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SAR EVALUATION REPORT

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

Date of Testing:
11/20/19 – 01/11/20
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
1M1911140188-03-R1.A3L

FCC ID: **A3LSMF700F**

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

DUT Type: Portable Handset
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model: SM-F700F
Additional Models: SM-F700F/DS, SCV47

Equipment Class	Band & Mode	Tx Frequency	SAR			
			1g Head (W/kg)	1g Body-Worn (W/kg)	1g Hotspot (W/kg)	10g Phablet (W/kg)
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.21	0.21	0.57	N/A
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	< 0.1	0.22	0.58	2.88
PCE	UMTS 850	826.40 - 846.60 MHz	0.19	0.21	0.36	N/A
PCE	UMTS 1750	1712.4 - 1752.6 MHz	0.14	0.55	1.11	2.58
PCE	UMTS 1900	1852.4 - 1907.6 MHz	< 0.1	0.39	1.15	2.61
PCE	LTE Band 12	699.7 - 715.3 MHz	0.15	0.27	0.36	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	0.10	0.21	0.37	N/A
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.23	0.26	0.45	N/A
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.19	0.76	0.98	1.75
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	< 0.1	0.47	1.14	3.29
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 30	2307.5 - 2312.5 MHz	0.17	0.27	0.49	2.40
PCE	LTE Band 41	2498.5 - 2687.5 MHz	0.17	0.24	0.49	1.23
DTS	2.4 GHz WLAN	2412 - 2472 MHz	0.37	0.19	0.65	N/A
NII	U-NII-1	5180 - 5240 MHz	N/A	N/A	N/A	N/A
NII	U-NII-2A	5260 - 5320 MHz	0.25	0.11	N/A	0.76
NII	U-NII-2C	5500 - 5720 MHz	0.35	0.10	N/A	0.48
NII	U-NII-3	5745 - 5825 MHz	0.46	0.13	0.26	N/A
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.27	< 0.1	< 0.1	N/A
Simultaneous SAR per KDB 690783 D01v01r03:			0.96	1.07	1.57	3.80

Note: This revised Test Report (S/N: 1M1911140188-03-R1.A3L) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

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

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

Randy Ortanez
President

The SAR Tick is an initiative of the Mobile & 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.

TABLE OF CONTENTS

1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.6 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
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 26 (Cell)	Voice/Data	814.7 - 848.3 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 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 25 (PCS)	Voice/Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 30	Voice/Data	2307.5 - 2312.5 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 MHz
ANT+	Data	2402 - 2480 MHz
MST	Data	555 Hz - 8.33 kHz

1.2 Power Reduction for SAR

This device utilizes a 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 hand and when headphones are inserted. 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 when being used in phablet use conditions. 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 2G/3G/4G Output Power

GSM/GPRS/EDGE 850										
Power Level	Mode / Band	Voice (in dBm)	Data - Burst Average GMSK (in dBm)				Data - Burst Average 8-PSK (in 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
Max	Max allowed power	34.0	34.0	33.5	31.0	29.5	29.0	27.5	25.5	24.5
	Nominal	33.0	33.0	32.5	30.0	28.5	28.0	26.5	24.5	23.5
GSM/GPRS/EDGE 1900										
Power Level	Mode / Band	Voice (in dBm)	Data - Burst Average GMSK (in dBm)				Data - Burst Average 8-PSK (in 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
Max	Max allowed power	31.0	31.0	29.0	27.5	25.8	27.0	26.0	24.0	22.5
	Nominal	30.0	30.0	28.0	26.5	24.8	26.0	25.0	23.0	21.5
Hotspot Mode Active	Max allowed power	N/A	29.0	27.0	25.5	23.8	27.0	26.0	24.0	22.5
	Nominal	N/A	28.0	26.0	24.5	22.8	26.0	25.0	23.0	21.5
Proximity Sensor Active	Max allowed power	29.0	29.0	27.0	25.5	23.8	27.0	26.0	24.0	22.5
	Nominal	28.0	28.0	26.0	24.5	22.8	26.0	25.0	23.0	21.5
Earjack Active	Max allowed power	29.0	29.0	27.0	25.5	23.8	27.0	26.0	24.0	22.5
	Nominal	28.0	28.0	26.0	24.5	22.8	26.0	25.0	23.0	21.5

UMTS Band 5 (850 MHz)					
Power Level	Mode / Band	Modulated Average Output Power (in dBm)			
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6	3GPP DC-HSDPA Rel 8
Max	Max allowed power	25.0	23.0	23.0	23.0
	Nominal	24.0	22.0	22.0	22.0

UMTS Band 4 (1750 MHz)					
Power Level	Mode / Band	Modulated Average Output Power (in dBm)			
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6	3GPP DC-HSDPA Rel 8
Max	Max allowed power	**24.0**	**22.5**	**22.5**	**22.5**
	Nominal	**23.0**	**21.5**	**21.5**	**21.5**
Hotspot Mode Active	Max allowed power	**22.0**	**20.5**	**20.5**	**20.5**
	Nominal	**21.0**	**19.5**	**19.5**	**19.5**
Proximity Sensor Active	Max allowed power	**22.0**	**20.5**	**20.5**	**20.5**
	Nominal	**21.0**	**19.5**	**19.5**	**19.5**
Earjack Active	Max allowed power	**22.0**	**20.5**	**20.5**	**20.5**
	Nominal	**21.0**	**19.5**	**19.5**	**19.5**

UMTS Band 2 (1900 MHz)					
Power Level	Mode / Band	Modulated Average Output Power (in dBm)			
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6	3GPP DC-HSDPA Rel 8
Max	Max allowed power	**25.0**	**23.0**	**23.0**	**23.0**
	Nominal	**24.0**	**22.0**	**22.0**	**22.0**
Hotspot Mode Active	Max allowed power	**22.5**	**20.5**	**20.5**	**20.5**
	Nominal	**21.5**	**19.5**	**19.5**	**19.5**
Proximity Sensor Active	Max allowed power	**22.5**	**20.5**	**20.5**	**20.5**
	Nominal	**21.5**	**19.5**	**19.5**	**19.5**
Earjack Active	Max allowed power	**22.5**	**20.5**	**20.5**	**20.5**
	Nominal	**21.5**	**19.5**	**19.5**	**19.5**

Mode / Band		Modulated Average Output Power (in dBm)			
		Max	Hotspot Mode Active	Proximity Sensor Active	Earjack Active
LTE FDD Band 12	Max allowed power	25.7	25.7	25.7	25.7
	Nominal	24.7	24.7	24.7	24.7
LTE FDD Band 17	Max allowed power	24.7	24.7	24.7	24.7
	Nominal	23.7	23.7	23.7	23.7
LTE FDD Band 13	Max allowed power	25.7	25.7	25.7	25.7
	Nominal	24.7	24.7	24.7	24.7
LTE FDD Band 5	Max allowed power	25.7	25.7	25.7	25.7
	Nominal	24.7	24.7	24.7	24.7
LTE FDD Band 26	Max allowed power	25.7	25.7	25.7	25.7
	Nominal	24.7	24.7	24.7	24.7
LTE FDD Band 4	Max allowed power	25.0	21.2	21.2	21.2
	Nominal	24.0	20.2	20.2	20.2
LTE FDD Band 66	Max allowed power	25.2	21.2	21.2	21.2
	Nominal	24.2	20.2	20.2	20.2
LTE FDD Band 2	Max allowed power	25.1	21.6	21.6	21.6
	Nominal	24.1	20.6	20.6	20.6
LTE FDD Band 25	Max allowed power	25.1	21.6	21.6	21.6
	Nominal	24.1	20.6	20.6	20.6
LTE FDD Band 30	Max allowed power	25.7	22.9	22.9	22.9
	Nominal	24.7	21.9	21.9	21.9
LTE TDD Band 41	Max allowed power	25.3	23.5	23.5	23.5
	Nominal	24.3	22.5	22.5	22.5

1.3.2 Maximum Bluetooth and WLAN Output Power

Mode	Band	IEEE 802.11 (in dBm)									
		SISO						MIMO			
		Antenna 1/Antenna 2									
		b		g		n		g (CDD + STBC)		n (CDD+STBC, SDM)	
Maximum / Nominal Power		Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.
2.4 GHz WIFI	2.45 GHz	22.0 ch. 12: 21.0 ch. 13: 16.0	21.0 ch. 12: 20.0 ch. 13: 15.0	22.0 ch. 1: 16.5 ch. 9: 21.0 ch. 10: 19.5 ch. 11: 18.5 ch. 12: 16.5 ch. 13: 13.0	21.0 ch. 1: 15.5 ch. 9: 20.0 ch. 10: 18.5 ch. 11: 17.5 ch. 12: 15.5 ch. 13: 12.0	22.0 ch. 1: 16.5 ch. 9: 21.0 ch. 10: 19.5 ch. 11: 18.5 ch. 12: 16.5 ch. 13: 13.0	21.0 ch. 1: 15.5 ch. 9: 20.0 ch. 10: 18.5 ch. 11: 17.5 ch. 12: 15.5 ch. 13: 12.0	25.0 ch. 1: 19.5 ch. 9: 24.0 ch. 10: 22.5 ch. 11: 21.5 ch. 12: 19.5 ch. 13: 16.0	24.0 ch. 1: 18.5 ch. 9: 23.0 ch. 10: 21.5 ch. 11: 20.5 ch. 12: 18.5 ch. 13: 15.0	25.0 ch. 1: 19.5 ch. 9: 24.0 ch. 10: 22.5 ch. 11: 21.5 ch. 12: 19.5 ch. 13: 16.0	24.0 ch. 1: 18.5 ch. 9: 23.0 ch. 10: 21.5 ch. 11: 20.5 ch. 12: 18.5 ch. 13: 15.0

Mode	Band	IEEE 802.11 (in dBm)											
		SISO						MIMO					
		Antenna 1/Antenna 2											
		a		n		ac		a (CDD + STBC)		n (CDD+STBC, SDM)		ac (CDD+STBC, SDM)	
Maximum / Nominal Power		Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.
5 GHz WIFI (20MHz BW)	5200 MHz	18.0	17.0	18.0	17.0	17.0	16.0	21.0	20.0	21.0	20.0	20.0	19.0
	5300 MHz	18.0	17.0	18.0	17.0	17.0	16.0	21.0	20.0	21.0	20.0	20.0	19.0
	5500 MHz	18.0	17.0	18.0	17.0	17.0	16.0	21.0	20.0	21.0	20.0	20.0	19.0
	5800 MHz	18.0	17.0	18.0	17.0	17.0	16.0	21.0	20.0	21.0	20.0	20.0	19.0
5 GHz WIFI (40MHz BW)	5200 MHz			16.0	15.0	16.0	15.0			19.0	18.0	19.0	18.0
	5300 MHz			16.0	15.0	16.0	15.0			19.0	18.0	19.0	18.0
	5500 MHz			16.0	15.0	16.0	15.0			19.0	18.0	19.0	18.0
	5800 MHz			16.0	15.0	15.0	15.0			19.0	18.0	19.0	18.0
5 GHz WIFI (80MHz BW)	5200 MHz					15.0	14.0					18.0	17.0
	5300 MHz					15.0	14.0					18.0	17.0
	5500 MHz					15.0	14.0					18.0	17.0
	5800 MHz					15.0	14.0					18.0	17.0

Mode / Band		Modulated Average - Single Tx Chain (dBm)
Bluetooth 1 Mbps	Maximum	**15.5**
	Nominal	**14.5**
Bluetooth 2 Mbps (EDR)	Maximum	**13.5**
	Nominal	**12.5**
Bluetooth 3 Mbps (EDR)	Maximum	**14.0**
	Nominal	**13.0**
Bluetooth LE (2 Mbps, 1 Mbps, 500 kbps)	Maximum	**5.0**
	Nominal	**4.0**
Bluetooth LE (125kbps)	Maximum	**6.0**
	Nominal	**5.0**

1.3.3 Reduced WLAN Output Power

Mode	Band	IEEE 802.11 (in dBm)									
		SISO						MIMO			
		Antenna 1/Antenna 2									
		b		g		n		g (CDD + STBC)		n (CDD+STBC, SDM)	
Maximum / Nominal Power		Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.
2.4 GHz WIFI	2.45 GHz	13.0	12.0	13.0	12.0	13.0	12.0	16.0	15.0	16.0	15.0

Mode	Band	IEEE 802.11 (in dBm)											
		SISO						MIMO					
		Antenna 1/ Antenna 2											
		a		n		ac		a (CDD + STBC)		n (CDD+STBC, SDM)		ac (CDD+STBC, SDM)	
Maximum / Nominal Power		Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.
5 GHz WIFI (20MHz BW)	5200 MHz	11.0	10.0	11.0	10.0	11.0	10.0	14.0	13.0	14.0	13.0	14.0	13.0
	5300 MHz	11.0	10.0	11.0	10.0	11.0	10.0	14.0	13.0	14.0	13.0	14.0	13.0
	5500 MHz	11.0	10.0	11.0	10.0	11.0	10.0	14.0	13.0	14.0	13.0	14.0	13.0
	5800 MHz	11.0	10.0	11.0	10.0	11.0	10.0	14.0	13.0	14.0	13.0	14.0	13.0
5 GHz WIFI (40MHz BW)	5200 MHz			11.0	10.0	11.0	10.0			14.0	13.0	14.0	13.0
	5300 MHz			11.0	10.0	11.0	10.0			14.0	13.0	14.0	13.0
	5500 MHz			11.0	10.0	11.0	10.0			14.0	13.0	14.0	13.0
	5800 MHz			11.0	10.0	15.0	10.0			14.0	13.0	14.0	13.0
5 GHz WIFI (80MHz BW)	5200 MHz					14.0	10.0					14.0	13.0
	5300 MHz					14.0	10.0					14.0	13.0
	5500 MHz					14.0	10.0					14.0	13.0
	5800 MHz					14.0	10.0					14.0	13.0

1.4 DUT Antenna Locations

The overall dimensions of this device are > 9 x 5 cm. A diagram showing the location of the device antennas for both open and closed configurations can be found in Appendix E. Since the diagonal dimension of this device when open is > 160 mm and <200 mm, it is considered a “phablet.” When the device is in the open configuration, it is considered a "Portable Handset". In the closed configuration, only a simple display/interaction of notifications occurs. Therefore, when the device is closed, the only testing considered is for body-worn and hotspot.

Table 1-1
Device Edges/Sides for SAR Testing Open

Mode	Back	Front	Top	Bottom	Right	Left
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 26 (Cell)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 66 (AWS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 25 (PCS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 30	Yes	Yes	No	Yes	No	Yes
LTE Band 41	Yes	Yes	No	Yes	No	Yes
2.4 GHz WLAN	Yes	Yes	Yes	No	Yes	No
5 GHz WLAN	Yes	Yes	Yes	No	Yes	No
Bluetooth	Yes	Yes	Yes	No	Yes	No

Table 1-2
Device Edges/Sides for SAR Testing Closed

Mode	Back	Front	Top	Bottom	Right	Left
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 26 (Cell)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 66 (AWS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 25 (PCS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 30	Yes	Yes	No	Yes	No	Yes
LTE Band 41	Yes	Yes	No	Yes	No	Yes
2.4 GHz WLAN Ant 1	Yes	Yes	No	Yes	Yes	No
2.4 GHz WLAN Ant 2	Yes	Yes	Yes	Yes	Yes	No
5 GHz WLAN Ant 1	Yes	Yes	No	Yes	Yes	No
5 GHz WLAN Ant 2	Yes	Yes	No	Yes	Yes	No
Bluetooth	Yes	Yes	No	Yes	Yes	No

Note: Particular DUT edges were not required to be evaluated for wireless router SAR or phablet SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v02r01 Section III and FCC KDB Publication 648474 D04v01r03. The distances between the transmit antennas and the edges of the device are included in the filing. 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 E.

1.6 Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D01v06, transmitters are considered to be operating 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 1-3
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Head	Body-Worn Accessory	Wireless Router	Phablet	Notes
1	GSM voice + 2.4 GHz WI-FI	Yes	Yes	N/A	Yes	
2	GSM voice + 5 GHz WI-FI	Yes	Yes	N/A	Yes	
3	GSM voice + 2.4 GHz Bluetooth	Yes^	Yes	N/A	Yes	^Bluetooth Tethering is considered
4	GSM voice + 2.4 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
5	GSM voice + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
6	GSM voice + 2.4 GHz Bluetooth + 5 GHz WI-FI Ant 2	Yes^	Yes	N/A	Yes	^Bluetooth Tethering is considered
7	GSM voice + 2.4 GHz WI-FI Ant 1 + 5 GHz WI-FI Ant 2	Yes	Yes	N/A	Yes	
8	UMTS + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes	
9	UMTS + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
10	UMTS + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^Bluetooth Tethering is considered
11	UMTS + 2.4 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
12	UMTS + 5 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
13	UMTS + 2.4 GHz Bluetooth + 5 GHz WI-FI Ant 2	Yes^	Yes	Yes^	Yes	^Bluetooth Tethering is considered
14	UMTS + 2.4 GHz WI-FI Ant 1 + 5 GHz WI-FI Ant 2	Yes	Yes	Yes	Yes	
15	LTE + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes	
16	LTE + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
17	LTE + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^Bluetooth Tethering is considered
18	LTE + 2.4 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
19	LTE + 5 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
20	LTE + 2.4 GHz Bluetooth + 5 GHz WI-FI Ant 2	Yes^	Yes	Yes^	Yes	^Bluetooth Tethering is considered
21	LTE + 2.4 GHz WI-FI Ant 1 + 5 GHz WI-FI Ant 2	Yes	Yes	Yes	Yes	
22	GPRS/EDGE + 2.4 GHz WI-FI	N/A	N/A	Yes	Yes	
23	GPRS/EDGE + 5 GHz WI-FI	N/A	N/A	Yes	Yes	
24	GPRS/EDGE + 2.4 GHz Bluetooth	N/A	N/A	Yes^	Yes	^Bluetooth Tethering is considered
25	GPRS/EDGE + 2.4 GHz WI-FI MIMO	N/A	N/A	Yes	Yes	
26	GPRS/EDGE + 5 GHz WI-FI MIMO	N/A	N/A	Yes	Yes	
27	GPRS/EDGE + 2.4 GHz Bluetooth + 5 GHz WI-FI 2	N/A	N/A	Yes^	Yes	^Bluetooth Tethering is considered
28	GPRS/EDGE + 2.4 GHz WI-FI Ant 1 + 5 GHz WI-FI Ant 2	N/A	N/A	Yes	Yes	

1. 2.4 GHz WLAN and 2.4 GHz Bluetooth share the same antenna path and cannot transmit simultaneously.
2. All licensed modes share the same antenna path and cannot transmit simultaneously.
3. When the user utilizes multiple services in UMTS 3G mode it uses multi-Radio Access Bearer or multi-RAB. The power control is based on a physical control channel (Dedicated Physical Control Channel [DPCCH]) and power control will be adjusted to meet the needs of both services. Therefore, the UMTS+WLAN scenario also represents the UMTS Voice/DATA + WLAN Hotspot scenario.
4. Per the manufacturer, WIFI Direct is 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-NII-2A, and U-NII-2C were not evaluated for wireless router conditions.
6. This device supports VOLTE.
7. This device supports VOWIFI.
8. This device supports Bluetooth Tethering.
9. This device supports 2x2 MIMO Tx for WLAN 802.11a/g/n/ac. 802.11a/g/n/ac supports CDD and STBC and 802.11n/ac additionally supports SDM. Each WLAN antenna can transmit independently or together when operating with MIMO.

1.7 Miscellaneous SAR Test Considerations

(A) WIFI/BT

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

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

This device supports IEEE 802.11ac with the following features:

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

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

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

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. The downlink carrier aggregation exclusion analysis can be found in Appendix F.

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. Additional SAR tests for phablet SAR were evaluated per KDB 616217 Section 6 (See Section 6.9 for more information).

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

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)
- April 2018 TCB Workshop Notes (LTE Carrier Aggregation)

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					
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 26 (Cell) (814.7 - 848.3 MHz)				
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)				
	LTE Band 66 (AWS) (1710.7 - 1779.3 MHz)				
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)				
	LTE Band 25 (PCS) (1850.7 - 1914.3 MHz)				
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)				
	LTE Band 30 (2307.5 - 2312.5 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 26 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz				
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 66 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 25 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 30: 5 MHz, 10 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 26 (Cell): 1.4 MHz	814.7 (26697)		831.5 (26865)	848.3 (27033)	
LTE Band 26 (Cell): 3 MHz	815.5 (26705)		831.5 (26865)	847.5 (27025)	
LTE Band 26 (Cell): 5 MHz	816.5 (26715)		831.5 (26865)	846.5 (27015)	
LTE Band 26 (Cell): 10 MHz	819 (26740)		831.5 (26865)	844 (26990)	
LTE Band 26 (Cell): 15 MHz	821.5 (26765)		831.5 (26865)	841.5 (26965)	
LTE Band 5 (Cell): 1.4 MHz	824.7 (20407)		836.5 (20525)	848.3 (20643)	
LTE Band 5 (Cell): 3 MHz	825.5 (20415)		836.5 (20525)	847.5 (20635)	
LTE Band 5 (Cell): 5 MHz	826.5 (20425)		836.5 (20525)	846.5 (20625)	
LTE Band 5 (Cell): 10 MHz	829 (20450)		836.5 (20525)	844 (20600)	
LTE Band 66 (AWS): 1.4 MHz	1710.7 (131979)		1745 (132322)	1779.3 (132665)	
LTE Band 66 (AWS): 3 MHz	1711.5 (131987)		1745 (132322)	1778.5 (132657)	
LTE Band 66 (AWS): 5 MHz	1712.5 (131997)		1745 (132322)	1777.5 (132647)	
LTE Band 66 (AWS): 10 MHz	1715 (132022)		1745 (132322)	1775 (132622)	
LTE Band 66 (AWS): 15 MHz	1717.5 (132047)		1745 (132322)	1772.5 (132597)	
LTE Band 66 (AWS): 20 MHz	1720 (132072)		1745 (132322)	1770 (132572)	
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)		1732.5 (20175)	1754.3 (20393)	
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)		1732.5 (20175)	1753.5 (20385)	
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)		1732.5 (20175)	1752.5 (20375)	
LTE Band 4 (AWS): 10 MHz	1715 (20000)		1732.5 (20175)	1750 (20350)	
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)		1732.5 (20175)	1747.5 (20325)	
LTE Band 4 (AWS): 20 MHz	1720 (20050)		1732.5 (20175)	1745 (20300)	
LTE Band 25 (PCS): 1.4 MHz	1850.7 (26047)		1882.5 (26365)	1914.3 (26683)	
LTE Band 25 (PCS): 3 MHz	1851.5 (26055)		1882.5 (26365)	1913.5 (26675)	
LTE Band 25 (PCS): 5 MHz	1852.5 (26065)		1882.5 (26365)	1912.5 (26665)	
LTE Band 25 (PCS): 10 MHz	1855 (26090)		1882.5 (26365)	1910 (26640)	
LTE Band 25 (PCS): 15 MHz	1857.5 (26115)		1882.5 (26365)	1907.5 (26615)	
LTE Band 25 (PCS): 20 MHz	1860 (26140)		1882.5 (26365)	1905 (26590)	
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)		1880 (18900)	1909.3 (19193)	
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)		1880 (18900)	1908.5 (19185)	
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)		1880 (18900)	1907.5 (19175)	
LTE Band 2 (PCS): 10 MHz	1855 (18650)		1880 (18900)	1905 (19150)	
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)		1880 (18900)	1902.5 (19125)	
LTE Band 2 (PCS): 20 MHz	1860 (18700)		1880 (18900)	1900 (19100)	
LTE Band 30: 5 MHz	2307.5 (27685)		2310 (27710)	2312.5 (27735)	
LTE Band 30: 10 MHz	N/A		2310 (27710)	N/A	
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 16, UL UE Cat 13				
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 carrier aggregation as shown in Section 9 and Appendix F. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC unless otherwise specified. The following LTE Release 14 Features are not supported: Relay, HetNet, Enhanced MIMO, eICIC, MDH, eMBMS, WIFI Offloading, Cross-Carrier Scheduling, Enhanced SC-FDMA.				

3 INTRODUCTION

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

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

3.1 SAR Definition

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

Equation 3-1
SAR Mathematical Equation

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

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

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

where:

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

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

4 DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

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

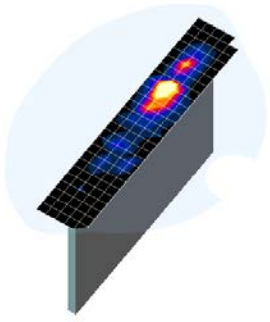

Figure 4-1
Sample SAR Area Scan

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

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

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

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

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

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

*Also compliant to IEEE 1528-2013 Table 6

5 DEFINITION OF REFERENCE POINTS

5.1 EAR REFERENCE POINT

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

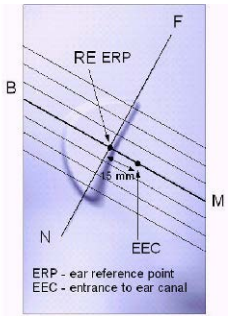

Figure 5-1
Close-Up Side view of ERP

5.2 HANDSET REFERENCE POINTS

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

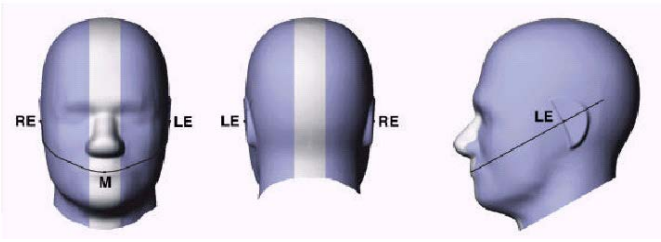

Figure 5-2
Front, back and side view of SAM Twin Phantom

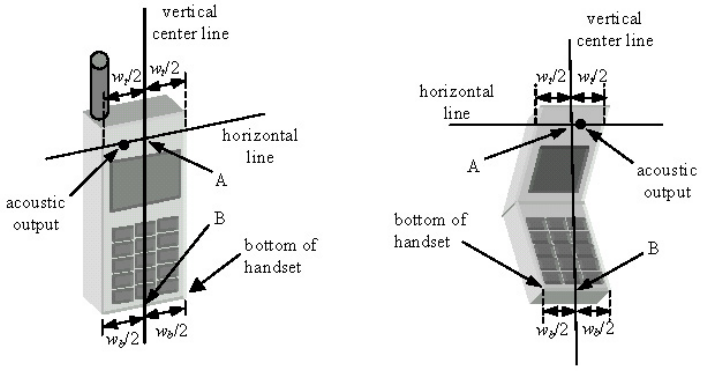

Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

6 TEST CONFIGURATION POSITIONS

6.1 Device Holder

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

6.2 Positioning for Cheek

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

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

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

6.3 Positioning for Ear / 15º Tilt

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

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

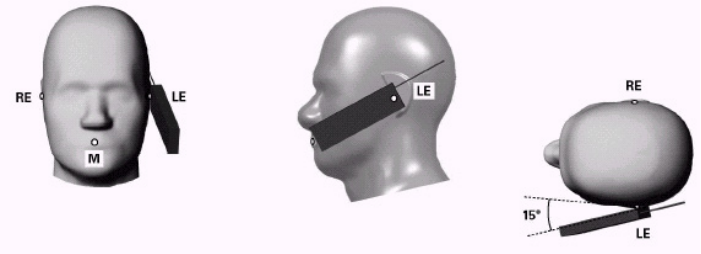

Figure 6-2 Front, Side and Top View of Ear/15º Tilt Position

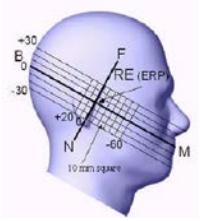

Figure 6-3
Side view w/ relevant markings

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

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

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

6.5 Body-Worn Accessory Configurations

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

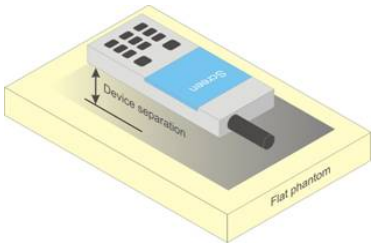

Figure 6-4
Sample Body-Worn Diagram

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not

contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

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

6.6 Extremity Exposure Configurations

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

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

6.7 Wireless Router Configurations

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

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

6.8 Phablet Configurations

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

6.9 Proximity Sensor Considerations

This device uses a power reduction mechanism to reduce output powers in certain use conditions when the device is used close the user's body.

When the device's antenna is within a certain distance of the user, the sensor activates and reduces the maximum allowed output power. However, the sensor is not active when the device is moved beyond the sensor triggering distance and the maximum output power is no longer limited. Therefore, additional evaluation is needed in the vicinity of the triggering distance to ensure SAR is compliant when the device is allowed to operate at a nonreduced output power level. 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.

The sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the sensor entirely covers the antennas.

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 UMTS

8.4.1 Output Power Verification

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

8.4.2 Head SAR Measurements

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

8.4.3 Body SAR Measurements

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

8.4.4 SAR Measurements with Rel 5 HSDPA

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

8.4.5 SAR Measurements with Rel 6 HSUPA

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

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

8.4.6 SAR Measurement Conditions for DC-HSDPA

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

8.5 SAR Measurement Conditions for LTE

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

8.5.1 Spectrum Plots for RB Configurations

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

8.5.2 MPR

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

8.5.3 A-MPR

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

8.5.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r04:

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

8.5.5 TDD

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

8.5.6 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.

8.6 SAR Testing with 802.11 Transmitters

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

8.6.1 General Device Setup

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

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

8.6.2 U-NII-1 and U-NII-2A

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

8.6.3 U-NII-2C and U-NII-3

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

tested independently according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

8.6.4 Initial Test Position Procedure

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

8.6.5 2.4 GHz SAR Test Requirements

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

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

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

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

8.6.6 OFDM Transmission Mode and SAR Test Channel Selection

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

8.6.7 Initial Test Configuration Procedure

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

The channel of the transmission mode with the highest average RF output conducted power will be the initial test configuration.

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

8.6.8 Subsequent Test Configuration Procedures

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

8.6.9 MIMO SAR considerations

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

9 RF CONDUCTED POWERS

9.1 GSM Conducted Powers

Table 9-1
Maximum Conducted Power

Maximum Burst-Averaged Output Power										
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 850	128	32.98	32.99	**32.32**	30.39	28.36	27.36	25.83	24.01	22.90
	190	33.03	33.15	**32.52**	30.47	28.57	27.56	26.11	24.14	23.37
	251	32.98	33.07	**32.58**	30.40	28.68	27.60	26.12	24.10	23.13
GSM 1900	512	29.00	29.04	27.78	**26.51**	24.61	25.33	24.12	22.10	20.71
	661	29.72	29.76	28.01	**26.94**	25.07	25.55	24.47	22.46	21.11
	810	29.42	29.55	27.89	**27.17**	25.13	25.43	24.32	22.50	21.27

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	23.95	23.96	**26.30**	26.13	25.35	18.33	19.81	19.75	19.89
	190	24.00	24.12	**26.50**	26.21	25.56	18.53	20.09	19.88	20.36
	251	23.95	24.04	**26.56**	26.14	25.67	18.57	20.10	19.84	20.12
GSM 1900	512	19.97	20.01	21.76	**22.25**	21.60	16.30	18.10	17.84	17.70
	661	20.69	20.73	21.99	**22.68**	22.06	16.52	18.45	18.20	18.10
	810	20.39	20.52	21.87	**22.91**	22.12	16.40	18.30	18.24	18.26

GSM 850	**Frame Avg.Targets:**	23.97	23.97	**26.48**	25.74	25.49	18.97	20.48	20.24	20.49
GSM 1900		20.97	20.97	21.98	**22.24**	21.79	16.97	18.98	18.74	18.49

Table 9-2
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	27.50	25.21	**24.00**	22.83	25.33	24.12	22.10	20.71
	661	27.66	25.97	**24.33**	23.06	25.55	24.47	22.46	21.11
	810	27.55	25.80	**24.03**	22.93	25.43	24.32	22.50	21.27

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	18.47	19.19	**19.74**	19.82	16.30	18.10	17.84	17.70
	661	18.63	19.95	**20.07**	20.05	16.52	18.45	18.20	18.10
	810	18.52	19.78	**19.77**	19.92	16.40	18.30	18.24	18.26
GSM 1900	**Frame Avg.Targets:**	18.97	19.98	**20.24**	19.79	16.97	18.98	18.74	18.49

Table 9-3
Reduced Conducted Power – Grip Sensor and/or Earjack Mode Active

Maximum Burst-Averaged Output Power										
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 1900	512	27.50	27.50	25.21	**24.00**	22.83	25.33	24.12	22.10	20.71
	661	27.64	27.66	25.97	**24.33**	23.06	25.55	24.47	22.46	21.11
	810	27.54	27.55	25.80	**24.03**	22.93	25.43	24.32	22.50	21.27

Calculated Maximum Frame-Averaged Output Power										
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 1900	512	18.47	18.47	19.19	**19.74**	19.82	16.30	18.10	17.84	17.70
	661	18.61	18.63	19.95	**20.07**	20.05	16.52	18.45	18.20	18.10
	810	18.51	18.52	19.78	**19.77**	19.92	16.40	18.30	18.24	18.26
GSM 1900	**Frame Avg.Targets:**	18.97	18.97	19.98	**20.24**	19.79	16.97	18.98	18.74	18.49

Note:

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

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

Figure 9-1
Power Measurement Setup

9.2 UMTS Conducted Powers

Table 9-4
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	24.25	24.33	24.39	22.96	23.00	22.90	24.21	24.59	24.37	-
99		12.2 kbps AMR	24.28	24.37	24.37	22.98	22.99	22.84	24.22	24.53	24.42	-
6	HSDPA	Subtest 1	21.78	21.78	21.94	21.71	21.74	21.66	22.26	22.63	22.55	0
6		Subtest 2	21.80	21.80	21.91	21.66	21.73	21.61	22.27	22.71	22.52	0
6		Subtest 3	21.25	21.30	21.45	21.23	21.21	21.14	21.74	22.11	22.01	0.5
6		Subtest 4	21.31	21.29	21.44	21.21	21.13	21.10	21.79	22.13	22.00	0.5
6	HSUPA	Subtest 1	21.84	21.90	21.91	21.70	21.78	21.64	22.20	22.62	22.50	0
6		Subtest 2	19.92	19.93	19.97	19.80	19.75	19.67	20.24	20.64	20.54	2
6		Subtest 3	20.81	20.95	20.96	18.76	18.76	18.65	18.73	19.16	19.00	1
6		Subtest 4	19.84	19.94	19.95	19.60	19.53	19.45	19.52	19.93	19.82	2
6		Subtest 5	21.84	21.93	21.96	21.82	21.83	21.69	22.31	22.73	22.58	0
8	DC-HSDPA	Subtest 1	21.81	21.90	21.94	21.69	21.61	21.55	22.17	22.60	22.51	0
8		Subtest 2	21.83	21.91	21.97	21.70	21.61	21.57	22.20	22.63	22.52	0
8		Subtest 3	21.32	21.45	21.44	21.19	21.15	21.09	21.69	22.09	22.02	0.5
8		Subtest 4	21.31	21.43	21.45	21.22	21.16	21.10	21.67	22.09	22.01	0.5

Table 9-5
Reduced Conducted Power – Hotspot Mode, Grip Sensor and/or Earjack 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	21.06	21.04	20.92	21.00	21.47	21.24	-
99		12.2 kbps AMR	21.10	21.04	20.90	21.01	21.45	21.25	-
6	HSDPA	Subtest 1	19.74	19.70	19.63	19.73	20.21	20.00	0
6		Subtest 2	19.73	19.72	19.65	19.72	20.14	19.97	0
6		Subtest 3	19.21	19.17	19.17	19.21	19.73	19.48	0.5
6		Subtest 4	19.23	19.21	19.14	19.21	19.66	19.47	0.5
6	HSUPA	Subtest 1	19.64	19.73	19.67	19.71	20.15	20.02	0
6		Subtest 2	17.76	17.75	17.61	17.77	18.15	18.00	2
6		Subtest 3	16.75	16.77	16.67	16.20	16.61	16.51	1
6		Subtest 4	17.59	17.59	17.50	17.05	17.48	17.31	2
6		Subtest 5	19.80	19.79	19.64	19.85	20.25	20.10	0
8	DC-HSDPA	Subtest 1	19.69	19.70	19.64	19.64	20.00	19.91	0
8		Subtest 2	19.71	19.69	19.64	19.64	20.01	19.93	0
8		Subtest 3	19.19	19.18	19.08	19.19	19.53	19.43	0.5
8		Subtest 4	19.17	19.21	19.10	19.18	19.52	19.44	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.

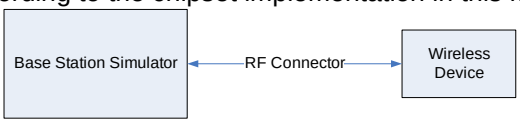

Figure 9-2
Power Measurement Setup

9.3 LTE Conducted Powers

9.3.1 LTE Band 12

Table 9-6
LTE Band 12 Conducted Powers - 10 MHz Bandwidth

LTE Band 12 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23095 (707.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	**24.77**	0	0
	1	25	24.76		0
	1	49	24.72		0
	25	0	**23.91**	0-1	1
	25	12	23.89		1
	25	25	23.81		1
	50	0	23.89		1
16QAM	1	0	23.99	0-1	1
	1	25	24.00		1
	1	49	23.95		1
	25	0	22.92	0-2	2
	25	12	22.88		2
	25	25	22.83		2
	50	0	22.87		2
64QAM	1	0	22.79	0-2	2
	1	25	22.84		2
	1	49	22.66		2
	25	0	21.42	0-3	3
	25	12	21.64		3
	25	25	21.72		3
	50	0	21.51		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 9-7
LTE Band 12 Conducted Powers - 5 MHz Bandwidth

LTE Band 12 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23035 (701.5 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23155 (713.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.75	24.78	24.96	0	0
	1	12	24.60	24.89	24.72		0
	1	24	24.64	24.83	24.64		0
	12	0	23.66	23.94	24.04	0-1	1
	12	6	23.51	24.08	23.81		1
	12	13	23.49	24.02	23.55		1
	25	0	23.44	24.04	23.74		1
16QAM	1	0	24.03	24.15	24.08	0-1	1
	1	12	23.80	24.26	23.79		1
	1	24	23.81	23.89	23.71		1
	12	0	22.85	23.01	23.00	0-2	2
	12	6	22.72	23.09	22.91		2
	12	13	22.73	23.06	22.87		2
	25	0	22.59	23.08	22.81		2
64QAM	1	0	22.68	22.70	22.76	0-2	2
	1	12	22.30	22.82	22.32		2
	1	24	22.20	22.94	22.17		2
	12	0	21.26	21.89	21.62	0-3	3
	12	6	21.22	22.12	21.39		3
	12	13	21.28	22.11	21.26		3
	25	0	21.17	21.96	21.21		3

Table 9-8
LTE Band 12 Conducted Powers - 3 MHz Bandwidth

LTE Band 12 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23025 (700.5 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23165 (714.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.74	24.78	24.74	0	0
	1	7	24.55	24.85	24.46		0
	1	14	24.37	24.84	24.35		0
	8	0	23.83	23.92	23.84	0-1	1
	8	4	23.70	23.99	23.74		1
	8	7	23.51	23.93	23.61		1
	15	0	23.72	23.98	23.73		1
16QAM	1	0	23.96	24.27	24.16	0-1	1
	1	7	23.86	24.34	23.89		1
	1	14	23.65	24.31	23.78		1
	8	0	22.88	23.07	23.07	0-2	2
	8	4	22.80	23.12	22.97		2
	8	7	22.66	23.11	22.83		2
	15	0	22.76	23.03	22.91		2
64QAM	1	0	22.47	22.86	22.51	0-2	2
	1	7	22.23	22.93	22.23		2
	1	14	22.04	22.87	22.57		2
	8	0	21.40	22.00	21.52	0-3	3
	8	4	21.29	22.06	21.42		3
	8	7	21.04	22.02	21.28		3
	15	0	21.28	21.92	21.47		3

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

LTE Band 12 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23017 (699.7 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23173 (715.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.68	24.85	24.42	0	0
	1	2	24.84	24.93	24.42		0
	1	5	24.71	24.91	24.35		0
	3	0	24.79	24.81	24.47		0
	3	2	24.81	24.92	24.52		0
	3	3	24.73	24.85	24.47		0
	6	0	23.85	23.90	23.53	0-1	1
16QAM	1	0	23.91	24.07	23.86	0-1	1
	1	2	24.02	24.14	23.87		1
	1	5	23.90	24.22	23.82		1
	3	0	23.95	24.00	23.59		1
	3	2	24.02	24.11	23.63		1
	3	3	23.93	24.06	23.58		1
	6	0	22.82	23.07	22.71	0-2	2
64QAM	1	0	22.49	23.28	22.42	0-2	2
	1	2	22.47	23.34	22.44		2
	1	5	22.25	23.27	22.35		2
	3	0	22.24	23.02	22.30		2
	3	2	22.14	23.10	22.34		2
	3	3	22.03	23.05	22.30		2
	6	0	21.07	21.85	21.26	0-3	3

9.3.2 LTE Band 13

Table 9-10
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)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]		
QPSK	1	0	24.48	0	0
	1	25	**24.60**		0
	1	49	24.46		0
	25	0	**23.81**	0-1	1
	25	12	23.77		1
	25	25	23.72		1
	50	0	23.80		1
16QAM	1	0	23.85	0-1	1
	1	25	23.90		1
	1	49	23.78		1
	25	0	22.78	0-2	2
	25	12	22.76		2
	25	25	22.69		2
	50	0	22.73		2
64QAM	1	0	22.65	0-2	2
	1	25	22.87		2
	1	49	22.76		2
	25	0	21.79	0-3	3
	25	12	21.75		3
	25	25	21.69		3
	50	0	21.76		3

Table 9-11
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	24.65	0	0
	1	12	24.63		0
	1	24	24.60		0
	12	0	23.76	0-1	1
	12	6	23.75		1
	12	13	23.74		1
	25	0	23.73		1
16QAM	1	0	23.86	0-1	1
	1	12	23.94		1
	1	24	23.85		1
	12	0	22.79	0-2	2
	12	6	22.76		2
	12	13	22.74		2
	25	0	22.71		2
64QAM	1	0	22.88	0-2	2
	1	12	22.86		2
	1	24	22.79		2
	12	0	21.76	0-3	3
	12	6	21.75		3
	12	13	21.74		3
	25	0	21.70		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.

9.3.3 LTE Band 26 (Cell)

Table 9-12
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	**24.62**	0	0
	1	36	24.59		0
	1	74	24.58		0
	36	0	23.66	0-1	1
	36	18	**23.76**		1
	36	37	23.67		1
	75	0	23.73		1
16QAM	1	0	23.85	0-1	1
	1	36	23.94		1
	1	74	23.86		1
	36	0	22.65	0-2	2
	36	18	22.77		2
	36	37	22.67		2
	75	0	22.72		2
64QAM	1	0	22.81	0-2	2
	1	36	22.90		2
	1	74	22.82		2
	36	0	21.73	0-3	3
	36	18	21.79		3
	36	37	21.70		3
	75	0	21.72		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 9-13
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	24.33	24.51	24.61	0	0
	1	25	24.27	24.49	24.49		0
	1	49	24.37	24.57	24.51		0
	25	0	23.37	23.66	23.70	0-1	1
	25	12	23.40	23.67	23.71		1
	25	25	23.45	23.63	23.68		1
	50	0	23.37	23.64	23.70		1
16QAM	1	0	23.53	24.02	23.89	0-1	1
	1	25	23.42	24.00	23.88		1
	1	49	23.51	24.01	23.87		1
	25	0	22.43	22.74	22.80	0-2	2
	25	12	22.42	22.75	22.82		2
	25	25	22.49	22.72	22.78		2
	50	0	22.35	22.67	22.71		2
64QAM	1	0	22.33	22.61	22.95	0-2	2
	1	25	22.21	22.58	22.82		2
	1	49	22.36	22.62	22.57		2
	25	0	21.49	21.73	21.80	0-3	3
	25	12	21.49	21.72	21.82		3
	25	25	21.48	21.70	21.78		3
	50	0	21.44	21.69	21.74		3

Table 9-14
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	24.16	24.42	24.64	0	0
	1	12	24.31	24.56	24.70		0
	1	24	24.36	24.53	24.55		0
	12	0	23.25	23.62	23.67	0-1	1
	12	6	23.37	23.67	23.76		1
	12	13	23.36	23.68	23.66		1
	25	0	23.33	23.61	23.65		1
16QAM	1	0	23.45	23.76	23.70	0-1	1
	1	12	23.68	23.84	23.72		1
	1	24	23.62	23.83	23.66		1
	12	0	22.43	22.63	22.65	0-2	2
	12	6	22.54	22.69	22.69		2
	12	13	22.54	22.66	22.63		2
	25	0	22.32	22.66	22.65		2
64QAM	1	0	22.25	22.67	22.89	0-2	2
	1	12	22.44	22.74	22.93		2
	1	24	22.46	22.73	22.60		2
	12	0	21.23	21.68	21.74	0-3	3
	12	6	21.33	21.70	21.80		3
	12	13	21.33	21.71	21.75		3
	25	0	21.32	21.62	21.68		3

Table 9-15
LTE Band 26 (Cell) Conducted Powers - 3 MHz Bandwidth

LTE Band 26 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26705 (815.5 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27025 (847.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.10	24.50	24.50	0	0
	1	7	24.23	24.58	24.48		0
	1	14	24.15	24.59	24.49		0
	8	0	23.23	23.60	23.69	0-1	1
	8	4	23.29	23.67	23.67		1
	8	7	23.27	23.62	23.61		1
	15	0	23.31	23.64	23.65		1
16QAM	1	0	23.27	24.00	23.96	0-1	1
	1	7	23.41	24.03	23.89		1
	1	14	23.35	24.03	23.81		1
	8	0	22.28	22.75	22.78	0-2	2
	8	4	22.34	22.77	22.83		2
	8	7	22.35	22.78	22.75		2
	15	0	22.27	22.67	22.74		2
64QAM	1	0	22.03	22.60	22.86	0-2	2
	1	7	22.18	22.64	22.83		2
	1	14	22.17	22.60	22.51		2
	8	0	21.30	21.65	21.69	0-3	3
	8	4	21.43	21.71	21.70		3
	8	7	21.38	21.73	21.60		3
	15	0	21.43	21.62	21.74		3

Table 9-16
LTE Band 26 (Cell) Conducted Powers -1.4 MHz Bandwidth

LTE Band 26 (Cell) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26697 (814.7 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27033 (848.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.06	24.60	24.41	0	0
	1	2	24.14	24.68	24.50		0
	1	5	24.07	24.60	24.39		0
	3	0	24.07	24.49	24.51		0
	3	2	24.18	24.58	24.58		0
	3	3	24.12	24.52	24.51		0
	6	0	23.20	23.53	23.59	0-1	1
16QAM	1	0	23.26	23.78	23.77	0-1	1
	1	2	23.36	23.89	23.87		1
	1	5	23.30	23.82	23.82		1
	3	0	23.24	23.70	23.57		1
	3	2	23.34	23.81	23.59		1
	3	3	23.31	23.74	23.54		1
	6	0	22.20	22.70	22.65	0-2	2
64QAM	1	0	22.06	22.97	22.55	0-2	2
	1	2	22.19	23.08	22.53		2
	1	5	22.07	22.98	22.28		2
	3	0	22.19	22.69	22.65		2
	3	2	22.31	22.79	22.66		2
	3	3	22.26	22.74	22.37		2
	6	0	21.25	21.51	21.28	0-3	3

9.3.4 LTE Band 66 (AWS)

Table 9-17
LTE Band 66 (AWS) Conducted Powers - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132072 (1720.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132572 (1770.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.93	24.01	24.07	0	0
	1	50	23.95	24.32	24.16		0
	1	99	23.95	**24.46**	24.05		0
	50	0	23.55	23.48	**23.63**	0-1	1
	50	25	23.52	23.48	23.55		1
	50	50	23.50	23.53	23.25		1
	100	0	23.50	23.59	23.53		1
16QAM	1	0	23.54	23.74	23.74	0-1	1
	1	50	23.58	23.62	23.70		1
	1	99	23.66	23.71	23.69		1
	50	0	22.58	22.48	22.64	0-2	2
	50	25	22.55	22.50	22.61		2
	50	50	22.53	22.54	22.31		2
	100	0	22.52	22.55	22.68		2
64QAM	1	0	22.11	22.33	22.71	0-2	2
	1	50	22.50	22.12	22.00		2
	1	99	22.55	22.74	22.10		2
	50	0	21.19	21.07	21.43	0-3	3
	50	25	21.57	21.04	21.09		3
	50	50	21.58	21.17	21.00		3
	100	0	21.37	21.04	21.12		3

Table 9-18
LTE Band 66 (AWS) Conducted Powers - 15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132047 (1717.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132597 (1772.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.89	23.88	24.43	0	0
	1	36	24.17	23.91	23.82		0
	1	74	24.15	24.00	24.05		0
	36	0	23.25	23.15	23.39	0-1	1
	36	18	23.23	23.14	23.00		1
	36	37	23.15	23.19	22.99		1
	75	0	23.27	23.15	23.09		1
16QAM	1	0	23.12	23.57	23.65	0-1	1
	1	36	23.34	23.48	23.14		1
	1	74	23.35	23.53	23.39		1
	36	0	22.24	22.17	22.41	0-2	2
	36	18	22.25	22.21	22.14		2
	36	37	22.19	22.20	22.08		2
	75	0	22.28	22.26	22.21		2
64QAM	1	0	21.59	21.94	22.27	0-2	2
	1	36	21.69	21.86	21.95		2
	1	74	21.97	21.72	22.01		2
	36	0	20.76	20.82	21.26	0-3	3
	36	18	20.89	20.85	20.86		3
	36	37	21.18	20.95	20.73		3
	75	0	20.79	20.88	20.87		3

Table 9-19
LTE Band 66 (AWS) Conducted Powers - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132022 (1715.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132622 (1775.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.89	23.90	23.79	0	0
	1	25	23.94	23.85	23.92		0
	1	49	24.05	24.02	24.08		0
	25	0	23.02	23.04	23.03	0-1	1
	25	12	23.12	23.06	23.12		1
	25	25	23.10	23.05	23.13		1
	50	0	23.11	22.97	23.11		1
16QAM	1	0	23.03	23.06	23.04	0-1	1
	1	25	23.23	23.10	23.20		1
	1	49	23.36	23.14	23.37		1
	25	0	22.11	22.18	22.03	0-2	2
	25	12	22.21	22.15	22.22		2
	25	25	22.21	22.13	22.21		2
	50	0	22.10	22.06	22.15		2
64QAM	1	0	21.55	21.59	21.54	0-2	2
	1	25	21.40	21.64	21.88		2
	1	49	21.73	21.59	21.71		2
	25	0	20.73	20.79	20.74	0-3	3
	25	12	20.41	20.81	20.42		3
	25	25	20.77	20.62	20.81		3
	50	0	20.40	20.64	20.40		3

Table 9-20
LTE Band 66 (AWS) Conducted Powers - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131997 (1712.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132647 (1777.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.91	23.67	23.82	0	0
	1	12	24.09	23.81	23.97		0
	1	24	24.26	23.94	24.19		0
	12	0	22.87	23.01	22.99	0-1	1
	12	6	22.96	23.07	23.04		1
	12	13	23.07	23.08	23.21		1
	25	0	22.88	22.98	23.05		1
16QAM	1	0	22.71	22.85	23.17	0-1	1
	1	12	22.86	22.93	23.31		1
	1	24	23.06	23.14	23.58		1
	12	0	21.99	22.12	21.86	0-2	2
	12	6	22.12	22.20	22.00		2
	12	13	22.19	22.18	22.15		2
	25	0	21.97	22.07	22.10		2
64QAM	1	0	21.71	21.93	21.79	0-2	2
	1	12	21.86	22.03	21.86		2
	1	24	22.03	21.83	22.07		2
	12	0	20.97	21.04	21.15	0-3	3
	12	6	21.06	21.02	21.26		3
	12	13	21.65	21.01	21.35		3
	25	0	21.08	20.97	21.11		3

Table 9-21
LTE Band 66 (AWS) Conducted Powers - 3 MHz Bandwidth

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131987 (1711.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132657 (1778.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.79	23.66	23.60	0	0
	1	7	23.85	23.68	23.75		0
	1	14	23.97	23.82	23.91		0
	8	0	22.70	22.97	23.07	0-1	1
	8	4	22.78	23.00	23.08		1
	8	7	22.80	22.98	23.06		1
	15	0	22.74	22.96	23.06		1
16QAM	1	0	22.84	22.88	23.06	0-1	1
	1	7	22.88	22.92	23.22		1
	1	14	22.97	23.08	23.22		1
	8	0	21.90	22.15	22.17	0-2	2
	8	4	22.01	22.20	22.17		2
	8	7	22.00	22.18	22.17		2
	15	0	21.85	22.04	22.07		2
64QAM	1	0	21.82	22.05	22.03	0-2	2
	1	7	21.86	22.18	21.95		2
	1	14	21.96	21.84	22.02		2
	8	0	20.79	20.76	20.91	0-3	3
	8	4	20.85	20.91	21.03		3
	8	7	20.84	20.88	20.93		3
	15	0	20.85	20.89	20.78		3

Table 9-22
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	23.68	23.92	23.93	0	0
	1	2	23.74	24.05	23.95		0
	1	5	23.69	24.03	23.97		0
	3	0	23.64	23.93	24.02		0
	3	2	23.72	24.01	24.07		0
	3	3	23.66	23.94	24.09		0
	6	0	22.73	23.02	23.12	0-1	1
16QAM	1	0	22.88	22.88	23.22	0-1	1
	1	2	22.96	22.96	23.21		1
	1	5	22.93	22.94	23.25		1
	3	0	22.72	22.95	23.00		1
	3	2	22.71	23.01	23.06		1
	3	3	22.69	22.96	23.05		1
	6	0	21.85	22.14	22.19	0-2	2
64QAM	1	0	21.17	21.31	21.32	0-2	2
	1	2	21.15	21.43	21.44		2
	1	5	21.11	21.37	21.47		2
	3	0	21.17	21.20	21.47		2
	3	2	21.20	21.27	21.56		2
	3	3	21.17	21.26	21.54		2
	6	0	20.30	20.18	20.51	0-3	3

Table 9-23
LTE Band 66 (AWS) Reduced Conducted Powers - 20 MHz Bandwidth – Hotspot Mode, Grip Sensor and/or Earjack Mode Active

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132072 (1720.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132572 (1770.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	20.52	20.68	**20.95**	0	0
	1	50	20.57	20.60	20.77		0
	1	99	20.70	20.73	20.78		0
	50	0	20.82	20.87	**21.00**	0-1	0
	50	25	20.80	20.86	20.98		0
	50	50	20.75	20.82	20.96		0
	100	0	20.78	20.80	20.94		0
16QAM	1	0	20.90	21.02	21.18	0-1	0
	1	50	20.86	20.93	21.03		0
	1	99	21.04	20.94	21.07		0
	50	0	20.83	20.86	20.97	0-2	0
	50	25	20.82	20.86	20.98		0
	50	50	20.77	20.81	20.92		0
	100	0	20.79	20.82	20.98		0
64QAM	1	0	20.87	20.97	21.16	0-2	0
	1	50	20.89	20.95	21.03		0
	1	99	20.99	21.00	21.08		0
	50	0	20.73	20.40	21.01	0-3	0
	50	25	20.87	20.45	20.86		0
	50	50	20.83	20.81	20.50		0
	100	0	20.82	20.69	20.86		0

Table 9-24
LTE Band 66 (AWS) Reduced Conducted Powers - 15 MHz Bandwidth – Hotspot Mode, Grip Sensor and/or Earjack Mode Active

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	20.53	20.66	21.01	0	0
	1	36	20.54	20.60	21.00		0
	1	74	20.50	20.78	20.98		0
	36	0	20.66	20.80	21.14	0-1	0
	36	18	20.68	20.82	21.10		0
	36	37	20.64	20.78	21.08		0
	75	0	20.65	20.80	21.13		0
16QAM	1	0	20.80	21.02	21.12	0-1	0
	1	36	20.82	20.91	21.11		0
	1	74	20.80	20.97	21.14		0
	36	0	20.69	20.84	21.11	0-2	0
	36	18	20.68	20.83	21.09		0
	36	37	20.66	20.80	21.05		0
	75	0	20.67	20.80	21.10		0
64QAM	1	0	20.66	20.85	21.19	0-2	0
	1	36	20.70	20.78	21.13		0
	1	74	20.69	20.83	21.15		0
	36	0	20.66	20.70	20.77	0-3	0
	36	18	20.69	20.24	20.38		0
	36	37	20.63	20.45	20.43		0
	75	0	20.61	20.25	20.33		0

Table 9-25
LTE Band 66 (AWS) Reduced Conducted Powers - 10 MHz Bandwidth – Hotspot Mode, Grip Sensor and/or Earjack Mode Active

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	20.33	20.45	20.81	0	0
	1	25	20.34	20.44	20.80		0
	1	49	20.36	20.47	20.77		0
	25	0	20.44	20.60	20.93	0-1	0
	25	12	20.50	20.62	20.92		0
	25	25	20.41	20.57	20.89		0
	50	0	20.45	20.59	20.91		0
16QAM	1	0	20.59	20.78	21.07	0-1	0
	1	25	20.55	20.67	21.10		0
	1	49	20.61	20.78	21.06		0
	25	0	20.48	20.57	20.98	0-2	0
	25	12	20.47	20.63	20.95		0
	25	25	20.47	20.59	20.96		0
	50	0	20.49	20.63	20.96		0
64QAM	1	0	20.52	20.71	21.04	0-2	0
	1	25	20.53	20.65	21.03		0
	1	49	20.62	20.71	21.12		0
	25	0	20.02	20.00	20.25	0-3	0
	25	12	20.28	20.24	20.15		0
	25	25	20.50	20.36	20.16		0
	50	0	20.35	20.14	20.18		0

Table 9-26
LTE Band 66 (AWS) Reduced Conducted Powers - 5 MHz Bandwidth – Hotspot Mode, Grip Sensor and/or Earjack Mode Active

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131997 (1712.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132647 (1777.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	20.44	20.58	20.77	0	0
	1	12	20.45	20.59	20.80		0
	1	24	20.47	20.57	20.67		0
	12	0	20.44	20.62	20.83	0-1	0
	12	6	20.51	20.63	20.90		0
	12	13	20.43	20.60	20.90		0
	25	0	20.46	20.60	20.90		0
16QAM	1	0	20.55	20.68	21.00	0-1	0
	1	12	20.54	20.66	21.08		0
	1	24	20.59	20.70	21.04		0
	12	0	20.50	20.60	20.90	0-2	0
	12	6	20.46	20.64	20.94		0
	12	13	20.45	20.62	20.98		0
	25	0	20.52	20.64	20.95		0
64QAM	1	0	20.51	20.68	21.02	0-2	0
	1	12	20.55	20.68	21.00		0
	1	24	20.67	20.77	21.10		0
	12	0	20.05	20.01	20.15	0-3	0
	12	6	20.14	20.14	20.17		0
	12	13	20.29	20.30	20.14		0
	25	0	20.48	20.25	20.45		0

Table 9-27
LTE Band 66 (AWS) Reduced Conducted Powers - 3 MHz Bandwidth – Hotspot Mode, Grip Sensor and/or Earjack Mode Active

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131987 (1711.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132657 (1778.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	20.55	20.70	20.99	0	0
	1	7	20.52	20.54	20.88		0
	1	14	20.68	20.63	20.82		0
	8	0	20.70	20.77	21.00	0-1	0
	8	4	20.72	20.76	21.05		0
	8	7	20.76	20.72	21.06		0
	15	0	20.65	20.70	21.04		0
16QAM	1	0	20.85	21.04	21.08	0-1	0
	1	7	20.84	21.00	21.13		0
	1	14	21.00	20.92	21.09		0
	8	0	20.93	20.88	21.00	0-2	0
	8	4	20.90	20.84	21.02		0
	8	7	20.66	20.50	21.08		0
	15	0	20.72	20.83	21.00		0
64QAM	1	0	20.90	20.99	21.06	0-2	0
	1	7	20.84	20.94	21.00		0
	1	14	20.95	21.02	21.05		0
	8	0	20.83	20.55	20.99	0-3	0
	8	4	20.66	20.54	20.86		0
	8	7	20.63	20.60	20.45		0
	15	0	20.74	20.70	20.74		0

Table 9-28
LTE Band 66 (AWS) Reduced Conducted Powers -1.4 MHz Bandwidth – Hotspot Mode, Grip Sensor and/or Earjack Mode Active

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	20.54	20.48	20.66	0	0
	1	2	20.46	20.55	20.65		0
	1	5	20.48	20.56	20.68		0
	3	0	20.48	20.60	20.88		0
	3	2	20.58	20.54	20.88		0
	3	3	20.47	20.55	20.87		0
	6	0	20.47	20.57	20.87	0-1	0
16QAM	1	0	20.54	20.60	21.10	0-1	0
	1	2	20.58	20.65	21.09		0
	1	5	20.60	20.65	21.00		0
	3	0	20.52	20.66	20.98		0
	3	2	20.48	20.63	20.95		0
	3	3	20.47	20.62	20.93		0
	6	0	20.51	20.62	20.92	0-2	0
64QAM	1	0	20.55	20.66	21.00	0-2	0
	1	2	20.55	20.60	20.99		0
	1	5	20.62	20.64	20.12		0
	3	0	20.12	20.13	20.17		0
	3	2	20.14	20.12	20.18		0
	3	3	20.25	20.30	20.15		0
	6	0	20.22	20.27	20.44	0-3	0

9.3.5 LTE Band 25 (PCS)

Table 9-29
LTE Band 25 (PCS) Conducted Powers - 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.07	24.14	24.06	0	0
	1	50	23.98	**24.24**	23.97		0
	1	99	24.06	24.19	23.96		0
	50	0	23.10	23.33	23.12	0-1	1
	50	25	23.14	**23.40**	23.15		1
	50	50	23.13	23.39	23.13		1
	100	0	23.13	23.33	23.13		1
16QAM	1	0	23.36	23.43	23.44	0-1	1
	1	50	23.25	23.56	23.37		1
	1	99	23.44	23.52	23.27		1
	50	0	22.10	22.31	22.12	0-2	2
	50	25	22.14	22.40	22.16		2
	50	50	22.17	22.37	22.13		2
	100	0	22.13	22.34	22.13		2
64QAM	1	0	21.83	22.35	22.19	0-2	2
	1	50	21.94	22.43	22.26		2
	1	99	21.91	22.30	21.53		2
	50	0	20.89	21.32	21.13	0-3	3
	50	25	20.96	21.40	21.13		3
	50	50	20.84	21.32	20.68		3
	100	0	20.82	21.25	21.01		3

Table 9-30
LTE Band 25 (PCS) Conducted Powers - 15 MHz Bandwidth

LTE Band 25 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26115 (1857.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26615 (1907.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.05	24.18	24.09	0	0
	1	36	23.98	24.22	24.07		0
	1	74	23.98	24.22	24.05		0
	36	0	23.01	23.33	23.13	0-1	1
	36	18	23.15	23.40	23.22		1
	36	37	23.13	23.42	23.19		1
	75	0	23.04	23.34	23.14		1
16QAM	1	0	23.14	23.83	23.16	0-1	1
	1	36	23.27	23.87	23.18		1
	1	74	23.26	23.86	23.12		1
	36	0	22.13	22.40	22.21	0-2	2
	36	18	22.20	22.46	22.28		2
	36	37	22.18	22.48	22.22		2
	75	0	22.16	22.39	22.10		2
64QAM	1	0	22.12	22.91	22.56	0-2	2
	1	36	22.41	22.95	22.50		2
	1	74	22.38	22.91	22.10		2
	36	0	21.17	21.42	21.14	0-3	3
	36	18	21.28	21.52	21.21		3
	36	37	21.17	21.50	21.06		3
	75	0	21.06	21.37	21.07		3

Table 9-31
LTE Band 25 (PCS) Conducted Powers - 10 MHz Bandwidth

LTE Band 25 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26090 (1855.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26640 (1910.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.90	23.98	23.97	0	0
	1	25	23.83	24.04	23.95		0
	1	49	23.88	23.98	23.91		0
	25	0	22.94	23.19	22.94	0-1	1
	25	12	22.97	23.23	22.95		1
	25	25	22.97	23.25	23.01		1
	50	0	22.93	23.26	22.96		1
16QAM	1	0	23.28	23.29	23.37	0-1	1
	1	25	23.18	23.36	23.39		1
	1	49	23.34	23.33	23.43		1
	25	0	21.97	22.18	21.94	0-2	2
	25	12	21.99	22.26	22.01		2
	25	25	21.97	22.27	21.95		2
	50	0	22.02	22.26	22.00		2
64QAM	1	0	22.00	22.52	22.49	0-2	2
	1	25	21.89	22.48	22.15		2
	1	49	22.00	22.54	21.95		2
	25	0	21.03	21.32	20.98	0-3	3
	25	12	21.05	21.37	20.77		3
	25	25	21.04	21.37	20.80		3
	50	0	20.95	21.36	20.76		3

Table 9-32
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	23.92	23.94	23.92	0	0
	1	12	23.96	24.04	23.97		0
	1	24	24.02	24.08	24.01		0
	12	0	22.94	23.15	22.97	0-1	1
	12	6	22.99	23.22	23.02		1
	12	13	22.99	23.22	23.01		1
	25	0	22.95	23.16	22.98		1
16QAM	1	0	23.09	23.49	23.00	0-1	1
	1	12	23.15	23.56	23.11		1
	1	24	23.22	23.66	23.13		1
	12	0	21.90	22.13	21.98	0-2	2
	12	6	22.01	22.27	22.03		2
	12	13	22.01	22.34	22.04		2
	25	0	22.05	22.14	22.03		2
64QAM	1	0	22.41	22.68	22.42	0-2	2
	1	12	22.54	22.79	22.50		2
	1	24	22.63	22.87	22.49		2
	12	0	20.98	21.19	20.91	0-3	3
	12	6	21.10	21.26	20.79		3
	12	13	21.07	21.35	20.87		3
	25	0	21.01	21.12	20.72		3

Table 9-33
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	23.93	23.97	23.97	0	0
	1	7	23.97	24.03	24.00		0
	1	14	24.01	24.10	24.04		0
	8	0	22.93	23.15	22.90	0-1	1
	8	4	23.02	23.20	23.00		1
	8	7	23.01	23.23	22.98		1
	15	0	22.98	23.20	22.97		1
16QAM	1	0	23.26	23.62	23.04	0-1	1
	1	7	23.29	23.76	23.10		1
	1	14	23.31	23.80	23.15		1
	8	0	22.10	22.08	21.85	0-2	2
	8	4	22.10	22.16	21.96		2
	8	7	22.12	22.24	21.90		2
	15	0	22.04	22.32	22.01		2
64QAM	1	0	21.86	22.65	22.10	0-2	2
	1	7	21.98	22.78	22.28		2
	1	14	22.04	22.80	22.24		2
	8	0	21.06	21.35	20.86	0-3	3
	8	4	21.08	21.40	20.95		3
	8	7	21.08	21.48	20.94		3
	15	0	20.96	21.22	20.85		3

Table 9-34
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	23.81	23.93	23.76	0	0
	1	2	23.96	24.11	23.92		0
	1	5	23.84	24.03	23.83		0
	3	0	23.82	24.00	23.77		0
	3	2	23.88	24.13	23.81		0
	3	3	23.82	24.09	23.80		0
	6	0	22.92	23.12	22.89	0-1	1
16QAM	1	0	22.96	23.37	23.06	0-1	1
	1	2	23.05	23.49	23.10		1
	1	5	23.01	23.45	23.10		1
	3	0	22.82	23.05	23.02		1
	3	2	22.88	23.18	23.07		1
	3	3	22.80	23.16	23.01		1
	6	0	21.81	22.12	22.04	0-2	2
64QAM	1	0	22.03	22.21	21.90	0-2	2
	1	2	22.14	22.35	22.05		2
	1	5	22.11	22.30	22.09		2
	3	0	22.01	22.12	21.50		2
	3	2	22.01	22.25	21.57		2
	3	3	21.98	22.21	21.62		2
	6	0	21.08	21.23	20.61	0-3	3

Table 9-35
LTE Band 25 (PCS) Reduced Conducted Powers - 20 MHz Bandwidth – Hotspot Mode, Grip Sensor and/or Earjack Mode Active

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	20.13	**20.48**	20.32	0	0
	1	50	20.04	20.32	20.08		0
	1	99	20.17	20.34	20.04		0
	50	0	20.18	20.42	20.23	0-1	0
	50	25	20.19	**20.51**	20.40		0
	50	50	20.23	20.50	20.22		0
	100	0	20.20	20.24	20.39		0
16QAM	1	0	20.36	20.49	20.44	0-1	0
	1	50	20.27	20.64	20.42		0
	1	99	20.42	20.59	20.34		0
	50	0	20.17	20.50	20.27	0-2	0
	50	25	20.20	20.57	20.28		0
	50	50	20.22	20.57	20.27		0
	100	0	20.17	20.49	20.26		0
64QAM	1	0	20.43	20.42	20.36	0-2	0
	1	50	20.24	20.61	20.36		0
	1	99	20.38	20.54	20.25		0
	50	0	20.18	20.45	20.25	0-3	0
	50	25	20.24	20.52	20.24		0
	50	50	20.22	20.50	20.23		0
	100	0	20.20	20.46	20.26		0

Table 9-36
LTE Band 25 (PCS) Reduced Conducted Powers - 15 MHz Bandwidth – Hotspot Mode, Grip Sensor and/or Earjack Mode Active

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	20.12	20.36	20.35	0	0
	1	36	20.10	20.38	20.09		0
	1	74	20.15	20.30	20.14		0
	36	0	20.10	20.45	20.25	0-1	0
	36	18	20.12	20.48	20.22		0
	36	37	20.20	20.55	20.33		0
	75	0	20.20	20.36	20.38		0
16QAM	1	0	20.33	20.48	20.41	0-1	0
	1	36	20.25	20.50	20.38		0
	1	74	20.10	20.22	20.37		0
	36	0	20.12	20.40	20.30	0-2	0
	36	18	20.22	20.46	20.30		0
	36	37	20.24	20.47	20.30		0
	75	0	20.18	20.52	20.25		0
64QAM	1	0	20.33	20.40	20.24	0-2	0
	1	36	20.36	20.60	20.23		0
	1	74	20.37	20.55	20.26		0
	36	0	20.18	20.42	20.26	0-3	0
	36	18	20.22	20.54	20.22		0
	36	37	20.25	20.49	20.14		0
	75	0	20.28	20.41	20.18		0

Table 9-37
LTE Band 25 (PCS) Reduced Conducted Powers - 10 MHz Bandwidth – Hotspot Mode, Grip Sensor and/or Earjack Mode Active

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	20.21	20.50	20.48	0	0
	1	25	20.18	20.44	20.12		0
	1	49	20.14	20.48	20.15		0
	25	0	20.14	20.38	20.27	0-1	0
	25	12	20.18	20.44	20.25		0
	25	25	20.22	20.55	20.34		0
	50	0	20.24	20.54	20.30		0
16QAM	1	0	20.38	20.47	20.30	0-1	0
	1	25	20.28	20.50	20.32		0
	1	49	20.14	20.22	20.31		0
	25	0	20.18	20.55	20.33	0-2	0
	25	12	20.27	20.52	20.35		0
	25	25	20.28	20.48	20.32		0
	50	0	20.22	20.56	20.26		0
64QAM	1	0	20.35	20.42	20.28	0-2	0
	1	25	20.38	20.55	20.30		0
	1	49	20.10	20.51	20.31		0
	25	0	20.19	20.44	20.34	0-3	0
	25	12	20.25	20.58	20.32		0
	25	25	20.29	20.58	20.24		0
	50	0	20.34	20.55	20.38		0

Table 9-38
LTE Band 25 (PCS) Reduced Conducted Powers - 5 MHz Bandwidth – Hotspot Mode, Grip Sensor and/or Earjack Mode Active

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	20.23	20.40	20.35	0	0
	1	12	20.14	20.30	20.12		0
	1	24	20.18	20.30	20.14		0
	12	0	20.22	20.44	20.13	0-1	0
	12	6	20.24	20.42	20.28		0
	12	13	20.25	20.41	20.26		0
	25	0	20.25	20.11	20.35		0
16QAM	1	0	20.48	20.38	20.34	0-1	0
	1	12	20.37	20.55	20.44		0
	1	24	20.38	20.54	20.42		0
	12	0	20.27	20.44	20.41	0-2	0
	12	6	20.28	20.47	20.38		0
	12	13	20.26	20.48	20.34		0
	25	0	20.27	20.58	20.32		0
64QAM	1	0	20.33	20.55	20.33	0-2	0
	1	12	20.36	20.55	20.10		0
	1	24	20.32	20.54	20.14		0
	12	0	20.28	20.53	20.18	0-3	0
	12	6	20.26	20.52	20.25		0
	12	13	20.24	20.50	20.24		0
	25	0	20.22	20.41	20.27		0

Table 9-39
LTE Band 25 (PCS) Reduced Conducted Powers - 3 MHz Bandwidth – Hotspot Mode, Grip Sensor and/or Earjack Mode Active

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	20.24	20.38	20.30	0	0
	1	7	20.10	20.33	20.18		0
	1	14	20.22	20.24	20.14		0
	8	0	20.24	20.40	20.23	0-1	0
	8	4	20.10	20.48	20.24		0
	8	7	20.20	20.42	20.13		0
	15	0	20.20	20.30	20.28		0
16QAM	1	0	20.24	20.39	20.22	0-1	0
	1	7	20.17	20.50	20.32		0
	1	14	20.32	20.44	20.34		0
	8	0	20.18	20.40	20.37	0-2	0
	8	4	20.22	20.47	20.27		0
	8	7	20.25	20.48	20.25		0
	15	0	20.22	20.52	20.34		0
64QAM	1	0	20.24	20.40	20.35	0-2	0
	1	7	20.25	20.60	20.32		0
	1	14	20.24	20.52	20.10		0
	8	0	20.28	20.44	20.14	0-3	0
	8	4	20.24	20.48	20.25		0
	8	7	20.27	20.50	20.28		0
	15	0	20.28	20.42	20.30		0

Table 9-40
LTE Band 25 (PCS) Reduced Conducted Powers -1.4 MHz Bandwidth – Hotspot Mode, Grip Sensor and/or Earjack Mode Active

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	20.31	20.28	20.28	0	0
	1	2	20.24	20.20	20.18		0
	1	5	20.27	20.24	20.14		0
	3	0	20.28	20.23	20.23		0
	3	2	20.11	20.41	20.20		0
	3	3	20.13	20.40	20.24		0
	6	0	20.10	20.14	20.29	0-1	0
16QAM	1	0	20.28	20.39	20.34	0-1	0
	1	2	20.24	20.54	20.32		0
	1	5	20.25	20.40	20.43		0
	3	0	20.22	20.10	20.17		0
	3	2	20.28	20.39	20.18		0
	3	3	20.28	20.40	20.28		0
	6	0	20.28	20.39	20.29	0-2	0
64QAM	1	0	20.44	20.33	20.44	0-2	0
	1	2	20.42	20.35	20.43		0
	1	5	20.38	20.50	20.13		0
	3	0	20.22	20.45	20.18		0
	3	2	20.37	20.42	20.48		0
	3	3	20.37	20.48	20.43		0
	6	0	20.32	20.47	20.17	0-3	0

9.3.6 LTE Band 30

Table 9-41
LTE Band 30 Conducted Powers - 10 MHz Bandwidth

LTE Band 30 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 27710 (2310.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	24.99	0	0
	1	25	25.10		0
	1	49	**25.17**		0
	25	0	24.16	0-1	1
	25	12	**24.18**		1
	25	25	24.12		1
	50	0	24.09		1
16QAM	1	0	24.41	0-1	1
	1	25	24.43		1
	1	49	24.29		1
	25	0	23.23	0-2	2
	25	12	23.24		2
	25	25	23.17		2
	50	0	23.20		2
64QAM	1	0	22.68	0-2	2
	1	25	22.66		2
	1	49	22.93		2
	25	0	21.46	0-3	3
	25	12	21.57		3
	25	25	21.68		3
	50	0	21.52		3

Table 9-42
LTE Band 30 Conducted Powers - 5 MHz Bandwidth

LTE Band 30 5 MHz Bandwidth					
Modulation	**RB Size**	**RB Offset**	**Mid Channel** **27710** **(2310.0 MHz)** **Conducted Power [dBm]**	**MPR Allowed per 3GPP [dB]**	**MPR [dB]**
QPSK	1	0	25.12	0	0
	1	12	25.18		0
	1	24	25.03		0
	12	0	24.22	0-1	1
	12	6	24.23		1
	12	13	24.17		1
	25	0	24.19		1
16QAM	1	0	24.37	0-1	1
	1	12	24.46		1
	1	24	24.30		1
	12	0	23.28	0-2	2
	12	6	23.25		2
	12	13	23.20		2
	25	0	23.19		2
64QAM	1	0	22.56	0-2	2
	1	12	22.63		2
	1	24	22.81		2
	12	0	21.53	0-3	3
	12	6	21.62		3
	12	13	21.69		3
	25	0	21.51		3

Note: LTE Band 30 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.

Table 9-43
LTE Band 30 Reduced Conducted Powers - 10 MHz Bandwidth – Hotspot Mode, Grip Sensor and/or Earjack Mode Active

LTE Band 30 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 27710 (2310.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	22.05	0	0
	1	25	**22.09**		0
	1	49	22.03		0
	25	0	22.13	0-1	0
	25	12	**22.20**		0
	25	25	22.12		0
	50	0	22.07		0
16QAM	1	0	22.19	0-1	0
	1	25	22.18		0
	1	49	22.18		0
	25	0	22.17	0-2	0
	25	12	22.02		0
	25	25	22.03		0
	50	0	22.00		0
64QAM	1	0	22.13	0-2	0
	1	25	22.08		0
	1	49	22.05		0
	25	0	21.88	0-3	0.2
	25	12	21.96		0.2
	25	25	22.01		0.2
	50	0	21.87		0.2

Table 9-44
LTE Band 30 Reduced Conducted Powers - 5 MHz Bandwidth – Hotspot Mode, Grip Sensor and/or Earjack Mode Active

LTE Band 30 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 27710 (2310.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	22.08	0	0
	1	12	22.03		0
	1	24	22.00		0
	12	0	22.17	0-1	0
	12	6	22.00		0
	12	13	22.02		0
	25	0	22.00		0
16QAM	1	0	22.09	0-1	0
	1	12	22.13		0
	1	24	22.03		0
	12	0	22.07	0-2	0
	12	6	22.00		0
	12	13	22.01		0
	25	0	22.00		0
64QAM	1	0	21.99	0-2	0
	1	12	21.98		0
	1	24	21.95		0
	12	0	21.93	0-3	0.2
	12	6	21.89		0.2
	12	13	22.00		0.2
	25	0	21.90		0.2

Note: LTE Band 30 at 5 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

9.3.7 LTE Band 41

Table 9-45
LTE Band 41 Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	23.82	24.00	24.27	**24.45**	24.02	0	0
	1	50	23.83	24.04	24.30	24.41	24.18		0
	1	99	23.86	24.05	24.32	24.28	24.25		0
	50	0	22.91	23.19	**23.55**	23.49	23.30	0-1	1
	50	25	22.99	23.19	23.54	23.51	23.42		1
	50	50	22.92	23.12	23.52	23.40	23.41		1
	100	0	22.92	23.11	23.51	23.46	23.35		1
16QAM	1	0	22.87	23.13	23.53	23.62	23.33	0-1	1
	1	50	22.70	23.10	23.56	23.44	23.29		1
	1	99	22.80	23.13	23.42	23.12	23.40		1
	50	0	21.97	22.34	22.76	22.67	22.49	0-2	2
	50	25	21.98	22.32	22.73	22.56	22.52		2
	50	50	21.95	22.22	22.58	22.42	22.51		2
	100	0	21.96	22.29	22.74	22.57	22.52		2
64QAM	1	0	21.86	21.93	22.27	22.35	22.04	0-2	2
	1	50	21.78	21.82	22.19	22.17	21.95		2
	1	99	21.82	21.83	22.13	22.07	21.87		2
	50	0	20.99	21.39	21.64	21.54	21.31	0-3	3
	50	25	20.98	21.36	21.61	21.58	21.18		3
	50	50	20.99	21.27	21.48	21.48	21.04		3
	100	0	20.95	21.27	21.52	21.51	21.15		3

Table 9-46
LTE Band 41 Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	24.21	24.42	24.77	24.63	24.41	0	0
	1	36	24.19	24.54	24.88	24.58	24.51		0
	1	74	24.26	24.48	24.79	24.42	24.53		0
	36	0	23.29	23.62	23.93	23.72	23.57	0-1	1
	36	18	23.34	23.66	23.97	23.69	23.65		1
	36	37	23.30	23.57	23.92	23.62	23.65		1
	75	0	23.24	23.58	23.90	23.64	23.59		1
16QAM	1	0	23.12	23.64	23.62	23.87	23.32	0-1	1
	1	36	23.11	23.70	23.77	23.82	23.41		1
	1	74	23.14	23.62	23.65	23.61	23.43		1
	36	0	22.32	22.64	22.97	22.66	22.66	0-2	2
	36	18	22.39	22.67	23.06	22.64	22.72		2
	36	37	22.40	22.61	22.96	22.53	22.68		2
	75	0	22.31	22.56	22.92	22.60	22.64		2
64QAM	1	0	22.04	22.32	22.50	22.73	22.25	0-2	2
	1	36	21.98	22.43	22.50	22.66	22.20		2
	1	74	22.06	22.33	22.33	22.46	21.91		2
	36	0	21.32	21.63	21.87	21.64	21.64	0-3	3
	36	18	21.38	21.66	21.91	21.58	21.60		3
	36	37	21.40	21.60	21.80	21.49	21.48		3
	75	0	21.32	21.57	21.80	21.70	21.55		3

Table 9-47
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	24.03	24.62	24.78	24.42	24.28	0	0
	1	25	24.13	24.40	24.45	24.56	24.17		0
	1	49	23.94	24.52	24.69	24.51	24.24		0
	25	0	23.19	23.54	23.82	23.62	23.46	0-1	1
	25	12	23.20	23.56	23.84	23.61	23.44		1
	25	25	23.16	23.51	23.75	23.57	23.39		1
	50	0	23.19	23.51	23.83	23.57	23.47		1
16QAM	1	0	23.35	23.38	24.02	23.70	23.46	0-1	1
	1	25	23.04	23.23	24.02	23.54	23.58		1
	1	49	23.33	23.25	23.95	23.57	23.41		1
	25	0	22.13	22.58	22.78	22.62	22.40	0-2	2
	25	12	22.16	22.57	22.76	22.58	22.45		2
	25	25	22.05	22.57	22.70	22.52	22.39		2
	50	0	22.15	22.58	22.81	22.59	22.42		2
64QAM	1	0	22.27	22.59	22.77	22.38	22.28	0-2	2
	1	25	21.84	22.42	22.77	21.89	22.45		2
	1	49	22.18	22.50	22.66	22.26	22.22		2
	25	0	21.09	21.58	21.75	21.63	21.41	0-3	3
	25	12	21.13	21.61	21.78	21.62	21.41		3
	25	25	21.06	21.55	21.70	21.65	21.35		3
	50	0	21.24	21.57	21.78	21.64	21.47		3

Table 9-48
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	24.06	24.56	24.65	24.49	24.29	0	0
	1	12	24.06	24.54	24.65	24.52	24.29		0
	1	24	24.17	24.58	24.67	24.53	24.28		0
	12	0	23.21	23.48	23.73	23.50	23.42	0-1	1
	12	6	23.26	23.60	23.77	23.55	23.45		1
	12	13	23.29	23.56	23.81	23.55	23.48		1
	25	0	23.22	23.57	23.77	23.62	23.40		1
16QAM	1	0	22.87	23.57	23.43	23.25	23.11	0-1	1
	1	12	22.84	23.57	23.44	23.23	23.06		1
	1	24	22.96	23.60	23.50	23.25	23.14		1
	12	0	22.28	22.55	22.83	22.57	22.47	0-2	2
	12	6	22.35	22.70	22.91	22.61	22.50		2
	12	13	22.28	22.66	22.88	22.65	22.54		2
	25	0	22.30	22.51	22.83	22.58	22.42		2
64QAM	1	0	22.18	22.87	22.81	22.49	22.43	0-2	2
	1	12	22.14	22.95	22.84	22.52	22.40		2
	1	24	22.22	22.93	22.77	22.46	22.39		2
	12	0	21.24	21.52	21.76	21.63	21.38	0-3	3
	12	6	21.22	21.64	21.78	21.61	21.46		3
	12	13	21.22	21.61	21.85	21.66	21.47		3
	25	0	21.20	21.46	21.72	21.57	21.42		3

Table 9-49
LTE Band 41 Reduced Conducted Powers - 20 MHz Bandwidth – Hotspot Mode, Grip Sensor and/or Earjack Mode Active

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	22.15	22.52	22.75	**22.85**	22.53	0	0
	1	50	21.97	22.48	22.81	22.57	22.55		0
	1	99	22.08	22.48	22.68	22.40	22.62		0
	50	0	22.19	22.69	23.03	22.92	22.71	0-1	0
	50	25	22.23	22.59	23.06	**23.11**	22.71		0
	50	50	22.24	22.59	22.96	22.74	22.71		0
	100	0	22.21	22.62	22.74	22.81	22.70		0
16QAM	1	0	22.24	22.66	22.96	23.02	22.71	0-1	0
	1	50	22.20	22.65	23.07	22.86	22.69		0
	1	99	22.19	22.64	22.99	22.60	22.77		0
	50	0	22.06	22.50	22.83	22.68	22.57	0-2	0.2
	50	25	22.09	22.47	22.84	22.69	22.57		0.2
	50	50	22.08	22.38	22.85	22.54	22.58		0.2
	100	0	22.09	22.45	22.82	22.68	22.61		0.2
64QAM	1	0	21.94	22.38	22.76	22.72	22.34	0-2	0.2
	1	50	21.88	22.31	22.86	22.51	22.36		0.2
	1	99	21.92	22.21	22.70	22.24	22.29		0.2
	50	0	21.15	21.58	21.78	21.80	21.54	0-3	1.2
	50	25	21.12	21.53	21.86	21.73	21.60		1.2
	50	50	21.11	21.34	21.77	21.59	21.62		1.2
	100	0	21.09	21.40	21.75	21.64	21.56		1.2

Table 9-50
LTE Band 41 Reduced Conducted Powers - 15 MHz Bandwidth – Hotspot Mode, Grip Sensor and/or Earjack Mode Active

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	22.49	22.71	22.84	23.06	22.97	0	0
	1	36	22.46	22.70	22.90	23.01	23.05		0
	1	74	22.39	22.52	22.81	22.78	23.06		0
	36	0	22.55	22.76	22.96	23.15	23.11	0-1	0
	36	18	22.61	22.79	23.02	23.12	23.17		0
	36	37	22.58	22.69	22.97	23.05	23.17		0
	75	0	22.54	22.71	22.93	23.04	23.09		0
16QAM	1	0	22.20	22.73	22.53	23.11	22.68	0-1	0
	1	36	22.00	22.72	22.55	23.05	22.72		0
	1	74	22.10	22.53	22.47	22.81	22.73		0
	36	0	22.36	22.57	22.77	22.95	22.91	0-2	0.2
	36	18	22.41	22.60	22.84	22.98	22.99		0.2
	36	37	22.39	22.49	22.80	22.85	22.97		0.2
	75	0	22.35	22.49	22.74	22.86	22.93		0.2
64QAM	1	0	22.72	22.67	23.03	23.11	23.15	0-2	0.2
	1	36	22.62	22.68	23.10	23.01	23.08		0.2
	1	74	22.61	22.43	22.96	22.79	22.81		0.2
	36	0	21.45	21.59	21.82	21.90	22.03	0-3	1.2
	36	18	21.45	21.60	21.87	21.89	21.94		1.2
	36	37	21.42	21.48	21.84	21.81	21.82		1.2
	75	0	21.43	21.53	21.81	21.92	21.91		1.2

Table 9-51
LTE Band 41 Reduced Conducted Powers - 10 MHz Bandwidth – Hotspot Mode, Grip Sensor and/or Earjack Mode Active

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	22.46	22.65	22.84	22.76	22.98	0	0
	1	25	22.27	22.57	22.72	22.60	22.84		0
	1	49	22.38	22.56	22.74	22.70	22.80		0
	25	0	22.41	22.63	22.83	22.93	22.98	0-1	0
	25	12	22.42	22.65	22.87	22.96	22.99		0
	25	25	22.36	22.59	22.79	22.87	22.93		0
	50	0	22.37	22.63	22.84	22.92	22.93		0
16QAM	1	0	22.51	22.59	22.75	22.96	22.99	0-1	0
	1	25	22.33	22.56	22.70	22.96	22.91		0
	1	49	22.38	22.58	22.74	22.88	22.81		0
	25	0	22.24	22.44	22.65	22.79	22.80	0-2	0.2
	25	12	22.27	22.46	22.67	22.78	22.79		0.2
	25	25	22.19	22.35	22.61	22.74	22.73		0.2
	50	0	22.25	22.44	22.66	22.73	22.81		0.2
64QAM	1	0	22.25	22.47	22.64	22.97	22.78	0-2	0.2
	1	25	22.15	22.45	22.60	22.62	22.65		0.2
	1	49	22.13	22.48	22.56	22.60	22.65		0.2
	25	0	21.14	21.43	21.58	21.68	21.73	0-3	1.2
	25	12	21.17	21.41	21.62	21.74	21.79		1.2
	25	25	21.11	21.30	21.51	21.67	21.69		1.2
	50	0	21.19	21.42	21.64	21.76	21.77		1.2

Table 9-52
LTE Band 41 Reduced Conducted Powers - 5 MHz Bandwidth– Hotspot Mode, Grip Sensor and/or Earjack Mode Active

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	22.29	22.57	22.66	22.88	22.80	0	0
	1	12	22.29	22.59	22.69	22.90	22.79		0
	1	24	22.28	22.67	22.74	22.92	22.77		0
	12	0	22.43	22.54	22.82	22.85	22.93	0-1	0
	12	6	22.41	22.64	22.78	22.89	22.94		0
	12	13	22.43	22.70	22.85	22.93	22.99		0
	25	0	22.44	22.66	22.83	22.90	22.91		0
16QAM	1	0	22.49	22.58	22.86	23.04	23.00	0-1	0
	1	12	22.49	22.50	23.09	23.12	23.09		0
	1	24	22.49	22.61	22.92	23.07	23.07		0
	12	0	22.22	22.42	22.61	22.68	22.74	0-2	0.2
	12	6	22.30	22.49	22.67	22.73	22.78		0.2
	12	13	22.29	22.47	22.65	22.75	22.83		0.2
	25	0	22.28	22.39	22.58	22.66	22.76		0.2
64QAM	1	0	22.21	22.51	22.58	22.53	22.67	0-2	0.2
	1	12	22.16	22.51	22.63	22.57	22.73		0.2
	1	24	22.24	22.54	22.60	22.53	22.72		0.2
	12	0	21.32	21.47	21.70	21.65	21.78	0-3	1.2
	12	6	21.31	21.54	21.71	21.61	21.85		1.2
	12	13	21.33	21.53	21.71	21.70	21.84		1.2
	25	0	21.22	21.42	21.61	21.66	21.72		1.2

9.3.8 LTE Uplink Carrier Aggregation Conducted Powers

Table 9-53
LTE Uplink Carrier Aggregation Max 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	LTE B41	20	41055	2636.5	QPSK	1	0	LTE B41	20	40857	2616.7	QPSK	1	99	24.63	24.45

Table 9-54
LTE Uplink Carrier Aggregation Hotspot Mode, Grip Sensor and/or Earjack Mode Active 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	LTE B41	20	41055	2636.5	QPSK	1	0	LTE B41	20	40857	2616.7	QPSK	1	99	23.24	22.85

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.

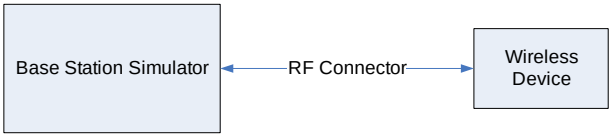

Figure 9-3
Power Measurement Setup

9.4 WLAN Conducted Powers

Table 9-55
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
		Average	Average	Average
2412	1	21.89	16.19	16.11
2417	2	N/A	21.97	21.73
2437	6	21.92	21.99	21.83
2447	8	N/A	21.82	21.67
2462	11	21.66	18.49	18.39

Table 9-56
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
		Average	Average	Average
2412	1	21.67	16.29	16.10
2417	2	N/A	21.67	21.95
2437	6	21.96	21.98	21.98
2447	8	N/A	21.77	21.86
2462	11	21.69	18.30	18.22

Table 9-57
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
		Average	Average	Average
5180	36	17.71	17.99	16.96
5200	40	17.96	17.76	16.79
5220	44	17.89	17.61	16.61
5240	48	17.87	17.74	16.63
5260	52	17.90	17.78	16.68
5280	56	17.82	17.66	16.64
5300	60	17.97	17.76	16.70
5320	64	17.77	17.62	16.98
5500	100	17.99	17.83	16.78
5600	120	17.95	17.86	16.87
5620	124	17.93	17.75	16.82
5720	144	17.94	17.81	16.83
5745	149	17.67	17.98	16.97
5785	157	17.98	17.90	16.87
5825	165	17.97	17.88	16.93

Table 9-58
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
		Average	Average	Average
5180	36	17.95	17.85	16.83
5200	40	17.97	17.94	16.91
5220	44	17.91	17.66	16.66
5240	48	17.92	17.81	16.73
5260	52	17.48	17.98	16.51
5280	56	17.98	17.91	16.86
5300	60	17.52	17.93	16.94
5320	64	17.61	17.97	16.98
5500	100	17.96	17.82	16.73
5600	120	17.87	17.71	16.66
5620	124	17.74	17.72	16.98
5720	144	17.78	17.78	16.62
5745	149	17.56	17.45	16.91
5785	157	17.83	17.65	16.97
5825	165	17.55	17.98	16.93

Table 9-59
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
		Average	Average	Average
2412	1	12.59	12.92	12.79
2437	6	12.66	12.87	12.73
2462	11	12.47	12.43	12.30

Table 9-60
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
		Average	Average	Average
2412	1	12.83	12.69	12.60
2437	6	12.15	12.66	12.60
2462	11	12.53	12.59	12.42

Table 9-61
5 GHz WLAN Reduced Average RF Power – Ant 1

5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
		Average
5210	42	10.97
5290	58	10.97
5530	106	10.41
5610	122	10.53
5690	138	10.71
5775	155	10.72

Table 9-62
5 GHz WLAN Reduced Average RF Power – Ant 2

5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
		Average
5210	42	10.72
5290	58	10.69
5530	106	10.55
5610	122	10.47
5690	138	10.54
5775	155	10.72

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.

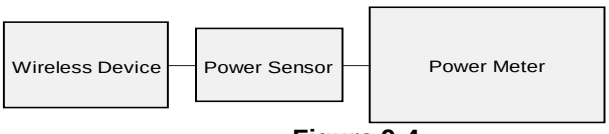

Figure 9-4
Power Measurement Setup

9.5 Bluetooth Conducted Powers

Table 9-63
Bluetooth Average RF Power

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	14.40	27.552
2441	1.0	39	15.11	32.407
2480	1.0	78	13.53	22.517
2402	2.0	0	12.62	18.276
2441	2.0	39	13.47	22.246
2480	2.0	78	11.88	15.426
2402	3.0	0	12.64	18.367
2441	3.0	39	13.62	23.002
2480	3.0	78	12.11	16.263

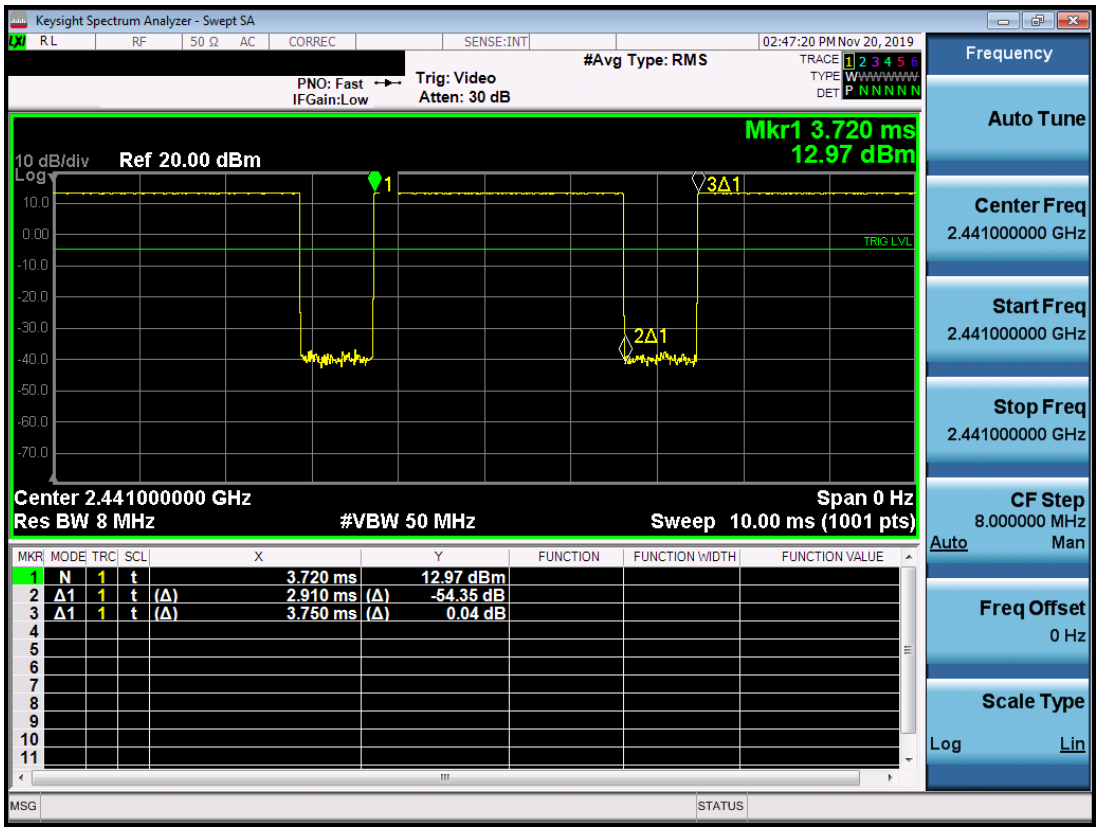

Figure 9-5
Bluetooth Transmission Plot

Equation 9-1
Bluetooth Duty Cycle Calculation

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

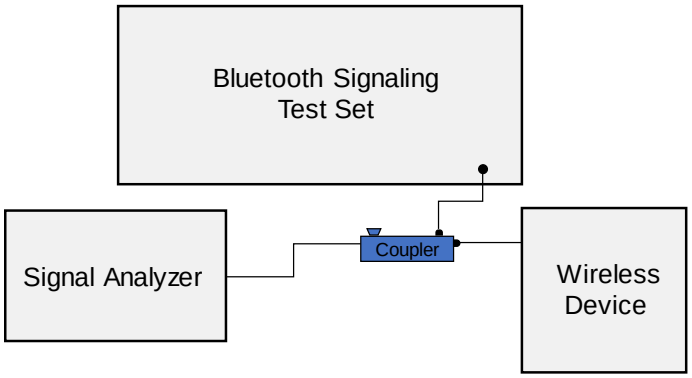

Figure 9-6
Power Measurement Setup

10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured Tissue Properties - Head

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
			680	0.872	41.900	0.888	42.305	-1.80%	-0.96%
			695	0.877	41.849	0.889	42.227	-1.35%	-0.90%
			700	0.879	41.834	0.889	42.201	-1.12%	-0.87%
			710	0.882	41.807	0.890	42.149	-0.90%	-0.81%
			725	0.887	41.771	0.891	42.071	-0.45%	-0.71%
11/20/2019	750 Head	21.4	740	0.892	41.733	0.893	41.994	-0.11%	-0.62%
			750	0.896	41.721	0.894	41.942	0.22%	-0.53%
			755	0.898	41.706	0.894	41.916	0.45%	-0.50%
			770	0.903	41.654	0.895	41.838	0.89%	-0.44%
			785	0.909	41.592	0.896	41.760	1.45%	-0.40%
			800	0.914	41.543	0.897	41.682	1.90%	-0.33%
			820	0.911	40.677	0.899	41.578	1.33%	-2.17%
12/09/2019	835 Head	21.3	835	0.915	40.624	0.900	41.500	1.67%	-2.11%
			850	0.920	40.584	0.916	41.500	0.44%	-2.21%
			1710	1.339	39.891	1.348	40.142	-0.67%	-0.63%
			1720	1.349	39.840	1.354	40.126	-0.37%	-0.71%
12/20/2019	1750 Head	21.7	1745	1.374	39.724	1.368	40.087	0.44%	-0.91%
			1750	1.379	39.702	1.371	40.079	0.58%	-0.94%
			1770	1.399	39.610	1.383	40.047	1.16%	-1.09%
			1790	1.419	39.519	1.394	40.016	1.79%	-1.24%
			1850	1.369	41.465	1.400	40.000	-2.21%	3.66%
			1860	1.375	41.458	1.400	40.000	-1.79%	3.65%
12/19/2019	1900 Head	20.9	1880	1.388	41.429	1.400	40.000	-0.86%	3.57%
			1900	1.401	41.402	1.400	40.000	0.07%	3.51%
			1905	1.404	41.394	1.400	40.000	0.29%	3.49%
			1910	1.407	41.386	1.400	40.000	0.50%	3.47%
			2300	1.736	38.458	1.670	39.500	4.91%	-2.23%
01/08/2020	2450 Head	20.7	2310	1.743	38.432	1.679	39.480	4.82%	-2.22%
			2320	1.751	38.411	1.687	39.460	4.80%	-2.21%
			2400	1.821	40.425	1.756	39.289	3.70%	2.89%
12/19/2019	2450 Head	21	2450	1.861	40.327	1.800	39.200	3.39%	2.87%
			2500	1.904	40.248	1.855	39.136	2.64%	2.84%
			2400	1.827	38.471	1.756	39.289	4.04%	-2.08%
			2450	1.867	38.384	1.800	39.200	3.72%	-2.08%
			2500	1.903	38.299	1.855	39.136	2.59%	-2.14%
			2510	1.911	38.281	1.866	39.123	2.41%	-2.15%
12/25/2019	2450 Head	23	2535	1.932	38.236	1.893	39.092	2.06%	-2.19%
			2550	1.944	38.208	1.909	39.073	1.83%	-2.21%
			2560	1.952	38.191	1.920	39.060	1.67%	-2.22%
			2600	1.980	38.120	1.964	39.009	0.81%	-2.28%
			2650	2.021	38.030	2.018	38.945	0.15%	-2.35%
			2680	2.044	37.977	2.051	38.907	-0.34%	-2.39%
			2700	2.058	37.940	2.073	38.882	-0.72%	-2.42%
			5180	4.572	35.410	4.635	36.009	-1.36%	-1.66%
			5190	4.580	35.404	4.645	35.998	-1.40%	-1.65%
			5200	4.585	35.393	4.655	35.986	-1.50%	-1.65%
			5210	4.595	35.369	4.666	35.975	-1.52%	-1.68%
			5220	4.605	35.348	4.676	35.963	-1.52%	-1.71%
			5240	4.630	35.305	4.696	35.940	-1.41%	-1.77%
			5250	4.642	35.290	4.706	35.929	-1.36%	-1.78%
			5260	4.654	35.273	4.717	35.917	-1.34%	-1.79%
			5270	4.665	35.260	4.727	35.906	-1.31%	-1.80%
			5280	4.676	35.255	4.737	35.894	-1.29%	-1.78%
			5290	4.688	35.248	4.748	35.883	-1.26%	-1.77%
			5300	4.697	35.242	4.758	35.871	-1.28%	-1.75%
			5310	4.704	35.221	4.768	35.860	-1.34%	-1.78%
			5320	4.711	35.201	4.778	35.849	-1.40%	-1.81%
			5500	4.899	34.942	4.963	35.643	-1.29%	-1.97%
			5510	4.912	34.929	4.973	35.632	-1.23%	-1.97%
			5520	4.924	34.926	4.983	35.620	-1.18%	-1.95%
			5530	4.934	34.918	4.994	35.609	-1.20%	-1.94%
			5540	4.941	34.902	5.004	35.597	-1.26%	-1.95%
			5550	4.950	34.880	5.014	35.586	-1.28%	-1.98%
			5560	4.960	34.862	5.024	35.574	-1.27%	-2.00%
11/25/2019	5200-5800 Head	20.1	5580	4.984	34.834	5.045	35.551	-1.21%	-2.02%
			5600	5.011	34.794	5.065	35.529	-1.07%	-2.07%
			5610	5.022	34.780	5.076	35.518	-1.06%	-2.08%
			5620	5.034	34.774	5.086	35.506	-1.02%	-2.06%
			5640	5.058	34.758	5.106	35.483	-0.94%	-2.04%
			5660	5.073	34.715	5.127	35.460	-1.05%	-2.10%
			5670	5.082	34.702	5.137	35.449	-1.07%	-2.11%
			5680	5.094	34.691	5.147	35.437	-1.03%	-2.11%
			5690	5.106	34.669	5.158	35.426	-1.01%	-2.14%
			5700	5.117	34.649	5.168	35.414	-0.99%	-2.16%
			5710	5.130	34.637	5.178	35.403	-0.93%	-2.16%
			5720	5.143	34.627	5.188	35.391	-0.87%	-2.16%
			5745	5.173	34.599	5.214	35.363	-0.79%	-2.16%
			5750	5.179	34.596	5.219	35.357	-0.77%	-2.15%
			5755	5.183	34.589	5.224	35.351	-0.78%	-2.16%
			5765	5.192	34.577	5.234	35.340	-0.80%	-2.16%
			5775	5.201	34.565	5.245	35.329	-0.84%	-2.16%
			5785	5.210	34.554	5.255	35.317	-0.86%	-2.16%
			5795	5.222	34.528	5.265	35.305	-0.82%	-2.20%
			5800	5.227	34.517	5.270	35.300	-0.82%	-2.22%
			5805	5.234	34.507	5.275	35.294	-0.78%	-2.23%
			5825	5.255	34.484	5.296	35.271	-0.77%	-2.23%

Table 10-2
Measured Tissue Properties – Body

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
12/10/2019	750 Body	23.4	680	0.948	54.023	0.958	55.804	-1.04%	-3.19%
			695	0.953	53.996	0.959	55.745	-0.63%	-3.14%
			700	0.954	53.990	0.959	55.726	-0.52%	-3.12%
			710	0.958	53.975	0.960	55.687	-0.21%	-3.07%
			725	0.963	53.945	0.961	55.629	0.21%	-3.03%
			740	0.968	53.900	0.963	55.570	0.52%	-3.01%
			750	0.972	53.864	0.964	55.531	0.83%	-3.00%
			755	0.973	53.849	0.964	55.512	0.93%	-3.00%
			770	0.979	53.806	0.965	55.453	1.45%	-2.97%
			785	0.984	53.780	0.966	55.395	1.86%	-2.92%
			800	0.990	53.766	0.967	55.336	2.38%	-2.84%
11/25/2019	835 Body	21.1	820	0.949	54.176	0.969	55.258	-2.06%	-1.96%
			835	0.964	54.041	0.970	55.200	-0.62%	-2.10%
			850	0.980	53.913	0.988	55.154	-0.81%	-2.25%
12/13/2019	835 Body	20.4	820	0.957	53.818	0.969	55.258	-1.24%	-2.61%
			835	0.964	53.751	0.970	55.200	-0.62%	-2.63%
			850	0.970	53.679	0.988	55.154	-1.82%	-2.67%
12/13/2019	1750 Body	19.1	1710	1.500	52.175	1.463	53.537	2.53%	-2.54%
			1720	1.512	52.124	1.469	53.511	2.93%	-2.59%
			1745	1.540	52.020	1.485	53.445	3.70%	-2.67%
			1750	1.546	51.999	1.488	53.432	3.90%	-2.68%
			1770	1.567	51.916	1.501	53.379	4.40%	-2.74%
			1790	1.589	51.834	1.514	53.326	4.95%	-2.80%
12/16/2019	1750 Body	20.3	1710	1.488	52.275	1.463	53.537	1.71%	-2.36%
			1720	1.499	52.238	1.469	53.511	2.04%	-2.38%
			1745	1.527	52.151	1.485	53.445	2.83%	-2.42%
			1750	1.533	52.134	1.488	53.432	3.02%	-2.43%
			1770	1.556	52.063	1.501	53.379	3.66%	-2.47%
			1790	1.579	51.985	1.514	53.326	4.29%	-2.51%
12/19/2019	1750 Body	20.4	1710	1.466	53.371	1.463	53.537	0.21%	-0.31%
			1720	1.478	53.332	1.469	53.511	0.61%	-0.33%
			1745	1.507	53.229	1.485	53.445	1.48%	-0.40%
			1750	1.512	53.208	1.488	53.432	1.61%	-0.42%
			1770	1.534	53.125	1.501	53.379	2.20%	-0.48%
			1790	1.556	53.036	1.514	53.326	2.77%	-0.54%
12/22/2019	1750 Body	20.3	1710	1.487	52.588	1.463	53.537	1.64%	-1.77%
			1720	1.499	52.549	1.469	53.511	2.04%	-1.80%
			1745	1.528	52.447	1.485	53.445	2.90%	-1.87%
			1750	1.534	52.426	1.488	53.432	3.09%	-1.88%
			1770	1.555	52.339	1.501	53.379	3.60%	-1.95%
			1790	1.577	52.250	1.514	53.326	4.16%	-2.02%
12/12/2019	1900 Body	23.9	1850	1.496	51.665	1.520	53.300	-1.58%	-3.07%
			1860	1.506	51.633	1.520	53.300	-0.92%	-3.13%
			1880	1.528	51.562	1.520	53.300	0.53%	-3.26%
			1900	1.551	51.482	1.520	53.300	2.04%	-3.41%
			1905	1.556	51.461	1.520	53.300	2.37%	-3.45%
			1910	1.562	51.440	1.520	53.300	2.76%	-3.49%
12/14/2019	1900 Body	24.5	1850	1.501	52.298	1.520	53.300	-1.25%	-1.88%
			1860	1.512	52.269	1.520	53.300	-0.53%	-1.93%
			1880	1.535	52.207	1.520	53.300	0.99%	-2.05%
			1900	1.558	52.138	1.520	53.300	2.50%	-2.18%
			1905	1.563	52.118	1.520	53.300	2.83%	-2.22%
			1910	1.569	52.100	1.520	53.300	3.22%	-2.25%
12/16/2019	1900 Body	23.2	1850	1.524	51.618	1.520	53.300	0.26%	-3.16%
			1860	1.534	51.597	1.520	53.300	0.92%	-3.20%
			1880	1.558	51.539	1.520	53.300	2.50%	-3.30%
			1900	1.581	51.468	1.520	53.300	4.01%	-3.44%
			1905	1.587	51.447	1.520	53.300	4.41%	-3.48%
			1910	1.593	51.428	1.520	53.300	4.80%	-3.51%
12/19/2019	1900 Body	24	1850	1.462	51.671	1.520	53.300	-3.82%	-3.06%
			1860	1.473	51.645	1.520	53.300	-3.09%	-3.11%
			1880	1.496	51.580	1.520	53.300	-1.58%	-3.23%
			1900	1.517	51.516	1.520	53.300	-0.20%	-3.35%
			1905	1.523	51.499	1.520	53.300	0.20%	-3.38%
			1910	1.528	51.483	1.520	53.300	0.53%	-3.41%
01/11/2020	1900 Body	21.8	1850	1.523	51.417	1.520	53.300	0.20%	-3.53%
			1860	1.534	51.386	1.520	53.300	0.92%	-3.59%
			1880	1.556	51.313	1.520	53.300	2.37%	-3.73%
			1900	1.579	51.230	1.520	53.300	3.88%	-3.88%
			1905	1.584	51.208	1.520	53.300	4.21%	-3.92%
			1910	1.590	51.187	1.520	53.300	4.61%	-3.96%

Table 10-3
Measured Tissue Properties – Body Continued

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
12/24/2019	2450 Body	21.2	2300	1.875	51.543	1.809	52.900	3.65%	-2.57%
			2310	1.887	51.515	1.816	52.887	3.91%	-2.59%
			2320	1.898	51.489	1.826	52.873	3.94%	-2.62%
12/19/2019	2450 Body	22.5	2400	1.986	52.011	1.902	52.767	4.42%	-1.43%
			2450	2.042	51.863	1.950	52.700	4.72%	-1.59%
			2500	2.100	51.723	2.021	52.636	3.91%	-1.73%
			2510	2.112	51.695	2.035	52.623	3.78%	-1.76%
			2535	2.140	51.613	2.071	52.592	3.33%	-1.86%
			2550	2.157	51.563	2.092	52.573	3.11%	-1.92%
12/19/2019	2450 Body	23.1	2400	1.961	51.693	1.902	52.767	3.10%	-2.04%
			2450	2.021	51.535	1.950	52.700	3.64%	-2.21%
			2500	2.080	51.388	2.021	52.636	2.92%	-2.37%
12/22/2019	2450 Body	24.5	2400	1.974	51.428	1.902	52.767	3.79%	-2.54%
			2450	2.037	51.284	1.950	52.700	4.46%	-2.69%
			2500	2.095	51.137	2.021	52.636	3.66%	-2.85%
			2510	2.106	51.108	2.035	52.623	3.49%	-2.88%
			2535	2.136	51.029	2.071	52.592	3.14%	-2.97%
			2550	2.155	50.982	2.092	52.573	3.01%	-3.03%
12/19/2019	2450 Body	22.5	2560	2.169	51.531	2.106	52.560	2.99%	-1.96%
			2600	2.219	51.418	2.163	52.509	2.59%	-2.08%
			2650	2.277	51.242	2.234	52.445	1.92%	-2.29%
			2680	2.313	51.132	2.277	52.407	1.58%	-2.43%
			2700	2.337	51.058	2.305	52.382	1.39%	-2.53%
12/22/2019	2450 Body	24.5	2560	2.167	50.950	2.106	52.560	2.90%	-3.06%
			2600	2.216	50.820	2.163	52.509	2.45%	-3.22%
			2650	2.275	50.663	2.234	52.445	1.84%	-3.40%
			2680	2.313	50.563	2.277	52.407	1.58%	-3.52%
			2700	2.339	50.498	2.305	52.382	1.48%	-3.60%
12/09/2019	5200-5800 Body	21.8	5180	5.418	47.636	5.276	49.041	2.69%	-2.86%
			5190	5.428	47.618	5.288	49.028	2.65%	-2.88%
			5200	5.439	47.593	5.299	49.014	2.64%	-2.90%
			5210	5.452	47.579	5.311	49.001	2.65%	-2.90%
			5220	5.464	47.556	5.323	48.987	2.65%	-2.92%
			5240	5.492	47.522	5.346	48.960	2.73%	-2.94%
			5250	5.505	47.502	5.358	48.947	2.74%	-2.95%
			5260	5.520	47.482	5.369	48.933	2.81%	-2.97%
			5270	5.533	47.467	5.381	48.919	2.82%	-2.97%
			5280	5.551	47.449	5.393	48.906	2.93%	-2.98%
			5290	5.564	47.438	5.404	48.892	2.96%	-2.97%
			5300	5.574	47.424	5.416	48.879	2.92%	-2.98%
			5310	5.585	47.405	5.428	48.865	2.89%	-2.99%
			5320	5.596	47.384	5.439	48.851	2.89%	-3.00%
			5500	5.837	47.097	5.650	48.607	3.31%	-3.11%
			5510	5.850	47.086	5.661	48.594	3.34%	-3.10%
			5520	5.862	47.074	5.673	48.580	3.33%	-3.10%
			5530	5.874	47.060	5.685	48.566	3.32%	-3.10%
			5540	5.887	47.041	5.696	48.553	3.35%	-3.11%
			5550	5.896	47.017	5.708	48.539	3.29%	-3.14%
			5560	5.909	46.984	5.720	48.526	3.30%	-3.18%
			5580	5.943	46.944	5.743	48.499	3.48%	-3.21%
			5600	5.981	46.917	5.766	48.471	3.73%	-3.21%
			5610	5.996	46.899	5.778	48.458	3.77%	-3.22%
			5620	6.009	46.888	5.790	48.444	3.78%	-3.21%
			5640	6.034	46.877	5.813	48.417	3.80%	-3.18%
			5660	6.052	46.839	5.837	48.390	3.68%	-3.21%
			5670	6.064	46.807	5.848	48.376	3.69%	-3.24%
			5680	6.080	46.771	5.860	48.363	3.75%	-3.29%
			5690	6.097	46.738	5.872	48.349	3.83%	-3.33%
			5700	6.113	46.710	5.883	48.336	3.91%	-3.36%
			5710	6.130	46.708	5.895	48.322	3.99%	-3.34%
			5720	6.148	46.714	5.907	48.309	4.08%	-3.30%
			5745	6.184	46.704	5.936	48.275	4.18%	-3.25%
			5750	6.190	46.693	5.942	48.268	4.17%	-3.26%
			5755	6.194	46.683	5.947	48.261	4.15%	-3.27%
			5765	6.204	46.669	5.959	48.248	4.11%	-3.27%
			5775	6.215	46.642	5.971	48.234	4.09%	-3.30%
			5785	6.229	46.617	5.982	48.220	4.13%	-3.32%
			5795	6.245	46.597	5.994	48.207	4.19%	-3.34%
			5800	6.252	46.585	6.000	48.200	4.20%	-3.35%
			5805	6.259	46.574	6.006	48.193	4.21%	-3.36%
			5825	6.295	46.540	6.029	48.166	4.41%	-3.38%

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 D.

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)	$Deviation_{1g}$ (%)
G	750	HEAD	11/20/2019	21.8	21.5	0.200	1003	7409	1.640	8.280	8.200	-0.97%
L	835	HEAD	12/09/2019	21.0	21.3	0.200	4d047	7410	1.920	9.420	9.600	1.91%
H	1750	HEAD	12/20/2019	20.4	21.7	0.100	1148	7406	3.560	37.000	35.600	-3.78%
D	1900	HEAD	12/19/2019	21.3	20.9	0.100	5d149	3914	4.190	39.300	41.900	6.62%
E	2300	HEAD	01/08/2020	22.9	20.7	0.100	1073	7417	5.110	49.200	51.100	3.86%
E	2450	HEAD	12/19/2019	22.7	21.0	0.100	981	7417	5.440	52.300	54.400	4.02%
E	2450	HEAD	12/25/2019	22.6	22.0	0.100	981	7417	5.340	52.300	53.400	2.10%
E	2600	HEAD	12/25/2019	22.6	22.0	0.100	1064	7417	6.110	58.100	61.100	5.16%
H	5250	HEAD	11/25/2019	21.0	20.1	0.050	1191	7406	3.820	80.800	76.400	-5.45%
H	5600	HEAD	11/25/2019	21.0	20.1	0.050	1191	7406	4.100	82.700	82.000	-0.85%
H	5750	HEAD	11/25/2019	21.0	20.1	0.050	1191	7406	3.790	80.200	75.800	-5.49%
L	750	BODY	12/10/2019	24.6	21.9	0.200	1161	7410	1.770	8.430	8.850	4.98%
D	835	BODY	11/25/2019	21.4	21.1	0.200	4d132	3914	2.030	9.670	10.150	4.96%
L	835	BODY	12/13/2019	21.8	20.4	0.200	4d047	7410	2.020	9.470	10.100	6.65%
I	1750	BODY	12/13/2019	20.2	19.1	0.100	1148	7357	3.920	37.700	39.200	3.98%
I	1750	BODY	12/19/2019	21.4	20.4	0.100	1148	7357	3.850	37.700	38.500	2.12%
I	1750	BODY	12/22/2019	20.6	20.3	0.100	1150	7357	3.930	36.600	39.300	7.38%
J	1900	BODY	12/12/2019	22.3	23.8	0.100	5d149	7488	4.210	39.400	42.100	6.85%
J	1900	BODY	12/14/2019	22.5	24.5	0.100	5d149	7488	4.010	39.400	40.100	1.78%
J	1900	BODY	12/16/2019	21.7	23.1	0.100	5d149	7488	4.250	39.400	42.500	7.87%
J	1900	BODY	12/19/2019	22.9	24.0	0.100	5d080	7488	4.030	39.200	40.300	2.81%
K	2300	BODY	12/24/2019	23.7	21.5	0.100	1073	7547	5.030	47.700	50.300	5.45%
K	2450	BODY	12/19/2019	23.5	22.4	0.100	797	7547	4.920	51.100	49.200	-3.72%
K	2450	BODY	12/22/2019	24.5	22.8	0.100	797	7547	5.150	51.100	51.500	0.78%
K	2600	BODY	12/22/2019	24.5	22.8	0.100	1004	7547	5.460	54.800	54.600	-0.36%
G	5250	BODY	12/09/2019	22.6	21.8	0.050	1191	7409	3.780	77.000	75.600	-1.82%
G	5600	BODY	12/09/2019	22.6	21.8	0.050	1191	7409	4.030	78.600	80.600	2.54%
G	5750	BODY	12/09/2019	22.6	21.8	0.050	1191	7409	3.860	76.900	77.200	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)	$Deviation_{10g}$ (%)
I	1750	BODY	12/16/2019	20.6	20.3	0.100	1148	7357	2.070	19.800	20.700	4.55%
I	1750	BODY	12/19/2019	21.4	20.4	0.100	1148	7357	2.020	19.800	20.200	2.02%
J	1900	BODY	12/19/2019	22.9	24.0	0.100	5d080	7488	2.090	20.600	20.900	1.46%
P	1900	BODY	01/11/2020	21.9	21.8	0.100	5d149	7551	2.140	20.700	21.400	3.38%
K	2300	BODY	12/24/2019	23.7	21.5	0.100	1073	7547	2.390	23.200	23.900	3.02%
M	2450	BODY	12/19/2019	21.9	20.6	0.100	719	7308	2.480	24.000	24.800	3.33%
M	2600	BODY	12/19/2019	21.9	20.6	0.100	1064	7308	2.420	25.000	24.200	-3.20%
G	5250	BODY	12/09/2019	22.6	21.8	0.050	1191	7409	1.050	21.400	21.000	-1.87%
G	5600	BODY	12/09/2019	22.6	21.8	0.050	1191	7409	1.110	21.900	22.200	1.37%
G	5750	BODY	12/09/2019	22.6	21.8	0.050	1191	7409	1.060	21.300	21.200	-0.47%

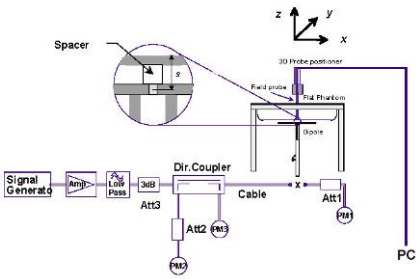

Figure 10-1
System Verification Setup Diagram

Figure 10-2
System Verification Setup Photo

11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
GSM 850 Head SAR - Open

MEASUREMENT RESULTS														
FREQUENCY		Mode	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	33.03	0.08	Right	Cheek	4724J	1:8.3	0.169	1.250	0.211	A1
836.60	190	GSM 850	GSM	34.0	33.03	0.12	Right	Tilt	4724J	1:8.3	0.076	1.250	0.095	
836.60	190	GSM 850	GSM	34.0	33.03	-0.02	Left	Cheek	4724J	1:8.3	0.145	1.250	0.181	
836.60	190	GSM 850	GSM	34.0	33.03	-0.11	Left	Tilt	4724J	1:8.3	0.079	1.250	0.099	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-2
GSM 1900 Head SAR - Open

MEASUREMENT RESULTS														
FREQUENCY		Mode	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	29.72	0.07	Right	Cheek	4724J	1:8.3	0.023	1.343	0.031	
1880.00	661	GSM 1900	GSM	31.0	29.72	0.17	Right	Tilt	4724J	1:8.3	0.014	1.343	0.019	
1880.00	661	GSM 1900	GSM	31.0	29.72	0.17	Left	Cheek	4724J	1:8.3	0.027	1.343	0.036	A2
1880.00	661	GSM 1900	GSM	31.0	29.72	0.15	Left	Tilt	4724J	1:8.3	0.013	1.343	0.017	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-3
UMTS 850 Head SAR - Open

MEASUREMENT RESULTS														
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
836.60	4183	UMTS 850	RMC	25.0	24.33	0.15	Right	Cheek	4724J	1:1	0.165	1.167	0.193	A3
836.60	4183	UMTS 850	RMC	25.0	24.33	0.09	Right	Tilt	4724J	1:1	0.070	1.167	0.082	
836.60	4183	UMTS 850	RMC	25.0	24.33	0.04	Left	Cheek	4724J	1:1	0.133	1.167	0.155	
836.60	4183	UMTS 850	RMC	25.0	24.33	0.01	Left	Tilt	4724J	1:1	0.072	1.167	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 11-4
UMTS 1750 Head SAR - Open

MEASUREMENT RESULTS														
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1732.40	1412	UMTS 1750	RMC	24.0	23.00	0.08	Right	Cheek	4731J	1:1	0.108	1.259	0.136	A4
1732.40	1412	UMTS 1750	RMC	24.0	23.00	0.15	Right	Tilt	4731J	1:1	0.032	1.259	0.040	
1732.40	1412	UMTS 1750	RMC	24.0	23.00	0.12	Left	Cheek	4731J	1:1	0.049	1.259	0.062	
1732.40	1412	UMTS 1750	RMC	24.0	23.00	0.04	Left	Tilt	4731J	1:1	0.043	1.259	0.054	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-5
UMTS 1900 Head SAR - Open

MEASUREMENT RESULTS														
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	25.0	24.59	0.13	Right	Cheek	4724J	1:1	0.050	1.099	0.055	
1880.00	9400	UMTS 1900	RMC	25.0	24.59	0.14	Right	Tilt	4724J	1:1	0.029	1.099	0.032	
1880.00	9400	UMTS 1900	RMC	25.0	24.59	0.14	Left	Cheek	4724J	1:1	0.057	1.099	0.063	A5
1880.00	9400	UMTS 1900	RMC	25.0	24.59	0.16	Left	Tilt	4724J	1:1	0.026	1.099	0.029	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-6
LTE Band 12 Head SAR - Open

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.7	24.77	-0.05	0	Right	Cheek	QPSK	1	0	4712J	1:1	0.120	1.239	0.149	A6
707.50	23095	Mid	LTE Band 12	10	24.7	23.91	0.00	1	Right	Cheek	QPSK	25	0	4712J	1:1	0.107	1.199	0.128	
707.50	23095	Mid	LTE Band 12	10	25.7	24.77	0.13	0	Right	Tilt	QPSK	1	0	4712J	1:1	0.071	1.239	0.088	
707.50	23095	Mid	LTE Band 12	10	24.7	23.91	0.14	1	Right	Tilt	QPSK	25	0	4712J	1:1	0.063	1.199	0.076	
707.50	23095	Mid	LTE Band 12	10	25.7	24.77	0.12	0	Left	Cheek	QPSK	1	0	4712J	1:1	0.120	1.239	0.149	
707.50	23095	Mid	LTE Band 12	10	24.7	23.91	0.05	1	Left	Cheek	QPSK	25	0	4712J	1:1	0.103	1.199	0.123	
707.50	23095	Mid	LTE Band 12	10	25.7	24.77	-0.04	0	Left	Tilt	QPSK	1	0	4712J	1:1	0.060	1.239	0.074	
707.50	23095	Mid	LTE Band 12	10	24.7	23.91	0.11	1	Left	Tilt	QPSK	25	0	4712J	1:1	0.054	1.199	0.065	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-7
LTE Band 13 Head SAR - Open

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
782.00	23230	Mid	LTE Band 13	10	25.7	24.60	0.16	0	Right	Cheek	QPSK	1	25	4712J	1:1	0.077	1.288	0.099	A7
782.00	23230	Mid	LTE Band 13	10	24.7	23.81	0.01	1	Right	Cheek	QPSK	25	0	4712J	1:1	0.071	1.227	0.087	
782.00	23230	Mid	LTE Band 13	10	25.7	24.60	0.16	0	Right	Tilt	QPSK	1	25	4712J	1:1	0.042	1.288	0.054	
782.00	23230	Mid	LTE Band 13	10	24.7	23.81	0.04	1	Right	Tilt	QPSK	25	0	4712J	1:1	0.036	1.227	0.044	
782.00	23230	Mid	LTE Band 13	10	25.7	24.60	0.05	0	Left	Cheek	QPSK	1	25	4712J	1:1	0.071	1.288	0.091	
782.00	23230	Mid	LTE Band 13	10	24.7	23.81	-0.12	1	Left	Cheek	QPSK	25	0	4712J	1:1	0.056	1.227	0.069	
782.00	23230	Mid	LTE Band 13	10	25.7	24.60	0.02	0	Left	Tilt	QPSK	1	25	4712J	1:1	0.053	1.288	0.068	
782.00	23230	Mid	LTE Band 13	10	24.7	23.81	0.02	1	Left	Tilt	QPSK	25	0	4712J	1:1	0.046	1.227	0.056	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-8
LTE Band 26 (Cell) Head SAR – Open

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	24.62	0.18	0	Right	Cheek	QPSK	1	0	4724J	1:1	0.182	1.282	**0.233**	A8
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	23.76	0.15	1	Right	Cheek	QPSK	36	18	4724J	1:1	0.145	1.242	0.180	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	24.62	0.10	0	Right	Tilt	QPSK	1	0	4724J	1:1	0.097	1.282	0.124	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	23.76	0.20	1	Right	Tilt	QPSK	36	18	4724J	1:1	0.082	1.242	0.102	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	24.62	-0.11	0	Left	Cheek	QPSK	1	0	4724J	1:1	0.160	1.282	0.205	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	23.76	0.06	1	Left	Cheek	QPSK	36	18	4724J	1:1	0.130	1.242	0.161	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	24.62	0.14	0	Left	Tilt	QPSK	1	0	4724J	1:1	0.091	1.282	0.117	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	23.76	0.12	1	Left	Tilt	QPSK	36	18	4724J	1:1	0.073	1.242	0.091	
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 66 (AWS) Head SAR - Open

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	24.46	0.16	0	Right	Cheek	QPSK	1	99	4731J	1:1	0.162	1.186	0.192	A9
1770.00	132572	High	LTE Band 66 (AWS)	20	24.2	23.63	0.14	1	Right	Cheek	QPSK	50	0	4731J	1:1	0.135	1.140	0.154	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	24.46	-0.13	0	Right	Tilt	QPSK	1	99	4731J	1:1	0.079	1.186	0.094	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.2	23.63	0.06	1	Right	Tilt	QPSK	50	0	4731J	1:1	0.057	1.140	0.065	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	24.46	0.06	0	Left	Cheek	QPSK	1	99	4731J	1:1	0.070	1.186	0.083	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.2	23.63	0.08	1	Left	Cheek	QPSK	50	0	4731J	1:1	0.063	1.140	0.072	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	24.46	0.13	0	Left	Tilt	QPSK	1	99	4731J	1:1	0.071	1.186	0.084	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.2	23.63	0.18	1	Left	Tilt	QPSK	50	0	4731J	1:1	0.059	1.140	0.067	
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 25 (PCS) Head SAR - Open

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.1	24.24	0.13	0	Right	Cheek	QPSK	1	50	4724J	1:1	0.057	1.219	0.069	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.1	23.40	0.17	1	Right	Cheek	QPSK	50	25	4724J	1:1	0.051	1.175	0.060	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.1	24.24	0.13	0	Right	Tilt	QPSK	1	50	4724J	1:1	0.037	1.219	0.045	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.1	23.40	0.15	1	Right	Tilt	QPSK	50	25	4724J	1:1	0.027	1.175	0.032	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.1	24.24	0.16	0	Left	Cheek	QPSK	1	50	4724J	1:1	0.070	1.219	0.085	A10
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.1	23.40	0.14	1	Left	Cheek	QPSK	50	25	4724J	1:1	0.055	1.175	0.065	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.1	24.24	0.15	0	Left	Tilt	QPSK	1	50	4724J	1:1	0.032	1.219	0.039	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.1	23.40	0.14	1	Left	Tilt	QPSK	50	25	4724J	1:1	0.029	1.175	0.034	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram									

Table 11-11
LTE Band 30 Head SAR - Open

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2310.00	27710	Mid	LTE Band 30	10	25.7	25.17	0.09	0	Right	Cheek	QPSK	1	49	4710J	1:1	0.059	1.130	0.067	
2310.00	27710	Mid	LTE Band 30	10	24.7	24.18	0.20	1	Right	Cheek	QPSK	25	12	4710J	1:1	0.043	1.127	0.048	
2310.00	27710	Mid	LTE Band 30	10	25.7	25.17	-0.11	0	Right	Tilt	QPSK	1	49	4710J	1:1	0.042	1.130	0.047	
2310.00	27710	Mid	LTE Band 30	10	24.7	24.18	0.18	1	Right	Tilt	QPSK	25	12	4710J	1:1	0.028	1.127	0.032	
2310.00	27710	Mid	LTE Band 30	10	25.7	25.17	0.12	0	Left	Cheek	QPSK	1	49	4710J	1:1	0.148	1.130	0.167	A11
2310.00	27710	Mid	LTE Band 30	10	24.7	24.18	0.13	1	Left	Cheek	QPSK	25	12	4710J	1:1	0.120	1.127	0.135	
2310.00	27710	Mid	LTE Band 30	10	25.7	25.17	0.15	0	Left	Tilt	QPSK	1	49	4710J	1:1	0.038	1.130	0.043	
2310.00	27710	Mid	LTE Band 30	10	24.7	24.18	0.18	1	Left	Tilt	QPSK	25	12	4710J	1:1	0.029	1.127	0.033	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram									

Table 11-12
LTE Band 41 Head SAR - Open

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	N/A	2636.50	41055	Mid-High	LTE Band 41	20	25.3	24.45	0.15	0	Right	Cheek	QPSK	1	0	4710J	1:1.58	0.088	1.216	0.107	
1 CC Uplink	N/A	2593.00	40620	Mid	LTE Band 41	20	24.3	23.55	0.13	1	Right	Cheek	QPSK	50	0	4710J	1:1.58	0.079	1.189	0.094	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	25.3	24.45	0.13	0	Right	Tilt	QPSK	1	0	4710J	1:1.58	0.054	1.216	0.066	
1 CC Uplink	N/A	2593.00	40620	Mid	LTE Band 41	20	24.3	23.55	0.20	1	Right	Tilt	QPSK	50	0	4710J	1:1.58	0.040	1.189	0.048	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	25.3	24.45	0.12	0	Left	Cheek	QPSK	1	0	4710J	1:1.58	0.140	1.216	0.170	
1 CC Uplink	N/A	2593.00	40620	Mid	LTE Band 41	20	24.3	23.55	0.19	1	Left	Cheek	QPSK	50	0	4710J	1:1.58	0.082	1.189	0.097	
2 CC Uplink	PCC	2636.50	41055	Mid-High	LTE Band 41	20	25.3	24.63	0.12	0	Left	Cheek	QPSK	1	0	4715J	1:1.58	0.144	1.167	0.168	A12
	SCC	2616.70	40857	Mid-High	LTE Band 41	20								1	99						
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	25.3	24.45	-0.17	0	Left	Tilt	QPSK	1	0	4710J	1:1.58	0.051	1.216	0.062	
1 CC Uplink	N/A	2593.00	40620	Mid	LTE Band 41	20	24.3	23.55	0.20	1	Left	Tilt	QPSK	50	0	4710J	1:1.58	0.039	1.189	0.046	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-13
DTS Head SAR – Open

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2437	6	802.11b	DSSS	22	13.0	12.66	-0.16	Right	Cheek	1	0542M	1	99.1	0.176	-	1.081	1.009	-	
2437	6	802.11b	DSSS	22	13.0	12.66	0.08	Right	Tilt	1	0542M	1	99.1	0.193	-	1.081	1.009	-	
2437	6	802.11b	DSSS	22	13.0	12.66	0.11	Left	Cheek	1	0542M	1	99.1	0.516	0.343	1.081	1.009	**0.374**	A13
2437	6	802.11b	DSSS	22	13.0	12.66	0.09	Left	Tilt	1	0542M	1	99.1	0.298	-	1.081	1.009	-	
2412	1	802.11b	DSSS	22	13.0	12.83	0.11	Right	Cheek	2	0542M	1	99.0	0.366	-	1.040	1.010	-	
2412	1	802.11b	DSSS	22	13.0	12.83	0.12	Right	Tilt	2	0542M	1	99.0	0.079	-	1.040	1.010	-	
2412	1	802.11b	DSSS	22	13.0	12.83	0.14	Left	Cheek	2	0542M	1	99.0	0.465	0.331	1.040	1.010	0.348	
2412	1	802.11b	DSSS	22	13.0	12.83	0.10	Left	Tilt	2	0542M	1	99.0	0.096	-	1.040	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 11-14
NII Head SAR - Open

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	11.0	10.97	0.11	Right	Cheek	1	0535M	29.3	90.1	0.140	-	1.007	1.110	-	
5290	58	802.11ac	OFDM	80	11.0	10.97	0.14	Right	Tilt	1	0535M	29.3	90.1	0.089	-	1.007	1.110	-	
5290	58	802.11ac	OFDM	80	11.0	10.97	0.15	Left	Cheek	1	0535M	29.3	90.1	0.474	0.222	1.007	1.110	0.248	
5290	58	802.11ac	OFDM	80	11.0	10.97	0.12	Left	Tilt	1	0535M	29.3	90.1	0.313	-	1.007	1.110	-	
5290	58	802.11ac	OFDM	80	11.0	10.69	0.16	Right	Cheek	2	0535M	29.3	90.3	0.010	-	1.074	1.107	-	
5290	58	802.11ac	OFDM	80	11.0	10.69	0.19	Right	Tilt	2	0535M	29.3	90.3	0.006	-	1.074	1.107	-	
5290	58	802.11ac	OFDM	80	11.0	10.69	0.20	Left	Cheek	2	0535M	29.3	90.3	0.016	0.001	1.074	1.107	0.001	
5290	58	802.11ac	OFDM	80	11.0	10.69	0.19	Left	Tilt	2	0535M	29.3	90.3	0.007	-	1.074	1.107	-	
5690	138	802.11ac	OFDM	80	11.0	10.71	0.17	Right	Cheek	1	0535M	29.3	90.1	0.187	-	1.069	1.110	-	
5690	138	802.11ac	OFDM	80	11.0	10.71	0.13	Right	Tilt	1	0535M	29.3	90.1	0.153	-	1.069	1.110	-	
5690	138	802.11ac	OFDM	80	11.0	10.71	0.14	Left	Cheek	1	0535M	29.3	90.1	0.803	0.296	1.069	1.110	0.351	
5690	138	802.11ac	OFDM	80	11.0	10.71	0.12	Left	Tilt	1	0535M	29.3	90.1	0.625	-	1.069	1.110	-	
5530	106	802.11ac	OFDM	80	11.0	10.55	-0.17	Right	Cheek	2	0535M	29.3	90.3	0.010	-	1.109	1.107	-	
5530	106	802.11ac	OFDM	80	11.0	10.55	-0.20	Right	Tilt	2	0535M	29.3	90.3	0.023	-	1.109	1.107	-	
5530	106	802.11ac	OFDM	80	11.0	10.55	0.19	Left	Cheek	2	0535M	29.3	90.3	0.059	0.004	1.109	1.107	0.005	
5530	106	802.11ac	OFDM	80	11.0	10.55	0.19	Left	Tilt	2	0535M	29.3	90.3	0.008	-	1.109	1.107	-	
5775	155	802.11ac	OFDM	80	11.0	10.72	0.14	Right	Cheek	1	0535M	29.3	90.1	0.218	-	1.067	1.110	-	
5775	155	802.11ac	OFDM	80	11.0	10.72	0.15	Right	Tilt	1	0535M	29.3	90.1	0.271	-	1.067	1.110	-	
5775	155	802.11ac	OFDM	80	11.0	10.72	0.12	Left	Cheek	1	0535M	29.3	90.1	0.946	0.390	1.067	1.110	**0.462**	A14
5775	155	802.11ac	OFDM	80	11.0	10.72	0.14	Left	Tilt	1	0535M	29.3	90.1	0.572	0.223	1.067	1.110	0.264	
5775	155	802.11ac	OFDM	80	11.0	10.72	0.20	Right	Cheek	2	0535M	29.3	90.3	0.009	-	1.067	1.107	-	
5775	155	802.11ac	OFDM	80	11.0	10.72	0.20	Right	Tilt	2	0535M	29.3	90.3	0.010	-	1.067	1.107	-	
5775	155	802.11ac	OFDM	80	11.0	10.72	0.19	Left	Cheek	2	0535M	29.3	90.3	0.049	0.007	1.067	1.107	0.008	
5775	155	802.11ac	OFDM	80	11.0	10.72	0.00	Left	Tilt	2	0535M	29.3	90.3	0.037	-	1.067	1.107	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**														**Head** **1.6 W/kg (mW/g)** averaged over 1 gram					

Table 11-15
DSS Head SAR - Open

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441.00	39	Bluetooth	FHSS	15.5	15.11	0.12	Right	Cheek	0498M	1	77.6	0.061	1.094	1.289	0.086	
2441.00	39	Bluetooth	FHSS	15.5	15.11	0.14	Right	Tilt	0498M	1	77.6	0.089	1.094	1.289	0.126	
2441.00	39	Bluetooth	FHSS	15.5	15.11	0.11	Left	Cheek	0498M	1	77.6	0.193	1.094	1.289	**0.272**	A15
2441.00	39	Bluetooth	FHSS	15.5	15.11	0.12	Left	Tilt	0498M	1	77.6	0.142	1.094	1.289	0.200	
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 Open Body-Worn SAR Data

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

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	34.0	33.03	0.00	15 mm	4724J	1	1:8.3	back	0.124	1.250	0.155	
1880.00	661	GSM 1900	GSM	31.0	29.72	-0.04	15 mm	4712J	1	1:8.3	back	0.164	1.343	0.220	A18
836.60	4183	UMTS 850	RMC	25.0	24.33	-0.04	15 mm	4724J	N/A	1:1	back	0.122	1.167	0.142	
1732.40	1412	UMTS 1750	RMC	24.0	23.00	0.06	15 mm	4721J	N/A	1:1	back	0.438	1.259	0.551	A22
1880.00	9400	UMTS 1900	RMC	25.0	24.59	0.05	15 mm	4712J	N/A	1:1	back	0.354	1.099	0.389	A24
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-17
LTE Body-Worn SAR - Open

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.7	24.77	-0.10	0	4723J	QPSK	1	0	15 mm	back	1:1	0.217	1.239	0.269	A26
707.50	23095	Mid	LTE Band 12	10	24.7	23.91	0.03	1	4723J	QPSK	25	0	15 mm	back	1:1	0.113	1.199	0.135	
782.00	23230	Mid	LTE Band 13	10	25.7	24.60	-0.02	0	4723J	QPSK	1	25	15 mm	back	1:1	0.117	1.288	0.151	
782.00	23230	Mid	LTE Band 13	10	24.7	23.81	-0.01	1	4723J	QPSK	25	0	15 mm	back	1:1	0.098	1.227	0.120	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	24.62	-0.09	0	4724J	QPSK	1	0	15 mm	back	1:1	0.105	1.282	0.135	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	23.76	0.02	1	4724J	QPSK	36	18	15 mm	back	1:1	0.102	1.242	0.127	
1720.00	132072	Low	LTE Band 66 (AWS)	20	25.2	23.95	-0.02	0	4721J	QPSK	1	99	15 mm	back	1:1	0.556	1.334	0.742	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	24.46	0.04	0	4721J	QPSK	1	99	15 mm	back	1:1	0.620	1.186	0.735	A32
1770.00	132572	High	LTE Band 66 (AWS)	20	25.2	24.16	-0.01	0	4721J	QPSK	1	50	15 mm	back	1:1	0.596	1.271	**0.758**	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.2	23.63	0.03	1	4721J	QPSK	50	0	15 mm	back	1:1	0.515	1.140	0.587	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.1	24.24	0.05	0	4718J	QPSK	1	50	15 mm	back	1:1	0.383	1.219	0.467	A34
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.1	23.40	0.01	1	4718J	QPSK	50	25	15 mm	back	1:1	0.310	1.175	0.364	
2310.00	27710	Mid	LTE Band 30	10	25.7	25.17	-0.09	0	4715J	QPSK	1	49	15 mm	back	1:1	0.236	1.130	0.267	A36
2310.00	27710	Mid	LTE Band 30	10	24.7	24.18	0.14	1	4715J	QPSK	25	12	15 mm	back	1:1	0.203	1.127	0.229	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Body 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-18
LTE Band 41 Body-Worn SAR - Open

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2636.50	41055	Mid-High	LTE Band 41	20	25.3	24.45	-0.05	0	4723J	QPSK	1	0	15 mm	back	1:1.58	0.122	1.216	0.148	
2593.00	40620	Mid	LTE Band 41	20	24.3	23.55	-0.05	1	4723J	QPSK	50	0	15 mm	back	1:1.58	0.094	1.189	0.112	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Body 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-19
DTS Body-Worn SAR - Open

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	22.0	21.92	-0.03	15 mm	1	0535M	1	back	99.1	0.264	0.181	1.019	1.009	**0.186**	A40
2437	6	802.11b	DSSS	22	22.0	21.96	0.02	15 mm	2	0535M	1	back	99.0	0.145	0.101	1.009	1.010	0.103	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Body 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-20
NII Body-Worn SAR - Open

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	17.97	-0.11	15 mm	1	0542M	6	back	97.6	0.067	0.023	1.007	1.025	0.024	
5280	56	802.11a	OFDM	20	18.0	17.98	0.13	15 mm	2	0542M	6	back	97.5	0.232	0.109	1.005	1.026	0.112	
5500	100	802.11a	OFDM	20	18.0	17.99	0.11	15 mm	1	0542M	6	back	97.6	0.078	0.029	1.002	1.025	0.030	
5500	100	802.11a	OFDM	20	18.0	17.96	0.14	15 mm	2	0542M	6	back	97.5	0.248	0.093	1.009	1.026	0.096	
5785	157	802.11a	OFDM	20	18.0	17.98	-0.17	15 mm	1	0542M	6	back	97.6	0.148	0.060	1.005	1.025	0.062	
5785	157	802.11a	OFDM	20	18.0	17.83	0.17	15 mm	2	0542M	6	back	97.5	0.265	0.119	1.040	1.026	**0.127**	A42
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-21
DSS Body-Worn SAR - Open

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	15.5	15.11	0.13	15 mm	0535M	1	back	77.6	0.017	1.094	1.289	**0.024**	A44
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram									

11.3 Standalone Open Hotspot SAR Data

Table 11-22
GPRS/UMTS Hotspot SAR Data - Open

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	190	GSM 850	GPRS	33.5	32.52	-0.13	10 mm	4724J	2	1:4.15	back	0.457	1.253	0.573	A17
836.60	190	GSM 850	GPRS	33.5	32.52	-0.05	10 mm	4724J	2	1:4.15	front	0.367	1.253	0.460	
836.60	190	GSM 850	GPRS	33.5	32.52	-0.16	10 mm	4724J	2	1:4.15	bottom	0.316	1.253	0.396	
836.60	190	GSM 850	GPRS	33.5	32.52	0.14	10 mm	4724J	2	1:4.15	right	0.312	1.253	0.391	
836.60	190	GSM 850	GPRS	33.5	32.52	0.07	10 mm	4724J	2	1:4.15	left	0.136	1.253	0.170	
1880.00	661	GSM 1900	GPRS	25.5	24.33	-0.03	10 mm	4718J	3	1:2.76	back	0.180	1.309	0.236	
1880.00	661	GSM 1900	GPRS	25.5	24.33	-0.08	10 mm	4718J	3	1:2.76	front	0.207	1.309	0.271	
1880.00	661	GSM 1900	GPRS	25.5	24.33	-0.14	10 mm	4718J	3	1:2.76	bottom	0.443	1.309	0.580	A19
1880.00	661	GSM 1900	GPRS	25.5	24.33	0.02	10 mm	4718J	3	1:2.76	right	0.025	1.309	0.033	
1880.00	661	GSM 1900	GPRS	25.5	24.33	0.01	10 mm	4718J	3	1:2.76	left	0.050	1.309	0.065	
836.60	4183	UMTS 850	RMC	25.0	24.33	-0.01	10 mm	4724J	N/A	1:1	back	0.262	1.167	0.306	
836.60	4183	UMTS 850	RMC	25.0	24.33	-0.04	10 mm	4724J	N/A	1:1	front	0.196	1.167	0.229	
836.60	4183	UMTS 850	RMC	25.0	24.33	-0.11	10 mm	4724J	N/A	1:1	bottom	0.160	1.167	0.187	
836.60	4183	UMTS 850	RMC	25.0	24.33	0.03	10 mm	4724J	N/A	1:1	right	0.162	1.167	0.189	
836.60	4183	UMTS 850	RMC	25.0	24.33	0.14	10 mm	4724J	N/A	1:1	left	0.062	1.167	0.072	
1732.40	1412	UMTS 1750	RMC	22.0	21.04	0.01	10 mm	4721J	N/A	1:1	back	0.540	1.247	0.673	
1732.40	1412	UMTS 1750	RMC	22.0	21.04	0.02	10 mm	4721J	N/A	1:1	front	0.454	1.247	0.566	
1712.40	1312	UMTS 1750	RMC	22.0	21.06	0.02	10 mm	4721J	N/A	1:1	bottom	0.764	1.242	0.949	
1732.40	1412	UMTS 1750	RMC	22.0	21.04	0.01	10 mm	4721J	N/A	1:1	bottom	0.856	1.247	1.067	
1752.60	1513	UMTS 1750	RMC	22.0	20.92	0.05	10 mm	4721J	N/A	1:1	bottom	0.862	1.282	1.105	A23
1732.40	1412	UMTS 1750	RMC	22.0	21.04	0.14	10 mm	4721J	N/A	1:1	right	0.076	1.247	0.095	
1732.40	1412	UMTS 1750	RMC	22.0	21.04	0.07	10 mm	4721J	N/A	1:1	left	0.094	1.247	0.117	
1880.00	9400	UMTS 1900	RMC	22.5	21.47	-0.03	10 mm	4712J	N/A	1:1	back	0.390	1.268	0.495	
1880.00	9400	UMTS 1900	RMC	22.5	21.47	-0.07	10 mm	4712J	N/A	1:1	front	0.441	1.268	0.559	
1852.40	9262	UMTS 1900	RMC	22.5	21.00	-0.02	10 mm	4712J	N/A	1:1	bottom	0.813	1.413	**1.149**	
1880.00	9400	UMTS 1900	RMC	22.5	21.47	-0.09	10 mm	4712J	N/A	1:1	bottom	0.865	1.268	1.097	A25
1907.60	9538	UMTS 1900	RMC	22.5	21.24	0.00	10 mm	4712J	N/A	1:1	bottom	0.828	1.337	1.107	
1880.00	9400	UMTS 1900	RMC	22.5	21.47	-0.12	10 mm	4712J	N/A	1:1	right	0.036	1.268	0.046	
1880.00	9400	UMTS 1900	RMC	22.5	21.47	0.04	10 mm	4712J	N/A	1:1	left	0.201	1.268	0.255	
1880.00	9400	UMTS 1900	RMC	22.5	21.47	0.02	10 mm	4712J	N/A	1:1	bottom	0.810	1.268	1.027	
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 Entry represents variability measurement

Table 11-23
LTE Band 12 Hotspot SAR - Open

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.7	24.77	0.02	0	4723J	QPSK	1	0	10 mm	back	1:1	0.220	1.239	0.273	
707.50	23095	Mid	LTE Band 12	10	24.7	23.91	0.00	1	4723J	QPSK	25	0	10 mm	back	1:1	0.126	1.199	0.151	
707.50	23095	Mid	LTE Band 12	10	25.7	24.77	-0.04	0	4723J	QPSK	1	0	10 mm	front	1:1	0.110	1.239	0.136	
707.50	23095	Mid	LTE Band 12	10	24.7	23.91	0.09	1	4723J	QPSK	25	0	10 mm	front	1:1	0.097	1.199	0.116	
707.50	23095	Mid	LTE Band 12	10	25.7	24.77	0.02	0	4723J	QPSK	1	0	10 mm	bottom	1:1	0.088	1.239	0.109	
707.50	23095	Mid	LTE Band 12	10	24.7	23.91	0.01	1	4723J	QPSK	25	0	10 mm	bottom	1:1	0.077	1.199	0.092	
707.50	23095	Mid	LTE Band 12	10	25.7	24.77	-0.05	0	4723J	QPSK	1	0	10 mm	right	1:1	0.293	1.239	0.363	A27
707.50	23095	Mid	LTE Band 12	10	24.7	23.91	-0.05	1	4723J	QPSK	25	0	10 mm	right	1:1	0.156	1.199	0.187	
707.50	23095	Mid	LTE Band 12	10	25.7	24.77	-0.08	0	4723J	QPSK	1	0	10 mm	left	1:1	0.068	1.239	0.084	
707.50	23095	Mid	LTE Band 12	10	24.7	23.91	0.05	1	4723J	QPSK	25	0	10 mm	left	1:1	0.049	1.199	0.059	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-24
LTE Band 13 Hotspot SAR - Open

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
782.00	23230	Mid	LTE Band 13	10	25.7	24.60	-0.06	0	4723J	QPSK	1	25	10 mm	back	1:1	0.182	1.288	0.234	
782.00	23230	Mid	LTE Band 13	10	24.7	23.81	-0.02	1	4723J	QPSK	25	0	10 mm	back	1:1	0.155	1.227	0.190	
782.00	23230	Mid	LTE Band 13	10	25.7	24.60	-0.02	0	4723J	QPSK	1	25	10 mm	front	1:1	0.140	1.288	0.180	
782.00	23230	Mid	LTE Band 13	10	24.7	23.81	0.03	1	4723J	QPSK	25	0	10 mm	front	1:1	0.120	1.227	0.147	
782.00	23230	Mid	LTE Band 13	10	25.7	24.60	0.05	0	4723J	QPSK	1	25	10 mm	bottom	1:1	0.118	1.288	0.152	
782.00	23230	Mid	LTE Band 13	10	24.7	23.81	-0.07	1	4723J	QPSK	25	0	10 mm	bottom	1:1	0.102	1.227	0.125	
782.00	23230	Mid	LTE Band 13	10	25.7	24.60	-0.04	0	4723J	QPSK	1	25	10 mm	right	1:1	0.169	1.288	0.218	
782.00	23230	Mid	LTE Band 13	10	24.7	23.81	-0.04	1	4723J	QPSK	25	0	10 mm	right	1:1	0.145	1.227	0.178	
782.00	23230	Mid	LTE Band 13	10	25.7	24.60	-0.08	0	4723J	QPSK	1	25	10 mm	left	1:1	0.047	1.288	0.061	
782.00	23230	Mid	LTE Band 13	10	24.7	23.81	-0.04	1	4723J	QPSK	25	0	10 mm	left	1:1	0.040	1.227	0.049	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram									

Table 11-25
LTE Band 26 (Cell) Hotspot SAR - Open

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	24.62	-0.07	0	4724J	QPSK	1	0	10 mm	back	1:1	0.248	1.282	0.318	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	23.76	-0.10	1	4724J	QPSK	36	18	10 mm	back	1:1	0.233	1.242	0.289	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	24.62	0.01	0	4724J	QPSK	1	0	10 mm	front	1:1	0.186	1.282	0.238	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	23.76	-0.04	1	4724J	QPSK	36	18	10 mm	front	1:1	0.179	1.242	0.222	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	24.62	-0.02	0	4724J	QPSK	1	0	10 mm	bottom	1:1	0.143	1.282	0.183	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	23.76	0.02	1	4724J	QPSK	36	18	10 mm	bottom	1:1	0.140	1.242	0.174	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	24.62	-0.04	0	4724J	QPSK	1	0	10 mm	right	1:1	0.137	1.282	0.176	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	23.76	0.02	1	4724J	QPSK	36	18	10 mm	right	1:1	0.124	1.242	0.154	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	24.62	-0.02	0	4724J	QPSK	1	0	10 mm	left	1:1	0.045	1.282	0.058	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	23.76	0.02	1	4724J	QPSK	36	18	10 mm	left	1:1	0.040	1.242	0.050	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram									

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

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	20.95	-0.01	0	4721J	QPSK	1	0	10 mm	back	1:1	0.571	1.059	0.605	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	21.00	0.00	0	4721J	QPSK	50	0	10 mm	back	1:1	0.574	1.047	0.601	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	20.95	0.01	0	4721J	QPSK	1	0	10 mm	front	1:1	0.501	1.059	0.531	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	21.00	-0.03	0	4721J	QPSK	50	0	10 mm	front	1:1	0.502	1.047	0.526	
1720.00	132072	Low	LTE Band 66 (AWS)	20	21.2	20.70	0.01	0	4721J	QPSK	1	99	10 mm	bottom	1:1	0.733	1.122	0.822	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	21.2	20.73	-0.06	0	4721J	QPSK	1	99	10 mm	bottom	1:1	0.809	1.114	0.901	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	20.95	-0.02	0	4721J	QPSK	1	0	10 mm	bottom	1:1	0.880	1.059	0.932	
1720.00	132072	Low	LTE Band 66 (AWS)	20	21.2	20.82	-0.02	0	4721J	QPSK	50	0	10 mm	bottom	1:1	0.723	1.091	0.789	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	21.2	20.87	-0.01	0	4721J	QPSK	50	0	10 mm	bottom	1:1	0.841	1.079	0.907	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	21.00	-0.01	0	4721J	QPSK	50	0	10 mm	bottom	1:1	0.934	1.047	0.978	A33
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	20.94	0.00	0	4721J	QPSK	100	0	10 mm	bottom	1:1	0.873	1.062	0.927	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	20.95	0.13	0	4721J	QPSK	1	0	10 mm	right	1:1	0.085	1.059	0.090	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	21.00	0.03	0	4721J	QPSK	50	0	10 mm	right	1:1	0.086	1.047	0.090	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	20.95	0.10	0	4721J	QPSK	1	0	10 mm	left	1:1	0.077	1.059	0.082	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	21.00	0.11	0	4721J	QPSK	50	0	10 mm	left	1:1	0.075	1.047	0.079	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	21.00	0.01	0	4721J	QPSK	50	0	10 mm	bottom	1:1	0.894	1.047	0.936	
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 Entry represents variability measurement

Table 11-27
LTE Band 25 (PCS) Hotspot SAR - Open

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.48	0.00	0	4718J	QPSK	1	0	10 mm	back	1:1	0.383	1.294	0.496	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.51	-0.05	0	4718J	QPSK	50	25	10 mm	back	1:1	0.399	1.285	0.513	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.48	-0.07	0	4718J	QPSK	1	0	10 mm	front	1:1	0.377	1.294	0.488	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.51	-0.02	0	4718J	QPSK	50	25	10 mm	front	1:1	0.396	1.285	0.509	
1860.00	26140	Low	LTE Band 25 (PCS)	20	21.6	20.17	0.04	0	4718J	QPSK	1	99	10 mm	bottom	1:1	0.731	1.390	1.016	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.48	-0.11	0	4718J	QPSK	1	0	10 mm	bottom	1:1	0.773	1.294	1.000	
1905.00	26590	High	LTE Band 25 (PCS)	20	21.6	20.32	-0.06	0	4718J	QPSK	1	0	10 mm	bottom	1:1	0.837	1.343	1.124	
1860.00	26140	Low	LTE Band 25 (PCS)	20	21.6	20.23	0.02	0	4718J	QPSK	50	50	10 mm	bottom	1:1	0.726	1.371	0.995	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.51	-0.05	0	4718J	QPSK	50	25	10 mm	bottom	1:1	0.828	1.285	1.064	
1905.00	26590	High	LTE Band 25 (PCS)	20	21.6	20.40	-0.07	0	4718J	QPSK	50	25	10 mm	bottom	1:1	0.862	1.318	1.136	A35
1905.00	26590	High	LTE Band 25 (PCS)	20	21.6	20.39	-0.09	0	4718J	QPSK	100	0	10 mm	bottom	1:1	0.857	1.321	1.132	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.48	0.05	0	4718J	QPSK	1	0	10 mm	right	1:1	0.042	1.294	0.054	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.51	-0.02	0	4718J	QPSK	50	25	10 mm	right	1:1	0.044	1.285	0.057	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.48	0.03	0	4718J	QPSK	1	0	10 mm	left	1:1	0.105	1.294	0.136	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.51	0.07	0	4718J	QPSK	50	25	10 mm	left	1:1	0.109	1.285	0.140	
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 30 Hotspot SAR - Open

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.09	0.01	0	4715J	QPSK	1	25	10 mm	back	1:1	0.230	1.205	0.277	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.20	0.03	0	4715J	QPSK	25	12	10 mm	back	1:1	0.243	1.175	0.286	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.09	-0.02	0	4715J	QPSK	1	25	10 mm	front	1:1	0.227	1.205	0.274	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.20	0.00	0	4715J	QPSK	25	12	10 mm	front	1:1	0.246	1.175	0.289	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.09	0.03	0	4715J	QPSK	1	25	10 mm	bottom	1:1	0.394	1.205	0.475	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.20	0.04	0	4715J	QPSK	25	12	10 mm	bottom	1:1	0.417	1.175	0.490	A37
2310.00	27710	Mid	LTE Band 30	10	22.9	22.09	-0.06	0	4715J	QPSK	1	25	10 mm	left	1:1	0.164	1.205	0.198	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.20	0.03	0	4715J	QPSK	25	12	10 mm	left	1:1	0.169	1.175	0.199	
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 41 Hotspot SAR - Open

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2636.50	41055	Mid-High	LTE Band 41	20	23.5	22.85	0.03	0	4715J	QPSK	1	0	10 mm	back	1:1.58	0.320	1.161	0.372	
2636.50	41055	Mid-High	LTE Band 41	20	23.5	23.11	0.04	0	4715J	QPSK	50	25	10 mm	back	1:1.58	0.316	1.094	0.346	
2636.50	41055	Mid-High	LTE Band 41	20	23.5	22.85	0.08	0	4715J	QPSK	1	0	10 mm	front	1:1.58	0.251	1.161	0.291	
2636.50	41055	Mid-High	LTE Band 41	20	23.5	23.11	0.11	0	4715J	QPSK	50	25	10 mm	front	1:1.58	0.258	1.094	0.282	
2636.50	41055	Mid-High	LTE Band 41	20	23.5	22.85	-0.09	0	4715J	QPSK	1	0	10 mm	bottom	1:1.58	0.345	1.161	0.401	
2636.50	41055	Mid-High	LTE Band 41	20	23.5	23.11	-0.02	0	4715J	QPSK	50	25	10 mm	bottom	1:1.58	0.347	1.094	0.380	
2636.50	41055	Mid-High	LTE Band 41	20	23.5	22.85	0.10	0	4715J	QPSK	1	0	10 mm	left	1:1.58	0.138	1.161	0.160	
2636.50	41055	Mid-High	LTE Band 41	20	23.5	23.11	0.06	0	4715J	QPSK	50	25	10 mm	left	1:1.58	0.134	1.094	0.147	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram									

Table 11-30
WLAN Hotspot SAR - Open

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	22.0	21.92	-0.03	10 mm	1	0535M	1	back	99.1	0.556	-	1.019	1.009	-	
2437	6	802.11b	DSSS	22	22.0	21.92	0.13	10 mm	1	0535M	1	front	99.1	0.515	-	1.019	1.009	-	
2437	6	802.11b	DSSS	22	22.0	21.92	0.12	10 mm	1	0535M	1	top	99.1	0.732	0.467	1.019	1.009	0.480	
2412	1	802.11b	DSSS	22	22.0	21.89	0.13	10 mm	1	0535M	1	right	99.1	0.945	0.624	1.026	1.009	**0.646**	A41
2437	6	802.11b	DSSS	22	22.0	21.92	0.20	10 mm	1	0535M	1	right	99.1	0.877	0.558	1.019	1.009	0.574	
2462	11	802.11b	DSSS	22	22.0	21.66	0.12	10 mm	1	0535M	1	right	99.1	0.861	0.569	1.081	1.009	0.621	
2437	6	802.11b	DSSS	22	22.0	21.96	0.13	10 mm	2	0535M	1	back	99.0	0.305	-	1.009	1.010	-	
2437	6	802.11b	DSSS	22	22.0	21.96	0.13	10 mm	2	0535M	1	front	99.0	0.328	0.212	1.009	1.010	0.216	
2437	6	802.11b	DSSS	22	22.0	21.96	0.14	10 mm	2	0535M	1	top	99.0	0.156	-	1.009	1.010	-	
2437	6	802.11b	DSSS	22	22.0	21.96	-0.13	10 mm	2	0535M	1	right	99.0	0.082	-	1.009	1.010	-	
5785	157	802.11a	OFDM	20	18.0	17.98	-0.13	10 mm	1	0542M	6	back	97.6	0.251	0.100	1.005	1.025	0.103	
5785	157	802.11a	OFDM	20	18.0	17.98	0.17	10 mm	1	0542M	6	front	97.6	0.424	0.165	1.005	1.025	0.170	
5785	157	802.11a	OFDM	20	18.0	17.98	0.11	10 mm	1	0542M	6	top	97.6	0.616	0.253	1.005	1.025	**0.261**	A43
5785	157	802.11a	OFDM	20	18.0	17.98	0.19	10 mm	1	0542M	6	right	97.6	0.596	-	1.005	1.025	-	
5785	157	802.11a	OFDM	20	18.0	17.83	0.14	10 mm	2	0542M	6	back	97.5	0.333	0.147	1.040	1.026	0.157	
5785	157	802.11a	OFDM	20	18.0	17.83	-0.17	10 mm	2	0542M	6	front	97.5	0.021	0.005	1.040	1.026	0.005	
5785	157	802.11a	OFDM	20	18.0	17.83	0.07	10 mm	2	0542M	6	top	97.5	0.038	-	1.040	1.026	-	
5785	157	802.11a	OFDM	20	18.0	17.83	0.11	10 mm	2	0542M	6	right	97.5	0.122	-	1.040	1.026	-	

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

Table 11-31
DSS Hotspot SAR - Open

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	15.5	15.11	-0.19	10 mm	0535M	1	back	77.6	0.035	1.094	1.289	0.049	
2441	39	Bluetooth	FHSS	15.5	15.11	-0.08	10 mm	0535M	1	front	77.6	0.038	1.094	1.289	0.054	
2441	39	Bluetooth	FHSS	15.5	15.11	0.14	10 mm	0535M	1	top	77.6	0.055	1.094	1.289	**0.078**	A45
2441	39	Bluetooth	FHSS	15.5	15.11	0.17	10 mm	0535M	1	right	77.6	0.046	1.094	1.289	0.065	

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

11.4 Standalone Open Phablet SAR Data

Table 11-32
GPRS/UMTS Phablet SAR Data - Open

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1909.80	810	GSM 1900	GPRS	27.5	27.17	-0.07	9 mm	4718J	3	1:2.76	back	0.168	1.079	0.181	
1909.80	810	GSM 1900	GPRS	27.5	27.17	0.19	7 mm	4718J	3	1:2.76	front	0.264	1.079	0.285	
1909.80	810	GSM 1900	GPRS	27.5	27.17	0.00	13 mm	4718J	3	1:2.76	bottom	0.233	1.079	0.251	
1909.80	810	GSM 1900	GPRS	27.5	27.17	0.07	0 mm	4718J	3	1:2.76	right	0.113	1.079	0.122	
1909.80	810	GSM 1900	GPRS	27.5	27.17	0.10	0 mm	4718J	3	1:2.76	left	0.142	1.079	0.153	
1880.00	661	GSM 1900	GPRS	25.5	24.33	-0.07	0 mm	4718J	3	1:2.76	back	0.971	1.309	1.271	
1880.00	661	GSM 1900	GPRS	25.5	24.33	0.02	0 mm	4718J	3	1:2.76	front	1.030	1.309	1.348	
1850.20	512	GSM 1900	GPRS	25.5	24.00	-0.10	0 mm	4718J	3	1:2.76	bottom	1.610	1.413	2.275	
1880.00	661	GSM 1900	GPRS	25.5	24.33	-0.18	0 mm	4718J	3	1:2.76	bottom	1.730	1.309	2.265	
1909.80	810	GSM 1900	GPRS	25.5	24.03	-0.17	0 mm	4718J	3	1:2.76	bottom	2.050	1.403	2.876	A46
1732.40	1412	UMTS 1750	RMC	24.0	23.00	-0.02	9 mm	4721J	N/A	1:1	back	0.507	1.259	0.638	
1732.40	1412	UMTS 1750	RMC	24.0	23.00	-0.01	7 mm	4721J	N/A	1:1	front	0.583	1.259	0.734	
1732.40	1412	UMTS 1750	RMC	24.0	23.00	-0.01	13 mm	4721J	N/A	1:1	bottom	0.450	1.259	0.567	
1732.40	1412	UMTS 1750	RMC	24.0	23.00	-0.03	0 mm	4721J	N/A	1:1	right	0.256	1.259	0.322	
1732.40	1412	UMTS 1750	RMC	24.0	23.00	0.06	0 mm	4721J	N/A	1:1	left	0.177	1.259	0.223	
1732.40	1412	UMTS 1750	RMC	22.0	21.04	0.00	0 mm	4721J	N/A	1:1	back	1.340	1.247	1.671	
1732.40	1412	UMTS 1750	RMC	22.0	21.04	-0.04	0 mm	4721J	N/A	1:1	front	1.390	1.247	1.733	
1712.40	1312	UMTS 1750	RMC	22.0	21.06	-0.07	0 mm	4721J	N/A	1:1	bottom	2.080	1.242	2.583	A47
1732.40	1412	UMTS 1750	RMC	22.0	21.04	-0.05	0 mm	4721J	N/A	1:1	bottom	1.770	1.247	2.207	
1752.60	1513	UMTS 1750	RMC	22.0	20.92	-0.07	0 mm	4721J	N/A	1:1	bottom	1.430	1.282	1.833	
1712.40	1312	UMTS 1750	RMC	22.0	21.06	-0.07	0 mm	4721J	N/A	1:1	bottom	2.030	1.242	2.521	
1880.00	9400	UMTS 1900	RMC	25.0	24.59	-0.10	9 mm	4712J	N/A	1:1	back	0.421	1.099	0.463	
1880.00	9400	UMTS 1900	RMC	25.0	24.59	0.00	7 mm	4712J	N/A	1:1	front	0.543	1.099	0.597	
1880.00	9400	UMTS 1900	RMC	25.0	24.59	-0.04	13 mm	4712J	N/A	1:1	bottom	0.547	1.099	0.601	
1880.00	9400	UMTS 1900	RMC	25.0	24.59	-0.10	0 mm	4712J	N/A	1:1	right	0.184	1.099	0.202	
1880.00	9400	UMTS 1900	RMC	25.0	24.59	-0.18	0 mm	4712J	N/A	1:1	left	0.429	1.099	0.471	
1880.00	9400	UMTS 1900	RMC	22.5	21.47	-0.03	0 mm	4712J	N/A	1:1	back	0.675	1.268	0.856	
1880.00	9400	UMTS 1900	RMC	22.5	21.47	-0.04	0 mm	4712J	N/A	1:1	front	0.851	1.268	1.079	
1852.40	9262	UMTS 1900	RMC	22.5	21.00	-0.02	0 mm	4712J	N/A	1:1	bottom	1.850	1.413	2.614	A48
1880.00	9400	UMTS 1900	RMC	22.5	21.47	0.00	0 mm	4712J	N/A	1:1	bottom	1.710	1.268	2.168	
1907.60	9538	UMTS 1900	RMC	22.5	21.24	-0.01	0 mm	4712J	N/A	1:1	bottom	1.410	1.337	1.885	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Phablet 4.0 W/kg (mW/g) averaged over 10 grams			

Note: Blue Entry represents variability measurement

Table 11-33
LTE Band 66 Phablet SAR - Open

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	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)	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	24.46	0.02	0	4721J	QPSK	1	99	9 mm	back	1:1	0.682	1.186	0.809	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.2	23.63	0.02	1	4721J	QPSK	50	0	9 mm	back	1:1	0.587	1.140	0.669	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	24.46	-0.02	0	4721J	QPSK	1	99	7 mm	front	1:1	0.794	1.186	0.942	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.2	23.63	0.01	1	4721J	QPSK	50	0	7 mm	front	1:1	0.677	1.140	0.772	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	24.46	0.01	0	4721J	QPSK	1	99	13 mm	bottom	1:1	0.679	1.186	0.805	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.2	23.63	0.02	1	4721J	QPSK	50	0	13 mm	bottom	1:1	0.601	1.140	0.685	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	24.46	0.00	0	4721J	QPSK	1	99	0 mm	right	1:1	0.416	1.186	0.493	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.2	23.63	0.05	1	4721J	QPSK	50	0	0 mm	right	1:1	0.363	1.140	0.414	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	24.46	0.06	0	4721J	QPSK	1	99	0 mm	left	1:1	0.246	1.186	0.292	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.2	23.63	0.07	1	4721J	QPSK	50	0	0 mm	left	1:1	0.186	1.140	0.212	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	20.95	-0.01	0	4721J	QPSK	1	0	0 mm	back	1:1	1.550	1.059	1.641	
1720.00	132072	Low	LTE Band 66 (AWS)	20	21.2	20.82	-0.13	0	4721J	QPSK	50	0	0 mm	back	1:1	1.280	1.091	1.396	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	21.2	20.87	-0.14	0	4721J	QPSK	50	0	0 mm	back	1:1	1.490	1.079	1.608	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	21.00	-0.08	0	4721J	QPSK	50	0	0 mm	back	1:1	1.670	1.047	1.748	A49
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	20.95	0.01	0	4721J	QPSK	1	0	0 mm	front	1:1	1.440	1.059	1.525	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	21.00	-0.01	0	4721J	QPSK	50	0	0 mm	front	1:1	1.470	1.047	1.539	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	20.95	0.00	0	4721J	QPSK	1	0	0 mm	bottom	1:1	1.430	1.059	1.514	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	21.00	-0.03	0	4721J	QPSK	50	0	0 mm	bottom	1:1	1.410	1.047	1.476	
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 11-34
LTE Band 25 Phablet SAR - Open

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	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)	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.1	24.24	-0.06	0	4718J	QPSK	1	50	9 mm	back	1:1	0.483	1.219	0.589	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.1	23.40	0.03	1	4718J	QPSK	50	25	9 mm	back	1:1	0.402	1.175	0.472	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.1	24.24	-0.01	0	4718J	QPSK	1	50	7 mm	front	1:1	0.701	1.219	0.855	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.1	23.40	-0.05	1	4718J	QPSK	50	25	7 mm	front	1:1	0.583	1.175	0.685	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.1	24.24	0.05	0	4718J	QPSK	1	50	13 mm	bottom	1:1	0.561	1.219	0.684	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.1	23.40	-0.04	1	4718J	QPSK	50	25	13 mm	bottom	1:1	0.475	1.175	0.558	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.1	24.24	-0.07	0	4718J	QPSK	1	50	0 mm	right	1:1	0.223	1.219	0.272	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.1	23.40	0.06	1	4718J	QPSK	50	25	0 mm	right	1:1	0.186	1.175	0.219	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.1	24.24	0.12	0	4718J	QPSK	1	50	0 mm	left	1:1	0.327	1.219	0.399	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.1	23.40	0.07	1	4718J	QPSK	50	25	0 mm	left	1:1	0.272	1.175	0.320	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.48	-0.06	0	4718J	QPSK	1	0	0 mm	back	1:1	0.851	1.294	1.101	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.51	-0.03	0	4718J	QPSK	50	25	0 mm	back	1:1	0.883	1.285	1.135	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.48	-0.02	0	4718J	QPSK	1	0	0 mm	front	1:1	1.020	1.294	1.320	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.51	0.03	0	4718J	QPSK	50	25	0 mm	front	1:1	1.050	1.285	1.349	
1860.00	26140	Low	LTE Band 25 (PCS)	20	21.6	20.17	0.01	0	4718J	QPSK	1	99	0 mm	bottom	1:1	2.280	1.390	3.169	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.48	0.05	0	4718J	QPSK	1	0	0 mm	bottom	1:1	2.380	1.294	3.080	
1905.00	26590	High	LTE Band 25 (PCS)	20	21.6	20.32	0.03	0	4718J	QPSK	1	0	0 mm	bottom	1:1	2.450	1.343	**3.290**	
1860.00	26140	Low	LTE Band 25 (PCS)	20	21.6	20.23	0.04	0	4718J	QPSK	50	50	0 mm	bottom	1:1	2.340	1.371	3.208	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.51	0.06	0	4718J	QPSK	50	25	0 mm	bottom	1:1	2.560	1.285	**3.290**	A50
1905.00	26590	High	LTE Band 25 (PCS)	20	21.6	20.40	0.07	0	4718J	QPSK	50	25	0 mm	bottom	1:1	2.470	1.318	3.255	
1905.00	26590	High	LTE Band 25 (PCS)	20	21.6	20.39	0.03	0	4718J	QPSK	100	0	0 mm	bottom	1:1	2.470	1.321	3.263	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.51	0.06	0	4718J	QPSK	50	25	0 mm	bottom	1:1	2.560	1.285	**3.290**	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Phablet 4.0 W/kg (mW/g) averaged over 10 grams			

Note: Blue Entry represents variability measurement

Table 11-35
LTE Band 30 Phablet SAR - Open

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	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.																			
2310.00	27710	Mid	LTE Band 30	10	25.7	25.17	-0.09	0	4715J	QPSK	1	49	9 mm	back	1:1	0.264	1.130	0.298	
2310.00	27710	Mid	LTE Band 30	10	24.7	24.18	0.03	1	4715J	QPSK	25	12	9 mm	back	1:1	0.240	1.127	0.270	
2310.00	27710	Mid	LTE Band 30	10	25.7	25.17	-0.06	0	4715J	QPSK	1	49	7 mm	front	1:1	0.486	1.130	0.549	
2310.00	27710	Mid	LTE Band 30	10	24.7	24.18	-0.02	1	4715J	QPSK	25	12	7 mm	front	1:1	0.392	1.127	0.442	
2310.00	27710	Mid	LTE Band 30	10	25.7	25.17	-0.10	0	4715J	QPSK	1	49	13 mm	bottom	1:1	0.288	1.130	0.325	
2310.00	27710	Mid	LTE Band 30	10	24.7	24.18	-0.03	1	4715J	QPSK	25	12	13 mm	bottom	1:1	0.245	1.127	0.276	
2310.00	27710	Mid	LTE Band 30	10	25.7	25.17	-0.13	0	4715J	QPSK	1	49	0 mm	left	1:1	0.589	1.130	0.666	
2310.00	27710	Mid	LTE Band 30	10	24.7	24.18	-0.19	1	4715J	QPSK	25	12	0 mm	left	1:1	0.446	1.127	0.503	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.09	-0.04	0	4715J	QPSK	1	25	0 mm	back	1:1	1.210	1.205	1.458	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.20	-0.04	0	4715J	QPSK	25	12	0 mm	back	1:1	1.290	1.175	1.516	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.09	-0.16	0	4715J	QPSK	1	25	0 mm	front	1:1	1.330	1.205	1.603	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.20	-0.06	0	4715J	QPSK	25	12	0 mm	front	1:1	1.400	1.175	1.645	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.09	-0.12	0	4715J	QPSK	1	25	0 mm	bottom	1:1	1.860	1.205	2.241	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.20	-0.12	0	4715J	QPSK	25	12	0 mm	bottom	1:1	1.980	1.175	2.327	A51
2310.00	27710	Mid	LTE Band 30	10	22.9	22.07	-0.12	0	4715J	QPSK	50	0	0 mm	bottom	1:1	1.980	1.211	2.398	
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 11-36
LTE Band 41 Phablet SAR - Open

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]	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.																		
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	25.3	24.45	-0.10	0	4715J	QPSK	1	0	9 mm	back	1:1.58	0.270	1.216	0.328	
1 CC Uplink	N/A	2593.00	40620	Mid	LTE Band 41	20	24.3	23.55	-0.17	1	4715J	QPSK	50	0	9 mm	back	1:1.58	0.220	1.189	0.262	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	25.3	24.45	-0.03	0	4715J	QPSK	1	0	7 mm	front	1:1.58	0.332	1.216	0.404	
1 CC Uplink	N/A	2593.00	40620	Mid	LTE Band 41	20	24.3	23.55	-0.03	1	4715J	QPSK	50	0	7 mm	front	1:1.58	0.252	1.189	0.300	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	25.3	24.45	-0.09	0	4715J	QPSK	1	0	13 mm	bottom	1:1.58	0.166	1.216	0.202	
1 CC Uplink	N/A	2593.00	40620	Mid	LTE Band 41	20	24.3	23.55	0.05	1	4715J	QPSK	50	0	13 mm	bottom	1:1.58	0.145	1.189	0.172	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	25.3	24.45	-0.12	0	4715J	QPSK	1	0	0 mm	left	1:1.58	0.370	1.216	0.450	
1 CC Uplink	N/A	2593.00	40620	Mid	LTE Band 41	20	24.3	23.55	-0.13	1	4715J	QPSK	50	0	0 mm	left	1:1.58	0.311	1.189	0.370	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	22.85	-0.06	0	4715J	QPSK	1	0	0 mm	back	1:1.58	1.050	1.161	1.219	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	23.11	-0.05	0	4715J	QPSK	50	25	0 mm	back	1:1.58	1.070	1.094	1.171	
2 CC Uplink	PCC	2636.50	41055	Mid-High	LTE Band 41	20	23.5	23.24	-0.10	0	4715J	QPSK	1	0	0 mm	back	1:1.58	1.160	1.062	1.232	A52
	SCC	2616.70	40857	Mid-High	LTE Band 41	20							1	99							
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	22.85	0.05	0	4710J	QPSK	1	0	0 mm	front	1:1.58	0.836	1.161	0.971	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	23.11	0.04	0	4710J	QPSK	50	25	0 mm	front	1:1.58	0.861	1.094	0.942	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	22.85	0.06	0	4710J	QPSK	1	0	0 mm	bottom	1:1.58	0.847	1.161	0.983	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	23.11	0.04	0	4710J	QPSK	50	25	0 mm	bottom	1:1.58	0.863	1.094	0.944	
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 11-37
WLAN Phablet SAR - Open

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	17.97	0.19	0 mm	1	0542M	6	back	97.6	0.842	0.119	1.007	1.025	0.123	
5300	60	802.11a	OFDM	20	18.0	17.97	0.02	0 mm	1	0542M	6	front	97.6	4.157	0.398	1.007	1.025	0.411	
5300	60	802.11a	OFDM	20	18.0	17.97	-0.18	0 mm	1	0542M	6	top	97.6	1.903	-	1.007	1.025	-	
5300	60	802.11a	OFDM	20	18.0	17.97	-0.14	0 mm	1	0542M	6	right	97.6	3.395	-	1.007	1.025	-	
5280	56	802.11a	OFDM	20	18.0	17.98	-0.04	0 mm	2	0542M	6	back	97.5	6.398	0.734	1.005	1.026	**0.757**	A53
5280	56	802.11a	OFDM	20	18.0	17.98	0.19	0 mm	2	0542M	6	front	97.5	0.212	-	1.005	1.026	-	
5280	56	802.11a	OFDM	20	18.0	17.98	0.12	0 mm	2	0542M	6	top	97.5	0.316	-	1.005	1.026	-	
5280	56	802.11a	OFDM	20	18.0	17.98	0.20	0 mm	2	0542M	6	right	97.5	0.513	-	1.005	1.026	-	
5500	100	802.11a	OFDM	20	18.0	17.99	-0.15	0 mm	1	0542M	6	back	97.6	0.888	0.095	1.002	1.025	0.098	
5500	100	802.11a	OFDM	20	18.0	17.99	0.00	0 mm	1	0542M	6	front	97.6	5.681	0.413	1.002	1.025	0.424	
5500	100	802.11a	OFDM	20	18.0	17.99	-0.18	0 mm	1	0542M	6	top	97.6	2.553	-	1.002	1.025	-	
5500	100	802.11a	OFDM	20	18.0	17.99	-0.17	0 mm	1	0542M	6	right	97.6	5.442	-	1.002	1.025	-	
5500	100	802.11a	OFDM	20	18.0	17.96	0.05	0 mm	2	0542M	6	back	97.5	3.889	0.460	1.009	1.026	0.476	
5500	100	802.11a	OFDM	20	18.0	17.96	0.12	0 mm	2	0542M	6	front	97.5	0.303	-	1.009	1.026	-	
5500	100	802.11a	OFDM	20	18.0	17.96	0.11	0 mm	2	0542M	6	top	97.5	0.198	-	1.009	1.026	-	
5500	100	802.11a	OFDM	20	18.0	17.96	0.14	0 mm	2	0542M	6	right	97.5	0.598	-	1.009	1.026	-	
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 Standalone Closed Body-Worn SAR Data

Table 11-38
GSM/UMTS Body-Worn SAR Data – Closed

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	34.0	33.03	-0.14	15 mm	4724J	1	1:8.3	back	0.166	1.250	0.208	A16
1880.00	661	GSM 1900	GSM	31.0	29.72	-0.03	15 mm	4718J	1	1:8.3	back	0.120	1.343	0.161	
836.60	4183	UMTS 850	RMC	25.0	24.33	-0.04	15 mm	4724J	N/A	1:1	back	0.178	1.167	0.208	A20
1732.40	1412	UMTS 1750	RMC	24.0	23.00	0.11	15 mm	4721J	N/A	1:1	back	0.157	1.259	0.198	
1880.00	9400	UMTS 1900	RMC	25.0	24.59	-0.07	15 mm	4712J	N/A	1:1	back	0.237	1.099	0.260	
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 11-39
LTE Body-Worn SAR - Closed

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.7	24.77	0.01	0	4723J	QPSK	1	0	15 mm	back	1:1	0.111	1.239	0.138	
707.50	23095	Mid	LTE Band 12	10	24.7	23.91	0.04	1	4723J	QPSK	25	0	15 mm	back	1:1	0.094	1.199	0.113	
782.00	23230	Mid	LTE Band 13	10	25.7	24.60	0.04	0	4723J	QPSK	1	25	15 mm	back	1:1	0.162	1.288	0.209	A28
782.00	23230	Mid	LTE Band 13	10	24.7	23.81	-0.06	1	4723J	QPSK	25	0	15 mm	back	1:1	0.141	1.227	0.173	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	24.62	-0.07	0	4724J	QPSK	1	0	15 mm	back	1:1	0.199	1.282	0.255	A30
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	23.76	-0.01	1	4724J	QPSK	36	18	15 mm	back	1:1	0.177	1.242	0.220	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	24.46	-0.02	0	4721J	QPSK	1	99	15 mm	back	1:1	0.271	1.186	0.321	
1770.00	132572	High	LTE Band 66 (AWS)	20	24.2	23.63	0.04	1	4721J	QPSK	50	0	15 mm	back	1:1	0.259	1.140	0.295	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.1	24.24	0.00	0	4718J	QPSK	1	50	15 mm	back	1:1	0.326	1.219	0.397	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.1	23.40	-0.02	1	4718J	QPSK	50	25	15 mm	back	1:1	0.261	1.175	0.307	
2310.00	27710	Mid	LTE Band 30	10	25.7	25.17	-0.12	0	4715J	QPSK	1	49	15 mm	back	1:1	0.176	1.130	0.199	
2310.00	27710	Mid	LTE Band 30	10	24.7	24.18	0.03	1	4715J	QPSK	25	12	15 mm	back	1:1	0.160	1.127	0.180	
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 11-40
LTE Band 41 Body-Worn SAR - Closed

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	N/A	2636.50	41055	Mid-High	LTE Band 41	20	25.3	24.45	0.11	0	4715J	QPSK	1	0	15 mm	back	1:1.58	0.193	1.216	0.235	
1 CC Uplink	N/A	2593.00	40620	Mid	LTE Band 41	20	24.3	23.55	-0.03	1	4715J	QPSK	50	0	15 mm	back	1:1.58	0.167	1.189	0.199	
2 CC Uplink	PCC	2636.50	41055	Mid-High	LTE Band 41	20	25.3	24.63	0.01	0	4715J	QPSK	1	0	15 mm	back	1:1.58	0.201	1.167	0.235	A38
	SCC	2616.70	40857	Mid-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 11-41
DTS Body-Worn SAR - Closed

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	22.0	21.92	0.07	15 mm	1	0535M	1	back	99.1	0.096	0.061	1.019	1.009	0.063	
2437	6	802.11b	DSSS	22	22.0	21.96	0.12	15 mm	2	0535M	1	back	99.0	0.061	0.041	1.009	1.010	0.042	
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 11-42
NII Body-Worn SAR - Closed

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	17.97	-0.19	15 mm	1	0542M	6	back	97.6	0.039	0.020	1.007	1.025	0.021	
5280	56	802.11a	OFDM	20	18.0	17.98	-0.12	15 mm	2	0542M	6	back	97.5	0.007	0.001	1.005	1.026	0.001	
5500	100	802.11a	OFDM	20	18.0	17.99	0.11	15 mm	1	0542M	6	back	97.6	0.026	0.009	1.002	1.025	0.009	
5500	100	802.11a	OFDM	20	18.0	17.96	-0.20	15 mm	2	0542M	6	back	97.5	0.007	0.002	1.009	1.026	0.002	
5785	157	802.11a	OFDM	20	18.0	17.98	0.11	15 mm	1	0542M	6	back	97.6	0.097	0.038	1.005	1.025	0.039	
5785	157	802.11a	OFDM	20	18.0	17.83	-0.16	15 mm	2	0542M	6	back	97.5	0.006	0.001	1.040	1.026	0.001	
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 11-43
DSS Body-Worn SAR - Closed

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	15.5	15.11	0.12	15 mm	0535M	1	back	77.6	0.005	1.094	1.289	0.007	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram								

11.6 Standalone Closed Hotspot SAR Data

Table 11-44
GPRS/UMTS Hotspot SAR Data - Closed

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	190	GSM 850	GPRS	33.5	32.52	-0.13	10 mm	4724J	2	1:4.15	back	0.455	1.253	0.570	
836.60	190	GSM 850	GPRS	33.5	32.52	-0.06	10 mm	4724J	2	1:4.15	front	0.083	1.253	0.104	
836.60	190	GSM 850	GPRS	33.5	32.52	-0.11	10 mm	4724J	2	1:4.15	bottom	0.169	1.253	0.212	
836.60	190	GSM 850	GPRS	33.5	32.52	-0.16	10 mm	4724J	2	1:4.15	right	0.050	1.253	0.063	
836.60	190	GSM 850	GPRS	33.5	32.52	-0.03	10 mm	4724J	2	1:4.15	left	0.076	1.253	0.095	
1880.00	661	GSM 1900	GPRS	25.5	24.33	-0.03	10 mm	4718J	3	1:2.76	back	0.159	1.309	0.208	
1880.00	661	GSM 1900	GPRS	25.5	24.33	0.20	10 mm	4718J	3	1:2.76	front	0.048	1.309	0.063	
1880.00	661	GSM 1900	GPRS	25.5	24.33	-0.08	10 mm	4718J	3	1:2.76	bottom	0.315	1.309	0.412	
1880.00	661	GSM 1900	GPRS	25.5	24.33	0.00	10 mm	4718J	3	1:2.76	right	0.013	1.309	0.017	
1880.00	661	GSM 1900	GPRS	25.5	24.33	-0.12	10 mm	4718J	3	1:2.76	left	0.059	1.309	0.077	
836.60	4183	UMTS 850	RMC	25.0	24.33	-0.06	10 mm	4724J	N/A	1:1	back	0.311	1.167	0.363	A21
836.60	4183	UMTS 850	RMC	25.0	24.33	-0.01	10 mm	4724J	N/A	1:1	front	0.053	1.167	0.062	
836.60	4183	UMTS 850	RMC	25.0	24.33	-0.15	10 mm	4724J	N/A	1:1	bottom	0.130	1.167	0.152	
836.60	4183	UMTS 850	RMC	25.0	24.33	-0.15	10 mm	4724J	N/A	1:1	right	0.032	1.167	0.037	
836.60	4183	UMTS 850	RMC	25.0	24.33	-0.15	10 mm	4724J	N/A	1:1	left	0.049	1.167	0.057	
1732.40	1412	UMTS 1750	RMC	22.0	21.04	-0.12	10 mm	4721J	N/A	1:1	back	0.219	1.247	0.273	
1732.40	1412	UMTS 1750	RMC	22.0	21.04	0.12	10 mm	4721J	N/A	1:1	front	0.041	1.247	0.051	
1732.40	1412	UMTS 1750	RMC	22.0	21.04	0.17	10 mm	4721J	N/A	1:1	bottom	0.415	1.247	0.518	
1732.40	1412	UMTS 1750	RMC	22.0	21.04	0.17	10 mm	4721J	N/A	1:1	right	0.018	1.247	0.022	
1732.40	1412	UMTS 1750	RMC	22.0	21.04	0.08	10 mm	4721J	N/A	1:1	left	0.184	1.247	0.229	
1880.00	9400	UMTS 1900	RMC	22.5	21.47	-0.05	10 mm	4712J	N/A	1:1	back	0.266	1.268	0.337	
1880.00	9400	UMTS 1900	RMC	22.5	21.47	0.10	10 mm	4712J	N/A	1:1	front	0.042	1.268	0.053	
1852.40	9262	UMTS 1900	RMC	22.5	21.00	-0.08	10 mm	4712J	N/A	1:1	bottom	0.467	1.413	0.660	
1880.00	9400	UMTS 1900	RMC	22.5	21.47	-0.12	10 mm	4712J	N/A	1:1	bottom	0.511	1.268	0.648	
1907.60	9538	UMTS 1900	RMC	22.5	21.24	-0.06	10 mm	4712J	N/A	1:1	bottom	0.522	1.337	0.698	
1880.00	9400	UMTS 1900	RMC	22.5	21.47	0.01	10 mm	4712J	N/A	1:1	right	0.013	1.268	0.016	
1880.00	9400	UMTS 1900	RMC	22.5	21.47	-0.01	10 mm	4712J	N/A	1:1	left	0.115	1.268	0.146	
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 11-45
LTE Band 12 Hotspot SAR - Closed

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.7	24.77	-0.06	0	4723J	QPSK	1	0	10 mm	back	1:1	0.191	1.239	0.237	
707.50	23095	Mid	LTE Band 12	10	24.7	23.91	0.01	1	4723J	QPSK	25	0	10 mm	back	1:1	0.155	1.199	0.186	
707.50	23095	Mid	LTE Band 12	10	25.7	24.77	-0.08	0	4723J	QPSK	1	0	10 mm	front	1:1	0.072	1.239	0.089	
707.50	23095	Mid	LTE Band 12	10	24.7	23.91	0.02	1	4723J	QPSK	25	0	10 mm	front	1:1	0.061	1.199	0.073	
707.50	23095	Mid	LTE Band 12	10	25.7	24.77	-0.13	0	4723J	QPSK	1	0	10 mm	bottom	1:1	0.065	1.239	0.081	
707.50	23095	Mid	LTE Band 12	10	24.7	23.91	-0.01	1	4723J	QPSK	25	0	10 mm	bottom	1:1	0.052	1.199	0.062	
707.50	23095	Mid	LTE Band 12	10	25.7	24.77	-0.02	0	4723J	QPSK	1	0	10 mm	right	1:1	0.047	1.239	0.058	
707.50	23095	Mid	LTE Band 12	10	24.7	23.91	0.04	1	4723J	QPSK	25	0	10 mm	right	1:1	0.037	1.199	0.044	
707.50	23095	Mid	LTE Band 12	10	25.7	24.77	-0.02	0	4723J	QPSK	1	0	10 mm	left	1:1	0.064	1.239	0.079	
707.50	23095	Mid	LTE Band 12	10	24.7	23.91	0.12	1	4723J	QPSK	25	0	10 mm	left	1:1	0.051	1.199	0.061	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11-46
LTE Band 13 Hotspot SAR - Closed

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
782.00	23230	Mid	LTE Band 13	10	25.7	24.60	-0.01	0	4723J	QPSK	1	25	10 mm	back	1:1	0.284	1.288	0.366	A29
782.00	23230	Mid	LTE Band 13	10	24.7	23.81	0.15	1	4723J	QPSK	25	0	10 mm	back	1:1	0.247	1.227	0.303	
782.00	23230	Mid	LTE Band 13	10	25.7	24.60	0.15	0	4723J	QPSK	1	25	10 mm	front	1:1	0.085	1.288	0.109	
782.00	23230	Mid	LTE Band 13	10	24.7	23.81	-0.14	1	4723J	QPSK	25	0	10 mm	front	1:1	0.065	1.227	0.080	
782.00	23230	Mid	LTE Band 13	10	25.7	24.60	0.05	0	4723J	QPSK	1	25	10 mm	bottom	1:1	0.094	1.288	0.121	
782.00	23230	Mid	LTE Band 13	10	24.7	23.81	-0.02	1	4723J	QPSK	25	0	10 mm	bottom	1:1	0.078	1.227	0.096	
782.00	23230	Mid	LTE Band 13	10	25.7	24.60	0.00	0	4723J	QPSK	1	25	10 mm	right	1:1	0.050	1.288	0.064	
782.00	23230	Mid	LTE Band 13	10	24.7	23.81	0.08	1	4723J	QPSK	25	0	10 mm	right	1:1	0.042	1.227	0.052	
782.00	23230	Mid	LTE Band 13	10	25.7	24.60	0.05	0	4723J	QPSK	1	25	10 mm	left	1:1	0.042	1.288	0.054	
782.00	23230	Mid	LTE Band 13	10	24.7	23.81	0.05	1	4723J	QPSK	25	0	10 mm	left	1:1	0.035	1.227	0.043	
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 11-47
LTE Band 26 (Cell) Hotspot SAR - Closed

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	24.62	-0.07	0	4724J	QPSK	1	0	10 mm	back	1:1	0.352	1.282	0.451	A31
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	23.76	-0.05	1	4724J	QPSK	36	18	10 mm	back	1:1	0.309	1.242	0.384	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	24.62	0.09	0	4724J	QPSK	1	0	10 mm	front	1:1	0.095	1.282	0.122	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	23.76	0.08	1	4724J	QPSK	36	18	10 mm	front	1:1	0.089	1.242	0.111	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	24.62	-0.02	0	4724J	QPSK	1	0	10 mm	bottom	1:1	0.101	1.282	0.129	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	23.76	0.04	1	4724J	QPSK	36	18	10 mm	bottom	1:1	0.088	1.242	0.109	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	24.62	0.00	0	4724J	QPSK	1	0	10 mm	right	1:1	0.040	1.282	0.051	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	23.76	-0.04	1	4724J	QPSK	36	18	10 mm	right	1:1	0.034	1.242	0.042	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	24.62	-0.08	0	4724J	QPSK	1	0	10 mm	left	1:1	0.047	1.282	0.060	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	23.76	0.11	1	4724J	QPSK	36	18	10 mm	left	1:1	0.044	1.242	0.055	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11-48
LTE Band 66 (AWS) Hotspot SAR - Closed

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	20.95	-0.04	0	4721J	QPSK	1	0	10 mm	back	1:1	0.284	1.059	0.301	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	21.00	-0.01	0	4721J	QPSK	50	0	10 mm	back	1:1	0.295	1.047	0.309	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	20.95	0.12	0	4721J	QPSK	1	0	10 mm	front	1:1	0.076	1.059	0.080	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	21.00	0.15	0	4721J	QPSK	50	0	10 mm	front	1:1	0.080	1.047	0.084	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	20.95	0.03	0	4721J	QPSK	1	0	10 mm	bottom	1:1	0.594	1.059	0.629	
1720.00	132072	Low	LTE Band 66 (AWS)	20	21.2	20.82	0.05	0	4721J	QPSK	50	0	10 mm	bottom	1:1	0.360	1.091	0.393	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	21.2	20.87	-0.02	0	4721J	QPSK	50	0	10 mm	bottom	1:1	0.474	1.079	0.511	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	21.00	0.00	0	4721J	QPSK	50	0	10 mm	bottom	1:1	0.621	1.047	0.650	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	20.95	0.08	0	4721J	QPSK	1	0	10 mm	right	1:1	0.028	1.059	0.030	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	21.00	0.04	0	4721J	QPSK	50	0	10 mm	right	1:1	0.033	1.047	0.035	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	20.95	0.11	0	4721J	QPSK	1	0	10 mm	left	1:1	0.171	1.059	0.181	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.2	21.00	0.08	0	4721J	QPSK	50	0	10 mm	left	1:1	0.178	1.047	0.186	
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 11-49
LTE Band 25 (PCS) Hotspot SAR - Closed

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.48	0.02	0	4718J	QPSK	1	0	10 mm	back	1:1	0.253	1.294	0.327	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.51	-0.06	0	4718J	QPSK	50	25	10 mm	back	1:1	0.269	1.285	0.346	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.48	-0.15	0	4718J	QPSK	1	0	10 mm	front	1:1	0.078	1.294	0.101	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.51	-0.07	0	4718J	QPSK	50	25	10 mm	front	1:1	0.081	1.285	0.104	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.48	0.05	0	4718J	QPSK	1	0	10 mm	bottom	1:1	0.532	1.294	0.688	
1860.00	26140	Low	LTE Band 25 (PCS)	20	21.6	20.23	-0.03	0	4718J	QPSK	50	50	10 mm	bottom	1:1	0.512	1.371	0.702	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.51	0.08	0	4718J	QPSK	50	25	10 mm	bottom	1:1	0.573	1.285	0.736	
1905.00	26590	High	LTE Band 25 (PCS)	20	21.6	20.40	0.01	0	4718J	QPSK	50	25	10 mm	bottom	1:1	0.577	1.318	0.760	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.48	-0.19	0	4718J	QPSK	1	0	10 mm	right	1:1	0.027	1.294	0.035	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.51	0.16	0	4718J	QPSK	50	25	10 mm	right	1:1	0.031	1.285	0.040	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.48	0.08	0	4718J	QPSK	1	0	10 mm	left	1:1	0.115	1.294	0.149	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.6	20.51	0.08	0	4718J	QPSK	50	25	10 mm	left	1:1	0.116	1.285	0.149	
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 11-50
LTE Band 30 Hotspot SAR – Closed

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.09	0.02	0	4715J	QPSK	1	25	10 mm	back	1:1	0.188	1.205	0.227	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.20	0.03	0	4715J	QPSK	25	12	10 mm	back	1:1	0.197	1.175	0.231	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.09	0.13	0	4715J	QPSK	1	25	10 mm	front	1:1	0.029	1.205	0.035	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.20	0.15	0	4715J	QPSK	25	12	10 mm	front	1:1	0.030	1.175	0.035	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.09	-0.01	0	4715J	QPSK	1	25	10 mm	bottom	1:1	0.226	1.205	0.272	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.20	-0.01	0	4715J	QPSK	25	12	10 mm	bottom	1:1	0.239	1.175	0.281	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.09	0.08	0	4715J	QPSK	1	25	10 mm	left	1:1	0.089	1.205	0.107	
2310.00	27710	Mid	LTE Band 30	10	22.9	22.20	0.10	0	4715J	QPSK	25	12	10 mm	left	1:1	0.096	1.175	0.113	
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 11-51
LTE Band 41 Hotspot SAR - Closed

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	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	22.85	-0.13	0	4715J	QPSK	1	0	10 mm	back	1:1.58	0.258	1.161	0.300	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	23.11	-0.09	0	4715J	QPSK	50	25	10 mm	back	1:1.58	0.255	1.094	0.279	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	22.85	0.16	0	4715J	QPSK	1	0	10 mm	front	1:1.58	0.038	1.161	0.044	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	23.11	0.19	0	4715J	QPSK	50	25	10 mm	front	1:1.58	0.038	1.094	0.042	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	22.85	-0.04	0	4715J	QPSK	1	0	10 mm	bottom	1:1.58	0.410	1.161	0.476	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	23.11	-0.07	0	4715J	QPSK	50	25	10 mm	bottom	1:1.58	0.412	1.094	0.451	
2 CC Uplink	PCC	2636.50	41055	Mid-High	LTE Band 41	20	23.5	23.24	0.02	0	4715J	QPSK	1	0	10 mm	bottom	1:1.58	0.463	1.062	0.492	A39
	SCC	2616.70	40857	Mid-High	LTE Band 41	20							1	99							
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	22.85	0.00	0	4715J	QPSK	1	0	10 mm	left	1:1.58	0.125	1.161	0.145	
1 CC Uplink	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	23.11	0.01	0	4715J	QPSK	50	25	10 mm	left	1:1.58	0.123	1.094	0.135	
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 11-52
WLAN Hotspot SAR - Closed

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	22.0	21.92	-0.12	10 mm	1	0535M	1	back	99.1	0.190	0.126	1.019	1.009	0.130	
2437	6	802.11b	DSSS	22	22.0	21.92	0.14	10 mm	1	0535M	1	front	99.1	0.409	0.263	1.019	1.009	0.270	
2437	6	802.11b	DSSS	22	22.0	21.92	0.19	10 mm	1	0535M	1	bottom	99.1	0.345	0.207	1.019	1.009	0.213	
2437	6	802.11b	DSSS	22	22.0	21.92	0.13	10 mm	1	0535M	1	right	99.1	0.707	0.452	1.019	1.009	0.465	
2437	6	802.11b	DSSS	22	22.0	21.96	-0.18	10 mm	2	0535M	1	back	99.0	0.094	0.065	1.009	1.010	0.066	
2437	6	802.11b	DSSS	22	22.0	21.96	-0.10	10 mm	2	0535M	1	front	99.0	0.281	0.181	1.009	1.010	0.184	
2437	6	802.11b	DSSS	22	22.0	21.96	0.02	10 mm	2	0535M	1	top	99.0	0.027	0.017	1.009	1.010	0.017	
2437	6	802.11b	DSSS	22	22.0	21.96	0.13	10 mm	2	0535M	1	bottom	99.0	0.161	0.099	1.009	1.010	0.101	
2437	6	802.11b	DSSS	22	22.0	21.96	0.06	10 mm	2	0535M	1	right	99.0	0.099	0.063	1.009	1.010	0.064	
5785	157	802.11a	OFDM	20	18.0	17.98	0.20	10 mm	1	0542M	6	back	97.6	0.112	0.048	1.005	1.025	0.049	
5785	157	802.11a	OFDM	20	18.0	17.98	-0.16	10 mm	1	0542M	6	front	97.6	0.259	0.101	1.005	1.025	0.104	
5785	157	802.11a	OFDM	20	18.0	17.98	0.12	10 mm	1	0542M	6	bottom	97.6	0.387	0.160	1.005	1.025	0.165	
5785	157	802.11a	OFDM	20	18.0	17.98	0.16	10 mm	1	0542M	6	right	97.6	0.561	0.228	1.005	1.025	0.235	
5785	157	802.11a	OFDM	20	18.0	17.83	-0.20	10 mm	2	0542M	6	back	97.5	0.011	0.001	1.040	1.026	0.001	
5785	157	802.11a	OFDM	20	18.0	17.83	0.16	10 mm	2	0542M	6	front	97.5	0.350	0.132	1.040	1.026	0.141	
5785	157	802.11a	OFDM	20	18.0	17.83	0.17	10 mm	2	0542M	6	bottom	97.5	0.035	0.013	1.040	1.026	0.014	
5785	157	802.11a	OFDM	20	18.0	17.83	0.13	10 mm	2	0542M	6	right	97.5	0.112	0.043	1.040	1.026	0.046	
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 11-53
DSS Hotspot SAR – Closed

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	15.5	15.11	0.13	10 mm	0535M	1	back	77.6	0.011	1.094	1.289	0.016	
2441	39	Bluetooth	FHSS	15.5	15.11	-0.04	10 mm	0535M	1	front	77.6	0.020	1.094	1.289	0.028	
2441	39	Bluetooth	FHSS	15.5	15.11	0.14	10 mm	0535M	1	bottom	77.6	0.015	1.094	1.289	0.021	
2441	39	Bluetooth	FHSS	15.5	15.11	0.04	10 mm	0535M	1	right	77.6	0.033	1.094	1.289	0.047	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram								

11.7 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 utilizes power reduction for some wireless modes and technologies, as outlined in Section 1.3. The maximum output power allowed for each transmitter and exposure condition was evaluated for SAR compliance based on expected use conditions and simultaneous transmission scenarios.
12. Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds below.
13. Additional SAR tests for phablet SAR were evaluated per KDB 616217 Section 6 (See Section 6.9 for more information).
14. This device has an open and closed configuration. When closed, 1g SAR test are required on all surfaces and edges with an antenna <=25 mm from that surface or edge at a test separation distance of 15mm for body-worn and 10mm for hotspot.

GSM Test Notes:

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

UMTS Notes:

1. UMTS mode 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 test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r04. The general test procedures used for testing can be found in Section 8.5.4.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
3. A-MPR was disabled for all SAR tests by setting NS=01 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
4. Per FCC KDB Publication 447498 D01v06, when the reported 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. 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, no additional testing for the remaining test positions was required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.
2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 2.4 GHz WIFI operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 8.6.5 for more information.
3. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 5 GHz WIFI operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg for 1g evaluations. See Section 8.6.6 for more information.
4. 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.
5. 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.
6. 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.
7. When 10g 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 9.5 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.

12.3 Head SAR Simultaneous Transmission Analysis

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 850	0.211	0.374	0.348	0.585	0.559	0.933
	GSM 1900	0.036	0.374	0.348	0.410	0.384	0.758
	UMTS 850	0.193	0.374	0.348	0.567	0.541	0.915
	UMTS 1750	0.136	0.374	0.348	0.510	0.484	0.858
	UMTS 1900	0.063	0.374	0.348	0.437	0.411	0.785
	LTE Band 12	0.149	0.374	0.348	0.523	0.497	0.871
	LTE Band 13	0.099	0.374	0.348	0.473	0.447	0.821
	LTE Band 26 (Cell)	0.233	0.374	0.348	0.607	0.581	**0.955**
	LTE Band 66 (AWS)	0.192	0.374	0.348	0.566	0.540	0.914
	LTE Band 25 (PCS)	0.085	0.374	0.348	0.459	0.433	0.807
	LTE Band 30	0.167	0.374	0.348	0.541	0.515	0.889
	LTE Band 41	0.170	0.374	0.348	0.544	0.518	0.892

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 850	0.211	0.462	0.008	0.673	0.219	0.681
	GSM 1900	0.036	0.462	0.008	0.498	0.044	0.506
	UMTS 850	0.193	0.462	0.008	0.655	0.201	0.663
	UMTS 1750	0.136	0.462	0.008	0.598	0.144	0.606
	UMTS 1900	0.063	0.462	0.008	0.525	0.071	0.533
	LTE Band 12	0.149	0.462	0.008	0.611	0.157	0.619
	LTE Band 13	0.099	0.462	0.008	0.561	0.107	0.569
	LTE Band 26 (Cell)	0.233	0.462	0.008	0.695	0.241	**0.703**
	LTE Band 66 (AWS)	0.192	0.462	0.008	0.654	0.200	0.662
	LTE Band 25 (PCS)	0.085	0.462	0.008	0.547	0.093	0.555
	LTE Band 30	0.167	0.462	0.008	0.629	0.175	0.637
	LTE Band 41	0.170	0.462	0.008	0.632	0.178	0.640

Table 12-3
Simultaneous Transmission Scenario with Bluetooth (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	GSM 850	0.211	0.272	0.483
	GSM 1900	0.036	0.272	0.308
	UMTS 850	0.193	0.272	0.465
	UMTS 1750	0.136	0.272	0.408
	UMTS 1900	0.063	0.272	0.335
	LTE Band 12	0.149	0.272	0.421
	LTE Band 13	0.099	0.272	0.371
	LTE Band 26 (Cell)	0.233	0.272	**0.505**
	LTE Band 66 (AWS)	0.192	0.272	0.464
	LTE Band 25 (PCS)	0.085	0.272	0.357
	LTE Band 30	0.167	0.272	0.439
	LTE Band 41	0.170	0.272	0.442

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	GSM 850	0.211	0.374	0.008	0.593
	GSM 1900	0.036	0.374	0.008	0.418
	UMTS 850	0.193	0.374	0.008	0.575
	UMTS 1750	0.136	0.374	0.008	0.518
	UMTS 1900	0.063	0.374	0.008	0.445
	LTE Band 12	0.149	0.374	0.008	0.531
	LTE Band 13	0.099	0.374	0.008	0.481
	LTE Band 26 (Cell)	0.233	0.374	0.008	**0.615**
	LTE Band 66 (AWS)	0.192	0.374	0.008	0.574
	LTE Band 25 (PCS)	0.085	0.374	0.008	0.467
	LTE Band 30	0.167	0.374	0.008	0.549
	LTE Band 41	0.170	0.374	0.008	0.552

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	GSM 850	0.211	0.272	0.008	0.491
	GSM 1900	0.036	0.272	0.008	0.316
	UMTS 850	0.193	0.272	0.008	0.473
	UMTS 1750	0.136	0.272	0.008	0.416
	UMTS 1900	0.063	0.272	0.008	0.343
	LTE Band 12	0.149	0.272	0.008	0.429
	LTE Band 13	0.099	0.272	0.008	0.379
	LTE Band 26 (Cell)	0.233	0.272	0.008	**0.513**
	LTE Band 66 (AWS)	0.192	0.272	0.008	0.472
	LTE Band 25 (PCS)	0.085	0.272	0.008	0.365
	LTE Band 30	0.167	0.272	0.008	0.447
	LTE Band 41	0.170	0.272	0.008	0.450

12.4 Open 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	GSM 850	0.155	0.186	0.103	0.341	0.258	0.444
	GSM 1900	0.220	0.186	0.103	0.406	0.323	0.509
	UMTS 850	0.142	0.186	0.103	0.328	0.245	0.431
	UMTS 1750	0.551	0.186	0.103	0.737	0.654	0.840
	UMTS 1900	0.389	0.186	0.103	0.575	0.492	0.678
	LTE Band 12	0.269	0.186	0.103	0.455	0.372	0.558
	LTE Band 13	0.151	0.186	0.103	0.337	0.254	0.440
	LTE Band 26 (Cell)	0.135	0.186	0.103	0.321	0.238	0.424
	LTE Band 66 (AWS)	0.758	0.186	0.103	0.944	0.861	**1.047**
	LTE Band 25 (PCS)	0.467	0.186	0.103	0.653	0.570	0.756
	LTE Band 30	0.267	0.186	0.103	0.453	0.370	0.556
	LTE Band 41	0.148	0.186	0.103	0.334	0.251	0.437

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	GSM 850	0.155	0.062	0.127	0.217	0.282	0.344
	GSM 1900	0.220	0.062	0.127	0.282	0.347	0.409
	UMTS 850	0.142	0.062	0.127	0.204	0.269	0.331
	UMTS 1750	0.551	0.062	0.127	0.613	0.678	0.740
	UMTS 1900	0.389	0.062	0.127	0.451	0.516	0.578
	LTE Band 12	0.269	0.062	0.127	0.331	0.396	0.458
	LTE Band 13	0.151	0.062	0.127	0.213	0.278	0.340
	LTE Band 26 (Cell)	0.135	0.062	0.127	0.197	0.262	0.324
	LTE Band 66 (AWS)	0.758	0.062	0.127	0.820	0.885	**0.947**
	LTE Band 25 (PCS)	0.467	0.062	0.127	0.529	0.594	0.656
	LTE Band 30	0.267	0.062	0.127	0.329	0.394	0.456
	LTE Band 41	0.148	0.062	0.127	0.210	0.275	0.337

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body-Worn	GSM 850	0.155	0.024	0.179
	GSM 1900	0.220	0.024	0.244
	UMTS 850	0.142	0.024	0.166
	UMTS 1750	0.551	0.024	0.575
	UMTS 1900	0.389	0.024	0.413
	LTE Band 12	0.269	0.024	0.293
	LTE Band 13	0.151	0.024	0.175
	LTE Band 26 (Cell)	0.135	0.024	0.159
	LTE Band 66 (AWS)	0.758	0.024	**0.782**
	LTE Band 25 (PCS)	0.467	0.024	0.491
	LTE Band 30	0.267	0.024	0.291
	LTE Band 41	0.148	0.024	0.172

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Body-Worn	GSM 850	0.155	0.186	0.127	0.468
	GSM 1900	0.220	0.186	0.127	0.533
	UMTS 850	0.142	0.186	0.127	0.455
	UMTS 1750	0.551	0.186	0.127	0.864
	UMTS 1900	0.389	0.186	0.127	0.702
	LTE Band 12	0.269	0.186	0.127	0.582
	LTE Band 13	0.151	0.186	0.127	0.464
	LTE Band 26 (Cell)	0.135	0.186	0.127	0.448
	LTE Band 66 (AWS)	0.758	0.186	0.127	**1.071**
	LTE Band 25 (PCS)	0.467	0.186	0.127	0.780
	LTE Band 30	0.267	0.186	0.127	0.580
	LTE Band 41	0.148	0.186	0.127	0.461

Table 12-10
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN Ant 2 (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Body-Worn	GSM 850	0.155	0.024	0.127	0.306
	GSM 1900	0.220	0.024	0.127	0.371
	UMTS 850	0.142	0.024	0.127	0.293
	UMTS 1750	0.551	0.024	0.127	0.702
	UMTS 1900	0.389	0.024	0.127	0.540
	LTE Band 12	0.269	0.024	0.127	0.420
	LTE Band 13	0.151	0.024	0.127	0.302
	LTE Band 26 (Cell)	0.135	0.024	0.127	0.286
	LTE Band 66 (AWS)	0.758	0.024	0.127	**0.909**
	LTE Band 25 (PCS)	0.467	0.024	0.127	0.618
	LTE Band 30	0.267	0.024	0.127	0.418
	LTE Band 41	0.148	0.024	0.127	0.299

12.5 Open Hotspot SAR Simultaneous Transmission Analysis

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

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

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	0.573	0.646	0.216	1.219	0.789	1.435
	GPRS 1900	0.580	0.646	0.216	1.226	0.796	**1.442**
	UMTS 850	0.306	0.646	0.216	0.952	0.522	1.168
	UMTS 1750	1.105	0.646	0.216	See Table Below	1.321	See Table Below
	UMTS 1900	1.149	0.646	0.216	See Table Below	1.365	See Table Below
	LTE Band 12	0.363	0.646	0.216	1.009	0.579	1.225
	LTE Band 13	0.234	0.646	0.216	0.880	0.450	1.096
	LTE Band 26 (Cell)	0.318	0.646	0.216	0.964	0.534	1.180
	LTE Band 66 (AWS)	0.978	0.646	0.216	See Table Below	1.194	See Table Below
	LTE Band 25 (PCS)	1.136	0.646	0.216	See Table Below	1.352	See Table Below
	LTE Band 30	0.490	0.646	0.216	1.136	0.706	1.352
	LTE Band 41	0.401	0.646	0.216	1.047	0.617	1.263

Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.673	0.646*	0.216*	1.319	0.889	**1.535**
	Front	0.566	0.646*	0.216	1.212	0.862	1.428
	Top	-	0.480	0.216*	0.480	0.216	0.696
	Bottom	1.105	-	-	1.105	1.105	1.105
	Right	0.095	0.646	0.216*	0.741	0.862	0.957
	Left	0.117	-	-	0.117	0.117	0.117

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.495	0.646*	0.216*	1.141	0.711	1.357
	Front	0.559	0.646*	0.216*	1.205	0.775	**1.421**
	Top	-	0.480	0.216*	0.480	0.216	0.696
	Bottom	1.149	-	-	1.149	1.149	1.149
	Right	0.046	0.646	0.216*	0.692	0.862	0.908
	Left	0.255	-	-	0.255	0.255	0.255

Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.605	0.646*	0.216*	1.251	0.821	**1.467**
	Front	0.531	0.646*	0.216	1.177	0.862	1.393
	Top	-	0.480	0.216*	0.480	0.216	0.696
	Bottom	0.978	-	-	0.978	0.978	0.978
	Right	0.090	0.646	0.216*	0.736	0.862	0.952
	Left	0.082	-	-	0.082	0.082	0.082

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.513	0.646*	0.216*	1.159	0.729	**1.375**
	Front	0.509	0.646*	0.216	1.155	0.862	1.371
	Top	-	0.480	0.216*	0.480	0.216	0.696
	Bottom	1.136	-	-	1.136	1.136	1.136
	Right	0.057	0.646	0.216*	0.703	0.862	0.919
	Left	0.140	-	-	0.140	0.140	0.140

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	0.573	0.261	0.157	0.834	0.730	0.991
	GPRS 1900	0.580	0.261	0.157	0.841	0.737	0.998
	UMTS 850	0.306	0.261	0.157	0.567	0.463	0.724
	UMTS 1750	1.105	0.261	0.157	1.366	1.262	1.523
	UMTS 1900	1.149	0.261	0.157	1.410	1.306	**1.567**
	LTE Band 12	0.363	0.261	0.157	0.624	0.520	0.781
	LTE Band 13	0.234	0.261	0.157	0.495	0.391	0.652
	LTE Band 26 (Cell)	0.318	0.261	0.157	0.579	0.475	0.736
	LTE Band 66 (AWS)	0.978	0.261	0.157	1.239	1.135	1.396
	LTE Band 25 (PCS)	1.136	0.261	0.157	1.397	1.293	1.554
	LTE Band 30	0.490	0.261	0.157	0.751	0.647	0.908
	LTE Band 41	0.401	0.261	0.157	0.662	0.558	0.819

Table 12-13
Simultaneous Transmission Scenario with Bluetooth (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	GPRS 850	0.573	0.078	0.651
	GPRS 1900	0.580	0.078	0.658
	UMTS 850	0.306	0.078	0.384
	UMTS 1750	1.105	0.078	1.183
	UMTS 1900	1.149	0.078	**1.227**
	LTE Band 12	0.363	0.078	0.441
	LTE Band 13	0.234	0.078	0.312
	LTE Band 26 (Cell)	0.318	0.078	0.396
	LTE Band 66 (AWS)	0.978	0.078	1.056
	LTE Band 25 (PCS)	1.136	0.078	1.214
	LTE Band 30	0.490	0.078	0.568
	LTE Band 41	0.401	0.078	0.479

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	GPRS 850	0.573	0.646	0.157	1.376
	GPRS 1900	0.580	0.646	0.157	**1.383**
	UMTS 850	0.306	0.646	0.157	1.109
	UMTS 1750	1.105	0.646	0.157	See Table Below
	UMTS 1900	1.149	0.646	0.157	See Table Below
	LTE Band 12	0.363	0.646	0.157	1.166
	LTE Band 13	0.234	0.646	0.157	1.037
	LTE Band 26 (Cell)	0.318	0.646	0.157	1.121
	LTE Band 66 (AWS)	0.978	0.646	0.157	See Table Below
	LTE Band 25 (PCS)	1.136	0.646	0.157	See Table Below
	LTE Band 30	0.490	0.646	0.157	1.293
	LTE Band 41	0.401	0.646	0.157	1.204

Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.673	0.646*	0.157	**1.476**
	Front	0.566	0.646*	0.005	1.217
	Top	-	0.480	0.157*	0.637
	Bottom	1.105	-	-	1.105
	Right	0.095	0.646	0.157*	0.898
	Left	0.117	-	-	0.117

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.495	0.646*	0.157	**1.298**
	Front	0.559	0.646*	0.005	1.210
	Top	-	0.480	0.157*	0.637
	Bottom	1.149	-	-	1.149
	Right	0.046	0.646	0.157*	0.849
	Left	0.255	-	-	0.255

Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.605	0.646*	0.157	**1.408**
	Front	0.531	0.646*	0.005	1.182
	Top	-	0.480	0.157*	0.637
	Bottom	0.978	-	-	0.978
	Right	0.090	0.646	0.157*	0.893
	Left	0.082	-	-	0.082

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.513	0.646*	0.157	**1.316**
	Front	0.509	0.646*	0.005	1.160
	Top	-	0.480	0.157*	0.637
	Bottom	1.136	-	-	1.136
	Right	0.057	0.646	0.157*	0.860
	Left	0.140	-	-	0.140

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

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	GPRS 850	0.573	0.078	0.157	0.808
	GPRS 1900	0.580	0.078	0.157	0.815
	UMTS 850	0.306	0.078	0.157	0.541
	UMTS 1750	1.105	0.078	0.157	1.340
	UMTS 1900	1.149	0.078	0.157	**1.384**
	LTE Band 12	0.363	0.078	0.157	0.598
	LTE Band 13	0.234	0.078	0.157	0.469
	LTE Band 26 (Cell)	0.318	0.078	0.157	0.553
	LTE Band 66 (AWS)	0.978	0.078	0.157	1.213
	LTE Band 25 (PCS)	1.136	0.078	0.157	1.371
	LTE Band 30	0.490	0.078	0.157	0.725
	LTE Band 41	0.401	0.078	0.157	0.636

12.6 Phablet Simultaneous Transmission Analysis

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

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

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.

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.

Table 12-16
Simultaneous Transmission Scenario with 5 GHz 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	1+2+3
Phablet SAR	GPRS 1900	2.876	0.424	0.757	3.300	3.633	See Table Below
	UMTS 1750	2.583	0.424	0.757	3.007	3.340	3.764
	UMTS 1900	2.614	0.424	0.757	3.038	3.371	**3.795**
	LTE Band 66 (AWS)	1.748	0.424	0.757	2.172	2.505	2.929
	LTE Band 25 (PCS)	3.290	0.424	0.757	3.714	See Table Below	See Table Below
	LTE Band 30	2.398	0.424	0.757	2.822	3.155	3.579
	LTE Band 41	1.232	0.424	0.757	1.656	1.989	2.413

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	1+2+3
Phablet SAR	Back	1.271	0.123	0.757	1.394	2.028	2.151
	Front	1.348	0.424	0.757*	1.772	2.105	2.529
	Top	-	0.424*	0.757*	0.424	0.757	1.181
	Bottom	2.876	-	-	**2.876**	**2.876**	**2.876**
	Right	0.122	0.424*	0.757*	0.546	0.879	1.303
	Left	0.153	-	-	0.153	0.153	0.153

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	1+2+3
Phablet SAR	Back	1.135	0.123	0.757	1.258	1.892	2.015
	Front	1.349	0.424	0.757*	1.773	2.106	2.530
	Top	-	0.424*	0.757*	0.424	0.757	1.181
	Bottom	3.290	-	-	**3.290**	**3.290**	**3.290**
	Right	0.272	0.424*	0.757*	0.696	1.029	1.453
	Left	0.399	-	-	0.399	0.399	0.399

12.7 Closed Body-Worn Simultaneous Transmission Analysis

Table 12-17
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	GSM 850	0.208	0.063	0.042	0.271	0.250	0.313
	GSM 1900	0.161	0.063	0.042	0.224	0.203	0.266
	UMTS 850	0.208	0.063	0.042	0.271	0.250	0.313
	UMTS 1750	0.198	0.063	0.042	0.261	0.240	0.303
	UMTS 1900	0.260	0.063	0.042	0.323	0.302	0.365
	LTE Band 12	0.138	0.063	0.042	0.201	0.180	0.243
	LTE Band 13	0.209	0.063	0.042	0.272	0.251	0.314
	LTE Band 26 (Cell)	0.255	0.063	0.042	0.318	0.297	0.360
	LTE Band 66 (AWS)	0.321	0.063	0.042	0.384	0.363	0.426
	LTE Band 25 (PCS)	0.397	0.063	0.042	0.460	0.439	**0.502**
	LTE Band 30	0.199	0.063	0.042	0.262	0.241	0.304
	LTE Band 41	0.235	0.063	0.042	0.298	0.277	0.340

Table 12-18
Simultaneous Transmission Scenario with 5 GHz WLAN (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	GSM 850	0.208	0.039	0.002	0.247	0.210	0.249
	GSM 1900	0.161	0.039	0.002	0.200	0.163	0.202
	UMTS 850	0.208	0.039	0.002	0.247	0.210	0.249
	UMTS 1750	0.198	0.039	0.002	0.237	0.200	0.239
	UMTS 1900	0.260	0.039	0.002	0.299	0.262	0.301
	LTE Band 12	0.138	0.039	0.002	0.177	0.140	0.179
	LTE Band 13	0.209	0.039	0.002	0.248	0.211	0.250
	LTE Band 26 (Cell)	0.255	0.039	0.002	0.294	0.257	0.296
	LTE Band 66 (AWS)	0.321	0.039	0.002	0.360	0.323	0.362
	LTE Band 25 (PCS)	0.397	0.039	0.002	0.436	0.399	**0.438**
	LTE Band 30	0.199	0.039	0.002	0.238	0.201	0.240
	LTE Band 41	0.235	0.039	0.002	0.274	0.237	0.276

Table 12-19
Simultaneous Transmission Scenario with Bluetooth (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body-Worn	GSM 850	0.208	0.007	0.215
	GSM 1900	0.161	0.007	0.168
	UMTS 850	0.208	0.007	0.215
	UMTS 1750	0.198	0.007	0.205
	UMTS 1900	0.260	0.007	0.267
	LTE Band 12	0.138	0.007	0.145
	LTE Band 13	0.209	0.007	0.216
	LTE Band 26 (Cell)	0.255	0.007	0.262
	LTE Band 66 (AWS)	0.321	0.007	0.328
	LTE Band 25 (PCS)	0.397	0.007	**0.404**
	LTE Band 30	0.199	0.007	0.206
	LTE Band 41	0.235	0.007	0.242

Table 12-20
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 and 5 GHz WLAN Ant 2 (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Body-Worn	GSM 850	0.208	0.063	0.002	0.273
	GSM 1900	0.161	0.063	0.002	0.226
	UMTS 850	0.208	0.063	0.002	0.273
	UMTS 1750	0.198	0.063	0.002	0.263
	UMTS 1900	0.260	0.063	0.002	0.325
	LTE Band 12	0.138	0.063	0.002	0.203
	LTE Band 13	0.209	0.063	0.002	0.274
	LTE Band 26 (Cell)	0.255	0.063	0.002	0.320
	LTE Band 66 (AWS)	0.321	0.063	0.002	0.386
	LTE Band 25 (PCS)	0.397	0.063	0.002	**0.462**
	LTE Band 30	0.199	0.063	0.002	0.264
	LTE Band 41	0.235	0.063	0.002	0.300

Table 12-21
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN Ant 2 (Body-Worn at 1.5 cm)

Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
	1	2	3	1+2+3
GSM 850	0.208	0.007	0.002	0.217
GSM 1900	0.161	0.007	0.002	0.170
UMTS 850	0.208	0.007	0.002	0.217
UMTS 1750	0.198	0.007	0.002	0.207
UMTS 1900	0.260	0.007	0.002	0.269
LTE Band 12	0.138	0.007	0.002	0.147
LTE Band 13	0.209	0.007	0.002	0.218
LTE Band 26 (Cell)	0.255	0.007	0.002	0.264
LTE Band 66 (AWS)	0.321	0.007	0.002	0.330
LTE Band 25 (PCS)	0.397	0.007	0.002	**0.406**
LTE Band 30	0.199	0.007	0.002	0.208
LTE Band 41	0.235	0.007	0.002	0.244

12.8 Closed Hotspot SAR Simultaneous Transmission Analysis

Table 12-22
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	0.570	0.465	0.184	1.035	0.754	1.219
	GPRS 1900	0.412	0.465	0.184	0.877	0.596	1.061
	UMTS 850	0.363	0.465	0.184	0.828	0.547	1.012
	UMTS 1750	0.518	0.465	0.184	0.983	0.702	1.167
	UMTS 1900	0.698	0.465	0.184	1.163	0.882	1.347
	LTE Band 12	0.237	0.465	0.184	0.702	0.421	0.886
	LTE Band 13	0.366	0.465	0.184	0.831	0.550	1.015
	LTE Band 26 (Cell)	0.451	0.465	0.184	0.916	0.635	1.100
	LTE Band 66 (AWS)	0.650	0.465	0.184	1.115	0.834	1.299
	LTE Band 25 (PCS)	0.760	0.465	0.184	1.225	0.944	**1.409**
	LTE Band 30	0.281	0.465	0.184	0.746	0.465	0.930
	LTE Band 41	0.492	0.465	0.184	0.957	0.676	1.141

Table 12-23
Simultaneous Transmission Scenario with 5 GHz WLAN (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	0.570	0.235	0.141	0.805	0.711	0.946
	GPRS 1900	0.412	0.235	0.141	0.647	0.553	0.788
	UMTS 850	0.363	0.235	0.141	0.598	0.504	0.739
	UMTS 1750	0.518	0.235	0.141	0.753	0.659	0.894
	UMTS 1900	0.698	0.235	0.141	0.933	0.839	1.074
	LTE Band 12	0.237	0.235	0.141	0.472	0.378	0.613
	LTE Band 13	0.366	0.235	0.141	0.601	0.507	0.742
	LTE Band 26 (Cell)	0.451	0.235	0.141	0.686	0.592	0.827
	LTE Band 66 (AWS)	0.650	0.235	0.141	0.885	0.791	1.026
	LTE Band 25 (PCS)	0.760	0.235	0.141	0.995	0.901	**1.136**
	LTE Band 30	0.281	0.235	0.141	0.516	0.422	0.657
	LTE Band 41	0.492	0.235	0.141	0.727	0.633	0.868

Table 12-24
Simultaneous Transmission Scenario with Bluetooth (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	GPRS 850	0.570	0.047	0.617
	GPRS 1900	0.412	0.047	0.459
	UMTS 850	0.363	0.047	0.410
	UMTS 1750	0.518	0.047	0.565
	UMTS 1900	0.698	0.047	0.745
	LTE Band 12	0.237	0.047	0.284
	LTE Band 13	0.366	0.047	0.413
	LTE Band 26 (Cell)	0.451	0.047	0.498
	LTE Band 66 (AWS)	0.650	0.047	0.697
	LTE Band 25 (PCS)	0.760	0.047	**0.807**
	LTE Band 30	0.281	0.047	0.328
	LTE Band 41	0.492	0.047	0.539

Table 12-25
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 and 5 GHz WLAN Ant 2 (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	GPRS 850	0.570	0.465	0.141	1.176
	GPRS 1900	0.412	0.465	0.141	1.018
	UMTS 850	0.363	0.465	0.141	0.969
	UMTS 1750	0.518	0.465	0.141	1.124
	UMTS 1900	0.698	0.465	0.141	1.304
	LTE Band 12	0.237	0.465	0.141	0.843
	LTE Band 13	0.366	0.465	0.141	0.972
	LTE Band 26 (Cell)	0.451	0.465	0.141	1.057
	LTE Band 66 (AWS)	0.650	0.465	0.141	1.256
	LTE Band 25 (PCS)	0.760	0.465	0.141	**1.366**
	LTE Band 30	0.281	0.465	0.141	0.887
	LTE Band 41	0.492	0.465	0.141	1.098

Table 12-26
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN Ant 2 (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	GPRS 850	0.570	0.047	0.141	0.758
	GPRS 1900	0.412	0.047	0.141	0.600
	UMTS 850	0.363	0.047	0.141	0.551
	UMTS 1750	0.518	0.047	0.141	0.706
	UMTS 1900	0.698	0.047	0.141	0.886
	LTE Band 12	0.237	0.047	0.141	0.425
	LTE Band 13	0.366	0.047	0.141	0.554
	LTE Band 26 (Cell)	0.451	0.047	0.141	0.639
	LTE Band 66 (AWS)	0.650	0.047	0.141	0.838
	LTE Band 25 (PCS)	0.760	0.047	0.141	**0.948**
	LTE Band 30	0.281	0.047	0.141	0.469
	LTE Band 41	0.492	0.047	0.141	0.680

12.9 Simultaneous Transmission Conclusion

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

13 SAR MEASUREMENT VARIABILITY

13.1 Measurement Variability

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

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

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

Table 13-1
Body SAR Measurement Variability Results

BODY VARIABILITY RESULTS														
Band	FREQUENCY		Mode	Service	Side	Spacing	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.					(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1900	1880.00	9400	UMTS 1900	RMC	bottom	10 mm	0.865	0.810	1.07	N/A	N/A	N/A	N/A
1750	1770.00	132572	LTE Band 66 (AWS), 20 MHz Bandwidth	QPSK, 50 RB, 0 RB Offset	bottom	10 mm	0.934	0.894	1.04	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 13-2
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	1712.40	1312	UMTS 1750	RMC	bottom	0 mm	2.080	2.030	1.02	N/A	N/A	N/A	N/A
1900	1882.50	26365	LTE Band 25 (PCS), 20 MHz Bandwidth	QPSK, 50 RB, 25 RB Offset	bottom	0 mm	2.560	2.560	1.00	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 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	E4432B	ESG-D Series Signal Generator	7/14/2019	Annual	7/14/2020	US40053896
Agilent	N9020A	MXA Signal Analyzer	4/20/2019	Annual	4/20/2020	US46470561
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB44450273
Agilent	E5515C	Wireless Communications Test Set	2/7/2018	Triennial	2/7/2021	GB43304447
Agilent	E5515C	Wireless Communications Test Set	6/26/2019	Annual	6/26/2020	MY50267125
Agilent	8753ES	S-Parameter Network Analyzer	3/11/2019	Annual	3/11/2020	US39170122
Agilent	N5182A	MXG Vector Signal Generator	7/10/2019	Annual	7/10/2020	MY47420800
Agilent	E4438C	ESG Vector Signal Generator	3/8/2019	Biennial	3/8/2021	MY42082385
Agilent	E4438C	ESG Vector Signal Generator	5/23/2019	Annual	5/23/2020	MY47270002
Agilent	E4438C	ESG Vector Signal Generator	5/22/2019	Annual	5/22/2020	MY45091346
Agilent	8753ES	S-Parameter Vector Network Analyzer	9/19/2019	Annual	9/19/2020	MY40003841
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433972
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433974
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433976
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433978
Anritsu	MA24106A	USB Power Sensor	5/6/2019	Annual	5/6/2020	1231538
Anritsu	MA24106A	USB Power Sensor	5/22/2019	Annual	5/22/2020	1231535
Anritsu	MA24106A	USB Power Sensor	1/31/2019	Annual	1/31/2020	1244524
Anritsu	MA2411B	Pulse Power Sensor	6/11/2019	Annual	6/11/2020	1207364
Anritsu	MT8820C	Radio Communication Analyzer	7/25/2019	Annual	7/25/2020	6201240328
Anritsu	MT8820C	Radio Communication Analyzer	3/29/2019	Annual	3/29/2020	6201300731
Anritsu	MT8821C	Radio Communication Analyzer	8/16/2019	Annual	8/16/2020	6201144418
Anritsu	ML2496A	Power Meter	11/6/2019	Annual	11/6/2020	1405003
Anritsu	MT8821C	Radio Communication Analyzer	10/2/2019	Annual	10/2/2020	6201664756
Anritsu	MT8821C	Radio Communication Analyzer	3/6/2019	Annual	3/6/2020	6201381794
Anritsu	MT8862A	Wireless Connectivity Test Set	8/8/2019	Annual	8/8/2020	6261782395
Anritsu	MT8821C	Radio Communication Analyzer	1/25/2019	Annual	1/25/2020	6261895213
Anritsu	MT8821C	Radio Communication Analyzer	5/13/2019	Annual	5/13/2020	6201524637
COMTECH	AR85729-5/5759B	Solid State Amplifier	CBT	N/A	CBT	M3W1A00-1002
COMTech	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M1S5A00-009
Control Company	4040	Therm./ Clock/ Humidity Monitor	10/9/2018	Biennial	10/9/2020	181647811
Control Company	4040	Therm./ Clock/ Humidity Monitor	10/9/2018	Biennial	10/9/2020	181647802
Control Company	4040	Therm./ Clock/ Humidity Monitor	10/9/2018	Biennial	10/9/2020	181647812
Control Company	4352	Ultra Long Stem Thermometer	11/29/2018	Biennial	11/29/2020	181766816
Control Company	4352	Ultra Long Stem Thermometer	11/29/2018	Biennial	11/29/2020	181766817
Control Company	4352	Ultra Long Stem Thermometer	11/29/2018	Biennial	11/29/2020	181766801
Control Company	4352	Ultra Long Stem Thermometer	11/29/2018	Biennial	11/29/2020	181766777
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
Keysight Technologies	N6705B	DC Power Analyzer	4/27/2019	Biennial	4/27/2021	MY53004059
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Mitutoyo	CD-6"CSX	Digital Caliper	4/18/2018	Biennial	4/18/2020	13264165
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	6/3/2019	Annual	6/3/2020	109892
Rohde & Schwarz	CMW500	Radio Communication Tester	8/26/2019	Annual	8/26/2020	100976
Rohde & Schwarz	CMW500	Radio Communication Tester	6/26/2019	Annual	6/26/2020	112347
Rohde & Schwarz	CMW500	Radio Communication Tester	10/15/2019	Annual	10/15/2020	109366
Rohde & Schwarz	CMW500	Radio Communication Tester	8/27/2019	Annual	8/27/2020	116743
Rohde & Schwarz	ZNLE6	Vector Network Analyzer	10/11/2019	Annual	10/11/2020	101307
Seekonk	NC-100	Torque Wrench (8" lb)	5/10/2018	Biennial	5/10/2020	21053
Seekonk	NC-100	Torque Wrench (8" lb)	5/23/2018	Biennial	5/23/2020	N/A
SPEAG	D835V2	835 MHz SAR Dipole	3/13/2019	Annual	3/13/2020	4d047
SPEAG	D835V2	835 MHz SAR Dipole	1/22/2019	Annual	1/22/2020	4d132
SPEAG	D1750V2	1750 MHz SAR Dipole	10/22/2018	Biennial	10/22/2020	1150
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Biennial	10/23/2020	5d080
SPEAG	D1900V2	1900 MHz SAR Dipole	10/23/2018	Biennial	10/23/2020	5d149
SPEAG	D2450V2	2450 MHz SAR Dipole	9/11/2017	Triennial	9/11/2020	797
SPEAG	D2450V2	2450 MHz SAR Dipole	8/14/2019	Annual	8/14/2020	719
SPEAG	D2450V2	2450 MHz SAR Dipole	8/16/2018	Biennial	8/16/2020	981
SPEAG	D2600V2	2600 MHz SAR Dipole	4/11/2018	Biennial	4/11/2020	1004
SPEAG	D2600V2	2600 MHz SAR Dipole	6/14/2019	Annual	6/14/2020	1064
SPEAG	D750V3	750 MHz SAR Dipole	1/15/2018	Biennial	1/15/2020	1003
SPEAG	D750V3	750 MHz SAR Dipole	10/19/2018	Biennial	10/19/2020	1161
SPEAG	D1750V2	1750 MHz SAR Dipole	5/15/2019	Annual	5/15/2020	1148
SPEAG	D2300V2	2300 MHz SAR Dipole	8/13/2018	Biennial	8/13/2020	1073
SPEAG	D5GHzV2	5 GHz SAR Dipole	9/17/2019	Annual	9/17/2020	1191
SPEAG	DAK-3.5	Dielectric Assessment Kit	10/22/2019	Annual	10/22/2020	1091
SPEAG	EX3DV4	SAR Probe	9/19/2019	Annual	9/19/2020	7551
SPEAG	EX3DV4	SAR Probe	2/19/2019	Annual	2/19/2020	7417
SPEAG	EX3DV4	SAR Probe	6/19/2019	Annual	6/19/2020	7409
SPEAG	EX3DV4	SAR Probe	2/19/2019	Annual	2/19/2020	3914
SPEAG	EX3DV4	SAR Probe	5/16/2019	Annual	5/16/2020	7406
SPEAG	EX3DV4	SAR Probe	7/16/2019	Annual	7/16/2020	7410
SPEAG	EX3DV4	SAR Probe	4/24/2019	Annual	4/24/2020	7357
SPEAG	EX3DV4	SAR Probe	1/24/2019	Annual	1/24/2020	7488
SPEAG	EX3DV4	SAR Probe	8/16/2019	Annual	8/16/2020	7308
SPEAG	EX3DV4	SAR Probe	7/15/2019	Annual	7/15/2020	7547
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/17/2019	Annual	9/17/2020	1333
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/13/2019	Annual	2/13/2020	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/20/2019	Annual	6/20/2020	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/14/2019	Annual	2/14/2020	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/8/2019	Annual	5/8/2020	728
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/8/2019	Annual	5/8/2020	859
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/11/2019	Annual	7/11/2020	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/18/2019	Annual	4/18/2020	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/15/2019	Annual	1/15/2020	1530
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/11/2019	Annual	7/11/2020	1323
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/14/2019	Annual	8/14/2020	1450

Note:

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

15 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	

16 CONCLUSION

16.1 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

APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4724J

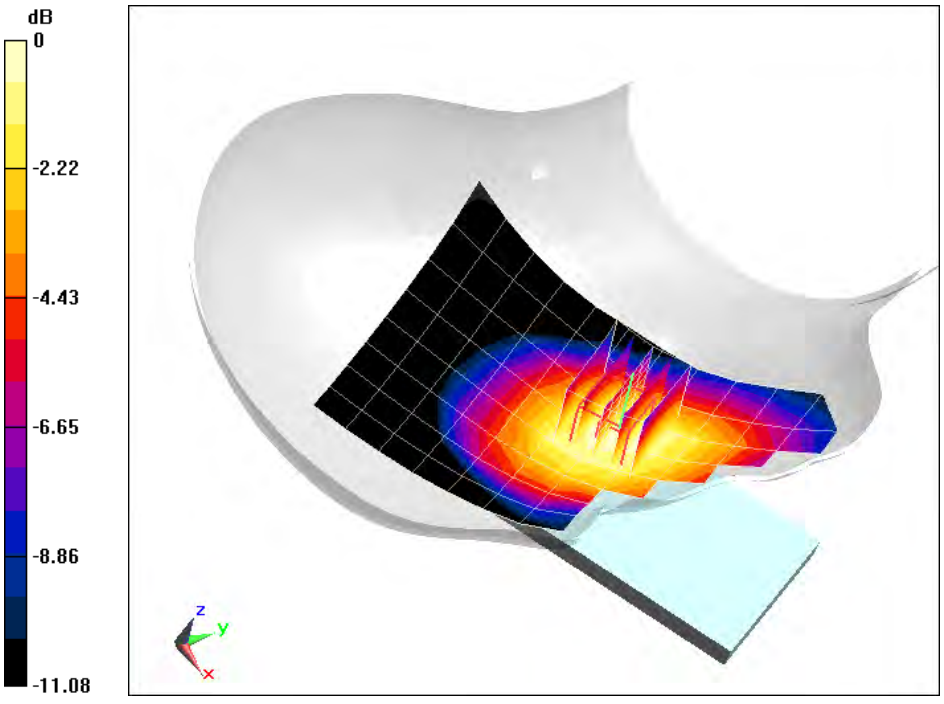
Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Head; Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.916 S/m; ε_r = 40.62; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 12-09-2019; Ambient Temp: 21.0°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7410; ConvF(9.88, 9.88, 9.88) @ 836.6 MHz; Calibrated: 7/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2019
Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1966
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.87 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.217 W/kg
SAR(1 g) = 0.169 W/kg



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

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4724J

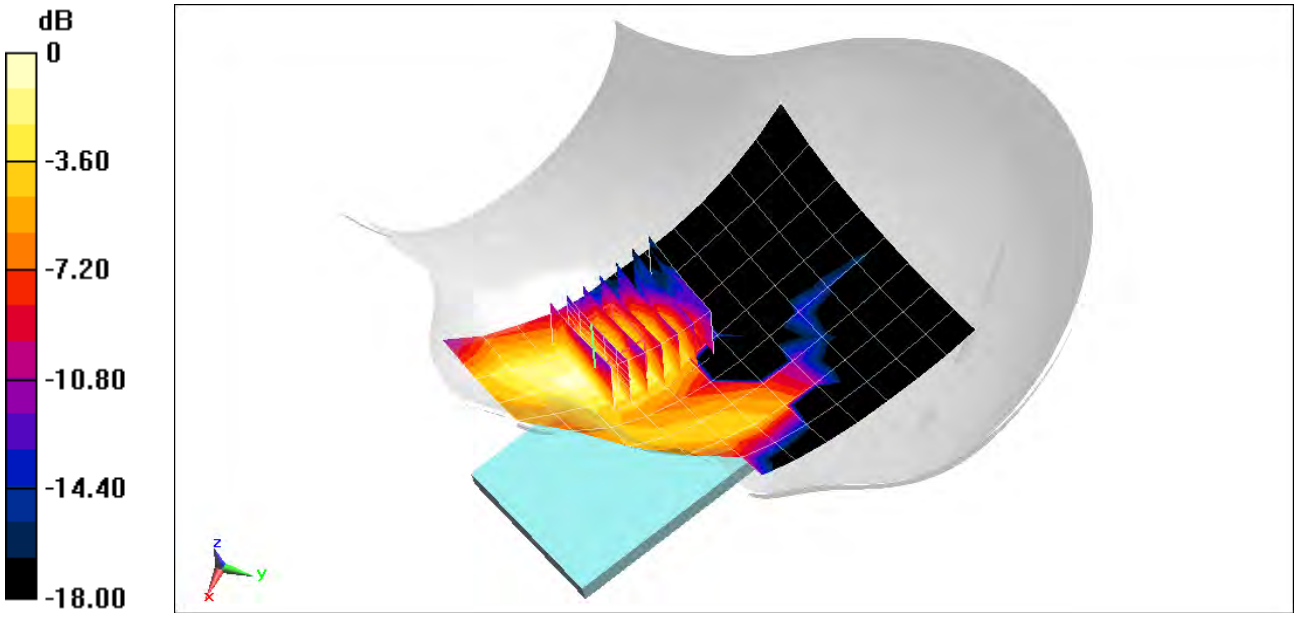
Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Head; Medium parameters used:
f = 1880 MHz; σ = 1.388 S/m; ε_r = 41.429; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 12-19-2019; Ambient Temp: 21.3°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN3914; ConvF(7.8, 7.8, 7.8) @ 1880 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/14/2019
Phantom: Twin-SAM V5.0 Front 30; Type: QD 000 P40 CD; Serial: 1646
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.353 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.0430 W/kg
SAR(1 g) = 0.027 W/kg



0 dB = 0.0360 W/kg = -14.44 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4724J

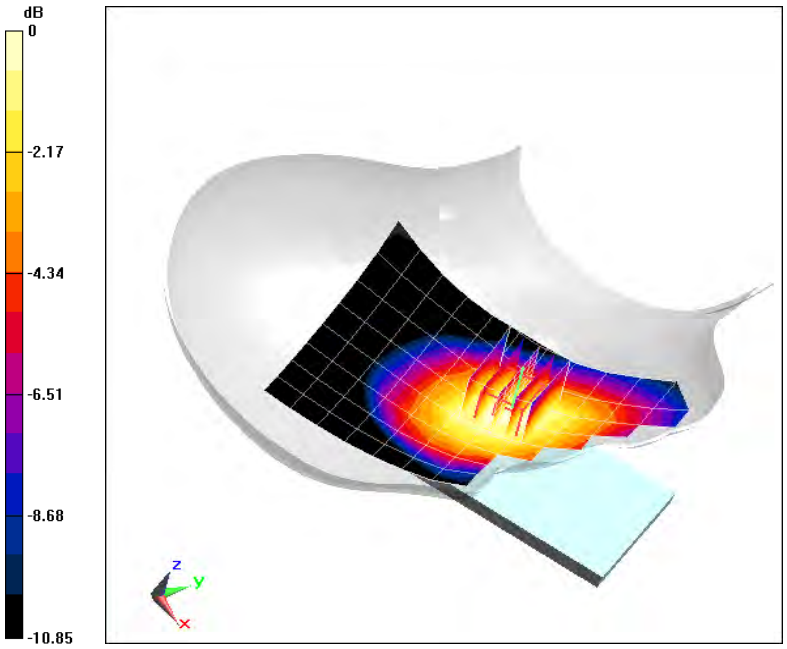
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Head; Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.916 S/m; ε_r = 40.62; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 12-09-2019; Ambient Temp: 21.0°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7410; ConvF(9.88, 9.88, 9.88) @ 836.6 MHz; Calibrated: 7/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2019
Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1966
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.79 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.210 W/kg
SAR(1 g) = 0.165 W/kg



0 dB = 0.194 W/kg = -7.12 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4731J

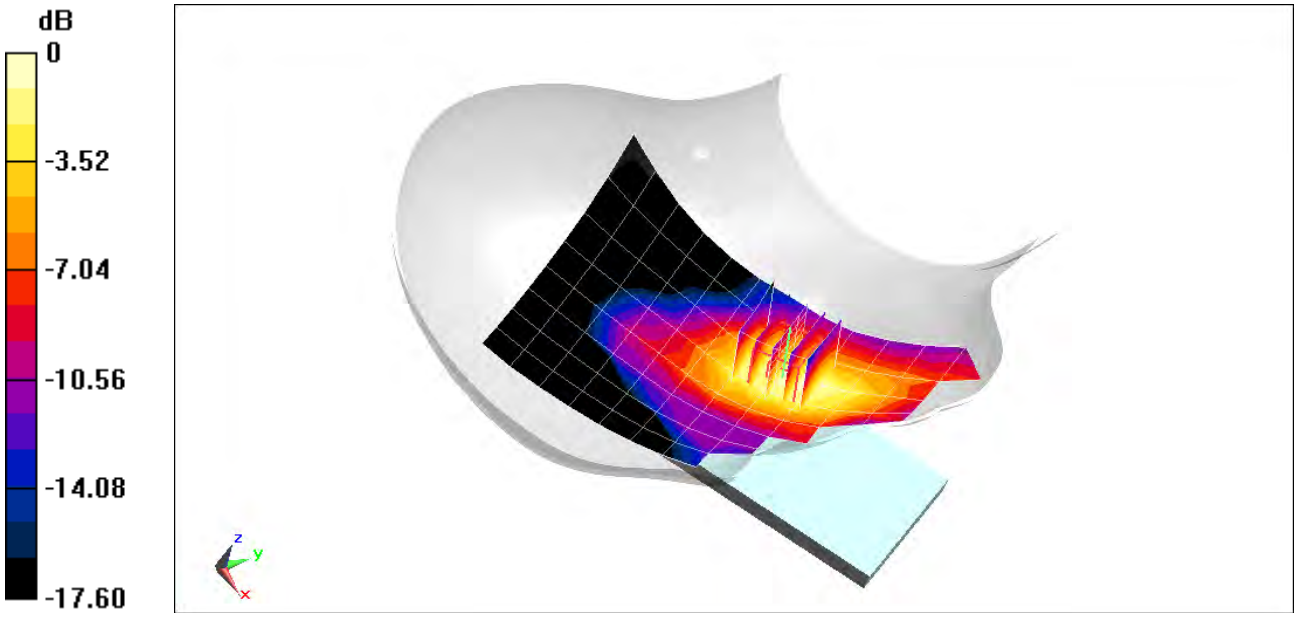
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Head; Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.362 S/m; ε_r = 39.782; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 12-20-2019; Ambient Temp: 20.4°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7406; ConvF(8.57, 8.57, 8.57) @ 1732.4 MHz; Calibrated: 5/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn728; Calibrated: 5/8/2019
Phantom: Twin-SAM V5.0 Left 30; Type: QD 000 P40 CD; Serial: 1715
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: UMTS 1750, 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 = 9.242 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.172 W/kg
SAR(1 g) = 0.108 W/kg



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

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4724J

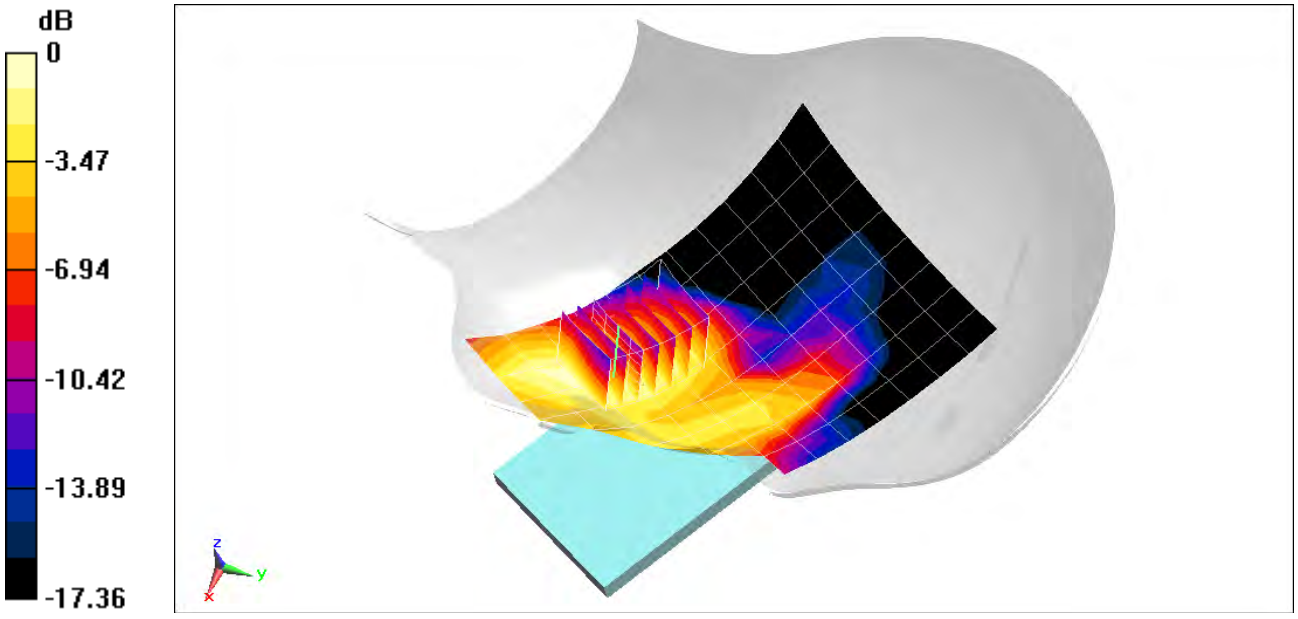
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head; Medium parameters used:
f = 1880 MHz; σ = 1.388 S/m; ε_r = 41.429; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 12-19-2019; Ambient Temp: 21.3°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN3914; ConvF(7.8, 7.8, 7.8) @ 1880 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/14/2019
Phantom: Twin-SAM V5.0 Front 30; Type: QD 000 P40 CD; Serial: 1646
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.308 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.0860 W/kg
SAR(1 g) = 0.057 W/kg



0 dB = 0.0752 W/kg = -11.24 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4712J

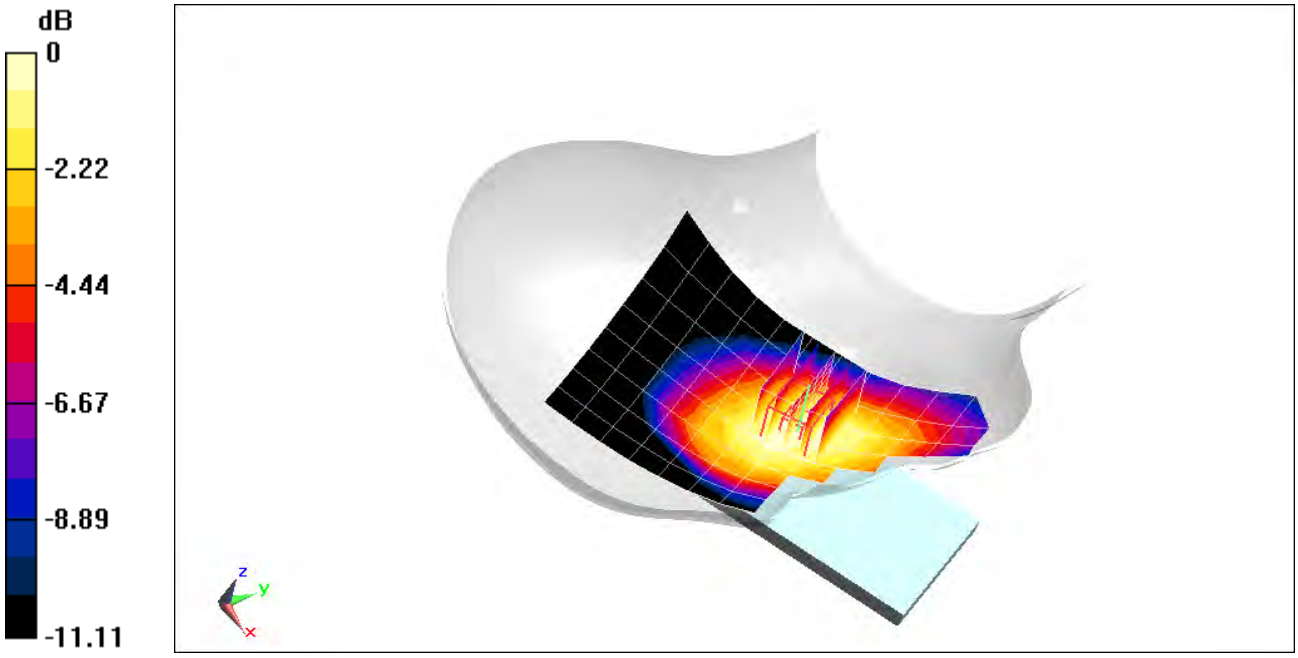
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Head; Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.881 S/m; ε_r = 41.814; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 11-20-2019; Ambient Temp: 21.8°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7409; ConvF(9.96, 9.96, 9.96) @ 707.5 MHz; Calibrated: 6/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/20/2019
Phantom: Front; Type: QD 000 P40 CD; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.19 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.158 W/kg
SAR(1 g) = 0.120 W/kg



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

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4712J

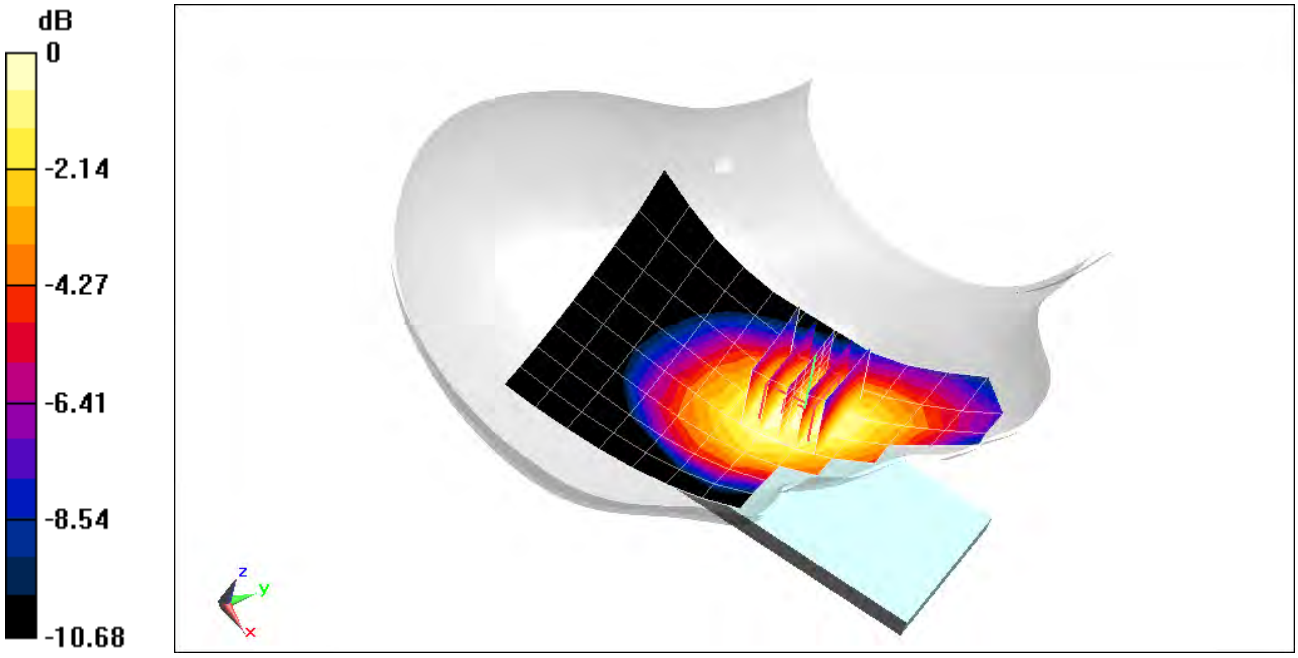
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Head; Medium parameters used (interpolated):
f = 782 MHz; σ = 0.908 S/m; ε_r = 41.604; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 11-20-2019; Ambient Temp: 21.8°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7409; ConvF(9.96, 9.96, 9.96) @ 782 MHz; Calibrated: 6/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/20/2019
Phantom: Front; Type: QD 000 P40 CD; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 13, Right Head, Cheek, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.556 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.103 W/kg
SAR(1 g) = 0.077 W/kg



0 dB = 0.0931 W/kg = -10.31 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4724J

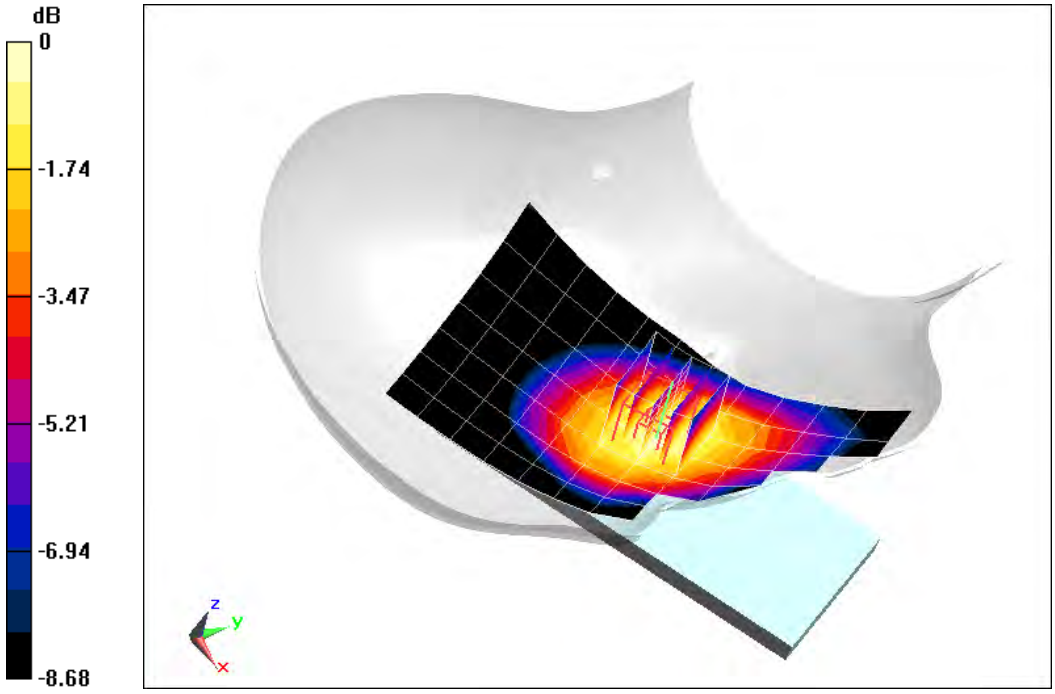
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Head; Medium parameters used (interpolated):
f = 831.5 MHz; σ = 0.915 S/m; ε_r = 40.636; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 12-09-2019; Ambient Temp: 21.0°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7410; ConvF(9.88, 9.88, 9.88) @ 831.5 MHz; Calibrated: 7/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2019
Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1966
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.54 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.227 W/kg
SAR(1 g) = 0.182 W/kg



0 dB = 0.211 W/kg = -6.76 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4731J

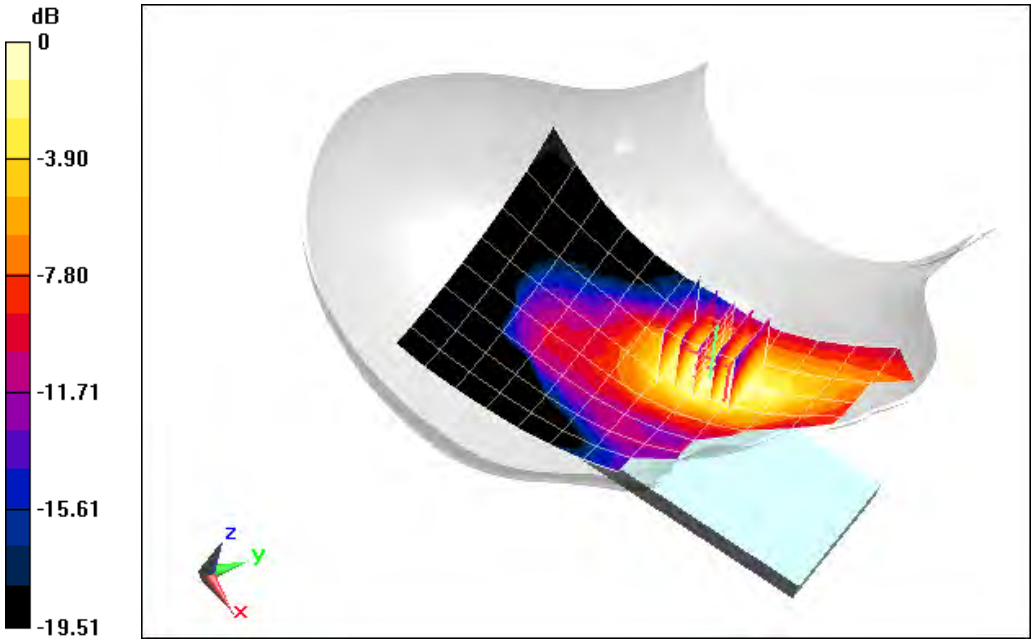
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1
Medium: 1750 Head; Medium parameters used:
f = 1745 MHz; σ = 1.374 S/m; ε_r = 39.724; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 12-20-2019; Ambient Temp: 20.4°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7406; ConvF(8.57, 8.57, 8.57) @ 1745 MHz; Calibrated: 5/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn728; Calibrated: 5/8/2019
Phantom: Twin-SAM V5.0 Left 30; Type: QD 000 P40 CD; Serial: 1715
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 66 (AWS), Right Head, Cheek, Mid.ch, 20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.65 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.261 W/kg
SAR(1 g) = 0.162 W/kg



0 dB = 0.213 W/kg = -6.72 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4724J

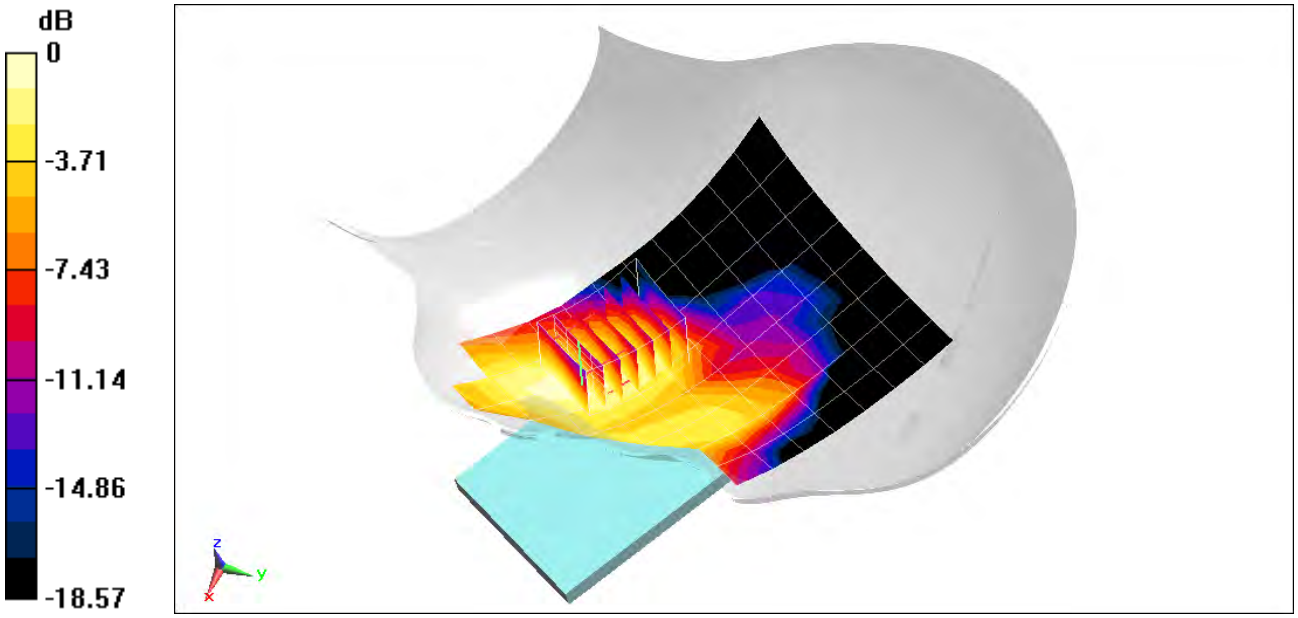
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1
Medium: 1900 Head; Medium parameters used (interpolated):
f = 1882.5 MHz; σ = 1.389 S/m; ε_r = 41.426; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 12-19-2019; Ambient Temp: 21.3°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN3914; ConvF(7.8, 7.8, 7.8) @ 1882.5 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/14/2019
Phantom: Twin-SAM V5.0 Front 30; Type: QD 000 P40 CD; Serial: 1646
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 25 (PCS), Left Head, Cheek, Mid.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.441 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.107 W/kg
SAR(1 g) = 0.070 W/kg



0 dB = 0.0892 W/kg = -10.50 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4710J

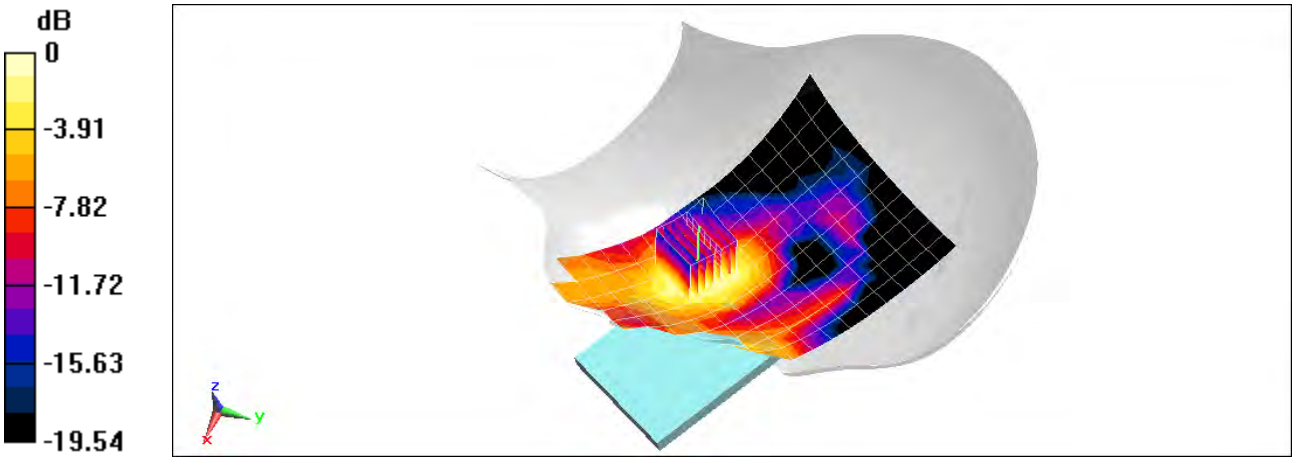
Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1
Medium: 2450 Head; Medium parameters used:
f = 2310 MHz; σ = 1.743 S/m; ε_r = 38.432; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 01-08-2020; Ambient Temp: 22.9°C; Tissue Temp: 20.7°C

Probe: EX3DV4 - SN7417; ConvF(7.73, 7.73, 7.73) @ 2310 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/13/2019
Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 30, Left Head, Cheek, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.04 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.259 W/kg
SAR(1 g) = 0.148 W/kg



0 dB = 0.214 W/kg = -6.70 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4715J

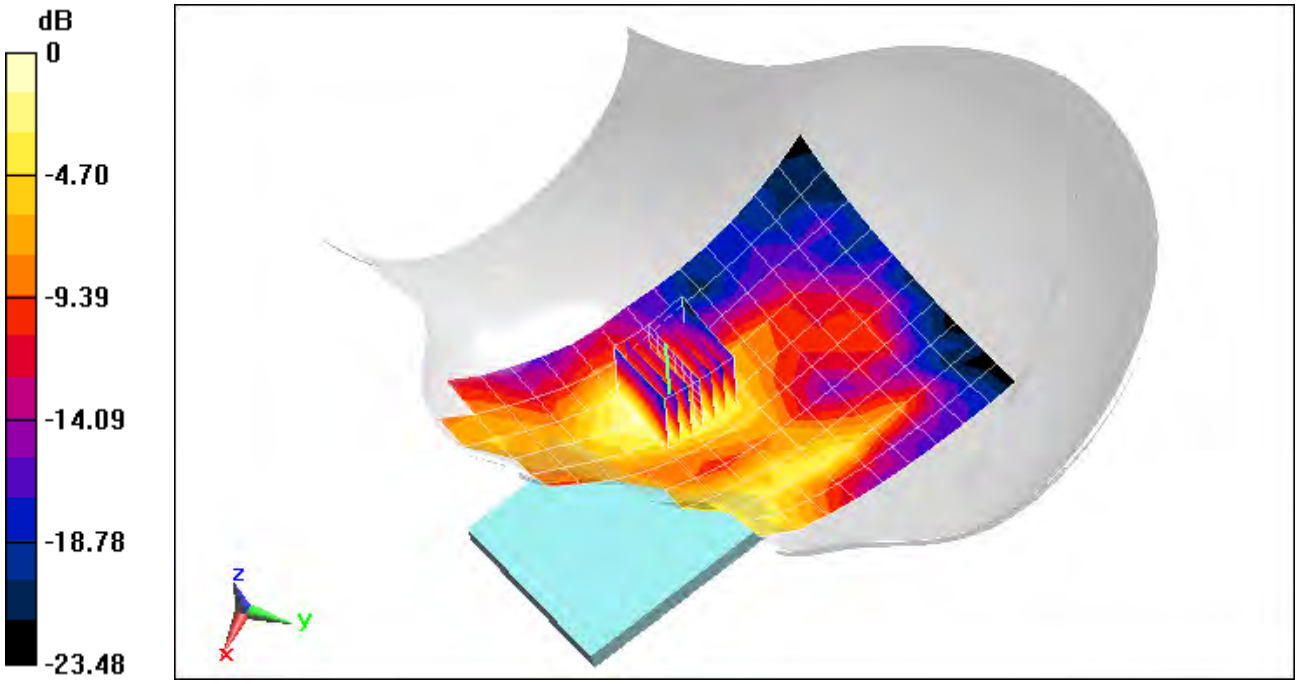
Communication System: UID 0, LTE Band 41 (Class 3); Frequency: 2636.5 MHz; Duty Cycle: 1:1.58
Medium: 2450 Head; Medium parameters used (interpolated):
$f = 2636.5$ MHz; $\sigma = 2.01$ S/m; $\varepsilon_r = 38.054$; $\rho = 1000$ kg/m^3
Phantom section: Left Section

Test Date: 12-25-2019; Ambient Temp: 22.6°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7417; ConvF(7.17, 7.17, 7.17) @ 2636.5 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/13/2019
Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 41, Left Head, Cheek,
PCC: 20 MHz Bandwidth, QPSK, Ch. 41055, 1 RB, 0 RB Offset
SCC: 20 MHz Bandwidth, QPSK, Ch. 40857, 1 RB, 99 RB Offset

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.799 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.263 W/kg
SAR(1 g) = 0.144 W/kg



0 dB = 0.214 W/kg = -6.70 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 0542M

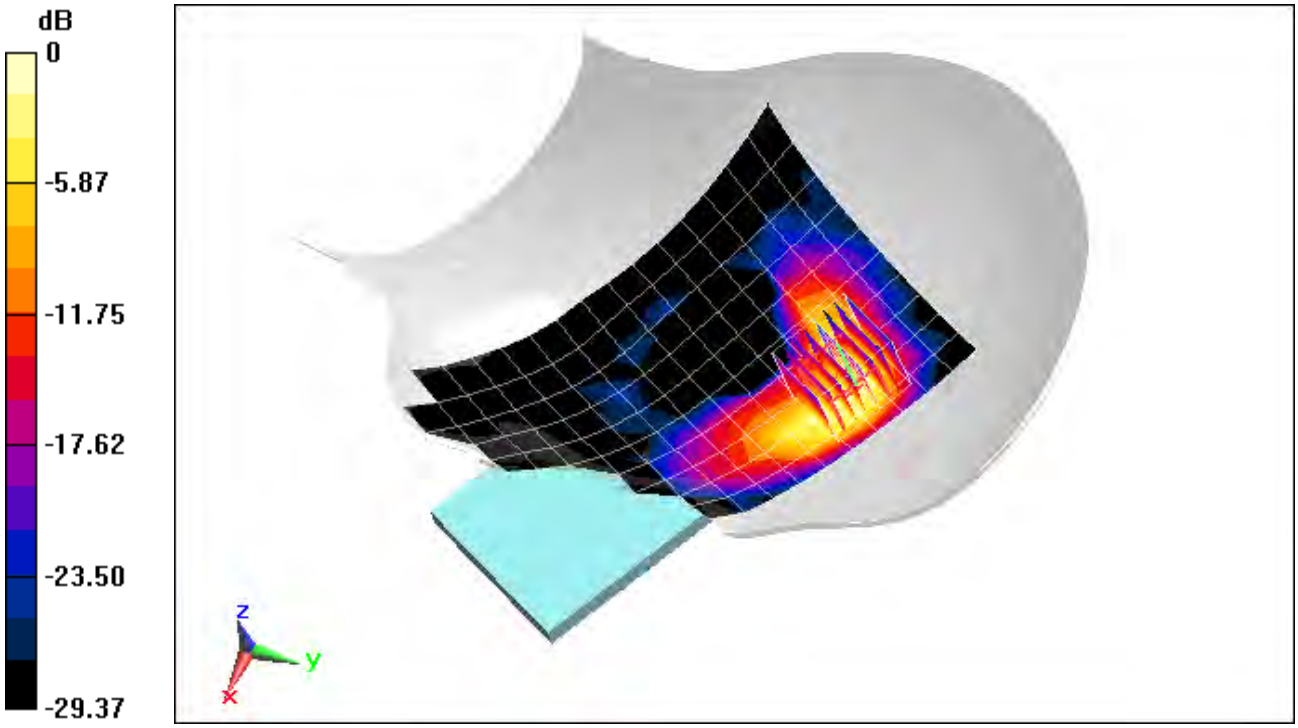
Communication System: UID 0, IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Head; Medium parameters used (interpolated):
f = 2437 MHz; σ = 1.857 S/m; ε_r = 38.407; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 12-25-2019; Ambient Temp: 22.6°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7417; ConvF(7.46, 7.46, 7.46) @ 2437 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/13/2019
Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.514 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.791 W/kg
SAR(1 g) = 0.343 W/kg



0 dB = 0.596 W/kg = -2.25 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 0535M

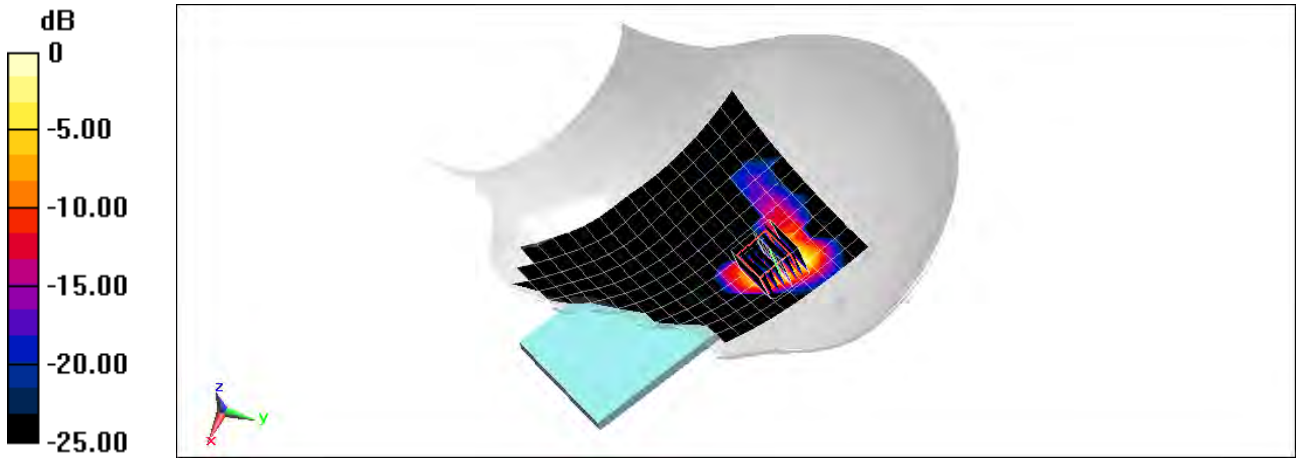
Communication System: UID 0, 802.11ac 5.2-5.8 GHz Band; Frequency: 5775 MHz; Duty Cycle: 1:1
Medium: 5200-5800 Head; Medium parameters used:
f = 5775 MHz; σ = 5.201 S/m; ε_r = 34.565; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 11-25-2019; Ambient Temp: 21.0°C; Tissue Temp: 20.1°C

Probe: EX3DV4 - SN7406; ConvF(5.23, 5.23, 5.23) @ 5775 MHz; Calibrated: 5/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/8/2019
Phantom: Twin-SAM V5.0 Left 20; Type: QD 000 P40 CD; Serial: 1715
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: IEEE 802.11ac, Antenna 1, U-NII-3, 80 MHz Bandwidth, Left Head, Cheek, Ch 155, 29.3 Mbps

Area Scan (13x21x1): 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 = 1.778 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 2.08 W/kg
SAR(1 g) = 0.390 W/kg



0 dB = 1.09 W/kg = 0.37 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 0498M

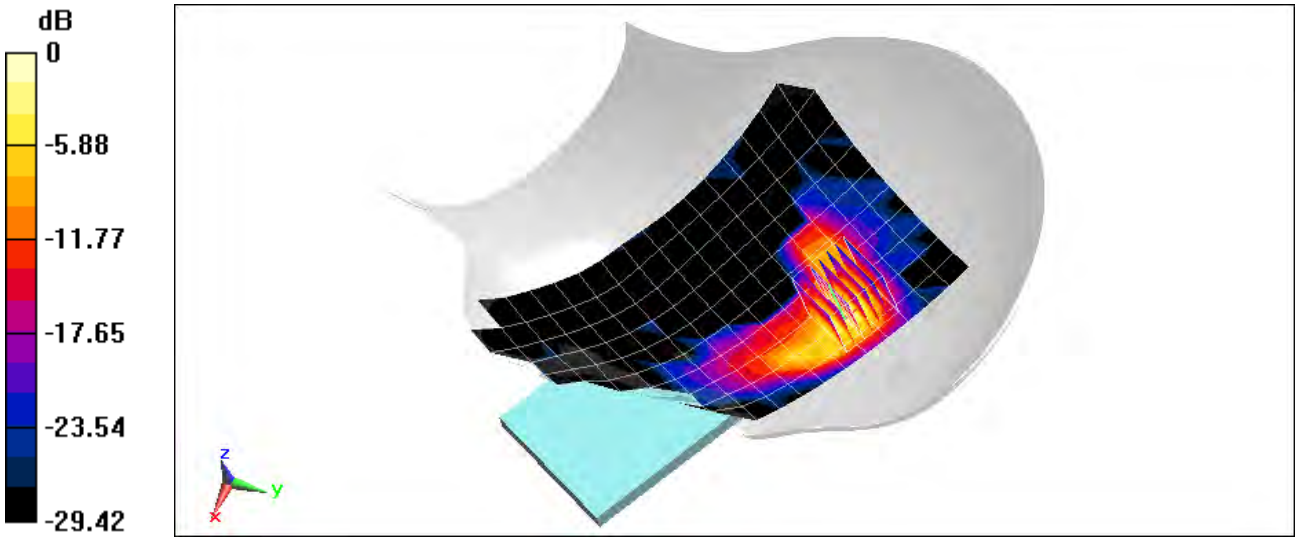
Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.289
Medium: 2450 Head; Medium parameters used (interpolated):
f = 2441 MHz; σ = 1.854 S/m; ε_r = 40.345; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 12-19-2019; Ambient Temp: 22.7°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7417; ConvF(7.46, 7.46, 7.46) @ 2441 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/13/2019
Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: Bluetooth, Left Head, Cheek, Ch 39, 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 = 9.945 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.476 W/kg
SAR(1 g) = 0.193 W/kg



0 dB = 0.376 W/kg = -4.25 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4724J

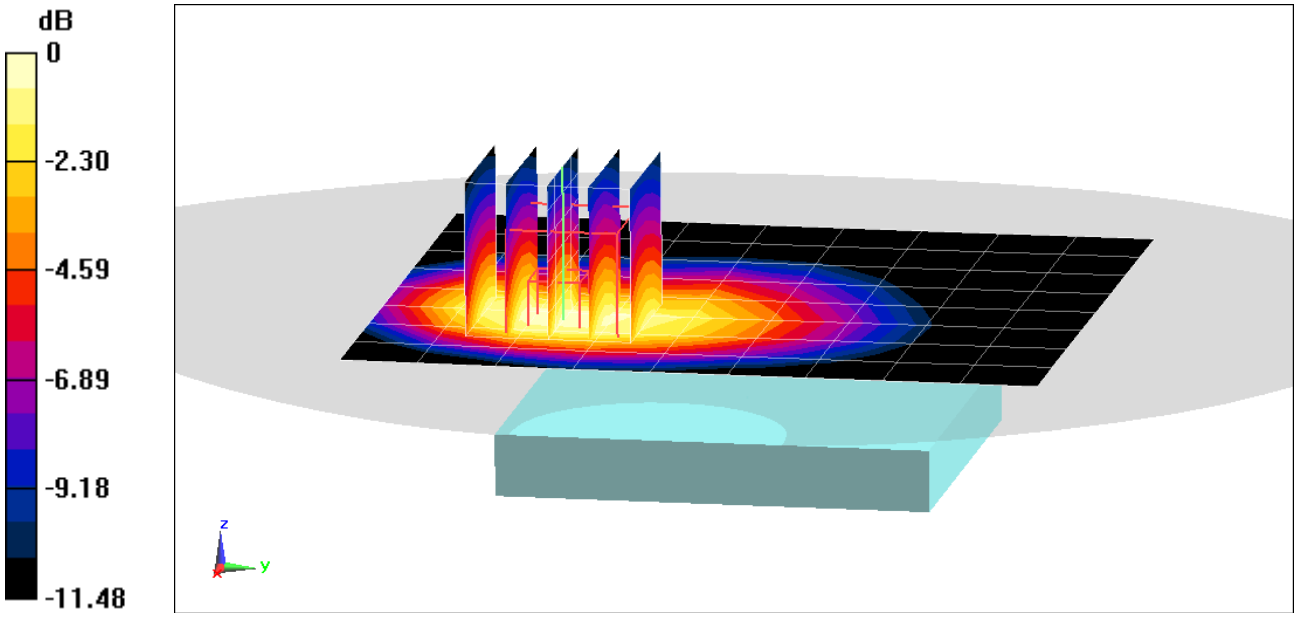
Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Body; Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.964 S/m; ε_r = 53.743; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-13-2019; Ambient Temp: 21.8°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7410; ConvF(9.79, 9.79, 9.79) @ 836.6 MHz; Calibrated: 7/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2019
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (9x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.69 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.261 W/kg
SAR(1 g) = 0.166 W/kg



0 dB = 0.226 W/kg = -6.46 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4724J

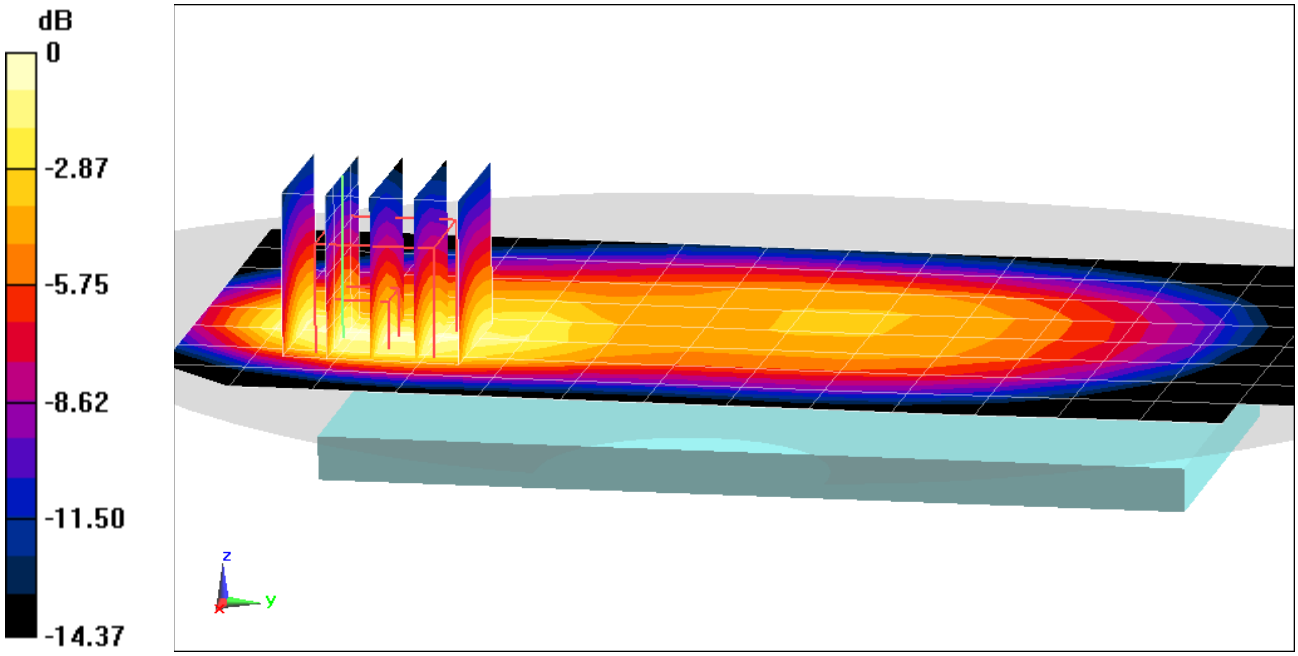
Communication System: UID 0, GSM GPRS; 2 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:4.15
Medium: 835 Body; Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.966 S/m; ε_r = 54.027; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-25-2019; Ambient Temp: 21.4°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN3914; ConvF(9.46, 9.46, 9.46) @ 836.6 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/14/2019
Phantom: Twin-SAM V5.0 Left 30; Type: QD 000 P40 CD; Serial: 1687
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan 1 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.34 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.831 W/kg
SAR(1 g) = 0.457 W/kg



0 dB = 0.684 W/kg = -1.65 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4712J

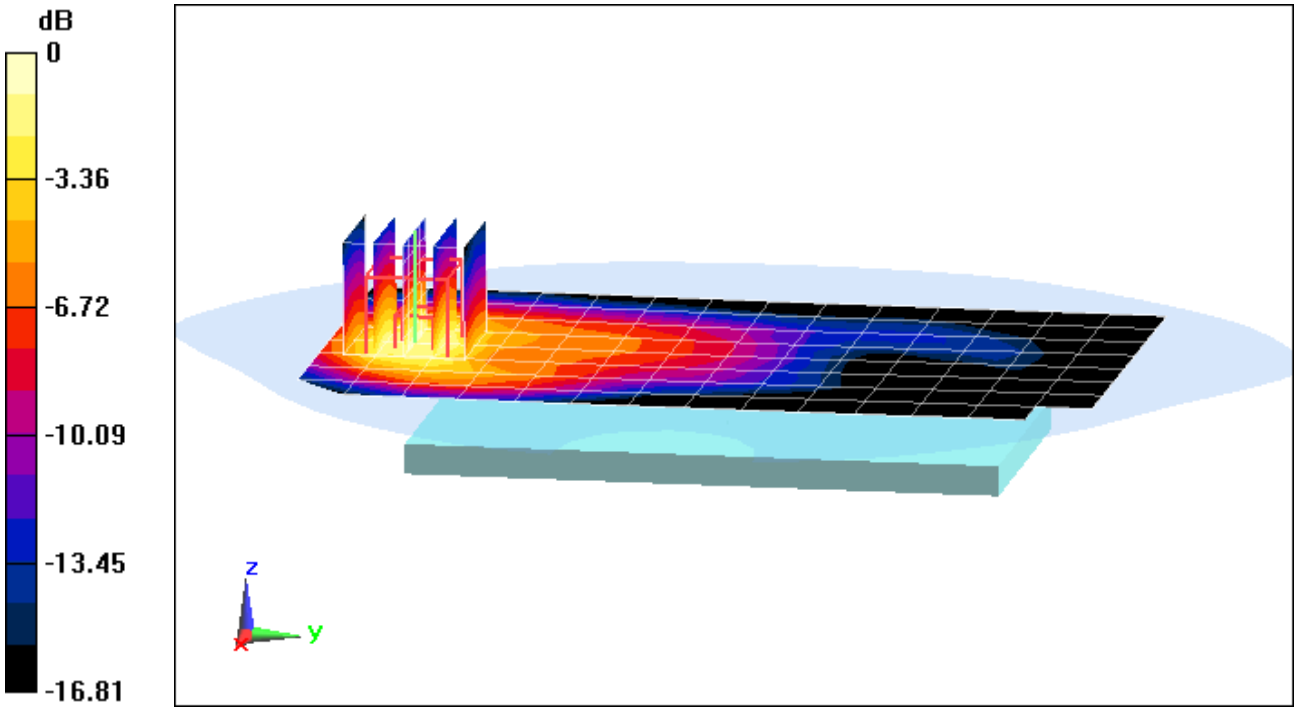
Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Body; Medium parameters used:
f = 1880 MHz; σ = 1.535 S/m; ε_r = 52.207; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-14-2019; Ambient Temp: 22.5°C; Tissue Temp: 24.5°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1880 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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 = 10.83 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.268 W/kg
SAR(1 g) = 0.164 W/kg



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

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4718J

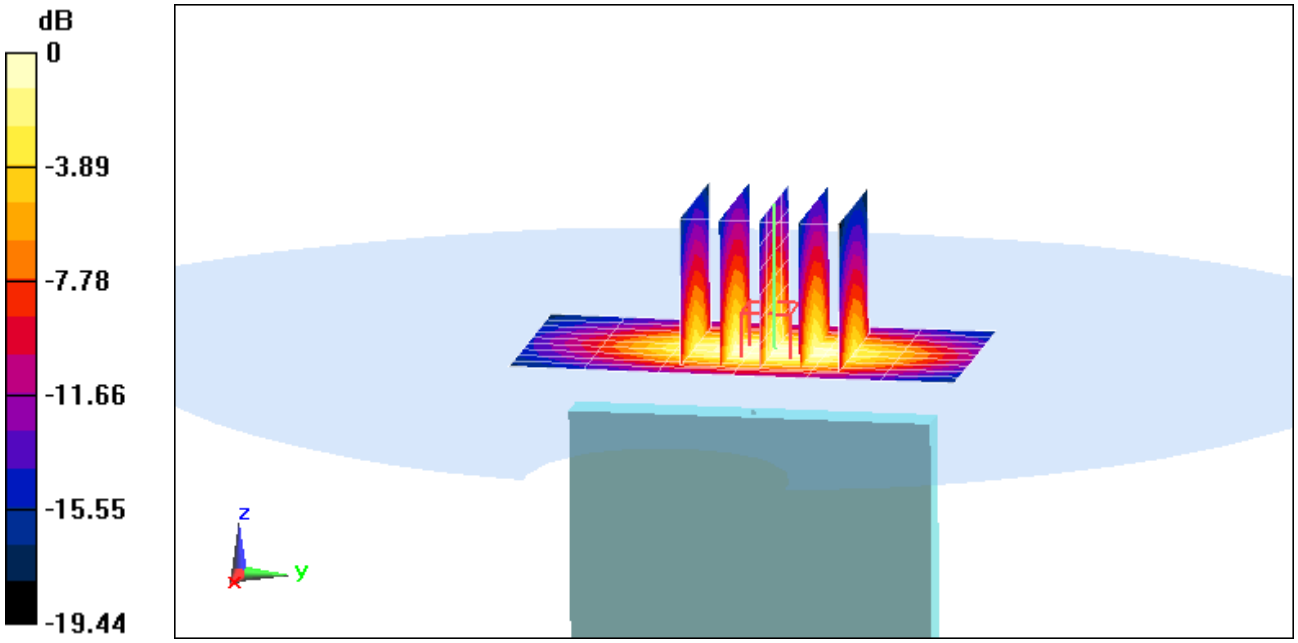
Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.76
Medium: 1900 Body; Medium parameters used:
f = 1880 MHz; σ = 1.496 S/m; ε_r = 51.58; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-19-2019; Ambient Temp: 22.9°C; Tissue Temp: 24.0°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1880 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode; GPRS 1900, Body SAR, Bottom Edge, Mid.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 = 18.93 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.796 W/kg
SAR(1 g) = 0.443 W/kg



0 dB = 0.675 W/kg = -1.71 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4724J

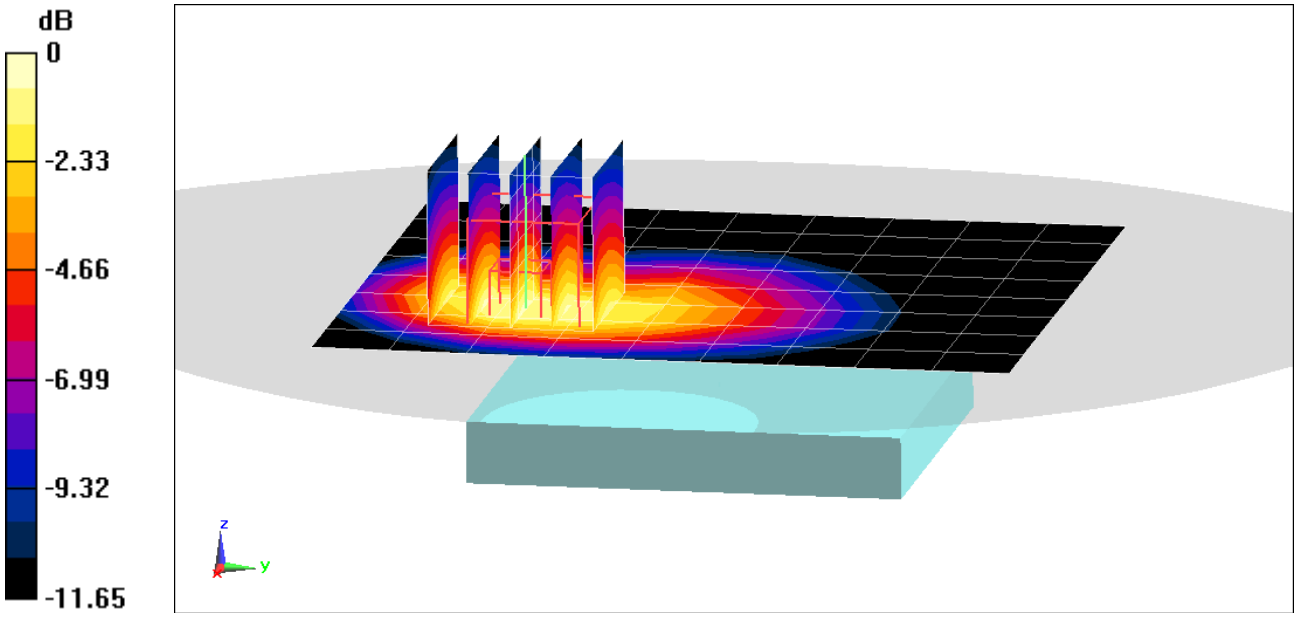
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Body; Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.964 S/m; ε_r = 53.743; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-13-2019; Ambient Temp: 21.8°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7410; ConvF(9.79, 9.79, 9.79) @ 836.6 MHz; Calibrated: 7/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2019
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (9x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.63 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.280 W/kg
SAR(1 g) = 0.178 W/kg



0 dB = 0.244 W/kg = -6.13 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4724J

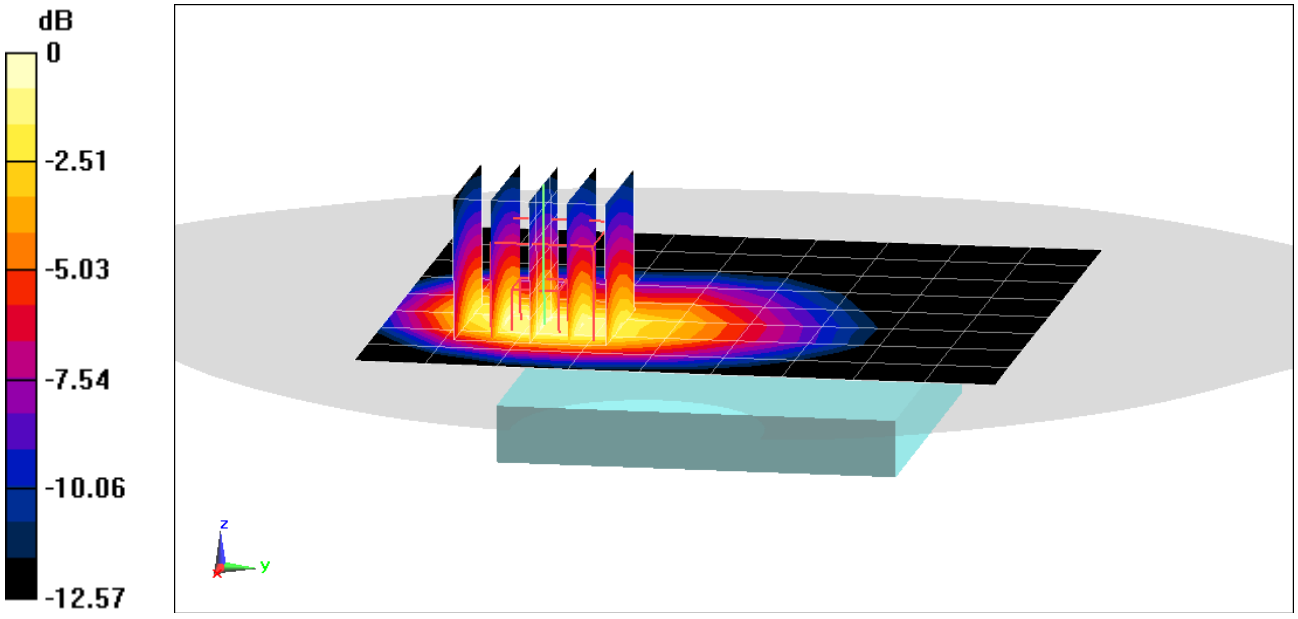
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Body; Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.964 S/m; ε_r = 53.743; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-13-2019; Ambient Temp: 21.8°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7410; ConvF(9.79, 9.79, 9.79) @ 836.6 MHz; Calibrated: 7/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2019
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (9x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.70 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.529 W/kg
SAR(1 g) = 0.311 W/kg



0 dB = 0.448 W/kg = -3.49 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4721J

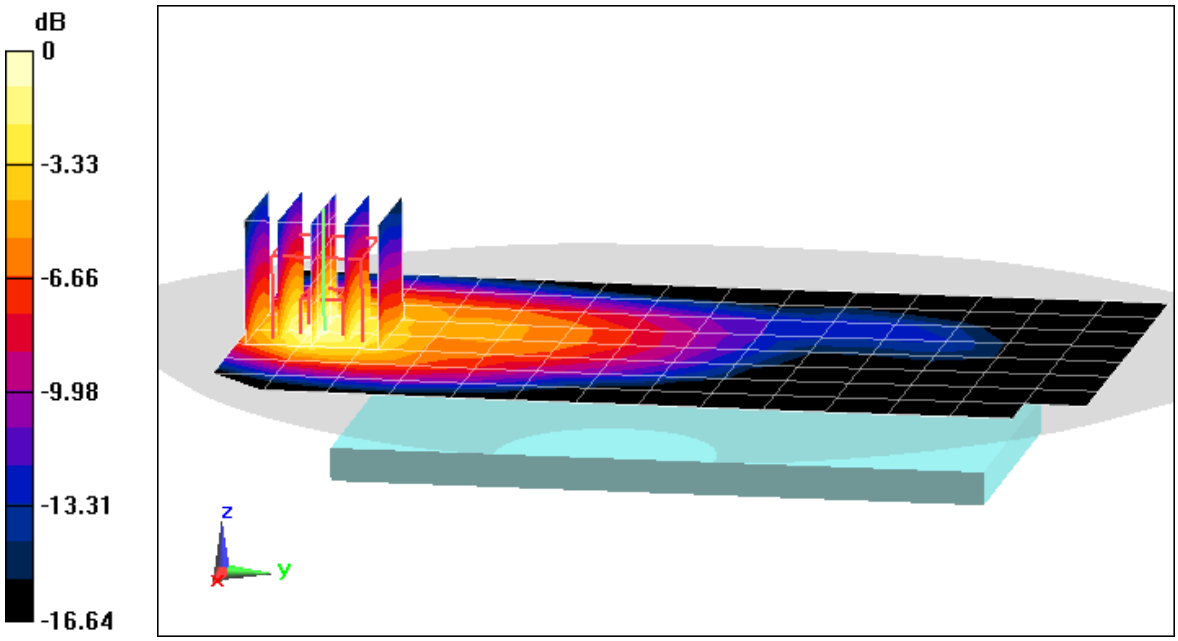
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Body; Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.526 S/m; ε_r = 52.072; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-13-2019; Ambient Temp: 20.2°C; Tissue Temp: 19.1°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1732.4 MHz; Calibrated: 4/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/18/2019
Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.71 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.723 W/kg
SAR(1 g) = 0.438 W/kg



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

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4721J

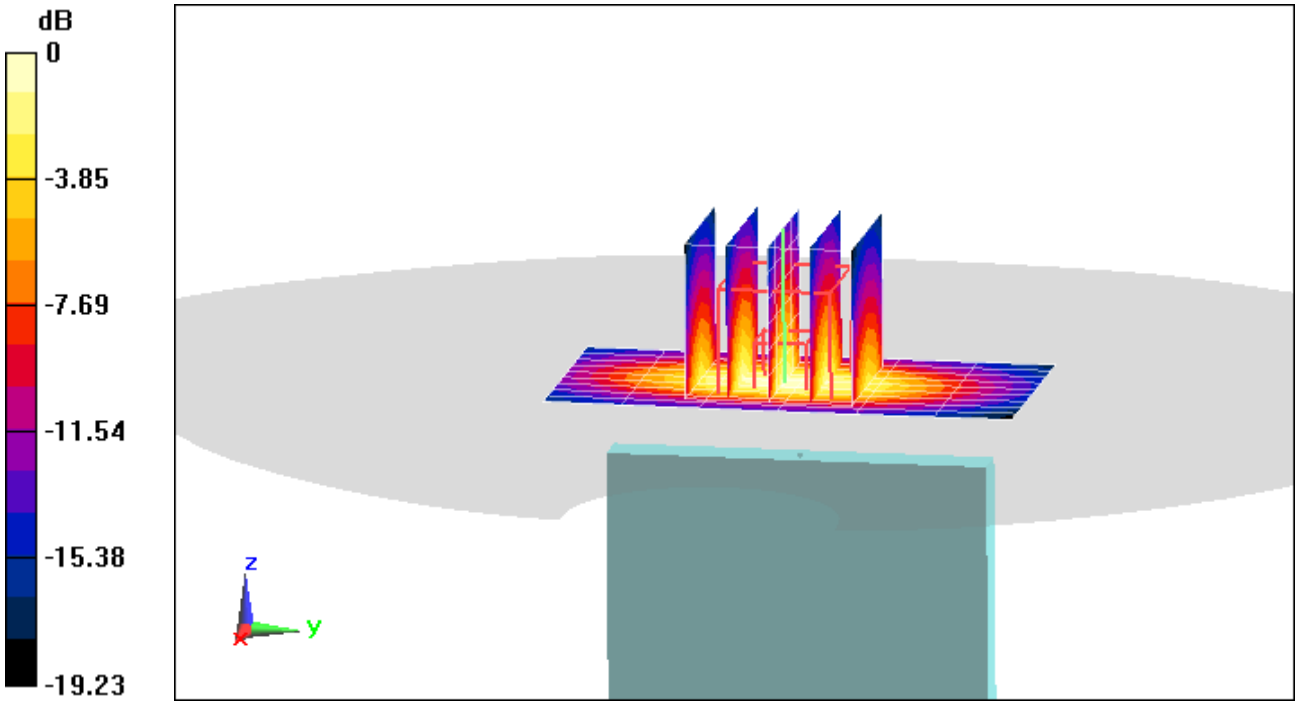
Communication System: UID 0, UMTS; Frequency: 1752.6 MHz; Duty Cycle: 1:1
Medium: 1750 Body; Medium parameters used (interpolated):
f = 1752.6 MHz; σ = 1.548 S/m; ε_r = 51.988; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-13-2019; Ambient Temp: 20.2°C; Tissue Temp: 19.1°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1752.6 MHz; Calibrated: 4/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/18/2019
Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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 = 25.05 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.57 W/kg
SAR(1 g) = 0.862 W/kg



0 dB = 1.33 W/kg = 1.24 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4712J

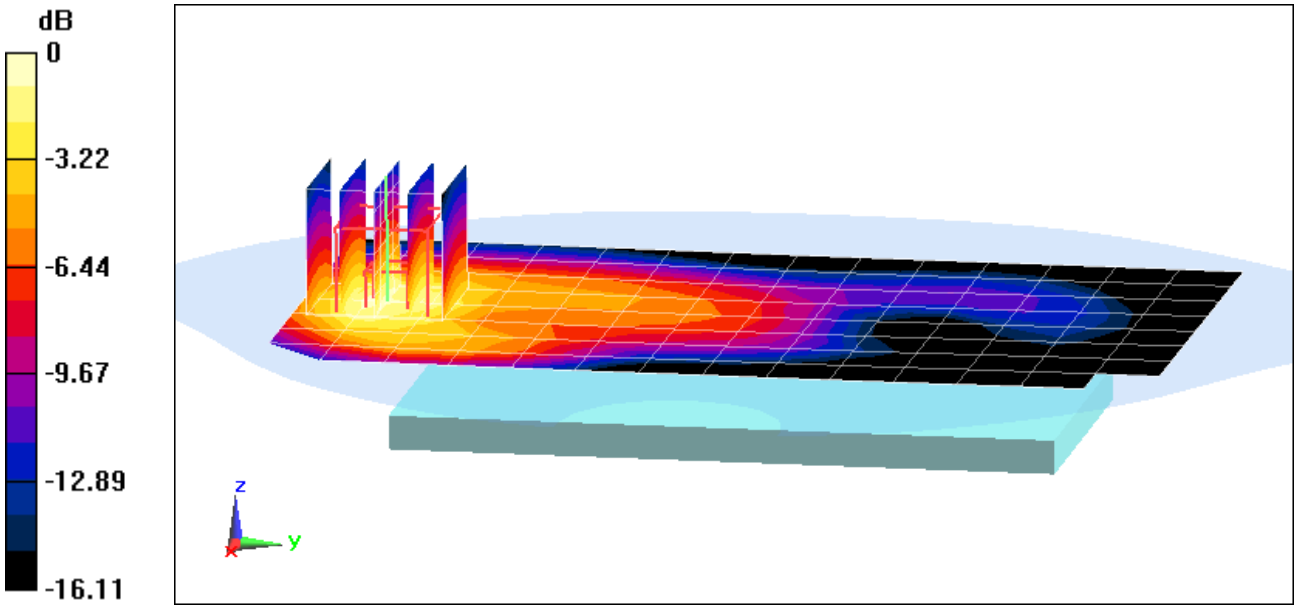
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used:
f = 1880 MHz; σ = 1.558 S/m; ε_r = 51.539; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-16-2019; Ambient Temp: 21.7°C; Tissue Temp: 23.1°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1880 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.76 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.578 W/kg
SAR(1 g) = 0.354 W/kg



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

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4712J

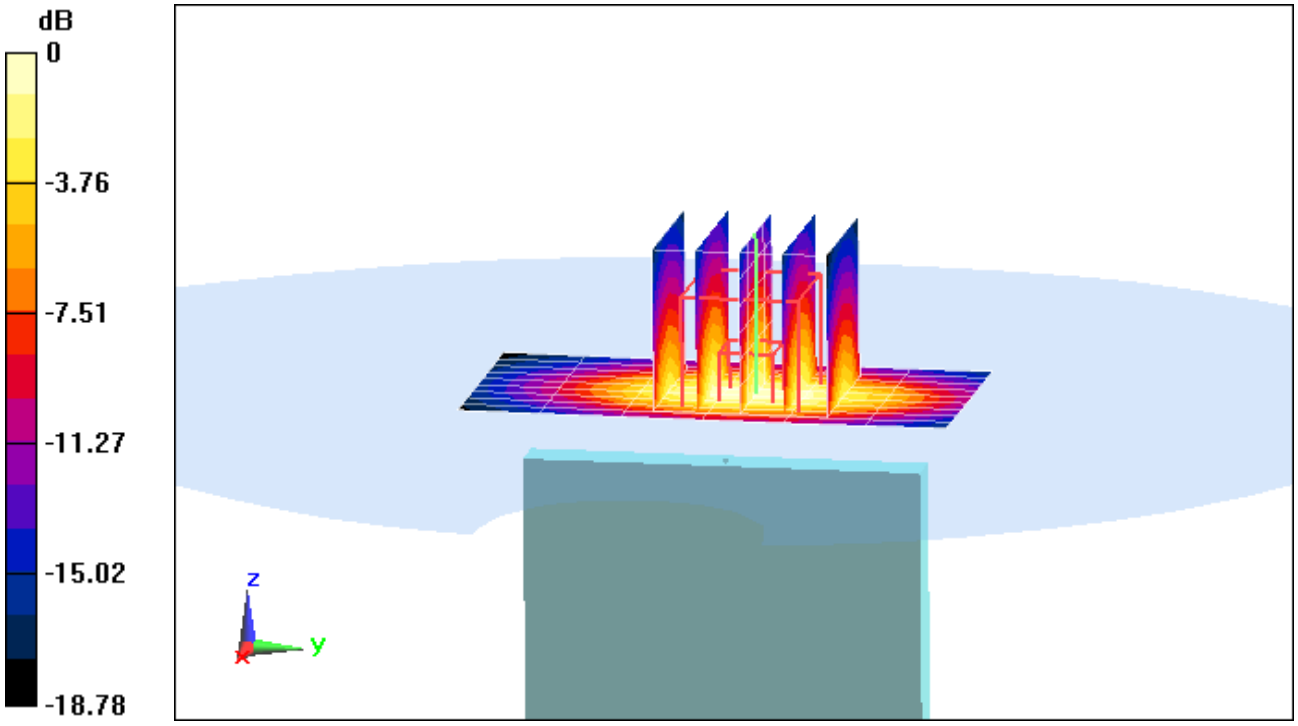
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used:
f = 1880 MHz; σ = 1.558 S/m; ε_r = 51.539; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-16-2019; Ambient Temp: 21.7°C; Tissue Temp: 23.1°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1880 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.07 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.54 W/kg
SAR(1 g) = 0.865 W/kg



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

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4723J

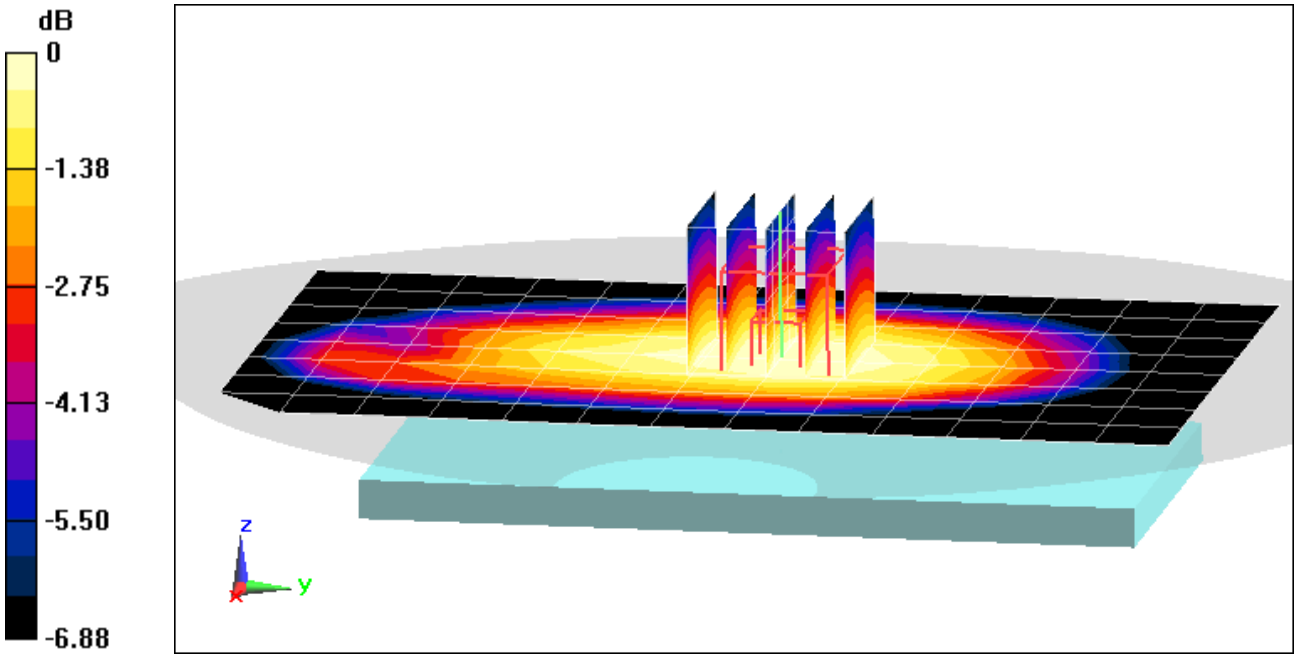
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Body; Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.957 S/m; ε_r = 53.979; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-10-2019; Ambient Temp: 24.6°C; Tissue Temp: 21.9°C

Probe: EX3DV4 - SN7410; ConvF(10.01, 10.01, 10.01) @ 707.5 MHz; Calibrated: 7/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2019
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.53 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.273 W/kg
SAR(1 g) = 0.217 W/kg



0 dB = 0.255 W/kg = -5.93 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4723J

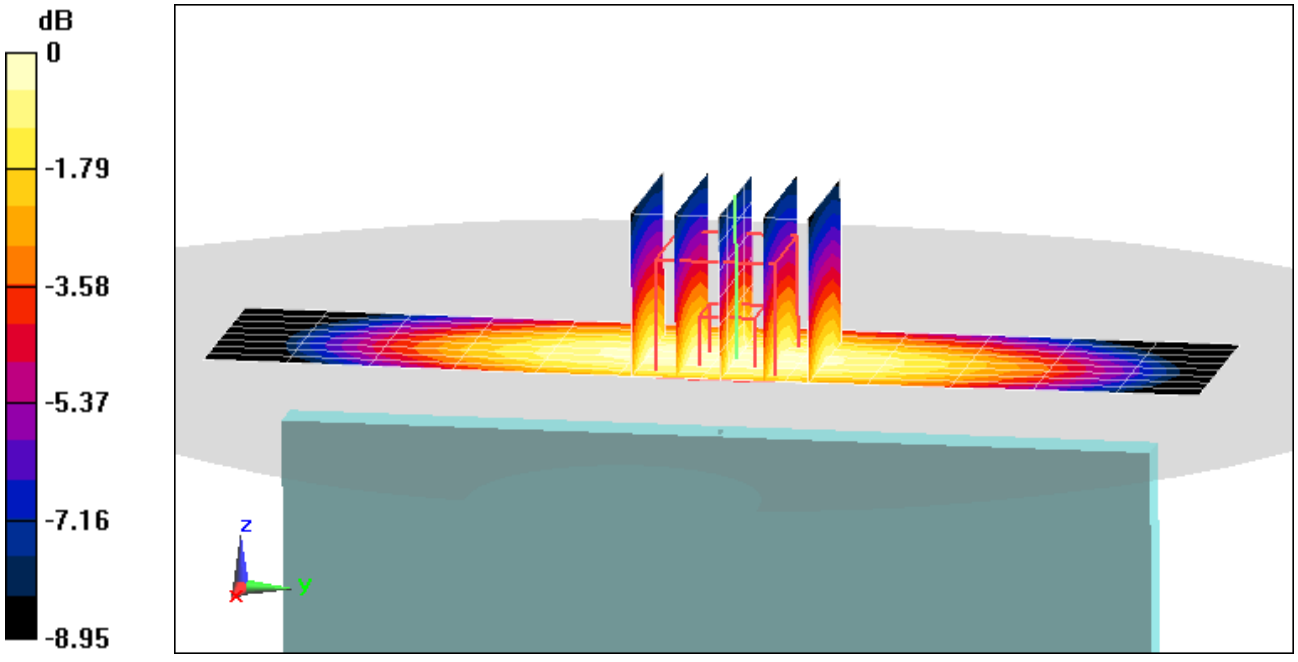
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Body; Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.957 S/m; ε_r = 53.979; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-10-2019; Ambient Temp: 24.6°C; Tissue Temp: 21.9°C

Probe: EX3DV4 - SN7410; ConvF(10.01, 10.01, 10.01) @ 707.5 MHz; Calibrated: 7/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2019
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (9x13x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.03 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.417 W/kg
SAR(1 g) = 0.293 W/kg



0 dB = 0.374 W/kg = -4.27 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4723J

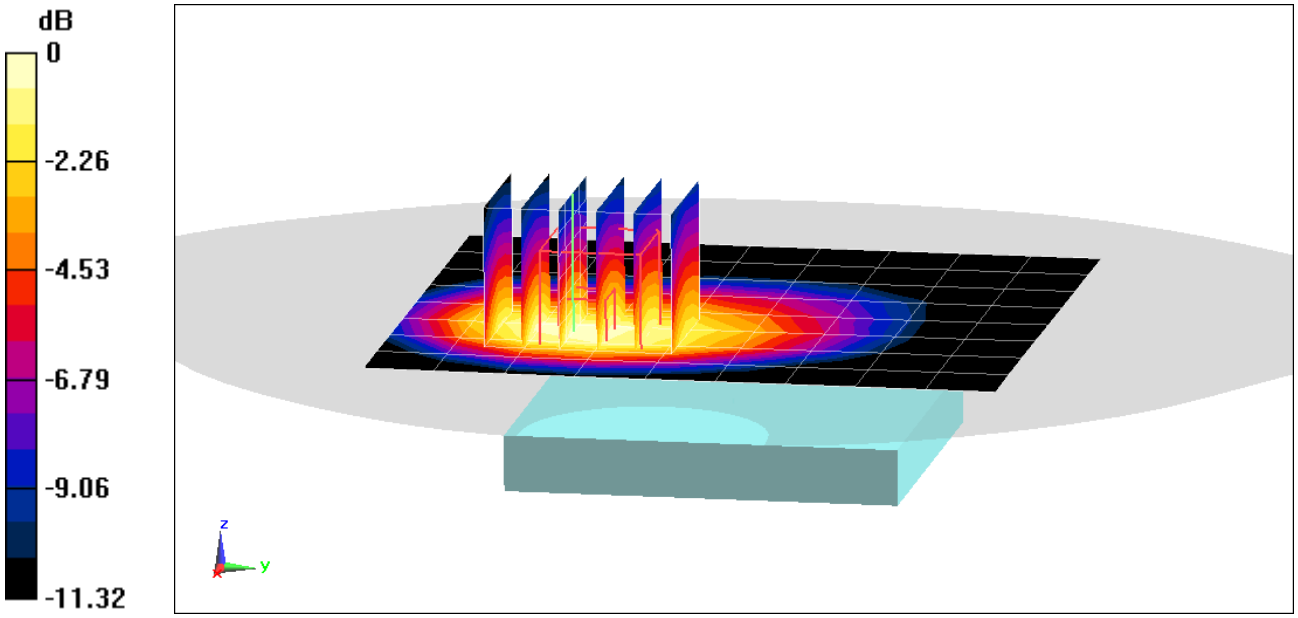
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Body; Medium parameters used (interpolated):
f = 782 MHz; σ = 0.983 S/m; ε_r = 53.785; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-10-2019; Ambient Temp: 24.6°C; Tissue Temp: 21.9°C

Probe: EX3DV4 - SN7410; ConvF(10.01, 10.01, 10.01) @ 782 MHz; Calibrated: 7/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2019
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 13, Body SAR, Back side, Mid.ch, Closed Configuration, 10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset,

Area Scan (9x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.22 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.246 W/kg
SAR(1 g) = 0.162 W/kg



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

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4723J

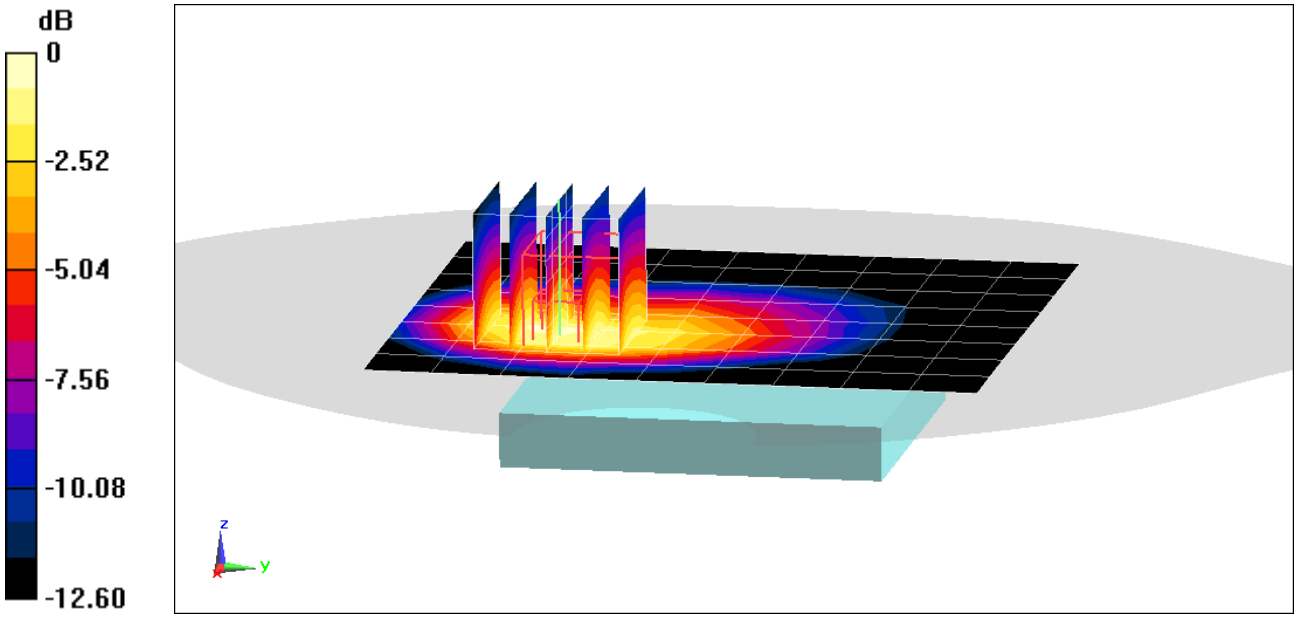
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Body; Medium parameters used (interpolated):
f = 782 MHz; σ = 0.983 S/m; ε_r = 53.785; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-10-2019; Ambient Temp: 24.6°C; Tissue Temp: 21.9°C

Probe: EX3DV4 - SN7410; ConvF(10.01, 10.01, 10.01) @ 782 MHz; Calibrated: 7/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2019
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 13, Body SAR, Back side, Mid.ch, Closed Configuration, 10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset

Area Scan (9x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.46 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.465 W/kg
SAR(1 g) = 0.284 W/kg



0 dB = 0.405 W/kg = -3.93 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4724J

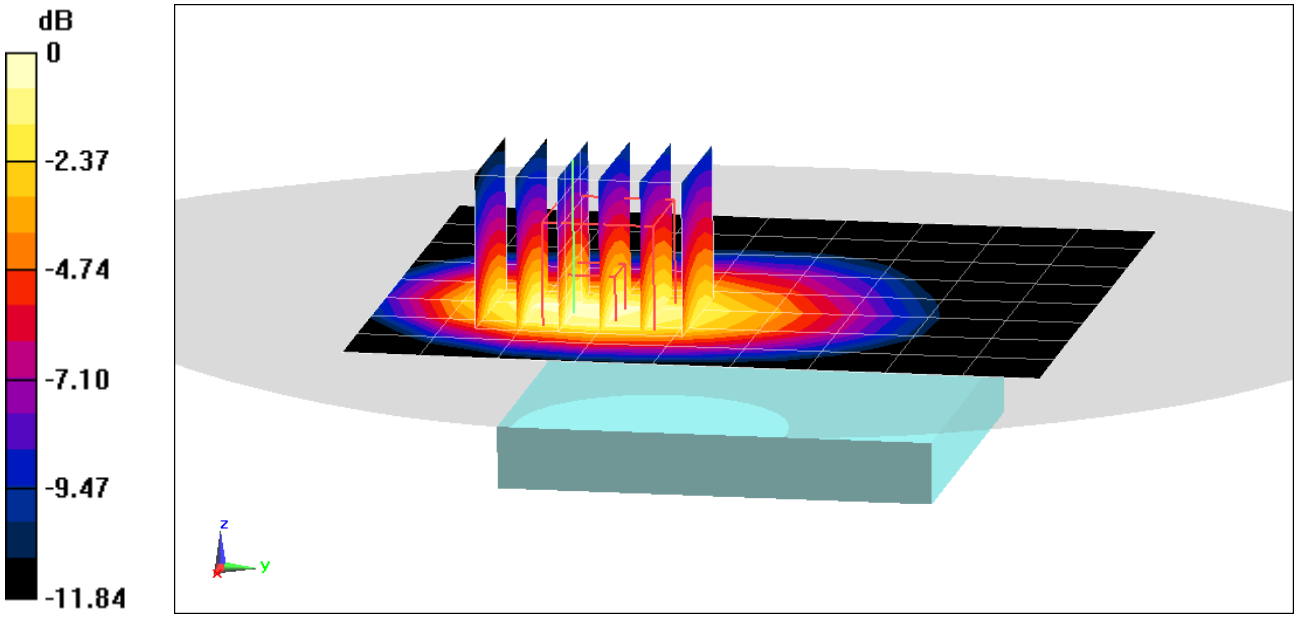
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Body; Medium parameters used (interpolated):
f = 831.5 MHz; σ = 0.962 S/m; ε_r = 53.767; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-13-2019; Ambient Temp: 21.8°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7410; ConvF(9.79, 9.79, 9.79) @ 831.5 MHz; Calibrated: 7/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2019
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (9x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.88 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.306 W/kg
SAR(1 g) = 0.199 W/kg



0 dB = 0.267 W/kg = -5.73 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4724J

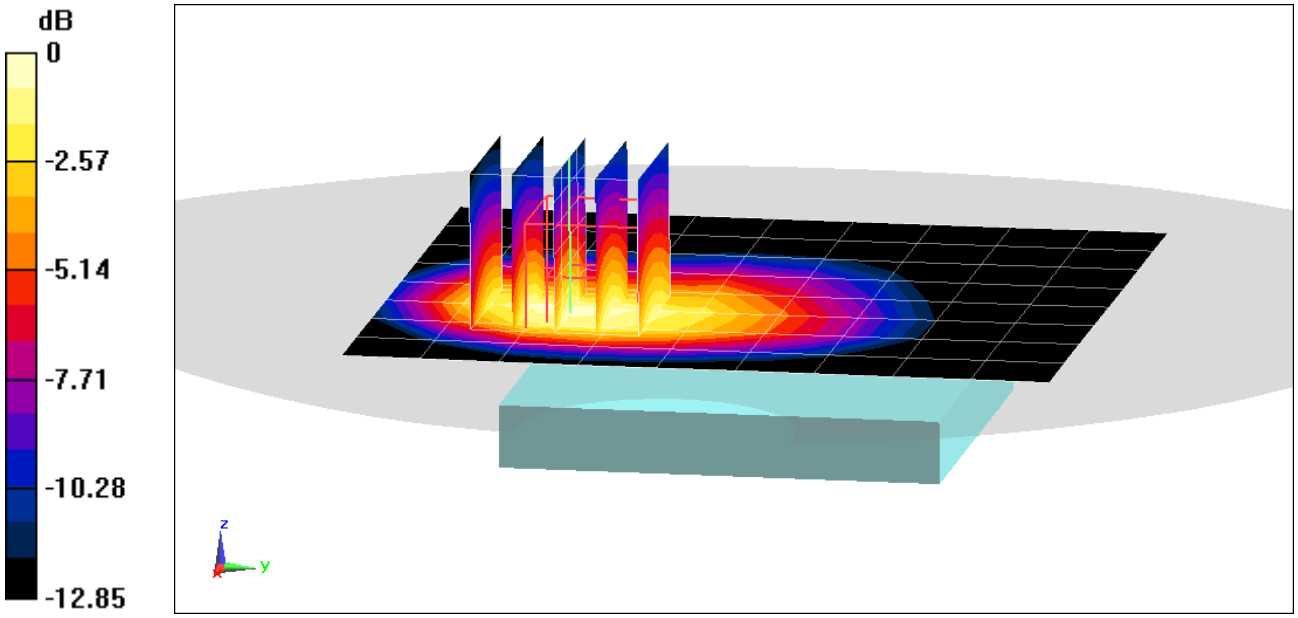
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Body; Medium parameters used (interpolated):
f = 831.5 MHz; σ = 0.962 S/m; ε_r = 53.767; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-13-2019; Ambient Temp: 21.8°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7410; ConvF(9.79, 9.79, 9.79) @ 831.5 MHz; Calibrated: 7/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2019
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (9x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.86 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.579 W/kg
SAR(1 g) = 0.352 W/kg



0 dB = 0.497 W/kg = -3.04 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4721J

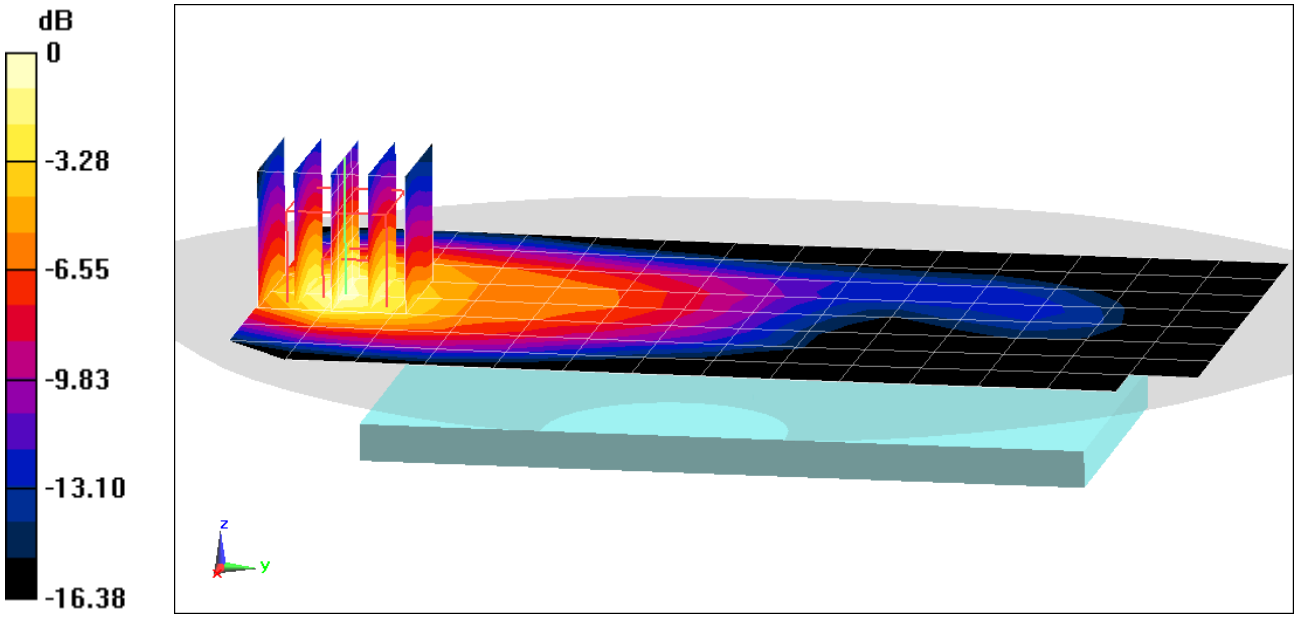
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1
Medium: 1750 Body; Medium parameters used:
f = 1745 MHz; σ = 1.507 S/m; ε_r = 53.229; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-19-2019; Ambient Temp: 21.4°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1745 MHz; Calibrated: 4/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/18/2019
Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 66 (AWS), Body SAR, Back side, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.11 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.01 W/kg
SAR(1 g) = 0.620 W/kg



0 dB = 0.877 W/kg = -0.57 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4721J

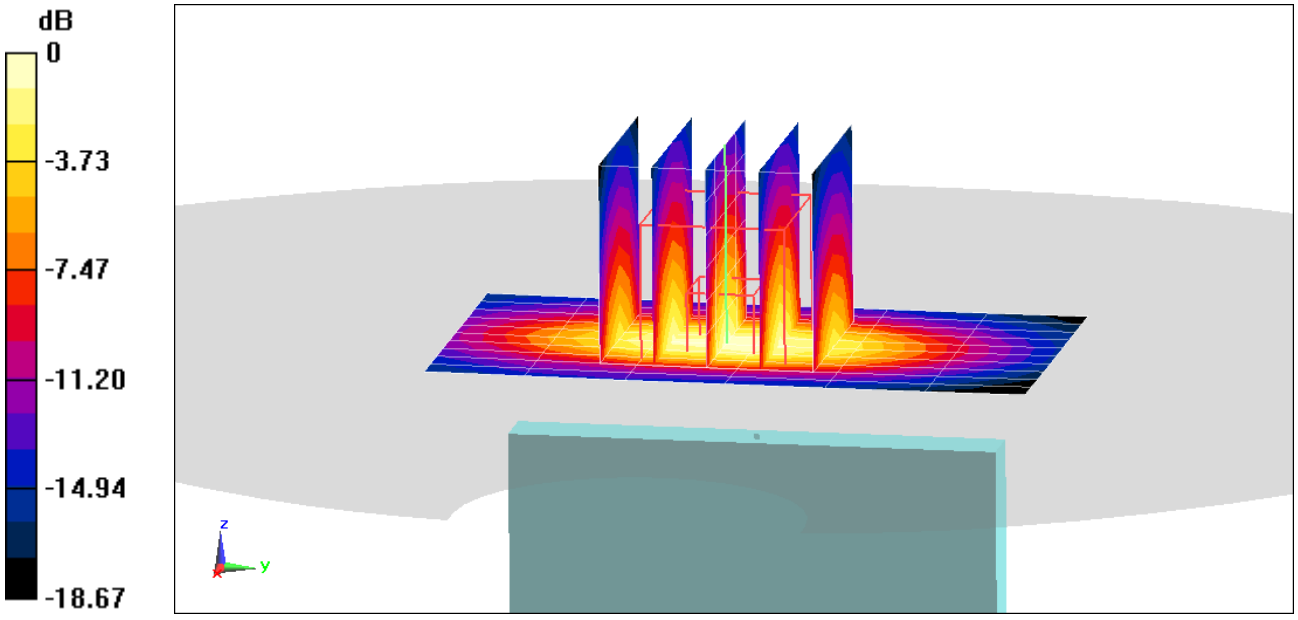
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1770 MHz; Duty Cycle: 1:1
Medium: 1750 Body; Medium parameters used:
f = 1770 MHz; σ = 1.555 S/m; ε_r = 52.339; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-22-2019; Ambient Temp: 20.6°C; Tissue Temp: 20.3°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1770 MHz; Calibrated: 4/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/18/2019
Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 66 (AWS), Body SAR, Bottom Edge, High.ch, 20 MHz Bandwidth, QPSK, 50 RB, 0 RB Offset

Area Scan (11x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.13 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.69 W/kg
SAR(1 g) = 0.934 W/kg



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

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4718J

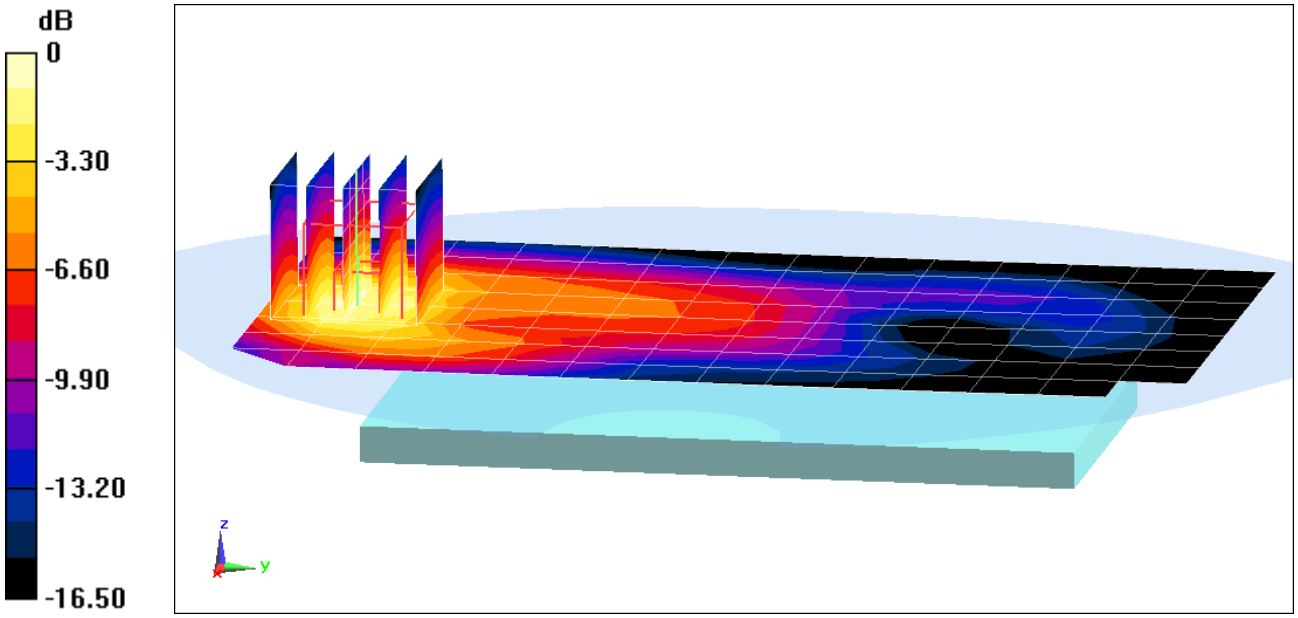
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used (interpolated):
f = 1882.5 MHz; σ = 1.531 S/m; ε_r = 51.552; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-12-2019; Ambient Temp: 22.3°C; Tissue Temp: 23.8°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1882.5 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 25 (PCS), Body SAR, Back side, Mid.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.52 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.634 W/kg
SAR(1 g) = 0.383 W/kg



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

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4718J

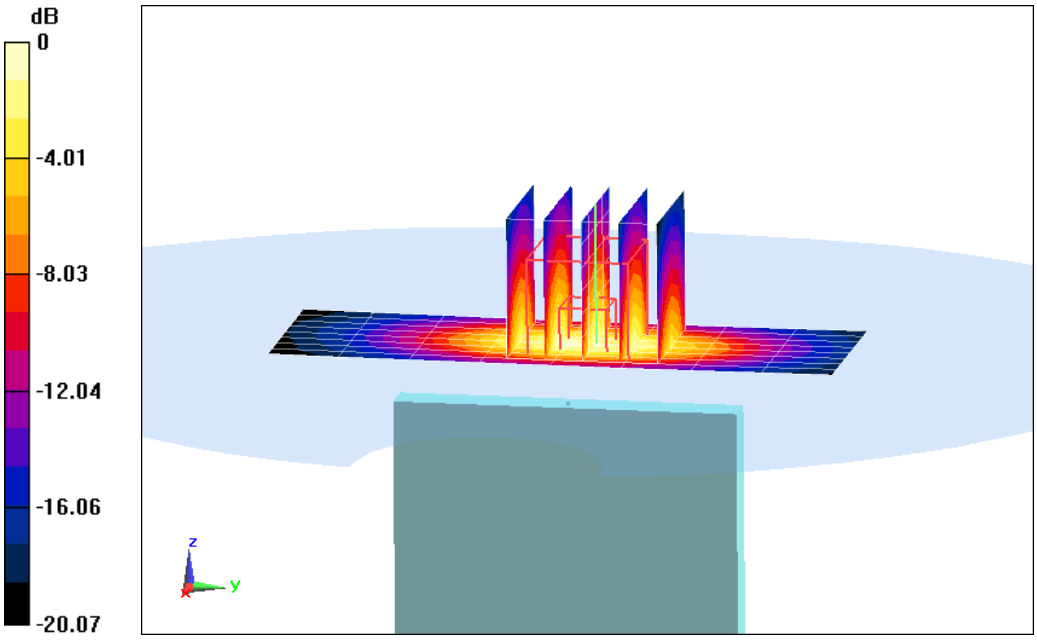
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used:
f = 1905 MHz; σ = 1.523 S/m; ε_r = 51.499; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-19-2019; Ambient Temp: 22.9°C; Tissue Temp: 24.0°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1905 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 25 (PCS), Body SAR, Bottom Edge, High.ch, 20 MHz Bandwidth, QPSK, 50 RB, 25 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 = 25.27 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.55 W/kg
SAR(1 g) = 0.862 W/kg



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

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4715J

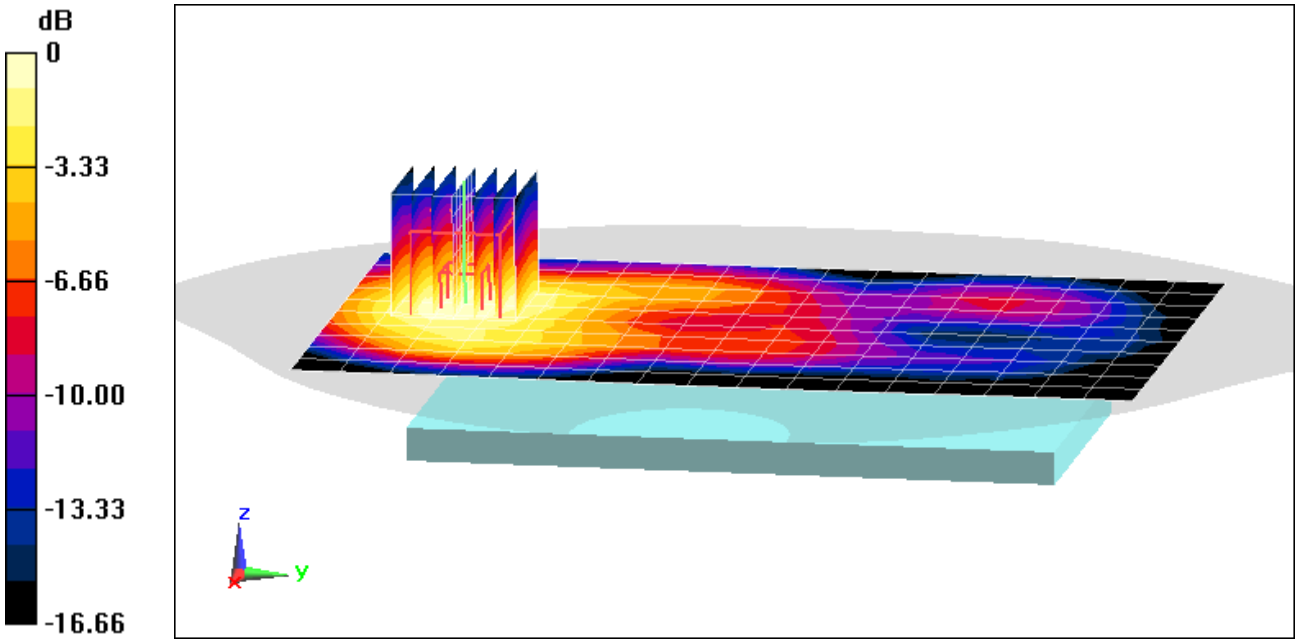
Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used:
f = 2310 MHz; σ = 1.887 S/m; ε_r = 51.515; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-24-2019; Ambient Temp: 23.7°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7547; ConvF(7.47, 7.47, 7.47) @ 2310 MHz; Calibrated: 7/15/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 7/11/2019
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 30, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.77 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.404 W/kg
SAR(1 g) = 0.236 W/kg



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

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4715J

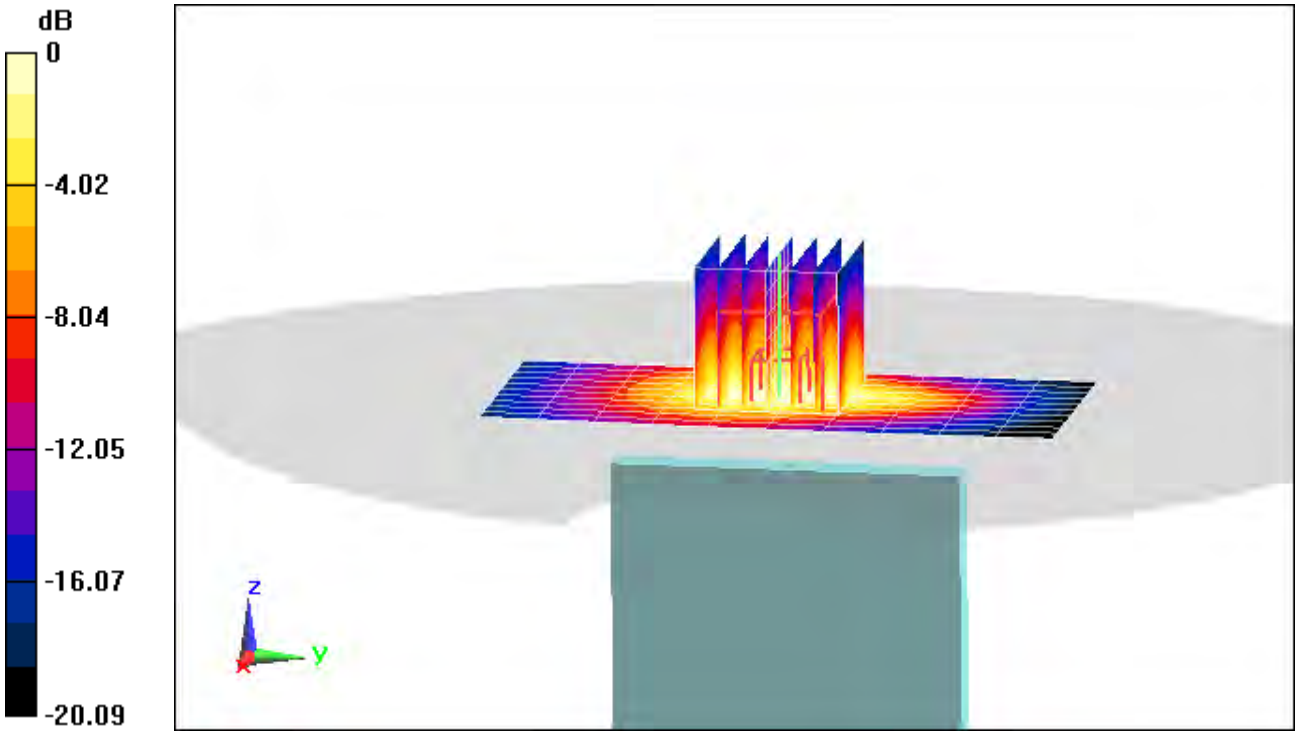
Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used:
f = 2310 MHz; σ = 1.887 S/m; ε_r = 51.515; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-24-2019; Ambient Temp: 23.7°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7547; ConvF(7.47, 7.47, 7.47) @ 2310 MHz; Calibrated: 7/15/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 7/11/2019
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 30, Body SAR, Bottom Edge, Mid.ch,
10 MHz Bandwidth, QPSK, 25 RB, 12 RB Offset

Area Scan (11x11x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.74 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.774 W/kg
SAR(1 g) = 0.417 W/kg



0 dB = 0.645 W/kg = -1.90 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4715J

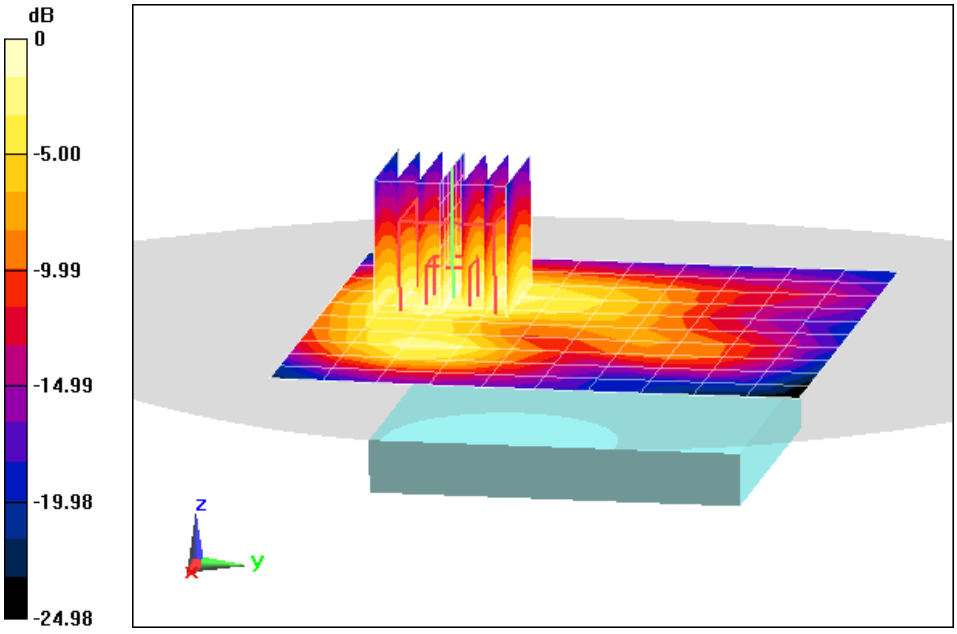
Communication System: UID 0, LTE Band 41 (Class 3); Frequency: 2636.5 MHz; Duty Cycle: 1:1.58
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2636.5 MHz; σ = 2.259 S/m; ε_r = 50.705; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-22-2019; Ambient Temp: 24.5°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN7547; ConvF(7.18, 7.18, 7.18) @ 2636.5 MHz; Calibrated: 7/15/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 7/11/2019
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 41, Body SAR, Back side, Closed Configuration,
PCC: 20 MHz Bandwidth, QPSK, Ch. 41055, 1 RB, 0 RB Offset
SCC: 20 MHz Bandwidth, QPSK, Ch. 40857, 1 RB, 99 RB Offset

Area Scan (11x11x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.817 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.390 W/kg
SAR(1 g) = 0.201 W/kg



0 dB = 0.315 W/kg = -5.02 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4715J

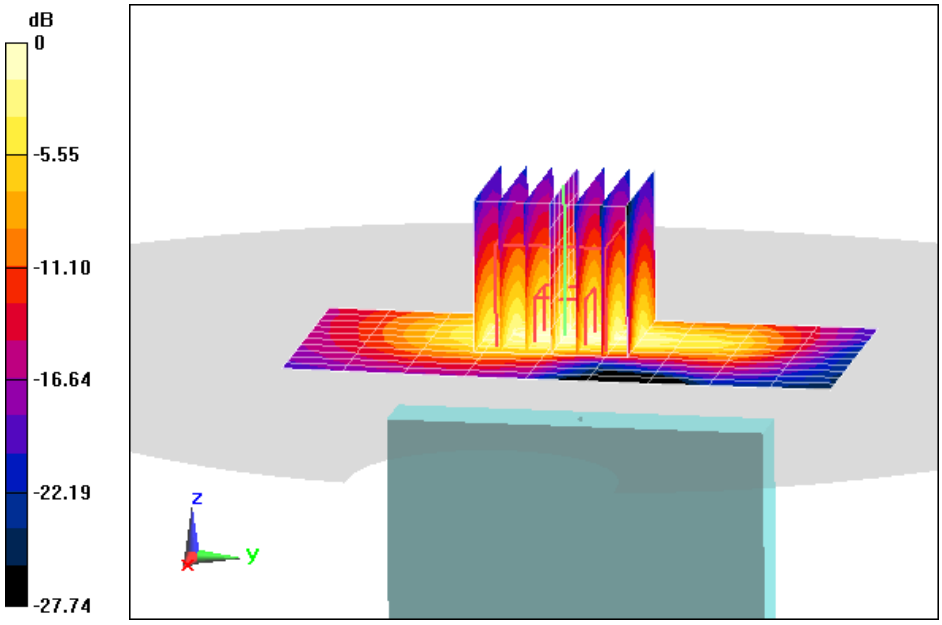
Communication System: UID 0, LTE Band 41 (Class 3); Frequency: 2636.5 MHz; Duty Cycle: 1:1.58
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2636.5 MHz; σ = 2.259 S/m; ε_r = 50.705; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-22-2019; Ambient Temp: 24.5°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN7547; ConvF(7.18, 7.18, 7.18) @ 2636.5 MHz; Calibrated: 7/15/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 7/11/2019
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 41, Body SAR, Bottom Edge, Closed Configuration,
PCC: 20 MHz Bandwidth, QPSK, Ch. 41055, 1 RB, 0 RB Offset
SCC: 20 MHz Bandwidth, QPSK, Ch. 40857, 1 RB, 99 RB Offset

Area Scan (11x10x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.30 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.01 W/kg
SAR(1 g) = 0.463 W/kg



0 dB = 0.797 W/kg = -0.99 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 0535M

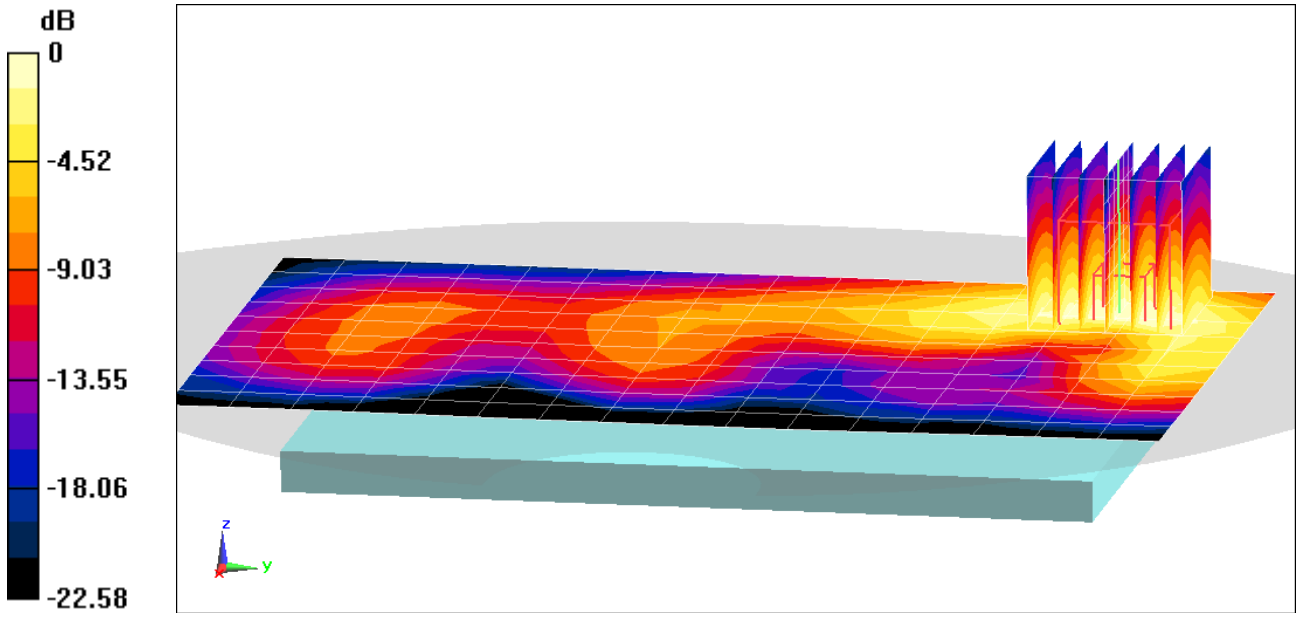
Communication System: UID 0, IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2437 MHz; σ = 2.005 S/m; ε_r = 51.576; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-19-2019; Ambient Temp: 23.5°C; Tissue Temp: 22.4°C

Probe: EX3DV4 - SN7547; ConvF(7.3, 7.3, 7.3) @ 2437 MHz; Calibrated: 7/15/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 7/11/2019
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: IEEE 802.11b, Antenna 1, 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 = 10.06 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.340 W/kg
SAR(1 g) = 0.181 W/kg



0 dB = 0.280 W/kg = -5.53 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 0535M

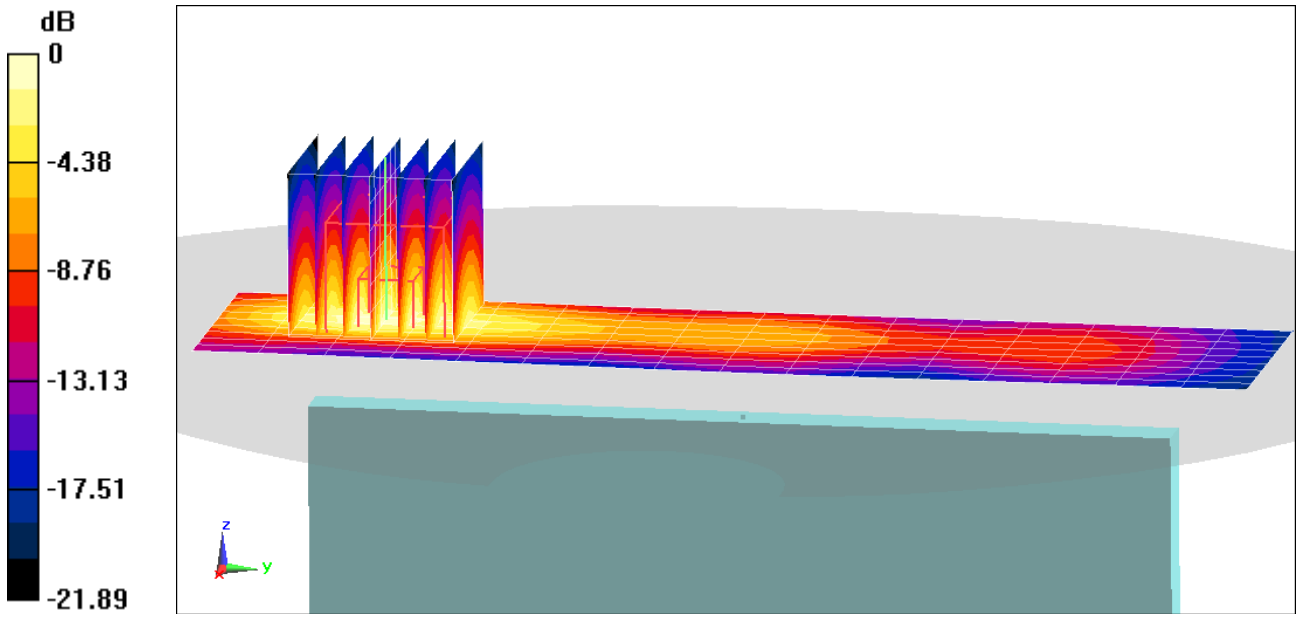
Communication System: UID 0, _IEEE 802.11b; Frequency: 2412 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2412 MHz; σ = 1.975 S/m; ε_r = 51.655; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-19-2019; Ambient Temp: 23.5°C; Tissue Temp: 22.4°C

Probe: EX3DV4 - SN7547; ConvF(7.3, 7.3, 7.3) @ 2412 MHz; Calibrated: 7/15/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 7/11/2019
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (10x17x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.324 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.624 W/kg



0 dB = 1.03 W/kg = 0.13 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 0542M

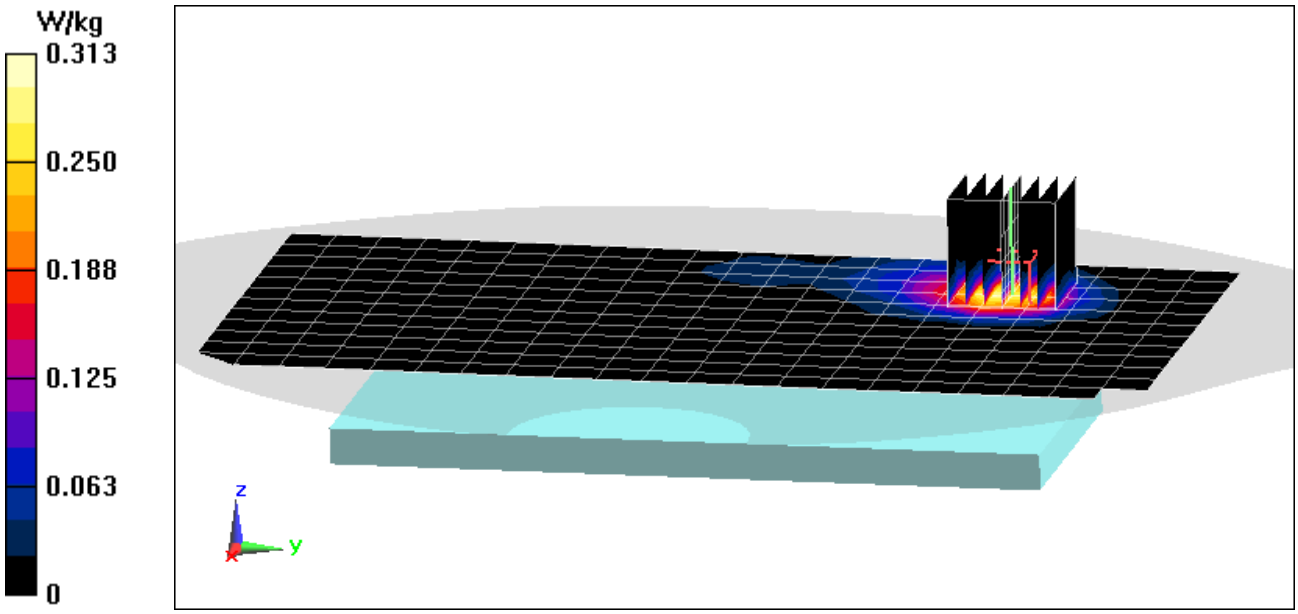
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5785 MHz; Duty Cycle: 1:1
Medium: 5200-5800 Body; Medium parameters used:
f = 5785 MHz; σ = 6.229 S/m; ε_r = 46.617; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-09-2019; Ambient Temp: 22.6°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7409; ConvF(4.23, 4.23, 4.23) @ 5785 MHz; Calibrated: 6/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/20/2019
Phantom: Front; Type: QD 000 P40 CD; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: IEEE 802.11a, Antenna 2, UNII-3, 20 MHz Bandwidth, Body SAR, Ch 157, 6 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 = 4.428 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.569 W/kg
SAR(1 g) = 0.119 W/kg



DUT: A3LSMF700F; Type: Portable Handset; Serial: 0542M

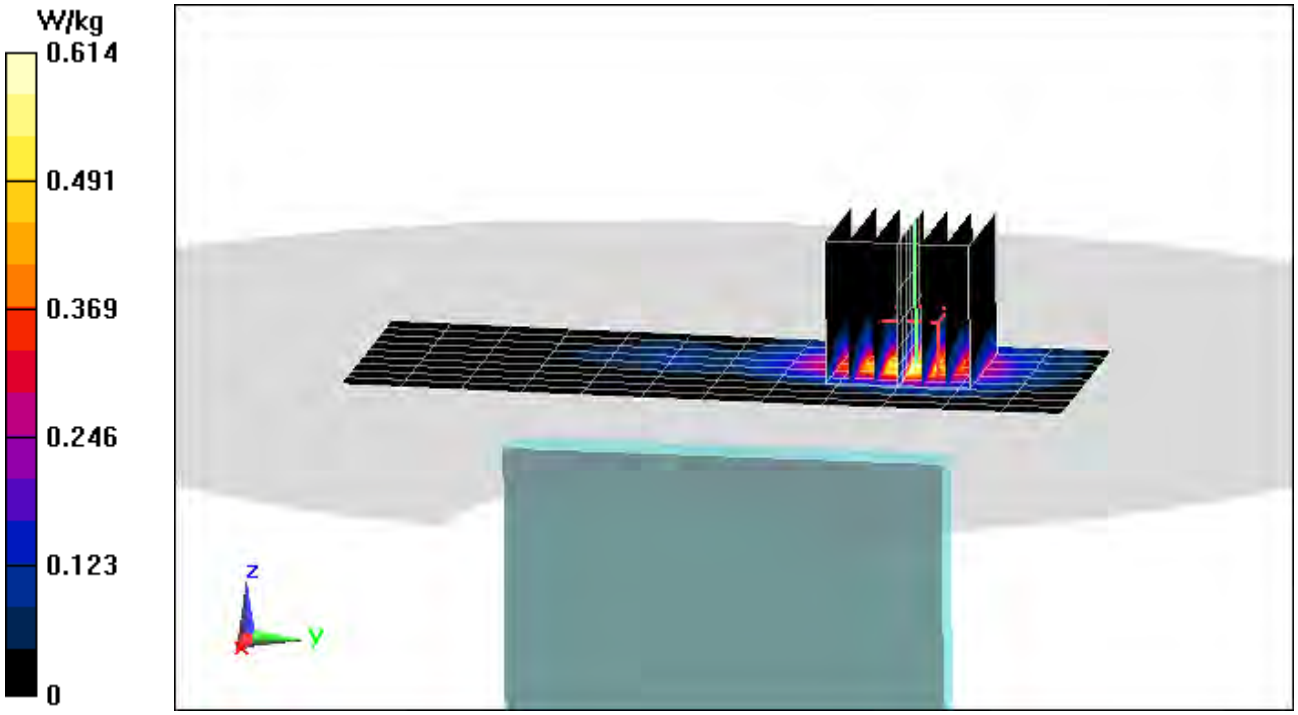
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5785 MHz; Duty Cycle: 1:1
Medium: 5200-5800 Body; Medium parameters used:
f = 5785 MHz; σ = 6.229 S/m; ε_r = 46.617; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-09-2019; Ambient Temp: 22.6°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7409; ConvF(4.23, 4.23, 4.23) @ 5785 MHz; Calibrated: 6/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/20/2019
Phantom: Front; Type: QD 000 P40 CD; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: IEEE 802.11a, Antenna 1, UNII-3, 20 MHz Bandwidth, Body SAR, Ch 157, 6 Mbps, Top Edge

Area Scan (10x13x1): Measurement grid: dx=5mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 6.553 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.18 W/kg
SAR(1 g) = 0.253 W/kg



DUT: A3LSMF700F; Type: Portable Handset; Serial: 0535M

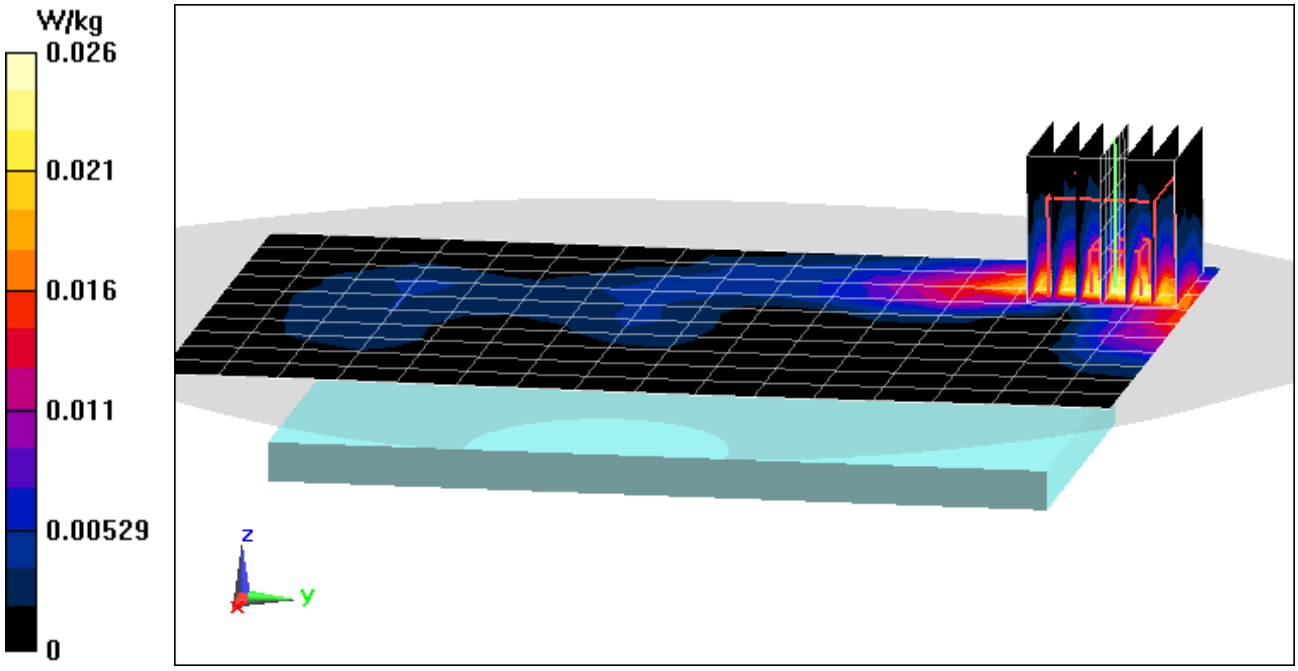
Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.289
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2441 MHz; σ = 2.025 S/m; ε_r = 51.31; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-22-2019; Ambient Temp: 24.5°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN7547; ConvF(7.3, 7.3, 7.3) @ 2441 MHz; Calibrated: 7/15/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 7/11/2019
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.067 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.0330 W/kg
SAR(1 g) = 0.017 W/kg



DUT: A3LSMF700F; Type: Portable Handset; Serial: 0535M

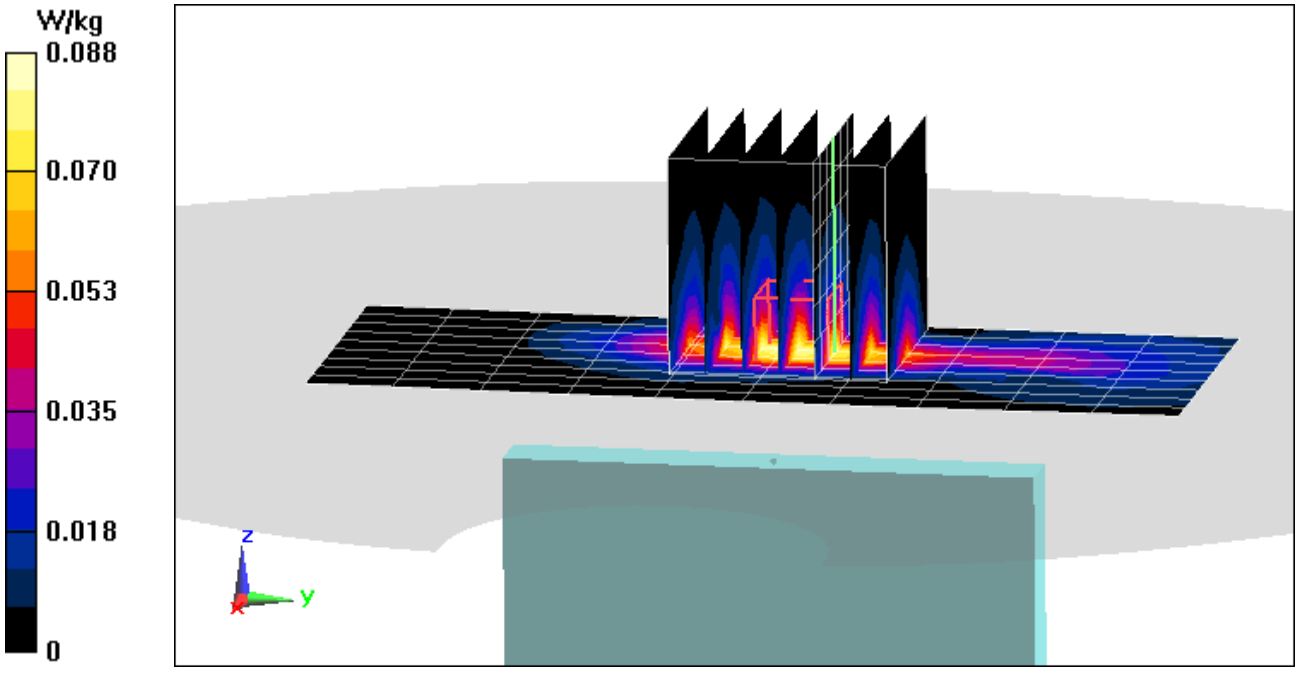
Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.289
Medium: 2450 Body; Medium parameters used (interpolated):
f = 2441 MHz; σ = 2.025 S/m; ε_r = 51.31; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-22-2019; Ambient Temp: 24.5°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN7547; ConvF(7.3, 7.3, 7.3) @ 2441 MHz; Calibrated: 7/15/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 7/11/2019
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: Bluetooth, Body SAR, Ch 39, 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 = 5.293 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.118 W/kg
SAR(1 g) = 0.055 W/kg



DUT: A3LSMF700F; Type: Portable Handset; Serial: 4718J

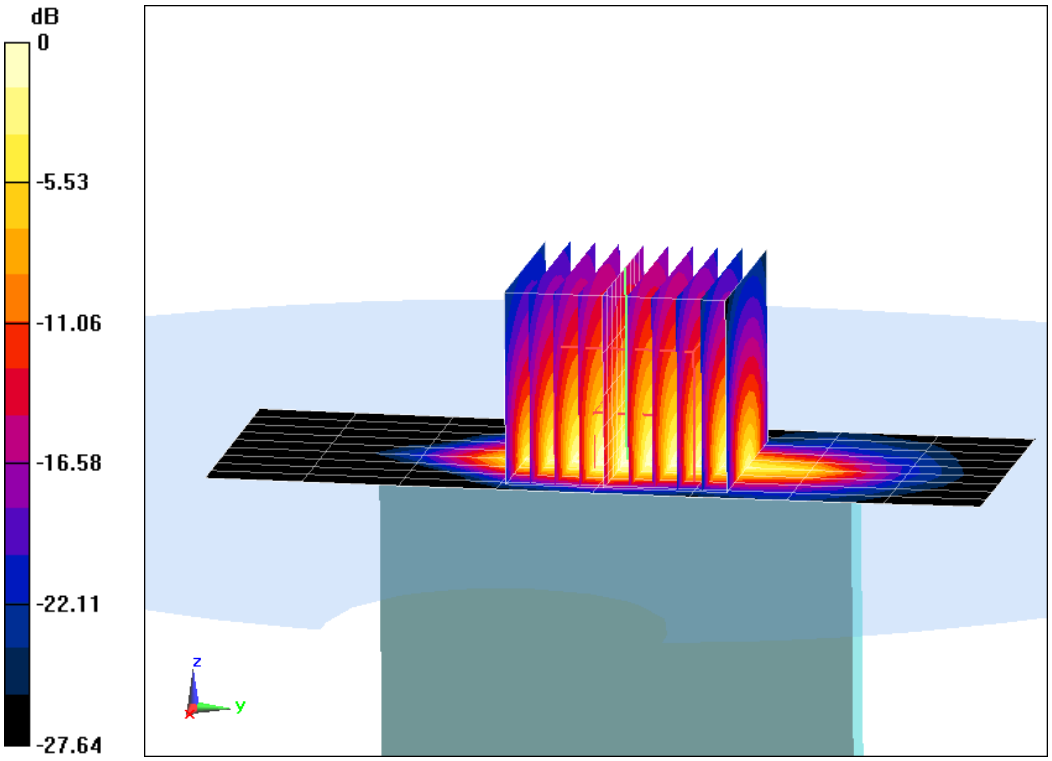
Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 1909.8 MHz; Duty Cycle: 1:2.76
Medium: 1900 Body; Medium parameters used:
f = 1910 MHz; σ = 1.528 S/m; ε_r = 51.483; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-19-2019; Ambient Temp: 22.9°C; Tissue Temp: 24.0°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1909.8 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (10x10x8)/Cube 0: Measurement grid: dx=3.8mm, dy=3.8mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 58.33 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 14.2 W/kg
SAR(10 g) = 2.05 W/kg



0 dB = 8.90 W/kg = 9.49 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4721J

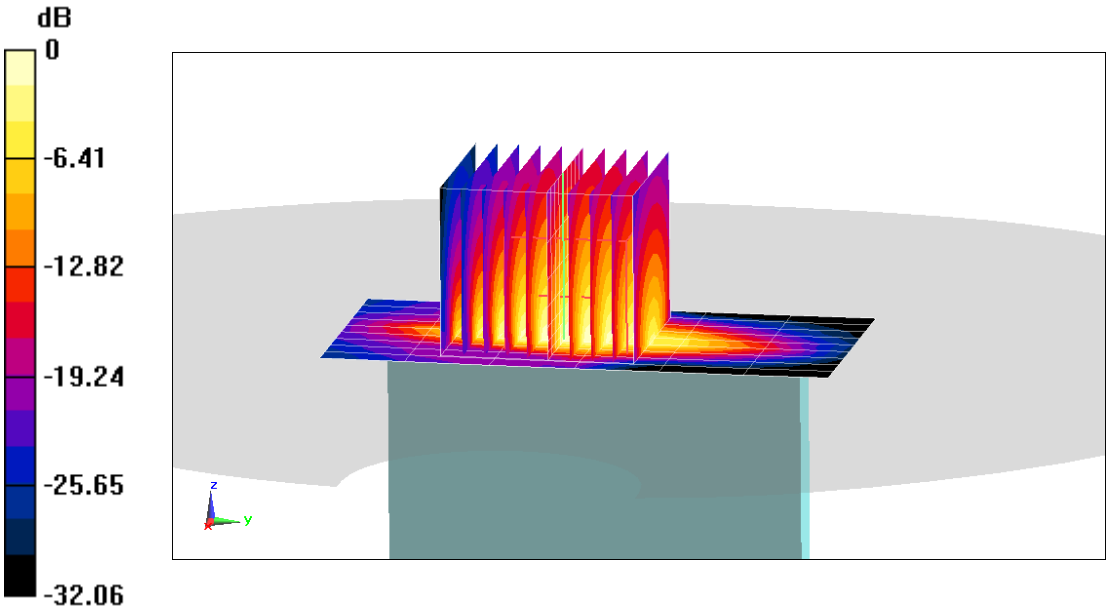
Communication System: UID 0, UMTS; Frequency: 1712.4 MHz; Duty Cycle: 1:1
Medium: 1750 Body; Medium parameters used (interpolated):
f = 1712.4 MHz; σ = 1.491 S/m; ε_r = 52.266; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-16-2019; Ambient Temp: 20.6°C; Tissue Temp: 20.3°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1712.4 MHz; Calibrated: 4/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/18/2019
Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: UMTS 1750, Phablet SAR, Bottom Edge, Low.ch

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (10x10x8)/Cube 0: Measurement grid: dx=3.8mm, dy=3.8mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 66.47 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 17.3 W/kg
SAR(10 g) = 2.08 W/kg



0 dB = 10.5 W/kg = 10.21 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4712J

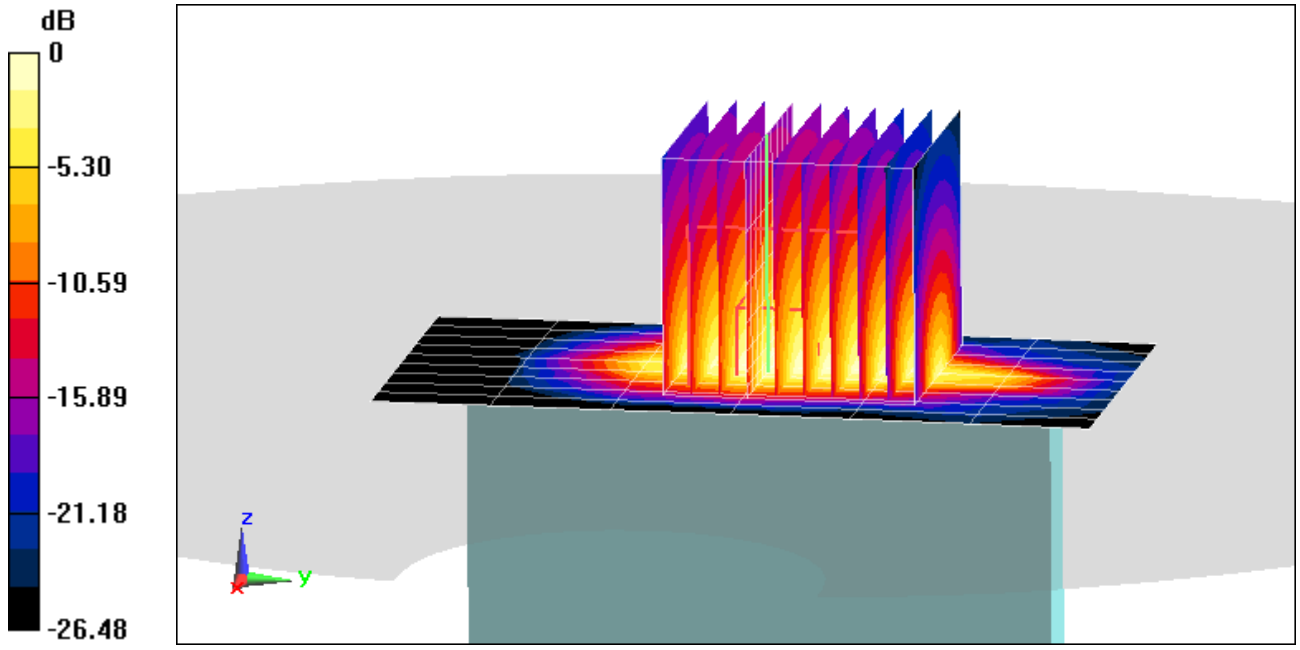
Communication System: UID 0, UMTS; Frequency: 1852.4 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used (interpolated):
f = 1852.4 MHz; σ = 1.526 S/m; ε_r = 51.41; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 01-11-2020; Ambient Temp: 21.9°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7551; ConvF(7.69, 7.69, 7.69) @ 1852.4 MHz; Calibrated: 9/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 9/17/2019
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1792
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (10x10x8)/Cube 0: Measurement grid: dx=3.5mm, dy=3.5mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 56.19 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 11.7 W/kg
SAR(10 g) = 1.85 W/kg



0 dB = 7.67 W/kg = 8.85 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4721J

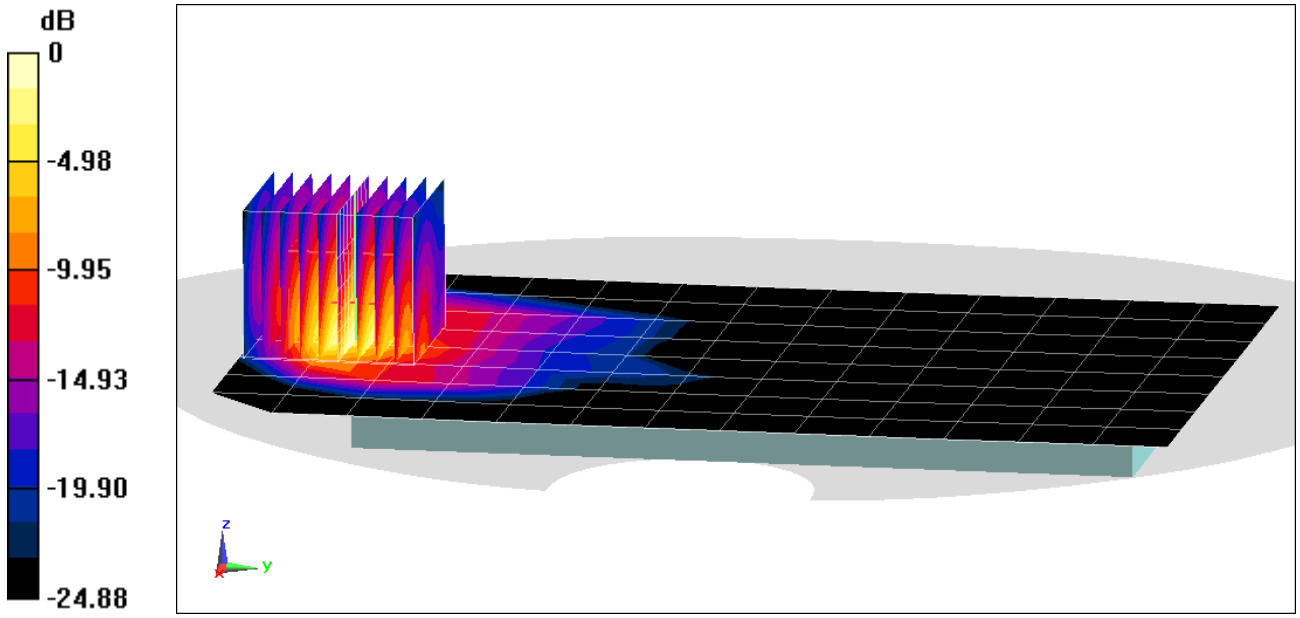
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1770 MHz; Duty Cycle: 1:1
Medium: 1750 Body; Medium parameters used:
f = 1770 MHz; σ = 1.534 S/m; ε_r = 53.125; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-19-2019; Ambient Temp: 21.4°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1770 MHz; Calibrated: 4/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/18/2019
Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 66 (AWS), Phablet SAR, Back side, High.ch,
20 MHz Bandwidth, QPSK, 50 RB, 0 RB Offset

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (10x10x8)/Cube 0: Measurement grid: dx=3.8mm, dy=3.8mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 53.65 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 9.53 W/kg
SAR(10 g) = 1.67 W/kg



0 dB = 7.11 W/kg = 8.52 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4718J

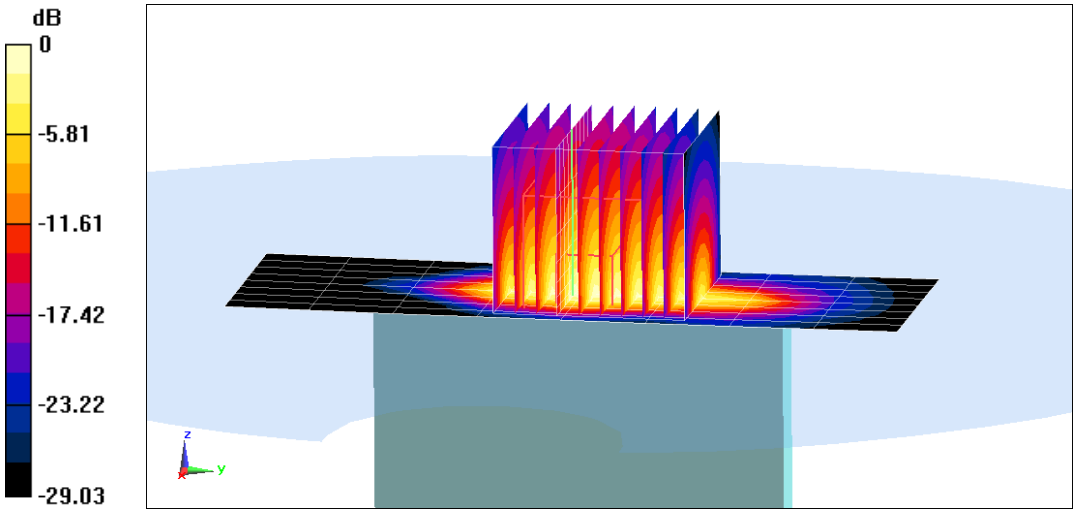
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1882.5 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used (interpolated):
f = 1882.5 MHz; σ = 1.498 S/m; ε_r = 51.572; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-19-2019; Ambient Temp: 22.9°C; Tissue Temp: 24.0°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1882.5 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 25 (PCS), Phablet SAR, Bottom Edge, Mid.ch, 20 MHz Bandwidth, QPSK, 50 RB, 25 RB Offset

Area Scan (9x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (10x10x8)/Cube 0: Measurement grid: dx=3.8mm, dy=3.8mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 69.42 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 18.5 W/kg
SAR(10 g) = 2.56 W/kg



0 dB = 12.6 W/kg = 11.00 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4715J

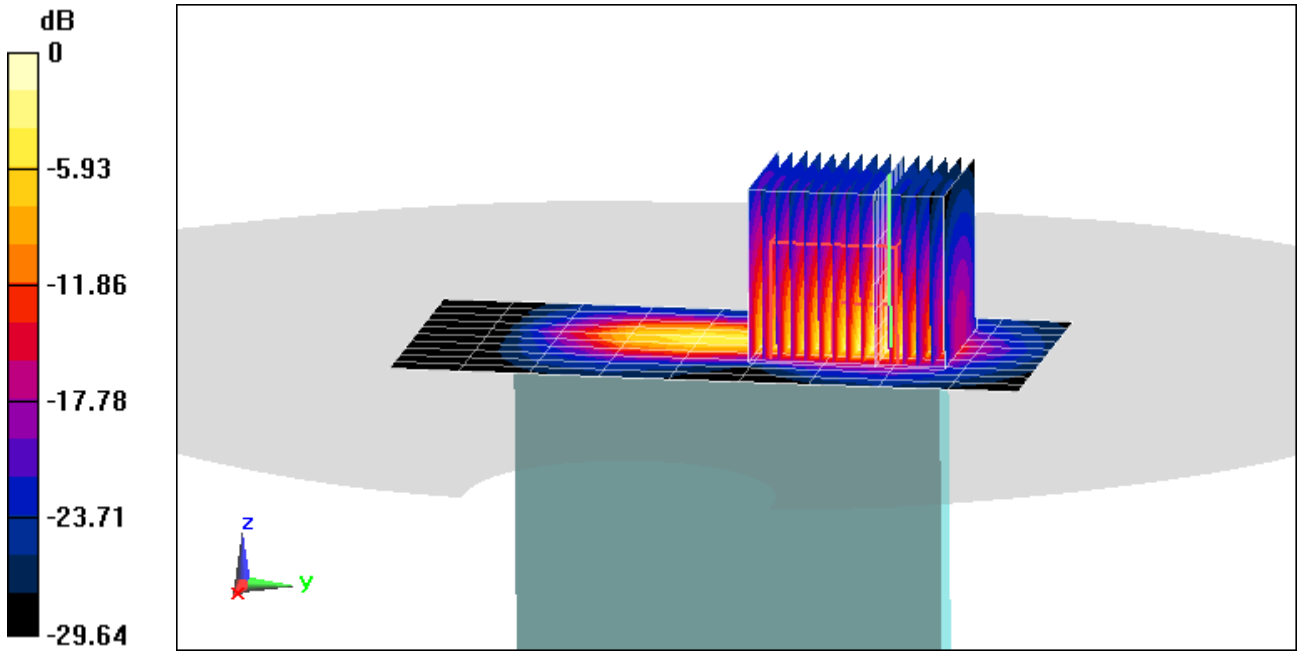
Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used:
f = 2310 MHz; σ = 1.887 S/m; ε_r = 51.515; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-24-2019; Ambient Temp: 23.7°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7547; ConvF(7.47, 7.47, 7.47) @ 2310 MHz; Calibrated: 7/15/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 7/11/2019
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 30, Phablet SAR, Bottom Edge, Mid.ch,
10 MHz Bandwidth, QPSK, 25 RB, 12 RB Offset

Area Scan (11x10x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (13x15x8)/Cube 0: Measurement grid: dx=2.4mm, dy=2.4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 64.78 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 36.6 W/kg
SAR(10 g) = 1.98 W/kg



0 dB = 17.1 W/kg = 12.33 dBW/kg

DUT: A3LSMF700F; Type: Portable Handset; Serial: 4715J

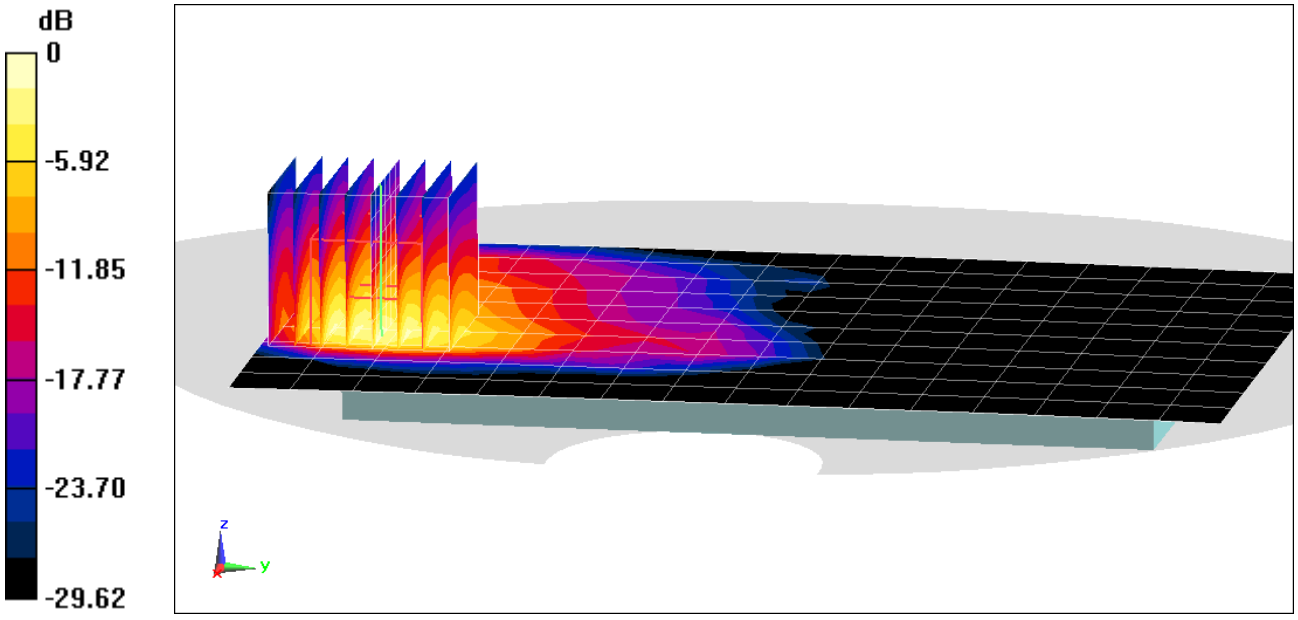
Communication System: UID 0, LTE Band 41 (Class 3); Frequency: 2636.5 MHz; Duty Cycle: 1:1.58
Medium: 2450 Body; Medium parameters used (interpolated):
$f = 2636.5$ MHz; $\sigma = 2.261$ S/m; $\varepsilon_r = 51.29$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-19-2019; Ambient Temp: 21.9°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7308; ConvF(7.37, 7.37, 7.37) @ 2636.5 MHz; Calibrated: 8/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 8/14/2019
Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 41, Phablet SAR, Back side,
PCC: 20 MHz Bandwidth, QPSK, Ch. 41055, 1 RB, 0 RB Offset
SCC: 20 MHz Bandwidth, QPSK, Ch. 40857, 1 RB, 99 RB Offset

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 32.98 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 7.20 W/kg
SAR(10 g) = 1.16 W/kg



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

DUT: A3LSMF700F; Type: Portable Handset; Serial: 0542M

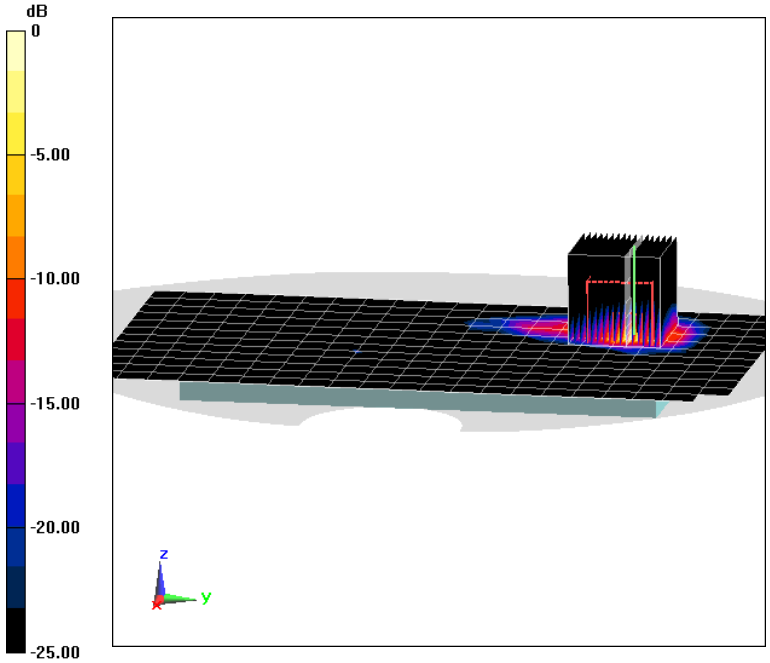
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5280 MHz; Duty Cycle: 1:1
Medium: 5200-5800 Body; Medium parameters used:
f = 5280 MHz; σ = 5.551 S/m; ε_r = 47.449; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-09-2019; Ambient Temp: 22.6°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7409; ConvF(4.7, 4.7, 4.7) @ 5280 MHz; Calibrated: 6/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/20/2019
Phantom: Front; Type: QD 000 P40 CD; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: IEEE 802.11a, Antenna 2, U-NII-2A, 20 MHz Bandwidth, Phablet SAR, Ch 56, 6 Mbps, Back Side

Area Scan (13x22x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (17x17x8)/Cube 0: Measurement grid: dx=1.9mm, dy=1.9mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 24.49 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 25.7 W/kg
SAR(10 g) = 0.734 W/kg



0 dB = 11.8 W/kg = 10.72 dBW/kg

APPENDIX B: SYSTEM VERIFICATION

APPENDIX B: SYSTEM VERIFICATION

PCTEST ENGINEERING LABORATORY, INC.

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

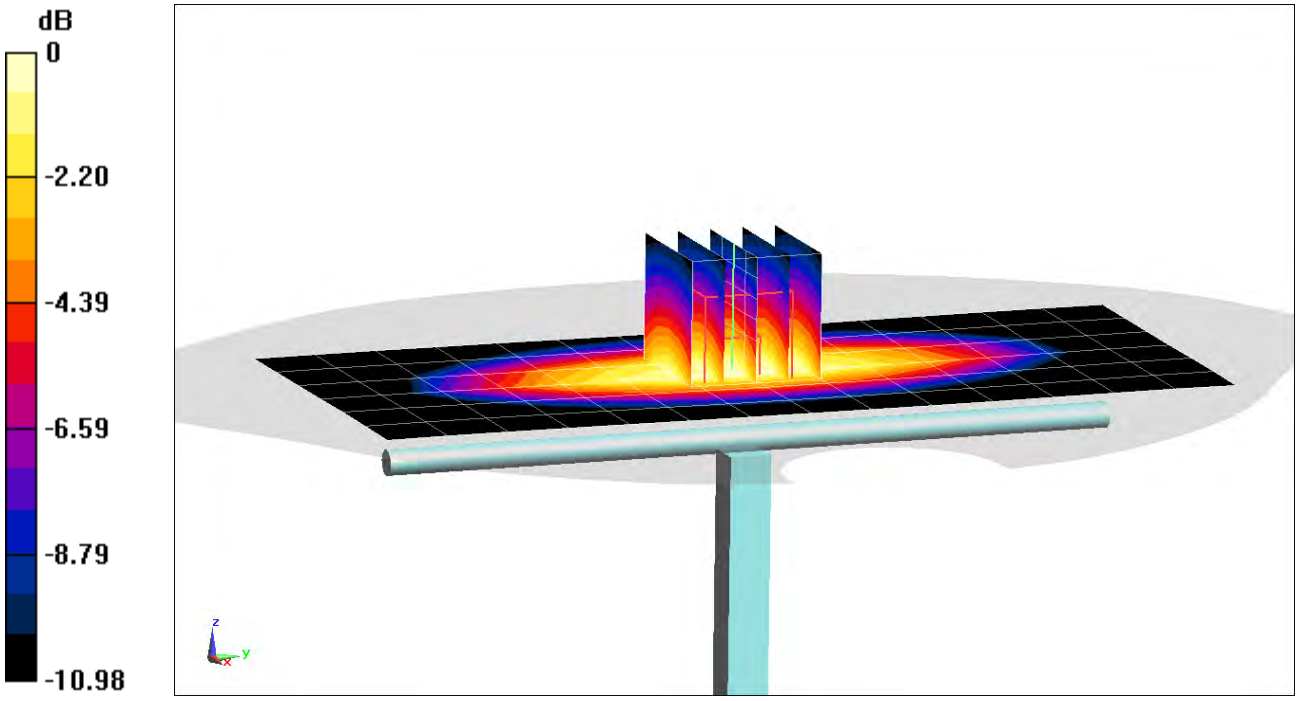
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used:
f = 750 MHz; σ = 0.896 S/m; ε_r = 41.721; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-20-2019; Ambient Temp: 21.8°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7409; ConvF(9.96, 9.96, 9.96) @ 750 MHz; Calibrated: 6/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/20/2019
Phantom: Front; Type: QD 000 P40 CD; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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) = 2.66 W/kg
SAR(1 g) = 1.64 W/kg
Deviation(1 g) = -0.97%



0 dB = 2.27 W/kg = 3.56 dBW/kg

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

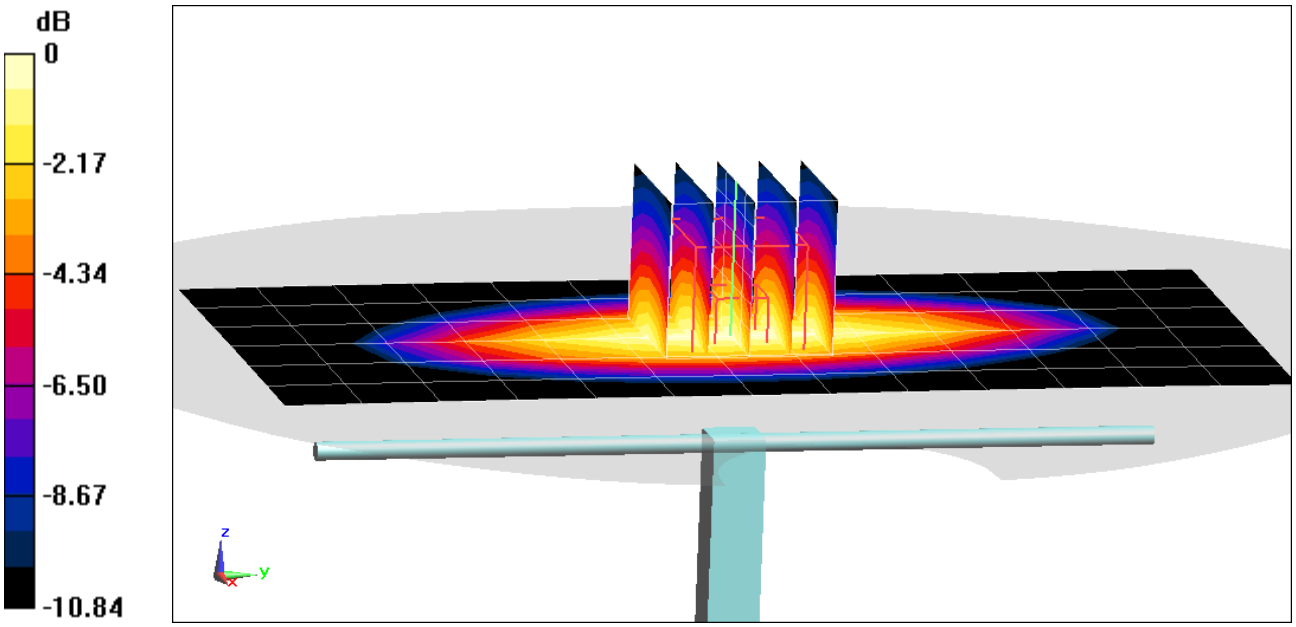
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used:
f = 835 MHz; σ = 0.915 S/m; ε_r = 40.624; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-09-2019; Ambient Temp: 21.0°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7410; ConvF(9.88, 9.88, 9.88) @ 835 MHz; Calibrated: 7/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2019
Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1966
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

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) = 2.86 W/kg
SAR(1 g) = 1.92 W/kg
Deviation(1 g) = 1.91%



0 dB = 2.56 W/kg = 4.08 dBW/kg

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

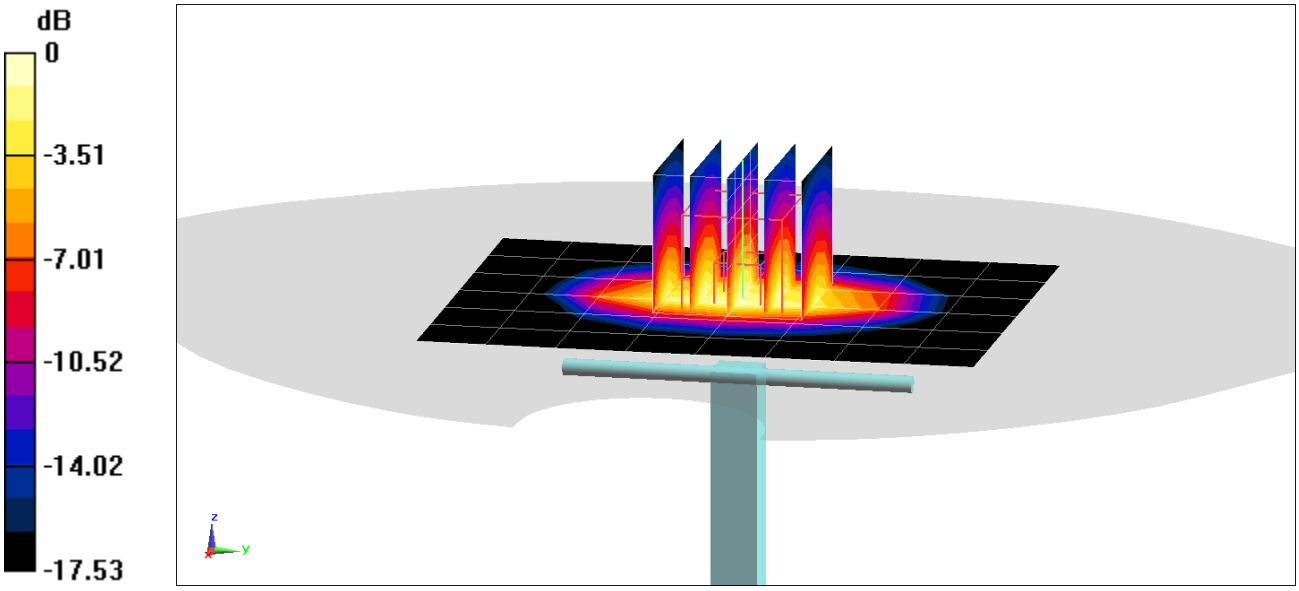
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Head; Medium parameters used:
f = 1750 MHz; σ = 1.379 S/m; ε_r = 39.702; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-20-2019; Ambient Temp: 20.4°C; Tissue Temp: 21.7°C

Probe: EX3DV4 - SN7406; ConvF(8.57, 8.57, 8.57) @ 1750 MHz; Calibrated: 5/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn728; Calibrated: 5/8/2019
Phantom: Twin-SAM V5.0 Left 30; Type: QD 000 P40 CD; Serial: 1715
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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) = 6.71 W/kg
SAR(1 g) = 3.56 W/kg
Deviation(1 g) = -3.78%



0 dB = 5.60 W/kg = 7.48 dBW/kg

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

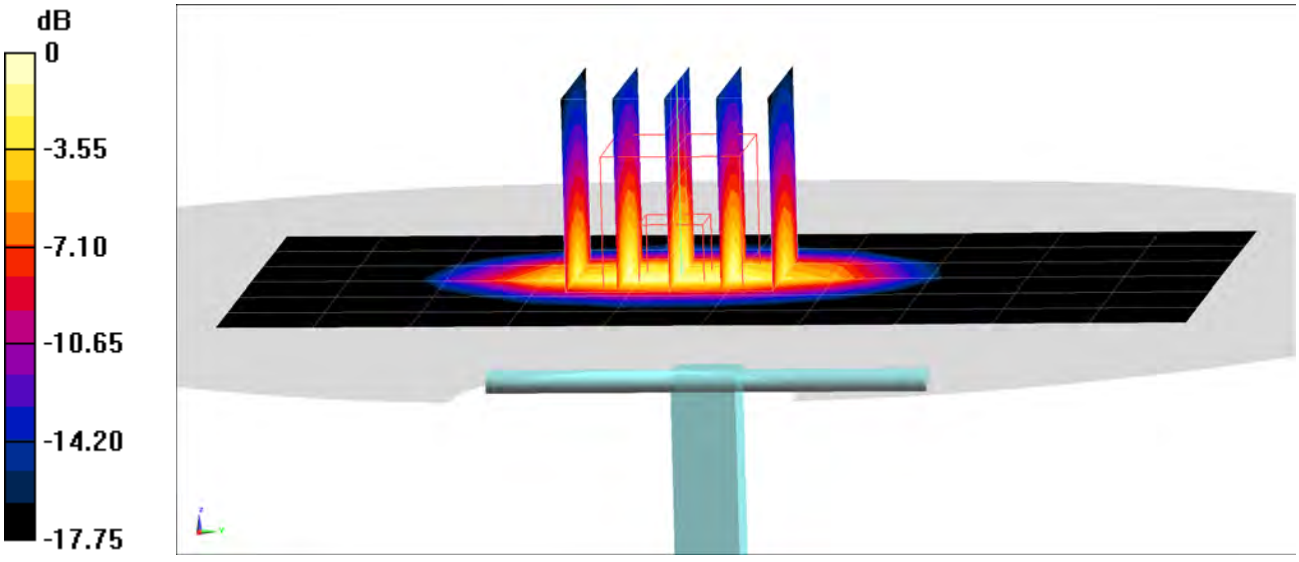
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1900 MHz; σ = 1.401 S/m; ε_r = 41.402; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-19-2019; Ambient Temp: 21.3°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN3914; ConvF(7.8, 7.8, 7.8) @ 1900 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/14/2019
Phantom: Twin-SAM V5.0 Front 30; Type: QD 000 P40 CD; Serial: 1646
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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) = 7.82 W/kg
SAR(1 g) = 4.19 W/kg
Deviation(1 g) = 6.62%



0 dB = 6.57 W/kg = 8.18 dBW/kg

DUT: Dipole 2300 MHz; Type: D2300V2; Serial: 1073

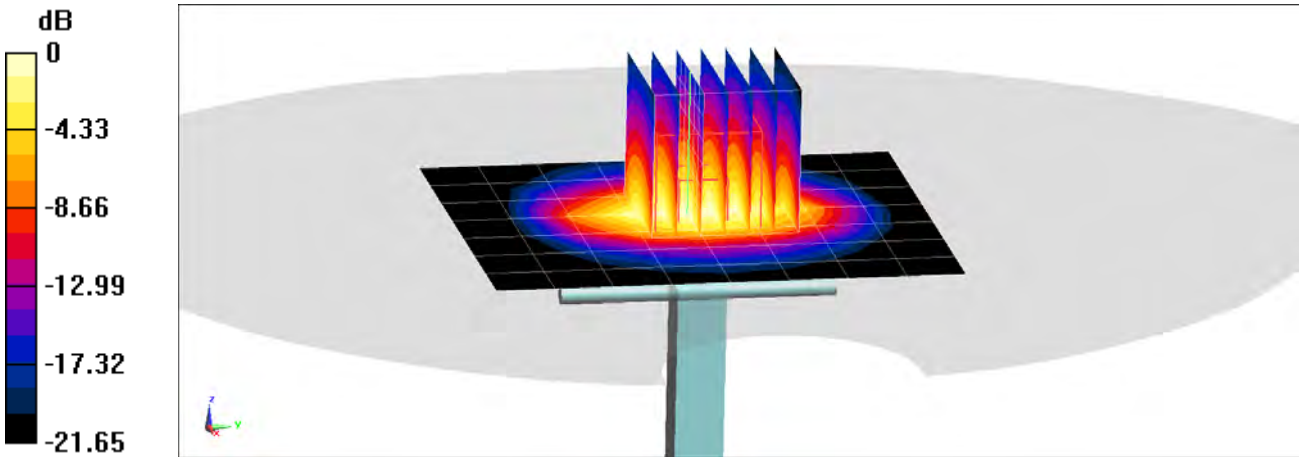
Communication System: UID 0, CW; Frequency: 2300 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2300 MHz; σ = 1.736 S/m; ε_r = 38.458; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-08-2020; Ambient Temp: 22.9°C; Tissue Temp: 20.7°C

Probe: EX3DV4 - SN7417; ConvF(7.73, 7.73, 7.73) @ 2300 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/13/2019
Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

2300 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.5 W/kg
SAR(1 g) = 5.11 W/kg
Deviation(1 g) = 3.86%



0 dB = 8.37 W/kg = 9.23 dBW/kg

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

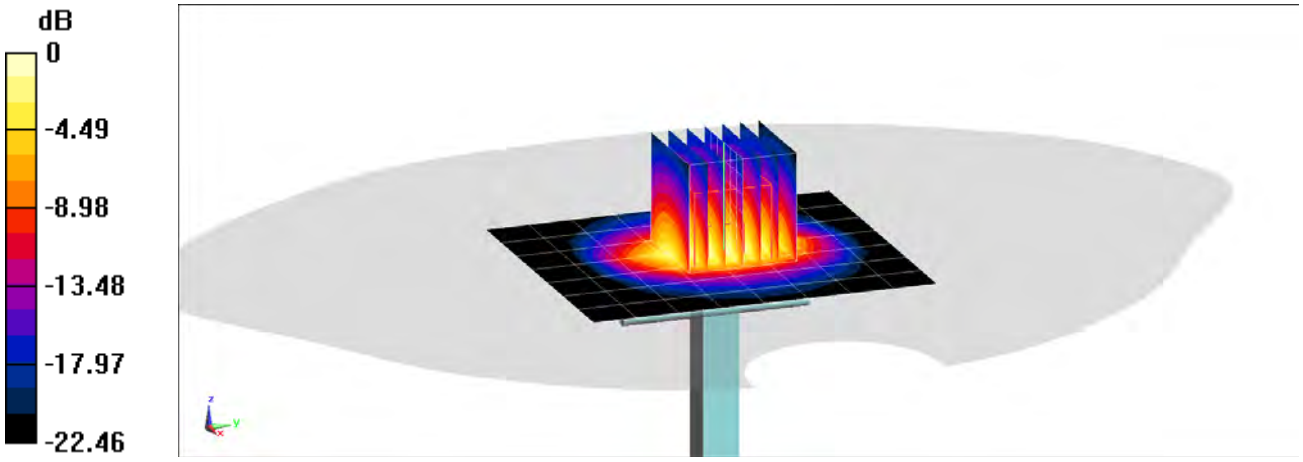
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; σ = 1.861 S/m; ε_r = 40.327; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-19-2019; Ambient Temp: 22.7°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7417; ConvF(7.46, 7.46, 7.46) @ 2450 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/13/2019
Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.2 W/kg
SAR(1 g) = 5.44 W/kg
Deviation(1 g) = 4.02%



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

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

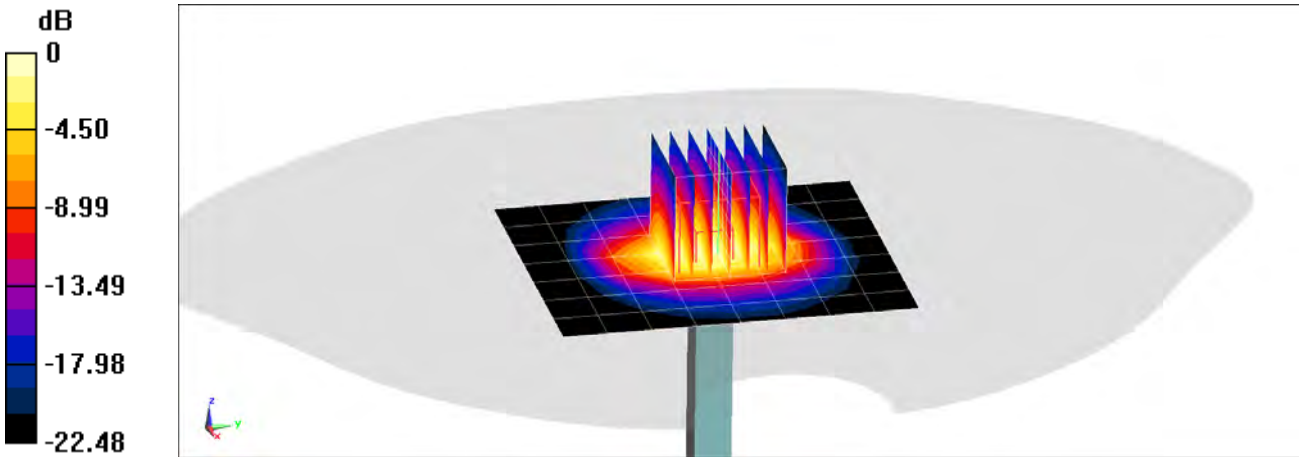
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; σ = 1.867 S/m; ε_r = 38.384; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-25-2019; Ambient Temp: 22.6°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7417; ConvF(7.46, 7.46, 7.46) @ 2450 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/13/2019
Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.2 W/kg
SAR(1 g) = 5.34 W/kg
Deviation(1 g) = 2.10%



0 dB = 8.92 W/kg = 9.50 dBW/kg

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

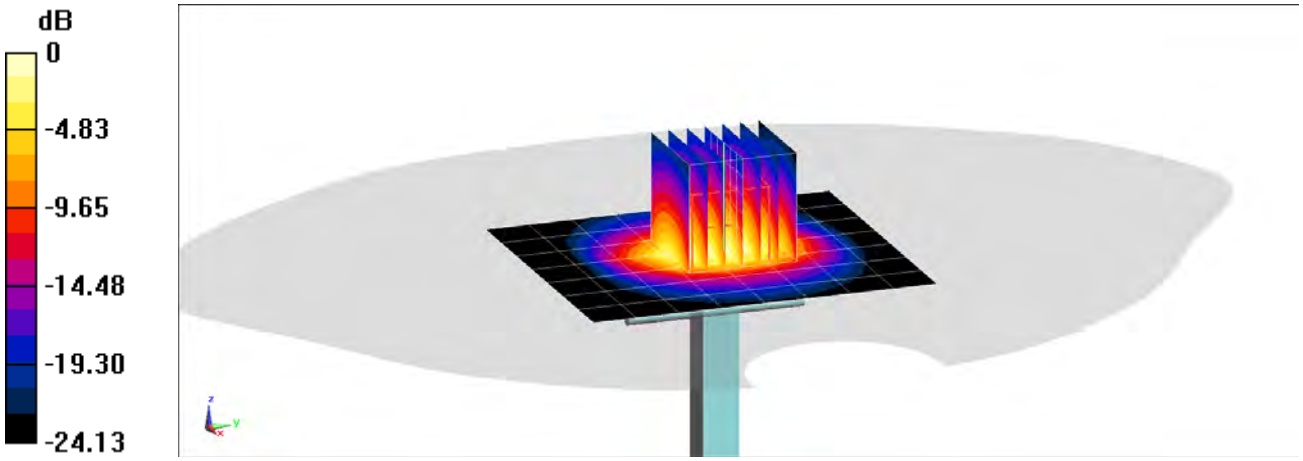
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2600 MHz; σ = 1.98 S/m; ε_r = 38.12; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-25-2019; Ambient Temp: 22.6°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7417; ConvF(7.17, 7.17, 7.17) @ 2600 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/13/2019
Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

2600 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 13.1 W/kg
SAR(1 g) = 6.11 W/kg
Deviation(1 g) = 5.16%



0 dB = 10.4 W/kg = 10.17 dBW/kg

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

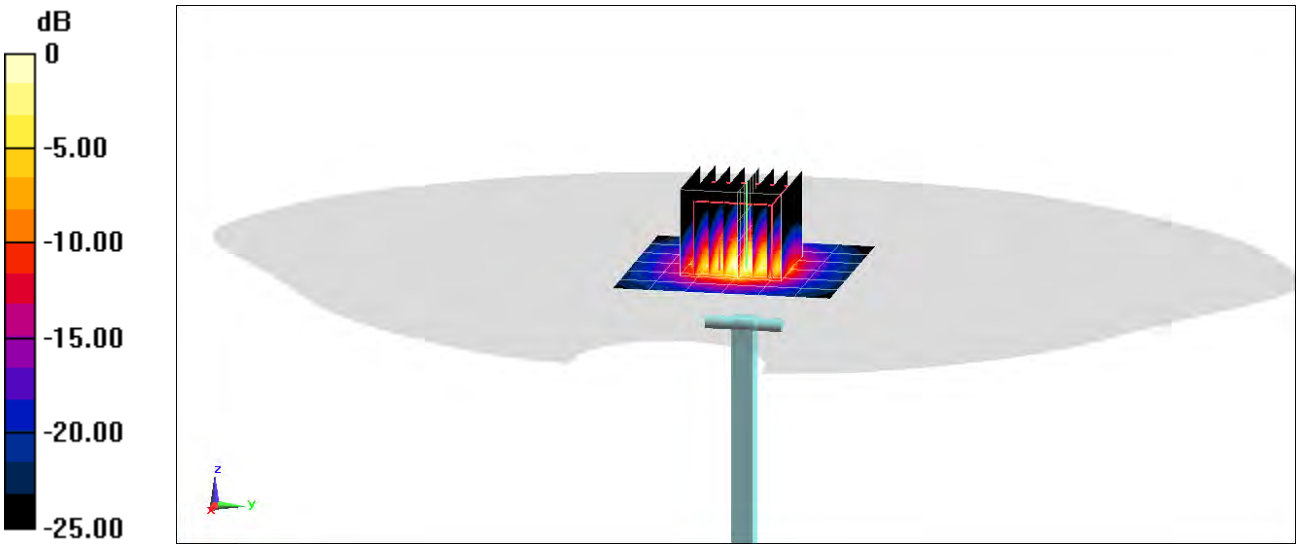
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5200-5800 Head Medium parameters used:
f = 5250 MHz; σ = 4.642 S/m; ε_r = 35.29; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-25-2019; Ambient Temp: 21.0°C; Tissue Temp: 20.1°C

Probe: EX3DV4 - SN7406; ConvF(5.54, 5.54, 5.54) @ 5250 MHz; Calibrated: 5/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/8/2019
Phantom: Twin-SAM V5.0 Left 20; Type: QD 000 P40 CD; Serial: 1715
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

5250 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 15.4 W/kg
SAR(1 g) = 3.82 W/kg
Deviation(1 g) = -5.45%



0 dB = 9.01 W/kg = 9.55 dBW/kg

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

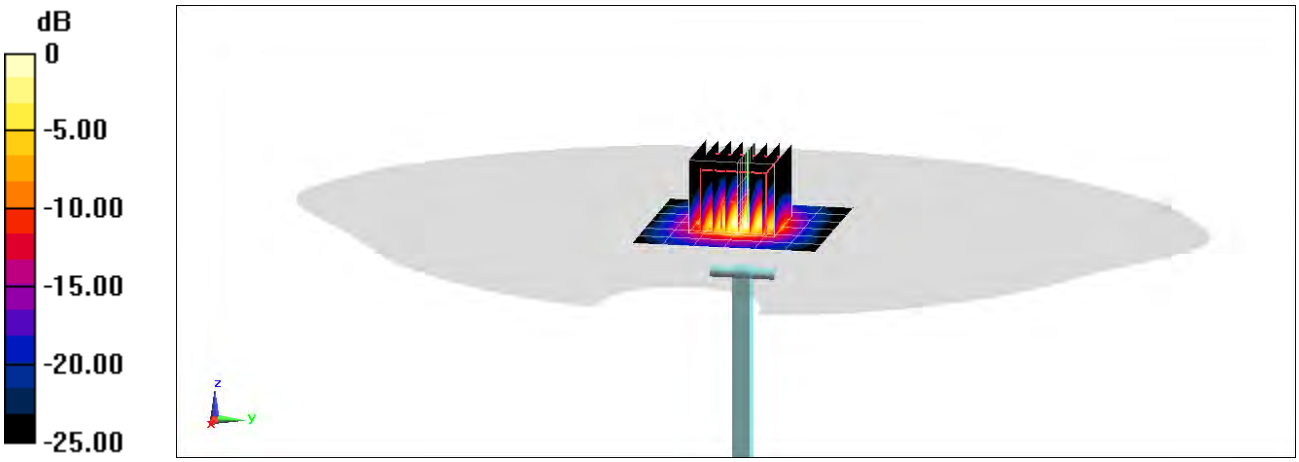
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5200-5800 Head Medium parameters used:
f = 5600 MHz; σ = 5.011 S/m; ε_r = 34.794; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-25-2019; Ambient Temp: 21.0°C; Tissue Temp: 20.1°C

Probe: EX3DV4 - SN7406; ConvF(4.94, 4.94, 4.94) @ 5600 MHz; Calibrated: 5/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/8/2019
Phantom: Twin-SAM V5.0 Left 20; Type: QD 000 P40 CD; Serial: 1715
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

5600 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 17.6 W/kg
SAR(1 g) = 4.1 W/kg
Deviation(1 g) = -0.85%



0 dB = 9.78 W/kg = 9.90 dBW/kg

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

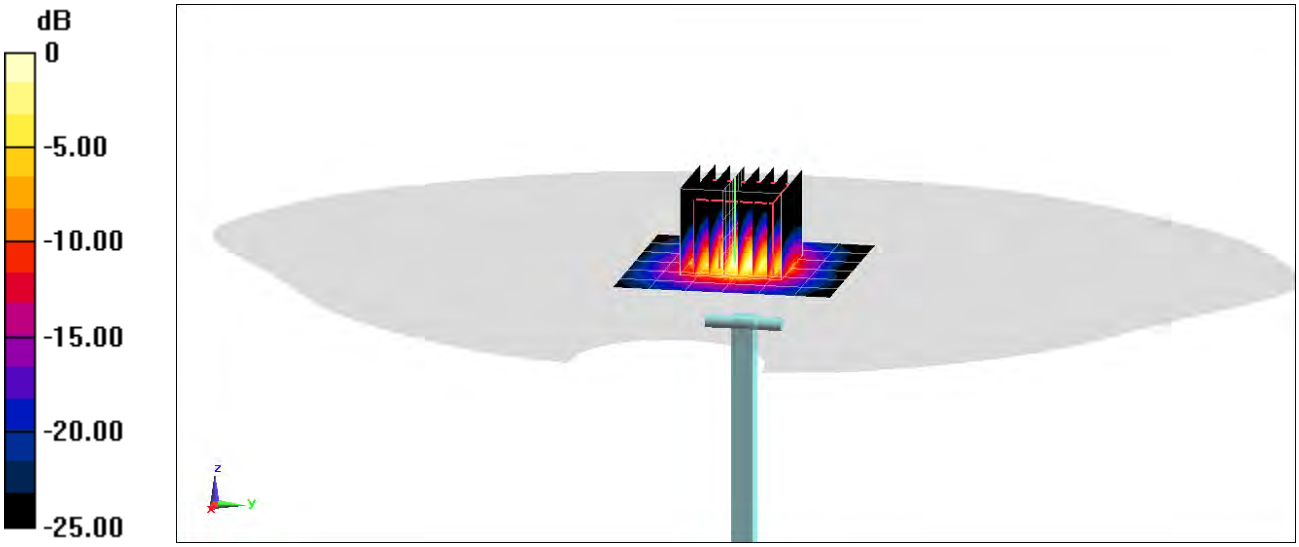
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5200-5800 Head Medium parameters used:
f = 5750 MHz; σ = 5.179 S/m; ε_r = 34.596; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-25-2019; Ambient Temp: 21.0°C; Tissue Temp: 20.1°C

Probe: EX3DV4 - SN7406; ConvF(5.23, 5.23, 5.23) @ 5750 MHz; Calibrated: 5/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/8/2019
Phantom: Twin-SAM V5.0 Left 20; Type: QD 000 P40 CD; Serial: 1715
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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) = 17.0 W/kg
SAR(1 g) = 3.79 W/kg
Deviation(1 g) = -5.49%



0 dB = 9.32 W/kg = 9.69 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

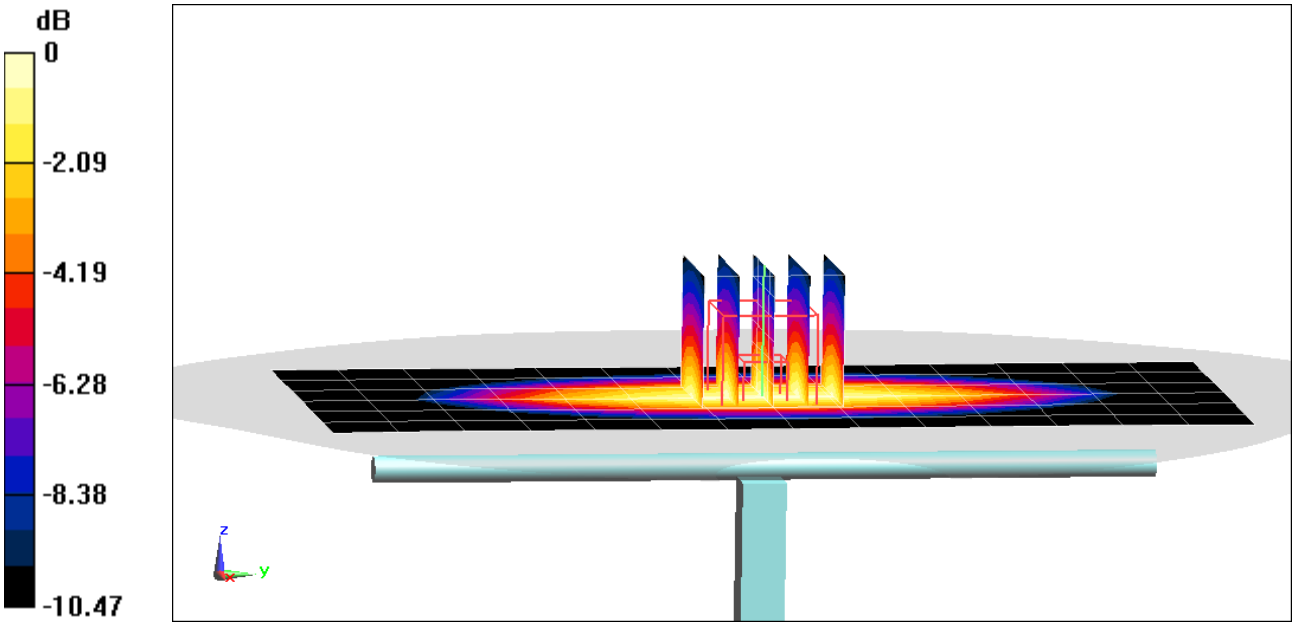
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used:
f = 750 MHz; σ = 0.972 S/m; ε_r = 53.864; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-10-2019; Ambient Temp: 24.6°C; Tissue Temp: 21.9°C

Probe: EX3DV4 - SN7410; ConvF(10.01, 10.01, 10.01) @ 750 MHz; Calibrated: 7/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2019
Phantom: Twin-SAM V5.0 (left 20); Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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) = 2.67 W/kg
SAR(1 g) = 1.77 W/kg
Deviation(1 g) = 4.98%



0 dB = 2.37 W/kg = 3.75 dBW/kg

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

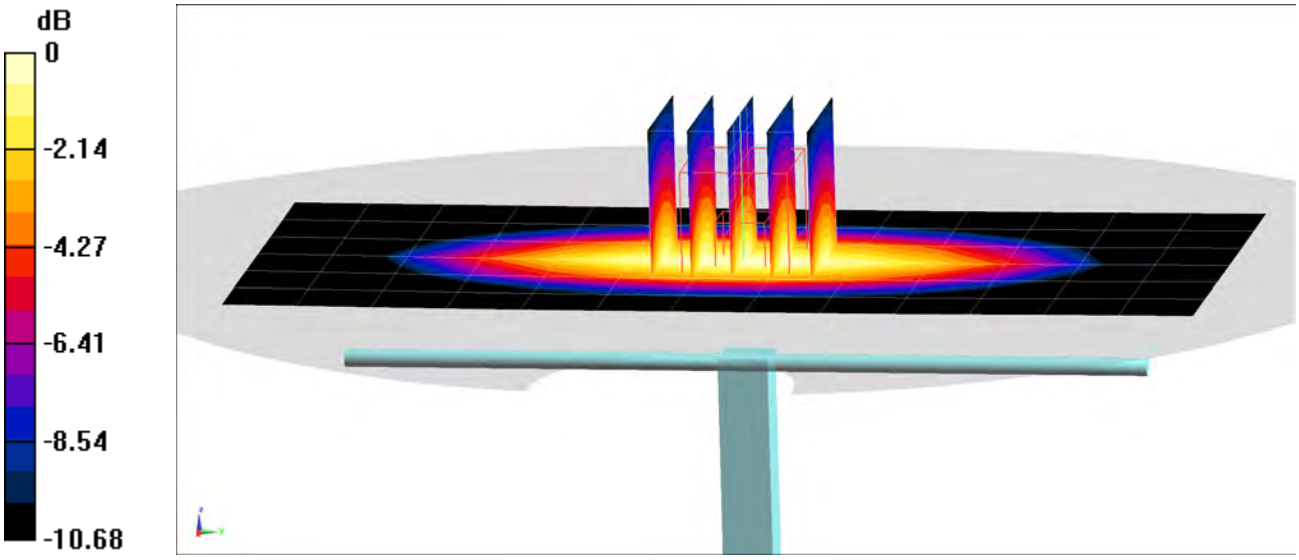
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.964 S/m; ε_r = 54.041; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-25-2019; Ambient Temp: 21.4°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN3914; ConvF(9.46, 9.46, 9.46) @ 835 MHz; Calibrated: 2/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/14/2019
Phantom: Twin-SAM V5.0 Left 30; Type: QD 000 P40 CD; Serial: 1687
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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) = 3.12 W/kg
SAR(1 g) = 2.03 W/kg
Deviation(1 g) = 4.96%



0 dB = 2.74 W/kg = 4.38 dBW/kg

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

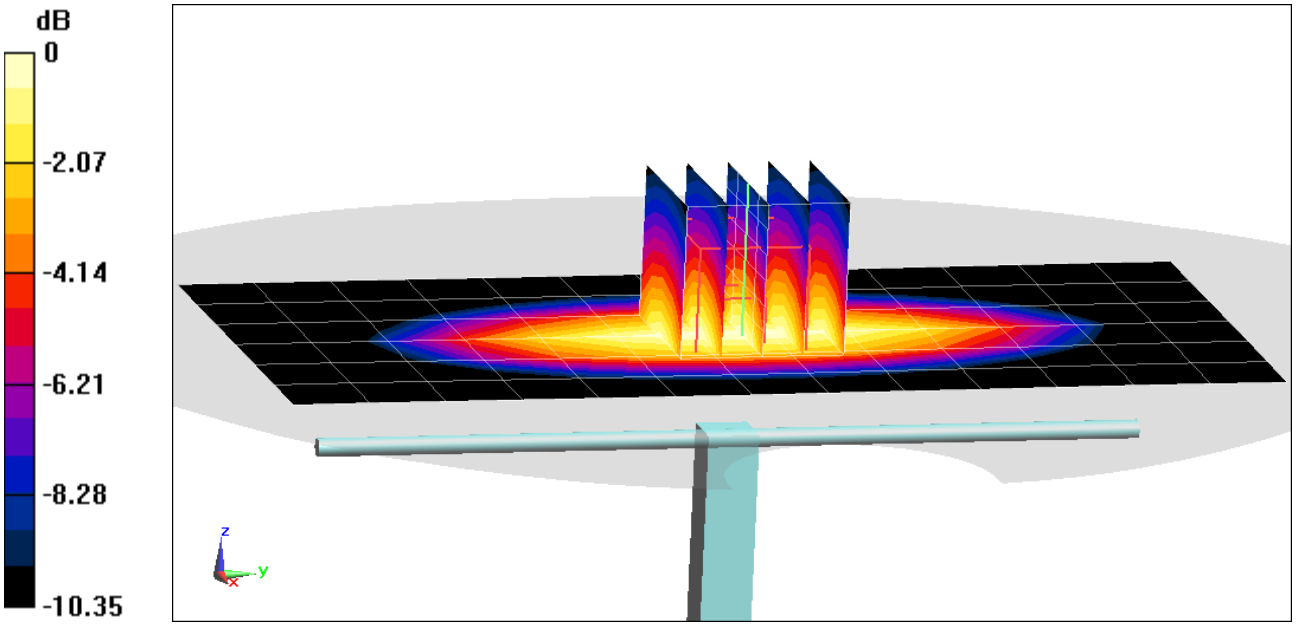
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.964 S/m; ε_r = 53.751; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-13-2019; Ambient Temp: 21.8°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7410; ConvF(9.79, 9.79, 9.79) @ 835 MHz; Calibrated: 7/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/11/2019
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630
Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 3.00 W/kg
SAR(1 g) = 2.02 W/kg
Deviation(1 g) = 6.65%



0 dB = 2.67 W/kg = 4.27 dBW/kg

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

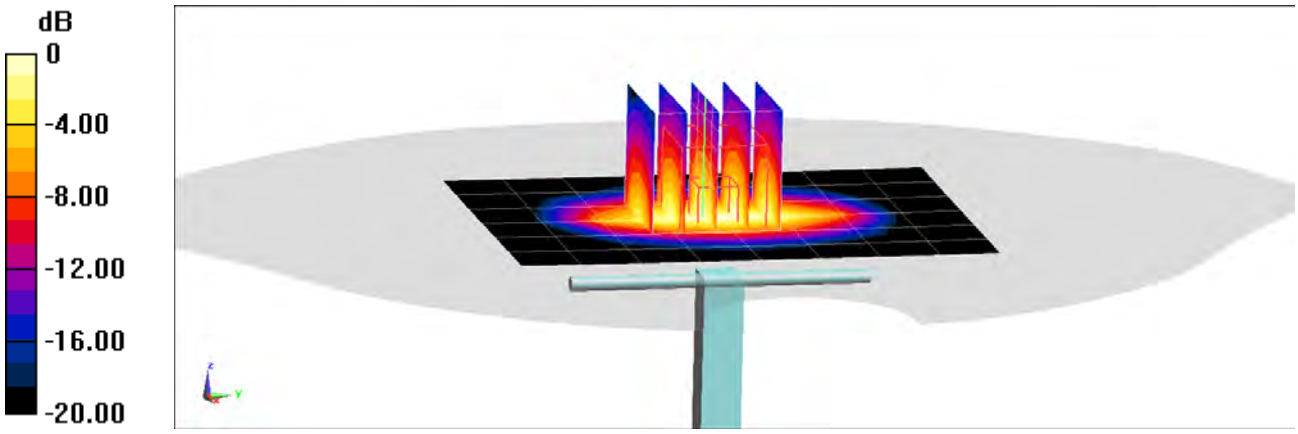
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body; Medium parameters used:
f = 1750 MHz; σ = 1.546 S/m; ε_r = 51.999; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-13-2019; Ambient Temp: 20.2°C; Tissue Temp: 19.1°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1750 MHz; Calibrated: 4/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/18/2019
Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.30 W/kg
SAR(1 g) = 3.92 W/kg
Deviation(1 g) = 3.98%



0 dB = 6.04 W/kg = 7.81 dBW/kg

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

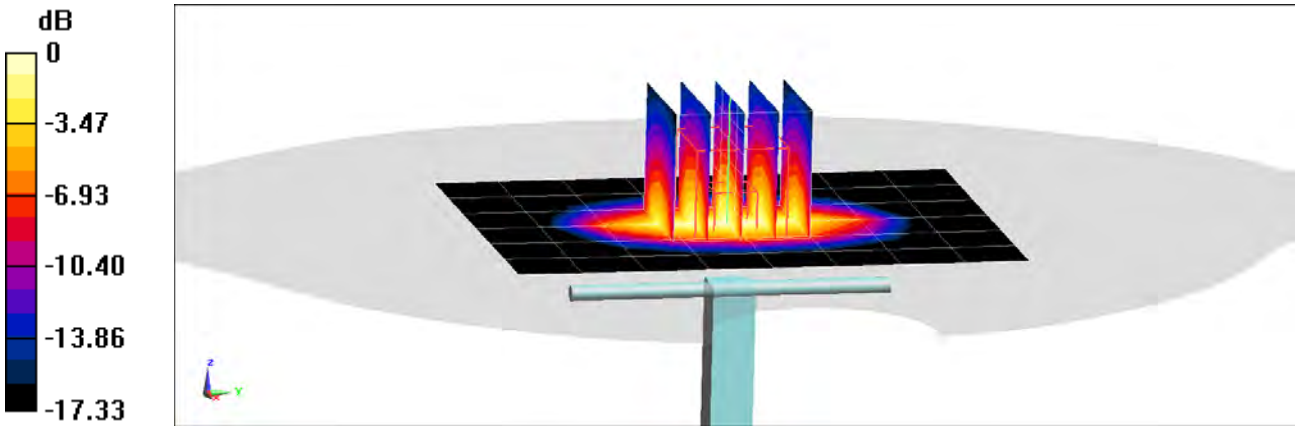
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body; Medium parameters used:
f = 1750 MHz; σ = 1.533 S/m; ε_r = 52.134; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-16-2019; Ambient Temp: 20.6°C; Tissue Temp: 20.3°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1750 MHz; Calibrated: 4/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/18/2019
Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.32 W/kg
SAR(10 g) = 2.07 W/kg
Deviation(10 g) = 4.55%



0 dB = 6.17 W/kg = 7.90 dBW/kg

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

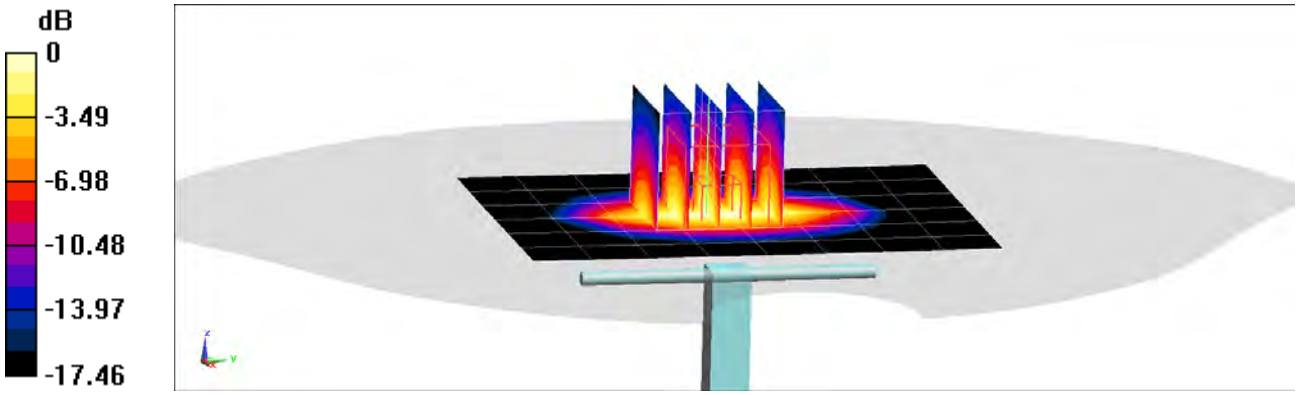
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body; Medium parameters used:
f = 1750 MHz; σ = 1.512 S/m; ε_r = 53.208; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-19-2019; Ambient Temp: 21.4°C; Tissue Temp: 20.4°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1750 MHz; Calibrated: 4/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/18/2019
Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.20 W/kg
SAR(1 g) = 3.85 W/kg; SAR(10 g) = 2.02 W/kg
Deviation(1 g) = 2.12%; Deviation(10 g) = 2.02%



0 dB = 5.94 W/kg = 7.74 dBW/kg

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

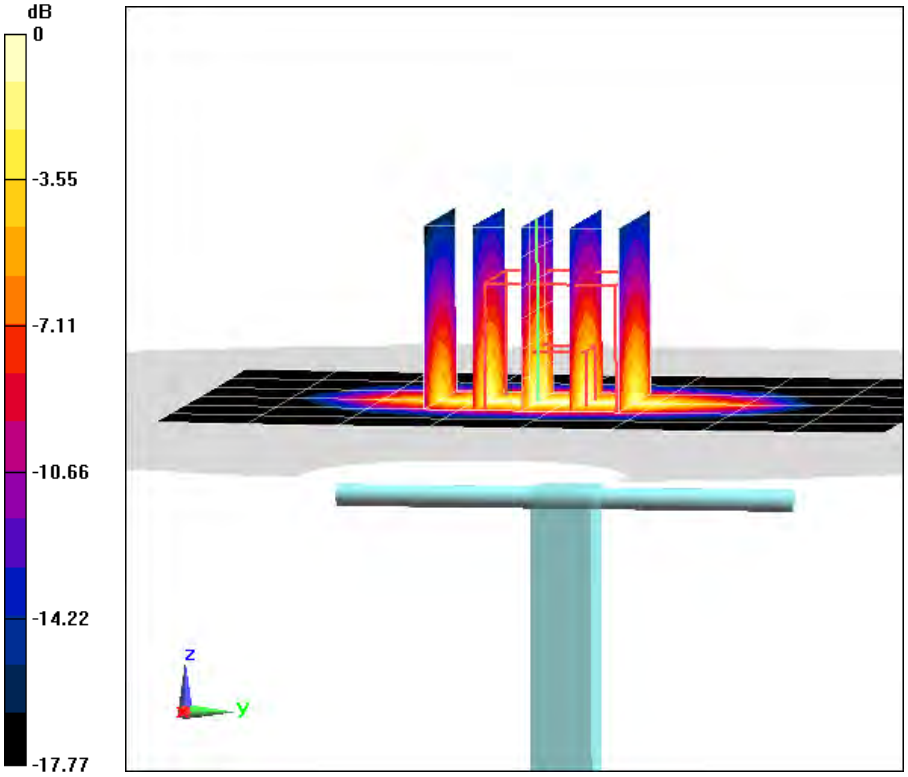
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body; Medium parameters used:
f = 1750 MHz; σ = 1.534 S/m; ε_r = 52.426; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-22-2019; Ambient Temp: 20.6°C; Tissue Temp: 20.3°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1750 MHz; Calibrated: 4/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/18/2019
Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.21 W/kg
SAR(1 g) = 3.93 W/kg
Deviation(1 g) = 7.38%



0 dB = 5.95 W/kg = 7.75 dBW/kg

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

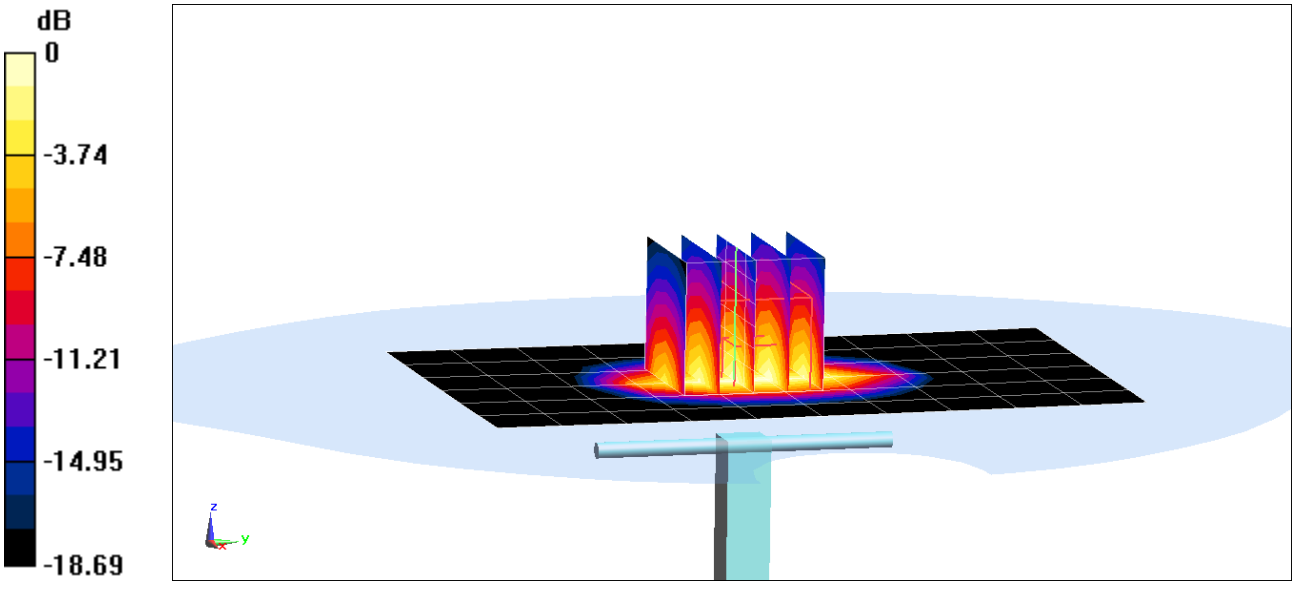
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1900 MHz; σ = 1.551 S/m; ε_r = 51.482; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-12-2019; Ambient Temp: 22.3°C; Tissue Temp: 23.8°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1900 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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) = 4.21 W/kg
Deviation(1 g) = 6.85%



0 dB = 6.41 W/kg = 8.07 dBW/kg

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

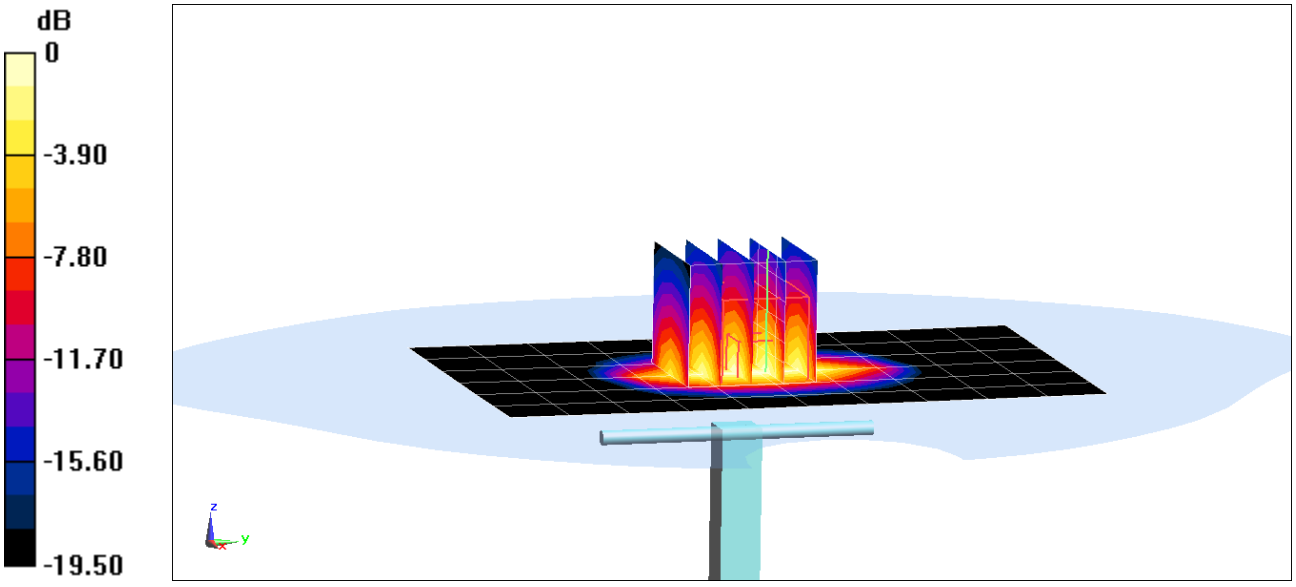
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1900 MHz; σ = 1.558 S/m; ε_r = 52.138; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-14-2019; Ambient Temp: 22.5°C; Tissue Temp: 24.5°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1900 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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) = 7.55 W/kg
SAR(1 g) = 4.01 W/kg
Deviation(1 g) = 1.78%



0 dB = 6.19 W/kg = 7.92 dBW/kg

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

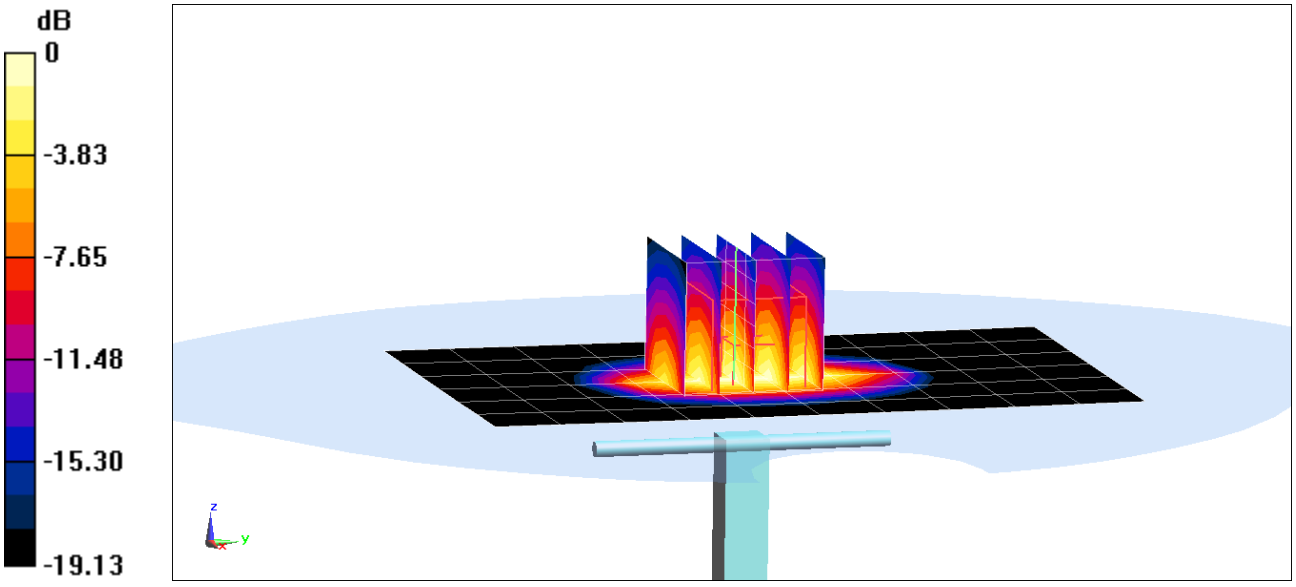
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1900 MHz; σ = 1.581 S/m; ε_r = 51.468; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-16-2019; Ambient Temp: 21.7°C; Tissue Temp: 23.1°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1900 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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) = 7.86 W/kg
SAR(1 g) = 4.25 W/kg
Deviation(1 g) = 7.87%



0 dB = 6.48 W/kg = 8.12 dBW/kg

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

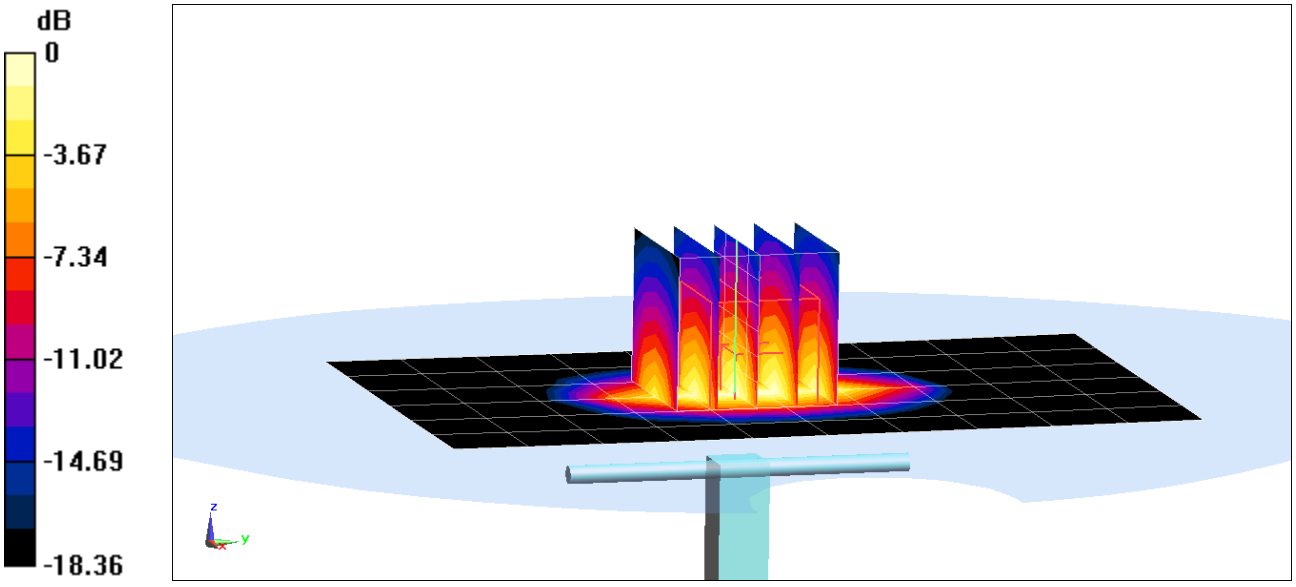
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1900 MHz; σ = 1.517 S/m; ε_r = 51.516; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-19-2019; Ambient Temp: 22.9°C; Tissue Temp: 24.0°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1900 MHz; Calibrated: 1/24/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1530; Calibrated: 1/15/2019
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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) = 7.39 W/kg
SAR(1 g) = 4.03 W/kg; SAR(10 g) = 2.09 W/kg
Deviation(1 g) = 2.81%; Deviation(10 g) = 1.46%



0 dB = 6.14 W/kg = 7.88 dBW/kg

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

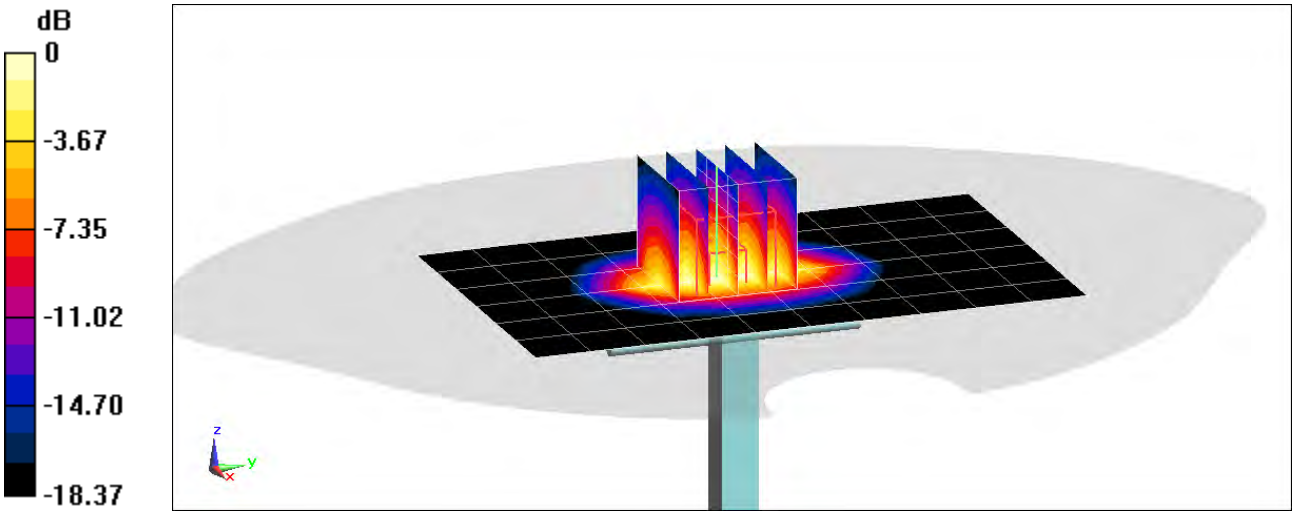
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body; Medium parameters used:
f = 1900 MHz; σ = 1.579 S/m; ε_r = 51.23; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-11-2020; Ambient Temp: 21.9°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7551; ConvF(7.69, 7.69, 7.69) @ 1900 MHz; Calibrated: 9/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 9/17/2019
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1792
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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) = 7.84 W/kg
SAR(10 g) = 2.14 W/kg
Deviation(10 g) = 3.38%



0 dB = 6.50 W/kg = 8.13 dBW/kg

DUT: Dipole 2300 MHz; Type: D2300V2; Serial: 1073

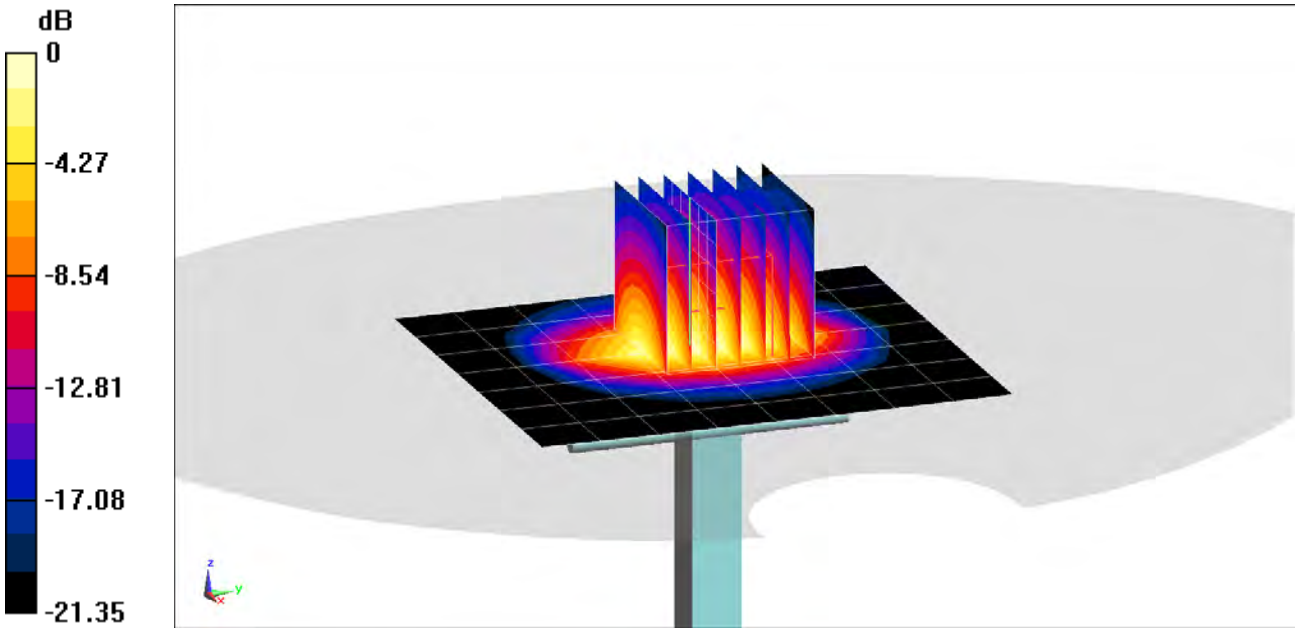
Communication System: UID 0, CW; Frequency: 2300 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used:
f = 2300 MHz; σ = 1.875 S/m; ε_r = 51.543; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-24-2019; Ambient Temp: 23.7°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7547; ConvF(7.47, 7.47, 7.47) @ 2300 MHz; Calibrated: 7/15/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 7/11/2019
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

2300 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) = 10.0 W/kg
SAR(1 g) = 5.03 W/kg; SAR(10 g) = 2.39 W/kg
Deviation(1 g) = 5.45%; Deviation(10 g) = 3.02%



0 dB = 8.14 W/kg = 9.11 dBW/kg

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

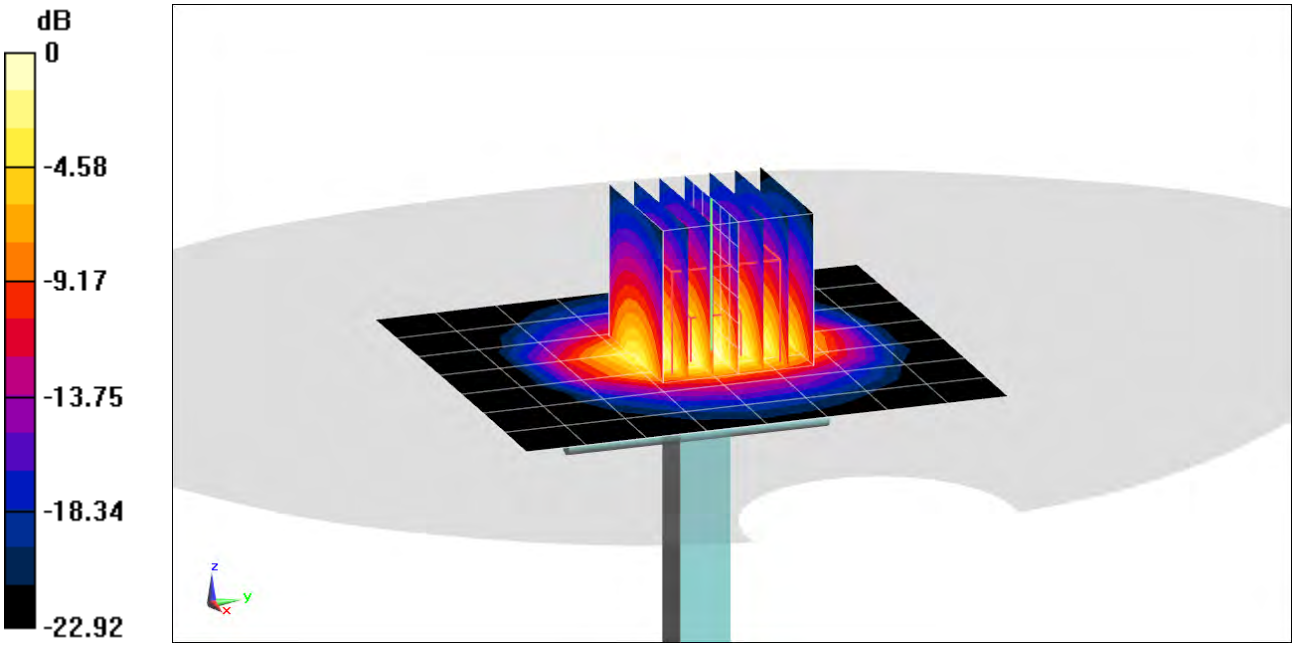
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; σ = 2.042 S/m; ε_r = 51.863; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-19-2019; Ambient Temp: 21.9°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7308; ConvF(7.46, 7.46, 7.46) @ 2450 MHz; Calibrated: 8/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 8/14/2019
Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.5 W/kg
SAR(10 g) = 2.48 W/kg
Deviation(10 g) = 3.33%



0 dB = 9.26 W/kg = 9.67 dBW/kg

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

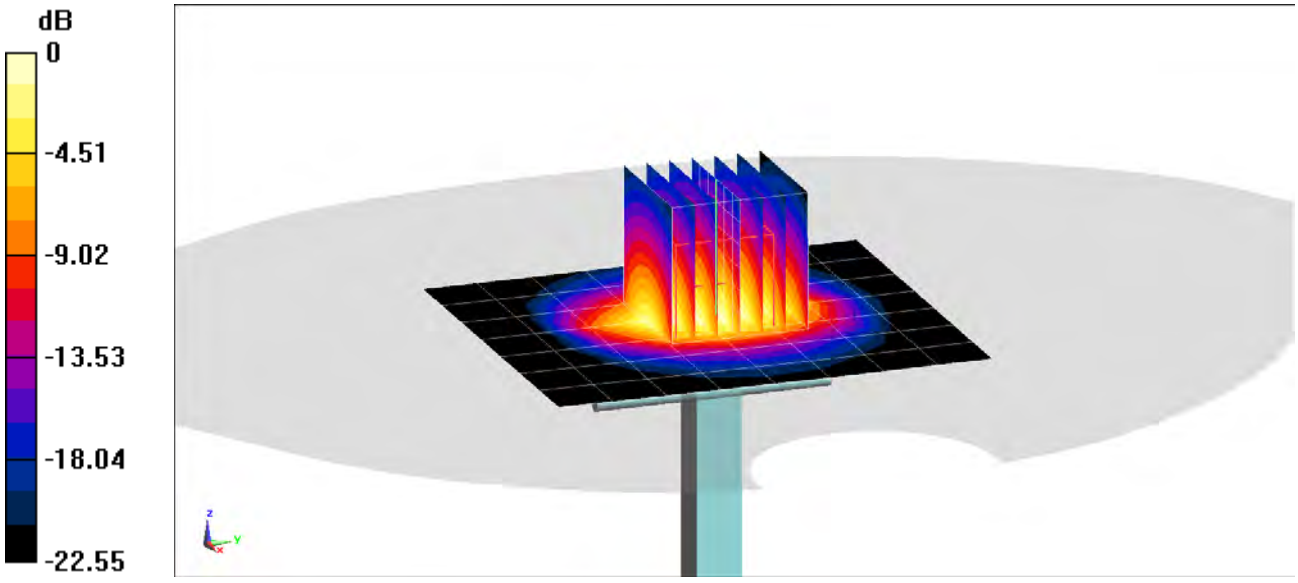
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used:
f = 2450 MHz; σ = 2.021 S/m; ε_r = 51.535; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-19-2019; Ambient Temp: 23.5°C; Tissue Temp: 22.4°C

Probe: EX3DV4 - SN7547; ConvF(7.3, 7.3, 7.3) @ 2450 MHz; Calibrated: 7/15/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 7/11/2019
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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) = 10.2 W/kg
SAR(1 g) = 4.92 W/kg
Deviation(1 g) = -3.72%



0 dB = 8.14 W/kg = 9.11 dBW/kg

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

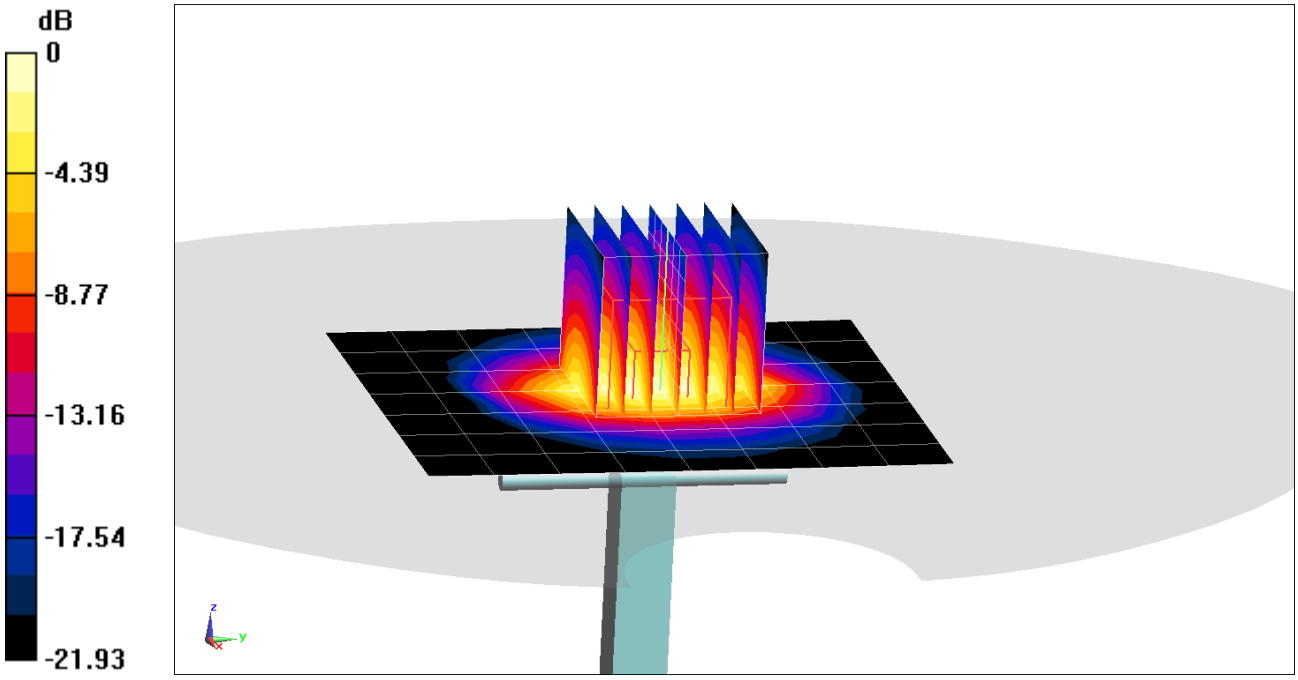
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used:
f = 2450 MHz; σ = 2.037 S/m; ε_r = 51.284; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-22-2019; Ambient Temp: 24.5°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN7547; ConvF(7.3, 7.3, 7.3) @ 2450 MHz; Calibrated: 7/15/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 7/11/2019
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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) = 10.7 W/kg
SAR(1 g) = 5.15 W/kg
Deviation(1 g) = 0.78 %



0 dB = 8.59 W/kg = 9.34 dBW/kg

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

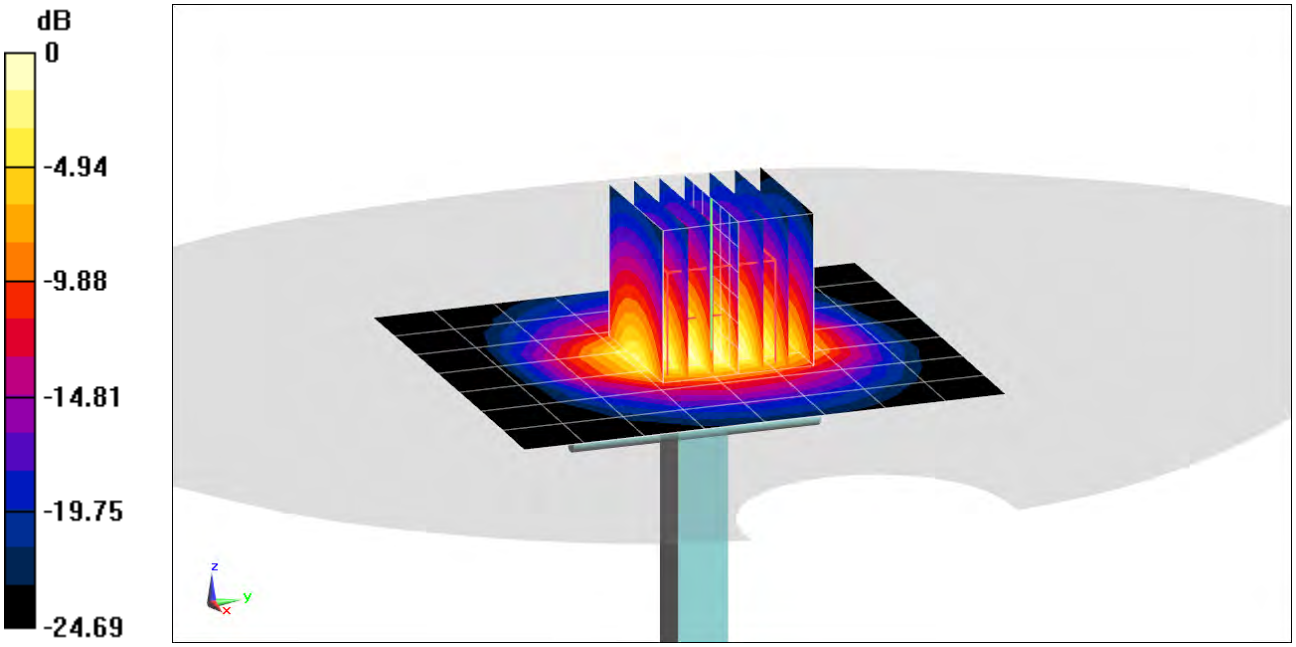
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2600 MHz; σ = 2.219 S/m; ε_r = 51.418; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-19-2019; Ambient Temp: 21.9°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7308; ConvF(7.37, 7.37, 7.37) @ 2600 MHz; Calibrated: 8/16/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 8/14/2019
Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

2600 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 12.4 W/kg
SAR(10 g) = 2.42 W/kg
Deviation(10 g) = -3.20%



0 dB = 9.69 W/kg = 9.86 dBW/kg

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

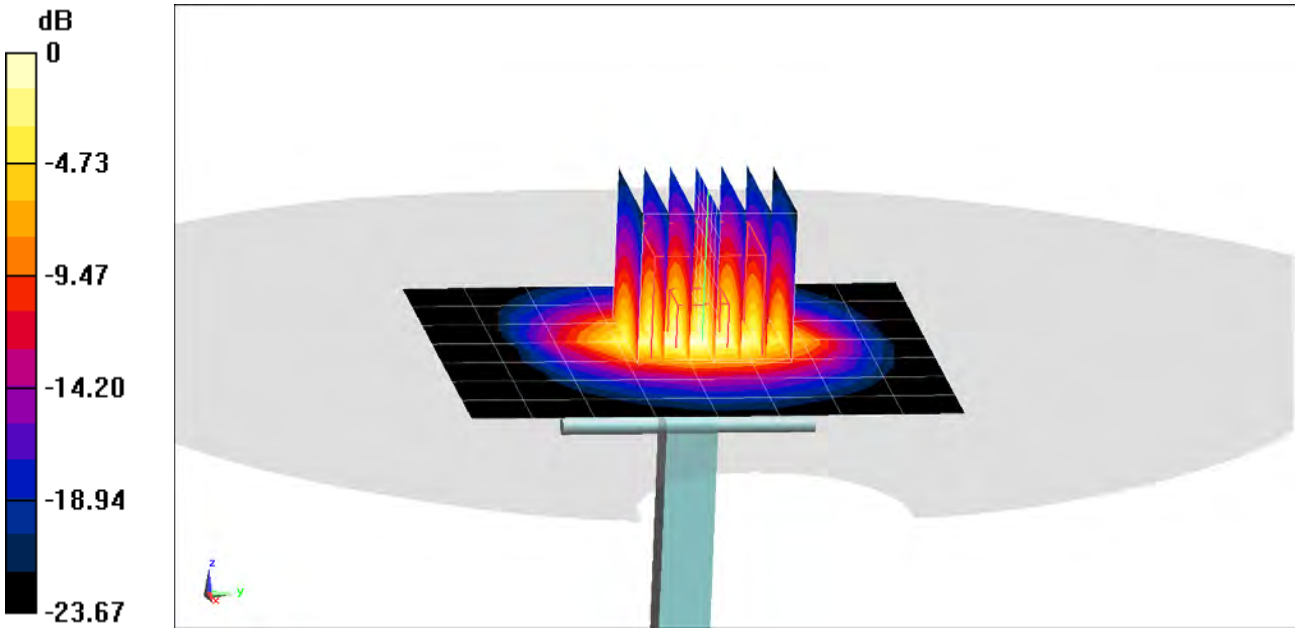
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2450 Body; Medium parameters used:
f = 2600 MHz; σ = 2.216 S/m; ε_r = 50.82; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-22-2019; Ambient Temp: 24.5°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN7547; ConvF(7.18, 7.18, 7.18) @ 2600 MHz; Calibrated: 7/15/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 7/11/2019
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

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) = 11.8 W/kg
SAR(1 g) = 5.46 W/kg
Deviation(1 g) = -0.36%



0 dB = 9.42 W/kg = 9.74 dBW/kg

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

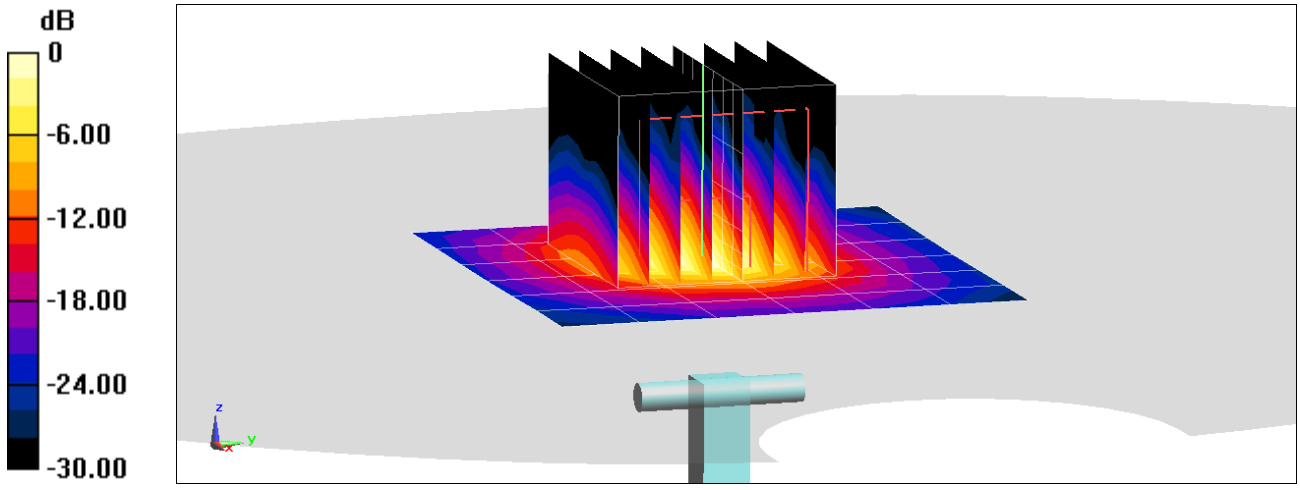
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5200-5800 Body Medium parameters used:
f = 5250 MHz; σ = 5.505 S/m; ε_r = 47.502; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-09-2019; Ambient Temp: 22.6°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7409; ConvF(4.7, 4.7, 4.7) @ 5250 MHz; Calibrated: 6/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/20/2019
Phantom: Front; Type: QD 000 P40 CD; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

5250 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 15.6 W/kg
SAR(1 g) = 3.78 W/kg; SAR(10 g) = 1.05 W/kg
Deviation(1 g) = -1.82%; Deviation(10 g) = -1.87%



0 dB = 9.15 W/kg = 9.61 dBW/kg

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

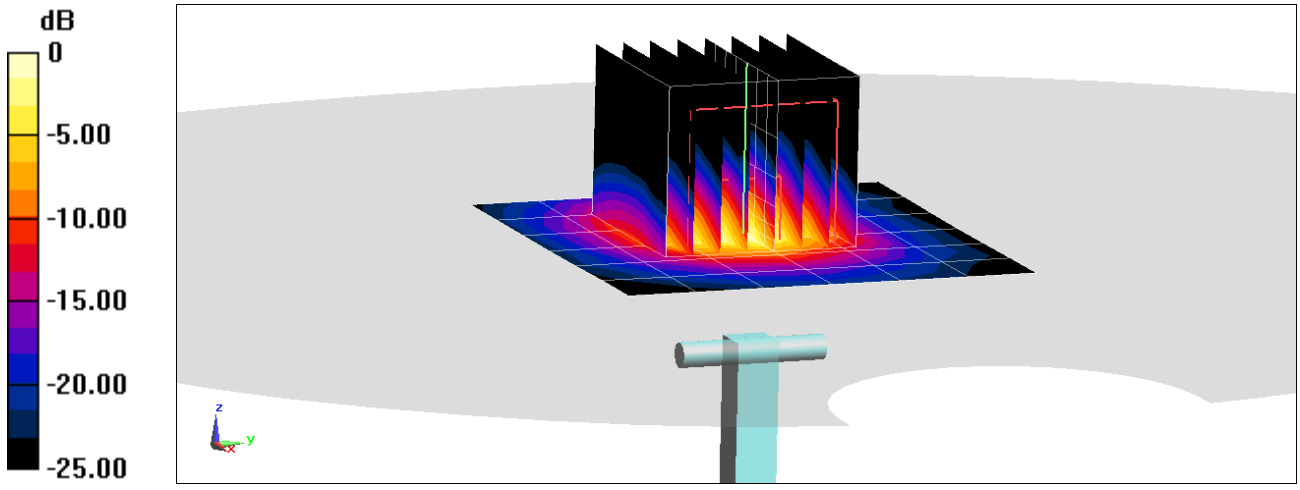
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5200-5800 Body Medium parameters used:
f = 5600 MHz; σ = 5.981 S/m; ε_r = 46.917; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-09-2019; Ambient Temp: 22.6°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7409; ConvF(4.22, 4.22, 4.22) @ 5600 MHz; Calibrated: 6/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/20/2019
Phantom: Front; Type: QD 000 P40 CD; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

5600 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 18.4 W/kg
SAR(1 g) = 4.03 W/kg; SAR(10 g) = 1.11 W/kg
Deviation(1 g) = 2.54%; Deviation(10 g) = 1.37%



0 dB = 10.4 W/kg = 10.17 dBW/kg

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

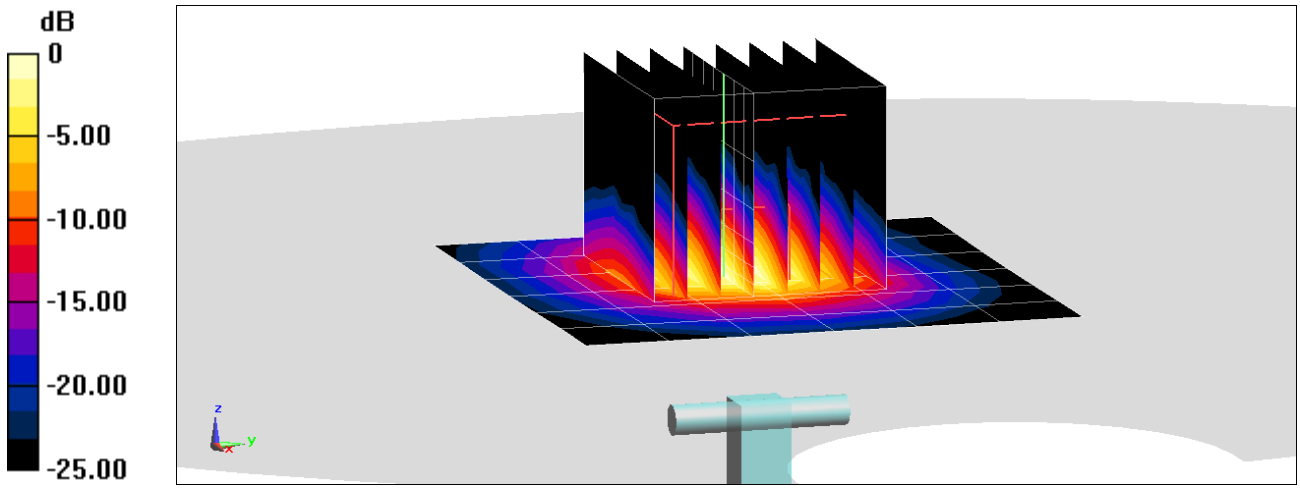
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5200-5800 Body Medium parameters used:
f = 5750 MHz; σ = 6.19 S/m; ε_r = 46.693; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-09-2019; Ambient Temp: 22.6°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7409; ConvF(4.23, 4.23, 4.23) @ 5750 MHz; Calibrated: 6/19/2019
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/20/2019
Phantom: Front; Type: QD 000 P40 CD; Serial: 1686
Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

5750 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 18.6 W/kg
SAR(1 g) = 3.86 W/kg; SAR(10 g) = 1.06 W/kg
Deviation(1 g) = 0.39%; Deviation(10 g) = -0.47%



0 dB = 9.63 W/kg = 9.84 dBW/kg

APPENDIX C: SAR TISSUE SPECIFICATIONS

Measurement Procedure for Tissue verification:

1) The network analyzer and probe system was configured and calibrated.
2) The probe was immersed in the tissue. The tissue was placed in a nonmetallic container. Trapped air bubbles beneath the flange were minimized by placing the probe at a slight angle.
3) The complex admittance with respect to the probe aperture was measured
4) The complex relative permittivity ε_r' can be calculated from the below equation (Pournaropoulos and Misra):

$$Y = \frac{j2\omega\varepsilon_r\varepsilon_0}{\left[\ln(b/a)\right]^2}\int_a^b\int_a^b\int_0^\pi \cos\phi' \frac{\exp\left[-j\omega r(\mu_0\varepsilon_r'\varepsilon_0)^{1/2}\right]}{r} d\phi' d\rho' d\rho$$

where *Y* is the admittance of the probe in contact with the sample, the primed and unprimed coordinates refer to source and observation points, respectively, $r^2 = \rho^2 + \rho'^2 - 2\rho\rho'\cos\phi'$, ω is the angular frequency, and $j = \sqrt{-1}$.

3 Composition / Information on ingredients

3.2 Mixtures
Description: Aqueous solution with surfactants and inhibitors
Declarable, or hazardous components:

CAS: 107-21-1 EINECS: 203-473-3 Reg.nr.: 01-2119456816-28-0000	**Ethanediol** STOT RE 2, H373; Acute Tox. 4, H302	>1.0-4.9%
CAS: 68608-26-4 EINECS: 271-781-5 Reg.nr.: 01-2119527859-22-0000	**Sodium petroleum sulfonate** Eye Irrit. 2, H319	< 2.9%
CAS: 107-41-5 EINECS: 203-489-0 Reg.nr.: 01-2119539582-35-0000	**Hexylene Glycol / 2-Methyl-pentane-2,4-diol** Skin Irrit. 2, H315; Eye Irrit. 2, H319	< 2.9%
CAS: 68920-66-1 NLP: 500-236-9 Reg.nr.: 01-2119489407-26-0000	**Alkoxylated alcohol, > C_{16}** Aquatic Chronic 2, H411; Skin Irrit. 2, H315; Eye Irrit. 2, H319	< 2.0%

Additional information:
For the wording of the listed risk phrases refer to section 16.
Not mentioned CAS-, EINECS- or registration numbers are to be regarded as Proprietary/Confidential.
The specific chemical identity and/or exact percentage concentration of proprietary components is withheld as a trade secret.

Figure C-1

Note: Liquid recipes are proprietary SPEAG. Since the composition is approximate to the actual liquids utilized, the manufacturer tissue-equivalent liquid data sheets are provided below.

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Measurement Certificate / Material Test

Item Name	**Body Tissue Simulating Liquid (MBBL600-6000V6)**
Product No.	SL AAM U16 BC (Batch: 181029-1)
Manufacturer	SPEAG

Measurement Method

TSL dielectric parameters measured using calibrated DAK probe.

Target Parameters

Target parameters as defined in the KDB 865664 compliance standard.

Test Condition

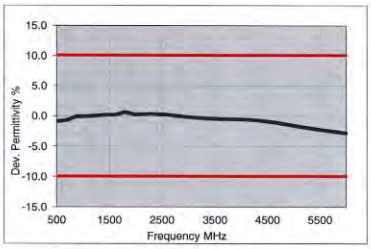
Ambient Condition	22°C ; 30% humidity
TSL Temperature	22°C
Test Date	30-Oct-18
Operator	CL

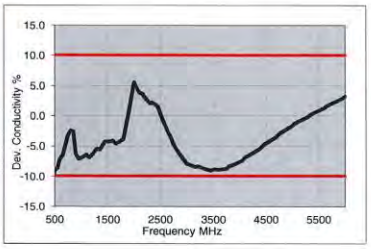
Additional Information

TSL Density
TSL Heat-capacity

Results

	Measured			Target		Diff.to Target [%]	
f [MHz]	e'	e''	sigma	eps	sigma	Δ-eps	Δ-sigma
800	55.1	21.3	0.95	55.3	0.97	-0.4	-2.1
825	55.1	20.8	0.96	55.2	0.98	-0.3	-2.0
835	55.1	20.6	0.96	55.1	0.99	0.0	-2.5
850	55.1	20.4	0.96	55.2	0.99	-0.1	-3.0
900	55.0	19.7	0.98	55.0	1.05	0.0	-6.7
1400	54.2	15.6	1.22	54.1	1.28	0.2	-4.7
1450	54.1	15.4	1.24	54.0	1.30	0.2	-4.6
1500	54.1	15.3	1.27	53.9	1.33	0.3	-4.5
1550	54.0	15.1	1.30	53.9	1.36	0.2	-4.4
1600	53.9	15.0	1.33	53.8	1.39	0.2	-4.3
1625	53.9	14.9	1.35	53.8	1.41	0.3	-4.3
1640	53.9	14.9	1.36	53.7	1.42	0.3	-4.2
1650	53.8	14.9	1.36	53.7	1.43	0.2	-4.9
1700	53.8	14.8	1.40	53.6	1.46	0.4	-4.1
1750	53.7	14.7	1.43	53.4	1.49	0.5	-4.0
1800	53.7	14.6	1.46	53.3	1.52	0.8	-3.9
1810	53.7	14.6	1.47	53.3	1.52	0.8	-3.3
1825	53.7	14.6	1.48	53.3	1.52	0.8	-2.6
1850	53.6	14.5	1.50	53.3	1.52	0.6	-1.3
1900	53.5	14.5	1.53	53.3	1.52	0.4	0.7
1950	53.5	14.5	1.57	53.3	1.52	0.4	3.3
2000	53.4	14.4	1.60	53.3	1.52	0.2	5.3
2050	53.4	14.4	1.64	53.2	1.57	0.3	4.5
2100	53.3	14.4	1.68	53.2	1.62	0.2	3.7
2150	53.3	14.4	1.72	53.1	1.66	0.4	3.6
2200	53.2	14.4	1.76	53.0	1.71	0.3	2.9
2250	53.1	14.4	1.81	53.0	1.76	0.2	2.8
2300	53.1	14.4	1.85	52.9	1.81	0.4	2.2
2350	53.0	14.5	1.89	52.8	1.85	0.3	2.2
2400	52.9	14.5	1.94	52.8	1.90	0.2	2.1
2450	52.9	14.5	1.98	52.7	1.95	0.4	1.5
2500	52.8	14.6	2.03	52.6	2.02	0.3	0.5
2550	52.7	14.6	2.07	52.6	2.09	0.2	-1.0
2600	52.6	14.7	2.12	52.5	2.16	0.2	-1.9





3500	51.1	15.5	3.02	51.3	3.31	-0.4	-8.8
3700	50.8	15.7	3.24	51.1	3.55	-0.5	-8.8
5200	48.1	18.2	5.27	49.0	5.30	-1.8	-0.6
5250	48.0	18.3	5.34	49.0	5.36	-1.9	-0.4
5300	47.9	18.4	5.41	48.9	5.42	-2.0	-0.2
5500	47.5	18.6	5.70	48.6	5.65	-2.2	0.8
5600	47.3	18.8	5.84	48.5	5.77	-2.3	1.3
5700	47.1	18.9	5.99	48.3	5.88	-2.5	1.8
5800	47.0	19.0	6.14	48.2	6.00	-2.6	2.3

TSL Dielectric Parameters

1

Figure C-2
600 – 5800 MHz Body Tissue Equivalent Matter

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Measurement Certificate / Material Test

Item Name	**Head Tissue Simulating Liquid (HBBL600-10000V6)**
Product No.	SL AAH U16 BC (Batch: 181031-2)
Manufacturer	SPEAG

Measurement Method

TSL dielectric parameters measured using calibrated DAK probe.

Target Parameters

Target parameters as defined in the IEEE 1528 and IEC 62209 compliance standards.

Test Condition

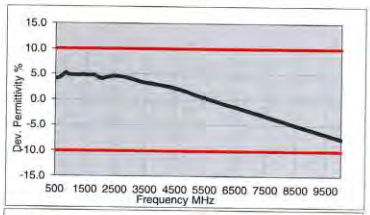
Ambient Condition	22°C ; 30% humidity
TSL Temperature	22°C
Test Date	31-Oct-18
Operator	CL

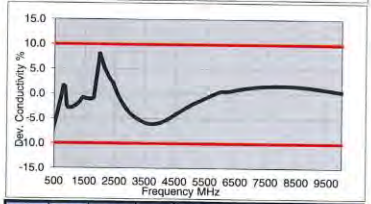
Additional Information

TSL Density
TSL Heat-capacity

Results

	Measured			Target		Diff.to Target [%]	
f [MHz]	e'	e''	sigma	eps	sigma	Δ-eps	Δ-sigma
800	43.8	20.5	0.91	41.7	0.90	5.1	1.4
825	43.8	20.1	0.92	41.6	0.91	5.3	1.5
835	43.8	19.9	0.93	41.5	0.91	5.4	2.0
850	43.7	19.7	0.93	41.5	0.92	5.3	1.5
900	43.5	18.9	0.95	41.5	0.97	4.8	-2.1
1400	42.5	15.0	1.17	40.6	1.18	4.7	-0.8
1450	42.5	14.8	1.19	40.5	1.20	4.9	-0.8
1600	42.2	14.3	1.27	40.3	1.28	4.7	-1.1
1625	42.2	14.2	1.29	40.3	1.30	4.8	-0.7
1640	42.2	14.2	1.30	40.3	1.31	4.8	-0.5
1650	42.1	14.2	1.30	40.2	1.31	4.6	-1.0
1700	42.1	14.0	1.33	40.2	1.34	4.8	-0.9
1750	42.0	13.9	1.36	40.1	1.37	4.8	-0.8
1800	41.9	13.9	1.39	40.0	1.40	4.7	-0.7
1810	41.9	13.8	1.40	40.0	1.40	4.7	0.0
1825	41.9	13.8	1.41	40.0	1.40	4.7	0.7
1850	41.8	13.8	1.42	40.0	1.40	4.5	1.4
1900	41.8	13.7	1.45	40.0	1.40	4.5	3.6
1950	41.7	13.7	1.48	40.0	1.40	4.3	5.7
2000	41.6	13.6	1.51	40.0	1.40	4.0	7.9
2050	41.6	13.6	1.55	39.9	1.44	4.2	7.3
2100	41.5	13.5	1.58	39.8	1.49	4.2	6.1
2150	41.4	13.5	1.62	39.7	1.53	4.2	5.7
2200	41.4	13.5	1.65	39.6	1.58	4.4	4.6
2250	41.3	13.5	1.69	39.6	1.62	4.4	4.2
2300	41.2	13.5	1.72	39.5	1.67	4.4	3.2
2350	41.1	13.5	1.76	39.4	1.71	4.4	2.9
2400	41.1	13.5	1.80	39.3	1.76	4.6	2.5
2450	41.0	13.5	1.84	39.2	1.80	4.6	2.2
2500	40.9	13.5	1.88	39.1	1.85	4.5	1.4
2550	40.8	13.5	1.92	39.1	1.91	4.4	0.6
2600	40.8	13.6	1.96	39.0	1.96	4.6	-0.2
3500	39.2	14.1	2.74	37.9	2.91	3.3	-5.8
3700	38.9	14.2	2.93	37.7	3.12	3.1	-6.1





5200	36.3	15.8	4.57	36.0	4.66	0.9	-1.7
5250	36.2	15.9	4.63	35.9	4.71	0.8	-1.6
5300	36.1	15.9	4.69	35.9	4.76	0.7	-1.4
5500	35.8	16.1	4.92	35.6	4.96	0.3	-0.9
5600	35.6	16.2	5.04	35.5	5.07	0.1	-0.6
5700	35.4	16.2	5.15	35.4	5.17	0.0	-0.3
5800	35.2	16.3	5.27	35.3	5.27	-0.2	0.0
6000	34.9	16.5	5.50	35.1	5.48	-0.6	0.5
6500	34.0	16.9	6.12	34.5	6.07	-1.4	0.9
7000	33.1	17.3	6.74	33.9	6.65	-2.3	1.3
7500	32.2	17.6	7.36	33.3	7.24	-3.2	1.6
8000	31.4	17.9	7.97	32.7	7.84	-4.1	1.7
8500	30.5	18.2	8.59	32.1	8.45	-5.0	1.6
9000	29.7	18.4	9.20	31.5	9.08	-5.9	1.3
9500	28.9	18.5	9.80	31.0	9.71	-6.8	0.9
10000	28.1	18.7	10.40	30.4	10.36	-7.6	0.4

TSL Dielectric Parameters

1

Figure C-3
600 – 5800 MHz Head Tissue Equivalent Matter

APPENDIX D: SAR SYSTEM VALIDATION

Per FCC KDB Publication 865664 D02v01r02, SAR system validation status should be documented to confirm measurement accuracy. The SAR systems (including SAR probes, system components and software versions) used for this device were validated against its performance specifications prior to the SAR measurements. Reference dipoles were used with the required tissue- equivalent media for system validation, according to the procedures outlined in FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013. Since SAR probe calibrations are frequency dependent, each probe calibration point was validated at a frequency within the valid frequency range of the probe calibration point, using the system that normally operates with the probe for routine SAR measurements and according to the required tissue-equivalent media.

A tabulated summary of the system validation status including the validation date(s), measurement frequencies, SAR probes and tissue dielectric parameters has been included.

Table D-1
SAR System Validation Summary – 1g

SAR SYSTEM #	FREQ. [MHz]	DATE	PROBE SN	PROBE CAL. POINT		COND. (σ)	PERM. (εr)	CW VALIDATION			MOD. VALIDATION		
								SENSITIVITY	PROBE LINEARITY	PROBE ISOTROPY	MOD. TYPE	DUTY FACTOR	PAR
G	750	9/20/2019	7409	750	Head	0.881	42.582	PASS	PASS	PASS	N/A	N/A	N/A
L	835	9/24/2019	7410	835	Head	0.911	42.199	PASS	PASS	PASS	GMSK	PASS	N/A
H	1750	12/20/2019	7406	1750	Head	1.379	39.702	PASS	PASS	PASS	N/A	N/A	N/A
D	1900	5/20/2019	3914	1900	Head	1.454	40.608	PASS	PASS	PASS	GMSK	PASS	N/A
E	2300	9/6/2019	7417	2300	Head	1.737	39.748	PASS	PASS	PASS	N/A	N/A	N/A
E	2450	9/5/2019	7417	2450	Head	1.855	39.542	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
E	2600	9/5/2019	7417	2600	Head	1.979	39.302	PASS	PASS	PASS	TDD	PASS	N/A
H	5250	6/10/2019	7406	5250	Head	4.590	36.819	PASS	PASS	PASS	OFDM	N/A	PASS
H	5600	6/10/2019	7406	5600	Head	4.978	34.167	PASS	PASS	PASS	OFDM	N/A	PASS
H	5750	6/10/2019	7406	5750	Head	5.150	33.901	PASS	PASS	PASS	OFDM	N/A	PASS
L	750	8/20/2019	7410	750	Body	0.941	54.921	PASS	PASS	PASS	N/A	N/A	N/A
D	835	6/18/2019	3914	835	Body	0.945	52.698	PASS	PASS	PASS	GMSK	PASS	N/A
L	835	8/20/2019	7410	835	Body	0.974	54.739	PASS	PASS	PASS	GMSK	PASS	N/A
I	1750	5/21/2019	7357	1750	Body	1.442	55.384	PASS	PASS	PASS	N/A	N/A	N/A
J	1900	10/7/2019	7488	1900	Body	1.555	51.08	PASS	PASS	PASS	GMSK	PASS	N/A
K	2300	9/5/2019	7547	2300	Body	1.893	52.45	PASS	PASS	PASS	N/A	N/A	N/A
K	2450	9/6/2019	7547	2450	Body	1.996	51.898	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
K	2600	9/5/2019	7547	2600	Body	2.716	52.04	PASS	PASS	PASS	TDD	PASS	N/A
G	5250	10/4/2019	7409	5250	Body	5.223	47.07	PASS	PASS	PASS	OFDM	N/A	PASS
G	5600	10/7/2019	7409	5600	Body	5.884	47.08	PASS	PASS	PASS	OFDM	N/A	PASS
G	5750	10/7/2019	7409	5750	Body	6.111	46.78	PASS	PASS	PASS	OFDM	N/A	PASS

Table D-2
SAR System Validation Summary – 10g

SAR SYSTEM #	FREQ. [MHz]	DATE	PROBE SN	PROBE CAL. POINT		COND. (σ)	PERM. (εr)	CW VALIDATION			MOD. VALIDATION		
								SENSITIVITY	PROBE LINEARITY	PROBE ISOTROPY	MOD. TYPE	DUTY FACTOR	PAR
I	1750	5/21/2019	7357	1750	Body	1.442	55.384	PASS	PASS	PASS	N/A	N/A	N/A
J	1900	10/7/2019	7488	1900	Body	1.555	51.08	PASS	PASS	PASS	GMSK	PASS	N/A
P	1900	10/8/2019	7551	1900	Body	1.542	51.76	PASS	PASS	PASS	GMSK	PASS	N/A
K	2300	9/5/2019	7547	2300	Body	1.893	52.45	PASS	PASS	PASS	N/A	N/A	N/A
M	2450	10/10/2019	7308	2450	Body	1.962	51.23	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
M	2600	10/16/2019	7308	2600	Body	2.138	52.938	PASS	PASS	PASS	TDD	PASS	N/A
G	5250	10/4/2019	7409	5250	Body	5.223	47.07	PASS	PASS	PASS	OFDM	N/A	PASS
G	5600	10/7/2019	7409	5600	Body	5.884	47.08	PASS	PASS	PASS	OFDM	N/A	PASS
G	5750	10/7/2019	7409	5750	Body	6.111	46.78	PASS	PASS	PASS	OFDM	N/A	PASS

NOTE: While the probes have been calibrated for both CW and modulated signals, all measurements were performed using communication systems calibrated for CW signals only. Modulations in the table above represent test configurations for which the measurement system has been validated per FCC KDB Publication 865664 D01v01r04 for scenarios when CW probe calibrations are used with other signal types. SAR systems were validated for modulated signals with a periodic duty cycle, such as GMSK, or with a high peak to average ratio (>5 dB), such as OFDM according to FCC KDB Publication 865664 D01v01r04.

APPENDIX F: DOWNLINK LTE CA RF CONDUCTED POWERS

1.1 LTE Downlink Only Carrier Aggregation Test Reduction Methodology

SAR test exclusion for LTE downlink Carrier Aggregation is determined by power measurements according to the number of component carriers (CCs) supported by the product implementation. Per April 2018 TCBC Workshop Notes, the following test reduction methodology was applied to determine the combinations required for conducted power measurements.

LTE DLCA Test Reduction Methodology:

- The supported combinations were arranged by the number of component carriers in columns.
- Any limitations on the PCC or SCC for each combination were identified alongside the combination (e.g. CA_2A-2A-4A-12A, but B12 can only be configured as a SCC).
- Power measurements were performed for "supersets" (LTE CA combinations with multiple components carriers) and any "subsets" (LTE CA combinations with fewer component carriers) that were not completely covered by the supersets.
- Only subsets that have the exact same components as a superset were excluded for measurement.
- When there were certain restrictions on component carriers that existed in the superset that were not applied for the subset, the subset configuration was additionally evaluated.
- Both inter-band and intra-band downlink carrier aggregation scenarios were considered.

Table 1 – Example of Exclusion Table for SISO Configurations

Index	2CC	Supported Channel Bandwidth [MHz]		Restriction	Completely Covered by Measurement Superset
		CC1	CC2		
DCC #1	CA_2C	5, 10, 15, 20	5, 10, 15, 20		SCC #4
DCC #2	CA_2A-5A	5, 10, 15, 20	5, 10		SCC #3
DCC #3	CA_2A-12A	5, 10, 15, 20	5, 10		SCC #3
DCC #4	CA_2A-13A	5, 10, 15, 20	10		SCC #9
DCC #5	CA_2A-17A	5, 10	5, 10		No
DCC #6	CA_2A-30A	5, 10, 15, 20	5, 10		SCC #14
DCC #7	CA_2A-66A (2)	5, 10, 15, 20	5, 10, 15, 20		SCC #1
DCC #9	CA_2A-71A	5, 10, 15, 20	5, 10, 15, 20		SCC #10
DCC #10	CA_4A-4A	5, 10, 15, 20	5, 10, 15, 20		SCC #6
DCC #11	CA_4A-5A (1)	5, 10, 15, 20	5, 10		SCC #1
DCC #12	CA_4A-12A (4)	5, 10, 15, 20	5, 10		SCC #9
DCC #13	CA_4A-13A	5, 10, 15, 20	10		SCC #9
DCC #14	CA_4A-17A	5, 10	5, 10	B17 SCC Only	No
DCC #15	CA_5B	5, 10	5, 10		SCC #1
DCC #16	CA_5A-29A	5, 10	5, 10, 15, 20		No
DCC #17	CA_7C	15, 20	15, 20		No
DCC #18	CA_7A-7A (1)	5, 10, 15, 20	5, 10, 15, 20		No
DCC #19	CA_7A-12A	5, 10, 15, 20	5, 10		SCC #12
DCC #20	CA_12B	5	5, 10		SCC #13
DCC #21	CA_12A-29A	5, 10	5, 10, 15, 20		No
DCC #22	CA_12A-30A	5, 10	5, 10		SCC #14
DCC #23	CA_41A-41A (1)	5, 10, 15, 20	5, 10, 15, 20		No

Index	3CC	Supported Channel Bandwidth [MHz]			Restriction	Completely Covered by Measurement Superset
		CC1	CC2	CC3		
DCC #1	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20		4CC #1
DCC #2	CA_2A-2A-5A	5, 10, 15, 20	5, 10, 15, 20	5, 10		4CC #1
DCC #3	CA_2A-2A-12A	5, 10, 15, 20	5, 10, 15, 20	5, 10		No
DCC #4	CA_2C-66A	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20		No
DCC #5	CA_2A-2A-71A	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20		No
DCC #6	CA_2A-4A-4A	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20		No
DCC #7	CA_2A-4A-5A	5, 10, 15, 20	5, 10, 15, 20	5, 10		4CC #1
DCC #8	CA_2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20	5, 10		No
DCC #9	CA_2A-4A-13A	5, 10, 15, 20	5, 10, 15, 20	10		No
DCC #10	CA_2A-4A-71A	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20		No
DCC #11	CA_2A-5B	5, 10, 15, 20	5, 10	5, 10		4CC #1
DCC #12	CA_2A-12A-30A	5, 10, 15, 20	5, 10	5, 10		No
DCC #13	CA_2A-29A-12A	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20		No
DCC #14	CA_2A-12B	5, 10, 15, 20	5	5, 10		No
DCC #15	CA_2A-12A-30A	5, 10, 15, 20	5, 10	5, 10		No
DCC #16	CA_4A-4A-5A	5, 10, 15, 20	5, 10, 15, 20	5, 10		No
DCC #17	CA_5B-30A	5, 10	5, 10	5, 10		3CC #1
DCC #18	CA_5B-66A	5, 10	5, 10	5, 10, 15, 20		3CC #1
DCC #19	CA_5A-30A-66A	5, 10	5, 10	5, 10, 15, 20		No
DCC #20	CA_12A-66C	5, 10	5, 10, 15, 20	5, 10, 15, 20		No
DCC #21	CA_30A-66A-66A	5, 10	5, 10, 15, 20	5, 10, 15, 20		3CC #9
DCC #22	CA_41D	10, 15, 20	10, 15, 20	10, 15, 20		No
DCC #23	CA_41A-41C	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20		No
DCC #24	CA_66A	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20		No
DCC #25	CA_66A-66C	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20		No

Index	4CC	Supported Channel Bandwidth [MHz]				Restriction	Completely Covered by Measurement Superset
		CC1	CC2	CC3	CC4		
DCC #1	CA_2A-2A-4A-5A	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20	5, 10		No
DCC #2	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20	5, 10	4CC SCC Only	No
DCC #3	CA_2A-2A-4A-30A	5, 10, 15, 20	5, 10, 15, 20	5, 10	5, 10		No
DCC #4	CA_2A-2A-5A-66A	5, 10, 15, 20	5, 10, 15, 20	5, 10	5, 10, 15, 20		No
DCC #5	CA_2A-5B-30A	5, 10, 15, 20	5, 10	5, 10	5, 10		3CC #1
DCC #6	CA_2A-5B-66A	5, 10, 15, 20	5, 10	5, 10	5, 10, 15, 20		3CC #1
DCC #7	CA_5B-30A-66A	5, 10	5, 10	5, 10	5, 10		3CC #1
DCC #8	CA_5B-66A-66A	5, 10	5, 10	5, 10, 15, 20	5, 10, 15, 20		3CC #2
DCC #9	CA_5A-30A-66A-66A	5, 10	5, 10	5, 10, 15, 20	5, 10, 15, 20		No
DCC #10	CA_41E	15, 20	15, 20	15, 20	20		No

Index	SCC	Supported Channel Bandwidth [MHz]					Restriction	Completely Covered by Measurement Superset
		CC1	CC2	CC3	CC4	CC5		
SCC #1	CA_2A-5B-30A-66A	5, 10, 15, 20	5, 10	5, 10	5, 10	5, 10, 15, 20		No
SCC #2	CA_2A-5B-66A-66A	5, 10, 15, 20	5, 10	5, 10	5, 10, 15, 20	5, 10, 15, 20		No

1.2 LTE Downlink Only Carrier Aggregation Test Selection and Setup

SAR test exclusion for LTE downlink Carrier Aggregation is determined by power measurements according to the number component carriers (CCs) supported by the product implementation. For those configurations required by April 2018 TCBC Workshop Notes, 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 carrier aggregation configurations when the maximum 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. All bands required for SAR testing per FCC KDB procedures were considered. Based on the measured maximum powers below, no additional SAR tests were required for DLCA SAR configurations.

General PCC and SCC configuration selection procedure

- PCC uplink channel, channel bandwidth, modulation and RB configurations were selected based on section C)3)b)ii) of KDB 941225 D05 V01r02. The downlink PCC channel was paired with the selected PCC uplink channel according to normal configurations without carrier aggregation.
- To maximize aggregated bandwidth, highest channel bandwidth available for that CA combination was selected for SCC. For inter-band CA, the SCC downlink channels were selected near the middle of their transmission bands. For contiguous intra-band CA, the downlink channel spacing between the component carriers was set to multiple of 300 kHz less than the nominal channel spacing defined in section 5.4.1A of 3GPP TS 36.521. For non-contiguous intra-band CA, the downlink channel spacing between the component carriers was set to be larger than the nominal channel spacing and provided maximum separation between the component carriers.
- All selected PCC and SCC(s) remained fully within the uplink/downlink transmission band of the respective component carrier.

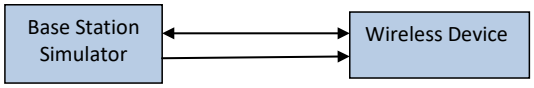


Figure 1
DL CA Power Measurement Setup

1.3 Downlink Carrier Aggregation RF Conducted Powers

1.3.1 LTE Band 12 as PCC

Table 1
Maximum Output Powers

	PCC									SCC 1				SCC 2				SCC 3				Power	
Combination	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC (UL) Freq. [MHz]	Mod.	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_2A-12A (1)	LTE B12	5	23155	713.5	QPSK	1	0	5155	743.5	LTE B2	20	900	1960	-	-	-	-	-	-	-	-	24.98	24.96
CA_2A-12A-30A	LTE B12	5	23155	713.5	QPSK	1	0	5155	743.5	LTE B2	20	900	1960	LTE B30	10	9820	2355	-	-	-	-	25.21	24.96
CA_2A-2A-12B	LTE B12	5	23155	713.5	QPSK	1	0	5155	743.5	LTE B12	10	5083	736.3	LTE B2	20	900	1960	LTE B2	20	700	1940	24.82	24.96

1.3.2 LTE Band 13 as PCC

Table 2
Maximum Output Powers

	PCC									SCC 1				SCC 2				SCC 3				SCC 4				Power	
Combination	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC (UL) Freq. [MHz]	Mod.	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_2A-13A-66B	LTE B13	5	23230	782	QPSK	1	0	5230	751	LTE B2	20	900	1960	LTE B66	15	66786	2145	LTE B66	5	66879	2154.3	-	-	-	-	24.69	24.65
CA_2A-13A-66C	LTE B13	5	23230	782	QPSK	1	0	5230	751	LTE B2	20	900	1960	LTE B66	20	66786	2145	LTE B66	20	66984	2164.8	-	-	-	-	24.67	24.65
CA_2A-2A-4A-4A-13A	LTE B13	10	23230	782	QPSK	1	25	5230	751	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B4	20	2175	2132.5	LTE B4	10	2350	2150	24.70	24.60
CA_2A-2A-13A-66A-66A	LTE B13	5	23230	782	QPSK	1	0	5230	751	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B66	20	66786	2145	LTE B66	20	67236	2190	24.75	24.65

1.3.3 LTE Band 26 as PCC

Table 3
Maximum Output Powers

Combination	PCC									SCC 1				SCC 2				Power	
	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC (UL) Freq. [MHz]	Mod.	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_25A-26A	LTE B26	5	27015	846.5	QPSK	1	12	9015	891.5	LTE B25	20	8365	1962.5	-	-	-	-	24.65	24.70
CA_26A-41A	LTE B26	5	27015	846.5	QPSK	1	12	9015	891.5	LTE B41	20	40620	2593	-	-	-	-	24.60	24.70
CA_25A-25A-26A	LTE B26	5	27015	846.5	QPSK	1	12	9015	891.5	LTE B25	20	8365	1962.5	LTE B25	20	8590	1985	24.70	24.70
CA_26A-41C	LTE B26	5	27015	846.5	QPSK	1	12	9015	891.5	LTE B41	20	40620	2593	LTE B41	20	40422	2573.2	24.95	24.70

1.3.4 LTE Band 66 as PCC

Table 4
Maximum Output Powers

Combination	PCC									SCC 1				SCC 2				SCC 3				SCC 4				Power	
	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC (UL) Freq. [MHz]	Mod.	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_2A-66A	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B2	20	900	1960	-	-	-	-	-	-	-	-	-	-	-	-	24.44	24.46
CA_12A-66A (1)	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B12	10	5095	737.5	-	-	-	-	-	-	-	-	-	-	-	-	24.54	24.46
CA_12A-66A (2)	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B12	10	5095	737.5	-	-	-	-	-	-	-	-	-	-	-	-	24.54	24.46
CA_66A-66C	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B66	20	67038	2170.2	LTE B66	20	67236	2190	-	-	-	-	-	-	-	-	24.42	24.46
CA_66C-66A	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B66	20	66588	2125.2	LTE B66	20	67236	2190	-	-	-	-	-	-	-	-	24.43	24.46
CA_2A-29A-30A-66A	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B2	20	900	1960	LTE B29	10	9715	722.5	LTE B30	10	9820	2355	-	-	-	-	24.61	24.46
CA_12A-66C	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B66	20	66588	2125.2	LTE B2	20	900	1960	LTE B12	10	5095	737.5	-	-	-	-	24.60	24.46
CA_2A-12B-66A	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B2	20	900	1960	LTE B12	5	5095	737.5	LTE B12	5	5047	732.7	-	-	-	-	24.56	24.46
CA_2A-13A-66B	LTE B66	15	132597	1772.5	QPSK	1	0	67061	2172.5	LTE B66	5	66968	2163.2	LTE B2	20	900	1960	LTE B13	10	5230	751	-	-	-	-	24.53	24.43
CA_2A-13A-66C	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B66	20	66588	2125.2	LTE B2	20	900	1960	LTE B13	10	5230	751	-	-	-	-	24.64	24.46
CA_2C-12A-66A	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B2	20	900	1960	LTE B2	20	702	1940.2	LTE B12	10	5095	737.5	-	-	-	-	24.53	24.46
CA_2C-66A-66A	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B66	20	67236	2190	LTE B2	20	900	1960	LTE B2	20	702	1940.2	-	-	-	-	24.53	24.46
CA_5A-5A-66A-66A	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B66	20	67236	2190	LTE B5	10	2525	881.5	LTE B5	5	2425	871.5	-	-	-	-	24.62	24.46
CA_5A-5A-66B	LTE B66	15	132597	1772.5	QPSK	1	0	67061	2172.5	LTE B66	5	66968	2163.2	LTE B5	10	2525	881.5	LTE B5	5	2425	871.5	-	-	-	-	24.50	24.43
CA_5A-5A-66C	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B66	20	66588	2125.2	LTE B5	10	2525	881.5	LTE B5	5	2425	871.5	-	-	-	-	24.63	24.46
CA_2A-2A-5A-30A-66A	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B5	10	2525	881.5	LTE B30	10	9820	2355	24.50	24.46
CA_2A-2A-5A-66A-66A	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B66	20	67236	2190	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B5	10	2525	881.5	24.52	24.46
CA_2A-2A-12A-30A-66A	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B12	10	5095	737.5	LTE B30	10	9820	2355	24.58	24.46
CA_2A-2A-12A-66A-66A	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B66	20	67236	2190	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B12	10	5095	737.5	24.61	24.46
CA_2A-2A-13A-66A-66A	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B66	20	67236	2190	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B13	10	5230	751	24.62	24.46
CA_2A-5A-30A-66A-66A	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B66	20	67236	2190	LTE B2	20	900	1960	LTE B5	10	2525	881.5	LTE B30	10	9820	2355	24.59	24.46
CA_2A-12A-30A-66A-66A	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B66	20	67236	2190	LTE B2	20	900	1960	LTE B12	10	5095	737.5	LTE B30	10	9820	2355	24.63	24.46
CA_2A-2A-5A-66B	LTE B66	15	132597	1772.5	QPSK	1	0	67061	2172.5	LTE B66	5	66968	2163.2	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B5	10	2525	881.5	24.48	24.43
CA_2A-2A-5A-66C	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B66	20	66588	2125.2	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B5	10	2525	881.5	24.54	24.46
CA_2A-5B-30A-66A	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B2	20	900	1960	LTE B5	10	2525	881.5	LTE B5	5	2453	874.3	LTE B30	10	9820	2355	24.52	24.46
CA_2A-5B-66A-66A	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B66	20	67236	2190	LTE B2	20	900	1960	LTE B5	10	2525	881.5	LTE B5	5	2453	874.3	24.60	24.46
CA_2A-5B-66B	LTE B66	15	132597	1772.5	QPSK	1	0	67061	2172.5	LTE B66	5	66968	2163.2	LTE B2	20	900	1960	LTE B5	10	2525	881.5	LTE B5	5	2453	874.3	24.46	24.43
CA_2A-5B-66C	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B66	20	66588	2125.2	LTE B2	20	900	1960	LTE B5	10	2525	881.5	LTE B5	5	2453	874.3	24.49	24.46
CA_5B-30A-66A-66A	LTE B66	20	132322	1745	QPSK	1	99	66786	2145	LTE B66	20	67236	2190	LTE B5	10	2525	881.5	LTE B5	5	2453	874.3	LTE B30	10	9820	2355	24.70	24.46

1.3.5 LTE Band 25 as PCC

Table 5
Maximum Output Powers

Combination	PCC									SCC 1				SCC 2				SCC 3				Power	
	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC (UL) Freq. [MHz]	Mod.	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_25A-26A	LTE B25	20	26365	1882.5	QPSK	1	50	8365	1962.5	LTE B26	15	8865	876.5	-	-	-	-	-	-	-	-	24.27	24.24
CA_25A-41A	LTE B25	20	26365	1882.5	QPSK	1	50	8365	1962.5	LTE B41	20	40620	2593	-	-	-	-	-	-	-	-	24.39	24.24
CA_25A-25A-26A	LTE B25	20	26365	1882.5	QPSK	1	50	8365	1962.5	LTE B25	20	8140	1940	LTE B26	5	8865	876.5	-	-	-	-	24.29	24.24
CA_25A-41C	LTE B25	20	26365	1882.5	QPSK	1	50	8365	1962.5	LTE B41	20	40620	2593	LTE B41	20	40422	2573.2	-	-	-	-	24.27	24.24
CA_25A-41D	LTE B25	20	26365	1882.5	QPSK	1	50	8365	1962.5	LTE B41	20	40422	2573.2	LTE B41	20	40620	2593	LTE B41	20	40818	2612.8	24.30	24.24

1.3.6 LTE Band 30 as PCC

Table 6
Maximum Output Powers

Combination	PCC									SCC 1				SCC 2				SCC 3				SCC 4				Power	
	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC (UL) Freq. [MHz]	Mod.	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_2A-12A-30A	LTE B30	5	27710	2310	QPSK	1	12	9820	2355	LTE B2	20	900	1960	LTE B12	10	5095	737.5	-	-	-	-	-	-	-	-	25.41	25.18
CA_2A-2A-29A-30A	LTE B30	5	27710	2310	QPSK	1	12	9820	2355	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B29	10	9715	722.5	-	-	-	-	25.22	25.18
CA_2A-4A-5A-30A	LTE B30	5	27710	2310	QPSK	1	12	9820	2355	LTE B2	20	900	1960	LTE B4	20	2175	2132.5	LTE B5	10	2525	881.5	-	-	-	-	25.10	25.18
CA_2A-4A-12A-30A	LTE B30	5	27710	2310	QPSK	1	12	9820	2355	LTE B2	20	900	1960	LTE B4	20	2175	2132.5	LTE B12	10	5095	737.5	-	-	-	-	25.11	25.18
CA_2A-4A-29A-30A	LTE B30	5	27710	2310	QPSK	1	12	9820	2355	LTE B2	20	900	1960	LTE B4	20	2175	2132.5	LTE B29	10	9715	722.5	-	-	-	-	25.08	25.18
CA_2A-29A-30A-66A	LTE B30	5	27710	2310	QPSK	1	12	9820	2355	LTE B2	20	900	1960	LTE B29	10	9715	722.5	LTE B66	20	66786	2145	-	-	-	-	25.11	25.18
CA_2A-2A-5A-30A-66A	LTE B30	5	27710	2310	QPSK	1	12	9820	2355	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B5	10	2525	881.5	LTE B66	20	66786	2145	25.24	25.18
CA_2A-2A-12A-30A-66A	LTE B30	5	27710	2310	QPSK	1	12	9820	2355	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B12	10	5095	737.5	LTE B66	20	66786	2145	25.23	25.18
CA_2A-5A-30A-66A-66A	LTE B30	5	27710	2310	QPSK	1	12	9820	2355	LTE B2	20	900	1960	LTE B5	10	2525	881.5	LTE B66	20	66786	2145	LTE B66	20	67236	2190	25.29	25.18
CA_2A-12A-30A-66A-66A	LTE B30	5	27710	2310	QPSK	1	12	9820	2355	LTE B2	20	900	1960	LTE B12	10	5095	737.5	LTE B66	20	66786	2145	LTE B66	20	67236	2190	25.30	25.18
CA_2A-5B-30A-66A	LTE B30	5	27710	2310	QPSK	1	12	9820	2355	LTE B2	20	900	1960	LTE B5	10	2525	881.5	LTE B5	5	2453	874.3	LTE B66	20	66786	2145	25.34	25.18
CA_5B-30A-66A-66A	LTE B30	5	27710	2310	QPSK	1	12	9820	2355	LTE B5	10	2525	881.5	LTE B5	5	2453	874.3	LTE B66	20	66786	2145	LTE B66	20	67236	2190	25.29	25.18

1.3.7 LTE Band 41 as PCC

Table 7
Maximum Output Powers

	PCC									SCC 1				SCC 2				SCC 3				SCC 4				Power	
Combination	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC (UL) Freq. [MHz]	Mod.	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	LTE Tx.Power with DLCA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41A-41A (1)	LTE B41	15	40620	2593	QPSK	1	36	40620	2593	LTE B41	20	39750	2506	-	-	-	-	-	-	-	-	-	-	-	-	24.98	24.88
CA_41A-41C	LTE B41	15	40620	2593	QPSK	1	36	40620	2593	LTE B41	20	41292	2660.2	LTE B41	20	41490	2680	-	-	-	-	-	-	-	-	24.99	24.88
CA_41C-41A	LTE B41	15	40620	2593	QPSK	1	36	40620	2593	LTE B41	20	40791	2610.1	LTE B41	20	41490	2680	-	-	-	-	-	-	-	-	25.01	24.88
CA_41A-41D	LTE B41	15	40620	2593	QPSK	1	36	40620	2593	LTE B41	20	41094	2640.4	LTE B41	20	41292	2660.2	LTE B41	20	41490	2680	-	-	-	-	24.84	24.88
CA_41D-41A	LTE B41	15	40620	2593	QPSK	1	36	40620	2593	LTE B41	20	40449	2575.9	LTE B41	20	40791	2610.1	LTE B41	20	41490	2680	-	-	-	-	24.90	24.88
CA_41C-41C	LTE B41	15	40620	2593	QPSK	1	36	40620	2593	LTE B41	20	40449	2575.9	LTE B41	20	41292	2660.2	LTE B41	20	41490	2680	-	-	-	-	24.84	24.88
CA_41E	LTE B41	15	40620	2593	QPSK	1	36	40620	2593	LTE B41	20	40449	2575.9	LTE B41	20	40791	2610.1	LTE B41	20	40989	2629.9	-	-	-	-	24.88	24.88
CA_41C-41D	LTE B41	15	40620	2593	QPSK	1	36	40620	2593	LTE B41	20	40449	2575.9	LTE B41	20	41094	2640.4	LTE B41	20	41292	2660.2	LTE B41	20	41490	2680	24.77	24.88
CA_41D-41C	LTE B41	15	40620	2593	QPSK	1	36	40620	2593	LTE B41	20	40449	2575.9	LTE B41	20	40791	2610.1	LTE B41	20	41292	2660.2	LTE B41	20	41490	2680	24.78	24.88
CA_41F	LTE B41	15	40620	2593	QPSK	1	36	40620	2593	LTE B41	20	40449	2575.9	LTE B41	20	40791	2610.1	LTE B41	20	40989	2629.9	LTE B41	20	41187	2649.7	24.79	24.88

APPENDIX G POWER REDUCTION VERIFICATION

Per the May 2017 TCBC Workshop Notes, demonstration of proper functioning of the power reduction mechanisms is required to support the corresponding SAR configurations. The verification process was divided into two parts: (1) evaluation of output power levels for individual or multiple triggering mechanisms and (2) evaluation of the triggering distances for proximity-based sensors.

G.1 Power Verification Procedure

The power verification was performed according to the following procedure:

1. A base station simulator was used to establish a conducted RF connection and the output power was monitored. The power measurements were confirmed to be within expected tolerances for all states before and after a power reduction mechanism was triggered.

2. Step 1 was repeated for all relevant modes and frequency bands for the mechanism being investigated.

3. Steps 1 and 2 were repeated for all individual power reduction mechanisms and combinations thereof. For the combination cases, one mechanism was switched to a 'triggered' state at a time; powers were confirmed to be within tolerances after each additional mechanism was activated.

G.2 Distance Verification Procedure

The distance verification procedure was performed according to the following procedure:

1. A base station simulator was used to establish an RF connection and to monitor the power levels. The device being tested was placed below the relevant section of the phantom with the relevant side or edge of the device facing toward the phantom.

2. The device was moved toward and away from the phantom to determine the distance at which the mechanism triggers and the output power is reduced, per KDB Publication 616217 D04v01r02 and FCC Guidance. Each applicable test position was evaluated. The distances were confirmed to be the same or larger (more conservative) than the minimum distances provided by the manufacturer.

3. Steps 1 and 2 were repeated for low, mid, and high bands, as appropriate (see note below Table G-2 for more details).

4. Steps 1 through 3 were repeated for all distance-based power reduction mechanisms.

G.3 Main Antenna Verification Summary

Table G-1
Power Measurement Verification for Main Antenna

Mechanism(s)		Mode/Band	Conducted Power (dBm)		
1st	2nd		Un-triggered (Max)	Mechanism #1 (Reduced)	Mechanism #2 (Reduced)
Hotspot On		GPRS 1900 1 tx	29.23	27.87	
Hotspot On	Grip	GPRS 1900 1 tx	29.19	28.05	27.83
Grip		GPRS 1900 1 tx	29.19	27.93	
Grip	Hotspot On	GPRS 1900 1 tx	29.28	28.02	27.86
Hotspot On		UMTS 1750	22.92	20.96	
Hotspot On	Grip	UMTS 1750	22.93	20.92	20.95
Grip		UMTS 1750	22.97	20.99	
Grip	Hotspot On	UMTS 1750	22.99	20.96	20.92
Hotspot On		UMTS 1900	23.89	21.46	
Hotspot On	Grip	UMTS 1900	23.92	21.52	21.44
Grip		UMTS 1900	23.91	21.55	
Grip	Hotspot On	UMTS 1900	23.93	21.54	21.53
Hotspot On		LTE FDD Band 66	24.56	21.18	
Hotspot On	Grip	LTE FDD Band 66	24.61	21.19	21.13
Grip		LTE FDD Band 66	24.64	21.12	
Grip	Hotspot On	LTE FDD Band 66	24.58	21.17	21.18
Hotspot On		LTE FDD Band 4	24.37	21.12	
Hotspot On	Grip	LTE FDD Band 4	24.33	21.10	21.19
Grip		LTE FDD Band 4	24.32	21.20	
Grip	Hotspot On	LTE FDD Band 4	24.28	21.18	21.15
Hotspot On		LTE FDD Band 25	24.26	20.93	
Hotspot On	Grip	LTE FDD Band 25	24.31	20.84	20.73
Grip		LTE FDD Band 25	24.28	20.79	
Grip	Hotspot On	LTE FDD Band 25	24.30	20.84	20.80
Hotspot On		LTE FDD Band 2	24.25	20.53	
Hotspot On	Grip	LTE FDD Band 2	24.18	20.52	20.54
Grip		LTE FDD Band 2	24.28	20.47	
Grip	Hotspot On	LTE FDD Band 2	24.29	20.49	20.56
Hotspot On		LTE FDD Band 30	24.91	22.14	
Hotspot On	Grip	LTE FDD Band 30	24.88	22.04	22.06
Grip		LTE FDD Band 30	24.90	22.17	
Grip	Hotspot On	LTE FDD Band 30	24.87	22.15	22.21
Hotspot On		LTE TDD Band 41	24.66	22.83	
Hotspot On	Grip	LTE TDD Band 41	24.59	22.80	22.92
Grip		LTE TDD Band 41	24.65	22.89	
Grip	Hotspot On	LTE TDD Band 41	24.57	22.88	22.95

Table G-2
Distance Measurement Verification for Main Antenna

Mechanism(s)	Test Condition	Band	Distance Measurements (mm)		Minimum Distance per Manufacturer (mm)
			Moving Toward	Moving Away	
Grip	Phablet - Back Side	Mid	14	15	10
Grip	Phablet - Back Side	High	14	15	10
Grip	Phablet - Front Side	Mid	14	16	8
Grip	Phablet - Front Side	High	14	16	8
Grip	Phablet - Bottom Edge	Mid	23	24	14
Grip	Phablet - Bottom Edge	High	23	24	14

*Note: Mid band refers to: GSM1900, UMTS B2/4, LTE B2/4/25/66; High band refers to: LTE B30/41

G.4 WIFI Verification Summary

Table G-3
Power Measurement Verification WIFI – Antenna 1

Mechanism(s)	Mode/Band	Conducted Power (dBm)	
1st		Un-triggered (Max)	Mechanism #1 (Reduced)
Held-to-Ear	802.11b	18.52	10.54
Held-to-Ear	802.11g	15.82	9.67
Held-to-Ear	802.11n (2.4GHz)	15.49	9.60
Held-to-Ear	802.11a	15.08	8.75
Held-to-Ear	802.11n (5GHz, 20MHz BW)	15.03	9.02
Held-to-Ear	802.11ac (20MHz BW)	14.77	9.03
Held-to-Ear	802.11n (5GHz, 40MHz BW)	14.84	9.43
Held-to-Ear	802.11ac (40MHz BW)	14.75	9.56
Held-to-Ear	802.11ac (80MHz BW)	13.18	9.57

*Note: MIMO WIFI modes were not evaluated due to equipment limitations.

Table G-4
Power Measurement Verification WIFI – Antenna 2

Mechanism(s)	Mode/Band	Conducted Power (dBm)	
1st		Un-triggered (Max)	Mechanism #1 (Reduced)
Held-to-Ear	802.11b	18.53	10.82
Held-to-Ear	802.11g	15.65	10.06
Held-to-Ear	802.11n (2.4GHz)	15.39	9.43
Held-to-Ear	802.11a	16.81	10.68
Held-to-Ear	802.11n (5GHz, 20MHz BW)	16.70	10.70
Held-to-Ear	802.11ac (20MHz BW)	16.88	10.67
Held-to-Ear	802.11n (5GHz, 40MHz BW)	14.51	9.97
Held-to-Ear	802.11ac (40MHz BW)	14.23	9.45
Held-to-Ear	802.11ac (80MHz BW)	13.78	11.00

*Note: MIMO WIFI modes were not evaluated due to equipment limitations.

APPENDIX H: 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
S 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: D835V2-4d047_Mar19

CALIBRATION CERTIFICATE

Object: D835V2 - SN:4d047

Calibration procedure(s): QA CAL-05.v11
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz

BN ✓

Calibration date: March 13, 2019 04-12-2019

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	31-Dec-18 (No. EX3-7349_Dec18)	Dec-19
DAE4	SN: 601	04-Oct-18 (No. DAE4-601_Oct18)	Oct-19

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	07-Oct-15 (in house check Feb-19)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

	Name	Function	Signature
Calibrated by:	Manu Seitz	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: March 13, 2019

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	V52.10.2
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	41.9 ± 6 %	0.91 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.37 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.42 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.54 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**6.13 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	54.3 ± 6 %	1.01 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.45 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**9.47 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.61 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**6.27 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	51.4 Ω - 2.6 jΩ
Return Loss	- 30.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.8 Ω - 6.1 jΩ
Return Loss	- 22.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.387 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

DASY5 Validation Report for Head TSL

Date: 13.03.2019

Test Laboratory: SPEAG, Zurich, Switzerland

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

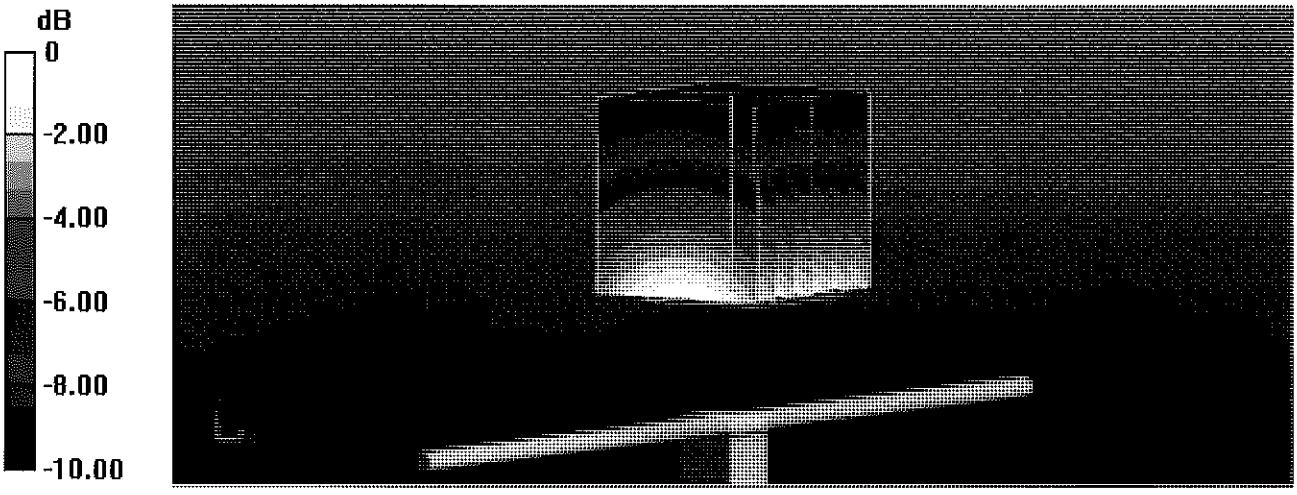
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; $\sigma = 0.91$ S/m; $\varepsilon_r = 41.9$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10, 10, 10) @ 835 MHz; Calibrated: 31.12.2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

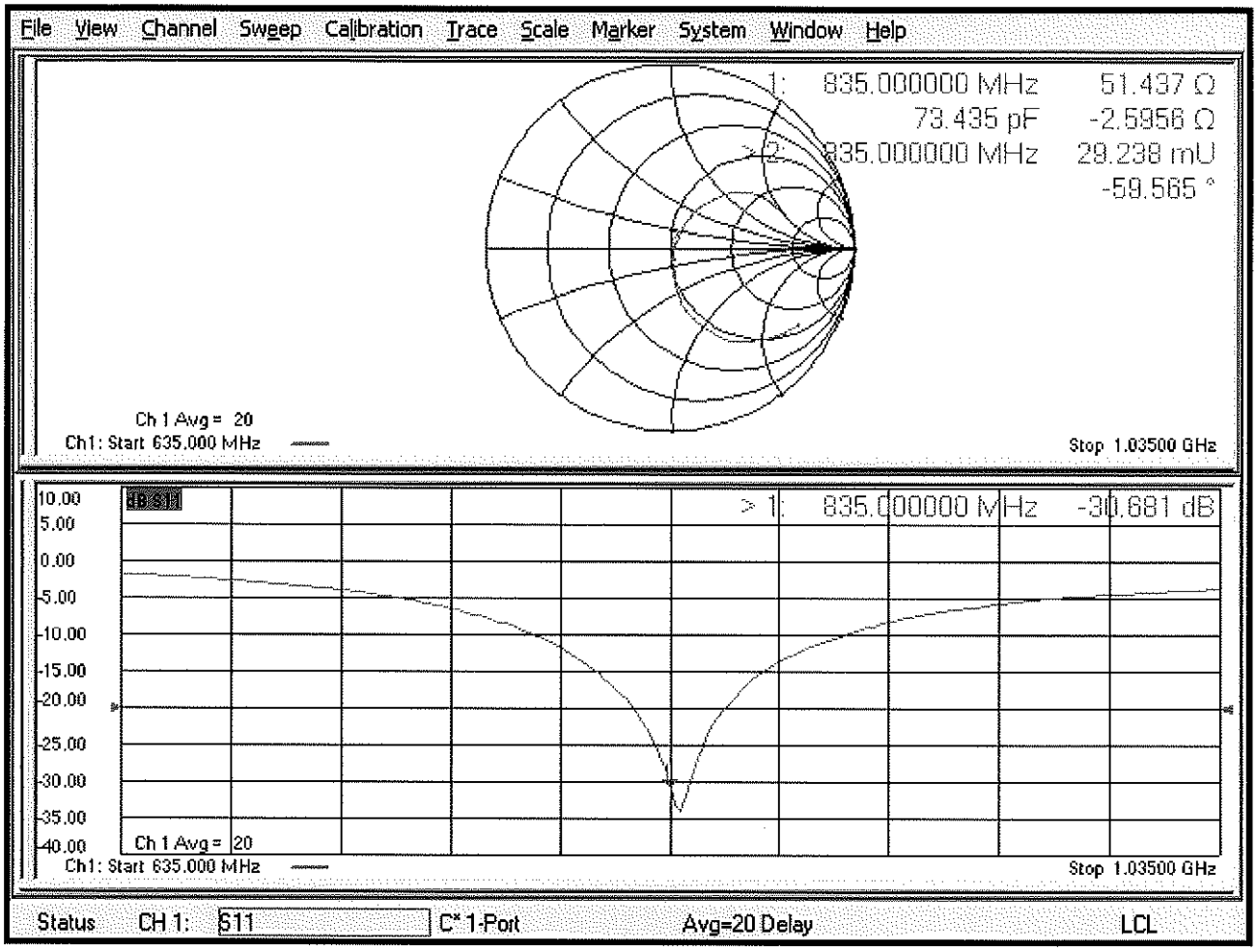
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 62.48 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 3.60 W/kg
SAR(1 g) = 2.37 W/kg; SAR(10 g) = 1.54 W/kg
Maximum value of SAR (measured) = 3.18 W/kg



0 dB = 3.18 W/kg = 5.02 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 13.03.2019

Test Laboratory: SPEAG, Zurich, Switzerland

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

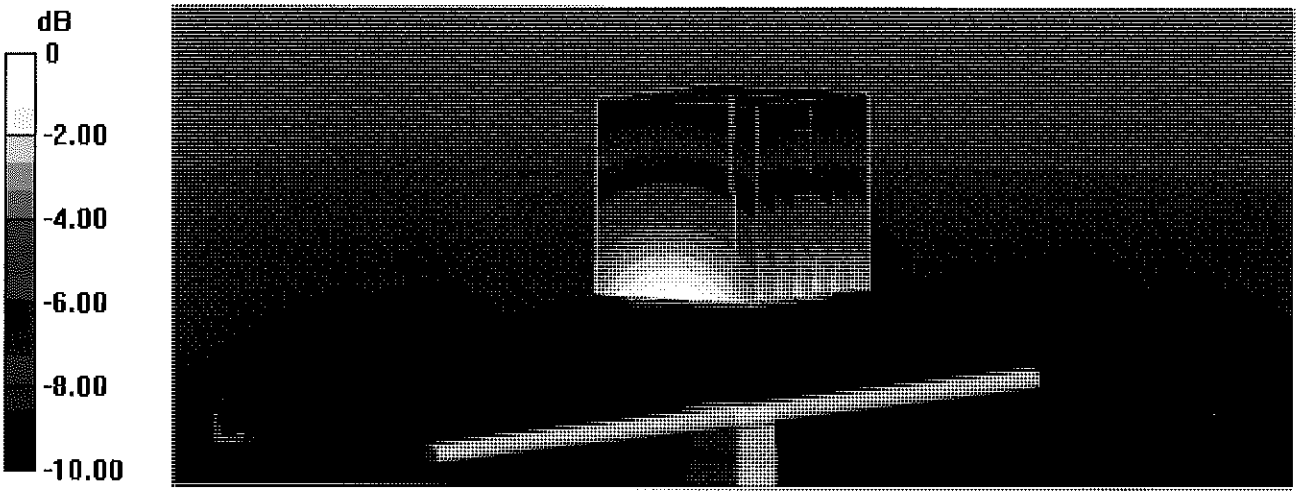
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 1.01 S/m; ε_r = 54.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.15, 10.15, 10.15) @ 835 MHz; Calibrated: 31.12.2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

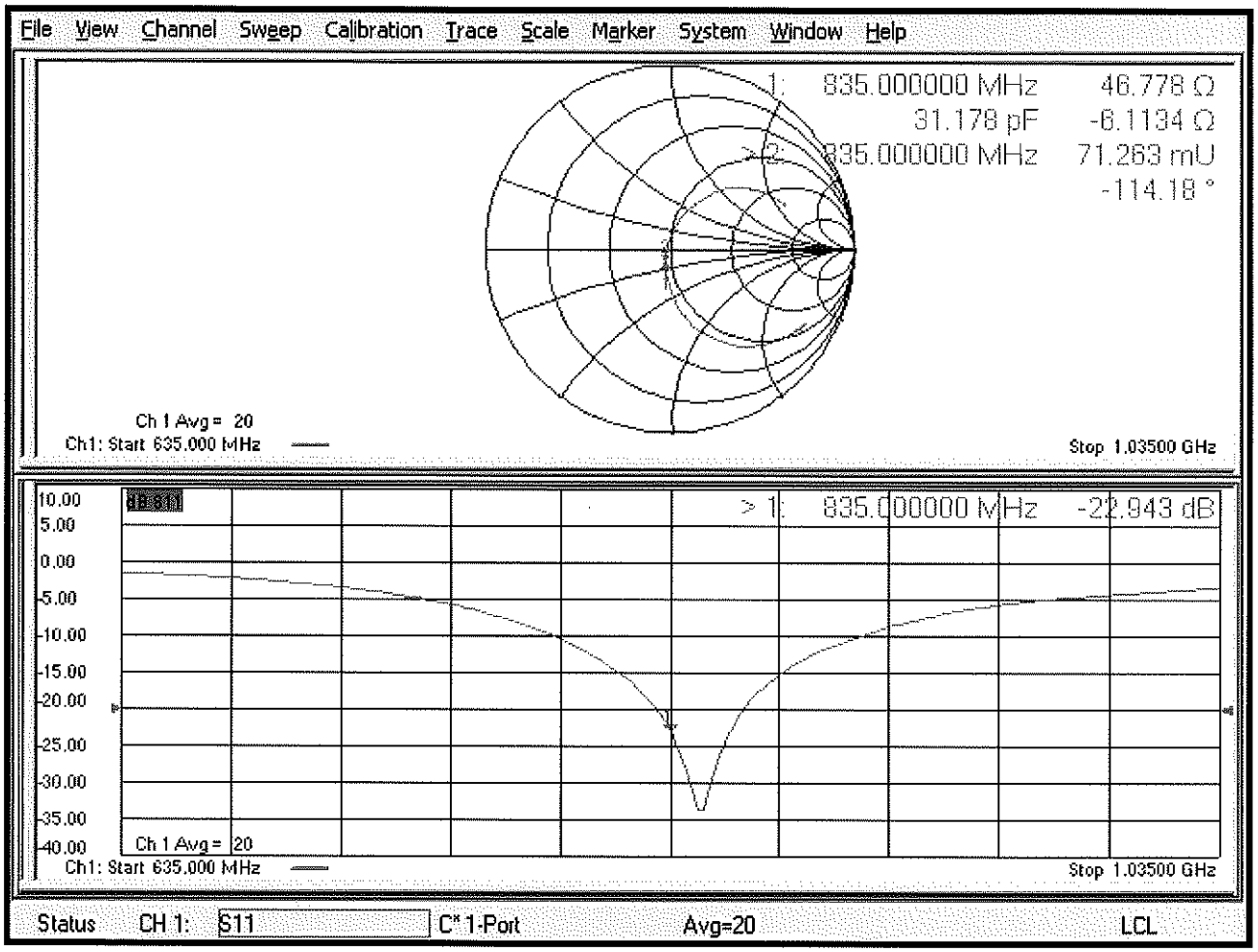
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 60.49 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.58 W/kg
SAR(1 g) = 2.45 W/kg; SAR(10 g) = 1.61 W/kg
Maximum value of SAR (measured) = 3.23 W/kg



0 dB = 3.23 W/kg = 5.09 dBW/kg

Impedance 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
S 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: D835V2-4d132_Jan19**

CALIBRATION CERTIFICATE

Object D835V2 - SN:4d132

Calibration procedure(s) QA CAL-05.v11
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz

BN ✓ 02/06/2019

Calibration date: January 22, 2019

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	31-Dec-18 (No. EX3-7349_Dec18)	Dec-19
DAE4	SN: 601	04-Oct-18 (No. DAE4-601_Oct18)	Oct-19

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

	Name	Function	Signature
Calibrated by:	Leif Klysner	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 22, 2019

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	V52.10.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5.0 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	41.3 ± 6 %	0.92 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.44 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.59 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.58 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**6.23 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	54.6 ± 6 %	0.99 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.46 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**9.67 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.61 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**6.35 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	49.6 Ω - 3.6 jΩ
Return Loss	- 28.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.4 Ω - 6.2 jΩ
Return Loss	- 23.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.387 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

Appendix (Additional assessments outside the scope of SCS 0108)

Measurement Conditions

DASY system configuration, as far as not given on page 1 and 3.

Phantom	SAM Head Phantom	For usage with cSAR3DV2-R/L

SAR result with SAM Head (Top)

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.35 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.38 W/kg ± 17.5 % (k=2)**

SAR averaged over 10 cm³ (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	**6.26 W/kg ± 16.9 % (k=2)**

SAR result with SAM Head (Mouth)

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.47 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.86 W/kg ± 17.5 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.65 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**6.58 W/kg ± 16.9 % (k=2)**

SAR result with SAM Head (Neck)

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.36 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.42 W/kg ± 17.5 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.60 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**6.38 W/kg ± 16.9 % (k=2)**

SAR result with SAM Head (Ear)

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.02 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**8.06 W/kg ± 17.5 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.36 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**5.42 W/kg ± 16.9 % (k=2)**

DASY5 Validation Report for Head TSL

Date: 17.01.2019

Test Laboratory: SPEAG, Zurich, Switzerland

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

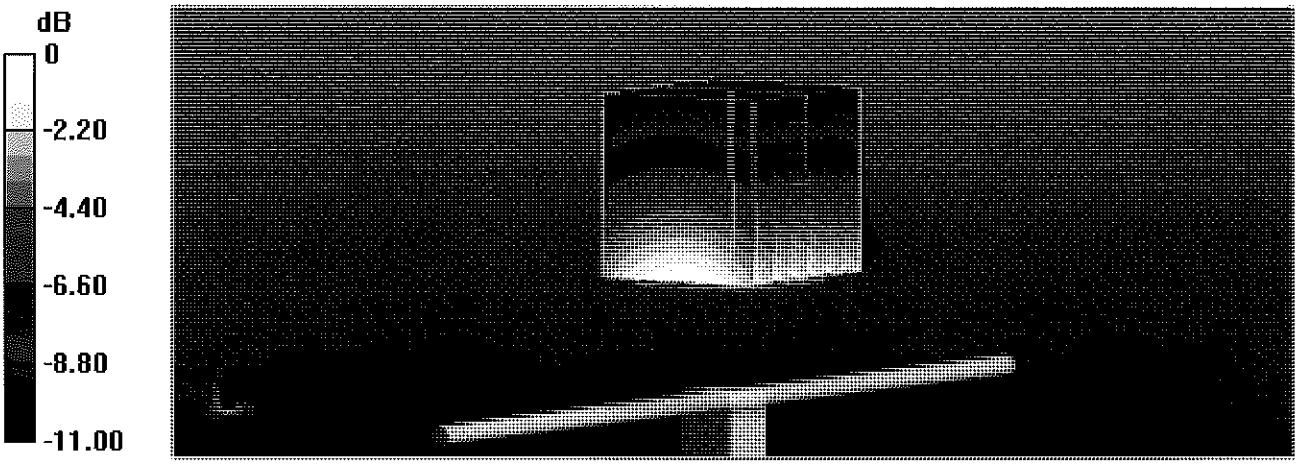
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.92 S/m; ε_r = 41.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10, 10, 10) @ 835 MHz; Calibrated: 31.12.2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

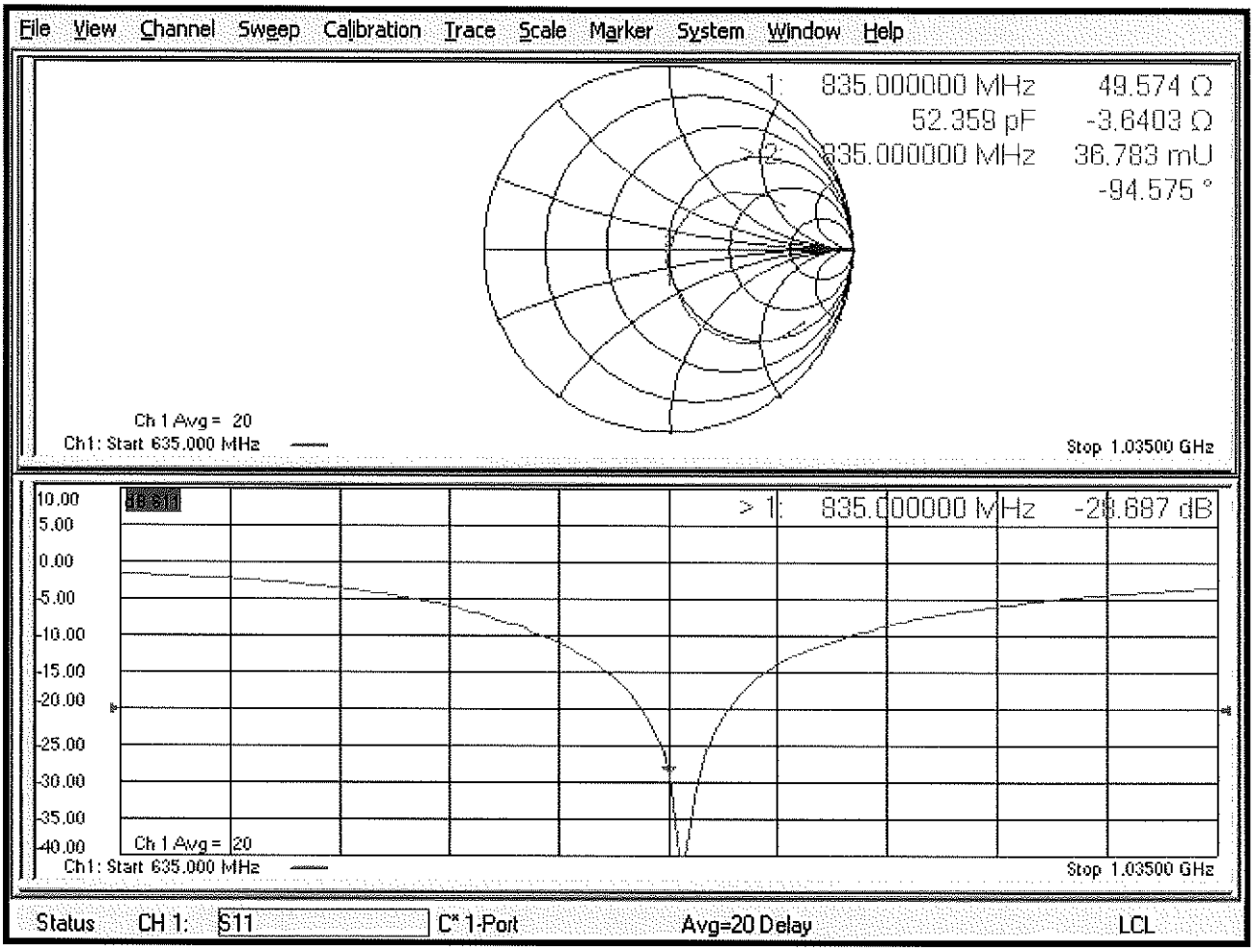
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 34.24 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 3.73 W/kg
SAR(1 g) = 2.44 W/kg; SAR(10 g) = 1.58 W/kg
Maximum value of SAR (measured) = 3.28 W/kg



0 dB = 3.28 W/kg = 5.16 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 17.01.2019

Test Laboratory: SPEAG, Zurich, Switzerland

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

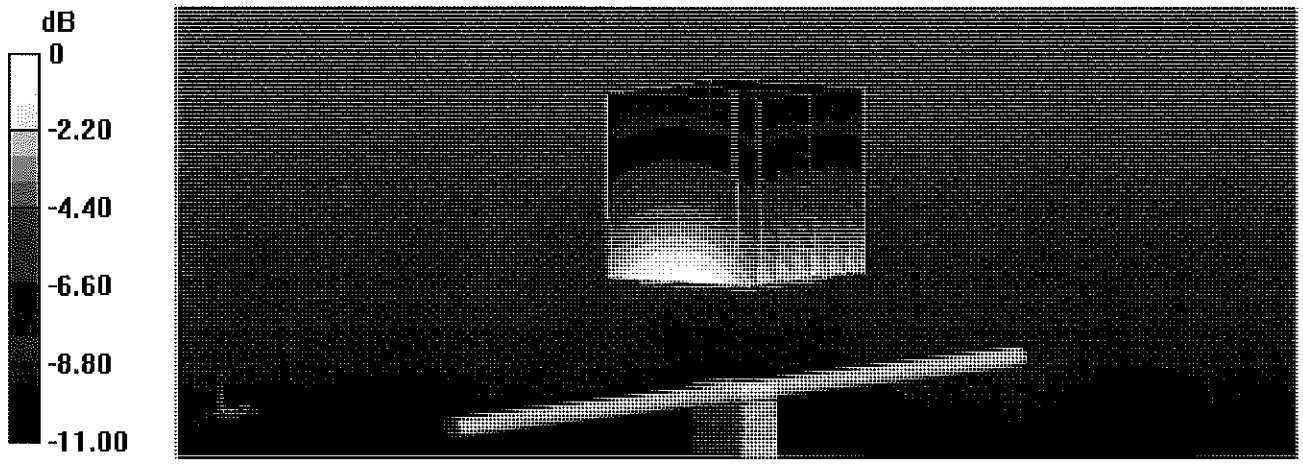
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.99 S/m; ε_r = 54.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.15, 10.15, 10.15) @ 835 MHz; Calibrated: 31.12.2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

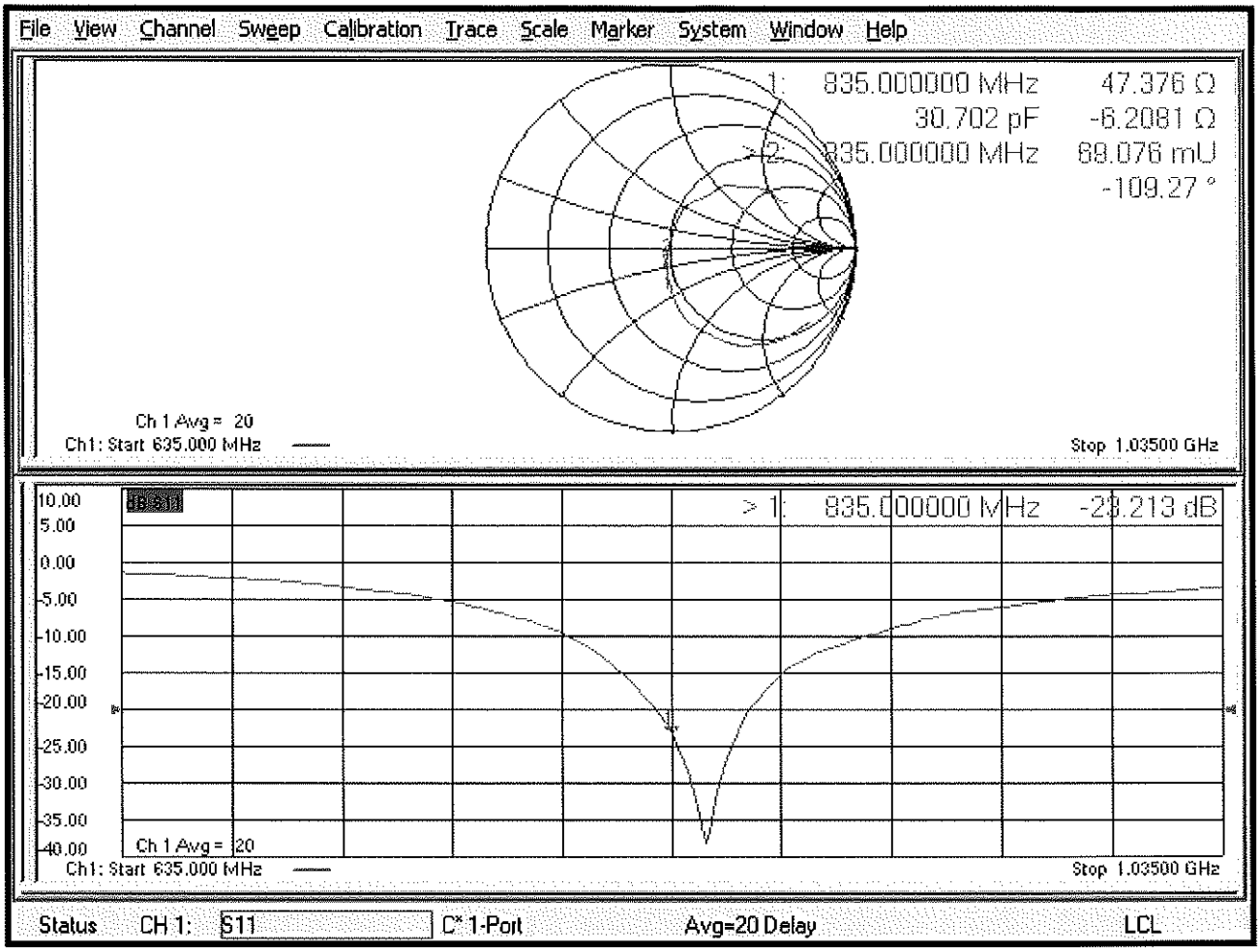
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 63.32 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 3.64 W/kg
SAR(1 g) = 2.46 W/kg; SAR(10 g) = 1.61 W/kg
Maximum value of SAR (measured) = 3.26 W/kg



0 dB = 3.26 W/kg = 5.13 dBW/kg

Impedance Measurement Plot for Body TSL



DASY5 Validation Report for SAM Head

Date: 22.01.2019

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.92 S/m; ε_r = 44.4; ρ = 1000 kg/m^3
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

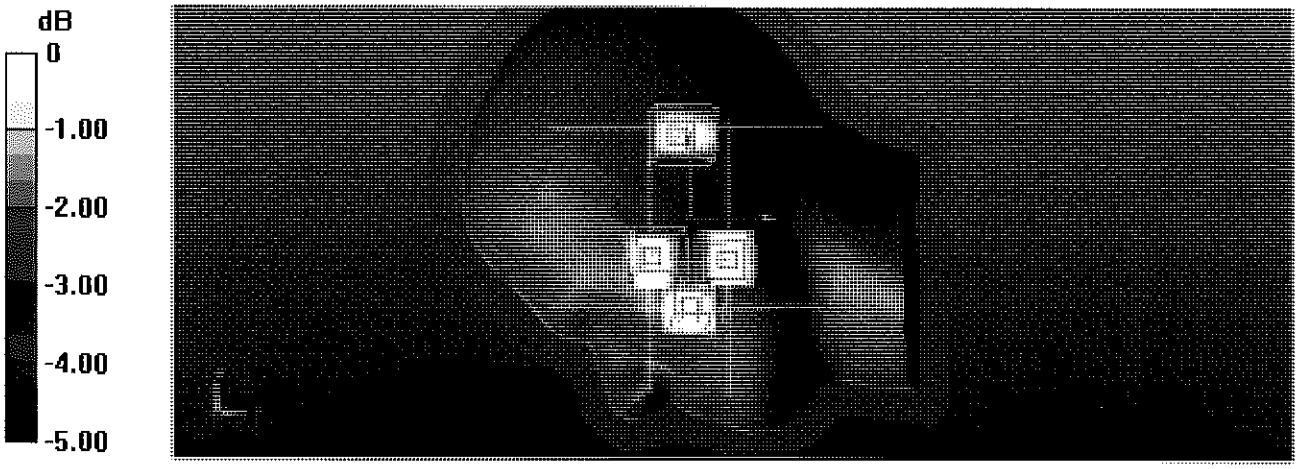
- Probe: EX3DV4 - SN7349; ConvF(10, 10, 10) @ 835 MHz; Calibrated: 31.12.2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: SAM Head
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

SAM/Head/Top/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 61.32 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 3.51 W/kg
SAR(1 g) = 2.35 W/kg; SAR(10 g) = 1.57 W/kg
Maximum value of SAR (measured) = 3.12 W/kg

SAM/Head/Mouth/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 62.25 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.67 W/kg
SAR(1 g) = 2.47 W/kg; SAR(10 g) = 1.65 W/kg
Maximum value of SAR (measured) = 3.24 W/kg

SAM/Head/Neck/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 60.69 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 3.43 W/kg
SAR(1 g) = 2.36 W/kg; SAR(10 g) = 1.6 W/kg
Maximum value of SAR (measured) = 3.08 W/kg

SAM/Head/Ear/Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.79 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 2.94 W/kg
SAR(1 g) = 2.02 W/kg; SAR(10 g) = 1.36 W/kg
Maximum value of SAR (measured) = 2.62 W/kg



0 dB = 2.62 W/kg = 4.18 dBW/kg

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Zeughausstrasse 43, 8004 Zurich, Switzerland

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S Servizio svizzero di taratura
S 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:** D1750V2-1150_Oct18

CALIBRATION CERTIFICATE

Object: D1750V2 - SN:1150

Calibration procedure(s): QA CAL-05.v10
Calibration procedure for dipole validation kits above 700 MHz

BN 10/30/2018

Calibration date: October 22, 2018

BN 10-20-2019

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	04-Oct-18 (No. DAE4-601_Oct18)	Oct-19

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	M.Weber
Approved by:	Katja Pokovic	Technical Manager	

Issued: October 22, 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	V52.10.2
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 %	1.33 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.02 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**36.5 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.76 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	53.5 ± 6 %	1.46 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.04 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**36.6 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	4.82 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**19.4 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	- 40.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.6 Ω - 0.1 jΩ
Return Loss	- 29.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.217 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: 22.10.2018

Test Laboratory: SPEAG, Zurich, Switzerland

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

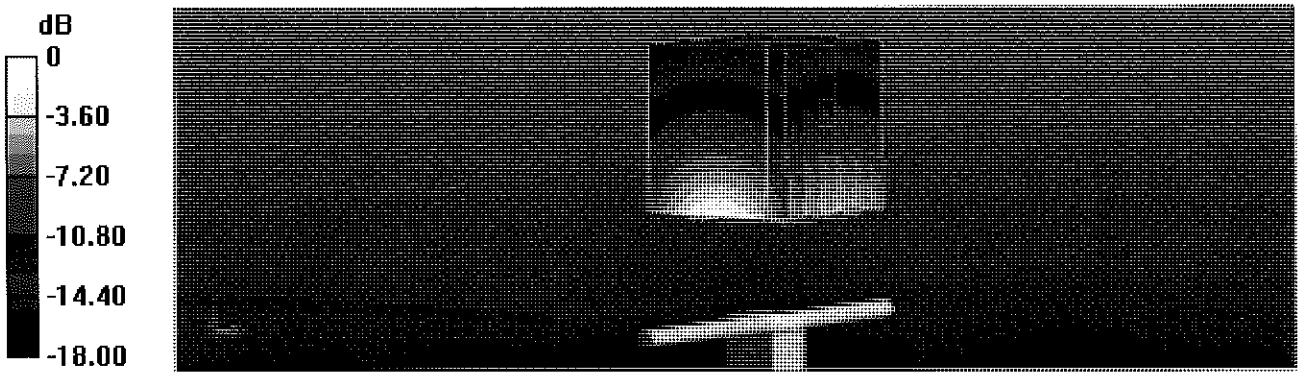
Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.33 S/m; ε_r = 38.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.5, 8.5, 8.5) @ 1750 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

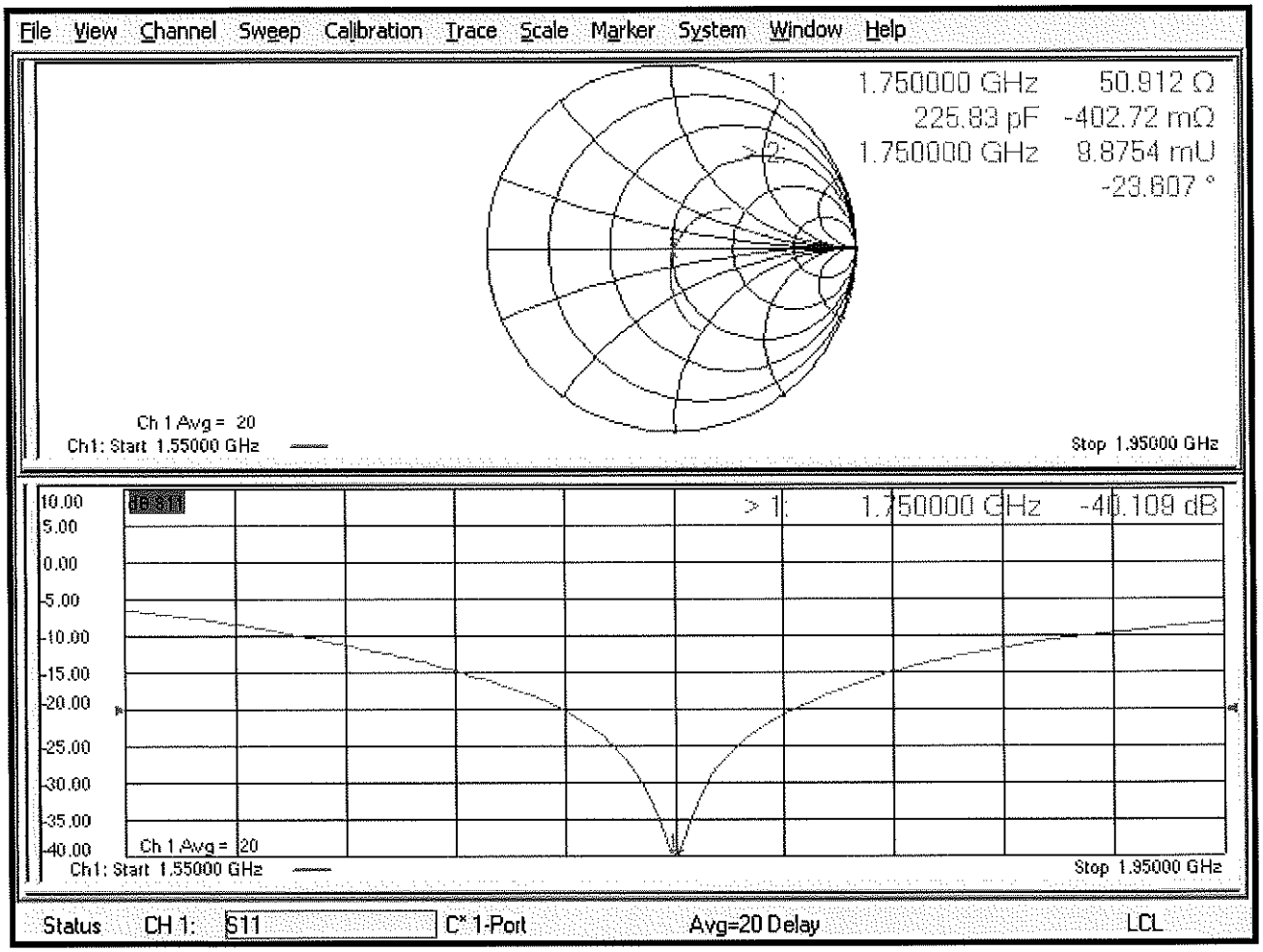
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 108.1 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 16.7 W/kg
SAR(1 g) = 9.02 W/kg; SAR(10 g) = 4.76 W/kg
Maximum value of SAR (measured) = 14.0 W/kg



0 dB = 14.0 W/kg = 11.46 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 22.10.2018

Test Laboratory: SPEAG, Zurich, Switzerland

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

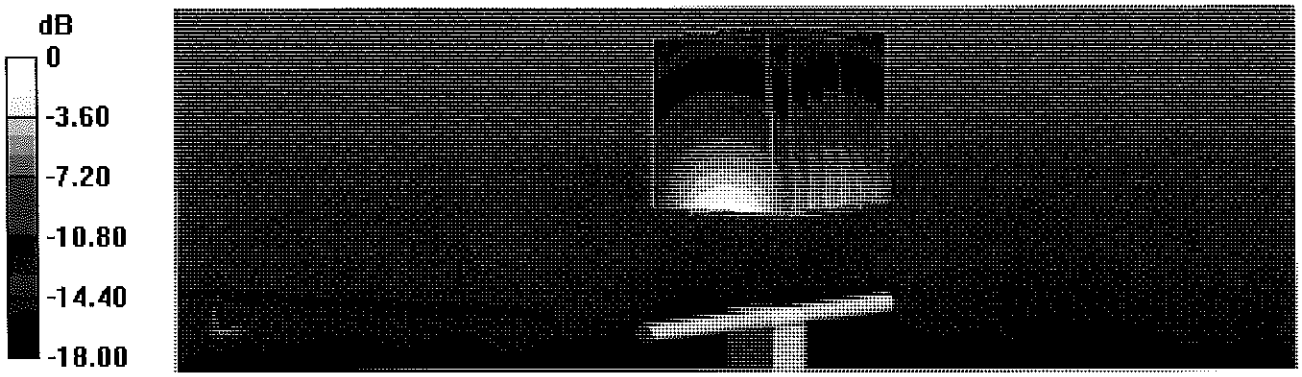
Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.46 S/m; ε_r = 53.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.35, 8.35, 8.35) @ 1750 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

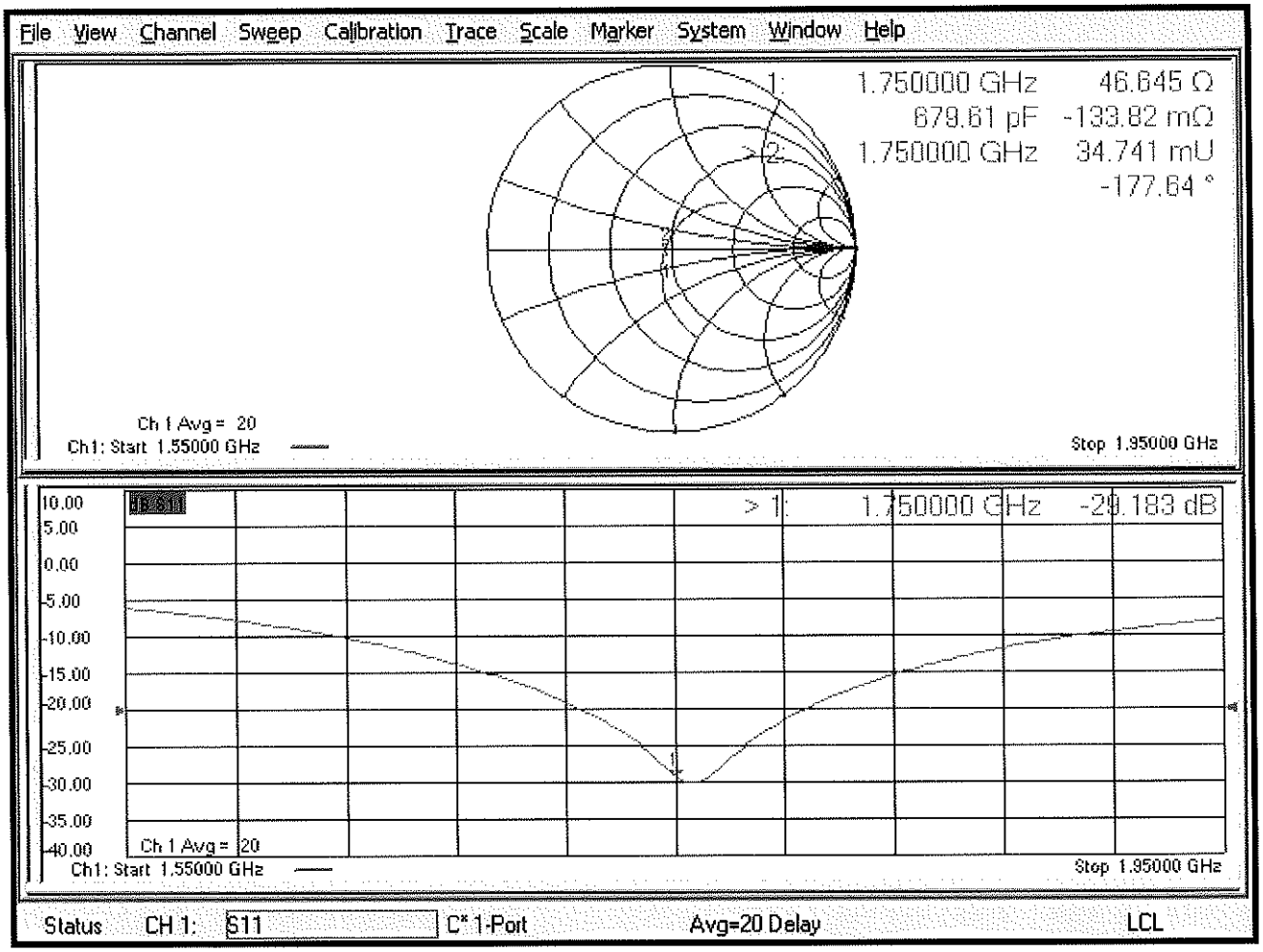
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 102.1 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 16.0 W/kg
SAR(1 g) = 9.04 W/kg; SAR(10 g) = 4.82 W/kg
Maximum value of SAR (measured) = 13.6 W/kg



0 dB = 13.6 W/kg = 11.34 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.
Extended Calibration date:	October 18, 2019
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	6/29/2019	Biennial	6/29/2021	192291470
Control Company	4352	Ultra Long Stem Thermometer	8/2/2018	Biennial	8/2/2020	181334684
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)	7/2/2019	Annual	7/2/2020	MY53401181
Rohde & Schwarz	ZNLE6	Vector Network Analyzer	10/11/2019	Annual	10/11/2020	101307
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	8/13/2019	Annual	8/13/2020	1041
Anritsu	MA2411B	Pulse Power Sensor	8/14/2019	Annual	8/14/2020	1315051
Anritsu	MA2411B	Pulse Power Sensor	8/8/2019	Annual	8/8/2020	1339008
Anritsu	ML2495A	Power Meter	11/20/2018	Annual	11/20/2019	1039008
Agilent	N5182A	MXG Vector Signal Generator	8/19/2019	Annual	8/19/2020	MY47420837
Seekonk	NC-100	Torque Wrench	5/9/2018	Biennial	5/9/2020	22217
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
MiniCircuits	ZHDC-16-63-S+	Bidirectional Coupler	CBT	N/A	CBT	N/A
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
SPEAG	EX3DV4	SAR Probe	8/16/2019	Annual	8/16/2020	7308
SPEAG	EX3DV4	SAR Probe	4/24/2019	Annual	4/24/2020	7357
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/18/2019	Annual	4/18/2020	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/14/2019	Annual	8/14/2020	1450

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.

Measurement Uncertainty = ±23% (k=2)

	Name	Function	Signature
Calibrated By:	Brodie Halbfoster	Team Lead Engineer	BRODIE HALBFOSTER
Approved By:	Kaitlin O'Keefe	Senior Technical Manager	KOK

DIPOLE CALIBRATION EXTENSION

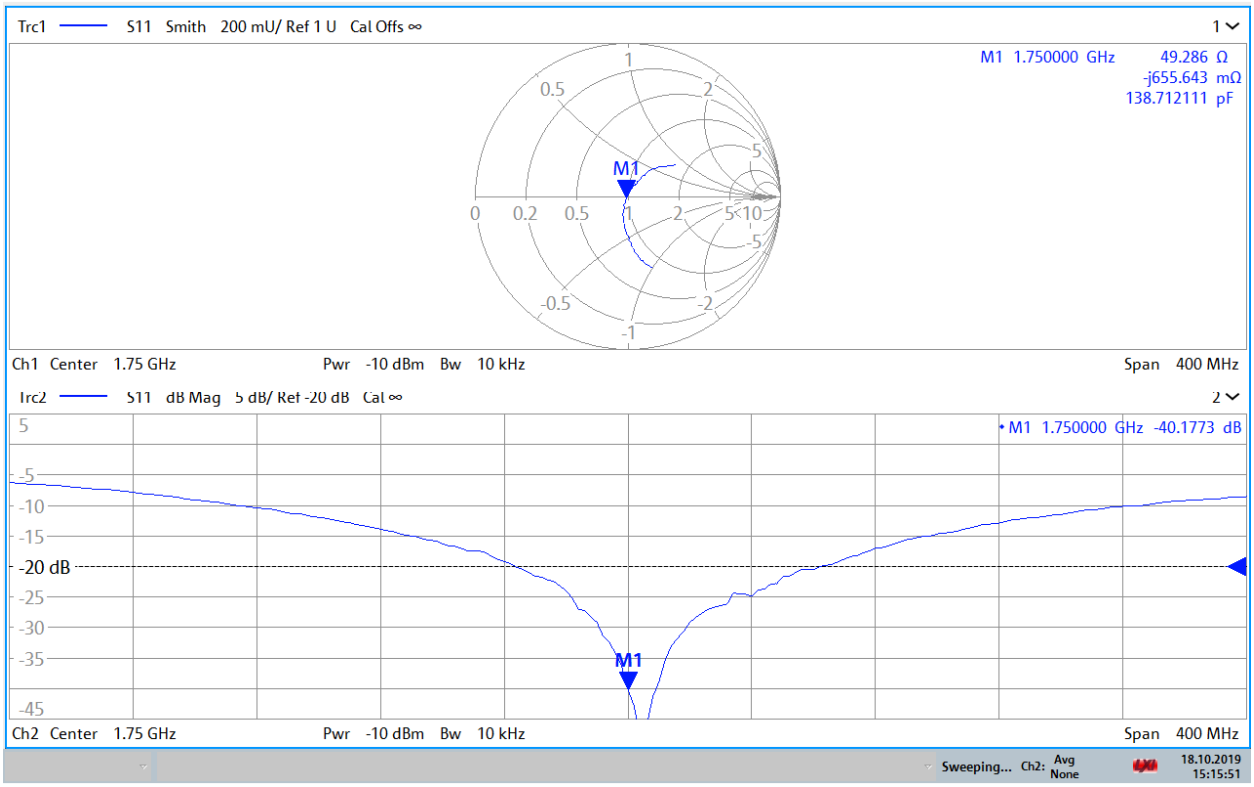
Per KDB 865664 D01, calibration intervals of up to three years may be considered for reference dipoles when it is demonstrated that the SAR target, impedance and return loss of a dipole have remained stable according to the following requirements:

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
10/22/2018	10/18/2019	1.217	3.65	3.8	4.11%	1.92	2	4.17%	50.9	49.3	1.6	0.4	-0.7	1.1	-40.1	-40.2	-0.20%	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
10/22/2018	10/18/2019	1.217	3.66	3.82	4.37%	1.94	2.02	4.12%	46.6	44.7	1.9	-0.1	-0.8	0.7	-29.2	-25	14.40%	PASS

Impedance & Return-Loss Measurement Plot for Head TSL



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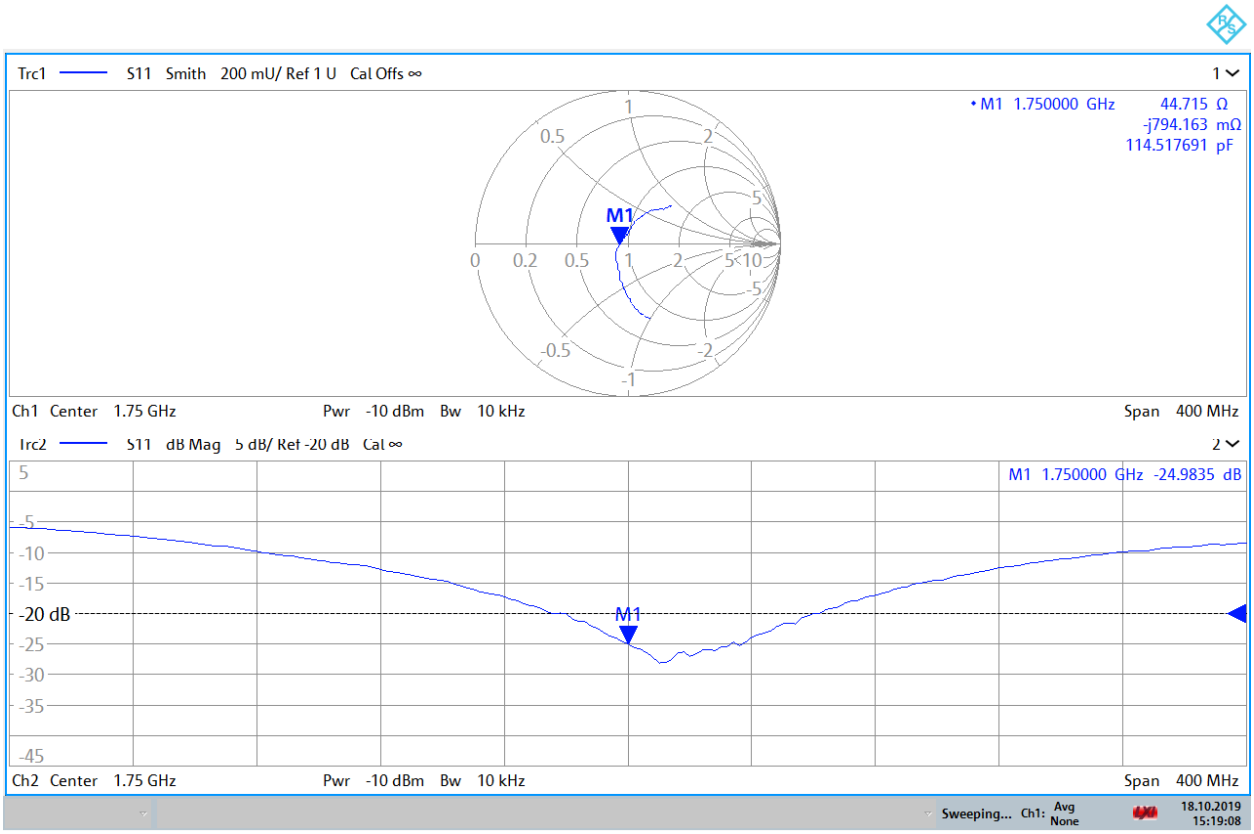
Impedance & Return-Loss Measurement Plot for Body TSL



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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
S 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: D1900V2-5d080_Oct18

CALIBRATION CERTIFICATE

Object	D1900V2 - SN:5d080
Calibration procedure(s)	QA CAL-05.v10 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	October 23, 2018

BN ✓ 10-30-2018
BN ✓ 10-20-2019

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	04-Oct-18 (No. DAE4-601_Oct18)	Oct-19

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: October 23, 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	V52.10.2
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	40.3 ± 6 %	1.40 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	9.93 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**39.8 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.18 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**20.7 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	52.9 ± 6 %	1.47 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	9.62 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**39.2 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.09 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.6 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	52.5 Ω + 7.9 jΩ
Return Loss	- 21.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.1 Ω + 8.1 jΩ
Return Loss	- 21.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.193 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 28, 2006

DASY5 Validation Report for Head TSL

Date: 23.10.2018

Test Laboratory: SPEAG, Zurich, Switzerland

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

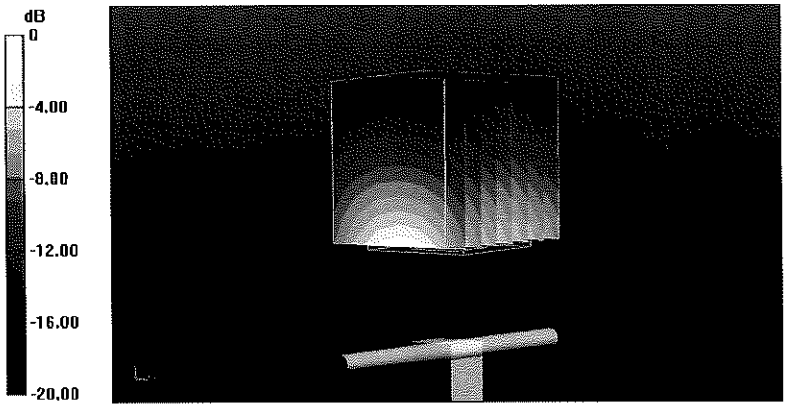
Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.4 S/m; ε_r = 40.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.18, 8.18, 8.18) @ 1900 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

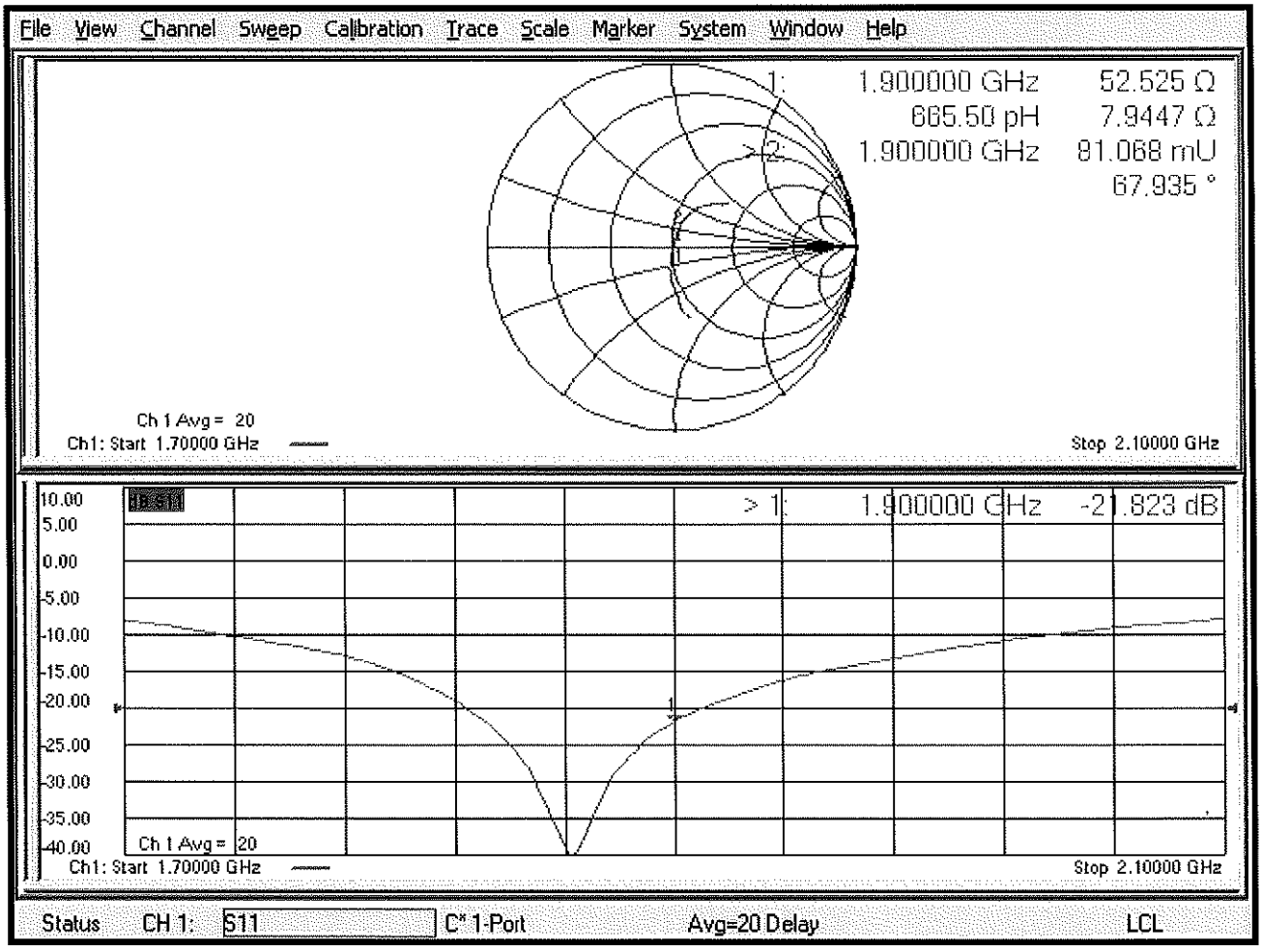
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 110.0 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 18.7 W/kg
SAR(1 g) = 9.93 W/kg; SAR(10 g) = 5.18 W/kg
Maximum value of SAR (measured) = 15.6 W/kg



0 dB = 15.6 W/kg = 11.93 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 23.10.2018

Test Laboratory: SPEAG, Zurich, Switzerland

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

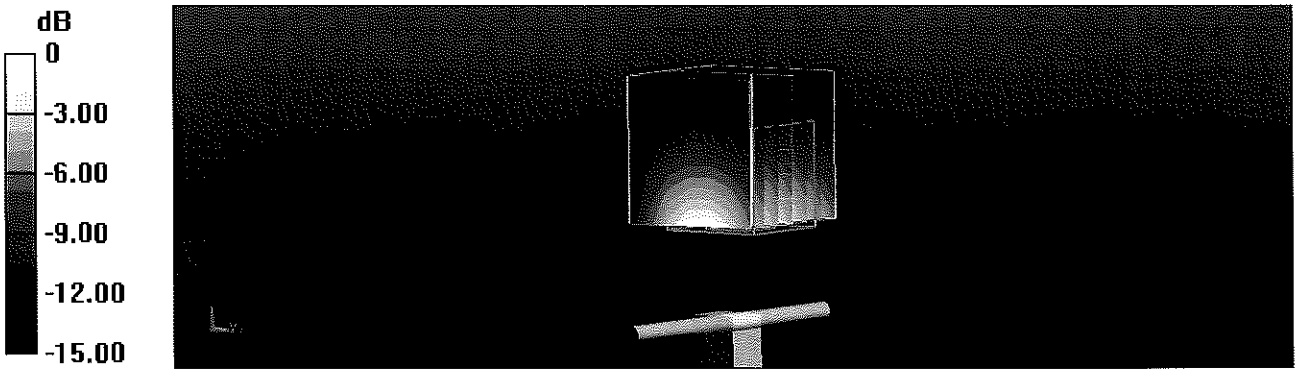
Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.47 S/m; ε_r = 52.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.15, 8.15, 8.15) @ 1900 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

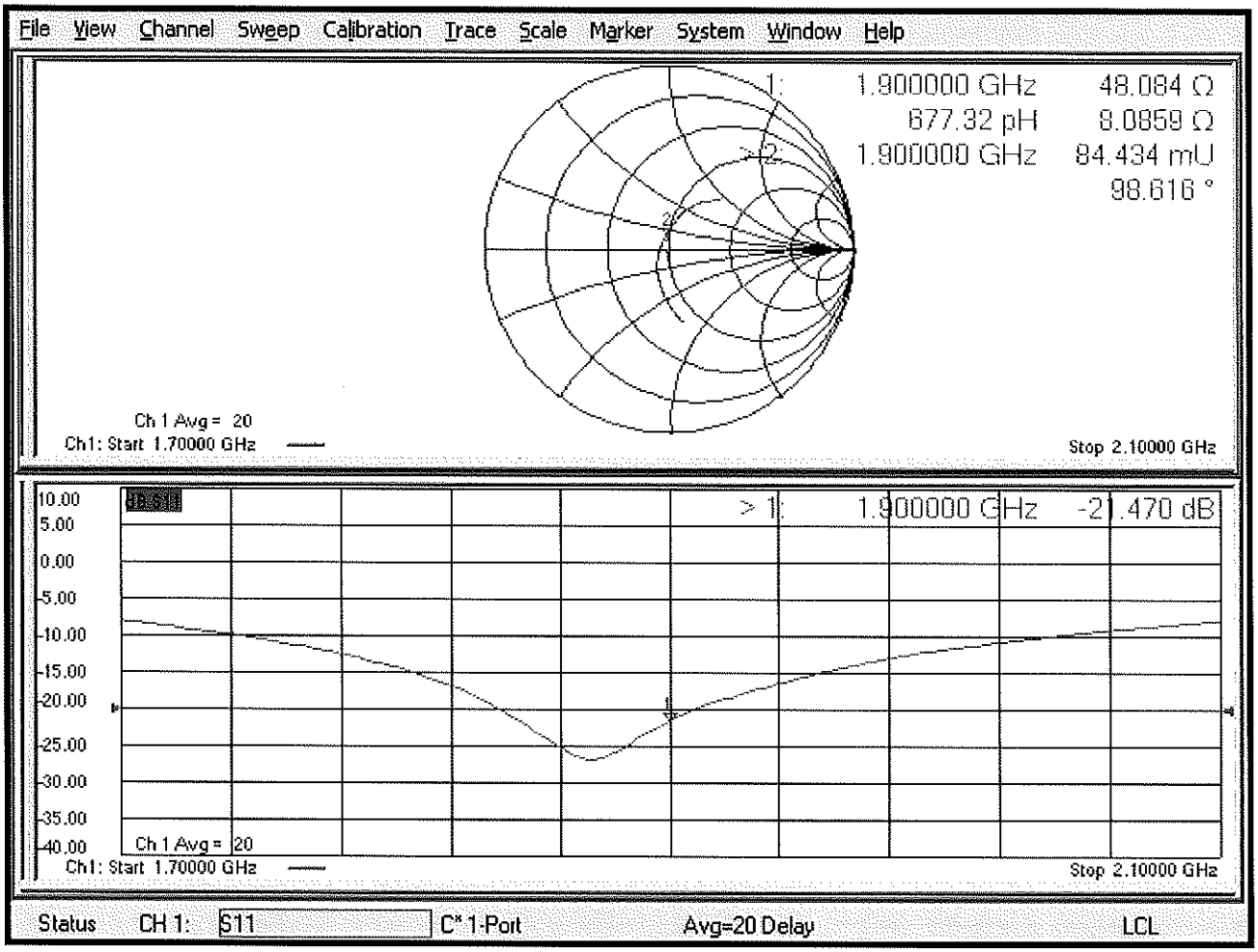
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 99.86 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 17.3 W/kg
SAR(1 g) = 9.62 W/kg; SAR(10 g) = 5.09 W/kg
Maximum value of SAR (measured) = 14.1 W/kg



0 dB = 14.1 W/kg = 11.49 dBW/kg

Impedance Measurement Plot for Body TSL



Certification of Calibration

Object	D1900V2 – SN:5d080
Calibration procedure(s)	Procedure for Calibration Extension for SAR Dipoles.
Extended Calibration date:	October 18, 2019
Description:	SAR Validation Dipole at 1900 MHz.

Calibration Equipment used:

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Control Company	4040	Therm./Clock/Humidity Monitor	6/29/2019	Biennial	6/29/2021	192291470
Control Company	4352	Ultra Long Stem Thermometer	8/2/2018	Biennial	8/2/2020	181334684
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)	7/2/2019	Annual	7/2/2020	MY53401181
Rohde & Schwarz	ZNLE6	Vector Network Analyzer	10/11/2019	Annual	10/11/2020	101307
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	8/13/2019	Annual	8/13/2020	1041
Anritsu	MA2411B	Pulse Power Sensor	8/14/2019	Annual	8/14/2020	1315051
Anritsu	MA2411B	Pulse Power Sensor	8/8/2019	Annual	8/8/2020	1339008
Anritsu	ML2495A	Power Meter	11/20/2018	Annual	11/20/2019	1039008
Agilent	N5182A	MXG Vector Signal Generator	8/19/2019	Annual	8/19/2020	MY47420837
Seekonk	NC-100	Torque Wrench	5/9/2018	Biennial	5/9/2020	22217
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
MiniCircuits	ZHDC-16-63-S+	Bidirectional Coupler	CBT	N/A	CBT	N/A
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
SPEAG	EX3DV4	SAR Probe	2/19/2019	Annual	2/19/2020	3914
SPEAG	EX3DV4	SAR Probe	5/16/2019	Annual	5/16/2020	7406
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/8/2019	Annual	5/8/2020	859
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/14/2019	Annual	2/14/2020	1272

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.

Measurement Uncertainty = ±23% (k=2)

	Name	Function	Signature
Calibrated By:	Brodie Halbfoster	Team Lead Engineer	BRODIE HALBFOSTER
Approved By:	Kaitlin O'Keefe	Senior Technical Manager	KOK