	1.035	**0.646**	A23
1880.00	9400	UMTS 1900	RMC	25.0	24.84	-0.09	10 mm	00532	N/A	1:1	back	0.471	1.038	0.489	A25
820.10	564	CDMA BC10 (§90S)	TDSO / SO32	25.0	24.62	0.08	10 mm	00532	N/A	1:1	back	0.393	1.091	0.429	A27
836.52	384	CDMA BC0 (§22H)	TDSO / SO32	25.0	24.63	0.00	10 mm	00532	N/A	1:1	back	0.393	1.089	0.428	A29
1880.00	600	PCS CDMA	TDSO / SO32	24.7	24.50	-0.04	10 mm	00532	N/A	1:1	back	0.328	1.047	0.343	A31
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							**Body 1.6 W/kg (mW/g)** averaged over 1 gram									

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Table 11-20
LTE Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
680.50	133297	Mid	LTE Band 71	20	25.5	25.25	-0.04	0	00531	QPSK	1	99	10 mm	back	1:1	0.551	1.059	0.584	A33
680.50	133297	Mid	LTE Band 71	20	24.5	24.26	0.06	1	00531	QPSK	50	50	10 mm	back	1:1	0.343	1.057	0.363	
707.50	23095	Mid	LTE Band 12	10	25.5	25.23	0.03	0	00531	QPSK	1	0	10 mm	back	1:1	0.420	1.064	0.447	A34
707.50	23095	Mid	LTE Band 12	10	24.5	24.22	0.03	1	00531	QPSK	25	25	10 mm	back	1:1	0.290	1.067	0.309	
782.00	23230	Mid	LTE Band 13	10	25.5	25.30	0.02	0	00531	QPSK	1	0	10 mm	back	1:1	0.453	1.047	0.474	A35
782.00	23230	Mid	LTE Band 13	10	24.5	24.16	0.04	1	00531	QPSK	25	0	10 mm	back	1:1	0.305	1.081	0.330	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.14	0.14	0	00531	QPSK	1	36	10 mm	back	1:1	0.472	1.086	0.513	A36
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.12	-0.01	1	00531	QPSK	36	37	10 mm	back	1:1	0.400	1.091	0.436	
1720.00	132072	Low	LTE Band 66 (AWS)	20	25.0	25.00	0.05	0	00531	QPSK	1	0	10 mm	back	1:1	0.542	1.000	0.542	A37
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.0	23.99	-0.01	1	00531	QPSK	50	0	10 mm	back	1:1	0.484	1.002	0.485	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	0.01	0	00531	QPSK	1	0	10 mm	back	1:1	0.558	1.002	0.559	A39
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.92	-0.01	1	00531	QPSK	50	0	10 mm	back	1:1	0.416	1.019	0.424	
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 11-21
LTE Band 41 Body-Worn SAR

MEASUREMENT RESULTS																				
Power Class	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)	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	25.0	25.00	-0.03	0	00531	QPSK	1	50	10 mm	back	1:1.58	0.327	1.000	0.327	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	24.0	23.98	0.01	1	00531	QPSK	50	50	10 mm	back	1:1.58	0.252	1.005	0.253	
Power Class 2	2636.50	41055	Mid-High	LTE Band 41	20	27.7	27.67	-0.08	0	00531	QPSK	1	50	10 mm	back	1:2.31	0.426	1.007	0.429	A41
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 11-22
DTS Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.												W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	21.0	20.78	0.09	10 mm	00547	1	back	99.9	0.680	0.482	1.052	1.001	**0.508**	A43
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 11-23
NII Body-Worn SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	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)	
5260	52	802.11a	OFDM	20	19.5	19.06	-0.03	10 mm	00547	6	back	99.2	0.987	0.569	1.107	1.008	0.635	
5280	56	802.11a	OFDM	20	19.5	19.12	-0.01	10 mm	00547	6	back	99.2	0.999	0.552	1.091	1.008	0.607	
5300	60	802.11a	OFDM	20	19.5	19.15	0.00	10 mm	00547	6	back	99.2	1.115	0.582	1.084	1.008	**0.636**	A44
5680	136	802.11a	OFDM	20	19.5	18.99	0.09	10 mm	00547	6	back	99.2	0.988	0.476	1.125	1.008	0.540	
5805	161	802.11a	OFDM	20	19.5	18.95	-0.03	10 mm	00547	6	back	99.2	0.935	0.464	1.135	1.008	0.531	
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 11-24
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	11.0	10.70	0.03	10 mm	00547	1	back	77.6	0.038	1.072	1.289	**0.053**	A46
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 11-25
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)	
836.60	190	GSM 850	GPRS	32.2	32.08	-0.02	10 mm	00532	2	1:4.15	back	0.480	1.028	0.493	A19
836.60	190	GSM 850	GPRS	32.2	32.08	-0.05	10 mm	00532	2	1:4.15	front	0.354	1.028	0.364	
836.60	190	GSM 850	GPRS	32.2	32.08	-0.12	10 mm	00532	2	1:4.15	bottom	0.168	1.028	0.173	
836.60	190	GSM 850	GPRS	32.2	32.08	-0.02	10 mm	00532	2	1:4.15	left	0.137	1.028	0.141	
1880.00	661	GSM 1900	GPRS	29.2	29.08	0.06	10 mm	00530	2	1:4.15	back	0.217	1.028	0.223	
1880.00	661	GSM 1900	GPRS	29.2	29.08	0.01	10 mm	00530	2	1:4.15	front	0.278	1.028	0.286	
1880.00	661	GSM 1900	GPRS	29.2	29.08	0.00	10 mm	00530	2	1:4.15	bottom	0.541	1.028	0.556	A21
1880.00	661	GSM 1900	GPRS	29.2	29.08	-0.11	10 mm	00530	2	1:4.15	right	0.074	1.028	0.076	
836.60	4183	UMTS 850	RMC	25.5	25.09	-0.02	10 mm	00532	N/A	1:1	back	0.504	1.099	0.554	A22
836.60	4183	UMTS 850	RMC	25.5	25.09	0.00	10 mm	00532	N/A	1:1	front	0.434	1.099	0.477	
836.60	4183	UMTS 850	RMC	25.5	25.09	-0.02	10 mm	00532	N/A	1:1	bottom	0.172	1.099	0.189	
836.60	4183	UMTS 850	RMC	25.5	25.09	0.10	10 mm	00532	N/A	1:1	left	0.105	1.099	0.115	
1712.40	1312	UMTS 1750	RMC	25.0	24.68	-0.02	10 mm	00530	N/A	1:1	back	0.580	1.076	0.624	
1732.40	1412	UMTS 1750	RMC	25.0	24.89	-0.04	10 mm	00530	N/A	1:1	back	0.599	1.026	0.615	
1752.60	1513	UMTS 1750	RMC	25.0	24.85	-0.03	10 mm	00530	N/A	1:1	back	0.624	1.035	0.646	
1732.40	1412	UMTS 1750	RMC	25.0	24.89	0.02	10 mm	00530	N/A	1:1	front	0.722	1.026	0.741	
1712.40	1312	UMTS 1750	RMC	25.0	24.68	-0.06	10 mm	00530	N/A	1:1	bottom	1.010	1.076	1.087	
1732.40	1412	UMTS 1750	RMC	25.0	24.89	-0.05	10 mm	00530	N/A	1:1	bottom	1.020	1.026	1.047	
1752.60	1513	UMTS 1750	RMC	25.0	24.85	-0.09	10 mm	00530	N/A	1:1	bottom	1.080	1.035	1.118	A24
1732.40	1412	UMTS 1750	RMC	25.0	24.89	0.02	10 mm	00530	N/A	1:1	right	0.253	1.026	0.260	
1880.00	9400	UMTS 1900	RMC	25.0	24.84	-0.09	10 mm	00532	N/A	1:1	back	0.471	1.038	0.489	
1880.00	9400	UMTS 1900	RMC	25.0	24.84	0.03	10 mm	00532	N/A	1:1	front	0.660	1.038	0.685	
1852.40	9262	UMTS 1900	RMC	25.0	24.87	-0.03	10 mm	00532	N/A	1:1	bottom	1.260	1.030	**1.298**	A26
1880.00	9400	UMTS 1900	RMC	25.0	24.84	-0.03	10 mm	00532	N/A	1:1	bottom	1.120	1.038	1.163	
1907.60	9538	UMTS 1900	RMC	25.0	24.82	-0.04	10 mm	00532	N/A	1:1	bottom	0.964	1.042	1.004	
1880.00	9400	UMTS 1900	RMC	25.0	24.84	0.11	10 mm	00532	N/A	1:1	right	0.163	1.038	0.169	
1852.40	9262	UMTS 1900	RMC	25.0	24.87	-0.16	10 mm	00532	N/A	1:1	bottom	1.210	1.030	1.246	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.0	24.50	0.01	10 mm	00532	N/A	1:1	back	0.359	1.122	0.403	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.0	24.50	0.00	10 mm	00532	N/A	1:1	front	0.363	1.122	0.407	A28
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.0	24.50	0.09	10 mm	00532	N/A	1:1	bottom	0.133	1.122	0.149	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.0	24.50	0.02	10 mm	00532	N/A	1:1	left	0.077	1.122	0.086	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.0	24.57	-0.01	10 mm	00532	N/A	1:1	back	0.440	1.104	0.486	A30
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.0	24.57	0.04	10 mm	00532	N/A	1:1	front	0.319	1.104	0.352	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.0	24.57	0.01	10 mm	00532	N/A	1:1	bottom	0.138	1.104	0.152	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.0	24.57	0.11	10 mm	00532	N/A	1:1	left	0.088	1.104	0.097	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.66	-0.09	10 mm	00532	N/A	1:1	back	0.352	1.009	0.355	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.66	-0.05	10 mm	00532	N/A	1:1	front	0.431	1.009	0.435	
1851.25	25	PCS CDMA	EVDO Rev. 0	24.7	24.48	-0.07	10 mm	00532	N/A	1:1	bottom	0.930	1.052	0.978	A32
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.66	-0.01	10 mm	00532	N/A	1:1	bottom	0.822	1.009	0.829	
1908.75	1175	PCS CDMA	EVDO Rev. 0	24.7	24.52	-0.10	10 mm	00532	N/A	1:1	bottom	0.725	1.042	0.755	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.66	0.00	10 mm	00532	N/A	1:1	right	0.116	1.009	0.117	
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 11-26
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	25.25	-0.04	0	00531	QPSK	1	99	10 mm	back	1:1	0.551	1.059	0.584	A33
680.50	133297	Mid	LTE Band 71	20	24.5	24.26	0.06	1	00531	QPSK	50	50	10 mm	back	1:1	0.343	1.057	0.363	
680.50	133297	Mid	LTE Band 71	20	25.5	25.25	0.07	0	00531	QPSK	1	99	10 mm	front	1:1	0.419	1.059	0.444	
680.50	133297	Mid	LTE Band 71	20	24.5	24.26	0.01	1	00531	QPSK	50	50	10 mm	front	1:1	0.235	1.057	0.248	
680.50	133297	Mid	LTE Band 71	20	25.5	25.25	-0.03	0	00531	QPSK	1	99	10 mm	bottom	1:1	0.135	1.059	0.143	
680.50	133297	Mid	LTE Band 71	20	24.5	24.26	0.03	1	00531	QPSK	50	50	10 mm	bottom	1:1	0.081	1.057	0.086	
680.50	133297	Mid	LTE Band 71	20	25.5	25.25	0.04	0	00531	QPSK	1	99	10 mm	left	1:1	0.359	1.059	0.380	
680.50	133297	Mid	LTE Band 71	20	24.5	24.26	0.01	1	00531	QPSK	50	50	10 mm	left	1:1	0.237	1.057	0.251	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Body 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-27
LTE Band 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	25.23	0.03	0	00531	QPSK	1	0	10 mm	back	1:1	0.420	1.064	0.447	A34
707.50	23095	Mid	LTE Band 12	10	24.5	24.22	0.03	1	00531	QPSK	25	25	10 mm	back	1:1	0.290	1.067	0.309	
707.50	23095	Mid	LTE Band 12	10	25.5	25.23	0.01	0	00531	QPSK	1	0	10 mm	front	1:1	0.307	1.064	0.327	
707.50	23095	Mid	LTE Band 12	10	24.5	24.22	0.01	1	00531	QPSK	25	25	10 mm	front	1:1	0.218	1.067	0.233	
707.50	23095	Mid	LTE Band 12	10	25.5	25.23	-0.08	0	00531	QPSK	1	0	10 mm	bottom	1:1	0.088	1.064	0.094	
707.50	23095	Mid	LTE Band 12	10	24.5	24.22	-0.02	1	00531	QPSK	25	25	10 mm	bottom	1:1	0.084	1.067	0.090	
707.50	23095	Mid	LTE Band 12	10	25.5	25.23	0.17	0	00531	QPSK	1	0	10 mm	left	1:1	0.271	1.064	0.288	
707.50	23095	Mid	LTE Band 12	10	24.5	24.22	-0.04	1	00531	QPSK	25	25	10 mm	left	1:1	0.204	1.067	0.218	
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
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	25.30	0.02	0	00531	QPSK	1	0	10 mm	back	1:1	0.453	1.047	0.474	A35
782.00	23230	Mid	LTE Band 13	10	24.5	24.16	0.04	1	00531	QPSK	25	0	10 mm	back	1:1	0.305	1.081	0.330	
782.00	23230	Mid	LTE Band 13	10	25.5	25.30	0.00	0	00531	QPSK	1	0	10 mm	front	1:1	0.328	1.047	0.343	
782.00	23230	Mid	LTE Band 13	10	24.5	24.16	0.11	1	00531	QPSK	25	0	10 mm	front	1:1	0.221	1.081	0.239	
782.00	23230	Mid	LTE Band 13	10	25.5	25.30	-0.08	0	00531	QPSK	1	0	10 mm	bottom	1:1	0.122	1.047	0.128	
782.00	23230	Mid	LTE Band 13	10	24.5	24.16	-0.14	1	00531	QPSK	25	0	10 mm	bottom	1:1	0.078	1.081	0.084	
782.00	23230	Mid	LTE Band 13	10	25.5	25.30	0.02	0	00531	QPSK	1	0	10 mm	left	1:1	0.150	1.047	0.157	
782.00	23230	Mid	LTE Band 13	10	24.5	24.16	-0.12	1	00531	QPSK	25	0	10 mm	left	1:1	0.106	1.081	0.115	
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 11-29
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	25.14	0.14	0	00531	QPSK	1	36	10 mm	back	1:1	0.472	1.086	0.513	A36
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.12	-0.01	1	00531	QPSK	36	37	10 mm	back	1:1	0.400	1.091	0.436	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.14	-0.08	0	00531	QPSK	1	36	10 mm	front	1:1	0.442	1.086	0.480	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.12	0.03	1	00531	QPSK	36	37	10 mm	front	1:1	0.367	1.091	0.400	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.14	-0.13	0	00531	QPSK	1	36	10 mm	bottom	1:1	0.151	1.086	0.164	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.12	-0.09	1	00531	QPSK	36	37	10 mm	bottom	1:1	0.131	1.091	0.143	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.14	0.13	0	00531	QPSK	1	36	10 mm	left	1:1	0.095	1.086	0.103	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.12	0.05	1	00531	QPSK	36	37	10 mm	left	1:1	0.080	1.091	0.087	
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 11-30
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)	
1720.00	132072	Low	LTE Band 66 (AWS)	20	25.0	25.00	0.05	0	00531	QPSK	1	0	10 mm	back	1:1	0.542	1.000	0.542	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.0	23.99	-0.01	1	00531	QPSK	50	0	10 mm	back	1:1	0.484	1.002	0.485	
1720.00	132072	Low	LTE Band 66 (AWS)	20	25.0	25.00	0.03	0	00531	QPSK	1	0	10 mm	front	1:1	0.720	1.000	0.720	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.0	23.99	0.11	1	00531	QPSK	50	0	10 mm	front	1:1	0.634	1.002	0.635	
1720.00	132072	Low	LTE Band 66 (AWS)	20	25.0	25.00	-0.09	0	00531	QPSK	1	0	10 mm	bottom	1:1	1.020	1.000	1.020	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.99	-0.04	0	00531	QPSK	1	0	10 mm	bottom	1:1	1.100	1.002	1.102	A38
1770.00	132572	High	LTE Band 66 (AWS)	20	25.0	24.94	0.03	0	00531	QPSK	1	99	10 mm	bottom	1:1	1.080	1.014	1.095	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.0	23.99	-0.01	1	00531	QPSK	50	0	10 mm	bottom	1:1	0.925	1.002	0.927	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.86	-0.04	1	00531	QPSK	50	50	10 mm	bottom	1:1	0.934	1.033	0.965	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.0	23.91	-0.03	1	00531	QPSK	50	50	10 mm	bottom	1:1	0.859	1.021	0.877	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.0	23.94	-0.11	1	00531	QPSK	100	0	10 mm	bottom	1:1	0.908	1.014	0.921	
1720.00	132072	Low	LTE Band 66 (AWS)	20	25.0	25.00	-0.06	0	00531	QPSK	1	0	10 mm	right	1:1	0.289	1.000	0.289	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.0	23.99	0.05	1	00531	QPSK	50	0	10 mm	right	1:1	0.262	1.002	0.263	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.0	24.99	-0.06	0	00531	QPSK	1	0	10 mm	bottom	1:1	1.070	1.002	1.072	
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 11-31
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	25.0	24.99	0.01	0	00531	QPSK	1	0	10 mm	back	1:1	0.558	1.002	0.559	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.92	-0.01	1	00531	QPSK	50	0	10 mm	back	1:1	0.416	1.019	0.424	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	0.01	0	00531	QPSK	1	0	10 mm	front	1:1	0.732	1.002	0.733	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.92	0.03	1	00531	QPSK	50	0	10 mm	front	1:1	0.559	1.019	0.570	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	-0.15	0	00531	QPSK	1	0	10 mm	bottom	1:1	1.190	1.002	1.192	A40
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.0	24.94	-0.09	0	00531	QPSK	1	50	10 mm	bottom	1:1	1.150	1.014	1.166	
1905.00	26590	High	LTE Band 25 (PCS)	20	25.0	24.78	-0.08	0	00531	QPSK	1	50	10 mm	bottom	1:1	1.070	1.052	1.126	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.92	-0.06	1	00531	QPSK	50	0	10 mm	bottom	1:1	0.939	1.019	0.957	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	23.91	-0.09	1	00531	QPSK	50	50	10 mm	bottom	1:1	0.894	1.021	0.913	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.79	0.00	1	00531	QPSK	50	0	10 mm	bottom	1:1	0.914	1.050	0.960	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	23.76	-0.04	1	00531	QPSK	100	0	10 mm	bottom	1:1	0.924	1.057	0.977	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	0.01	0	00531	QPSK	1	0	10 mm	right	1:1	0.205	1.002	0.205	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.92	-0.03	1	00531	QPSK	50	0	10 mm	right	1:1	0.148	1.019	0.151	
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 11-32
LTE Band 41 Hotspot SAR

MEASUREMENT RESULTS																				
Power Class	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)	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	25.0	25.00	-0.03	0	00531	QPSK	1	50	10 mm	back	1:1.58	0.327	1.000	0.327	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	24.0	23.98	0.01	1	00531	QPSK	50	50	10 mm	back	1:1.58	0.252	1.005	0.253	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	25.0	25.00	0.02	0	00531	QPSK	1	50	10 mm	front	1:1.58	0.302	1.000	0.302	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	24.0	23.98	-0.11	1	00531	QPSK	50	50	10 mm	front	1:1.58	0.222	1.005	0.223	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	25.0	25.00	-0.08	0	00531	QPSK	1	50	10 mm	bottom	1:1.58	0.552	1.000	0.552	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	24.0	23.98	0.02	1	00531	QPSK	50	50	10 mm	bottom	1:1.58	0.395	1.005	0.397	
Power Class 2	2636.50	41055	Mid-High	LTE Band 41	20	27.7	27.67	0.06	0	00531	QPSK	1	50	10 mm	bottom	1:2.31	0.630	1.007	0.634	A42
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	25.0	25.00	-0.04	0	00531	QPSK	1	50	10 mm	right	1:1.58	0.131	1.000	0.131	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	24.0	23.98	-0.11	1	00531	QPSK	50	50	10 mm	right	1:1.58	0.092	1.005	0.092	
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 11-33
WLAN Hotspot SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.												W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	21.0	20.78	0.09	10 mm	00547	1	back	99.9	0.680	0.482	1.052	1.001	**0.508**	A43
2412	1	802.11b	DSSS	22	21.0	20.78	-0.02	10 mm	00547	1	front	99.9	0.358	-	1.052	1.001	-	
2412	1	802.11b	DSSS	22	21.0	20.78	-0.03	10 mm	00547	1	top	99.9	0.390	-	1.052	1.001	-	
2412	1	802.11b	DSSS	22	21.0	20.78	0.07	10 mm	00547	1	left	99.9	0.582	0.381	1.052	1.001	0.401	
5200	40	802.11a	OFDM	20	19.5	19.39	0.11	10 mm	00547	6	back	99.2	1.089	0.505	1.026	1.008	0.522	A45
5200	40	802.11a	OFDM	20	19.5	19.39	0.04	10 mm	00547	6	front	99.2	0.180	-	1.026	1.008	-	
5200	40	802.11a	OFDM	20	19.5	19.39	0.09	10 mm	00547	6	top	99.2	0.138	-	1.026	1.008	-	
5200	40	802.11a	OFDM	20	19.5	19.39	-0.08	10 mm	00547	6	left	99.2	0.721	0.335	1.026	1.008	0.346	
5805	161	802.11a	OFDM	20	19.5	18.95	-0.03	10 mm	00547	6	back	99.2	0.935	0.464	1.135	1.008	**0.531**	
5805	161	802.11a	OFDM	20	19.5	18.95	0.10	10 mm	00547	6	front	99.2	0.324	-	1.135	1.008	-	
5805	161	802.11a	OFDM	20	19.5	18.95	0.09	10 mm	00547	6	top	99.2	0.108	-	1.135	1.008	-	
5805	161	802.11a	OFDM	20	19.5	18.95	-0.04	10 mm	00547	6	left	99.2	0.710	0.290	1.135	1.008	0.332	
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 11-34
DSS Hotspot SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	11.0	10.70	0.03	10 mm	00547	1	back	77.6	0.038	1.072	1.289	**0.053**	A46
2441	39	Bluetooth	FHSS	11.0	10.70	0.02	10 mm	00547	1	front	77.6	0.014	1.072	1.289	0.019	
2441	39	Bluetooth	FHSS	11.0	10.70	0.14	10 mm	00547	1	top	77.6	0.021	1.072	1.289	0.029	
2441	39	Bluetooth	FHSS	11.0	10.70	0.14	10 mm	00547	1	left	77.6	0.014	1.072	1.289	0.019	
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 11-35
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	25.0	24.89	-0.09	1 mm	00530	1:1	back	1.260	1.026	1.293	
1712.40	1312	UMTS 1750	RMC	25.0	24.68	-0.19	1 mm	00530	1:1	front	1.950	1.076	2.098	
1732.40	1412	UMTS 1750	RMC	25.0	24.89	0.07	1 mm	00530	1:1	front	2.280	1.026	2.339	A47
1752.60	1513	UMTS 1750	RMC	25.0	24.85	-0.09	1 mm	00530	1:1	front	1.920	1.035	1.987	
1732.40	1412	UMTS 1750	RMC	25.0	24.89	-0.16	3 mm	00530	1:1	bottom	1.400	1.026	1.436	
1732.40	1412	UMTS 1750	RMC	25.0	24.89	-0.08	0 mm	00530	1:1	right	0.565	1.026	0.580	
1732.40	1412	UMTS 1750	RMC	24.0	23.98	-0.05	0 mm	00530	1:1	back	1.530	1.005	1.538	
1712.40	1312	UMTS 1750	RMC	24.0	23.77	0.06	0 mm	00530	1:1	front	2.180	1.054	2.298	
1732.40	1412	UMTS 1750	RMC	24.0	23.98	0.16	0 mm	00530	1:1	front	2.190	1.005	2.201	
1752.60	1513	UMTS 1750	RMC	24.0	23.92	0.13	0 mm	00530	1:1	front	2.250	1.019	2.293	
1732.40	1412	UMTS 1750	RMC	24.0	23.98	-0.12	0 mm	00530	1:1	bottom	1.980	1.005	1.990	
1880.00	9400	UMTS 1900	RMC	25.0	24.84	-0.09	1 mm	00532	1:1	back	1.260	1.038	1.308	
1852.40	9262	UMTS 1900	RMC	25.0	24.87	-0.14	1 mm	00532	1:1	front	2.380	1.030	2.451	
1880.00	9400	UMTS 1900	RMC	25.0	24.84	-0.06	1 mm	00532	1:1	front	2.180	1.038	2.263	
1907.60	9538	UMTS 1900	RMC	25.0	24.82	0.03	1 mm	00532	1:1	front	2.070	1.042	2.157	
1880.00	9400	UMTS 1900	RMC	25.0	24.84	-0.07	3 mm	00532	1:1	bottom	1.420	1.038	1.474	
1880.00	9400	UMTS 1900	RMC	25.0	24.84	0.03	0 mm	00532	1:1	right	0.453	1.038	0.470	
1880.00	9400	UMTS 1900	RMC	24.0	23.76	-0.19	0 mm	00532	1:1	back	1.550	1.057	1.638	
1852.40	9262	UMTS 1900	RMC	24.0	23.72	-0.06	0 mm	00532	1:1	front	2.480	1.067	2.646	A48
1880.00	9400	UMTS 1900	RMC	24.0	23.76	-0.05	0 mm	00532	1:1	front	2.110	1.057	2.230	
1907.60	9538	UMTS 1900	RMC	24.0	23.90	-0.03	0 mm	00532	1:1	front	2.180	1.023	2.230	
1852.40	9262	UMTS 1900	RMC	24.0	23.72	-0.14	0 mm	00532	1:1	bottom	2.400	1.067	2.561	
1880.00	9400	UMTS 1900	RMC	24.0	23.76	-0.17	0 mm	00532	1:1	bottom	2.090	1.057	2.209	
1907.60	9538	UMTS 1900	RMC	24.0	23.90	-0.12	0 mm	00532	1:1	bottom	1.940	1.023	1.985	
1852.40	9262	UMTS 1900	RMC	24.0	23.72	-0.02	0 mm	00532	1:1	front	2.370	1.067	2.529	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.66	-0.04	1 mm	00532	1:1	back	0.992	1.009	1.001	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.66	-0.03	1 mm	00532	1:1	front	1.380	1.009	1.392	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.66	-0.18	3 mm	00532	1:1	bottom	1.040	1.009	1.049	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.66	-0.18	0 mm	00532	1:1	right	0.338	1.009	0.341	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.7	23.62	-0.05	0 mm	00532	1:1	back	1.190	1.019	1.213	
1851.25	25	PCS CDMA	EVDO Rev. 0	23.7	23.53	0.07	0 mm	00532	1:1	front	1.820	1.040	1.893	A49
1880.00	600	PCS CDMA	EVDO Rev. 0	23.7	23.62	0.12	0 mm	00532	1:1	front	1.680	1.019	1.712	
1908.75	1175	PCS CDMA	EVDO Rev. 0	23.7	23.46	0.18	0 mm	00532	1:1	front	1.610	1.057	1.702	
1880.00	600	PCS CDMA	EVDO Rev. 0	23.7	23.62	-0.19	0 mm	00532	1:1	bottom	1.580	1.019	1.610	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Phablet 4.0 W/kg (mW/g) averaged over 10 grams							

Note: Blue entry represents variability measurement.

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Table 11-36
LTE 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)	
1720.00	132072	Low	LTE Band 66 (AWS)	20	25.0	25.00	0.13	0	00531	QPSK	1	0	1 mm	back	1:1	1.390	1.000	1.390	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.0	23.99	-0.06	1	00531	QPSK	50	0	1 mm	back	1:1	1.240	1.002	1.242	
1720.00	132072	Low	LTE Band 66 (AWS)	20	25.0	25.00	0.12	0	00531	QPSK	1	0	1 mm	front	1:1	1.930	1.000	1.930	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.0	23.99	0.13	1	00531	QPSK	50	0	1 mm	front	1:1	1.730	1.002	1.733	
1720.00	132072	Low	LTE Band 66 (AWS)	20	25.0	25.00	-0.06	0	00531	QPSK	1	0	3 mm	bottom	1:1	1.470	1.000	1.470	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.0	23.99	-0.12	1	00531	QPSK	50	0	3 mm	bottom	1:1	1.270	1.002	1.273	
1720.00	132072	Low	LTE Band 66 (AWS)	20	25.0	25.00	-0.11	0	00531	QPSK	1	0	0 mm	right	1:1	0.615	1.000	0.615	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.0	23.99	-0.04	1	00531	QPSK	50	0	0 mm	right	1:1	0.542	1.002	0.543	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.0	23.90	-0.09	0	00531	QPSK	1	50	0 mm	back	1:1	1.660	1.023	1.698	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.99	-0.05	0	00531	QPSK	50	50	0 mm	back	1:1	1.620	1.002	1.623	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.0	23.85	0.14	0	00531	QPSK	1	50	0 mm	front	1:1	2.570	1.035	2.660	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.82	0.17	0	00531	QPSK	1	50	0 mm	front	1:1	2.600	1.042	2.709	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.0	23.90	-0.14	0	00531	QPSK	1	50	0 mm	front	1:1	2.390	1.023	2.445	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.0	23.81	0.14	0	00531	QPSK	50	0	0 mm	front	1:1	2.380	1.045	2.487	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.99	0.16	0	00531	QPSK	50	50	0 mm	front	1:1	2.370	1.002	2.375	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.0	23.86	0.04	0	00531	QPSK	50	0	0 mm	front	1:1	2.340	1.033	2.417	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.80	0.03	0	00531	QPSK	100	0	0 mm	front	1:1	2.380	1.047	2.492	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.0	23.85	-0.05	0	00531	QPSK	1	50	0 mm	bottom	1:1	2.500	1.035	2.588	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.82	-0.02	0	00531	QPSK	1	50	0 mm	bottom	1:1	2.680	1.042	**2.793**	A50
1770.00	132572	High	LTE Band 66 (AWS)	20	24.0	23.90	-0.15	0	00531	QPSK	1	50	0 mm	bottom	1:1	2.580	1.023	2.639	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.0	23.81	-0.16	0	00531	QPSK	50	0	0 mm	bottom	1:1	2.490	1.045	2.602	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.99	-0.12	0	00531	QPSK	50	50	0 mm	bottom	1:1	2.550	1.002	2.555	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.0	23.86	-0.17	0	00531	QPSK	50	0	0 mm	bottom	1:1	2.550	1.033	2.634	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.80	-0.04	0	00531	QPSK	100	0	0 mm	bottom	1:1	2.640	1.047	2.764	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.0	23.82	-0.18	0	00531	QPSK	1	50	0 mm	bottom	1:1	2.600	1.042	2.709	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	-0.06	0	00531	QPSK	1	0	1 mm	back	1:1	1.490	1.002	1.493	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.92	-0.13	1	00531	QPSK	50	0	1 mm	back	1:1	1.140	1.019	1.162	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	-0.03	0	00531	QPSK	1	0	1 mm	front	1:1	1.960	1.002	1.964	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.92	-0.11	1	00531	QPSK	50	0	1 mm	front	1:1	1.490	1.019	1.518	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	-0.06	0	00531	QPSK	1	0	3 mm	bottom	1:1	1.670	1.002	1.673	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.92	-0.09	1	00531	QPSK	50	0	3 mm	bottom	1:1	1.300	1.019	1.325	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	-0.03	0	00531	QPSK	1	0	0 mm	right	1:1	0.460	1.002	0.461	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.92	-0.06	1	00531	QPSK	50	0	0 mm	right	1:1	0.353	1.019	0.360	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.93	-0.12	0	00531	QPSK	1	50	0 mm	back	1:1	1.350	1.016	1.372	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.98	-0.09	0	00531	QPSK	50	0	0 mm	back	1:1	1.350	1.005	1.357	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.93	0.04	0	00531	QPSK	1	50	0 mm	front	1:1	1.760	1.016	1.788	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.98	-0.03	0	00531	QPSK	50	0	0 mm	front	1:1	1.750	1.005	1.759	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.93	-0.18	0	00531	QPSK	1	50	0 mm	bottom	1:1	2.340	1.016	2.377	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	23.86	-0.19	0	00531	QPSK	1	50	0 mm	bottom	1:1	2.240	1.033	2.314	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.92	-0.07	0	00531	QPSK	1	50	0 mm	bottom	1:1	2.160	1.019	2.201	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.98	-0.19	0	00531	QPSK	50	0	0 mm	bottom	1:1	2.360	1.005	2.372	A51
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.0	23.92	-0.12	0	00531	QPSK	50	25	0 mm	bottom	1:1	2.230	1.019	2.272	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.97	-0.14	0	00531	QPSK	50	0	0 mm	bottom	1:1	2.260	1.007	2.276	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.80	-0.15	0	00531	QPSK	100	0	0 mm	bottom	1:1	2.360	1.047	2.471	
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 11-37
WLAN Phablet SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	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)	
5260	52	802.11a	OFDM	20	19.5	19.06	-0.03	0 mm	00547	6	back	99.2	13.728	1.730	1.107	1.008	1.930	A52
5280	56	802.11a	OFDM	20	19.5	19.12	-0.20	0 mm	00547	6	back	99.2	12.847	1.710	1.091	1.008	1.881	
5300	60	802.11a	OFDM	20	19.5	19.15	-0.01	0 mm	00547	6	back	99.2	11.035	1.640	1.084	1.008	1.792	
5300	60	802.11a	OFDM	20	19.5	19.15	-0.04	0 mm	00547	6	front	99.2	4.242	0.528	1.084	1.008	0.577	
5300	60	802.11a	OFDM	20	19.5	19.15	-0.02	0 mm	00547	6	top	99.2	5.211	-	1.084	1.008	-	
5300	60	802.11a	OFDM	20	19.5	19.15	0.09	0 mm	00547	6	left	99.2	11.799	1.120	1.084	1.008	1.224	
5680	136	802.11a	OFDM	20	19.5	18.99	-0.07	0 mm	00547	6	back	99.2	8.850	1.320	1.125	1.008	1.497	
5680	136	802.11a	OFDM	20	19.5	18.99	-0.05	0 mm	00547	6	front	99.2	5.294	0.556	1.125	1.008	0.631	
5680	136	802.11a	OFDM	20	19.5	18.99	-0.18	0 mm	00547	6	top	99.2	4.567	-	1.125	1.008	-	
5680	136	802.11a	OFDM	20	19.5	18.99	-0.16	0 mm	00547	6	left	99.2	16.537	1.370	1.125	1.008	1.554	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Phablet 4.0 W/kg (mW/g) averaged over 10 grams										

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.
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 6.9 for more information).

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GSM Test Notes:

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

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.

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3. A-MPR was disabled for all SAR tests by setting NS=01 and MCC=001 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
4. Per FCC KDB Publication 447498 D01v06, when the reported LTE Band 41 SAR measured at the highest output power channel in a given a test configuration was > 0.6 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.

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 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 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. 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.
5. 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.
6. When 10g 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 9.6 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

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 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	GSM/GPRS 850	0.147	1.012	1.159
	GSM/GPRS 1900	0.082	1.012	1.094
	UMTS 850	0.190	1.012	1.202
	UMTS 1750	0.119	1.012	1.131
	UMTS 1900	0.156	1.012	1.168
	CDMA/EVDO BC10 (§90S)	0.161	1.012	1.173
	CDMA/EVDO BC0 (§22H)	0.146	1.012	1.158
	PCS CDMA/EVDO	0.125	1.012	1.137
	LTE Band 71	0.247	1.012	**1.259**
	LTE Band 12	0.177	1.012	1.189
	LTE Band 13	0.131	1.012	1.143
	LTE Band 26 (Cell)	0.131	1.012	1.143
	LTE Band 66 (AWS)	0.153	1.012	1.165
	LTE Band 25 (PCS)	0.162	1.012	1.174
	LTE Band 41	0.106	1.012	1.118

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	GSM/GPRS 850	0.147	0.996	1.143
	GSM/GPRS 1900	0.082	0.996	1.078
	UMTS 850	0.190	0.996	1.186
	UMTS 1750	0.119	0.996	1.115
	UMTS 1900	0.156	0.996	1.152
	CDMA/EVDO BC10 (§90S)	0.161	0.996	1.157
	CDMA/EVDO BC0 (§22H)	0.146	0.996	1.142
	PCS CDMA/EVDO	0.125	0.996	1.121
	LTE Band 71	0.247	0.996	**1.243**
	LTE Band 12	0.177	0.996	1.173
	LTE Band 13	0.131	0.996	1.127
	LTE Band 26 (Cell)	0.131	0.996	1.127
	LTE Band 66 (AWS)	0.153	0.996	1.149
	LTE Band 25 (PCS)	0.162	0.996	1.158
	LTE Band 41	0.106	0.996	1.102

Table 12-3
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	0.147	0.148	0.295
	GSM/GPRS 1900	0.082	0.148	0.230
	UMTS 850	0.190	0.148	0.338
	UMTS 1750	0.119	0.148	0.267
	UMTS 1900	0.156	0.148	0.304
	CDMA/EVDO BC10 (§90S)	0.161	0.148	0.309
	CDMA/EVDO BC0 (§22H)	0.146	0.148	0.294
	PCS CDMA/EVDO	0.125	0.148	0.273
	LTE Band 71	0.247	0.148	**0.395**
	LTE Band 12	0.177	0.148	0.325
	LTE Band 13	0.131	0.148	0.279
	LTE Band 26 (Cell)	0.131	0.148	0.279
	LTE Band 66 (AWS)	0.153	0.148	0.301
	LTE Band 25 (PCS)	0.162	0.148	0.310
	LTE Band 41	0.106	0.148	0.254

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Table 12-4
Simultaneous Transmission Scenario with 5 GHz WLAN and Bluetooth (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	GSM/GPRS 850	0.147	0.996	0.148	1.291
	GSM/GPRS 1900	0.082	0.996	0.148	1.226
	UMTS 850	0.190	0.996	0.148	1.334
	UMTS 1750	0.119	0.996	0.148	1.263
	UMTS 1900	0.156	0.996	0.148	1.300
	CDMA/EVDO BC10 (§90S)	0.161	0.996	0.148	1.305
	CDMA/EVDO BC0 (§22H)	0.146	0.996	0.148	1.290
	PCS CDMA/EVDO	0.125	0.996	0.148	1.269
	LTE Band 71	0.247	0.996	0.148	**1.391**
	LTE Band 12	0.177	0.996	0.148	1.321
	LTE Band 13	0.131	0.996	0.148	1.275
	LTE Band 26 (Cell)	0.131	0.996	0.148	1.275
	LTE Band 66 (AWS)	0.153	0.996	0.148	1.297
	LTE Band 25 (PCS)	0.162	0.996	0.148	1.306
	LTE Band 41	0.106	0.996	0.148	1.250

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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 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body-Worn	GSM/GPRS 850	0.493	0.508	1.001
	GSM/GPRS 1900	0.223	0.508	0.731
	UMTS 850	0.554	0.508	1.062
	UMTS 1750	0.646	0.508	**1.154**
	UMTS 1900	0.489	0.508	0.997
	CDMA BC10 (§90S)	0.429	0.508	0.937
	CDMA BC0 (§22H)	0.428	0.508	0.936
	PCS CDMA	0.343	0.508	0.851
	LTE Band 71	0.584	0.508	1.092
	LTE Band 12	0.447	0.508	0.955
	LTE Band 13	0.474	0.508	0.982
	LTE Band 26 (Cell)	0.513	0.508	1.021
	LTE Band 66 (AWS)	0.542	0.508	1.050
	LTE Band 25 (PCS)	0.559	0.508	1.067
	LTE Band 41	0.429	0.508	0.937

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 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body-Worn	GSM/GPRS 850	0.493	0.636	1.129
	GSM/GPRS 1900	0.223	0.636	0.859
	UMTS 850	0.554	0.636	1.190
	UMTS 1750	0.646	0.636	**1.282**
	UMTS 1900	0.489	0.636	1.125
	CDMA BC10 (§90S)	0.429	0.636	1.065
	CDMA BC0 (§22H)	0.428	0.636	1.064
	PCS CDMA	0.343	0.636	0.979
	LTE Band 71	0.584	0.636	1.220
	LTE Band 12	0.447	0.636	1.083
	LTE Band 13	0.474	0.636	1.110
	LTE Band 26 (Cell)	0.513	0.636	1.149
	LTE Band 66 (AWS)	0.542	0.636	1.178
	LTE Band 25 (PCS)	0.559	0.636	1.195
	LTE Band 41	0.429	0.636	1.065

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Table 12-7
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	0.493	0.053	0.546
	GSM/GPRS 1900	0.223	0.053	0.276
	UMTS 850	0.554	0.053	0.607
	UMTS 1750	0.646	0.053	0.699
	UMTS 1900	0.489	0.053	0.542
	CDMA BC10 (§90S)	0.429	0.053	0.482
	CDMA BC0 (§22H)	0.428	0.053	0.481
	PCS CDMA	0.343	0.053	0.396
	LTE Band 71	0.584	0.053	0.637
	LTE Band 12	0.447	0.053	0.500
	LTE Band 13	0.474	0.053	0.527
	LTE Band 26 (Cell)	0.513	0.053	0.566
	LTE Band 66 (AWS)	0.542	0.053	0.595
	LTE Band 25 (PCS)	0.559	0.053	0.612
	LTE Band 41	0.429	0.053	0.482

Table 12-8
Simultaneous Transmission Scenario with 5 GHz WLAN and Bluetooth (Body-Worn at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Body-Worn	GSM/GPRS 850	0.493	0.636	0.053	1.182
	GSM/GPRS 1900	0.223	0.636	0.053	0.912
	UMTS 850	0.554	0.636	0.053	1.243
	UMTS 1750	0.646	0.636	0.053	**1.335**
	UMTS 1900	0.489	0.636	0.053	1.178
	CDMA BC10 (§90S)	0.429	0.636	0.053	1.118
	CDMA BC0 (§22H)	0.428	0.636	0.053	1.117
	PCS CDMA	0.343	0.636	0.053	1.032
	LTE Band 71	0.584	0.636	0.053	1.273
	LTE Band 12	0.447	0.636	0.053	1.136
	LTE Band 13	0.474	0.636	0.053	1.163
	LTE Band 26 (Cell)	0.513	0.636	0.053	1.202
	LTE Band 66 (AWS)	0.542	0.636	0.053	1.231
	LTE Band 25 (PCS)	0.559	0.636	0.053	1.248
	LTE Band 41	0.429	0.636	0.053	1.118

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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 12-9
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	GPRS 850	0.493	0.508	1.001
	GPRS 1900	0.556	0.508	1.064
	UMTS 850	0.554	0.508	1.062
	UMTS 1750	1.118	0.508	See Table Below
	UMTS 1900	1.298	0.508	See Table Below
	EVDO BC10 (§90S)	0.407	0.508	0.915
	EVDO BC0 (§22H)	0.486	0.508	0.994
	PCS EVDO	0.978	0.508	1.486
	LTE Band 71	0.584	0.508	1.092
	LTE Band 12	0.447	0.508	0.955
	LTE Band 13	0.474	0.508	0.982
	LTE Band 26 (Cell)	0.513	0.508	1.021
	LTE Band 66 (AWS)	1.102	0.508	See Table Below
	LTE Band 25 (PCS)	1.192	0.508	See Table Below
	LTE Band 41	0.634	0.508	1.142

Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
Hotspot SAR	Back	0.646	0.508	1.154	Hotspot SAR	Back	0.489	0.508	0.997
	Front	0.741	0.508*	1.249		Front	0.685	0.508*	1.193
	Top	-	0.508*	0.508		Top	-	0.508*	0.508
	Bottom	1.118	-	1.118		Bottom	1.298	-	**1.298**
	Right	0.260	-	0.260		Right	0.169	-	0.169
	Left	-	0.401	0.401		Left	-	0.401	0.401

Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
Hotspot SAR	Back	0.542	0.508	1.050	Hotspot SAR	Back	0.559	0.508	1.067
	Front	0.720	0.508*	1.228		Front	0.733	0.508*	1.241
	Top	-	0.508*	0.508		Top	-	0.508*	0.508
	Bottom	1.102	-	1.102		Bottom	1.192	-	1.192
	Right	0.289	-	0.289		Right	0.205	-	0.205
	Left	-	0.401	0.401		Left	-	0.401	0.401

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Table 12-10
Simultaneous Transmission Scenario with 5 GHz WLAN (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	GPRS 850	0.493	0.531	1.024
	GPRS 1900	0.556	0.531	1.087
	UMTS 850	0.554	0.531	1.085
	UMTS 1750	1.118	0.531	See Table Below
	UMTS 1900	1.298	0.531	See Table Below
	EVDO BC10 (§90S)	0.407	0.531	0.938
	EVDO BC0 (§22H)	0.486	0.531	1.017
	PCS EVDO	0.978	0.531	1.509
	LTE Band 71	0.584	0.531	1.115
	LTE Band 12	0.447	0.531	0.978
	LTE Band 13	0.474	0.531	1.005
	LTE Band 26 (Cell)	0.513	0.531	1.044
	LTE Band 66 (AWS)	1.102	0.531	See Table Below
	LTE Band 25 (PCS)	1.192	0.531	See Table Below
	LTE Band 41	0.634	0.531	1.165

Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
Hotspot SAR	Back	0.646	0.531	1.177	Hotspot SAR	Back	0.489	0.531	1.020
	Front	0.741	0.531*	1.272		Front	0.685	0.531*	1.216
	Top	-	0.531*	0.531		Top	-	0.531*	0.531
	Bottom	1.118	-	1.118		Bottom	1.298	-	**1.298**
	Right	0.260	-	0.260		Right	0.169	-	0.169
	Left	-	0.346	0.346		Left	-	0.346	0.346

Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
Hotspot SAR	Back	0.542	0.531	1.073	Hotspot SAR	Back	0.559	0.531	1.090
	Front	0.720	0.531*	1.251		Front	0.733	0.531*	1.264
	Top	-	0.531*	0.531		Top	-	0.531*	0.531
	Bottom	1.102	-	1.102		Bottom	1.192	-	1.192
	Right	0.289	-	0.289		Right	0.205	-	0.205
	Left	-	0.346	0.346		Left	-	0.346	0.346

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Table 12-11
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	0.493	0.053	0.546
	GPRS 1900	0.556	0.053	0.609
	UMTS 850	0.554	0.053	0.607
	UMTS 1750	1.118	0.053	1.171
	UMTS 1900	1.298	0.053	**1.351**
	EVDO BC10 (§90S)	0.407	0.053	0.460
	EVDO BC0 (§22H)	0.486	0.053	0.539
	PCS EVDO	0.978	0.053	1.031
	LTE Band 71	0.584	0.053	0.637
	LTE Band 12	0.447	0.053	0.500
	LTE Band 13	0.474	0.053	0.527
	LTE Band 26 (Cell)	0.513	0.053	0.566
	LTE Band 66 (AWS)	1.102	0.053	1.155
	LTE Band 25 (PCS)	1.192	0.053	1.245
	LTE Band 41	0.634	0.053	0.687

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	GPRS 850	0.493	0.531	0.053	1.077
	GPRS 1900	0.556	0.531	0.053	1.140
	UMTS 850	0.554	0.531	0.053	1.138
	UMTS 1750	1.118	0.531	0.053	See Table Below
	UMTS 1900	1.298	0.531	0.053	See Table Below
	EVDO BC10 (§90S)	0.407	0.531	0.053	0.991
	EVDO BC0 (§22H)	0.486	0.531	0.053	1.070
	PCS EVDO	0.978	0.531	0.053	**1.562**
	LTE Band 71	0.584	0.531	0.053	1.168
	LTE Band 12	0.447	0.531	0.053	1.031
	LTE Band 13	0.474	0.531	0.053	1.058
	LTE Band 26 (Cell)	0.513	0.531	0.053	1.097
	LTE Band 66 (AWS)	1.102	0.531	0.053	See Table Below
	LTE Band 25 (PCS)	1.192	0.531	0.053	See Table Below
	LTE Band 41	0.634	0.531	0.053	1.218

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Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
Hotspot SAR	Back	0.646	0.531	0.053	1.230	Hotspot SAR	Back	0.489	0.531	0.053	1.073
	Front	0.741	0.531*	0.019	**1.291**		Front	0.685	0.531*	0.019	1.235
	Top	-	0.531*	0.029	0.560		Top	-	0.531*	0.029	0.560
	Bottom	1.118	-	-	1.118		Bottom	1.298	-	-	**1.298**
	Right	0.260	-	-	0.260		Right	0.169	-	-	0.169
	Left	-	0.346	0.019	0.365		Left	-	0.346	0.019	0.365
Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3			1	2	3	1+2+3
Hotspot SAR	Back	0.542	0.531	0.053	1.126	Hotspot SAR	Back	0.559	0.531	0.053	1.143
	Front	0.720	0.531*	0.019	**1.270**		Front	0.733	0.531*	0.019	**1.283**
	Top	-	0.531*	0.029	0.560		Top	-	0.531*	0.029	0.560
	Bottom	1.102	-	-	1.102		Bottom	1.192	-	-	1.192
	Right	0.289	-	-	0.289		Right	0.205	-	-	0.205
	Left	-	0.346	0.019	0.365		Left	-	0.346	0.019	0.365

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12.6 Phablet Simultaneous Transmission Analysis

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

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

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.

Table 12-13
Simultaneous Transmission Scenario with 5 GHz WLAN (Phablet)

Exposure Condition	Mode	3G/4G SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Phablet SAR	UMTS 1750	2.339	1.930	See Table Below
	UMTS 1900	2.646	1.930	See Table Below
	PCS EVDO	1.893	1.930	**3.823**
	LTE Band 66 (AWS)	2.793	1.930	See Table Below
	LTE Band 25 (PCS)	2.471	1.930	See Table Below

Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
Phablet SAR	Back	1.538	1.930	**3.468**	Phablet SAR	Back	1.638	1.930	**3.568**
	Front	2.339	0.631	2.970		Front	2.646	0.631	3.277
	Top	-	1.930*	1.930		Top	-	1.930*	1.930
	Bottom	1.990	-	1.990		Bottom	2.561	-	2.561
	Right	0.580	-	0.580		Right	0.470	-	0.470
	Left	-	1.554	1.554		Left	-	1.554	1.554

Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
Phablet SAR	Back	1.698	1.930	**3.628**	Phablet SAR	Back	1.493	1.930	**3.423**
	Front	2.709	0.631	3.340		Front	1.964	0.631	2.595
	Top	-	1.930*	1.930		Top	-	1.930*	1.930
	Bottom	2.793	-	2.793		Bottom	2.471	-	2.471
	Right	0.615	-	0.615		Right	0.461	-	0.461
	Left	-	1.554	1.554		Left	-	1.554	1.554

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12.7 Simultaneous Transmission Conclusion

The above numerical summed SAR results for all the worst-case simultaneous transmission conditions were below the SAR limit. Therefore, the above analysis 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 6.3.4.1.2.

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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
Head SAR Measurement Variability Results

HEAD VARIABILITY RESULTS															
Band	FREQUENCY		Mode/Band	Service	Side	Test Position	Data Rate (Mbps)	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)	
2450	2412.00	1	802.11b, 22 MHz Bandwidth	DSSS	Right	Cheek	1	0.810	0.771	1.05	N/A	N/A	N/A	N/A
5600	5520.00	104	802.11a, 20 MHz Bandwidth	OFDM	Right	Cheek	6	0.926	0.800	1.16	N/A	N/A	N/A	N/A
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 13-2
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)	
1900	1852.40	9262	UMTS 1900	RMC	bottom	10 mm	1.260	1.210	1.04	N/A	N/A	N/A	N/A
1750	1745.00	132322	LTE Band 66 (AWS), 20 MHz Bandwidth	QPSK, 1 RB, 0 RB Offset	bottom	10 mm	1.100	1.070	1.03	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								

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Table 13-3
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)	
1900	1852.40	9262	UMTS 1900	RMC	front	0 mm	2.480	2.370	1.05	N/A	N/A	N/A	N/A
1750	1745.00	132322	LTE Band 66 (AWS), 20 MHz Bandwidth	QPSK, 1 RB, 50 RB Offset	bottom	0 mm	2.680	2.600	1.03	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	27.7
Measured Output Power (dBm)	25	27.67
Measured SAR (W/kg)	0.09	0.105
Measured Power (mW)	316.23	584.79
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	200.17	253.21
% deviation from expected linearity		-7.77%

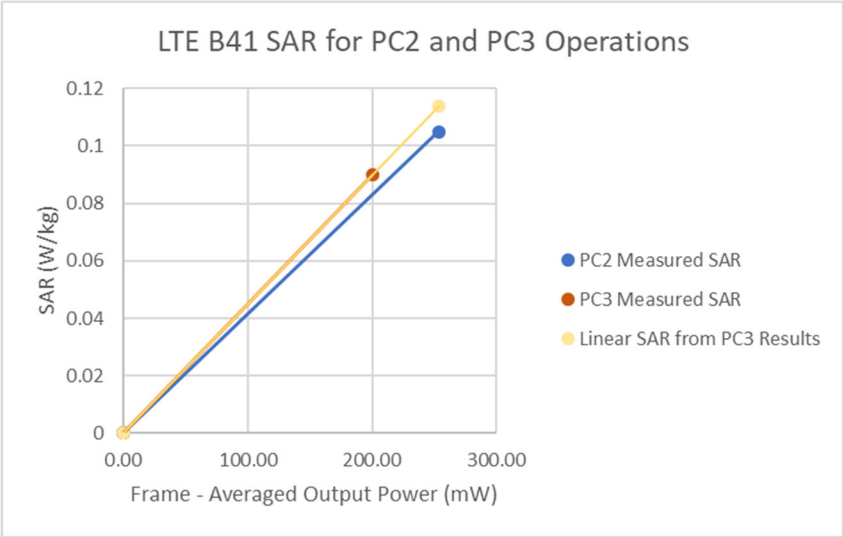

Figure 14-1
LTE Band 41 Head Linearity

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

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25	27.7
Measured Output Power (dBm)	25	27.67
Measured SAR (W/kg)	0.327	0.426
Measured Power (mW)	316.23	584.79
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	200.17	253.21
% deviation from expected linearity		2.99%

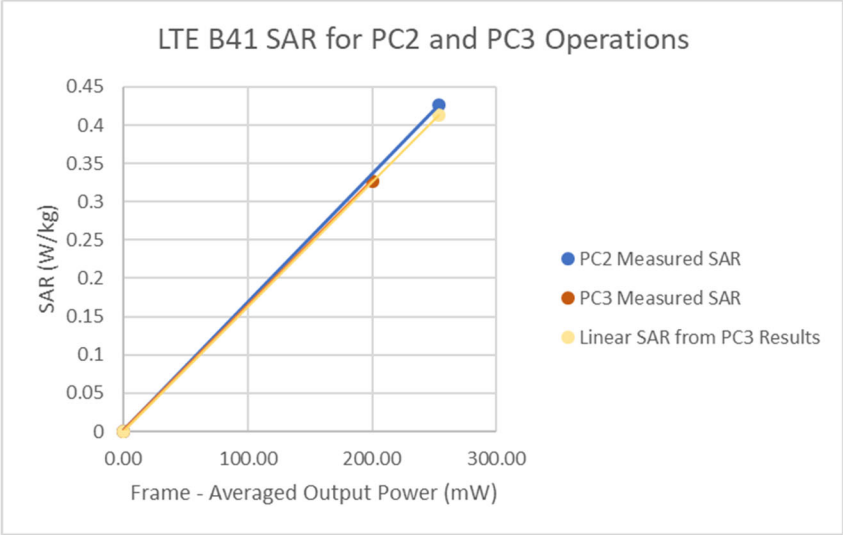

Figure 14-2
LTE Band 41 Body-Worn Linearity

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Table 14-3
LTE Band 41 Hotspot Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25	27.7
Measured Output Power (dBm)	25	27.67
Measured SAR (W/kg)	0.552	0.63
Measured Power (mW)	316.23	584.79
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	200.17	253.21
% deviation from expected linearity		-9.78%

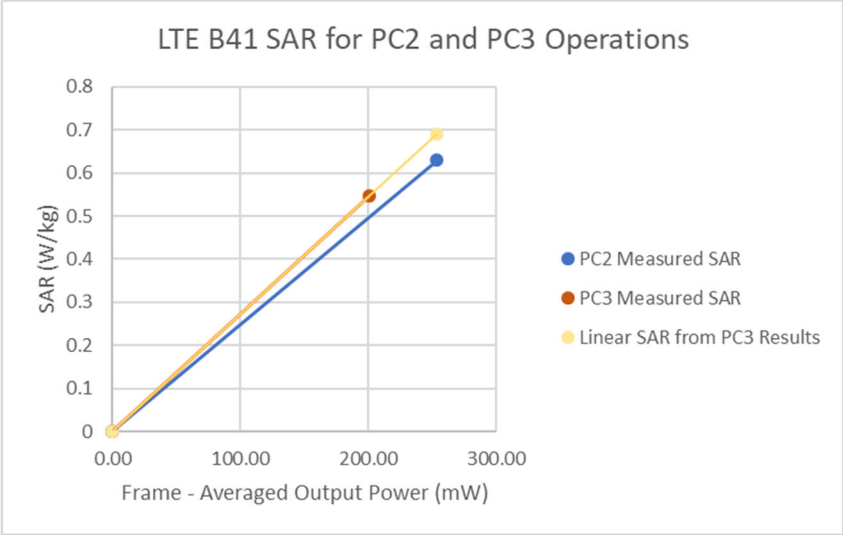

Figure 14-3
LTE Band 41 Hotspot Linearity

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15 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	E5515C	8960 Series 10 Wireless Communications Test Set	12/18/2018	Annual	12/18/2019	GB42230325
Agilent	E4438C	ESG Vector Signal Generator	3/8/2019	Biennial	3/8/2021	MY42082385
Agilent	E4438C	ESG Vector Signal Generator	3/11/2019	Biennial	3/11/2021	MY45090700
Agilent	N9020A	MXA Signal Analyzer	4/24/2018	Annual	4/24/2019	US46470561
Agilent	N5182A-506	MXG Vector Signal Generator	6/19/2018	Annual	6/19/2019	MY48180366
Agilent	N5182A	MXG Vector Signal Generator	11/28/2018	Annual	11/28/2019	MY47420603
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	E5515C	Wireless Communications Test Set	5/22/2018	Biennial	5/22/2020	GB43193563
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433972
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433974
Anritsu	ML2496A	Power Meter	5/21/2018	Annual	5/21/2019	1351001
Anritsu	ML2496A	Power Meter	6/19/2018	Annual	6/19/2019	1306009
Anritsu	MA2411B	Pulse Power Sensor	10/30/2018	Annual	10/30/2019	1126066
Anritsu	MA2411B	Pulse Power Sensor	11/20/2018	Annual	11/20/2019	1339008
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	MA24106A	USB Power Sensor	6/5/2018	Annual	6/5/2019	1231538
Anritsu	MA24106A	USB Power Sensor	6/5/2018	Annual	6/5/2019	1231535
Anritsu	MT8862A	Wireless Connectivity Test Set	7/3/2018	Annual	7/3/2019	6261782395
Control Company	4040	Therm./ Clock/ Humidity Monitor	10/9/2018	Biennial	10/9/2020	181647811
Control Company	4040	Therm./ Clock/ Humidity Monitor	10/9/2018	Biennial	10/9/2020	181647802
Control Company	4352	Ultra Long Stem Thermometer	5/2/2017	Biennial	5/2/2019	170330157
Control Company	4352	Ultra Long Stem Thermometer	5/2/2017	Biennial	5/2/2019	170330131
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
Keysignt Technologies	U3401A	Digital Multimeter	5/17/2018	Annual	5/17/2019	MY57201470
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5+	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	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	NC-100	Torque Wrench	11/7/2017	Biennial	11/7/2019	N/A
Pasternack	NC-100	Torque Wrench	5/23/2018	Biennial	5/23/2020	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	5/18/2018	Annual	5/18/2019	109892
Rohde & Schwarz	CMW500	Radio Communication Tester	10/12/2018	Annual	10/12/2019	166462
Rohde & Schwarz	CMW500	Radio Communication Tester	11/5/2018	Annual	11/5/2019	140148
Rohde & Schwarz	CMW500	Radio Communication Tester	11/14/2018	Annual	11/14/2019	100976
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	5/29/2018	Annual	5/29/2019	161662
SPEAG	D1750V2	1750 MHz SAR Dipole	5/9/2017	Biennial	5/9/2019	1148
SPEAG	D1765V2	1765 MHz SAR Dipole	5/23/2018	Annual	5/23/2019	1008
SPEAG	D1750V2	1750 MHz SAR Dipole	10/22/2018	Annual	10/22/2019	1150
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Annual	10/23/2019	5d080
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Annual	10/23/2019	5d149
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	D2600V2	2600 MHz SAR Dipole	8/13/2018	Annual	8/13/2019	1126
SPEAG	D5GHzV2	5 GHz SAR Dipole	9/21/2016	Triennial	9/21/2019	1191
SPEAG	D5GHzV2	5 GHz SAR Dipole	1/16/2018	Biennial	1/16/2020	1057
SPEAG	D750V3	750 MHz SAR Dipole	10/19/2018	Annual	10/19/2019	1161
SPEAG	D835V2	835 MHz SAR Dipole	10/19/2018	Annual	10/19/2019	4d133
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/15/2018	Annual	5/15/2019	1070
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/11/2018	Annual	4/11/2019	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/18/2018	Annual	6/18/2019	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/11/2018	Annual	7/11/2019	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/22/2018	Annual	8/22/2019	1450
SPEAG	DAE4	Dasy Data Acquisition Electronics	10/3/2018	Annual	10/3/2019	1558
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/15/2019	Annual	1/15/2020	1530
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/13/2019	Annual	2/13/2020	665
SPEAG	EX3DV4	SAR Probe	4/18/2018	Annual	4/18/2019	7357
SPEAG	EX3DV4	SAR Probe	6/25/2018	Annual	6/25/2019	7409
SPEAG	EX3DV4	SAR Probe	7/20/2018	Annual	7/20/2019	7410
SPEAG	EX3DV4	SAR Probe	8/23/2018	Annual	8/23/2019	7308
SPEAG	EX3DV4	SAR Probe	1/24/2019	Annual	1/24/2020	7488
SPEAG	EX3DV4	SAR Probe	1/25/2019	Annual	1/25/2020	3589
SPEAG	EX3DV4	SAR Probe	2/19/2019	Annual	2/19/2020	7417

Each equipment was used solely within its calibration period.

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

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16 MEASUREMENT UNCERTAINTIES

a	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	**Tol. (± %)**	**Prob. Dist.**	**Div.**	**c_i 1gm**	**c_i 10 gms**	**1gm u_i (± %)**	**10gms u_i (± %)**	**v_i**
Measurement System								
Probe Calibration	6.55	N	1	1.0	1.0	6.6	6.6	∞
Axial Isotropy	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	1.3	N	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	2.0	R	1.73	1.0	1.0	1.2	1.2	∞
Linearity	0.3	N	1	1.0	1.0	0.3	0.3	∞
System Detection Limits	0.25	R	1.73	1.0	1.0	0.1	0.1	∞
Readout Electronics	0.3	N	1	1.0	1.0	0.3	0.3	∞
Response Time	0.8	R	1.73	1.0	1.0	0.5	0.5	∞
Integration Time	2.6	R	1.73	1.0	1.0	1.5	1.5	∞
RF Ambient Conditions - Noise	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
RF Ambient Conditions - Reflections	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	0.4	R	1.73	1.0	1.0	0.2	0.2	∞
Probe Positioning w/ respect to Phantom	6.7	R	1.73	1.0	1.0	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	4.0	R	1.73	1.0	1.0	2.3	2.3	∞
Test Sample Related								
Test Sample Positioning	2.7	N	1	1.0	1.0	2.7	2.7	35
Device Holder Uncertainty	1.67	N	1	1.0	1.0	1.7	1.7	5
Output Power Variation - SAR drift measurement	5.0	R	1.73	1.0	1.0	2.9	2.9	∞
SAR Scaling	0.0	R	1.73	1.0	1.0	0.0	0.0	∞
Phantom & Tissue Parameters								
Phantom Uncertainty (Shape & Thickness tolerances)	7.6	R	1.73	1.0	1.0	4.4	4.4	∞
Liquid Conductivity - measurement uncertainty	4.2	N	1	0.78	0.71	3.3	3.0	10
Liquid Permittivity - measurement uncertainty	4.1	N	1	0.23	0.26	1.0	1.1	10
Liquid Conductivity - Temperature Uncertainty	3.4	R	1.73	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature 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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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: ZNFQ720PS; Type: Portable Handset; Serial: 00530

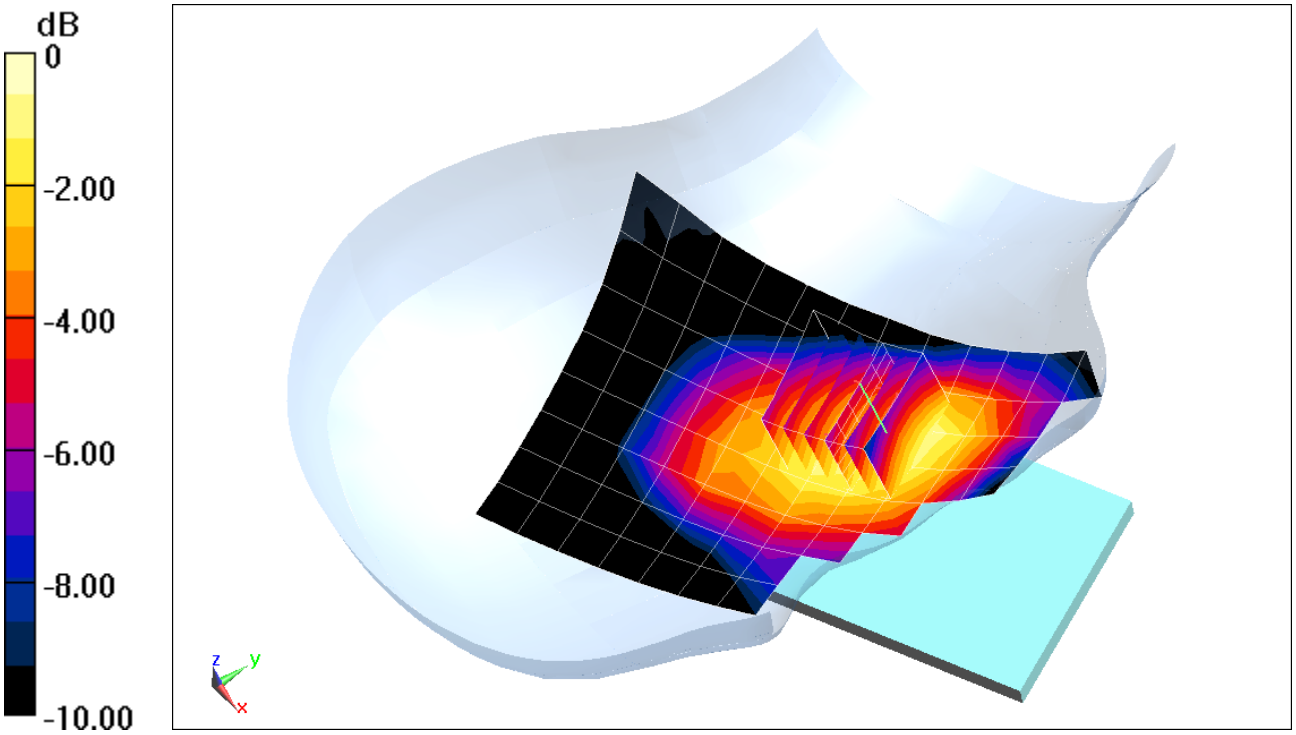
Communication System: UID 0, GSM GPRS; 2 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:4.15
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.918 S/m; ε_r = 42.431; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 04-01-2019; Ambient Temp: 22.4°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7357; ConvF(10.11, 10.11, 10.11) @ 836.6 MHz; Calibrated: 4/18/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: Left For Head SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1687
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: GPRS 850, Right Head, Cheek, Mid.ch, 2 Tx slots

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.81 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.187 W/kg
SAR(1 g) = 0.143 W/kg



0 dB = 0.170 W/kg = -7.70 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00532

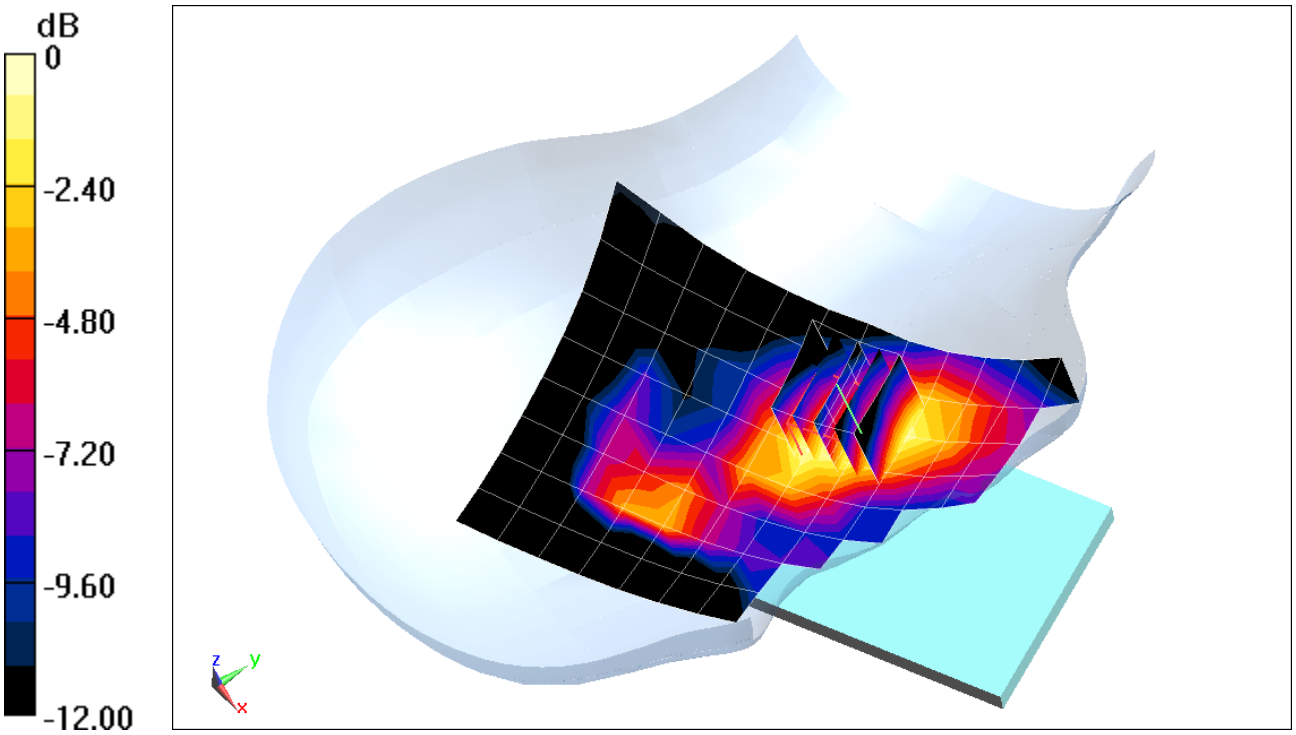
Communication System: UID 0, GSM GPRS; 2 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:4.15
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.432 S/m; ε_r = 41.408; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 04-03-2019; Ambient Temp: 21.5°C; Tissue Temp: 20.5°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 30 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 1900, Right Head, Cheek, Mid.ch, 2 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 = 7.721 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.120 W/kg
SAR(1 g) = 0.080 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00530

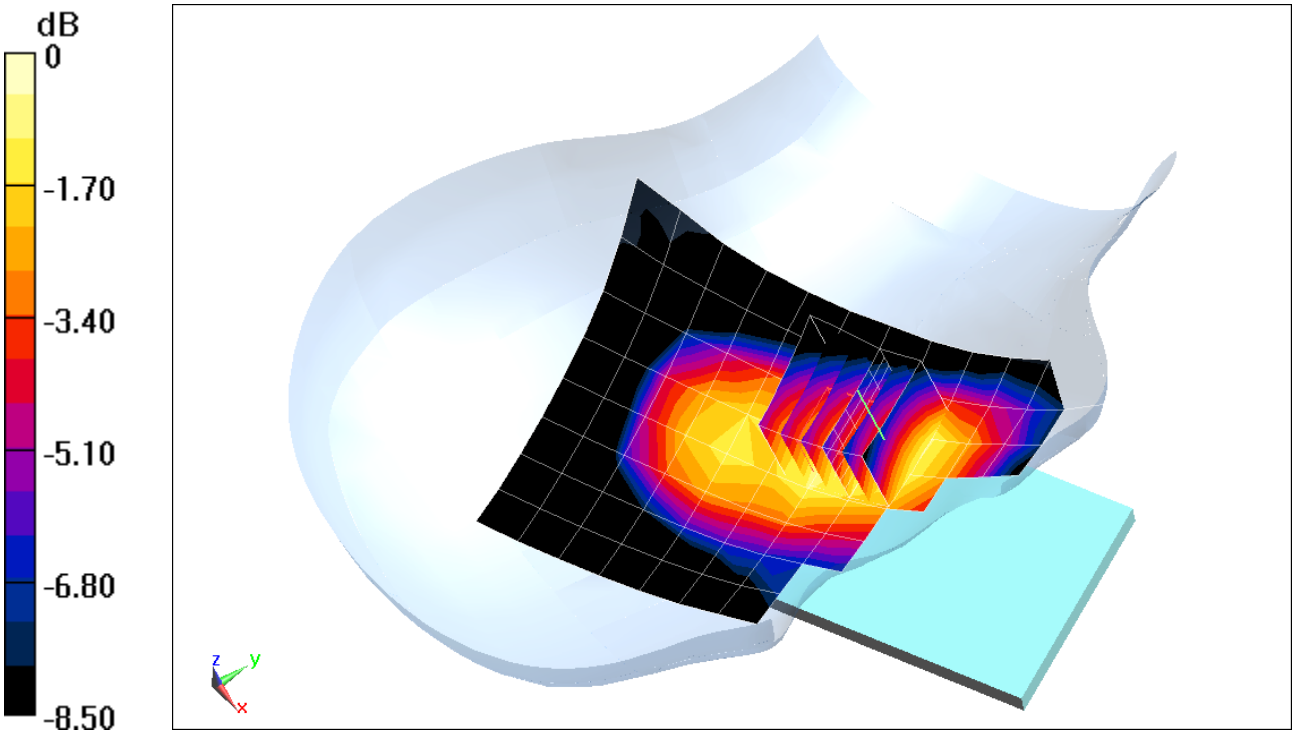
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.918 S/m; ε_r = 42.431; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 04-01-2019; Ambient Temp: 22.4°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7357; ConvF(10.11, 10.11, 10.11) @ 836.6 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 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.08 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.228 W/kg
SAR(1 g) = 0.173 W/kg



0 dB = 0.207 W/kg = -6.84 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00530

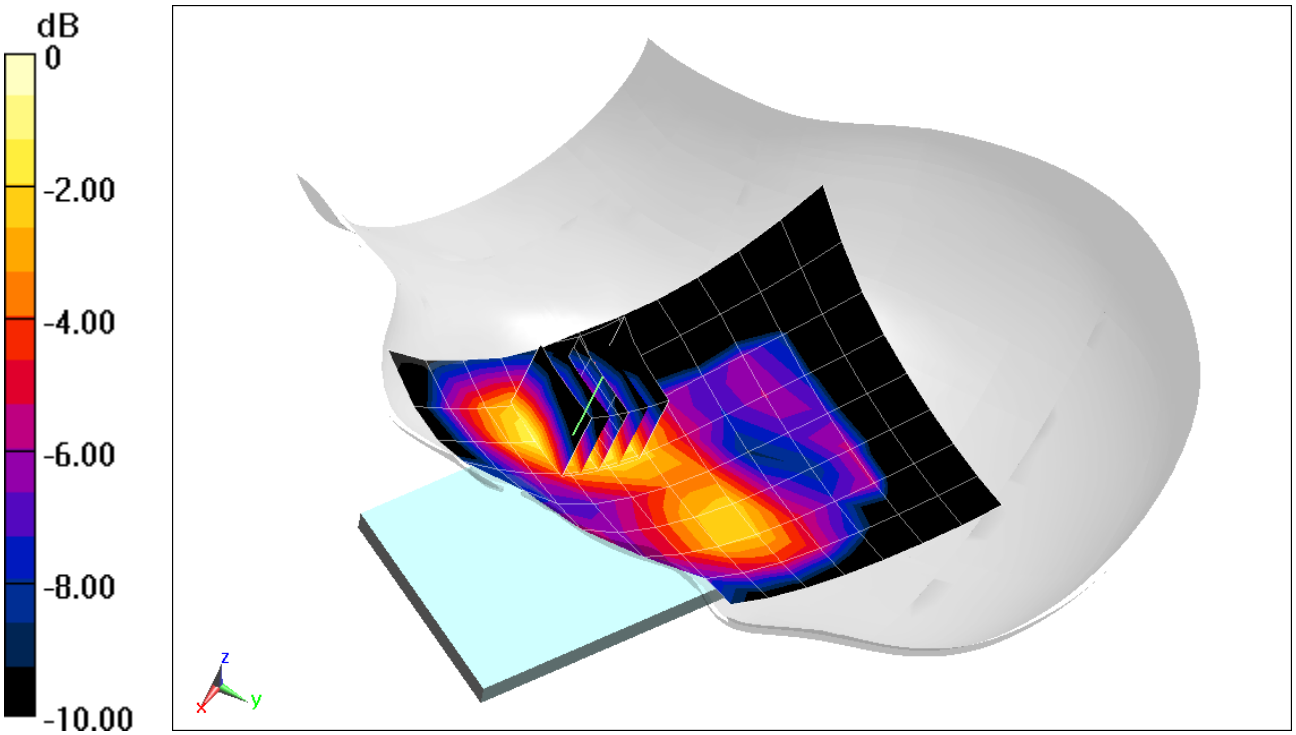
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.345 S/m; ε_r = 38.463; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 03-24-2019; Ambient Temp: 21.9°C; Tissue Temp: 20.3°C

Probe: EX3DV4 - SN3589; ConvF(7.31, 7.31, 7.31) @ 1732.4 MHz; Calibrated: 1/25/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 8/22/2018
Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 1750, Left Head, 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 = 9.606 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.176 W/kg
SAR(1 g) = 0.116 W/kg



0 dB = 0.152 W/kg = -8.18 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00532

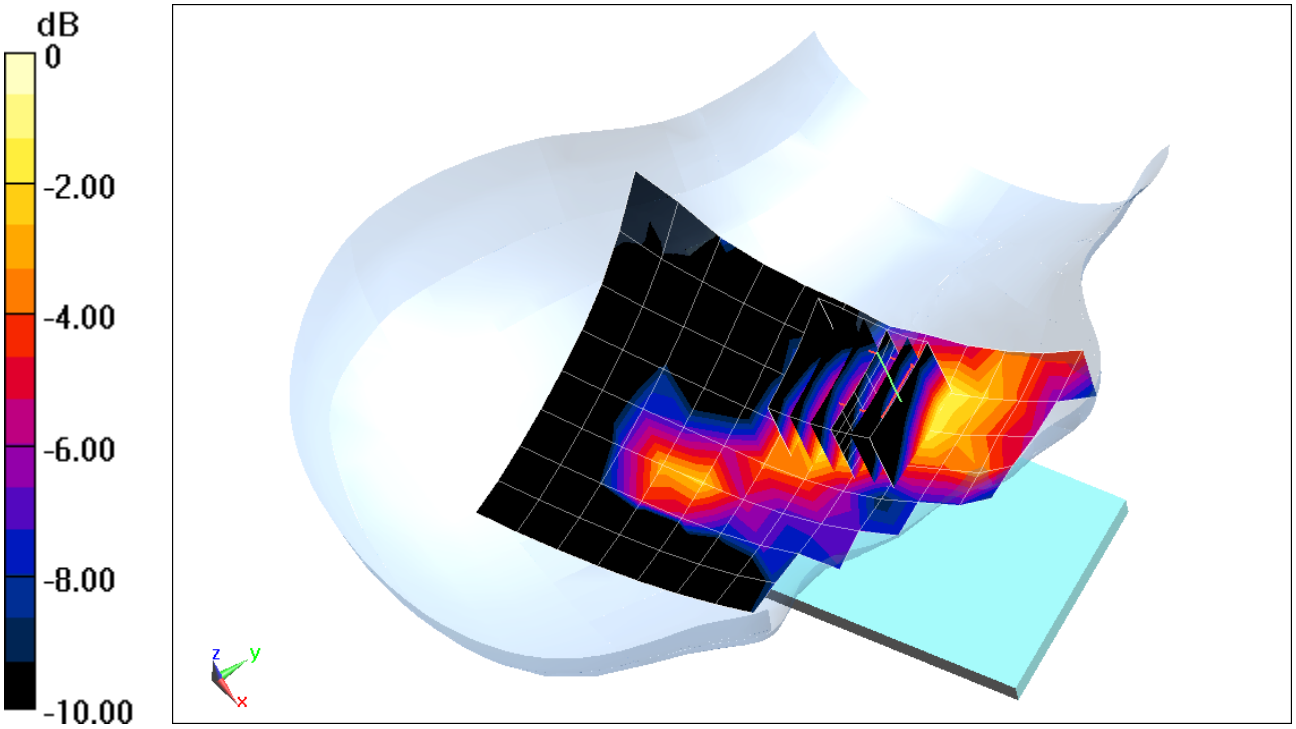
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.432 S/m; ε_r = 40; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 04-08-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7357; ConvF(8.47, 8.47, 8.47) @ 1880 MHz; Calibrated: 4/18/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: Left For Head SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1687
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.28 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.230 W/kg
SAR(1 g) = 0.150 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00530

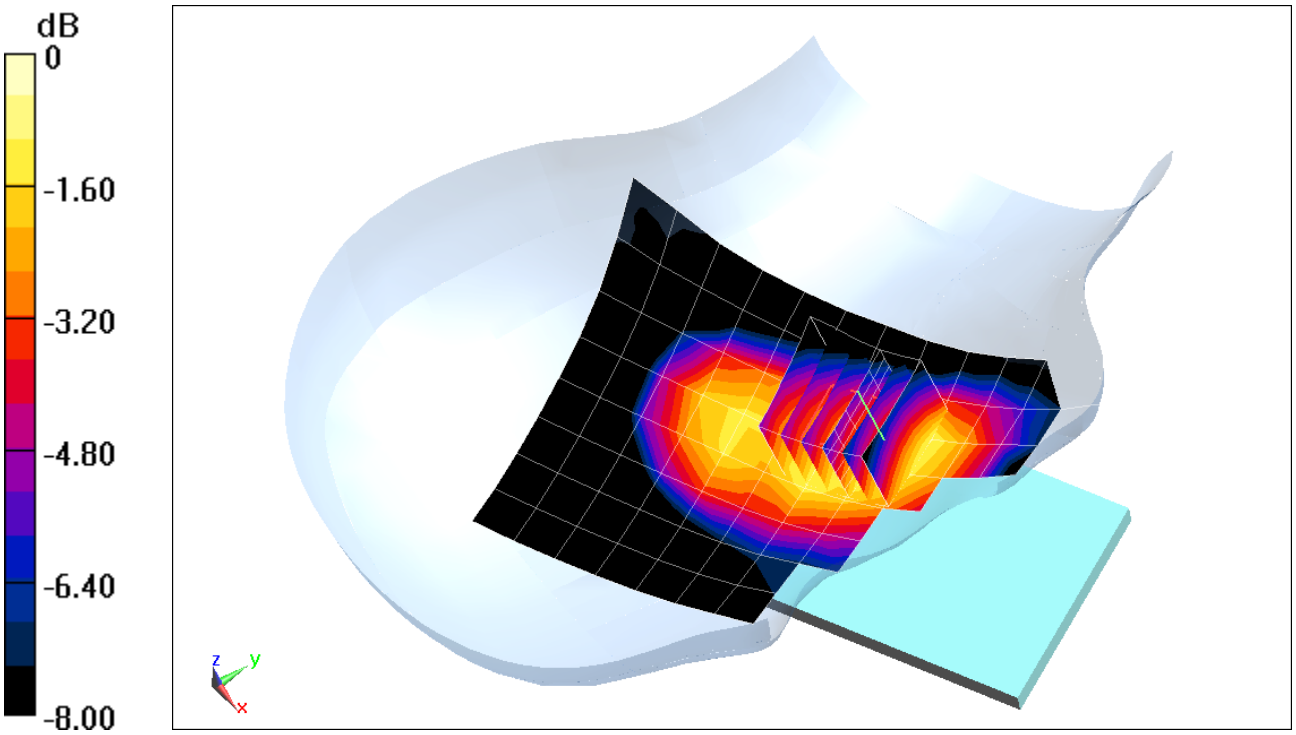
Communication System: UID 0, Cellular CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 820.1 MHz; σ = 0.901 S/m; ε_r = 42.634; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 04-01-2019; Ambient Temp: 22.4°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7357; ConvF(10.11, 10.11, 10.11) @ 820.1 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 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: Cell. CDMA, Rule Part 90S, Right Head, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.82 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.184 W/kg
SAR(1 g) = 0.142 W/kg



0 dB = 0.168 W/kg = -7.75 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00530

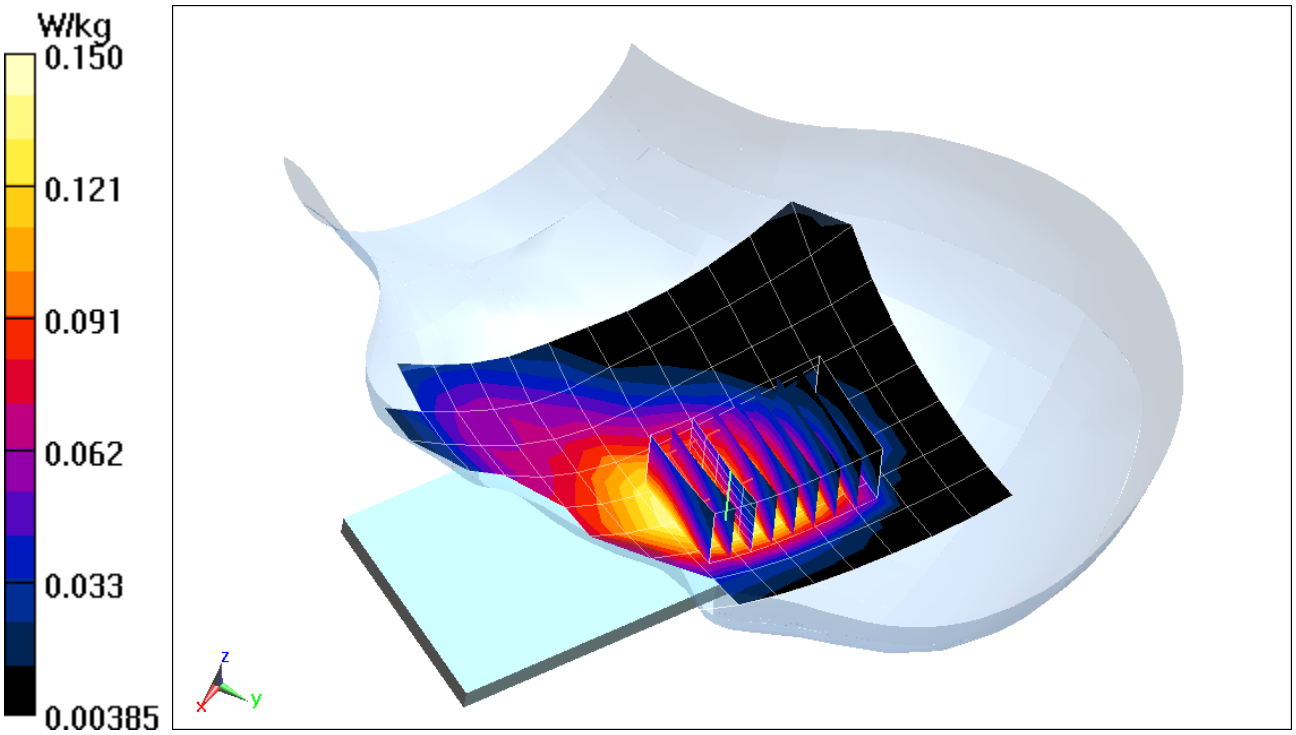
Communication System: UID 0, Cellular CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.918 S/m; ε_r = 42.432; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 04-01-2019; Ambient Temp: 22.4°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7357; ConvF(10.11, 10.11, 10.11) @ 836.52 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 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: Cell. CDMA, Rule Part 22H, Left Head, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x9x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.11 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.165 W/kg
SAR(1 g) = 0.129 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00532

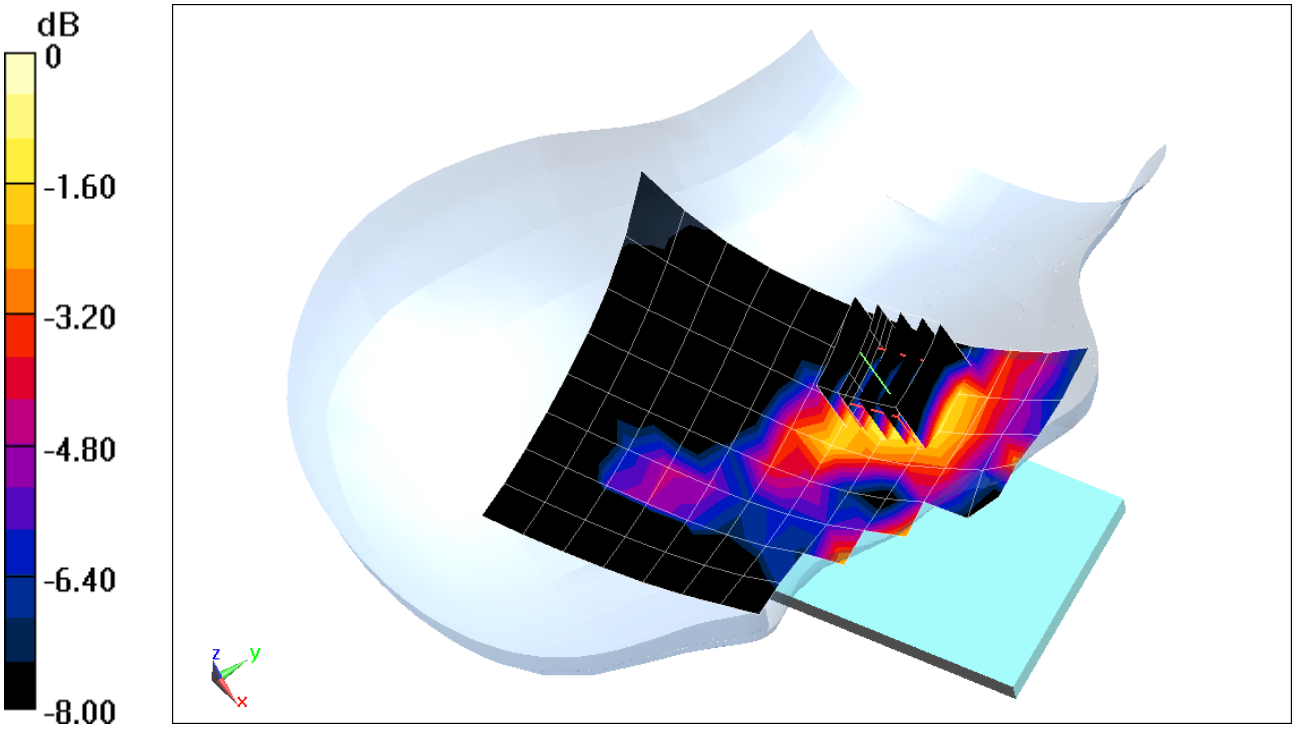
Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.432 S/m; ε_r = 40; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 04-08-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7357; ConvF(8.47, 8.47, 8.47) @ 1880 MHz; Calibrated: 4/18/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: Left For Head SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1687
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: PCS EVDO Rev. A, Right Head, 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 = 9.350 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 0.207 W/kg
SAR(1 g) = 0.122 W/kg



0 dB = 0.168 W/kg = -7.75 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00531

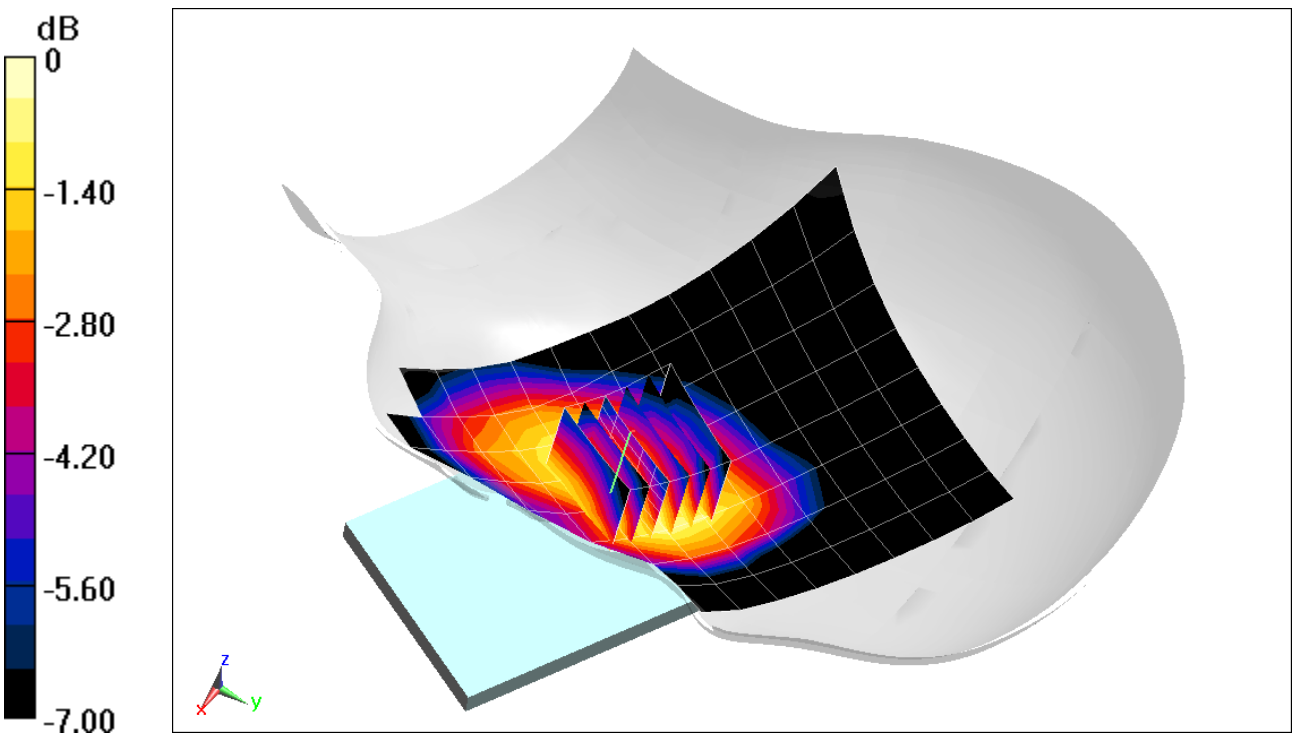
Communication System: UID 0, LTE Band 71; Frequency: 680.5 MHz; Duty Cycle: 1:1
Medium: 750 MHz Medium parameters used (interpolated):
f = 680.5 MHz; σ = 0.845 S/m; ε_r = 41.151; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 03-28-2019; Ambient Temp: 23.1°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN3589; ConvF(8.67, 8.67, 8.67) @ 680.5 MHz; Calibrated: 1/25/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 8/22/2018
Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 71, Left Head, Cheek, Mid.ch, 20 MHz Bandwidth, QPSK, 1 RB, 99 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 = 17.01 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.287 W/kg
SAR(1 g) = 0.233 W/kg



0 dB = 0.265 W/kg = -5.77 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00531

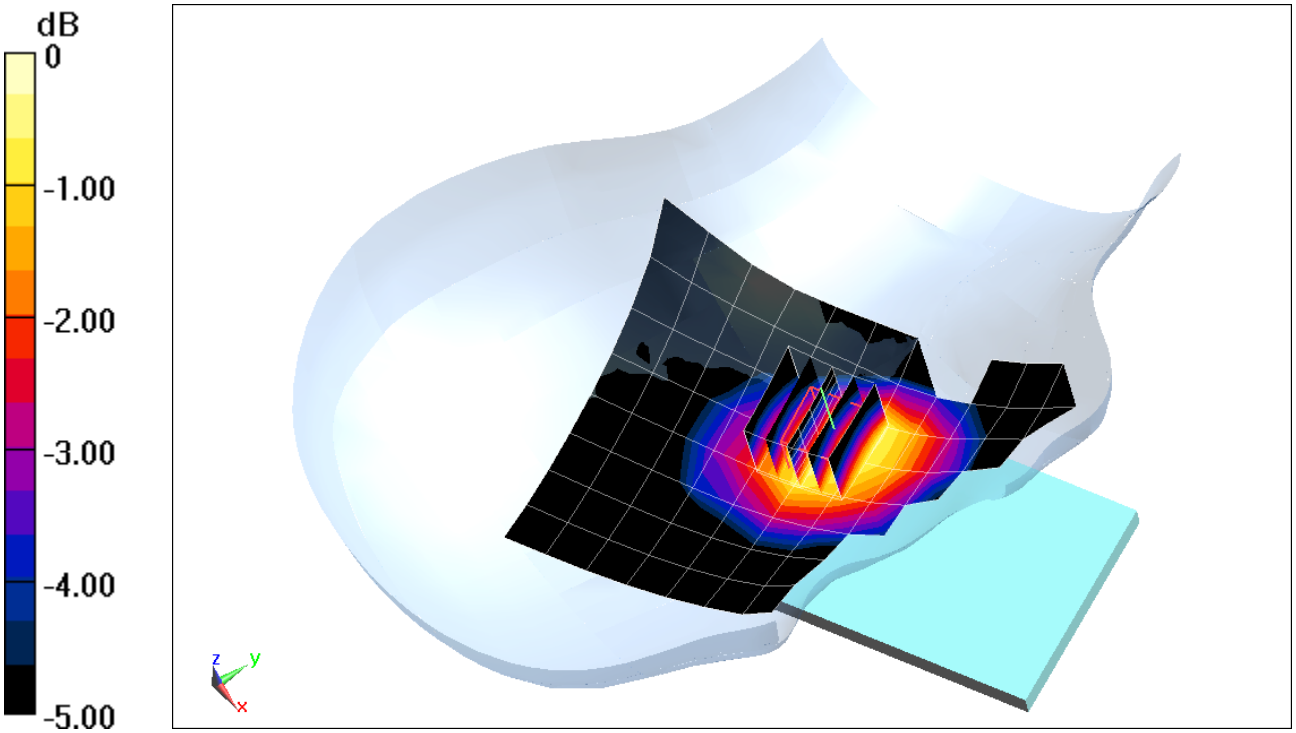
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 MHz Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.853 S/m; ε_r = 41.073; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 03-28-2019; Ambient Temp: 23.1°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN3589; ConvF(8.67, 8.67, 8.67) @ 707.5 MHz; Calibrated: 1/25/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 8/22/2018
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 12, Right Head, Cheek, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 0 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 = 14.16 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.215 W/kg
SAR(1 g) = 0.166 W/kg



0 dB = 0.194 W/kg = -7.12 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00531

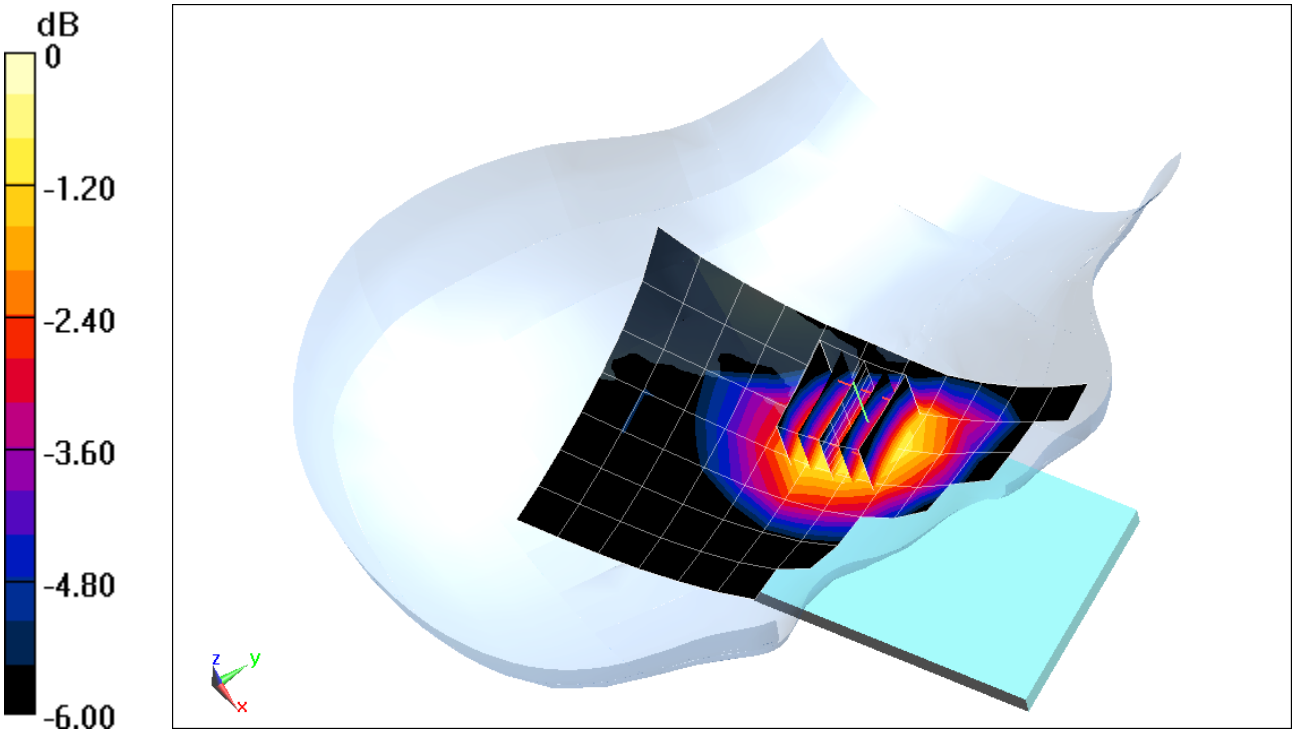
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 MHz Medium parameters used (interpolated):
f = 782 MHz; σ = 0.878 S/m; ε_r = 40.867; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 03-28-2019; Ambient Temp: 23.1°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN3589; ConvF(8.67, 8.67, 8.67) @ 782 MHz; Calibrated: 1/25/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 8/22/2018
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 13, Right Head, Cheek, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 0 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 = 12.56 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.170 W/kg
SAR(1 g) = 0.125 W/kg



0 dB = 0.151 W/kg = -8.21 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00531

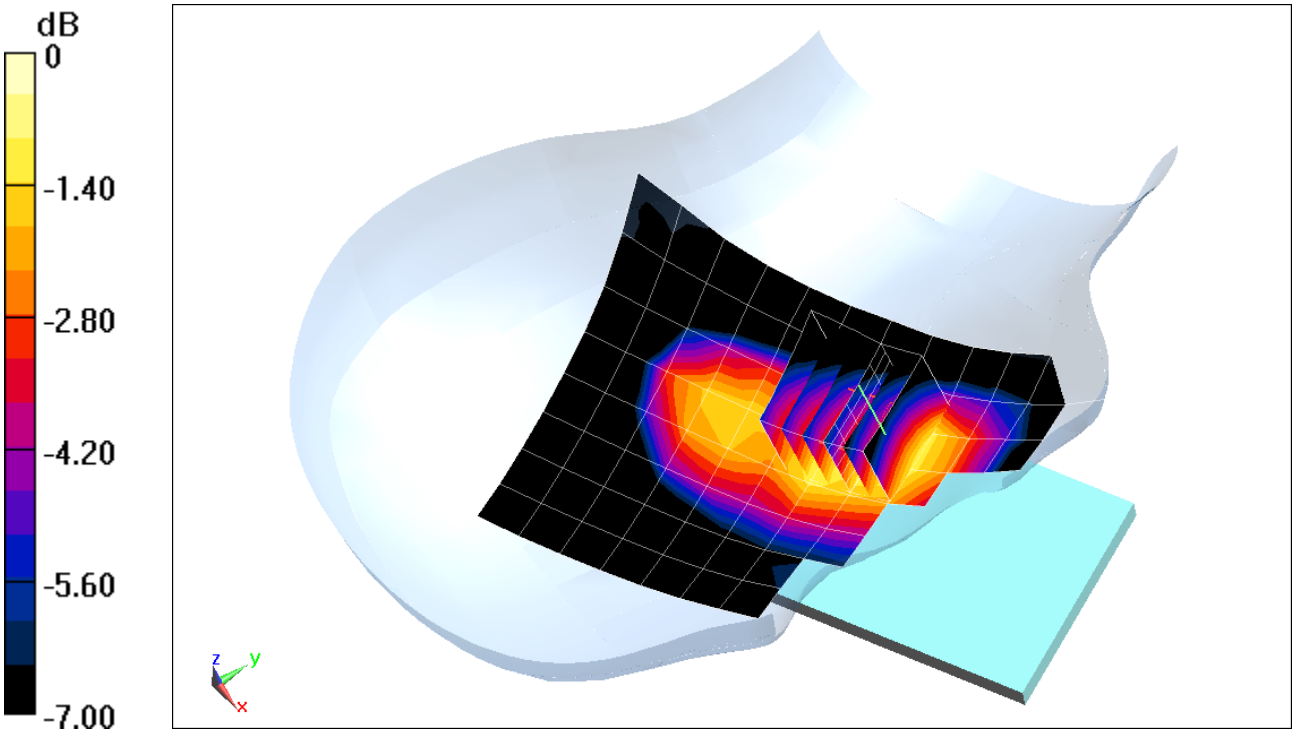
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 831.5 MHz; σ = 0.912 S/m; ε_r = 42.493; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 04-01-2019; Ambient Temp: 22.4°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7357; ConvF(10.11, 10.11, 10.11) @ 831.5 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 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 26 (Cell.), Right Head, Cheek, Mid.ch, 15 MHz Bandwidth, QPSK, 1 RB, 36 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 = 12.09 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.160 W/kg
SAR(1 g) = 0.121 W/kg



0 dB = 0.144 W/kg = -8.42 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00531

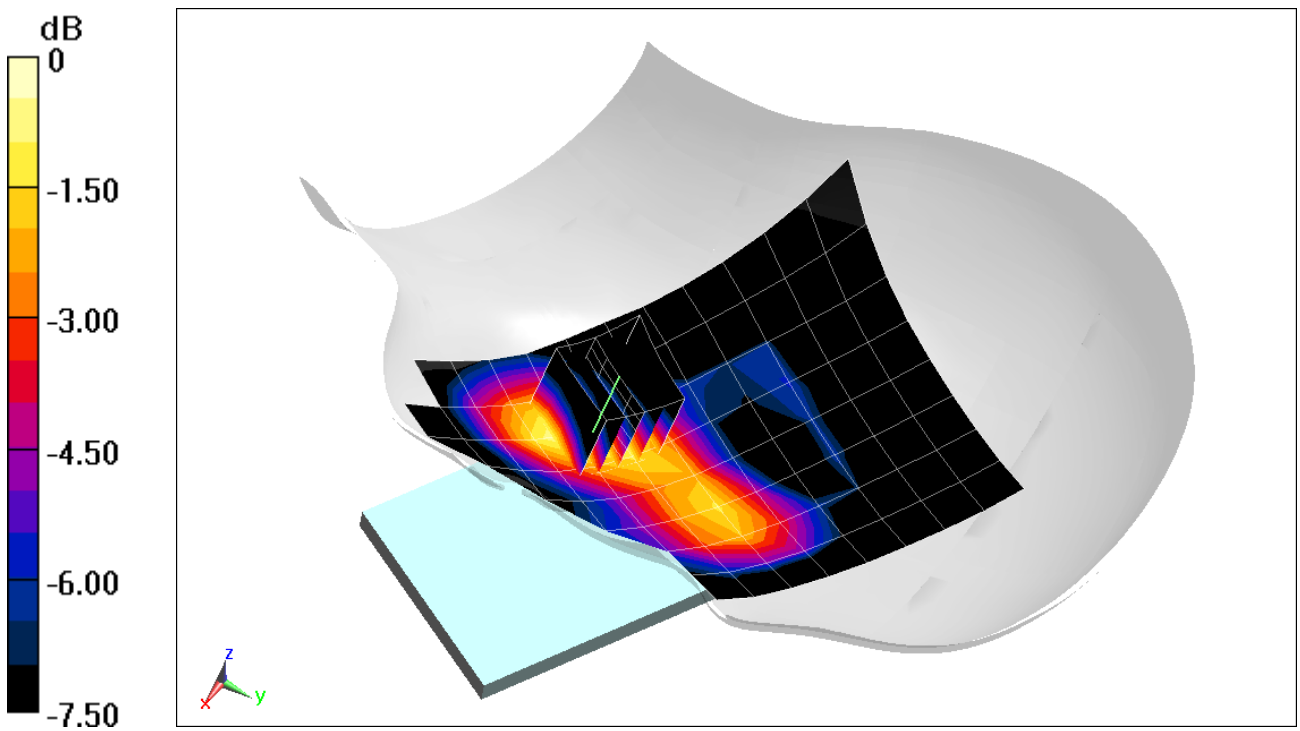
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1720 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
f = 1720 MHz; σ = 1.331 S/m; ε_r = 38.712; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 04-10-2019; Ambient Temp: 23.0°C; Tissue Temp: 22.7°C

Probe: EX3DV4 - SN7308; ConvF(8.66, 8.66, 8.66) @ 1720 MHz; Calibrated: 8/23/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1558; Calibrated: 10/3/2018
Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1966
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 66 (AWS), Left Head, Cheek, Low.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 = 5.290 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.234 W/kg
SAR(1 g) = 0.153 W/kg



0 dB = 0.195 W/kg = -7.10 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00531

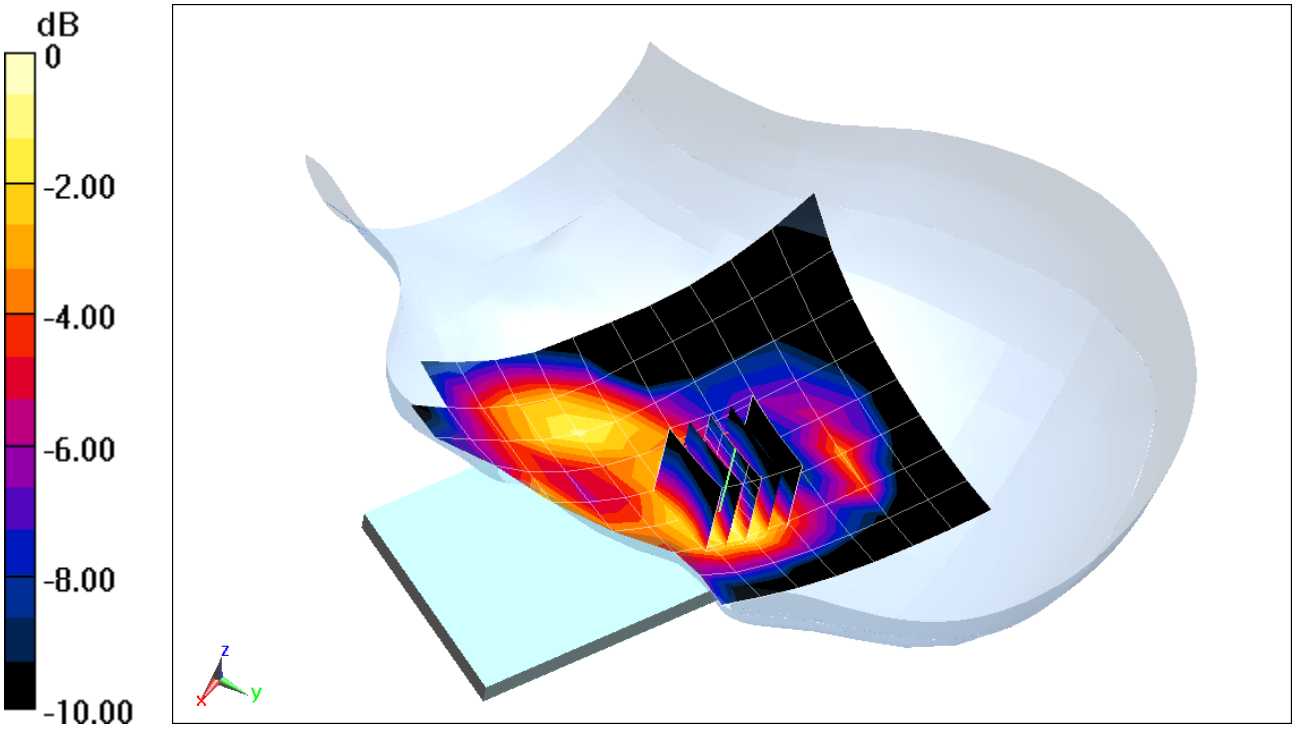
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1860 MHz; σ = 1.411 S/m; ε_r = 40.087; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 04-08-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7357; ConvF(8.47, 8.47, 8.47) @ 1860 MHz; Calibrated: 4/18/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: Left For Head SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1687
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 25 (PCS), Left Head, Cheek, Low.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 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 = 11.36 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.244 W/kg
SAR(1 g) = 0.162 W/kg



0 dB = 0.212 W/kg = -6.74 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00531

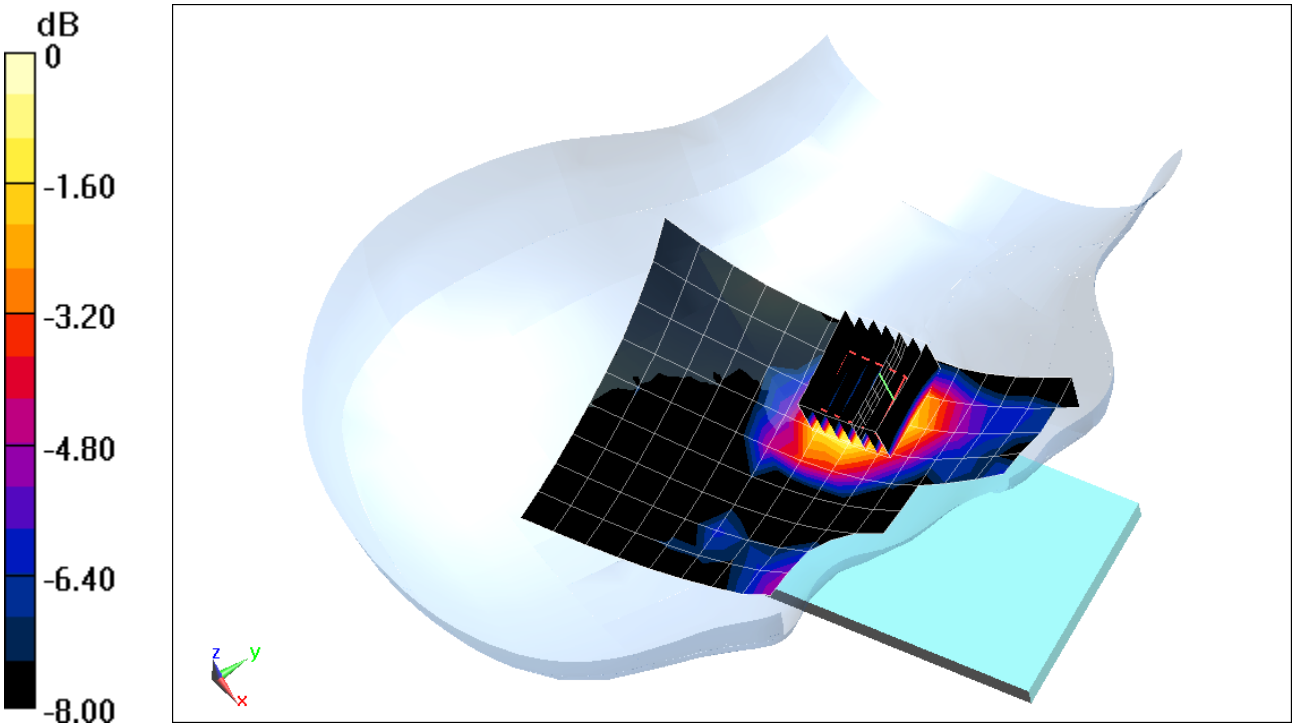
Communication System: UID 0, LTE Band 41 (Class 2); Frequency: 2636.5 MHz; Duty Cycle: 1:2.31
Medium: 2450 MHz Medium parameters used (interpolated):
f = 2636.5 MHz; σ = 1.956 S/m; ε_r = 38.026; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 03-26-2019; Ambient Temp: 24.3°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN3589; ConvF(6.25, 6.25, 6.25) @ 2636.5 MHz; Calibrated: 1/25/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 8/22/2018
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 41 HPUE, Right Head, Cheek, Mid-High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

Area Scan (10x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.067 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.208 W/kg
SAR(1 g) = 0.105 W/kg



0 dB = 0.159 W/kg = -7.99 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00547

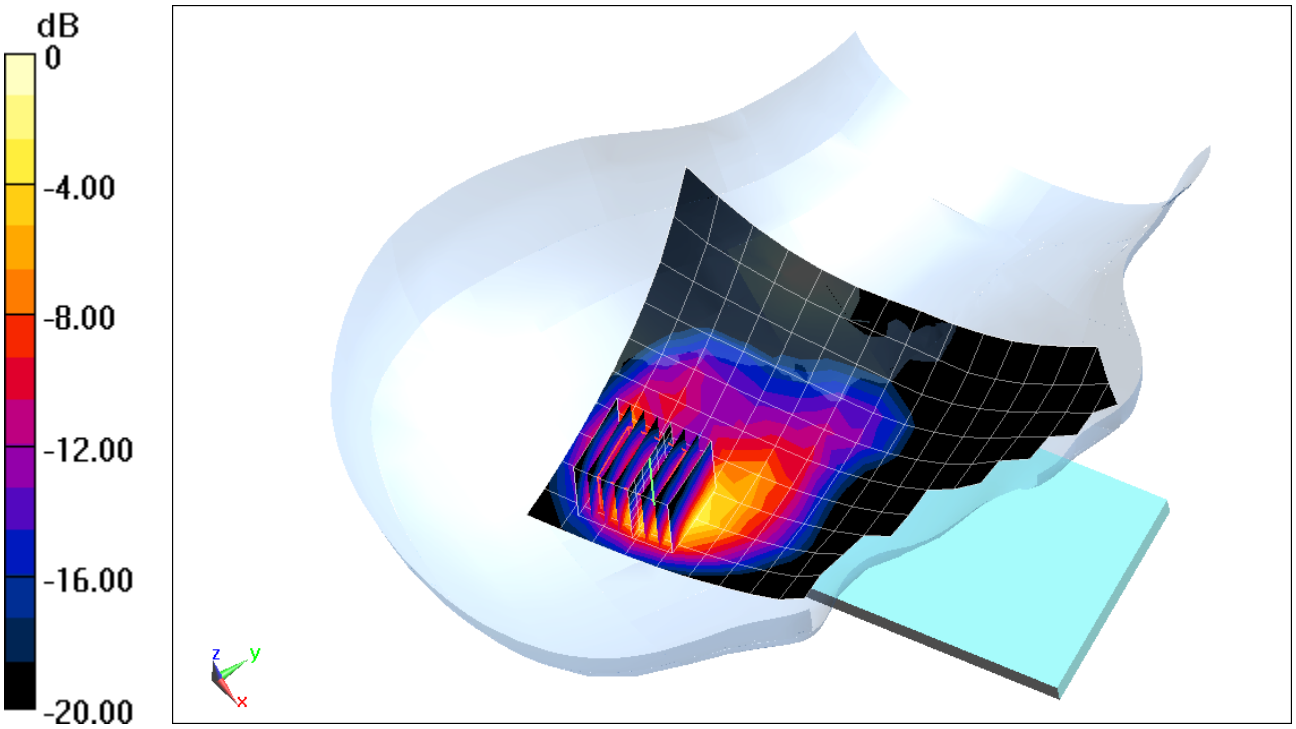
Communication System: UID 0, IEEE 802.11b; Frequency: 2412 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used (interpolated):
f = 2412 MHz; σ = 1.798 S/m; ε_r = 38.254; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 03-21-2019; Ambient Temp: 23.1°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN3589; ConvF(6.46, 6.46, 6.46) @ 2412 MHz; Calibrated: 1/25/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 8/22/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

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

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.769 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 2.03 W/kg
SAR(1 g) = 0.810 W/kg



0 dB = 1.55 W/kg = 1.90 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00547

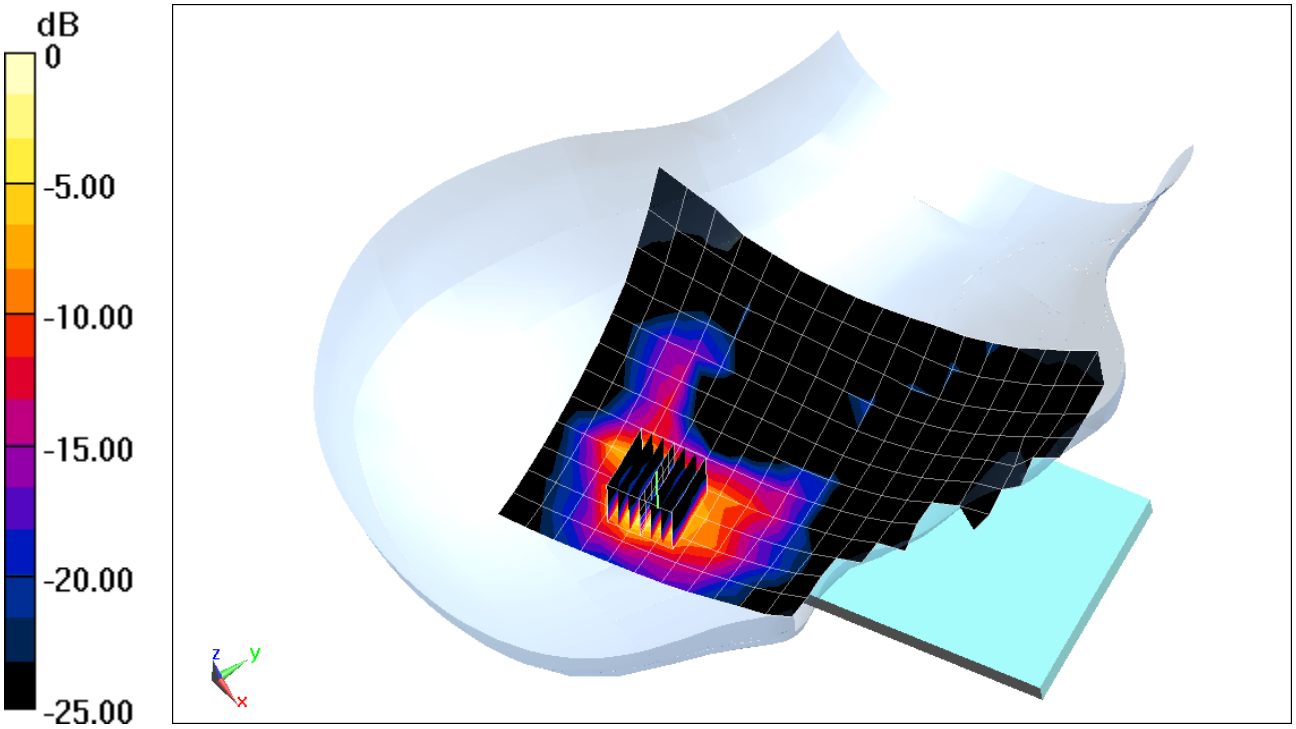
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5520 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head Medium parameters used:
f = 5520 MHz; σ = 4.835 S/m; ε_r = 34.184; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 03-25-2019; Ambient Temp: 20.7°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7409; ConvF(4.77, 4.77, 4.77) @ 5520 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: IEEE 802.11a, U-NII-2C, 20 MHz Bandwidth, Right Head, Cheek, Ch 104, 6 Mbps

Area Scan (13x21x1): 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 = 2.946 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 4.62 W/kg
SAR(1 g) = 0.926 W/kg



0 dB = 2.58 W/kg = 4.12 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00548

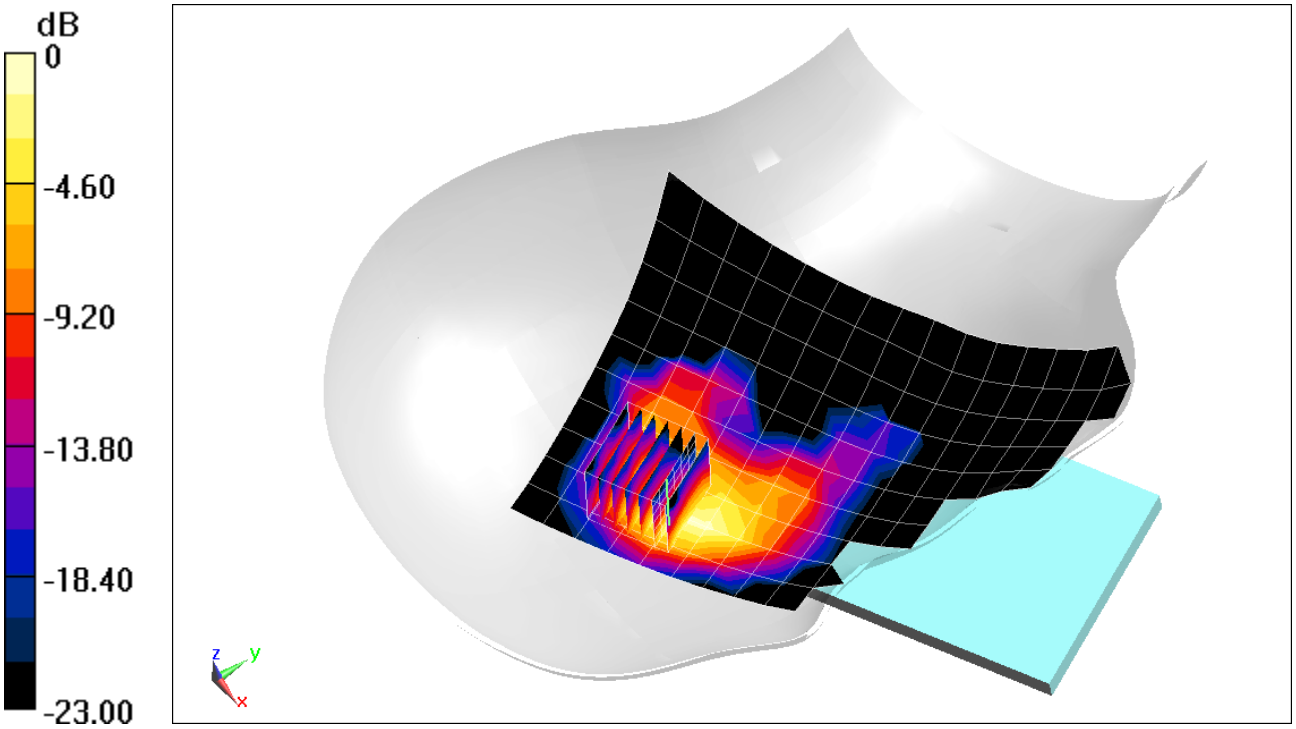
Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.289
Medium: 2450 Head Medium parameters used (interpolated):
f = 2441 MHz; σ = 1.801 S/m; ε_r = 37.841; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 04-03-2019; Ambient Temp: 24.0°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN3589; ConvF(6.46, 6.46, 6.46) @ 2441 MHz; Calibrated: 1/25/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 8/22/2018
Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: Bluetooth, Right Head, 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 = 7.828 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.235 W/kg
SAR(1 g) = 0.107 W/kg



0 dB = 0.178 W/kg = -7.50 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00532

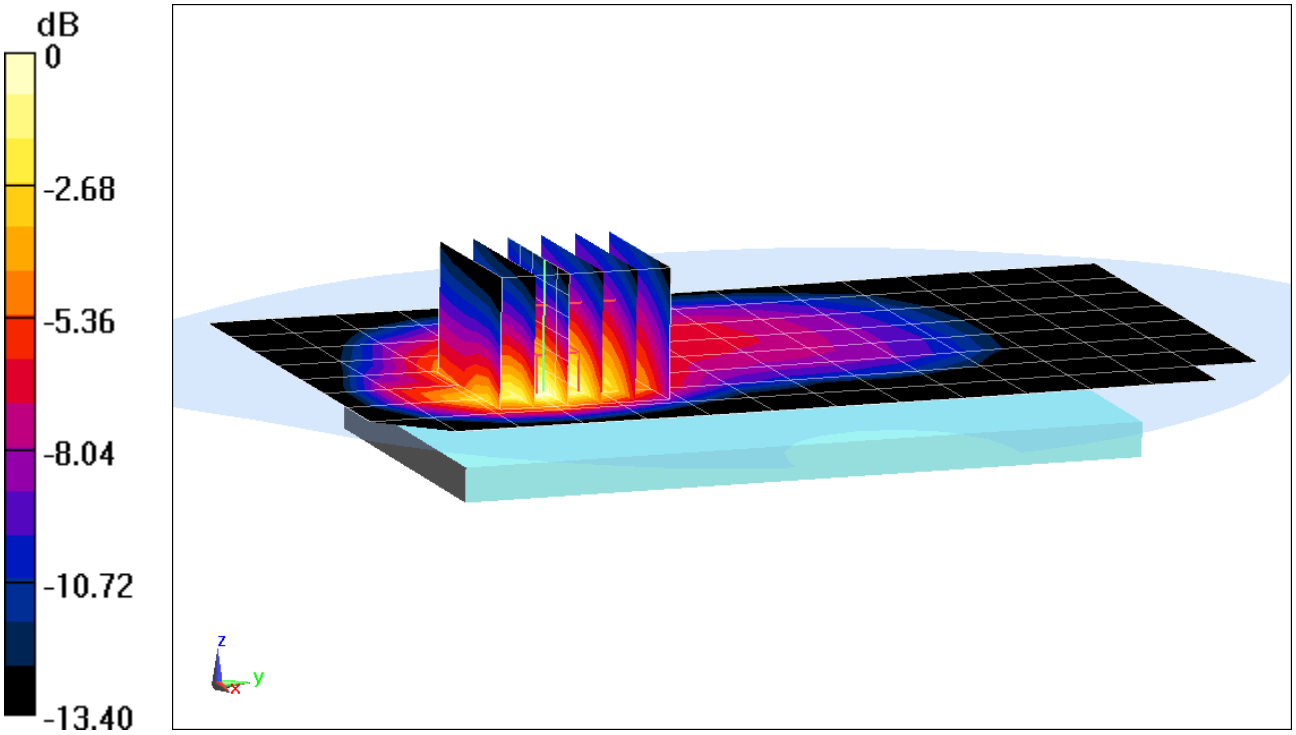
Communication System: UID 0, GSM GPRS; 2 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:4.15
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.97 S/m; ε_r = 53.229; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-18-2019; Ambient Temp: 20.8°C; Tissue Temp: 20.2°C

Probe: EX3DV4 - SN7357; ConvF(10.17, 10.17, 10.17) @ 836.6 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: GPRS 850, Body SAR, Back side, Mid.ch, 2 Tx Slots

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.93 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.850 W/kg
SAR(1 g) = 0.480 W/kg



0 dB = 0.703 W/kg = -1.53 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00530

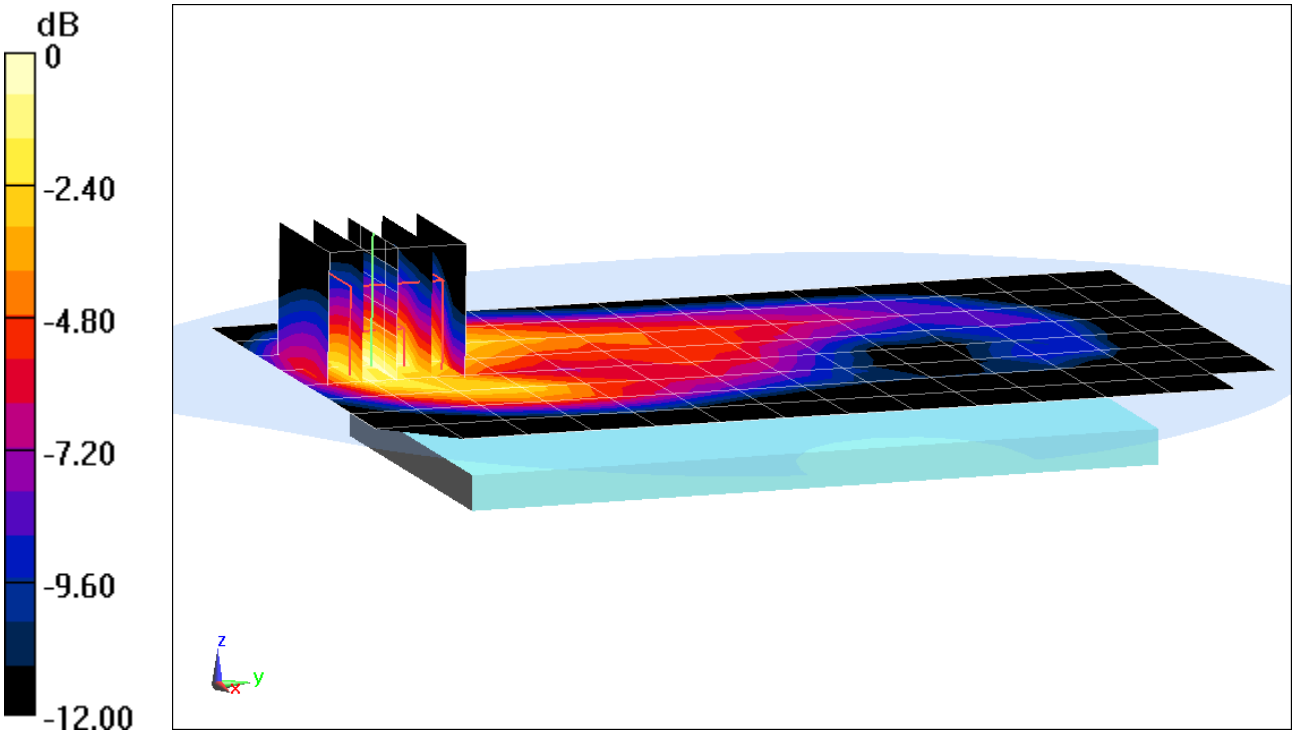
Communication System: UID 0, GSM GPRS; 2 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:4.15
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.545 S/m; ε_r = 51.564; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-18-2019; Ambient Temp: 23.0°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7410; ConvF(7.78, 7.78, 7.78) @ 1880 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 1900, Body SAR, Back side, Mid.ch, 2 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 = 12.46 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.376 W/kg
SAR(1 g) = 0.217 W/kg



0 dB = 0.318 W/kg = -4.98 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00530

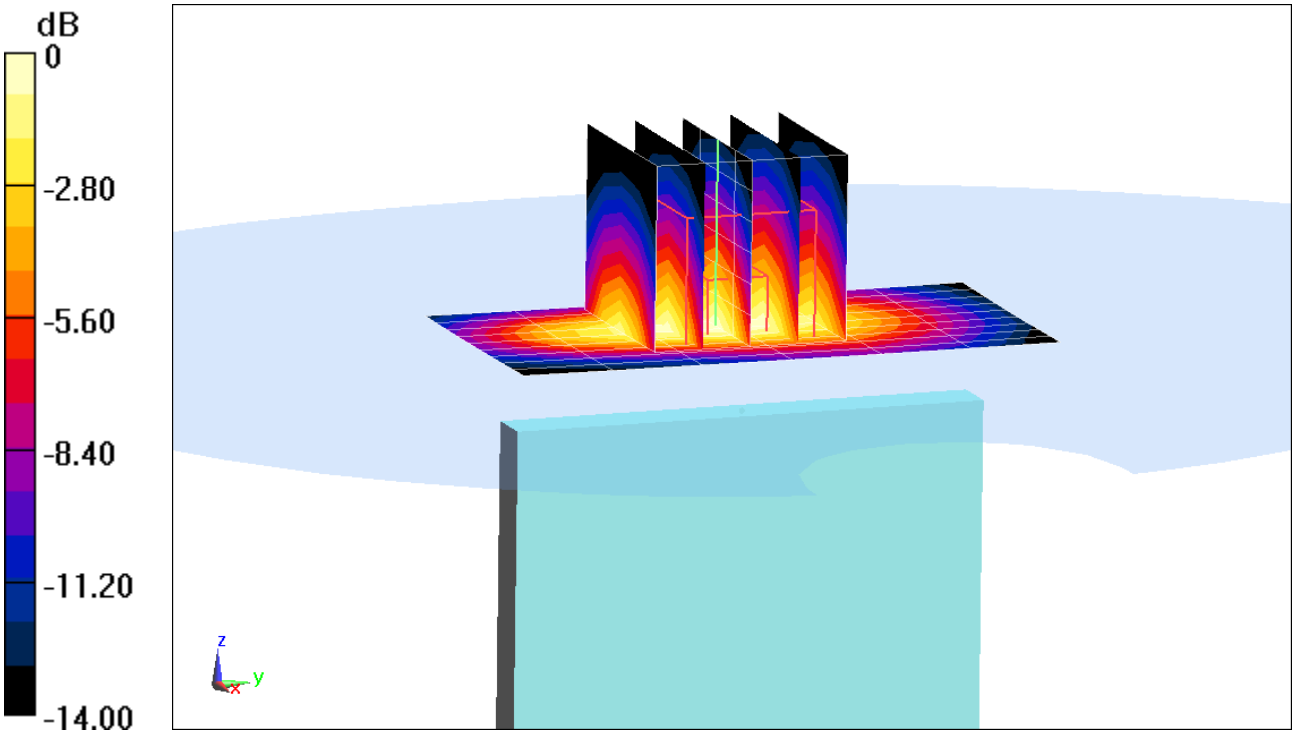
Communication System: UID 0, GSM GPRS; 2 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:4.15
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.545 S/m; ε_r = 51.564; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-18-2019; Ambient Temp: 23.0°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7410; ConvF(7.78, 7.78, 7.78) @ 1880 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 1900, Body SAR, Bottom Edge, Mid.ch, 2 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 = 19.81 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.932 W/kg
SAR(1 g) = 0.541 W/kg



0 dB = 0.797 W/kg = -0.99 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00532

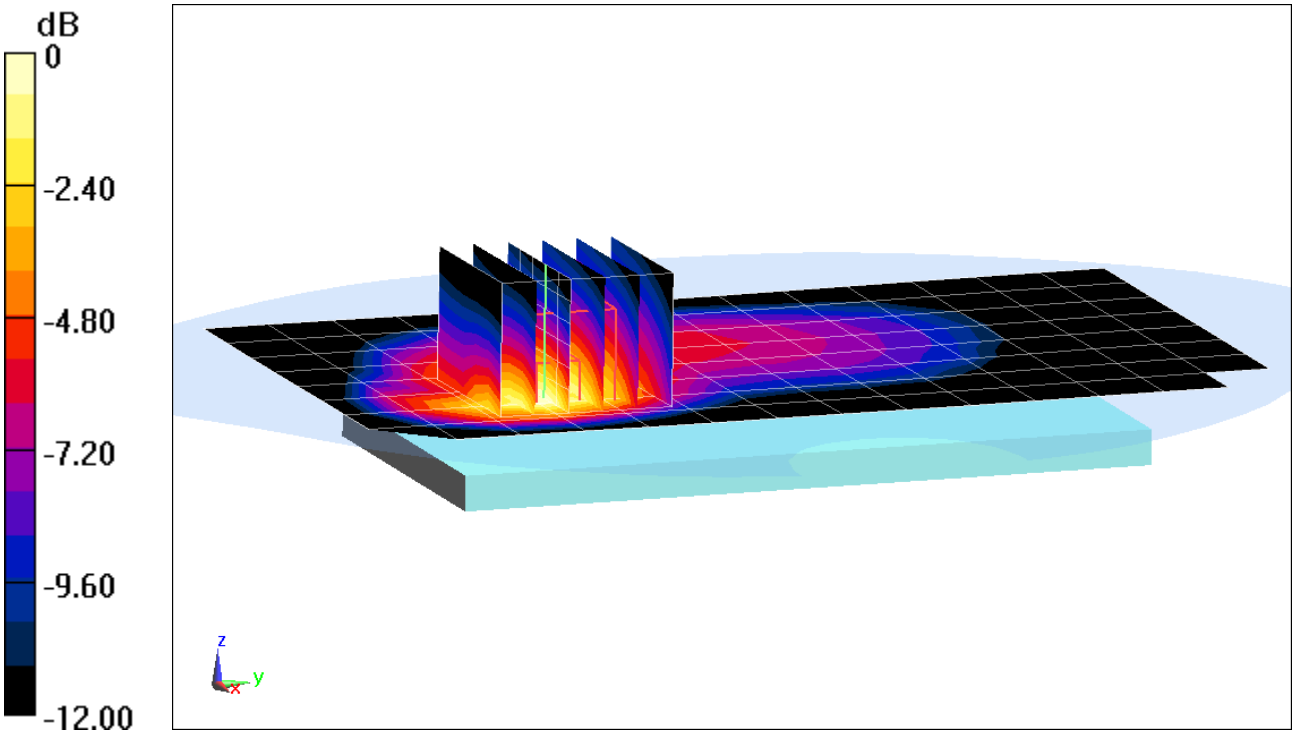
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.978 S/m; ε_r = 53.565; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-20-2019; Ambient Temp: 21.7°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7357; ConvF(10.17, 10.17, 10.17) @ 836.6 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 850, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.02 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.866 W/kg
SAR(1 g) = 0.504 W/kg



0 dB = 0.733 W/kg = -1.35 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00530

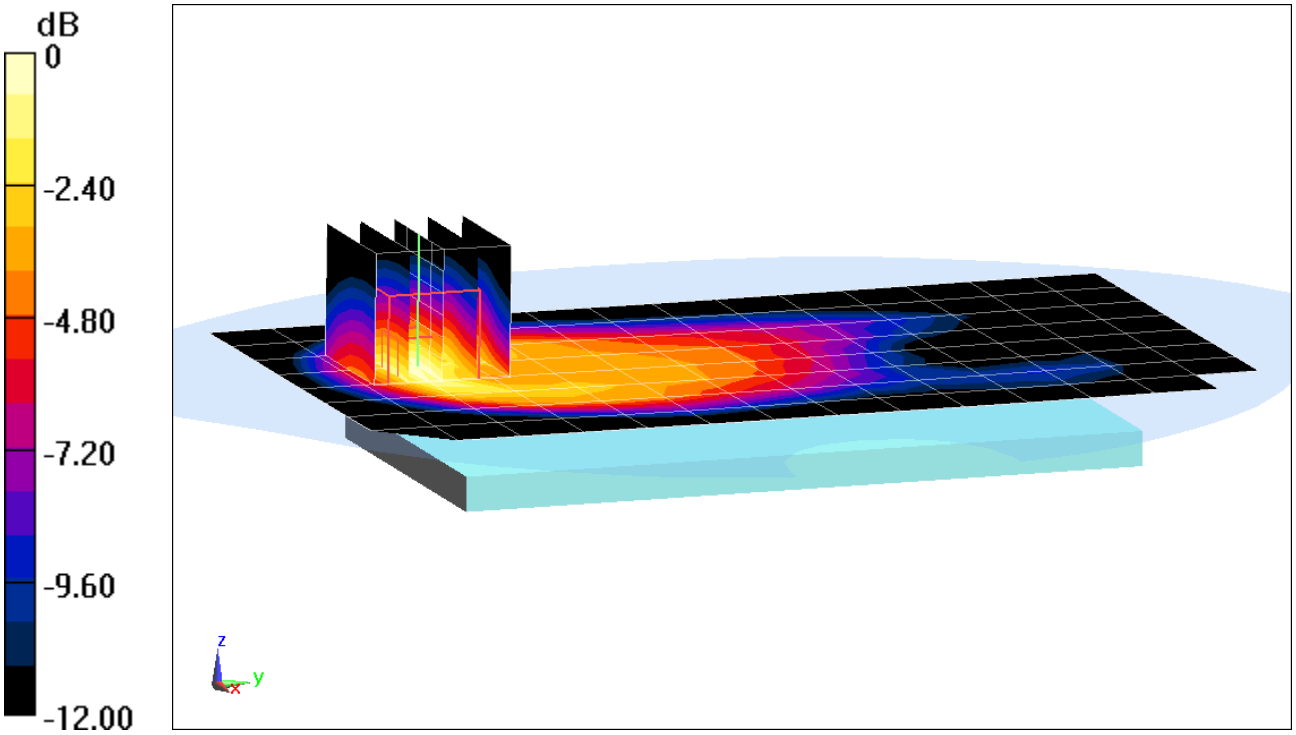
Communication System: UID 0, UMTS; Frequency: 1752.6 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1752.6 MHz; σ = 1.539 S/m; ε_r = 51.323; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-18-2019; Ambient Temp: 20.2°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN7488; ConvF(8.68, 8.68, 8.68) @ 1752.6 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
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 = 20.93 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.624 W/kg



0 dB = 0.914 W/kg = -0.39 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00530

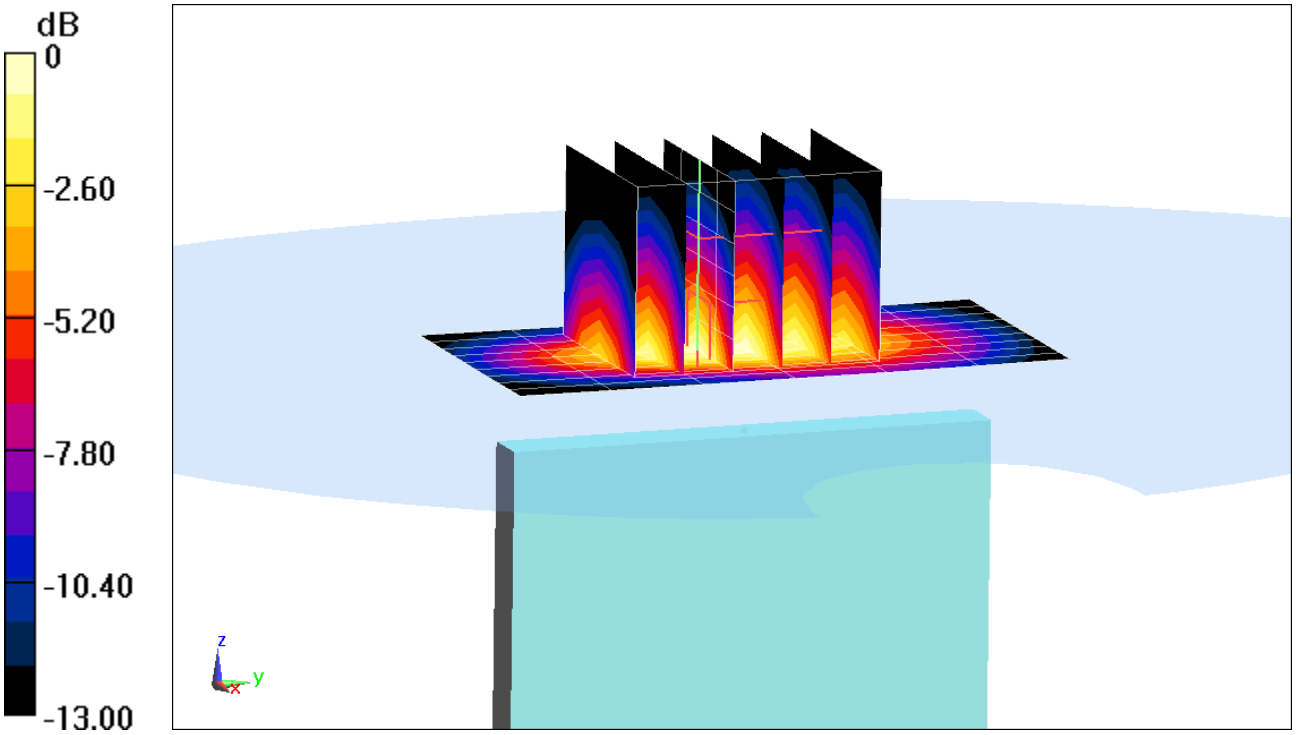
Communication System: UID 0, UMTS; Frequency: 1752.6 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1752.6 MHz; σ = 1.539 S/m; ε_r = 51.323; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-18-2019; Ambient Temp: 20.2°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN7488; ConvF(8.68, 8.68, 8.68) @ 1752.6 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

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

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.65 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.94 W/kg
SAR(1 g) = 1.08 W/kg



0 dB = 1.62 W/kg = 2.10 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00532

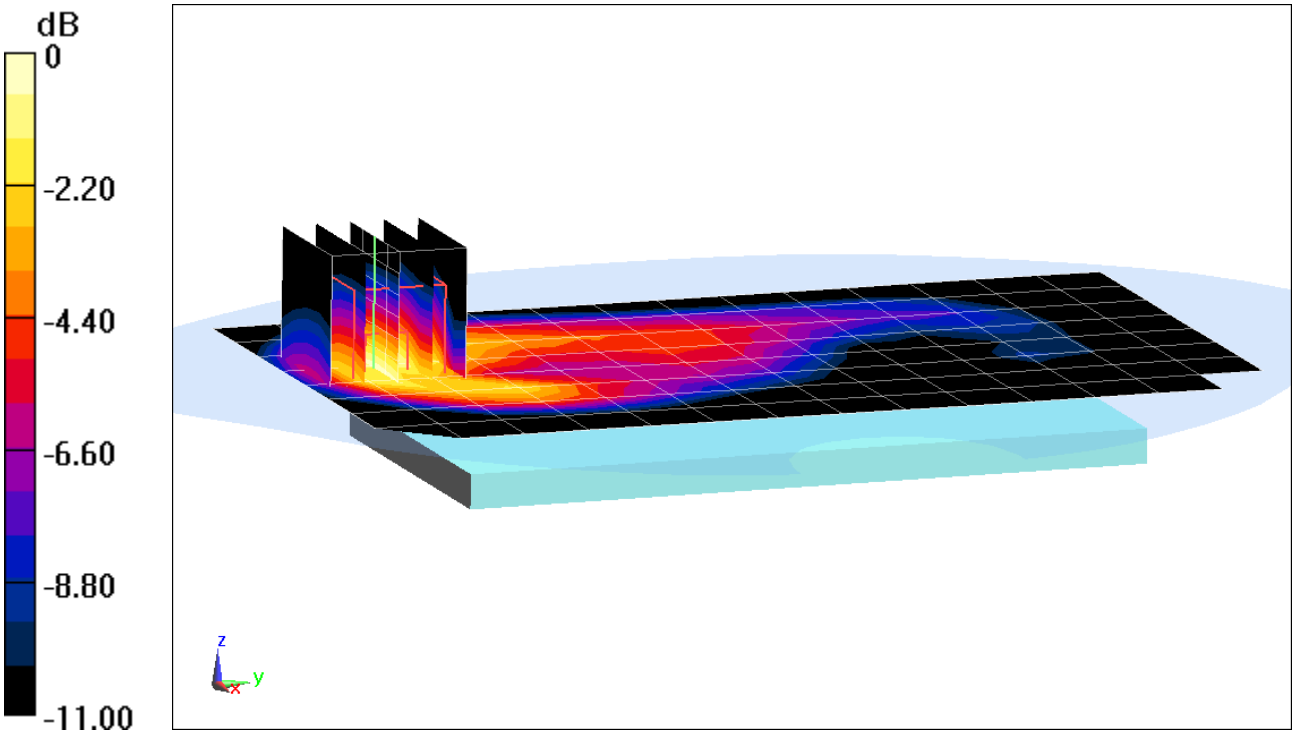
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.549 S/m; ε_r = 52.779; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-25-2019; Ambient Temp: 22.2°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7410; ConvF(7.78, 7.78, 7.78) @ 1880 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 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 = 18.47 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.810 W/kg
SAR(1 g) = 0.471 W/kg



0 dB = 0.682 W/kg = -1.66 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00532

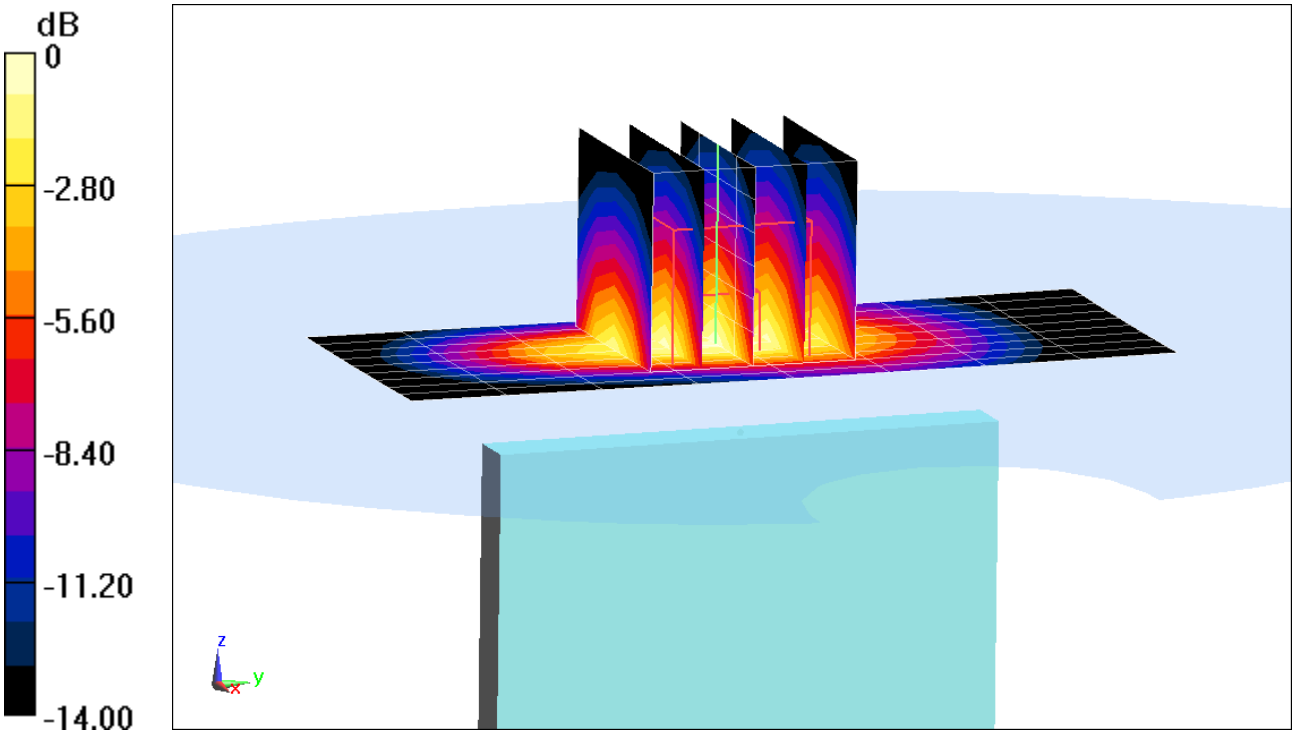
Communication System: UID 0, UMTS; 1852.4 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1852.4 MHz; σ = 1.519 S/m; ε_r = 52.873; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-25-2019; Ambient Temp: 22.2°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7410; ConvF(7.78, 7.78, 7.78) @ 1852.4 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 1900, 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 = 30.51 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 2.14 W/kg
SAR(1 g) = 1.26 W/kg



0 dB = 1.85 W/kg = 2.67 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00532

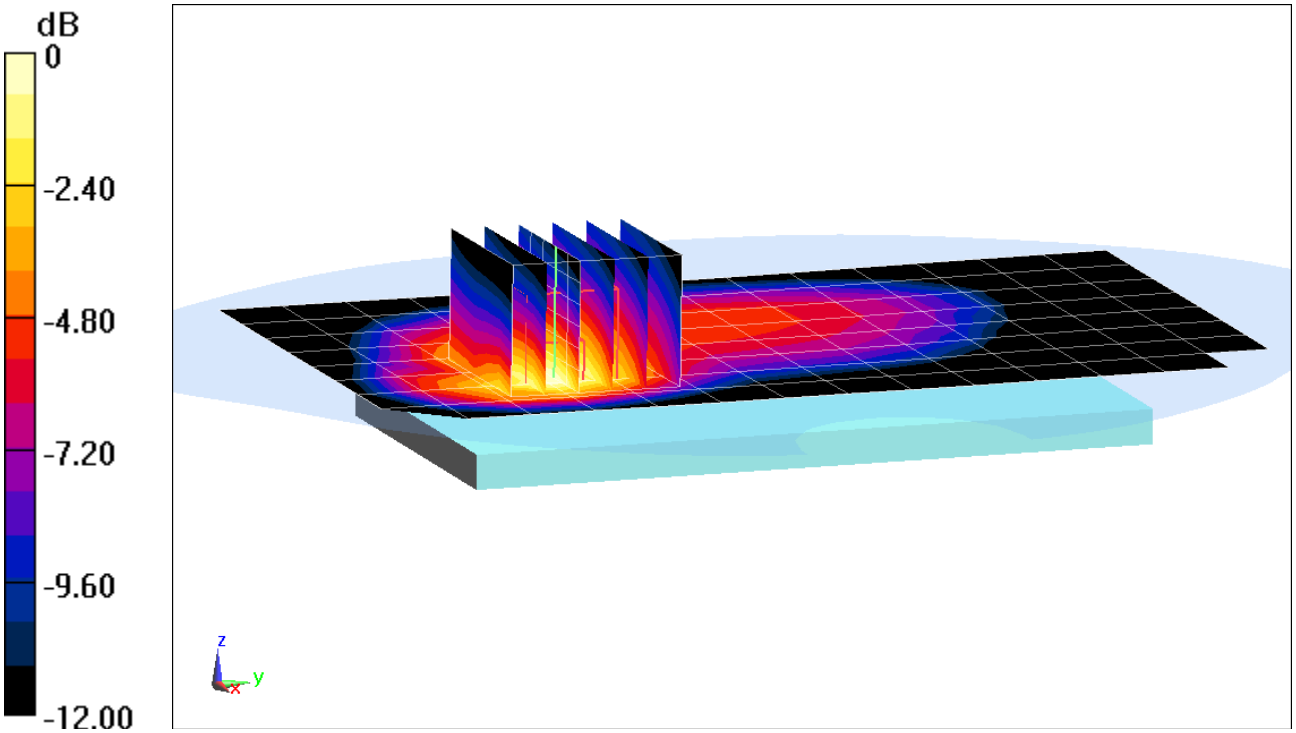
Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 820.1 MHz; σ = 0.961 S/m; ε_r = 53.73; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-20-2019; Ambient Temp: 21.7°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7357; ConvF(10.17, 10.17, 10.17) @ 820.1 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: Cell. CDMA, Rule Part 90S, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.44 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.660 W/kg
SAR(1 g) = 0.393 W/kg



0 dB = 0.561 W/kg = -2.51 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00532

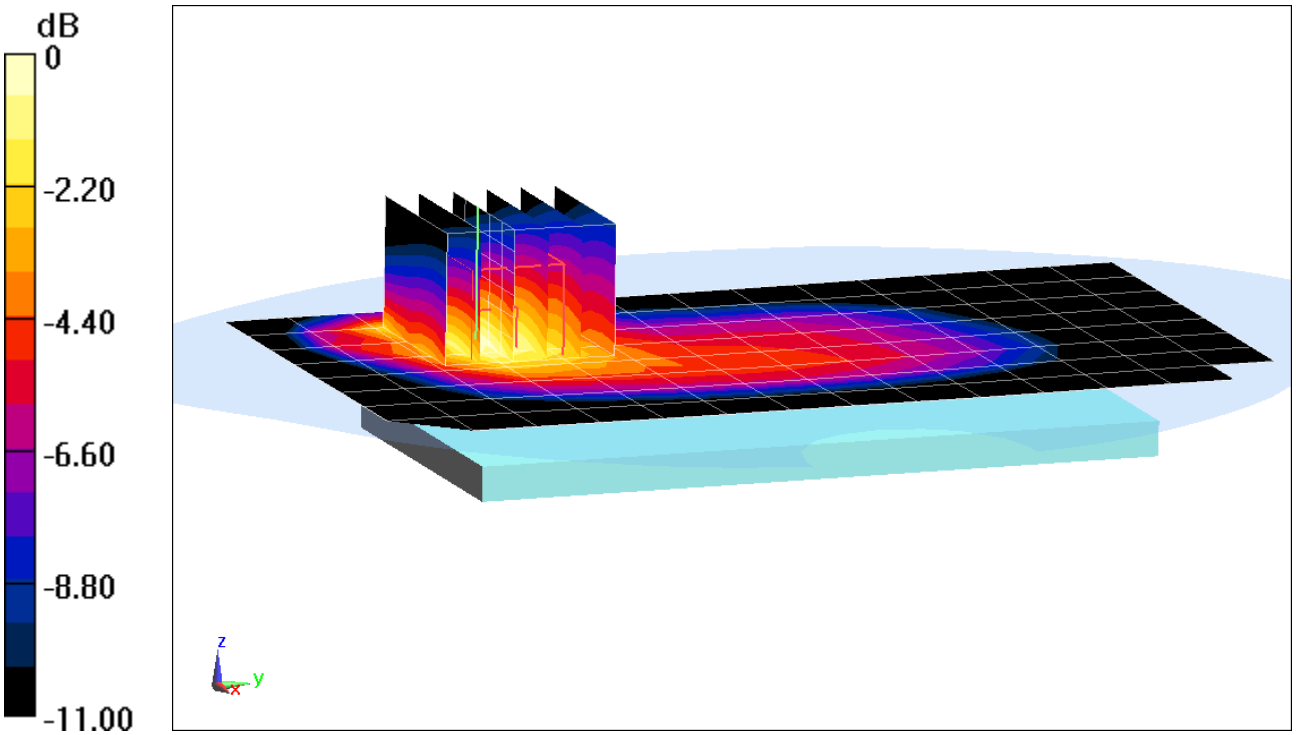
Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 820.1 MHz; σ = 0.961 S/m; ε_r = 53.73; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-20-2019; Ambient Temp: 21.7°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7357; ConvF(10.17, 10.17, 10.17) @ 820.1 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: Cell. EVDO Rev. 0, Rule Part 90S, Body SAR, Front side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.43 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.570 W/kg
SAR(1 g) = 0.363 W/kg



0 dB = 0.497 W/kg = -3.04 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00532

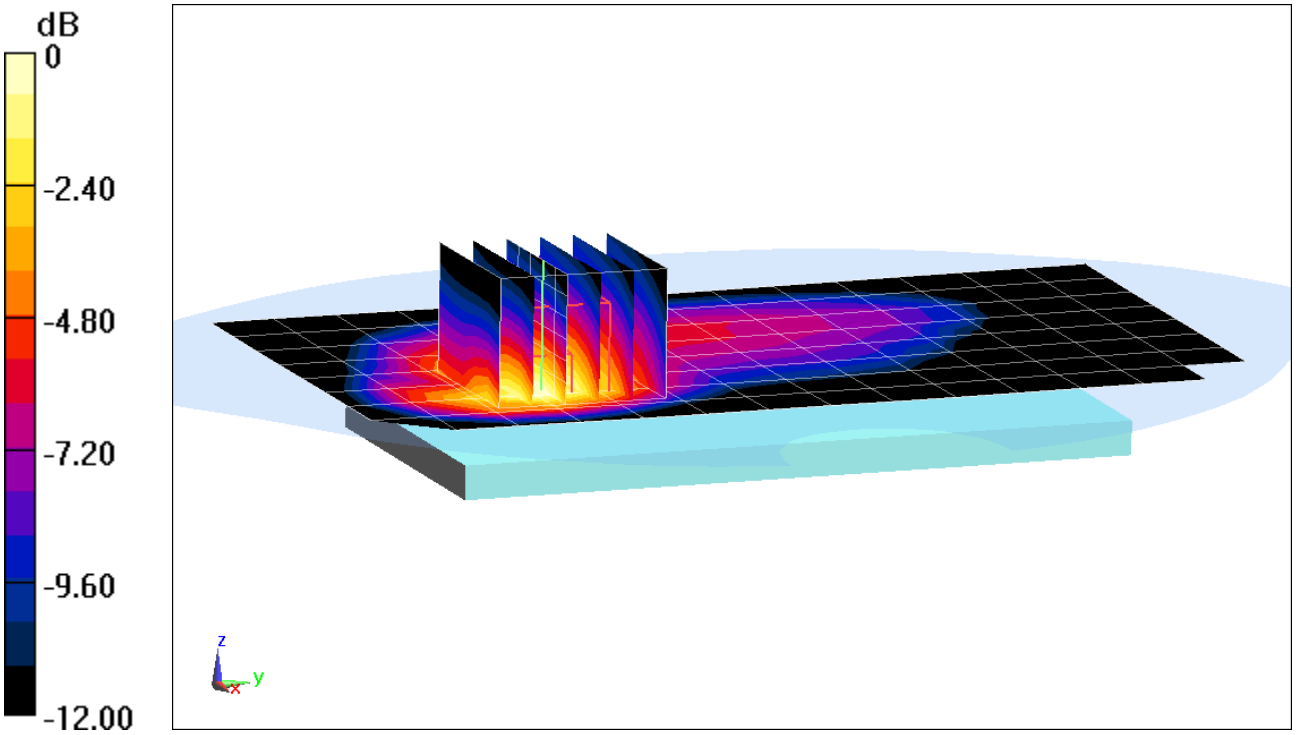
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.978 S/m; ε_r = 53.566; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-20-2019; Ambient Temp: 21.7°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7357; ConvF(10.17, 10.17, 10.17) @ 836.52 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: Cell. CDMA, Rule Part 22H, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.87 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.669 W/kg
SAR(1 g) = 0.393 W/kg



0 dB = 0.567 W/kg = -2.46 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00532

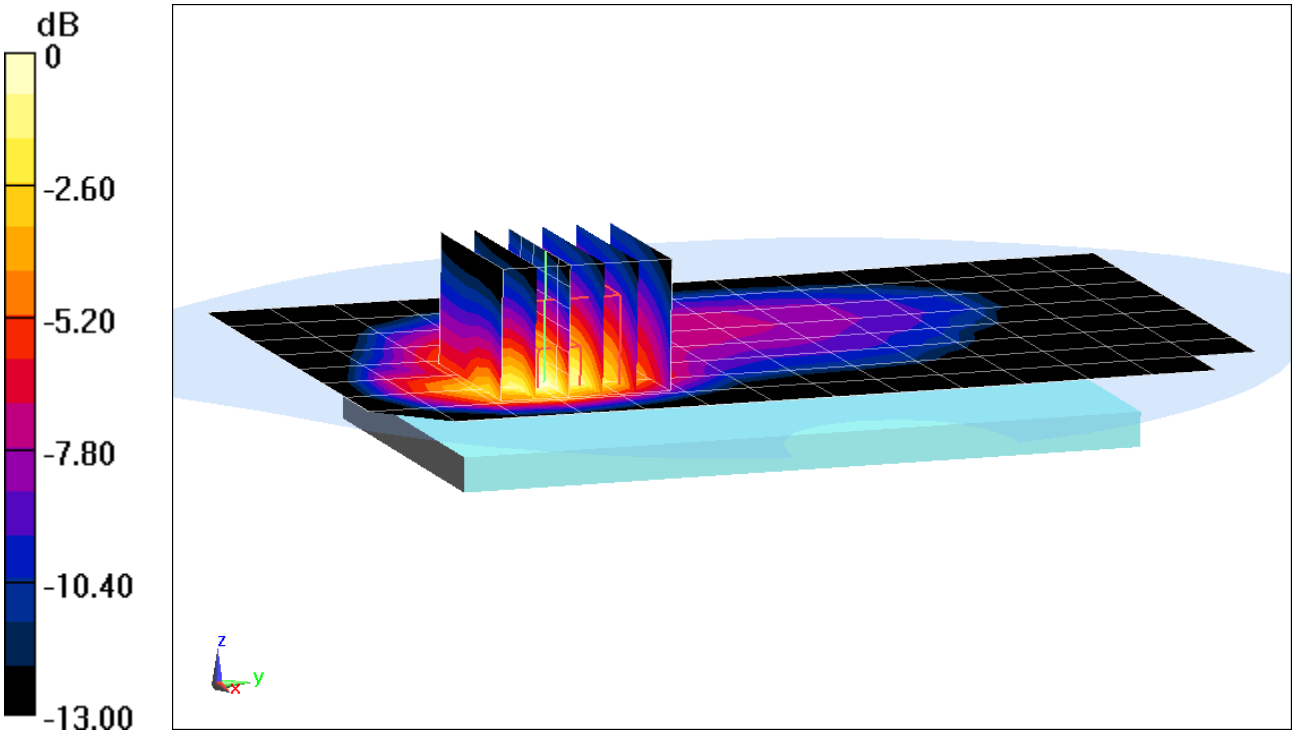
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.978 S/m; ε_r = 53.566; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-20-2019; Ambient Temp: 21.7°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7357; ConvF(10.17, 10.17, 10.17) @ 836.52 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: Cell. EVDO Rev. 0, Rule Part 22H, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.07 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.781 W/kg
SAR(1 g) = 0.440 W/kg



0 dB = 0.655 W/kg = -1.84 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00532

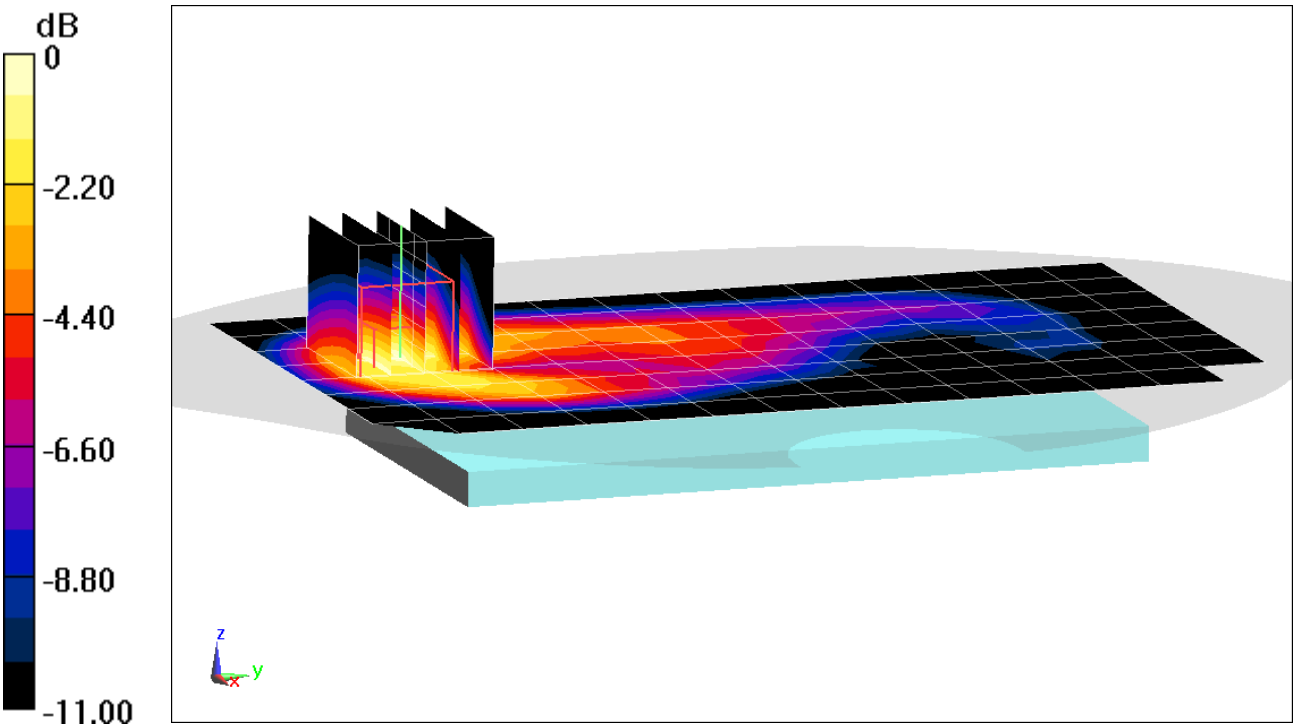
Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.551 S/m; ε_r = 52.047; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-27-2019; Ambient Temp: 22.4°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN7410; ConvF(7.78, 7.78, 7.78) @ 1880 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: Front; Type: QD 000 P40 CD; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.06 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.562 W/kg
SAR(1 g) = 0.328 W/kg



0 dB = 0.463 W/kg = -3.34 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00532

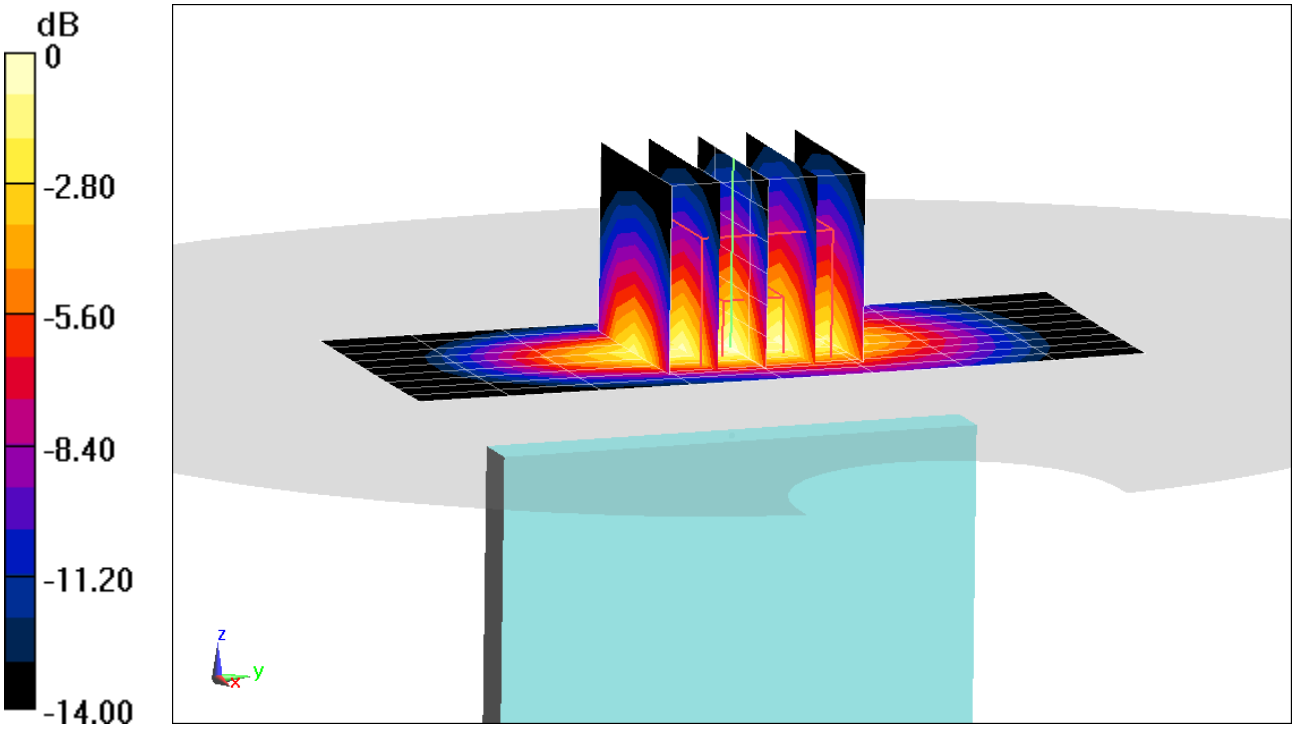
Communication System: UID 0, CDMA; Frequency: 1851.25 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1851.25 MHz; σ = 1.518 S/m; ε_r = 52.149; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-27-2019; Ambient Temp: 22.4°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN7410; ConvF(7.78, 7.78, 7.78) @ 1851.25 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: Front; Type: QD 000 P40 CD; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: 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 = 26.23 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.59 W/kg
SAR(1 g) = 0.930 W/kg



0 dB = 1.37 W/kg = 1.37 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00531

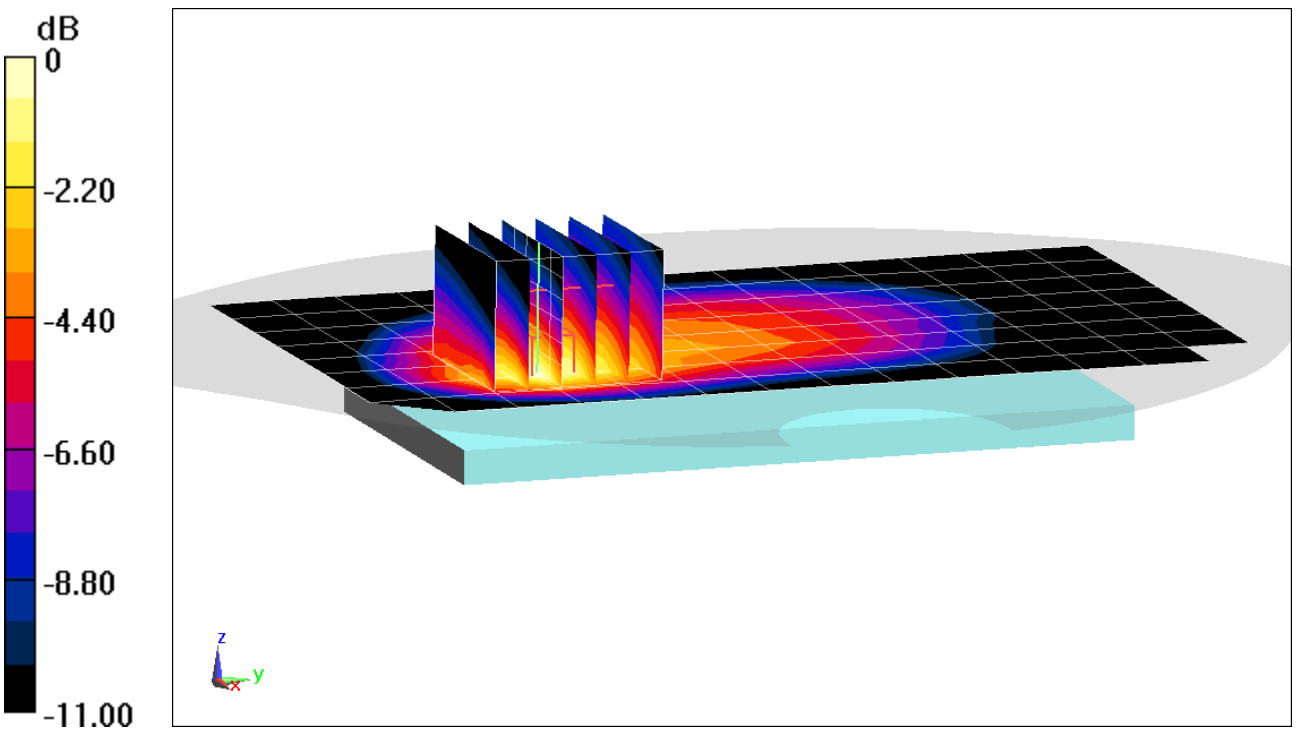
Communication System: UID 0, LTE Band 71; Frequency: 680.5 MHz; Duty Cycle: 1:1
Medium: 750MHz Body Medium parameters used (interpolated):
f = 680.5 MHz; σ = 0.929 S/m; ε_r = 54.217; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-01-2019; Ambient Temp: 21.7°C; Tissue Temp: 19.7°C

Probe: EX3DV4 - SN7308; ConvF(10.38, 10.38, 10.38) @ 680.5 MHz; Calibrated: 8/23/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1558; Calibrated: 10/3/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 71, Body SAR, Back side, Mid.ch, 20 MHz Bandwidth, QPSK, 1 RB, 99 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 = 25.59 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.905 W/kg
SAR(1 g) = 0.551 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00531

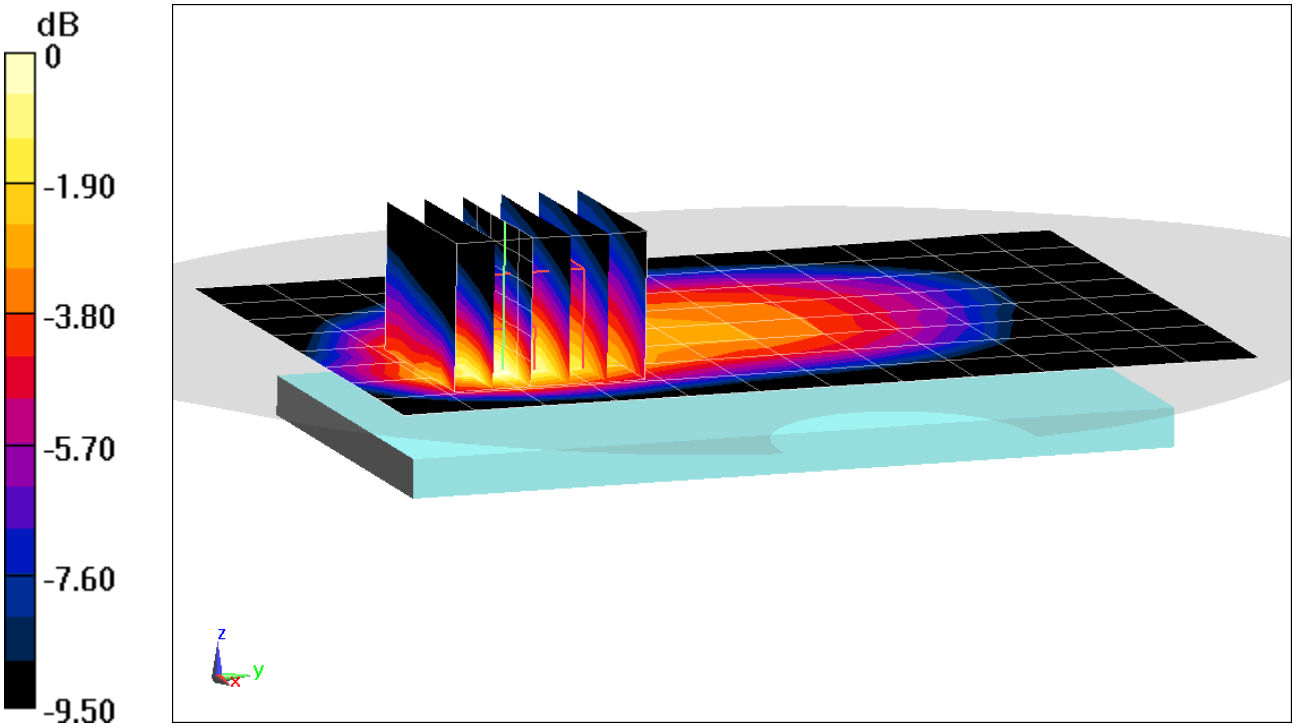
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750MHz Body Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.939 S/m; ε_r = 54.184; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-01-2019; Ambient Temp: 21.7°C; Tissue Temp: 19.7°C

Probe: EX3DV4 - SN7308; ConvF(10.38, 10.38, 10.38) @ 707.5 MHz; Calibrated: 8/23/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1558; Calibrated: 10/3/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

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

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.04 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.676 W/kg
SAR(1 g) = 0.420 W/kg



0 dB = 0.578 W/kg = -2.38 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00531

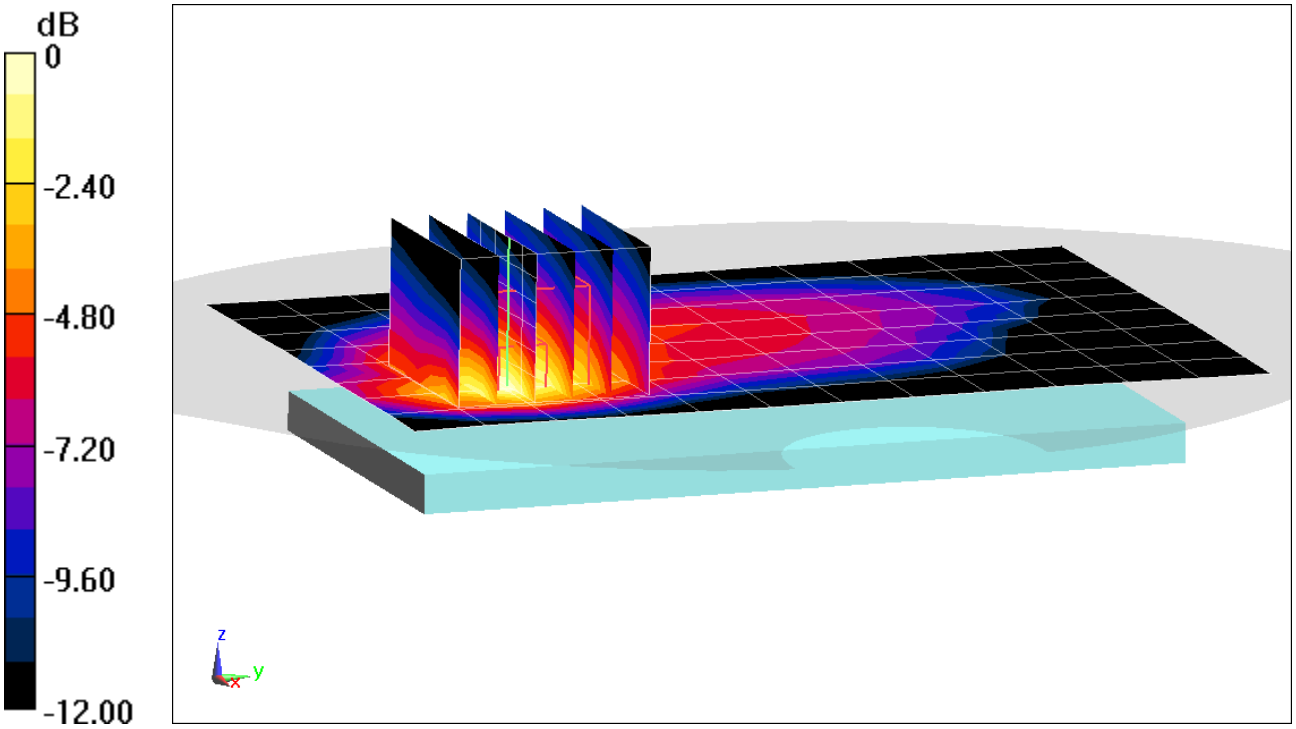
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750MHz Body Medium parameters used (interpolated):
f = 782 MHz; σ = 0.964 S/m; ε_r = 53.885; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-01-2019; Ambient Temp: 21.7°C; Tissue Temp: 19.7°C

Probe: EX3DV4 - SN7308; ConvF(10.38, 10.38, 10.38) @ 782 MHz; Calibrated: 8/23/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1558; Calibrated: 10/3/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

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

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.61 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.773 W/kg
SAR(1 g) = 0.453 W/kg



0 dB = 0.661 W/kg = -1.80 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00531

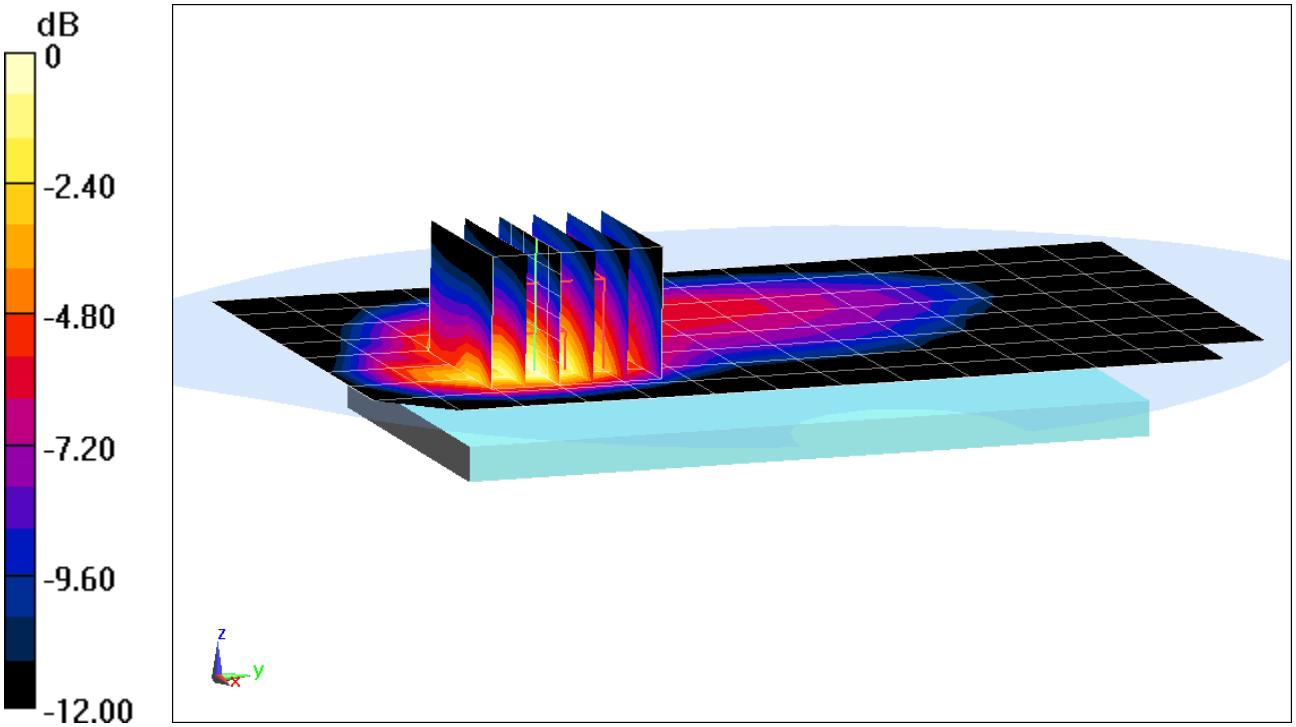
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 831.5 MHz; σ = 0.977 S/m; ε_r = 54.835; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-25-2019; Ambient Temp: 22.1°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7357; ConvF(10.17, 10.17, 10.17) @ 831.5 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 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 (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.59 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.808 W/kg
SAR(1 g) = 0.472 W/kg



0 dB = 0.671 W/kg = -1.73 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00531

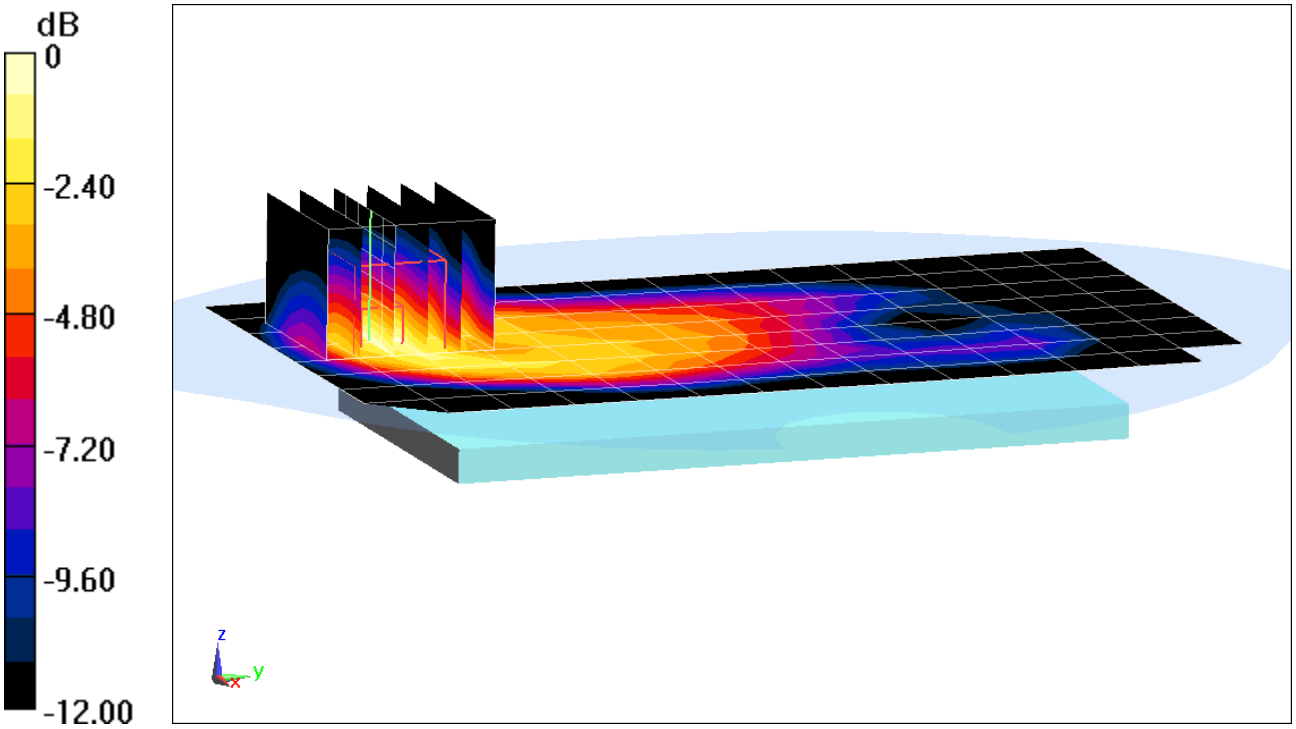
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1720 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1720 MHz; σ = 1.507 S/m; ε_r = 51.753; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-01-2019; Ambient Temp: 20.6°C; Tissue Temp: 20.3°C

Probe: EX3DV4 - SN7488; ConvF(8.68, 8.68, 8.68) @ 1720 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 66 (AWS), Body SAR, Back side, Low.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 = 18.46 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.941 W/kg
SAR(1 g) = 0.542 W/kg



0 dB = 0.793 W/kg = -1.01 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00531

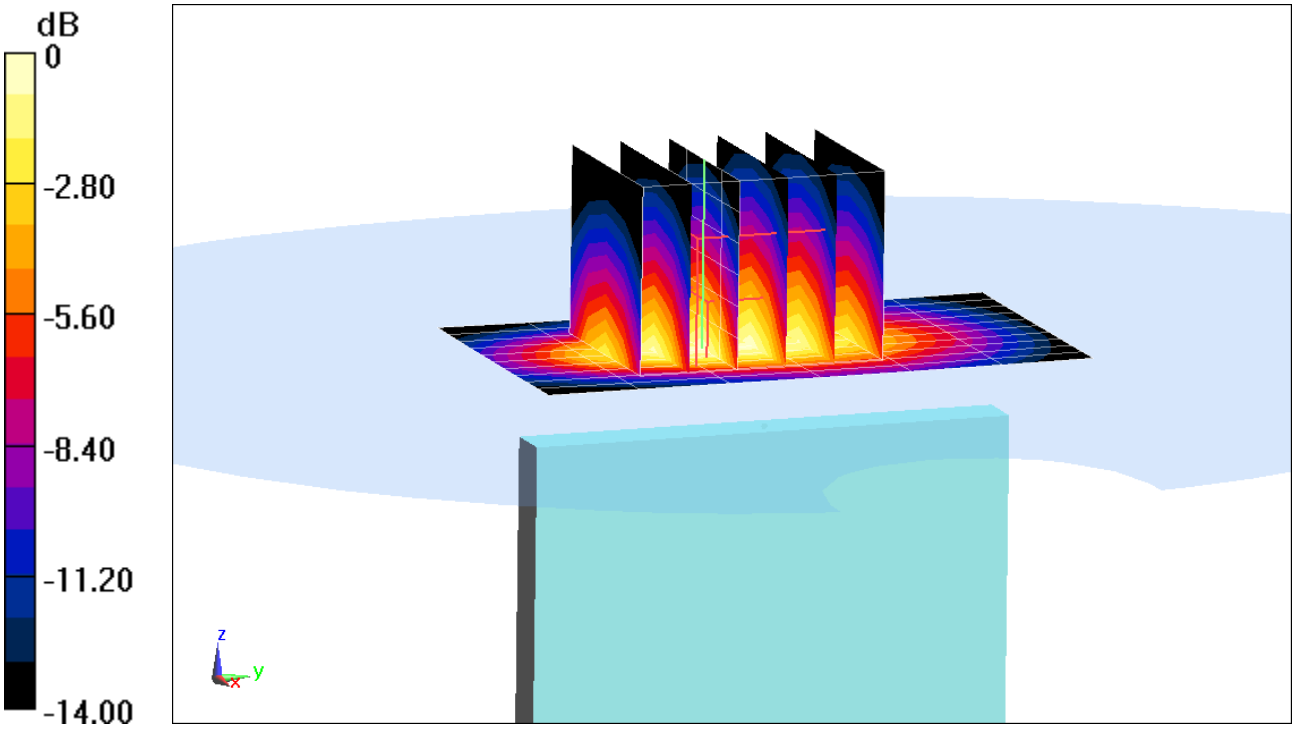
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1745 MHz; σ = 1.535 S/m; ε_r = 51.64; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-01-2019; Ambient Temp: 20.6°C; Tissue Temp: 20.3°C

Probe: EX3DV4 - SN7488; ConvF(8.68, 8.68, 8.68) @ 1745 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
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, 0 RB Offset

Area Scan (11x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.94 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.94 W/kg
SAR(1 g) = 1.1 W/kg



0 dB = 1.63 W/kg = 2.12 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00531

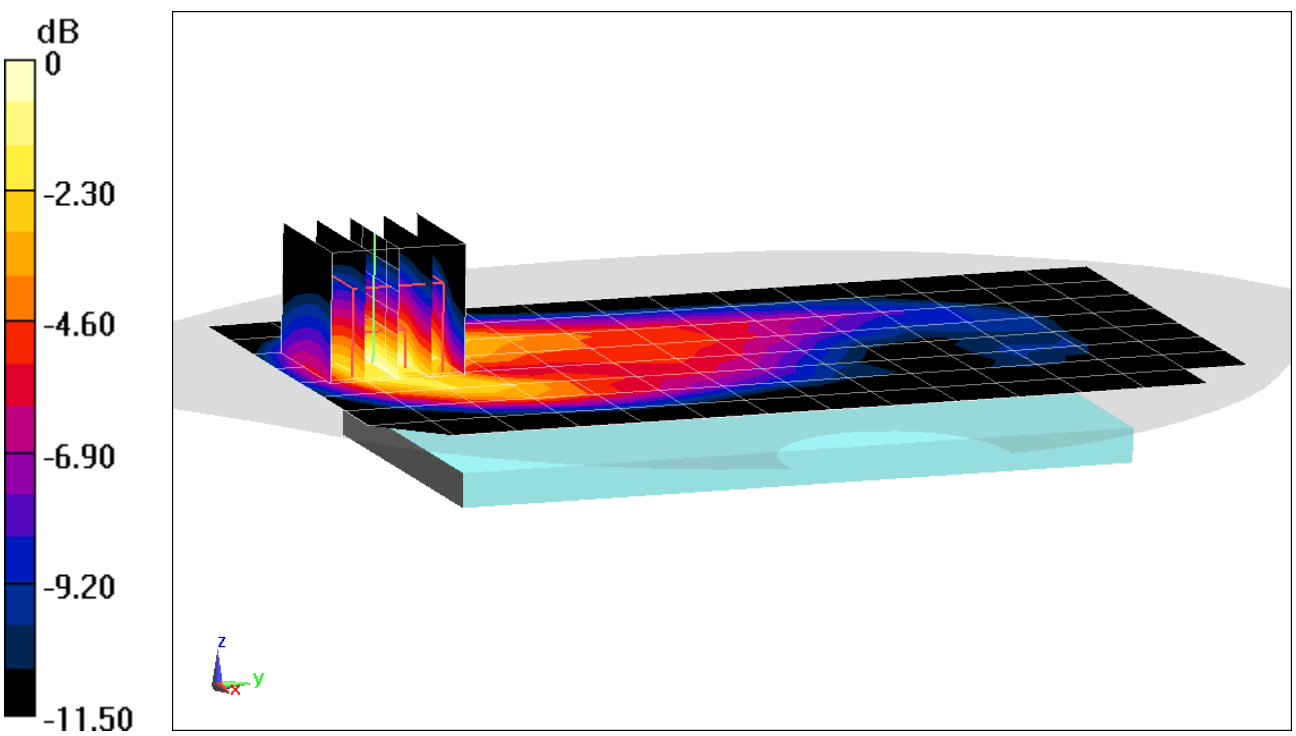
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1860 MHz; σ = 1.523 S/m; ε_r = 52.263; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-03-2019; Ambient Temp: 22.2°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN7410; ConvF(7.78, 7.78, 7.78) @ 1860 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: Front; Type: QD 000 P40 CD; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 25 (PCS), Body SAR, Back side, Low.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 = 20.10 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.965 W/kg
SAR(1 g) = 0.558 W/kg



0 dB = 0.827 W/kg = -0.82 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00531

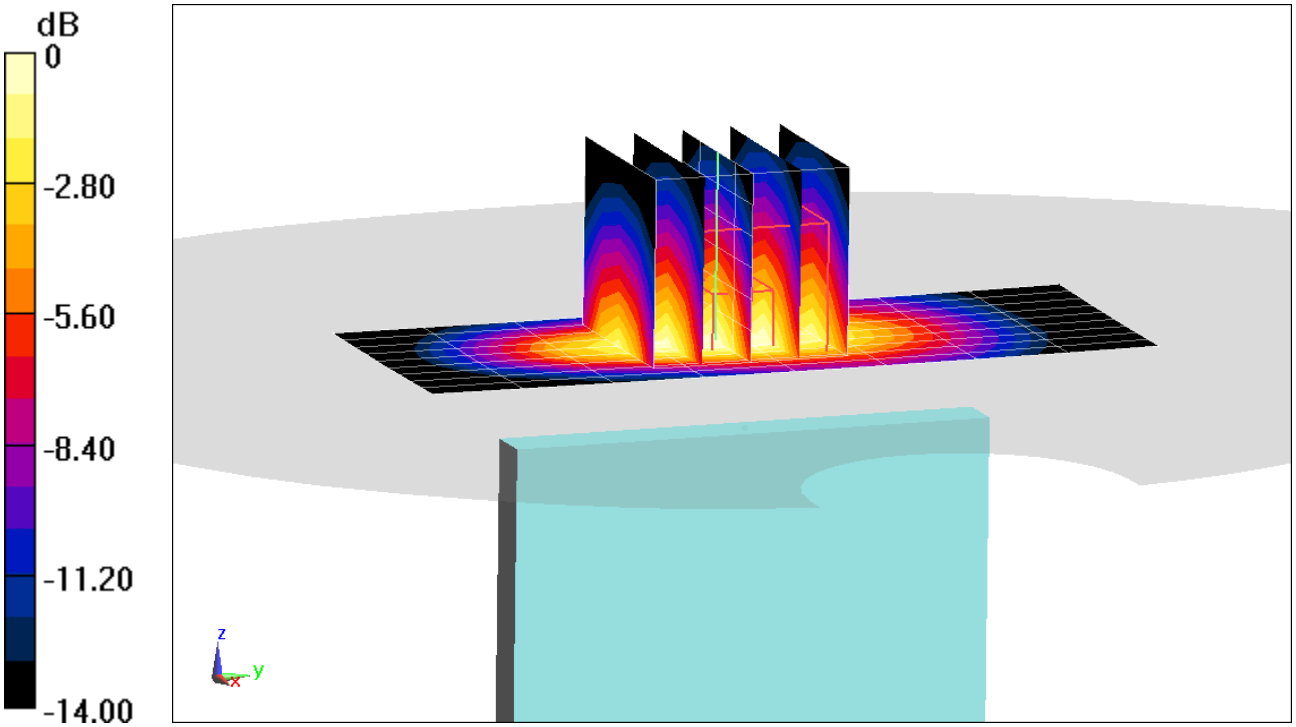
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1860 MHz; σ = 1.523 S/m; ε_r = 52.263; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-03-2019; Ambient Temp: 22.2°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN7410; ConvF(7.78, 7.78, 7.78) @ 1860 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: Front; Type: QD 000 P40 CD; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

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

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.67 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 2.01 W/kg
SAR(1 g) = 1.19 W/kg



0 dB = 1.74 W/kg = 2.41 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00531

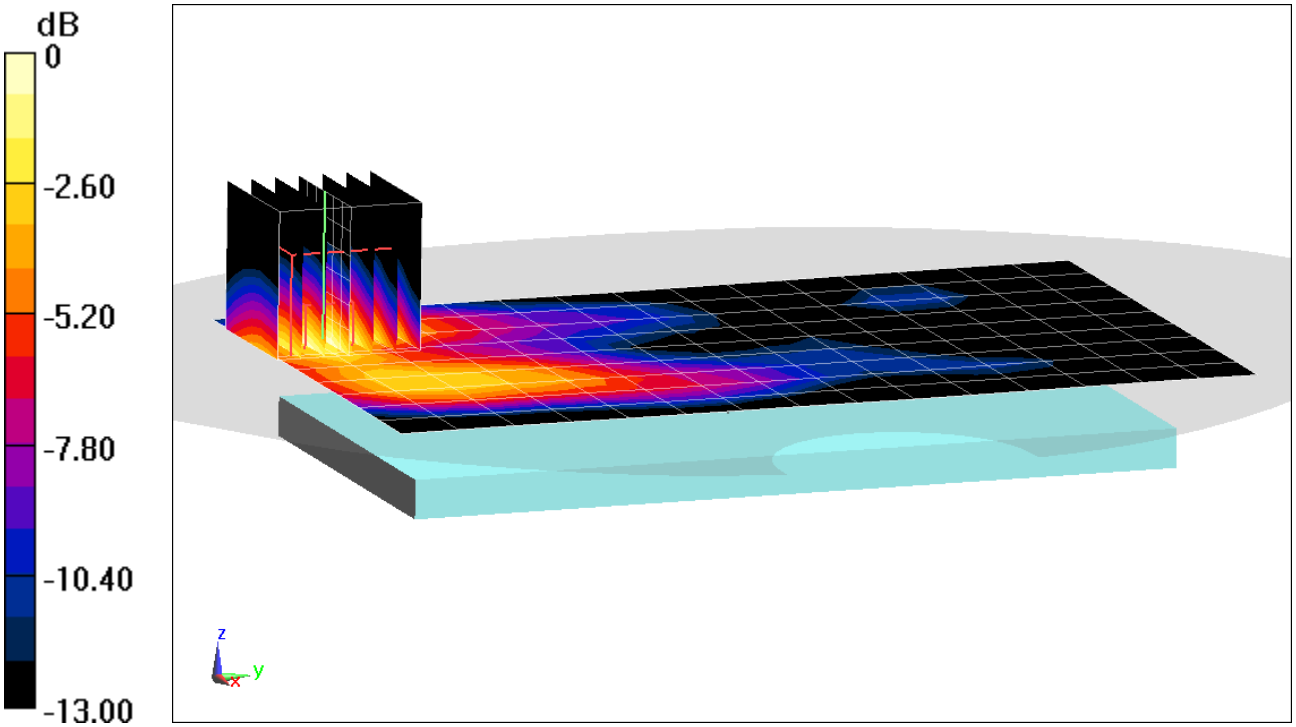
Communication System: UID 0, LTE Band 41 (Class 2); Frequency: 2636.5 MHz; Duty Cycle: 1:2.31
Medium: 2450 Body Medium parameters used (interpolated):
f = 2636.5 MHz; σ = 2.266 S/m; ε_r = 51.476; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-08-2019; Ambient Temp: 23.0°C; Tissue Temp: 22.4°C

Probe: EX3DV4 - SN7417; ConvF(7.37, 7.37, 7.37) @ 2636.5 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/13/2019
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 41 HPUE, Body SAR, Back side, Mid-High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 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 = 14.51 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.873 W/kg
SAR(1 g) = 0.426 W/kg



0 dB = 0.685 W/kg = -1.64 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00531

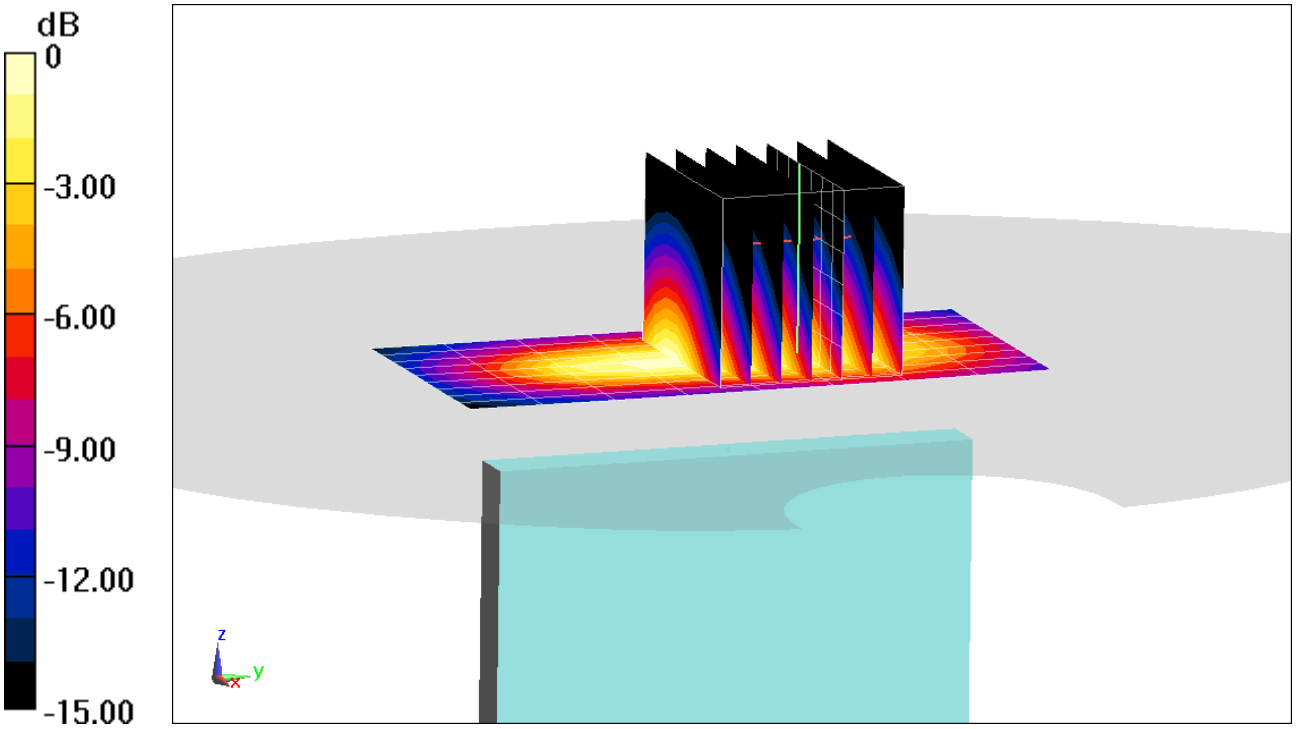
Communication System: UID 0, LTE Band 41 (Class 2); Frequency: 2636.5 MHz; Duty Cycle: 1:2.31
Medium: 2450 Body Medium parameters used (interpolated):
f = 2636.5 MHz; σ = 2.266 S/m; ε_r = 51.476; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-08-2019; Ambient Temp: 23.0°C; Tissue Temp: 22.4°C

Probe: EX3DV4 - SN7417; ConvF(7.37, 7.37, 7.37) @ 2636.5 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/13/2019
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 41 HPUE, Body SAR, Bottom Edge, Mid-High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.76 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.630 W/kg



0 dB = 0.996 W/kg = -0.02 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00547

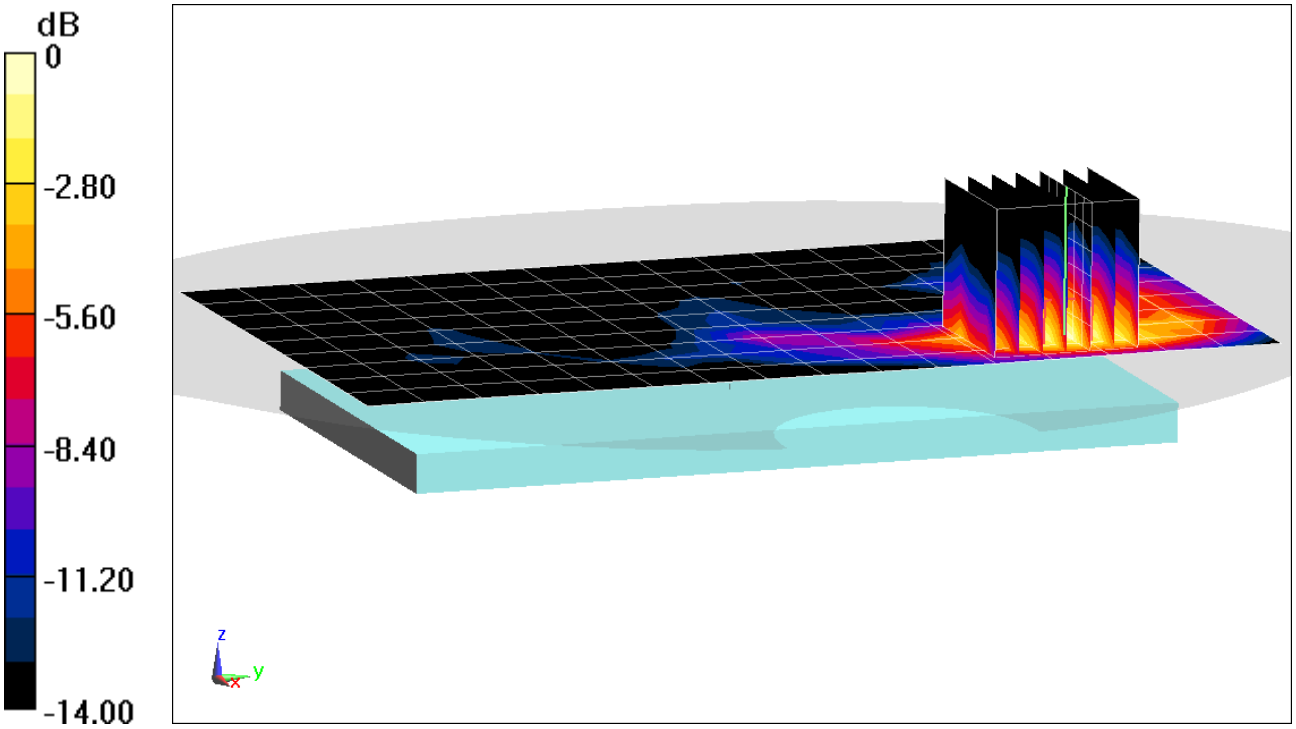
Communication System: UID 0, IEEE 802.11b; Frequency: 2412 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2412 MHz; σ = 1.996 S/m; ε_r = 52.122; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-08-2019; Ambient Temp: 23.0°C; Tissue Temp: 22.4°C

Probe: EX3DV4 - SN7417; ConvF(7.51, 7.51, 7.51) @ 2412 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/13/2019
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

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

Area Scan (10x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.51 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.02 W/kg
SAR(1 g) = 0.482 W/kg



0 dB = 0.818 W/kg = -0.87 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00547

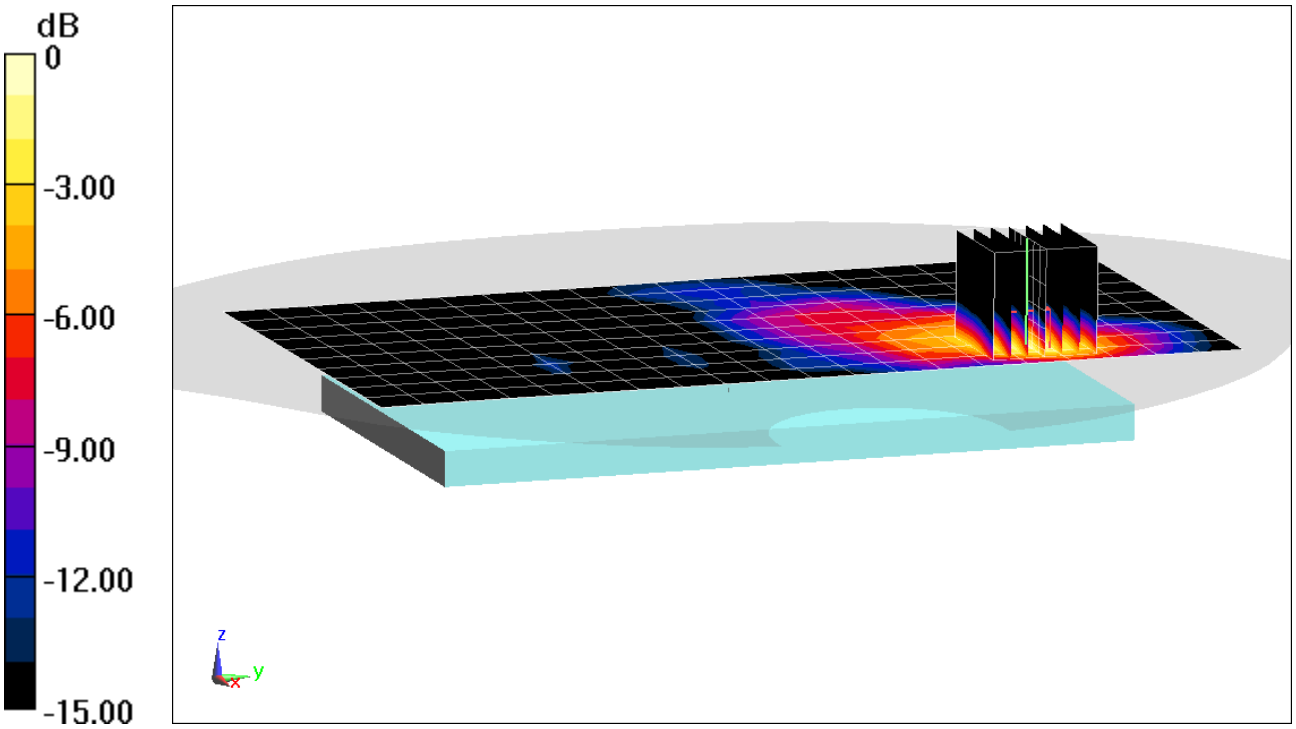
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5300 MHz; Duty Cycle: 1:1
Medium: 5GHz Body Medium parameters used:
f = 5300 MHz; σ = 5.502 S/m; ε_r = 48.688; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-25-2019; Ambient Temp: 22.8°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7308; ConvF(4.48, 4.48, 4.48) @ 5300 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, UNII-2A, 20 MHz Bandwidth, Body SAR, Ch 60, 6 Mbps, Back Side

Area Scan (11x21x1): 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 = 10.87 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 2.18 W/kg
SAR(1 g) = 0.582 W/kg



0 dB = 1.31 W/kg = 1.17 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00547

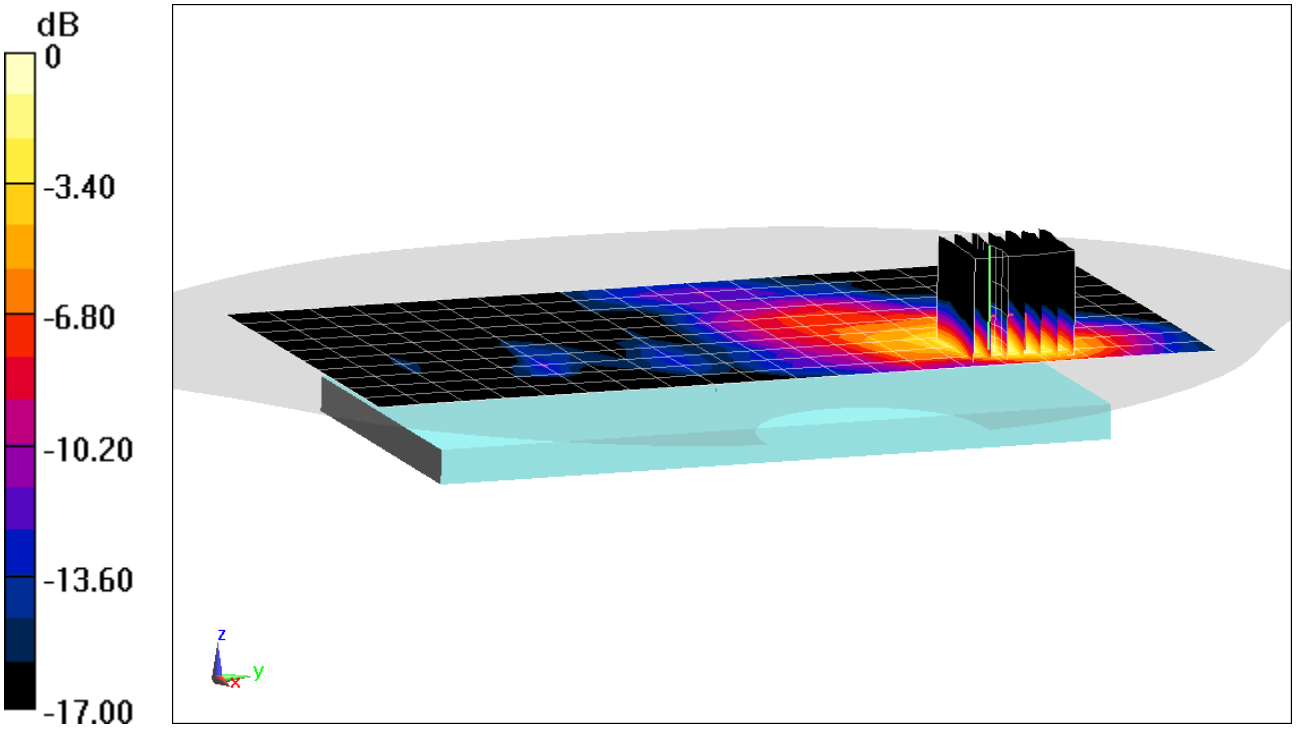
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5200 MHz; Duty Cycle: 1:1
Medium: 5GHz Body Medium parameters used:
f = 5200 MHz; σ = 5.357 S/m; ε_r = 48.877; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-25-2019; Ambient Temp: 22.8°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7308; ConvF(4.48, 4.48, 4.48) @ 5200 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, UNII-1, 20 MHz Bandwidth, Body SAR, Ch 40, 6 Mbps, Back Side

Area Scan (11x21x1): 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 = 11.36 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.92 W/kg
SAR(1 g) = 0.505 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00547

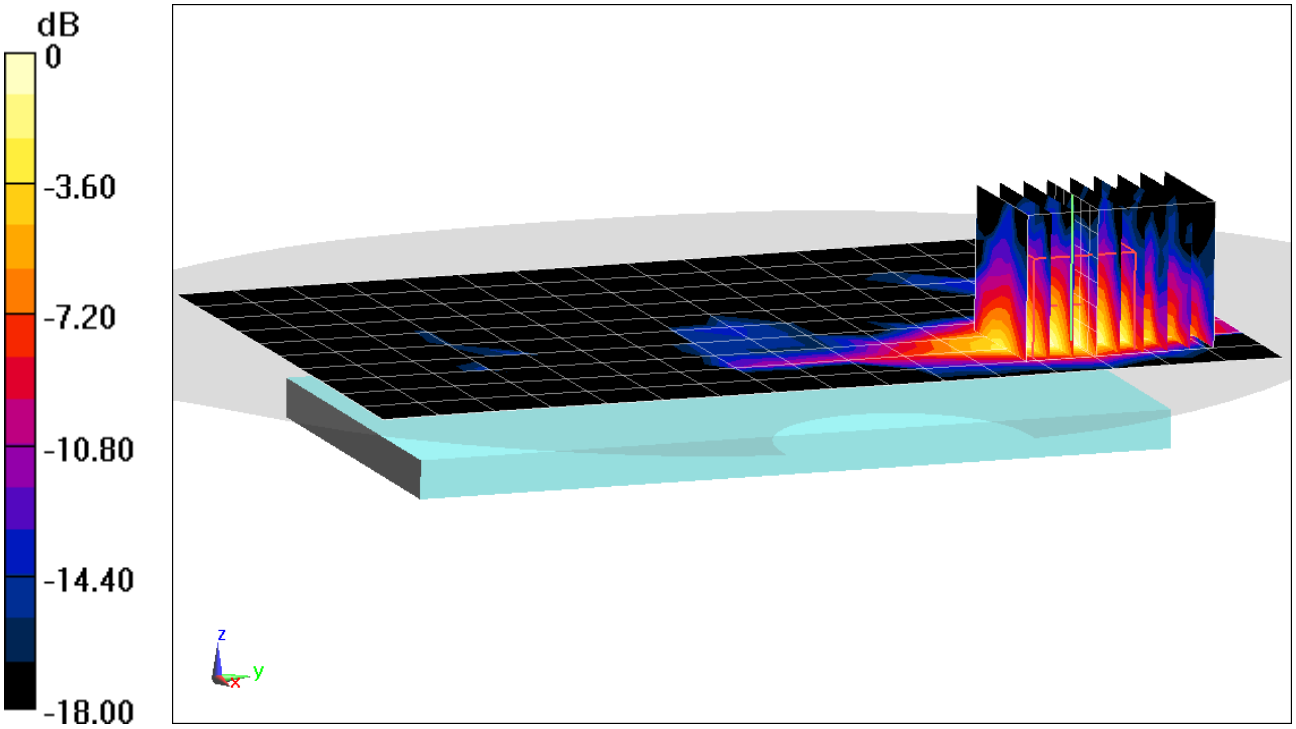
Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.289
Medium: 2450 Body Medium parameters used (interpolated):
f = 2441 MHz; σ = 2.03 S/m; ε_r = 52.046; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-08-2019; Ambient Temp: 23.0°C; Tissue Temp: 22.4°C

Probe: EX3DV4 - SN7417; ConvF(7.51, 7.51, 7.51) @ 2441 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/13/2019
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: Bluetooth, Body SAR, Ch 39, 1 Mbps, Back Side

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x9x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.463 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.0820 W/kg
SAR(1 g) = 0.038 W/kg



0 dB = 0.0650 W/kg = -11.87 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00530

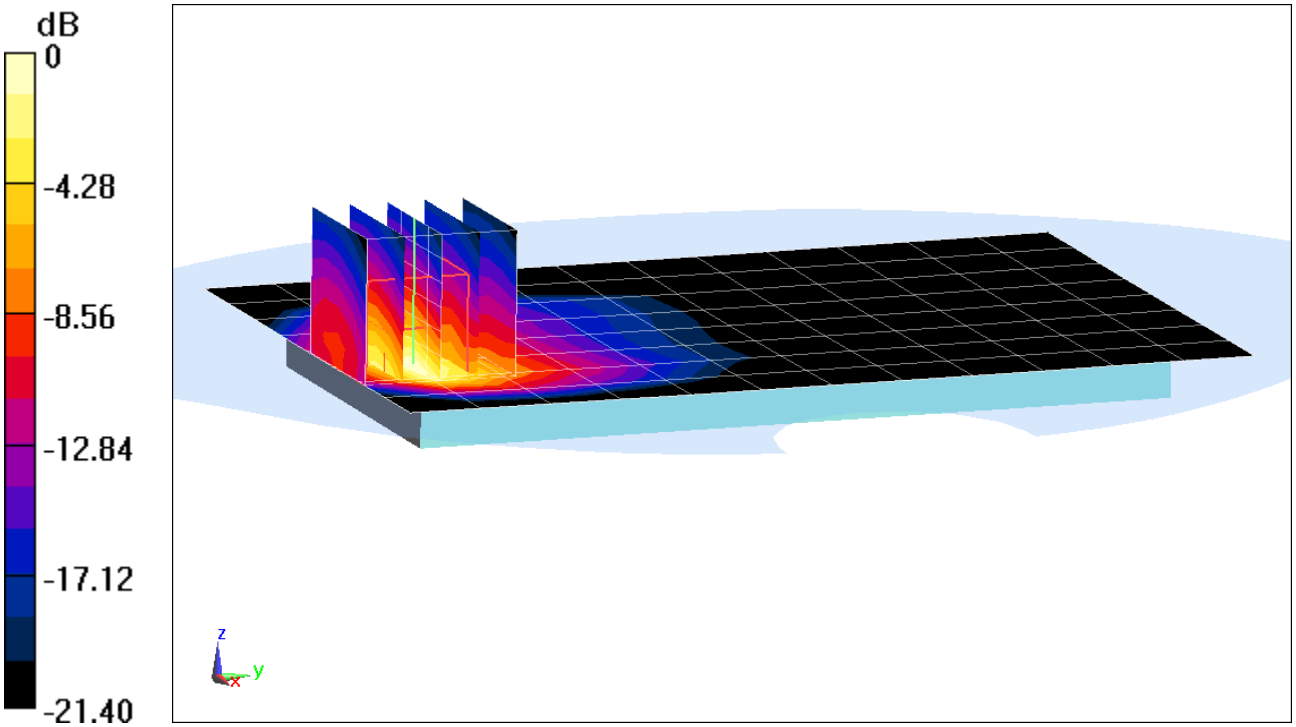
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.516 S/m; ε_r = 51.402; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.1 cm

Test Date: 03-18-2019; Ambient Temp: 20.2°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN7488; ConvF(8.68, 8.68, 8.68) @ 1732.4 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 1750, Phablet SAR, Front side, Mid.ch

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 63.43 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 13.1 W/kg
SAR(10 g) = 2.28 W/kg



0 dB = 9.96 W/kg = 9.98 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00532

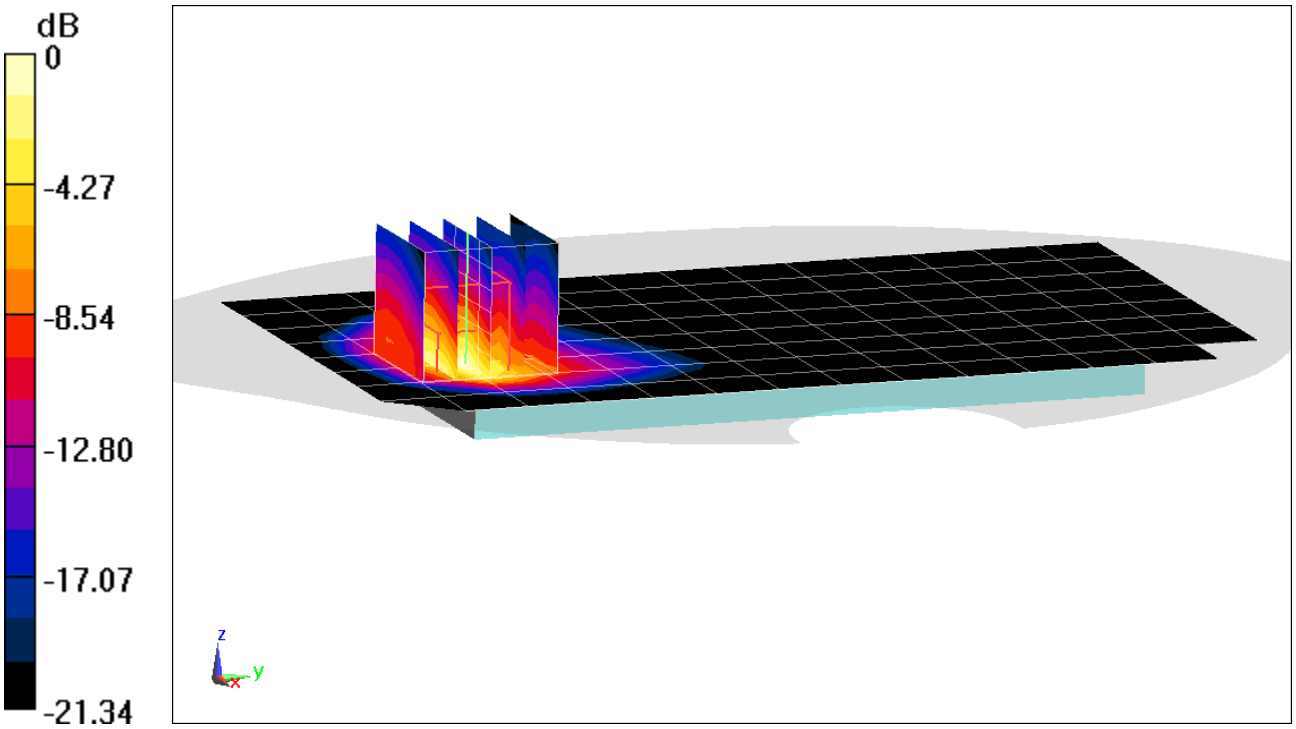
Communication System: UID 0, UMTS; Frequency: 1852.4 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1852.4 MHz; σ = 1.52 S/m; ε_r = 52.145; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 03-27-2019; Ambient Temp: 22.4°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN7410; ConvF(7.78, 7.78, 7.78) @ 1852.4 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: Front; Type: QD 000 P40 CD; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: UMTS 1900, Phablet SAR, Front side, Low.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 = 64.74 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 13.8 W/kg
SAR(10 g) = 2.48 W/kg



0 dB = 10.0 W/kg = 10.00 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00532

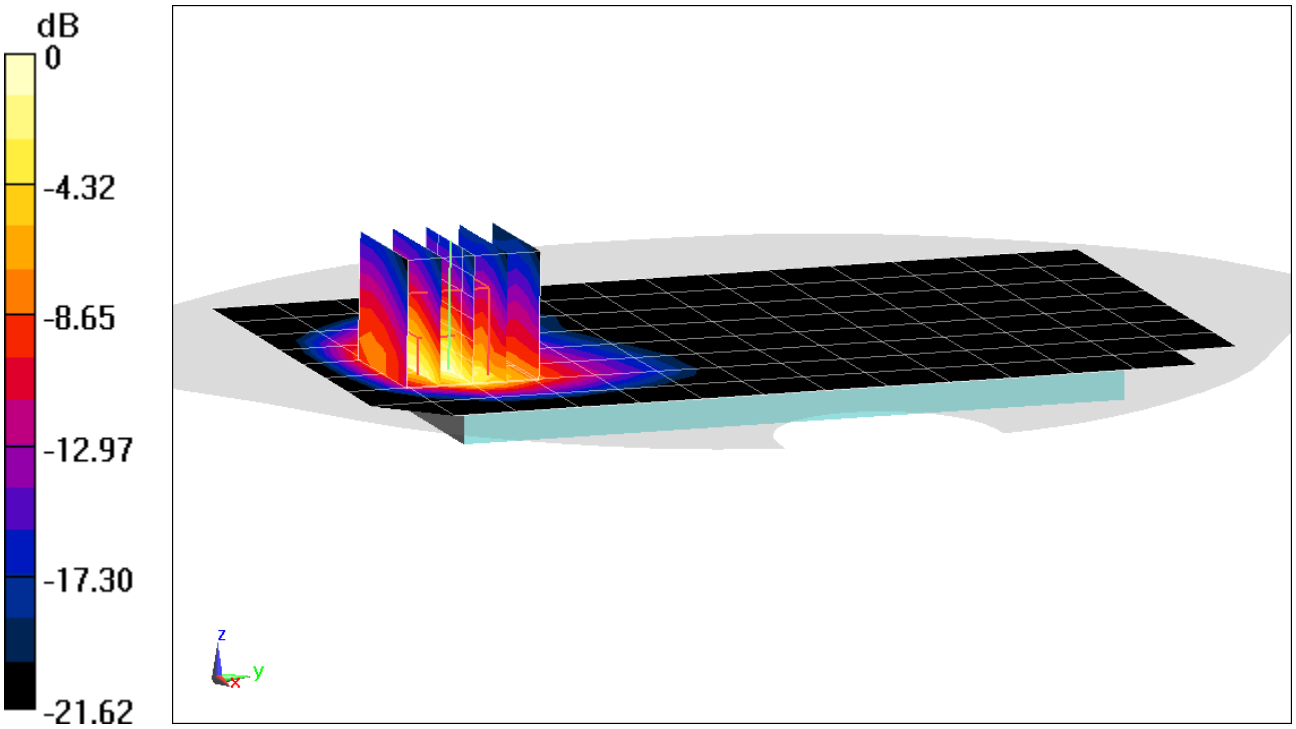
Communication System: UID 0, CDMA; Frequency: 1851.25 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1851.25 MHz; σ = 1.518 S/m; ε_r = 52.149; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 03-27-2019; Ambient Temp: 22.4°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN7410; ConvF(7.78, 7.78, 7.78) @ 1851.25 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: Front; Type: QD 000 P40 CD; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: PCS EVDO Rev. 0, Phablet SAR, Front side, Low.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 = 54.16 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 9.61 W/kg
SAR(10 g) = 1.82 W/kg



0 dB = 6.69 W/kg = 8.25 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00531

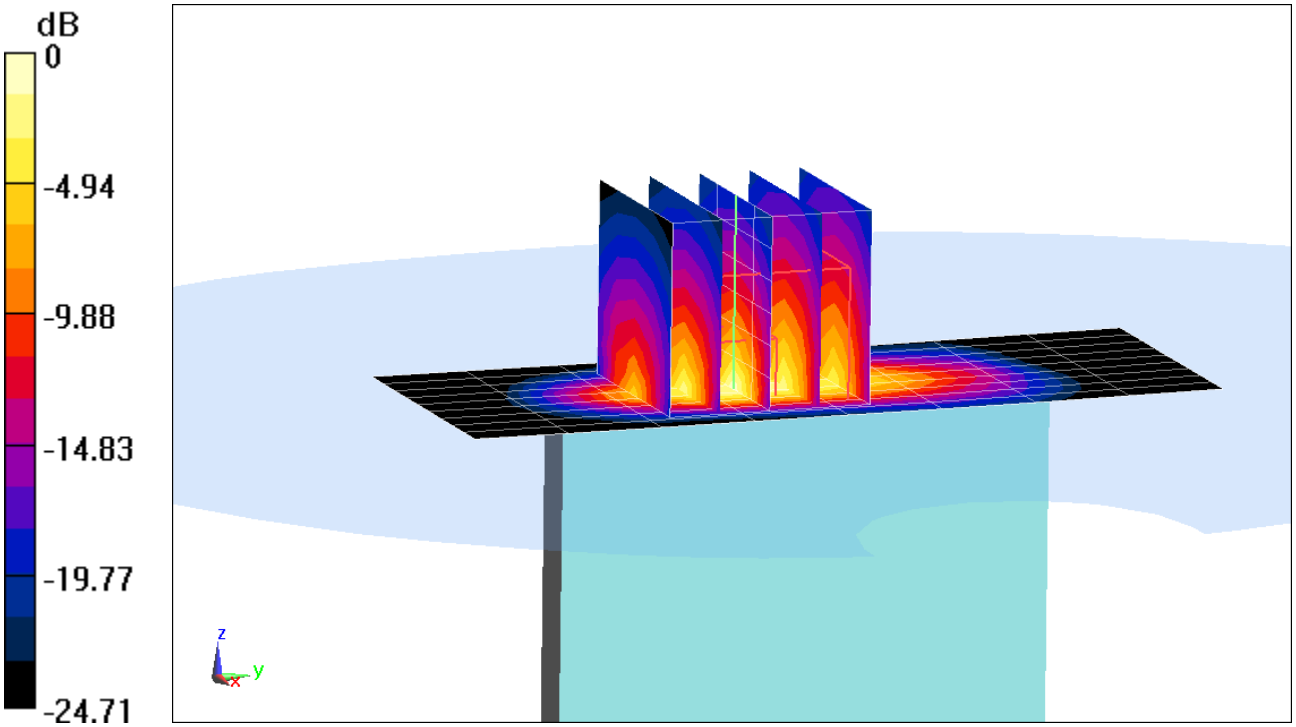
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1745 MHz; σ = 1.518 S/m; ε_r = 51.522; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-04-2019; Ambient Temp: 20.8°C; Tissue Temp: 19.9°C

Probe: EX3DV4 - SN7488; ConvF(8.68, 8.68, 8.68) @ 1745 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 66 (AWS), Phablet SAR, Bottom Edge, Mid.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 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 = 75.32 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 20.3 W/kg
SAR(10 g) = 2.68 W/kg



0 dB = 16.3 W/kg = 12.12 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00531

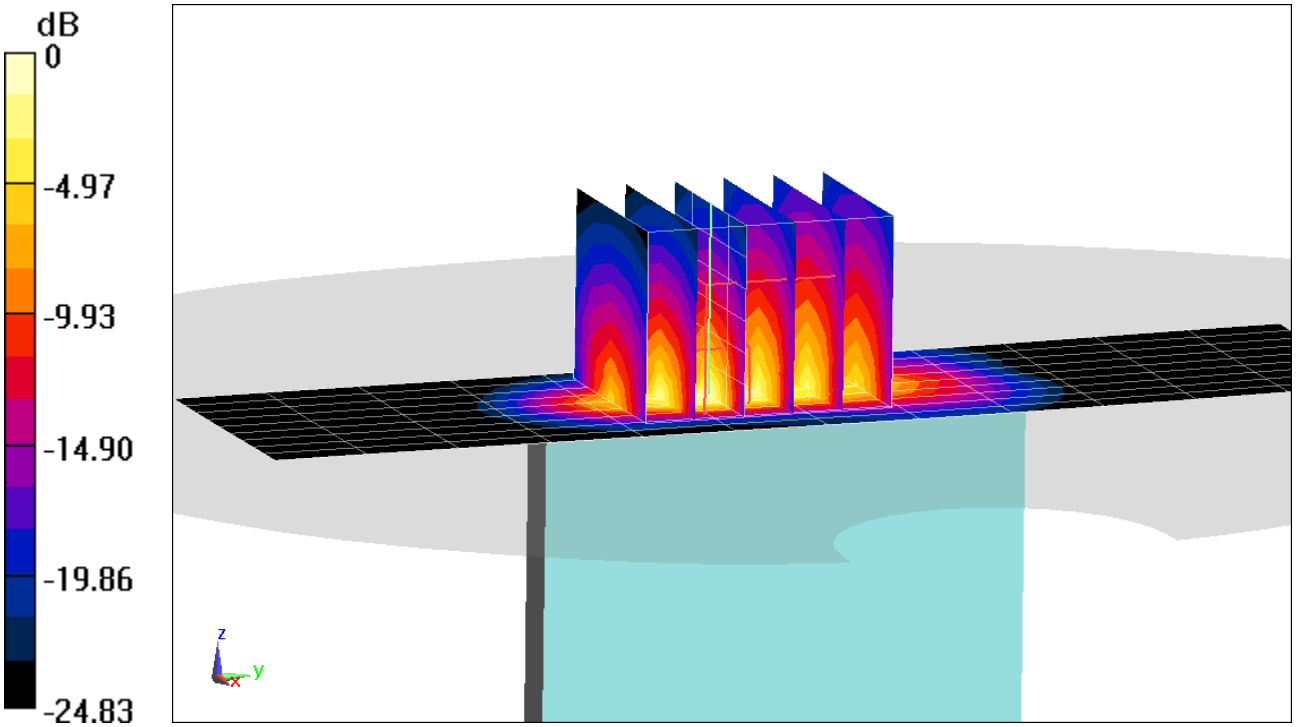
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1860 MHz; σ = 1.523 S/m; ε_r = 52.263; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 04-03-2019; Ambient Temp: 22.2°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN7410; ConvF(7.78, 7.78, 7.78) @ 1860 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: Front; Type: QD 000 P40 CD; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

Mode: LTE Band 25 (PCS), Phablet SAR, Bottom Edge, Low.ch, 20 MHz Bandwidth, QPSK, 50 RB, 0 RB Offset

Area Scan (10x13x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 69.12 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 18.6 W/kg
SAR(10 g) = 2.36 W/kg



0 dB = 14.9 W/kg = 11.73 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFQ720PS; Type: Portable Handset; Serial: 00547

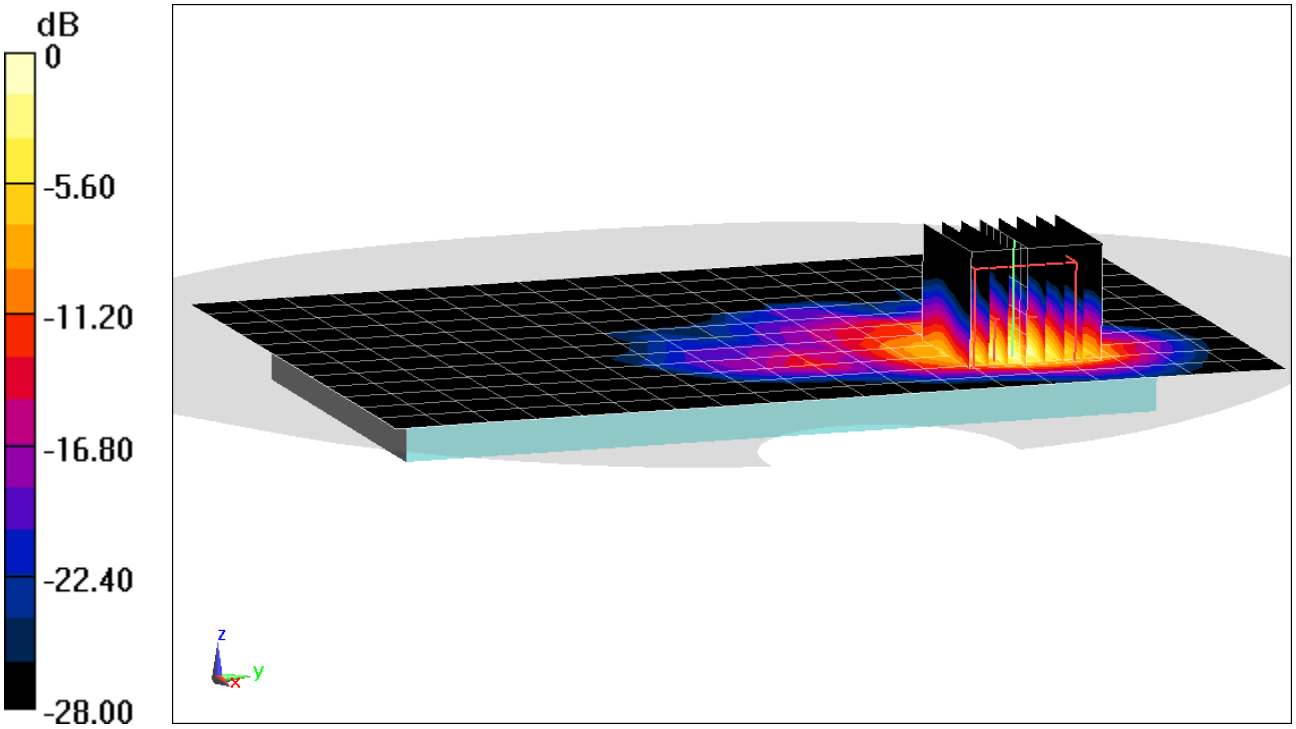
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5260 MHz; Duty Cycle: 1:1
Medium: 5GHz Body Medium parameters used:
f = 5260 MHz; σ = 5.447 S/m; ε_r = 48.732; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 03-25-2019; Ambient Temp: 22.8°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7308; ConvF(4.48, 4.48, 4.48) @ 5260 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, U-NII-2A, 20 MHz Bandwidth, Phablet SAR, Ch 52, 6 Mbps, Back Side

Area Scan (13x20x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 35.53 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 28.2 W/kg
SAR(10 g) = 1.73 W/kg



0 dB = 15.6 W/kg = 11.93 dBW/kg

APPENDIX B: SYSTEM VERIFICATION

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PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1161

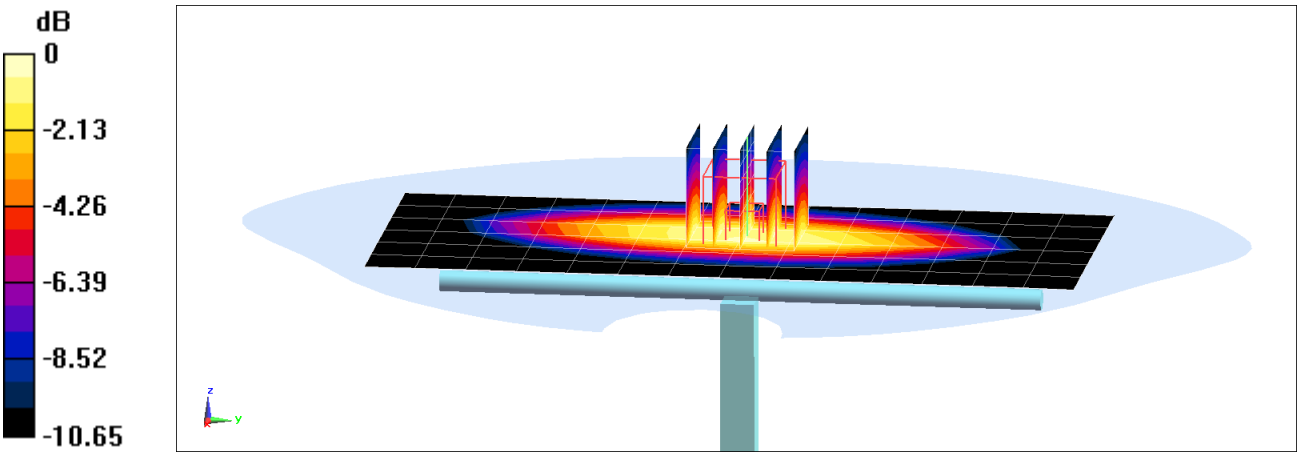
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 MHz Medium parameters used (interpolated):
f = 750 MHz; σ = 0.866 S/m; ε_r = 40.946; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 03-28-2019; Ambient Temp: 23.1°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN3589; ConvF(8.67, 8.67, 8.67) @ 750 MHz; Calibrated: 1/25/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 8/22/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
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) = 2.35 W/kg
SAR(1 g) = 1.51 W/kg
Deviation(1 g) = -5.98%



0 dB = 2.06 W/kg = 3.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d133

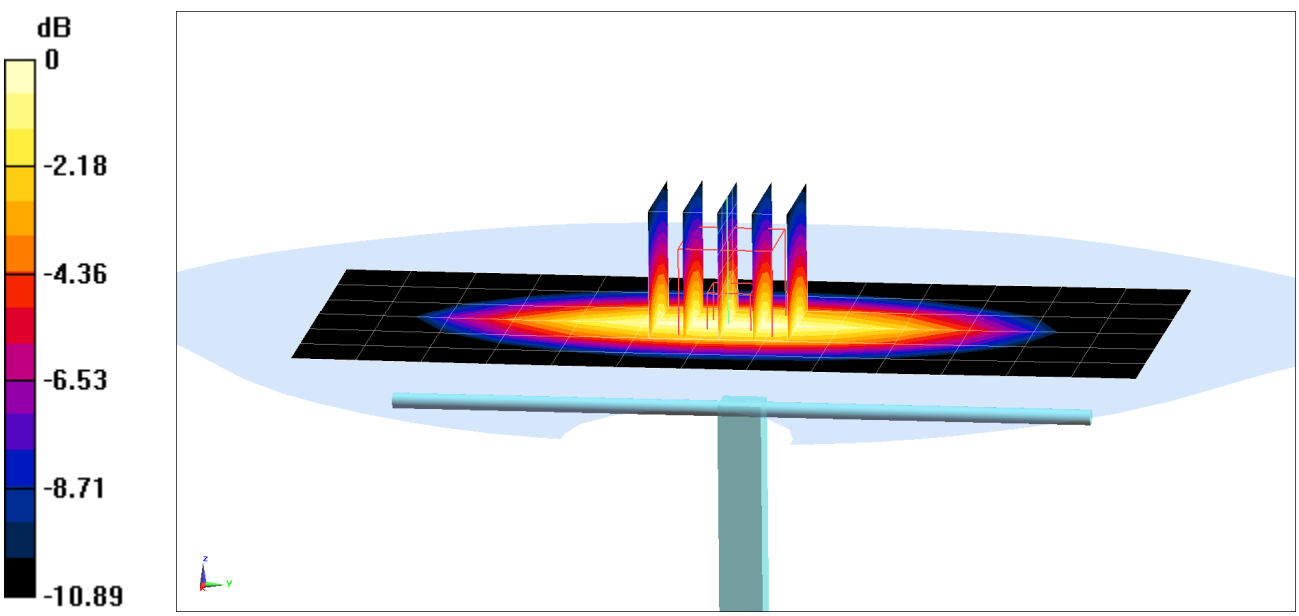
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used:
f = 835 MHz; σ = 0.916 S/m; ε_r = 42.45; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 04-01-2019; Ambient Temp: 22.4°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7357; ConvF(10.11, 10.11, 10.11) @ 835 MHz; Calibrated: 4/18/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: Left For Head SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1687
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) = 2.93 W/kg
SAR(1 g) = 1.92 W/kg
Deviation(1 g) = 1.80%



0 dB = 2.60 W/kg = 4.15 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1150

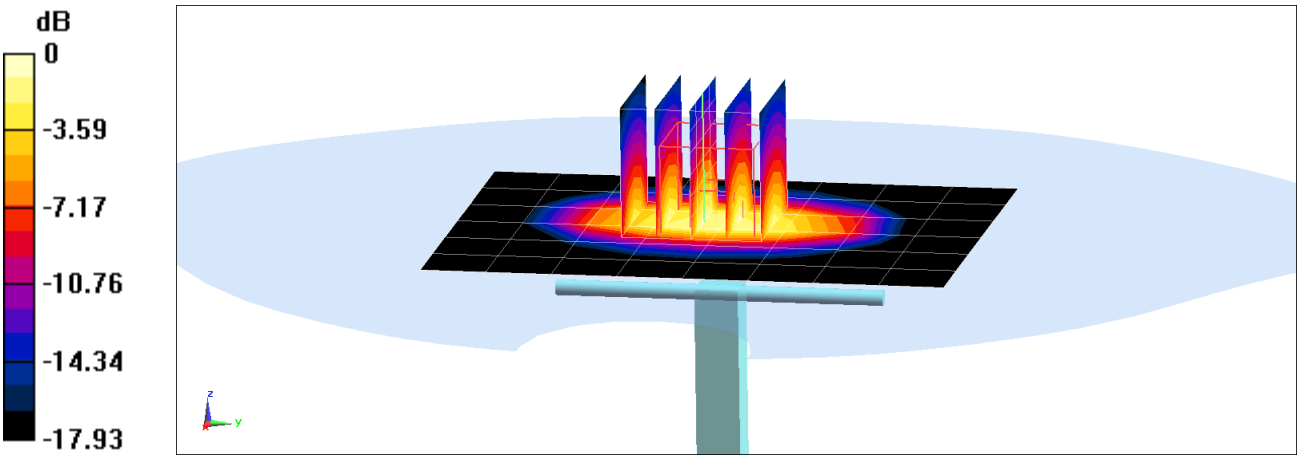
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used:
f = 1750 MHz; σ = 1.356 S/m; ε_r = 38.434; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-24-2019; Ambient Temp: 21.9°C; Tissue Temp: 20.3°C

Probe: EX3DV4 - SN3589; ConvF(7.31, 7.31, 7.31) @ 1750 MHz; Calibrated: 1/25/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 8/22/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
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) = 6.89 W/kg
SAR(1 g) = 3.63 W/kg
Deviation(1 g) = -0.55%



0 dB = 5.64 W/kg = 7.51 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1150

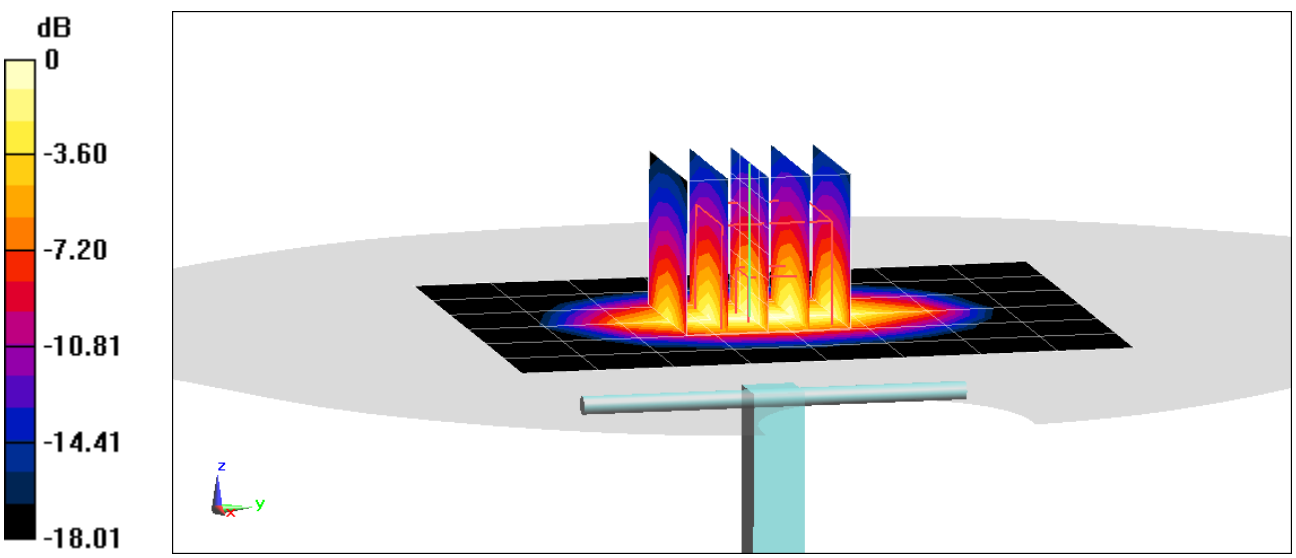
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used:
f = 1750 MHz; σ = 1.35 S/m; ε_r = 38.66; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-10-2019; Ambient Temp: 23.0°C; Tissue Temp: 22.7°C

Probe: EX3DV4 - SN7308; ConvF(8.66, 8.66, 8.66) @ 1750 MHz; Calibrated: 8/23/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1558; Calibrated: 10/3/2018
Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1966
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) = 6.98 W/kg
SAR(1 g) = 3.59 W/kg
Deviation(1 g) = -1.64%



0 dB = 5.63 W/kg = 7.51 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

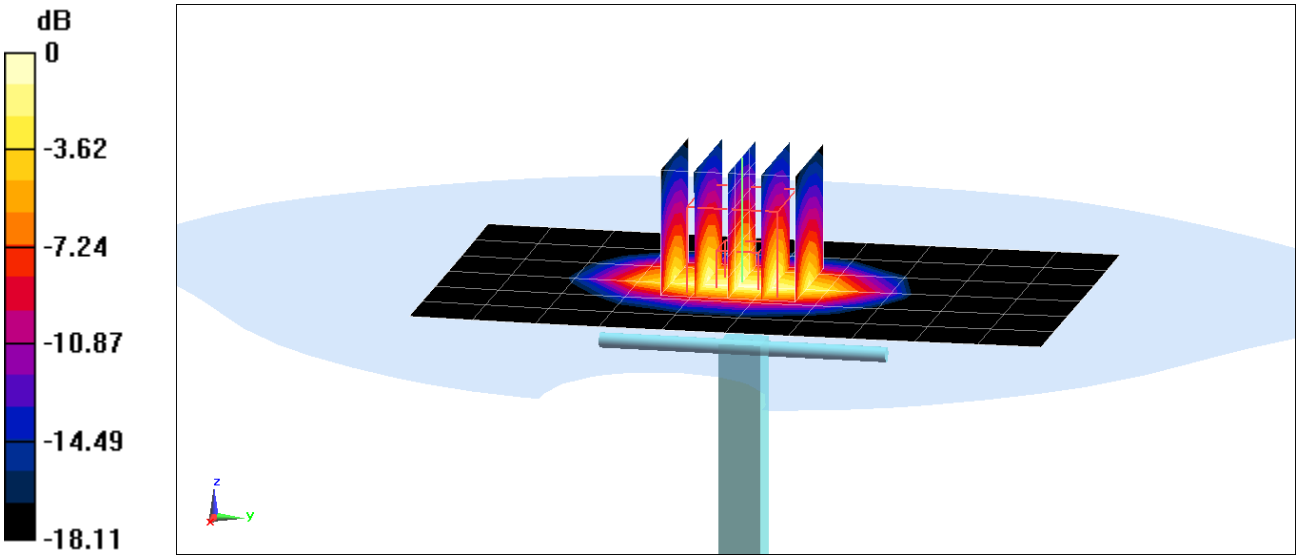
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head; Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.444 S/m; ε_r = 41.385; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-03-2019; Ambient Temp: 21.5°C; Tissue Temp: 20.5°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 30 with CRP v5.0 right; Type: QD000P40CD; Serial: TP:1759
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) = 7.65 W/kg
SAR(1 g) = 4.03 W/kg
Deviation(1 g) = 1.26%



0 dB = 6.39 W/kg = 8.06 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

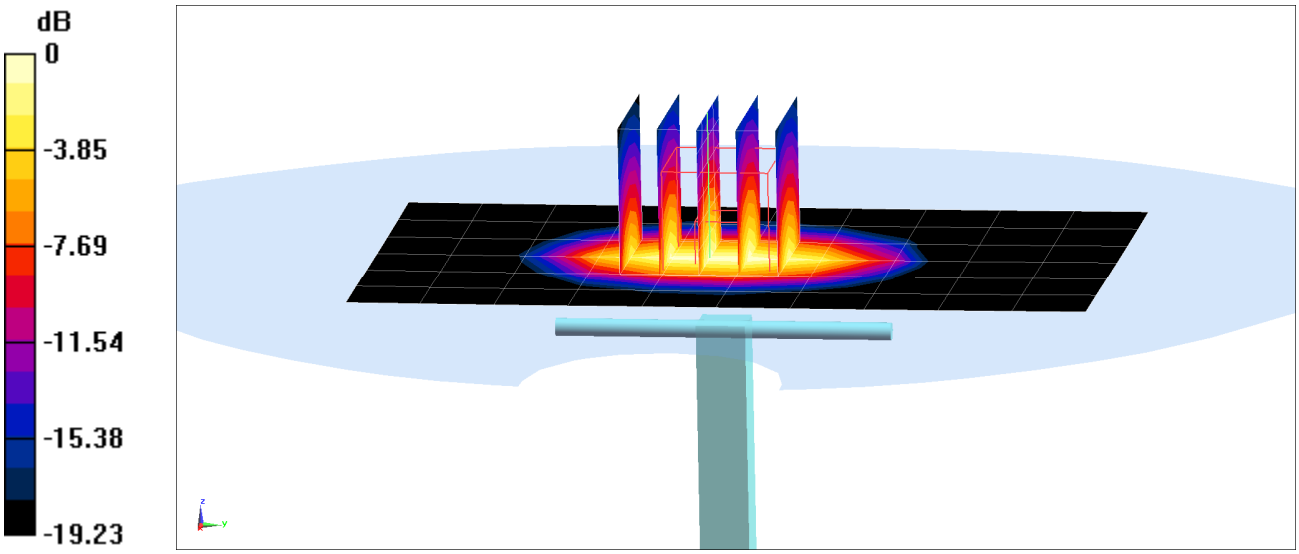
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.453 S/m; ε_r = 39.926; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-08-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7357; ConvF(8.47, 8.47, 8.47) @ 1900 MHz; Calibrated: 4/18/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: Left For Head SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1687
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 8.07 W/kg
SAR(1 g) = 4.07 W/kg
Deviation(1 g) = 3.56%



0 dB = 6.54 W/kg = 8.16 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

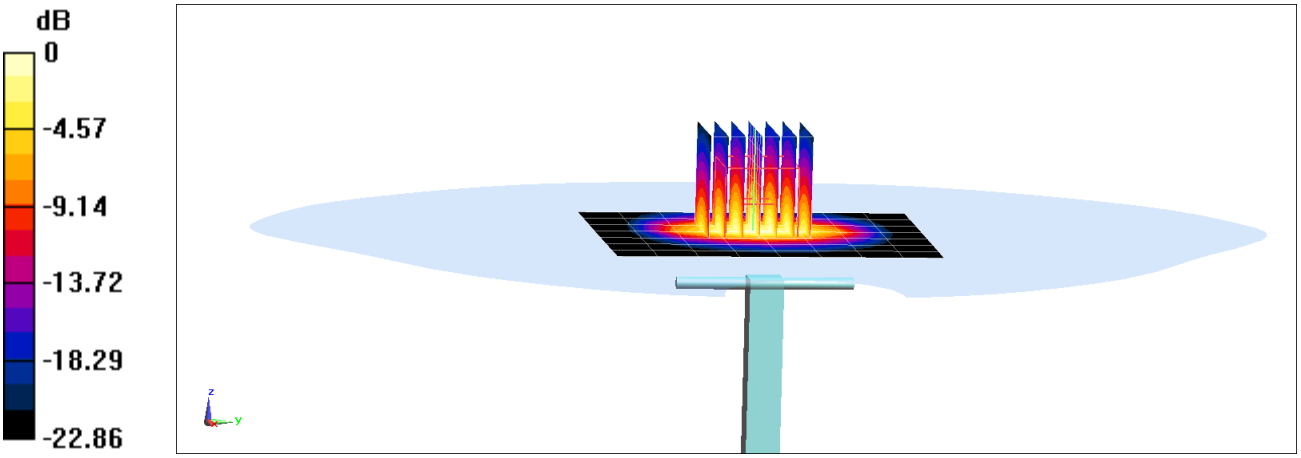
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; σ = 1.825 S/m; ε_r = 38.176; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-21-2019; Ambient Temp: 23.1°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN3589; ConvF(6.46, 6.46, 6.46) @ 2450 MHz; Calibrated: 1/25/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 8/22/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.6 W/kg
SAR(1 g) = 5.17 W/kg
Deviation(1 g) = -1.90%



0 dB = 9.05 W/kg = 9.57 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

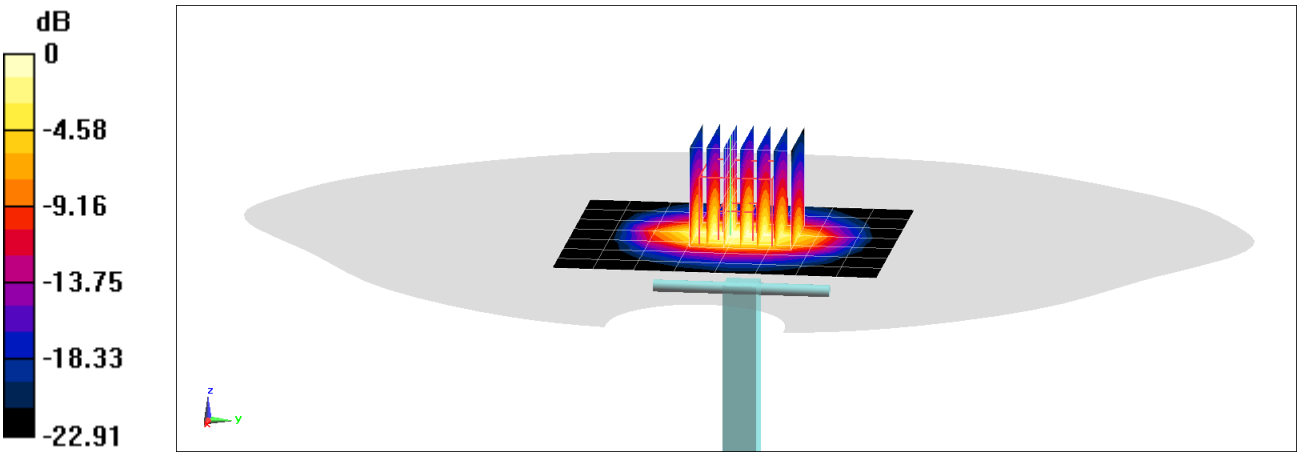
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; σ = 1.808 S/m; ε_r = 37.823; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-03-2019; Ambient Temp: 24.0°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN3589; ConvF(6.46, 6.46, 6.46) @ 2450 MHz; Calibrated: 1/25/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 8/22/2018
Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.6 W/kg
SAR(1 g) = 5.31 W/kg
Deviation(1 g) = 0.76%



0 dB = 9.02 W/kg = 9.55 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 981

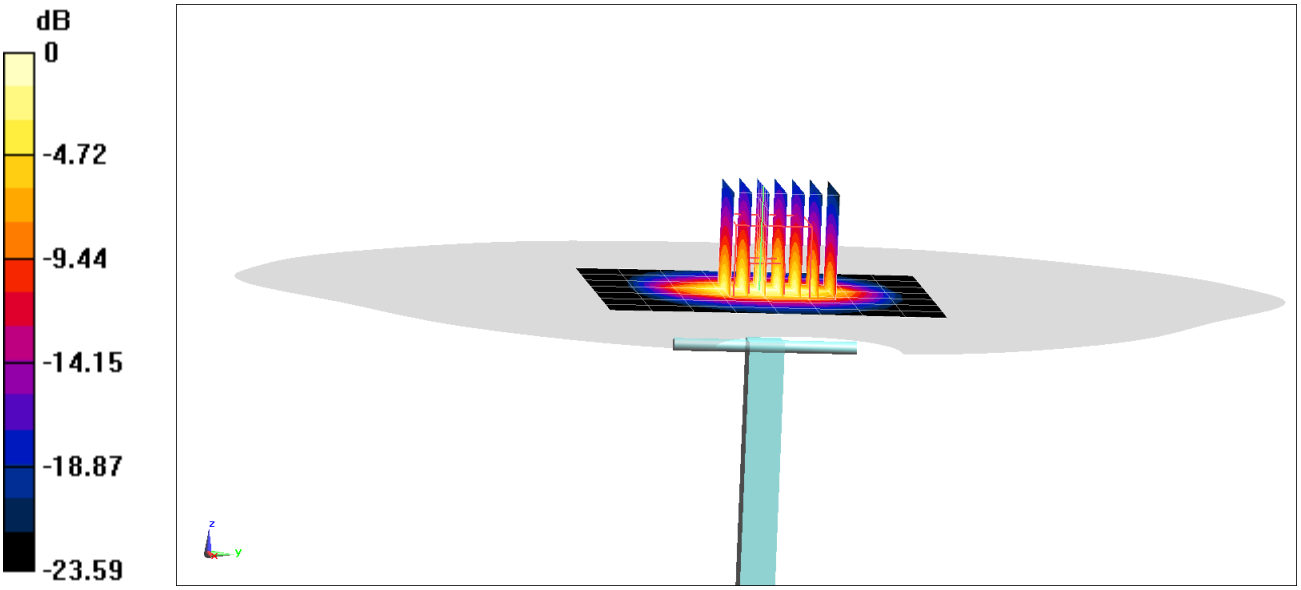
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; σ = 1.814 S/m; ε_r = 37.503; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-09-2019; Ambient Temp: 23.5°C; Tissue Temp: 21.9°C

Probe: EX3DV4 - SN3589; ConvF(6.46, 6.46, 6.46) @ 2450 MHz; Calibrated: 1/25/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 8/22/2018
Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.4 W/kg
SAR(1 g) = 5.25 W/kg
Deviation(1 g) = 0.38%



0 dB = 8.94 W/kg = 9.51 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1064

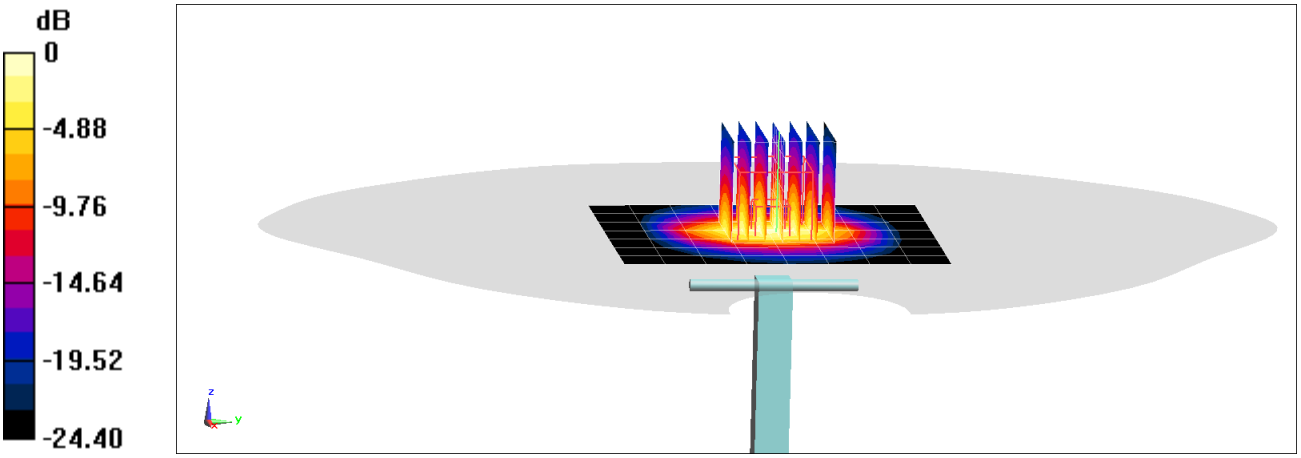
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2600 MHz; σ = 1.927 S/m; ε_r = 38.085; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-26-2019; Ambient Temp: 24.3°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN3589; ConvF(6.25, 6.25, 6.25) @ 2600 MHz; Calibrated: 1/25/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 8/22/2018
Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

2600 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 13.0 W/kg
SAR(1 g) = 5.83 W/kg
Deviation(1 g) = 2.28%



0 dB = 10.1 W/kg = 10.04 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1057

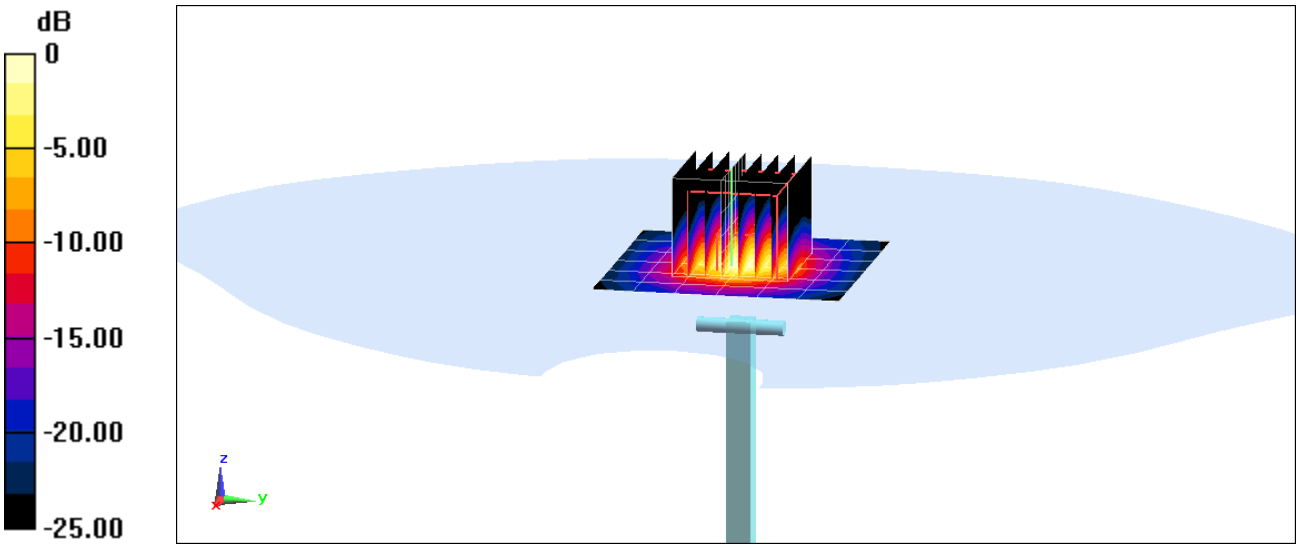
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head; Medium parameters used (interpolated):
f = 5250 MHz; σ = 4.536 S/m; ε_r = 34.646; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-25-2019; Ambient Temp: 20.7°C; Tissue Temp: 21.0°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 v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

5250 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 15.3 W/kg
SAR(1 g) = 3.75 W/kg
Deviation(1 g) = -5.30%



0 dB = 8.72 W/kg = 9.41 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1057

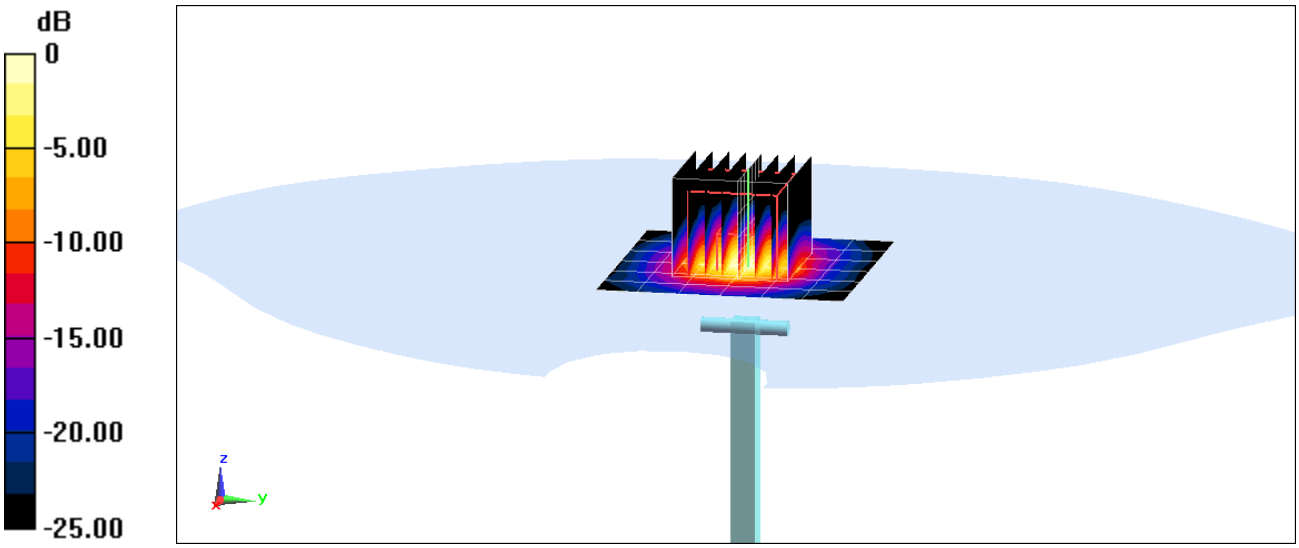
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head; Medium parameters used:
f = 5600 MHz; σ = 4.924 S/m; ε_r = 34.044; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-25-2019; Ambient Temp: 20.7°C; Tissue Temp: 21.0°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 v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

5600 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 18.4 W/kg
SAR(1 g) = 4.1 W/kg
Deviation(1 g) = -2.50%



0 dB = 9.95 W/kg = 9.98 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1057

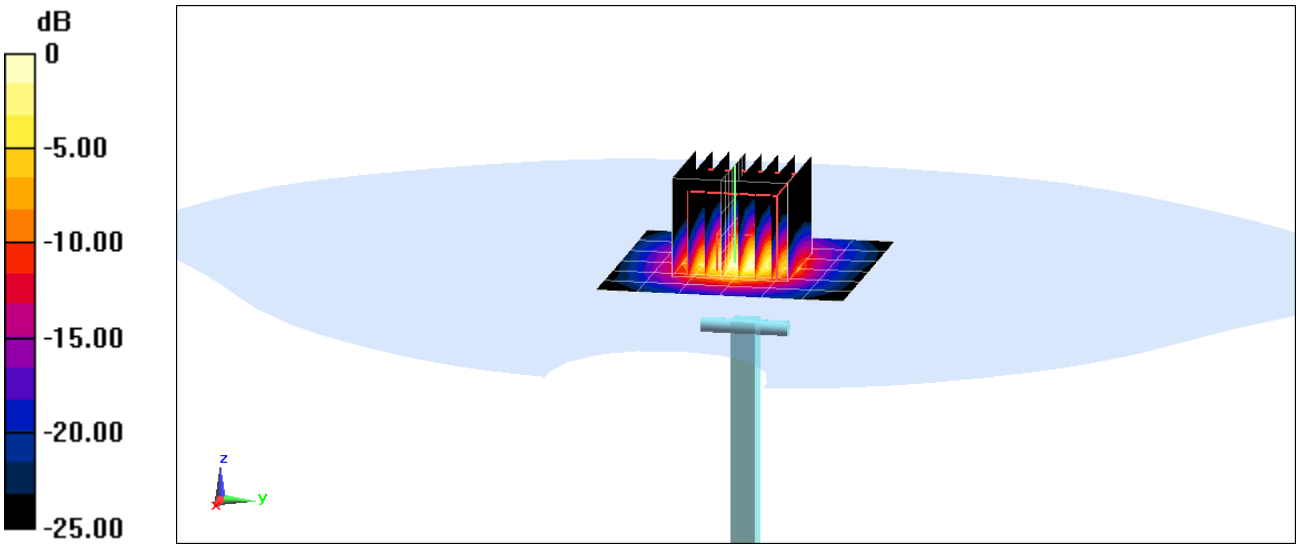
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head; Medium parameters used (interpolated):
f = 5750 MHz; σ = 5.101 S/m; ε_r = 33.783; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-25-2019; Ambient Temp: 20.7°C; Tissue Temp: 21.0°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 v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

5750 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 18.0 W/kg
SAR(1 g) = 3.87 W/kg
Deviation(1 g) = -3.85%



0 dB = 9.48 W/kg = 9.77 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1161

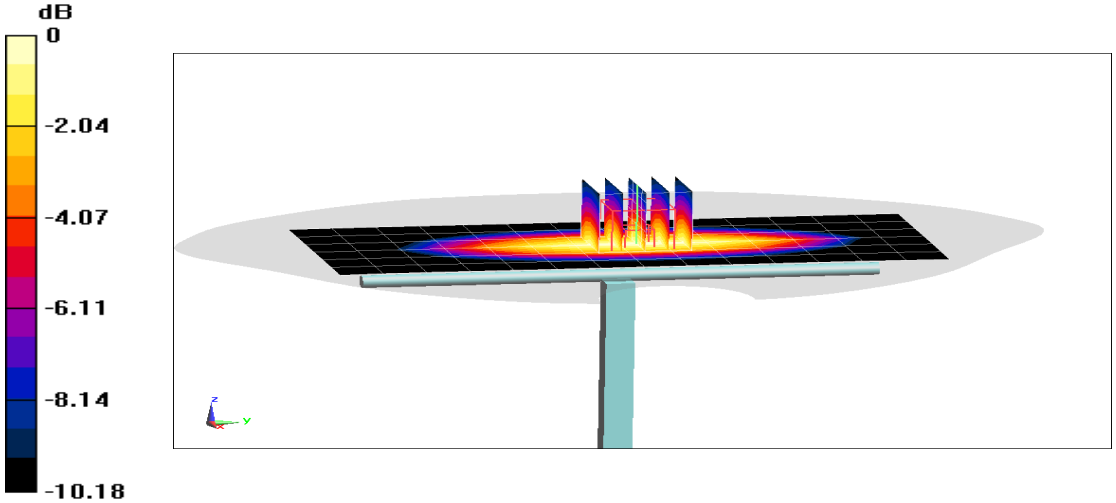
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750MHz Body Medium parameters used (interpolated):
f = 750 MHz; σ = 0.954 S/m; ε_r = 54.024; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 04-01-2019; Ambient Temp: 21.7°C; Tissue Temp: 19.7°C

Probe: EX3DV4 - SN7308; ConvF(10.38, 10.38, 10.38) @ 750 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)

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) = 2.51 W/kg
SAR(1 g) = 1.7 W/kg
Deviation(1 g) = 0.83%



0 dB = 2.25 W/kg = 3.52 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d133

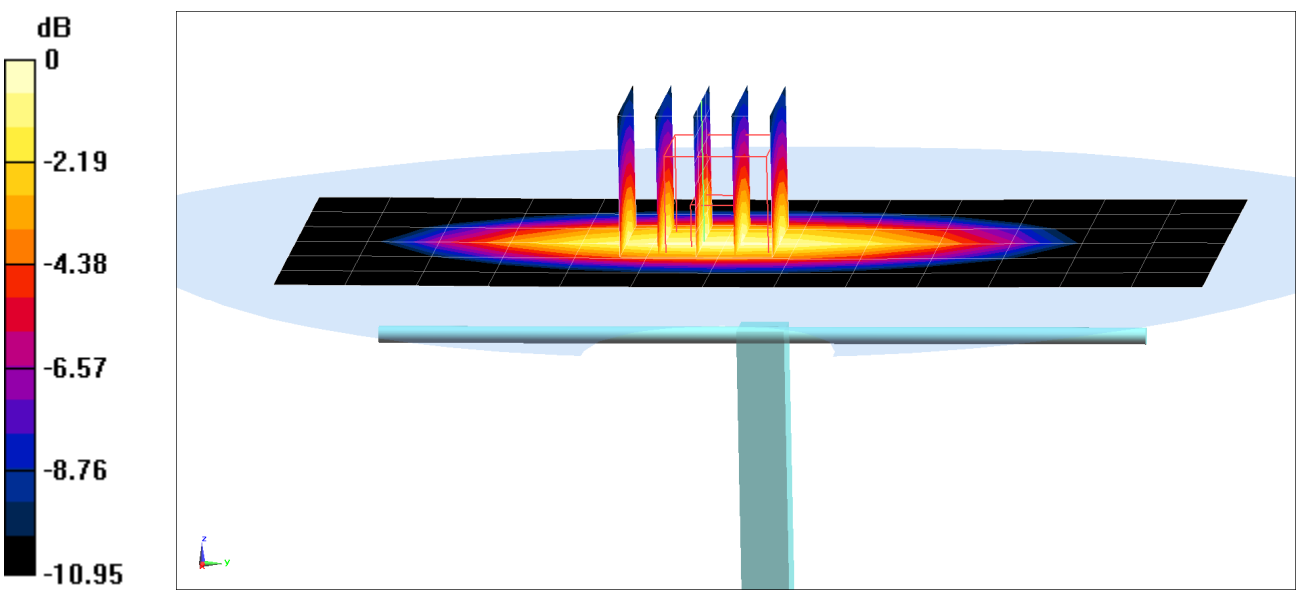
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.968 S/m; ε_r = 53.245; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 03-18-2019; Ambient Temp: 20.8°C; Tissue Temp: 20.2°C

Probe: EX3DV4 - SN7357; ConvF(10.17, 10.17, 10.17) @ 835 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)

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) = 3.12 W/kg
SAR(1 g) = 2.06 W/kg
Deviation(1 g) = 5.64%



0 dB = 2.77 W/kg = 4.42 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d133

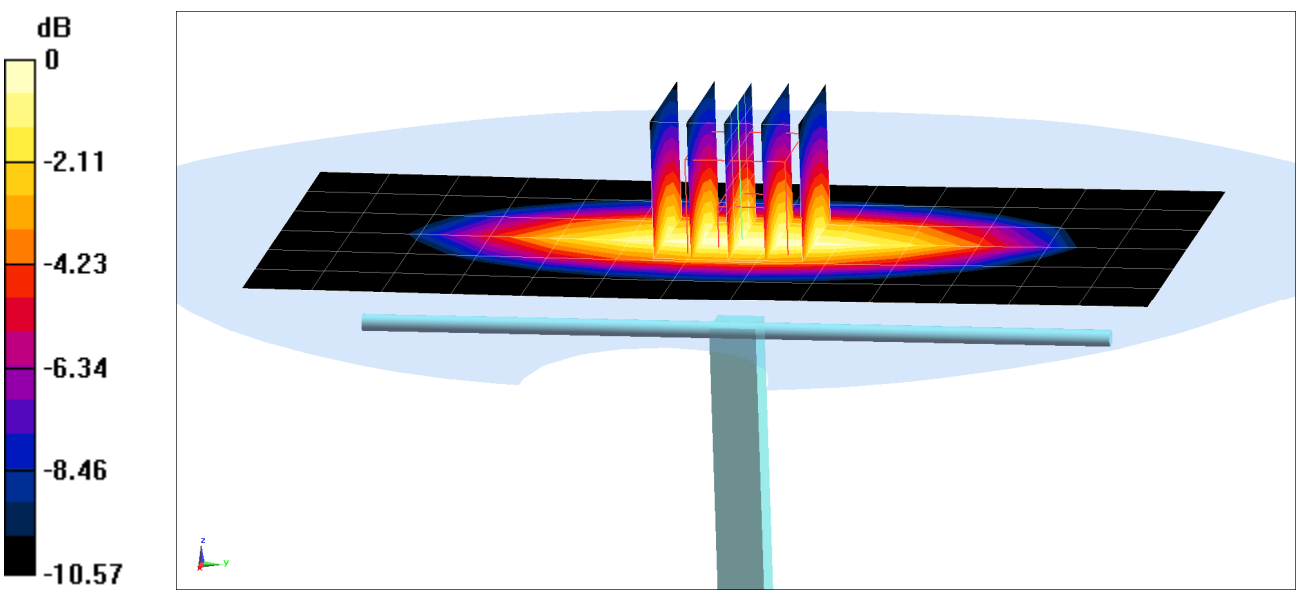
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.976 S/m; ε_r = 53.581; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 03-20-2019; Ambient Temp: 21.7°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7357; ConvF(10.17, 10.17, 10.17) @ 835 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)

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) = 2.91 W/kg
SAR(1 g) = 1.92 W/kg
Deviation(1 g) = -1.54%



0 dB = 2.58 W/kg = 4.12 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d133

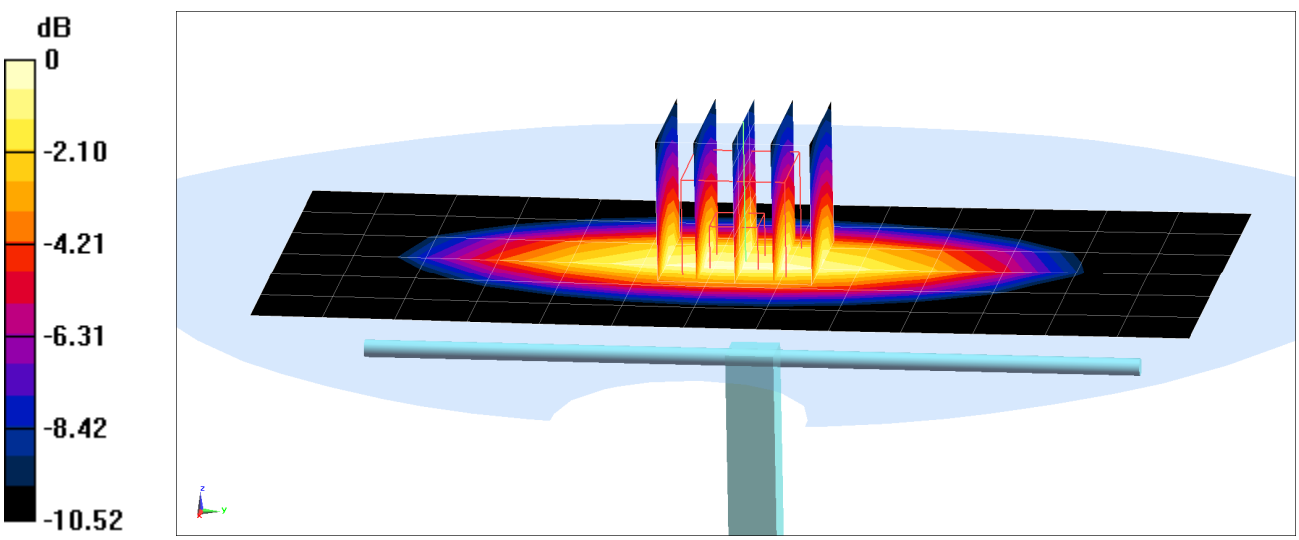
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.98 S/m; ε_r = 54.807; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 03-25-2019; Ambient Temp: 22.1°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7357; ConvF(10.17, 10.17, 10.17) @ 835 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)

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) = 2.81 W/kg
SAR(1 g) = 1.88 W/kg
Deviation(1 g) = -3.59%



0 dB = 2.49 W/kg = 3.96 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1150

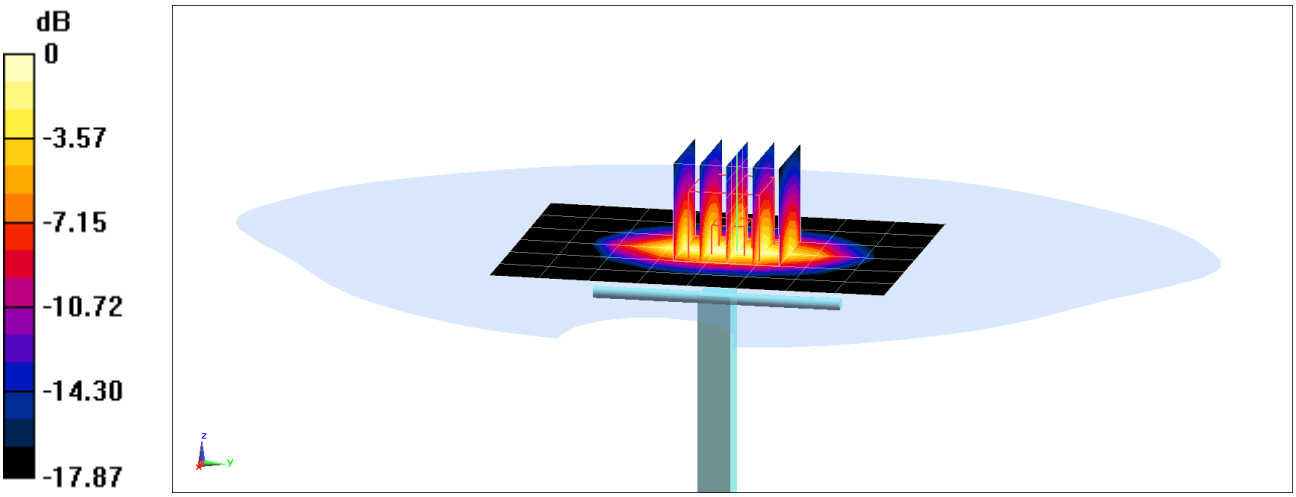
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body; Medium parameters used:
f = 1750 MHz; σ = 1.536 S/m; ε_r = 51.333; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-18-2019; Ambient Temp: 20.2°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN7488; ConvF(8.68, 8.68, 8.68) @ 1750 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.05 W/kg
SAR(1 g) = 3.83 W/kg; SAR(10 g) = 2 W/kg
Deviation(1 g) = 4.64%; Deviation(10 g) = 3.09%



0 dB = 5.91 W/kg = 7.72 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1148

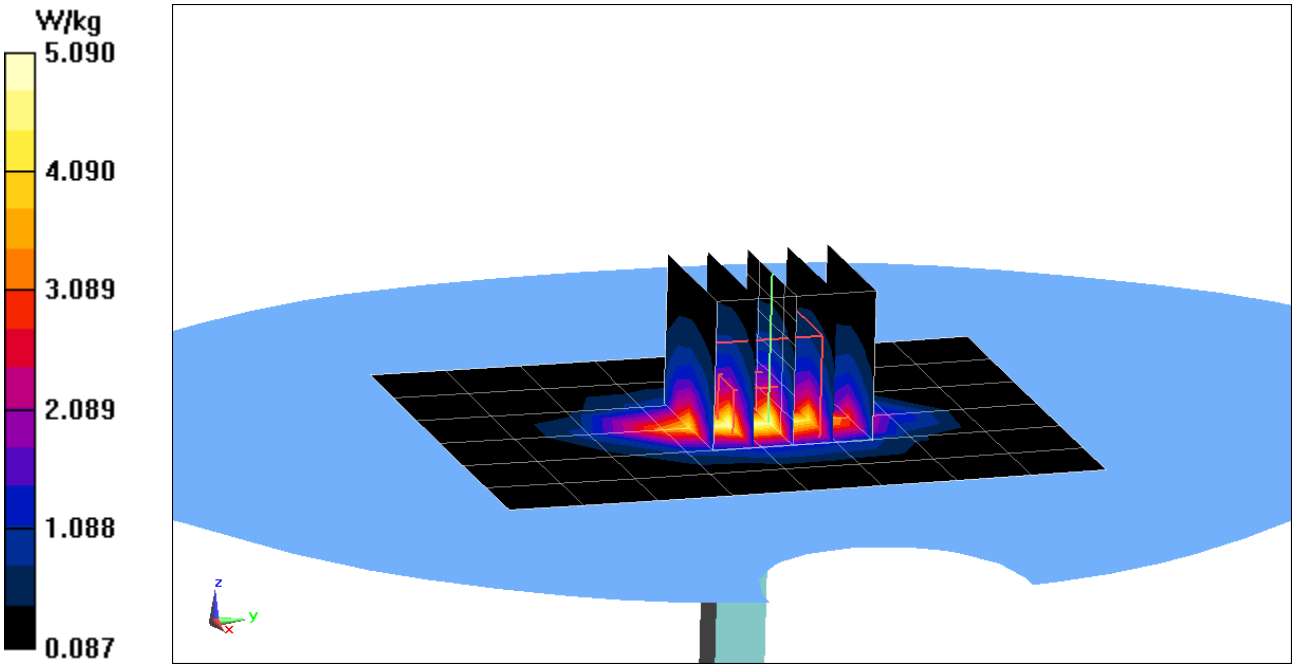
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used:
f = 1750 MHz; σ = 1.54 S/m; ε_r = 51.617; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-01-2019; Ambient Temp: 20.6°C; Tissue Temp: 20.3°C

Probe: EX3DV4 - SN7488; ConvF(8.68, 8.68, 8.68) @ 1750 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
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) = 6.13 W/kg
SAR(1 g) = 3.39 W/kg
Deviation(1 g) = -8.38%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1148

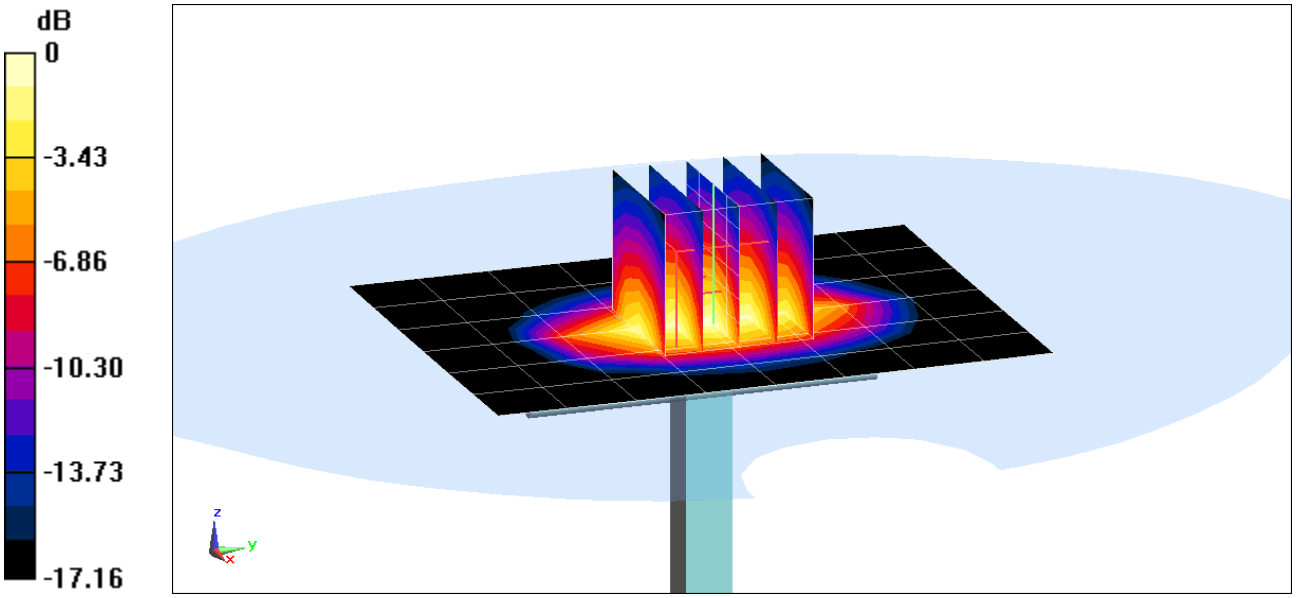
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used:
f = 1750 MHz; σ = 1.524 S/m; ε_r = 51.502; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-04-2019; Ambient Temp: 20.8°C; Tissue Temp: 19.9°C

Probe: EX3DV4 - SN7488; ConvF(8.68, 8.68, 8.68) @ 1750 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
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) = 6.64 W/kg
SAR(10 g) = 1.99 W/kg
Deviation(10 g) = 0.51%



0 dB = 5.62 W/kg = 7.50 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1765V2; Serial: 1008

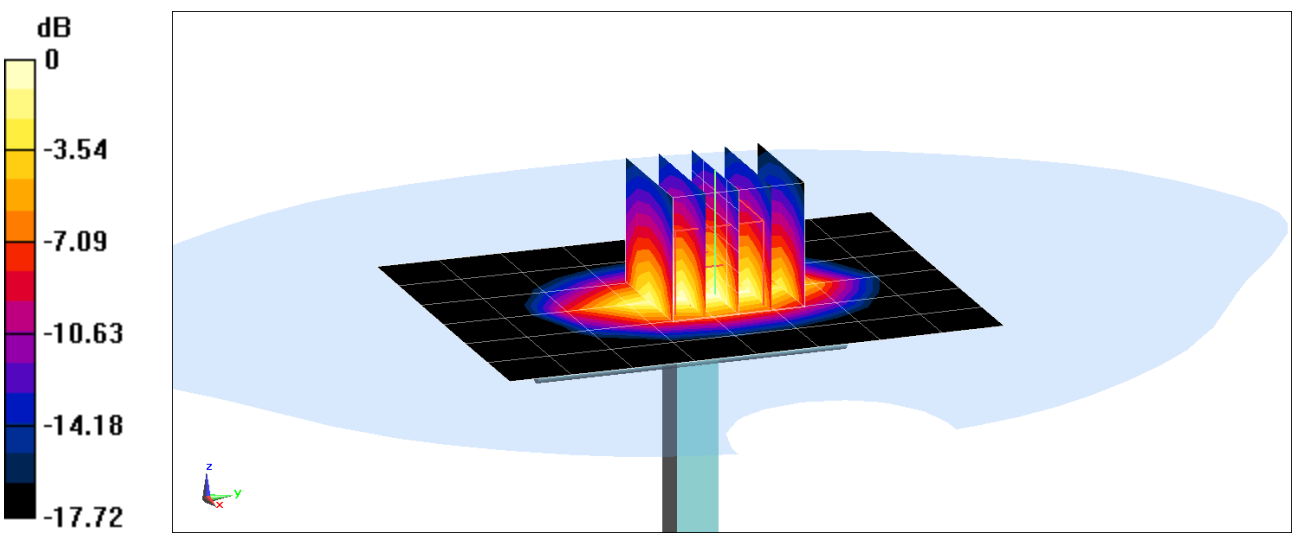
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used:
f = 1750 MHz; σ = 1.495 S/m; ε_r = 51.531; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-11-2019; Ambient Temp: 22.5°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7488; ConvF(8.68, 8.68, 8.68) @ 1750 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
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) = 6.56 W/kg
SAR(1 g) = 3.6 W/kg
Deviation(1 g) = -3.74%



0 dB = 5.49 W/kg = 7.40 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

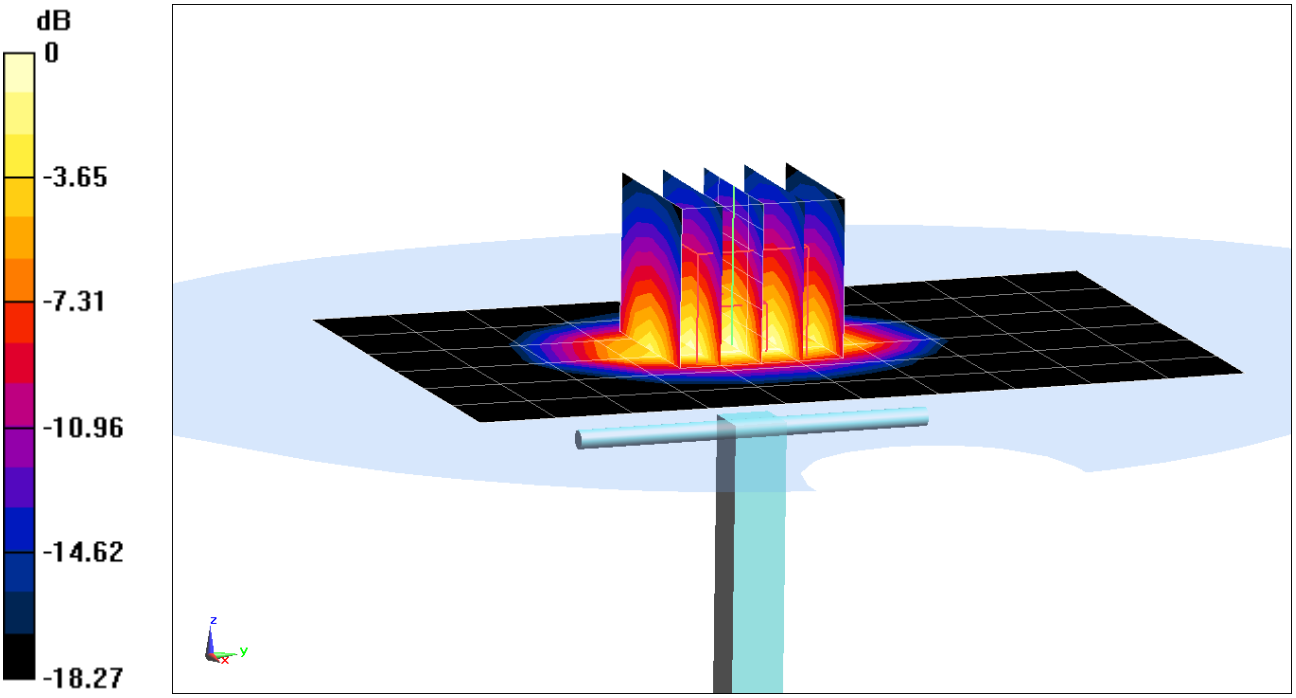
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.566 S/m; ε_r = 51.501; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-18-2019; Ambient Temp: 23.0°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7410; ConvF(7.78, 7.78, 7.78) @ 1900 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)

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) = 7.66 W/kg
SAR(1 g) = 4.05 W/kg
Deviation(1 g) = 3.32%



0 dB = 6.40 W/kg = 8.06 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):

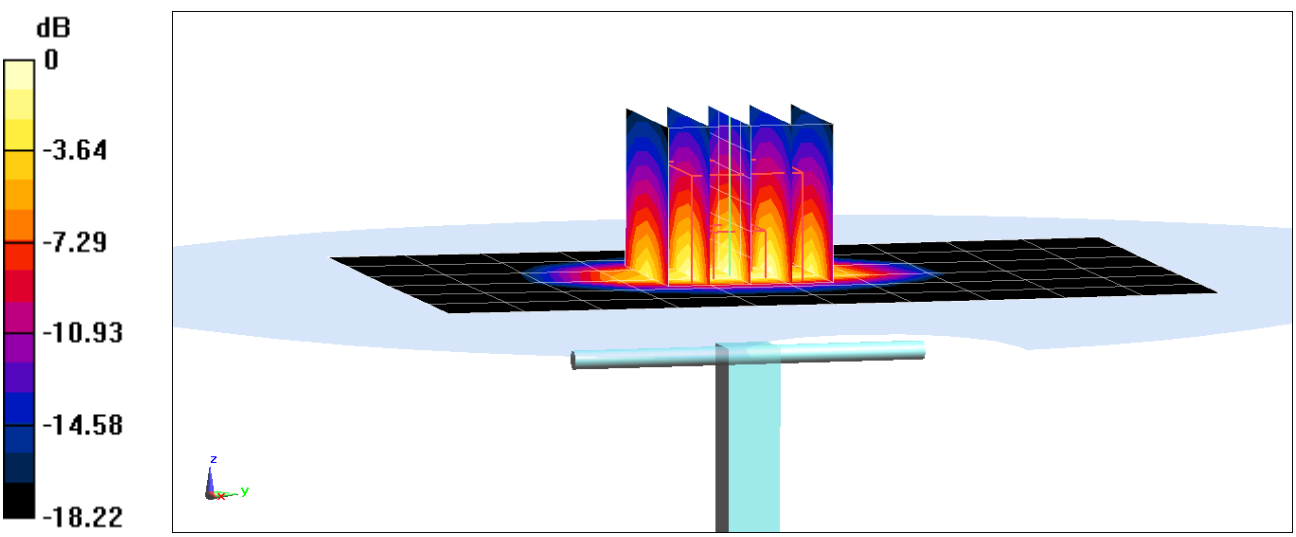
f = 1900 MHz; σ = 1.572 S/m; ε_r = 52.718; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-25-2019; Ambient Temp: 22.2°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7410; ConvF(7.78, 7.78, 7.78) @ 1900 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)

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) = 7.57 W/kg
SAR(1 g) = 4.17 W/kg
Deviation(1 g) = 6.38%



0 dB = 6.45 W/kg = 8.10 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):

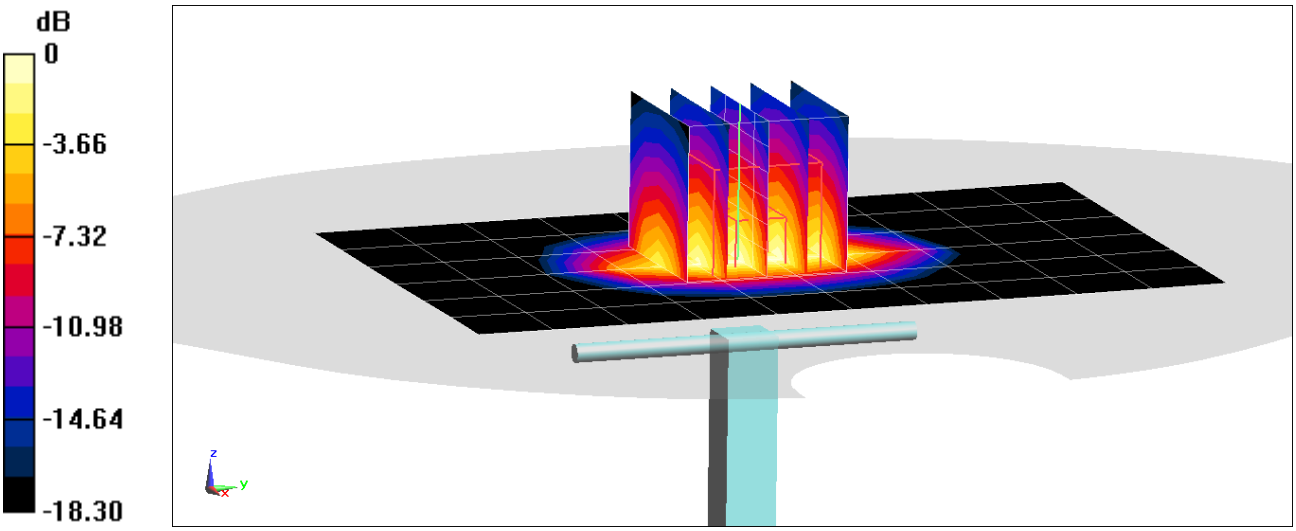
f = 1900 MHz; σ = 1.574 S/m; ε_r = 51.98; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-27-2019; Ambient Temp: 22.4°C; Tissue Temp: 22.9°C

Probe: EX3DV4 - SN7410; ConvF(7.78, 7.78, 7.78) @ 1900 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: Front; Type: QD 000 P40 CD; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.76 W/kg
SAR(1 g) = 4.22 W/kg; SAR(10g) = 2.18 W/kg
Deviation(1 g) = 7.65%; Deviation(10 g) = 5.83%



0 dB = 6.52 W/kg = 8.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

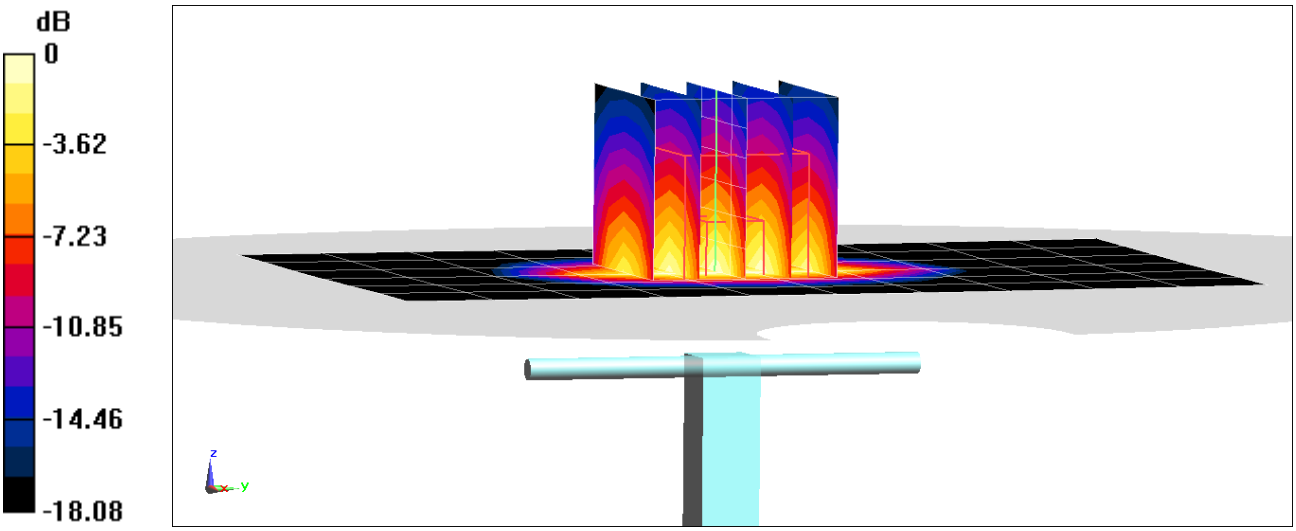
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.569 S/m; ε_r = 52.137; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-03-2019; Ambient Temp: 22.2°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN7410; ConvF(7.78, 7.78, 7.78) @ 1900 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: Front; Type: QD 000 P40 CD; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.67 W/kg
SAR(1 g) = 4.21 W/kg; SAR(10 g) = 2.18 W/kg
Deviation(1 g) = 7.40%; Deviation(10 g) = 5.83%



0 dB = 6.49 W/kg = 8.12 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

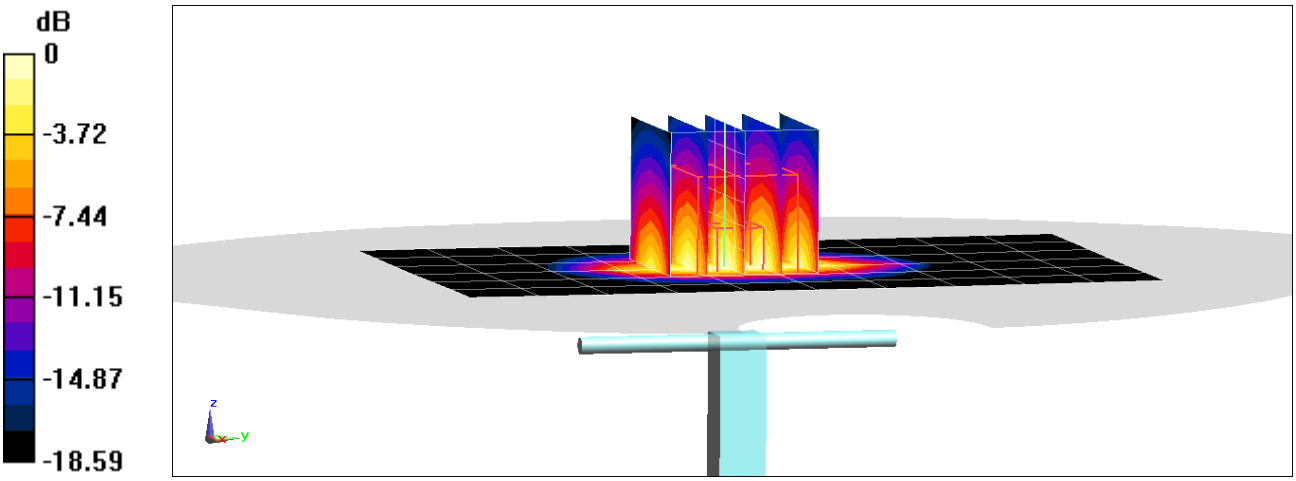
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.569 S/m; ε_r = 51.929; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-10-2019; Ambient Temp: 22.4°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7410; ConvF(7.78, 7.78, 7.78) @ 1900 MHz; Calibrated: 7/20/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2018
Phantom: Front; Type: QD 000 P40 CD; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.65 W/kg
SAR(1 g) = 4.16 W/kg
Deviation(1 g) = 5.58%



0 dB = 6.43 W/kg = 8.08 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

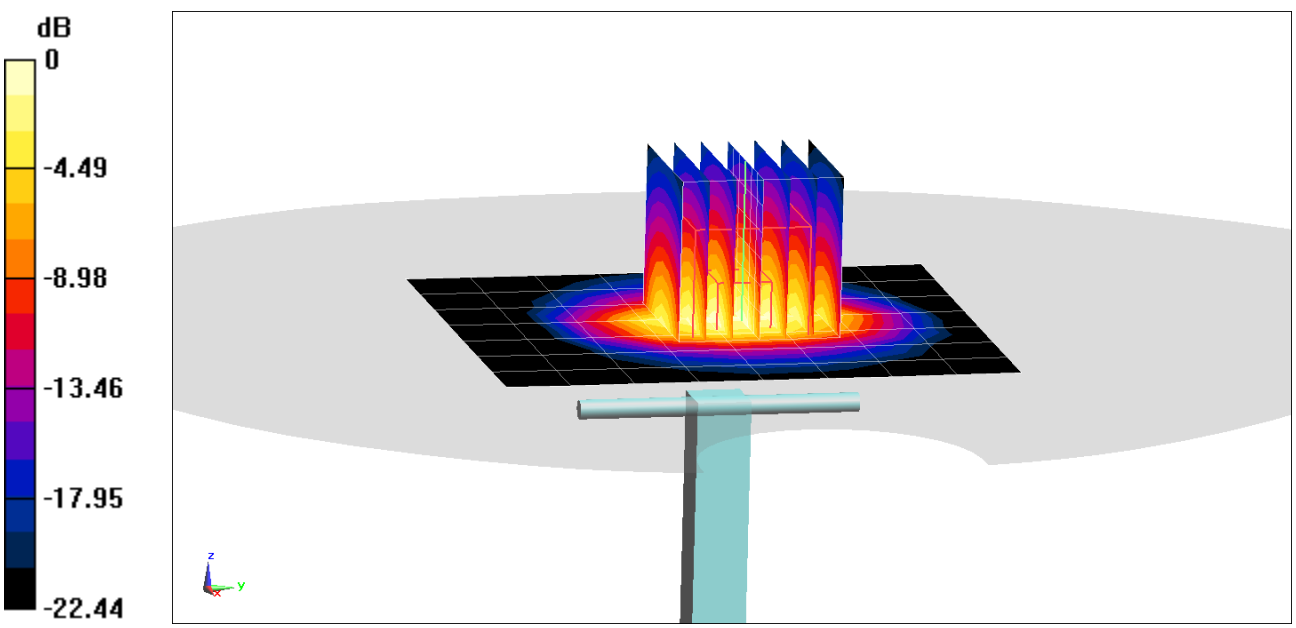
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used:
f = 2450 MHz; σ = 2.04 S/m; ε_r = 52.022; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-08-2019; Ambient Temp: 23.0°C; Tissue Temp: 22.4°C

Probe: EX3DV4 - SN7417; ConvF(7.51, 7.51, 7.51) @ 2450 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/13/2019
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.4 W/kg
SAR(1 g) = 5.06 W/kg
Deviation(1 g) = -0.98%



0 dB = 8.46 W/kg = 9.27 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1126

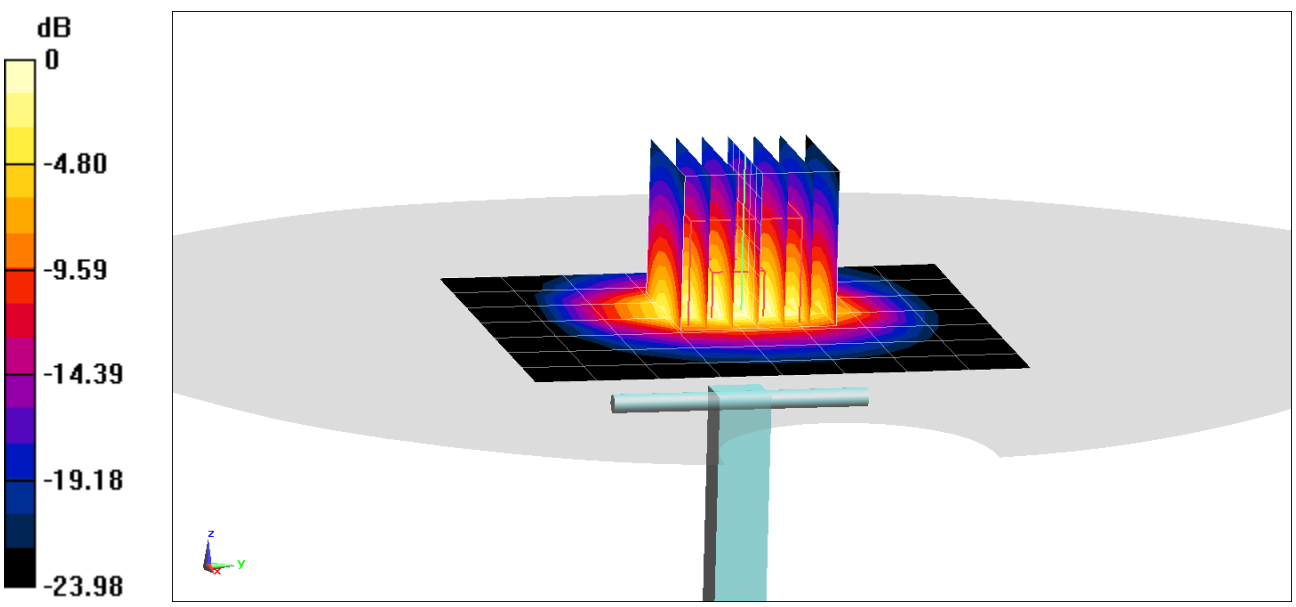
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used:
f = 2600 MHz; σ = 2.221 S/m; ε_r = 51.594; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-08-2019; Ambient Temp: 23.0°C; Tissue Temp: 22.4°C

Probe: EX3DV4 - SN7417; ConvF(7.37, 7.37, 7.37) @ 2600 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/13/2019
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7450)

2600 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.6 W/kg
SAR(1 g) = 5.36 W/kg
Deviation(1 g) = -0.92%



0 dB = 9.24 W/kg = 9.66 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191

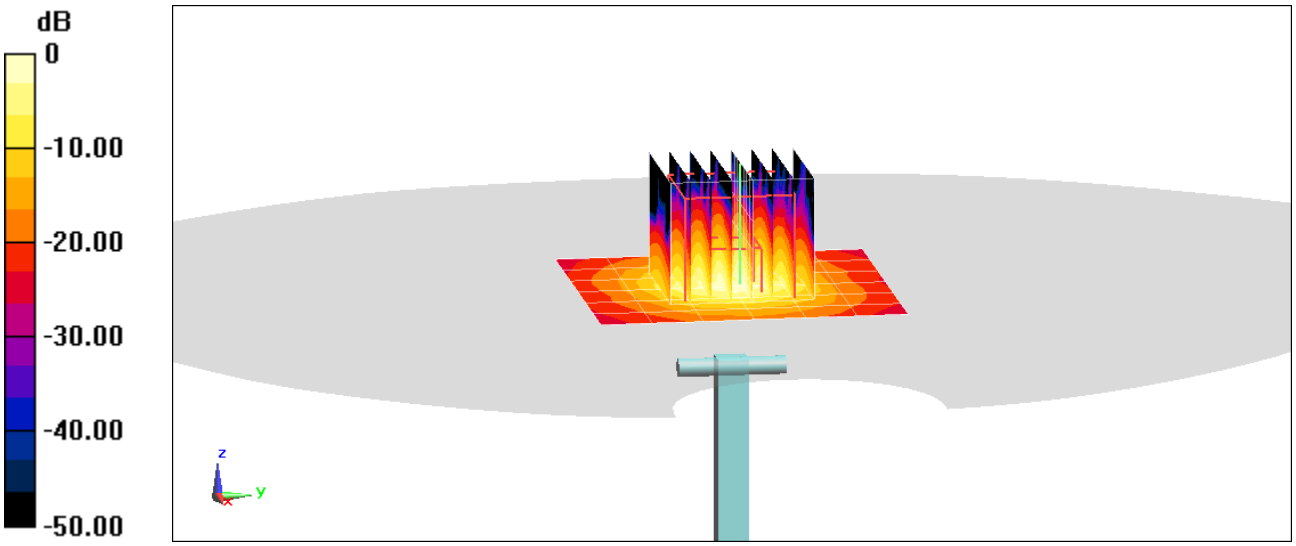
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5GHz Body Medium parameters used (interpolated):
f = 5250 MHz; σ = 5.432 S/m; ε_r = 48.752; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-25-2019; Ambient Temp: 22.8°C; Tissue Temp: 20.5°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) = 15.1 W/kg
SAR(1 g) = 3.72 W/kg; SAR(10 g) = 1.03 W/kg
Deviation(1 g) = -3.38%; Deviation(10 g) = -4.63%



0 dB = 8.65 W/kg = 9.37 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191

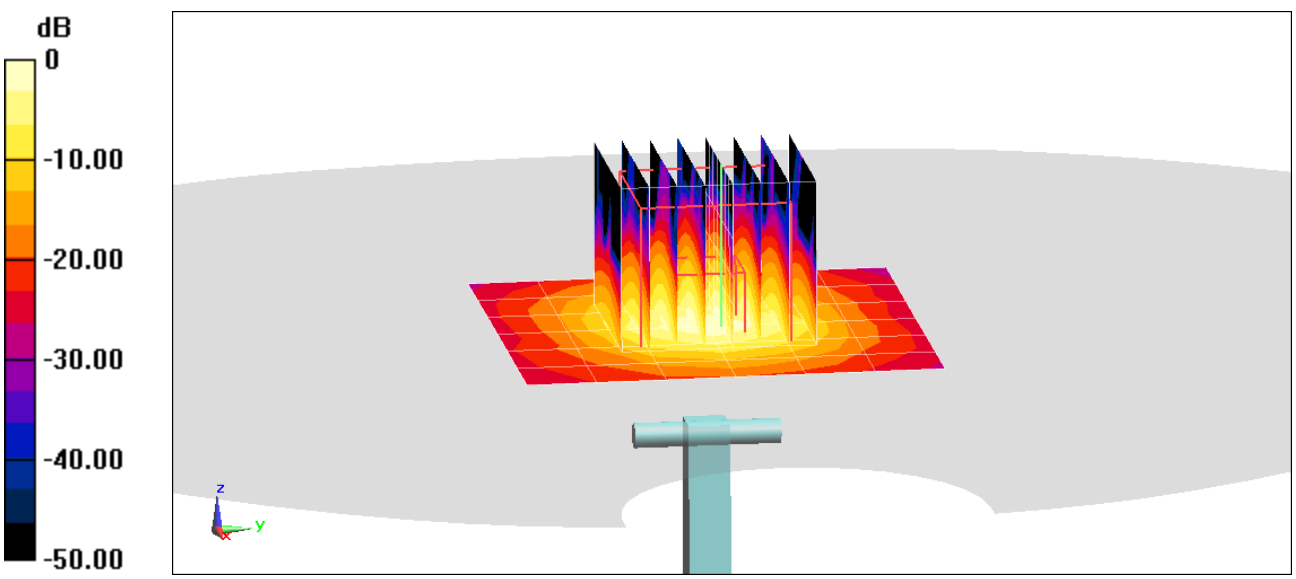
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5GHz Body Medium parameters used:
f = 5600 MHz; σ = 5.947 S/m; ε_r = 48.114; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-25-2019; Ambient Temp: 22.8°C; Tissue Temp: 20.5°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) = 17.4 W/kg
SAR(1 g) = 3.91 W/kg
Deviation(1 g) = -1.26%



0 dB = 9.45 W/kg = 9.75 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191

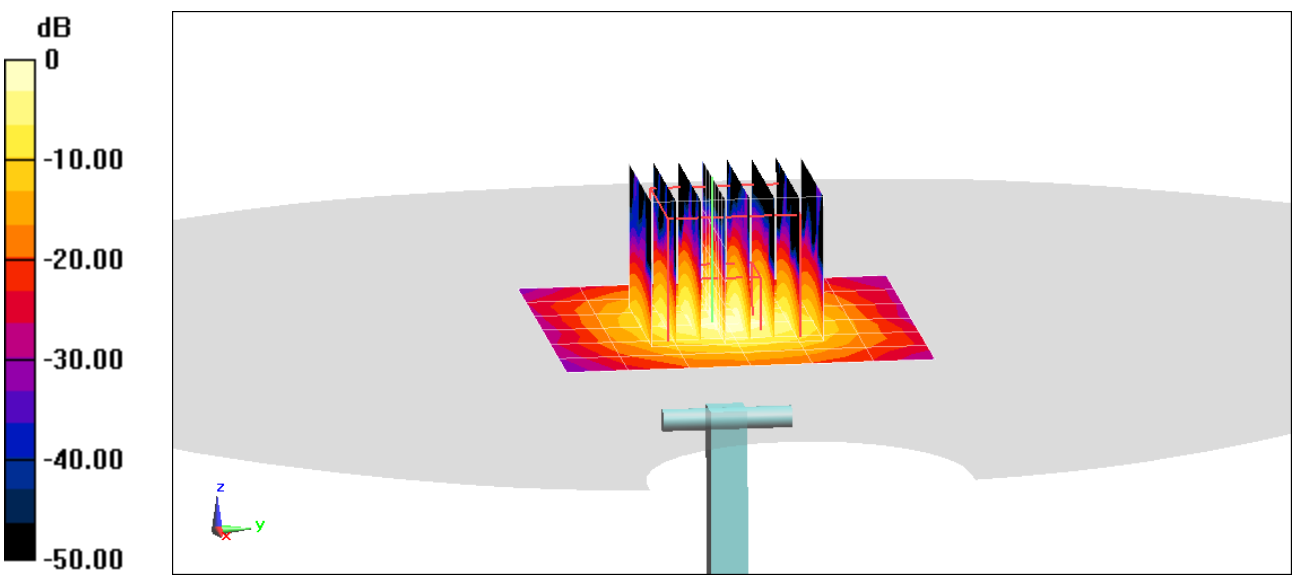
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5GHz Body Medium parameters used (interpolated):
f = 5750 MHz; σ = 6.178 S/m; ε_r = 47.843; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-25-2019; Ambient Temp: 22.8°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7308; ConvF(4.18, 4.18, 4.18) @ 5750 MHz; Calibrated: 8/23/2018
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1558; Calibrated: 10/3/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

5750 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 16.2 W/kg
SAR(1 g) = 3.5 W/kg; SAR(10 g) = 0.973 W/kg
Deviation(1 g) = -8.02%; Deviation(10 g) = -8.21%



0 dB = 8.90 W/kg = 9.49 dBW/kg

APPENDIX C: PROBE CALIBRATION

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Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **PC Test**

Certificate No: EX3-3589_Jan19

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3589
Calibration procedure(s)	QA CAL-01.v9, QA CAL-14.v5, QA CAL-23.v5, QA CAL-25.v7 Calibration procedure for dosimetric E-field probes
Calibration date:	January 25, 2019

BN ✓
02-06-2019

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-18 (No. 217-02682)	Apr-19
DAE4	SN: 660	19-Dec-18 (No. DAE4-660_Dec18)	Dec-19
Reference Probe ES3DV2	SN: 3013	31-Dec-18 (No. ES3-3013_Dec18)	Dec-19
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-18)	In house check: Jun-20
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 29, 2019

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, ", "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3589

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.44	0.40	0.39	± 10.1 %
DCP (mV)[B]	104.1	102.3	101.6	

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB√µV	C	D dB	VR mV	Max dev.	Max Unc[E] (k=2)
0	CW	X	0.00	0.00	1.00	0.00	161.0	± 2.2 %	± 4.7 %
		Y	0.00	0.00	1.00		172.8		
		Z	0.00	0.00	1.00		161.9		
10352-AAA	Pulse Waveform (200Hz, 10%)	X	15.00	89.05	22.73	10.00	60.0	± 1.8 %	± 9.6 %
		Y	15.00	87.03	21.09		60.0		
		Z	15.00	88.89	22.24		60.0		
10353-AAA	Pulse Waveform (200Hz, 20%)	X	15.00	89.55	21.62	6.99	80.0	± 0.9 %	± 9.6 %
		Y	15.00	87.28	19.70		80.0		
		Z	15.00	89.25	21.07		80.0		
10354-AAA	Pulse Waveform (200Hz, 40%)	X	15.00	91.62	21.02	3.98	95.0	± 0.9 %	± 9.6 %
		Y	15.00	87.00	17.73		95.0		
		Z	15.00	91.02	20.33		95.0		
10355-AAA	Pulse Waveform (200Hz, 60%)	X	15.00	97.72	22.56	2.22	120.0	± 1.3 %	± 9.6 %
		Y	15.00	85.70	15.52		120.0		
		Z	15.00	94.39	20.55		120.0		
10387-AAA	QPSK Waveform, 1 MHz	X	0.93	64.13	11.59	0.00	150.0	± 3.0 %	± 9.6 %
		Y	0.57	60.00	7.45		150.0		
		Z	0.83	63.49	10.36		150.0		
10388-AAA	QPSK Waveform, 10 MHz	X	2.36	68.76	16.09	0.00	150.0	± 1.5 %	± 9.6 %
		Y	1.95	66.09	14.43		150.0		
		Z	2.37	69.14	16.27		150.0		
10396-AAA	64-QAM Waveform, 100 kHz	X	3.76	72.95	19.72	3.01	150.0	± 0.7 %	± 9.6 %
		Y	3.11	69.51	18.06		150.0		
		Z	4.24	75.35	20.59		150.0		
10399-AAA	64-QAM Waveform, 40 MHz	X	3.57	67.40	15.92	0.00	150.0	± 2.7 %	± 9.6 %
		Y	3.33	66.26	15.18		150.0		
		Z	3.47	67.09	15.77		150.0		
10414-AAA	WLAN CCDF, 64-QAM, 40MHz	X	4.95	65.72	15.56	0.00	150.0	± 4.8 %	± 9.6 %
		Y	4.74	65.16	15.23		150.0		
		Z	4.81	65.57	15.48		150.0		

Note: For details on UID parameters see Appendix

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of Norm X,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3589

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $ms.V^{-2}$	T2 $ms.V^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
X	55.3	407.97	34.85	27.50	1.34	5.10	1.23	0.50	1.01
Y	46.7	357.99	37.12	21.71	1.59	5.07	0.00	0.73	1.01
Z	46.1	339.04	34.64	23.94	1.27	5.07	1.73	0.40	1.01

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-30.3
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3589

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	41.9	0.89	8.67	8.67	8.67	0.70	0.80	± 12.0 %
835	41.5	0.90	8.39	8.39	8.39	0.63	0.81	± 12.0 %
1750	40.1	1.37	7.31	7.31	7.31	0.40	0.80	± 12.0 %
1900	40.0	1.40	7.08	7.08	7.08	0.39	0.80	± 12.0 %
2300	39.5	1.67	6.77	6.77	6.77	0.31	0.85	± 12.0 %
2450	39.2	1.80	6.46	6.46	6.46	0.30	0.85	± 12.0 %
2600	39.0	1.96	6.25	6.25	6.25	0.40	0.83	± 12.0 %
3500	37.9	2.91	6.16	6.16	6.16	0.26	1.20	± 13.1 %
3700	37.7	3.12	6.02	6.02	6.02	0.26	1.20	± 13.1 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4-9 MHz, and ConvF assessed at 13 MHz is 9-19 MHz. Above 5 GHz frequency validity can be extended to ± 110 MHz.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3589

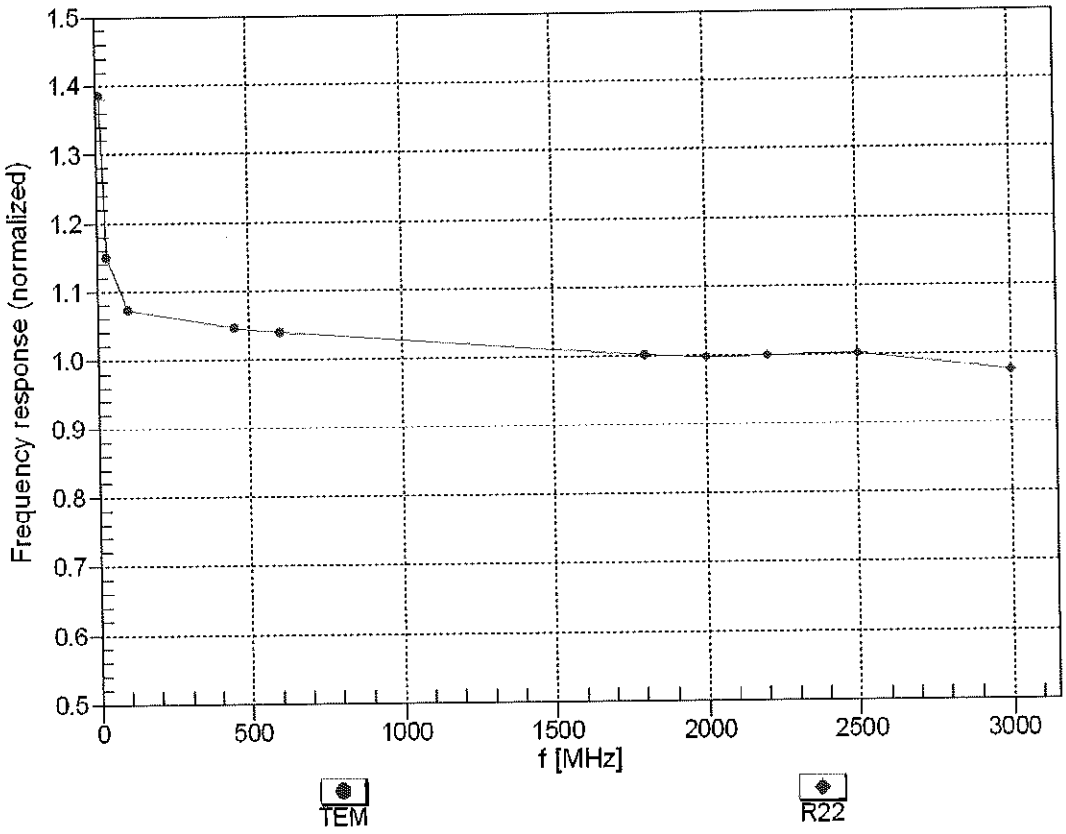
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	55.5	0.96	8.34	8.34	8.34	0.42	0.84	± 12.0 %
835	55.2	0.97	8.29	8.29	8.29	0.41	0.84	± 12.0 %
1750	53.4	1.49	6.82	6.82	6.82	0.43	0.80	± 12.0 %
1900	53.3	1.52	6.75	6.75	6.75	0.35	0.85	± 12.0 %
2300	52.9	1.81	6.71	6.71	6.71	0.36	0.87	± 12.0 %
2450	52.7	1.95	6.66	6.66	6.66	0.34	0.88	± 12.0 %
2600	52.5	2.16	6.47	6.47	6.47	0.28	0.95	± 12.0 %
3500	51.3	3.31	6.21	6.21	6.21	0.25	1.25	± 13.1 %
3700	51.0	3.55	6.13	6.13	6.13	0.20	1.25	± 13.1 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4-9 MHz, and ConvF assessed at 13 MHz is 9-19 MHz. Above 5 GHz frequency validity can be extended to ± 110 MHz.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

Frequency Response of E-Field

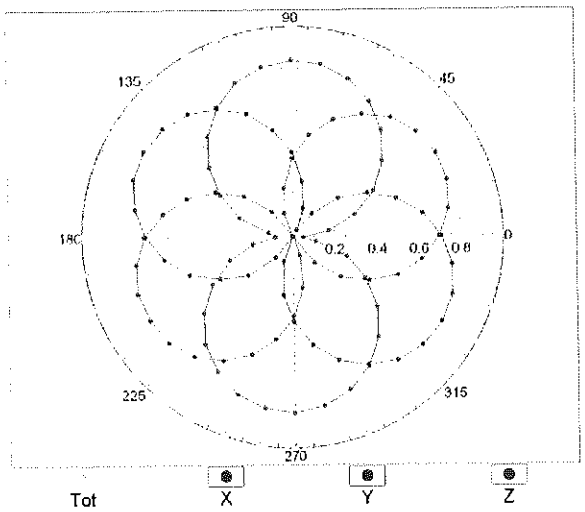
(TEM-Cell:ifi110 EXX, Waveguide: R22)



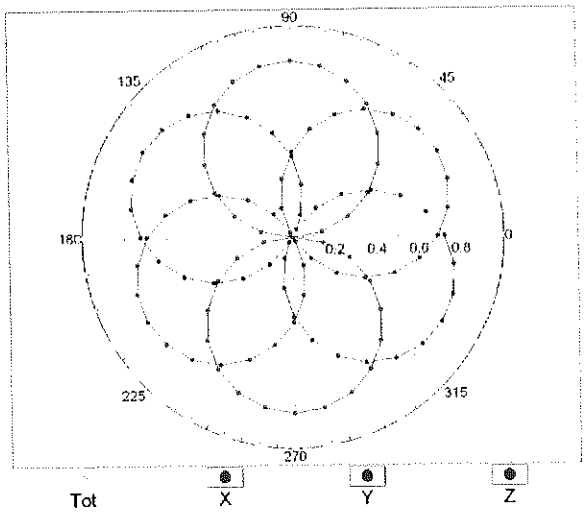
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

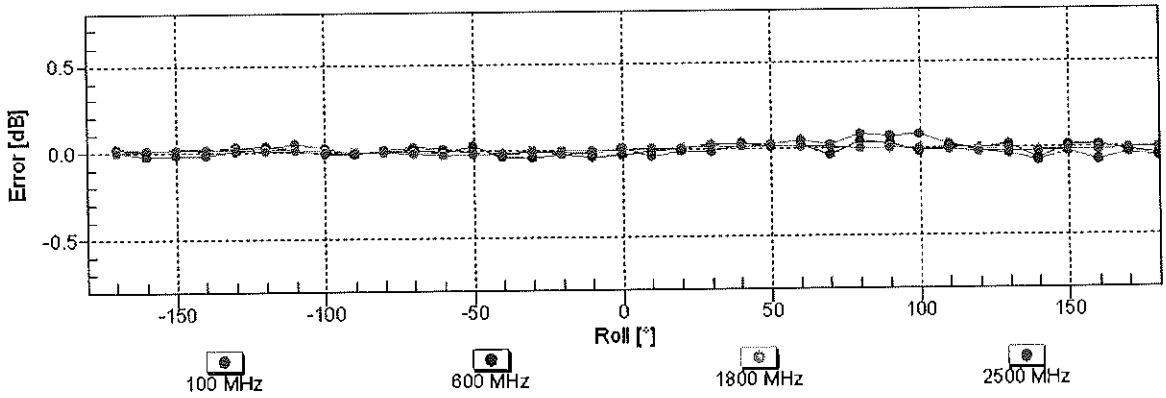
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



f=1800 MHz,R22

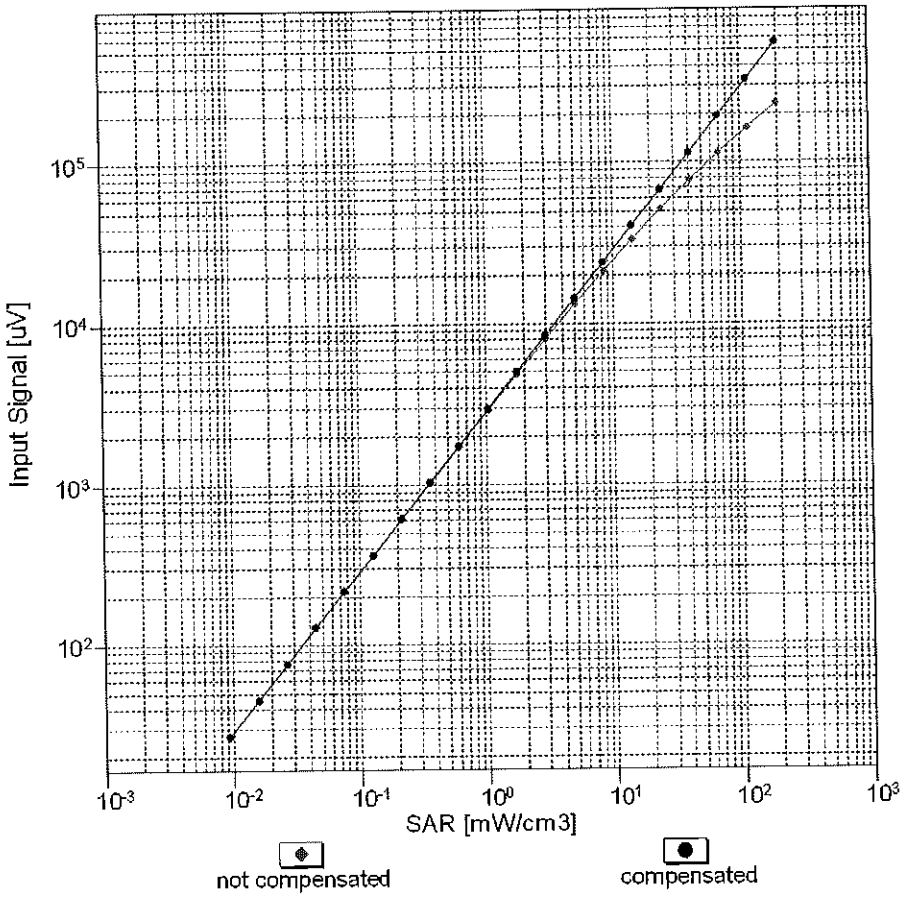


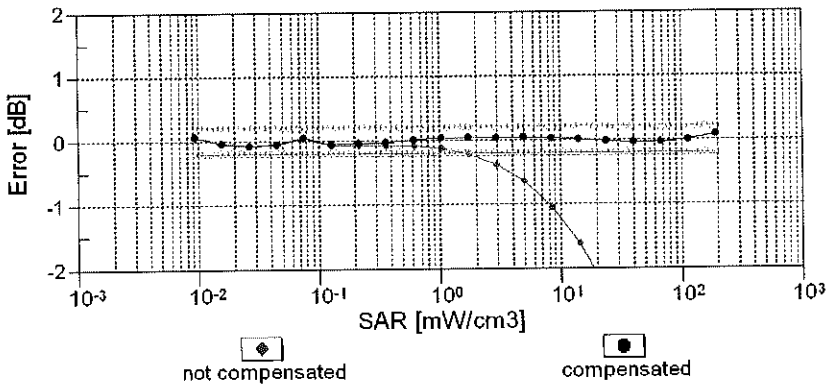


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})

(TEM cell , f_{eval}= 1900 MHz)

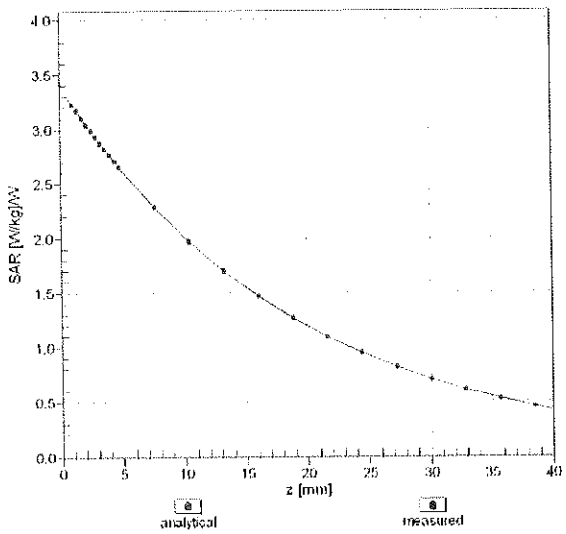




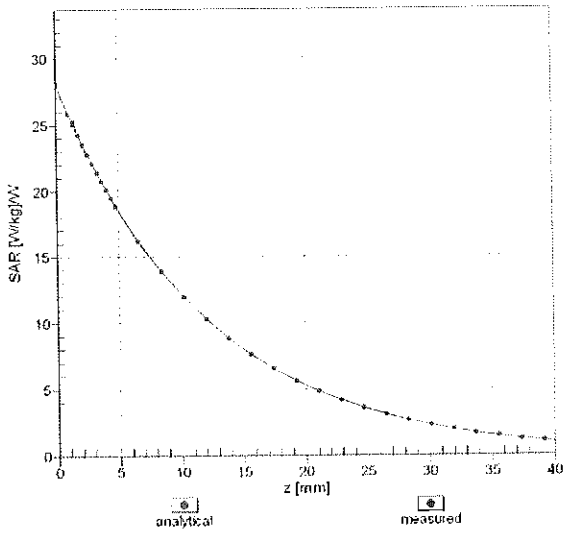
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

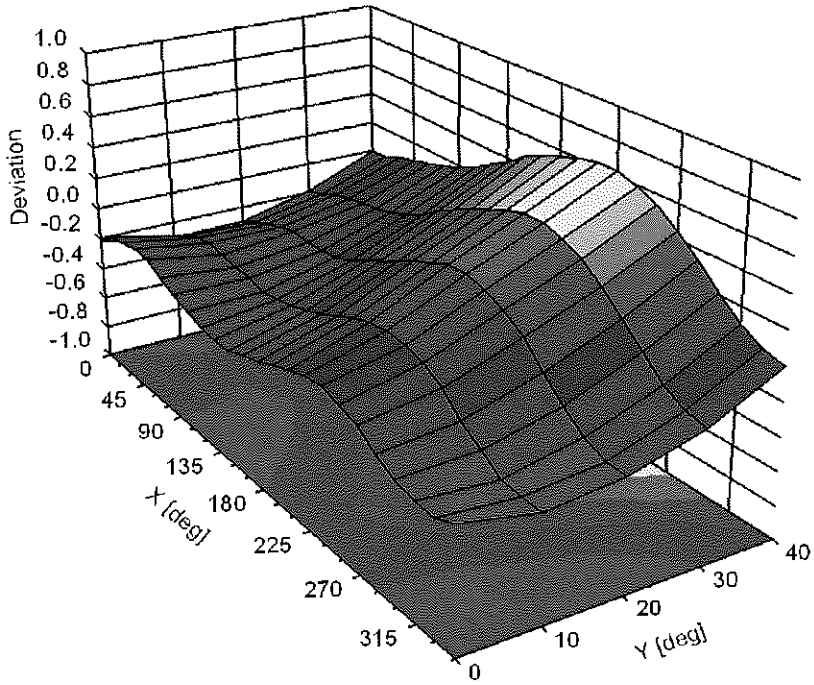


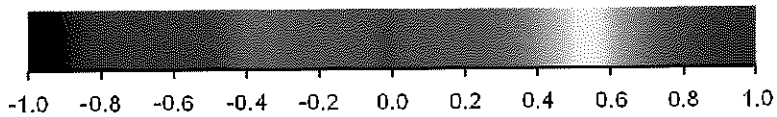
f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz





Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

Appendix: Modulation Calibration Parameters

UID	Rev	Communication System Name	Group	PAR (dB)	Unc[E] (k=2)
0		CW	CW	0.00	± 4.7 %
10010	CAA	SAR Validation (Square, 100ms, 10ms)	Test	10.00	± 9.6 %
10011	CAB	UMTS-FDD (WCDMA)	WCDMA	2.91	± 9.6 %
10012	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	WLAN	1.87	± 9.6 %
10013	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	WLAN	9.46	± 9.6 %
10021	DAC	GSM-FDD (TDMA, GMSK)	GSM	9.39	± 9.6 %
10023	DAC	GPRS-FDD (TDMA, GMSK, TN 0)	GSM	9.57	± 9.6 %
10024	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	GSM	6.56	± 9.6 %
10025	DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	GSM	12.62	± 9.6 %
10026	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	GSM	9.55	± 9.6 %
10027	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	GSM	4.80	± 9.6 %
10028	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	GSM	3.55	± 9.6 %
10029	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	GSM	7.78	± 9.6 %
10030	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	Bluetooth	5.30	± 9.6 %
10031	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	Bluetooth	1.87	± 9.6 %
10032	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	Bluetooth	1.16	± 9.6 %
10033	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	Bluetooth	7.74	± 9.6 %
10034	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	Bluetooth	4.53	± 9.6 %
10035	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	Bluetooth	3.83	± 9.6 %
10036	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	Bluetooth	8.01	± 9.6 %
10037	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	Bluetooth	4.77	± 9.6 %
10038	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	Bluetooth	4.10	± 9.6 %
10039	CAB	CDMA2000 (1xRTT, RC1)	CDMA2000	4.57	± 9.6 %
10042	CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	AMPS	7.78	± 9.6 %
10044	CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	AMPS	0.00	± 9.6 %
10048	CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	DECT	13.80	± 9.6 %
10049	CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	DECT	10.79	± 9.6 %
10056	CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	TD-SCDMA	11.01	± 9.6 %
10058	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	GSM	6.52	± 9.6 %
10059	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	WLAN	2.12	± 9.6 %
10060	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	WLAN	2.83	± 9.6 %
10061	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	WLAN	3.60	± 9.6 %
10062	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	WLAN	8.68	± 9.6 %
10063	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	WLAN	8.63	± 9.6 %
10064	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	WLAN	9.09	± 9.6 %
10065	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	WLAN	9.00	± 9.6 %
10066	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	WLAN	9.38	± 9.6 %
10067	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	WLAN	10.12	± 9.6 %
10068	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	WLAN	10.24	± 9.6 %
10069	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	WLAN	10.56	± 9.6 %
10071	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	WLAN	9.83	± 9.6 %
10072	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	WLAN	9.62	± 9.6 %
10073	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	WLAN	9.94	± 9.6 %
10074	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	WLAN	10.30	± 9.6 %
10075	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	WLAN	10.77	± 9.6 %
10076	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	WLAN	10.94	± 9.6 %
10077	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	WLAN	11.00	± 9.6 %
10081	CAB	CDMA2000 (1xRTT, RC3)	CDMA2000	3.97	± 9.6 %
10082	CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	AMPS	4.77	± 9.6 %
10090	DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	GSM	6.56	± 9.6 %
10097	CAB	UMTS-FDD (HSDPA)	WCDMA	3.98	± 9.6 %
10098	CAB	UMTS-FDD (HSUPA, Subtest 2)	WCDMA	3.98	± 9.6 %
10099	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	GSM	9.55	± 9.6 %
10100	CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	LTE-FDD	5.67	± 9.6 %
10101	CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE-FDD	6.42	± 9.6 %
10102	CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	LTE-FDD	6.60	± 9.6 %
10103	CAG	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	LTE-TDD	9.29	± 9.6 %
10104	CAG	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE-TDD	9.97	± 9.6 %
10105	CAG	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	LTE-TDD	10.01	± 9.6 %
10108	CAG	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	LTE-FDD	5.80	± 9.6 %

10109	CAG	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	LTE-FDD	6.43	± 9.6 %
10110	CAG	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	LTE-FDD	5.75	± 9.6 %
10111	CAG	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	LTE-FDD	6.44	± 9.6 %
10112	CAG	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	LTE-FDD	6.59	± 9.6 %
10113	CAG	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	LTE-FDD	6.62	± 9.6 %
10114	CAC	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	WLAN	8.10	± 9.6 %
10115	CAC	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	WLAN	8.46	± 9.6 %
10116	CAC	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	WLAN	8.15	± 9.6 %
10117	CAC	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	WLAN	8.07	± 9.6 %
10118	CAC	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	WLAN	8.59	± 9.6 %
10119	CAC	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	WLAN	8.13	± 9.6 %
10140	CAE	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	LTE-FDD	6.49	± 9.6 %
10141	CAE	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	LTE-FDD	6.53	± 9.6 %
10142	CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10143	CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	LTE-FDD	6.35	± 9.6 %
10144	CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	LTE-FDD	6.65	± 9.6 %
10145	CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	LTE-FDD	5.76	± 9.6 %
10146	CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	LTE-FDD	6.41	± 9.6 %
10147	CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.72	± 9.6 %
10149	CAE	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	LTE-FDD	6.42	± 9.6 %
10150	CAE	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	LTE-FDD	6.60	± 9.6 %
10151	CAG	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	LTE-TDD	9.28	± 9.6 %
10152	CAG	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	LTE-TDD	9.92	± 9.6 %
10153	CAG	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	LTE-TDD	10.05	± 9.6 %
10154	CAG	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	LTE-FDD	5.75	± 9.6 %
10155	CAG	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	LTE-FDD	6.43	± 9.6 %
10156	CAG	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	LTE-FDD	5.79	± 9.6 %
10157	CAG	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	LTE-FDD	6.49	± 9.6 %
10158	CAG	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	LTE-FDD	6.62	± 9.6 %
10159	CAG	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	LTE-FDD	6.56	± 9.6 %
10160	CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	LTE-FDD	5.82	± 9.6 %
10161	CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	LTE-FDD	6.43	± 9.6 %
10162	CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	LTE-FDD	6.58	± 9.6 %
10166	CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	LTE-FDD	5.46	± 9.6 %
10167	CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	LTE-FDD	6.21	± 9.6 %
10168	CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.79	± 9.6 %
10169	CAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10170	CAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10171	AAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	LTE-FDD	6.49	± 9.6 %
10172	CAG	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	LTE-TDD	9.21	± 9.6 %
10173	CAG	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10174	CAG	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10175	CAG	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	LTE-FDD	5.72	± 9.6 %
10176	CAG	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10177	CAI	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10178	CAG	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10179	CAG	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %
10180	CAG	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %
10181	CAE	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	LTE-FDD	5.72	± 9.6 %
10182	CAE	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10183	AAD	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %
10184	CAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10185	CAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	LTE-FDD	6.51	± 9.6 %
10186	AAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %
10187	CAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10188	CAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10189	AAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %
10193	CAC	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	WLAN	8.09	± 9.6 %
10194	CAC	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	WLAN	8.12	± 9.6 %
10195	CAC	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	WLAN	8.21	± 9.6 %
10196	CAC	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	WLAN	8.10	± 9.6 %
10197	CAC	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	WLAN	8.13	± 9.6 %
10198	CAC	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	WLAN	8.27	± 9.6 %
10219	CAC	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	WLAN	8.03	± 9.6 %

10220	CAC	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	WLAN	8.13	± 9.6 %
10221	CAC	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	WLAN	8.27	± 9.6 %
10222	CAC	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	WLAN	8.06	± 9.6 %
10223	CAC	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	WLAN	8.48	± 9.6 %
10224	CAC	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	WLAN	8.08	± 9.6 %
10225	CAB	UMTS-FDD (HSPA+)	WCDMA	5.97	± 9.6 %
10226	CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	LTE-TDD	9.49	± 9.6 %
10227	CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	LTE-TDD	10.26	± 9.6 %
10228	CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	LTE-TDD	9.22	± 9.6 %
10229	CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10230	CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10231	CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	LTE-TDD	9.19	± 9.6 %
10232	CAF	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10233	CAF	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10234	CAF	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	LTE-TDD	9.21	± 9.6 %
10235	CAF	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10236	CAF	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10237	CAF	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	LTE-TDD	9.21	± 9.6 %
10238	CAF	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10239	CAF	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10240	CAF	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	LTE-TDD	9.21	± 9.6 %
10241	CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	LTE-TDD	9.82	± 9.6 %
10242	CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	LTE-TDD	9.86	± 9.6 %
10243	CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	LTE-TDD	9.46	± 9.6 %
10244	CAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	LTE-TDD	10.06	± 9.6 %
10245	CAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	LTE-TDD	10.06	± 9.6 %
10246	CAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	LTE-TDD	9.30	± 9.6 %
10247	CAF	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	LTE-TDD	9.91	± 9.6 %
10248	CAF	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	LTE-TDD	10.09	± 9.6 %
10249	CAF	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	LTE-TDD	9.29	± 9.6 %
10250	CAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	LTE-TDD	9.81	± 9.6 %
10251	CAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	LTE-TDD	10.17	± 9.6 %
10252	CAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	LTE-TDD	9.24	± 9.6 %
10253	CAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	LTE-TDD	9.90	± 9.6 %
10254	CAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	LTE-TDD	10.14	± 9.6 %
10255	CAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	LTE-TDD	9.20	± 9.6 %
10256	CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	LTE-TDD	9.96	± 9.6 %
10257	CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	LTE-TDD	10.08	± 9.6 %
10258	CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	LTE-TDD	9.34	± 9.6 %
10259	CAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	LTE-TDD	9.98	± 9.6 %
10260	CAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	LTE-TDD	9.97	± 9.6 %
10261	CAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	LTE-TDD	9.24	± 9.6 %
10262	CAF	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	LTE-TDD	9.83	± 9.6 %
10263	CAF	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	LTE-TDD	10.16	± 9.6 %
10264	CAF	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	LTE-TDD	9.23	± 9.6 %
10265	CAF	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	LTE-TDD	9.92	± 9.6 %
10266	CAF	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	LTE-TDD	10.07	± 9.6 %
10267	CAF	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	LTE-TDD	9.30	± 9.6 %
10268	CAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	LTE-TDD	10.06	± 9.6 %
10269	CAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	LTE-TDD	10.13	± 9.6 %
10270	CAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	LTE-TDD	9.58	± 9.6 %
10274	CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	WCDMA	4.87	± 9.6 %
10275	CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	WCDMA	3.96	± 9.6 %
10277	CAA	PHS (QPSK)	PHS	11.81	± 9.6 %
10278	CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	PHS	11.81	± 9.6 %
10279	CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	PHS	12.18	± 9.6 %
10290	AAB	CDMA2000, RC1, SO55, Full Rate	CDMA2000	3.91	± 9.6 %
10291	AAB	CDMA2000, RC3, SO55, Full Rate	CDMA2000	3.46	± 9.6 %
10292	AAB	CDMA2000, RC3, SO32, Full Rate	CDMA2000	3.39	± 9.6 %
10293	AAB	CDMA2000, RC3, SO3, Full Rate	CDMA2000	3.50	± 9.6 %
10295	AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	CDMA2000	12.49	± 9.6 %
10297	AAD	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	LTE-FDD	5.81	± 9.6 %
10298	AAD	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	LTE-FDD	5.72	± 9.6 %
10299	AAD	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	LTE-FDD	6.39	± 9.6 %