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SAR EVALUATION REPORT

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

Date of Testing:
08/08/16 - 08/29/16
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
0Y1608121372-R2.ZNF

FCC ID: **ZNFVS995**

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

DUT Type: Portable Handset
Application Type: Class II Permissive Change
FCC Rule Part(s): CFR §2.1093
Model(s): LG-VS995, LGVS995, VS995, LG-US996, LGUS996, US996, LG-H990T, LGH990T, H990T, LG-VS995S, LGVS995S, VS995S

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 850	824.20 - 848.80 MHz	< 0.1	< 0.1	< 0.1	N/A
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	0.22	0.37	0.46	N/A
PCE	UMTS 850	826.40 - 846.60 MHz	0.27	0.33	0.42	N/A
PCE	UMTS 1750	1712.4 - 1752.6 MHz	0.29	0.39	0.47	N/A
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.26	0.49	0.67	N/A
PCE	Cell. CDMA/EVDO	824.70 - 848.31 MHz	1.03	0.33	0.46	N/A
PCE	PCS CDMA/EVDO	1851.25 - 1908.75 MHz	0.32	0.55	0.65	N/A
PCE	LTE Band 12	699.7 - 715.3 MHz	0.81	0.26	0.39	N/A
PCE	LTE Band 17	706.5 - 713.5 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 13	779.5 - 784.5 MHz	0.61	0.37	0.45	N/A
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	0.97	0.38	0.47	N/A
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.30	0.59	0.69	N/A
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.33	0.58	0.78	N/A
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	N/A	N/A	N/A	N/A
DTS	2.4 GHz WLAN	2412 - 2462 MHz	0.41	0.28	0.39	N/A
NII	U-NII-1	5180 - 5240 MHz	N/A	N/A	0.19	N/A
NII	U-NII-2A	5260 - 5320 MHz	0.32	< 0.1	N/A	0.65
NII	U-NII-2C	5500 - 5720 MHz	0.14	< 0.1	N/A	0.47
NII	U-NII-3	5745 - 5825 MHz	0.13	< 0.1	0.16	N/A
DSS/DTS	Bluetooth	2402 - 2480 MHz	N/A	< 0.1	N/A	0.10
Simultaneous SAR per KDB 690783 D01v01r03:			1.50	1.11	1.46	1.00

Note: This revised Test Report (S/N: 0Y1608121372-R2.ZNF) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

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

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

Randy Ortanez
President

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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.6 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
Cell. CDMA/EVDO	Voice/Data	824.70 - 848.31 MHz
PCS CDMA/EVDO	Voice/Data	1851.25 - 1908.75 MHz
LTE Band 12	Voice/Data	699.7 - 715.3 MHz
LTE Band 17	Voice/Data	706.5 - 713.5 MHz
LTE Band 13	Voice/Data	779.5 - 784.5 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 848.3 MHz
LTE Band 66 (AWS)	Voice/Data	1712.5 - 1777.5 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 25 (PCS)	Voice/Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2462 MHz
U-NII-1	Voice/Data	5180 - 5240 MHz
U-NII-2A	Voice/Data	5260 - 5320 MHz
U-NII-2C	Voice/Data	5500 - 5720 MHz
U-NII-3	Voice/Data	5745 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz

1.2 Power Reduction for SAR

This device uses a 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. The reduced powers for the power reduction mechanism were confirmed via conducted power measurements at the RF port (See Section 9).

1.3 Nominal and Maximum Output Power Specifications

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

1.3.1 Maximum PCE Power

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)		Burst Average 8-PSK (dBm)	
		1 TX Slot	*1 TX Slots*	*2 TX Slots*	*1 TX Slots*	*2 TX Slots*
GSM/GPRS/EDGE 850	Maximum	**33.7**	**33.7**	**32.2**	**27.2**	**27.2**
	Nominal	**33.2**	**33.2**	**31.7**	**26.7**	**26.7**
GSM/GPRS/EDGE 1900	Maximum	**30.7**	**30.7**	**29.2**	**26.2**	**26.2**
	Nominal	**30.2**	**30.2**	**28.7**	**25.7**	**25.7**

Mode / Band		Modulated Average (dBm)		
		3GPP WCDMA	*3GPP HSDPA*	*3GPP HSUPA*
UMTS Band 5 (850 MHz)	Maximum	**24.7**	**24.7**	**24.7**
	Nominal	**24.2**	**24.2**	**24.2**
UMTS Band 4 (1750 MHz)	Maximum	**24.7**	**24.7**	**24.7**
	Nominal	**24.2**	**24.2**	**24.2**
UMTS Band 2 (1900 MHz)	Maximum	**24.7**	**24.7**	**24.7**
	Nominal	**24.2**	**24.2**	**24.2**

Mode / Band		Modulated Average (dBm)
Cell. CDMA/EVDO	Maximum	**24.7**
	Nominal	**24.2**
PCS CDMA/EVDO	Maximum	**24.7**
	Nominal	**24.2**

Mode / Band		Modulated Average (dBm)
LTE Band 12	Maximum	**24.7**
	Nominal	**24.2**
LTE Band 17	Maximum	**24.7**
	Nominal	**24.2**
LTE Band 13	Maximum	**24.7**
	Nominal	**24.2**
LTE Band 5 (Cell)	Maximum	**24.7**
	Nominal	**24.2**
LTE Band 66 (AWS)	Maximum	**25.0**
	Nominal	**24.5**
LTE Band 4 (AWS)	Maximum	**25.0**
	Nominal	**24.5**
LTE Band 25 (PCS)	Maximum	**25.0**
	Nominal	**24.5**
LTE Band 2 (PCS)	Maximum	**25.0**
	Nominal	**24.5**

1.3.2 Maximum WLAN/BT Power

This device only supports SISO operations on the secondary antenna for 802.11b. The below 802.11 a/g/n/ac secondary antenna powers are included to represent the maximum allowed output power the device can operate in CDD or MIMO SDM modes for simultaneous transmission evaluation purposes.

Mode / Band		Modulated Average - Single Tx Chain (Primary) (dBm)		
		Ch. 1-3	Ch. 4-8	Ch. 9-11
IEEE 802.11b (2.4 GHz)	Maximum	19.0	20.0	18.0
	Nominal	18.0	19.0	17.0
IEEE 802.11g (2.4 GHz)	Maximum	14.5	15.5	13.5
	Nominal	13.5	14.5	12.5
IEEE 802.11n (2.4 GHz)	Maximum	14.5	15.5	13.5
	Nominal	13.5	14.5	12.5
IEEE 802.11ac (2.4 GHz)	Maximum	14.5	15.5	13.5
	Nominal	13.5	14.5	12.5

Mode / Band		Modulated Average - Single Tx Chain (Secondary) (dBm)		
		Ch. 1-3	Ch. 4-8	Ch. 9-11
IEEE 802.11b (2.4 GHz)	Maximum	19.5	20.0	19.0
	Nominal	18.5	19.0	18.0
IEEE 802.11g (2.4 GHz)	Maximum	15.0	15.5	14.5
	Nominal	14.0	14.5	13.5
IEEE 802.11n (2.4 GHz)	Maximum	15.0	15.5	14.5
	Nominal	14.0	14.5	13.5
IEEE 802.11ac (2.4 GHz)	Maximum	15.0	15.5	14.5
	Nominal	14.0	14.5	13.5

Mode / Band		Modulated Average - MIMO (dBm)		
		Ch. 1-3	Ch. 4-8	Ch. 9-11
IEEE 802.11g (2.4 GHz)	Maximum	17.8	18.5	17.0
	Nominal	16.8	17.5	16.0
IEEE 802.11n (2.4 GHz)	Maximum	17.8	18.5	17.0
	Nominal	16.8	17.5	16.0
IEEE 802.11ac (2.4 GHz)	Maximum	17.8	18.5	17.0
	Nominal	16.8	17.5	16.0

Mode / Band		Modulated Average - Single Tx Chain (Primary) (dBm)				
		20 MHz Bandwidth	40 MHz Bandwidth		80 MHz Bandwidth	
			Ch. 38, 62, 102	Ch. 46, 54, 110, 134, 142, 151, 159	Ch. 42, 58, 106	Ch. 138, 155
IEEE 802.11a (5 GHz)	Maximum	15.0				
	Nominal	14.0				
IEEE 802.11n (5 GHz)	Maximum	15.0	12.0	14.0		
	Nominal	14.0	11.0	13.0		
IEEE 802.11ac (5 GHz)	Maximum	15.0	12.0	14.0	11.5	13.5
	Nominal	14.0	11.0	13.0	10.5	12.5

Mode / Band		Modulated Average - Single Tx Chain (Secondary) (dBm)				
		20 MHz Bandwidth	40 MHz Bandwidth		80 MHz Bandwidth	
			Ch. 38, 62, 102	Ch. 46, 54, 110, 134, 142, 151, 159	Ch. 42, 58, 106	Ch. 138, 155
IEEE 802.11a (5 GHz)	Maximum	14.0				
	Nominal	13.0				
IEEE 802.11n (5 GHz)	Maximum	14.0	11.0	13.0		
	Nominal	13.0	10.0	12.0		
IEEE 802.11ac (5 GHz)	Maximum	14.0	11.0	13.0	10.5	12.5
	Nominal	13.0	10.0	12.0	9.5	11.5

Mode / Band		Modulated Average - MIMO (dBm)				
		20 MHz Bandwidth	40 MHz Bandwidth		80 MHz Bandwidth	
			Ch. 38, 62, 102	Ch. 46, 54, 110, 134, 142, 151, 159	Ch. 42, 58, 106	Ch. 138, 155
IEEE 802.11a(5 GHz)	Maximum	17.5				
	Nominal	16.5				
IEEE 802.11n (5 GHz)	Maximum	17.5	14.5	16.5		
	Nominal	16.5	13.5	15.5		
IEEE 802.11ac (5 GHz)	Maximum	17.5	14.5	16.5	14.0	16.0
	Nominal	16.5	13.5	15.5	13.0	15.0

Mode / Band		Modulated Average (dBm)
Bluetooth (1 Mbps)	Maximum	**13.0**
	Nominal	**12.0**
Bluetooth (2 Mbps)	Maximum	**11.0**
	Nominal	**10.0**
Bluetooth (3 Mbps)	Maximum	**11.0**
	Nominal	**10.0**
Bluetooth LE	Maximum	**6.0**
	Nominal	**5.0**

1.3.3 Reduced WLAN Power

This device only supports SISO operations on the secondary antenna for 802.11b. The below 802.11 a/g/n/ac secondary antenna powers are included to represent the maximum allowed output power the device can operate in CDD or MIMO SDM modes for simultaneous transmission evaluation purposes.

Mode / Band		Modulated Average - Single Tx Chain (Primary) (dBm)
IEEE 802.11b (2.4 GHz)	Maximum	**12.5**
	Nominal	**11.5**
IEEE 802.11g (2.4 GHz)	Maximum	**12.5**
	Nominal	**11.5**
IEEE 802.11n (2.4 GHz)	Maximum	**12.5**
	Nominal	**11.5**
IEEE 802.11ac (2.4 GHz)	Maximum	**12.5**
	Nominal	**11.5**

Mode / Band		Modulated Average - Single Tx Chain (Secondary) (dBm)
IEEE 802.11b (2.4 GHz)	Maximum	**5.5**
	Nominal	**4.5**
IEEE 802.11g (2.4 GHz)	Maximum	**5.5**
	Nominal	**4.5**
IEEE 802.11n (2.4 GHz)	Maximum	**5.5**
	Nominal	**4.5**
IEEE 802.11ac (2.4 GHz)	Maximum	**5.5**
	Nominal	**4.5**

Mode / Band		Modulated Average - MIMO (dBm)
IEEE 802.11g (2.4 GHz)	Maximum	**13.3**
	Nominal	**12.3**
IEEE 802.11n (2.4 GHz)	Maximum	**13.3**
	Nominal	**12.3**
IEEE 802.11ac (2.4 GHz)	Maximum	**13.3**
	Nominal	**12.3**

Mode / Band		Modulated Average - Single Tx Chain (Primary) (dBm)				
		20 MHz Bandwidth	40 MHz Bandwidth		80 MHz Bandwidth	
			Ch. 38, 62, 102	Ch. 46, 54, 110, 134, 142, 151, 159	Ch. 42, 58, 106	Ch. 138, 155
IEEE 802.11a (5 GHz)	Maximum	**13.0**				
	Nominal	**12.0**				
IEEE 802.11n (5 GHz)	Maximum	**13.0**	**12.0**	**13.0**		
	Nominal	**12.0**	**11.0**	**12.0**		
IEEE 802.11ac (5 GHz)	Maximum	**13.0**	**12.0**	**13.0**	**11.5**	**13.0**
	Nominal	**12.0**	**11.0**	**12.0**	**10.5**	**12.0**

Mode / Band		Modulated Average - Single Tx Chain (Secondary) (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11a (5 GHz)	Maximum	**5.5**		
	Nominal	**4.5**		
IEEE 802.11n (5 GHz)	Maximum	**5.5**	**5.5**	
	Nominal	**4.5**	**4.5**	
IEEE 802.11ac (5 GHz)	Maximum	**5.5**	**5.5**	**5.5**
	Nominal	**4.5**	**4.5**	**4.5**

Mode / Band		Modulated Average - MIMO (dBm)				
		20 MHz Bandwidth	40 MHz Bandwidth		80 MHz Bandwidth	
			Ch. 38, 62, 102	Ch. 46, 54, 110, 134, 142, 151, 159	Ch. 42, 58, 106	Ch. 138, 155
IEEE 802.11a (5 GHz)	Maximum	13.7				
	Nominal	12.7				
IEEE 802.11n (5 GHz)	Maximum	13.7	12.9	13.7		
	Nominal	12.7	11.9	12.7		
IEEE 802.11ac (5 GHz)	Maximum	13.7	12.9	13.7	12.5	13.7
	Nominal	12.7	11.9	12.7	11.5	12.7

1.4 DUT Antenna Locations

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

Table 1-1
Device Edges/Sides for SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
GPRS 850	Yes	Yes	No	Yes	Yes	Yes
GPRS 1900	Yes	Yes	No	Yes	No	Yes
UMTS 850	Yes	Yes	No	Yes	Yes	Yes
UMTS 1750	Yes	Yes	No	Yes	No	Yes
UMTS 1900	Yes	Yes	No	Yes	No	Yes
Cell. EVDO Ant 1	Yes	Yes	No	Yes	Yes	Yes
PCS EVDO	Yes	Yes	No	Yes	No	Yes
LTE Band 12 Ant 1	Yes	Yes	No	Yes	Yes	Yes
LTE Band 13 Ant 1	Yes	Yes	No	Yes	Yes	Yes
LTE Band 5 (Cell) Ant 1	Yes	Yes	No	Yes	Yes	Yes
LTE Band 66 (AWS)	Yes	Yes	No	Yes	No	Yes
LTE Band 25 (PCS)	Yes	Yes	No	Yes	No	Yes
Cell. EVDO Ant 3	Yes	Yes	Yes	No	Yes	Yes
LTE Band 12 Ant 3	Yes	Yes	Yes	No	Yes	Yes
LTE Band 13 Ant 3	Yes	Yes	Yes	No	Yes	Yes
LTE Band 5 (Cell) Ant 3	Yes	Yes	Yes	No	Yes	Yes
2.4 GHz WLAN Primary	Yes	Yes	Yes	No	Yes	No
2.4 GHz WLAN Secondary	Yes	Yes	Yes	No	Yes	No
5 GHz WLAN Primary	Yes	Yes	Yes	No	Yes	No
5 GHz WLAN Secondary	Yes	Yes	Yes	No	Yes	No
Bluetooth	Yes	Yes	Yes	No	Yes	No

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.

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	1x CDMA voice + 2.4 GHz WI-FI	Yes	Yes	N/A	Yes	
2	1x CDMA voice + 5 GHz WI-FI	Yes	Yes	N/A	Yes	
3	1x CDMA voice + 2.4 GHz Bluetooth	N/A	Yes	N/A	Yes	
4	1x CDMA voice + 2.4 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
5	1x CDMA voice + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
6	GSM voice + 2.4 GHz WI-FI	Yes	Yes	N/A	Yes	
7	GSM voice + 5 GHz WI-FI	Yes	Yes	N/A	Yes	
8	GSM voice + 2.4 GHz Bluetooth	N/A	Yes	N/A	Yes	
9	GSM voice + 2.4 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
10	GSM voice + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
11	UMTS + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes	
12	UMTS + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
13	UMTS + 2.4 GHz Bluetooth	N/A	Yes	N/A	Yes	
14	UMTS + 2.4 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
15	UMTS + 5 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
16	LTE + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes	
17	LTE + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
18	LTE + 2.4 GHz Bluetooth	N/A	Yes	N/A	Yes	
19	LTE + 2.4 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
20	LTE + 5 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
21	CDMA/EVDO data + 2.4 GHz WI-FI	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
22	CDMA/EVDO data + 5 GHz WI-FI	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
23	CDMA/EVDO data + 2.4 GHz Bluetooth	N/A	Yes*	N/A	Yes	*-Pre-installed VOIP applications are considered.
24	CDMA/EVDO data + 2.4 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
25	CDMA/EVDO data + 5 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
26	GPRS/EDGE + 2.4 GHz WI-FI	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
27	GPRS/EDGE + 5 GHz WI-FI	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
28	GPRS/EDGE + 2.4 GHz Bluetooth	N/A	Yes*	N/A	Yes	*-Pre-installed VOIP applications are considered.
29	GPRS/EDGE + 2.4 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.
30	GPRS/EDGE + 5 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	*-Pre-installed VOIP applications are considered.

1. 2.4 GHz WLAN and 5GHz WLAN that share the same transmission path cannot transmit simultaneously.
2. All licensed modes share the same antenna path and cannot transmit simultaneously.
3. When the user utilizes multiple services in UMTS 3G mode it uses multi-Radio Access Bearer or multi-RAB. The power control is based on a physical control channel (Dedicated Physical Control Channel [DPCCH]) and power control will be adjusted to meet the needs of both services. Therefore, the UMTS+WLAN scenario also represents the UMTS Voice/DATA + WLAN Hotspot scenario.
4. Per the manufacturer, WIFI Direct is expected to be used in conjunction with a held-to-ear or body-worn accessory voice call. Simultaneous transmission scenarios involving WIFI direct are included in the above table.
5. 5 GHz Wireless Router is only supported for the U-NII-1 & U-NII-3 by S/W, therefore U-NII2A & U-NII2C were not evaluated for wireless router conditions.
6. This device supports 2x2 MIMO Tx for WLAN 802.11a/g/n/ac when both primary and secondary WLAN antennas transmit together. Independent (SISO) WLAN transmission from the secondary WLAN antenna is limited to 2.4 GHz 802.11b mode only.
7. This device supports VOLTE.
8. This device supports VOWIFI.

1.7 Miscellaneous SAR Test Considerations

(A) WIFI/BT

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

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. 10g SAR measurements analysis applies a factor of 2.5 to the procedures outlines above.

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 channel are not supported. Band gap channels are supported

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is greater than 160mm and less than 200mm. Phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg. Because wireless router operations are not supported for U-NII-2A & U-NII-2C WLAN, phablet SAR tests were performed. Phablet SAR was not evaluated for 2.4 GHz and U-NII-1 & 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 B12 and LTE B17. 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 B66 (AWS) and LTE B4 (AWS). Since the supported frequency span for LTE B4 (AWS) falls completely within the supported frequency span for LTE B66 (AWS), both LTE bands have the same target power, and both LTE bands share the same transmission path, SAR was only assessed for LTE B66 (AWS).

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).

This device supports LTE Carrier Aggregation (CA) in the downlink only. All uplink communications are identical to Release 8 specifications. Per FCC KDB Publication 941225 D05A v01r02, SAR for LTE CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive.

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, D05Av01r02, D06v02r01 (2G/3G/4G and Hotspot)
- FCC KDB Publication 248227 D01v02r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v06 (General SAR Guidance)
- FCC KDB Publication 865664 D01v01r04, D02v01r02 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 648474 D04v01r03 (Phablet Procedures)
- 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 850	11247	11254	11254	-
GSM/GPRS/EDGE 1900	11247	11247	11247	-
UMTS 850	11254	11247	11247	-
UMTS 1750	11254	11247	11247	-
UMTS 1900	11247	11247	11247	-
Cell. CDMA/EVDO Ant 1	11304	11304	11304	-
Cell. CDMA/EVDO Ant 3	11254	11254	11254	-
PCS CDMA/EVDO	11247	11247	11247	-
LTE Band 12 Ant 1	11304	11304	11304	-
LTE Band 12 Ant 3	11304	11304	11304	-
LTE Band 13 Ant 1	11304	11304	11304	-
LTE Band 13 Ant 3	11304	11304	11304	-
LTE Band 5 (Cell) Ant 1	11304	11304	11304	-
LTE Band 5 (Cell) Ant 3	11304	11304	11304	-
LTE Band 66 (AWS)	11288	11288	11288	-
LTE Band 25 (PCS)	11288	11288	11288	-
2.4 GHz WLAN	11387	11387	11387	-
5 GHz WLAN	11395	11395	11395	11395
Bluetooth	-	11387	-	11387

2 LTE INFORMATION

LTE Information			
FCC ID	**ZNFVS995**		
Form Factor	Portable Handset		
Frequency Range of each LTE transmission band	LTE Band 12 (699.7 - 715.3 MHz)		
	LTE Band 17 (706.5 - 713.5 MHz)		
	LTE Band 13 (779.5 - 784.5 MHz)		
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)		
	LTE Band 66 (AWS) (1710.7 - 1779.3 MHz)		
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)		
	LTE Band 25 (PCS) (1850.7 - 1914.3 MHz)		
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)		
Channel Bandwidths	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz		
	LTE Band 17: 5 MHz, 10 MHz		
	LTE Band 13: 5 MHz, 10 MHz		
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz		
	LTE Band 66 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz		
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz		
	LTE Band 25 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz		
	LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz		
Channel Numbers and Frequencies (MHz)	Low	Mid	High
LTE Band 12: 1.4 MHz	699.7 (23017)	707.5 (23095)	715.3 (23173)
LTE Band 12: 3 MHz	700.5 (23025)	707.5 (23095)	714.5 (23165)
LTE Band 12: 5 MHz	701.5 (23035)	707.5 (23095)	713.5 (23155)
LTE Band 12: 10 MHz	704 (23060)	707.5 (23095)	711 (23130)
LTE Band 17: 5 MHz	706.5 (23755)	710 (23790)	713.5 (23825)
LTE Band 17: 10 MHz	709 (23780)	710 (23790)	711 (23800)
LTE Band 13: 5 MHz	779.5 (23205)	782 (23230)	784.5 (23255)
LTE Band 13: 10 MHz	N/A	782 (23230)	N/A
LTE Band 5 (Cell): 3 MHz	825.5 (20415)	836.5 (20525)	847.5 (20635)
LTE Band 5 (Cell): 5 MHz	826.5 (20425)	836.5 (20525)	846.5 (20625)
LTE Band 5 (Cell): 10 MHz	829 (20450)	836.5 (20525)	844 (20600)
LTE Band 66 (AWS): 1.4 MHz	1710.7 (131979)	1745 (132322)	1779.3 (132665)
LTE Band 66 (AWS): 3 MHz	1711.5 (131987)	1745 (132322)	1778.5 (132657)
LTE Band 66 (AWS): 5 MHz	1712.5 (131997)	1745 (132322)	1777.5 (132647)
LTE Band 66 (AWS): 10 MHz	1715 (132022)	1745 (132322)	1775 (132622)
LTE Band 66 (AWS): 15 MHz	1717.5 (132047)	1745 (132322)	1772.5 (132597)
LTE Band 66 (AWS): 20 MHz	1720 (132072)	1745 (132322)	1770 (132572)
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)	1732.5 (20175)	1754.3 (20393)
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)	1732.5 (20175)	1753.5 (20385)
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)	1732.5 (20175)	1752.5 (20375)
LTE Band 4 (AWS): 10 MHz	1715 (20000)	1732.5 (20175)	1750 (20350)
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)	1732.5 (20175)	1747.5 (20325)
LTE Band 4 (AWS): 20 MHz	1720 (20050)	1732.5 (20175)	1745 (20300)
LTE Band 25 (PCS): 1.4 MHz	1850.7 (26047)	1882.5 (26365)	1914.3 (26683)
LTE Band 25 (PCS): 3 MHz	1851.5 (26055)	1882.5 (26365)	1913.5 (26675)
LTE Band 25 (PCS): 5 MHz	1852.5 (26065)	1882.5 (26365)	1912.5 (26665)
LTE Band 25 (PCS): 10 MHz	1855 (26090)	1882.5 (26365)	1910 (26640)
LTE Band 25 (PCS): 15 MHz	1857.5 (26115)	1882.5 (26365)	1907.5 (26615)
LTE Band 25 (PCS): 20 MHz	1860 (26140)	1882.5 (26365)	1905 (26590)
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)	1880 (18900)	1909.3 (19193)
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)	1880 (18900)	1908.5 (19185)
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)	1880 (18900)	1907.5 (19175)
LTE Band 2 (PCS): 10 MHz	1855 (18650)	1880 (18900)	1905 (19150)
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)	1880 (18900)	1902.5 (19125)
LTE Band 2 (PCS): 20 MHz	1860 (18700)	1880 (18900)	1900 (19100)
UE Category	11		
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 Carrier Aggregation Possible Combinations	The technical description includes all the possible carrier aggregation combinations		
LTE Release 10 Additional Information	This device does not support full CA features on 3GPP Release 10. It supports a maximum of 2 carriers in the downlink. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. The following LTE Release 10 Features are not supported: Relay, HetNet, Enhanced MIMO, WIFI Offloading, MDH, Cross-Carrier Scheduling, Enhanced SC-FDMA.		

3 INTRODUCTION

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

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

3.1 SAR Definition

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

Equation 3-1
SAR Mathematical Equation

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

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

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

where:

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

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

4 DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

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

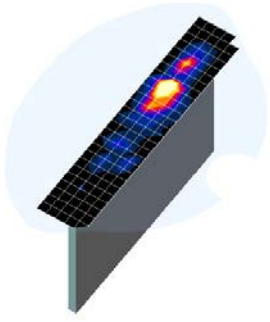

Figure 4-1
Sample SAR Area Scan

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

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

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

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

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

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

*Also compliant to IEEE 1528-2013 Table 6

5 DEFINITION OF REFERENCE POINTS

5.1 EAR REFERENCE POINT

Figure 5-2 shows the front, back and side views of the SAM Twin Phantom. The point "M" is the reference point for the center of the mouth, "LE" is the left ear reference point (ERP), and "RE" is the right ERP. The ERP is 15mm posterior to the entrance to the ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 5-1. The plane passing through the two ear canals and M is defined as the Reference Plane. The line N-F (Neck-Front), also called the Reference Pivoting Line, is not perpendicular to the reference plane (see Figure 5-1). Line B-M is perpendicular to the N-F line. Both N-F and B-M lines are marked on the external phantom shell to facilitate handset positioning [5].

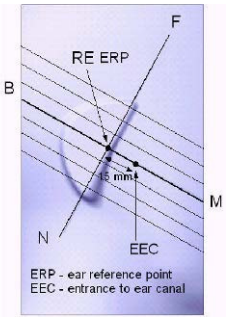

Figure 5-1
Close-Up Side view of ERP

5.2 HANDSET REFERENCE POINTS

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The test device was placed in a normal operating position with the acoustic output located along the "vertical centerline" on the front of the device aligned to the "ear reference point" (See Figure 5-3). The acoustic output was than located at the same level as the center of the ear reference point. The test device was positioned so that the "vertical centerline" was bisecting the front surface of the handset at its top and bottom edges, positioning the "ear reference point" on the outer surface of the both the left and right head phantoms on the ear reference point.

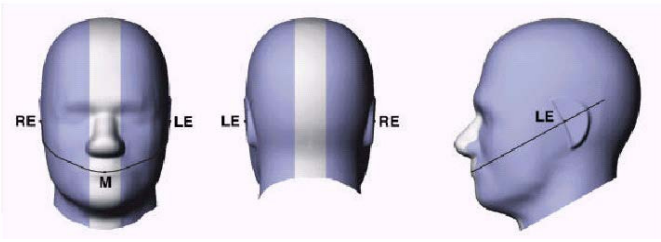

Figure 5-2
Front, back and side view of SAM Twin Phantom

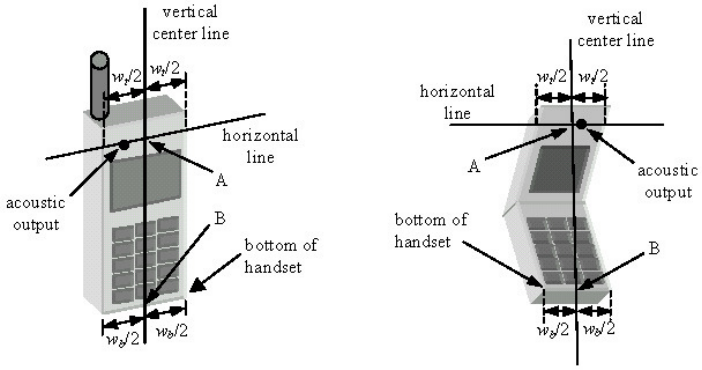

Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

6 TEST CONFIGURATION POSITIONS

6.1 Device Holder

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

6.2 Positioning for Cheek

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

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

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

6.3 Positioning for Ear / 15º Tilt

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

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

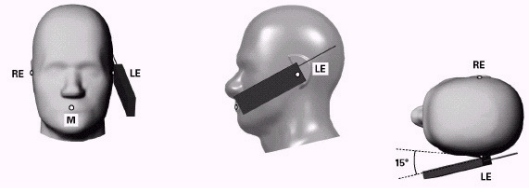

Figure 6-2 Front, Side and Top View of Ear/15º Tilt Position

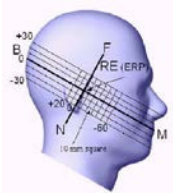

Figure 6-3 Side view w/ relevant markings

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

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

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

6.5 Body-Worn Accessory Configurations

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

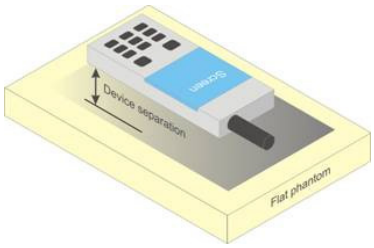

Figure 6-4 Sample Body-Worn Diagram

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

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

6.6 Extremity Exposure Configurations

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions; i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user's body, SAR compliance for the body is also required. The 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 CDMA2000

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

8.4.1 Output Power Verification

See 3GPP2 C.S0011/TIA-98-E as recommended by FCC KDB Publication 941225 D01v03r01 “3G SAR Measurement Procedures.” Maximum output power is verified on the High, Middle and Low channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. SO55 tests were measured with power control bits in the “All Up” condition.

1. If the mobile station (MS) supports Reverse TCH RC 1 and Forward TCH RC 1, set up a call using Fundamental Channel Test Mode 1 (RC=1/1) with 9600 bps data rate only.
2. Under RC1, C.S0011 Table 4.4.5.2-1, Table 8-1 parameters were applied.
3. If the MS supports the RC 3 Reverse FCH, RC3 Reverse SCH_0 and demodulation of RC 3,4, or 5, set up a call using Supplemental Channel Test Mode 3 (RC 3/3) with 9600 bps Fundamental Channel and 9600 bps SCH0 data rate.
4. Under RC3, C.S0011 Table 4.4.5.2-2, Table 8-2 was applied.

Table 8-1
Parameters for Max. Power for RC1

Parameter	Units	Value
$\hat{I}_{or}$	dBm/1.23 MHz	-104
$\frac{\text{Pilot } E_c}{I_{or}}$	dB	-7
$\frac{\text{Traffic } E_c}{I_{or}}$	dB	-7.4

Table 8-2
Parameters for Max. Power for RC3

Parameter	Units	Value
$\hat{I}_{or}$	dBm/1.23 MHz	-86
$\frac{\text{Pilot } E_c}{I_{or}}$	dB	-7
$\frac{\text{Traffic } E_c}{I_{or}}$	dB	-7.4

5. FCHs were configured at full rate for maximum SAR with “All Up” power control bits.

8.4.2 Head SAR Measurements

SAR for next to the ear head exposure is measured in RC3 with the handset configured to transmit at fullrate in SO55. The 3G SAR test reduction procedure is applied to RC1 with RC3 as the primary mode; otherwise, SAR is required for the channel with maximum measured output in RC1 using the head exposure configuration that results in the highest reported SAR in RC3.

Head SAR is additionally evaluated using EVDO Rev. A to support compliance for VoIP operations. See Section 8.4.5 for EVDO Rev. A configuration parameters.

8.4.3 Body-worn SAR Measurements

SAR for body-worn exposure configurations is measured in RC3 with the DUT configured to transmit at full rate on FCH with all other code channels disabled using TDSO / SO32. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCHn), with FCH only as the primary mode. Otherwise, SAR is required for multiple code channel configuration (FCH + SCHn), with FCH at full rate and SCH0 enabled at 9600 bps, using the highest reported SAR configuration for FCH only. When multiple code channels are enabled, the transmitter output can shift by more than 0.5 dB and may lead to higher SAR drifts and SCH dropouts.

The 3G SAR test reduction procedure is applied to body-worn accessory SAR in RC1 with RC3 as the primary mode. Otherwise, SAR is required for RC1, with SO55 and full rate, using the highest reported SAR configuration for body-worn accessory exposure in RC3.

8.4.4 Body-worn SAR Measurements for EVDO Devices

For handsets with Ev-Do capabilities, the 3G SAR test reduction procedure is applied to Ev-Do Rev. 0 with 1x RTT RC3 as the primary mode to determine body-worn accessory test requirements. Otherwise, body-worn accessory SAR is required for Rev. 0, at 153.6 kbps, using the highest reported SAR configuration for body-worn accessory exposure in RC3.

The 3G SAR test reduction procedure is applied to Rev. A, with Rev. 0 as the primary mode to determine body-worn accessory SAR test requirements. When SAR is not required for Rev. 0, the 3G SAR test reduction is applied with 1x RTT RC3 as the primary mode.

When SAR is required for EVDO Rev. A, SAR is measured with a Reverse Data Channel payload size of 4096 bits and a Termination Target of 16 slots defined for Subtype 2 Physical Layer configurations, using the highest reported SAR configuration for body-worn accessory exposure in Rev. 0 or 1x RTT RC3, as appropriate.

8.4.5 Body SAR Measurements for EVDO Hotspot

Hotspot Body SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0. The 3G SAR test reduction procedure is applied to Rev. A, Subtype 2 Physical layer configuration, with Rev. 0 as the primary mode; otherwise, SAR is measured for Rev. A using the highest reported SAR configuration for body-worn accessory exposure in Rev. 0. The AT is tested with a Reverse Data Channel rate of 153.6 kbps in Subtype 0/1 Physical Layer configurations; and a Reverse Data Channel payload size of 4096 bits and Termination Target of 16 slots in Subtype 2 Physical Layer configurations.

For Ev-Do data devices that also support 1x RTT voice and/or data operations, the 3G SAR test reduction procedure is applied to 1x RTT RC3 and RC1 with Ev-Do Rev. 0 and Rev. A as the respective primary modes. Otherwise, the 'Body-Worn Accessory SAR' procedures in the '3GPP2 CDMA 2000 1x Handsets' section are applied.

8.5 SAR Measurement Conditions for UMTS

8.5.1 Output Power Verification

Maximum output power is verified on the High, Middle and Low channels according to the general descriptions in section 5.2 of 3GPP TS 34.121, using the appropriate RMC with TPC (transmit power control) set to all "1s" or applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HS-DPCCH etc) are tabulated in this test report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations are identified.

8.5.2 Head SAR Measurements

SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1's". The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for 12.2 kbps AMR in 3.4 kbps SRB (signaling radio bearer) using the highest reported SAR configuration in 12.2 kbps RMC for head exposure.

8.5.3 Body SAR Measurements

SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits all "1s". The 3G SAR test reduction procedure is applied to other spreading codes and multiple $DPDCH_n$ configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using an applicable RMC configuration with the corresponding spreading code or $DPDCH_n$, for the highest reported SAR configuration in 12.2 kbps RMC.

8.5.4 SAR Measurements with Rel 5 HSDPA

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

8.5.5 SAR Measurements with Rel 6 HSUPA

The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA.

When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing.

8.6 SAR Measurement Conditions for LTE

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

8.6.1 Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

8.6.2 MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

8.6.3 A-MPR

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

8.6.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r04:

a. Per Section 5.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
   i. The required channel and offset combination with the highest maximum output power is required for SAR.
   ii. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
   iii. When the reported SAR for a required test channel is > 1.45 W/kg, SAR is required for all RB offset configurations for that channel.
b. Per Section 5.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Section 5.2.1.
c. Per Section 5.2.3, QPSK SAR is not required for the 100% allocation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is < 0.8 W/kg.

d. Per Section 5.2.4 and 5.3, SAR tests for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sections 5.2.1 through 5.2.3 is less than or equal to ½ dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is <1.45 W/kg.

8.6.5 Downlink Only Carrier Aggregation

Conducted power measurements with LTE Carrier Aggregation (CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s) (SCC) on the downlink only. All uplink communications and acknowledgements remain identical to specifications when downlink carrier aggregation is inactive on the PCC. For every supported combination of downlink only carrier aggregation, additional conducted output powers are measured with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band. Per FCC KDB Publication 941225 D05Av01r02, no SAR measurements are required for carrier aggregation configurations when the average output power with downlink only carrier aggregation active is not more than 0.25 dB higher than the average output power with downlink only carrier aggregation inactive.

8.7 SAR Testing with 802.11 Transmitters

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

8.7.1 General Device Setup

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters.

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

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

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

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

The frequency range covered by U-NII-2C and U-NII-3 is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, the channels at 5.60 – 5.65 GHz in U-NII-2C

band must be disabled with acceptable mechanisms and documented in the equipment certification. Unless band gap channels are permanently disabled, SAR must be considered for these channels. Each band is tested independently according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

8.7.4 Initial Test Position Procedure

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

8.7.5 2.4 GHz SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either the fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

1) When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

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

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

8.7.6 OFDM Transmission Mode and SAR Test Channel Selection

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

8.7.7 Initial Test Configuration Procedure

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

When the reported SAR is ≤ 0.8 W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is ≤ 1.2 W/kg or all channels are measured. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest 802.11 mode is considered for SAR measurements (See Section 8.7.6). When 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.7.8 Subsequent Test Configuration Procedures

For OFDM configurations in each frequency band and aggregated band, SAR is evaluated for initial test configuration using the fixed test position or the initial test position procedure. When the highest reported SAR (for the initial test configuration), adjusted by the ratio of the specified maximum output power of the subsequent test configuration to initial test configuration, is ≤ 1.2 W/kg, no additional SAR tests for the subsequent test configurations are required. When 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.7.9 MIMO SAR considerations

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

9 RF CONDUCTED POWERS

9.1 CDMA Conducted Powers

Band	Channel	Frequency	SO55 [dBm]	SO55 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC	MHz	RC1	RC3	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	1013	824.7	24.69	24.63	24.68	24.62	24.64	24.67
	384	836.52	24.67	24.68	24.58	24.68	24.63	24.62
	777	848.31	24.63	24.61	24.64	24.67	24.65	24.63
PCS	25	1851.25	24.63	24.66	24.65	24.62	24.63	24.65
	600	1880	24.62	24.62	24.67	24.65	24.60	24.64
	1175	1908.75	24.61	24.70	24.63	24.66	24.62	24.66

Note: RC1 is only applicable for IS-95 compatibility.

Figure 9-1
Power Measurement Setup

9.2 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**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**
GSM 850	128	33.60	33.62	**32.10**	27.10	26.90
	190	33.65	33.70	**32.11**	27.11	26.88
	251	33.61	33.60	**31.94**	27.05	26.64
GSM 1900	512	30.62	30.70	**29.18**	26.11	26.10
	661	30.68	30.64	**29.19**	26.18	26.15
	810	30.60	30.70	**29.03**	26.13	26.11
Calculated Maximum Frame-Averaged Output Power						
		Voice	*GPRS/EDGE Data (GMSK)*		*EDGE Data (8-PSK)*	
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**
GSM 850	128	24.57	24.59	**26.08**	18.07	20.88
	190	24.62	24.67	**26.09**	18.08	20.86
	251	24.58	24.57	**25.92**	18.02	20.62
GSM 1900	512	21.59	21.67	**23.16**	17.08	20.08
	661	21.65	21.61	**23.17**	17.15	20.13
	810	21.57	21.67	**23.01**	17.10	20.09
GSM 850	**Frame Avg.Targets:**	24.17	24.17	**25.68**	17.67	20.68
GSM 1900		21.17	21.17	**22.68**	16.67	19.68

Note:

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

GSM Class: B
GPRS Multislot class: 10 (Max 2 Tx uplink slots)
EDGE Multislot class: 10 (Max 2 Tx uplink slots)
DTM Multislot Class: N/A

Figure 9-2
Power Measurement Setup

9.3 UMTS Conducted Powers

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	24.45	24.63	24.35	24.60	24.70	24.60	24.50	24.50	24.62	-
99		12.2 kbps AMR	24.35	24.58	24.45	24.15	24.09	24.12	24.50	24.60	24.40	-
6	HSDPA	Subtest 1	24.35	24.47	24.45	24.16	24.32	24.29	23.70	23.80	23.60	0
6		Subtest 2	24.45	24.62	24.35	24.09	24.19	24.32	24.49	24.59	24.61	0
6		Subtest 3	23.95	23.88	23.95	23.74	23.68	23.88	24.14	24.08	24.20	0.5
6		Subtest 4	24.02	24.03	24.15	23.85	23.73	23.80	24.20	24.13	24.13	0.5
6	HSUPA	Subtest 1	24.35	24.45	24.52	24.15	24.22	24.25	24.55	24.62	24.66	0
6		Subtest 2	22.45	22.62	22.48	22.32	22.28	22.32	22.70	22.68	22.70	2
6		Subtest 3	23.45	23.51	23.39	23.35	23.18	23.15	23.59	23.65	23.68	1
6		Subtest 4	22.62	22.69	22.58	22.33	22.16	22.22	22.70	22.68	22.65	2
6		Subtest 5	24.48	24.65	24.65	24.28	24.32	24.18	24.68	24.68	24.69	0

This device does not support DC-HSDPA.

Figure 9-3
Power Measurement Setup

9.4 LTE Conducted Powers

9.4.1 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	24.62	0	0
	1	25	24.65		0
	1	49	**24.70**		0
	25	0	**23.26**	0-1	1
	25	12	23.20		1
	25	25	23.22		1
	50	0	23.18		1
16QAM	1	0	23.13	0-1	1
	1	25	22.94		1
	1	49	23.36		1
	25	0	22.22	0-2	2
	25	12	22.21		2
	25	25	22.26		2
	50	0	22.10		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)	Mid Channel 23095 (707.5 MHz)	High Channel 23155 (713.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.69	24.69	24.66	0	0
	1	12	24.69	24.69	24.69		0
	1	24	24.69	24.68	24.64		0
	12	0	23.22	23.09	23.02	0-1	1
	12	6	23.24	23.14	23.35		1
	12	13	22.86	23.26	23.47		1
	25	0	23.17	23.21	23.39		1
16QAM	1	0	23.59	23.31	23.35	0-1	1
	1	12	23.59	23.15	23.50		1
	1	24	23.45	23.21	23.44		1
	12	0	22.27	22.15	22.07	0-2	2
	12	6	22.31	22.11	22.39		2
	12	13	21.88	22.41	22.49		2
	25	0	22.17	22.30	22.30		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	24.69	24.62	24.69	0	0
	1	7	24.66	24.61	24.65		0
	1	14	24.67	24.68	24.67		0
	8	0	23.00	23.09	23.34	0-1	1
	8	4	22.89	23.16	23.22		1
	8	7	22.89	22.99	23.24		1
	15	0	23.12	23.11	23.35		1
16QAM	1	0	23.60	23.18	23.19	0-1	1
	1	7	23.30	22.74	23.40		1
	1	14	23.56	23.41	23.31		1
	8	0	22.06	22.10	22.33	0-2	2
	8	4	22.15	21.99	22.30		2
	8	7	22.19	21.98	22.14		2
	15	0	22.24	22.03	22.14		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	24.68	24.64	24.58	0	0
	1	2	24.67	24.69	24.62		0
	1	5	24.68	24.68	24.68		0
	3	0	24.38	24.42	24.47		0
	3	2	24.41	24.48	24.42		0
	3	3	24.27	24.16	24.40		0
	6	0	23.01	22.94	23.17	0-1	1
16QAM	1	0	23.07	22.77	23.11	0-1	1
	1	2	23.08	23.08	23.31		1
	1	5	23.14	22.76	23.04		1
	3	0	22.95	22.94	23.13		1
	3	2	23.04	22.98	22.98		1
	3	3	22.99	22.75	23.15		1
	6	0	21.99	21.96	22.16	0-2	2

9.4.2 LTE Band 13

Table 9-5
LTE Band 13 Conducted Powers - 10 MHz Bandwidth

LTE Band 13 10 MHzBandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	24.27	0	0
	1	25	24.36		0
	1	49	**24.68**		0
	25	0	23.06	0-1	1
	25	12	22.93		1
	25	25	**23.12**		1
	50	0	23.05		1
16QAM	1	0	23.31	0-1	1
	1	25	22.92		1
	1	49	22.90		1
	25	0	21.99	0-2	2
	25	12	22.12		2
	25	25	21.95		2
	50	0	21.80		2

Table 9-6
LTE Band 13 Conducted Powers - 5 MHz Bandwidth

LTE Band 13 5 MHzBandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	24.62	0	0
	1	12	24.63		0
	1	24	24.65		0
	12	0	23.04	0-1	1
	12	6	22.87		1
	12	13	23.21		1
	25	0	22.94		1
16QAM	1	0	22.99	0-1	1
	1	12	23.03		1
	1	24	23.22		1
	12	0	21.99	0-2	2
	12	6	22.06		2
	12	13	22.20		2
	25	0	22.02		2

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

9.4.3 LTE Band 5 (Cell)

Table 9-7
LTE Band 5 (Cell) Conducted Powers - 10 MHz Bandwidth

LTE Band 5 (Cell) 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 20525 (836.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	24.50	0	0
	1	25	**24.68**		0
	1	49	24.47		0
	25	0	**23.59**	0-1	1
	25	12	23.35		1
	25	25	23.22		1
	50	0	23.08		1
16QAM	1	0	23.18	0-1	1
	1	25	23.02		1
	1	49	23.28		1
	25	0	22.06	0-2	2
	25	12	22.02		2
	25	25	22.09		2
	50	0	22.01		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 9-8
LTE Band 5 (Cell) Conducted Powers - 5 MHz Bandwidth

LTE Band 5 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20425 (826.5 MHz)	Mid Channel 20525 (836.5 MHz)	High Channel 20625 (846.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.54	24.55	24.47	0	0
	1	12	24.55	24.55	24.54		0
	1	24	24.50	24.51	24.55		0
	12	0	23.16	23.21	23.21	0-1	1
	12	6	23.09	23.25	23.11		1
	12	13	23.19	23.21	23.05		1
	25	0	23.08	23.17	23.15		1
16QAM	1	0	23.16	23.19	23.19	0-1	1
	1	12	23.25	23.12	23.13		1
	1	24	23.11	23.08	23.20		1
	12	0	22.34	21.78	22.24	0-2	2
	12	6	22.27	22.14	22.16		2
	12	13	22.06	22.11	22.13		2
	25	0	22.20	22.06	22.08		2

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

LTE Band 5 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20415 (825.5 MHz)	Mid Channel 20525 (836.5 MHz)	High Channel 20635 (847.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.47	24.53	24.55	0	0
	1	7	24.64	24.49	24.55		0
	1	14	24.55	24.55	24.55		0
	8	0	23.31	23.00	23.12	0-1	1
	8	4	23.20	23.31	23.42		1
	8	7	23.12	23.23	23.30		1
	15	0	23.19	23.11	23.30		1
16QAM	1	0	23.28	23.28	23.17	0-1	1
	1	7	23.32	23.31	23.26		1
	1	14	23.34	23.06	23.14		1
	8	0	22.56	22.05	22.08	0-2	2
	8	4	22.43	22.15	22.22		2
	8	7	22.36	22.22	22.28		2
	15	0	22.48	22.22	22.21		2

Table 9-10
LTE Band 5 (Cell) Conducted Powers -1.4 MHz Bandwidth

LTE Band 5 (Cell) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20407 (824.7 MHz)	Mid Channel 20525 (836.5 MHz)	High Channel 20643 (848.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.54	24.46	24.55	0	0
	1	2	24.52	24.54	24.55		0
	1	5	24.55	24.55	24.55		0
	3	0	24.37	24.26	24.30		0
	3	2	24.48	24.31	24.23		0
	3	3	24.40	24.38	24.29		0
	6	0	23.22	23.25	23.27	0-1	1
16QAM	1	0	23.25	23.34	23.31	0-1	1
	1	2	23.28	23.29	23.28		1
	1	5	23.55	23.31	23.33		1
	3	0	23.49	23.25	23.32		1
	3	2	23.35	23.26	23.25		1
	3	3	23.59	23.26	23.33		1
	6	0	22.62	22.33	22.33	0-2	2

9.4.4 LTE Band 66 (AWS)

Table 9-11
LTE Band 66 (AWS) Conducted Powers - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132072 (1720.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132572 (1770.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.99	24.99	24.90	0	0
	1	50	24.41	24.99	**25.00**		0
	1	99	24.97	24.96	24.98		0
	50	0	23.78	23.70	**23.79**	0-1	1
	50	25	23.60	23.69	23.69		1
	50	50	23.69	23.70	23.74		1
	100	0	23.68	23.66	23.66		1
16QAM	1	0	23.46	23.48	23.53	0-1	1
	1	50	23.63	23.52	23.53		1
	1	99	23.48	23.41	23.32		1
	50	0	22.76	22.69	22.71	0-2	2
	50	25	22.53	22.54	22.51		2
	50	50	22.70	22.65	22.61		2
	100	0	22.57	22.63	22.58		2

Table 9-12
LTE Band 66 (AWS) Conducted Powers - 15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132047 (1717.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132597 (1772.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.99	24.93	24.99	0	0
	1	36	25.00	24.96	24.97		0
	1	74	25.00	25.00	25.00		0
	36	0	23.62	23.66	23.60	0-1	1
	36	18	23.56	23.64	23.58		1
	36	37	23.76	23.52	23.59		1
	75	0	23.56	23.56	23.56		1
16QAM	1	0	23.67	23.09	23.51	0-1	1
	1	36	23.53	23.26	23.39		1
	1	74	23.63	23.22	23.45		1
	36	0	22.66	22.66	22.60	0-2	2
	36	18	22.62	22.65	22.61		2
	36	37	22.74	22.54	22.68		2
	75	0	22.60	22.62	22.63		2

Table 9-13
LTE Band 66 (AWS) Conducted Powers - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132022 (1715.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132622 (1775.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.00	25.00	24.92	0	0
	1	25	24.98	24.96	24.96		0
	1	49	25.00	24.92	24.99		0
	25	0	23.45	23.29	23.52	0-1	1
	25	12	23.51	23.34	23.53		1
	25	25	23.56	23.30	23.39		1
	50	0	23.53	23.30	23.45		1
16QAM	1	0	23.36	23.60	23.97	0-1	1
	1	25	23.37	23.20	23.51		1
	1	49	23.52	23.73	23.79		1
	25	0	22.44	22.37	22.48	0-2	2
	25	12	22.53	22.44	22.55		2
	25	25	22.54	22.40	22.46		2
	50	0	22.48	22.37	22.39		2

Table 9-14
LTE Band 66 (AWS) Conducted Powers - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131997 (1712.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132647 (1777.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.96	25.00	24.95	0	0
	1	12	24.99	24.96	25.00		0
	1	24	24.95	24.99	24.98		0
	12	0	23.47	23.47	23.44	0-1	1
	12	6	23.46	23.38	23.44		1
	12	13	23.54	23.37	23.21		1
	25	0	23.43	23.35	23.39		1
16QAM	1	0	23.60	23.65	23.82	0-1	1
	1	12	23.65	23.45	23.65		1
	1	24	23.72	23.79	23.57		1
	12	0	22.48	22.49	22.49	0-2	2
	12	6	22.52	22.37	22.49		2
	12	13	22.52	22.32	22.28		2
	25	0	22.44	22.44	22.48		2

9.4.5 LTE Band 25 (PCS)

Table 9-15
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	**24.99**	24.81	24.91	0	0
	1	50	24.85	24.90	24.88		0
	1	99	24.89	24.89	24.90		0
	50	0	23.71	23.62	23.51	0-1	1
	50	25	**23.88**	23.67	23.51		1
	50	50	23.71	23.60	23.49		1
	100	0	23.64	23.73	23.60		1
16QAM	1	0	23.62	23.76	23.63	0-1	1
	1	50	23.52	23.86	23.41		1
	1	99	23.61	23.90	23.70		1
	50	0	22.56	22.49	22.34	0-2	2
	50	25	22.59	22.55	22.33		2
	50	50	22.56	22.50	22.32		2
	100	0	22.54	22.52	22.44		2

Table 9-16
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	24.90	24.90	24.86	0	0
	1	36	24.97	24.90	24.80		0
	1	74	24.88	24.88	24.90		0
	36	0	23.73	23.59	23.44	0-1	1
	36	18	23.67	23.66	23.42		1
	36	37	23.61	23.68	23.53		1
	75	0	23.57	23.59	23.45		1
16QAM	1	0	23.84	23.34	23.43	0-1	1
	1	36	23.69	23.41	23.36		1
	1	74	23.70	23.54	23.49		1
	36	0	22.58	22.41	22.27	0-2	2
	36	18	22.56	22.50	22.29		2
	36	37	22.50	22.44	22.43		2
	75	0	22.47	22.50	22.43		2

Table 9-17
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	24.90	24.90	24.81	0	0
	1	25	24.88	24.94	24.90		0
	1	49	24.87	24.96	24.88		0
	25	0	23.33	23.15	23.33	0-1	1
	25	12	23.32	23.14	23.23		1
	25	25	23.41	23.36	23.32		1
	50	0	23.40	23.27	23.32		1
16QAM	1	0	23.71	23.27	23.64	0-1	1
	1	25	23.15	23.00	23.00		1
	1	49	23.84	23.35	23.46		1
	25	0	22.11	22.10	22.30	0-2	2
	25	12	22.20	22.20	22.22		2
	25	25	22.31	22.18	22.29		2
	50	0	22.20	22.12	22.20		2

Table 9-18
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	24.90	24.90	24.82	0	0
	1	12	24.88	24.89	24.90		0
	1	24	24.89	24.88	24.90		0
	12	0	23.41	23.12	23.18	0-1	1
	12	6	23.30	23.10	23.21		1
	12	13	23.29	23.16	23.18		1
	25	0	23.26	23.13	23.16		1
16QAM	1	0	23.84	23.20	23.62	0-1	1
	1	12	23.85	23.25	23.52		1
	1	24	23.78	23.38	23.57		1
	12	0	22.23	22.00	22.10	0-2	2
	12	6	22.17	22.10	22.14		2
	12	13	22.16	22.01	22.12		2
	25	0	22.16	22.10	22.11		2

Table 9-19
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	24.90	24.83	24.83	0	0
	1	7	24.81	24.89	24.90		0
	1	14	24.87	24.90	24.90		0
	8	0	23.23	23.17	23.33	0-1	1
	8	4	23.33	23.25	23.29		1
	8	7	23.22	23.25	23.32		1
	15	0	23.25	23.27	23.32		1
16QAM	1	0	23.54	23.23	23.56	0-1	1
	1	7	23.39	23.50	23.55		1
	1	14	23.12	23.39	23.44		1
	8	0	22.13	22.07	22.19	0-2	2
	8	4	22.30	22.08	22.16		2
	8	7	22.11	22.13	22.22		2
	15	0	22.22	22.02	22.21		2

Table 9-20
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	24.90	24.90	24.90	0	0
	1	2	24.85	24.88	24.90		0
	1	5	24.88	24.90	24.88		0
	3	0	24.51	24.51	24.60		0
	3	2	24.57	24.39	24.54		0
	3	3	24.49	24.49	24.49		0
	6	0	23.26	23.10	23.21	0-1	1
16QAM	1	0	23.19	23.13	23.10	0-1	1
	1	2	23.61	23.55	23.41		1
	1	5	23.18	23.24	23.10		1
	3	0	23.05	23.06	23.18		1
	3	2	23.16	23.16	23.21		1
	3	3	23.19	23.02	23.03		1
	6	0	22.11	22.02	22.18	0-2	2

9.4.6 LTE Carrier Aggregation Conducted Powers

Table 9-21
LTE Carrier Aggregation Conducted Powers – 2CC

PCC									SCC				Power	
PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Rel 10 Tx.Power (dBm)	LTE Rel. 8 Tx.Power (dBm)
LTE B2	20	18700	1860	QPSK	1	0	600	1940	LTE B4	20	2175	2132.5	24.80	24.99
LTE B4	20	20175	1732.5	QPSK	1	50	2175	2132.5	LTE B2	20	900	1960	24.92	25.00
LTE B2	20	18700	1860	QPSK	1	0	600	1940	LTE B13	10	5230	751	24.88	24.99
LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B2	20	900	1960	24.65	24.68
LTE B2	20	18700	1860	QPSK	1	0	600	1940	LTE B5	10	2525	881.5	24.96	24.99
LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B2	20	900	1960	24.66	24.68
LTE B2	20	18700	1860	QPSK	1	0	600	1940	LTE B66	20	66786	2145	24.89	24.99
LTE B66	20	132572	1770	QPSK	1	50	67036	2170	LTE B2	20	900	1960	24.92	25.00
LTE B4	20	20175	1732.5	QPSK	1	50	2175	2132.5	LTE B13	10	5230	751	24.86	25.00
LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B4	20	2175	2132.5	24.66	24.68
LTE B4	20	20175	1732.5	QPSK	1	50	2175	2132.5	LTE B5	10	2525	881.5	24.95	25.00
LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B4	20	2175	2132.5	24.62	24.68
LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B66	20	66786	2145	24.67	24.68
LTE B66	20	132572	1770	QPSK	1	50	67036	2170	LTE B5	10	2525	881.5	24.90	25.00
LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B66	20	66786	2145	24.60	24.68
LTE B66	20	132572	1770	QPSK	1	50	67036	2170	LTE B13	10	5230	751	24.99	25.00
LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B4	20	2175	2132.5	24.61	24.70
LTE B4	20	20175	1732.5	QPSK	1	50	2175	2132.5	LTE B12	10	5095	737.5	24.90	25.00
LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B2	20	900	1960	24.70	24.70
LTE B2	20	18700	1860	QPSK	1	0	600	1940	LTE B12	10	5095	737.5	24.94	24.99
LTE B4	20	20175	1732.5	QPSK	1	50	2175	2132.5	LTE B4	5	1975	2112.5	24.99	25.00
LTE B2	20	18700	1860	QPSK	1	0	600	1940	LTE B2	5	1175	1987.5	25.00	24.99
LTE B66	20	132572	1770	QPSK	1	50	67036	2170	LTE B66	5	66461	2112.5	24.95	25.00

Table 9-22
LTE Carrier Aggregation Conducted Powers – 3CC

PCC									SCC				SCC				Power	
PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Rel 10 Tx.Power (dBm)	LTE Rel. 8 Tx.Power (dBm)
LTE B2	20	18700	1860	QPSK	1	0	600	1940	LTE B4	20	2175	2132.5	LTE B13	10	5230	751	24.95	24.99
LTE B4	20	20175	1732.5	QPSK	1	50	2175	2132.5	LTE B2	20	900	1960	LTE B13	10	5230	751	24.81	25.00
LTE B2	20	18700	1860	QPSK	1	0	600	1940	LTE B4	20	2175	2132.5	LTE B5	10	2525	881.5	24.91	24.99
LTE B4	20	20175	1732.5	QPSK	1	50	2175	2132.5	LTE B2	20	900	1960	LTE B5	10	2525	881.5	24.99	25.00
LTE B2	20	18700	1860	QPSK	1	0	600	1940	LTE B66	20	67036	2170	LTE B13	10	5230	751	24.90	24.99
LTE B66	20	132572	1770	QPSK	1	50	67036	2170	LTE B2	20	900	1960	LTE B13	10	5230	751	24.85	25.00
LTE B2	20	18700	1860	QPSK	1	0	600	1940	LTE B66	20	67036	2170	LTE B5	10	2525	881.5	24.94	24.99
LTE B66	20	132572	1770	QPSK	1	50	67036	2170	LTE B2	20	900	1960	LTE B5	10	2525	881.5	24.88	25.00
LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B4	20	2175	2132.5	LTE B2	20	900	1960	24.69	24.68
LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B4	20	2175	2132.5	LTE B2	20	900	1960	24.60	24.68
LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B66	20	67036	2170	LTE B2	20	900	1960	24.62	24.68
LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B66	20	67036	2170	LTE B2	20	900	1960	24.62	24.68
LTE B2	20	18700	1860	QPSK	1	0	600	1940	LTE B2	5	1175	1987.5	LTE B13	10	5230	751	24.89	24.99
LTE B2	20	18700	1860	QPSK	1	0	600	1940	LTE B2	5	1175	1987.5	LTE B5	10	2525	881.5	24.97	24.99
LTE B4	20	20175	1732.5	QPSK	1	50	2175	2132.5	LTE B4	20	2275	2142.5	LTE B5	10	2525	881.5	24.89	25.00
LTE B4	20	20175	1732.5	QPSK	1	50	2175	2132.5	LTE B4	20	2275	2142.5	LTE B13	10	5230	751	24.93	25.00
LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B4	20	2175	2132.5	LTE B4	5	1975	2112.5	24.52	24.68
LTE B66	20	132572	1770	QPSK	1	50	67036	2170	LTE B66	20	66786	2145	LTE B5	10	2525	881.5	24.94	25.00
LTE B66	20	132572	1770	QPSK	1	50	67036	2170	LTE B66	20	66786	2145	LTE B13	10	5230	751	25.00	25.00
LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B66	20	66838	2150.2	LTE B66	5	66461	2112.5	24.62	24.68
LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B2	20	900	1960	LTE B2	5	1175	1987.5	24.70	24.68
LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B2	20	900	1960	LTE B2	5	1175	1987.5	24.66	24.68
LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B4	20	2175	2132.5	LTE B4	5	1975	2112.5	24.64	24.68
LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B66	20	66838	2150.2	LTE B66	5	66461	2112.5	24.59	24.68
LTE B66	15	132047	1717.5	QPSK	1	36	66511	2117.5	LTE B66	5	66610	2127.4	LTE B66	5	66658	2132.2	24.98	25.00
LTE B4	20	20175	1732.5	QPSK	1	50	2175	2132.5	LTE B2	20	900	1960	LTE B12	10	5095	737.5	24.92	25.00
LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B2	20	900	1960	LTE B4	20	2175	2132.5	24.68	24.70
LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B2	20	900	1960	LTE B2	5	1175	1987.5	24.68	24.70
LTE B2	20	18700	1860	QPSK	1	0	8140	1940	LTE B4	20	2175	2132.5	LTE B12	10	5095	737.5	24.97	24.99
LTE B2	20	18700	1860	QPSK	1	0	600	1940	LTE B2	20	898	1959.8	LTE B12	10	5095	737.5	24.81	24.99

Notes:

1. The device only supports downlink Carrier Aggregation. Uplink Carrier Aggregation is not supported. For every supported combination of downlink carrier aggregation, power measurements were performed with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.
2. All control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
3. Since the supported frequency span for LTE B2/4 falls completely within the supported frequency span for LTE B25/66, both LTE bands have the same target power, and both LTE bands share the same transmission path, the configuration with the highest conducted power from LTE B25/66 was used to assess LTE CA combinations with LTE B2/4.

Figure 9-4
Power Measurement Setup

9.5 WLAN Conducted Powers

Table 9-23
2.4 GHz WLAN Maximum Average RF Power – Primary Antenna

Freq [MHz]	Channel	2.4GHz Conducted Power [dBm]			
		IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ac
2412	1	18.36	14.45	13.91	13.92
2427	4	19.23	15.35	14.69	14.71
2437	6	19.34	15.25	14.80	14.75
2447	8	**19.45**	15.35	14.78	14.75
2462	11	17.23	13.35	13.16	13.04

Table 9-24
2.4 GHz WLAN Maximum Average RF Power – Secondary Antenna

Freq [MHz]	Channel	2.4GHz Conducted Power [dBm]			
		IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ac
2412	1	19.07	14.95	14.26	14.37
2427	4	19.45	15.30	14.63	14.65
2437	6	**19.74**	15.39	14.83	14.87
2447	8	19.50	15.38	14.73	14.79
2462	11	18.60	14.44	13.76	13.75

Table 9-25
2.4 GHz WLAN Reduced Average RF Power – Primary Antenna

Freq [MHz]	Channel	2.4GHz Conducted Power [dBm]			
		IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ac
2412	1	11.59	12.26	12.11	12.16
2437	6	**11.95**	12.38	12.33	12.40
2462	11	11.78	12.37	12.05	12.13

Table 9-26
2.4 GHz WLAN Reduced Average RF Power – Secondary Antenna

Freq [MHz]	Channel	2.4GHz Conducted Power [dBm]			
		IEEE Transmission Mode			
		802.11b	802.11g	802.11n	802.11ac
2412	1	4.82	5.11	4.88	4.84
2437	6	**5.49**	5.49	5.48	5.46
2462	11	5.22	5.43	5.12	5.23

Table 9-27
5 GHz WLAN Maximum Average RF Power – Primary Antenna

Freq [MHz]	Channel	5GHz (20MHz) Conducted Power [dBm]		
		IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
5180	36	14.38	14.31	14.46
5200	40	14.38	14.55	14.53
5220	44	14.32	14.41	14.38
5240	48	**14.51**	14.36	14.45
5260	52	**14.88**	14.71	14.70
5280	56	14.70	14.60	14.65
5300	60	14.73	14.53	14.61
5320	64	14.68	14.62	14.63
5500	100	**14.42**	14.33	14.38
5580	116	14.39	14.32	14.23
5660	132	14.40	14.16	14.32
5720	144	14.21	14.10	14.30
5745	149	**14.56**	14.30	14.36
5785	157	14.48	14.34	14.45
5825	165	14.53	14.42	14.41

Table 9-28
5 GHz WLAN Maximum Average RF Power – Secondary Antenna

Freq [MHz]	Channel	5GHz (20MHz) Conducted Power [dBm]		
		IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
5180	36	13.50	13.39	13.40
5200	40	**13.79**	13.37	13.30
5220	44	13.51	13.41	13.32
5240	48	13.49	13.50	13.36
5260	52	**13.54**	13.41	13.41
5280	56	13.47	13.49	13.30
5300	60	13.47	13.34	13.35
5320	64	13.45	13.43	13.40
5500	100	13.15	13.08	13.09
5580	116	13.50	13.25	13.33
5660	132	13.55	13.40	13.47
5720	144	**13.56**	13.52	13.45
5745	149	**13.65**	13.55	13.51
5785	157	13.38	13.56	13.57
5825	165	13.32	13.38	13.44

Table 9-29
5 GHz WLAN Reduced Average RF Power – 40 MHz Bandwidth – Primary Antenna

Freq [MHz]	Channel	5GHz (40MHz) Conducted Power [dBm]	
		IEEE Transmission Mode	
		802.11n	802.11ac
5190	38	11.39	11.25
5230	46	12.01	12.24
5270	54	**12.07**	12.06
5310	62	11.10	11.40
5510	102	11.42	11.75
5550	110	12.59	12.69
5670	134	12.55	12.45
5755	151	12.31	12.32
5795	159	12.29	12.45

Table 9-30
5 GHz WLAN Reduced Average RF Power – 80 MHz Bandwidth – Primary Antenna

5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
5210	42	10.88
5290	58	10.62
5530	106	10.63
5690	138	**11.92**
5775	155	**11.85**

Table 9-31
5 GHz WLAN Reduced Average RF Power – Secondary Antenna

5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
5210	42	4.56
5290	58	**4.66**
5530	106	4.71
5690	138	**4.92**
5775	155	**4.69**

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.

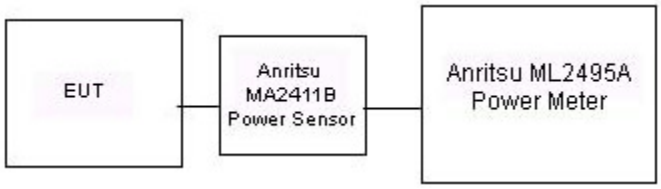

Figure 9-5
Power Measurement Setup for Bandwidths < 50 MHz

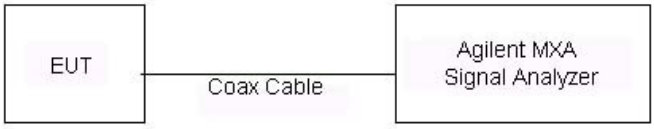

Figure 9-6
Power Measurement Setup for Bandwidths > 50 MHz

9.6 Bluetooth Conducted Powers

Table 9-32
Bluetooth Average RF Powers

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	10.05	10.123
2441	1.0	39	12.44	17.548
2480	1.0	78	**12.72**	18.709
2402	2.0	0	6.93	4.927
2441	2.0	39	8.59	7.233
2480	2.0	78	8.17	6.568
2402	3.0	0	6.94	4.939
2441	3.0	39	8.61	7.266
2480	3.0	78	8.24	6.666

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

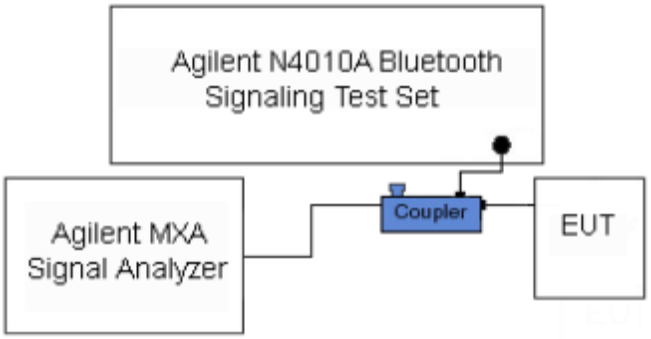

Figure 9-7
Power Measurement Setup

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
08/12/2016	750H	22.4	700	0.849	41.451	0.889	42.201	-4.50%	-1.78%
			710	0.857	41.285	0.890	42.149	-3.71%	-2.05%
			740	0.887	40.835	0.893	41.994	-0.67%	-2.76%
			755	0.900	40.659	0.894	41.916	0.67%	-3.00%
08/18/2016	750H	22.3	740	0.894	41.951	0.893	41.994	0.11%	-0.10%
			755	0.901	41.782	0.894	41.916	0.78%	-0.32%
			770	0.916	41.594	0.895	41.838	2.35%	-0.58%
			785	0.932	41.324	0.896	41.760	4.02%	-1.04%
08/25/2016	750H	21.1	700	0.849	42.254	0.889	42.201	-4.50%	0.13%
			710	0.858	42.104	0.890	42.149	-3.60%	-0.11%
			740	0.886	41.654	0.893	41.994	-0.78%	-0.81%
			755	0.899	41.456	0.894	41.916	0.56%	-1.10%
08/08/2016	835H	20.9	820	0.877	40.306	0.899	41.578	-2.45%	-3.06%
			835	0.891	40.116	0.900	41.500	-1.00%	-3.33%
			850	0.904	39.918	0.916	41.500	-1.31%	-3.81%
08/10/2016	835H	21.7	820	0.872	40.522	0.899	41.578	-3.00%	-2.54%
			835	0.885	40.244	0.900	41.500	-1.67%	-3.03%
			850	0.899	40.093	0.916	41.500	-1.86%	-3.39%
08/29/2016	835H	21.5	820	0.873	40.798	0.899	41.578	-2.89%	-1.88%
			835	0.891	40.602	0.900	41.500	-1.00%	-2.16%
			850	0.902	40.390	0.916	41.500	-1.53%	-2.67%
08/15/2016	1750H	21.8	1710	1.329	38.898	1.348	40.142	-1.41%	-3.10%
			1750	1.369	38.696	1.371	40.079	-0.15%	-3.45%
			1790	1.408	38.532	1.394	40.016	1.00%	-3.71%
08/10/2016	1900H	22.5	1850	1.401	40.358	1.400	40.000	0.07%	0.89%
			1880	1.433	40.212	1.400	40.000	2.36%	0.53%
			1910	1.468	40.087	1.400	40.000	4.86%	0.22%
08/08/2016	2450H	22.8	2400	1.823	38.405	1.756	39.289	3.82%	-2.25%
			2450	1.880	38.216	1.800	39.200	4.44%	-2.51%
			2500	1.934	38.013	1.855	39.136	4.26%	-2.87%
08/08/2016	5200H-5800H	21.7	5240	4.477	36.207	4.696	35.940	-4.66%	0.74%
			5260	4.486	36.197	4.717	35.917	-4.90%	0.78%
			5280	4.516	36.157	4.737	35.894	-4.67%	0.73%
			5300	4.523	36.135	4.758	35.871	-4.94%	0.74%
			5600	4.860	35.746	5.065	35.529	-4.05%	0.61%
			5680	4.943	35.599	5.147	35.437	-3.96%	0.46%
			5700	4.964	35.606	5.168	35.414	-3.95%	0.54%
			5745	5.024	35.508	5.214	35.363	-3.64%	0.41%
			5765	5.049	35.468	5.234	35.340	-3.53%	0.36%
			5785	5.069	35.415	5.255	35.317	-3.54%	0.28%

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
08/09/2016	750B	21.0	700	0.920	55.196	0.959	55.726	-4.07%	-0.95%
			710	0.929	55.059	0.960	55.687	-3.23%	-1.13%
			740	0.958	54.689	0.963	55.570	-0.52%	-1.59%
			755	0.973	54.575	0.964	55.512	0.93%	-1.69%
			770	0.987	54.333	0.965	55.453	2.28%	-2.02%
			785	1.000	54.200	0.966	55.395	3.52%	-2.16%
08/24/2016	750B	22.6	700	0.925	54.145	0.959	55.726	-3.55%	-2.84%
			710	0.935	54.036	0.960	55.687	-2.60%	-2.96%
			740	0.963	53.708	0.963	55.570	0.00%	-3.35%
			755	0.976	53.564	0.964	55.512	1.24%	-3.51%
08/15/2016	835B	21.3	820	0.953	54.285	0.969	55.258	-1.65%	-1.76%
			835	0.969	54.256	0.970	55.200	-0.10%	-1.71%
			850	0.984	54.005	0.988	55.154	-0.40%	-2.08%
08/24/2016	835B	22.1	820	0.999	53.614	0.969	55.258	3.10%	-2.98%
			835	1.013	53.465	0.970	55.200	4.43%	-3.14%
			850	1.027	53.301	0.988	55.154	3.95%	-3.36%
08/29/2016	835B	20.8	820	1.001	54.669	0.969	55.258	3.30%	-1.07%
			835	1.013	54.482	0.970	55.200	4.43%	-1.30%
			850	1.029	54.403	0.988	55.154	4.15%	-1.36%
08/14/2016	1750B	21.7	1710	1.429	51.844	1.463	53.537	-2.32%	-3.16%
			1750	1.474	51.701	1.488	53.432	-0.94%	-3.24%
			1790	1.517	51.488	1.514	53.326	0.20%	-3.45%
08/08/2016	1900B	22.8	1850	1.512	53.425	1.520	53.300	-0.53%	0.23%
			1880	1.547	53.354	1.520	53.300	1.78%	0.10%
			1910	1.579	53.231	1.520	53.300	3.88%	-0.13%
08/10/2016	2450B	23.0	2400	1.967	51.186	1.902	52.767	3.42%	-3.00%
			2450	2.032	51.051	1.950	52.700	4.21%	-3.13%
			2500	2.099	50.828	2.021	52.636	3.86%	-3.43%
08/15/2016	2450B	23.2	2400	1.953	52.593	1.902	52.767	2.68%	-0.33%
			2450	2.027	52.369	1.950	52.700	3.95%	-0.63%
			2500	2.095	52.115	2.021	52.636	3.66%	-0.99%
08/09/2016	5200B-5800B	21.4	5200	5.353	46.828	5.299	49.014	1.02%	-4.46%
			5240	5.410	46.768	5.346	48.960	1.20%	-4.48%
			5260	5.460	46.756	5.369	48.933	1.69%	-4.45%
			5500	5.778	46.367	5.650	48.607	2.27%	-4.61%
			5600	5.903	46.127	5.766	48.471	2.38%	-4.84%
			5700	5.996	46.072	5.883	48.336	1.92%	-4.68%
			5745	6.112	45.920	5.936	48.275	2.96%	-4.88%
			5765	6.164	45.843	5.959	48.248	3.44%	-4.98%

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

10.2 Test System Verification

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

Table 10-3
System Verification Results – 1g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Dipole SN	Probe SN	Measured SAR_{1g} (W/kg)	1 W Target SAR_{1g} (W/kg)	1 W Normalized SAR_{1g} (W/kg)	$Deviation_{1g}$ (%)
G	750	HEAD	08/12/2016	21.4	22.4	0.200	1054	3334	1.690	8.220	8.450	2.80%
E	750	HEAD	08/18/2016	22.7	22.3	0.200	1161	7406	1.530	8.170	7.650	-6.36%
J	750	HEAD	08/25/2016	20.1	21.1	0.200	1054	3318	1.680	8.220	8.400	2.19%
K	835	HEAD	08/08/2016	22.7	20.9	0.200	4d047	7409	1.780	9.130	8.900	-2.52%
K	835	HEAD	08/10/2016	23.5	21.7	0.200	4d133	7409	1.740	9.320	8.700	-6.65%
H	835	HEAD	08/29/2016	20.7	21.5	0.200	4d047	3319	1.900	9.130	9.500	4.05%
G	1750	HEAD	08/15/2016	23.5	22.0	0.100	1148	3334	3.900	36.200	39.000	7.73%
I	1900	HEAD	08/10/2016	23.2	22.5	0.100	5d080	3333	4.190	39.300	41.900	6.62%
K	2450	HEAD	08/08/2016	23.0	22.5	0.100	719	7409	5.600	54.200	56.000	3.32%
D	5250	HEAD	08/08/2016	20.1	22.4	0.050	1191	3914	3.830	82.500	76.600	-7.15%
D	5600	HEAD	08/08/2016	20.1	22.4	0.050	1191	3914	3.830	84.500	76.600	-9.35%
D	5750	HEAD	08/08/2016	20.1	22.4	0.050	1191	3914	3.700	80.000	74.000	-7.50%
G	750	BODY	08/09/2016	23.1	21.9	0.200	1054	3334	1.710	8.560	8.550	-0.12%
H	750	BODY	08/24/2016	22.0	21.5	0.200	1054	3319	1.780	8.560	8.900	3.97%
H	835	BODY	08/15/2016	20.3	21.3	0.200	4d133	3319	2.010	9.500	10.050	5.79%
I	835	BODY	08/24/2016	22.7	22.1	0.200	4d133	3333	1.900	9.500	9.500	0.00%
I	835	BODY	08/29/2016	21.2	20.8	0.200	4d133	3333	1.890	9.500	9.450	-0.53%
K	1750	BODY	08/14/2016	21.4	21.7	0.100	1008	7409	3.850	37.300	38.500	3.22%
H	1900	BODY	08/08/2016	22.0	22.5	0.100	5d080	3319	4.090	39.100	40.900	4.60%
E	2450	BODY	08/10/2016	23.6	23.0	0.100	719	7406	5.270	51.900	52.700	1.54%
E	2450	BODY	08/15/2016	22.9	22.8	0.100	981	7406	5.110	50.800	51.100	0.59%
J	5250	BODY	08/09/2016	21.3	21.4	0.050	1191	7357	4.060	77.200	81.200	5.18%
J	5600	BODY	08/09/2016	21.3	21.4	0.050	1191	7357	4.380	81.900	87.600	6.96%
J	5750	BODY	08/09/2016	21.3	21.4	0.050	1191	7357	3.790	77.100	75.800	-1.69%

Table 10-4
System Verification Results – 10g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Dipole SN	Probe SN	Measured SAR_{10g} (W/kg)	1 W Target SAR_{10g} (W/kg)	1 W Normalized SAR_{10g} (W/kg)	$Deviation_{10g}$ (%)
E	2450	BODY	08/15/2016	22.9	22.8	0.100	981	7406	2.360	23.800	23.600	-0.84%
J	5250	BODY	08/09/2016	21.3	21.4	0.050	1191	7357	1.130	21.500	22.600	5.12%
J	5600	BODY	08/09/2016	21.3	21.4	0.050	1191	7357	1.230	22.800	24.600	7.89%
J	5750	BODY	08/09/2016	21.3	21.4	0.050	1191	7357	1.060	21.400	21.200	-0.93%

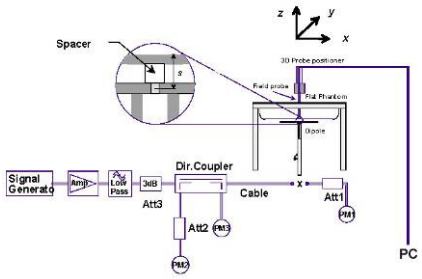

Figure 10-1
System Verification Setup Diagram

Figure 10-2
System Verification Setup Photo

11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
GSM 850 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	33.7	33.65	0.19	Right	Cheek	11247	1	1:8.3	0.014	1.012	0.014	
836.60	190	GSM 850	GSM	33.7	33.65	0.17	Right	Tilt	11247	1	1:8.3	0.007	1.012	0.007	
836.60	190	GSM 850	GSM	33.7	33.65	0.18	Left	Cheek	11247	1	1:8.3	0.013	1.012	0.013	
836.60	190	GSM 850	GSM	33.7	33.65	0.13	Left	Tilt	11247	1	1:8.3	0.007	1.012	0.007	
836.60	190	GSM 850	GPRS	32.2	32.11	0.11	Right	Cheek	11247	2	1:4.15	0.021	1.021	0.021	A1
836.60	190	GSM 850	GPRS	32.2	32.11	0.17	Right	Tilt	11247	2	1:4.15	0.010	1.021	0.010	
836.60	190	GSM 850	GPRS	32.2	32.11	0.11	Left	Cheek	11247	2	1:4.15	0.017	1.021	0.017	
836.60	190	GSM 850	GPRS	32.2	32.11	0.01	Left	Tilt	11247	2	1:4.15	0.011	1.021	0.011	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-2
GSM 1900 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GSM	30.7	30.68	0.17	Right	Cheek	11247	1	1:8.3	0.104	1.005	0.105	
1880.00	661	GSM 1900	GSM	30.7	30.68	0.10	Right	Tilt	11247	1	1:8.3	0.072	1.005	0.072	
1880.00	661	GSM 1900	GSM	30.7	30.68	0.14	Left	Cheek	11247	1	1:8.3	0.156	1.005	0.157	
1880.00	661	GSM 1900	GSM	30.7	30.68	0.21	Left	Tilt	11247	1	1:8.3	0.108	1.005	0.109	
1880.00	661	GSM 1900	GPRS	29.2	29.19	0.15	Right	Cheek	11247	2	1:4.15	0.150	1.002	0.150	
1880.00	661	GSM 1900	GPRS	29.2	29.19	-0.08	Right	Tilt	11247	2	1:4.15	0.100	1.002	0.100	
1880.00	661	GSM 1900	GPRS	29.2	29.19	-0.14	Left	Cheek	11247	2	1:4.15	0.218	1.002	0.218	A2
1880.00	661	GSM 1900	GPRS	29.2	29.19	0.01	Left	Tilt	11247	2	1:4.15	0.150	1.002	0.150	
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 850 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
836.60	4183	UMTS 850	RMC	24.7	24.63	-0.04	Right	Cheek	11254	1:1	0.267	1.016	0.271	A3
836.60	4183	UMTS 850	RMC	24.7	24.63	0.11	Right	Tilt	11254	1:1	0.106	1.016	0.108	
836.60	4183	UMTS 850	RMC	24.7	24.63	0.06	Left	Cheek	11254	1:1	0.243	1.016	0.247	
836.60	4183	UMTS 850	RMC	24.7	24.63	0.07	Left	Tilt	11254	1:1	0.138	1.016	0.140	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-4
UMTS 1750 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1732.40	1412	UMTS 1750	RMC	24.7	24.70	0.17	Right	Cheek	11254	1:1	0.241	1.000	0.241	
1732.40	1412	UMTS 1750	RMC	24.7	24.70	0.04	Right	Tilt	11254	1:1	0.127	1.000	0.127	
1732.40	1412	UMTS 1750	RMC	24.7	24.70	0.10	Left	Cheek	11254	1:1	0.293	1.000	0.293	A4
1732.40	1412	UMTS 1750	RMC	24.7	24.70	0.04	Left	Tilt	11254	1:1	0.175	1.000	0.175	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-5
UMTS 1900 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	24.7	24.50	0.16	Right	Cheek	11247	1:1	0.161	1.047	0.169	
1880.00	9400	UMTS 1900	RMC	24.7	24.50	0.10	Right	Tilt	11247	1:1	0.119	1.047	0.125	
1880.00	9400	UMTS 1900	RMC	24.7	24.50	0.09	Left	Cheek	11247	1:1	0.246	1.047	0.258	A5
1880.00	9400	UMTS 1900	RMC	24.7	24.50	0.06	Left	Tilt	11247	1:1	0.212	1.047	0.222	
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
Cell. CDMA Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Tuner State	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
836.52	384	Cell. CDMA	RC3 / SO55	24.7	24.68	0.00	Right	Cheek	Ant 1	2	11304	1:1	0.267	1.005	0.268	
836.52	384	Cell. CDMA	RC3 / SO55	24.7	24.68	0.13	Right	Tilt	Ant 1	2	11304	1:1	0.150	1.005	0.151	
836.52	384	Cell. CDMA	RC3 / SO55	24.7	24.68	0.07	Left	Cheek	Ant 1	2	11304	1:1	0.232	1.005	0.233	
836.52	384	Cell. CDMA	RC3 / SO55	24.7	24.68	0.06	Left	Tilt	Ant 1	2	11304	1:1	0.163	1.005	0.164	
836.52	384	Cell. CDMA	EVDO Rev. A	24.7	24.62	0.06	Right	Cheek	Ant 1	2	11304	1:1	0.262	1.019	0.267	
836.52	384	Cell. CDMA	EVDO Rev. A	24.7	24.62	0.13	Right	Tilt	Ant 1	2	11304	1:1	0.121	1.019	0.123	
836.52	384	Cell. CDMA	EVDO Rev. A	24.7	24.62	0.09	Left	Cheek	Ant 1	2	11304	1:1	0.235	1.019	0.239	
836.52	384	Cell. CDMA	EVDO Rev. A	24.7	24.62	0.05	Left	Tilt	Ant 1	2	11304	1:1	0.134	1.019	0.137	
824.70	1013	Cell. CDMA	RC3 / SO55	24.7	24.63	0.02	Right	Cheek	Ant 3	N/A	11254	1:1	1.010	1.016	**1.026**	A6
836.52	384	Cell. CDMA	RC3 / SO55	24.7	24.68	-0.02	Right	Cheek	Ant 3	N/A	11254	1:1	0.931	1.005	0.936	
848.31	777	Cell. CDMA	RC3 / SO55	24.7	24.61	-0.05	Right	Cheek	Ant 3	N/A	11254	1:1	0.722	1.021	0.737	
836.52	384	Cell. CDMA	RC3 / SO55	24.7	24.68	-0.03	Right	Tilt	Ant 3	N/A	11254	1:1	0.655	1.005	0.658	
836.52	384	Cell. CDMA	RC3 / SO55	24.7	24.68	-0.07	Left	Cheek	Ant 3	N/A	11254	1:1	0.556	1.005	0.559	
836.52	384	Cell. CDMA	RC3 / SO55	24.7	24.68	0.00	Left	Tilt	Ant 3	N/A	11254	1:1	0.476	1.005	0.478	
836.52	384	Cell. CDMA	EVDO Rev. A	24.7	24.62	-0.05	Right	Cheek	Ant 3	N/A	11254	1:1	0.751	1.019	0.765	
836.52	384	Cell. CDMA	EVDO Rev. A	24.7	24.62	0.03	Right	Tilt	Ant 3	N/A	11254	1:1	0.652	1.019	0.664	
836.52	384	Cell. CDMA	EVDO Rev. A	24.7	24.62	0.04	Left	Cheek	Ant 3	N/A	11254	1:1	0.506	1.019	0.516	
836.52	384	Cell. CDMA	EVDO Rev. A	24.7	24.62	0.07	Left	Tilt	Ant 3	N/A	11254	1:1	0.447	1.019	0.455	
824.70	1013	Cell. CDMA	RC3 / SO55	24.7	24.63	-0.04	Right	Cheek	Ant 3	N/A	11254	1:1	0.933	1.016	0.948	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram									

Note: Blue entry represents variability measurement.

Table 11-7
PCS CDMA Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	600	PCS CDMA	RC3 / SO55	24.7	24.62	0.03	Right	Cheek	11247	1:1	0.210	1.019	0.214	
1880.00	600	PCS CDMA	RC3 / SO55	24.7	24.62	0.07	Right	Tilt	11247	1:1	0.124	1.019	0.126	
1880.00	600	PCS CDMA	RC3 / SO55	24.7	24.62	0.05	Left	Cheek	11247	1:1	0.295	1.019	0.301	
1880.00	600	PCS CDMA	RC3 / SO55	24.7	24.62	0.07	Left	Tilt	11247	1:1	0.250	1.019	0.255	
1880.00	600	PCS CDMA	EVDO Rev. A	24.7	24.64	0.04	Right	Cheek	11247	1:1	0.247	1.014	0.250	
1880.00	600	PCS CDMA	EVDO Rev. A	24.7	24.64	0.06	Right	Tilt	11247	1:1	0.132	1.014	0.134	
1880.00	600	PCS CDMA	EVDO Rev. A	24.7	24.64	0.06	Left	Cheek	11247	1:1	0.313	1.014	0.317	A7
1880.00	600	PCS CDMA	EVDO Rev. A	24.7	24.64	0.03	Left	Tilt	11247	1:1	0.259	1.014	0.263	
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 12 Head SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Antenna Config.	Tuner 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)	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	0.01	0	Right	Cheek	Ant 1	20	QPSK	1	49	11304	1:1	0.197	1.000	0.197	
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	0.02	1	Right	Cheek	Ant 1	20	QPSK	25	0	11304	1:1	0.145	1.107	0.161	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	0.07	0	Right	Tilt	Ant 1	20	QPSK	1	49	11304	1:1	0.092	1.000	0.092	
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	-0.19	1	Right	Tilt	Ant 1	20	QPSK	25	0	11304	1:1	0.074	1.107	0.082	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	0.11	0	Left	Cheek	Ant 1	20	QPSK	1	49	11304	1:1	0.152	1.000	0.152	
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	0.04	1	Left	Cheek	Ant 1	20	QPSK	25	0	11304	1:1	0.138	1.107	0.153	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	0.01	0	Left	Tilt	Ant 1	20	QPSK	1	49	11304	1:1	0.086	1.000	0.086	
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	0.07	1	Left	Tilt	Ant 1	20	QPSK	25	0	11304	1:1	0.077	1.107	0.085	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	-0.01	0	Right	Cheek	Ant 3	N/A	QPSK	1	49	11304	1:1	0.668	1.000	0.668	
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	0.02	1	Right	Cheek	Ant 3	N/A	QPSK	25	0	11304	1:1	0.501	1.107	0.555	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	0.02	0	Right	Tilt	Ant 3	N/A	QPSK	1	49	11304	1:1	0.807	1.000	0.807	A8
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	0.02	1	Right	Tilt	Ant 3	N/A	QPSK	25	0	11304	1:1	0.592	1.107	0.655	
707.50	23095	Mid	LTE Band 12	10	23.7	23.18	-0.01	1	Right	Tilt	Ant 3	N/A	QPSK	50	0	11304	1:1	0.600	1.127	0.676	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	0.03	0	Left	Cheek	Ant 3	N/A	QPSK	1	49	11304	1:1	0.690	1.000	0.690	
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	-0.02	1	Left	Cheek	Ant 3	N/A	QPSK	25	0	11304	1:1	0.534	1.107	0.591	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	0.03	0	Left	Tilt	Ant 3	N/A	QPSK	1	49	11304	1:1	0.669	1.000	0.669	
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	-0.01	1	Left	Tilt	Ant 3	N/A	QPSK	25	0	11304	1:1	0.509	1.107	0.563	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	-0.19	0	Right	Tilt	Ant 3	N/A	QPSK	1	49	11304	1:1	0.788	1.000	0.788	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram												

Note: Blue entry represents variability measurement.

Table 11-9
LTE Band 13 Head SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Antenna Config.	Tuner 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)	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	-0.10	0	Right	Cheek	Ant 1	61	QPSK	1	49	11304	1:1	0.212	1.005	0.213	
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	0.01	1	Right	Cheek	Ant 1	61	QPSK	25	25	11304	1:1	0.169	1.143	0.193	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	0.01	0	Right	Tilt	Ant 1	61	QPSK	1	49	11304	1:1	0.124	1.005	0.125	
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	0.09	1	Right	Tilt	Ant 1	61	QPSK	25	25	11304	1:1	0.091	1.143	0.104	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	0.12	0	Left	Cheek	Ant 1	61	QPSK	1	49	11304	1:1	0.181	1.005	0.182	
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	0.06	1	Left	Cheek	Ant 1	61	QPSK	25	25	11304	1:1	0.125	1.143	0.143	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	0.10	0	Left	Tilt	Ant 1	61	QPSK	1	49	11304	1:1	0.102	1.005	0.103	
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	0.15	1	Left	Tilt	Ant 1	61	QPSK	25	25	11304	1:1	0.069	1.143	0.079	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	-0.02	0	Right	Cheek	Ant 3	N/A	QPSK	1	49	11304	1:1	0.602	1.005	0.605	A9
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	0.01	1	Right	Cheek	Ant 3	N/A	QPSK	25	25	11304	1:1	0.425	1.143	0.486	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	-0.02	0	Right	Tilt	Ant 3	N/A	QPSK	1	49	11304	1:1	0.533	1.005	0.536	
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	0.01	1	Right	Tilt	Ant 3	N/A	QPSK	25	25	11304	1:1	0.401	1.143	0.458	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	0.11	0	Left	Cheek	Ant 3	N/A	QPSK	1	49	11304	1:1	0.414	1.005	0.416	
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	0.02	1	Left	Cheek	Ant 3	N/A	QPSK	25	25	11304	1:1	0.300	1.143	0.343	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	0.00	0	Left	Tilt	Ant 3	N/A	QPSK	1	49	11304	1:1	0.388	1.005	0.390	
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	0.05	1	Left	Tilt	Ant 3	N/A	QPSK	25	25	11304	1:1	0.276	1.143	0.315	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram												

Table 11-10
LTE Band 5 (Cell) Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Antenna Config.	Tuner State	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																				
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	0.03	0	Right	Cheek	Ant 1	2	QPSK	1	25	11304	1:1	0.251	1.005	0.252	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	0.01	1	Right	Cheek	Ant 1	2	QPSK	25	0	11304	1:1	0.190	1.026	0.195	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	0.02	0	Right	Tilt	Ant 1	2	QPSK	1	25	11304	1:1	0.115	1.005	0.116	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	0.14	1	Right	Tilt	Ant 1	2	QPSK	25	0	11304	1:1	0.092	1.026	0.094	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	0.08	0	Left	Cheek	Ant 1	2	QPSK	1	25	11304	1:1	0.226	1.005	0.227	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	0.06	1	Left	Cheek	Ant 1	2	QPSK	25	0	11304	1:1	0.175	1.026	0.180	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	-0.10	0	Left	Tilt	Ant 1	2	QPSK	1	25	11304	1:1	0.131	1.005	0.132	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	-0.03	1	Left	Tilt	Ant 1	2	QPSK	25	0	11304	1:1	0.095	1.026	0.097	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	-0.02	0	Right	Cheek	Ant 3	N/A	QPSK	1	25	11304	1:1	0.963	1.005	0.968	A10
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	-0.02	1	Right	Cheek	Ant 3	N/A	QPSK	25	0	11304	1:1	0.828	1.026	0.850	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.08	0.02	1	Right	Cheek	Ant 3	N/A	QPSK	50	0	11304	1:1	0.757	1.153	0.873	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	0.02	0	Right	Tilt	Ant 3	N/A	QPSK	1	25	11304	1:1	0.695	1.005	0.698	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	-0.02	1	Right	Tilt	Ant 3	N/A	QPSK	25	0	11304	1:1	0.624	1.026	0.640	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	0.00	0	Left	Cheek	Ant 3	N/A	QPSK	1	25	11304	1:1	0.704	1.005	0.708	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	0.05	1	Left	Cheek	Ant 3	N/A	QPSK	25	0	11304	1:1	0.599	1.026	0.615	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	0.02	0	Left	Tilt	Ant 3	N/A	QPSK	1	25	11304	1:1	0.583	1.005	0.586	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	0.05	1	Left	Tilt	Ant 3	N/A	QPSK	25	0	11304	1:1	0.495	1.026	0.508	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram											

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

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																			
1770.00	132572	High	LTE Band 66 (AWS)	20	25.0	25.00	0.03	0	Right	Cheek	QPSK	1	50	11288	1:1	0.278	1.000	0.278	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.0	23.79	0.20	1	Right	Cheek	QPSK	50	0	11288	1:1	0.225	1.050	0.236	
1770.00	132572	High	LTE Band 66 (AWS)	20	25.0	25.00	0.11	0	Right	Tilt	QPSK	1	50	11288	1:1	0.127	1.000	0.127	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.0	23.79	-0.10	1	Right	Tilt	QPSK	50	0	11288	1:1	0.100	1.050	0.105	
1770.00	132572	High	LTE Band 66 (AWS)	20	25.0	25.00	0.02	0	Left	Cheek	QPSK	1	50	11288	1:1	0.298	1.000	0.298	A11
1770.00	132572	High	LTE Band 66 (AWS)	20	24.0	23.79	-0.06	1	Left	Cheek	QPSK	50	0	11288	1:1	0.256	1.050	0.269	
1770.00	132572	High	LTE Band 66 (AWS)	20	25.0	25.00	0.08	0	Left	Tilt	QPSK	1	50	11288	1:1	0.177	1.000	0.177	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.0	23.79	0.05	1	Left	Tilt	QPSK	50	0	11288	1:1	0.148	1.050	0.155	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-12
LTE Band 25 (PCS) Head SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	-0.07	0	Right	Cheek	QPSK	1	0	11288	1:1	0.291	1.002	0.292	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.88	0.00	1	Right	Cheek	QPSK	50	25	11288	1:1	0.211	1.028	0.217	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	-0.07	0	Right	Tilt	QPSK	1	0	11288	1:1	0.163	1.002	0.163	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.88	0.11	1	Right	Tilt	QPSK	50	25	11288	1:1	0.111	1.028	0.114	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	0.04	0	Left	Cheek	QPSK	1	0	11288	1:1	0.324	1.002	0.325	A12
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.88	0.00	1	Left	Cheek	QPSK	50	25	11288	1:1	0.247	1.028	0.254	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	-0.03	0	Left	Tilt	QPSK	1	0	11288	1:1	0.202	1.002	0.202	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.88	0.09	1	Left	Tilt	QPSK	50	25	11288	1:1	0.167	1.028	0.172	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Head 1.6 W/kg (mW/g) averaged over 1 gram			

Table 11-13
DTS Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2437	6	802.11b	DSSS	22	12.5	11.95	0.11	Right	Cheek	Primary	11387	1	99.9	0.144	-	1.135	1.001	-	
2437	6	802.11b	DSSS	22	12.5	11.95	0.16	Right	Tilt	Primary	11387	1	99.9	0.139	-	1.135	1.001	-	
2437	6	802.11b	DSSS	22	12.5	11.95	0.21	Left	Cheek	Primary	11387	1	99.9	0.546	0.359	1.135	1.001	**0.408**	A13
2437	6	802.11b	DSSS	22	12.5	11.95	0.10	Left	Tilt	Primary	11387	1	99.9	0.456	0.318	1.135	1.001	0.361	
2437	6	802.11b	DSSS	22	5.5	5.49	0.19	Right	Cheek	Secondary	11387	1	99.9	0.021	-	1.002	1.001	-	
2437	6	802.11b	DSSS	22	5.5	5.49	0.11	Right	Tilt	Secondary	11387	1	99.9	0.018	-	1.002	1.001	-	
2437	6	802.11b	DSSS	22	5.5	5.49	0.12	Left	Cheek	Secondary	11387	1	99.9	0.096	0.062	1.002	1.001	0.062	
2437	6	802.11b	DSSS	22	5.5	5.49	0.16	Left	Tilt	Secondary	11387	1	99.9	0.062	-	1.002	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 11-14
NII Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5270	54	802.11n	OFDM	40	13.0	12.07	0.12	Right	Cheek	Primary	11395	13.5	99.3	0.061	-	1.239	1.007	-	
5270	54	802.11n	OFDM	40	13.0	12.07	0.13	Right	Tilt	Primary	11395	13.5	99.3	0.066	-	1.239	1.007	-	
5270	54	802.11n	OFDM	40	13.0	12.07	0.17	Left	Cheek	Primary	11395	13.5	99.3	0.084	-	1.239	1.007	-	
5270	54	802.11n	OFDM	40	13.0	12.07	0.10	Left	Tilt	Primary	11395	13.5	99.3	0.097	0.066	1.239	1.007	0.082	
5290	58	802.11ac	OFDM	80	5.5	4.66	0.12	Right	Cheek	Secondary	11395	29.3	98.4	0.191	-	1.213	1.016	-	
5290	58	802.11ac	OFDM	80	5.5	4.66	0.11	Right	Tilt	Secondary	11395	29.3	98.4	0.218	-	1.213	1.016	-	
5290	58	802.11ac	OFDM	80	5.5	4.66	0.15	Left	Cheek	Secondary	11395	29.3	98.4	0.263	-	1.213	1.016	-	
5290	58	802.11ac	OFDM	80	5.5	4.66	0.10	Left	Tilt	Secondary	11395	29.3	98.4	0.395	0.259	1.213	1.016	**0.319**	A14
5690	138	802.11ac	OFDM	80	13.0	11.92	0.13	Right	Cheek	Primary	11395	29.3	98.4	0.267	-	1.282	1.016	-	
5690	138	802.11ac	OFDM	80	13.0	11.92	0.17	Right	Tilt	Primary	11395	29.3	98.4	0.335	-	1.282	1.016	-	
5690	138	802.11ac	OFDM	80	13.0	11.92	0.16	Left	Cheek	Primary	11395	29.3	98.4	0.382	-	1.282	1.016	-	
5690	138	802.11ac	OFDM	80	13.0	11.92	0.17	Left	Tilt	Primary	11395	29.3	98.4	0.433	0.077	1.282	1.016	0.100	
5690	138	802.11ac	OFDM	80	5.5	4.92	0.10	Right	Cheek	Secondary	11395	29.3	98.4	0.090	-	1.143	1.016	-	
5690	138	802.11ac	OFDM	80	5.5	4.92	0.10	Right	Tilt	Secondary	11395	29.3	98.4	0.132	-	1.143	1.016	-	
5690	138	802.11ac	OFDM	80	5.5	4.92	0.10	Left	Cheek	Secondary	11395	29.3	98.4	0.124	-	1.143	1.016	-	
5690	138	802.11ac	OFDM	80	5.5	4.92	0.17	Left	Tilt	Secondary	11395	29.3	98.4	0.188	0.122	1.143	1.016	0.142	
5775	155	802.11ac	OFDM	80	13.0	11.85	0.17	Right	Cheek	Primary	11395	29.3	98.4	0.256	-	1.303	1.016	-	
5775	155	802.11ac	OFDM	80	13.0	11.85	0.10	Right	Tilt	Primary	11395	29.3	98.4	0.318	-	1.303	1.016	-	
5775	155	802.11ac	OFDM	80	13.0	11.85	0.19	Left	Cheek	Primary	11395	29.3	98.4	0.510	-	1.303	1.016	-	
5775	155	802.11ac	OFDM	80	13.0	11.85	0.11	Left	Tilt	Primary	11395	29.3	98.4	0.694	0.097	1.303	1.016	0.128	
5775	155	802.11ac	OFDM	80	5.5	4.69	0.18	Right	Cheek	Secondary	11395	29.3	98.4	0.072	-	1.205	1.016	-	
5775	155	802.11ac	OFDM	80	5.5	4.69	0.14	Right	Tilt	Secondary	11395	29.3	98.4	0.102	-	1.205	1.016	-	
5775	155	802.11ac	OFDM	80	5.5	4.69	-0.18	Left	Cheek	Secondary	11395	29.3	98.4	0.107	-	1.205	1.016	-	
5775	155	802.11ac	OFDM	80	5.5	4.69	0.16	Left	Tilt	Secondary	11395	29.3	98.4	0.145	0.083	1.205	1.016	0.102	
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 11-15
GSM/UMTS/CDMA Body-Worn SAR Data

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Tuner State	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.													(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	33.7	33.65	0.15	10 mm	Ant 1	N/A	11254	1	1:8.3	back	0.022	1.012	0.022	
836.60	190	GSM 850	GPRS	32.2	32.11	0.06	10 mm	Ant 1	N/A	11254	2	1:4.15	back	0.028	1.021	0.029	A15
1880.00	661	GSM 1900	GSM	30.7	30.68	0.09	10 mm	Ant 2	N/A	11247	1	1:8.3	back	0.264	1.005	0.265	
1880.00	661	GSM 1900	GPRS	29.2	29.19	0.07	10 mm	Ant 2	N/A	11247	2	1:4.15	back	0.373	1.002	0.374	A17
836.60	4183	UMTS 850	RMC	24.7	24.63	-0.13	10 mm	Ant 1	N/A	11247	N/A	1:1	back	0.322	1.016	0.327	A19
1732.40	1412	UMTS 1750	RMC	24.7	24.70	-0.04	10 mm	Ant 2	N/A	11247	N/A	1:1	back	0.392	1.000	0.392	A21
1880.00	9400	UMTS 1900	RMC	24.7	24.50	0.19	10 mm	Ant 2	N/A	11247	N/A	1:1	back	0.469	1.047	0.491	A23
836.52	384	Cell. CDMA	TDSO / SO32	24.7	24.68	-0.03	10 mm	Ant 1	2	11304	N/A	1:1	back	0.330	1.005	0.332	A25
836.52	384	Cell. CDMA	TDSO / SO32	24.7	24.68	0.02	10 mm	Ant 3	N/A	11254	N/A	1:1	back	0.178	1.005	0.179	
1880.00	600	PCS CDMA	TDSO / SO32	24.7	24.65	0.05	10 mm	Ant 2	N/A	11247	N/A	1:1	back	0.543	1.012	0.550	A27
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 11-16
LTE Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna Config.	Tuner State	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	-0.07	0	Ant 1	2	11304	QPSK	1	49	10 mm	back	1:1	0.260	1.000	0.260	A29
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	-0.06	1	Ant 1	2	11304	QPSK	25	0	10 mm	back	1:1	0.189	1.107	0.209	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	-0.16	0	Ant 3	N/A	11304	QPSK	1	49	10 mm	back	1:1	0.108	1.000	0.108	
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	-0.04	1	Ant 3	N/A	11304	QPSK	25	0	10 mm	back	1:1	0.072	1.107	0.080	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	-0.15	0	Ant 1	43	11304	QPSK	1	49	10 mm	back	1:1	0.364	1.005	0.366	A31
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	0.02	1	Ant 1	43	11304	QPSK	25	25	10 mm	back	1:1	0.240	1.143	0.274	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	0.01	0	Ant 3	N/A	11304	QPSK	1	49	10 mm	back	1:1	0.141	1.005	0.142	
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	0.06	1	Ant 3	N/A	11304	QPSK	25	25	10 mm	back	1:1	0.098	1.143	0.112	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	-0.03	0	Ant 1	2	11304	QPSK	1	25	10 mm	back	1:1	0.377	1.005	0.379	A33
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	-0.05	1	Ant 1	2	11304	QPSK	25	0	10 mm	back	1:1	0.284	1.026	0.291	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	-0.04	0	Ant 3	N/A	11304	QPSK	1	25	10 mm	back	1:1	0.197	1.005	0.198	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	0.08	1	Ant 3	N/A	11304	QPSK	25	0	10 mm	back	1:1	0.152	1.026	0.156	
1770.00	132572	High	LTE Band 66 (AWS)	20	25.0	25.00	0.18	0	Ant 2	N/A	11288	QPSK	1	50	10 mm	back	1:1	0.593	1.000	**0.593**	A35
1770.00	132572	High	LTE Band 66 (AWS)	20	24.0	23.79	-0.01	1	Ant 2	N/A	11288	QPSK	50	0	10 mm	back	1:1	0.467	1.050	0.490	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	0.09	0	Ant 1	N/A	11288	QPSK	1	0	10 mm	back	1:1	0.579	1.002	0.580	A37
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.88	0.10	1	Ant 1	N/A	11288	QPSK	50	25	10 mm	back	1:1	0.473	1.028	0.486	
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
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)	
2447	8	802.11b	DSSS	22	20.0	19.45	-0.01	10 mm	Primary	11387	1	back	99.9	0.367	0.249	1.135	1.001	**0.283**	A39
2437	6	802.11b	DSSS	22	20.0	19.74	0.13	10 mm	Secondary	11387	1	back	99.9	0.299	0.218	1.062	1.001	0.232	
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
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)	
5260	52	802.11a	OFDM	20	15.0	14.88	-0.19	10 mm	Primary	11395	6	back	99.4	0.050	0.021	1.028	1.006	0.022	
5260	52	802.11a	OFDM	20	14.0	13.54	0.12	10 mm	Secondary	11395	6	back	99.4	0.116	0.049	1.112	1.006	0.055	
5500	100	802.11a	OFDM	20	15.0	14.42	0.16	10 mm	Primary	11395	6	back	99.4	0.129	0.048	1.143	1.006	0.055	
5720	144	802.11a	OFDM	20	14.0	13.56	0.12	10 mm	Secondary	11395	6	back	99.4	0.141	0.056	1.107	1.006	0.062	
5745	149	802.11a	OFDM	20	15.0	14.56	0.12	10 mm	Primary	11395	6	back	99.4	0.157	0.062	1.107	1.006	**0.069**	A41
5745	149	802.11a	OFDM	20	14.0	13.65	-0.13	10 mm	Secondary	11395	6	back	99.4	0.146	0.056	1.084	1.006	0.061	
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
Bluetooth Body-Worn SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
2480	78	Bluetooth	FHSS	13.0	12.72	0.07	10 mm	11387	1	back	1:1	0.015	1.067	**0.016**	A43
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**								**Body** **1.6 W/kg (mW/g)** averaged over 1 gram							

11.3 Standalone Hotspot SAR Data

Table 11-20
GPRS/UMTS Hotspot SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	# of GPRS Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
836.60	190	GSM 850	GPRS	32.2	32.11	0.06	10 mm	Ant 1	11254	2	1:4.15	back	0.028	1.021	0.029	
836.60	190	GSM 850	GPRS	32.2	32.11	0.09	10 mm	Ant 1	11254	2	1:4.15	front	0.026	1.021	0.027	
836.60	190	GSM 850	GPRS	32.2	32.11	0.08	10 mm	Ant 1	11254	2	1:4.15	bottom	0.032	1.021	0.033	
836.60	190	GSM 850	GPRS	32.2	32.11	0.17	10 mm	Ant 1	11254	2	1:4.15	right	0.049	1.021	0.050	A16
836.60	190	GSM 850	GPRS	32.2	32.11	0.00	10 mm	Ant 1	11254	2	1:4.15	left	0.027	1.021	0.028	
1880.00	661	GSM 1900	GPRS	29.2	29.19	0.07	10 mm	Ant 2	11247	2	1:4.15	back	0.373	1.002	0.374	
1880.00	661	GSM 1900	GPRS	29.2	29.19	0.04	10 mm	Ant 2	11247	2	1:4.15	front	0.455	1.002	0.456	A18
1880.00	661	GSM 1900	GPRS	29.2	29.19	-0.15	10 mm	Ant 2	11247	2	1:4.15	bottom	0.287	1.002	0.288	
1880.00	661	GSM 1900	GPRS	29.2	29.19	-0.07	10 mm	Ant 2	11247	2	1:4.15	left	0.316	1.002	0.317	
836.60	4183	UMTS 850	RMC	24.7	24.63	-0.13	10 mm	Ant 1	11247	N/A	1:1	back	0.322	1.016	0.327	
836.60	4183	UMTS 850	RMC	24.7	24.63	-0.01	10 mm	Ant 1	11247	N/A	1:1	front	0.398	1.016	0.404	
836.60	4183	UMTS 850	RMC	24.7	24.63	-0.02	10 mm	Ant 1	11247	N/A	1:1	bottom	0.414	1.016	0.421	A20
836.60	4183	UMTS 850	RMC	24.7	24.63	0.00	10 mm	Ant 1	11247	N/A	1:1	right	0.381	1.016	0.387	
836.60	4183	UMTS 850	RMC	24.7	24.63	-0.04	10 mm	Ant 1	11247	N/A	1:1	left	0.267	1.016	0.271	
1732.40	1412	UMTS 1750	RMC	24.7	24.70	-0.04	10 mm	Ant 2	11247	N/A	1:1	back	0.392	1.000	0.392	
1732.40	1412	UMTS 1750	RMC	24.7	24.70	0.19	10 mm	Ant 2	11247	N/A	1:1	front	0.468	1.000	0.468	A22
1732.40	1412	UMTS 1750	RMC	24.7	24.70	-0.02	10 mm	Ant 2	11247	N/A	1:1	bottom	0.384	1.000	0.384	
1732.40	1412	UMTS 1750	RMC	24.7	24.70	-0.06	10 mm	Ant 2	11247	N/A	1:1	left	0.320	1.000	0.320	
1880.00	9400	UMTS 1900	RMC	24.7	24.50	0.19	10 mm	Ant 2	11247	N/A	1:1	back	0.469	1.047	0.491	
1880.00	9400	UMTS 1900	RMC	24.7	24.50	0.02	10 mm	Ant 2	11247	N/A	1:1	front	0.643	1.047	0.673	A24
1880.00	9400	UMTS 1900	RMC	24.7	24.50	0.06	10 mm	Ant 2	11247	N/A	1:1	bottom	0.394	1.047	0.413	
1880.00	9400	UMTS 1900	RMC	24.7	24.50	0.06	10 mm	Ant 2	11247	N/A	1:1	left	0.411	1.047	0.430	
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
CDMA Hotspot SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Tuner State	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
836.52	384	Cell. CDMA	EVDO Rev. 0	24.7	24.63	-0.02	10 mm	Ant 1	11304	2	1:1	back	0.346	1.016	0.352	
836.52	384	Cell. CDMA	EVDO Rev. 0	24.7	24.63	-0.02	10 mm	Ant 1	11304	2	1:1	front	0.382	1.016	0.388	
836.52	384	Cell. CDMA	EVDO Rev. 0	24.7	24.63	-0.08	10 mm	Ant 1	11304	2	1:1	bottom	0.451	1.016	0.458	A26
836.52	384	Cell. CDMA	EVDO Rev. 0	24.7	24.63	0.00	10 mm	Ant 1	11304	2	1:1	right	0.378	1.016	0.384	
836.52	384	Cell. CDMA	EVDO Rev. 0	24.7	24.63	0.01	10 mm	Ant 1	11304	2	1:1	left	0.269	1.016	0.273	
836.52	384	Cell. CDMA	EVDO Rev. 0	24.7	24.63	0.00	10 mm	Ant 3	11254	N/A	1:1	back	0.169	1.016	0.172	
836.52	384	Cell. CDMA	EVDO Rev. 0	24.7	24.63	0.01	10 mm	Ant 3	11254	N/A	1:1	front	0.206	1.016	0.209	
836.52	384	Cell. CDMA	EVDO Rev. 0	24.7	24.63	0.02	10 mm	Ant 3	11254	N/A	1:1	top	0.193	1.016	0.196	
836.52	384	Cell. CDMA	EVDO Rev. 0	24.7	24.63	-0.10	10 mm	Ant 3	11254	N/A	1:1	right	0.102	1.016	0.104	
836.52	384	Cell. CDMA	EVDO Rev. 0	24.7	24.63	-0.03	10 mm	Ant 3	11254	N/A	1:1	left	0.059	1.016	0.060	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.60	0.05	10 mm	Ant 2	11247	N/A	1:1	back	0.527	1.023	0.539	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.60	0.00	10 mm	Ant 2	11247	N/A	1:1	front	0.639	1.023	0.654	A28
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.60	0.00	10 mm	Ant 2	11247	N/A	1:1	bottom	0.424	1.023	0.434	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.7	24.60	0.00	10 mm	Ant 2	11247	N/A	1:1	left	0.448	1.023	0.458	
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 12 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna Config.	Tuner State	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	-0.07	0	Ant 1	2	11304	QPSK	1	49	10 mm	back	1:1	0.260	1.000	0.260	
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	-0.06	1	Ant 1	2	11304	QPSK	25	0	10 mm	back	1:1	0.189	1.107	0.209	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	0.06	0	Ant 1	2	11304	QPSK	1	49	10 mm	front	1:1	0.254	1.000	0.254	
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	-0.02	1	Ant 1	2	11304	QPSK	25	0	10 mm	front	1:1	0.184	1.107	0.204	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	-0.06	0	Ant 1	2	11304	QPSK	1	49	10 mm	bottom	1:1	0.213	1.000	0.213	
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	-0.08	1	Ant 1	2	11304	QPSK	25	0	10 mm	bottom	1:1	0.147	1.107	0.163	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	-0.03	0	Ant 1	2	11304	QPSK	1	49	10 mm	right	1:1	0.394	1.000	0.394	A30
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	-0.03	1	Ant 1	2	11304	QPSK	25	0	10 mm	right	1:1	0.321	1.107	0.355	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	-0.07	0	Ant 1	2	11304	QPSK	1	49	10 mm	left	1:1	0.178	1.000	0.178	
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	-0.15	1	Ant 1	2	11304	QPSK	25	0	10 mm	left	1:1	0.124	1.107	0.137	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	-0.16	0	Ant 3	N/A	11304	QPSK	1	49	10 mm	back	1:1	0.108	1.000	0.108	
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	-0.04	1	Ant 3	N/A	11304	QPSK	25	0	10 mm	back	1:1	0.072	1.107	0.080	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	0.02	0	Ant 3	N/A	11304	QPSK	1	49	10 mm	front	1:1	0.105	1.000	0.105	
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	-0.04	1	Ant 3	N/A	11304	QPSK	25	0	10 mm	front	1:1	0.083	1.107	0.092	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	0.01	0	Ant 3	N/A	11304	QPSK	1	49	10 mm	top	1:1	0.112	1.000	0.112	
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	-0.04	1	Ant 3	N/A	11304	QPSK	25	0	10 mm	top	1:1	0.077	1.107	0.085	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	0.05	0	Ant 3	N/A	11304	QPSK	1	49	10 mm	right	1:1	0.086	1.000	0.086	
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	-0.06	1	Ant 3	N/A	11304	QPSK	25	0	10 mm	right	1:1	0.078	1.107	0.086	
707.50	23095	Mid	LTE Band 12	10	24.7	24.70	0.10	0	Ant 3	N/A	11304	QPSK	1	49	10 mm	left	1:1	0.090	1.000	0.090	
707.50	23095	Mid	LTE Band 12	10	23.7	23.26	0.02	1	Ant 3	N/A	11304	QPSK	25	0	10 mm	left	1:1	0.077	1.107	0.085	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Body 1.6 W/kg (mW/g) averaged over 1 gram					

Table 11-23
LTE Band 13 Hotspot SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna Config.	Tuner State	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.																				
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	-0.15	0	Ant 1	43	11304	QPSK	1	49	10 mm	back	1:1	0.364	1.005	0.366	
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	0.02	1	Ant 1	43	11304	QPSK	25	25	10 mm	back	1:1	0.240	1.143	0.274	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	-0.12	0	Ant 1	43	11304	QPSK	1	49	10 mm	front	1:1	0.311	1.005	0.313	
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	0.01	1	Ant 1	43	11304	QPSK	25	25	10 mm	front	1:1	0.199	1.143	0.227	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	-0.06	0	Ant 1	43	11304	QPSK	1	49	10 mm	bottom	1:1	0.336	1.005	0.338	
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	-0.03	1	Ant 1	43	11304	QPSK	25	25	10 mm	bottom	1:1	0.230	1.143	0.263	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	0.11	0	Ant 1	43	11304	QPSK	1	49	10 mm	right	1:1	0.445	1.005	0.447	A32
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	-0.05	1	Ant 1	43	11304	QPSK	25	25	10 mm	right	1:1	0.311	1.143	0.355	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	-0.13	0	Ant 1	43	11304	QPSK	1	49	10 mm	left	1:1	0.281	1.005	0.282	
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	0.15	1	Ant 1	43	11304	QPSK	25	25	10 mm	left	1:1	0.201	1.143	0.230	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	0.01	0	Ant 3	N/A	11304	QPSK	1	49	10 mm	back	1:1	0.141	1.005	0.142	
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	0.06	1	Ant 3	N/A	11304	QPSK	25	25	10 mm	back	1:1	0.098	1.143	0.112	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	0.02	0	Ant 3	N/A	11304	QPSK	1	49	10 mm	front	1:1	0.142	1.005	0.143	
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	0.04	1	Ant 3	N/A	11304	QPSK	25	25	10 mm	front	1:1	0.104	1.143	0.119	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	0.02	0	Ant 3	N/A	11304	QPSK	1	49	10 mm	top	1:1	0.125	1.005	0.126	
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	0.04	1	Ant 3	N/A	11304	QPSK	25	25	10 mm	top	1:1	0.086	1.143	0.098	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	0.12	0	Ant 3	N/A	11304	QPSK	1	49	10 mm	right	1:1	0.094	1.005	0.094	
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	-0.01	1	Ant 3	N/A	11304	QPSK	25	25	10 mm	right	1:1	0.065	1.143	0.074	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	-0.06	0	Ant 3	N/A	11304	QPSK	1	49	10 mm	left	1:1	0.077	1.005	0.077	
782.00	23230	Mid	LTE Band 13	10	23.7	23.12	0.06	1	Ant 3	N/A	11304	QPSK	25	25	10 mm	left	1:1	0.055	1.143	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 11-24
LTE Band 5 (Cell) Hotspot SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna Config.	Tuner State	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.																				
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	-0.03	0	Ant 1	2	11304	QPSK	1	25	10 mm	back	1:1	0.377	1.005	0.379	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	-0.05	1	Ant 1	2	11304	QPSK	25	0	10 mm	back	1:1	0.284	1.026	0.291	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	-0.05	0	Ant 1	2	11304	QPSK	1	25	10 mm	front	1:1	0.392	1.005	0.394	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	-0.09	1	Ant 1	2	11304	QPSK	25	0	10 mm	front	1:1	0.296	1.026	0.304	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	-0.08	0	Ant 1	2	11304	QPSK	1	25	10 mm	bottom	1:1	0.468	1.005	0.470	A34
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	-0.08	1	Ant 1	2	11304	QPSK	25	0	10 mm	bottom	1:1	0.350	1.026	0.359	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	-0.04	0	Ant 1	2	11304	QPSK	1	25	10 mm	right	1:1	0.411	1.005	0.413	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	-0.06	1	Ant 1	2	11304	QPSK	25	0	10 mm	right	1:1	0.310	1.026	0.318	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	-0.06	0	Ant 1	2	11304	QPSK	1	25	10 mm	left	1:1	0.289	1.005	0.290	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	0.00	1	Ant 1	2	11304	QPSK	25	0	10 mm	left	1:1	0.211	1.026	0.216	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	-0.04	0	Ant 3	N/A	11304	QPSK	1	25	10 mm	back	1:1	0.197	1.005	0.198	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	0.08	1	Ant 3	N/A	11304	QPSK	25	0	10 mm	back	1:1	0.152	1.026	0.156	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	0.02	0	Ant 3	N/A	11304	QPSK	1	25	10 mm	front	1:1	0.221	1.005	0.222	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	0.10	1	Ant 3	N/A	11304	QPSK	25	0	10 mm	front	1:1	0.167	1.026	0.171	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	0.13	0	Ant 3	N/A	11304	QPSK	1	25	10 mm	top	1:1	0.211	1.005	0.212	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	-0.02	1	Ant 3	N/A	11304	QPSK	25	0	10 mm	top	1:1	0.165	1.026	0.169	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	0.01	0	Ant 3	N/A	11304	QPSK	1	25	10 mm	right	1:1	0.093	1.005	0.093	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	0.11	1	Ant 3	N/A	11304	QPSK	25	0	10 mm	right	1:1	0.070	1.026	0.072	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.7	24.68	-0.17	0	Ant 3	N/A	11304	QPSK	1	25	10 mm	left	1:1	0.047	1.005	0.047	
836.50	20525	Mid	LTE Band 5 (Cell)	10	23.7	23.59	-0.14	1	Ant 3	N/A	11304	QPSK	25	0	10 mm	left	1:1	0.039	1.026	0.040	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Body 1.6 W/kg (mW/g) averaged over 1 gram			

Table 11-25
LTE Band 66 (AWS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1770.00	132572	High	LTE Band 66 (AWS)	20	25.0	25.00	0.18	0	11288	QPSK	1	50	10 mm	back	1:1	0.593	1.000	0.593	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.0	23.79	-0.01	1	11288	QPSK	50	0	10 mm	back	1:1	0.467	1.050	0.490	
1770.00	132572	High	LTE Band 66 (AWS)	20	25.0	25.00	0.03	0	11288	QPSK	1	50	10 mm	front	1:1	0.692	1.000	0.692	A36
1770.00	132572	High	LTE Band 66 (AWS)	20	24.0	23.79	0.06	1	11288	QPSK	50	0	10 mm	front	1:1	0.558	1.050	0.586	
1770.00	132572	High	LTE Band 66 (AWS)	20	25.0	25.00	-0.01	0	11288	QPSK	1	50	10 mm	bottom	1:1	0.455	1.000	0.455	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.0	23.79	-0.01	1	11288	QPSK	50	0	10 mm	bottom	1:1	0.380	1.050	0.399	
1770.00	132572	High	LTE Band 66 (AWS)	20	25.0	25.00	-0.02	0	11288	QPSK	1	50	10 mm	left	1:1	0.456	1.000	0.456	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.0	23.79	0.02	1	11288	QPSK	50	0	10 mm	left	1:1	0.352	1.050	0.370	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Body 1.6 W/kg (mW/g) averaged over 1 gram			

Table 11-26
LTE Band 25 (PCS) Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	0.09	0	11288	QPSK	1	0	10 mm	back	1:1	0.579	1.002	0.580	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.88	0.10	1	11288	QPSK	50	25	10 mm	back	1:1	0.473	1.028	0.486	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	0.01	0	11288	QPSK	1	0	10 mm	front	1:1	0.779	1.002	**0.781**	A38
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.88	0.02	1	11288	QPSK	50	25	10 mm	front	1:1	0.598	1.028	0.615	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	0.05	0	11288	QPSK	1	0	10 mm	bottom	1:1	0.582	1.002	0.583	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.88	0.01	1	11288	QPSK	50	25	10 mm	bottom	1:1	0.426	1.028	0.438	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.0	24.99	-0.02	0	11288	QPSK	1	0	10 mm	left	1:1	0.538	1.002	0.539	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.0	23.88	-0.02	1	11288	QPSK	50	25	10 mm	left	1:1	0.412	1.028	0.424	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Body 1.6 W/kg (mW/g) averaged over 1 gram			

Table 11-27
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)	
2447	8	802.11b	DSSS	22	20.0	19.45	-0.01	10 mm	Primary	11387	1	back	99.9	0.367	-	1.135	1.001	-	
2447	8	802.11b	DSSS	22	20.0	19.45	0.10	10 mm	Primary	11387	1	front	99.9	0.447	0.342	1.135	1.001	**0.389**	A40
2447	8	802.11b	DSSS	22	20.0	19.45	0.02	10 mm	Primary	11387	1	top	99.9	0.223	-	1.135	1.001	-	
2447	8	802.11b	DSSS	22	20.0	19.45	-0.18	10 mm	Primary	11387	1	right	99.9	0.250	-	1.135	1.001	-	
2437	6	802.11b	DSSS	22	20.0	19.74	0.13	10 mm	Secondary	11387	1	back	99.9	0.299	-	1.062	1.001	-	
2437	6	802.11b	DSSS	22	20.0	19.74	-0.20	10 mm	Secondary	11387	1	front	99.9	0.386	-	1.062	1.001	-	
2437	6	802.11b	DSSS	22	20.0	19.74	-0.07	10 mm	Secondary	11387	1	top	99.9	0.435	0.271	1.062	1.001	0.288	
2437	6	802.11b	DSSS	22	20.0	19.74	0.17	10 mm	Secondary	11387	1	right	99.9	0.033	-	1.062	1.001	-	
5240	48	802.11a	OFDM	20	15.0	14.51	0.19	10 mm	Primary	11395	6	back	99.4	0.047	-	1.119	1.006	-	
5240	48	802.11a	OFDM	20	15.0	14.51	0.14	10 mm	Primary	11395	6	front	99.4	0.047	-	1.119	1.006	-	
5240	48	802.11a	OFDM	20	15.0	14.51	0.14	10 mm	Primary	11395	6	top	99.4	0.132	0.058	1.119	1.006	0.065	
5240	48	802.11a	OFDM	20	15.0	14.51	0.19	10 mm	Primary	11395	6	right	99.4	0.018	-	1.119	1.006	-	
5200	40	802.11a	OFDM	20	14.0	13.79	-0.13	10 mm	Secondary	11395	6	back	99.4	0.106	-	1.050	1.006	-	
5200	40	802.11a	OFDM	20	14.0	13.79	0.19	10 mm	Secondary	11395	6	front	99.4	0.252	-	1.050	1.006	-	
5200	40	802.11a	OFDM	20	14.0	13.79	0.13	10 mm	Secondary	11395	6	top	99.4	0.398	0.181	1.050	1.006	**0.191**	A42
5200	40	802.11a	OFDM	20	14.0	13.79	0.18	10 mm	Secondary	11395	6	right	99.4	0.044	-	1.050	1.006	-	
5745	149	802.11a	OFDM	20	15.0	14.56	0.12	10 mm	Primary	11395	6	back	99.4	0.157	-	1.107	1.006	-	
5745	149	802.11a	OFDM	20	15.0	14.56	0.10	10 mm	Primary	11395	6	front	99.4	0.114	-	1.107	1.006	-	
5745	149	802.11a	OFDM	20	15.0	14.56	0.13	10 mm	Primary	11395	6	top	99.4	0.330	0.145	1.107	1.006	0.161	
5745	149	802.11a	OFDM	20	15.0	14.56	0.16	10 mm	Primary	11395	6	right	99.4	0.058	-	1.107	1.006	-	
5745	149	802.11a	OFDM	20	14.0	13.65	-0.13	10 mm	Secondary	11395	6	back	99.4	0.146	-	1.084	1.006	-	
5745	149	802.11a	OFDM	20	14.0	13.65	0.17	10 mm	Secondary	11395	6	front	99.4	0.100	-	1.084	1.006	-	
5745	149	802.11a	OFDM	20	14.0	13.65	0.17	10 mm	Secondary	11395	6	top	99.4	0.265	0.120	1.084	1.006	0.131	
5745	149	802.11a	OFDM	20	14.0	13.65	0.16	10 mm	Secondary	11395	6	right	99.4	0.056	-	1.084	1.006	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**										**Body** **1.6 W/kg (mW/g)** averaged over 1 gram									

11.4 Standalone Phablet SAR Data

Table 11-28
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)	
5260	52	802.11a	OFDM	20	15.0	14.88	-0.11	0 mm	Primary	11395	6	back	99.4	0.368	-	1.028	1.006	-	
5260	52	802.11a	OFDM	20	15.0	14.88	0.16	0 mm	Primary	11395	6	front	99.4	0.295	-	1.028	1.006	-	
5260	52	802.11a	OFDM	20	15.0	14.88	0.12	0 mm	Primary	11395	6	top	99.4	2.850	0.153	1.028	1.006	0.158	
5260	52	802.11a	OFDM	20	15.0	14.88	0.12	0 mm	Primary	11395	6	right	99.4	0.271	-	1.028	1.006	-	
5260	52	802.11a	OFDM	20	14.0	13.54	0.12	0 mm	Secondary	11395	6	back	99.4	0.864	-	1.112	1.006	-	
5260	52	802.11a	OFDM	20	14.0	13.54	0.18	0 mm	Secondary	11395	6	front	99.4	2.028	-	1.112	1.006	-	
5260	52	802.11a	OFDM	20	14.0	13.54	-0.11	0 mm	Secondary	11395	6	top	99.4	7.605	0.584	1.112	1.006	**0.653**	A44
5260	52	802.11a	OFDM	20	14.0	13.54	0.17	0 mm	Secondary	11395	6	right	99.4	0.285	-	1.112	1.006	-	
5500	100	802.11a	OFDM	20	15.0	14.42	0.10	0 mm	Primary	11395	6	back	99.4	2.441	-	1.143	1.006	-	
5500	100	802.11a	OFDM	20	15.0	14.42	0.12	0 mm	Primary	11395	6	front	99.4	0.682	-	1.143	1.006	-	
5500	100	802.11a	OFDM	20	15.0	14.42	0.16	0 mm	Primary	11395	6	top	99.4	5.804	0.300	1.143	1.006	0.345	
5500	100	802.11a	OFDM	20	15.0	14.42	0.02	0 mm	Primary	11395	6	right	99.4	0.749	-	1.143	1.006	-	
5720	144	802.11a	OFDM	20	14.0	13.56	0.19	0 mm	Secondary	11395	6	back	99.4	0.916	-	1.107	1.006	-	
5720	144	802.11a	OFDM	20	14.0	13.56	0.10	0 mm	Secondary	11395	6	front	99.4	1.220	-	1.107	1.006	-	
5720	144	802.11a	OFDM	20	14.0	13.56	0.02	0 mm	Secondary	11395	6	top	99.4	5.173	0.418	1.107	1.006	0.466	
5720	144	802.11a	OFDM	20	14.0	13.56	0.10	0 mm	Secondary	11395	6	right	99.4	0.124	-	1.107	1.006	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Phablet 4.0 W/kg (mW/g) averaged over 10 grams					

Table 11-29
Bluetooth Phablet SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
2480	78	Bluetooth	FHSS	13.0	12.72	-0.18	0 mm	11387	1	back	1:1	0.077	1.067	0.082	
2480	78	Bluetooth	FHSS	13.0	12.72	-0.02	0 mm	11387	1	front	1:1	0.096	1.067	**0.102**	A45
2480	78	Bluetooth	FHSS	13.0	12.72	0.12	0 mm	11387	1	top	1:1	0.067	1.067	0.071	
2480	78	Bluetooth	FHSS	13.0	12.72	-0.16	0 mm	11387	1	right	1:1	0.057	1.067	0.061	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Phablet 4.0 W/kg (mW/g) averaged over 10 grams			

11.5 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, and FCC KDB Publication 447498 D01v06.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 10 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.

7. Per FCC KDB Publication 648474 D04v01r03, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported body-worn SAR was ≤ 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were required.
8. Per FCC KDB 865664 D01v01r04, variability SAR tests were performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 13 for variability analysis.
9. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v02r01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.7 for more details).
10. Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is > 160 mm and < 200 mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg.
11. This device supports dynamic antenna tuning for some bands on Antenna 1. 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 14 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.
4. GPRS was additionally evaluated for head and body-worn exposure conditions to address possible VoIP scenarios.

CDMA Notes:

1. Head SAR for CDMA2000 mode was tested under RC3/SO55 per FCC KDB Publication 941225 D01v03r01.
2. Body-Worn SAR was tested with 1x RTT with TDSO / SO32 FCH Only. EVDO Rev0 and RevA and TDSO / SO32 FCH+SCH SAR tests were not required per the 3G SAR Test Reduction Procedure in FCC KDB Publication 941225 D01v03r01.
3. CDMA Wireless Router SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0 according to KDB 941225 D01v03r01 procedures for data devices. Wireless Router SAR tests for Subtype 2 of Rev.A and 1x RTT configurations were not required per the 3G SAR Test Reduction Policy in KDB Publication 941225 D01v03r01.
4. Head SAR was additionally evaluated using EVDO Rev. A to determine compliance for VoIP operations.
5. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg 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 8.6.4.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
3. A-MPR was disabled for all SAR tests by setting NS=01 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 KDB Publication 941225 D05Av01r02, SAR for LTE CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive.

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. 10g SAR measurement analysis apploes a factor of 2.5 to the procedures outlined above.
2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 2.4 GHz WIFI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 8.7.5 for more information.
3. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 5 GHz WIFI single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg. See Section 8.7.6 for more information. 10g SAR measurement analysis applies a factor of 2.5 to the procedures outlined above.
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. 10g SAR measurement analysis applies a factor of 2.5 to the procedures outlined above.
6. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated EMC test reports.
7. Under normal operation this device supports independent (SISO) WLAN transmission from the primary antenna for all modes and from the secondary antenna for 2.4 GHz 802.11b mode only. Other WLAN modes tested for standalone scenarios for the secondary antenna were evaluated using the test mode software provided by the manufacturer to determine simultaneous transmission SAR compliance for potential MIMO operations.

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.

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

12.3 Head SAR Simultaneous Transmission Analysis

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Primary SAR (W/kg)	2.4 GHz WLAN Secondary SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	GSM/GPRS 850	0.021	0.408	0.062	0.429	0.083	0.491
	GSM/GPRS 1900	0.218	0.408	0.062	0.626	0.280	0.688
	UMTS 850	0.271	0.408	0.062	0.679	0.333	0.741
	UMTS 1750	0.293	0.408	0.062	0.701	0.355	0.763
	UMTS 1900	0.258	0.408	0.062	0.666	0.320	0.728
	Cell. CDMA/EVDO	1.026	0.408	0.062	1.434	1.088	**1.496**
	PCS CDMA/EVDO	0.317	0.408	0.062	0.725	0.379	0.787
	LTE Band 12	0.807	0.408	0.062	1.215	0.869	1.277
	LTE Band 13	0.605	0.408	0.062	1.013	0.667	1.075
	LTE Band 5 (Cell)	0.968	0.408	0.062	1.376	1.030	1.438
	LTE Band 66 (AWS)	0.298	0.408	0.062	0.706	0.360	0.768
	LTE Band 25 (PCS)	0.325	0.408	0.062	0.733	0.387	0.795

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Primary SAR (W/kg)	5 GHz WLAN Secondary SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	GSM/GPRS 850	0.021	0.128	0.319	0.149	0.340	0.468
	GSM/GPRS 1900	0.218	0.128	0.319	0.346	0.537	0.665
	UMTS 850	0.271	0.128	0.319	0.399	0.590	0.718
	UMTS 1750	0.293	0.128	0.319	0.421	0.612	0.740
	UMTS 1900	0.258	0.128	0.319	0.386	0.577	0.705
	Cell. CDMA/EVDO	1.026	0.128	0.319	1.154	1.345	**1.473**
	PCS CDMA/EVDO	0.317	0.128	0.319	0.445	0.636	0.764
	LTE Band 12	0.807	0.128	0.319	0.935	1.126	1.254
	LTE Band 13	0.605	0.128	0.319	0.733	0.924	1.052
	LTE Band 5 (Cell)	0.968	0.128	0.319	1.096	1.287	1.415
	LTE Band 66 (AWS)	0.298	0.128	0.319	0.426	0.617	0.745
	LTE Band 25 (PCS)	0.325	0.128	0.319	0.453	0.644	0.772

12.4 Body-Worn Simultaneous Transmission Analysis

Table 12-3
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 Primary SAR (W/kg)	2.4 GHz WLAN Secondary SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	GSM/GPRS 850	0.029	0.283	0.232	0.312	0.261	0.544
	GSM/GPRS 1900	0.374	0.283	0.232	0.657	0.606	0.889
	UMTS 850	0.327	0.283	0.232	0.610	0.559	0.842
	UMTS 1750	0.392	0.283	0.232	0.675	0.624	0.907
	UMTS 1900	0.491	0.283	0.232	0.774	0.723	1.006
	Cell. CDMA	0.332	0.283	0.232	0.615	0.564	0.847
	PCS CDMA	0.550	0.283	0.232	0.833	0.782	1.065
	LTE Band 12	0.260	0.283	0.232	0.543	0.492	0.775
	LTE Band 13	0.366	0.283	0.232	0.649	0.598	0.881
	LTE Band 5 (Cell)	0.379	0.283	0.232	0.662	0.611	0.894
	LTE Band 66 (AWS)	0.593	0.283	0.232	0.876	0.825	**1.108**
	LTE Band 25 (PCS)	0.580	0.283	0.232	0.863	0.812	1.095

Table 12-4
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 Primary SAR (W/kg)	5 GHz WLAN Secondary SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	GSM/GPRS 850	0.029	0.069	0.062	0.098	0.091	0.160
	GSM/GPRS 1900	0.374	0.069	0.062	0.443	0.436	0.505
	UMTS 850	0.327	0.069	0.062	0.396	0.389	0.458
	UMTS 1750	0.392	0.069	0.062	0.461	0.454	0.523
	UMTS 1900	0.491	0.069	0.062	0.560	0.553	0.622
	Cell. CDMA	0.332	0.069	0.062	0.401	0.394	0.463
	PCS CDMA	0.550	0.069	0.062	0.619	0.612	0.681
	LTE Band 12	0.260	0.069	0.062	0.329	0.322	0.391
	LTE Band 13	0.366	0.069	0.062	0.435	0.428	0.497
	LTE Band 5 (Cell)	0.379	0.069	0.062	0.448	0.441	0.510
	LTE Band 66 (AWS)	0.593	0.069	0.062	0.662	0.655	**0.724**
	LTE Band 25 (PCS)	0.580	0.069	0.062	0.649	0.642	0.711

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body-Worn	GSM/GPRS 850	0.029	0.016	0.045
	GSM/GPRS 1900	0.374	0.016	0.390
	UMTS 850	0.327	0.016	0.343
	UMTS 1750	0.392	0.016	0.408
	UMTS 1900	0.491	0.016	0.507
	Cell. CDMA	0.332	0.016	0.348
	PCS CDMA	0.550	0.016	0.566
	LTE Band 12	0.260	0.016	0.276
	LTE Band 13	0.366	0.016	0.382
	LTE Band 5 (Cell)	0.379	0.016	0.395
	LTE Band 66 (AWS)	0.593	0.016	**0.609**
	LTE Band 25 (PCS)	0.580	0.016	0.596

12.5 Hotspot SAR Simultaneous Transmission Analysis

Table 12-6
Simultaneous Transmission Scenario (2.4 GHz Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Primary SAR (W/kg)	2.4 GHz WLAN Secondary SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	0.050	0.389	0.288	0.439	0.338	0.727
	GPRS 1900	0.456	0.389	0.288	0.845	0.744	1.133
	UMTS 850	0.421	0.389	0.288	0.810	0.709	1.098
	UMTS 1750	0.468	0.389	0.288	0.857	0.756	1.145
	UMTS 1900	0.673	0.389	0.288	1.062	0.961	1.350
	Cell. EVDO	0.458	0.389	0.288	0.847	0.746	1.135
	PCS EVDO	0.654	0.389	0.288	1.043	0.942	1.331
	LTE Band 12	0.394	0.389	0.288	0.783	0.682	1.071
	LTE Band 13	0.447	0.389	0.288	0.836	0.735	1.124
	LTE Band 5 (Cell)	0.470	0.389	0.288	0.859	0.758	1.147
	LTE Band 66 (AWS)	0.692	0.389	0.288	1.081	0.980	1.369
	LTE Band 25 (PCS)	0.781	0.389	0.288	1.170	1.069	**1.458**

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Primary SAR (W/kg)	5 GHz WLAN Secondary SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	0.050	0.161	0.191	0.211	0.241	0.402
	GPRS 1900	0.456	0.161	0.191	0.617	0.647	0.808
	UMTS 850	0.421	0.161	0.191	0.582	0.612	0.773
	UMTS 1750	0.468	0.161	0.191	0.629	0.659	0.820
	UMTS 1900	0.673	0.161	0.191	0.834	0.864	1.025
	Cell. EVDO	0.458	0.161	0.191	0.619	0.649	0.810
	PCS EVDO	0.654	0.161	0.191	0.815	0.845	1.006
	LTE Band 12	0.394	0.161	0.191	0.555	0.585	0.746
	LTE Band 13	0.447	0.161	0.191	0.608	0.638	0.799
	LTE Band 5 (Cell)	0.470	0.161	0.191	0.631	0.661	0.822
	LTE Band 66 (AWS)	0.692	0.161	0.191	0.853	0.883	1.044
	LTE Band 25 (PCS)	0.781	0.161	0.191	0.942	0.972	**1.133**

12.6 Phablet SAR Simultaneous Transmission Analysis

Table 12-8
Simultaneous Transmission Scenario with 5 GHz WLAN (Phablet at 0.0 cm)

Exposure Condition	5 GHz WLAN Primary SAR (W/kg)	5 GHz WLAN Secondary SAR (W/kg)	Σ SAR (W/kg)
	1	2	1+2
Phablet SAR	0.345	0.653	**0.998**

12.7 Simultaneous Transmission Conclusion

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

13 SAR MEASUREMENT VARIABILITY

13.1 Measurement Variability

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

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

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

Table 13-1
Head SAR Measurement Variability Results

HEAD VARIABILITY RESULTS														
Band	FREQUENCY		Mode/Band	Service	Side	Test Position	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.					(W/kg)	(W/kg)		(W/kg)		(W/kg)	
750	707.50	23095	LTE Band 12, 10 MHz Bandwidth	QPSK, 1 RB, 49 RB Offset	Right	Tilt	0.807	0.788	1.02	N/A	N/A	N/A	N/A
835	824.70	1013	Cell. CDMA	RC3 / SO55	Right	Cheek	1.010	0.933	1.08	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					Head 1.6 W/kg (mW/g) averaged over 1 gram								

13.2 Measurement Uncertainty

The measured 1g 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.

14 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.

To evaluate all of the tuner states, the 144 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. The tuner state was able to be established remotely so that the device was not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe remained stationary at the same position throughout the entire series of single point measurements for each combination.

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

Table 14-1
Supplemental Head SAR Data

Supplemental Head SAR Data							
LTE Band 12		LTE Band 13		LTE Band 5		CDMA BC0	
QPSK, 10MHz Bandwidth, 1 RB, 49 RB Offset		QPSK, 10MHz Bandwidth, 1 RB, 49 RB Offset		QPSK, 10MHz Bandwidth, 1 RB, 25 RB Offset		SO 55	
Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Right Cheek
Frequency (MHz)	707.5	Frequency (MHz)	782	Frequency (MHz)	836.5	Frequency (MHz)	836.52
Channel	23095	Channel	23230	Channel	20525	Channel	384
Measured 1g SAR (W/kg)	0.197	Measured 1g SAR (W/kg)	0.212	Measured 1g SAR (W/kg)	0.251	Measured 1g SAR (W/kg)	0.267
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 20)	0.223	Auto-tune (State 61)	0.304	Auto-tune (State 2)	0.288	Auto-tune (State 2)	0.288
Default (State 75)	0.224	Default (State 3)	0.269	Default (State 3)	0.266	Default (State 3)	0.292
State 1	0.206	State 5	0.268	State 2	0.274	State 2	0.292
State 2	0.222	State 21	0.267	State 6	0.267	State 27	0.250
State 20	0.224	State 24	0.286	State 8	0.259	State 33	0.179
State 42	0.175	State 26	0.301	State 11	0.228	State 38	0.245
State 45	0.118	State 29	0.242	State 14	0.169	State 47	0.225
State 48	0.063	State 32	0.151	State 17	0.104	State 50	0.188
State 51	0.036	State 35	0.073	State 61	0.273	State 64	0.223
State 54	0.015	State 39	0.271	State 65	0.245	State 70	0.134
State 90	0.016	State 56	0.255	State 73	0.184	State 76	0.246
State 92	0.230	State 57	0.263	State 75	0.241	State 85	0.138
State 94	0.193	State 60	0.288	State 78	0.238	State 103	0.130
State 97	0.171	State 61	0.317	State 81	0.219	State 114	0.244
State 112	0.181	State 63	0.284	State 84	0.164	State 117	0.234
State 115	0.129	State 66	0.077	State 87	0.091	State 120	0.158
State 118	0.069	State 69	0.106	State 99	0.223	State 123	0.078
State 121	0.030	State 72	0.041	State 102	0.155	State 126	0.028
State 124	0.012	State 130	0.241	State 105	0.081	State 132	0.243
State 131	0.155	State 139	0.042	State 134	0.230	State 138	0.149
State 140	0.019	State 142	0.014	State 137	0.164	State 143	0.038

Table 14-2
Supplemental Body SAR Data

Supplemental Body SAR Data							
LTE Band 12		LTE Band 13		LTE Band 5		CDMA BC0	
QPSK, 10MHz Bandwidth, 1 RB, 49 RB Offset		QPSK, 10MHz Bandwidth, 1 RB, 49 RB Offset		QPSK, 10MHz Bandwidth, 1 RB, 25 RB Offset		EVDO Rev. 0	
Test Position	Right Edge	Test Position	Right Edge	Test Position	Bottom Edge	Test Position	Bottom Edge
Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	Spacing	10 mm
Frequency (MHz)	707.5	Frequency (MHz)	782	Frequency (MHz)	836.5	Frequency (MHz)	836.52
Channel	23095	Channel	23230	Channel	20525	Channel	384
Measured 1g SAR (W/kg)	0.394	Measured 1g SAR (W/kg)	0.445	Measured 1g SAR (W/kg)	0.468	Measured 1g SAR (W/kg)	0.451
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 2)	0.520	Auto-tune (State 43)	0.611	Auto-tune (State 2)	0.801	Auto-tune (State 2)	0.771
Default (State 75)	0.474	Default (State 3)	0.605	Default (State 3)	0.806	Default (State 3)	0.766
State 2	0.521	State 22	0.604	State 2	0.802	State 2	0.778
State 4	0.499	State 25	0.590	State 19	0.532	State 3	0.766
State 7	0.443	State 28	0.539	State 36	0.355	State 9	0.753
State 10	0.327	State 31	0.388	State 40	0.649	State 12	0.618
State 13	0.194	State 34	0.236	State 43	0.733	State 15	0.451
State 16	0.100	State 43	0.611	State 46	0.732	State 18	0.257
State 20	0.488	State 44	0.603	State 49	0.640	State 37	0.498
State 23	0.442	State 55	0.344	State 52	0.484	State 41	0.677
State 30	0.187	State 59	0.599	State 58	0.643	State 79	0.572
State 53	0.061	State 68	0.302	State 62	0.686	State 82	0.553
State 67	0.120	State 74	0.499	State 71	0.373	State 88	0.179
State 77	0.447	State 95	0.528	State 100	0.594	State 91	0.377
State 80	0.379	State 98	0.472	State 108	0.076	State 93	0.616
State 83	0.232	State 101	0.261	State 113	0.650	State 96	0.657
State 86	0.129	State 104	0.131	State 116	0.699	State 106	0.153
State 89	0.060	State 107	0.053	State 122	0.268	State 111	0.600
State 109	0.303	State 110	0.527	State 125	0.110	State 129	0.582
State 128	0.454	State 119	0.243	State 127	0.329	State 135	0.633
State 141	0.038	State 144	0.027	State 133	0.680	State 136	0.572

15 EQUIPMENT LIST

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	6/28/2016	Annual	6/28/2017	MY40000670
Agilent	E4432B	ESG-D Series Signal Generator	3/5/2016	Annual	3/5/2017	US40053896
Agilent	E4438C	ESG Vector Signal Generator	3/2/2016	Annual	3/2/2017	MY47270002
Agilent	E5515C	Wireless Communications Test Set	6/18/2015	Biennial	6/18/2017	GB41450275
Agilent	E5515C	Wireless Communications Test Set	1/29/2016	Biennial	1/29/2018	GB46310798
Agilent	E8257D	(250kHz-20GHz) Signal Generator	3/2/2016	Annual	3/2/2017	MY45470194
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB44450273
Agilent	N5182A	MXG Vector Signal Generator	11/6/2015	Annual	11/6/2016	MY47420603
Agilent	N9020A	MXA Signal Analyzer	11/5/2015	Annual	11/5/2016	US46470561
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Anritsu	MA24106A	USB Power Sensor	6/2/2016	Annual	6/2/2017	1231535
Anritsu	MA24106A	USB Power Sensor	6/2/2016	Annual	6/2/2017	1231538
Anritsu	MA24106A	USB Power Sensor	2/27/2016	Annual	2/27/2017	1349509
Anritsu	MA24106A	USB Power Sensor	3/4/2016	Annual	3/4/2017	1349514
Anritsu	MA2411B	Pulse Power Sensor	12/7/2015	Annual	12/7/2016	1207364
Anritsu	MA2411B	Pulse Power Sensor	2/28/2016	Annual	2/28/2017	1207470
Anritsu	MA2481A	Power Sensor	3/3/2016	Annual	3/3/2017	2400
Anritsu	MA2481A	Power Sensor	3/3/2016	Annual	3/3/2017	5318
Anritsu	ML2495A	Power Meter	10/16/2015	Biennial	10/16/2017	941001
Anritsu	ML2496A	Power Meter	3/5/2016	Annual	3/5/2017	1351001
Anritsu	MT8820C	Radio Communication Analyzer	11/12/2015	Annual	11/12/2016	6201144418
Anritsu	MT8820C	Radio Communication Analyzer	12/4/2015	Annual	12/4/2016	6201300731
COMTech	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M1S5A00-009
COMTECH	AR85729-5/5759B	Solid State Amplifier	CBT	N/A	CBT	M3W1A00-1002
Control Company	4040	Digital Thermometer	3/15/2015	Biennial	3/15/2017	150195005
Control Company	4352	Ultra Long Stem Thermometer	3/8/2016	Biennial	3/8/2018	160261694
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
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
Pasternack	NC-100	Torque Wrench	5/21/2015	Biennial	5/21/2017	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	12/2/2015	Annual	12/2/2016	833855/0010
Rohde & Schwarz	CMW500	Radio Communication Tester	10/13/2015	Annual	10/13/2016	100976
Rohde & Schwarz	CMW500	Radio Communication Tester	4/13/2016	Annual	4/13/2017	140148
Seekonk	NC-100	Torque Wrench	11/6/2015	Biennial	11/6/2017	22313
SPEAG	D750V3	750 MHz SAR Dipole	3/16/2016	Annual	3/16/2017	1054
SPEAG	D750V3	750 MHz SAR Dipole	7/13/2016	Annual	7/13/2017	1161
SPEAG	D835V2	835 MHz SAR Dipole	7/13/2016	Annual	7/13/2017	4d047
SPEAG	D835V2	835 MHz SAR Dipole	7/14/2016	Annual	7/14/2017	4d133
SPEAG	D1750V2	1750 MHz SAR Dipole	5/9/2016	Annual	5/9/2017	1148
SPEAG	D1765V2	1765 MHz SAR Dipole	5/11/2016	Annual	5/11/2017	1008
SPEAG	D1900V2	1900 MHz SAR Dipole	7/8/2016	Annual	7/8/2017	5d080
SPEAG	D2450V2	2450 MHz SAR Dipole	8/20/2015	Annual	8/20/2016	719
SPEAG	D2450V2	2450 MHz SAR Dipole	7/25/2016	Annual	7/25/2017	981
SPEAG	D5GHzV2	5 GHz SAR Dipole	9/16/2015	Annual	9/16/2016	1191
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/19/2016	Annual	2/19/2017	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/11/2016	Annual	5/11/2017	859
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/18/2016	Annual	2/18/2017	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	10/27/2015	Annual	10/27/2016	1333
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/14/2016	Annual	3/14/2017	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/11/2015	Annual	11/11/2016	1415
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/14/2016	Annual	4/14/2017	1407
SPEAG	DAK-12	Dielectric Assessment Kit (10MHz - 3GHz)	3/1/2016	Annual	3/1/2017	1102
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/10/2016	Annual	5/10/2017	1070
SPEAG	EX3DV4	SAR Probe	2/22/2016	Annual	2/22/2017	3914
SPEAG	ES3DV3	SAR Probe	2/19/2016	Annual	2/19/2017	3318
SPEAG	ES3DV3	SAR Probe	3/18/2016	Annual	3/18/2017	3319
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	7357
SPEAG	EX3DV4	SAR Probe	4/19/2016	Annual	4/19/2017	7406
SPEAG	EX3DV4	SAR Probe	5/17/2016	Annual	5/17/2017	7409

Note:

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

16 MEASUREMENT UNCERTAINTIES

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

17 CONCLUSION

17.1 Measurement Conclusion

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

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

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APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFVS995; Type: Portable Handset; Serial: 11247

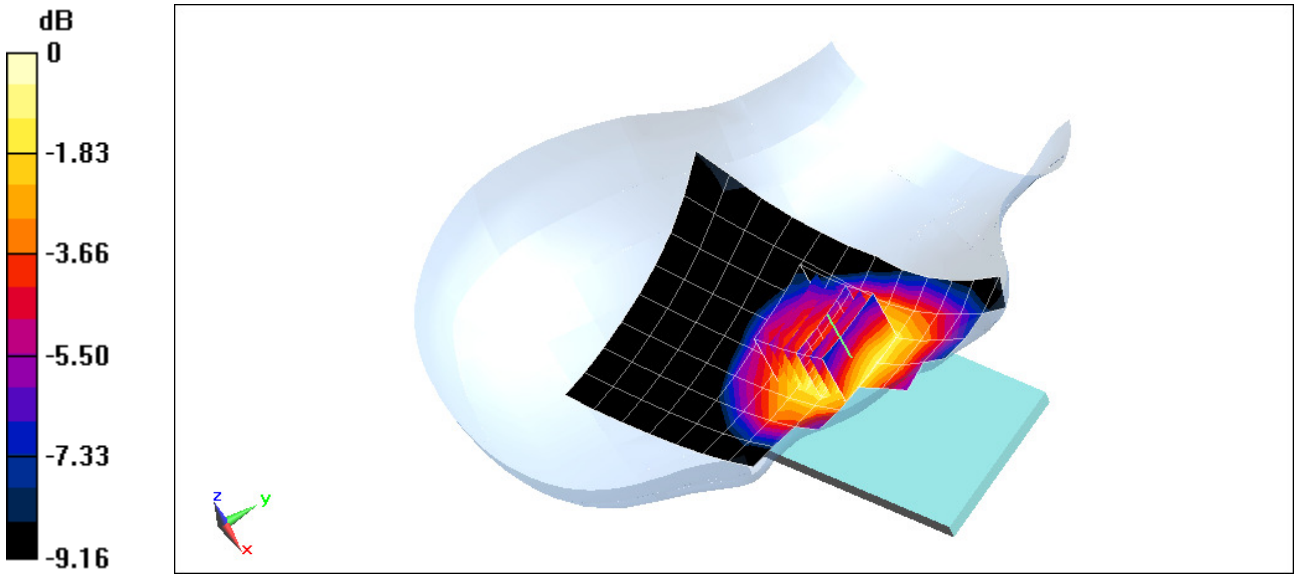
Communication System: UID 0, GSM GPRS; 2 Tx Slots; Frequency: 836.6 MHz; Duty Cycle: 1:4.15
Medium: 835 Head; Medium parameters used (interpolated):
$f = 836.6$ MHz; $\sigma = 0.886$ S/m; $\varepsilon_r = 40.228$; $\rho = 1000$ kg/m^3
Phantom section: Right Section

Test Date: 08-10-2016; Ambient Temp: 23.5°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7409; ConvF(10.04, 10.04, 10.04); Calibrated: 5/17/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/11/2016
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.706 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.0260 W/kg
SAR(1 g) = 0.021 W/kg



0 dB = 0.0239 W/kg = -16.22 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFVS995; Type: Portable Handset; Serial: 11247

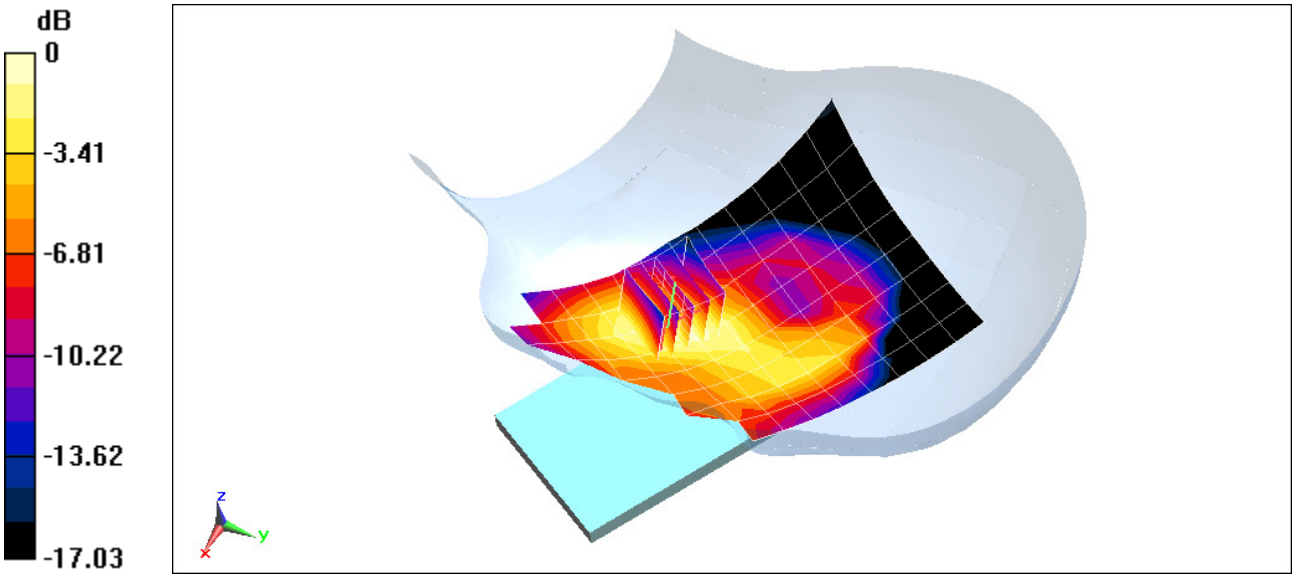
Communication System: UID 0, GSM GPRS; 2 Tx Slots; Frequency: 1880 MHz; Duty Cycle: 1:4.15
Medium: 1900 Head; Medium parameters used:
f = 1880 MHz; σ = 1.433 S/m; ε_r = 40.212; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-10-2016; Ambient Temp: 23.2°C; Tissue Temp: 22.5°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 Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: GPRS 1900, Left Head, Cheek, Mid.ch, 2 Tx Slots

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.14 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.336 W/kg
SAR(1 g) = 0.218 W/kg



0 dB = 0.252 W/kg = -5.99 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11254

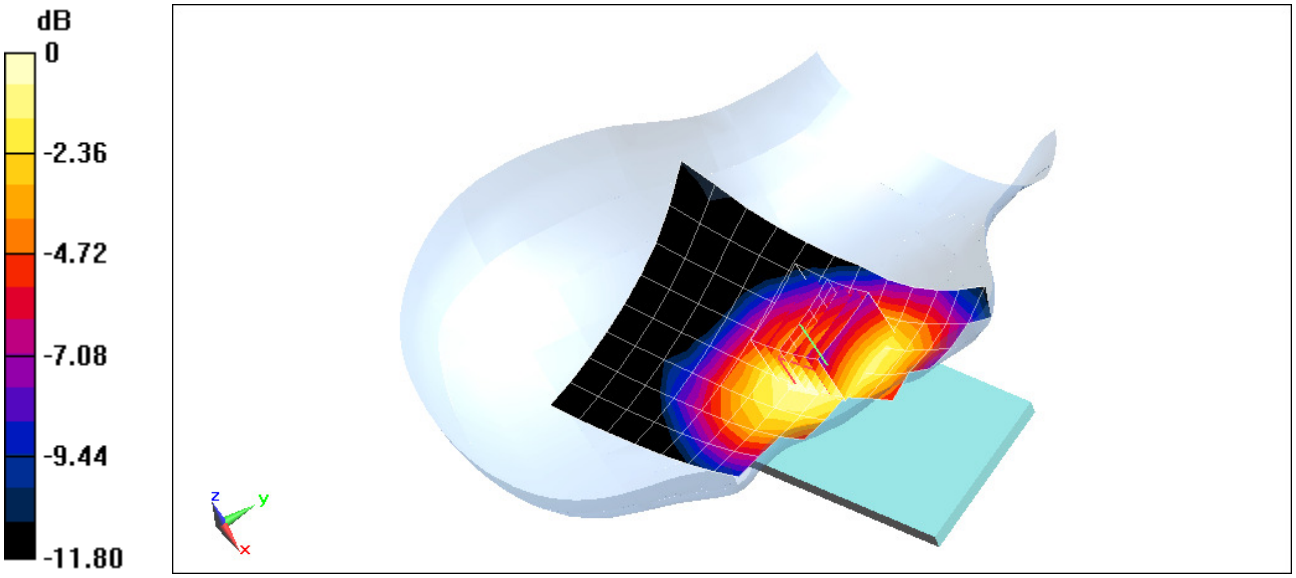
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Head; Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.886 S/m; ε_r = 40.228; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-10-2016; Ambient Temp: 23.5°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7409; ConvF(10.04, 10.04, 10.04); Calibrated: 5/17/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/11/2016
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
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 (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.52 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.340 W/kg
SAR(1 g) = 0.267 W/kg



0 dB = 0.310 W/kg = -5.09 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11254

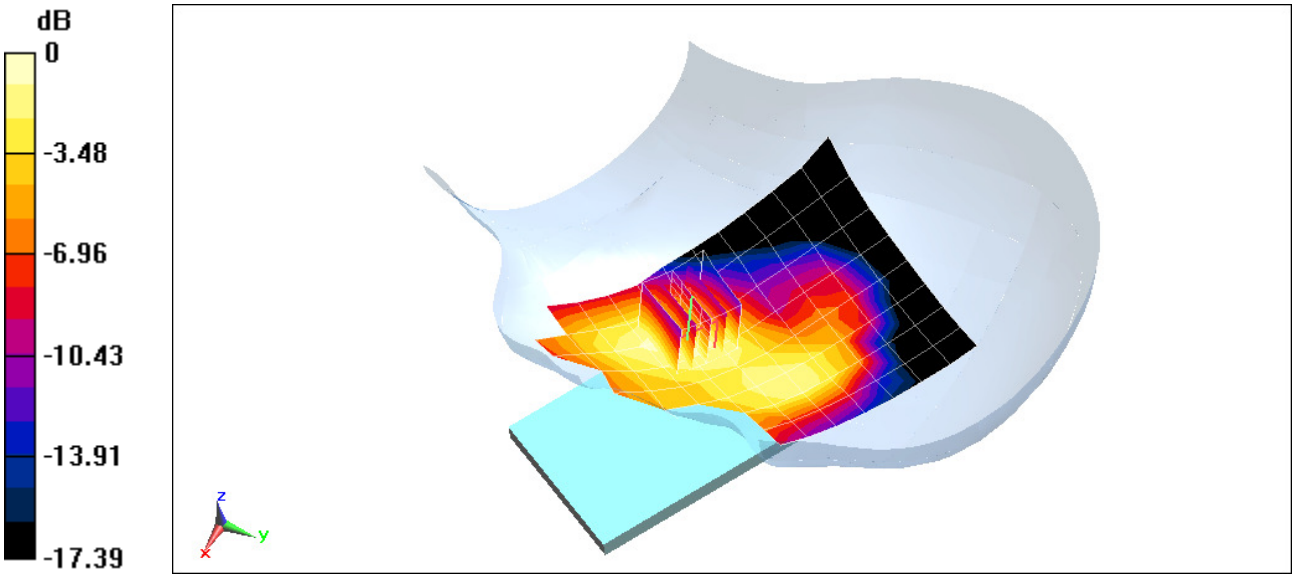
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Head; Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.351 S/m; ε_r = 38.785; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-15-2016; Ambient Temp: 23.5°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3334; ConvF(5.39, 5.39, 5.39); 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: UMTS 1750, Left Head, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.42 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.438 W/kg
SAR(1 g) = 0.293 W/kg



0 dB = 0.337 W/kg = -4.72 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11247

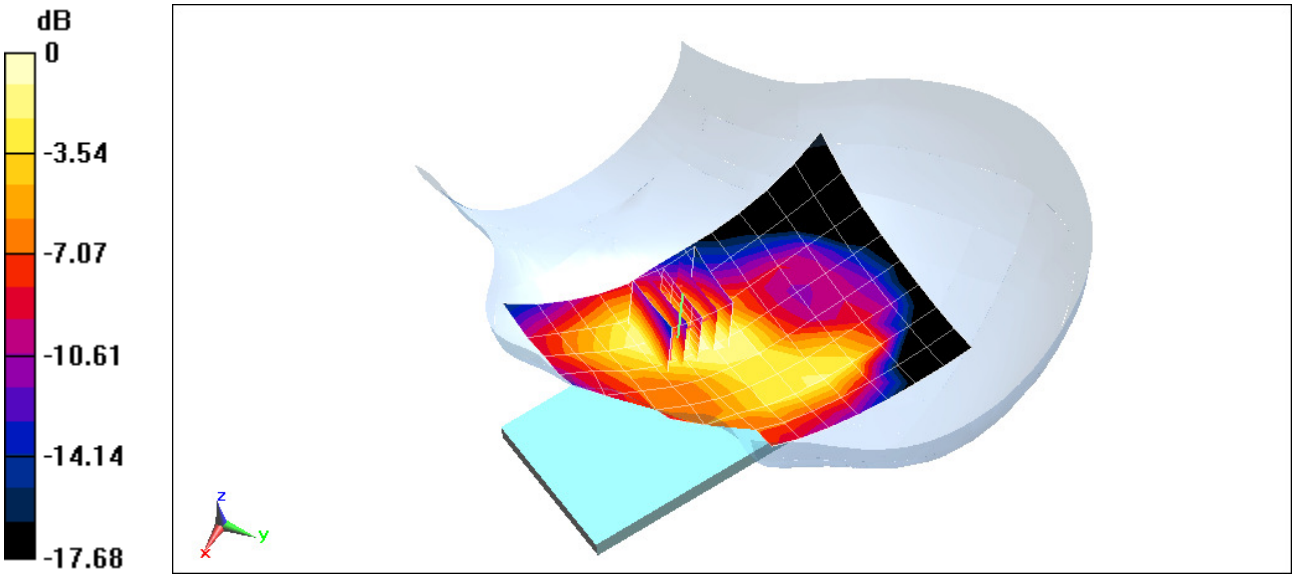
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head; Medium parameters used:
f = 1880 MHz; σ = 1.433 S/m; ε_r = 40.212; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-10-2016; Ambient Temp: 23.2°C; Tissue Temp: 22.5°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 Front; Type: QD000P40CD; Serial: TP:1758
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 = 13.67 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.367 W/kg
SAR(1 g) = 0.246 W/kg



0 dB = 0.283 W/kg = -5.48 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11254

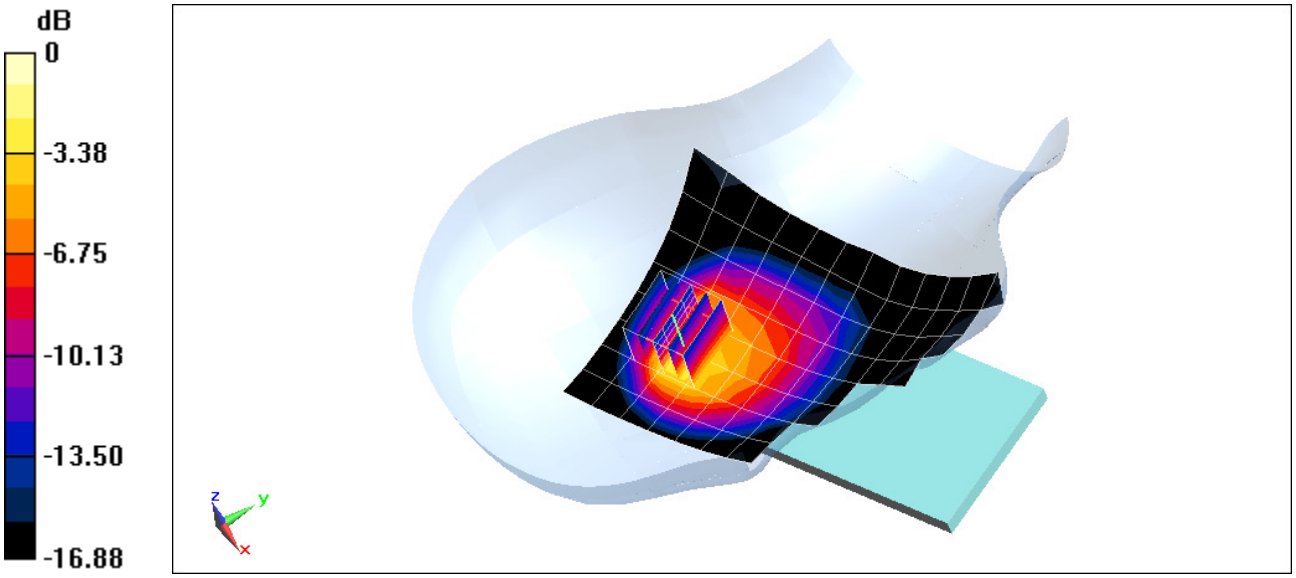
Communication System: UID 0, CDMA; Frequency: 824.7 MHz; Duty Cycle: 1:1
Medium: 835 Head; Medium parameters used (interpolated):
f = 824.7 MHz; σ = 0.876 S/m; ε_r = 40.435; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-10-2016; Ambient Temp: 23.5°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7409; ConvF(10.04, 10.04, 10.04); Calibrated: 5/17/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/11/2016
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: Cell. CDMA, Antenna 3, Rule Part 22H, Right Head, Cheek, Low.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 35.30 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 2.28 W/kg
SAR(1 g) = 1.01 W/kg



0 dB = 1.77 W/kg = 2.48 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11247

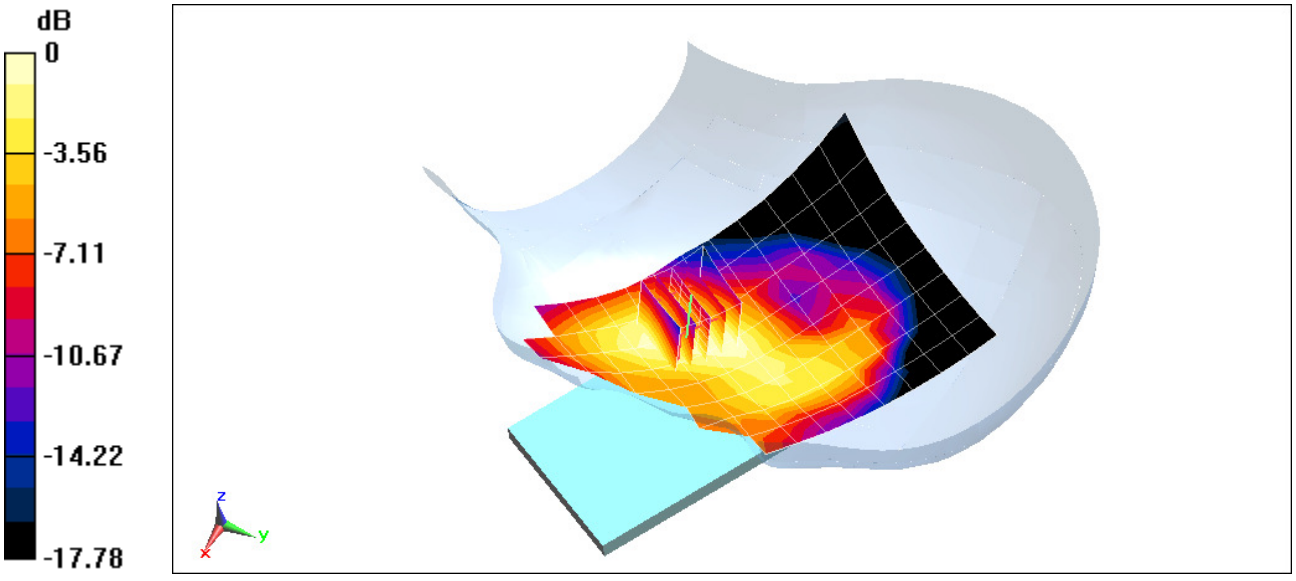
Communication System: UID 0, PCS CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head; Medium parameters used:
f = 1880 MHz; σ = 1.433 S/m; ε_r = 40.212; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-10-2016; Ambient Temp: 23.2°C; Tissue Temp: 22.5°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 Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: PCS EVDO Rev A, 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 = 15.40 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.460 W/kg
SAR(1 g) = 0.313 W/kg



0 dB = 0.354 W/kg = -4.51 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11304

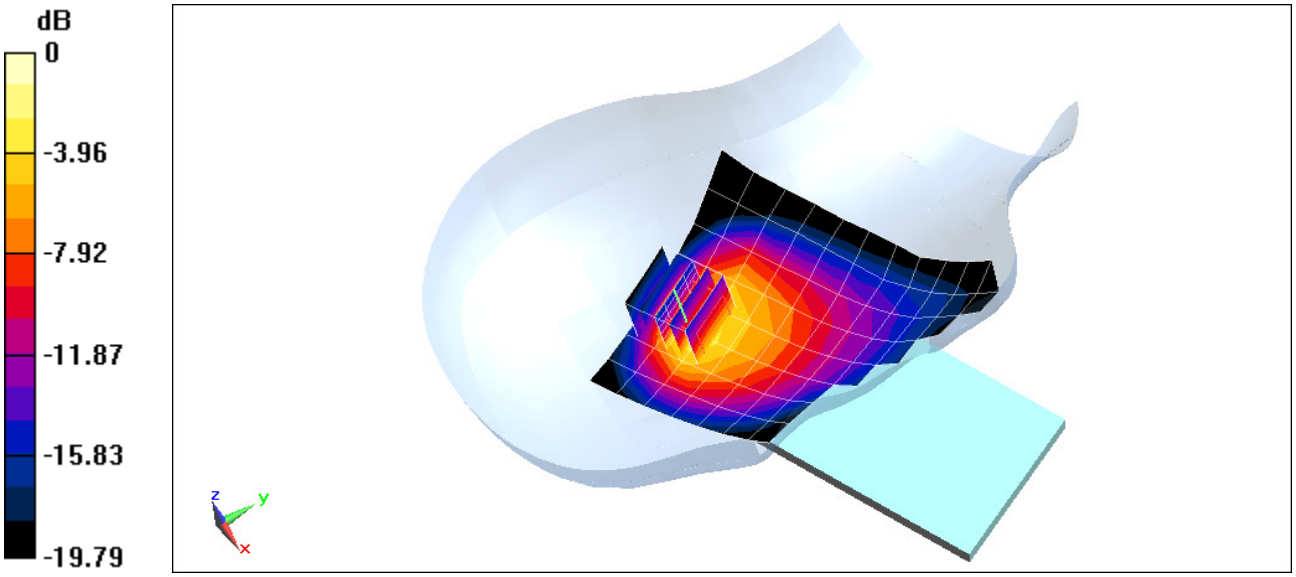
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Head; Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.855 S/m; ε_r = 41.326; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-12-2016; Ambient Temp: 21.4°C; Tissue Temp: 22.4°C

Probe: ES3DV3 - SN3334; ConvF(6.56, 6.56, 6.56); 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 12, Antenna 3, Right Head, Tilt, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 37.91 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 2.19 W/kg
SAR(1 g) = 0.807 W/kg



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

DUT: ZNFVS995; Type: Portable Handset; Serial: 11304

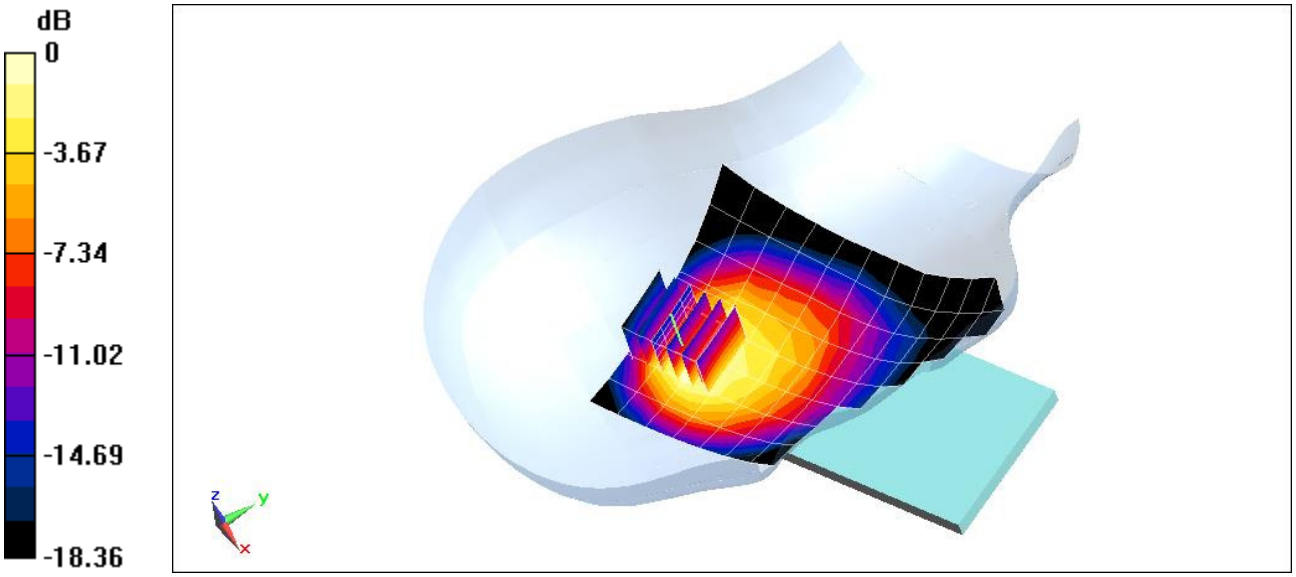
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Head; Medium parameters used (interpolated):
f = 782 MHz; σ = 0.929 S/m; ε_r = 41.378; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-18-2016; Ambient Temp: 22.7°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN7406; ConvF(10.52, 10.52, 10.52); 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 13, Antenna 3, Right Head, Cheek, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.67 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 0.602 W/kg



0 dB = 1.04 W/kg = 0.17 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11304

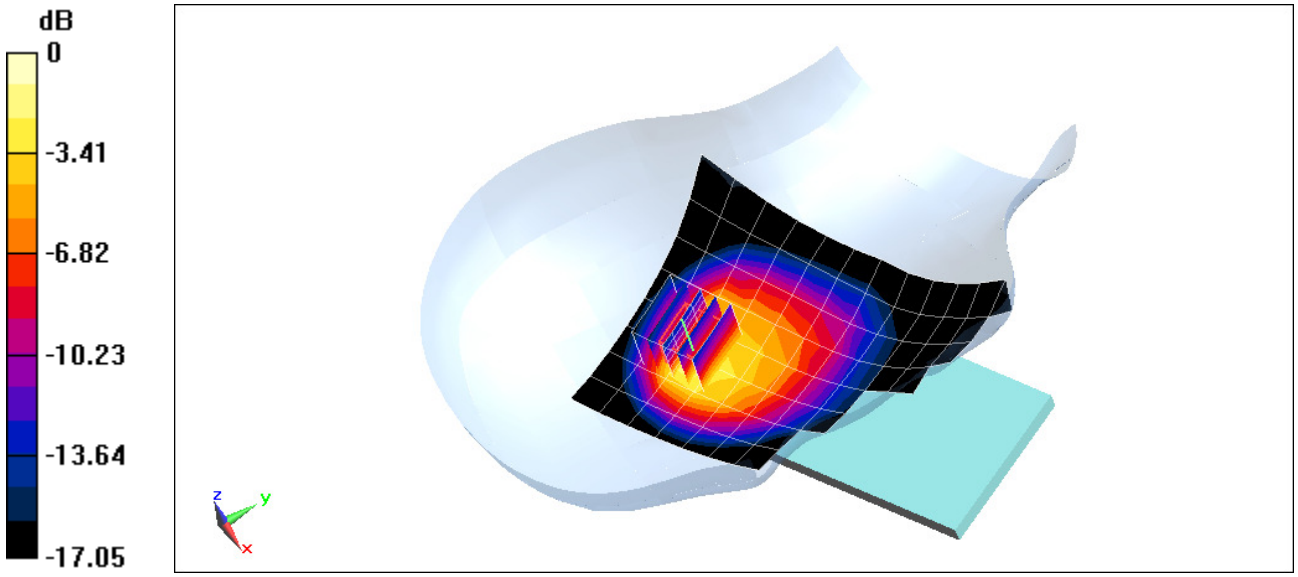
Communication System: UID 0, LTE Band 5 (Cell.); Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Head; Medium parameters used (interpolated):
f = 836.5 MHz; σ = 0.892 S/m; ε_r = 40.096; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-08-2016; Ambient Temp: 22.7°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7409; ConvF(10.04, 10.04, 10.04); Calibrated: 5/17/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/11/2016
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 5 (Cell.), Antenna 3, Right Head, Cheek, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 37.25 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 2.08 W/kg
SAR(1 g) = 0.963 W/kg



0 dB = 1.66 W/kg = 2.20 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11288

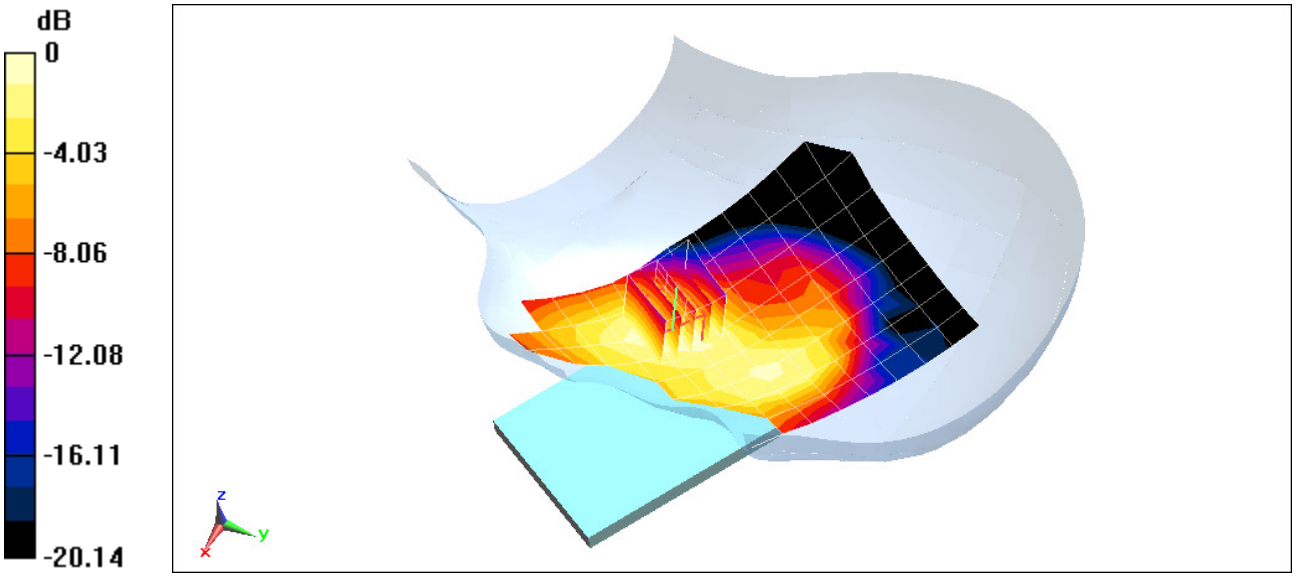
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1770 MHz; Duty Cycle: 1:1
Medium: 1750 Head; Medium parameters used (interpolated):
f = 1770 MHz; σ = 1.388 S/m; ε_r = 38.614; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-15-2016; Ambient Temp: 23.5°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3334; ConvF(5.39, 5.39, 5.39); 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 66 (AWS), Left Head, Cheek, High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.30 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.453 W/kg
SAR(1 g) = 0.298 W/kg



0 dB = 0.345 W/kg = -4.62 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11288

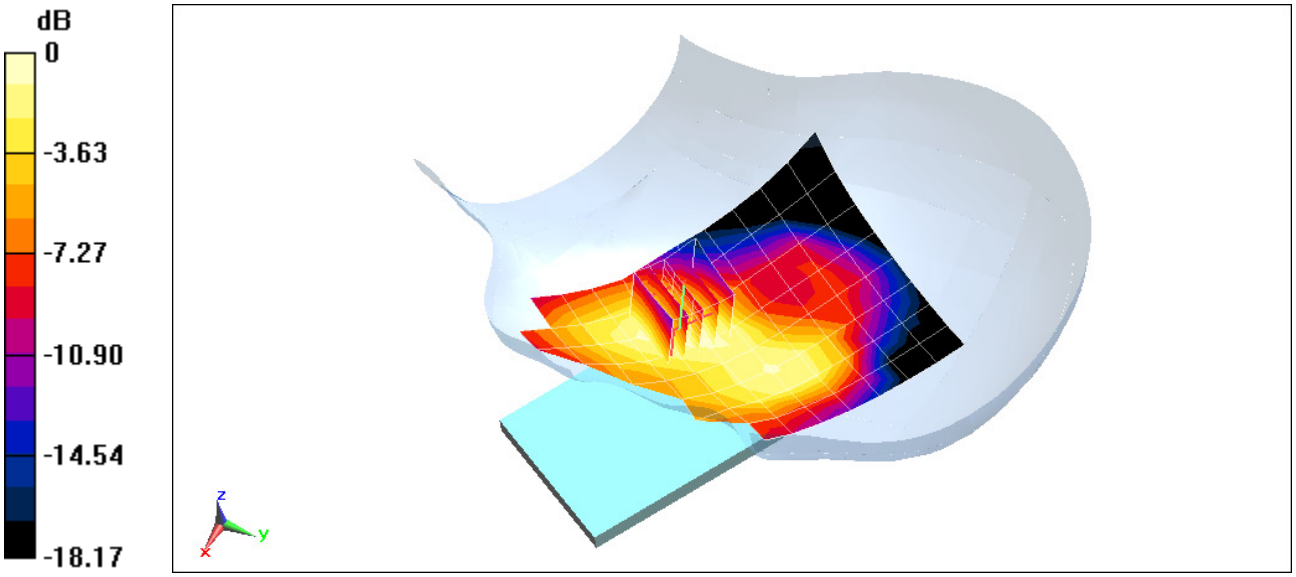
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1
Medium: 1900 Head; Medium parameters used (interpolated):
f = 1860 MHz; σ = 1.412 S/m; ε_r = 40.309; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-10-2016; Ambient Temp: 23.2°C; Tissue Temp: 22.5°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 Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.77 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.470 W/kg
SAR(1 g) = 0.324 W/kg



0 dB = 0.371 W/kg = -4.31 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11387

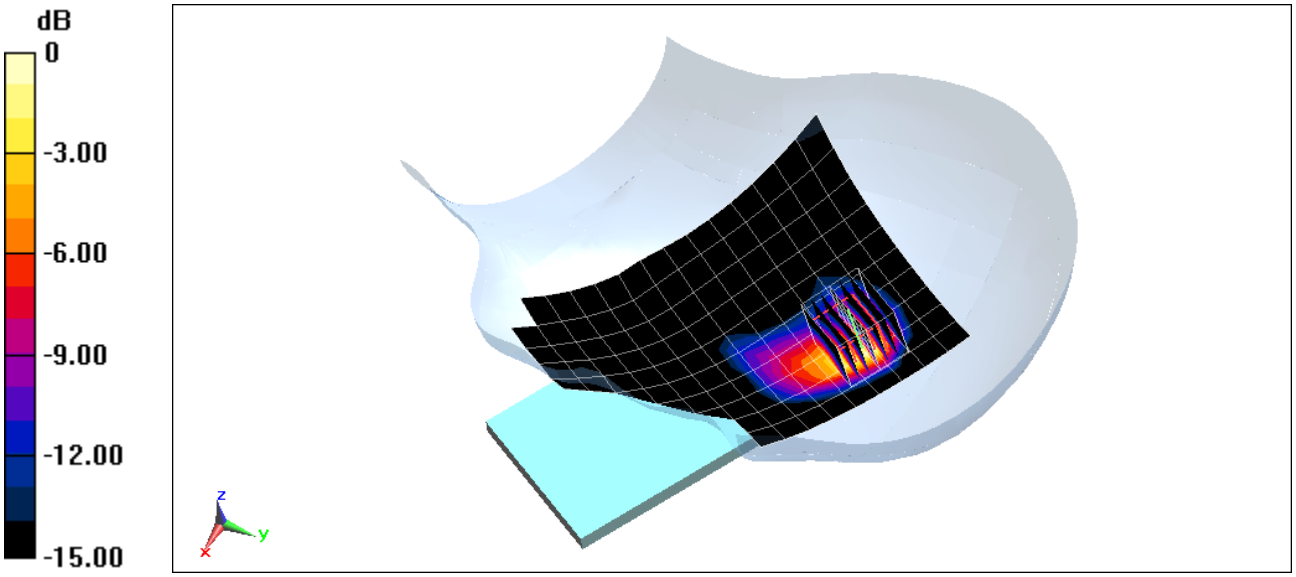
Communication System: UID 0, IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Head; Medium parameters used (interpolated):
f = 2437 MHz; σ = 1.865 S/m; ε_r = 38.265; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-08-2016; Ambient Temp: 23.0°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN7409; ConvF(6.9, 6.9, 6.9); Calibrated: 5/17/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/11/2016
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.108 V/m; Power Drift = 0.21 dB
Peak SAR (extrapolated) = 0.855 W/kg
SAR(1 g) = 0.359 W/kg



0 dB = 0.617 W/kg = -2.10 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11395

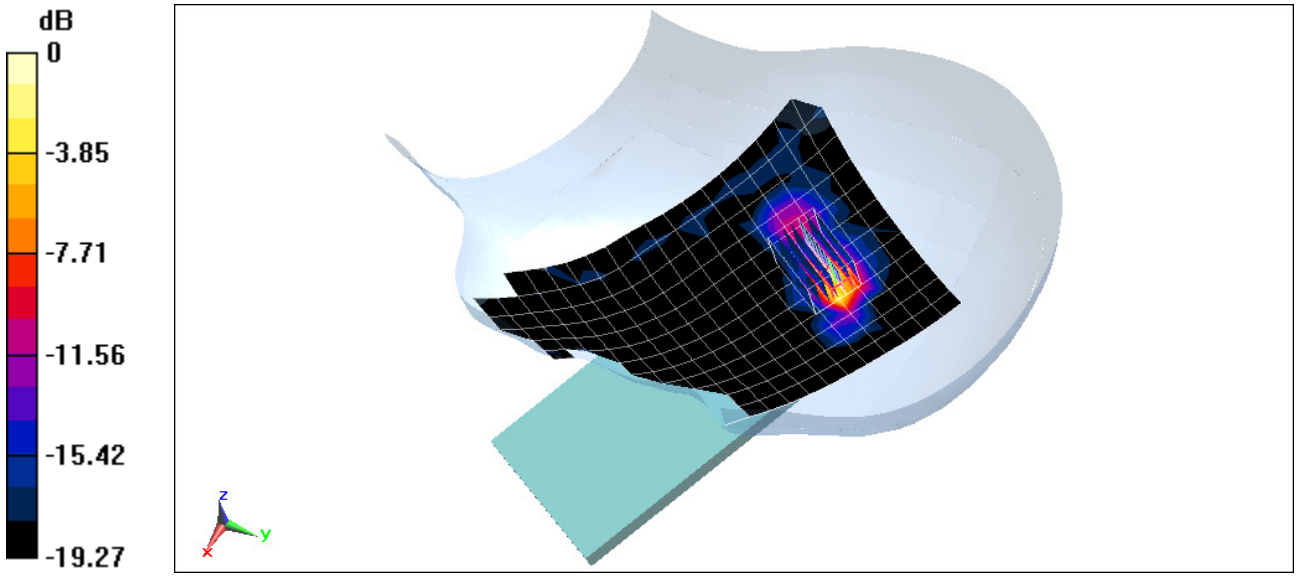
Communication System: UID 0, IEEE 802.11ac; Frequency: 5290 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head; Medium parameters used (interpolated):
f = 5290 MHz; σ = 4.519 S/m; ε_r = 36.146; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-08-2016; Ambient Temp: 20.1°C; Tissue Temp: 22.4°C

Probe: EX3DV4 - SN3914; ConvF(5.07, 5.07, 5.07); Calibrated: 2/22/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/18/2016
Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: IEEE 802.11ac, Secondary Antenna, U-NII-2A, 80 MHz Bandwidth, Left Head, Tilt, Ch 58, 29.3 Mbps

Area Scan (13x22x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (9x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 3.832 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 1.43 W/kg
SAR(1 g) = 0.259 W/kg



0 dB = 0.725 W/kg = -1.40 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11254

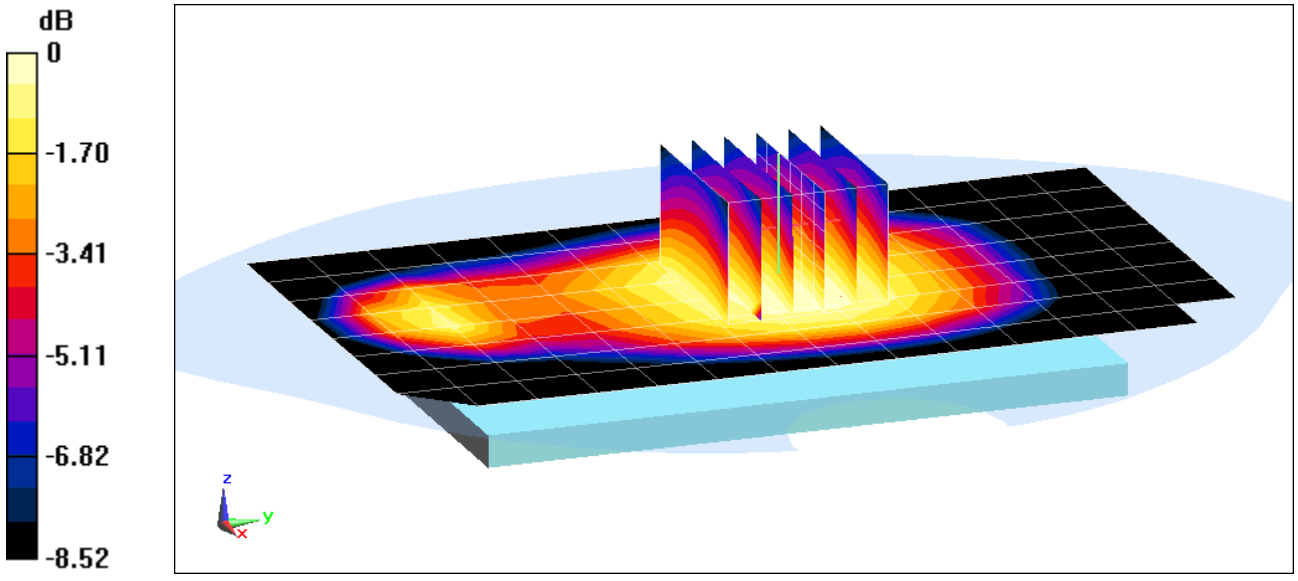
Communication System: UID 0, GSM GPRS; 2 Tx Slots; Frequency: 836.6 MHz; Duty Cycle: 1:4.15
Medium: 835 Body; Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.971 S/m; ε_r = 54.229; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-15-2016; Ambient Temp: 20.3°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3319; ConvF(6.04, 6.04, 6.04); Calibrated: 3/18/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/14/2016
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: GPRS 850, Body SAR, Back Side, Mid.ch, 2 Tx Slots

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (7x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.542 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.0360 W/kg
SAR(1 g) = 0.028 W/kg



0 dB = 0.0307 W/kg = -15.13 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11254

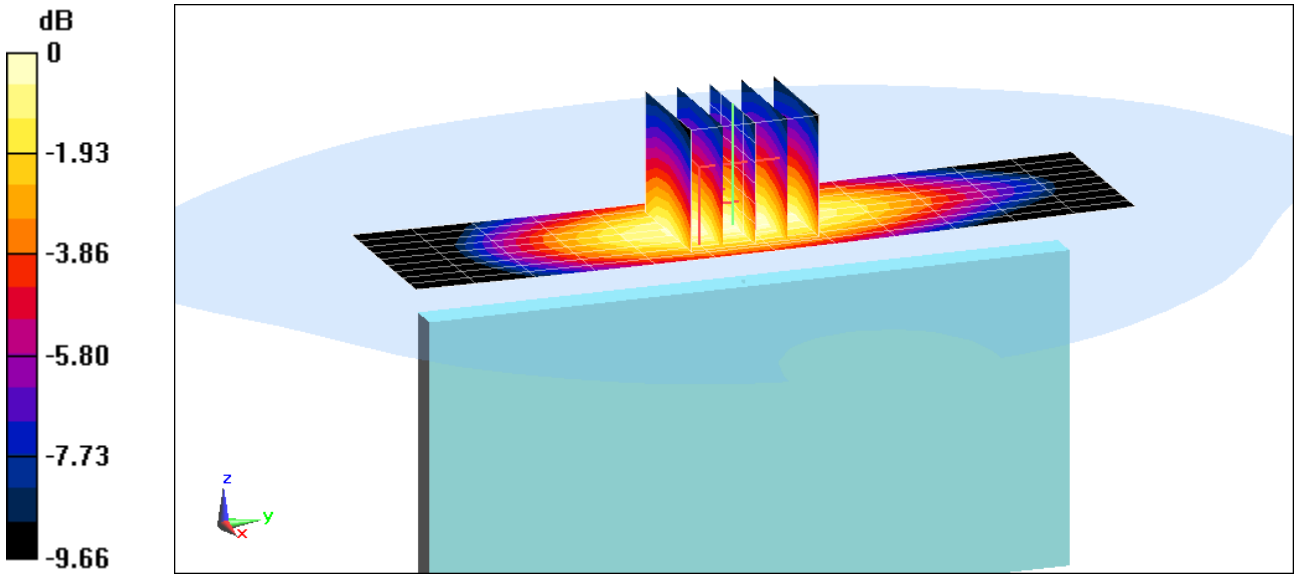
Communication System: UID 0, GSM GPRS; 2 Tx Slots; Frequency: 836.6 MHz; Duty Cycle: 1:4.15
Medium: 835 Body; Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.971 S/m; ε_r = 54.229; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-15-2016; Ambient Temp: 20.3°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3319; ConvF(6.04, 6.04, 6.04); Calibrated: 3/18/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/14/2016
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: GPRS 850, Body SAR, Right Edge, Mid.ch, 2 Tx Slots

Area Scan (10x13x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.378 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.0710 W/kg
SAR(1 g) = 0.049 W/kg



0 dB = 0.0568 W/kg = -12.46 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11247

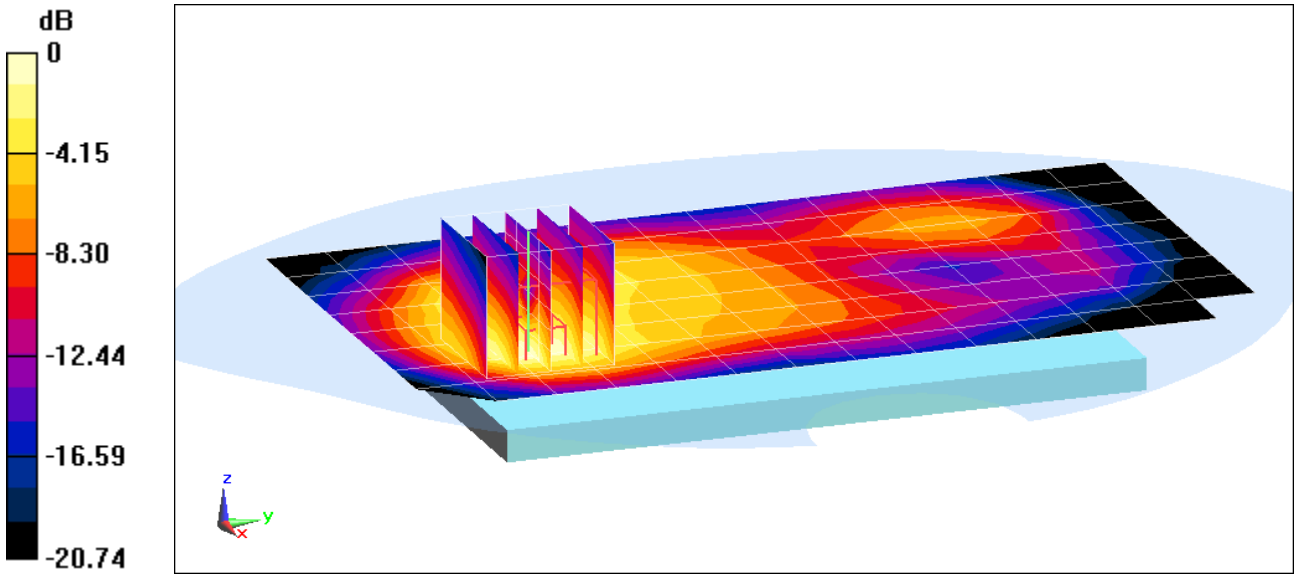
Communication System: UID 0, GSM GPRS; 2 Tx Slots; Frequency: 1880 MHz; Duty Cycle: 1:4.15
Medium: 1900 Body; Medium parameters used:
f = 1880 MHz; σ = 1.547 S/m; ε_r = 53.354; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-08-2016; Ambient Temp: 22.0°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.7, 4.7, 4.7); Calibrated: 3/18/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/14/2016
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: GPRS 1900, Body SAR, Back Side, Mid.ch, 2 Tx Slots

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.17 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.670 W/kg
SAR(1 g) = 0.373 W/kg



0 dB = 0.490 W/kg = -3.10 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11247

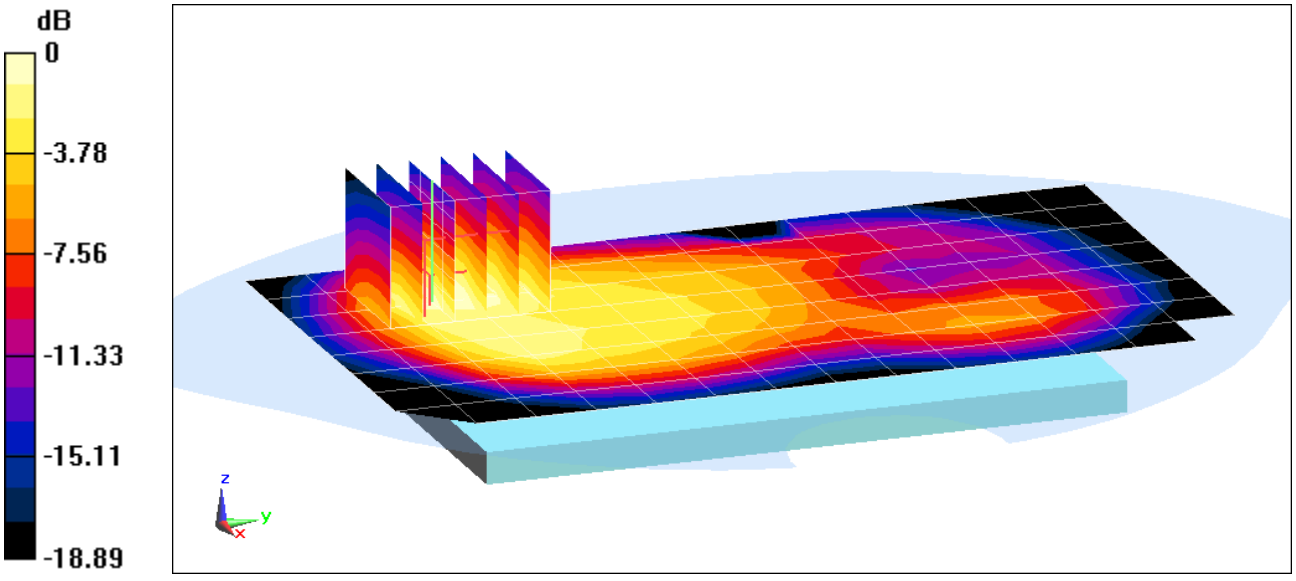
Communication System: UID 0, GSM GPRS; 2 Tx Slots; Frequency: 1880 MHz; Duty Cycle: 1:4.15
Medium: 1900 Body; Medium parameters used:
f = 1880 MHz; σ = 1.547 S/m; ε_r = 53.354; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-08-2016; Ambient Temp: 22.0°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.7, 4.7, 4.7); Calibrated: 3/18/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/14/2016
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: GPRS 1900, Body SAR, Front Side, Mid.ch, 2 Tx Slots

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.57 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.826 W/kg
SAR(1 g) = 0.455 W/kg



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

DUT: ZNFVS995; Type: Portable Handset; Serial: 11247

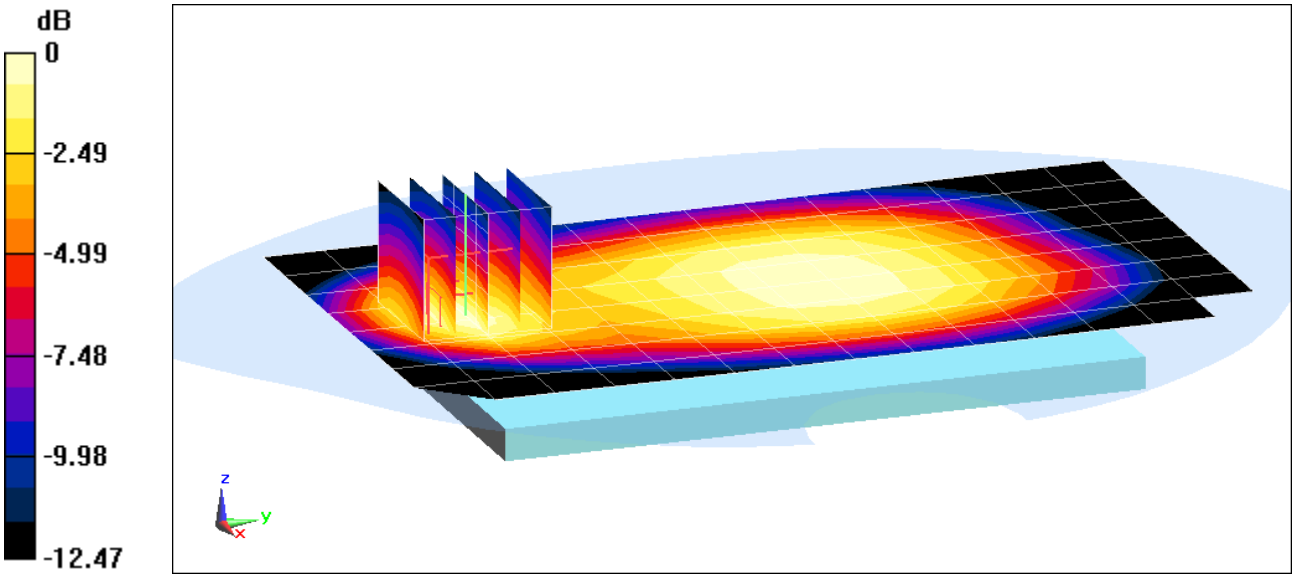
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Body; Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.971 S/m; ε_r = 54.229; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-15-2016; Ambient Temp: 20.3°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3319; ConvF(6.04, 6.04, 6.04); Calibrated: 3/18/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/14/2016
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: 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 = 19.26 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.533 W/kg
SAR(1 g) = 0.322 W/kg



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

DUT: ZNFVS995; Type: Portable Handset; Serial: 11247

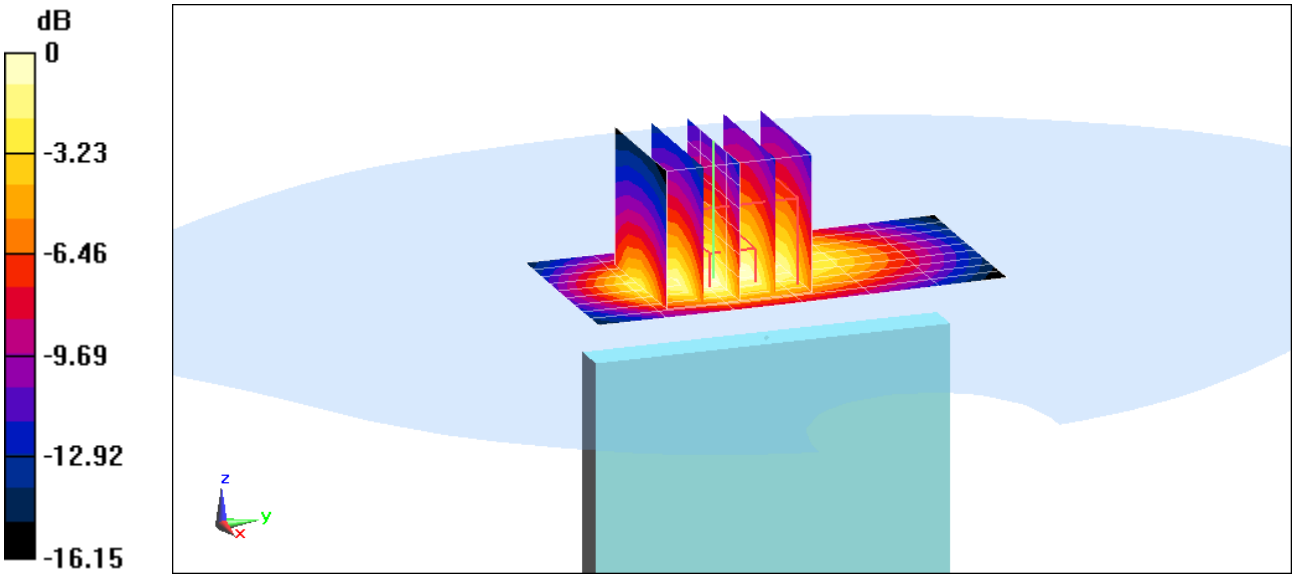
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Body; Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.971 S/m; ε_r = 54.229; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-15-2016; Ambient Temp: 20.3°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3319; ConvF(6.04, 6.04, 6.04); Calibrated: 3/18/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/14/2016
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 850, Body SAR, Bottom Edge, Mid.ch

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.83 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.729 W/kg
SAR(1 g) = 0.414 W/kg



0 dB = 0.510 W/kg = -2.92 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11247

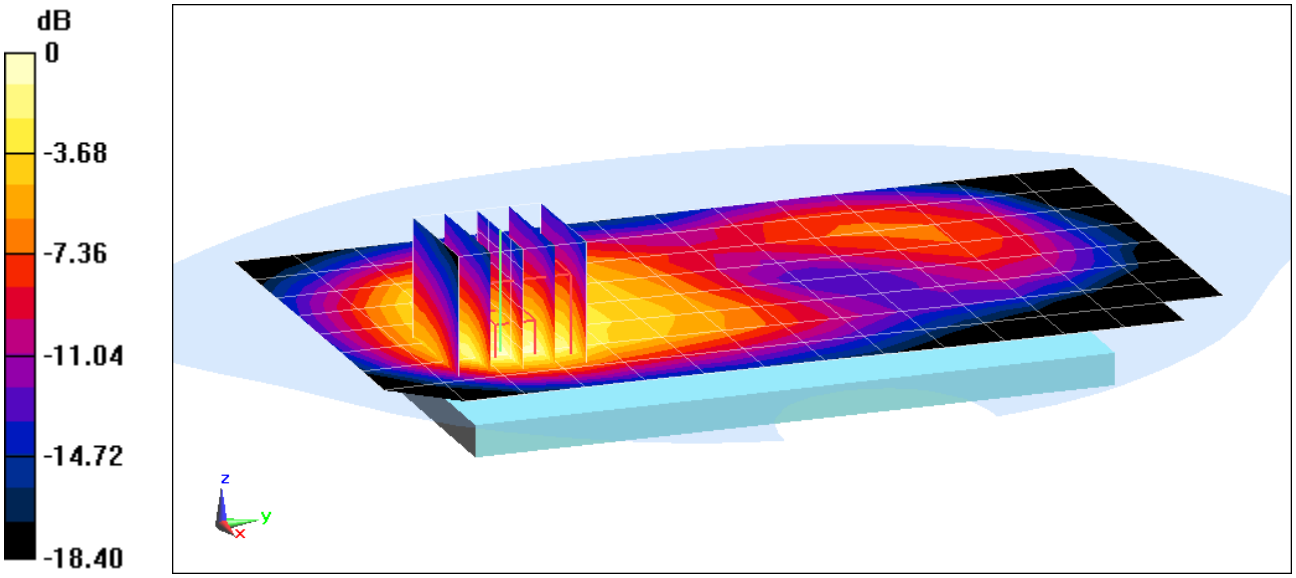
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Body; Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.454 S/m; ε_r = 51.764; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2016; Ambient Temp: 21.4°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7409; ConvF(7.72, 7.72, 7.72); Calibrated: 5/17/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/11/2016
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 1750, 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 = 17.16 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.731 W/kg
SAR(1 g) = 0.392 W/kg



0 dB = 0.605 W/kg = -2.18 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11247

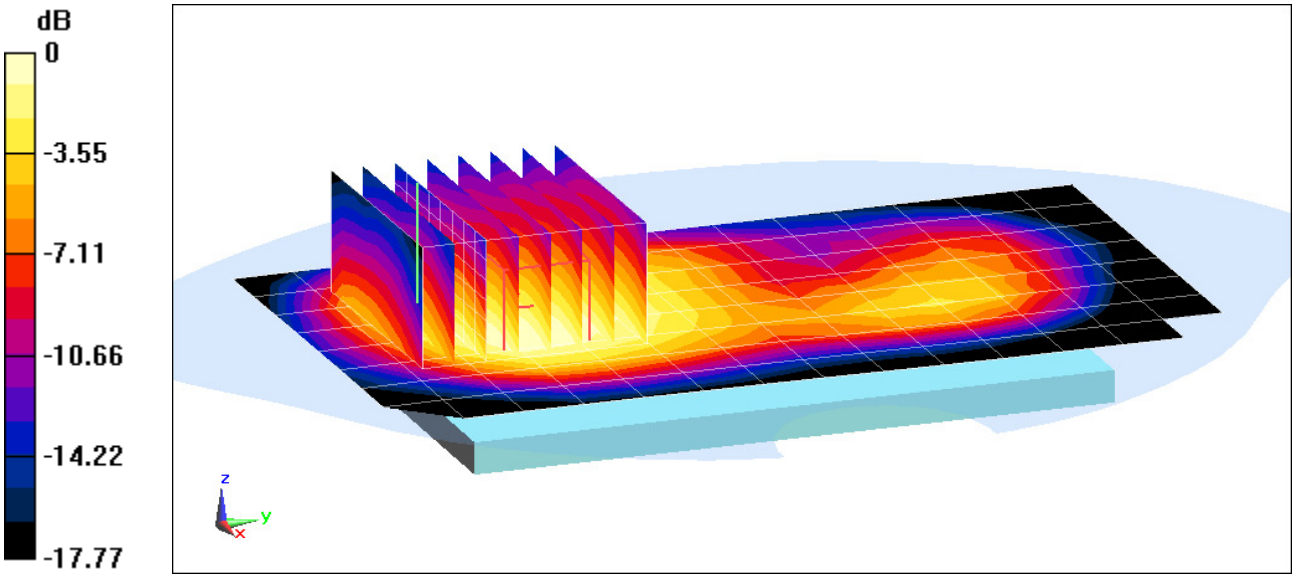
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Body; Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.454 S/m; ε_r = 51.764; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2016; Ambient Temp: 21.4°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7409; ConvF(7.72, 7.72, 7.72); Calibrated: 5/17/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/11/2016
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: UMTS 1750, Body SAR, Front Side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (9x8x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.33 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.768 W/kg
SAR(1 g) = 0.468 W/kg



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

DUT: ZNFVS995; Type: Portable Handset; Serial: 11247

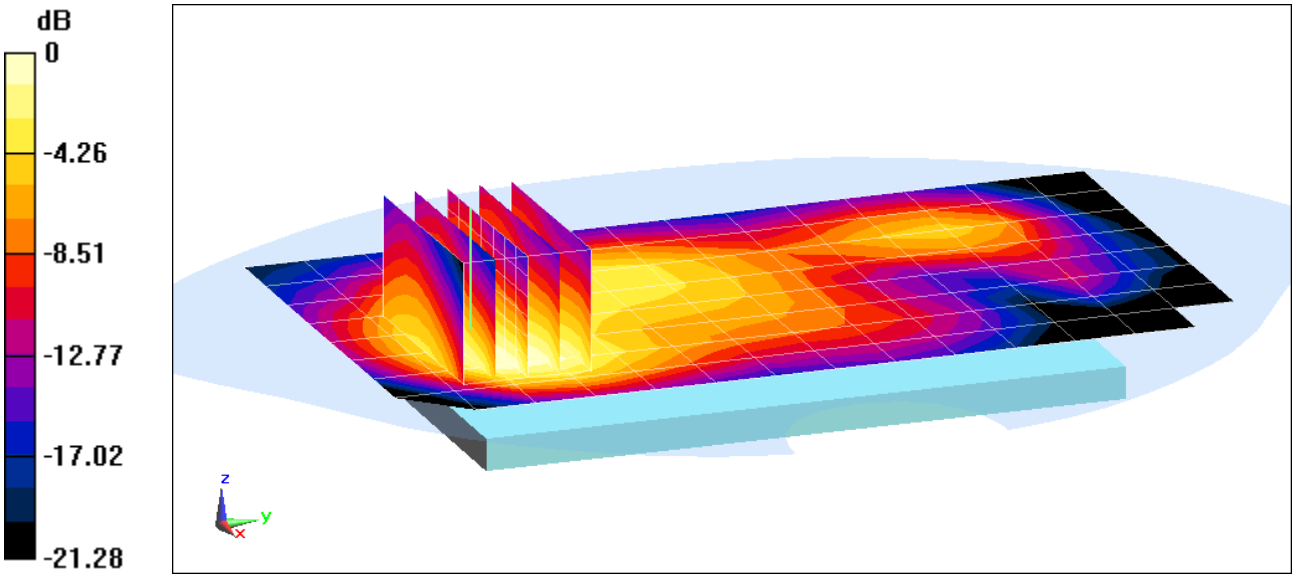
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used:
f = 1880 MHz; σ = 1.547 S/m; ε_r = 53.354; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-08-2016; Ambient Temp: 22.0°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.7, 4.7, 4.7); Calibrated: 3/18/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/14/2016
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (8x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.17 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.844 W/kg
SAR(1 g) = 0.469 W/kg



0 dB = 0.555 W/kg = -2.56 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11247

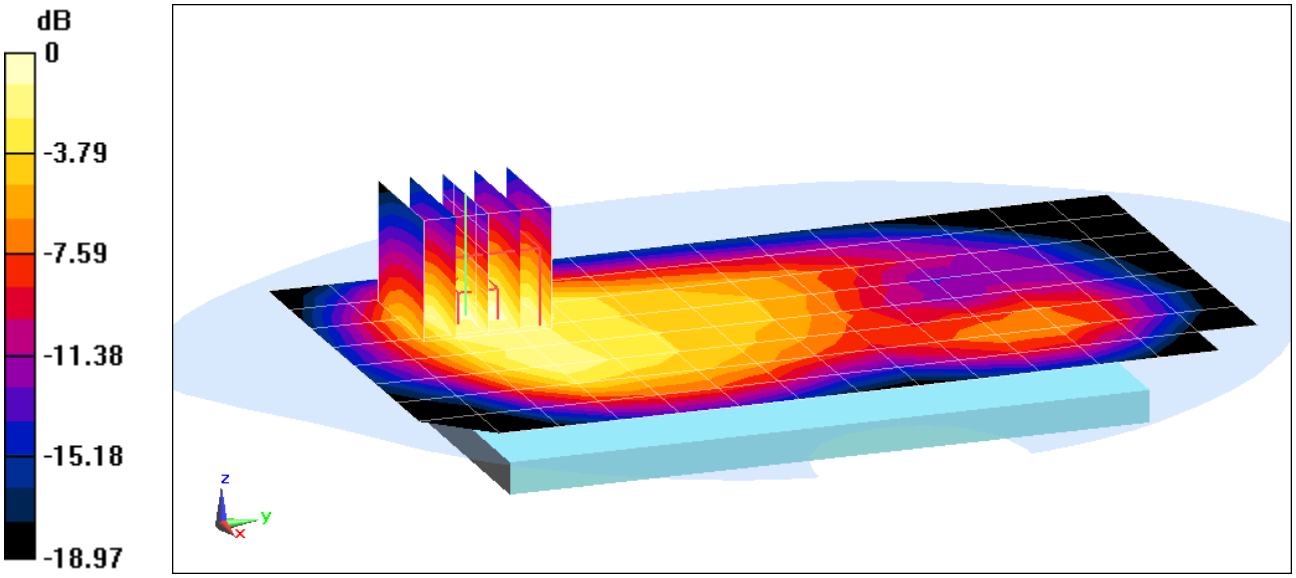
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used:
f = 1880 MHz; σ = 1.547 S/m; ε_r = 53.354; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-08-2016; Ambient Temp: 22.0°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.7, 4.7, 4.7); Calibrated: 3/18/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/14/2016
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.72 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.13 W/kg
SAR(1 g) = 0.643 W/kg



0 dB = 0.787 W/kg = -1.04 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11304

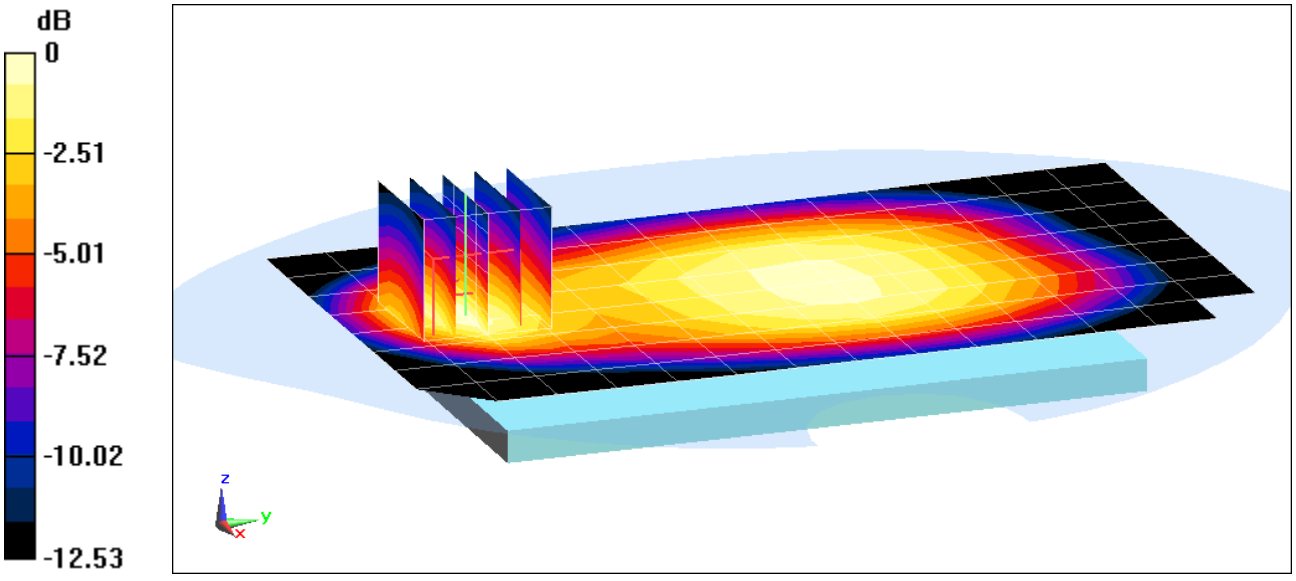
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Body; Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.971 S/m; ε_r = 54.231; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-15-2016; Ambient Temp: 20.3°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3319; ConvF(6.04, 6.04, 6.04); Calibrated: 3/18/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/14/2016
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: Cell. CDMA, Antenna 1, 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 = 19.44 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.546 W/kg
SAR(1 g) = 0.330 W/kg



0 dB = 0.398 W/kg = -4.00 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11304

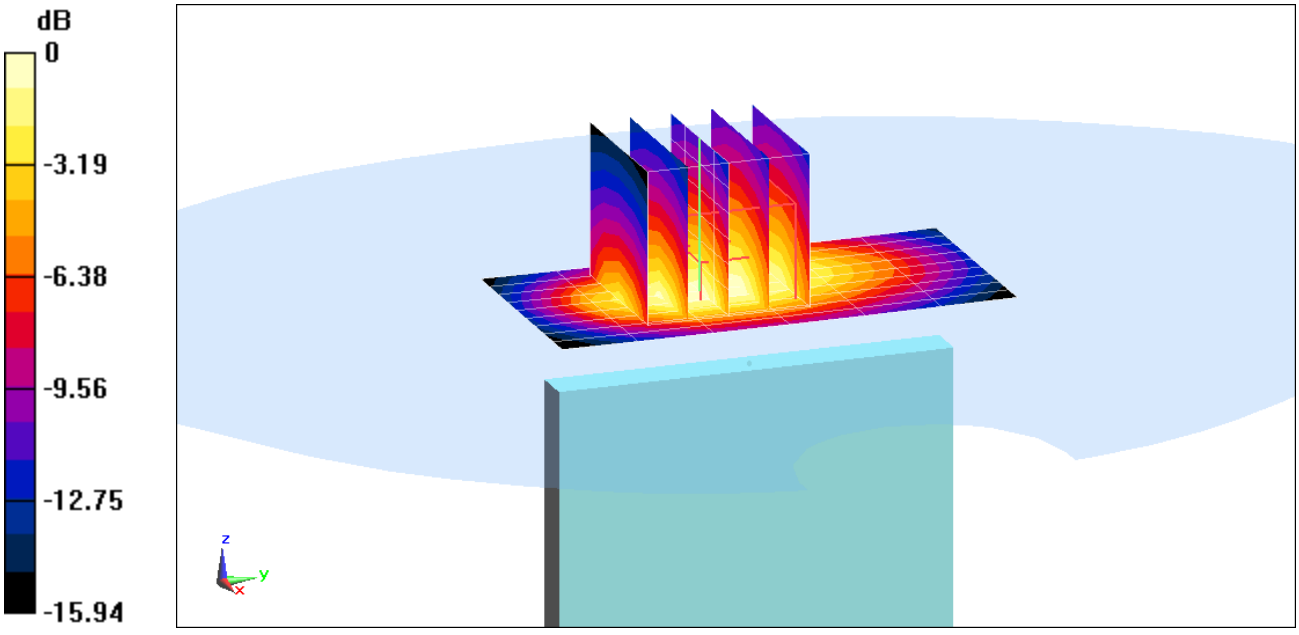
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.52 MHz; σ = 1.014 S/m; ε_r = 53.448; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-24-2016; Ambient Temp: 22.7°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3333; ConvF(6.25, 6.25, 6.25); 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: Cell. EVDO Rev 0, Antenna 1, Body SAR, Bottom Edge, Mid.ch

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.36 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.783 W/kg
SAR(1 g) = 0.451 W/kg



0 dB = 0.553 W/kg = -2.57 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11247

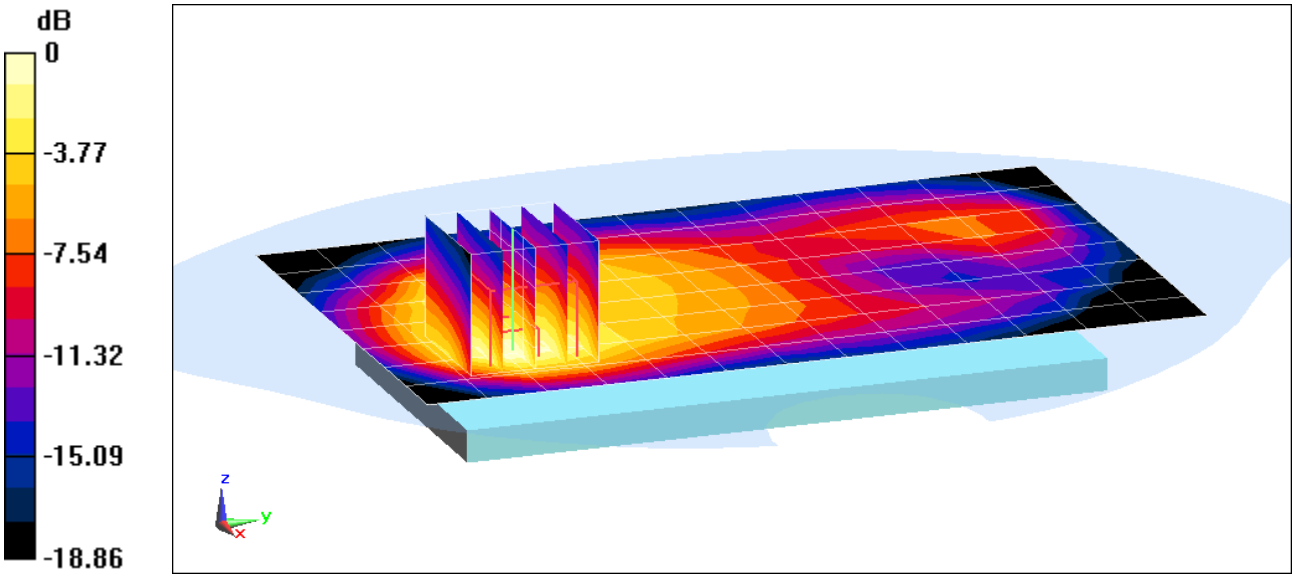
Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used:
f = 1880 MHz; σ = 1.547 S/m; ε_r = 53.354; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-08-2016; Ambient Temp: 22.0°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.7, 4.7, 4.7); Calibrated: 3/18/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/14/2016
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: PCS CDMA, 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 = 19.93 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.995 W/kg
SAR(1 g) = 0.543 W/kg



0 dB = 0.667 W/kg = -1.76 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11247

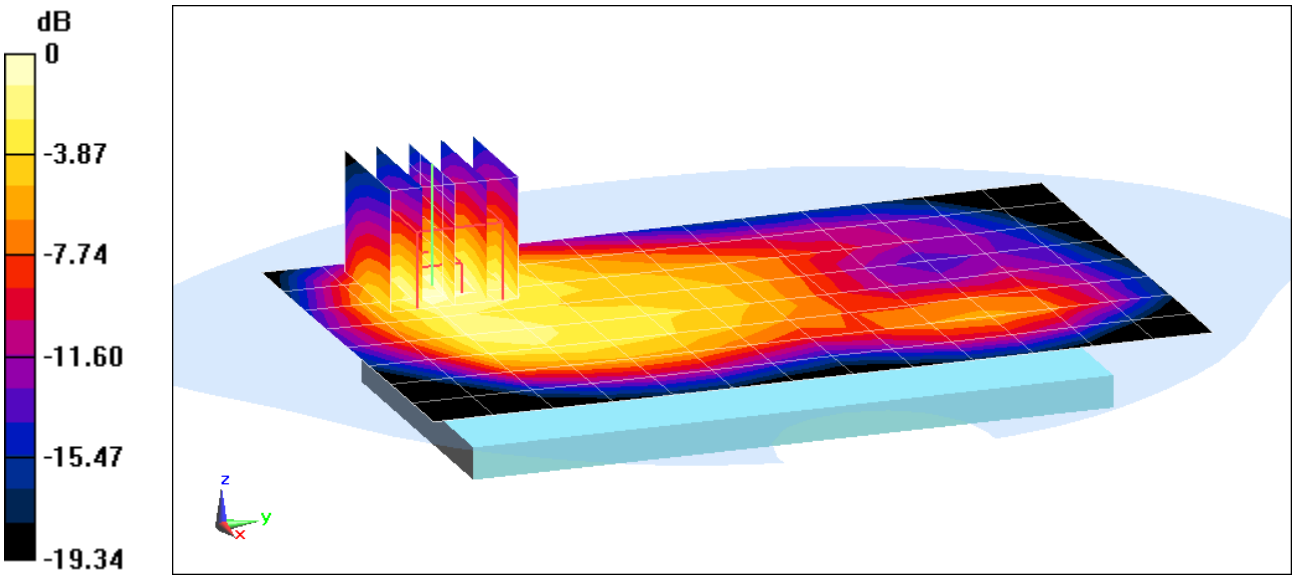
Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used:
f = 1880 MHz; σ = 1.547 S/m; ε_r = 53.354; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-08-2016; Ambient Temp: 22.0°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.7, 4.7, 4.7); Calibrated: 3/18/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/14/2016
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: PCS EVDO Rev 0, Body SAR, Front 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 = 21.83 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.639 W/kg



0 dB = 0.795 W/kg = -1.00 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11304

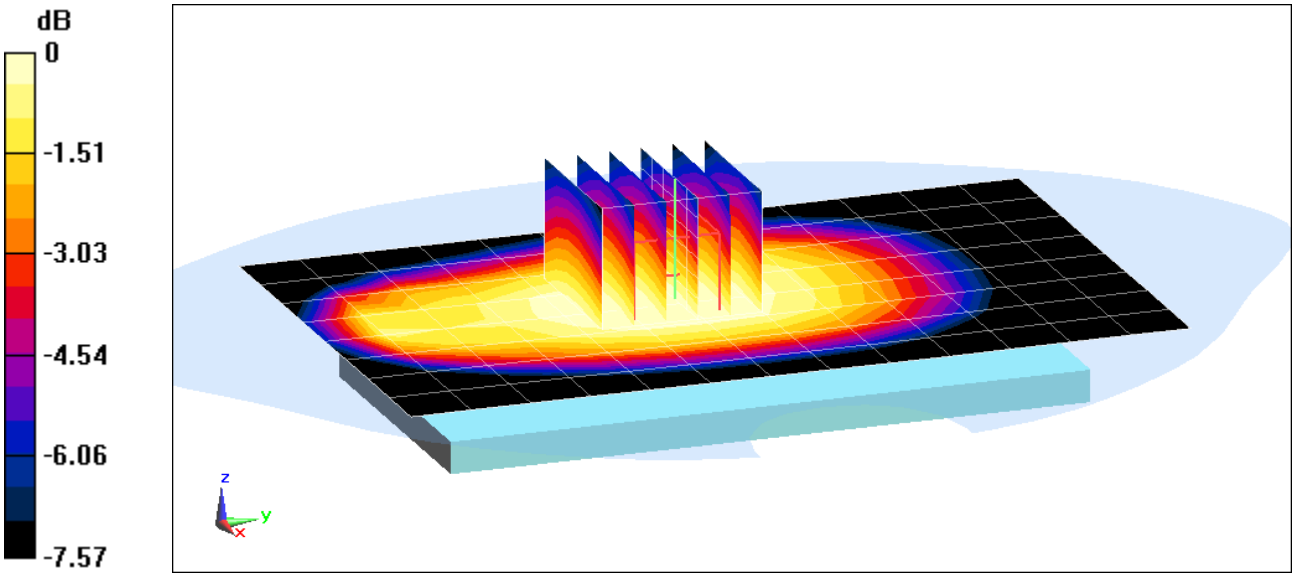
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Body; Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.927 S/m; ε_r = 55.093; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-09-2016; Ambient Temp: 23.1°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3334; ConvF(6.37, 6.37, 6.37); 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 12, Antenna 1, Body SAR, Back Side, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 49 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 = 17.23 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.317 W/kg
SAR(1 g) = 0.260 W/kg



0 dB = 0.283 W/kg = -5.48 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11304

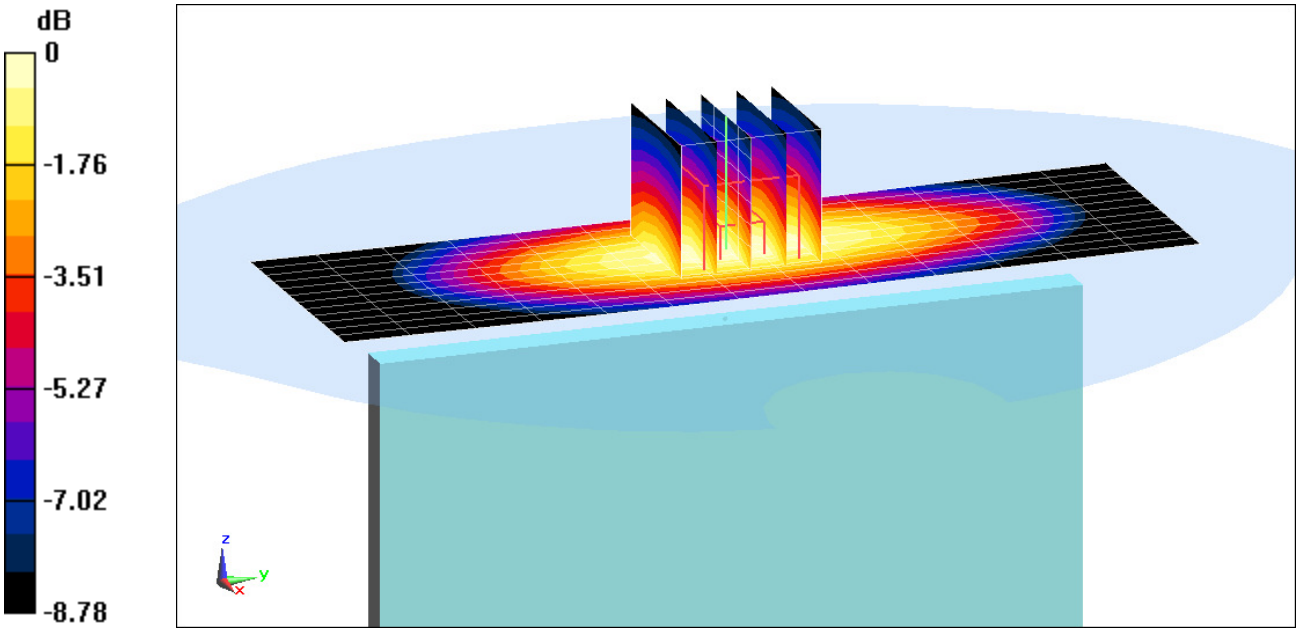
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.932 S/m; ε_r = 54.063; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-24-2016; Ambient Temp: 22.0°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3319; ConvF(6.06, 6.06, 6.06); Calibrated: 3/18/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/14/2016
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Mode: LTE Band 12, Antenna 1, Body SAR, Right Edge, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (13x14x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.39 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.554 W/kg
SAR(1 g) = 0.394 W/kg



0 dB = 0.450 W/kg = -3.47 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11304

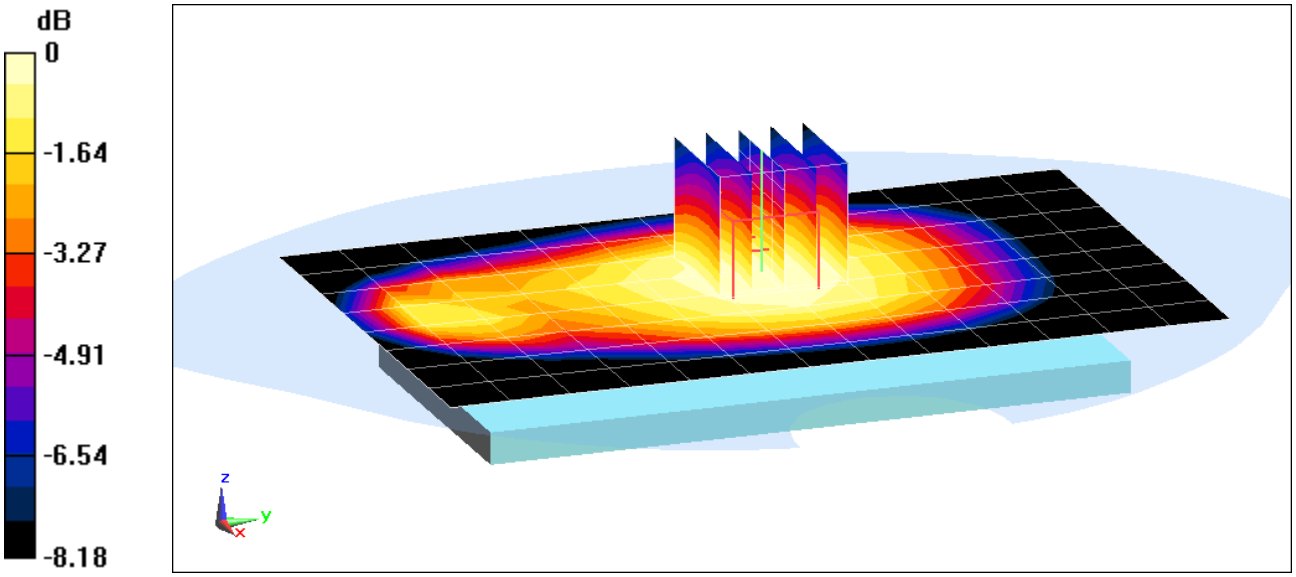
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Body; Medium parameters used (interpolated):
f = 782 MHz; σ = 0.997 S/m; ε_r = 54.227; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-09-2016; Ambient Temp: 23.1°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3334; ConvF(6.37, 6.37, 6.37); 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 13, Antenna 1, Body SAR, Back Side, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.75 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.459 W/kg
SAR(1 g) = 0.364 W/kg



0 dB = 0.398 W/kg = -4.00 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11304

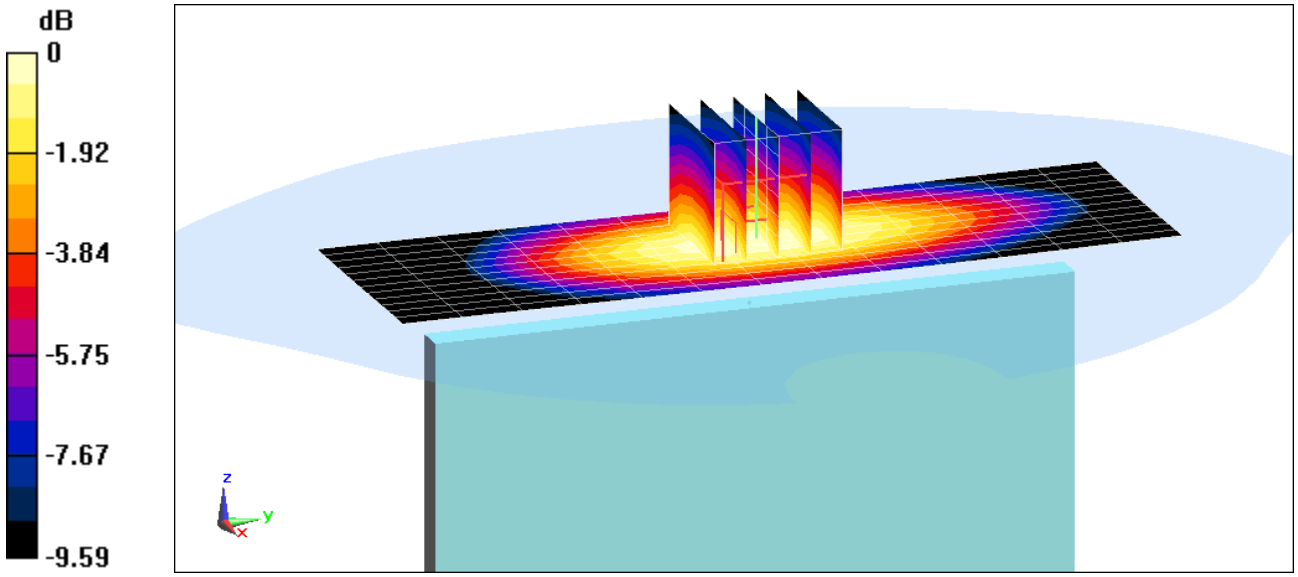
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Body; Medium parameters used (interpolated):
f = 782 MHz; σ = 0.997 S/m; ε_r = 54.227; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-09-2016; Ambient Temp: 23.1°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3334; ConvF(6.37, 6.37, 6.37); 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 13, Antenna 1, Body SAR, Right Edge, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (13x14x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.88 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.637 W/kg
SAR(1 g) = 0.445 W/kg



0 dB = 0.510 W/kg = -2.92 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11304

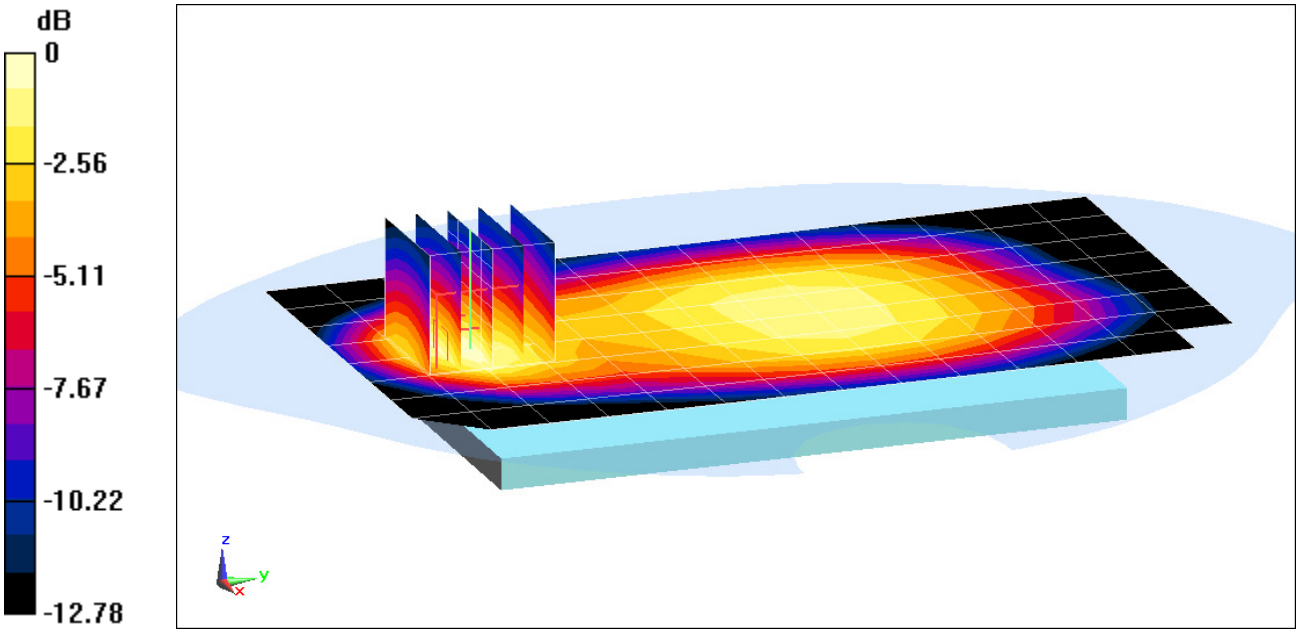
Communication System: UID 0, LTE Band 5 (Cell.); Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.5 MHz; σ = 1.015 S/m; ε_r = 54.474; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-29-2016; Ambient Temp: 21.2°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3333; ConvF(6.25, 6.25, 6.25); 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.), Antenna 1, Body SAR, Back Side, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.18 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.620 W/kg
SAR(1 g) = 0.377 W/kg



0 dB = 0.443 W/kg = -3.54 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11304

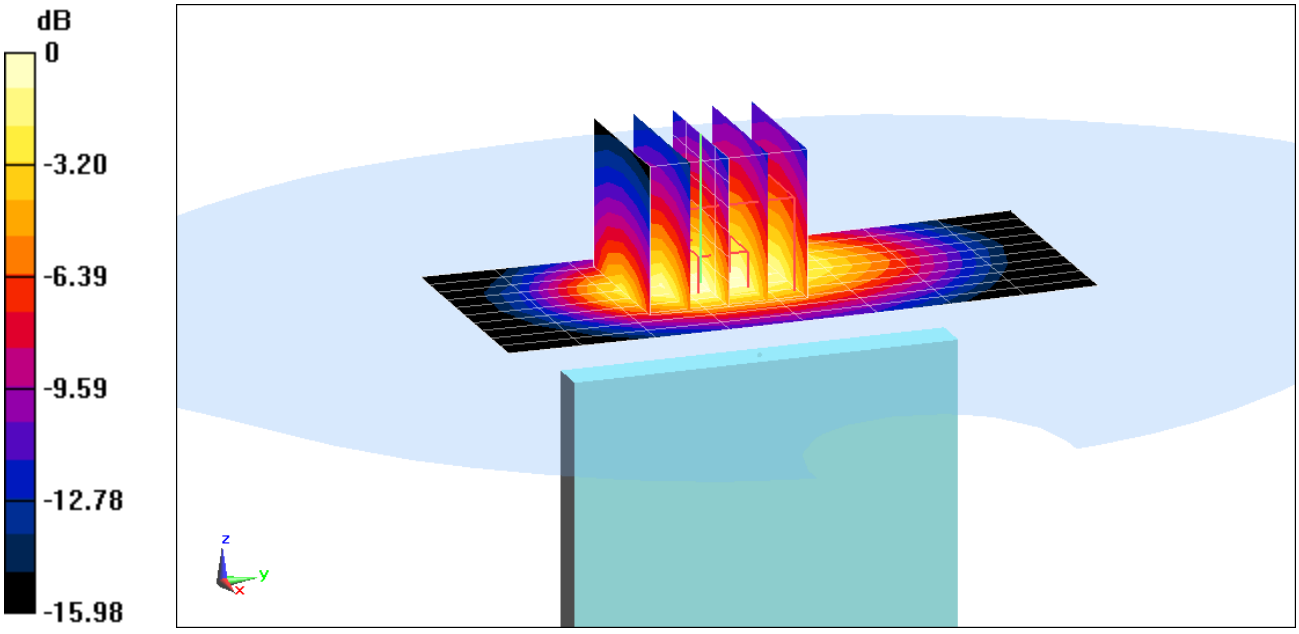
Communication System: UID 0, LTE Band 5 (Cell.); Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.5 MHz; σ = 1.014 S/m; ε_r = 53.449; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-24-2016; Ambient Temp: 22.7°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3333; ConvF(6.25, 6.25, 6.25); 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.), Antenna 1, Body SAR, Bottom Edge, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset

Area Scan (11x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.74 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.812 W/kg
SAR(1 g) = 0.468 W/kg



0 dB = 0.575 W/kg = -2.40 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11288

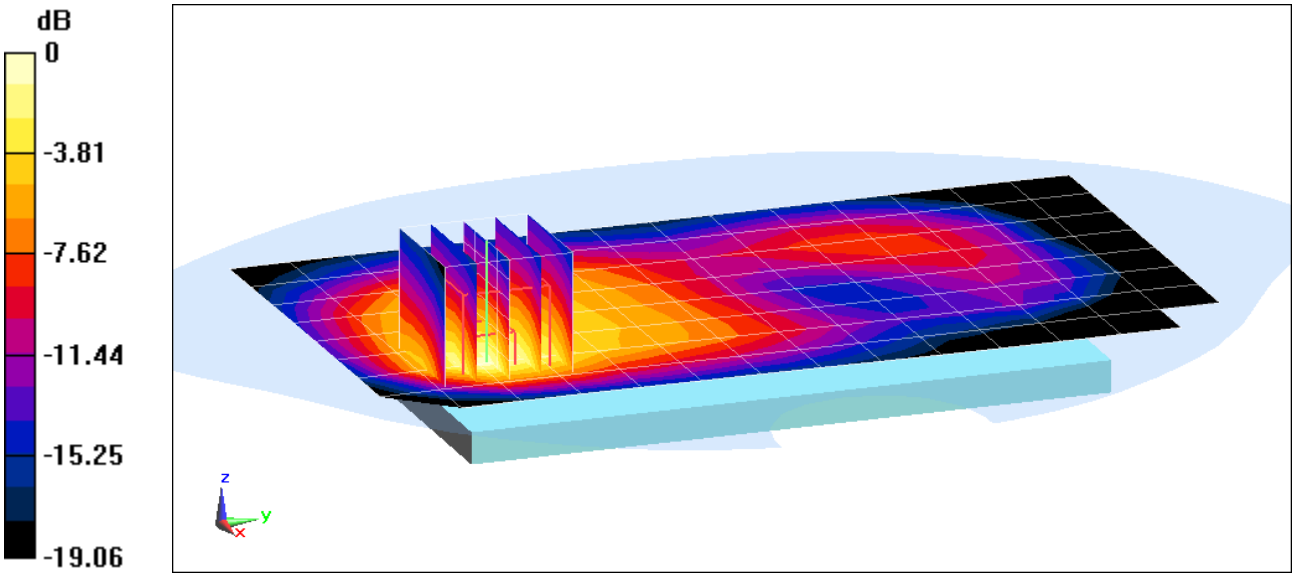
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1770 MHz; Duty Cycle: 1:1
Medium: 1750 Body; Medium parameters used (interpolated):
f = 1770 MHz; σ = 1.495 S/m; ε_r = 51.594; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2016; Ambient Temp: 21.4°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7409; ConvF(7.72, 7.72, 7.72); Calibrated: 5/17/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/11/2016
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 66 (AWS), Body SAR, Back Side, High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.92 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 1.12 W/kg
SAR(1 g) = 0.593 W/kg



0 dB = 0.922 W/kg = -0.35 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11288

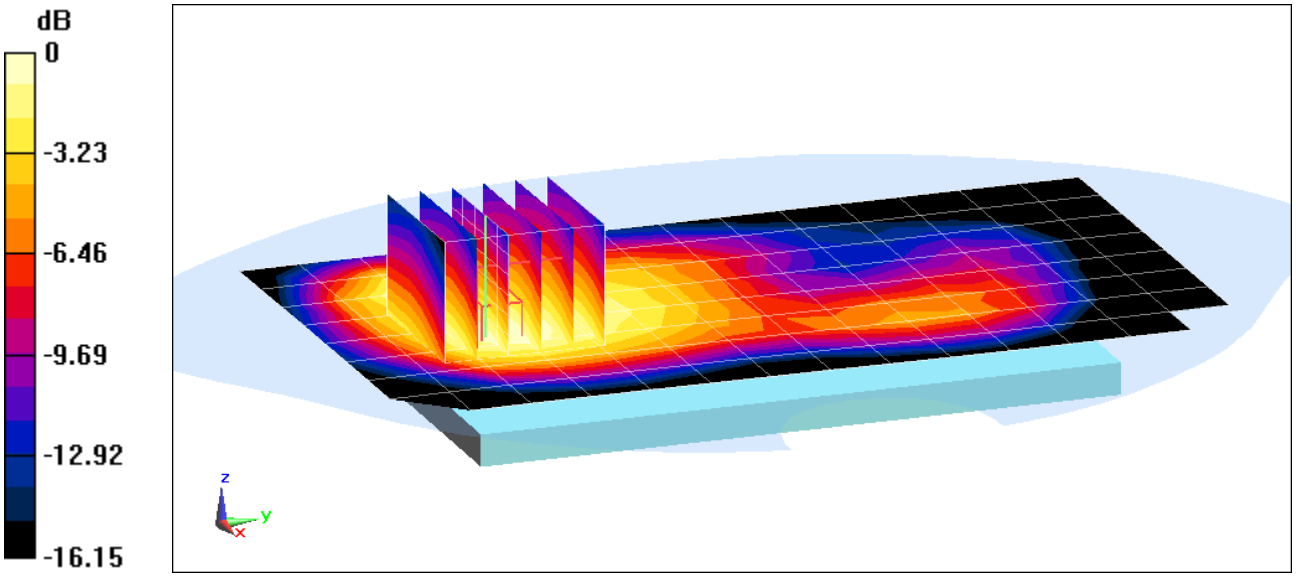
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1770 MHz; Duty Cycle: 1:1
Medium: 1750 Body; Medium parameters used (interpolated):
f = 1770 MHz; σ = 1.495 S/m; ε_r = 51.594; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2016; Ambient Temp: 21.4°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7409; ConvF(7.72, 7.72, 7.72); Calibrated: 5/17/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/11/2016
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 66 (AWS), Body SAR, Front Side, High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.02 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.692 W/kg



0 dB = 0.936 W/kg = -0.29 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11288

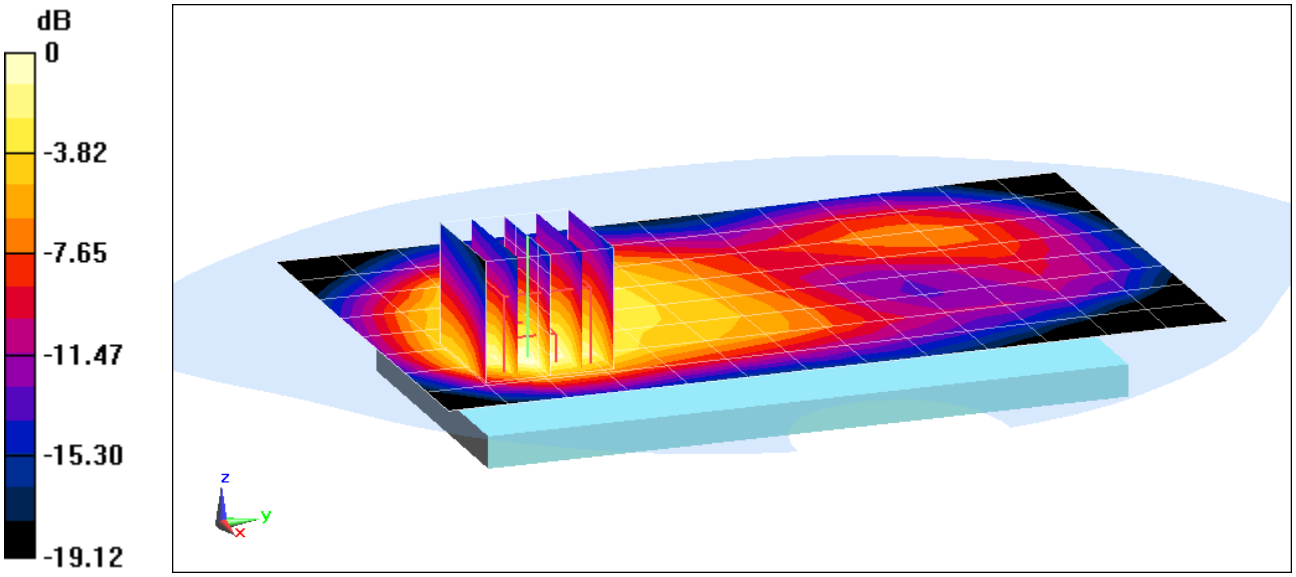
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used (interpolated):
f = 1860 MHz; σ = 1.524 S/m; ε_r = 53.401; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-08-2016; Ambient Temp: 22.0°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.7, 4.7, 4.7); Calibrated: 3/18/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/14/2016
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.36 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.08 W/kg
SAR(1 g) = 0.579 W/kg



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

DUT: ZNFVS995; Type: Portable Handset; Serial: 11288

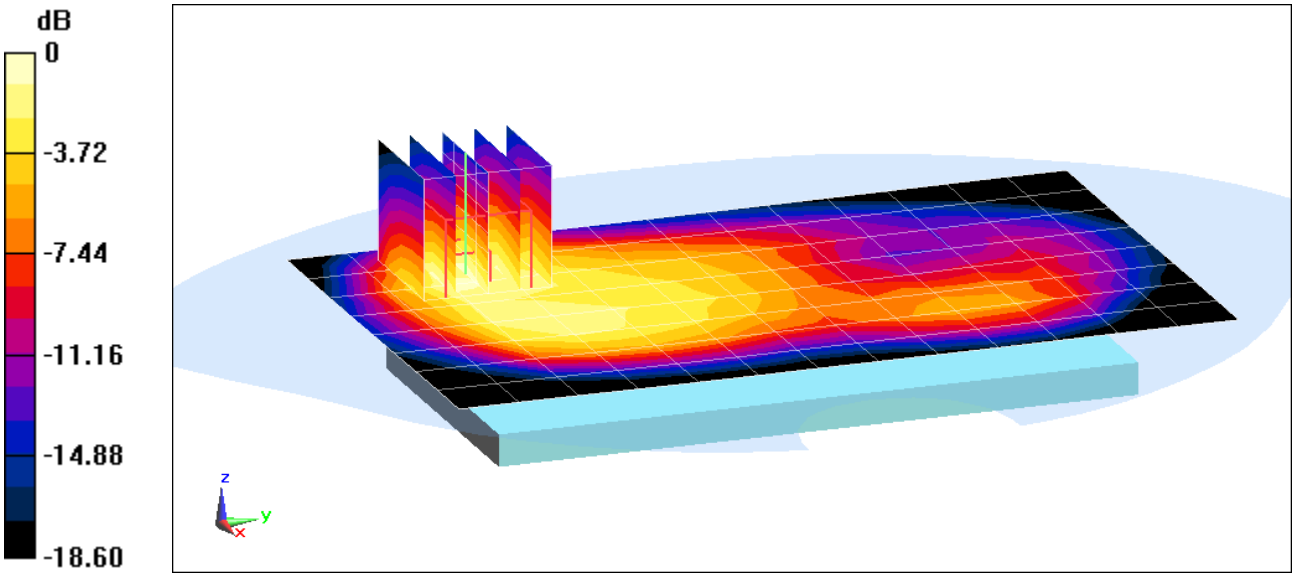
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used (interpolated):
f = 1860 MHz; σ = 1.524 S/m; ε_r = 53.401; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-08-2016; Ambient Temp: 22.0°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.7, 4.7, 4.7); Calibrated: 3/18/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/14/2016
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.90 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.39 W/kg
SAR(1 g) = 0.779 W/kg



0 dB = 0.961 W/kg = -0.17 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11387

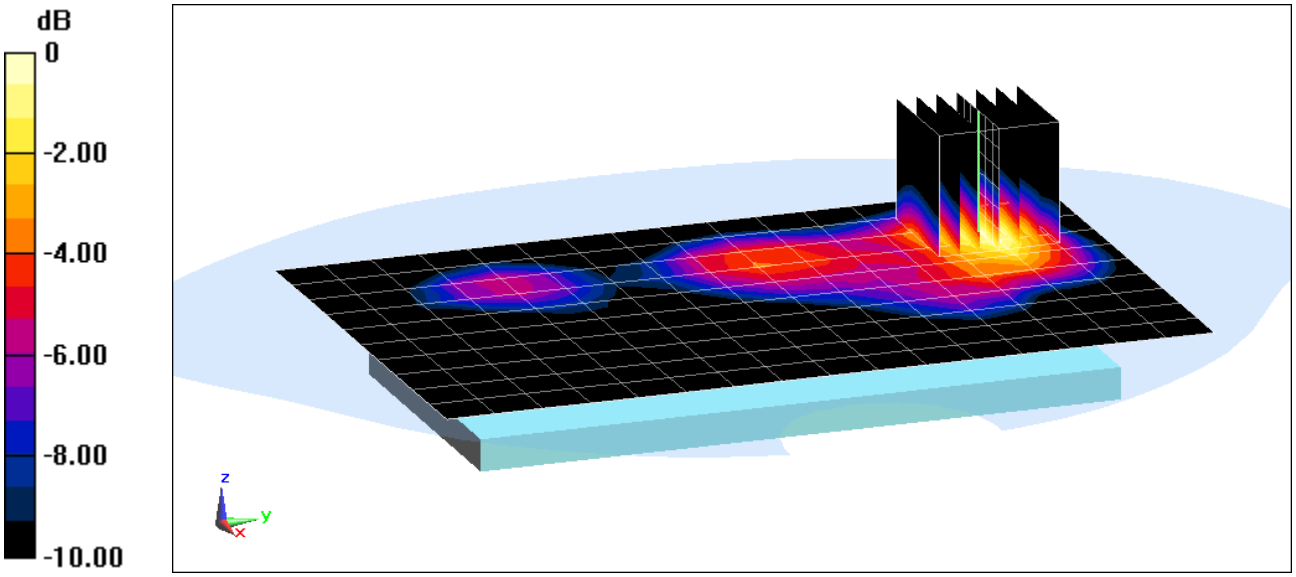
Communication System: UID 0, IEEE 802.11b; Frequency: 2447 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2447 MHz; σ = 2.028 S/m; ε_r = 51.059; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-10-2016; Ambient Temp: 23.6°C; Tissue Temp: 23.0°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, Primary Antenna, 22 MHz Bandwidth, Body SAR, Back Side, Ch 08, 1 Mbps

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.68 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.498 W/kg
SAR(1 g) = 0.249 W/kg



0 dB = 0.396 W/kg = -4.02 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11387

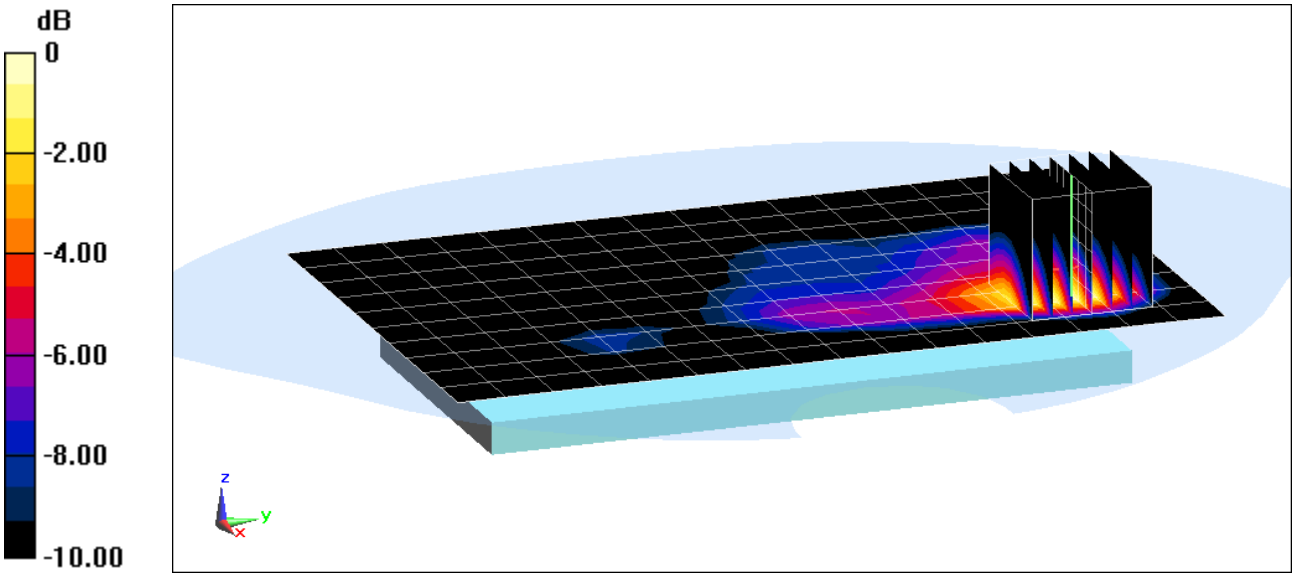
Communication System: UID 0, IEEE 802.11b; Frequency: 2447 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2447 MHz; σ = 2.028 S/m; ε_r = 51.059; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-10-2016; Ambient Temp: 23.6°C; Tissue Temp: 23.0°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, Primary Antenna, 22 MHz Bandwidth, Body SAR, Front Side, Ch 08, 1 Mbps

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.403 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.677 W/kg
SAR(1 g) = 0.342 W/kg



0 dB = 0.549 W/kg = -2.60 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11395

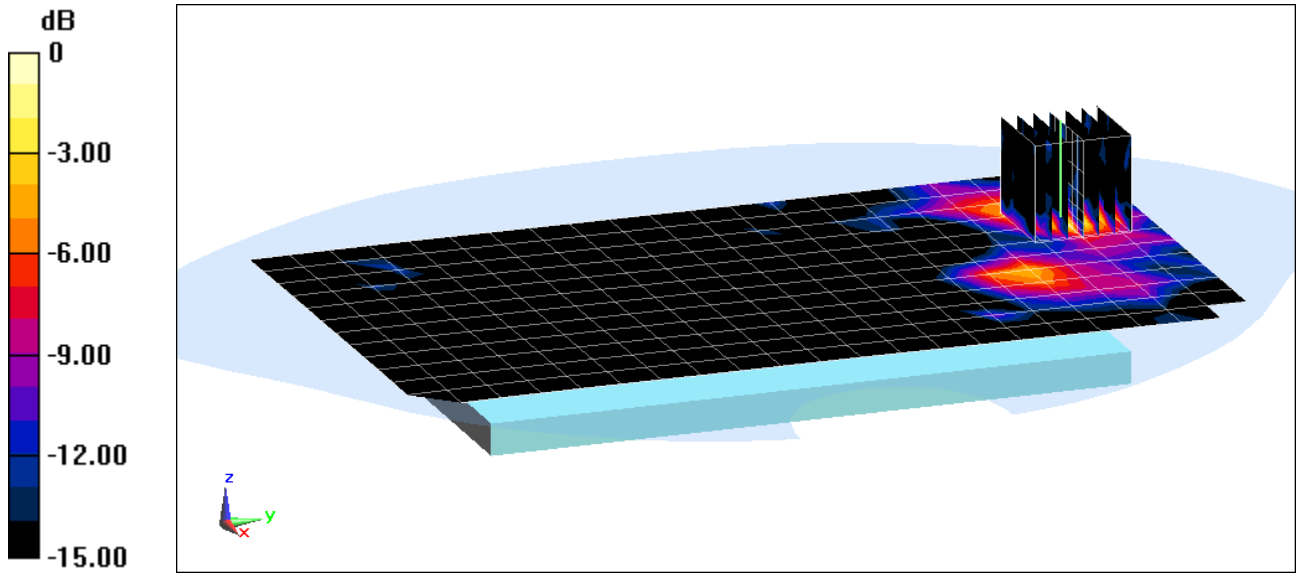
Communication System: UID 0, 802.11a; Frequency: 5745 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body; Medium parameters used:
f = 5745 MHz; σ = 6.112 S/m; ε_r = 45.92; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-09-2016; Ambient Temp: 21.3°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7357; ConvF(3.77, 3.77, 3.77); 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 802.11a, Primary Antenna, UNII-3, 20 MHz Bandwidth, Body SAR, Back Side, Ch 149, 6 Mbps

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 = 3.130 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.284 W/kg
SAR(1 g) = 0.062 W/kg



0 dB = 0.173 W/kg = -7.62 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11395

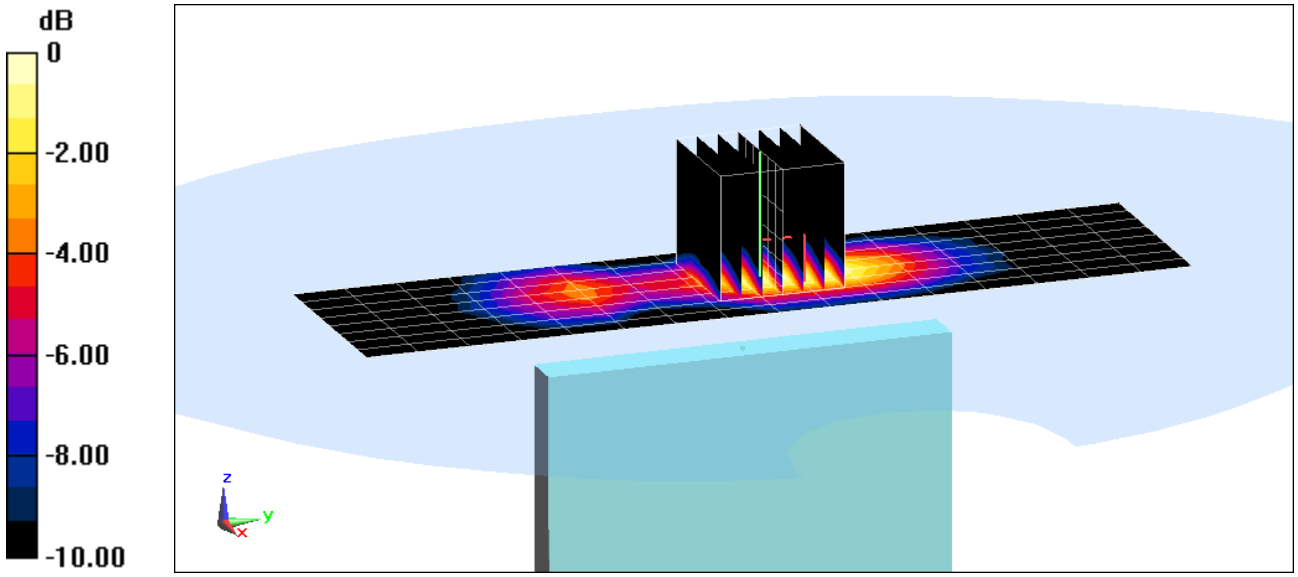
Communication System: UID 0, 802.11a; Frequency: 5200 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body; Medium parameters used:
f = 5200 MHz; σ = 5.353 S/m; ε_r = 46.828; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-09-2016; Ambient Temp: 21.3°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7357; ConvF(4.28, 4.28, 4.28); 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 802.11a, Secondary Antenna, UNII-1, 20 MHz Bandwidth, Body SAR, Top Edge, Ch 40, 6 Mbps

Area Scan (9x17x1): Measurement grid: dx=5mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 5.767 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.719 W/kg
SAR(1 g) = 0.181 W/kg



0 dB = 0.419 W/kg = -3.78 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11387

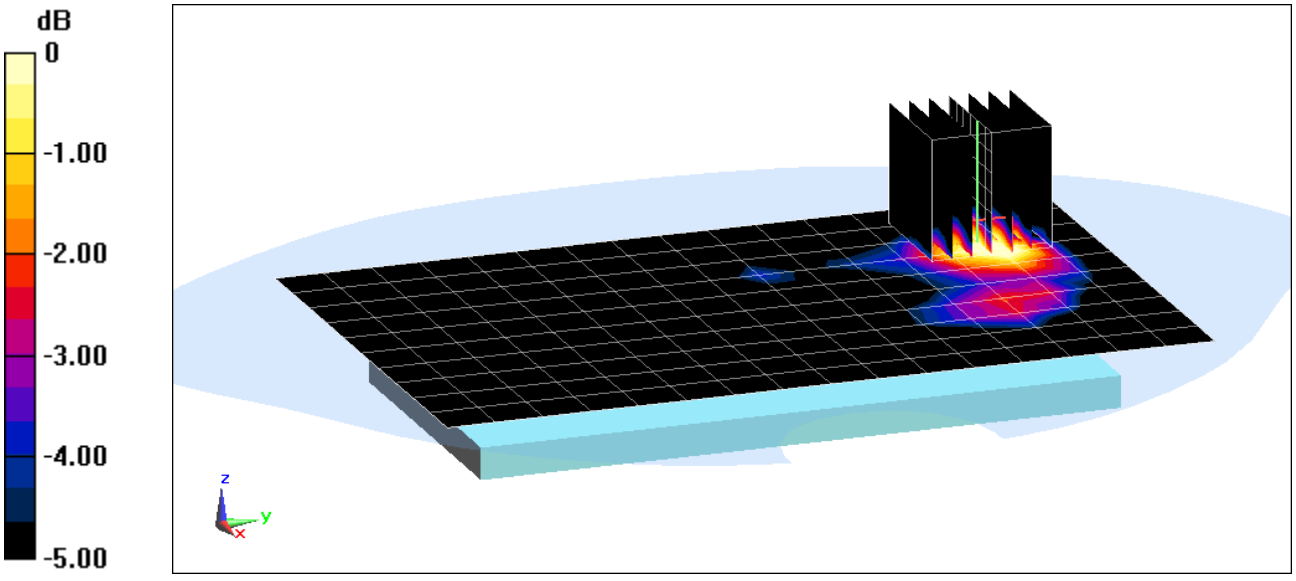
Communication System: UID 0, Bluetooth; Frequency: 2480 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2480 MHz; σ = 2.068 S/m; ε_r = 52.217; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-15-2016; Ambient Temp: 22.9°C; Tissue Temp: 22.8°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: Bluetooth, Body SAR, Back Side, Ch 78, 1 Mbps

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.883 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.0270 W/kg
SAR(1 g) = 0.015 W/kg



0 dB = 0.0206 W/kg = -16.86 dBW/kg

DUT: ZNFVS995; Type: Portable Handset; Serial: 11395

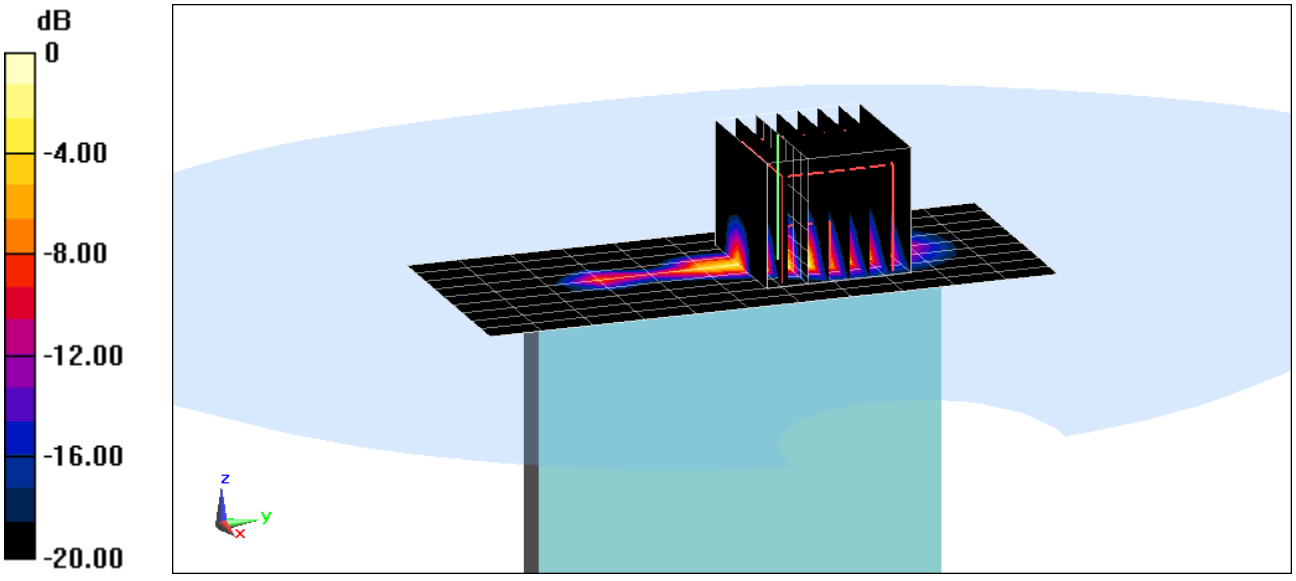
Communication System: UID 0, 802.11a; Frequency: 5260 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body; Medium parameters used:
f = 5260 MHz; σ = 5.46 S/m; ε_r = 46.756; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-09-2016; Ambient Temp: 21.3°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7357; ConvF(4.28, 4.28, 4.28); 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 802.11a, Secondary Antenna, U-NII-2A, 20 MHz Bandwidth, Phablet SAR, Top Edge, Ch 52, 6 Mbps

Area Scan (10x12x1): Measurement grid: dx=5mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 23.30 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 21.0 W/kg
SAR(10 g) = 0.584 W/kg



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

DUT: ZNFVS995; Type: Portable Handset; Serial: 11387

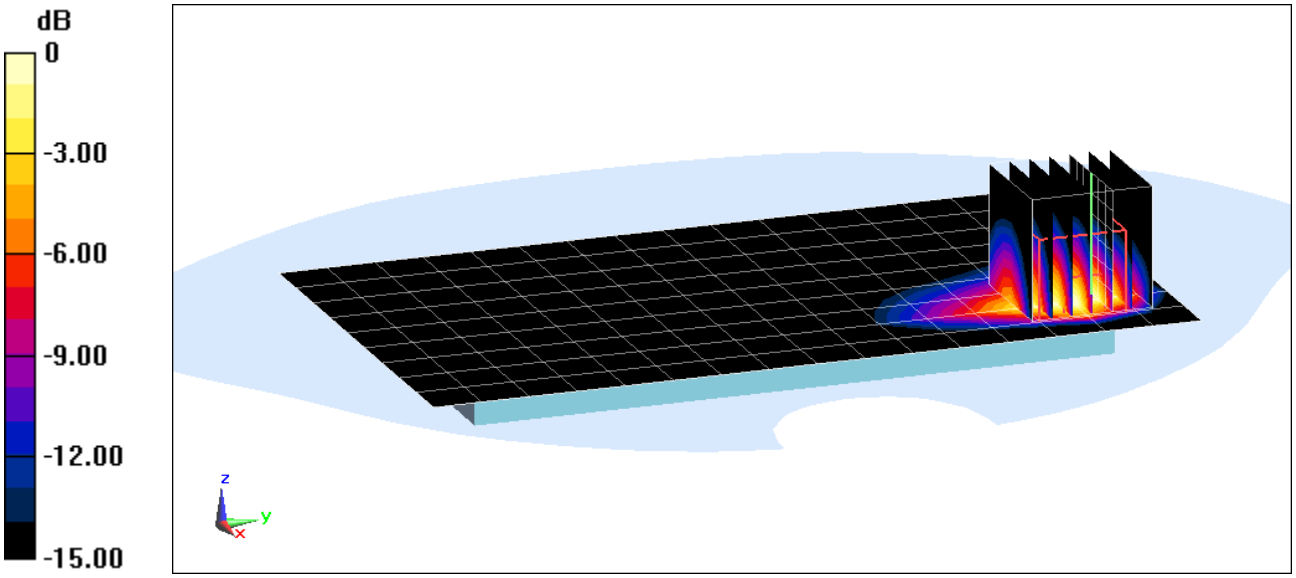
Communication System: UID 0, Bluetooth; Frequency: 2480 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2480 MHz; σ = 2.068 S/m; ε_r = 52.217; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-15-2016; Ambient Temp: 22.9°C; Tissue Temp: 22.8°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: Bluetooth, Phablet SAR, Front Side, Ch 78, 1 Mbps

Area Scan (10x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.55 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.637 W/kg
SAR(10 g) = 0.096 W/kg



0 dB = 0.337 W/kg = -4.72 dBW/kg

APPENDIX B: SYSTEM VERIFICATION

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1054

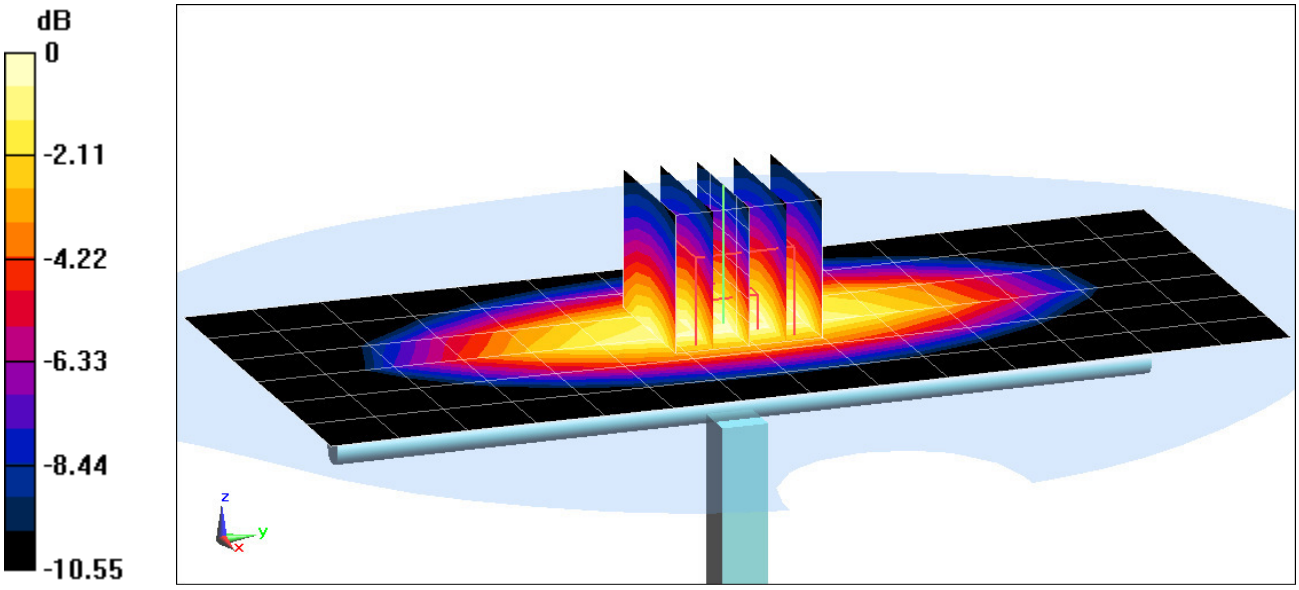
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Head; Medium parameters used (interpolated):
f = 750 MHz; σ = 0.896 S/m; ε_r = 40.718; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-12-2016; Ambient Temp: 21.4°C; Tissue Temp: 22.4°C

Probe: ES3DV3 - SN3334; ConvF(6.56, 6.56, 6.56); 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)

750 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.51 W/kg
SAR(1 g) = 1.69 W/kg
Deviation(1 g) = 2.80%



0 dB = 1.99 W/kg = 2.99 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

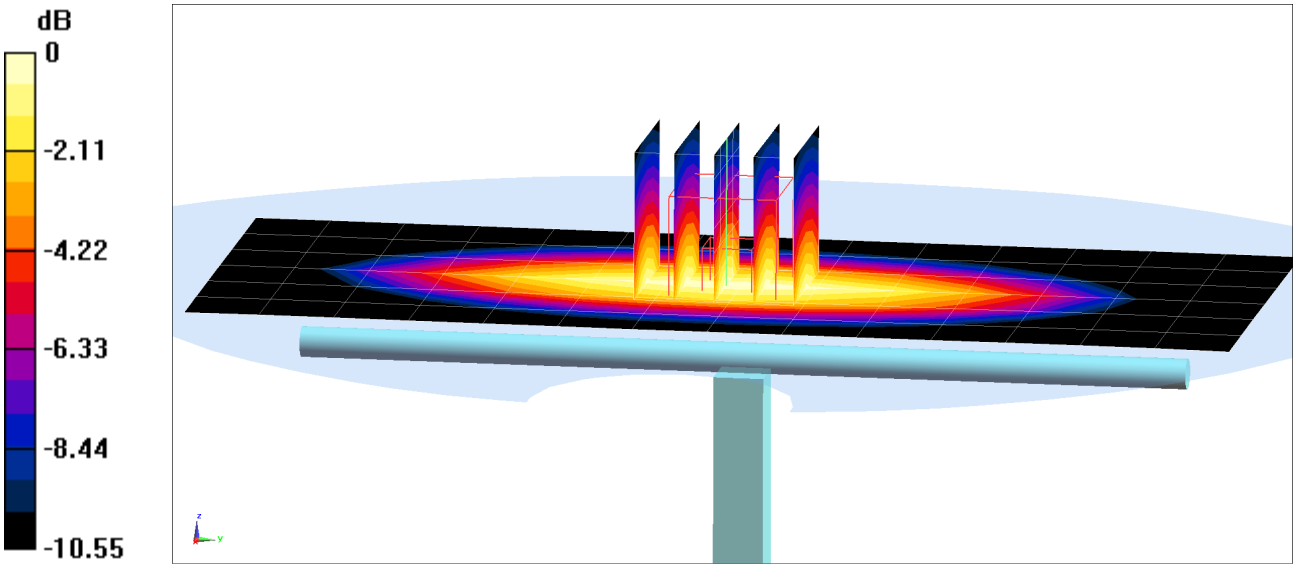
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Head; Medium parameters used (interpolated):
f = 750 MHz; σ = 0.899 S/m; ε_r = 41.838; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-18-2016; Ambient Temp: 22.7°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN7406; ConvF(10.52, 10.52, 10.52); 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)

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) = 2.29 W/kg
SAR(1 g) = 1.53 W/kg
Deviation(1 g) = -6.36%



0 dB = 2.04 W/kg = 3.10 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1054

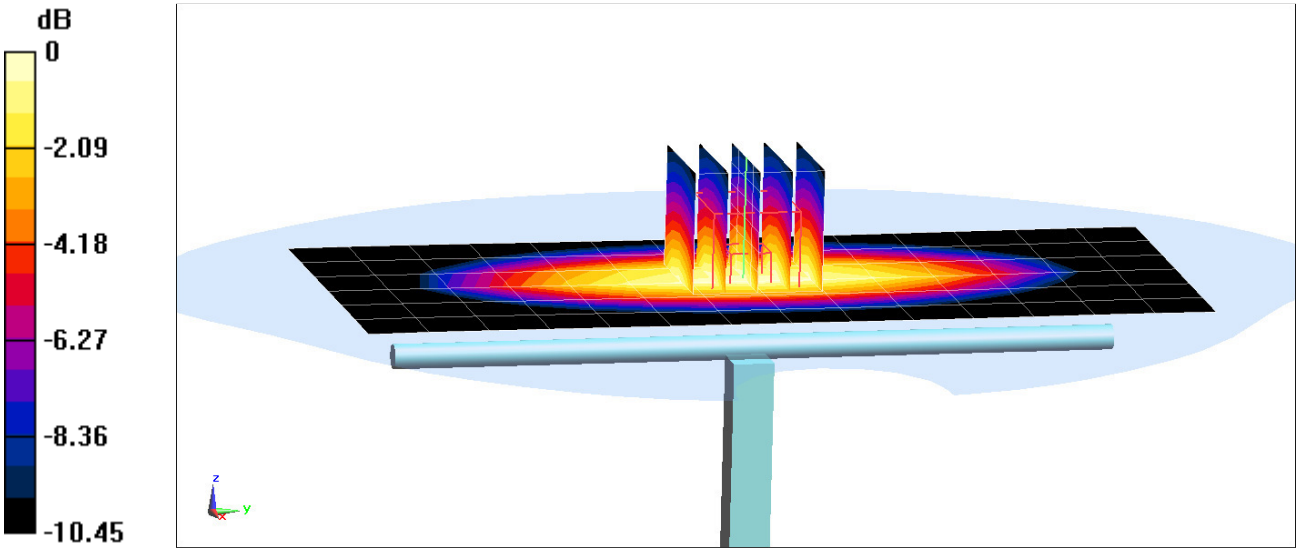
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 750 MHz; σ = 0.895 S/m; ε_r = 41.522; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-25-2016; Ambient Temp: 20.1°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3318; ConvF(6.48, 6.48, 6.48); Calibrated: 2/19/2016;
Sensor-Surface: 3mm (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)

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) = 2.50 W/kg
SAR(1 g) = 1.68 W/kg
Deviation(1 g) = 2.19%



0 dB = 1.96 W/kg = 2.92 dBW/kg

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

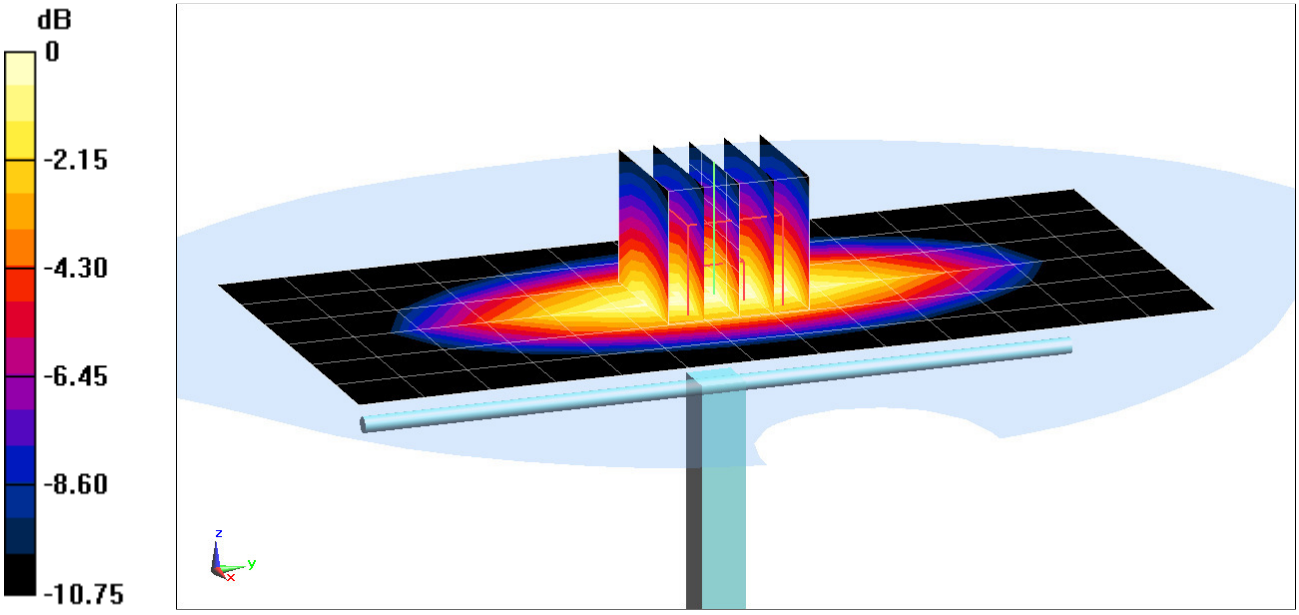
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head; Medium parameters used:
f = 835 MHz; σ = 0.891 S/m; ε_r = 40.116; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-08-2016; Ambient Temp: 22.7°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7409; ConvF(10.04, 10.04, 10.04); Calibrated: 5/17/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/11/2016
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
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) = 2.70 W/kg
SAR(1 g) = 1.78 W/kg
Deviation(1 g) = -2.52%



0 dB = 2.39 W/kg = 3.78 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

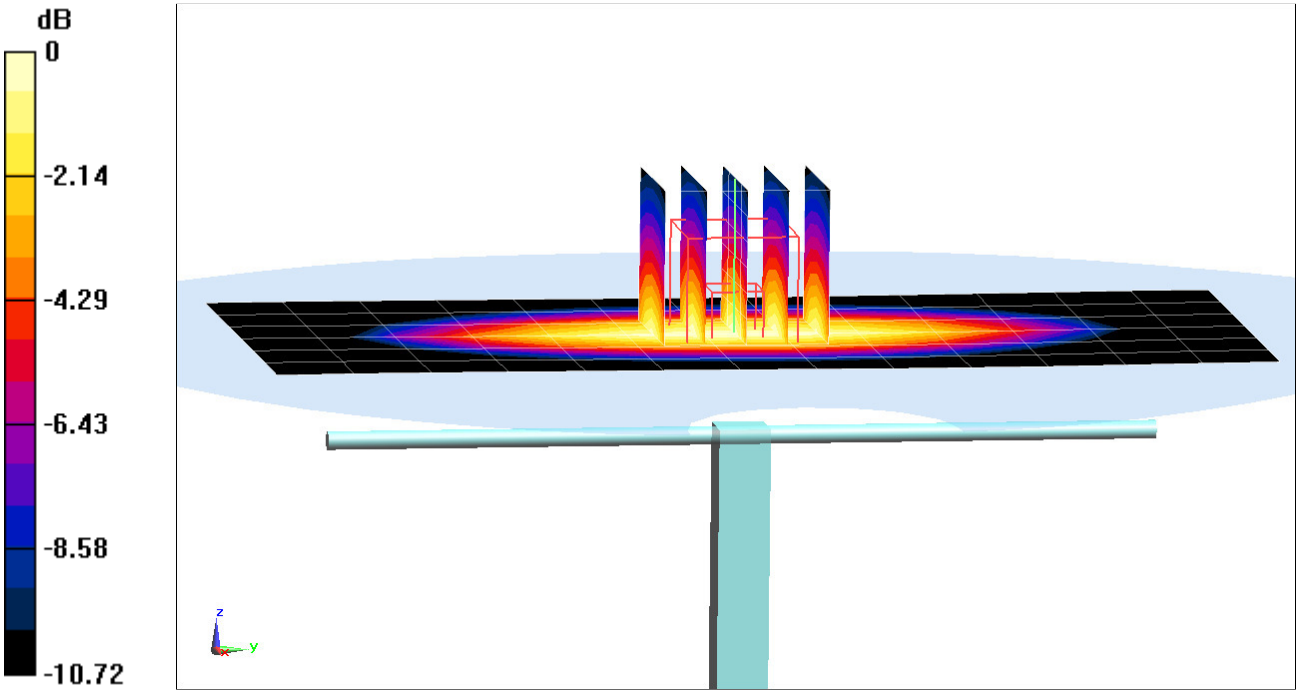
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head; Medium parameters used:
f = 835 MHz; σ = 0.885 S/m; ε_r = 40.244; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-10-2016; Ambient Temp: 23.5°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7409; ConvF(10.04, 10.04, 10.04); Calibrated: 5/17/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/11/2016
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
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) = 2.64 W/kg
SAR(1 g) = 1.74 W/kg
Deviation(1 g) = -6.65%



0 dB = 2.34 W/kg = 3.69 dBW/kg

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

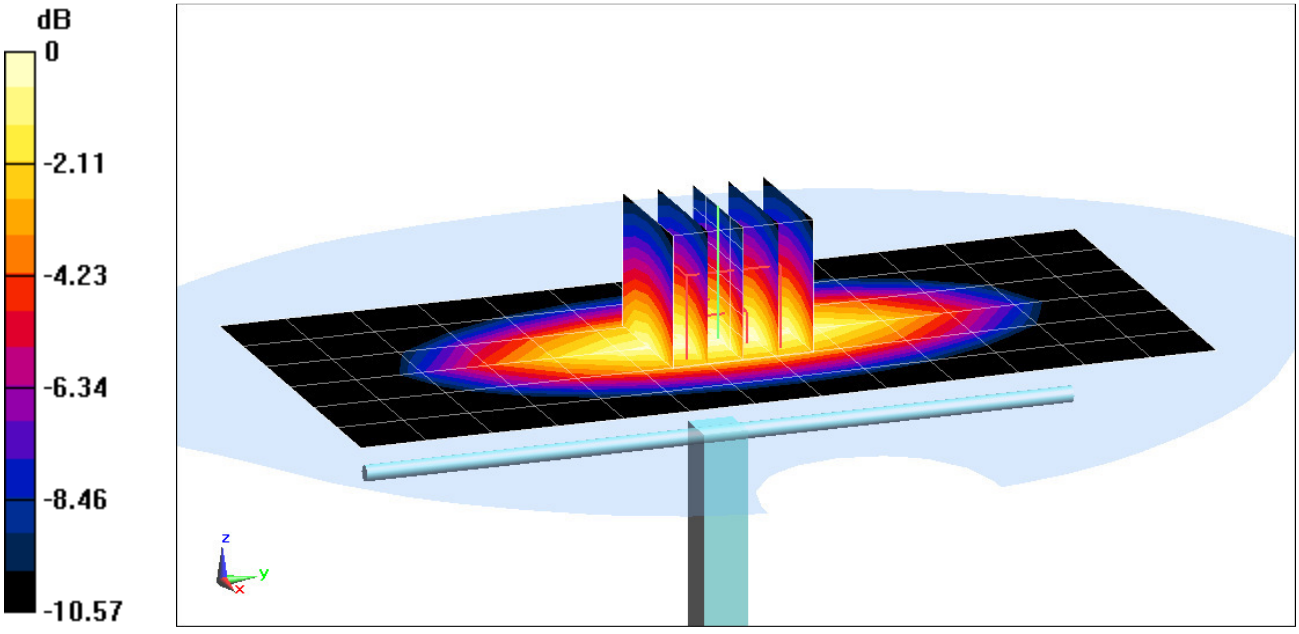
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used:
f = 835 MHz; σ = 0.891 S/m; ε_r = 40.602; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-29-2016; Ambient Temp: 20.7°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3319; ConvF(6.16, 6.16, 6.16); Calibrated: 3/18/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/14/2016
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
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) = 2.73 W/kg
SAR(1 g) = 1.90 W/kg
Deviation(1 g) = 4.05%



0 dB = 2.22 W/kg = 3.46 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

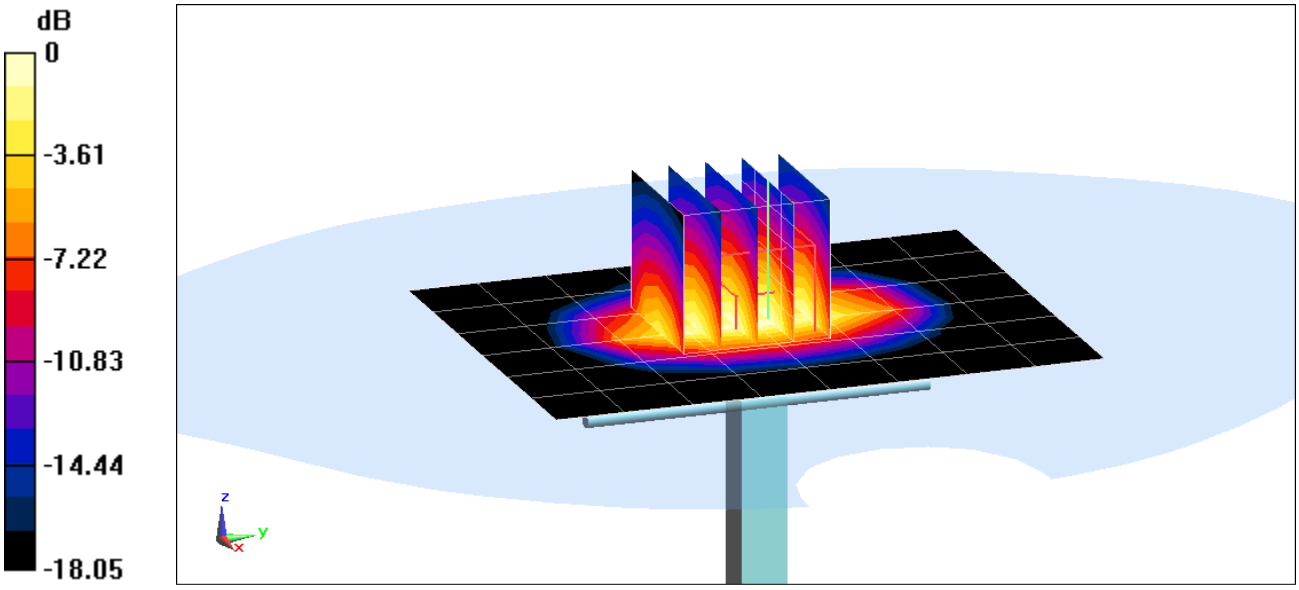
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Head; Medium parameters used:
f = 1750 MHz; σ = 1.369 S/m; ε_r = 38.696; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-15-2016; Ambient Temp: 23.5°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3334; ConvF(5.39, 5.39, 5.39); 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)

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) = 7.02 W/kg
SAR(1 g) = 3.90 W/kg
Deviation(1 g) = 7.73%



0 dB = 4.83 W/kg = 6.84 dBW/kg

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

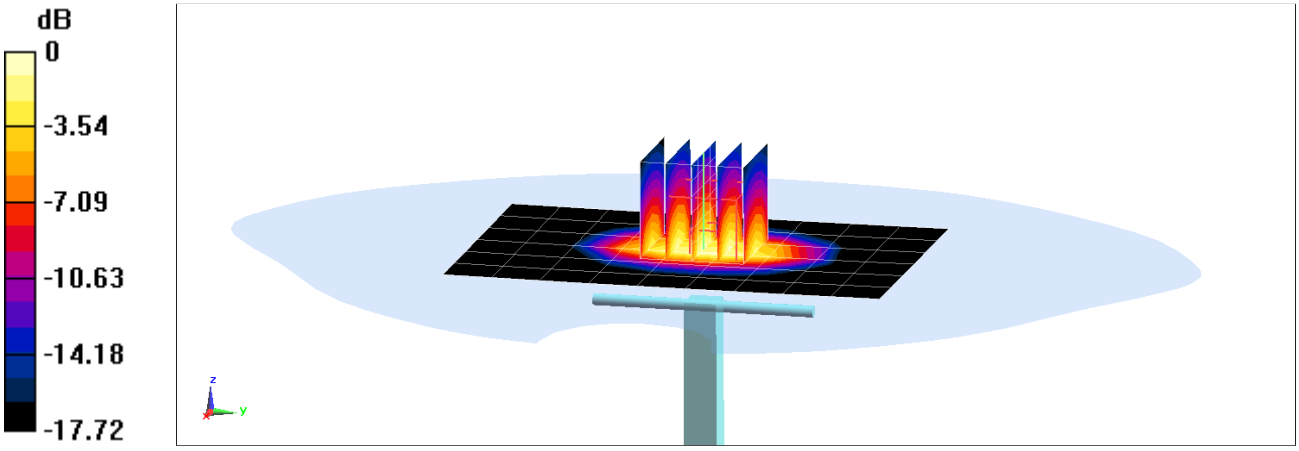
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head; Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.456 S/m; ε_r = 40.129; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-10-2016; Ambient Temp: 23.2°C; Tissue Temp: 22.5°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 Front; Type: QD000P40CD; Serial: TP:1758
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) = 7.59 W/kg
SAR(1 g) = 4.19 W/kg
Deviation(1 g) = 6.62%



0 dB = 5.32 W/kg = 7.26 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

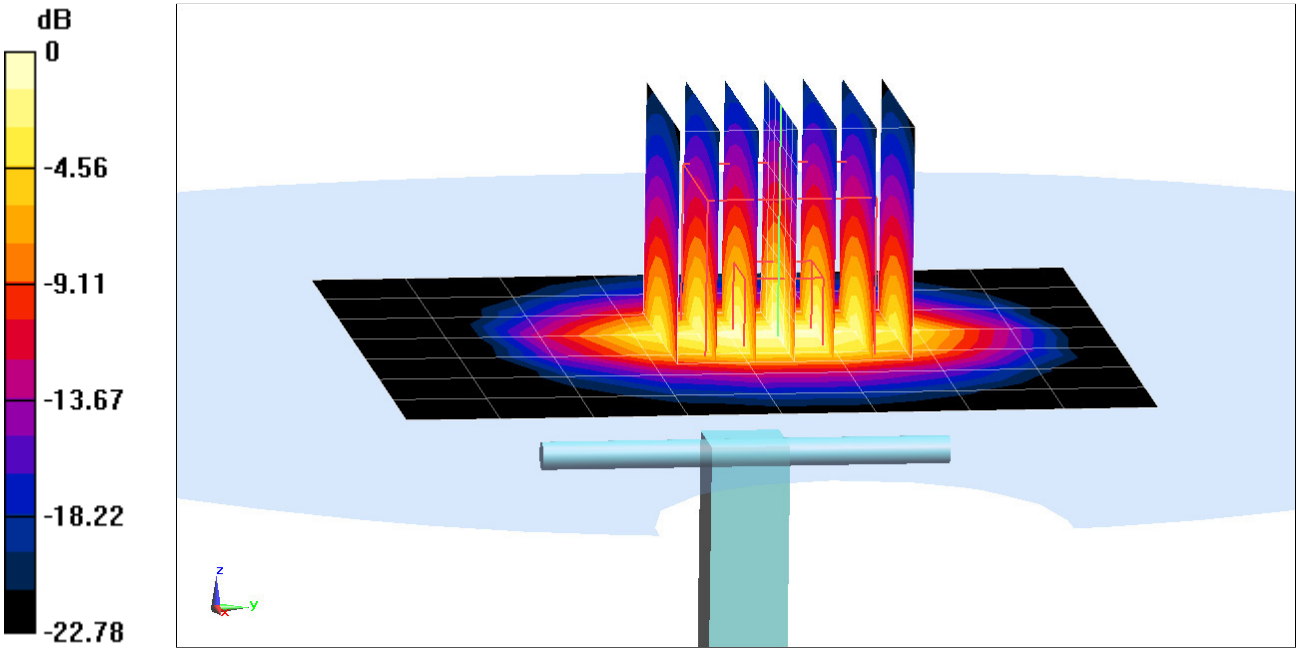
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head; Medium parameters used:
f = 2450 MHz; σ = 1.88 S/m; ε_r = 38.216; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-08-2016; Ambient Temp: 23.0°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN7409; ConvF(6.9, 6.9, 6.9); Calibrated: 5/17/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/11/2016
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
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) = 12.5 W/kg
SAR(1 g) = 5.60 W/kg
Deviation(1 g) = 3.32%



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

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

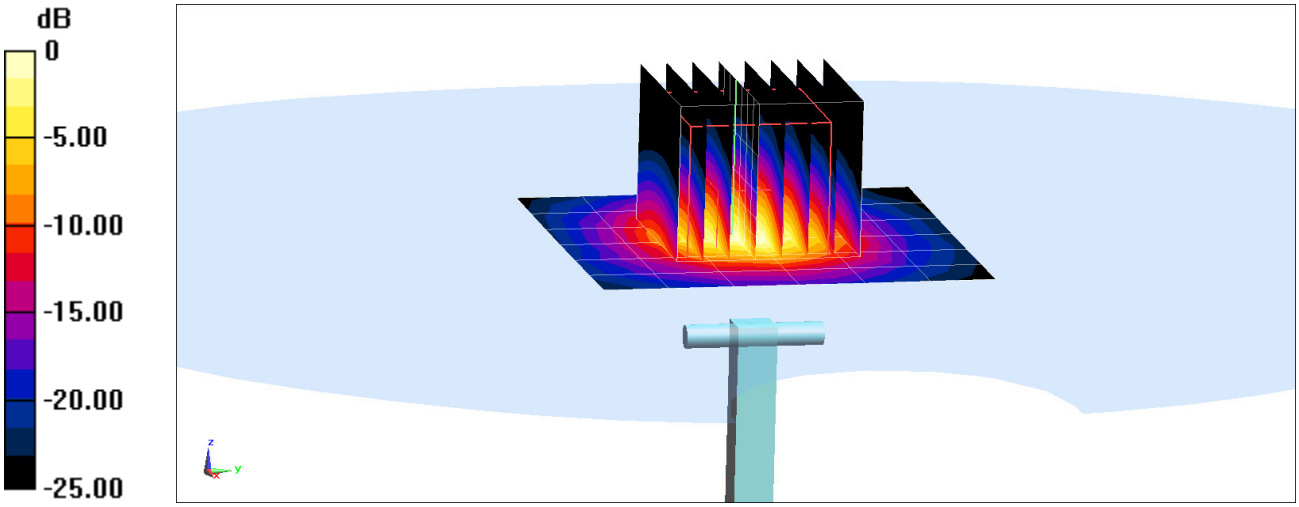
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head; Medium parameters used (interpolated):
f = 5250 MHz; σ = 4.481 S/m; ε_r = 36.202; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-08-2016; Ambient Temp: 20.1°C; Tissue Temp: 22.4°C

Probe: EX3DV4 - SN3914; ConvF(5.07, 5.07, 5.07); Calibrated: 2/22/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/18/2016
Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687
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) = 17.2 W/kg
SAR(1 g) = 3.83 W/kg
Deviation(1 g) = -7.15%



0 dB = 9.12 W/kg = 9.60 dBW/kg

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

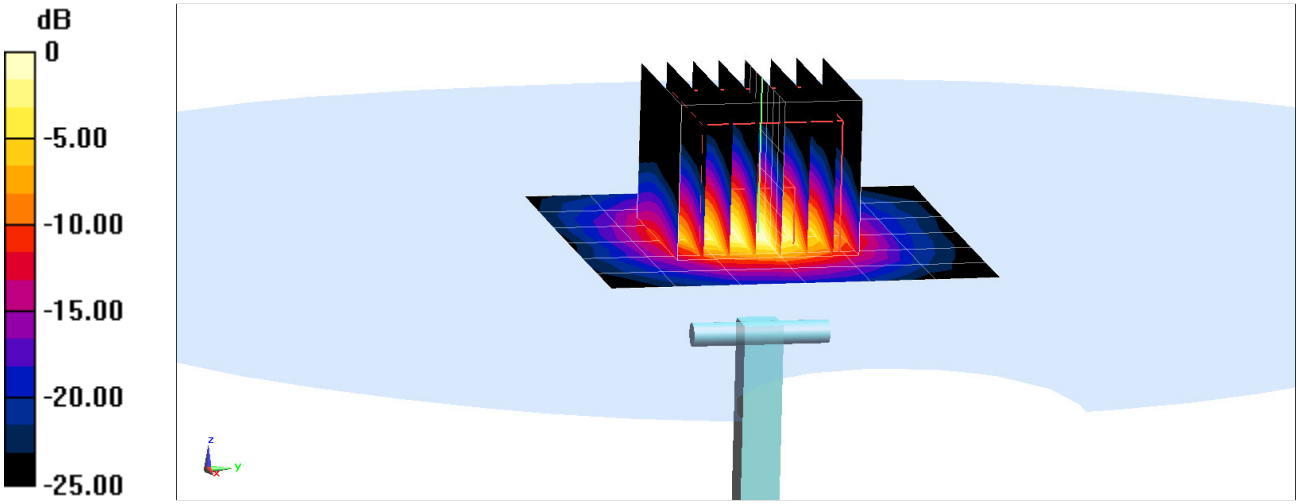
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head; Medium parameters used:
f = 5600 MHz; σ = 4.86 S/m; ε_r = 35.746; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-08-2016; Ambient Temp: 20.1°C; Tissue Temp: 22.4°C

Probe: EX3DV4 - SN3914; ConvF(4.66, 4.66, 4.66); Calibrated: 2/22/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/18/2016
Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687
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) = 18.1 W/kg
SAR(1 g) = 3.83 W/kg
Deviation(1 g) = -9.35%



0 dB = 9.41 W/kg = 9.74 dBW/kg

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

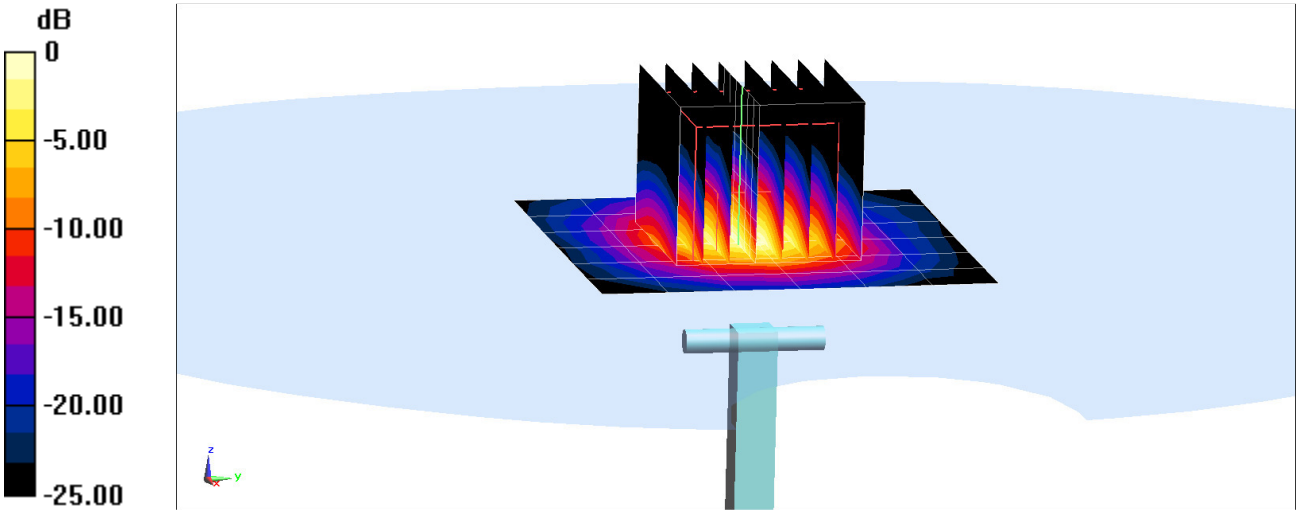
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head; Medium parameters used (interpolated):
f = 5750 MHz; σ = 5.03 S/m; ε_r = 35.498; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-08-2016; Ambient Temp: 20.1°C; Tissue Temp: 22.4°C

Probe: EX3DV4 - SN3914; ConvF(4.74, 4.74, 4.74); Calibrated: 2/22/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/18/2016
Phantom: SAM v5.0 Left; Type: QD000P40CD; Serial: TP: 1687
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) = 17.8 W/kg
SAR(1 g) = 3.70 W/kg
Deviation(1 g) = -7.50%



0 dB = 9.17 W/kg = 9.62 dBW/kg

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1054

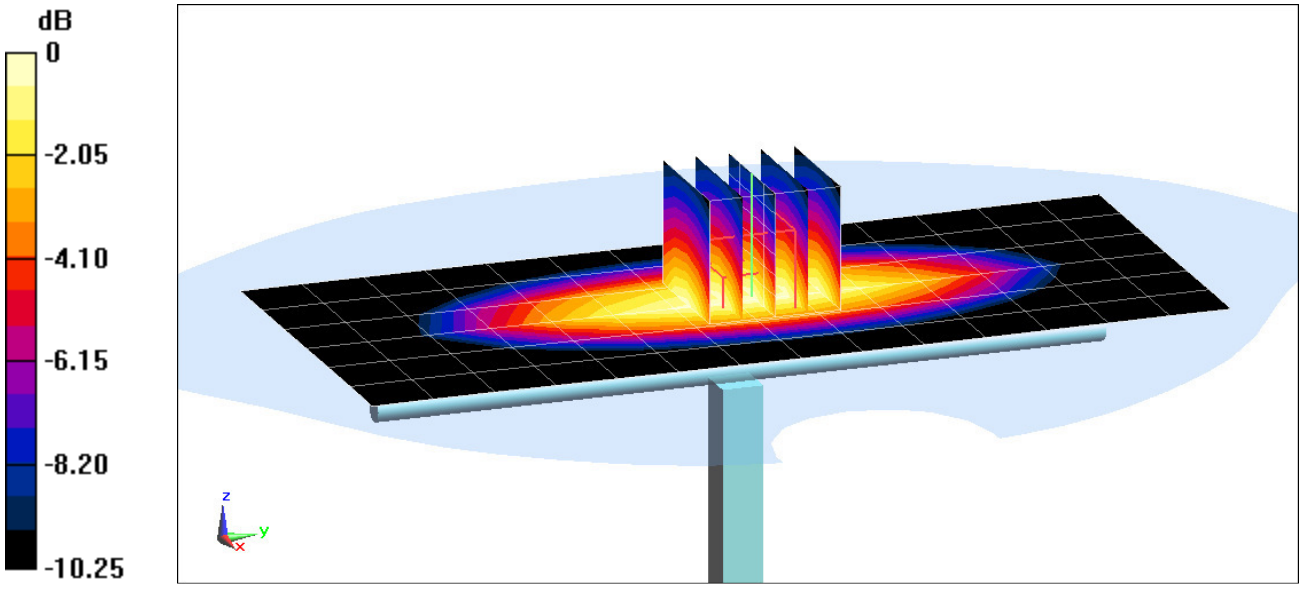
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Body; Medium parameters used (interpolated):
f = 750 MHz; σ = 0.968 S/m; ε_r = 54.613; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-09-2016; Ambient Temp: 23.1°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3334; ConvF(6.37, 6.37, 6.37); 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)

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) = 2.47 W/kg
SAR(1 g) = 1.71 W/kg
Deviation(1 g) = -0.12%



0 dB = 1.98 W/kg = 2.97 dBW/kg

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1054

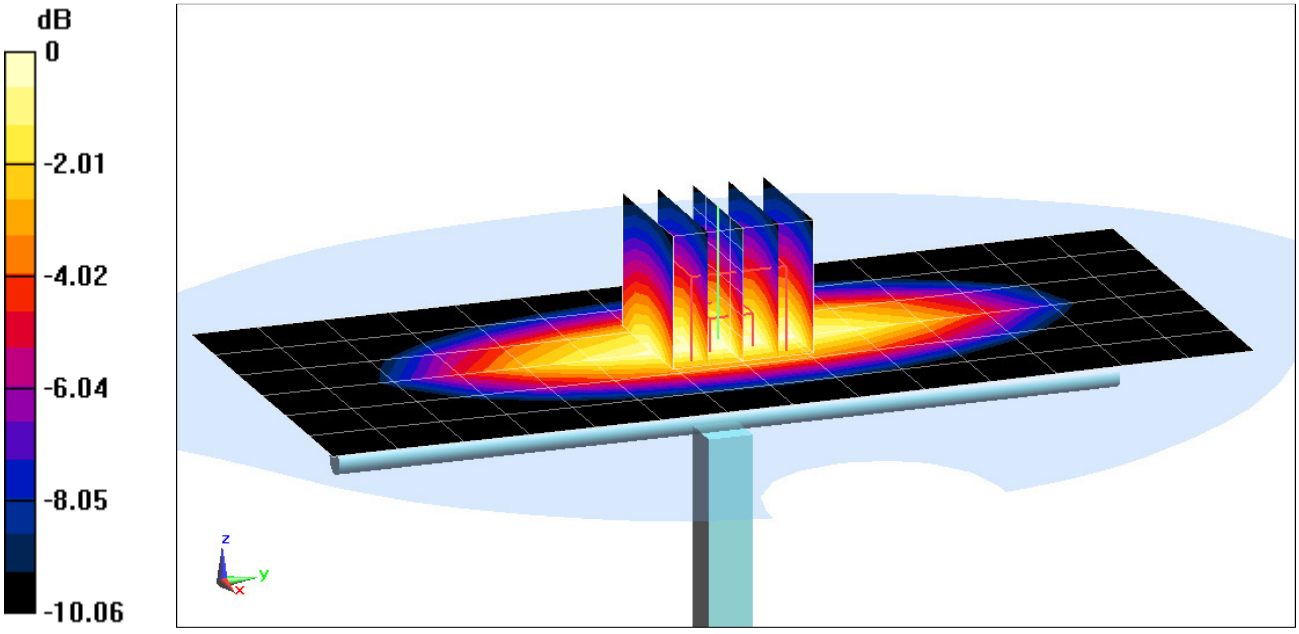
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Body; Medium parameters used (interpolated):
f = 750 MHz; σ = 0.972 S/m; ε_r = 53.612; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-24-2016; Ambient Temp: 22.0°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3319; ConvF(6.06, 6.06, 6.06); Calibrated: 3/18/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/14/2016
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

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) = 2.62 W/kg
SAR(1 g) = 1.78 W/kg
Deviation(1 g) = 3.97%



0 dB = 2.07 W/kg = 3.16 dBW/kg

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

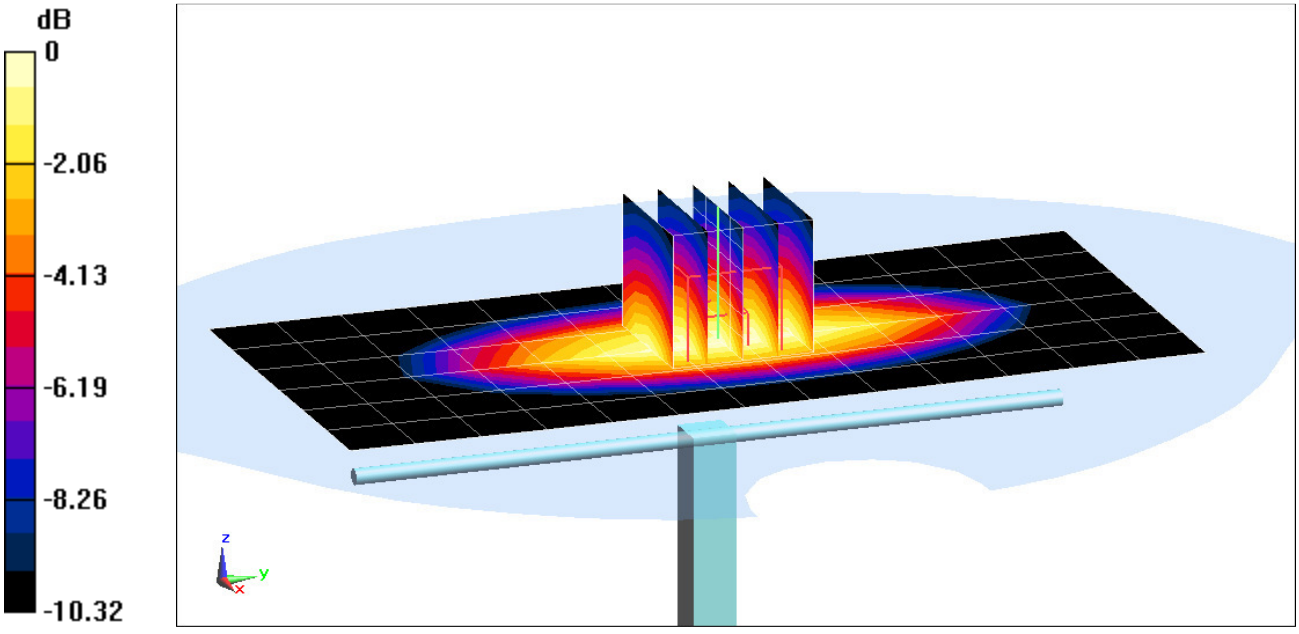
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body; Medium parameters used:
f = 835 MHz; σ = 0.969 S/m; ε_r = 54.256; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-15-2016; Ambient Temp: 20.3°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3319; ConvF(6.04, 6.04, 6.04); Calibrated: 3/18/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/14/2016
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 3.00 W/kg
SAR(1 g) = 2.01 W/kg
Deviation(1 g) = 5.79%



0 dB = 2.35 W/kg = 3.71 dBW/kg

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

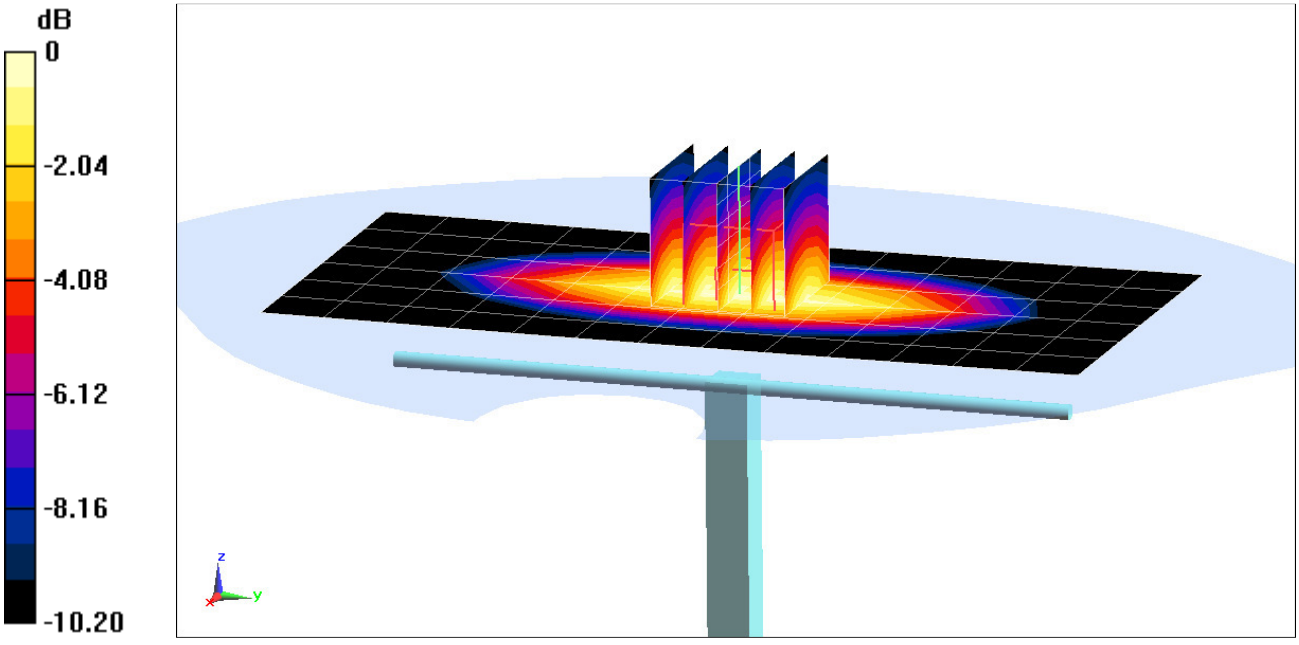
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 1.013 S/m; ε_r = 54.482; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-29-2016; Ambient Temp: 21.2°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3333; ConvF(6.25, 6.25, 6.25); 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) = 2.74 W/kg
SAR(1 g) = 1.89 W/kg
Deviation(1 g) = -0.53%



0 dB = 2.21 W/kg = 3.44 dBW/kg

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

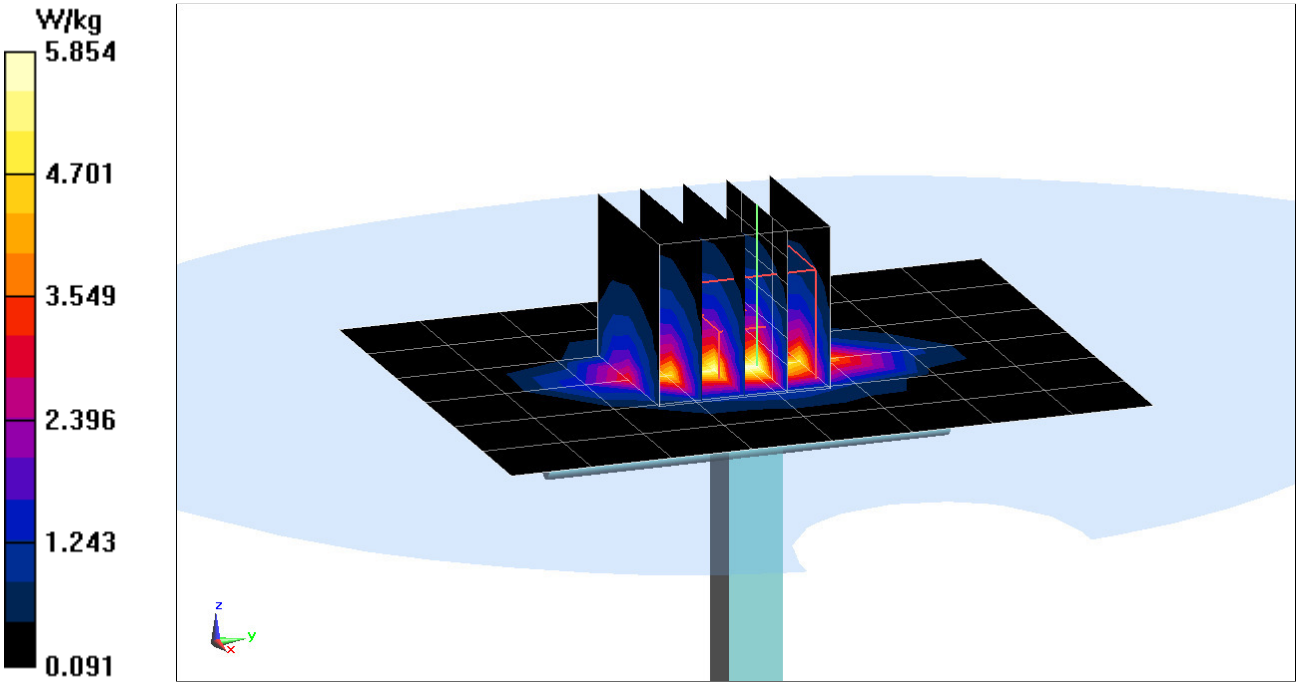
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body; Medium parameters used:
f = 1750 MHz; σ = 1.474 S/m; ε_r = 51.701; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2016; Ambient Temp: 21.4°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7409; ConvF(7.72, 7.72, 7.72); Calibrated: 5/17/2016;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/11/2016
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
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) = 7.04 W/kg
SAR(1 g) = 3.85 W/kg
Deviation(1 g) = 3.22%



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

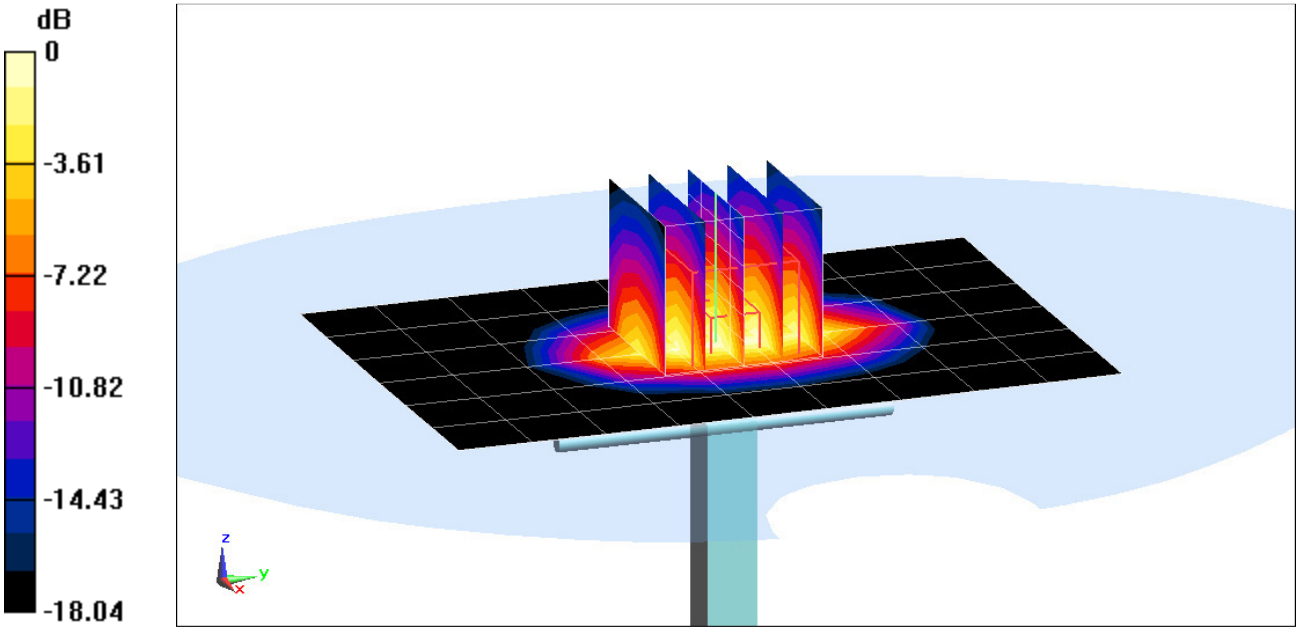
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.568 S/m; ε_r = 53.272; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-08-2016; Ambient Temp: 22.0°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.7, 4.7, 4.7); Calibrated: 3/18/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/14/2016
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.40 W/kg
SAR(1 g) = 4.09 W/kg
Deviation(1 g) = 4.60%



0 dB = 5.17 W/kg = 7.13 dBW/kg

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

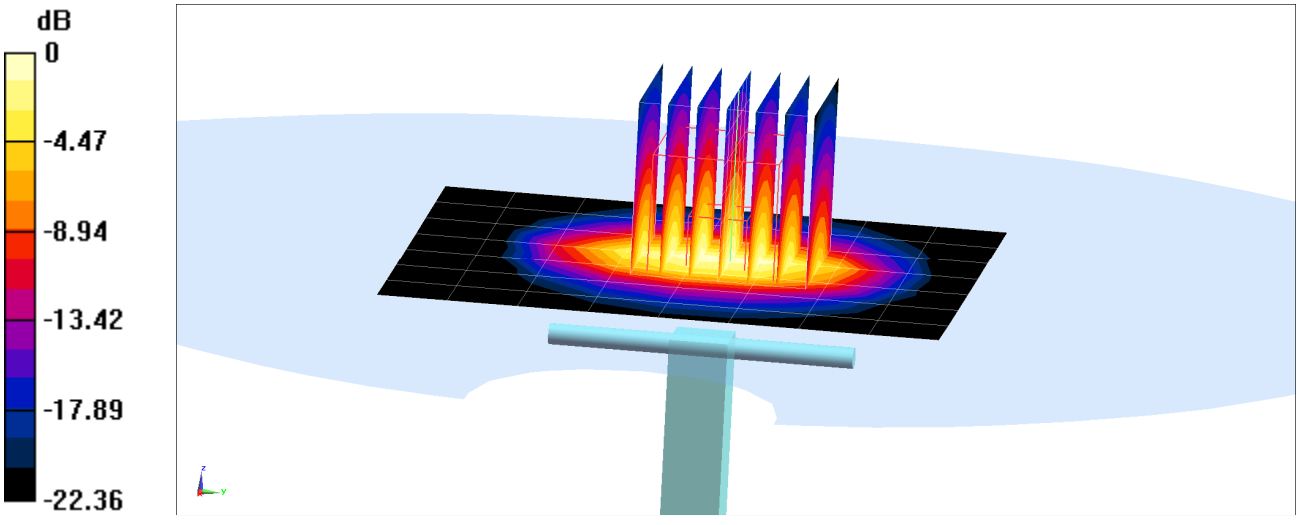
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used:
f = 2450 MHz; σ = 2.032 S/m; ε_r = 51.051; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-10-2016; Ambient Temp: 23.6°C; Tissue Temp: 23.0°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)

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) = 5.27 W/kg
Deviation(1 g) = 1.54%



0 dB = 8.76 W/kg = 9.43 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

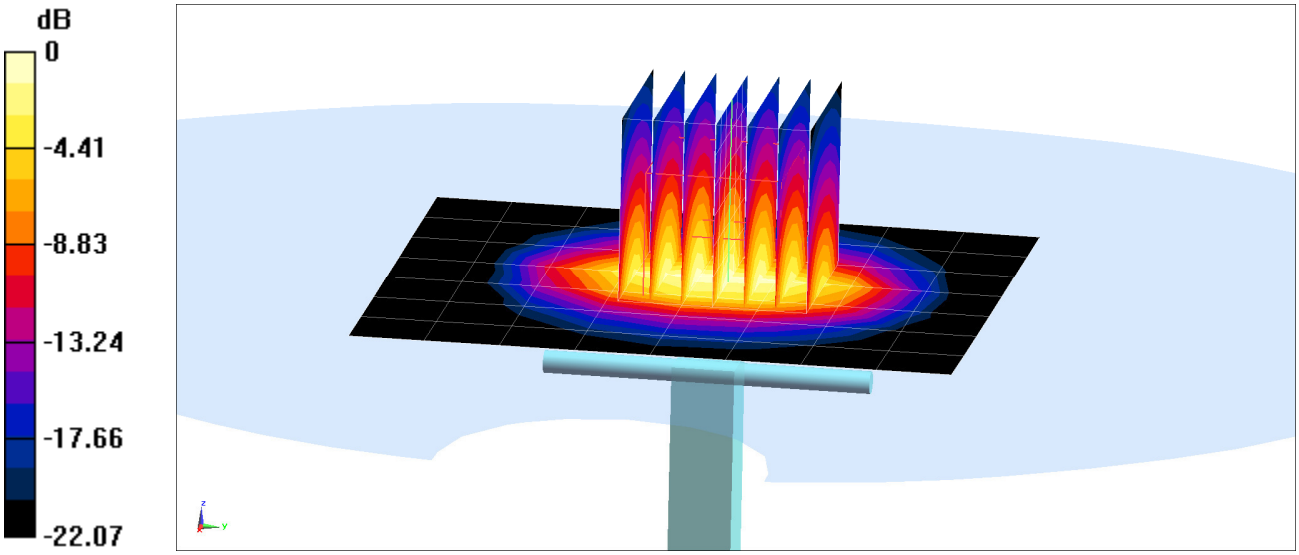
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used:
f = 2450 MHz; σ = 2.027 S/m; ε_r = 52.369; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-15-2016; Ambient Temp: 22.9°C; Tissue Temp: 22.8°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)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.5 W/kg
SAR(1 g) = 5.11 W/kg; SAR(10 g) = 2.36 W/kg
Deviation(1 g) = 0.59%; Deviation(10 g) = -0.84%



0 dB = 8.53 W/kg = 9.31 dBW/kg

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

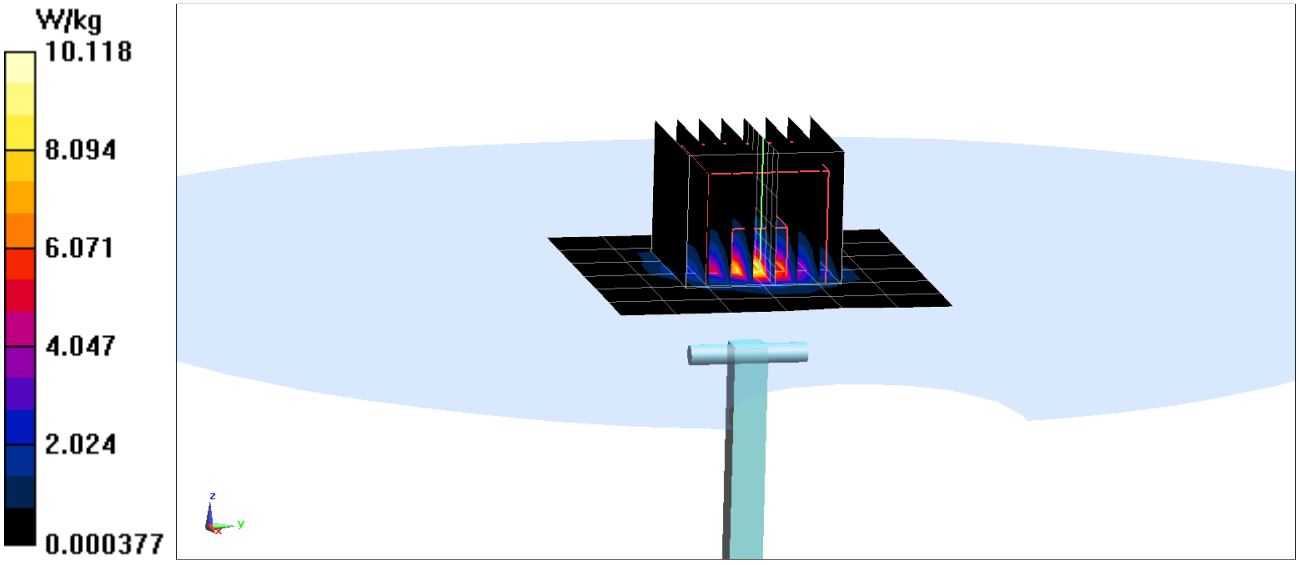
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body; Medium parameters used (interpolated):
f = 5250 MHz; σ = 5.435 S/m; ε_r = 46.762; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-09-2016; Ambient Temp: 21.3°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7357; ConvF(4.28, 4.28, 4.28); 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) = 16.6 W/kg
SAR(1 g) = 4.06 W/kg; SAR(10 g) = 1.13 W/kg
Deviation(1 g) = 5.18%; Deviation(10 g) = 5.12%



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

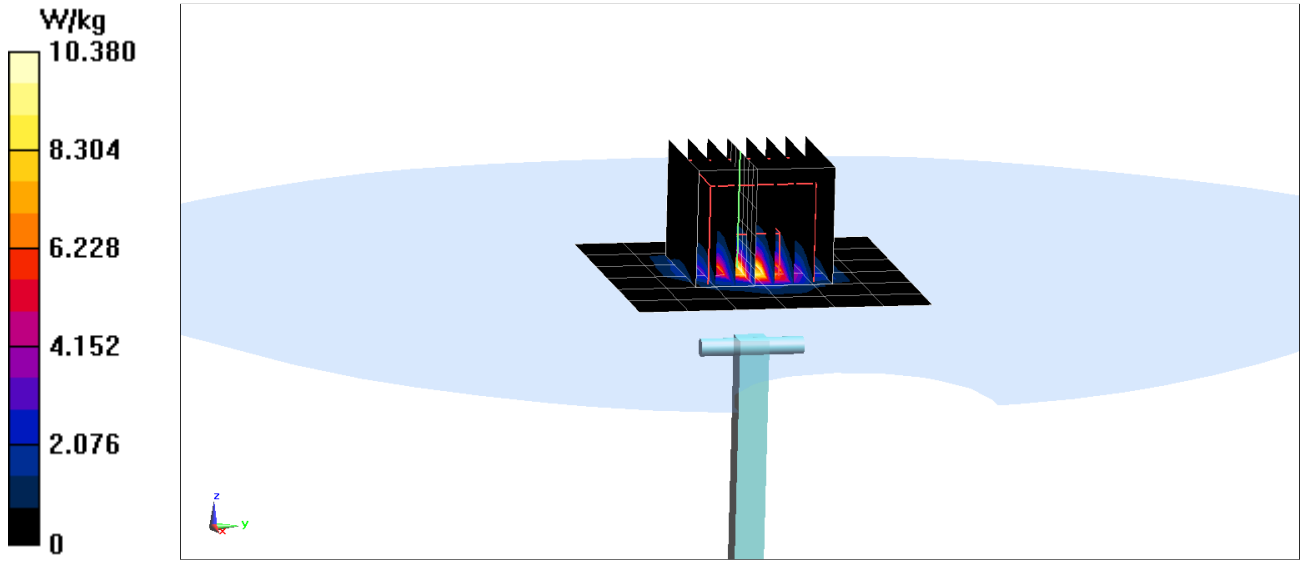
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body; Medium parameters used:
f = 5600 MHz; σ = 5.903 S/m; ε_r = 46.127; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-09-2016; Ambient Temp: 21.3°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7357; ConvF(3.63, 3.63, 3.63); 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) = 17.9 W/kg
SAR(1 g) = 4.38 W/kg; SAR(10 g) = 1.23 W/kg
Deviation(1 g) = 6.96%; Deviation(10 g) = 7.89%



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

Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body; Medium parameters used (interpolated):
f = 5750 MHz; σ = 6.125 S/m; ε_r = 45.901; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-09-2016; Ambient Temp: 21.3°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7357; ConvF(3.77, 3.77, 3.77); 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) = 16.4 W/kg
SAR(1 g) = 3.79 W/kg; SAR(10 g) = 1.06 W/kg
Deviation(1 g) = -1.69%; Deviation(10 g) = -0.93%