PCTEST ENGINEERING LABORATORY, INC.
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SAR EVALUATION REPORT

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

Date of Testing:
06/18/18 - 07/09/18
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
1M1806060120-01.A3L

FCC ID: A3LSMN9600

APPLICANT: SAMSUNG ELECTRONICS CO., LTD.

DUT Type:	Portable Handset
Application Type:	Class II Permissive Change
FCC Rule Part(s):	CFR §2.1093
Model:	SM-N9600
Additional Model(s):	SM-N9608, SM-N9600/SS
Permissive Change(s):	See FCC Change Document

Equipment Class	Band & Mode	Tx Frequency	SAR			
			1g Head (W/kg)	1g Body-Worn (W/kg)	1g Hotspot (W/kg)	10g Phablet (W/kg)
PCE	Cell. CDMA/EVDO	824.70 - 848.31 MHz	0.32	0.50	1.14	N/A
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.24	0.42	0.81	N/A
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	< 0.1	0.47	0.70	3.28
PCE	UMTS 850	826.40 - 846.60 MHz	0.26	0.47	0.87	N/A
PCE	UMTS 1750	1712.4 - 1752.6 MHz	0.15	0.81	0.84	2.94
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.12	0.76	1.28	3.29
PCE	LTE Band 12	699.7 - 715.3 MHz	0.19	0.29	0.55	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	0.25	0.44	0.86	N/A
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	0.23	0.46	0.91	N/A
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.21	0.40	0.83	N/A
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.18	0.92	0.89	3.10
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	0.15	0.68	1.16	3.30
PCE	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.12	0.53	1.01	3.29
PCE	LTE Band 41	2498.5 - 2687.5 MHz	0.11	0.56	0.54	2.33
DTS	2.4 GHz WLAN	2412 - 2472 MHz	0.83	0.10	0.24	N/A
NII	U-NII-1	5180 - 5240 MHz	N/A	N/A	N/A	N/A
NII	U-NII-2A	5260 - 5320 MHz	0.24	0.26	N/A	1.19
NII	U-NII-2C	5500 - 5720 MHz	0.43	0.22	N/A	1.10
NII	U-NII-3	5745 - 5825 MHz	0.39	0.24	0.36	N/A
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.89	< 0.1	0.11	N/A
Simultaneous SAR per KDB 690783 D01v01r03:			1.53	1.56	1.59	3.52

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

ACCREDITED
TESTING CERT#2041.01

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

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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
Cell. CDMA/EVDO	Voice/Data	824.70 - 848.31 MHz
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
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 26 (Cell)	Voice/Data	814.7 - 848.3 MHz
LTE Band 66 (AWS)	Voice/Data	1710.7 - 1779.3 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 25 (PCS)	Voice/Data	1850.7 - 1914.3 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2472 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
ANT+	Data	2402 - 2480 MHz
MST	Data	555 Hz - 8.33 kHz

1.2 Power Reduction for SAR

This device utilizes power reduction mechanism for some wireless modes and bands for SAR compliance under portable hotspot conditions and under some conditions when the device is being used in close proximity to the user's body. All hotspot SAR evaluations for this device were performed at the maximum allowed output power when hotspot is enabled. FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device. Detailed descriptions of the power reduction mechanism are included in the operational description.

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

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 Output Power

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slot	*1 TX Slots*	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*	*1 TX Slots*	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*
GSM/GPRS/EDGE 850	Maximum	**34.0**	**34.0**	**31.5**	**30.0**	**28.0**	**28.0**	**26.0**	**24.0**	**22.0**
	Nominal	**33.0**	**33.0**	**30.5**	**29.0**	**27.0**	**27.0**	**25.0**	**23.0**	**21.0**
GSM/GPRS/EDGE 1900	Maximum	**31.0**	**31.0**	**28.6**	**26.0**	**24.5**	**26.6**	**25.5**	**23.5**	**21.5**
	Nominal	**30.0**	**30.0**	**27.6**	**25.0**	**23.5**	**25.6**	**24.5**	**22.5**	**20.5**

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	*3GPP HSDPA*	*3GPP HSUPA*	*3GPP DC-HSDPA*
UMTS Band 5 (850 MHz)	Maximum	**25.0**	**25.0**	**25.0**	**25.0**
	Nominal	**24.0**	**24.0**	**24.0**	**24.0**
UMTS Band 4 (1750 MHz)	Maximum	**25.0**	**25.0**	**25.0**	**25.0**
	Nominal	**24.0**	**24.0**	**24.0**	**24.0**
UMTS Band 2 (1900 MHz)	Maximum	**25.0**	**25.0**	**25.0**	**25.0**
	Nominal	**24.0**	**24.0**	**24.0**	**24.0**

Mode / Band		Modulated Average (dBm)
Cell. CDMA/EVDO	Maximum	**26.5**
	Nominal	**25.5**

Mode / Band		Modulated Average (dBm)
LTE Band 12	Maximum	**25.2**
	Nominal	**24.2**
LTE Band 17	Maximum	**25.2**
	Nominal	**24.2**
LTE Band 13	Maximum	**25.5**
	Nominal	**24.5**
LTE Band 5 (Cell)	Maximum	**25.5**
	Nominal	**24.5**
LTE Band 26 (Cell)	Maximum	**25.2**
	Nominal	**24.2**
LTE Band 66 (AWS)	Maximum	**25.3**
	Nominal	**24.3**
LTE Band 4 (AWS)	Maximum	**25.3**
	Nominal	**24.3**
LTE Band 2 (PCS)	Maximum	**25.0**
	Nominal	**24.0**
LTE Band 25 (PCS)	Maximum	**24.0**
	Nominal	**23.0**
LTE Band 41 (PC3)	Maximum	**25.0**
	Nominal	**24.0**
LTE Band 41 (PC2)	Maximum	**28.0**
	Nominal	**27.0**

1.3.2 Reduced PCE Output Power – Hotspot Mode Activated

Mode / Band		Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slots	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*	*1 TX Slots*	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*
GSM/GPRS/EDGE 1900	Maximum	**27.0**	**25.3**	**23.3**	**21.5**	**25.5**	**24.0**	**22.5**	**21.0**
	Nominal	**26.0**	**24.3**	**22.3**	**20.5**	**24.5**	**23.0**	**21.5**	**20.0**

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	*3GPP HSDPA*	*3GPP HSUPA*	*3GPP DC-HSDPA*
UMTS Band 4 (1750 MHz)	Maximum	**20.0**	**20.0**	**20.0**	**20.0**
	Nominal	**19.0**	**19.0**	**19.0**	**19.0**
UMTS Band 2 (1900 MHz)	Maximum	**20.0**	**20.0**	**20.0**	**20.0**
	Nominal	**19.0**	**19.0**	**19.0**	**19.0**

Mode / Band		Modulated Average (dBm)
LTE Band 66 (AWS)	Maximum	**20.5**
	Nominal	**19.5**
LTE Band 4 (AWS)	Maximum	**20.5**
	Nominal	**19.5**
LTE Band 2 (PCS)	Maximum	**20.5**
	Nominal	**19.5**
LTE Band 25 (PCS)	Maximum	**20.5**
	Nominal	**19.5**
LTE Band 41 (PC3)	Maximum	**21.0**
	Nominal	**20.0**
LTE Band 41 (PC2)	Maximum	**21.0**
	Nominal	**20.0**

1.3.3 Reduced PCE Output Power – Grip Mode Activated

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	*3GPP HSDPA*	*3GPP HSUPA*	*3GPP DC-HSDPA*
UMTS Band 4 (1750 MHz)	Maximum	**21.5**	**21.5**	**21.5**	**21.5**
	Nominal	**20.5**	**20.5**	**20.5**	**20.5**
UMTS Band 2 (1900 MHz)	Maximum	**21.0**	**21.0**	**21.0**	**21.0**
	Nominal	**20.0**	**20.0**	**20.0**	**20.0**

Mode / Band		Modulated Average (dBm)
LTE Band 66 (AWS)	Maximum	**21.5**
	Nominal	**20.5**
LTE Band 4 (AWS)	Maximum	**21.5**
	Nominal	**20.5**
LTE Band 2 (PCS)	Maximum	**21.0**
	Nominal	**20.0**
LTE Band 25 (PCS)	Maximum	**21.0**
	Nominal	**20.0**
LTE Band 41 (PC3)	Maximum	**23.5**
	Nominal	**22.5**
LTE Band 41 (PC2)	Maximum	**23.5**
	Nominal	**22.5**

1.3.4 Maximum Bluetooth and WLAN Output Power

Mode / Band		Modulated Average - Antenna 1 Single Tx Chain (dBm)			
		Ch. 1,11	Ch. 2-10	Ch. 12	Ch. 13
IEEE 802.11b (2.4 GHz)	Maximum	**21.0**		**17.0**	**16.0**
	Nominal	**20.0**		**16.0**	**15.0**
IEEE 802.11g (2.4 GHz)	Maximum	**17.0**	**18.0**	**14.5**	**8.5**
	Nominal	**16.0**	**17.0**	**13.5**	**7.5**
IEEE 802.11n (2.4 GHz)	Maximum	**17.0**	**18.0**	**14.5**	**8.5**
	Nominal	**16.0**	**17.0**	**13.5**	**7.5**

Mode / Band		Modulated Average - Antenna 2 Single Tx Chain (dBm)			
		Ch. 1,11	Ch. 2-10	Ch. 12	Ch. 13
IEEE 802.11b (2.4 GHz)	Maximum	**21.0**		**19.5**	**17.0**
	Nominal	**20.0**		**18.5**	**16.0**
IEEE 802.11g (2.4 GHz)	Maximum	**17.0**	**18.0**	**15.0**	**10.5**
	Nominal	**16.0**	**17.0**	**14.0**	**9.5**
IEEE 802.11n (2.4 GHz)	Maximum	**17.0**	**18.0**	**15.0**	**8.5**
	Nominal	**16.0**	**17.0**	**14.0**	**7.5**

Mode / Band		Modulated Average - Single Tx Chain (dBm)						
		20 MHz Bandwidth		40 MHz Bandwidth			80 MHz Bandwidth	
		Ch. 36-64	Ch. 100-165	Ch. 38	Ch. 62	Ch. 46, 54, 102-159	Ch. 42,58, 106	Ch. 122-155
IEEE 802.11a (5 GHz)	Maximum	**18.0**	**17.5**					
	Nominal	**17.0**	**16.5**					
IEEE 802.11n (5 GHz)	Maximum	**18.0**	**17.5**	**16.0**	**15.0**	**17.0**		
	Nominal	**17.0**	**16.5**	**15.0**	**14.0**	**16.0**		
IEEE 802.11ac (5 GHz)	Maximum	**18.0**	**17.5**	**16.0**	**15.0**	**17.0**	**15.0**	**16.0**
	Nominal	**17.0**	**16.5**	**15.0**	**14.0**	**16.0**	**14.0**	**15.0**

Mode / Band		Modulated Average - MIMO (dBm)			
		Ch. 1,11	Ch. 2-10	Ch. 12	Ch. 13
IEEE 802.11g (2.4 GHz)	Maximum	**20.0**	**21.0**	**16.5**	**8.0**
	Nominal	**19.0**	**20.0**	**15.5**	**7.0**
IEEE 802.11n (2.4 GHz)	Maximum	**20.0**	**21.0**	**16.5**	**6.0**
	Nominal	**19.0**	**20.0**	**15.5**	**5.0**

Mode / Band		Modulated Average - MIMO (dBm)						
		20 MHz Bandwidth		40 MHz Bandwidth			80 MHz Bandwidth	
		Ch. 36-64	Ch. 100-165	Ch. 38	Ch. 62	Ch. 46, 54, 102-159	Ch. 42,58, 106	Ch. 122-155
IEEE 802.11a (5 GHz)	Maximum	**21.0**	**20.5**					
	Nominal	**20.0**	**19.5**					
IEEE 802.11n (5 GHz)	Maximum	**21.0**	**20.5**	**19.0**	**18.0**	**20.0**		
	Nominal	**20.0**	**19.5**	**18.0**	**17.0**	**19.0**		
IEEE 802.11ac (5 GHz)	Maximum	**21.0**	**20.5**	**19.0**	**18.0**	**20.0**	**18.0**	**19.0**
	Nominal	**20.0**	**19.5**	**18.0**	**17.0**	**19.0**	**17.0**	**18.0**

Mode / Band		Modulated Average - Antenna 2 Single Tx Chain (dBm)
Bluetooth	Maximum	**16.5**
	Nominal	**15.5**
Bluetooth (EDR)	Maximum	**11.0**
	Nominal	**10.0**
Bluetooth LE	Maximum	**10.0**
	Nominal	**9.0**

1.3.5 Reduced WLAN Output Power

Mode / Band		Modulated Average - Antenna 1 Single Tx Chain (dBm)		
		Ch. 1-11	Ch. 12	Ch. 13
IEEE 802.11b (2.4 GHz)	Maximum	**17.0**		**16.0**
	Nominal	**16.0**		**15.0**
IEEE 802.11g (2.4 GHz)	Maximum	**17.0**	**14.5**	**8.5**
	Nominal	**16.0**	**13.5**	**7.5**
IEEE 802.11n (2.4 GHz)	Maximum	**17.0**	**14.5**	**8.5**
	Nominal	**16.0**	**13.5**	**7.5**

Mode / Band		Modulated Average - Antenna 2 Single Tx Chain (dBm)		
		Ch. 1-11	Ch. 12	Ch. 13
IEEE 802.11b (2.4 GHz)	Maximum	**17.0**		
	Nominal	**16.0**		
IEEE 802.11g (2.4 GHz)	Maximum	**17.0**	**15.0**	**10.5**
	Nominal	**16.0**	**14.0**	**9.5**
IEEE 802.11n (2.4 GHz)	Maximum	**17.0**	**15.0**	**8.5**
	Nominal	**16.0**	**14.0**	**7.5**

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

Mode / Band		Modulated Average - MIMO (dBm)		
		Ch. 1-11	Ch. 12	Ch. 13
IEEE 802.11g (2.4 GHz)	Maximum	19.0	16.5	8.0
	Nominal	18.0	15.5	7.0
IEEE 802.11n (2.4 GHz)	Maximum	19.0	16.5	6.0
	Nominal	18.0	15.5	5.0

Mode / Band		Modulated Average - MIMO (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11a (5 GHz)	Maximum	17.0		
	Nominal	16.0		
IEEE 802.11n (5 GHz)	Maximum	17.0	17.0	
	Nominal	16.0	16.0	
IEEE 802.11ac (5 GHz)	Maximum	17.0	17.0	17.0
	Nominal	16.0	16.0	16.0

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

<table>
<tr><th rowspan="2"></th><th rowspan="2">#
Tx</th><th colspan="2">5 GHz WIFI
[dBm]</th><th colspan="2">2.4 GHz WIFI
[dBm]</th><th rowspan="2">802.11 Modes</th></tr>
<tr><th>Ant1</th><th>Ant2</th><th>Ant1</th><th>Ant2</th></tr>
<tr><td rowspan="9">2.4 GHz + 5 GHz</td><td>2</td><td>A</td><td>-</td><td>-</td><td>B</td><td rowspan="4">2.4 GHz: b,g,n
5 GHz: a,n,ac</td></tr>
<tr><td>2</td><td>-</td><td>A</td><td>B</td><td>-</td></tr>
<tr><td>2</td><td>A</td><td>-</td><td>B</td><td>-</td></tr>
<tr><td>2</td><td>-</td><td>A</td><td>-</td><td>B</td></tr>
<tr><td>3</td><td>A</td><td>A</td><td>B</td><td>-</td><td rowspan="2">2.4 GHz: b, g, n
5 GHz: n, ac, a (CDD + STBC only)</td></tr>
<tr><td>3</td><td>A</td><td>A</td><td>-</td><td>B</td></tr>
<tr><td>3</td><td>A</td><td>-</td><td>B</td><td>B</td><td rowspan="2">2.4 GHz: n, g (CDD + STBC only)
5 GHz: a, n, ac</td></tr>
<tr><td>3</td><td>-</td><td>A</td><td>B</td><td>B</td></tr>
<tr><td>4</td><td>A</td><td>A</td><td>B</td><td>B</td><td>2.4 GHz: n, g (CDD + STBC only)
5 GHz: n, ac, a (CDD + STBC only)</td></tr>
</table>

A = 13 dBm
B = 16 dBm
2.4 GHz WLAN Channel 12 will operate with Single Tx target power of 12.5 dBm
2.4 GHz WLAN Channel 13 will operate with Single Tx target power of 2.0 dBm
(Upper tolerance: target + 1.0 dB)

1.3.7 Reduced Output Power During Conditions with Simultaneous 2.4 GHz WLAN and 5 GHz WLAN

<table>
<tr><th rowspan="2"></th><th rowspan="2">#
Tx</th><th colspan="2">5 GHz WIFI
[dBm]</th><th colspan="2">2.4 GHz WIFI
[dBm]</th><th rowspan="2">802.11 Modes</th></tr>
<tr><th>Ant1</th><th>Ant2</th><th>Ant1</th><th>Ant2</th></tr>
<tr><td rowspan="9">2.4 GHz + 5 GHz</td><td>2</td><td>A</td><td>-</td><td>-</td><td>B</td><td rowspan="4">2.4 GHz: b,g,n
5 GHz: a,n,ac</td></tr>
<tr><td>2</td><td>-</td><td>A</td><td>B</td><td>-</td></tr>
<tr><td>2</td><td>A</td><td>-</td><td>B</td><td>-</td></tr>
<tr><td>2</td><td>-</td><td>A</td><td>-</td><td>B</td></tr>
<tr><td>3</td><td>A</td><td>A</td><td>B</td><td>-</td><td rowspan="2">2.4 GHz: b, g, n
5 GHz: n, ac, a (CDD + STBC only)</td></tr>
<tr><td>3</td><td>A</td><td>A</td><td>-</td><td>B</td></tr>
<tr><td>3</td><td>A</td><td>-</td><td>B</td><td>B</td><td rowspan="2">2.4 GHz: n, g (CDD + STBC only)
5 GHz: a, n, ac</td></tr>
<tr><td>3</td><td>-</td><td>A</td><td>B</td><td>B</td></tr>
<tr><td>4</td><td>A</td><td>A</td><td>B</td><td>B</td><td>2.4 GHz: n, g (CDD + STBC only)
5 GHz: n, ac, a (CDD + STBC only)</td></tr>
</table>

A = 12 dBm
B = 13 dBm
2.4 GHz WLAN Channel 12 will operate with Single Tx target power of 12.5 dBm
2.4 GHz WLAN Channel 13 will operate with Single Tx target power of 2.0 dBm
(Upper tolerance: target + 1.0 dB)

1.4 DUT Antenna Locations

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

Table 1-1
Device Edges/Sides for SAR Testing

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

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

1.5 Near Field Communications (NFC) Antenna

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

1.6 Simultaneous Transmission Capabilities

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

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

Table 1-2
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Head	Body-Worn Accessory	Wireless Router	Phablet	Notes
1	1x CDMA voice + 2.4 GHz WI-FI	Yes	Yes	N/A	Yes	
2	1x CDMA voice + 5 GHz WI-FI	Yes	Yes	N/A	Yes	
3	1x CDMA voice + 2.4 GHz Bluetooth	Yes^	Yes	N/A	Yes	^Bluetooth Tethering is considered
4	1x CDMA voice + 2.4 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
5	1x CDMA voice + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
6	1x CDMA voice + 2.4 GHz WI-FI + 5 GHz WI-FI	Yes	Yes	N/A	Yes	
7	1x CDMA voice + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
8	GSM voice + 2.4 GHz WI-FI	Yes	Yes	N/A	Yes	
9	GSM voice + 5 GHz WI-FI	Yes	Yes	N/A	Yes	
10	GSM voice + 2.4 GHz Bluetooth	Yes^	Yes	N/A	Yes	^Bluetooth Tethering is considered
11	GSM voice + 2.4 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
12	GSM voice + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
13	GSM voice + 2.4 GHz WI-FI + 5 GHz WI-FI	Yes	Yes	N/A	Yes	
14	GSM voice + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
15	UMTS + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes	
16	UMTS + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
17	UMTS + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^Bluetooth Tethering is considered
18	UMTS + 2.4 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
19	UMTS + 5 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
20	UMTS + 2.4 GHz WI-FI + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
21	UMTS + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
22	LTE + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes	
23	LTE + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
24	LTE + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^Bluetooth Tethering is considered
25	LTE + 2.4 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
26	LTE + 5 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
27	LTE + 2.4 GHz WI-FI + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
28	LTE + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
29	CDMA/EVDO data + 2.4 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
30	CDMA/EVDO data + 5 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
31	CDMA/EVDO data + 2.4 GHz Bluetooth	Yes*^	Yes*	Yes^	Yes	* Pre-installed VOIP applications are considered ^Bluetooth Tethering is considered
32	CDMA/EVDO data + 2.4 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
33	CDMA/EVDO data + 5 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
34	CDMA/EVDO data + 2.4 GHz WI-FI + 5 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
35	CDMA/EVDO data + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
36	GPRS/EDGE + 2.4 GHz WI-FI	N/A	N/A	Yes	Yes	
37	GPRS/EDGE + 5 GHz WI-FI	N/A	N/A	Yes	Yes	
38	GPRS/EDGE + 2.4 GHz Bluetooth	N/A	N/A	Yes^	Yes	^Bluetooth Tethering is considered
39	GPRS/EDGE + 2.4 GHz WI-FI MIMO	N/A	N/A	Yes	Yes	
40	GPRS/EDGE + 5 GHz WI-FI MIMO	N/A	N/A	Yes	Yes	
41	GPRS/EDGE + 2.4 GHz WI-FI + 5 GHz WI-FI	N/A	N/A	Yes	Yes	
42	GPRS/EDGE + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	N/A	N/A	Yes	Yes	

1. Bluetooth cannot transmit simultaneously with WLAN.
2. All licensed modes share the same antenna path and cannot transmit simultaneously.
3. When the user utilizes multiple services in UMTS 3G mode it uses multi-Radio Access Bearer or multi-RAB. The power control is based on a physical control channel (Dedicated Physical Control Channel [DPCCH]) and power control will be adjusted to meet the needs of both services. Therefore, the UMTS+WLAN scenario also represents the UMTS Voice/DATA + WLAN Hotspot scenario.
4. Per the manufacturer, WIFI Direct is not expected to be used in conjunction with a held-to-ear or body-worn accessory voice call. Therefore, there are no simultaneous transmission scenarios involving WIFI direct beyond that listed in the above table.

5. 5 GHz Wireless Router is only supported for the U-NII-3 by S/W, therefore U-NII-1, U-NII2A, and U-NII2C were not evaluated for wireless router conditions.
6. This device supports 2x2 MIMO Tx for WLAN. 802.11a/g/n/ac supports CDD and STBC and 802.11 n/ac additionally supports SDM.
7. This device supports VOLTE.
8. This device supports VoWIFI.
9. This device supports Bluetooth Tethering.

1.7 Miscellaneous SAR Test Considerations

(A) WIFI/BT

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

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

This device supports IEEE 802.11ac with the following features:
a) Up to 80 MHz Bandwidth only
b) No aggregate channel configurations
c) 2 Tx antenna output
d) 256 QAM is supported
e) TDWR and Band gap channels are supported

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

This device supports channel 1-13 for 2.4 GHz WLAN. However, due to the reduced output power for channels 12 and 13, channels 1-11 were considered for SAR testing per KDB 248227 D01v02r02.

(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.

CDMA 1X Advanced technology was not required for SAR since the maximum allowed output powers for 1x Advanced was not more than 0.25 dB higher than the maximum powers for 1x and the measured SAR in any 1x mode exposure conditions was not greater than 1.2 W/kg per FCC KDB Publication 941225 D01v03r01.

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

This device supports 64QAM on the uplink and 256QAM on the downlink for LTE Operations. Conducted powers for 64QAM uplink configurations were measured per Section 5.1 of FCC KDB Publication 941225 D05v02r05. SAR was not required for 64QAM since the highest maximum output power for 64 QAM is $\leq \frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is $\leq$ 1.45 W/kg, per Section 5.2.4 of FCC KDB Publication 941225 D05v02r05.

This device supports downlink 4x4 MIMO operations for some LTE Bands. Per May 2017 TCB Workshop Guidance, SAR for downlink 4x4 MIMO was not needed since the maximum average output power in 4x4 downlink MIMO mode was not > 0.25 dB higher than the maximum output power with downlink 4x4 MIMO inactive.

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

This device supports both Power Class 2 (PC2) and Power Class 3 (PC3) for LTE Band 41. Per May 2017 TCB Workshop Notes, SAR tests were performed with Power Class 3 (given the specific UL/DL limitations for Power Class 2). Additionally, SAR testing for the power class condition was evaluated for the highest configuration in Power Class 3 for each test configuration to confirm the results were scalable linearly (See Section 14).

This device supports LTE Carrier Aggregation (CA) for LTE Band 41 with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per 2017 Fall TCB Workshop Notes.

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)
- FCC KDB Publication 616217 D04v01r02 (Proximity Sensor)
- October 2013 TCB Workshop Notes (GPRS Testing Considerations)
- May 2017 TCB Workshop Notes (LTE 4x4 Downlink MIMO, LTE Band 41 Power Class 2/3)
- April 2018 TCB Workshop Notes (DL LTE CA exclusion)

1.9 Device Serial Numbers

Several samples with identical hardware were used to support SAR testing. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units. The serial numbers used for each test are indicated alongside the results in Section 11.

2 LTE INFORMATION

LTE Information					
FCC ID	**A3LSMN9600**				
Form Factor	Portable Handset				
Frequency Range of each LTE transmission band	LTE Band 12 (699.7 - 715.3 MHz)				
	LTE Band 17 (706.5 - 713.5 MHz)				
	LTE Band 13 (779.5 - 784.5 MHz)				
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)				
	LTE Band 26 (Cell) (814.7 - 848.3 MHz)				
	LTE Band 66 (AWS) (1710.7 - 1779.3 MHz)				
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)				
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)				
	LTE Band 25 (PCS) (1850.7 - 1914.3 MHz)				
	LTE Band 41 (2498.5 - 2687.5 MHz)				
Channel Bandwidths	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 17: 5 MHz, 10 MHz				
	LTE Band 13: 5 MHz, 10 MHz				
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 26 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz				
	LTE Band 66 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 2 (PCS): 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 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 12: 1.4 MHz	699.7 (23017)		707.5 (23095)		715.3 (23173)
LTE Band 12: 3 MHz	700.5 (23025)		707.5 (23095)		714.5 (23165)
LTE Band 12: 5 MHz	701.5 (23035)		707.5 (23095)		713.5 (23155)
LTE Band 12: 10 MHz	704 (23060)		707.5 (23095)		711 (23130)
LTE Band 17: 5 MHz	706.5 (23755)		710 (23790)		713.5 (23825)
LTE Band 17: 10 MHz	709 (23780)		710 (23790)		711 (23800)
LTE Band 13: 5 MHz	779.5 (23205)		782 (23230)		784.5 (23255)
LTE Band 13: 10 MHz	N/A		782 (23230)		N/A
LTE Band 5 (Cell): 1.4 MHz	824.7 (20407)		836.5 (20525)		848.3 (20643)
LTE Band 5 (Cell): 3 MHz	825.5 (20415)		836.5 (20525)		847.5 (20635)
LTE Band 5 (Cell): 5 MHz	826.5 (20425)		836.5 (20525)		846.5 (20625)
LTE Band 5 (Cell): 10 MHz	829 (20450)		836.5 (20525)		844 (20600)
LTE Band 26 (Cell): 1.4 MHz	814.7 (26697)		831.5 (26865)		848.3 (27033)
LTE Band 26 (Cell): 3 MHz	815.5 (26705)		831.5 (26865)		847.5 (27025)
LTE Band 26 (Cell): 5 MHz	816.5 (26715)		831.5 (26865)		846.5 (27015)
LTE Band 26 (Cell): 10 MHz	819 (26740)		831.5 (26865)		844 (26990)
LTE Band 26 (Cell): 15 MHz	821.5 (26765)		831.5 (26865)		841.5 (26965)
LTE Band 66 (AWS): 1.4 MHz	1710.7 (131979)		1745 (132322)		1779.3 (132665)
LTE Band 66 (AWS): 3 MHz	1711.5 (131987)		1745 (132322)		1778.5 (132657)
LTE Band 66 (AWS): 5 MHz	1712.5 (131997)		1745 (132322)		1777.5 (132647)
LTE Band 66 (AWS): 10 MHz	1715 (132022)		1745 (132322)		1775 (132622)
LTE Band 66 (AWS): 15 MHz	1717.5 (132047)		1745 (132322)		1772.5 (132597)
LTE Band 66 (AWS): 20 MHz	1720 (132072)		1745 (132322)		1770 (132572)
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)		1732.5 (20175)		1754.3 (20393)
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)		1732.5 (20175)		1753.5 (20385)
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)		1732.5 (20175)		1752.5 (20375)
LTE Band 4 (AWS): 10 MHz	1715 (20000)		1732.5 (20175)		1750 (20350)
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)		1732.5 (20175)		1747.5 (20325)
LTE Band 4 (AWS): 20 MHz	1720 (20050)		1732.5 (20175)		1745 (20300)
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)		1880 (18900)		1909.3 (19193)
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)		1880 (18900)		1908.5 (19185)
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)		1880 (18900)		1907.5 (19175)
LTE Band 2 (PCS): 10 MHz	1855 (18650)		1880 (18900)		1905 (19150)
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)		1880 (18900)		1902.5 (19125)
LTE Band 2 (PCS): 20 MHz	1860 (18700)		1880 (18900)		1900 (19100)
LTE Band 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 41: 5 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
UE Category	DL UE Cat 18 (QPSK, 16QAM, 64 QAM, 256 QAM), UL UE Cat 13 (QPSK, 16 QAM, 64 QAM)				
Modulations Supported in UL	QPSK, 16QAM, 64QAM				
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestation to be provided)	YES				
A-MPR (Additional MPR) disabled for SAR Testing?	YES				
LTE Carrier Aggregation Possible Combinations	The technical description includes all the possible carrier aggregation combinations				
LTE Additional Information	This device does not support full CA features on 3GPP Release 14. It supports uplink carrier aggregation for LTE CA_41C with a maximum of two 20 MHz component carriers. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. The following LTE Release 14 Features are not supported: Relay, HetNet, Enhanced MIMO, eICIC, WIFI Offloading, MDH, eMBMS, Cross-Carrier Scheduling, Enhanced SC-FDMA.				

3 INTRODUCTION

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

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

3.1 SAR Definition

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

Equation 3-1
SAR Mathematical Equation

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

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:

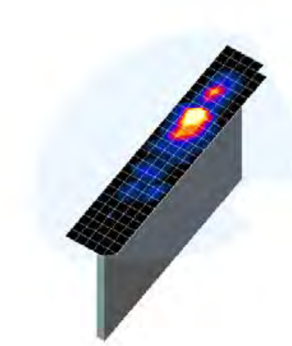


Figure 4-1
Sample SAR Area Scan

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].

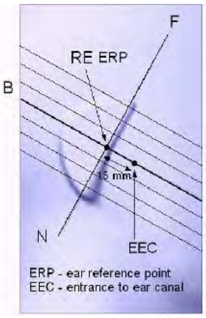


Figure 5-1
Close-Up Side view of ERP

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

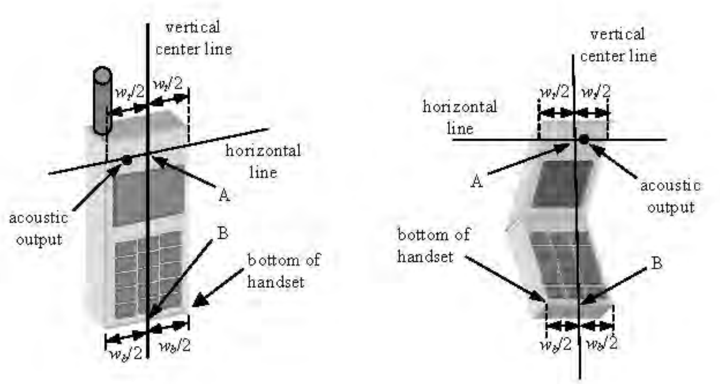


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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 $\varepsilon = 3$ and loss tangent $\delta = 0.02$.

6.2 Positioning for Cheek

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

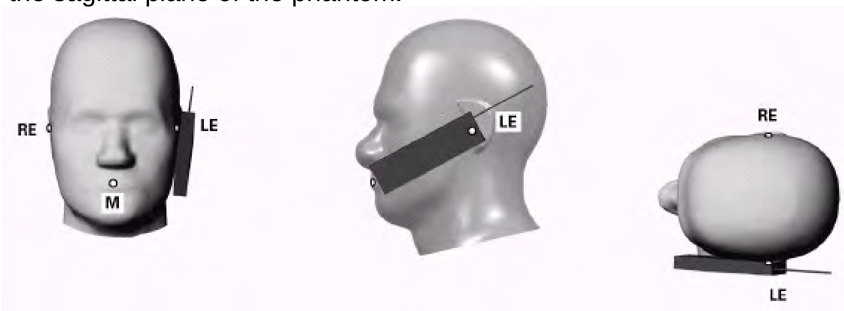


Figure 6-1 Front, Side and Top View of Cheek Position

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

6.3 Positioning for Ear / 15º Tilt

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

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

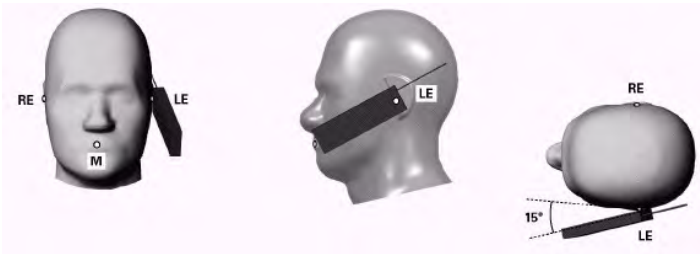


Figure 6-2 Front, Side and Top View of Ear/15º Tilt Position

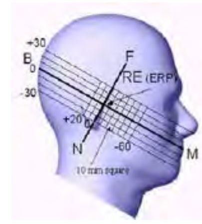


Figure 6-3
Side view w/ relevant markings

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

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

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

6.5 Body-Worn Accessory Configurations

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

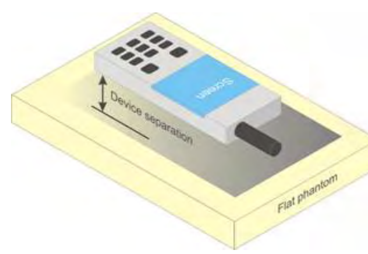


Figure 6-4
Sample Body-Worn Diagram

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

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

6.6 Extremity Exposure Configurations

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

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

6.7 Wireless Router Configurations

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

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

6.8 Phablet Configurations

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

6.9 Additional Test Positions due to Proximity Conditions

This device uses a sensor to reduce voice and data powers in extremity (hand-held) use conditions.

When the sensor detects a user is touching the device on or near to the antenna the device reduces the maximum allowed output power However, the proximity sensor is not active when the device is moved beyond the sensor triggering distance and the maximum output power is no longer limited. Therefore, an additional exposure condition is needed in the vicinity of the triggering distance to ensure SAR is compliant when the device is allowed to operate at a non-reduced output power level.

The proximity sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the proximity sensor entirely covers the antenna. FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device at these additional test positions. Sensor triggering distance summary data is included in Appendix G.

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 ≤ 0.25 dB higher than the primary mode or when the highest reported SAR of the primary mode, scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode, is ≤ 1.2 W/kg, SAR measurements are not required for the secondary mode. These criteria are referred to as the 3G SAR test reduction procedure. When the 3G SAR test reduction procedure is not satisfied, SAR measurements are additionally required for the secondary mode.

8.3 Procedures Used to Establish RF Signal for SAR

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

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

8.4 SAR Measurement Conditions for CDMA2000

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

8.4.1 Output Power Verification

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

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

Table 8-1
Parameters for Max. Power for RC1

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

Table 8-2
Parameters for Max. Power for RC3

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

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

8.4.2 Head SAR Measurements

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

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

8.4.3 Body-worn SAR Measurements

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

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

8.4.4 Body-worn SAR Measurements for EVDO Devices

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

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

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

8.4.5 Body SAR Measurements for EVDO Hotspot

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

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

8.4.6 CDMA2000 1x Advanced

This device additionally supports 1x Advanced. Conducted powers are measured using SO75 with RC8 on the uplink and RC11 on the downlink per FCC KDB Publication 941225 D01v03r01. Smart blanking is disabled for all measurements. The EUT is configured with forward power control Mode 000 and reverse power control at 400 bps. Conducted powers are measured on an Agilent 8960 Series 10 Wireless Communications Test Set, Model E5515C using the CDMA2000 1x Advanced application, Option E1962B-410.

The 3G SAR test reduction procedure is applied to the 1x-Advanced transmission mode with 1x RTT RC3 as the primary mode. When SAR measurement is required, the 1x-Advanced power measurement configurations are used. The1x Advanced SAR procedures are applied separately to head, body-worn accessory and other exposure conditions.

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.

8.5.6 SAR Measurement Conditions for DC-HSDPA

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

8.6 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 TDD

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

8.6.6 Downlink Only Carrier Aggregation

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

8.7 SAR Testing with 802.11 Transmitters

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

8.7.1 General Device Setup

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

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

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

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

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

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

8.7.4 Initial Test Position Procedure

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

8.7.5 2.4 GHz SAR Test Requirements

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

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

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

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

8.7.6 OFDM Transmission Mode and SAR Test Channel Selection

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

8.7.7 Initial Test Configuration Procedure

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

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

8.7.8 Subsequent Test Configuration Procedures

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

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

9 RF CONDUCTED POWERS

9.1 CDMA Conducted Powers

Table 9-1
Maximum Conducted Power

Band	Channel	Rule Part	Frequency	SO55 [dBm]	SO55 [dBm]	SO75 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC		MHz	RC1	RC3	RC11	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	1013	22H	824.7	25.81	25.77	25.73	25.76	25.77	25.79	25.78
	384	22H	836.52	25.86	25.83	25.78	25.85	25.83	25.85	25.83
	777	22H	848.31	25.74	25.69	25.66	25.70	25.69	25.94	25.72

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

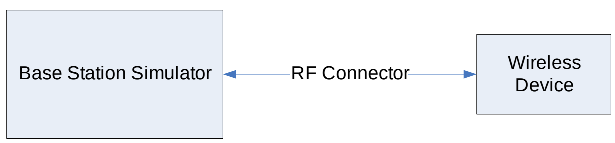


Figure 9-1
Power Measurement Setup

9.2 GSM Conducted Powers

Table 9-2
Maximum Conducted Power

Maximum Burst-Averaged Output Power										
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 850	128	32.91	32.93	30.65	**28.97**	27.02	27.39	25.28	23.13	21.29
	190	32.65	32.68	30.66	**29.05**	27.01	27.32	25.27	23.27	21.17
	251	32.74	32.80	30.58	**28.76**	26.82	27.37	25.22	23.03	21.12
GSM 1900	512	29.61	29.59	**27.65**	25.57	24.31	25.49	24.32	22.59	20.42
	661	29.30	29.41	**27.75**	25.35	24.14	25.45	24.29	22.31	20.27
	810	29.34	29.16	**27.40**	25.08	24.12	25.28	24.28	22.15	20.21

Calculated Maximum Frame-Averaged Output Power										
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
GSM 850	128	23.88	23.90	24.63	**24.71**	24.01	18.36	19.26	18.87	18.28
	190	23.62	23.65	24.64	**24.79**	24.00	18.29	19.25	19.01	18.16
	251	23.71	23.77	24.56	**24.50**	23.81	18.34	19.20	18.77	18.11
GSM 1900	512	20.58	20.56	**21.63**	21.31	21.30	16.46	18.30	18.33	17.41
	661	20.27	20.38	**21.73**	21.09	21.13	16.42	18.27	18.05	17.26
	810	20.31	20.13	**21.38**	20.82	21.11	16.25	18.26	17.89	17.20

GSM 850	Frame Avg.Targets:	23.97	23.97	24.48	**24.74**	23.99	17.97	18.98	18.74	17.99
GSM 1900		20.97	20.97	**21.58**	20.74	20.49	16.57	18.48	18.24	17.49

Table 9-3
Reduced Conducted Power – Hotspot Mode Active

Maximum Burst-Averaged Output Power									
		GPRS/EDGE Data (GMSK)				*EDGE Data (8-PSK)*			
Band	**Channel**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 1900	512	26.54	24.59	**22.04**	20.49	24.53	23.32	21.57	19.67
	661	26.38	24.47	**22.05**	20.31	24.46	23.05	21.42	19.61
	810	26.12	24.55	**22.06**	20.20	24.52	22.91	21.39	19.66

Calculated Maximum Frame-Averaged Output Power									
		GPRS/EDGE Data (GMSK)				*EDGE Data (8-PSK)*			
Band	**Channel**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 1900	512	17.51	18.57	**17.78**	17.48	15.50	17.30	17.31	16.66
	661	17.35	18.45	**17.79**	17.30	15.43	17.03	17.16	16.60
	810	17.09	18.53	**17.80**	17.19	15.49	16.89	17.13	16.65
GSM 1900	**Frame Avg.Targets:**	16.97	18.28	**18.04**	17.49	15.47	16.98	17.24	16.99

Note:

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

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

Figure 9-2
Power Measurement Setup

9.3 UMTS Conducted Powers

Table 9-4
Maximum Conducted Power

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	24.35	24.28	24.09	24.09	24.20	24.17	24.25	24.03	23.83	-
99		12.2 kbps AMR	24.36	24.28	24.12	24.09	24.21	24.18	24.25	24.04	23.83	-
6	HSDPA	Subtest 1	23.49	23.44	23.36	23.11	23.15	23.01	23.29	23.05	23.01	0
6		Subtest 2	23.49	23.40	23.34	23.15	23.20	23.00	23.33	23.09	23.00	0
6		Subtest 3	22.95	22.93	22.76	22.66	22.68	22.51	22.80	22.61	22.54	0.5
6		Subtest 4	23.01	23.00	22.83	22.58	22.62	22.52	22.82	22.55	22.51	0.5
6	HSUPA	Subtest 1	23.48	23.42	23.31	23.17	23.21	23.01	23.31	23.12	23.09	0
6		Subtest 2	21.45	21.41	21.30	21.16	21.19	21.02	21.35	21.13	21.06	2
6		Subtest 3	22.44	22.41	22.33	22.20	22.17	22.02	22.35	22.12	22.10	1
6		Subtest 4	21.43	21.38	21.32	21.13	21.15	21.00	21.32	21.11	21.06	2
6		Subtest 5	23.49	23.40	23.33	23.15	23.15	23.00	23.34	23.11	23.01	0
8	DC-HSDPA	Subtest 1	23.01	23.12	23.05	23.14	23.13	23.01	23.31	23.15	23.03	0
8		Subtest 2	23.07	23.05	23.03	23.06	23.10	23.15	23.29	23.13	23.06	0
8		Subtest 3	22.53	22.51	22.56	22.68	22.65	22.51	22.80	22.68	22.56	0.5
8		Subtest 4	22.57	22.53	22.54	22.57	22.58	22.66	22.77	22.65	22.51	0.5

Table 9-5
Reduced Conducted Power – Hotspot Mode Active

3GPP Release Version	Mode	3GPP 34.121 Subtest	AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	19.09	19.21	19.17	19.27	19.07	18.90	-
99		12.2 kbps AMR	19.17	19.19	19.17	19.24	19.05	18.85	-
6	HSDPA	Subtest 1	18.14	18.17	18.05	18.54	18.25	18.03	0
6		Subtest 2	18.13	18.14	18.04	18.51	18.27	18.05	0
6		Subtest 3	17.64	17.70	17.54	17.96	17.73	17.59	0.5
6		Subtest 4	17.61	17.67	17.54	17.99	17.80	17.52	0.5
6	HSUPA	Subtest 1	18.14	18.13	18.01	18.49	18.26	18.05	0
6		Subtest 2	16.21	16.18	16.02	16.50	16.29	16.04	2
6		Subtest 3	17.22	17.15	17.03	17.50	17.30	17.05	1
6		Subtest 4	16.16	16.13	16.01	16.49	16.27	16.03	2
6		Subtest 5	18.15	18.16	18.04	18.50	18.28	18.00	0
8	DC-HSDPA	Subtest 1	18.07	18.18	18.20	18.16	18.09	18.02	0
8		Subtest 2	18.15	18.32	18.21	18.22	18.06	18.01	0
8		Subtest 3	17.68	17.75	17.61	17.64	17.62	17.53	0.5
8		Subtest 4	17.73	17.70	17.65	17.70	17.55	17.50	0.5

Table 9-6
Reduced Conducted Power – Grip Sensor Mode Active

3GPP Release Version	Mode	3GPP 34.121 Subtest	AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	20.59	20.71	20.67	20.28	20.05	20.01	-
99		12.2 kbps AMR	20.59	20.67	20.65	20.24	20.02	19.84	-
6	HSDPA	Subtest 1	19.65	19.66	19.50	19.46	19.20	19.00	0
6		Subtest 2	19.65	19.68	19.52	19.46	19.18	19.02	0
6		Subtest 3	19.19	19.23	19.07	18.97	18.73	18.54	0.5
6		Subtest 4	19.14	19.19	19.02	18.94	18.71	18.51	0.5
6	HSUPA	Subtest 1	19.66	19.65	19.52	19.44	19.22	19.02	0
6		Subtest 2	17.71	17.70	17.53	17.48	17.24	17.03	2
6		Subtest 3	18.67	18.68	18.52	18.45	18.24	18.05	1
6		Subtest 4	17.62	17.66	17.50	17.47	17.23	17.00	2
6		Subtest 5	19.65	19.68	19.53	19.45	19.26	19.01	0
8	DC-HSDPA	Subtest 1	19.49	19.64	19.56	19.30	19.18	18.98	0
8		Subtest 2	19.50	19.62	19.59	19.33	19.17	19.01	0
8		Subtest 3	18.99	19.12	19.08	18.78	18.69	18.49	0.5
8		Subtest 4	18.93	19.07	19.03	18.77	18.62	18.43	0.5

DC-HSDPA considerations

- 3GPP Specification 34.121-1 Release 8 Ver 8.10.0 was used for DC-HSDPA guidance
- H-Set 12 (QPSK) was confirmed to be used during DC-HSDPA measurements
- The DUT supports UE category 24 for HSDPA

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

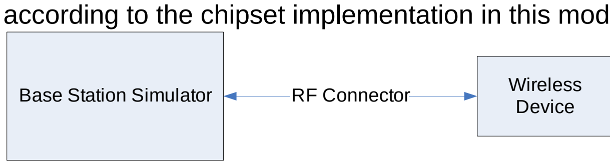


Figure 9-3
Power Measurement Setup

9.4 LTE Conducted Powers

9.4.1 LTE Band 12

Table 9-7
LTE Band 12 Conducted Powers - 10 MHz Bandwidth

LTE Band 12 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23095 (707.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	23.92	0	0
	1	25	23.91		0
	1	49	**23.94**		0
	25	0	**23.00**	0-1	1
	25	12	22.94		1
	25	25	22.91		1
	50	0	22.94		1
16QAM	1	0	23.51	0-1	1
	1	25	23.52		1
	1	49	23.52		1
	25	0	22.11	0-2	2
	25	12	22.10		2
	25	25	22.01		2
	50	0	22.02		2
64QAM	1	0	21.95	0-2	2
	1	25	21.96		2
	1	49	21.94		2
	25	0	21.08	0-3	3
	25	12	21.05		3
	25	25	21.03		3
	50	0	21.04		3

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

Table 9-8
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	23.99	24.04	23.94	0	0
	1	12	23.91	23.94	24.01		0
	1	24	23.97	23.91	23.95		0
	12	0	23.03	23.08	22.97	0-1	1
	12	6	22.99	23.06	23.08		1
	12	13	23.05	22.98	23.01		1
	25	0	23.10	23.04	22.96		1
16QAM	1	0	23.36	23.38	23.26	0-1	1
	1	12	23.21	23.31	23.33		1
	1	24	23.26	23.26	23.19		1
	12	0	22.11	22.19	22.10	0-2	2
	12	6	22.13	22.20	22.20		2
	12	13	22.18	22.15	22.14		2
	25	0	22.17	22.10	22.03		2
64QAM	1	0	22.31	22.36	22.28	0-2	2
	1	12	22.25	22.27	22.30		2
	1	24	22.25	22.25	22.22		2
	12	0	21.14	21.23	21.11	0-3	3
	12	6	21.13	21.17	21.19		3
	12	13	21.17	21.14	21.12		3
	25	0	21.17	21.12	21.05		3

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

LTE Band 12 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23025 (700.5 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23165 (714.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.97	24.00	24.01	0	0
	1	7	24.04	24.08	24.06		0
	1	14	23.89	23.92	23.93		0
	8	0	22.98	23.01	23.05	0-1	1
	8	4	23.04	23.02	23.06		1
	8	7	22.97	23.00	23.01		1
	15	0	23.01	23.02	23.06		1
16QAM	1	0	23.25	23.39	23.36	0-1	1
	1	7	23.32	23.42	23.38		1
	1	14	23.14	23.32	23.23		1
	8	0	21.98	22.16	22.15	0-2	2
	8	4	22.04	22.15	22.16		2
	8	7	21.96	22.13	22.09		2
	15	0	22.09	22.09	22.10		2
64QAM	1	0	22.28	22.26	22.32	0-2	2
	1	7	22.29	22.35	22.33		2
	1	14	22.18	22.22	22.22		2
	8	0	21.12	21.13	21.12	0-3	3
	8	4	21.12	21.18	21.17		3
	8	7	21.06	21.12	21.13		3
	15	0	21.07	21.10	21.12		3

Table 9-10
LTE Band 12 Conducted Powers -1.4 MHz Bandwidth

LTE Band 12 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23017 (699.7 MHz)	23095 (707.5 MHz)	23173 (715.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.88	23.92	23.94	0	0
	1	2	23.92	23.95	23.98		0
	1	5	23.85	23.85	23.85		0
	3	0	23.92	23.93	23.92		0
	3	2	23.94	23.97	23.93		0
	3	3	23.92	23.93	23.81		0
	6	0	22.82	22.96	22.99	0-1	1
16QAM	1	0	23.14	23.22	23.24	0-1	1
	1	2	23.16	23.26	23.18		1
	1	5	23.06	23.22	23.10		1
	3	0	23.02	23.09	23.05		1
	3	2	23.02	23.17	23.07		1
	3	3	22.97	23.10	23.04		1
	6	0	21.97	22.09	22.03	0-2	2
64QAM	1	0	22.04	22.20	22.19	0-2	2
	1	2	22.14	22.26	22.23		2
	1	5	22.07	22.17	22.15		2
	3	0	22.01	22.10	22.08		2
	3	2	22.03	22.19	22.14		2
	3	3	21.96	22.11	22.08		2
	6	0	20.95	21.07	21.03	0-3	3

9.4.2 LTE Band 13

Table 9-11
LTE Band 13 Conducted Powers - 10 MHz Bandwidth

LTE Band 13 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	23.91	0	0
	1	25	23.94		0
	1	49	**24.08**		0
	25	0	**23.18**	0-1	1
	25	12	23.17		1
	25	25	23.12		1
	50	0	23.16		1
16QAM	1	0	23.27	0-1	1
	1	25	23.41		1
	1	49	23.48		1
	25	0	22.31	0-2	2
	25	12	22.31		2
	25	25	22.24		2
	50	0	22.25		2
64QAM	1	0	22.16	0-2	2
	1	25	22.39		2
	1	49	22.45		2
	25	0	21.34	0-3	3
	25	12	21.37		3
	25	25	21.31		3
	50	0	21.28		3

Table 9-12
LTE Band 13 Conducted Powers - 5 MHz Bandwidth

LTE Band 13 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	23.97	0	0
	1	12	23.96		0
	1	24	23.93		0
	12	0	23.14	0-1	1
	12	6	23.02		1
	12	13	23.10		1
	25	0	23.13		1
16QAM	1	0	23.34	0-1	1
	1	12	23.39		1
	1	24	23.32		1
	12	0	22.23	0-2	2
	12	6	22.23		2
	12	13	22.19		2
	25	0	22.17		2
64QAM	1	0	22.23	0-2	2
	1	12	22.25		2
	1	24	22.23		2
	12	0	21.22	0-3	3
	12	6	21.25		3
	12	13	21.23		3
	25	0	21.24		3

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

9.4.3 LTE Band 5 (Cell)

Table 9-13
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	24.57	0	0
	1	25	**24.62**		0
	1	49	24.55		0
	25	0	**23.71**	0-1	1
	25	12	23.70		1
	25	25	23.61		1
	50	0	23.69		1
16QAM	1	0	23.83	0-1	1
	1	25	23.81		1
	1	49	23.74		1
	25	0	22.80	0-2	2
	25	12	22.83		2
	25	25	22.75		2
	50	0	22.73		2
64QAM	1	0	22.60	0-2	2
	1	25	22.58		2
	1	49	22.57		2
	25	0	21.86	0-3	3
	25	12	21.83		3
	25	25	21.78		3
	50	0	21.79		3

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 9-14
LTE Band 5 (Cell) Conducted Powers - 5 MHz Bandwidth

LTE Band 5 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20425 (826.5 MHz)	20525 (836.5 MHz)	20625 (846.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.51	24.45	24.27	0	0
	1	12	24.42	24.36	24.19		0
	1	24	24.37	24.33	24.12		0
	12	0	23.53	23.52	23.32	0-1	1
	12	6	23.55	23.48	23.30		1
	12	13	23.47	23.44	23.26		1
	25	0	23.51	23.47	23.29		1
16QAM	1	0	23.87	23.79	23.67	0-1	1
	1	12	23.80	23.68	23.54		1
	1	24	23.75	23.64	23.53		1
	12	0	22.65	22.60	22.39	0-2	2
	12	6	22.64	22.59	22.43		2
	12	13	22.60	22.57	22.36		2
	25	0	22.59	22.55	22.34		2
64QAM	1	0	22.85	22.78	22.54	0-2	2
	1	12	22.73	22.70	22.48		2
	1	24	22.71	22.58	22.41		2
	12	0	21.63	21.59	21.40	0-3	3
	12	6	21.64	21.61	21.40		3
	12	13	21.61	21.52	21.34		3
	25	0	21.59	21.56	21.37		3

Table 9-15
LTE Band 5 (Cell) Conducted Powers - 3 MHz Bandwidth

LTE Band 5 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20415 (825.5 MHz)	20525 (836.5 MHz)	20635 (847.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.48	24.42	24.17	0	0
	1	7	24.56	24.48	24.24		0
	1	14	24.44	24.37	24.13		0
	8	0	23.48	23.42	23.22	0-1	1
	8	4	23.54	23.48	23.23		1
	8	7	23.49	23.38	23.19		1
	15	0	23.51	23.43	23.25		1
16QAM	1	0	23.86	23.71	23.52	0-1	1
	1	7	23.89	23.82	23.62		1
	1	14	23.83	23.70	23.46		1
	8	0	22.65	22.55	22.38	0-2	2
	8	4	22.66	22.57	22.38		2
	8	7	22.65	22.52	22.33		2
	15	0	22.56	22.54	22.33		2
64QAM	1	0	22.73	22.69	22.46	0-2	2
	1	7	22.87	22.77	22.55		2
	1	14	22.75	22.60	22.38		2
	8	0	21.60	21.53	21.31	0-3	3
	8	4	21.58	21.54	21.35		3
	8	7	21.57	21.50	21.30		3
	15	0	21.61	21.53	21.31		3

Table 9-16
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	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			20407 (824.7 MHz)	20525 (836.5 MHz)	20643 (848.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.39	24.33	24.08	0	0
	1	2	24.47	24.38	24.16		0
	1	5	24.41	24.30	24.08		0
	3	0	24.43	24.36	24.13		0
	3	2	24.50	24.38	24.16		0
	3	3	24.46	24.37	24.12		0
	6	0	23.45	23.38	23.16	0-1	1
16QAM	1	0	23.72	23.72	23.48	0-1	1
	1	2	23.77	23.69	23.51		1
	1	5	23.75	23.63	23.43		1
	3	0	23.62	23.56	23.37		1
	3	2	23.71	23.62	23.41		1
	3	3	23.67	23.54	23.30		1
	6	0	22.58	22.49	22.28	0-2	2
64QAM	1	0	22.72	22.59	22.40	0-2	2
	1	2	22.77	22.65	22.48		2
	1	5	22.66	22.58	22.38		2
	3	0	22.62	22.56	22.33		2
	3	2	22.66	22.59	22.35		2
	3	3	22.61	22.53	22.31		2
	6	0	21.56	21.46	21.28	0-3	3

9.4.4 LTE Band 26 (Cell)

Table 9-17
LTE Band 26 (Cell) Conducted Powers - 15 MHz Bandwidth

LTE Band 26 (Cell) 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 26865 (831.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	24.27	0	0
	1	36	**24.33**		0
	1	74	24.18		0
	36	0	**23.39**	0-1	1
	36	18	23.34		1
	36	37	23.24		1
	75	0	23.34		1
16QAM	1	0	23.88	0-1	1
	1	36	23.95		1
	1	74	23.80		1
	36	0	22.50	0-2	2
	36	18	22.48		2
	36	37	22.39		2
	75	0	22.44		2
64QAM	1	0	22.33	0-2	2
	1	36	22.39		2
	1	74	22.22		2
	36	0	21.50	0-3	3
	36	18	21.50		3
	36	37	21.37		3
	75	0	21.47		3

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

Table 9-18
LTE Band 26 (Cell) Conducted Powers - 10 MHz Bandwidth

LTE Band 26 (Cell) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26740 (819.0 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 26990 (844.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.19	24.36	24.17	0	0
	1	25	24.19	24.25	24.08		0
	1	49	24.21	24.15	23.98		0
	25	0	23.32	23.33	23.17	0-1	1
	25	12	23.40	23.33	23.15		1
	25	25	23.34	23.23	23.07		1
	50	0	23.39	23.32	23.10		1
16QAM	1	0	23.55	23.72	23.53	0-1	1
	1	25	23.52	23.63	23.42		1
	1	49	23.61	23.49	23.33		1
	25	0	22.40	22.43	22.28	0-2	2
	25	12	22.50	22.41	22.22		2
	25	25	22.40	22.31	22.15		2
	50	0	22.48	22.41	22.22		2
64QAM	1	0	22.51	22.71	22.46	0-2	2
	1	25	22.48	22.55	22.41		2
	1	49	22.52	22.47	22.27		2
	25	0	21.47	21.45	21.23	0-3	3
	25	12	21.50	21.42	21.23		3
	25	25	21.39	21.30	21.16		3
	50	0	21.48	21.41	21.23		3

Table 9-19
LTE Band 26 (Cell) Conducted Powers - 5 MHz Bandwidth

LTE Band 26 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26715 (816.5 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27015 (846.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.18	24.29	24.10	0	0
	1	12	24.23	24.24	24.04		0
	1	24	24.21	24.20	24.02		0
	12	0	23.35	23.33	23.08	0-1	1
	12	6	23.36	23.33	23.10		1
	12	13	23.29	23.25	23.04		1
	25	0	23.32	23.28	23.08		1
16QAM	1	0	23.59	23.65	23.44	0-1	1
	1	12	23.55	23.59	23.37		1
	1	24	23.56	23.57	23.32		1
	12	0	22.47	22.45	22.21	0-2	2
	12	6	22.45	22.43	22.24		2
	12	13	22.41	22.35	22.16		2
	25	0	22.41	22.38	22.15		2
64QAM	1	0	22.51	22.62	22.44	0-2	2
	1	12	22.56	22.52	22.33		2
	1	24	22.46	22.48	22.27		2
	12	0	21.43	21.40	21.20	0-3	3
	12	6	21.44	21.44	21.22		3
	12	13	21.38	21.35	21.18		3
	25	0	21.38	21.38	21.13		3

Table 9-20
LTE Band 26 (Cell) Conducted Powers - 3 MHz Bandwidth

LTE Band 26 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26705 (815.5 MHz)	26865 (831.5 MHz)	27025 (847.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.29	24.38	24.10	0	0
	1	7	24.35	24.44	24.20		0
	1	14	24.29	24.33	24.07		0
	8	0	23.34	23.39	23.16	0-1	1
	8	4	23.30	23.41	23.17		1
	8	7	23.37	23.37	23.12		1
	15	0	23.42	23.41	23.15		1
16QAM	1	0	23.66	23.77	23.52	0-1	1
	1	7	23.66	23.82	23.55		1
	1	14	23.72	23.74	23.48		1
	8	0	22.47	22.52	22.27	0-2	2
	8	4	22.47	22.55	22.27		2
	8	7	22.52	22.50	22.26		2
	15	0	22.50	22.46	22.22		2
64QAM	1	0	22.61	22.67	22.42	0-2	2
	1	7	22.66	22.78	22.53		2
	1	14	22.61	22.62	22.36		2
	8	0	21.43	21.52	21.25	0-3	3
	8	4	21.44	21.53	21.26		3
	8	7	21.52	21.49	21.21		3
	15	0	21.51	21.49	21.25		3

Table 9-21
LTE Band 26 (Cell) Conducted Powers -1.4 MHz Bandwidth

LTE Band 26 (Cell) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26697 (814.7 MHz)	26865 (831.5 MHz)	27033 (848.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.20	24.33	24.03	0	0
	1	2	24.29	24.39	24.10		0
	1	5	24.17	24.30	24.03		0
	3	0	24.29	24.36	24.09		0
	3	2	24.29	24.41	24.11		0
	3	3	24.25	24.33	24.08		0
	6	0	23.31	23.37	23.07	0-1	1
16QAM	1	0	23.60	23.72	23.43	0-1	1
	1	2	23.62	23.79	23.46		1
	1	5	23.58	23.65	23.39		1
	3	0	23.48	23.58	23.28		1
	3	2	23.49	23.59	23.35		1
	3	3	23.46	23.55	23.27		1
	6	0	22.41	22.53	22.26	0-2	2
64QAM	1	0	22.53	22.62	22.39	0-2	2
	1	2	22.58	22.67	22.39		2
	1	5	22.46	22.55	22.29		2
	3	0	22.45	22.57	22.27		2
	3	2	22.47	22.60	22.30		2
	3	3	22.42	22.56	22.28		2
	6	0	21.38	21.48	21.18	0-3	3

9.4.5 Maximum LTE Band 66 (AWS)

Table 9-22
LTE Band 66 (AWS) Conducted Powers - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132072 (1720.0 MHz)	132322 (1745.0 MHz)	132572 (1770.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.14	**24.33**	24.21	0	0
	1	50	23.95	24.15	24.02		0
	1	99	24.07	24.08	23.88		0
	50	0	23.25	**23.30**	23.09	0-1	1
	50	25	23.17	23.19	23.05		1
	50	50	23.27	23.17	22.97		1
	100	0	23.26	23.23	23.01		1
16QAM	1	0	23.65	23.63	23.51	0-1	1
	1	50	23.47	23.44	23.34		1
	1	99	23.58	23.38	23.27		1
	50	0	22.32	22.35	22.22	0-2	2
	50	25	22.30	22.30	22.17		2
	50	50	22.32	22.25	22.11		2
	100	0	22.36	22.32	22.14		2
64QAM	1	0	22.56	22.38	22.29	0-2	2
	1	50	22.40	22.20	22.12		2
	1	99	22.45	22.11	22.01		2
	50	0	21.34	21.38	21.21	0-3	3
	50	25	21.29	21.35	21.19		3
	50	50	21.36	21.30	21.12		3
	100	0	21.34	21.32	21.17		3

Table 9-23
LTE Band 66 (AWS) Conducted Powers - 15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132047 (1717.5 MHz)	132322 (1745.0 MHz)	132597 (1772.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.37	24.33	24.17	0	0
	1	36	24.17	24.16	23.92		0
	1	74	24.17	24.14	23.91		0
	36	0	23.28	23.32	23.16	0-1	1
	36	18	23.25	23.30	23.11		1
	36	37	23.21	23.26	22.95		1
	75	0	23.24	23.28	23.08		1
16QAM	1	0	23.66	23.66	23.49	0-1	1
	1	36	23.47	23.52	23.30		1
	1	74	23.51	23.49	23.22		1
	36	0	22.36	22.40	22.26	0-2	2
	36	18	22.34	22.37	22.20		2
	36	37	22.30	22.31	22.06		2
	75	0	22.33	22.39	22.21		2
64QAM	1	0	22.65	22.63	22.50	0-2	2
	1	36	22.45	22.45	22.18		2
	1	74	22.41	22.46	22.18		2
	36	0	21.38	21.44	21.29	0-3	3
	36	18	21.34	21.35	21.20		3
	36	37	21.29	21.34	21.04		3
	75	0	21.32	21.40	21.18		3

Table 9-24
LTE Band 66 (AWS) Conducted Powers - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132022 (1715.0 MHz)	132322 (1745.0 MHz)	132622 (1775.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.30	24.23	24.09	0	0
	1	25	24.15	24.12	23.91		0
	1	49	24.14	24.11	23.83		0
	25	0	23.27	23.28	23.13	0-1	1
	25	12	23.25	23.29	22.98		1
	25	25	23.21	23.22	22.94		1
	50	0	23.24	23.25	23.07		1
16QAM	1	0	23.49	23.57	23.40	0-1	1
	1	25	23.53	23.50	23.24		1
	1	49	23.50	23.48	23.21		1
	25	0	22.34	22.40	22.18	0-2	2
	25	12	22.34	22.37	22.09		2
	25	25	22.27	22.35	22.04		2
	50	0	22.32	22.35	22.17		2
64QAM	1	0	22.53	22.50	22.40	0-2	2
	1	25	22.43	22.46	22.21		2
	1	49	22.42	22.40	22.14		2
	25	0	21.34	21.39	21.22	0-3	3
	25	12	21.32	21.40	21.07		3
	25	25	21.29	21.31	21.06		3
	50	0	21.33	21.37	21.16		3

Table 9-25
LTE Band 66 (AWS) Conducted Powers - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131997 (1712.5 MHz)	132322 (1745.0 MHz)	132647 (1777.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.20	24.21	23.97	0	0
	1	12	24.16	24.12	23.88		0
	1	24	24.17	24.15	23.90		0
	12	0	23.25	23.27	22.95	0-1	1
	12	6	23.24	23.26	22.96		1
	12	13	23.21	23.23	22.95		1
	25	0	23.24	23.24	22.95		1
16QAM	1	0	23.59	23.64	23.24	0-1	1
	1	12	23.51	23.57	23.24		1
	1	24	23.50	23.48	23.20		1
	12	0	22.36	22.37	22.07	0-2	2
	12	6	22.36	22.39	22.06		2
	12	13	22.35	22.38	22.06		2
	25	0	22.33	22.35	22.02		2
64QAM	1	0	22.51	22.50	22.24	0-2	2
	1	12	22.47	22.41	22.20		2
	1	24	22.42	22.44	22.19		2
	12	0	21.34	21.37	21.08	0-3	3
	12	6	21.35	21.41	21.04		3
	12	13	21.36	21.40	21.03		3
	25	0	21.32	21.33	21.03		3

Table 9-26
LTE Band 66 (AWS) Conducted Powers - 3 MHz Bandwidth

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131987 (1711.5 MHz)	132322 (1745.0 MHz)	132657 (1778.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	24.20	24.19	23.88	0	0
	1	7	24.25	24.24	23.96		0
	1	14	24.14	24.12	23.85		0
	8	0	23.21	23.23	22.92	0-1	1
	8	4	23.24	23.25	22.94		1
	8	7	23.17	23.20	22.90		1
	15	0	23.24	23.24	22.92		1
16QAM	1	0	23.45	23.50	23.20	0-1	1
	1	7	23.54	23.61	23.32		1
	1	14	23.47	23.40	23.20		1
	8	0	22.34	22.33	22.04	0-2	2
	8	4	22.36	22.36	22.07		2
	8	7	22.31	22.35	22.03		2
	15	0	22.29	22.29	22.00		2
64QAM	1	0	22.44	22.45	22.16	0-2	2
	1	7	22.50	22.51	22.25		2
	1	14	22.41	22.41	22.10		2
	8	0	21.32	21.35	21.01	0-3	3
	8	4	21.36	21.35	21.07		3
	8	7	21.28	21.33	21.02		3
	15	0	21.30	21.31	21.00		3

Table 9-27
LTE Band 66 (AWS) Conducted Powers -1.4 MHz Bandwidth

LTE Band 66 (AWS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131979 (1710.7 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132665 (1779.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.08	24.06	23.82	0	0
	1	2	24.13	24.15	23.86		0
	1	5	24.08	24.03	23.80		0
	3	0	24.11	24.10	23.85		0
	3	2	24.14	24.14	23.91		0
	3	3	24.11	24.11	23.85		0
	6	0	23.12	23.16	22.86	0-1	1
16QAM	1	0	23.42	23.41	23.15	0-1	1
	1	2	23.38	23.50	23.22		1
	1	5	23.33	23.40	23.11		1
	3	0	23.33	23.30	23.04		1
	3	2	23.37	23.34	23.03		1
	3	3	23.31	23.32	23.02		1
	6	0	22.25	22.31	21.99	0-2	2
64QAM	1	0	22.36	22.37	22.10	0-2	2
	1	2	22.43	22.42	22.16		2
	1	5	22.33	22.34	22.04		2
	3	0	22.31	22.29	22.04		2
	3	2	22.34	22.35	22.05		2
	3	3	22.27	22.30	22.03		2
	6	0	21.27	21.27	20.99	0-3	3

9.4.6 Hotspot Mode Reduced LTE Band 66 (AWS)

Table 9-28
LTE Band 66 (AWS) Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132072 (1720.0 MHz)	132322 (1745.0 MHz)	132572 (1770.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.59	**19.63**	19.45	0	0
	1	50	19.38	19.43	19.26		0
	1	99	19.49	19.39	19.17		0
	50	0	19.57	**19.62**	19.41	0-1	0
	50	25	19.51	19.54	19.37		0
	50	50	19.53	19.51	19.33		0
	100	0	19.60	19.52	19.34		0
16QAM	1	0	19.71	20.03	19.82	0-1	0
	1	50	19.47	19.84	19.63		0
	1	99	19.60	19.74	19.53		0
	50	0	19.63	19.72	19.55	0-2	0
	50	25	19.55	19.70	19.50		0
	50	50	19.66	19.63	19.45		0
	100	0	19.70	19.62	19.43		0
64QAM	1	0	20.13	19.68	19.50	0-2	0
	1	50	19.99	19.48	19.30		0
	1	99	20.08	19.40	19.20		0
	50	0	19.65	19.70	19.48	0-3	0
	50	25	19.60	19.66	19.46		0
	50	50	19.69	19.63	19.40		0
	100	0	19.72	19.69	19.48		0

Table 9-29
LTE Band 66 (AWS) Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132047 (1717.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132597 (1772.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.49	19.62	19.42	0	0
	1	36	19.31	19.36	19.19		0
	1	74	19.35	19.29	19.11		0
	36	0	19.52	19.53	19.39	0-1	0
	36	18	19.48	19.50	19.35		0
	36	37	19.42	19.48	19.31		0
	75	0	19.45	19.48	19.34		0
16QAM	1	0	19.40	19.49	19.80	0-1	0
	1	36	19.25	19.31	19.55		0
	1	74	19.25	19.28	19.52		0
	36	0	19.58	19.68	19.41	0-2	0
	36	18	19.54	19.62	19.39		0
	36	37	19.46	19.55	19.41		0
	75	0	19.51	19.57	19.40		0
64QAM	1	0	19.88	19.98	19.72	0-2	0
	1	36	19.73	19.80	19.51		0
	1	74	19.73	19.76	19.48		0
	36	0	19.65	19.70	19.53	0-3	0
	36	18	19.58	19.65	19.48		0
	36	37	19.53	19.59	19.42		0
	75	0	19.56	19.60	19.40		0

Table 9-30
LTE Band 66 (AWS) Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132022 (1715.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132622 (1775.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.41	19.47	19.24	0	0
	1	25	19.30	19.40	19.10		0
	1	49	19.22	19.46	19.10		0
	25	0	19.48	19.50	19.34	0-1	0
	25	12	19.44	19.51	19.30		0
	25	25	19.39	19.47	19.26		0
	50	0	19.45	19.47	19.30		0
16QAM	1	0	19.94	19.78	19.19	0-1	0
	1	25	19.84	19.69	19.09		0
	1	49	19.81	19.69	19.07		0
	25	0	19.51	19.58	19.39	0-2	0
	25	12	19.49	19.54	19.29		0
	25	25	19.45	19.51	19.26		0
	50	0	19.52	19.58	19.32		0
64QAM	1	0	19.62	19.77	19.25	0-2	0
	1	25	19.64	19.72	19.16		0
	1	49	19.58	19.73	19.14		0
	25	0	19.57	19.61	19.49	0-3	0
	25	12	19.53	19.61	19.43		0
	25	25	19.53	19.57	19.42		0
	50	0	19.51	19.58	19.43		0

Table 9-31
LTE Band 66 (AWS) Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131997 (1712.5 MHz)	132322 (1745.0 MHz)	132647 (1777.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.30	19.48	19.23	0	0
	1	12	19.30	19.42	19.19		0
	1	24	19.34	19.40	19.18		0
	12	0	19.40	19.47	19.25	0-1	0
	12	6	19.40	19.50	19.31		0
	12	13	19.37	19.45	19.26		0
	25	0	19.37	19.45	19.27		0
16QAM	1	0	19.36	19.60	19.59	0-1	0
	1	12	19.37	19.30	19.50		0
	1	24	19.39	19.26	19.52		0
	12	0	19.45	19.57	19.42	0-2	0
	12	6	19.42	19.58	19.42		0
	12	13	19.40	19.58	19.36		0
	25	0	19.48	19.53	19.38		0
64QAM	1	0	19.65	19.65	19.72	0-2	0
	1	12	19.30	19.80	19.64		0
	1	24	19.27	19.74	19.45		0
	12	0	19.60	19.66	19.44	0-3	0
	12	6	19.59	19.66	19.40		0
	12	13	19.53	19.64	19.36		0
	25	0	19.55	19.54	19.42		0

Table 9-32
LTE Band 66 (AWS) Reduced Conducted Powers - 3 MHz Bandwidth

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131987 (1711.5 MHz)	132322 (1745.0 MHz)	132657 (1778.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.35	19.43	19.23	0	0
	1	7	19.38	19.53	19.30		0
	1	14	19.32	19.43	19.18		0
	8	0	19.37	19.47	19.25	0-1	0
	8	4	19.40	19.48	19.26		0
	8	7	19.38	19.45	19.21		0
	15	0	19.39	19.50	19.24		0
16QAM	1	0	19.53	19.45	19.41	0-1	0
	1	7	19.65	19.51	19.49		0
	1	14	19.53	19.37	19.37		0
	8	0	19.48	19.52	19.34	0-2	0
	8	4	19.51	19.55	19.37		0
	8	7	19.50	19.50	19.34		0
	15	0	19.48	19.57	19.35		0
64QAM	1	0	19.54	19.81	19.68	0-2	0
	1	7	19.63	19.92	19.77		0
	1	14	19.52	19.76	19.66		0
	8	0	19.54	19.62	19.43	0-3	0
	8	4	19.54	19.66	19.41		0
	8	7	19.52	19.64	19.38		0
	15	0	19.58	19.60	19.43		0

Table 9-33
LTE Band 66 (AWS) Reduced Conducted Powers -1.4 MHz Bandwidth

LTE Band 66 (AWS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131979 (1710.7 MHz)	132322 (1745.0 MHz)	132665 (1779.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.23	19.31	19.08	0	0
	1	2	19.30	19.38	19.25		0
	1	5	19.23	19.31	19.20		0
	3	0	19.28	19.36	19.19		0
	3	2	19.32	19.39	19.20		0
	3	3	19.31	19.35	19.17		0
	6	0	19.32	19.35	19.25	0-1	0
16QAM	1	0	19.63	19.80	19.05	0-1	0
	1	2	19.71	19.88	19.19		0
	1	5	19.63	19.76	19.16		0
	3	0	19.42	19.54	19.14		0
	3	2	19.44	19.59	19.15		0
	3	3	19.43	19.53	19.13		0
	6	0	19.61	19.53	19.22	0-2	0
64QAM	1	0	19.65	19.53	19.52	0-2	0
	1	2	19.70	19.59	19.60		0
	1	5	19.67	19.52	19.53		0
	3	0	19.57	19.50	19.48		0
	3	2	19.62	19.71	19.51		0
	3	3	19.67	19.65	19.47		0
	6	0	19.45	19.49	19.25	0-3	0

9.4.7 Grip Sensor Mode Reduced LTE Band 66 (AWS)

Table 9-34
LTE Band 66 (AWS) Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132072 (1720.0 MHz)	132322 (1745.0 MHz)	132572 (1770.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	**20.47**	20.22	20.37	0	0
	1	50	20.27	20.03	20.24		0
	1	99	20.35	19.94	20.14		0
	50	0	**20.44**	20.36	20.24	0-1	0
	50	25	20.33	20.35	20.22		0
	50	50	20.40	20.28	20.17		0
	100	0	20.43	20.31	20.16		0
16QAM	1	0	20.67	20.69	20.83	0-1	0
	1	50	20.51	20.58	20.69		0
	1	99	20.59	20.53	20.59		0
	50	0	20.39	20.52	20.34	0-2	0
	50	25	20.40	20.45	20.31		0
	50	50	20.50	20.37	20.26		0
	100	0	20.56	20.38	20.35		0
64QAM	1	0	20.93	20.86	20.87	0-2	0
	1	50	20.76	20.70	20.83		0
	1	99	20.83	20.63	20.72		0
	50	0	20.54	20.55	20.38	0-3	0
	50	25	20.49	20.42	20.34		0
	50	50	20.52	20.40	20.36		0
	100	0	20.65	20.48	20.31		0

Table 9-35
LTE Band 66 (AWS) Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132047 (1717.5 MHz)	132322 (1745.0 MHz)	132597 (1772.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.39	20.56	20.35	0	0
	1	36	20.18	20.25	20.13		0
	1	74	20.17	20.23	20.04		0
	36	0	20.31	20.53	20.34	0-1	0
	36	18	20.30	20.47	20.24		0
	36	37	20.24	20.41	20.22		0
	75	0	20.26	20.43	20.23		0
16QAM	1	0	20.54	20.43	20.47	0-1	0
	1	36	20.40	20.25	20.28		0
	1	74	20.39	20.20	20.27		0
	36	0	20.40	20.57	20.45	0-2	0
	36	18	20.34	20.50	20.34		0
	36	37	20.34	20.44	20.30		0
	75	0	20.34	20.50	20.36		0
64QAM	1	0	20.91	20.68	20.50	0-2	0
	1	36	20.70	20.50	20.28		0
	1	74	20.58	20.49	20.22		0
	36	0	20.52	20.63	20.42	0-3	0
	36	18	20.50	20.60	20.38		0
	36	37	20.44	20.54	20.33		0
	75	0	20.45	20.55	20.35		0

Table 9-36
LTE Band 66 (AWS) Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132022 (1715.0 MHz)	132322 (1745.0 MHz)	132622 (1775.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.34	20.45	20.22	0	0
	1	25	20.21	20.38	20.21		0
	1	49	20.19	20.41	20.13		0
	25	0	20.43	20.49	20.30	0-1	0
	25	12	20.35	20.45	20.24		0
	25	25	20.36	20.45	20.19		0
	50	0	20.39	20.49	20.24		0
16QAM	1	0	20.68	20.73	20.31	0-1	0
	1	25	20.61	20.66	20.20		0
	1	49	20.59	20.66	20.14		0
	25	0	20.49	20.55	20.42	0-2	0
	25	12	20.46	20.51	20.39		0
	25	25	20.45	20.46	20.33		0
	50	0	20.44	20.55	20.28		0
64QAM	1	0	20.81	20.83	20.66	0-2	0
	1	25	20.62	20.74	20.44		0
	1	49	20.49	20.70	20.07		0
	25	0	20.52	20.57	20.43	0-3	0
	25	12	20.49	20.52	20.38		0
	25	25	20.46	20.51	20.34		0
	50	0	20.48	20.57	20.41		0

Table 9-37
LTE Band 66 (AWS) Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131997 (1712.5 MHz)	132322 (1745.0 MHz)	132647 (1777.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.42	20.46	20.21	0	0
	1	12	20.31	20.40	20.14		0
	1	24	20.34	20.42	20.19		0
	12	0	20.40	20.45	20.30	0-1	0
	12	6	20.44	20.47	20.25		0
	12	13	20.38	20.44	20.20		0
	25	0	20.40	20.43	20.23		0
16QAM	1	0	20.74	20.83	20.37	0-1	0
	1	12	20.78	20.79	20.36		0
	1	24	20.83	20.76	20.32		0
	12	0	20.49	20.50	20.35	0-2	0
	12	6	20.49	20.50	20.34		0
	12	13	20.45	20.50	20.28		0
	25	0	20.44	20.47	20.35		0
64QAM	1	0	20.58	20.60	20.39	0-2	0
	1	12	20.50	20.57	20.29		0
	1	24	20.45	20.55	20.29		0
	12	0	20.48	20.61	20.33	0-3	0
	12	6	20.51	20.55	20.38		0
	12	13	20.46	20.51	20.37		0
	25	0	20.44	20.57	20.30		0

Table 9-38
LTE Band 66 (AWS) Reduced Conducted Powers - 3 MHz Bandwidth

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131987 (1711.5 MHz)	132322 (1745.0 MHz)	132657 (1778.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.37	20.53	20.24	0	0
	1	7	20.33	20.53	20.32		0
	1	14	20.18	20.34	20.17		0
	8	0	20.38	20.44	20.21	0-1	0
	8	4	20.40	20.47	20.24		0
	8	7	20.38	20.43	20.21		0
	15	0	20.40	20.44	20.23		0
16QAM	1	0	20.40	20.78	20.43	0-1	0
	1	7	20.52	20.88	20.71		0
	1	14	20.41	20.73	20.57		0
	8	0	20.60	20.56	20.31	0-2	0
	8	4	20.46	20.63	20.35		0
	8	7	20.46	20.68	20.29		0
	15	0	20.42	20.55	20.46		0
64QAM	1	0	20.75	20.81	20.39	0-2	0
	1	7	20.84	20.86	20.47		0
	1	14	20.56	20.77	20.33		0
	8	0	20.53	20.70	20.28	0-3	0
	8	4	20.54	20.61	20.30		0
	8	7	20.49	20.50	20.30		0
	15	0	20.50	20.58	20.28		0

Table 9-39
LTE Band 66 (AWS) Reduced Conducted Powers – 1.4 MHz Bandwidth

LTE Band 66 (AWS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131979 (1710.7 MHz)	132322 (1745.0 MHz)	132665 (1779.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.22	20.36	20.10	0	0
	1	2	20.26	20.41	20.24		0
	1	5	20.22	20.37	20.17		0
	3	0	20.28	20.36	20.20		0
	3	2	20.33	20.39	20.17		0
	3	3	20.29	20.35	20.17		0
	6	0	20.29	20.35	20.23	0-1	0
16QAM	1	0	20.71	20.75	20.34	0-1	0
	1	2	20.77	20.88	20.37		0
	1	5	20.70	20.81	20.29		0
	3	0	20.47	20.63	20.30		0
	3	2	20.49	20.66	20.31		0
	3	3	20.45	20.59	20.29		0
	6	0	20.45	20.41	20.37	0-2	0
64QAM	1	0	20.50	20.52	20.27	0-2	0
	1	2	20.75	20.74	20.31		0
	1	5	20.70	20.53	20.27		0
	3	0	20.60	20.67	20.33		0
	3	2	20.63	20.65	20.36		0
	3	3	20.57	20.64	20.36		0
	6	0	20.40	20.49	20.44	0-3	0

9.4.8 Maximum LTE Band 2 (PCS)

Table 9-40
LTE Band 2 (PCS) Conducted Powers - 20 MHz Bandwidth

LTE Band 2 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18700 (1860.0 MHz)	18900 (1880.0 MHz)	19100 (1900.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.85	23.62	**23.95**	0	0
	1	50	23.57	23.26	23.58		0
	1	99	23.68	23.43	23.54		0
	50	0	22.67	22.59	**22.80**	0-1	1
	50	25	22.61	22.48	22.66		1
	50	50	22.51	22.48	22.55		1
	100	0	22.61	22.55	22.72		1
16QAM	1	0	23.29	23.17	23.17	0-1	1
	1	50	22.93	22.81	22.88		1
	1	99	23.07	22.95	22.82		1
	50	0	21.80	21.73	21.87	0-2	2
	50	25	21.76	21.59	21.70		2
	50	50	21.62	21.58	21.63		2
	100	0	21.71	21.59	21.83		2
64QAM	1	0	22.05	22.06	21.90	0-2	2
	1	50	21.68	21.83	21.65		2
	1	99	21.79	21.90	21.54		2
	50	0	20.81	20.76	20.94	0-3	3
	50	25	20.76	20.71	20.79		3
	50	50	20.76	20.69	20.69		3
	100	0	20.81	20.57	20.84		3

Table 9-41
LTE Band 2 (PCS) Conducted Powers - 15 MHz Bandwidth

LTE Band 2 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18675 (1857.5 MHz)	18900 (1880.0 MHz)	19125 (1902.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.70	23.51	23.62	0	0
	1	36	23.49	23.32	23.45		0
	1	74	23.45	23.35	23.44		0
	36	0	22.64	22.47	22.60	0-1	1
	36	18	22.57	22.41	22.55		1
	36	37	22.51	22.38	22.49		1
	75	0	22.54	22.41	22.54		1
16QAM	1	0	22.99	22.77	22.95	0-1	1
	1	36	22.76	22.69	22.79		1
	1	74	22.74	22.69	22.78		1
	36	0	21.68	21.58	21.67	0-2	2
	36	18	21.63	21.50	21.65		2
	36	37	21.54	21.45	21.57		2
	75	0	21.63	21.51	21.62		2
64QAM	1	0	21.97	21.78	21.93	0-2	2
	1	36	21.74	21.63	21.75		2
	1	74	21.70	21.58	21.69		2
	36	0	20.68	20.55	20.67	0-3	3
	36	18	20.65	20.53	20.63		3
	36	37	20.57	20.49	20.55		3
	75	0	20.65	20.48	20.60		3

Table 9-42
LTE Band 2 (PCS) Conducted Powers - 10 MHz Bandwidth

LTE Band 2 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18650 (1855.0 MHz)	18900 (1880.0 MHz)	19150 (1905.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.82	23.65	23.57	0	0
	1	25	23.51	23.33	23.43		0
	1	49	23.64	23.52	23.37		0
	25	0	22.61	22.43	22.54	0-1	1
	25	12	22.59	22.43	22.52		1
	25	25	22.50	22.38	22.48		1
	50	0	22.55	22.40	22.52		1
16QAM	1	0	23.09	22.98	22.86	0-1	1
	1	25	22.81	22.72	22.74		1
	1	49	23.00	22.80	22.76		1
	25	0	21.69	21.50	21.64	0-2	2
	25	12	21.64	21.51	21.59		2
	25	25	21.63	21.46	21.52		2
	50	0	21.65	21.51	21.57		2
64QAM	1	0	22.07	21.91	21.83	0-2	2
	1	25	21.77	21.62	21.72		2
	1	49	21.91	21.86	21.67		2
	25	0	20.71	20.54	20.63	0-3	3
	25	12	20.65	20.49	20.60		3
	25	25	20.60	20.50	20.56		3
	50	0	20.66	20.49	20.60		3

Table 9-43
LTE Band 2 (PCS) Conducted Powers - 5 MHz Bandwidth

LTE Band 2 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18625 (1852.5 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19175 (1907.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.56	23.40	23.56	0	0
	1	12	23.50	23.30	23.42		0
	1	24	23.47	23.34	23.38		0
	12	0	22.57	22.40	22.47	0-1	1
	12	6	22.56	22.41	22.49		1
	12	13	22.54	22.38	22.42		1
	25	0	22.54	22.37	22.47		1
16QAM	1	0	22.90	22.78	22.77	0-1	1
	1	12	22.84	22.63	22.75		1
	1	24	22.81	22.63	22.71		1
	12	0	21.71	21.46	21.61	0-2	2
	12	6	21.68	21.49	21.62		2
	12	13	21.62	21.48	21.56		2
	25	0	21.62	21.44	21.55		2
64QAM	1	0	21.82	21.70	21.75	0-2	2
	1	12	21.70	21.60	21.70		2
	1	24	21.78	21.61	21.66		2
	12	0	20.66	20.50	20.60	0-3	3
	12	6	20.66	20.47	20.60		3
	12	13	20.67	20.49	20.60		3
	25	0	20.65	20.46	20.55		3

Table 9-44
LTE Band 2 (PCS) Conducted Powers - 3 MHz Bandwidth

LTE Band 2 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18615 (1851.5 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19185 (1908.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.54	23.32	23.57	0	0
	1	7	23.61	23.42	23.49		0
	1	14	23.50	23.32	23.37		0
	8	0	22.54	22.36	22.43	0-1	1
	8	4	22.57	22.38	22.44		1
	8	7	22.53	22.36	22.42		1
	15	0	22.53	22.35	22.42		1
16QAM	1	0	22.90	22.80	22.77	0-1	1
	1	7	22.95	22.73	22.78		1
	1	14	22.81	22.65	22.70		1
	8	0	21.65	21.48	21.55	0-2	2
	8	4	21.67	21.49	21.57		2
	8	7	21.62	21.45	21.53		2
	15	0	21.60	21.42	21.50		2
64QAM	1	0	21.77	21.67	21.66	0-2	2
	1	7	21.85	21.70	21.78		2
	1	14	21.78	21.56	21.62		2
	8	0	20.64	20.50	20.55	0-3	3
	8	4	20.63	20.48	20.57		3
	8	7	20.62	20.48	20.57		3
	15	0	20.66	20.46	20.50		3

Table 9-45
LTE Band 2 (PCS) Conducted Powers -1.4 MHz Bandwidth

LTE Band 2 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18607 (1850.7 MHz)	18900 (1880.0 MHz)	19193 (1909.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.45	23.27	23.58	0	0
	1	2	23.49	23.31	23.39		0
	1	5	23.44	23.27	23.33		0
	3	0	23.49	23.31	23.37		0
	3	2	23.53	23.35	23.38		0
	3	3	23.48	23.31	23.37		0
	6	0	22.48	22.29	22.39	0-1	1
16QAM	1	0	22.94	22.78	22.80	0-1	1
	1	2	22.88	22.64	22.66		1
	1	5	22.72	22.60	22.58		1
	3	0	22.65	22.49	22.56		1
	3	2	22.71	22.53	22.57		1
	3	3	22.69	22.48	22.56		1
	6	0	21.59	21.45	21.51	0-2	2
64QAM	1	0	21.75	21.70	21.59	0-2	2
	1	2	21.77	21.58	21.63		2
	1	5	21.68	21.53	21.54		2
	3	0	21.87	21.44	21.58		2
	3	2	21.86	21.45	21.56		2
	3	3	21.89	21.44	21.57		2
	6	0	20.55	20.39	20.47	0-3	3

9.4.9 Hotspot Mode Reduced LTE Band 2 (PCS)

Table 9-46
LTE Band 2 (PCS) Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 2 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18700 (1860.0 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19100 (1900.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.38	**19.50**	19.47	0	0
	1	50	19.00	19.15	19.26		0
	1	99	19.20	19.19	19.08		0
	50	0	19.18	**19.29**	19.27	0-1	0
	50	25	19.09	19.21	19.22		0
	50	50	19.16	19.17	19.15		0
	100	0	19.17	19.13	19.23		0
16QAM	1	0	19.49	19.47	19.47	0-1	0
	1	50	19.13	19.12	19.24		0
	1	99	19.29	19.18	19.11		0
	50	0	19.27	19.25	19.39	0-2	0
	50	25	19.23	19.20	19.33		0
	50	50	19.21	19.15	19.25		0
	100	0	19.32	19.22	19.33		0
64QAM	1	0	19.87	19.97	19.97	0-2	0
	1	50	19.62	19.61	19.72		0
	1	99	19.84	19.67	19.55		0
	50	0	19.32	19.29	19.44	0-3	0
	50	25	19.24	19.25	19.39		0
	50	50	19.24	19.21	19.32		0
	100	0	19.33	19.28	19.38		0

Table 9-47
LTE Band 2 (PCS) Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 2 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18675 (1857.5 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19125 (1902.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.37	19.33	19.49	0	0
	1	36	19.19	19.13	19.29		0
	1	74	19.15	19.11	19.29		0
	36	0	19.31	19.28	19.42	0-1	0
	36	18	19.25	19.22	19.39		0
	36	37	19.21	19.24	19.35		0
	75	0	19.27	19.19	19.38		0
16QAM	1	0	19.63	19.65	19.68	0-1	0
	1	36	19.48	19.47	19.57		0
	1	74	19.45	19.43	19.68		0
	36	0	19.37	19.38	19.50	0-2	0
	36	18	19.33	19.32	19.46		0
	36	37	19.30	19.26	19.45		0
	75	0	19.32	19.31	19.46		0
64QAM	1	0	19.54	19.58	19.62	0-2	0
	1	36	19.30	19.33	19.52		0
	1	74	19.30	19.33	19.50		0
	36	0	19.37	19.37	19.53	0-3	0
	36	18	19.32	19.32	19.51		0
	36	37	19.29	19.31	19.45		0
	75	0	19.34	19.32	19.49		0

Table 9-48
LTE Band 2 (PCS) Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 2 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18650 (1855.0 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19150 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.51	19.48	19.39	0	0
	1	25	19.20	19.08	19.26		0
	1	49	19.35	19.32	19.22		0
	25	0	19.32	19.24	19.42	0-1	0
	25	12	19.29	19.23	19.36		0
	25	25	19.25	19.18	19.33		0
	50	0	19.28	19.22	19.35		0
16QAM	1	0	19.68	19.75	19.68	0-1	0
	1	25	19.48	19.44	19.61		0
	1	49	19.68	19.62	19.58		0
	25	0	19.39	19.30	19.45	0-2	0
	25	12	19.35	19.28	19.43		0
	25	25	19.34	19.26	19.40		0
	50	0	19.39	19.31	19.44		0
64QAM	1	0	19.67	19.71	19.60	0-2	0
	1	25	19.35	19.34	19.52		0
	1	49	19.52	19.55	19.48		0
	25	0	19.42	19.37	19.52	0-3	0
	25	12	19.34	19.31	19.50		0
	25	25	19.32	19.28	19.46		0
	50	0	19.36	19.33	19.48		0

Table 9-49
LTE Band 2 (PCS) Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 2 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18625 (1852.5 MHz)	18900 (1880.0 MHz)	19175 (1907.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.24	19.21	19.32	0	0
	1	12	19.22	19.13	19.27		0
	1	24	19.20	19.16	19.27		0
	12	0	19.25	19.20	19.34	0-1	0
	12	6	19.25	19.17	19.33		0
	12	13	19.25	19.16	19.29		0
	25	0	19.26	19.17	19.30		0
16QAM	1	0	19.61	19.56	19.56	0-1	0
	1	12	19.48	19.43	19.56		0
	1	24	19.50	19.45	19.56		0
	12	0	19.38	19.36	19.43	0-2	0
	12	6	19.36	19.27	19.43		0
	12	13	19.36	19.27	19.36		0
	25	0	19.34	19.27	19.37		0
64QAM	1	0	19.39	19.20	19.56	0-2	0
	1	12	19.32	19.09	19.45		0
	1	24	19.34	19.15	19.41		0
	12	0	19.33	19.22	19.40	0-3	0
	12	6	19.37	19.20	19.43		0
	12	13	19.30	19.15	19.39		0
	25	0	19.32	19.19	19.40		0

Table 9-50
LTE Band 2 (PCS) Reduced Conducted Powers - 3 MHz Bandwidth

LTE Band 2 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18615 (1851.5 MHz)	18900 (1880.0 MHz)	19185 (1908.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.21	19.13	19.27	0	0
	1	7	19.29	19.25	19.28		0
	1	14	19.12	19.11	19.20		0
	8	0	19.22	19.17	19.27	0-1	0
	8	4	19.25	19.21	19.28		0
	8	7	19.22	19.17	19.27		0
	15	0	19.23	19.18	19.28		0
16QAM	1	0	19.48	19.49	19.56	0-1	0
	1	7	19.58	19.50	19.63		0
	1	14	19.48	19.40	19.54		0
	8	0	19.32	19.28	19.39	0-2	0
	8	4	19.38	19.32	19.38		0
	8	7	19.32	19.28	19.38		0
	15	0	19.28	19.22	19.36		0
64QAM	1	0	19.35	19.37	19.46	0-2	0
	1	7	19.40	19.48	19.51		0
	1	14	19.29	19.32	19.41		0
	8	0	19.30	19.28	19.38	0-3	0
	8	4	19.33	19.30	19.40		0
	8	7	19.27	19.26	19.39		0
	15	0	19.30	19.28	19.39		0

Table 9-51
LTE Band 2 (PCS) Reduced Conducted Powers - 1.4 MHz Bandwidth

LTE Band 2 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18607 (1850.7 MHz)	18900 (1880.0 MHz)	19193 (1909.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.13	19.04	19.50	0	0
	1	2	19.14	19.13	19.51		0
	1	5	19.11	19.03	19.46		0
	3	0	19.16	19.08	19.39		0
	3	2	19.17	19.11	19.41		0
	3	3	19.13	19.08	19.33		0
	6	0	19.16	19.12	19.34	0-1	0
16QAM	1	0	19.42	19.34	19.46	0-1	0
	1	2	19.39	19.40	19.56		0
	1	5	19.35	19.31	19.49		0
	3	0	19.30	19.25	19.42		0
	3	2	19.33	19.26	19.40		0
	3	3	19.36	19.26	19.40		0
	6	0	19.28	19.25	19.35	0-2	0
64QAM	1	0	19.33	19.27	19.37	0-2	0
	1	2	19.34	19.31	19.45		0
	1	5	19.28	19.24	19.36		0
	3	0	19.31	19.33	19.43		0
	3	2	19.38	19.34	19.46		0
	3	3	19.32	19.30	19.38		0
	6	0	19.24	19.23	19.32	0-3	0

9.4.10 Grip Sensor Mode Reduced LTE Band 2 (PCS)

Table 9-52
LTE Band 2 (PCS) Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 2 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18700 (1860.0 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19100 (1900.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.96	20.10	**20.15**	0	0
	1	50	19.63	19.91	19.98		0
	1	99	19.82	19.97	19.75		0
	50	0	19.98	19.96	**20.21**	0-1	0
	50	25	20.05	19.89	20.19		0
	50	50	20.06	19.91	20.10		0
	100	0	20.12	19.95	20.10		0
16QAM	1	0	20.17	20.20	20.29	0-1	0
	1	50	19.78	19.84	20.13		0
	1	99	19.97	19.86	19.98		0
	50	0	19.74	19.72	19.92	0-2	0
	50	25	19.67	19.63	19.85		0
	50	50	19.67	19.58	19.68		0
	100	0	19.77	19.72	19.78		0
64QAM	1	0	20.31	20.32	20.43	0-2	0
	1	50	19.97	20.07	20.39		0
	1	99	20.19	20.12	20.23		0
	50	0	19.77	19.76	19.84	0-3	0
	50	25	19.71	19.71	19.88		0
	50	50	19.67	19.67	19.79		0
	100	0	19.78	19.74	19.83		0

Table 9-53
LTE Band 2 (PCS) Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 2 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18675 (1857.5 MHz)	18900 (1880.0 MHz)	19125 (1902.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.80	19.73	19.86	0	0
	1	36	19.48	19.46	19.69		0
	1	74	19.45	19.44	19.66		0
	36	0	19.73	19.69	19.82	0-1	0
	36	18	19.66	19.65	19.74		0
	36	37	19.60	19.58	19.69		0
	75	0	19.64	19.63	19.76		0
16QAM	1	0	19.82	20.16	19.73	0-1	0
	1	36	19.64	20.00	19.52		0
	1	74	19.59	19.98	19.49		0
	36	0	19.79	19.72	19.85	0-2	0
	36	18	19.75	19.69	19.82		0
	36	37	19.67	19.64	19.74		0
	75	0	19.71	19.70	19.78		0
64QAM	1	0	20.17	19.86	20.15	0-2	0
	1	36	19.95	19.66	19.96		0
	1	74	19.79	19.67	19.94		0
	36	0	19.82	19.80	19.88	0-3	0
	36	18	19.75	19.74	19.84		0
	36	37	19.67	19.64	19.79		0
	75	0	19.74	19.69	19.81		0

Table 9-54
LTE Band 2 (PCS) Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 2 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18650 (1855.0 MHz)	18900 (1880.0 MHz)	19150 (1905.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.84	19.80	19.76	0	0
	1	25	19.56	19.45	19.66		0
	1	49	19.79	19.67	19.63		0
	25	0	19.67	19.68	19.75	0-1	0
	25	12	19.69	19.64	19.70		0
	25	25	19.60	19.59	19.66		0
	50	0	19.65	19.64	19.68		0
16QAM	1	0	19.98	20.09	19.61	0-1	0
	1	25	19.66	19.90	19.88		0
	1	49	19.86	19.79	19.97		0
	25	0	19.81	19.73	19.85	0-2	0
	25	12	19.75	19.71	19.80		0
	25	25	19.72	19.68	19.75		0
	50	0	19.75	19.69	19.78		0
64QAM	1	0	20.21	20.18	19.62	0-2	0
	1	25	19.67	19.62	19.66		0
	1	49	19.84	19.80	19.72		0
	25	0	19.80	19.72	19.89	0-3	0
	25	12	19.76	19.69	19.83		0
	25	25	19.70	19.67	19.81		0
	50	0	19.76	19.84	19.79		0

Table 9-55
LTE Band 2 (PCS) Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 2 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18625 (1852.5 MHz)	18900 (1880.0 MHz)	19175 (1907.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.71	19.60	19.78	0	0
	1	12	19.57	19.43	19.65		0
	1	24	19.61	19.48	19.65		0
	12	0	19.69	19.61	19.72	0-1	0
	12	6	19.68	19.61	19.69		0
	12	13	19.63	19.57	19.64		0
	25	0	19.63	19.57	19.69		0
16QAM	1	0	19.70	19.70	19.92	0-1	0
	1	12	19.60	19.51	19.84		0
	1	24	19.91	19.41	19.84		0
	12	0	19.68	19.60	19.70	0-2	0
	12	6	19.68	19.58	19.71		0
	12	13	19.65	19.57	19.67		0
	25	0	19.73	19.79	19.71		0
64QAM	1	0	19.85	19.94	19.95	0-2	0
	1	12	19.74	19.86	19.92		0
	1	24	19.77	19.87	19.91		0
	12	0	19.76	19.68	19.85	0-3	0
	12	6	19.79	19.69	19.84		0
	12	13	19.75	19.66	19.80		0
	25	0	19.78	19.69	19.74		0

Table 9-56
LTE Band 2 (PCS) Reduced Conducted Powers - 3 MHz Bandwidth

LTE Band 2 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18615 (1851.5 MHz)	18900 (1880.0 MHz)	19185 (1908.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.58	19.74	19.70	0	0
	1	7	19.72	19.58	19.66		0
	1	14	19.63	19.48	19.52		0
	8	0	19.63	19.52	19.80	0-1	0
	8	4	19.65	19.55	19.80		0
	8	7	19.60	19.51	19.75		0
	15	0	19.80	19.52	19.61		0
16QAM	1	0	19.81	19.86	19.80	0-1	0
	1	7	19.93	19.98	19.78		0
	1	14	19.76	19.87	19.57		0
	8	0	19.55	19.61	19.66	0-2	0
	8	4	19.59	19.64	19.68		0
	8	7	19.55	19.66	19.64		0
	15	0	19.71	19.62	19.61		0
64QAM	1	0	19.84	19.85	19.98	0-2	0
	1	7	19.88	19.73	19.97		0
	1	14	19.76	19.63	19.73		0
	8	0	19.71	19.62	19.73	0-3	0
	8	4	19.76	19.66	19.75		0
	8	7	19.80	19.62	19.73		0
	15	0	19.64	19.55	19.60		0

Table 9-57
LTE Band 2 (PCS) Reduced Conducted Powers - 1.4 MHz Bandwidth

LTE Band 2 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18607 (1850.7 MHz)	18900 (1880.0 MHz)	19193 (1909.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.65	19.65	19.67	0	0
	1	2	19.52	19.58	19.57		0
	1	5	19.45	19.64	19.48		0
	3	0	19.55	19.65	19.76		0
	3	2	19.56	19.48	19.74		0
	3	3	19.60	19.43	19.72		0
	6	0	19.65	19.50	19.72	0-1	0
16QAM	1	0	19.70	19.70	19.79	0-1	0
	1	2	19.63	19.84	19.64		0
	1	5	19.57	19.76	19.62		0
	3	0	19.65	19.54	19.58		0
	3	2	19.65	19.57	19.60		0
	3	3	19.62	19.55	19.55		0
	6	0	19.56	19.61	19.61	0-2	0
64QAM	1	0	19.94	19.86	19.94	0-2	0
	1	2	19.96	19.80	19.90		0
	1	5	19.83	19.74	19.81		0
	3	0	19.69	19.71	19.69		0
	3	2	19.71	19.71	19.73		0
	3	3	19.69	19.67	19.69		0
	6	0	19.65	19.55	19.58	0-3	0

9.4.11 Maximum LTE Band 25 (PCS)

Table 9-58
LTE Band 25 (PCS) Conducted Powers - 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.97	22.71	**23.07**	0	0
	1	50	22.59	22.37	22.73		0
	1	99	22.66	22.52	22.63		0
	50	0	21.70	21.68	**21.84**	0-1	1
	50	25	21.62	21.61	21.77		1
	50	50	21.55	21.55	21.68		1
	100	0	21.61	21.62	21.77		1
16QAM	1	0	22.30	22.19	22.30	0-1	1
	1	50	21.92	21.90	22.06		1
	1	99	22.02	22.00	22.00		1
	50	0	20.79	20.75	20.96	0-2	2
	50	25	20.73	20.67	20.87		2
	50	50	20.65	20.68	20.80		2
	100	0	20.74	20.68	20.88		2
64QAM	1	0	21.05	20.92	21.07	0-2	2
	1	50	20.68	20.61	20.87		2
	1	99	20.78	20.72	20.76		2
	50	0	19.81	19.78	19.99	0-3	3
	50	25	19.74	19.76	19.88		3
	50	50	19.67	19.72	19.81		3
	100	0	19.76	19.74	19.89		3

Table 9-59
LTE Band 25 (PCS) Conducted Powers - 15 MHz Bandwidth

LTE Band 25 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26115 (1857.5 MHz)	26365 (1882.5 MHz)	26615 (1907.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.83	22.68	22.93	0	0
	1	36	22.67	22.52	22.70		0
	1	74	22.60	22.51	22.68		0
	36	0	21.81	21.62	21.89	0-1	1
	36	18	21.74	21.59	21.78		1
	36	37	21.69	21.59	21.74		1
	75	0	21.75	21.63	21.81		1
16QAM	1	0	22.10	21.94	22.17	0-1	1
	1	36	21.98	21.79	22.04		1
	1	74	21.83	21.74	21.99		1
	36	0	20.89	20.74	20.93	0-2	2
	36	18	20.82	20.71	20.90		2
	36	37	20.74	20.63	20.81		2
	75	0	20.82	20.70	20.87		2
64QAM	1	0	21.18	20.90	21.19	0-2	2
	1	36	20.95	20.78	20.97		2
	1	74	20.93	20.76	20.95		2
	36	0	19.91	19.70	19.90	0-3	3
	36	18	19.83	19.67	19.80		3
	36	37	19.77	19.64	19.80		3
	75	0	19.84	19.64	19.84		3

Table 9-60
LTE Band 25 (PCS) Conducted Powers - 10 MHz Bandwidth

LTE Band 25 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26090 (1855.0 MHz)	26365 (1882.5 MHz)	26640 (1910.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	22.96	22.64	22.72	0	0
	1	25	22.64	22.41	22.55		0
	1	49	22.78	22.64	22.55		0
	25	0	21.72	21.52	21.71	0-1	1
	25	12	21.72	21.52	21.67		1
	25	25	21.65	21.48	21.63		1
	50	0	21.71	21.51	21.66		1
16QAM	1	0	22.24	21.95	22.05	0-1	1
	1	25	21.89	21.70	21.81		1
	1	49	22.01	21.91	21.89		1
	25	0	20.81	20.60	20.75	0-2	2
	25	12	20.75	20.56	20.72		2
	25	25	20.71	20.55	20.66		2
	50	0	20.86	20.64	20.80		2
64QAM	1	0	21.22	21.03	21.04	0-2	2
	1	25	20.88	20.72	20.94		2
	1	49	21.09	20.99	20.91		2
	25	0	19.88	19.67	19.88	0-3	3
	25	12	19.82	19.65	19.80		3
	25	25	19.80	19.61	19.74		3
	50	0	19.84	19.66	19.80		3

Table 9-61
LTE Band 25 (PCS) Conducted Powers - 5 MHz Bandwidth

LTE Band 25 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26065 (1852.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26665 (1912.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.73	22.49	22.70	0	0
	1	12	22.64	22.43	22.57		0
	1	24	22.66	22.46	22.60		0
	12	0	21.73	21.50	21.66	0-1	1
	12	6	21.72	21.49	21.66		1
	12	13	21.69	21.47	21.61		1
	25	0	21.69	21.48	21.64		1
16QAM	1	0	21.92	21.82	21.93	0-1	1
	1	12	21.96	21.71	21.85		1
	1	24	22.03	21.73	21.85		1
	12	0	20.77	20.62	20.75	0-2	2
	12	6	20.81	20.57	20.74		2
	12	13	20.80	20.59	20.70		2
	25	0	20.75	20.58	20.69		2
64QAM	1	0	20.98	20.73	20.85	0-2	2
	1	12	20.92	20.64	20.80		2
	1	24	20.94	20.68	20.83		2
	12	0	19.82	19.60	19.79	0-3	3
	12	6	19.81	19.62	19.75		3
	12	13	19.81	19.62	19.83		3
	25	0	19.80	19.55	19.72		3

Table 9-62
LTE Band 25 (PCS) Conducted Powers - 3 MHz Bandwidth

LTE Band 25 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26055 (1851.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26675 (1913.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.63	22.38	22.70	0	0
	1	7	22.74	22.48	22.63		0
	1	14	22.57	22.39	22.53		0
	8	0	21.67	21.44	21.55	0-1	1
	8	4	21.69	21.45	21.59		1
	8	7	21.63	21.43	21.54		1
	15	0	21.66	21.44	21.64		1
16QAM	1	0	21.90	21.79	21.90	0-1	1
	1	7	21.99	21.84	21.94		1
	1	14	21.81	21.72	21.79		1
	8	0	20.75	20.58	20.67	0-2	2
	8	4	20.79	20.59	20.68		2
	8	7	20.75	20.56	20.68		2
	15	0	20.72	20.48	20.64		2
64QAM	1	0	20.88	20.65	20.77	0-2	2
	1	7	21.00	20.77	20.92		2
	1	14	20.84	20.63	20.80		2
	8	0	19.76	19.50	19.72	0-3	3
	8	4	19.76	19.53	19.70		3
	8	7	19.75	19.53	19.71		3
	15	0	19.74	19.53	19.66		3

Table 9-63
LTE Band 25 (PCS) Conducted Powers - 1.4 MHz Bandwidth

LTE Band 25 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26047 (1850.7 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26683 (1914.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.60	22.54	22.68	0	0
	1	2	22.58	22.62	22.51		0
	1	5	22.54	22.53	22.42		0
	3	0	22.56	22.61	22.48		0
	3	2	22.60	22.62	22.52		0
	3	3	22.53	22.59	22.48		0
	6	0	21.58	21.61	21.51	0-1	1
16QAM	1	0	21.92	21.90	21.90	0-1	1
	1	2	21.83	21.93	21.86		1
	1	5	21.74	21.86	21.80		1
	3	0	21.87	21.93	21.83		1
	3	2	21.89	22.02	21.88		1
	3	3	21.87	21.96	21.78		1
	6	0	20.77	20.80	20.69	0-2	2
64QAM	1	0	20.84	20.86	20.79	0-2	2
	1	2	20.94	20.97	20.84		2
	1	5	20.85	20.88	20.78		2
	3	0	21.06	20.56	20.76		2
	3	2	21.03	20.59	20.79		2
	3	3	21.03	20.57	20.79		2
	6	0	19.64	19.69	19.61	0-3	3

9.4.12 Hotspot Mode Reduced LTE Band 25 (PCS)

Table 9-64
LTE Band 25 (PCS) Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.58	19.33	**19.66**	0	0
	1	50	19.27	19.06	19.42		0
	1	99	19.49	19.17	19.29		0
	50	0	19.30	19.36	**19.51**	0-1	0
	50	25	19.46	19.29	19.44		0
	50	50	19.22	19.23	19.37		0
	100	0	19.37	19.28	19.47		0
16QAM	1	0	19.96	19.81	19.86	0-1	0
	1	50	19.74	19.48	19.67		0
	1	99	19.85	19.60	19.50		0
	50	0	19.42	19.44	19.57	0-2	0
	50	25	19.36	19.34	19.52		0
	50	50	19.34	19.35	19.40		0
	100	0	19.41	19.34	19.48		0
64QAM	1	0	20.08	20.03	20.07	0-2	0
	1	50	19.82	19.74	19.83		0
	1	99	20.06	19.86	19.73		0
	50	0	19.36	19.45	19.67	0-3	0
	50	25	19.44	19.38	19.58		0
	50	50	19.39	19.37	19.49		0
	100	0	19.42	19.36	19.55		0

Table 9-65
LTE Band 25 (PCS) Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 25 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26115 (1857.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26615 (1907.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.50	19.32	19.58	0	0
	1	36	19.27	19.11	19.36		0
	1	74	19.28	19.13	19.35		0
	36	0	19.44	19.24	19.51	0-1	0
	36	18	19.37	19.23	19.46		0
	36	37	19.31	19.16	19.38		0
	75	0	19.37	19.21	19.44		0
16QAM	1	0	19.89	19.70	19.86	0-1	0
	1	36	19.55	19.42	19.64		0
	1	74	19.51	19.46	19.64		0
	36	0	19.52	19.38	19.57	0-2	0
	36	18	19.45	19.26	19.52		0
	36	37	19.40	19.25	19.42		0
	75	0	19.46	19.32	19.51		0
64QAM	1	0	19.71	19.53	19.74	0-2	0
	1	36	19.42	19.29	19.55		0
	1	74	19.50	19.30	19.47		0
	36	0	19.52	19.37	19.57	0-3	0
	36	18	19.47	19.33	19.53		0
	36	37	19.44	19.26	19.46		0
	75	0	19.47	19.31	19.54		0

Table 9-66
LTE Band 25 (PCS) Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 25 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26090 (1855.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26640 (1910.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.59	19.44	19.45	0	0
	1	25	19.25	19.14	19.32		0
	1	49	19.45	19.31	19.28		0
	25	0	19.41	19.25	19.46	0-1	0
	25	12	19.37	19.24	19.40		0
	25	25	19.33	19.20	19.38		0
	50	0	19.36	19.21	19.42		0
16QAM	1	0	19.84	19.74	19.75	0-1	0
	1	25	19.55	19.39	19.62		0
	1	49	19.79	19.63	19.53		0
	25	0	19.49	19.33	19.53	0-2	0
	25	12	19.45	19.32	19.46		0
	25	25	19.43	19.27	19.42		0
	50	0	19.44	19.31	19.47		0
64QAM	1	0	19.83	19.65	19.63	0-2	0
	1	25	19.46	19.34	19.51		0
	1	49	19.65	19.54	19.48		0
	25	0	19.52	19.35	19.53	0-3	0
	25	12	19.48	19.32	19.49		0
	25	25	19.43	19.27	19.43		0
	50	0	19.49	19.33	19.50		0

Table 9-67
LTE Band 25 (PCS) Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 25 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26065 (1852.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26665 (1912.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.40	19.19	19.38	0	0
	1	12	19.31	19.12	19.29		0
	1	24	19.27	19.14	19.27		0
	12	0	19.35	19.18	19.38	0-1	0
	12	6	19.35	19.21	19.39		0
	12	13	19.33	19.15	19.34		0
	25	0	19.34	19.19	19.39		0
16QAM	1	0	19.69	19.50	19.70	0-1	0
	1	12	19.58	19.42	19.54		0
	1	24	19.54	19.46	19.60		0
	12	0	19.44	19.33	19.45	0-2	0
	12	6	19.45	19.31	19.45		0
	12	13	19.44	19.27	19.45		0
	25	0	19.42	19.27	19.38		0
64QAM	1	0	19.56	19.45	19.55	0-2	0
	1	12	19.45	19.31	19.48		0
	1	24	19.44	19.34	19.48		0
	12	0	19.47	19.31	19.45	0-3	0
	12	6	19.47	19.27	19.42		0
	12	13	19.43	19.29	19.41		0
	25	0	19.41	19.29	19.45		0

Table 9-68
LTE Band 25 (PCS) Reduced Conducted Powers - 3 MHz Bandwidth

LTE Band 25 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26055 (1851.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26675 (1913.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.33	19.16	19.33	0	0
	1	7	19.40	19.26	19.38		0
	1	14	19.27	19.10	19.24		0
	8	0	19.35	19.15	19.32	0-1	0
	8	4	19.35	19.17	19.34		0
	8	7	19.31	19.14	19.33		0
	15	0	19.34	19.13	19.31		0
16QAM	1	0	19.55	19.44	19.56	0-1	0
	1	7	19.66	19.59	19.66		0
	1	14	19.54	19.37	19.53		0
	8	0	19.44	19.28	19.42	0-2	0
	8	4	19.47	19.32	19.42		0
	8	7	19.44	19.27	19.43		0
	15	0	19.39	19.20	19.39		0
64QAM	1	0	19.54	19.30	19.50	0-2	0
	1	7	19.54	19.41	19.56		0
	1	14	19.46	19.32	19.44		0
	8	0	19.42	19.26	19.38	0-3	0
	8	4	19.41	19.29	19.43		0
	8	7	19.43	19.24	19.39		0
	15	0	19.41	19.24	19.43		0

Table 9-69
LTE Band 25 (PCS) Reduced Conducted Powers -1.4 MHz Bandwidth

LTE Band 25 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26047 (1850.7 MHz)	26365 (1882.5 MHz)	26683 (1914.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.23	19.27	19.21	0	0
	1	2	19.27	19.33	19.29		0
	1	5	19.20	19.23	19.19		0
	3	0	19.23	19.29	19.23		0
	3	2	19.28	19.31	19.27		0
	3	3	19.23	19.28	19.23		0
	6	0	19.27	19.28	19.27	0-1	0
16QAM	1	0	19.52	19.60	19.54	0-1	0
	1	2	19.50	19.69	19.56		0
	1	5	19.41	19.65	19.53		0
	3	0	19.41	19.48	19.43		0
	3	2	19.41	19.50	19.45		0
	3	3	19.38	19.49	19.43		0
	6	0	19.38	19.46	19.35	0-2	0
64QAM	1	0	19.36	19.48	19.38	0-2	0
	1	2	19.47	19.53	19.47		0
	1	5	19.40	19.47	19.34		0
	3	0	19.45	19.49	19.43		0
	3	2	19.48	19.52	19.47		0
	3	3	19.44	19.51	19.41		0
	6	0	19.38	19.42	19.31	0-3	0

9.4.13 Grip Sensor Mode Reduced LTE Band 25 (PCS)

Table 9-70
LTE Band 25 (PCS) Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	**20.09**	20.05	19.95	0	0
	1	50	19.66	19.72	19.64		0
	1	99	19.86	19.90	19.54		0
	50	0	19.80	19.83	**20.06**	0-1	0
	50	25	19.88	19.81	20.00		0
	50	50	19.78	19.76	19.87		0
	100	0	19.83	19.79	19.96		0
16QAM	1	0	20.45	20.27	20.36	0-1	0
	1	50	20.07	19.90	20.12		0
	1	99	20.29	20.07	20.04		0
	50	0	19.87	19.91	20.07	0-2	0
	50	25	19.90	19.83	20.01		0
	50	50	19.85	19.79	19.91		0
	100	0	19.80	19.87	19.96		0
64QAM	1	0	20.59	20.54	20.53	0-2	0
	1	50	20.33	20.19	20.33		0
	1	99	20.54	20.28	20.21		0
	50	0	19.91	19.99	20.09	0-3	0
	50	25	19.94	19.86	19.99		0
	50	50	19.88	19.84	19.94		0
	100	0	19.90	19.85	19.97		0

Table 9-71
LTE Band 25 (PCS) Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 25 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26115 (1857.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26615 (1907.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.58	19.68	19.87	0	0
	1	36	19.43	19.40	19.69		0
	1	74	19.43	19.43	19.60		0
	36	0	19.62	19.61	19.80	0-1	0
	36	18	19.54	19.53	19.77		0
	36	37	19.54	19.51	19.70		0
	75	0	19.54	19.54	19.78		0
16QAM	1	0	19.70	20.01	20.19	0-1	0
	1	36	19.55	19.85	20.02		0
	1	74	19.56	19.82	19.97		0
	36	0	19.73	19.69	19.82	0-2	0
	36	18	19.66	19.64	19.78		0
	36	37	19.64	19.64	19.72		0
	75	0	19.65	19.64	19.85		0
64QAM	1	0	20.04	19.99	19.99	0-2	0
	1	36	19.87	19.81	19.79		0
	1	74	19.85	19.80	19.76		0
	36	0	19.69	19.69	19.91	0-3	0
	36	18	19.64	19.68	19.89		0
	36	37	19.58	19.64	19.81		0
	75	0	19.65	19.61	19.83		0

Table 9-72
LTE Band 25 (PCS) Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 25 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26090 (1855.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26640 (1910.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.98	19.86	19.74	0	0
	1	25	19.63	19.45	19.64		0
	1	49	19.82	19.59	19.61		0
	25	0	19.74	19.57	19.76	0-1	0
	25	12	19.70	19.54	19.68		0
	25	25	19.64	19.51	19.66		0
	50	0	19.71	19.55	19.68		0
16QAM	1	0	19.76	20.11	20.03	0-1	0
	1	25	19.47	19.82	19.91		0
	1	49	19.62	20.01	19.85		0
	25	0	19.86	19.70	19.80	0-2	0
	25	12	19.77	19.60	19.79		0
	25	25	19.73	19.56	19.72		0
	50	0	19.76	19.64	19.74		0
64QAM	1	0	19.84	19.91	19.95	0-2	0
	1	25	19.52	19.59	19.85		0
	1	49	19.69	19.99	19.82		0
	25	0	19.86	19.62	19.82	0-3	0
	25	12	19.82	19.60	19.80		0
	25	25	19.81	19.57	19.76		0
	50	0	19.82	19.62	19.77		0

Table 9-73
LTE Band 25 (PCS) Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 25 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26065 (1852.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26665 (1912.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.66	19.57	19.67	0	0
	1	12	19.59	19.49	19.60		0
	1	24	19.56	19.53	19.64		0
	12	0	19.68	19.56	19.70	0-1	0
	12	6	19.69	19.57	19.67		0
	12	13	19.66	19.56	19.65		0
	25	0	19.66	19.48	19.63		0
16QAM	1	0	19.75	19.36	19.46	0-1	0
	1	12	19.68	19.32	19.45		0
	1	24	19.67	19.31	19.51		0
	12	0	19.72	19.58	19.75	0-2	0
	12	6	19.70	19.54	19.77		0
	12	13	19.68	19.53	19.72		0
	25	0	19.77	19.61	19.68		0
64QAM	1	0	20.09	19.45	20.07	0-2	0
	1	12	19.99	19.36	19.91		0
	1	24	19.78	19.39	19.96		0
	12	0	19.76	19.66	19.87	0-3	0
	12	6	19.74	19.64	19.84		0
	12	13	19.72	19.62	19.69		0
	25	0	19.75	19.64	19.73		0

Table 9-74
LTE Band 25 (PCS) Reduced Conducted Powers - 3 MHz Bandwidth

LTE Band 25 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26055 (1851.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26675 (1913.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.61	19.60	19.61	0	0
	1	7	19.64	19.62	19.70		0
	1	14	19.54	19.56	19.50		0
	8	0	19.68	19.54	19.67	0-1	0
	8	4	19.70	19.56	19.66		0
	8	7	19.65	19.52	19.60		0
	15	0	19.66	19.49	19.65		0
16QAM	1	0	19.98	19.73	19.62	0-1	0
	1	7	20.11	19.85	19.68		0
	1	14	19.93	19.69	19.59		0
	8	0	19.77	19.56	19.66	0-2	0
	8	4	19.79	19.65	19.68		0
	8	7	19.88	19.60	19.63		0
	15	0	19.70	19.59	19.69		0
64QAM	1	0	20.00	19.73	19.93	0-2	0
	1	7	20.07	19.85	20.04		0
	1	14	19.98	19.81	19.80		0
	8	0	19.73	19.75	19.79	0-3	0
	8	4	19.73	19.79	19.82		0
	8	7	19.71	19.74	19.79		0
	15	0	19.77	19.65	19.74		0

Table 9-75
LTE Band 25 (PCS) Reduced Conducted Powers - 1.4 MHz Bandwidth

LTE Band 25 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26047 (1850.7 MHz)	26365 (1882.5 MHz)	26683 (1914.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.61	19.61	19.47	0	0
	1	2	19.67	19.61	19.51		0
	1	5	19.50	19.55	19.45		0
	3	0	19.62	19.61	19.50		0
	3	2	19.68	19.65	19.54		0
	3	3	19.62	19.62	19.52		0
	6	0	19.63	19.64	19.58	0-1	0
16QAM	1	0	19.96	20.06	19.87	0-1	0
	1	2	20.00	20.12	19.90		0
	1	5	19.92	20.06	19.85		0
	3	0	19.69	19.89	19.61		0
	3	2	19.72	19.92	19.63		0
	3	3	19.71	19.86	19.62		0
	6	0	19.64	19.77	19.80	0-2	0
64QAM	1	0	19.76	19.77	19.82	0-2	0
	1	2	19.79	19.84	19.88		0
	1	5	19.73	19.77	19.84		0
	3	0	19.58	19.84	19.79		0
	3	2	19.60	19.93	19.82		0
	3	3	19.55	19.88	19.80		0
	6	0	19.68	19.72	19.78	0-3	0

9.4.14 Maximum LTE Band 41 (PC3)

Table 9-76
LTE Band 41 Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
	1	0	23.79	23.56	23.63	23.88	**24.04**		0
	1	50	23.70	23.50	23.46	23.81	23.91	0	0
	1	99	23.58	23.46	23.48	23.76	23.86		0
QPSK	50	0	22.74	22.74	22.68	22.77	**22.96**		1
	50	25	22.73	22.75	22.60	22.83	22.90	0-1	1
	50	50	22.68	22.64	22.55	22.76	22.95		1
	100	0	22.66	22.64	22.58	22.68	22.89		1
	1	0	23.23	22.69	22.69	23.33	23.12		1
	1	50	23.07	22.66	22.61	23.24	23.01	0-1	1
	1	99	23.04	22.58	22.65	23.19	22.93		1
16QAM	50	0	21.86	21.82	21.73	21.89	22.09		2
	50	25	21.82	21.75	21.72	21.93	21.99	0-2	2
	50	50	21.72	21.74	21.62	21.86	22.02		2
	100	0	21.75	21.81	21.68	21.80	21.99		2
	1	0	21.50	21.95	22.02	21.61	22.46		2
	1	50	21.39	21.94	21.87	21.54	22.37	0-2	2
	1	99	21.34	21.85	21.86	21.41	22.29		2
64QAM	50	0	20.73	20.82	20.70	20.83	21.12		3
	50	25	20.72	20.78	20.73	20.88	21.06		3
	50	50	20.65	20.71	20.60	20.82	21.11	0-3	3
	100	0	20.81	20.76	20.69	20.87	20.97		3

Table 9-77
LTE Band 41 Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
	1	0	23.65	23.53	23.63	23.65	23.88		0
	1	36	23.41	23.42	23.37	23.57	23.76	0	0
	1	74	23.29	23.41	23.23	23.49	23.68		0
QPSK	36	0	22.56	22.57	22.53	22.55	22.84		1
	36	18	22.50	22.54	22.41	22.61	22.75	0-1	1
	36	37	22.42	22.47	22.35	22.54	22.76		1
	75	0	22.49	22.49	22.42	22.51	22.74		1
	1	0	22.82	22.69	22.77	22.80	23.04		1
	1	36	22.60	22.63	22.52	22.70	22.93	0-1	1
	1	74	22.49	22.57	22.41	22.66	22.84		1
16QAM	36	0	21.66	21.66	21.63	21.67	21.91		2
	36	18	21.61	21.64	21.53	21.74	21.84	0-2	2
	36	37	21.53	21.59	21.45	21.69	21.86		2
	75	0	21.58	21.60	21.53	21.62	21.84		2
	1	0	21.67	21.56	21.46	21.67	21.89		2
	1	36	21.46	21.48	21.41	21.60	21.82	0-2	2
	1	74	21.35	21.44	21.30	21.55	21.68		2
64QAM	36	0	20.64	20.62	20.58	20.67	20.92		3
	36	18	20.56	20.61	20.55	20.71	20.85	0-3	3
	36	37	20.51	20.55	20.45	20.65	20.83		3
	75	0	20.59	20.64	20.55	20.63	20.88		3

Table 9-78
LTE Band 41 Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	23.58	23.49	23.53	23.67	23.84	0	0
	1	25	23.45	23.47	23.40	23.57	23.77		0
	1	49	23.31	23.36	23.25	23.48	23.69		0
	25	0	22.51	22.50	22.45	22.61	22.76	0-1	1
	25	12	22.47	22.51	22.40	22.59	22.81		1
	25	25	22.39	22.44	22.31	22.53	22.77		1
	50	0	22.48	22.50	22.42	22.59	22.72		1
16QAM	1	0	22.72	22.62	22.65	22.84	22.98	0-1	1
	1	25	22.60	22.62	22.54	22.73	22.94		1
	1	49	22.52	22.58	22.45	22.67	22.87		1
	25	0	21.53	21.53	21.48	21.64	21.78	0-2	2
	25	12	21.51	21.53	21.45	21.61	21.85		2
	25	25	21.44	21.49	21.36	21.57	21.77		2
	50	0	21.58	21.60	21.53	21.72	21.87		2
64QAM	1	0	21.58	21.48	21.52	21.70	21.86	0-2	2
	1	25	21.47	21.50	21.40	21.61	21.81		2
	1	49	21.36	21.45	21.32	21.54	21.75		2
	25	0	20.68	20.67	20.60	20.78	20.93	0-3	3
	25	12	20.65	20.65	20.60	20.80	21.00		3
	25	25	20.58	20.60	20.53	20.72	20.94		3
	50	0	20.59	20.61	20.53	20.70	20.86		3

Table 9-79
LTE Band 41 Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	23.47	23.48	23.41	23.59	23.80	0	0
	1	12	23.43	23.45	23.36	23.58	23.77		0
	1	24	23.34	23.38	23.29	23.46	23.68		0
	12	0	22.44	22.45	22.42	22.60	22.81	0-1	1
	12	6	22.44	22.48	22.39	22.58	22.82		1
	12	13	22.40	22.42	22.34	22.54	22.78		1
	25	0	22.42	22.44	22.37	22.56	22.80		1
16QAM	1	0	22.63	22.65	22.60	22.78	22.99	0-1	1
	1	12	22.59	22.61	22.53	22.75	22.94		1
	1	24	22.53	22.58	22.48	22.69	22.87		1
	12	0	21.60	21.61	21.53	21.70	21.91	0-2	2
	12	6	21.59	21.63	21.53	21.72	21.92		2
	12	13	21.52	21.58	21.48	21.66	21.89		2
	25	0	21.47	21.51	21.44	21.62	21.82		2
64QAM	1	0	21.49	21.53	21.47	21.64	21.82	0-2	2
	1	12	21.45	21.49	21.40	21.61	21.81		2
	1	24	21.38	21.47	21.36	21.59	21.74		2
	12	0	20.49	20.51	20.47	20.63	20.85	0-3	3
	12	6	20.50	20.55	20.45	20.65	20.86		3
	12	13	20.45	20.49	20.40	20.60	20.81		3
	25	0	20.61	20.64	20.56	20.77	20.97		3

9.4.15 Hotspot Mode Reduced LTE Band 41 (PC3)

Table 9-80
LTE Band 41 Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	19.79	19.83	19.81	19.86	**20.02**	0	0
	1	50	19.69	19.71	19.67	19.81	19.92		0
	1	99	19.67	19.69	19.75	19.77	19.84		0
	50	0	19.88	19.85	19.78	19.84	**19.99**	0-1	0
	50	25	19.87	19.80	19.79	19.91	19.91		0
	50	50	19.78	19.79	19.71	19.84	19.94		0
	100	0	19.86	19.87	19.79	19.81	19.90		0
16QAM	1	0	20.06	19.53	19.50	19.57	20.07	0-1	0
	1	50	19.96	19.42	19.37	19.49	19.96		0
	1	99	19.99	19.47	19.43	19.45	19.92		0
	50	0	20.03	19.93	19.92	19.96	20.07	0-2	0
	50	25	19.97	19.90	19.88	19.96	20.02		0
	50	50	19.96	19.92	19.82	19.93	20.08		0
	100	0	19.95	19.92	19.87	19.89	20.03		0
64QAM	1	0	19.52	20.18	20.12	20.20	20.13	0-2	0
	1	50	19.41	20.09	20.00	20.16	20.07		0
	1	99	19.43	20.05	20.10	20.07	20.00		0
	50	0	19.92	19.95	19.90	19.96	20.15	0-3	0
	50	25	19.93	19.92	19.90	20.02	20.10		0
	50	50	19.89	19.90	19.83	19.96	20.15		0
	100	0	19.93	19.92	19.89	19.91	20.03		0

Table 9-81
LTE Band 41 Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	19.86	19.77	19.77	19.84	20.01	0	0
	1	36	19.72	19.59	19.51	19.72	19.91		0
	1	74	19.65	19.55	19.39	19.63	19.80		0
	36	0	19.78	19.68	19.66	19.76	19.93	0-1	0
	36	18	19.76	19.66	19.58	19.80	19.89		0
	36	37	19.70	19.60	19.49	19.76	19.89		0
	75	0	19.72	19.63	19.55	19.69	19.85		0
16QAM	1	0	20.00	19.87	19.87	19.96	20.15	0-1	0
	1	36	19.82	19.73	19.65	19.87	20.05		0
	1	74	19.76	19.70	19.87	19.80	19.96		0
	36	0	19.87	19.77	19.73	19.80	20.03	0-2	0
	36	18	19.84	19.79	19.67	19.85	19.96		0
	36	37	19.75	19.69	19.58	19.79	19.99		0
	75	0	19.81	19.72	19.64	19.78	19.96		0
64QAM	1	0	19.84	19.76	19.75	19.80	20.00	0-2	0
	1	36	19.68	19.56	19.50	19.71	19.90		0
	1	74	19.63	19.55	19.38	19.64	19.84		0
	36	0	19.84	19.75	19.70	19.84	20.01	0-3	0
	36	18	19.83	19.75	19.64	19.86	19.97		0
	36	37	19.78	19.66	19.56	19.78	19.95		0
	75	0	19.87	19.76	19.66	19.80	19.98		0

Table 9-82
LTE Band 41 Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	19.89	19.70	19.61	19.78	19.97	0	0
	1	25	19.82	19.63	19.47	19.69	19.94		0
	1	49	19.76	19.56	19.36	19.64	19.88		0
	25	0	19.85	19.69	19.56	19.78	19.92	0-1	0
	25	12	19.83	19.71	19.55	19.77	20.01		0
	25	25	19.76	19.64	19.46	19.71	19.91		0
	50	0	19.85	19.68	19.55	19.74	19.89		0
16QAM	1	0	20.03	19.85	19.76	19.97	20.16	0-1	0
	1	25	19.96	19.77	19.64	19.88	20.09		0
	1	49	19.90	19.72	19.53	19.81	20.04		0
	25	0	19.83	19.72	19.57	19.81	19.97	0-2	0
	25	12	19.83	19.70	19.53	19.79	20.02		0
	25	25	19.81	19.64	19.45	19.71	19.95		0
	50	0	19.92	19.78	19.63	19.86	19.99		0
64QAM	1	0	19.93	19.77	19.67	19.86	19.99	0-2	0
	1	25	19.80	19.67	19.53	19.74	19.96		0
	1	49	19.76	19.61	19.39	19.67	19.90		0
	25	0	19.96	19.82	19.72	19.95	20.11	0-3	0
	25	12	19.97	19.83	19.65	19.92	20.13		0
	25	25	19.93	19.78	19.61	19.87	20.08		0
	50	0	19.95	19.83	19.66	19.89	20.04		0

Table 9-83
LTE Band 41 Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	19.83	19.63	19.56	19.81	19.98	0	0
	1	12	19.80	19.65	19.56	19.80	19.95		0
	1	24	19.73	19.60	19.48	19.72	19.87		0
	12	0	19.83	19.69	19.63	19.83	19.99	0-1	0
	12	6	19.85	19.70	19.54	19.84	20.00		0
	12	13	19.79	19.65	19.52	19.77	19.92		0
	25	0	19.82	19.64	19.55	19.81	19.96		0
16QAM	1	0	20.00	19.81	19.76	19.97	20.15	0-1	0
	1	12	19.95	19.79	19.70	19.95	20.09		0
	1	24	19.91	19.74	19.62	19.89	20.05		0
	12	0	19.94	19.76	19.70	19.94	20.08	0-2	0
	12	6	19.96	19.79	19.71	19.95	20.08		0
	12	13	19.88	19.73	19.66	19.90	20.03		0
	25	0	19.81	19.65	19.58	19.84	19.98		0
64QAM	1	0	19.84	19.70	19.65	19.83	19.99	0-2	0
	1	12	19.82	19.68	19.57	19.83	19.94		0
	1	24	19.77	19.62	19.53	19.76	19.90		0
	12	0	19.96	19.78	19.73	19.95	20.09	0-3	0
	12	6	19.96	19.80	19.70	19.93	20.10		0
	12	13	19.90	19.74	19.63	19.89	20.03		0
	25	0	19.94	19.82	19.71	19.98	20.09		0

9.4.16 Grip Mode Reduced LTE Band 41 (PC3)

Table 9-84
LTE Band 41 Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.53	22.73	22.76	22.89	**23.01**	0	0
	1	50	22.51	22.70	22.61	22.81	22.91		0
	1	99	22.54	22.70	22.69	22.76	22.85		0
	50	0	22.68	22.83	22.78	22.87	**22.97**	0-1	0
	50	25	22.63	22.78	22.76	22.89	22.93		0
	50	50	22.69	22.71	22.69	22.81	22.94		0
	100	0	22.60	22.75	22.71	22.80	22.92		0
16QAM	1	0	22.86	22.78	22.99	22.94	23.25	0-1	0
	1	50	22.77	22.77	22.85	22.88	23.17		0
	1	99	22.78	22.75	22.93	22.85	23.11		0
	50	0	21.79	21.89	21.91	21.91	22.13	0-2	1
	50	25	21.75	21.85	21.87	21.95	22.04		1
	50	50	21.76	21.86	21.83	21.92	22.09		1
	100	0	21.71	21.87	21.79	21.88	22.11		1
64QAM	1	0	21.30	21.81	21.44	21.95	21.69	0-2	1
	1	50	21.12	21.76	21.31	21.90	21.61		1
	1	99	21.21	21.74	21.40	21.85	21.60		1
	50	0	20.71	20.93	20.86	20.98	21.09	0-3	1.5
	50	25	20.67	20.91	20.79	21.02	21.00		1.5
	50	50	20.68	20.86	20.77	20.97	21.06		1.5
	100	0	20.72	20.85	20.83	20.87	21.03		1.5

Table 9-85
LTE Band 41 Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.59	22.46	22.50	22.50	22.66	0	0
	1	36	22.41	22.29	22.32	22.36	22.58		0
	1	74	22.33	22.20	22.22	22.29	22.49		0
	36	0	22.60	22.38	22.45	22.35	22.67	0-1	0
	36	18	22.55	22.39	22.38	22.44	22.62		0
	36	37	22.44	22.32	22.31	22.34	22.62		0
	75	0	22.51	22.33	22.40	22.33	22.57		0
16QAM	1	0	22.94	22.77	22.82	22.79	23.06	0-1	0
	1	36	22.73	22.58	22.63	22.68	22.92		0
	1	74	22.62	22.53	22.59	22.57	22.82		0
	36	0	21.64	21.46	21.53	21.47	21.72	0-2	1
	36	18	21.59	21.45	21.45	21.49	21.66		1
	36	37	21.52	21.39	21.38	21.40	21.73		1
	75	0	21.60	21.44	21.48	21.42	21.65		1
64QAM	1	0	21.40	21.30	21.29	21.35	21.52	0-2	1
	1	36	21.22	21.05	21.13	21.13	21.40		1
	1	74	21.16	21.01	21.03	21.05	21.31		1
	36	0	20.67	20.47	20.52	20.44	20.77	0-3	1.5
	36	18	20.61	20.45	20.50	20.55	20.67		1.5
	36	37	20.53	20.42	20.42	20.46	20.70		1.5
	75	0	20.61	20.46	20.50	20.45	20.70		1.5

Table 9-86
LTE Band 41 Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.52	22.36	22.34	22.46	22.64	0	0
	1	25	22.43	22.29	22.36	22.35	22.61		0
	1	49	22.35	22.25	22.27	22.25	22.59		0
	25	0	22.51	22.34	22.39	22.43	22.61	0-1	0
	25	12	22.48	22.30	22.39	22.41	22.65		0
	25	25	22.43	22.26	22.31	22.35	22.61		0
	50	0	22.50	22.32	22.37	22.41	22.58		0
16QAM	1	0	22.85	22.68	22.75	22.80	22.95	0-1	0
	1	25	22.73	22.57	22.62	22.65	22.89		0
	1	49	22.65	22.53	22.57	22.59	22.87		0
	25	0	21.55	21.40	21.44	21.47	21.66	0-2	1
	25	12	21.54	21.37	21.39	21.48	21.70		1
	25	25	21.50	21.30	21.32	21.33	21.68		1
	50	0	21.60	21.46	21.49	21.54	21.67		1
64QAM	1	0	21.35	21.19	21.23	21.29	21.49	0-2	1
	1	25	21.25	21.08	21.11	21.17	21.42		1
	1	49	21.14	21.02	21.05	21.07	21.33		1
	25	0	20.66	20.46	20.55	20.59	20.75	0-3	1.5
	25	12	20.68	20.54	20.55	20.55	20.84		1.5
	25	25	20.60	20.44	20.49	20.50	20.81		1.5
	50	0	20.62	20.43	20.50	20.53	20.72		1.5

Table 9-87
LTE Band 41 Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.44	22.31	22.32	22.39	22.63	0	0
	1	12	22.51	22.26	22.34	22.39	22.63		0
	1	24	22.34	22.21	22.22	22.30	22.53		0
	12	0	22.49	22.31	22.36	22.42	22.64	0-1	0
	12	6	22.50	22.34	22.34	22.43	22.66		0
	12	13	22.44	22.25	22.33	22.34	22.61		0
	25	0	22.43	22.32	22.32	22.40	22.64		0
16QAM	1	0	22.77	22.61	22.67	22.72	22.90	0-1	0
	1	12	22.75	22.61	22.45	22.68	22.92		0
	1	24	22.68	22.56	22.54	22.58	22.82		0
	12	0	21.55	21.36	21.47	21.44	21.70	0-2	1
	12	6	21.55	21.40	21.44	21.48	21.72		1
	12	13	21.51	21.37	21.37	21.43	21.66		1
	25	0	21.52	21.34	21.37	21.42	21.66		1
64QAM	1	0	21.27	21.09	21.15	21.16	21.43	0-2	1
	1	12	21.24	21.08	21.10	21.16	21.41		1
	1	24	21.19	21.05	21.07	21.11	21.35		1
	12	0	20.67	20.48	20.51	20.56	20.81	0-3	1.5
	12	6	20.65	20.50	20.51	20.57	20.79		1.5
	12	13	20.63	20.41	20.47	20.49	20.74		1.5
	25	0	20.63	20.47	20.48	20.55	20.79		1.5

9.4.17 Maximum LTE Band 41 (PC2)

Table 9-88
LTE Band 41 Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	26.70	26.73	26.71	26.76	**27.03**	0	0
	1	50	26.55	26.69	26.56	26.70	26.98		0
	1	99	26.51	26.65	26.61	26.61	26.77		0
	50	0	25.73	25.71	25.65	25.83	**25.97**	0-1	1
	50	25	25.68	25.66	25.57	25.87	25.85		1
	50	50	25.54	25.62	25.53	25.74	25.92		1
	100	0	25.36	25.62	25.55	25.72	25.79		1
16QAM	1	0	26.06	26.24	25.87	26.16	26.48	0-1	1
	1	50	25.83	26.20	25.69	26.04	26.41		1
	1	99	25.86	26.16	25.73	26.00	26.24		1
	50	0	24.43	24.84	24.71	24.88	25.01	0-2	2
	50	25	24.57	24.75	24.65	24.89	24.98		2
	50	50	24.43	24.74	24.58	24.84	25.00		2
	100	0	24.75	24.72	24.68	24.80	24.93		2
64QAM	1	0	25.30	24.60	25.24	25.44	24.90	0-2	2
	1	50	25.23	24.57	25.09	25.37	24.85		2
	1	99	25.20	24.50	25.13	25.29	24.66		2
	50	0	23.66	23.76	23.82	23.89	24.02	0-3	3
	50	25	23.63	23.66	23.77	23.90	23.89		3
	50	50	23.45	23.65	23.66	23.84	23.97		3
	100	0	23.38	23.70	23.64	23.76	23.91		3

Table 9-89
LTE Band 41 Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	26.61	26.46	26.58	26.63	26.86	0	0
	1	36	26.37	26.40	26.29	26.51	26.74		0
	1	74	26.31	26.36	26.22	26.44	26.63		0
	36	0	25.57	25.53	25.51	25.58	25.82	0-1	1
	36	18	25.50	25.48	25.41	25.64	25.76		1
	36	37	25.43	25.44	25.32	25.56	25.76		1
	75	0	25.38	25.46	25.41	25.51	25.73		1
16QAM	1	0	25.97	25.90	25.99	26.01	26.21	0-1	1
	1	36	25.72	25.82	25.73	25.94	26.12		1
	1	74	25.61	25.78	25.62	25.86	26.01		1
	36	0	24.63	24.65	24.60	24.71	24.93	0-2	2
	36	18	24.61	24.61	24.54	24.73	24.84		2
	36	37	24.53	24.57	24.47	24.66	24.89		2
	75	0	24.53	24.60	24.50	24.63	24.83		2
64QAM	1	0	24.78	24.65	24.74	24.77	25.00	0-2	2
	1	36	24.57	24.60	24.52	24.72	24.93		2
	1	74	24.47	24.55	24.41	24.64	24.82		2
	36	0	23.68	23.63	23.59	23.72	23.94	0-3	3
	36	18	23.63	23.61	23.57	23.81	23.88		3
	36	37	23.54	23.56	23.45	23.71	23.90		3
	75	0	23.54	23.64	23.53	23.67	23.88		3

Table 9-90
LTE Band 41 Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	26.53	26.42	26.48	26.66	26.81	0	0
	1	25	26.38	26.42	26.34	26.54	26.77		0
	1	49	26.31	26.37	26.22	26.45	26.69		0
	25	0	25.52	25.52	25.47	25.64	25.81	0-1	1
	25	12	25.47	25.53	25.42	25.63	25.82		1
	25	25	25.33	25.44	25.37	25.59	25.78		1
	50	0	25.15	25.49	25.41	25.63	25.76		1
16QAM	1	0	25.89	25.82	25.87	26.06	26.14	0-1	1
	1	25	25.77	25.83	25.74	25.94	26.14		1
	1	49	25.62	25.80	25.67	25.89	26.08		1
	25	0	24.54	24.55	24.48	24.69	24.79	0-2	2
	25	12	24.55	24.56	24.49	24.67	24.88		2
	25	25	24.48	24.48	24.40	24.61	24.78		2
	50	0	24.34	24.62	24.53	24.76	24.85		2
64QAM	1	0	24.70	24.59	24.65	24.77	24.97	0-2	2
	1	25	24.45	24.60	24.50	24.71	24.92		2
	1	49	24.38	24.53	24.40	24.66	24.85		2
	25	0	23.70	23.68	23.61	23.82	23.98	0-3	3
	25	12	23.66	23.64	23.61	23.83	24.01		3
	25	25	23.58	23.59	23.53	23.78	23.96		3
	50	0	23.52	23.61	23.55	23.74	23.87		3

Table 9-91
LTE Band 41 Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	26.43	26.42	26.36	26.53	26.76	0	0
	1	12	26.37	26.39	26.28	26.51	26.72		0
	1	24	26.30	26.36	26.25	26.49	26.68		0
	12	0	25.44	25.46	25.40	25.57	25.78	0-1	1
	12	6	25.44	25.45	25.35	25.60	25.77		1
	12	13	25.38	25.39	25.28	25.52	25.73		1
	25	0	25.39	25.44	25.36	25.55	25.76		1
16QAM	1	0	25.77	25.85	25.76	25.96	26.12	0-1	1
	1	12	25.71	25.80	25.73	25.94	26.11		1
	1	24	25.66	25.73	25.64	25.89	26.03		1
	12	0	24.56	24.57	24.54	24.73	24.92	0-2	2
	12	6	24.59	24.61	24.50	24.74	24.95		2
	12	13	24.52	24.58	24.46	24.68	24.91		2
	25	0	24.45	24.47	24.41	24.62	24.81		2
64QAM	1	0	24.57	24.60	24.55	24.71	24.95	0-2	2
	1	12	24.55	24.59	24.49	24.71	24.92		2
	1	24	24.47	24.53	24.44	24.65	24.83		2
	12	0	23.50	23.54	23.43	23.68	23.88	0-3	3
	12	6	23.48	23.51	23.44	23.65	23.85		3
	12	13	23.46	23.48	23.38	23.64	23.79		3
	25	0	23.61	23.59	23.53	23.76	23.97		3

9.4.18 Hotspot Mode Reduced LTE Band 41 (PC2)

Table 9-92
LTE Band 41 Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	19.58	19.65	19.73	19.78	**20.11**	0	0
	1	50	19.60	19.56	19.59	19.73	19.97		0
	1	99	19.51	19.59	19.71	19.70	19.96		0
	50	0	19.71	19.75	19.67	19.85	20.11	0-1	0
	50	25	19.64	19.69	19.64	19.95	20.06		0
	50	50	19.57	19.65	19.57	19.85	**20.13**		0
	100	0	19.64	19.70	19.68	19.81	20.03		0
16QAM	1	0	19.77	20.00	20.29	19.91	20.28	0-1	0
	1	50	19.68	19.94	20.06	19.90	20.25		0
	1	99	19.70	19.95	20.18	19.89	20.22		0
	50	0	19.76	19.81	19.83	19.89	20.18	0-2	0
	50	25	19.71	19.79	19.80	19.93	20.09		0
	50	50	19.73	19.76	19.76	19.92	20.17		0
	100	0	19.75	19.81	19.73	19.80	20.12		0
64QAM	1	0	20.30	19.85	19.75	20.42	20.60	0-2	0
	1	50	20.19	19.84	19.55	20.36	20.52		0
	1	99	20.22	19.89	19.69	20.26	20.44		0
	50	0	19.80	19.85	19.79	19.90	19.99	0-3	0
	50	25	19.78	19.81	19.74	19.99	19.96		0
	50	50	19.72	19.79	19.70	19.97	20.00		0
	100	0	19.76	19.74	19.75	19.90	19.97		0

Table 9-93
LTE Band 41 Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	19.60	19.41	19.52	19.45	19.66	0	0
	1	36	19.46	19.25	19.34	19.33	19.58		0
	1	74	19.39	19.18	19.27	19.24	19.51		0
	36	0	19.56	19.40	19.47	19.42	19.72	0-1	0
	36	18	19.51	19.35	19.38	19.47	19.61		0
	36	37	19.44	19.29	19.32	19.34	19.62		0
	75	0	19.45	19.32	19.35	19.35	19.55		0
16QAM	1	0	20.03	19.90	19.96	19.93	20.10	0-1	0
	1	36	19.86	19.75	19.79	19.84	20.06		0
	1	74	19.81	19.70	19.72	19.78	19.97		0
	36	0	19.63	19.47	19.47	19.44	19.69	0-2	0
	36	18	19.57	19.36	19.45	19.47	19.65		0
	36	37	19.49	19.32	19.37	19.40	19.65		0
	75	0	19.56	19.42	19.43	19.39	19.65		0
64QAM	1	0	19.71	19.54	19.60	19.52	19.79	0-2	0
	1	36	19.54	19.35	19.39	19.45	19.70		0
	1	74	19.46	19.31	19.30	19.36	19.61		0
	36	0	19.65	19.46	19.52	19.47	19.74	0-3	0
	36	18	19.58	19.43	19.48	19.50	19.67		0
	36	37	19.51	19.38	19.39	19.44	19.72		0
	75	0	19.60	19.44	19.47	19.42	19.70		0

Table 9-94
LTE Band 41 Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	19.54	19.37	19.44	19.41	19.60	0	0
	1	25	19.47	19.28	19.35	19.30	19.58		0
	1	49	19.38	19.21	19.24	19.20	19.51		0
	25	0	19.49	19.33	19.38	19.45	19.65	0-1	0
	25	12	19.48	19.35	19.38	19.42	19.64		0
	25	25	19.41	19.25	19.30	19.35	19.61		0
	50	0	19.47	19.31	19.35	19.39	19.56		0
16QAM	1	0	20.00	19.83	19.89	19.95	20.07	0-1	0
	1	25	19.88	19.75	19.81	19.84	20.01		0
	1	49	19.82	19.70	19.72	19.75	20.03		0
	25	0	19.53	19.34	19.40	19.46	19.60	0-2	0
	25	12	19.50	19.33	19.36	19.43	19.68		0
	25	25	19.43	19.28	19.28	19.37	19.63		0
	50	0	19.56	19.39	19.45	19.47	19.65		0
64QAM	1	0	19.65	19.49	19.51	19.56	19.74	0-2	0
	1	25	19.55	19.35	19.43	19.44	19.67		0
	1	49	19.48	19.26	19.32	19.35	19.67		0
	25	0	19.70	19.52	19.53	19.58	19.77	0-3	0
	25	12	19.68	19.51	19.55	19.57	19.79		0
	25	25	19.60	19.46	19.45	19.48	19.78		0
	50	0	19.61	19.42	19.45	19.52	19.68		0

Table 9-95
LTE Band 41 Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	19.47	19.31	19.36	19.40	19.65	0	0
	1	12	19.45	19.31	19.35	19.40	19.63		0
	1	24	19.38	19.27	19.27	19.30	19.57		0
	12	0	19.43	19.30	19.38	19.41	19.65	0-1	0
	12	6	19.46	19.30	19.35	19.41	19.66		0
	12	13	19.44	19.28	19.29	19.33	19.59		0
	25	0	19.43	19.29	19.28	19.36	19.61		0
16QAM	1	0	19.90	19.78	19.82	19.88	20.05	0-1	0
	1	12	19.86	19.77	19.79	19.86	20.01		0
	1	24	19.86	19.69	19.72	19.79	19.96		0
	12	0	19.53	19.40	19.40	19.51	19.72	0-2	0
	12	6	19.54	19.41	19.46	19.52	19.73		0
	12	13	19.53	19.37	19.41	19.45	19.68		0
	25	0	19.49	19.30	19.36	19.39	19.65		0
64QAM	1	0	19.56	19.43	19.47	19.47	19.72	0-2	0
	1	12	19.55	19.36	19.43	19.45	19.70		0
	1	24	19.51	19.34	19.38	19.41	19.65		0
	12	0	19.64	19.45	19.50	19.58	19.82	0-3	0
	12	6	19.63	19.46	19.53	19.60	19.80		0
	12	13	19.64	19.42	19.48	19.51	19.75		0
	25	0	19.63	19.47	19.48	19.57	19.76		0

9.4.19 Grip Sensor Mode Reduced LTE Band 41 (PC2)

Table 9-96
LTE Band 41 Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.68	22.71	22.81	22.93	**23.06**	0	0
	1	50	22.60	22.66	22.67	22.81	22.99		0
	1	99	22.61	22.66	22.80	22.78	22.92		0
	50	0	22.66	22.78	22.75	22.83	**22.99**	0-1	0
	50	25	22.67	22.80	22.71	22.89	22.96		0
	50	50	22.61	22.76	22.71	22.81	22.98		0
	100	0	22.63	22.76	22.71	22.78	22.93		0
16QAM	1	0	23.18	23.06	23.29	23.41	23.50	0-1	0
	1	50	23.06	23.03	23.13	23.29	23.48		0
	1	99	23.07	23.04	23.26	23.27	23.43		0
	50	0	22.79	22.86	22.90	22.98	23.11	0-2	0
	50	25	22.75	22.89	22.86	23.03	23.03		0
	50	50	22.77	22.86	22.82	22.93	23.10		0
	100	0	22.74	22.84	22.81	22.88	23.03		0
64QAM	1	0	22.69	23.14	22.85	22.92	23.03	0-2	0
	1	50	22.55	23.10	22.70	22.86	22.94		0
	1	99	22.59	23.10	22.79	22.80	22.91		0
	50	0	22.74	22.95	22.90	22.93	23.08	0-3	0
	50	25	22.74	22.97	22.83	22.92	23.01		0
	50	50	22.66	22.88	22.80	22.93	23.02		0
	100	0	22.74	22.91	22.81	22.91	23.04		0

Table 9-97
LTE Band 41 Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.29	22.27	22.46	22.49	22.85	0	0
	1	36	22.10	22.27	22.27	22.27	22.81		0
	1	74	22.02	22.26	22.17	22.18	22.66		0
	36	0	22.25	22.39	22.40	22.39	22.87	0-1	0
	36	18	22.19	22.38	22.33	22.34	22.81		0
	36	37	22.11	22.34	22.22	22.22	22.85		0
	75	0	22.13	22.37	22.30	22.31	22.76		0
16QAM	1	0	22.78	22.87	22.99	22.98	23.40	0-1	0
	1	36	22.55	22.84	22.75	22.75	23.35		0
	1	74	22.49	22.80	22.63	22.63	23.20		0
	36	0	22.25	22.51	22.46	22.47	22.93	0-2	0
	36	18	22.22	22.49	22.42	22.41	22.89		0
	36	37	22.09	22.46	22.33	22.34	22.92		0
	75	0	22.18	22.49	22.42	22.42	22.86		0
64QAM	1	0	22.27	22.50	22.59	22.58	22.96	0-2	0
	1	36	22.10	22.43	22.37	22.36	22.89		0
	1	74	22.05	22.40	22.26	22.27	22.78		0
	36	0	22.17	22.54	22.53	22.54	23.00	0-3	0
	36	18	22.26	22.52	22.44	22.45	22.91		0
	36	37	22.17	22.50	22.33	22.33	22.89		0
	75	0	22.25	22.53	22.43	22.45	22.91		0

Table 9-98
LTE Band 41 Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.20	22.31	22.38	22.51	22.86	0	0
	1	25	22.12	22.37	22.26	22.43	22.83		0
	1	49	22.01	22.30	22.15	22.34	22.76		0
	25	0	22.20	22.41	22.33	22.47	22.81	0-1	0
	25	12	22.21	22.39	22.32	22.47	22.86		0
	25	25	22.16	22.36	22.23	22.42	22.78		0
	50	0	22.19	22.38	22.31	22.45	22.77		0
16QAM	1	0	22.71	22.86	22.90	23.03	23.33	0-1	0
	1	25	22.64	22.85	22.76	22.94	23.31		0
	1	49	22.54	22.79	22.66	22.89	23.25		0
	25	0	22.28	22.48	22.38	22.55	22.80	0-2	0
	25	12	22.26	22.44	22.35	22.52	22.90		0
	25	25	22.21	22.37	22.27	22.48	22.86		0
	50	0	22.33	22.50	22.42	22.59	22.89		0
64QAM	1	0	22.37	22.44	22.51	22.64	22.93	0-2	0
	1	25	22.24	22.48	22.39	22.55	22.90		0
	1	49	22.20	22.41	22.31	22.46	22.85		0
	25	0	22.43	22.59	22.56	22.67	22.99	0-3	0
	25	12	22.41	22.62	22.53	22.68	23.04		0
	25	25	22.34	22.52	22.42	22.62	23.02		0
	50	0	22.34	22.50	22.43	22.59	22.88		0

Table 9-99
LTE Band 41 Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.12	22.32	22.27	22.40	22.80	0	0
	1	12	22.09	22.28	22.23	22.39	22.79		0
	1	24	22.05	22.26	22.17	22.34	22.72		0
	12	0	22.16	22.35	22.27	22.44	22.87	0-1	0
	12	6	22.19	22.39	22.26	22.44	22.86		0
	12	13	22.13	22.31	22.25	22.39	22.81		0
	25	0	22.18	22.37	22.28	22.43	22.83		0
16QAM	1	0	22.66	22.85	22.81	22.96	23.35	0-1	0
	1	12	22.64	22.84	22.75	22.93	23.31		0
	1	24	22.58	22.79	22.68	22.88	23.25		0
	12	0	22.30	22.45	22.43	22.55	22.96	0-2	0
	12	6	22.31	22.46	22.39	22.56	22.98		0
	12	13	22.24	22.44	22.34	22.55	22.89		0
	25	0	22.24	22.39	22.33	22.49	22.89		0
64QAM	1	0	22.30	22.47	22.43	22.55	22.90	0-2	0
	1	12	22.25	22.44	22.40	22.60	22.84		0
	1	24	22.18	22.60	22.32	22.51	22.84		0
	12	0	22.38	22.57	22.51	22.62	23.03	0-3	0
	12	6	22.39	22.57	22.50	22.66	23.01		0
	12	13	22.33	22.53	22.45	22.60	22.96		0
	25	0	22.38	22.55	22.47	22.64	23.00		0

9.4.20 LTE Uplink Carrier Aggregation Conducted Powers

Table 9-100
Maximum LTE Uplink Carrier Aggregation Conducted Powers

	PCC							SCC							Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41C (1)	LTE B41	20	41490	2680.0	QPSK	1	0	LTE B41	20	41292	2660.2	QPSK	1	99	23.96	24.04

Table 9-101
Hotspot Mode Reduced LTE Uplink Carrier Aggregation Conducted Powers

	PCC							SCC							Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41C (1)	LTE B41	20	41490	2680.0	QPSK	1	0	LTE B41	20	41292	2660.2	QPSK	1	99	19.98	20.02

Table 9-102
Grip Sensor Mode Reduced LTE Uplink Carrier Aggregation Conducted Powers

	PCC							SCC							Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41C (1)	LTE B41	20	39750	2506.0	QPSK	50	50	LTE B41	20	39948	2525.8	QPSK	50	0	22.79	22.69

Notes:

1. This device supports uplink carrier aggregation for LTE CA_41C with a maximum of two 20 MHz component carriers. For intraband contiguous carrier aggregation scenarios, 3GPP 36.101 Table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when non-contiguous RB allocation is implemented. The conducted powers and MPR settings in this device are permanently implemented per the above 3GPP requirements.
2. Per FCC Guidance, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.
3. Uplink carrier aggregation is only possible when the device is operating with Power Class 3 for LTE Band 41.

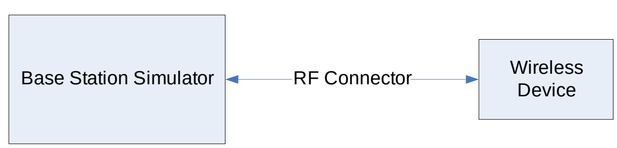


Figure 9-4
Power Measurement Setup

9.5 WLAN Conducted Powers

Table 9-103
2.4 GHz WLAN Maximum Average RF Power – Ant 1

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
2412	1	20.18	16.80	16.77
2417	2	N/A	17.43	17.41
2437	6	**20.77**	17.42	17.41
2457	10	N/A	17.54	17.51
2462	11	20.15	15.82	15.84

Table 9-104
2.4 GHz WLAN Maximum Average RF Power – Ant 2

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
2412	1	20.19	16.83	16.65
2417	2	N/A	17.37	17.98
2437	6	**20.24**	17.93	17.91
2457	10	N/A	17.82	17.64
2462	11	20.08	15.98	15.74

Table 9-105
2.4 GHz WLAN Maximum Average RF Power – MIMO

2.4GHz 802.11n Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
2412	1	16.77	16.65	19.72
2417	2	**17.41**	**17.98**	**20.71**
2437	6	17.41	17.91	20.68
2457	10	17.51	17.64	20.59
2462	11	15.84	15.74	18.80

Table 9-106
5 GHz WLAN Maximum Average RF Power – Ant 1

5GHz (20MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
5180	36	17.24	17.14	17.27
5200	40	17.24	17.23	17.24
5220	44	17.28	17.26	17.19
5240	48	17.31	17.29	17.34
5260	52	17.08	17.05	17.04
5280	56	17.04	17.11	17.08
5300	60	**17.15**	17.04	17.06
5320	64	17.15	17.21	17.04
5500	100	16.35	16.29	16.33
5600	120	16.54	16.38	16.42
5620	124	16.36	16.54	16.59
5720	144	**16.62**	16.46	16.54
5745	149	16.65	16.62	16.48
5785	157	**16.70**	16.64	16.69
5825	165	16.68	16.51	16.52

Table 9-107
5 GHz WLAN Maximum Average RF Power – Ant 2

5GHz (20MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
5180	36	16.87	16.82	16.84
5200	40	16.88	16.79	16.83
5220	44	16.84	16.77	16.81
5240	48	16.83	16.89	16.76
5260	52	**16.95**	16.88	16.84
5280	56	16.92	16.83	16.92
5300	60	16.92	16.91	16.96
5320	64	16.93	16.89	16.76
5500	100	17.13	17.14	17.21
5600	120	17.22	17.23	17.30
5620	124	17.34	17.33	17.20
5720	144	**17.35**	17.29	17.22
5745	149	17.20	17.13	17.10
5785	157	**17.26**	17.21	17.21
5825	165	17.25	17.15	17.16

Table 9-108
5 GHz WLAN Maximum Average RF Power – MIMO

5GHz (20MHz) 802.11n Conducted Power [dBm]				
Freq [MHz]	**Channel**	**ANT1**	**ANT2**	**MIMO**
5180	36	17.14	16.82	19.99
5200	40	17.23	16.79	20.03
5220	44	17.26	16.77	20.03
5240	48	17.29	16.89	20.10
5260	52	17.05	16.88	19.98
5280	56	17.11	16.83	19.98
5300	60	17.04	16.91	19.99
5320	64	**17.21**	**16.89**	**20.06**
5500	100	15.94	16.02	18.99
5600	120	**15.97**	**16.40**	**19.20**
5620	124	16.00	16.23	19.13
5720	144	15.89	16.42	19.17
5745	149	**15.99**	**16.25**	**19.13**
5785	157	15.94	16.24	19.10
5825	165	15.85	16.32	19.10

Table 9-109
Maximum Output Powers During Conditions with 2.4 GHz and 5 GHz WLAN

2.4GHz 802.11n Conducted Power [dBm]			
Freq [MHz]	**Channel**	**ANT1**	**ANT2**
2412	1	16.55	16.69
2437	6	16.11	16.86
2462	11	**16.41**	**16.83**

5GHz (80MHz) 802.11 ac Conducted Power [dBm]			
Freq [MHz]	**Channel**	**ANT1**	**ANT2**
5210	42	13.84	13.59
5290	58	13.59	13.69
5530	106	13.98	13.53
5610	122	13.93	13.47
5690	138	13.99	13.55
5775	155	**13.53**	**13.43**

Table 9-110
2.4 GHz WLAN Reduced Average RF Power – Ant 1

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
2412	1	16.09	16.34	16.55
2437	6	15.97	16.27	16.11
2462	11	**16.37**	16.45	16.41

Table 9-111
2.4 GHz WLAN Reduced Average RF Power – Ant 2

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
2412	1	16.58	16.86	16.69
2437	6	16.65	16.97	16.86
2462	11	**16.89**	16.95	16.83

Table 9-112
2.4 GHz WLAN Reduced Average RF Power – MIMO

2.4GHz 802.11n Conducted Power [dBm]			
Freq [MHz]	Channel	ANT1	ANT2
2412	1	15.37	15.51
2437	6	15.61	15.41
2462	11	**15.36**	**15.89**

Table 9-113
5 GHz WLAN Reduced Average RF Power – Ant 1

5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
5210	42	13.84
5290	58	**13.59**
5530	106	13.98
5610	122	13.93
5690	138	**13.99**
5775	155	**13.53**

Table 9-114
5 GHz WLAN Reduced Average RF Power – Ant 2

5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
5210	42	13.59
5290	58	**13.69**
5530	106	13.53
5610	122	13.47
5690	138	**13.55**
5775	155	**13.43**

Table 9-115
Reduced Output Powers During Conditions with 2.4 GHz and 5 GHz WLAN

2.4GHz 802.11n Conducted Power [dBm]			
Freq [MHz]	Channel	ANT1	ANT2
2412	1	**13.56**	**13.95**
2437	6	13.29	13.69
2462	11	13.35	13.98

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.

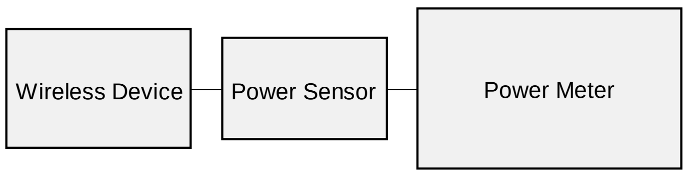


Figure 9-5
Power Measurement Setup

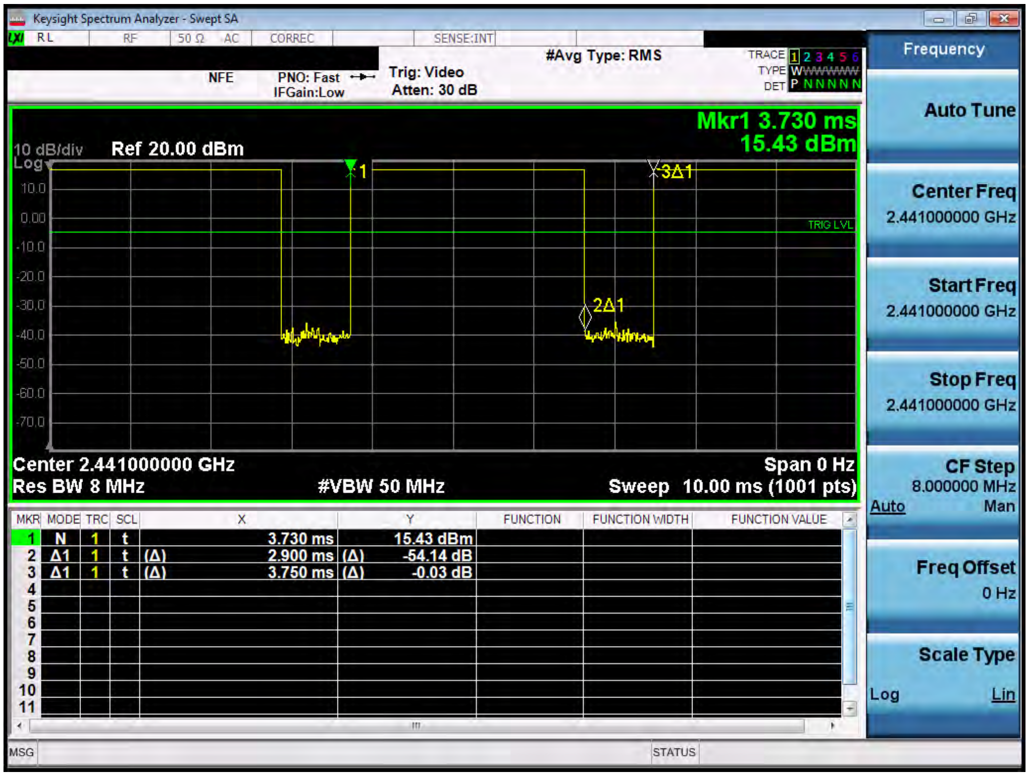
9.6 Bluetooth Conducted Powers

Table 9-116
Bluetooth Average RF Power

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	16.14	41.079
2441	1.0	39	16.47	44.357
2480	1.0	78	**16.50**	44.637
2402	2.0	0	9.56	9.042
2441	2.0	39	9.15	8.226
2480	2.0	78	9.50	8.919
2402	3.0	0	9.99	9.980
2441	3.0	39	9.54	8.991
2480	3.0	78	9.39	8.682

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

Figure 9-6
Bluetooth Transmission Plot



Equation 9-1
Bluetooth Duty Cycle Calculation

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.9\ ms}{3.75ms} * 100\% = 77.3\%$$

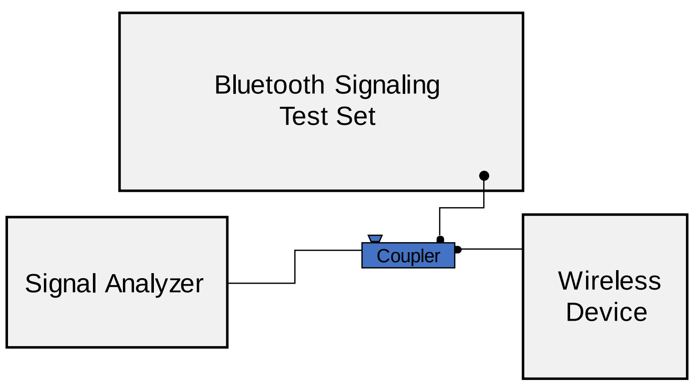


Figure 9-7
Power Measurement Setup

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
6/25/2018	750H	21.8	700	0.911	43.837	0.889	42.201	2.47%	3.88%
			710	0.915	43.825	0.890	42.149	2.81%	3.98%
			720	0.918	43.807	0.891	42.097	3.03%	4.06%
			725	0.919	43.798	0.891	42.071	3.14%	4.10%
			740	0.924	43.757	0.893	41.994	3.47%	4.20%
			755	0.929	43.705	0.894	41.916	3.91%	4.27%
			770	0.934	43.661	0.895	41.838	4.36%	4.36%
			785	0.940	43.615	0.896	41.760	4.91%	4.44%
6/30/2018	750H	23.0	700	0.905	43.176	0.889	42.201	1.80%	2.31%
			710	0.908	43.149	0.890	42.149	2.02%	2.37%
			720	0.912	43.121	0.891	42.097	2.36%	2.43%
			725	0.913	43.107	0.891	42.071	2.47%	2.46%
			740	0.918	43.060	0.893	41.994	2.80%	2.54%
			755	0.923	43.018	0.894	41.916	3.24%	2.63%
			770	0.928	42.968	0.895	41.838	3.69%	2.70%
			785	0.934	42.923	0.896	41.760	4.24%	2.78%
6/19/2018	835H	20.8	820	0.936	42.562	0.899	41.578	4.12%	2.37%
			835	0.942	42.516	0.900	41.500	4.67%	2.45%
			850	0.947	42.475	0.916	41.500	3.38%	2.35%
6/21/2018	1750H	22.0	1710	1.330	39.163	1.348	40.142	-1.34%	-2.44%
			1750	1.371	38.986	1.371	40.079	0.00%	-2.73%
			1790	1.411	38.820	1.394	40.016	1.22%	-2.99%
6/25/2018	1900H	21.8	1850	1.420	41.798	1.400	40.000	1.43%	4.50%
			1880	1.440	41.774	1.400	40.000	2.86%	4.44%
			1910	1.460	41.747	1.400	40.000	4.29%	4.37%
6/27/2018	1900H	22.1	1850	1.419	41.448	1.400	40.000	1.36%	3.62%
			1880	1.439	41.426	1.400	40.000	2.79%	3.57%
			1910	1.460	41.409	1.400	40.000	4.29%	3.52%
7/2/2018	2450H	22.4	2500	1.915	39.293	1.855	39.136	3.23%	0.40%
			2550	1.972	39.132	1.909	39.073	3.30%	0.15%
			2600	2.032	38.934	1.964	39.009	3.46%	-0.19%
			2650	2.094	38.734	2.018	38.945	3.77%	-0.54%
			2700	2.151	38.522	2.073	38.882	3.76%	-0.93%
7/4/2018	2450H	23.3	2400	1.797	38.987	1.756	39.289	2.33%	-0.77%
			2450	1.851	38.791	1.800	39.200	2.83%	-1.04%
			2500	1.906	38.600	1.855	39.136	2.75%	-1.37%
7/9/2018	2450H	22.6	2400	1.806	38.664	1.756	39.289	2.85%	-1.59%
			2450	1.856	38.490	1.800	39.200	3.11%	-1.81%
			2500	1.916	38.298	1.855	39.136	3.29%	-2.14%
06/25/2018	5200H-5800H	22.5	5240	4.574	36.702	4.696	35.940	-2.60%	2.12%
			5260	4.600	36.592	4.717	35.917	-2.48%	1.88%
			5280	4.622	36.644	4.737	35.894	-2.43%	2.09%
			5300	4.627	36.588	4.758	35.871	-2.75%	2.00%
			5320	4.648	36.544	4.778	35.849	-2.72%	1.94%
			5500	4.841	36.306	4.963	35.643	-2.46%	1.86%
			5520	4.854	36.209	4.983	35.620	-2.59%	1.65%
			5540	4.914	36.257	5.004	35.597	-1.80%	1.85%
			5560	4.921	36.212	5.024	35.574	-2.05%	1.79%
			5580	4.945	36.166	5.045	35.551	-1.98%	1.73%
			5600	4.968	36.129	5.065	35.529	-1.92%	1.69%
			5620	4.986	36.144	5.086	35.506	-1.97%	1.80%
			5640	4.995	36.060	5.106	35.483	-2.17%	1.63%
			5660	5.038	36.040	5.127	35.460	-1.74%	1.64%
			5680	5.047	36.036	5.147	35.437	-1.94%	1.69%
			5700	5.062	35.999	5.168	35.414	-2.05%	1.65%
			5745	5.110	35.937	5.214	35.363	-1.99%	1.62%
			5765	5.130	35.890	5.234	35.340	-1.99%	1.56%
			5785	5.165	35.886	5.255	35.317	-1.71%	1.61%
			5800	5.176	35.867	5.270	35.300	-1.78%	1.61%
			5805	5.187	35.912	5.275	35.294	-1.67%	1.75%
			5825	5.204	35.814	5.296	35.271	-1.74%	1.54%

Table 10-2
Measured Body Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (˚C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
6/25/2018	750B	21.8	700	0.967	53.869	0.959	55.726	0.83%	-3.33%
			710	0.972	53.770	0.960	55.687	1.25%	-3.44%
			720	0.973	53.767	0.961	55.648	1.25%	-3.38%
			725	0.978	53.751	0.961	55.629	1.77%	-3.38%
			740	0.982	53.724	0.963	55.570	1.97%	-3.32%
			755	0.989	53.606	0.964	55.512	2.59%	-3.43%
			770	0.993	53.601	0.965	55.453	2.90%	-3.34%
			785	0.999	53.600	0.966	55.395	3.42%	-3.24%
6/18/2018	835B	22.0	820	0.978	54.328	0.969	55.258	0.93%	-1.68%
			835	0.984	54.308	0.970	55.200	1.44%	-1.62%
			850	0.990	54.276	0.988	55.154	0.20%	-1.59%
6/20/2018	835B	21.5	820	0.974	53.642	0.969	55.258	0.52%	-2.92%
			835	0.979	53.624	0.970	55.200	0.93%	-2.86%
			850	0.985	53.597	0.988	55.154	-0.30%	-2.82%
6/19/2018	1750B	22.1	1710	1.446	53.130	1.463	53.537	-1.16%	-0.76%
			1750	1.478	53.073	1.488	53.432	-0.67%	-0.67%
			1790	1.501	53.058	1.514	53.326	-0.86%	-0.50%
6/18/2018	1900B	22.0	1850	1.519	51.741	1.520	53.300	-0.07%	-2.92%
			1880	1.554	51.642	1.520	53.300	2.24%	-3.11%
			1910	1.586	51.548	1.520	53.300	4.34%	-3.29%
6/21/2018	1900B	22.2	1850	1.493	51.584	1.520	53.300	-1.78%	-3.22%
			1880	1.527	51.481	1.520	53.300	0.46%	-3.41%
			1910	1.560	51.349	1.520	53.300	2.63%	-3.66%
6/25/2018	1900B	22.0	1850	1.519	51.310	1.520	53.300	-0.07%	-3.73%
			1880	1.554	51.239	1.520	53.300	2.24%	-3.87%
			1910	1.586	51.163	1.520	53.300	4.34%	-4.01%
6/28/2018	1900B	22.0	1850	1.519	51.681	1.520	53.300	-0.07%	-3.04%
			1880	1.553	51.643	1.520	53.300	2.17%	-3.11%
			1910	1.586	51.538	1.520	53.300	4.34%	-3.31%
7/2/2018	1900B	22.3	1850	1.500	51.413	1.520	53.300	-1.32%	-3.54%
			1880	1.535	51.307	1.520	53.300	0.99%	-3.74%
			1910	1.568	51.198	1.520	53.300	3.16%	-3.94%
6/21/2018	2450B	23.0	2400	1.914	52.599	1.902	52.767	0.63%	-0.32%
			2450	1.981	52.417	1.950	52.700	1.59%	-0.54%
			2500	2.050	52.230	2.021	52.636	1.43%	-0.77%
7/2/2018	2450B	21.7	2400	1.968	50.714	1.902	52.767	3.47%	-3.89%
			2450	2.025	50.558	1.950	52.700	3.85%	-4.06%
			2500	2.084	50.421	2.021	52.636	3.12%	-4.21%
6/24/2018	2450B	22.0	2400	1.988	50.736	1.902	52.767	4.52%	-3.85%
			2450	2.047	50.574	1.950	52.700	4.97%	-4.03%
			2500	2.105	50.437	2.021	52.636	4.16%	-4.18%
			2550	2.165	50.269	2.092	52.573	3.49%	-4.38%
			2600	2.226	50.150	2.163	52.509	2.91%	-4.49%
			2650	2.291	49.983	2.234	52.445	2.55%	-4.69%
			2700	2.343	49.784	2.305	52.382	1.65%	-4.96%
6/26/2018	2450B	22.6	2600	2.201	50.515	2.163	52.509	1.76%	-3.80%
			2650	2.261	50.392	2.234	52.445	1.21%	-3.91%
			2700	2.321	50.226	2.305	52.382	0.69%	-4.12%

Table 10-3
Measured Body Tissue Properties Cont.

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
06/25/2018	5200B-5800B	21.5	5240	5.473	47.393	5.346	48.960	2.38%	-3.20%
			5260	5.476	47.373	5.369	48.933	1.99%	-3.19%
			5280	5.517	47.296	5.393	48.906	2.30%	-3.29%
			5300	5.540	47.314	5.416	48.879	2.29%	-3.20%
			5320	5.571	47.250	5.439	48.851	2.43%	-3.28%
			5500	5.808	46.954	5.650	48.607	2.80%	-3.40%
			5520	5.844	46.925	5.673	48.580	3.01%	-3.41%
			5540	5.870	46.904	5.696	48.553	3.05%	-3.40%
			5560	5.899	46.853	5.720	48.526	3.13%	-3.45%
			5580	5.931	46.829	5.743	48.499	3.27%	-3.44%
			5600	5.949	46.790	5.766	48.471	3.17%	-3.47%
			5620	5.992	46.748	5.790	48.444	3.49%	-3.50%
			5640	6.011	46.722	5.813	48.417	3.41%	-3.50%
			5660	6.046	46.664	5.837	48.390	3.58%	-3.57%
			5680	6.066	46.677	5.860	48.363	3.52%	-3.49%
			5700	6.089	46.626	5.883	48.336	3.50%	-3.54%
			5745	6.155	46.525	5.936	48.275	3.69%	-3.63%
			5765	6.188	46.527	5.959	48.248	3.84%	-3.57%
			5785	6.209	46.501	5.982	48.220	3.79%	-3.56%
			5800	6.237	46.439	6.000	48.200	3.95%	-3.65%
			5805	6.249	46.425	6.006	48.193	4.05%	-3.67%
			5825	6.253	46.384	6.029	48.166	3.72%	-3.70%
07/02/2018	5200B-5800B	21.8	5745	6.167	47.441	5.936	48.275	3.89%	-1.73%
			5765	6.193	47.374	5.959	48.248	3.93%	-1.81%
			5785	6.228	47.363	5.982	48.220	4.11%	-1.78%
			5800	6.258	47.325	6.000	48.200	4.30%	-1.82%
			5805	6.265	47.309	6.006	48.193	4.31%	-1.83%
			5825	6.267	47.304	6.029	48.166	3.95%	-1.79%

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 10-4
System Verification Results – 1g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR_{1g} (W/kg)	1 W Target SAR_{1g} (W/kg)	1 W Normalized SAR_{1g} (W/kg)	$Deviation_{1g}$ (%)
E	750	HEAD	06/25/2018	23.5	21.8	0.200	1161	3213	1.620	8.170	8.100	-0.86%
E	750	HEAD	06/30/2018	24.5	23.0	0.200	1161	3213	1.580	8.170	7.900	-3.30%
E	835	HEAD	06/19/2018	21.5	21.9	0.200	4d119	3213	1.980	9.530	9.900	3.88%
G	1750	HEAD	06/21/2018	22.4	22.1	0.100	1150	3332	3.470	36.100	34.700	-3.88%
E	1900	HEAD	06/25/2018	23.5	21.8	0.100	5d148	3213	4.020	40.100	40.200	0.25%
E	1900	HEAD	06/27/2018	23.9	22.2	0.100	5d148	3213	4.030	40.100	40.300	0.50%
G	2450	HEAD	07/04/2018	23.5	23.3	0.100	882	3332	5.380	52.200	53.800	3.07%
G	2450	HEAD	07/09/2018	22.0	21.4	0.100	882	3332	5.200	52.200	52.000	-0.38%
G	2600	HEAD	07/02/2018	22.9	21.8	0.100	1004	3332	5.750	55.900	57.500	2.86%
H	5250	HEAD	06/25/2018	20.7	20.8	0.050	1191	3589	4.020	78.900	80.400	1.90%
H	5600	HEAD	06/25/2018	20.7	20.8	0.050	1191	3589	4.130	83.600	82.600	-1.20%
H	5750	HEAD	06/25/2018	20.7	20.8	0.050	1191	3589	3.700	79.100	74.000	-6.45%
J	750	BODY	06/25/2018	21.5	22.0	0.200	1003	3914	1.860	8.580	9.300	8.39%
J	835	BODY	06/18/2018	21.5	22.0	0.200	4d132	3914	2.040	9.710	10.200	5.05%
J	835	BODY	06/20/2018	21.5	21.5	0.200	4d132	3914	2.080	9.710	10.400	7.11%
G	1750	BODY	06/19/2018	22.6	21.7	0.100	1150	3332	3.670	36.500	36.700	0.55%
I	1900	BODY	06/18/2018	21.6	21.6	0.100	5d148	7406	4.200	39.600	42.000	6.06%
I	1900	BODY	06/21/2018	21.3	21.6	0.100	5d148	7406	4.190	39.600	41.900	5.81%
I	1900	BODY	06/28/2018	22.6	22.0	0.100	5d141	7406	4.140	40.000	41.400	3.50%
I	1900	BODY	07/02/2018	22.4	22.3	0.100	5d141	7406	4.130	40.000	41.300	3.25%
H	2450	BODY	06/21/2018	21.2	22.3	0.100	981	7410	4.930	50.800	49.300	-2.95%
K	2450	BODY	07/02/2018	22.2	21.7	0.100	882	3319	5.100	50.200	51.000	1.59%
K	2600	BODY	06/26/2018	22.8	21.3	0.100	1004	3319	5.600	54.800	56.000	2.19%
D	5250	BODY	06/25/2018	22.5	21.3	0.050	1237	7357	3.570	76.900	71.400	-7.15%
D	5600	BODY	06/25/2018	22.5	21.3	0.050	1237	7357	3.900	78.500	78.000	-0.64%
D	5750	BODY	06/25/2018	22.5	21.3	0.050	1237	7357	3.730	77.100	74.600	-3.24%
D	5750	BODY	07/02/2018	22.4	21.1	0.050	1237	7357	3.840	77.100	76.800	-0.39%

Table 10-5
System Verification Results – 10g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR_{10g} (W/kg)	1 W Target SAR_{10g} (W/kg)	1 W Normalized SAR_{10g} (W/kg)	$Deviation_{10g}$ (%)
G	1750	BODY	06/19/2018	22.6	21.7	0.100	1150	3332	1.960	19.500	19.600	0.51%
I	1900	BODY	06/21/2018	21.3	21.6	0.100	5d148	7406	2.140	20.900	21.400	2.39%
I	1900	BODY	06/25/2018	21.1	21.2	0.100	5d148	7406	2.130	20.900	21.300	1.91%
K	2450	BODY	06/24/2018	22.7	22.0	0.100	882	3319	2.380	23.600	23.800	0.85%
K	2600	BODY	06/24/2018	22.7	22.0	0.100	1004	3319	2.410	24.700	24.100	-2.43%
D	5250	BODY	06/25/2018	22.5	21.3	0.050	1237	7357	1.010	21.500	20.200	-6.05%
D	5600	BODY	06/25/2018	22.5	21.3	0.050	1237	7357	1.080	22.100	21.600	-2.26%
D	5750	BODY	06/25/2018	22.5	21.3	0.050	1237	7357	1.030	21.400	20.600	-3.74%

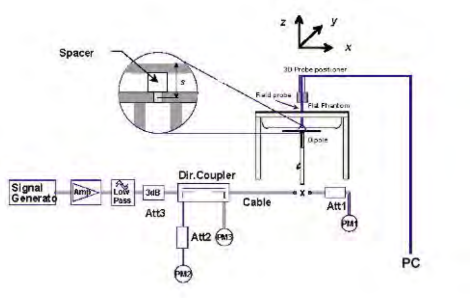


Figure 10-1
System Verification Setup Diagram

Figure 10-2
System Verification Setup Photo

11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
Cell. 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)	
836.52	384	Cell. CDMA	RC3 / SO55	26.5	25.83	-0.01	Right	Cheek	52900	1:1	0.270	1.167	0.315	A1
836.52	384	Cell. CDMA	RC3 / SO55	26.5	25.83	0.01	Right	Tilt	52900	1:1	0.146	1.167	0.170	
836.52	384	Cell. CDMA	RC3 / SO55	26.5	25.83	-0.03	Left	Cheek	52900	1:1	0.209	1.167	0.244	
836.52	384	Cell. CDMA	RC3 / SO55	26.5	25.83	-0.02	Left	Tilt	52900	1:1	0.117	1.167	0.137	
836.52	384	Cell. CDMA	EVDO Rev. A	26.5	25.83	0.04	Right	Cheek	52900	1:1	0.255	1.167	0.298	
836.52	384	Cell. CDMA	EVDO Rev. A	26.5	25.83	0.03	Right	Tilt	52900	1:1	0.113	1.167	0.132	
836.52	384	Cell. CDMA	EVDO Rev. A	26.5	25.83	0.05	Left	Cheek	52900	1:1	0.186	1.167	0.217	
836.52	384	Cell. CDMA	EVDO Rev. A	26.5	25.83	0.00	Left	Tilt	52900	1:1	0.136	1.167	0.159	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-2
GSM 850 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	34.0	32.65	-0.07	Right	Cheek	52814	1:8.3	0.172	1.365	0.235	A2
836.60	190	GSM 850	GSM	34.0	32.65	0.01	Right	Tilt	52814	1:8.3	0.090	1.365	0.123	
836.60	190	GSM 850	GSM	34.0	32.65	0.05	Left	Cheek	52814	1:8.3	0.141	1.365	0.192	
836.60	190	GSM 850	GSM	34.0	32.65	-0.02	Left	Tilt	52814	1:8.3	0.085	1.365	0.116	
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
GSM 1900 Head SAR

MEASUREMENT RESULTS													
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GSM	31.0	29.30	0.15	Right	Cheek	52869	1:8.3	0.028	1.479	0.041	
1880.00	661	GSM 1900	GSM	31.0	29.30	0.06	Right	Tilt	52869	1:8.3	0.015	1.479	0.022	
1880.00	661	GSM 1900	GSM	31.0	29.30	0.11	Left	Cheek	52869	1:8.3	0.033	1.479	0.049	A3
1880.00	661	GSM 1900	GSM	31.0	29.30	0.13	Left	Tilt	52869	1:8.3	0.016	1.479	0.024	
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 850 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	4183	UMTS 850	RMC	25.0	24.28	2	0.00	Right	Cheek	52814	1:1	0.216	1.180	0.255	A4
836.60	4183	UMTS 850	RMC	25.0	24.28	2	0.03	Right	Tilt	52814	1:1	0.113	1.180	0.133	
836.60	4183	UMTS 850	RMC	25.0	24.28	2	0.00	Left	Cheek	52814	1:1	0.185	1.180	0.218	
836.60	4183	UMTS 850	RMC	25.0	24.28	2	0.03	Left	Tilt	52814	1:1	0.108	1.180	0.127	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-5
UMTS 1750 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1732.40	1412	UMTS 1750	RMC	25.0	24.20	16	0.01	Right	Cheek	52824	1:1	0.079	1.202	0.095	
1732.40	1412	UMTS 1750	RMC	25.0	24.20	16	-0.11	Right	Tilt	52824	1:1	0.083	1.202	0.100	
1732.40	1412	UMTS 1750	RMC	25.0	24.20	16	0.00	Left	Cheek	52824	1:1	0.127	1.202	0.153	A5
1732.40	1412	UMTS 1750	RMC	25.0	24.20	16	0.13	Left	Tilt	52824	1:1	0.069	1.202	0.083	
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
UMTS 1900 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	25.0	24.03	16	0.03	Right	Cheek	52869	1:1	0.070	1.250	0.088	
1880.00	9400	UMTS 1900	RMC	25.0	24.03	16	0.02	Right	Tilt	52869	1:1	0.044	1.250	0.055	
1880.00	9400	UMTS 1900	RMC	25.0	24.03	16	0.00	Left	Cheek	52869	1:1	0.099	1.250	0.124	A6
1880.00	9400	UMTS 1900	RMC	25.0	24.03	16	0.03	Left	Tilt	52869	1:1	0.049	1.250	0.061	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-7
LTE Band 12 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.2	23.94	9	0.02	0	Right	Cheek	QPSK	1	49	52904	1:1	0.141	1.337	0.189	A7
707.50	23095	Mid	LTE Band 12	10	24.2	23.00	9	0.00	1	Right	Cheek	QPSK	25	0	52904	1:1	0.105	1.318	0.138	
707.50	23095	Mid	LTE Band 12	10	25.2	23.94	9	0.03	0	Right	Tilt	QPSK	1	49	52904	1:1	0.062	1.337	0.083	
707.50	23095	Mid	LTE Band 12	10	24.2	23.00	9	0.10	1	Right	Tilt	QPSK	25	0	52904	1:1	0.039	1.318	0.051	
707.50	23095	Mid	LTE Band 12	10	25.2	23.94	9	0.19	0	Left	Cheek	QPSK	1	49	52904	1:1	0.086	1.337	0.115	
707.50	23095	Mid	LTE Band 12	10	24.2	23.00	9	0.08	1	Left	Cheek	QPSK	25	0	52904	1:1	0.065	1.318	0.086	
707.50	23095	Mid	LTE Band 12	10	25.2	23.94	9	0.04	0	Left	Tilt	QPSK	1	49	52904	1:1	0.075	1.337	0.100	
707.50	23095	Mid	LTE Band 12	10	24.2	23.00	9	0.03	1	Left	Tilt	QPSK	25	0	52904	1:1	0.050	1.318	0.066	
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 13 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
782.00	23230	Mid	LTE Band 13	10	25.5	24.08	0	-0.03	0	Right	Cheek	QPSK	1	49	52904	1:1	0.182	1.387	0.252	A8
782.00	23230	Mid	LTE Band 13	10	24.5	23.18	0	0.01	1	Right	Cheek	QPSK	25	0	52904	1:1	0.140	1.355	0.190	
782.00	23230	Mid	LTE Band 13	10	25.5	24.08	0	0.03	0	Right	Tilt	QPSK	1	49	52904	1:1	0.086	1.387	0.119	
782.00	23230	Mid	LTE Band 13	10	24.5	23.18	0	-0.03	1	Right	Tilt	QPSK	25	0	52904	1:1	0.058	1.355	0.079	
782.00	23230	Mid	LTE Band 13	10	25.5	24.08	0	-0.04	0	Left	Cheek	QPSK	1	49	52904	1:1	0.154	1.387	0.214	
782.00	23230	Mid	LTE Band 13	10	24.5	23.18	0	-0.01	1	Left	Cheek	QPSK	25	0	52904	1:1	0.104	1.355	0.141	
782.00	23230	Mid	LTE Band 13	10	25.5	24.08	0	-0.04	0	Left	Tilt	QPSK	1	49	52904	1:1	0.093	1.387	0.129	
782.00	23230	Mid	LTE Band 13	10	24.5	23.18	0	-0.06	1	Left	Tilt	QPSK	25	0	52904	1:1	0.078	1.355	0.106	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-9
LTE Band 5 (Cell) Head SAR

MEASUREMENT RESULTS

FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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)	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.62	76	-0.04	0	Right	Cheek	QPSK	1	25	52900	1:1	0.186	1.225	0.228	A9
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.71	76	-0.01	1	Right	Cheek	QPSK	25	0	52900	1:1	0.152	1.199	0.182	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.62	76	0.09	0	Right	Tilt	QPSK	1	25	52900	1:1	0.099	1.225	0.121	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.71	76	-0.06	1	Right	Tilt	QPSK	25	0	52900	1:1	0.070	1.199	0.084	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.62	76	0.05	0	Left	Cheek	QPSK	1	25	52900	1:1	0.136	1.225	0.167	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.71	76	0.06	1	Left	Cheek	QPSK	25	0	52900	1:1	0.111	1.199	0.133	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.62	76	0.04	0	Left	Tilt	QPSK	1	25	52900	1:1	0.097	1.225	0.119	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.71	76	-0.03	1	Left	Tilt	QPSK	25	0	52900	1:1	0.082	1.199	0.098	

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 26 (Cell) Head SAR

MEASUREMENT RESULTS

FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.33	76	-0.04	0	Right	Cheek	QPSK	1	36	52900	1:1	0.174	1.222	0.213	A10
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.39	76	-0.02	1	Right	Cheek	QPSK	36	0	52900	1:1	0.137	1.205	0.165	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.33	76	-0.01	0	Right	Tilt	QPSK	1	36	52900	1:1	0.088	1.222	0.108	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.39	76	0.02	1	Right	Tilt	QPSK	36	0	52900	1:1	0.068	1.205	0.082	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.33	76	0.04	0	Left	Cheek	QPSK	1	36	52900	1:1	0.138	1.222	0.169	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.39	76	0.05	1	Left	Cheek	QPSK	36	0	52900	1:1	0.102	1.205	0.123	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.33	76	-0.02	0	Left	Tilt	QPSK	1	36	52900	1:1	0.109	1.222	0.133	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.39	76	0.01	1	Left	Tilt	QPSK	36	0	52900	1:1	0.086	1.205	0.104	

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]	Ant State	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)	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.33	16	0.20	0	Right	Cheek	QPSK	1	0	52824	1:1	0.076	1.250	0.095	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.30	16	0.18	1	Right	Cheek	QPSK	50	0	52824	1:1	0.063	1.259	0.079	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.33	16	-0.14	0	Right	Tilt	QPSK	1	0	52824	1:1	0.066	1.250	0.083	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.30	16	-0.04	1	Right	Tilt	QPSK	50	0	52824	1:1	0.053	1.259	0.067	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.33	16	-0.11	0	Left	Cheek	QPSK	1	0	52824	1:1	0.147	1.250	0.184	A11
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.30	16	0.09	1	Left	Cheek	QPSK	50	0	52824	1:1	0.113	1.259	0.142	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.33	16	0.13	0	Left	Tilt	QPSK	1	0	52824	1:1	0.081	1.250	0.101	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.30	16	0.16	1	Left	Tilt	QPSK	50	0	52824	1:1	0.067	1.259	0.084	

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 2 (PCS) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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)	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	23.95	17	-0.09	0	Right	Cheek	QPSK	1	0	52869	1:1	0.069	1.274	0.088	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	22.80	17	0.04	1	Right	Cheek	QPSK	50	0	52869	1:1	0.056	1.318	0.074	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	23.95	17	0.02	0	Right	Tilt	QPSK	1	0	52869	1:1	0.044	1.274	0.056	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	22.80	17	0.15	1	Right	Tilt	QPSK	50	0	52869	1:1	0.033	1.318	0.043	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	23.95	17	0.04	0	Left	Cheek	QPSK	1	0	52869	1:1	0.120	1.274	0.153	A12
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	22.80	17	0.01	1	Left	Cheek	QPSK	50	0	52869	1:1	0.090	1.318	0.119	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	23.95	17	-0.18	0	Left	Tilt	QPSK	1	0	52869	1:1	0.035	1.274	0.045	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	22.80	17	0.04	1	Left	Tilt	QPSK	50	0	52869	1:1	0.022	1.318	0.029	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-13
LTE Band 25 (PCS) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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)	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.07	17	0.07	0	Right	Cheek	QPSK	1	0	52869	1:1	0.064	1.239	0.079	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	21.84	17	0.15	1	Right	Cheek	QPSK	50	0	52869	1:1	0.047	1.306	0.061	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.07	17	0.17	0	Right	Tilt	QPSK	1	0	52869	1:1	0.033	1.239	0.041	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	21.84	17	0.12	1	Right	Tilt	QPSK	50	0	52869	1:1	0.028	1.306	0.037	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.07	17	-0.11	0	Left	Cheek	QPSK	1	0	52869	1:1	0.096	1.239	0.119	A13
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	21.84	17	-0.05	1	Left	Cheek	QPSK	50	0	52869	1:1	0.075	1.306	0.098	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.07	17	0.06	0	Left	Tilt	QPSK	1	0	52869	1:1	0.030	1.239	0.037	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	21.84	17	0.17	1	Left	Tilt	QPSK	50	0	52869	1:1	0.023	1.306	0.030	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-14
LTE Band 41 Head SAR

MEASUREMENT RESULTS																						
1 CC Uplink | 2 CC Uplink	Component Carrier	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)	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	25.0	24.04	0.17	0	Right	Cheek	QPSK	1	0	52900	1:1.58	0.068	1.247	0.085	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	24.0	22.96	0.19	1	Right	Cheek	QPSK	50	0	52900	1:1.58	0.047	1.271	0.060	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	25.0	24.04	0.17	0	Right	Tilt	QPSK	1	0	52900	1:1.58	0.069	1.247	0.086	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	24.0	22.96	0.14	1	Right	Tilt	QPSK	50	0	52900	1:1.58	0.057	1.271	0.072	
1 CC Uplink - Power Class 2	N/A	2680.00	41490	High	LTE Band 41	20	28.0	27.03	0.03	0	Right	Tilt	QPSK	1	0	52900	1:2.31	0.086	1.250	0.108	A14
2 CC Uplink - Power Class 3	PCC	2680.00	41490	High	LTE Band 41	20	25.0	23.96	-0.05	0	Right	Tilt	QPSK	1	0	52900	1:1.58	0.067	1.271	0.085	
2 CC Uplink - Power Class 3	SCC	2660.20	41292	High	LTE Band 41	20								1	99						
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	25.0	24.04	0.16	0	Left	Cheek	QPSK	1	0	52900	1:1.58	0.057	1.247	0.071	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	24.0	22.96	-0.09	1	Left	Cheek	QPSK	50	0	52900	1:1.58	0.050	1.271	0.064	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	25.0	24.04	-0.08	0	Left	Tilt	QPSK	1	0	52900	1:1.58	0.042	1.247	0.052	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	24.0	22.96	0.08	1	Left	Tilt	QPSK	50	0	52900	1:1.58	0.031	1.271	0.039	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-15
DTS Head SISO 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)	
2462	11	802.11b	DSSS	22	17.0	16.37	0.15	Right	Cheek	1	52900	1	99.0	0.468	0.407	1.156	1.010	0.475	
2462	11	802.11b	DSSS	22	17.0	16.37	0.12	Right	Tilt	1	52900	1	99.0	0.416	0.334	1.156	1.010	0.390	
2462	11	802.11b	DSSS	22	17.0	16.37	-0.15	Left	Cheek	1	52900	1	99.0	0.183	-	1.156	1.010	-	
2462	11	802.11b	DSSS	22	17.0	16.37	0.06	Left	Tilt	1	52900	1	99.0	0.190	-	1.156	1.010	-	
2412	1	802.11b	DSSS	22	17.0	16.58	-0.12	Right	Cheek	2	52900	1	99.0	0.782	0.668	1.102	1.010	0.743	
2437	6	802.11b	DSSS	22	17.0	16.65	0.14	Right	Cheek	2	52900	1	99.0	0.695	0.662	1.084	1.010	0.725	
2462	11	802.11b	DSSS	22	17.0	16.89	0.06	Right	Cheek	2	52900	1	99.0	0.789	0.797	1.026	1.010	**0.826**	
2437	6	802.11b	DSSS	22	17.0	16.65	0.02	Right	Tilt	2	52900	1	99.0	0.778	0.707	1.084	1.010	0.774	
2462	11	802.11b	DSSS	22	17.0	16.89	0.00	Right	Tilt	2	52900	1	99.0	1.033	0.779	1.026	1.010	0.807	
2462	11	802.11b	DSSS	22	17.0	16.89	0.17	Left	Cheek	2	52900	1	99.0	0.357	0.302	1.026	1.010	0.313	
2462	11	802.11b	DSSS	22	17.0	16.89	0.17	Left	Tilt	2	52900	1	99.0	0.275	-	1.026	1.010	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-16
DTS Head MIMO SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
2412	1	802.11n	OFDM	20	16.0	15.37	16.0	15.51	-0.19	Right	Cheek	MIMO	52900	13	98.6	0.837	0.750	1.156	1.014	0.879	
2437	6	802.11n	OFDM	20	16.0	15.61	16.0	15.41	-0.14	Right	Cheek	MIMO	52900	13	98.6	0.670	0.661	1.146	1.014	0.768	
2462	11	802.11n	OFDM	20	16.0	15.36	16.0	15.89	0.16	Right	Cheek	MIMO	52900	13	98.6	1.002	0.887	1.159	1.014	1.042	A15
2462	11	802.11n	OFDM	20	16.0	15.36	16.0	15.89	0.03	Right	Tilt	MIMO	52900	13	98.6	0.800	0.674	1.159	1.014	0.792	
2462	11	802.11n	OFDM	20	16.0	15.36	16.0	15.89	-0.11	Left	Cheek	MIMO	52900	13	98.6	0.407	-	1.159	1.014	-	
2462	11	802.11n	OFDM	20	16.0	15.36	16.0	15.89	0.07	Left	Tilt	MIMO	52900	13	98.6	0.343	-	1.159	1.014	-	
2462	11	802.11n	OFDM	20	16.0	15.36	16.0	15.89	-0.16	Right	Cheek	MIMO	52900	13	98.6	1.002	0.829	1.159	1.014	0.974	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram											

To achieve the 19.0 dBm maximum allowed MIMO power shown in the documentation tune-up, each antenna transmits at a maximum allowed power of 16.0 dBm

Note: Blue entries represent variability measurements.

Table 11-17
DTS MIMO Head SAR for Conditions with 2.4 GHz and 5 GHz WLAN SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
2412	1	802.11n	OFDM	20	14.0	13.56	14.0	13.95	0.15	Right	Cheek	MIMO	52900	13	98.6	0.718	0.641	1.107	1.014	0.720	
2437	6	802.11n	OFDM	20	14.0	13.29	14.0	13.69	-0.07	Right	Cheek	MIMO	52900	13	98.6	0.573	0.537	1.178	1.014	0.641	
2462	11	802.11n	OFDM	20	14.0	13.35	14.0	13.98	-0.19	Right	Cheek	MIMO	52900	13	98.6	0.691	0.572	1.161	1.014	0.673	
2412	1	802.11n	OFDM	20	14.0	13.56	14.0	13.95	0.08	Right	Tilt	MIMO	52900	13	98.6	0.577	0.499	1.107	1.014	0.560	
2412	1	802.11n	OFDM	20	14.0	13.56	14.0	13.95	0.18	Left	Cheek	MIMO	52900	13	98.6	0.243	-	1.107	1.014	-	
2412	1	802.11n	OFDM	20	14.0	13.56	14.0	13.95	0.17	Left	Tilt	MIMO	52900	13	98.6	0.227	-	1.107	1.014	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram											

DTS MIMO was additionally evaluated at the maximum allowed output power during operations with Simultaneous 2.4 GHz and 5 GHz WLAN. 5 GHz WIFI was not transmitting during the above evaluations.

Table 11-18
NII Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5290	58	802.11ac	OFDM	80	14.0	13.59	-0.19	Right	Cheek	1	52869	29.3	94.6	0.127	0.055	1.099	1.057	0.064	
5290	58	802.11ac	OFDM	80	14.0	13.59	0.19	Right	Tilt	1	52869	29.3	94.6	0.106	-	1.099	1.057	-	
5290	58	802.11ac	OFDM	80	14.0	13.59	0.19	Left	Cheek	1	52869	29.3	94.6	0.072	-	1.099	1.057	-	
5290	58	802.11ac	OFDM	80	14.0	13.59	0.21	Left	Tilt	1	52869	29.3	94.6	0.049	-	1.099	1.057	-	
5290	58	802.11ac	OFDM	80	14.0	13.69	0.21	Right	Cheek	2	52869	29.3	94.5	0.368	0.213	1.074	1.058	0.242	
5290	58	802.11ac	OFDM	80	14.0	13.69	0.16	Right	Tilt	2	52869	29.3	94.5	0.292	-	1.074	1.058	-	
5290	58	802.11ac	OFDM	80	14.0	13.69	0.16	Left	Cheek	2	52869	29.3	94.5	0.200	-	1.074	1.058	-	
5290	58	802.11ac	OFDM	80	14.0	13.69	0.20	Left	Tilt	2	52869	29.3	94.5	0.196	-	1.074	1.058	-	
5690	138	802.11ac	OFDM	80	14.0	13.99	0.18	Right	Cheek	1	52869	29.3	94.6	0.148	-	1.002	1.057	-	
5690	138	802.11ac	OFDM	80	14.0	13.99	0.19	Right	Tilt	1	52869	29.3	94.6	0.162	0.052	1.002	1.057	0.055	
5690	138	802.11ac	OFDM	80	14.0	13.99	0.20	Left	Cheek	1	52869	29.3	94.6	0.076	-	1.002	1.057	-	
5690	138	802.11ac	OFDM	80	14.0	13.99	0.12	Left	Tilt	1	52869	29.3	94.6	0.056	-	1.002	1.057	-	
5690	138	802.11ac	OFDM	80	14.0	13.55	0.18	Right	Cheek	2	52869	29.3	94.5	0.762	0.366	1.109	1.058	**0.429**	A16
5690	138	802.11ac	OFDM	80	14.0	13.55	0.13	Right	Tilt	2	52869	29.3	94.5	0.536	0.186	1.109	1.058	0.218	
5690	138	802.11ac	OFDM	80	14.0	13.55	-0.13	Left	Cheek	2	52869	29.3	94.5	0.358	-	1.109	1.058	-	
5690	138	802.11ac	OFDM	80	14.0	13.55	0.20	Left	Tilt	2	52869	29.3	94.5	0.343	-	1.109	1.058	-	
5775	155	802.11ac	OFDM	80	14.0	13.53	0.13	Right	Cheek	1	52869	29.3	94.6	0.113	-	1.114	1.057	-	
5775	155	802.11ac	OFDM	80	14.0	13.53	0.15	Right	Tilt	1	52869	29.3	94.6	0.117	0.043	1.114	1.057	0.051	
5775	155	802.11ac	OFDM	80	14.0	13.53	0.18	Left	Cheek	1	52869	29.3	94.6	0.054	-	1.114	1.057	-	
5775	155	802.11ac	OFDM	80	14.0	13.53	0.16	Left	Tilt	1	52869	29.3	94.6	0.043	-	1.114	1.057	-	
5775	155	802.11ac	OFDM	80	14.0	13.43	-0.13	Right	Cheek	2	52869	29.3	94.5	0.633	0.322	1.140	1.058	0.388	
5775	155	802.11ac	OFDM	80	14.0	13.43	0.20	Right	Tilt	2	52869	29.3	94.5	0.445	-	1.140	1.058	-	
5775	155	802.11ac	OFDM	80	14.0	13.43	0.12	Left	Cheek	2	52869	29.3	94.5	0.316	-	1.140	1.058	-	
5775	155	802.11ac	OFDM	80	14.0	13.43	0.15	Left	Tilt	2	52869	29.3	94.5	0.257	-	1.140	1.058	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-19
DSS Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	Duty Cycle %	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2402.00	0	Bluetooth	FHSS	16.5	16.14	0.12	Right	Cheek	52900	1	77.3	0.389	1.086	1.294	0.547	
2441.00	39	Bluetooth	FHSS	16.5	16.47	-0.07	Right	Cheek	52900	1	77.3	0.518	1.007	1.294	0.675	
2480.00	78	Bluetooth	FHSS	16.5	16.50	0.21	Right	Cheek	52900	1	77.3	0.690	1.000	1.294	**0.893**	A17
2480.00	78	Bluetooth	FHSS	16.5	16.50	-0.21	Right	Tilt	52900	1	77.3	0.608	1.000	1.294	0.787	
2480.00	78	Bluetooth	FHSS	16.5	16.50	0.01	Left	Cheek	52900	1	77.3	0.171	1.000	1.294	0.221	
2480.00	78	Bluetooth	FHSS	16.5	16.50	-0.12	Left	Tilt	52900	1	77.3	0.123	1.000	1.294	0.159	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram									

11.2 Standalone Body-Worn SAR Data

Table 11-20
GSM/UMTS/CDMA Body-Worn SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
836.52	384	Cell. CDMA	TDSO / SO32	26.5	25.83	N/A	0.07	15 mm	52904	N/A	1:1	back	0.426	1.167	0.497	A18
836.60	190	GSM 850	GSM	34.0	32.65	N/A	-0.19	15 mm	52904	1	1:8.3	back	0.305	1.365	0.416	A20
1880.00	661	GSM 1900	GSM	31.0	29.30	N/A	-0.03	15 mm	52806	1	1:8.3	back	0.320	1.479	0.473	A22
836.60	4183	UMTS 850	RMC	25.0	24.28	2	0.02	15 mm	52904	N/A	1:1	back	0.399	1.180	0.471	A24
1712.40	1312	UMTS 1750	RMC	25.0	24.09	16	-0.03	15 mm	52869	N/A	1:1	back	0.648	1.233	0.799	
1732.40	1412	UMTS 1750	RMC	25.0	24.20	16	0.04	15 mm	52869	N/A	1:1	back	0.675	1.202	0.811	A26
1752.60	1513	UMTS 1750	RMC	25.0	24.17	16	-0.02	15 mm	52869	N/A	1:1	back	0.648	1.211	0.785	
1852.40	9262	UMTS 1900	RMC	25.0	24.25	17	-0.01	15 mm	52806	N/A	1:1	back	0.541	1.189	0.643	
1880.00	9400	UMTS 1900	RMC	25.0	24.03	17	0.00	15 mm	52806	N/A	1:1	back	0.567	1.250	0.709	
1907.60	9538	UMTS 1900	RMC	25.0	23.83	17	0.01	15 mm	52806	N/A	1:1	back	0.581	1.309	0.761	A28
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-21
LTE FDD Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.2	23.94	8	0.02	0	52904	QPSK	1	49	15 mm	back	1:1	0.219	1.337	0.293	A30
707.50	23095	Mid	LTE Band 12	10	24.2	23.00	8	-0.02	1	52904	QPSK	25	0	15 mm	back	1:1	0.180	1.318	0.237	
782.00	23230	Mid	LTE Band 13	10	25.5	24.08	2	0.04	0	52904	QPSK	1	49	15 mm	back	1:1	0.318	1.387	0.441	A32
782.00	23230	Mid	LTE Band 13	10	24.5	23.18	2	0.02	1	52904	QPSK	25	0	15 mm	back	1:1	0.239	1.355	0.324	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.62	2	-0.01	0	52904	QPSK	1	25	15 mm	back	1:1	0.373	1.225	0.457	A34
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.71	2	-0.04	1	52904	QPSK	25	0	15 mm	back	1:1	0.298	1.199	0.357	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.33	2	0.00	0	52904	QPSK	1	36	15 mm	back	1:1	0.327	1.222	0.400	A36
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.39	2	-0.02	1	52904	QPSK	36	0	15 mm	back	1:1	0.253	1.205	0.305	
1720.00	132072	Low	LTE Band 66 (AWS)	20	25.3	24.14	16	-0.10	0	52869	QPSK	1	0	15 mm	back	1:1	0.704	1.306	**0.919**	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.33	16	0.01	0	52869	QPSK	1	0	15 mm	back	1:1	0.714	1.250	0.893	A38
1770.00	132572	High	LTE Band 66 (AWS)	20	25.3	24.21	16	-0.06	0	52869	QPSK	1	0	15 mm	back	1:1	0.682	1.285	0.876	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.30	16	-0.03	1	52869	QPSK	50	0	15 mm	back	1:1	0.563	1.259	0.709	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.3	23.26	16	0.03	1	52869	QPSK	100	0	15 mm	back	1:1	0.542	1.271	0.689	
1860.00	18700	Low	LTE Band 2 (PCS)	20	25.0	23.85	17	-0.02	0	52870	QPSK	1	0	15 mm	back	1:1	0.434	1.303	0.566	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	25.0	23.62	17	-0.04	0	52870	QPSK	1	0	15 mm	back	1:1	0.462	1.374	0.635	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	23.95	17	0.02	0	52870	QPSK	1	0	15 mm	back	1:1	0.537	1.274	0.684	A40
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	22.80	17	0.05	1	52870	QPSK	50	0	15 mm	back	1:1	0.432	1.318	0.569	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.07	17	0.02	0	52870	QPSK	1	0	15 mm	back	1:1	0.430	1.239	0.533	A42
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	21.84	17	-0.01	1	52870	QPSK	50	0	15 mm	back	1:1	0.349	1.306	0.456	
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 TDD Body-Worn SAR

MEASUREMENT RESULTS																					
1 CC Uplink | 2 CC Uplink	Component Carrier	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)	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	25.0	24.04	-0.08	0	52870	QPSK	1	0	15 mm	back	1:1.58	0.355	1.247	0.443	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	24.0	22.96	0.03	1	52870	QPSK	50	0	15 mm	back	1:1.58	0.272	1.271	0.346	
1 CC Uplink - Power Class 2	N/A	2680.00	41490	High	LTE Band 41	20	28.0	27.03	-0.19	0	52870	QPSK	1	0	15 mm	back	1:2.31	0.451	1.250	0.564	A44
2 CC Uplink - Power Class 3	PCC	2680.00	41490	High	LTE Band 41	20	25.0	23.96	0.00	0	52870	QPSK	1	0	15 mm	back	1:1.58	0.366	1.271	0.465	
2 CC Uplink - Power Class 3	SCC	2660.20	41292	High	LTE Band 41	20							1	99							
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
DTS Body-Worn SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2437	6	802.11b	DSSS	22	21.0	20.77	0.10	15 mm	1	52869	1	back	99.0	0.073	0.066	1.054	1.010	0.070	
2437	6	802.11b	DSSS	22	21.0	20.24	0.06	15 mm	2	52869	1	back	99.0	0.097	0.082	1.191	1.010	**0.099**	A46
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram									

Table 11-24
NII Body-Worn SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5300	60	802.11a	OFDM	20	18.0	17.15	-0.01	15 mm	1	52806	6	back	98.7	0.389	0.173	1.216	1.013	0.213	
5260	52	802.11a	OFDM	20	18.0	16.95	0.04	15 mm	2	52806	6	back	98.8	0.430	0.200	1.274	1.012	**0.258**	
5720	144	802.11a	OFDM	20	17.5	16.62	0.20	15 mm	1	52806	6	back	98.7	0.207	0.100	1.225	1.013	0.124	
5720	144	802.11a	OFDM	20	17.5	17.35	0.06	15 mm	2	52806	6	back	98.8	0.455	0.210	1.035	1.012	0.220	
5785	157	802.11a	OFDM	20	17.5	16.70	0.20	15 mm	1	52806	6	back	98.7	0.277	0.132	1.202	1.013	0.161	
5785	157	802.11a	OFDM	20	17.5	17.26	0.21	15 mm	2	52806	6	back	98.8	0.479	0.222	1.057	1.012	0.237	A48
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
DSS Body-Worn SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2480	78	Bluetooth	FHSS	16.5	16.50	-0.05	15 mm	52869	1	back	77.3	0.021	1.000	1.294	**0.027**	A50
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 11-26
GPRS/UMTS/CDMA Hotspot SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Ant State	Spacing	Device Serial Number	# of GPRS Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
824.70	1013	Cell. CDMA	EVDO Rev. 0	26.5	25.79	0.14	N/A	10 mm	52904	N/A	1:1	back	0.859	1.178	1.012	
836.52	384	Cell. CDMA	EVDO Rev. 0	26.5	25.85	-0.09	N/A	10 mm	52904	N/A	1:1	back	0.962	1.161	1.117	
848.31	777	Cell. CDMA	EVDO Rev. 0	26.5	25.94	0.10	N/A	10 mm	52904	N/A	1:1	back	0.997	1.138	1.135	A19
824.70	1013	Cell. CDMA	EVDO Rev. 0	26.5	25.79	0.08	N/A	10 mm	52904	N/A	1:1	front	0.644	1.178	0.759	
836.52	384	Cell. CDMA	EVDO Rev. 0	26.5	25.85	0.01	N/A	10 mm	52904	N/A	1:1	front	0.809	1.161	0.939	
848.31	777	Cell. CDMA	EVDO Rev. 0	26.5	25.94	0.03	N/A	10 mm	52904	N/A	1:1	front	0.793	1.138	0.902	
836.52	384	Cell. CDMA	EVDO Rev. 0	26.5	25.85	-0.04	N/A	10 mm	52904	N/A	1:1	bottom	0.550	1.161	0.639	
836.52	384	Cell. CDMA	EVDO Rev. 0	26.5	25.85	-0.18	N/A	10 mm	52904	N/A	1:1	right	0.443	1.161	0.514	
836.52	384	Cell. CDMA	EVDO Rev. 0	26.5	25.85	0.07	N/A	10 mm	52904	N/A	1:1	left	0.106	1.161	0.123	
848.31	777	Cell. CDMA	EVDO Rev. 0	26.5	25.94	0.10	N/A	10 mm	52904	N/A	1:1	back	0.978	1.138	1.113	
824.20	128	GSM 850	GPRS	30.0	28.97	-0.01	N/A	10 mm	52904	3	1:2.76	back	0.522	1.268	0.662	
836.60	190	GSM 850	GPRS	30.0	29.05	-0.06	N/A	10 mm	52904	3	1:2.76	back	0.611	1.245	0.761	
848.80	251	GSM 850	GPRS	30.0	28.76	0.18	N/A	10 mm	52904	3	1:2.76	back	0.612	1.330	0.814	A21
836.60	190	GSM 850	GPRS	30.0	29.05	-0.01	N/A	10 mm	52904	3	1:2.76	front	0.392	1.245	0.488	
836.60	190	GSM 850	GPRS	30.0	29.05	-0.02	N/A	10 mm	52904	3	1:2.76	bottom	0.327	1.245	0.407	
836.60	190	GSM 850	GPRS	30.0	29.05	0.17	N/A	10 mm	52904	3	1:2.76	right	0.234	1.245	0.291	
836.60	190	GSM 850	GPRS	30.0	29.05	-0.02	N/A	10 mm	52904	3	1:2.76	left	0.077	1.245	0.096	
1880.00	661	GSM 1900	GPRS	23.3	22.05	-0.03	N/A	10 mm	52814	3	1:2.76	back	0.249	1.334	0.332	
1880.00	661	GSM 1900	GPRS	23.3	22.05	0.03	N/A	10 mm	52814	3	1:2.76	front	0.218	1.334	0.291	
1850.20	512	GSM 1900	GPRS	23.3	22.04	0.05	N/A	10 mm	52814	3	1:2.76	bottom	0.381	1.337	0.509	
1880.00	661	GSM 1900	GPRS	23.3	22.05	0.04	N/A	10 mm	52814	3	1:2.76	bottom	0.478	1.334	0.638	
1909.80	810	GSM 1900	GPRS	23.3	22.06	-0.01	N/A	10 mm	52814	3	1:2.76	bottom	0.528	1.330	0.702	A23
1880.00	661	GSM 1900	GPRS	23.3	22.05	0.05	N/A	10 mm	52814	3	1:2.76	right	0.045	1.334	0.060	
1880.00	661	GSM 1900	GPRS	23.3	22.05	-0.02	N/A	10 mm	52814	3	1:2.76	left	0.039	1.334	0.052	
826.40	4132	UMTS 850	RMC	25.0	24.35	0.00	2	10 mm	52904	N/A	1:1	back	0.649	1.161	0.753	
836.60	4183	UMTS 850	RMC	25.0	24.28	0.00	2	10 mm	52904	N/A	1:1	back	0.699	1.180	0.825	
846.60	4233	UMTS 850	RMC	25.0	24.09	-0.01	2	10 mm	52904	N/A	1:1	back	0.708	1.233	0.873	A25
836.60	4183	UMTS 850	RMC	25.0	24.28	-0.01	2	10 mm	52904	N/A	1:1	front	0.569	1.180	0.671	
836.60	4183	UMTS 850	RMC	25.0	24.28	-0.04	2	10 mm	52904	N/A	1:1	bottom	0.425	1.180	0.502	
836.60	4183	UMTS 850	RMC	25.0	24.28	-0.03	2	10 mm	52904	N/A	1:1	right	0.350	1.180	0.413	
836.60	4183	UMTS 850	RMC	25.0	24.28	-0.11	2	10 mm	52904	N/A	1:1	left	0.108	1.180	0.127	
1732.40	1412	UMTS 1750	RMC	20.0	19.21	0.01	16	10 mm	52869	N/A	1:1	back	0.413	1.199	0.495	
1732.40	1412	UMTS 1750	RMC	20.0	19.21	0.07	16	10 mm	52869	N/A	1:1	front	0.364	1.199	0.436	
1712.40	1312	UMTS 1750	RMC	20.0	19.09	0.00	16	10 mm	52869	N/A	1:1	bottom	0.616	1.233	0.760	
1732.40	1412	UMTS 1750	RMC	20.0	19.21	0.00	16	10 mm	52869	N/A	1:1	bottom	0.670	1.199	0.803	
1752.60	1513	UMTS 1750	RMC	20.0	19.17	0.00	16	10 mm	52869	N/A	1:1	bottom	0.690	1.211	0.836	A27
1732.40	1412	UMTS 1750	RMC	20.0	19.21	0.01	16	10 mm	52869	N/A	1:1	right	0.064	1.199	0.077	
1732.40	1412	UMTS 1750	RMC	20.0	19.21	-0.01	16	10 mm	52869	N/A	1:1	left	0.087	1.199	0.104	
1880.00	9400	UMTS 1900	RMC	20.0	19.07	0.01	17	10 mm	52806	N/A	1:1	back	0.427	1.239	0.529	
1880.00	9400	UMTS 1900	RMC	20.0	19.07	0.00	17	10 mm	52806	N/A	1:1	front	0.341	1.239	0.422	
1852.40	9262	UMTS 1900	RMC	20.0	19.27	-0.02	17	10 mm	52806	N/A	1:1	bottom	0.647	1.183	0.765	
1880.00	9400	UMTS 1900	RMC	20.0	19.07	0.00	17	10 mm	52806	N/A	1:1	bottom	0.765	1.239	0.948	
1907.60	9538	UMTS 1900	RMC	20.0	18.90	0.00	17	10 mm	52806	N/A	1:1	bottom	0.872	1.288	1.123	
1880.00	9400	UMTS 1900	RMC	20.0	19.07	0.00	17	10 mm	52806	N/A	1:1	right	0.070	1.239	0.087	
1880.00	9400	UMTS 1900	RMC	20.0	19.07	-0.05	17	10 mm	52806	N/A	1:1	left	0.055	1.239	0.068	
1907.60	9538	UMTS 1900	RMC	20.0	18.90	-0.01	17	10 mm	52806	N/A	1:1	bottom	0.993	1.288	1.279	A29
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram								

Note: Blue entries represent variability measurements.

Table 11-27
LTE Band 12 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.2	23.94	8	0.10	0	52904	QPSK	1	49	10 mm	back	1:1	0.408	1.337	0.545	A31
707.50	23095	Mid	LTE Band 12	10	24.2	23.00	8	0.12	1	52904	QPSK	25	0	10 mm	back	1:1	0.293	1.318	0.386	
707.50	23095	Mid	LTE Band 12	10	25.2	23.94	8	0.12	0	52904	QPSK	1	49	10 mm	front	1:1	0.321	1.337	0.429	
707.50	23095	Mid	LTE Band 12	10	24.2	23.00	8	0.10	1	52904	QPSK	25	0	10 mm	front	1:1	0.240	1.318	0.316	
707.50	23095	Mid	LTE Band 12	10	25.2	23.94	8	0.05	0	52904	QPSK	1	49	10 mm	bottom	1:1	0.236	1.337	0.316	
707.50	23095	Mid	LTE Band 12	10	24.2	23.00	8	0.05	1	52904	QPSK	25	0	10 mm	bottom	1:1	0.176	1.318	0.232	
707.50	23095	Mid	LTE Band 12	10	25.2	23.94	8	0.20	0	52904	QPSK	1	49	10 mm	right	1:1	0.238	1.337	0.318	
707.50	23095	Mid	LTE Band 12	10	24.2	23.00	8	0.09	1	52904	QPSK	25	0	10 mm	right	1:1	0.151	1.318	0.199	
707.50	23095	Mid	LTE Band 12	10	25.2	23.94	8	0.05	0	52904	QPSK	1	49	10 mm	left	1:1	0.087	1.337	0.116	
707.50	23095	Mid	LTE Band 12	10	24.2	23.00	8	0.15	1	52904	QPSK	25	0	10 mm	left	1:1	0.059	1.318	0.078	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-28
LTE Band 13 Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
782.00	23230	Mid	LTE Band 13	10	25.5	24.08	2	0.15	0	52904	QPSK	1	49	10 mm	back	1:1	0.620	1.387	0.860	A33
782.00	23230	Mid	LTE Band 13	10	24.5	23.18	2	0.00	1	52904	QPSK	25	0	10 mm	back	1:1	0.473	1.355	0.641	
782.00	23230	Mid	LTE Band 13	10	24.5	23.16	2	0.00	1	52904	QPSK	50	0	10 mm	back	1:1	0.493	1.361	0.671	
782.00	23230	Mid	LTE Band 13	10	25.5	24.08	2	0.18	0	52904	QPSK	1	49	10 mm	front	1:1	0.457	1.387	0.634	
782.00	23230	Mid	LTE Band 13	10	24.5	23.18	2	0.19	1	52904	QPSK	25	0	10 mm	front	1:1	0.348	1.355	0.472	
782.00	23230	Mid	LTE Band 13	10	25.5	24.08	2	-0.04	0	52904	QPSK	1	49	10 mm	bottom	1:1	0.382	1.387	0.530	
782.00	23230	Mid	LTE Band 13	10	24.5	23.18	2	-0.04	1	52904	QPSK	25	0	10 mm	bottom	1:1	0.313	1.355	0.424	
782.00	23230	Mid	LTE Band 13	10	25.5	24.08	2	0.06	0	52904	QPSK	1	49	10 mm	right	1:1	0.321	1.387	0.445	
782.00	23230	Mid	LTE Band 13	10	24.5	23.18	2	0.14	1	52904	QPSK	25	0	10 mm	right	1:1	0.245	1.355	0.332	
782.00	23230	Mid	LTE Band 13	10	25.5	24.08	2	-0.13	0	52904	QPSK	1	49	10 mm	left	1:1	0.111	1.387	0.154	
782.00	23230	Mid	LTE Band 13	10	24.5	23.18	2	-0.01	1	52904	QPSK	25	0	10 mm	left	1:1	0.074	1.355	0.100	
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 11-29
LTE Band 5 (Cell) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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)	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.62	2	0.01	0	52904	QPSK	1	25	10 mm	back	1:1	0.744	1.225	0.911	A35
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.71	2	-0.02	1	52904	QPSK	25	0	10 mm	back	1:1	0.600	1.199	0.719	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.69	2	0.14	1	52904	QPSK	50	0	10 mm	back	1:1	0.560	1.205	0.675	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.62	2	-0.01	0	52904	QPSK	1	25	10 mm	front	1:1	0.573	1.225	0.702	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.71	2	-0.03	1	52904	QPSK	25	0	10 mm	front	1:1	0.460	1.199	0.552	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.62	2	-0.13	0	52904	QPSK	1	25	10 mm	bottom	1:1	0.409	1.225	0.501	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.71	2	-0.02	1	52904	QPSK	25	0	10 mm	bottom	1:1	0.323	1.199	0.387	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.62	2	0.00	0	52904	QPSK	1	25	10 mm	right	1:1	0.397	1.225	0.486	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.71	2	-0.01	1	52904	QPSK	25	0	10 mm	right	1:1	0.311	1.199	0.373	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.62	2	-0.02	0	52904	QPSK	1	25	10 mm	left	1:1	0.081	1.225	0.099	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.71	2	-0.02	1	52904	QPSK	25	0	10 mm	left	1:1	0.058	1.199	0.070	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-30
LTE Band 26 (Cell) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.33	2	0.00	0	52904	QPSK	1	36	10 mm	back	1:1	0.678	1.222	0.829	A37
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.39	2	-0.02	1	52904	QPSK	36	0	10 mm	back	1:1	0.528	1.205	0.636	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.34	2	0.11	1	52904	QPSK	75	0	10 mm	back	1:1	0.498	1.219	0.607	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.33	2	0.01	0	52904	QPSK	1	36	10 mm	front	1:1	0.514	1.222	0.628	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.39	2	-0.10	1	52904	QPSK	36	0	10 mm	front	1:1	0.393	1.205	0.474	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.33	2	-0.10	0	52904	QPSK	1	36	10 mm	bottom	1:1	0.366	1.222	0.447	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.39	2	0.00	1	52904	QPSK	36	0	10 mm	bottom	1:1	0.299	1.205	0.360	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.33	2	-0.19	0	52904	QPSK	1	36	10 mm	right	1:1	0.325	1.222	0.397	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.39	2	0.03	1	52904	QPSK	36	0	10 mm	right	1:1	0.257	1.205	0.310	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.33	2	-0.12	0	52904	QPSK	1	36	10 mm	left	1:1	0.064	1.222	0.078	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.39	2	-0.07	1	52904	QPSK	36	0	10 mm	left	1:1	0.053	1.205	0.064	
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 11-31
LTE Band 66 (AWS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	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)	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.5	19.63	16	0.04	0	52869	QPSK	1	0	10 mm	back	1:1	0.403	1.222	0.492	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.5	19.62	16	0.03	0	52869	QPSK	50	0	10 mm	back	1:1	0.398	1.225	0.488	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.5	19.63	16	0.01	0	52869	QPSK	1	0	10 mm	front	1:1	0.359	1.222	0.439	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.5	19.62	16	-0.08	0	52869	QPSK	50	0	10 mm	front	1:1	0.346	1.225	0.424	
1720.00	132072	Low	LTE Band 66 (AWS)	20	20.5	19.59	16	0.14	0	52869	QPSK	1	0	10 mm	bottom	1:1	0.620	1.233	0.764	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.5	19.63	16	-0.01	0	52869	QPSK	1	0	10 mm	bottom	1:1	0.671	1.222	0.820	
1770.00	132572	High	LTE Band 66 (AWS)	20	20.5	19.45	16	-0.10	0	52869	QPSK	1	0	10 mm	bottom	1:1	0.699	1.274	0.891	A39
1720.00	132072	Low	LTE Band 66 (AWS)	20	20.5	19.57	16	0.05	0	52869	QPSK	50	0	10 mm	bottom	1:1	0.648	1.239	0.803	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.5	19.62	16	-0.05	0	52869	QPSK	50	0	10 mm	bottom	1:1	0.673	1.225	0.824	
1770.00	132572	High	LTE Band 66 (AWS)	20	20.5	19.41	16	0.01	0	52869	QPSK	50	0	10 mm	bottom	1:1	0.693	1.285	0.891	
1720.00	132072	Low	LTE Band 66 (AWS)	20	20.5	19.60	16	0.02	0	52869	QPSK	100	0	10 mm	bottom	1:1	0.660	1.230	0.812	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.5	19.63	16	-0.01	0	52869	QPSK	1	0	10 mm	right	1:1	0.065	1.222	0.079	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.5	19.62	16	0.04	0	52869	QPSK	50	0	10 mm	right	1:1	0.063	1.225	0.077	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.5	19.63	16	-0.03	0	52869	QPSK	1	0	10 mm	left	1:1	0.087	1.222	0.106	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.5	19.62	16	-0.01	0	52869	QPSK	50	0	10 mm	left	1:1	0.087	1.225	0.107	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-32
LTE Band 2 (PCS) Hotspot SAR

MEASUREMENT RESULTS

FREQUENCY MHz	Ch.		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
1880.00	18900	Mid	LTE Band 2 (PCS)	20	20.5	19.50	17	-0.04	0	52806	QPSK	1	0	10 mm	back	1:1	0.410	1.259	0.516	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	20.5	19.29	17	-0.01	0	52806	QPSK	50	0	10 mm	back	1:1	0.398	1.321	0.526	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	20.5	19.50	17	0.03	0	52806	QPSK	1	0	10 mm	front	1:1	0.349	1.259	0.439	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	20.5	19.29	17	0.01	0	52806	QPSK	50	0	10 mm	front	1:1	0.342	1.321	0.452	
1860.00	18700	Low	LTE Band 2 (PCS)	20	20.5	19.38	17	0.01	0	52806	QPSK	1	0	10 mm	bottom	1:1	0.678	1.294	0.877	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	20.5	19.50	17	-0.05	0	52806	QPSK	1	0	10 mm	bottom	1:1	0.747	1.259	0.940	
1900.00	19100	High	LTE Band 2 (PCS)	20	20.5	19.47	17	-0.02	0	52806	QPSK	1	0	10 mm	bottom	1:1	0.852	1.268	1.080	
1860.00	18700	Low	LTE Band 2 (PCS)	20	20.5	19.18	17	0.02	0	52806	QPSK	50	0	10 mm	bottom	1:1	0.662	1.355	0.897	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	20.5	19.29	17	-0.01	0	52806	QPSK	50	0	10 mm	bottom	1:1	0.737	1.321	0.974	
1900.00	19100	High	LTE Band 2 (PCS)	20	20.5	19.27	17	0.01	0	52806	QPSK	50	0	10 mm	bottom	1:1	0.870	1.327	1.154	A41
1900.00	19100	High	LTE Band 2 (PCS)	20	20.5	19.23	17	0.04	0	52806	QPSK	100	0	10 mm	bottom	1:1	0.866	1.340	1.160	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	20.5	19.50	17	0.12	0	52806	QPSK	1	0	10 mm	right	1:1	0.078	1.259	0.098	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	20.5	19.29	17	0.09	0	52806	QPSK	50	0	10 mm	right	1:1	0.073	1.321	0.096	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	20.5	19.50	17	-0.07	0	52806	QPSK	1	0	10 mm	left	1:1	0.060	1.259	0.076	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	20.5	19.29	17	0.07	0	52806	QPSK	50	0	10 mm	left	1:1	0.059	1.321	0.078	
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 11-33
LTE Band 25 (PCS) Hotspot SAR

MEASUREMENT RESULTS

FREQUENCY MHz	Ch.		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.66	17	0.00	0	52870	QPSK	1	0	10 mm	back	1:1	0.438	1.213	0.531	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.51	17	-0.02	0	52870	QPSK	50	0	10 mm	back	1:1	0.446	1.256	0.560	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.66	17	-0.01	0	52870	QPSK	1	0	10 mm	front	1:1	0.297	1.213	0.360	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.51	17	0.02	0	52870	QPSK	50	0	10 mm	front	1:1	0.303	1.256	0.381	
1860.00	26140	Low	LTE Band 25 (PCS)	20	20.5	19.58	17	-0.05	0	52870	QPSK	1	0	10 mm	bottom	1:1	0.523	1.236	0.646	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.5	19.33	17	-0.04	0	52870	QPSK	1	0	10 mm	bottom	1:1	0.622	1.309	0.814	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.66	17	-0.02	0	52870	QPSK	1	0	10 mm	bottom	1:1	0.770	1.213	0.934	
1860.00	26140	Low	LTE Band 25 (PCS)	20	20.5	19.46	17	-0.06	0	52870	QPSK	50	25	10 mm	bottom	1:1	0.519	1.271	0.660	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.5	19.36	17	-0.02	0	52870	QPSK	50	0	10 mm	bottom	1:1	0.610	1.300	0.793	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.51	17	-0.03	0	52870	QPSK	50	0	10 mm	bottom	1:1	0.787	1.256	0.988	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.47	17	-0.03	0	52870	QPSK	100	0	10 mm	bottom	1:1	0.800	1.268	1.014	A43
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.66	17	-0.01	0	52870	QPSK	1	0	10 mm	right	1:1	0.068	1.213	0.082	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.51	17	0.03	0	52870	QPSK	50	0	10 mm	right	1:1	0.064	1.256	0.080	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.66	17	0.01	0	52870	QPSK	1	0	10 mm	left	1:1	0.063	1.213	0.076	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.51	17	-0.02	0	52870	QPSK	50	0	10 mm	left	1:1	0.062	1.256	0.078	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-34
LTE Band 41 Hotspot SAR

MEASUREMENT RESULTS

1 CC Uplink | 2 CC Uplink	Component Carrier	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)	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	21.0	20.02	0.03	0	52870	QPSK	1	0	10 mm	back	1:1.58	0.283	1.253	0.355	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	21.0	19.99	0.08	0	52870	QPSK	50	0	10 mm	back	1:1.58	0.223	1.262	0.281	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	21.0	20.02	-0.03	0	52870	QPSK	1	0	10 mm	front	1:1.58	0.205	1.253	0.257	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	21.0	19.99	0.00	0	52870	QPSK	50	0	10 mm	front	1:1.58	0.192	1.262	0.242	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	21.0	20.02	-0.09	0	52870	QPSK	1	0	10 mm	bottom	1:1.58	0.428	1.253	0.536	A45
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	21.0	19.99	-0.08	0	52870	QPSK	50	0	10 mm	bottom	1:1.58	0.413	1.262	0.521	
1 CC Uplink - Power Class 2	N/A	2680.00	41490	High	LTE Band 41	20	21.0	20.11	-0.05	0	52870	QPSK	1	0	10 mm	bottom	1:2.31	0.285	1.227	0.350	
2 CC Uplink - Power Class 3	PCC	2680.00	41490	High	LTE Band 41	20	21.0	19.98	-0.10	0	52870	QPSK	1	0	10 mm	bottom	1:1.58	0.423	1.265	0.535	
2 CC Uplink - Power Class 3	SCC	2660.20	41292	High	LTE Band 41	20							1	99							
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	21.0	20.02	0.01	0	52870	QPSK	1	0	10 mm	left	1:1.58	0.078	1.253	0.098	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	21.0	19.99	0.00	0	52870	QPSK	50	0	10 mm	left	1:1.58	0.072	1.262	0.091	

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

Table 11-35
WLAN SISO Hotspot SAR

MEASUREMENT RESULTS

FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2437	6	802.11b	DSSS	22	21.0	20.77	-0.04	10 mm	1	52869	1	back	99.0	0.176	-	1.054	1.010	-	
2437	6	802.11b	DSSS	22	21.0	20.77	0.14	10 mm	1	52869	1	front	99.0	0.109	-	1.054	1.010	-	
2437	6	802.11b	DSSS	22	21.0	20.77	0.00	10 mm	1	52869	1	top	99.0	0.228	0.170	1.054	1.010	0.181	
2437	6	802.11b	DSSS	22	21.0	20.77	0.10	10 mm	1	52869	1	left	99.0	0.093	-	1.054	1.010	-	
2437	6	802.11b	DSSS	22	21.0	20.24	-0.08	10 mm	2	52869	1	back	99.0	0.241	-	1.191	1.010	-	
2437	6	802.11b	DSSS	22	21.0	20.24	-0.18	10 mm	2	52869	1	front	99.0	0.242	-	1.191	1.010	-	
2437	6	802.11b	DSSS	22	21.0	20.24	0.03	10 mm	2	52869	1	top	99.0	0.271	0.201	1.191	1.010	**0.242**	
2437	6	802.11b	DSSS	22	21.0	20.24	0.16	10 mm	2	52869	1	left	99.0	0.142	-	1.191	1.010	-	
5785	157	802.11a	OFDM	20	17.5	16.70	0.21	10 mm	1	52806	6	back	98.7	0.472	0.224	1.202	1.013	0.273	
5785	157	802.11a	OFDM	20	17.5	16.70	0.16	10 mm	1	52806	6	front	98.7	0.038	-	1.202	1.013	-	
5785	157	802.11a	OFDM	20	17.5	16.70	-0.17	10 mm	1	52806	6	top	98.7	0.166	-	1.202	1.013	-	
5785	157	802.11a	OFDM	20	17.5	16.70	-0.12	10 mm	1	52806	6	left	98.7	0.014	-	1.202	1.013	-	
5785	157	802.11a	OFDM	20	17.5	17.26	0.02	10 mm	2	52806	6	back	98.8	0.726	0.338	1.057	1.012	**0.362**	
5785	157	802.11a	OFDM	20	17.5	17.26	0.17	10 mm	2	52806	6	front	98.8	0.137	-	1.057	1.012	-	
5785	157	802.11a	OFDM	20	17.5	17.26	0.16	10 mm	2	52806	6	top	98.8	0.127	-	1.057	1.012	-	
5785	157	802.11a	OFDM	20	17.5	17.26	0.19	10 mm	2	52806	6	left	98.8	0.220	-	1.057	1.012	-	

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 11-36
WLAN MIMO Hotspot SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [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)	
2417	2	802.11n	OFDM	20	18.0	17.41	18.0	17.98	-0.08	10 mm	MIMO	52869	13	back	98.6	0.291	-	1.146	1.014	-	
2417	2	802.11n	OFDM	20	18.0	17.41	18.0	17.98	0.08	10 mm	MIMO	52869	13	front	98.6	0.243	-	1.146	1.014	-	
2417	2	802.11n	OFDM	20	18.0	17.41	18.0	17.98	0.15	10 mm	MIMO	52869	13	top	98.6	0.312	0.265	1.146	1.014	0.308	A47
2417	2	802.11n	OFDM	20	18.0	17.41	18.0	17.98	0.14	10 mm	MIMO	52869	13	left	98.6	0.236	-	1.146	1.014	-	
5745	149	802.11n	OFDM	20	17.5	15.99	17.5	16.25	0.08	10 mm	MIMO	52806	13	back	98.6	0.884	0.380	1.416	1.014	0.546	A49
5745	149	802.11n	OFDM	20	17.5	15.99	17.5	16.25	0.17	10 mm	MIMO	52806	13	front	98.6	0.088	-	1.416	1.014	-	
5745	149	802.11n	OFDM	20	17.5	15.99	17.5	16.25	0.13	10 mm	MIMO	52806	13	top	98.6	0.263	0.102	1.416	1.014	0.146	
5745	149	802.11n	OFDM	20	17.5	15.99	17.5	16.25	0.15	10 mm	MIMO	52806	13	left	98.6	0.172	-	1.416	1.014	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram											

To achieve the 21.0 dBm maximum allowed MIMO power for 2.4 GHz WLAN shown in the documentation tune-up, each antenna transmits at a maximum allowed power of 18.0 dBm. To achieve the 20.5 dBm maximum allowed MIMO power for 5 GHz WLAN shown in the documentation tune-up, each antenna transmits at a maximum allowed power of 17.5 dBm.

Table 11-37
DTS MIMO Hotspot SAR for Conditions with 2.4 GHz and 5 GHz WLAN SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [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)	
2462	11	802.11n	OFDM	20	17.0	16.41	17.0	16.83	0.04	10 mm	MIMO	52869	13	back	98.6	0.208	0.199	1.146	1.014	0.231	
2462	11	802.11n	OFDM	20	17.0	16.41	17.0	16.83	0.14	10 mm	MIMO	52869	13	front	98.6	0.171	-	1.146	1.014	-	
2462	11	802.11n	OFDM	20	17.0	16.41	17.0	16.83	0.04	10 mm	MIMO	52869	13	top	98.6	0.229	0.190	1.146	1.014	0.221	
2462	11	802.11n	OFDM	20	17.0	16.41	17.0	16.83	0.06	10 mm	MIMO	52869	13	left	98.6	0.153	-	1.146	1.014	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram											

DTS MIMO was additionally evaluated at the maximum allowed output power during operations with Simultaneous 2.4 GHz and 5 GHz WLAN. 5 GHz WIFI was not transmitting during the above evaluations.

Table 11-38
NII MIMO Hotspot SAR for Conditions with 2.4 GHz and 5 GHz WLAN SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [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)	
5775	155	802.11ac	OFDM	80	14.0	13.53	14.0	13.43	-0.03	10 mm	MIMO	52806	58.5	back	94.0	0.415	0.187	1.140	1.064	0.227	
5775	155	802.11ac	OFDM	80	14.0	13.53	14.0	13.43	0.19	10 mm	MIMO	52806	58.5	front	94.0	0.031	-	1.140	1.064	-	
5775	155	802.11ac	OFDM	80	14.0	13.53	14.0	13.43	0.16	10 mm	MIMO	52806	58.5	top	94.0	0.100	-	1.140	1.064	-	
5775	155	802.11ac	OFDM	80	14.0	13.53	14.0	13.43	0.15	10 mm	MIMO	52806	58.5	left	94.0	0.061	-	1.140	1.064	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram											

NII MIMO was additionally evaluated at the maximum allowed output power during operations with Simultaneous 2.4 GHz and 5 GHz WLAN. 2.4 GHz WIFI was not transmitting during the above evaluations.

Table 11-39
DSS Hotspot SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2480	78	Bluetooth	FHSS	16.5	16.50	0.08	10 mm	52869	1	back	77.3	0.051	1.000	1.294	0.066	
2480	78	Bluetooth	FHSS	16.5	16.50	-0.05	10 mm	52869	1	front	77.3	0.043	1.000	1.294	0.056	
2480	78	Bluetooth	FHSS	16.5	16.50	-0.02	10 mm	52869	1	top	77.3	0.086	1.000	1.294	0.111	A51
2480	78	Bluetooth	FHSS	16.5	16.50	-0.11	10 mm	52869	1	left	77.3	0.035	1.000	1.294	0.045	
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 11-40
GPRS/UMTS Phablet SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	Spacing	Device Serial Number	# of GPRS Slots	Duty Cycle	Side	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
1850.20	512	GSM 1900	GPRS	28.6	27.65	N/A	0.16	0 mm	52806	2	1:4.15	bottom	2.570	1.245	3.200	
1880.00	661	GSM 1900	GPRS	28.6	27.75	N/A	0.01	0 mm	52806	2	1:4.15	bottom	2.660	1.216	3.235	A52
1909.80	810	GSM 1900	GPRS	28.6	27.40	N/A	0.20	0 mm	52806	2	1:4.15	bottom	2.490	1.318	3.282	
1732.40	1412	UMTS 1750	RMC	25.0	24.20	16	0.03	7 mm	52869	N/A	1:1	back	0.931	1.202	1.119	
1732.40	1412	UMTS 1750	RMC	25.0	24.20	16	-0.01	5 mm	52869	N/A	1:1	front	0.956	1.202	1.149	
1732.40	1412	UMTS 1750	RMC	25.0	24.20	16	-0.04	10 mm	52869	N/A	1:1	bottom	1.150	1.202	1.382	
1732.40	1412	UMTS 1750	RMC	25.0	24.20	16	-0.03	0 mm	52869	N/A	1:1	right	0.331	1.202	0.398	
1732.40	1412	UMTS 1750	RMC	25.0	24.20	16	0.05	0 mm	52869	N/A	1:1	left	0.559	1.202	0.672	
1732.40	1412	UMTS 1750	RMC	21.5	20.71	16	0.03	0 mm	52869	N/A	1:1	back	1.550	1.199	1.858	
1732.40	1412	UMTS 1750	RMC	21.5	20.71	16	0.06	0 mm	52869	N/A	1:1	front	1.330	1.199	1.595	
1712.40	1312	UMTS 1750	RMC	21.5	20.59	16	-0.09	0 mm	52869	N/A	1:1	bottom	2.380	1.233	2.935	A53
1732.40	1412	UMTS 1750	RMC	21.5	20.71	16	-0.05	0 mm	52869	N/A	1:1	bottom	2.180	1.199	2.614	
1752.60	1513	UMTS 1750	RMC	21.5	20.67	16	-0.05	0 mm	52869	N/A	1:1	bottom	2.330	1.211	2.822	
1880.00	9400	UMTS 1900	RMC	25.0	24.03	17	0.00	7 mm	52806	N/A	1:1	back	1.120	1.250	1.400	
1880.00	9400	UMTS 1900	RMC	25.0	24.03	17	-0.01	5 mm	52806	N/A	1:1	front	1.360	1.250	1.700	
1880.00	9400	UMTS 1900	RMC	25.0	24.03	17	-0.02	10 mm	52806	N/A	1:1	bottom	1.310	1.250	1.638	
1880.00	9400	UMTS 1900	RMC	25.0	24.03	17	0.05	0 mm	52806	N/A	1:1	right	0.411	1.250	0.514	
1880.00	9400	UMTS 1900	RMC	25.0	24.03	17	0.00	0 mm	52806	N/A	1:1	left	0.637	1.250	0.796	
1880.00	9400	UMTS 1900	RMC	21.0	20.05	17	-0.01	0 mm	52870	N/A	1:1	back	1.450	1.245	1.805	
1880.00	9400	UMTS 1900	RMC	21.0	20.05	17	-0.01	0 mm	52870	N/A	1:1	front	1.150	1.245	1.432	
1852.40	9262	UMTS 1900	RMC	21.0	20.28	17	-0.05	0 mm	52870	N/A	1:1	bottom	2.280	1.180	2.690	
1880.00	9400	UMTS 1900	RMC	21.0	20.05	17	-0.15	0 mm	52870	N/A	1:1	bottom	2.550	1.245	3.175	
1907.60	9538	UMTS 1900	RMC	21.0	20.01	17	-0.17	0 mm	52870	N/A	1:1	bottom	2.620	1.256	3.291	A54
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 11-41
LTE FDD Phablet SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g) (W/kg)	Scaling Factor	Reported SAR (10g) (W/kg)	Plot #
MHz	Ch.																			
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.33	16	-0.03	0	52869	QPSK	1	0	7 mm	back	1:1	1.040	1.250	1.300	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.30	16	-0.01	1	52869	QPSK	50	0	7 mm	back	1:1	0.828	1.259	1.042	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.33	16	0.01	0	52869	QPSK	1	0	5 mm	front	1:1	1.200	1.250	1.500	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.30	16	0.03	1	52869	QPSK	50	0	5 mm	front	1:1	0.972	1.259	1.224	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.33	16	-0.12	0	52869	QPSK	1	0	10 mm	bottom	1:1	1.180	1.250	1.475	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.30	16	0.02	1	52869	QPSK	50	0	10 mm	bottom	1:1	0.951	1.259	1.197	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.33	16	-0.03	0	52869	QPSK	1	0	0 mm	right	1:1	0.371	1.250	0.464	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.30	16	-0.05	1	52869	QPSK	50	0	0 mm	right	1:1	0.291	1.259	0.366	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.33	16	-0.11	0	52869	QPSK	1	0	0 mm	left	1:1	0.601	1.250	0.751	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.30	16	-0.12	1	52869	QPSK	50	0	0 mm	left	1:1	0.477	1.259	0.601	
1720.00	132072	Low	LTE Band 66 (AWS)	20	21.5	20.47	16	0.01	0	52869	QPSK	1	0	0 mm	back	1:1	1.670	1.268	2.118	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	21.5	20.22	16	0.02	0	52869	QPSK	1	0	0 mm	back	1:1	1.630	1.343	2.189	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.5	20.37	16	0.00	0	52869	QPSK	1	0	0 mm	back	1:1	1.600	1.297	2.075	
1720.00	132072	Low	LTE Band 66 (AWS)	20	21.5	20.44	16	-0.01	0	52869	QPSK	50	0	0 mm	back	1:1	1.710	1.276	2.182	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	21.5	20.36	16	0.02	0	52869	QPSK	50	0	0 mm	back	1:1	1.650	1.300	2.145	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.5	20.24	16	-0.01	0	52869	QPSK	50	0	0 mm	back	1:1	1.580	1.337	2.112	
1720.00	132072	Low	LTE Band 66 (AWS)	20	21.5	20.43	16	0.03	0	52869	QPSK	100	0	0 mm	back	1:1	1.670	1.279	2.136	
1720.00	132072	Low	LTE Band 66 (AWS)	20	21.5	20.47	16	0.08	0	52869	QPSK	1	0	0 mm	front	1:1	1.320	1.268	1.674	
1720.00	132072	Low	LTE Band 66 (AWS)	20	21.5	20.44	16	0.04	0	52869	QPSK	50	0	0 mm	front	1:1	1.340	1.276	1.710	
1720.00	132072	Low	LTE Band 66 (AWS)	20	21.5	20.47	16	-0.09	0	52869	QPSK	1	0	0 mm	bottom	1:1	2.370	1.268	3.005	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	21.5	20.22	16	-0.13	0	52869	QPSK	1	0	0 mm	bottom	1:1	2.310	1.343	3.102	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.5	20.37	16	-0.07	0	52869	QPSK	1	0	0 mm	bottom	1:1	2.230	1.297	2.892	
1720.00	132072	Low	LTE Band 66 (AWS)	20	21.5	20.44	16	-0.04	0	52869	QPSK	50	0	0 mm	bottom	1:1	2.400	1.276	3.062	A55
1745.00	132322	Mid	LTE Band 66 (AWS)	20	21.5	20.36	16	-0.06	0	52869	QPSK	50	0	0 mm	bottom	1:1	2.320	1.300	3.016	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.5	20.24	16	-0.13	0	52869	QPSK	50	0	0 mm	bottom	1:1	2.240	1.337	2.995	
1720.00	132072	Low	LTE Band 66 (AWS)	20	21.5	20.43	16	-0.07	0	52869	QPSK	100	0	0 mm	bottom	1:1	2.330	1.279	2.980	
1720.00	132072	Low	LTE Band 66 (AWS)	20	21.5	20.44	16	-0.18	0	52869	QPSK	50	0	0 mm	bottom	1:1	2.270	1.276	2.897	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	23.95	17	0.01	0	52904	QPSK	1	0	7 mm	back	1:1	1.200	1.274	1.529	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	22.80	17	0.01	1	52904	QPSK	50	0	7 mm	back	1:1	0.949	1.318	1.251	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	23.95	17	-0.02	0	52904	QPSK	1	0	5 mm	front	1:1	1.210	1.274	1.542	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	22.80	17	0.00	1	52904	QPSK	50	0	5 mm	front	1:1	0.975	1.318	1.285	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	23.95	17	-0.02	0	52904	QPSK	1	0	10 mm	bottom	1:1	1.400	1.274	1.784	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	22.80	17	-0.03	1	52904	QPSK	50	0	10 mm	bottom	1:1	1.110	1.318	1.463	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	23.95	17	0.06	0	52904	QPSK	1	0	0 mm	right	1:1	0.419	1.274	0.534	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	22.80	17	0.06	1	52904	QPSK	50	0	0 mm	right	1:1	0.327	1.318	0.431	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	23.95	17	0.00	0	52904	QPSK	1	0	0 mm	left	1:1	0.503	1.274	0.641	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	22.80	17	0.00	1	52904	QPSK	50	0	0 mm	left	1:1	0.391	1.318	0.515	
1900.00	19100	High	LTE Band 2 (PCS)	20	21.0	20.15	17	0.04	0	52869	QPSK	1	0	0 mm	back	1:1	1.570	1.216	1.909	
1900.00	19100	High	LTE Band 2 (PCS)	20	21.0	20.21	17	0.01	0	52869	QPSK	50	0	0 mm	back	1:1	1.600	1.199	1.918	
1900.00	19100	High	LTE Band 2 (PCS)	20	21.0	20.15	17	0.00	0	52869	QPSK	1	0	0 mm	front	1:1	1.220	1.216	1.484	
1900.00	19100	High	LTE Band 2 (PCS)	20	21.0	20.21	17	0.01	0	52869	QPSK	50	0	0 mm	front	1:1	1.230	1.199	1.475	
1860.00	18700	Low	LTE Band 2 (PCS)	20	21.0	19.96	17	-0.07	0	52869	QPSK	1	0	0 mm	bottom	1:1	2.350	1.271	2.987	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	21.0	20.10	17	-0.07	0	52869	QPSK	1	0	0 mm	bottom	1:1	2.560	1.230	3.149	
1900.00	19100	High	LTE Band 2 (PCS)	20	21.0	20.15	17	-0.05	0	52869	QPSK	1	0	0 mm	bottom	1:1	2.700	1.216	3.283	
1860.00	18700	Low	LTE Band 2 (PCS)	20	21.0	20.06	17	-0.06	0	52869	QPSK	50	50	0 mm	bottom	1:1	2.370	1.242	2.944	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	21.0	19.96	17	-0.04	0	52869	QPSK	50	0	0 mm	bottom	1:1	2.590	1.271	3.292	
1900.00	19100	High	LTE Band 2 (PCS)	20	21.0	20.21	17	-0.04	0	52869	QPSK	50	0	0 mm	bottom	1:1	2.750	1.199	**3.297**	A56
1860.00	18700	Low	LTE Band 2 (PCS)	20	21.0	20.12	17	-0.07	0	52869	QPSK	100	0	0 mm	bottom	1:1	2.390	1.225	2.928	
1900.00	19100	High	LTE Band 2 (PCS)	20	21.0	20.21	17	-0.05	0	52869	QPSK	50	0	0 mm	bottom	1:1	2.630	1.199	3.153	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.07	17	0.00	0	52870	QPSK	1	0	7 mm	back	1:1	0.699	1.239	0.866	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	21.84	17	-0.02	1	52870	QPSK	50	0	7 mm	back	1:1	0.560	1.306	0.731	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.07	17	-0.01	0	52870	QPSK	1	0	5 mm	front	1:1	0.728	1.239	0.902	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	21.84	17	-0.02	1	52870	QPSK	50	0	5 mm	front	1:1	0.590	1.306	0.771	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.07	17	0.00	0	52870	QPSK	1	0	10 mm	bottom	1:1	0.980	1.239	1.214	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	21.84	17	0.02	1	52870	QPSK	50	0	10 mm	bottom	1:1	0.791	1.306	1.033	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.07	17	0.02	0	52870	QPSK	1	0	0 mm	right	1:1	0.253	1.239	0.313	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	21.84	17	0.02	1	52870	QPSK	50	0	0 mm	right	1:1	0.202	1.306	0.264	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.07	17	-0.02	0	52870	QPSK	1	0	0 mm	left	1:1	0.447	1.239	0.554	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	21.84	17	0.00	1	52870	QPSK	50	0	0 mm	left	1:1	0.362	1.306	0.473	
1860.00	26140	Low	LTE Band 25 (PCS)	20	21.0	20.09	17	0.01	0	52870	QPSK	1	0	0 mm	back	1:1	1.170	1.233	1.443	
1905.00	26590	High	LTE Band 25 (PCS)	20	21.0	20.06	17	-0.10	0	52870	QPSK	50	0	0 mm	back	1:1	1.560	1.242	1.938	
1860.00	26140	Low	LTE Band 25 (PCS)	20	21.0	20.09	17	-0.01	0	52870	QPSK	1	0	0 mm	front	1:1	0.919	1.233	1.133	
1905.00	26590	High	LTE Band 25 (PCS)	20	21.0	20.06	17	-0.05	0	52870	QPSK	50	0	0 mm	front	1:1	1.230	1.242	1.528	
1860.00	26140	Low	LTE Band 25 (PCS)	20	21.0	20.09	17	-0.13	0	52870	QPSK	1	0	0 mm	bottom	1:1	2.130	1.233	2.626	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.0	20.05	17	-0.10	0	52870	QPSK	1	0	0 mm	bottom	1:1	2.380	1.245	2.963	
1905.00	26590	High	LTE Band 25 (PCS)	20	21.0	19.95	17	-0.10	0	52870	QPSK	1	0	0 mm	bottom	1:1	2.580	1.274	3.287	
1860.00	26140	Low	LTE Band 25 (PCS)	20	21.0	19.88	17	-0.12	0	52870	QPSK	50	25	0 mm	bottom	1:1	2.150	1.294	2.782	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.0	19.83	17	-0.15	0	52870	QPSK	50	0	0 mm	bottom	1:1	2.330	1.309	3.050	
1905.00	26590	High	LTE Band 25 (PCS)	20	21.0	20.06	17	-0.08	0	52870	QPSK	50	0	0 mm	bottom	1:1	2.650	1.242	3.291	A57
1905.00	26590	High	LTE Band 25 (PCS)	20	21.0	19.96	17	-0.12	0	52870	QPSK	100	0	0 mm	bottom	1:1	2.590	1.271	3.292	
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Note: Blue entries represent variability measurements.

Table 11-42
LTE TDD Phablet SAR

MEASUREMENT RESULTS																					
1 CC Uplink | 2 CC Uplink	Component Carrier	FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
		MHz	Ch.															(W/kg)		(W/kg)	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	25.0	24.04	-0.07	0	52870	QPSK	1	0	7 mm	back	1:1.58	0.444	1.247	0.554	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	24.0	22.96	-0.05	1	52870	QPSK	50	0	7 mm	back	1:1.58	0.337	1.271	0.428	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	25.0	24.04	-0.10	0	52870	QPSK	1	0	5 mm	front	1:1.58	0.551	1.247	0.687	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	24.0	22.96	-0.14	1	52870	QPSK	50	0	5 mm	front	1:1.58	0.418	1.271	0.531	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	25.0	24.04	-0.02	0	52870	QPSK	1	0	10 mm	bottom	1:1.58	0.486	1.247	0.606	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	24.0	22.96	0.00	1	52870	QPSK	50	0	10 mm	bottom	1:1.58	0.370	1.271	0.470	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	25.0	24.04	-0.12	0	52870	QPSK	1	0	0 mm	left	1:1.58	0.716	1.247	0.893	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	24.0	22.96	-0.17	1	52870	QPSK	50	0	0 mm	left	1:1.58	0.548	1.271	0.697	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.5	22.54	-0.04	0	52870	QPSK	1	99	0 mm	back	1:1.58	1.340	1.247	1.671	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	23.5	22.73	-0.05	0	52870	QPSK	1	0	0 mm	back	1:1.58	1.290	1.194	1.540	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	23.5	22.76	-0.07	0	52870	QPSK	1	0	0 mm	back	1:1.58	1.370	1.186	1.625	
1 CC Uplink - Power Class 3	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	22.89	-0.08	0	52870	QPSK	1	0	0 mm	back	1:1.58	1.510	1.151	1.738	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	23.5	23.01	-0.03	0	52870	QPSK	1	0	0 mm	back	1:1.58	1.900	1.119	2.126	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.5	22.69	-0.02	0	52870	QPSK	50	50	0 mm	back	1:1.58	1.340	1.205	1.615	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	23.5	22.83	-0.04	0	52870	QPSK	50	0	0 mm	back	1:1.58	1.270	1.167	1.482	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	23.5	22.78	-0.04	0	52870	QPSK	50	0	0 mm	back	1:1.58	1.370	1.180	1.617	
1 CC Uplink - Power Class 3	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	22.89	-0.10	0	52870	QPSK	50	25	0 mm	back	1:1.58	1.560	1.151	1.796	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	23.5	22.97	-0.11	0	52870	QPSK	50	0	0 mm	back	1:1.58	1.920	1.130	2.170	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	23.5	22.92	-0.04	0	52870	QPSK	100	0	0 mm	back	1:1.58	1.910	1.143	2.183	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	23.5	23.01	0.01	0	52870	QPSK	1	0	0 mm	front	1:1.58	1.290	1.119	1.444	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	23.5	22.97	0.15	0	52870	QPSK	50	0	0 mm	front	1:1.58	1.280	1.130	1.446	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.5	22.54	-0.13	0	52870	QPSK	1	99	0 mm	bottom	1:1.58	1.760	1.247	2.195	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	23.5	22.73	-0.17	0	52870	QPSK	1	0	0 mm	bottom	1:1.58	1.850	1.194	2.209	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	23.5	22.76	-0.13	0	52870	QPSK	1	0	0 mm	bottom	1:1.58	1.810	1.186	2.147	
1 CC Uplink - Power Class 3	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	22.89	-0.12	0	52870	QPSK	1	0	0 mm	bottom	1:1.58	1.820	1.151	2.095	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	23.5	23.01	-0.20	0	52870	QPSK	1	0	0 mm	bottom	1:1.58	1.810	1.119	2.025	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.5	22.69	-0.13	0	52870	QPSK	50	50	0 mm	bottom	1:1.58	1.890	1.205	2.277	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	23.5	22.83	-0.12	0	52870	QPSK	50	0	0 mm	bottom	1:1.58	1.880	1.167	2.194	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	23.5	22.78	-0.12	0	52870	QPSK	50	0	0 mm	bottom	1:1.58	1.820	1.180	2.148	
1 CC Uplink - Power Class 3	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	22.89	-0.15	0	52870	QPSK	50	25	0 mm	bottom	1:1.58	1.830	1.151	2.106	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	23.5	22.97	-0.15	0	52870	QPSK	50	0	0 mm	bottom	1:1.58	1.790	1.130	2.023	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	23.5	22.92	-0.17	0	52870	QPSK	100	0	0 mm	bottom	1:1.58	1.750	1.143	2.000	
1 CC Uplink - Power Class 2	N/A	2506.00	39750	Low	LTE Band 41	20	23.5	22.61	-0.15	0	52870	QPSK	50	50	0 mm	bottom	1:2.31	1.250	1.227	1.534	
2 CC Uplink - Power Class 3	PCC	2506.00	39750	Low	LTE Band 41	20	23.5	22.79	-0.15	0	52870	QPSK	50	50	0 mm	bottom	1:1.58	1.980	1.178	2.332	A58
2 CC Uplink - Power Class 3	SCC	2525.80	39948	Low	LTE Band 41	20							50	0							
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Table 11-43
WLAN SISO Phablet SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5300	60	802.11a	OFDM	20	18.0	17.15	-0.12	0 mm	1	52806	6	back	98.7	7.392	0.967	1.216	1.013	1.191	
5300	60	802.11a	OFDM	20	18.0	17.15	-0.15	0 mm	1	52806	6	front	98.7	1.007	0.094	1.216	1.013	0.116	
5300	60	802.11a	OFDM	20	18.0	17.15	0.14	0 mm	1	52806	6	top	98.7	0.795	-	1.216	1.013	-	
5300	60	802.11a	OFDM	20	18.0	17.15	0.00	0 mm	1	52806	6	left	98.7	0.375	-	1.216	1.013	-	
5260	52	802.11a	OFDM	20	18.0	16.95	-0.13	0 mm	2	52806	6	back	98.8	11.191	0.743	1.274	1.012	0.958	
5260	52	802.11a	OFDM	20	18.0	16.95	0.19	0 mm	2	52806	6	front	98.8	2.181	-	1.274	1.012	-	
5260	52	802.11a	OFDM	20	18.0	16.95	0.19	0 mm	2	52806	6	top	98.8	0.947	-	1.274	1.012	-	
5260	52	802.11a	OFDM	20	18.0	16.95	0.19	0 mm	2	52806	6	left	98.8	0.913	-	1.274	1.012	-	
5720	144	802.11a	OFDM	20	17.5	16.62	-0.01	0 mm	1	52806	6	back	98.7	8.518	0.711	1.225	1.013	0.882	
5720	144	802.11a	OFDM	20	17.5	16.62	0.21	0 mm	1	52806	6	front	98.7	0.341	-	1.225	1.013	-	
5720	144	802.11a	OFDM	20	17.5	16.62	0.19	0 mm	1	52806	6	top	98.7	0.826	-	1.225	1.013	-	
5720	144	802.11a	OFDM	20	17.5	16.62	0.19	0 mm	1	52806	6	left	98.7	0.121	-	1.225	1.013	-	
5720	144	802.11a	OFDM	20	17.5	17.35	-0.12	0 mm	2	52806	6	back	98.8	12.611	1.050	1.035	1.012	1.100	
5720	144	802.11a	OFDM	20	17.5	17.35	0.19	0 mm	2	52806	6	front	98.8	5.119	0.599	1.035	1.012	0.627	
5720	144	802.11a	OFDM	20	17.5	17.35	0.20	0 mm	2	52806	6	top	98.8	2.915	-	1.035	1.012	-	
5720	144	802.11a	OFDM	20	17.5	17.35	0.19	0 mm	2	52806	6	left	98.8	1.475	-	1.035	1.012	-	
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 11-44
WLAN MIMO Phablet SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
5300	60	802.11n	OFDM	20	18.0	17.04	18.0	16.91	0.09	0 mm	MIMO	52806	13	back	98.6	19.999	1.580	1.285	1.014	2.059	
5320	64	802.11n	OFDM	20	18.0	17.21	18.0	16.89	-0.02	0 mm	MIMO	52806	13	back	98.6	25.041	1.560	1.291	1.014	2.042	
5320	64	802.11n	OFDM	20	18.0	17.21	18.0	16.89	0.19	0 mm	MIMO	52806	13	front	98.6	1.794	0.263	1.291	1.014	0.344	
5320	64	802.11n	OFDM	20	18.0	17.21	18.0	16.89	0.15	0 mm	MIMO	52806	13	top	98.6	1.362	-	1.291	1.014	-	
5320	64	802.11n	OFDM	20	18.0	17.21	18.0	16.89	0.19	0 mm	MIMO	52806	13	left	98.6	0.953	-	1.291	1.014	-	
5500	100	802.11n	OFDM	20	17.5	15.94	17.5	16.02	-0.01	0 mm	MIMO	52806	13	back	98.6	27.338	1.740	1.432	1.014	2.527	A59
5600	120	802.11n	OFDM	20	17.5	15.97	17.5	16.40	0.01	0 mm	MIMO	52806	13	back	98.6	14.613	1.680	1.422	1.014	2.422	
5720	144	802.11n	OFDM	20	17.5	15.89	17.5	16.42	-0.19	0 mm	MIMO	52806	13	back	98.6	8.375	1.500	1.449	1.014	2.204	
5600	120	802.11n	OFDM	20	17.5	15.97	17.5	16.40	0.15	0 mm	MIMO	52806	13	front	98.6	4.286	0.484	1.422	1.014	0.698	
5600	120	802.11n	OFDM	20	17.5	15.97	17.5	16.40	-0.18	0 mm	MIMO	52806	13	top	98.6	1.457	-	1.422	1.014	-	
5600	120	802.11n	OFDM	20	17.5	15.97	17.5	16.40	0.00	0 mm	MIMO	52806	13	left	98.6	1.132	-	1.422	1.014	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Phablet 4.0 W/kg (mW/g) averaged over 10 grams											

11.5 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, and FCC KDB Publication 447498 D01v06.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 15 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
7. Per FCC KDB Publication 648474 D04v01r03, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported body-worn SAR was ≤ 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were required.
8. Per FCC KDB 865664 D01v01r04, variability SAR tests were performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 13 for variability analysis.
9. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v02r01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.7 for more details).
10. Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is > 160 mm and < 200 mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg.
11. This device supports dynamic antenna tuning for some bands. Per FCC Guidance, SAR was measured according to the normally required SAR measurement configurations with tuner active. The auto-tune state determined by the device was verified before and after each SAR measurement and is listed in tables above. Please see Section 14 for supplemental data.
12. This device utilizes power reduction for some wireless modes and technologies, as outlined in Section 1.3. The maximum output power allowed for each transmitter and exposure condition was evaluated for SAR compliance based on expected use conditions and simultaneous transmission scenarios.
13. Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds below.

GSM Test Notes:

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

CDMA Notes:

1. Head SAR for CDMA2000 mode was tested under RC3/SO55 per FCC KDB Publication 941225 D01v03r01.

2. Body-Worn SAR was tested with 1x RTT with TDSO / SO32 FCH Only. EVDO Rev0 and RevA and TDSO / SO32 FCH+SCH SAR tests were not required per the 3G SAR Test Reduction Procedure in FCC KDB Publication 941225 D01v03r01.
3. CDMA Wireless Router SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0 according to KDB 941225 D01v03r01 procedures for data devices. Wireless Router SAR tests for Subtype 2 of Rev.A and 1x RTT configurations were not required per the 3G SAR Test Reduction Policy in KDB Publication 941225 D01v03r01.
4. Head SAR was additionally evaluated using EVDO Rev. A to determine compliance for VoIP operations.
5. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel was used.
6. CDMA 1X Advanced technology was not required for SAR since the maximum allowed output powers for 1X Advanced was not more than 0.25 dB higher than the maximum powers for 1X.

UMTS Notes:

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

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r04. The general test procedures used for testing can be found in Section 8.6.4.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
3. A-MPR was disabled for all SAR tests by setting NS=01 and MCC=001 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
4. Per FCC KDB Publication 447498 D01v06, when the reported LTE Band 41 SAR measured at the highest output power channel in a given a test configuration was > 0.6 W/kg for 1g evaluations, testing at the other channels was required for such test configurations.
5. TDD LTE was tested per the guidance provided in FCC KDB Publication 941225 D05v02r04. Testing was performed using UL-DL configuration 0 with 6 UL subframes and 2 S subframes using extended cyclic prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633.
6. Per KDB Publication 941225 D05Av01r02, SAR for downlink only LTE CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive.
7. This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per FCC Guidance, all SAR tests were performed using Power Class 3. SAR with power class 2 at the available

duty factor was additionally performed for the power class 3 configuration with the highest SAR configuration for each exposure conditions. Please see Section 14 for linearity results.

8. For LTE Band 41, per FCC guidance, SAR was first measured with only a single carrier active in the uplink (carrier aggregation not active). For each exposure condition, the uplink CA scenario with two component carriers was additionally tested for the configuration with the highest SAR when carrier aggregation was not active. The SCC was configured with the closest available contiguous channel. The two component carriers were configured so the resource blocks are physically allocated side by side to achieve the maximum output power.

WLAN Notes:

1. For held-to-ear, hotspot, and phablet operations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg for 1g evaluations or ≤ 1.0 W/kg for 10g evaluations, no additional testing for the remaining test positions was required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg for 1 g evaluations or ≤ 0.8 W/kg for 10 g evaluations or all test positions are measured.
2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 2.4 GHz WIFI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 8.7.5 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 for 1g evaluations. See Section 8.7.6 for more information.
4. Per KDB Publication 248227 D01v02r02, SAR for MIMO was evaluated by following the simultaneous SAR provisions from KDB Publication 447498 D01v06 by either evaluating the sum of the 1g SAR values of each antenna transmitting independently or making a SAR measurement with both antennas transmitting simultaneously. Please see Section 12 for complete analysis.
5. When the maximum reported 1g averaged SAR is ≤0.8 W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was ≤ 1.20 W/kg for 1g evaluations or all test channels were measured.
6. 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. When 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

Bluetooth Notes

1. Bluetooth SAR was measured with the device connected to a call box with hopping disabled with DH5 operation and Tx Tests test mode type. Per October 2016 TCB Workshop Notes, the reported SAR was scaled to the 100% transmission duty factor to determine compliance. See Section 9.6 for the time domain plot and calculation for the duty factor of the device.
2. Head and hotspot Bluetooth SAR were evaluated for BT BR tethering applications.

12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Introduction

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

12.2 Simultaneous Transmission Procedures

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

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

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

12.3 Head SAR Simultaneous Transmission Analysis

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Head SAR	Cell. CDMA/EVDO	0.315	0.475	0.826	0.790	1.141
	GSM 850	0.235	0.475	0.826	0.710	1.061
	GSM 1900	0.049	0.475	0.826	0.524	0.875
	UMTS 850	0.255	0.475	0.826	0.730	1.081
	UMTS 1750	0.153	0.475	0.826	0.628	0.979
	UMTS 1900	0.124	0.475	0.826	0.599	0.950
	LTE Band 12	0.189	0.475	0.826	0.664	1.015
	LTE Band 13	0.252	0.475	0.826	0.727	1.078
	LTE Band 5 (Cell)	0.228	0.475	0.826	0.703	1.054
	LTE Band 26 (Cell)	0.213	0.475	0.826	0.688	1.039
	LTE Band 66 (AWS)	0.184	0.475	0.826	0.659	1.010
	LTE Band 2 (PCS)	0.153	0.475	0.826	0.628	0.979
	LTE Band 25 (PCS)	0.119	0.475	0.826	0.594	0.945
	LTE Band 41	0.108	0.475	0.826	0.583	0.934

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	Cell. CDMA/EVDO	0.315	1.042	**1.357**
	GSM 850	0.235	1.042	1.277
	GSM 1900	0.049	1.042	1.091
	UMTS 850	0.255	1.042	1.297
	UMTS 1750	0.153	1.042	1.195
	UMTS 1900	0.124	1.042	1.166
	LTE Band 12	0.189	1.042	1.231
	LTE Band 13	0.252	1.042	1.294
	LTE Band 5 (Cell)	0.228	1.042	1.270
	LTE Band 26 (Cell)	0.213	1.042	1.255
	LTE Band 66 (AWS)	0.184	1.042	1.226
	LTE Band 2 (PCS)	0.153	1.042	1.195
	LTE Band 25 (PCS)	0.119	1.042	1.161
	LTE Band 41	0.108	1.042	1.150

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Cell. CDMA/EVDO	0.315	0.064	0.429	0.379	0.744	**0.808**
	GSM 850	0.235	0.064	0.429	0.299	0.664	0.728
	GSM 1900	0.049	0.064	0.429	0.113	0.478	0.542
	UMTS 850	0.255	0.064	0.429	0.319	0.684	0.748
	UMTS 1750	0.153	0.064	0.429	0.217	0.582	0.646
	UMTS 1900	0.124	0.064	0.429	0.188	0.553	0.617
	LTE Band 12	0.189	0.064	0.429	0.253	0.618	0.682
	LTE Band 13	0.252	0.064	0.429	0.316	0.681	0.745
	LTE Band 5 (Cell)	0.228	0.064	0.429	0.292	0.657	0.721
	LTE Band 26 (Cell)	0.213	0.064	0.429	0.277	0.642	0.706
	LTE Band 66 (AWS)	0.184	0.064	0.429	0.248	0.613	0.677
	LTE Band 2 (PCS)	0.153	0.064	0.429	0.217	0.582	0.646
	LTE Band 25 (PCS)	0.119	0.064	0.429	0.183	0.548	0.612
	LTE Band 41	0.108	0.064	0.429	0.172	0.537	0.601

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO at 16 dBm SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Head SAR	Cell. CDMA/EVDO	0.315	0.720	0.064	0.429	**1.528**
	GSM 850	0.235	0.720	0.064	0.429	1.448
	GSM 1900	0.049	0.720	0.064	0.429	1.262
	UMTS 850	0.255	0.720	0.064	0.429	1.468
	UMTS 1750	0.153	0.720	0.064	0.429	1.366
	UMTS 1900	0.124	0.720	0.064	0.429	1.337
	LTE Band 12	0.189	0.720	0.064	0.429	1.402
	LTE Band 13	0.252	0.720	0.064	0.429	1.465
	LTE Band 5 (Cell)	0.228	0.720	0.064	0.429	1.441
	LTE Band 26 (Cell)	0.213	0.720	0.064	0.429	1.426
	LTE Band 66 (AWS)	0.184	0.720	0.064	0.429	1.397
	LTE Band 2 (PCS)	0.153	0.720	0.064	0.429	1.366
	LTE Band 25 (PCS)	0.119	0.720	0.064	0.429	1.332
	LTE Band 41	0.108	0.720	0.064	0.429	1.321

Table 12-5
Simultaneous Transmission Scenario with Bluetooth (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	Cell. CDMA/EVDO	0.315	0.893	**1.208**
	GSM 850	0.235	0.893	1.128
	GSM 1900	0.049	0.893	0.942
	UMTS 850	0.255	0.893	1.148
	UMTS 1750	0.153	0.893	1.046
	UMTS 1900	0.124	0.893	1.017
	LTE Band 12	0.189	0.893	1.082
	LTE Band 13	0.252	0.893	1.145
	LTE Band 5 (Cell)	0.228	0.893	1.121
	LTE Band 26 (Cell)	0.213	0.893	1.106
	LTE Band 66 (AWS)	0.184	0.893	1.077
	LTE Band 2 (PCS)	0.153	0.893	1.046
	LTE Band 25 (PCS)	0.119	0.893	1.012
	LTE Band 41	0.108	0.893	1.001

12.4 Body-Worn Simultaneous Transmission Analysis

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	Cell. CDMA	0.497	0.070	0.099	0.567	0.596	0.666
	GSM 850	0.416	0.070	0.099	0.486	0.515	0.585
	GSM 1900	0.473	0.070	0.099	0.543	0.572	0.642
	UMTS 850	0.471	0.070	0.099	0.541	0.570	0.640
	UMTS 1750	0.811	0.070	0.099	0.881	0.910	0.980
	UMTS 1900	0.761	0.070	0.099	0.831	0.860	0.930
	LTE Band 12	0.293	0.070	0.099	0.363	0.392	0.462
	LTE Band 13	0.441	0.070	0.099	0.511	0.540	0.610
	LTE Band 5 (Cell)	0.457	0.070	0.099	0.527	0.556	0.626
	LTE Band 26 (Cell)	0.400	0.070	0.099	0.470	0.499	0.569
	LTE Band 66 (AWS)	0.919	0.070	0.099	0.989	1.018	**1.088**
	LTE Band 2 (PCS)	0.684	0.070	0.099	0.754	0.783	0.853
	LTE Band 25 (PCS)	0.533	0.070	0.099	0.603	0.632	0.702
	LTE Band 41	0.564	0.070	0.099	0.634	0.663	0.733

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	Cell. CDMA	0.497	0.213	0.258	0.710	0.755	0.968
	GSM 850	0.416	0.213	0.258	0.629	0.674	0.887
	GSM 1900	0.473	0.213	0.258	0.686	0.731	0.944
	UMTS 850	0.471	0.213	0.258	0.684	0.729	0.942
	UMTS 1750	0.811	0.213	0.258	1.024	1.069	1.282
	UMTS 1900	0.761	0.213	0.258	0.974	1.019	1.232
	LTE Band 12	0.293	0.213	0.258	0.506	0.551	0.764
	LTE Band 13	0.441	0.213	0.258	0.654	0.699	0.912
	LTE Band 5 (Cell)	0.457	0.213	0.258	0.670	0.715	0.928
	LTE Band 26 (Cell)	0.400	0.213	0.258	0.613	0.658	0.871
	LTE Band 66 (AWS)	0.919	0.213	0.258	1.132	1.177	**1.390**
	LTE Band 2 (PCS)	0.684	0.213	0.258	0.897	0.942	1.155
	LTE Band 25 (PCS)	0.533	0.213	0.258	0.746	0.791	1.004
	LTE Band 41	0.564	0.213	0.258	0.777	0.822	1.035

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Body-Worn	Cell. CDMA	0.497	0.070	0.099	0.213	0.258	1.137
	GSM 850	0.416	0.070	0.099	0.213	0.258	1.056
	GSM 1900	0.473	0.070	0.099	0.213	0.258	1.113
	UMTS 850	0.471	0.070	0.099	0.213	0.258	1.111
	UMTS 1750	0.811	0.070	0.099	0.213	0.258	1.451
	UMTS 1900	0.761	0.070	0.099	0.213	0.258	1.401
	LTE Band 12	0.293	0.070	0.099	0.213	0.258	0.933
	LTE Band 13	0.441	0.070	0.099	0.213	0.258	1.081
	LTE Band 5 (Cell)	0.457	0.070	0.099	0.213	0.258	1.097
	LTE Band 26 (Cell)	0.400	0.070	0.099	0.213	0.258	1.040
	LTE Band 66 (AWS)	0.919	0.070	0.099	0.213	0.258	**1.559**
	LTE Band 2 (PCS)	0.684	0.070	0.099	0.213	0.258	1.324
	LTE Band 25 (PCS)	0.533	0.070	0.099	0.213	0.258	1.173
	LTE Band 41	0.564	0.070	0.099	0.213	0.258	1.204

Table 12-9
Simultaneous Transmission Scenario with Bluetooth (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body-Worn	Cell. CDMA	0.497	0.027	0.524
	GSM 850	0.416	0.027	0.443
	GSM 1900	0.473	0.027	0.500
	UMTS 850	0.471	0.027	0.498
	UMTS 1750	0.811	0.027	0.838
	UMTS 1900	0.761	0.027	0.788
	LTE Band 12	0.293	0.027	0.320
	LTE Band 13	0.441	0.027	0.468
	LTE Band 5 (Cell)	0.457	0.027	0.484
	LTE Band 26 (Cell)	0.400	0.027	0.427
	LTE Band 66 (AWS)	0.919	0.027	**0.946**
	LTE Band 2 (PCS)	0.684	0.027	0.711
	LTE Band 25 (PCS)	0.533	0.027	0.560
	LTE Band 41	0.564	0.027	0.591

12.5 Hotspot SAR Simultaneous Transmission Analysis

Table 12-10
Simultaneous Transmission Scenario with 2.4 GHz SISO WLAN (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Hotspot SAR	Cell. EVDO	1.135	0.181	0.242	1.316	1.377
	GPRS 850	0.814	0.181	0.242	0.995	1.056
	GPRS 1900	0.702	0.181	0.242	0.883	0.944
	UMTS 850	0.873	0.181	0.242	1.054	1.115
	UMTS 1750	0.836	0.181	0.242	1.017	1.078
	UMTS 1900	1.279	0.181	0.242	1.460	**1.521**
	LTE Band 12	0.545	0.181	0.242	0.726	0.787
	LTE Band 13	0.860	0.181	0.242	1.041	1.102
	LTE Band 5 (Cell)	0.911	0.181	0.242	1.092	1.153
	LTE Band 26 (Cell)	0.829	0.181	0.242	1.010	1.071
	LTE Band 66 (AWS)	0.891	0.181	0.242	1.072	1.133
	LTE Band 2 (PCS)	1.160	0.181	0.242	1.341	1.402
	LTE Band 25 (PCS)	1.014	0.181	0.242	1.195	1.256
	LTE Band 41	0.536	0.181	0.242	0.717	0.778

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	Cell. EVDO	1.135	0.308	1.443
	GPRS 850	0.814	0.308	1.122
	GPRS 1900	0.702	0.308	1.010
	UMTS 850	0.873	0.308	1.181
	UMTS 1750	0.836	0.308	1.144
	UMTS 1900	1.279	0.308	**1.587**
	LTE Band 12	0.545	0.308	0.853
	LTE Band 13	0.860	0.308	1.168
	LTE Band 5 (Cell)	0.911	0.308	1.219
	LTE Band 26 (Cell)	0.829	0.308	1.137
	LTE Band 66 (AWS)	0.891	0.308	1.199
	LTE Band 2 (PCS)	1.160	0.308	1.468
	LTE Band 25 (PCS)	1.014	0.308	1.322
	LTE Band 41	0.536	0.308	0.844

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Hotspot SAR	Cell. EVDO	1.135	0.273	0.362	1.408	1.497
	GPRS 850	0.814	0.273	0.362	1.087	1.176
	GPRS 1900	0.702	0.273	0.362	0.975	1.064
	UMTS 850	0.873	0.273	0.362	1.146	1.235
	UMTS 1750	0.836	0.273	0.362	1.109	1.198
	UMTS 1900	1.279	0.273	0.362	**1.552**	See Table Below
	LTE Band 12	0.545	0.273	0.362	0.818	0.907
	LTE Band 13	0.860	0.273	0.362	1.133	1.222
	LTE Band 5 (Cell)	0.911	0.273	0.362	1.184	1.273
	LTE Band 26 (Cell)	0.829	0.273	0.362	1.102	1.191
	LTE Band 66 (AWS)	0.891	0.273	0.362	1.164	1.253
	LTE Band 2 (PCS)	1.160	0.273	0.362	1.433	1.522
	LTE Band 25 (PCS)	1.014	0.273	0.362	1.287	1.376
	LTE Band 41	0.536	0.273	0.362	0.809	0.898

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	Back	0.529	0.362	0.891
	Front	0.422	0.362*	0.784
	Top	-	0.362*	0.362
	Bottom	1.279	-	**1.279**
	Right	0.087	-	0.087
	Left	0.068	0.362*	0.430

Table 12-13
Simultaneous Transmission Scenario with 5 GHz MIMO WLAN (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	Cell. EVDO	1.135	0.546	See Table Below
	GPRS 850	0.814	0.546	1.360
	GPRS 1900	0.702	0.546	1.248
	UMTS 850	0.873	0.546	1.419
	UMTS 1750	0.836	0.546	1.382
	UMTS 1900	1.279	0.546	See Table Below
	LTE Band 12	0.545	0.546	1.091
	LTE Band 13	0.860	0.546	1.406
	LTE Band 5 (Cell)	0.911	0.546	1.457
	LTE Band 26 (Cell)	0.829	0.546	1.375
	LTE Band 66 (AWS)	0.891	0.546	1.437
	LTE Band 2 (PCS)	1.160	0.546	See Table Below
	LTE Band 25 (PCS)	1.014	0.546	**1.560**
	LTE Band 41	0.536	0.546	1.082

Simult Tx	Configuration	Cell. EVDO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Hotspot SAR	Back	1.135	0.546	See Note 1	0.01
	Front	0.939	0.546*	**1.485**	N/A
	Top	-	0.146	0.146	N/A
	Bottom	0.639	-	0.639	N/A
	Right	0.514	-	0.514	N/A
	Left	0.123	0.546*	0.669	N/A

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	Back	0.529	0.546	1.075
	Front	0.422	0.546*	0.968
	Top	-	0.146	0.146
	Bottom	1.279	-	**1.279**
	Right	0.087	-	0.087
	Left	0.068	0.546*	0.614

Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	Back	0.526	0.546	1.072
	Front	0.452	0.546*	0.998
	Top	-	0.146	0.146
	Bottom	1.160	-	**1.160**
	Right	0.098	-	0.098
	Left	0.078	0.546*	0.624

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Cell. EVDO	1.135	0.231	0.227	**1.593**
	GPRS 850	0.814	0.231	0.227	1.272
	GPRS 1900	0.702	0.231	0.227	1.160
	UMTS 850	0.873	0.231	0.227	1.331
	UMTS 1750	0.836	0.231	0.227	1.294
	UMTS 1900	1.279	0.231	0.227	See Table Below
	LTE Band 12	0.545	0.231	0.227	1.003
	LTE Band 13	0.860	0.231	0.227	1.318
	LTE Band 5 (Cell)	0.911	0.231	0.227	1.369
	LTE Band 26 (Cell)	0.829	0.231	0.227	1.287
	LTE Band 66 (AWS)	0.891	0.231	0.227	1.349
	LTE Band 2 (PCS)	1.160	0.231	0.227	See Table Below
	LTE Band 25 (PCS)	1.014	0.231	0.227	1.472
	LTE Band 41	0.536	0.231	0.227	0.994

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.529	0.231	0.227	0.987
	Front	0.422	0.231*	0.227*	0.880
	Top	-	0.221	0.227*	0.448
	Bottom	1.279	-	-	**1.279**
	Right	0.087	-	-	0.087
	Left	0.068	0.231*	0.227*	0.526

Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO at 19 dBm SAR (W/kg)	5 GHz WLAN MIMO at 16 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.526	0.231	0.227	0.984
	Front	0.452	0.231*	0.227*	0.910
	Top	-	0.221	0.227*	0.448
	Bottom	1.160	-	-	**1.160**
	Right	0.098	-	-	0.098
	Left	0.078	0.231*	0.227*	0.536

Table 12-15
Simultaneous Transmission Scenario with Bluetooth (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	Cell. EVDO	1.135	0.111	1.246
	GPRS 850	0.814	0.111	0.925
	GPRS 1900	0.702	0.111	0.813
	UMTS 850	0.873	0.111	0.984
	UMTS 1750	0.836	0.111	0.947
	UMTS 1900	1.279	0.111	**1.390**
	LTE Band 12	0.545	0.111	0.656
	LTE Band 13	0.860	0.111	0.971
	LTE Band 5 (Cell)	0.911	0.111	1.022
	LTE Band 26 (Cell)	0.829	0.111	0.940
	LTE Band 66 (AWS)	0.891	0.111	1.002
	LTE Band 2 (PCS)	1.160	0.111	1.271
	LTE Band 25 (PCS)	1.014	0.111	1.125
	LTE Band 41	0.536	0.111	0.647

Notes:
1. No evaluation was performed to determine the aggregate 1g SAR for these configurations as the SPLS ratio between the antenna pairs was not greater than 0.04 per FCC KDB 447498 D01v06. See Section 12.7 for detailed SPLS ratio analysis.

12.6 Phablet Simultaneous Transmission Analysis

Per FCC KDB Publication 648474 D04 Handset SAR, Phablet SAR tests were not required if wireless router 1g SAR (scaled to the maximum output power, including tolerance) < 1.2 W/kg. Therefore, no further analysis beyond the tables included in this section was required to determine that possible simultaneous transmission scenarios would not exceed the SAR limit.

For SAR summation, the highest reported SAR across all test distances was used as the most conservative evaluation for simultaneous transmission analysis for each device edge.

Table 12-16
Simultaneous Transmission Scenario with 5 GHz SISO WLAN (Phablet)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Phablet SAR	GPRS 1900	3.282	1.191	1.100	See Table Below	See Table Below
	UMTS 1750	2.935	1.191	1.100	See Table Below	See Table Below
	UMTS 1900	3.291	1.191	1.100	See Table Below	See Table Below
	LTE Band 66 (AWS)	3.102	1.191	1.100	See Table Below	See Table Below
	LTE Band 2 (PCS)	3.297	1.191	1.100	See Table Below	See Table Below
	LTE Band 25 (PCS)	3.292	1.191	1.100	See Table Below	See Table Below
	LTE Band 41	2.332	1.191	1.100	**3.523**	3.432

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Phablet SAR	Back	-	1.191	1.100	1.191	1.100
	Front	-	0.116	0.627	0.116	0.627
	Top	-	1.191*	1.100*	1.191	1.100
	Bottom	3.282	-	-	**3.282**	**3.282**
	Right	-	-	-	0.000	0.000
	Left	-	1.191*	1.100*	1.191	1.100

Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Phablet SAR	Back	1.858	1.191	1.100	**3.049**	2.958
	Front	1.595	0.116	0.627	1.711	2.222
	Top	-	1.191*	1.100*	1.191	1.100
	Bottom	2.935	-	-	2.935	2.935
	Right	0.398	-	-	0.398	0.398
	Left	0.672	1.191*	1.100*	1.863	1.772

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Phablet SAR	Back	1.805	1.191	1.100	2.996	2.905
	Front	1.700	0.116	0.627	1.816	2.327
	Top	-	1.191*	1.100*	1.191	1.100
	Bottom	3.291	-	-	**3.291**	**3.291**
	Right	0.514	-	-	0.514	0.514
	Left	0.796	1.191*	1.100*	1.987	1.896

Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Phablet SAR	Back	2.189	1.191	1.100	**3.380**	3.289
	Front	1.710	0.116	0.627	1.826	2.337
	Top	-	1.191*	1.100*	1.191	1.100
	Bottom	3.102	-	-	3.102	3.102
	Right	0.464	-	-	0.464	0.464
	Left	0.751	1.191*	1.100*	1.942	1.851

Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Phablet SAR	Back	1.918	1.191	1.100	3.109	3.018
	Front	1.542	0.116	0.627	1.658	2.169
	Top	-	1.191*	1.100*	1.191	1.100
	Bottom	3.297	-	-	**3.297**	**3.297**
	Right	0.534	-	-	0.534	0.534
	Left	0.641	1.191*	1.100*	1.832	1.741

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Phablet SAR	Back	1.938	1.191	1.100	3.129	3.038
	Front	1.528	0.116	0.627	1.644	2.155
	Top	-	1.191*	1.100*	1.191	1.100
	Bottom	3.292	-	-	**3.292**	**3.292**
	Right	0.313	-	-	0.313	0.313
	Left	0.554	1.191*	1.100*	1.745	1.654

Table 12-17
Simultaneous Transmission Scenario with 5 GHz MIMO WLAN (Phablet)

Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Phablet SAR	Back	-	2.527	2.527
	Front	-	0.698	0.698
	Top	-	2.527*	2.527
	Bottom	3.282	-	**3.282**
	Right	-	-	0.000
	Left	-	2.527*	2.527

Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Phablet SAR	Back	1.858	2.527	See Note 1	0.06
	Front	1.595	0.698	2.293	N/A
	Top	-	2.527*	2.527	N/A
	Bottom	2.935	-	2.935	N/A
	Right	0.398	-	0.398	N/A
	Left	0.672	2.527*	**3.199**	N/A

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Phablet SAR	Back	1.805	2.527	See Note 1	0.06
	Front	1.700	0.698	2.398	N/A
	Top	-	2.527*	2.527	N/A
	Bottom	3.291	-	3.291	N/A
	Right	0.514	-	0.514	N/A
	Left	0.796	2.527*	**3.323**	N/A

Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Phablet SAR	Back	2.189	2.527	See Note 1	0.07
	Front	1.710	0.698	2.408	N/A
	Top	-	2.527*	2.527	N/A
	Bottom	3.102	-	3.102	N/A
	Right	0.464	-	0.464	N/A
	Left	0.751	2.527*	**3.278**	N/A

Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Phablet SAR	Back	1.918	2.527	See Note 1	0.07
	Front	1.542	0.698	2.240	N/A
	Top	-	2.527*	2.527	N/A
	Bottom	3.297	-	**3.297**	N/A
	Right	0.534	-	0.534	N/A
	Left	0.641	2.527*	3.168	N/A

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Phablet SAR	Back	1.938	2.527	See Note 1	0.07
	Front	1.528	0.698	2.226	N/A
	Top	-	2.527*	2.527	N/A
	Bottom	3.292	-	**3.292**	N/A
	Right	0.313	-	0.313	N/A
	Left	0.554	2.527*	3.081	N/A

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Phablet SAR	Back	2.183	2.527	See Note 1	0.08
	Front	1.446	0.698	2.144	N/A
	Top	-	2.527*	2.527	N/A
	Bottom	2.332	-	2.332	N/A
	Right	-	-	0.000	N/A
	Left	0.893	2.527*	**3.420**	N/A

Notes:
1. No evaluation was performed to determine the aggregate 10g SAR for these configurations as the SPLS ratio between the antenna pairs was not greater than 0.10 per FCC KDB 447498 D01v06. See Section 12.7 for detailed SPLS ratio analysis.
2. When scaled to the maximum target, GPRS 1900 bottom edge hotspot 1g SAR > 1.2 W/kg. Phablet SAR was tested for GPRS 1900 bottom edge.

12.7 SPLSR Evaluation and Analysis

Per FCC KDB Publication 447498 D01v06, when the sum of the standalone transmitters is more than 1.6 W/kg for 1g and 4 W/kg for 10g, the SAR sum to peak locations can be analyzed to determine SAR distribution overlaps. When the SAR peak to location ratio (shown below) for each pair of antennas is ≤ 0.04 for 1g and ≤ 0.10 for 10g, simultaneous SAR evaluation is not required. The distance between the transmitters was calculated using the following formula.

$$\text{Distance}_{Tx1-Tx2} = R_i = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

$$\text{SPLS Ratio} = \frac{(SAR_1 + SAR_2)^{1.5}}{R_i}$$

12.7.1 Back Side Hotspot SPLSR Evaluation and Analysis

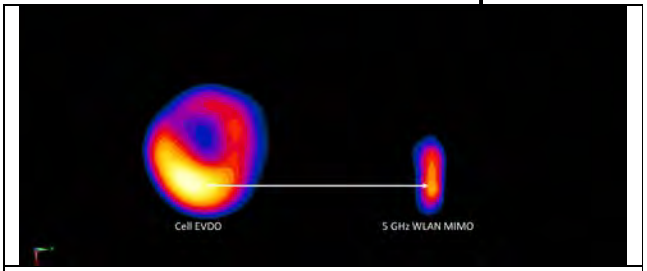
Table 12-18
Peak SAR Locations for Hotspot Back Side

Mode/Band	x (mm)	y (mm)
5 GHz WLAN MIMO	-3.00	64.00
Cell. EVDO	-16.50	-81.50

Table 12-19
Hotspot Back Side SAR to Peak Location Separation Ratio Calculations

Antenna Pair		Standalone SAR (W/kg)		Standalone SAR Sum (W/kg)	Peak SAR Separation Distance (mm)	SPLS Ratio	Plot Number
Ant "a"	Ant "b"	a	b	a+b	D_{a-b}	$(a+b)^{1.5}/D_{a-b}$	
5 GHz WLAN MIMO	Cell. EVDO	0.546	1.135	1.681	146.12	0.01	1

Table 12-20
Hotspot Back Side SAR to Peak Location Separation Ratio Plots



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12.7.2 Back Side Phablet SPLSR Evaluation and Analysis

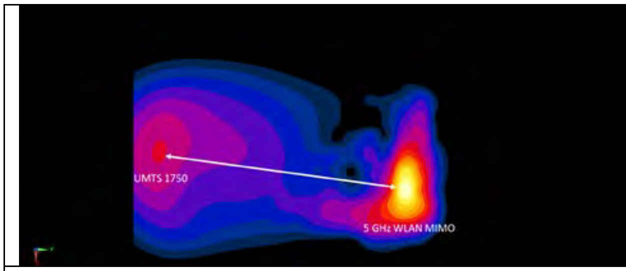
Table 12-21
Peak SAR Locations for Phablet Back Side

Mode/Band	x (mm)	y (mm)
5 GHz WLAN MIMO	-1.00	60.00
UMTS 1750	-14.00	-81.00
UMTS 1900	-19.00	-79.50
LTE Band 66 (AWS)	-11.00	-78.00
LTE Band 2 (PCS)	-19.00	-79.50
LTE Band 25 (PCS)	-22.00	-78.00
LTE Band 41	-4.70	-73.20

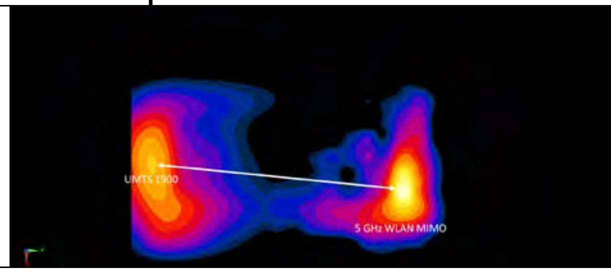
Table 12-22
Phablet Back Side SAR to Peak Location Separation Ratio Calculations

Antenna Pair		Standalone SAR (W/kg)		Standalone SAR Sum (W/kg)	Peak SAR Separation Distance (mm)	SPLS Ratio	Plot Number
Ant "a"	Ant "b"	a	b	a+b	D_{a-b}	$(a+b)^{1.5}/D_{a-b}$	
5 GHz WLAN MIMO	UMTS 1750	2.527	1.858	4.385	141.60	0.06	1
5 GHz WLAN MIMO	UMTS 1900	2.527	1.805	4.332	140.66	0.06	2
5 GHz WLAN MIMO	LTE Band 66 (AWS)	2.527	2.189	4.716	138.36	0.07	3
5 GHz WLAN MIMO	LTE Band 2 (PCS)	2.527	1.918	4.445	140.66	0.07	4
5 GHz WLAN MIMO	LTE Band 25 (PCS)	2.527	1.938	4.465	139.59	0.07	5
5 GHz WLAN MIMO	LTE Band 41	2.527	2.183	4.710	133.25	0.08	6

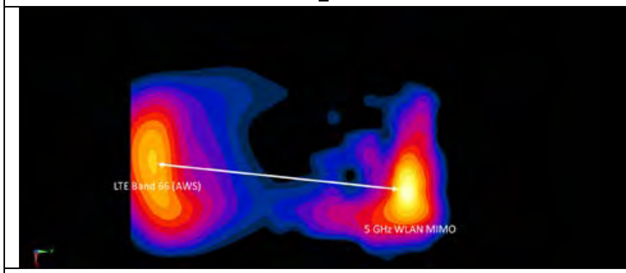
Table 12-23
Phablet Back Side SAR to Peak Location Separation Ratio Plots



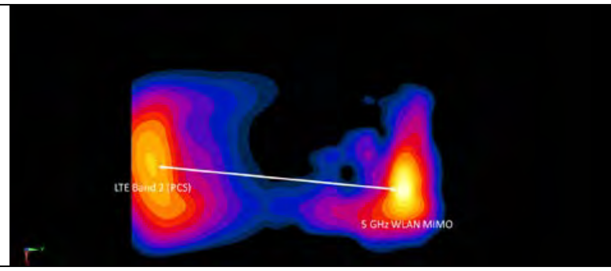
1



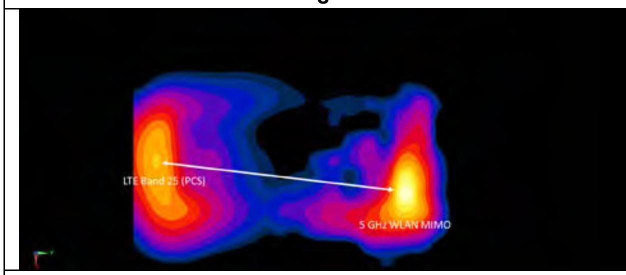
2



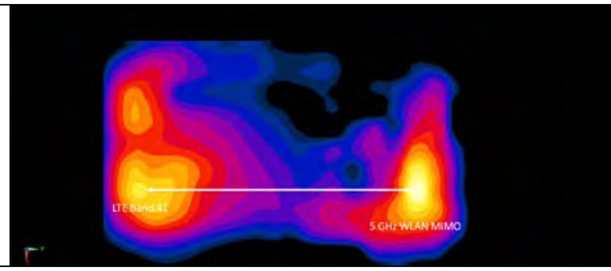
3



4



5



6

12.8 Simultaneous Transmission Conclusion

The above numerical summed SAR results and SPLSR analysis are 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.

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

Table 13-1
Head SAR Measurement Variability Results

HEAD VARIABILITY RESULTS														
Band	FREQUENCY		Mode/Band	Service	Side	Test Position	Data Rate (Mbps)	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.						(W/kg)	(W/kg)		(W/kg)		(W/kg)	
2450	2462.00	11	802.11n, 20 MHz Bandwidth	OFDM , MIMO	Right	Cheek	13	0.887	0.829	1.07	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					Head 1.6 W/kg (mW/g) averaged over 1 gram									

Table 13-2
Body SAR Measurement Variability Results

BODY VARIABILITY RESULTS														
Band	FREQUENCY		Mode	Service	Side	Spacing	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.					(W/kg)	(W/kg)		(W/kg)		(W/kg)	
835	848.31	777	Cell. CDMA	EVDO Rev. 0	back	10 mm	0.997	0.978	1.02	N/A	N/A	N/A	N/A
1900	1907.60	9538	UMTS 1900	RMC	bottom	10 mm	0.872	0.993	1.14	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Body 1.6 W/kg (mW/g) averaged over 1 gram							

Table 13-3
Phablet SAR Measurement Variability Results

PHABLET VARIABILITY RESULTS														
Band	FREQUENCY		Mode	Service	Side	Spacing	Measured SAR (10g)	1st Repeated SAR (10g)	Ratio	2nd Repeated SAR (10g)	Ratio	3rd Repeated SAR (10g)	Ratio
	MHz	Ch.					(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1750	1720.00	132072	LTE Band 66 (AWS), 20 MHz Bandwidth	QPSK, 50 RB, 0 RB Offset	bottom	0 mm	2.400	2.270	1.06	N/A	N/A	N/A	N/A
1900	1900.00	19100	LTE Band 2 (PCS), 20 MHz Bandwidth	QPSK, 50 RB, 0 RB Offset	bottom	0 mm	2.750	2.630	1.05	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Phablet 4.0 W/kg (mW/g) averaged over 10 grams							

13.2 Measurement Uncertainty

The measured SAR was <1.5 W/kg for 1g and <3.75 W/kg for 10g for all frequency bands. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncertainty analysis per IEEE 1528-2013 was not required.

14 ADDITIONAL TESTING PER FCC GUIDANCE

14.1 Tuner Testing

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

To evaluate all of the tuner states, the 80 tuner states were divided among the aggregate band, mode and exposure combinations so that each combination was evaluated for at least 20 tuner states and also so that at least 3 single point SAR measurements were made for every available tuner state. 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. When the single point SAR or 1g SAR was > 1.2 W/kg for a particular band/mode/exposure condition, point SAR measurements were made for all 80 states.

Per FCC Guidance, several bands/modes were combined to be treated as a single aggregate band. For the LTE Band 2 and 25 pair, the highest reported SAR configuration per exposure condition was evaluated. For the LTE Band 5 and 26 pair, the highest reported SAR configuration per exposure condition was evaluated. Additionally, LTE bands 12/17 and 13 were considered as an aggregated band to select single point measurement configurations. The wireless configuration and exposure condition combinations were divided evenly among three bands (i.e. the number of required single point measurements (at least 20) apply to the aggregated band). All other bands were treated independently.

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

Table 14-1
UMTS Supplemental Head SAR Data

Supplemental Head SAR Data					
UMTS Band 5		UMTS Band 4		UMTS Band 2	
RMC		RMC		RMC	
Test Position	Right Cheek	Test Position	Left Cheek	Test Position	Left Cheek
Frequency (MHz)	836.6	Frequency (MHz)	1732.4	Frequency (MHz)	1880
Channel	4183	Channel	1412	Channel	9400
Measured 1g SAR (W/kg)	0.216	Measured 1g SAR (W/kg)	0.127	Measured 1g SAR (W/kg)	0.099
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)	0.242	Auto-tune (State 16)	0.137	Auto-tune (State 16)	0.12
Default (State 2)	0.243	Default (State 16)	0.143	Default (State 16)	0.12
State 1	0.260	State 0	0.113	State 4	0.086
State 2	0.243	State 1	0.113	State 6	0.078
State 5	0.252	State 8	0.089	State 7	0.075
State 9	0.218	State 10	0.073	State 9	0.068
State 13	0.112	State 11	0.064	State 11	0.052
State 15	0.053	State 13	0.045	State 14	0.027
State 18	0.133	State 18	0.137	State 16	0.120
State 22	0.128	State 21	0.134	State 24	0.099
State 25	0.112	State 24	0.13	State 27	0.073
State 28	0.058	State 27	0.108	State 29	0.053
State 29	0.045	State 28	0.097	State 30	0.043
State 32	0.215	State 30	0.075	State 32	0.024
State 33	0.214	State 36	0.02	State 42	0.012
State 35	0.188	State 42	0.014	State 44	0.007
State 38	0.171	State 45	0.006	State 47	0.002
State 40	0.162	State 49	0.048	State 50	0.035
State 43	0.104	State 52	0.04	State 52	0.033
State 48	0.16	State 55	0.035	State 57	0.026
State 49	0.160	State 58	0.029	State 61	0.010
State 53	0.171	State 64	0.099	State 66	0.015
State 68	0.253	State 68	0.112	State 70	0.024
State 69	0.122	State 70	0.025	State 72	0.100
State 71	0.161	State 73	0.14	State 75	0.034
State 76	0.253	State 77	0.143	State 78	0.024

Table 14-2
LTE Supplemental Head SAR Data

Supplemental Head SAR Data									
LTE Band 12		LTE Band 13		LTE Band 5		LTE Band 66		LTE Band 2	
QPSK, 10MHz Bandwidth, 1 RB, 49 RB Offsets		QPSK, 10MHz Bandwidth, 1 RB, 49 RB Offsets		QPSK, 10MHz Bandwidth, 1 RB, 25 RB Offsets		QPSK, 20 MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 20 MHz Bandwidth, 1 RB, 0 RB Offsets	
Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Left Cheek	Test Position	Left Cheek
Frequency (MHz)	707.5	Frequency (MHz)	782	Frequency (MHz)	836.5	Frequency (MHz)	1745	Frequency (MHz)	1900
Channel	23095	Channel	23230	Channel	20525	Channel	132322	Channel	19100
Measured 1g SAR (W/kg)	0.141	Measured 1g SAR (W/kg)	0.182	Measured 1g SAR (W/kg)	0.186	Measured 1g SAR (W/kg)	0.147	Measured 1g SAR (W/kg)	0.120
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)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 9)	0.153	Auto-tune (State 0)	0.208	Auto-tune (State 76)	0.21	Auto-tune (State 16)	0.152	Auto-tune (State 17)	0.14
Default (State 2)	0.122	Default (State 0)	0.205	Default (State 2)	0.211	Default (State 16)	0.145	Default (State 16)	0.144
State 0	0.097	State 0	0.205	State 3	0.210	State 1	0.113	State 3	0.102
State 7	0.141	State 1	0.203	State 4	0.208	State 4	0.101	State 5	0.098
State 9	0.153	State 2	0.208	State 6	0.203	State 5	0.097	State 10	0.072
State 12	0.091	State 8	0.204	State 10	0.175	State 6	0.091	State 14	0.032
State 22	0.024	State 16	0.072	State 13	0.11	State 15	0.025	State 17	0.145
State 30	0.002	State 17	0.071	State 19	0.094	State 16	0.145	State 19	0.126
State 34	0.101	State 21	0.093	State 23	0.093	State 19	0.137	State 23	0.113
State 36	0.098	State 24	0.093	State 24	0.092	State 20	0.137	State 25	0.104
State 40	0.086	State 33	0.178	State 30	0.026	State 21	0.138	State 28	0.069
State 50	0.041	State 40	0.130	State 33	0.178	State 25	0.125	State 34	0.023
State 54	0.042	State 49	0.010	State 37	0.161	State 26	0.121	State 35	0.022
State 62	0.003	State 50	0.123	State 38	0.154	State 31	0.059	State 38	0.018
State 68	0.095	State 55	0.127	State 41	0.131	State 37	0.02	State 45	0.006
State 70	0.117	State 60	0.069	State 44	0.076	State 39	0.016	State 46	0.004
State 79	0.028	State 67	0.1	State 51	0.131	State 43	0.009	State 51	0.119
				State 54	0.13	State 46	0.004	State 56	0.136
				State 58	0.114	State 48	0.051	State 60	0.066
				State 60	0.076	State 53	0.037	State 62	0.048
				State 64	0.209	State 56	0.034	State 64	0.096
				State 66	0.18	State 59	0.021	State 65	0.118
				State 69	0.087	State 65	0.132	State 66	0.018
				State 72	0.211	State 66	0.019	State 69	0.140
				State 76	0.213	State 71	0.049	State 74	0.019
				State 79	0.119	State 77	0.146	State 79	0.140

Table 14-3
UMTS Supplemental Body SAR Data

Supplemental Body SAR Data					
UMTS Band 5		UMTS Band 4		UMTS Band 2	
RMC		RMC		RMC	
Test Position	Back	Test Position	Bottom	Test Position	Bottom
Spacing	10 mm	Spacing	10 mm	Spacing	10 mm
Frequency (MHz)	846.6	Frequency (MHz)	1752.6	Frequency (MHz)	1907.6
Channel	4233	Channel	1513	Channel	9538
Measured 1g SAR (W/kg)	0.708	Measured 1g SAR (W/kg)	0.690	Measured 1g SAR (W/kg)	0.993
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)	1.128	Auto-tune (State 16)	1.063	Auto-tune (State 17)	1.087
Default (State 2)	1.106	Default (State 16)	1.073	Default (State 16)	1.075
State 2	1.106	State 3	0.76	State 3	0.747
State 4	1.065	State 7	0.693	State 5	0.723
State 7	1.049	State 9	0.643	State 10	0.524
State 11	0.772	State 12	0.460	State 15	0.180
State 14	0.396	State 16	1.073	State 16	1.075
State 16	0.506	State 17	1.068	State 17	1.076
State 17	0.502	State 18	1.066	State 18	0.967
State 19	0.545	State 23	1.036	State 21	0.927
State 24	0.513	State 27	0.955	State 25	0.792
State 27	0.341	State 29	0.836	State 36	0.161
State 31	0.096	State 35	0.148	State 37	0.160
State 33	1.028	State 38	0.13	State 39	0.135
State 34	0.966	State 41	0.116	State 41	0.127
State 42	0.671	State 43	0.088	State 42	0.114
State 45	0.374	State 45	0.057	State 49	0.327
State 47	0.205	State 51	0.277	State 51	0.278
State 48	0.669	State 52	0.272	State 53	0.268
State 52	0.716	State 57	0.221	State 57	0.212
State 55	0.690	State 63	0.068	State 58	0.190
State 59	0.485	State 67	0.268	State 60	0.12
State 62	0.221	State 69	1.065	State 64	0.707
State 70	1.033	State 73	1.037	State 67	0.241
State 73	0.500	State 75	0.300	State 76	0.894
State 76	1.08	State 78	0.178	State 77	1.072

Table 14-4
LTE Supplemental Body SAR Data

Supplemental Body SAR Data									
LTE Band 12		LTE Band 13		LTE Band 5		LTE Band 66		LTE Band 2	
QPSK, 10 MHz Bandwidth, 1 RB, 49 RB Offsets		QPSK, 10 MHz Bandwidth, 1 RB, 49 RB Offsets		QPSK, 10 MHz Bandwidth, 1 RB, 25 RB Offsets		QPSK, 20MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 20 MHz Bandwidth, 100 RB, 0 RB Offsets	
Test Position	Back	Test Position	Back	Test Position	Back	Test Position	Back	Test Position	Bottom
Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	Spacing	15 mm	Spacing	10 mm
Frequency (MHz)	707.5	Frequency (MHz)	782	Frequency (MHz)	836.5	Frequency (MHz)	1720	Frequency (MHz)	1900
Channel	23095	Channel	23230	Channel	20525	Channel	132072	Channel	19100
Measured 1g SAR (W/kg)	0.408	Measured 1g SAR (W/kg)	0.620	Measured 1g SAR (W/kg)	0.744	Measured 1g SAR (W/kg)	0.704	Measured 1g SAR (W/kg)	0.866
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)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 8)	0.625	Auto-tune (State 2)	1.01	Auto-tune (State 2)	1.193	Auto-tune (State 16)	0.873	Auto-tune (State 17)	1.175
Default (State 2)	0.533	Default (State 0)	0.942	Default (State 2)	1.195	Default (State 16)	0.878	Default (State 16)	1.159
State 1	0.421	State 0	0.942	State 2	1.195	State 4	0.551	State 6	0.726
State 2	0.533	State 2	1.000	State 4	1.195	State 8	0.492	State 11	0.485
State 7	0.599	State 6	0.979	State 8	1.166	State 14	0.192	State 13	0.329
State 8	0.610	State 11	0.758	State 9	1.114	State 16	0.878	State 17	1.171
State 9	0.641	State 13	0.523	State 12	0.771	State 17	0.881	State 19	1.023
State 21	0.146	State 21	0.422	State 14	0.506	State 20	0.827	State 26	0.795
State 23	0.110	State 26	0.335	State 18	0.488	State 22	0.799	State 30	0.437
State 41	0.348	State 31	0.063	State 20	0.489	State 28	0.594	State 32	0.218
State 47	0.108	State 34	0.803	State 26	0.385	State 31	0.384	State 35	0.178
State 50	0.192	State 44	0.336	State 29	0.185	State 33	0.147	State 37	0.172
State 55	0.174	State 51	0.552	State 33	1.045	State 37	0.122	State 39	0.145
State 59	0.06	State 61	0.235	State 34	0.964	State 38	0.112	State 44	0.074
State 61	0.028	State 71	0.465	State 36	0.933	State 46	0.027	State 46	0.044
State 66	0.53	State 72	0.947	State 47	0.179	State 50	0.25	State 48	0.371
State 73	0.1	State 78	0.87	State 48	0.616	State 56	0.209	State 54	0.263
				State 50	0.690	State 63	0.042	State 55	0.249
				State 54	0.692	State 65	0.808	State 58	0.205
				State 56	0.683	State 68	0.686	State 61	0.105
				State 57	0.647	State 70	0.152	State 63	0.056
				State 59	0.504	State 71	0.289	State 65	0.968
				State 67	0.602	State 74	0.133	State 72	0.925
				State 74	1.046	State 76	0.687	State 74	0.161
				State 75	0.604	State 77	0.877	State 75	0.298
				State 78	1.055	State 79	0.29	State 77	1.155

14.2 LTE Band 41 Power Class 2 and Power Class 3 Linearity

This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per May 2017 TCB Workshop Notes based on the device behavior, all SAR tests were performed using Power Class 3. SAR with Power Class 2 at the highest power and available duty factor was additionally performed for the Power Class 3 configuration with the highest SAR for each exposure condition. The linearity between the Power Class 2 and Power Class 3 SAR results and the respective frame averaged powers was calculated to determine that the results were linear. Per May 2017 TCB Workshop, no additional SAR measurements were required since the linearity between power classes as < 10% and all reported SAR values were < 1.4 W/kg for 1g and < 3.5 W/kg for 10g.

LTE Band 41 SAR testing with power class 2 at the highest power and available duty factor was additionally performed for the power class 3 configuration with the highest SAR for each exposure condition.

Table 14-5
LTE Band 41 Head Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25	28
Measured Output Power (dBm)	24.04	27.03
Measured SAR (W/kg)	0.069	0.086
Measured Power (mW)	253.51	504.66
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	160.47	218.52
% deviation from expected linearity		-8.20%

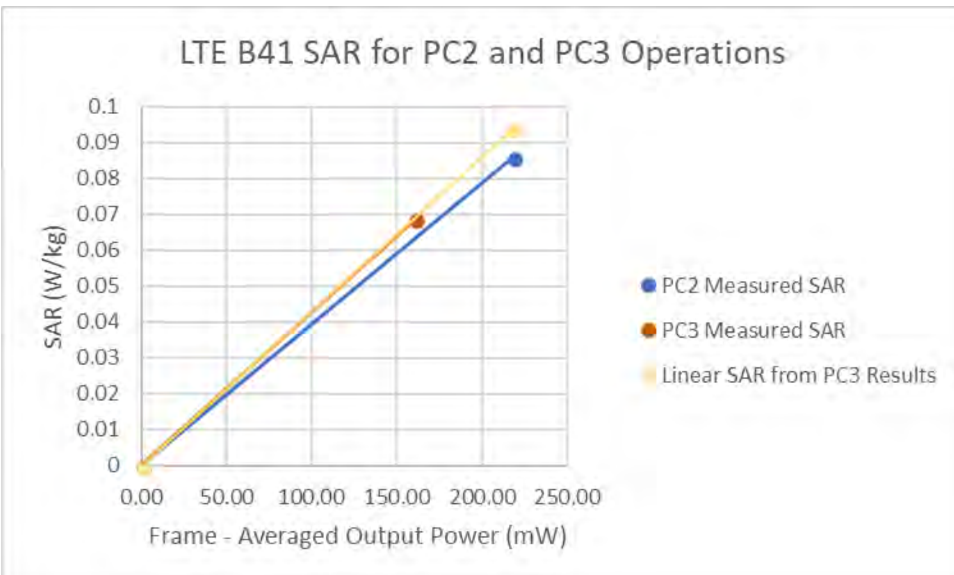


Figure 14-1
LTE Band 41 Head Linearity

Table 14-6
LTE Band 41 Body-Worn Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25	28
Measured Output Power (dBm)	24.04	27.03
Measured SAR (W/kg)	0.355	0.451
Measured Power (mW)	253.51	504.66
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	160.47	218.52
% deviation from expected linearity		-6.70%

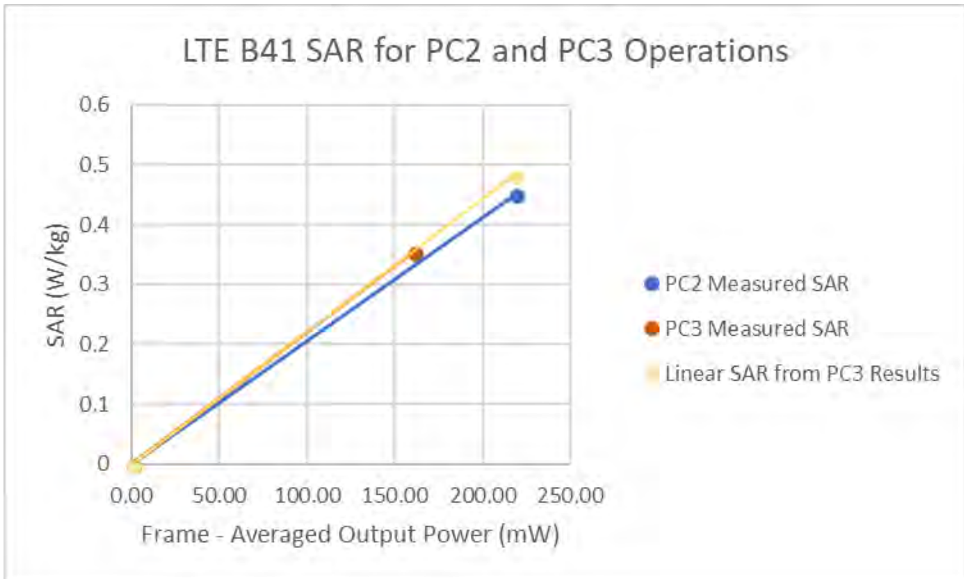


Figure 14-2
LTE Band 41 Body-Worn Linearity

Table 14-7
LTE Band 41 Hotspot Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	21	21
Measured Output Power (dBm)	20.02	20.11
Measured SAR (W/kg)	0.428	0.285
Measured Power (mW)	100.46	102.57
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	63.59	44.41
% deviation from expected linearity		-4.65%

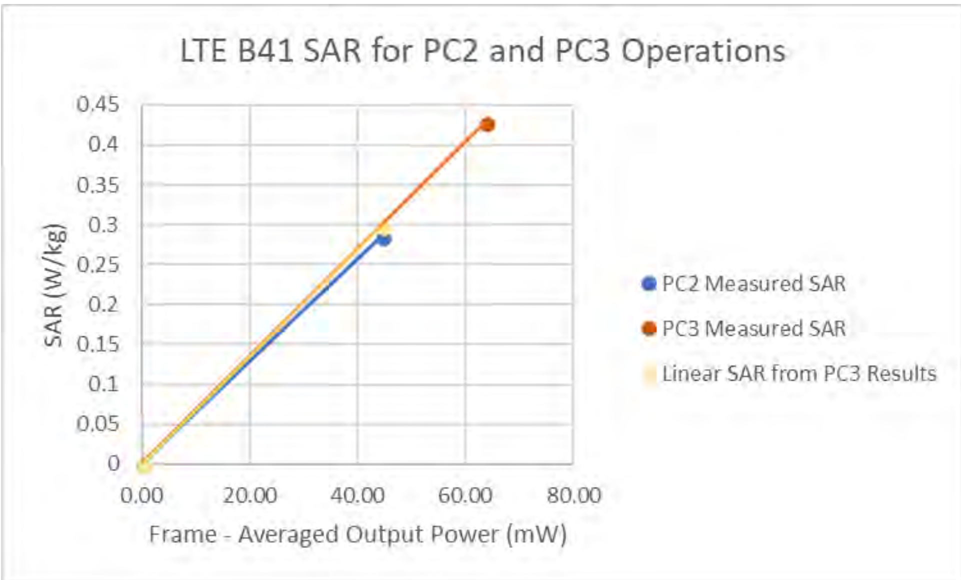


Figure 14-3
LTE Band 41 Hotspot Linearity

Table 14-8
LTE Band 41 Phablet Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	23.5	23.5
Measured Output Power (dBm)	22.69	22.61
Measured SAR (W/kg)	1.89	1.25
Measured Power (mW)	185.78	182.39
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	117.60	78.97
% deviation from expected linearity		-1.52%

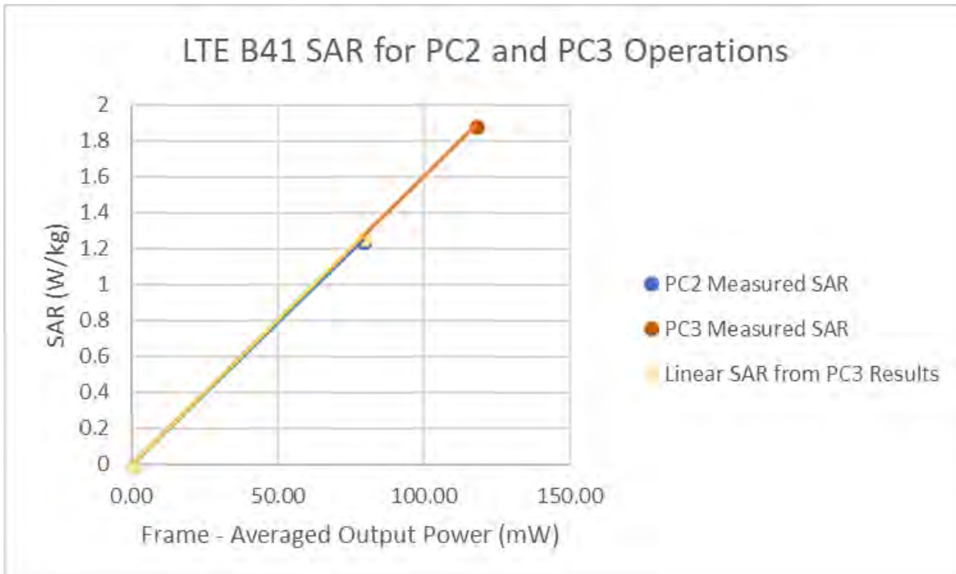


Figure 14-4
LTE Band 41 Phablet Linearity

15 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	8753ES	S-Parameter Vector Network Analyzer	8/17/2017	Annual	8/17/2018	MY40003841
Agilent	8753ES	S-Parameter Network Analyzer	9/14/2017	Annual	9/14/2018	US39170118
Agilent	E4438C	ESG Vector Signal Generator	3/21/2017	Biennial	3/21/2019	MY45090700
Agilent	E5515C	Wireless Communications Test Set	1/29/2016	Triennial	1/29/2019	GB46310798
Agilent	E5515C	8960 Series 10 Wireless Communications Test Set	11/15/2017	Annual	11/15/2018	GB42230325
Agilent	E5515C	Wireless Communications Test Set	1/24/2018	Annual	1/24/2019	GB44400860
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Agilent	N5182A	MXG Vector Signal Generator	1/24/2018	Annual	1/24/2019	MY47420651
Agilent	N9020A	MXA Signal Analyzer	1/24/2018	Annual	1/24/2019	US46470561
Amplifier Research	150A100C	DC Amplifier	CBT	N/A	CBT	348812
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Anritsu	MA24106A	USB Power Sensor	3/12/2018	Annual	3/12/2019	1344555
Anritsu	MA24106A	USB Power Sensor	4/18/2018	Annual	4/18/2019	1344556
Anritsu	MA2411B	Pulse Power Sensor	3/2/2018	Annual	3/2/2019	1207364
Anritsu	MA2411B	Pulse Power Sensor	3/2/2018	Annual	3/2/2019	1339018
Anritsu	ML2495A	Power Meter	10/22/2017	Annual	10/22/2018	941001
Anritsu	MT8820C	Radio Communication Analyzer	1/5/2018	Annual	1/5/2019	6201144418
Anritsu	MT8821C	Radio Communication Analyzer	7/25/2017	Annual	7/25/2018	6201664756
Anritsu	MT8821C	Radio Communication Analyzer	11/17/2017	Annual	11/17/2018	6201381794
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	Therm./ Clock/ Humidity Monitor	1/8/2018	Annual	1/8/2019	160473909
Control Company	4352	Ultra Long Stem Thermometer	1/8/2018	Annual	1/8/2019	160508097
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
Mini Circuits	PWR-4GHS	USB Power Sensor	1/20/2018	Annual	1/20/2019	11710030063
Mini Circuits	PWR-4GHS	USB Power Sensor	1/22/2018	Annual	1/22/2019	11710030062
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
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE5011-1	Torque Wrench	7/19/2017	Biennial	7/19/2019	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	5/18/2018	Annual	5/18/2019	109892
Rohde & Schwarz	CMW500	Radio Communication Tester	11/3/2017	Annual	11/3/2018	100976
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	7/20/2017	Annual	7/20/2018	132885
Seekonk	NC-100	Torque Wrench (8" lb)	8/30/2016	Biennial	8/30/2018	N/A
Seekonk	NC-100	Torque Wrench	12/28/2017	Annual	12/28/2018	N/A
Seekonk	NC-100	Torque Wrench 5/16", 8" lbs	1/22/2018	Annual	1/22/2019	N/A
SPEAG	DAK-3.5	Dielectric Assessment Kit	9/12/2017	Annual	9/12/2018	1091
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2018	Annual	2/9/2019	1272
SPEAG	D750V3	750 MHz SAR Dipole	7/13/2016	Biennial	7/13/2018	1161
SPEAG	D835V2	835 MHz SAR Dipole	4/10/2018	Annual	4/10/2019	4d119
SPEAG	D1750V2	1750 MHz SAR Dipole	7/14/2016	Biennial	7/14/2018	1150
SPEAG	D1900V2	1900 MHz SAR Dipole	2/7/2018	Annual	2/7/2019	5d148
SPEAG	D2450V2	2450 MHz SAR Dipole	2/7/2018	Annual	2/7/2019	882
SPEAG	D2600V2	2600 MHz SAR Dipole	4/11/2018	Annual	4/11/2019	1004
SPEAG	D5GHzV2	5 GHz SAR Dipole	9/21/2016	Biennial	9/21/2018	1191
SPEAG	D750V3	750 MHz SAR Dipole	1/15/2018	Annual	1/15/2019	1003
SPEAG	D835V2	835 MHz SAR Dipole	1/15/2018	Annual	1/15/2019	4d132
SPEAG	D1900V2	1900 MHz SAR Dipole	4/12/2018	Annual	4/12/2019	5d141
SPEAG	D2450V2	2450 MHz SAR Dipole	7/25/2016	Biennial	7/25/2018	981
SPEAG	D5GHzV2	5 GHz SAR Dipole	8/15/2017	Annual	8/15/2018	1237
SPEAG	ES3DV3	SAR Probe	2/13/2018	Annual	2/13/2019	3213
SPEAG	ES3DV3	SAR Probe	8/14/2017	Annual	8/14/2018	3332
SPEAG	EX3DV4	SAR Probe	1/16/2018	Annual	1/16/2019	3589
SPEAG	EX3DV4	SAR Probe	2/14/2018	Annual	2/14/2019	3914
SPEAG	EX3DV4	SAR Probe	5/22/2018	Annual	5/22/2019	7406
SPEAG	EX3DV4	SAR Probe	7/17/2017	Annual	7/17/2018	7410
SPEAG	ES3DV3	SAR Probe	3/13/2018	Annual	3/13/2019	3319
SPEAG	EX3DV4	SAR Probe	4/18/2018	Annual	4/18/2019	7357
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2018	Annual	2/9/2019	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/9/2017	Annual	8/9/2018	1323
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/13/2017	Annual	7/13/2018	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/15/2018	Annual	2/15/2019	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/22/2018	Annual	5/22/2019	859
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/7/2018	Annual	3/7/2019	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/11/2018	Annual	4/11/2019	1407

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

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: A3LSMN9600; Type: Portable Handset; Serial: 52900

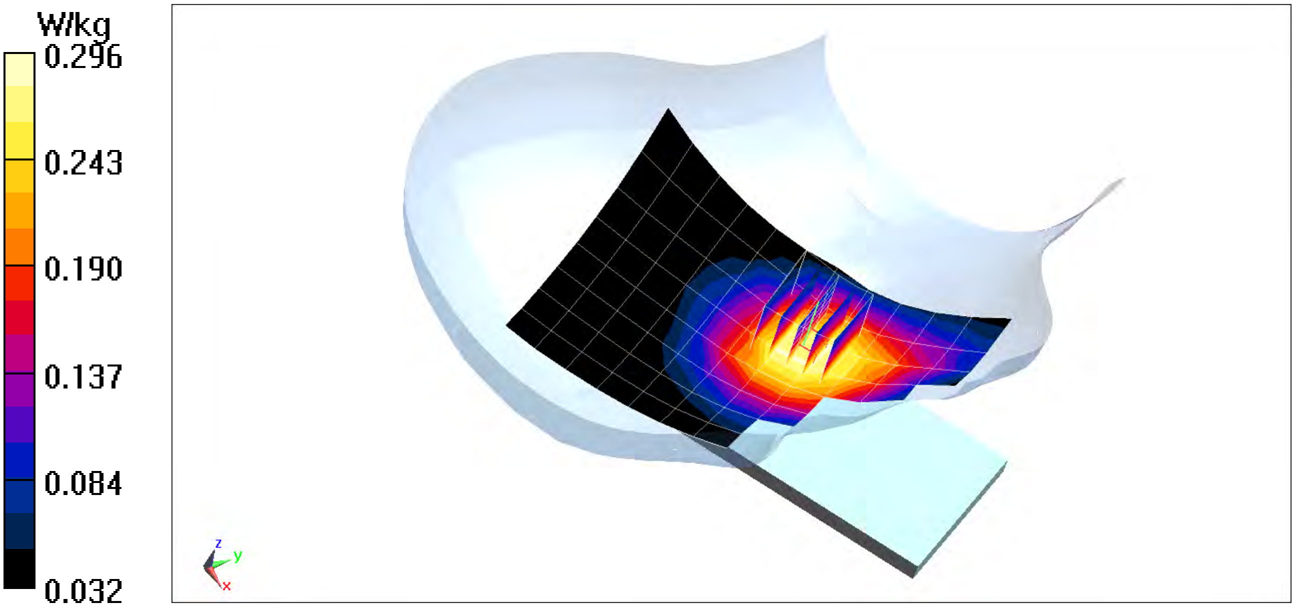
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.943 S/m; ε_r = 42.512; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-19-2018; Ambient Temp: 21.5°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Cell. CDMA, Right Head, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.59 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.343 W/kg
SAR(1 g) = 0.270 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52814

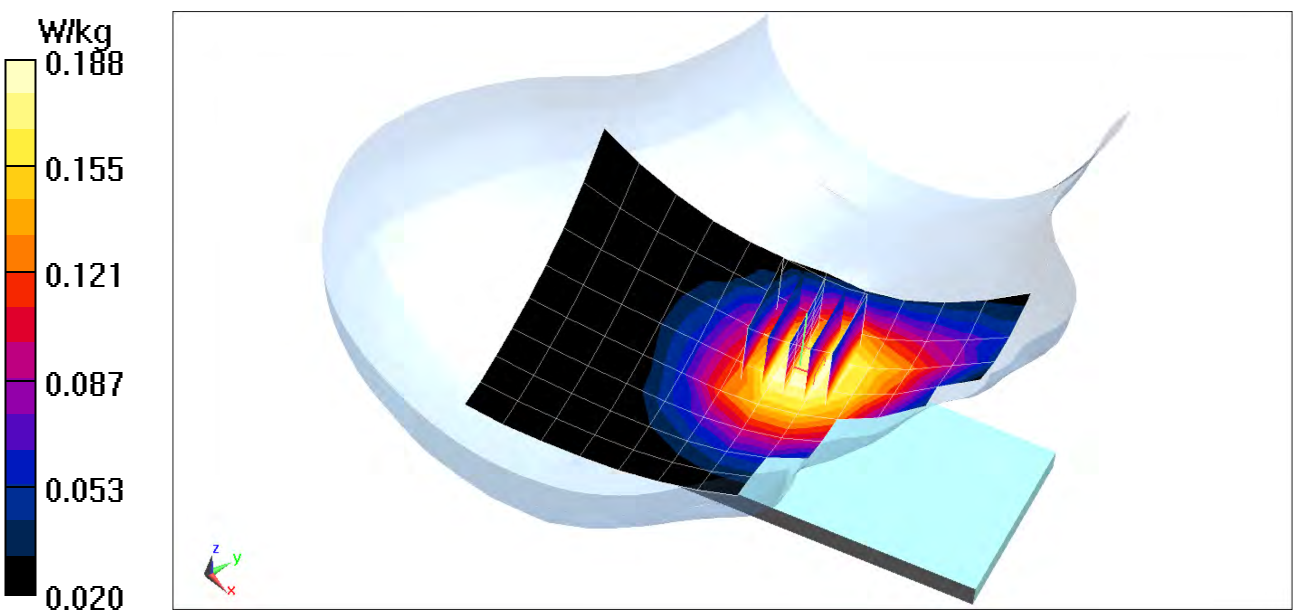
Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.943 S/m; ε_r = 42.512; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-19-2018; Ambient Temp: 21.5°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.07 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.222 W/kg
SAR(1 g) = 0.172 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52869

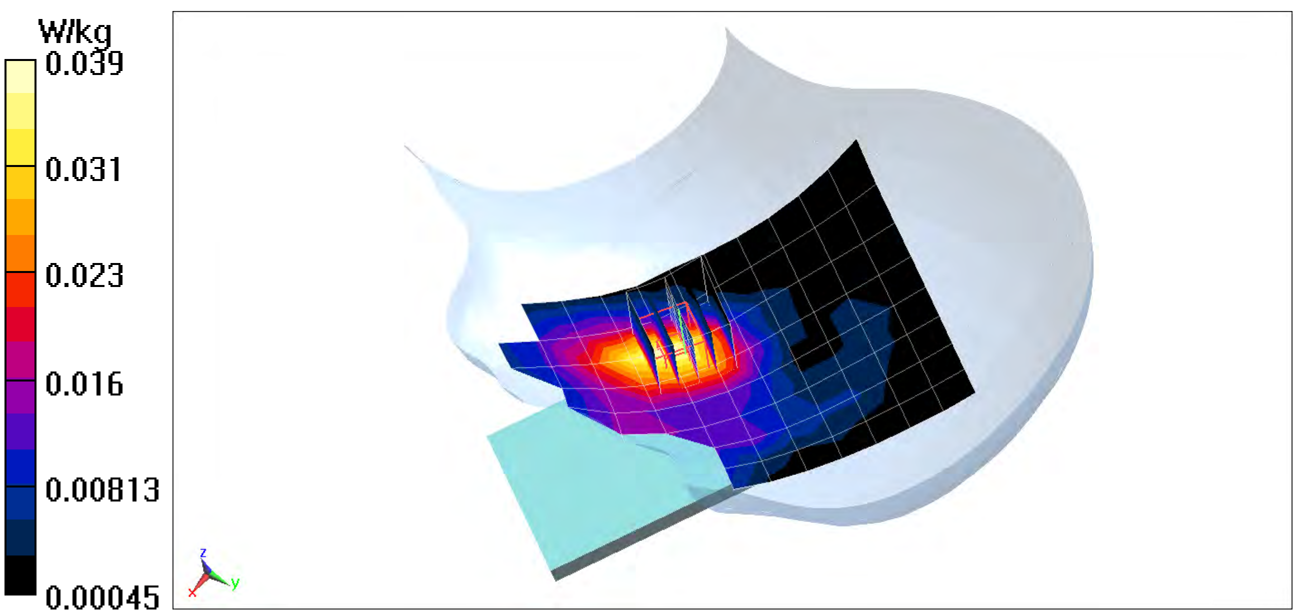
Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.44 S/m; ε_r = 41.774; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 06-25-2018; Ambient Temp: 23.5°C; Tissue Temp: 21.8°C

Probe: ES3DV3 - SN3213; ConvF(5.3, 5.3, 5.3); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.050 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.0530 W/kg
SAR(1 g) = 0.033 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52814

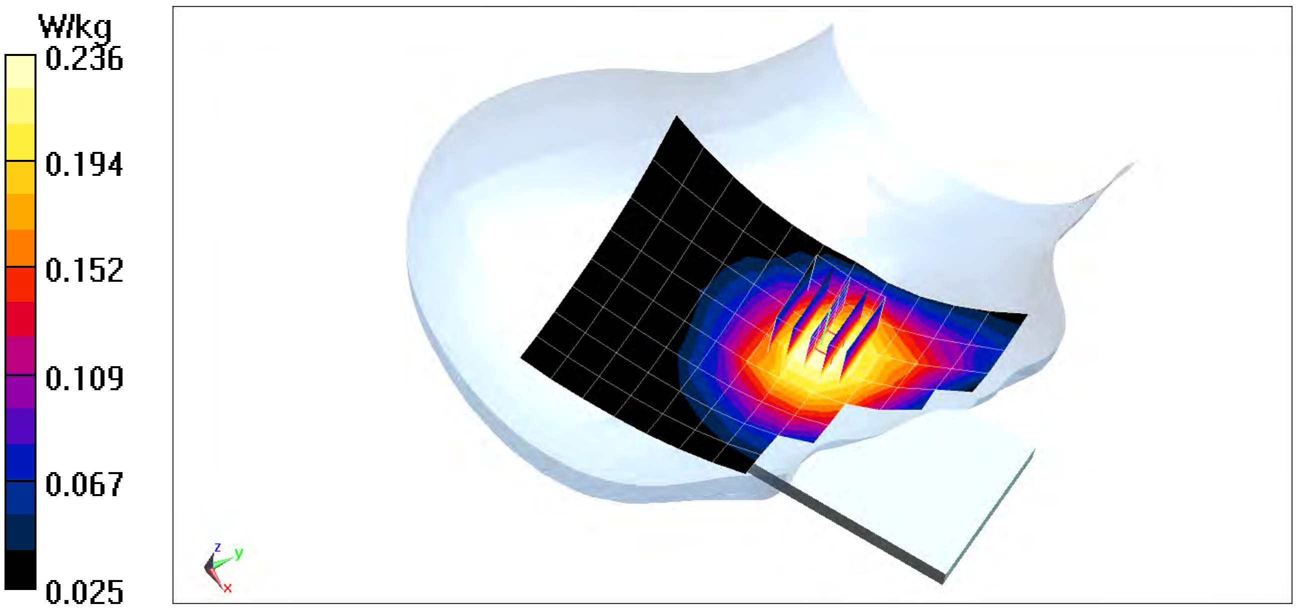
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.943 S/m; ε_r = 42.512; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-19-2018; Ambient Temp: 21.5°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.66 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.279 W/kg
SAR(1 g) = 0.216 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52824

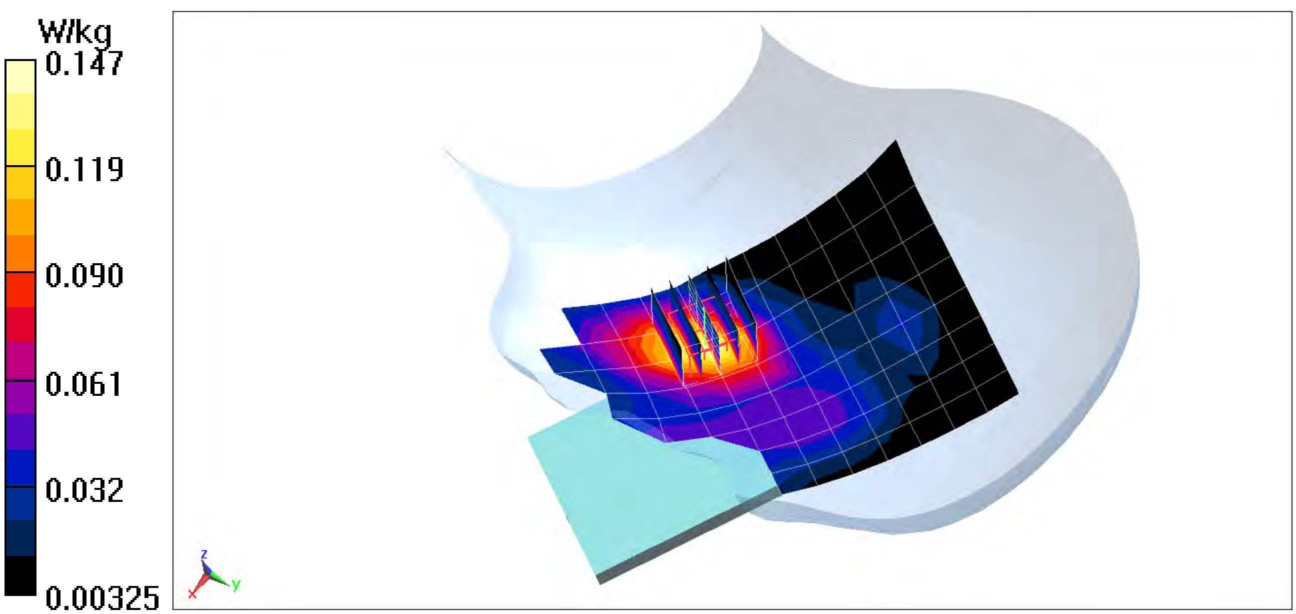
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.353 S/m; ε_r = 39.064; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 06-21-2018; Ambient Temp: 22.4°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3332; ConvF(5.56, 5.56, 5.56); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1750, Left Head, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.14 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.189 W/kg
SAR(1 g) = 0.127 W/kg



DUT: A3LSMN9600; Type: Portable Handset; Serial: 52869

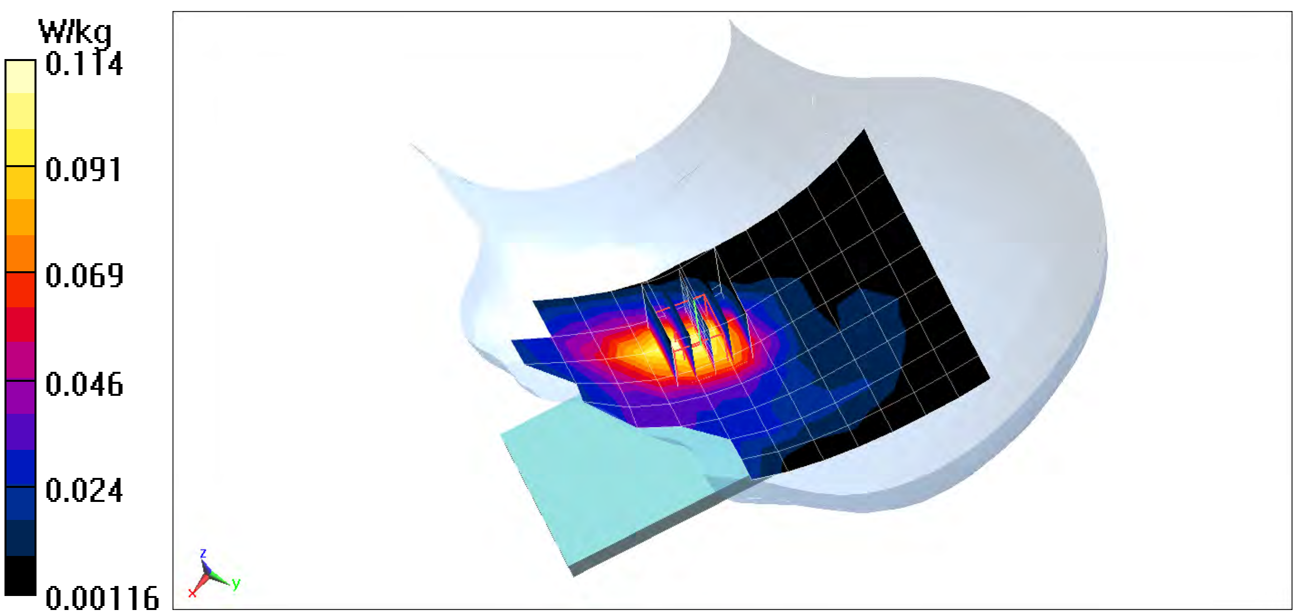
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.44 S/m; ε_r = 41.774; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 06-25-2018; Ambient Temp: 23.5°C; Tissue Temp: 21.8°C

Probe: ES3DV3 - SN3213; ConvF(5.3, 5.3, 5.3); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.706 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.153 W/kg
SAR(1 g) = 0.099 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52904

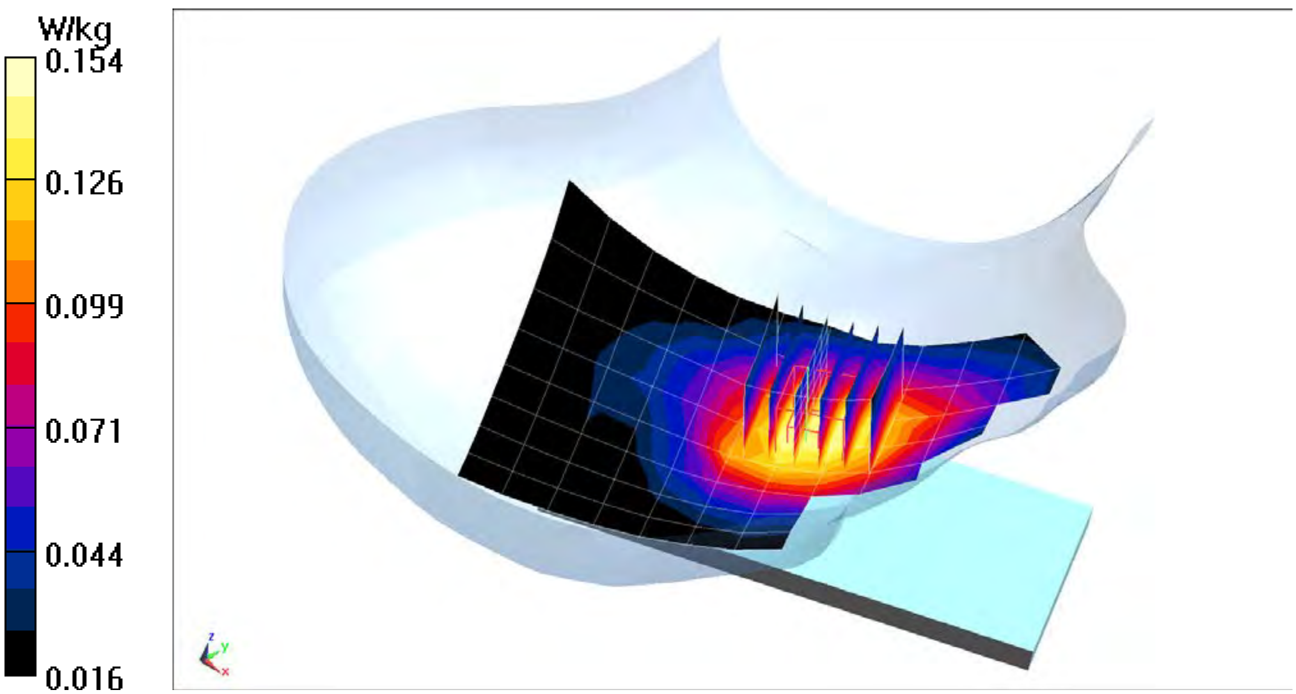
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.907 S/m; ε_r = 43.156; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-30-2018; Ambient Temp: 24.5°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3213; ConvF(6.75, 6.75, 6.75); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 12, Right Head, Cheek, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.32 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.177 W/kg
SAR(1 g) = 0.141 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52904

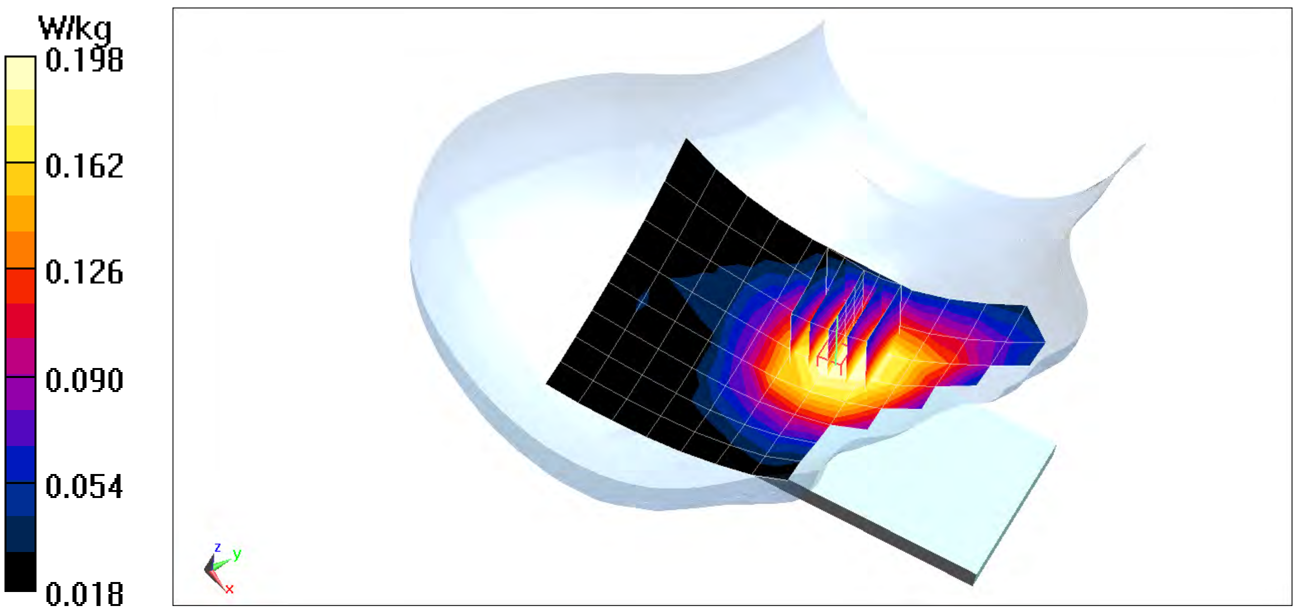
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 782 MHz; σ = 0.939 S/m; ε_r = 43.624; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-25-2018; Ambient Temp: 23.5°C; Tissue Temp: 21.8°C

Probe: ES3DV3 - SN3213; ConvF(6.75, 6.75, 6.75); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.13 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.225 W/kg
SAR(1 g) = 0.182 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52900

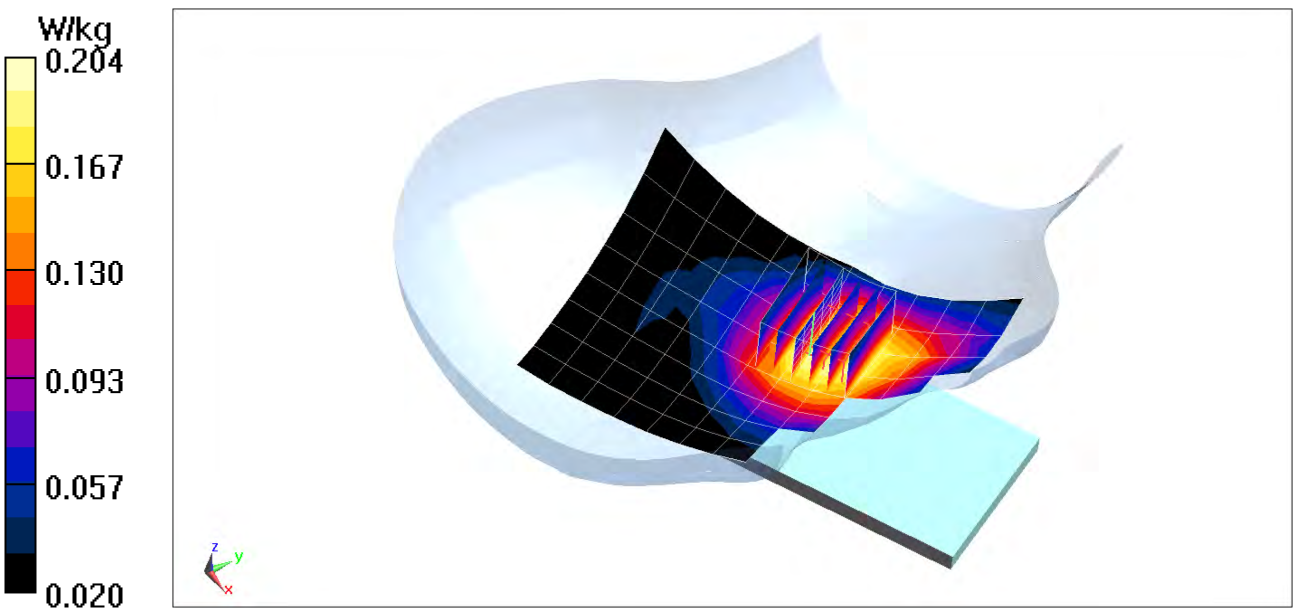
Communication System: UID 0, LTE Band 5 (Cell.); Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.5 MHz; σ = 0.943 S/m; ε_r = 42.512; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-19-2018; Ambient Temp: 21.5°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 5 (Cell.), Right Head, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.24 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.234 W/kg
SAR(1 g) = 0.186 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52900

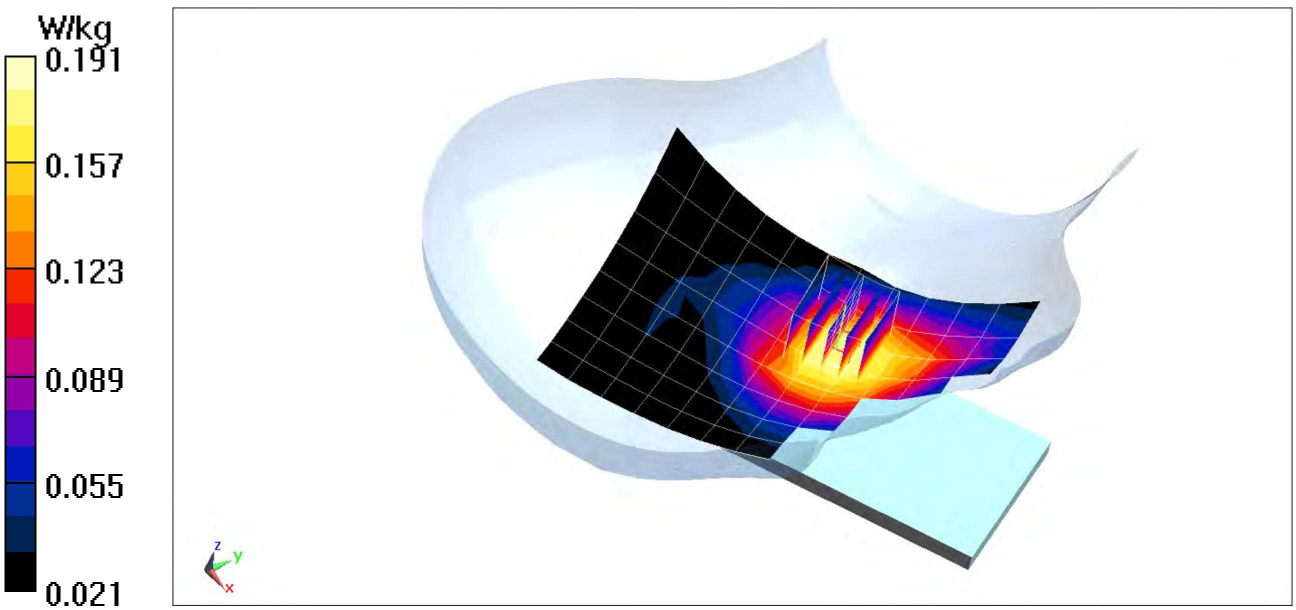
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 831.5 MHz; $\sigma = 0.941$ S/m; $\varepsilon_r = 42.527$; $\rho = 1000$ kg/m^3
Phantom section: Right Section

Test Date: 06-19-2018; Ambient Temp: 21.5°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 26 (Cell.), Right Head, Cheek, Mid.ch,
15 MHz Bandwidth, QPSK, 1 RB, 36 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.75 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.225 W/kg
SAR(1 g) = 0.174 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52824

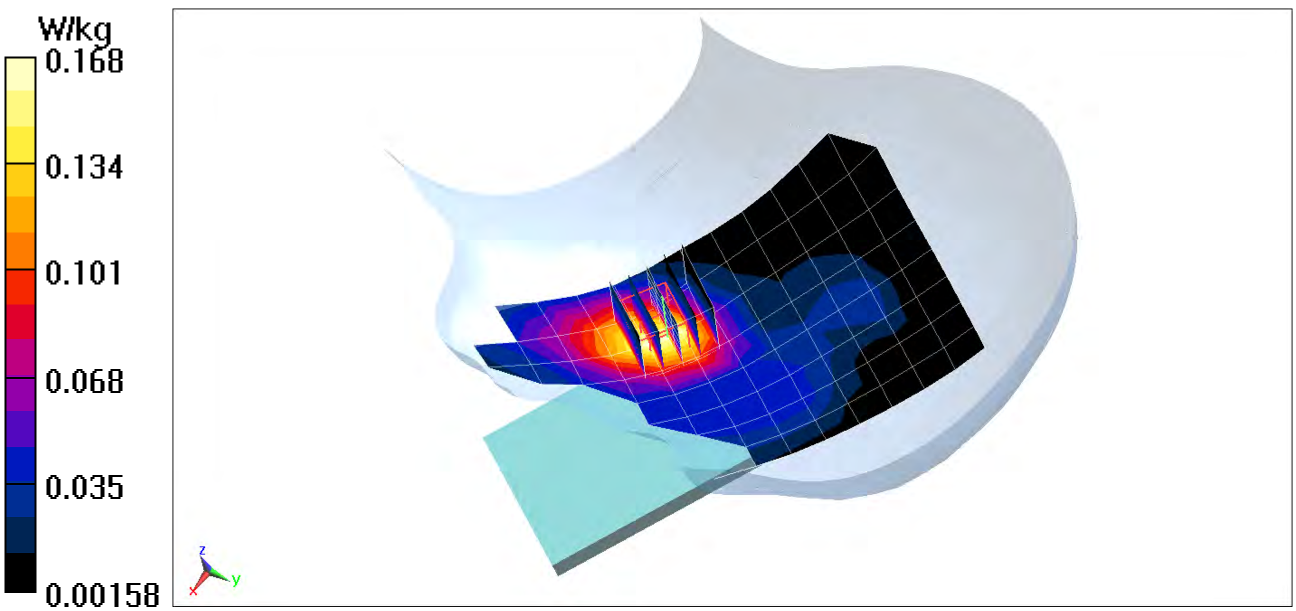
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
f = 1745 MHz; σ = 1.366 S/m; ε_r = 39.008; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 06-21-2018; Ambient Temp: 22.4°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3332; ConvF(5.56, 5.56, 5.56); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 66 (AWS), Left Head, Cheek, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.60 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.222 W/kg
SAR(1 g) = 0.147 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52869

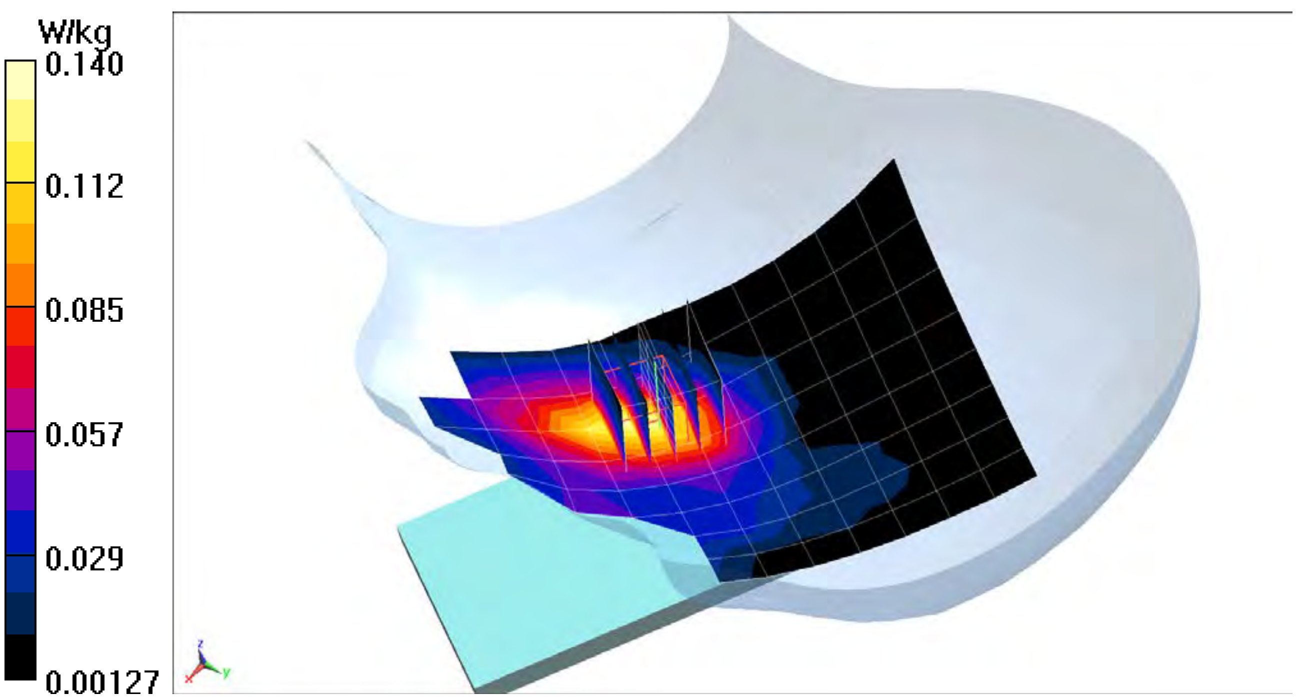
Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.453 S/m; ε_r = 41.415; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 06-27-2018; Ambient Temp: 23.9°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3213; ConvF(5.3, 5.3, 5.3); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.10 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.185 W/kg
SAR(1 g) = 0.120 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52869

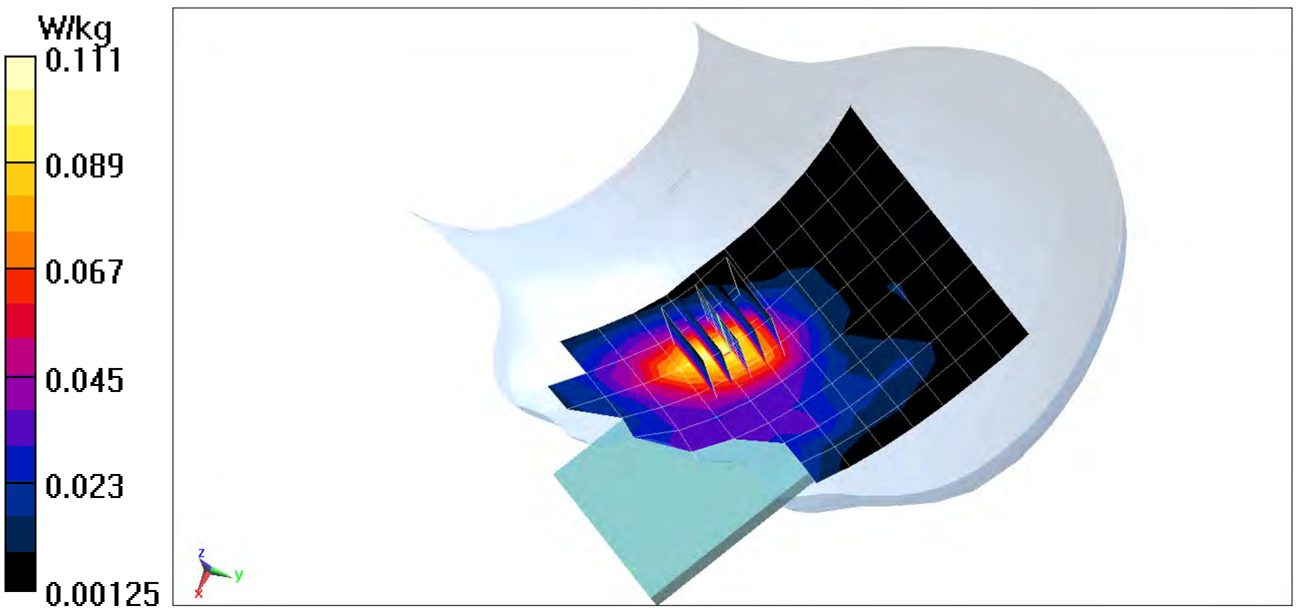
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1905 MHz; σ = 1.457 S/m; ε_r = 41.752; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 06-25-2018; Ambient Temp: 23.5°C; Tissue Temp: 21.8°C

Probe: ES3DV3 - SN3213; ConvF(5.3, 5.3, 5.3); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 25 (PCS), Left Head, Cheek, High.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 = 8.940 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.144 W/kg
SAR(1 g) = 0.096 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52900

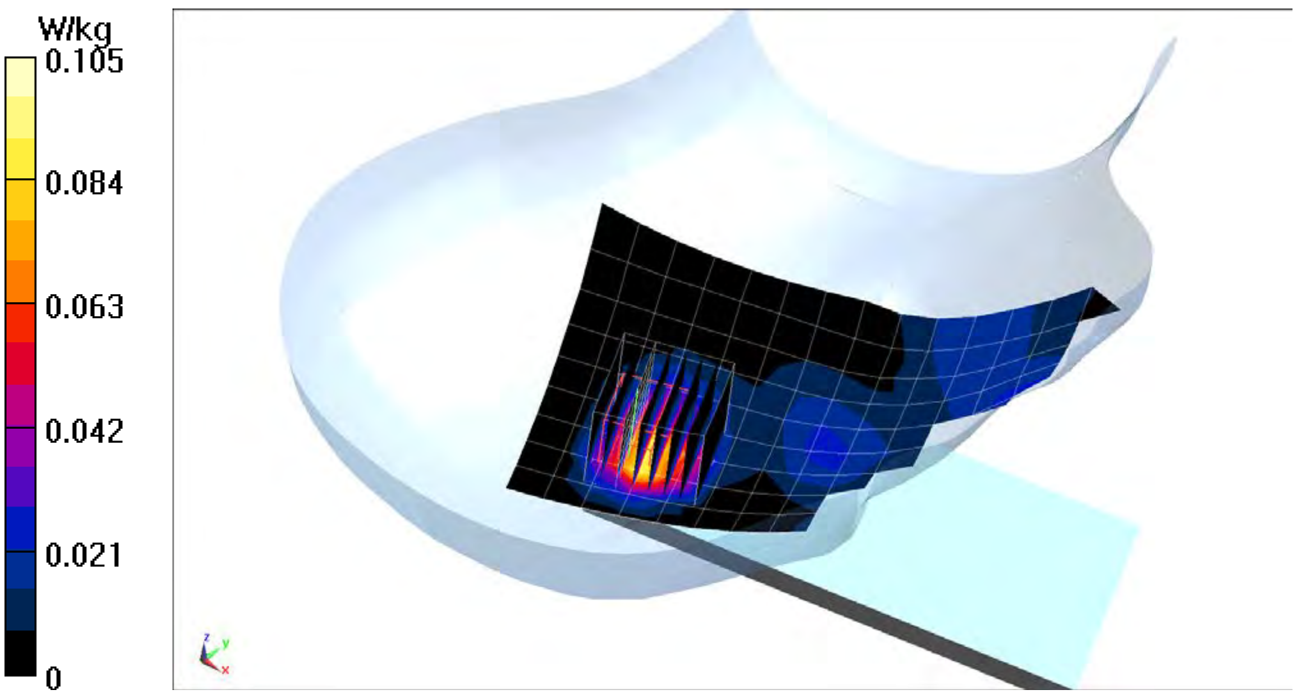
Communication System: UID 0, _LTE Band 41 (Class 2); Frequency: 2680 MHz; Duty Cycle: 1:2.31
Medium: 2450 Head Medium parameters used (interpolated):
f = 2680 MHz; σ = 2.128 S/m; ε_r = 38.607; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 07-02-2018; Ambient Temp: 22.9°C; Tissue Temp: 21.8°C

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

Mode: LTE Band 41 (PC2), Right Head, Tilt, High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (10x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.136 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.163 W/kg
SAR(1 g) = 0.086 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52900

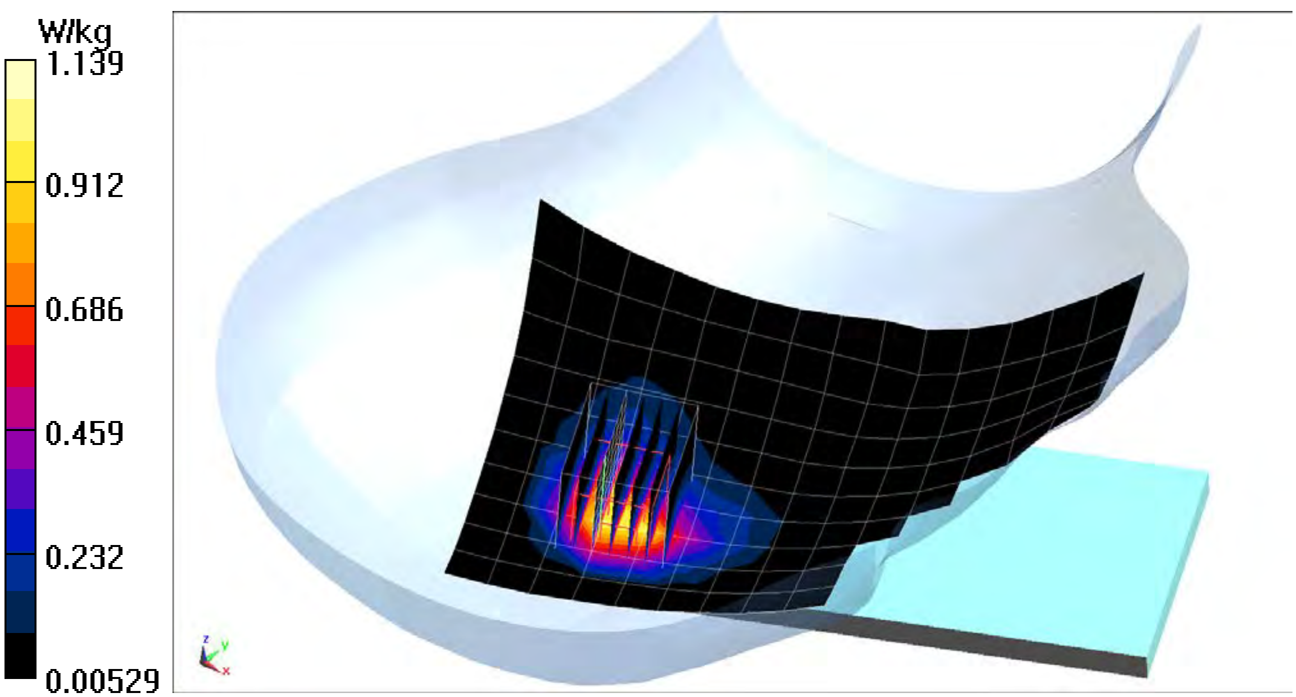
Communication System: UID 0, _IEEE 802.11n; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used (interpolated):
f = 2462 MHz; σ = 1.864 S/m; ε_r = 38.745; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 07-04-2018; Ambient Temp: 23.5°C; Tissue Temp: 23.3°C

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

Mode: IEEE 802.11n, MIMO, 20 MHz Bandwidth, Right Head, Cheek, Ch 11, 13 Mbps

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.48 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 1.97 W/kg
SAR(1 g) = 0.887 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52869

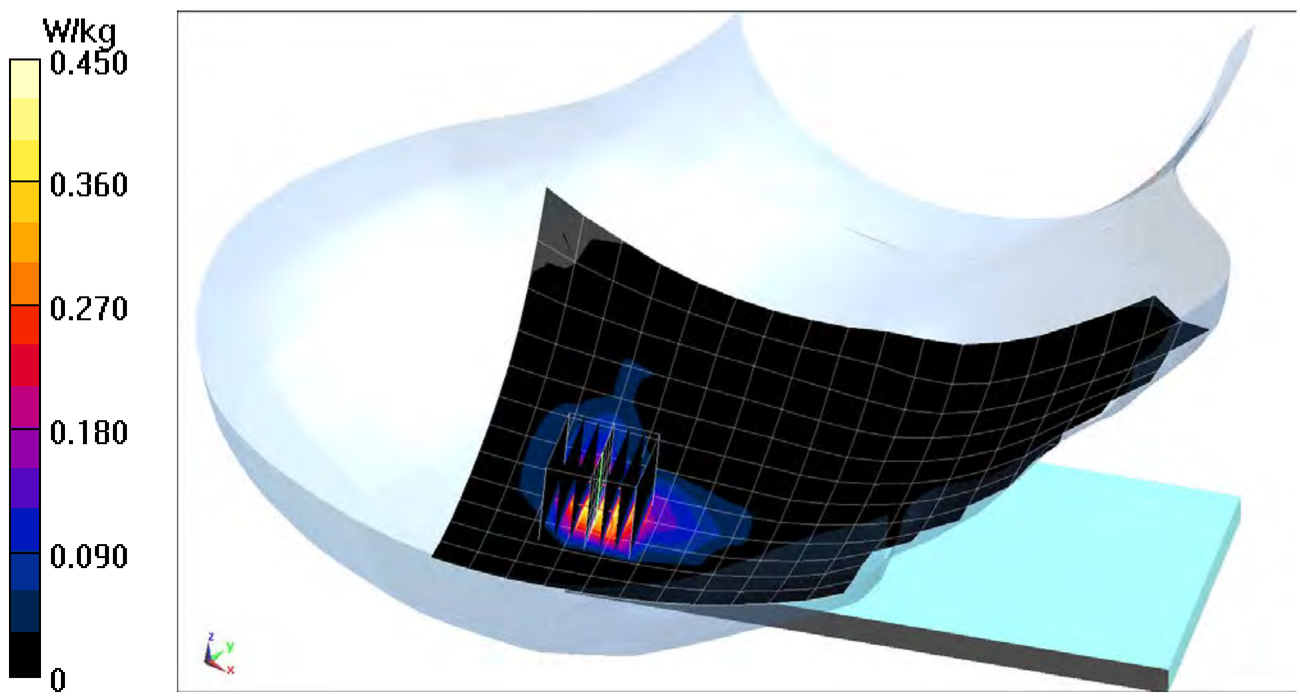
Communication System: UID 0, 802.11ac 5.2-5.8 GHz Band; Frequency: 5690 MHz; Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used (interpolated):
f = 5690 MHz; σ = 5.054 S/m; ε_r = 36.017; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-25-2018; Ambient Temp: 20.7°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN3589; ConvF(4.42, 4.42, 4.42); Calibrated: 1/16/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11ac, U-NII-2C, Antenna 2, 80 MHz Bandwidth, Right Head, Cheek, Ch 138, 29.3 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 = 2.594 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 1.80 W/kg
SAR(1 g) = 0.366 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52900

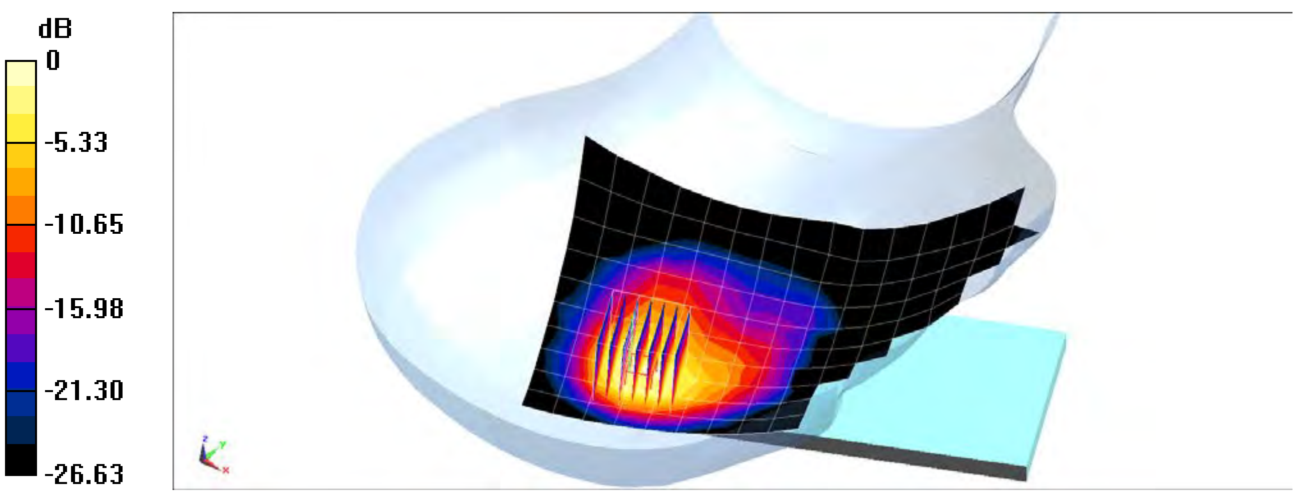
Communication System: UID 0, Bluetooth; Frequency: 2480 MHz; Duty Cycle: 1:1.294
Medium: 2450 Head Medium parameters used (interpolated):
f = 2480 MHz; σ = 1.892 S/m; ε_r = 38.375; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 07-09-2018; Ambient Temp: 22.0°C; Tissue Temp: 21.4°C

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

Mode: Bluetooth, Right Head, Cheek, Ch 78, 1 Mbps

Area Scan (11x19x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.41 V/m; Power Drift = 0.21 dB
Peak SAR (extrapolated) = 1.70 W/kg
SAR(1 g) = 0.690 W/kg



0 dB = 0.930 W/kg = -0.32 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52904

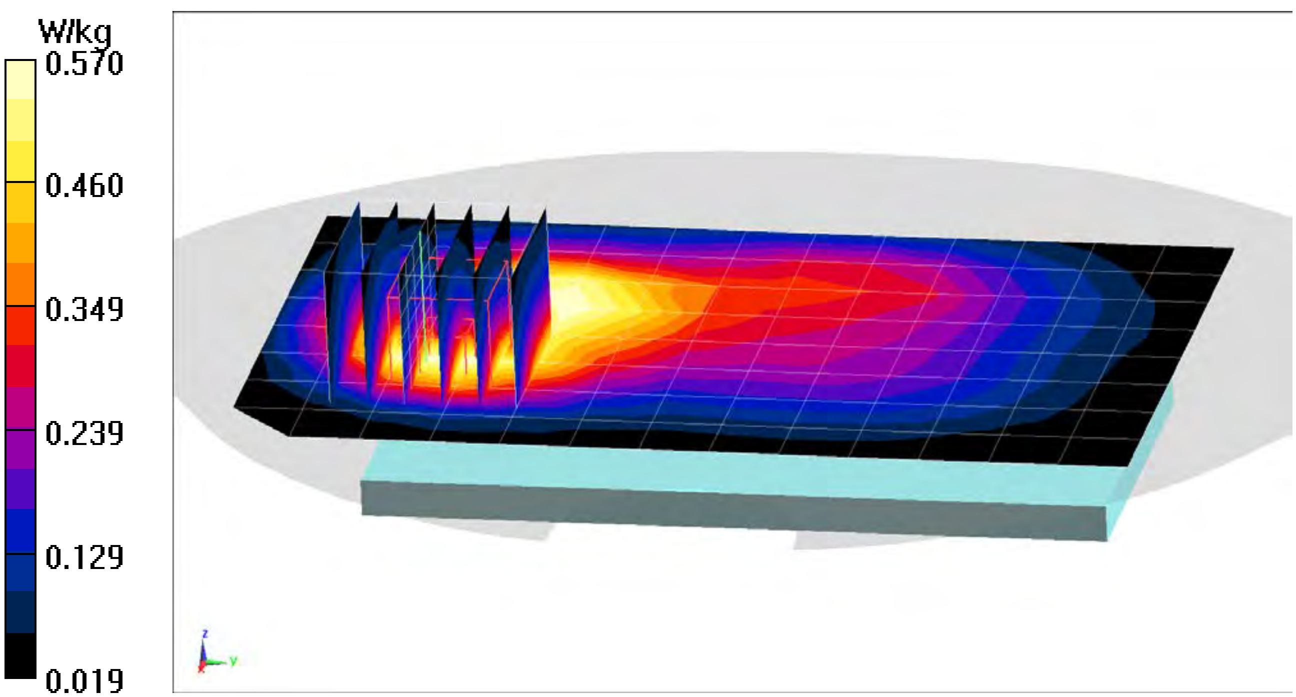
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.98 S/m; ε_r = 53.621; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-20-2018; Ambient Temp: 21.5°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN3914; ConvF(9.57, 9.57, 9.57); Calibrated: 2/14/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.10 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.657 W/kg
SAR(1 g) = 0.426 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52904

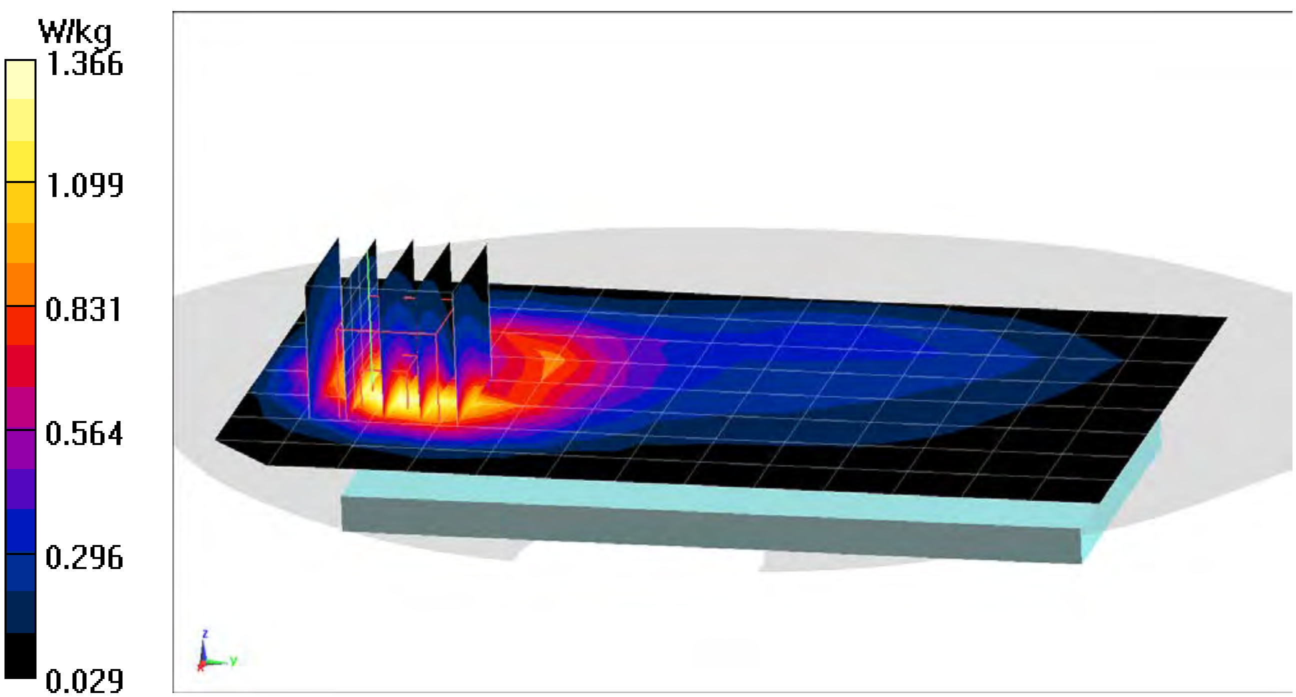
Communication System: UID 0, CDMA; Frequency: 848.31 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 848.31 MHz; σ = 0.984 S/m; ε_r = 53.6; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-20-2018; Ambient Temp: 21.5°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN3914; ConvF(9.57, 9.57, 9.57); Calibrated: 2/14/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Cell. EVDO, Body SAR, Back side, High.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 = 32.53 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 1.62 W/kg
SAR(1 g) = 0.997 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52904

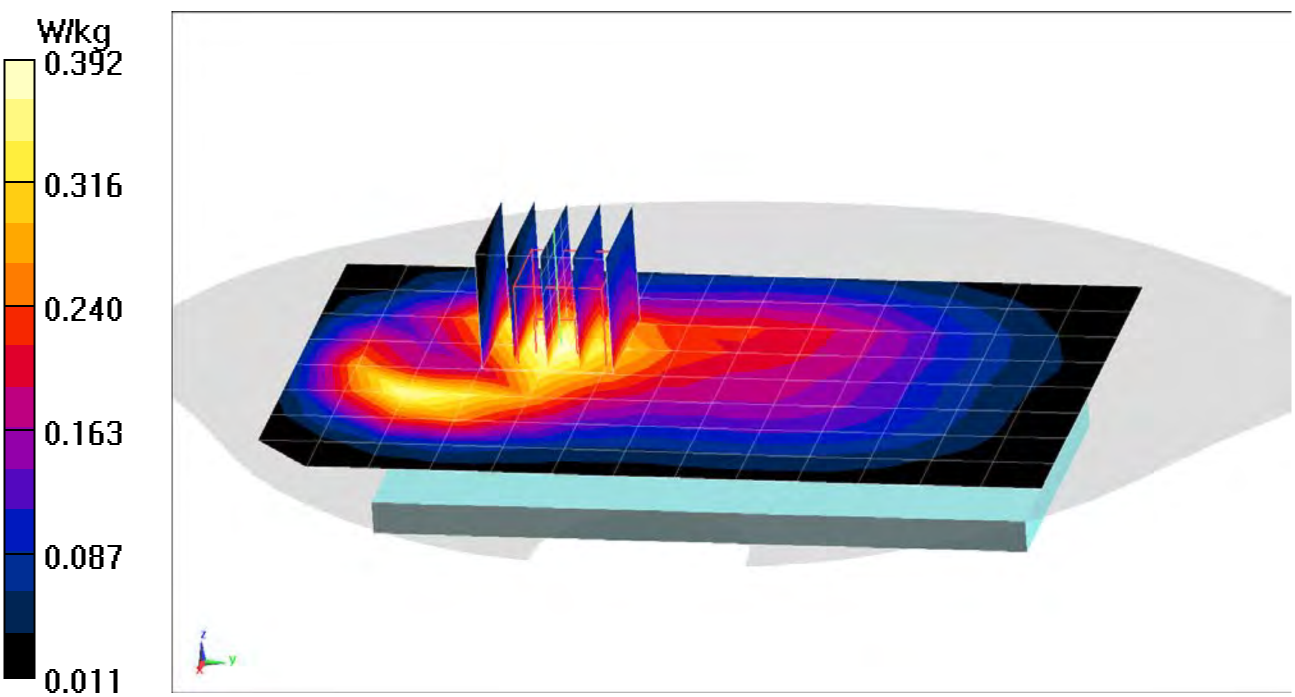
Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.985 S/m; ε_r = 54.305; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-18-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN3914; ConvF(9.57, 9.57, 9.57); Calibrated: 2/14/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: GSM 850, Body SAR, Back side, Mid.ch

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.58 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.432 W/kg
SAR(1 g) = 0.305 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52904

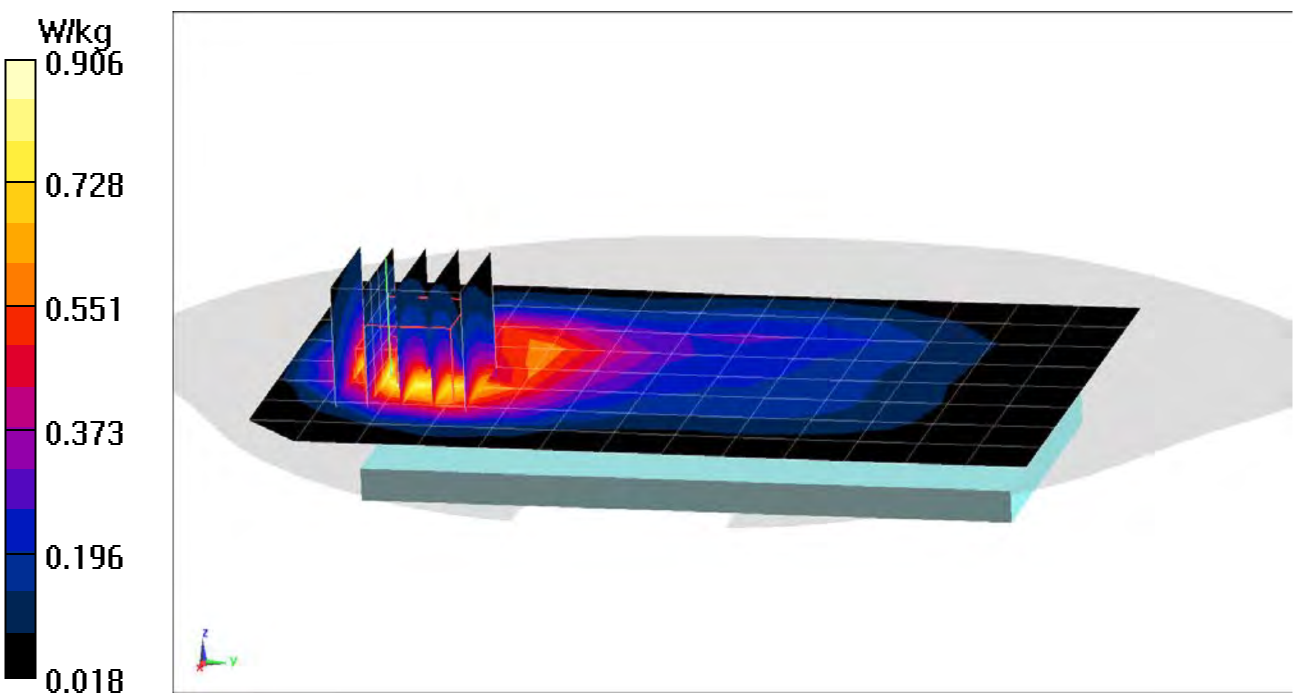
Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 848.8 MHz; Duty Cycle: 1:2.76
Medium: 835 Body Medium parameters used (interpolated):
f = 848.8 MHz; σ = 0.99 S/m; ε_r = 54.279; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-18-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN3914; ConvF(9.57, 9.57, 9.57); Calibrated: 2/14/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.52 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 1.07 W/kg
SAR(1 g) = 0.612 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52806

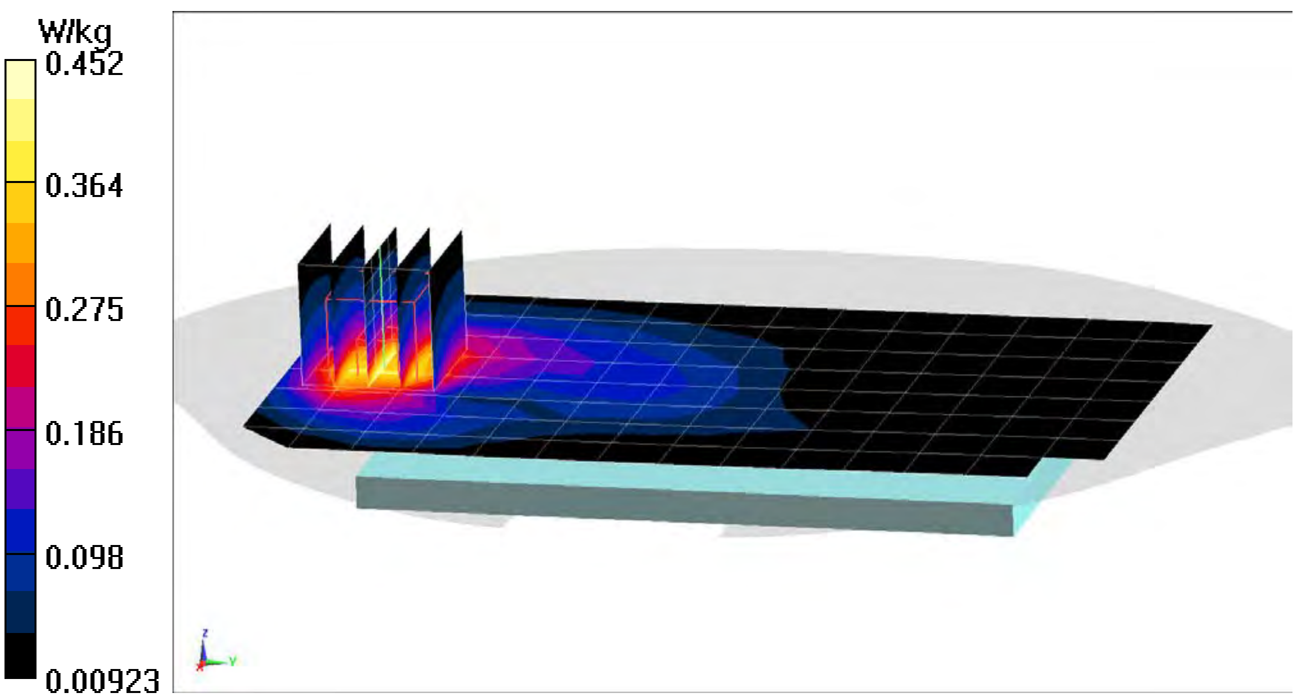
Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.527 S/m; ε_r = 51.481; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-21-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.10 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.522 W/kg
SAR(1 g) = 0.320 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52814

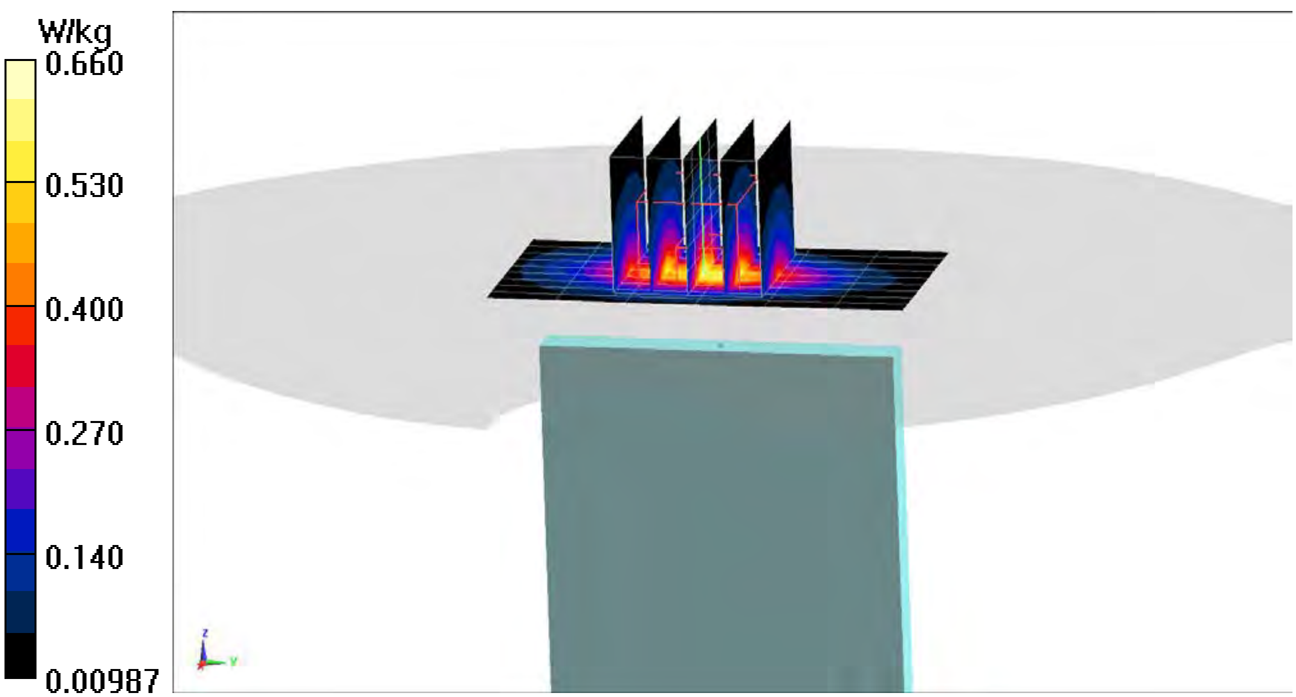
Communication System: UID 0, _GSM GPRS; 3 Tx slots; Frequency: 1909.8 MHz; Duty Cycle: 1:2.76
Medium: 1900 Body Medium parameters used:
f = 1910 MHz; σ = 1.586 S/m; ε_r = 51.548; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-18-2018; Ambient Temp: 21.6°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.58 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.908 W/kg
SAR(1 g) = 0.528 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52904

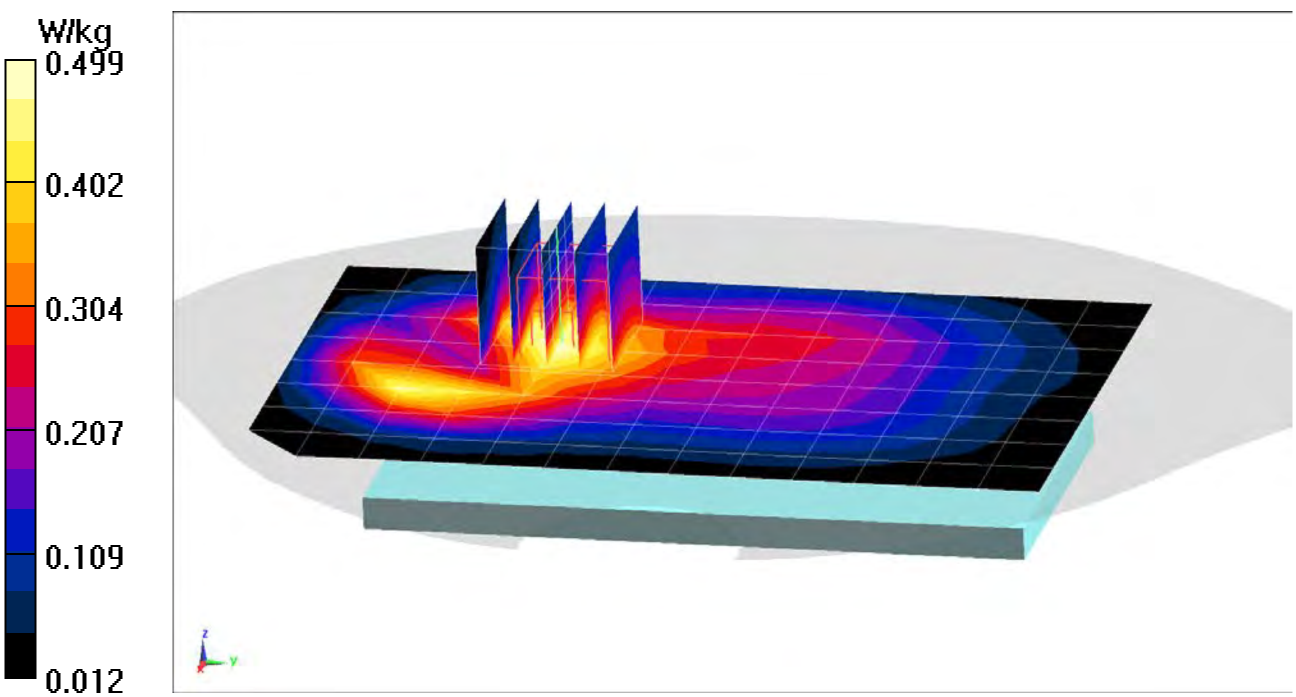
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.985 S/m; ε_r = 54.305; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-18-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN3914; ConvF(9.57, 9.57, 9.57); Calibrated: 2/14/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 850, Body SAR, Back side, Mid.ch

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.62 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.569 W/kg
SAR(1 g) = 0.399 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52904

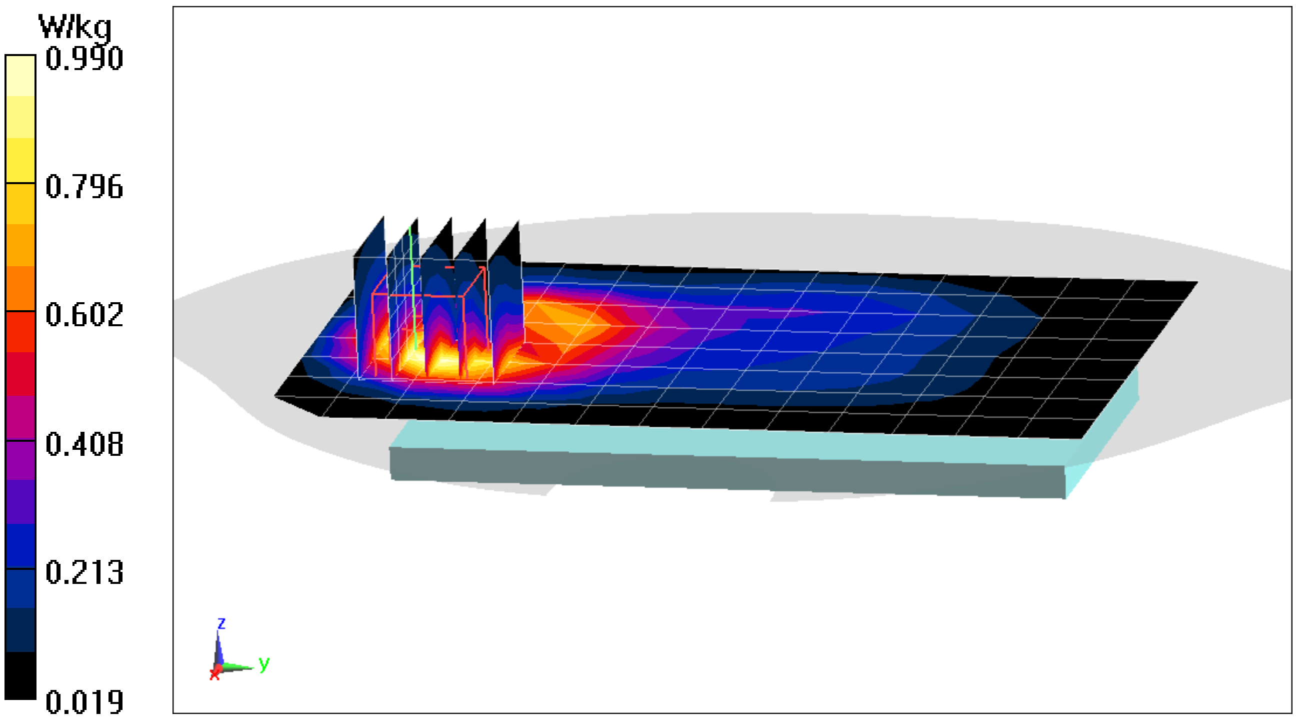
Communication System: UID 0, UMTS; Frequency: 846.6 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 846.6 MHz; σ = 0.989 S/m; ε_r = 54.283; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-18-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN3914; ConvF(9.57, 9.57, 9.57); Calibrated: 2/14/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 850, Body SAR, Back side, High.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 = 27.39 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.20 W/kg
SAR(1 g) = 0.708 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52869

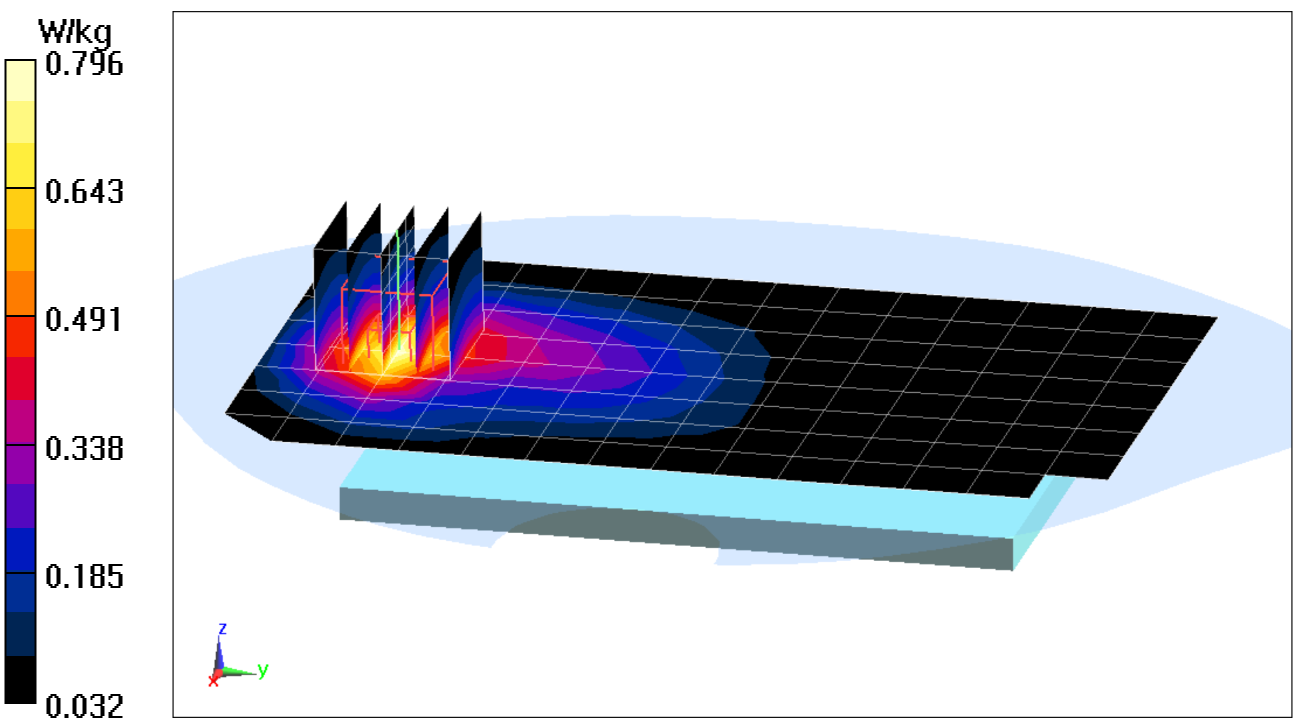
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.464 S/m; ε_r = 53.098; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-19-2018; Ambient Temp: 22.6°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3332; ConvF(5.16, 5.16, 5.16); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: 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 = 22.81 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.03 W/kg
SAR(1 g) = 0.675 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52869

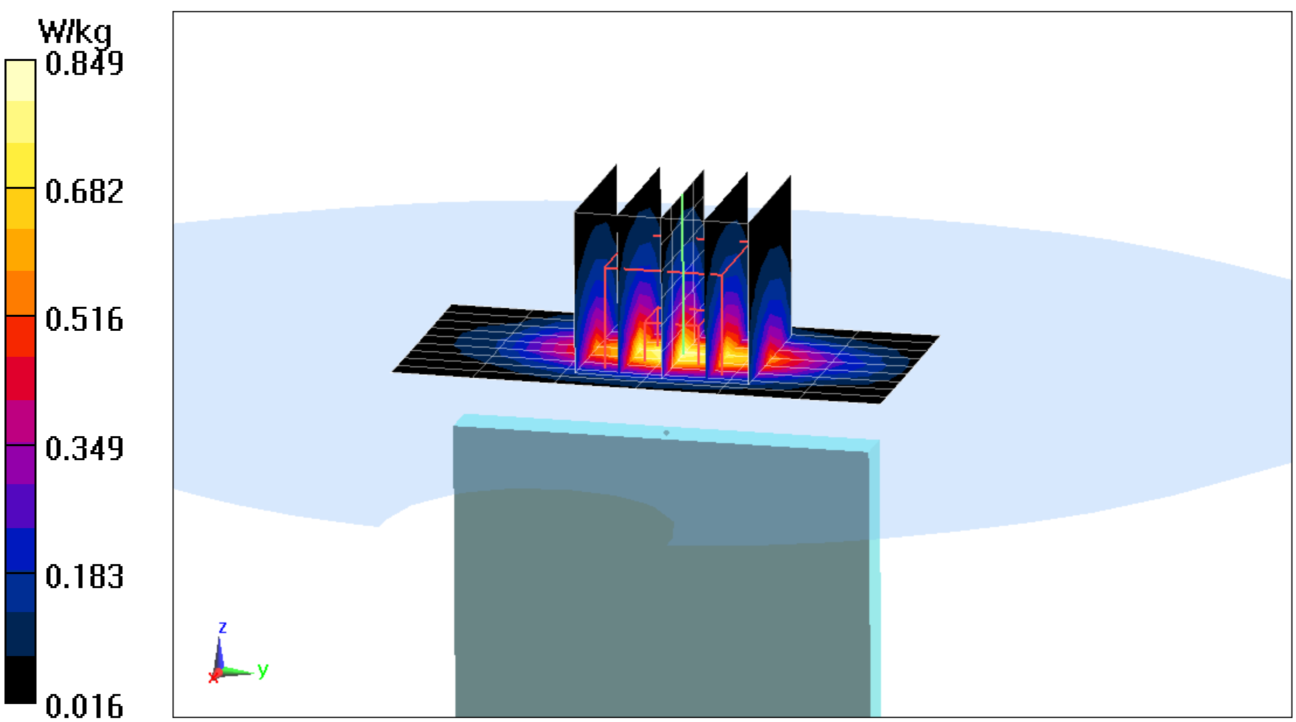
Communication System: UID 0, UMTS; Frequency: 1752.6 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1752.6 MHz; σ = 1.479 S/m; ε_r = 53.072; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-19-2018; Ambient Temp: 22.6°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3332; ConvF(5.16, 5.16, 5.16); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1750, Body SAR, Bottom Edge, High.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 = 23.30 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.14 W/kg
SAR(1 g) = 0.690 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52806

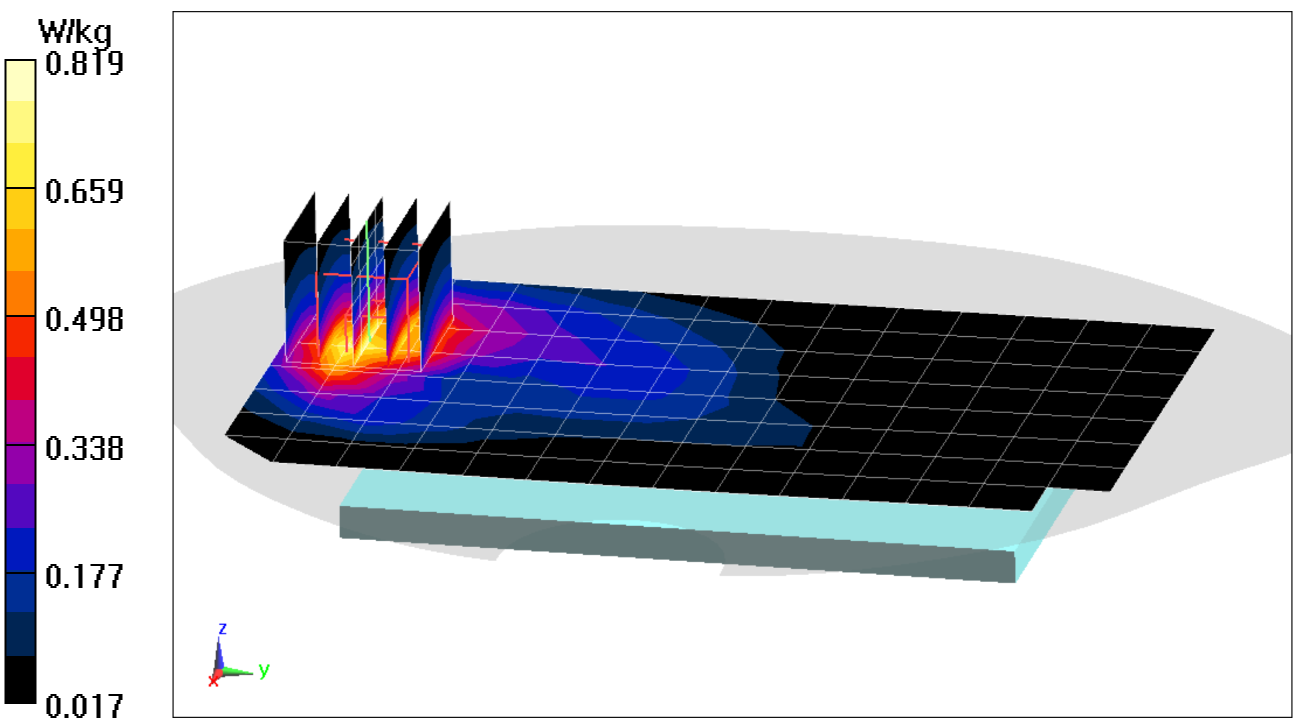
Communication System: UID 0, UMTS; Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1907.6 MHz; σ = 1.557 S/m; ε_r = 51.36; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-21-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.16 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.948 W/kg
SAR(1 g) = 0.581 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52806

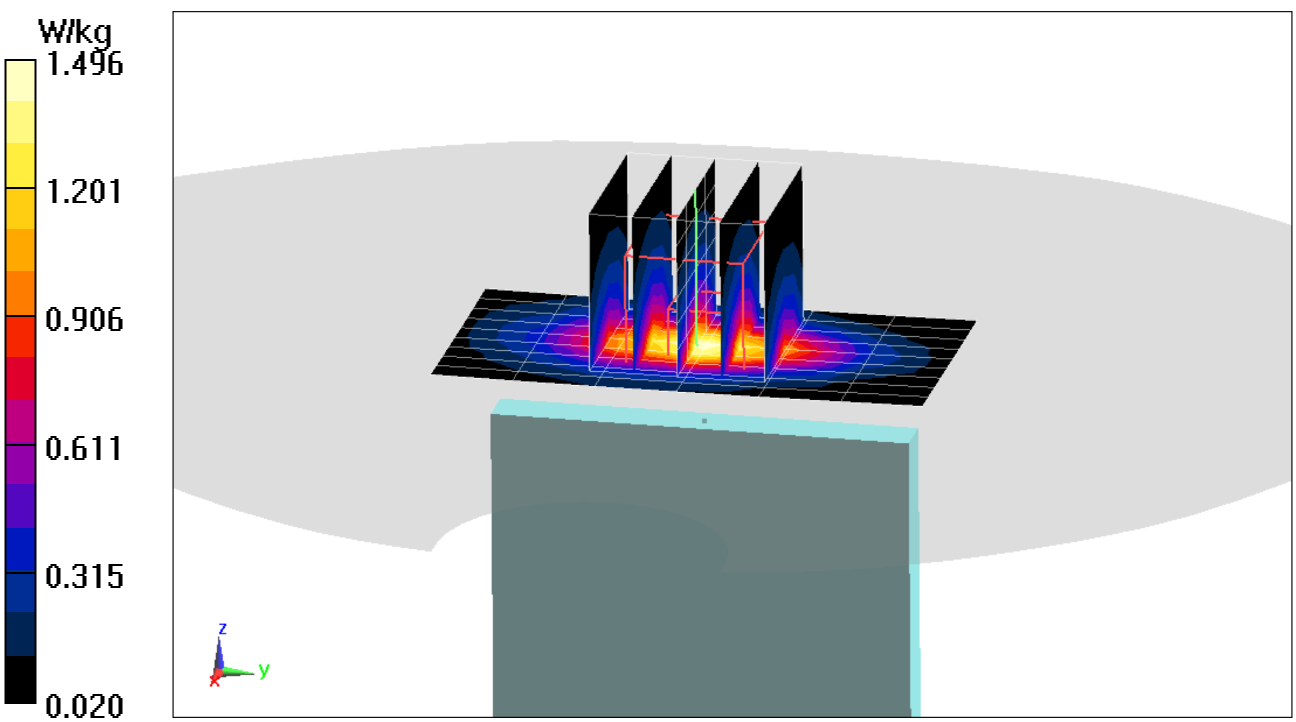
Communication System: UID 0, _UMTS; Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1907.6 MHz; σ = 1.565 S/m; ε_r = 51.207; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-02-2018; Ambient Temp: 22.4°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1900, Body SAR, Bottom Edge, High.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 = 26.49 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.78 W/kg
SAR(1 g) = 0.993 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52904

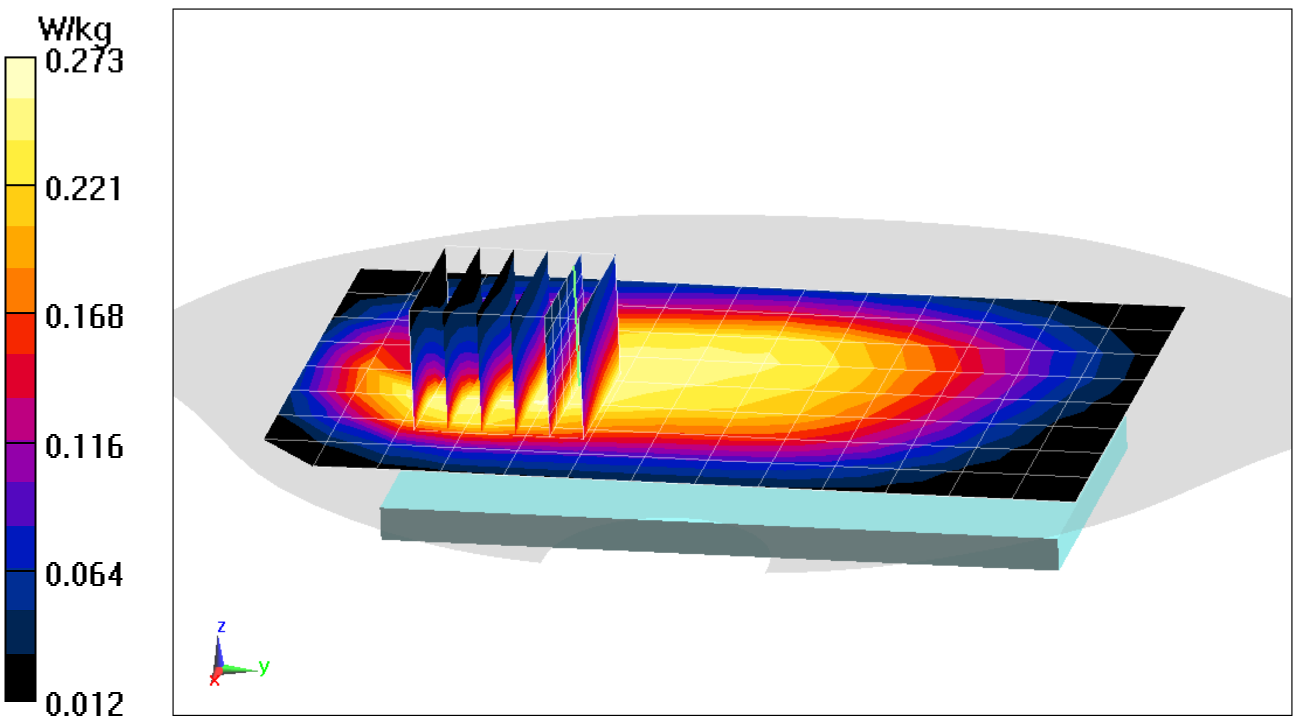
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.971 S/m; ε_r = 53.795; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-25-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN3914; ConvF(9.75, 9.75, 9.75); Calibrated: 2/14/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.82 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.313 W/kg
SAR(1 g) = 0.219 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52904

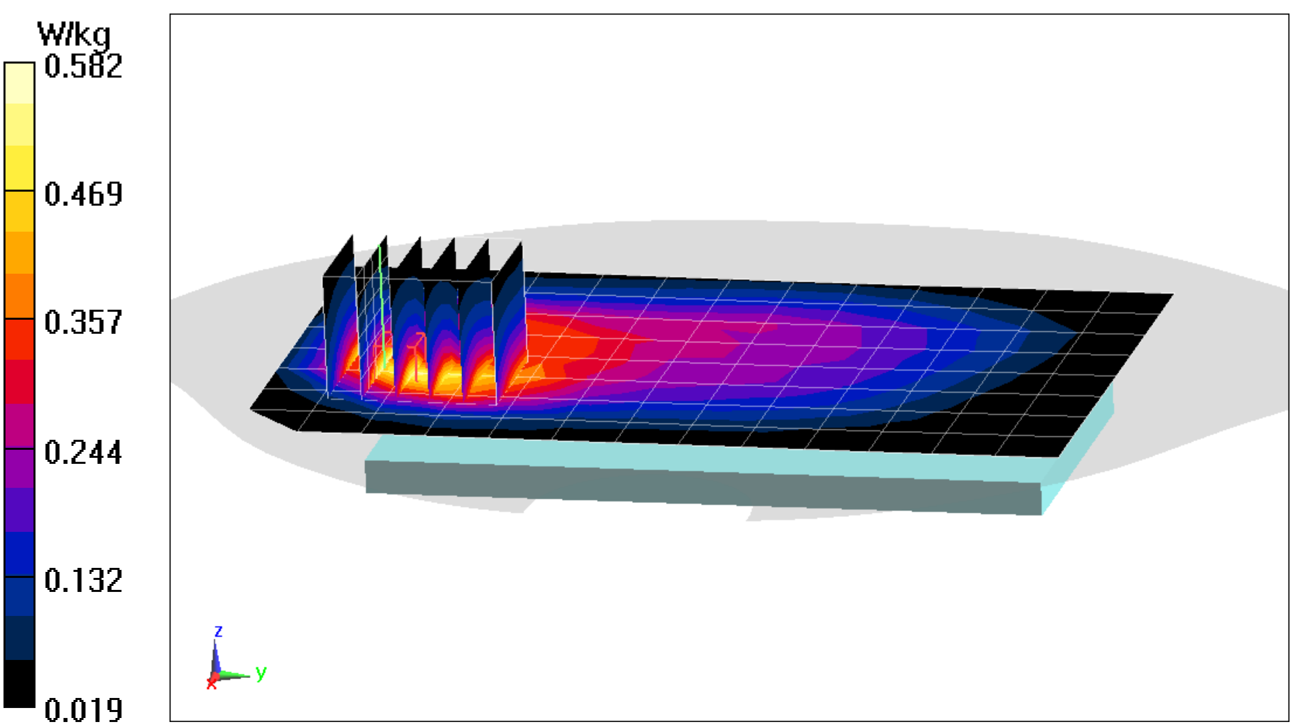
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.971 S/m; ε_r = 53.795; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN3914; ConvF(9.75, 9.75, 9.75); Calibrated: 2/14/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.80 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.698 W/kg
SAR(1 g) = 0.408 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52904

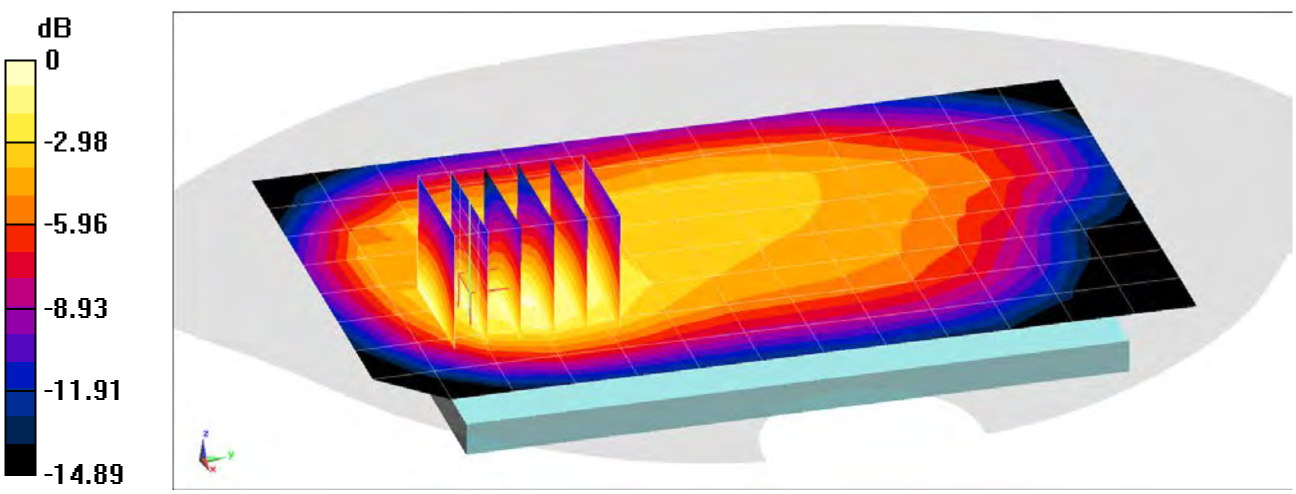
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 782 MHz; σ = 0.998 S/m; ε_r = 53.6; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-25-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN3914; ConvF(9.75, 9.75, 9.75); Calibrated: 2/14/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.53 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.516 W/kg
SAR(1 g) = 0.318 W/kg



0 dB = 0.437 W/kg = -3.60 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52904

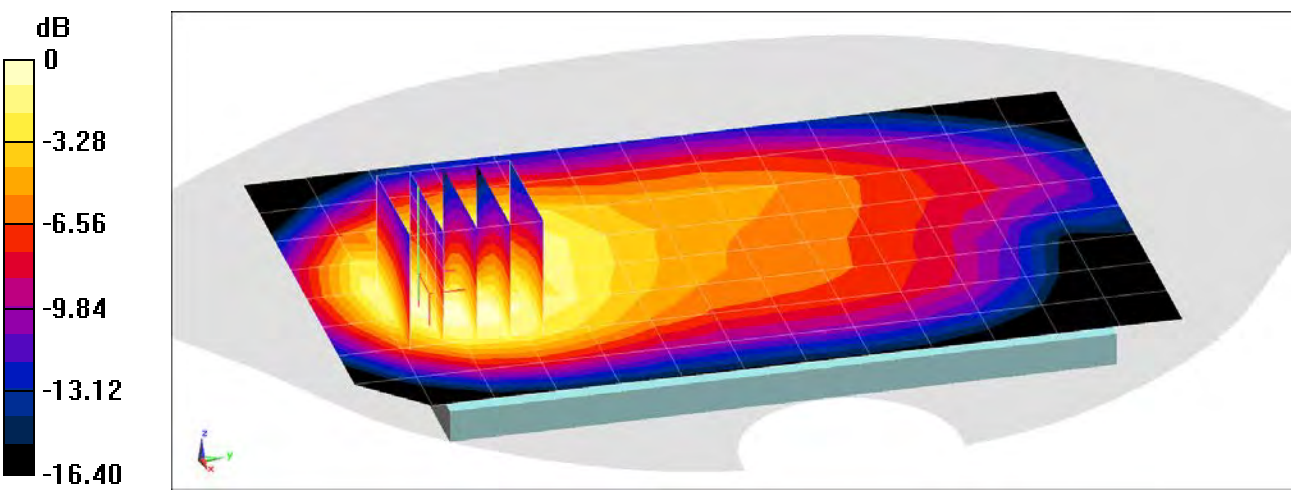
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 782 MHz; σ = 0.998 S/m; ε_r = 53.6; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN3914; ConvF(9.75, 9.75, 9.75); Calibrated: 2/14/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.87 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.620 W/kg



0 dB = 0.885 W/kg = -0.53 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52904

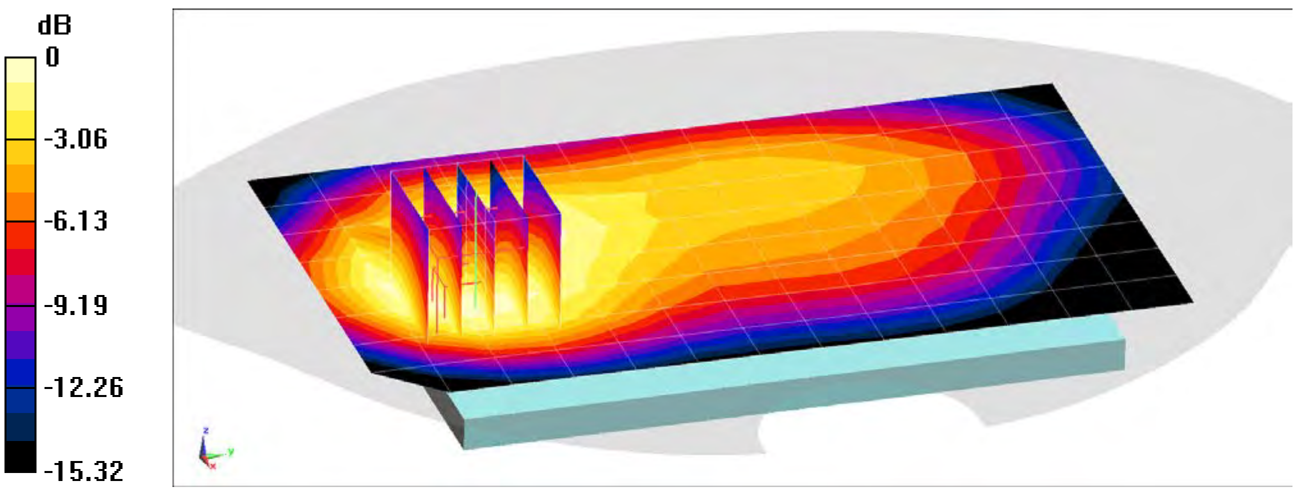
Communication System: UID 0, LTE Band 5; Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.5 MHz; σ = 0.98 S/m; ε_r = 53.621; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-20-2018; Ambient Temp: 21.5°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN3914; ConvF(9.57, 9.57, 9.57); Calibrated: 2/14/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.21 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.595 W/kg
SAR(1 g) = 0.373 W/kg



0 dB = 0.500 W/kg = -3.01 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52904

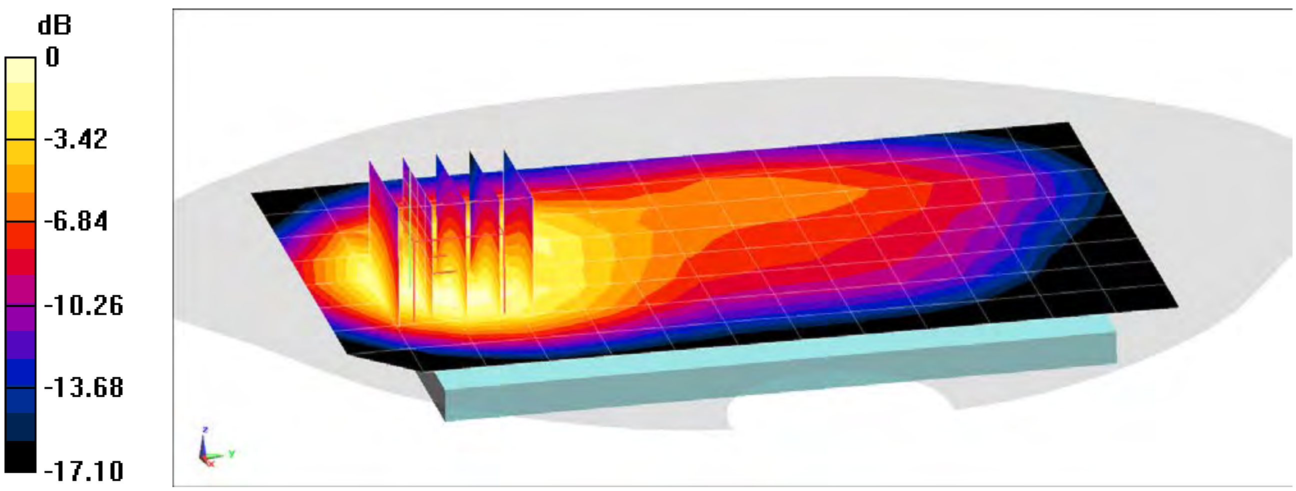
Communication System: UID 0, LTE Band 5; Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.5 MHz; σ = 0.98 S/m; ε_r = 53.621; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-20-2018; Ambient Temp: 21.5°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN3914; ConvF(9.57, 9.57, 9.57); Calibrated: 2/14/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.43 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.26 W/kg
SAR(1 g) = 0.744 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52904

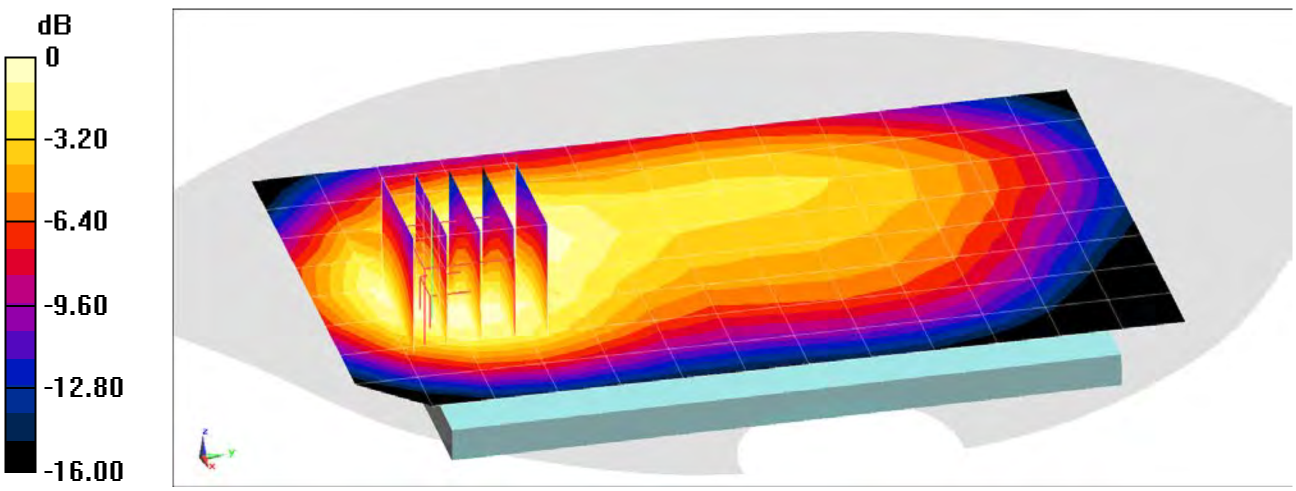
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 831.5 MHz; σ = 0.978 S/m; ε_r = 53.628; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-20-2018; Ambient Temp: 21.5°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN3914; ConvF(9.57, 9.57, 9.57); Calibrated: 2/14/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.78 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.522 W/kg
SAR(1 g) = 0.327 W/kg



0 dB = 0.438 W/kg = -3.59 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52904

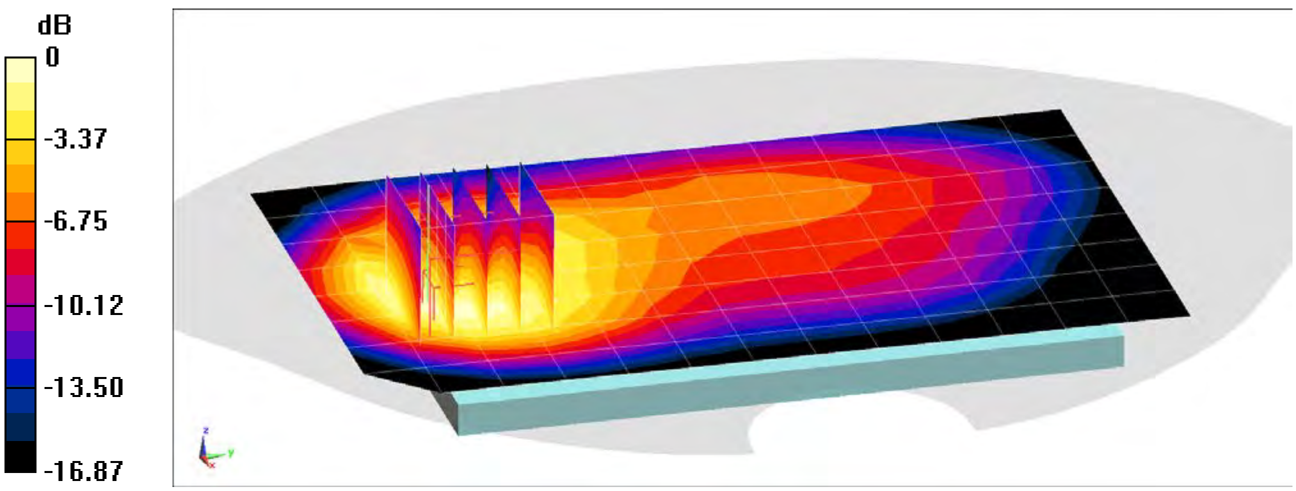
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 831.5 MHz; σ = 0.978 S/m; ε_r = 53.628; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-20-2018; Ambient Temp: 21.5°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN3914; ConvF(9.57, 9.57, 9.57); Calibrated: 2/14/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.17 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.16 W/kg
SAR(1 g) = 0.678 W/kg



0 dB = 0.957 W/kg = -0.19 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52869

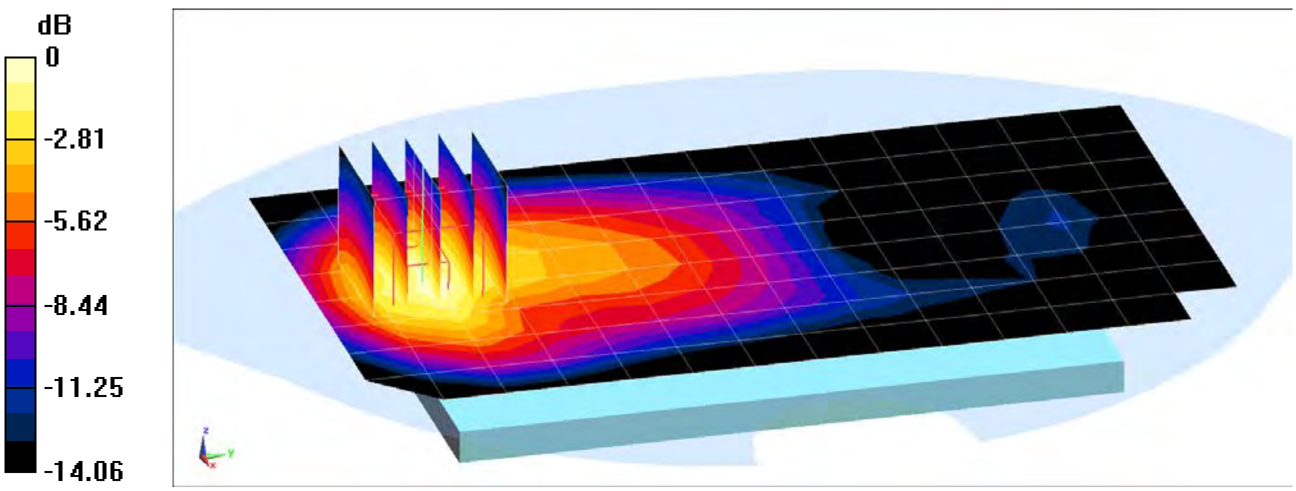
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1745 MHz; σ = 1.474 S/m; ε_r = 53.08; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-19-2018; Ambient Temp: 22.6°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3332; ConvF(5.16, 5.16, 5.16); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 66 (AWS), Body SAR, Back side, Mid.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.33 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.714 W/kg



0 dB = 0.850 W/kg = -0.71 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52869

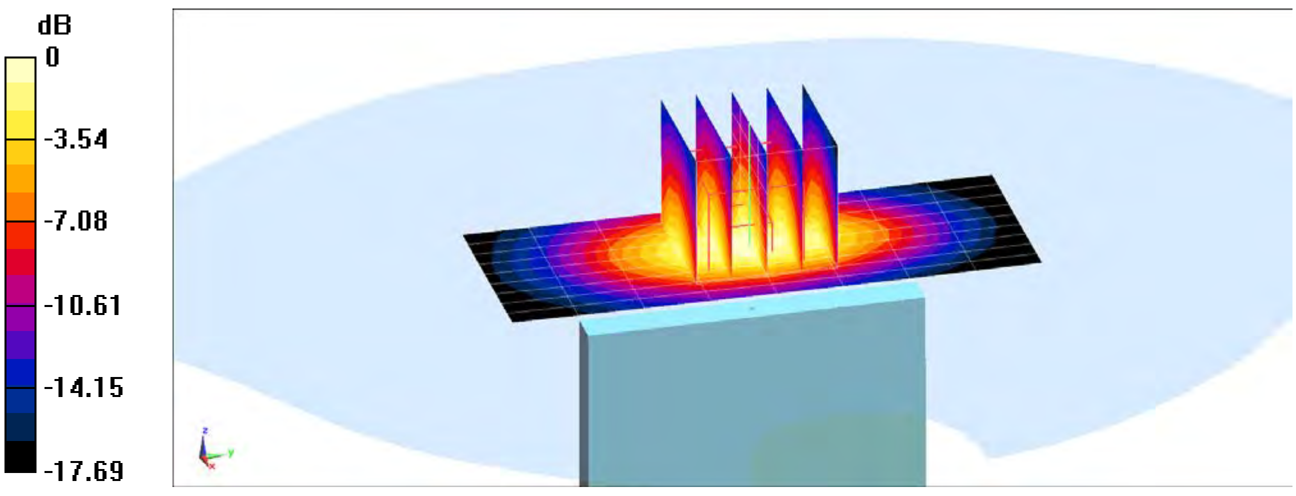
Communication System: UID 0, LTE Band 66 (AWS), Frequency: 1770 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1770 MHz; σ = 1.49 S/m; ε_r = 53.066; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-19-2018; Ambient Temp: 22.6°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3332; ConvF(5.16, 5.16, 5.16); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 66 (AWS), Body SAR, Bottom Edge, High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.34 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.699 W/kg



0 dB = 0.858 W/kg = -0.67 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52870

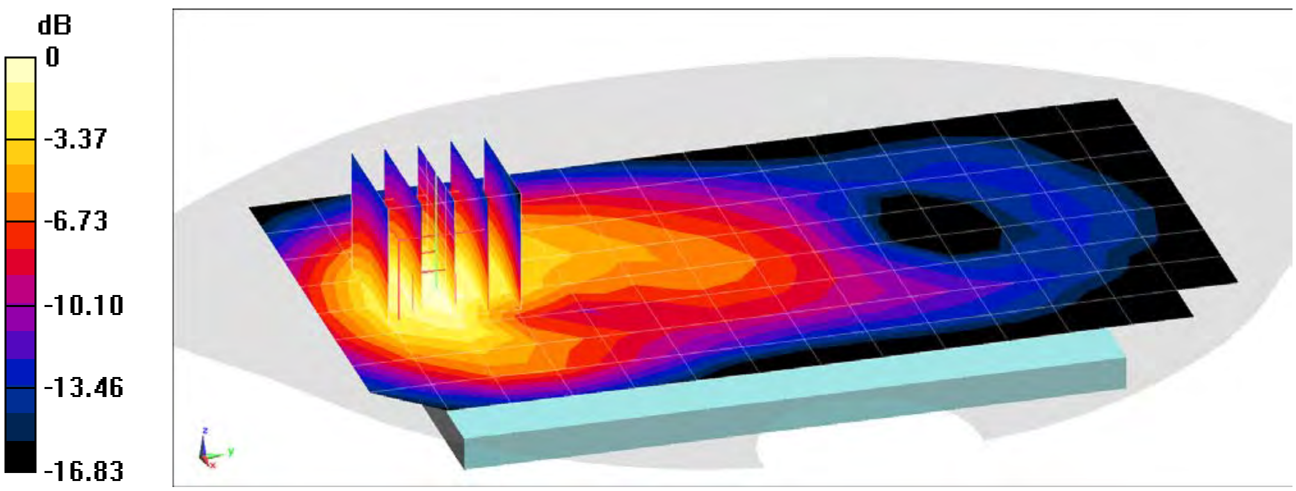
Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.549 S/m; ε_r = 51.393; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-21-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.16 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.876 W/kg
SAR(1 g) = 0.537 W/kg



0 dB = 0.739 W/kg = -1.31 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52806

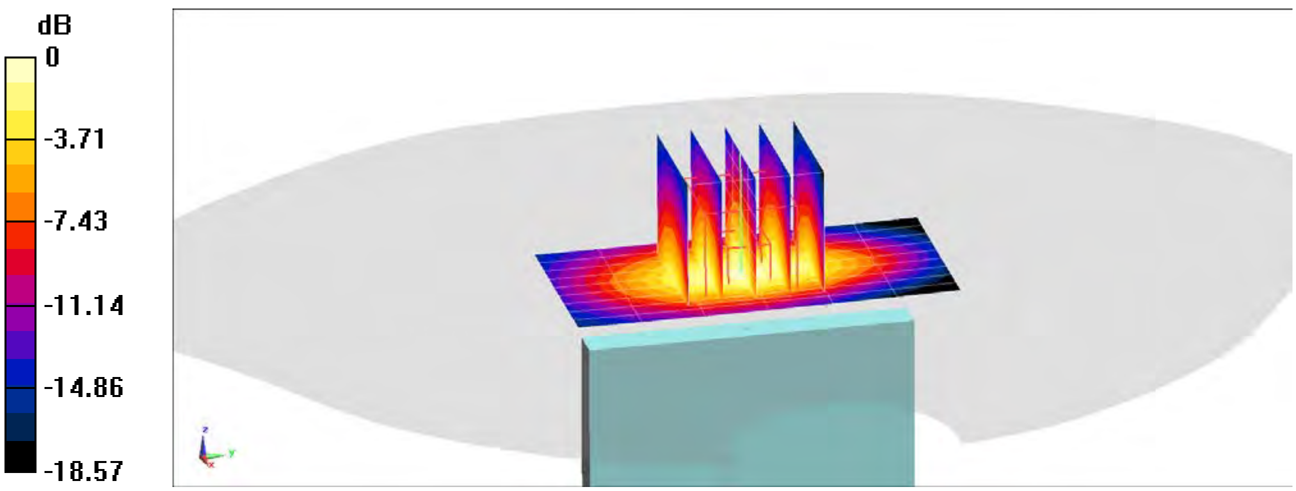
Communication System: UID 0, _LTE Band 2 (PCS); Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.575 S/m; ε_r = 51.573; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-28-2018; Ambient Temp: 22.6°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 2 (PCS), Body SAR, Bottom Edge, High.ch, 20 MHz Bandwidth, QPSK, 50 RB, 0 RB Offset

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.71 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.54 W/kg
SAR(1 g) = 0.870 W/kg



0 dB = 1.30 W/kg = 1.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52870

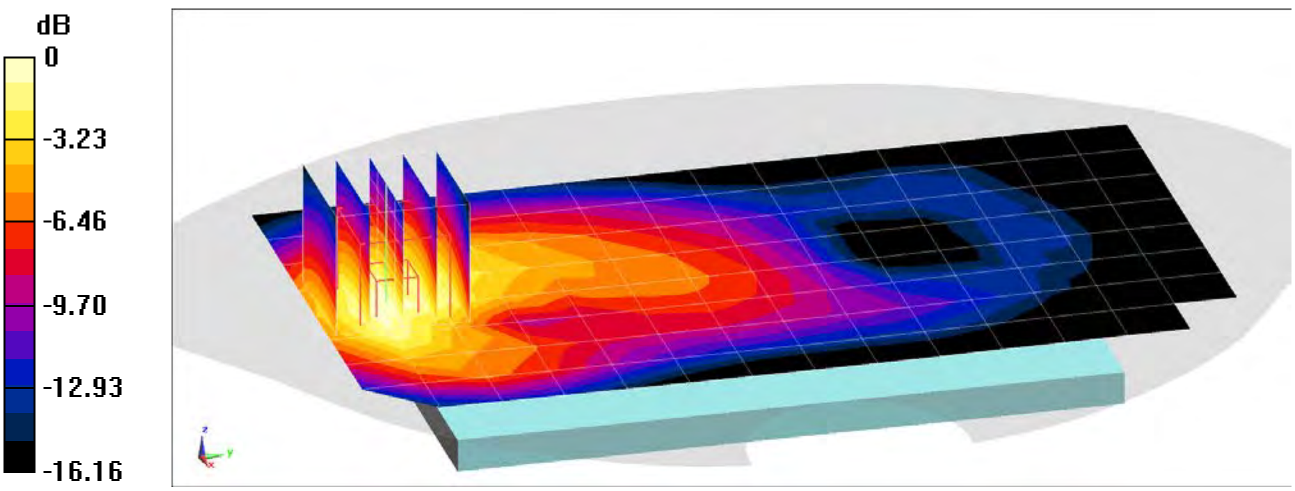
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1905 MHz; σ = 1.555 S/m; ε_r = 51.371; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-21-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.33 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.696 W/kg
SAR(1 g) = 0.430 W/kg



0 dB = 0.599 W/kg = -2.23 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52870

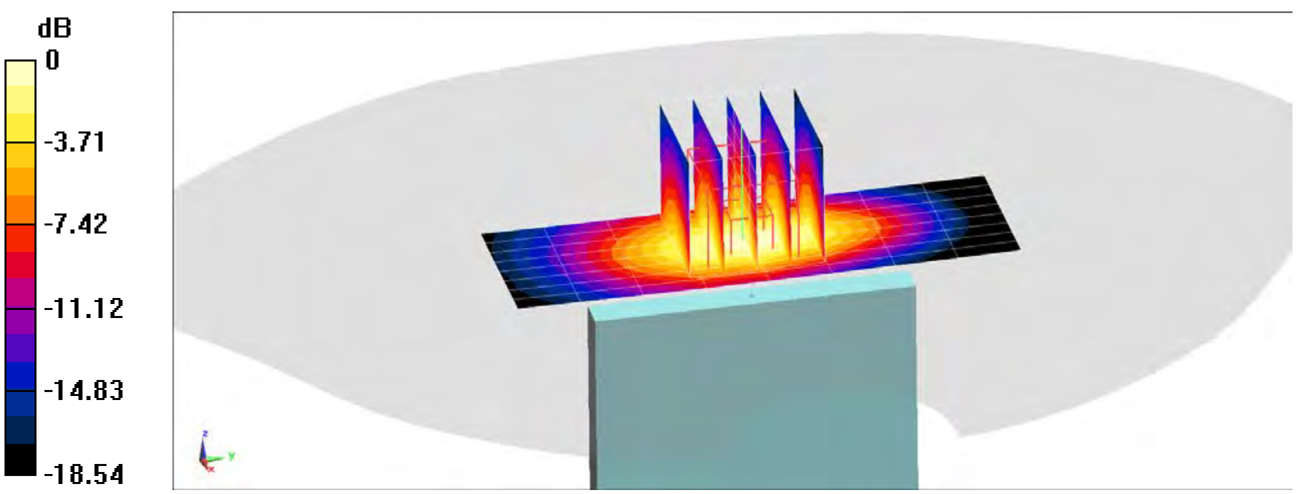
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1905 MHz; σ = 1.555 S/m; ε_r = 51.371; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-21-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 25 (PCS), Body SAR, Bottom Edge, High.ch, 20 MHz Bandwidth, QPSK, 100 RB, 0 RB Offset

Area Scan (9x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.83 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.44 W/kg
SAR(1 g) = 0.800 W/kg



0 dB = 1.21 W/kg = 0.83 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52870

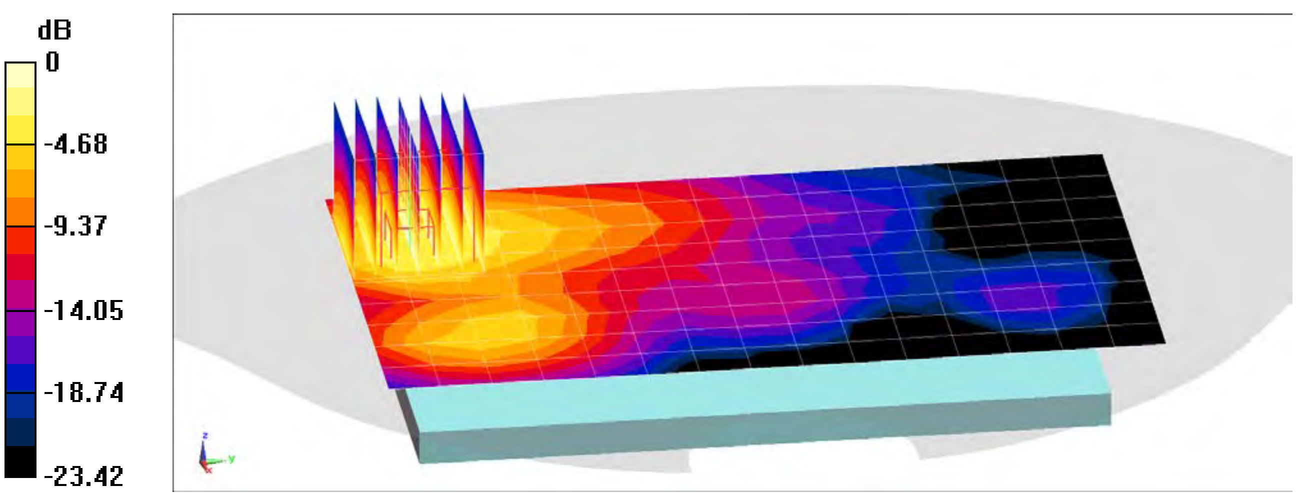
Communication System: UID 0, _LTE Band 41 (Class 2); Frequency: 2680 MHz; Duty Cycle: 1:2.31
Medium: 2450 Body Medium parameters used (interpolated):
f = 2680 MHz; σ = 2.297 S/m; ε_r = 50.292; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-26-2018; Ambient Temp: 22.8°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3319; ConvF(4.33, 4.33, 4.33); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 41 (PC2), Body SAR, Back side, High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (10x16x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.94 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.859 W/kg
SAR(1 g) = 0.451 W/kg



0 dB = 0.564 W/kg = -2.49 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52870

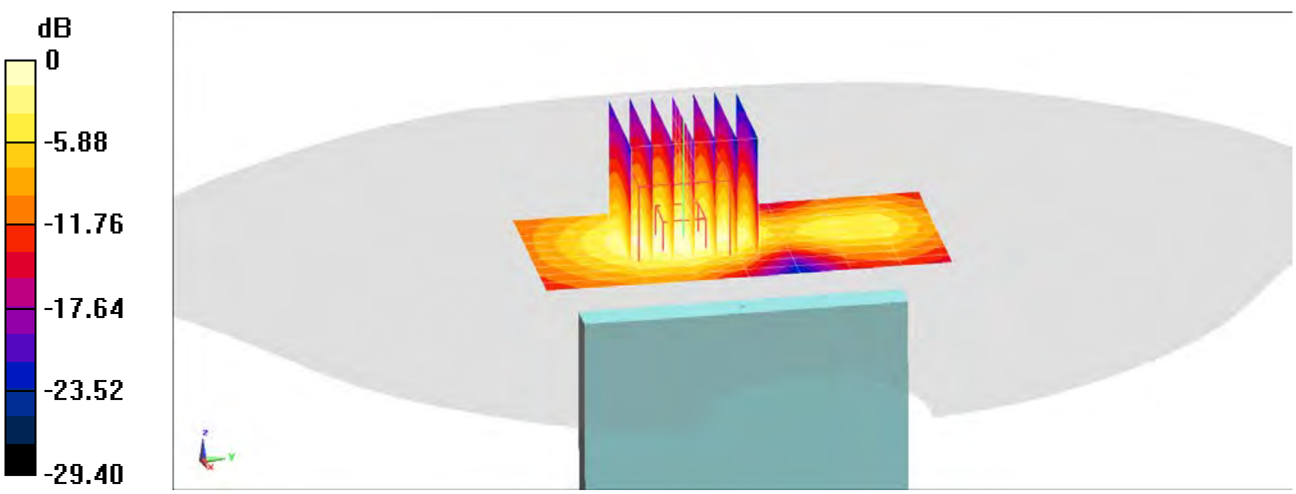
Communication System: UID 0, _LTE Band 41; Frequency: 2680 MHz; Duty Cycle: 1:1.58
Medium: 2450 Body Medium parameters used (interpolated):
f = 2680 MHz; σ = 2.297 S/m; ε_r = 50.292; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-26-2018; Ambient Temp: 22.8°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3319; ConvF(4.33, 4.33, 4.33); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.75 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.874 W/kg
SAR(1 g) = 0.428 W/kg



0 dB = 0.556 W/kg = -2.55 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52869

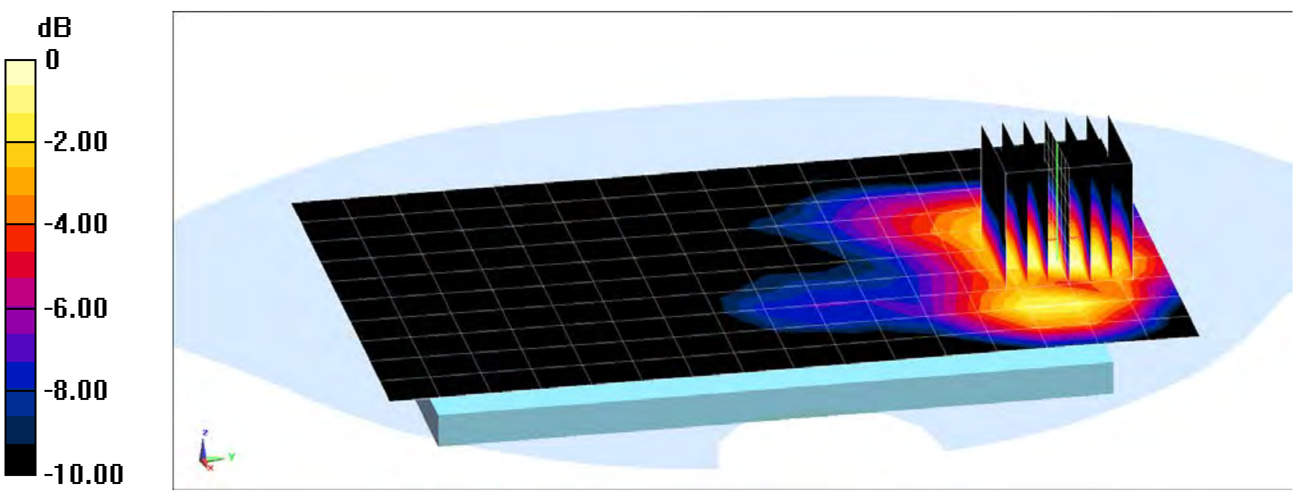
Communication System: UID 0, _IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2437 MHz; σ = 1.964 S/m; ε_r = 52.464; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-21-2018; Ambient Temp: 21.2°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN7410; ConvF(7.69, 7.69, 7.69); Calibrated: 7/17/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11b, Antenna 2, 22 MHz Bandwidth, Body SAR, Ch 6, 1 Mbps, Back Side

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.788 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.152 W/kg
SAR(1 g) = 0.082 W/kg



0 dB = 0.103 W/kg = -9.87 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52869

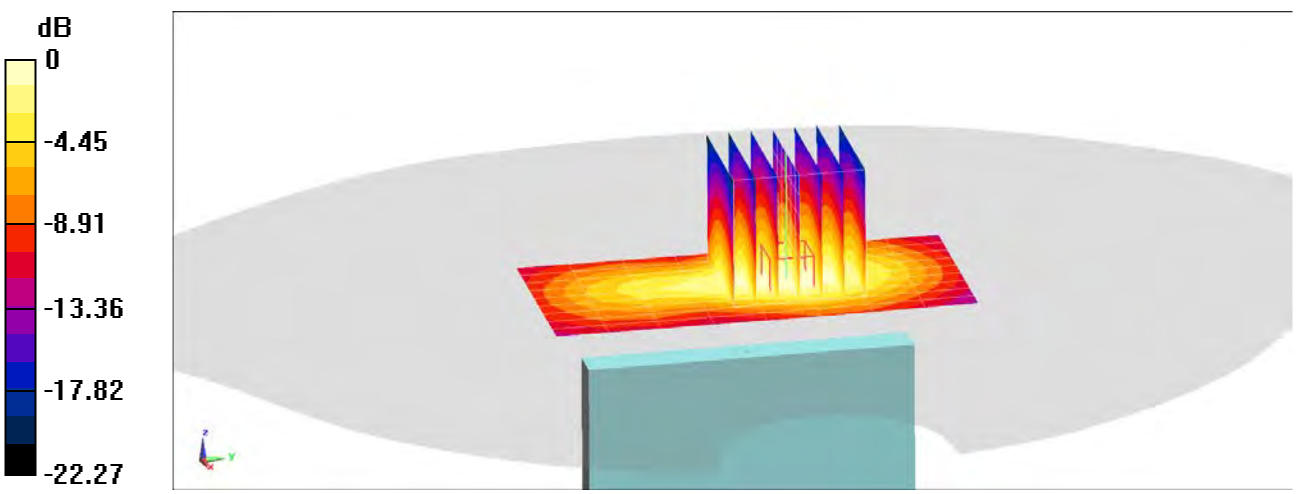
Communication System: UID 0, _IEEE 802.11n; Frequency: 2417 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2417 MHz; σ = 1.987 S/m; ε_r = 50.661; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-02-2018; Ambient Temp: 22.2°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3319; ConvF(4.51, 4.51, 4.51); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11n, MIMO 20 MHz Bandwidth, Body SAR, Ch 2, 13 Mbps, Top Edge

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.90 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.500 W/kg
SAR(1 g) = 0.265 W/kg



0 dB = 0.333 W/kg = -4.78 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52806

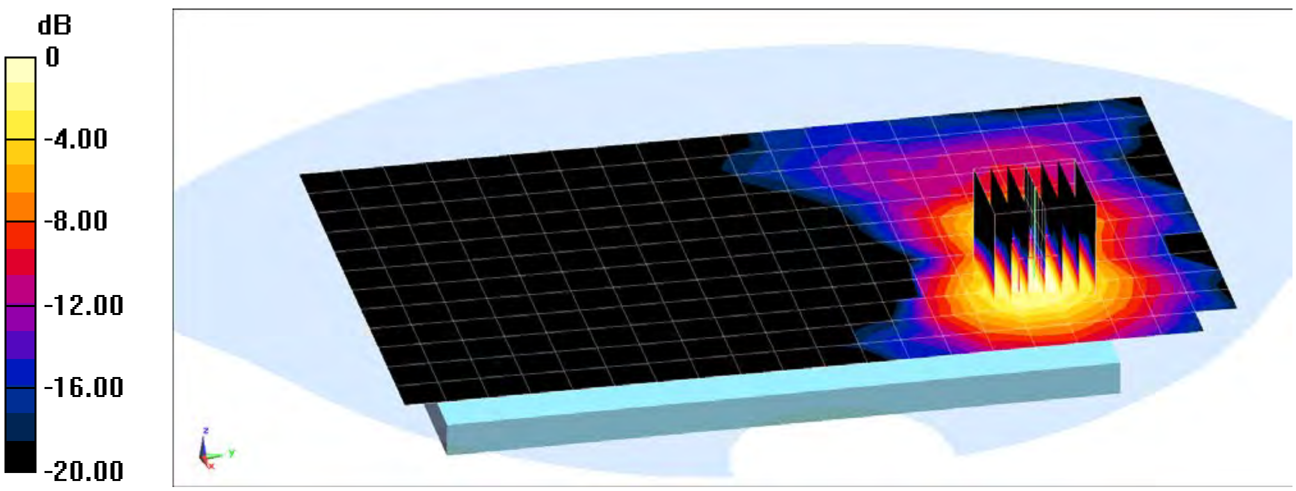
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5785 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5785 MHz; σ = 6.209 S/m; ε_r = 46.501; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5cm

Test Date: 06-25-2018; Ambient Temp: 22.5°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7357; ConvF(4.21, 4.21, 4.21); Calibrated: 4/18/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (13x21x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 6.072 V/m; Power Drift = 0.21 dB
Peak SAR (extrapolated) = 0.900 W/kg
SAR(1 g) = 0.222 W/kg



0 dB = 0.520 W/kg = -2.84 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52806

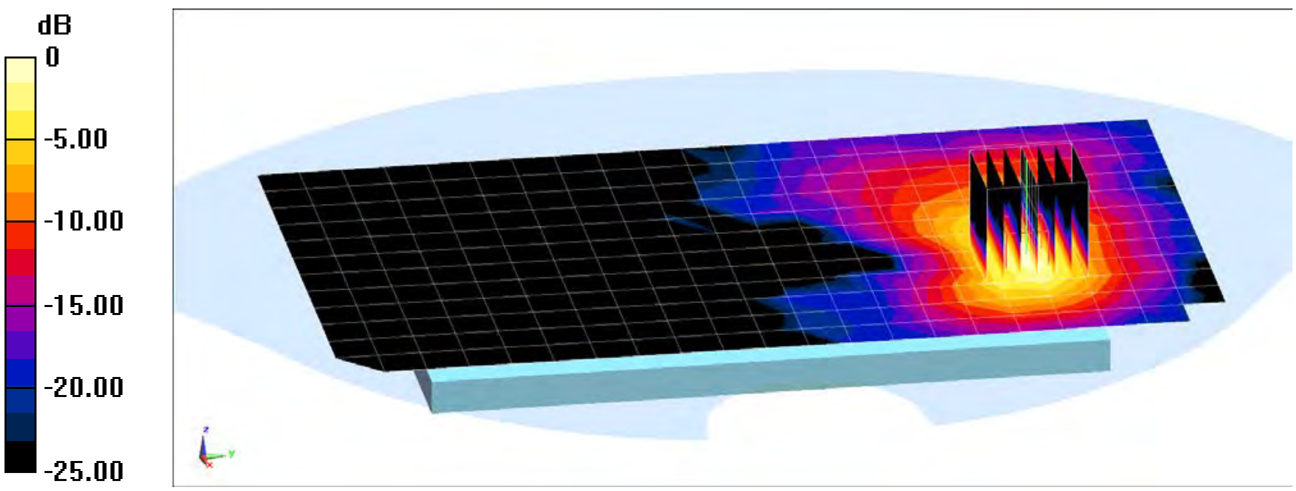
Communication System: UID 0, 802.11n 5.2-5.8 GHz Band; Frequency: 5745 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5745 MHz; σ = 6.167 S/m; ε_r = 47.441; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-02-2018; Ambient Temp: 22.4°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7357; ConvF(4.21, 4.21, 4.21); Calibrated: 4/18/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11n, MIMO, UNII-3, 20 MHz Bandwidth, Body SAR, Ch 149, 13 Mbps, Back Side

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 = 8.347 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.74 W/kg
SAR(1 g) = 0.380 W/kg



0 dB = 0.977 W/kg = -0.10 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52869

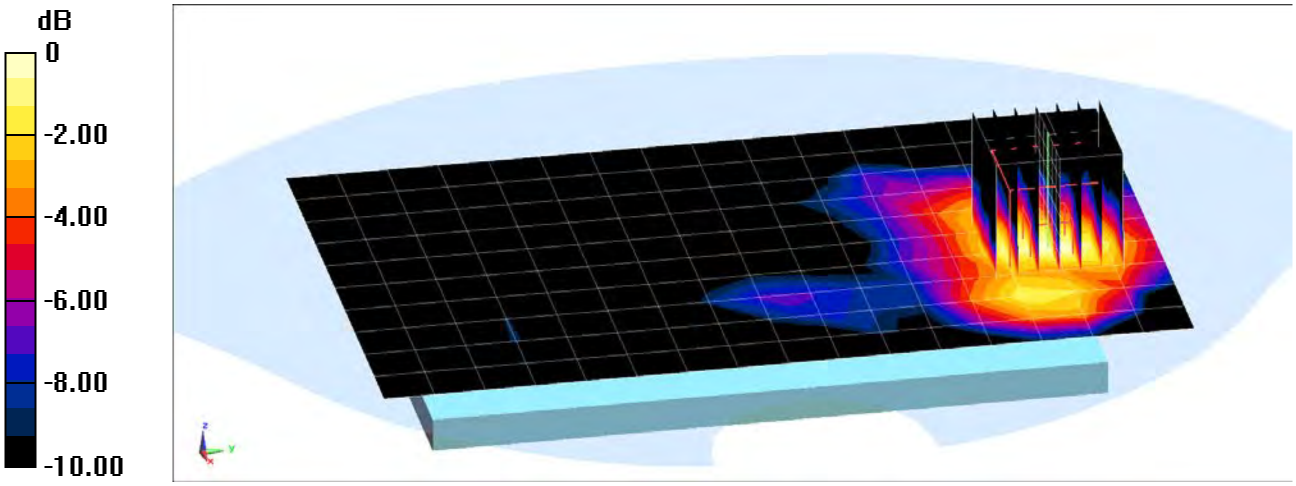
Communication System: UID 0, Bluetooth; Frequency: 2480 MHz; Duty Cycle: 1:1.294
Medium: 2450 Body Medium parameters used (interpolated):
f = 2480 MHz; σ = 2.022 S/m; ε_r = 52.305; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-21-2018; Ambient Temp: 21.2°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN7410; ConvF(7.69, 7.69, 7.69); Calibrated: 7/17/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Bluetooth, Body SAR, Ch 78, 1 Mbps, Back Side

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.421 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.0690 W/kg
SAR(1 g) = 0.021 W/kg



0 dB = 0.0322 W/kg = -14.92 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52869

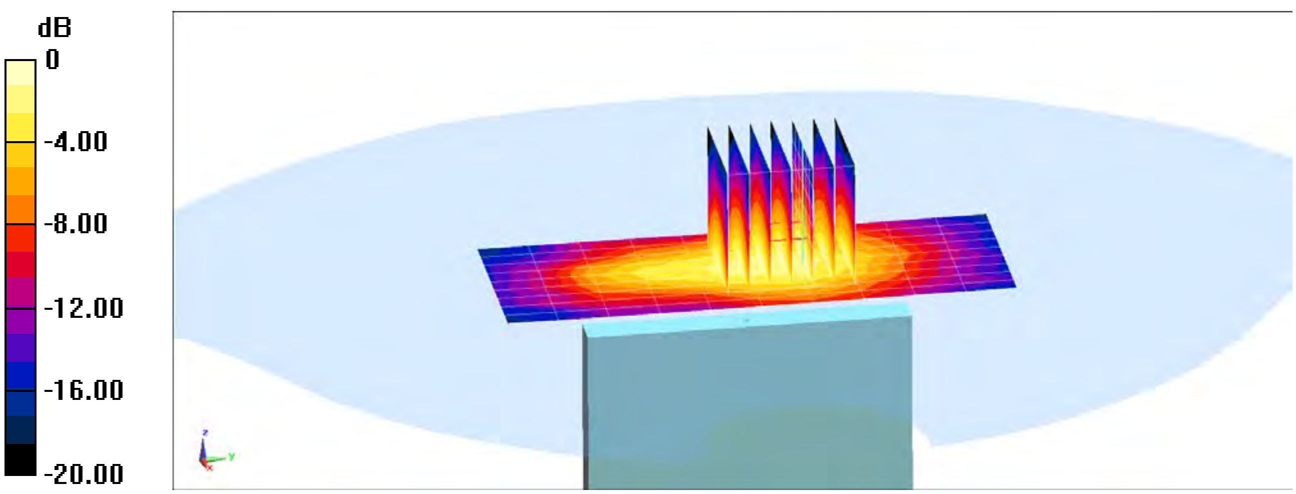
Communication System: UID 0, Bluetooth; Frequency: 2480 MHz; Duty Cycle: 1:1.294
Medium: 2450 Body Medium parameters used (interpolated):
f = 2480 MHz; σ = 2.022 S/m; ε_r = 52.305; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-21-2018; Ambient Temp: 21.2°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN7410; ConvF(7.69, 7.69, 7.69); Calibrated: 7/17/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Bluetooth, Body SAR, Ch 78, 1 Mbps, Top Edge

Area Scan (10x11x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.666 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.161 W/kg
SAR(1 g) = 0.086 W/kg



0 dB = 0.132 W/kg = -8.79 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52806

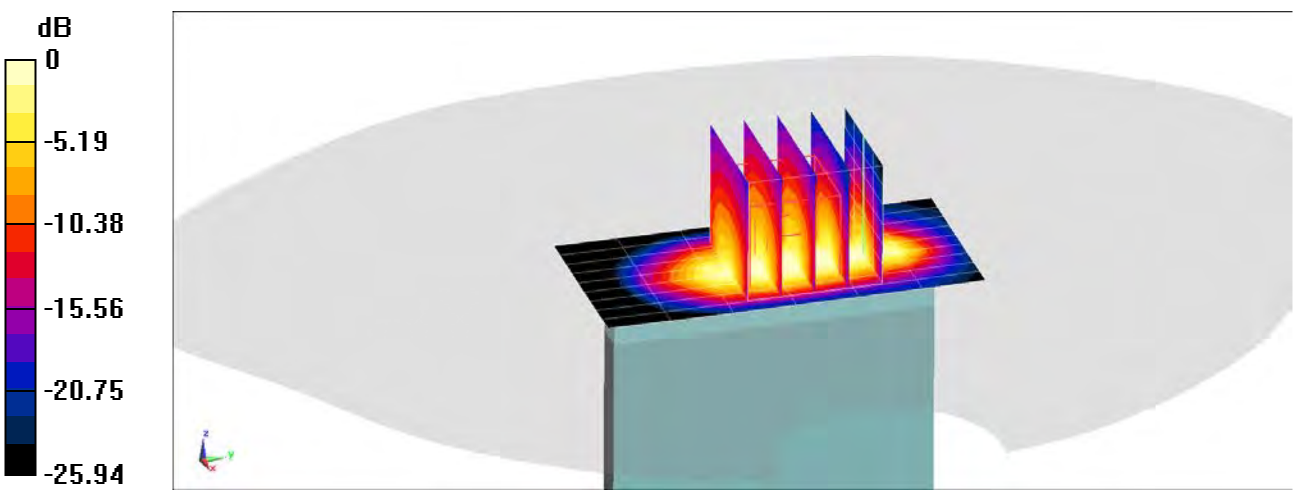
Communication System: UID 0, _GSM GPRS; 2 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:4.15
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.527 S/m; ε_r = 51.481; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 06-21-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: GPRS 1900, Phablet SAR, Bottom Edge, Mid.ch, 2 Tx Slots

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 63.43 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 16.1 W/kg
SAR(10 g) = 2.66 W/kg



0 dB = 11.7 W/kg = 10.68 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52869

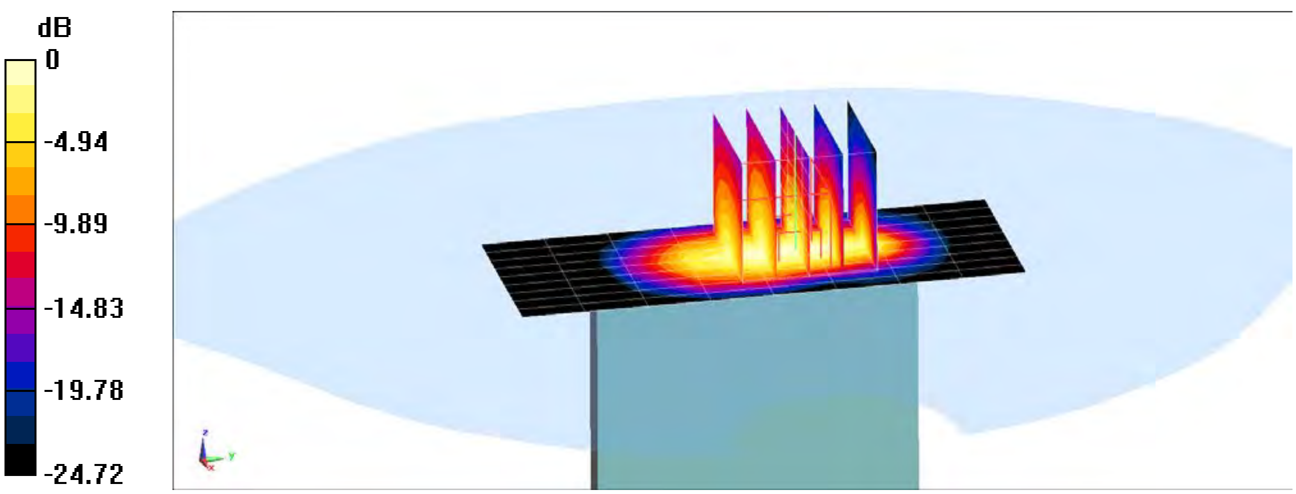
Communication System: UID 0, _UMTS; Frequency: 1712.4 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1712.4 MHz; σ = 1.448 S/m; ε_r = 53.127; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 06-19-2018; Ambient Temp: 22.6°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3332; ConvF(5.16, 5.16, 5.16); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1750, Phablet SAR, Bottom Edge, Low.ch

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 65.04 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 10.7 W/kg
SAR(10 g) = 2.38 W/kg



0 dB = 7.07 W/kg = 8.49 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52870

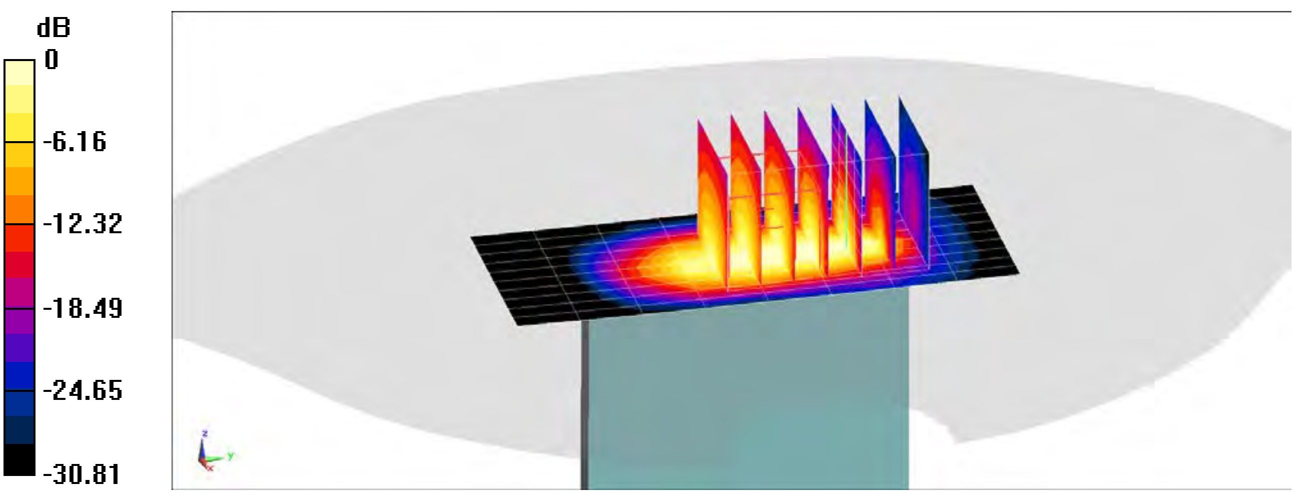
Communication System: UID 0, _UMTS; Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1907.6 MHz; σ = 1.557 S/m; ε_r = 51.36; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 06-21-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1900, Phablet SAR, Bottom Edge, High.ch

Area Scan (11x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 59.70 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 15.2 W/kg
SAR(10 g) = 2.62 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52869

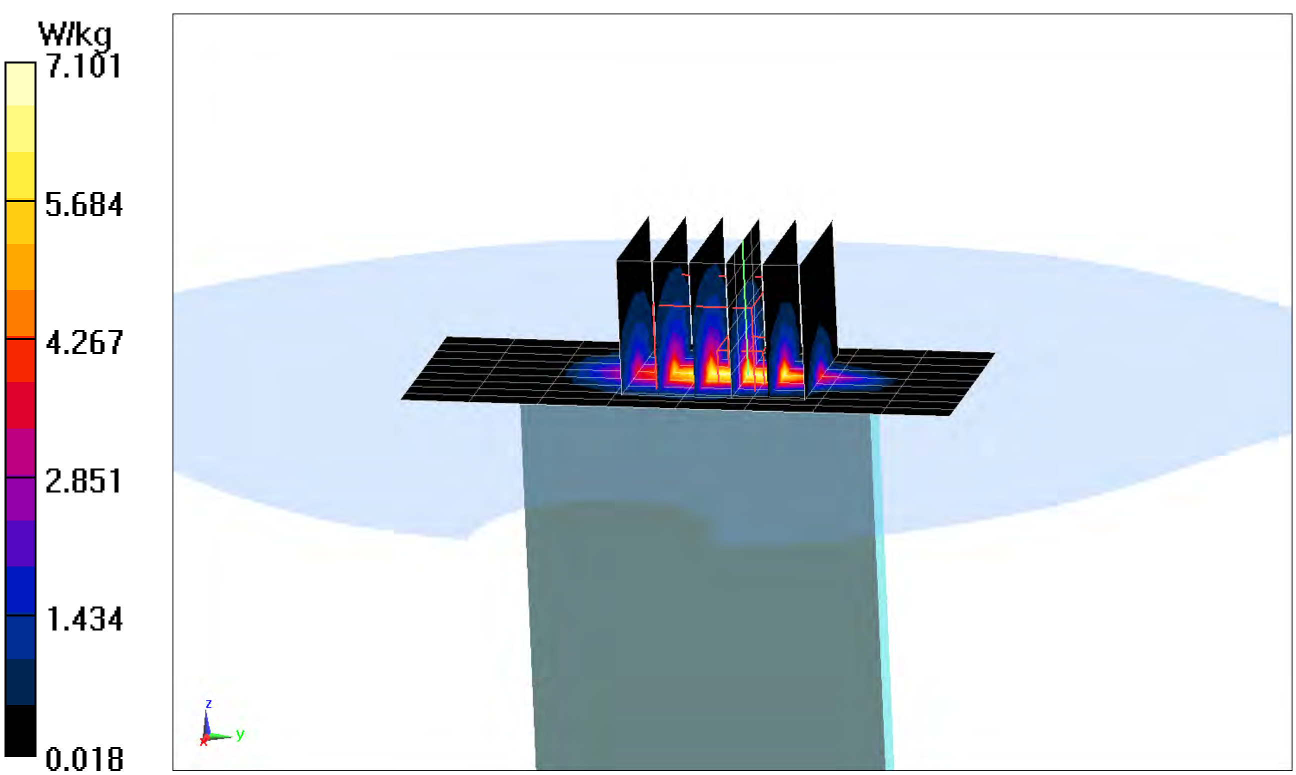
Communication System: UID 0, _LTE Band 66 (AWS); Frequency: 1720 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1720 MHz; σ = 1.454 S/m; ε_r = 53.116; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 06-19-2018; Ambient Temp: 22.6°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3332; ConvF(5.16, 5.16, 5.16); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 66 (AWS), Phablet SAR, Bottom Edge, Low.ch, 20 MHz Bandwidth, QPSK, 50 RB, 0 RB Offset

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 65.03 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 11.9 W/kg
SAR(10 g) = 2.4 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52869

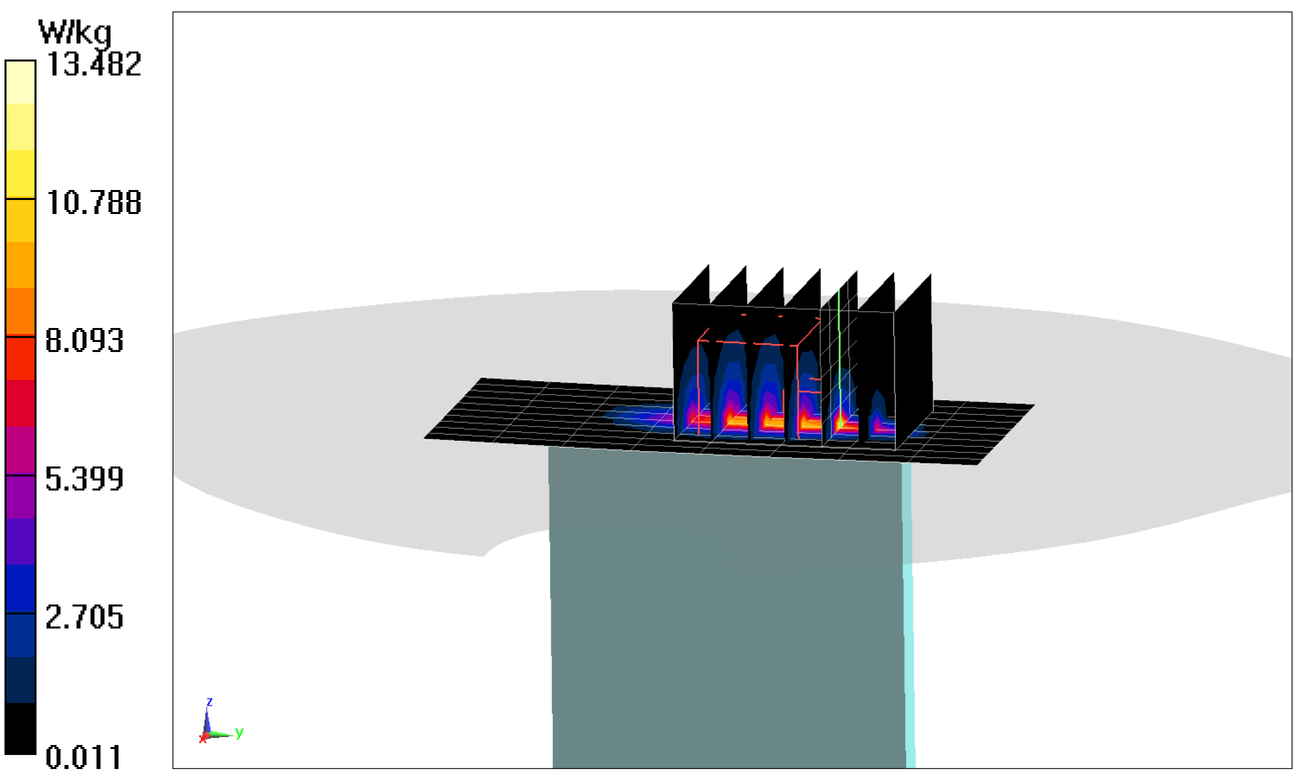
Communication System: UID 0, _LTE Band 2 (PCS); Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.575 S/m; ε_r = 51.188; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 06-25-2018; Ambient Temp: 21.1°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 2 (PCS), Phablet SAR, Bottom Edge, High.ch, 20 MHz Bandwidth, QPSK, 50 RB, 0 RB Offset

Area Scan (11x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 62.86 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 19.3 W/kg
SAR(10 g) = 2.75 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52870

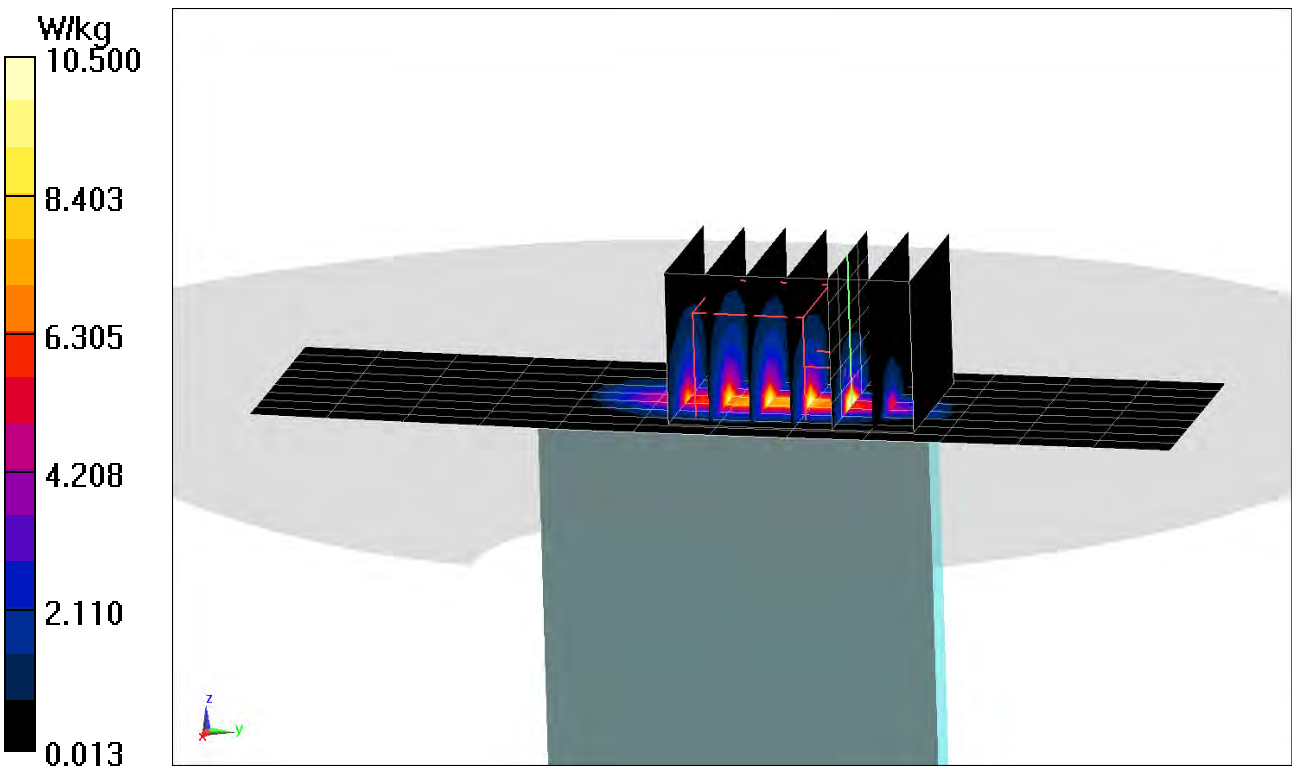
Communication System: UID 0, _LTE Band 25 (PCS);Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1905 MHz; σ = 1.555 S/m; ε_r = 51.371; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 06-21-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (10x13x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 63.91 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 19.3 W/kg
SAR(10 g) = 2.65 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52870

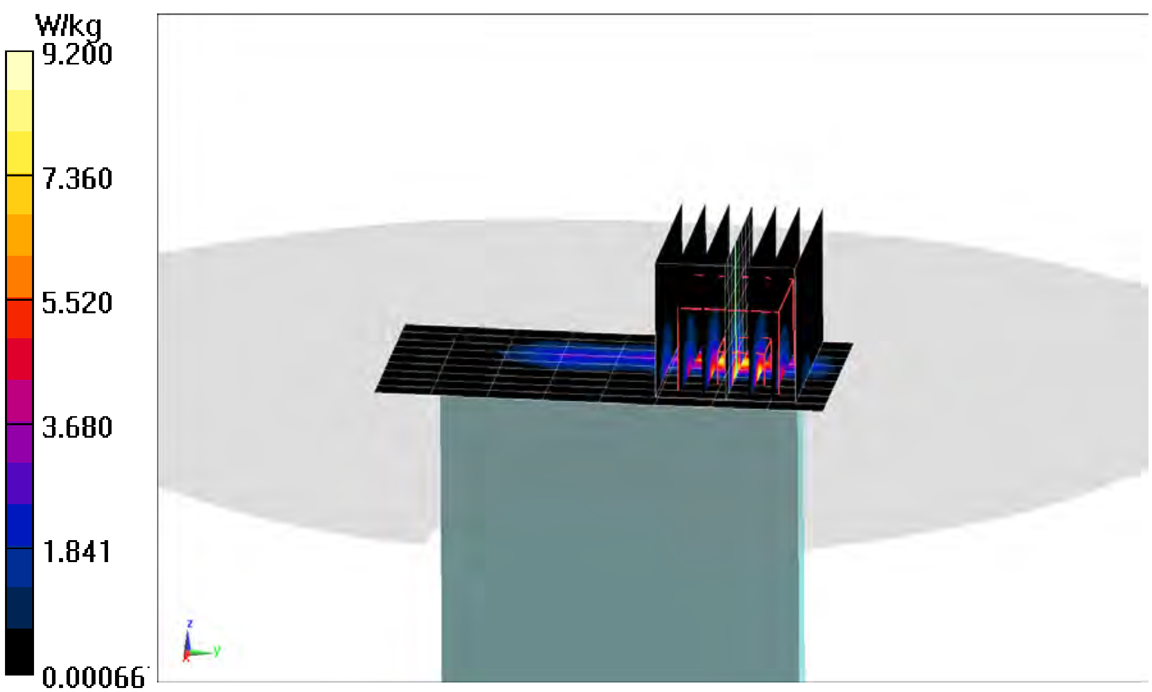
Communication System: UID 0, _LTE Band 41; Frequency: 2506 MHz; Duty Cycle: 1:1.58
Medium: 2450 Body Medium parameters used (interpolated):
f = 2506 MHz; σ = 2.112 S/m; ε_r = 50.417; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 06-24-2018; Ambient Temp: 22.7°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.51, 4.51, 4.51); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 41 PC3 ULCA, Phablet SAR, Bottom Edge,
PCC: 20 MHz Bandwidth, QPSK, Ch. 39750, 50 RB, 50 RB Offset
SCC: 20 MHz Bandwidth, QPSK, Ch. 39948, 50 RB, 0 RB Offset

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (9x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 28.26 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 24.3 W/kg
SAR(10 g) = 1.98 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: 52806

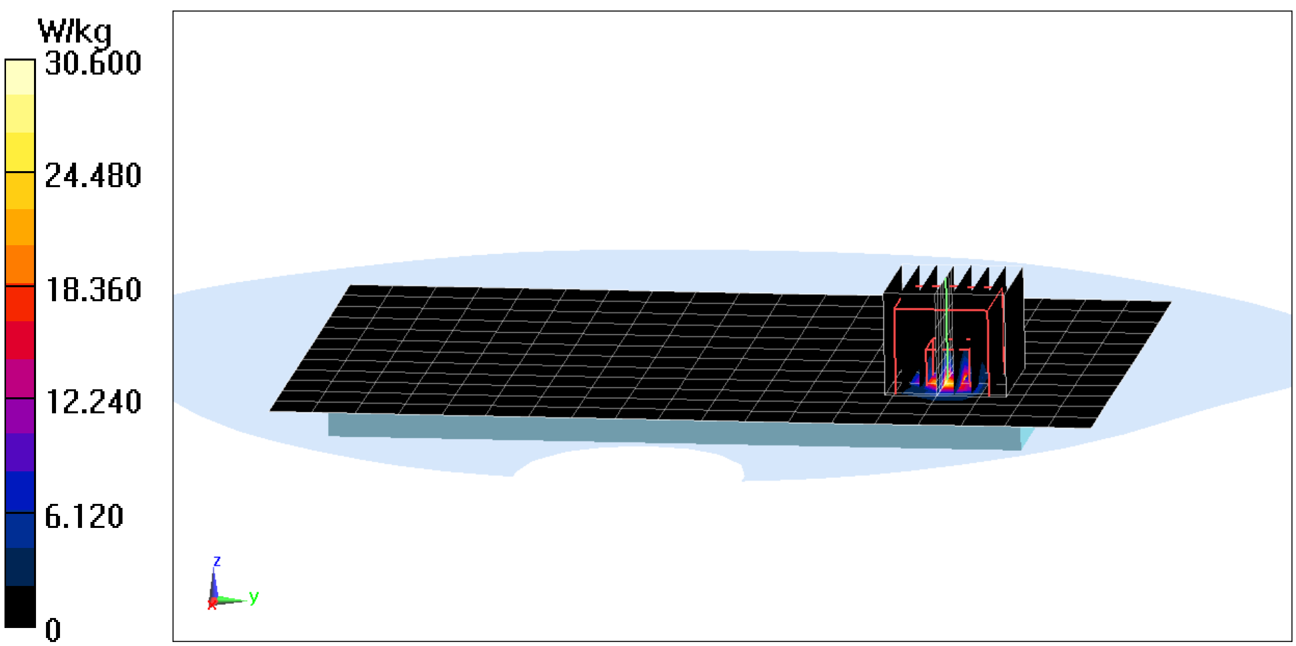
Communication System: UID 0, 802.11n 5.2-5.8 GHz Band; Frequency: 5500 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5500 MHz; σ = 5.808 S/m; ε_r = 46.954; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 06-25-2018; Ambient Temp: 22.5°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7357; ConvF(4.2, 4.2, 4.2); Calibrated: 4/18/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11n, U-NII-2C, MIMO, 20 MHz Bandwidth, Phablet SAR, Ch 100, 13 Mbps, Back Side

Area Scan (13x20x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 44.67 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 81.3 W/kg
SAR(10 g) = 1.74 W/kg



APPENDIX B: SYSTEM VERIFICATION

PCTEST ENGINEERING LABORATORY, INC.

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

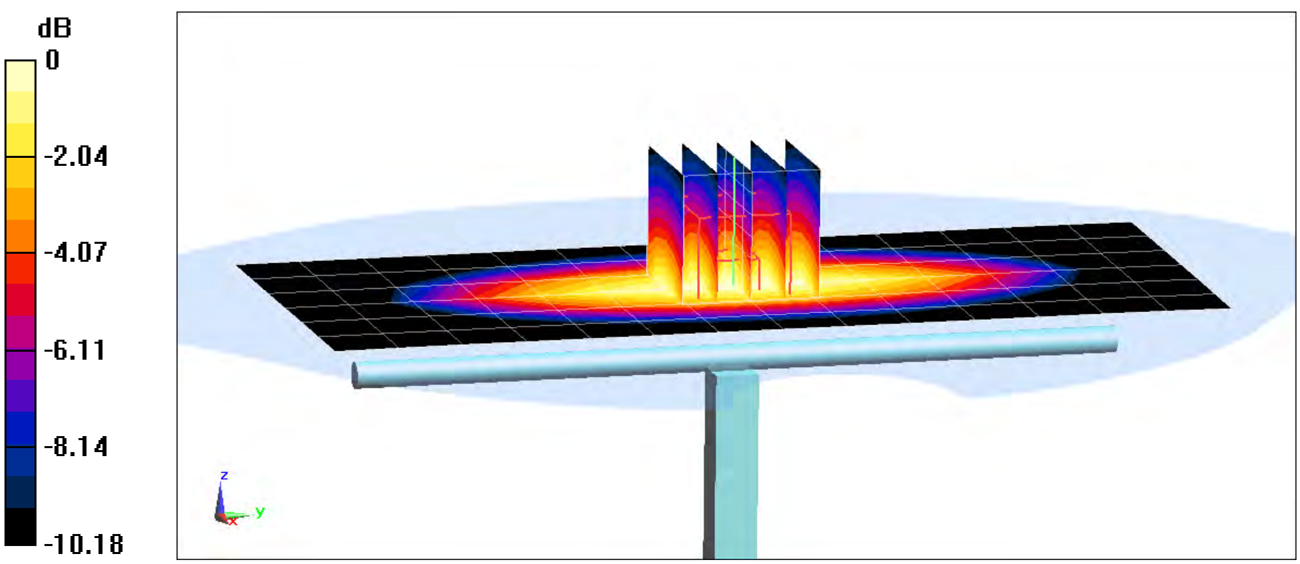
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 750 MHz; σ = 0.927 S/m; ε_r = 43.722; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-25-2018; Ambient Temp: 23.5°C; Tissue Temp: 21.8°C

Probe: ES3DV3 - SN3213; ConvF(6.75, 6.75, 6.75); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

750 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.39 W/kg
SAR(1 g) = 1.62 W/kg
Deviation(1 g) = -0.86%



0 dB = 1.88 W/kg = 2.74 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

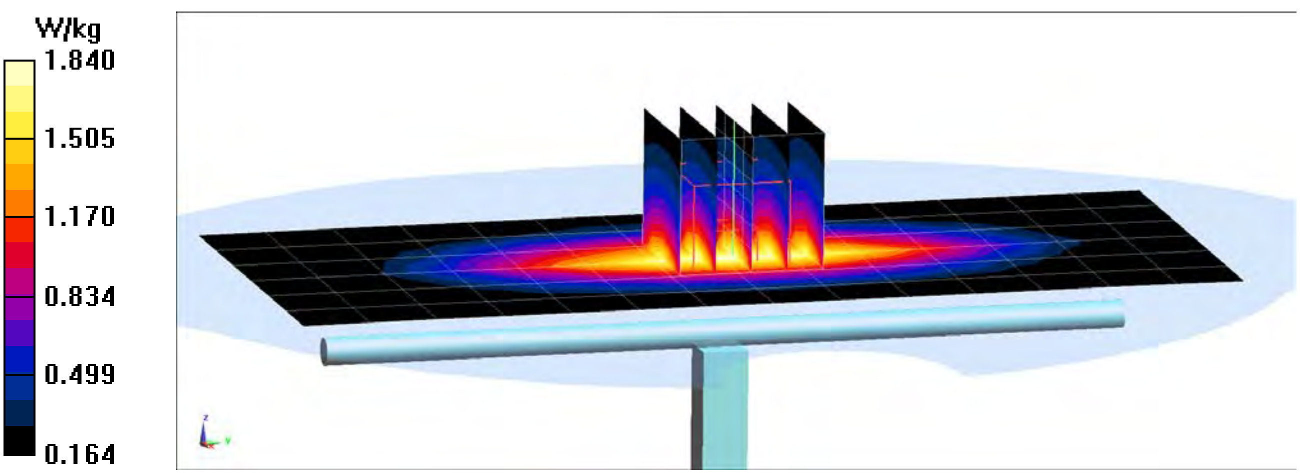
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 750 MHz; σ = 0.921 S/m; ε_r = 43.032; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-30-2018; Ambient Temp: 24.5°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3213; ConvF(6.75, 6.75, 6.75); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

750 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.38 W/kg
SAR(1 g) = 1.58 W/kg
Deviation(1 g) = -3.30%



PCTEST ENGINEERING LABORATORY, INC.

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

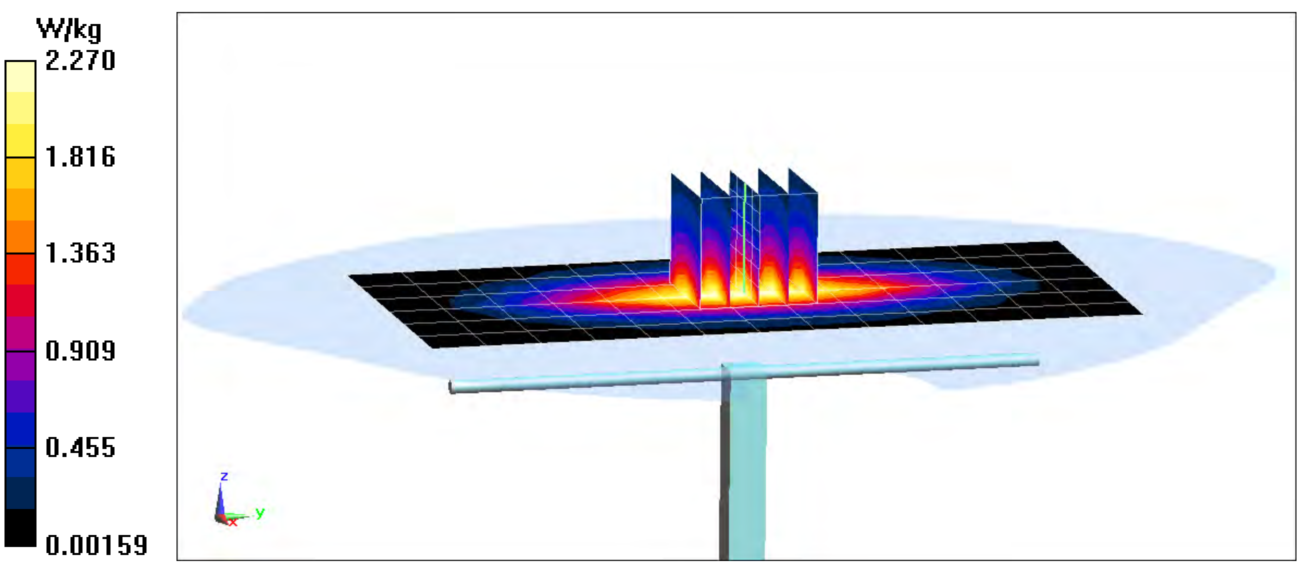
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used:
f = 835 MHz; σ = 0.942 S/m; ε_r = 42.516; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-19-2018; Ambient Temp: 21.5°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.91 W/kg
SAR(1 g) = 1.98 W/kg
Deviation(1 g) = 3.88%



PCTEST ENGINEERING LABORATORY, INC.

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

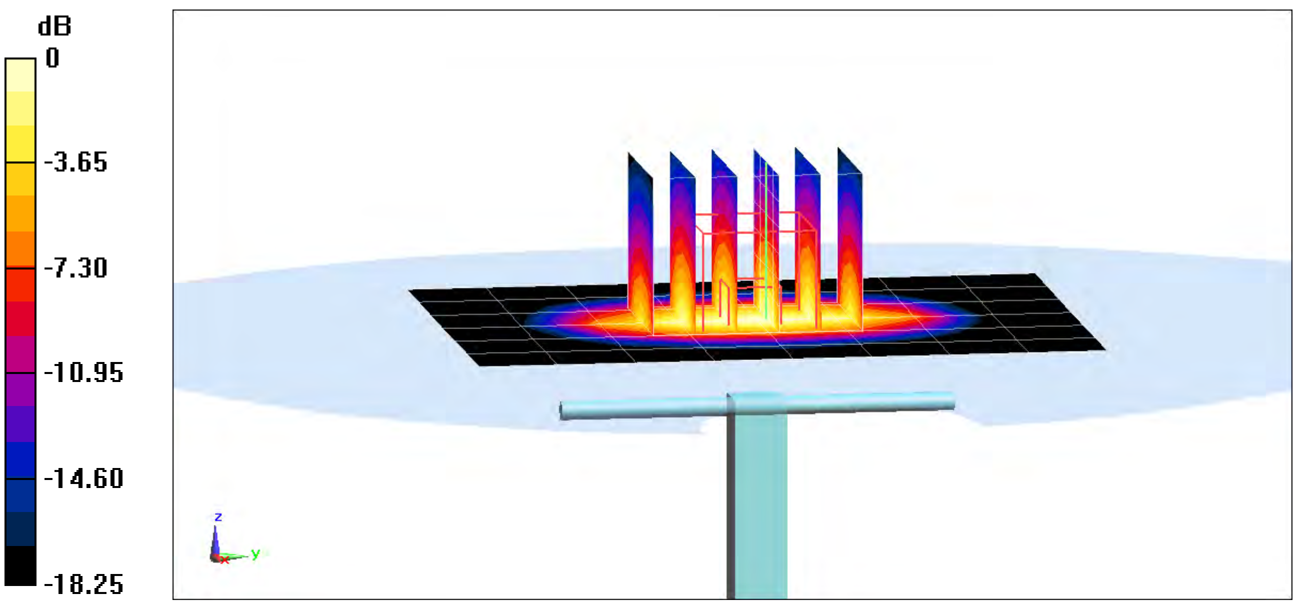
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used:
f = 1750 MHz; σ = 1.371 S/m; ε_r = 38.986; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-21-2018; Ambient Temp: 22.4°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3332; ConvF(5.56, 5.56, 5.56); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.21 W/kg
SAR(1 g) = 3.47 W/kg
Deviation(1 g) = -3.88%



0 dB = 4.36 W/kg = 6.39 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

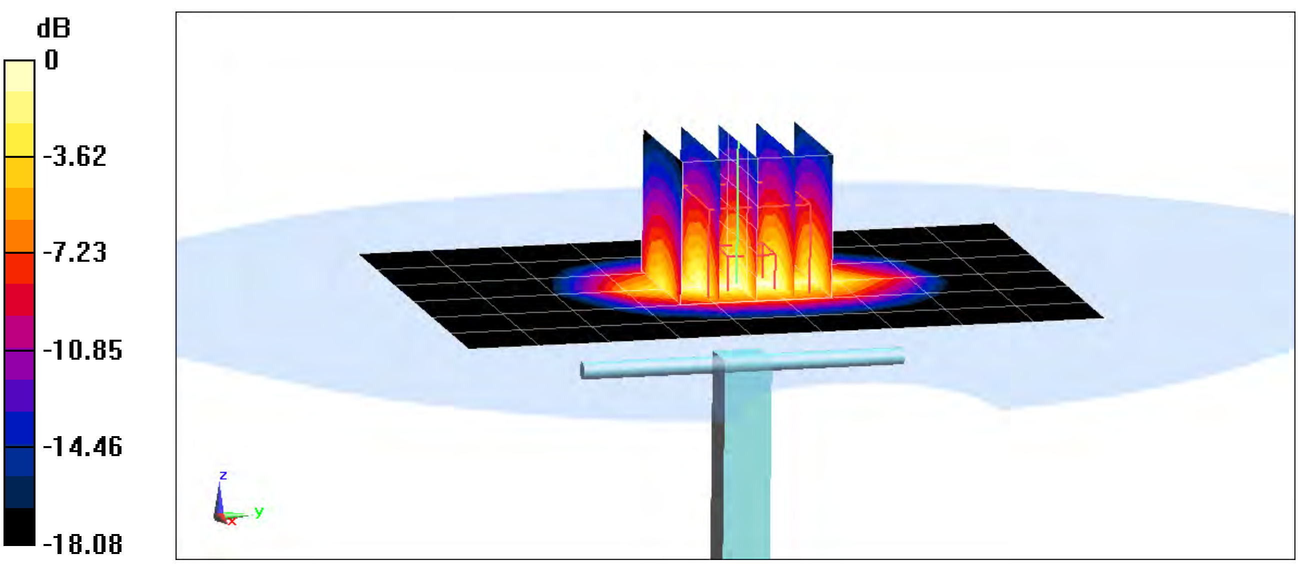
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.453 S/m; ε_r = 41.756; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2018; Ambient Temp: 23.5°C; Tissue Temp: 21.8°C

Probe: ES3DV3 - SN3213; ConvF(5.3, 5.3, 5.3); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.36 W/kg
SAR(1 g) = 4.02 W/kg
Deviation(1 g) = 0.25%



0 dB = 5.08 W/kg = 7.06 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

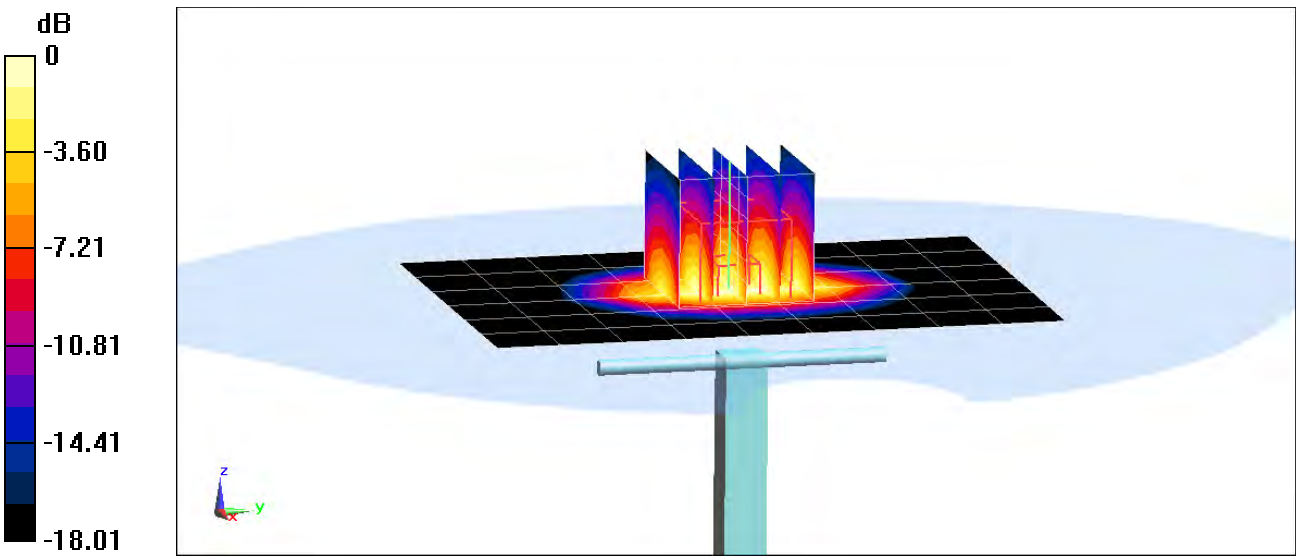
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.453 S/m; ε_r = 41.415; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2018; Ambient Temp: 23.9°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3213; ConvF(5.3, 5.3, 5.3); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.35 W/kg
SAR(1 g) = 4.03 W/kg
Deviation(1 g) = 0.50%



0 dB = 5.11 W/kg = 7.08 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

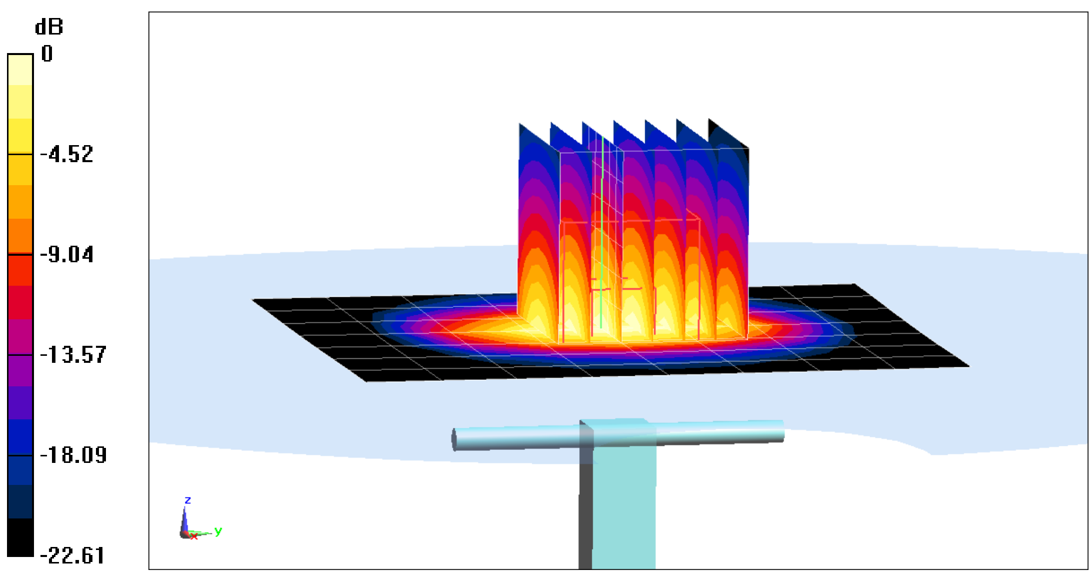
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; σ = 1.851 S/m; ε_r = 38.791; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-04-2018; Ambient Temp: 23.5°C; Tissue Temp: 23.3°C

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

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.9 W/kg
SAR(1 g) = 5.38 W/kg
Deviation(1 g) = 3.07%



0 dB = 7.01 W/kg = 8.46 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

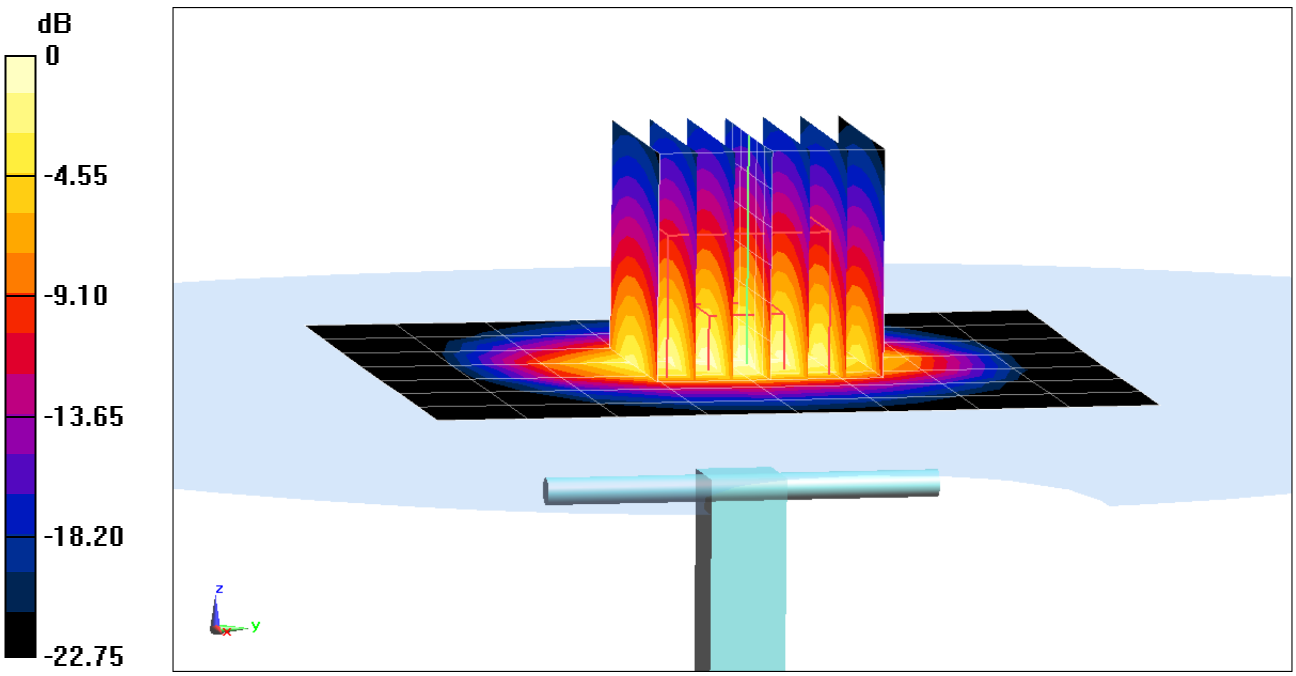
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; σ = 1.856 S/m; ε_r = 38.49; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-09-2018; Ambient Temp: 22.0°C; Tissue Temp: 21.4°C

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

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.8 W/kg
SAR(1 g) = 5.2 W/kg
Deviation(1 g) = -0.38%



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

PCTEST ENGINEERING LABORATORY, INC.

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

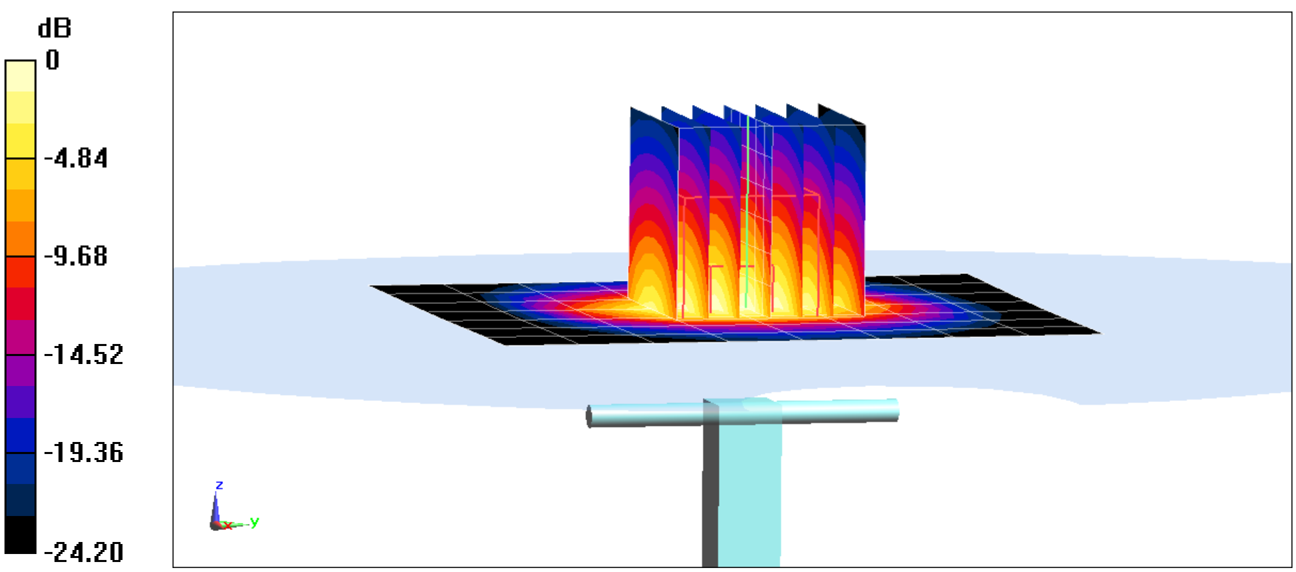
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2600 MHz; σ = 2.032 S/m; ε_r = 38.934; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-02-2018; Ambient Temp: 22.9°C; Tissue Temp: 21.8°C

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

2600 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 12.8 W/kg
SAR(1 g) = 5.75 W/kg
Deviation(1 g) = 2.86%



0 dB = 7.61 W/kg = 8.81 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

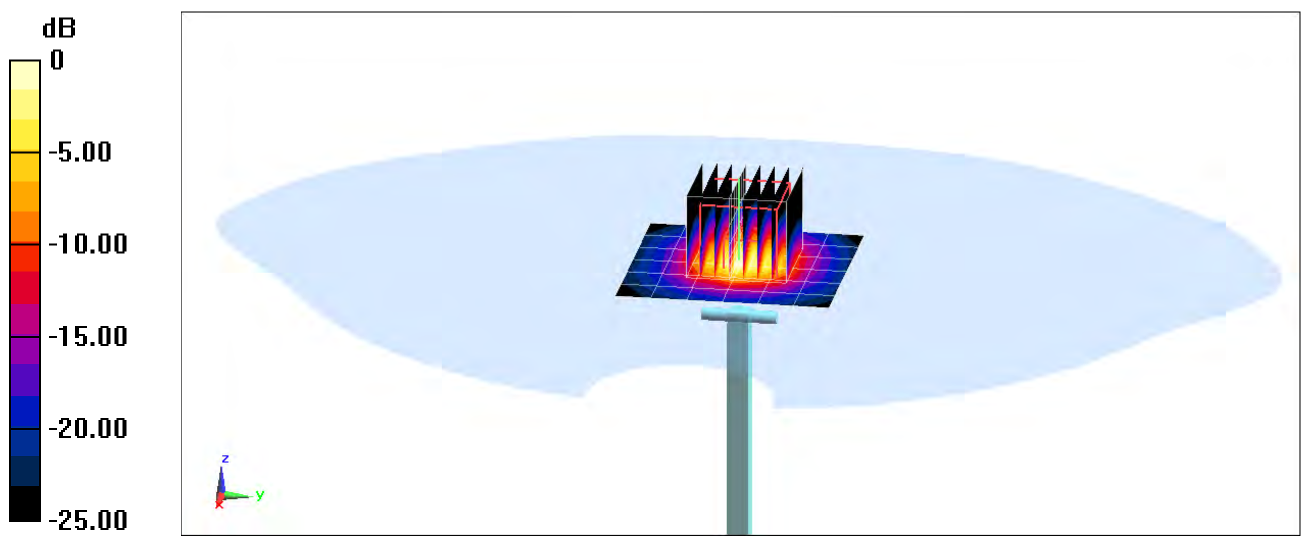
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used (interpolated):
f = 5250 MHz; σ = 4.587 S/m; ε_r = 36.647; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2018; Ambient Temp: 20.7°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN3589; ConvF(4.69, 4.69, 4.69); Calibrated: 1/16/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5250 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 16.4 W/kg
SAR(1 g) = 4.02 W/kg
Deviation(1 g) = 1.90%



0 dB = 9.46 W/kg = 9.76 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

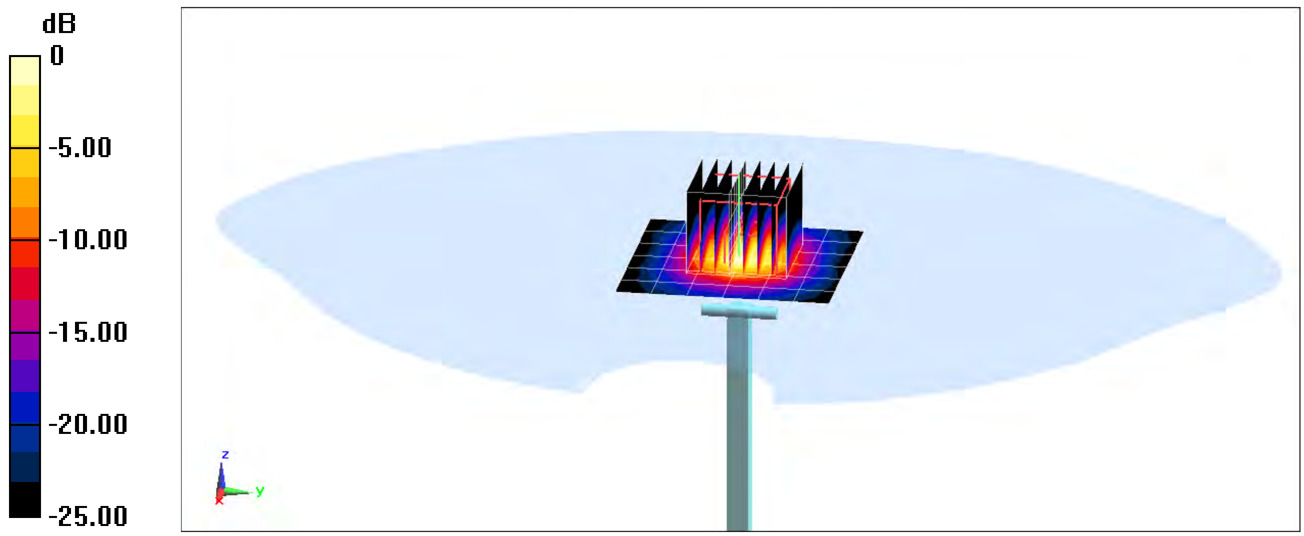
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used:
f = 5600 MHz; σ = 4.968 S/m; ε_r = 36.129; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2018; Ambient Temp: 20.7°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN3589; ConvF(4.17, 4.17, 4.17); Calibrated: 1/16/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5600 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 17.9 W/kg
SAR(1 g) = 4.13 W/kg
Deviation(1 g) = -1.20%



0 dB = 10.2 W/kg = 10.09 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

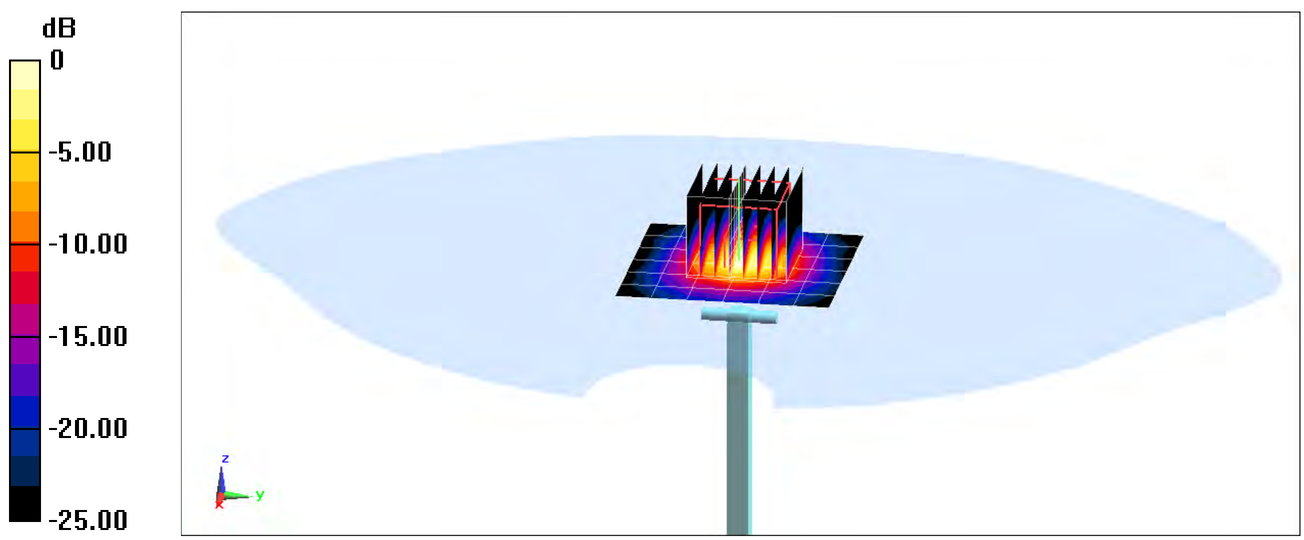
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used (interpolated):
f = 5750 MHz; σ = 5.115 S/m; ε_r = 35.925; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2018; Ambient Temp: 20.7°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN3589; ConvF(4.42, 4.42, 4.42); Calibrated: 1/16/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5750 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 16.4 W/kg
SAR(1 g) = 3.7 W/kg
Deviation(1 g) = -6.45%



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

PCTEST ENGINEERING LABORATORY, INC.

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

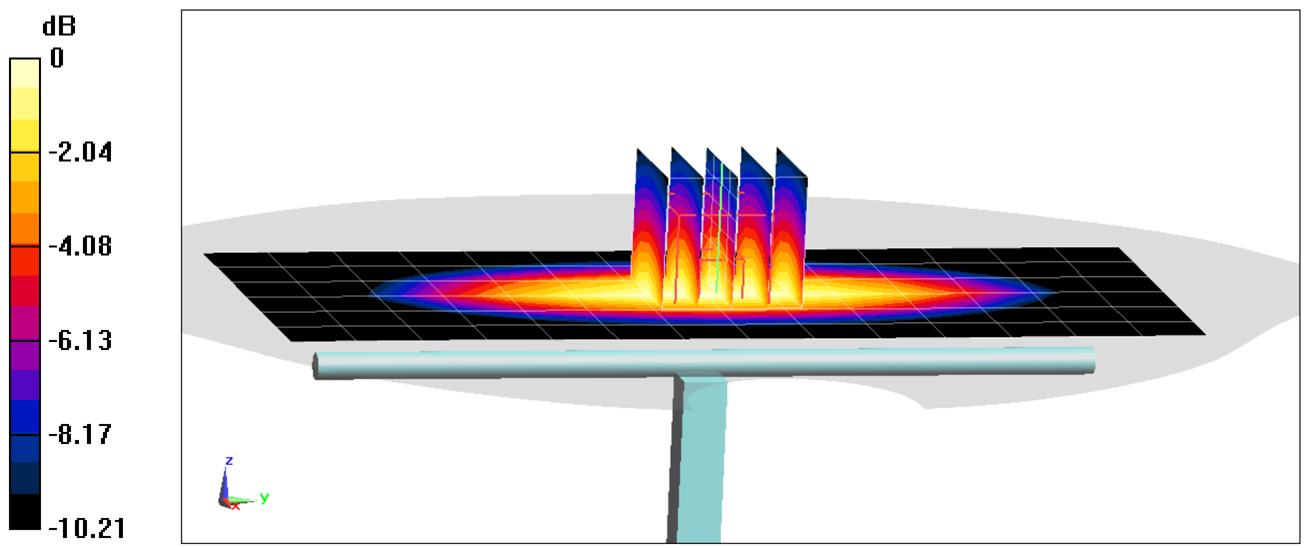
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 750 MHz; σ = 0.987 S/m; ε_r = 53.645; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-25-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN3914; ConvF(9.75, 9.75, 9.75); Calibrated: 2/14/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

750 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.80 W/kg
SAR(1 g) = 1.86 W/kg
Deviation(1 g) = 8.39%



0 dB = 2.48 W/kg = 3.94 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

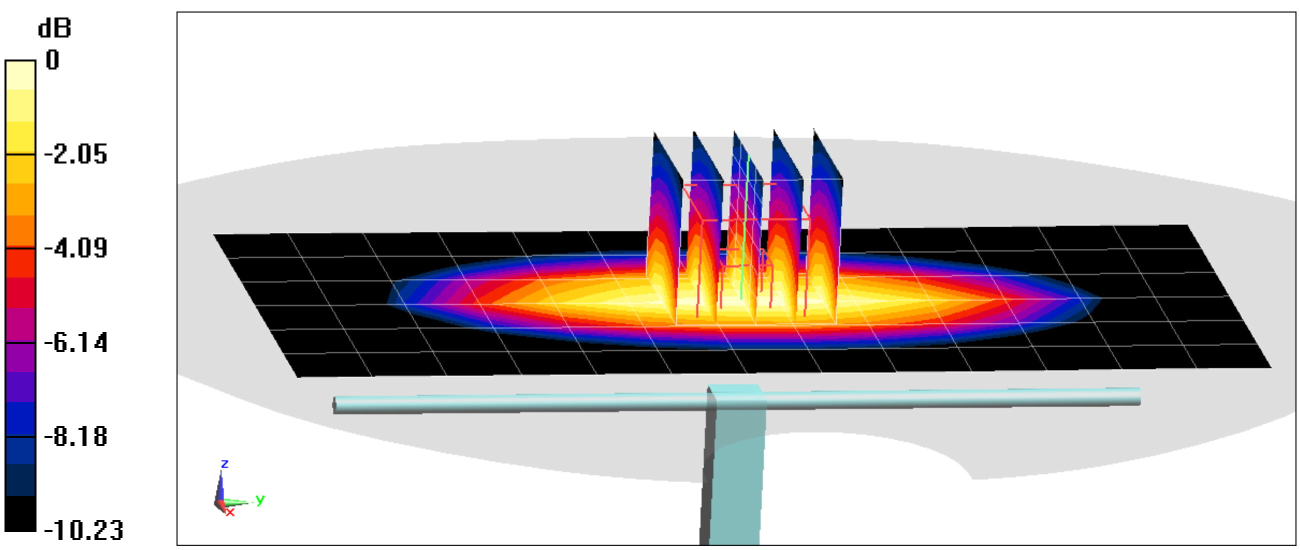
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.984 S/m; ε_r = 54.308; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-18-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN3914; ConvF(9.57, 9.57, 9.57); Calibrated: 2/14/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 3.03 W/kg
SAR(1 g) = 2.04 W/kg
Deviation(1 g) = 5.05%



0 dB = 2.71 W/kg = 4.33 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

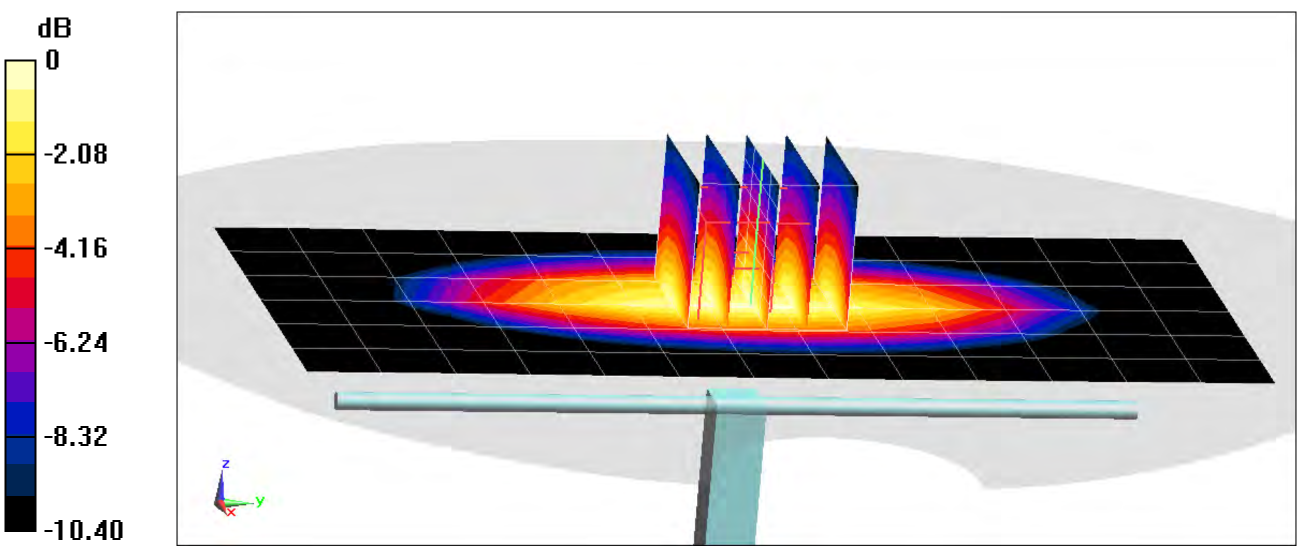
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.979 S/m; ε_r = 53.624; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-20-2018; Ambient Temp: 21.5°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN3914; ConvF(9.57, 9.57, 9.57); Calibrated: 2/14/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 3.09 W/kg
SAR(1 g) = 2.08 W/kg
Deviation(1 g) = 7.11%



0 dB = 2.74 W/kg = 4.38 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

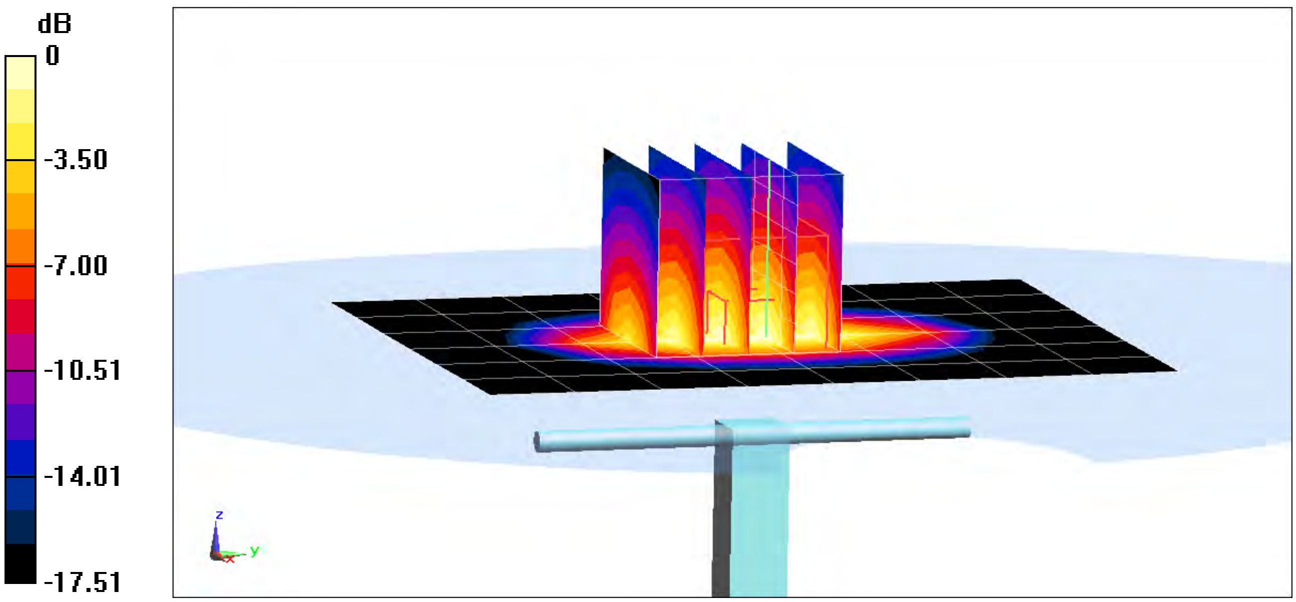
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used:
f = 1750 MHz; σ = 1.478 S/m; ε_r = 53.073; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-19-2018; Ambient Temp: 22.6°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3332; ConvF(5.16, 5.16, 5.16); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.43 W/kg
SAR(1 g) = 3.67 W/kg; SAR(10 g) = 1.96 W/kg
Deviation(1 g) = 0.55%; Deviation(10 g) = 0.51%



0 dB = 4.57 W/kg = 6.60 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

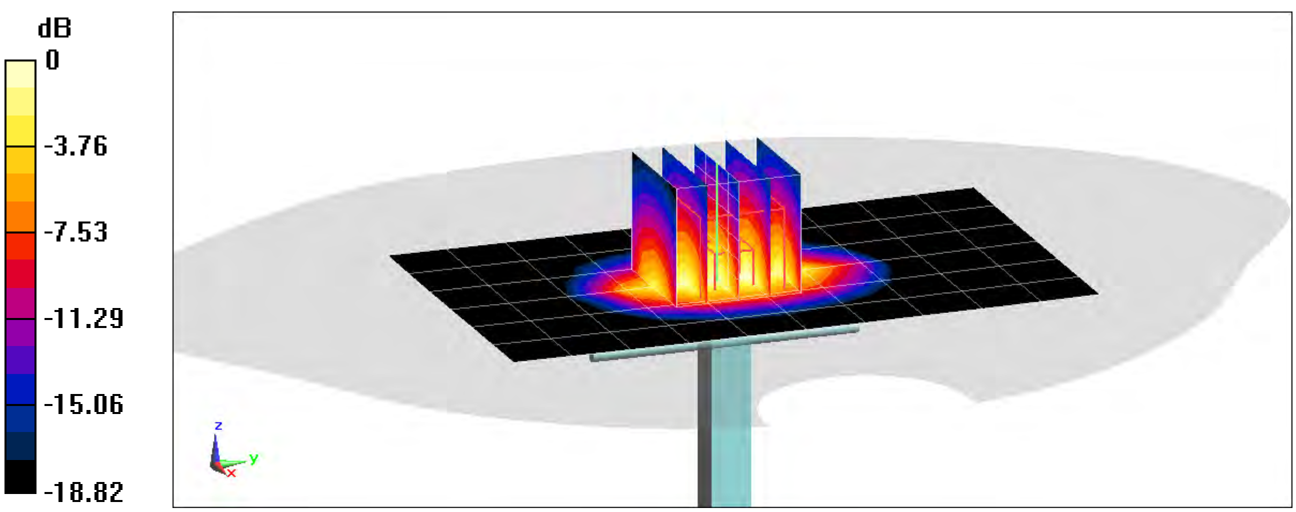
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.575 S/m; ε_r = 51.579; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-18-2018; Ambient Temp: 21.6°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.83 W/kg
SAR(1 g) = 4.2 W/kg
Deviation(1 g) = 6.06%



0 dB = 6.51 W/kg = 8.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

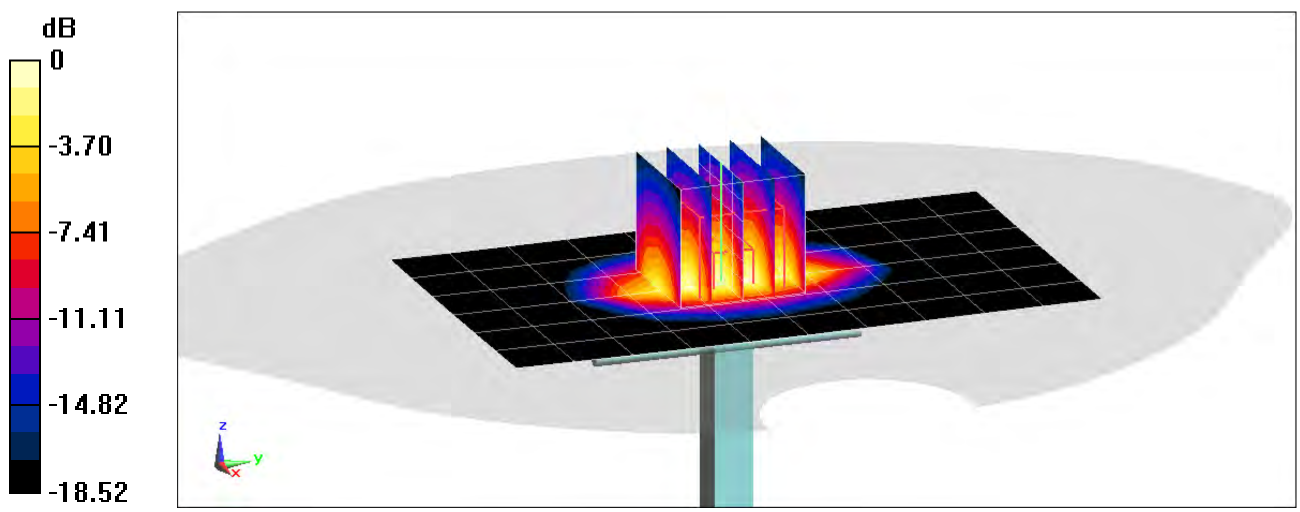
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.549 S/m; ε_r = 51.393; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-21-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.79 W/kg
SAR(1 g) = 4.19 W/kg; SAR(10 g) = 2.14 W/kg
Deviation(1 g) = 5.81%; Deviation(10 g) = 2.39%



0 dB = 6.50 W/kg = 8.13 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

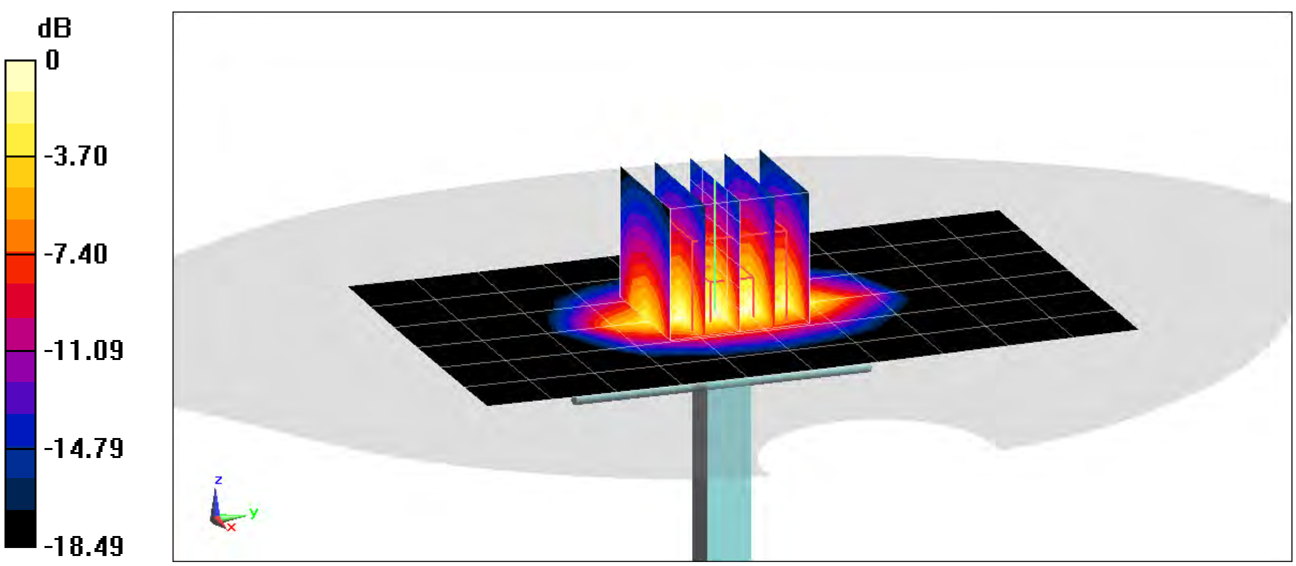
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.575 S/m; ε_r = 51.573; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-28-2018; Ambient Temp: 22.6°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.74 W/kg
SAR(1 g) = 4.14 W/kg
Deviation(1 g) = 3.50%



0 dB = 6.47 W/kg = 8.11 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

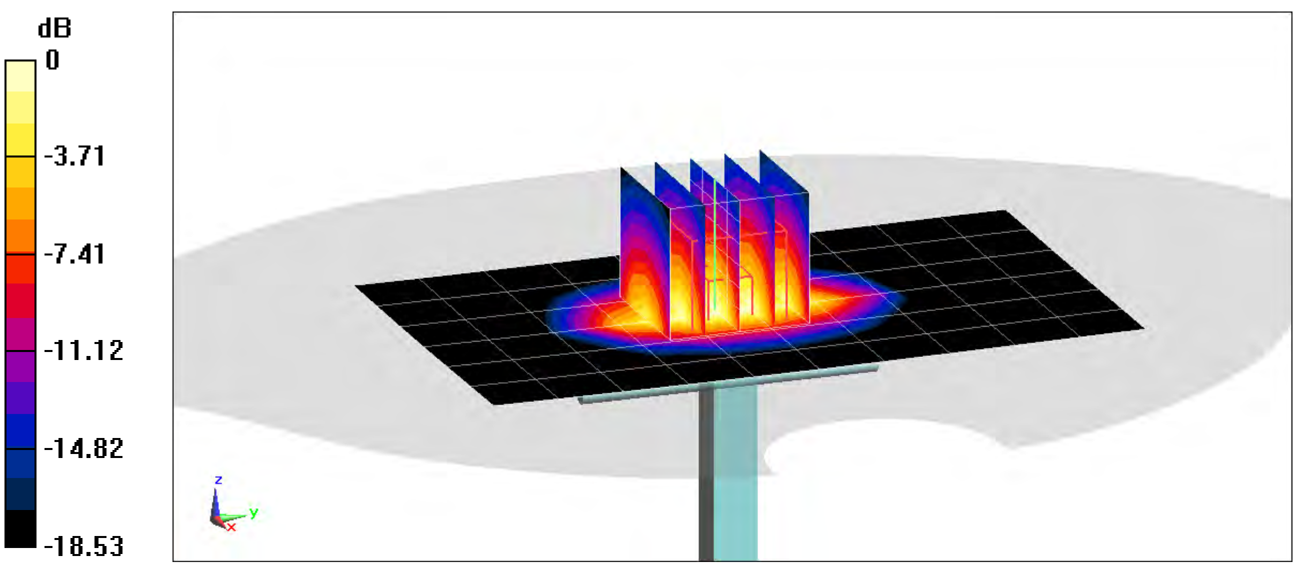
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.557 S/m; ε_r = 51.234; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-02-2018; Ambient Temp: 22.4°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.72 W/kg
SAR(1 g) = 4.13 W/kg
Deviation(1 g) = 3.25%



0 dB = 6.45 W/kg = 8.10 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

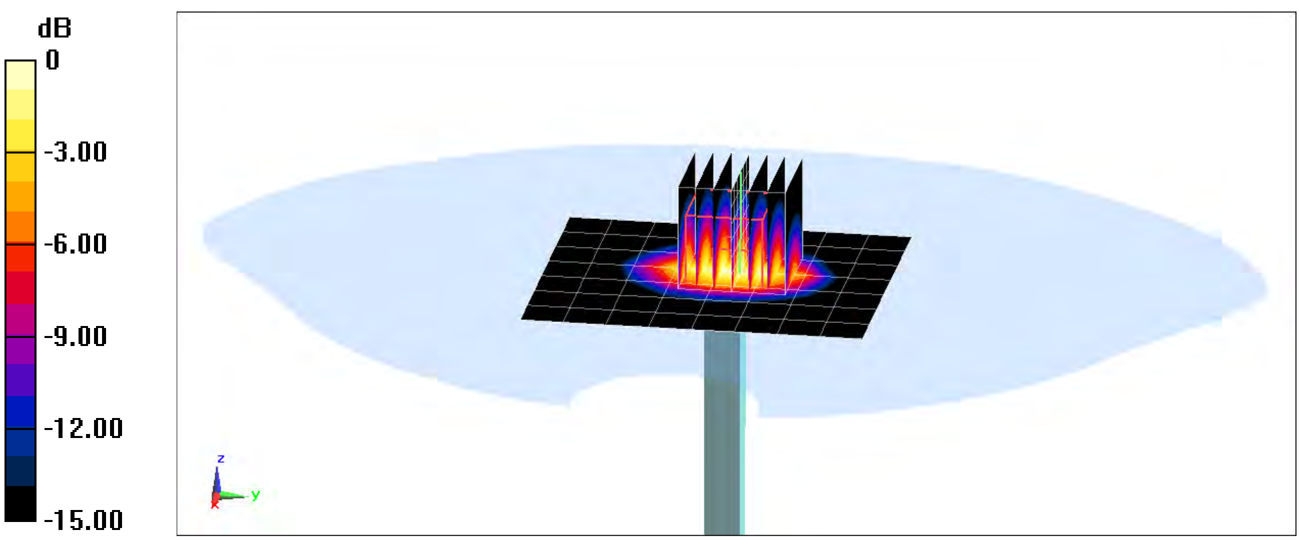
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; σ = 1.981 S/m; ε_r = 52.417; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-21-2018; Ambient Temp: 21.2°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN7410; ConvF(7.69, 7.69, 7.69); Calibrated: 7/17/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.1 W/kg
SAR(1 g) = 4.93 W/kg
Deviation(1 g) = -2.95%



0 dB = 8.18 W/kg = 9.13 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

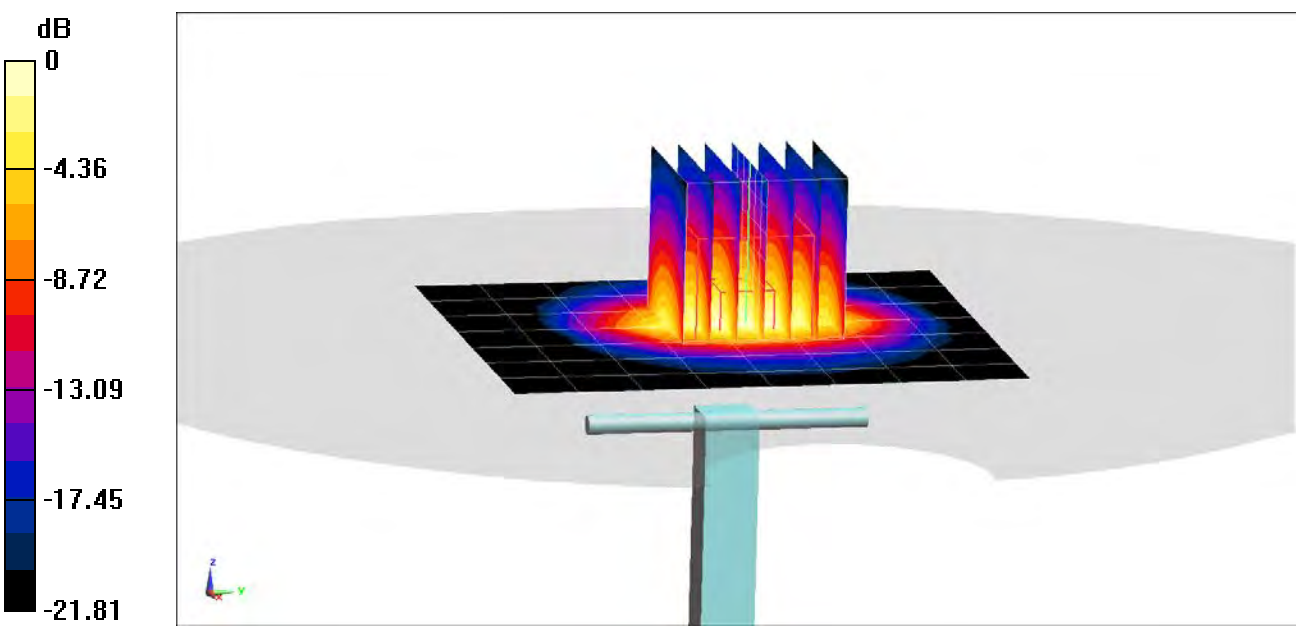
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; σ = 2.025 S/m; ε_r = 50.558; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-02-2018; Ambient Temp: 22.2°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3319; ConvF(4.51, 4.51, 4.51); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.6 W/kg
SAR(1 g) = 5.1 W/kg
Deviation(1 g) = 1.59%



0 dB = 6.78 W/kg = 8.31 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

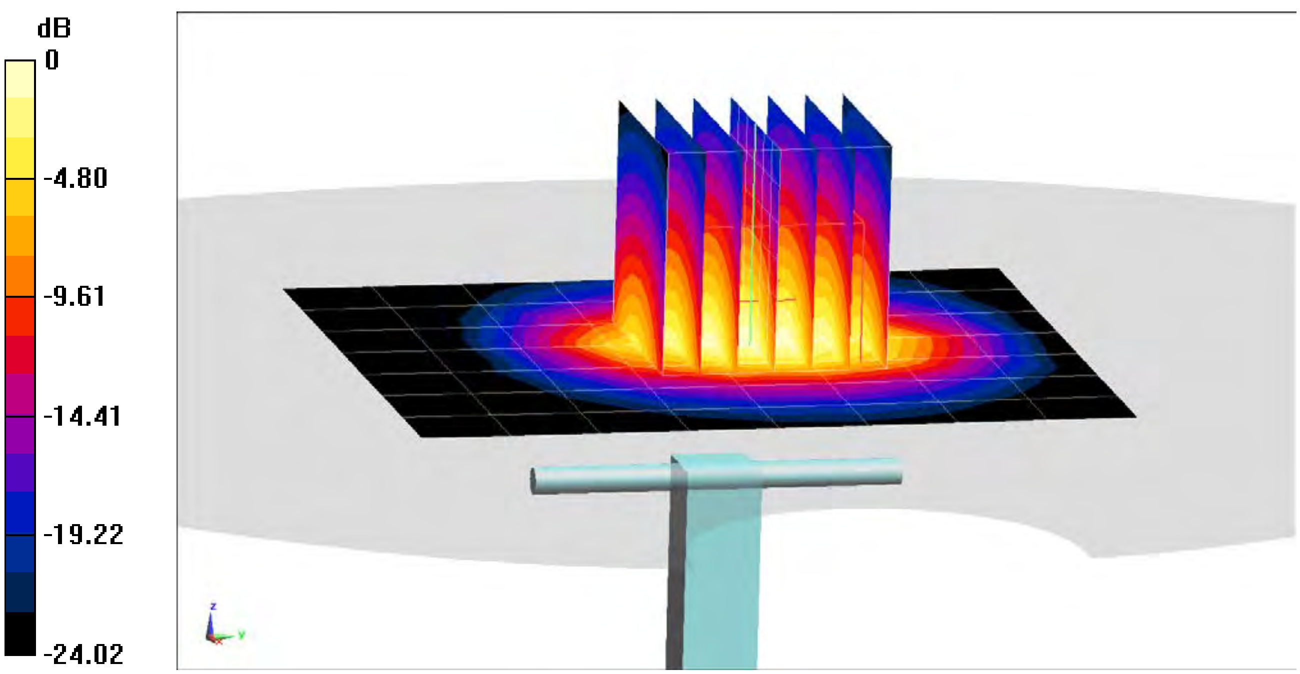
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2600 MHz; σ = 2.201 S/m; ε_r = 50.515; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-26-2018; Ambient Temp: 22.8°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3319; ConvF(4.33, 4.33, 4.33); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 12.2 W/kg
SAR(1 g) = 5.6 W/kg
Deviation(1 g) = 2.19%



0 dB = 7.42 W/kg = 8.70 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

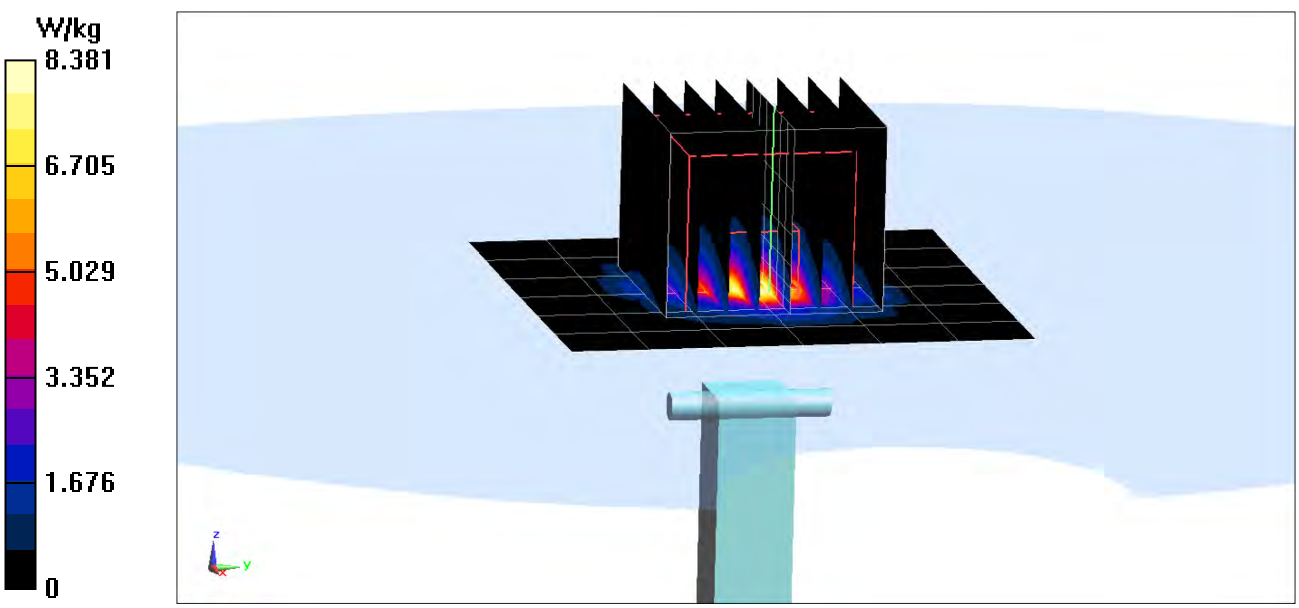
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used (interpolated):
f = 5250 MHz; σ = 5.475 S/m; ε_r = 47.383; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2018; Ambient Temp: 22.5°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7357; ConvF(4.78, 4.78, 4.78); Calibrated: 4/18/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5250 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 14.2 W/kg
SAR(1 g) = 3.57 W/kg; SAR(10 g) = 1.01 W/kg
Deviation(1 g) =-7.15%; Deviation(10 g) = -6.05%



PCTEST ENGINEERING LABORATORY, INC.

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

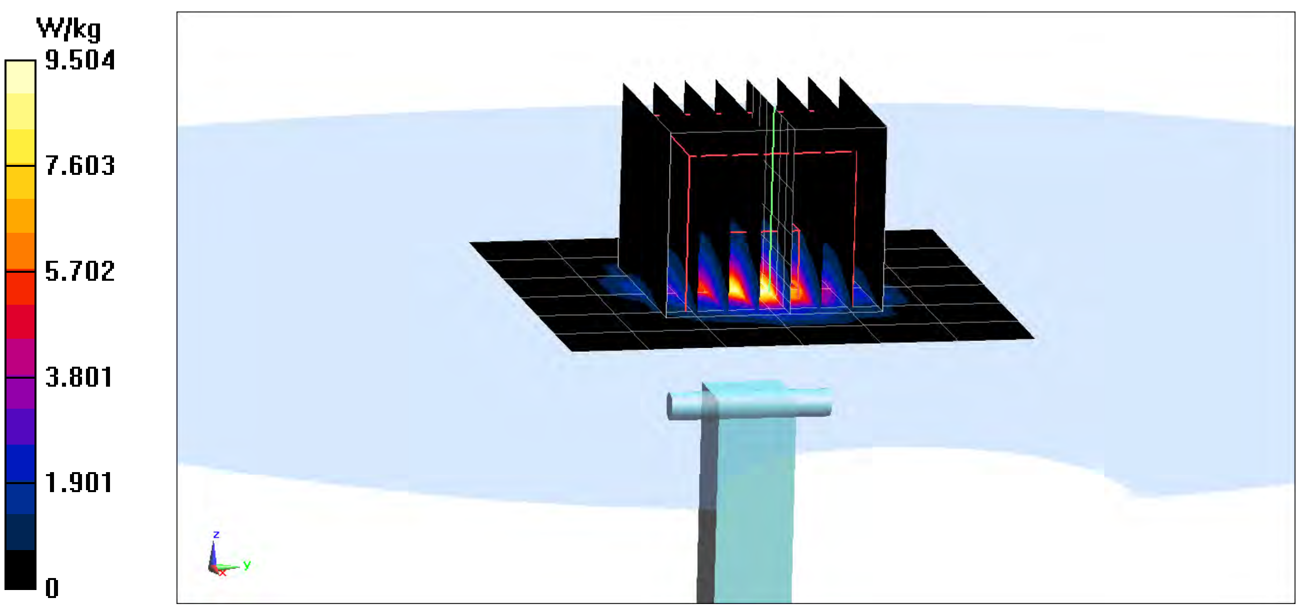
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5600 MHz; σ = 5.949 S/m; ε_r = 46.79; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2018; Ambient Temp: 22.5°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7357; ConvF(4.2, 4.2, 4.2); Calibrated: 4/18/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5600 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 17.1 W/kg
SAR(1 g) = 3.9 W/kg; SAR(10 g) = 1.08 W/kg
Deviation(1 g) = -0.64%; Deviation(10 g) = -2.26%



PCTEST ENGINEERING LABORATORY, INC.

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

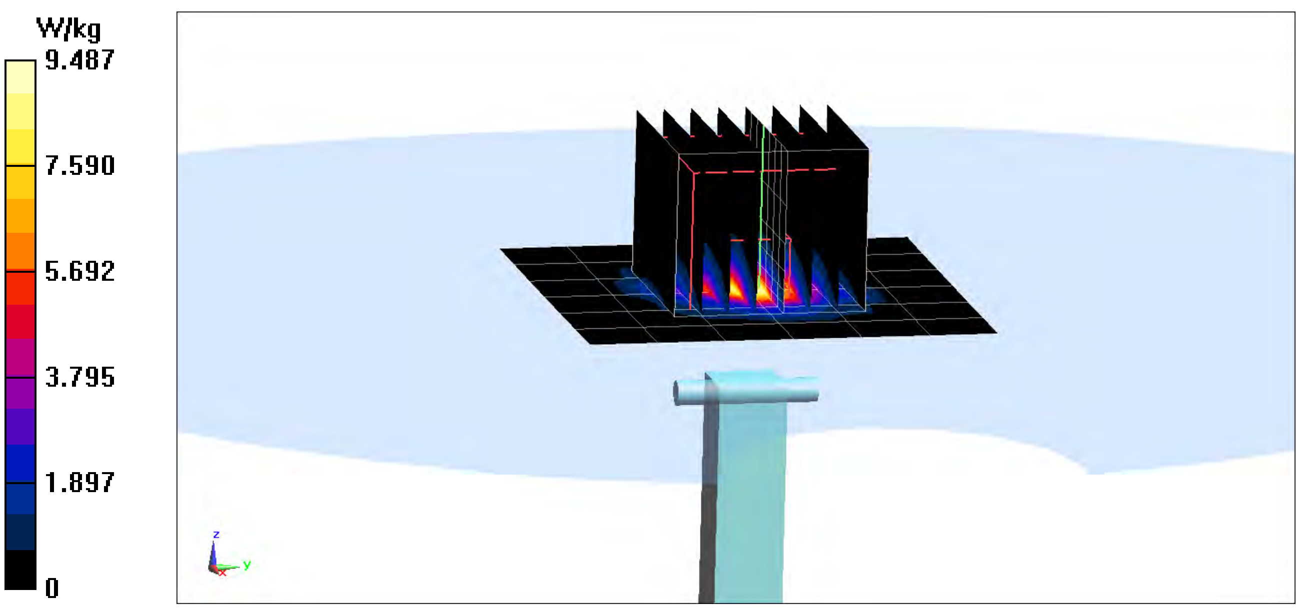
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used (interpolated):
f = 5750 MHz; σ = 6.163 S/m; ε_r = 46.526; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2018; Ambient Temp: 22.5°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7357; ConvF(4.21, 4.21, 4.21); Calibrated: 4/18/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5750 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 17.2 W/kg
SAR(1 g) = 3.73 W/kg; SAR(10 g) = 1.03 W/kg
Deviation(1 g) = -3.24%; Deviation(10 g) = -3.74%



PCTEST ENGINEERING LABORATORY, INC.

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

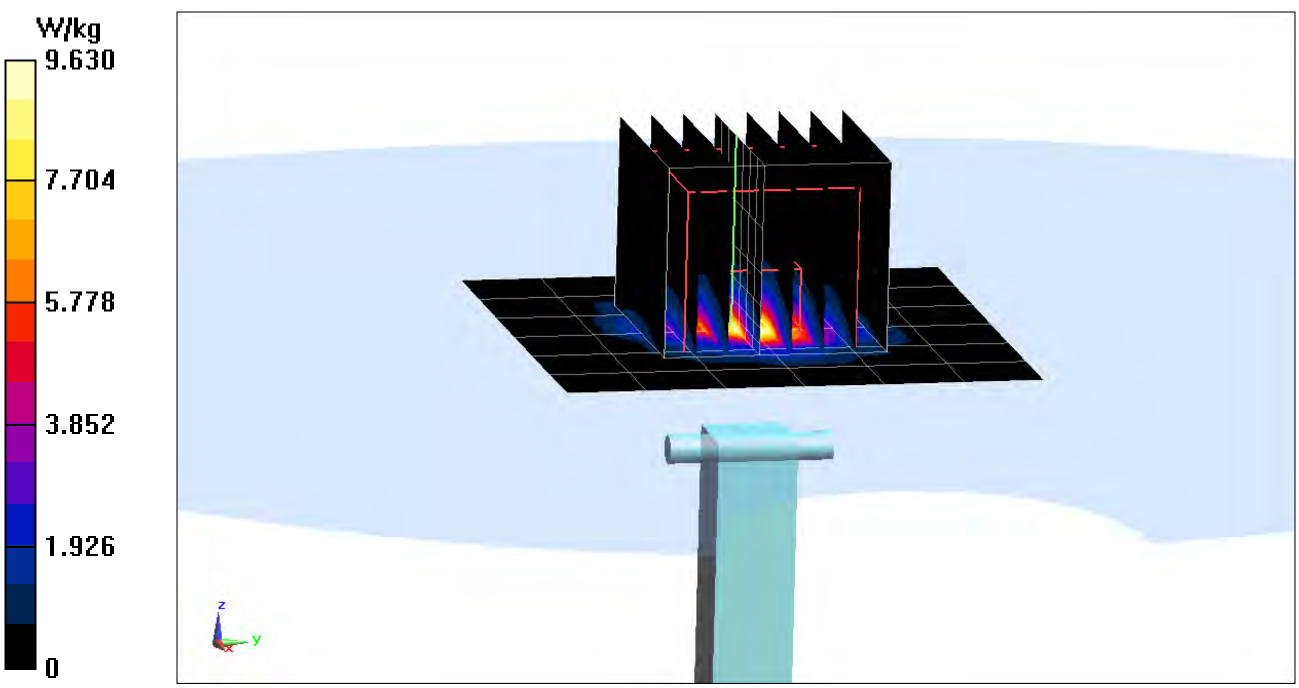
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used (interpolated):
f = 5750 MHz; σ = 6.173 S/m; ε_r = 47.424; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-02-2018; Ambient Temp: 22.4°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7357; ConvF(4.21, 4.21, 4.21); Calibrated: 4/18/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5750 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 17.8 W/kg
SAR(1 g) = 3.84 W/kg
Deviation(1 g) = -0.39%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

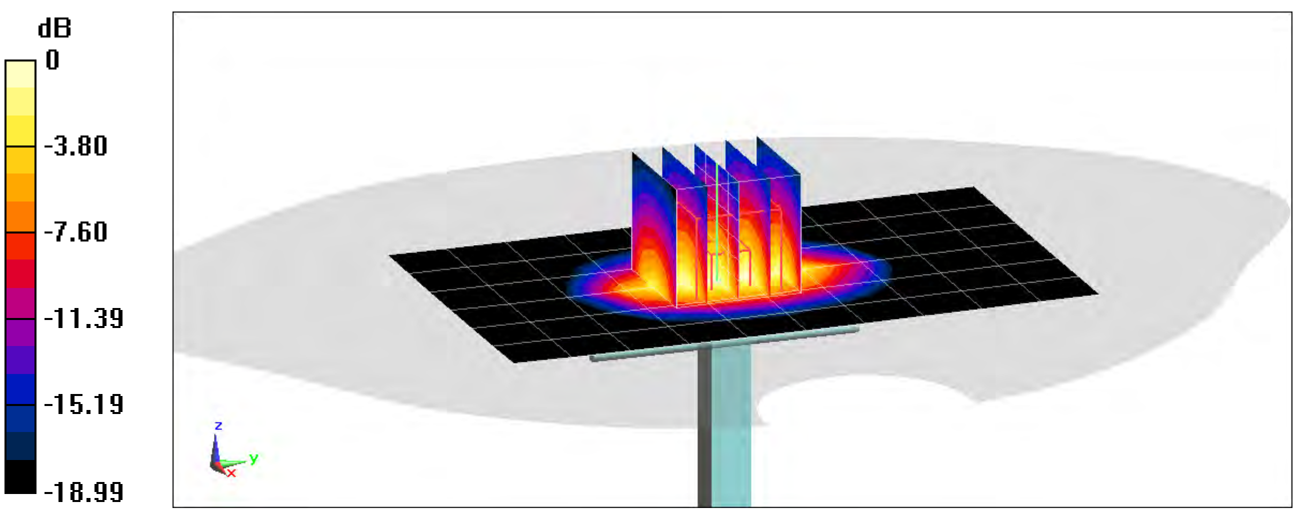
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.575 S/m; ε_r = 51.188; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2018; Ambient Temp: 21.1°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.90 W/kg
SAR(10 g) = 2.13 W/kg
Deviation(10 g) = 1.91%



0 dB = 6.57 W/kg = 8.18 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

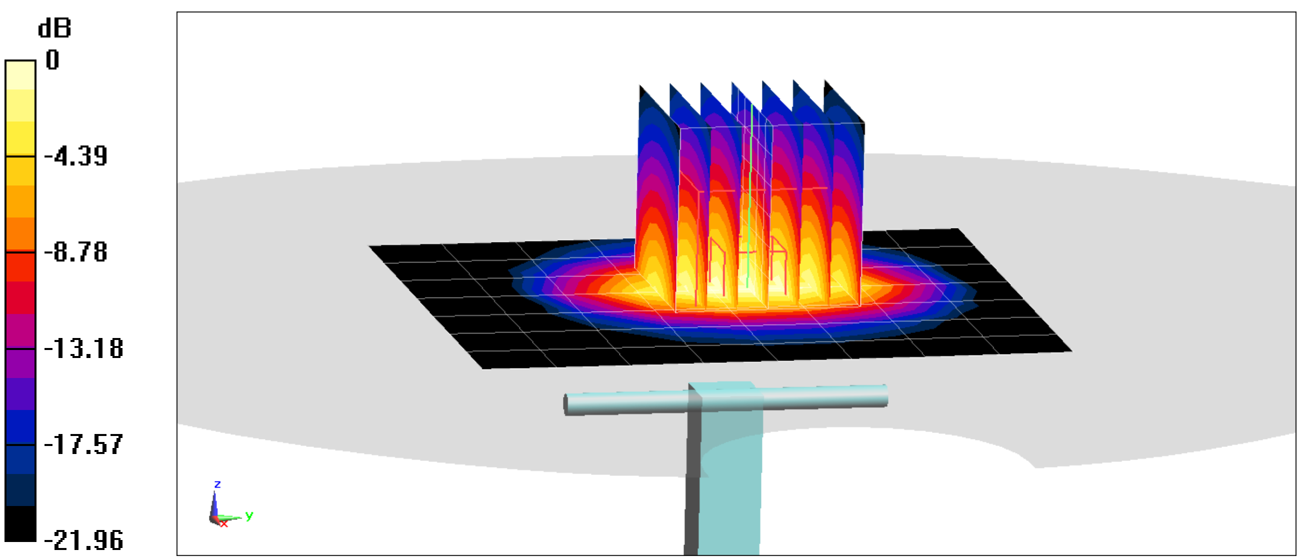
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; σ = 2.047 S/m; ε_r = 50.574; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-24-2018; Ambient Temp: 22.7°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.51, 4.51, 4.51); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.8 W/kg
SAR(10 g) = 2.38 W/kg
Deviation(10 g) = 0.85%



0 dB = 6.95 W/kg = 8.42 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

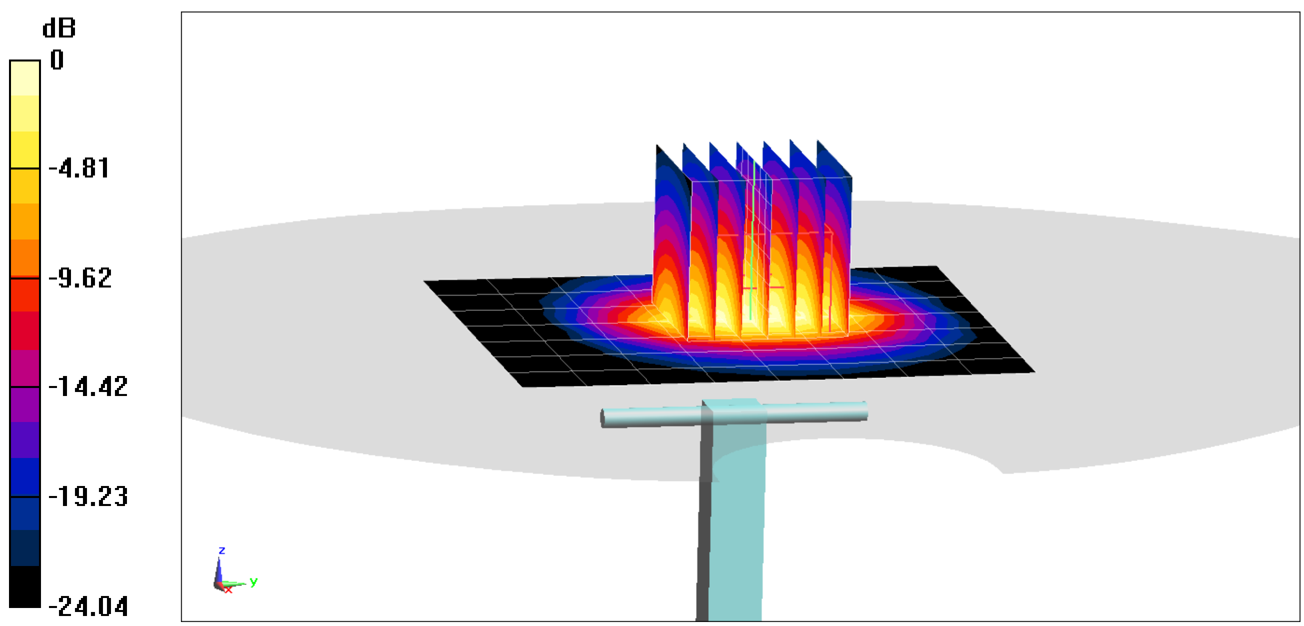
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2600 MHz; $\sigma = 2.226$ S/m; $\varepsilon_r = 50.15$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-24-2018; Ambient Temp: 22.7°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.33, 4.33, 4.33); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 12.0 W/kg
SAR(10 g) = 2.41 W/kg
Deviation(10 g) = -2.43%



0 dB = 7.19 W/kg = 8.57 dBW/kg

APPENDIX C: PROBE CALIBRATION

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

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

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

Accreditation No.: SCS 0108

Client **PC Test**

Certificate No: D750V3-1161_Jul16

CALIBRATION CERTIFICATE

Object	D750V3 - SN:1161
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	July 13, 2016

√PM 8/9/16
Extended 7/2017 SC ✓

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 5058 (20k)	05-Apr-16 (No. 217-02292)	Apr-17
Type-N mismatch combination	SN: 5047.2 / 06327	05-Apr-16 (No. 217-02295)	Apr-17
Reference Probe EX3DV4	SN: 7349	15-Jun-16 (No. EX3-7349_Jun16)	Jun-17
DAE4	SN: 601	30-Dec-15 (No. DAE4-601_Dec15)	Dec-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (No. 217-02223)	In house check: Oct-16
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Jun-15)	In house check: Oct-16
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: July 13, 2016

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.9 ± 6 %	0.91 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.09 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**8.17 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.37 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**5.39 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	55.1 ± 6 %	0.99 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.16 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**8.43 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.41 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**5.53 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	55.6 Ω - 0.9 jΩ
Return Loss	- 25.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	50.2 Ω - 4.0 jΩ
Return Loss	- 28.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.033 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	November 19, 2015

DASY5 Validation Report for Head TSL

Date: 13.07.2016

Test Laboratory: SPEAG, Zurich, Switzerland

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

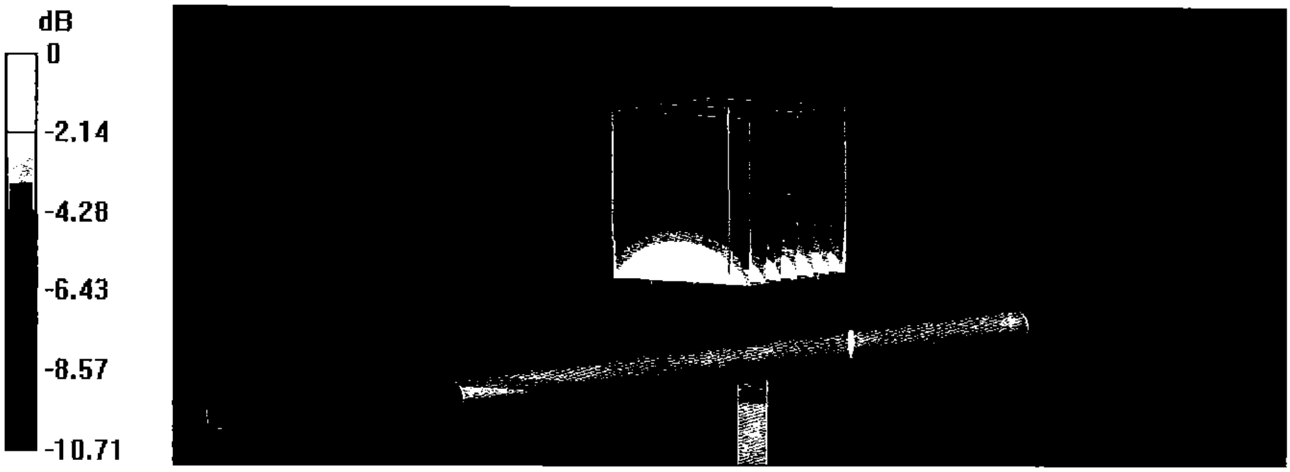
Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.91 S/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.07, 10.07, 10.07); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

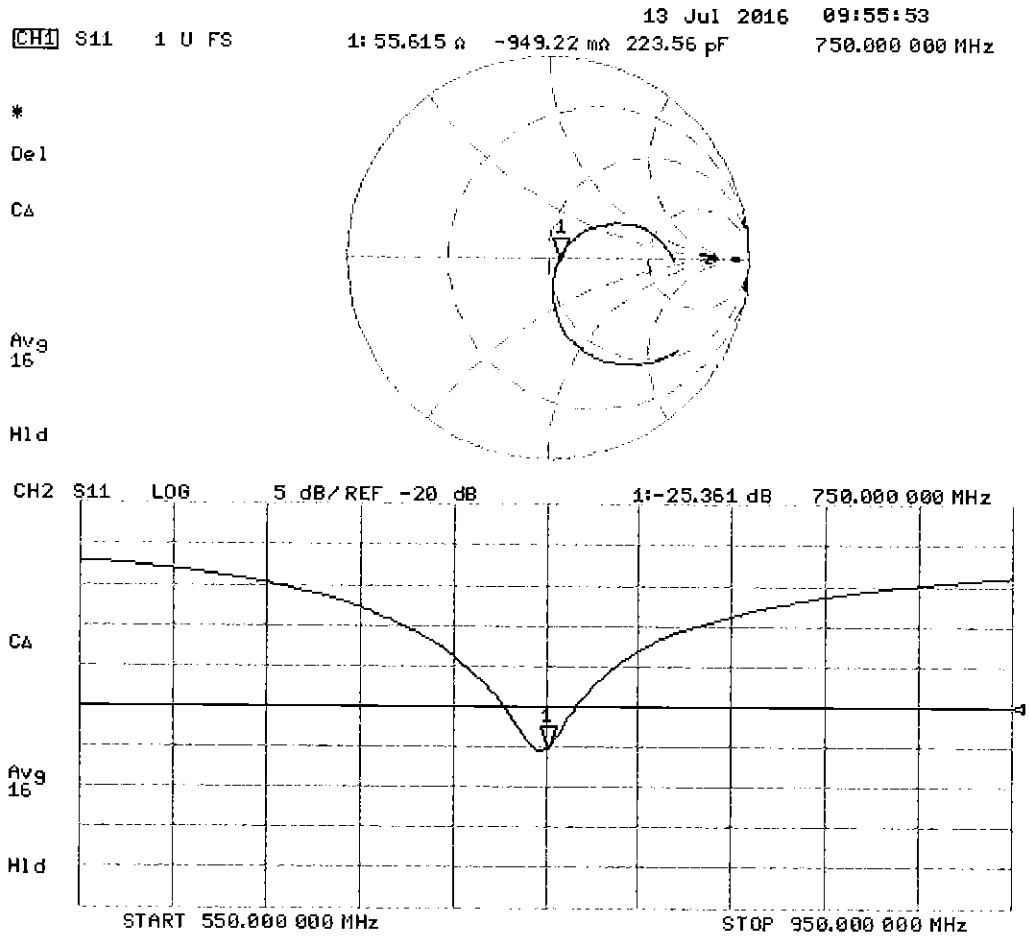
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 58.07 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 3.13 W/kg
SAR(1 g) = 2.09 W/kg; SAR(10 g) = 1.37 W/kg
Maximum value of SAR (measured) = 2.80 W/kg



0 dB = 2.80 W/kg = 4.47 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 13.07.2016

Test Laboratory: SPEAG, Zurich, Switzerland

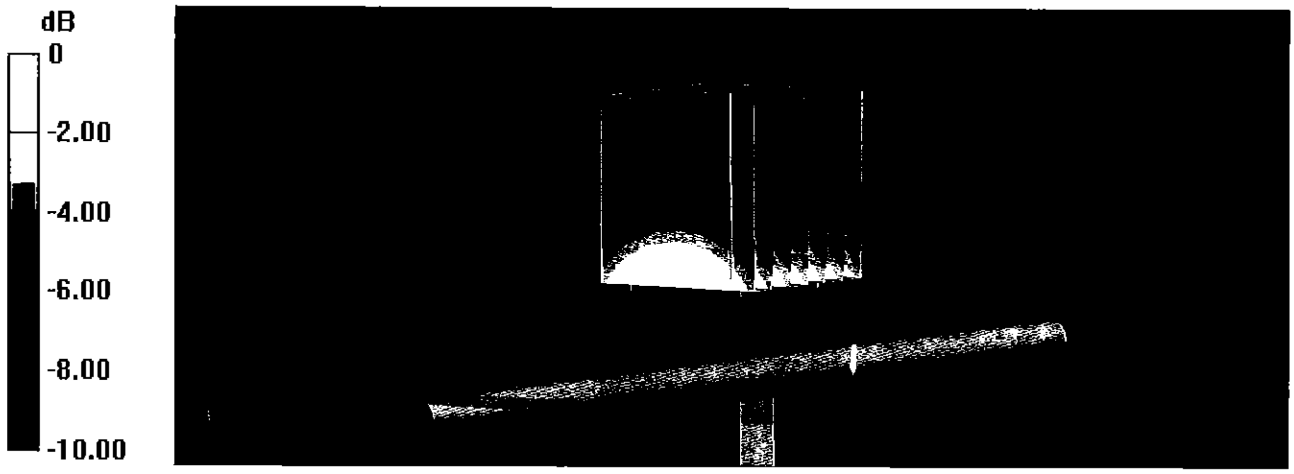
DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1161

Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.99 S/m; ε_r = 55.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

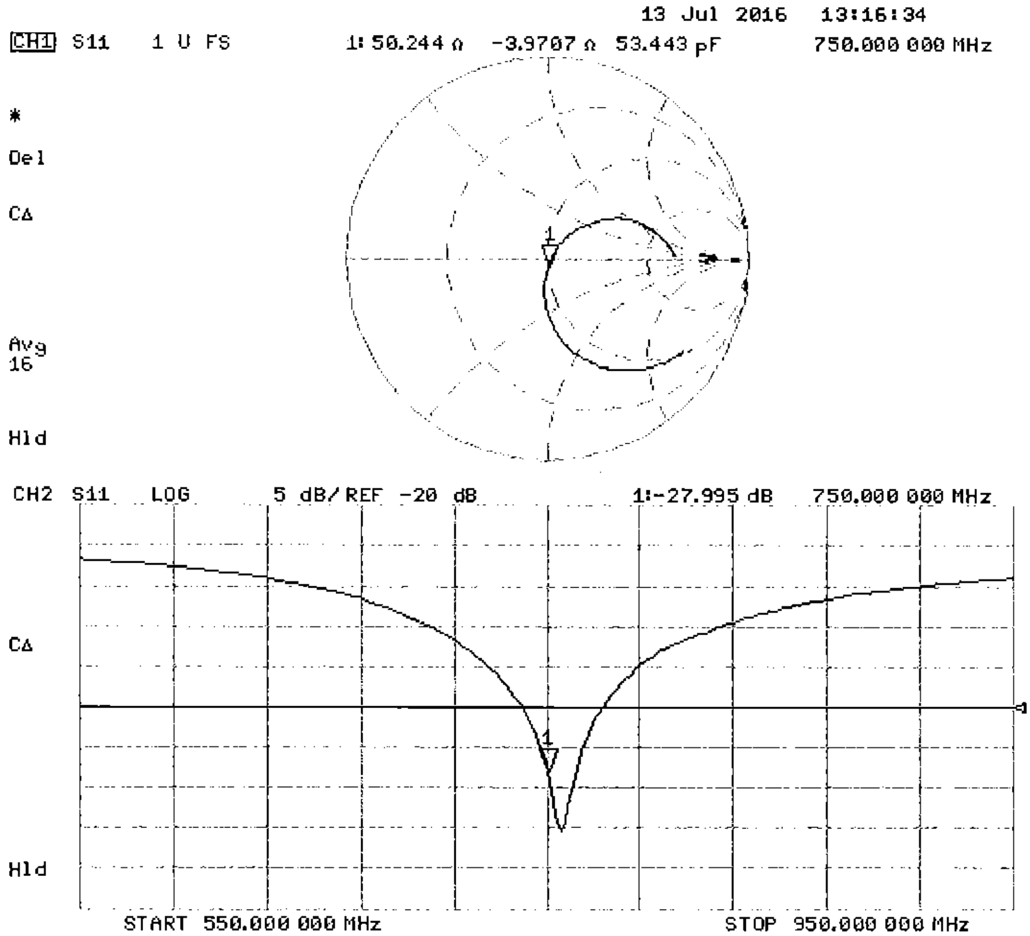
- Probe: EX3DV4 - SN7349; ConvF(9.99, 9.99, 9.99); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.33 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 3.22 W/kg
SAR(1 g) = 2.16 W/kg; SAR(10 g) = 1.41 W/kg
Maximum value of SAR (measured) = 2.87 W/kg



0 dB = 2.87 W/kg = 4.58 dBW/kg

Impedance Measurement Plot for Body TSL



Certification of Calibration

Object	D750V3 – SN: 1161
Calibration procedure(s)	Procedure for Calibration Extension for SAR Dipoles.
Calibration date:	July 12, 2017
Description:	SAR Validation Dipole at 750 MHz.

Calibration Equipment used:

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Control Company	4040	Therm./Clock/Humidity Monitor	3/31/2017	Biennial	3/31/2019	170232394
Control Company	4352	Ultra Long Stem Thermometer	5/2/2017	Biennial	5/2/2019	170330156
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Keysight Technologies	85033E	Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm)	6/1/2017	Annual	6/1/2018	MY53401181
Agilent	8753ES	S-Parameter Network Analyzer	10/26/2016	Annual	10/26/2017	US39170118
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/8/2017	Annual	3/8/2018	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/14/2017	Annual	6/14/2018	1334
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/10/2017	Annual	5/10/2018	1070
SPEAG	ES3DV3	SAR Probe	11/15/2016	Annual	11/15/2017	3334
SPEAG	ES3DV3	SAR Probe	3/14/2017	Annual	3/14/2018	3319
Anritsu	MA2411B	Pulse Power Sensor	2/10/2017	Annual	2/10/2018	1207364
Anritsu	MA2411B	Pulse Power Sensor	2/10/2017	Annual	2/10/2018	1339018
Anritsu	ML2495A	Power Meter	10/16/2015	Biennial	10/16/2017	941001
Agilent	N5182A	MXG Vector Signal Generator	2/28/2017	Annual	2/28/2018	MY47420800
Seekonk	NC-100	Torque Wrench	11/6/2015	Biennial	11/6/2017	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A

Measurement Uncertainty = ±23% (k=2)

	Name	Function	Signature
Calibrated By:	Brodie Halbfoster	Test Engineer	BRODIE HALBFOSTER
Approved By:	Kaitlin O'Keefe	Senior Technical Manager	KOK

DIPOLE CALIBRATION EXTENSION

Per KDB 865664 D01, calibration intervals of up to three years may be considered for reference dipoles when it is demonstrated that the SAR target, impedance and return loss of a dipole have remained stable according to the following requirements:

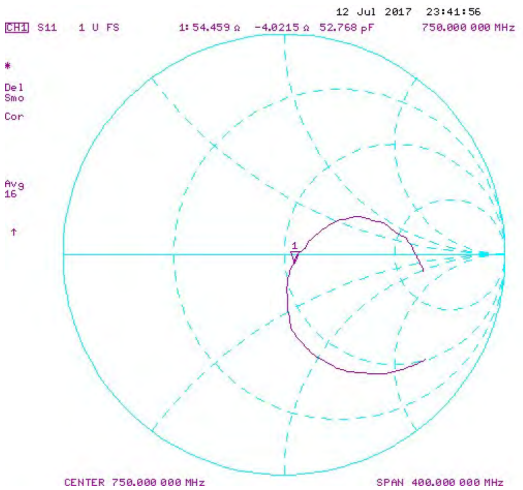
1. The measured SAR does not deviate more than 10% from the target on the calibration certificate.
2. The return-loss does not deviate more than 20% from the previous measurement and meets the required 20dB minimum return-loss requirement.
3. The measurement of real or imaginary parts of impedance does not deviate more than 5Ω from the previous measurement.

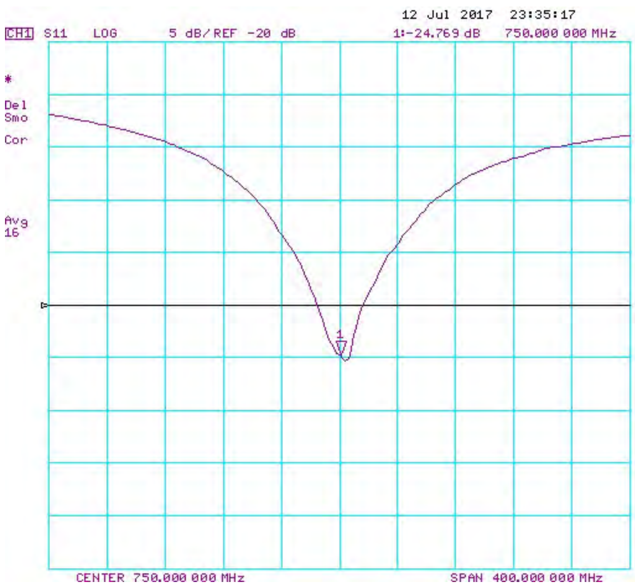
The following dipole was checked to pass the above 3 requirements to have 2-year calibration period from the calibration date:

Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Head (1g) W/kg @ 23.0 dBm	Measured Head SAR (1g) W/kg @ 23.0 dBm	Deviation 1g (%)	Certificate SAR Target Head (10g) W/kg @ 23.0 dBm	Measured Head SAR (10g) W/kg @ 23.0 dBm	Deviation 10g (%)	Certificate Impedance Head (Ohm) Real	Measured Impedance Head (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Head (Ohm) Imaginary	Measured Impedance Head (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Head (dB)	Measured Return Loss Head (dB)	Deviation (%)	PASS/FAIL
7/13/2016	7/12/2017	1.033	1.63	1.65	0.98%	1.08	1.09	1.11%	55.6	54.5	1.1	-0.9	-4.0	3.1	-25.4	-24.8	2.40%	PASS

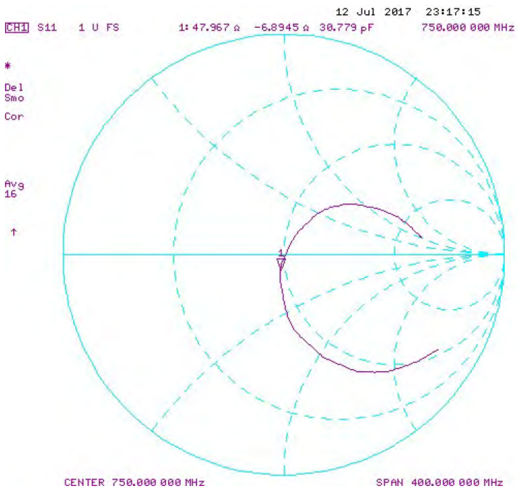
Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Body (1g) W/kg @ 23.0 dBm	Measured Body SAR (1g) W/kg @ 23.0 dBm	Deviation 1g (%)	Certificate SAR Target Body (10g) W/kg @ 23.0 dBm	Measured Body SAR (10g) W/kg @ 23.0 dBm	Deviation 10g (%)	Certificate Impedance Body (Ohm) Real	Measured Impedance Body (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Body (Ohm) Imaginary	Measured Impedance Body (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Body (dB)	Measured Return Loss Body (dB)	Deviation (%)	PASS/FAIL
7/13/2016	7/12/2017	1.033	1.69	1.75	3.80%	1.11	1.17	5.79%	50.2	48.0	2.2	-4.0	-6.9	2.9	-28.0	-23.9	14.60%	PASS

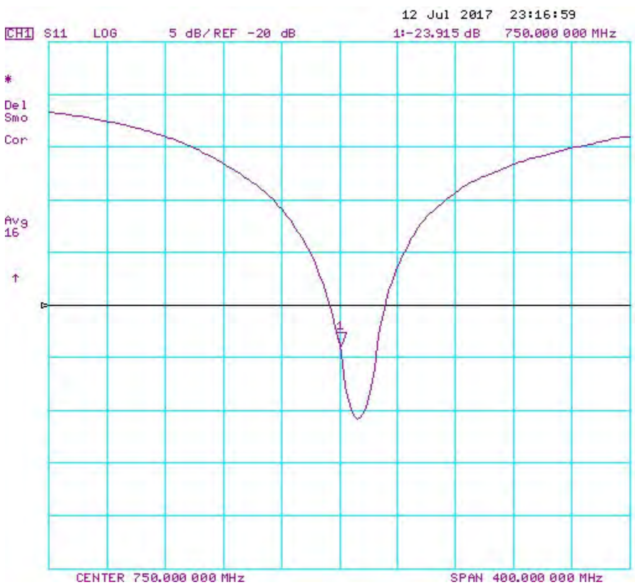
Impedance & Return-Loss Measurement Plot for Head TSL





Impedance & Return-Loss Measurement Plot for Body TSL





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Swiss Calibration Service

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Accreditation No.: SCS 0108

Client **PC Test**

Certificate No: D835V2-4d119_Apr18

CALIBRATION CERTIFICATE

Object	D835V2 - SN:4d119
Calibration procedure(s)	QA CAL-05.v10 Calibration procedure for dipole validation kits above 700 MHz BN ✓ 05-01-2018
Calibration date:	April 10, 2018

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 7349	30-Dec-17 (No. EX3-7349_Dec17)	Dec-18
DAE4	SN: 601	26-Oct-17 (No. DAE4-601_Oct17)	Oct-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-17)	In house check: Oct-18

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	M. Weber
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 11, 2018

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Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.9 ± 6 %	0.92 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.43 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.53 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.57 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**6.19 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.8 ± 6 %	0.99 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.44 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**9.56 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.59 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**6.26 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.0 Ω + 0.6 jΩ
Return Loss	- 38.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.1 Ω - 3.3 jΩ
Return Loss	- 26.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.389 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	June 29, 2010

DASY5 Validation Report for Head TSL

Date: 10.04.2018

Test Laboratory: SPEAG, Zurich, Switzerland

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

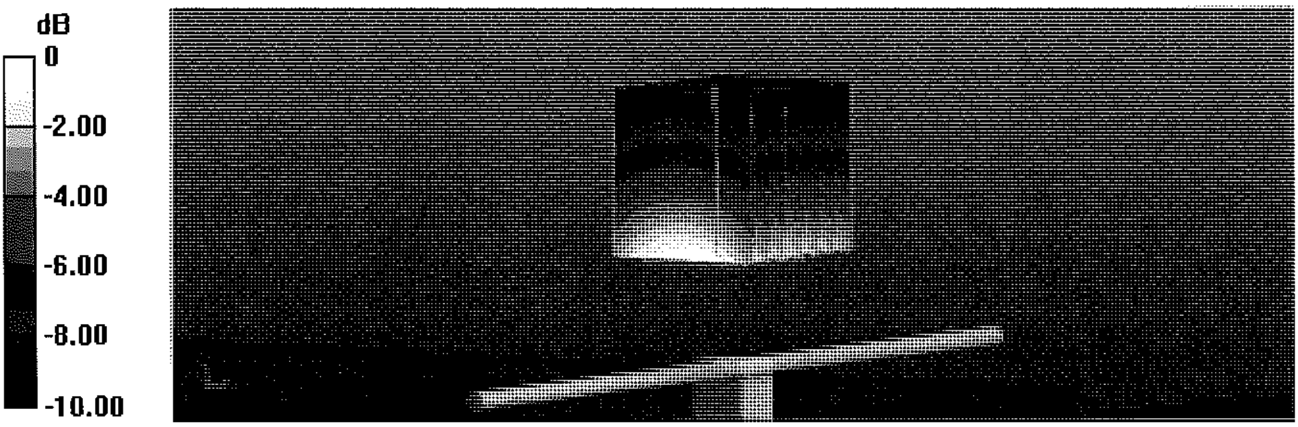
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.92 S/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.9, 9.9, 9.9); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

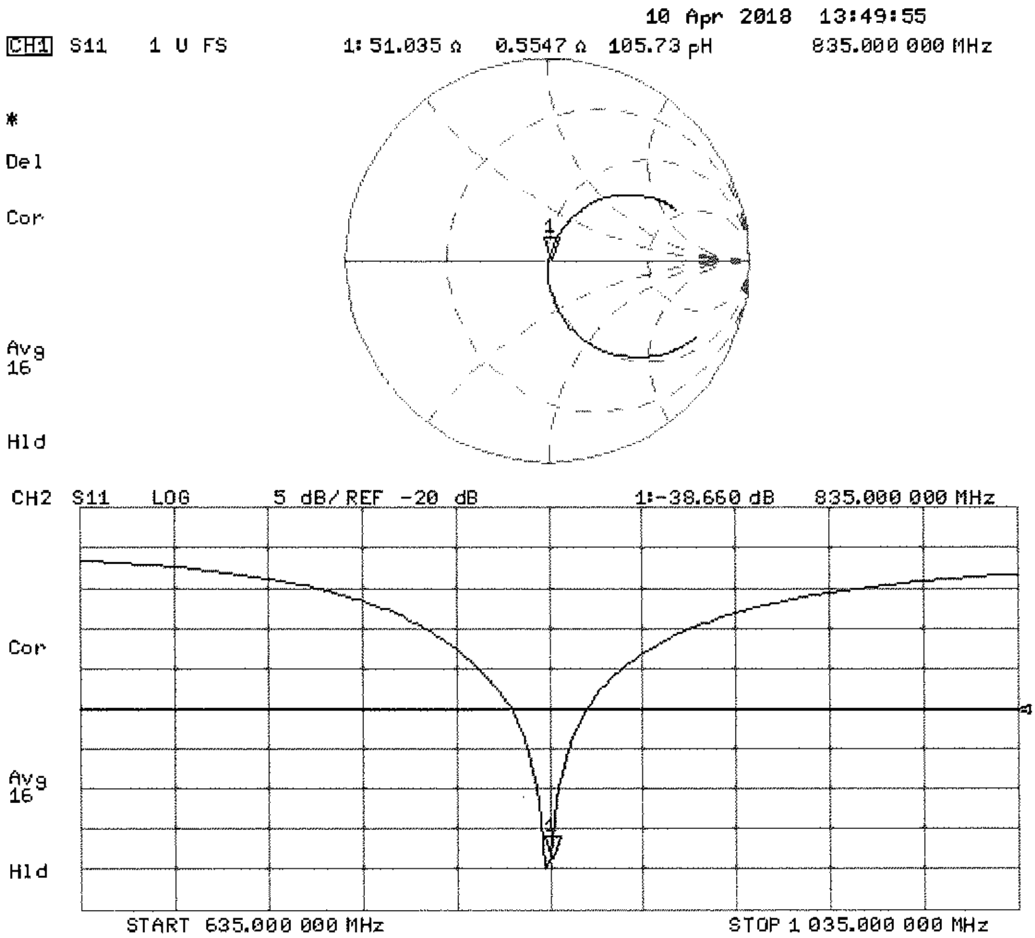
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 62.85 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 3.74 W/kg
SAR(1 g) = 2.43 W/kg; SAR(10 g) = 1.57 W/kg
Maximum value of SAR (measured) = 3.29 W/kg



0 dB = 3.29 W/kg = 5.17 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 10.04.2018

Test Laboratory: SPEAG, Zurich, Switzerland

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

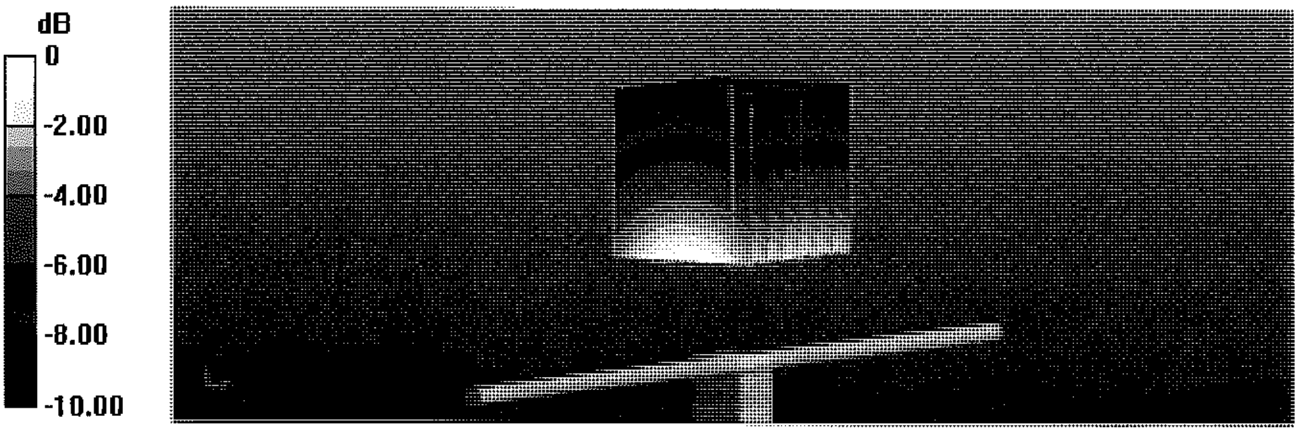
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; $\sigma = 0.99$ S/m; $\varepsilon_r = 53.8$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.05, 10.05, 10.05); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

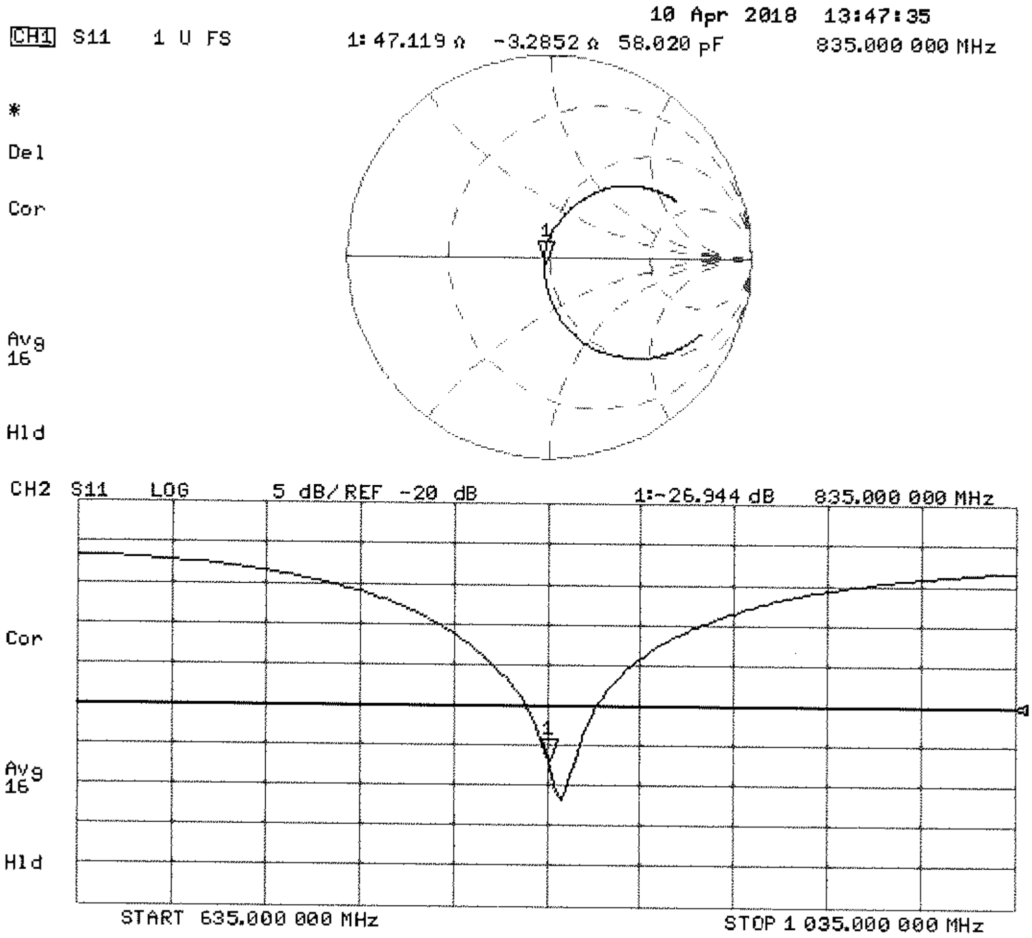
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 60.52 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 3.64 W/kg
SAR(1 g) = 2.44 W/kg; SAR(10 g) = 1.59 W/kg
Maximum value of SAR (measured) = 3.24 W/kg



0 dB = 3.24 W/kg = 5.11 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client **PC Test**

Certificate No: D1750V2-1150_Jul16

CALIBRATION CERTIFICATE

Object	D1750V2 - SN:1150
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	July 14, 2016

√PM
8/9/16
Extended
9/2017
SC ✓

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 5058 (20k)	05-Apr-16 (No. 217-02292)	Apr-17
Type-N mismatch combination	SN: 5047.2 / 06327	05-Apr-16 (No. 217-02295)	Apr-17
Reference Probe EX3DV4	SN: 7349	15-Jun-16 (No. EX3-7349_Jun16)	Jun-17
DAE4	SN: 601	30-Dec-15 (No. DAE4-601_Dec15)	Dec-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (No. 217-02223)	In house check: Oct-16
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Jun-15)	In house check: Oct-16
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

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

Issued: July 14, 2016

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.8 ± 6 %	1.36 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.06 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**36.1 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.80 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**19.2 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	53.4	1.49 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.4 ± 6 %	1.48 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.09 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**36.5 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	4.85 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**19.5 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.9 Ω + 0.4 jΩ
Return Loss	- 40.2 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.4 Ω - 0.5 jΩ
Return Loss	- 28.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.218 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	April 10, 2015

DASY5 Validation Report for Head TSL

Date: 14.07.2016

Test Laboratory: SPEAG, Zurich, Switzerland

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

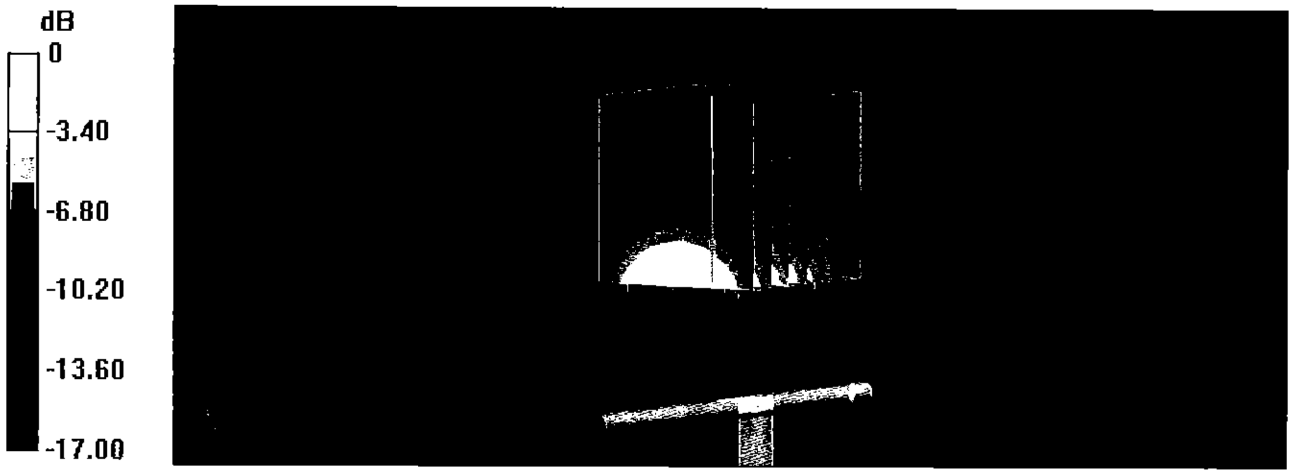
Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.36 S/m; ε_r = 38.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.46, 8.46, 8.46); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

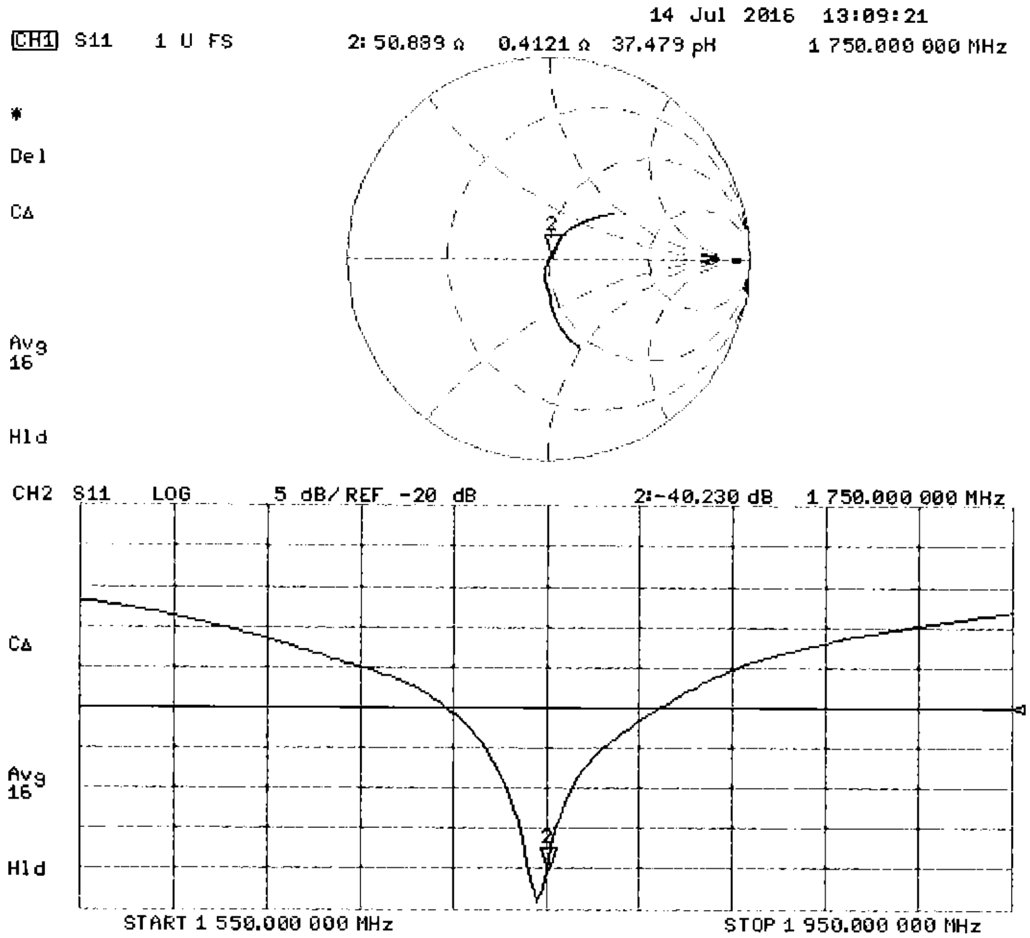
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 104.4 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 16.6 W/kg
SAR(1 g) = 9.06 W/kg; SAR(10 g) = 4.8 W/kg
Maximum value of SAR (measured) = 13.9 W/kg



0 dB = 13.9 W/kg = 11.43 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 14.07.2016

Test Laboratory: SPEAG, Zurich, Switzerland

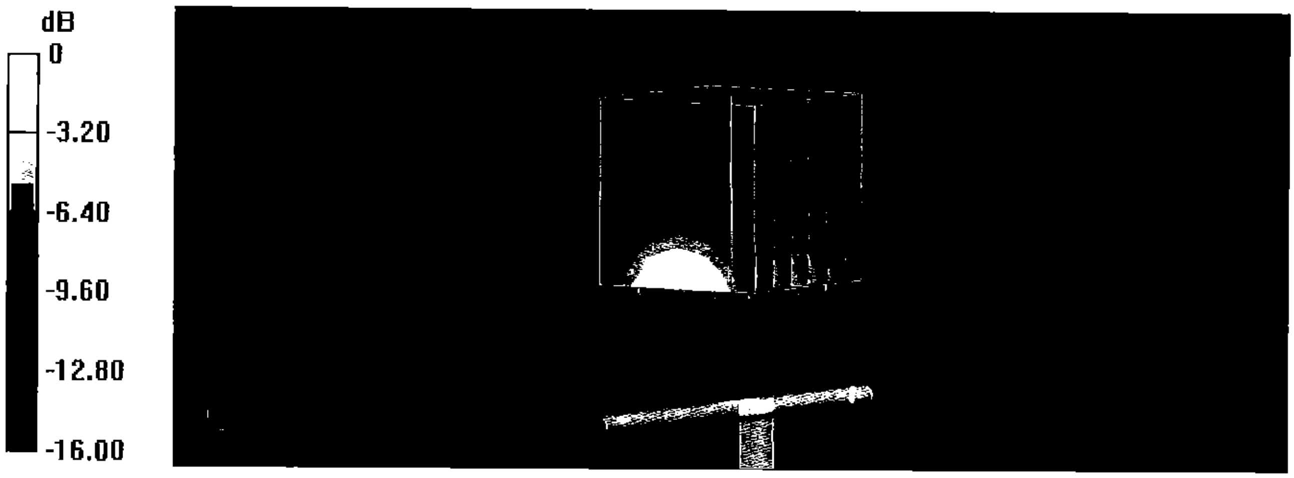
DUT: Dipole 1750 MHz D1750V2; Type: D1750V2; Serial: D1750V2 - SN:1150

Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.48 S/m; ε_r = 53.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

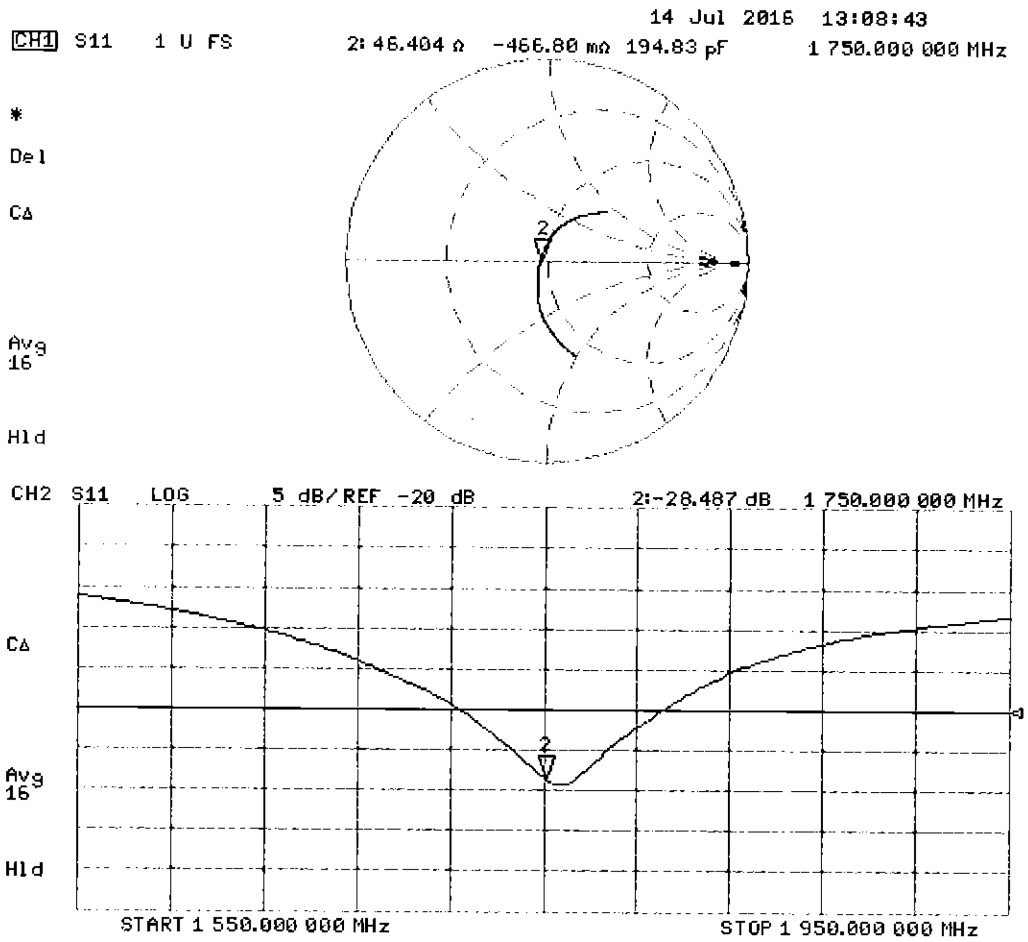
- Probe: EX3DV4 - SN7349; ConvF(8.25, 8.25, 8.25); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 100.4 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 16.0 W/kg
SAR(1 g) = 9.09 W/kg; SAR(10 g) = 4.85 W/kg
Maximum value of SAR (measured) = 13.7 W/kg



0 dB = 13.7 W/kg = 11.37 dBW/kg

Impedance Measurement Plot for Body TSL



Certification of Calibration

Object	D1750V2 – SN: 1150
Calibration procedure(s)	Procedure for Calibration Extension for SAR Dipoles.
Calibration date:	July 07, 2017
Description:	SAR Validation Dipole at 1750 MHz.

Calibration Equipment used:

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Control Company	4040	Therm./Clock/Humidity Monitor	3/31/2017	Biennial	3/31/2019	170232394
Control Company	4352	Ultra Long Stem Thermometer	5/2/2017	Biennial	5/2/2019	170330156
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Keysight Technologies	85033E	Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm)	6/1/2017	Annual	6/1/2018	MY53401181
Agilent	8753ES	S-Parameter Network Analyzer	10/26/2016	Annual	10/26/2017	US39170118
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/8/2017	Annual	3/8/2018	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/13/2017	Annual	3/13/2018	1415
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/10/2017	Annual	5/10/2018	1070
SPEAG	ES3DV3	SAR Probe	3/14/2017	Annual	3/14/2018	3209
SPEAG	ES3DV3	SAR Probe	3/14/2017	Annual	3/14/2018	3319
Anritsu	MA2411B	Pulse Power Sensor	2/10/2017	Annual	2/10/2018	1207364
Anritsu	MA2411B	Pulse Power Sensor	2/10/2017	Annual	2/10/2018	1339018
Anritsu	ML2495A	Power Meter	10/16/2015	Biennial	10/16/2017	941001
Agilent	N5182A	MXG Vector Signal Generator	2/28/2017	Annual	2/28/2018	MY47420800
Seekonk	NC-100	Torque Wrench	11/6/2015	Biennial	11/6/2017	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A

Measurement Uncertainty = ±23% (k=2)

	Name	Function	Signature
Calibrated By:	Brodie Halbfoster	Test Engineer	BRODIE HALBFOSTER
Approved By:	Kaitlin O'Keefe	Senior Technical Manager	KOK

DIPOLE CALIBRATION EXTENSION

Per KDB 865664 D01, calibration intervals of up to three years may be considered for reference dipoles when it is demonstrated that the SAR target, impedance and return loss of a dipole have remained stable according to the following requirements:

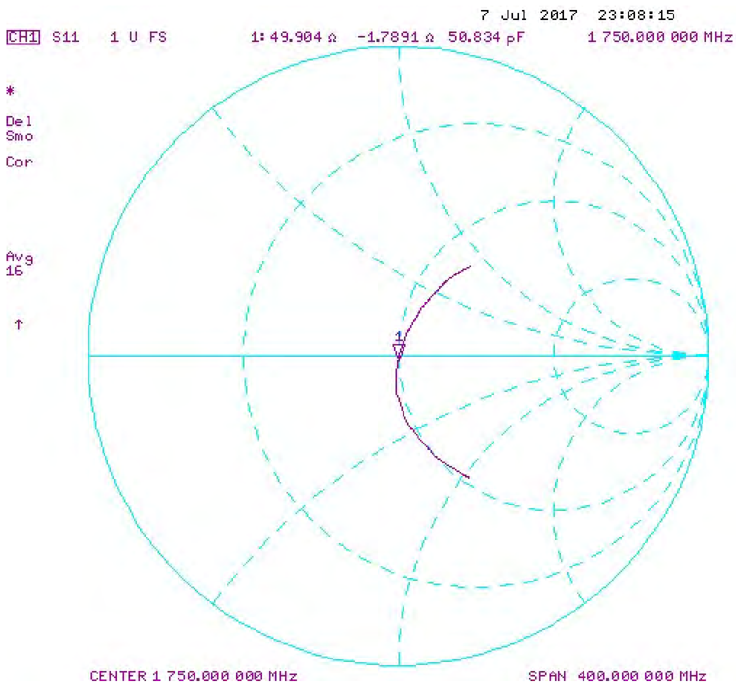
1. The measured SAR does not deviate more than 10% from the target on the calibration certificate.
2. The return-loss does not deviate more than 20% from the previous measurement and meets the required 20dB minimum return-loss requirement.
3. The measurement of real or imaginary parts of impedance does not deviate more than 5Ω from the previous measurement.

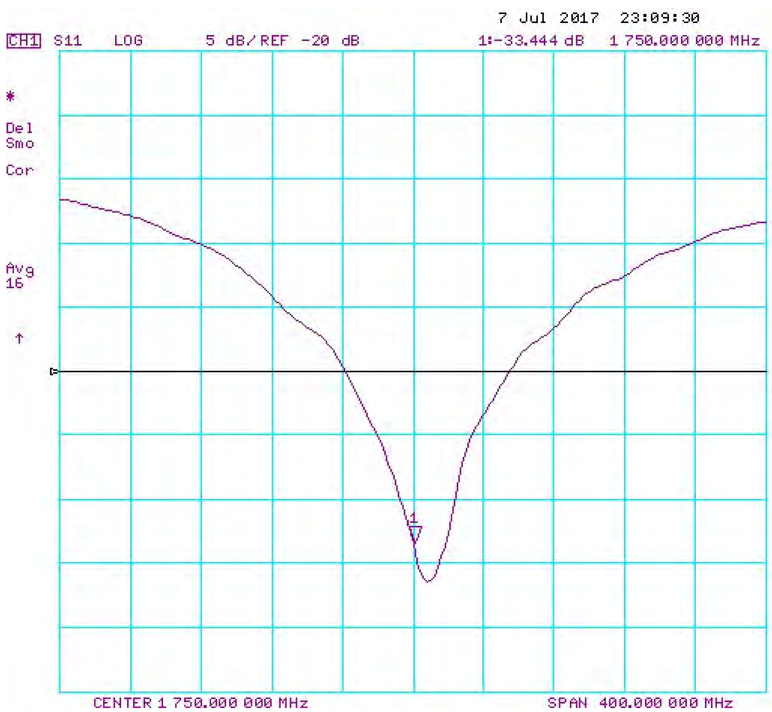
The following dipole was checked to pass the above 3 requirements to have 2-year calibration period from the calibration date:

Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Head (1g) W/kg @ 20.0 dBm	Measured Head SAR (1g) W/kg @ 20.0 dBm	Deviation 1g (%)	Certificate SAR Target Head (10g) W/kg @ 20.0 dBm	Measured Head SAR (10g) W/kg @ 20.0 dBm	Deviation 10g (%)	Certificate Impedance Head (Ohm) Real	Measured Impedance Head (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Head (Ohm) Imaginary	Measured Impedance Head (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Head (dB)	Measured Return Loss Head (dB)	Deviation (%)	PASS/FAIL
7/14/2016	7/7/2017	1.218	3.61	3.57	-1.11%	1.92	1.88	-2.08%	50.9	49.9	1	0.4	-1.8	2.1	-40.2	-33.4	16.90%	PASS

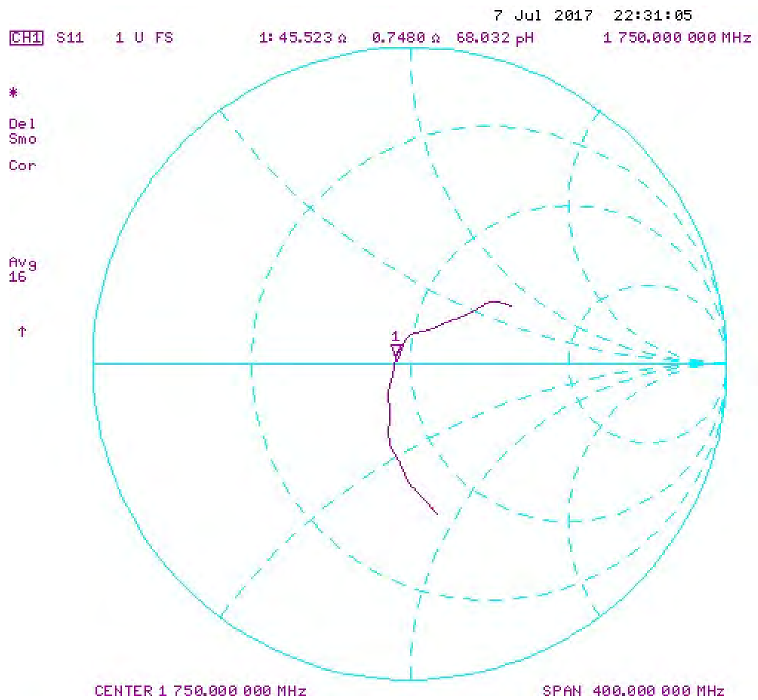
Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Body (1g) W/kg @ 20.0 dBm	Measured Body SAR (1g) W/kg @ 20.0 dBm	Deviation 1g (%)	Certificate SAR Target Body (10g) W/kg @ 20.0 dBm	Measured Body SAR (10g) W/kg @ 20.0 dBm	Deviation 10g (%)	Certificate Impedance Body (Ohm) Real	Measured Impedance Body (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Body (Ohm) Imaginary	Measured Impedance Body (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Body (dB)	Measured Return Loss Body (dB)	Deviation (%)	PASS/FAIL
7/14/2016	7/7/2017	1.218	3.65	3.68	0.82%	1.95	1.97	1.03%	46.4	45.5	0.9	-0.5	0.7	1.2	-28.5	-23.6	17.20%	PASS

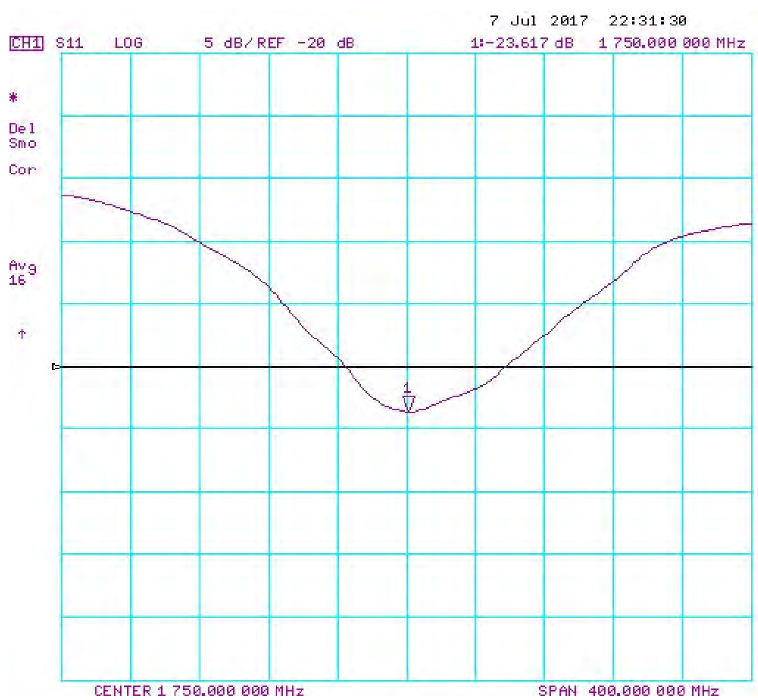
Impedance & Return-Loss Measurement Plot for Head TSL





Impedance & Return-Loss Measurement Plot for Body TSL





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

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

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

Accreditation No.: SCS 0108

Client **PC Test**

Certificate No: D1900V2-5d148_Feb18

CALIBRATION CERTIFICATE

Object	D1900V2 - SN:5d148
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	February 07, 2018

BN
03-02-2018

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenuator	SN: 5058 (20k)	07-Apr-17 (No. 217-02528)	Apr-18
Type-N mismatch combination	SN: 5047.2 / 06327	07-Apr-17 (No. 217-02529)	Apr-18
Reference Probe EX3DV4	SN: 7349	30-Dec-17 (No. EX3-7349_Dec17)	Dec-18
DAE4	SN: 601	26-Oct-17 (No. DAE4-601_Oct17)	Oct-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-17)	In house check: Oct-18

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: February 7, 2018

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.7 ± 6 %	1.39 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.95 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**40.1 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.22 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**21.0 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	55.2 ± 6 %	1.48 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.68 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**39.6 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.14 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.9 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.1 Ω + 5.8 jΩ
Return Loss	- 24.3 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.8 Ω + 6.5 jΩ
Return Loss	- 23.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.199 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 11, 2011

DASY5 Validation Report for Head TSL

Date: 07.02.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d148

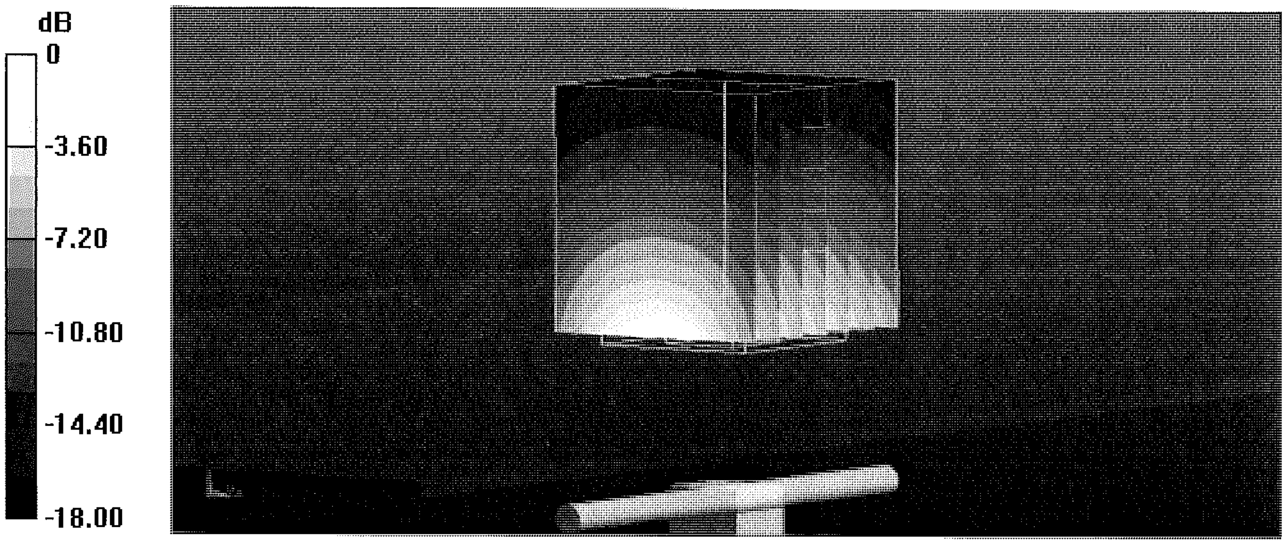
Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.39 S/m; ε_r = 40.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.18, 8.18, 8.18); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

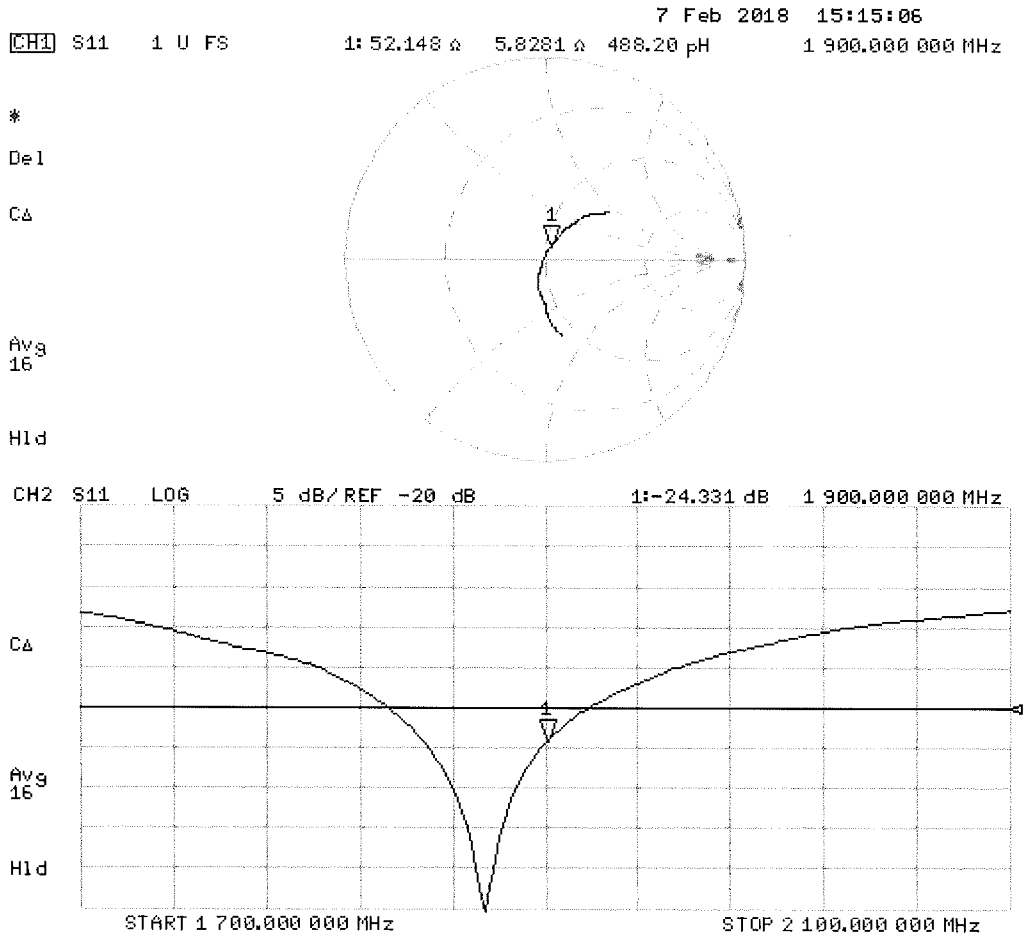
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 109.6 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 18.5 W/kg
SAR(1 g) = 9.95 W/kg; SAR(10 g) = 5.22 W/kg
Maximum value of SAR (measured) = 15.3 W/kg



0 dB = 15.3 W/kg = 11.85 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 07.02.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d148

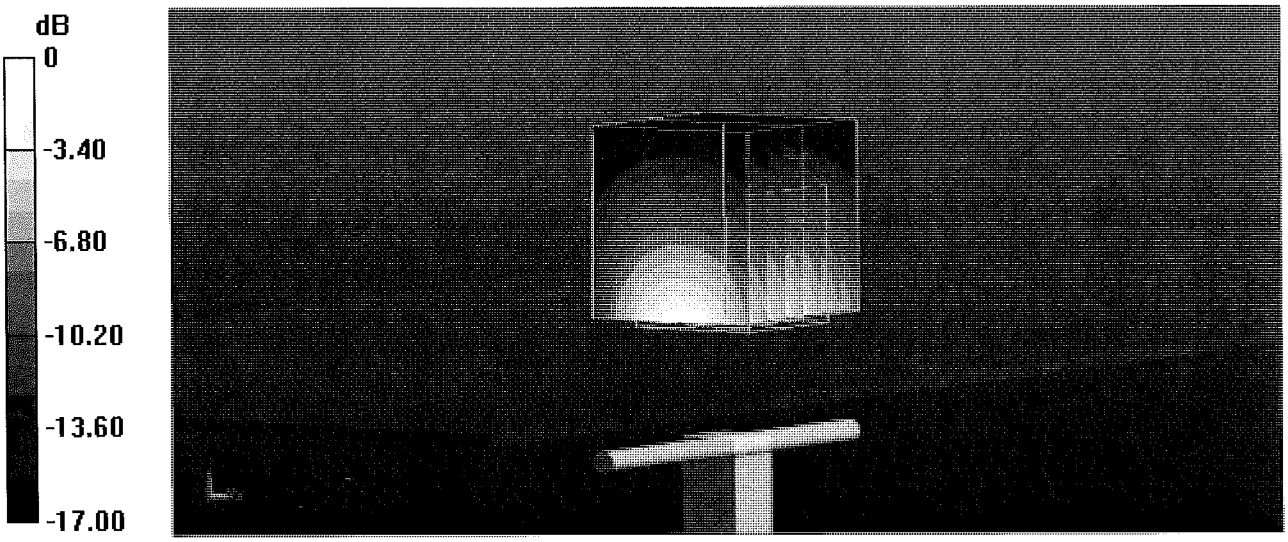
Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.48 S/m; ε_r = 55.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.15, 8.15, 8.15); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

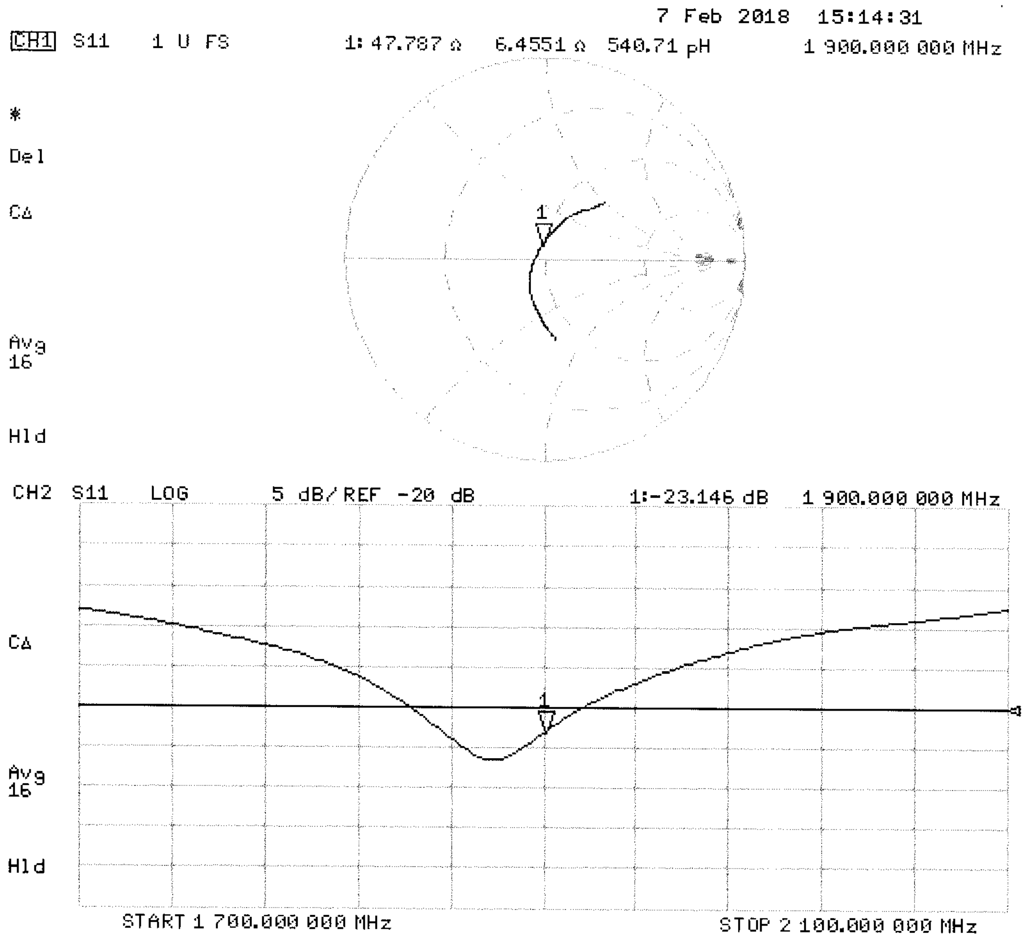
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 103.0 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 17.2 W/kg
SAR(1 g) = 9.68 W/kg; SAR(10 g) = 5.14 W/kg
Maximum value of SAR (measured) = 14.4 W/kg



0 dB = 14.4 W/kg = 11.58 dBW/kg

Impedance Measurement Plot for Body TSL



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

S Schweizerischer Kalibrierdienst
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S Swiss Calibration Service

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The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **PC Test**

Certificate No: D2450V2-882_Feb18

CALIBRATION CERTIFICATE

Object: D2450V2 - SN:882

Calibration procedure(s): QA CAL-05.v9
Calibration procedure for dipole validation kits above 700 MHz

BN
03-02-2018

Calibration date: February 07, 2018

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenuator	SN: 5058 (20k)	07-Apr-17 (No. 217-02528)	Apr-18
Type-N mismatch combination	SN: 5047.2 / 06327	07-Apr-17 (No. 217-02529)	Apr-18
Reference Probe EX3DV4	SN: 7349	30-Dec-17 (No. EX3-7349_Dec17)	Dec-18
DAE4	SN: 601	26-Oct-17 (No. DAE4-601_Oct17)	Oct-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-17)	In house check: Oct-18

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: February 7, 2018

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	37.9 ± 6 %	1.87 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.4 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**52.2 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.22 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**24.5 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.4 ± 6 %	2.04 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.9 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**50.2 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.98 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**23.6 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.0 Ω + 1.3 jΩ
Return Loss	- 32.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.8 Ω + 3.7 jΩ
Return Loss	- 28.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.156 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	October 06, 2011