PCTEST ENGINEERING LABORATORY, INC.
7185 Oakland Mills Road, Columbia, MD 21046 USA
Tel. +1.410.290.6652 / Fax +1.410.290.6654
http://www.pctestlab.com

SAR EVALUATION REPORT

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

Date of Testing:
06/01/16 - 06/30/16;
03/27/17 - 04/10/17
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
1M1703230122-01-R1.A3L

FCC ID: **A3LSMN935KOR**

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

DUT Type: Portable Handset
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model: SM-N935S
Additional Model(s): SM-N935K, SM-N935L

Equipment Class	Band & Mode	Tx Frequency	SAR			
			1 gm Head (W/kg)	1 gm Body-Worn (W/kg)	1 gm Hotspot (W/kg)	10 gm Phablet (W/kg)
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	< 0.1	0.41	0.56	N/A
PCE	UMTS 850	826.40 - 846.60 MHz	0.20	0.57	0.57	N/A
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.11	0.79	0.96	N/A
PCE	LTE Band 12	699.7 - 715.3 MHz	< 0.1	0.26	0.28	N/A
PCE	LTE Band 17	706.5 - 713.5 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.20	0.56	0.64	N/A
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	0.17	0.59	0.65	N/A
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	0.13	0.45	0.75	N/A
PCE	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.16	0.71	0.89	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	0.30	0.84	N/A
DTS	2.4 GHz WLAN	2412 - 2462 MHz	0.57	0.40	0.40	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	0.16	N/A	1.08
NII	U-NII-2C	5500 - 5720 MHz	0.30	0.16	N/A	1.97
NII	U-NII-3	5745 - 5825 MHz	0.21	0.34	0.34	N/A
DSS/DTS	Bluetooth	2402 - 2480 MHz	N/A			N/A
Simultaneous SAR per KDB 690783 D01v01r03:			1.09	1.59	1.59	2.64

Note: This revised Test Report (S/N: 1M1703230122-01-R1.A3L) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

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

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

Randy Ortanez
President

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

TABLE OF CONTENTS

1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 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 26 (Cell)	Data	814.7 - 848.3 MHz
LTE Band 5 (Cell)	Data	824.7 - 848.3 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	Data	2412 - 2462 MHz
U-NII-1	Data	5180 - 5240 MHz
U-NII-2A	Data	5260 - 5320 MHz
U-NII-2C	Data	5500 - 5720 MHz
U-NII-3	Data	5745 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz
ANT+	Data	2402 - 2480 MHz
MST	Data	555 Hz - 8.33 kHz

1.2 Power Reduction for SAR

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 – Ant A / C

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slot	*1 TX Slots*	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*	*1 TX Slots*	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*
GSM/GPRS/EDGE 1900	Maximum	**30.0**	**30.0**	**27.0**	**25.5**	**24.5**	**26.5**	**24.5**	**22.5**	**21.5**
	Nominal	**29.5**	**29.5**	**26.5**	**25.0**	**24.0**	**26.0**	**24.0**	**22.0**	**21.0**

Mode / Band		Modulated Average (dBm)		
		3GPP WCDMA	*3GPP HSDPA*	*3GPP HSUPA*
UMTS Band 5 (850 MHz)	Maximum	**23.5**	**23.5**	**23.5**
	Nominal	**23.0**	**23.0**	**23.0**
UMTS Band 2 (1900 MHz)	Maximum	**23.0**	**23.0**	**23.0**
	Nominal	**22.5**	**22.5**	**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 26 (Cell)	Maximum	**23.5**
	Nominal	**23.0**
LTE Band 5 (Cell)	Maximum	**24.0**
	Nominal	**23.5**
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 Maximum PCE Power – Ant B

Mode / Band		Modulated Average (dBm)
LTE Band 5 (Cell)	Maximum	**22.5**
	Nominal	**22.0**

1.3.3 Maximum WLAN/BT Power

Mode / Band		Modulated Average - Single Tx Chain (dBm)
IEEE 802.11b (2.4 GHz)	Maximum	**19.5**
	Nominal	**19.0**
IEEE 802.11g (2.4 GHz)	Maximum	**17.5**
	Nominal	**17.0**
IEEE 802.11n (2.4 GHz)	Maximum	**15.5**
	Nominal	**15.0**
Bluetooth	Maximum	**11.5**
	Nominal	**11.0**
Bluetooth LE	Maximum	**7.5**
	Nominal	**7.0**

Mode / Band		Modulated Average - Single Tx Chain (dBm)			
		20 MHz Bandwidth		40 MHz Bandwidth	80 MHz Bandwidth
		Ch. 36-48	Ch. 52-165		
IEEE 802.11a (5 GHz)	Maximum	**15.5**	**17.5**		
	Nominal	**15.0**	**17.0**		
IEEE 802.11n (5 GHz)	Maximum	**15.5**	**17.5**	**14.5**	
	Nominal	**15.0**	**17.0**	**14.0**	
IEEE 802.11ac (5 GHz)	Maximum	**15.5**	**17.5**	**14.5**	**13.5**
	Nominal	**15.0**	**17.0**	**14.0**	**13.0**
Mode / Band		Modulated Average - MIMO (dBm)			
		20 MHz Bandwidth		40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11g (2.4 GHz)	Maximum	**18.5**			
	Nominal	**18.0**			
IEEE 802.11n (2.4 GHz)	Maximum	**18.5**			
	Nominal	**18.0**			
		Ch. 36-48	Ch. 52-165		
IEEE 802.11a (5 GHz)	Maximum	**15.5**	**17.5**		
	Nominal	**15.0**	**17.0**		
IEEE 802.11n (5 GHz)	Maximum	**15.5**	**17.5**	**15.5**	
	Nominal	**15.0**	**17.0**	**15.0**	
IEEE 802.11ac (5 GHz)	Maximum	**15.5**	**17.5**	**15.5**	**14.5**
	Nominal	**15.0**	**17.0**	**15.0**	**14.0**

1.3.4 Reduced WLAN Power

Mode / Band		Modulated Average - Single Tx Chain (dBm)
IEEE 802.11b (2.4 GHz)	Maximum	**12.5**
	Nominal	**12.0**
IEEE 802.11g (2.4 GHz)	Maximum	**12.5**
	Nominal	**12.0**
IEEE 802.11n (2.4 GHz)	Maximum	**12.5**
	Nominal	**12.0**

Mode / Band		Modulated Average - Single Tx Chain (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11a (5 GHz)	Maximum	**10.5**		
	Nominal	**10.0**		
IEEE 802.11n (5 GHz)	Maximum	**10.5**	**10.5**	
	Nominal	**10.0**	**10.0**	
IEEE 802.11ac (5 GHz)	Maximum	**10.5**	**10.5**	**10.5**
	Nominal	**10.0**	**10.0**	**10.0**
Mode / Band		Modulated Average - MIMO (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11g (2.4 GHz)	Maximum	**15.5**		
	Nominal	**15.0**		
IEEE 802.11n (2.4 GHz)	Maximum	**15.5**		
	Nominal	**15.0**		
IEEE 802.11a (5 GHz)	Maximum	**13.5**		
	Nominal	**13.0**		
IEEE 802.11n (5 GHz)	Maximum	**13.5**	**13.5**	
	Nominal	**13.0**	**13.0**	
IEEE 802.11ac (5 GHz)	Maximum	**13.5**	**13.5**	**13.5**
	Nominal	**13.0**	**13.0**	**13.0**

1.4 DUT Antenna Locations

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

Table 1-1
Device Edges/Sides for SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
GSM/GPRS 1900	Yes	Yes	No	Yes	No	Yes
UMTS 850	Yes	Yes	No	Yes	Yes	Yes
UMTS 1900	Yes	Yes	No	Yes	No	Yes
LTE Band 12	Yes	Yes	No	Yes	Yes	Yes
LTE Band 26 (Cell)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 5 (Cell) Ant A	Yes	Yes	No	Yes	Yes	Yes
LTE Band 5 (Cell) Ant B	Yes	Yes	Yes	No	Yes	Yes
LTE Band 4 (AWS)	Yes	Yes	No	Yes	No	Yes
LTE Band 25 (PCS)	Yes	Yes	No	Yes	No	Yes
LTE Band 41	Yes	Yes	No	Yes	No	Yes
2.4 GHz WLAN Ant 1	Yes	Yes	Yes	No	No	Yes
2.4 GHz WLAN Ant 2	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN Ant 1	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN Ant 2	Yes	Yes	Yes	No	No	Yes

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.

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. Possible transmission paths for the DUT are shown in Figure 1-1 and are color-coded to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.

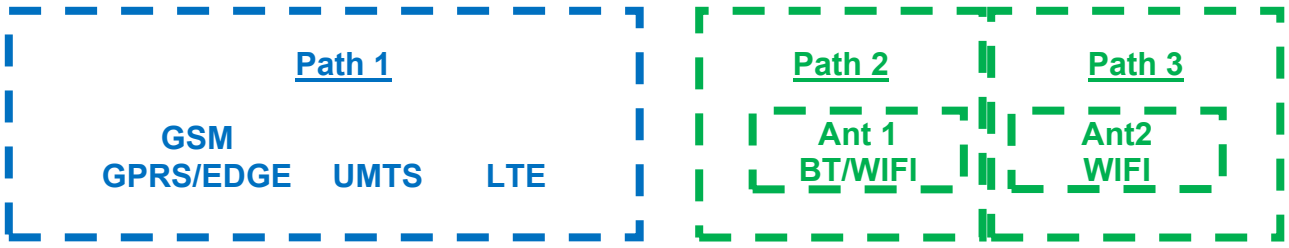


Figure 1-1
Simultaneous Transmission Paths

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	N/A	Yes	N/A	Yes	
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	UMTS + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes	
8	UMTS + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
9	UMTS + 2.4 GHz Bluetooth	N/A	Yes	N/A	Yes	
10	UMTS + 2.4 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
11	UMTS + 5 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
12	UMTS + 2.4 GHz WI-FI + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
13	LTE + 2.4 GHz WI-FI	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
14	LTE + 5 GHz WI-FI	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
15	LTE + 2.4 GHz Bluetooth	N/A	Yes*	N/A	Yes	*-Pre-installed VOIP applications are considered.
16	LTE + 2.4 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
17	LTE + 5 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
18	LTE + 2.4 GHz WI-FI + 5 GHz WI-FI	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
19	GPRS/EDGE + 2.4 GHz WI-FI	N/A	N/A	Yes	Yes	
20	GPRS/EDGE + 5 GHz WI-FI	N/A	N/A	Yes	Yes	
21	GPRS/EDGE + 2.4 GHz Bluetooth	N/A	N/A	N/A	Yes	
22	GPRS/EDGE + 2.4 GHz WI-FI MIMO	N/A	N/A	Yes	Yes	
23	GPRS/EDGE + 5 GHz WI-FI MIMO	N/A	N/A	Yes	Yes	
24	GPRS/EDGE + 2.4 GHz WI-FI + 5 GHz WI-FI	N/A	N/A	Yes	Yes	

1. Ant A and Ant B operate in a switched condition only and cannot transmit simultaneously.
2. All licensed modes share the same antenna path and cannot transmit simultaneously.
3. 2.4 GHz WLAN, 5 GHz WLAN, and 2.4 GHz Bluetooth that share the same antenna path cannot all transmit simultaneously.
4. 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.

5. 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.
6. 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.
7. This device supports 2x2 MIMO Tx for WLAN 802.11a/g/n/ac. Each WLAN antenna can transmit independently or together when operating with MIMO.
8. This device does not support VoLTE.

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.

Per FCC KDB 447498 D01v06, the 1g SAR exclusion threshold for distances <50mm is defined by the following equation:

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

Based on the maximum conducted power of Bluetooth (rounded to the nearest mW) and the antenna to user separation distance, body-worn Bluetooth SAR was not required; [(14/10)* √2.480] = 2.2< 3.0. Per KDB Publication 447498 D01v06, the maximum power of the channel was rounded to the nearest mW before calculation.

Per FCC KDB 447498 D01v06, the 10g SAR exclusion threshold for distances <50mm is defined by the following equation:

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

Based on the maximum conducted power of Bluetooth (rounded to the nearest mW) and the antenna to user separation distance, phablet Bluetooth SAR was not required; [(14/ 5)* √2.480] = 4.4 < 7.5. Per KDB Publication 447498 D01v06, the maximum power of the channel was rounded to the nearest mW before calculation.

This device supports IEEE 802.11ac with the following features:

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

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is greater than 160mm and less than 200mm. Phablet SAR tests are required when wireless router

mode does not apply or if wireless router 1g SAR > 1.2 W/kg. Because wireless router operations are not supported for U-NII-1, U-NII-2A & U-NII-2C WLAN, phablet SAR tests were performed. Phablet SAR was not evaluated for 2.4 GHz 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.

This device supports both LTE B17 and LTE B12. Since the supported frequency span for LTE B17 falls completely within the supported frequency span for LTE B12, both LTE bands have the same target power, and both LTE bands share the same transmission path, SAR was only assessed for LTE B12.

This device supports both LTE B25 (PCS) and LTE B2 (PCS). Since the supported frequency span for LTE B2 (PCS) falls completely within the supported frequency span for LTE B25 (PCS), both LTE bands have the same target power, and both LTE bands share the same transmission path, SAR was only assessed for LTE B25 (PCS).

LTE Band 5 Antenna B is disabled for all held to ear scenarios. Therefore SAR was only assessed for body-worn accessory and wireless router exposure conditions.

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

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.

	Head Serial Number	Body-Worn Serial Number	Hotspot Serial Number	Phablet Serial Number
GSM/GPRS/EDGE 1900	05AA2	54872	54872	-
UMTS 850	8485A	8485A	8485A	-
UMTS 1900	05AD2	54872	54872	-
LTE Band 12	05AD2	54955	54955	-
LTE Band 26 (Cell)	8485A	8485A	8485A	-
LTE Band 5 (Cell)	8485A	8485A, 23032	8485A, 23032	-
LTE Band 4 (AWS)	05AA2	05AA2	05AA2	-
LTE Band 25 (PCS)	8433D	54872	54872	-
LTE Band 41	05A82	0548E	0548E	-
2.4 GHz WLAN	252AF, 54955	23033	23033	-
5 GHz WLAN	252AE	252AE, 54872	252AE, 54872	252AE

2 LTE INFORMATION

LTE Information					
FCC ID	**A3LSMN935KOR**				
Form Factor	Portable Handset				
Frequency Range of each LTE transmission band	LTE Band 12 (699.7 - 715.3 MHz)				
	LTE Band 17 (706.5 - 713.5 MHz)				
	LTE Band 26 (Cell) (814.7 - 848.3 MHz)				
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)				
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)				
	LTE Band 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 26 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz				
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 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 26 (Cell): 1.4 MHz	814.7 (26697)		831.5 (26865)	848.3 (27033)	
LTE Band 26 (Cell): 3 MHz	815.5 (26705)		831.5 (26865)	847.5 (27025)	
LTE Band 26 (Cell): 5 MHz	816.5 (26715)		831.5 (26865)	846.5 (27015)	
LTE Band 26 (Cell): 10 MHz	819 (26740)		831.5 (26865)	844 (26990)	
LTE Band 26 (Cell): 15 MHz	821.5 (26765)		831.5 (26865)	841.5 (26965)	
LTE Band 5 (Cell): 1.4 MHz	824.7 (20407)		836.5 (20525)	848.3 (20643)	
LTE Band 5 (Cell): 3 MHz	825.5 (20415)		836.5 (20525)	847.5 (20635)	
LTE Band 5 (Cell): 5 MHz	826.5 (20425)		836.5 (20525)	846.5 (20625)	
LTE Band 5 (Cell): 10 MHz	829 (20450)		836.5 (20525)	844 (20600)	
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)		1732.5 (20175)	1754.3 (20393)	
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)		1732.5 (20175)	1753.5 (20385)	
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)		1732.5 (20175)	1752.5 (20375)	
LTE Band 4 (AWS): 10 MHz	1715 (20000)		1732.5 (20175)	1750 (20350)	
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)		1732.5 (20175)	1747.5 (20325)	
LTE Band 4 (AWS): 20 MHz	1720 (20050)		1732.5 (20175)	1745 (20300)	
LTE Band 25 (PCS): 1.4 MHz	1850.7 (26047)		1882.5 (26365)	1914.3 (26683)	
LTE Band 25 (PCS): 3 MHz	1851.5 (26055)		1882.5 (26365)	1913.5 (26675)	
LTE Band 25 (PCS): 5 MHz	1852.5 (26065)		1882.5 (26365)	1912.5 (26665)	
LTE Band 25 (PCS): 10 MHz	1855 (26090)		1882.5 (26365)	1910 (26640)	
LTE Band 25 (PCS): 15 MHz	1857.5 (26115)		1882.5 (26365)	1907.5 (26615)	
LTE Band 25 (PCS): 20 MHz	1860 (26140)		1882.5 (26365)	1905 (26590)	
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)		1880 (18900)	1909.3 (19193)	
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)		1880 (18900)	1908.5 (19185)	
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)		1880 (18900)	1907.5 (19175)	
LTE Band 2 (PCS): 10 MHz	1855 (18650)		1880 (18900)	1905 (19150)	
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)		1880 (18900)	1902.5 (19125)	
LTE Band 2 (PCS): 20 MHz	1860 (18700)		1880 (18900)	1900 (19100)	
LTE Band 41: 5 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
UE Category	6				
Modulations Supported in UL	QPSK, 16QAM				
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestation to be provided)	YES				
A-MPR (Additional MPR) disabled for SAR Testing?	YES				
LTE Release 11 Additional Information	This device does not support full CA features on 3GPP Release 11. All uplink communications are identical to the Release 8 Specifications. The following LTE Release 11 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:

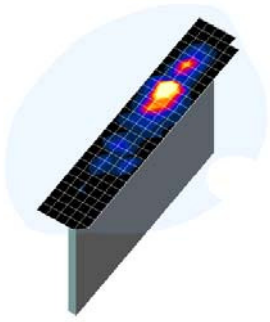


Figure 4-1
Sample SAR Area Scan

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*

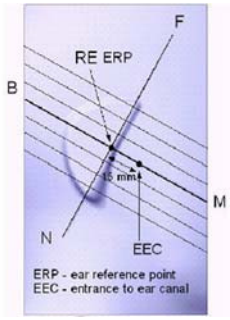
Frequency	Maximum Area Scan Resolution (mm) (Δx_{area}, Δy_{area})	Maximum Zoom Scan Resolution (mm) (Δx_{zoom}, Δy_{zoom})	Maximum Zoom Scan Spatial Resolution (mm)			Minimum Zoom Scan Volume (mm) (x,y,z)
			Uniform Grid	Graded Grid		
			$\Delta z_{zoom}(n)$	$\Delta z_{zoom}(1)$*	$\Delta z_{zoom}(n>1)$*	
≤ 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].



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

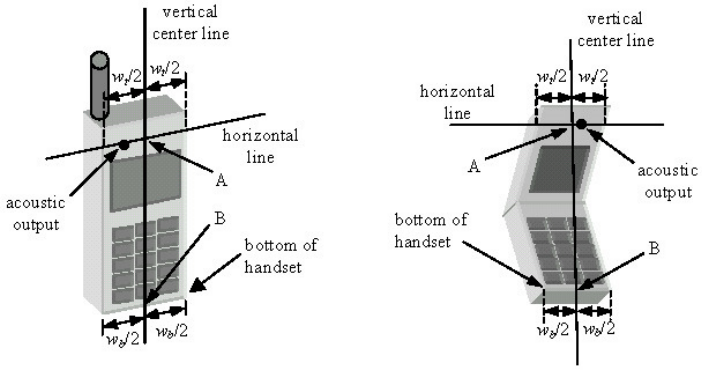


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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.

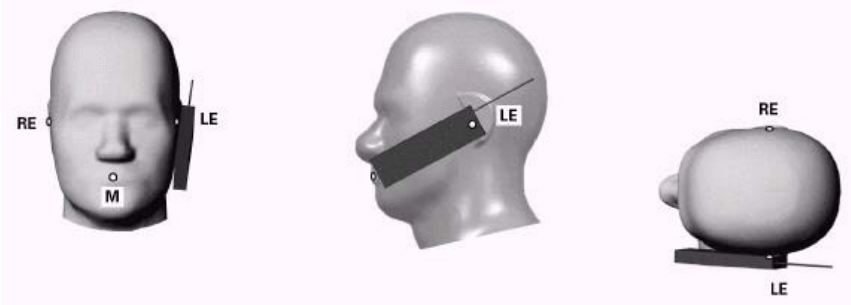


Figure 6-1 Front, Side and Top View of Cheek Position

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).

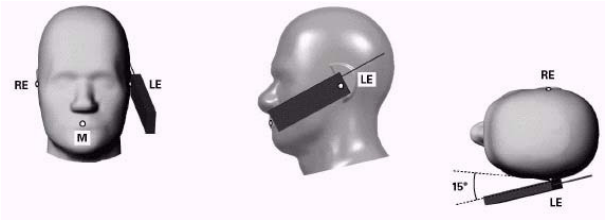


Figure 6-2 Front, Side and Top View of Ear/15º Tilt Position

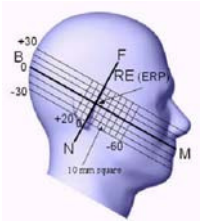


Figure 6-3 Side view w/ relevant markings

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.

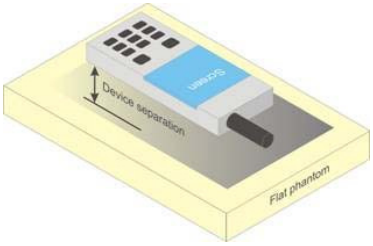


Figure 6-4 Sample Body-Worn Diagram

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 1-g body and 10-g 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 10-g SAR. The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g 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 ≤ 0.6 W/kg for LTE B41 and ≤ 0.8 W/kg for other LTE bands, testing of the remaining RB offset configurations and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
   iii. When the reported SAR for a required test channel is > 1.45 W/kg, SAR is required for all RB offset configurations for that channel.
b. Per Section 5.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Section 5.2.1.
c. Per Section 5.2.3, QPSK SAR is not required for the 100% allocation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is < 0.8 W/kg.
d. Per Section 5.2.4 and 5.3, SAR tests for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sections 5.2.1 through 5.2.3 is less than or equal to ½ dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is <1.45 W/kg.

8.5.5 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 10-g 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 10-g 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 10-g 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 10-g 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 10-g 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 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

9 RF CONDUCTED POWERS

9.1 GSM Conducted Powers

Maximum Burst-Averaged Output Power										
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 1900	512	29.54	29.63	26.06	24.97	**23.31**	24.82	22.55	21.52	20.38
	661	29.49	29.57	26.23	24.84	**23.20**	24.78	22.50	21.32	20.39
	810	29.87	29.94	26.50	25.29	**23.69**	25.26	23.04	21.79	20.68

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 1900	512	20.51	20.60	20.04	20.71	**20.30**	15.79	16.53	17.26	17.37
	661	20.46	20.54	20.21	20.58	**20.19**	15.75	16.48	17.06	17.38
	810	20.84	20.91	20.48	21.03	**20.68**	16.23	17.02	17.53	17.67
GSM 1900	**Frame Avg.Targets:**	20.47	20.47	20.48	20.74	**20.99**	16.97	17.98	17.74	17.99

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

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	22.48	22.25	22.29	21.95	22.15	22.19	-
99		12.2 kbps AMR	22.44	22.22	22.28	21.97	22.13	22.19	-
6	HSDPA	Subtest 1	22.63	22.38	22.45	22.00	22.30	22.35	0
6		Subtest 2	22.62	22.39	22.44	22.12	22.31	22.36	0
6		Subtest 3	22.42	22.21	22.23	22.10	22.33	22.29	0.5
6		Subtest 4	22.43	22.23	22.25	22.09	22.32	22.39	0.5
6	HSUPA	Subtest 1	21.91	21.68	21.70	21.20	21.53	21.54	0
6		Subtest 2	21.43	21.24	21.30	21.13	21.34	21.37	2
6		Subtest 3	21.79	21.58	21.59	21.21	21.43	21.47	1
6		Subtest 4	21.47	21.21	21.31	21.13	21.33	21.37	2
6		Subtest 5	22.63	22.42	22.45	21.97	22.26	22.31	0

This device does not support DC-HSDPA.

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

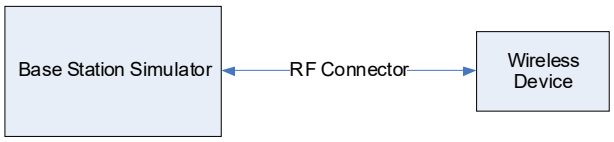


Figure 9-2
Power Measurement Setup

9.3 LTE Conducted Powers

9.3.1 LTE Band 12

Table 9-1
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	**23.21**	0	0
	1	25	23.19		0
	1	49	23.15		0
	25	0	**22.33**	0-1	1
	25	12	22.32		1
	25	25	22.30		1
	50	0	22.31		1
16QAM	1	0	22.25	0-1	1
	1	25	22.18		1
	1	49	22.15		1
	25	0	21.27	0-2	2
	25	12	21.29		2
	25	25	21.25		2
	50	0	21.30		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 9-2
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) Conducted Power [dBm]	Mid Channel 23095 (707.5 MHz) Conducted Power [dBm]	High Channel 23155 (713.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	23.44	23.23	23.42	0	0
	1	12	23.39	23.11	23.42		0
	1	24	23.41	23.15	23.36		0
	12	0	22.34	22.33	22.27	0-1	1
	12	6	22.32	22.37	22.29		1
	12	13	22.27	22.34	22.29		1
	25	0	22.32	22.34	22.27		1
16QAM	1	0	22.41	22.27	22.31	0-1	1
	1	12	22.17	22.32	22.24		1
	1	24	22.43	22.40	22.34		1
	12	0	21.38	21.39	21.33	0-2	2
	12	6	21.38	21.25	21.24		2
	12	13	21.32	21.30	21.25		2
	25	0	21.34	21.34	21.26		2

Table 9-3
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	23.34	23.38	23.19	0	0
	1	7	23.26	23.30	23.18		0
	1	14	23.32	23.29	23.17		0
	8	0	22.32	22.28	22.23	0-1	1
	8	4	22.27	22.31	22.22		1
	8	7	22.26	22.36	22.22		1
	15	0	22.28	22.29	22.22		1
16QAM	1	0	22.46	22.49	22.18	0-1	1
	1	7	22.44	22.39	22.26		1
	1	14	22.38	22.45	22.17		1
	8	0	21.38	21.25	21.27	0-2	2
	8	4	21.37	21.34	21.27		2
	8	7	21.34	21.25	21.29		2
	15	0	21.25	21.37	21.30		2

Table 9-4
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	23.29	23.34	23.25	0	0
	1	2	23.32	23.29	23.15		0
	1	5	23.27	23.28	23.26		0
	3	0	23.42	23.31	23.19		0
	3	2	23.41	23.34	23.18		0
	3	3	23.31	23.35	23.16		0
	6	0	22.31	22.28	22.17	0-1	1
16QAM	1	0	22.45	22.29	22.29	0-1	1
	1	2	22.26	22.31	22.08		1
	1	5	22.20	22.20	22.11		1
	3	0	22.37	22.36	22.17		1
	3	2	22.41	22.27	22.25		1
	3	3	22.40	22.39	22.15		1
	6	0	21.34	21.32	21.16	0-2	2

9.3.2 LTE Band 26 (Cell)

Table 9-5
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	**22.90**	0	0
	1	36	22.85		0
	1	74	22.83		0
	36	0	**21.97**	0-1	1
	36	18	21.95		1
	36	37	21.96		1
	75	0	21.96		1
16QAM	1	0	22.10	0-1	1
	1	36	22.09		1
	1	74	22.08		1
	36	0	20.95	0-2	2
	36	18	20.98		2
	36	37	20.99		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 9-6
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	23.24	23.15	23.22	0	0
	1	25	23.26	23.05	23.05		0
	1	49	23.20	23.07	22.95		0
	25	0	22.22	22.10	22.08	0-1	1
	25	12	22.18	22.11	22.03		1
	25	25	22.17	22.08	21.98		1
	50	0	22.17	22.08	22.01		1
16QAM	1	0	22.35	22.10	22.09	0-1	1
	1	25	22.33	22.01	22.05		1
	1	49	22.27	22.02	21.94		1
	25	0	21.25	21.15	21.06	0-2	2
	25	12	21.21	21.12	21.01		2
	25	25	21.24	21.14	20.97		2
	50	0	21.16	21.07	21.03		2

Table 9-7
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	23.19	23.10	23.17	0	0
	1	12	23.37	23.22	23.33		0
	1	24	23.33	23.23	23.02		0
	12	0	22.21	22.13	22.05	0-1	1
	12	6	22.23	22.10	22.01		1
	12	13	22.18	22.11	21.97		1
	25	0	22.18	22.05	22.00		1
16QAM	1	0	22.28	22.03	22.05	0-1	1
	1	12	22.19	22.22	21.94		1
	1	24	22.36	21.98	22.15		1
	12	0	21.27	21.05	21.03	0-2	2
	12	6	21.23	21.04	21.03		2
	12	13	21.23	21.07	20.94		2
	25	0	21.19	21.06	21.02		2

Table 9-8
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	23.39	23.16	23.04	0	0
	1	7	23.24	23.39	23.29		0
	1	14	23.17	23.05	23.12		0
	8	0	22.22	21.94	22.15	0-1	1
	8	4	22.12	22.19	21.99		1
	8	7	22.22	22.25	21.95		1
	15	0	21.98	22.07	22.20		1
16QAM	1	0	22.35	21.95	21.87	0-1	1
	1	7	22.07	22.20	22.09		1
	1	14	22.16	21.87	22.12		1
	8	0	21.45	20.93	21.01	0-2	2
	8	4	21.39	20.85	20.91		2
	8	7	21.15	20.94	20.98		2
	15	0	21.10	20.86	20.94		2

Table 9-9
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	23.18	22.87	23.02	0	0
	1	2	23.02	23.07	23.02		0
	1	5	23.05	22.96	23.13		0
	3	0	22.99	23.33	22.98		0
	3	2	22.87	22.88	23.11		0
	3	3	23.23	23.16	22.88		0
	6	0	22.20	21.88	22.20	0-1	1
16QAM	1	0	22.03	21.91	22.26	0-1	1
	1	2	22.29	22.22	22.00		1
	1	5	22.43	21.81	22.01		1
	3	0	22.20	22.15	21.80		1
	3	2	22.06	22.15	21.69		1
	3	3	22.06	22.13	21.90		1
	6	0	21.22	20.90	21.15	0-2	2

9.3.3 LTE Band 5 (Cell)

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

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	**23.92**	0	0
	1	25	23.86		0
	1	49	23.82		0
	25	0	**22.82**	0-1	1
	25	12	22.81		1
	25	25	22.78		1
	50	0	22.77		1
16QAM	1	0	23.00	0-1	1
	1	25	22.99		1
	1	49	22.95		1
	25	0	21.76	0-2	2
	25	12	21.80		2
	25	25	21.76		2
	50	0	21.81		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- Ant A

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	23.34	23.28	23.44	0	0
	1	12	23.45	23.40	23.42		0
	1	24	23.12	23.25	23.28		0
	12	0	22.32	22.47	22.36	0-1	1
	12	6	22.47	22.49	22.48		1
	12	13	22.42	22.26	22.19		1
	25	0	22.58	22.53	22.68		1
16QAM	1	0	22.81	22.88	22.74	0-1	1
	1	12	22.98	22.97	22.96		1
	1	24	22.91	22.90	22.99		1
	12	0	21.26	21.30	21.33	0-2	2
	12	6	21.33	21.48	21.42		2
	12	13	21.46	21.34	21.53		2
	25	0	21.47	21.39	21.20		2

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

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	23.48	23.10	23.62	0	0
	1	7	23.36	23.24	23.43		0
	1	14	23.21	23.13	23.21		0
	8	0	22.34	22.27	22.44	0-1	1
	8	4	22.53	22.67	22.38		1
	8	7	22.39	22.42	22.25		1
	15	0	22.48	22.33	22.51		1
16QAM	1	0	22.92	22.99	22.94	0-1	1
	1	7	22.82	22.91	23.00		1
	1	14	22.94	22.88	22.97		1
	8	0	21.39	21.31	21.48	0-2	2
	8	4	21.27	21.58	21.61		2
	8	7	21.42	21.34	21.64		2
	15	0	21.55	21.39	21.38		2

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

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	23.25	23.28	23.37	0	0
	1	2	23.62	23.36	23.33		0
	1	5	23.05	23.16	23.20		0
	3	0	23.19	23.48	23.30		0
	3	2	23.50	23.31	23.64		0
	3	3	23.24	23.08	23.28		0
	6	0	22.41	22.65	22.88	0-1	1
16QAM	1	0	22.97	22.86	22.81	0-1	1
	1	2	22.88	22.90	22.96		1
	1	5	22.92	22.92	22.90		1
	3	0	22.43	22.28	22.20		1
	3	2	22.43	22.28	22.24		1
	3	3	22.33	22.49	22.62		1
	6	0	21.29	21.52	21.02	0-2	2

Table 9-14
LTE Band 5 (Cell) Conducted Powers - 10 MHz Bandwidth- Ant B

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	20.93	0	0
	1	25	**21.00**		0
	1	49	20.88		0
	25	0	**20.13**	0-1	1
	25	12	20.12		1
	25	25	20.11		1
	50	0	20.11		1
16QAM	1	0	20.65	0-1	1
	1	25	20.60		1
	1	49	20.58		1
	25	0	19.05	0-2	2
	25	12	19.05		2
	25	25	19.00		2
	50	0	19.05		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 9-15
LTE Band 5 (Cell) Conducted Powers - 5 MHz Bandwidth- Ant B

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	21.36	21.05	21.06	0	0
	1	12	21.47	20.80	21.14		0
	1	24	21.50	20.76	21.15		0
	12	0	20.66	20.12	20.36	0-1	1
	12	6	20.64	20.10	20.23		1
	12	13	20.66	20.07	20.14		1
	25	0	20.60	20.07	20.16		1
16QAM	1	0	21.09	20.66	20.73	0-1	1
	1	12	21.08	20.66	20.67		1
	1	24	21.00	20.65	20.68		1
	12	0	19.66	18.89	19.09	0-2	2
	12	6	19.64	18.91	18.92		2
	12	13	19.58	18.93	18.90		2
	25	0	19.51	18.95	19.14		2

Table 9-16
LTE Band 5 (Cell) Conducted Powers - 3 MHz Bandwidth- Ant B

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	21.50	20.71	21.25	0	0
	1	7	21.48	20.80	21.19		0
	1	14	21.49	20.64	21.14		0
	8	0	20.52	19.80	20.27	0-1	1
	8	4	20.35	19.97	20.32		1
	8	7	20.43	19.99	20.24		1
	15	0	20.54	19.96	20.23		1
16QAM	1	0	21.00	20.63	20.85	0-1	1
	1	7	20.92	20.32	20.84		1
	1	14	21.00	20.45	20.85		1
	8	0	19.36	18.89	19.33	0-2	2
	8	4	19.45	18.87	19.23		2
	8	7	19.27	18.88	19.23		2
	15	0	19.52	18.90	19.25		2

Table 9-17
LTE Band 5 (Cell) Conducted Powers -1.4 MHz Bandwidth- Ant B

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	21.50	21.03	21.16	0	0
	1	2	21.44	21.03	21.17		0
	1	5	21.45	21.04	21.00		0
	3	0	21.56	21.11	21.08		0
	3	2	21.53	21.10	21.02		0
	3	3	21.56	21.11	21.15		0
	6	0	20.59	20.07	20.00	0-1	1
16QAM	1	0	20.95	20.35	20.47	0-1	1
	1	2	20.81	20.39	20.49		1
	1	5	20.67	20.38	20.43		1
	3	0	20.78	20.50	20.63		1
	3	2	20.90	20.48	20.66		1
	3	3	20.82	20.47	20.71		1
	6	0	19.40	19.04	19.08	0-2	2

9.3.4 LTE Band 4 (AWS)

Table 9-18
LTE Band 4 (AWS) Conducted Powers - 20 MHz Bandwidth

LTE Band 4 (AWS) 20 MHzBandwidth					
Modulation	RB Size	RB Offset	Mid Channel 20175 (1732.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	**22.81**	0	0
	1	50	22.74		0
	1	99	22.68		0
	50	0	21.65	0-1	1
	50	25	**21.69**		1
	50	50	21.58		1
	100	0	21.63		1
16QAM	1	0	21.72	0-1	1
	1	50	21.77		1
	1	99	21.65		1
	50	0	20.60	0-2	2
	50	25	20.61		2
	50	50	20.52		2
	100	0	20.42		2

Note: LTE Band 4 (AWS) at 20 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

Table 9-19
LTE Band 4 (AWS) Conducted Powers - 15 MHz Bandwidth

LTE Band 4 (AWS) 15 MHzBandwidth							
Modulation	RB Size	RB Offset	Low Channel 20025 (1717.5 MHz)	Mid Channel 20175 (1732.5 MHz)	High Channel 20325 (1747.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.11	22.81	23.08	0	0
	1	36	23.10	22.72	23.06		0
	1	74	23.02	22.67	23.02		0
	36	0	21.95	21.87	22.02	0-1	1
	36	18	21.85	21.83	22.01		1
	36	37	21.83	21.81	22.00		1
	75	0	21.90	21.84	21.99		1
16QAM	1	0	22.17	21.96	22.08	0-1	1
	1	36	22.19	21.91	22.09		1
	1	74	22.15	21.86	22.05		1
	36	0	20.92	20.91	21.04	0-2	2
	36	18	20.89	20.85	21.03		2
	36	37	20.91	20.84	20.98		2
	75	0	20.84	20.87	21.07		2

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

LTE Band 4 (AWS) 10 MHzBandwidth							
Modulation	RB Size	RB Offset	Low Channel 20000 (1715.0 MHz)	Mid Channel 20175 (1732.5 MHz)	High Channel 20350 (1750.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.08	22.73	23.07	0	0
	1	25	23.07	22.68	23.03		0
	1	49	23.04	22.70	23.04		0
	25	0	21.93	21.83	22.02	0-1	1
	25	12	21.91	21.80	22.01		1
	25	25	21.88	21.79	21.99		1
	50	0	21.89	21.79	22.04		1
16QAM	1	0	22.13	21.75	22.11	0-1	1
	1	25	22.08	21.79	22.19		1
	1	49	22.03	21.73	22.14		1
	25	0	20.89	20.85	21.01	0-2	2
	25	12	20.88	20.79	21.02		2
	25	25	20.88	20.80	20.98		2
	50	0	20.93	20.84	20.93		2

Table 9-21
LTE Band 4 (AWS) Conducted Powers - 5 MHz Bandwidth

LTE Band 4 (AWS) 5 MHzBandwidth							
Modulation	RB Size	RB Offset	Low Channel 19975 (1712.5 MHz)	Mid Channel 20175 (1732.5 MHz)	High Channel 20375 (1752.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.91	22.69	22.85	0	0
	1	12	22.90	22.71	22.84		0
	1	24	22.93	22.73	22.81		0
	12	0	21.83	21.84	21.94	0-1	1
	12	6	21.80	21.82	21.92		1
	12	13	21.78	21.81	21.90		1
	25	0	21.81	21.83	21.93		1
16QAM	1	0	21.74	21.78	21.76	0-1	1
	1	12	21.77	21.68	21.67		1
	1	24	21.79	21.65	21.72		1
	12	0	20.81	20.81	20.99	0-2	2
	12	6	20.79	20.83	21.00		2
	12	13	20.81	20.85	21.02		2
	25	0	20.87	20.80	20.92		2

Table 9-22
LTE Band 4 (AWS) Conducted Powers - 3 MHz Bandwidth

LTE Band 4 (AWS) 3 MHzBandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			19965 (1711.5 MHz)	20175 (1732.5 MHz)	20385 (1753.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.88	22.72	22.93	0	0
	1	7	22.91	22.69	22.91		0
	1	14	22.89	22.68	22.90		0
	8	0	21.89	21.85	21.94	0-1	1
	8	4	21.91	21.83	21.95		1
	8	7	21.90	21.79	21.89		1
	15	0	21.91	21.81	22.04		1
16QAM	1	0	22.12	21.71	21.89	0-1	1
	1	7	22.07	21.67	21.85		1
	1	14	22.09	21.66	21.83		1
	8	0	20.86	20.69	20.94	0-2	2
	8	4	20.91	20.72	20.96		2
	8	7	20.89	20.67	21.00		2
	15	0	20.87	20.81	21.01		2

Table 9-23
LTE Band 4 (AWS) Conducted Powers -1.4 MHz Bandwidth

LTE Band 4 (AWS) 1.4 MHzBandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			19957 (1710.7 MHz)	20175 (1732.5 MHz)	20393 (1754.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.06	22.92	22.89	0	0
	1	2	23.08	22.91	22.91		0
	1	5	23.03	22.89	23.00		0
	3	0	23.02	22.86	23.01		0
	3	2	23.05	22.83	23.05		0
	3	3	23.06	22.82	23.04		0
	6	0	22.03	21.84	21.91	0-1	1
16QAM	1	0	21.73	21.41	21.74	0-1	1
	1	2	21.70	21.52	21.72		1
	1	5	21.67	21.53	21.79		1
	3	0	21.96	21.67	21.99		1
	3	2	21.94	21.63	21.97		1
	3	3	21.91	21.64	21.99		1
	6	0	20.83	20.89	20.99	0-2	2

9.3.5 LTE Band 25 (PCS)

Table 9-24
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	22.23	**22.24**	22.17	0	0
	1	50	22.19	22.16	22.14		0
	1	99	22.05	22.13	22.11		0
	50	0	21.12	21.16	21.03	0-1	1
	50	25	21.10	**21.19**	21.03		1
	50	50	21.04	21.13	21.01		1
	100	0	21.05	21.14	20.98		1
16QAM	1	0	21.00	21.33	21.05	0-1	1
	1	50	20.99	21.18	21.04		1
	1	99	20.80	21.16	21.03		1
	50	0	19.98	20.21	20.00	0-2	2
	50	25	19.98	20.18	20.02		2
	50	50	19.92	20.14	20.00		2
	100	0	19.83	20.09	19.89		2

Table 9-25
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	22.17	22.37	22.16	0	0
	1	36	22.12	22.24	22.11		0
	1	74	22.06	22.24	22.06		0
	36	0	21.08	21.25	21.12	0-1	1
	36	18	21.08	21.20	21.18		1
	36	37	21.02	21.20	21.11		1
	75	0	21.11	21.23	21.12		1
16QAM	1	0	21.29	21.43	21.17	0-1	1
	1	36	21.22	21.51	21.16		1
	1	74	21.46	21.15	21.12		1
	36	0	20.05	20.26	20.19	0-2	2
	36	18	20.08	20.26	20.17		2
	36	37	20.03	20.20	20.16		2
	75	0	20.11	20.21	20.17		2

Table 9-26
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	22.00	22.10	22.13	0	0
	1	25	22.03	22.08	22.09		0
	1	49	21.91	22.08	21.99		0
	25	0	21.02	21.20	21.15	0-1	1
	25	12	21.01	21.16	21.18		1
	25	25	21.02	21.17	21.11		1
	50	0	21.03	21.19	21.14		1
16QAM	1	0	21.26	21.26	21.18	0-1	1
	1	25	21.16	21.27	21.19		1
	1	49	21.22	21.12	21.12		1
	25	0	20.05	20.26	20.22	0-2	2
	25	12	19.98	20.26	20.17		2
	25	25	20.03	20.22	20.16		2
	50	0	20.02	20.21	20.17		2

Table 9-27
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	22.10	22.06	22.53	0	0
	1	12	22.11	22.10	22.67		0
	1	24	22.13	22.03	22.16		0
	12	0	21.02	21.22	21.15	0-1	1
	12	6	21.01	21.21	21.11		1
	12	13	21.03	21.20	21.13		1
	25	0	21.04	21.22	21.11		1
16QAM	1	0	20.98	21.46	21.22	0-1	1
	1	12	21.05	21.47	21.15		1
	1	24	20.88	21.27	21.13		1
	12	0	20.09	20.33	20.16	0-2	2
	12	6	20.05	20.24	20.16		2
	12	13	20.09	20.22	20.12		2
	25	0	20.08	20.26	20.13		2

Table 9-28
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	21.94	22.15	22.05	0	0
	1	7	22.00	22.15	22.02		0
	1	14	21.99	22.17	22.09		0
	8	0	21.00	21.19	21.11	0-1	1
	8	4	21.02	21.16	21.12		1
	8	7	21.04	21.19	21.11		1
	15	0	21.05	21.19	21.10		1
16QAM	1	0	20.92	21.05	21.29	0-1	1
	1	7	20.90	21.02	21.41		1
	1	14	21.12	21.25	21.02		1
	8	0	20.17	20.30	20.13	0-2	2
	8	4	20.07	20.28	20.14		2
	8	7	20.08	20.27	20.15		2
	15	0	20.06	20.22	20.14		2

Table 9-29
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	22.09	22.22	22.13	0	0
	1	2	22.09	22.22	22.11		0
	1	5	22.11	22.18	22.06		0
	3	0	22.15	22.22	22.11		0
	3	2	22.13	22.23	22.05		0
	3	3	22.12	22.22	22.06		0
	6	0	21.11	21.21	21.10	0-1	1
16QAM	1	0	21.15	21.25	20.95	0-1	1
	1	2	20.75	21.27	20.88		1
	1	5	21.08	21.15	20.93		1
	3	0	21.12	21.34	21.02		1
	3	2	21.13	21.31	21.07		1
	3	3	21.12	21.28	21.00		1
	6	0	20.04	20.23	20.11	0-2	2

9.3.6 LTE Band 41

Table 9-30
LTE Band 41 Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHzBandwidth									
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	22.46	21.72	22.78	22.65	**23.00**	0	0
	1	50	22.45	21.68	22.76	22.66	22.99		0
	1	99	22.41	21.62	22.71	22.87	22.89		0
	50	0	21.54	21.11	21.77	21.93	**21.97**	0-1	1
	50	25	21.53	21.03	21.74	21.91	21.87		1
	50	50	21.56	21.00	21.73	21.89	21.78		1
	100	0	21.55	20.93	21.71	21.90	21.77		1
16QAM	1	0	21.56	21.25	21.83	21.87	21.87	0-1	1
	1	50	21.54	21.28	21.82	21.90	21.85		1
	1	99	21.56	21.29	21.80	21.92	21.81		1
	50	0	20.65	20.09	21.00	20.82	20.81	0-2	2
	50	25	20.69	20.11	20.99	20.83	20.79		2
	50	50	20.66	20.07	20.97	20.83	20.78		2
	100	0	20.67	20.04	21.00	21.00	20.84		2

Table 9-31
LTE Band 41 Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHzBandwidth									
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	22.38	21.70	22.91	22.46	22.91	0	0
	1	36	22.62	21.88	22.81	22.63	22.96		0
	1	74	22.30	21.67	22.86	22.99	22.84		0
	36	0	21.42	21.25	21.94	21.87	21.93	0-1	1
	36	18	21.49	21.14	21.83	21.86	21.85		1
	36	37	21.42	21.01	21.59	21.97	21.63		1
	75	0	21.66	20.84	21.85	21.70	21.77		1
16QAM	1	0	21.70	21.31	21.69	21.83	21.82	0-1	1
	1	36	21.56	21.19	21.80	21.96	21.91		1
	1	74	21.45	21.23	21.96	21.95	21.81		1
	36	0	20.85	20.01	20.99	20.94	20.77	0-2	2
	36	18	20.67	20.21	20.94	20.84	20.75		2
	36	37	20.80	20.20	20.89	20.72	20.92		2
	75	0	20.74	20.12	20.82	20.82	20.72		2

Table 9-32
LTE Band 41 Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHzBandwidth									
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	22.20	21.62	22.82	22.28	22.93	0	0
	1	25	22.69	21.94	22.76	22.54	22.78		0
	1	49	22.17	21.80	22.74	22.99	22.87		0
	25	0	21.32	21.28	22.00	21.70	21.78	0-1	1
	25	12	21.58	20.96	21.85	21.70	21.90		1
	25	25	21.40	21.05	21.75	21.98	21.79		1
	50	0	21.80	20.78	21.65	21.79	21.78		1
16QAM	1	0	21.72	21.43	21.88	21.66	21.88	0-1	1
	1	25	21.59	21.38	21.80	21.95	21.87		1
	1	49	21.35	21.25	21.95	21.99	21.98		1
	25	0	20.72	20.12	20.83	20.88	20.79	0-2	2
	25	12	20.79	20.39	20.90	20.86	20.57		2
	25	25	20.86	20.07	20.74	20.55	20.79		2
	50	0	20.91	20.08	20.67	20.74	20.89		2

Table 9-33
LTE Band 41 Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHzBandwidth									
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	22.08	21.54	22.84	22.21	22.87	0	0
	1	12	22.54	21.90	22.79	22.66	22.91		0
	1	24	22.14	21.64	22.88	22.89	22.89		0
	12	0	21.26	21.46	21.96	21.86	21.71	0-1	1
	12	6	21.64	20.81	21.65	21.55	21.83		1
	12	13	21.42	21.18	21.65	21.79	21.68		1
	25	0	21.60	20.59	21.71	21.66	21.98		1
16QAM	1	0	21.54	21.47	21.90	21.68	21.87	0-1	1
	1	12	21.44	21.40	21.88	21.84	21.90		1
	1	24	21.42	21.13	21.85	21.69	21.96		1
	12	0	20.58	20.29	20.85	20.86	20.78	0-2	2
	12	6	20.93	20.25	20.88	20.99	20.51		2
	12	13	20.84	19.88	20.73	20.36	20.97		2
	25	0	20.86	20.20	20.60	20.66	20.79		2

9.4 WLAN Conducted Powers

Table 9-34
2.4 GHz WLAN Maximum Average RF Power – Antenna 1

Freq [MHz]	Channel	2.4GHz Conducted Power [dBm]	
		IEEE Transmission Mode	
		802.11b	802.11g
2412	1	19.40	16.71
2437	6	**19.48**	16.81
2462	11	18.39	16.65

Table 9-35
2.4 GHz WLAN Maximum Average RF Power- Antenna 2

Freq [MHz]	Channel	2.4GHz Conducted Power [dBm]	
		IEEE Transmission Mode	
		802.11b	802.11g
2412	1	**19.46**	16.74
2437	6	18.77	16.99
2462	11	18.76	16.56

Table 9-36
2.4 GHz WLAN Reduced Average RF Power- Antenna 1 (Held to Ear)

Freq [MHz]	Channel	2.4GHz Conducted Power [dBm]		
		IEEE Transmission Mode		
		802.11b	802.11g	802.11n
2412	1	11.75	11.43	11.34
2437	6	**11.81**	11.64	11.13
2462	11	11.59	11.24	12.45

Table 9-37
2.4 GHz WLAN Reduced Average RF Power – Antenna 2 (Held to Ear)

Freq [MHz]	Channel	2.4GHz Conducted Power [dBm]		
		IEEE Transmission Mode		
		802.11b	802.11g	802.11n
2412	1	11.84	11.33	10.90
2437	6	**12.01**	11.46	11.20
2462	11	11.32	10.90	12.45

Table 9-38
5 GHz WLAN Maximum Average RF Power- Antenna 1

Freq [MHz]	Channel	5GHz (20MHz) Conducted Power [dBm]		
		IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
5180	36	15.44	14.45	14.50
5200	40	15.32	14.51	15.48
5220	44	15.26	15.48	15.46
5240	48	15.07	15.46	15.48
5260	52	16.83	17.33	17.40
5280	56	17.19	17.36	17.29
5300	60	**17.22**	17.39	17.33
5320	64	16.53	17.48	17.45
5500	100	16.43	17.25	17.23
5600	120	17.00	16.95	17.01
5620	124	**17.03**	16.88	16.96
5720	144	16.75	16.57	16.78
5745	149	**17.17**	17.13	17.07
5785	157	17.16	17.00	16.89
5825	165	16.89	16.79	16.69

Table 9-39
5 GHz WLAN Maximum Average RF Power – Antenna 2

Freq [MHz]	Channel	5GHz (20MHz) Conducted Power [dBm]		
		IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
5180	36	14.63	15.19	15.08
5200	40	14.53	15.04	15.11
5220	44	14.43	15.02	15.06
5240	48	14.60	14.89	15.00
5260	52	**17.44**	16.71	16.69
5280	56	17.40	16.57	16.63
5300	60	17.32	16.57	16.41
5320	64	17.17	16.52	16.53
5500	100	**16.77**	16.78	17.01
5600	120	16.49	16.54	16.50
5620	124	16.51	16.53	16.43
5720	144	16.48	16.26	16.39
5745	149	**16.93**	16.96	17.04
5785	157	16.77	16.84	16.93
5825	165	16.73	16.84	16.74

Table 9-40
5 GHz WLAN Reduced Average RF Power- Antenna 1 (Held to Ear)

5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
5210	42	10.11
5290	58	**10.26**
5530	106	10.15
5610	122	**10.19**
5690	138	9.96
5775	155	**9.65**

Table 9-41
5 GHz WLAN Reduced Average RF Power- Antenna 2 (Held to Ear)

5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
5210	42	9.45
5290	58	**10.33**
5530	106	9.68
5610	122	**10.38**
5690	138	10.12
5775	155	**9.64**

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.

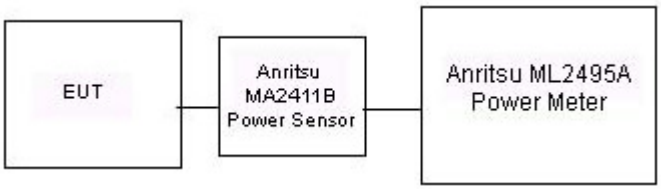


Figure 9-3
Power Measurement Setup

10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured Head Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (˚C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	%dev σ	%dev ε
6/2/2016	750H	21.7	700	0.850	42.172	0.889	42.201	-4.39%	-0.07%
			710	0.861	42.028	0.890	42.149	-3.26%	-0.29%
			740	0.888	41.619	0.893	41.994	-0.56%	-0.89%
			755	0.902	41.411	0.894	41.916	0.89%	-1.20%
6/30/2016	835H	22.8	820	0.901	42.937	0.899	41.578	0.22%	3.27%
			835	0.907	42.814	0.900	41.500	0.78%	3.17%
			850	0.929	42.650	0.916	41.500	1.42%	2.77%
6/6/2016	1750H	21.7	1710	1.321	39.255	1.348	40.142	-2.00%	-2.21%
			1750	1.359	39.049	1.371	40.079	-0.88%	-2.57%
			1790	1.402	38.875	1.394	40.016	0.57%	-2.85%
6/3/2016	1900H	22.2	1850	1.368	39.219	1.400	40.000	-2.29%	-1.95%
			1880	1.398	39.087	1.400	40.000	-0.14%	-2.28%
			1910	1.435	39.002	1.400	40.000	2.50%	-2.49%
6/13/2016	2450H	23.4	2400	1.797	39.953	1.756	39.289	2.33%	1.69%
			2450	1.857	39.758	1.800	39.200	3.17%	1.42%
			2500	1.913	39.565	1.855	39.136	3.13%	1.10%
6/3/2016	2600H	23.5	2600	2.040	39.880	1.964	39.009	3.87%	2.23%
			2650	2.103	39.642	2.018	38.945	4.21%	1.79%
			2700	2.168	39.480	2.073	38.882	4.58%	1.54%
06/13/2016	5200H-5800H	21.1	5240	4.643	35.181	4.696	35.940	-1.13%	-2.11%
			5260	4.673	35.130	4.717	35.917	-0.93%	-2.19%
			5280	4.690	35.118	4.737	35.894	-0.99%	-2.16%
			5300	4.709	35.079	4.758	35.871	-1.03%	-2.21%
			5600	4.999	34.662	5.065	35.529	-1.30%	-2.44%
			5620	5.040	34.611	5.086	35.506	-0.90%	-2.52%
			5745	5.171	34.423	5.214	35.363	-0.82%	-2.66%
			5765	5.195	34.433	5.234	35.340	-0.75%	-2.57%
			5785	5.201	34.443	5.255	35.317	-1.03%	-2.47%
			5800	5.219	34.377	5.270	35.300	-0.97%	-2.61%

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
4/3/2017	750B	24.5	700	0.917	54.755	0.959	55.726	-4.38%	-1.74%
			710	0.922	54.626	0.960	55.687	-3.96%	-1.91%
			740	0.943	54.286	0.963	55.570	-2.08%	-2.31%
			755	0.956	54.145	0.964	55.512	-0.83%	-2.46%
6/29/2016	835B	21.2	820	0.999	54.564	0.969	55.258	3.10%	-1.26%
			835	1.014	54.395	0.970	55.200	4.54%	-1.46%
			850	1.029	54.248	0.988	55.154	4.15%	-1.64%
6/6/2016	1750B	20.7	1710	1.462	52.026	1.463	53.537	-0.07%	-2.82%
			1750	1.507	51.834	1.488	53.432	1.28%	-2.99%
			1790	1.552	51.697	1.514	53.326	2.51%	-3.05%
3/27/2017	1900B	22.5	1850	1.517	52.532	1.520	53.300	-0.20%	-1.44%
			1880	1.552	52.413	1.520	53.300	2.11%	-1.66%
			1910	1.584	52.283	1.520	53.300	4.21%	-1.91%
6/1/2016	2450B	22.2	2400	1.946	51.651	1.902	52.767	2.31%	-2.11%
			2450	2.012	51.444	1.950	52.700	3.18%	-2.38%
			2500	2.082	51.240	2.021	52.636	3.02%	-2.65%
3/29/2017	2450B	22.1	2400	1.948	51.178	1.902	52.767	2.42%	-3.01%
			2450	2.011	50.977	1.950	52.700	3.13%	-3.27%
			2500	2.081	50.801	2.021	52.636	2.97%	-3.49%
6/1/2016	2600B	22.2	2550	2.151	51.060	2.092	52.573	2.82%	-2.88%
			2600	2.216	50.857	2.163	52.509	2.45%	-3.15%
			2650	2.284	50.644	2.234	52.445	2.24%	-3.43%
			2700	2.353	50.452	2.305	52.382	2.08%	-3.68%
06/13/2016	5200B-5800B	22.3	5240	5.512	47.117	5.346	48.960	3.11%	-3.76%
			5260	5.542	47.105	5.369	48.933	3.22%	-3.74%
			5300	5.593	47.010	5.416	48.879	3.27%	-3.82%
			5500	5.841	46.683	5.650	48.607	3.38%	-3.96%
			5600	5.969	46.504	5.766	48.471	3.52%	-4.06%
			5620	6.020	46.449	5.790	48.444	3.97%	-4.12%
04/10/2017	5200B-5800B	22.8	5240	5.500	47.858	5.346	48.960	2.88%	-2.25%
			5260	5.529	47.838	5.369	48.933	2.98%	-2.24%
			5300	5.578	47.748	5.416	48.879	2.99%	-2.31%
			5500	5.835	47.440	5.650	48.607	3.27%	-2.40%
			5600	5.978	47.260	5.766	48.471	3.68%	-2.50%
			5620	6.007	47.245	5.790	48.444	3.75%	-2.48%
			5745	6.184	47.041	5.936	48.275	4.18%	-2.56%
			5765	6.210	47.001	5.959	48.248	4.21%	-2.58%

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
1g System Verification Results

SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Dipole SN	Probe SN	Measured SAR_{1g} (W/kg)	1 W Target SAR_{1g} (W/kg)	1 W Normalized SAR_{1g} (W/kg)	$Deviation_{1g}$ (%)
K	750	HEAD	06/02/2016	24.0	21.7	0.200	1046	3022	1.580	8.200	7.900	-3.66%
I	835	HEAD	06/30/2016	22.8	22.8	0.200	4d119	3333	1.780	9.140	8.900	-2.63%
E	1750	HEAD	06/06/2016	23.2	21.7	0.100	1008	7406	3.400	36.700	34.000	-7.36%
I	1900	HEAD	06/03/2016	23.0	22.2	0.100	5d141	3333	4.150	38.500	41.500	7.79%
K	2450	HEAD	06/13/2016	22.4	23.4	0.100	719	3022	5.320	54.200	53.200	-1.85%
K	2600	HEAD	06/03/2016	24.0	23.5	0.100	1004	3022	5.840	55.700	58.400	4.85%
J	5250	HEAD	06/13/2016	20.4	21.1	0.050	1191	7357	3.880	82.500	77.600	-5.94%
J	5600	HEAD	06/13/2016	20.4	21.1	0.050	1191	7357	4.110	84.500	82.200	-2.72%
J	5750	HEAD	06/13/2016	20.4	21.1	0.050	1191	7357	3.940	80.000	78.800	-1.50%
I	750	BODY	04/03/2017	24.5	23.1	0.200	1161	3213	1.590	8.430	7.950	-5.69%
E	835	BODY	06/29/2016	23.2	21.2	0.200	4d119	7406	1.830	9.140	9.150	0.11%
E	1750	BODY	06/06/2016	21.3	20.7	0.100	1008	7406	3.800	37.300	38.000	1.88%
G	1900	BODY	03/27/2017	21.8	22.3	0.100	5d080	3287	4.170	39.100	41.700	6.65%
G	2450	BODY	06/01/2016	22.0	22.0	0.100	882	3334	5.200	49.400	52.000	5.26%
E	2450	BODY	03/29/2017	23.5	22.1	0.100	981	7406	4.770	50.800	47.700	-6.10%
G	2600	BODY	06/01/2016	22.0	22.0	0.100	1071	3334	5.770	54.900	57.700	5.10%
D	5250	BODY	04/10/2017	21.9	21.6	0.050	1237	3589	3.590	74.800	71.800	-4.01%
D	5600	BODY	04/10/2017	21.9	21.6	0.050	1237	3589	3.680	77.000	73.600	-4.42%
D	5750	BODY	04/10/2017	21.9	21.6	0.050	1237	3589	3.470	75.400	69.400	-7.96%

Table 10-4
10g System Verification Results

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Dipole SN	Probe SN	Measured SAR_{10g} (W/kg)	1 W Target SAR_{10g} (W/kg)	1 W Normalized SAR_{10g} (W/kg)	$Deviation_{10g}$ (%)
D	5250	BODY	06/13/2016	23.0	22.3	0.050	1120	3914	1.040	21.200	20.800	-1.89%
D	5600	BODY	06/13/2016	23.0	22.3	0.050	1120	3914	1.080	22.600	21.600	-4.42%

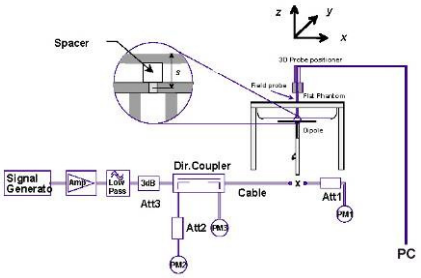


Figure 10-1
System Verification Setup Diagram

Figure 10-2
System Verification Setup Photo

11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
GSM 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	30.0	29.49	0.18	Right	Cheek	05AA2	1:8.3	0.043	1.125	0.048	
1880.00	661	GSM 1900	GSM	30.0	29.49	0.07	Right	Tilt	05AA2	1:8.3	0.028	1.125	0.032	
1880.00	661	GSM 1900	GSM	30.0	29.49	-0.16	Left	Cheek	05AA2	1:8.3	0.060	1.125	0.068	A1
1880.00	661	GSM 1900	GSM	30.0	29.49	0.08	Left	Tilt	05AA2	1:8.3	0.026	1.125	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 11-2
UMTS 850 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Ant. State	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	22.25	-0.04	Right	Cheek	7	8485A	1:1	0.150	1.334	**0.200**	A2
836.60	4183	UMTS 850	RMC	23.5	22.25	0.05	Right	Tilt	7	8485A	1:1	0.071	1.334	0.095	
836.60	4183	UMTS 850	RMC	23.5	22.25	0.08	Left	Cheek	7	8485A	1:1	0.096	1.334	0.128	
836.60	4183	UMTS 850	RMC	23.5	22.25	0.09	Left	Tilt	7	8485A	1:1	0.089	1.334	0.119	
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 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	23.0	22.15	0.12	Right	Cheek	05AD2	1:1	0.056	1.216	0.068	
1880.00	9400	UMTS 1900	RMC	23.0	22.15	0.06	Right	Tilt	05AD2	1:1	0.039	1.216	0.047	
1880.00	9400	UMTS 1900	RMC	23.0	22.15	0.09	Left	Cheek	05AD2	1:1	0.089	1.216	0.108	A3
1880.00	9400	UMTS 1900	RMC	23.0	22.15	0.13	Left	Tilt	05AD2	1:1	0.036	1.216	0.044	
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
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	23.21	0.19	0	Right	Cheek	QPSK	1	0	05AD2	1:1	0.011	1.069	0.012	A4
707.50	23095	Mid	LTE Band 12	10	22.5	22.33	0.15	1	Right	Cheek	QPSK	25	0	05AD2	1:1	0.008	1.040	0.008	
707.50	23095	Mid	LTE Band 12	10	23.5	23.21	0.18	0	Right	Tilt	QPSK	1	0	05AD2	1:1	0.005	1.069	0.005	
707.50	23095	Mid	LTE Band 12	10	22.5	22.33	0.12	1	Right	Tilt	QPSK	25	0	05AD2	1:1	0.003	1.040	0.003	
707.50	23095	Mid	LTE Band 12	10	23.5	23.21	0.15	0	Left	Cheek	QPSK	1	0	05AD2	1:1	0.010	1.069	0.011	
707.50	23095	Mid	LTE Band 12	10	22.5	22.33	0.16	1	Left	Cheek	QPSK	25	0	05AD2	1:1	0.006	1.040	0.006	
707.50	23095	Mid	LTE Band 12	10	23.5	23.21	0.17	0	Left	Tilt	QPSK	1	0	05AD2	1:1	0.002	1.069	0.002	
707.50	23095	Mid	LTE Band 12	10	22.5	22.33	0.11	1	Left	Tilt	QPSK	25	0	05AD2	1:1	0.001	1.040	0.001	
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
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	22.90	-0.01	0	Right	Cheek	QPSK	1	0	8485A	1:1	0.172	1.148	**0.197**	A5
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.97	-0.05	1	Right	Cheek	QPSK	36	0	8485A	1:1	0.148	1.130	0.167	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.5	22.90	0.04	0	Right	Tilt	QPSK	1	0	8485A	1:1	0.061	1.148	0.070	
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.97	0.00	1	Right	Tilt	QPSK	36	0	8485A	1:1	0.054	1.130	0.061	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.5	22.90	0.11	0	Left	Cheek	QPSK	1	0	8485A	1:1	0.102	1.148	0.117	
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.97	0.07	1	Left	Cheek	QPSK	36	0	8485A	1:1	0.086	1.130	0.097	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.5	22.90	0.02	0	Left	Tilt	QPSK	1	0	8485A	1:1	0.085	1.148	0.098	
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.97	0.06	1	Left	Tilt	QPSK	36	0	8485A	1:1	0.073	1.130	0.082	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Head 1.6 W/kg (mW/g) averaged over 1 gram					

Table 11-6
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	Ant. 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	24.0	23.92	0.06	0	Right	Cheek	7	QPSK	1	0	8485A	1:1	0.168	1.019	0.171	A6
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.0	22.82	0.07	1	Right	Cheek	7	QPSK	25	0	8485A	1:1	0.150	1.042	0.156	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.0	23.92	0.01	0	Right	Tilt	7	QPSK	1	0	8485A	1:1	0.081	1.019	0.083	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.0	22.82	0.00	1	Right	Tilt	7	QPSK	25	0	8485A	1:1	0.069	1.042	0.072	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.0	23.92	-0.02	0	Left	Cheek	7	QPSK	1	0	8485A	1:1	0.118	1.019	0.120	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.0	22.82	0.09	1	Left	Cheek	7	QPSK	25	0	8485A	1:1	0.097	1.042	0.101	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.0	23.92	0.02	0	Left	Tilt	7	QPSK	1	0	8485A	1:1	0.093	1.019	0.095	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.0	22.82	0.05	1	Left	Tilt	7	QPSK	25	0	8485A	1:1	0.091	1.042	0.095	
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 4 (AWS) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	22.81	0.03	0	Right	Cheek	QPSK	1	0	05AA2	1:1	0.065	1.172	0.076	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	21.69	-0.03	1	Right	Cheek	QPSK	50	25	05AA2	1:1	0.051	1.205	0.061	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	22.81	0.10	0	Right	Tilt	QPSK	1	0	05AA2	1:1	0.055	1.172	0.064	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	21.69	0.08	1	Right	Tilt	QPSK	50	25	05AA2	1:1	0.045	1.205	0.054	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	22.81	0.02	0	Left	Cheek	QPSK	1	0	05AA2	1:1	0.109	1.172	0.128	A7
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	21.69	0.08	1	Left	Cheek	QPSK	50	25	05AA2	1:1	0.083	1.205	0.100	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	22.81	0.02	0	Left	Tilt	QPSK	1	0	05AA2	1:1	0.054	1.172	0.063	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	21.69	0.12	1	Left	Tilt	QPSK	50	25	05AA2	1:1	0.042	1.205	0.051	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Head 1.6 W/kg (mW/g) averaged over 1 gram			

Table 11-8
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	22.24	-0.09	0	Right	Cheek	QPSK	1	0	8433D	1:1	0.093	1.337	0.124	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.19	0.08	1	Right	Cheek	QPSK	50	25	8433D	1:1	0.066	1.352	0.089	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.5	22.24	0.06	0	Right	Tilt	QPSK	1	0	8433D	1:1	0.061	1.337	0.082	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.19	0.08	1	Right	Tilt	QPSK	50	25	8433D	1:1	0.044	1.352	0.059	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.5	22.24	0.03	0	Left	Cheek	QPSK	1	0	8433D	1:1	0.120	1.337	0.160	A8
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.19	0.09	1	Left	Cheek	QPSK	50	25	8433D	1:1	0.091	1.352	0.123	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.5	22.24	0.05	0	Left	Tilt	QPSK	1	0	8433D	1:1	0.067	1.337	0.090	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.19	0.09	1	Left	Tilt	QPSK	50	25	8433D	1:1	0.043	1.352	0.058	
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 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)	
2680.00	41490	High	LTE Band 41	20	23.0	23.00	0.17	0	Right	Cheek	QPSK	1	0	05A82	1:1.58	0.032	1.000	0.032	
2680.00	41490	High	LTE Band 41	20	22.0	21.97	0.16	1	Right	Cheek	QPSK	50	0	05A82	1:1.58	0.022	1.007	0.022	
2680.00	41490	High	LTE Band 41	20	23.0	23.00	0.16	0	Right	Tilt	QPSK	1	0	05A82	1:1.58	0.024	1.000	0.024	
2680.00	41490	High	LTE Band 41	20	22.0	21.97	0.17	1	Right	Tilt	QPSK	50	0	05A82	1:1.58	0.016	1.007	0.016	
2680.00	41490	High	LTE Band 41	20	23.0	23.00	0.19	0	Left	Cheek	QPSK	1	0	05A82	1:1.58	0.036	1.000	0.036	A9
2680.00	41490	High	LTE Band 41	20	22.0	21.97	0.19	1	Left	Cheek	QPSK	50	0	05A82	1:1.58	0.028	1.007	0.028	
2680.00	41490	High	LTE Band 41	20	23.0	23.00	0.18	0	Left	Tilt	QPSK	1	0	05A82	1:1.58	0.011	1.000	0.011	
2680.00	41490	High	LTE Band 41	20	22.0	21.97	0.11	1	Left	Tilt	QPSK	50	0	05A82	1:1.58	0.009	1.007	0.009	
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
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)	
2437	6	802.11b	DSSS	22	12.5	11.81	-0.21	Right	Cheek	1	252AF	1	99.0	0.458	0.479	1.172	1.011	**0.568**	A10
2437	6	802.11b	DSSS	22	12.5	11.81	0.12	Right	Tilt	1	252AF	1	99.0	0.351	0.328	1.172	1.011	0.389	
2437	6	802.11b	DSSS	22	12.5	11.81	-0.15	Left	Cheek	1	252AF	1	99.0	0.246	-	1.172	1.011	-	
2437	6	802.11b	DSSS	22	12.5	11.81	0.02	Left	Tilt	1	252AF	1	99.0	0.136	-	1.172	1.011	-	
2437	6	802.11b	DSSS	22	12.5	12.01	0.17	Right	Cheek	2	54955	1	99.9	0.290	-	1.119	1.001	-	
2437	6	802.11b	DSSS	22	12.5	12.01	0.09	Right	Tilt	2	54955	1	99.9	0.295	0.287	1.119	1.001	0.321	
2437	6	802.11b	DSSS	22	12.5	12.01	0.17	Left	Cheek	2	54955	1	99.9	0.102	-	1.119	1.001	-	
2437	6	802.11b	DSSS	22	12.5	12.01	0.15	Left	Tilt	2	54955	1	99.9	0.146	-	1.119	1.001	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-11
NII Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5290	58	802.11ac	OFDM	80	10.5	10.26	0.13	Right	Cheek	1	252AE	29.3	94.3	0.607	0.274	1.057	1.060	**0.307**	A11
5290	58	802.11ac	OFDM	80	10.5	10.26	0.11	Right	Tilt	1	252AE	29.3	94.3	0.488	-	1.057	1.060	-	
5290	58	802.11ac	OFDM	80	10.5	10.26	0.12	Left	Cheek	1	252AE	29.3	94.3	0.294	-	1.057	1.060	-	
5290	58	802.11ac	OFDM	80	10.5	10.26	0.14	Left	Tilt	1	252AE	29.3	94.3	0.233	-	1.057	1.060	-	
5290	58	802.11ac	OFDM	80	10.5	10.33	0.19	Right	Cheek	2	252AE	29.3	94.1	0.414	0.159	1.040	1.062	0.176	
5290	58	802.11ac	OFDM	80	10.5	10.33	0.19	Right	Tilt	2	252AE	29.3	94.1	0.363	-	1.040	1.062	-	
5290	58	802.11ac	OFDM	80	10.5	10.33	-0.10	Left	Cheek	2	252AE	29.3	94.1	0.302	-	1.040	1.062	-	
5290	58	802.11ac	OFDM	80	10.5	10.33	0.18	Left	Tilt	2	252AE	29.3	94.1	0.154	-	1.040	1.062	-	
5610	122	802.11ac	OFDM	80	10.5	10.19	0.14	Right	Cheek	1	252AE	29.3	94.3	0.344	0.122	1.074	1.060	0.139	
5610	122	802.11ac	OFDM	80	10.5	10.19	0.17	Right	Tilt	1	252AE	29.3	94.3	0.295	-	1.074	1.060	-	
5610	122	802.11ac	OFDM	80	10.5	10.19	0.21	Left	Cheek	1	252AE	29.3	94.3	0.146	-	1.074	1.060	-	
5610	122	802.11ac	OFDM	80	10.5	10.19	-0.20	Left	Tilt	1	252AE	29.3	94.3	0.116	-	1.074	1.060	-	
5610	122	802.11ac	OFDM	80	10.5	10.38	0.10	Right	Cheek	2	252AE	29.3	94.1	0.730	-	1.028	1.062	-	
5610	122	802.11ac	OFDM	80	10.5	10.38	0.15	Right	Tilt	2	252AE	29.3	94.1	0.631	-	1.028	1.062	-	
5610	122	802.11ac	OFDM	80	10.5	10.38	-0.14	Left	Cheek	2	252AE	29.3	94.1	0.961	0.274	1.028	1.062	0.299	
5610	122	802.11ac	OFDM	80	10.5	10.38	0.06	Left	Tilt	2	252AE	29.3	94.1	0.740	-	1.028	1.062	-	
5775	155	802.11ac	OFDM	80	10.5	9.65	0.12	Right	Cheek	1	252AE	29.3	94.3	0.115	0.039	1.216	1.060	0.050	
5775	155	802.11ac	OFDM	80	10.5	9.65	0.20	Right	Tilt	1	252AE	29.3	94.3	0.098	-	1.216	1.060	-	
5775	155	802.11ac	OFDM	80	10.5	9.65	0.15	Left	Cheek	1	252AE	29.3	94.3	0.049	-	1.216	1.060	-	
5775	155	802.11ac	OFDM	80	10.5	9.65	0.12	Left	Tilt	1	252AE	29.3	94.3	0.039	-	1.216	1.060	-	
5775	155	802.11ac	OFDM	80	10.5	9.64	0.16	Right	Cheek	2	252AE	29.3	94.1	0.364	-	1.219	1.062	-	
5775	155	802.11ac	OFDM	80	10.5	9.64	0.18	Right	Tilt	2	252AE	29.3	94.1	0.376	-	1.219	1.062	-	
5775	155	802.11ac	OFDM	80	10.5	9.64	-0.17	Left	Cheek	2	252AE	29.3	94.1	0.720	0.164	1.219	1.062	0.212	
5775	155	802.11ac	OFDM	80	10.5	9.64	0.07	Left	Tilt	2	252AE	29.3	94.1	0.655	-	1.219	1.062	-	
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 11-12
GSM/UMTS Body-Worn SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Ant. State	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GSM	30.0	29.49	0.04	10 mm	N/A	54872	1	1:8.3	back	0.360	1.125	0.405	A12
836.60	4183	UMTS 850	RMC	23.5	22.25	0.03	10 mm	7	8485A	N/A	1:1	back	0.425	1.334	0.567	A14
1880.00	9400	UMTS 1900	RMC	23.0	22.15	-0.03	10 mm	N/A	54872	N/A	1:1	back	0.649	1.216	**0.789**	A15
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram									

Table 11-13
LTE Body-Worn SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna Config.	Device Serial Number	Ant. State	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	23.21	0.05	0	N/A	54955	N/A	QPSK	1	0	10 mm	back	1:1	0.242	1.069	0.259	A17
707.50	23095	Mid	LTE Band 12	10	22.5	22.33	-0.01	1	N/A	54955	N/A	QPSK	25	0	10 mm	back	1:1	0.198	1.040	0.206	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.5	22.90	0.00	0	N/A	8485A	NA	QPSK	1	0	10 mm	back	1:1	0.491	1.148	0.564	A19
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.97	0.04	1	N/A	8485A	NA	QPSK	36	0	10 mm	back	1:1	0.403	1.130	0.455	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.0	23.92	0.07	0	Ant A	8485A	7	QPSK	1	0	10 mm	back	1:1	0.574	1.019	0.585	A21
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.0	22.82	0.00	1	Ant A	8485A	7	QPSK	25	0	10 mm	back	1:1	0.477	1.042	0.497	
836.50	20525	Mid	LTE Band 5 (Cell)	10	22.5	21.00	0.06	0	Ant B	23032	N/A	QPSK	1	25	10 mm	back	1:1	0.283	1.413	0.400	
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.5	20.13	0.07	1	Ant B	23032	N/A	QPSK	25	0	10 mm	back	1:1	0.226	1.371	0.310	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	22.81	0.00	0	N/A	05AA2	N/A	QPSK	1	0	10 mm	back	1:1	0.380	1.172	0.445	A23
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	21.69	0.01	1	N/A	05AA2	N/A	QPSK	50	25	10 mm	back	1:1	0.300	1.205	0.362	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.5	22.24	0.12	0	N/A	54872	N/A	QPSK	1	0	10 mm	back	1:1	0.529	1.337	0.707	A25
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.19	0.05	1	N/A	54872	N/A	QPSK	50	25	10 mm	back	1:1	0.412	1.352	0.557	
2680.00	41490	High	LTE Band 41	20	23.0	23.00	0.07	0	N/A	0548E	N/A	QPSK	1	0	10 mm	back	1:1.58	0.300	1.000	0.300	A27
2680.00	41490	High	LTE Band 41	20	22.0	21.97	0.02	1	N/A	0548E	N/A	QPSK	50	0	10 mm	back	1:1.58	0.232	1.007	0.234	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Body 1.6 W/kg (mW/g) averaged over 1 gram												

Table 11-14
DTS Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2437	6	802.11b	DSSS	22	19.5	19.48	0.05	10 mm	1	23033	1	back	99.0	0.521	0.396	1.005	1.011	**0.402**	
2412	1	802.11b	DSSS	22	19.5	19.46	0.04	10 mm	2	23033	1	back	99.9	0.546	0.399	1.009	1.001	**0.403**	A29
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 11-15
NII Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	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	17.5	17.22	-0.18	10 mm	1	252AE	6	back	98.6	0.085	0.046	1.067	1.014	0.050	
5260	52	802.11a	OFDM	20	17.5	17.44	0.11	10 mm	2	54872	6	back	98.6	0.360	0.153	1.014	1.015	0.157	
5620	124	802.11a	OFDM	20	17.5	17.03	-0.16	10 mm	1	252AE	6	back	98.6	0.209	0.110	1.114	1.014	0.124	
5500	100	802.11a	OFDM	20	17.5	16.77	0.21	10 mm	2	54872	6	back	98.6	0.348	0.135	1.183	1.015	0.162	
5745	149	802.11a	OFDM	20	17.5	17.17	-0.11	10 mm	1	252AE	6	back	98.6	0.219	0.106	1.079	1.014	0.116	
5745	149	802.11a	OFDM	20	17.5	16.93	0.13	10 mm	2	54872	6	back	98.6	0.599	0.295	1.140	1.015	**0.341**	A30
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

11.3 Standalone Hotspot SAR Data

Table 11-16
GPRS/UMTS Hotspot SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Ant. State	Device Serial Number	# of GPRS Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GPRS	24.5	23.20	0.16	10 mm	N/A	54872	4	1:2.076	back	0.357	1.349	0.482	
1880.00	661	GSM 1900	GPRS	24.5	23.20	0.15	10 mm	N/A	54872	4	1:2.076	front	0.342	1.349	0.461	
1880.00	661	GSM 1900	GPRS	24.5	23.20	-0.07	10 mm	N/A	54872	4	1:2.076	bottom	0.415	1.349	0.560	A13
1880.00	661	GSM 1900	GPRS	24.5	23.20	-0.05	10 mm	N/A	54872	4	1:2.076	left	0.119	1.349	0.161	
836.60	4183	UMTS 850	RMC	23.5	22.25	0.03	10 mm	7	8485A	N/A	1:1	back	0.425	1.334	0.567	A14
836.60	4183	UMTS 850	RMC	23.5	22.25	0.06	10 mm	7	8485A	N/A	1:1	front	0.424	1.334	0.566	
836.60	4183	UMTS 850	RMC	23.5	22.25	-0.05	10 mm	7	8485A	N/A	1:1	bottom	0.281	1.334	0.375	
836.60	4183	UMTS 850	RMC	23.5	22.25	0.04	10 mm	7	8485A	N/A	1:1	right	0.229	1.334	0.305	
836.60	4183	UMTS 850	RMC	23.5	22.25	0.02	10 mm	7	8485A	N/A	1:1	left	0.045	1.334	0.060	
1880.00	9400	UMTS 1900	RMC	23.0	22.15	-0.03	10 mm	N/A	54872	N/A	1:1	back	0.649	1.216	0.789	
1880.00	9400	UMTS 1900	RMC	23.0	22.15	0.02	10 mm	N/A	54872	N/A	1:1	front	0.635	1.216	0.772	
1852.40	9262	UMTS 1900	RMC	23.0	21.95	-0.02	10 mm	N/A	54872	N/A	1:1	bottom	0.664	1.274	0.846	
1880.00	9400	UMTS 1900	RMC	23.0	22.15	0.00	10 mm	N/A	54872	N/A	1:1	bottom	0.786	1.216	**0.956**	A16
1907.60	9538	UMTS 1900	RMC	23.0	22.19	-0.05	10 mm	N/A	54872	N/A	1:1	bottom	0.667	1.205	0.804	
1880.00	9400	UMTS 1900	RMC	23.0	22.15	-0.03	10 mm	N/A	54872	N/A	1:1	left	0.241	1.216	0.293	
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 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	23.21	0.05	0	54955	QPSK	1	0	10 mm	back	1:1	0.242	1.069	0.259	
707.50	23095	Mid	LTE Band 12	10	22.5	22.33	-0.01	1	54955	QPSK	25	0	10 mm	back	1:1	0.198	1.040	0.206	
707.50	23095	Mid	LTE Band 12	10	23.5	23.21	-0.02	0	54955	QPSK	1	0	10 mm	front	1:1	0.263	1.069	0.281	A18
707.50	23095	Mid	LTE Band 12	10	22.5	22.33	-0.01	1	54955	QPSK	25	0	10 mm	front	1:1	0.211	1.040	0.219	
707.50	23095	Mid	LTE Band 12	10	23.5	23.21	-0.01	0	54955	QPSK	1	0	10 mm	bottom	1:1	0.149	1.069	0.159	
707.50	23095	Mid	LTE Band 12	10	22.5	22.33	-0.04	1	54955	QPSK	25	0	10 mm	bottom	1:1	0.112	1.040	0.116	
707.50	23095	Mid	LTE Band 12	10	23.5	23.21	-0.07	0	54955	QPSK	1	0	10 mm	right	1:1	0.120	1.069	0.128	
707.50	23095	Mid	LTE Band 12	10	22.5	22.33	-0.06	1	54955	QPSK	25	0	10 mm	right	1:1	0.101	1.040	0.105	
707.50	23095	Mid	LTE Band 12	10	23.5	23.21	-0.01	0	54955	QPSK	1	0	10 mm	left	1:1	0.043	1.069	0.046	
707.50	23095	Mid	LTE Band 12	10	22.5	22.33	0.05	1	54955	QPSK	25	0	10 mm	left	1:1	0.036	1.040	0.037	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Body 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-18
LTE Band 26 (Cell) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.5	22.90	0.00	0	8485A	QPSK	1	0	10 mm	back	1:1	0.491	1.148	0.564	
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.97	0.04	1	8485A	QPSK	36	0	10 mm	back	1:1	0.403	1.130	0.455	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.5	22.90	-0.06	0	8485A	QPSK	1	0	10 mm	front	1:1	0.561	1.148	0.644	A20
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.97	0.00	1	8485A	QPSK	36	0	10 mm	front	1:1	0.456	1.130	0.515	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.5	22.90	-0.04	0	8485A	QPSK	1	0	10 mm	bottom	1:1	0.298	1.148	0.342	
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.97	-0.04	1	8485A	QPSK	36	0	10 mm	bottom	1:1	0.240	1.130	0.271	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.5	22.90	-0.01	0	8485A	QPSK	1	0	10 mm	right	1:1	0.268	1.148	0.308	
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.97	0.02	1	8485A	QPSK	36	0	10 mm	right	1:1	0.199	1.130	0.225	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.5	22.90	0.01	0	8485A	QPSK	1	0	10 mm	left	1:1	0.060	1.148	0.069	
831.50	26865	Mid	LTE Band 26 (Cell)	15	22.5	21.97	-0.06	1	8485A	QPSK	36	0	10 mm	left	1:1	0.056	1.130	0.063	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Body 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-19
LTE Band 5 (Cell) Hotspot SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna Config.	Device Serial Number	Ant. State	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	24.0	23.92	0.07	0	Ant A	8485A	7	QPSK	1	0	10 mm	back	1:1	0.574	1.019	0.585	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.0	22.82	0.00	1	Ant A	8485A	7	QPSK	25	0	10 mm	back	1:1	0.477	1.042	0.497	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.0	23.92	-0.02	0	Ant A	8485A	7	QPSK	1	0	10 mm	front	1:1	0.635	1.019	0.647	A22
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.0	22.82	-0.01	1	Ant A	8485A	7	QPSK	25	0	10 mm	front	1:1	0.543	1.042	0.566	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.0	23.92	-0.02	0	Ant A	8485A	7	QPSK	1	0	10 mm	bottom	1:1	0.325	1.019	0.331	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.0	22.82	0.01	1	Ant A	8485A	7	QPSK	25	0	10 mm	bottom	1:1	0.289	1.042	0.301	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.0	23.92	-0.04	0	Ant A	8485A	7	QPSK	1	0	10 mm	right	1:1	0.276	1.019	0.281	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.0	22.82	0.02	1	Ant A	8485A	7	QPSK	25	0	10 mm	right	1:1	0.255	1.042	0.266	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.0	23.92	-0.04	0	Ant A	8485A	7	QPSK	1	0	10 mm	left	1:1	0.119	1.019	0.121	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.0	22.82	-0.01	1	Ant A	8485A	7	QPSK	25	0	10 mm	left	1:1	0.104	1.042	0.108	
836.50	20525	Mid	LTE Band 5 (Cell)	10	22.5	21.00	0.06	0	Ant B	23032	N/A	QPSK	1	25	10 mm	back	1:1	0.283	1.413	0.400	
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.5	20.13	0.07	1	Ant B	23032	N/A	QPSK	25	0	10 mm	back	1:1	0.226	1.371	0.310	
836.50	20525	Mid	LTE Band 5 (Cell)	10	22.5	21.00	0.05	0	Ant B	23032	N/A	QPSK	1	25	10 mm	front	1:1	0.271	1.413	0.383	
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.5	20.13	-0.02	1	Ant B	23032	N/A	QPSK	25	0	10 mm	front	1:1	0.210	1.371	0.288	
836.50	20525	Mid	LTE Band 5 (Cell)	10	22.5	21.00	0.03	0	Ant B	23032	N/A	QPSK	1	25	10 mm	top	1:1	0.177	1.413	0.250	
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.5	20.13	-0.07	1	Ant B	23032	N/A	QPSK	25	0	10 mm	top	1:1	0.135	1.371	0.185	
836.50	20525	Mid	LTE Band 5 (Cell)	10	22.5	21.00	0.18	0	Ant B	23032	N/A	QPSK	1	25	10 mm	right	1:1	0.018	1.413	0.025	
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.5	20.13	0.20	1	Ant B	23032	N/A	QPSK	25	0	10 mm	right	1:1	0.014	1.371	0.019	
836.50	20525	Mid	LTE Band 5 (Cell)	10	22.5	21.00	0.03	0	Ant B	23032	N/A	QPSK	1	25	10 mm	left	1:1	0.131	1.413	0.185	
836.50	20525	Mid	LTE Band 5 (Cell)	10	21.5	20.13	0.01	1	Ant B	23032	N/A	QPSK	25	0	10 mm	left	1:1	0.099	1.371	0.136	
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
LTE Band 4 (AWS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	22.81	0.00	0	05AA2	QPSK	1	0	10 mm	back	1:1	0.380	1.172	0.445	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	21.69	0.01	1	05AA2	QPSK	50	25	10 mm	back	1:1	0.300	1.205	0.362	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	22.81	-0.02	0	05AA2	QPSK	1	0	10 mm	front	1:1	0.378	1.172	0.443	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	21.69	-0.01	1	05AA2	QPSK	50	25	10 mm	front	1:1	0.310	1.205	0.374	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	22.81	0.00	0	05AA2	QPSK	1	0	10 mm	bottom	1:1	0.642	1.172	0.752	A24
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	21.69	0.00	1	05AA2	QPSK	50	25	10 mm	bottom	1:1	0.546	1.205	0.658	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	23.5	22.81	-0.03	0	05AA2	QPSK	1	0	10 mm	left	1:1	0.293	1.172	0.343	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.5	21.69	0.00	1	05AA2	QPSK	50	25	10 mm	left	1:1	0.240	1.205	0.289	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11-21
LTE Band 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) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																		
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.5	22.24	0.12	0	54872	QPSK	1	0	10 mm	back	1:1	0.529	1.337	0.707	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.19	0.05	1	54872	QPSK	50	25	10 mm	back	1:1	0.412	1.352	0.557	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.5	22.23	-0.05	0	54872	QPSK	1	0	10 mm	front	1:1	0.599	1.340	0.803	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.5	22.24	0.07	0	54872	QPSK	1	0	10 mm	front	1:1	0.605	1.337	0.809	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	22.17	0.04	0	54872	QPSK	1	0	10 mm	front	1:1	0.602	1.358	0.818	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.19	0.06	1	54872	QPSK	50	25	10 mm	front	1:1	0.477	1.352	0.645	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.14	0.07	1	54872	QPSK	100	0	10 mm	front	1:1	0.475	1.368	0.650	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.5	22.23	0.04	0	54872	QPSK	1	0	10 mm	bottom	1:1	0.654	1.340	0.876	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.5	22.24	-0.01	0	54872	QPSK	1	0	10 mm	bottom	1:1	0.665	1.337	0.889	A26
1905.00	26590	High	LTE Band 25 (PCS)	20	23.5	22.17	-0.08	0	54872	QPSK	1	0	10 mm	bottom	1:1	0.583	1.358	0.792	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.19	-0.02	1	54872	QPSK	50	25	10 mm	bottom	1:1	0.429	1.352	0.580	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.14	-0.02	1	54872	QPSK	100	0	10 mm	bottom	1:1	0.431	1.368	0.590	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	23.5	22.24	0.10	0	54872	QPSK	1	0	10 mm	left	1:1	0.212	1.337	0.283	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	22.5	21.19	0.00	1	54872	QPSK	50	25	10 mm	left	1:1	0.132	1.352	0.178	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Body 1.6 W/kg (mW/g) averaged over 1 gram			

Table 11-22
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) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																		
2680.00	41490	High	LTE Band 41	20	23.0	23.00	0.07	0	0548E	QPSK	1	0	10 mm	back	1:1.58	0.300	1.000	0.300	
2680.00	41490	High	LTE Band 41	20	22.0	21.97	0.02	1	0548E	QPSK	50	0	10 mm	back	1:1.58	0.232	1.007	0.234	
2680.00	41490	High	LTE Band 41	20	23.0	23.00	0.01	0	0548E	QPSK	1	0	10 mm	front	1:1.58	0.325	1.000	0.325	
2680.00	41490	High	LTE Band 41	20	22.0	21.97	0.04	1	0548E	QPSK	50	0	10 mm	front	1:1.58	0.253	1.007	0.255	
2506.00	39750	Low	LTE Band 41	20	23.0	22.46	-0.07	0	0548E	QPSK	1	0	10 mm	bottom	1:1.58	0.541	1.132	0.612	
2549.50	40185	Low-Mid	LTE Band 41	20	23.0	21.72	-0.06	0	0548E	QPSK	1	0	10 mm	bottom	1:1.58	0.622	1.343	0.835	
2593.00	40620	Mid	LTE Band 41	20	23.0	22.78	-0.11	0	0548E	QPSK	1	0	10 mm	bottom	1:1.58	0.710	1.052	0.747	A28
2636.50	41055	Mid-High	LTE Band 41	20	23.0	22.87	0.02	0	0548E	QPSK	1	99	10 mm	bottom	1:1.58	0.621	1.030	0.640	
2680.00	41490	High	LTE Band 41	20	23.0	23.00	-0.04	0	0548E	QPSK	1	0	10 mm	bottom	1:1.58	0.622	1.000	0.622	
2680.00	41490	High	LTE Band 41	20	22.0	21.97	0.01	1	0548E	QPSK	50	0	10 mm	bottom	1:1.58	0.469	1.007	0.472	
2636.50	41055	Mid-High	LTE Band 41	20	22.0	21.90	-0.03	1	0548E	QPSK	100	0	10 mm	bottom	1:1.58	0.460	1.023	0.471	
2680.00	41490	High	LTE Band 41	20	23.0	23.00	-0.11	0	0548E	QPSK	1	0	10 mm	left	1:1.58	0.148	1.000	0.148	
2680.00	41490	High	LTE Band 41	20	22.0	21.97	0.14	1	0548E	QPSK	50	0	10 mm	left	1:1.58	0.146	1.007	0.147	
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
WLAN Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2437	6	802.11b	DSSS	22	19.5	19.48	0.05	10 mm	1	23033	1	back	99.0	0.521	0.396	1.005	1.011	**0.402**	
2437	6	802.11b	DSSS	22	19.5	19.48	0.15	10 mm	1	23033	1	front	99.0	0.461	0.376	1.005	1.011	0.382	
2437	6	802.11b	DSSS	22	19.5	19.48	0.00	10 mm	1	23033	1	top	99.0	0.150	-	1.005	1.011	-	
2437	6	802.11b	DSSS	22	19.5	19.48	0.09	10 mm	1	23033	1	left	99.0	0.139	-	1.005	1.011	-	
2412	1	802.11b	DSSS	22	19.5	19.46	0.04	10 mm	2	23033	1	back	99.9	0.546	0.399	1.009	1.001	**0.403**	A29
2412	1	802.11b	DSSS	22	19.5	19.46	0.09	10 mm	2	23033	1	front	99.9	0.241	0.211	1.009	1.001	0.213	
2412	1	802.11b	DSSS	22	19.5	19.46	0.03	10 mm	2	23033	1	top	99.9	0.373	0.324	1.009	1.001	0.327	
2412	1	802.11b	DSSS	22	19.5	19.46	-0.07	10 mm	2	23033	1	left	99.9	0.246	-	1.009	1.001	-	
5745	149	802.11a	OFDM	20	17.5	17.17	-0.11	10 mm	1	252AE	6	back	98.6	0.219	-	1.079	1.014	-	
5745	149	802.11a	OFDM	20	17.5	17.17	0.19	10 mm	1	252AE	6	front	98.6	0.238	0.149	1.079	1.014	0.163	
5745	149	802.11a	OFDM	20	17.5	17.17	0.11	10 mm	1	252AE	6	top	98.6	0.115	-	1.079	1.014	-	
5745	149	802.11a	OFDM	20	17.5	17.17	0.12	10 mm	1	252AE	6	left	98.6	0.095	-	1.079	1.014	-	
5745	149	802.11a	OFDM	20	17.5	16.93	0.13	10 mm	2	54872	6	back	98.6	0.599	0.295	1.140	1.015	**0.341**	A30
5745	149	802.11a	OFDM	20	17.5	16.93	0.14	10 mm	2	54872	6	front	98.6	0.573	-	1.140	1.015	-	
5745	149	802.11a	OFDM	20	17.5	16.93	0.21	10 mm	2	54872	6	top	98.6	0.155	-	1.140	1.015	-	
5745	149	802.11a	OFDM	20	17.5	16.93	-0.14	10 mm	2	54872	6	left	98.6	0.150	-	1.140	1.015	-	

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 11-24
WLAN Phablet SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5300	60	802.11a	OFDM	20	17.5	17.22	0.05	0 mm	1	252AE	6	back	98.6	1.698	0.170	1.067	1.014	0.184	
5300	60	802.11a	OFDM	20	17.5	17.22	0.14	0 mm	1	252AE	6	front	98.6	1.326	-	1.067	1.014	-	
5300	60	802.11a	OFDM	20	17.5	17.22	-0.14	0 mm	1	252AE	6	top	98.6	0.571	-	1.067	1.014	-	
5300	60	802.11a	OFDM	20	17.5	17.22	0.11	0 mm	1	252AE	6	left	98.6	0.189	-	1.067	1.014	-	
5260	52	802.11a	OFDM	20	17.5	17.44	0.19	0 mm	2	252AE	6	back	98.6	6.153	1.050	1.014	1.015	1.081	
5260	52	802.11a	OFDM	20	17.5	17.44	-0.20	0 mm	2	252AE	6	front	98.6	5.369	0.675	1.014	1.015	0.695	
5260	52	802.11a	OFDM	20	17.5	17.44	0.18	0 mm	2	252AE	6	top	98.6	1.509	-	1.014	1.015	-	
5260	52	802.11a	OFDM	20	17.5	17.44	-0.20	0 mm	2	252AE	6	left	98.6	0.711	-	1.014	1.015	-	
5620	124	802.11a	OFDM	20	17.5	17.03	0.02	0 mm	1	252AE	6	back	98.6	5.956	0.594	1.114	1.014	0.671	
5620	124	802.11a	OFDM	20	17.5	17.03	-0.18	0 mm	1	252AE	6	front	98.6	2.353	-	1.114	1.014	-	
5620	124	802.11a	OFDM	20	17.5	17.03	0.08	0 mm	1	252AE	6	top	98.6	0.889	-	1.114	1.014	-	
5620	124	802.11a	OFDM	20	17.5	17.03	0.14	0 mm	1	252AE	6	left	98.6	0.707	-	1.114	1.014	-	
5500	100	802.11a	OFDM	20	17.5	16.77	-0.19	0 mm	2	252AE	6	back	98.6	14.009	1.640	1.183	1.015	**1.969**	A31
5500	100	802.11a	OFDM	20	17.5	16.77	0.05	0 mm	2	252AE	6	front	98.6	5.332	0.664	1.183	1.015	0.797	
5500	100	802.11a	OFDM	20	17.5	16.77	0.14	0 mm	2	252AE	6	top	98.6	1.277	-	1.183	1.015	-	
5500	100	802.11a	OFDM	20	17.5	16.77	0.15	0 mm	2	252AE	6	left	98.6	0.788	-	1.183	1.015	-	

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

11.5 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, and FCC KDB Publication 447498 D01v06.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 10 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
7. Per FCC KDB Publication 648474 D04v01r03, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported body-worn SAR was ≤ 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were required.
8. Per FCC KDB Publication 865664 D01v01r04, variability SAR tests were not required since measured SAR results for all frequency bands were less than 0.8 W/kg. Please see Section 14 for variability analysis.
9. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v02r01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.7 for more details).
10. Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is > 160 mm and < 200 mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg.
11. This device utilizes power reduction for some wireless modes and technologies, as outlined in Section 1.3. The maximum output power allowed for each transmitter and exposure condition was evaluated for SAR Compliance based on expected use conditions and simultaneous transmission scenarios.
12. This device supports dynamic antenna tuning for some low frequency bands. Per FCC Guidance, SAR was measured according to the normally required SAR measurement configurations with the tuner active. The auto-tune state determined by the device was verified before and after each SAR measurement and is listed in the tables above. Please see Section 13 for supplemental data.

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 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 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, 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 and hotspot operations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, 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. 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. 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 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.

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 1-g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is ≤1.6 W/kg. The different test positions in an exposure condition may be considered collectively to determine SAR test exclusion according to the sum of 1-g or 10-g SAR.

When standalone SAR is not required to be measured, per FCC KDB 447498 D01v06 4.3.2 b), the following equation must be used to estimate the standalone 1g SAR for simultaneous transmission assessment involving that transmitter.

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

Table 12-1
Estimated SAR

Mode	Frequency	Maximum Allowed Power	Separation Distance (Body)	Estimated SAR (Body)
	[MHz]	[dBm]	[mm]	[W/kg]
Bluetooth	2480	11.50	10	0.294

Note: Held-to ear configurations are not applicable to Bluetooth operations and therefore were not considered for simultaneous transmission. Per KDB Publication 447498 D01v06, the maximum power of the channel was rounded to the nearest mW before calculation.

12.3 Head SAR Simultaneous Transmission Analysis

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 1900	0.068	0.568	0.321	0.636	0.389	0.957
	UMTS 850	0.200	0.568	0.321	0.768	0.521	**1.089**
	UMTS 1900	0.108	0.568	0.321	0.676	0.429	0.997
	LTE Band 12	0.012	0.568	0.321	0.580	0.333	0.901
	LTE Band 26 (Cell)	0.197	0.568	0.321	0.765	0.518	1.086
	LTE Band 5 (Cell)	0.171	0.568	0.321	0.739	0.492	1.060
	LTE Band 4 (AWS)	0.128	0.568	0.321	0.696	0.449	1.017
	LTE Band 25 (PCS)	0.160	0.568	0.321	0.728	0.481	1.049
	LTE Band 41	0.036	0.568	0.321	0.604	0.357	0.925

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 1900	0.068	0.307	0.299	0.375	0.367	0.674
	UMTS 850	0.200	0.307	0.299	0.507	0.499	**0.806**
	UMTS 1900	0.108	0.307	0.299	0.415	0.407	0.714
	LTE Band 12	0.012	0.307	0.299	0.319	0.311	0.618
	LTE Band 26 (Cell)	0.197	0.307	0.299	0.504	0.496	0.803
	LTE Band 5 (Cell)	0.171	0.307	0.299	0.478	0.470	0.777
	LTE Band 4 (AWS)	0.128	0.307	0.299	0.435	0.427	0.734
	LTE Band 25 (PCS)	0.160	0.307	0.299	0.467	0.459	0.766
	LTE Band 41	0.036	0.307	0.299	0.343	0.335	0.642

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 1900	0.068	0.568	0.299	0.636	0.367	0.935
	UMTS 850	0.200	0.568	0.299	0.768	0.499	**1.067**
	UMTS 1900	0.108	0.568	0.299	0.676	0.407	0.975
	LTE Band 12	0.012	0.568	0.299	0.580	0.311	0.879
	LTE Band 26 (Cell)	0.197	0.568	0.299	0.765	0.496	1.064
	LTE Band 5 (Cell)	0.171	0.568	0.299	0.739	0.470	1.038
	LTE Band 4 (AWS)	0.128	0.568	0.299	0.696	0.427	0.995
	LTE Band 25 (PCS)	0.160	0.568	0.299	0.728	0.459	1.027
	LTE Band 41	0.036	0.568	0.299	0.604	0.335	0.903

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 1900	0.068	0.321	0.307	0.389	0.375	0.696
	UMTS 850	0.200	0.321	0.307	0.521	0.507	**0.828**
	UMTS 1900	0.108	0.321	0.307	0.429	0.415	0.736
	LTE Band 12	0.012	0.321	0.307	0.333	0.319	0.640
	LTE Band 26 (Cell)	0.197	0.321	0.307	0.518	0.504	0.825
	LTE Band 5 (Cell)	0.171	0.321	0.307	0.492	0.478	0.799
	LTE Band 4 (AWS)	0.128	0.321	0.307	0.449	0.435	0.756
	LTE Band 25 (PCS)	0.160	0.321	0.307	0.481	0.467	0.788
	LTE Band 41	0.036	0.321	0.307	0.357	0.343	0.664

12.4 Body-Worn Simultaneous Transmission Analysis

Table 12-6
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Body-Worn at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	GSM 1900	0.405	0.402	0.403	0.807	0.808	1.210
	UMTS 850	0.567	0.402	0.403	0.969	0.970	1.372
	UMTS 1900	0.789	0.402	0.403	1.191	1.192	**1.594**
	LTE Band 12	0.259	0.402	0.403	0.661	0.662	1.064
	LTE Band 26 (Cell)	0.564	0.402	0.403	0.966	0.967	1.369
	LTE Band 5 (Cell)	0.585	0.402	0.403	0.987	0.988	1.390
	LTE Band 4 (AWS)	0.445	0.402	0.403	0.847	0.848	1.250
	LTE Band 25 (PCS)	0.707	0.402	0.403	1.109	1.110	1.512
	LTE Band 41	0.300	0.402	0.403	0.702	0.703	1.105

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	GSM 1900	0.405	0.124	0.341	0.529	0.746	0.870
	UMTS 850	0.567	0.124	0.341	0.691	0.908	1.032
	UMTS 1900	0.789	0.124	0.341	0.913	1.130	**1.254**
	LTE Band 12	0.259	0.124	0.341	0.383	0.600	0.724
	LTE Band 26 (Cell)	0.564	0.124	0.341	0.688	0.905	1.029
	LTE Band 5 (Cell)	0.585	0.124	0.341	0.709	0.926	1.050
	LTE Band 4 (AWS)	0.445	0.124	0.341	0.569	0.786	0.910
	LTE Band 25 (PCS)	0.707	0.124	0.341	0.831	1.048	1.172
	LTE Band 41	0.300	0.124	0.341	0.424	0.641	0.765

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	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 1900	0.405	0.402	0.341	0.807	0.746	1.148
	UMTS 850	0.567	0.402	0.341	0.969	0.908	1.310
	UMTS 1900	0.789	0.402	0.341	1.191	1.130	**1.532**
	LTE Band 12	0.259	0.402	0.341	0.661	0.600	1.002
	LTE Band 26 (Cell)	0.564	0.402	0.341	0.966	0.905	1.307
	LTE Band 5 (Cell)	0.585	0.402	0.341	0.987	0.926	1.328
	LTE Band 4 (AWS)	0.445	0.402	0.341	0.847	0.786	1.188
	LTE Band 25 (PCS)	0.707	0.402	0.341	1.109	1.048	1.450
	LTE Band 41	0.300	0.402	0.341	0.702	0.641	1.043

Table 12-9
Simultaneous Transmission Scenario with 2.4 GHz Ant 2 and 5 GHz Ant 1 WLAN (Body-Worn at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	GSM 1900	0.405	0.403	0.124	0.808	0.529	0.932
	UMTS 850	0.567	0.403	0.124	0.970	0.691	1.094
	UMTS 1900	0.789	0.403	0.124	1.192	0.913	**1.316**
	LTE Band 12	0.259	0.403	0.124	0.662	0.383	0.786
	LTE Band 26 (Cell)	0.564	0.403	0.124	0.967	0.688	1.091
	LTE Band 5 (Cell)	0.585	0.403	0.124	0.988	0.709	1.112
	LTE Band 4 (AWS)	0.445	0.403	0.124	0.848	0.569	0.972
	LTE Band 25 (PCS)	0.707	0.403	0.124	1.110	0.831	1.234
	LTE Band 41	0.300	0.403	0.124	0.703	0.424	0.827

Table 12-10
Simultaneous Transmission Scenario with Bluetooth (Body-Worn at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body-Worn	GSM 1900	0.405	0.294	0.699
	UMTS 850	0.567	0.294	0.861
	UMTS 1900	0.789	0.294	**1.083**
	LTE Band 12	0.259	0.294	0.553
	LTE Band 26 (Cell)	0.564	0.294	0.858
	LTE Band 5 (Cell)	0.585	0.294	0.879
	LTE Band 4 (AWS)	0.445	0.294	0.739
	LTE Band 25 (PCS)	0.707	0.294	1.001
	LTE Band 41	0.300	0.294	0.594

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

12.5 Hotspot SAR Simultaneous Transmission Analysis

Per FCC KDB Publication 648474 D04 Handset SAR v01r01, 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 Hotspot SAR result was used for simultaneous transmission analysis.

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 1900	0.560	0.402	0.403	0.962	0.963	1.365
	UMTS 850	0.567	0.402	0.403	0.969	0.970	1.372
	UMTS 1900	0.956	0.402	0.403	1.358	1.359	See Table 12-12
	LTE Band 12	0.281	0.402	0.403	0.683	0.684	1.086
	LTE Band 26 (Cell)	0.644	0.402	0.403	1.046	1.047	1.449
	LTE Band 5 (Cell)	0.647	0.402	0.403	1.049	1.050	1.452
	LTE Band 4 (AWS)	0.752	0.402	0.403	1.154	1.155	**1.557**
	LTE Band 25 (PCS)	0.889	0.402	0.403	1.291	1.292	See Table 12-12
	LTE Band 41	0.835	0.402	0.403	1.237	1.238	See Table 12-12

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

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.789	0.402	0.403	1.191	1.192	**1.594**
	Front	0.772	0.382	0.213	1.154	0.985	1.367
	Top	-	0.402*	0.327	0.402	0.327	0.729
	Bottom	0.956	-	-	0.956	0.956	0.956
	Left	0.293	0.402*	0.403*	0.695	0.696	1.098

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.707	0.402	0.403	1.109	1.110	**1.512**
	Front	0.818	0.382	0.213	1.200	1.031	1.413
	Top	-	0.402*	0.327	0.402	0.327	0.729
	Bottom	0.889	-	-	0.889	0.889	0.889
	Left	0.283	0.402*	0.403*	0.685	0.686	1.088

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.300	0.402	0.403	0.702	0.703	**1.105**
	Front	0.325	0.382	0.213	0.707	0.538	0.920
	Top	-	0.402*	0.327	0.402	0.327	0.729
	Bottom	0.835	-	-	0.835	0.835	0.835
	Left	0.148	0.402*	0.403*	0.550	0.551	0.953

Table 12-13
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 1900	0.560	0.163	0.341	0.723	0.901	1.064
	UMTS 850	0.567	0.163	0.341	0.730	0.908	1.071
	UMTS 1900	0.956	0.163	0.341	1.119	1.297	**1.460**
	LTE Band 12	0.281	0.163	0.341	0.444	0.622	0.785
	LTE Band 26 (Cell)	0.644	0.163	0.341	0.807	0.985	1.148
	LTE Band 5 (Cell)	0.647	0.163	0.341	0.810	0.988	1.151
	LTE Band 4 (AWS)	0.752	0.163	0.341	0.915	1.093	1.256
	LTE Band 25 (PCS)	0.889	0.163	0.341	1.052	1.230	1.393
	LTE Band 41	0.835	0.163	0.341	0.998	1.176	1.339

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 1900	0.560	0.402	0.341	0.962	0.901	1.303
	UMTS 850	0.567	0.402	0.341	0.969	0.908	1.310
	UMTS 1900	0.956	0.402	0.341	1.358	1.297	See Table 12- 15
	LTE Band 12	0.281	0.402	0.341	0.683	0.622	1.024
	LTE Band 26 (Cell)	0.644	0.402	0.341	1.046	0.985	1.387
	LTE Band 5 (Cell)	0.647	0.402	0.341	1.049	0.988	1.390
	LTE Band 4 (AWS)	0.752	0.402	0.341	1.154	1.093	1.495
	LTE Band 25 (PCS)	0.889	0.402	0.341	1.291	1.230	See Table 12- 15
	LTE Band 41	0.835	0.402	0.341	1.237	1.176	**1.578**

Table 12-15
Simultaneous Transmission Scenario with 2.4 GHz Ant 1 and 5 GHz Ant 2 WLAN (Hotspot at 1.0 cm)

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.789	0.402	0.341	1.191	1.130	**1.532**
	Front	0.772	0.382	0.341*	1.154	1.113	1.495
	Top	-	0.402*	0.341*	0.402	0.341	0.743
	Bottom	0.956	-	-	0.956	0.956	0.956
	Left	0.293	0.402*	0.341*	0.695	0.634	1.036
Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.707	0.402	0.341	1.109	1.048	1.450
	Front	0.818	0.382	0.341*	1.200	1.159	**1.541**
	Top	-	0.402*	0.341*	0.402	0.341	0.743
	Bottom	0.889	-	-	0.889	0.889	0.889
	Left	0.283	0.402*	0.341*	0.685	0.624	1.026

Table 12-16
Simultaneous Transmission Scenario with 2.4 GHz Ant 2 and 5 GHz Ant 1 WLAN (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 1900	0.560	0.403	0.163	0.963	0.723	1.126
	UMTS 850	0.567	0.403	0.163	0.970	0.730	1.133
	UMTS 1900	0.956	0.403	0.163	1.359	1.119	**1.522**
	LTE Band 12	0.281	0.403	0.163	0.684	0.444	0.847
	LTE Band 26 (Cell)	0.644	0.403	0.163	1.047	0.807	1.210
	LTE Band 5 (Cell)	0.647	0.403	0.163	1.050	0.810	1.213
	LTE Band 4 (AWS)	0.752	0.403	0.163	1.155	0.915	1.318
	LTE Band 25 (PCS)	0.889	0.403	0.163	1.292	1.052	1.455
	LTE Band 41	0.835	0.403	0.163	1.238	0.998	1.401

12.6 Phablet SAR Simultaneous Transmission Analysis

Main antenna, 2.4 GHz WIFI/BT SAR testing was not required for extremity exposure conditions per FCC KDB 648474 D04v01r02. Therefore, no further analysis beyond Table 12-17 was required to determine that possible simultaneous scenarios would not exceed the SAR limit.

Table 12-17
Simultaneous Transmission Scenario for MIMO 5 GHz WLAN (Phablet at 0.0 cm)

Exposure Condition	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
Phablet SAR	0.671	1.969	**2.640**

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 ADDITIONAL TUNER TESTING PER FCC GUIDANCE

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. All channels within LTE Band 5 and UMTS B5 use the identical 25 tuning states.

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 13-1
Supplemental Head SAR Data

Mode	Service/ Modulation	Frequency (MHz)	Channel	RB Size	RB offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)								
									Auto-Tune (State 7)	Default (State 7)	State 1	State 5	State 9	State 10	State 15	State 20	State 22
LTE B5	QPSK	836.5	20525	1	0	Right Cheek	N/A	0.168	0.211	0.206	0.191	0.060	0.173	0.069	0.192	0.126	0.043
Mode	Service/ Modulation	Frequency (MHz)	Channel	RB Size	RB offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)								
									Auto-Tune (State 7)	Default (State 7)	State 4	State 6	State 10	State 12	State 17	State 21	State 25
UMTS B5	RMC	836.6	4183	N/A	N/A	Right Cheek	N/A	0.150	0.172	0.164	0.102	0.130	0.056	0.046	0.160	0.048	0.152

Table 13-2
Supplemental Body SAR Data

Mode	Service/ Modulation	Frequency (MHz)	Channel	RB Size	RB offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)								
									Auto-Tune (State 7)	Default (State 7)	State 1	State 3	State 8	State 11	State 13	State 18	State 24
LTE B5	QPSK	836.5	20525	1	0	Front Side	10 mm	0.635	0.837	0.841	0.798	0.331	0.831	0.301	0.227	0.599	0.812
Mode	Service/ Modulation	Frequency (MHz)	Channel	RB Size	RB offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)								
									Auto-Tune (State 7)	Default (State 7)	State 2	State 4	State 14	State 16	State 19	State 21	State 23
UMTS B5	RMC	836.6	4183	N/A	N/A	Back Side	10 mm	0.425	0.727	0.723	0.595	0.462	0.431	0.670	0.302	0.200	0.509

14 SAR MEASUREMENT VARIABILITY

14.1 Measurement Variability

Per FCC KDB Publication 865664 D01, SAR measurement variability was not assessed for any frequency band since all measured 1g SAR values were less than 0.80 W/kg and all measured 10g SAR values were less than 2.00 W/kg.

14.2 Measurement Uncertainty

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

15 EQUIPMENT LIST

Equipment List for Test Period 06/01/16 - 06/30/16

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	8753E	(30kHz-6GHz) Network Analyzer	3/2/2016	Annual	3/2/2017	JP38020182
Agilent	8753ES	S-Parameter Network Analyzer	11/4/2015	Annual	11/4/2016	US39170118
Agilent	E4432B	ESG-D Series Signal Generator	3/5/2016	Annual	3/5/2017	US40053896
Agilent	E4438C	ESG Vector Signal Generator	3/13/2015	Biennial	3/13/2017	MY42082659
Agilent	E5515C	Wireless Communications Test Set	11/4/2014	Biennial	11/4/2016	GB43193563
Agilent	E8257D	(250kHz-20GHz) Signal Generator	3/2/2016	Annual	3/2/2017	MY45470194
Agilent	N5182A	MXG Vector Signal Generator	3/5/2016	Annual	3/5/2017	MY47420800
Agilent	N9020A	MXA Signal Analyzer	11/5/2015	Annual	11/5/2016	US46470561
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433978
Anritsu	MA24106A	USB Power Sensor	3/4/2016	Annual	3/4/2017	1344557
Anritsu	MA24106A	USB Power Sensor	3/28/2016	Annual	3/28/2017	1344554
Anritsu	MA2411B	Pulse Power Sensor	12/7/2015	Annual	12/7/2016	1339018
Anritsu	MA2411B	Pulse Power Sensor	2/28/2016	Annual	2/28/2017	1207470
Anritsu	MA2481A	Power Sensor	3/3/2016	Annual	3/3/2017	5318
Anritsu	MA2481A	Power Sensor	3/3/2016	Annual	3/3/2017	2400
Anritsu	ML2438A	Power Meter	3/3/2016	Annual	3/3/2017	1070030
Anritsu	ML2495A	Power Meter	10/16/2015	Biennial	10/16/2017	941001
Anritsu	ML2495A	Power Meter	10/16/2015	Biennial	10/16/2017	1039008
Anritsu	ML2496A	Power Meter	2/28/2016	Annual	2/28/2017	1306009
Anritsu	ML2496A	Power Meter	3/5/2016	Annual	3/5/2017	1351001
Anritsu	MT8820C	Radio Communication Analyzer	7/24/2015	Annual	7/24/2016	6200901190
Anritsu	MT8820C	Radio Communication Analyzer	9/1/2015	Annual	9/1/2016	6201144419
COMTech	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M1S5A00-009
Control Company	4040	Digital Thermometer	3/18/2015	Biennial	3/18/2017	150194896
Control Company	4352	Ultra Long Stem Thermometer	3/8/2016	Biennial	3/8/2018	160261701
Control Company	4353	Long Stem Thermometer	3/5/2015	Biennial	3/5/2017	150149565
Gigatronics	80701A	(0.05-18GHz) Power Sensor	11/4/2015	Annual	11/4/2016	1833460
Gigatronics	8651A	Universal Power Meter	11/4/2015	Annual	11/4/2016	8650319
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mitutoyo	CD-6"CSX	Digital Caliper	3/2/2016	Biennial	3/2/2018	13264162
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Pasternack	NC-100	Torque Wrench	11/6/2015	Biennial	11/6/2017	N/A
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	3/29/2016	Annual	3/29/2017	836371/0079
Rohde & Schwarz	CMW500	Radio Communication Tester	4/27/2016	Annual	4/27/2017	101699
Seekonk	NC-100	Torque Wrench 5/16", 8" lbs	3/2/2016	Biennial	3/2/2018	N/A
SPEAG	D1765V2	1765 MHz SAR Dipole	5/11/2016	Annual	5/11/2017	1008
SPEAG	D1900V2	1900 MHz SAR Dipole	4/12/2016	Annual	4/12/2017	5d141
SPEAG	D2450V2	2450 MHz SAR Dipole	8/20/2015	Annual	8/20/2016	719
SPEAG	D2450V2	2450 MHz SAR Dipole	2/18/2016	Annual	2/18/2017	882
SPEAG	D2600V2	2600 MHz SAR Dipole	4/19/2016	Annual	4/19/2017	1004
SPEAG	D2600V2	2600 MHz SAR Dipole	10/21/2015	Annual	10/21/2016	1071
SPEAG	D5GHzV2	5 GHz SAR Dipole	9/16/2015	Annual	9/16/2016	1191
SPEAG	D5GHzV2	5 GHz SAR Dipole	2/25/2016	Annual	2/25/2017	1120
SPEAG	D750V3	750 MHz SAR Dipole	2/16/2016	Annual	2/16/2017	1046
SPEAG	D835V2	835 MHz SAR Dipole	4/14/2016	Annual	4/14/2017	4d119
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/16/2015	Annual	9/16/2016	1323
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/14/2016	Annual	4/14/2017	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	10/27/2015	Annual	10/27/2016	1333
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/19/2016	Annual	2/19/2017	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/11/2015	Annual	11/11/2016	1415
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/18/2016	Annual	2/18/2017	1272
SPEAG	DAK-12	Dielectric Assessment Kit (10MHz - 3GHz)	3/1/2016	Annual	3/1/2017	1102
SPEAG	DAK-3.5	Dielectric Assessment Kit	10/20/2015	Annual	10/20/2016	1091
SPEAG	ES3DV2	SAR Probe	8/26/2015	Annual	8/26/2016	3022
SPEAG	ES3DV3	SAR Probe	10/29/2015	Annual	10/29/2016	3333
SPEAG	ES3DV3	SAR Probe	11/17/2015	Annual	11/17/2016	3334
SPEAG	EX3DV4	SAR Probe	4/19/2016	Annual	4/19/2017	7406
SPEAG	EX3DV4	SAR Probe	4/19/2016	Annual	4/19/2017	7357
SPEAG	EX3DV4	SAR Probe	2/22/2016	Annual	2/22/2017	3914

Equipment List for Test Period 03/27/17 - 04/10/17

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	8753ES	S-Parameter Network Analyzer	6/28/2016	Annual	6/28/2017	MY40000670
Agilent	E5515C	Wireless Communications Test Set	1/29/2016	Biennial	1/29/2018	GB46310798
Agilent	E5515C	8960 Series 10 Wireless Communications Test Set	10/5/2016	Annual	10/5/2017	GB42230325
Agilent	E5515C	Wireless Communications Test Set	12/12/2016	Annual	12/12/2017	GB44400860
Agilent	N5182A	MXG Vector Signal Generator	2/28/2017	Annual	2/28/2018	MY47420800
Agilent	N9020A	MXA Signal Analyzer	10/28/2016	Annual	10/28/2017	US46470561
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433978
Anritsu	MA24106A	USB Power Sensor	6/2/2016	Annual	6/2/2017	1231538
Anritsu	MA24106A	USB Power Sensor	6/2/2016	Annual	6/2/2017	1231535
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	ML2495A	Power Meter	10/16/2015	Biennial	10/16/2017	941001
Anritsu	ML2495A	Power Meter	10/16/2015	Biennial	10/16/2017	1039008
Anritsu	MT8820C	Radio Communication Analyzer	4/14/2016	Annual	4/14/2017	6201240328
COMTech	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M1S5A00-009
Control Company	4352	Ultra Long Stem Thermometer	3/8/2016	Biennial	3/8/2018	160261701
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mitutoyo	CD-6"CSX	Digital Caliper	3/2/2016	Biennial	3/2/2018	13264162
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Pasternack	NC-100	Torque Wrench	11/6/2015	Biennial	11/6/2017	N/A
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	12/12/2016	Annual	12/12/2017	833855/0010
Rohde & Schwarz	CMW500	Radio Communication Tester	4/13/2016	Annual	4/13/2017	140148
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	2/10/2017	Annual	2/10/2018	162125
Seekonk	NC-100	Torque Wrench	11/6/2015	Biennial	11/6/2017	N/A
SPEAG	D1900V2	1900 MHz SAR Dipole	7/8/2016	Annual	7/8/2017	5d080
SPEAG	D2450V2	2450 MHz SAR Dipole	7/25/2016	Annual	7/25/2017	981
SPEAG	D5GHzV2	5 GHz SAR Dipole	8/2/2016	Annual	8/2/2017	1237
SPEAG	D750V3	750 MHz SAR Dipole	7/13/2016	Annual	7/13/2017	1161
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/14/2016	Annual	4/14/2017	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/14/2016	Annual	9/14/2017	1408
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/16/2017	Annual	1/16/2018	1466
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2017	Annual	2/9/2018	1272
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/10/2016	Annual	5/10/2017	1070
SPEAG	ES3DV3	SAR Probe	9/19/2016	Annual	9/19/2017	3287
SPEAG	ES3DV3	SAR Probe	2/10/2017	Annual	2/10/2018	3213
SPEAG	EX3DV4	SAR Probe	4/19/2016	Annual	4/19/2017	7406
SPEAG	EX3DV4	SAR Probe	1/13/2017	Annual	1/13/2018	3589

Notes:

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]

18 REFERENCES

[1] Federal Communications Commission, ET Docket 93-62, Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, Aug. 1996.

[2] ANSI/IEEE C95.1-2005, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, 2006.

[3] ANSI/IEEE C95.1-1992, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, Sept. 1992.

[4] ANSI/IEEE C95.3-2002, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave, New York: IEEE, December 2002.

[5] IEEE Standards Coordinating Committee 39 –Standards Coordinating Committee 34 – IEEE Std. 1528-2013, IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.

[6] NCRP, National Council on Radiation Protection and Measurements, Biological Effects and Exposure Criteria for RadioFrequency Electromagnetic Fields, NCRP Report No. 86, 1986. Reprinted Feb. 1995.

[7] T. Schmid, O. Egger, N. Kuster, Automated E-field scanning system for dosimetric assessments, IEEE Transaction on Microwave Theory and Techniques, vol. 44, Jan. 1996, pp. 105-113.

[8] K. Pokovic, T. Schmid, N. Kuster, Robust setup for precise calibration of E-field probes in tissue simulating liquids at mobile communications frequencies, ICECOM97, Oct. 1997, pp. 1 -124.

[9] K. Pokovic, T. Schmid, and N. Kuster, E-field Probe with improved isotropy in brain simulating liquids, Proceedings of the ELMAR, Zadar, Croatia, June 23-25, 1996, pp. 172-175.

[10] Schmid & Partner Engineering AG, Application Note: Data Storage and Evaluation, June 1998, p2.

[11] V. Hombach, K. Meier, M. Burkhardt, E. Kuhn, N. Kuster, The Dependence of EM Energy Absorption upon Human Modeling at 900 MHz, IEEE Transaction on Microwave Theory and Techniques, vol. 44 no. 10, Oct. 1996, pp. 1865-1873.

[12] N. Kuster and Q. Balzano, Energy absorption mechanism by biological bodies in the near field of dipole antennas above 300MHz, IEEE Transaction on Vehicular Technology, vol. 41, no. 1, Feb. 1992, pp. 17-23.

[13] G. Hartsgrove, A. Kraszewski, A. Surowiec, Simulated Biological Materials for Electromagnetic Radiation Absorption Studies, University of Ottawa, Bioelectromagnetics, Canada: 1987, pp. 29-36.

[14] Q. Balzano, O. Garay, T. Manning Jr., Electromagnetic Energy Exposure of Simulated Users of Portable Cellular Telephones, IEEE Transactions on Vehicular Technology, vol. 44, no.3, Aug. 1995.

[15] W. Gander, Computermathematick, Birkhaeuser, Basel, 1992.

[16] W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, Numerical Recipes in C, The Art of Scientific Computing, Second edition, Cambridge University Press, 1992.

[17] N. Kuster, R. Kastle, T. Schmid, Dosimetric evaluation of mobile communications equipment with known precision, IEEE Transaction on Communications, vol. E80-B, no. 5, May 1997, pp. 645-652.

[18] CENELEC CLC/SC111B, European Prestandard (prENV 50166-2), Human Exposure to Electromagnetic Fields High-frequency: 10kHz-300GHz, Jan. 1995.

[19] Prof. Dr. Niels Kuster, ETH, Eidgenössische Technische Hoschschule Zürich, Dosimetric Evaluation of the Cellular Phone.

[20] IEC 62209-1, Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz), Feb. 2005.

[21] Innovation, Science, Economic Development Canada RSS-102 Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) Issue 5, March 2015.

[22] Health Canada Safety Code 6 Limits of Human Exposure to Radio Frequency Electromagnetic Fields in the Frequency Range from 3 kHz – 300 GHz, 2015

[23] FCC SAR Test Procedures for 2G-3G Devices, Mobile Hotspot and UMPC Devices KDB Publications 941225, D01-D07

[24] SAR Measurement Guidance for IEEE 802.11 Transmitters, KDB Publication 248227 D01

[25] FCC SAR Considerations for Handsets with Multiple Transmitters and Antennas, KDB Publications 648474 D03-D04

[26] FCC SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers, FCC KDB Publication 616217 D04

[27] FCC SAR Measurement and Reporting Requirements for 100MHz – 6 GHz, KDB Publications 865664 D01-D02

[28] FCC General RF Exposure Guidance and SAR Procedures for Dongles, KDB Publication 447498, D01-D02

[29] Anexo à Resolução No. 533, de 10 de Septembro de 2009.

[30] IEC 62209-2, Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz), Mar. 2010.

APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 05AA2

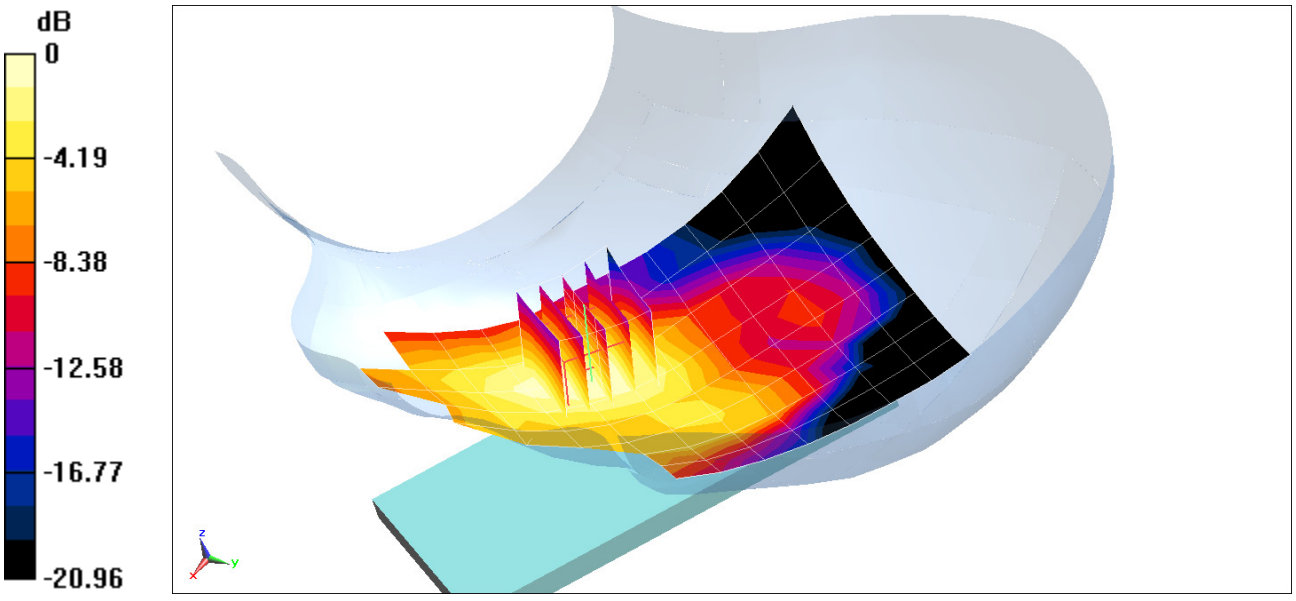
Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Head; Medium parameters used:
f = 1880 MHz; σ = 1.398 S/m; ε_r = 39.087; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 06-03-2016; Ambient Temp: 23.0°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3333; ConvF(5.03, 5.03, 5.03); Calibrated: 10/29/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 10/27/2015
Phantom: SAM Right; Type: QD000P40CD; Serial: 1757
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.054 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 0.0940 W/kg
SAR(1 g) = 0.060 W/kg



0 dB = 0.0702 W/kg = -11.54 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 8485A

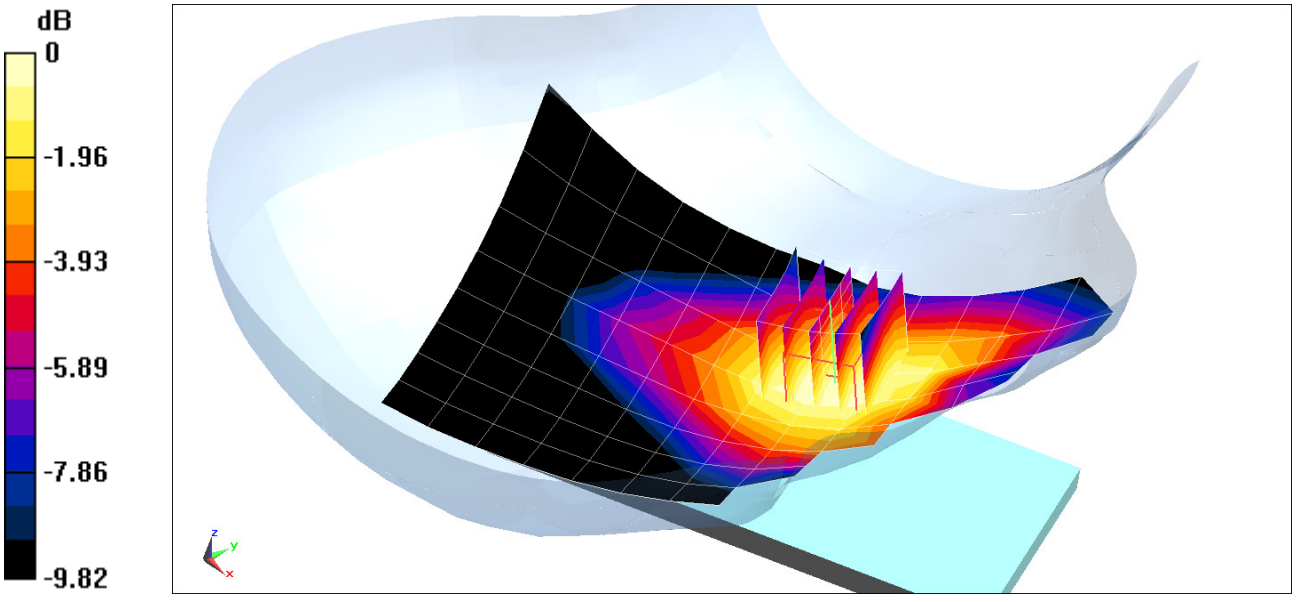
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Head; Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.909 S/m; ε_r = 42.797; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-30-2016; Ambient Temp: 22.8°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3333; ConvF(6.16, 6.16, 6.16); Calibrated: 10/29/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 10/27/2015
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.35 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.186 W/kg
SAR(1 g) = 0.150 W/kg



0 dB = 0.164 W/kg = -7.85 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 05AD2

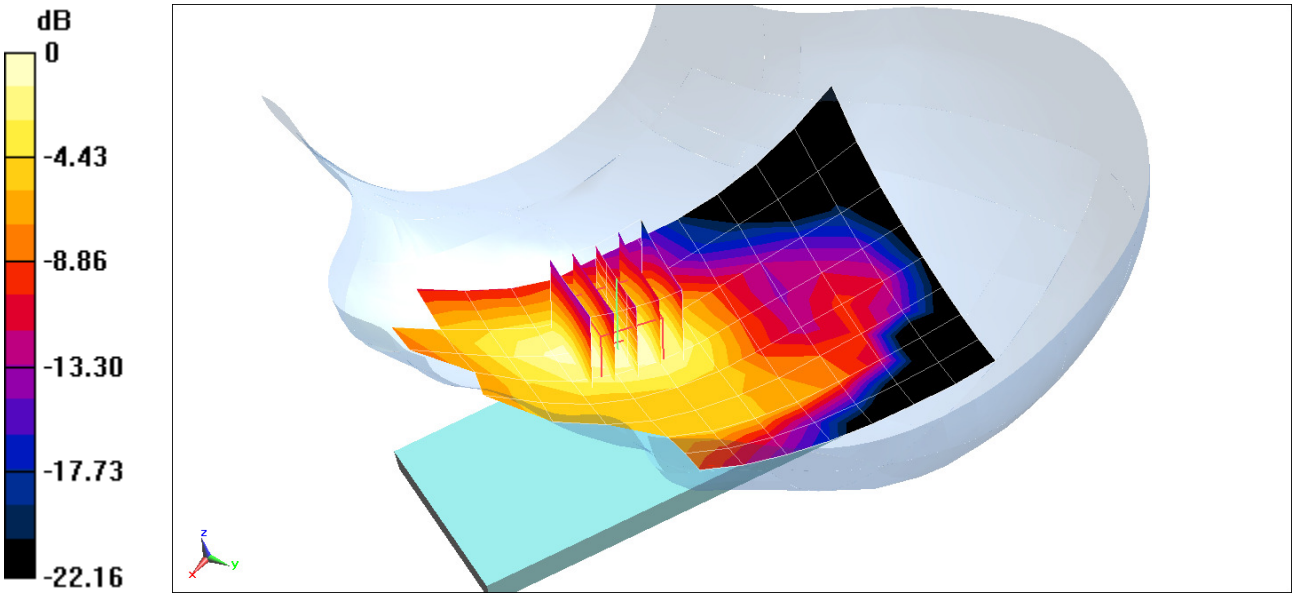
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head; Medium parameters used:
f = 1880 MHz; σ = 1.398 S/m; ε_r = 39.087; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 06-03-2016; Ambient Temp: 23.0°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3333; ConvF(5.03, 5.03, 5.03); Calibrated: 10/29/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 10/27/2015
Phantom: SAM Right; Type: QD000P40CD; Serial: 1757
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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 = 8.466 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.142 W/kg
SAR(1 g) = 0.089 W/kg



0 dB = 0.106 W/kg = -9.75 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 05AD2

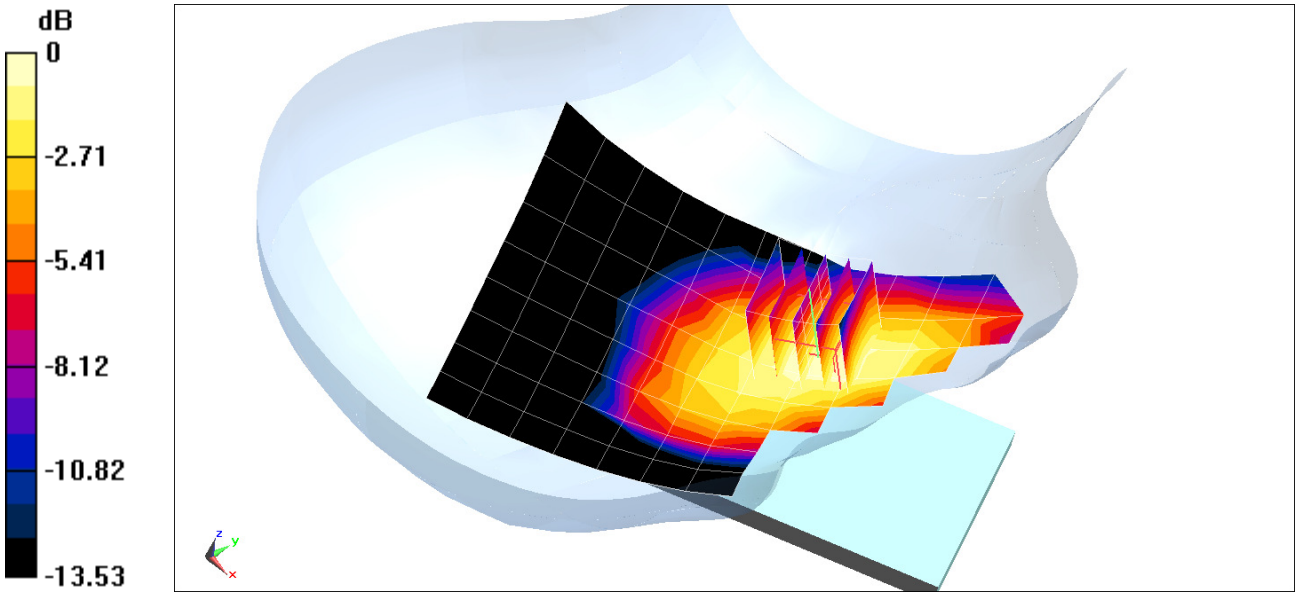
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Head; Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.858 S/m; ε_r = 42.064; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-02-2016; Ambient Temp: 24.0°C; Tissue Temp: 21.7°C

Probe: ES3DV2 - SN3022; ConvF(6.33, 6.33, 6.33); Calibrated: 8/26/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/16/2015
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.914 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.0150 W/kg
SAR(1 g) = 0.011 W/kg



0 dB = 0.0125 W/kg = -19.03 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 8485A

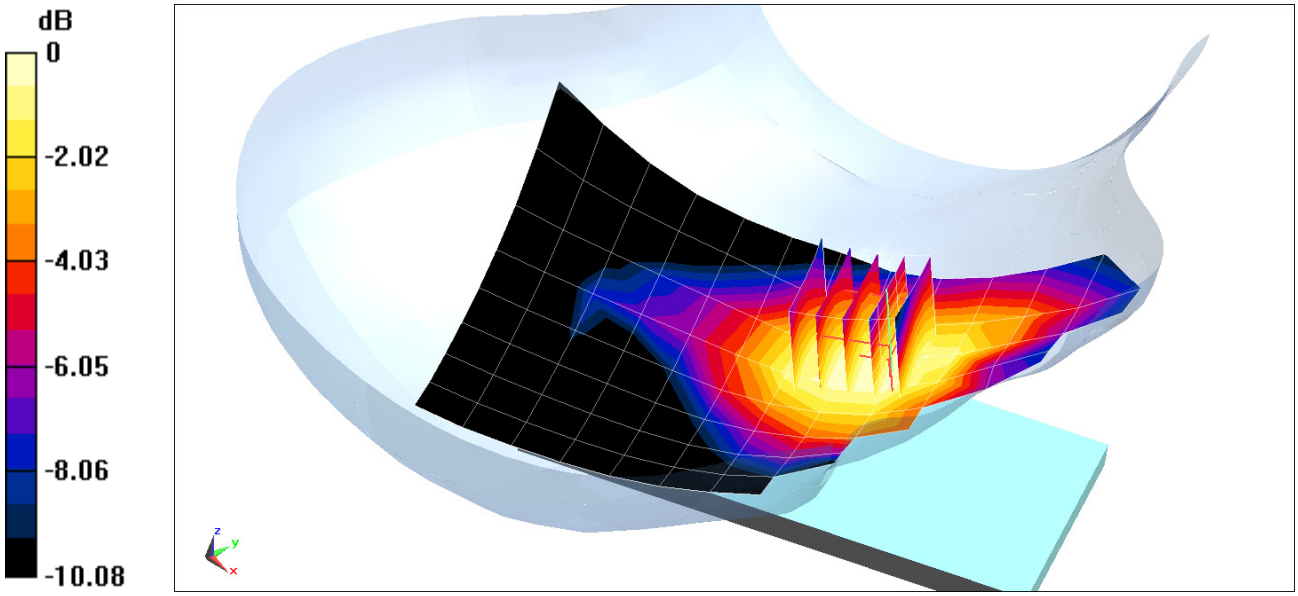
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Head; Medium parameters used (interpolated):
$f = 831.5$ MHz; $\sigma = 0.906$ S/m; $\varepsilon_r = 42.843$; $\rho = 1000$ kg/m^3
Phantom section: Right Section

Test Date: 06-30-2016; Ambient Temp: 22.8°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3333; ConvF(6.16, 6.16, 6.16); Calibrated: 10/29/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 10/27/2015
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.80 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.210 W/kg
SAR(1 g) = 0.172 W/kg



0 dB = 0.186 W/kg = -7.30 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 8485A

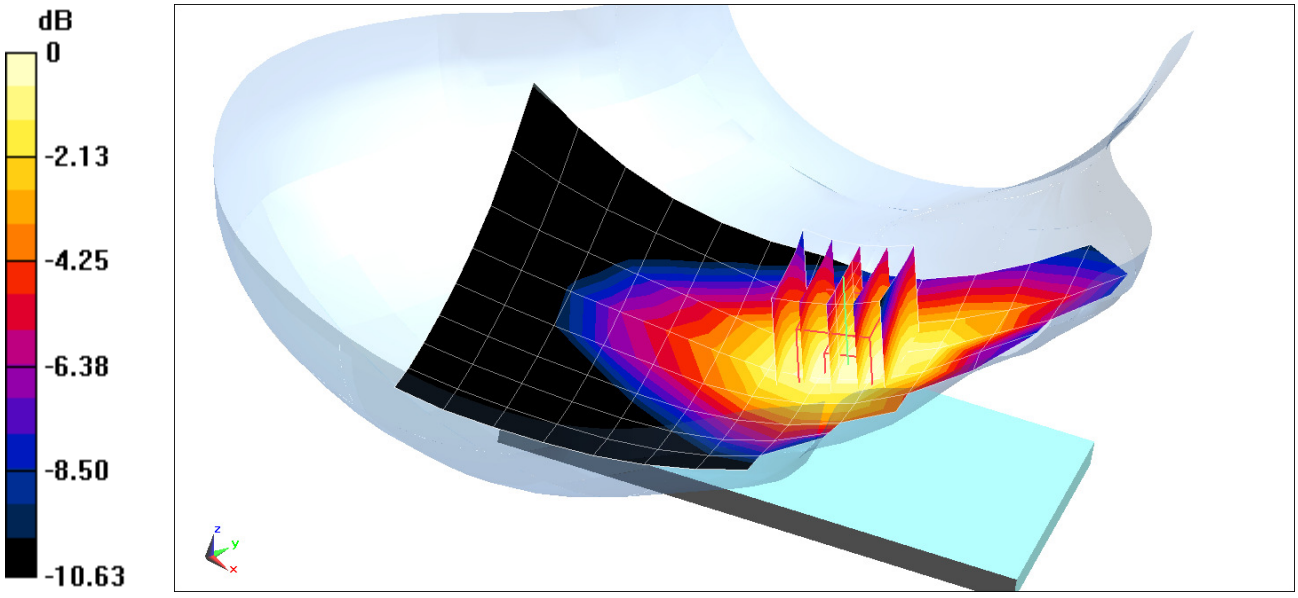
Communication System: UID 0, LTE Band 5 (Cell.); Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Head; Medium parameters used (interpolated):
$f = 836.5$ MHz; $\sigma = 0.909$ S/m; $\varepsilon_r = 42.798$; $\rho = 1000$ kg/m^3
Phantom section: Right Section

Test Date: 06-30-2016; Ambient Temp: 22.8°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3333; ConvF(6.16, 6.16, 6.16); Calibrated: 10/29/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 10/27/2015
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.53 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.207 W/kg
SAR(1 g) = 0.168 W/kg



0 dB = 0.183 W/kg = -7.38 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 05AA2

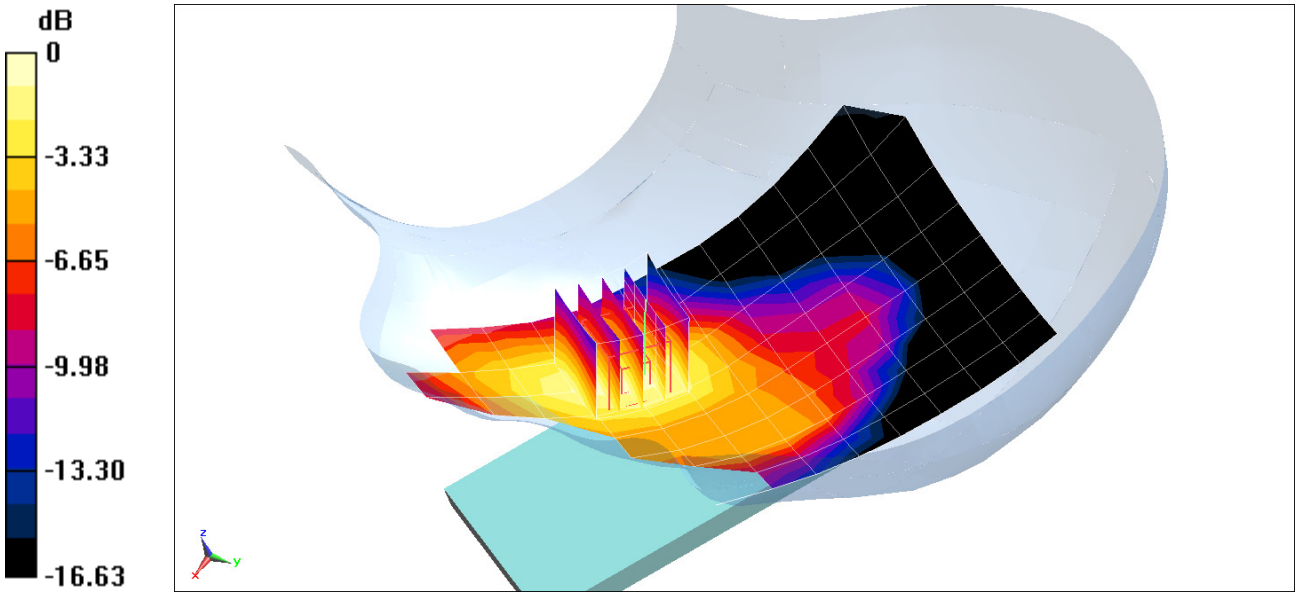
Communication System: UID 0, LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium: 1750 Head; Medium parameters used (interpolated):
f = 1732.5 MHz; σ = 1.342 S/m; ε_r = 39.139; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 06-06-2016; Ambient Temp: 23.2°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7406; ConvF(8.85, 8.85, 8.85); Calibrated: 4/19/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/14/2016
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 4 (AWS), Left Head, Cheek, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.812 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.165 W/kg
SAR(1 g) = 0.109 W/kg



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

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 8433D

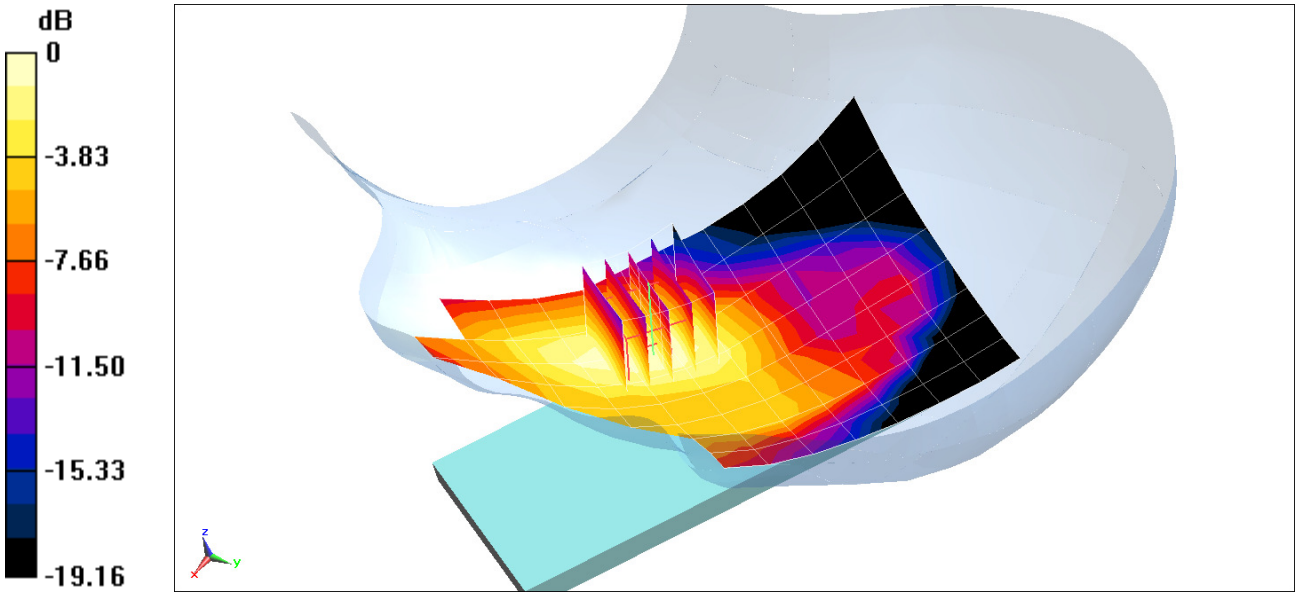
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1
Medium: 1900 Head; Medium parameters used (interpolated):
f = 1882.5 MHz; σ = 1.401 S/m; ε_r = 39.08; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 06-03-2016; Ambient Temp: 23.0°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3333; ConvF(5.03, 5.03, 5.03); Calibrated: 10/29/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 10/27/2015
Phantom: SAM Right; Type: QD000P40CD; Serial: 1757
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.39 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.185 W/kg
SAR(1 g) = 0.120 W/kg



0 dB = 0.140 W/kg = -8.54 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 05A82

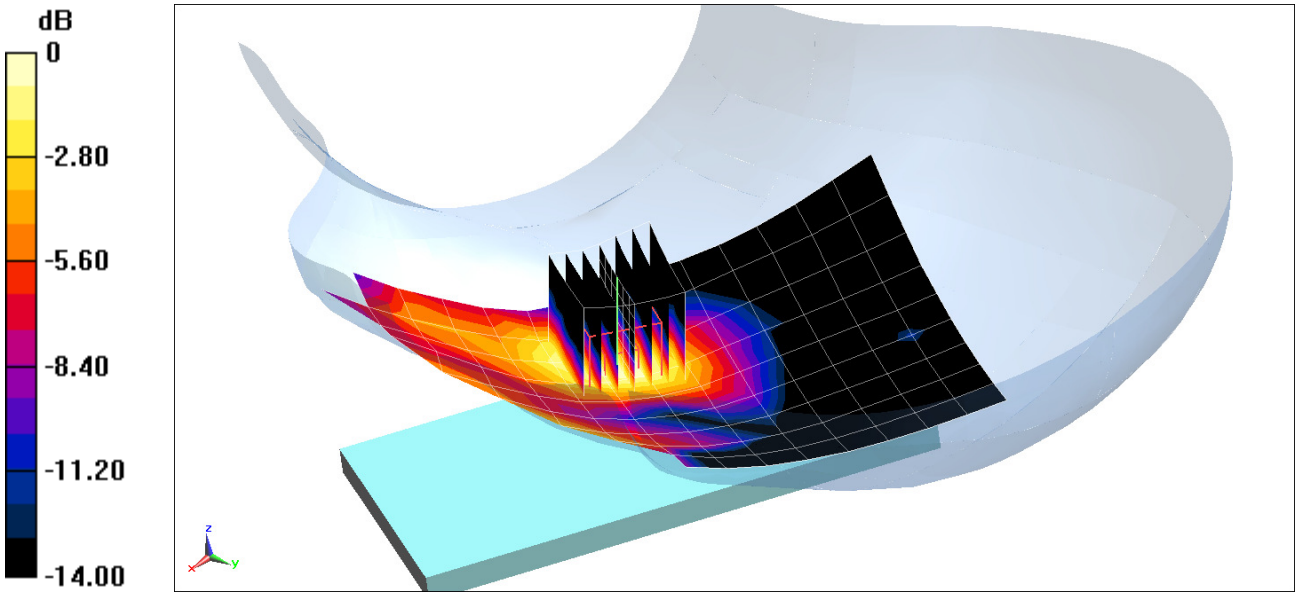
Communication System: UID 0, LTE Band 41; Frequency: 2680 MHz; Duty Cycle: 1:1.58
Medium: 2600 Head; Medium parameters used (interpolated):
f = 2680 MHz; σ = 2.142 S/m; ε_r = 39.545; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 06-03-2016; Ambient Temp: 24.0°C; Tissue Temp:23.5°C

Probe: ES3DV2 - SN3022; ConvF(4.12, 4.12, 4.12); Calibrated: 8/26/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/16/2015
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (10x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.851 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.0690 W/kg
SAR(1 g) = 0.036 W/kg



0 dB = 0.0463 W/kg = -13.34 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 252AF

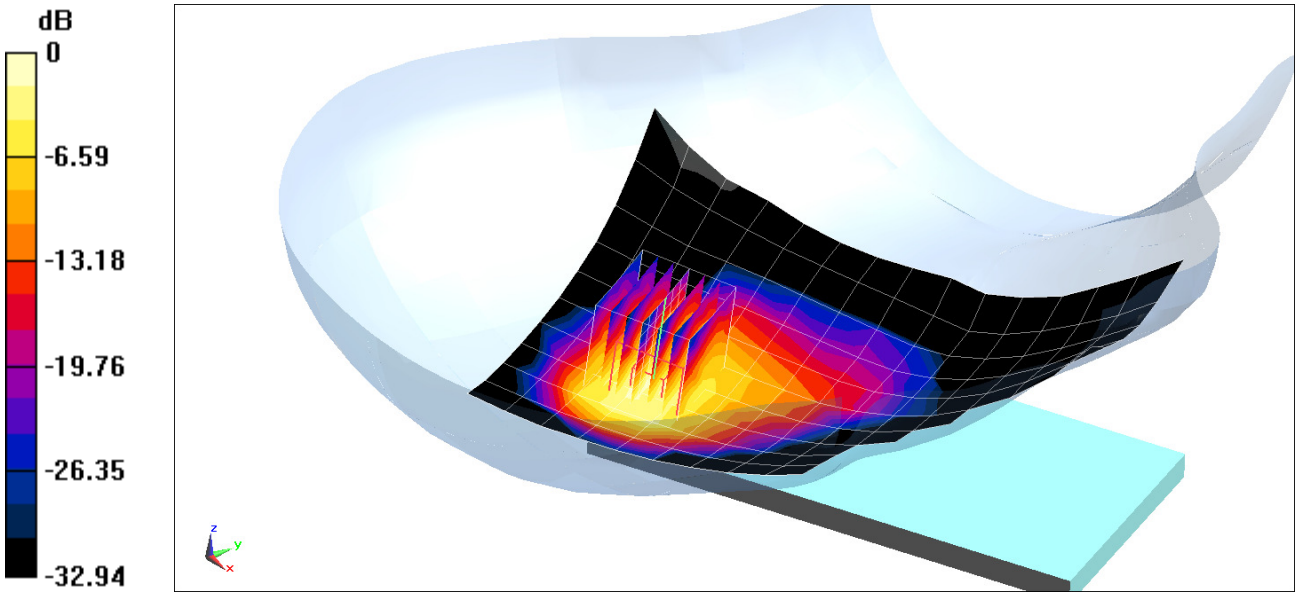
Communication System: UID 0, IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Head; Medium parameters used (interpolated):
f = 2437 MHz; σ = 1.841 S/m; ε_r = 39.809; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-13-2016; Ambient Temp: 22.4°C; Tissue Temp: 23.4°C

Probe: ES3DV2 - SN3022; ConvF(4.3, 4.3, 4.3); Calibrated: 8/26/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/16/2015
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11b, 22 MHz Bandwidth,
Right Head, Cheek, Ch 06, 1 Mbps, Antenna 1

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.16 V/m; Power Drift = -0.21 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.479 W/kg



0 dB = 0.635 W/kg = -1.97 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 252AE

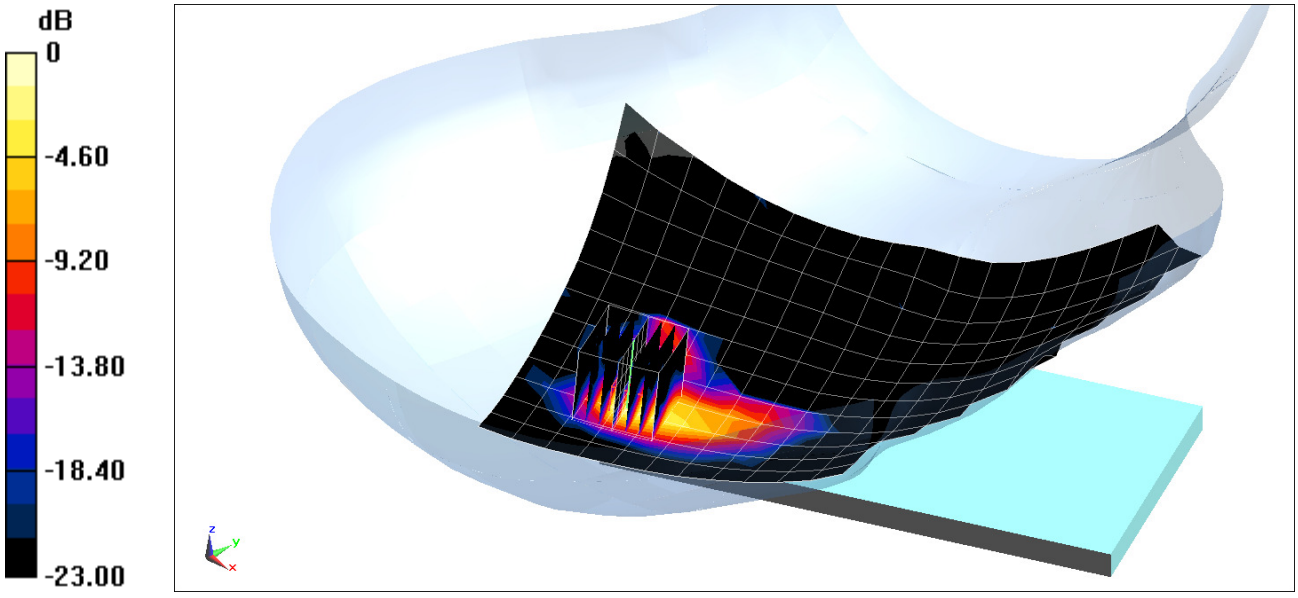
Communication System: UID 0, IEEE 802.11ac; Frequency: 5290 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head; Medium parameters used (interpolated):
f = 5290 MHz; σ = 4.7 S/m; ε_r = 35.099; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-13-2016; Ambient Temp: 20.4°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7357; ConvF(5.1, 5.1, 5.1); Calibrated: 4/19/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/19/2016
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11ac, U-NII-2A, 80 MHz Bandwidth,
Right Head, Cheek, Ch 58, 29.3 Mbps, Antenna 1

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 = 3.241 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 0.274 W/kg



0 dB = 0.753 W/kg = -1.23 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 54872

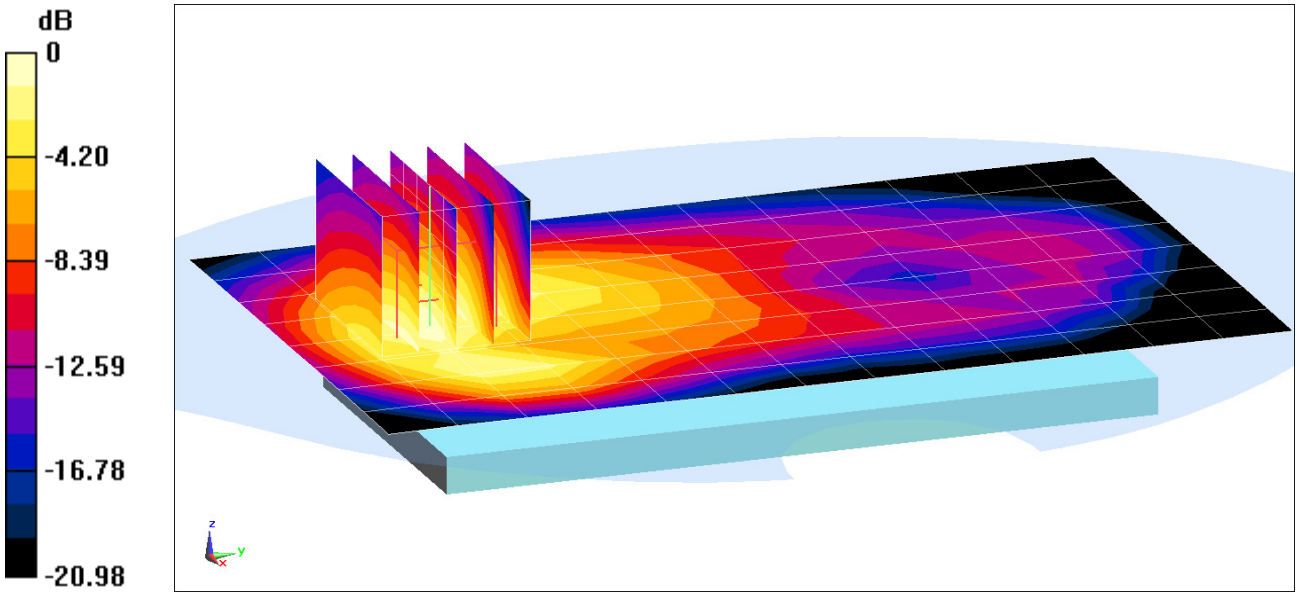
Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Body; Medium parameters used:
f = 1880 MHz; σ = 1.552 S/m; ε_r = 52.413; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-27-2017; Ambient Temp: 21.8°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3287; ConvF(4.94, 4.94, 4.94); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.14 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.597 W/kg
SAR(1 g) = 0.360 W/kg



0 dB = 0.433 W/kg = -3.64 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 54872

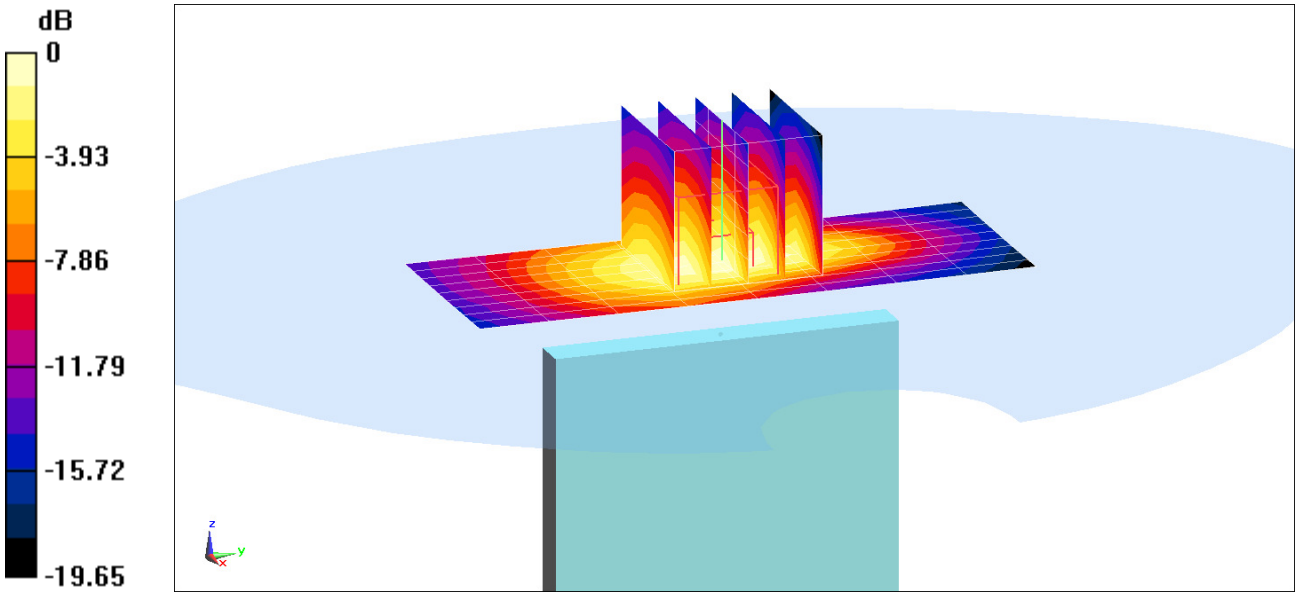
Communication System: UID 0, GSM GPRS; 4 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.076
Medium: 1900 Body; Medium parameters used:
f = 1880 MHz; σ = 1.552 S/m; ε_r = 52.413; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-27-2017; Ambient Temp: 21.8°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3287; ConvF(4.94, 4.94, 4.94); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: GPRS 1900, Body SAR, Bottom Edge, Mid.ch, 4 Tx Slots

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.72 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.707 W/kg
SAR(1 g) = 0.415 W/kg



0 dB = 0.519 W/kg = -2.85 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 8485A

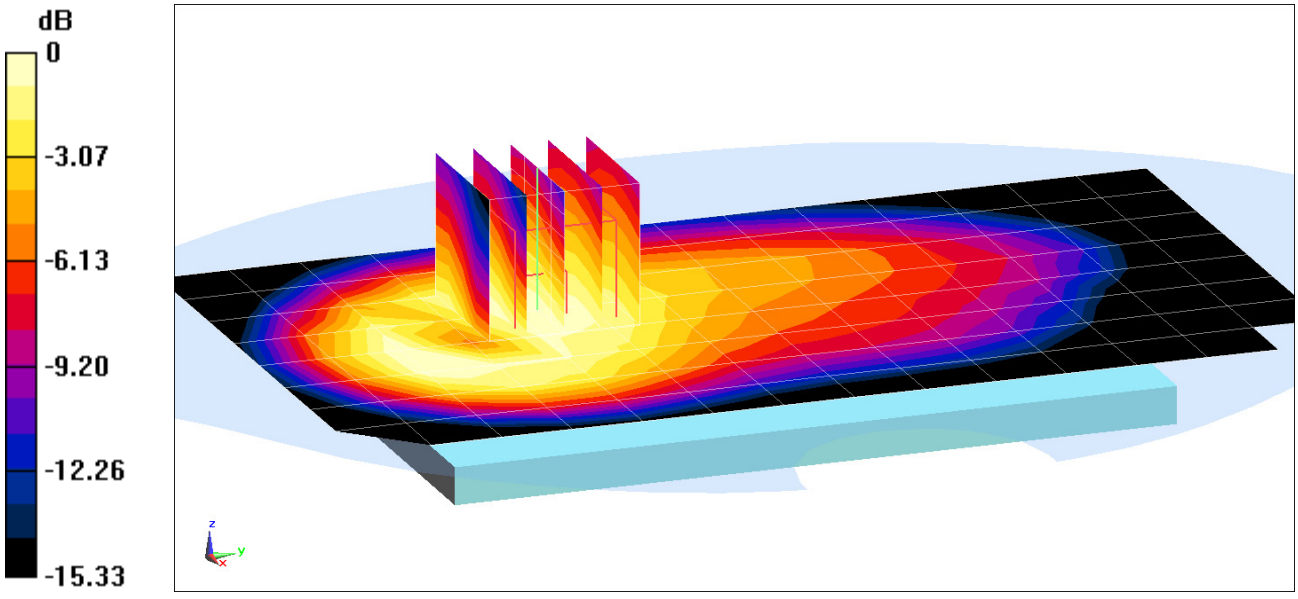
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Body; Medium parameters used (interpolated):
f = 836.6 MHz; σ = 1.016 S/m; ε_r = 54.379; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-29-2016; Ambient Temp: 23.2°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7406; ConvF(9.35, 9.35, 9.35); Calibrated: 4/19/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/14/2016
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: 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 = 21.07 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.611 W/kg
SAR(1 g) = 0.425 W/kg



0 dB = 0.541 W/kg = -2.67 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 54872

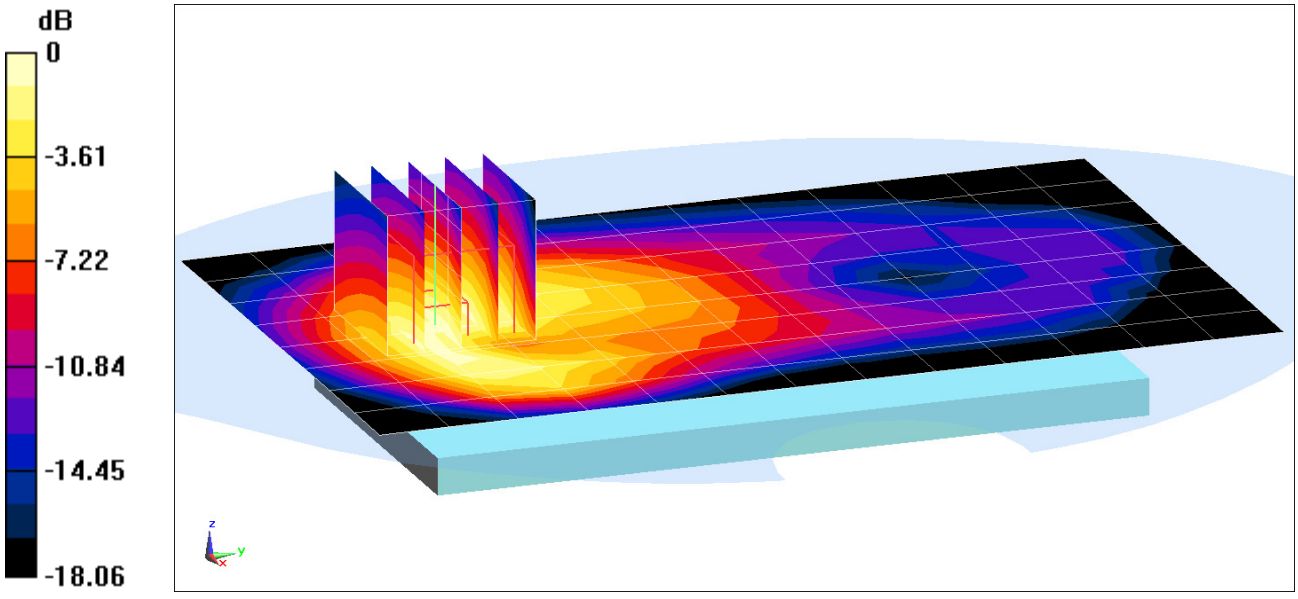
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used:
f = 1880 MHz; σ = 1.552 S/m; ε_r = 52.413; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-27-2017; Ambient Temp: 21.8°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3287; ConvF(4.94, 4.94, 4.94); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.70 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.08 W/kg
SAR(1 g) = 0.649 W/kg



0 dB = 0.777 W/kg = -1.10 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 54872

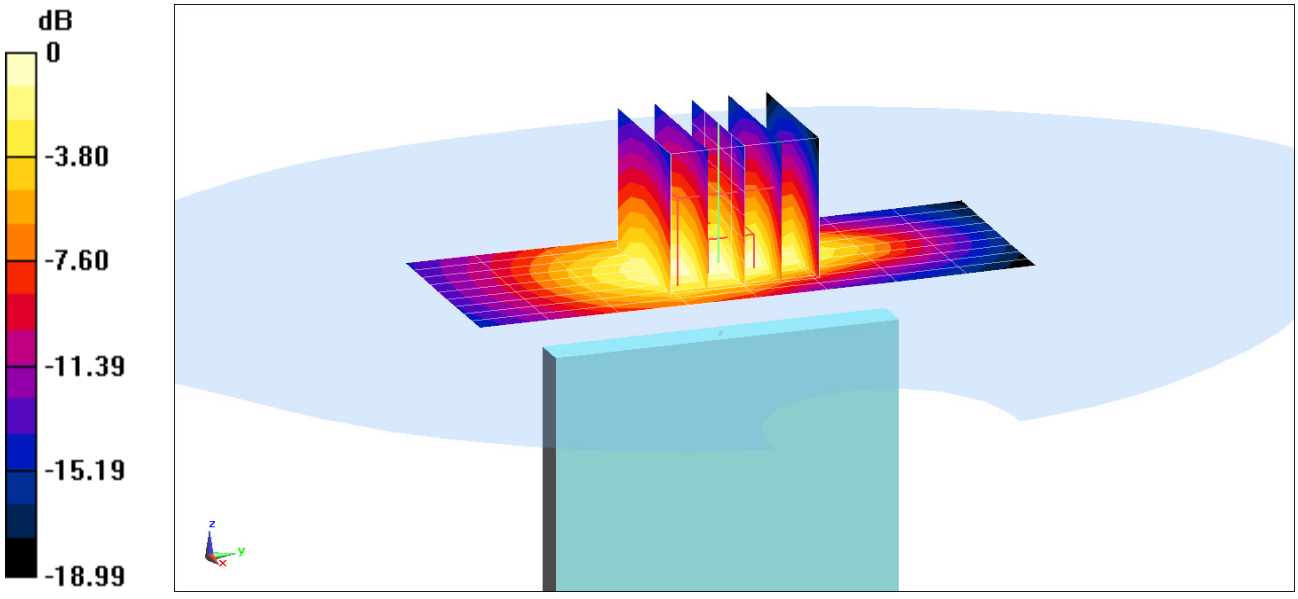
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used:
f = 1880 MHz; σ = 1.552 S/m; ε_r = 52.413; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-27-2017; Ambient Temp: 21.8°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3287; ConvF(4.94, 4.94, 4.94); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.26 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.33 W/kg
SAR(1 g) = 0.786 W/kg



0 dB = 0.979 W/kg = -0.09 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 54955

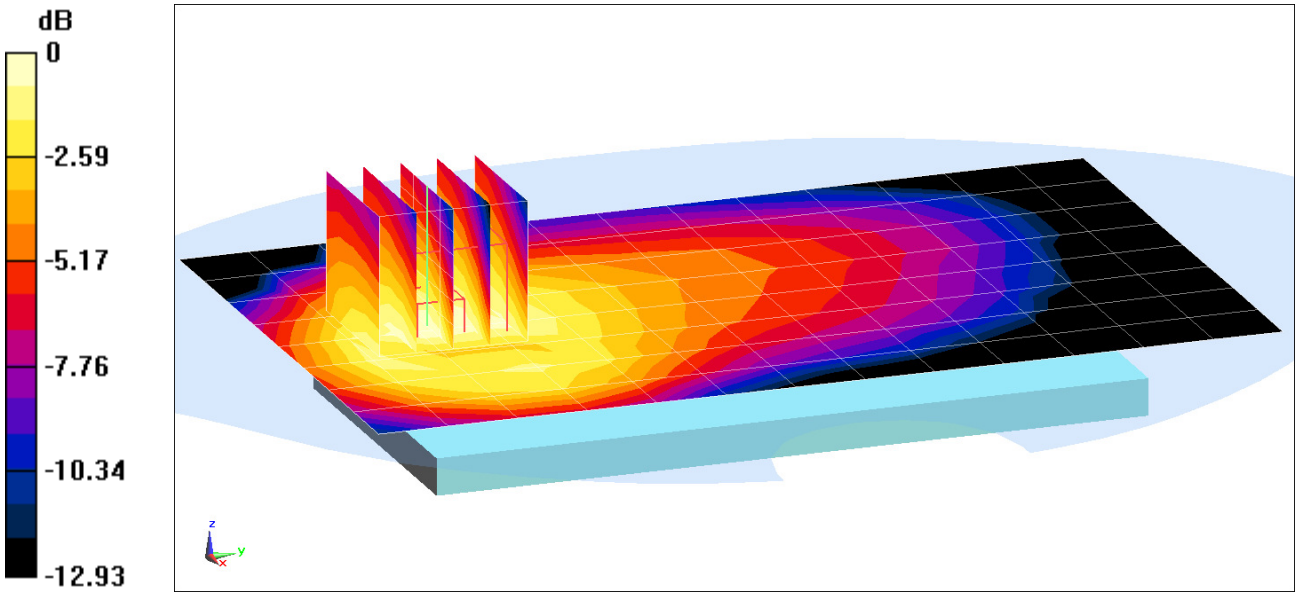
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Body; Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.921 S/m; ε_r = 54.658; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-03-2017; Ambient Temp: 24.5°C; Tissue Temp: 23.1°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 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.81 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.355 W/kg
SAR(1 g) = 0.242 W/kg



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

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 54955

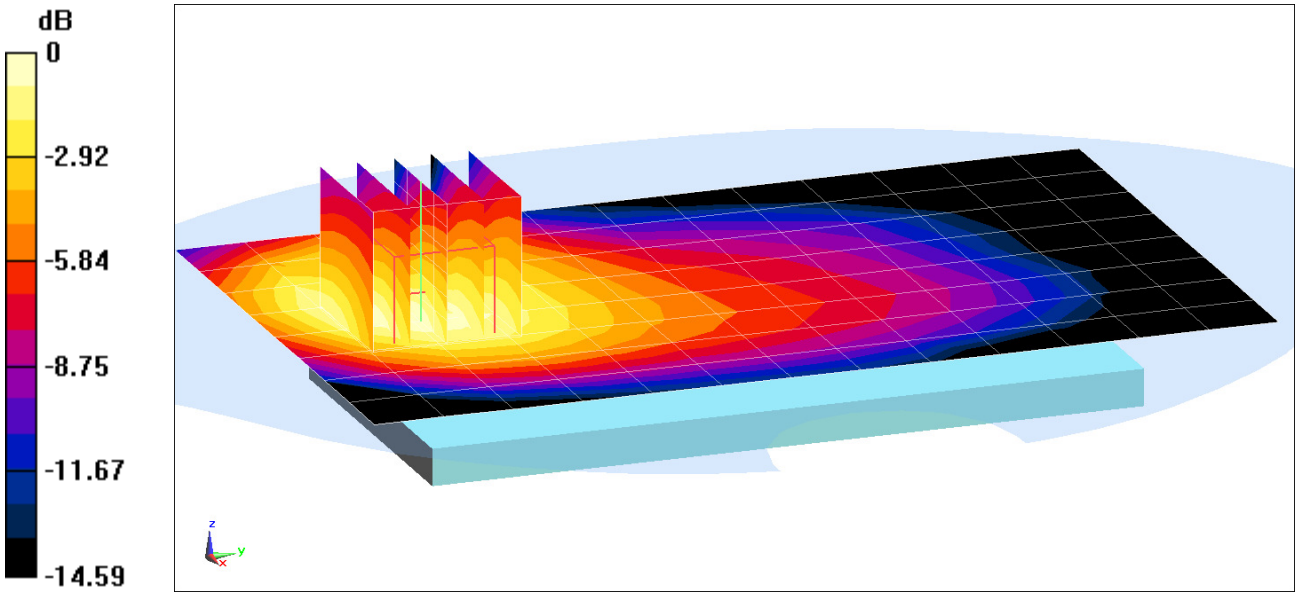
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Body; Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.921 S/m; ε_r = 54.658; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-03-2017; Ambient Temp: 24.5°C; Tissue Temp: 23.1°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 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.93 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.454 W/kg
SAR(1 g) = 0.263 W/kg



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

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 8485A

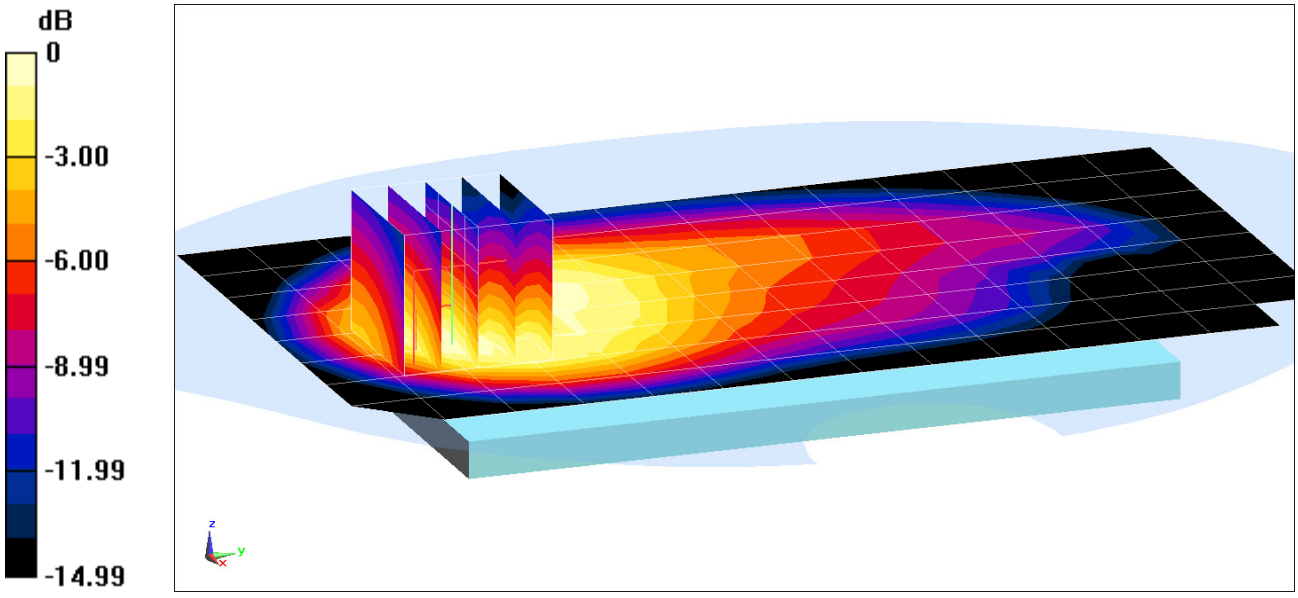
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Body; Medium parameters used (interpolated):
f = 831.5 MHz; σ = 1.011 S/m; ε_r = 54.434; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-29-2016; Ambient Temp: 23.2°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7406; ConvF(9.35, 9.35, 9.35); Calibrated: 4/19/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/14/2016
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.87 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.827 W/kg
SAR(1 g) = 0.491 W/kg



0 dB = 0.693 W/kg = -1.59 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 8485A

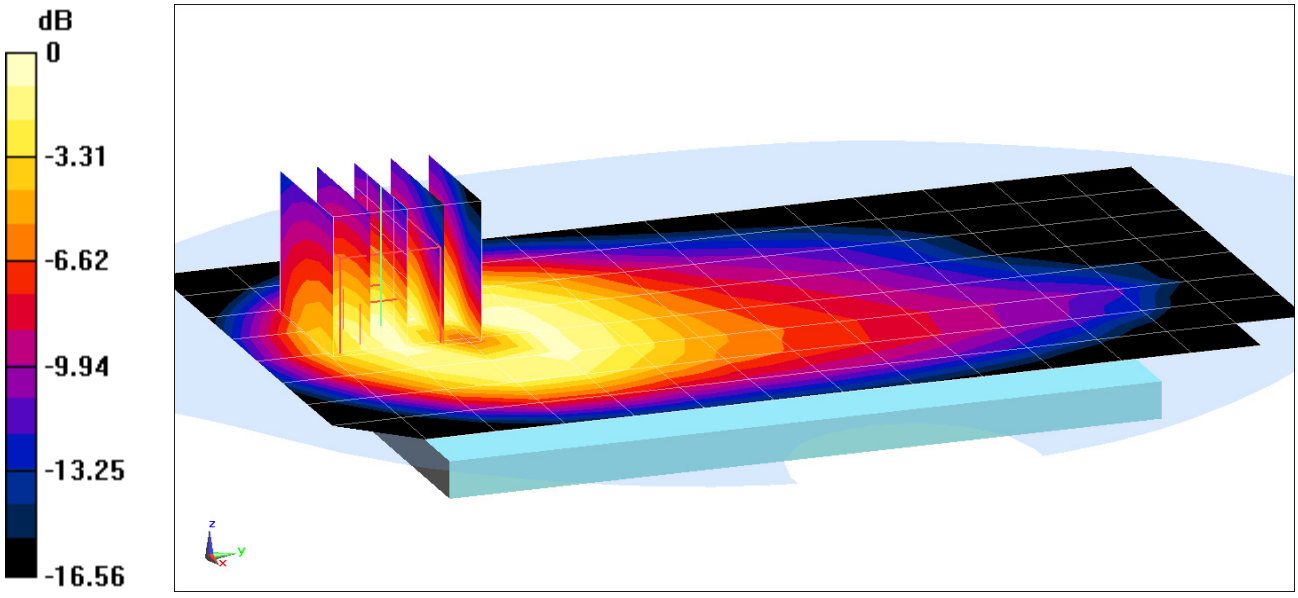
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Body; Medium parameters used (interpolated):
f = 831.5 MHz; σ = 1.011 S/m; ε_r = 54.434; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-29-2016; Ambient Temp: 23.2°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7406; ConvF(9.35, 9.35, 9.35); Calibrated: 4/19/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/14/2016
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.52 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.969 W/kg
SAR(1 g) = 0.561 W/kg



0 dB = 0.812 W/kg = -0.90 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 8485A

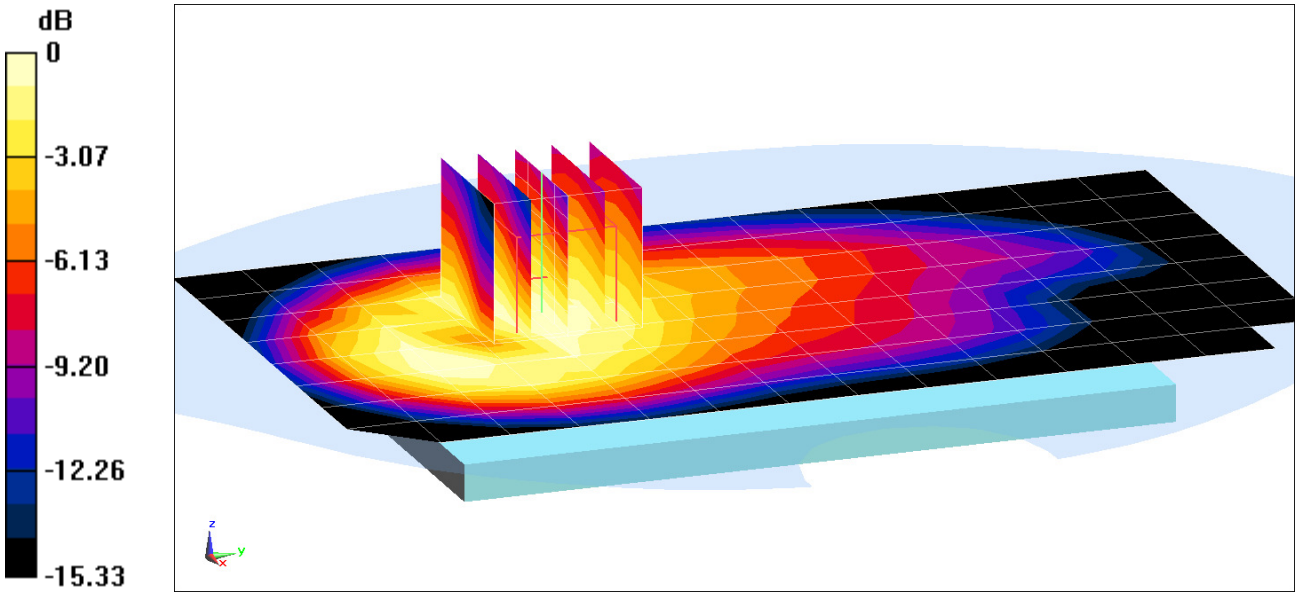
Communication System: UID 0, LTE Band 5; Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Body; Medium parameters used (interpolated):
f = 836.5 MHz; σ = 1.016 S/m; ε_r = 54.38; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-29-2016; Ambient Temp: 23.2°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7406; ConvF(9.35, 9.35, 9.35); Calibrated: 4/19/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/14/2016
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.36 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.830 W/kg
SAR(1 g) = 0.574 W/kg



0 dB = 0.729 W/kg = -1.37 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 8485A

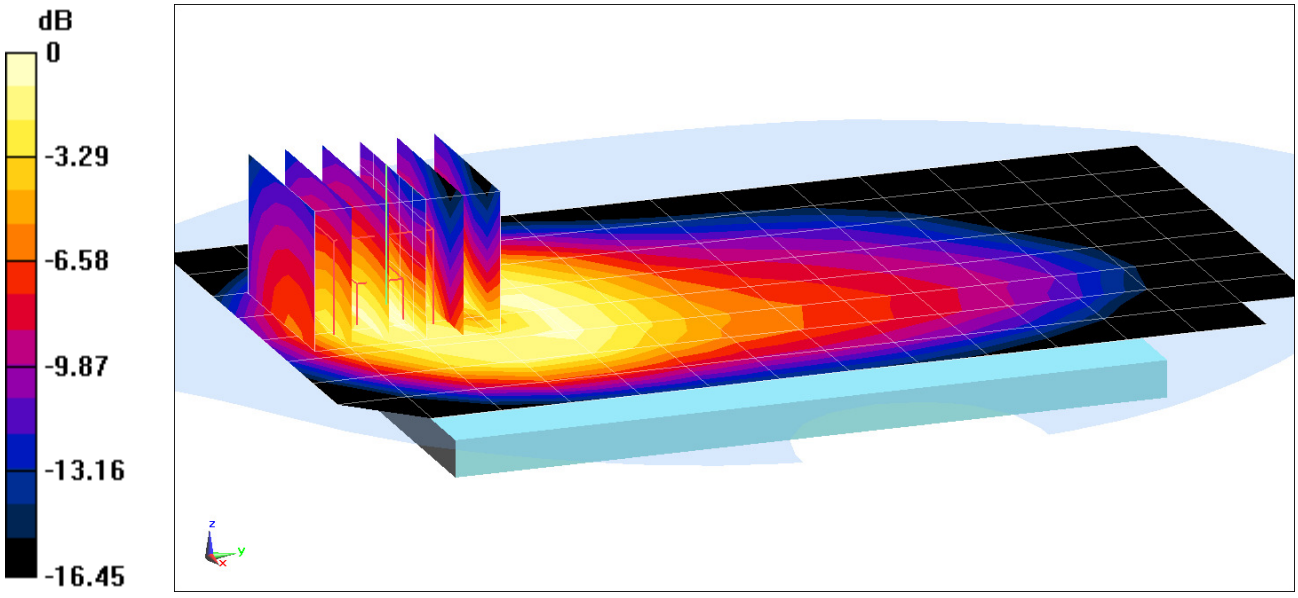
Communication System: UID 0, LTE Band 5 (Cell.); Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Body; Medium parameters used (interpolated):
f = 836.5 MHz; σ = 1.016 S/m; ε_r = 54.38; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-29-2016; Ambient Temp: 23.2°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7406; ConvF(9.35, 9.35, 9.35); Calibrated: 4/19/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/14/2016
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.39 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.11 W/kg
SAR(1 g) = 0.635 W/kg



0 dB = 0.899 W/kg = -0.46 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 05AA2

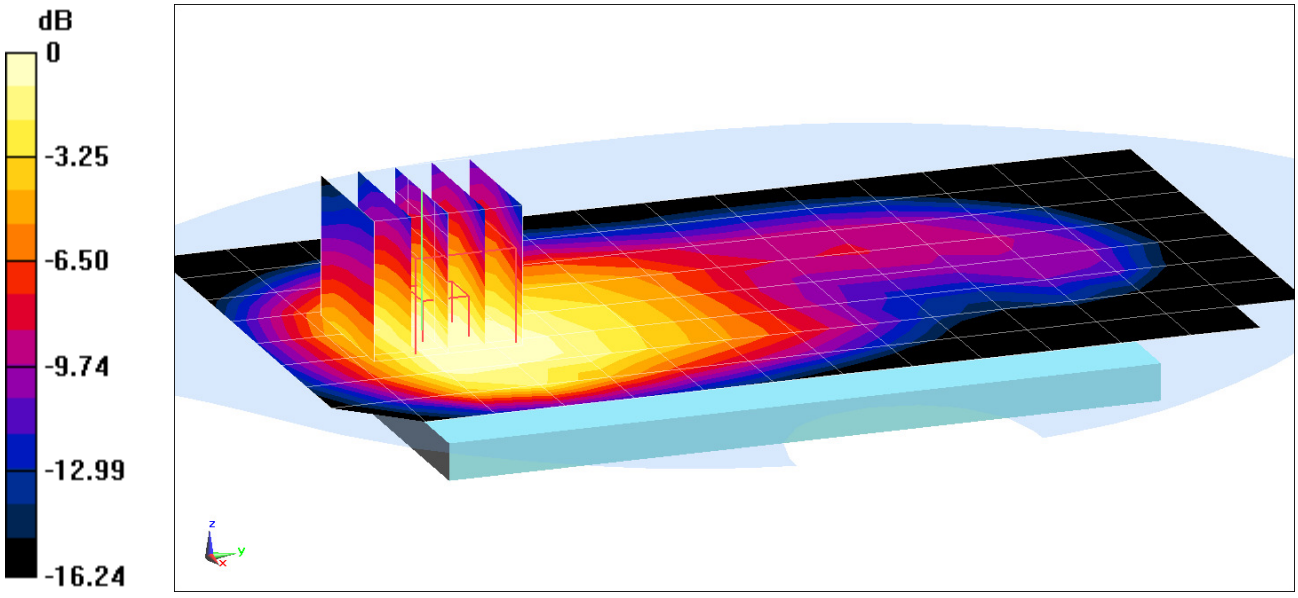
Communication System: UID 0, LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium: 1750 Body; Medium parameters used (interpolated):
f = 1732.5 MHz; σ = 1.487 S/m; ε_r = 51.918; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-06-2016; Ambient Temp: 21.3°C; Tissue Temp: 20.7°C

Probe: EX3DV4 - SN7406; ConvF(7.78, 7.78, 7.78); Calibrated: 4/19/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/14/2016
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.46 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.588 W/kg
SAR(1 g) = 0.380 W/kg



0 dB = 0.512 W/kg = -2.91 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 05AA2

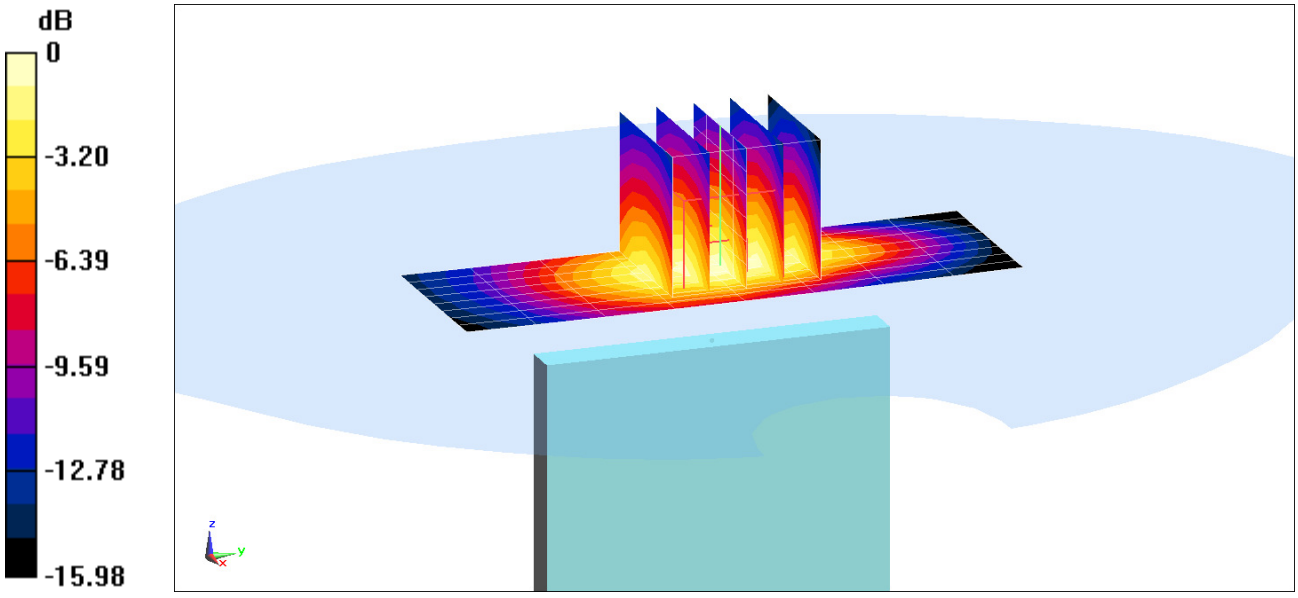
Communication System: UID 0, LTE Band 4 (AWS); Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium: 1750 Body; Medium parameters used (interpolated):
f = 1732.5 MHz; σ = 1.487 S/m; ε_r = 51.918; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-06-2016; Ambient Temp: 21.3°C; Tissue Temp: 20.7°C

Probe: EX3DV4 - SN7406; ConvF(7.78, 7.78, 7.78); Calibrated: 4/19/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/14/2016
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (11x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.73 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.642 W/kg



0 dB = 0.928 W/kg = -0.32 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 54872

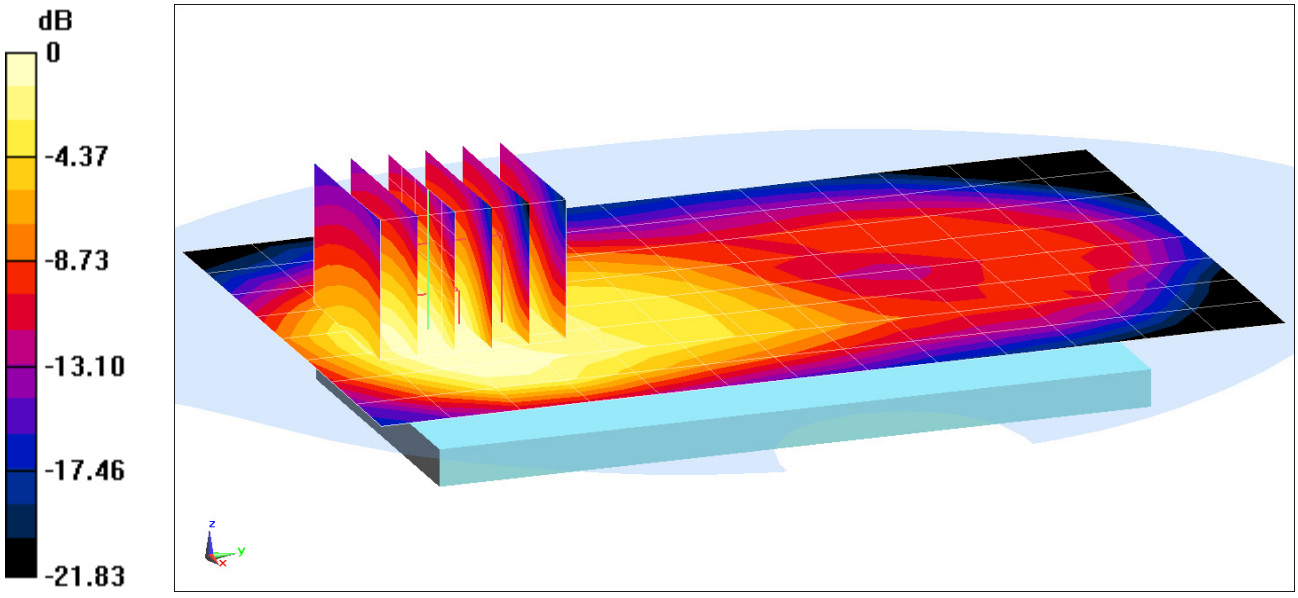
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used (interpolated):
f = 1882.5 MHz; σ = 1.555 S/m; ε_r = 52.402; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-27-2017; Ambient Temp: 21.8°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3287; ConvF(4.94, 4.94, 4.94); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.27 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.862 W/kg
SAR(1 g) = 0.529 W/kg



0 dB = 0.623 W/kg = -2.06 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 54872

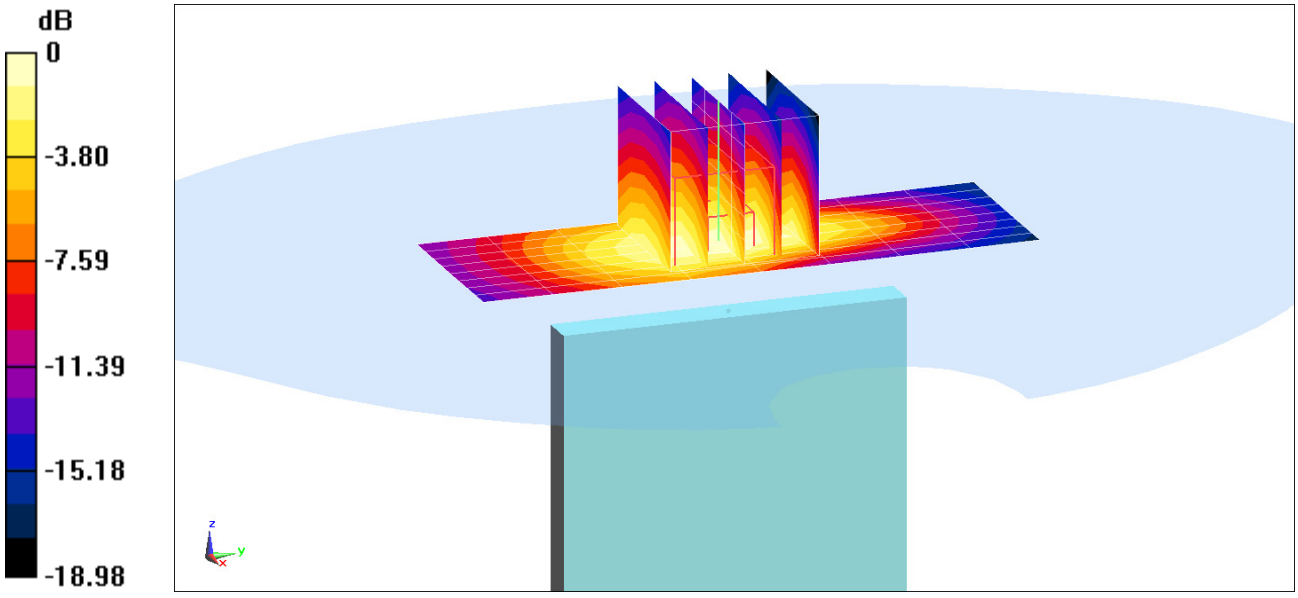
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used (interpolated):
f = 1882.5 MHz; σ = 1.555 S/m; ε_r = 52.402; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-27-2017; Ambient Temp: 21.8°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3287; ConvF(4.94, 4.94, 4.94); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.16 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.13 W/kg
SAR(1 g) = 0.665 W/kg



0 dB = 0.822 W/kg = -0.85 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 0548E

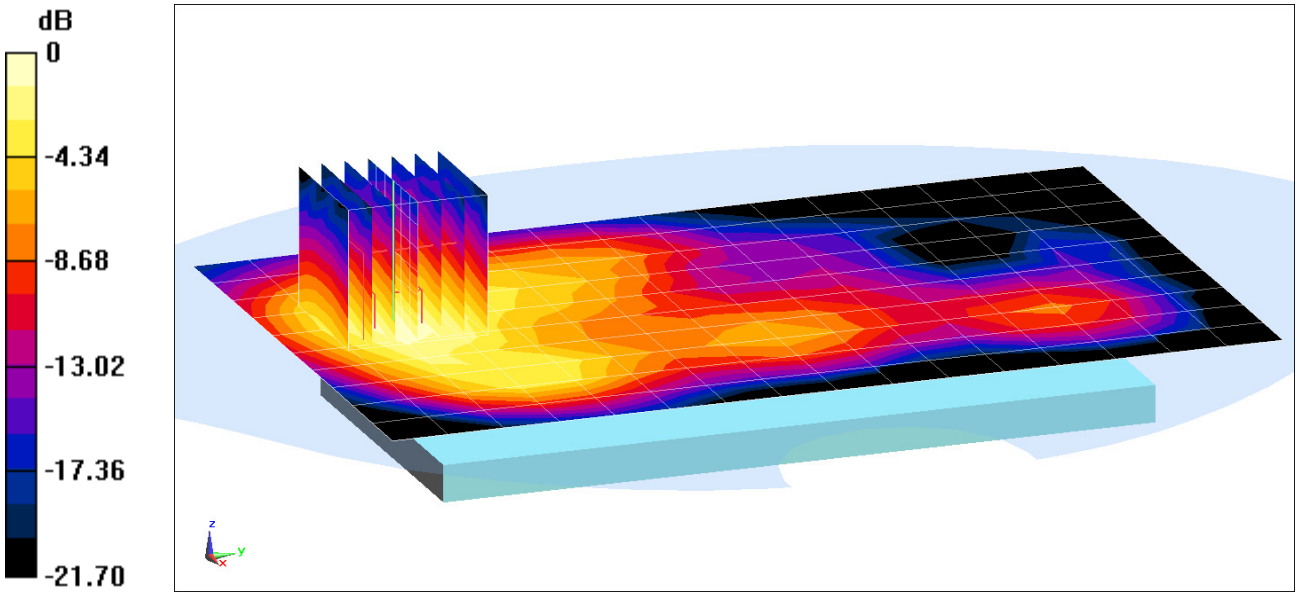
Communication System: UID 0, LTE Band 41; Frequency: 2680 MHz; Duty Cycle: 1:1.58
Medium: 2600 Body; Medium parameters used (interpolated):
f = 2680 MHz; σ = 2.325 S/m; ε_r = 50.529; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-01-2016; Ambient Temp: 22.0°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3334; ConvF(4.29, 4.29, 4.29); Calibrated: 11/17/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 11/11/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.08 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.592 W/kg
SAR(1 g) = 0.300 W/kg



0 dB = 0.380 W/kg = -4.20 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 0548E

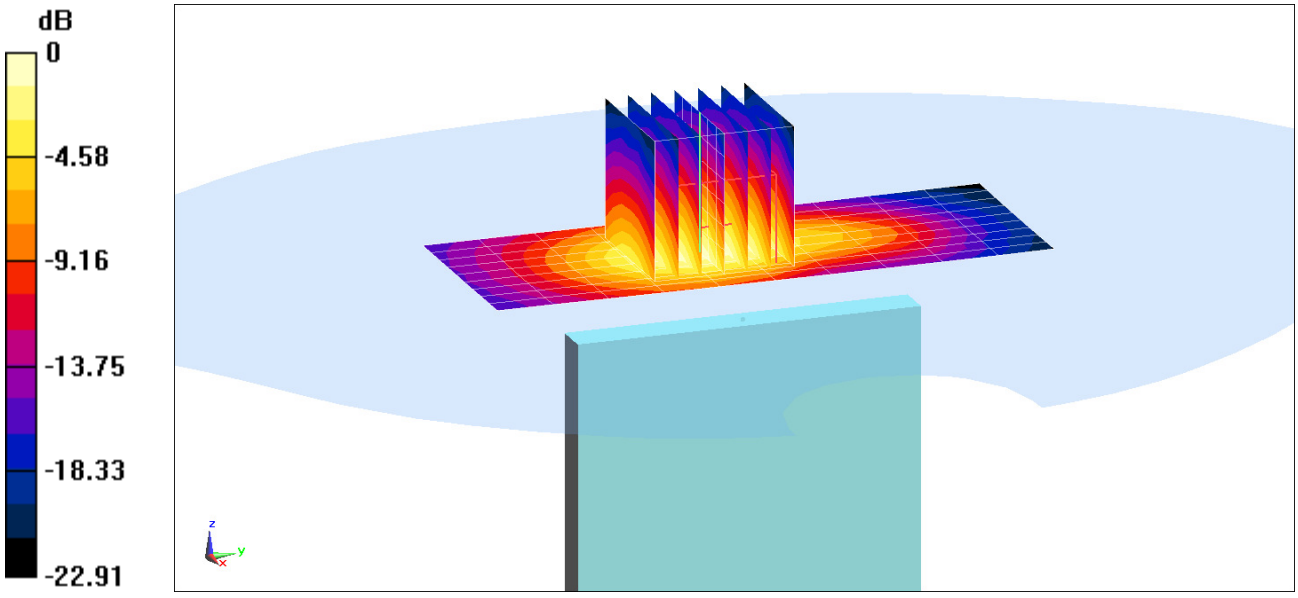
Communication System: UID 0, LTE Band 41; Frequency: 2593 MHz; Duty Cycle: 1:1.58
Medium: 2600 Body; Medium parameters used (interpolated):
f = 2593 MHz; σ = 2.207 S/m; ε_r = 50.886; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-01-2016; Ambient Temp: 22.0°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3334; ConvF(4.29, 4.29, 4.29); Calibrated: 11/17/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 11/11/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (10x11x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.43 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.43 W/kg
SAR(1 g) = 0.710 W/kg



0 dB = 0.913 W/kg = -0.40 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 23033

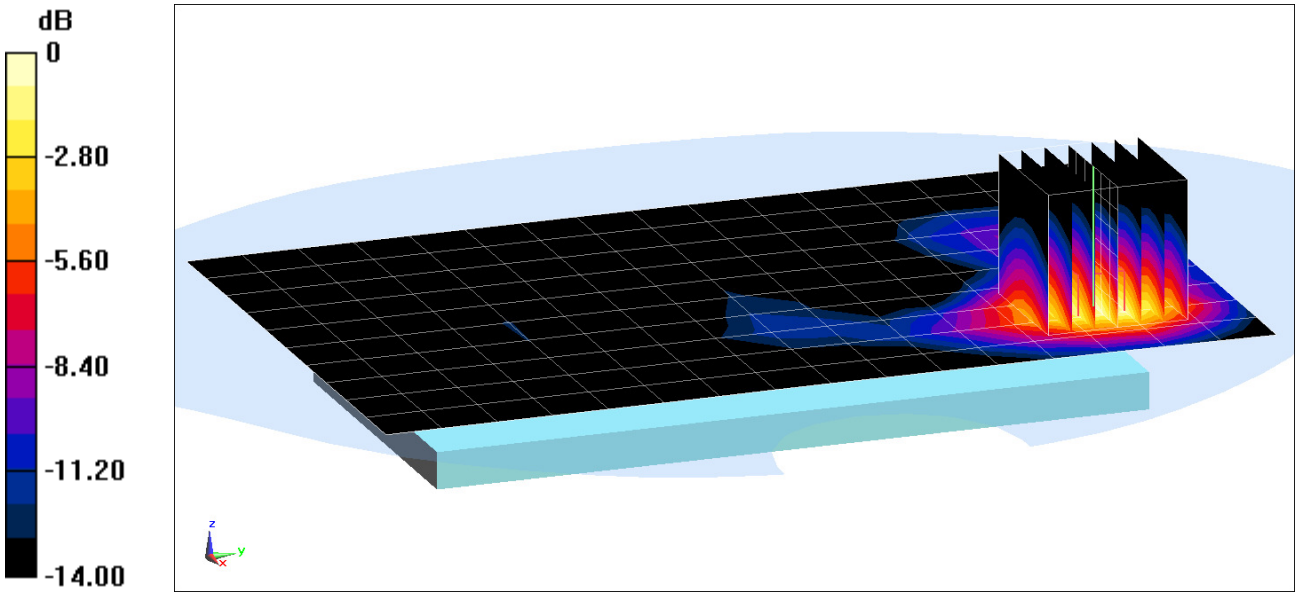
Communication System: UID 0, IEEE 802.11b; Frequency: 2412 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2412 MHz; σ = 1.963 S/m; ε_r = 51.13; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-29-2017; Ambient Temp: 23.5°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN7406; ConvF(7.24, 7.24, 7.24); Calibrated: 4/19/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/14/2016
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11b, 22 MHz Bandwidth, Body SAR
Ch 01, 1 Mbps, Back Side, Antenna 2

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.20 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.836 W/kg
SAR(1 g) = 0.399 W/kg



0 dB = 0.664 W/kg = -1.78 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 54872

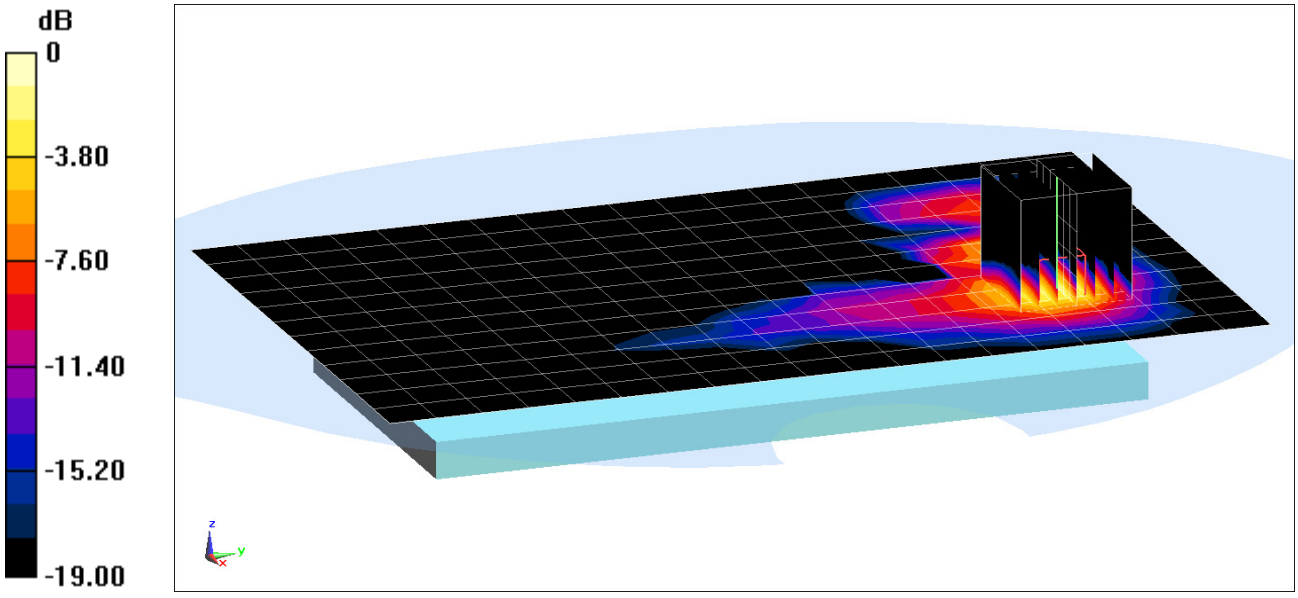
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5745 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body; Medium parameters used:
f = 5745 MHz; σ = 6.184 S/m; ε_r = 47.041; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-10-2017; Ambient Temp: 21.9°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN3589; ConvF(3.83, 3.83, 3.83); Calibrated: 1/13/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1466; Calibrated: 1/16/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11a, UNII-3, 20 MHz Bandwidth, Body SAR
Ch 149, 6 Mbps, Back Side, Antenna 2

Area Scan (13x20x1): 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 = 7.049 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 1.36 W/kg
SAR(1 g) = 0.295 W/kg



0 dB = 0.810 W/kg = -0.92 dBW/kg

DUT: A3LSMN935KOR; Type: Portable Handset; Serial: 252AE

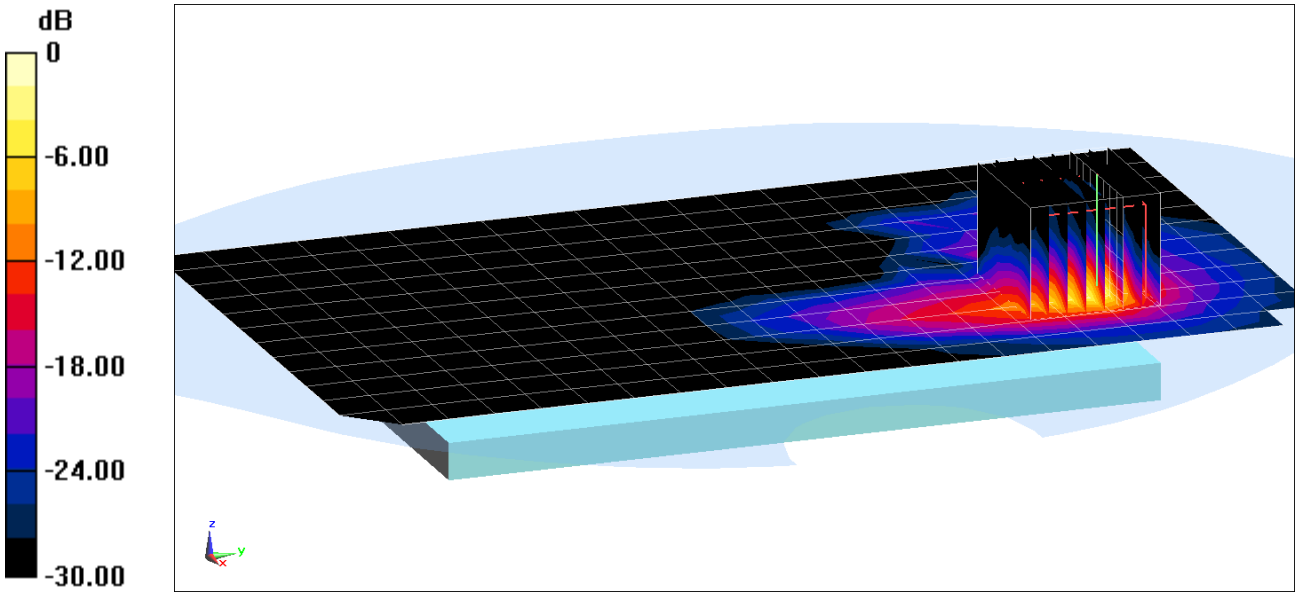
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5500 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body; Medium parameters used:
f = 5500 MHz; σ = 5.841 S/m; ε_r = 46.683; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 06-13-2016; Ambient Temp: 23.0°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN3914; ConvF(3.63, 3.63, 3.63); Calibrated: 2/22/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/18/2016
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11a, UNII-2C, 20 MHz Bandwidth, Phablet SAR,
Ch 100, 6 Mbps, Back Side, Antenna 2

Area Scan (13x22x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (9x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 1.732 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 36.2 W/kg
SAR(10 g) = 1.64 W/kg



0 dB = 21.0 W/kg = 13.22 dBW/kg

APPENDIX B: SYSTEM VERIFICATION

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1046

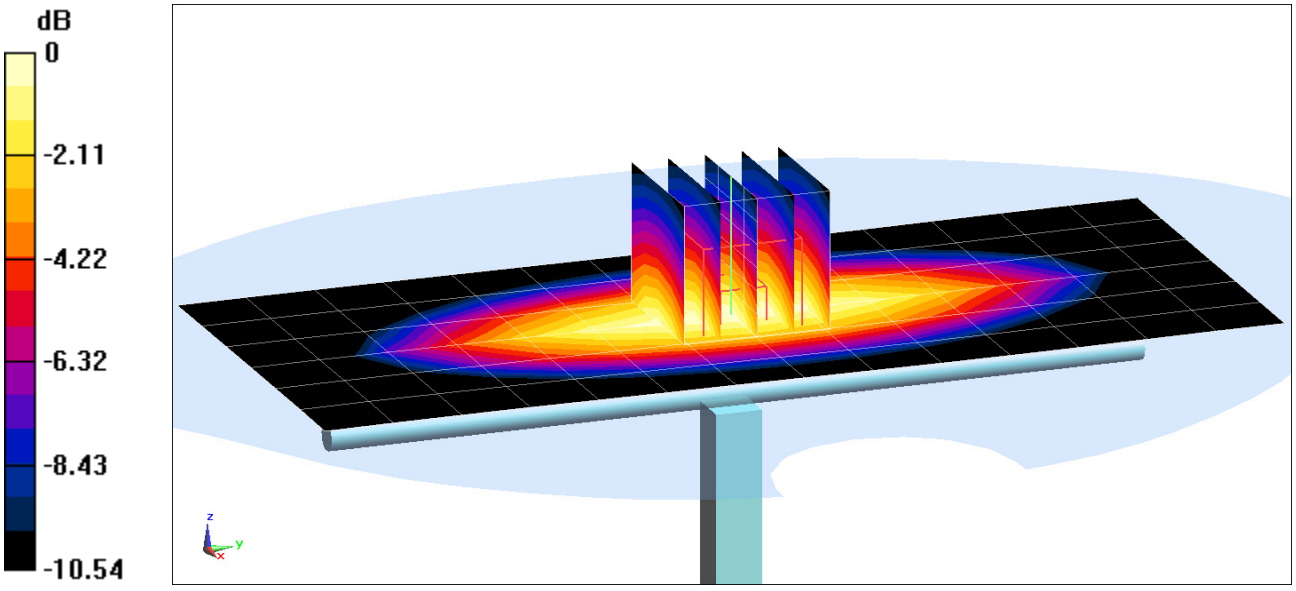
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Head; Medium parameters used (interpolated):
f = 750 MHz; σ = 0.897 S/m; ε_r = 41.48; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-02-2016; Ambient Temp: 24.0°C; Tissue Temp: 21.7°C

Probe: ES3DV2 - SN3022; ConvF(6.33, 6.33, 6.33); Calibrated: 8/26/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/16/2015
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

750 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.35 W/kg
SAR(1 g) = 1.58 W/kg
Deviation(1 g) = -3.66%



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

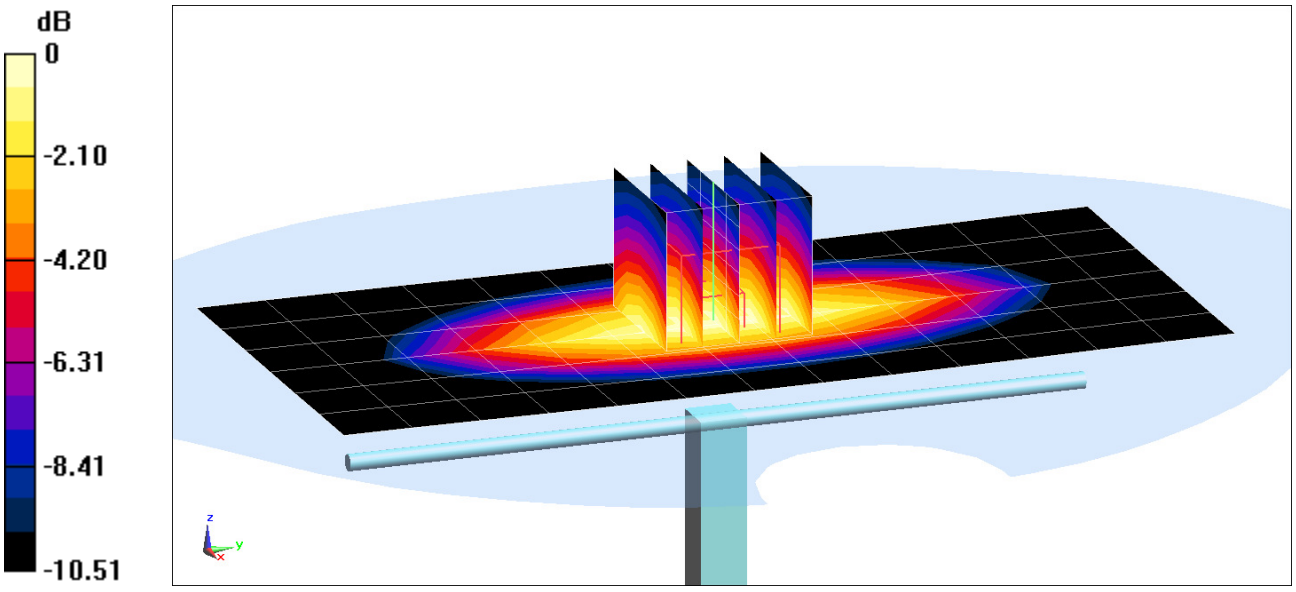
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head; Medium parameters used:
f = 835 MHz; σ = 0.907 S/m; ε_r = 42.814; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-30-2016; Ambient Temp: 22.8°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3333; ConvF(6.16, 6.16, 6.16); Calibrated: 10/29/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 10/27/2015
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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) = 2.66 W/kg
SAR(1 g) = 1.78 W/kg
Deviation(1 g) = -2.63%



0 dB = 2.08 W/kg = 3.18 dBW/kg

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

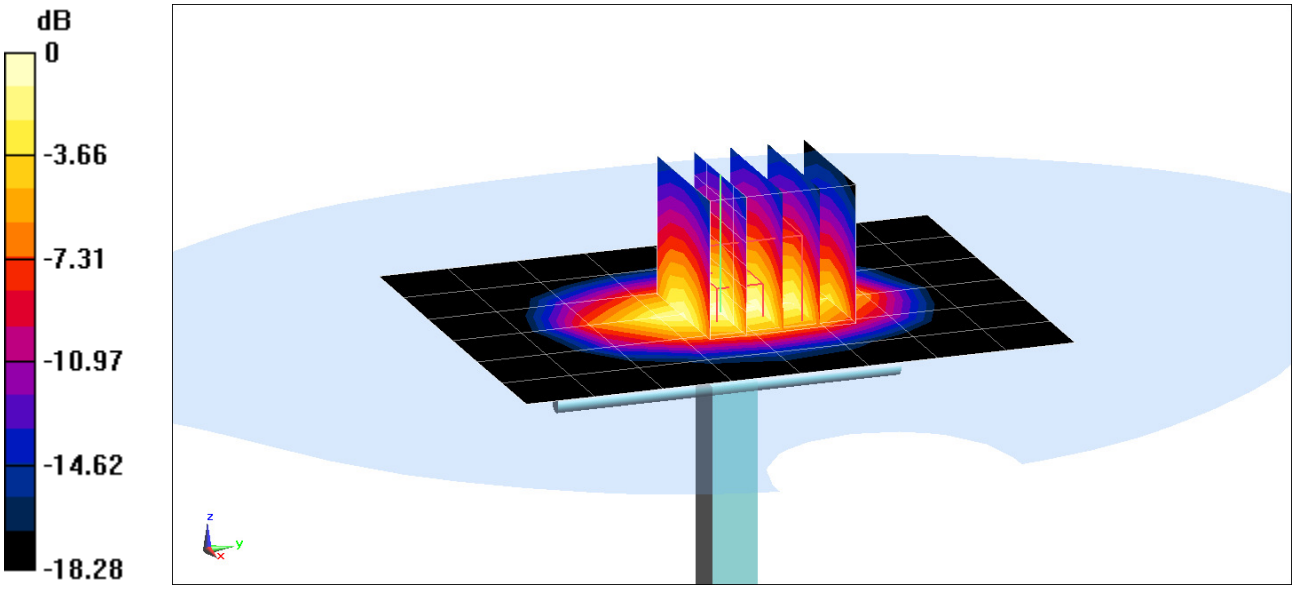
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Head; Medium parameters used:
f = 1750 MHz; σ = 1.359 S/m; ε_r = 39.049; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-06-2016; Ambient Temp: 23.2°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7406; ConvF(8.85, 8.85, 8.85); Calibrated: 4/19/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/14/2016
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.13 W/kg
SAR(1 g) = 3.40 W/kg
Deviation(1 g) = -7.36%



0 dB = 4.25 W/kg = 6.28 dBW/kg

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

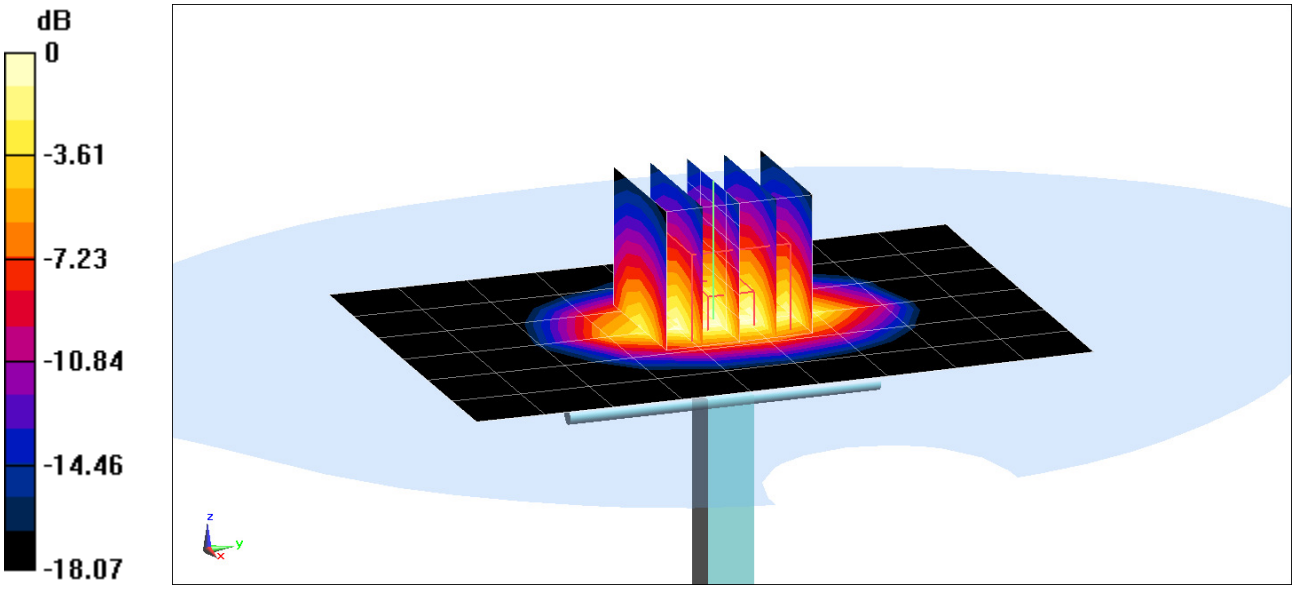
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head; Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.423 S/m; ε_r = 39.03; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-03-2016; Ambient Temp: 23.0°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3333; ConvF(5.03, 5.03, 5.03); Calibrated: 10/29/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 10/27/2015
Phantom: SAM Right; Type: QD000P40CD; Serial: 1757
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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) = 7.53 W/kg
SAR(1 g) = 4.15 W/kg
Deviation(1 g) = 7.79%



0 dB = 5.26 W/kg = 7.21 dBW/kg

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

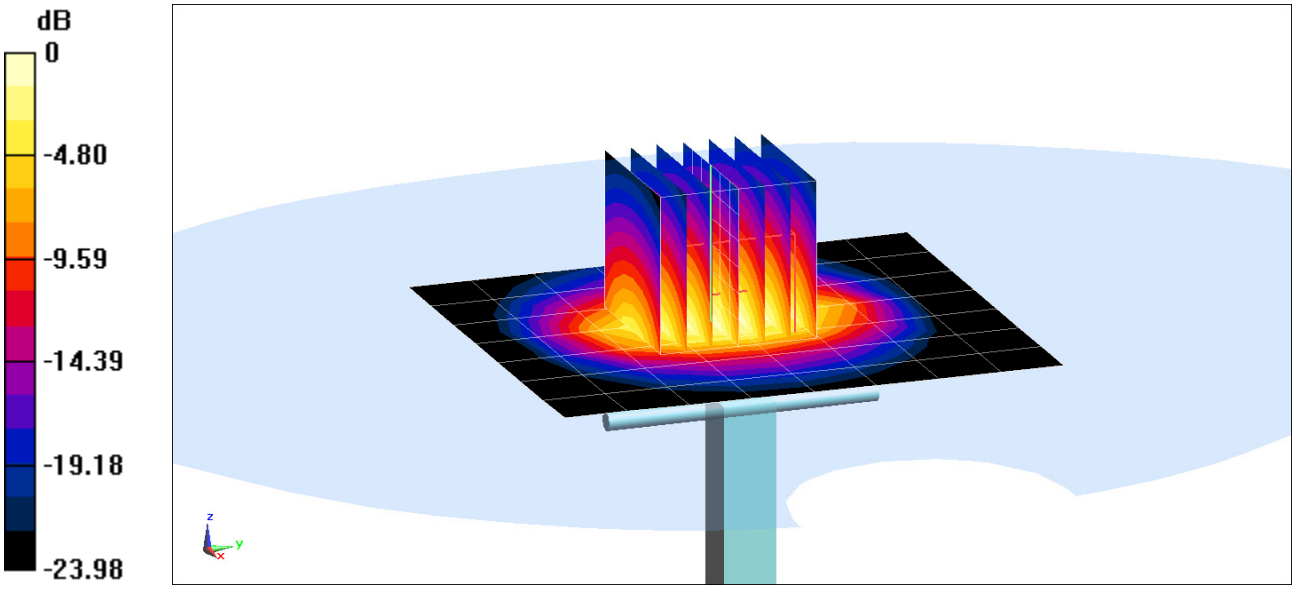
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head; Medium parameters used:
f = 2450 MHz; σ = 1.857 S/m; ε_r = 39.758; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-13-2016; Ambient Temp: 22.4°C; Tissue Temp: 23.4°C

Probe: ES3DV2 - SN3022; ConvF(4.3, 4.3, 4.3); Calibrated: 8/26/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/16/2015
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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) = 11.5 W/kg
SAR(1 g) = 5.32 W/kg
Deviation(1 g) = -1.85%



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

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1004

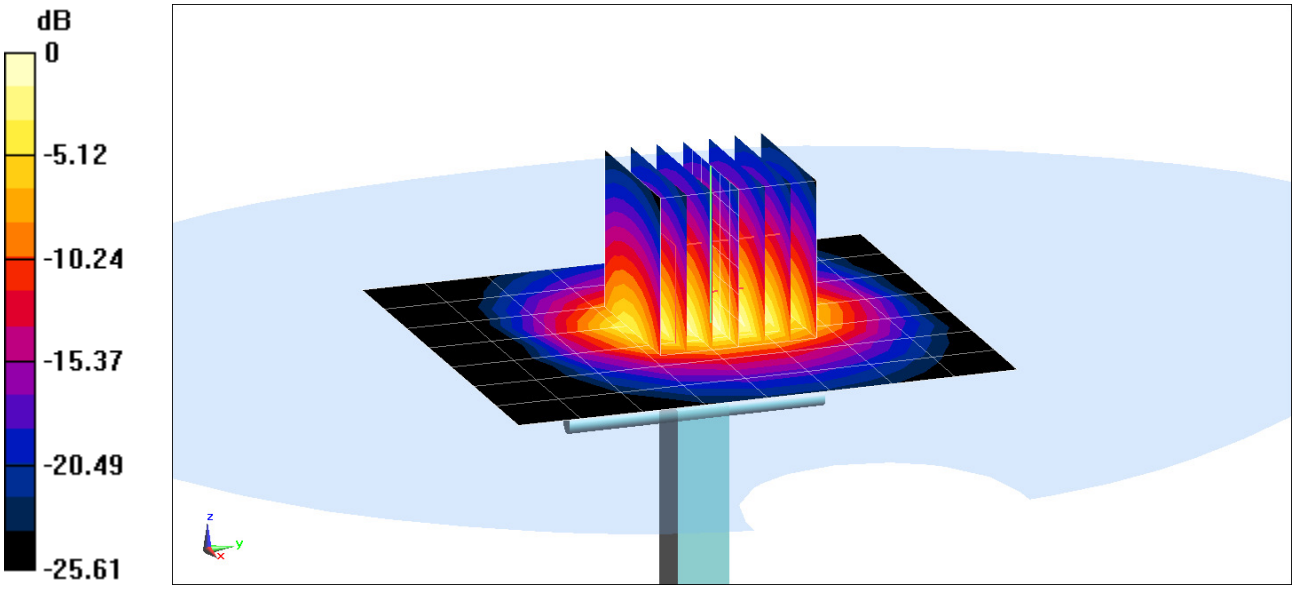
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2600 Head; Medium parameters used:
f = 2600 MHz; σ = 2.04 S/m; ε_r = 39.88; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-03-2016; Ambient Temp: 24.0°C; Tissue Temp: 23.5°C

Probe: ES3DV2 - SN3022; ConvF(4.12, 4.12, 4.12); Calibrated: 8/26/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 9/16/2015
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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) = 13.1 W/kg
SAR(1 g) = 5.84 W/kg
Deviation(1 g) = 4.85%



0 dB = 7.70 W/kg = 8.86 dBW/kg

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

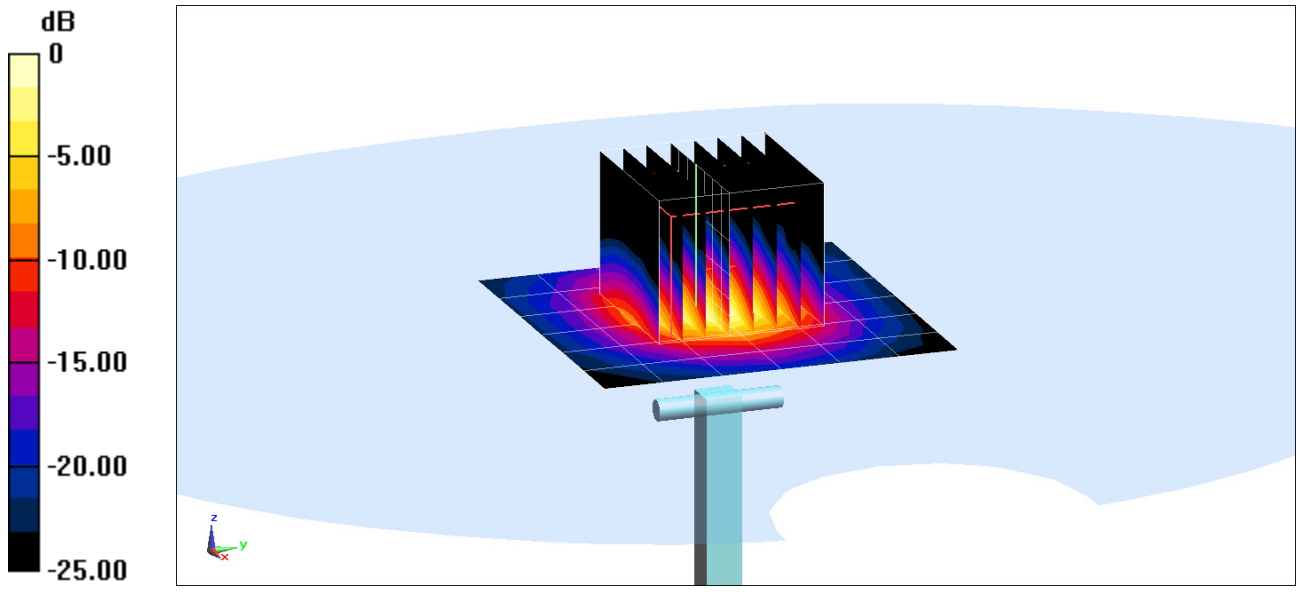
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head; Medium parameters used (interpolated):
f = 5250 MHz; σ = 4.658 S/m; ε_r = 35.155; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-13-2016; Ambient Temp: 20.4°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7357; ConvF(5.1, 5.1, 5.1); Calibrated: 4/19/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/19/2016
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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) = 15.8 W/kg
SAR(1 g) = 3.88 W/kg
Deviation(1 g) = -5.94%



0 dB = 9.04 W/kg = 9.56 dBW/kg

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

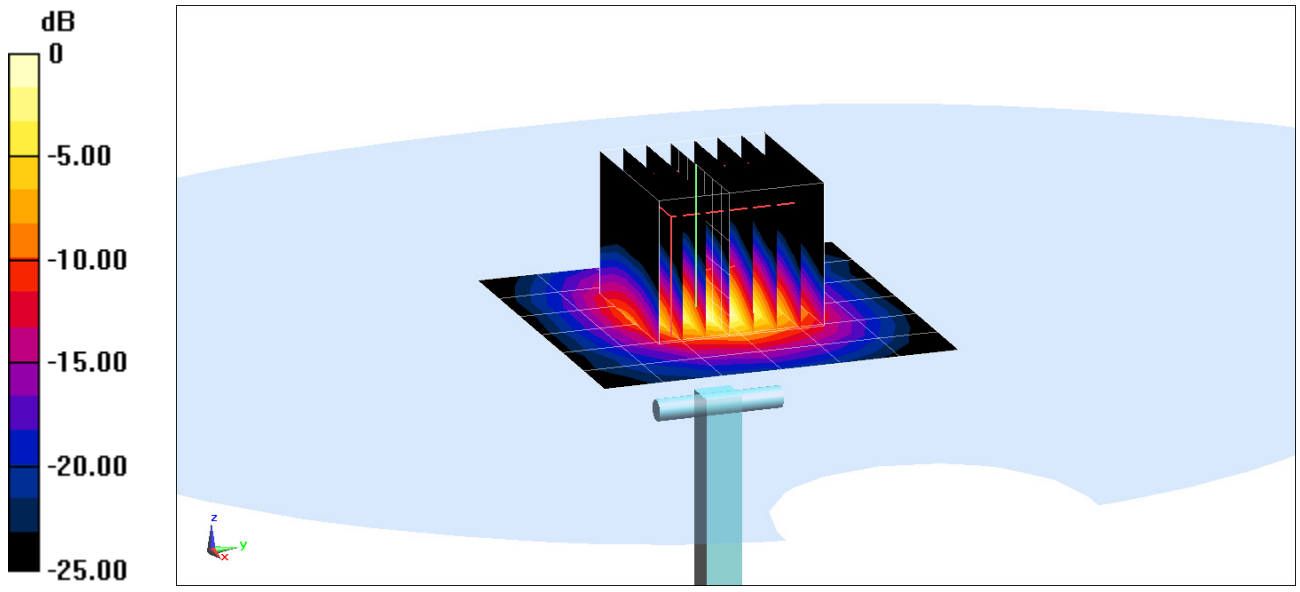
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head; Medium parameters used:
f = 5600 MHz; σ = 4.999 S/m; ε_r = 34.662; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-13-2016; Ambient Temp: 20.4°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7357; ConvF(4.41, 4.41, 4.41); Calibrated: 4/19/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/19/2016
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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) = 17.1 W/kg
SAR(1 g) = 4.11 W/kg
Deviation(1 g) = -2.72%



0 dB = 9.82 W/kg = 9.92 dBW/kg

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

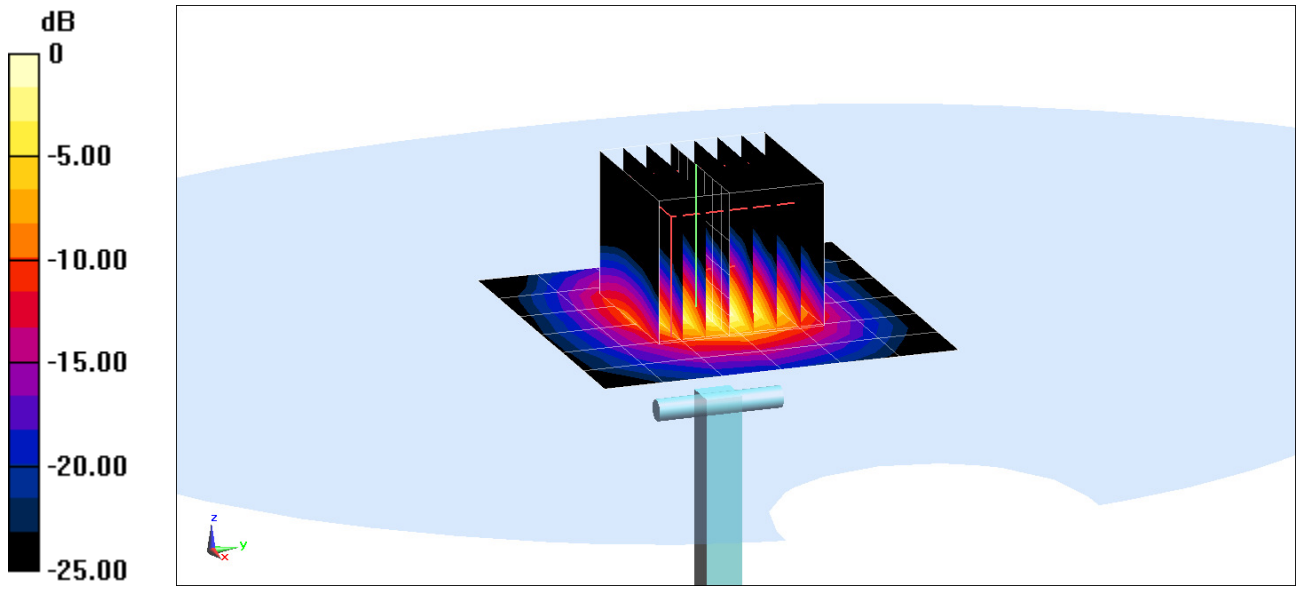
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head; Medium parameters used (interpolated):
f = 5750 MHz; σ = 5.177 S/m; ε_r = 34.426; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-13-2016; Ambient Temp: 20.4°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7357; ConvF(4.65, 4.65, 4.65); Calibrated: 4/19/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/19/2016
Phantom: SAM with CRP v4.0; Type: QD000P40CD; Serial: TP:1800
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5750 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 16.9 W/kg
SAR(1 g) = 3.94 W/kg
Deviation(1 g) = -1.50%



0 dB = 9.53 W/kg = 9.79 dBW/kg

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

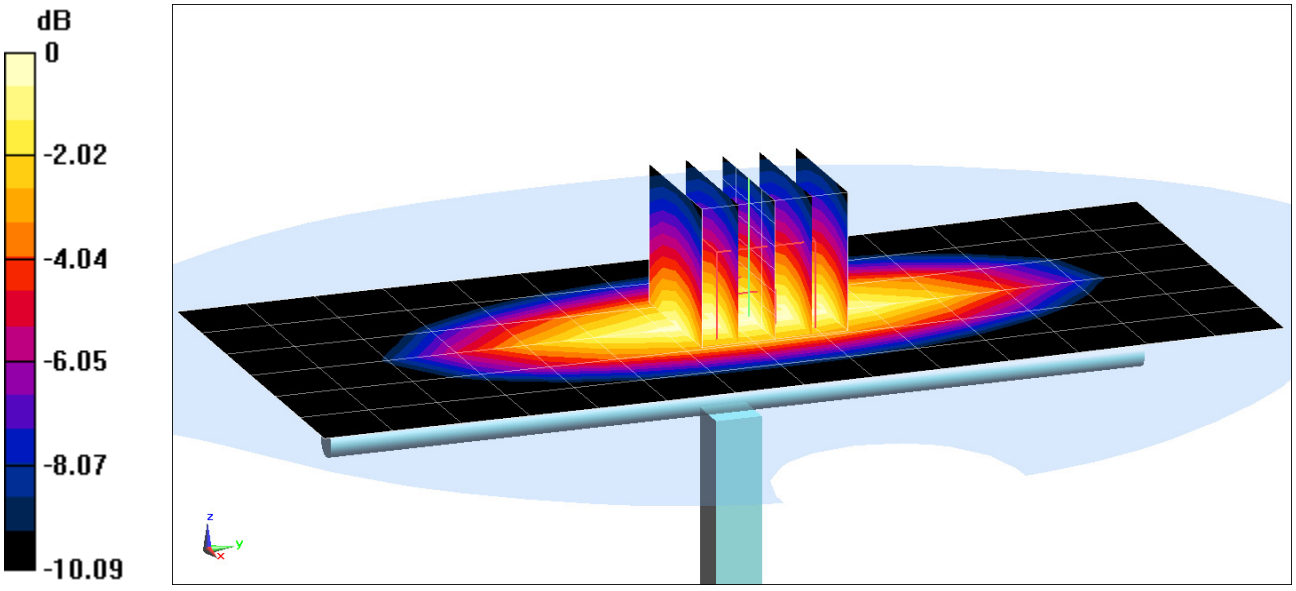
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Body; Medium parameters used (interpolated):
f = 750 MHz; σ = 0.952 S/m; ε_r = 54.192; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 04-03-2017; Ambient Temp: 24.5°C; Tissue Temp: 23.1°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 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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) = 2.34 W/kg
SAR(1 g) = 1.59 W/kg
Deviation(1 g) = -5.69%



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

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

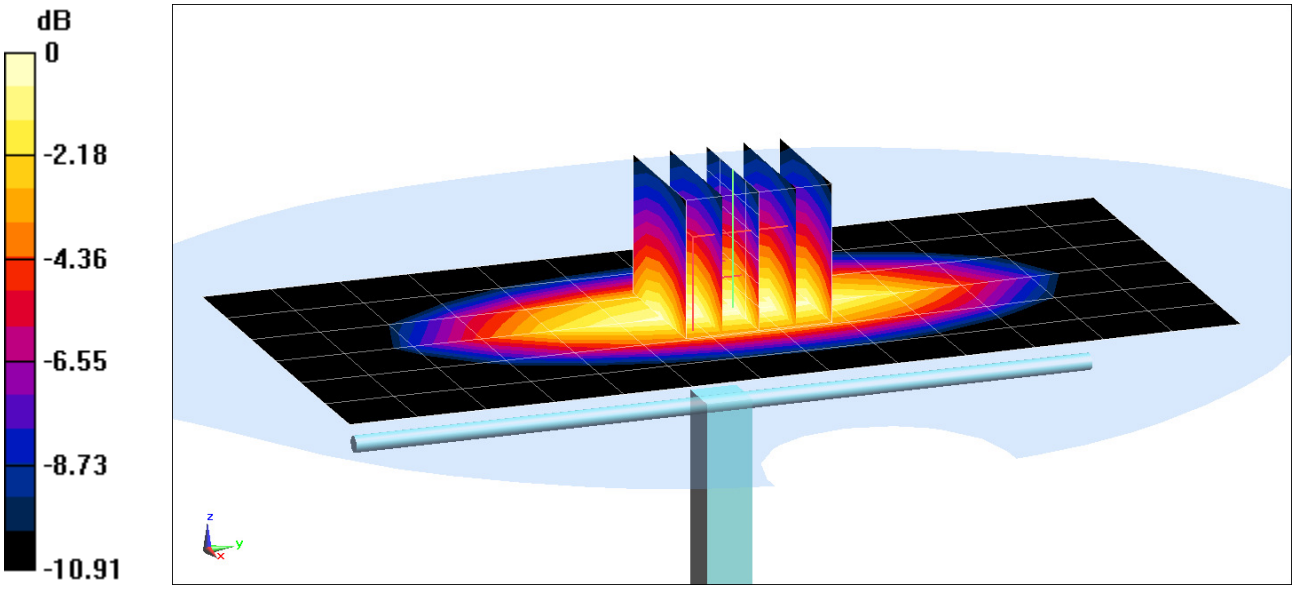
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body; Medium parameters used:
f = 835 MHz; σ = 1.014 S/m; ε_r = 54.395; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-29-2016; Ambient Temp: 23.2°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7406; ConvF(9.35, 9.35, 9.35); Calibrated: 4/19/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/14/2016
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.85 W/kg
SAR(1 g) = 1.83 W/kg
Deviation(1 g) = 0.11%



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

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

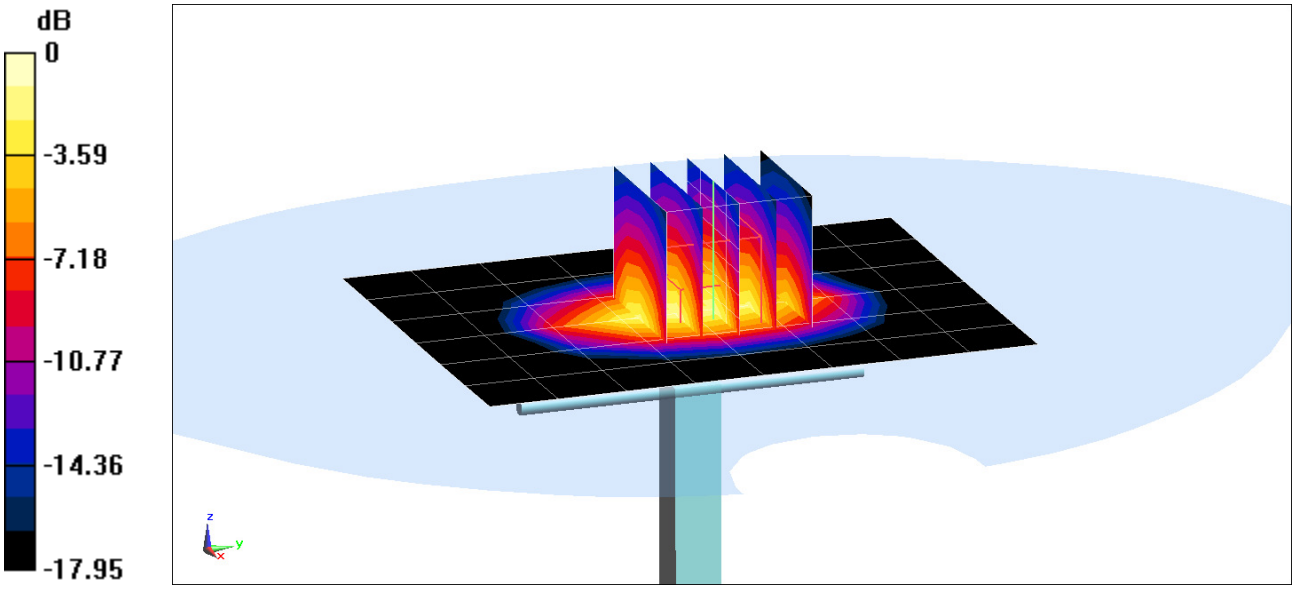
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body; Medium parameters used:
f = 1750 MHz; σ = 1.507 S/m; ε_r = 51.834; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-06-2016; Ambient Temp: 21.3°C; Tissue Temp: 20.7°C

Probe: EX3DV4 - SN7406; ConvF(7.78, 7.78, 7.78); Calibrated: 4/19/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/14/2016
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.01 W/kg
SAR(1 g) = 3.80 W/kg
Deviation(1 g) = 1.88%



0 dB = 5.75 W/kg = 7.60 dBW/kg

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

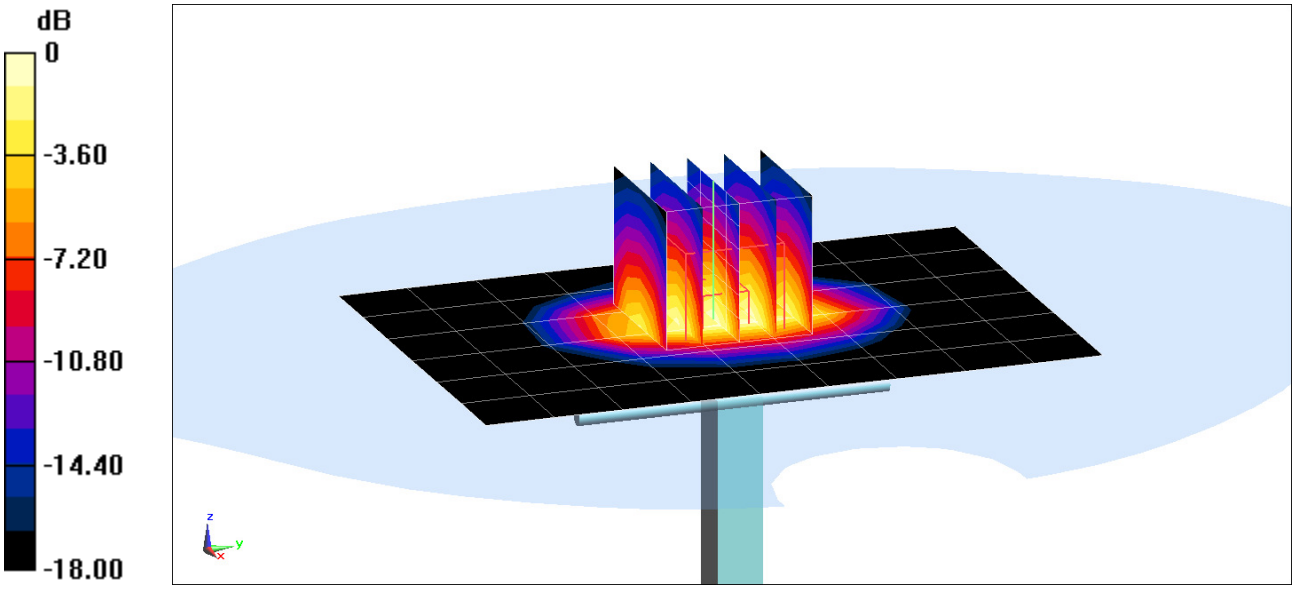
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.573 S/m; ε_r = 52.326; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-27-2017; Ambient Temp: 21.8°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3287; ConvF(4.94, 4.94, 4.94); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1900 MHz System Verification 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) = 7.50 W/kg
SAR(1 g) = 4.17 W/kg
Deviation(1 g) = 6.65%



0 dB = 5.29 W/kg = 7.23 dBW/kg

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 882

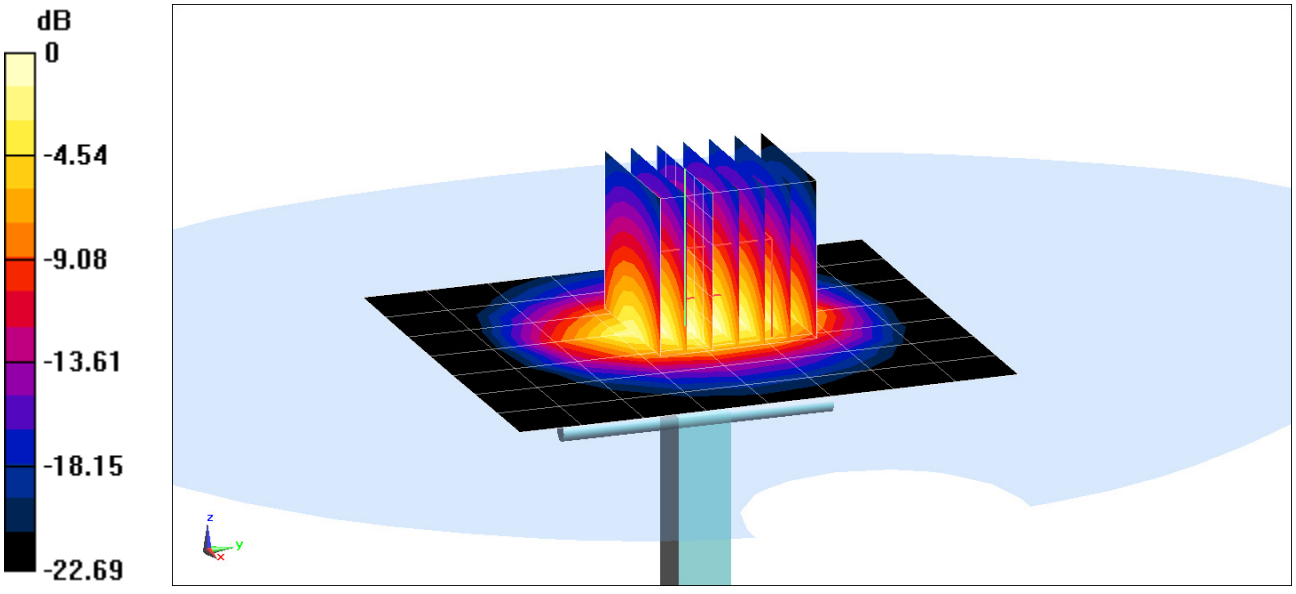
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; σ = 2.012 S/m; εr = 51.444; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-01-2016; Ambient Temp: 22.0°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3334; ConvF(4.45, 4.45, 4.45); Calibrated: 11/17/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 11/11/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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) = 11.0 W/kg
SAR(1 g) = 5.20 W/kg
Deviation(1 g) = 5.26%



0 dB = 7.38 W/kg = 8.68 dBW/kg

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

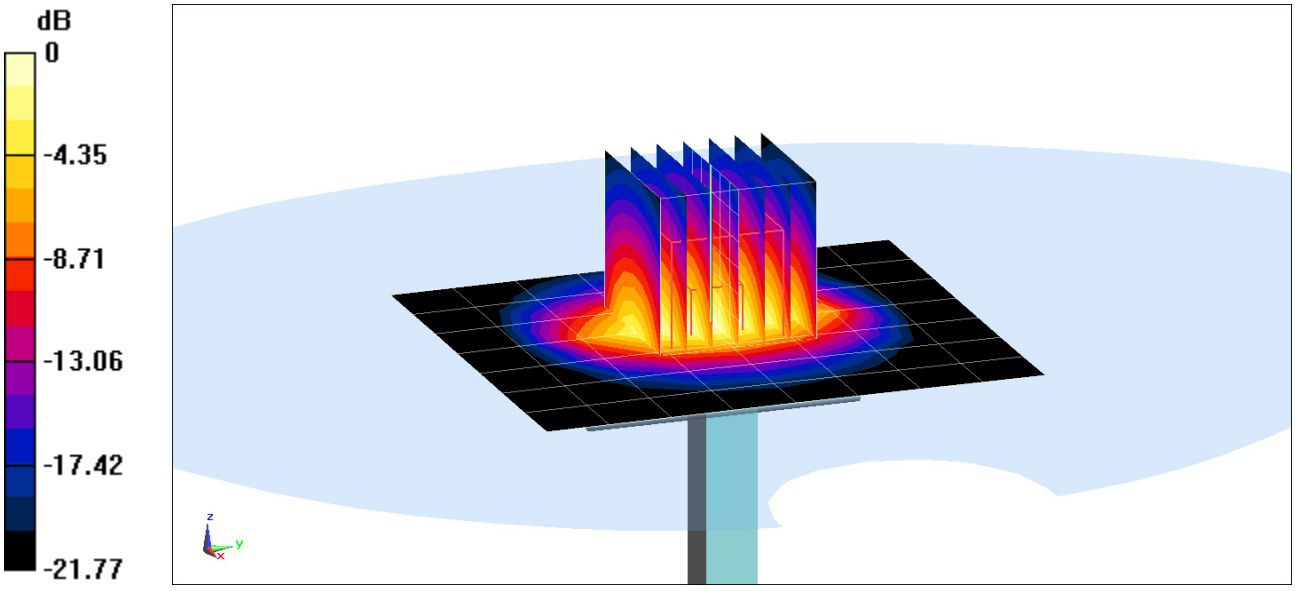
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used:
f = 2450 MHz; σ = 2.011 S/m; ε_r = 50.977; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 03-29-2017; Ambient Temp: 23.5°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN7406; ConvF(7.24, 7.24, 7.24); Calibrated: 04/19/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 04/14/2016
Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 9.77 W/kg
SAR(1 g) = 4.77 W/kg
Deviation(1 g) = -6.10%



0 dB = 7.95 W/kg = 9.00 dBW/kg

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1071

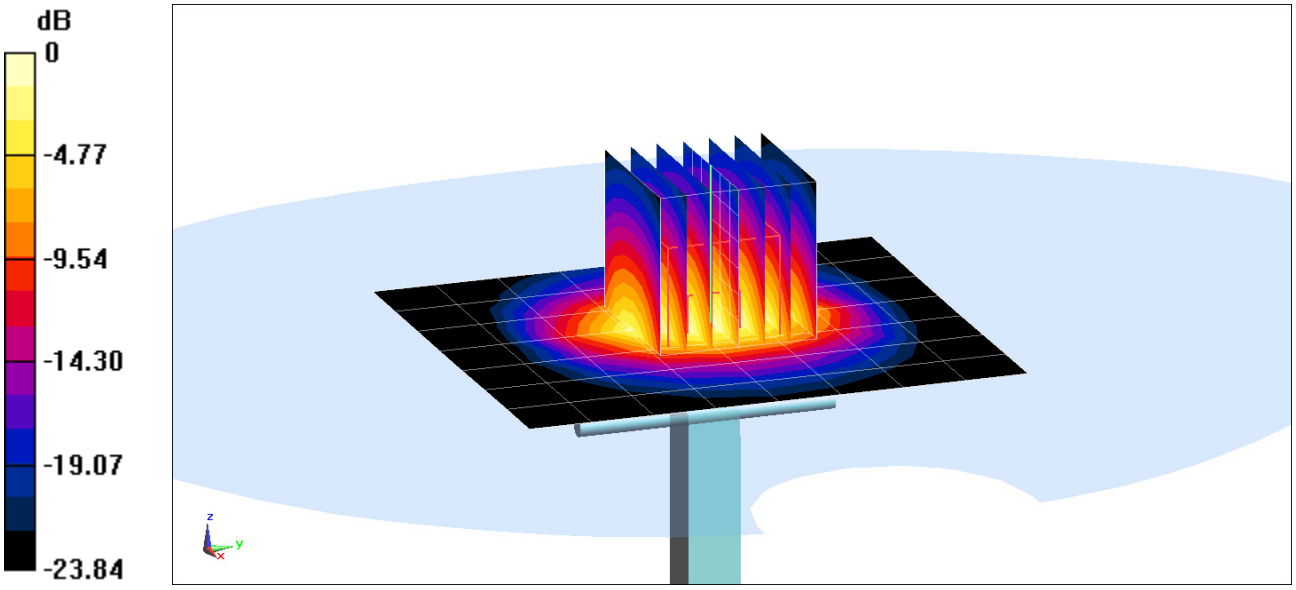
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2600 Body; Medium parameters used:
f = 2600 MHz; σ = 2.216 S/m; ε_r = 50.857; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-01-2016; Ambient Temp: 22.0°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3334; ConvF(4.29, 4.29, 4.29); Calibrated: 11/17/2015;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 11/11/2015
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2600 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 12.4 W/kg
SAR(1 g) = 5.77 W/kg
Deviation(1 g) = 5.10%



0 dB = 7.74 W/kg = 8.89 dBW/kg

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1120

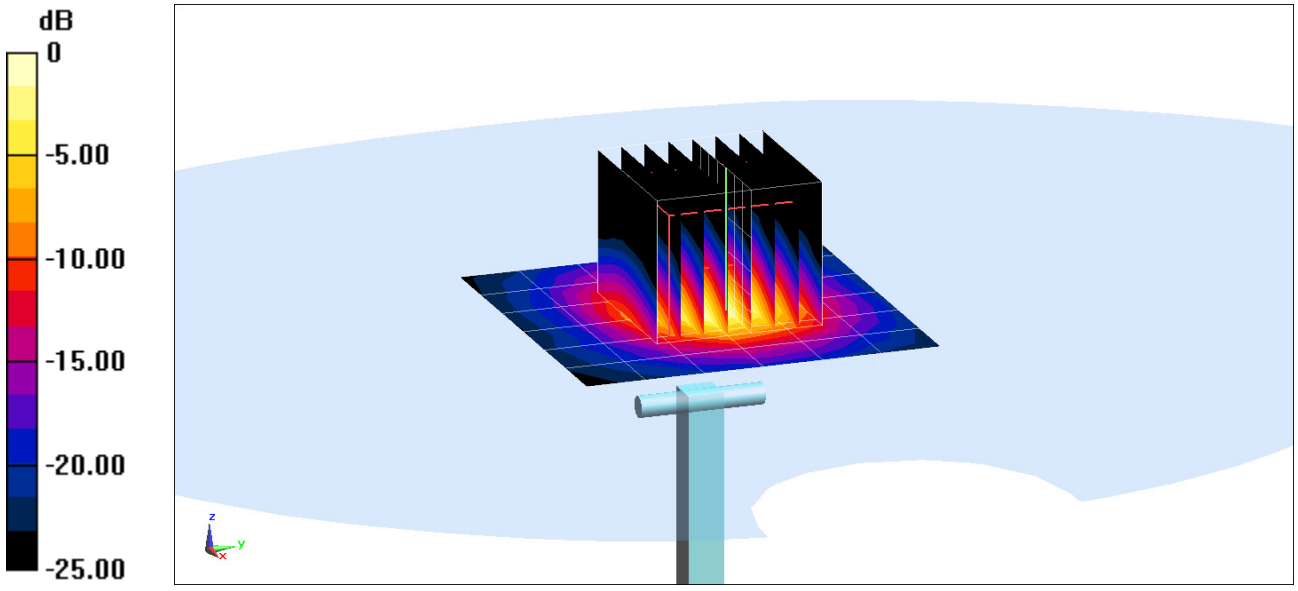
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body; Medium parameters used (interpolated):
f = 5250 MHz; σ = 5.527 S/m; ε_r = 47.111; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-13-2016; Ambient Temp: 23.0ºC; Tissue Temp: 22.3ºC

Probe: EX3DV4 - SN3914; ConvF(4.32, 4.32, 4.32); Calibrated: 2/22/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/18/2016
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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) = 15.0 W/kg
SAR(10 g) = 1.04 W/kg
Deviation(10 g) = -1.89%



0 dB = 8.63 W/kg = 9.36 dBW/kg

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

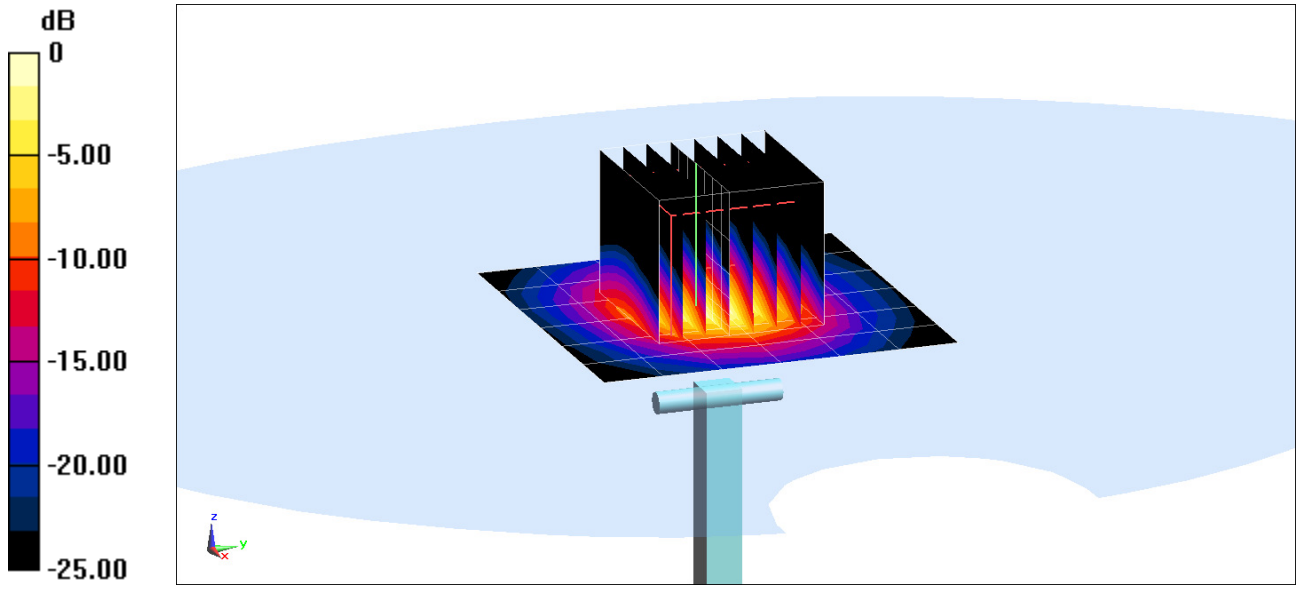
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body; Medium parameters used (interpolated):
f = 5250 MHz; σ = 5.515 S/m; ε_r = 47.848; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-10-2017; Ambient Temp: 21.9°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN3589; ConvF(4.19, 4.19, 4.19); Calibrated: 1/13/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1466; Calibrated: 1/16/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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) = 15.5 W/kg
SAR(1 g) = 3.59 W/kg
Deviation(1 g) = -4.01%



0 dB = 8.51 W/kg = 9.30 dBW/kg

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1120

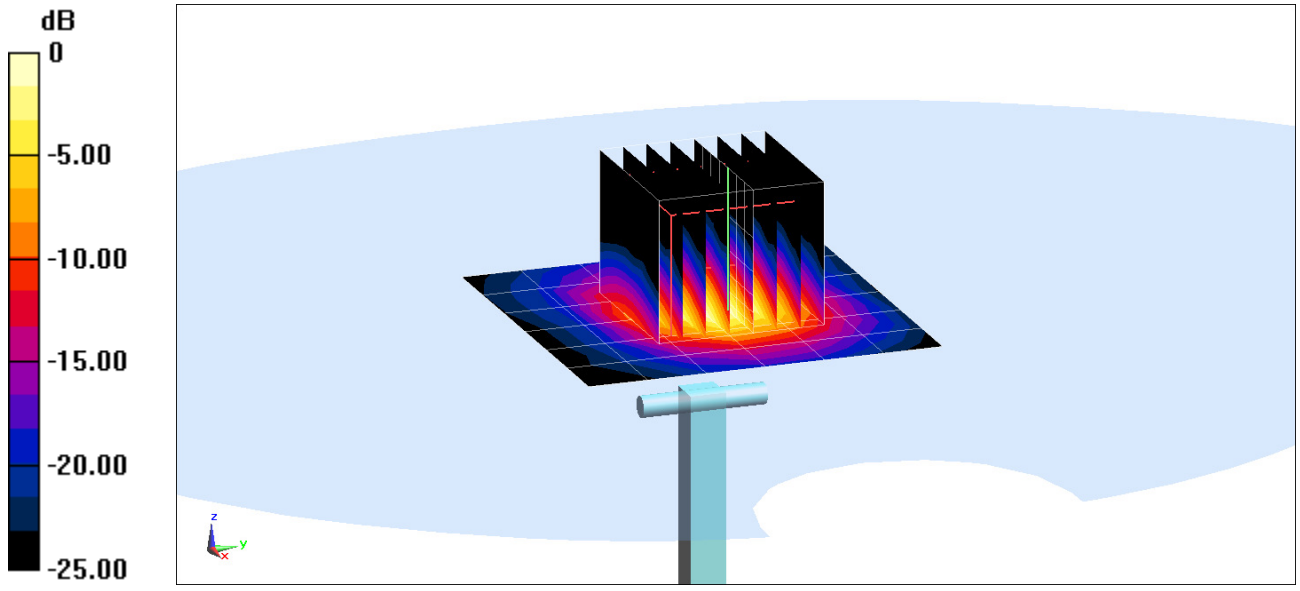
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body; Medium parameters used:
f = 5600 MHz; σ = 5.969 S/m; ε_r = 46.504; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-13-2016; Ambient Temp: 23.0ºC; Tissue Temp: 22.3ºC

Probe: EX3DV4 - SN3914; ConvF(3.63, 3.63, 3.63); Calibrated: 2/22/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/18/2016
Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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) = 15.6 W/kg
SAR(10 g) = 1.08 W/kg
Deviation(10 g) = -4.42%



0 dB = 9.07 W/kg = 9.58 dBW/kg

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

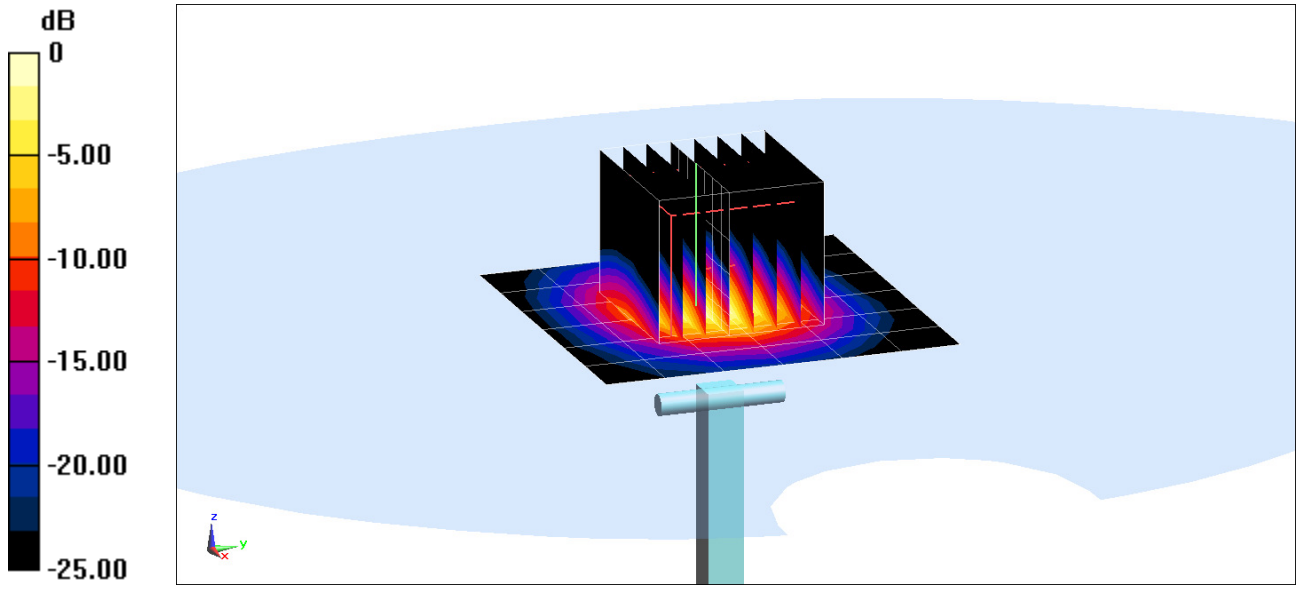
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body; Medium parameters used:
f = 5600 MHz; σ = 5.978 S/m; ε_r = 47.26; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-10-2017; Ambient Temp: 21.9°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN3589; ConvF(3.82, 3.82, 3.82); Calibrated: 1/13/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1466; Calibrated: 1/16/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5600 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 17.6 W/kg
SAR(1 g) = 3.68 W/kg
Deviation(1 g) = -4.42%



0 dB = 9.31 W/kg = 9.69 dBW/kg

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

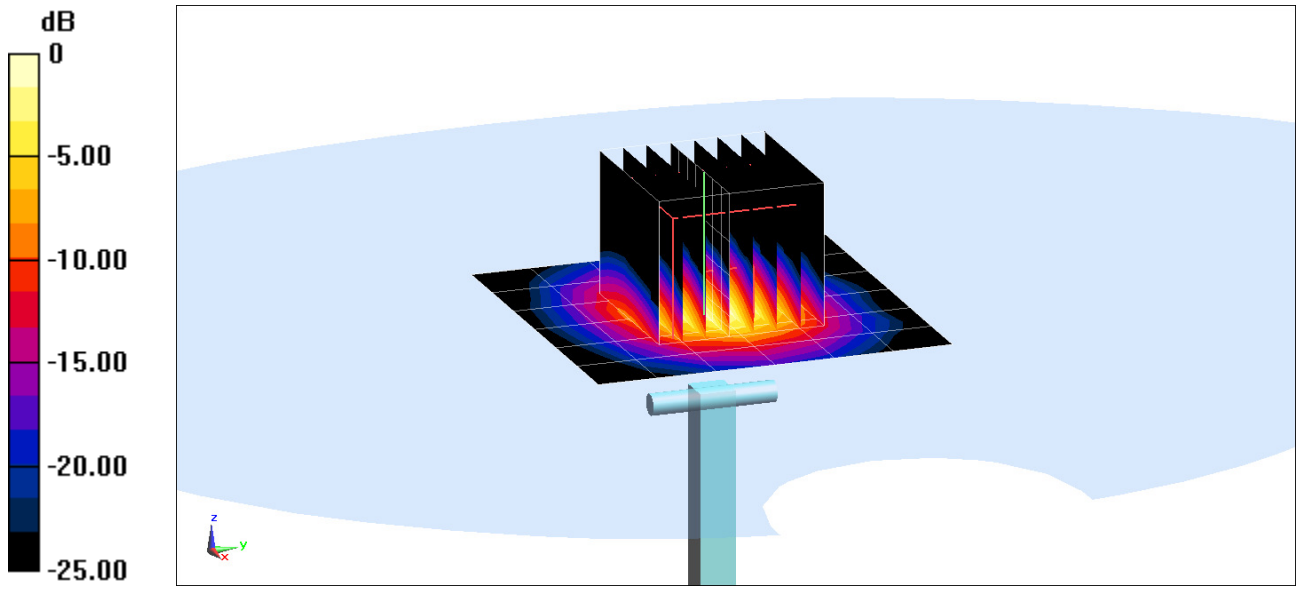
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body; Medium parameters used (interpolated):
f = 5750 MHz; σ = 6.191 S/m; ε_r = 47.031; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-10-2017; Ambient Temp: 21.9°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN3589; ConvF(3.83, 3.83, 3.83); Calibrated: 1/13/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1466; Calibrated: 1/16/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

5750 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 16.0 W/kg
SAR(1 g) = 3.47 W/kg
Deviation(1 g) = -7.96%



0 dB = 8.63 W/kg = 9.36 dBW/kg