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SAR EVALUATION REPORT

Applicant Name:
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Date of Testing:
06/14/15 – 07/13/15
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
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FCC ID: **A3LSMG928I**

APPLICANT: **SAMSUNG ELECTRONICS, CO. LTD.**

DUT Type: Portable Handset
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model(s): SM-G928I

Equipment Class	Band & Mode	Tx Frequency	SAR			
			1 gm Head (W/kg)	1 gm Body-Worn (W/kg)	1 gm Hotspot (W/kg)	10 gm Extremity (W/kg)
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	< 0.1	0.16	0.39	
PCE	UMTS 850	826.40 - 846.60 MHz	0.22	0.58	0.58	
PCE	UMTS 1750	1712.4 - 1752.5 MHz	< 0.1	0.72	0.60	2.98
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	< 0.1	0.27	0.41	
PCE	UMTS 1900	1852.4 - 1907.6 MHz	< 0.1	0.24	0.67	1.72
PCE	LTE Band 12	699.7 - 715.3 MHz	0.17	0.78	0.78	
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.28	0.60	0.61	
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	0.18	0.47	0.15	
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	< 0.1	0.84	0.90	
DTS	2.4 GHz WLAN	2412 - 2472 MHz	0.43	0.23	0.26	
NII	U-NII-1	5180 - 5240 MHz				
NII	U-NII-2A	5260 - 5320 MHz	0.33	< 0.1		0.56
NII	U-NII-2C	5500 - 5720 MHz	0.49	< 0.1		0.42
NII	U-NII-3	5745 - 5825 MHz	0.43	< 0.1	0.10	
DSS/DTS	Bluetooth	2402 - 2480 MHz	N/A			
Simultaneous SAR per KDB 690783 D01v01r03:			1.19	1.19	1.29	3.68

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

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

Randy Ortanez
President

The SAR Tick is an initiative of the Mobile Manufacturers Forum (MMF). While a product may be considered eligible, use of the SAR Tick logo requires an agreement with the MMF. Further details can be obtained by emailing: SARTICK@MMFAI.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
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.5 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
LTE Band 12	Voice/Data	699.7 - 715.3 MHz
LTE Band 17	Voice/Data	706.5 - 713.5 MHz
LTE Band 26 (Cell)	Voice/Data	814.7 - 848.3 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 848.3 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
2.4 GHz WLAN	Data	2412 - 2472 MHz
U-NII-1	Data	5180 - 5240 MHz
U-NII-2A	Data	5260 - 5320 MHz
U-NII-2C	Data	5500 - 5720 MHz
U-NII-3	Data	5745 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz
MST	Data	1 - 8.3 kHz
ANT+	Data	2402 - 2480 MHz

1.2 Power Reduction for SAR

This device utilizes independent power reduction mechanisms for SAR compliance for the licensed transmitter and the WLAN transmitter. For the main transmitter, the device utilizes power reduction for some exposure and use conditions as outlined in Section 1.3. Additionally, this device uses an independent single-step 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. The reduced powers for the power reduction mechanisms were confirmed via conducted power measurements at the RF port (See Section 9). Detailed descriptions of the mechanisms 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 D01v05.

1.3.1 Maximum PCE Power

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slot	*1 TX Slots*	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*	*1 TX Slots*	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*
GSM/GPRS/EDGE 850	Maximum	**33.5**	**33.5**	**32.0**	**30.5**	**29.0**	**27.5**	**26.2**	**24.6**	**23.0**
	Nominal	**33.0**	**33.0**	**31.5**	**30.0**	**28.5**	**27.0**	**25.7**	**24.1**	**22.5**
GSM/GPRS/EDGE 1900	Maximum	**30.5**	**30.5**	**29.0**	**27.0**	**25.5**	**26.7**	**25.0**	**24.0**	**23.0**
	Nominal	**30.0**	**30.0**	**28.5**	**26.5**	**25.0**	**26.2**	**24.5**	**23.5**	**22.5**

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA Rel 99	*3GPP HSDPA Rel 5*	*3GPP HSUPA Rel 6*	*3GPP DC-HSDPA Rel 8*
UMTS Band 5 (850 MHz)	Maximum	**23.5**	**23.5**	**23.5**	**23.5**
	Nominal	**23.0**	**23.0**	**23.0**	**23.0**
UMTS Band 4 (1750 MHz)	Maximum	**22.5**	**22.5**	**22.5**	**22.5**
	Nominal	**22.0**	**22.0**	**22.0**	**22.0**
UMTS Band 2 (1900 MHz)	Maximum	**23.5**	**23.5**	**23.5**	**23.5**
	Nominal	**23.0**	**23.0**	**23.0**	**23.0**

Mode / Band		Modulated Average (dBm)
LTE Band 12	Maximum	**24.5**
	Nominal	**24.0**
LTE Band 17	Maximum	**24.5**
	Nominal	**24.0**
LTE Band 26 (Cell)	Maximum	**24.5**
	Nominal	**24.0**
LTE Band 5 (Cell)	Maximum	**24.5**
	Nominal	**24.0**
LTE Band 4 (AWS)	Maximum	**22.5**
	Nominal	**22.0**
LTE Band 2 (PCS)	Maximum	**24.5**
	Nominal	**24.0**

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1.3.2 WLAN Maximum Output Powers

Mode / Band		Modulated Average - Single Tx Chain (dBm)			Modulated Average - MIMO (dBm)	
		Ant 1 & Ant 2	Ant 1	Ant 2		
		Channel 1-11	Channels 12-13	Channels 12-13	Channels 1-11	Channels 12-13
IEEE 802.11b (2.4 GHz)	Maximum	**17.5**	**6.5**	**2.5**		
	Nominal	**17.0**	**6.0**	**2.0**		
IEEE 802.11g (2.4 GHz)	Maximum	**14.5**	**2.5**	**3.0**		
	Nominal	**14.0**	**2.0**	**2.5**		
IEEE 802.11n (2.4 GHz)	Maximum	**13.5**	**2.5**	**2.5**	**16.5**	**5.5**
	Nominal	**13.0**	**2.0**	**2.0**	**16.0**	**5.0**

Mode / Band		Modulated Average - Single Tx Chain (dBm)			
	Bandwidth	20 MHz	40 MHz	80 MHz	
IEEE 802.11a (5 GHz)	Maximum	**13.5**			
	Nominal	**13.0**			
IEEE 802.11n (5 GHz)	Maximum	**13.5**	**12.5**		
	Nominal	**13.0**	**12.0**		
IEEE 802.11ac (5 GHz)	Maximum	**12.5**	**12.5**	**11.5**	
	Nominal	**12.0**	**12.0**	**11.0**	

Mode / Band		Modulated Average - MIMO (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11n (5 GHz)	Maximum	**16.5**	**15.5**	
	Nominal	**16.0**	**15.0**	
IEEE 802.11ac (5 GHz)	Maximum	**15.5**	**15.5**	**14.5**
	Nominal	**15.0**	**15.0**	**14.0**

Mode/Band		Modulated Average (dBm)
Bluetooth	Maximum	**12.0**
	Nominal	**11.5**
Bluetooth LE	Maximum	**9.0**
	Nominal	**8.5**

1.3.3 WLAN Reduced Output Powers

Mode / Band		Modulated Average - Single Tx Chain (dBm)			Modulated Average - MIMO (dBm)	
		Ant 1 & Ant 2	Ant 1	Ant 2		
		Channel 1-11	Channels 12-13	Channels 12-13	Channels 1-11	Channels 12-13
IEEE 802.11b (2.4 GHz)	Maximum	**14.5**	**6.5**	**2.5**		
	Nominal	**14.0**	**6.0**	**2.0**		
IEEE 802.11g (2.4 GHz)	Maximum	**11.5**	**2.5**	**3.0**		
	Nominal	**11.0**	**2.0**	**2.5**		
IEEE 802.11n (2.4 GHz)	Maximum	**10.5**	**2.5**	**2.5**	**13.5**	**5.5**
	Nominal	**10.0**	**2.0**	**2.0**	**13.0**	**5.0**

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Mode / Band		Modulated Average - Single Tx Chain (dBm)		
	Bandwidth	20 MHz	40 MHz	80 MHz
IEEE 802.11a (5 GHz)	Maximum	**10.5**		
	Nominal	**10.0**		
IEEE 802.11n (5 GHz)	Maximum	**10.5**	**9.5**	
	Nominal	**10.0**	**9.0**	
IEEE 802.11ac (5 GHz)	Maximum	**9.5**	**9.5**	**8.5**
	Nominal	**9.0**	**9.0**	**8.0**

Mode / Band		Modulated Average - MIMO (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11n (5 GHz)	Maximum	**13.5**	**12.5**	
	Nominal	**13.0**	**12.0**	
IEEE 802.11ac (5 GHz)	Maximum	**12.5**	**12.5**	**11.5**
	Nominal	**12.0**	**12.0**	**11.0**

1.3.4 Reduced PCE Power – Power Reduction Active – Hotspot

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA Rel 99	*3GPP HSDPA Rel 5*	*3GPP HSUPA Rel 6*	*3GPP DC-HSDPA Rel 8*
UMTS Band 4 (1750 MHz)	Maximum	**19.0**	**19.0**	**19.0**	**19.0**
	Nominal	**18.5**	**18.5**	**18.5**	**18.5**
UMTS Band 2 (1900 MHz)	Maximum	**19.5**	**19.5**	**19.5**	**19.5**
	Nominal	**19.0**	**19.0**	**19.0**	**19.0**

Mode / Band		Modulated Average (dBm)
LTE Band 4 (AWS)	Maximum	**18.5**
	Nominal	**18.0**

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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	Yes	Yes
UMTS 850	Yes	Yes	No	Yes	Yes	Yes
UMTS 1750	Yes	Yes	No	Yes	Yes	Yes
GPRS 1900	Yes	Yes	No	Yes	Yes	Yes
UMTS 1900	Yes	Yes	No	Yes	Yes	Yes
LTE Band 12	Yes	Yes	No	Yes	Yes	Yes
LTE Band 26 (Cell)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 4 (AWS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 2 (PCS)	Yes	Yes	No	Yes	Yes	Yes
2.4 GHz WLAN	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN	Yes	Yes	Yes	No	No	Yes

Note: Particular DUT edges were not required to be evaluated for Wireless Router SAR or Extremity SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v02 guidance, page 2 and FCC KDB 648474 D04v01r02. The distances between the transmit antennas and the edges of the device are included in the filing. When wireless router mode is enabled, U-NII-1, U-NII-2A and U-NII-2C WLAN operations are disabled.

1.5 Near Field Communications (NFC) Antenna

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

1.6 Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D05v01, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds. Possible transmission paths for the DUT are shown in Figure 1-1 and are color-coded to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.

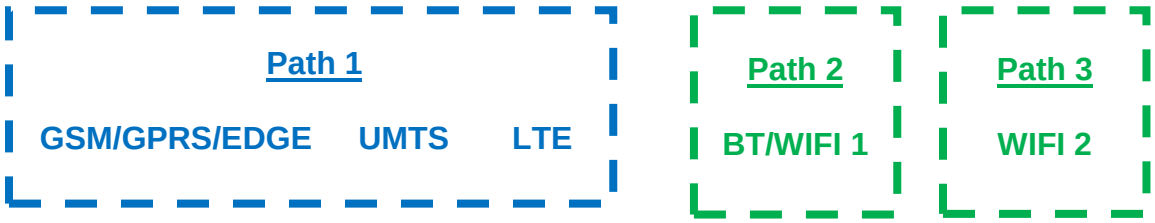

Figure 1-1
Simultaneous Transmission Paths

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This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to FCC KDB Publication 447498 D01v05 3) procedures.

Table 1-2
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Head	Body-Worn Accessory	Wireless Router	Extremity	Notes
1	GSM voice + 2.4 GHz WI-FI	Yes	Yes	N/A	Yes	
2	GSM voice + 5 GHz WI-FI	Yes	Yes	N/A	Yes	
3	GSM voice + 2.4 GHz Bluetooth	N/A	Yes	N/A	Yes	
4	GSM voice + 2.4 GHz WIFI MIMO	Yes	Yes	N/A	Yes	
5	GSM voice + 5 GHz WIFI MIMO	Yes	Yes	N/A	Yes	
6	GSM voice + 2.4 GHz WIFI Ant 1 + 5 GHz WIFI Ant 2	Yes	Yes	N/A	Yes	
7	GSM voice + 2.4 GHz WIFI Ant 2 + 5 GHz WIFI Ant 1	Yes	Yes	N/A	Yes	
8	UMTS + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes	
9	UMTS + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
10	UMTS + 2.4 GHz Bluetooth	N/A	Yes	N/A	Yes	
11	UMTS + 2.4 GHz WIFI MIMO	Yes	Yes	Yes	Yes	
12	UMTS + 5 GHz WIFI MIMO	Yes	Yes	Yes	Yes	
13	UMTS + 2.4 GHz WIFI Ant 1 + 5 GHz WIFI Ant 2	Yes	Yes	Yes	Yes	
14	UMTS + 2.4 GHz WIFI Ant 2 + 5 GHz WIFI Ant 1	Yes	Yes	Yes	Yes	
15	LTE + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes	
16	LTE + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
17	LTE + 2.4 GHz Bluetooth	N/A	Yes	N/A	Yes	
18	LTE + 2.4 GHz WIFI MIMO	Yes	Yes	Yes	Yes	
19	LTE + 5 GHz WIFI MIMO	Yes	Yes	Yes	Yes	
20	LTE + 2.4 GHz WIFI Ant 1 + 5 GHz WIFI Ant 2	Yes	Yes	Yes	Yes	
21	LTE + 2.4 GHz WIFI Ant 2 + 5 GHz WIFI Ant 1	Yes	Yes	Yes	Yes	
22	GPRS/EDGE + 2.4 GHz WI-FI	N/A	N/A	Yes	Yes	
23	GPRS/EDGE + 5 GHz WI-FI	N/A	N/A	Yes	Yes	
24	GRPS/EDGE + 2.4 GHz WIFI MIMO	N/A	N/A	Yes	Yes	
25	GRPS/EDGE + 5 GHz WIFI MIMO	N/A	N/A	Yes	Yes	
26	GRPS/EDGE + 2.4 GHz WIFI Ant 1 + 5 GHz WIFI Ant 2	N/A	N/A	Yes	Yes	
27	GRPS/EDGE + 2.4 GHz WIFI Ant 2 + 5 GHz WIFI Ant 1	N/A	N/A	Yes	Yes	
28	GSM voice + 2.4 GHz WIFI Ant 1 + 5 GHz WIFI Ant 1	N/A	N/A	N/A	N/A	Not Supported by HW
29	GSM voice + 2.4 GHz WIFI Ant 2 + 5 GHz WIFI Ant 2	N/A	N/A	N/A	N/A	Not Supported by HW
30	UMTS + 2.4 GHz WIFI Ant 1 + 5 GHz WIFI Ant 1	N/A	N/A	N/A	N/A	Not Supported by HW
31	UMTS + 2.4 GHz WIFI Ant 2 + 5 GHz WIFI Ant 2	N/A	N/A	N/A	N/A	Not Supported by HW
32	LTE + 2.4 GHz WIFI Ant 1 + 5 GHz WIFI Ant 1	N/A	N/A	N/A	N/A	Not Supported by HW
33	LTE + 2.4 GHz WIFI Ant 2 + 5 GHz WIFI Ant 2	N/A	N/A	N/A	N/A	Not Supported by HW
34	GPRS/EDGE + 2.4 GHz WIFI Ant 1 + 5 GHz WIFI Ant 1	N/A	N/A	N/A	N/A	Not Supported by HW
35	GPRS/EDGE + 2.4 GHz WIFI Ant 2 + 5 GHz WIFI Ant 2	N/A	N/A	N/A	N/A	Not Supported by HW

Notes:

1. All licensed modes share the same antenna path and cannot transmit simultaneously.
2. 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.
3. Per the manufacturer, WIFI Direct is not expected to be used in conjunction with a held-to-ear or body-worn accessory voice call. Therefore, there are no simultaneous transmission scenarios involving WIFI direct beyond that listed in the above table.
4. 5 GHz Wireless Router is only supported for the U-NII-3 by S/W, therefore U-NII-1, U-NII-2A, and U-NII-2C were not evaluated for wireless router conditions.
5. This device supports 2x2 MIMO Tx for WLAN 802.11n/ac. Each WLAN antenna can transmit independently or together when operating with MIMO.
6. This device supports VoLTE.
7. 2.4 GHz Bluetooth cannot transmit simultaneously with 2.4 GHz WLAN or 5 GHz WLAN.

1.7 Miscellaneous SAR Test Considerations

(A) WIFI/BT

Since Wireless Router operations are not allowed by the chipset firmware using U-NII-1, U-NII-2A & U-NII-2C WIFI, only 2.4 GHz DTS 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 D06v02.

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This device supports IEEE 802.11ac with the following features:

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

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 for 1g SAR and less than 3.0 W/kg for 10g SAR, SAR is not required for U-NII-1 band according to FCC KDB 248227 D01v02r01.

Per FCC KDB 447498 D01v05, the 1g SAR exclusion threshold for distances <50mm is defined by the following equation:

$$\frac{Max\ Power\ of\ Channel\ (mW)}{Test\ Separation\ Dist\ (mm)} * \sqrt{Frequency(GHz)} \leq 3.0$$

Based on the maximum conducted power of Bluetooth (rounded to the nearest mW) and the antenna to user separation distance, body-worn Bluetooth SAR was not required; [(16/15)* √2.480] = 1.7< 3.0. Per KDB Publication 447498 D01v05, the maximum power of the channel was rounded to the nearest mW before calculation.

Per FCC KDB 447498 D01v05, the 10g SAR exclusion threshold for distances <50mm is defined by the following equation:

$$\frac{Max\ Power\ of\ Channel\ (mW)}{Test\ Separation\ Dist\ (mm)} * \sqrt{Frequency(GHz)} \leq 7.5$$

Based on the maximum conducted power of Bluetooth (rounded to the nearest mW) and the antenna to user separation distance, extremity Bluetooth SAR was not required; [(16/5)* √2.480] = 5.0< 7.5. Per KDB Publication 447498 D01v05, the maximum power of the channel was rounded to the nearest mW before calculation.

Per FCC KDB Publication 648474 D04v01r02, this device is considered a "phablet" since the diagonal dimension is greater than 160mm and less than 200mm. Extremity 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, extremity SAR tests were required. When hotspot mode applies, 10-g SAR is required only for the surfaces and edges with hotspot mode scaled to the maximum output power (including tolerance) is 1-g SAR > 1.2 W/kg.

This device supports channel 1-13 for 2.4 GHz WLAN. However, due to the reduced output power for channels 12 and 13, channels 1, 6, and 11 were considered for SAR testing per KDB 248227 D01v02r01.

(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 D01v03.

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 D05v02r03.

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This device supports both LTE Band 12 and LTE Band 17. Since the supported frequency span for LTE Band 17 falls completely within the supported frequency span for LTE Band 12, both LTE bands have the same target power, and both LTE bands share the same transmission path, SAR was only assessed for LTE Band 12.

This device supports both LTE B26 and LTE B5. Since the supported frequency span for LTE B26 falls completely within the supported frequency span for LTE B5, both LTE bands have the same target power, and both LTE bands share the same transmission path, SAR was only assessed for LTE B26.

Per FCC KDB Publication 648474 D04v01r02, this device is considered a "phablet" since the diagonal dimension is greater than 160mm and less than 200mm. Therefore, extremity SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg. When hotspot mode applies, 10-g SAR is required only for the surfaces and edges with hotspot mode scaled to the maximum output power (including tolerance) is 1-g SAR > 1.2 W/kg.

1.8 Guidance Applied

- IEEE 1528-2003
- FCC KDB Publication 941225 D01v03, D05v02r03, D05Av01, D06v02 (2G/3G/4G and Hotspot)
- FCC KDB Publication 248227 D01v02r01 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v05r02 (General SAR Guidance)
- FCC KDB Publication 865664 D01v01r03, D02v01r01 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 648474 D04v01r02 (Phablet Procedures)
- October 2013 TCB Workshop Notes (GPRS Testing Considerations)

1.9 Device Serial Numbers

Several samples with identical hardware were used to support SAR testing. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.

	Head Serial Number	Body-Worn Serial Number	Hotspot Serial Number	Extremity Serial Number
GSM/GPRS/EDGE 850	92AF3	92AF3	92AF3	-
UMTS 850	92AF0	92B01	92B01	-
UMTS 1750	92B01	93F17	93D28	92AF3
GSM/GPRS/EDGE 1900	92AF3	92AF3	92AF3	-
UMTS 1900	92B01	92B01	93D28	92B01
LTE Band 12	92AED	92AED	92AED	-
LTE Band 26 (Cell)	92AF0	92AED	92AED	-
LTE Band 4 (AWS)	92AF0	92AF3	9F829	-
LTE Band 2 (PCS)	92AF0	92B09	92B09	-
2.4 GHz WLAN	95BE4	95C04	95C04	-
5 GHz WLAN	95BE4	95BE4	95BE4	95BE4

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2 LTE INFORMATION

LTE Information			
FCC ID	**A3LSMG928I**		
Form Factor	Portable Handset		
Frequency Range of each LTE transmission band	LTE Band 12 (699.7 - 715.3 MHz)		
	LTE Band 17 (706.5 - 713.5 MHz)		
	LTE Band 26 (Cell) (814.7 - 848.3 MHz)		
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)		
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)		
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)		
Channel Bandwidths	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz		
	LTE Band 17: 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 4 (AWS): 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		
Channel Numbers and Frequencies (MHz)	Low	Mid	High-Mid
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 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	831.5 (26865)	836.5 (26915)	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 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 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)
UE Category	6		
Modulations Supported in UL	QPSK, 16QAM		
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 Release 10 Additional Information	This device does not support full LTE Release 10 operations in the US. The following LTE Release 10 Features are not supported: Carrier Aggregation, Relay, HetNet, Enhanced MIMO, eICI, WIFI Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.		

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3 INTRODUCTION

The FCC and Industry 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 D01v01 and IEEE 1528-2013:

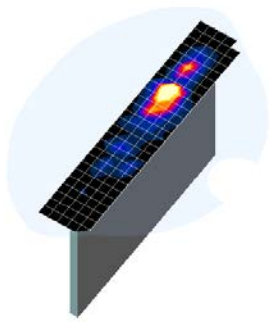

Figure 4-1
Sample SAR Area Scan

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 D01v01 (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 D01v01 (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 D01v01*

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].

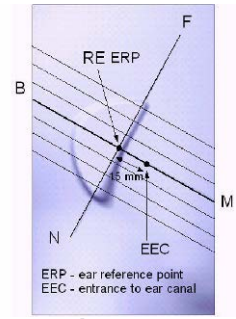

Figure 5-1
Close-Up Side view of ERP

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

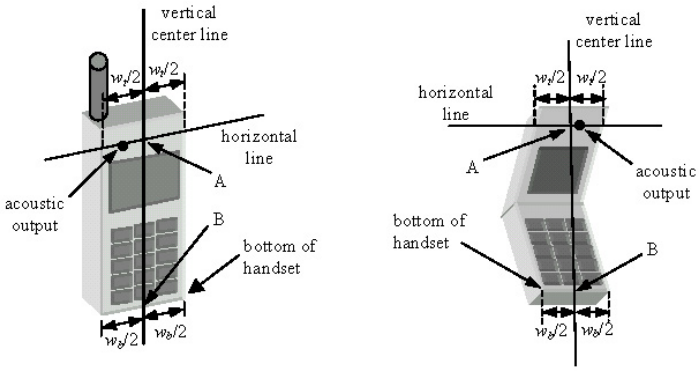

Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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6 TEST CONFIGURATION POSITIONS FOR HANDSETS

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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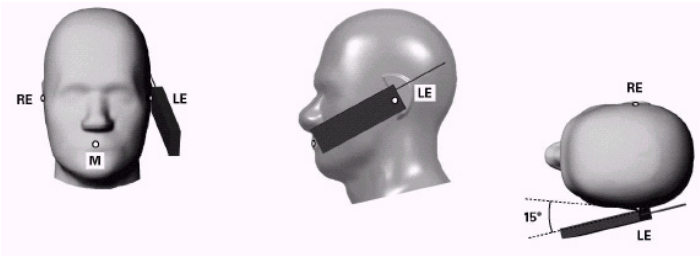

Figure 6-2 Front, Side and Top View of Ear/15º Tilt Position

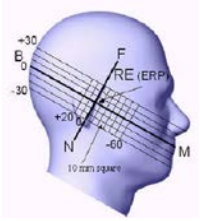

Figure 6-3
Side view w/ relevant markings

6.4 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 D04v01r02, 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 D01v05 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.

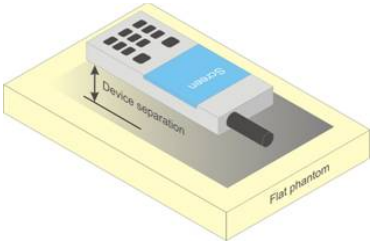

Figure 6-4
Sample Body-Worn Diagram

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 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.

6.5 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 1-g body and 10-g extremity SAR Exclusion Thresholds found in KDB Publication 447498 D01v05 should be applied to determine SAR test requirements.

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For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm 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 D04 v01r02 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 10-g SAR. The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g SAR is required only for the surfaces and edges with hotspot mode scaled to the maximum output power (including tolerance) is 1-g SAR > 1.2 W/kg.

6.6 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 D06v02 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 D01v05 publication 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.

There is power reduction for some wireless modes and bands, as indicated in Section 1.3. The reduced powers were confirmed via conducted power measurements at the RF port (See Section 9). Detailed descriptions of the power reduction mechanism are included in the operational description

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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 D01v05, 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 D01v01r02.

8.2 3G SAR Test Reduction Procedure

In FCC KDB Publication 941225 D01v03, 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 D01v03 “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 UMTS

8.4.1 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.

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8.4.2 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.

8.4.3 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.

8.4.4 SAR Measurements with Rel 5 HSDPA

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

8.4.5 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.

8.4.6 SAR Measurement Conditions for DC-HSDPA

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

8.5 SAR Measurement Conditions for LTE

LTE modes are tested according to FCC KDB 941225 D05v02r03 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).

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8.5.1 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.

8.5.2 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.

8.5.3 A-MPR

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

8.5.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r03:

a. Per Section 4.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
    i. The required channel and offset combination with the highest maximum output power is required for SAR.
    ii. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
    iii. When the reported SAR for a required test channel is > 1.45 W/kg, SAR is required for all RB offset configurations for that channel.
b. Per Section 4.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Section 4.2.1.
c. Per Section 4.2.3, 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 4.2.4 and 4.3, 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 4.2.1 through 4.2.3 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 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 D01v02r01 for more details.

8.6.1 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.

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

8.6.2 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 for 1g SAR or > 3.0 W/kg for 10g SAR. 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 for 1g SAR or > 3.0 W/kg for 10g SAR.

8.6.3 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. When band gap channels are disabled, each band is tested independently according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

8.6.4 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 for 1g SAR and ≤ 1.0 W/kg for 10g SAR, 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 for 1g SAR and ≤ 2.0 W/kg for 10g SAR or all test positions are measured.

8.6.5 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 for 1g SAR and ≤ 2.0 W/kg for 10g SAR, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

2) When the reported SAR is > 0.8 W/kg for 1g SAR and > 2.0 W/kg for 10g SAR, SAR is required for that position using the next highest measured output power channel. When any

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reported SAR is > 1.2 W/kg for 1g SAR and > 3.0 W/kg for 10g SAR, 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 for 1g SAR and > 3.0 W/kg for 10g SAR. When SAR is required for OFDM modes in 2.4 GHz band, the Initial Test Configuration Procedures should be followed.

8.6.6 OFDM Transmission Mode and SAR Test Channel Selection

For the 2.4 GHz and 5 GHz bands, 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 and lowest order 802.11a/g/n/ac mode. 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.

8.6.7 Initial Test Configuration Procedure

For OFDM, in both 2.4 and 5 GHz bands, 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, and lowest data rate, and lowest order 802.11a/g/n/ac 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 for 1g SAR and ≤ 2.0 W/kg for 10g SAR, 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 for 1g SAR and ≤ 3.0 W/kg for 10g SAR 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 8.6.6).

8.6.8 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 for 1g SAR and ≤ 3.0 W/kg for 10g SAR, no additional SAR tests for the subsequent test configurations are required.

8.6.9 MIMO SAR considerations

Per KDB 248227 D01v02r01, the simultaneous SAR provisions in KDB Publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WIFI MIMO. If the sum of 1g single transmission chain SAR measurements is <1.6 W/kg for 1g SAR and < 4.0 W/kg for 10g SAR, no additional SAR measurements for MIMO are required. Alternatively, SAR for MIMO can be measured with all antennas transmitting simultaneously at the specified maximum output power of MIMO operation.

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9 RF CONDUCTED POWERS

9.1 GSM Conducted Powers

9.1.1 Maximum Conducted Powers

		Maximum Burst-Averaged Output Power								
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	**Channel**	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 850	128	32.45	32.48	30.90	**29.43**	27.88	26.18	25.09	23.91	22.28
	190	32.91	32.95	31.75	**30.00**	28.44	26.88	25.82	24.42	22.68
	251	33.10	33.12	31.83	**30.27**	28.63	27.13	26.04	24.58	22.83
GSM 1900	512	30.34	30.50	28.18	**26.67**	25.16	26.51	24.96	23.93	22.82
	661	30.22	30.25	27.74	**26.42**	24.77	26.04	24.31	23.58	22.21
	810	30.28	30.41	27.87	**26.61**	24.90	26.25	24.61	23.76	22.46
		Calculated Maximum Frame-Averaged Output Power								
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	**Channel**	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 850	128	23.42	23.45	24.88	**25.17**	24.87	17.15	19.07	19.65	19.27
	190	23.88	23.92	25.73	**25.74**	25.43	17.85	19.80	20.16	19.67
	251	24.07	24.09	25.81	**26.01**	25.62	18.10	20.02	20.32	19.82
GSM 1900	512	21.31	21.47	22.16	**22.41**	22.15	17.48	18.94	19.67	19.81
	661	21.19	21.22	21.72	**22.16**	21.76	17.01	18.29	19.32	19.20
	810	21.25	21.38	21.85	**22.35**	21.89	17.22	18.59	19.50	19.45
GSM 850	**Frame Avg.Targets:**	23.97	23.97	25.48	**25.74**	25.49	17.97	19.68	19.84	19.49
GSM 1900		20.97	20.97	22.48	**22.24**	21.99	17.17	18.48	19.24	19.49

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: 33 (Max 4 Tx uplink slots)
EDGE Multislot class: 33 (Max 4 Tx uplink slots)
DTM Multislot Class: N/A

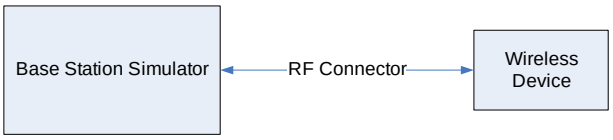

Figure 9-1
Power Measurement Setup

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9.2 UMTS Conducted Powers

9.2.1 Maximum Conducted Powers

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	1862	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	22.76	23.10	23.38	21.61	21.72	21.82	23.50	23.25	23.01	-
99		12.2 kbps AMR	22.69	23.15	23.46	21.57	21.81	21.88	23.49	23.24	23.09	-
6	HSDPA	Subtest 1	21.90	22.19	22.48	21.59	21.83	21.90	23.47	23.05	23.02	0
6		Subtest 2	22.88	23.25	23.50	21.52	21.88	21.99	23.50	23.25	23.21	0
6		Subtest 3	21.90	22.31	22.61	21.59	21.81	21.92	22.70	22.24	22.18	0.5
6		Subtest 4	21.85	22.25	22.58	20.59	20.84	20.75	22.71	22.26	22.15	0.5
6	HSUPA	Subtest 1	21.85	22.25	22.55	21.73	22.26	22.40	22.65	22.20	22.12	0
6		Subtest 2	20.92	21.28	21.61	20.49	20.99	20.73	21.51	21.09	21.02	2
6		Subtest 3	21.81	22.19	22.54	21.05	21.10	21.38	22.49	22.09	22.00	1
6		Subtest 4	20.91	21.29	21.60	20.59	20.68	20.79	21.54	21.13	21.00	2
6		Subtest 5	21.50	21.55	21.57	21.47	21.68	21.67	21.88	21.59	21.57	0
8	DC-HSDPA	Subtest 1	22.52	23.01	22.99	21.72	21.65	21.95	23.49	23.48	23.30	0
8		Subtest 2	22.59	23.11	23.06	21.67	22.00	21.87	23.43	23.50	23.29	0
8		Subtest 3	21.60	22.14	22.07	21.65	21.79	21.90	22.86	22.52	22.27	0.5
8		Subtest 4	21.59	22.16	22.10	20.67	20.74	20.69	22.87	22.48	22.30	0.5

9.2.2 Reduced Conducted Powers –Reduced Power Active (Hotspot mode)

3GPP Release Version	Mode	3GPP 34.121 Subtest	AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			1312	1412	1862	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	18.67	19.00	18.99	19.20	19.17	19.39	-
99		12.2 kbps AMR	18.71	18.44	18.98	19.50	19.45	19.42	-
6	HSDPA	Subtest 1	18.61	18.95	18.98	19.14	19.34	19.38	0
6		Subtest 2	18.68	18.90	19.00	19.50	19.33	19.40	0
6		Subtest 3	18.64	18.94	18.97	19.46	19.33	19.39	0.5
6		Subtest 4	18.63	18.95	18.95	19.48	19.35	19.40	0.5
6	HSUPA	Subtest 1	17.79	18.13	18.11	18.62	18.36	18.44	0
6		Subtest 2	17.55	17.92	17.94	18.45	18.32	18.47	2
6		Subtest 3	17.80	18.20	18.19	18.58	18.42	18.48	1
6		Subtest 4	17.50	17.90	17.92	18.65	18.41	18.45	2
6		Subtest 5	17.45	17.81	17.85	18.48	18.18	18.31	0
8	DC-HSDPA	Subtest 1	18.67	18.92	18.91	19.48	19.35	19.22	0
8		Subtest 2	18.69	18.90	18.92	19.44	19.41	19.21	0
8		Subtest 3	18.65	18.92	18.96	19.45	19.43	19.33	0.5
8		Subtest 4	18.85	18.91	18.93	19.43	19.39	19.30	0.5

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

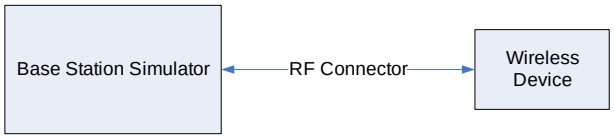

Figure 9-2
Power Measurement Setup

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9.3 LTE Conducted Powers

9.3.1 LTE Band 12

Table 9-1
LTE Band 12 Maximum Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Mid	707.5	23095	10	QPSK	1	0	24.41	0	0
	707.5	23095	10	QPSK	1	25	**24.49**	0	0
	707.5	23095	10	QPSK	1	49	24.43	0	0
	707.5	23095	10	QPSK	25	0	23.24	0-1	1
	707.5	23095	10	QPSK	25	12	**23.25**	0-1	1
	707.5	23095	10	QPSK	25	25	23.23	0-1	1
	707.5	23095	10	QPSK	50	0	23.22	0-1	1
	707.5	23095	10	16QAM	1	0	23.48	0-1	1
	707.5	23095	10	16QAM	1	25	23.45	0-1	1
	707.5	23095	10	16QAM	1	49	23.47	0-1	1
	707.5	23095	10	16QAM	25	0	22.23	0-2	2
	707.5	23095	10	16QAM	25	12	22.26	0-2	2
	707.5	23095	10	16QAM	25	25	22.27	0-2	2
	707.5	23095	10	16QAM	50	0	22.19	0-2	2

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 9-2
LTE Band 12 Maximum Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	701.5	23035	5	QPSK	1	0	24.45	0	0
	701.5	23035	5	QPSK	1	12	24.50	0	0
	701.5	23035	5	QPSK	1	24	24.48	0	0
	701.5	23035	5	QPSK	12	0	23.30	0-1	1
	701.5	23035	5	QPSK	12	6	23.16	0-1	1
	701.5	23035	5	QPSK	12	13	23.10	0-1	1
	701.5	23035	5	QPSK	25	0	23.23	0-1	1
	701.5	23035	5	16-QAM	1	0	23.50	0-1	1
	701.5	23035	5	16-QAM	1	12	23.47	0-1	1
	701.5	23035	5	16-QAM	1	24	23.50	0-1	1
	701.5	23035	5	16-QAM	12	0	22.11	0-2	2
	701.5	23035	5	16-QAM	12	6	22.09	0-2	2
	701.5	23035	5	16-QAM	12	13	22.09	0-2	2
	701.5	23035	5	16-QAM	25	0	22.24	0-2	2
Mid	707.5	23095	5	QPSK	1	0	24.48	0	0
	707.5	23095	5	QPSK	1	12	24.50	0	0
	707.5	23095	5	QPSK	1	24	24.50	0	0
	707.5	23095	5	QPSK	12	0	23.08	0-1	1
	707.5	23095	5	QPSK	12	6	23.19	0-1	1
	707.5	23095	5	QPSK	12	13	23.21	0-1	1
	707.5	23095	5	QPSK	25	0	23.17	0-1	1
	707.5	23095	5	16-QAM	1	0	23.50	0-1	1
	707.5	23095	5	16-QAM	1	12	23.49	0-1	1
	707.5	23095	5	16-QAM	1	24	23.47	0-1	1
	707.5	23095	5	16-QAM	12	0	22.08	0-2	2
	707.5	23095	5	16-QAM	12	6	22.09	0-2	2
	707.5	23095	5	16-QAM	12	13	22.06	0-2	2
	707.5	23095	5	16-QAM	25	0	22.08	0-2	2
High	713.5	23155	5	QPSK	1	0	24.35	0	0
	713.5	23155	5	QPSK	1	12	24.36	0	0
	713.5	23155	5	QPSK	1	24	24.36	0	0
	713.5	23155	5	QPSK	12	0	23.04	0-1	1
	713.5	23155	5	QPSK	12	6	22.96	0-1	1
	713.5	23155	5	QPSK	12	13	22.95	0-1	1
	713.5	23155	5	QPSK	25	0	23.04	0-1	1
	713.5	23155	5	16-QAM	1	0	23.24	0-1	1
	713.5	23155	5	16-QAM	1	12	23.11	0-1	1
	713.5	23155	5	16-QAM	1	24	22.98	0-1	1
	713.5	23155	5	16-QAM	12	0	21.98	0-2	2
	713.5	23155	5	16-QAM	12	6	21.80	0-2	2
	713.5	23155	5	16-QAM	12	13	21.89	0-2	2
	713.5	23155	5	16-QAM	25	0	21.98	0-2	2

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	700.5	23025	3	QPSK	1	0	24.50	0	0
	700.5	23025	3	QPSK	1	7	24.49	0	0
	700.5	23025	3	QPSK	1	14	24.50	0	0
	700.5	23025	3	QPSK	8	0	23.33	0-1	1
	700.5	23025	3	QPSK	8	4	23.17	0-1	1
	700.5	23025	3	QPSK	8	7	23.21	0-1	1
	700.5	23025	3	QPSK	15	0	23.30	0-1	1
	700.5	23025	3	16-QAM	1	0	23.50	0-1	1
	700.5	23025	3	16-QAM	1	7	23.47	0-1	1
	700.5	23025	3	16-QAM	1	14	23.48	0-1	1
	700.5	23025	3	16-QAM	8	0	22.19	0-2	2
	700.5	23025	3	16-QAM	8	4	22.11	0-2	2
	700.5	23025	3	16-QAM	8	7	22.15	0-2	2
	700.5	23025	3	16-QAM	15	0	22.21	0-2	2
Mid	707.5	23095	3	QPSK	1	0	24.50	0	0
	707.5	23095	3	QPSK	1	7	24.49	0	0
	707.5	23095	3	QPSK	1	14	24.50	0	0
	707.5	23095	3	QPSK	8	0	23.22	0-1	1
	707.5	23095	3	QPSK	8	4	23.25	0-1	1
	707.5	23095	3	QPSK	8	7	23.18	0-1	1
	707.5	23095	3	QPSK	15	0	23.15	0-1	1
	707.5	23095	3	16-QAM	1	0	23.50	0-1	1
	707.5	23095	3	16-QAM	1	7	23.48	0-1	1
	707.5	23095	3	16-QAM	1	14	23.50	0-1	1
	707.5	23095	3	16-QAM	8	0	22.03	0-2	2
	707.5	23095	3	16-QAM	8	4	22.12	0-2	2
	707.5	23095	3	16-QAM	8	7	22.08	0-2	2
	707.5	23095	3	16-QAM	15	0	22.08	0-2	2
High	714.5	23165	3	QPSK	1	0	24.40	0	0
	714.5	23165	3	QPSK	1	7	24.39	0	0
	714.5	23165	3	QPSK	1	14	24.43	0	0
	714.5	23165	3	QPSK	8	0	22.98	0-1	1
	714.5	23165	3	QPSK	8	4	22.95	0-1	1
	714.5	23165	3	QPSK	8	7	23.00	0-1	1
	714.5	23165	3	QPSK	15	0	22.98	0-1	1
	714.5	23165	3	16-QAM	1	0	23.37	0-1	1
	714.5	23165	3	16-QAM	1	7	23.28	0-1	1
	714.5	23165	3	16-QAM	1	14	23.41	0-1	1
	714.5	23165	3	16-QAM	8	0	21.89	0-2	2
	714.5	23165	3	16-QAM	8	4	21.87	0-2	2
	714.5	23165	3	16-QAM	8	7	21.90	0-2	2
	714.5	23165	3	16-QAM	15	0	21.83	0-2	2

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Table 9-4
LTE Band 12 Maximum Conducted Powers - 1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	699.7	23017	1.4	QPSK	1	0	24.47	0	0
	699.7	23017	1.4	QPSK	1	2	24.50	0	0
	699.7	23017	1.4	QPSK	1	5	24.49	0	0
	699.7	23017	1.4	QPSK	3	0	24.45	0	0
	699.7	23017	1.4	QPSK	3	2	24.32	0	0
	699.7	23017	1.4	QPSK	3	3	24.30	0	0
	699.7	23017	1.4	QPSK	6	0	23.28	0-1	1
	699.7	23017	1.4	16-QAM	1	0	23.50	0-1	1
	699.7	23017	1.4	16-QAM	1	2	23.50	0-1	1
	699.7	23017	1.4	16-QAM	1	5	23.49	0-1	1
	699.7	23017	1.4	16-QAM	3	0	23.21	0-1	1
	699.7	23017	1.4	16-QAM	3	2	23.12	0-1	1
	699.7	23017	1.4	16-QAM	3	3	23.15	0-1	1
	699.7	23017	1.4	16-QAM	6	0	22.28	0-2	2
Mid	707.5	23095	1.4	QPSK	1	0	24.48	0	0
	707.5	23095	1.4	QPSK	1	2	24.50	0	0
	707.5	23095	1.4	QPSK	1	5	24.50	0	0
	707.5	23095	1.4	QPSK	3	0	24.25	0	0
	707.5	23095	1.4	QPSK	3	2	24.33	0	0
	707.5	23095	1.4	QPSK	3	3	24.35	0	0
	707.5	23095	1.4	QPSK	6	0	23.20	0-1	1
	707.5	23095	1.4	16-QAM	1	0	23.50	0-1	1
	707.5	23095	1.4	16-QAM	1	2	23.47	0-1	1
	707.5	23095	1.4	16-QAM	1	5	23.50	0-1	1
	707.5	23095	1.4	16-QAM	3	0	23.26	0-1	1
	707.5	23095	1.4	16-QAM	3	2	23.24	0-1	1
	707.5	23095	1.4	16-QAM	3	3	23.25	0-1	1
	707.5	23095	1.4	16-QAM	6	0	22.19	0-2	2
High	715.3	23173	1.4	QPSK	1	0	24.29	0	0
	715.3	23173	1.4	QPSK	1	2	24.45	0	0
	715.3	23173	1.4	QPSK	1	5	24.46	0	0
	715.3	23173	1.4	QPSK	3	0	24.08	0	0
	715.3	23173	1.4	QPSK	3	2	24.11	0	0
	715.3	23173	1.4	QPSK	3	3	24.18	0	0
	715.3	23173	1.4	QPSK	6	0	22.95	0-1	1
	715.3	23173	1.4	16-QAM	1	0	23.36	0-1	1
	715.3	23173	1.4	16-QAM	1	2	23.34	0-1	1
	715.3	23173	1.4	16-QAM	1	5	23.35	0-1	1
	715.3	23173	1.4	16-QAM	3	0	23.00	0-1	1
	715.3	23173	1.4	16-QAM	3	2	22.96	0-1	1
	715.3	23173	1.4	16-QAM	3	3	22.90	0-1	1
	715.3	23173	1.4	16-QAM	6	0	21.86	0-2	2

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9.3.2 LTE Band 26 (Cell)

Table 9-5
LTE Band 26 (Cell) Maximum Conducted Powers - 15 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Mid	836.5	26915	15	QPSK	1	0	24.47	0	0
	836.5	26915	15	QPSK	1	36	**24.49**	0	0
	836.5	26915	15	QPSK	1	74	24.41	0	0
	836.5	26915	15	QPSK	36	0	**23.22**	0-1	1
	836.5	26915	15	QPSK	36	18	23.20	0-1	1
	836.5	26915	15	QPSK	36	37	23.16	0-1	1
	836.5	26915	15	QPSK	75	0	23.11	0-1	1
	836.5	26915	15	16QAM	1	0	23.50	0-1	1
	836.5	26915	15	16QAM	1	36	23.46	0-1	1
	836.5	26915	15	16QAM	1	74	23.36	0-1	1
	836.5	26915	15	16QAM	36	0	22.05	0-2	2
	836.5	26915	15	16QAM	36	18	22.02	0-2	2
	836.5	26915	15	16QAM	36	37	22.06	0-2	2
	836.5	26915	15	16QAM	75	0	22.14	0-2	2

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 9-6
LTE Band 26 (Cell) Maximum Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	819	26740	10	QPSK	1	0	23.88	0	0
	819	26740	10	QPSK	1	25	23.92	0	0
	819	26740	10	QPSK	1	49	23.87	0	0
	819	26740	10	QPSK	25	0	22.50	0-1	1
	819	26740	10	QPSK	25	12	22.53	0-1	1
	819	26740	10	QPSK	25	25	22.51	0-1	1
	819	26740	10	QPSK	50	0	22.50	0-1	1
	819	26740	10	16QAM	1	0	22.95	0-1	1
	819	26740	10	16QAM	1	25	22.87	0-1	1
	819	26740	10	16QAM	1	49	22.89	0-1	1
	819	26740	10	16QAM	25	0	21.53	0-2	2
	819	26740	10	16QAM	25	12	21.51	0-2	2
	819	26740	10	16QAM	25	25	21.53	0-2	2
	819	26740	10	16QAM	50	0	21.50	0-2	2
Mid	831.5	26865	10	QPSK	1	0	24.18	0	0
	831.5	26865	10	QPSK	1	25	24.28	0	0
	831.5	26865	10	QPSK	1	49	24.16	0	0
	831.5	26865	10	QPSK	25	0	22.76	0-1	1
	831.5	26865	10	QPSK	25	12	22.80	0-1	1
	831.5	26865	10	QPSK	25	25	22.83	0-1	1
	831.5	26865	10	QPSK	50	0	22.72	0-1	1
	831.5	26865	10	16QAM	1	0	23.04	0-1	1
	831.5	26865	10	16QAM	1	25	23.18	0-1	1
	831.5	26865	10	16QAM	1	49	23.06	0-1	1
	831.5	26865	10	16QAM	25	0	21.69	0-2	2
	831.5	26865	10	16QAM	25	12	21.76	0-2	2
	831.5	26865	10	16QAM	25	25	21.78	0-2	2
	831.5	26865	10	16QAM	50	0	21.63	0-2	2
High	844	26990	10	QPSK	1	0	24.50	0	0
	844	26990	10	QPSK	1	25	24.50	0	0
	844	26990	10	QPSK	1	49	24.48	0	0
	844	26990	10	QPSK	25	0	23.38	0-1	1
	844	26990	10	QPSK	25	12	23.44	0-1	1
	844	26990	10	QPSK	25	25	23.50	0-1	1
	844	26990	10	QPSK	50	0	23.41	0-1	1
	844	26990	10	16QAM	1	0	23.50	0-1	1
	844	26990	10	16QAM	1	25	23.49	0-1	1
	844	26990	10	16QAM	1	49	23.47	0-1	1
	844	26990	10	16QAM	25	0	22.43	0-2	2
	844	26990	10	16QAM	25	12	22.45	0-2	2
	844	26990	10	16QAM	25	25	22.42	0-2	2
	844	26990	10	16QAM	50	0	22.33	0-2	2

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Table 9-7
LTE Band 26 (Cell) Maximum Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	816.5	26715	5	QPSK	1	0	23.86	0	0
	816.5	26715	5	QPSK	1	12	23.98	0	0
	816.5	26715	5	QPSK	1	24	23.96	0	0
	816.5	26715	5	QPSK	12	0	22.61	0-1	1
	816.5	26715	5	QPSK	12	6	22.65	0-1	1
	816.5	26715	5	QPSK	12	13	22.64	0-1	1
	816.5	26715	5	QPSK	25	0	22.57	0-1	1
	816.5	26715	5	16-QAM	1	0	22.91	0-1	1
	816.5	26715	5	16-QAM	1	12	22.87	0-1	1
	816.5	26715	5	16-QAM	1	24	22.88	0-1	1
	816.5	26715	5	16-QAM	12	0	21.52	0-2	2
	816.5	26715	5	16-QAM	12	6	21.59	0-2	2
	816.5	26715	5	16-QAM	12	13	21.58	0-2	2
	816.5	26715	5	16-QAM	25	0	21.50	0-2	2
Mid	831.5	26865	5	QPSK	1	0	24.22	0	0
	831.5	26865	5	QPSK	1	12	24.23	0	0
	831.5	26865	5	QPSK	1	24	24.23	0	0
	831.5	26865	5	QPSK	12	0	22.85	0-1	1
	831.5	26865	5	QPSK	12	6	22.79	0-1	1
	831.5	26865	5	QPSK	12	13	22.81	0-1	1
	831.5	26865	5	QPSK	25	0	22.77	0-1	1
	831.5	26865	5	16-QAM	1	0	23.01	0-1	1
	831.5	26865	5	16-QAM	1	12	22.93	0-1	1
	831.5	26865	5	16-QAM	1	24	22.91	0-1	1
	831.5	26865	5	16-QAM	12	0	21.74	0-2	2
	831.5	26865	5	16-QAM	12	6	21.81	0-2	2
	831.5	26865	5	16-QAM	12	13	21.81	0-2	2
	831.5	26865	5	16-QAM	25	0	21.75	0-2	2
High	846.5	27015	5	QPSK	1	0	24.50	0	0
	846.5	27015	5	QPSK	1	12	24.49	0	0
	846.5	27015	5	QPSK	1	24	24.50	0	0
	846.5	27015	5	QPSK	12	0	23.45	0-1	1
	846.5	27015	5	QPSK	12	6	23.40	0-1	1
	846.5	27015	5	QPSK	12	13	23.31	0-1	1
	846.5	27015	5	QPSK	25	0	23.31	0-1	1
	846.5	27015	5	16-QAM	1	0	23.50	0-1	1
	846.5	27015	5	16-QAM	1	12	23.46	0-1	1
	846.5	27015	5	16-QAM	1	24	23.50	0-1	1
	846.5	27015	5	16-QAM	12	0	22.31	0-2	2
	846.5	27015	5	16-QAM	12	6	22.28	0-2	2
	846.5	27015	5	16-QAM	12	13	22.23	0-2	2
	846.5	27015	5	16-QAM	25	0	22.27	0-2	2

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Table 9-8
LTE Band 26 (Cell) Maximum Conducted Powers - 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	815.5	26705	3	QPSK	1	0	24.09	0	0
	815.5	26705	3	QPSK	1	7	24.13	0	0
	815.5	26705	3	QPSK	1	14	24.16	0	0
	815.5	26705	3	QPSK	8	0	22.64	0-1	1
	815.5	26705	3	QPSK	8	4	22.59	0-1	1
	815.5	26705	3	QPSK	8	7	22.65	0-1	1
	815.5	26705	3	QPSK	15	0	22.63	0-1	1
	815.5	26705	3	16-QAM	1	0	23.07	0-1	1
	815.5	26705	3	16-QAM	1	7	23.02	0-1	1
	815.5	26705	3	16-QAM	1	14	23.06	0-1	1
	815.5	26705	3	16-QAM	8	0	21.50	0-2	2
	815.5	26705	3	16-QAM	8	4	21.55	0-2	2
	815.5	26705	3	16-QAM	8	7	21.51	0-2	2
	815.5	26705	3	16-QAM	15	0	21.52	0-2	2
Mid	831.5	26865	3	QPSK	1	0	24.27	0	0
	831.5	26865	3	QPSK	1	7	24.32	0	0
	831.5	26865	3	QPSK	1	14	24.28	0	0
	831.5	26865	3	QPSK	8	0	22.78	0-1	1
	831.5	26865	3	QPSK	8	4	22.80	0-1	1
	831.5	26865	3	QPSK	8	7	22.79	0-1	1
	831.5	26865	3	QPSK	15	0	22.78	0-1	1
	831.5	26865	3	16-QAM	1	0	23.27	0-1	1
	831.5	26865	3	16-QAM	1	7	23.28	0-1	1
	831.5	26865	3	16-QAM	1	14	23.31	0-1	1
	831.5	26865	3	16-QAM	8	0	21.75	0-2	2
	831.5	26865	3	16-QAM	8	4	21.71	0-2	2
	831.5	26865	3	16-QAM	8	7	21.70	0-2	2
	831.5	26865	3	16-QAM	15	0	21.67	0-2	2
High	847.5	27025	3	QPSK	1	0	24.50	0	0
	847.5	27025	3	QPSK	1	7	24.48	0	0
	847.5	27025	3	QPSK	1	14	24.47	0	0
	847.5	27025	3	QPSK	8	0	23.40	0-1	1
	847.5	27025	3	QPSK	8	4	23.34	0-1	1
	847.5	27025	3	QPSK	8	7	23.30	0-1	1
	847.5	27025	3	QPSK	15	0	23.39	0-1	1
	847.5	27025	3	16-QAM	1	0	23.50	0-1	1
	847.5	27025	3	16-QAM	1	7	23.48	0-1	1
	847.5	27025	3	16-QAM	1	14	23.49	0-1	1
	847.5	27025	3	16-QAM	8	0	22.33	0-2	2
	847.5	27025	3	16-QAM	8	4	22.30	0-2	2
	847.5	27025	3	16-QAM	8	7	22.23	0-2	2
	847.5	27025	3	16-QAM	15	0	22.28	0-2	2

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

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	814.7	26697	1.4	QPSK	1	0	23.94	0	0
	814.7	26697	1.4	QPSK	1	2	24.09	0	0
	814.7	26697	1.4	QPSK	1	5	24.10	0	0
	814.7	26697	1.4	QPSK	3	0	23.78	0	0
	814.7	26697	1.4	QPSK	3	2	23.82	0	0
	814.7	26697	1.4	QPSK	3	3	23.82	0	0
	814.7	26697	1.4	QPSK	6	0	22.69	0-1	1
	814.7	26697	1.4	16-QAM	1	0	23.07	0-1	1
	814.7	26697	1.4	16-QAM	1	2	22.98	0-1	1
	814.7	26697	1.4	16-QAM	1	5	23.02	0-1	1
	814.7	26697	1.4	16-QAM	3	0	22.54	0-1	1
	814.7	26697	1.4	16-QAM	3	2	22.64	0-1	1
	814.7	26697	1.4	16-QAM	3	3	22.61	0-1	1
	814.7	26697	1.4	16-QAM	6	0	21.64	0-2	2
Mid	831.5	26865	1.4	QPSK	1	0	24.16	0	0
	831.5	26865	1.4	QPSK	1	2	24.18	0	0
	831.5	26865	1.4	QPSK	1	5	24.21	0	0
	831.5	26865	1.4	QPSK	3	0	23.96	0	0
	831.5	26865	1.4	QPSK	3	2	23.92	0	0
	831.5	26865	1.4	QPSK	3	3	23.86	0	0
	831.5	26865	1.4	QPSK	6	0	22.80	0-1	1
	831.5	26865	1.4	16-QAM	1	0	23.18	0-1	1
	831.5	26865	1.4	16-QAM	1	2	23.18	0-1	1
	831.5	26865	1.4	16-QAM	1	5	23.26	0-1	1
	831.5	26865	1.4	16-QAM	3	0	22.79	0-1	1
	831.5	26865	1.4	16-QAM	3	2	22.74	0-1	1
	831.5	26865	1.4	16-QAM	3	3	22.68	0-1	1
	831.5	26865	1.4	16-QAM	6	0	21.72	0-2	2
High	848.3	27033	1.4	QPSK	1	0	24.50	0	0
	848.3	27033	1.4	QPSK	1	2	24.48	0	0
	848.3	27033	1.4	QPSK	1	5	24.50	0	0
	848.3	27033	1.4	QPSK	3	0	24.49	0	0
	848.3	27033	1.4	QPSK	3	2	24.50	0	0
	848.3	27033	1.4	QPSK	3	3	24.47	0	0
	848.3	27033	1.4	QPSK	6	0	23.41	0-1	1
	848.3	27033	1.4	16-QAM	1	0	23.50	0-1	1
	848.3	27033	1.4	16-QAM	1	2	23.49	0-1	1
	848.3	27033	1.4	16-QAM	1	5	23.47	0-1	1
	848.3	27033	1.4	16-QAM	3	0	23.42	0-1	1
	848.3	27033	1.4	16-QAM	3	2	23.39	0-1	1
	848.3	27033	1.4	16-QAM	3	3	23.38	0-1	1
	848.3	27033	1.4	16-QAM	6	0	22.27	0-2	2

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9.3.3 LTE Band 4 (AWS)

Table 9-10
LTE Band 4 (AWS) Maximum Conducted Powers - 20 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Mid	1732.5	20175	20	QPSK	1	0	22.22	0	0
	1732.5	20175	20	QPSK	1	50	22.25	0	0
	1732.5	20175	20	QPSK	1	99	**22.30**	0	0
	1732.5	20175	20	QPSK	50	0	21.09	0-1	1
	1732.5	20175	20	QPSK	50	25	**21.12**	0-1	1
	1732.5	20175	20	QPSK	50	50	21.09	0-1	1
	1732.5	20175	20	QPSK	100	0	21.05	0-1	1
	1732.5	20175	20	16QAM	1	0	21.36	0-1	1
	1732.5	20175	20	16QAM	1	50	21.49	0-1	1
	1732.5	20175	20	16QAM	1	99	21.45	0-1	1
	1732.5	20175	20	16QAM	50	0	19.96	0-2	2
	1732.5	20175	20	16QAM	50	25	20.04	0-2	2
	1732.5	20175	20	16QAM	50	50	20.02	0-2	2
	1732.5	20175	20	16QAM	100	0	20.06	0-2	2

Note: LTE Band 4 (AWS) 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 9-11
LTE Band 4 (AWS) Maximum Conducted Powers - 15 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1717.5	20025	15	QPSK	1	0	22.42	0	0
	1717.5	20025	15	QPSK	1	36	22.48	0	0
	1717.5	20025	15	QPSK	1	74	22.50	0	0
	1717.5	20025	15	QPSK	36	0	21.27	0-1	1
	1717.5	20025	15	QPSK	36	18	21.28	0-1	1
	1717.5	20025	15	QPSK	36	37	21.27	0-1	1
	1717.5	20025	15	QPSK	75	0	21.25	0-1	1
	1717.5	20025	15	16QAM	1	0	21.49	0-1	1
	1717.5	20025	15	16QAM	1	36	21.48	0-1	1
	1717.5	20025	15	16QAM	1	74	21.49	0-1	1
	1717.5	20025	15	16QAM	36	0	20.17	0-2	2
	1717.5	20025	15	16QAM	36	18	20.18	0-2	2
	1717.5	20025	15	16QAM	36	37	20.26	0-2	2
	1717.5	20025	15	16QAM	75	0	20.22	0-2	2
Mid	1732.5	20175	15	QPSK	1	0	22.30	0	0
	1732.5	20175	15	QPSK	1	36	22.37	0	0
	1732.5	20175	15	QPSK	1	74	22.32	0	0
	1732.5	20175	15	QPSK	36	0	21.00	0-1	1
	1732.5	20175	15	QPSK	36	18	20.92	0-1	1
	1732.5	20175	15	QPSK	36	37	21.01	0-1	1
	1732.5	20175	15	QPSK	75	0	20.97	0-1	1
	1732.5	20175	15	16QAM	1	0	21.02	0-1	1
	1732.5	20175	15	16QAM	1	36	21.04	0-1	1
	1732.5	20175	15	16QAM	1	74	21.02	0-1	1
	1732.5	20175	15	16QAM	36	0	19.95	0-2	2
	1732.5	20175	15	16QAM	36	18	19.90	0-2	2
	1732.5	20175	15	16QAM	36	37	19.93	0-2	2
	1732.5	20175	15	16QAM	75	0	19.84	0-2	2
High	1747.5	20325	15	QPSK	1	0	22.26	0	0
	1747.5	20325	15	QPSK	1	36	22.42	0	0
	1747.5	20325	15	QPSK	1	74	22.37	0	0
	1747.5	20325	15	QPSK	36	0	20.99	0-1	1
	1747.5	20325	15	QPSK	36	18	20.96	0-1	1
	1747.5	20325	15	QPSK	36	37	21.06	0-1	1
	1747.5	20325	15	QPSK	75	0	20.93	0-1	1
	1747.5	20325	15	16QAM	1	0	21.02	0-1	1
	1747.5	20325	15	16QAM	1	36	21.05	0-1	1
	1747.5	20325	15	16QAM	1	74	21.01	0-1	1
	1747.5	20325	15	16QAM	36	0	19.98	0-2	2
	1747.5	20325	15	16QAM	36	18	19.94	0-2	2
	1747.5	20325	15	16QAM	36	37	19.95	0-2	2
	1747.5	20325	15	16QAM	75	0	19.87	0-2	2

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Table 9-12
LTE Band 4 (AWS) Maximum Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1715	20000	10	QPSK	1	0	22.41	0	0
	1715	20000	10	QPSK	1	25	22.46	0	0
	1715	20000	10	QPSK	1	49	22.50	0	0
	1715	20000	10	QPSK	25	0	21.25	0-1	1
	1715	20000	10	QPSK	25	12	21.32	0-1	1
	1715	20000	10	QPSK	25	25	21.23	0-1	1
	1715	20000	10	QPSK	50	0	21.26	0-1	1
	1715	20000	10	16QAM	1	0	21.44	0-1	1
	1715	20000	10	16QAM	1	25	21.46	0-1	1
	1715	20000	10	16QAM	1	49	21.45	0-1	1
	1715	20000	10	16QAM	25	0	20.18	0-2	2
	1715	20000	10	16QAM	25	12	20.14	0-2	2
	1715	20000	10	16QAM	25	25	20.28	0-2	2
	1715	20000	10	16QAM	50	0	20.27	0-2	2
Mid	1732.5	20175	10	QPSK	1	0	22.27	0	0
	1732.5	20175	10	QPSK	1	25	22.35	0	0
	1732.5	20175	10	QPSK	1	49	22.31	0	0
	1732.5	20175	10	QPSK	25	0	20.96	0-1	1
	1732.5	20175	10	QPSK	25	12	20.89	0-1	1
	1732.5	20175	10	QPSK	25	25	20.97	0-1	1
	1732.5	20175	10	QPSK	50	0	20.99	0-1	1
	1732.5	20175	10	16QAM	1	0	21.02	0-1	1
	1732.5	20175	10	16QAM	1	25	21.06	0-1	1
	1732.5	20175	10	16QAM	1	49	21.01	0-1	1
	1732.5	20175	10	16QAM	25	0	19.93	0-2	2
	1732.5	20175	10	16QAM	25	12	19.87	0-2	2
	1732.5	20175	10	16QAM	25	25	19.89	0-2	2
	1732.5	20175	10	16QAM	50	0	19.86	0-2	2
High	1750	20350	10	QPSK	1	0	22.23	0	0
	1750	20350	10	QPSK	1	25	22.44	0	0
	1750	20350	10	QPSK	1	49	22.36	0	0
	1750	20350	10	QPSK	25	0	20.95	0-1	1
	1750	20350	10	QPSK	25	12	20.96	0-1	1
	1750	20350	10	QPSK	25	25	21.06	0-1	1
	1750	20350	10	QPSK	50	0	20.90	0-1	1
	1750	20350	10	16QAM	1	0	20.97	0-1	1
	1750	20350	10	16QAM	1	25	21.03	0-1	1
	1750	20350	10	16QAM	1	49	21.06	0-1	1
	1750	20350	10	16QAM	25	0	20.02	0-2	2
	1750	20350	10	16QAM	25	12	19.91	0-2	2
	1750	20350	10	16QAM	25	25	19.95	0-2	2
	1750	20350	10	16QAM	50	0	19.89	0-2	2

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Table 9-13
LTE Band 4 (AWS) Maximum Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1712.5	19975	5	QPSK	1	0	22.42	0	0
	1712.5	19975	5	QPSK	1	12	22.43	0	0
	1712.5	19975	5	QPSK	1	24	22.46	0	0
	1712.5	19975	5	QPSK	12	0	21.22	0-1	1
	1712.5	19975	5	QPSK	12	6	21.33	0-1	1
	1712.5	19975	5	QPSK	12	13	21.22	0-1	1
	1712.5	19975	5	QPSK	25	0	21.24	0-1	1
	1712.5	19975	5	16-QAM	1	0	21.40	0-1	1
	1712.5	19975	5	16-QAM	1	12	21.41	0-1	1
	1712.5	19975	5	16-QAM	1	24	21.49	0-1	1
	1712.5	19975	5	16-QAM	12	0	20.17	0-2	2
	1712.5	19975	5	16-QAM	12	6	20.16	0-2	2
	1712.5	19975	5	16-QAM	12	13	20.31	0-2	2
	1712.5	19975	5	16-QAM	25	0	20.23	0-2	2
Mid	1732.5	20175	5	QPSK	1	0	22.32	0	0
	1732.5	20175	5	QPSK	1	12	22.33	0	0
	1732.5	20175	5	QPSK	1	24	22.35	0	0
	1732.5	20175	5	QPSK	12	0	20.99	0-1	1
	1732.5	20175	5	QPSK	12	6	20.89	0-1	1
	1732.5	20175	5	QPSK	12	13	20.96	0-1	1
	1732.5	20175	5	QPSK	25	0	20.98	0-1	1
	1732.5	20175	5	16-QAM	1	0	21.00	0-1	1
	1732.5	20175	5	16-QAM	1	12	21.05	0-1	1
	1732.5	20175	5	16-QAM	1	24	20.97	0-1	1
	1732.5	20175	5	16-QAM	12	0	19.91	0-2	2
	1732.5	20175	5	16-QAM	12	6	19.87	0-2	2
	1732.5	20175	5	16-QAM	12	13	19.94	0-2	2
	1732.5	20175	5	16-QAM	25	0	19.82	0-2	2
High	1752.5	20375	5	QPSK	1	0	22.28	0	0
	1752.5	20375	5	QPSK	1	12	22.42	0	0
	1752.5	20375	5	QPSK	1	24	22.32	0	0
	1752.5	20375	5	QPSK	12	0	20.99	0-1	1
	1752.5	20375	5	QPSK	12	6	20.98	0-1	1
	1752.5	20375	5	QPSK	12	13	21.04	0-1	1
	1752.5	20375	5	QPSK	25	0	20.94	0-1	1
	1752.5	20375	5	16-QAM	1	0	20.98	0-1	1
	1752.5	20375	5	16-QAM	1	12	21.03	0-1	1
	1752.5	20375	5	16-QAM	1	24	21.02	0-1	1
	1752.5	20375	5	16-QAM	12	0	20.00	0-2	2
	1752.5	20375	5	16-QAM	12	6	19.89	0-2	2
	1752.5	20375	5	16-QAM	12	13	19.97	0-2	2
	1752.5	20375	5	16-QAM	25	0	19.91	0-2	2

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Table 9-14
LTE Band 4 (AWS) Maximum Conducted Powers - 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1711.5	19965	3	QPSK	1	0	22.45	0	0
	1711.5	19965	3	QPSK	1	7	22.44	0	0
	1711.5	19965	3	QPSK	1	14	22.42	0	0
	1711.5	19965	3	QPSK	8	0	21.26	0-1	1
	1711.5	19965	3	QPSK	8	4	21.37	0-1	1
	1711.5	19965	3	QPSK	8	7	21.22	0-1	1
	1711.5	19965	3	QPSK	15	0	21.22	0-1	1
	1711.5	19965	3	16-QAM	1	0	21.35	0-1	1
	1711.5	19965	3	16-QAM	1	7	21.46	0-1	1
	1711.5	19965	3	16-QAM	1	14	21.49	0-1	1
	1711.5	19965	3	16-QAM	8	0	20.19	0-2	2
	1711.5	19965	3	16-QAM	8	4	20.16	0-2	2
	1711.5	19965	3	16-QAM	8	7	20.29	0-2	2
	1711.5	19965	3	16-QAM	15	0	20.21	0-2	2
Mid	1732.5	20175	3	QPSK	1	0	22.30	0	0
	1732.5	20175	3	QPSK	1	7	22.37	0	0
	1732.5	20175	3	QPSK	1	14	22.36	0	0
	1732.5	20175	3	QPSK	8	0	21.02	0-1	1
	1732.5	20175	3	QPSK	8	4	20.88	0-1	1
	1732.5	20175	3	QPSK	8	7	20.92	0-1	1
	1732.5	20175	3	QPSK	15	0	21.02	0-1	1
	1732.5	20175	3	16-QAM	1	0	21.02	0-1	1
	1732.5	20175	3	16-QAM	1	7	21.04	0-1	1
	1732.5	20175	3	16-QAM	1	14	20.93	0-1	1
	1732.5	20175	3	16-QAM	8	0	19.86	0-2	2
	1732.5	20175	3	16-QAM	8	4	19.90	0-2	2
	1732.5	20175	3	16-QAM	8	7	19.92	0-2	2
	1732.5	20175	3	16-QAM	15	0	19.84	0-2	2
High	1753.5	20385	3	QPSK	1	0	22.23	0	0
	1753.5	20385	3	QPSK	1	7	22.45	0	0
	1753.5	20385	3	QPSK	1	14	22.34	0	0
	1753.5	20385	3	QPSK	8	0	20.99	0-1	1
	1753.5	20385	3	QPSK	8	4	20.97	0-1	1
	1753.5	20385	3	QPSK	8	7	21.01	0-1	1
	1753.5	20385	3	QPSK	15	0	20.94	0-1	1
	1753.5	20385	3	16-QAM	1	0	20.98	0-1	1
	1753.5	20385	3	16-QAM	1	7	21.02	0-1	1
	1753.5	20385	3	16-QAM	1	14	21.01	0-1	1
	1753.5	20385	3	16-QAM	8	0	19.98	0-2	2
	1753.5	20385	3	16-QAM	8	4	19.89	0-2	2
	1753.5	20385	3	16-QAM	8	7	19.97	0-2	2
	1753.5	20385	3	16-QAM	15	0	19.93	0-2	2

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Table 9-15
LTE Band 4 (AWS) Maximum Conducted Powers - 1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1710.7	19957	1.4	QPSK	1	0	22.47	0	0
	1710.7	19957	1.4	QPSK	1	2	22.39	0	0
	1710.7	19957	1.4	QPSK	1	5	22.44	0	0
	1710.7	19957	1.4	QPSK	3	0	22.28	0	0
	1710.7	19957	1.4	QPSK	3	2	22.32	0	0
	1710.7	19957	1.4	QPSK	3	3	22.18	0	0
	1710.7	19957	1.4	QPSK	6	0	21.25	0-1	1
	1710.7	19957	1.4	16-QAM	1	0	21.32	0-1	1
	1710.7	19957	1.4	16-QAM	1	2	21.50	0-1	1
	1710.7	19957	1.4	16-QAM	1	5	21.49	0-1	1
	1710.7	19957	1.4	16-QAM	3	0	21.24	0-1	1
	1710.7	19957	1.4	16-QAM	3	2	21.21	0-1	1
	1710.7	19957	1.4	16-QAM	3	3	21.28	0-1	1
	1710.7	19957	1.4	16-QAM	6	0	20.26	0-2	2
Mid	1732.5	20175	1.4	QPSK	1	0	22.32	0	0
	1732.5	20175	1.4	QPSK	1	2	22.42	0	0
	1732.5	20175	1.4	QPSK	1	5	22.41	0	0
	1732.5	20175	1.4	QPSK	3	0	22.21	0	0
	1732.5	20175	1.4	QPSK	3	2	21.93	0	0
	1732.5	20175	1.4	QPSK	3	3	21.92	0	0
	1732.5	20175	1.4	QPSK	6	0	21.07	0-1	1
	1732.5	20175	1.4	16-QAM	1	0	20.97	0-1	1
	1732.5	20175	1.4	16-QAM	1	2	21.01	0-1	1
	1732.5	20175	1.4	16-QAM	1	5	20.93	0-1	1
	1732.5	20175	1.4	16-QAM	3	0	20.91	0-1	1
	1732.5	20175	1.4	16-QAM	3	2	20.85	0-1	1
	1732.5	20175	1.4	16-QAM	3	3	20.94	0-1	1
	1732.5	20175	1.4	16-QAM	6	0	19.89	0-2	2
High	1754.3	20393	1.4	QPSK	1	0	22.20	0	0
	1754.3	20393	1.4	QPSK	1	2	22.44	0	0
	1754.3	20393	1.4	QPSK	1	5	22.30	0	0
	1754.3	20393	1.4	QPSK	3	0	21.97	0	0
	1754.3	20393	1.4	QPSK	3	2	21.94	0	0
	1754.3	20393	1.4	QPSK	3	3	22.02	0	0
	1754.3	20393	1.4	QPSK	6	0	20.90	0-1	1
	1754.3	20393	1.4	16-QAM	1	0	20.98	0-1	1
	1754.3	20393	1.4	16-QAM	1	2	21.06	0-1	1
	1754.3	20393	1.4	16-QAM	1	5	21.05	0-1	1
	1754.3	20393	1.4	16-QAM	3	0	20.98	0-1	1
	1754.3	20393	1.4	16-QAM	3	2	20.94	0-1	1
	1754.3	20393	1.4	16-QAM	3	3	21.01	0-1	1
	1754.3	20393	1.4	16-QAM	6	0	19.89	0-2	2

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Table 9-15
LTE Band 4 Reduced Conducted Powers - 20 MHz Bandwidth
(Reduced Power Active - Hotspot mode)

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Mid	1732.5	20175	20	QPSK	1	0	**18.31**	0	0
	1732.5	20175	20	QPSK	1	50	18.24	0	0
	1732.5	20175	20	QPSK	1	99	18.28	0	0
	1732.5	20175	20	QPSK	50	0	**18.27**	0-1	0
	1732.5	20175	20	QPSK	50	25	18.16	0-1	0
	1732.5	20175	20	QPSK	50	50	18.24	0-1	0
	1732.5	20175	20	QPSK	100	0	18.13	0-1	0
	1732.5	20175	20	16QAM	1	0	18.36	0-1	0
	1732.5	20175	20	16QAM	1	50	18.35	0-1	0
	1732.5	20175	20	16QAM	1	99	18.39	0-1	0
	1732.5	20175	20	16QAM	50	0	18.43	0-2	0
	1732.5	20175	20	16QAM	50	25	18.42	0-2	0
	1732.5	20175	20	16QAM	50	50	18.38	0-2	0
	1732.5	20175	20	16QAM	100	0	18.44	0-2	0

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Table 9-16
LTE Band 4 Reduced Conducted Powers - 15 MHz Bandwidth
(Reduced Power Active - Hotspot mode)

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1717.5	20025	15	QPSK	1	0	18.19	0	0
	1717.5	20025	15	QPSK	1	36	18.17	0	0
	1717.5	20025	15	QPSK	1	74	18.06	0	0
	1717.5	20025	15	QPSK	36	0	18.04	0-1	0
	1717.5	20025	15	QPSK	36	18	18.09	0-1	0
	1717.5	20025	15	QPSK	36	37	18.08	0-1	0
	1717.5	20025	15	QPSK	75	0	18.01	0-1	0
	1717.5	20025	15	16QAM	1	0	18.13	0-1	0
	1717.5	20025	15	16QAM	1	36	18.07	0-1	0
	1717.5	20025	15	16QAM	1	74	18.01	0-1	0
	1717.5	20025	15	16QAM	36	0	18.03	0-2	0
	1717.5	20025	15	16QAM	36	18	18.07	0-2	0
	1717.5	20025	15	16QAM	36	37	18.05	0-2	0
	1717.5	20025	15	16QAM	75	0	18.00	0-2	0
Mid	1732.5	20175	15	QPSK	1	0	18.45	0	0
	1732.5	20175	15	QPSK	1	36	18.38	0	0
	1732.5	20175	15	QPSK	1	74	18.45	0	0
	1732.5	20175	15	QPSK	36	0	18.37	0-1	0
	1732.5	20175	15	QPSK	36	18	18.33	0-1	0
	1732.5	20175	15	QPSK	36	37	18.34	0-1	0
	1732.5	20175	15	QPSK	75	0	18.33	0-1	0
	1732.5	20175	15	16QAM	1	0	18.47	0-1	0
	1732.5	20175	15	16QAM	1	36	18.49	0-1	0
	1732.5	20175	15	16QAM	1	74	18.44	0-1	0
	1732.5	20175	15	16QAM	36	0	18.36	0-2	0
	1732.5	20175	15	16QAM	36	18	18.30	0-2	0
	1732.5	20175	15	16QAM	36	37	18.32	0-2	0
	1732.5	20175	15	16QAM	75	0	18.28	0-2	0
High	1747.5	20325	15	QPSK	1	0	18.50	0	0
	1747.5	20325	15	QPSK	1	36	18.45	0	0
	1747.5	20325	15	QPSK	1	74	18.39	0	0
	1747.5	20325	15	QPSK	36	0	18.45	0-1	0
	1747.5	20325	15	QPSK	36	18	18.44	0-1	0
	1747.5	20325	15	QPSK	36	37	18.43	0-1	0
	1747.5	20325	15	QPSK	75	0	18.42	0-1	0
	1747.5	20325	15	16QAM	1	0	18.50	0-1	0
	1747.5	20325	15	16QAM	1	36	18.49	0-1	0
	1747.5	20325	15	16QAM	1	74	18.46	0-1	0
	1747.5	20325	15	16QAM	36	0	18.41	0-2	0
	1747.5	20325	15	16QAM	36	18	18.41	0-2	0
	1747.5	20325	15	16QAM	36	37	18.42	0-2	0
	1747.5	20325	15	16QAM	75	0	18.37	0-2	0

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Table 9-17
LTE Band 4 Reduced Conducted Powers - 10 MHz Bandwidth
(Reduced Power Active - Hotspot mode)

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1715	20000	10	QPSK	1	0	18.21	0	0
	1715	20000	10	QPSK	1	25	18.12	0	0
	1715	20000	10	QPSK	1	49	18.14	0	0
	1715	20000	10	QPSK	25	0	18.02	0-1	0
	1715	20000	10	QPSK	25	12	18.05	0-1	0
	1715	20000	10	QPSK	25	25	18.06	0-1	0
	1715	20000	10	QPSK	50	0	18.06	0-1	0
	1715	20000	10	16QAM	1	0	18.24	0-1	0
	1715	20000	10	16QAM	1	25	18.19	0-1	0
	1715	20000	10	16QAM	1	49	18.19	0-1	0
	1715	20000	10	16QAM	25	0	18.07	0-2	0
	1715	20000	10	16QAM	25	12	18.09	0-2	0
	1715	20000	10	16QAM	25	25	18.09	0-2	0
	1715	20000	10	16QAM	50	0	18.08	0-2	0
Mid	1732.5	20175	10	QPSK	1	0	18.50	0	0
	1732.5	20175	10	QPSK	1	25	18.48	0	0
	1732.5	20175	10	QPSK	1	49	18.42	0	0
	1732.5	20175	10	QPSK	25	0	18.40	0-1	0
	1732.5	20175	10	QPSK	25	12	18.38	0-1	0
	1732.5	20175	10	QPSK	25	25	18.28	0-1	0
	1732.5	20175	10	QPSK	50	0	18.31	0-1	0
	1732.5	20175	10	16QAM	1	0	18.50	0-1	0
	1732.5	20175	10	16QAM	1	25	18.48	0-1	0
	1732.5	20175	10	16QAM	1	49	18.43	0-1	0
	1732.5	20175	10	16QAM	25	0	18.41	0-2	0
	1732.5	20175	10	16QAM	25	12	18.40	0-2	0
	1732.5	20175	10	16QAM	25	25	18.30	0-2	0
	1732.5	20175	10	16QAM	50	0	18.29	0-2	0
High	1750	20350	10	QPSK	1	0	18.46	0	0
	1750	20350	10	QPSK	1	25	18.49	0	0
	1750	20350	10	QPSK	1	49	18.50	0	0
	1750	20350	10	QPSK	25	0	18.22	0-1	0
	1750	20350	10	QPSK	25	12	18.32	0-1	0
	1750	20350	10	QPSK	25	25	18.30	0-1	0
	1750	20350	10	QPSK	50	0	18.34	0-1	0
	1750	20350	10	16QAM	1	0	18.48	0-1	0
	1750	20350	10	16QAM	1	25	18.46	0-1	0
	1750	20350	10	16QAM	1	49	18.41	0-1	0
	1750	20350	10	16QAM	25	0	18.28	0-2	0
	1750	20350	10	16QAM	25	12	18.39	0-2	0
	1750	20350	10	16QAM	25	25	18.36	0-2	0
	1750	20350	10	16QAM	50	0	18.27	0-2	0

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Table 9-18
LTE Band 4 Reduced Conducted Powers - 5 MHz Bandwidth
(Reduced Power Active - Hotspot mode)

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1712.5	19975	5	QPSK	1	0	18.10	0	0
	1712.5	19975	5	QPSK	1	12	18.05	0	0
	1712.5	19975	5	QPSK	1	24	18.08	0	0
	1712.5	19975	5	QPSK	12	0	17.93	0-1	0
	1712.5	19975	5	QPSK	12	6	17.96	0-1	0
	1712.5	19975	5	QPSK	12	13	18.01	0-1	0
	1712.5	19975	5	QPSK	25	0	17.94	0-1	0
	1712.5	19975	5	16-QAM	1	0	17.99	0-1	0
	1712.5	19975	5	16-QAM	1	12	17.96	0-1	0
	1712.5	19975	5	16-QAM	1	24	17.98	0-1	0
	1712.5	19975	5	16-QAM	12	0	17.91	0-2	0
	1712.5	19975	5	16-QAM	12	6	17.83	0-2	0
	1712.5	19975	5	16-QAM	12	13	17.87	0-2	0
	1712.5	19975	5	16-QAM	25	0	17.87	0-2	0
Mid	1732.5	20175	5	QPSK	1	0	18.44	0	0
	1732.5	20175	5	QPSK	1	12	18.40	0	0
	1732.5	20175	5	QPSK	1	24	18.41	0	0
	1732.5	20175	5	QPSK	12	0	18.36	0-1	0
	1732.5	20175	5	QPSK	12	6	18.32	0-1	0
	1732.5	20175	5	QPSK	12	13	18.27	0-1	0
	1732.5	20175	5	QPSK	25	0	18.29	0-1	0
	1732.5	20175	5	16-QAM	1	0	18.16	0-1	0
	1732.5	20175	5	16-QAM	1	12	18.12	0-1	0
	1732.5	20175	5	16-QAM	1	24	18.15	0-1	0
	1732.5	20175	5	16-QAM	12	0	18.33	0-2	0
	1732.5	20175	5	16-QAM	12	6	18.30	0-2	0
	1732.5	20175	5	16-QAM	12	13	18.26	0-2	0
	1732.5	20175	5	16-QAM	25	0	18.32	0-2	0
High	1752.5	20375	5	QPSK	1	0	18.47	0	0
	1752.5	20375	5	QPSK	1	12	18.46	0	0
	1752.5	20375	5	QPSK	1	24	18.39	0	0
	1752.5	20375	5	QPSK	12	0	18.38	0-1	0
	1752.5	20375	5	QPSK	12	6	18.42	0-1	0
	1752.5	20375	5	QPSK	12	13	18.42	0-1	0
	1752.5	20375	5	QPSK	25	0	18.38	0-1	0
	1752.5	20375	5	16-QAM	1	0	18.26	0-1	0
	1752.5	20375	5	16-QAM	1	12	18.29	0-1	0
	1752.5	20375	5	16-QAM	1	24	18.24	0-1	0
	1752.5	20375	5	16-QAM	12	0	18.21	0-2	0
	1752.5	20375	5	16-QAM	12	6	18.23	0-2	0
	1752.5	20375	5	16-QAM	12	13	18.23	0-2	0
	1752.5	20375	5	16-QAM	25	0	18.32	0-2	0

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Table 9-19
LTE Band 4 Reduced Conducted Powers - 3 MHz Bandwidth
(Reduced Power Active - Hotspot mode)

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1711.5	19965	3	QPSK	1	0	18.31	0	0
	1711.5	19965	3	QPSK	1	7	18.24	0	0
	1711.5	19965	3	QPSK	1	14	18.21	0	0
	1711.5	19965	3	QPSK	8	0	18.01	0-1	0
	1711.5	19965	3	QPSK	8	4	18.03	0-1	0
	1711.5	19965	3	QPSK	8	7	17.96	0-1	0
	1711.5	19965	3	QPSK	15	0	18.00	0-1	0
	1711.5	19965	3	16-QAM	1	0	18.13	0-1	0
	1711.5	19965	3	16-QAM	1	7	18.04	0-1	0
	1711.5	19965	3	16-QAM	1	14	18.06	0-1	0
	1711.5	19965	3	16-QAM	8	0	17.93	0-2	0
	1711.5	19965	3	16-QAM	8	4	17.98	0-2	0
	1711.5	19965	3	16-QAM	8	7	18.01	0-2	0
	1711.5	19965	3	16-QAM	15	0	17.96	0-2	0
Mid	1732.5	20175	3	QPSK	1	0	18.50	0	0
	1732.5	20175	3	QPSK	1	7	18.46	0	0
	1732.5	20175	3	QPSK	1	14	18.49	0	0
	1732.5	20175	3	QPSK	8	0	18.31	0-1	0
	1732.5	20175	3	QPSK	8	4	18.29	0-1	0
	1732.5	20175	3	QPSK	8	7	18.26	0-1	0
	1732.5	20175	3	QPSK	15	0	18.29	0-1	0
	1732.5	20175	3	16-QAM	1	0	18.50	0-1	0
	1732.5	20175	3	16-QAM	1	7	18.47	0-1	0
	1732.5	20175	3	16-QAM	1	14	18.49	0-1	0
	1732.5	20175	3	16-QAM	8	0	18.23	0-2	0
	1732.5	20175	3	16-QAM	8	4	18.21	0-2	0
	1732.5	20175	3	16-QAM	8	7	18.17	0-2	0
	1732.5	20175	3	16-QAM	15	0	18.26	0-2	0
High	1753.5	20385	3	QPSK	1	0	18.46	0	0
	1753.5	20385	3	QPSK	1	7	18.48	0	0
	1753.5	20385	3	QPSK	1	14	18.49	0	0
	1753.5	20385	3	QPSK	8	0	18.32	0-1	0
	1753.5	20385	3	QPSK	8	4	18.31	0-1	0
	1753.5	20385	3	QPSK	8	7	18.32	0-1	0
	1753.5	20385	3	QPSK	15	0	18.28	0-1	0
	1753.5	20385	3	16-QAM	1	0	18.50	0-1	0
	1753.5	20385	3	16-QAM	1	7	18.44	0-1	0
	1753.5	20385	3	16-QAM	1	14	18.46	0-1	0
	1753.5	20385	3	16-QAM	8	0	18.35	0-2	0
	1753.5	20385	3	16-QAM	8	4	18.31	0-2	0
	1753.5	20385	3	16-QAM	8	7	18.27	0-2	0
	1753.5	20385	3	16-QAM	15	0	18.25	0-2	0

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Table 9-20
LTE Band 4 Reduced Conducted Powers – 1.4 MHz Bandwidth
(Reduced Power Active - Hotspot mode)

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1710.7	19957	1.4	QPSK	1	0	18.34	0	0
	1710.7	19957	1.4	QPSK	1	2	18.28	0	0
	1710.7	19957	1.4	QPSK	1	5	18.26	0	0
	1710.7	19957	1.4	QPSK	3	0	18.16	0	0
	1710.7	19957	1.4	QPSK	3	2	18.12	0	0
	1710.7	19957	1.4	QPSK	3	3	18.07	0	0
	1710.7	19957	1.4	QPSK	6	0	18.08	0-1	0
	1710.7	19957	1.4	16-QAM	1	0	18.23	0-1	0
	1710.7	19957	1.4	16-QAM	1	2	18.27	0-1	0
	1710.7	19957	1.4	16-QAM	1	5	18.29	0-1	0
	1710.7	19957	1.4	16-QAM	3	0	17.95	0-1	0
	1710.7	19957	1.4	16-QAM	3	2	17.88	0-1	0
	1710.7	19957	1.4	16-QAM	3	3	17.94	0-1	0
	1710.7	19957	1.4	16-QAM	6	0	17.95	0-2	0
Mid	1732.5	20175	1.4	QPSK	1	0	18.50	0	0
	1732.5	20175	1.4	QPSK	1	2	18.49	0	0
	1732.5	20175	1.4	QPSK	1	5	18.50	0	0
	1732.5	20175	1.4	QPSK	3	0	18.37	0	0
	1732.5	20175	1.4	QPSK	3	2	18.40	0	0
	1732.5	20175	1.4	QPSK	3	3	18.36	0	0
	1732.5	20175	1.4	QPSK	6	0	18.34	0-1	0
	1732.5	20175	1.4	16-QAM	1	0	18.50	0-1	0
	1732.5	20175	1.4	16-QAM	1	2	18.47	0-1	0
	1732.5	20175	1.4	16-QAM	1	5	18.48	0-1	0
	1732.5	20175	1.4	16-QAM	3	0	18.24	0-1	0
	1732.5	20175	1.4	16-QAM	3	2	18.18	0-1	0
	1732.5	20175	1.4	16-QAM	3	3	18.13	0-1	0
	1732.5	20175	1.4	16-QAM	6	0	18.24	0-2	0
High	1754.3	20393	1.4	QPSK	1	0	18.47	0	0
	1754.3	20393	1.4	QPSK	1	2	18.48	0	0
	1754.3	20393	1.4	QPSK	1	5	18.46	0	0
	1754.3	20393	1.4	QPSK	3	0	18.37	0	0
	1754.3	20393	1.4	QPSK	3	2	18.33	0	0
	1754.3	20393	1.4	QPSK	3	3	18.28	0	0
	1754.3	20393	1.4	QPSK	6	0	18.31	0-1	0
	1754.3	20393	1.4	16-QAM	1	0	18.46	0-1	0
	1754.3	20393	1.4	16-QAM	1	2	18.47	0-1	0
	1754.3	20393	1.4	16-QAM	1	5	18.50	0-1	0
	1754.3	20393	1.4	16-QAM	3	0	18.13	0-1	0
	1754.3	20393	1.4	16-QAM	3	2	18.10	0-1	0
	1754.3	20393	1.4	16-QAM	3	3	18.05	0-1	0
	1754.3	20393	1.4	16-QAM	6	0	18.35	0-2	0

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9.3.4 LTE Band 2 (PCS)

Table 9-21
LTE Band 2 (PCS) Maximum Conducted Powers - 20 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1860	18700	20	QPSK	1	0	**24.37**	0	0
	1860	18700	20	QPSK	1	50	24.25	0	0
	1860	18700	20	QPSK	1	99	24.23	0	0
	1860	18700	20	QPSK	50	0	22.96	0-1	1
	1860	18700	20	QPSK	50	25	23.01	0-1	1
	1860	18700	20	QPSK	50	50	**23.09**	0-1	1
	1860	18700	20	QPSK	100	0	22.96	0-1	1
	1860	18700	20	16QAM	1	0	23.30	0-1	1
	1860	18700	20	16QAM	1	50	23.42	0-1	1
	1860	18700	20	16QAM	1	99	23.32	0-1	1
	1860	18700	20	16QAM	50	0	22.03	0-2	2
	1860	18700	20	16QAM	50	25	22.08	0-2	2
	1860	18700	20	16QAM	50	50	22.11	0-2	2
	1860	18700	20	16QAM	100	0	22.02	0-2	2
Mid	1880.0	18900	20	QPSK	1	0	23.96	0	0
	1880.0	18900	20	QPSK	1	50	24.03	0	0
	1880.0	18900	20	QPSK	1	99	23.87	0	0
	1880.0	18900	20	QPSK	50	0	22.65	0-1	1
	1880.0	18900	20	QPSK	50	25	22.71	0-1	1
	1880.0	18900	20	QPSK	50	50	22.69	0-1	1
	1880.0	18900	20	QPSK	100	0	22.65	0-1	1
	1880.0	18900	20	16QAM	1	0	22.82	0-1	1
	1880.0	18900	20	16QAM	1	50	22.98	0-1	1
	1880.0	18900	20	16QAM	1	99	22.80	0-1	1
	1880.0	18900	20	16QAM	50	0	21.67	0-2	2
	1880.0	18900	20	16QAM	50	25	21.70	0-2	2
	1880.0	18900	20	16QAM	50	50	21.62	0-2	2
	1880.0	18900	20	16QAM	100	0	21.70	0-2	2
High	1900	19100	20	QPSK	1	0	24.00	0	0
	1900	19100	20	QPSK	1	50	23.92	0	0
	1900	19100	20	QPSK	1	99	23.81	0	0
	1900	19100	20	QPSK	50	0	22.63	0-1	1
	1900	19100	20	QPSK	50	25	22.50	0-1	1
	1900	19100	20	QPSK	50	50	22.58	0-1	1
	1900	19100	20	QPSK	100	0	22.54	0-1	1
	1900	19100	20	16QAM	1	0	22.97	0-1	1
	1900	19100	20	16QAM	1	50	22.85	0-1	1
	1900	19100	20	16QAM	1	99	22.71	0-1	1
	1900	19100	20	16QAM	50	0	21.55	0-2	2
	1900	19100	20	16QAM	50	25	21.53	0-2	2
	1900	19100	20	16QAM	50	50	21.51	0-2	2
	1900	19100	20	16QAM	100	0	21.63	0-2	2

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Table 9-22
LTE Band 2 (PCS) Maximum Conducted Powers - 15 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1857.5	18675	15	QPSK	1	0	24.50	0	0
	1857.5	18675	15	QPSK	1	36	24.49	0	0
	1857.5	18675	15	QPSK	1	74	24.46	0	0
	1857.5	18675	15	QPSK	36	0	23.23	0-1	1
	1857.5	18675	15	QPSK	36	18	23.24	0-1	1
	1857.5	18675	15	QPSK	36	37	23.26	0-1	1
	1857.5	18675	15	QPSK	75	0	23.24	0-1	1
	1857.5	18675	15	16QAM	1	0	23.50	0-1	1
	1857.5	18675	15	16QAM	1	36	23.47	0-1	1
	1857.5	18675	15	16QAM	1	74	23.43	0-1	1
	1857.5	18675	15	16QAM	36	0	22.20	0-2	2
	1857.5	18675	15	16QAM	36	18	22.26	0-2	2
	1857.5	18675	15	16QAM	36	37	22.27	0-2	2
	1857.5	18675	15	16QAM	75	0	22.15	0-2	2
Mid	1880.0	18900	15	QPSK	1	0	23.95	0	0
	1880.0	18900	15	QPSK	1	36	24.15	0	0
	1880.0	18900	15	QPSK	1	74	24.05	0	0
	1880.0	18900	15	QPSK	36	0	22.82	0-1	1
	1880.0	18900	15	QPSK	36	18	22.75	0-1	1
	1880.0	18900	15	QPSK	36	37	22.82	0-1	1
	1880.0	18900	15	QPSK	75	0	22.73	0-1	1
	1880.0	18900	15	16QAM	1	0	23.12	0-1	1
	1880.0	18900	15	16QAM	1	36	23.15	0-1	1
	1880.0	18900	15	16QAM	1	74	23.18	0-1	1
	1880.0	18900	15	16QAM	36	0	21.70	0-2	2
	1880.0	18900	15	16QAM	36	18	21.73	0-2	2
	1880.0	18900	15	16QAM	36	37	21.71	0-2	2
	1880.0	18900	15	16QAM	75	0	21.70	0-2	2
High	1902.5	19125	15	QPSK	1	0	24.03	0	0
	1902.5	19125	15	QPSK	1	36	23.91	0	0
	1902.5	19125	15	QPSK	1	74	24.09	0	0
	1902.5	19125	15	QPSK	36	0	22.81	0-1	1
	1902.5	19125	15	QPSK	36	18	22.76	0-1	1
	1902.5	19125	15	QPSK	36	37	22.74	0-1	1
	1902.5	19125	15	QPSK	75	0	22.80	0-1	1
	1902.5	19125	15	16QAM	1	0	23.13	0-1	1
	1902.5	19125	15	16QAM	1	36	23.17	0-1	1
	1902.5	19125	15	16QAM	1	74	23.19	0-1	1
	1902.5	19125	15	16QAM	36	0	21.68	0-2	2
	1902.5	19125	15	16QAM	36	18	22.03	0-2	2
	1902.5	19125	15	16QAM	36	37	21.79	0-2	2
	1902.5	19125	15	16QAM	75	0	21.74	0-2	2

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Table 9-23
LTE Band 2 (PCS) Maximum Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1855	18650	10	QPSK	1	0	24.48	0	0
	1855	18650	10	QPSK	1	25	24.50	0	0
	1855	18650	10	QPSK	1	49	24.43	0	0
	1855	18650	10	QPSK	25	0	23.27	0-1	1
	1855	18650	10	QPSK	25	12	23.36	0-1	1
	1855	18650	10	QPSK	25	25	23.33	0-1	1
	1855	18650	10	QPSK	50	0	23.30	0-1	1
	1855	18650	10	16QAM	1	0	23.44	0-1	1
	1855	18650	10	16QAM	1	25	23.18	0-1	1
	1855	18650	10	16QAM	1	49	23.39	0-1	1
	1855	18650	10	16QAM	25	0	22.27	0-2	2
	1855	18650	10	16QAM	25	12	22.31	0-2	2
	1855	18650	10	16QAM	25	25	22.34	0-2	2
	1855	18650	10	16QAM	50	0	22.18	0-2	2
Mid	1880.0	18900	10	QPSK	1	0	24.08	0	0
	1880.0	18900	10	QPSK	1	25	24.18	0	0
	1880.0	18900	10	QPSK	1	49	24.13	0	0
	1880.0	18900	10	QPSK	25	0	22.73	0-1	1
	1880.0	18900	10	QPSK	25	12	22.71	0-1	1
	1880.0	18900	10	QPSK	25	25	22.89	0-1	1
	1880.0	18900	10	QPSK	50	0	22.79	0-1	1
	1880.0	18900	10	16QAM	1	0	23.35	0-1	1
	1880.0	18900	10	16QAM	1	25	23.18	0-1	1
	1880.0	18900	10	16QAM	1	49	23.21	0-1	1
	1880.0	18900	10	16QAM	25	0	21.73	0-2	2
	1880.0	18900	10	16QAM	25	12	21.89	0-2	2
	1880.0	18900	10	16QAM	25	25	21.76	0-2	2
	1880.0	18900	10	16QAM	50	0	21.79	0-2	2
High	1905	19150	10	QPSK	1	0	24.11	0	0
	1905	19150	10	QPSK	1	25	24.26	0	0
	1905	19150	10	QPSK	1	49	24.28	0	0
	1905	19150	10	QPSK	25	0	22.84	0-1	1
	1905	19150	10	QPSK	25	12	22.82	0-1	1
	1905	19150	10	QPSK	25	25	22.75	0-1	1
	1905	19150	10	QPSK	50	0	22.78	0-1	1
	1905	19150	10	16QAM	1	0	23.27	0-1	1
	1905	19150	10	16QAM	1	25	23.28	0-1	1
	1905	19150	10	16QAM	1	49	23.21	0-1	1
	1905	19150	10	16QAM	25	0	21.76	0-2	2
	1905	19150	10	16QAM	25	12	21.83	0-2	2
	1905	19150	10	16QAM	25	25	21.78	0-2	2
	1905	19150	10	16QAM	50	0	21.73	0-2	2

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Table 9-24
LTE Band 2 (PCS) Maximum Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1852.5	18625	5	QPSK	1	0	24.50	0	0
	1852.5	18625	5	QPSK	1	12	24.45	0	0
	1852.5	18625	5	QPSK	1	24	24.48	0	0
	1852.5	18625	5	QPSK	12	0	23.38	0-1	1
	1852.5	18625	5	QPSK	12	6	23.44	0-1	1
	1852.5	18625	5	QPSK	12	13	23.42	0-1	1
	1852.5	18625	5	QPSK	25	0	23.31	0-1	1
	1852.5	18625	5	16-QAM	1	0	23.45	0-1	1
	1852.5	18625	5	16-QAM	1	12	23.50	0-1	1
	1852.5	18625	5	16-QAM	1	24	23.47	0-1	1
	1852.5	18625	5	16-QAM	12	0	22.24	0-2	2
	1852.5	18625	5	16-QAM	12	6	22.28	0-2	2
	1852.5	18625	5	16-QAM	12	13	22.16	0-2	2
	1852.5	18625	5	16-QAM	25	0	22.19	0-2	2
Mid	1880.0	18900	5	QPSK	1	0	24.09	0	0
	1880.0	18900	5	QPSK	1	12	24.08	0	0
	1880.0	18900	5	QPSK	1	24	24.10	0	0
	1880.0	18900	5	QPSK	12	0	23.50	0-1	1
	1880.0	18900	5	QPSK	12	6	23.48	0-1	1
	1880.0	18900	5	QPSK	12	13	23.43	0-1	1
	1880.0	18900	5	QPSK	25	0	22.78	0-1	1
	1880.0	18900	5	16-QAM	1	0	23.23	0-1	1
	1880.0	18900	5	16-QAM	1	12	23.24	0-1	1
	1880.0	18900	5	16-QAM	1	24	23.20	0-1	1
	1880.0	18900	5	16-QAM	12	0	22.50	0-2	2
	1880.0	18900	5	16-QAM	12	6	22.49	0-2	2
	1880.0	18900	5	16-QAM	12	13	22.47	0-2	2
	1880.0	18900	5	16-QAM	25	0	21.67	0-2	2
High	1907.5	19175	5	QPSK	1	0	24.13	0	0
	1907.5	19175	5	QPSK	1	12	24.28	0	0
	1907.5	19175	5	QPSK	1	24	24.24	0	0
	1907.5	19175	5	QPSK	12	0	23.48	0-1	1
	1907.5	19175	5	QPSK	12	6	23.45	0-1	1
	1907.5	19175	5	QPSK	12	13	23.49	0-1	1
	1907.5	19175	5	QPSK	25	0	22.87	0-1	1
	1907.5	19175	5	16-QAM	1	0	23.09	0-1	1
	1907.5	19175	5	16-QAM	1	12	23.15	0-1	1
	1907.5	19175	5	16-QAM	1	24	23.11	0-1	1
	1907.5	19175	5	16-QAM	12	0	22.46	0-2	2
	1907.5	19175	5	16-QAM	12	6	22.49	0-2	2
	1907.5	19175	5	16-QAM	12	13	22.50	0-2	2
	1907.5	19175	5	16-QAM	25	0	21.89	0-2	2

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Table 9-25
LTE Band 2 (PCS) Maximum Conducted Powers - 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1851.5	18615	3	QPSK	1	0	24.50	0	0
	1851.5	18615	3	QPSK	1	7	24.46	0	0
	1851.5	18615	3	QPSK	1	14	24.49	0	0
	1851.5	18615	3	QPSK	8	0	23.46	0-1	1
	1851.5	18615	3	QPSK	8	4	23.48	0-1	1
	1851.5	18615	3	QPSK	8	7	23.44	0-1	1
	1851.5	18615	3	QPSK	15	0	23.49	0-1	1
	1851.5	18615	3	16-QAM	1	0	23.50	0-1	1
	1851.5	18615	3	16-QAM	1	7	23.49	0-1	1
	1851.5	18615	3	16-QAM	1	14	23.47	0-1	1
	1851.5	18615	3	16-QAM	8	0	22.31	0-2	2
	1851.5	18615	3	16-QAM	8	4	22.29	0-2	2
	1851.5	18615	3	16-QAM	8	7	22.24	0-2	2
	1851.5	18615	3	16-QAM	15	0	22.38	0-2	2
Mid	1880.0	18900	3	QPSK	1	0	24.16	0	0
	1880.0	18900	3	QPSK	1	7	24.29	0	0
	1880.0	18900	3	QPSK	1	14	24.26	0	0
	1880.0	18900	3	QPSK	8	0	22.80	0-1	1
	1880.0	18900	3	QPSK	8	4	22.76	0-1	1
	1880.0	18900	3	QPSK	8	7	22.89	0-1	1
	1880.0	18900	3	QPSK	15	0	22.73	0-1	1
	1880.0	18900	3	16-QAM	1	0	23.18	0-1	1
	1880.0	18900	3	16-QAM	1	7	23.27	0-1	1
	1880.0	18900	3	16-QAM	1	14	23.21	0-1	1
	1880.0	18900	3	16-QAM	8	0	21.63	0-2	2
	1880.0	18900	3	16-QAM	8	4	21.74	0-2	2
	1880.0	18900	3	16-QAM	8	7	21.68	0-2	2
	1880.0	18900	3	16-QAM	15	0	21.69	0-2	2
High	1908.5	19185	3	QPSK	1	0	24.20	0	0
	1908.5	19185	3	QPSK	1	7	24.24	0	0
	1908.5	19185	3	QPSK	1	14	24.23	0	0
	1908.5	19185	3	QPSK	8	0	22.79	0-1	1
	1908.5	19185	3	QPSK	8	4	22.81	0-1	1
	1908.5	19185	3	QPSK	8	7	22.74	0-1	1
	1908.5	19185	3	QPSK	15	0	22.71	0-1	1
	1908.5	19185	3	16-QAM	1	0	23.30	0-1	1
	1908.5	19185	3	16-QAM	1	7	23.32	0-1	1
	1908.5	19185	3	16-QAM	1	14	23.29	0-1	1
	1908.5	19185	3	16-QAM	8	0	21.61	0-2	2
	1908.5	19185	3	16-QAM	8	4	21.55	0-2	2
	1908.5	19185	3	16-QAM	8	7	21.53	0-2	2
	1908.5	19185	3	16-QAM	15	0	21.66	0-2	2

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Table 9-26
LTE Band 2 (PCS) Maximum Conducted Powers - 1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
Low	1850.7	18607	1.4	QPSK	1	0	24.50	0	0
	1850.7	18607	1.4	QPSK	1	2	24.44	0	0
	1850.7	18607	1.4	QPSK	1	5	24.48	0	0
	1850.7	18607	1.4	QPSK	3	0	24.40	0	0
	1850.7	18607	1.4	QPSK	3	2	24.42	0	0
	1850.7	18607	1.4	QPSK	3	3	24.43	0	0
	1850.7	18607	1.4	QPSK	6	0	23.45	0-1	1
	1850.7	18607	1.4	16-QAM	1	0	23.50	0-1	1
	1850.7	18607	1.4	16-QAM	1	2	23.49	0-1	1
	1850.7	18607	1.4	16-QAM	1	5	23.44	0-1	1
	1850.7	18607	1.4	16-QAM	3	0	23.37	0-1	1
	1850.7	18607	1.4	16-QAM	3	2	23.24	0-1	1
	1850.7	18607	1.4	16-QAM	3	3	23.35	0-1	1
	1850.7	18607	1.4	16-QAM	6	0	22.47	0-2	2
Mid	1880.0	18900	1.4	QPSK	1	0	24.28	0	0
	1880.0	18900	1.4	QPSK	1	2	24.32	0	0
	1880.0	18900	1.4	QPSK	1	5	24.34	0	0
	1880.0	18900	1.4	QPSK	3	0	23.85	0	0
	1880.0	18900	1.4	QPSK	3	2	23.96	0	0
	1880.0	18900	1.4	QPSK	3	3	23.94	0	0
	1880.0	18900	1.4	QPSK	6	0	22.78	0-1	1
	1880.0	18900	1.4	16-QAM	1	0	23.04	0-1	1
	1880.0	18900	1.4	16-QAM	1	2	22.72	0-1	1
	1880.0	18900	1.4	16-QAM	1	5	23.01	0-1	1
	1880.0	18900	1.4	16-QAM	3	0	22.61	0-1	1
	1880.0	18900	1.4	16-QAM	3	2	22.73	0-1	1
	1880.0	18900	1.4	16-QAM	3	3	22.74	0-1	1
	1880.0	18900	1.4	16-QAM	6	0	21.85	0-2	2
High	1909.3	19193	1.4	QPSK	1	0	24.05	0	0
	1909.3	19193	1.4	QPSK	1	2	24.01	0	0
	1909.3	19193	1.4	QPSK	1	5	24.03	0	0
	1909.3	19193	1.4	QPSK	3	0	23.87	0	0
	1909.3	19193	1.4	QPSK	3	2	23.86	0	0
	1909.3	19193	1.4	QPSK	3	3	23.93	0	0
	1909.3	19193	1.4	QPSK	6	0	22.75	0-1	1
	1909.3	19193	1.4	16-QAM	1	0	23.28	0-1	1
	1909.3	19193	1.4	16-QAM	1	2	23.14	0-1	1
	1909.3	19193	1.4	16-QAM	1	5	23.30	0-1	1
	1909.3	19193	1.4	16-QAM	3	0	22.87	0-1	1
	1909.3	19193	1.4	16-QAM	3	2	22.85	0-1	1
	1909.3	19193	1.4	16-QAM	3	3	22.91	0-1	1
	1909.3	19193	1.4	16-QAM	6	0	21.55	0-2	2

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9.4 WLAN Conducted Powers

Table 9-27
2.4 GHz WLAN Maximum Average RF Power

Antenna	Freq [MHz]	Channel	2.4 GHz Conducted Power [dBm]	
			IEEE Transmission Mode	
			802.11b	802.11g
Antenna 1	2412	1	16.50	14.26
	2437	6	**17.35**	14.00
	2462	11	17.33	13.98
Antenna 2	2412	1	17.40	13.98
	2437	6	**17.48**	14.27
	2462	11	16.64	14.34

Table 9-28
2.4 GHz WLAN Reduced Average RF Power –Reduced Power Active – Head

Antenna	Freq [MHz]	Channel	2.4 GHz Conducted Power [dBm]	
			IEEE Transmission Mode	
			802.11b	802.11g
Antenna 1	2412	1	14.04	11.27
	2437	6	13.71	10.63
	2462	11	**14.12**	11.03
Antenna 2	2412	1	13.84	10.57
	2437	6	**14.48**	11.36
	2462	11	13.86	10.75

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Table 9-29
5 GHz WLAN (20 MHz) Maximum Average RF Power

Antenna	Freq [MHz]	Channel	5 GHz (20 MHz) Conducted Power [dBm]	
			IEEE Transmission Mode	
			802.11a	802.11n
Antenna 1	5180	36	12.80	12.57
	5200	40	12.81	12.55
	5220	44	12.85	12.57
	5240	48	12.86	12.51
	5260	52	**13.45**	12.52
	5280	56	13.40	12.50
	5300	60	13.42	13.07
	5320	64	13.25	13.03
	5500	100	**13.45**	13.34
	5600	120	12.88	12.91
	5620	124	12.76	12.80
	5720	144	13.38	13.06
	5745	149	13.30	13.32
	5785	157	**13.40**	13.32
	5825	165	13.32	13.25
Antenna 2	5180	36	12.92	12.57
	5200	40	12.88	12.51
	5220	44	12.95	12.52
	5240	48	12.90	12.55
	5260	52	13.00	12.56
	5280	56	12.98	12.56
	5300	60	12.90	12.65
	5320	64	**13.11**	12.60
	5500	100	**12.70**	12.65
	5600	120	12.56	12.37
	5620	124	12.47	12.34
	5720	144	12.55	12.62
	5745	149	12.70	12.40
	5785	157	**12.72**	12.44
	5825	165	12.65	12.45

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Table 9-30
5 GHz WLAN (20 MHz) Reduced Average RF Power – Reduced Power Active - Head

Antenna	Freq [MHz]	Channel	5 GHz (20 MHz) Conducted Power [dBm]	
			IEEE Transmission Mode	
			802.11a	802.11n
Antenna 1	5180	36	9.56	9.52
	5200	40	9.42	9.41
	5220	44	9.35	9.29
	5240	48	9.49	9.31
	5260	52	9.67	9.41
	5280	56	**9.74**	9.55
	5300	60	9.61	9.41
	5320	64	9.44	9.35
	5500	100	**9.91**	9.85
	5600	120	9.74	9.67
	5620	124	9.61	9.55
	5720	144	9.55	9.41
	5745	149	9.91	9.75
	5785	157	**10.01**	9.89
	5825	165	9.90	9.65
Antenna 2	5180	36	9.59	9.39
	5200	40	9.57	9.31
	5220	44	9.51	9.29
	5240	48	9.44	9.37
	5260	52	9.47	9.45
	5280	56	9.43	9.39
	5300	60	**9.48**	9.25
	5320	64	9.45	9.42
	5500	100	**9.53**	9.47
	5600	120	9.48	9.47
	5620	124	9.39	9.32
	5720	144	9.52	9.42
	5745	149	9.67	9.50
	5785	157	**9.86**	9.74
	5825	165	9.58	9.55

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Justification for test configurations for WLAN per KDB Publication 248227 D01v02r01:

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

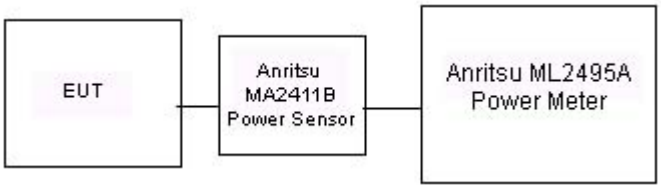

Figure 9-3
Power Measurement Setup

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10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured Head Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (C˚)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
6/22/2015	750H	24.5	700	0.849	42.571	0.889	42.201	-4.50%	0.88%
			710	0.859	42.452	0.890	42.149	-3.48%	0.72%
			725	0.873	42.294	0.891	42.071	-2.02%	0.53%
			740	0.886	42.137	0.893	41.994	-0.78%	0.34%
			755	0.900	41.969	0.894	41.916	0.67%	0.13%
6/29/2015	835H	21.8	820	0.885	41.634	0.899	41.578	-1.56%	0.13%
			835	0.904	41.428	0.900	41.500	0.44%	-0.17%
			850	0.919	41.212	0.916	41.500	0.33%	-0.69%
6/22/2015	1750H	22.0	1710	1.305	39.265	1.348	40.142	-3.19%	-2.18%
			1750	1.346	39.121	1.371	40.079	-1.82%	-2.39%
			1790	1.386	38.970	1.394	40.016	-0.57%	-2.61%
6/29/2015	1750H	21.0	1710	1.343	40.258	1.348	40.142	-0.37%	0.29%
			1750	1.387	40.026	1.371	40.079	1.17%	-0.13%
			1790	1.432	39.872	1.394	40.016	2.73%	-0.36%
6/14/2015	1900H	22.0	1850	1.364	39.792	1.400	40.000	-2.57%	-0.52%
			1880	1.395	39.656	1.400	40.000	-0.36%	-0.86%
			1910	1.429	39.558	1.400	40.000	2.07%	-1.11%
6/17/2015	2400H	23.7	2400	1.764	39.081	1.756	39.289	0.46%	-0.53%
			2450	1.825	38.879	1.800	39.200	1.39%	-0.82%
			2500	1.883	38.670	1.855	39.136	1.51%	-1.19%
6/15/2015	5200H-5800H	21.6	5280	4.710	34.444	4.737	35.894	-0.57%	-4.04%
			5300	4.720	34.391	4.758	35.871	-0.80%	-4.13%
			5500	4.950	34.051	4.963	35.643	-0.26%	-4.47%
			5785	5.264	33.603	5.255	35.317	0.17%	-4.85%
			5800	5.268	33.587	5.270	35.300	-0.04%	-4.85%

Table 10-2
Measured Body Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (C˚)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
6/18/2015	750B	22.3	700	0.925	55.732	0.959	55.726	-3.55%	0.01%
			710	0.934	55.652	0.960	55.687	-2.71%	-0.06%
			725	0.947	55.518	0.961	55.629	-1.46%	-0.20%
			740	0.960	55.370	0.963	55.570	-0.31%	-0.36%
			755	0.974	55.198	0.964	55.512	1.04%	-0.57%
6/29/2015	835B	21.9	820	0.977	53.879	0.969	55.258	0.83%	-2.50%
			835	0.993	53.688	0.970	55.200	2.37%	-2.74%
			850	1.005	53.594	0.988	55.154	1.72%	-2.83%
7/9/2015	1750B	22.8	1710	1.431	51.502	1.463	53.537	-2.19%	-3.80%
			1750	1.472	51.335	1.488	53.432	-1.08%	-3.92%
			1790	1.507	51.279	1.514	53.326	-0.46%	-3.84%
7/13/2015	1750B	22.2	1710	1.445	51.498	1.463	53.537	-1.23%	-3.81%
			1750	1.490	51.327	1.488	53.432	0.13%	-3.94%
			1790	1.538	51.189	1.514	53.326	1.59%	-4.01%
6/24/2015	1900B	21.5	1850	1.502	51.032	1.520	53.300	-1.18%	-4.26%
			1880	1.534	50.951	1.520	53.300	0.92%	-4.41%
			1910	1.568	50.812	1.520	53.300	3.16%	-4.67%
7/8/2015	1900B	22.7	1850	1.475	50.892	1.520	53.300	-2.96%	-4.52%
			1880	1.517	50.801	1.520	53.300	-0.20%	-4.69%
			1910	1.549	50.719	1.520	53.300	1.91%	-4.84%
6/20/2015	2400B	22.0	2400	1.958	51.583	1.902	52.767	2.94%	-2.24%
			2450	2.030	51.318	1.950	52.700	4.10%	-2.62%
			2500	2.096	51.154	2.021	52.636	3.71%	-2.82%
6/15/2015	5200B-5800B	21.8	5260	5.253	48.754	5.369	48.933	-2.16%	-0.37%
			5300	5.298	48.672	5.416	48.879	-2.18%	-0.42%
			5320	5.327	48.627	5.439	48.851	-2.06%	-0.46%
			5500	5.561	48.347	5.650	48.607	-1.58%	-0.53%
			5785	5.944	47.950	5.982	48.220	-0.64%	-0.56%
			5800	5.960	47.927	6.000	48.200	-0.67%	-0.57%

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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 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.

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)	Dipole SN	Probe SN	Measured SAR_{1g} (W/kg)	1 W Target SAR_{1g} (W/kg)	1 W Normalized SAR_{1g} (W/kg)	$Deviation_{1g}$ (%)
K	750	HEAD	06/22/2015	22.3	24.5	0.200	1003	3288	1.750	8.090	8.750	8.16%
K	835	HEAD	06/29/2015	22.5	21.9	0.200	4d132	3288	1.910	9.250	9.550	3.24%
G	1750	HEAD	06/22/2015	23.1	22.0	0.100	1051	3318	3.660	36.200	36.600	1.10%
H	1750	HEAD	06/29/2015	21.1	21.0	0.100	1051	3263	3.710	36.200	37.100	2.49%
G	1900	HEAD	06/14/2015	22.5	22.1	0.100	5d141	3318	4.310	39.900	43.100	8.02%
E	2450	HEAD	06/17/2015	23.0	22.2	0.100	719	3332	5.170	52.100	51.700	-0.77%
D	5300	HEAD	06/15/2015	23.1	21.6	0.050	1057	7357	4.440	84.700	88.800	4.84%
D	5500	HEAD	06/15/2015	22.5	21.6	0.050	1057	7357	4.280	84.300	85.600	1.54%
D	5800	HEAD	06/15/2015	22.7	21.6	0.050	1057	7357	4.200	81.100	84.000	3.58%
K	750	BODY	06/18/2015	22.3	22.3	0.100	1003	3288	0.870	8.460	8.700	2.84%
G	835	BODY	06/29/2015	23.3	21.9	0.200	4d132	3318	1.880	9.140	9.400	2.84%
K	1750	BODY	07/09/2015	22.4	22.8	0.100	1051	3288	3.760	37.100	37.600	1.35%
K	1750	BODY	07/13/2015	22.7	22.2	0.100	1051	3288	3.710	37.100	37.100	0.00%
H	1900	BODY	06/24/2015	23.3	21.7	0.100	5d141	3263	4.290	40.000	42.900	7.25%
G	1900	BODY	07/08/2015	24.1	22.7	0.100	5d141	3318	3.960	40.000	39.600	-1.00%
E	2450	BODY	06/20/2015	22.1	22.0	0.100	719	3332	5.300	51.800	53.000	2.32%
E	5300	BODY	06/15/2015	22.4	21.8	0.050	1057	3589	3.770	74.200	75.400	1.62%
E	5500	BODY	06/15/2015	22.3	21.6	0.050	1057	3589	3.810	79.200	76.200	-3.79%
E	5800	BODY	06/15/2015	22.5	21.7	0.050	1057	3589	3.390	75.100	67.800	-9.72%

Table 10-4
System Verification Results – 10g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Dipole SN	Probe SN	Measured SAR_{10g} (W/kg)	1 W Target SAR_{10g} (W/kg)	1 W Normalized SAR_{10g} (W/kg)	$Deviation_{10g}$ (%)
K	1750	BODY	07/09/2015	22.4	22.8	0.100	1051	3288	2.000	20.000	20.000	0.00%
G	1900	BODY	07/08/2015	24.1	22.7	0.100	5d141	3318	2.070	21.200	20.700	-2.36%
E	5300	BODY	06/15/2015	22.4	21.8	0.050	1057	3589	1.060	20.900	21.200	1.44%
E	5500	BODY	06/15/2015	22.3	21.6	0.050	1057	3589	1.070	22.000	21.400	-2.73%

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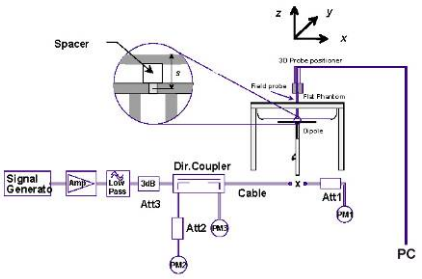

Figure 10-1
System Verification Setup Diagram

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	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
848.80	251	GSM 850	GSM	33.5	33.10	0.15	Right	Cheek	92AF3	1:8.3	0.079	1.096	0.087	A1
848.80	251	GSM 850	GSM	33.5	33.10	0.05	Right	Tilt	92AF3	1:8.3	0.033	1.096	0.036	
848.80	251	GSM 850	GSM	33.5	33.10	0.16	Left	Cheek	92AF3	1:8.3	0.049	1.096	0.054	
848.80	251	GSM 850	GSM	33.5	33.10	0.04	Left	Tilt	92AF3	1:8.3	0.031	1.096	0.034	
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
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	Scaled SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
846.60	4233	UMTS 850	RMC	23.5	23.38	0.01	Right	Cheek	92AF0	1:1	0.214	1.028	0.220	A2
846.60	4233	UMTS 850	RMC	23.5	23.38	-0.04	Right	Tilt	92AF0	1:1	0.099	1.028	0.102	
846.60	4233	UMTS 850	RMC	23.5	23.38	0.12	Left	Cheek	92AF0	1:1	0.157	1.028	0.161	
846.60	4233	UMTS 850	RMC	23.5	23.38	0.05	Left	Tilt	92AF0	1:1	0.103	1.028	0.106	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-3
UMTS 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	Scaled SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1732.40	1412	UMTS 1750	RMC	22.5	21.72	0.09	Right	Cheek	92B01	1:1	0.029	1.197	0.035	
1732.40	1412	UMTS 1750	RMC	22.5	21.72	0.09	Right	Tilt	92B01	1:1	0.018	1.197	0.022	
1732.40	1412	UMTS 1750	RMC	22.5	21.72	-0.01	Left	Cheek	92B01	1:1	0.040	1.197	0.048	A3
1732.40	1412	UMTS 1750	RMC	22.5	21.72	0.10	Left	Tilt	92B01	1:1	0.018	1.197	0.022	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

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Table 11-4
GSM 1900 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Scaled SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GSM	30.5	30.22	0.20	Right	Cheek	92AF3	1:8.3	0.014	1.067	0.015	
1880.00	661	GSM 1900	GSM	30.5	30.22	-0.04	Right	Tilt	92AF3	1:8.3	0.012	1.067	0.013	
1880.00	661	GSM 1900	GSM	30.5	30.22	-0.06	Left	Cheek	92AF3	1:8.3	0.021	1.067	0.022	A4
1880.00	661	GSM 1900	GSM	30.5	30.22	0.19	Left	Tilt	92AF3	1:8.3	0.009	1.067	0.010	

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	Scaled SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	23.5	23.25	-0.17	Right	Cheek	92B01	1:1	0.045	1.059	0.048	
1880.00	9400	UMTS 1900	RMC	23.5	23.25	-0.18	Right	Tilt	92B01	1:1	0.028	1.059	0.030	
1880.00	9400	UMTS 1900	RMC	23.5	23.25	0.19	Left	Cheek	92B01	1:1	0.073	1.059	0.077	A5
1880.00	9400	UMTS 1900	RMC	23.5	23.25	0.20	Left	Tilt	92B01	1:1	0.027	1.059	0.029	

ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population	Head 1.6 W/kg (mW/g) averaged over 1 gram

Table 11-6
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	Scaled SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	0.01	0	Right	Cheek	QPSK	1	25	92AED	1:1	0.173	1.002	0.173	A6
707.50	23095	Mid	LTE Band 12	10	23.5	23.25	0.07	1	Right	Cheek	QPSK	25	12	92AED	1:1	0.132	1.059	0.140	
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	0.05	0	Right	Tilt	QPSK	1	25	92AED	1:1	0.090	1.002	0.090	
707.50	23095	Mid	LTE Band 12	10	23.5	23.25	0.06	1	Right	Tilt	QPSK	25	12	92AED	1:1	0.066	1.059	0.070	
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	0.02	0	Left	Cheek	QPSK	1	25	92AED	1:1	0.128	1.002	0.128	
707.50	23095	Mid	LTE Band 12	10	23.5	23.25	0.12	1	Left	Cheek	QPSK	25	12	92AED	1:1	0.096	1.059	0.102	
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	0.16	0	Left	Tilt	QPSK	1	25	92AED	1:1	0.107	1.002	0.107	
707.50	23095	Mid	LTE Band 12	10	23.5	23.25	0.00	1	Left	Tilt	QPSK	25	12	92AED	1:1	0.081	1.059	0.086	

ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population	Head 1.6 W/kg (mW/g) averaged over 1 gram

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Table 11-7
LTE Band 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	Scaled SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
836.50	26915	Mid	LTE Band 26 (Cell)	15	24.5	24.49	-0.02	0	Right	Cheek	QPSK	1	36	92AF0	1:1	0.277	1.002	0.278	A7
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.22	0.02	1	Right	Cheek	QPSK	36	0	92AF0	1:1	0.218	1.067	0.233	
836.50	26915	Mid	LTE Band 26 (Cell)	15	24.5	24.49	0.07	0	Right	Tilt	QPSK	1	36	92AF0	1:1	0.127	1.002	0.127	
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.22	0.05	1	Right	Tilt	QPSK	36	0	92AF0	1:1	0.101	1.067	0.108	
836.50	26915	Mid	LTE Band 26 (Cell)	15	24.5	24.49	-0.02	0	Left	Cheek	QPSK	1	36	92AF0	1:1	0.196	1.002	0.196	
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.22	0.08	1	Left	Cheek	QPSK	36	0	92AF0	1:1	0.141	1.067	0.150	
836.50	26915	Mid	LTE Band 26 (Cell)	15	24.5	24.49	-0.03	0	Left	Tilt	QPSK	1	36	92AF0	1:1	0.102	1.002	0.102	
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.22	0.09	1	Left	Tilt	QPSK	36	0	92AF0	1:1	0.081	1.067	0.086	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-8
LTE Band 4 (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	Scaled SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	22.30	-0.20	0	Right	Cheek	QPSK	1	99	92AF0	1:1	0.171	1.047	0.179	A8
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.5	21.12	0.00	1	Right	Cheek	QPSK	50	25	92AF0	1:1	0.091	1.091	0.099	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	22.30	-0.19	0	Right	Tilt	QPSK	1	99	92AF0	1:1	0.118	1.047	0.124	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.5	21.12	0.01	1	Right	Tilt	QPSK	50	25	92AF0	1:1	0.072	1.091	0.079	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	22.30	-0.02	0	Left	Cheek	QPSK	1	99	92AF0	1:1	0.165	1.047	0.173	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.5	21.12	-0.08	1	Left	Cheek	QPSK	50	25	92AF0	1:1	0.113	1.091	0.123	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	22.30	0.04	0	Left	Tilt	QPSK	1	99	92AF0	1:1	0.101	1.047	0.106	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.5	21.12	0.16	1	Left	Tilt	QPSK	50	25	92AF0	1:1	0.066	1.091	0.072	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-9
LTE Band 2 (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	Scaled SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1860.00	18700	Low	LTE Band 2 (PCS)	20	24.5	24.37	0.04	0	Right	Cheek	QPSK	1	0	92AF0	1:1	0.043	1.030	0.044	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	23.09	0.19	1	Right	Cheek	QPSK	50	50	92AF0	1:1	0.036	1.099	0.040	
1860.00	18700	Low	LTE Band 2 (PCS)	20	24.5	24.37	-0.07	0	Right	Tilt	QPSK	1	0	92AF0	1:1	0.044	1.030	0.045	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	23.09	0.21	1	Right	Tilt	QPSK	50	50	92AF0	1:1	0.031	1.099	0.034	
1860.00	18700	Low	LTE Band 2 (PCS)	20	24.5	24.37	0.06	0	Left	Cheek	QPSK	1	0	92AF0	1:1	0.059	1.030	0.061	A9
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	23.09	0.00	1	Left	Cheek	QPSK	50	50	92AF0	1:1	0.044	1.099	0.048	
1860.00	18700	Low	LTE Band 2 (PCS)	20	24.5	24.37	0.18	0	Left	Tilt	QPSK	1	0	92AF0	1:1	0.043	1.030	0.044	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	23.09	0.09	1	Left	Tilt	QPSK	50	50	92AF0	1:1	0.026	1.099	0.029	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

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Table 11-10
DTS Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Scaled SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2462	11	802.11b	DSSS	22	14.5	14.12	0.14	Right	Cheek	1	95BE4	1	99.7	0.489	0.390	1.091	1.003	**0.426**	
2462	11	802.11b	DSSS	22	14.5	14.12	-0.04	Right	Tilt	1	95BE4	1	99.7	0.395	0.313	1.091	1.003	0.342	
2462	11	802.11b	DSSS	22	14.5	14.12	-	Left	Cheek	1	95BE4	1	99.7	0.289	-	1.091	1.003	-	
2462	11	802.11b	DSSS	22	14.5	14.12	-	Left	Tilt	1	95BE4	1	99.7	0.188	-	1.091	1.003	-	
2437	6	802.11b	DSSS	22	14.5	14.48	0.16	Right	Cheek	2	95BE4	1	99.7	0.458	0.419	1.005	1.003	0.422	A10
2437	6	802.11b	DSSS	22	14.5	14.48	0.07	Right	Tilt	2	95BE4	1	99.7	0.418	0.377	1.005	1.003	0.380	
2437	6	802.11b	DSSS	22	14.5	14.48	-	Left	Cheek	2	95BE4	1	99.7	0.218	-	1.005	1.003	-	
2437	6	802.11b	DSSS	22	14.5	14.48	-	Left	Tilt	2	95BE4	1	99.7	0.304	-	1.005	1.003	-	
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
NII Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Scaled SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5280	56	802.11a	OFDM	20	10.5	9.74	0.13	Right	Cheek	1	95BE4	6	98.6	0.288	0.124	1.191	1.014	0.150	
5280	56	802.11a	OFDM	20	10.5	9.74	-	Right	Tilt	1	95BE4	6	98.6	0.160	-	1.191	1.014	-	
5280	56	802.11a	OFDM	20	10.5	9.74	-	Left	Cheek	1	95BE4	6	98.6	0.049	-	1.191	1.014	-	
5280	56	802.11a	OFDM	20	10.5	9.74	-	Left	Tilt	1	95BE4	6	98.6	0.045	-	1.191	1.014	-	
5300	60	802.11a	OFDM	20	10.5	9.48	0.18	Right	Cheek	2	95BE4	6	99.4	0.483	0.255	1.265	1.006	0.325	
5300	60	802.11a	OFDM	20	10.5	9.48	-	Right	Tilt	2	95BE4	6	99.4	0.357	-	1.265	1.006	-	
5300	60	802.11a	OFDM	20	10.5	9.48	-	Left	Cheek	2	95BE4	6	99.4	0.036	-	1.265	1.006	-	
5300	60	802.11a	OFDM	20	10.5	9.48	-	Left	Tilt	2	95BE4	6	99.4	0.029	-	1.265	1.006	-	
5500	100	802.11a	OFDM	20	10.5	9.91	0.18	Right	Cheek	1	95BE4	6	98.6	0.088	0.022	1.146	1.014	0.025	
5500	100	802.11a	OFDM	20	10.5	9.91	-	Right	Tilt	1	95BE4	6	98.6	0.046	-	1.146	1.014	-	
5500	100	802.11a	OFDM	20	10.5	9.91	-	Left	Cheek	1	95BE4	6	98.6	0.014	-	1.146	1.014	-	
5500	100	802.11a	OFDM	20	10.5	9.91	-	Left	Tilt	1	95BE4	6	98.6	0.010	-	1.146	1.014	-	
5500	100	802.11a	OFDM	20	10.5	9.53	0.02	Right	Cheek	2	95BE4	6	99.4	0.609	0.311	1.250	1.006	0.391	
5500	100	802.11a	OFDM	20	10.5	9.53	0.18	Right	Tilt	2	95BE4	6	99.4	0.683	0.388	1.250	1.006	**0.488**	A11
5500	100	802.11a	OFDM	20	10.5	9.53	-	Left	Cheek	2	95BE4	6	99.4	0.488	-	1.250	1.006	-	
5500	100	802.11a	OFDM	20	10.5	9.53	-	Left	Tilt	2	95BE4	6	99.4	0.499	-	1.250	1.006	-	
5785	157	802.11a	OFDM	20	10.5	10.01	0.18	Right	Cheek	1	95BE4	6	98.6	0.043	0.012	1.119	1.014	0.013	
5785	157	802.11a	OFDM	20	10.5	10.01	-	Right	Tilt	1	95BE4	6	98.6	0.018	-	1.119	1.014	-	
5785	157	802.11a	OFDM	20	10.5	10.01	-	Left	Cheek	1	95BE4	6	98.6	0.008	-	1.119	1.014	-	
5785	157	802.11a	OFDM	20	10.5	10.01	-	Left	Tilt	1	95BE4	6	98.6	0.009	-	1.119	1.014	-	
5785	157	802.11a	OFDM	20	10.5	9.86	0.18	Right	Cheek	2	95BE4	6	99.4	0.931	0.371	1.159	1.006	0.433	
5785	157	802.11a	OFDM	20	10.5	9.86	0.16	Right	Tilt	2	95BE4	6	99.4	0.826	0.315	1.159	1.006	0.367	
5785	157	802.11a	OFDM	20	10.5	9.86	-	Left	Cheek	2	95BE4	6	99.4	0.472	-	1.159	1.006	-	
5785	157	802.11a	OFDM	20	10.5	9.86	-	Left	Tilt	2	95BE4	6	99.4	0.476	-	1.159	1.006	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram											

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11.2 Standalone Body-Worn SAR Data

Table 11-12
GSM/UMTS 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	Scaled SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
848.80	251	GSM 850	GSM	33.5	33.10	-0.01	10 mm	92AF3	1	1:8.3	back	0.147	1.096	0.161	A12
846.60	4233	UMTS 850	RMC	23.5	23.38	0.01	10 mm	92B01	N/A	1:1	back	0.565	1.028	0.581	A14
1732.40	1412	UMTS 1750	RMC	22.5	21.72	-0.11	15 mm	93F17	N/A	1:1	back	0.600	1.197	0.718	A15
1880.00	661	GSM 1900	GSM	30.5	30.22	-0.08	10 mm	92AF3	1	1:8.3	back	0.255	1.067	0.272	A17
1880.00	9400	UMTS 1900	RMC	23.5	23.25	0.02	15 mm	92B01	N/A	1:1	back	0.225	1.059	0.238	A19
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-13
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	Scaled SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	0.13	0	92AED	QPSK	1	25	10 mm	back	1:1	0.778	1.002	0.780	A21
707.50	23095	Mid	LTE Band 12	10	23.5	23.25	0.14	1	92AED	QPSK	25	12	10 mm	back	1:1	0.565	1.059	0.598	
836.50	26915	Mid	LTE Band 26 (Cell)	15	24.5	24.49	-0.06	0	92AED	QPSK	1	36	10 mm	back	1:1	0.596	1.002	0.597	A22
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.22	0.03	1	92AED	QPSK	36	0	10 mm	back	1:1	0.423	1.067	0.451	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	22.30	0.07	0	92AF3	QPSK	1	99	15 mm	back	1:1	0.452	1.047	0.473	A24
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.5	21.12	0.08	1	92AF3	QPSK	50	25	15 mm	back	1:1	0.328	1.091	0.358	
1860.00	18700	Low	LTE Band 2 (PCS)	20	24.5	24.37	-0.07	0	92B09	QPSK	1	0	10 mm	back	1:1	0.815	1.030	**0.839**	A26
1880.00	18900	Mid	LTE Band 2 (PCS)	20	24.5	24.03	-0.05	0	92B09	QPSK	1	50	10 mm	back	1:1	0.641	1.114	0.714	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.5	24.00	-0.01	0	92B09	QPSK	1	0	10 mm	back	1:1	0.598	1.122	0.671	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	23.09	-0.06	1	92B09	QPSK	50	50	10 mm	back	1:1	0.594	1.099	0.653	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	22.96	-0.04	1	92B09	QPSK	100	0	10 mm	back	1:1	0.606	1.132	0.686	
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 11-14
DTS Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Scaled SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2437	6	802.11b	DSSS	22	17.5	17.35	0.09	10 mm	1	95C04	1	back	99.7	0.145	0.122	1.035	1.003	0.126	
2437	6	802.11b	DSSS	22	17.5	17.48	0.01	10 mm	2	95C04	1	back	99.7	0.277	0.224	1.005	1.003	**0.226**	A28
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 11-15
NII Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan W/kg	SAR (1g) (W/kg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Scaled SAR (1g) (W/kg)	Plot #
MHz	Ch.																		
5260	52	802.11a	OFDM	20	13.5	13.45	-0.12	10 mm	1	95BE4	6	back	98.6	0.028	0.016	1.012	1.014	0.016	
5320	64	802.11a	OFDM	20	13.5	13.11	0.18	10 mm	2	95BE4	6	back	99.4	0.062	0.032	1.094	1.006	0.035	
5500	100	802.11a	OFDM	20	13.5	13.45	0.10	10 mm	1	95BE4	6	back	98.6	0.014	0.002	1.012	1.014	0.002	
5500	100	802.11a	OFDM	20	13.5	12.70	0.14	10 mm	2	95BE4	6	back	99.4	0.067	0.030	1.202	1.006	0.036	
5785	157	802.11a	OFDM	20	13.5	13.40	0.00	10 mm	1	95BE4	6	back	98.6	0.013	0.003	1.023	1.014	0.003	
5785	157	802.11a	OFDM	20	13.5	12.72	0.12	10 mm	2	95BE4	6	back	99.4	0.082	0.035	1.197	1.006	0.042	A30
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

11.3 Standalone Wireless Router SAR Data

Table 11-16
GPRS/UMTS 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) (W/kg)	Scaling Factor	Scaled SAR (1g) (W/kg)	Plot #
MHz	Ch.														
848.80	251	GSM 850	GPRS	30.5	30.27	0.14	10 mm	92AF3	3	1:2.76	back	0.373	1.054	0.393	A13
848.80	251	GSM 850	GPRS	30.5	30.27	-0.05	10 mm	92AF3	3	1:2.76	front	0.350	1.054	0.369	
848.80	251	GSM 850	GPRS	30.5	30.27	-0.21	10 mm	92AF3	3	1:2.76	bottom	0.237	1.054	0.250	
848.80	251	GSM 850	GPRS	30.5	30.27	-0.19	10 mm	92AF3	3	1:2.76	right	0.185	1.054	0.195	
848.80	251	GSM 850	GPRS	30.5	30.27	0.04	10 mm	92AF3	3	1:2.76	left	0.022	1.054	0.023	
846.60	4233	UMTS 850	RMC	23.5	23.38	0.01	10 mm	92B01	N/A	1:1	back	0.565	1.028	0.581	A14
846.60	4233	UMTS 850	RMC	23.5	23.38	-0.01	10 mm	92B01	N/A	1:1	front	0.530	1.028	0.545	
846.60	4233	UMTS 850	RMC	23.5	23.38	-0.06	10 mm	92B01	N/A	1:1	bottom	0.276	1.028	0.284	
846.60	4233	UMTS 850	RMC	23.5	23.38	-0.03	10 mm	92B01	N/A	1:1	right	0.287	1.028	0.295	
846.60	4233	UMTS 850	RMC	23.5	23.38	-0.11	10 mm	92B01	N/A	1:1	left	0.036	1.028	0.037	
1732.40	1412	UMTS 1750	RMC	19.0	19.00	-0.15	10 mm	93D28	N/A	1:1	back	0.582	1.000	0.582	
1732.40	1412	UMTS 1750	RMC	19.0	19.00	-0.11	10 mm	93D28	N/A	1:1	front	0.599	1.000	0.599	A16
1732.40	1412	UMTS 1750	RMC	19.0	19.00	0.11	10 mm	93D28	N/A	1:1	bottom	0.570	1.000	0.570	
1732.40	1412	UMTS 1750	RMC	19.0	19.00	0.01	10 mm	93D28	N/A	1:1	right	0.117	1.000	0.117	
1732.40	1412	UMTS 1750	RMC	19.0	19.00	0.13	10 mm	93D28	N/A	1:1	left	0.027	1.000	0.027	
1880.00	661	GSM 1900	GPRS	27.0	26.42	-0.02	10 mm	92AF3	3	1:2.76	back	0.354	1.143	0.405	A18
1880.00	661	GSM 1900	GPRS	27.0	26.42	0.05	10 mm	92AF3	3	1:2.76	front	0.349	1.143	0.399	
1880.00	661	GSM 1900	GPRS	27.0	26.42	0.07	10 mm	92AF3	3	1:2.76	bottom	0.325	1.143	0.371	
1880.00	661	GSM 1900	GPRS	27.0	26.42	0.02	10 mm	92AF3	3	1:2.76	right	0.064	1.143	0.073	
1880.00	661	GSM 1900	GPRS	27.0	26.42	0.21	10 mm	92AF3	3	1:2.76	left	0.015	1.143	0.017	
1880.00	9400	UMTS 1900	RMC	19.5	19.17	0.18	10 mm	93D28	N/A	1:1	back	0.615	1.079	0.664	
1880.00	9400	UMTS 1900	RMC	19.5	19.17	0.05	10 mm	93D28	N/A	1:1	front	0.617	1.079	0.666	A20
1880.00	9400	UMTS 1900	RMC	19.5	19.17	-0.05	10 mm	93D28	N/A	1:1	bottom	0.498	1.079	0.537	
1880.00	9400	UMTS 1900	RMC	19.5	19.17	-0.05	10 mm	93D28	N/A	1:1	right	0.106	1.079	0.114	
1880.00	9400	UMTS 1900	RMC	19.5	19.17	-0.06	10 mm	93D28	N/A	1:1	left	0.031	1.079	0.033	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram								

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Table 11-17
LTE 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	Scaled SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	0.13	0	92AED	QPSK	1	25	10 mm	back	1:1	0.778	1.002	0.780	A21
707.50	23095	Mid	LTE Band 12	10	23.5	23.25	0.14	1	92AED	QPSK	25	12	10 mm	back	1:1	0.565	1.059	0.598	
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	-0.03	0	92AED	QPSK	1	25	10 mm	front	1:1	0.628	1.002	0.629	
707.50	23095	Mid	LTE Band 12	10	23.5	23.25	0.02	1	92AED	QPSK	25	12	10 mm	front	1:1	0.469	1.059	0.497	
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	0.01	0	92AED	QPSK	1	25	10 mm	bottom	1:1	0.334	1.002	0.335	
707.50	23095	Mid	LTE Band 12	10	23.5	23.25	-0.05	1	92AED	QPSK	25	12	10 mm	bottom	1:1	0.246	1.059	0.261	
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	0.00	0	92AED	QPSK	1	25	10 mm	right	1:1	0.352	1.002	0.353	
707.50	23095	Mid	LTE Band 12	10	23.5	23.25	-0.01	1	92AED	QPSK	25	12	10 mm	right	1:1	0.252	1.059	0.267	
707.50	23095	Mid	LTE Band 12	10	24.5	24.49	0.00	0	92AED	QPSK	1	25	10 mm	left	1:1	0.149	1.002	0.149	
707.50	23095	Mid	LTE Band 12	10	23.5	23.25	0.02	1	92AED	QPSK	25	12	10 mm	left	1:1	0.108	1.059	0.114	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-18
LTE 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	Scaled SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
836.50	26915	Mid	LTE Band 26 (Cell)	15	24.5	24.49	-0.06	0	92AED	QPSK	1	36	10 mm	back	1:1	0.596	1.002	0.597	
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.22	0.03	1	92AED	QPSK	36	0	10 mm	back	1:1	0.423	1.067	0.451	
836.50	26915	Mid	LTE Band 26 (Cell)	15	24.5	24.49	-0.04	0	92AED	QPSK	1	36	10 mm	front	1:1	0.613	1.002	0.614	A23
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.22	-0.10	1	92AED	QPSK	36	0	10 mm	front	1:1	0.433	1.067	0.462	
836.50	26915	Mid	LTE Band 26 (Cell)	15	24.5	24.49	-0.04	0	92AED	QPSK	1	36	10 mm	bottom	1:1	0.280	1.002	0.281	
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.22	-0.08	1	92AED	QPSK	36	0	10 mm	bottom	1:1	0.205	1.067	0.219	
836.50	26915	Mid	LTE Band 26 (Cell)	15	24.5	24.49	0.01	0	92AED	QPSK	1	36	10 mm	right	1:1	0.323	1.002	0.324	
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.22	0.04	1	92AED	QPSK	36	0	10 mm	right	1:1	0.225	1.067	0.240	
836.50	26915	Mid	LTE Band 26 (Cell)	15	24.5	24.49	-0.10	0	92AED	QPSK	1	36	10 mm	left	1:1	0.053	1.002	0.053	
836.50	26915	Mid	LTE Band 26 (Cell)	15	23.5	23.22	-0.07	1	92AED	QPSK	36	0	10 mm	left	1:1	0.035	1.067	0.037	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-19
LTE Band 4 (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	Scaled SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	18.5	18.31	0.20	0	9F829	QPSK	1	0	10 mm	back	1:1	0.140	1.045	0.146	A25
1732.50	20175	Mid	LTE Band 4 (AWS)	20	18.5	18.27	0.20	0	9F829	QPSK	50	0	10 mm	back	1:1	0.102	1.054	0.108	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	18.5	18.31	-0.19	0	9F829	QPSK	1	0	10 mm	front	1:1	0.135	1.045	0.141	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	18.5	18.27	-0.16	0	9F829	QPSK	50	0	10 mm	front	1:1	0.103	1.054	0.109	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	18.5	18.31	0.14	0	9F829	QPSK	1	0	10 mm	bottom	1:1	0.083	1.045	0.087	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	18.5	18.27	0.19	0	9F829	QPSK	50	0	10 mm	bottom	1:1	0.061	1.054	0.064	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	18.5	18.31	0.12	0	9F829	QPSK	1	0	10 mm	right	1:1	0.021	1.045	0.022	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	18.5	18.27	0.14	0	9F829	QPSK	50	0	10 mm	right	1:1	0.016	1.054	0.017	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	18.5	18.31	0.16	0	9F829	QPSK	1	0	10 mm	left	1:1	0.003	1.045	0.003	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	18.5	18.27	0.19	0	9F829	QPSK	50	0	10 mm	left	1:1	0.005	1.054	0.005	
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 Band 2 (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	Scaled SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1860.00	18700	Low	LTE Band 2 (PCS)	20	24.5	24.37	-0.07	0	92B09	QPSK	1	0	10 mm	back	1:1	0.815	1.030	0.839	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	24.5	24.03	-0.05	0	92B09	QPSK	1	50	10 mm	back	1:1	0.641	1.114	0.714	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.5	24.00	-0.01	0	92B09	QPSK	1	0	10 mm	back	1:1	0.598	1.122	0.671	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	23.09	-0.06	1	92B09	QPSK	50	50	10 mm	back	1:1	0.594	1.099	0.653	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	22.96	-0.04	1	92B09	QPSK	100	0	10 mm	back	1:1	0.606	1.132	0.686	
1860.00	18700	Low	LTE Band 2 (PCS)	20	24.5	24.37	-0.07	0	92B09	QPSK	1	0	10 mm	front	1:1	0.833	1.030	0.858	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	24.5	24.03	-0.10	0	92B09	QPSK	1	50	10 mm	front	1:1	0.638	1.114	0.711	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.5	24.00	-0.01	0	92B09	QPSK	1	0	10 mm	front	1:1	0.602	1.122	0.675	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	23.09	-0.02	1	92B09	QPSK	50	50	10 mm	front	1:1	0.585	1.099	0.643	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	22.96	-0.07	1	92B09	QPSK	100	0	10 mm	front	1:1	0.599	1.132	0.678	
1860.00	18700	Low	LTE Band 2 (PCS)	20	24.5	24.37	-0.01	0	92B09	QPSK	1	0	10 mm	bottom	1:1	0.870	1.030	**0.896**	A27
1880.00	18900	Mid	LTE Band 2 (PCS)	20	24.5	24.03	-0.02	0	92B09	QPSK	1	50	10 mm	bottom	1:1	0.646	1.114	0.720	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.5	24.00	-0.02	0	92B09	QPSK	1	0	10 mm	bottom	1:1	0.608	1.122	0.682	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	23.09	-0.04	1	92B09	QPSK	50	50	10 mm	bottom	1:1	0.636	1.099	0.699	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	22.96	-0.01	1	92B09	QPSK	100	0	10 mm	bottom	1:1	0.641	1.132	0.726	
1860.00	18700	Low	LTE Band 2 (PCS)	20	24.5	24.37	-0.01	0	92B09	QPSK	1	0	10 mm	right	1:1	0.157	1.030	0.162	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	23.09	0.04	1	92B09	QPSK	50	50	10 mm	right	1:1	0.115	1.099	0.126	
1860.00	18700	Low	LTE Band 2 (PCS)	20	24.5	24.37	0.06	0	92B09	QPSK	1	0	10 mm	left	1:1	0.038	1.030	0.039	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	23.09	0.11	1	92B09	QPSK	50	50	10 mm	left	1:1	0.026	1.099	0.029	
1860.00	18700	Low	LTE Band 2 (PCS)	20	24.5	24.37	0.04	0	92B09	QPSK	1	0	10 mm	bottom	1:1	0.804	1.030	0.828	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Blue entry represents variability measurement.

Table 11-21
WLAN Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Scaled SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2437	6	802.11b	DSSS	22	17.5	17.35	-	10 mm	1	95C04	1	back	99.7	0.145	-	1.035	1.003	-	
2437	6	802.11b	DSSS	22	17.5	17.35	0.03	10 mm	1	95C04	1	front	99.7	0.153	0.135	1.035	1.003	0.140	
2437	6	802.11b	DSSS	22	17.5	17.35	-	10 mm	1	95C04	1	top	99.7	0.053	-	1.035	1.003	-	
2437	6	802.11b	DSSS	22	17.5	17.35	-	10 mm	1	95C04	1	left	99.7	0.064	-	1.035	1.003	-	
2437	6	802.11b	DSSS	22	17.5	17.48	-	10 mm	2	95C04	1	back	99.7	0.277	-	1.005	1.003	-	
2437	6	802.11b	DSSS	22	17.5	17.48	-	10 mm	2	95C04	1	front	99.7	0.179	-	1.005	1.003	-	
2437	6	802.11b	DSSS	22	17.5	17.48	-0.08	10 mm	2	95C04	1	top	99.7	0.300	0.253	1.005	1.003	**0.255**	A29
2437	6	802.11b	DSSS	22	17.5	17.48	-	10 mm	2	95C04	1	left	99.7	0.112	-	1.005	1.003	-	
5785	157	802.11a	OFDM	20	13.5	13.40	-	10 mm	1	95BE4	6	back	98.6	0.013	-	1.023	1.014	-	
5785	157	802.11a	OFDM	20	13.5	13.40	-0.17	10 mm	1	95BE4	6	front	98.6	0.016	0.004	1.023	1.014	0.004	
5785	157	802.11a	OFDM	20	13.5	13.40	-	10 mm	1	95BE4	6	top	98.6	0.013	-	1.023	1.014	-	
5785	157	802.11a	OFDM	20	13.5	13.40	-	10 mm	1	95BE4	6	left	98.6	0.013	-	1.023	1.014	-	
5785	157	802.11a	OFDM	20	13.5	12.72	-	10 mm	2	95BE4	6	back	99.4	0.082	-	1.197	1.006	-	
5785	157	802.11a	OFDM	20	13.5	12.72	0.12	10 mm	2	95BE4	6	front	99.4	0.203	0.085	1.197	1.006	**0.103**	A31
5785	157	802.11a	OFDM	20	13.5	12.72	-	10 mm	2	95BE4	6	top	99.4	0.180	-	1.197	1.006	-	
5785	157	802.11a	OFDM	20	13.5	12.72	-	10 mm	2	95BE4	6	left	99.4	0.028	-	1.197	1.006	-	
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 Extremity SAR Data

Table 11-22
UMTS Extremity 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	Scaled SAR (10g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1712.40	1312	UMTS 1750	RMC	22.5	21.61	-0.04	0 mm	92AF3	1:1	back	2.180	1.227	2.675	
1732.40	1412	UMTS 1750	RMC	22.5	21.72	-0.01	0 mm	92AF3	1:1	back	2.210	1.197	2.645	
1752.50	1862	UMTS 1750	RMC	22.5	21.82	-0.19	0 mm	92AF3	1:1	back	2.550	1.169	**2.981**	A32
1712.40	1312	UMTS 1750	RMC	22.5	21.61	0.21	0 mm	92AF3	1:1	front	1.790	1.227	2.196	
1732.40	1412	UMTS 1750	RMC	22.5	21.72	-0.21	0 mm	92AF3	1:1	front	2.030	1.197	2.430	
1752.50	1862	UMTS 1750	RMC	22.5	21.82	-0.19	0 mm	92AF3	1:1	front	2.040	1.169	2.385	
1732.40	1412	UMTS 1750	RMC	22.5	21.72	0.18	0 mm	92AF3	1:1	bottom	1.330	1.197	1.592	
1752.50	1862	UMTS 1750	RMC	22.5	21.82	-0.03	0 mm	92AF3	1:1	back	2.410	1.169	2.817	
1880.00	9400	UMTS 1900	RMC	23.5	23.25	0.08	0 mm	92B01	1:1	back	1.620	1.059	1.716	A33
1880.00	9400	UMTS 1900	RMC	23.5	23.25	-0.06	0 mm	92B01	1:1	front	1.610	1.059	1.705	
1880.00	9400	UMTS 1900	RMC	23.5	23.25	-0.21	0 mm	92B01	1:1	bottom	0.893	1.059	0.946	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Extremity 4.0 W/kg (mW/g) averaged over 10 grams						

Blue entry represents variability measurement.

Table 11-23
WLAN Extremity SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Scaled SAR (10g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5260	52	802.11a	OFDM	20	13.5	13.45	-	0 mm	1	95BE4	6	back	98.6	1.009	-	1.012	1.014	-	
5260	52	802.11a	OFDM	20	13.5	13.45	-0.19	0 mm	1	95BE4	6	front	98.6	2.529	0.139	1.012	1.014	0.143	
5260	52	802.11a	OFDM	20	13.5	13.45	-	0 mm	1	95BE4	6	top	98.6	0.390	-	1.012	1.014	-	
5260	52	802.11a	OFDM	20	13.5	13.45	-	0 mm	1	95BE4	6	left	98.6	0.274	-	1.012	1.014	-	
5320	64	802.11a	OFDM	20	13.5	13.11	-	0 mm	2	95BE4	6	back	99.4	1.864	-	1.094	1.006	-	
5320	64	802.11a	OFDM	20	13.5	13.11	-0.10	0 mm	2	95BE4	6	front	99.4	2.706	0.505	1.094	1.006	**0.555**	A34
5320	64	802.11a	OFDM	20	13.5	13.11	-	0 mm	2	95BE4	6	top	99.4	1.055	-	1.094	1.006	-	
5320	64	802.11a	OFDM	20	13.5	13.11	-	0 mm	2	95BE4	6	left	99.4	0.128	-	1.094	1.006	-	
5500	100	802.11a	OFDM	20	13.5	13.45	-	0 mm	1	95BE4	6	back	98.6	0.483	-	1.012	1.014	-	
5500	100	802.11a	OFDM	20	13.5	13.45	0.11	0 mm	1	95BE4	6	front	98.6	0.700	0.028	1.012	1.014	0.028	
5500	100	802.11a	OFDM	20	13.5	13.45	-	0 mm	1	95BE4	6	top	98.6	0.047	-	1.012	1.014	-	
5500	100	802.11a	OFDM	20	13.5	13.45	-	0 mm	1	95BE4	6	left	98.6	0.102	-	1.012	1.014	-	
5500	100	802.11a	OFDM	20	13.5	12.70	-	0 mm	2	95BE4	6	back	99.4	2.463	-	1.202	1.006	-	
5500	100	802.11a	OFDM	20	13.5	12.70	-0.08	0 mm	2	95BE4	6	front	99.4	2.771	0.344	1.202	1.006	0.415	
5500	100	802.11a	OFDM	20	13.5	12.70	-	0 mm	2	95BE4	6	top	99.4	1.448	-	1.202	1.006	-	
5500	100	802.11a	OFDM	20	13.5	12.70	-	0 mm	2	95BE4	6	left	99.4	0.368	-	1.202	1.006	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Extremity 4.0 W/kg (mW/g) averaged over 10 grams									

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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 1528-2003, and FCC KDB Publication 447498 D01v05.
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 D01v05.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 15 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance. A test separation distance of 10 mm for Body-worn SAR was used for some modes as it is more conservative.
7. Per FCC KDB Publication 648474 D04v01r02, 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 D01 v01, variability SAR tests were performed when the measured SAR results for a frequency band were greater than 0.8 W/kg for 1g SAR and 2.0 W/kg for 10g SAR. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 13 for variability analysis.
9. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v02, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.6 for more details).
10. Per FCC KDB Publication 648474 D04v01r02, this device is considered a "phablet" since the diagonal dimension is > 160 mm and < 200 mm. When hotspot mode applies, extremity SAR is required only for the surfaces and edges with hotspot mode scaled to the maximum output power (including tolerance) is 1-g SAR > 1.2 W/kg.
11. 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 scenarios.

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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 D01v03 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 D01v05, 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 SAR and ≤ 2.0 W/kg for 10g SAR 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 D01v03. AMR and HSPA SAR was not required per the 3G Test Reduction Procedure in KDB Publication 941225 D01v03.
2. Per FCC KDB Publication 447498 D01v05, 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 SAR and ≤ 2.0 W/kg for 10g SAR 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 D05v02r03. The general test procedures used for testing can be found in Section 8.5.4.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
3. A-MPR was disabled for all SAR tests by setting NS=01 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).

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WLAN Notes:

1. For held-to-ear and hotspot 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 SAR and ≤ 1.0 W/kg for 10g SAR, 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 for 1g SAR and ≤ 2.0 W/kg for 10g SAR or all test positions are measured.
2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r01 for 2.4 GHz WIFI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 8.6.5 for more information.
3. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r01 for 5 GHz WIFI single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg for 1g SAR and less than 3.0 W/kg for 10g SAR. See Section 8.6.6 for more information.
4. Per KDB Publication 248227 D01v02r01, SAR for MIMO was evaluated by following the simultaneous SAR provisions from KDB Publication 447498. Please see Section 12 for complete analysis.
5. When the maximum reported 1g averaged SAR is ≤0.8 W/kg for 1g SAR and ≤ 2.0 W/kg for 10g SAR, 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 SAR and ≤ 3.0 W/kg for 10g SAR or all test channels were measured.
6. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated EMC test reports.
7. For SAR compliance, this device always uses power reduction when the device is in a held-to-ear RF exposure condition with 2.4 GHz and 5 GHz WLAN data modes. Therefore, WLAN head SAR was evaluated at reduced power levels.

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12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Introduction

The following procedures adopted from FCC KDB Publication 447498 D01v05r02 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 447498 D01v05 IV.C.1.iii and IEEE 1528-2013 Section 6.3.4.1.2, simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g 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 1-g or 10-g SAR.

When standalone SAR is not required to be measured, per FCC KDB 447498 D01v05 4.3.2 2), the following equation must be used to estimate the standalone 1g or 10g SAR for simultaneous transmission assessment involving that transmitter.

$$Estimated\ 1g\ SAR = \frac{\sqrt{\mathrm{f(GHz)}}}{7.5} * \frac{(\text{Max Power of channel, mW})}{\text{Min. Separation Distance, mm}}$$

$$Estimated\ 10g\ SAR = \frac{\sqrt{\mathrm{f(GHz}}}{18.75} * \frac{(\text{Max Power of channel, mW})}{\text{Min. Separation Distance, mm}}$$

Table 12-1
Estimated SAR

Mode	Frequency	Maximum Allowed Power	Separation Distance (Body)	Estimated SAR (Body)
	[MHz]	[dBm]	[mm]	[W/kg]
Bluetooth (1g)	2480	12.00	15	0.224
Bluetooth (10g)*	2480	12.00	5	0.269

Note:

1. Held-to ear configurations are not applicable to Bluetooth operations and therefore were not considered for simultaneous transmission. Per KDB Publication 447498 D01v05, the maximum power of the channel was rounded to the nearest mW before calculation.
2. Since the sum of 1g single transmission chain SAR measurements is <1.6 W/kg, MIMO SAR for 2.4 GHz and 5 GHz head, body-worn, hotspot and extremity exposure conditions was determined by the sum of 1g single transmission chain SAR values because the summation represents higher output power and yields more conservative result per KDB 248227 D01v02r01.
3. The highest reported SAR for each exposure condition is used for SAR summation purpose.
4. (*) – Per FCC KDB Publication 447498, when the test separation distance is < 5 mm, a distance of 5 mm is applied to determine estimated SAR.

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12.3 Head SAR Simultaneous Transmission Analysis

Table 12-2
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 850	0.087	0.426	0.422	0.513	0.509	0.935
	UMTS 850	0.220	0.426	0.422	0.646	0.642	1.068
	UMTS 1750	0.048	0.426	0.422	0.474	0.470	0.896
	GSM 1900	0.022	0.426	0.422	0.448	0.444	0.870
	UMTS 1900	0.077	0.426	0.422	0.503	0.499	0.925
	LTE Band 12	0.173	0.426	0.422	0.599	0.595	1.021
	LTE Band 26 (Cell)	0.278	0.426	0.422	0.704	0.700	**1.126**
	LTE Band 4 (AWS)	0.179	0.426	0.422	0.605	0.601	1.027
	LTE Band 2 (PCS)	0.061	0.426	0.422	0.487	0.483	0.909

Note: 1+2+3 denotes MIMO summation

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 850	0.087	0.150	0.488	0.237	0.575	0.725
	UMTS 850	0.220	0.150	0.488	0.370	0.708	0.858
	UMTS 1750	0.048	0.150	0.488	0.198	0.536	0.686
	GSM 1900	0.022	0.150	0.488	0.172	0.510	0.660
	UMTS 1900	0.077	0.150	0.488	0.227	0.565	0.715
	LTE Band 12	0.173	0.150	0.488	0.323	0.661	0.811
	LTE Band 26 (Cell)	0.278	0.150	0.488	0.428	0.766	**0.916**
	LTE Band 4 (AWS)	0.179	0.150	0.488	0.329	0.667	0.817
	LTE Band 2 (PCS)	0.061	0.150	0.488	0.211	0.549	0.699

Note: 1+2+3 denotes MIMO summation

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Table 12-4
Simultaneous Transmission Scenario with 2.4 GHz Ant 1 and 5 GHz Ant 2 WLAN (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	GSM 850	0.087	0.426	0.488	1.001
	UMTS 850	0.220	0.426	0.488	1.134
	UMTS 1750	0.048	0.426	0.488	0.962
	GSM 1900	0.022	0.426	0.488	0.936
	UMTS 1900	0.077	0.426	0.488	0.991
	LTE Band 12	0.173	0.426	0.488	1.087
	LTE Band 26 (Cell)	0.278	0.426	0.488	**1.192**
	LTE Band 4 (AWS)	0.179	0.426	0.488	1.093
	LTE Band 2 (PCS)	0.061	0.426	0.488	0.975

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	GSM 850	0.087	0.422	0.150	0.659
	UMTS 850	0.220	0.422	0.150	0.792
	UMTS 1750	0.048	0.422	0.150	0.620
	GSM 1900	0.022	0.422	0.150	0.594
	UMTS 1900	0.077	0.422	0.150	0.649
	LTE Band 12	0.173	0.422	0.150	0.745
	LTE Band 26 (Cell)	0.278	0.422	0.150	**0.850**
	LTE Band 4 (AWS)	0.179	0.422	0.150	0.751
	LTE Band 2 (PCS)	0.061	0.422	0.150	0.633

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12.4 Body-Worn Simultaneous Transmission Analysis

Note: For SAR summation for body-worn back side at 15mm, the SAR values at 10mm for some transmission modes were used since the 10mm test distance was more conservative. "<" denotes that the 10mm SAR values were used for summation purposes.

Table 12-6
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	GSM 850	< 0.161	< 0.126	< 0.226	< 0.287	< 0.387	< 0.513
	UMTS 850	< 0.581	< 0.126	< 0.226	< 0.707	< 0.807	< 0.933
	UMTS 1750	0.718	< 0.126	< 0.226	< 0.844	< 0.944	< 1.07
	GSM 1900	< 0.272	< 0.126	< 0.226	< 0.398	< 0.498	< 0.624
	UMTS 1900	0.238	< 0.126	< 0.226	< 0.364	< 0.464	< 0.59
	LTE Band 12	< 0.780	< 0.126	< 0.226	< 0.906	< 1.006	< 1.132
	LTE Band 26 (Cell)	< 0.597	< 0.126	< 0.226	< 0.723	< 0.823	< 0.949
	LTE Band 4 (AWS)	0.473	< 0.126	< 0.226	< 0.599	< 0.699	< 0.825
	LTE Band 2 (PCS)	< 0.839	< 0.126	< 0.226	< 0.965	< 1.065	**< 1.191**

Note: 1+2+3 denotes MIMO summation

Table 12-7
Simultaneous Transmission Scenario with 5 GHz WLAN (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	GSM 850	< 0.161	< 0.016	< 0.042	< 0.177	< 0.203	< 0.219
	UMTS 850	< 0.581	< 0.016	< 0.042	< 0.597	< 0.623	< 0.639
	UMTS 1750	0.718	< 0.016	< 0.042	< 0.734	< 0.76	< 0.776
	GSM 1900	< 0.272	< 0.016	< 0.042	< 0.288	< 0.314	< 0.33
	UMTS 1900	0.238	< 0.016	< 0.042	< 0.254	< 0.28	< 0.296
	LTE Band 12	< 0.780	< 0.016	< 0.042	< 0.796	< 0.822	< 0.838
	LTE Band 26 (Cell)	< 0.597	< 0.016	< 0.042	< 0.613	< 0.639	< 0.655
	LTE Band 4 (AWS)	0.473	< 0.016	< 0.042	< 0.489	< 0.515	< 0.531
	LTE Band 2 (PCS)	< 0.839	< 0.016	< 0.042	< 0.855	< 0.881	**< 0.897**

Note: 1+2+3 denotes MIMO summation

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Table 12-8
Simultaneous Transmission Scenario with 2.4 GHz Ant 1 and 5 GHz Ant 2 WLAN (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	GSM 850	< 0.161	< 0.126	< 0.042	< 0.287	< 0.203	< 0.329
	UMTS 850	< 0.581	< 0.126	< 0.042	< 0.707	< 0.623	< 0.749
	UMTS 1750	0.718	< 0.126	< 0.042	< 0.844	< 0.76	< 0.886
	GSM 1900	< 0.272	< 0.126	< 0.042	< 0.398	< 0.314	< 0.44
	UMTS 1900	0.238	< 0.126	< 0.042	< 0.364	< 0.28	< 0.406
	LTE Band 12	< 0.780	< 0.126	< 0.042	< 0.906	< 0.822	< 0.948
	LTE Band 26 (Cell)	< 0.597	< 0.126	< 0.042	< 0.723	< 0.639	< 0.765
	LTE Band 4 (AWS)	0.473	< 0.126	< 0.042	< 0.599	< 0.515	< 0.641
	LTE Band 2 (PCS)	< 0.839	< 0.126	< 0.042	< 0.965	< 0.881	**< 1.007**

Table 12-9
Simultaneous Transmission Scenario with 2.4 GHz Ant 2 and 5 GHz Ant 1 WLAN (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	GSM 850	< 0.161	< 0.226	< 0.016	< 0.387	< 0.177	< 0.403
	UMTS 850	< 0.581	< 0.226	< 0.016	< 0.807	< 0.597	< 0.823
	UMTS 1750	0.718	< 0.226	< 0.016	< 0.944	< 0.734	< 0.96
	GSM 1900	< 0.272	< 0.226	< 0.016	< 0.498	< 0.288	< 0.514
	UMTS 1900	0.238	< 0.226	< 0.016	< 0.464	< 0.254	< 0.48
	LTE Band 12	< 0.780	< 0.226	< 0.016	< 1.006	< 0.796	< 1.022
	LTE Band 26 (Cell)	< 0.597	< 0.226	< 0.016	< 0.823	< 0.613	< 0.839
	LTE Band 4 (AWS)	0.473	< 0.226	< 0.016	< 0.699	< 0.489	< 0.715
	LTE Band 2 (PCS)	< 0.839	< 0.226	< 0.016	< 1.065	< 0.855	**< 1.081**

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Table 12-10
Simultaneous Transmission Scenario with Bluetooth (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body-Worn	GSM 850	< 0.161	0.224	< 0.385
	UMTS 850	< 0.581	0.224	< 0.805
	UMTS 1750	0.718	0.224	0.942
	GSM 1900	< 0.272	0.224	< 0.496
	UMTS 1900	0.238	0.224	0.462
	LTE Band 12	< 0.780	0.224	< 1.004
	LTE Band 26 (Cell)	< 0.597	0.224	< 0.821
	LTE Band 4 (AWS)	0.473	0.224	0.697
	LTE Band 2 (PCS)	< 0.839	0.224	< 1.063

Note: Bluetooth SAR was not required to be measured per FCC KDB 447498. Estimated SAR results were used in the above table to determine simultaneous transmission SAR test exclusion.

12.5 Hotspot SAR Simultaneous Transmission Analysis

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	0.393	0.140	0.255	0.533	0.648	0.788
	UMTS 850	0.581	0.140	0.255	0.721	0.836	0.976
	UMTS 1750	0.599	0.140	0.255	0.739	0.854	0.994
	GPRS 1900	0.405	0.140	0.255	0.545	0.660	0.800
	UMTS 1900	0.666	0.140	0.255	0.806	0.921	1.061
	LTE Band 12	0.780	0.140	0.255	0.920	1.035	1.175
	LTE Band 26 (Cell)	0.614	0.140	0.255	0.754	0.869	1.009
	LTE Band 4 (AWS)	0.146	0.140	0.255	0.286	0.401	0.541
	LTE Band 2 (PCS)	0.896	0.140	0.255	1.036	1.151	**1.291**

Note: 1+2+3 denotes MIMO summation

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	0.393	0.004	0.103	0.397	0.496	0.500
	UMTS 850	0.581	0.004	0.103	0.585	0.684	0.688
	UMTS 1750	0.599	0.004	0.103	0.603	0.702	0.706
	GPRS 1900	0.405	0.004	0.103	0.409	0.508	0.512
	UMTS 1900	0.666	0.004	0.103	0.670	0.769	0.773
	LTE Band 12	0.780	0.004	0.103	0.784	0.883	0.887
	LTE Band 26 (Cell)	0.614	0.004	0.103	0.618	0.717	0.721
	LTE Band 4 (AWS)	0.146	0.004	0.103	0.150	0.249	0.253
	LTE Band 2 (PCS)	0.896	0.004	0.103	0.900	0.999	**1.003**

Note: 1+2+3 denotes MIMO summation

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	0.393	0.140	0.103	0.533	0.496	0.636
	UMTS 850	0.581	0.140	0.103	0.721	0.684	0.824
	UMTS 1750	0.599	0.140	0.103	0.739	0.702	0.842
	GPRS 1900	0.405	0.140	0.103	0.545	0.508	0.648
	UMTS 1900	0.666	0.140	0.103	0.806	0.769	0.909
	LTE Band 12	0.780	0.140	0.103	0.920	0.883	1.023
	LTE Band 26 (Cell)	0.614	0.140	0.103	0.754	0.717	0.857
	LTE Band 4 (AWS)	0.146	0.140	0.103	0.286	0.249	0.389
	LTE Band 2 (PCS)	0.896	0.140	0.103	1.036	0.999	**1.139**

Note: 1+2+3 denotes MIMO summation

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Table 12-14
Simultaneous Transmission Scenario with 2.4 GHz Ant 2 and 5 GHz Ant 1 WLAN (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	0.393	0.255	0.004	0.648	0.397	0.652
	UMTS 850	0.581	0.255	0.004	0.836	0.585	0.840
	UMTS 1750	0.599	0.255	0.004	0.854	0.603	0.858
	GPRS 1900	0.405	0.255	0.004	0.660	0.409	0.664
	UMTS 1900	0.666	0.255	0.004	0.921	0.670	0.925
	LTE Band 12	0.780	0.255	0.004	1.035	0.784	1.039
	LTE Band 26 (Cell)	0.614	0.255	0.004	0.869	0.618	0.873
	LTE Band 4 (AWS)	0.146	0.255	0.004	0.401	0.150	0.405
	LTE Band 2 (PCS)	0.896	0.255	0.004	1.151	0.900	**1.155**

12.6 Extremity SAR Simultaneous Transmission Analysis

Per FCC KDB Publication 648474 D04 Handset SAR v01r02, hand SAR tests were not required when wireless router mode does not apply and if wireless router 1g SAR (scaled to the maximum output power, including tolerance) < 1.2 W/kg. Therefore no further analysis was required to determine that SAR limit would not be exceed for all possible simultaneous scenarios, including those involving bands/modes not required to be evaluated for hand SAR.

Table 12-15
Simultaneous Transmission Scenario with 5 GHz WLAN (Extremity at 0.0 cm)

Exposure Condition	Mode	3G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Extremity SAR	UMTS 1750	2.981	0.143	0.555	3.124	3.536	**3.679**
	UMTS 1900	1.716	0.143	0.555	1.859	2.271	2.414

Note: 1+2+3 denotes MIMO summation

Table 12-16
Simultaneous Transmission Scenario with Bluetooth (Extremity at 0.0 cm)

Exposure Condition	Mode	3G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Extremity SAR	UMTS 1750	2.981	0.269	3.250
	UMTS 1900	1.716	0.269	1.985

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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 D01v05 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 D01v01, 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 preformed 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 1-g 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) 10g Extremity SAR measurement variability analysis applies a factor of 2.5 to the procedures outlined above.

Table 13-1
Body SAR Measurement Variability Results

BODY VARIABILITY RESULTS													
Band	FREQUENCY		Mode	Service	Side	Spacing	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.					(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1900	1860.00	18700	LTE Band 2 (PCS)	QPSK, 1 RB, 0 RB Offset	bottom	10 mm	0.870	0.804	1.08	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Body 1.6 W/kg (mW/g) averaged over 1 gram							

Table 13-2
Extremity SAR Measurement Variability Results

EXTREMITY VARIABILITY RESULTS													
Band	FREQUENCY		Mode	Service	Side	Spacing	Measured SAR (10g)	1st Repeated SAR (10g)	Ratio	2nd Repeated SAR (10g)	Ratio	3rd Repeated SAR (10g)	Ratio
	MHz	Ch.					(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1750	1752.50	1862	UMTS 1750	RMC	back	0 mm	2.550	2.410	1.06	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Extremity 4.0 W/kg (mW/g) averaged over 10 grams							

13.2 Measurement Uncertainty

The measured SAR was <1.5 W/kg for all frequency bands. Therefore, per KDB Publication 865664 D01v01, the extended measurement uncertainty analysis per IEEE 1528-2003 was not required.

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14 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	E8257D	(250kHz-20GHz) Signal Generator	3/15/2015	Annual	3/15/2016	MY45470194
Agilent	8753E	(30kHz-6GHz) Network Analyzer	12/30/2014	Annual	12/30/2015	JP38020182
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	8648D	(9kHz-4GHz) Signal Generator	3/15/2015	Annual	3/15/2016	3629U00687
Agilent	E4438C	ESG Vector Signal Generator	3/12/2015	Annual	3/12/2016	MY45090700
Agilent	E4438C	ESG Vector Signal Generator	3/13/2015	Annual	3/13/2016	MY42082385
Agilent	N9020A	MXA Signal Analyzer	10/27/2014	Annual	10/27/2015	US46470561
Agilent	N5182A	MXG Vector Signal Generator	10/27/2014	Annual	10/27/2015	MY47420603
Agilent	N5182A	MXG Vector Signal Generator	3/16/2015	Annual	3/16/2016	MY47420800
Agilent	8753ES	S-Parameter Network Analyzer	1/20/2015	Annual	1/20/2016	US39170122
Agilent	8753ES	S-Parameter Network Analyzer	3/12/2015	Annual	3/12/2016	MY40000670
Agilent	E5515C	Wireless Communications Test Set	2/23/2015	Biennial	2/23/2017	GB41450275
Agilent	E5515C	Wireless Communications Test Set	5/16/2015	Biennial	5/16/2017	GB43304447
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433972
Anritsu	ML2495A	Power Meter	10/31/2013	Biennial	10/31/2015	941001
Anritsu	ML2495A	Power Meter	10/31/2013	Biennial	10/31/2015	1039008
Anritsu	MA2411B	Pulse Power Sensor	11/17/2014	Annual	11/17/2015	1126066
Anritsu	MA2411B	Pulse Power Sensor	3/13/2015	Annual	3/13/2016	1207470
Anritsu	MT8820C	Radio Communication Analyzer	8/28/2014	Annual	8/28/2015	6201240328
Anritsu	MT8820C	Radio Communication Analyzer	9/19/2014	Annual	9/19/2015	6201144418
Anritsu	MA24106A	USB Power Sensor	3/2/2015	Annual	3/2/2016	1344555
Anritsu	MA24106A	USB Power Sensor	3/2/2015	Annual	3/2/2016	1344556
COMTECH	AR85729-5/5759B	Solid State Amplifier	CBT	N/A	CBT	M3W1A00-1002
COMTech	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M1S5A00-009
Control Company	4052	Long Stem Thermometer	9/27/2013	Biennial	9/27/2015	130567447
Fisher Scientific	15-077-960	Digital Thermometer	12/4/2013	Biennial	12/4/2015	130764551
Fisher Scientific	15-077-960	Digital Thermometer	12/4/2013	Biennial	12/4/2015	130764558
Fisher Scientific	S407993	Long Stem Thermometer	11/4/2013	Biennial	11/4/2015	130671826
Gigatronics	80701A	(0.05-18GHz) Power Sensor	10/30/2014	Annual	10/30/2015	1833460
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
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
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Mitutoyo	CD-6"CSX	Digital Caliper	5/8/2014	Biennial	5/8/2016	13264162
Mitutoyo	CD-6"CSX	Digital Caliper	5/8/2014	Biennial	5/8/2016	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
Rohde & Schwarz	CMU200	Base Station Simulator	12/4/2014	Annual	12/4/2015	833855/0010
Rohde & Schwarz	CMU200	Base Station Simulator	3/23/2015	Annual	3/23/2016	836371/0079
Rohde & Schwarz	CMW500	Radio Communication Tester	5/28/2015	Annual	5/28/2016	102060
Rohde & Schwarz	CMW500	Radio Communication Tester	6/1/2015	Annual	6/1/2016	108843
Seekonk	NC-100	Torque Wrench	3/18/2014	Biennial	3/18/2016	N/A
Seekonk	NC-100	Torque Wrench	3/18/2014	Biennial	3/18/2016	N/A
Seekonk	NC-100	Torque Wrench 5/16", 8" lbs	3/18/2014	Biennial	3/18/2016	N/A
SPEAG	D1750V2	1750 MHz SAR Dipole	4/15/2015	Annual	4/15/2016	1051
SPEAG	D1900V2	1900 MHz SAR Dipole	4/14/2015	Annual	4/14/2016	5d141
SPEAG	D2450V2	2450 MHz SAR Dipole	8/11/2014	Annual	8/11/2015	719
SPEAG	D5GHzV2	5 GHz SAR Dipole	1/21/2015	Annual	1/21/2016	1057
SPEAG	D750V3	750 MHz Dipole	1/16/2015	Annual	1/16/2016	1003
SPEAG	D835V2	835 MHz SAR Dipole	1/16/2015	Annual	1/16/2016	4d132
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/17/2014	Annual	9/17/2015	1323
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/14/2015	Annual	1/14/2016	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/13/2015	Annual	3/13/2016	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/18/2014	Annual	9/18/2015	1364
SPEAG	DAE4	Dasy Data Acquisition Electronics	10/23/2014	Annual	10/23/2015	1408
SPEAG	DAK-3.5	Dielectric Assessment Kit	10/21/2014	Annual	10/21/2015	1091
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/12/2015	Annual	5/12/2016	1070
SPEAG	ES3DV3	SAR Probe	9/18/2014	Annual	9/18/2015	3332
SPEAG	ES3DV3	SAR Probe	9/24/2014	Annual	9/24/2015	3288
SPEAG	EX3DV4	SAR Probe	1/22/2015	Annual	1/22/2016	3589
SPEAG	ES3DV3	SAR Probe	1/23/2015	Annual	1/23/2016	3318
SPEAG	EX3DV4	SAR Probe	4/23/2015	Annual	4/23/2016	7357
SPEAG	ES3DV3	SAR Probe	5/20/2015	Annual	5/20/2016	3263
VWR	36934-158	Wall-Mounted Thermometer	8/8/2013	Biennial	8/8/2015	130477877
VWR	36934-158	Wall-Mounted Thermometer	8/8/2013	Biennial	8/8/2015	130477866

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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15 MEASUREMENT UNCERTAINTIES

Applicable for frequencies less than 3000 MHz.

a	b	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	IEEE 1528 Sec.	Tol. (± %)	Prob. Dist.	Div.	c_i 1gm	c_i 10 gms	1gm u_i (± %)	10gms u_i (± %)	v_i
Measurement System									
Probe Calibration	E.2.1	6.0	N	1	1.0	1.0	6.0	6.0	∞
Axial Isotropy	E.2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E.2.2	1.3	N	1	1.0	1.0	1.3	1.3	∞
Boundary Effect	E.2.3	0.4	N	1	1.0	1.0	0.4	0.4	∞
Linearity	E.2.4	0.3	N	1	1.0	1.0	0.3	0.3	∞
System Detection Limits	E.2.5	5.1	N	1	1.0	1.0	5.1	5.1	∞
Readout Electronics	E.2.6	1.0	N	1	1.0	1.0	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1.0	1.0	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.73	1.0	1.0	1.5	1.5	∞
RF Ambient Conditions	E.6.1	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	R	1.73	1.0	1.0	0.2	0.2	∞
Probe Positioning w/ respect to Phantom	E.6.3	2.9	R	1.73	1.0	1.0	1.7	1.7	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	1.0	R	1.73	1.0	1.0	0.6	0.6	∞
Test Sample Related									
Test Sample Positioning	E.4.2	6.0	N	1	1.0	1.0	6.0	6.0	287
Device Holder Uncertainty	E.4.1	3.32	R	1.73	1.0	1.0	1.9	1.9	∞
Output Power Variation - SAR drift measurement	6.6.2	5.0	R	1.73	1.0	1.0	2.9	2.9	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E.3.1	4.0	R	1.73	1.0	1.0	2.3	2.3	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity - measurement uncertainty	E.3.3	3.8	N	1	0.64	0.43	2.4	1.6	6
Liquid Permittivity - deviation from target values	E.3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Liquid Permittivity - measurement uncertainty	E.3.3	4.5	N	1	0.60	0.49	2.7	2.2	6
Combined Standard Uncertainty (k=1)			RSS				12.1	11.7	299
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				24.2	23.5	

The above measurement uncertainties are according to IEEE Std. 1528-2003

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Applicable for frequencies up to 6 GHz.

a	b	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	**IEEE 1528 Sec.**	**Tol. (± %)**	**Prob. Dist.**	**Div.**	**c_i 1gm**	**c_i 10 gms**	**1gm u_i (± %)**	**10gms u_i (± %)**	**v_i**
Measurement System									
Probe Calibration	E.2.1	6.55	N	1	1.0	1.0	6.6	6.6	∞
Axial Isotropy	E.2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E.2.2	1.3	N	1	1.0	1.0	1.3	1.3	∞
Boundary Effect	E.2.3	0.4	N	1	1.0	1.0	0.4	0.4	∞
Linearity	E.2.4	0.3	N	1	1.0	1.0	0.3	0.3	∞
System Detection Limits	E.2.5	5.1	N	1	1.0	1.0	5.1	5.1	∞
Readout Electronics	E.2.6	1.0	N	1	1.0	1.0	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1.0	1.0	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.73	1.0	1.0	1.5	1.5	∞
RF Ambient Conditions	E.6.1	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	R	1.73	1.0	1.0	0.2	0.2	∞
Probe Positioning w/ respect to Phantom	E.6.3	2.9	R	1.73	1.0	1.0	1.7	1.7	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	1.0	R	1.73	1.0	1.0	0.6	0.6	∞
Test Sample Related									
Test Sample Positioning	E.4.2	6.0	N	1	1.0	1.0	6.0	6.0	287
Device Holder Uncertainty	E.4.1	3.32	R	1.73	1.0	1.0	1.9	1.9	∞
Output Power Variation - SAR drift measurement	6.6.2	5.0	R	1.73	1.0	1.0	2.9	2.9	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E.3.1	4.0	R	1.73	1.0	1.0	2.3	2.3	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity - measurement uncertainty	E.3.3	3.8	N	1	0.64	0.43	2.4	1.6	6
Liquid Permittivity - deviation from target values	E.3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Liquid Permittivity - measurement uncertainty	E.3.3	4.5	N	1	0.60	0.49	2.7	2.2	6
Combined Standard Uncertainty (k=1)			RSS				12.4	12.0	299
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				24.7	24.0	

The above measurement uncertainties are according to IEEE Std. 1528-2003

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16 CONCLUSION

16.1 Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of the FCC and Industry 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: A3LSMG928I; Type: Portable Handset; Serial: 92AF3

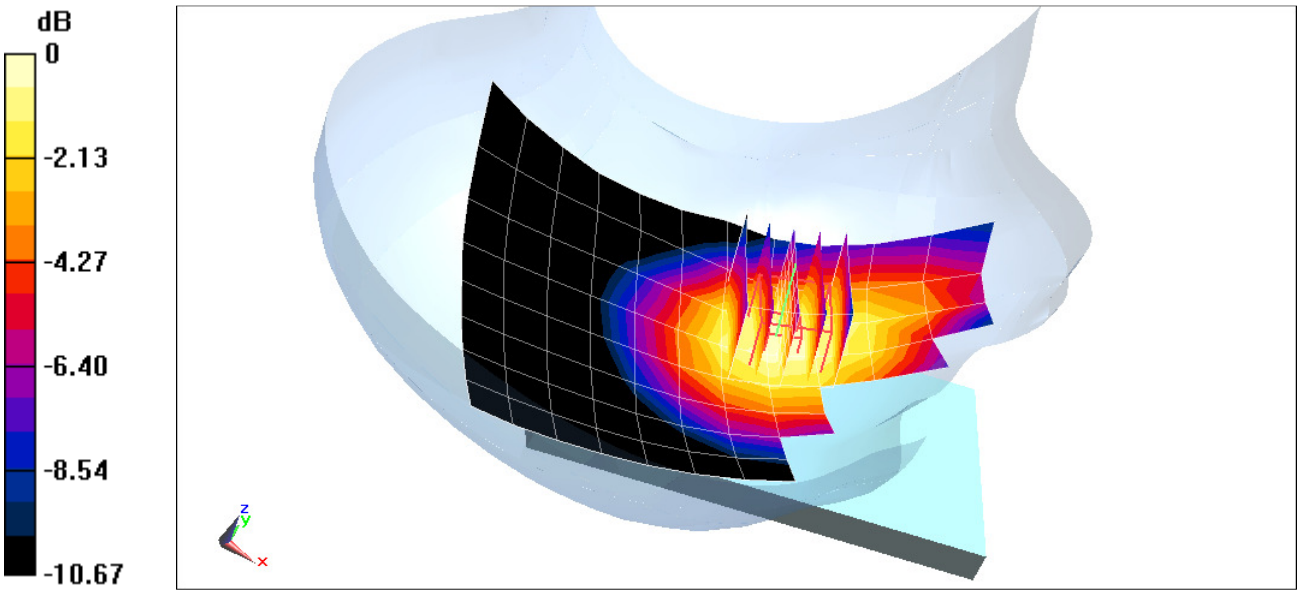
Communication System: UID 0, GSM; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium: 835 Head Medium parameters used (interpolated):
f = 848.8 MHz; σ = 0.918 S/m; ε_r = 41.229; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-29-2015; Ambient Temp: 22.5°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3288; ConvF(6.51, 6.51, 6.51); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1797
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.424 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.103 W/kg
SAR(1 g) = 0.079 W/kg



0 dB = 0.0872 W/kg = -10.59 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92AF0

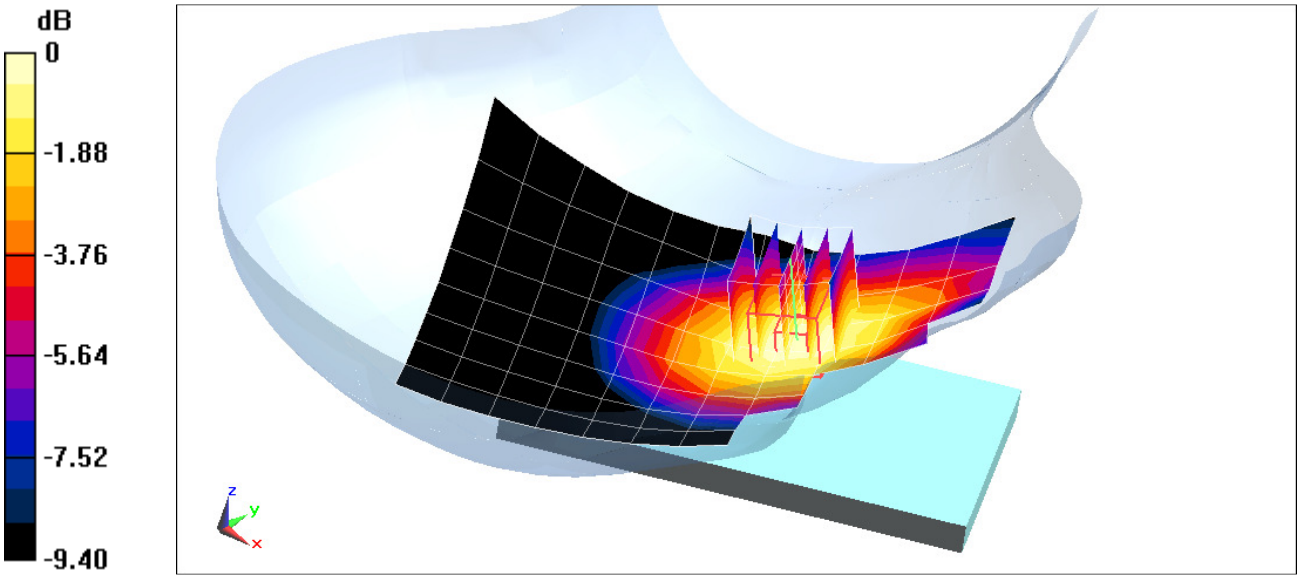
Communication System: UID 0, UMTS; Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 846.6 MHz; σ = 0.916 S/m; ε_r = 41.261; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-29-2015; Ambient Temp: 22.5°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3288; ConvF(6.51, 6.51, 6.51); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1797
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 850, Right Head, Cheek, 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 = 15.65 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.268 W/kg
SAR(1 g) = 0.214 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92B01

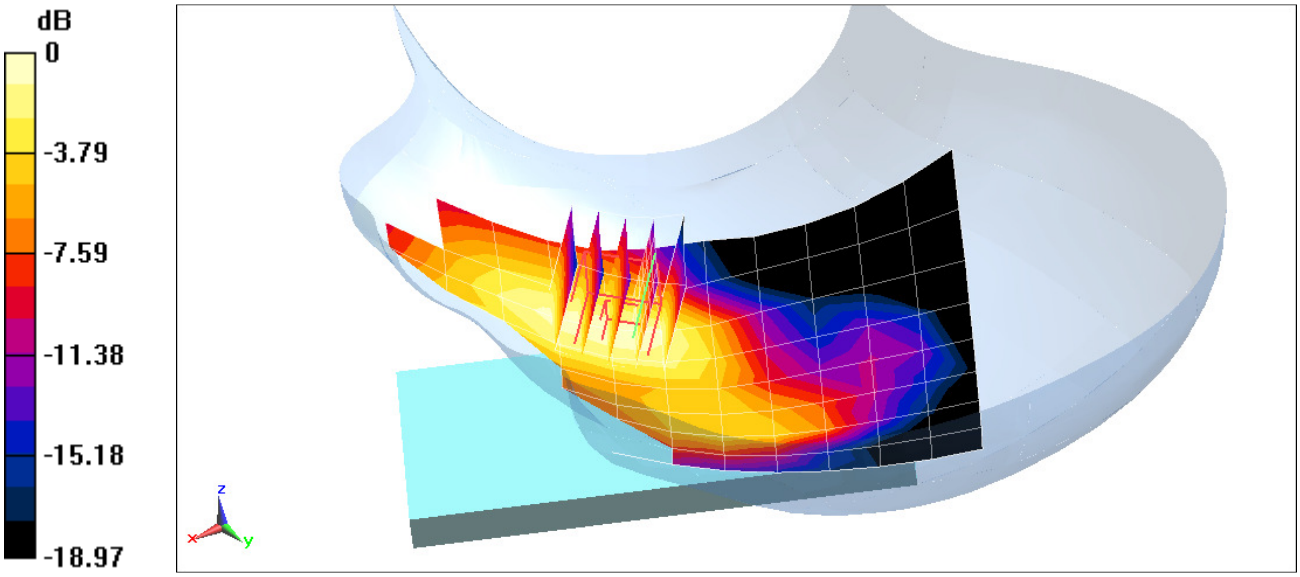
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz;Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.368 S/m; ε_r = 40.128; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 06-29-2015; Ambient Temp: 21.1°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3263; ConvF(5.27, 5.27, 5.27); Calibrated: 5/20/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 10/23/2014
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.667 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.0620 W/kg
SAR(1 g) = 0.040 W/kg



0 dB = 0.0461 W/kg = -13.36 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92AF3

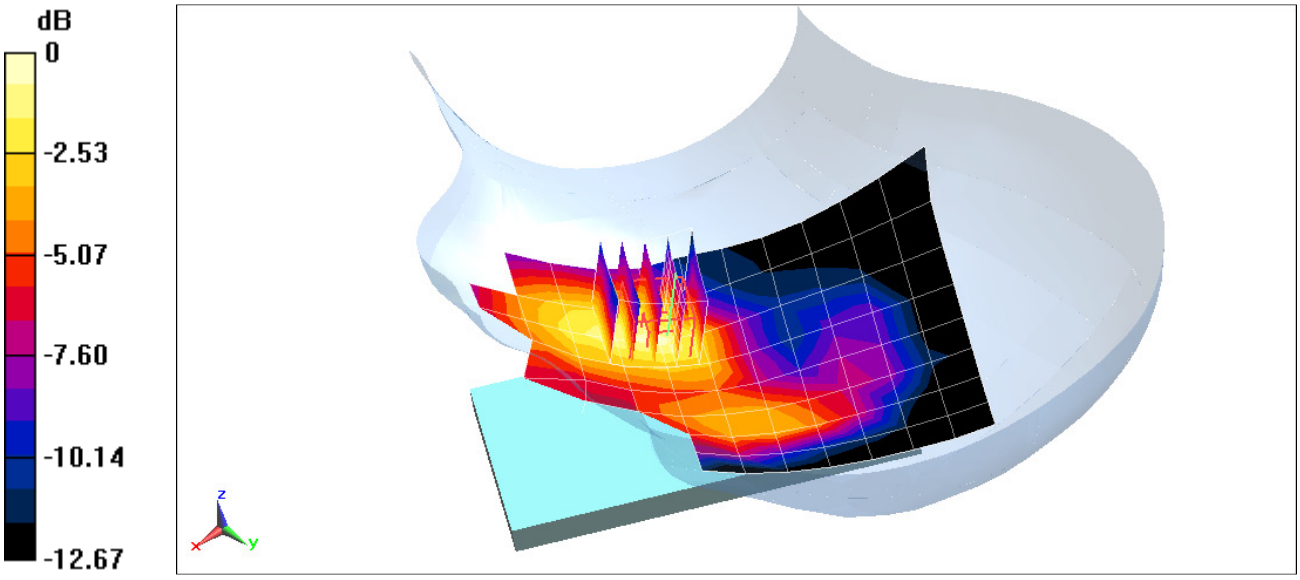
Communication System: UID 0, GSM1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.395 S/m; ε_r = 39.656; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 06-14-2015; Ambient Temp: 22.5°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3318; ConvF(5.05, 5.05, 5.05); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

Mode: GSM 1900, 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 = 3.987 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.0320 W/kg
SAR(1 g) = 0.021 W/kg



0 dB = 0.0243 W/kg = -16.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92B01

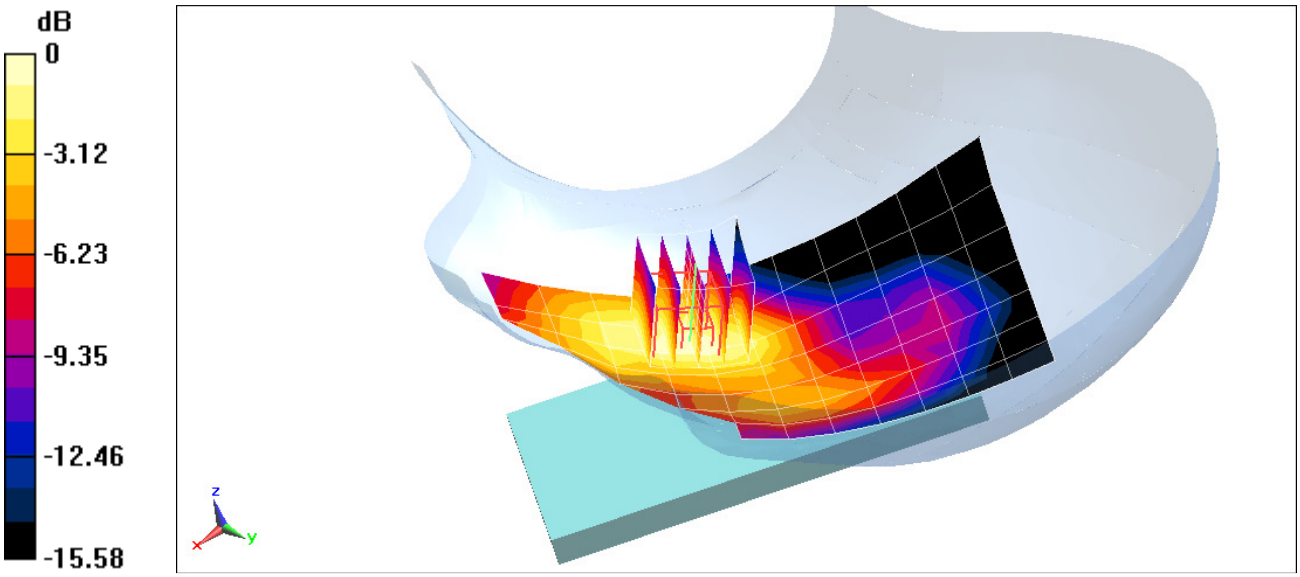
Communication System: UID 0, UMTS; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.395 S/m; ε_r = 39.656; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 06-14-2015; Ambient Temp: 22.5°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3318; ConvF(5.05, 5.05, 5.05); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

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

Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.930 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.112 W/kg
SAR(1 g) = 0.073 W/kg



0 dB = 0.0837 W/kg = -10.77 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92AED

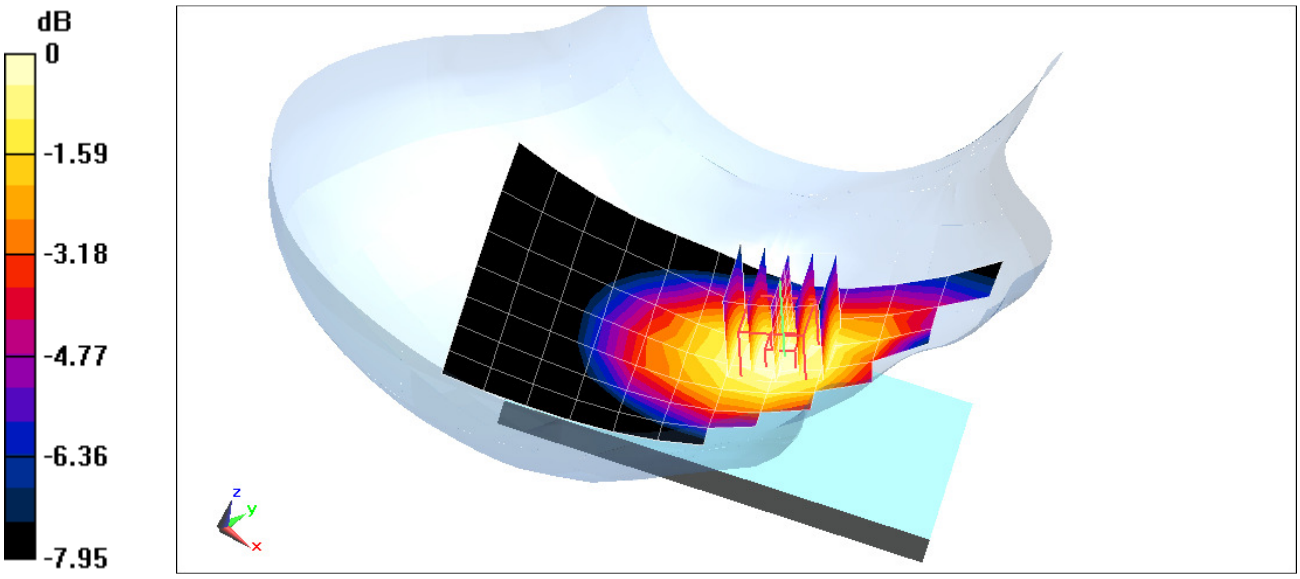
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.856 S/m; ε_r = 42.482; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-22-2015; Ambient Temp: 22.3°C; Tissue Temp: 24.5°C

Probe: ES3DV3 - SN3288; ConvF(6.81, 6.81, 6.81); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1797
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 12, Right Head, Cheek, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.89 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.205 W/kg
SAR(1 g) = 0.173 W/kg



0 dB = 0.185 W/kg = -7.33 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92AF0

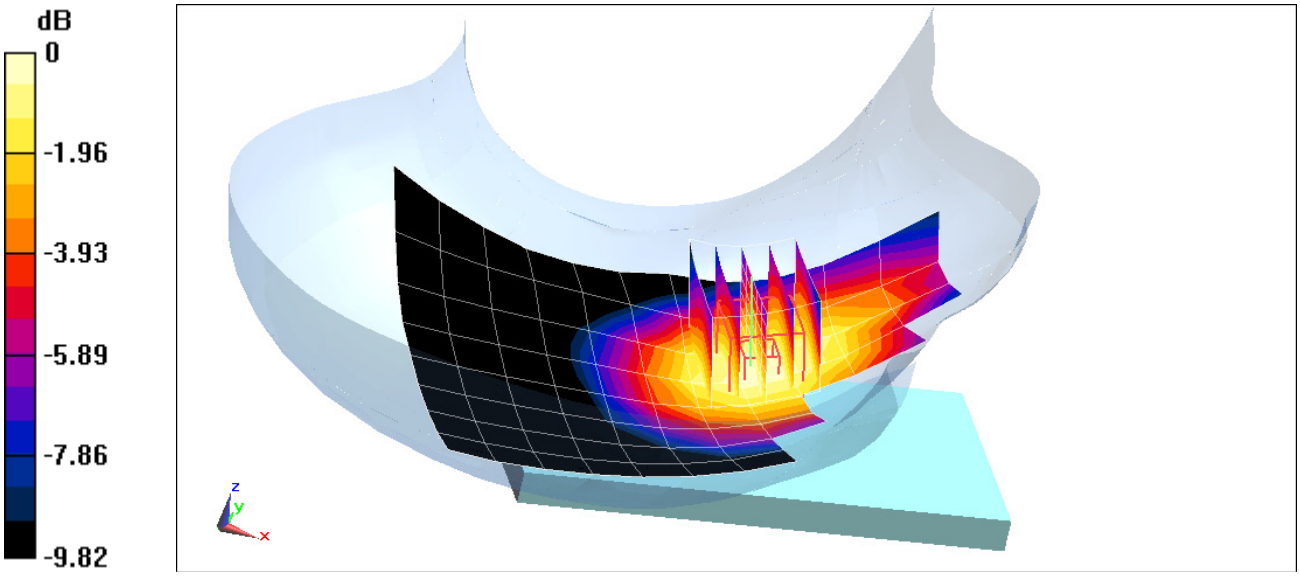
Communication System: UID 0, LTE Band 26; Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.5 MHz; σ = 0.906 S/m; ε_r = 41.406; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-29-2015; Ambient Temp: 22.5°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3288; ConvF(6.51, 6.51, 6.51); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1797
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

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 (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.98 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.349 W/kg
SAR(1 g) = 0.277 W/kg



0 dB = 0.302 W/kg = -5.20 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92AF0

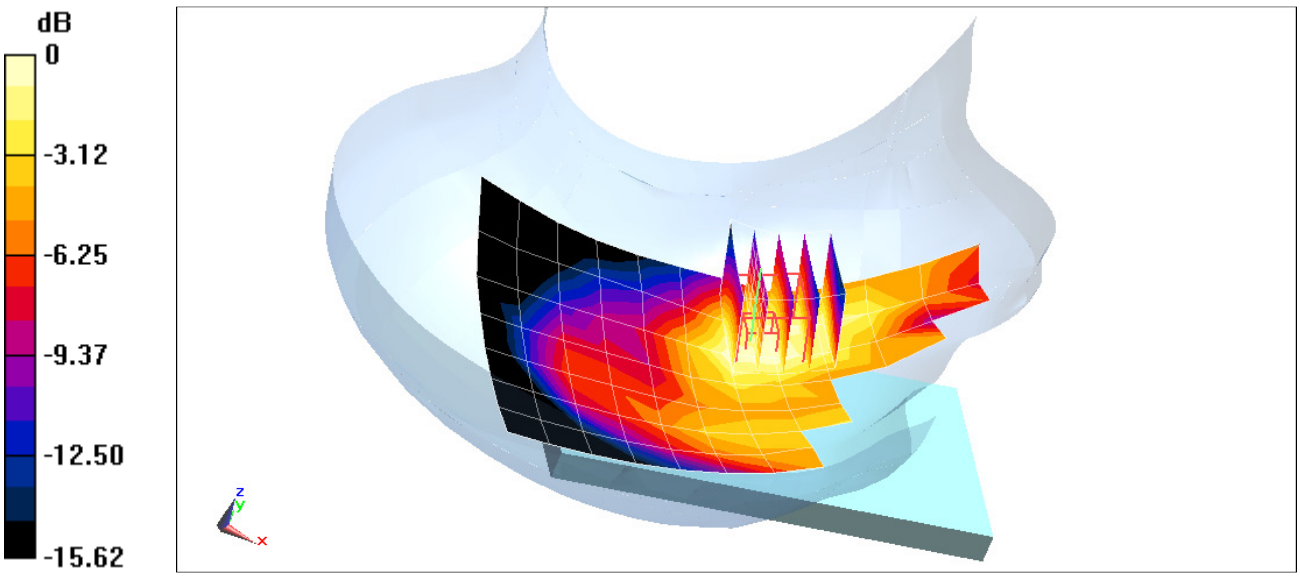
Communication System: UID 0, LTE RF Band 4; Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
f = 1732.5 MHz; σ = 1.328 S/m; ε_r = 39.184; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-22-2015; Ambient Temp: 23.1°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3318; ConvF(5.27, 5.27, 5.27); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 4 (AWS), Right Head, Cheek, Mid.ch, 20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset

Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.81 V/m; Power Drift = -0.20 dB
Peak SAR (extrapolated) = 0.260 W/kg
SAR(1 g) = 0.171 W/kg



0 dB = 0.197 W/kg = -7.06 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92AF0

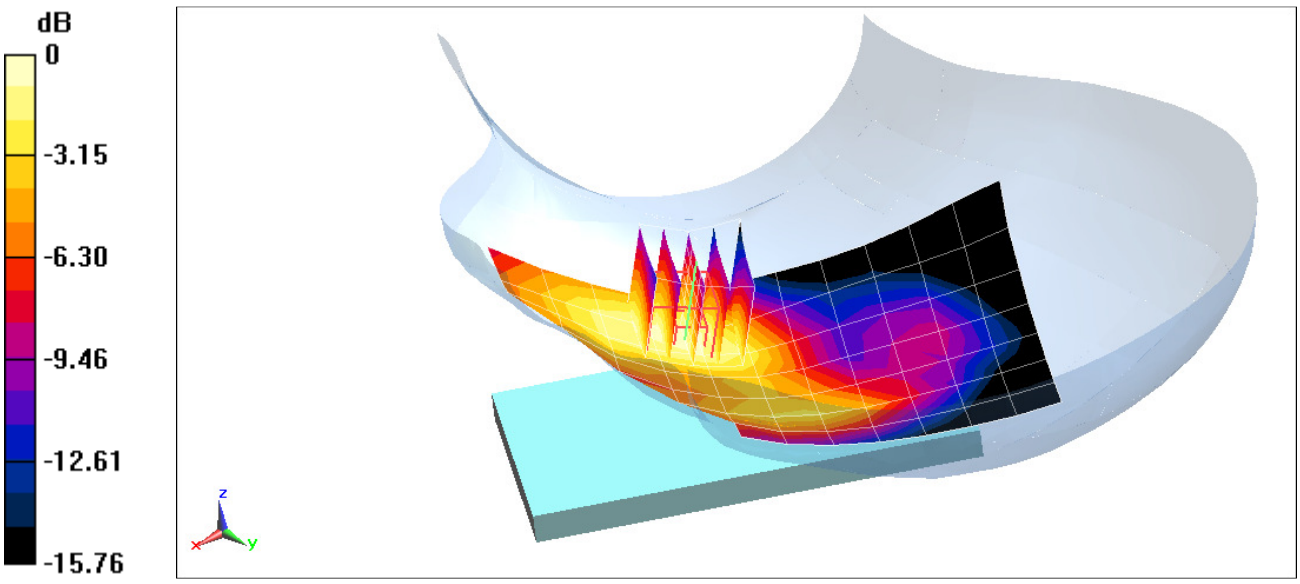
Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1860 MHz;Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1860 MHz; σ = 1.374 S/m; ε_r = 39.747; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 06-14-2015; Ambient Temp: 22.5°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3318; ConvF(5.05, 5.05, 5.05); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 2 (PCS), Left Head, Cheek, Low.ch, QPSK, 20 MHz Bandwidth, 1 RB, 0 RB Offset

Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.803 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.0890 W/kg
SAR(1 g) = 0.059 W/kg



0 dB = 0.0688 W/kg = -11.62 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 95BE4

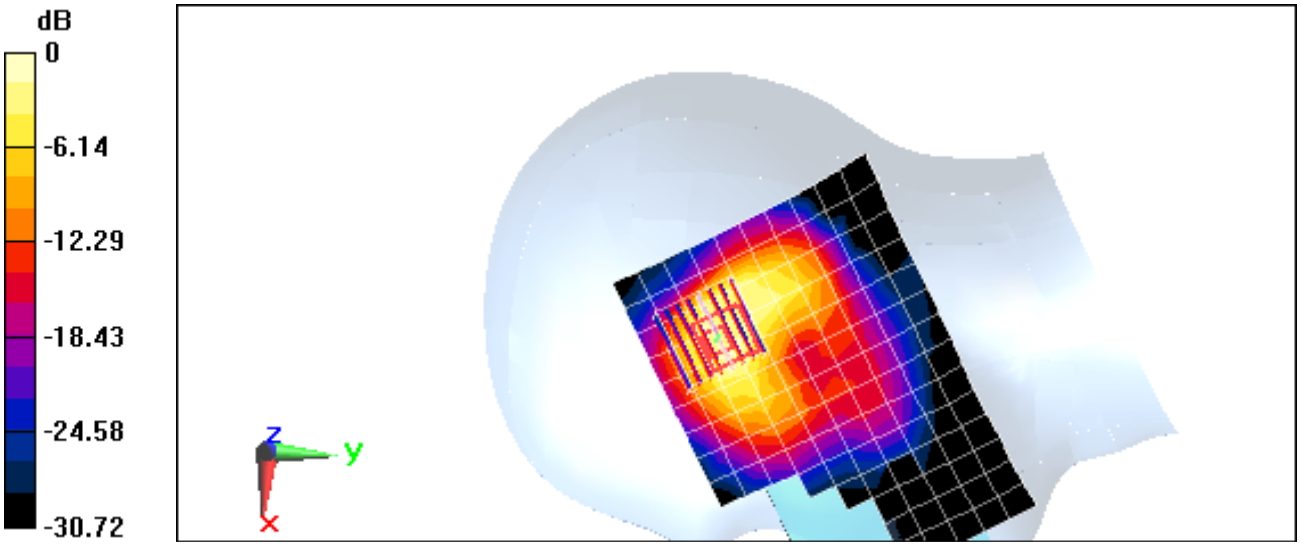
Communication System: UID 0, IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used (interpolated):
f = 2437 MHz; σ = 1.809 S/m; ε_r = 38.932; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-17-2015; Ambient Temp: 23.0°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3332; ConvF(4.49, 4.49, 4.49); Calibrated: 9/18/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/17/2014
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11b, 22 MHz Bandwidth,
Right Head, Cheek, Ch 6, 1 Mbps, Antenna 2

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.32 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.971 W/kg
SAR (1 g) = 0.419 W/kg



0 dB = 0.577 W/kg = -2.39 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 95BE4

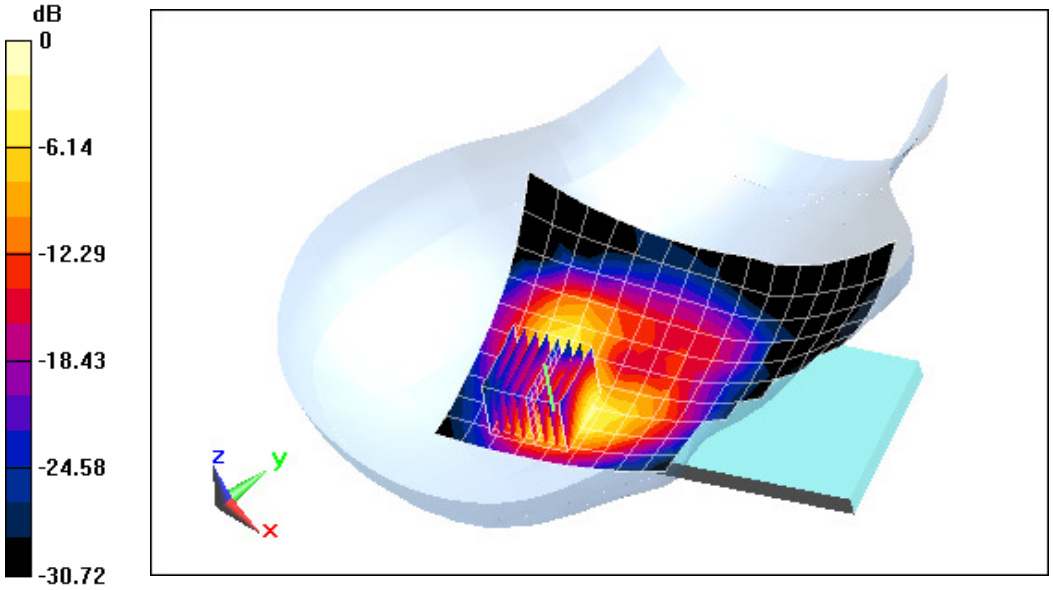
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5500 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head Medium parameters used:
f = 5500 MHz; σ = 4.950 S/m; ε_r = 34.051; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-15-2015; Ambient Temp: 22.5°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7357; ConvF(4.7, 4.7, 4.7); Calibrated: 4/23/2015;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 3/13/2015
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11a, U-NII-2C, 20 MHz Bandwidth,
Right Head, Tilt, Ch 100, 6 Mbps, Antenna 2

Area Scan (13x22x1): 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 = 9.642 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 1.59 W/kg
SAR (1 g) = 0.388 W/kg



0 dB = 0.577 W/kg = -2.39 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92AF3

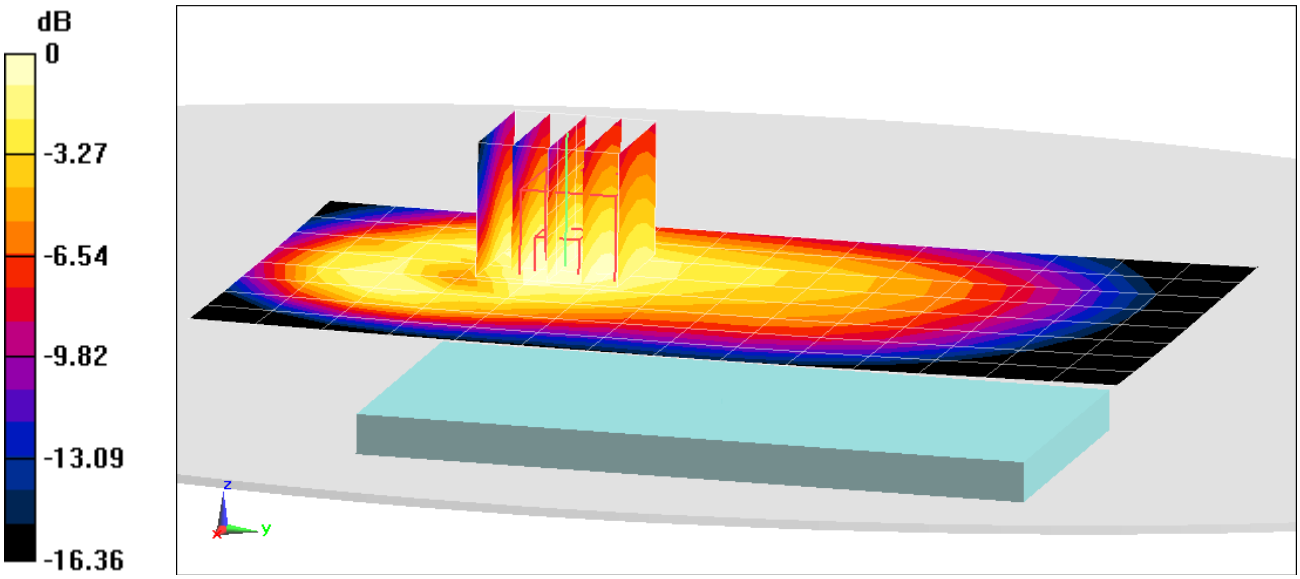
Communication System: UID 0, GSM; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium: 835 Body Medium parameters used (interpolated):
f = 848.8 MHz; σ = 1.004 S/m; ε_r = 53.602; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 06-29-2015; Ambient Temp: 23.3°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3318; ConvF(6.23, 6.23, 6.23); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: ELI v6.0; Type: QDOVA003AA; Serial: TP:2027
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

Mode: GSM 850, 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 = 12.63 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.201 W/kg
SAR(1 g) = 0.147 W/kg



0 dB = 0.166 W/kg = -7.80 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92AF3

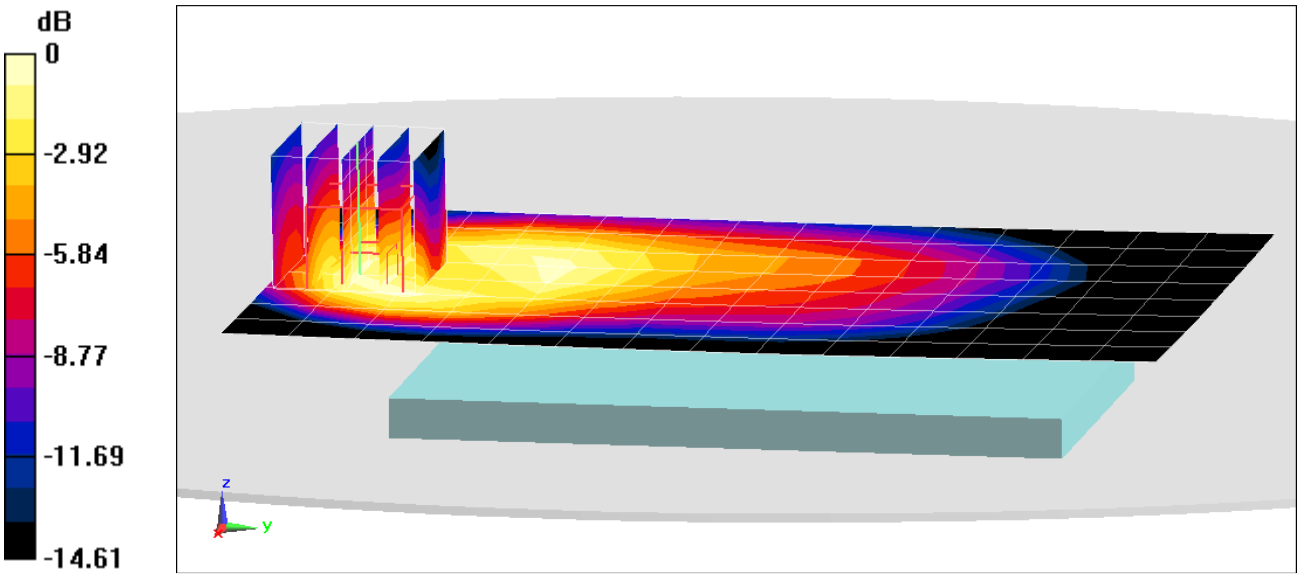
Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 848.8 MHz;Duty Cycle: 1:2.76
Medium: 835 Body Medium parameters used (interpolated):
f = 848.8 MHz; σ = 1.004 S/m; ε_r = 53.602; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 06-29-2015; Ambient Temp: 23.3°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3318; ConvF(6.23, 6.23, 6.23); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: ELI v6.0; Type: QDOVA003AA; Serial: TP:2027
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.07 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.635 W/kg
SAR(1 g) = 0.373 W/kg



0 dB = 0.435 W/kg = -3.62 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92B01

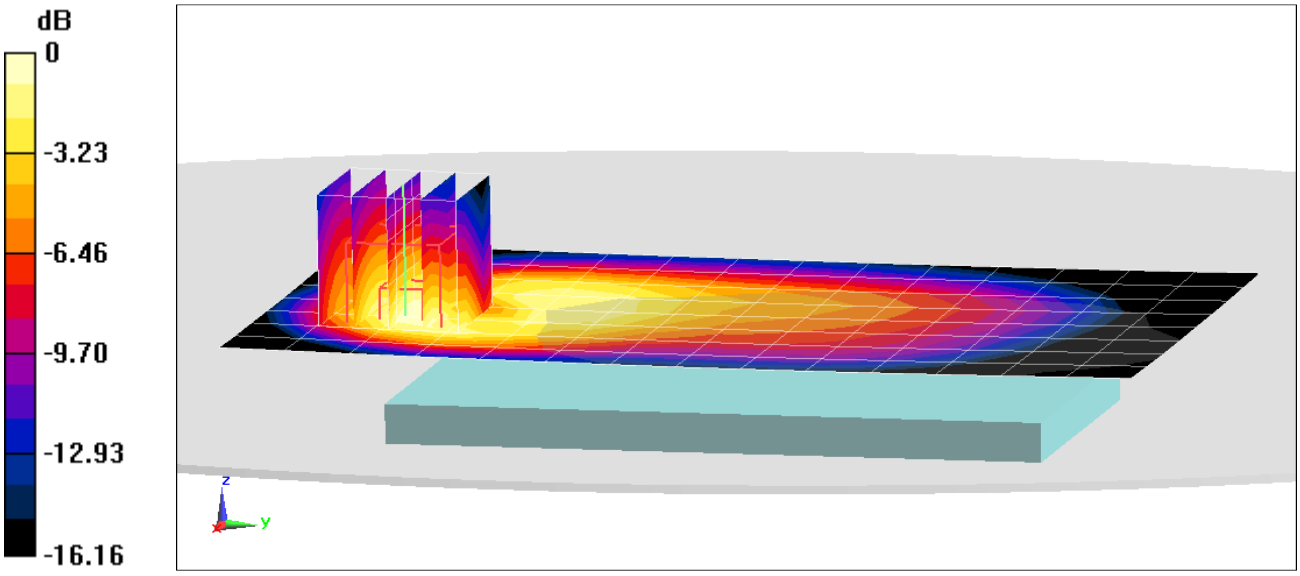
Communication System: UID 0, UMTS; Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 846.6 MHz; σ = 1.002 S/m; ε_r = 53.615; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 06-29-2015; Ambient Temp: 23.3°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3318; ConvF(6.23, 6.23, 6.23); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: ELI v6.0; Type: QDOVA003AA; Serial: TP:2027
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 850, 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 = 25.31 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.956 W/kg
SAR(1 g) = 0.565 W/kg



0 dB = 0.695 W/kg = -1.58 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 93F17

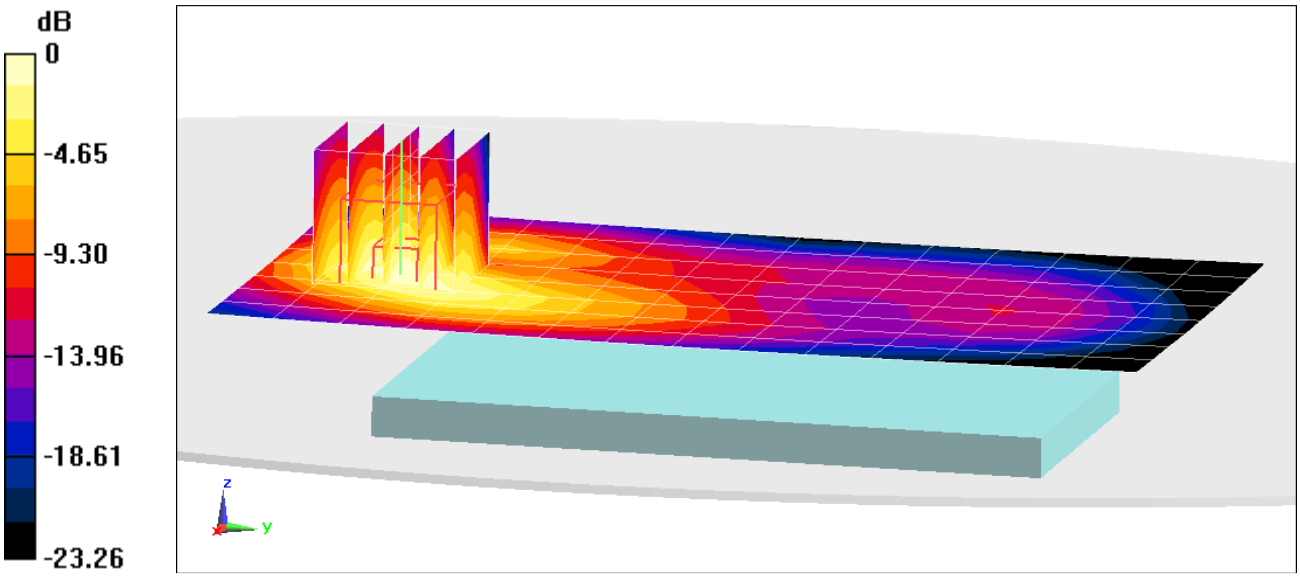
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz;Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.454 S/m; ε_r = 51.408; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.5 cm

Test Date: 07-09-2015; Ambient Temp: 22.4°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3288; ConvF(5.03, 5.03, 5.03); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

Mode: AWS UMTS, 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 = 21.69 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.971 W/kg
SAR(1 g) = 0.600 W/kg



0 dB = 0.736 W/kg = -1.33 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 93D28

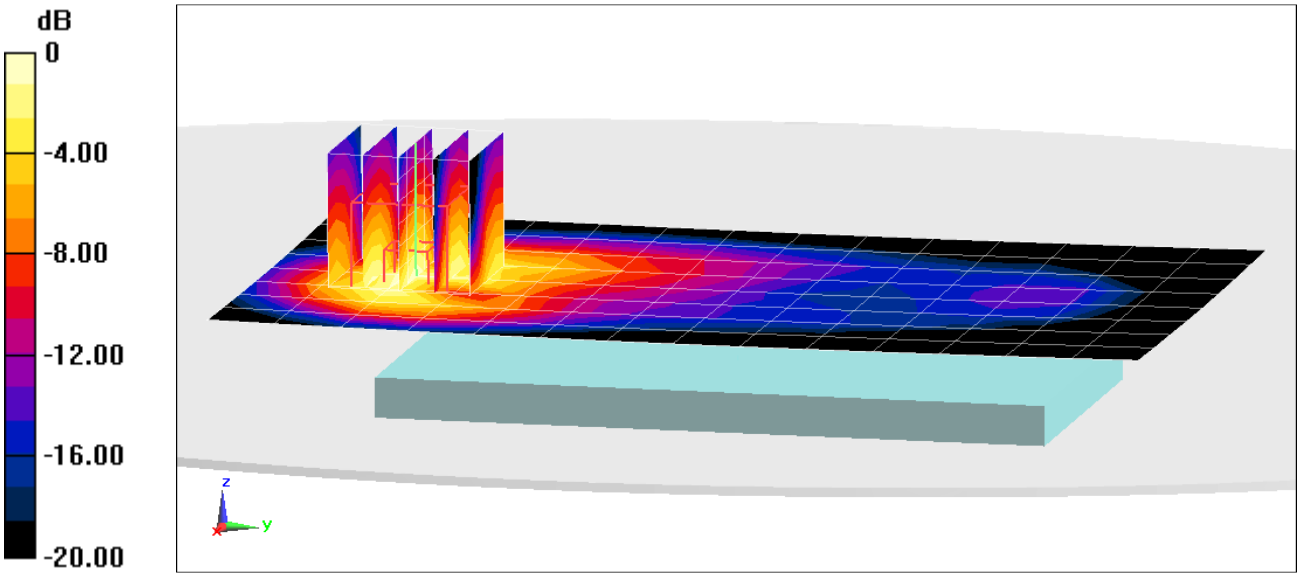
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz;Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.454 S/m; ε_r = 51.408; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 07-09-2015; Ambient Temp: 22.4°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3288; ConvF(5.03, 5.03, 5.03); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

Mode: AWS UMTS, Body SAR, Front 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 = 21.10 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.06 W/kg
SAR(1 g) = 0.599 W/kg



0 dB = 0.758 W/kg = -1.20 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92AF3

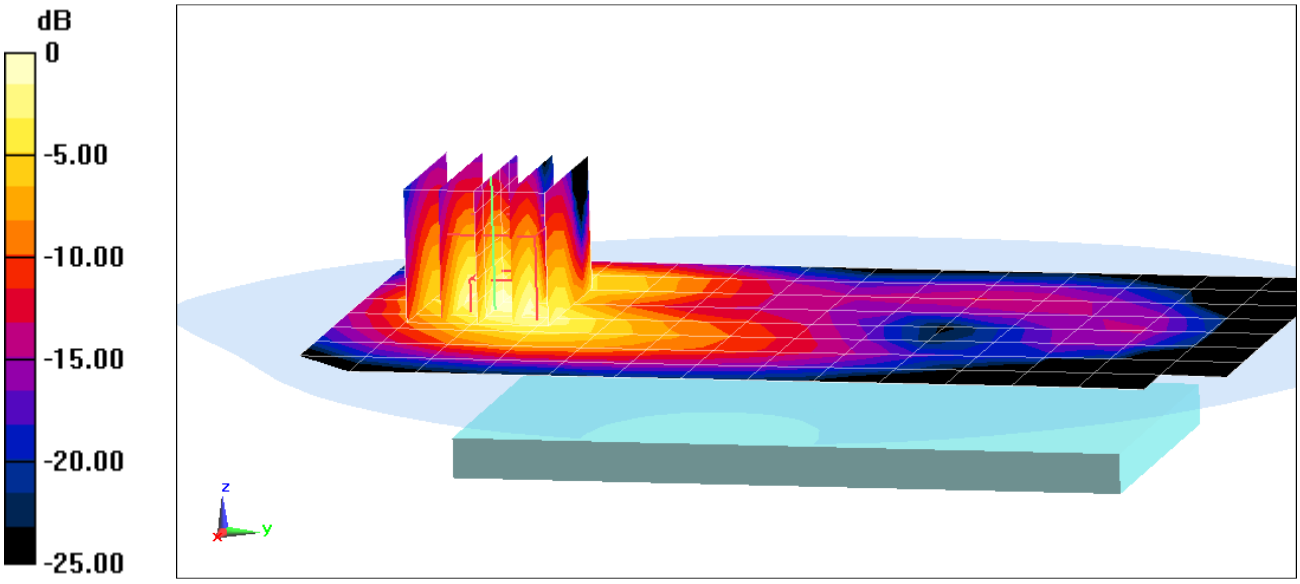
Communication System: UID 0, GSM; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.534 S/m; ε_r = 50.951; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 06-24-2015; Ambient Temp: 23.3°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3263; ConvF(4.66, 4.66, 4.66); Calibrated: 5/20/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 10/23/2014
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.63 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.464 W/kg
SAR(1 g) = 0.255 W/kg



0 dB = 0.311 W/kg = -5.07 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92AF3

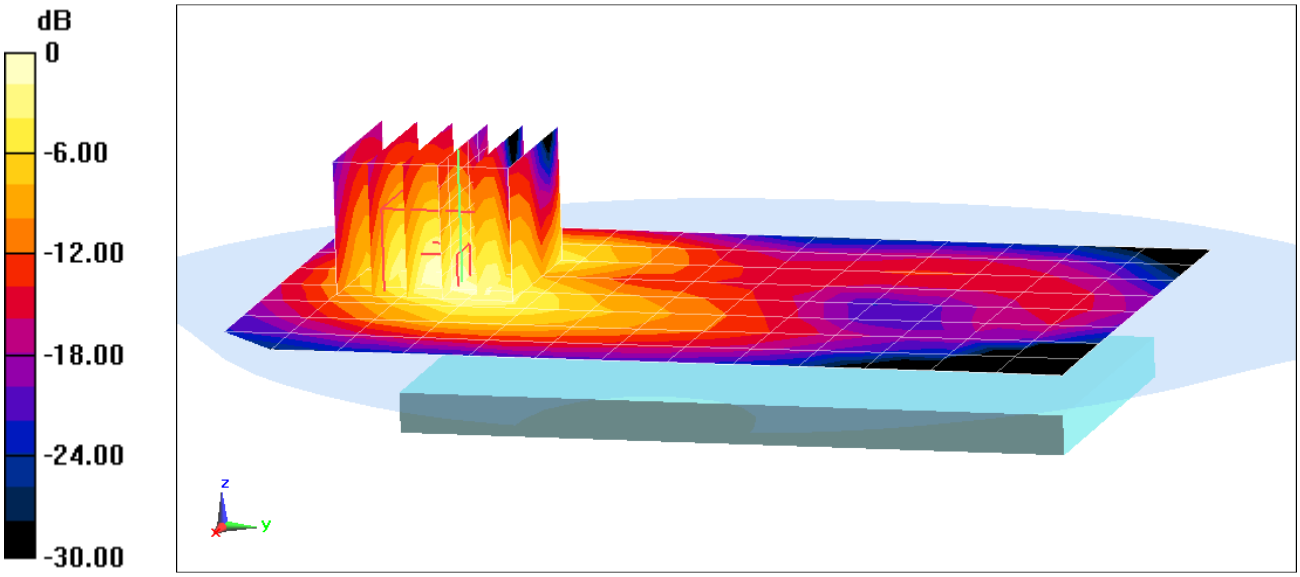
Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 1880 MHz;Duty Cycle: 1:2.76
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.534 S/m; ε_r = 50.951; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 06-24-2015; Ambient Temp: 23.3°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3263; ConvF(4.66, 4.66, 4.66); Calibrated: 5/20/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 10/23/2014
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.79 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.635 W/kg
SAR(1 g) = 0.354 W/kg



0 dB = 0.439 W/kg = -3.58 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92B01

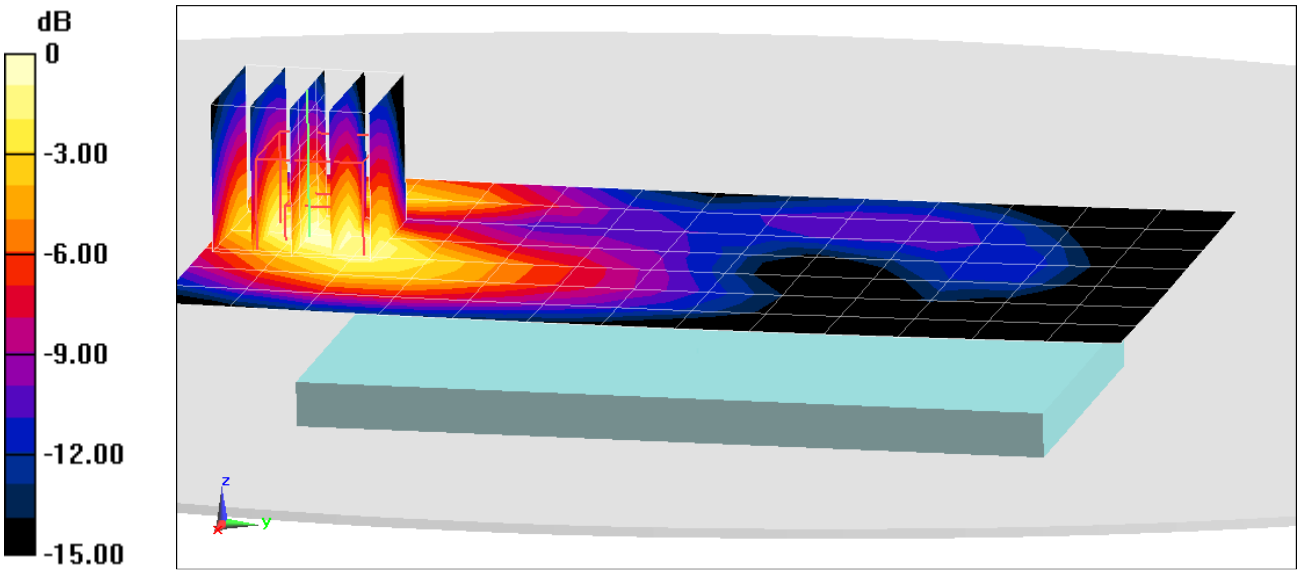
Communication System: UID 0, UMTS; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.517 S/m; ε_r = 50.801; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.5 cm

Test Date: 07-08-2015; Ambient Temp: 24.1°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3318; ConvF(4.76, 4.76, 4.76); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: ELI v6.0; Type: QDOVA003AA; Serial: TP:2027
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

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

Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.89 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.376 W/kg
SAR(1 g) = 0.225 W/kg



0 dB = 0.273 W/kg = -5.64 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 93D28

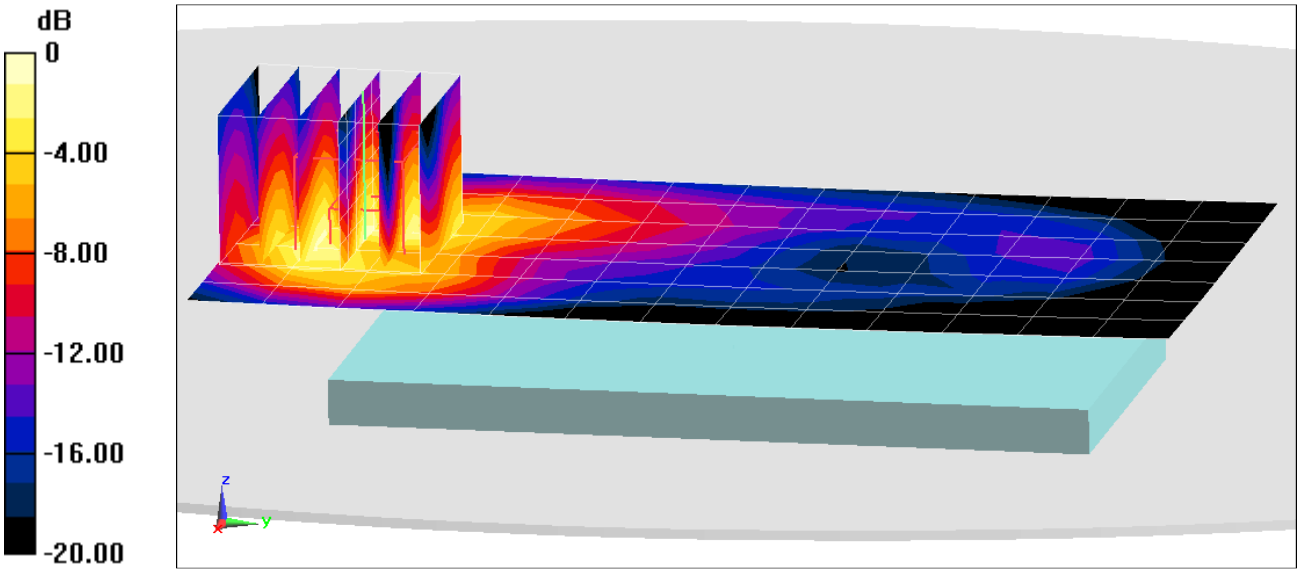
Communication System: UID 0, UMTS; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.517 S/m; ε_r = 50.801; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 07-08-2015; Ambient Temp: 24.1°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3318; ConvF(4.76, 4.76, 4.76); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: ELI v6.0; Type: QDOVA003AA; Serial: TP:2027
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

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

Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.99 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.12 W/kg
SAR(1 g) = 0.617 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92AED

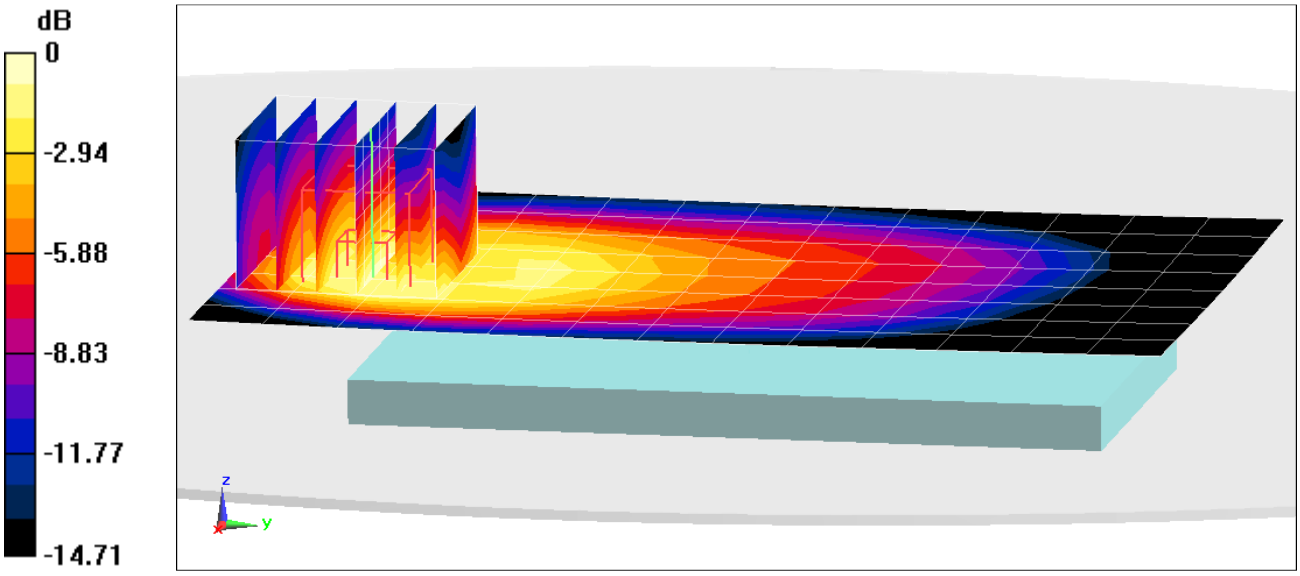
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.932 S/m; ε_r = 55.672; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 06-18-2015; Ambient Temp: 22.3°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3288; ConvF(6.38, 6.38, 6.38); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 12, Body SAR, Back side, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.87 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 0.778 W/kg



0 dB = 0.960 W/kg = -0.18 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92AED

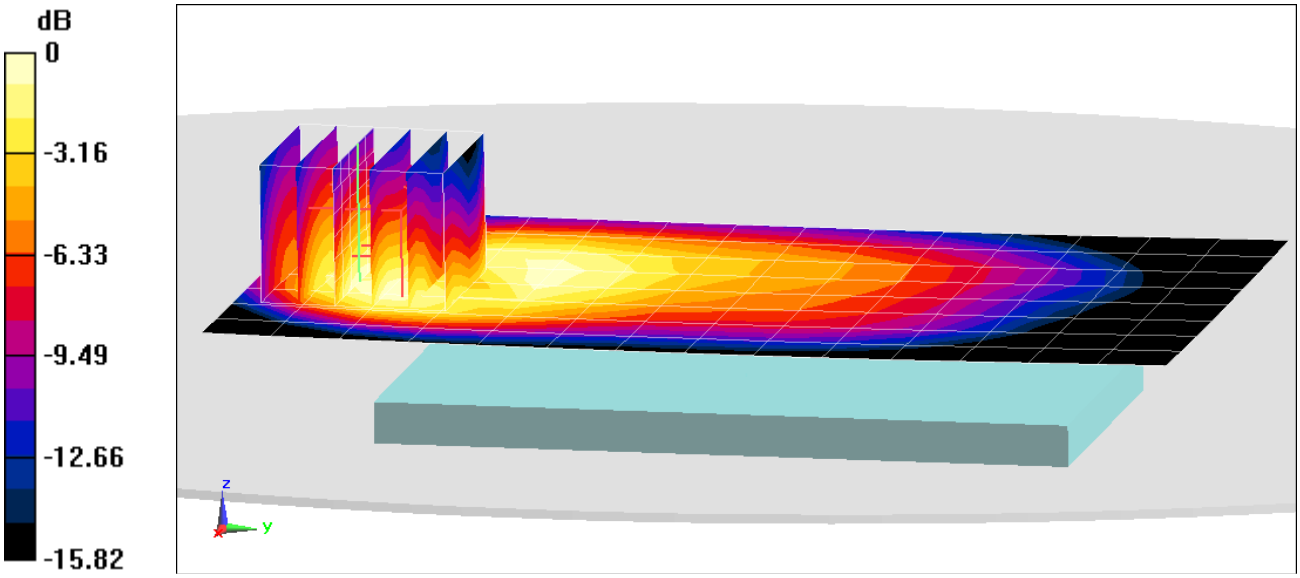
Communication System: UID 0, LTE Band 26; Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.5 MHz; σ = 0.994 S/m; ε_r = 53.679; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 06-29-2015; Ambient Temp: 23.3°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3318; ConvF(6.23, 6.23, 6.23); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: ELI v6.0; Type: QDOVA003AA; Serial: TP:2027
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

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 = 25.11 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.01 W/kg
SAR(1 g) = 0.596 W/kg



0 dB = 0.702 W/kg = -1.54 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92AED

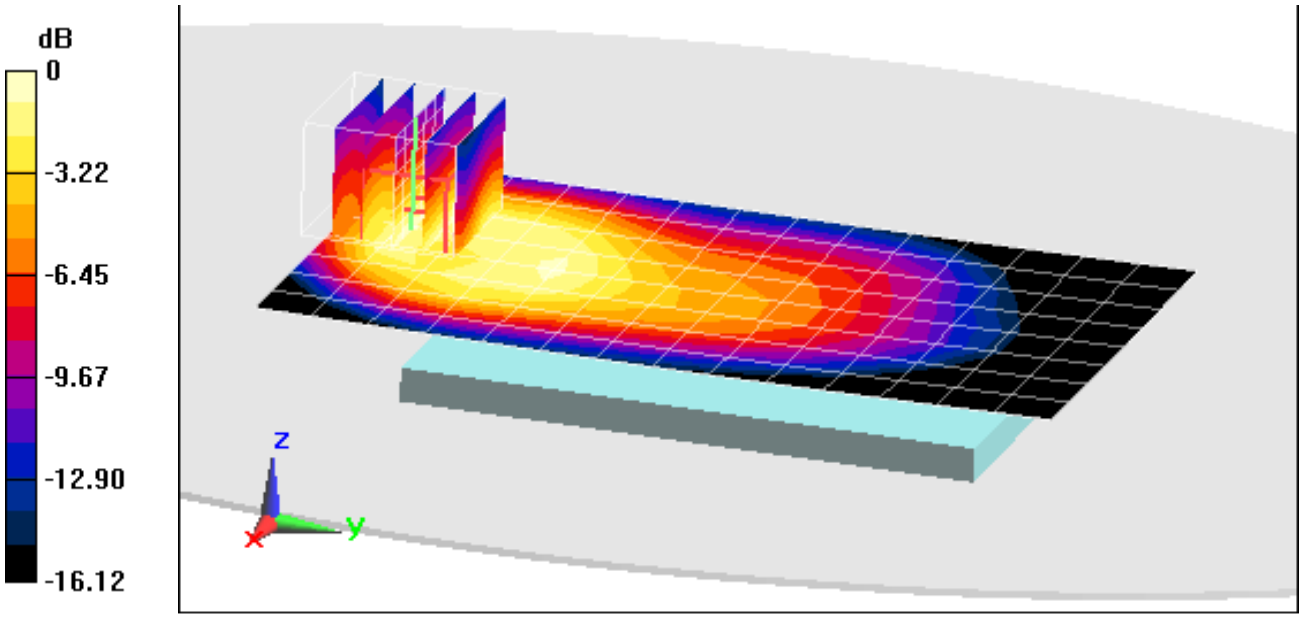
Communication System: UID 0, LTE Band 26; Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.5 MHz; σ = 0.994 S/m; ε_r = 53.679; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 06-29-2015; Ambient Temp: 23.3°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3318; ConvF(6.23, 6.23, 6.23); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: ELI v6.0; Type: QDOVA003AA; Serial: TP:2027
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 26 (Cell.), Body SAR, Front 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 = 25.91 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.04 W/kg
SAR(1 g) = 0.613 W/kg



0 dB = 0.711 W/kg = -1.48 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92AF3

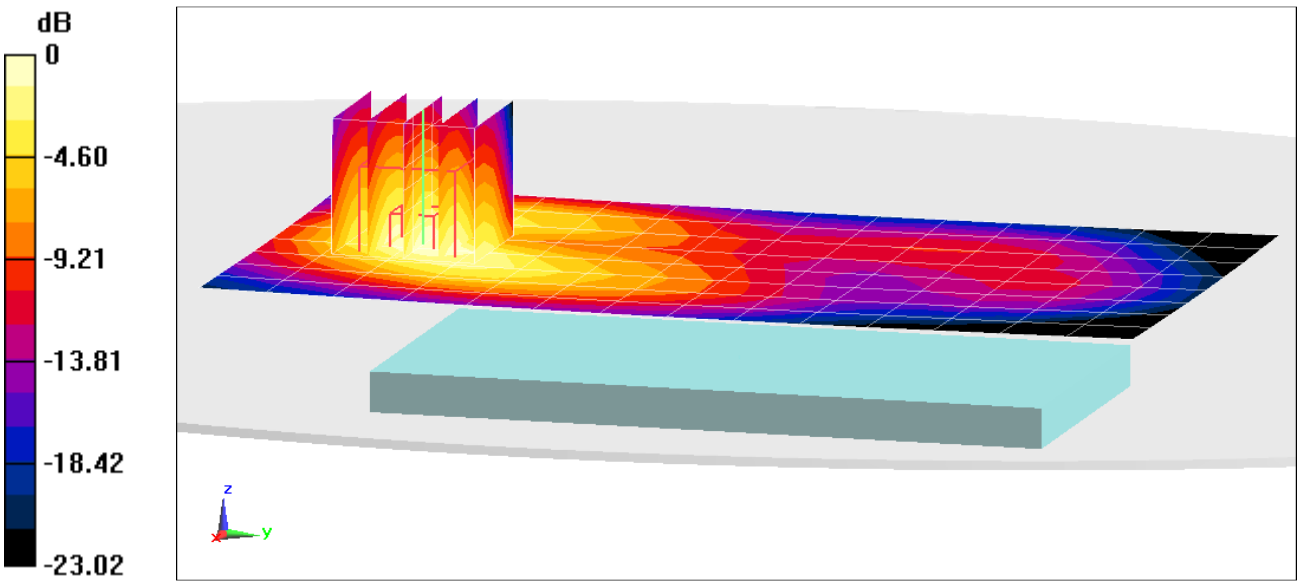
Communication System: UID 0, LTE Band 4 (AWS); Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1732.5 MHz; σ = 1.47 S/m; ε_r = 51.402; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.5 cm

Test Date: 07-13-2015; Ambient Temp: 22.7°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3288; ConvF(5.03, 5.03, 5.03); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 4 (AWS), 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 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.70 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.737 W/kg
SAR(1 g) = 0.452 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 9F829

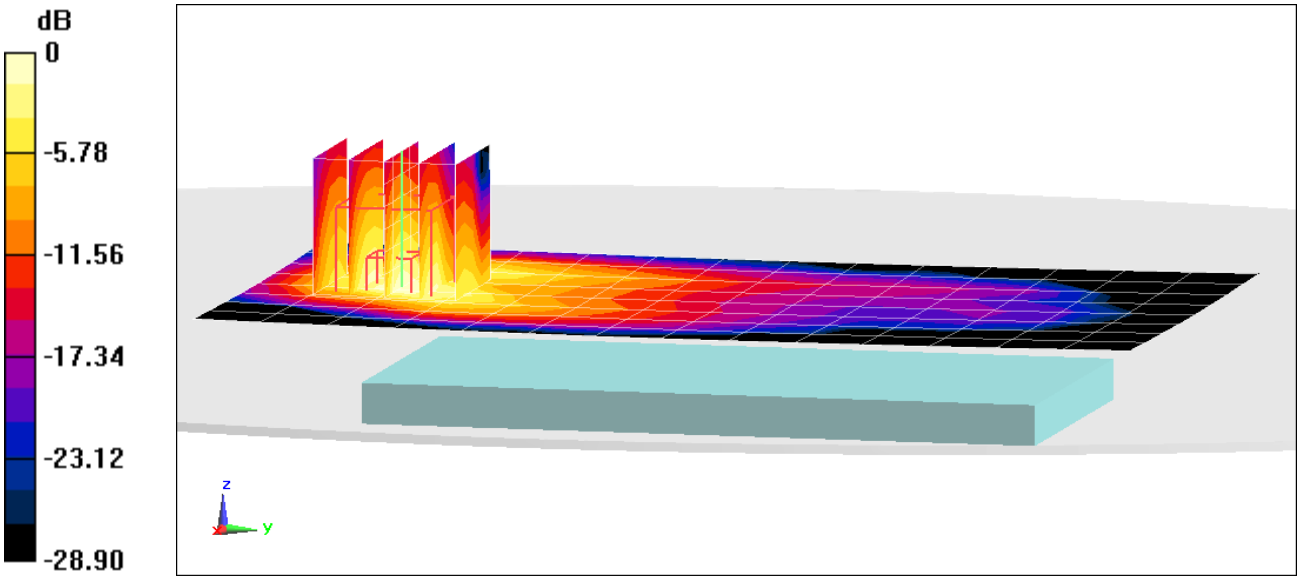
Communication System: UID 0, LTE Band 4 (AWS); Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1732.5 MHz; σ = 1.47 S/m; ε_r = 51.402; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 07-13-2015; Ambient Temp: 22.7°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3288; ConvF(5.03, 5.03, 5.03); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 4 (AWS), Body SAR, Back side, Mid.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.25 V/m; Power Drift = 0.20 dB
Peak SAR (extrapolated) = 0.250 W/kg
SAR(1 g) = 0.140 W/kg



0 dB = 0.179 W/kg = -7.47 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92B09

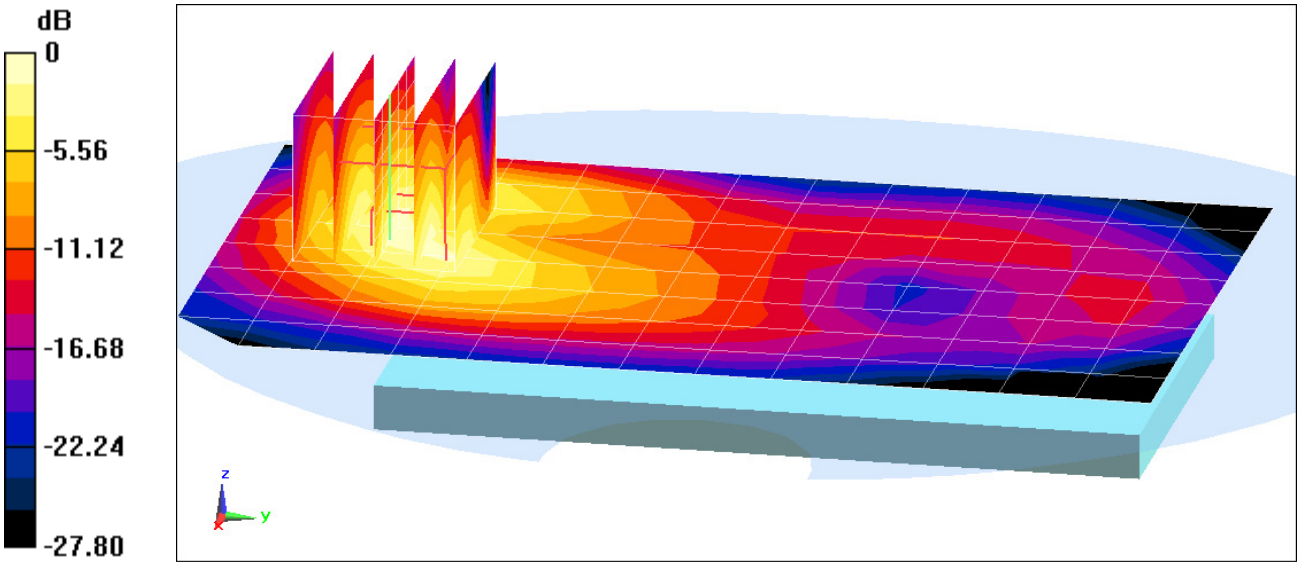
Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1860 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1860 MHz; σ = 1.513 S/m; ε_r = 51.005; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 06-24-2015; Ambient Temp: 23.3°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3263; ConvF(4.66, 4.66, 4.66); Calibrated: 5/20/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 10/23/2014
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 2 (PCS), Body SAR, Back side, Low.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.60 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.45 W/kg
SAR(1 g) = 0.815 W/kg



0 dB = 0.965 W/kg = -0.15 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92B09

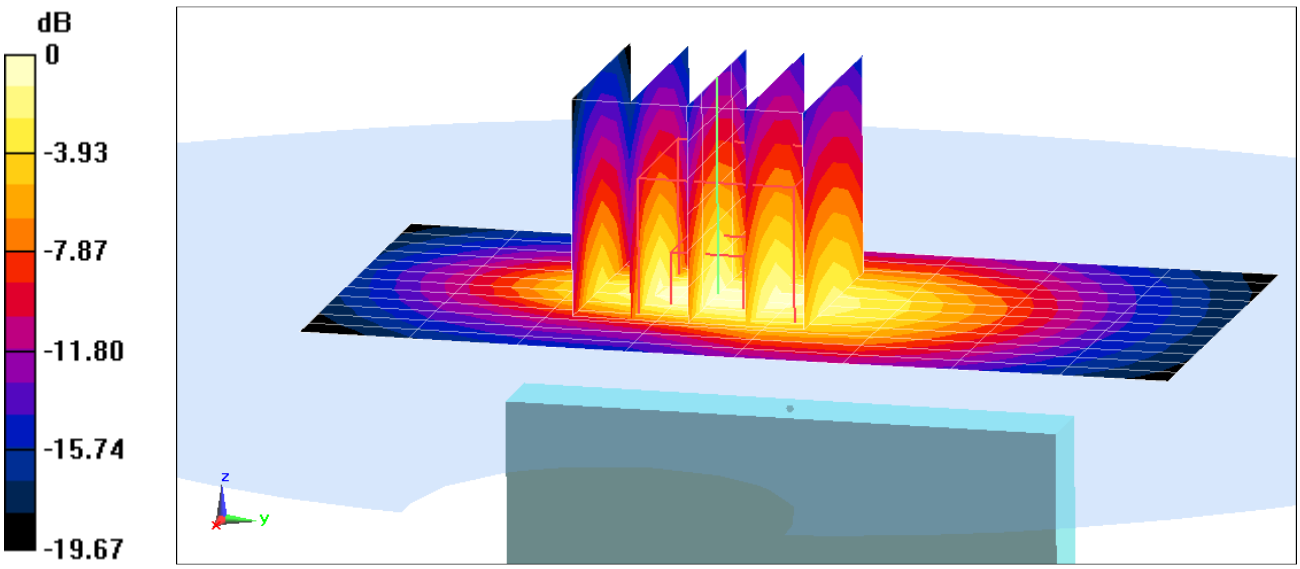
Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1860 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1860 MHz; σ = 1.513 S/m; ε_r = 51.005; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 06-24-2015; Ambient Temp: 23.3°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3263; ConvF(4.66, 4.66, 4.66); Calibrated: 5/20/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 10/23/2014
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 2 (PCS), Body SAR, Bottom Edge, Low.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (13x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.96 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.47 W/kg
SAR(1 g) = 0.870 W/kg



0 dB = 1.08 W/kg = 0.33 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 95C04

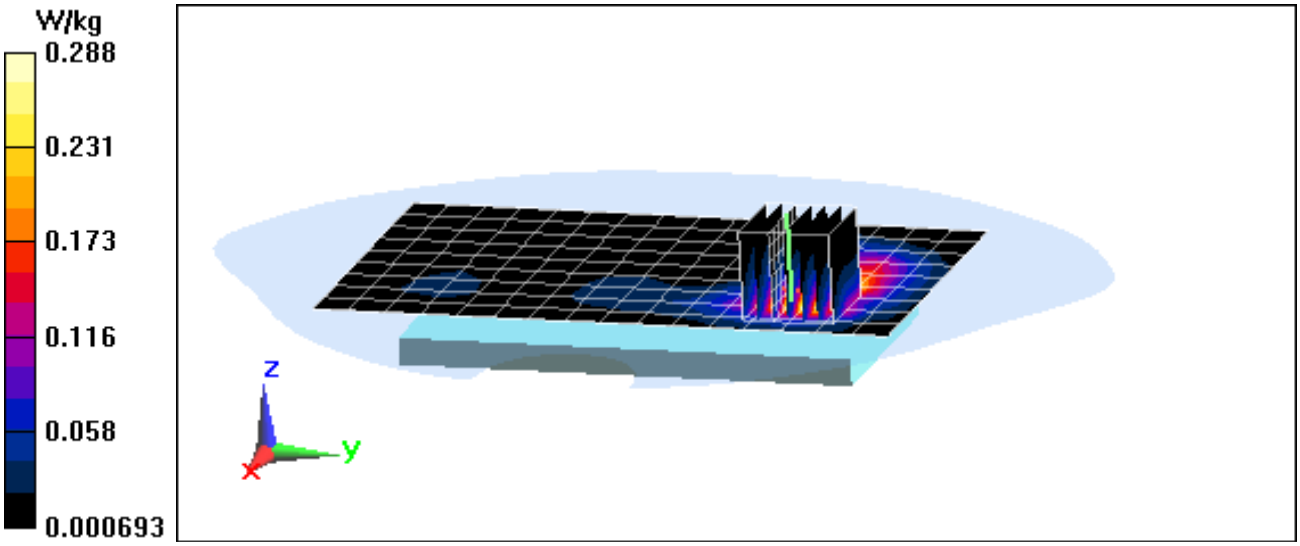
Communication System: UID 0, IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2437 MHz; σ = 2.011 S/m; ε_r = 51.387; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-20-2015; Ambient Temp: 22.1°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3332; ConvF(4.31, 4.31, 4.31); Calibrated: 9/18/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/17/2014
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11b, 22 MHz Bandwidth,
Body SAR, Ch 06, 1 Mbps, Back Side, Antenna 2

Area Scan (10x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.22 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.474 W/kg
SAR (1 g) = 0.224 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 95C04

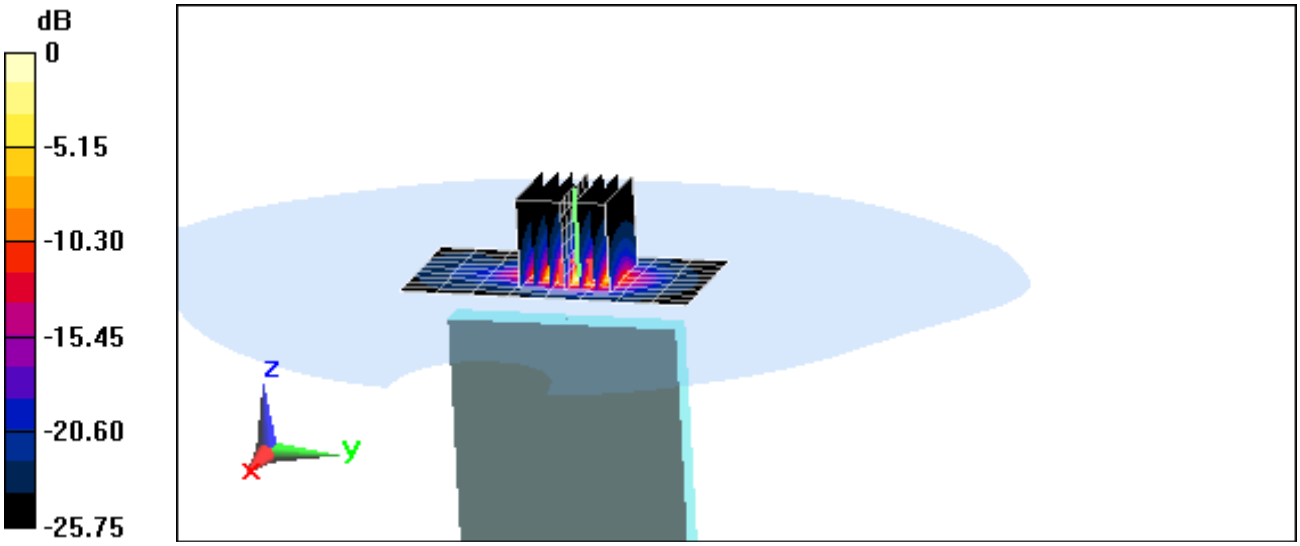
Communication System: UID 0, IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2437 MHz; σ = 2.011 S/m; ε_r = 51.387; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-20-2015; Ambient Temp: 22.1°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3332; ConvF(4.31, 4.31, 4.31); Calibrated: 9/18/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/17/2014
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11b, 22 MHz Bandwidth,
Body SAR, Ch 06, 1 Mbps, Top Edge, Antenna 2

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.68 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.484 W/kg
SAR (1 g) = 0.253 W/kg



0 dB = 0.323 W/kg = -4.91 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 95BE4

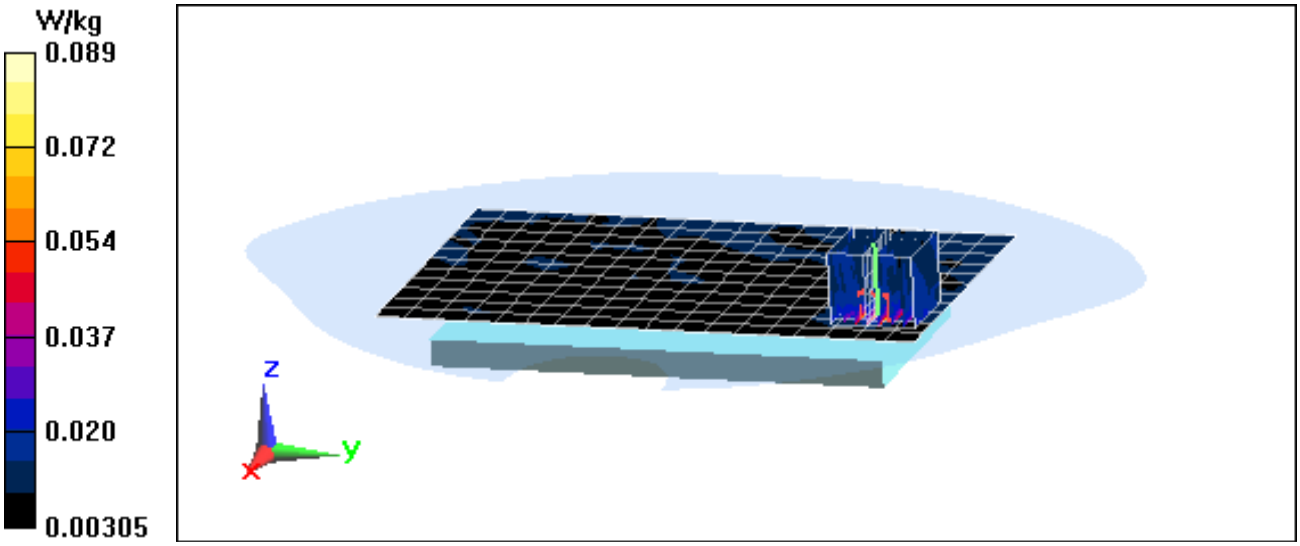
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5785 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5785 MHz; σ = 5.944 S/m; ε_r = 47.95; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-15-2015; Ambient Temp: 22.5°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN3589; ConvF(3.79, 3.79, 3.79); Calibrated: 1/22/2015;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/17/2014
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11a, U-NII-3, 20 MHz Bandwidth,
Body SAR, Ch 157, 6 Mbps, Back Side, Antenna 2

Area Scan (12x19x1): 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 = 2.537 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.145 W/kg
SAR (1 g) = 0.035 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 95BE4

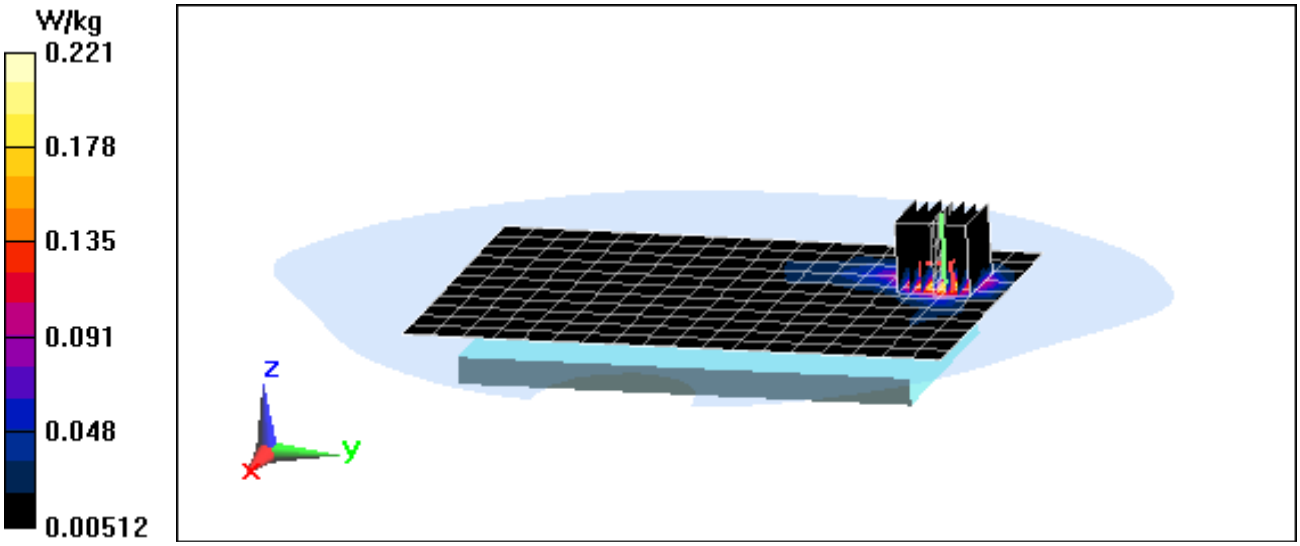
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5785 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5785 MHz; σ = 5.944 S/m; ε_r = 47.95; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-15-2015; Ambient Temp: 22.5°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN3589; ConvF(3.79, 3.79, 3.79); Calibrated: 1/22/2015;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/17/2014
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11a, U-NII-3, 20 MHz Bandwidth,
Body SAR, Ch 157, 6 Mbps, Front Side, Antenna 2

Area Scan (12x19x1): 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 = 3.718 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.374 W/kg
SAR (1 g) = 0.085 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92AF3

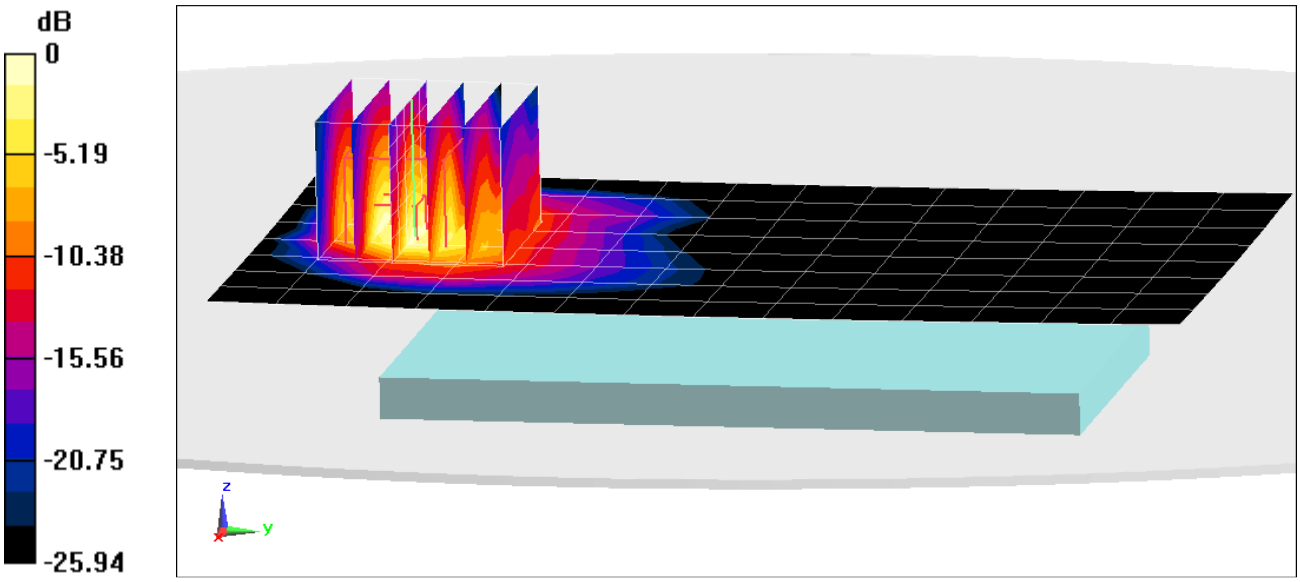
Communication System: UID 0, UMTS; Frequency: 1752.5 MHz;Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1752.5 MHz; σ = 1.474 S/m; ε_r = 51.332; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 0.0 cm

Test Date: 07-09-2015; Ambient Temp: 22.4°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3288; ConvF(5.03, 5.03, 5.03); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

Mode: AWS UMTS, Extremity SAR, Back side, High.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 = 59.40 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 11.7 W/kg
SAR(10 g) = 2.55 W/kg



0 dB = 7.02 W/kg = 8.46 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 92B01

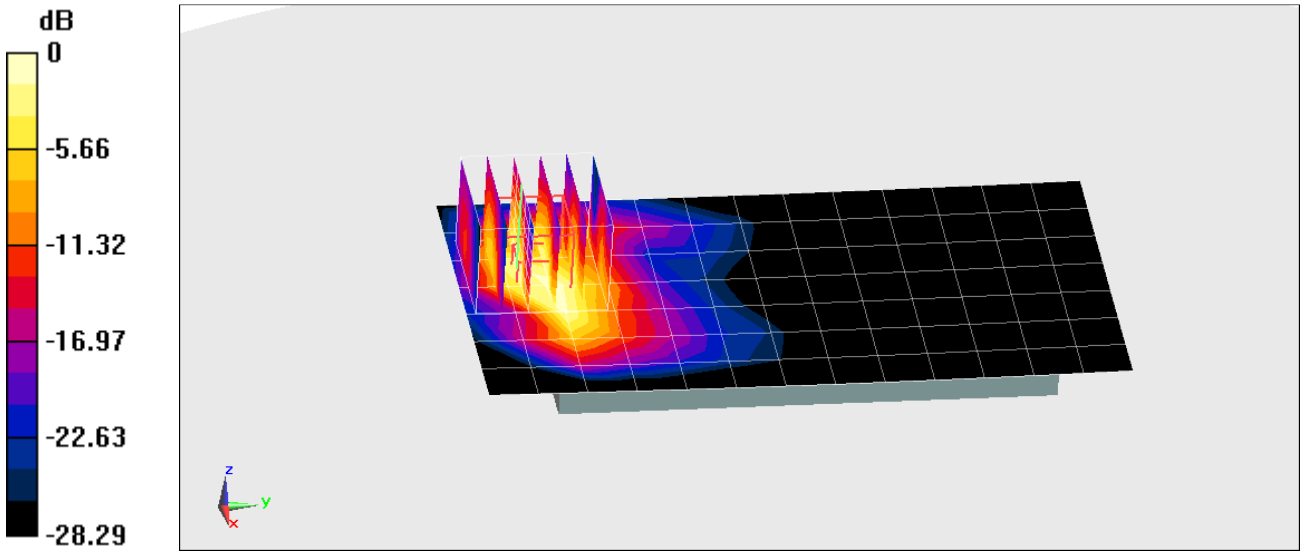
Communication System: UID 0, UMTS (0); Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.517 S/m; ε_r = 50.801; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-08-2015; Ambient Temp: 24.1°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3318; ConvF(4.76, 4.76, 4.76); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: ELI v6.0; Type: QDOVA003AA; Serial: TP:2027
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 47.73 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 8.32 W/kg
SAR(10 g) = 1.62 W/kg



0 dB = 4.43 W/kg = 6.46 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG928I; Type: Portable Handset; Serial: 95BE4

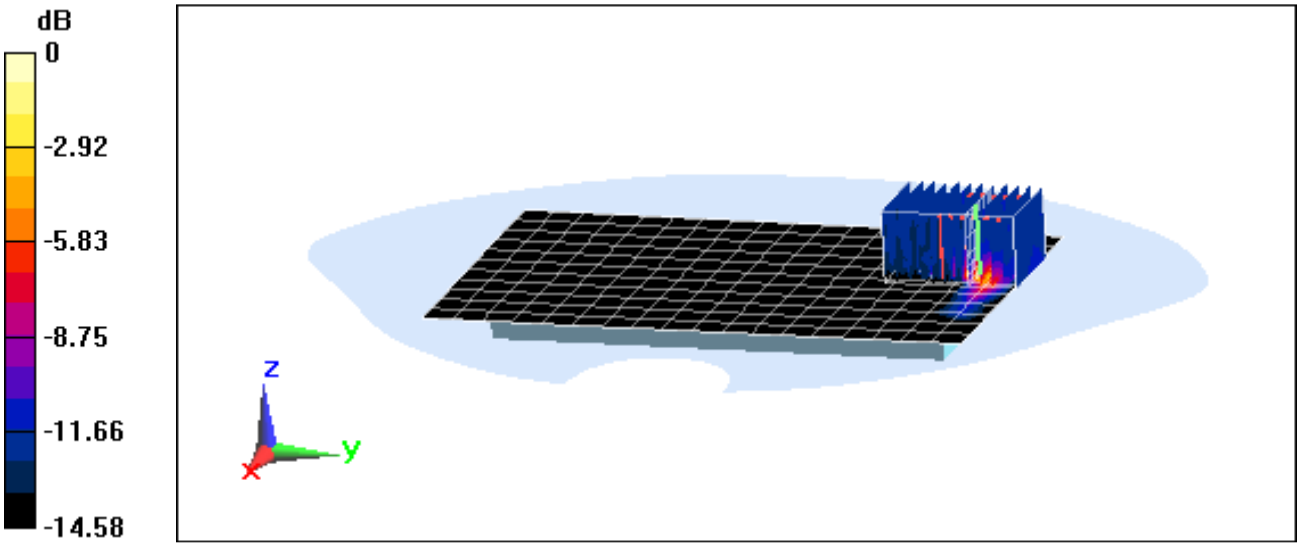
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5320 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5320 MHz; σ = 5.327 S/m; ε_r = 48.627; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 06-15-2015; Ambient Temp: 22.4°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN3589; ConvF(3.79, 3.79, 3.79); Calibrated: 1/22/2015;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/17/2014
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11a, U-NII-2A, 20 MHz Bandwidth,
Extremity SAR, Ch 64, 6 Mbps, Front Side, Antenna 2

Area Scan (12x19x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (9x12x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio=1.4
Reference Value = 16.60 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 6.12 W/kg
SAR (10 g) = 0.505 W/kg



0 dB = 2.98 W/kg = 4.74 dBW/kg

APPENDIX B: SYSTEM VERIFICATION

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PCTEST ENGINEERING LABORATORY, INC.

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

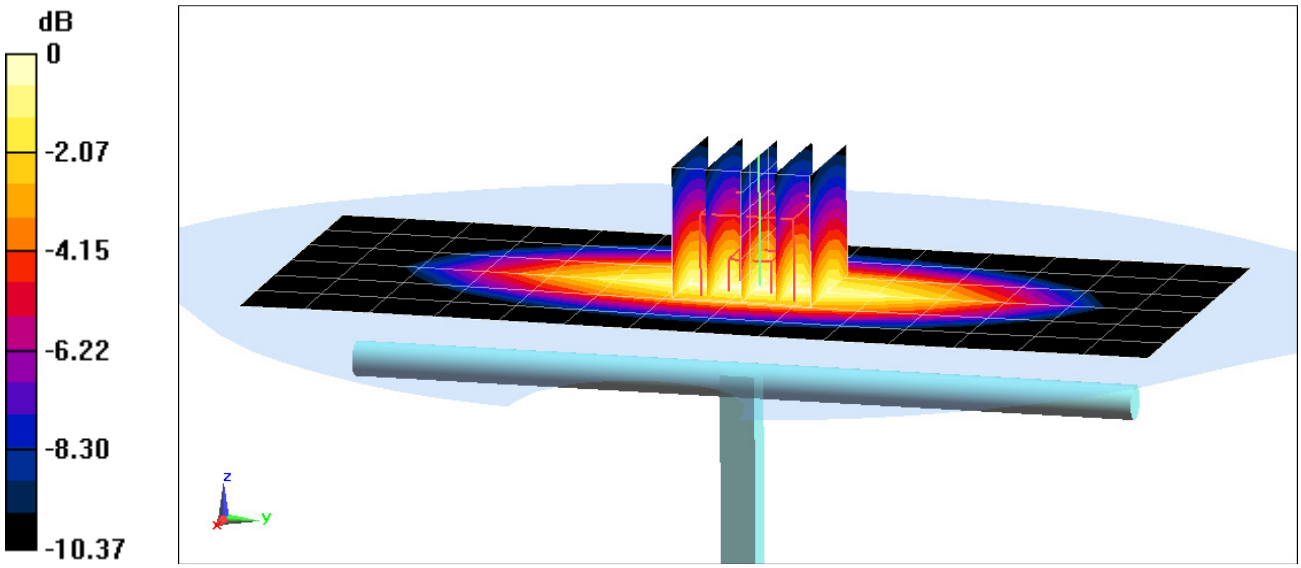
Communication System: UID 0, CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 750 MHz; σ = 0.895 S/m; ε_r = 42.025; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.5 cm

Test Date: 06-22-2015; Ambient Temp: 22.3°C; Tissue Temp: 24.5°C

Probe: ES3DV3 - SN3288; ConvF(6.81, 6.81, 6.81); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1797
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

750 MHz System Verification

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 23 dBm (200 mW)
Peak SAR (extrapolated) = 2.60 W/kg
SAR(1 g) = 1.75 W/kg
Deviation (1 g) = 8.16%



0 dB = 2.05 W/kg = 3.12 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d132

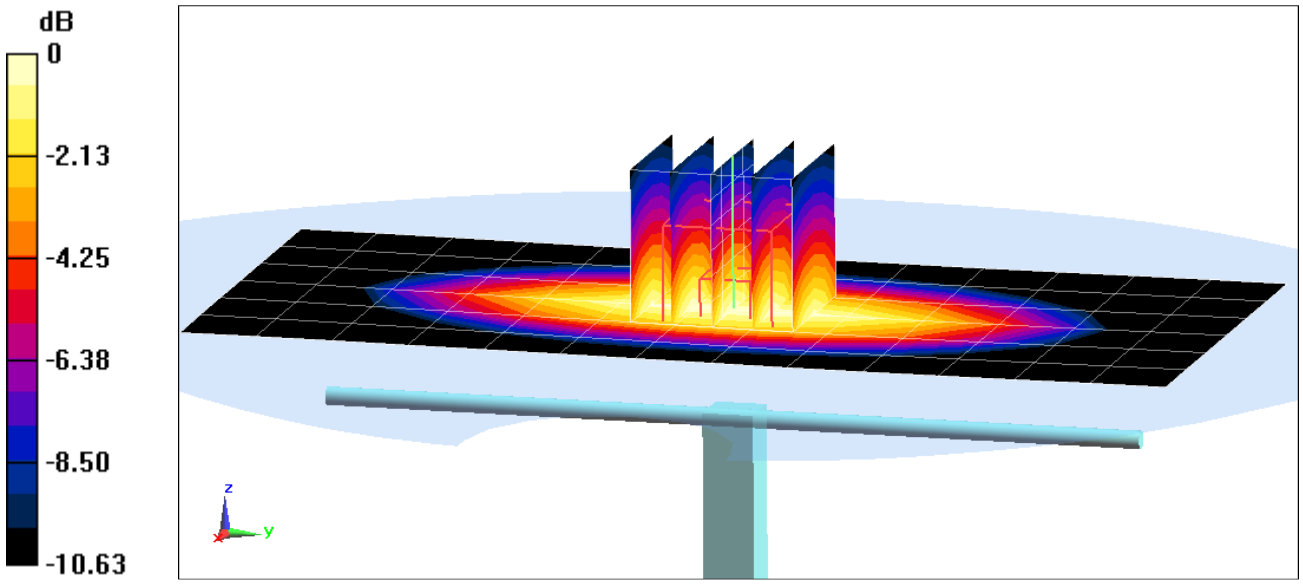
Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: 835 Head Medium parameters used:
f = 835 MHz; σ = 0.904 S/m; ε_r = 41.428; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.5 cm

Test Date: 06-29-2015; Ambient Temp: 22.5°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3288; ConvF(6.51, 6.51, 6.51); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1797
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

835 MHz System Verification

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 23 dBm (200 mW)
Peak SAR (extrapolated) = 2.84 W/kg
SAR(1 g) = 1.91 W/kg
Deviation (1 g) = 3.24%



0 dB = 2.23 W/kg = 3.48 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1051

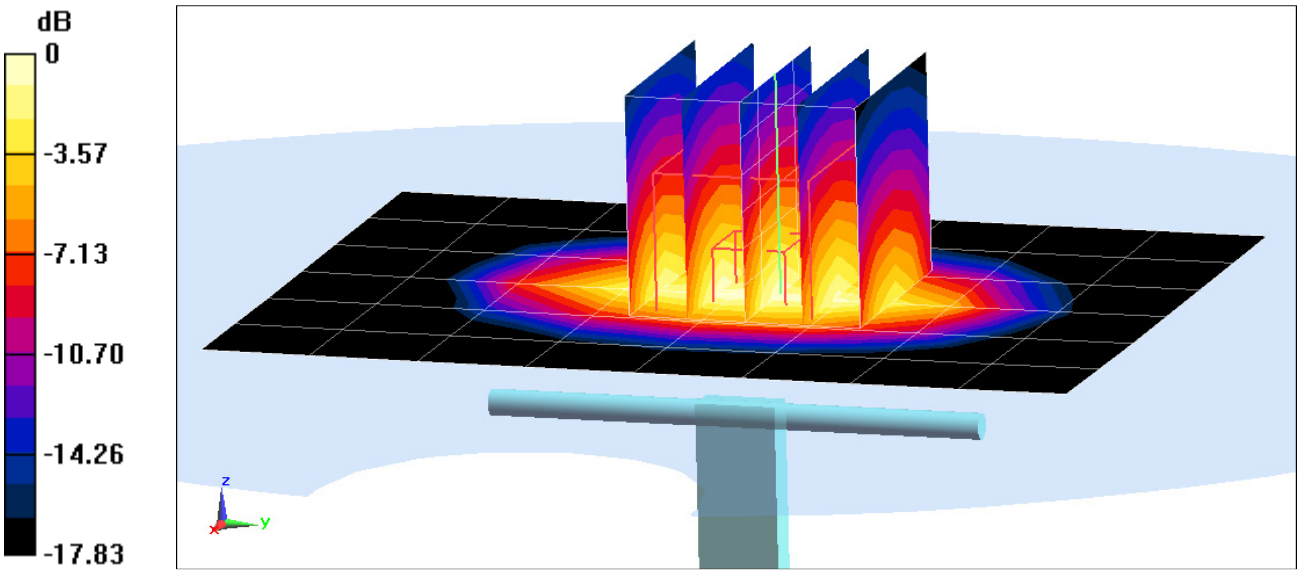
Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used:
f = 1750 MHz; σ = 1.346 S/m; ε_r = 39.121; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 06-22-2015; Ambient Temp: 23.1°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3318; ConvF(5.27, 5.27, 5.27); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

1750 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 6.68 W/kg
SAR(1 g) = 3.66 W/kg
Deviation (1 g) = 1.10%



0 dB = 4.62 W/kg = 6.65 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1051

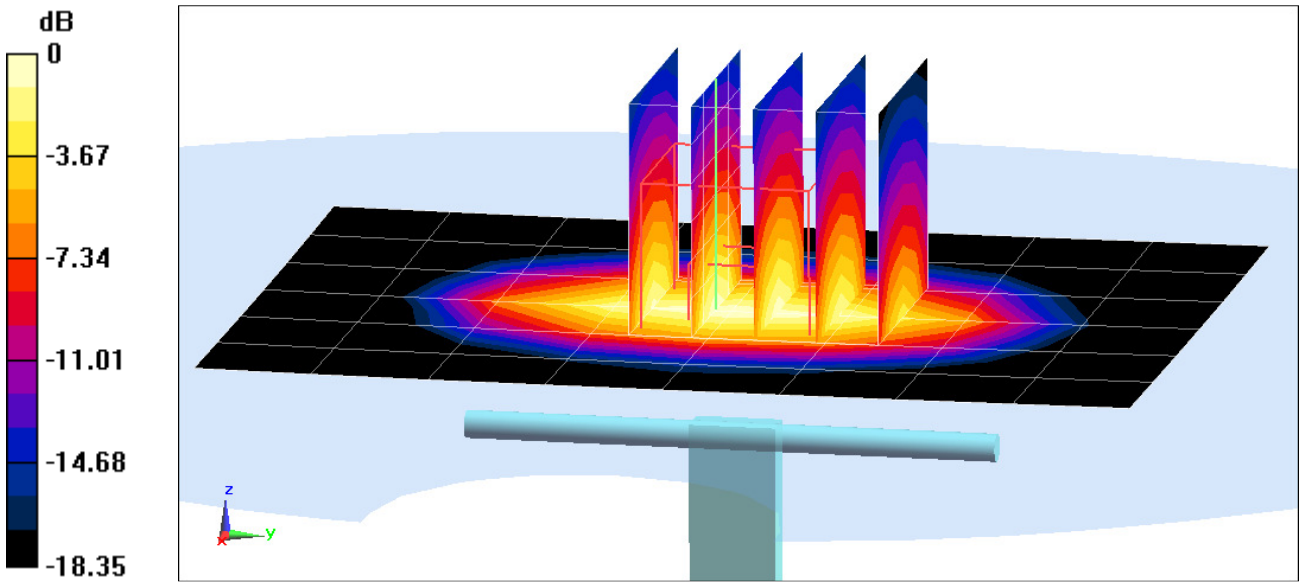
Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used:
f = 1750 MHz; σ = 1.387 S/m; ε_r = 40.026; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 06-29-2015; Ambient Temp: 21.1°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3263; ConvF(5.27, 5.27, 5.27); Calibrated: 5/20/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 10/23/2014
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

1750 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 6.75 W/kg
SAR(1 g) = 3.71 W/kg
Deviation (1 g) = 2.49%



0 dB = 4.66 W/kg = 6.68 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d141

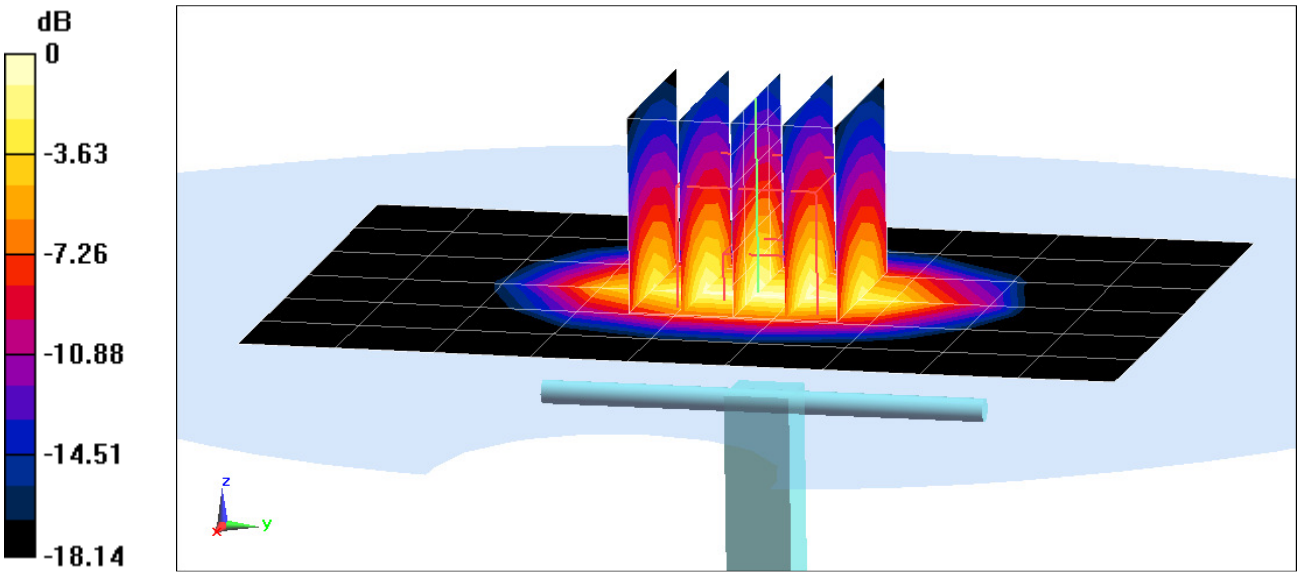
Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.418 S/m; ε_r = 39.591; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 06-14-2015; Ambient Temp: 22.5°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3318; ConvF(5.05, 5.05, 5.05); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

1900 MHz System Verification

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 7.98 W/kg
SAR(1 g) = 4.31 W/kg
Deviation (1 g) = 8.02%



0 dB = 5.53 W/kg = 7.43 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 719

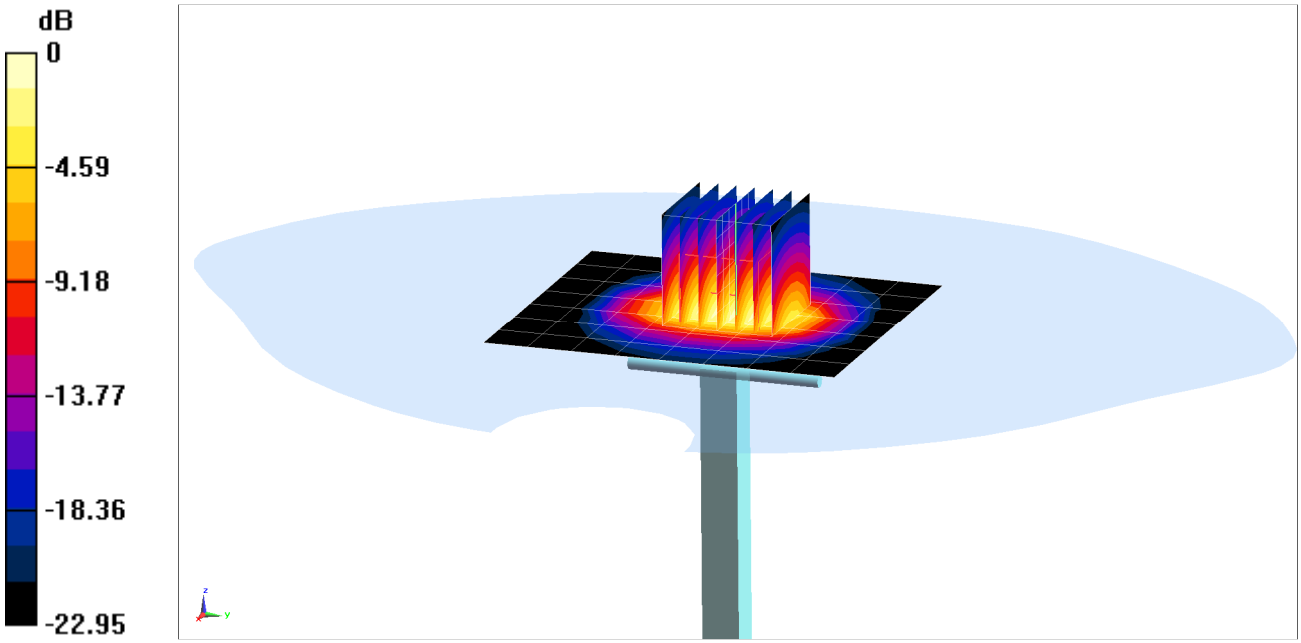
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2400 Head Medium parameters used:
f = 2450 MHz; σ = 1.825 S/m; ε_r = 38.879; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-17-2015; Ambient Temp: 23.0°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3332; ConvF(4.49, 4.49, 4.49); Calibrated: 9/18/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/17/2014
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2450 MHz System Verification

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 11.0 W/kg
SAR (1 g) = 5.17 W/kg
Deviation (1 g) = -0.77%



0 dB = 6.86 W/kg = 8.36 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5300 MHz; Type: D5GHzV2; Serial: 1057

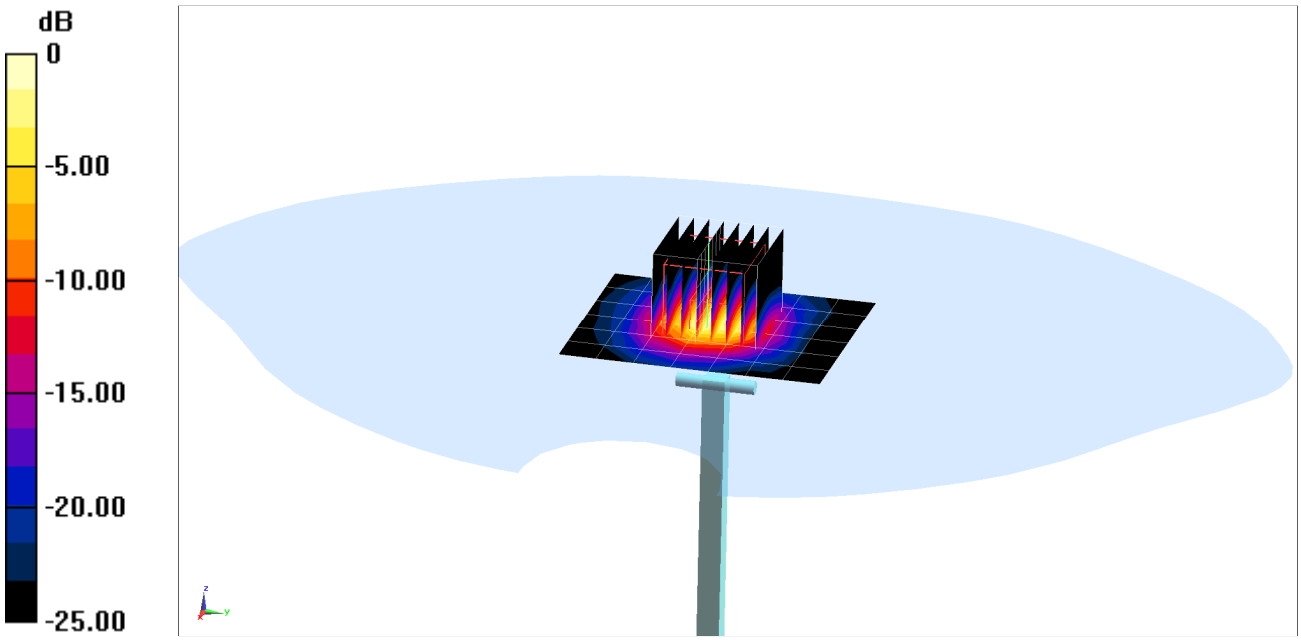
Communication System: UID 0, CW; Frequency: 5300 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head Medium parameters used:
f = 5300 MHz; σ = 4.72 S/m; ε_r = 34.391; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-15-2015; Ambient Temp: 23.1°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7357; ConvF(4.93, 4.93, 4.93); Calibrated: 4/23/2015;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 3/13/2015
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5300 MHz System Verification

Area Scan (7x8x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio =1.4
Input Power = 17 dBm (50 mW)
Peak SAR (extrapolated) = 18.1 W/kg
SAR (1 g) = 4.44 W/kg
Deviation (1 g) = 4.84%



0 dB = 10.6 W/kg = 10.25 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5500 MHz; Type: D5GHzV2; Serial: 1057

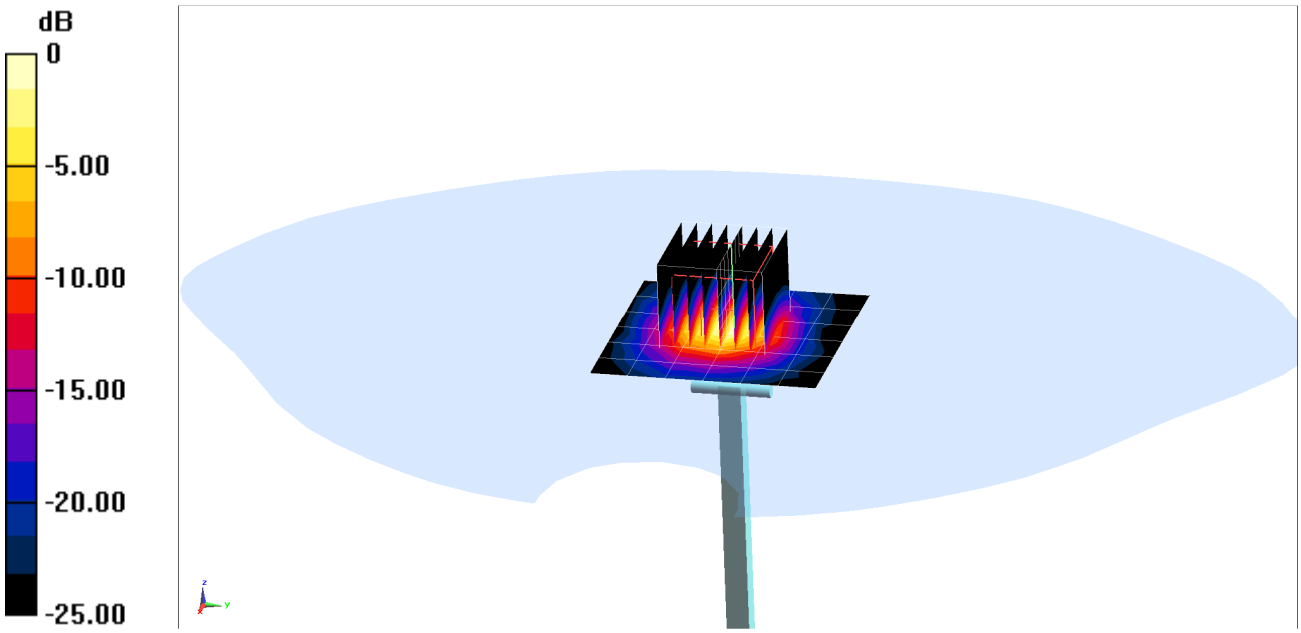
Communication System: UID 0, CW; Frequency: 5500 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head Medium parameters used:
f = 5500 MHz; σ = 4.95 S/m; ε_r = 34.051; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-15-2015; Ambient Temp: 22.5°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7357; ConvF(4.7, 4.7, 4.7); Calibrated: 4/23/2015;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 3/13/2015
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5500 MHz System Verification

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
Input Power = 17 dBm (50 mW)
Peak SAR (extrapolated) = 18.2 W/kg
SAR (1 g) = 4.28 W/kg
Deviation (1 g) = 1.54%



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1057

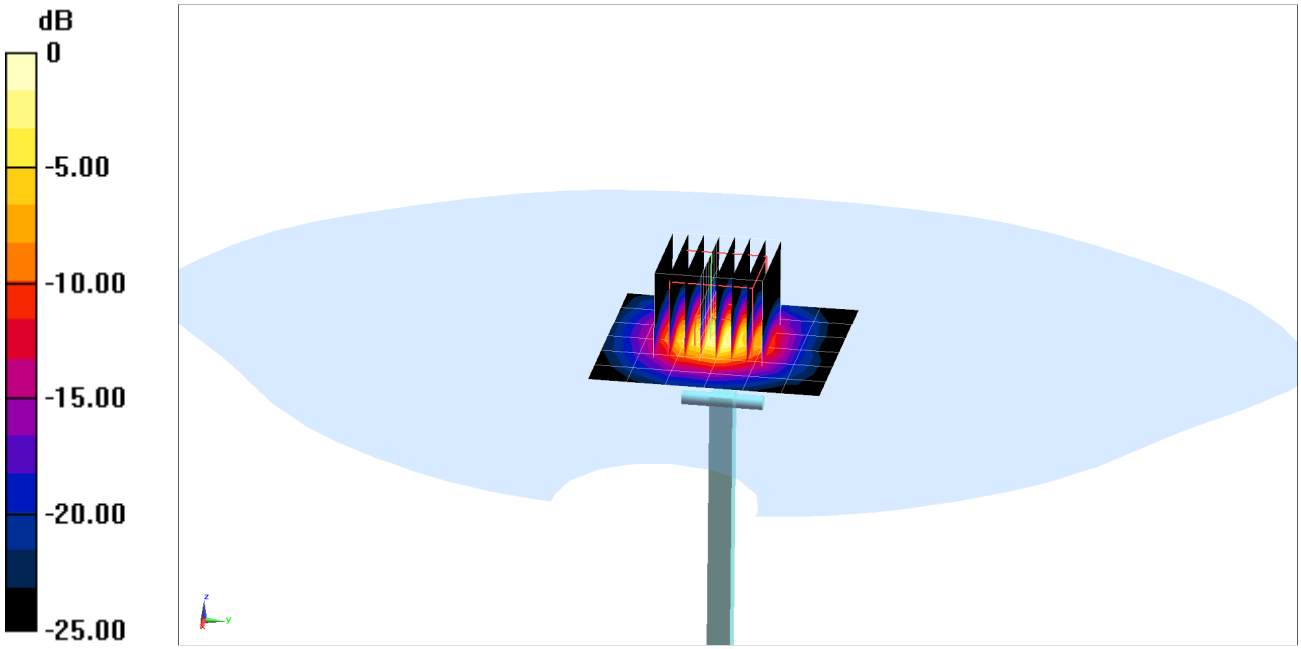
Communication System: UID 0, CW; Frequency: 5800 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head Medium parameters used:
f = 5800 MHz; σ = 5.268 S/m; ε_r = 33.587; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-15-2015; Ambient Temp: 22.7°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7357; ConvF(4.41, 4.41, 4.41); Calibrated: 4/23/2015;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 3/13/2015
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5800 MHz System Verification

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
Input Power = 17 dBm (50 mW)
Peak SAR (extrapolated) = 18.5 W/kg
SAR (1 g) = 4.20 W/kg
Deviation (1 g) = 3.58%



0 dB = 10.3 W/kg = 10.13 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

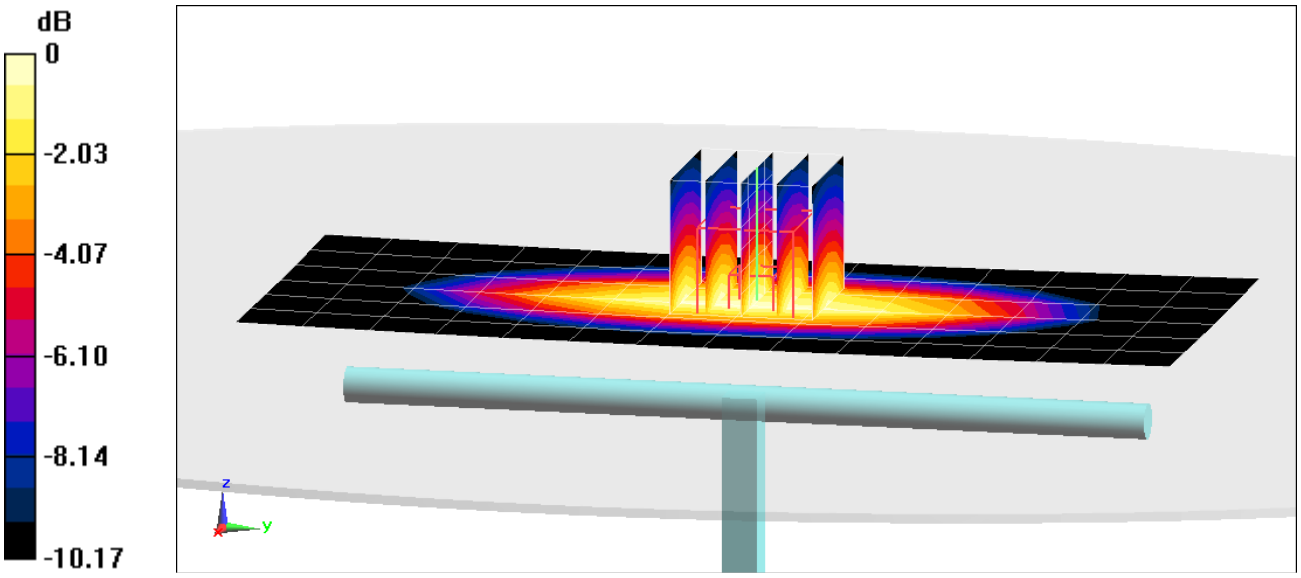
Communication System: UID 0, CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 750 MHz; σ = 0.969 S/m; ε_r = 55.255; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.5 cm

Test Date: 06-18-2015; Ambient Temp: 22.3°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3288; ConvF(6.38, 6.38, 6.38); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

750 MHz System Verification

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 1.28 W/kg
SAR(1 g) = 0.870 W/kg
Deviation (1 g) = 2.84%



0 dB = 1.01 W/kg = 0.04 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d132

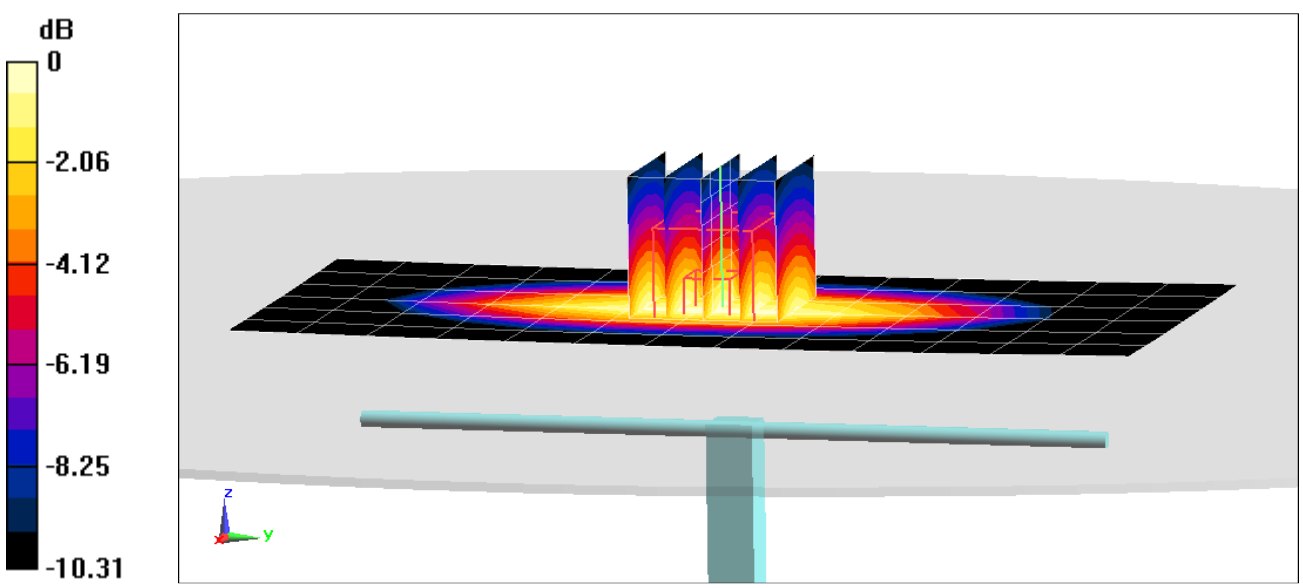
Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.993 S/m; ε_r = 53.688; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.5 cm

Test Date: 06-29-2015; Ambient Temp: 23.3°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3318; ConvF(6.23, 6.23, 6.23); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: ELI v6.0; Type: QDOVA003AA; Serial: TP:2027
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

835 MHz System Verification

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 23 dBm (200 mW)
Peak SAR (extrapolated) = 2.78 W/kg
SAR(1 g) = 1.88 W/kg
Deviation (1 g) = 2.84%



0 dB = 2.20 W/kg = 3.42 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1051

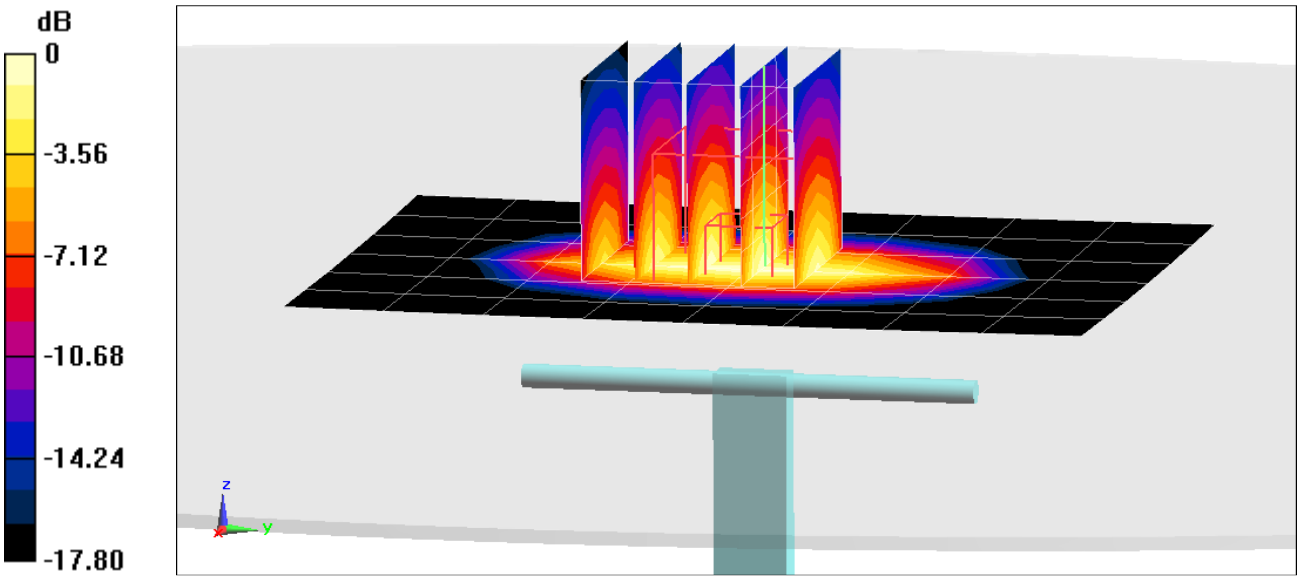
Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used:
f = 1750 MHz; σ = 1.472 S/m; ε_r = 51.335; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 07-09-2015; Ambient Temp: 22.4°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3288; ConvF(5.03, 5.03, 5.03); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

1750 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 6.58 W/kg
SAR(1 g) = 3.76 W/kg; SAR(10 g) = 2 W/kg
Deviation(1 g) = 1.35%; Deviation (10 g) = 0.00%



0 dB = 4.68 W/kg = 6.70 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1051

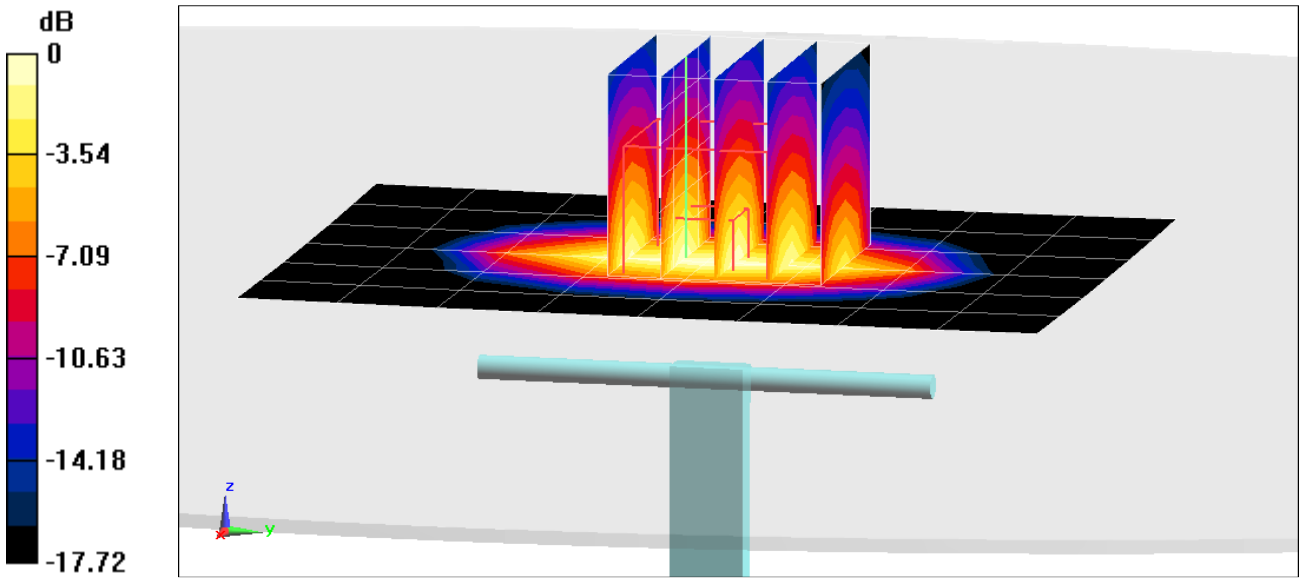
Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used:
f = 1750 MHz; σ = 1.49 S/m; ε_r = 51.327; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 07-13-2015; Ambient Temp: 22.7°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3288; ConvF(5.03, 5.03, 5.03); Calibrated: 9/24/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1364; Calibrated: 9/18/2014
Phantom: ELI v5.0; Type: QDOVA001BB; Serial: 1229
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

1750 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 6.54 W/kg
SAR(1 g) = 3.71 W/kg
Deviation = 0.00%



0 dB = 4.53 W/kg = 6.56 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d141

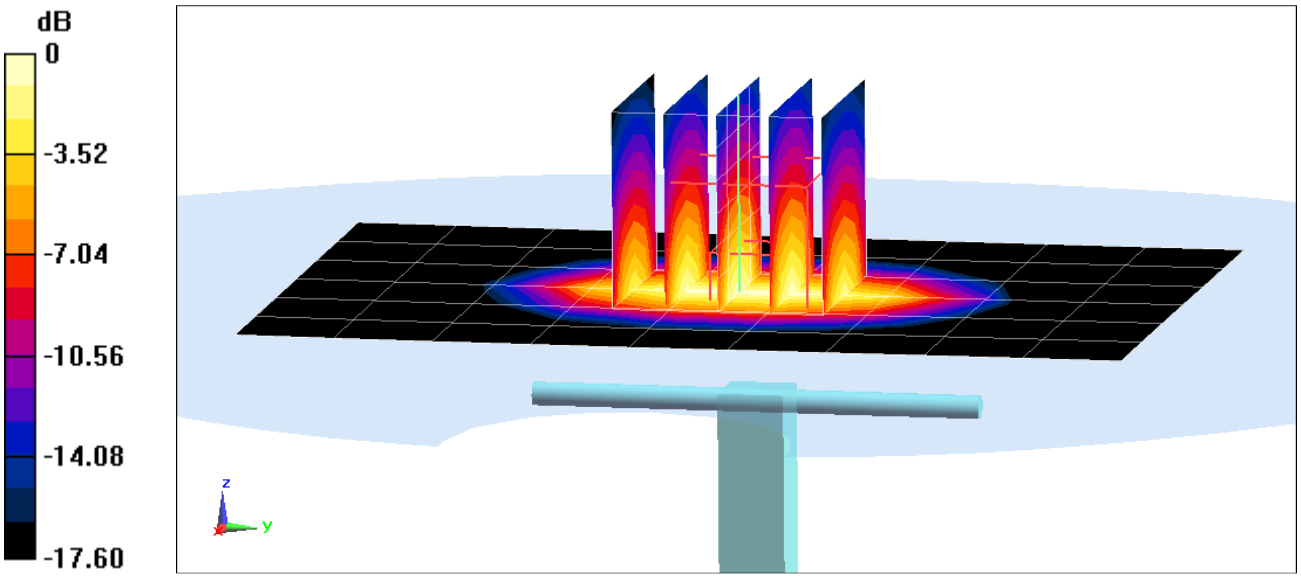
Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.557 S/m; ε_r = 50.858; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 06-24-2015; Ambient Temp: 23.3°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3263; ConvF(4.66, 4.66, 4.66); Calibrated: 5/20/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 10/23/2014
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

1900 MHz System Verification

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 7.56 W/kg
SAR(1 g) = 4.29 W/kg
Deviation (1 g) = 7.25%



0 dB = 5.42 W/kg = 7.34 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d141

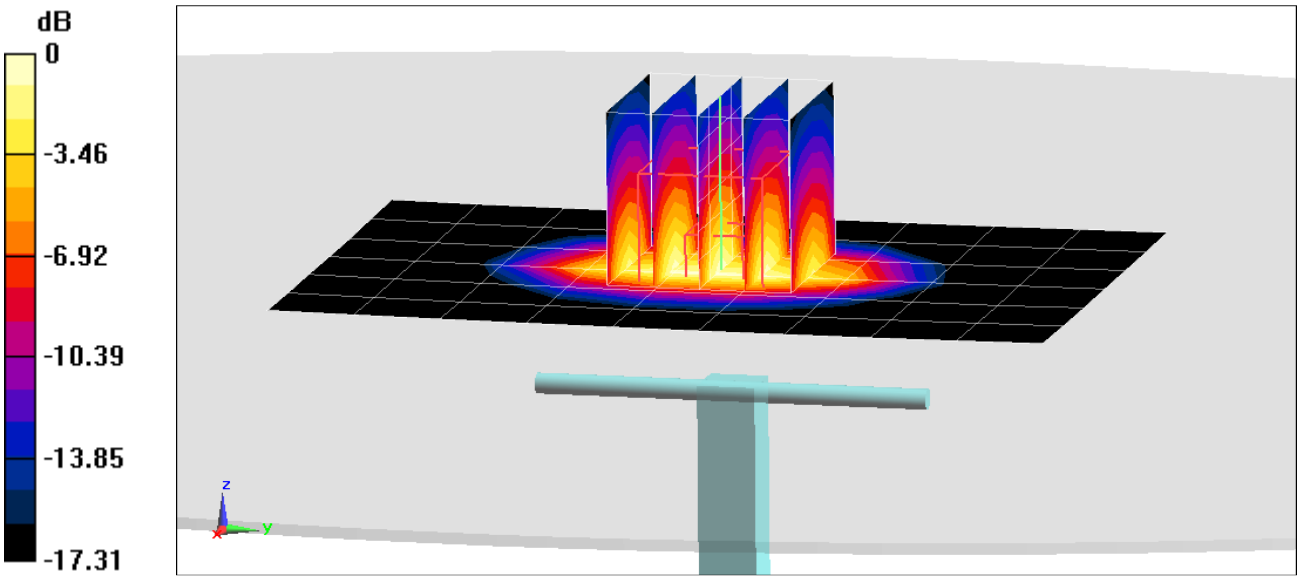
Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.538 S/m; ε_r = 50.746; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 07-08-2015; Ambient Temp: 24.1°C; Tissue Temp: 22.7°C

Probe: ES3DV3 - SN3318; ConvF(4.76, 4.76, 4.76); Calibrated: 1/23/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 1/14/2015
Phantom: ELI v6.0; Type: QDOVA003AA; Serial: TP:2027
Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

1900 MHz System Verification

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 7.03 W/kg
SAR(1 g) = 3.96 W/kg; SAR(10 g) = 2.07 W/kg
Deviation(1 g) = -1.00%; Deviation (10 g) = -2.36%



0 dB = 5.04 W/kg = 7.02 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 719

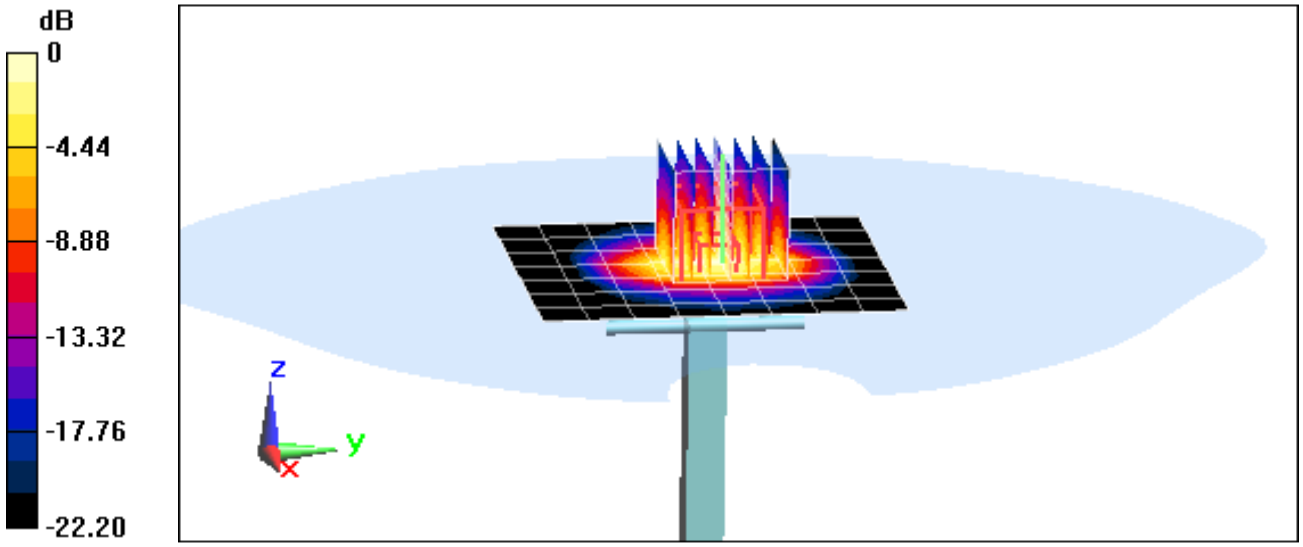
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2400 Body Medium parameters used:
f = 2450 MHz; σ = 2.03 S/m; ε_r = 51.318; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-20-2015; Ambient Temp: 22.1°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3332; ConvF(4.31, 4.31, 4.31); Calibrated: 9/18/2014;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/17/2014
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2450 MHz System Verification

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Input Power = 20 dBm (100 mW)
Peak SAR (extrapolated) = 11.0 W/kg
SAR (1 g) = 5.30 W/kg
Deviation (1 g) = 2.32%



0 dB = 7.00 W/kg = 8.45 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5300 MHz; Type: D5GHzV2; Serial: 1057

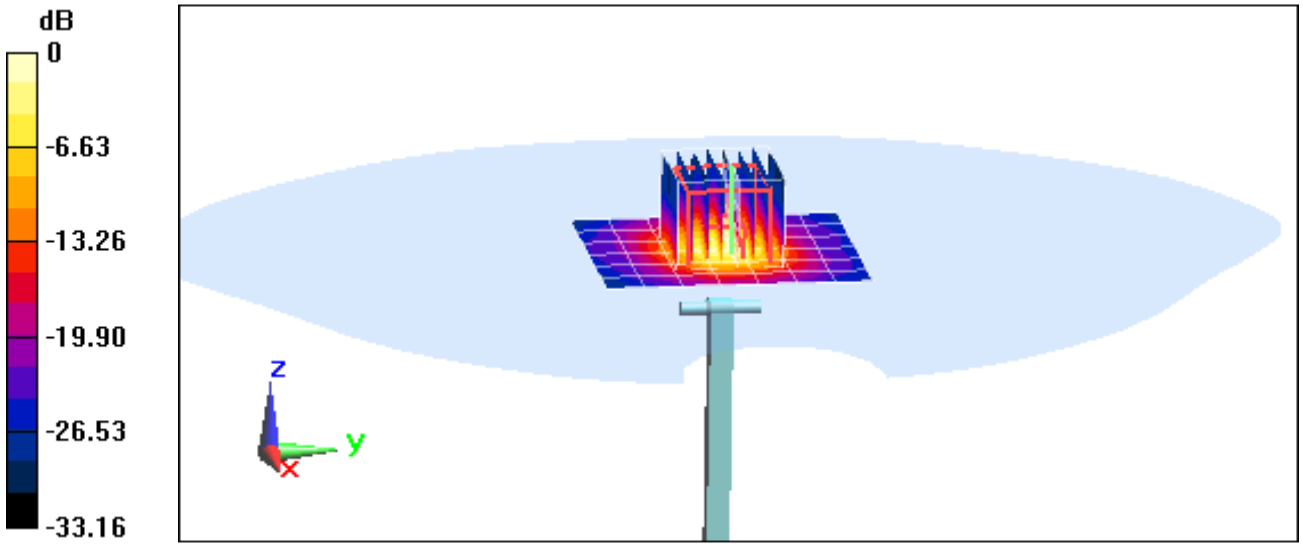
Communication System: UID 0, CW; Frequency: 5300 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5300 MHz; σ = 5.298 S/m; ε_r = 48.672; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-15-2015; Ambient Temp: 22.4°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN3589; ConvF(3.79, 3.79, 3.79); Calibrated: 1/22/2015;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/17/2014
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5300 MHz System Verification

Area Scan (7x8x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio =1.4
Input Power = 17 dBm (50 mW)
Peak SAR (extrapolated) = 15.5 W/kg
SAR (1 g) = 3.77 W/kg; SAR (10 g) = 1.06 W/kg
Deviation (1 g) = 1.62%; Deviation (10 g) = 1.44%



0 dB = 8.74 W/kg = 9.42 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5500 MHz; Type: D5GHzV2; Serial: 1057

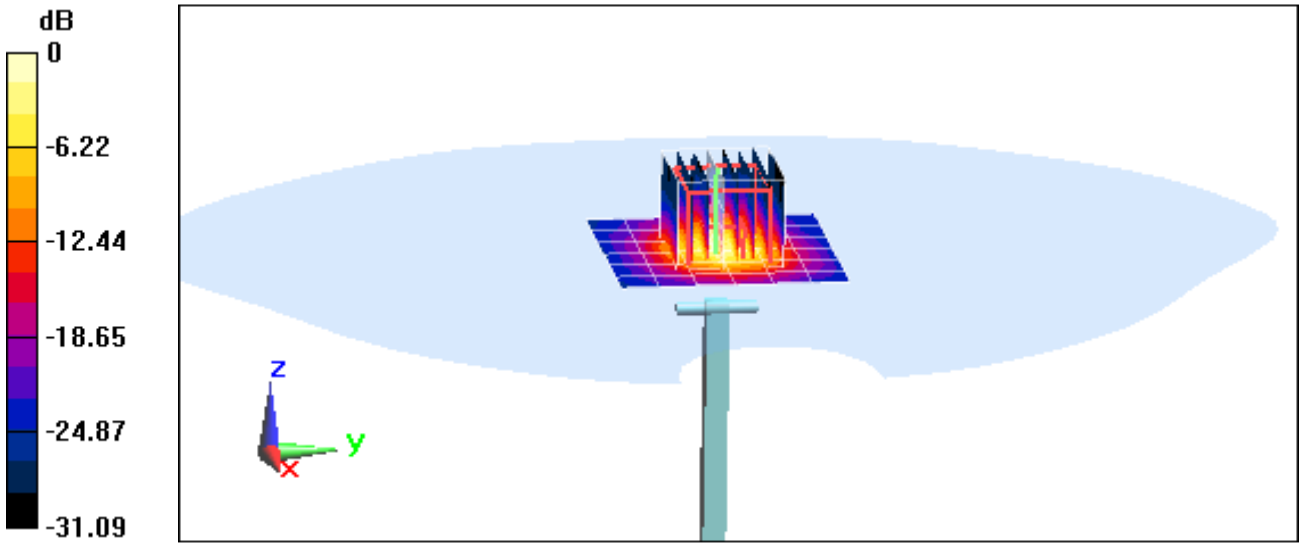
Communication System: UID 0, CW; Frequency: 5500 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5500 MHz; σ = 5.561 S/m; ε_r = 48.347; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-15-2015; Ambient Temp: 22.3°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN3589; ConvF(3.65, 3.65, 3.65); Calibrated: 1/22/2015;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/17/2014
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5500 MHz System Verification

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
Input Power = 17 dBm (50 mW)
Peak SAR (extrapolated) = 16.5 W/kg
SAR (1 g) = 3.81 W/kg; SAR (10 g) = 1.07 W/kg
Deviation (1 g) = -3.79%; Deviation (10 g) = -2.73%



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5800 MHz; Type: D5GHzV2; Serial: 1057

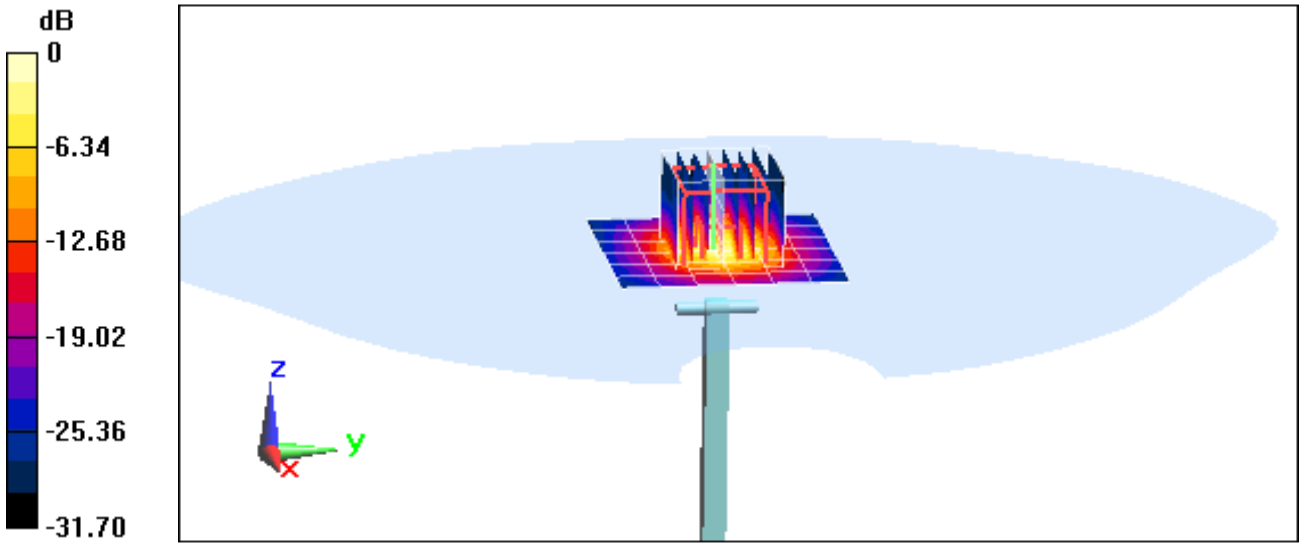
Communication System: UID 0, CW; Frequency: 5800 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5800 MHz; σ = 5.96 S/m; ε_r = 47.927; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-15-2015; Ambient Temp: 22.5°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN3589; ConvF(3.79, 3.79, 3.79); Calibrated: 1/22/2015;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/17/2014
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5800 MHz System Verification

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
Input Power = 17 dBm (50 mW)
Peak SAR (extrapolated) = 15.6 W/kg
SAR (1 g) = 3.39 W/kg
Deviation (1 g) = -9.72%



0 dB = 8.42 W/kg = 9.25 dBW/kg