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SAR EVALUATION REPORT

Applicant Name:
Samsung Electronics Co., Ltd.
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Yeongtong-gu, Suwon-si
Gyeonggi-do, 16677, Korea

Date of Testing:
10/23/17 - 11/15/17
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
1M1710200271-01.A3L

FCC ID: **A3LSMG965KOR**

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

DUT Type: Portable Handset
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model: SM-G965N

Equipment Class	Band & Mode	Tx Frequency	SAR			
			1g Head (W/kg)	1g Body-Worn (W/kg)	1g Hotspot (W/kg)	10g Phablet (W/kg)
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.19	0.28	0.76	N/A
PCE	UMTS 850	826.40 - 846.60 MHz	0.16	0.21	0.42	N/A
PCE	UMTS 1750	1712.4 - 1752.6 MHz	0.15	0.64	0.52	N/A
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	< 0.1	0.34	1.00	N/A
PCE	UMTS 1900	1852.4 - 1907.6 MHz	< 0.1	0.36	1.09	N/A
PCE	LTE Band 12	699.7 - 715.3 MHz	0.10	0.18	0.29	N/A
PCE	LTE Band 17	706.5 - 713.5 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 13	779.5 - 784.5 MHz	< 0.1	0.21	0.33	N/A
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	0.18	0.29	0.61	N/A
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.15	0.23	0.47	N/A
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.11	0.54	1.09	N/A
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	< 0.1	0.34	1.09	N/A
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 41	2498.5 - 2687.5 MHz	< 0.1	0.24	1.09	N/A
DTS	2.4 GHz WLAN	2412 - 2462 MHz	0.31	< 0.1	0.28	N/A
NII	U-NII-1	5180 - 5240 MHz	N/A	N/A	N/A	N/A
NII	U-NII-2A	5260 - 5320 MHz	0.31	0.14	N/A	0.84
NII	U-NII-2C	5500 - 5720 MHz	0.26	0.15	N/A	1.26
NII	U-NII-3	5745 - 5825 MHz	0.43	0.16	0.25	N/A
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.26	< 0.1	< 0.1	N/A
Simultaneous SAR per KDB 690783 D01v01r03:			1.36	0.97	1.46	1.70

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

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

Randy Ortanez
President

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

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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.6 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
LTE Band 12	Data	699.7 - 715.3 MHz
LTE Band 17	Data	706.5 - 713.5 MHz
LTE Band 13	Data	779.5 - 784.5 MHz
LTE Band 5 (Cell)	Data	824.7 - 848.3 MHz
LTE Band 26 (Cell)	Data	814.7 - 848.3 MHz
LTE Band 66 (AWS)	Data	1710.7 - 1779.3 MHz
LTE Band 4 (AWS)	Data	1710.7 - 1754.3 MHz
LTE Band 25 (PCS)	Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Data	1850.7 - 1909.3 MHz
LTE Band 41	Data	2498.5 - 2687.5 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2462 MHz
U-NII-1	Voice/Data	5180 - 5240 MHz
U-NII-2A	Voice/Data	5260 - 5320 MHz
U-NII-2C	Voice/Data	5500 - 5720 MHz
U-NII-3	Voice/Data	5745 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz
ANT+	Data	2402 - 2480 MHz
MST	Data	555 Hz - 8.33 kHz

1.2 Power Reduction for SAR

This device utilizes a single step power reduction mechanism for SAR compliance under portable hotspot conditions for UMTS Band 4. All hotspot SAR evaluations for this device were performed at the maximum allowed output power when hotspot is enabled. Detailed descriptions of the power reduction mechanism are included in the operational description.

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

1.3 Nominal and Maximum Output Power Specifications

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

1.3.1 Maximum PCE Power

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slot	*1 TX Slot*	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*	*1 TX Slot*	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*
GSM/GPRS/EDGE 850	Maximum	**32.9**	**32.9**	**31.5**	**29.5**	**28.5**	**27.5**	**25.0**	**24.0**	**23.0**
	Nominal	**32.4**	**32.4**	**31.0**	**29.0**	**28.0**	**27.0**	**24.5**	**23.5**	**22.5**
GSM/GPRS/EDGE 1900	Maximum	**30.2**	**30.2**	**27.0**	**26.0**	**24.5**	**26.0**	**23.5**	**22.5**	**21.0**
	Nominal	**29.7**	**29.7**	**26.5**	**25.5**	**24.0**	**25.5**	**23.0**	**22.0**	**20.5**

Mode / Band		Modulated Average (dBm)		
		3GPP WCDMA	*3GPP HSDPA*	*3GPP HSUPA*
UMTS Band 5 (850 MHz)	Maximum	**23.5**	**23.5**	**23.2**
	Nominal	**23.0**	**23.0**	**22.7**
UMTS Band 4 (1750 MHz)	Maximum	**23.5**	**23.5**	**22.5**
	Nominal	**23.0**	**23.0**	**22.0**
UMTS Band 2 (1900 MHz)	Maximum	**23.3**	**23.3**	**23.0**
	Nominal	**22.8**	**22.8**	**22.5**

Mode / Band		Modulated Average (dBm)
LTE Band 12	Maximum	**23.5**
	Nominal	**23.0**
LTE Band 17	Maximum	**23.5**
	Nominal	**23.0**
LTE Band 13	Maximum	**23.5**
	Nominal	**23.0**
LTE Band 5 (Cell)	Maximum	**24.5**
	Nominal	**24.0**
LTE Band 26 (Cell)	Maximum	**23.5**
	Nominal	**23.0**
LTE Band 66 (AWS)	Maximum	**23.5**
	Nominal	**23.0**
LTE Band 4 (AWS)	Maximum	**23.5**
	Nominal	**23.0**
LTE Band 25 (PCS)	Maximum	**23.5**
	Nominal	**23.0**
LTE Band 2 (PCS)	Maximum	**23.5**
	Nominal	**23.0**
LTE Band 41	Maximum	**23.0**
	Nominal	**22.5**

1.3.2 Reduced PCE Power – Hotspot Mode Activated

Mode / Band		Modulated Average (dBm)		
		3GPP WCDMA	*3GPP HSDPA*	*3GPP HSUPA*
UMTS Band 4 (1750 MHz)	Maximum	**20.5**	**20.5**	**20.0**
	Nominal	**20.0**	**20.0**	**19.5**

1.3.3 Maximum Bluetooth and WLAN Power

Mode / Band		Modulated Average - Single Tx Chain (dBm)
IEEE 802.11b (2.4 GHz)	Maximum	**18.5**
	Nominal	**18.0**
IEEE 802.11g (2.4 GHz)	Maximum	**17.5**
	Nominal	**17.0**
IEEE 802.11n (2.4 GHz)	Maximum	**16.5**
	Nominal	**16.0**
Bluetooth	Maximum	**16.0**
	Nominal	**15.5**
Bluetooth LE (1 Mbps)	Maximum	**8.5**
	Nominal	**8.0**
Bluetooth LE (2 Mbps)	Maximum	**10.5**
	Nominal	**10.0**

Mode / Band		Modulated Average - Single Tx Chain (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11a (5 GHz)	Maximum	**17.5**		
	Nominal	**17.0**		
IEEE 802.11n (5 GHz)	Maximum	**16.5**	**16.5**	
	Nominal	**16.0**	**16.0**	
IEEE 802.11ac (5 GHz)	Maximum	**17.5**	**16.5**	**15.5**
	Nominal	**17.0**	**16.0**	**15.0**

Mode / Band		Modulated Average - MIMO (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11g (2.4 GHz)	Maximum	**20.5 (ch. 1: 17.5, ch.11: 18.5)**		
	Nominal	**20.0 (ch. 1: 17.0, ch.11: 18.0)**		
IEEE 802.11n (2.4 GHz)	Maximum	**19.5 (ch. 1: 17.5, ch.11: 18.5)**		
	Nominal	**19.0 (ch. 1: 17.0, ch.11: 18.0)**		
IEEE 802.11a (5 GHz)	Maximum	**20.5**		
	Nominal	**20.0**		
IEEE 802.11n (5 GHz)	Maximum	**19.5**	**19.5 (ch. 38: 17.5)**	
	Nominal	**19.0**	**19.0 (ch. 38: 17.0)**	
IEEE 802.11ac (5 GHz)	Maximum	**20.5**	**19.5 (ch. 38: 17.5)**	**18.5**
	Nominal	**20.0**	**19.0 (ch. 38: 17.0)**	**18.0**

1.3.4 Reduced WLAN Power

Mode / Band		Modulated Average - Single Tx Chain (dBm)
IEEE 802.11b (2.4 GHz)	Maximum	**15.5**
	Nominal	**15.0**
IEEE 802.11g (2.4 GHz)	Maximum	**14.5**
	Nominal	**14.0**
IEEE 802.11n (2.4 GHz)	Maximum	**13.5**
	Nominal	**13.0**

Mode / Band		Modulated Average - Single Tx Chain (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11a (5 GHz)	Maximum	**14.5**		
	Nominal	**14.0**		
IEEE 802.11n (5 GHz)	Maximum	**13.5**	**13.5**	
	Nominal	**13.0**	**13.0**	
IEEE 802.11ac (5 GHz)	Maximum	**14.5**	**13.5**	**12.5**
	Nominal	**14.0**	**13.0**	**12.0**

Mode / Band		Modulated Average - MIMO (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11g (2.4 GHz)	Maximum	**17.5**		
	Nominal	**17.0**		
IEEE 802.11n (2.4 GHz)	Maximum	**16.5**		
	Nominal	**16.0**		
IEEE 802.11a (5 GHz)	Maximum	**17.5**		
	Nominal	**17.0**		
IEEE 802.11n (5 GHz)	Maximum	**16.5**	**16.5**	
	Nominal	**16.0**	**16.0**	
IEEE 802.11ac (5 GHz)	Maximum	**17.5**	**16.5**	**15.5**
	Nominal	**17.0**	**16.0**	**15.0**

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

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

A = 12 dBm
B = 13 dBm
(Upper tolerance: target + 0.5 dB)

1.4 DUT Antenna Locations

The overall dimensions of this device are > 9 x 5 cm. A diagram showing the location of the device antennas can be found in Appendix F. Since the diagonal dimension of this device is > 160 mm and <200 mm, it is considered a "phablet."

Table 1-1
Device Edges/Sides for SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
GPRS 850	Yes	Yes	No	Yes	Yes	Yes
UMTS 850	Yes	Yes	No	Yes	Yes	Yes
UMTS 1750	Yes	Yes	No	Yes	Yes	Yes
GPRS 1900	Yes	Yes	No	Yes	Yes	Yes
UMTS 1900	Yes	Yes	No	Yes	Yes	Yes
LTE Band 12	Yes	Yes	No	Yes	Yes	Yes
LTE Band 13	Yes	Yes	No	Yes	Yes	Yes
LTE Band 5 (Cell)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 26 (Cell)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 66 (AWS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 25 (PCS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 41	Yes	Yes	No	Yes	Yes	Yes
2.4 GHz WLAN Ant 1	Yes	Yes	Yes	No	Yes	Yes
2.4 GHz WLAN Ant 2	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN Ant 1	Yes	Yes	Yes	No	Yes	Yes
5 GHz WLAN Ant 2	Yes	Yes	Yes	No	No	Yes
Bluetooth	Yes	Yes	Yes	No	No	Yes

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

1.5 Near Field Communications (NFC) Antenna

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

1.6 Simultaneous Transmission Capabilities

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

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

Table 1-2
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Head	Body-Worn Accessory	Wireless Router	Phablet	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	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
4	GSM voice + 2.4 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
5	GSM voice + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
6	GSM voice + 2.4 GHz WI-FI + 5 GHz WI-FI	Yes	Yes	N/A	Yes	
7	GSM voice + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	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	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
11	UMTS + 2.4 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
12	UMTS + 5 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
13	UMTS + 2.4 GHz WI-FI + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
14	UMTS + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
15	LTE + 2.4 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
16	LTE + 5 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
17	LTE + 2.4 GHz Bluetooth	Yes*^	Yes*	Yes^	Yes	* Pre-installed VOIP applications are considered ^ Bluetooth Tethering is considered
18	LTE + 2.4 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
19	LTE + 5 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
20	LTE + 2.4 GHz WI-FI + 5 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
21	LTE + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
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	GPRS/EDGE + 2.4 GHz Bluetooth	N/A	N/A	Yes^	Yes	^ Bluetooth Tethering is considered
25	GPRS/EDGE + 2.4 GHz WI-FI MIMO	N/A	N/A	Yes	Yes	
26	GPRS/EDGE + 5 GHz WI-FI MIMO	N/A	N/A	Yes	Yes	
27	GPRS/EDGE + 2.4 GHz WI-FI + 5 GHz WI-FI	N/A	N/A	Yes	Yes	
28	GPRS/EDGE + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	N/A	N/A	Yes	Yes	

1. Bluetooth cannot transmit simultaneously with WLAN.
2. All licensed modes share the same antenna path and cannot transmit simultaneously.
3. When the user utilizes multiple services in UMTS 3G mode it uses multi-Radio Access Bearer or multi-RAB. The power control is based on a physical control channel (Dedicated Physical Control Channel [DPCCH]) and power control will be adjusted to meet the needs of both services. Therefore, the UMTS+WLAN scenario also represents the UMTS Voice/DATA + WLAN Hotspot scenario.
4. Per the manufacturer, WIFI Direct is not expected to be used in conjunction with a held-to-ear or body-worn accessory voice call. Therefore, there are no simultaneous transmission scenarios involving WIFI direct beyond that listed in the above table.
5. 5 GHz Wireless Router is only supported for the U-NII-3 by S/W, therefore U-NII-1, U-NII2A, and U-NII2C were not evaluated for wireless router conditions.
6. This device supports 2x2 MIMO Tx for WLAN. 802.11a/g/n/ac supports CDD and STBC and 802.11n/ac additionally supports SDM. Each WLAN antenna can transmit independently or together when operating with MIMO.
7. This device supports VoWIFI.

1.7 Miscellaneous SAR Test Considerations

(A) WIFI/BT

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

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

This device supports IEEE 802.11ac with the following features:

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

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

(B) Licensed Transmitter(s)

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

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

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

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is greater than 160mm and less than 200mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR scaled to the maximum output power of the transmission mode is > 1.2 W/kg. Phablet SAR was not evaluated for licensed technologies since wireless router 1g SAR was < 1.2 W/kg for these modes.

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

LTE with 64QAM in the uplink is permanently disabled for US operations.

1.8 Guidance Applied

- IEEE 1528-2013
- FCC KDB Publication 941225 D01v03r01, D05v02r04, D06v02r01 (2G/3G/4G and Hotspot)
- FCC KDB Publication 248227 D01v02r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v06 (General SAR Guidance)
- FCC KDB Publication 865664 D01v01r04, D02v01r02 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 648474 D04v01r03 (Phablet Procedures)
- 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. The serial numbers used for each test are indicated alongside the results in Section 11.

2 LTE INFORMATION

LTE Information					
FCC ID	**A3LSMG965KOR**				
Form Factor	Portable Handset				
Frequency Range of each LTE transmission band	LTE Band 12 (699.7 - 715.3 MHz)				
	LTE Band 17 (706.5 - 713.5 MHz)				
	LTE Band 13 (779.5 - 784.5 MHz)				
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)				
	LTE Band 26 (Cell) (814.7 - 848.3 MHz)				
	LTE Band 66 (AWS) (1710.7 - 1779.3 MHz)				
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)				
	LTE Band 25 (PCS) (1850.7 - 1914.3 MHz)				
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)				
	LTE Band 41 (2498.5 - 2687.5 MHz)				
Channel Bandwidths	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 17: 5 MHz, 10 MHz				
	LTE Band 13: 5 MHz, 10 MHz				
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 26 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz				
	LTE Band 66 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 25 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 12: 1.4 MHz	699.7 (23017)		707.5 (23095)	715.3 (23173)	
LTE Band 12: 3 MHz	700.5 (23025)		707.5 (23095)	714.5 (23165)	
LTE Band 12: 5 MHz	701.5 (23035)		707.5 (23095)	713.5 (23155)	
LTE Band 12: 10 MHz	704 (23060)		707.5 (23095)	711 (23130)	
LTE Band 17: 5 MHz	706.5 (23755)		710 (23790)	713.5 (23825)	
LTE Band 17: 10 MHz	709 (23780)		710 (23790)	711 (23800)	
LTE Band 13: 5 MHz	779.5 (23205)		782 (23230)	784.5 (23255)	
LTE Band 13: 10 MHz	N/A		782 (23230)	N/A	
LTE Band 5 (Cell): 1.4 MHz	824.7 (20407)		836.5 (20525)	848.3 (20643)	
LTE Band 5 (Cell): 3 MHz	825.5 (20415)		836.5 (20525)	847.5 (20635)	
LTE Band 5 (Cell): 5 MHz	826.5 (20425)		836.5 (20525)	846.5 (20625)	
LTE Band 5 (Cell): 10 MHz	829 (20450)		836.5 (20525)	844 (20600)	
LTE Band 26 (Cell): 1.4 MHz	814.7 (26697)		831.5 (26865)	848.3 (27033)	
LTE Band 26 (Cell): 3 MHz	815.5 (26705)		831.5 (26865)	847.5 (27025)	
LTE Band 26 (Cell): 5 MHz	816.5 (26715)		831.5 (26865)	846.5 (27015)	
LTE Band 26 (Cell): 10 MHz	819 (26740)		831.5 (26865)	844 (26990)	
LTE Band 26 (Cell): 15 MHz	821.5 (26765)		831.5 (26865)	841.5 (26965)	
LTE Band 66 (AWS): 1.4 MHz	1710.7 (131979)		1745 (132322)	1779.3 (132665)	
LTE Band 66 (AWS): 3 MHz	1711.5 (131987)		1745 (132322)	1778.5 (132657)	
LTE Band 66 (AWS): 5 MHz	1712.5 (131997)		1745 (132322)	1777.5 (132647)	
LTE Band 66 (AWS): 10 MHz	1715 (132022)		1745 (132322)	1775 (132622)	
LTE Band 66 (AWS): 15 MHz	1717.5 (132047)		1745 (132322)	1772.5 (132597)	
LTE Band 66 (AWS): 20 MHz	1720 (132072)		1745 (132322)	1770 (132572)	
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)		1732.5 (20175)	1754.3 (20393)	
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)		1732.5 (20175)	1753.5 (20385)	
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)		1732.5 (20175)	1752.5 (20375)	
LTE Band 4 (AWS): 10 MHz	1715 (20000)		1732.5 (20175)	1750 (20350)	
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)		1732.5 (20175)	1747.5 (20325)	
LTE Band 4 (AWS): 20 MHz	1720 (20050)		1732.5 (20175)	1745 (20300)	
LTE Band 25 (PCS): 1.4 MHz	1850.7 (26047)		1882.5 (26365)	1914.3 (26683)	
LTE Band 25 (PCS): 3 MHz	1851.5 (26055)		1882.5 (26365)	1913.5 (26675)	
LTE Band 25 (PCS): 5 MHz	1852.5 (26065)		1882.5 (26365)	1912.5 (26665)	
LTE Band 25 (PCS): 10 MHz	1855 (26090)		1882.5 (26365)	1910 (26640)	
LTE Band 25 (PCS): 15 MHz	1857.5 (26115)		1882.5 (26365)	1907.5 (26615)	
LTE Band 25 (PCS): 20 MHz	1860 (26140)		1882.5 (26365)	1905 (26590)	
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)		1880 (18900)	1909.3 (19193)	
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)		1880 (18900)	1908.5 (19185)	
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)		1880 (18900)	1907.5 (19175)	
LTE Band 2 (PCS): 10 MHz	1855 (18650)		1880 (18900)	1905 (19150)	
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)		1880 (18900)	1902.5 (19125)	
LTE Band 2 (PCS): 20 MHz	1860 (18700)		1880 (18900)	1900 (19100)	
LTE Band 41: 5 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
DL UE Category	16				
UL UE Category	13				
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 Additional Information	This device does not support full CA features on 3GPP Release 13. All uplink communications are identical to the Release 8 Specifications. The following LTE Release 13 Features are not supported: Carrier Aggregation, Relay, HetNet, Enhanced MIMO, eICIC, WIFI Offloading, MDH, eMBMS, Cross-Carrier Scheduling, Enhanced SC-FDMA.				

3 INTRODUCTION

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

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

3.1 SAR Definition

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

Equation 3-1
SAR Mathematical Equation

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

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

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

where:

σ = conductivity of the tissue-simulating material (S/m)
ρ = mass density of the tissue-simulating material (kg/m^3)
E = Total RMS electric field strength (V/m)

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

4 DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

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

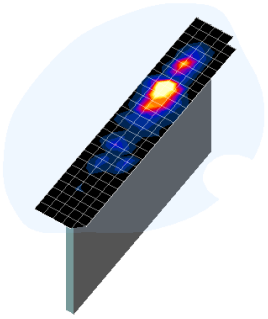

Figure 4-1
Sample SAR Area Scan

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01r04 (See Table 4-1) and IEEE 1528-2013.
2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1g/10g cube evaluation. SAR at this fixed point was measured and used as a reference value.
3. Based on the area scan data, the peak of the region with maximum SAR was determined by spline interpolation. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB Publication 865664 D01v01r04 (See Table 4-1) and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):

   a. SAR values at the inner surface of the phantom are extrapolated from the measured values along the line away from the surface with spacing no greater than that in Table 4-1. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).

   b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot" condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.

   c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

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

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

*Also compliant to IEEE 1528-2013 Table 6

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].

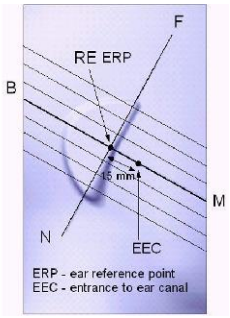

Figure 5-1
Close-Up Side view of ERP

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.

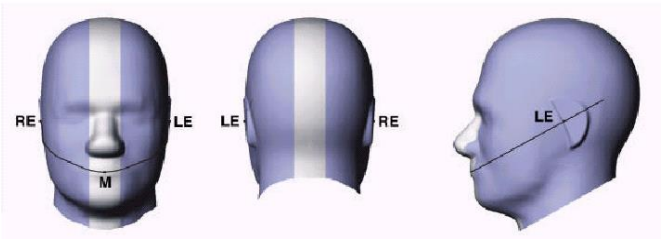

Figure 5-2
Front, back and side view of SAM Twin Phantom

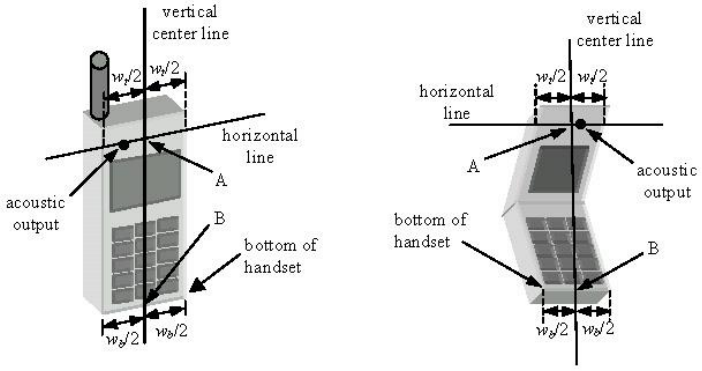

Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

6 TEST CONFIGURATION POSITIONS

6.1 Device Holder

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

6.2 Positioning for Cheek

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

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

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

6.3 Positioning for Ear / 15º Tilt

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

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

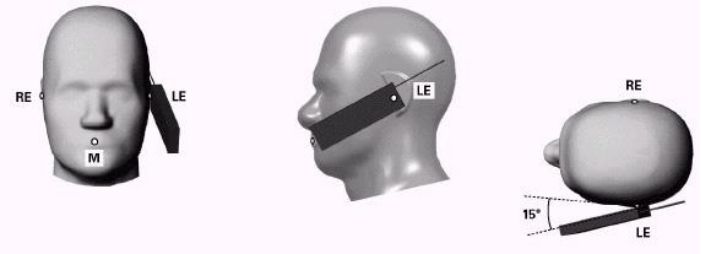

Figure 6-2 Front, Side and Top View of Ear/15º Tilt Position

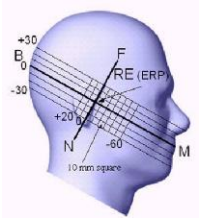

Figure 6-3
Side view w/ relevant markings

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

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

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

6.5 Body-Worn Accessory Configurations

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

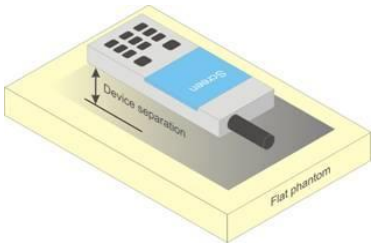

Figure 6-4
Sample Body-Worn Diagram

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented.
Transmitters that are designed to operate in front of a person's face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

6.6 Extremity Exposure Configurations

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

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

6.7 Wireless Router Configurations

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

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

6.8 Phablet Configurations

For smart phones with a display diagonal dimension > 150 mm or an overall diagonal dimension > 160 mm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, the phablets procedures outlined in KDB Publication 648474 D04v01r03 should be applied to evaluate SAR compliance. A device marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance. In addition to the normally required head and body-worn accessory SAR test procedures required for handsets, the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna <=25 mm from that surface or edge, in direct contact with the phantom, for 10g SAR. The UMPC mini-tablet 1g SAR at 5 mm is not required. When hotspot mode applies, 10g SAR is required only for the surfaces and edges with hotspot mode 1g SAR > 1.2 W/kg.

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.

8 FCC MEASUREMENT PROCEDURES

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

8.1 Measured and Reported SAR

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

8.2 3G SAR Test Reduction Procedure

In FCC KDB Publication 941225 D01v03r01, certain transmission modes within a frequency band and wireless mode evaluated for SAR are defined as primary modes. The equivalent modes considered for SAR test reduction are denoted as secondary modes. When the maximum output power including tune-up tolerance specified for production units in a secondary mode is $\leq$ 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 $\leq$ 1.2 W/kg, SAR measurements are not required for the secondary mode. These criteria are referred to as the 3G SAR test reduction procedure. When the 3G SAR test reduction procedure is not satisfied, SAR measurements are additionally required for the secondary mode.

8.3 Procedures Used to Establish RF Signal for SAR

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

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

8.4 SAR Measurement Conditions for 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.

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.

8.5 SAR Measurement Conditions for LTE

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

8.5.1 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 D05v02r04:

a. Per Section 5.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
    i. The required channel and offset combination with the highest maximum output power is required for SAR.
    ii. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
    iii. When the reported SAR for a required test channel is > 1.45 W/kg, SAR is required for all RB offset configurations for that channel.
b. Per Section 5.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Section 5.2.1.
c. Per Section 5.2.3, QPSK SAR is not required for the 100% allocation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is < 0.8 W/kg.
d. Per Section 5.2.4 and 5.3, SAR tests for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sections 5.2.1 through 5.2.3 is less than or equal to ½ dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is <1.45 W/kg.

Per FCC KDB Publication 447498 D01v06, when the reported (scaled) for LTE Band 41 SAR measured at the highest output power channel in a given a test configuration was > 0.6 W/kg for 1g evaluations, testing at the other channels was required for such test configurations.

8.5.5 TDD

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

8.6 SAR Testing with 802.11 Transmitters

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

8.6.1 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.

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. When different maximum output powers are specified for the bands, SAR measurement for the U-NII band with the lower maximum output power is not required unless the highest reported SAR for the U-NII band with the higher maximum output power, adjusted by the ratio of lower to higher specified maximum output power for the two bands, is > 1.2 W/kg. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.6.3 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. 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, no additional testing for the remaining test positions is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.6.5 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, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

2) When the reported SAR is > 0.8 W/kg, SAR is required for that position using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

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

8.6.6 OFDM Transmission Mode and SAR Test Channel Selection

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

8.6.7 Initial Test Configuration Procedure

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

When the reported SAR is ≤ 0.8 W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is ≤ 1.2 W/kg or all channels are measured. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest 802.11 mode is considered for SAR measurements (See Section 8.6.6). When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

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, no additional SAR tests for the subsequent test configurations are required. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.6.9 MIMO SAR considerations

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

9 RF CONDUCTED POWERS

9.1 GSM Conducted Powers

Table 9-1
Maximum Conducted Power

Maximum Burst-Averaged Output Power										
		Voice	GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 850	128	32.45	32.54	30.94	29.11	**28.08**	26.58	24.78	23.43	22.05
	190	32.47	32.55	30.98	29.19	**28.04**	26.76	24.70	23.45	22.13
	251	32.50	32.63	30.93	29.25	**28.10**	26.66	24.68	23.30	22.09
GSM 1900	512	29.48	29.54	26.83	**25.70**	23.95	25.20	23.35	22.06	20.60
	661	29.25	29.43	26.80	**25.71**	24.02	25.23	23.38	22.10	20.41
	810	29.42	29.42	26.81	**25.79**	24.14	25.17	23.50	22.07	20.64

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	23.51	24.92	24.85	**25.07**	17.55	18.76	19.17	19.04
	190	23.44	23.52	24.96	24.93	**25.03**	17.73	18.68	19.19	19.12
	251	23.47	23.60	24.91	24.99	**25.09**	17.63	18.66	19.04	19.08
GSM 1900	512	20.45	20.51	20.81	**21.44**	20.94	16.17	17.33	17.80	17.59
	661	20.22	20.40	20.78	**21.45**	21.01	16.20	17.36	17.84	17.40
	810	20.39	20.39	20.79	**21.53**	21.13	16.14	17.48	17.81	17.63
GSM 850	Frame Avg.Targets:	23.37	23.37	24.98	24.74	**24.99**	17.97	18.48	19.24	19.49
GSM 1900		20.67	20.67	20.48	**21.24**	20.99	16.47	16.98	17.74	17.49

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

9.2 UMTS Conducted Powers

Table 9-2
Maximum Conducted Power

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	23.11	23.18	23.17	22.69	22.90	22.87	23.12	22.89	23.17	-
99		12.2 kbps AMR	23.15	23.23	23.19	22.73	22.95	22.89	23.08	22.88	23.14	-
6	HSDPA	Subtest 1	23.10	23.18	23.17	22.42	22.64	22.57	22.77	22.75	22.94	0
6		Subtest 2	22.09	22.22	22.25	22.43	22.64	22.58	22.78	22.77	22.93	0
6		Subtest 3	22.12	22.27	22.24	21.45	21.62	21.59	21.80	21.76	21.95	0.5
6		Subtest 4	21.07	21.20	21.17	21.46	21.65	21.59	21.79	21.74	21.96	0.5
6	HSUPA	Subtest 1	21.98	21.58	21.20	20.97	21.19	21.13	21.81	21.76	21.97	0
6		Subtest 2	20.00	19.65	19.23	18.90	19.10	19.09	19.31	19.30	19.45	2
6		Subtest 3	22.12	22.20	22.16	20.98	21.22	21.18	21.79	21.76	21.96	1
6		Subtest 4	20.00	19.65	19.20	18.87	19.13	19.10	19.32	19.31	19.44	2
6		Subtest 5	23.08	23.19	23.17	22.42	22.50	22.49	22.80	22.78	22.96	0

Table 9-3
Reduced Conducted Power – Hotspot Mode Activated

3GPP Release Version	Mode	3GPP 34.121 Subtest	AWS Band [dBm]			3GPP MPR [dB]
			1312	1412	1513	
99	WCDMA	12.2 kbps RMC	19.65	19.68	19.73	-
99		12.2 kbps AMR	19.63	19.70	19.67	-
6	HSDPA	Subtest 1	19.54	19.78	19.74	0
6		Subtest 2	19.58	19.81	19.76	0
6		Subtest 3	19.54	19.79	19.77	0.5
6		Subtest 4	19.59	19.82	19.78	0.5
6	HSUPA	Subtest 1	18.62	18.81	18.76	0
6		Subtest 2	18.60	18.82	18.78	2
6		Subtest 3	18.61	18.80	18.63	1
6		Subtest 4	18.59	18.79	18.75	2
6		Subtest 5	19.58	19.77	19.76	0

This device does not support DC-HSDPA.

It is expected by the manufacturer that MPR for some HSPA subtests may be up to 1 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

9.3 LTE Conducted Powers

9.3.1 LTE Band 12

Table 9-4
LTE Band 12 Conducted Powers - 10 MHz Bandwidth

LTE Band 12 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23095 (707.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	22.96	0	0
	1	25	23.11		0
	1	49	**23.13**		0
	25	0	22.07	0-1	1
	25	12	**22.15**		1
	25	25	22.12		1
	50	0	22.11		1
16QAM	1	0	22.18	0-1	1
	1	25	22.26		1
	1	49	22.27		1
	25	0	21.07	0-2	2
	25	12	21.16		2
	25	25	21.11		2
	50	0	21.09		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.

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

LTE Band 12 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23035 (701.5 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23155 (713.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.98	23.07	22.94	0	0
	1	12	22.80	22.85	22.88		0
	1	24	22.97	23.06	22.99		0
	12	0	22.12	22.14	22.10	0-1	1
	12	6	22.10	22.13	22.11		1
	12	13	22.07	22.14	22.08		1
	25	0	22.06	22.14	22.04		1
16QAM	1	0	22.14	22.14	22.09	0-1	1
	1	12	22.14	22.13	22.14		1
	1	24	22.13	22.14	22.13		1
	12	0	21.08	21.24	21.09	0-2	2
	12	6	21.11	21.19	21.12		2
	12	13	21.10	21.18	21.09		2
	25	0	21.08	21.15	21.06		2

Table 9-6
LTE Band 12 Conducted Powers - 3 MHz Bandwidth

LTE Band 12 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23025 (700.5 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23165 (714.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.04	23.08	22.98	0	0
	1	7	22.81	22.80	22.74		0
	1	14	23.01	23.03	22.95		0
	8	0	22.10	22.14	22.03	0-1	1
	8	4	21.95	22.07	21.92		1
	8	7	22.06	22.11	22.00		1
	15	0	22.12	22.14	22.01		1
16QAM	1	0	22.11	22.14	22.14	0-1	1
	1	7	22.14	22.12	22.13		1
	1	14	22.12	22.13	22.09		1
	8	0	21.12	21.22	21.07	0-2	2
	8	4	21.12	21.17	21.05		2
	8	7	21.11	21.21	21.07		2
	15	0	21.09	21.15	21.01		2

Table 9-7
LTE Band 12 Conducted Powers - 1.4 MHz Bandwidth

LTE Band 12 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23017 (699.7 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23173 (715.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.10	23.06	22.95	0	0
	1	2	23.06	23.01	22.88		0
	1	5	23.07	23.02	22.87		0
	3	0	23.12	23.09	23.01		0
	3	2	23.11	23.12	22.97		0
	3	3	23.06	23.12	22.86		0
	6	0	22.09	22.11	21.91	0-1	1
16QAM	1	0	22.13	22.14	22.12	0-1	1
	1	2	22.12	22.07	22.04		1
	1	5	22.14	22.13	22.10		1
	3	0	22.12	22.12	22.09		1
	3	2	22.14	22.13	22.12		1
	3	3	22.13	22.14	22.06		1
	6	0	21.17	21.21	21.02	0-2	2

9.3.2 LTE Band 13

Table 9-8
LTE Band 13 Conducted Powers - 10 MHz Bandwidth

LTE Band 13 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	22.74	0	0
	1	25	22.81		0
	1	49	**22.86**		0
	25	0	21.82	0-1	1
	25	12	**21.91**		1
	25	25	21.85		1
	50	0	21.88		1
16QAM	1	0	22.04	0-1	1
	1	25	22.02		1
	1	49	22.11		1
	25	0	20.83	0-2	2
	25	12	20.88		2
	25	25	20.87		2
	50	0	20.90		2

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

LTE Band 13 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	22.86	0	0
	1	12	22.77		0
	1	24	22.85		0
	12	0	21.90	0-1	1
	12	6	21.89		1
	12	13	22.01		1
	25	0	21.90		1
16QAM	1	0	21.90	0-1	1
	1	12	21.89		1
	1	24	21.88		1
	12	0	21.12	0-2	2
	12	6	21.10		2
	12	13	21.01		2
	25	0	21.02		2

Note: LTE Band 13 at 5 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

9.3.3 LTE Band 5 (Cell)

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

LTE Band 5 (Cell) 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 20525 (836.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	23.77	0	0
	1	25	**23.85**		0
	1	49	23.84		0
	25	0	22.89	0-1	1
	25	12	**22.99**		1
	25	25	22.91		1
	50	0	22.94		1
16QAM	1	0	22.99	0-1	1
	1	25	23.11		1
	1	49	23.03		1
	25	0	21.86	0-2	2
	25	12	21.93		2
	25	25	21.90		2
	50	0	21.96		2

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

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

LTE Band 5 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20425 (826.5 MHz)	Mid Channel 20525 (836.5 MHz)	High Channel 20625 (846.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.86	23.92	23.91	0	0
	1	12	23.67	23.75	23.72		0
	1	24	23.88	23.89	23.96		0
	12	0	23.02	23.04	23.06	0-1	1
	12	6	22.97	23.01	23.05		1
	12	13	22.99	22.99	23.01		1
	25	0	22.95	23.00	23.02		1
16QAM	1	0	22.96	23.11	23.07	0-1	1
	1	12	22.94	23.14	23.11		1
	1	24	22.97	23.18	23.12		1
	12	0	22.04	22.10	22.09	0-2	2
	12	6	21.97	22.00	22.01		2
	12	13	21.96	21.96	22.00		2
	25	0	21.93	21.99	21.91		2

Table 9-12
LTE Band 5 (Cell) Conducted Powers - 3 MHz Bandwidth

LTE Band 5 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20415 (825.5 MHz)	Mid Channel 20525 (836.5 MHz)	High Channel 20635 (847.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.89	23.97	24.00	0	0
	1	7	23.77	23.86	23.91		0
	1	14	23.93	23.95	24.01		0
	8	0	23.05	23.05	23.09	0-1	1
	8	4	22.95	23.01	23.08		1
	8	7	22.98	23.03	23.06		1
	15	0	22.90	23.05	23.07		1
16QAM	1	0	23.01	23.13	23.16	0-1	1
	1	7	22.96	23.03	23.05		1
	1	14	22.99	23.07	23.09		1
	8	0	21.92	22.01	22.11	0-2	2
	8	4	21.88	22.06	22.08		2
	8	7	21.94	22.03	22.04		2
	15	0	21.93	21.96	22.09		2

Table 9-13
LTE Band 5 (Cell) Conducted Powers - 1.4 MHz Bandwidth

LTE Band 5 (Cell) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20407 (824.7 MHz)	Mid Channel 20525 (836.5 MHz)	High Channel 20643 (848.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.91	23.93	24.02	0	0
	1	2	23.95	23.92	23.97		0
	1	5	23.99	23.92	23.94		0
	3	0	24.03	23.98	24.05		0
	3	2	24.05	24.00	24.04		0
	3	3	24.01	23.91	23.93		0
	6	0	22.86	22.89	22.93	0-1	1
16QAM	1	0	23.11	23.08	23.09	0-1	1
	1	2	22.99	22.94	22.96		1
	1	5	23.10	23.02	23.11		1
	3	0	23.05	23.05	23.12		1
	3	2	23.00	23.01	23.08		1
	3	3	23.06	23.03	23.05		1
	6	0	22.03	22.06	22.01	0-2	2

9.3.4 LTE Band 26 (Cell)

Table 9-14
LTE Band 26 (Cell) Conducted Powers - 15 MHz Bandwidth

LTE Band 26 (Cell) 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 26865 (831.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	22.79	0	0
	1	36	**22.95**		0
	1	74	22.91		0
	36	0	21.94	0-1	1
	36	18	**21.98**		1
	36	37	21.92		1
	75	0	21.95		1
16QAM	1	0	21.97	0-1	1
	1	36	22.15		1
	1	74	22.17		1
	36	0	20.92	0-2	2
	36	18	20.97		2
	36	37	20.92		2
	75	0	20.96		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.

Table 9-15
LTE Band 26 (Cell) Conducted Powers - 10 MHz Bandwidth

LTE Band 26 (Cell) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26740 (819.0 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 26990 (844.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.87	22.89	22.96	0	0
	1	25	22.89	22.95	23.01		0
	1	49	22.88	22.97	23.00		0
	25	0	21.92	21.93	22.03	0-1	1
	25	12	21.94	22.02	22.09		1
	25	25	21.91	21.89	22.02		1
	50	0	22.05	22.05	22.03		1
16QAM	1	0	22.03	22.02	22.09	0-1	1
	1	25	22.12	22.00	22.15		1
	1	49	22.04	21.99	22.11		1
	25	0	20.93	20.94	21.01	0-2	2
	25	12	20.98	20.98	21.02		2
	25	25	20.94	20.96	20.99		2
	50	0	21.02	21.03	21.03		2

Table 9-16
LTE Band 26 (Cell) Conducted Powers - 5 MHz Bandwidth

LTE Band 26 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26715 (816.5 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27015 (846.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.96	22.99	22.95	0	0
	1	12	22.81	22.84	22.83		0
	1	24	22.89	22.93	22.92		0
	12	0	22.05	22.12	22.09	0-1	1
	12	6	22.06	22.11	22.11		1
	12	13	22.03	22.06	22.05		1
	25	0	22.01	22.00	22.05		1
16QAM	1	0	22.05	22.14	22.03	0-1	1
	1	12	22.06	22.11	22.04		1
	1	24	22.03	22.16	22.13		1
	12	0	21.10	21.13	21.09	0-2	2
	12	6	21.08	21.10	21.08		2
	12	13	21.02	21.06	21.02		2
	25	0	21.05	21.08	21.05		2

Table 9-17
LTE Band 26 (Cell) Conducted Powers - 3 MHz Bandwidth

LTE Band 26 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26705 (815.5 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27025 (847.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.00	23.04	23.04	0	0
	1	7	22.79	22.81	22.80		0
	1	14	22.97	22.99	23.06		0
	8	0	22.01	22.07	22.14	0-1	1
	8	4	22.05	22.11	22.11		1
	8	7	22.02	22.04	22.09		1
	15	0	22.03	22.07	22.16		1
16QAM	1	0	22.13	22.12	22.15	0-1	1
	1	7	22.12	22.14	22.13		1
	1	14	22.14	22.13	22.24		1
	8	0	21.07	21.06	21.14	0-2	2
	8	4	21.06	21.04	21.06		2
	8	7	21.04	21.07	21.13		2
	15	0	21.02	21.11	21.13		2

Table 9-18
LTE Band 26 (Cell) Conducted Powers - 1.4 MHz Bandwidth

LTE Band 26 (Cell) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26697 (814.7 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27033 (848.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.07	23.06	23.12	0	0
	1	2	23.01	23.03	23.08		0
	1	5	23.00	22.99	23.06		0
	3	0	23.08	23.11	23.07		0
	3	2	23.09	23.12	23.14		0
	3	3	22.99	23.08	23.09		0
	6	0	22.01	21.99	22.08	0-1	1
16QAM	1	0	22.12	22.16	22.14	0-1	1
	1	2	22.18	22.04	22.15		1
	1	5	22.19	22.15	22.16		1
	3	0	22.14	22.10	22.09		1
	3	2	22.15	22.09	22.10		1
	3	3	22.09	22.13	22.17		1
	6	0	21.18	21.08	21.20	0-2	2

9.3.5 LTE Band 66 (AWS)

Table 9-19
LTE Band 66 (AWS) Conducted Powers - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132072 (1720.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132572 (1770.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.56	22.50	22.68	0	0
	1	50	22.71	22.60	22.74		0
	1	99	22.77	22.76	**22.97**		0
	50	0	21.64	21.55	21.69	0-1	1
	50	25	21.75	21.65	**21.78**		1
	50	50	21.72	21.61	21.74		1
	100	0	21.76	21.71	21.77		1
16QAM	1	0	21.75	21.73	21.72	0-1	1
	1	50	21.94	21.77	21.86		1
	1	99	21.95	21.84	21.94		1
	50	0	20.63	20.64	20.61	0-2	2
	50	25	20.75	20.63	20.72		2
	50	50	20.71	20.61	20.69		2
	100	0	20.78	20.68	20.73		2

Table 9-20
LTE Band 66 (AWS) Conducted Powers - 15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132047 (1717.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132597 (1772.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.63	22.65	22.72	0	0
	1	36	22.73	22.81	22.84		0
	1	74	22.72	22.79	22.82		0
	36	0	21.73	21.75	21.86	0-1	1
	36	18	21.76	21.76	21.87		1
	36	37	21.72	21.77	21.84		1
	75	0	21.70	21.80	21.92		1
16QAM	1	0	21.80	21.85	21.99	0-1	1
	1	36	21.93	21.98	22.06		1
	1	74	21.96	22.06	22.02		1
	36	0	20.70	20.75	20.83	0-2	2
	36	18	20.82	20.80	20.89		2
	36	37	20.73	20.75	20.81		2
	75	0	20.76	20.77	20.90		2

Table 9-21
LTE Band 66 (AWS) Conducted Powers - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132022 (1715.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132622 (1775.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.52	22.64	22.73	0	0
	1	25	22.65	22.73	22.83		0
	1	49	22.69	22.74	22.88		0
	25	0	21.69	21.66	21.86	0-1	1
	25	12	21.66	21.75	21.90		1
	25	25	21.67	21.73	21.89		1
	50	0	21.71	21.74	21.92		1
16QAM	1	0	21.68	21.69	21.89	0-1	1
	1	25	21.66	21.78	21.81		1
	1	49	21.77	21.93	21.95		1
	25	0	20.68	20.68	20.87	0-2	2
	25	12	20.69	20.71	20.88		2
	25	25	20.67	20.79	20.86		2
	50	0	20.70	20.74	20.92		2

Table 9-22
LTE Band 66 (AWS) Conducted Powers - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131997 (1712.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132647 (1777.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.61	22.62	22.79	0	0
	1	12	22.57	22.58	22.70		0
	1	24	22.68	22.65	22.88		0
	12	0	21.70	21.77	21.91	0-1	1
	12	6	21.67	21.79	21.88		1
	12	13	21.72	21.76	21.92		1
	25	0	21.71	21.78	21.93		1
16QAM	1	0	21.65	21.75	21.82	0-1	1
	1	12	21.76	21.76	21.80		1
	1	24	21.72	21.84	21.90		1
	12	0	20.74	20.81	20.96	0-2	2
	12	6	20.79	20.80	20.92		2
	12	13	20.75	20.79	20.98		2
	25	0	20.69	20.74	20.91		2

Table 9-23
LTE Band 66 (AWS) Conducted Powers - 3 MHz Bandwidth

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131987 (1711.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132657 (1778.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.54	22.64	22.71	0	0
	1	7	22.58	22.50	22.63		0
	1	14	22.56	22.59	22.74		0
	8	0	21.58	21.64	21.79	0-1	1
	8	4	21.59	21.66	21.76		1
	8	7	21.57	21.67	21.78		1
	15	0	21.60	21.65	21.80		1
16QAM	1	0	21.67	21.76	21.90	0-1	1
	1	7	21.63	21.75	21.80		1
	1	14	21.65	21.77	21.84		1
	8	0	20.54	20.64	20.78	0-2	2
	8	4	20.61	20.63	20.83		2
	8	7	20.59	20.67	20.80		2
	15	0	20.58	20.65	20.74		2

Table 9-24
LTE Band 66 (AWS) Conducted Powers - 1.4 MHz Bandwidth

LTE Band 66 (AWS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131979 (1710.7 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132665 (1779.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.60	22.60	22.58	0	0
	1	2	22.56	22.61	22.63		0
	1	5	22.57	22.65	22.70		0
	3	0	22.61	22.70	22.67		0
	3	2	22.60	22.68	22.61		0
	3	3	22.50	22.64	22.62		0
	6	0	21.55	21.67	21.63	0-1	1
16QAM	1	0	21.67	21.70	21.64	0-1	1
	1	2	21.62	21.71	21.71		1
	1	5	21.70	21.83	21.66		1
	3	0	21.63	21.74	21.65		1
	3	2	21.64	21.78	21.63		1
	3	3	21.66	21.76	21.61		1
	6	0	20.63	20.71	20.64	0-2	2

9.3.6 LTE Band 25 (PCS)

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

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.62	22.73	22.87	0	0
	1	50	22.67	22.84	22.89		0
	1	99	22.96	**23.14**	23.13		0
	50	0	21.52	21.75	21.69	0-1	1
	50	25	21.68	21.83	21.83		1
	50	50	21.64	**21.87**	21.80		1
	100	0	21.61	21.80	21.85		1
16QAM	1	0	21.86	22.13	21.94	0-1	1
	1	50	21.75	21.76	21.90		1
	1	99	22.15	22.19	22.10		1
	50	0	20.60	20.70	20.81	0-2	2
	50	25	20.81	20.81	20.87		2
	50	50	20.81	20.84	20.89		2
	100	0	20.75	20.81	20.93		2

Table 9-26
LTE Band 25 (PCS) Conducted Powers - 15 MHz Bandwidth

LTE Band 25 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26115 (1857.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26615 (1907.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.60	22.72	22.71	0	0
	1	36	22.65	22.80	22.81		0
	1	74	22.66	22.81	22.70		0
	36	0	21.61	21.73	21.75	0-1	1
	36	18	21.65	21.77	21.78		1
	36	37	21.60	21.74	21.70		1
	75	0	21.65	21.77	21.80		1
16QAM	1	0	21.89	21.97	21.98	0-1	1
	1	36	21.88	22.04	22.00		1
	1	74	21.93	22.14	21.97		1
	36	0	20.62	20.76	20.77	0-2	2
	36	18	20.65	20.79	20.82		2
	36	37	20.59	20.76	20.74		2
	75	0	20.65	20.79	20.84		2

Table 9-27
LTE Band 25 (PCS) Conducted Powers - 10 MHz Bandwidth

LTE Band 25 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26090 (1855.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26640 (1910.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.65	22.64	22.73	0	0
	1	25	22.71	22.78	22.84		0
	1	49	22.67	22.77	22.75		0
	25	0	21.72	21.76	21.85	0-1	1
	25	12	21.76	21.82	21.88		1
	25	25	21.73	21.81	21.85		1
	50	0	21.78	21.84	21.84		1
16QAM	1	0	21.84	21.80	21.90	0-1	1
	1	25	21.67	21.79	21.82		1
	1	49	21.74	21.78	21.89		1
	25	0	20.66	20.72	20.86	0-2	2
	25	12	20.72	20.78	20.90		2
	25	25	20.66	20.76	20.85		2
	50	0	20.73	20.82	20.84		2

Table 9-28
LTE Band 25 (PCS) Conducted Powers - 5 MHz Bandwidth

LTE Band 25 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26065 (1852.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26665 (1912.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.64	22.70	22.67	0	0
	1	12	22.52	22.62	22.50		0
	1	24	22.60	22.71	22.64		0
	12	0	21.74	21.80	21.83	0-1	1
	12	6	21.71	21.77	21.79		1
	12	13	21.68	21.78	21.76		1
	25	0	21.69	21.80	21.79		1
16QAM	1	0	21.73	21.75	21.82	0-1	1
	1	12	21.78	21.87	21.86		1
	1	24	21.70	21.84	21.80		1
	12	0	20.71	20.81	20.81	0-2	2
	12	6	20.70	20.77	20.80		2
	12	13	20.67	20.76	20.77		2
	25	0	20.69	20.72	20.76		2

Table 9-29
LTE Band 25 (PCS) Conducted Powers - 3 MHz Bandwidth

LTE Band 25 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26055 (1851.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26675 (1913.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.58	22.60	22.64	0	0
	1	7	22.42	22.50	22.58		0
	1	14	22.54	22.61	22.61		0
	8	0	21.66	21.74	21.76	0-1	1
	8	4	21.59	21.73	21.67		1
	8	7	21.62	21.70	21.72		1
	15	0	21.67	21.71	21.74		1
16QAM	1	0	21.80	21.85	21.88	0-1	1
	1	7	21.78	21.77	21.84		1
	1	14	21.71	21.74	21.81		1
	8	0	20.64	20.72	20.73	0-2	2
	8	4	20.62	20.71	20.71		2
	8	7	20.63	20.74	20.73		2
	15	0	20.61	20.68	20.76		2

Table 9-30
LTE Band 25 (PCS) Conducted Powers - 1.4 MHz Bandwidth

LTE Band 25 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26047 (1850.7 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26683 (1914.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.76	22.79	22.71	0	0
	1	2	22.80	22.81	22.72		0
	1	5	22.75	22.78	22.66		0
	3	0	22.83	22.86	22.73		0
	3	2	22.89	22.83	22.77		0
	3	3	22.79	22.77	22.69		0
	6	0	21.76	21.79	21.68	0-1	1
16QAM	1	0	21.85	21.96	21.82	0-1	1
	1	2	21.78	21.97	21.74		1
	1	5	21.77	21.99	21.83		1
	3	0	21.92	21.92	21.87		1
	3	2	21.83	21.93	21.81		1
	3	3	21.84	21.83	21.83		1
	6	0	20.86	20.91	20.79	0-2	2

9.3.7 LTE Band 41

Table 9-31
LTE Band 41 Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	21.94	21.95	21.85	21.48	21.59	0	0
	1	50	21.85	21.88	21.75	21.36	21.43		0
	1	99	22.15	**22.16**	21.99	21.57	21.66		0
	50	0	21.01	21.03	20.90	20.56	20.59	0-1	1
	50	25	21.12	**21.17**	21.03	20.61	20.71		1
	50	50	21.10	21.12	20.95	20.54	20.64		1
	100	0	21.13	21.15	21.00	20.63	20.73		1
16QAM	1	0	21.07	21.10	20.99	20.62	20.68	0-1	1
	1	50	21.06	21.19	21.08	20.65	20.59		1
	1	99	21.24	21.23	21.13	20.79	20.72		1
	50	0	19.99	20.06	19.92	19.55	19.62	0-2	2
	50	25	20.11	20.14	20.01	19.62	19.71		2
	50	50	20.10	20.13	19.98	19.59	19.67		2
	100	0	20.14	20.18	20.06	19.67	19.77		2

Table 9-32
LTE Band 41 Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	21.81	21.95	21.88	21.48	21.56	0	0
	1	36	21.98	22.06	21.98	21.52	21.63		0
	1	74	22.03	22.01	21.93	21.46	21.55		0
	36	0	21.01	21.07	21.01	20.57	20.68	0-1	1
	36	18	21.06	21.10	20.98	20.55	20.64		1
	36	37	21.03	21.04	20.94	20.48	20.58		1
	75	0	21.06	21.10	21.02	20.57	20.67		1
16QAM	1	0	20.89	21.01	20.95	20.46	20.72	0-1	1
	1	36	20.99	21.12	21.03	20.64	20.70		1
	1	74	21.02	21.09	20.99	20.61	20.72		1
	36	0	19.97	20.06	19.96	19.55	19.66	0-2	2
	36	18	20.02	20.09	19.97	19.54	19.65		2
	36	37	19.99	20.04	19.92	19.44	19.57		2
	75	0	20.03	20.10	20.01	19.56	19.68		2

Table 9-33
LTE Band 41 Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	21.88	21.93	21.82	21.45	21.55	0	0
	1	25	21.75	21.76	21.68	21.25	21.35		0
	1	49	21.99	21.96	21.87	21.42	21.53		0
	25	0	20.94	21.01	20.92	20.49	20.62	0-1	1
	25	12	21.00	21.06	20.96	20.51	20.63		1
	25	25	21.03	21.05	20.94	20.49	20.62		1
	50	0	21.05	21.08	20.99	20.55	20.67		1
16QAM	1	0	21.02	21.07	20.95	20.50	20.68	0-1	1
	1	25	21.00	20.89	20.90	20.34	20.46		1
	1	49	21.11	21.07	21.01	20.49	20.61		1
	25	0	19.89	19.96	19.86	19.41	19.54	0-2	2
	25	12	19.93	20.02	19.89	19.42	19.56		2
	25	25	19.95	19.99	19.88	19.40	19.54		2
	50	0	20.05	20.08	20.00	19.56	19.68		2

Table 9-34
LTE Band 41 Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	21.90	21.96	21.83	21.43	21.54	0	0
	1	12	22.01	22.11	21.73	21.42	21.56		0
	1	24	21.97	21.99	21.87	21.42	21.55		0
	12	0	21.04	21.10	20.99	20.56	20.68	0-1	1
	12	6	21.01	21.07	20.93	20.52	20.62		1
	12	13	21.02	21.06	20.95	20.49	20.62		1
	25	0	21.00	21.08	20.96	20.52	20.65		1
16QAM	1	0	21.03	21.00	20.93	20.60	20.61	0-1	1
	1	12	20.89	20.97	20.75	20.43	20.64		1
	1	24	21.09	21.05	20.94	20.56	20.62		1
	12	0	19.99	20.08	19.95	19.50	19.63	0-2	2
	12	6	19.98	20.06	19.93	19.49	19.59		2
	12	13	19.97	20.03	19.91	19.43	19.58		2
	25	0	19.92	20.01	19.87	19.44	19.56		2

9.4 WLAN Conducted Powers

Table 9-35
2.4 GHz WLAN Maximum Average RF Power – Ant 1

2.4GHz Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11b	802.11g
2412	1	**18.29**	16.64
2437	6	17.84	16.54
2462	11	18.11	16.52

Table 9-36
2.4 GHz WLAN Maximum Average RF Power – Ant 2

2.4GHz Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11b	802.11g
2412	1	17.85	16.51
2437	6	17.77	16.70
2462	11	**17.95**	16.11

Table 9-37
2.4 GHz WLAN Reduced Average RF Power – Ant 1

2.4GHz Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11b	802.11g
2412	1	**15.05**	14.22
2437	6	14.79	14.09
2462	11	14.80	13.88

Table 9-38
2.4 GHz WLAN Reduced Average RF Power – Ant 2

2.4GHz Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11b	802.11g
2412	1	**15.22**	14.08
2437	6	15.16	13.92
2462	11	15.02	13.62

Table 9-39
5 GHz WLAN Maximum Average RF Power – Ant 1

5GHz (20MHz) Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11a	802.11ac
5180	36	16.72	16.79
5200	40	16.80	16.78
5220	44	16.75	16.75
5240	48	16.74	16.84
5260	52	16.92	16.86
5280	56	16.89	16.77
5300	60	16.90	16.89
5320	64	**16.93**	16.79
5500	100	17.19	17.11
5600	120	**17.31**	17.16
5620	124	17.29	17.28
5720	144	17.24	17.24
5745	149	17.04	17.17
5785	157	**17.24**	17.07
5825	165	17.21	17.15

Table 9-40
5 GHz WLAN Maximum Average RF Power – Ant 2

5GHz (20MHz) Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11a	802.11ac
5180	36	17.13	17.20
5200	40	17.42	17.35
5220	44	16.42	17.36
5240	48	16.32	17.24
5260	52	17.12	17.24
5280	56	17.22	17.07
5300	60	**17.27**	17.07
5320	64	17.25	17.23
5500	100	17.13	17.15
5600	120	17.06	16.88
5620	124	**17.27**	17.01
5720	144	17.08	16.93
5745	149	16.48	16.24
5785	157	16.35	17.35
5825	165	**17.44**	17.22

Table 9-41
5 GHz WLAN Reduced Average RF Power – Ant 1

5GHz (20MHz) Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11a	802.11ac
5180	36	14.15	14.06
5200	40	14.17	14.25
5220	44	14.13	14.30
5240	48	14.26	14.33
5260	52	14.16	14.33
5280	56	14.20	14.41
5300	60	**14.24**	14.32
5320	64	14.23	14.37
5500	100	14.45	14.44
5600	120	**14.49**	13.92
5620	124	14.45	13.75
5720	144	14.46	13.95
5745	149	**14.47**	13.81
5785	157	14.45	13.85
5825	165	14.46	13.83

Table 9-42
5 GHz WLAN Reduced Average RF Power – Ant 2

5GHz (20MHz) Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11a	802.11ac
5180	36	14.43	14.07
5200	40	14.28	14.19
5220	44	14.44	14.14
5240	48	14.47	14.22
5260	52	14.47	14.10
5280	56	14.45	14.19
5300	60	**14.48**	14.14
5320	64	13.56	14.26
5500	100	13.80	14.44
5600	120	**13.90**	14.47
5620	124	13.83	14.48
5720	144	13.88	14.42
5745	149	13.95	13.88
5785	157	13.96	13.86
5825	165	**13.97**	13.94

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

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

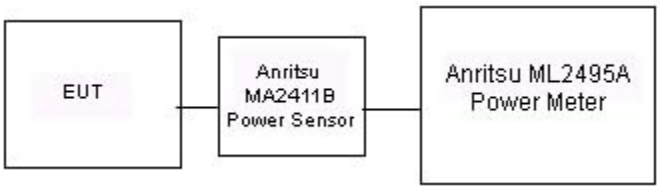

Figure 9-3
Power Measurement Setup for Bandwidths < 50 MHz

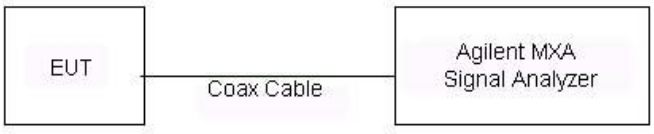

Figure 9-4
Power Measurement Setup for Bandwidths > 50 MHz

9.5 Bluetooth Conducted Powers

Table 9-43
Bluetooth Average RF Power

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	14.97	31.396
2441	1.0	39	**15.81**	38.081
2480	1.0	78	14.59	28.764
2402	2.0	0	6.97	4.976
2441	2.0	39	7.95	6.238
2480	2.0	78	6.24	4.209
2402	3.0	0	7.03	5.046
2441	3.0	39	7.94	6.223
2480	3.0	78	6.21	4.178

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

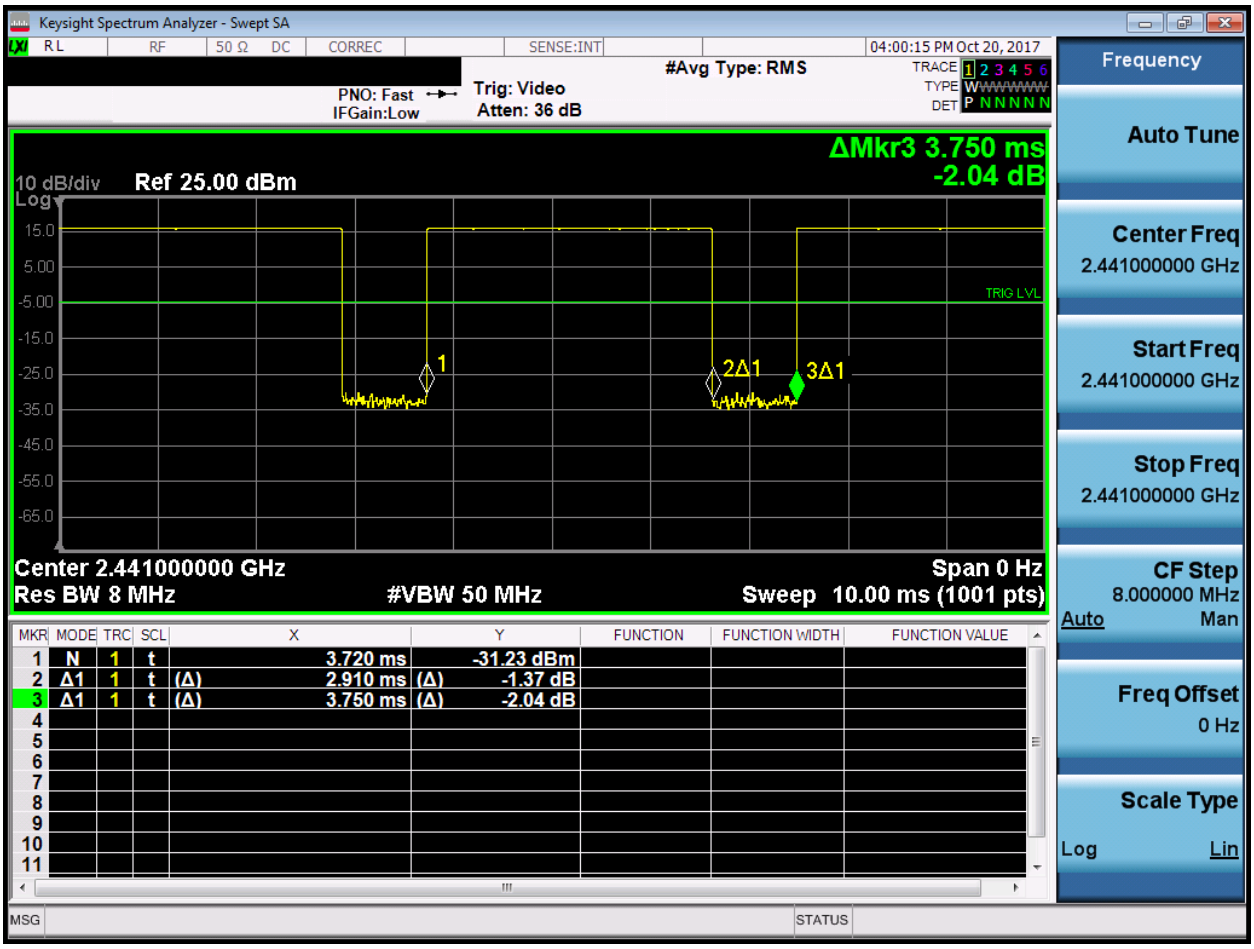

Figure 9-5
Bluetooth Transmission Plot

Equation 9-1
Bluetooth Duty Cycle Calculation

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.91ms}{3.75\ ms} * 100\% = 77.6\%$$

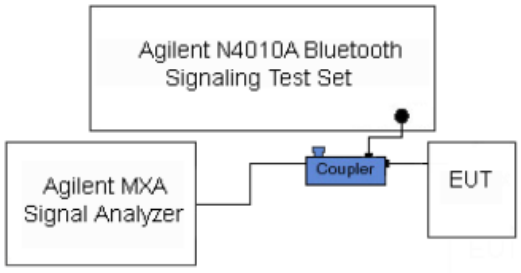

Figure 9-6
Power Measurement Setup

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
10/23/2017	750H	20.8	700	0.850	41.370	0.889	42.201	-4.39%	-1.97%
			710	0.859	41.220	0.890	42.149	-3.48%	-2.20%
			740	0.897	40.763	0.893	41.994	0.45%	-2.93%
			755	0.914	40.537	0.894	41.916	2.24%	-3.29%
			770	0.928	40.335	0.895	41.838	3.69%	-3.59%
			785	0.938	40.160	0.896	41.760	4.69%	-3.83%
10/23/2017	835H	20.9	820	0.891	42.148	0.899	41.578	-0.89%	1.37%
			835	0.906	41.946	0.900	41.500	0.67%	1.07%
			850	0.920	41.758	0.916	41.500	0.44%	0.62%
10/30/2017	1750H	21.0	1710	1.347	40.420	1.348	40.142	-0.07%	0.69%
			1750	1.391	40.209	1.371	40.079	1.46%	0.32%
			1790	1.430	40.022	1.394	40.016	2.58%	0.01%
11/9/2017	1750H	21.9	1710	1.331	39.387	1.348	40.142	-1.26%	-1.88%
			1750	1.372	39.195	1.371	40.079	0.07%	-2.21%
			1790	1.414	38.998	1.394	40.016	1.43%	-2.54%
10/23/2017	1900H	22.0	1850	1.379	39.882	1.400	40.000	-1.50%	-0.30%
			1880	1.413	39.747	1.400	40.000	0.93%	-0.63%
			1910	1.443	39.603	1.400	40.000	3.07%	-0.99%
10/30/2017	2450H - 2600H	21.9	2400	1.812	39.175	1.756	39.289	3.19%	-0.29%
			2450	1.868	38.996	1.800	39.200	3.78%	-0.52%
			2500	1.925	38.785	1.855	39.136	3.77%	-0.90%
			2550	1.984	38.605	1.909	39.073	3.93%	-1.20%
			2600	2.038	38.401	1.964	39.009	3.77%	-1.56%
11/1/2017	2450H	21.9	2400	1.808	39.320	1.756	39.289	2.96%	0.08%
			2450	1.865	39.143	1.800	39.200	3.61%	-0.15%
			2500	1.920	38.943	1.855	39.136	3.50%	-0.49%
10/30/2017	5250H-5750H	22.7	5240	4.553	36.238	4.696	35.940	-3.05%	0.83%
			5260	4.589	36.193	4.717	35.917	-2.71%	0.77%
			5300	4.637	36.123	4.758	35.871	-2.54%	0.70%
			5600	4.951	35.715	5.065	35.529	-2.25%	0.52%
			5745	5.101	35.488	5.214	35.363	-2.17%	0.35%
			5765	5.121	35.389	5.234	35.340	-2.16%	0.14%
			5825	5.187	35.377	5.296	35.271	-2.06%	0.30%

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
10/25/2017	750B	21.1	700	0.929	56.261	0.959	55.726	-3.13%	0.96%
			710	0.938	56.151	0.960	55.687	-2.29%	0.83%
			740	0.968	55.847	0.963	55.570	0.52%	0.50%
			755	0.982	55.678	0.964	55.512	1.87%	0.30%
			770	0.996	55.514	0.965	55.453	3.21%	0.11%
			785	1.011	55.361	0.966	55.395	4.66%	-0.06%
10/26/2017	835B	21.3	820	0.988	53.514	0.969	55.258	1.96%	-3.16%
			835	1.004	53.365	0.970	55.200	3.51%	-3.32%
			850	1.020	53.219	0.988	55.154	3.24%	-3.51%
11/1/2017	835B	21.6	820	0.965	54.790	0.969	55.258	-0.41%	-0.85%
			835	0.980	54.661	0.970	55.200	1.03%	-0.98%
			850	0.995	54.517	0.988	55.154	0.71%	-1.15%
10/25/2017	1750B	21.2	1710	1.472	51.176	1.463	53.537	0.62%	-4.41%
			1750	1.516	51.001	1.488	53.432	1.88%	-4.55%
			1790	1.559	50.839	1.514	53.326	2.97%	-4.66%
11/3/2017	1750B	21.7	1710	1.459	51.806	1.463	53.537	-0.27%	-3.23%
			1750	1.505	51.635	1.488	53.432	1.14%	-3.36%
			1790	1.550	51.476	1.514	53.326	2.38%	-3.47%
11/13/2017	1750B	20.1	1710	1.450	52.957	1.463	53.537	-0.89%	-1.08%
			1750	1.477	52.918	1.488	53.432	-0.74%	-0.96%
			1790	1.502	52.861	1.514	53.326	-0.79%	-0.87%
11/15/2017	1750B	22.3	1710	1.437	51.042	1.463	53.537	-1.78%	-4.66%
			1750	1.483	50.918	1.488	53.432	-0.34%	-4.71%
			1790	1.522	50.739	1.514	53.326	0.53%	-4.85%
10/23/2017	1900B	22.3	1850	1.499	53.834	1.520	53.300	-1.38%	1.00%
			1880	1.532	53.738	1.520	53.300	0.79%	0.82%
			1910	1.566	53.658	1.520	53.300	3.03%	0.67%
10/25/2017	1900B	22.3	1850	1.523	53.915	1.520	53.300	0.20%	1.15%
			1880	1.557	53.824	1.520	53.300	2.43%	0.98%
			1910	1.592	53.718	1.520	53.300	4.74%	0.78%
10/29/2017	2450B	22.0	2400	1.971	51.351	1.902	52.767	3.63%	-2.68%
			2450	2.038	51.157	1.950	52.700	4.51%	-2.93%
			2500	2.106	50.938	2.021	52.636	4.21%	-3.23%
11/1/2017	2450B-2600B	22.3	2400	1.935	52.828	1.902	52.767	1.74%	0.12%
			2450	2.004	52.659	1.950	52.700	2.77%	-0.08%
			2500	2.071	52.460	2.021	52.636	2.47%	-0.33%
			2550	2.144	52.279	2.092	52.573	2.49%	-0.56%
			2600	2.211	52.087	2.163	52.509	2.22%	-0.80%
			2650	2.285	51.892	2.234	52.445	2.28%	-1.05%
			2700	2.359	51.705	2.305	52.382	2.34%	-1.29%
10/30/2017	5250B-5750B	23.2	5240	5.430	48.576	5.346	48.960	1.57%	-0.78%
			5260	5.463	48.568	5.369	48.933	1.75%	-0.75%
			5300	5.540	48.412	5.416	48.879	2.29%	-0.96%
			5320	5.548	48.416	5.439	48.851	2.00%	-0.89%
			5600	5.952	47.886	5.766	48.471	3.23%	-1.21%
			5620	5.964	47.804	5.790	48.444	3.01%	-1.32%
			5745	6.151	47.589	5.936	48.275	3.62%	-1.42%
			5765	6.218	47.522	5.959	48.248	4.35%	-1.50%
			5785	6.234	47.446	5.982	48.220	4.21%	-1.61%
			5825	6.279	47.432	6.029	48.166	4.15%	-1.52%

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

10.2 Test System Verification

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

Table 10-3
System Verification Results – 1g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR_{1g} (W/kg)	1 W Target SAR_{1g} (W/kg)	1 W Normalized SAR_{1g} (W/kg)	$Deviation_{1g}$ (%)
I	750	HEAD	10/23/2017	23.4	20.8	0.200	1003	3213	1.640	8.390	8.200	-2.26%
H	835	HEAD	10/23/2017	22.6	20.9	0.200	4d133	7410	1.860	9.520	9.300	-2.31%
J	1750	HEAD	10/30/2017	21.9	21.0	0.100	1148	3209	3.570	36.400	35.700	-1.92%
H	1750	HEAD	11/09/2017	24.2	22.0	0.100	1148	7410	3.530	36.400	35.300	-3.02%
I	1900	HEAD	10/23/2017	21.6	21.5	0.100	5d080	3213	4.020	39.300	40.200	2.29%
G	2450	HEAD	10/30/2017	21.7	20.7	0.100	981	3332	5.400	52.800	54.000	2.27%
G	2450	HEAD	11/01/2017	21.5	21.1	0.100	981	3332	5.230	52.800	52.300	-0.95%
G	2600	HEAD	10/30/2017	21.7	20.7	0.100	1126	3332	6.030	56.400	60.300	6.91%
H	5250	HEAD	10/30/2017	22.0	21.3	0.050	1191	3914	3.680	78.900	73.600	-6.72%
H	5600	HEAD	10/30/2017	22.0	21.3	0.050	1191	3914	4.000	83.600	80.000	-4.31%
H	5750	HEAD	10/30/2017	22.0	21.3	0.050	1191	3914	3.920	79.100	78.400	-0.88%
I	750	BODY	10/25/2017	23.4	21.1	0.200	1003	3213	1.730	8.790	8.650	-1.59%
J	835	BODY	10/26/2017	21.5	21.4	0.200	4d132	3209	2.100	9.800	10.500	7.14%
J	835	BODY	11/01/2017	20.6	21.6	0.200	4d132	3209	2.030	9.800	10.150	3.57%
K	1750	BODY	10/25/2017	22.1	21.2	0.100	1148	7406	3.670	37.000	36.700	-0.81%
J	1750	BODY	11/03/2017	21.9	21.7	0.100	1150	3209	3.930	36.500	39.300	7.67%
D	1750	BODY	11/13/2017	20.9	19.8	0.100	1148	3318	3.690	37.000	36.900	-0.27%
K	1750	BODY	11/15/2017	23.3	22.3	0.100	1148	7406	3.820	37.000	38.200	3.24%
J	1900	BODY	10/23/2017	21.7	22.5	0.100	5d080	3209	4.030	39.100	40.300	3.07%
J	1900	BODY	10/25/2017	22.5	22.3	0.100	5d080	3209	4.120	39.100	41.200	5.37%
E	2450	BODY	10/29/2017	20.4	20.1	0.100	719	3319	4.940	50.100	49.400	-1.40%
E	2450	BODY	11/01/2017	22.3	22.3	0.100	719	3319	4.840	50.100	48.400	-3.39%
E	2600	BODY	11/01/2017	22.3	22.3	0.100	1064	3319	5.560	54.700	55.600	1.65%
D	5250	BODY	10/30/2017	22.5	21.5	0.050	1237	7308	3.690	76.900	73.800	-4.03%
D	5600	BODY	10/30/2017	22.5	21.5	0.050	1237	7308	3.830	78.500	76.600	-2.42%
D	5750	BODY	10/30/2017	22.5	21.5	0.050	1237	7308	3.630	77.100	72.600	-5.84%

Table 10-4
System Verification Results – 10g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR_{10g} (W/kg)	1 W Target SAR_{10g} (W/kg)	1 W Normalized SAR_{10g} (W/kg)	$Deviation_{10g}$ (%)
D	5250	BODY	10/30/2017	22.5	21.5	0.050	1237	7308	1.030	21.500	20.600	-4.19%
D	5600	BODY	10/30/2017	22.5	21.5	0.050	1237	7308	1.060	22.100	21.200	-4.07%

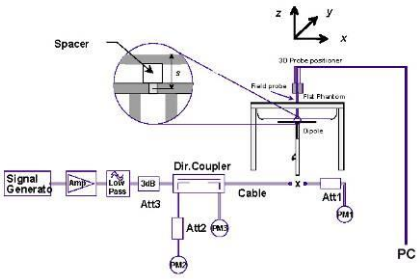

Figure 10-1
System Verification Setup Diagram

Figure 10-2
System Verification Setup Photo

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	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	32.9	32.47	-0.01	Right	Cheek	03C55	1:8.3	0.171	1.104	**0.189**	A1
836.60	190	GSM 850	GSM	32.9	32.47	0.06	Right	Tilt	03C55	1:8.3	0.081	1.104	0.089	
836.60	190	GSM 850	GSM	32.9	32.47	0.06	Left	Cheek	03C55	1:8.3	0.116	1.104	0.128	
836.60	190	GSM 850	GSM	32.9	32.47	-0.05	Left	Tilt	03C55	1:8.3	0.111	1.104	0.123	
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	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
836.60	4183	UMTS 850	RMC	23.5	23.18	0.02	Right	Cheek	03C55	1:1	0.145	1.076	0.156	A2
836.60	4183	UMTS 850	RMC	23.5	23.18	0.08	Right	Tilt	03C55	1:1	0.055	1.076	0.059	
836.60	4183	UMTS 850	RMC	23.5	23.18	0.03	Left	Cheek	03C55	1:1	0.107	1.076	0.115	
836.60	4183	UMTS 850	RMC	23.5	23.18	0.08	Left	Tilt	03C55	1:1	0.052	1.076	0.056	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-3
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	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1732.40	1412	UMTS 1750	RMC	23.5	22.90	0.02	Right	Cheek	03951	1:1	0.105	1.148	0.121	
1732.40	1412	UMTS 1750	RMC	23.5	22.90	0.07	Right	Tilt	03951	1:1	0.066	1.148	0.076	
1732.40	1412	UMTS 1750	RMC	23.5	22.90	0.01	Left	Cheek	03951	1:1	0.130	1.148	0.149	A3
1732.40	1412	UMTS 1750	RMC	23.5	22.90	0.06	Left	Tilt	03951	1:1	0.051	1.148	0.059	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-4
GSM 1900 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GSM	30.2	29.25	0.06	Right	Cheek	03C35	1:8.3	0.048	1.245	0.060	
1880.00	661	GSM 1900	GSM	30.2	29.25	-0.01	Right	Tilt	03C35	1:8.3	0.033	1.245	0.041	
1880.00	661	GSM 1900	GSM	30.2	29.25	0.09	Left	Cheek	03C35	1:8.3	0.066	1.245	0.082	A4
1880.00	661	GSM 1900	GSM	30.2	29.25	-0.07	Left	Tilt	03C35	1:8.3	0.027	1.245	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 11-5
UMTS 1900 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	23.3	22.89	0.01	Right	Cheek	03C35	1:1	0.070	1.099	0.077	
1880.00	9400	UMTS 1900	RMC	23.3	22.89	0.04	Right	Tilt	03C35	1:1	0.038	1.099	0.042	
1880.00	9400	UMTS 1900	RMC	23.3	22.89	0.08	Left	Cheek	03C35	1:1	0.084	1.099	0.092	A5
1880.00	9400	UMTS 1900	RMC	23.3	22.89	0.07	Left	Tilt	03C35	1:1	0.033	1.099	0.036	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

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	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	23.5	23.13	0.00	0	Right	Cheek	QPSK	1	49	03C35	1:1	0.094	1.089	0.102	A6
707.50	23095	Mid	LTE Band 12	10	22.5	22.15	0.09	1	Right	Cheek	QPSK	25	12	03C35	1:1	0.075	1.084	0.081	
707.50	23095	Mid	LTE Band 12	10	23.5	23.13	0.11	0	Right	Tilt	QPSK	1	49	03C35	1:1	0.047	1.089	0.051	
707.50	23095	Mid	LTE Band 12	10	22.5	22.15	0.07	1	Right	Tilt	QPSK	25	12	03C35	1:1	0.039	1.084	0.042	
707.50	23095	Mid	LTE Band 12	10	23.5	23.13	0.11	0	Left	Cheek	QPSK	1	49	03C35	1:1	0.069	1.089	0.075	
707.50	23095	Mid	LTE Band 12	10	22.5	22.15	0.08	1	Left	Cheek	QPSK	25	12	03C35	1:1	0.055	1.084	0.060	
707.50	23095	Mid	LTE Band 12	10	23.5	23.13	-0.01	0	Left	Tilt	QPSK	1	49	03C35	1:1	0.064	1.089	0.070	
707.50	23095	Mid	LTE Band 12	10	22.5	22.15	0.10	1	Left	Tilt	QPSK	25	12	03C35	1:1	0.051	1.084	0.055	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-7
LTE Band 13 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
782.00	23230	Mid	LTE Band 13	10	23.5	22.86	0.03	0	Right	Cheek	QPSK	1	49	03C35	1:1	0.049	1.159	0.057	A7
782.00	23230	Mid	LTE Band 13	10	22.5	21.91	0.15	1	Right	Cheek	QPSK	25	12	03C35	1:1	0.048	1.146	0.055	
782.00	23230	Mid	LTE Band 13	10	23.5	22.86	0.10	0	Right	Tilt	QPSK	1	49	03C35	1:1	0.019	1.159	0.022	
782.00	23230	Mid	LTE Band 13	10	22.5	21.91	0.17	1	Right	Tilt	QPSK	25	12	03C35	1:1	0.017	1.146	0.019	
782.00	23230	Mid	LTE Band 13	10	23.5	22.86	0.14	0	Left	Cheek	QPSK	1	49	03C35	1:1	0.041	1.159	0.048	
782.00	23230	Mid	LTE Band 13	10	22.5	21.91	0.20	1	Left	Cheek	QPSK	25	12	03C35	1:1	0.031	1.146	0.036	
782.00	23230	Mid	LTE Band 13	10	23.5	22.86	0.13	0	Left	Tilt	QPSK	1	49	03C35	1:1	0.022	1.159	0.025	
782.00	23230	Mid	LTE Band 13	10	22.5	21.91	0.18	1	Left	Tilt	QPSK	25	12	03C35	1:1	0.012	1.146	0.014	
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 5 (Cell) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Antenna State	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.85	0.00	0	Right	Cheek	1	QPSK	1	25	03BB2	1:1	0.158	1.161	0.183	A8
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	22.99	-0.01	1	Right	Cheek	1	QPSK	25	12	03BB2	1:1	0.136	1.125	0.153	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.85	0.10	0	Right	Tilt	1	QPSK	1	25	03BB2	1:1	0.052	1.161	0.060	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	22.99	0.03	1	Right	Tilt	1	QPSK	25	12	03BB2	1:1	0.040	1.125	0.045	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.85	-0.01	0	Left	Cheek	1	QPSK	1	25	03BB2	1:1	0.118	1.161	0.137	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	22.99	0.00	1	Left	Cheek	1	QPSK	25	12	03BB2	1:1	0.099	1.125	0.111	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.85	0.06	0	Left	Tilt	1	QPSK	1	25	03BB2	1:1	0.076	1.161	0.088	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	22.99	-0.10	1	Left	Tilt	1	QPSK	25	12	03BB2	1:1	0.062	1.125	0.070	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																	Head 1.6 W/kg (mW/g) averaged over 1 gram			

Table 11-9
LTE Band 26 (Cell) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.5	22.95	-0.10	0	Right	Cheek	QPSK	1	36	03BB2	1:1	0.129	1.135	0.146	A9
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.98	0.05	1	Right	Cheek	QPSK	36	18	03BB2	1:1	0.101	1.127	0.114	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.5	22.95	0.07	0	Right	Tilt	QPSK	1	36	03BB2	1:1	0.047	1.135	0.053	
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.98	0.03	1	Right	Tilt	QPSK	36	18	03BB2	1:1	0.037	1.127	0.042	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.5	22.95	-0.02	0	Left	Cheek	QPSK	1	36	03BB2	1:1	0.094	1.135	0.107	
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.98	0.07	1	Left	Cheek	QPSK	36	18	03BB2	1:1	0.075	1.127	0.085	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.5	22.95	-0.04	0	Left	Tilt	QPSK	1	36	03BB2	1:1	0.079	1.135	0.090	
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.98	0.05	1	Left	Tilt	QPSK	36	18	03BB2	1:1	0.061	1.127	0.069	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																	Head 1.6 W/kg (mW/g) averaged over 1 gram			

Table 11-10
LTE Band 66 (AWS) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	22.97	0.15	0	Right	Cheek	QPSK	1	99	03C55	1:1	0.059	1.130	0.067	
1770.00	132572	High	LTE Band 66 (AWS)	20	22.5	21.78	0.16	1	Right	Cheek	QPSK	50	25	03C55	1:1	0.035	1.180	0.041	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	22.97	-0.17	0	Right	Tilt	QPSK	1	99	03C55	1:1	0.040	1.130	0.045	
1770.00	132572	High	LTE Band 66 (AWS)	20	22.5	21.78	0.15	1	Right	Tilt	QPSK	50	25	03C55	1:1	0.028	1.180	0.033	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	22.97	0.12	0	Left	Cheek	QPSK	1	99	03C55	1:1	0.099	1.130	0.112	A10
1770.00	132572	High	LTE Band 66 (AWS)	20	22.5	21.78	0.03	1	Left	Cheek	QPSK	50	25	03C55	1:1	0.065	1.180	0.077	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	22.97	0.07	0	Left	Tilt	QPSK	1	99	03C55	1:1	0.047	1.130	0.053	
1770.00	132572	High	LTE Band 66 (AWS)	20	22.5	21.78	0.13	1	Left	Tilt	QPSK	50	25	03C55	1:1	0.027	1.180	0.032	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

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

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.5	23.14	0.00	0	Right	Cheek	QPSK	1	99	03C35	1:1	0.058	1.086	0.063	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.87	0.07	1	Right	Cheek	QPSK	50	50	03C35	1:1	0.041	1.156	0.047	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.5	23.14	-0.02	0	Right	Tilt	QPSK	1	99	03C35	1:1	0.037	1.086	0.040	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.87	-0.18	1	Right	Tilt	QPSK	50	50	03C35	1:1	0.029	1.156	0.034	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.5	23.14	0.09	0	Left	Cheek	QPSK	1	99	03C35	1:1	0.066	1.086	0.072	A11
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.87	0.10	1	Left	Cheek	QPSK	50	50	03C35	1:1	0.055	1.156	0.064	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.5	23.14	0.05	0	Left	Tilt	QPSK	1	99	03C35	1:1	0.042	1.086	0.046	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.87	0.07	1	Left	Tilt	QPSK	50	50	03C35	1:1	0.031	1.156	0.036	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-12
LTE Band 41 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.16	0.12	0	Right	Cheek	QPSK	1	99	03BB2	1:1.58	0.043	1.213	0.052	
2549.50	40185	Low-Mid	LTE Band 41	20	22.0	21.17	0.07	1	Right	Cheek	QPSK	50	25	03BB2	1:1.58	0.036	1.211	0.044	
2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.16	-0.02	0	Right	Tilt	QPSK	1	99	03BB2	1:1.58	0.051	1.213	0.062	A12
2549.50	40185	Low-Mid	LTE Band 41	20	22.0	21.17	0.14	1	Right	Tilt	QPSK	50	25	03BB2	1:1.58	0.037	1.211	0.045	
2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.16	0.13	0	Left	Cheek	QPSK	1	99	03BB2	1:1.58	0.050	1.213	0.061	
2549.50	40185	Low-Mid	LTE Band 41	20	22.0	21.17	0.14	1	Left	Cheek	QPSK	50	25	03BB2	1:1.58	0.039	1.211	0.047	
2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.16	0.13	0	Left	Tilt	QPSK	1	99	03BB2	1:1.58	0.031	1.213	0.038	
2549.50	40185	Low-Mid	LTE Band 41	20	22.0	21.17	0.14	1	Left	Tilt	QPSK	50	25	03BB2	1:1.58	0.024	1.211	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 11-13
DTS Head SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	15.5	15.05	0.11	Right	Cheek	1	03C35	1	99.7	0.344	0.280	1.109	1.003	**0.311**	A13
2412	1	802.11b	DSSS	22	15.5	15.05	0.21	Right	Tilt	1	03C35	1	99.7	0.258	-	1.109	1.003	-	
2412	1	802.11b	DSSS	22	15.5	15.05	0.14	Left	Cheek	1	03C35	1	99.7	0.152	-	1.109	1.003	-	
2412	1	802.11b	DSSS	22	15.5	15.05	-0.15	Left	Tilt	1	03C35	1	99.7	0.203	-	1.109	1.003	-	
2412	1	802.11b	DSSS	22	15.5	15.22	0.13	Right	Cheek	2	03C35	1	99.7	0.268	0.211	1.067	1.003	0.226	
2412	1	802.11b	DSSS	22	15.5	15.22	0.12	Right	Tilt	2	03C35	1	99.7	0.231	-	1.067	1.003	-	
2412	1	802.11b	DSSS	22	15.5	15.22	-0.17	Left	Cheek	2	03C35	1	99.7	0.123	-	1.067	1.003	-	
2412	1	802.11b	DSSS	22	15.5	15.22	0.11	Left	Tilt	2	03C35	1	99.7	0.093	-	1.067	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 11-14
NII Head SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5300	60	802.11a	OFDM	20	14.5	14.24	0.11	Right	Cheek	1	03C55	6	98.6	0.381	0.196	1.062	1.014	0.211	
5300	60	802.11a	OFDM	20	14.5	14.24	-0.17	Right	Tilt	1	03C55	6	98.6	0.332	-	1.062	1.014	-	
5300	60	802.11a	OFDM	20	14.5	14.24	0.16	Left	Cheek	1	03C55	6	98.6	0.149	-	1.062	1.014	-	
5300	60	802.11a	OFDM	20	14.5	14.24	-0.17	Left	Tilt	1	03C55	6	98.6	0.132	-	1.062	1.014	-	
5300	60	802.11a	OFDM	20	14.5	14.48	0.16	Right	Cheek	2	03C55	6	98.6	0.512	0.301	1.005	1.014	0.307	
5300	60	802.11a	OFDM	20	14.5	14.48	0.12	Right	Tilt	2	03C55	6	98.6	0.437	-	1.005	1.014	-	
5300	60	802.11a	OFDM	20	14.5	14.48	0.18	Left	Cheek	2	03C55	6	98.6	0.161	-	1.005	1.014	-	
5300	60	802.11a	OFDM	20	14.5	14.48	0.00	Left	Tilt	2	03C55	6	98.6	0.138	-	1.005	1.014	-	
5600	120	802.11a	OFDM	20	14.5	14.49	0.12	Right	Cheek	1	03C55	6	98.6	0.218	0.162	1.002	1.014	0.165	
5600	120	802.11a	OFDM	20	14.5	14.49	-0.19	Right	Tilt	1	03C55	6	98.6	0.206	-	1.002	1.014	-	
5600	120	802.11a	OFDM	20	14.5	14.49	0.16	Left	Cheek	1	03C55	6	98.6	0.140	-	1.002	1.014	-	
5600	120	802.11a	OFDM	20	14.5	14.49	0.12	Left	Tilt	1	03C55	6	98.6	0.122	-	1.002	1.014	-	
5600	120	802.11a	OFDM	20	14.5	13.90	0.13	Right	Cheek	2	03C55	6	98.6	0.296	0.220	1.148	1.014	0.256	
5600	120	802.11a	OFDM	20	14.5	13.90	0.14	Right	Tilt	2	03C55	6	98.6	0.227	-	1.148	1.014	-	
5600	120	802.11a	OFDM	20	14.5	13.90	0.19	Left	Cheek	2	03C55	6	98.6	0.148	-	1.148	1.014	-	
5600	120	802.11a	OFDM	20	14.5	13.90	0.00	Left	Tilt	2	03C55	6	98.6	0.112	-	1.148	1.014	-	
5745	149	802.11a	OFDM	20	14.5	14.47	0.00	Right	Cheek	1	03C55	6	98.6	0.217	0.144	1.007	1.014	0.147	
5745	149	802.11a	OFDM	20	14.5	14.47	0.10	Right	Tilt	1	03C55	6	98.6	0.178	-	1.007	1.014	-	
5745	149	802.11a	OFDM	20	14.5	14.47	0.00	Left	Cheek	1	03C55	6	98.6	0.130	-	1.007	1.014	-	
5745	149	802.11a	OFDM	20	14.5	14.47	0.14	Left	Tilt	1	03C55	6	98.6	0.112	-	1.007	1.014	-	
5825	165	802.11a	OFDM	20	14.5	13.97	0.19	Right	Cheek	2	03C55	6	98.6	0.516	0.372	1.130	1.014	**0.426**	A14
5825	165	802.11a	OFDM	20	14.5	13.97	0.09	Right	Tilt	2	03C55	6	98.6	0.401	0.248	1.130	1.014	0.284	
5825	165	802.11a	OFDM	20	14.5	13.97	0.09	Left	Cheek	2	03C55	6	98.6	0.334	-	1.130	1.014	-	
5825	165	802.11a	OFDM	20	14.5	13.97	0.19	Left	Tilt	2	03C55	6	98.6	0.260	-	1.130	1.014	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**														**Head** **1.6 W/kg (mW/g)** averaged over 1 gram					

Table 11-15
DSS Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	Duty Cycle %	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441.00	39	Bluetooth	FHSS	16.0	15.81	0.12	Right	Cheek	03C55	1	77.6	0.192	1.045	1.289	**0.259**	A15
2441.00	39	Bluetooth	FHSS	16.0	15.81	-0.01	Right	Tilt	03C55	1	77.6	0.146	1.045	1.289	0.197	
2441.00	39	Bluetooth	FHSS	16.0	15.81	0.05	Left	Cheek	03C55	1	77.6	0.078	1.045	1.289	0.105	
2441.00	39	Bluetooth	FHSS	16.0	15.81	0.07	Left	Tilt	03C55	1	77.6	0.052	1.045	1.289	0.070	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram							

11.2 Standalone Body-Worn SAR Data

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

MEASUREMENT RESULTS														
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	32.9	32.47	0.04	15 mm	03E49	1:8.3	back	0.252	1.104	0.278	A16
836.60	4183	UMTS 850	RMC	23.5	23.18	-0.01	15 mm	03951	1:1	back	0.193	1.076	0.208	A18
1712.40	1312	UMTS 1750	RMC	23.5	22.69	-0.03	15 mm	03951	1:1	back	0.513	1.205	0.618	
1732.40	1412	UMTS 1750	RMC	23.5	22.90	-0.02	15 mm	03951	1:1	back	0.531	1.148	0.610	
1752.60	1513	UMTS 1750	RMC	23.5	22.87	-0.02	15 mm	03951	1:1	back	0.557	1.156	**0.644**	A20
1880.00	661	GSM 1900	GSM	30.2	29.25	-0.03	15 mm	03E49	1:8.3	back	0.276	1.245	0.344	A22
1880.00	9400	UMTS 1900	RMC	23.3	22.89	0.00	15 mm	03E49	1:1	back	0.324	1.099	0.356	A24
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 11-17
LTE Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna State	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	23.5	23.13	0.00	0	N/A	03C35	QPSK	1	49	15 mm	back	1:1	0.169	1.089	0.184	A26
707.50	23095	Mid	LTE Band 12	10	22.5	22.15	0.00	1	N/A	03C35	QPSK	25	12	15 mm	back	1:1	0.127	1.084	0.138	
782.00	23230	Mid	LTE Band 13	10	23.5	22.86	-0.02	0	N/A	03951	QPSK	1	49	15 mm	back	1:1	0.179	1.159	0.207	A28
782.00	23230	Mid	LTE Band 13	10	22.5	21.91	0.01	1	N/A	03951	QPSK	25	12	15 mm	back	1:1	0.140	1.146	0.160	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.85	0.01	0	1	03BB2	QPSK	1	25	15 mm	back	1:1	0.247	1.161	0.287	A30
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	22.99	-0.02	1	1	03BB2	QPSK	25	12	15 mm	back	1:1	0.205	1.125	0.231	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.5	22.95	-0.01	0	N/A	03BB2	QPSK	1	36	15 mm	back	1:1	0.198	1.135	0.225	A32
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.98	-0.04	1	N/A	03BB2	QPSK	36	18	15 mm	back	1:1	0.157	1.127	0.177	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	22.97	0.05	0	N/A	03C55	QPSK	1	99	15 mm	back	1:1	0.475	1.130	0.537	A34
1770.00	132572	High	LTE Band 66 (AWS)	20	22.5	21.78	-0.01	1	N/A	03C55	QPSK	50	25	15 mm	back	1:1	0.353	1.180	0.417	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.5	23.14	0.03	0	N/A	03E49	QPSK	1	99	15 mm	back	1:1	0.315	1.086	0.342	A36
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.87	0.01	1	N/A	03E49	QPSK	50	50	15 mm	back	1:1	0.248	1.156	0.287	
2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.16	0.03	0	N/A	03951	QPSK	1	99	15 mm	back	1:1.58	0.196	1.213	0.238	A38
2549.50	40185	Low-Mid	LTE Band 41	20	22.0	21.17	-0.08	1	N/A	03951	QPSK	50	25	15 mm	back	1:1.58	0.163	1.211	0.197	
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
DTS Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	18.5	18.29	0.11	15 mm	1	03C4C	1	back	99.7	0.083	0.073	1.050	1.003	**0.077**	A40
2462	11	802.11b	DSSS	22	18.5	17.95	0.11	15 mm	2	03C4C	1	back	99.7	0.033	0.031	1.135	1.003	0.035	
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
NII Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5320	64	802.11a	OFDM	20	17.5	16.93	0.11	15 mm	1	03C35	6	back	98.6	0.115	0.043	1.140	1.014	0.050	
5300	60	802.11a	OFDM	20	17.5	17.27	-0.15	15 mm	2	03C35	6	back	98.6	0.300	0.133	1.054	1.014	0.142	
5600	120	802.11a	OFDM	20	17.5	17.31	0.10	15 mm	1	03C35	6	back	98.6	0.068	0.021	1.045	1.014	0.022	
5620	124	802.11a	OFDM	20	17.5	17.27	0.17	15 mm	2	03C35	6	back	98.6	0.323	0.139	1.054	1.014	0.149	
5785	157	802.11a	OFDM	20	17.5	17.24	-0.06	15 mm	1	03C35	6	back	98.6	0.082	0.028	1.062	1.014	0.030	
5825	165	802.11a	OFDM	20	17.5	17.44	-0.14	15 mm	2	03C35	6	back	98.6	0.359	0.159	1.014	1.014	**0.163**	A42
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 11-20
DSS Body-Worn SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	16.0	15.81	0.00	15 mm	03C4C	1	back	77.6	0.012	1.045	1.289	**0.016**	A44
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**							**Body** **1.6 W/kg (mW/g)** averaged over 1 gram									

11.3 Standalone Hotspot SAR Data

Table 11-21
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)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
824.20	128	GSM 850	GPRS	28.5	28.08	-0.11	10 mm	03E49	4	1:2.076	back	0.505	1.102	0.557	
836.60	190	GSM 850	GPRS	28.5	28.04	-0.12	10 mm	03E49	4	1:2.076	back	0.614	1.112	0.683	
848.80	251	GSM 850	GPRS	28.5	28.10	-0.13	10 mm	03E49	4	1:2.076	back	0.691	1.096	0.757	A17
836.60	190	GSM 850	GPRS	28.5	28.04	-0.04	10 mm	03E49	4	1:2.076	front	0.497	1.112	0.553	
836.60	190	GSM 850	GPRS	28.5	28.04	-0.18	10 mm	03E49	4	1:2.076	bottom	0.406	1.112	0.451	
836.60	190	GSM 850	GPRS	28.5	28.04	-0.05	10 mm	03E49	4	1:2.076	right	0.303	1.112	0.337	
836.60	190	GSM 850	GPRS	28.5	28.04	0.04	10 mm	03E49	4	1:2.076	left	0.064	1.112	0.071	
836.60	4183	UMTS 850	RMC	23.5	23.18	-0.04	10 mm	03951	N/A	1:1	back	0.386	1.076	0.415	A19
836.60	4183	UMTS 850	RMC	23.5	23.18	-0.01	10 mm	03951	N/A	1:1	front	0.330	1.076	0.355	
836.60	4183	UMTS 850	RMC	23.5	23.18	-0.08	10 mm	03951	N/A	1:1	bottom	0.219	1.076	0.236	
836.60	4183	UMTS 850	RMC	23.5	23.18	-0.03	10 mm	03951	N/A	1:1	right	0.182	1.076	0.196	
836.60	4183	UMTS 850	RMC	23.5	23.18	-0.03	10 mm	03951	N/A	1:1	left	0.044	1.076	0.047	
1732.40	1412	UMTS 1750	RMC	20.5	19.68	-0.05	10 mm	03C4C	N/A	1:1	back	0.312	1.208	0.377	
1732.40	1412	UMTS 1750	RMC	20.5	19.68	0.00	10 mm	03C4C	N/A	1:1	front	0.257	1.208	0.310	
1732.40	1412	UMTS 1750	RMC	20.5	19.68	-0.04	10 mm	03C4C	N/A	1:1	bottom	0.426	1.208	0.515	A21
1732.40	1412	UMTS 1750	RMC	20.5	19.68	-0.12	10 mm	03C4C	N/A	1:1	right	0.054	1.208	0.065	
1732.40	1412	UMTS 1750	RMC	20.5	19.68	0.07	10 mm	03C4C	N/A	1:1	left	0.064	1.208	0.077	
1880.00	661	GSM 1900	GPRS	26.0	25.71	0.12	10 mm	03E49	3	1:2.76	back	0.565	1.069	0.604	
1880.00	661	GSM 1900	GPRS	26.0	25.71	-0.06	10 mm	03E49	3	1:2.76	front	0.368	1.069	0.393	
1850.20	512	GSM 1900	GPRS	26.0	25.70	-0.05	10 mm	03E49	3	1:2.76	bottom	0.931	1.072	0.998	A23
1880.00	661	GSM 1900	GPRS	26.0	25.71	-0.04	10 mm	03E49	3	1:2.76	bottom	0.860	1.069	0.919	
1909.80	810	GSM 1900	GPRS	26.0	25.79	-0.01	10 mm	03E49	3	1:2.76	bottom	0.846	1.050	0.888	
1880.00	661	GSM 1900	GPRS	26.0	25.71	-0.11	10 mm	03E49	3	1:2.76	right	0.105	1.069	0.112	
1880.00	661	GSM 1900	GPRS	26.0	25.71	0.07	10 mm	03E49	3	1:2.76	left	0.037	1.069	0.040	
1880.00	9400	UMTS 1900	RMC	23.3	22.89	-0.02	10 mm	03E49	N/A	1:1	back	0.631	1.099	0.693	
1880.00	9400	UMTS 1900	RMC	23.3	22.89	0.00	10 mm	03E49	N/A	1:1	front	0.428	1.099	0.470	
1852.40	9262	UMTS 1900	RMC	23.3	23.12	-0.03	10 mm	03E49	N/A	1:1	bottom	1.050	1.042	**1.094**	A25
1880.00	9400	UMTS 1900	RMC	23.3	22.89	-0.07	10 mm	03E49	N/A	1:1	bottom	0.956	1.099	1.051	
1907.60	9538	UMTS 1900	RMC	23.3	23.17	-0.04	10 mm	03E49	N/A	1:1	bottom	1.010	1.030	1.040	
1880.00	9400	UMTS 1900	RMC	23.3	22.89	-0.06	10 mm	03E49	N/A	1:1	right	0.120	1.099	0.132	
1880.00	9400	UMTS 1900	RMC	23.3	22.89	-0.01	10 mm	03E49	N/A	1:1	left	0.040	1.099	0.044	
1852.40	9262	UMTS 1900	RMC	23.3	23.12	-0.04	10 mm	03E49	N/A	1:1	bottom	1.050	1.042	**1.094**	
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 11-22
LTE Band 12 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	23.5	23.13	0.00	0	03C35	QPSK	1	49	10 mm	back	1:1	0.270	1.089	0.294	A27
707.50	23095	Mid	LTE Band 12	10	22.5	22.15	-0.01	1	03C35	QPSK	25	12	10 mm	back	1:1	0.200	1.084	0.217	
707.50	23095	Mid	LTE Band 12	10	23.5	23.13	-0.02	0	03C35	QPSK	1	49	10 mm	front	1:1	0.226	1.089	0.246	
707.50	23095	Mid	LTE Band 12	10	22.5	22.15	-0.03	1	03C35	QPSK	25	12	10 mm	front	1:1	0.166	1.084	0.180	
707.50	23095	Mid	LTE Band 12	10	23.5	23.13	0.01	0	03C35	QPSK	1	49	10 mm	bottom	1:1	0.164	1.089	0.179	
707.50	23095	Mid	LTE Band 12	10	22.5	22.15	-0.01	1	03C35	QPSK	25	12	10 mm	bottom	1:1	0.124	1.084	0.134	
707.50	23095	Mid	LTE Band 12	10	23.5	23.13	-0.04	0	03C35	QPSK	1	49	10 mm	right	1:1	0.205	1.089	0.223	
707.50	23095	Mid	LTE Band 12	10	22.5	22.15	-0.01	1	03C35	QPSK	25	12	10 mm	right	1:1	0.162	1.084	0.176	
707.50	23095	Mid	LTE Band 12	10	23.5	23.13	-0.03	0	03C35	QPSK	1	49	10 mm	left	1:1	0.095	1.089	0.103	
707.50	23095	Mid	LTE Band 12	10	22.5	22.15	-0.03	1	03C35	QPSK	25	12	10 mm	left	1:1	0.068	1.084	0.074	
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 11-23
LTE Band 13 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
782.00	23230	Mid	LTE Band 13	10	23.5	22.86	-0.06	0	03951	QPSK	1	49	10 mm	back	1:1	0.280	1.159	0.325	A29
782.00	23230	Mid	LTE Band 13	10	22.5	21.91	-0.02	1	03951	QPSK	25	12	10 mm	back	1:1	0.213	1.146	0.244	
782.00	23230	Mid	LTE Band 13	10	23.5	22.86	-0.02	0	03951	QPSK	1	49	10 mm	front	1:1	0.226	1.159	0.262	
782.00	23230	Mid	LTE Band 13	10	22.5	21.91	-0.05	1	03951	QPSK	25	12	10 mm	front	1:1	0.174	1.146	0.199	
782.00	23230	Mid	LTE Band 13	10	23.5	22.86	0.02	0	03951	QPSK	1	49	10 mm	bottom	1:1	0.183	1.159	0.212	
782.00	23230	Mid	LTE Band 13	10	22.5	21.91	0.00	1	03951	QPSK	25	12	10 mm	bottom	1:1	0.135	1.146	0.155	
782.00	23230	Mid	LTE Band 13	10	23.5	22.86	0.01	0	03951	QPSK	1	49	10 mm	right	1:1	0.234	1.159	0.271	
782.00	23230	Mid	LTE Band 13	10	22.5	21.91	-0.01	1	03951	QPSK	25	12	10 mm	right	1:1	0.184	1.146	0.211	
782.00	23230	Mid	LTE Band 13	10	23.5	22.86	-0.05	0	03951	QPSK	1	49	10 mm	left	1:1	0.101	1.159	0.117	
782.00	23230	Mid	LTE Band 13	10	22.5	21.91	0.00	1	03951	QPSK	25	12	10 mm	left	1:1	0.079	1.146	0.091	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Body 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-24
LTE Band 5 (Cell) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna State	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.85	-0.07	0	1	03BB2	QPSK	1	25	10 mm	back	1:1	0.521	1.161	0.605	A31
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	22.99	-0.05	1	1	03BB2	QPSK	25	12	10 mm	back	1:1	0.432	1.125	0.486	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.85	-0.02	0	1	03BB2	QPSK	1	25	10 mm	front	1:1	0.425	1.161	0.493	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	22.99	0.00	1	1	03BB2	QPSK	25	12	10 mm	front	1:1	0.347	1.125	0.390	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.85	-0.03	0	1	03BB2	QPSK	1	25	10 mm	bottom	1:1	0.301	1.161	0.349	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	22.99	-0.05	1	1	03BB2	QPSK	25	12	10 mm	bottom	1:1	0.250	1.125	0.281	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.85	-0.09	0	1	03BB2	QPSK	1	25	10 mm	right	1:1	0.242	1.161	0.281	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	22.99	-0.04	1	1	03BB2	QPSK	25	12	10 mm	right	1:1	0.202	1.125	0.227	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.85	0.04	0	1	03BB2	QPSK	1	25	10 mm	left	1:1	0.054	1.161	0.063	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.5	22.99	0.01	1	1	03BB2	QPSK	25	12	10 mm	left	1:1	0.049	1.125	0.055	
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 11-25
LTE Band 26 (Cell) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.5	22.95	-0.08	0	03BB2	QPSK	1	36	10 mm	back	1:1	0.418	1.135	0.474	A33
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.98	-0.08	1	03BB2	QPSK	36	18	10 mm	back	1:1	0.335	1.127	0.378	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.5	22.95	-0.21	0	03BB2	QPSK	1	36	10 mm	front	1:1	0.346	1.135	0.393	
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.98	-0.10	1	03BB2	QPSK	36	18	10 mm	front	1:1	0.272	1.127	0.307	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.5	22.95	-0.01	0	03BB2	QPSK	1	36	10 mm	bottom	1:1	0.237	1.135	0.269	
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.98	-0.04	1	03BB2	QPSK	36	18	10 mm	bottom	1:1	0.188	1.127	0.212	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.5	22.95	0.00	0	03BB2	QPSK	1	36	10 mm	right	1:1	0.210	1.135	0.238	
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.98	0.00	1	03BB2	QPSK	36	18	10 mm	right	1:1	0.167	1.127	0.188	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.5	22.95	-0.01	0	03BB2	QPSK	1	36	10 mm	left	1:1	0.040	1.135	0.045	
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.98	0.07	1	03BB2	QPSK	36	18	10 mm	left	1:1	0.032	1.127	0.036	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Body 1.6 W/kg (mW/g) averaged over 1 gram			

Table 11-26
LTE Band 66 (AWS) Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	22.97	0.03	0	03C4C	QPSK	1	99	10 mm	back	1:1	0.553	1.130	0.625	
1770.00	132572	High	LTE Band 66 (AWS)	20	22.5	21.78	-0.04	1	03C4C	QPSK	50	25	10 mm	back	1:1	0.421	1.180	0.497	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	22.97	0.04	0	03C4C	QPSK	1	99	10 mm	front	1:1	0.434	1.130	0.490	
1770.00	132572	High	LTE Band 66 (AWS)	20	22.5	21.78	0.00	1	03C4C	QPSK	50	25	10 mm	front	1:1	0.311	1.180	0.367	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	22.77	-0.06	0	03C4C	QPSK	1	99	10 mm	bottom	1:1	0.738	1.183	0.873	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.5	22.76	-0.07	0	03C4C	QPSK	1	99	10 mm	bottom	1:1	0.786	1.186	0.932	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	22.97	-0.05	0	03C4C	QPSK	1	99	10 mm	bottom	1:1	0.942	1.130	1.064	
1770.00	132572	High	LTE Band 66 (AWS)	20	22.5	21.78	-0.06	1	03C4C	QPSK	50	25	10 mm	bottom	1:1	0.648	1.180	0.765	
1770.00	132572	High	LTE Band 66 (AWS)	20	22.5	21.77	-0.04	1	03C4C	QPSK	100	0	10 mm	bottom	1:1	0.657	1.183	0.777	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	22.97	-0.03	0	03C4C	QPSK	1	99	10 mm	right	1:1	0.051	1.130	0.058	
1770.00	132572	High	LTE Band 66 (AWS)	20	22.5	21.78	-0.14	1	03C4C	QPSK	50	25	10 mm	right	1:1	0.042	1.180	0.050	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	22.97	-0.06	0	03C4C	QPSK	1	99	10 mm	left	1:1	0.090	1.130	0.102	
1770.00	132572	High	LTE Band 66 (AWS)	20	22.5	21.78	0.05	1	03C4C	QPSK	50	25	10 mm	left	1:1	0.078	1.180	0.092	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.5	22.97	0.03	0	03C4C	QPSK	1	99	10 mm	bottom	1:1	0.968	1.130	1.094	A35
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 11-27
LTE Band 25 (PCS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.5	23.14	0.00	0	03E49	QPSK	1	99	10 mm	back	1:1	0.617	1.086	0.670	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.87	0.00	1	03E49	QPSK	50	50	10 mm	back	1:1	0.490	1.156	0.566	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.5	23.14	0.03	0	03E49	QPSK	1	99	10 mm	front	1:1	0.448	1.086	0.487	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.87	0.01	1	03E49	QPSK	50	50	10 mm	front	1:1	0.360	1.156	0.416	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.5	22.96	0.01	0	03E49	QPSK	1	99	10 mm	bottom	1:1	0.966	1.132	**1.094**	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.5	23.14	-0.05	0	03E49	QPSK	1	99	10 mm	bottom	1:1	0.942	1.086	1.023	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	23.13	0.06	0	03E49	QPSK	1	99	10 mm	bottom	1:1	0.988	1.089	1.076	A37
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	21.68	0.06	1	03E49	QPSK	50	25	10 mm	bottom	1:1	0.816	1.208	0.986	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.87	-0.04	1	03E49	QPSK	50	50	10 mm	bottom	1:1	0.759	1.156	0.877	
1905.00	26590	High	LTE Band 25 (PCS)	20	22.5	21.83	-0.02	1	03E49	QPSK	50	25	10 mm	bottom	1:1	0.783	1.167	0.914	
1905.00	26590	High	LTE Band 25 (PCS)	20	22.5	21.85	0.04	1	03E49	QPSK	100	0	10 mm	bottom	1:1	0.781	1.161	0.907	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.5	23.14	0.03	0	03E49	QPSK	1	99	10 mm	right	1:1	0.110	1.086	0.119	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.87	-0.04	1	03E49	QPSK	50	50	10 mm	right	1:1	0.085	1.156	0.098	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.5	23.14	0.00	0	03E49	QPSK	1	99	10 mm	left	1:1	0.037	1.086	0.040	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.87	0.01	1	03E49	QPSK	50	50	10 mm	left	1:1	0.031	1.156	0.036	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11-28
LTE Band 41 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.16	-0.01	0	03951	QPSK	1	99	10 mm	back	1:1.58	0.381	1.213	0.462	
2549.50	40185	Low-Mid	LTE Band 41	20	22.0	21.17	0.06	1	03951	QPSK	50	25	10 mm	back	1:1.58	0.316	1.211	0.383	
2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.16	-0.05	0	03951	QPSK	1	99	10 mm	front	1:1.58	0.358	1.213	0.434	
2549.50	40185	Low-Mid	LTE Band 41	20	22.0	21.17	0.09	1	03951	QPSK	50	25	10 mm	front	1:1.58	0.304	1.211	0.368	
2506.00	39750	Low	LTE Band 41	20	23.0	22.15	-0.17	0	03951	QPSK	1	99	10 mm	bottom	1:1.58	0.900	1.216	**1.094**	A39
2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.16	-0.09	0	03951	QPSK	1	99	10 mm	bottom	1:1.58	0.851	1.213	1.032	
2593.00	40620	Mid	LTE Band 41	20	23.0	21.99	0.18	0	03951	QPSK	1	99	10 mm	bottom	1:1.58	0.563	1.262	0.711	
2636.50	41055	Mid-High	LTE Band 41	20	23.0	21.57	-0.11	0	03951	QPSK	1	99	10 mm	bottom	1:1.58	0.527	1.390	0.733	
2680.00	41490	High	LTE Band 41	20	23.0	21.66	-0.17	0	03951	QPSK	1	99	10 mm	bottom	1:1.58	0.577	1.361	0.785	
2506.00	39750	Low	LTE Band 41	20	22.0	21.12	0.02	1	03951	QPSK	50	25	10 mm	bottom	1:1.58	0.731	1.225	0.895	
2549.50	40185	Low-Mid	LTE Band 41	20	22.0	21.17	-0.14	1	03951	QPSK	50	25	10 mm	bottom	1:1.58	0.684	1.211	0.828	
2593.00	40620	Mid	LTE Band 41	20	22.0	21.03	-0.02	1	03951	QPSK	50	25	10 mm	bottom	1:1.58	0.492	1.250	0.615	
2636.50	41055	Mid-High	LTE Band 41	20	22.0	20.61	0.00	1	03951	QPSK	50	25	10 mm	bottom	1:1.58	0.423	1.377	0.582	
2680.00	41490	High	LTE Band 41	20	22.0	20.71	0.00	1	03951	QPSK	50	25	10 mm	bottom	1:1.58	0.467	1.346	0.629	
2549.50	40185	Low-Mid	LTE Band 41	20	22.0	21.15	-0.02	1	03951	QPSK	100	0	10 mm	bottom	1:1.58	0.723	1.216	0.879	
2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.16	0.05	0	03951	QPSK	1	99	10 mm	right	1:1.58	0.064	1.213	0.078	
2549.50	40185	Low-Mid	LTE Band 41	20	22.0	21.17	-0.20	1	03951	QPSK	50	25	10 mm	right	1:1.58	0.055	1.211	0.067	
2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.16	0.04	0	03951	QPSK	1	99	10 mm	left	1:1.58	0.179	1.213	0.217	
2549.50	40185	Low-Mid	LTE Band 41	20	22.0	21.17	0.01	1	03951	QPSK	50	25	10 mm	left	1:1.58	0.140	1.211	0.170	
2506.00	39750	Low	LTE Band 41	20	23.0	22.15	-0.07	0	03951	QPSK	1	99	10 mm	bottom	1:1.58	0.884	1.216	1.075	
2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.16	-0.15	0	03951	QPSK	1	99	10 mm	bottom	1:1.58	0.837	1.213	1.015	
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 11-29
WLAN Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	18.5	18.29	0.14	10 mm	1	03C4C	1	back	99.7	0.166	-	1.050	1.003	-	
2412	1	802.11b	DSSS	22	18.5	18.29	0.13	10 mm	1	03C4C	1	front	99.7	0.094	-	1.050	1.003	-	
2412	1	802.11b	DSSS	22	18.5	18.29	0.16	10 mm	1	03C4C	1	top	99.7	0.326	0.265	1.050	1.003	**0.279**	A41
2412	1	802.11b	DSSS	22	18.5	18.29	0.05	10 mm	1	03C4C	1	right	99.7	0.021	-	1.050	1.003	-	
2412	1	802.11b	DSSS	22	18.5	18.29	-0.07	10 mm	1	03C4C	1	left	99.7	0.085	-	1.050	1.003	-	
2462	11	802.11b	DSSS	22	18.5	17.95	-0.16	10 mm	2	03C4C	1	back	99.7	0.091	0.074	1.135	1.003	0.084	
2462	11	802.11b	DSSS	22	18.5	17.95	0.16	10 mm	2	03C4C	1	front	99.7	0.067	-	1.135	1.003	-	
2462	11	802.11b	DSSS	22	18.5	17.95	0.13	10 mm	2	03C4C	1	top	99.7	0.026	-	1.135	1.003	-	
2462	11	802.11b	DSSS	22	18.5	17.95	0.16	10 mm	2	03C4C	1	left	99.7	0.051	-	1.135	1.003	-	
5785	157	802.11a	OFDM	20	17.5	17.24	0.12	10 mm	1	03C35	6	back	98.6	0.107	0.042	1.062	1.014	0.045	
5785	157	802.11a	OFDM	20	17.5	17.24	-0.10	10 mm	1	03C35	6	front	98.6	0.073	-	1.062	1.014	-	
5785	157	802.11a	OFDM	20	17.5	17.24	0.00	10 mm	1	03C35	6	top	98.6	0.052	-	1.062	1.014	-	
5785	157	802.11a	OFDM	20	17.5	17.24	0.19	10 mm	1	03C35	6	right	98.6	0.012	-	1.062	1.014	-	
5785	157	802.11a	OFDM	20	17.5	17.24	-0.16	10 mm	1	03C35	6	left	98.6	0.028	-	1.062	1.014	-	
5825	165	802.11a	OFDM	20	17.5	17.44	0.08	10 mm	2	03C35	6	back	98.6	0.534	0.238	1.014	1.014	**0.245**	A43
5825	165	802.11a	OFDM	20	17.5	17.44	-0.04	10 mm	2	03C35	6	front	98.6	0.274	-	1.014	1.014	-	
5825	165	802.11a	OFDM	20	17.5	17.44	-0.10	10 mm	2	03C35	6	top	98.6	0.189	-	1.014	1.014	-	
5825	165	802.11a	OFDM	20	17.5	17.44	-0.18	10 mm	2	03C35	6	left	98.6	0.154	-	1.014	1.014	-	

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

Table 11-30
DSS Hotspot SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	16.0	15.81	0.04	10 mm	03C4C	1	back	77.6	0.032	1.045	1.289	**0.043**	A45
2441	39	Bluetooth	FHSS	16.0	15.81	-0.15	10 mm	03C4C	1	front	77.6	0.029	1.045	1.289	0.039	
2441	39	Bluetooth	FHSS	16.0	15.81	0.18	10 mm	03C4C	1	top	77.6	0.010	1.045	1.289	0.013	
2441	39	Bluetooth	FHSS	16.0	15.81	0.06	10 mm	03C4C	1	left	77.6	0.018	1.045	1.289	0.024	

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

11.4 Standalone Phablet SAR Data

Table 11-31
WLAN Phablet SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan W/kg	SAR (10g) (W/kg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g) (W/kg)	Plot #
MHz	Ch.																		
5320	64	802.11a	OFDM	20	17.5	16.93	-0.16	0 mm	1	03C35	6	back	98.6	3.221	0.382	1.140	1.014	0.442	
5320	64	802.11a	OFDM	20	17.5	16.93	0.12	0 mm	1	03C35	6	front	98.6	1.929	-	1.140	1.014	-	
5320	64	802.11a	OFDM	20	17.5	16.93	-0.15	0 mm	1	03C35	6	top	98.6	2.667	-	1.140	1.014	-	
5320	64	802.11a	OFDM	20	17.5	16.93	0.17	0 mm	1	03C35	6	right	98.6	0.106	-	1.140	1.014	-	
5320	64	802.11a	OFDM	20	17.5	16.93	0.09	0 mm	1	03C35	6	left	98.6	0.991	-	1.140	1.014	-	
5300	60	802.11a	OFDM	20	17.5	17.27	0.05	0 mm	2	03C35	6	back	98.6	8.329	0.785	1.054	1.014	0.839	
5300	60	802.11a	OFDM	20	17.5	17.27	0.14	0 mm	2	03C35	6	front	98.6	5.359	-	1.054	1.014	-	
5300	60	802.11a	OFDM	20	17.5	17.27	-0.15	0 mm	2	03C35	6	top	98.6	5.017	-	1.054	1.014	-	
5300	60	802.11a	OFDM	20	17.5	17.27	-0.10	0 mm	2	03C35	6	left	98.6	0.734	-	1.054	1.014	-	
5600	120	802.11a	OFDM	20	17.5	17.31	0.08	0 mm	1	03C35	6	back	98.6	2.213	0.280	1.045	1.014	0.297	
5600	120	802.11a	OFDM	20	17.5	17.31	-0.18	0 mm	1	03C35	6	front	98.6	2.105	-	1.045	1.014	-	
5600	120	802.11a	OFDM	20	17.5	17.31	0.00	0 mm	1	03C35	6	top	98.6	1.054	-	1.045	1.014	-	
5600	120	802.11a	OFDM	20	17.5	17.31	-0.19	0 mm	1	03C35	6	right	98.6	0.036	-	1.045	1.014	-	
5600	120	802.11a	OFDM	20	17.5	17.31	0.09	0 mm	1	03C35	6	left	98.6	0.719	-	1.045	1.014	-	
5620	124	802.11a	OFDM	20	17.5	17.27	0.12	0 mm	2	03C35	6	back	98.6	9.712	1.180	1.054	1.014	**1.261**	A46
5620	124	802.11a	OFDM	20	17.5	17.27	0.05	0 mm	2	03C35	6	front	98.6	7.331	0.372	1.054	1.014	0.398	
5620	124	802.11a	OFDM	20	17.5	17.27	0.01	0 mm	2	03C35	6	top	98.6	2.199	-	1.054	1.014	-	
5620	124	802.11a	OFDM	20	17.5	17.27	0.05	0 mm	2	03C35	6	left	98.6	1.086	-	1.054	1.014	-	

ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**	**Phablet** **4.0 W/kg (mW/g)** averaged over 10 grams

11.5 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, and FCC KDB Publication 447498 D01v06.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 15 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
7. Per FCC KDB Publication 648474 D04v01r03, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported body-worn SAR was ≤ 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were required.
8. Per FCC KDB 865664 D01v01r04, variability SAR tests were performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 13 for variability analysis.
9. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v02r01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.7 for more details).
10. Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is > 160 mm and < 200 mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR scaled to the maximum output power of the transmission mode is > 1.2 W/kg.
11. This device supports dynamic antenna tuning for LTE Band 5. Per FCC Guidance, SAR was measured according to the normally required SAR measurement configurations with tuner active. The auto-tune state determined by the device was verified before and after each SAR measurement and is listed in tables above. Please see Section 14 for supplemental data.
12. Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds below.

GSM Test Notes:

1. Body-Worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
2. Justification for reduced test configurations per KDB Publication 941225 D01v03r01 and October 2013 TCB Workshop Notes: The source-based frame-averaged output power was evaluated for all GPRS/EDGE slot configurations. The configuration with the highest target frame averaged output power was evaluated for hotspot SAR. When the maximum frame-averaged powers are equivalent across two or more slots (within 0.25 dB), the configuration with the most number of time slots was tested.
3. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel was used.

UMTS Notes:

1. UMTS mode in was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03r01. AMR and HSPA SAR was not required per the 3G Test Reduction Procedure in KDB Publication 941225 D01v03r01.
2. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel was used.

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r04. The general test procedures used for testing can be found in Section 8.5.4.
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).
4. Per FCC KDB Publication 447498 D01v06, when the reported (scaled) for LTE Band 41 SAR measured at the highest output power channel in a given a test configuration was > 0.6 W/kg for 1g evaluations, testing at the other channels was required for such test configurations.
5. TDD LTE was tested per the guidance provided in FCC KDB Publication 941225 D05v02r04. Testing was performed using UL-DL configuration 0 with 6 UL subframes and 2 S subframes using extended cyclic prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633.

WLAN Notes:

1. For held-to-ear, hotspot and phablet operations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg for 1g evaluations, no additional testing for the remaining test positions was required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.
2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 2.4 GHz WIFI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 8.6.5 for more information.
3. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 5 GHz WIFI single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg for 1g evaluations. See Section 8.6.6 for more information.
4. Per KDB Publication 248227 D01v02r02, SAR for MIMO was evaluated by following the simultaneous SAR provisions from KDB Publication 447498 D01v06 by either evaluating the sum of the 1g SAR values of each antenna transmitting independently or making a SAR measurement with both antennas transmitting simultaneously. Please see Section 12 for complete analysis.
5. When the maximum reported 1g averaged SAR is ≤0.8 W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was ≤ 1.20 W/kg for 1g evaluations or all test channels were measured.
6. When 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.
7. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated EMC test reports.

Bluetooth Notes:

1. Bluetooth SAR was measured with the device connected to a call box with hopping disabled with DH5 operation and Tx Tests test mode type. Per October 2016 TCB Workshop Notes, the reported SAR was scaled to the 100% transmission duty factor to determine compliance. See Section 9.5 for the time domain plot and calculation for the duty factor of the device.
2. Head and hotspot Bluetooth SAR was evaluated for BT BR tethering applications.

12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Introduction

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

12.2 Simultaneous Transmission Procedures

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

Main antenna SAR testing was not required for phablet exposure conditions per FCC KDB 648474 D04v01r03. Therefore, no further analysis was required to determine that possible simultaneous scenarios would not exceed the SAR limit.

12.3 Head SAR Simultaneous Transmission Analysis

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 850	0.189	0.311	0.226	0.500	0.415	**0.726**
	UMTS 850	0.156	0.311	0.226	0.467	0.382	0.693
	UMTS 1750	0.149	0.311	0.226	0.460	0.375	0.686
	GSM 1900	0.082	0.311	0.226	0.393	0.308	0.619
	UMTS 1900	0.092	0.311	0.226	0.403	0.318	0.629
	LTE Band 12	0.102	0.311	0.226	0.413	0.328	0.639
	LTE Band 13	0.057	0.311	0.226	0.368	0.283	0.594
	LTE Band 5 (Cell)	0.183	0.311	0.226	0.494	0.409	0.720
	LTE Band 26 (Cell)	0.146	0.311	0.226	0.457	0.372	0.683
	LTE Band 66 (AWS)	0.112	0.311	0.226	0.423	0.338	0.649
	LTE Band 25 (PCS)	0.072	0.311	0.226	0.383	0.298	0.609
	LTE Band 41	0.062	0.311	0.226	0.373	0.288	0.599

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 850	0.189	0.211	0.426	0.400	0.615	**0.826**
	UMTS 850	0.156	0.211	0.426	0.367	0.582	0.793
	UMTS 1750	0.149	0.211	0.426	0.360	0.575	0.786
	GSM 1900	0.082	0.211	0.426	0.293	0.508	0.719
	UMTS 1900	0.092	0.211	0.426	0.303	0.518	0.729
	LTE Band 12	0.102	0.211	0.426	0.313	0.528	0.739
	LTE Band 13	0.057	0.211	0.426	0.268	0.483	0.694
	LTE Band 5 (Cell)	0.183	0.211	0.426	0.394	0.609	0.820
	LTE Band 26 (Cell)	0.146	0.211	0.426	0.357	0.572	0.783
	LTE Band 66 (AWS)	0.112	0.211	0.426	0.323	0.538	0.749
	LTE Band 25 (PCS)	0.072	0.211	0.426	0.283	0.498	0.709
	LTE Band 41	0.062	0.211	0.426	0.273	0.488	0.699

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Head SAR	GSM 850	0.189	0.311	0.226	0.211	0.426	**1.363**
	UMTS 850	0.156	0.311	0.226	0.211	0.426	1.330
	UMTS 1750	0.149	0.311	0.226	0.211	0.426	1.323
	GSM 1900	0.082	0.311	0.226	0.211	0.426	1.256
	UMTS 1900	0.092	0.311	0.226	0.211	0.426	1.266
	LTE Band 12	0.102	0.311	0.226	0.211	0.426	1.276
	LTE Band 13	0.057	0.311	0.226	0.211	0.426	1.231
	LTE Band 5 (Cell)	0.183	0.311	0.226	0.211	0.426	1.357
	LTE Band 26 (Cell)	0.146	0.311	0.226	0.211	0.426	1.320
	LTE Band 66 (AWS)	0.112	0.311	0.226	0.211	0.426	1.286
	LTE Band 25 (PCS)	0.072	0.311	0.226	0.211	0.426	1.246
	LTE Band 41	0.062	0.311	0.226	0.211	0.426	1.236

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	GSM 850	0.189	0.259	**0.448**
	UMTS 850	0.156	0.259	0.415
	UMTS 1750	0.149	0.259	0.408
	GSM 1900	0.082	0.259	0.341
	UMTS 1900	0.092	0.259	0.351
	LTE Band 12	0.102	0.259	0.361
	LTE Band 13	0.057	0.259	0.316
	LTE Band 5 (Cell)	0.183	0.259	0.442
	LTE Band 26 (Cell)	0.146	0.259	0.405
	LTE Band 66 (AWS)	0.112	0.259	0.371
	LTE Band 25 (PCS)	0.072	0.259	0.331
	LTE Band 41	0.062	0.259	0.321

12.4 Body-Worn Simultaneous Transmission Analysis

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	GSM 850	0.278	0.077	0.035	0.355	0.313	0.390
	UMTS 850	0.208	0.077	0.035	0.285	0.243	0.320
	UMTS 1750	0.644	0.077	0.035	0.721	0.679	**0.756**
	GSM 1900	0.344	0.077	0.035	0.421	0.379	0.456
	UMTS 1900	0.356	0.077	0.035	0.433	0.391	0.468
	LTE Band 12	0.184	0.077	0.035	0.261	0.219	0.296
	LTE Band 13	0.207	0.077	0.035	0.284	0.242	0.319
	LTE Band 5 (Cell)	0.287	0.077	0.035	0.364	0.322	0.399
	LTE Band 26 (Cell)	0.225	0.077	0.035	0.302	0.260	0.337
	LTE Band 66 (AWS)	0.537	0.077	0.035	0.614	0.572	0.649
	LTE Band 25 (PCS)	0.342	0.077	0.035	0.419	0.377	0.454
	LTE Band 41	0.238	0.077	0.035	0.315	0.273	0.350

Table 12-6
Simultaneous Transmission Scenario with 5 GHz WLAN (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	GSM 850	0.278	0.050	0.163	0.328	0.441	0.491
	UMTS 850	0.208	0.050	0.163	0.258	0.371	0.421
	UMTS 1750	0.644	0.050	0.163	0.694	0.807	**0.857**
	GSM 1900	0.344	0.050	0.163	0.394	0.507	0.557
	UMTS 1900	0.356	0.050	0.163	0.406	0.519	0.569
	LTE Band 12	0.184	0.050	0.163	0.234	0.347	0.397
	LTE Band 13	0.207	0.050	0.163	0.257	0.370	0.420
	LTE Band 5 (Cell)	0.287	0.050	0.163	0.337	0.450	0.500
	LTE Band 26 (Cell)	0.225	0.050	0.163	0.275	0.388	0.438
	LTE Band 66 (AWS)	0.537	0.050	0.163	0.587	0.700	0.750
	LTE Band 25 (PCS)	0.342	0.050	0.163	0.392	0.505	0.555
	LTE Band 41	0.238	0.050	0.163	0.288	0.401	0.451

Table 12-7
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 5 GHz WLAN MIMO (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Body-Worn	GSM 850	0.278	0.077	0.035	0.050	0.163	0.603
	UMTS 850	0.208	0.077	0.035	0.050	0.163	0.533
	UMTS 1750	0.644	0.077	0.035	0.050	0.163	**0.969**
	GSM 1900	0.344	0.077	0.035	0.050	0.163	0.669
	UMTS 1900	0.356	0.077	0.035	0.050	0.163	0.681
	LTE Band 12	0.184	0.077	0.035	0.050	0.163	0.509
	LTE Band 13	0.207	0.077	0.035	0.050	0.163	0.532
	LTE Band 5 (Cell)	0.287	0.077	0.035	0.050	0.163	0.612
	LTE Band 26 (Cell)	0.225	0.077	0.035	0.050	0.163	0.550
	LTE Band 66 (AWS)	0.537	0.077	0.035	0.050	0.163	0.862
	LTE Band 25 (PCS)	0.342	0.077	0.035	0.050	0.163	0.667
	LTE Band 41	0.238	0.077	0.035	0.050	0.163	0.563

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body-Worn	GSM 850	0.278	0.016	0.294
	UMTS 850	0.208	0.016	0.224
	UMTS 1750	0.644	0.016	**0.660**
	GSM 1900	0.344	0.016	0.360
	UMTS 1900	0.356	0.016	0.372
	LTE Band 12	0.184	0.016	0.200
	LTE Band 13	0.207	0.016	0.223
	LTE Band 5 (Cell)	0.287	0.016	0.303
	LTE Band 26 (Cell)	0.225	0.016	0.241
	LTE Band 66 (AWS)	0.537	0.016	0.553
	LTE Band 25 (PCS)	0.342	0.016	0.358
	LTE Band 41	0.238	0.016	0.254

12.5 Hotspot SAR Simultaneous Transmission Analysis

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

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

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN 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	0.757	0.279	0.084	1.036	0.841	1.120
	UMTS 850	0.415	0.279	0.084	0.694	0.499	0.778
	UMTS 1750	0.515	0.279	0.084	0.794	0.599	0.878
	GPRS 1900	0.998	0.279	0.084	1.277	1.082	1.361
	UMTS 1900	1.094	0.279	0.084	1.373	1.178	**1.457**
	LTE Band 12	0.294	0.279	0.084	0.573	0.378	0.657
	LTE Band 13	0.325	0.279	0.084	0.604	0.409	0.688
	LTE Band 5 (Cell)	0.605	0.279	0.084	0.884	0.689	0.968
	LTE Band 26 (Cell)	0.474	0.279	0.084	0.753	0.558	0.837
	LTE Band 66 (AWS)	1.094	0.279	0.084	1.373	1.178	**1.457**
	LTE Band 25 (PCS)	1.094	0.279	0.084	1.373	1.178	**1.457**
	LTE Band 41	1.094	0.279	0.084	1.373	1.178	**1.457**

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	0.757	0.045	0.245	0.802	1.002	1.047
	UMTS 850	0.415	0.045	0.245	0.460	0.660	0.705
	UMTS 1750	0.515	0.045	0.245	0.560	0.760	0.805
	GPRS 1900	0.998	0.045	0.245	1.043	1.243	1.288
	UMTS 1900	1.094	0.045	0.245	1.139	1.339	**1.384**
	LTE Band 12	0.294	0.045	0.245	0.339	0.539	0.584
	LTE Band 13	0.325	0.045	0.245	0.370	0.570	0.615
	LTE Band 5 (Cell)	0.605	0.045	0.245	0.650	0.850	0.895
	LTE Band 26 (Cell)	0.474	0.045	0.245	0.519	0.719	0.764
	LTE Band 66 (AWS)	1.094	0.045	0.245	1.139	1.339	**1.384**
	LTE Band 25 (PCS)	1.094	0.045	0.245	1.139	1.339	**1.384**
	LTE Band 41	1.094	0.045	0.245	1.139	1.339	**1.384**

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	GPRS 850	0.757	0.279	0.084	0.045	0.245	**1.410**
	UMTS 850	0.415	0.279	0.084	0.045	0.245	1.068
	UMTS 1750	0.515	0.279	0.084	0.045	0.245	1.168
	GPRS 1900	0.998	0.279	0.084	0.045	0.245	See Table Below
	UMTS 1900	1.094	0.279	0.084	0.045	0.245	See Table Below
	LTE Band 12	0.294	0.279	0.084	0.045	0.245	0.947
	LTE Band 13	0.325	0.279	0.084	0.045	0.245	0.978
	LTE Band 5 (Cell)	0.605	0.279	0.084	0.045	0.245	1.258
	LTE Band 26 (Cell)	0.474	0.279	0.084	0.045	0.245	1.127
	LTE Band 66 (AWS)	1.094	0.279	0.084	0.045	0.245	See Table Below
	LTE Band 25 (PCS)	1.094	0.279	0.084	0.045	0.245	See Table Below
	LTE Band 41	1.094	0.279	0.084	0.045	0.245	See Table Below

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	Back	0.604	0.279*	0.084	0.045	0.245	**1.257**
	Front	0.393	0.279*	0.084*	0.045*	0.245*	1.046
	Top	-	0.279	0.084*	0.045*	0.245*	0.653
	Bottom	0.998	-	-	-	-	0.998
	Right	0.112	0.279*	-	0.045*	-	0.436
	Left	0.040	0.279*	0.084*	0.045*	0.245*	0.693

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	Back	0.693	0.279*	0.084	0.045	0.245	**1.346**
	Front	0.470	0.279*	0.084*	0.045*	0.245*	1.123
	Top	-	0.279	0.084*	0.045*	0.245*	0.653
	Bottom	1.094	-	-	-	-	1.094
	Right	0.132	0.279*	-	0.045*	-	0.456
	Left	0.044	0.279*	0.084*	0.045*	0.245*	0.697

Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	Back	0.625	0.279*	0.084	0.045	0.245	**1.278**
	Front	0.490	0.279*	0.084*	0.045*	0.245*	1.143
	Top	-	0.279	0.084*	0.045*	0.245*	0.653
	Bottom	1.094	-	-	-	-	1.094
	Right	0.058	0.279*	-	0.045*	-	0.382
	Left	0.102	0.279*	0.084*	0.045*	0.245*	0.755

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	Back	0.670	0.279*	0.084	0.045	0.245	**1.323**
	Front	0.487	0.279*	0.084*	0.045*	0.245*	1.140
	Top	-	0.279	0.084*	0.045*	0.245*	0.653
	Bottom	1.094	-	-	-	-	1.094
	Right	0.119	0.279*	-	0.045*	-	0.443
	Left	0.040	0.279*	0.084*	0.045*	0.245*	0.693

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Hotspot SAR	Back	0.462	0.279*	0.084	0.045	0.245	**1.115**
	Front	0.434	0.279*	0.084*	0.045*	0.245*	1.087
	Top	-	0.279	0.084*	0.045*	0.245*	0.653
	Bottom	1.094	-	-	-	-	1.094
	Right	0.078	0.279*	-	0.045*	-	0.402
	Left	0.217	0.279*	0.084*	0.045*	0.245*	0.870

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	GPRS 850	0.757	0.043	0.800
	UMTS 850	0.415	0.043	0.458
	UMTS 1750	0.515	0.043	0.558
	GPRS 1900	0.998	0.043	1.041
	UMTS 1900	1.094	0.043	**1.137**
	LTE Band 12	0.294	0.043	0.337
	LTE Band 13	0.325	0.043	0.368
	LTE Band 5 (Cell)	0.605	0.043	0.648
	LTE Band 26 (Cell)	0.474	0.043	0.517
	LTE Band 66 (AWS)	1.094	0.043	**1.137**
	LTE Band 25 (PCS)	1.094	0.043	**1.137**
	LTE Band 41	1.094	0.043	**1.137**

12.6 Phablet Simultaneous Transmission Analysis

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

Exposure Condition	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
	1	2	1+2
Phablet SAR	0.442	1.261	**1.703**

12.7 Simultaneous Transmission Conclusion

The above numerical summed SAR results for all the worst-case simultaneous transmission conditions were below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v06 and IEEE 1528-2013 Section 6.3.4.1.2.

13 SAR MEASUREMENT VARIABILITY

13.1 Measurement Variability

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

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

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

Table 13-1
Body SAR Measurement Variability Results

BODY VARIABILITY RESULTS														
Band	FREQUENCY		Mode	Service	Side	Spacing	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.					(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1750	1770.00	132572	LTE Band 66 (AWS), 20 MHz Bandwidth	QPSK, 1 RB, 99 RB Offset	bottom	10 mm	0.942	0.968	1.03	N/A	N/A	N/A	N/A
1900	1852.40	9262	UMTS 1900	RMC	bottom	10 mm	1.050	1.050	1.00	N/A	N/A	N/A	N/A
2450	2506.00	39750	LTE Band 41, 20 MHz Bandwidth	QPSK, 1 RB, 99 RB Offset	bottom	10 mm	0.900	0.884	1.02	N/A	N/A	N/A	N/A
2600	2549.50	40185	LTE Band 41, 20 MHz Bandwidth	QPSK, 1 RB, 99 RB Offset	bottom	10 mm	0.851	0.837	1.02	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								

13.2 Measurement Uncertainty

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

14 ADDITIONAL TESTING PER FCC GUIDANCE

14.1 Tuner Testing

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

To evaluate all of the tuner states, the 25 tuner states were divided evenly among band, mode and exposure combinations so that at least one single point SAR measurement was measured among the configurations. Single point time-sweep measurements were performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. While inserting and removing the USB cable between single point SAR measurements, the device was ensured to capture the same physical point SAR that generated the highest SAR. The SAR probe remained stationary at the same position throughout the entire series of single point measurements for each combination.

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

Table 14-1
LTE Supplemental SAR Data

Supplemental Head SAR Data				Supplemental Body SAR Data			
LTE Band 5				LTE Band 5			
QPSK, 10MHz Bandwidth, 1 RB, 25 RB Offset				QPSK, 10MHz Bandwidth, 1 RB, 25 RB Offset			
Test Position	Right Cheek			Test Position	Back Side		
				Spacing	10 mm		
Frequency (MHz)	836.5			Frequency (MHz)	836.5		
Channel	20525			Channel	20525		
Measured 1g SAR (W/kg)	0.158			Measured 1g SAR (W/kg)	0.521		
Average Value of Time Sweep (W/kg)				Average Value of Time Sweep (W/kg)			
Auto-tune (State 1)	0.223			Auto-tune (State 1)	0.678		
Default (State 1)	0.223			Default (State 1)	0.676		
State 1	0.223	State 14	0.139	State 1	0.676	State 13	0.397
State 2	0.205	State 16	0.212	State 3	0.635	State 15	0.636
State 4	0.211	State 17	0.212	State 4	0.638	State 17	0.636
State 5	0.172	State 18	0.211	State 5	0.523	State 19	0.053
State 6	0.178	State 19	0.012	State 7	0.64	State 20	0.157
State 8	0.217	State 20	0.040	State 8	0.634	State 21	0.227
State 10	0.199	State 22	0.071	State 9	0.637	State 23	0.633
State 12	0.102	State 24	0.211	State 11	0.277	State 25	0.635

15 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	E8257D	(250kHz-20GHz) Signal Generator	3/22/2017	Annual	3/22/2018	MY45470194
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
SPEAG	D750V3	750 MHz SAR Dipole	1/11/2017	Annual	1/11/2018	1003
SPEAG	D835V2	835 MHz SAR Dipole	7/11/2017	Annual	7/11/2018	4d133
SPEAG	D835V2	835 MHz SAR Dipole	1/11/2017	Annual	1/11/2018	4d132
SPEAG	D1750V2	1750 MHz SAR Dipole	5/9/2017	Annual	5/9/2018	1148
SPEAG	D1750V2	1750 MHz SAR Dipole	7/14/2016	Biennial	7/14/2018	1150
SPEAG	D1900V2	1900 MHz SAR Dipole	7/8/2016	Biennial	7/8/2018	5d080
SPEAG	D2450V2	2450 MHz SAR Dipole	7/25/2016	Biennial	7/25/2018	981
SPEAG	D2450V2	2450 MHz SAR Dipole	8/17/2017	Annual	8/17/2018	719
SPEAG	D2600V2	2600 MHz SAR Dipole	7/10/2017	Annual	7/10/2018	1126
SPEAG	D2600V2	2600 MHz SAR Dipole	6/7/2017	Annual	6/7/2018	1064
SPEAG	D5GHzV2	5 GHz SAR Dipole	9/21/2016	Biennial	9/21/2018	1191
SPEAG	D5GHzV2	5 GHz SAR Dipole	8/15/2017	Annual	8/15/2018	1237
SPEAG	ES3DV3	SAR Probe	2/10/2017	Annual	2/10/2018	3213
SPEAG	EX3DV4	SAR Probe	7/17/2017	Annual	7/17/2018	7410
SPEAG	ES3DV3	SAR Probe	3/14/2017	Annual	3/14/2018	3209
SPEAG	ES3DV3	SAR Probe	8/14/2017	Annual	8/14/2018	3332
SPEAG	EX3DV4	SAR Probe	2/13/2017	Annual	2/13/2018	3914
SPEAG	EX3DV4	SAR Probe	4/18/2017	Annual	4/18/2018	7406
SPEAG	ES3DV3	SAR Probe	9/22/2017	Annual	9/22/2018	3318
SPEAG	ES3DV3	SAR Probe	3/14/2017	Annual	3/14/2018	3319
SPEAG	EX3DV4	SAR Probe	8/16/2017	Annual	8/16/2018	7308
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2017	Annual	2/9/2018	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/13/2017	Annual	7/13/2018	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/13/2017	Annual	3/13/2018	1415
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/9/2017	Annual	8/9/2018	1323
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2017	Annual	2/9/2018	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/11/2017	Annual	4/11/2018	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/14/2017	Annual	6/14/2018	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/8/2017	Annual	3/8/2018	1368
Rohde & Schwarz	CMU200	Base Station Simulator	4/11/2017	Annual	4/11/2018	836371/0079
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/10/2017	Annual	5/10/2018	1070
Mitutoyo	CD-6"CSX	Digital Caliper	3/2/2016	Biennial	3/2/2018	13264162
Mitutoyo	CD-6"CSX	Digital Caliper	3/2/2016	Biennial	3/2/2018	13264165
Agilent	E4438C	ESG Vector Signal Generator	3/24/2017	Biennial	3/24/2019	MY42082385
Agilent	E4438C	ESG Vector Signal Generator	3/23/2017	Annual	3/23/2018	MY47270002
Agilent	N9020A	MXA Signal Analyzer	12/28/2016	Annual	12/28/2017	US46470561
Agilent	N5182A	MXG Vector Signal Generator	2/28/2017	Annual	2/28/2018	MY47420800
Anritsu	ML2495A	Power Meter	10/22/2017	Annual	10/22/2018	941001
Anritsu	ML2495A	Power Meter	10/22/2017	Annual	10/22/2018	1328004
Anritsu	MA2411B	Pulse Power Sensor	2/10/2017	Annual	2/10/2018	1207364
Anritsu	MA2411B	Pulse Power Sensor	2/10/2017	Annual	2/10/2018	1339018
Anritsu	MT8820C	Radio Communication Analyzer	5/23/2017	Annual	5/23/2018	6201240328
Anritsu	MT8820C	Radio Communication Analyzer	12/8/2016	Annual	12/8/2017	6201300731
Rohde & Schwarz	CMW500	Radio Communication Tester	6/6/2017	Annual	6/6/2018	108843
Rohde & Schwarz	CMW500	Radio Communication tester	7/14/2017	Annual	7/14/2018	140144
Agilent	8753ES	S-Parameter Network Analyzer	9/14/2017	Annual	9/14/2018	US39170118
Agilent	8753ES	S-Parameter Vector Network Analyzer	8/17/2017	Annual	8/17/2018	MY40003841
Control Company	4040	Therm./Clock/Humidity Monitor	3/31/2017	Biennial	3/31/2019	170232394
Pasternack	PE5011-1	Torque Wrench	7/19/2017	Biennial	7/19/2019	N/A
Seekonk	NC-100	Torque Wrench (8" lb)	9/1/2016	Biennial	9/1/2018	21053
Control Company	4352	Ultra Long Stem Thermometer	3/8/2016	Biennial	3/8/2018	160261729
Control Company	4352	Ultra Long Stem Thermometer	3/8/2016	Biennial	3/8/2018	160261694
Anritsu	MA24106A	USB Power Sensor	3/20/2017	Annual	3/20/2018	1344554
Anritsu	MA24106A	USB Power Sensor	3/20/2017	Annual	3/20/2018	1344557
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	7/20/2017	Annual	7/20/2018	132885
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	2/10/2017	Annual	2/10/2018	162125
Agilent	E5515C	Wireless Communications Test Set	12/12/2016	Annual	12/12/2017	GB44400860
Agilent	E5515C	Wireless Communications Test Set	5/31/2017	Annual	5/31/2018	GB43304278
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433972
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
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

Note:

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

16 MEASUREMENT UNCERTAINTIES

a	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	Tol. (± %)	Prob. Dist.	Div.	c_i 1gm	c_i 10 gms	1gm u_i (± %)	10gms u_i (± %)	v_i
Measurement System								
Probe Calibration	6.55	N	1	1.0	1.0	6.6	6.6	∞
Axial Isotropy	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	1.3	N	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	2.0	R	1.73	1.0	1.0	1.2	1.2	∞
Linearity	0.3	N	1	1.0	1.0	0.3	0.3	∞
System Detection Limits	0.25	R	1.73	1.0	1.0	0.1	0.1	∞
Readout Electronics	0.3	N	1	1.0	1.0	0.3	0.3	∞
Response Time	0.8	R	1.73	1.0	1.0	0.5	0.5	∞
Integration Time	2.6	R	1.73	1.0	1.0	1.5	1.5	∞
RF Ambient Conditions - Noise	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
RF Ambient Conditions - Reflections	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	0.4	R	1.73	1.0	1.0	0.2	0.2	∞
Probe Positioning w/ respect to Phantom	6.7	R	1.73	1.0	1.0	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	4.0	R	1.73	1.0	1.0	2.3	2.3	∞
Test Sample Related								
Test Sample Positioning	2.7	N	1	1.0	1.0	2.7	2.7	35
Device Holder Uncertainty	1.67	N	1	1.0	1.0	1.7	1.7	5
Output Power Variation - SAR drift measurement	5.0	R	1.73	1.0	1.0	2.9	2.9	∞
SAR Scaling	0.0	R	1.73	1.0	1.0	0.0	0.0	∞
Phantom & Tissue Parameters								
Phantom Uncertainty (Shape & Thickness tolerances)	7.6	R	1.73	1.0	1.0	4.4	4.4	∞
Liquid Conductivity - measurement uncertainty	4.2	N	1	0.78	0.71	3.3	3.0	10
Liquid Permittivity - measurement uncertainty	4.1	N	1	0.23	0.26	1.0	1.1	10
Liquid Conductivity - Temperature Uncertainty	3.4	R	1.73	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Unceritainty	0.6	R	1.73	0.23	0.26	0.1	0.1	∞
Liquid Conductivity - deviation from target values	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Permittivity - deviation from target values	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Combined Standard Uncertainty (k=1)		RSS				11.5	11.3	60
Expanded Uncertainty (95% CONFIDENCE LEVEL)		k=2				23.0	22.6	

17 CONCLUSION

17.1 Measurement Conclusion

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

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

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APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C55

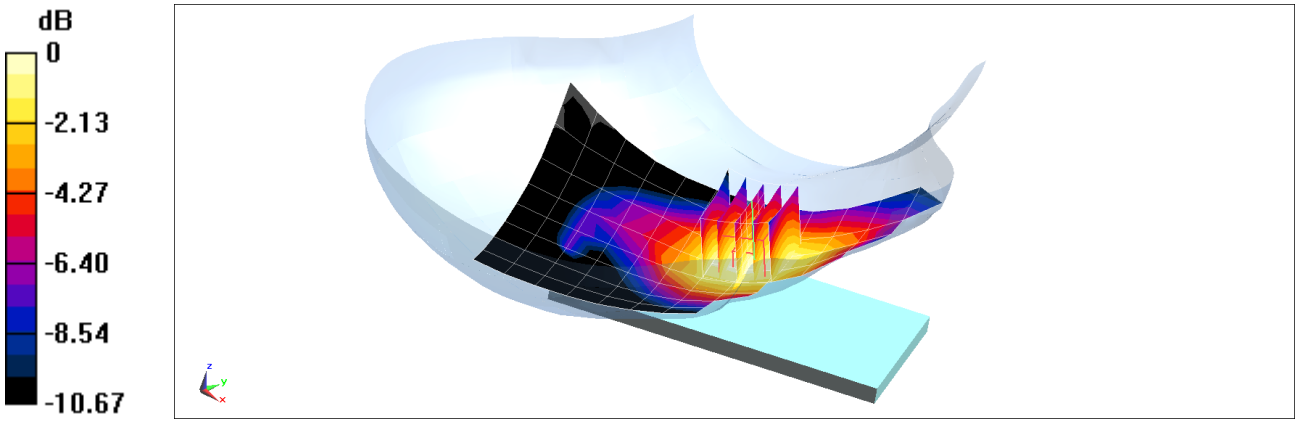
Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.907 S/m; ε_r = 41.926; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 10-23-2017; Ambient Temp: 22.6°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7410; ConvF(10.08, 10.08, 10.08); Calibrated: 7/17/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: GSM 850, Right Head, Cheek, 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 = 14.06 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.215 W/kg
SAR(1 g) = 0.171 W/kg



0 dB = 0.199 W/kg = -7.01 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C55

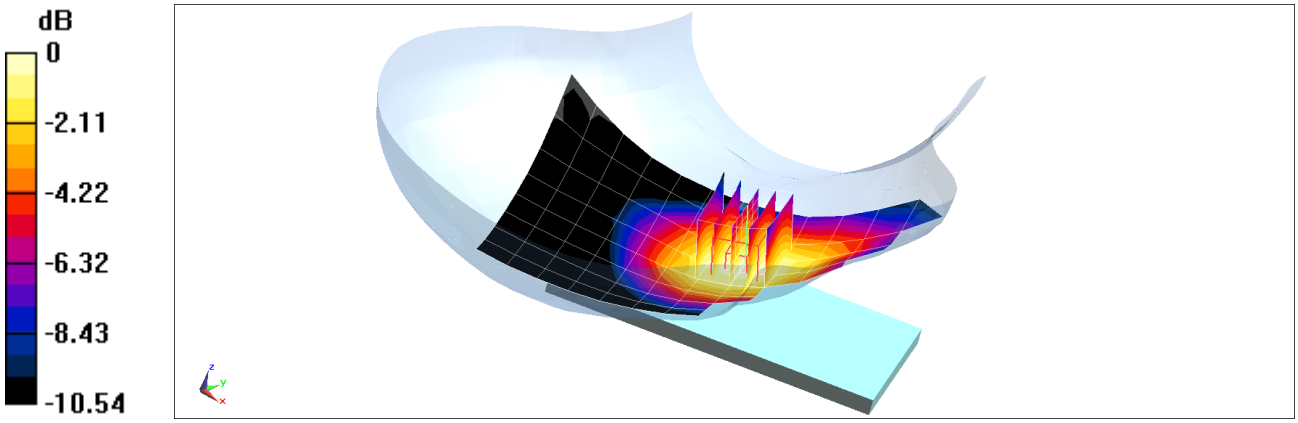
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
$f = 836.6$ MHz; $\sigma = 0.907$ S/m; $\varepsilon_r = 41.926$; $\rho = 1000$ kg/m^3
Phantom section: Right Section

Test Date: 10-23-2017; Ambient Temp: 22.6°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7410; ConvF(10.08, 10.08, 10.08); Calibrated: 7/17/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 850, Right Head, Cheek, 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 = 12.97 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.181 W/kg
SAR(1 g) = 0.145 W/kg



0 dB = 0.169 W/kg = -7.72 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03951

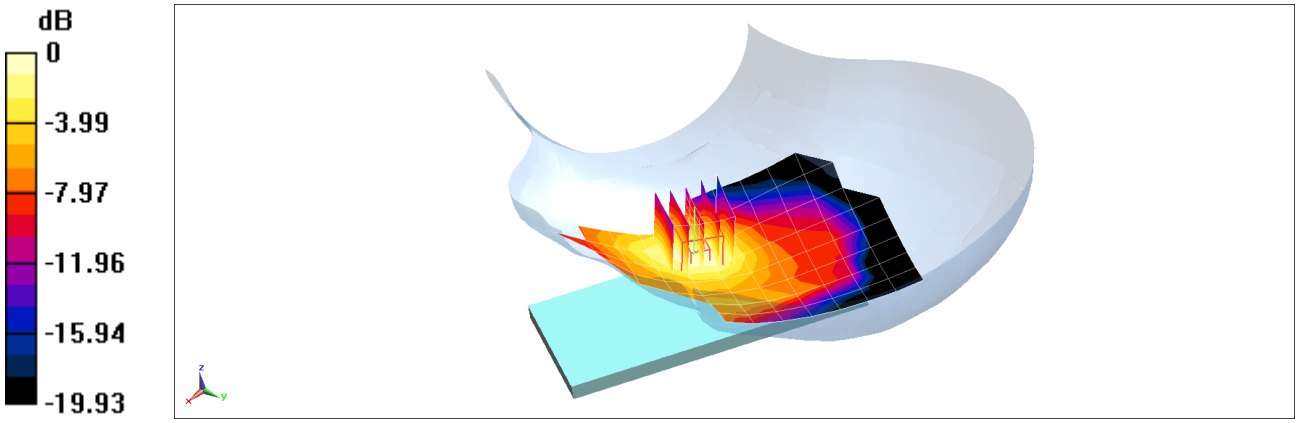
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.372 S/m; ε_r = 40.302; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 10-30-2017; Ambient Temp: 21.9°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(5.5, 5.5, 5.5); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Left; Type: QD000P40CD; Serial: 1692
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1750, 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 = 10.24 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.199 W/kg
SAR(1 g) = 0.130 W/kg



0 dB = 0.153 W/kg = -8.15 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C35

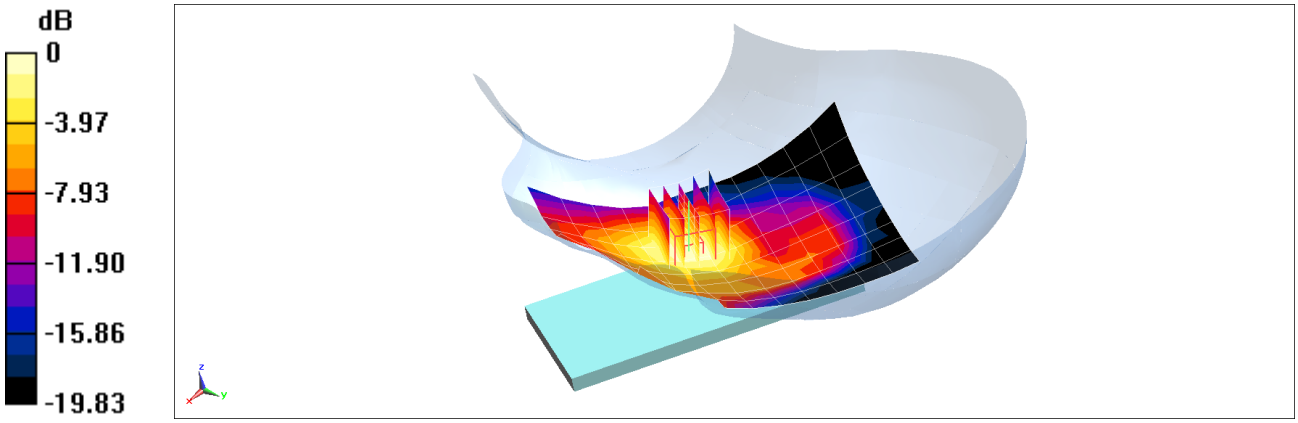
Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.413 S/m; ε_r = 39.747; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 10-23-2017; Ambient Temp: 21.6°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3213; ConvF(5.29, 5.29, 5.29); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: 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 = 7.271 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.0970 W/kg
SAR(1 g) = 0.066 W/kg



0 dB = 0.0760 W/kg = -11.19 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C35

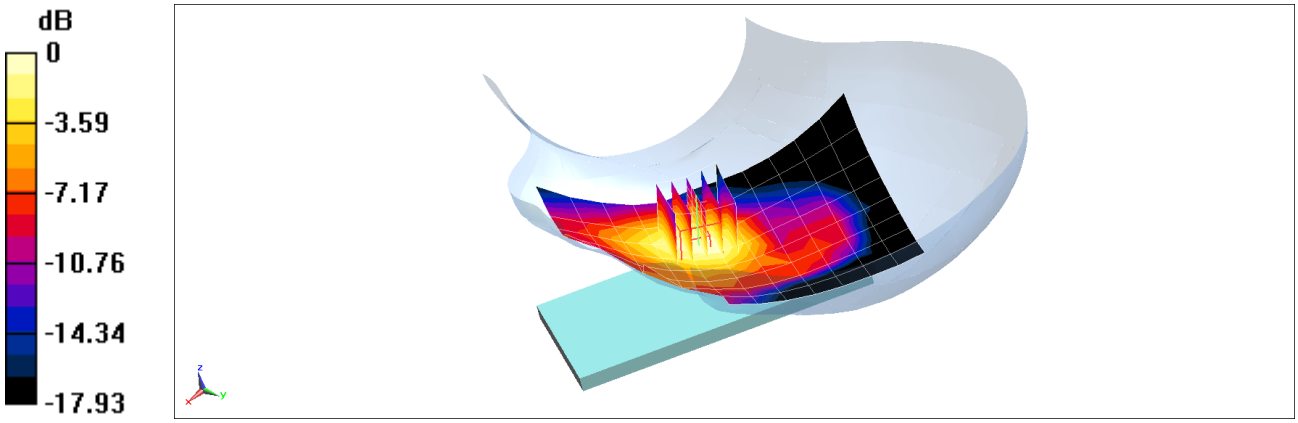
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.413 S/m; ε_r = 39.747; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 10-23-2017; Ambient Temp: 21.6°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3213; ConvF(5.29, 5.29, 5.29); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 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 = 8.170 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.124 W/kg
SAR(1 g) = 0.084 W/kg



0 dB = 0.0976 W/kg = -10.11 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C35

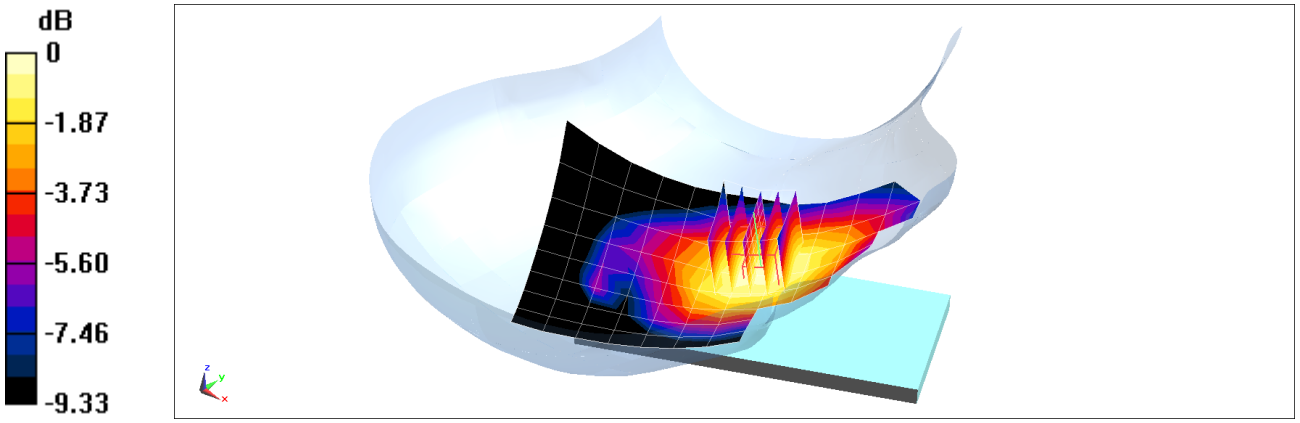
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
$f = 707.5$ MHz; $\sigma = 0.857$ S/m; $\varepsilon_r = 41.258$; $\rho = 1000$ kg/m^3
Phantom section: Right Section

Test Date: 10-23-2017; Ambient Temp: 23.4°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3213; ConvF(6.85, 6.85, 6.85); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Right; Type: SAM; Serial: 1757
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 12, Right Head, Cheek, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 49 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 = 11.24 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.117 W/kg
SAR(1 g) = 0.094 W/kg



0 dB = 0.102 W/kg = -9.91 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C35

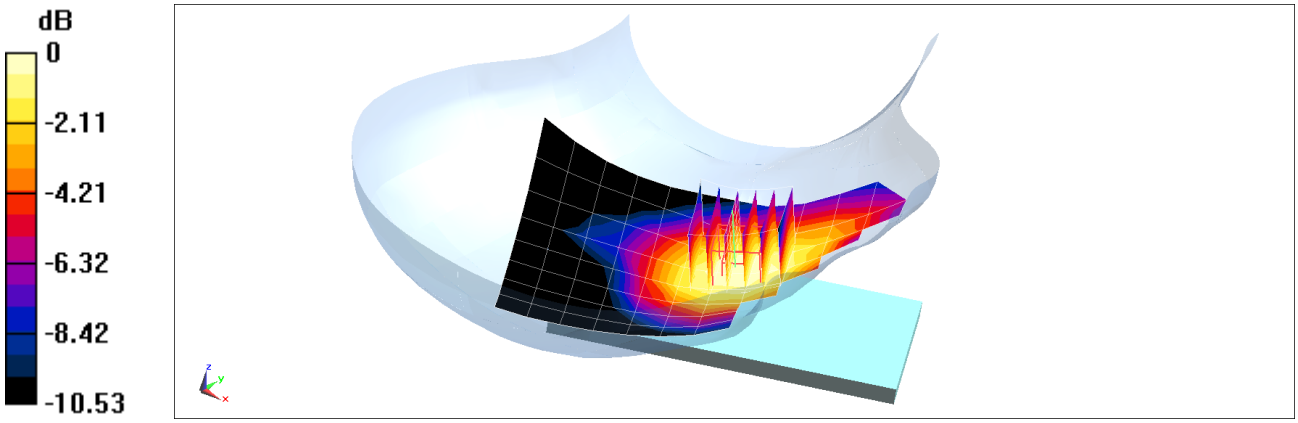
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 782 MHz; σ = 0.936 S/m; ε_r = 40.195; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 10-23-2017; Ambient Temp: 23.4°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3213; ConvF(6.85, 6.85, 6.85); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Right; Type: SAM; Serial: 1757
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 13, Right Head, Cheek, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.890 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.0640 W/kg
SAR(1 g) = 0.049 W/kg



0 dB = 0.0540 W/kg = -12.68 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03BB2

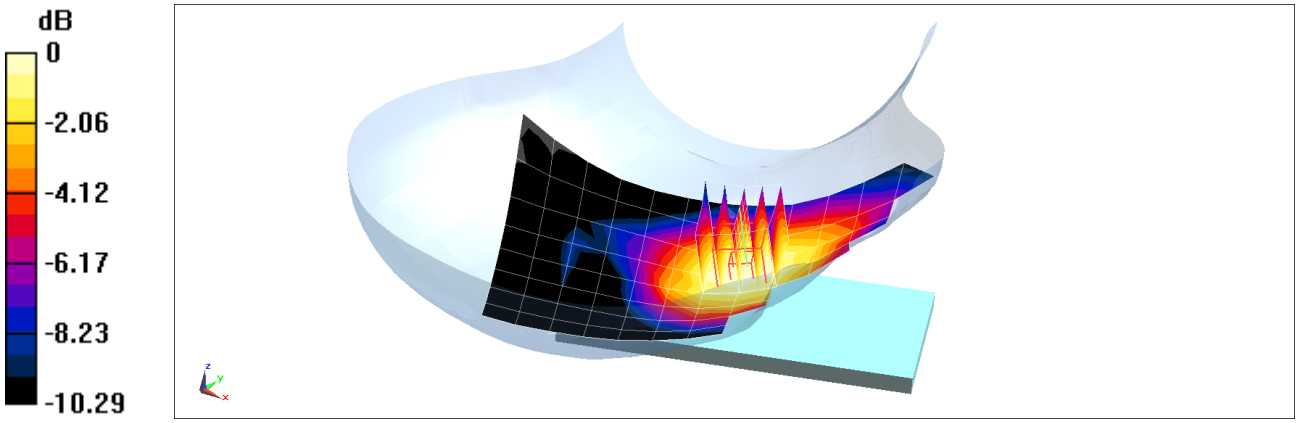
Communication System: UID 0, LTE Band 5 (Cell.); Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.5 MHz; σ = 0.907 S/m; ε_r = 41.927; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 10-23-2017; Ambient Temp: 22.6°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7410; ConvF(10.08, 10.08, 10.08); Calibrated: 7/17/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 5 (Cell.), Right Head, Cheek, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 25 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 = 13.96 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.191 W/kg
SAR(1 g) = 0.158 W/kg



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

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03BB2

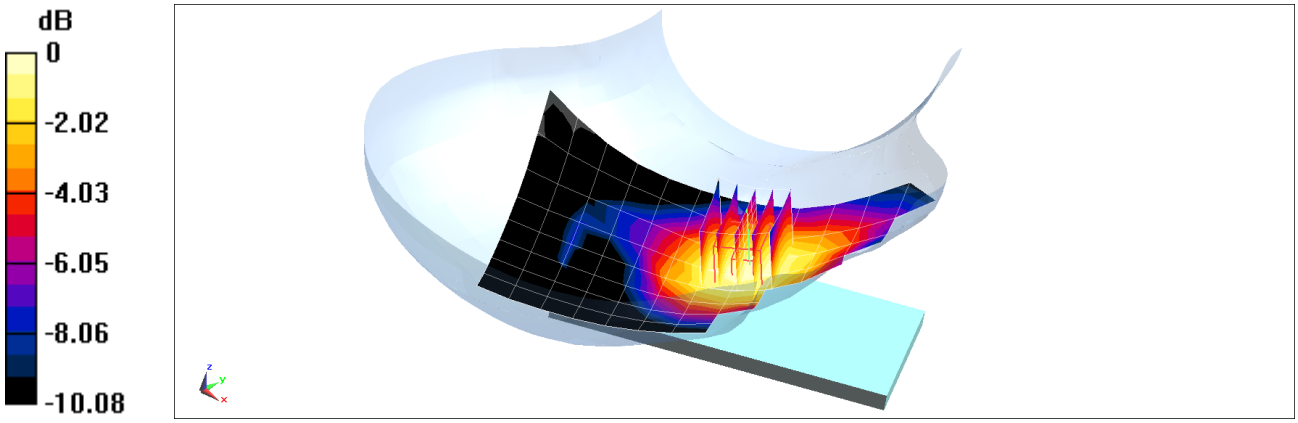
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
$f = 831.5$ MHz; $\sigma = 0.902$ S/m; $\varepsilon_r = 41.993$; $\rho = 1000$ kg/m^3
Phantom section: Right Section

Test Date: 10-23-2017; Ambient Temp: 22.6°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7410; ConvF(10.08, 10.08, 10.08); Calibrated: 7/17/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: 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 = 12.60 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.160 W/kg
SAR(1 g) = 0.129 W/kg



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

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C55

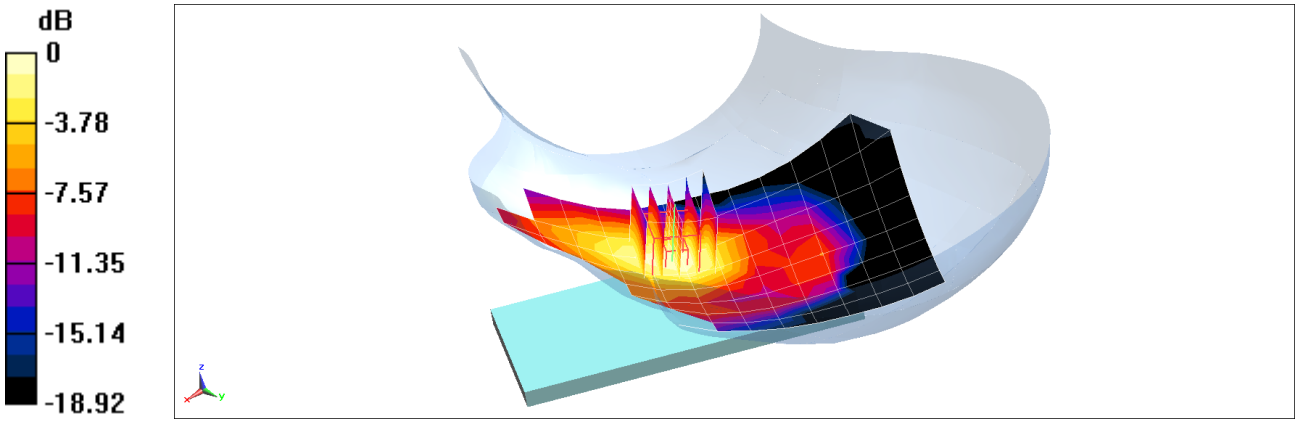
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1770 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
f = 1770 MHz; σ = 1.393 S/m; ε_r = 39.096; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 11-09-2017; Ambient Temp: 24.2°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7410; ConvF(8.66, 8.66, 8.66); Calibrated: 7/17/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 66 (AWS), Left Head, Cheek, High.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 = 9.257 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.152 W/kg
SAR(1 g) = 0.099 W/kg



0 dB = 0.133 W/kg = -8.76 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C35

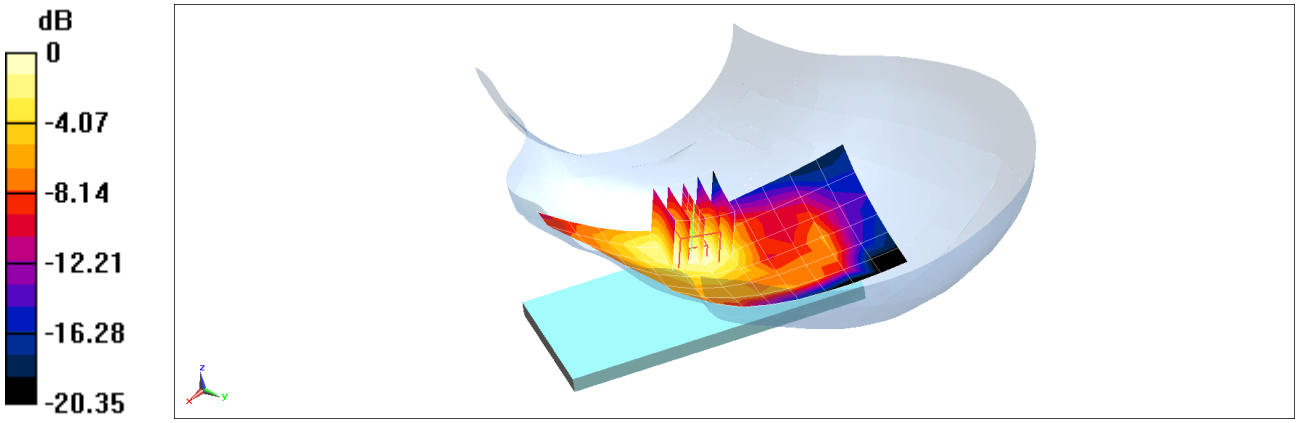
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1882.5 MHz; σ = 1.415 S/m; ε_r = 39.735; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 10-23-2017; Ambient Temp: 21.6°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3213; ConvF(5.29, 5.29, 5.29); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 25 (PCS), Left Head, Cheek, Mid.ch
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.604 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.0960 W/kg
SAR(1 g) = 0.066 W/kg



0 dB = 0.0764 W/kg = -11.17 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03BB2

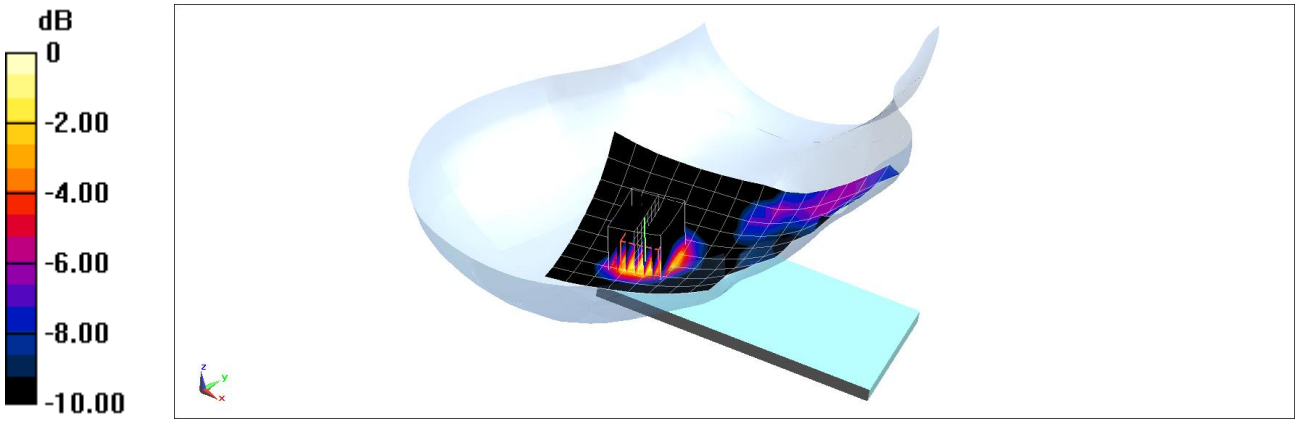
Communication System: UID 0, LTE Band 41; Frequency: 2549.5 MHz; Duty Cycle: 1:1.58
Medium: 2600 Head Medium parameters used:
f = 2550 MHz; σ = 1.984 S/m; ε_r = 38.605; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 10-30-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.7°C

Probe: ES3DV3 - SN3332; ConvF(4.56, 4.56, 4.56); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 41, Right Head, Tilt, Low-Mid.ch
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset

Area Scan (10x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.886 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.0980 W/kg
SAR(1 g) = 0.051 W/kg



0 dB = 0.0647 W/kg = -11.89 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C35

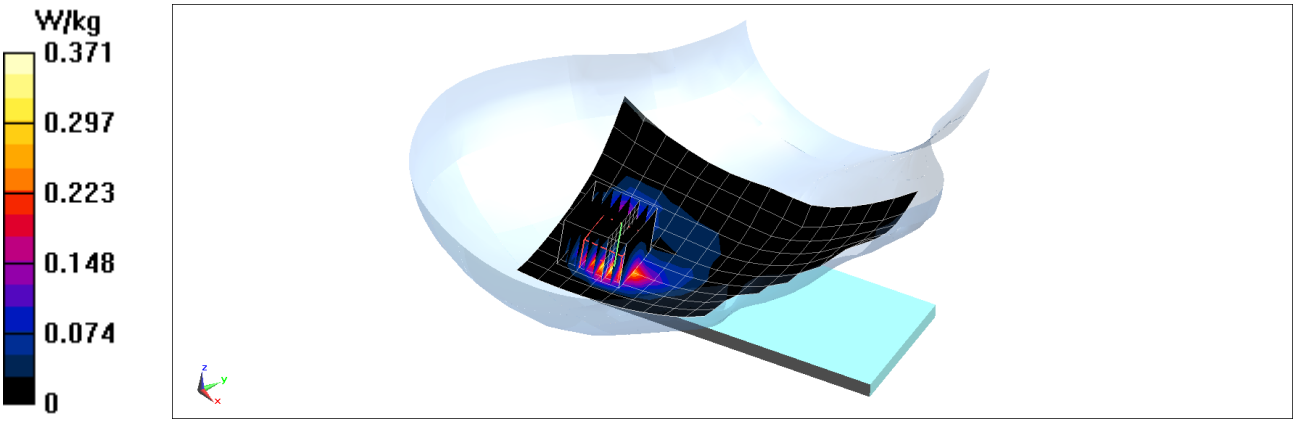
Communication System: UID 0, IEEE 802.11b; Frequency: 2412 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used (interpolated):
$f = 2412$ MHz; $\sigma = 1.825$ S/m; $\varepsilon_r = 39.132$; $\rho = 1000$ kg/m^3
Phantom section: Right Section

Test Date: 10-30-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.7°C

Probe: ES3DV3 - SN3332; ConvF(4.68, 4.68, 4.68); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.640 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.652 W/kg
SAR(1 g) = 0.280 W/kg



DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C55

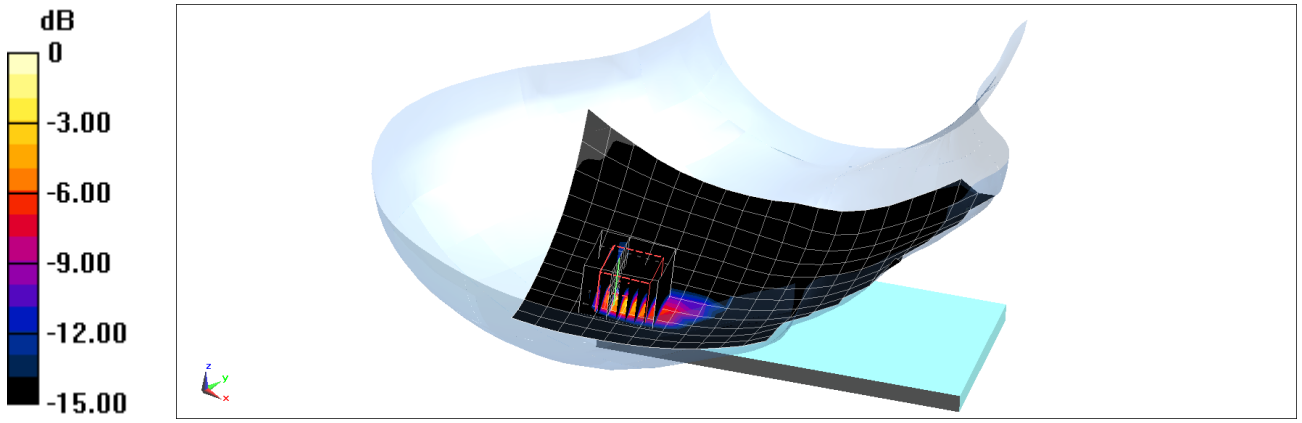
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5825 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head Medium parameters used:
f = 5825 MHz; σ = 5.187 S/m; ε_r = 35.377; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 10-30-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN3914; ConvF(4.91, 4.91, 4.91); Calibrated: 2/13/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/9/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11a, U-NII-3, 20 MHz Bandwidth
Right Head, Cheek, Ch 165, 6 Mbps, Antenna 2

Area Scan (13x22x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 0 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 2.41 W/kg
SAR(1 g) = 0.372 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C55

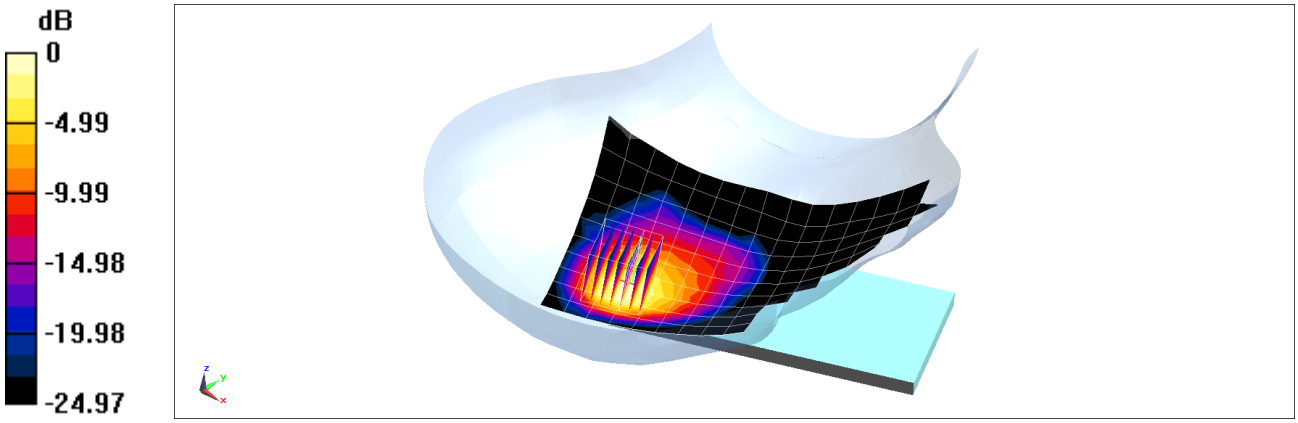
Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.289
Medium: 2450 Head Medium parameters used (interpolated):
$f = 2441$ MHz; $\sigma = 1.855$ S/m; $\varepsilon_r = 39.175$; $\rho = 1000$ kg/m^3
Phantom section: Right Section

Test Date: 11-01-2017; Ambient Temp: 21.5°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3332; ConvF(4.68, 4.68, 4.68); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

Area Scan (11x19x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.13 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.436 W/kg
SAR(1 g) = 0.192 W/kg



0 dB = 0.247 W/kg = -6.07 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03E49

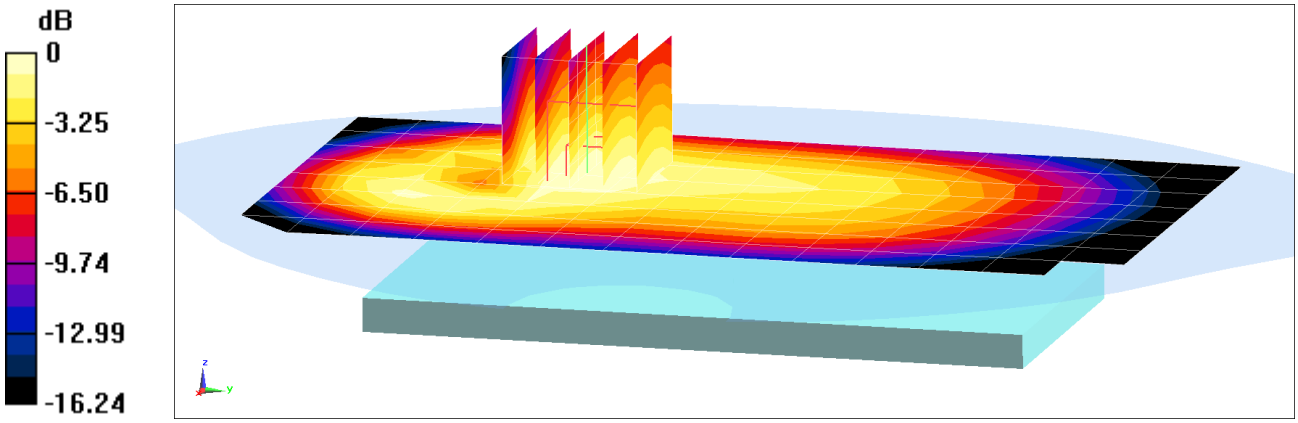
Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Body Medium parameters used (interpolated):
$f = 836.6$ MHz; $\sigma = 1.006$ S/m; $\varepsilon_r = 53.349$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-26-2017; Ambient Temp: 21.5°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: 1800
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: GSM 850, Body SAR, Back side, 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 = 16.50 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.336 W/kg
SAR(1 g) = 0.252 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03E49

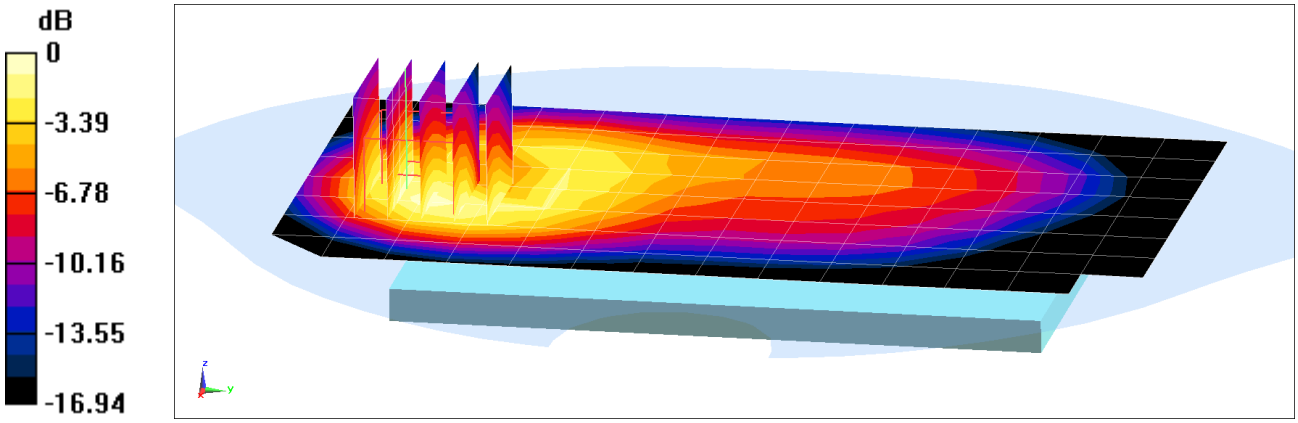
Communication System: UID 0, GSM GPRS; 4 Tx slots; Frequency: 848.8 MHz; Duty Cycle: 1:2.076
Medium: 835 Body Medium parameters used (interpolated):
$f = 848.8$ MHz; $\sigma = 1.019$ S/m; $\varepsilon_r = 53.231$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-26-2017; Ambient Temp: 21.5°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: GPRS 850, Body SAR, Back side, High.ch, 4 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 = 26.95 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.691 W/kg



0 dB = 0.828 W/kg = -0.82 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03951

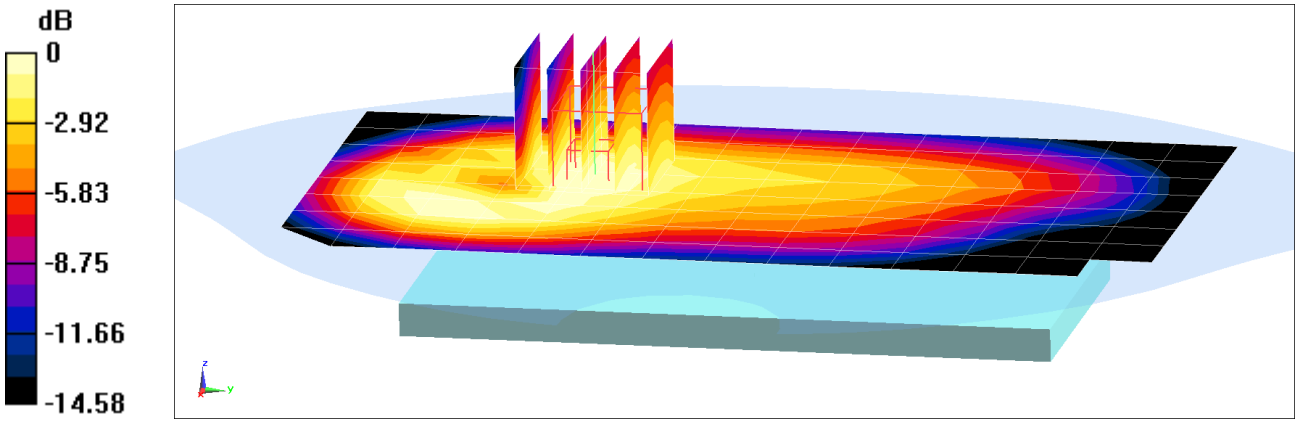
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.982 S/m; ε_r = 54.646; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-01-2017; Ambient Temp: 20.6°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: 1800
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 850, 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 = 14.65 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.260 W/kg
SAR(1 g) = 0.193 W/kg



0 dB = 0.217 W/kg = -6.64 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03951

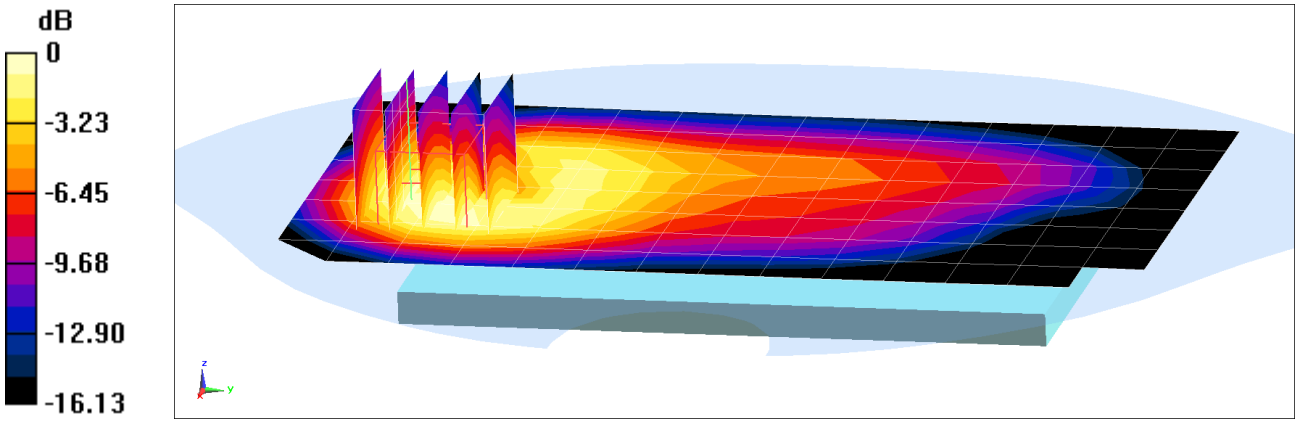
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.982 S/m; ε_r = 54.646; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-01-2017; Ambient Temp: 20.6°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: 1800
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 850, 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 = 20.72 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.644 W/kg
SAR(1 g) = 0.386 W/kg



0 dB = 0.465 W/kg = -3.33 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03951

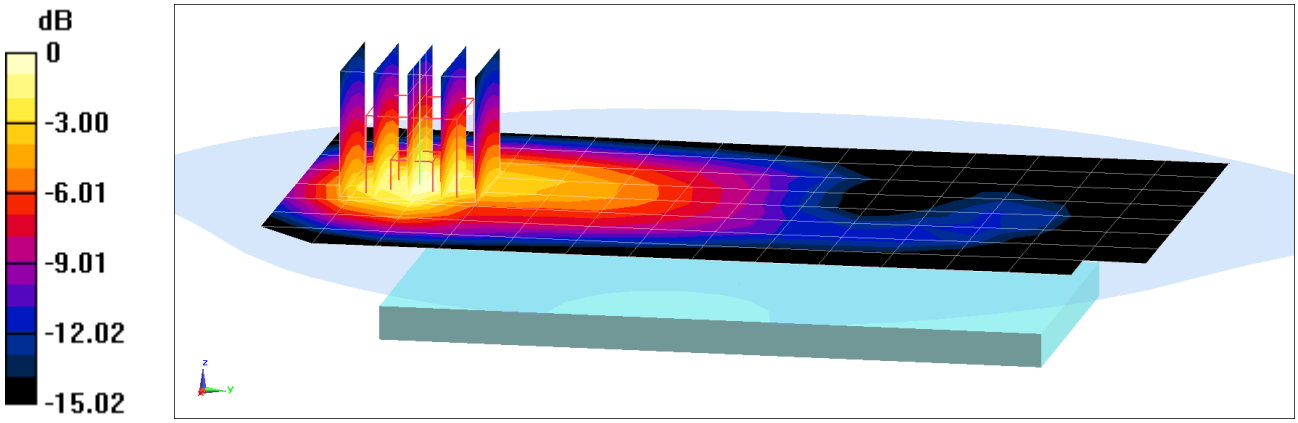
Communication System: UID 0, UMTS; Frequency: 1752.6 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1752.6 MHz; σ = 1.508 S/m; ε_r = 51.625; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-03-2017; Ambient Temp: 21.9°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3209; ConvF(5.13, 5.13, 5.13); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Left; Type: QD000P40CD; Serial: 1692
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.57 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.866 W/kg
SAR(1 g) = 0.557 W/kg



0 dB = 0.668 W/kg = -1.75 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C4C

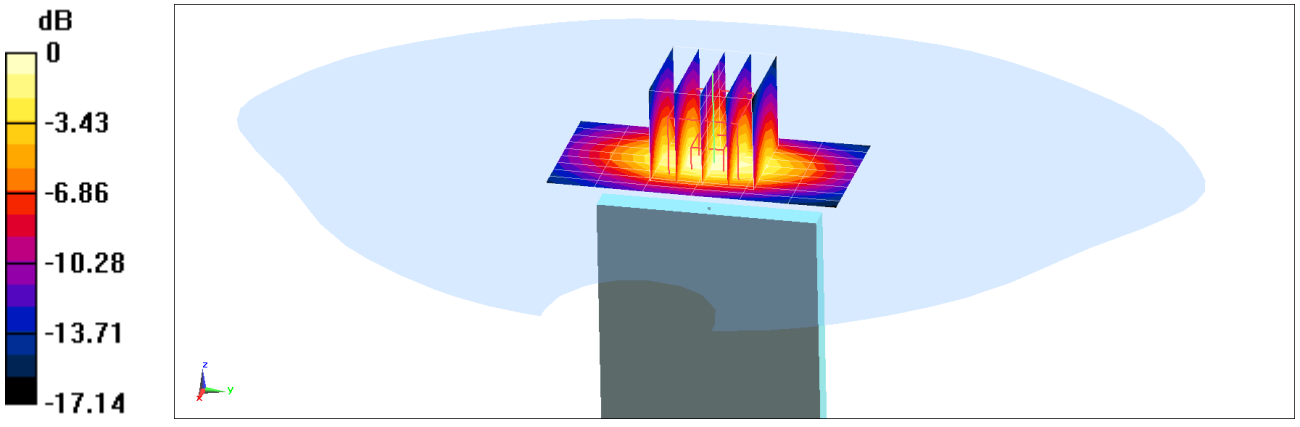
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.465 S/m; ε_r = 52.935; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-13-2017; Ambient Temp: 20.9°C; Tissue Temp: 19.8°C

Probe: ES3DV3 - SN3318; ConvF(5.18, 5.18, 5.18); Calibrated: 9/22/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/14/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.39 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.711 W/kg
SAR(1 g) = 0.426 W/kg



0 dB = 0.526 W/kg = -2.79 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03E49

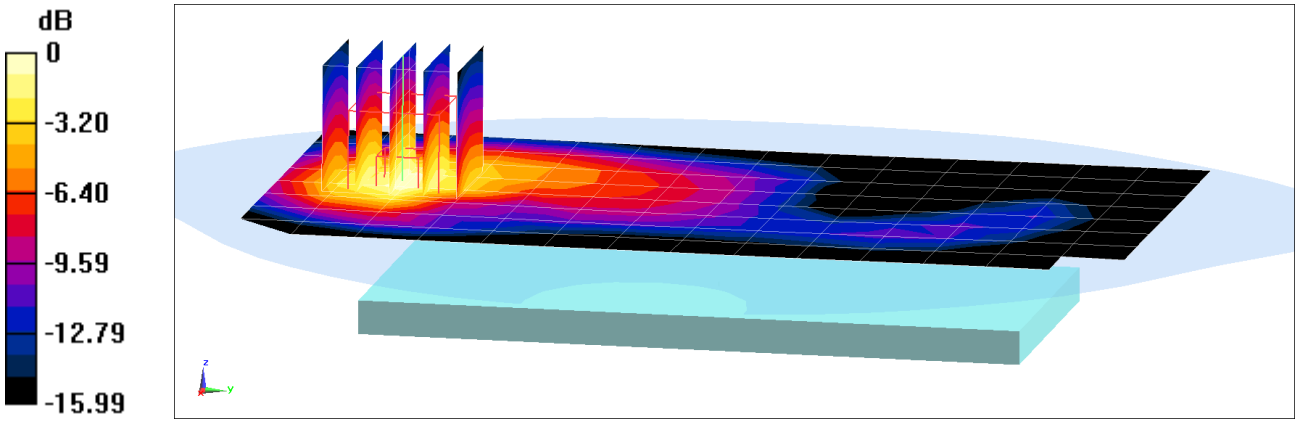
Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.532 S/m; ε_r = 53.738; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-23-2017; Ambient Temp: 21.7°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Left; Type: QD000P40CD; Serial: 1692
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.45 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.438 W/kg
SAR(1 g) = 0.276 W/kg



0 dB = 0.334 W/kg = -4.76 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03E49

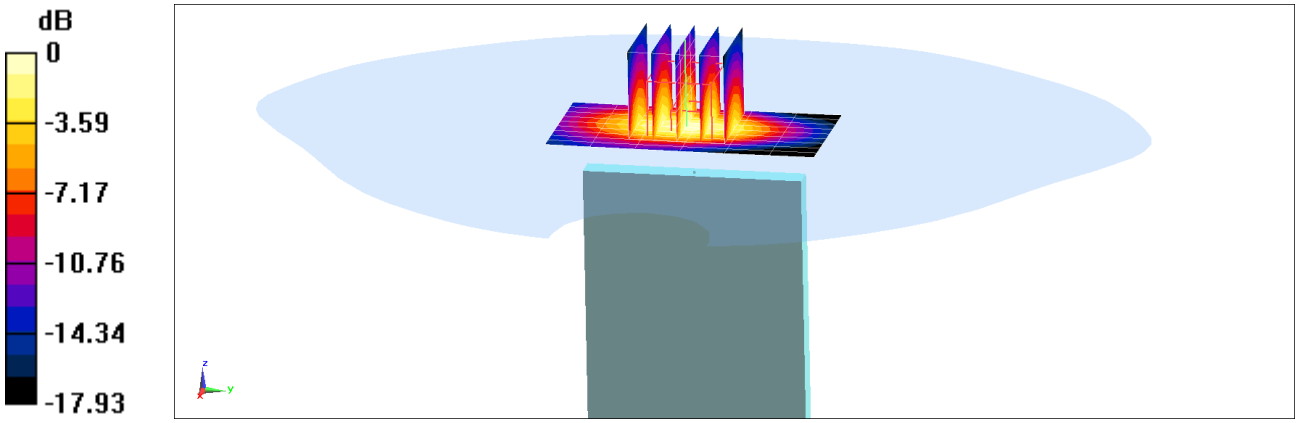
Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 1850.2 MHz; Duty Cycle: 1:2.76
Medium: 1900 Body Medium parameters used (interpolated):
$f = 1850.2$ MHz; $\sigma = 1.499$ S/m; $\varepsilon_r = 53.833$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-23-2017; Ambient Temp: 21.7°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Left; Type: QD000P40CD; Serial: 1692
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.11 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.57 W/kg
SAR(1 g) = 0.931 W/kg



0 dB = 1.16 W/kg = 0.64 dBW/kg

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DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03E49

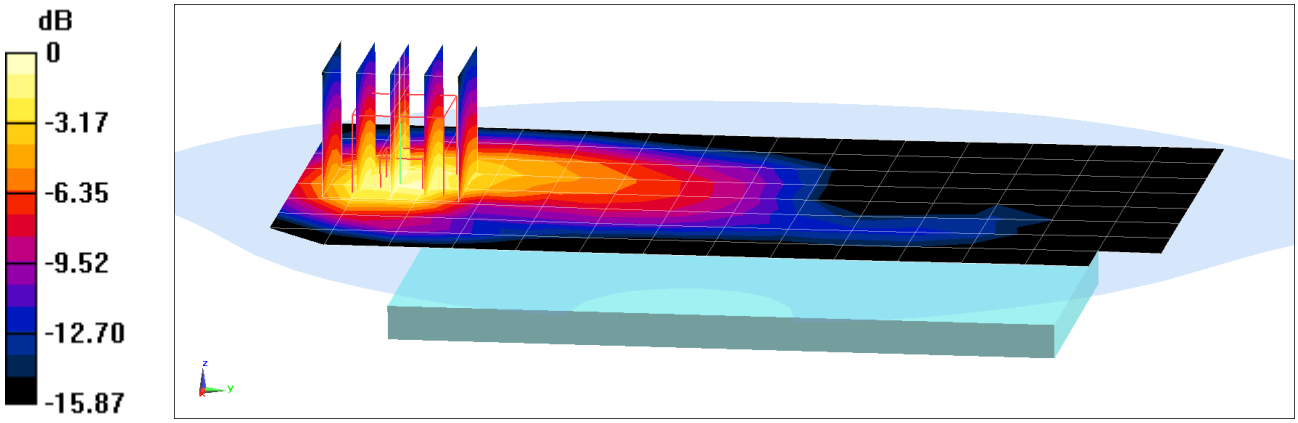
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.557 S/m; ε_r = 53.824; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-25-2017; Ambient Temp: 22.5°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Left; Type: QD000P40CD; Serial: 1692
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.51 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.511 W/kg
SAR(1 g) = 0.324 W/kg



0 dB = 0.391 W/kg = -4.08 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03E49

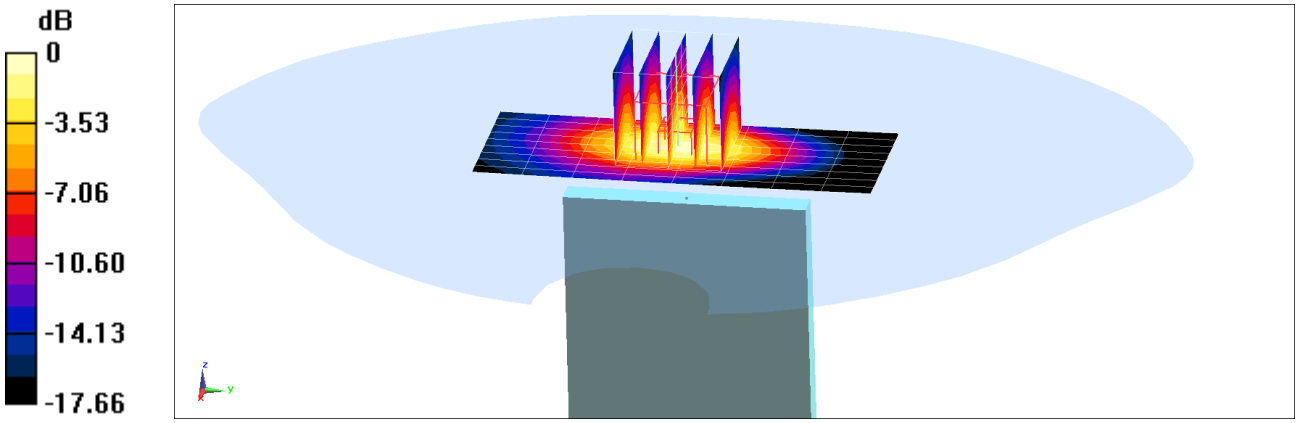
Communication System: UID 0, UMTS; Frequency: 1852.4 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1852.4 MHz; σ = 1.526 S/m; ε_r = 53.908; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-25-2017; Ambient Temp: 22.5°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Left; Type: QD000P40CD; Serial: 1692
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.45 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.75 W/kg
SAR(1 g) = 1.05 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C35

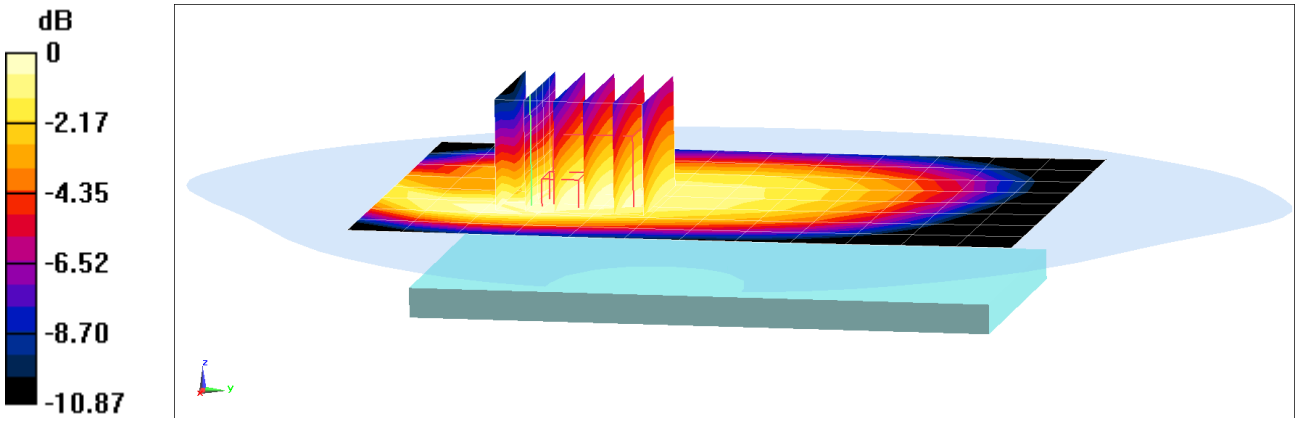
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.936 S/m; ε_r = 56.178; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-25-2017; Ambient Temp: 23.4°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3213; ConvF(6.38, 6.38, 6.38); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 12, Body SAR, Back side, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.92 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.236 W/kg
SAR(1 g) = 0.169 W/kg



0 dB = 0.189 W/kg = -7.24 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C35

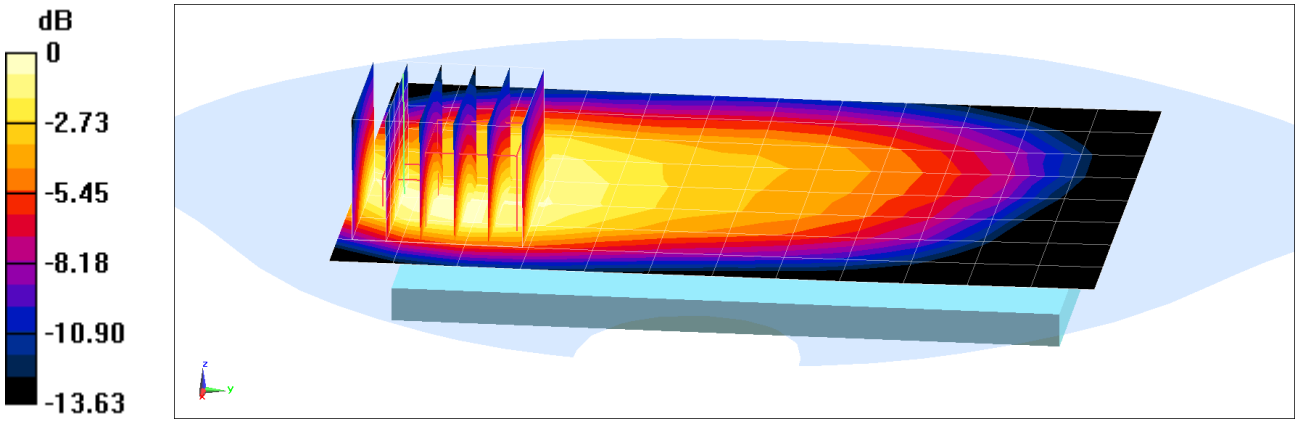
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.936 S/m; ε_r = 56.178; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-25-2017; Ambient Temp: 23.4°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3213; ConvF(6.38, 6.38, 6.38); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 12, Body SAR, Back side, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.81 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.453 W/kg
SAR(1 g) = 0.270 W/kg



0 dB = 0.326 W/kg = -4.87 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03951

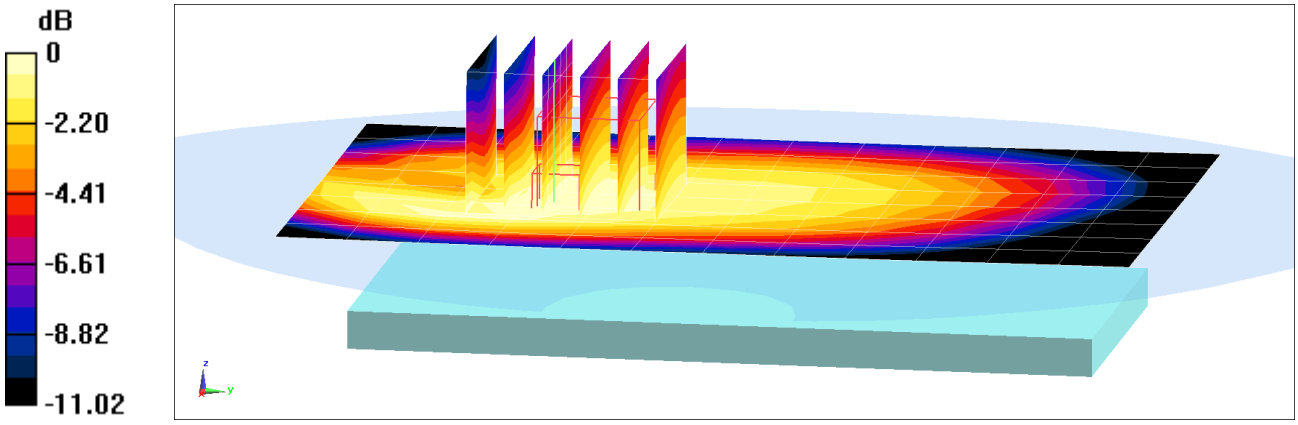
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 782 MHz; σ = 1.008 S/m; ε_r = 55.392; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-25-2017; Ambient Temp: 23.4°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3213; ConvF(6.38, 6.38, 6.38); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 13, Body SAR, Back side, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.83 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.249 W/kg
SAR(1 g) = 0.179 W/kg



0 dB = 0.201 W/kg = -6.97 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03951

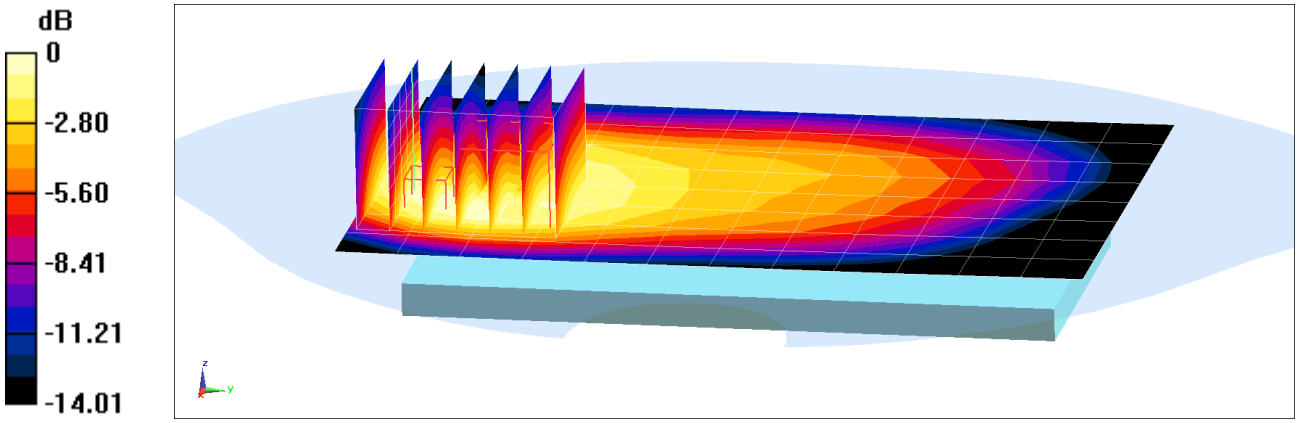
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 782 MHz; σ = 1.008 S/m; ε_r = 55.392; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-25-2017; Ambient Temp: 23.4°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3213; ConvF(6.38, 6.38, 6.38); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 13, Body SAR, Back side, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.44 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.479 W/kg
SAR(1 g) = 0.280 W/kg



0 dB = 0.342 W/kg = -4.66 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03BB2

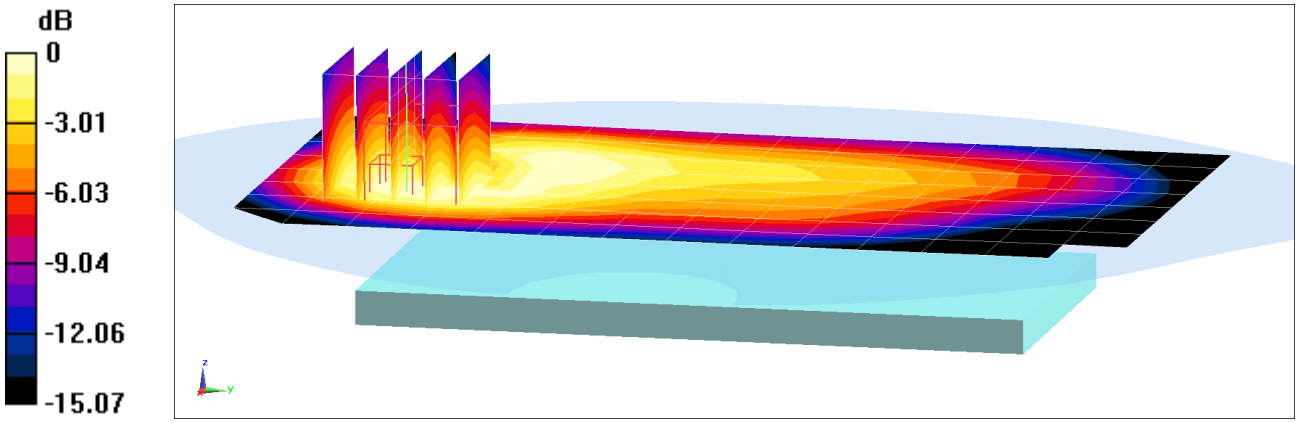
Communication System: UID 0, LTE Band 5; Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.5 MHz; σ = 1.006 S/m; ε_r = 53.35; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-26-2017; Ambient Temp: 21.5°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: 1800
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 5 (Cell.), Body SAR, Back side, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 25 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 = 16.48 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.384 W/kg
SAR(1 g) = 0.247 W/kg



0 dB = 0.290 W/kg = -5.38 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03BB2

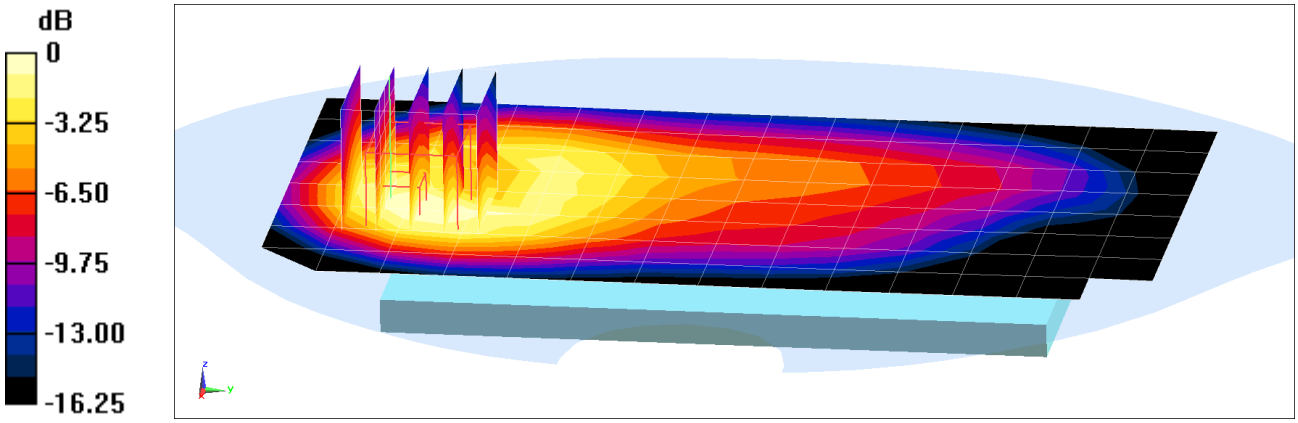
Communication System: UID 0, LTE Band 5; Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.5 MHz; σ = 1.006 S/m; ε_r = 53.35; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-26-2017; Ambient Temp: 21.5°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: 1800
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 5 (Cell.), Body SAR, Back side, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.82 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.872 W/kg
SAR(1 g) = 0.521 W/kg



0 dB = 0.629 W/kg = -2.01 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03BB2

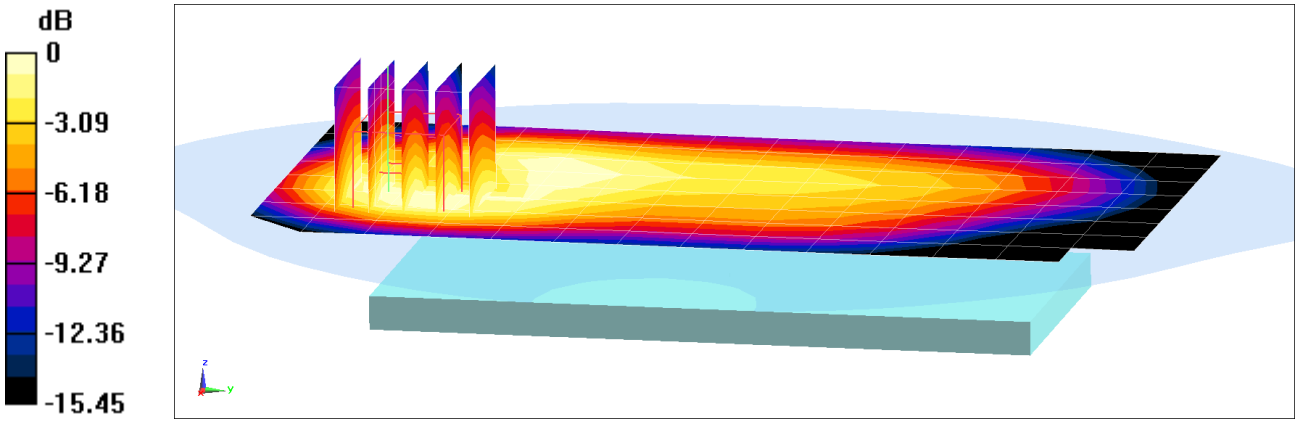
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 831.5 MHz; σ = 1 S/m; ε_r = 53.4; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-26-2017; Ambient Temp: 21.5°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: 1800
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 26 (Cell.), Body SAR, Back side, Mid.ch
15 MHz Bandwidth, QPSK, 1 RB, 36 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 = 14.69 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.311 W/kg
SAR(1 g) = 0.198 W/kg



0 dB = 0.232 W/kg = -6.35 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03BB2

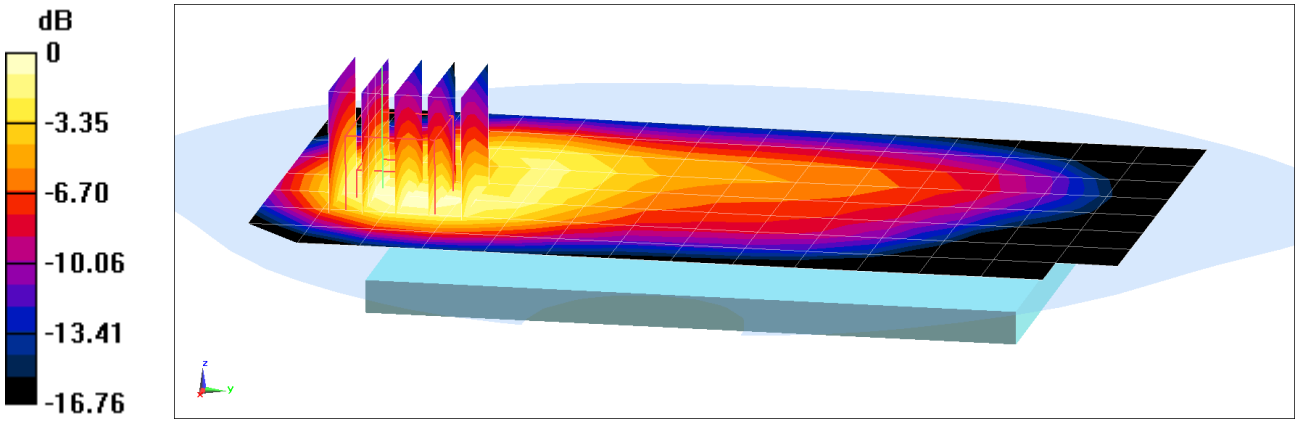
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 831.5 MHz; σ = 1 S/m; ε_r = 53.4; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-26-2017; Ambient Temp: 21.5°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: 1800
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.09 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.704 W/kg
SAR(1 g) = 0.418 W/kg



0 dB = 0.504 W/kg = -2.98 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C55

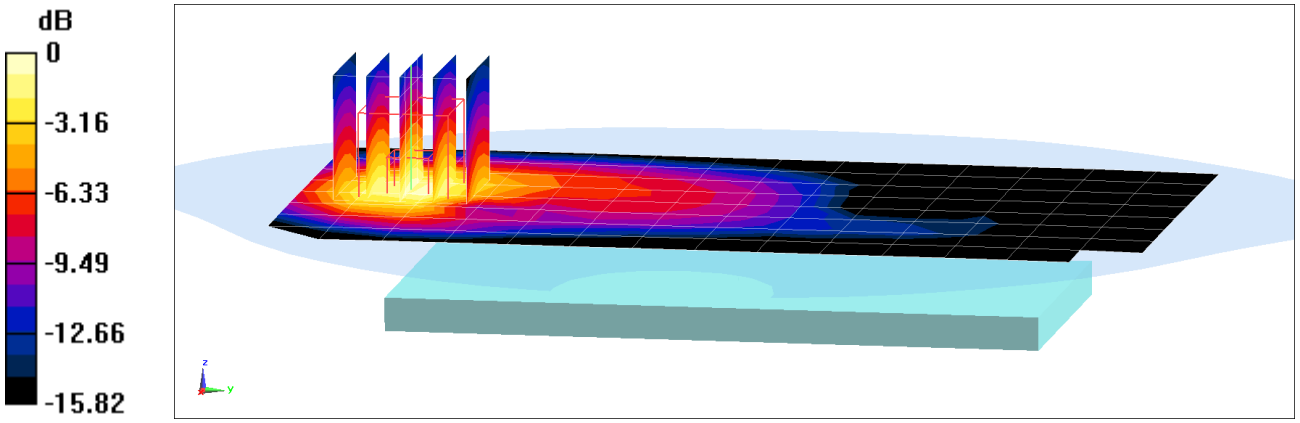
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1770 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1770 MHz; σ = 1.538 S/m; ε_r = 50.92; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-25-2017; Ambient Temp: 22.1°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7406; ConvF(8.08, 8.08, 8.08); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 66 (AWS), Body SAR, Back side, High.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 = 18.36 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.777 W/kg
SAR(1 g) = 0.475 W/kg



0 dB = 0.674 W/kg = -1.71 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C4C

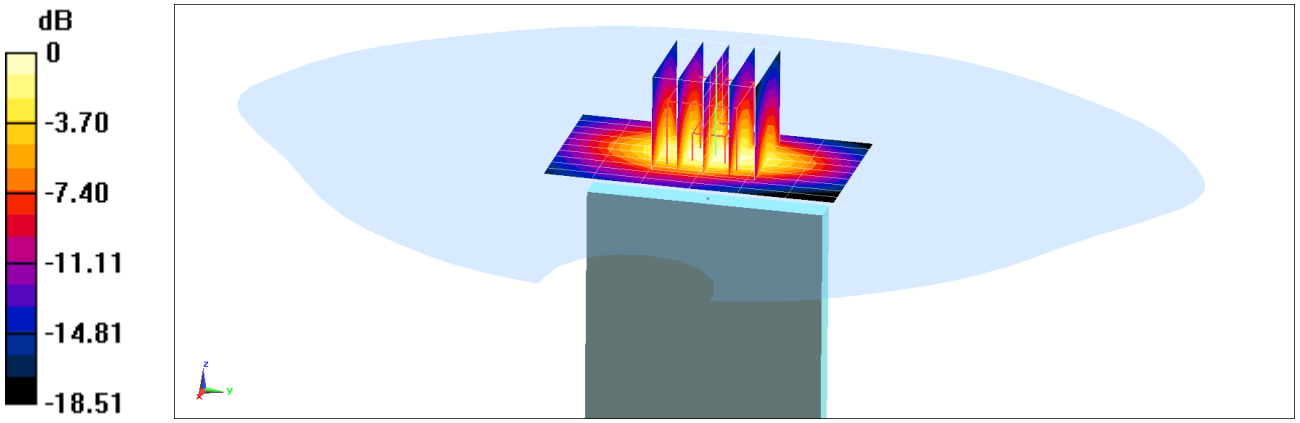
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1770 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1770 MHz; σ = 1.502 S/m; ε_r = 50.828; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-15-2017; Ambient Temp: 23.3°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN7406; ConvF(8.08, 8.08, 8.08); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 66 (AWS), Body SAR, Bottom Edge, High.ch
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset

Area Scan (11x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.08 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.69 W/kg
SAR(1 g) = 0.968 W/kg



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

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03E49

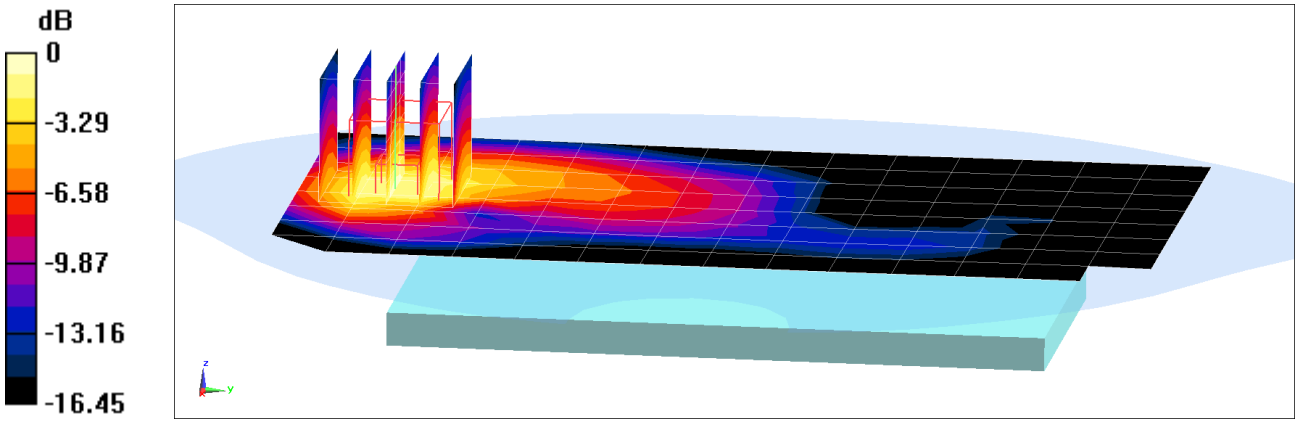
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1882.5 MHz; σ = 1.535 S/m; ε_r = 53.731; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-23-2017; Ambient Temp: 21.7°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Left; Type: QD000P40CD; Serial: 1692
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 25 (PCS), Body SAR, Back side, Mid.ch
20 MHz Bandwidth, QPSK, 1 RB, 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 = 15.32 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.499 W/kg
SAR(1 g) = 0.315 W/kg



0 dB = 0.381 W/kg = -4.19 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03E49

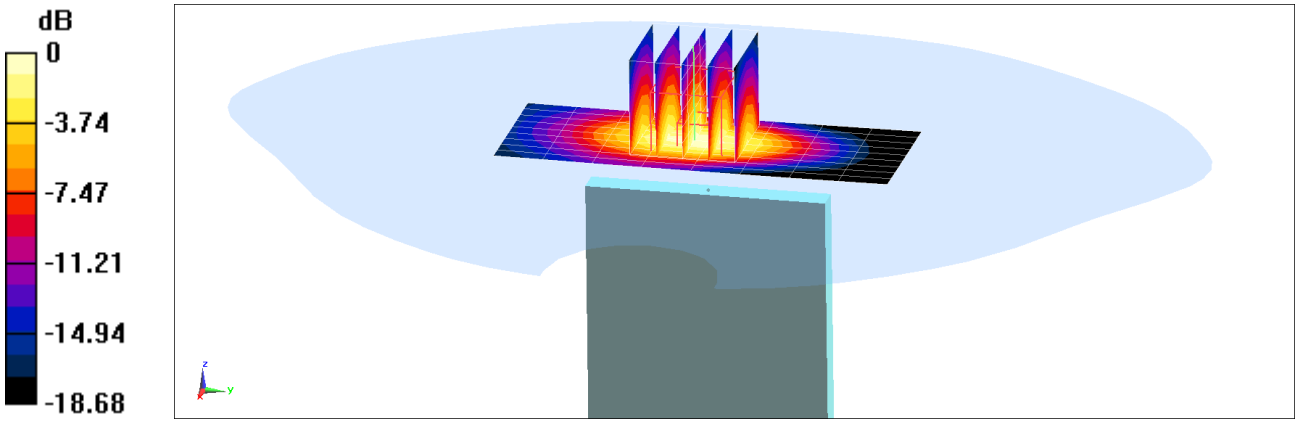
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1905 MHz; σ = 1.56 S/m; ε_r = 53.671; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-23-2017; Ambient Temp: 21.7°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Left; Type: QD000P40CD; Serial: 1692
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 25 (PCS), Body SAR, Bottom Edge, High.ch
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.35 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.67 W/kg
SAR(1 g) = 0.988 W/kg



0 dB = 1.23 W/kg = 0.90 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03951

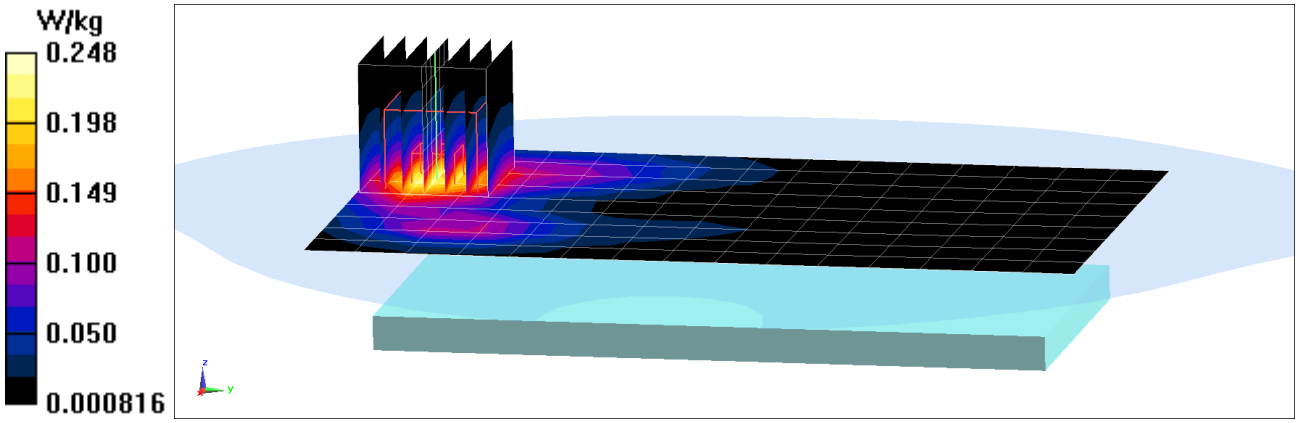
Communication System: UID 0, LTE Band 41; Frequency: 2549.5 MHz; Duty Cycle: 1:1.58
Medium: 2600 Body Medium parameters used:
f = 2550 MHz; σ = 2.144 S/m; ε_r = 52.279; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-01-2017; Ambient Temp: 22.3°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3319; ConvF(4.18, 4.18, 4.18); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/8/2017
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: 1648
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 41, Body SAR, Back side, Low-Mid.ch
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset

Area Scan (10x16x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.25 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.375 W/kg
SAR(1 g) = 0.196 W/kg



DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03951

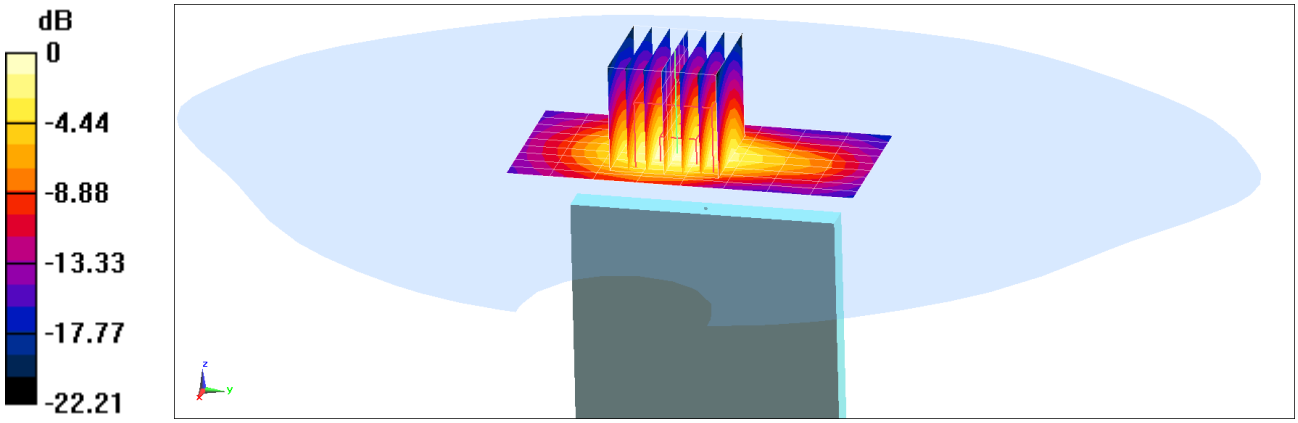
Communication System: UID 0, LTE Band 41; Frequency: 2506 MHz; Duty Cycle: 1:1.58
Medium: 2450 Body Medium parameters used (interpolated):
f = 2506 MHz; σ = 2.08 S/m; ε_r = 52.438; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-01-2017; Ambient Temp: 22.3°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3319; ConvF(4.42, 4.42, 4.42); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/8/2017
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: 1648
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 41, Body SAR, Bottom Edge, Low.ch
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.88 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 1.79 W/kg
SAR(1 g) = 0.900 W/kg



0 dB = 1.18 W/kg = 0.72 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C4C

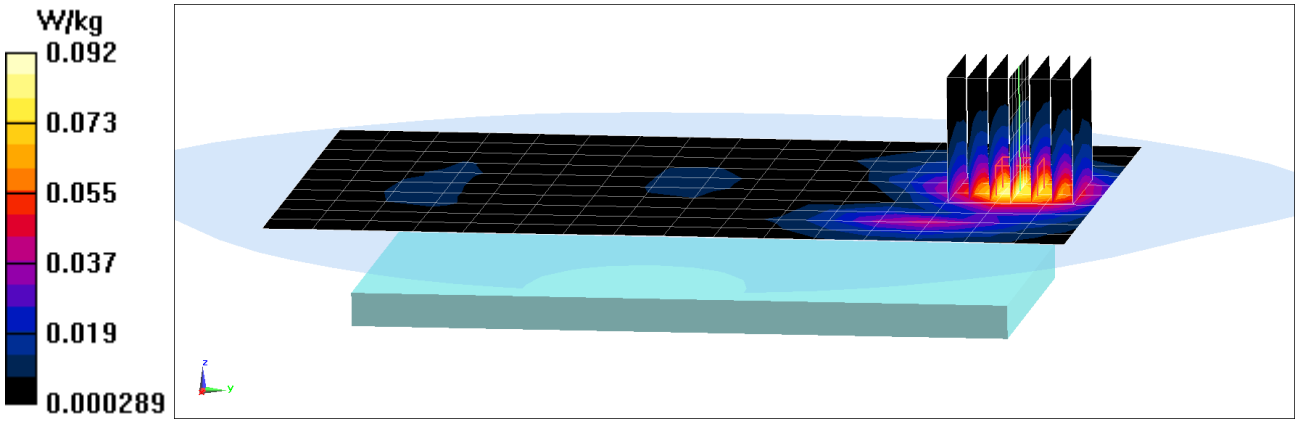
Communication System: UID 0, IEEE 802.11b; Frequency: 2412 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2412 MHz; σ = 1.987 S/m; ε_r = 51.304; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-29-2017; Ambient Temp: 20.4°C; Tissue Temp: 20.1°C

Probe: ES3DV3 - SN3319; ConvF(4.42, 4.42, 4.42); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/8/2017
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: 1648
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.487 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.138 W/kg
SAR(1 g) = 0.073 W/kg



DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C4C

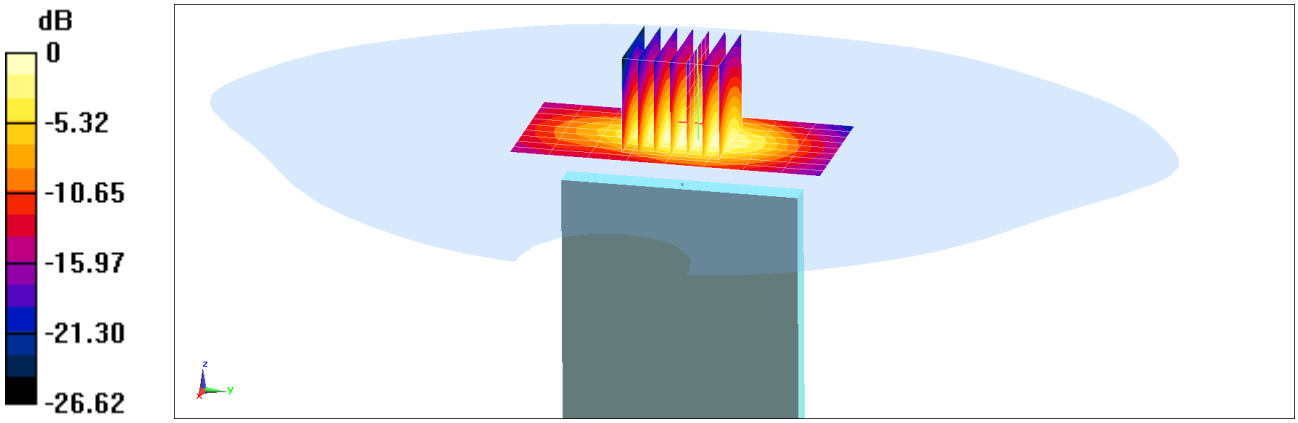
Communication System: UID 0, IEEE 802.11b; Frequency: 2412 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2412 MHz; σ = 1.987 S/m; ε_r = 51.304; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-29-2017; Ambient Temp: 20.4°C; Tissue Temp: 20.1°C

Probe: ES3DV3 - SN3319; ConvF(4.42, 4.42, 4.42); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/8/2017
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: 1648
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.15 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.527 W/kg
SAR(1 g) = 0.265 W/kg



0 dB = 0.339 W/kg = -4.70 dBW/kg

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C35

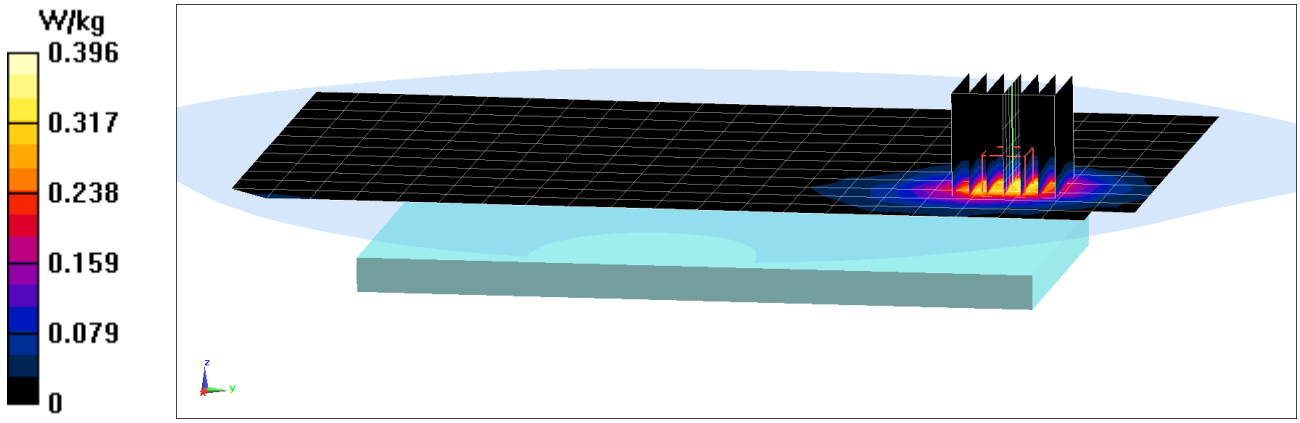
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5825 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5825 MHz; σ = 6.279 S/m; ε_r = 47.432; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-30-2017; Ambient Temp: 22.5°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7308; ConvF(4.5, 4.5, 4.5); Calibrated: 8/16/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/14/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11a, UNII-3, 20 MHz Bandwidth
Body SAR, Ch 165, 6 Mbps, Back Side, 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 = 5.203 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.763 W/kg
SAR(1 g) = 0.159 W/kg



DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C35

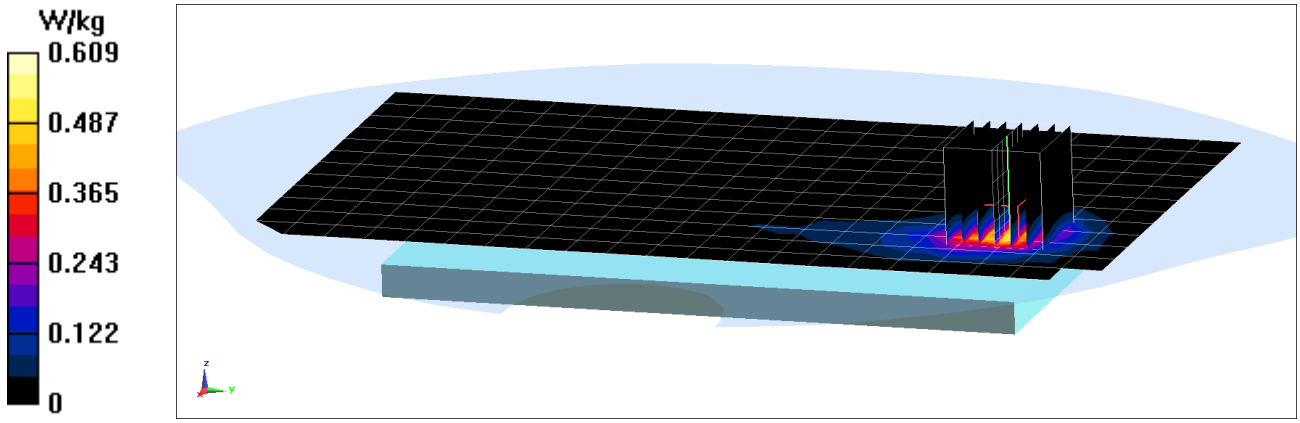
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5825 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5825 MHz; σ = 6.279 S/m; ε_r = 47.432; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-30-2017; Ambient Temp: 22.5°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7308; ConvF(4.5, 4.5, 4.5); Calibrated: 8/16/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/14/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11a, UNII-3, 20 MHz Bandwidth
Body SAR, Ch 165, 6 Mbps, Back Side, 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 = 6.223 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.17 W/kg
SAR(1 g) = 0.238 W/kg



DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C4C

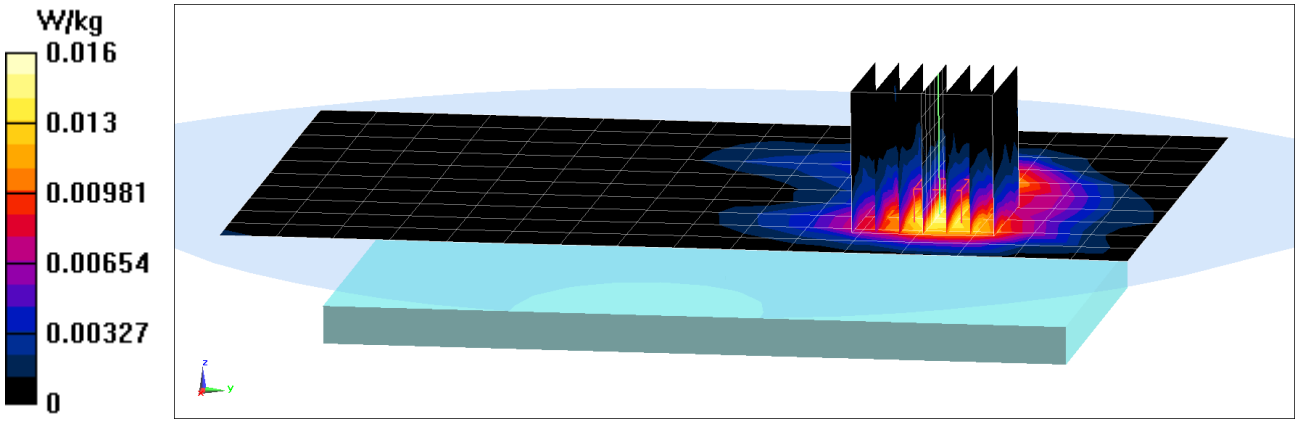
Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.289
Medium: 2450 Body Medium parameters used (interpolated):
f = 2441 MHz; σ = 1.992 S/m; ε_r = 52.689; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-01-2017; Ambient Temp: 22.3°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3319; ConvF(4.42, 4.42, 4.42); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/8/2017
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: 1648
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.684 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.0270 W/kg
SAR(1 g) = 0.012 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C4C

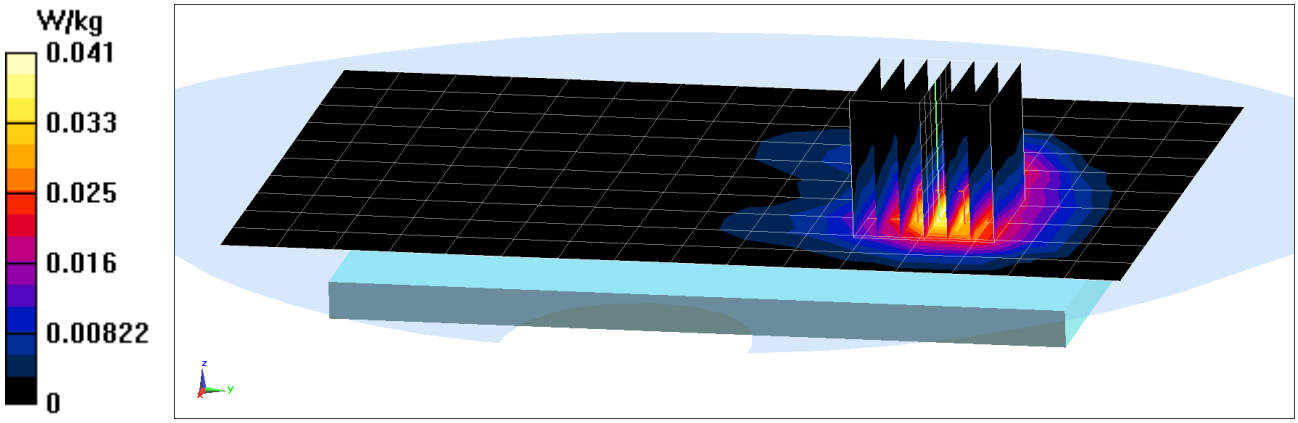
Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.289
Medium: 2450 Body Medium parameters used (interpolated):
f = 2441 MHz; σ = 1.992 S/m; ε_r = 52.689; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-01-2017; Ambient Temp: 22.3°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3319; ConvF(4.42, 4.42, 4.42); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/8/2017
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: 1648
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.302 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.0680 W/kg
SAR(1 g) = 0.032 W/kg



DUT: A3LSMG965KOR; Type: Portable Handset; Serial: 03C35

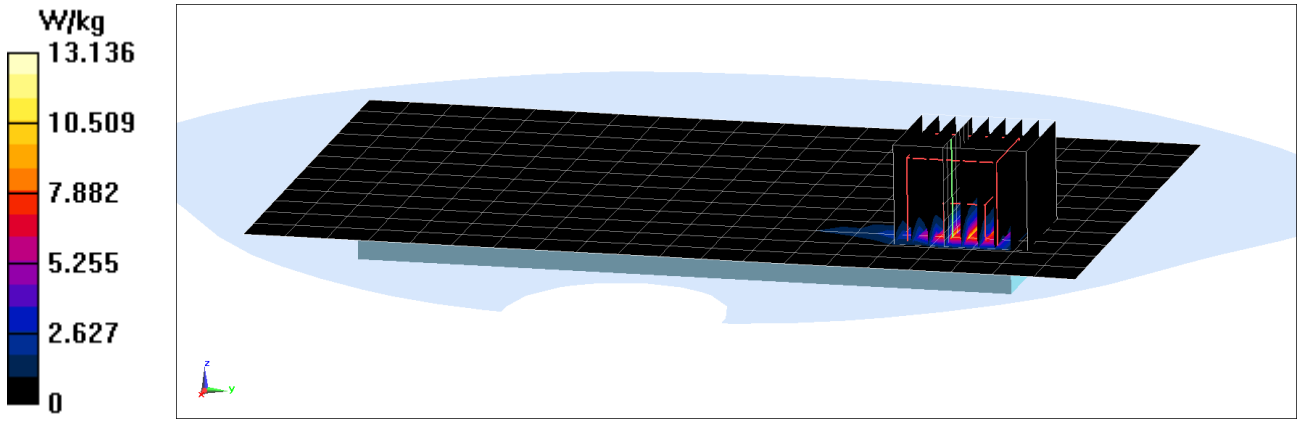
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5620 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5620 MHz; σ = 5.964 S/m; ε_r = 47.804; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 10-30-2017; Ambient Temp: 22.5°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7308; ConvF(4.23, 4.23, 4.23); Calibrated: 8/16/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/14/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

Area Scan (13x21x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 28.21 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 36.4 W/kg
SAR(10 g) = 1.18 W/kg



APPENDIX B: SYSTEM VERIFICATION

PCTEST ENGINEERING LABORATORY, INC.

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

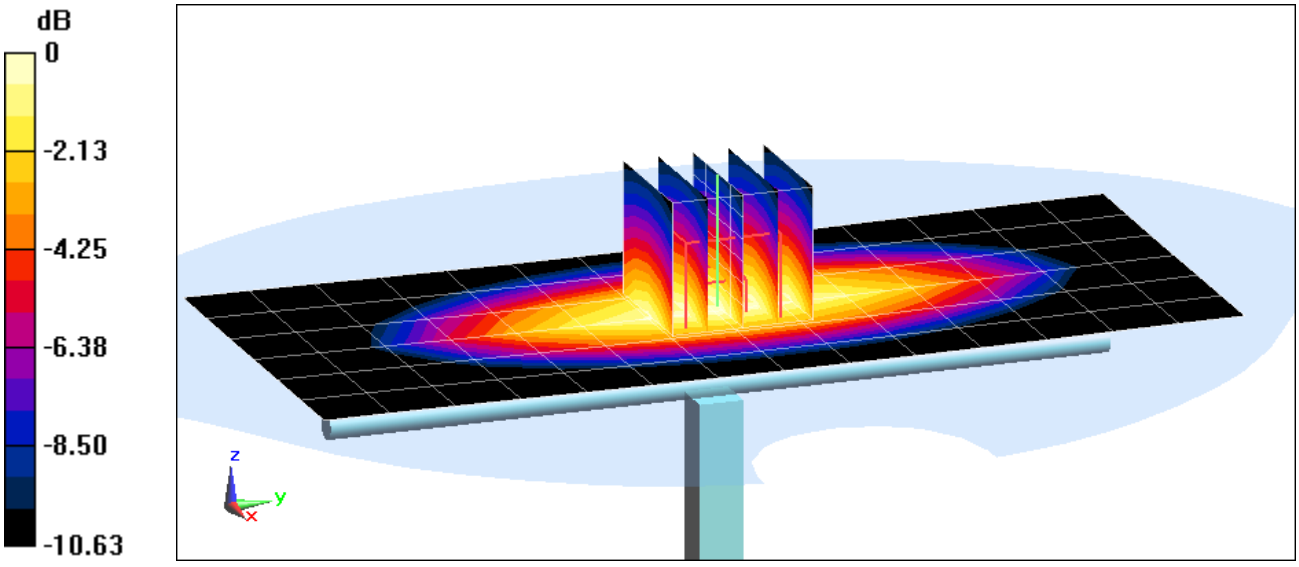
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 750 MHz; σ = 0.908 S/m; ε_r = 40.612; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-23-2017; Ambient Temp: 23.4°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3213; ConvF(6.85, 6.85, 6.85); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Right; Type: SAM; Serial: 1757
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

750 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.48 W/kg
SAR(1 g) = 1.64 W/kg
Deviation(1 g) = -2.26%



0 dB = 1.93 W/kg = 2.86 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

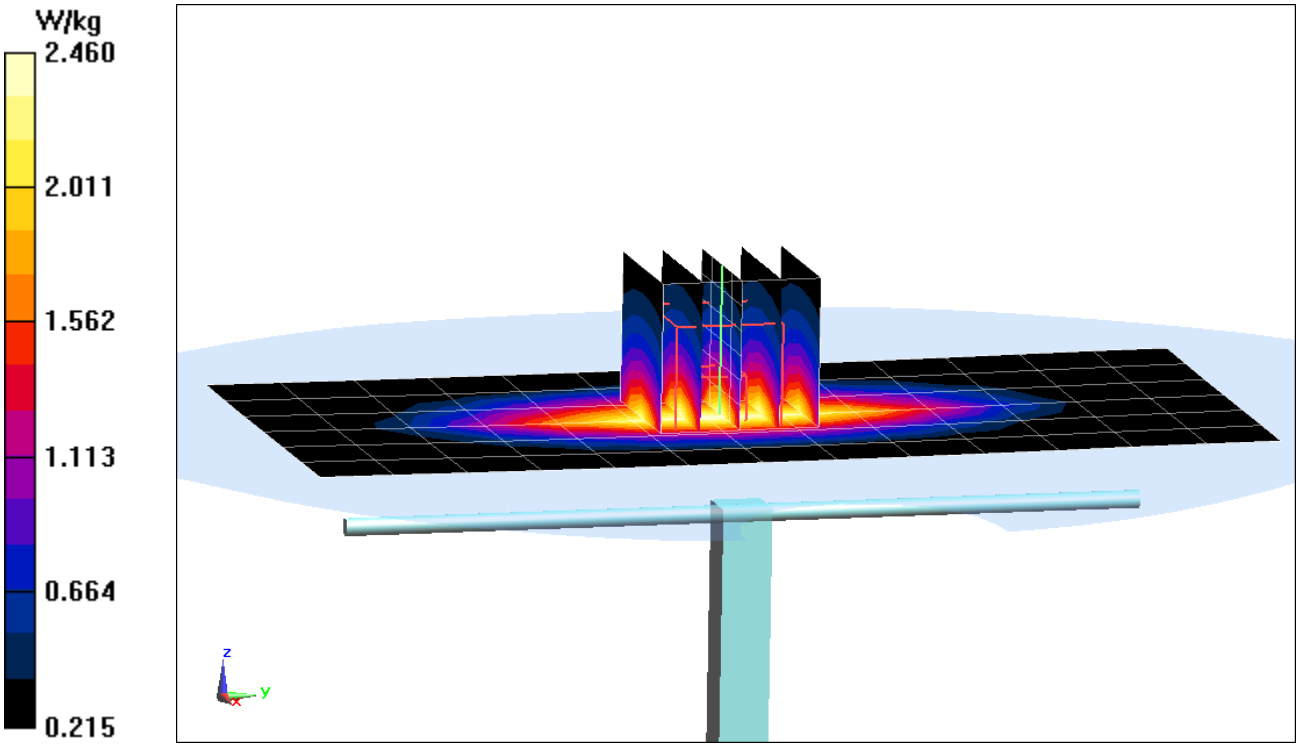
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used:
f = 835 MHz; σ = 0.906 S/m; ε_r = 41.946; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-23-2017; Ambient Temp: 22.6°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7410; ConvF(10.08, 10.08, 10.08); Calibrated: 7/17/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.74 W/kg
SAR(1 g) = 1.86 W/kg
Deviation(1 g) = -2.31%



PCTEST ENGINEERING LABORATORY, INC.

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

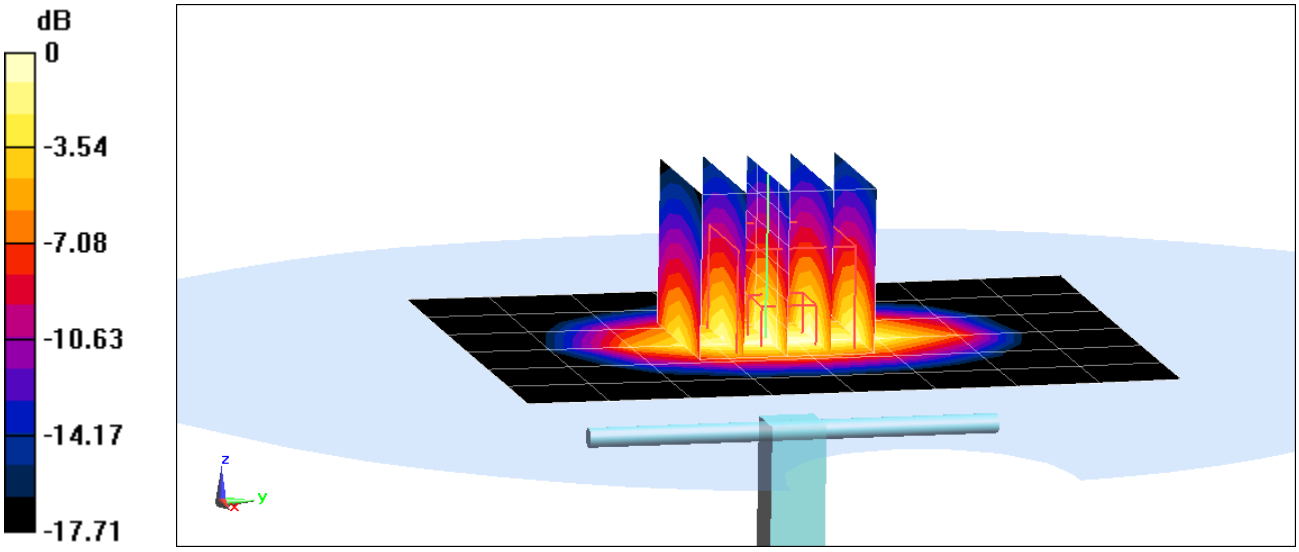
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used:
f = 1750 MHz; σ = 1.391 S/m; ε_r = 40.209; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-30-2017; Ambient Temp: 21.9°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(5.5, 5.5, 5.5); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Left; Type: QD000P40CD; Serial: 1692
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.42 W/kg
SAR(1 g) = 3.57 W/kg
Deviation(1 g) = -1.92%



0 dB = 4.45 W/kg = 6.48 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

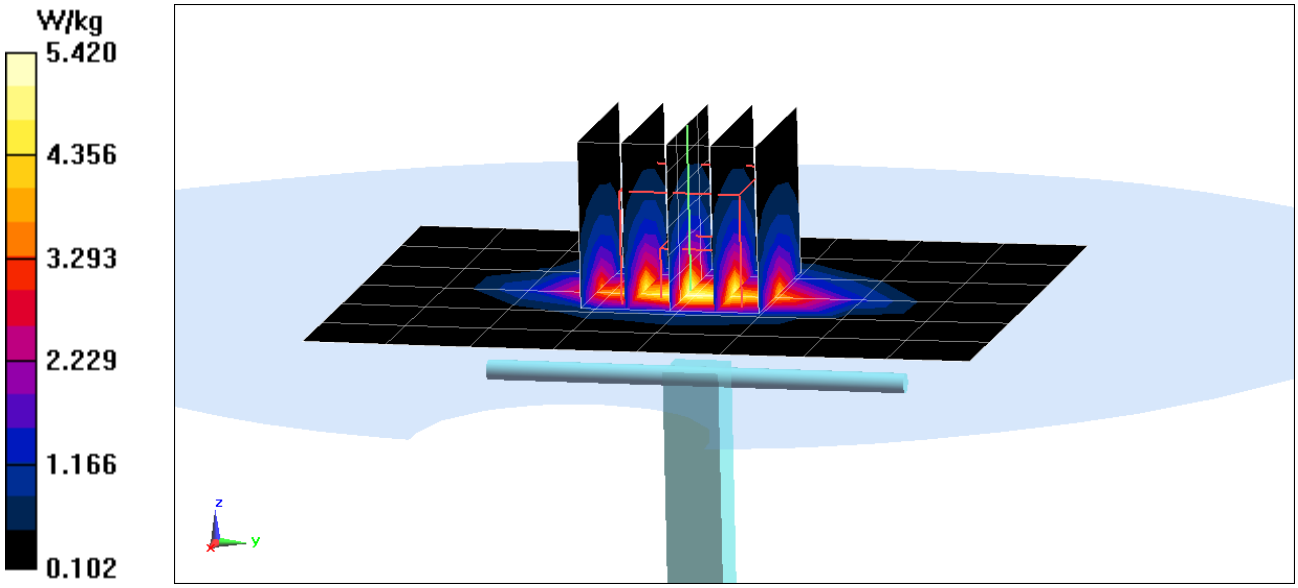
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used:
f = 1750 MHz; σ = 1.372 S/m; ε_r = 39.195; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-09-2017; Ambient Temp: 24.2°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7410; ConvF(8.66, 8.66, 8.66); Calibrated: 7/17/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.38 W/kg
SAR(1 g) = 3.53 W/kg
Deviation(1 g) = -3.02%



PCTEST ENGINEERING LABORATORY, INC.

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

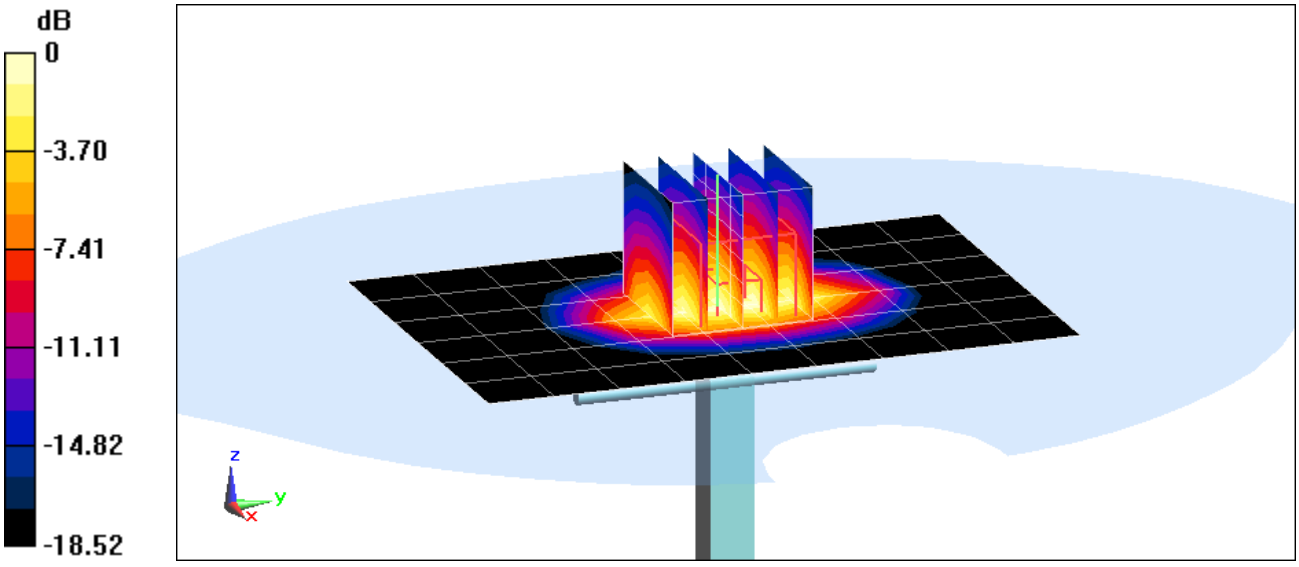
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.433 S/m; ε_r = 39.651; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-23-2017; Ambient Temp: 21.6°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3213; ConvF(5.29, 5.29, 5.29); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.48 W/kg
SAR(1 g) = 4.02 W/kg
Deviation(1 g) = 2.29%



0 dB = 5.09 W/kg = 7.07 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

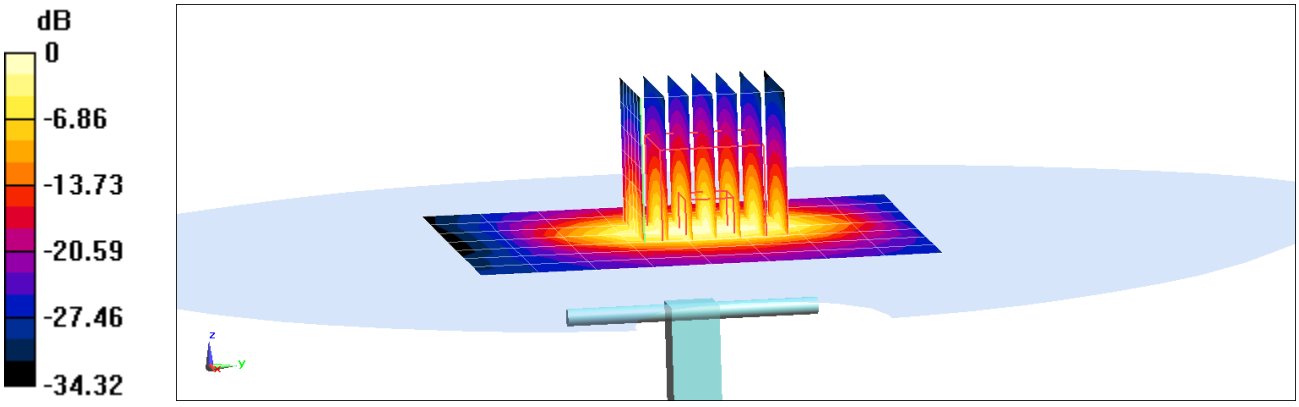
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; σ = 1.868 S/m; ε_r = 38.996; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-30-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.7°C

Probe: ES3DV3 - SN3332; ConvF(4.68, 4.68, 4.68); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.2 W/kg
SAR(1 g) = 5.4 W/kg
Deviation(1 g) = 2.27%



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

PCTEST ENGINEERING LABORATORY, INC.

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

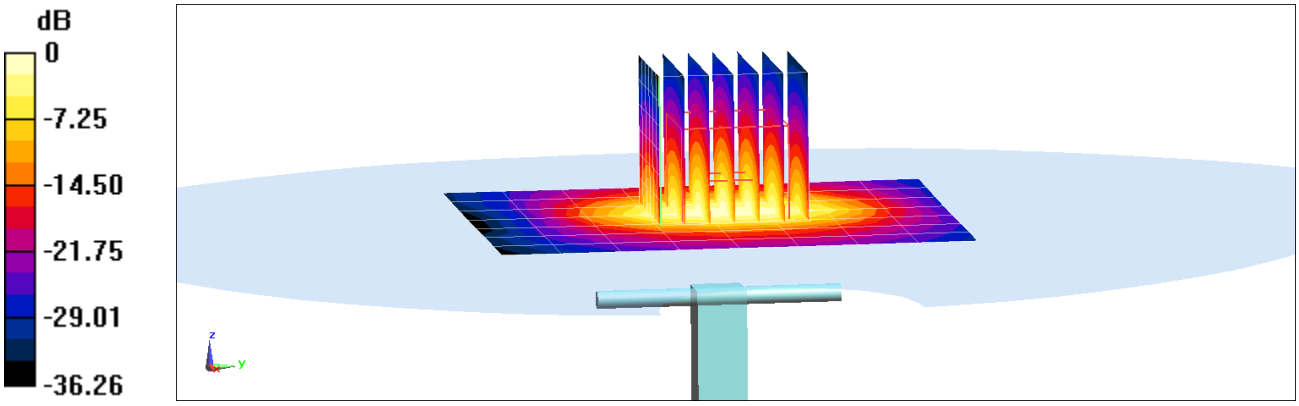
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2600 Head Medium parameters used:
f = 2600 MHz; σ = 2.038 S/m; ε_r = 38.401; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-30-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.7°C

Probe: ES3DV3 - SN3332; ConvF(4.56, 4.56, 4.56); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 13.6 W/kg
SAR(1 g) = 6.03 W/kg
Deviation(1 g) = 6.91%



0 dB = 7.62 W/kg = 8.82 dBW/kg

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

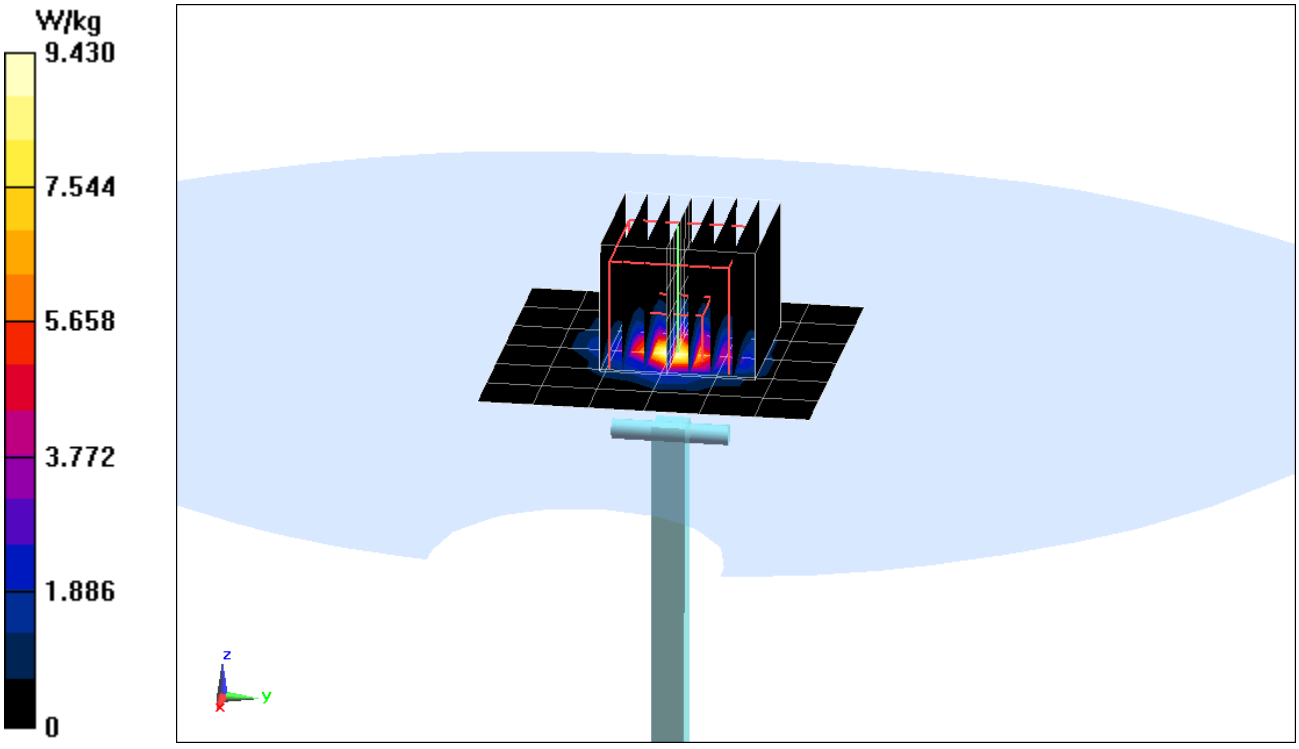
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head Medium parameters used (interpolated):
f = 5250 MHz; σ = 4.571 S/m; ε_r = 36.215; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-30-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN3914; ConvF(5.49, 5.49, 5.49); Calibrated: 2/13/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/9/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

5250 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 15.9 W/kg
SAR(1 g) = 3.68 W/kg
Deviation(1 g) = -6.72%



PCTEST ENGINEERING LABORATORY, INC.

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

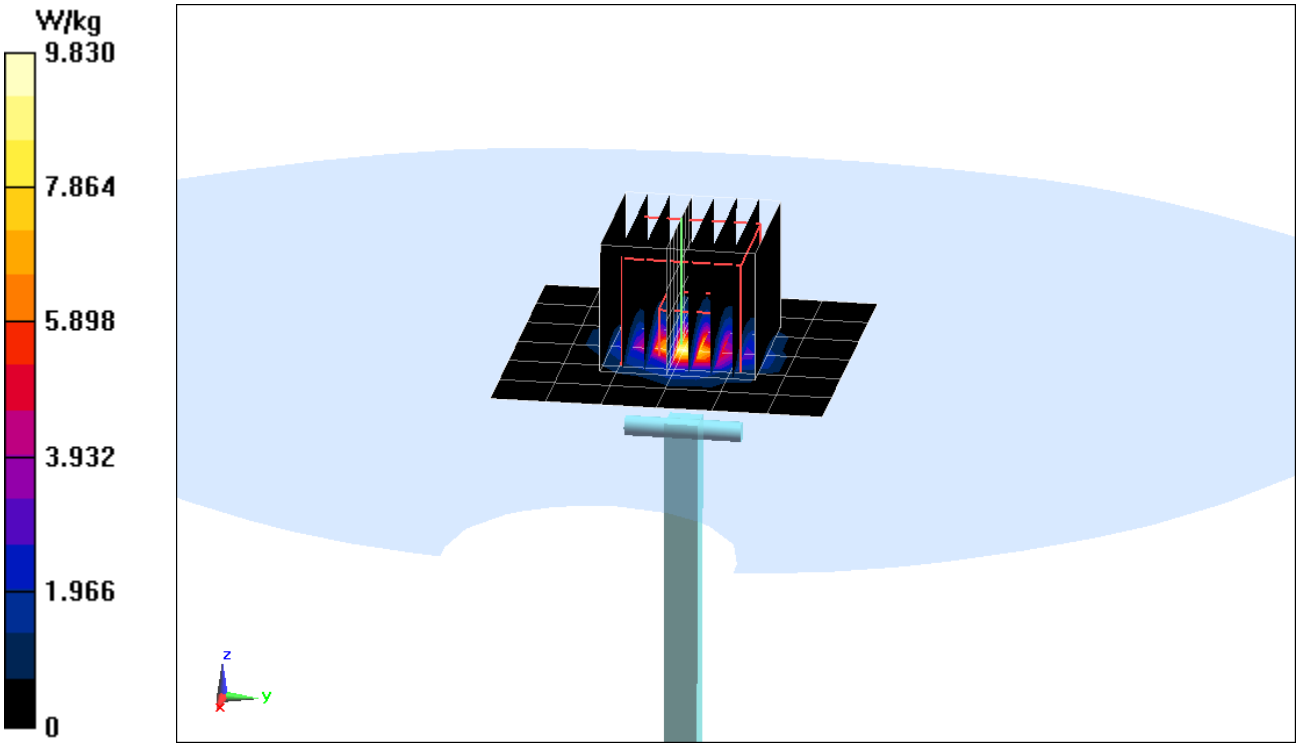
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head Medium parameters used:
f = 5600 MHz; σ = 4.951 S/m; ε_r = 35.715; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-30-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN3914; ConvF(4.94, 4.94, 4.94); Calibrated: 2/13/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/9/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

5600 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 17.3 W/kg
SAR(1 g) = 4.00 W/kg
Deviation(1 g) = -4.31%



PCTEST ENGINEERING LABORATORY, INC.

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

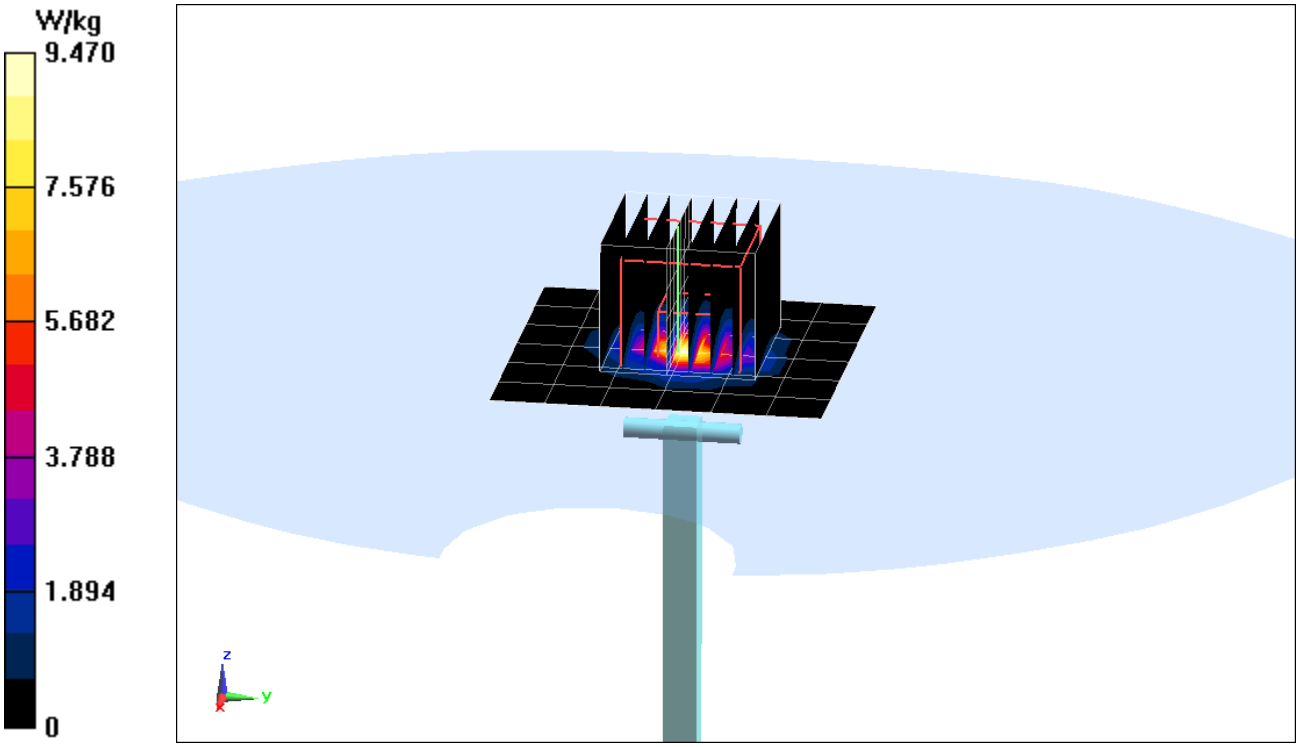
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head Medium parameters used (interpolated):
f = 5750 MHz; σ = 5.106 S/m; ε_r = 35.463; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-30-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN3914; ConvF(4.91, 4.91, 4.91); Calibrated: 2/13/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/9/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

5750 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 17.9 W/kg
SAR(1 g) = 3.92 W/kg
Deviation(1 g) = -0.88%



PCTEST ENGINEERING LABORATORY, INC.

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

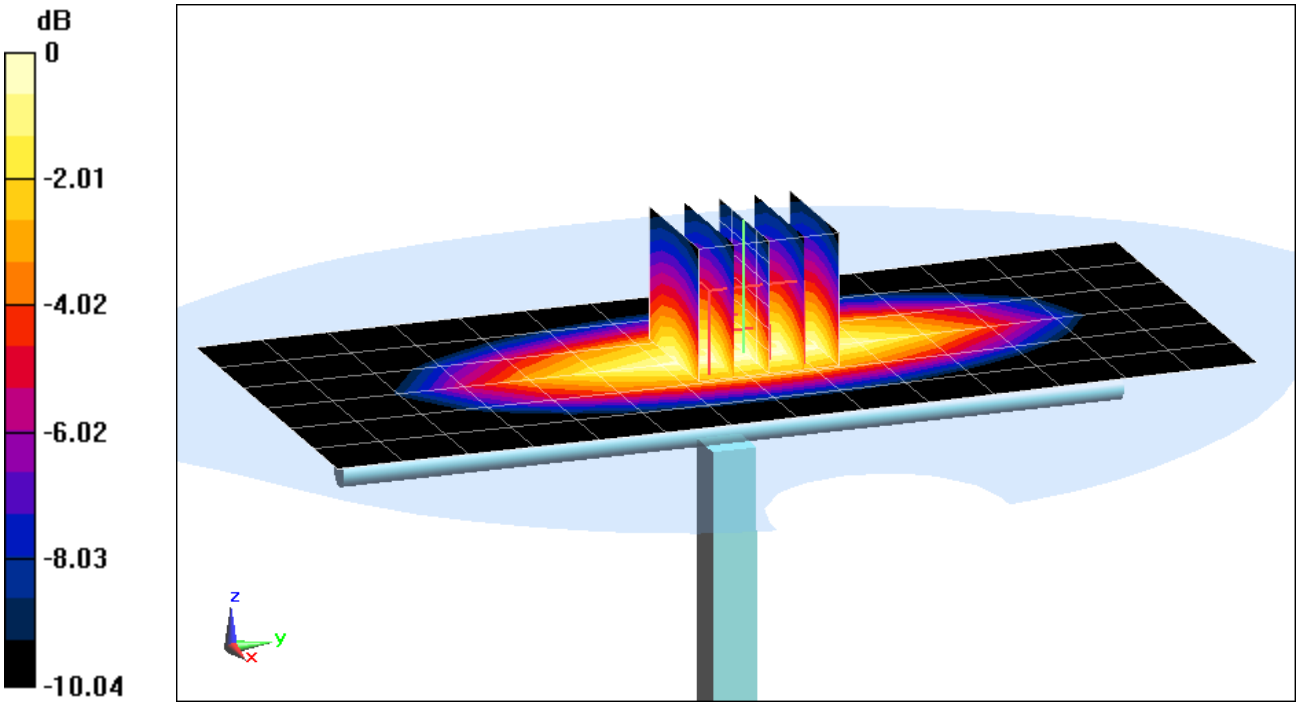
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
$f = 750$ MHz; $\sigma = 0.977$ S/m; $\varepsilon_r = 55.734$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-25-2017; Ambient Temp: 23.4°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3213; ConvF(6.38, 6.38, 6.38); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

750 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.54 W/kg
SAR(1 g) = 1.73 W/kg
Deviation(1 g) = -1.59%



0 dB = 2.02 W/kg = 3.05 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

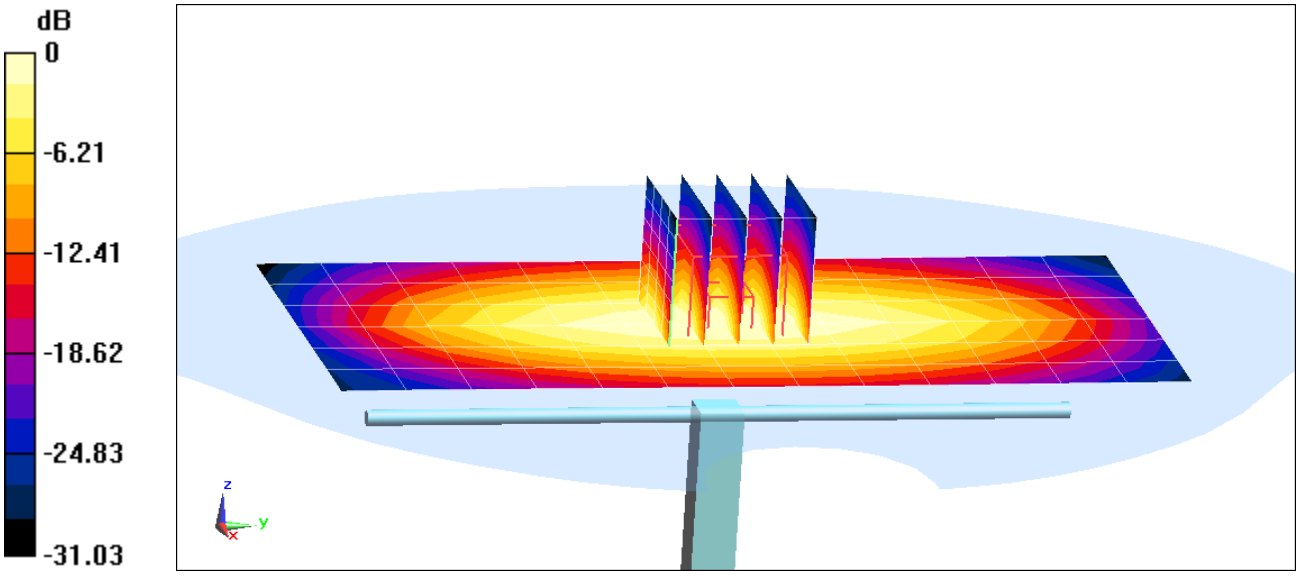
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 1.004 S/m; ε_r = 53.365; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-26-2017; Ambient Temp: 21.5°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3209; ConvF(6.36, 6.36, 6.36); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: 1800
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 3.05 W/kg
SAR(1 g) = 2.1 W/kg
Deviation(1 g) = 7.14%



0 dB = 2.38 W/kg = 3.77 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

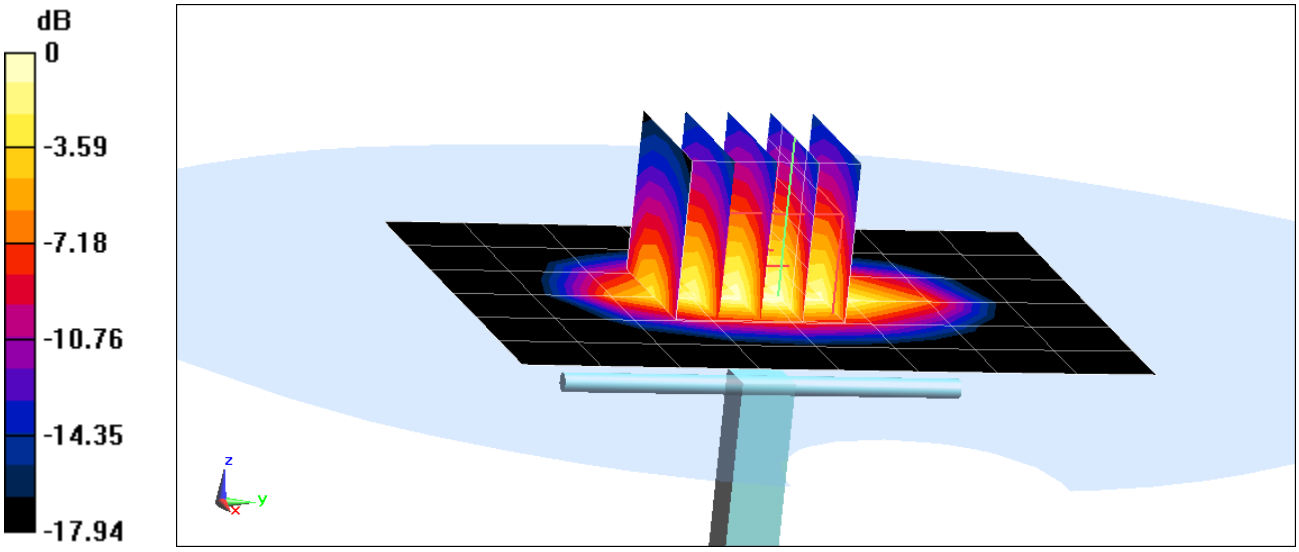
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used:
f = 1750 MHz; σ = 1.505 S/m; ε_r = 51.635; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-03-2017; Ambient Temp: 21.9°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3209; ConvF(5.13, 5.13, 5.13); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Left; Type: QD000P40CD; Serial: 1692
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.88 W/kg
SAR(1 g) = 3.93 W/kg
Deviation(1 g) = 7.67%



0 dB = 4.89 W/kg = 6.89 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

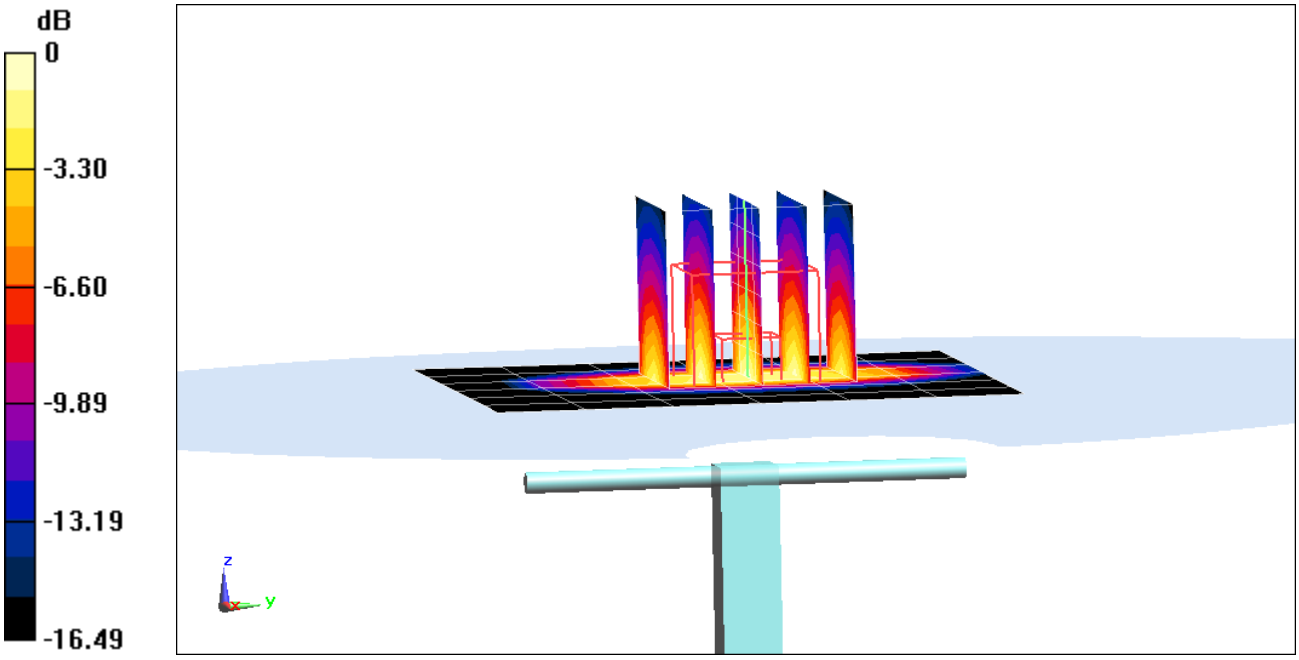
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used:
f = 1750 MHz; σ = 1.477 S/m; ε_r = 52.918; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-13-2017; Ambient Temp: 20.9°C; Tissue Temp: 19.8°C

Probe: ES3DV3 - SN3318; ConvF(5.18, 5.18, 5.18); Calibrated: 9/22/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/14/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.47 W/kg
SAR(1 g) = 3.69 W/kg
Deviation(1 g) = -0.27%



0 dB = 4.64 W/kg = 6.67 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

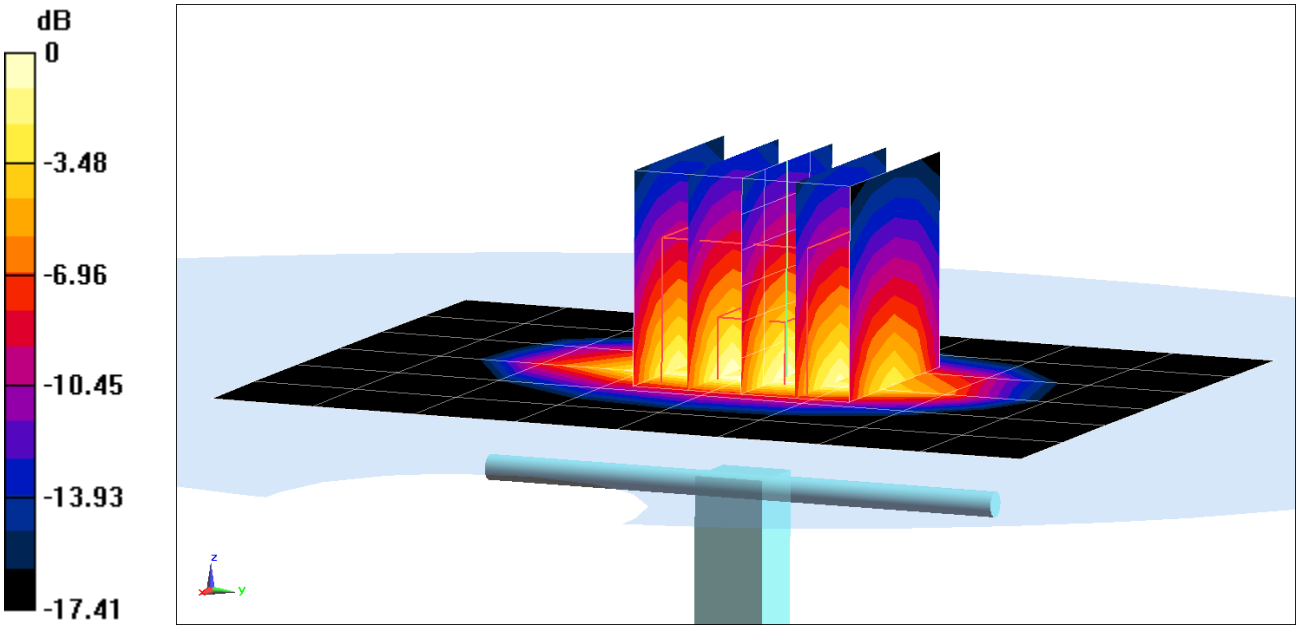
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used:
f = 1750 MHz; σ = 1.483 S/m; ε_r = 50.918; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-15-2017; Ambient Temp: 23.3°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN7406; ConvF(8.08, 8.08, 8.08); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.93 W/kg
SAR(1 g) = 3.82 W/kg
Deviation(1 g) = 3.24%



0 dB = 5.81 W/kg = 7.64 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

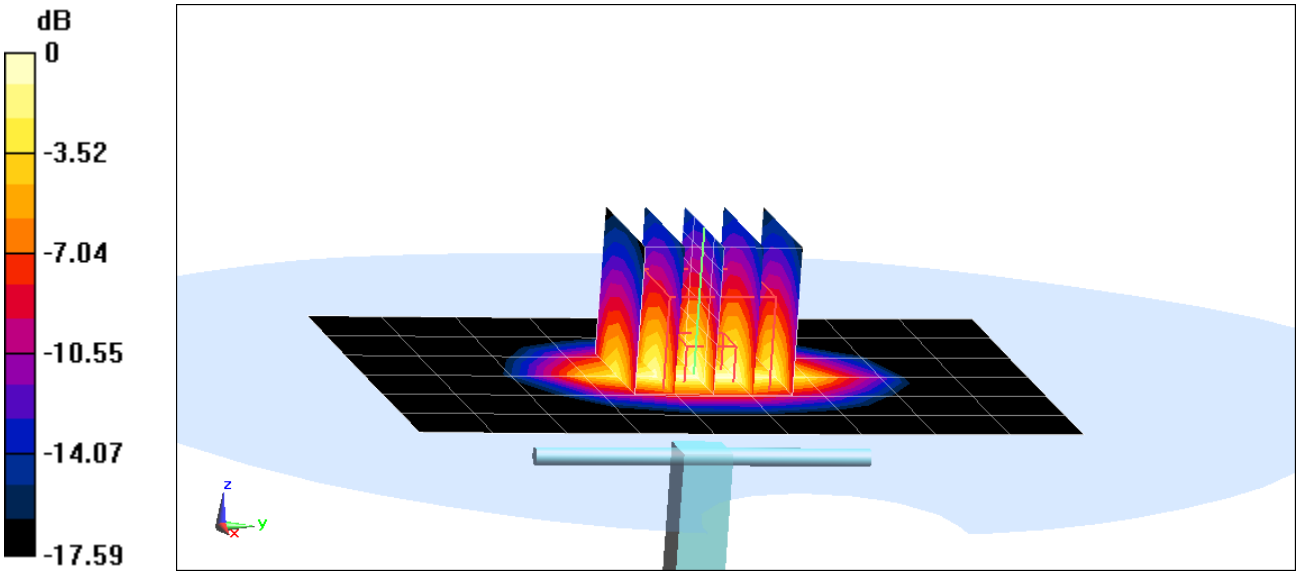
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.58 S/m; ε_r = 53.753; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-25-2017; Ambient Temp: 22.5°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM Left; Type: QD000P40CD; Serial: 1692
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.30 W/kg
SAR(1 g) = 4.12 W/kg
Deviation(1 g) = 5.37%



0 dB = 5.21 W/kg = 7.17 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

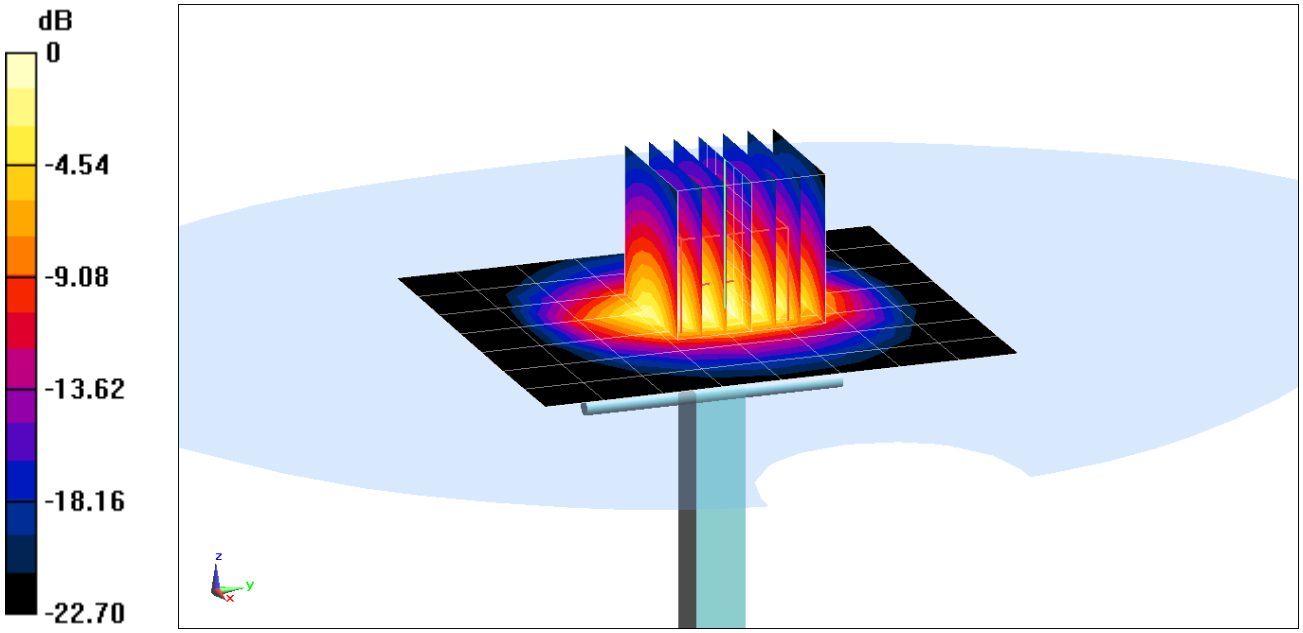
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; σ = 2.004 S/m; ε_r = 52.659; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-01-2017; Ambient Temp: 22.3°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3319; ConvF(4.42, 4.42, 4.42); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/8/2017
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: 1648
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.1 W/kg
SAR(1 g) = 4.84 W/kg
Deviation(1 g) = -3.39%



0 dB = 6.34 W/kg = 8.02 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

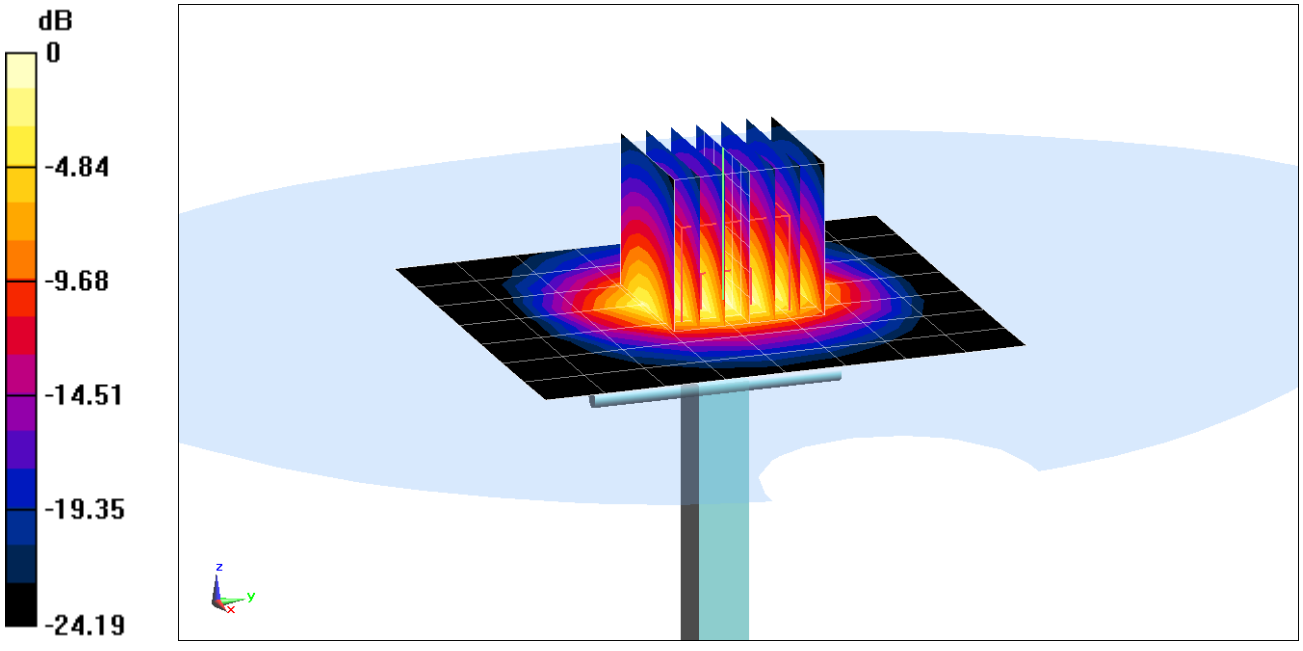
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2600 Body Medium parameters used:
f = 2600 MHz; σ = 2.211 S/m; ε_r = 52.087; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-01-2017; Ambient Temp: 22.3°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3319; ConvF(4.18, 4.18, 4.18); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/8/2017
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: 1648
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 12.2 W/kg
SAR(1 g) = 5.56 W/kg
Deviation(1 g) = 1.65%



0 dB = 7.40 W/kg = 8.69 dBW/kg

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237

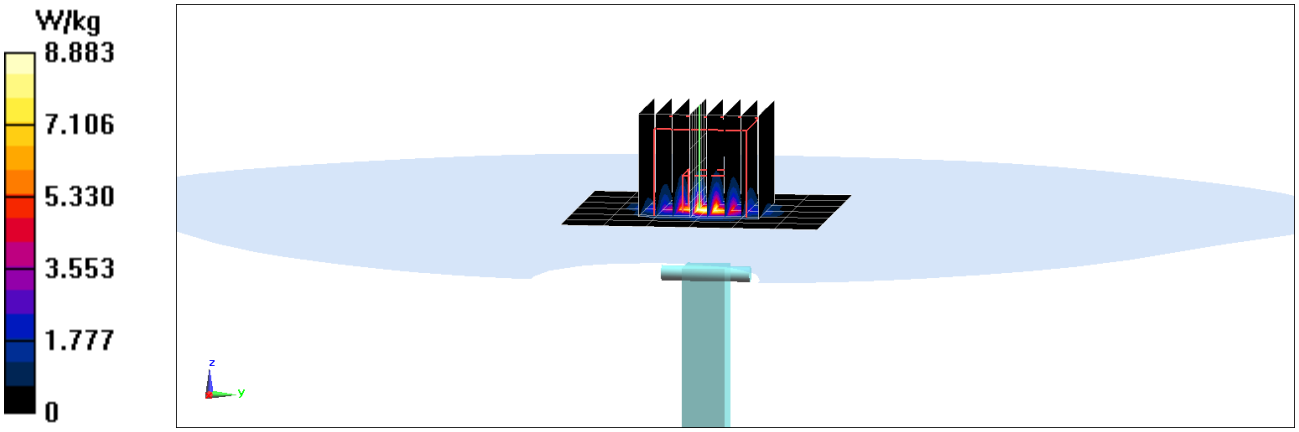
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used (interpolated):
$f = 5250$ MHz; $\sigma = 5.446$ S/m; $\varepsilon_r = 48.572$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-30-2017; Ambient Temp: 22.5°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7308; ConvF(4.84, 4.84, 4.84); Calibrated: 8/16/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/14/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

5250 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 17.0 W/kg
SAR(1 g) = 3.69 W/kg; SAR(10 g) = 1.03 W/kg
Deviation(1 g) = -4.03%; Deviation(10 g) = -4.19%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237

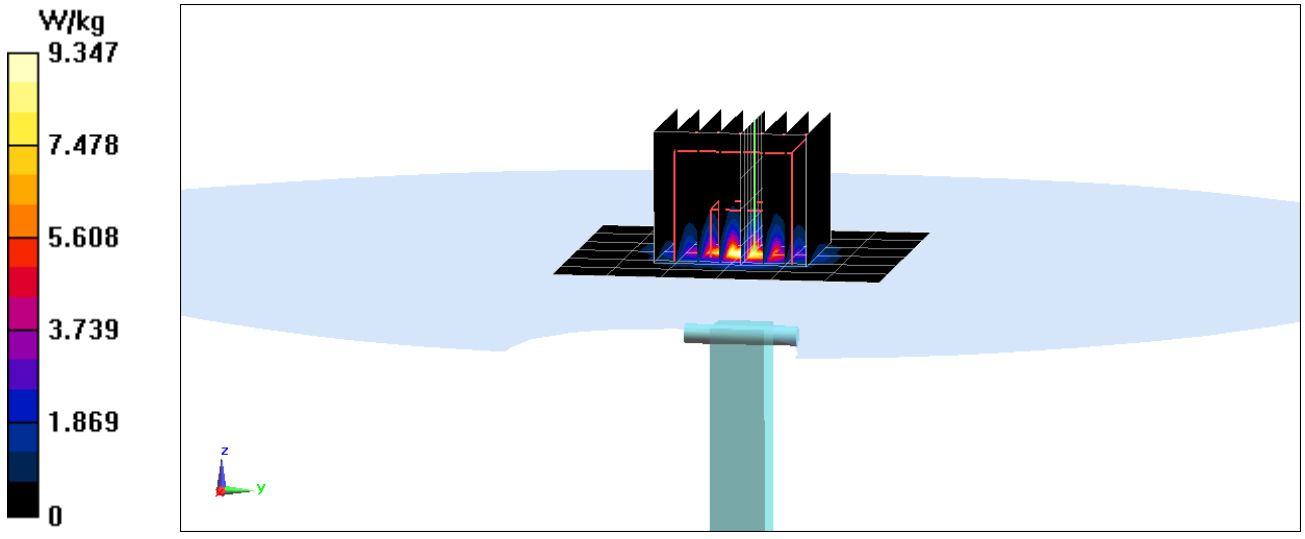
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5600 MHz; σ = 5.952 S/m; ε_r = 47.886; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-30-2017; Ambient Temp: 22.5°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7308; ConvF(4.23, 4.23, 4.23); Calibrated: 8/16/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/14/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

5600 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 18.9 W/kg
SAR(1 g) = 3.83 W/kg; SAR(10 g) = 1.06 W/kg
Deviation(1 g) = -2.42%; Deviation(10 g) = -4.07%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237

Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used (interpolated):
f = 5750 MHz; σ = 6.168 S/m; ε_r = 47.572; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-30-2017; Ambient Temp: 22.5°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7308; ConvF(4.5, 4.5, 4.5); Calibrated: 8/16/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/14/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

5750 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 18.7 W/kg
SAR(1 g) = 3.63 W/kg
Deviation(1 g) = -5.84%