



SAR EVALUATION REPORT

Applicant Name:

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

Date of Testing:

10/18/17 - 11/09/17

Test Site/Location:

PCTEST Lab, Columbia, MD, USA

Document Serial No.:

1M1710180270-01-R1.A3L

FCC ID:

A3LSMA530F

APPLICANT:

SAMSUNG ELECTRONICS CO., LTD.

DUT Type:

Portable Handset

Application Type:

Certification

FCC Rule Part(s):

CFR §2.1093

Model:

SM-A530F, SM-A530F/DS

Equipment Class	Band & Mode	Tx Frequency	SAR		
			1g Head (W/kg)	1g Body-Worn (W/kg)	1g Hotspot (W/kg)
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.26	0.40	0.94
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	0.11	0.30	0.96
PCE	UMTS 850	826.40 - 846.60 MHz	0.26	0.44	0.68
PCE	UMTS 1750	1712.4 - 1752.6 MHz	0.18	0.57	0.58
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.22	0.76	0.98
PCE	LTE Band 12	699.7 - 715.3 MHz	0.13	0.23	0.29
PCE	LTE Band 17	706.5 - 713.5 MHz	N/A	N/A	N/A
PCE	LTE Band 13	779.5 - 784.5 MHz	0.18	0.33	0.53
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.23	0.30	0.52
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	N/A	N/A	N/A
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.17	0.48	0.81
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A	N/A
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	0.23	0.73	0.91
PCE	LTE Band 41	2498.5 - 2687.5 MHz	< 0.1	0.13	0.77
DTS	2.4 GHz WLAN	2412 - 2462 MHz	0.51	0.16	0.35
Nil	U-NII-1	5180 - 5240 MHz	N/A	N/A	N/A
Nil	U-NII-2A	5260 - 5320 MHz	0.46	0.14	N/A
Nil	U-NII-2C	5500 - 5720 MHz	0.21	0.41	N/A
Nil	U-NII-3	5745 - 5825 MHz	0.21	0.39	0.97
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.24	< 0.1	< 0.1
Simultaneous SAR per KDB 690783 D01v01r03:			0.76	1.17	1.54

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.

Note: This revised Test Report (S/N: 1M1710180270-01-R1.A3L) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.


Randy Ortanez
President



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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.6 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
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 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2462 MHz
U-NII-1	Voice/Data	5180 - 5240 MHz
U-NII-2A	Voice/Data	5260 - 5320 MHz
U-NII-2C	Voice/Data	5500 - 5720 MHz
U-NII-3	Voice/Data	5745 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz
ANT+	Data	2402 - 2480 MHz
MST	Data	555 Hz - 8.33 kHz

1.2 Power Reduction for SAR

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

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

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1.3 Nominal and Maximum Output Power Specifications

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

1.3.1 Maximum Output Power

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slot	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots
GSM/GPRS/EDGE 850	Maximum	34.0	34.0	31.5	30.5	30.0	28.0	26.5	25.0	24.0
	Nominal	33.5	33.5	31.0	30.0	29.5	27.5	26.0	24.5	23.5
GSM/GPRS/EDGE 1900	Maximum	30.2	30.2	28.0	26.5	26.0	26.5	24.5	23.5	22.0
	Nominal	29.7	29.7	27.5	26.0	25.5	26.0	24.0	23.0	21.5

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	3GPP HSDPA	3GPP HSUPA	3GPP DC-HSDPA
UMTS Band 5 (850 MHz)	Maximum	24.5	23.5	22.0	23.5
	Nominal	24.0	23.0	21.5	23.0
UMTS Band 4 (1750 MHz)	Maximum	23.5	23.5	22.0	23.5
	Nominal	23.0	23.0	21.5	23.0
UMTS Band 2 (1900 MHz)	Maximum	23.5	23.5	23.5	23.5
	Nominal	23.0	23.0	23.0	23.0

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

Mode / Band		Modulated Average (dBm)			
		Ch. 1	Ch. 2-9	Ch. 10	Ch. 11
IEEE 802.11b (2.4 GHz)	Maximum	18.5			
	Nominal	18.0			
IEEE 802.11g (2.4 GHz)	Maximum	14.5	16.5	15.5	12.5
	Nominal	14.0	16.0	15.0	12.0
IEEE 802.11n (2.4 GHz)	Maximum	13.5	16.5	15.5	11.5
	Nominal	13.0	16.0	15.0	11.0
Bluetooth	Maximum	9.5			
	Nominal	9.0			
Bluetooth LE	Maximum	7.0			
	Nominal	6.5			

Mode / Band		Modulated Average (dBm)								
		20 MHz Bandwidth		40 MHz Bandwidth				80 MHz Bandwidth		
		Ch. 36	Ch. 40-165	Ch. 38	Ch. 62	Ch. 102	Ch. 46, 54, 110-159	Ch. 42, 106	Ch. 58	Ch. 122- 155
IEEE 802.11a (5 GHz)	Maximum	13.5	14.0							
	Nominal	13.0	13.5							
IEEE 802.11n (5 GHz)	Maximum	13.5	14.0	8.5	7.5	12.5	14.0			
	Nominal	13.0	13.5	8.0	7.0	12.0	13.5			
IEEE 802.11ac (5 GHz)	Maximum	13.5	14.0	8.5	7.5	12.5	14.0	7.5	5.5	12.5
	Nominal	13.0	13.5	8.0	7.0	12.0	13.5	7.0	5.0	12.0

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1.3.2

Hotspot Reduced Output Power

Mode / Band		Burst Average GMSK (dBm)			
		1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots
GSM/GPRS/EDGE 850	Maximum	33.0	30.5	29.5	29.0
	Nominal	32.5	30.0	29.0	28.5
GSM/GPRS/EDGE 1900	Maximum	29.2	27.0	25.5	25.0
	Nominal	28.7	26.5	25.0	24.5
Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	3GPP HSDPA	3GPP HSUPA	3GPP DC-HSDPA
UMTS Band 5 (850 MHz)	Maximum	23.5	23.5	22.0	23.5
	Nominal	23.0	23.0	21.5	23.0
UMTS Band 4 (1750 MHz)	Maximum	20.0	20.0	20.0	20.0
	Nominal	19.5	19.5	19.5	19.5
UMTS Band 2 (1900 MHz)	Maximum	20.0	20.0	20.0	20.0
	Nominal	19.5	19.5	19.5	19.5

Mode / Band		Modulated Average (dBm)
LTE Band 5 (Cell)	Maximum	23.0
	Nominal	22.5
LTE Band 66 (AWS)	Maximum	20.5
	Nominal	20.0
LTE Band 4 (AWS)	Maximum	20.0
	Nominal	19.5
LTE Band 2 (PCS)	Maximum	20.0
	Nominal	19.5
LTE Band 41	Maximum	22.5
	Nominal	22.0

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1.3.3

WLAN Reduced Output Power

Mode / Band		Modulated Average (dBm)	
		Ch. 1-10	Ch. 11
IEEE 802.11b (2.4 GHz)	Maximum	12.5	
	Nominal	12.0	
IEEE 802.11g (2.4 GHz)	Maximum	12.5	
	Nominal	12.0	
IEEE 802.11n (2.4 GHz)	Maximum	12.5	11.5
	Nominal	12.0	11.0

Mode / Band		Modulated Average (dBm)						
		20 MHz Bandwidth	40 MHz Bandwidth			80 MHz Bandwidth		
			Ch. 38	Ch. 62	Ch. 46, 54, 102-159	Ch. 42, 106	Ch. 58	Ch. 122- 155
IEEE 802.11a (5 GHz)	Maximum	10.5						
	Nominal	10.0						
IEEE 802.11n (5 GHz)	Maximum	10.5	8.5	7.5	10.5			
	Nominal	10.0	8.0	7.0	10.0			
IEEE 802.11ac (5 GHz)	Maximum	10.5	8.5	7.5	10.5	7.5	5.5	10.5
	Nominal	10.0	8.0	7.0	10.0	7.0	5.0	10.0

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1.4 DUT Antenna Locations

The overall dimensions of this device are > 9 x 5 cm. The overall diagonal dimension of the device is ≤160 mm and the diagonal display is ≤150 mm. A diagram showing the location of the device antennas can be found in Appendix F.

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

Mode	Back	Front	Top	Bottom	Right	Left
GPRS 850	Yes	Yes	No	Yes	Yes	Yes
GPRS 1900	Yes	Yes	No	Yes	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 2 (PCS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 41	Yes	Yes	No	Yes	Yes	Yes
2.4 GHz WLAN	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN	Yes	Yes	Yes	No	No	Yes
Bluetooth	Yes	Yes	Yes	No	No	Yes

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

1.5 Near Field Communications (NFC) Antenna

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

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1.6 Simultaneous Transmission Capabilities

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

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

Table 1-2
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Head	Body-Worn Accessory	Wireless Router	Notes
1	GSM voice + 2.4 GHz Wi-Fi	Yes	Yes	N/A	
2	GSM voice + 5 GHz Wi-Fi	Yes	Yes	N/A	
3	GSM voice + 2.4 GHz Bluetooth	Yes^	Yes	N/A	^ Bluetooth Tethering is considered
4	UMTS + 2.4 GHz Wi-Fi	Yes	Yes	Yes	
5	UMTS + 5 GHz Wi-Fi	Yes	Yes	Yes	
6	UMTS + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	^ Bluetooth Tethering is considered
7	LTE + 2.4 GHz Wi-Fi	Yes	Yes	Yes	
8	LTE + 5 GHz Wi-Fi	Yes	Yes	Yes	
9	LTE + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	^ Bluetooth Tethering is considered
10	GPRS/EDGE + 2.4 GHz Wi-Fi	N/A	N/A	Yes	
11	GPRS/EDGE + 5 GHz Wi-Fi	N/A	N/A	Yes	
12	GPRS/EDGE + 2.4 GHz Bluetooth	N/A	N/A	Yes^	

- 2.4 GHz WLAN, 5 GHz WLAN, and 2.4 GHz Bluetooth share the same antenna path and cannot transmit simultaneously.
- All licensed modes share the same antenna path and cannot transmit simultaneously.
- 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.
- 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 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.
- This device supports VOLTE.
- This device supports VoWIFI.

1.7 Miscellaneous SAR Test Considerations

(A) WIFI/BT

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

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

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This device supports IEEE 802.11ac with the following features:

- a) Up to 80 MHz Bandwidth only
- b) No aggregate channel configurations
- c) 1 Tx antenna output
- d) 256 QAM is supported
- e) TDWR and Band gap channels are supported

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

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.

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)
- October 2013 TCB Workshop Notes (GPRS Testing Considerations)

1.9 Device Serial Numbers

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

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LTE Information					
FCC ID	A3LSMA530F				
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 2 (PCS) (1850.7 - 1909.3 MHz)				
	LTE Band 41 (2498.5 - 2687.5 MHz)				
	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
Channel Bandwidths	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 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 12: 1.4 MHz	699.7 (23017)		707.5 (23095)		715.3 (23173)
LTE Band 12: 3 MHz	700.5 (23025)		707.5 (23095)		714.5 (23165)
LTE Band 12: 5 MHz	701.5 (23035)		707.5 (23095)		713.5 (23155)
LTE Band 12: 10 MHz	704 (23060)		707.5 (23095)		711 (23130)
LTE Band 17: 5 MHz	706.5 (23755)		710 (23790)		713.5 (23825)
LTE Band 17: 10 MHz	709 (23780)		710 (23790)		711 (23800)
LTE Band 13: 5 MHz	779.5 (23205)		782 (23230)		784.5 (23255)
LTE Band 13: 10 MHz	N/A		782 (23230)		N/A
LTE Band 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 2 (PCS): 1.4 MHz	1850.7 (18607)		1880 (18900)		1909.3 (19193)
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)		1880 (18900)		1908.5 (19185)
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)		1880 (18900)		1907.5 (19175)
LTE Band 2 (PCS): 10 MHz	1855 (18650)		1880 (18900)		1905 (19150)
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)		1880 (18900)		1902.5 (19125)
LTE Band 2 (PCS): 20 MHz	1860 (18700)		1880 (18900)		1900 (19100)
LTE Band 41: 5 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
UE Category	DL UE Cat 11, UL UE Cat 5				
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 12. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. The following LTE Features are not supported: Relay, HetNet, Enhanced MIMO, eCIC, WIFI Offloading, eMBMS, Cross-Carrier Scheduling, Enhanced SC-FDMA.				

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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/m³)
- 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]

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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:

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.

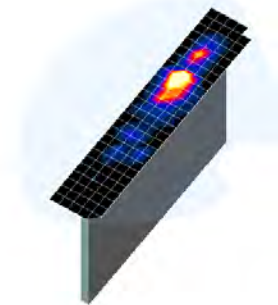


Figure 4-1
Sample SAR Area Scan

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

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

*Also compliant to IEEE 1528-2013 Table 6

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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].

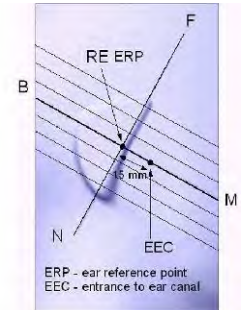


Figure 5-1
Close-Up Side view of ERP

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 then 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

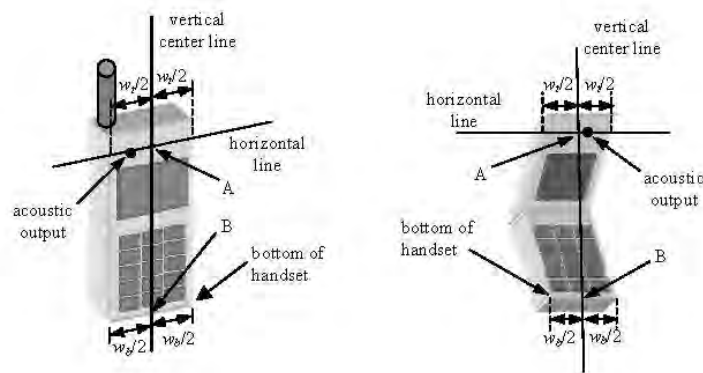


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

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

6.2 Positioning for Cheek

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



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

2. The handset was translated towards the phantom along the line passing through RE & LE until the handset touches the pinna.
3. While maintaining the handset in this plane, the handset was rotated around the LE-RE line until the vertical centerline was in the reference plane.
4. The phone was then rotated around the vertical centerline until the phone (horizontal line) was symmetrical with 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 / 15° 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 15 degrees.
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).

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

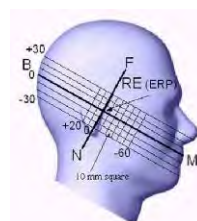


Figure 6-3 Side view w/ relevant markings

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.

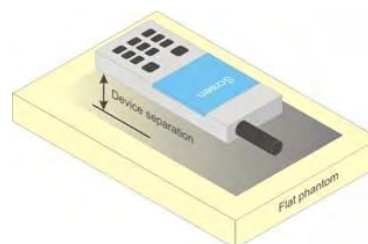


Figure 6-4 Sample Body-Worn Diagram

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

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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 ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) 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.

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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 <i>General Population</i> (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT <i>Occupational</i> (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.

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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.

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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).

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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 $\frac{1}{2}$ 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

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carrier aggregation is inactive on the PCC. For every supported combination of downlink only carrier aggregation, additional conducted output powers are measured with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band. Per FCC KDB Publication 941225 D05Av01r02, no SAR measurements are required for carrier aggregation configurations when the average output power with downlink only carrier aggregation active is not more than 0.25 dB higher than the average output power with downlink only carrier aggregation inactive.

8.6 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.

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.

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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.

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.

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.

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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).

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.

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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	33.22	33.17	30.80	30.06	29.60	26.81	25.22	23.73	22.38
	190	33.38	33.31	31.05	30.19	29.78	27.23	25.33	24.15	22.78
	251	33.42	33.46	31.00	30.38	29.88	27.11	25.48	24.11	22.66
GSM 1900	512	29.66	29.70	27.23	26.02	25.46	25.83	23.85	22.32	20.98
	661	29.85	29.88	27.51	26.38	25.68	26.12	24.05	22.67	21.21
	810	29.82	29.90	27.72	26.48	25.71	26.07	24.06	22.73	21.43

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	24.19	24.14	24.78	25.80	26.59	17.78	19.20	19.47	19.37
	190	24.35	24.28	25.03	25.93	26.77	18.20	19.31	19.89	19.77
	251	24.39	24.43	24.98	26.12	26.87	18.08	19.46	19.85	19.65
GSM 1900	512	20.63	20.67	21.21	21.76	22.45	16.80	17.83	18.06	17.97
	661	20.82	20.85	21.49	22.12	22.67	17.09	18.03	18.41	18.20
	810	20.79	20.87	21.70	22.22	22.70	17.04	18.04	18.47	18.42

GSM 850	Frame	24.47	24.47	24.98	25.74	26.49	18.47	19.98	20.24	20.49
GSM 1900	Avg.Targets:	20.67	20.67	21.48	21.74	22.49	16.97	17.98	18.74	18.49

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Table 9-2
Reduced Conducted Power

Maximum Burst-Averaged Output Power					
		GPRS/EDGE Data (GMSK)			
Band	Channel	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot
GSM 850	128	32.60	30.04	28.60	28.03
	190	32.72	30.16	28.94	28.08
	251	32.85	30.32	28.82	28.31
GSM 1900	512	28.99	26.00	25.18	24.27
	661	29.08	26.39	25.20	24.39
	810	29.17	26.37	25.19	24.22

Calculated Maximum Frame-Averaged Output Power					
		GPRS/EDGE Data (GMSK)			
Band	Channel	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot
GSM 850	128	23.57	24.02	24.34	25.02
	190	23.69	24.14	24.68	25.07
	251	23.82	24.30	24.56	25.30
GSM 1900	512	19.96	19.98	20.92	21.26
	661	20.05	20.37	20.94	21.38
	810	20.14	20.35	20.93	21.21

GSM 850	Frame Avg.Targets:	23.47	23.98	24.74	25.49
GSM 1900		19.67	20.48	20.74	21.49

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Note:

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

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



Figure 9-1
Power Measurement Setup

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9.2 UMTS Conducted Powers

Table 9-3
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	24.26	24.23	24.33	23.16	23.02	22.82	23.28	23.41	23.35	-
99		12.2 kbps AMR	24.24	24.21	24.33	23.14	23.03	22.83	23.25	23.42	23.33	-
6	HSDPA	Subtest 1	23.22	23.25	23.36	23.47	23.08	23.07	23.44	23.41	23.34	0
6		Subtest 2	22.33	22.24	22.35	22.44	22.12	22.01	22.96	22.95	22.85	0
6		Subtest 3	21.47	21.38	21.51	21.52	21.23	21.10	21.94	21.92	21.86	0.5
6		Subtest 4	21.43	21.41	21.50	21.51	21.15	21.05	21.90	21.88	21.87	0.5
6	HSUPA	Subtest 1	20.41	20.37	20.53	20.35	20.06	20.00	21.80	21.76	21.74	0
6		Subtest 2	18.38	18.38	18.41	18.63	18.25	18.18	20.05	20.30	20.00	2
6		Subtest 3	19.34	19.33	19.41	20.02	19.76	19.70	20.95	20.92	20.88	1
6		Subtest 4	18.46	18.44	18.44	18.64	18.32	18.20	20.07	20.02	20.05	2
6		Subtest 5	21.50	21.46	21.58	21.89	21.62	21.51	22.77	22.70	22.73	0
8	DC-HSDPA	Subtest 1	23.34	23.49	23.37	23.41	23.14	23.07	23.15	23.40	23.27	0
8		Subtest 2	22.15	22.35	22.37	22.28	22.07	21.98	22.72	22.88	22.75	0
8		Subtest 3	21.49	21.52	21.38	21.39	21.06	21.00	21.69	21.87	21.74	0.5
8		Subtest 4	21.45	21.51	21.37	21.44	21.11	21.02	21.71	21.89	21.77	0.5

Table 9-4
Reduced Conducted Power

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	23.37	23.33	23.43	19.64	19.57	19.42	19.86	20.00	19.90	-
99		12.2 kbps AMR	23.37	23.37	23.44	19.68	19.58	19.36	19.85	20.00	19.91	-
6	HSDPA	Subtest 1	23.21	23.26	23.33	19.98	19.72	19.64	19.96	19.91	19.89	0
6		Subtest 2	22.34	22.24	22.35	19.97	19.77	19.71	19.99	19.87	19.93	0
6		Subtest 3	21.46	21.38	21.50	20.00	19.75	19.70	20.00	19.99	19.94	0.5
6		Subtest 4	21.42	21.43	21.49	19.97	19.78	19.69	19.98	19.96	19.95	0.5
6	HSUPA	Subtest 1	20.40	20.43	20.51	19.08	18.78	18.71	18.83	18.79	18.76	0
6		Subtest 2	18.36	18.38	18.40	18.66	18.30	18.22	18.97	18.94	18.91	2
6		Subtest 3	19.27	19.26	19.38	19.14	18.83	18.77	18.93	18.87	18.83	1
6		Subtest 4	18.33	18.36	18.38	18.26	18.27	18.20	18.92	18.86	18.85	2
6		Subtest 5	21.50	21.50	21.54	19.95	19.68	19.58	19.93	19.89	19.84	0
8	DC-HSDPA	Subtest 1	23.34	23.49	23.37	19.76	19.71	19.64	19.89	19.91	19.87	0
8		Subtest 2	22.15	22.35	22.37	19.98	19.73	19.60	19.84	19.85	19.92	0
8		Subtest 3	21.49	21.52	21.38	19.96	19.71	19.61	19.83	19.99	19.89	0.5
8		Subtest 4	21.45	21.51	21.37	19.99	19.68	19.66	19.85	20.00	19.89	0.5

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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

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9.3 LTE Conducted Powers

9.3.1

LTE Band 12

Table 9-5
LTE Band 12 Conducted Powers - 10 MHz Bandwidth

LTE Band 12 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23095 (707.5 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	24.00	0	0
	1	25	23.99		0
	1	49	23.93		0
	25	0	22.93	0-1	1
	25	12	22.89		1
	25	25	22.86		1
	50	0	22.91		1
16QAM	1	0	22.66	0-1	1
	1	25	22.70		1
	1	49	22.56		1
	25	0	21.85	0-2	2
	25	12	21.78		2
	25	25	21.76		2
	50	0	21.92		2
64QAM	1	0	22.00	0-2	2
	1	25	21.92		2
	1	49	21.85		2
	25	0	20.97	0-3	3
	25	12	20.85		3
	25	25	20.78		3
	50	0	20.90		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.

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Table 9-6
LTE Band 12 Conducted Powers - 5 MHz Bandwidth

LTE Band 12 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23035 (701.5 MHz)	23095 (707.5 MHz)	23155 (713.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.74	24.00	23.43	0	0
	1	12	23.76	23.99	23.39		0
	1	24	23.75	23.96	23.33		0
	12	0	22.72	22.92	22.36	0-1	1
	12	6	22.67	22.89	22.37		1
	12	13	22.76	22.83	22.33		1
	25	0	22.73	22.89	22.34		1
16QAM	1	0	22.52	22.72	22.18	0-1	1
	1	12	22.46	22.65	22.12		1
	1	24	22.40	22.62	22.10		1
	12	0	21.59	21.88	21.27	0-2	2
	12	6	21.66	21.84	21.30		2
	12	13	21.62	21.80	21.23		2
	25	0	21.60	21.86	21.25		2
64QAM	1	0	21.64	21.92	21.35	0-2	2
	1	12	21.69	21.90	21.31		2
	1	24	21.65	21.85	21.24		2
	12	0	20.65	20.85	20.30	0-3	3
	12	6	20.70	20.90	20.37		3
	12	13	20.62	20.85	20.33		3
	25	0	20.65	20.89	20.32		3

Table 9-7
LTE Band 12 Conducted Powers - 3 MHz Bandwidth

LTE Band 12 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23025 (700.5 MHz)	23095 (707.5 MHz)	23165 (714.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.85	24.00	23.43	0	0
	1	7	23.87	23.97	23.42		0
	1	14	23.89	23.89	23.40		0
	8	0	22.75	22.94	22.41	0-1	1
	8	4	22.82	22.92	22.40		1
	8	7	22.83	22.84	22.41		1
	15	0	22.82	22.90	22.38		1
16QAM	1	0	22.49	22.60	22.06	0-1	1
	1	7	22.60	22.69	22.12		1
	1	14	22.52	22.58	22.06		1
	8	0	21.73	21.92	21.36	0-2	2
	8	4	21.82	21.88	21.38		2
	8	7	21.79	21.83	21.36		2
	15	0	21.81	21.93	21.37		2
64QAM	1	0	21.88	22.00	21.30	0-2	2
	1	7	21.83	21.89	21.36		2
	1	14	21.87	21.83	21.33		2
	8	0	20.80	20.95	20.36	0-3	3
	8	4	20.81	20.85	20.30		3
	8	7	20.79	20.76	20.32		3
	15	0	20.79	20.84	20.36		3

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Table 9-8
LTE Band 12 Conducted Powers -1.4 MHz Bandwidth

LTE Band 12 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23017 (699.7 MHz)	23095 (707.5 MHz)	23173 (715.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.94	23.96	23.51	0	0
	1	2	23.96	23.97	23.52		0
	1	5	23.97	23.98	23.49		0
	3	0	23.99	23.99	23.57		0
	3	2	23.99	24.00	23.56		0
	3	3	24.00	23.96	23.54		0
	6	0	22.93	22.85	22.50	0-1	1
16QAM	1	0	22.58	22.53	22.16	0-1	1
	1	2	22.60	22.51	22.11		1
	1	5	22.57	22.57	22.10		1
	3	0	22.85	22.90	22.42		1
	3	2	22.81	22.79	22.45		1
	3	3	22.82	22.83	22.40		1
	6	0	21.86	21.93	21.42	0-2	2
64QAM	1	0	21.81	21.90	21.30	0-2	2
	1	2	21.84	21.82	21.35		2
	1	5	21.82	21.80	21.26		2
	3	0	21.84	21.90	21.42		2
	3	2	21.89	21.88	21.38		2
	3	3	21.83	21.85	21.40		2
	6	0	20.85	20.86	20.43	0-3	3

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LTE Band 13

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

LTE Band 13 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23230 (782.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	23.51	0	0
	1	25	23.44		0
	1	49	23.40		0
	25	0	22.34	0-1	1
	25	12	22.30		1
	25	25	22.28		1
	50	0	22.31		1
16QAM	1	0	22.19	0-1	1
	1	25	21.95		1
	1	49	22.09		1
	25	0	21.35	0-2	2
	25	12	21.33		2
	25	25	21.32		2
	50	0	21.37		2
64QAM	1	0	21.32	0-2	2
	1	25	21.27		2
	1	49	21.11		2
	25	0	20.34	0-3	3
	25	12	20.26		3
	25	25	20.20		3
	50	0	20.15		3

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

LTE Band 13 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			23230 (782.0 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	23.45	0	0
	1	12	23.41		0
	1	24	23.39		0
	12	0	22.31	0-1	1
	12	6	22.28		1
	12	13	22.27		1
	25	0	22.30		1
16QAM	1	0	22.06	0-1	1
	1	12	22.02		1
	1	24	21.90		1
	12	0	21.25	0-2	2
	12	6	21.26		2
	12	13	21.17		2
	25	0	21.28		2
64QAM	1	0	21.19	0-2	2
	1	12	21.03		2
	1	24	21.13		2
	12	0	20.09	0-3	3
	12	6	20.01		3
	12	13	19.99		3
	25	0	20.08		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.

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LTE Band 26 (Cell)

Table 9-11
LTE Band 26 (Cell) Conducted Powers - 15 MHz Bandwidth

LTE Band 26 (Cell) 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26865 (831.5 MHz)		
			Conducted Power [dBm]		
QPSK	1	0	23.84	0	0
	1	36	23.78		0
	1	74	23.70		0
	36	0	22.71	0-1	1
	36	18	22.63		1
	36	37	22.64		1
	75	0	22.67		1
16QAM	1	0	22.49	0-1	1
	1	36	22.39		1
	1	74	22.25		1
	36	0	21.71	0-2	2
	36	18	21.66		2
	36	37	21.64		2
	75	0	21.70		2
64QAM	1	0	21.65	0-2	2
	1	36	21.55		2
	1	74	21.61		2
	36	0	20.67	0-3	3
	36	18	20.62		3
	36	37	20.56		3
	75	0	20.53		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.

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Table 9-12
LTE Band 26 (Cell) Conducted Powers - 10 MHz Bandwidth

LTE Band 26 (Cell) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26740 (819.0 MHz)	26865 (831.5 MHz)	26990 (844.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.72	23.68	23.69	0	0
	1	25	23.71	23.63	23.60		0
	1	49	23.68	23.62	23.66		0
	25	0	22.73	22.82	22.78	0-1	1
	25	12	22.76	22.74	22.67		1
	25	25	22.75	22.72	22.64		1
	50	0	22.73	22.76	22.70		1
16QAM	1	0	22.50	22.54	22.44	0-1	1
	1	25	22.46	22.55	22.39		1
	1	49	22.44	22.48	22.32		1
	25	0	21.67	21.72	21.63	0-2	2
	25	12	21.65	21.69	21.64		2
	25	25	21.69	21.63	21.56		2
	50	0	21.70	21.76	21.67		2
64QAM	1	0	21.50	21.54	21.47	0-2	2
	1	25	21.55	21.52	21.41		2
	1	49	21.45	21.43	21.37		2
	25	0	20.57	20.58	20.51	0-3	3
	25	12	20.59	20.56	20.43		3
	25	25	20.55	20.51	20.46		3
	50	0	20.55	20.59	20.52		3

Table 9-13
LTE Band 26 (Cell) Conducted Powers - 5 MHz Bandwidth

LTE Band 26 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26715 (816.5 MHz)	26865 (831.5 MHz)	27015 (846.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.73	23.63	23.55	0	0
	1	12	23.70	23.53	23.53		0
	1	24	23.72	23.54	23.63		0
	12	0	22.82	22.64	22.67	0-1	1
	12	6	22.83	22.59	22.61		1
	12	13	22.77	22.64	22.60		1
	25	0	22.77	22.70	22.58		1
16QAM	1	0	22.58	22.54	22.37	0-1	1
	1	12	22.48	22.42	22.36		1
	1	24	22.42	22.33	22.36		1
	12	0	21.77	21.61	21.53	0-2	2
	12	6	21.72	21.59	21.58		2
	12	13	21.77	21.57	21.58		2
	25	0	21.72	21.58	21.50		2
64QAM	1	0	21.60	21.45	21.49	0-2	2
	1	12	21.54	21.40	21.45		2
	1	24	21.45	21.39	21.44		2
	12	0	20.57	20.46	20.38	0-3	3
	12	6	20.51	20.50	20.38		3
	12	13	20.50	20.47	20.39		3
	25	0	20.54	20.50	20.41		3

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Table 9-14
LTE Band 26 (Cell) Conducted Powers - 3 MHz Bandwidth

LTE Band 26 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26705 (815.5 MHz)	26865 (831.5 MHz)	27025 (847.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.72	23.61	23.45	0	0
	1	7	23.68	23.60	23.47		0
	1	14	23.65	23.54	23.50		0
	8	0	22.77	22.71	22.49	0-1	1
	8	4	22.77	22.67	22.46		1
	8	7	22.79	22.67	22.46		1
16QAM	15	0	22.84	22.72	22.41		1
	1	0	22.49	22.43	22.00	0-1	1
	1	7	22.41	22.39	22.03		1
	1	14	22.37	22.35	22.07		1
	8	0	21.72	21.63	21.32	0-2	2
	8	4	21.70	21.66	21.40		2
8	7	21.68	21.61	21.40	2		
64QAM	15	0	21.74	21.71	21.43		2
	1	0	21.63	21.51	21.19	0-2	2
	1	7	21.61	21.53	21.25		2
	1	14	21.52	21.50	21.27		2
	8	0	20.60	20.48	20.22	0-3	3
	8	4	20.54	20.49	20.24		3
8	7	20.60	20.54	20.23	3		
	15	0	20.59	20.50	20.22		3

Table 9-15
LTE Band 26 (Cell) Conducted Powers -1.4 MHz Bandwidth

LTE Band 26 (Cell) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			26697 (814.7 MHz)	26865 (831.5 MHz)	27033 (848.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.71	23.56	23.46	0	0
	1	2	23.70	23.57	23.47		0
	1	5	23.72	23.55	23.50		0
	3	0	23.71	23.65	23.54		0
	3	2	23.69	23.66	23.53		0
	3	3	23.66	23.65	23.51		0
	6	0	22.73	22.66	22.42	0-1	1
16QAM	1	0	22.42	22.29	22.08	0-1	1
	1	2	22.39	22.26	22.03		1
	1	5	22.33	22.25	22.13		1
	3	0	22.69	22.73	22.45		1
	3	2	22.68	22.69	22.36		1
	3	3	22.72	22.66	22.40		1
	6	0	21.73	21.68	21.36	0-2	2
64QAM	1	0	21.47	21.22	21.17	0-2	2
	1	2	21.44	21.34	21.12		2
	1	5	21.34	21.31	21.16		2
	3	0	21.64	21.58	21.16		2
	3	2	21.61	21.63	21.25		2
	3	3	21.64	21.61	21.22		2
	6	0	20.54	20.44	20.18	0-3	3

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LTE Band 66 (AWS)

Table 9-16
LTE Band 66 (AWS) Conducted Powers - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132072 (1720.0 MHz)	132322 (1745.0 MHz)	132572 (1770.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.23	23.00	23.12	0	0
	1	50	23.26	22.91	23.09		0
	1	99	23.25	22.80	23.08		0
	50	0	22.31	21.77	22.07	0-1	1
	50	25	22.28	21.80	22.01		1
	50	50	22.29	21.78	22.05		1
	100	0	22.27	21.77	22.07		1
16QAM	1	0	22.18	21.72	22.30	0-1	1
	1	50	22.11	21.53	22.29		1
	1	99	22.15	21.47	22.33		1
	50	0	21.33	20.90	21.24	0-2	2
	50	25	21.27	20.89	21.04		2
	50	50	21.30	20.89	21.03		2
	100	0	21.29	20.79	21.07		2
64QAM	1	0	21.22	20.85	21.20	0-2	2
	1	50	21.20	20.76	21.10		2
	1	99	21.20	20.65	21.17		2
	50	0	20.30	19.80	20.07	0-3	3
	50	25	20.26	19.84	20.09		3
	50	50	20.28	19.83	20.09		3
	100	0	20.23	19.89	20.07		3

Table 9-17
LTE Band 66 (AWS) Conducted Powers - 15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]	
			132047 (1717.5 MHz)	132322 (1745.0 MHz)	132597 (1772.5 MHz)			
			Conducted Power [dBm]					
QPSK	1	0	23.40	22.96	23.25	0	0	
	1	36	23.42	22.97	23.24		0	
	1	74	23.40	23.00	23.16		0	
	36	0	22.36	21.91	22.00	0-1	1	
	36	18	22.36	21.95	22.03		1	
	36	37	22.40	21.95	22.02		1	
16QAM	75	0	22.36	21.91	22.03	0-1	1	
	1	0	22.13	21.76	21.84		0-1	1
	1	36	22.15	21.77	21.92			1
	1	74	22.14	21.80	21.84	0-2		1
	36	0	21.38	20.90	20.99		2	
	36	18	21.39	20.91	21.00		2	
64QAM	36	37	21.41	20.93	21.02	0-2	2	
	75	0	21.38	20.95	21.02		2	
	1	0	21.19	20.68	20.94		0-2	2
	1	36	21.15	20.68	20.90	2		
	1	74	21.14	20.68	20.95	2		
	64QAM	36	0	20.42	19.94	20.01	0-3	3
36		18	20.43	19.93	20.01	3		
36		37	20.40	19.95	20.02	3		
75		0	20.42	19.86	20.05		3	

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Table 9-18
LTE Band 66 (AWS) Conducted Powers - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132022 (1715.0 MHz)	132322 (1745.0 MHz)	132622 (1775.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.31	22.78	22.95	0	0
	1	25	23.36	22.82	22.99		0
	1	49	23.32	22.80	22.98		0
	25	0	22.23	21.76	21.96	0-1	1
	25	12	22.21	21.78	21.96		1
	25	25	22.24	21.80	21.98		1
	50	0	22.23	21.81	21.99		1
16QAM	1	0	21.96	21.71	21.92	0-1	1
	1	25	21.99	21.61	21.89		1
	1	49	21.86	21.69	21.90		1
	25	0	21.24	20.85	20.99	0-2	2
	25	12	21.25	20.78	20.99		2
	25	25	21.25	20.76	20.98		2
	50	0	21.22	20.82	20.96		2
64QAM	1	0	20.89	20.41	20.52	0-2	2
	1	25	20.88	20.41	20.50		2
	1	49	20.93	20.42	20.51		2
	25	0	20.25	19.85	20.02	0-3	3
	25	12	20.26	19.80	19.99		3
	25	25	20.25	19.84	19.99		3
	50	0	20.22	19.86	20.00		3

Table 9-19
LTE Band 66 (AWS) Conducted Powers - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131997 (1712.5 MHz)	132322 (1745.0 MHz)	132647 (1777.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.07	22.88	23.09	0	0
	1	12	23.06	22.87	23.07		0
	1	24	23.10	22.91	23.10		0
	12	0	21.93	21.77	21.95	0-1	1
	12	6	21.94	21.75	21.94		1
	12	13	21.94	21.77	21.94		1
	25	0	21.90	21.74	21.92		1
16QAM	1	0	21.77	21.61	21.76	0-1	1
	1	12	21.77	21.62	21.82		1
	1	24	21.80	21.60	21.82		1
	12	0	20.93	20.71	20.95	0-2	2
	12	6	20.95	20.72	20.96		2
	12	13	20.97	20.72	20.97		2
	25	0	20.93	20.75	20.91		2
64QAM	1	0	20.72	20.59	20.68	0-2	2
	1	12	20.70	20.63	20.71		2
	1	24	20.71	20.66	20.71		2
	12	0	19.90	19.76	19.85	0-3	3
	12	6	19.84	19.77	19.89		3
	12	13	19.86	19.76	19.90		3
	25	0	19.84	19.82	19.87		3

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Table 9-20
LTE Band 66 (AWS) Conducted Powers - 3 MHz Bandwidth

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131987 (1711.5 MHz)	132322 (1745.0 MHz)	132657 (1778.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.33	22.78	22.96	0	0
	1	7	23.33	22.81	22.94		0
	1	14	23.31	22.76	22.96		0
	8	0	22.18	21.75	21.93	0-1	1
	8	4	22.18	21.72	21.91		1
	8	7	22.17	21.74	21.93		1
	15	0	22.18	21.74	21.93		1
16QAM	1	0	22.15	21.61	22.08	0-1	1
	1	7	22.12	21.59	22.07		1
	1	14	22.14	21.66	22.05		1
	8	0	21.16	20.72	20.90	0-2	2
	8	4	21.15	20.72	20.93		2
	8	7	21.16	20.73	20.92		2
	15	0	21.14	20.75	20.91		2
64QAM	1	0	20.82	20.51	20.64	0-2	2
	1	7	20.88	20.55	20.61		2
	1	14	20.91	20.56	20.61		2
	8	0	20.15	19.78	19.92	0-3	3
	8	4	20.15	19.76	19.94		3
	8	7	20.16	19.82	19.94		3
	15	0	20.19	19.82	19.93		3

Table 9-21
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	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131979 (1710.7 MHz)	132322 (1745.0 MHz)	132665 (1779.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.37	22.78	22.98	0	0
	1	2	23.35	22.73	22.90		0
	1	5	23.38	22.77	22.95		0
	3	0	23.28	22.83	22.94		0
	3	2	23.30	22.84	23.00		0
	3	3	23.29	22.83	23.01		0
	6	0	22.16	21.71	21.91	0-1	1
16QAM	1	0	21.92	21.56	21.51	0-1	1
	1	2	21.97	21.56	21.51		1
	1	5	22.00	21.55	21.57		1
	3	0	22.04	21.72	21.61		1
	3	2	22.12	21.71	21.65		1
	3	3	22.10	21.75	21.63		1
	6	0	21.13	20.77	20.86	0-2	2
64QAM	1	0	20.70	20.17	20.21	0-2	2
	1	2	20.82	20.13	20.15		2
	1	5	20.69	20.20	20.13		2
	3	0	21.15	20.75	20.83		2
	3	2	21.13	20.74	20.82		2
	3	3	21.13	20.75	20.78		2
	6	0	20.07	19.74	19.97	0-3	3

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

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132072 (1720.0 MHz)	132322 (1745.0 MHz)	132572 (1770.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.20	19.55	19.85	0	0
	1	50	20.19	19.60	19.86		0
	1	99	20.24	19.66	19.87		0
	50	0	20.15	19.65	19.93	0-1	0
	50	25	20.12	19.67	19.95		0
	50	50	20.14	19.66	19.94		0
	100	0	20.14	19.65	19.94		0
16QAM	1	0	20.12	19.58	19.98	0-1	0
	1	50	20.09	19.59	19.99		0
	1	99	20.11	19.66	19.98		0
	50	0	20.18	19.69	19.98	0-2	0
	50	25	20.23	19.75	19.96		0
	50	50	20.24	19.72	19.94		0
	100	0	20.21	19.72	19.98		0
64QAM	1	0	20.07	19.65	19.77	0-2	0
	1	50	20.09	19.71	19.76		0
	1	99	20.09	19.86	19.78		0
	50	0	19.93	19.64	19.98	0-3	0
	50	25	19.91	19.65	20.00		0
	50	50	19.90	19.69	19.99		0
	100	0	19.92	19.70	19.98		0

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

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132047 (1717.5 MHz)	132322 (1745.0 MHz)	132597 (1772.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.41	19.65	20.08	0	0
	1	36	20.37	19.61	20.06		0
	1	74	20.36	19.60	20.03		0
	36	0	20.39	19.67	19.99	0-1	0
	36	18	20.38	19.68	19.96		0
	36	37	20.39	19.66	19.97		0
	75	0	20.37	19.64	19.98		0
16QAM	1	0	20.27	19.58	19.83	0-1	0
	1	36	20.25	19.49	19.79		0
	1	74	20.24	19.47	19.82		0
	36	0	20.41	19.69	20.02	0-2	0
	36	18	20.42	19.75	19.98		0
	36	37	20.39	19.71	19.97		0
	75	0	20.40	19.74	19.98		0
64QAM	1	0	20.03	19.45	19.91	0-2	0
	1	36	20.04	19.44	19.89		0
	1	74	20.02	19.47	19.87		0
	36	0	20.25	19.69	19.91	0-3	0
	36	18	20.31	19.73	19.91		0
	36	37	20.30	19.67	19.87		0
	75	0	20.33	19.64	19.94		0

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

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			132022 (1715.0 MHz)	132322 (1745.0 MHz)	132622 (1775.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.16	19.65	19.83	0	0
	1	25	20.17	19.61	19.81		0
	1	49	20.11	19.57	19.78		0
	25	0	20.21	19.66	19.84	0-1	0
	25	12	20.22	19.68	19.86		0
	25	25	20.20	19.67	19.84		0
	50	0	20.19	19.66	19.85		0
16QAM	1	0	20.16	19.54	19.87	0-1	0
	1	25	20.17	19.57	19.87		0
	1	49	20.15	19.51	19.89		0
	25	0	20.20	19.63	19.91	0-2	0
	25	12	20.21	19.65	19.88		0
	25	25	20.19	19.63	19.90		0
	50	0	20.23	19.71	19.92		0
64QAM	1	0	19.82	19.13	19.29	0-2	0
	1	25	19.80	19.15	19.27		0
	1	49	19.85	19.14	19.34		0
	25	0	20.16	19.72	19.80	0-3	0
	25	12	20.15	19.73	19.86		0
	25	25	20.17	19.75	19.88		0
	50	0	20.16	19.65	19.86		0

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

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131997 (1712.5 MHz)	132322 (1745.0 MHz)	132647 (1777.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.21	19.48	19.83	0	0
	1	12	20.23	19.49	19.83		0
	1	24	20.22	19.50	19.85		0
	12	0	20.17	19.68	19.81	0-1	0
	12	6	20.16	19.71	19.82		0
	12	13	20.15	19.70	19.82		0
	25	0	20.17	19.69	19.83		0
16QAM	1	0	20.01	19.46	19.77	0-1	0
	1	12	19.98	19.41	19.75		0
	1	24	20.03	19.38	19.76		0
	12	0	20.18	19.66	19.86	0-2	0
	12	6	20.17	19.65	19.89		0
	12	13	20.16	19.64	19.87		0
	25	0	20.15	19.70	19.85		0
64QAM	1	0	19.76	19.37	19.50	0-2	0
	1	12	19.75	19.41	19.55		0
	1	24	19.76	19.43	19.51		0
	12	0	20.15	19.56	19.81	0-3	0
	12	6	20.15	19.54	19.81		0
	12	13	20.17	19.56	19.83		0
	25	0	20.16	19.63	19.73		0

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

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131987 (1711.5 MHz)	132322 (1745.0 MHz)	132657 (1778.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.17	19.57	19.80	0	0
	1	7	20.18	19.59	19.78		0
	1	14	20.17	19.58	19.73		0
	8	0	20.21	19.64	19.82	0-1	0
	8	4	20.18	19.61	19.81		0
	8	7	20.18	19.65	19.84		0
	15	0	20.22	19.64	19.80		0
16QAM	1	0	20.33	19.46	19.62	0-1	0
	1	7	20.25	19.39	19.71		0
	1	14	20.29	19.41	19.63		0
	8	0	20.29	19.56	19.84	0-2	0
	8	4	20.28	19.55	19.85		0
	8	7	20.24	19.58	19.85		0
	15	0	20.20	19.69	19.86		0
64QAM	1	0	19.56	19.30	19.29	0-2	0
	1	7	19.62	19.29	19.27		0
	1	14	19.71	19.33	19.30		0
	8	0	20.16	19.56	19.77	0-3	0
	8	4	20.18	19.57	19.79		0
	8	7	20.16	19.60	19.78		0
	15	0	20.20	19.64	19.70		0

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

LTE Band 66 (AWS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			131979 (1710.7 MHz)	132322 (1745.0 MHz)	132665 (1779.3 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	20.30	19.75	19.90	0	0
	1	2	20.27	19.73	19.86		0
	1	5	20.31	19.77	19.88		0
	3	0	20.35	19.65	19.83		0
	3	2	20.37	19.66	19.81		0
	3	3	20.40	19.67	19.83		0
	6	0	20.35	19.65	19.83	0-1	0
16QAM	1	0	20.23	19.31	19.43	0-1	0
	1	2	20.18	19.29	19.42		0
	1	5	20.20	19.38	19.41		0
	3	0	20.31	19.61	19.84		0
	3	2	20.27	19.65	19.81		0
	3	3	20.29	19.60	19.78		0
	6	0	20.40	19.58	19.79	0-2	0
64QAM	1	0	19.69	19.11	19.08	0-2	0
	1	2	19.72	19.12	19.10		0
	1	5	19.68	19.07	19.13		0
	3	0	20.31	19.65	19.59		0
	3	2	20.28	19.65	19.63		0
	3	3	20.25	19.61	19.61		0
	6	0	20.35	19.67	19.72	0-3	0

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LTE Band 2 (PCS)

Table 9-28
LTE Band 2 (PCS) Conducted Powers - 20 MHz Bandwidth

LTE Band 2 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18700 (1860.0 MHz)	18900 (1880.0 MHz)	19100 (1900.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.32	23.31	22.92	0	0
	1	50	23.33	23.32	22.93		0
	1	99	23.29	23.30	22.95		0
	50	0	22.12	22.11	21.88	0-1	1
	50	25	22.07	22.08	21.83		1
	50	50	22.07	22.08	21.84		1
	100	0	22.04	22.07	21.86		1
16QAM	1	0	21.99	22.22	21.65	0-1	1
	1	50	22.00	22.12	21.70		1
	1	99	22.01	22.21	21.69		1
	50	0	21.15	21.26	21.03	0-2	2
	50	25	21.17	21.12	20.97		2
	50	50	21.18	21.12	20.97		2
	100	0	21.15	21.18	20.98		2
64QAM	1	0	20.92	21.18	21.09	0-2	2
	1	50	20.92	21.11	21.09		2
	1	99	20.90	21.17	21.11		2
	50	0	20.16	20.29	19.99	0-3	3
	50	25	20.18	20.21	19.93		3
	50	50	20.15	20.20	19.94		3
	100	0	20.20	20.19	19.92		3

Table 9-29
LTE Band 2 (PCS) Conducted Powers - 15 MHz Bandwidth

LTE Band 2 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18675 (1857.5 MHz)	18900 (1880.0 MHz)	19125 (1902.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.18	23.23	22.82	0	0
	1	36	23.16	23.20	22.81		0
	1	74	23.15	23.21	22.83		0
	36	0	21.96	22.11	21.69	0-1	1
	36	18	21.95	22.08	21.68		1
	36	37	21.94	22.10	21.70		1
	75	0	21.96	22.09	21.68		1
16QAM	1	0	21.81	21.98	21.71	0-1	1
	1	36	21.83	21.97	21.70		1
	1	74	21.80	21.95	21.73		1
	36	0	21.04	21.11	20.80	0-2	2
	36	18	21.02	21.15	20.78		2
	36	37	21.01	21.12	20.79		2
	75	0	21.02	21.14	20.80		2
64QAM	1	0	20.85	20.64	20.43	0-2	2
	1	36	20.89	20.66	20.45		2
	1	74	20.88	20.63	20.44		2
	36	0	20.07	20.18	19.89	0-3	3
	36	18	20.06	20.20	19.84		3
	36	37	20.04	20.19	19.85		3
	75	0	20.11	20.08	19.82		3

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Table 9-30
LTE Band 2 (PCS) Conducted Powers - 10 MHz Bandwidth

LTE Band 2 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18650 (1855.0 MHz)	18900 (1880.0 MHz)	19150 (1905.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.17	23.16	22.81	0	0
	1	25	23.19	23.18	22.83		0
	1	49	23.18	23.15	22.84		0
	25	0	22.09	22.09	21.75	0-1	1
	25	12	22.08	22.08	21.76		1
	25	25	22.07	22.10	21.77		1
	50	0	22.06	22.07	21.78		1
16QAM	1	0	21.94	22.07	21.66	0-1	1
	1	25	21.93	22.05	21.64		1
	1	49	21.92	22.03	21.68		1
	25	0	21.16	21.17	20.86	0-2	2
	25	12	21.19	21.19	20.89		2
	25	25	21.20	21.18	20.91		2
	50	0	21.21	21.17	20.85		2
64QAM	1	0	20.97	20.67	20.56	0-2	2
	1	25	20.99	20.69	20.59		2
	1	49	20.98	20.72	20.61		2
	25	0	20.25	20.27	19.95	0-3	3
	25	12	20.26	20.31	19.96		3
	25	25	20.27	20.29	19.98		3
	50	0	20.19	20.21	19.92		3

Table 9-31
LTE Band 2 (PCS) Conducted Powers - 5 MHz Bandwidth

LTE Band 2 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18625 (1852.5 MHz)	18900 (1880.0 MHz)	19175 (1907.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.21	23.09	22.93	0	0
	1	12	23.25	23.12	22.95		0
	1	24	23.28	23.14	22.98		0
	12	0	22.11	22.11	21.76	0-1	1
	12	6	22.08	22.09	21.78		1
	12	13	22.07	22.10	21.79		1
	25	0	22.06	22.07	21.77		1
16QAM	1	0	22.00	21.98	21.68	0-1	1
	1	12	22.06	22.01	21.67		1
	1	24	22.09	21.97	21.69		1
	12	0	21.16	21.16	20.89	0-2	2
	12	6	21.17	21.15	20.88		2
	12	13	21.19	21.17	20.89		2
	25	0	21.18	21.22	20.91		2
64QAM	1	0	20.91	20.87	20.75	0-2	2
	1	12	20.94	20.89	20.76		2
	1	24	20.96	20.88	20.77		2
	12	0	20.18	20.14	19.98	0-3	3
	12	6	20.19	20.13	19.96		3
	12	13	20.19	20.15	19.97		3
	25	0	20.23	20.14	19.88		3

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Table 9-32
LTE Band 2 (PCS) Conducted Powers - 3 MHz Bandwidth

LTE Band 2 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18615 (1851.5 MHz)	18900 (1880.0 MHz)	19185 (1908.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	23.14	23.18	22.82	0	0
	1	7	23.15	23.19	22.83		0
	1	14	23.12	23.16	22.84		0
	8	0	22.08	22.07	21.76	0-1	1
	8	4	22.06	22.09	21.78		1
	8	7	22.05	22.05	21.77		1
	15	0	22.04	22.06	21.73		1
16QAM	1	0	21.93	21.97	21.59	0-1	1
	1	7	21.96	22.00	21.47		1
	1	14	21.94	21.99	21.45		1
	8	0	21.16	21.19	20.79	0-2	2
	8	4	21.18	21.22	20.80		2
	8	7	21.17	21.21	20.78		2
	15	0	21.18	21.16	20.77		2
64QAM	1	0	20.81	20.88	20.41	0-2	2
	1	7	20.82	20.84	20.50		2
	1	14	20.76	20.82	20.48		2
	8	0	20.06	20.04	19.85	0-3	3
	8	4	20.05	20.03	19.87		3
	8	7	20.04	20.05	19.82		3
	15	0	20.18	20.12	19.91		3

Table 9-33
LTE Band 2 (PCS) Conducted Powers -1.4 MHz Bandwidth

LTE Band 2 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18607 (1850.7 MHz)	18900 (1880.0 MHz)	19193 (1909.3 MHz)		
QPSK	1	0	23.32	23.28	22.85	0	0
	1	2	23.25	23.27	22.80		0
	1	5	23.30	23.29	22.86		0
	3	0	23.21	23.22	22.89		0
	3	2	23.25	23.21	22.88		0
	3	3	23.24	23.24	22.89		0
	6	0	22.07	22.04	21.74	0-1	1
16QAM	1	0	21.85	21.90	21.62	0-1	1
	1	2	21.90	21.93	21.58		1
	1	5	21.92	21.94	21.61		1
	3	0	22.06	22.00	21.72		1
	3	2	22.10	22.01	21.77		1
	3	3	22.08	22.01	21.76		1
	6	0	21.11	21.18	20.82	0-2	2
64QAM	1	0	20.76	20.84	20.42	0-2	2
	1	2	20.83	20.82	20.41		2
	1	5	20.78	20.79	20.46		2
	3	0	21.31	21.12	20.77		2
	3	2	21.29	21.13	20.79		2
	3	3	21.32	21.14	20.78		2
	6	0	20.18	20.17	19.77	0-3	3

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Table 9-34
LTE Band 2 (PCS) Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 2 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18700 (1860.0 MHz)	18900 (1880.0 MHz)	19100 (1900.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.53	19.50	19.47	0	0
	1	50	19.58	19.51	19.49		0
	1	99	19.53	19.48	19.48		0
	50	0	19.59	19.56	19.47	0-1	0
	50	25	19.57	19.58	19.43		0
	50	50	19.60	19.57	19.45		0
	100	0	19.57	19.56	19.45		0
16QAM	1	0	19.52	19.68	19.43	0-1	0
	1	50	19.53	19.61	19.30		0
	1	99	19.55	19.57	19.33		0
	50	0	19.63	19.60	19.48	0-2	0
	50	25	19.64	19.61	19.54		0
	50	50	19.66	19.60	19.53		0
	100	0	19.64	19.63	19.52		0
64QAM	1	0	19.47	19.49	19.33	0-2	0
	1	50	19.53	19.48	19.27		0
	1	99	19.51	19.43	19.30		0
	50	0	19.47	19.37	19.42	0-3	0
	50	25	19.45	19.44	19.41		0
	50	50	19.44	19.45	19.43		0
	100	0	19.47	19.46	19.46		0

Table 9-35
LTE Band 2 (PCS) Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 2 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18675 (1857.5 MHz)	18900 (1880.0 MHz)	19125 (1902.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.56	19.46	19.31	0	0
	1	36	19.53	19.41	19.23		0
	1	74	19.50	19.32	19.23		0
	36	0	19.53	19.45	19.21	0-1	0
	36	18	19.55	19.44	19.22		0
	36	37	19.58	19.44	19.24		0
	75	0	19.57	19.41	19.22		0
16QAM	1	0	19.42	19.33	19.39	0-1	0
	1	36	19.41	19.42	19.33		0
	1	74	19.43	19.41	19.27		0
	36	0	19.60	19.47	19.29	0-2	0
	36	18	19.61	19.47	19.24		0
	36	37	19.58	19.42	19.22		0
	75	0	19.60	19.47	19.29		0
64QAM	1	0	19.42	19.46	19.26	0-2	0
	1	36	19.45	19.37	19.31		0
	1	74	19.43	19.40	19.32		0
	36	0	19.54	19.49	19.26	0-3	0
	36	18	19.52	19.52	19.28		0
	36	37	19.51	19.50	19.30		0
	75	0	19.53	19.48	19.28		0

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Table 9-36
LTE Band 2 (PCS) Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 2 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18650 (1855.0 MHz)	18900 (1880.0 MHz)	19150 (1905.0 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.49	19.39	19.12	0	0
	1	25	19.48	19.36	19.09		0
	1	49	19.51	19.35	19.10		0
	25	0	19.57	19.45	19.17	0-1	0
	25	12	19.58	19.43	19.16		0
	25	25	19.57	19.44	19.15		0
	50	0	19.56	19.43	19.17		0
16QAM	1	0	19.27	19.36	19.30	0-1	0
	1	25	19.31	19.31	19.27		0
	1	49	19.27	19.26	19.26		0
	25	0	19.56	19.47	19.24	0-2	0
	25	12	19.58	19.46	19.21		0
	25	25	19.59	19.48	19.20		0
	50	0	19.62	19.49	19.23		0
64QAM	1	0	19.53	19.32	19.10	0-2	0
	1	25	19.56	19.29	19.06		0
	1	49	19.55	19.33	19.12		0
	25	0	19.62	19.52	19.33	0-3	0
	25	12	19.57	19.50	19.31		0
	25	25	19.60	19.53	19.27		0
	50	0	19.61	19.48	19.32		0

Table 9-37
LTE Band 2 (PCS) Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 2 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18625 (1852.5 MHz)	18900 (1880.0 MHz)	19175 (1907.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.49	19.47	19.11	0	0
	1	12	19.53	19.47	19.09		0
	1	24	19.50	19.45	19.15		0
	12	0	19.47	19.43	19.13	0-1	0
	12	6	19.49	19.46	19.12		0
	12	13	19.53	19.46	19.12		0
	25	0	19.51	19.44	19.14		0
16QAM	1	0	19.52	19.45	19.24	0-1	0
	1	12	19.54	19.40	19.21		0
	1	24	19.51	19.44	19.29		0
	12	0	19.46	19.49	19.06	0-2	0
	12	6	19.47	19.42	19.11		0
	12	13	19.43	19.46	19.08		0
	25	0	19.49	19.43	19.10		0
64QAM	1	0	19.34	19.36	19.12	0-2	0
	1	12	19.42	19.31	19.15		0
	1	24	19.38	19.30	19.17		0
	12	0	19.51	19.44	19.27	0-3	0
	12	6	19.54	19.40	19.27		0
	12	13	19.53	19.43	19.30		0
	25	0	19.51	19.49	19.23		0

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Table 9-38
LTE Band 2 (PCS) Reduced Conducted Powers - 3 MHz Bandwidth

LTE Band 2 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18615 (1851.5 MHz)	18900 (1880.0 MHz)	19185 (1908.5 MHz)		
			Conducted Power [dBm]				
QPSK	1	0	19.48	19.36	19.11	0	0
	1	7	19.52	19.39	19.07		0
	1	14	19.50	19.35	19.08		0
	8	0	19.57	19.42	19.15	0-1	0
	8	4	19.53	19.41	19.12		0
	8	7	19.56	19.39	19.16		0
	15	0	19.55	19.40	19.13		0
16QAM	1	0	19.48	19.33	19.08	0-1	0
	1	7	19.52	19.29	19.06		0
	1	14	19.52	19.31	19.11		0
	8	0	19.57	19.43	19.06	0-2	0
	8	4	19.58	19.46	19.03		0
	8	7	19.56	19.42	19.09		0
	15	0	19.56	19.47	19.04		0
64QAM	1	0	19.37	19.34	19.13	0-2	0
	1	7	19.38	19.32	19.11		0
	1	14	19.35	19.31	19.09		0
	8	0	19.51	19.43	19.19	0-3	0
	8	4	19.50	19.41	19.21		0
	8	7	19.53	19.49	19.20		0
	15	0	19.59	19.53	19.27		0

Table 9-39
LTE Band 2 (PCS) Reduced Conducted Powers -1.4 MHz Bandwidth

LTE Band 2 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			18607 (1850.7 MHz)	18900 (1880.0 MHz)	19193 (1909.3 MHz)		
QPSK	1	0	19.57	19.37	19.12	0	0
	1	2	19.55	19.38	19.07		0
	1	5	19.60	19.35	19.11		0
	3	0	19.61	19.48	19.16		0
	3	2	19.59	19.44	19.21		0
	3	3	19.62	19.45	19.23		0
	6	0	19.55	19.42	19.19	0-1	0
16QAM	1	0	19.49	19.41	19.05	0-1	0
	1	2	19.43	19.37	19.07		0
	1	5	19.50	19.46	19.12		0
	3	0	19.56	19.40	19.18		0
	3	2	19.62	19.37	19.16		0
	3	3	19.59	19.42	19.20		0
	6	0	19.60	19.41	19.19	0-2	0
64QAM	1	0	19.45	19.34	19.14	0-2	0
	1	2	19.48	19.27	19.17		0
	1	5	19.46	19.33	19.08		0
	3	0	19.61	19.54	19.23		0
	3	2	19.63	19.57	19.21		0
	3	3	19.66	19.51	19.19		0
	6	0	19.67	19.57	19.21	0-3	0

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LTE Band 41

Table 9-40
LTE Band 41 Maximum 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	23.37	23.18	23.39	23.28	23.90	0	0
	1	50	23.54	23.31	23.47	23.31	23.93		0
	1	99	23.76	23.42	23.52	23.27	23.94		0
	50	0	22.46	22.34	22.54	22.48	22.91	0-1	1
	50	25	22.49	22.31	22.58	22.44	22.93		1
	50	50	22.60	22.42	22.59	22.43	22.94		1
	100	0	22.52	22.39	22.58	22.45	22.92		1
16QAM	1	0	22.02	22.36	22.53	22.59	22.89	0-1	1
	1	50	22.12	22.45	22.54	22.66	22.91		1
	1	99	22.31	22.57	22.62	22.71	22.95		1
	50	0	21.57	21.40	21.69	21.48	22.00	0-2	2
	50	25	21.57	21.40	21.59	21.45	21.98		2
	50	50	21.68	21.45	21.62	21.45	21.99		2
	100	0	21.61	21.46	21.66	21.45	21.96		2
64QAM	1	0	21.20	21.46	21.59	21.31	21.78	0-2	2
	1	50	21.31	21.58	21.55	21.28	21.80		2
	1	99	21.52	21.70	21.59	21.32	21.82		2
	50	0	20.48	20.38	20.55	20.42	20.96	0-3	3
	50	25	20.50	20.41	20.53	20.35	20.91		3
	50	50	20.55	20.50	20.57	20.36	20.98		3
	100	0	20.59	20.41	20.59	20.42	20.98		3

Table 9-41
LTE Band 41 Maximum 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	23.30	23.28	23.37	23.15	23.50	0	0
	1	36	23.40	23.40	23.38	23.16	23.49		0
	1	74	23.62	23.47	23.39	23.14	23.52		0
	36	0	22.50	22.44	22.62	22.29	22.65	0-1	1
	36	18	22.58	22.49	22.63	22.30	22.68		1
	36	37	22.66	22.51	22.64	22.31	22.69		1
	75	0	22.57	22.51	22.65	22.32	22.66		1
16QAM	1	0	22.51	22.40	22.52	22.40	22.63	0-1	1
	1	36	22.54	22.45	22.53	22.43	22.65		1
	1	74	22.69	22.38	22.56	22.41	22.67		1
	36	0	21.55	21.46	21.63	21.30	21.59	0-2	2
	36	18	21.61	21.47	21.64	21.31	21.61		2
	36	37	21.68	21.52	21.65	21.35	21.62		2
	75	0	21.59	21.56	21.65	21.38	21.70		2
64QAM	1	0	21.45	21.30	21.53	21.10	21.58	0-2	2
	1	36	21.52	21.42	21.52	21.12	21.60		2
	1	74	21.72	21.46	21.54	21.15	21.66		2
	36	0	20.53	20.48	20.64	20.30	20.63	0-3	3
	36	18	20.61	20.52	20.61	20.27	20.62		3
	36	37	20.70	20.60	20.61	20.29	20.65		3
	75	0	20.64	20.46	20.65	20.32	20.68		3

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Table 9-42
LTE Band 41 Maximum Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	23.41	23.31	23.49	23.12	23.51	0	0
	1	25	23.52	23.37	23.55	23.18	23.49		0
	1	49	23.64	23.41	23.49	23.15	23.53		0
	25	0	22.49	22.42	22.61	22.24	22.62	0-1	1
	25	12	22.54	22.46	22.60	22.23	22.65		1
	25	25	22.60	22.51	22.59	22.22	22.64		1
16QAM	50	0	22.55	22.50	22.62	22.25	22.63	0-1	1
	1	0	22.41	22.47	22.43	22.30	22.46		1
	1	25	22.49	22.51	22.48	22.33	22.55		1
	1	49	22.48	22.53	22.52	22.35	22.51		1
	25	0	21.47	21.45	21.61	21.30	21.66		2
	25	12	21.53	21.49	21.63	21.32	21.67		2
64QAM	25	25	21.62	21.54	21.64	21.31	21.68	0-2	2
	50	0	21.60	21.50	21.63	21.35	21.69		2
	1	0	21.44	21.38	21.48	21.16	21.46		2
	1	25	21.53	21.42	21.47	21.18	21.53	0-3	2
	1	49	21.67	21.45	21.46	21.15	21.49		2
	25	0	20.56	20.49	20.65	20.22	20.66		3
64QAM	25	12	20.63	20.51	20.66	20.21	20.67	3	
	25	25	20.69	20.56	20.69	20.19	20.70	3	
	50	0	20.62	20.49	20.64	20.20	20.67	3	

Table 9-43
LTE Band 41 Maximum Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	23.52	23.40	23.61	23.13	23.64	0	0
	1	12	23.58	23.43	23.54	23.14	23.61		0
	1	24	23.65	23.46	23.59	23.16	23.63		0
	12	0	22.51	22.41	22.56	22.14	22.62	0-1	1
	12	6	22.55	22.42	22.58	22.18	22.64		1
	12	13	22.57	22.44	22.57	22.16	22.61		1
25	0	22.53	22.43	22.58	22.19	22.63	1		
16QAM	1	0	22.40	22.43	22.52	22.21	22.52	0-1	1
	1	12	22.46	22.49	22.53	22.25	22.46		1
	1	24	22.49	22.52	22.58	22.19	22.50		1
	12	0	21.50	21.45	21.52	21.27	21.73	0-2	2
	12	6	21.55	21.49	21.51	21.25	21.72		2
	12	13	21.56	21.50	21.53	21.25	21.69		2
25	0	21.51	21.51	21.56	21.28	21.71	2		
64QAM	1	0	21.45	21.39	21.43	21.22	21.57	0-2	2
	1	12	21.50	21.52	21.46	21.17	21.58		2
	1	24	21.68	21.40	21.49	21.19	21.56		2
	12	0	20.55	20.39	20.57	20.22	20.65	0-3	3
	12	6	20.57	20.43	20.58	20.18	20.62		3
	12	13	20.63	20.42	20.60	20.21	20.64		3
25	0	20.62	20.39	20.61	20.16	20.60	3		

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Table 9-44
LTE Band 41 Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	21.71	21.89	21.96	21.68	22.02	0	0
	1	50	21.87	21.92	21.94	21.60	21.98		0
	1	99	22.21	21.91	21.93	21.52	22.04		0
	50	0	20.83	20.85	20.91	20.59	21.00	0-1	1
	50	25	20.97	20.87	20.92	20.61	21.03		1
	50	50	21.10	20.88	20.93	20.54	21.02		1
100	0	21.02	20.87	20.92	20.57	20.96			
16QAM	1	0	20.44	20.43	20.46	20.18	20.55	0-1	1
	1	50	20.52	20.46	20.49	20.19	20.56		1
	1	99	20.68	20.49	20.45	20.13	20.57		1
	50	0	19.87	19.84	19.97	19.62	20.06	0-2	2
	50	25	19.95	19.91	19.96	19.58	20.09		2
	50	50	20.03	19.94	20.00	19.54	20.11		2
100	0	19.94	19.93	19.99	19.61	20.08			
64QAM	1	0	19.31	19.25	19.43	19.06	19.28	0-2	2
	1	50	19.32	19.26	19.45	18.98	19.24		2
	1	99	19.44	19.34	19.44	18.92	19.27		2
	50	0	18.81	18.84	18.88	18.65	18.94	0-3	3
	50	25	18.97	18.86	18.93	18.78	18.98		3
	50	50	19.10	18.89	18.91	18.54	18.95		3
100	0	19.01	18.90	18.95	18.63	19.00			

Table 9-45
LTE Band 41 Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth										
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]	
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)			
			Conducted Power [dBm]							
QPSK	1	0	21.67	21.69	21.88	21.57	22.02	0	0	
	1	36	21.71	21.74	21.84	21.62	22.10		0	
	1	74	21.82	21.82	21.81	21.58	22.07		0	
	36	0	20.64	20.69	20.85	20.58	21.08	0-1	1	
	36	18	20.72	20.74	20.84	20.57	21.06		1	
	36	37	20.77	20.78	20.82	20.59	21.05		1	
16QAM	75	0	20.71	20.75	20.84	20.60	21.09	0-1	1	
	1	0	20.29	20.35	20.54	20.31	20.64		0-1	1
	1	36	20.33	20.50	20.55	20.30	20.60			1
	1	74	20.43	20.53	20.51	20.23	20.56	0-2		1
	36	0	19.75	19.72	19.86	19.56	20.07		2	
	36	18	19.79	19.77	19.87	19.55	20.11		2	
64QAM	36	37	19.86	19.81	19.83	19.57	20.08	0-2	2	
	75	0	19.81	19.66	19.85	19.58	20.12		2	
	1	0	19.12	19.07	19.29	19.08	19.49		0-2	2
	1	36	19.21	19.15	19.24	19.02	19.41	2		
	1	74	19.36	19.23	19.28	19.04	19.50	0-3		2
	36	0	18.69	18.64	18.85	18.86	19.07		3	
36	18	18.74	18.69	18.93	18.89	19.09	3			
64QAM	36	37	18.81	18.72	18.86	18.73	19.04	0-3	3	
	75	0	18.84	18.73	18.90	18.84	19.06		3	

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Table 9-46
LTE Band 41 Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	21.80	21.85	22.07	21.72	22.14	0	0
	1	25	22.03	21.90	22.12	21.74	22.12		0
	1	49	22.00	21.96	22.13	21.75	22.11		0
	25	0	20.88	20.86	21.06	20.72	21.18	0-1	1
	25	12	20.95	20.89	21.07	20.76	21.16		1
	25	25	20.98	20.92	21.02	20.77	21.18		1
16QAM	50	0	20.95	20.90	21.04	20.79	21.15	0-1	1
	1	0	20.44	20.42	20.58	20.40	20.82		1
	1	25	20.47	20.48	20.51	20.24	20.81		1
	1	49	20.55	20.53	20.49	20.26	20.86	0-2	2
	25	0	19.85	19.87	20.03	19.75	20.25		2
	25	12	19.95	19.91	20.07	19.79	20.27		2
64QAM	25	25	19.97	19.93	20.04	19.73	20.24	0-2	2
	50	0	19.99	19.97	20.12	19.80	20.29		2
	1	0	19.45	19.34	19.46	19.17	19.54		0-3
	1	25	19.51	19.46	19.47	19.16	19.57	3	
	1	49	19.57	19.50	19.45	19.20	19.50	3	
	25	0	18.94	18.96	19.04	18.79	19.17	3	
64QAM	25	12	18.96	18.88	19.01	18.90	19.18	0-3	3
	25	25	18.88	18.94	19.02	18.78	19.15		3
	50	0	18.95	18.86	19.03	18.76	19.14	3	

Table 9-47
LTE Band 41 Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	21.72	21.74	21.89	21.59	21.95	0	0
	1	12	21.73	21.77	21.88	21.68	21.97		0
	1	24	21.74	21.79	21.86	21.60	21.91		0
	12	0	20.71	20.74	20.81	20.57	20.95	0-1	1
	12	6	20.72	20.77	20.82	20.59	20.92		1
	12	13	20.74	20.80	20.80	20.58	20.93		1
25	0	20.73	20.78	20.85	20.60	20.94	1		
16QAM	1	0	20.37	20.39	20.46	20.20	20.57	0-1	1
	1	12	20.44	20.42	20.52	20.16	20.61		1
	1	24	20.42	20.38	20.41	20.10	20.54		1
	12	0	19.76	19.74	19.84	19.48	20.03	0-2	2
	12	6	19.80	19.75	19.82	19.47	20.05		2
	12	13	19.77	19.78	19.81	19.51	20.04		2
25	0	19.71	19.76	19.84	19.50	20.06	2		
64QAM	1	0	19.45	19.38	19.40	19.05	19.42	0-2	2
	1	12	19.51	19.46	19.41	19.07	19.50		2
	1	24	19.48	19.41	19.38	19.04	19.44		2
	12	0	18.71	18.64	19.03	18.87	19.07	0-3	3
	12	6	18.80	18.71	19.06	18.89	19.10		3
	12	13	18.74	18.70	19.08	18.80	19.00		3
25	0	18.73	18.72	19.05	18.89	19.09	3		

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9.3.7 LTE Carrier Aggregation Conducted Powers

Table 9-48
LTE Carrier Aggregation Max Conducted Powers- 2CC

Combination	PCC									SCC				Power	
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_2A-5A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B5	10	2525	881.5	23.33	23.33
CA_2A-12A (1)	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B12	10	5095	737.5	23.36	23.33
CA_2A-13A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B13	10	5230	751	23.31	23.33
CA_2A-17A	LTE B2	5	18625	1852.5	QPSK	1	24	625	1932.5	LTE B17	10	5790	740	23.24	23.28
CA_2A-41A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B41	20	40620	2593	23.30	23.33
CA_4A-4A	LTE B4	15	20025	1717.5	QPSK	1	36	2025	2117.5	LTE B4	20	2300	2145	23.32	23.42
CA_4A-5A (1)	LTE B4	15	20025	1717.5	QPSK	1	36	2025	2117.5	LTE B5	10	2525	881.5	23.35	23.42
CA_4A-12A (2)	LTE B4	15	20025	1717.5	QPSK	1	36	2025	2117.5	LTE B12	10	5095	737.5	23.34	23.42
CA_4A-13A	LTE B4	15	20025	1717.5	QPSK	1	36	2025	2117.5	LTE B13	10	5230	751	23.28	23.42
CA_4A-17A	LTE B4	10	20000	1715	QPSK	1	25	2000	2115	LTE B17	10	5790	740	23.23	23.36
CA_66C	LTE B66	15	132047	1717.5	QPSK	1	36	66511	2117.5	LTE B66	20	66682	2134.6	23.38	23.42
CA_66B	LTE B66	15	132047	1717.5	QPSK	1	36	66511	2117.5	LTE B66	5	66604	2126.8	23.43	23.42
CA_66A-66A	LTE B66	15	132047	1717.5	QPSK	1	36	66511	2117.5	LTE B66	20	67236	2190	23.45	23.42
CA_12A-66A (2)	LTE B66	15	132047	1717.5	QPSK	1	36	66511	2117.5	LTE B12	10	5095	737.5	23.41	23.42
CA_17A-66A	LTE B66	15	132047	1717.5	QPSK	1	36	66511	2117.5	LTE B17	10	5790	740	23.46	23.42
CA_2A-5A	LTE B5	5	20425	826.5	QPSK	1	0	2425	871.5	LTE B2	20	900	1960	23.53	23.73
CA_4A-5A (1)	LTE B5	5	20425	826.5	QPSK	1	0	2425	871.5	LTE B4	20	2175	2132.5	23.56	23.73
CA_5A-41A	LTE B5	5	20425	826.5	QPSK	1	0	2425	871.5	LTE B41	20	40620	2593	23.66	23.73
CA_2A-13A	LTE B13	10	23230	782	QPSK	1	0	5230	751	LTE B2	20	900	1960	23.43	23.51
CA_4A-13A	LTE B13	10	23230	782	QPSK	1	0	5230	751	LTE B4	20	2175	2132.5	23.45	23.51
CA_12A-12A	LTE B12	5	23095	707.5	QPSK	1	0	5095	737.5	LTE B12	5	5035	731.5	23.70	24.00
CA_2A-12A (1)	LTE B12	10	23095	707.5	QPSK	1	0	5095	737.5	LTE B2	20	900	1960	23.78	24.00
CA_4A-12A (2)	LTE B12	10	23095	707.5	QPSK	1	0	5095	737.5	LTE B4	20	2175	2132.5	23.72	24.00
CA_12A-66A (2)	LTE B12	10	23095	707.5	QPSK	1	0	5095	737.5	LTE B66	20	66786	2145	23.75	24.00
CA_2A-17A	LTE B17	10	23790	710	QPSK	1	0	5790	740	LTE B2	10	900	1960	23.70	24.00
CA_4A-17A	LTE B17	10	23790	710	QPSK	1	0	5790	740	LTE B4	10	2175	2132.5	23.72	24.00
CA_41C (1)	LTE B41	20	41490	2680	QPSK	1	99	41490	2680	LTE B41	20	41292	2660.2	23.95	23.94
CA_41A-41A (1)	LTE B41	20	41490	2680	QPSK	1	99	41490	2680	LTE B41	20	39750	2506	23.92	23.94

Table 9-49
LTE Carrier Aggregation Max Conducted Powers- 3CC

Combination	PCC									SCC 1				SCC 2				Power	
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA 4A-12A-12A	LTE B4	15	20025	1717.5	QPSK	1	36	2025	2117.5	LTE B12	5	5095	737.5	LTE B12	5	5035	731.5	23.15	23.42
CA 12A-66C	LTE B66	15	132047	1717.5	QPSK	1	36	66511	2117.5	LTE B66	20	66682	2134.6	LTE B12	10	5095	737.5	23.38	23.42
CA 12A-66B	LTE B66	15	132047	1717.5	QPSK	1	36	66511	2117.5	LTE B66	5	66604	2126.8	LTE B12	10	5095	737.5	23.43	23.42
CA 12A-66A-66A	LTE B66	15	132047	1717.5	QPSK	1	36	66511	2117.5	LTE B66	20	67236	2190	LTE B12	10	5095	737.5	23.45	23.42
CA 17A-66C	LTE B66	15	132047	1717.5	QPSK	1	36	66511	2117.5	LTE B66	20	66682	2134.6	LTE B17	10	5790	740	23.40	23.42
CA 17A-66B	LTE B66	15	132047	1717.5	QPSK	1	36	66511	2117.5	LTE B66	5	66604	2126.8	LTE B17	10	5790	740	23.50	23.42
CA 17A-66A-66A	LTE B66	15	132047	1717.5	QPSK	1	36	66511	2117.5	LTE B66	20	67236	2190	LTE B17	10	5790	740	23.37	23.42
CA 41D	LTE B41	20	41490	2680	QPSK	1	99	41490	2680	LTE B41	20	41292	2660.2	LTE B41	20	41094	2640.4	23.96	23.94
CA 41C-41A	LTE B41	20	41490	2680	QPSK	1	99	41490	2680	LTE B41	20	41292	2660.2	LTE B41	20	39750	2506	23.77	23.94
CA 41A-41C	LTE B41	20	41490	2680	QPSK	1	99	41490	2680	LTE B41	20	39948	2525.8	LTE B41	20	39750	2506	23.86	23.94

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Table 9-50
LTE Carrier Aggregation Reduced Conducted Powers- 2CC

Combination	PCC								SCC				Power	
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL RB	PCC UL RB Offset	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA 2A-5A	LTE B2	20	18900	1880	16QAM	1	0	900	LTE B5	10	2525	881.5	19.55	19.68
CA 2A-12A (1)	LTE B2	20	18900	1880	16QAM	1	0	900	LTE B12	10	5095	737.5	19.62	19.68
CA 2A-13A	LTE B2	20	18900	1880	16QAM	1	0	900	LTE B13	10	5230	751	19.57	19.68
CA 2A-17A	LTE B2	10	18650	1855	16QAM	50	0	650	LTE B17	10	5790	740	19.59	19.62
CA 2A-41A	LTE B2	20	18900	1880	16QAM	1	0	900	LTE B41	20	40620	2593	19.67	19.68
CA 4A-4A	LTE B4	15	20025	1717.5	16QAM	36	18	2025	LTE B4	20	2300	2145	19.99	19.96
CA 4A-5A (1)	LTE B4	15	20025	1717.5	16QAM	36	18	2025	LTE B5	10	2525	881.5	19.97	19.96
CA 4A-12A (2)	LTE B4	15	20025	1717.5	16QAM	36	18	2025	LTE B12	10	5095	737.5	19.95	19.96
CA 4A-13A	LTE B4	15	20025	1717.5	16QAM	36	18	2025	LTE B13	10	5230	751	19.97	19.96
CA 4A-17A	LTE B4	10	20000	1715	16QAM	50	0	2000	LTE B17	10	5790	740	19.93	19.95
CA 66C	LTE B66	15	132047	1717.5	16QAM	36	18	66511	LTE B66	20	66682	2134.6	20.44	20.42
CA 66B	LTE B66	15	132047	1717.5	16QAM	36	18	66511	LTE B66	5	66604	2126.8	20.43	20.42
CA 66A-66A	LTE B66	15	132047	1717.5	16QAM	36	18	66511	LTE B66	20	67236	2190	20.37	20.42
CA 66A-66A (2)	LTE B66	15	132047	1717.5	16QAM	36	18	66511	LTE B12	10	5095	737.5	20.39	20.42
CA 17A-66A	LTE B66	15	132047	1717.5	16QAM	36	18	66511	LTE B17	10	5790	740	20.41	20.42
CA 41C (1)	LTE B41	20	39750	2506	QPSK	1	99	39750	LTE B41	20	39948	2525.8	22.24	22.21
CA 41A-41A (1)	LTE B41	20	39750	2506	QPSK	1	99	39750	LTE B41	20	41490	2680	22.27	22.21
CA 2A-5A	LTE B5	5	20425	826.5	QPSK	1	0	2425	LTE B2	20	900	1960	22.43	22.41
CA 4A-5A (1)	LTE B5	5	20425	826.5	QPSK	1	0	2425	LTE B4	20	2175	2132.5	22.45	22.41
CA 5A-41A	LTE B5	5	20425	826.5	QPSK	1	0	2425	LTE B41	20	40620	2593	22.48	22.41

Table 9-51
LTE Carrier Aggregation Reduced Conducted Powers- 3CC

Combination	PCC								SCC 1				SCC 2				Power	
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL RB	PCC UL RB Offset	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA 4A-12A-12A	LTE B4	15	20025	1717.5	16QAM	36	18	2025	LTE B12	5	5095	737.5	LTE B12	5	5035	731.5	19.95	19.96
CA 12A-66C	LTE B66	15	132047	1717.5	16QAM	36	18	66511	LTE B66	20	66682	2134.6	LTE B12	10	5095	737.5	20.42	20.42
CA 12A-66B	LTE B66	15	132047	1717.5	16QAM	36	18	66511	LTE B66	5	66604	2126.8	LTE B12	10	5095	737.5	20.43	20.42
CA 12A-66A-66A	LTE B66	15	132047	1717.5	16QAM	36	18	66511	LTE B66	20	67236	2190	LTE B12	10	5095	737.5	20.45	20.42
CA 17A-66C	LTE B66	15	132047	1717.5	16QAM	36	18	66511	LTE B66	20	66682	2134.6	LTE B17	10	5790	740	20.47	20.42
CA 17A-66B	LTE B66	15	132047	1717.5	16QAM	36	18	66511	LTE B66	5	66604	2126.8	LTE B17	10	5790	740	20.41	20.42
CA 17A-66A-66A	LTE B66	15	132047	1717.5	16QAM	36	18	66511	LTE B66	20	67236	2190	LTE B17	10	5790	740	20.39	20.42
CA 41D	LTE B41	20	39750	2506	QPSK	1	99	39750	LTE B41	20	39948	2525.8	LTE B41	20	40466	2545.6	22.21	22.21
CA 41C-41A	LTE B41	20	39750	2506	QPSK	1	99	39750	LTE B41	20	39948	2525.8	LTE B41	20	41490	2680	22.25	22.21
CA 41A-41C	LTE B41	20	39750	2506	QPSK	1	99	39750	LTE B41	20	41292	2660.2	LTE B41	20	41490	2680	22.22	22.21

Notes:

- For every supported combination of downlink carrier aggregation, power measurements were performed with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.
- All control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
- For downlink carrier aggregation combinations, PCC uplink channel was selected based on section C)3)b)ii) of KBD 941225 D05 V01r02. The downlink PCC channel was paired with the selected PCC uplink channel according to normal configurations without carrier aggregation. 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 downlink channels remained fully within the downlink transmission band of the respective component carrier.
- 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.

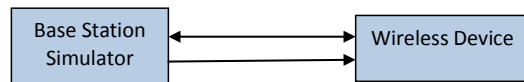


Figure 9-3
Power Measurement Setup

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9.4 WLAN Conducted Powers

Table 9-52
2.4 GHz WLAN Maximum Average RF Power

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
2412	1	17.80	13.63	13.11
2437	6	18.34	15.43	15.00
2457	10	18.01	15.31	14.92
2462	11	17.99	12.01	11.11

Table 9-53
2.4 GHz WLAN Reduced Average RF Power

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
		Average	Average	Average
2412	1	11.86	12.46	11.77
2437	6	11.63	11.71	12.18
2462	11	12.35	11.64	11.11

Table 9-54
5 GHz WLAN Maximum Average RF Power- 40 MHz Bandwidth

5GHz (40MHz) Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11n	802.11ac
		Average	Average
5190	38	8.05	8.13
5230	46	13.60	13.42
5270	54	13.58	13.35
5310	62	6.62	7.30
5510	102	11.81	11.92
5590	118	13.61	13.40
5630	126	13.72	13.39
5710	142	13.48	13.60
5755	151	13.82	13.80
5795	159	13.98	13.67

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Table 9-55
5 GHz WLAN Reduced Average RF Power- 40 MHz Bandwidth

5GHz (40MHz) Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11n	802.11ac
		Average	Average
5190	38	8.05	8.13
5230	46	9.62	10.41
5270	54	10.22	9.56
5310	62	6.62	7.30
5510	102	9.70	10.08
5590	118	10.09	10.19
5630	126	10.23	10.35
5710	142	9.73	9.65
5755	151	10.46	9.56
5795	159	10.21	10.12

Table 9-56
5 GHz WLAN Reduced Average RF Power – 80 MHz Bandwidth

5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
		Average
5210	42	7.05
5290	58	4.85
5530	106	7.32
5610	122	9.95
5690	138	9.25
5775	155	9.92

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

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

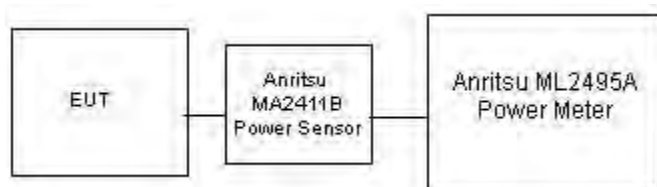


Figure 9-4

Power Measurement Setup for Bandwidths < 50 MHz

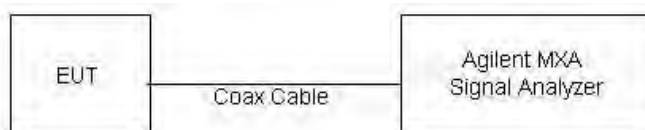


Figure 9-5

Power Measurement Setup for Bandwidths > 50 MHz

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9.5 Bluetooth Conducted Powers

Table 9-57
Bluetooth Average RF Power

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	8.50	7.074
2441	1.0	39	9.02	7.984
2480	1.0	78	6.76	4.742
2402	2.0	0	6.98	4.994
2441	2.0	39	7.53	5.662
2480	2.0	78	5.41	3.477
2402	3.0	0	6.98	4.990
2441	3.0	39	7.48	5.603
2480	3.0	78	5.40	3.471

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

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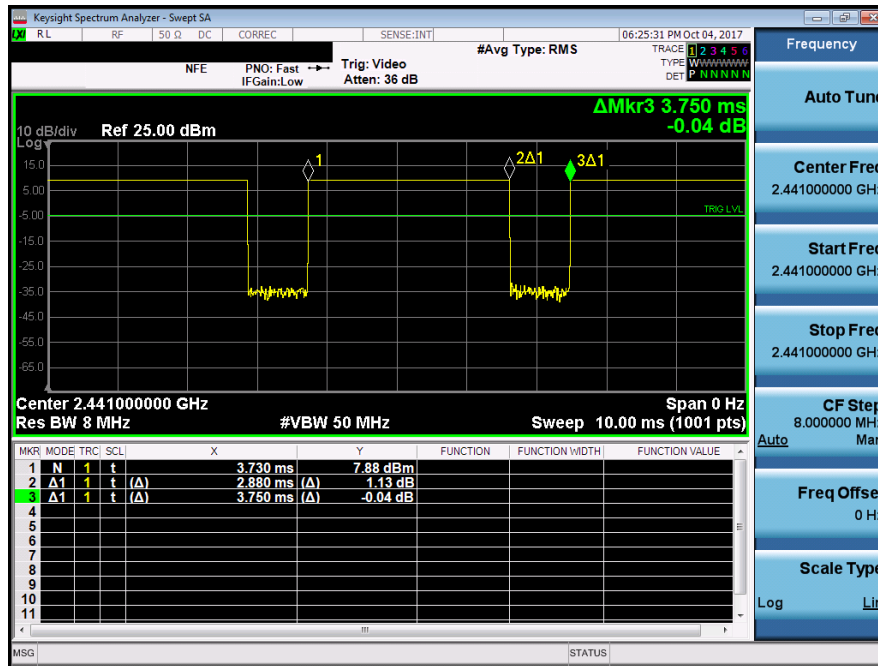


Figure 9-6
Bluetooth Transmission Plot

Equation 9-1
Bluetooth Duty Cycle Calculation

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.88\ ms}{3.75\ ms} * 100\% = 76.8\%$$

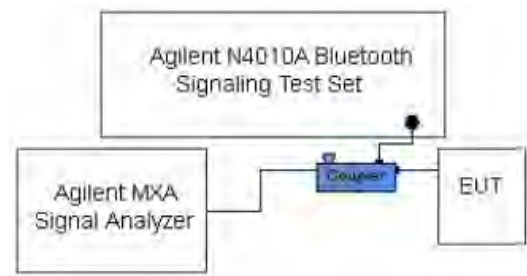


Figure 9-7
Power Measurement Setup

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10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ϵ	% dev σ	% dev ϵ
10/18/2017	750H	20.8	700	0.848	42.369	0.889	42.201	-4.61%	0.40%
			710	0.857	42.227	0.890	42.149	-3.71%	0.19%
			740	0.884	41.819	0.893	41.994	-1.01%	-0.42%
			755	0.898	41.596	0.894	41.916	0.45%	-0.76%
			770	0.913	41.377	0.895	41.838	2.01%	-1.10%
			785	0.927	41.172	0.896	41.760	3.46%	-1.41%
10/19/2017	835H	21.4	820	0.878	41.332	0.899	41.578	-2.34%	-0.59%
			835	0.894	41.162	0.900	41.500	-0.67%	-0.81%
			850	0.909	40.967	0.916	41.500	-0.76%	-1.28%
			1710	1.343	39.959	1.348	40.142	-0.37%	-0.46%
10/23/2017	1750H	21.0	1750	1.384	39.785	1.371	40.079	0.95%	-0.73%
			1790	1.425	39.595	1.394	40.016	2.22%	-1.05%
			1850	1.400	39.972	1.400	40.000	0.00%	-0.07%
10/21/2017	1900H	21.6	1880	1.433	39.831	1.400	40.000	2.36%	-0.42%
			1910	1.467	39.700	1.400	40.000	4.79%	-0.75%
			1950	1.379	39.882	1.400	40.000	-1.50%	-0.30%
10/23/2017	1900H	22.0	1880	1.413	39.747	1.400	40.000	0.93%	-0.63%
			1910	1.443	39.603	1.400	40.000	3.07%	-0.99%
			2400	1.813	38.767	1.756	39.289	3.25%	-1.33%
10/23/2017	2450H	20.5	2450	1.871	38.587	1.800	39.200	3.94%	-1.56%
			2500	1.924	38.396	1.855	39.136	3.72%	-1.92%
			2600	2.054	38.023	1.964	39.009	4.58%	-2.53%
10/20/2017	2600H	20.9	2650	2.113	37.825	2.018	38.945	4.71%	-2.88%
			2700	2.169	37.616	2.073	38.882	4.63%	-3.26%
			5240	4.597	35.561	4.696	35.940	-2.11%	-1.05%
10/25/2017	5200H-5800H	21.2	5260	4.614	35.559	4.717	35.917	-2.18%	-1.00%
			5280	4.626	35.522	4.737	35.894	-2.34%	-1.04%
			5600	4.960	35.069	5.065	35.529	-2.07%	-1.29%
			5620	4.997	35.018	5.086	35.506	-1.75%	-1.37%
			5745	5.124	34.820	5.214	35.363	-1.73%	-1.54%
			5765	5.152	34.801	5.234	35.340	-1.57%	-1.53%
			5785	5.165	34.775	5.255	35.317	-1.71%	-1.53%
			700	0.929	56.261	0.959	55.726	-3.13%	0.96%
			710	0.938	56.151	0.960	55.687	-2.29%	0.83%
			740	0.968	55.847	0.963	55.570	0.52%	0.50%
10/25/2017	750B	21.1	755	0.982	55.678	0.964	55.512	1.87%	0.30%
			770	0.996	55.514	0.965	55.453	3.21%	0.11%
			785	1.011	55.361	0.966	55.395	4.66%	-0.06%
			820	0.944	53.087	0.969	55.258	-2.58%	-3.93%
			835	0.959	52.949	0.970	55.200	-1.13%	-4.08%
			850	0.975	52.797	0.988	55.154	-1.32%	-4.27%
10/23/2017	835B	20.6	820	0.972	54.839	0.969	55.258	0.31%	-0.76%
			835	0.977	54.812	0.970	55.200	0.72%	-0.70%
			850	0.982	54.781	0.988	55.154	-0.61%	-0.68%
10/20/2017	1750B	21.8	1710	1.449	52.286	1.463	53.537	-0.96%	-2.34%
			1750	1.492	52.159	1.488	53.432	0.27%	-2.38%
			1790	1.538	52.013	1.514	53.326	1.59%	-2.46%
10/18/2017	1900B	21.1	1850	1.526	52.394	1.520	53.300	0.39%	-1.70%
			1880	1.560	52.294	1.520	53.300	2.63%	-1.89%
			1910	1.595	52.199	1.520	53.300	4.93%	-2.07%
10/23/2017	1900B	22.3	1850	1.499	53.834	1.520	53.300	-1.38%	1.00%
			1880	1.532	53.738	1.520	53.300	0.79%	0.82%
			1910	1.566	53.658	1.520	53.300	3.03%	0.67%
10/23/2017	2450B	23.0	2400	1.953	52.131	1.902	52.767	2.68%	-1.21%
			2450	2.022	51.957	1.950	52.700	3.69%	-1.41%
			2500	2.092	51.768	2.021	52.636	3.51%	-1.65%
11/9/2017	2450B-2600B	23.3	2450	2.030	51.483	1.950	52.700	4.10%	-2.31%
			2500	2.099	51.277	2.021	52.636	3.86%	-2.58%
			2550	2.170	51.084	2.092	52.573	3.73%	-2.83%
			2600	2.240	50.865	2.163	52.509	3.56%	-3.13%
			2650	2.311	50.674	2.234	52.445	3.45%	-3.38%
			2700	2.378	50.475	2.305	52.382	3.17%	-3.64%
10/18/2017	2600B	21.5	2600	2.244	50.325	2.163	52.509	3.74%	-4.16%
			2650	2.316	50.160	2.234	52.445	3.67%	-4.36%
			2700	2.384	49.942	2.305	52.382	3.43%	-4.66%
10/24/2017	5200B-5800B	21.5	5240	5.390	48.574	5.346	48.960	0.82%	-0.79%
			5260	5.421	48.485	5.369	48.933	0.97%	-0.92%
			5280	5.441	48.449	5.393	48.906	0.89%	-0.93%
			5600	5.910	47.818	5.766	48.471	2.50%	-1.35%
			5620	5.931	47.782	5.790	48.444	2.44%	-1.35%
			5640	5.969	47.762	5.813	48.417	2.68%	-1.35%
			5745	6.129	47.560	5.936	48.275	3.25%	-1.48%
			5765	6.155	47.505	5.959	48.248	3.29%	-1.54%
			5785	6.183	47.474	5.982	48.220	3.36%	-1.55%
			5800	6.199	47.434	6.000	48.200	3.32%	-1.59%

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.

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10.2 Test System Verification

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

Table 10-2 System Verification Results

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	10/18/2017	21.3	20.8	0.200	1054	3332	1.550	8.370	7.750	-7.41%
K	835	HEAD	10/19/2017	22.8	21.4	0.200	4d047	7406	1.870	9.130	9.350	2.41%
J	1750	HEAD	10/23/2017	22.7	21.0	0.100	1150	3209	3.620	36.100	36.200	0.28%
I	1900	HEAD	10/21/2017	20.7	20.7	0.100	5d080	3213	4.100	39.300	41.000	4.33%
I	1900	HEAD	10/23/2017	21.6	21.5	0.100	5d080	3213	4.020	39.300	40.200	2.29%
G	2450	HEAD	10/23/2017	20.6	20.5	0.100	719	3332	5.520	51.900	55.200	6.36%
G	2600	HEAD	10/20/2017	22.0	20.9	0.100	1126	3332	5.650	56.400	56.500	0.18%
H	5250	HEAD	10/25/2017	22.8	21.2	0.050	1191	3914	3.840	78.900	76.800	-2.66%
H	5600	HEAD	10/25/2017	22.8	21.2	0.050	1191	3914	4.060	83.600	81.200	-2.87%
H	5750	HEAD	10/25/2017	22.8	21.2	0.050	1191	3914	3.710	79.100	74.200	-6.19%
I	750	BODY	10/25/2017	23.4	21.1	0.200	1003	3213	1.730	8.790	8.650	-1.59%
I	835	BODY	10/18/2017	21.7	21.1	0.200	4d133	3213	1.930	9.410	9.650	2.55%
D	835	BODY	10/23/2017	20.6	20.3	0.200	4d132	3288	2.100	9.800	10.500	7.14%
K	1750	BODY	10/20/2017	23.5	21.8	0.100	1150	7406	3.820	36.500	38.200	4.66%
J	1900	BODY	10/18/2017	22.3	21.1	0.100	5d080	3209	4.090	39.100	40.900	4.60%
J	1900	BODY	10/23/2017	21.7	22.5	0.100	5d080	3209	4.030	39.100	40.300	3.07%
E	2450	BODY	10/23/2017	21.0	21.5	0.100	981	3319	4.940	50.800	49.400	-2.76%
I	2450	BODY	11/09/2017	22.6	22.3	0.100	981	3213	5.170	50.800	51.700	1.77%
E	2600	BODY	10/18/2017	23.3	21.5	0.100	1064	3319	5.480	54.700	54.800	0.18%
I	2600	BODY	11/09/2017	22.6	22.3	0.100	1126	3213	5.640	54.300	56.400	3.87%
D	5250	BODY	10/24/2017	22.5	21.5	0.050	1237	7308	3.750	76.900	75.000	-2.47%
D	5600	BODY	10/24/2017	22.5	21.5	0.050	1237	7308	3.810	78.500	76.200	-2.93%
D	5750	BODY	10/24/2017	22.5	21.5	0.050	1237	7308	3.540	77.100	70.800	-8.17%

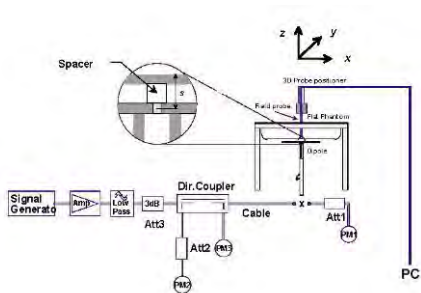


Figure 10-1
System Verification Setup Diagram



Figure 10-2
System Verification Setup Photo

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11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

**Table 11-1
GSM 850 Head SAR**

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	34.0	33.38	0.08	Right	Cheek	76217	1:8.3	0.224	1.153	0.258	A1
836.60	190	GSM 850	GSM	34.0	33.38	-0.17	Right	Tilt	76217	1:8.3	0.096	1.153	0.111	
836.60	190	GSM 850	GSM	34.0	33.38	-0.01	Left	Cheek	76217	1:8.3	0.163	1.153	0.188	
836.60	190	GSM 850	GSM	34.0	33.38	0.03	Left	Tilt	76217	1:8.3	0.129	1.153	0.149	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram						

**Table 11-2
GSM 1900 Head SAR**

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	661	GSM1900	GSM	30.2	29.85	0.13	Right	Cheek	76720	1:8.3	0.070	1.084	0.076	
1880.00	661	GSM1900	GSM	30.2	29.85	0.10	Right	Tilt	76720	1:8.3	0.038	1.084	0.041	
1880.00	661	GSM1900	GSM	30.2	29.85	-0.04	Left	Cheek	76720	1:8.3	0.104	1.084	0.113	A2
1880.00	661	GSM1900	GSM	30.2	29.85	-0.04	Left	Tilt	76720	1:8.3	0.018	1.084	0.020	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram						

**Table 11-3
UMTS 850 Head SAR**

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
836.60	4183	UMTS 850	RMC	24.5	24.23	-0.03	Right	Cheek	77264	1:1	0.241	1.064	0.256	A3
836.60	4183	UMTS 850	RMC	24.5	24.23	0.05	Right	Tilt	77264	1:1	0.092	1.064	0.098	
836.60	4183	UMTS 850	RMC	24.5	24.23	0.05	Left	Cheek	77264	1:1	0.175	1.064	0.186	
836.60	4183	UMTS 850	RMC	24.5	24.23	0.02	Left	Tilt	77264	1:1	0.125	1.064	0.133	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

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Table 11-4
UMTS 1750 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1732.40	1412	UMTS 1750	RMC	23.5	23.02	0.18	Right	Cheek	77264	1:1	0.100	1.117	0.112	
1732.40	1412	UMTS 1750	RMC	23.5	23.02	0.02	Right	Tilt	77264	1:1	0.099	1.117	0.111	
1732.40	1412	UMTS 1750	RMC	23.5	23.02	0.00	Left	Cheek	77264	1:1	0.161	1.117	0.180	A4
1732.40	1412	UMTS 1750	RMC	23.5	23.02	0.03	Left	Tilt	77264	1:1	0.092	1.117	0.103	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-5
UMTS 1900 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	23.5	23.41	-0.01	Right	Cheek	76720	1:1	0.144	1.021	0.147	
1880.00	9400	UMTS 1900	RMC	23.5	23.41	0.06	Right	Tilt	76720	1:1	0.083	1.021	0.085	
1880.00	9400	UMTS 1900	RMC	23.5	23.41	0.09	Left	Cheek	76720	1:1	0.211	1.021	0.215	A5
1880.00	9400	UMTS 1900	RMC	23.5	23.41	0.03	Left	Tilt	76720	1:1	0.045	1.021	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 11-6
LTE Band 12 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
707.50	23095	Mid	LTE Band 12	10	24.0	24.00	-0.20	0	Right	Cheek	QPSK	1	0	76720	1:1	0.132	1.000	0.132	A6
707.50	23095	Mid	LTE Band 12	10	23.0	22.93	0.08	1	Right	Cheek	QPSK	25	0	76720	1:1	0.095	1.016	0.097	
707.50	23095	Mid	LTE Band 12	10	24.0	24.00	0.18	0	Right	Tilt	QPSK	1	0	76720	1:1	0.084	1.000	0.084	
707.50	23095	Mid	LTE Band 12	10	23.0	22.93	0.19	1	Right	Tilt	QPSK	25	0	76720	1:1	0.063	1.016	0.064	
707.50	23095	Mid	LTE Band 12	10	24.0	24.00	0.15	0	Left	Cheek	QPSK	1	0	76720	1:1	0.113	1.000	0.113	
707.50	23095	Mid	LTE Band 12	10	23.0	22.93	0.10	1	Left	Cheek	QPSK	25	0	76720	1:1	0.077	1.016	0.078	
707.50	23095	Mid	LTE Band 12	10	24.0	24.00	0.13	0	Left	Tilt	QPSK	1	0	76720	1:1	0.112	1.000	0.112	
707.50	23095	Mid	LTE Band 12	10	23.0	22.93	0.17	1	Left	Tilt	QPSK	25	0	76720	1:1	0.081	1.016	0.082	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

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Table 11-7
LTE Band 13 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
782.00	23230	Mid	LTE Band 13	10	24.0	23.51	-0.08	0	Right	Cheek	QPSK	1	0	76720	1.1	0.160	1.119	0.179	A7
782.00	23230	Mid	LTE Band 13	10	23.0	22.34	0.07	1	Right	Cheek	QPSK	25	0	76720	1.1	0.114	1.164	0.133	
782.00	23230	Mid	LTE Band 13	10	24.0	23.51	-0.05	0	Right	Tilt	QPSK	1	0	76720	1.1	0.098	1.119	0.110	
782.00	23230	Mid	LTE Band 13	10	23.0	22.34	-0.02	1	Right	Tilt	QPSK	25	0	76720	1.1	0.058	1.164	0.068	
782.00	23230	Mid	LTE Band 13	10	24.0	23.51	0.11	0	Left	Cheek	QPSK	1	0	76720	1.1	0.127	1.119	0.142	
782.00	23230	Mid	LTE Band 13	10	23.0	22.34	0.11	1	Left	Cheek	QPSK	25	0	76720	1.1	0.090	1.164	0.105	
782.00	23230	Mid	LTE Band 13	10	24.0	23.51	0.21	0	Left	Tilt	QPSK	1	0	76720	1.1	0.101	1.119	0.113	
782.00	23230	Mid	LTE Band 13	10	23.0	22.34	0.17	1	Left	Tilt	QPSK	25	0	76720	1.1	0.078	1.164	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 11-8
LTE Band 26 (Cell) Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.84	-0.03	0	Right	Cheek	QPSK	1	0	76217	1.1	0.223	1.038	0.231	A8
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.71	-0.03	1	Right	Cheek	QPSK	36	0	76217	1.1	0.162	1.069	0.173	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.84	0.15	0	Right	Tilt	QPSK	1	0	76217	1.1	0.083	1.038	0.086	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.71	0.21	1	Right	Tilt	QPSK	36	0	76217	1.1	0.066	1.069	0.071	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.84	0.14	0	Left	Cheek	QPSK	1	0	76217	1.1	0.146	1.038	0.152	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.71	0.12	1	Left	Cheek	QPSK	36	0	76217	1.1	0.117	1.069	0.125	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.84	0.19	0	Left	Tilt	QPSK	1	0	76217	1.1	0.084	1.038	0.087	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.71	0.20	1	Left	Tilt	QPSK	36	0	76217	1.1	0.062	1.069	0.066	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-9
LTE Band 66 (AWS) Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	23.26	0.06	0	Right	Cheek	QPSK	1	50	77264	1:1	0.092	1.057	0.097	
1720.00	132072	Low	LTE Band 66 (AWS)	20	22.5	22.31	0.04	1	Right	Cheek	QPSK	50	0	77264	1:1	0.069	1.045	0.072	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	23.26	0.05	0	Right	Tilt	QPSK	1	50	77264	1:1	0.085	1.057	0.090	
1720.00	132072	Low	LTE Band 66 (AWS)	20	22.5	22.31	0.04	1	Right	Tilt	QPSK	50	0	77264	1:1	0.057	1.045	0.060	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	23.26	0.02	0	Left	Cheek	QPSK	1	50	77264	1:1	0.163	1.057	0.172	A9
1720.00	132072	Low	LTE Band 66 (AWS)	20	22.5	22.31	0.08	1	Left	Cheek	QPSK	50	0	77264	1:1	0.129	1.045	0.135	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	23.26	0.09	0	Left	Tilt	QPSK	1	50	77264	1:1	0.056	1.057	0.059	
1720.00	132072	Low	LTE Band 66 (AWS)	20	22.5	22.31	0.11	1	Left	Tilt	QPSK	50	0	77264	1:1	0.041	1.045	0.043	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

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Table 11-10
LTE Band 2 (PCS) Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	23.33	-0.08	0	Right	Cheek	QPSK	1	50	76720	1:1	0.119	1.040	0.124	
1860.00	18700	Low	LTE Band 2 (PCS)	20	22.5	22.12	-0.02	1	Right	Cheek	QPSK	50	0	76720	1:1	0.085	1.091	0.093	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	23.33	0.10	0	Right	Tilt	QPSK	1	50	76720	1:1	0.088	1.040	0.092	
1860.00	18700	Low	LTE Band 2 (PCS)	20	22.5	22.12	0.04	1	Right	Tilt	QPSK	50	0	76720	1:1	0.066	1.091	0.072	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	23.33	0.05	0	Left	Cheek	QPSK	1	50	76720	1:1	0.219	1.040	0.228	A10
1860.00	18700	Low	LTE Band 2 (PCS)	20	22.5	22.12	0.08	1	Left	Cheek	QPSK	50	0	76720	1:1	0.170	1.091	0.185	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	23.33	-0.19	0	Left	Tilt	QPSK	1	50	76720	1:1	0.072	1.040	0.075	
1860.00	18700	Low	LTE Band 2 (PCS)	20	22.5	22.12	0.09	1	Left	Tilt	QPSK	50	0	76720	1:1	0.047	1.091	0.051	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-11
LTE Band 41 Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
2680.00	41490	High	LTE Band 41	20	24.0	23.94	0.14	0	Right	Cheek	QPSK	1	99	76720	1:1.58	0.015	1.014	0.015	
2680.00	41490	High	LTE Band 41	20	23.0	22.94	0.13	1	Right	Cheek	QPSK	50	50	76720	1:1.58	0.015	1.014	0.015	
2680.00	41490	High	LTE Band 41	20	24.0	23.94	0.18	0	Right	Tilt	QPSK	1	99	76720	1:1.58	0.015	1.014	0.015	
2680.00	41490	High	LTE Band 41	20	23.0	22.94	0.14	1	Right	Tilt	QPSK	50	50	76720	1:1.58	0.012	1.014	0.012	
2680.00	41490	High	LTE Band 41	20	24.0	23.94	0.19	0	Left	Cheek	QPSK	1	99	76720	1:1.58	0.034	1.014	0.034	A11
2680.00	41490	High	LTE Band 41	20	23.0	22.94	0.19	1	Left	Cheek	QPSK	50	50	76720	1:1.58	0.026	1.014	0.026	
2680.00	41490	High	LTE Band 41	20	24.0	23.94	0.16	0	Left	Tilt	QPSK	1	99	76720	1:1.58	0.023	1.014	0.023	
2680.00	41490	High	LTE Band 41	20	23.0	22.94	0.10	1	Left	Tilt	QPSK	50	50	76720	1:1.58	0.020	1.014	0.020	
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
DTS Head SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.												W/kg	(W/kg)			(W/kg)	
2462	11	802.11b	DSSS	22	12.5	12.35	0.09	Right	Cheek	77074	1	99.7	0.666	0.486	1.035	1.003	0.505	A12
2462	11	802.11b	DSSS	22	12.5	12.35	-0.13	Right	Tilt	77074	1	99.7	0.521	0.450	1.035	1.003	0.467	
2462	11	802.11b	DSSS	22	12.5	12.35	0.10	Left	Cheek	77074	1	99.7	0.280	-	1.035	1.003	-	
2462	11	802.11b	DSSS	22	12.5	12.35	-0.11	Left	Tilt	77074	1	99.7	0.244	-	1.035	1.003	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram									

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**Table 11-13
NII Head SAR**

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.												W/kg	(W/kg)			(W/kg)	
5270	54	802.11n	OFDM	40	10.5	10.22	0.13	Right	Cheek	76720	13.5	96.3	0.912	0.417	1.067	1.038	0.462	A13
5270	54	802.11n	OFDM	40	10.5	10.22	-0.11	Right	Tilt	76720	13.5	96.3	0.822	0.306	1.067	1.038	0.339	
5270	54	802.11n	OFDM	40	10.5	10.22	0.07	Left	Cheek	76720	13.5	96.3	0.487	-	1.067	1.038	-	
5270	54	802.11n	OFDM	40	10.5	10.22	-0.17	Left	Tilt	76720	13.5	96.3	0.409	-	1.067	1.038	-	
5610	122	802.11ac	OFDM	80	10.5	9.95	0.18	Right	Cheek	76720	29.3	97.3	0.561	0.177	1.135	1.028	0.207	
5610	122	802.11ac	OFDM	80	10.5	9.95	0.16	Right	Tilt	76720	29.3	97.3	0.434	-	1.135	1.028	-	
5610	122	802.11ac	OFDM	80	10.5	9.95	0.13	Left	Cheek	76720	29.3	97.3	0.291	-	1.135	1.028	-	
5610	122	802.11ac	OFDM	80	10.5	9.95	0.12	Left	Tilt	76720	29.3	97.3	0.274	-	1.135	1.028	-	
5775	155	802.11ac	OFDM	80	10.5	9.92	0.13	Right	Cheek	76720	29.3	97.3	0.538	-	1.143	1.028	-	
5775	155	802.11ac	OFDM	80	10.5	9.92	0.11	Right	Tilt	76720	29.3	97.3	0.568	0.178	1.143	1.028	0.209	
5775	155	802.11ac	OFDM	80	10.5	9.92	0.02	Left	Cheek	76720	29.3	97.3	0.257	-	1.143	1.028	-	
5775	155	802.11ac	OFDM	80	10.5	9.92	0.18	Left	Tilt	76720	29.3	97.3	0.240	-	1.143	1.028	-	
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
DSS Head SAR**

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	Duty Cycle %	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441.00	39	Bluetooth	FHSS	9.5	9.02	-0.13	Right	Cheek	77074	1	76.8	0.164	1.117	1.302	0.239	A14
2441.00	39	Bluetooth	FHSS	9.5	9.02	0.00	Right	Tilt	77074	1	76.8	0.155	1.117	1.302	0.225	
2441.00	39	Bluetooth	FHSS	9.5	9.02	0.13	Left	Cheek	77074	1	76.8	0.069	1.117	1.302	0.100	
2441.00	39	Bluetooth	FHSS	9.5	9.02	0.18	Left	Tilt	77074	1	76.8	0.088	1.117	1.302	0.128	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram							

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11.2 Standalone Body-Worn SAR Data

Table 11-15
GSM/UMTS Body-Worn SAR Data

MEASUREMENT RESULTS														
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
836.60	190	GSM850	GSM	34.0	33.38	-0.02	15 mm	77074	1:8.3	back	0.347	1.153	0.400	A15
1880.00	661	GSM1900	GSM	30.2	29.85	-0.14	15 mm	76720	1:8.3	back	0.275	1.084	0.298	A17
836.60	4183	UMTS 850	RMC	24.5	24.23	0.00	15 mm	76217	1:1	back	0.413	1.064	0.439	A19
1732.40	1412	UMTS 1750	RMC	23.5	23.02	0.09	15 mm	39289	1:1	back	0.509	1.117	0.569	A21
1852.40	9262	UMTS 1900	RMC	23.5	23.28	-0.01	15 mm	76720	1:1	back	0.589	1.052	0.620	
1880.00	9400	UMTS 1900	RMC	23.5	23.41	0.04	15 mm	76720	1:1	back	0.687	1.021	0.701	
1907.60	9538	UMTS 1900	RMC	23.5	23.35	-0.03	15 mm	76720	1:1	back	0.735	1.035	0.761	A23
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-16
LTE Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
707.50	23095	Mid	LTE Band 12	10	24.0	24.00	-0.08	0	77074	QPSK	1	0	15 mm	back	1:1	0.225	1.000	0.225	A25
707.50	23095	Mid	LTE Band 12	10	23.0	22.93	-0.01	1	77074	QPSK	25	0	15 mm	back	1:1	0.167	1.016	0.170	
782.00	23230	Mid	LTE Band 13	10	24.0	23.51	0.07	0	77074	QPSK	1	0	15 mm	back	1:1	0.290	1.119	0.325	A27
782.00	23230	Mid	LTE Band 13	10	23.0	22.34	0.04	1	77074	QPSK	25	0	15 mm	back	1:1	0.221	1.164	0.257	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.84	0.00	0	76720	QPSK	1	0	15 mm	back	1:1	0.291	1.038	0.302	A29
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.71	-0.01	1	76720	QPSK	36	0	15 mm	back	1:1	0.234	1.069	0.250	
1720.00	132072	Low	LTE Band 66 (AWS)	20	23.5	23.26	0.07	0	39099	QPSK	1	50	15 mm	back	1:1	0.458	1.057	0.484	A31
1720.00	132072	Low	LTE Band 66 (AWS)	20	22.5	22.31	0.02	1	39099	QPSK	50	0	15 mm	back	1:1	0.340	1.045	0.355	
1860.00	18700	Low	LTE Band 2 (PCS)	20	23.5	23.33	-0.02	0	76720	QPSK	1	50	15 mm	back	1:1	0.640	1.040	0.666	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	23.5	23.32	-0.02	0	76720	QPSK	1	50	15 mm	back	1:1	0.624	1.042	0.650	
1900.00	19100	High	LTE Band 2 (PCS)	20	23.5	22.95	-0.04	0	76720	QPSK	1	99	15 mm	back	1:1	0.642	1.135	0.729	A33
1860.00	18700	Low	LTE Band 2 (PCS)	20	22.5	22.12	-0.01	1	76720	QPSK	50	0	15 mm	back	1:1	0.489	1.091	0.533	
2680.00	41490	High	LTE Band 41	20	24.0	23.94	0.05	0	76217	QPSK	1	99	15 mm	back	1:1.58	0.131	1.014	0.133	A35
2680.00	41490	High	LTE Band 41	20	23.0	22.94	0.01	1	76217	QPSK	50	50	15 mm	back	1:1.58	0.106	1.014	0.107	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Body 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-17
DTS Body-Worn SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	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	18.5	18.34	-0.12	15 mm	76720	1	back	99.7	0.182	0.158	1.038	1.003	0.164	A37
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Body 1.6 W/kg (mW/g) averaged over 1 gram									

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Table 11-18
NII Body-Worn SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	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)			
5270	54	802.11n	OFDM	40	14.0	13.58	0.01	15 mm	76217	13.5	back	96.3	0.246	0.121	1.102	1.038	0.138	
5630	126	802.11n	OFDM	40	14.0	13.72	-0.06	15 mm	76217	13.5	back	96.3	0.896	0.368	1.067	1.038	0.408	
5795	159	802.11n	OFDM	40	14.0	13.98	0.07	15 mm	76217	13.5	back	96.3	0.873	0.373	1.005	1.038	0.389	A39
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
DSS Body-Worn SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	9.5	9.02	-0.20	15 mm	77264	1	back	76.8	0.010	1.117	1.302	0.015	A41
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram									

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11.3 Standalone Hotspot SAR Data

Table 11-20
GPRS/UMTS Hotspot SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of GPRS Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
824.20	128	GSM 850	GPRS	29.0	28.03	0.01	10 mm	77074	4	1:2.076	back	0.737	1.250	0.921	A16
836.60	190	GSM 850	GPRS	29.0	28.08	-0.02	10 mm	77074	4	1:2.076	back	0.763	1.236	0.943	
848.80	251	GSM 850	GPRS	29.0	28.31	-0.16	10 mm	77074	4	1:2.076	back	0.664	1.172	0.778	
836.60	190	GSM 850	GPRS	29.0	28.08	-0.05	10 mm	77074	4	1:2.076	front	0.584	1.236	0.722	
836.60	190	GSM 850	GPRS	29.0	28.08	-0.05	10 mm	77074	4	1:2.076	bottom	0.398	1.236	0.492	
836.60	190	GSM 850	GPRS	29.0	28.08	-0.20	10 mm	77074	4	1:2.076	right	0.609	1.236	0.753	
836.60	190	GSM 850	GPRS	29.0	28.08	-0.08	10 mm	77074	4	1:2.076	left	0.192	1.236	0.237	
1880.00	661	GSM 1900	GPRS	25.0	24.39	-0.06	10 mm	77074	4	1:2.076	back	0.498	1.151	0.573	
1880.00	661	GSM 1900	GPRS	25.0	24.39	-0.05	10 mm	77074	4	1:2.076	front	0.435	1.151	0.501	
1850.20	512	GSM 1900	GPRS	25.0	24.27	-0.05	10 mm	77074	4	1:2.076	bottom	0.724	1.183	0.856	
1880.00	661	GSM 1900	GPRS	25.0	24.39	0.00	10 mm	77074	4	1:2.076	bottom	0.788	1.151	0.907	
1909.80	810	GSM 1900	GPRS	25.0	24.22	-0.11	10 mm	77074	4	1:2.076	bottom	0.799	1.197	0.956	A18
1880.00	661	GSM 1900	GPRS	25.0	24.39	0.09	10 mm	77074	4	1:2.076	right	0.099	1.151	0.114	
1880.00	661	GSM 1900	GPRS	25.0	24.39	-0.01	10 mm	77074	4	1:2.076	left	0.065	1.151	0.075	
826.40	4132	UMTS 850	RMC	23.5	23.37	-0.21	10 mm	76217	N/A	1:1	back	0.629	1.030	0.648	
836.60	4183	UMTS 850	RMC	23.5	23.33	-0.10	10 mm	76217	N/A	1:1	back	0.622	1.040	0.647	
846.60	4233	UMTS 850	RMC	23.5	23.43	-0.19	10 mm	76217	N/A	1:1	back	0.670	1.016	0.681	A20
836.60	4183	UMTS 850	RMC	23.5	23.33	-0.04	10 mm	76217	N/A	1:1	front	0.563	1.040	0.586	
836.60	4183	UMTS 850	RMC	23.5	23.33	-0.02	10 mm	76217	N/A	1:1	bottom	0.399	1.040	0.415	
836.60	4183	UMTS 850	RMC	23.5	23.33	-0.01	10 mm	76217	N/A	1:1	right	0.470	1.040	0.489	
836.60	4183	UMTS 850	RMC	23.5	23.33	0.06	10 mm	76217	N/A	1:1	left	0.115	1.040	0.120	
1732.40	1412	UMTS 1750	RMC	20.0	19.57	-0.05	10 mm	39289	N/A	1:1	back	0.418	1.104	0.461	
1732.40	1412	UMTS 1750	RMC	20.0	19.57	0.01	10 mm	39289	N/A	1:1	front	0.309	1.104	0.341	
1732.40	1412	UMTS 1750	RMC	20.0	19.57	0.01	10 mm	39289	N/A	1:1	bottom	0.523	1.104	0.577	A22
1732.40	1412	UMTS 1750	RMC	20.0	19.57	-0.01	10 mm	39289	N/A	1:1	right	0.049	1.104	0.054	
1732.40	1412	UMTS 1750	RMC	20.0	19.57	-0.02	10 mm	39289	N/A	1:1	left	0.098	1.104	0.108	
1880.00	9400	UMTS 1900	RMC	20.0	20.00	0.03	10 mm	76720	N/A	1:1	back	0.549	1.000	0.549	
1880.00	9400	UMTS 1900	RMC	20.0	20.00	-0.01	10 mm	76720	N/A	1:1	front	0.423	1.000	0.423	
1852.40	9262	UMTS 1900	RMC	20.0	19.86	-0.04	10 mm	76720	N/A	1:1	bottom	0.880	1.033	0.909	
1880.00	9400	UMTS 1900	RMC	20.0	20.00	-0.07	10 mm	76720	N/A	1:1	bottom	0.906	1.000	0.906	
1907.60	9538	UMTS 1900	RMC	20.0	19.90	-0.05	10 mm	76720	N/A	1:1	bottom	0.955	1.023	0.977	A24
1880.00	9400	UMTS 1900	RMC	20.0	20.00	-0.04	10 mm	76720	N/A	1:1	right	0.092	1.000	0.092	
1880.00	9400	UMTS 1900	RMC	20.0	20.00	-0.06	10 mm	76720	N/A	1:1	left	0.083	1.000	0.083	
1907.60	9538	UMTS 1900	RMC	20.0	19.90	0.00	10 mm	76720	N/A	1:1	bottom	0.907	1.023	0.928	
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.

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Table 11-21
LTE Band 12 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
707.50	23095	Mid	LTE Band 12	10	24.0	24.00	0.00	0	77074	QPSK	1	0	10 mm	back	1:1	0.286	1.000	0.286	A26
707.50	23095	Mid	LTE Band 12	10	23.0	22.93	0.04	1	77074	QPSK	25	0	10 mm	back	1:1	0.220	1.016	0.224	
707.50	23095	Mid	LTE Band 12	10	24.0	24.00	-0.10	0	77074	QPSK	1	0	10 mm	front	1:1	0.231	1.000	0.231	
707.50	23095	Mid	LTE Band 12	10	23.0	22.93	-0.03	1	77074	QPSK	25	0	10 mm	front	1:1	0.173	1.016	0.176	
707.50	23095	Mid	LTE Band 12	10	24.0	24.00	-0.03	0	77074	QPSK	1	0	10 mm	bottom	1:1	0.121	1.000	0.121	
707.50	23095	Mid	LTE Band 12	10	23.0	22.93	-0.09	1	77074	QPSK	25	0	10 mm	bottom	1:1	0.101	1.016	0.103	
707.50	23095	Mid	LTE Band 12	10	24.0	24.00	0.01	0	77074	QPSK	1	0	10 mm	right	1:1	0.256	1.000	0.256	
707.50	23095	Mid	LTE Band 12	10	23.0	22.93	0.01	1	77074	QPSK	25	0	10 mm	right	1:1	0.198	1.016	0.201	
707.50	23095	Mid	LTE Band 12	10	24.0	24.00	0.04	0	77074	QPSK	1	0	10 mm	left	1:1	0.176	1.000	0.176	
707.50	23095	Mid	LTE Band 12	10	23.0	22.93	0.04	1	77074	QPSK	25	0	10 mm	left	1:1	0.128	1.016	0.130	
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 11-22
LTE Band 13 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
782.00	23230	Mid	LTE Band 13	10	24.0	23.51	-0.02	0	77074	QPSK	1	0	10 mm	back	1:1	0.475	1.119	0.532	A28
782.00	23230	Mid	LTE Band 13	10	23.0	22.34	-0.09	1	77074	QPSK	25	0	10 mm	back	1:1	0.370	1.164	0.431	
782.00	23230	Mid	LTE Band 13	10	24.0	23.51	0.01	0	77074	QPSK	1	0	10 mm	front	1:1	0.365	1.119	0.408	
782.00	23230	Mid	LTE Band 13	10	23.0	22.34	0.00	1	77074	QPSK	25	0	10 mm	front	1:1	0.278	1.164	0.324	
782.00	23230	Mid	LTE Band 13	10	24.0	23.51	0.00	0	77074	QPSK	1	0	10 mm	bottom	1:1	0.281	1.119	0.314	
782.00	23230	Mid	LTE Band 13	10	23.0	22.34	-0.06	1	77074	QPSK	25	0	10 mm	bottom	1:1	0.216	1.164	0.251	
782.00	23230	Mid	LTE Band 13	10	24.0	23.51	0.06	0	77074	QPSK	1	0	10 mm	right	1:1	0.300	1.119	0.336	
782.00	23230	Mid	LTE Band 13	10	23.0	22.34	-0.07	1	77074	QPSK	25	0	10 mm	right	1:1	0.249	1.164	0.290	
782.00	23230	Mid	LTE Band 13	10	24.0	23.51	0.18	0	77074	QPSK	1	0	10 mm	left	1:1	0.144	1.119	0.161	
782.00	23230	Mid	LTE Band 13	10	23.0	22.34	0.02	1	77074	QPSK	25	0	10 mm	left	1:1	0.107	1.164	0.125	
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 11-23
LTE Band 26 (Cell) Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.84	0.01	0	76720	QPSK	1	0	10 mm	back	1:1	0.500	1.038	0.519	A30
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.71	0.01	1	76720	QPSK	36	0	10 mm	back	1:1	0.396	1.069	0.423	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.84	-0.05	0	76720	QPSK	1	0	10 mm	front	1:1	0.386	1.038	0.401	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.71	-0.01	1	76720	QPSK	36	0	10 mm	front	1:1	0.308	1.069	0.329	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.84	-0.03	0	76720	QPSK	1	0	10 mm	bottom	1:1	0.319	1.038	0.331	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.71	0.01	1	76720	QPSK	36	0	10 mm	bottom	1:1	0.255	1.069	0.273	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.84	-0.01	0	76720	QPSK	1	0	10 mm	right	1:1	0.366	1.038	0.380	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.71	-0.01	1	76720	QPSK	36	0	10 mm	right	1:1	0.293	1.069	0.313	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.84	0.04	0	76720	QPSK	1	0	10 mm	left	1:1	0.097	1.038	0.101	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.71	-0.02	1	76720	QPSK	36	0	10 mm	left	1:1	0.075	1.069	0.080	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Body											
Spatial Peak								1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population								averaged over 1 gram											

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Table 11-24
LTE Band 66 (AWS) Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
1720.00	132072	Low	LTE Band 66 (AWS)	20	20.5	20.24	0.03	0	39099	QPSK	1	99	10 mm	back	1:1	0.418	1.062	0.444	
1720.00	132072	Low	LTE Band 66 (AWS)	20	20.5	20.15	0.05	0	39099	QPSK	50	0	10 mm	back	1:1	0.389	1.084	0.422	
1720.00	132072	Low	LTE Band 66 (AWS)	20	20.5	20.24	0.04	0	39099	QPSK	1	99	10 mm	front	1:1	0.359	1.062	0.381	
1720.00	132072	Low	LTE Band 66 (AWS)	20	20.5	20.15	-0.03	0	39099	QPSK	50	0	10 mm	front	1:1	0.351	1.084	0.380	
1720.00	132072	Low	LTE Band 66 (AWS)	20	20.5	20.24	-0.05	0	39099	QPSK	1	99	10 mm	bottom	1:1	0.580	1.062	0.616	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.5	19.66	0.04	0	39099	QPSK	1	99	10 mm	bottom	1:1	0.593	1.213	0.719	
1770.00	132572	High	LTE Band 66 (AWS)	20	20.5	19.87	-0.12	0	39099	QPSK	1	99	10 mm	bottom	1:1	0.700	1.156	0.809	A32
1720.00	132072	Low	LTE Band 66 (AWS)	20	20.5	20.15	-0.02	0	39099	QPSK	50	0	10 mm	bottom	1:1	0.548	1.084	0.594	
1720.00	132072	Low	LTE Band 66 (AWS)	20	20.5	20.14	-0.03	0	39099	QPSK	100	0	10 mm	bottom	1:1	0.561	1.086	0.609	
1720.00	132072	Low	LTE Band 66 (AWS)	20	20.5	20.24	0.19	0	39099	QPSK	1	99	10 mm	right	1:1	0.054	1.062	0.057	
1720.00	132072	Low	LTE Band 66 (AWS)	20	20.5	20.15	0.16	0	39099	QPSK	50	0	10 mm	right	1:1	0.049	1.084	0.053	
1720.00	132072	Low	LTE Band 66 (AWS)	20	20.5	20.24	-0.01	0	39099	QPSK	1	99	10 mm	left	1:1	0.108	1.062	0.115	
1720.00	132072	Low	LTE Band 66 (AWS)	20	20.5	20.15	-0.01	0	39099	QPSK	50	0	10 mm	left	1:1	0.108	1.084	0.117	
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 2 (PCS) Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
1860.00	18700	Low	LTE Band 2 (PCS)	20	20.0	19.58	0.03	0	76720	QPSK	1	50	10 mm	back	1:1	0.525	1.102	0.579	
1860.00	18700	Low	LTE Band 2 (PCS)	20	20.0	19.60	0.01	0	76720	QPSK	50	50	10 mm	back	1:1	0.521	1.096	0.571	
1860.00	18700	Low	LTE Band 2 (PCS)	20	20.0	19.58	-0.07	0	76720	QPSK	1	50	10 mm	front	1:1	0.385	1.102	0.424	
1860.00	18700	Low	LTE Band 2 (PCS)	20	20.0	19.60	-0.05	0	76720	QPSK	50	50	10 mm	front	1:1	0.380	1.096	0.416	
1860.00	18700	Low	LTE Band 2 (PCS)	20	20.0	19.58	-0.01	0	76720	QPSK	1	50	10 mm	bottom	1:1	0.787	1.102	0.867	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	20.0	19.51	-0.02	0	76720	QPSK	1	50	10 mm	bottom	1:1	0.804	1.119	0.900	
1900.00	19100	High	LTE Band 2 (PCS)	20	20.0	19.49	-0.06	0	76720	QPSK	1	50	10 mm	bottom	1:1	0.807	1.125	0.908	
1860.00	18700	Low	LTE Band 2 (PCS)	20	20.0	19.60	-0.07	0	76720	QPSK	50	50	10 mm	bottom	1:1	0.787	1.096	0.863	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	20.0	19.58	-0.06	0	76720	QPSK	50	25	10 mm	bottom	1:1	0.810	1.102	0.893	A34
1900.00	19100	High	LTE Band 2 (PCS)	20	20.0	19.47	-0.05	0	76720	QPSK	50	0	10 mm	bottom	1:1	0.803	1.130	0.907	
1860.00	18700	Low	LTE Band 2 (PCS)	20	20.0	19.57	-0.01	0	76720	QPSK	100	0	10 mm	bottom	1:1	0.779	1.104	0.860	
1860.00	18700	Low	LTE Band 2 (PCS)	20	20.0	19.58	0.03	0	76720	QPSK	1	50	10 mm	right	1:1	0.091	1.102	0.100	
1860.00	18700	Low	LTE Band 2 (PCS)	20	20.0	19.60	0.01	0	76720	QPSK	50	50	10 mm	right	1:1	0.089	1.096	0.098	
1860.00	18700	Low	LTE Band 2 (PCS)	20	20.0	19.58	0.00	0	76720	QPSK	1	50	10 mm	left	1:1	0.090	1.102	0.099	
1860.00	18700	Low	LTE Band 2 (PCS)	20	20.0	19.60	-0.07	0	76720	QPSK	50	50	10 mm	left	1:1	0.087	1.096	0.095	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak								Body 1.6 W/kg (mW/g) averaged over 1 gram											
Uncontrolled Exposure/General Population																			

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Table 11-26
LTE Band 41 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #	
MHz	Ch.														(W/kg)		(W/kg)		
2506.00	39750	Low	LTE Band 41	20	22.5	22.21	-0.02	0	76720	QPSK	1	99	10 mm	back	1:1.58	0.317	1.069	0.339	
2506.00	39750	Low	LTE Band 41	20	21.5	21.10	0.03	1	76720	QPSK	50	50	10 mm	back	1:1.58	0.253	1.096	0.277	
2506.00	39750	Low	LTE Band 41	20	22.5	22.21	-0.03	0	76720	QPSK	1	99	10 mm	front	1:1.58	0.329	1.069	0.352	
2506.00	39750	Low	LTE Band 41	20	21.5	21.10	-0.04	1	76720	QPSK	50	50	10 mm	front	1:1.58	0.268	1.096	0.294	
2506.00	39750	Low	LTE Band 41	20	22.5	22.21	-0.08	0	76720	QPSK	1	99	10 mm	bottom	1:1.58	0.720	1.069	0.770	A36
2549.50	40185	Low-Mid	LTE Band 41	20	22.5	21.92	0.07	0	76720	QPSK	1	50	10 mm	bottom	1:1.58	0.582	1.143	0.665	
2593.00	40620	Mid	LTE Band 41	20	22.5	21.96	0.10	0	76720	QPSK	1	0	10 mm	bottom	1:1.58	0.467	1.132	0.529	
2636.50	41055	Mid-High	LTE Band 41	20	22.5	21.68	0.08	0	76720	QPSK	1	0	10 mm	bottom	1:1.58	0.361	1.208	0.436	
2680.00	41490	High	LTE Band 41	20	22.5	22.04	0.11	0	76720	QPSK	1	99	10 mm	bottom	1:1.58	0.300	1.112	0.334	
2506.00	39750	Low	LTE Band 41	20	21.5	21.10	0.13	1	76720	QPSK	50	50	10 mm	bottom	1:1.58	0.564	1.096	0.618	
2549.50	40185	Low-Mid	LTE Band 41	20	21.5	20.88	-0.10	1	76720	QPSK	50	50	10 mm	bottom	1:1.58	0.552	1.153	0.636	
2593.00	40620	Mid	LTE Band 41	20	21.5	20.93	-0.12	1	76720	QPSK	50	50	10 mm	bottom	1:1.58	0.410	1.140	0.467	
2636.50	41055	Mid-High	LTE Band 41	20	21.5	20.61	-0.15	1	76720	QPSK	50	25	10 mm	bottom	1:1.58	0.326	1.227	0.400	
2680.00	41490	High	LTE Band 41	20	21.5	21.03	-0.15	1	76720	QPSK	50	25	10 mm	bottom	1:1.58	0.289	1.114	0.322	
2506.00	39750	Low	LTE Band 41	20	21.5	21.02	0.12	1	76720	QPSK	100	0	10 mm	bottom	1:1.58	0.558	1.117	0.623	
2506.00	39750	Low	LTE Band 41	20	22.5	22.21	0.03	0	76720	QPSK	1	99	10 mm	right	1:1.58	0.117	1.069	0.125	
2506.00	39750	Low	LTE Band 41	20	21.5	21.10	-0.01	1	76720	QPSK	50	50	10 mm	right	1:1.58	0.094	1.096	0.103	
2506.00	39750	Low	LTE Band 41	20	22.5	22.21	0.03	0	76720	QPSK	1	99	10 mm	left	1:1.58	0.249	1.069	0.266	
2506.00	39750	Low	LTE Band 41	20	21.5	21.10	-0.02	1	76720	QPSK	50	50	10 mm	left	1:1.58	0.218	1.096	0.239	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-27
WLAN Hotspot SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	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	18.5	18.34	0.07	10 mm	76720	1	back	99.7	0.309	-	1.038	1.003	-	
2437	6	802.11b	DSSS	22	18.5	18.34	-0.03	10 mm	76720	1	front	99.7	0.297	-	1.038	1.003	-	
2437	6	802.11b	DSSS	22	18.5	18.34	0.18	10 mm	76720	1	top	99.7	0.423	0.339	1.038	1.003	0.353	A38
2437	6	802.11b	DSSS	22	18.5	18.34	-0.18	10 mm	76720	1	left	99.7	0.167	-	1.038	1.003	-	
5755	151	802.11n	OFDM	40	14.0	13.82	0.03	10 mm	76217	13.5	back	96.3	2.414	0.892	1.042	1.038	0.965	A40
5795	159	802.11n	OFDM	40	14.0	13.98	0.10	10 mm	76217	13.5	back	96.3	2.296	0.817	1.005	1.038	0.852	
5795	159	802.11n	OFDM	40	14.0	13.98	-0.14	10 mm	76217	13.5	front	96.3	0.153	0.064	1.005	1.038	0.067	
5795	159	802.11n	OFDM	40	14.0	13.98	-0.12	10 mm	76217	13.5	top	96.3	0.216	0.080	1.005	1.038	0.083	
5795	159	802.11n	OFDM	40	14.0	13.98	0.00	10 mm	76217	13.5	left	96.3	0.125	-	1.005	1.038	-	
5755	151	802.11n	OFDM	40	14.0	13.82	0.02	10 mm	76217	13.5	back	96.3	1.598	0.860	1.042	1.038	0.930	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Body										
Spatial Peak								1.6 W/kg (mW/g)										
Uncontrolled Exposure/General Population								averaged over 1 gram										

Note: Blue entry represents variability measurement.

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**Table 11-28
DSS Hotspot SAR**

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2441	39	Bluetooth	FHSS	9.5	9.02	0.01	10 mm	77264	1	back	76.8	0.021	1.117	1.302	0.031	
2441	39	Bluetooth	FHSS	9.5	9.02	-0.12	10 mm	77264	1	front	76.8	0.014	1.117	1.302	0.020	
2441	39	Bluetooth	FHSS	9.5	9.02	-0.16	10 mm	77264	1	top	76.8	0.027	1.117	1.302	0.039	A42
2441	39	Bluetooth	FHSS	9.5	9.02	-0.16	10 mm	77264	1	left	76.8	0.009	1.117	1.302	0.013	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram									

11.4 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. 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.

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 $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel was used.

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UMTS Notes:

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

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r04. The general test procedures used for testing can be found in Section 8.5.4.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
3. A-MPR was disabled for all SAR tests by setting NS=01 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
4. Per FCC KDB Publication 447498 D01v06, when the reported (scaled) for LTE Band 41 SAR measured at the highest output power channel in a given a test configuration was > 0.6 W/kg for 1g evaluations, testing at the other channels was required for such test configurations.
5. TDD LTE was tested per the guidance provided in FCC KDB Publication 941225 D05v02r04. Testing was performed using UL-DL configuration 0 with 6 UL subframes and 2 S subframes using extended cyclic prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633.
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.

WLAN Notes:

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

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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.

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. BT SAR was evaluated for BT BR tethering applications.

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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 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 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	GSM 850	0.258	0.505	0.763
	GSM 1900	0.113	0.505	0.618
	UMTS 850	0.256	0.505	0.761
	UMTS 1750	0.180	0.505	0.685
	UMTS 1900	0.215	0.505	0.720
	LTE Band 12	0.132	0.505	0.637
	LTE Band 13	0.179	0.505	0.684
	LTE Band 26 (Cell)	0.231	0.505	0.736
	LTE Band 66 (AWS)	0.172	0.505	0.677
	LTE Band 2 (PCS)	0.228	0.505	0.733
	LTE Band 41	0.034	0.505	0.539

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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 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	GSM 850	0.258	0.462	0.720
	GSM 1900	0.113	0.462	0.575
	UMTS 850	0.256	0.462	0.718
	UMTS 1750	0.180	0.462	0.642
	UMTS 1900	0.215	0.462	0.677
	LTE Band 12	0.132	0.462	0.594
	LTE Band 13	0.179	0.462	0.641
	LTE Band 26 (Cell)	0.231	0.462	0.693
	LTE Band 66 (AWS)	0.172	0.462	0.634
	LTE Band 2 (PCS)	0.228	0.462	0.690
	LTE Band 41	0.034	0.462	0.496

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	0.258	0.239	0.497
	GSM 1900	0.113	0.239	0.352
	UMTS 850	0.256	0.239	0.495
	UMTS 1750	0.180	0.239	0.419
	UMTS 1900	0.215	0.239	0.454
	LTE Band 12	0.132	0.239	0.371
	LTE Band 13	0.179	0.239	0.418
	LTE Band 26 (Cell)	0.231	0.239	0.470
	LTE Band 66 (AWS)	0.172	0.239	0.411
	LTE Band 2 (PCS)	0.228	0.239	0.467
	LTE Band 41	0.034	0.239	0.273

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12.4 Body-Worn Simultaneous Transmission Analysis

Table 12-4
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 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body-Worn	GSM 850	0.400	0.164	0.564
	GSM 1900	0.298	0.164	0.462
	UMTS 850	0.439	0.164	0.603
	UMTS 1750	0.569	0.164	0.733
	UMTS 1900	0.761	0.164	0.925
	LTE Band 12	0.225	0.164	0.389
	LTE Band 13	0.325	0.164	0.489
	LTE Band 26 (Cell)	0.302	0.164	0.466
	LTE Band 66 (AWS)	0.484	0.164	0.648
	LTE Band 2 (PCS)	0.729	0.164	0.893
	LTE Band 41	0.133	0.164	0.297

Table 12-5
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 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body-Worn	GSM 850	0.400	0.408	0.808
	GSM 1900	0.298	0.408	0.706
	UMTS 850	0.439	0.408	0.847
	UMTS 1750	0.569	0.408	0.977
	UMTS 1900	0.761	0.408	1.169
	LTE Band 12	0.225	0.408	0.633
	LTE Band 13	0.325	0.408	0.733
	LTE Band 26 (Cell)	0.302	0.408	0.710
	LTE Band 66 (AWS)	0.484	0.408	0.892
	LTE Band 2 (PCS)	0.729	0.408	1.137
	LTE Band 41	0.133	0.408	0.541

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Table 12-6
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	0.400	0.015	0.415
	GSM 1900	0.298	0.015	0.313
	UMTS 850	0.439	0.015	0.454
	UMTS 1750	0.569	0.015	0.584
	UMTS 1900	0.761	0.015	0.776
	LTE Band 12	0.225	0.015	0.240
	LTE Band 13	0.325	0.015	0.340
	LTE Band 26 (Cell)	0.302	0.015	0.317
	LTE Band 66 (AWS)	0.484	0.015	0.499
	LTE Band 2 (PCS)	0.729	0.015	0.744
	LTE Band 41	0.133	0.015	0.148

12.5 Hotspot SAR Simultaneous Transmission Analysis

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

Per FCC KDB Publication 648474 D04 Handset SAR v01r01, the devices edges with antennas more than 2.5 cm from edge are not required to be evaluated for SAR (“-”).

Table 12-7
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 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	GPRS 850	0.943	0.353	1.296
	GPRS 1900	0.956	0.353	1.309
	UMTS 850	0.681	0.353	1.034
	UMTS 1750	0.577	0.353	0.930
	UMTS 1900	0.977	0.353	1.330
	LTE Band 12	0.286	0.353	0.639
	LTE Band 13	0.532	0.353	0.885
	LTE Band 26 (Cell)	0.519	0.353	0.872
	LTE Band 66 (AWS)	0.809	0.353	1.162
	LTE Band 2 (PCS)	0.908	0.353	1.261
	LTE Band 41	0.770	0.353	1.123

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Table 12-8
Simultaneous Transmission Scenario with 5 GHz WLAN (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	GPRS 850	0.943	0.965	See Table Below
	GPRS 1900	0.956	0.965	See Table Below
	UMTS 850	0.681	0.965	See Table Below
	UMTS 1750	0.577	0.965	1.542
	UMTS 1900	0.977	0.965	See Table Below
	LTE Band 12	0.286	0.965	1.251
	LTE Band 13	0.532	0.965	1.497
	LTE Band 26 (Cell)	0.519	0.965	1.484
	LTE Band 66 (AWS)	0.809	0.965	See Table Below
	LTE Band 2 (PCS)	0.908	0.965	See Table Below
	LTE Band 41	0.770	0.965	See Table Below

Simult Tx	Configuration	GPRS 850 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	SPLSR	Simult Tx	Configuration	GPRS 1900 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2				1	2	1+2
Hotspot SAR	Back	0.943	0.965	See Note 1	0.02	Hotspot SAR	Back	0.573	0.965	1.538
	Front	0.722	0.067	0.789	N/A		Front	0.501	0.067	0.568
	Top	-	0.083	0.083	N/A		Top	-	0.083	0.083
	Bottom	0.492	-	0.492	N/A		Bottom	0.956	-	0.956
	Right	0.753	-	0.753	N/A		Right	0.114	-	0.114
	Left	0.237	0.965*	1.202	N/A		Left	0.075	0.965*	1.040

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	SPLSR	Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2				1	2	1+2
Hotspot SAR	Back	0.681	0.965	See Note 1	0.01	Hotspot SAR	Back	0.549	0.965	1.514
	Front	0.586	0.067	0.653	N/A		Front	0.423	0.067	0.490
	Top	-	0.083	0.083	N/A		Top	-	0.083	0.083
	Bottom	0.415	-	0.415	N/A		Bottom	0.977	-	0.977
	Right	0.489	-	0.489	N/A		Right	0.092	-	0.092
	Left	0.120	0.965*	1.085	N/A		Left	0.083	0.965*	1.048

Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
Hotspot SAR	Back	0.444	0.965	1.409	Hotspot SAR	Back	0.579	0.965	1.544
	Front	0.381	0.067	0.448		Front	0.424	0.067	0.491
	Top	-	0.083	0.083		Top	-	0.083	0.083
	Bottom	0.809	-	0.809		Bottom	0.908	-	0.908
	Right	0.057	-	0.057		Right	0.100	-	0.100
	Left	0.117	0.965*	1.082		Left	0.099	0.965*	1.064

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	Back	0.339	0.965	1.304
	Front	0.352	0.067	0.419
	Top	-	0.083	0.083
	Bottom	0.770	-	0.770
	Right	0.125	-	0.125
	Left	0.266	0.965*	1.231

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Table 12-9
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	0.943	0.039	0.982
	GPRS 1900	0.956	0.039	0.995
	UMTS 850	0.681	0.039	0.720
	UMTS 1750	0.577	0.039	0.616
	UMTS 1900	0.977	0.039	1.016
	LTE Band 12	0.286	0.039	0.325
	LTE Band 13	0.532	0.039	0.571
	LTE Band 26 (Cell)	0.519	0.039	0.558
	LTE Band 66 (AWS)	0.809	0.039	0.848
	LTE Band 2 (PCS)	0.908	0.039	0.947
	LTE Band 41	0.770	0.039	0.809

Notes:

1. No evaluation was performed to determine the aggregate 1g SAR for these configurations as the SPLS ratio between the antenna pairs was not greater than 0.04 per FCC KDB 447498 D01v06. See Section 12.6 for detailed SPLS ratio analysis.

12.6 SPLSR Evaluation and Analysis

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

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

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

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12.6.1 Back Side SPLSR Evaluation and Analysis

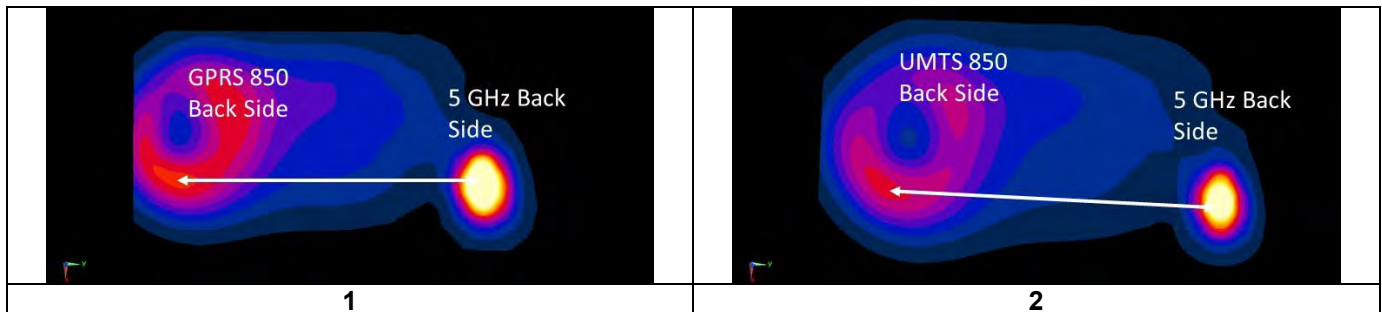
Table 12-10
Peak SAR Locations for Body Back Side (Hotspot 10 mm)

Mode/Band	x (mm)	y (mm)	Reported SAR (W/kg)
5 GHz WLAN	3.00	65.00	0.965
GSM 850	-0.50	-81.50	0.943
UMTS 850	-2.00	-78.50	0.681

Table 12-11
Back Side (Hotspot 10 mm) SAR to Peak Location Separation Ratio Calculations

Antenna Pair		Standalone 1g SAR (W/kg)		Standalone SAR Sum (W/kg)	Peak SAR Separation Distance (mm)	SPLS Ratio	Plot Number
Ant "a"	Ant "b"	a	b	a+b	D _{a-b}	$(a+b)^{1.5}/D_{a-b}$	
5 GHz WLAN	GSM 850	0.965	0.943	1.908	146.54	0.02	1
5 GHz WLAN	UMTS 850	0.965	0.681	1.646	143.59	0.01	2

Table 12-12
Back Side (Hotspot 10 mm) SAR to Peak Location Separation Ratio Plots



12.7 Simultaneous Transmission Conclusion

The above numerical summed SAR results and SPLSR analysis are sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v06 and IEEE 1528- 2013 Section 6.3.4.1.

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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

Table 13-1
Body SAR Measurement Variability Results

BODY VARIABILITY RESULTS														
Band	FREQUENCY		Mode	Service	Data Rate (Mbps)	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	1907.60	9538	UMTS 1900	RMC	N/A	bottom	10 mm	0.955	0.907	1.05	N/A	N/A	N/A	N/A
5750	5755.00	151	802.11n, 40 MHz Bandwidth	OFDM	13.5	back	10 mm	0.892	0.860	1.04	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT							Body							
Spatial Peak							1.6 W/kg (mW/g)							
Uncontrolled Exposure/General Population							averaged over 1 gram							

13.2 Measurement Uncertainty

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

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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	8753ES	S-Parameter Vector Network Analyzer	8/17/2017	Annual	8/17/2018	MY40003841
Agilent	8753ES	S-Parameter Network Analyzer	9/14/2017	Annual	9/14/2018	US39170118
Agilent	E4432B	ESG-D Series Signal Generator	3/24/2017	Annual	3/24/2018	US40053896
Agilent	E4438C	ESG Vector Signal Generator	3/23/2017	Annual	3/23/2018	MY47270002
Agilent	E5515C	Wireless Communications Test Set	12/12/2016	Annual	12/12/2017	GB44400860
Agilent	E8257D	(250kHz-20GHz) Signal Generator	3/22/2017	Annual	3/22/2018	MY45470194
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Agilent	N5182A	MXG Vector Signal Generator	2/28/2017	Annual	2/28/2018	MY47420800
Agilent	N9020A	MXA Signal Analyzer	10/28/2016	Annual	10/28/2017	US46470561
Amplifier Research	1551G6	Amplifier	CBT	N/A	CBT	433971
Anritsu	MA24106A	USB Power Sensor	3/20/2017	Annual	3/20/2018	1344555
Anritsu	MA24106A	USB Power Sensor	3/20/2017	Annual	3/20/2018	1349501
Anritsu	MA2411B	Pulse Power Sensor	2/10/2017	Annual	2/10/2018	1207364
Anritsu	MA2411B	Pulse Power Sensor	2/10/2017	Annual	2/10/2018	1339018
Anritsu	ML2495A	Power Meter	10/22/2017	Annual	10/22/2018	941001
Anritsu	MT8820C	Radio Communication Analyzer	11/4/2016	Annual	11/4/2017	6201144418
COMTech	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M155A00-009
Control Company	4040	Therm./Clock/Humidity Monitor	3/31/2017	Biennial	3/31/2019	170232394
Control Company	4352	Ultra Long Stem Thermometer	3/8/2016	Biennial	3/8/2018	160261729
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mitutoyo	CD-6"CSX	Digital Caliper	3/2/2016	Biennial	3/2/2018	13264162
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Pasternack	NC-100	Torque Wrench	11/6/2015	Biennial	11/6/2017	N/A
Pasternack	PEZ208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	12/12/2016	Annual	12/12/2017	833855/0010
Rohde & Schwarz	CMW500	Radio Communication Tester	3/29/2017	Annual	3/29/2018	128633
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	7/20/2017	Annual	7/20/2018	132885
Rohde & Schwarz	CMW500	Radio Communication Tester	8/2/2017	Annual	8/2/2018	116743
Seekonk	NC-100	Torque Wrench	11/6/2015	Biennial	11/6/2017	N/A
Seekonk	NC-100	Torque Wrench 5/16", 8" lbs	3/2/2016	Biennial	3/2/2018	N/A
Seekonk	NC-100	Torque Wrench (8" lb)	8/30/2016	Biennial	8/30/2018	N/A
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/10/2017	Annual	5/10/2018	1070
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	8/8/2017	Annual	8/8/2018	1041
SPEAG	ES3DV3	SAR Probe	8/14/2017	Annual	8/14/2018	3332
SPEAG	EX3DV4	SAR Probe	4/18/2017	Annual	4/18/2018	7406
SPEAG	ES3DV3	SAR Probe	3/14/2017	Annual	3/14/2018	3209
SPEAG	ES3DV3	SAR Probe	2/10/2017	Annual	2/10/2018	3213
SPEAG	EX3DV4	SAR Probe	2/13/2017	Annual	2/13/2018	3914
SPEAG	ES3DV3	SAR Probe	1/13/2017	Annual	1/13/2018	3288
SPEAG	ES3DV3	SAR Probe	3/14/2017	Annual	3/14/2018	3319
SPEAG	EX3DV4	SAR Probe	8/16/2017	Annual	8/16/2018	7308
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/9/2017	Annual	8/9/2018	1323
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/11/2017	Annual	4/11/2018	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/13/2017	Annual	3/13/2018	1415
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2017	Annual	2/9/2018	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2017	Annual	2/9/2018	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/16/2017	Annual	1/16/2018	1466
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/8/2017	Annual	3/8/2018	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/14/2017	Annual	6/14/2018	1334
SPEAG	D750V3	750 MHz SAR Dipole	3/7/2017	Annual	3/7/2018	1054
SPEAG	D835V2	835 MHz SAR Dipole	7/13/2016	Biennial	7/13/2018	4d047
SPEAG	D1750V2	1750 MHz SAR Dipole	7/14/2016	Biennial	7/14/2018	1150
SPEAG	D1900V2	1900 MHz SAR Dipole	7/8/2016	Biennial	7/8/2018	5d080
SPEAG	D2450V2	2450 MHz SAR Dipole	8/17/2017	Annual	8/17/2018	719
SPEAG	D2600V2	2600 MHz SAR Dipole	7/10/2017	Annual	7/10/2018	1126
SPEAG	D5GHzV2	5 GHz SAR Dipole	9/21/2016	Biennial	9/21/2018	1191
SPEAG	D750V3	750 MHz SAR Dipole	1/11/2017	Annual	1/11/2018	1003
SPEAG	D835V2	835 MHz SAR Dipole	7/11/2017	Annual	7/11/2018	4d133
SPEAG	D835V2	835 MHz SAR Dipole	1/11/2017	Annual	1/11/2018	4d132
SPEAG	D2450V2	2450 MHz SAR Dipole	7/25/2016	Biennial	7/25/2018	981
SPEAG	D2600V2	2600 MHz SAR Dipole	6/7/2017	Annual	6/7/2018	1064
SPEAG	D5GHzV2	5 GHz SAR Dipole	8/15/2017	Annual	8/15/2018	1237

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

2. Each equipment item was used solely within its respective calibration period.

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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 Uncertainty	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	

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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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76217

Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.896 \text{ S/m}$; $\epsilon_r = 41.141$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 10-19-2017; Ambient Temp: 22.8°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7406; ConvF(9.97, 9.97, 9.97); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535

Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

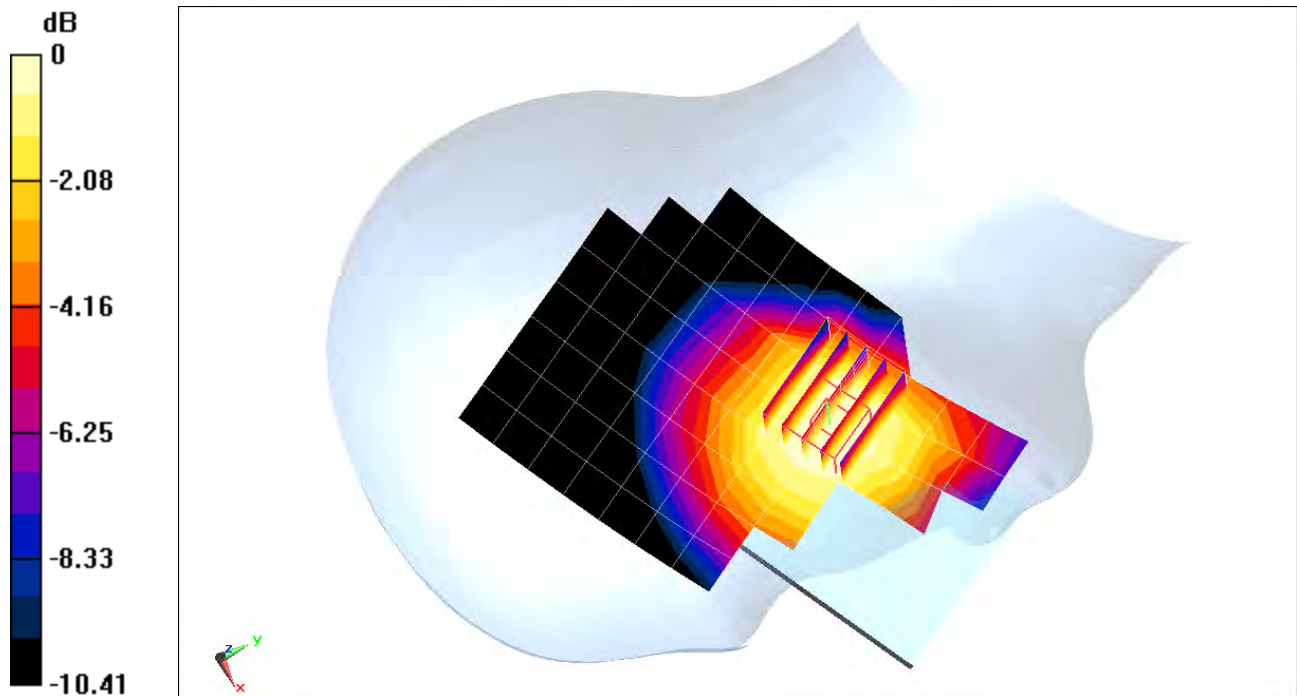
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 15.82 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.287 W/kg

SAR(1 g) = 0.224 W/kg



0 dB = 0.260 W/kg = -5.85 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76720

Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.433 \text{ S/m}$; $\epsilon_r = 39.831$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 10-21-2017; Ambient Temp: 20.7°C; Tissue Temp: 20.7°C

Probe: ES3DV3 - SN3213; ConvF(5.29, 5.29, 5.29); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

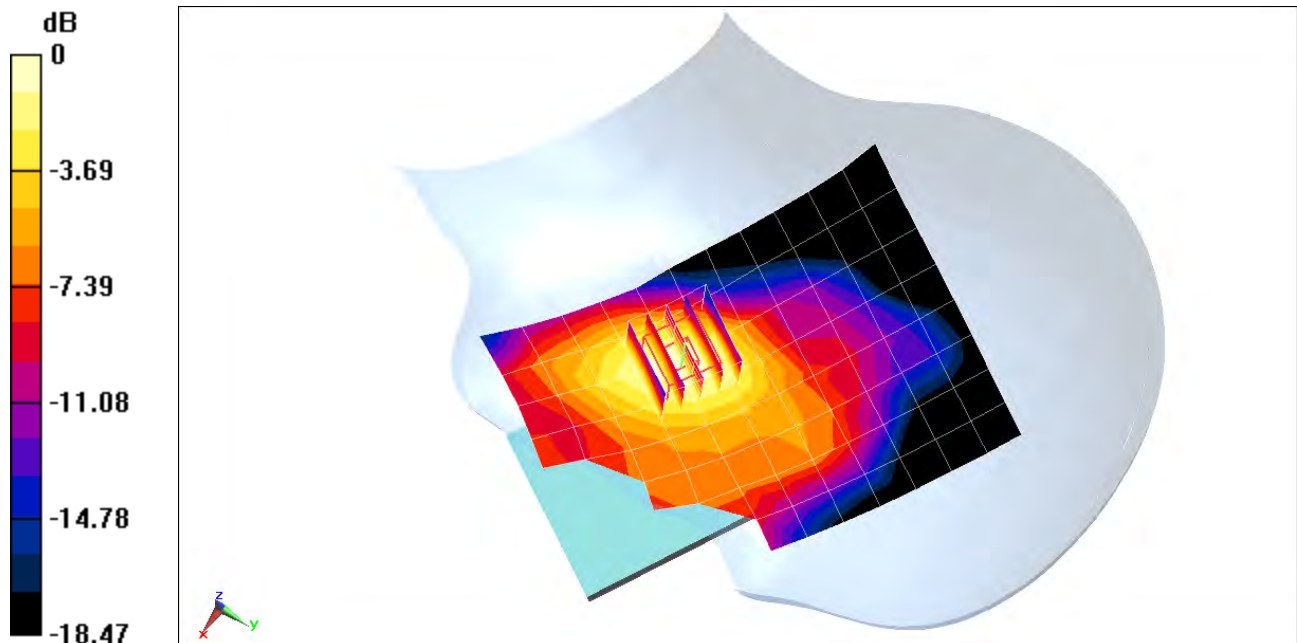
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 8.873 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.160 W/kg

SAR(1 g) = 0.104 W/kg



0 dB = 0.117 W/kg = -9.32 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 77264

Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.896 \text{ S/m}$; $\epsilon_r = 41.141$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 10-19-2017; Ambient Temp: 22.8°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7406; ConvF(9.97, 9.97, 9.97); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

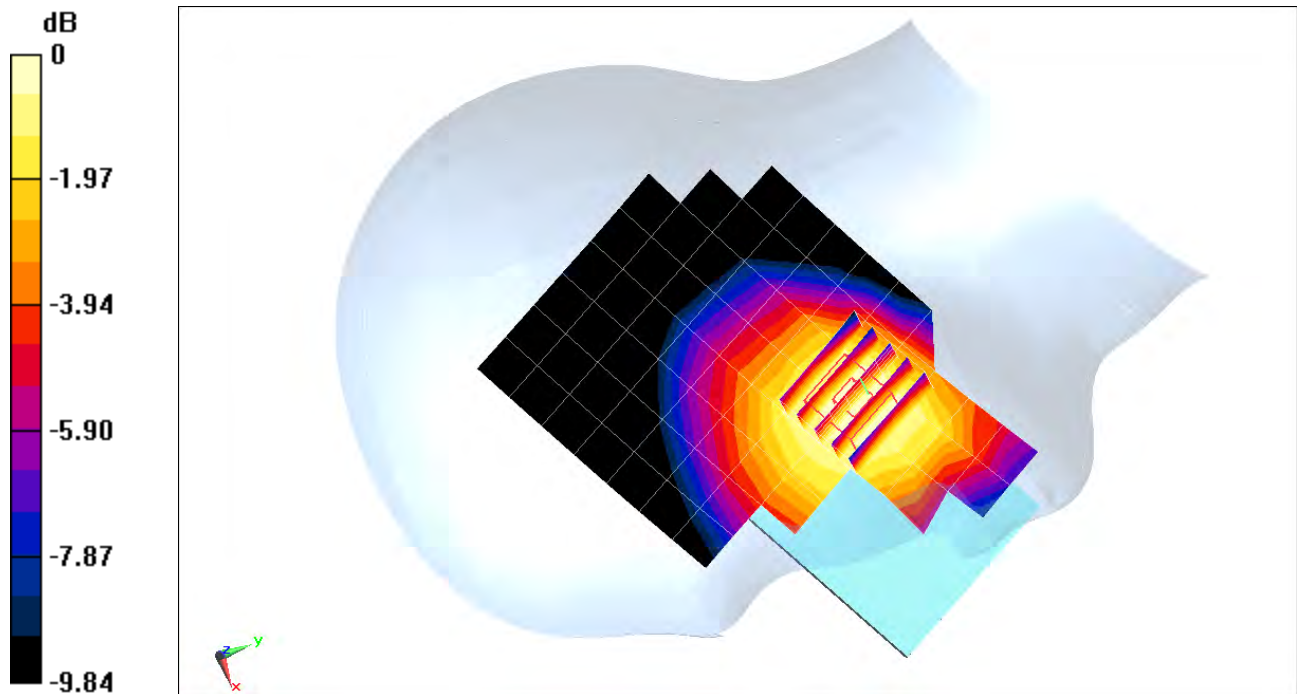
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 16.69 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.305 W/kg

SAR(1 g) = 0.241 W/kg



0 dB = 0.277 W/kg = -5.58 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 77264

Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.4 \text{ MHz}$; $\sigma = 1.366 \text{ S/m}$; $\epsilon_r = 39.862$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 10-23-2017; Ambient Temp: 22.7°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(5.5, 5.5, 5.5); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: 1800

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

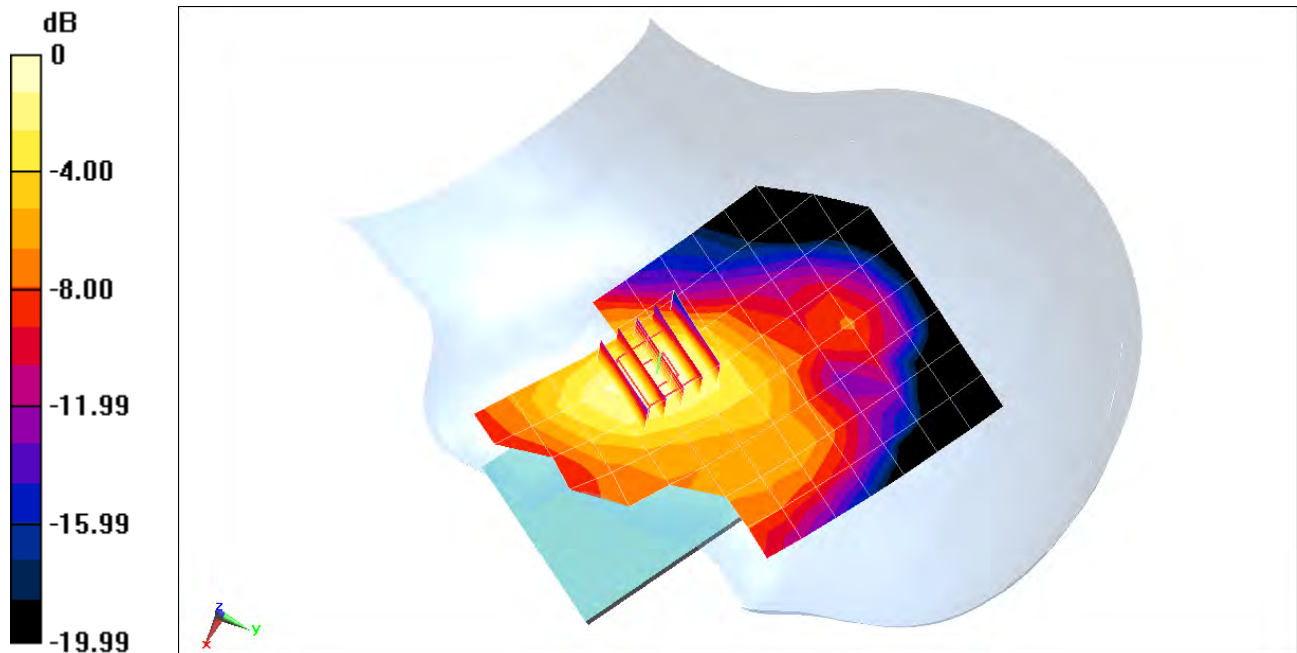
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 11.48 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.248 W/kg

SAR(1 g) = 0.161 W/kg



0 dB = 0.192 W/kg = -7.17 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76720

Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.433 \text{ S/m}$; $\epsilon_r = 39.831$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 10-21-2017; Ambient Temp: 20.7°C; Tissue Temp: 20.7°C

Probe: ES3DV3 - SN3213; ConvF(5.29, 5.29, 5.29); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

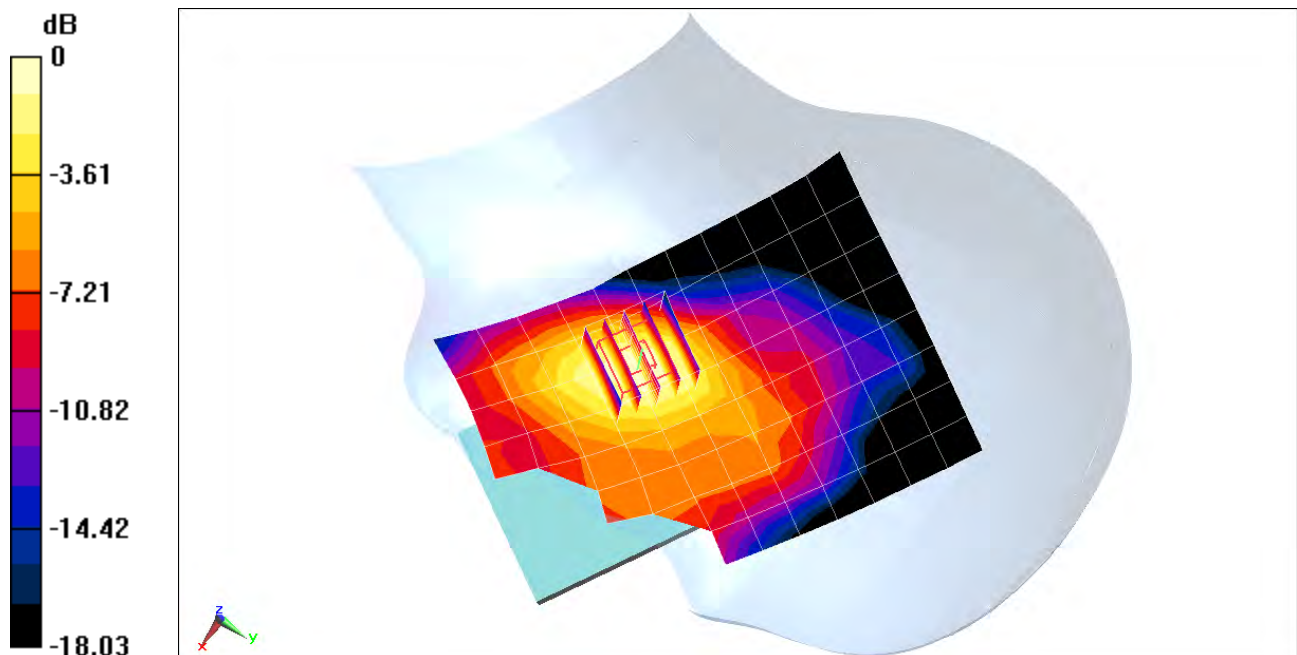
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 12.67 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.327 W/kg

SAR(1 g) = 0.211 W/kg



0 dB = 0.240 W/kg = -6.20 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76720

Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium: 750 Head Medium parameters used (interpolated):

$f = 707.5 \text{ MHz}$; $\sigma = 0.855 \text{ S/m}$; $\epsilon_r = 42.263$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 10-18-2017; Ambient Temp: 21.3°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3332; ConvF(6.81, 6.81, 6.81); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

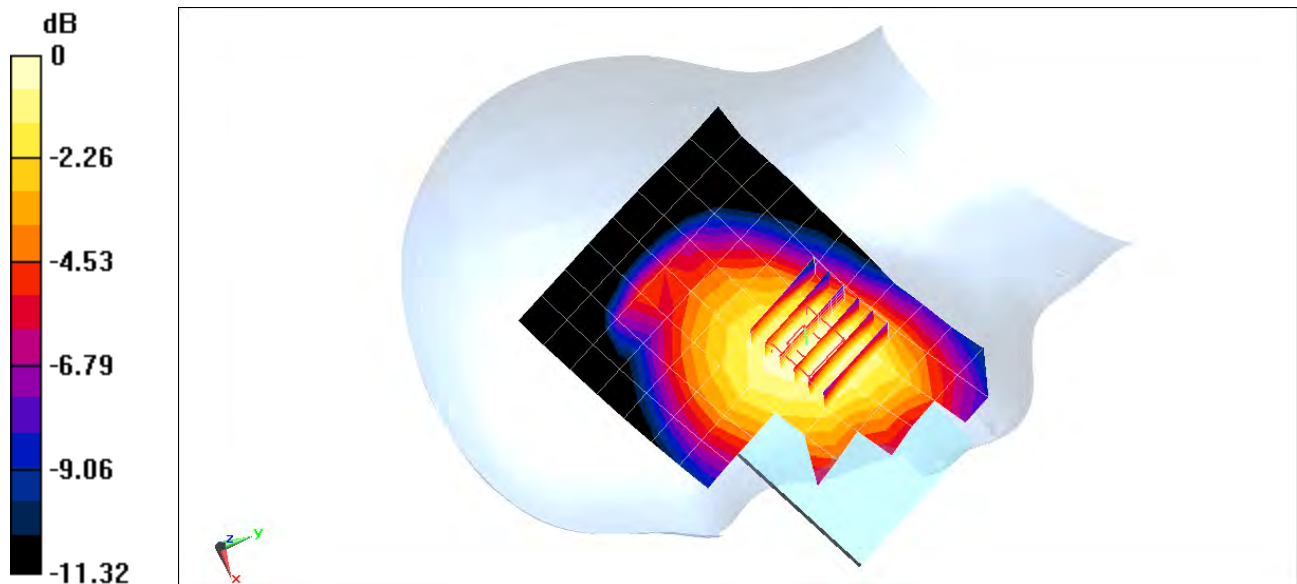
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 13.21 V/m; Power Drift = -0.20 dB

Peak SAR (extrapolated) = 0.161 W/kg

SAR(1 g) = 0.132 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76720

Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: 750 Head Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 0.924 \text{ S/m}$; $\epsilon_r = 41.213$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 10-18-2017; Ambient Temp: 21.3°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3332; ConvF(6.81, 6.81, 6.81); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 13, Right Head, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

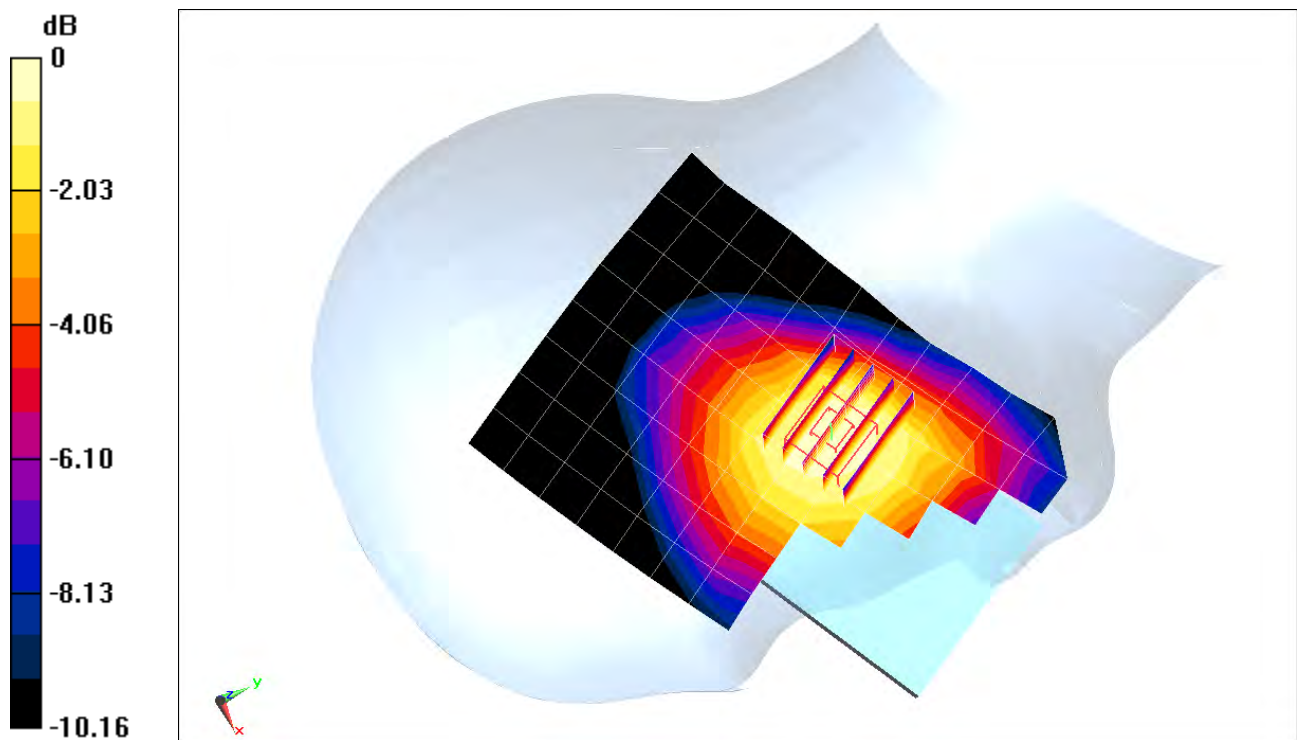
Area Scan (9x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 14.30 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.203 W/kg

SAR(1 g) = 0.160 W/kg



0 dB = 0.175 W/kg = -7.57 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76217

Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 831.5 \text{ MHz}$; $\sigma = 0.89 \text{ S/m}$; $\epsilon_r = 41.202$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 10-19-2017; Ambient Temp: 22.8°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7406; ConvF(9.97, 9.97, 9.97); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

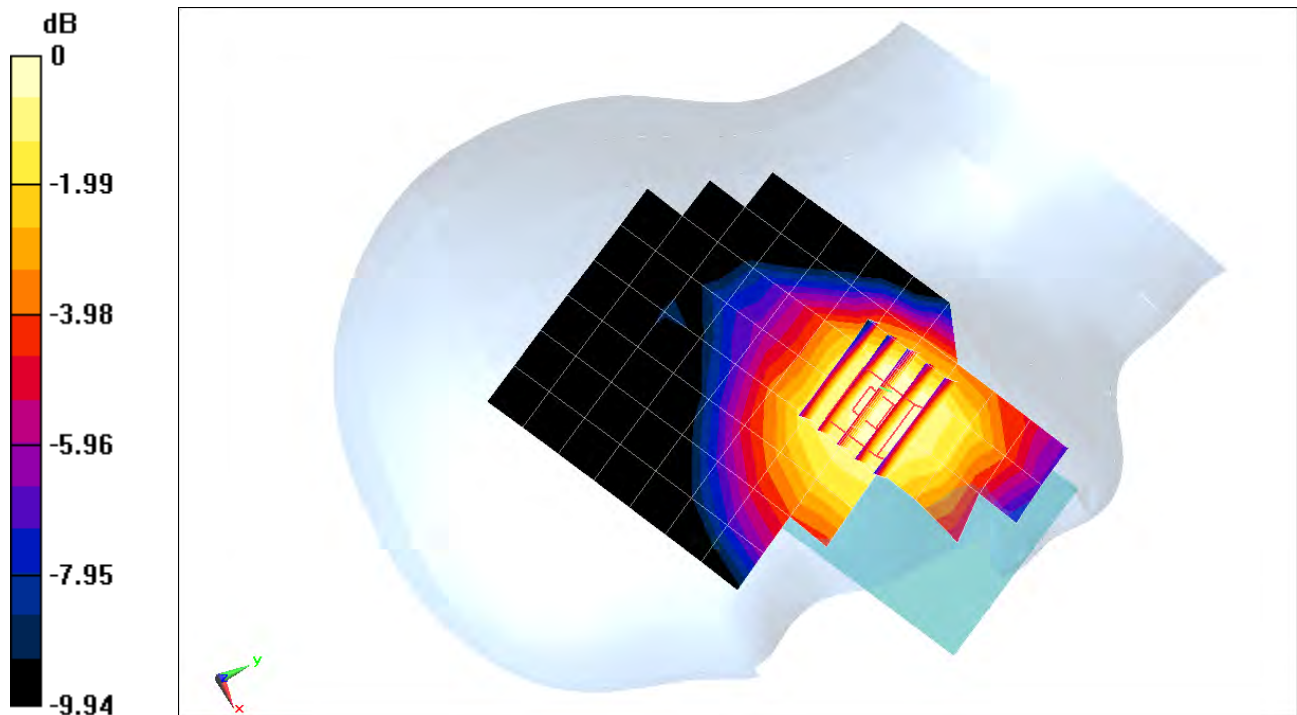
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 16.48 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.282 W/kg

SAR(1 g) = 0.223 W/kg



0 dB = 0.256 W/kg = -5.92 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 77264

Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1720 \text{ MHz}$; $\sigma = 1.353 \text{ S/m}$; $\epsilon_r = 39.915$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 10-23-2017; Ambient Temp: 22.7°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(5.5, 5.5, 5.5); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: 1800

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 66 (AWS), Left Head, Cheek, Low.ch,
20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset**

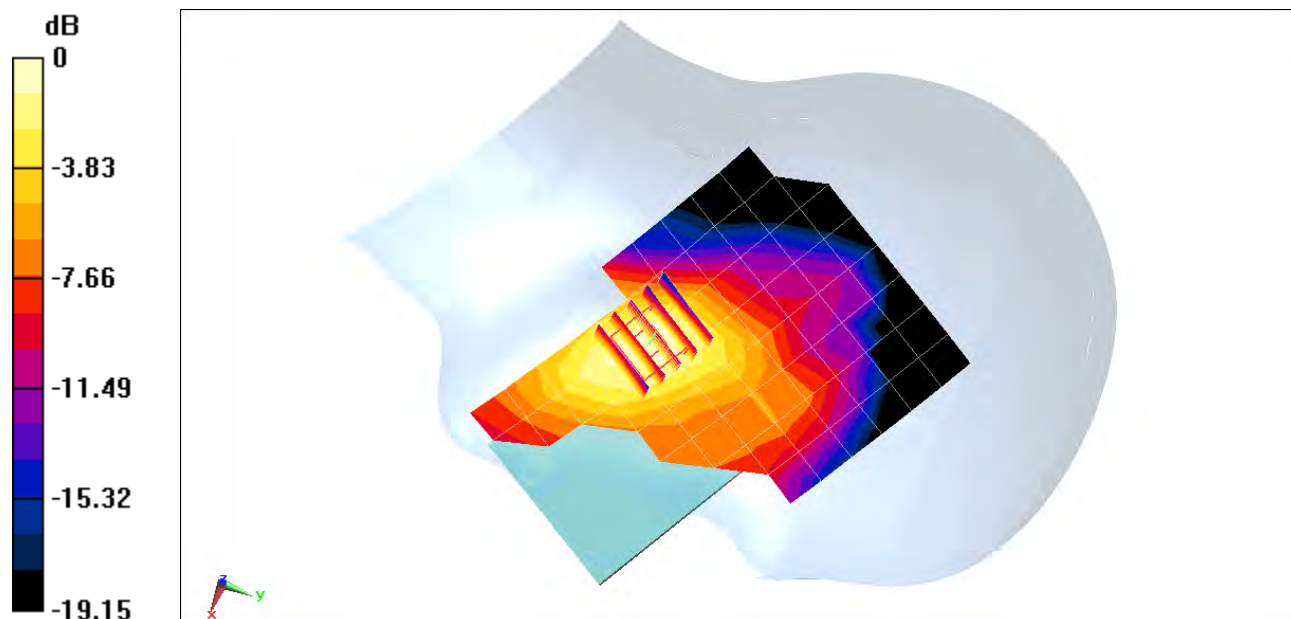
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 12.23 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.250 W/kg

SAR(1 g) = 0.163 W/kg



0 dB = 0.193 W/kg = -7.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76720

Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1860 \text{ MHz}$; $\sigma = 1.39 \text{ S/m}$; $\epsilon_r = 39.837$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

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

Probe: ES3DV3 - SN3213; ConvF(5.29, 5.29, 5.29); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 2 (PCS), Left Head, Cheek, Low.ch,
20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset**

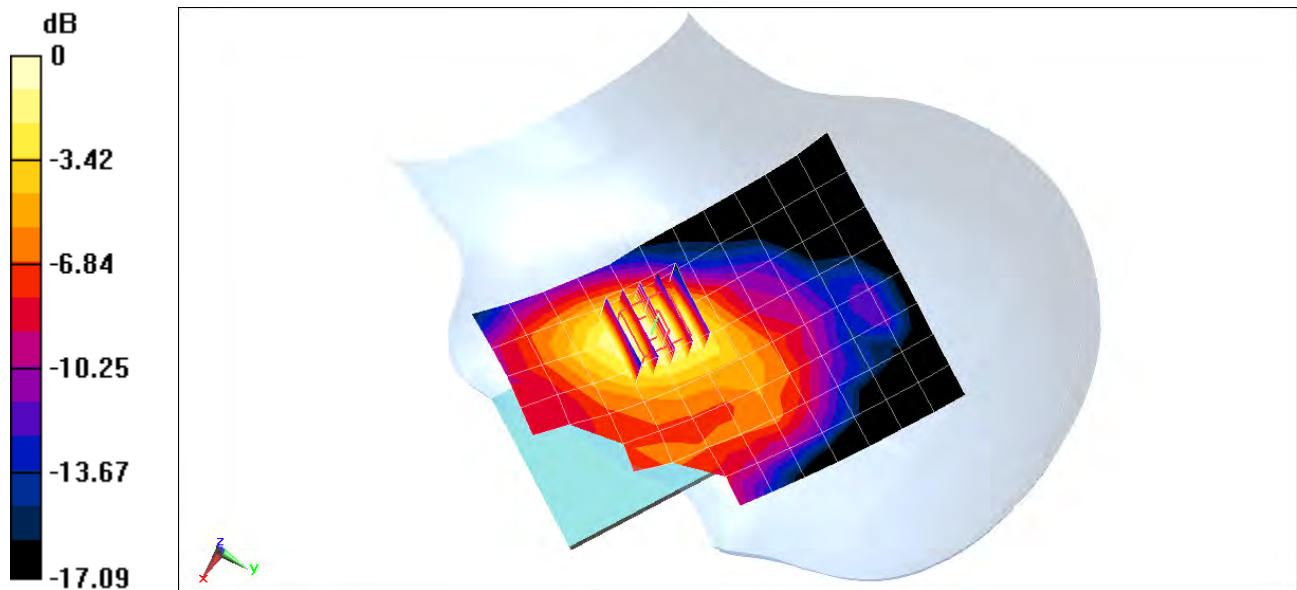
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 13.90 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.332 W/kg

SAR(1 g) = 0.219 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76720

Communication System: UID 0, LTE Band 41; Frequency: 2680 MHz; Duty Cycle: 1:1.58

Medium: 2600 MHz Head Medium parameters used (interpolated):

$f = 2680 \text{ MHz}$; $\sigma = 2.147 \text{ S/m}$; $\epsilon_r = 37.7$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 10-20-2017; Ambient Temp: 22.0°C; Tissue Temp: 20.9°C

Probe: ES3DV3 - SN3332; ConvF(4.56, 4.56, 4.56); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 41, Left Head, Cheek, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset**

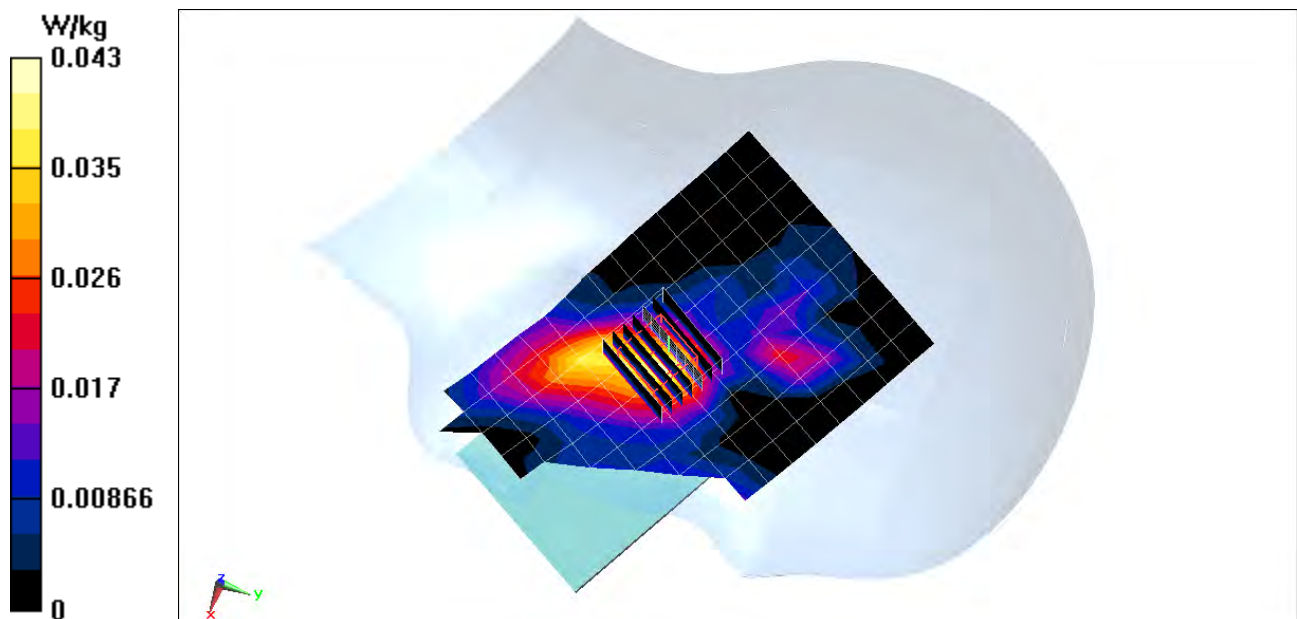
Area Scan (10x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (8x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 4.775 V/m; Power Drift = 0.19 dB

Peak SAR (extrapolated) = 0.0760 W/kg

SAR(1 g) = 0.034 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 77074

Communication System: UID 0, IEEE 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2462 \text{ MHz}$; $\sigma = 1.884 \text{ S/m}$; $\epsilon_r = 38.539$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 10-23-2017; Ambient Temp: 20.6°C; Tissue Temp: 20.5°C

Probe: ES3DV3 - SN3332; ConvF(4.68, 4.68, 4.68); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11b, 22 MHz Bandwidth, Right Head, Cheek, Ch 11, 1 Mbps

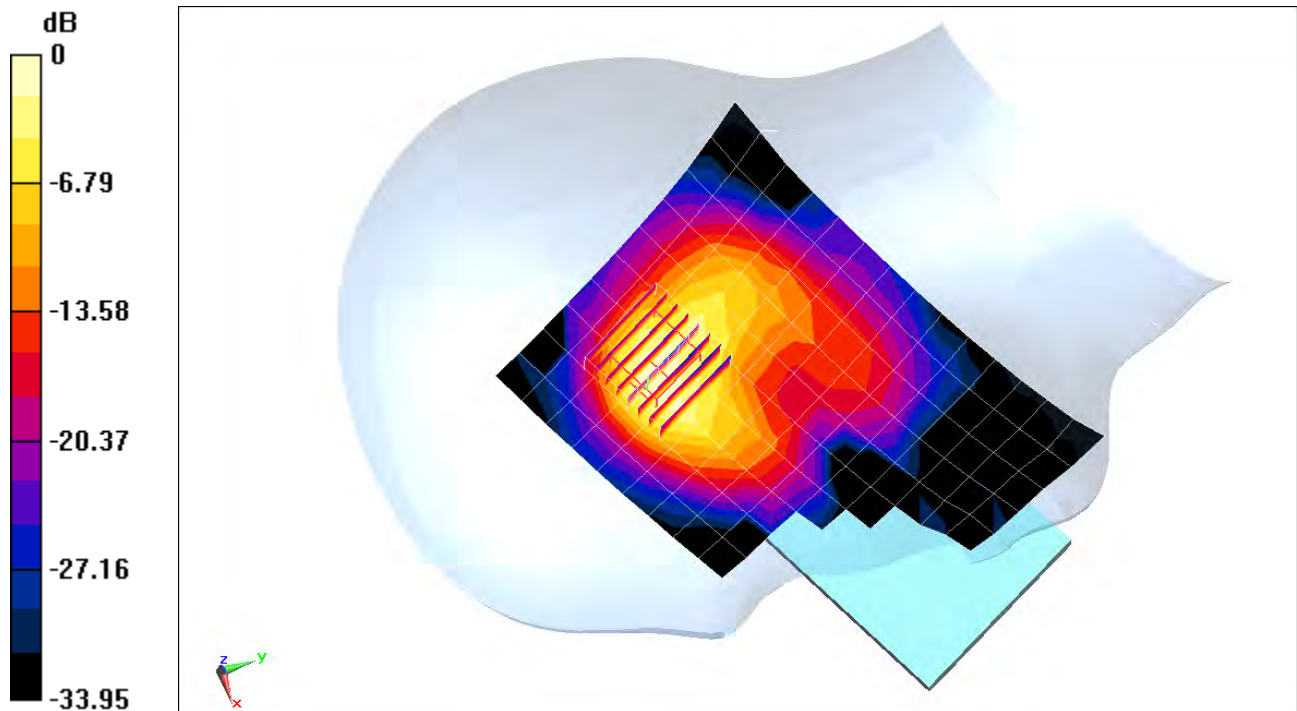
Area Scan (11x18x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 16.67 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 1.21 W/kg

SAR(1 g) = 0.486 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76720

Communication System: UID 0, 802.11n 5.2-5.8 GHz Band; Frequency: 5270 MHz; Duty Cycle: 1:1

Medium: 5 GHz Medium parameters used (interpolated):

$f = 5270 \text{ MHz}$; $\sigma = 4.62 \text{ S/m}$; $\epsilon_r = 35.54$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 10-25-2017; Ambient Temp: 22.8°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN3914; ConvF(5.49, 5.49, 5.49); Calibrated: 2/13/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/9/2017

Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: IEEE 802.11n, U-NII-2A, 40 MHz Bandwidth,
Right Head, Cheek, Ch 54, 13.5 Mbps**

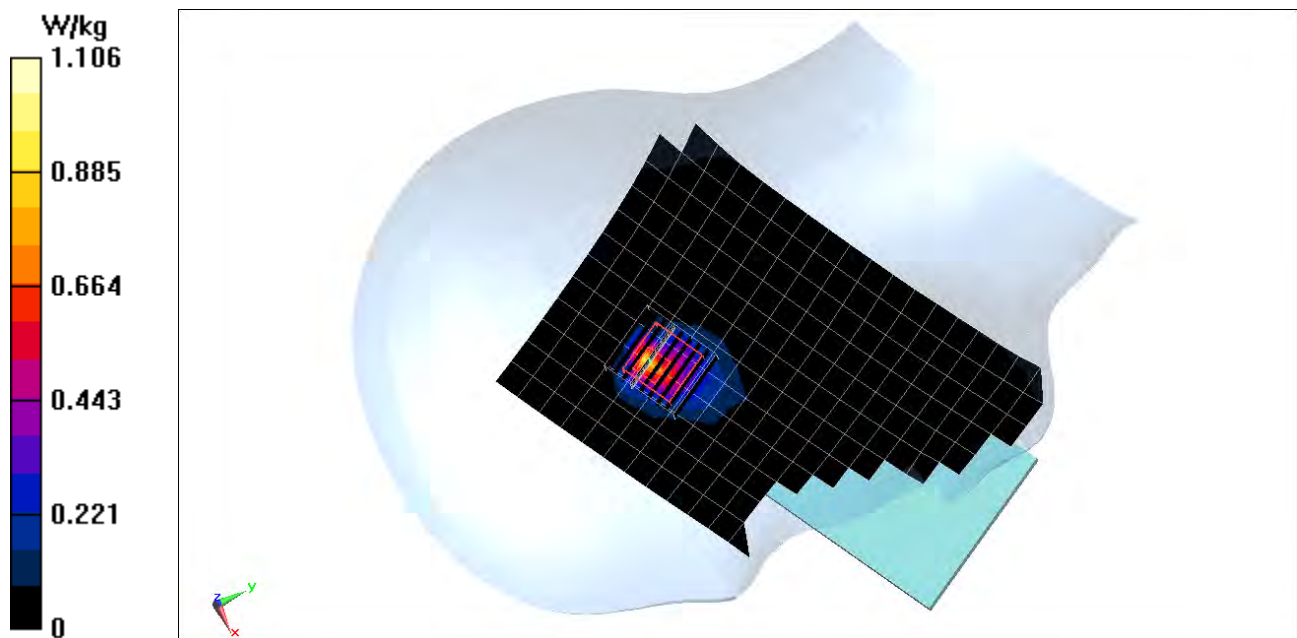
Area Scan (13x21x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (8x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 0.9870 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 1.98 W/kg

SAR(1 g) = 0.417 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 77074

Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.302

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2441 \text{ MHz}$; $\sigma = 1.861 \text{ S/m}$; $\epsilon_r = 38.619$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 10-23-2017; Ambient Temp: 20.6°C; Tissue Temp: 20.5°C

Probe: ES3DV3 - SN3332; ConvF(4.68, 4.68, 4.68); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

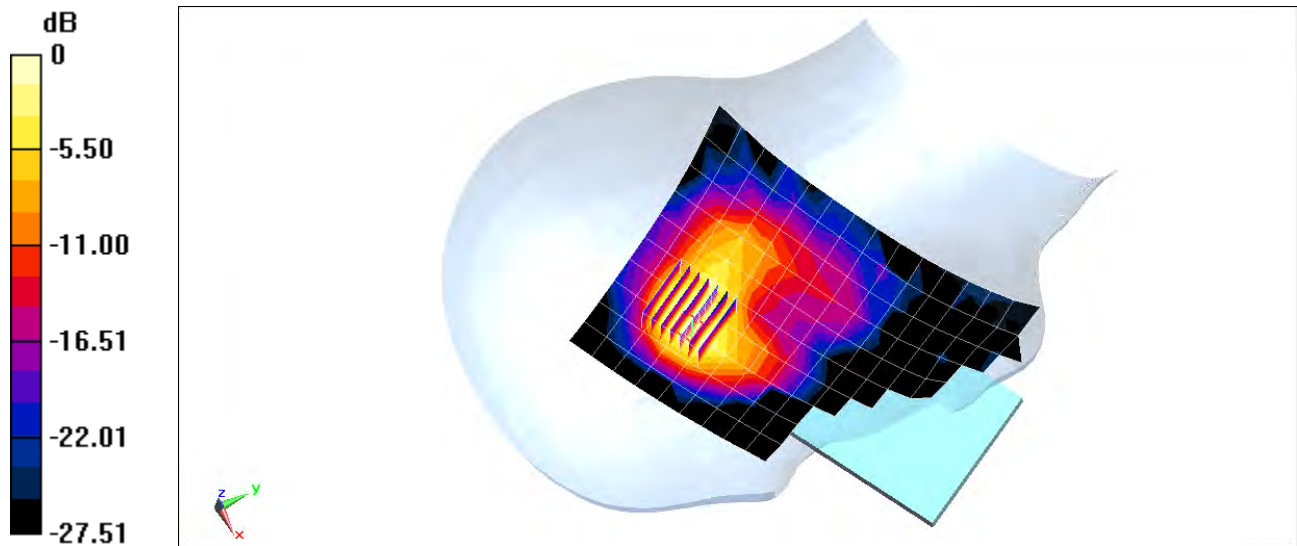
Area Scan (11x19x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 9.605 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.413 W/kg

SAR(1 g) = 0.164 W/kg



0 dB = 0.224 W/kg = -6.50 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 77074

Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.978 \text{ S/m}$; $\epsilon_r = 54.809$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-23-2017; Ambient Temp: 20.6°C; Tissue Temp: 20.3°C

Probe: ES3DV3 - SN3288; ConvF(6.3, 6.3, 6.3); Calibrated: 1/13/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1466; Calibrated: 1/16/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

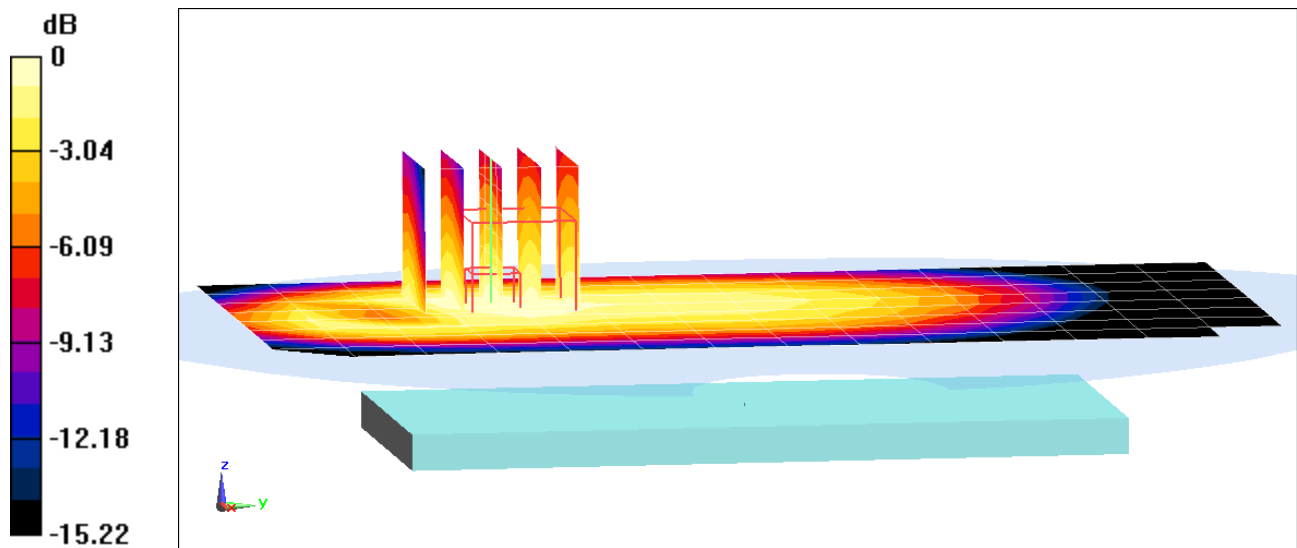
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 19.68 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.455 W/kg

SAR(1 g) = 0.347 W/kg



0 dB = 0.387 W/kg = -4.12 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 77074

Communication System: UID 0, GSM GPRS; 4 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.076

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.978 \text{ S/m}$; $\epsilon_r = 54.809$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-23-2017; Ambient Temp: 20.6°C; Tissue Temp: 20.3°C

Probe: ES3DV3 - SN3288; ConvF(6.3, 6.3, 6.3); Calibrated: 1/13/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1466; Calibrated: 1/16/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: GPRS 850, Body SAR, Back side, Mid.ch, 4 Tx Slots

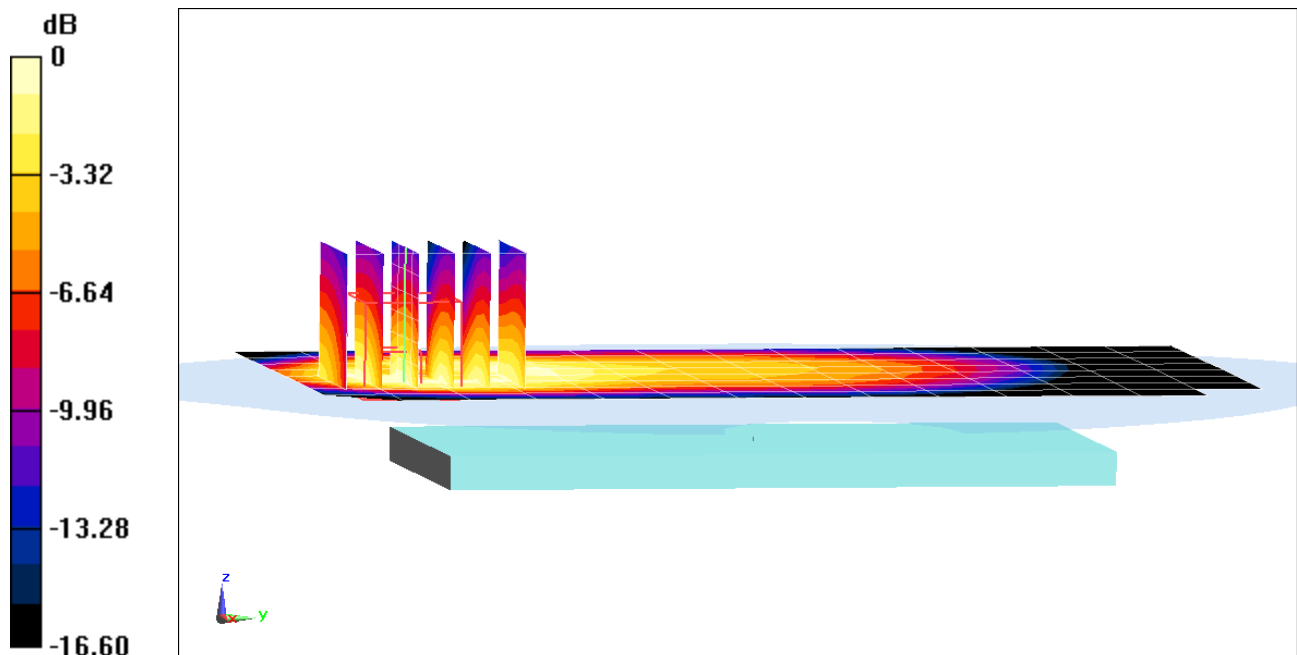
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 28.41 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.26 W/kg

SAR(1 g) = 0.763 W/kg



0 dB = 0.909 W/kg = -0.41 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76720

Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.56 \text{ S/m}$; $\epsilon_r = 52.294$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-18-2017; Ambient Temp: 22.3°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Left; Type: QD000P40CD; Serial: 1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

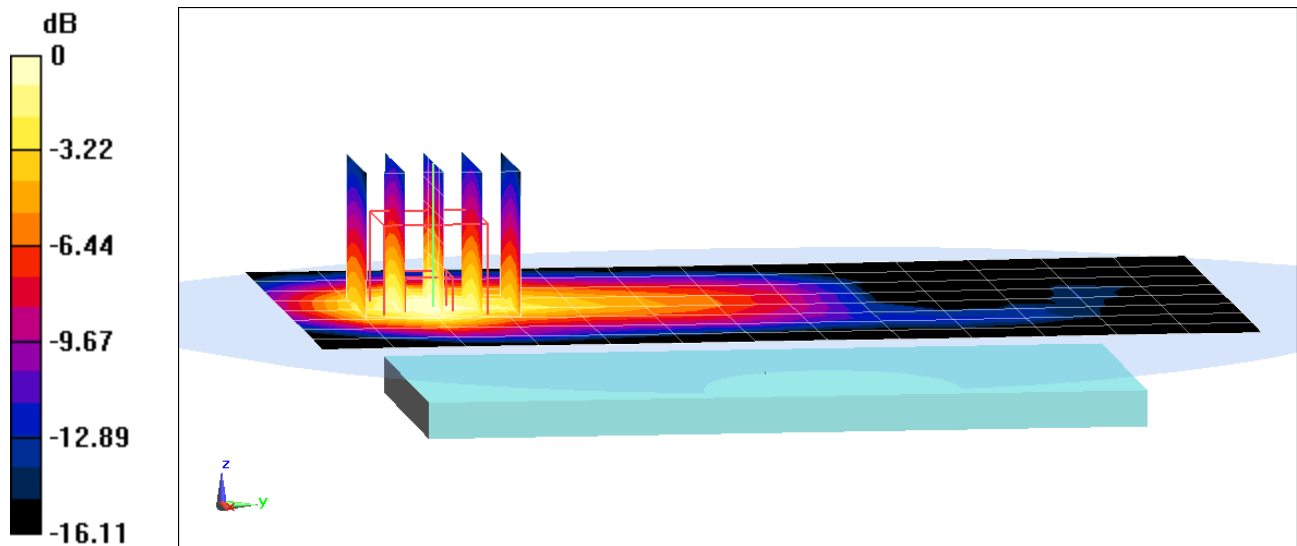
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 14.50 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 0.434 W/kg

SAR(1 g) = 0.275 W/kg



0 dB = 0.328 W/kg = -4.84 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 77074

Communication System: UID 0, GSM GPRS; 4 Tx slots; Frequency: 1909.8 MHz; Duty Cycle: 1:2.076

Medium: 1900 Body Medium parameters used:

$f = 1910$ MHz; $\sigma = 1.566$ S/m; $\epsilon_r = 53.658$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

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

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Left; Type: QD000P40CD; Serial: 1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

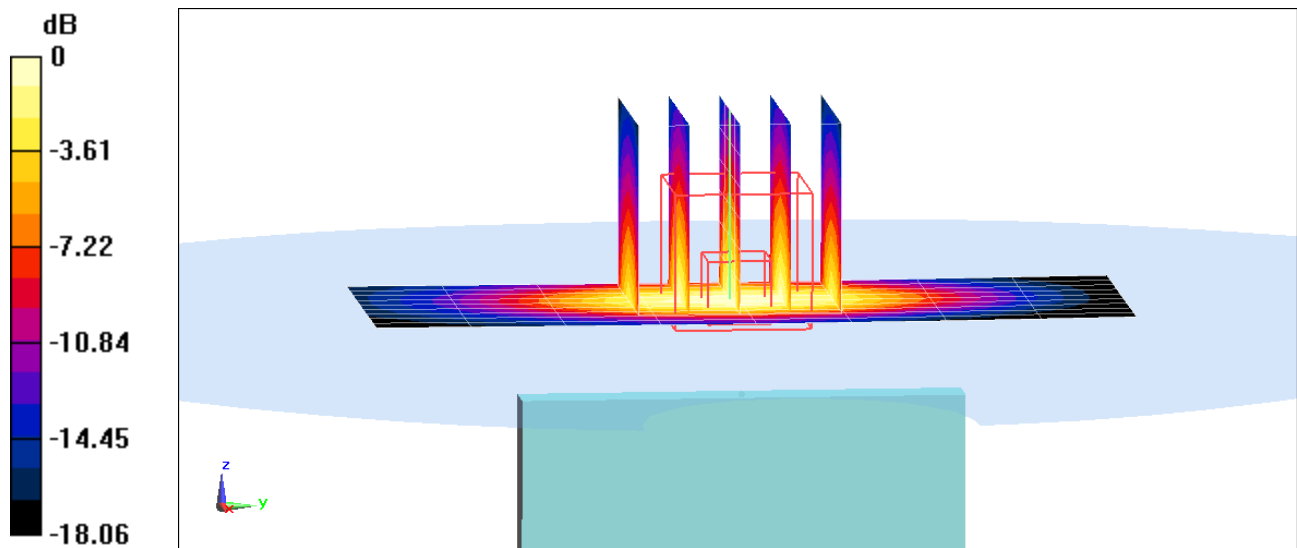
Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 24.24 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 1.34 W/kg

SAR(1 g) = 0.799 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76217

Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.961 \text{ S/m}$; $\epsilon_r = 52.933$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-18-2017; Ambient Temp: 21.7°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3213; ConvF(6.28, 6.28, 6.28); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

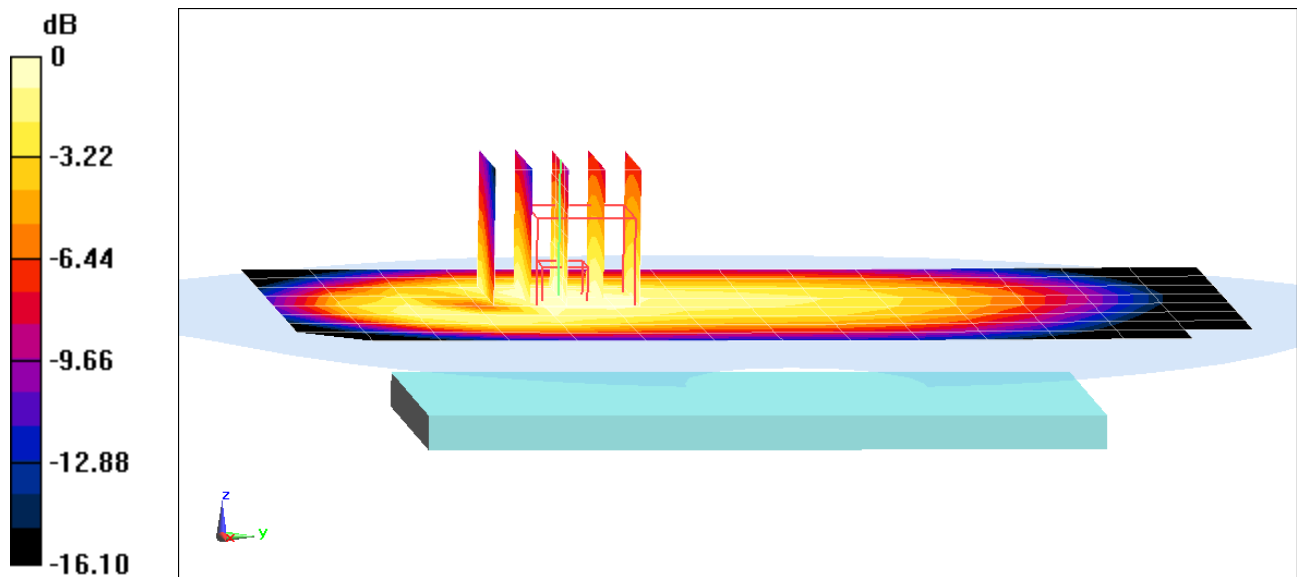
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 21.71 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.558 W/kg

SAR(1 g) = 0.413 W/kg



0 dB = 0.466 W/kg = -3.32 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76217

Communication System: UID 0, UMTS; Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 846.6 \text{ MHz}$; $\sigma = 0.971 \text{ S/m}$; $\epsilon_r = 52.831$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-18-2017; Ambient Temp: 21.7°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3213; ConvF(6.28, 6.28, 6.28); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

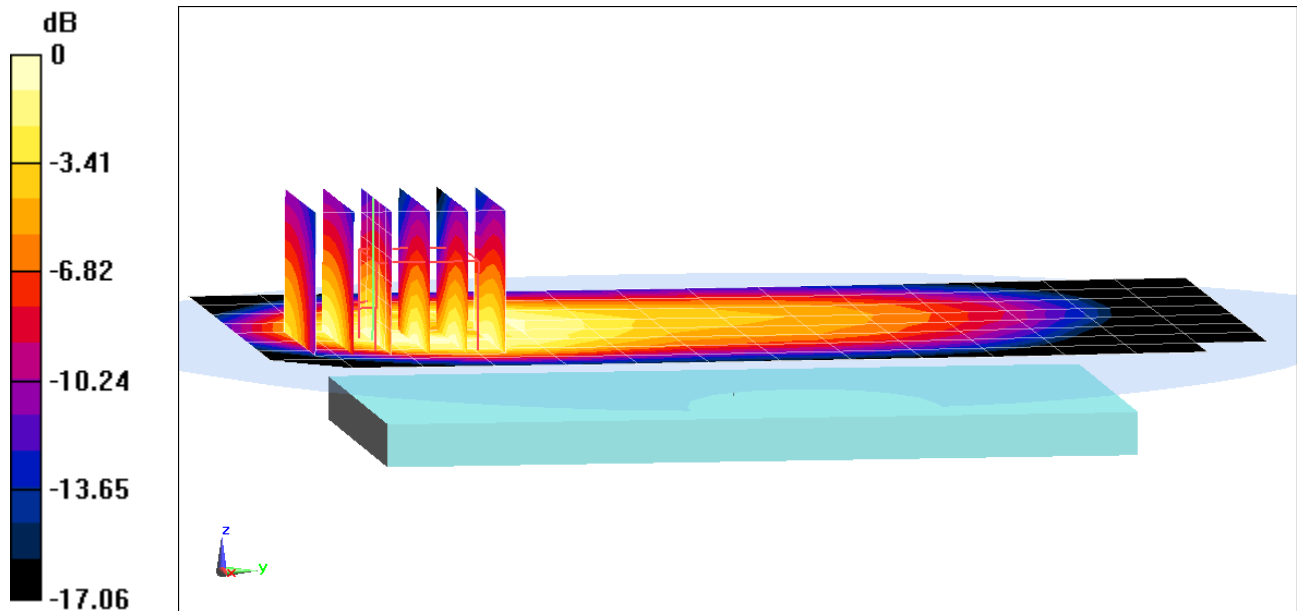
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 25.87 V/m; Power Drift = -0.19 dB

Peak SAR (extrapolated) = 1.13 W/kg

SAR(1 g) = 0.670 W/kg



0 dB = 0.820 W/kg = -0.86 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 39289

Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.4 \text{ MHz}$; $\sigma = 1.473 \text{ S/m}$; $\epsilon_r = 52.215$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-20-2017; Ambient Temp: 23.5°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7406; ConvF(8.08, 8.08, 8.08); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

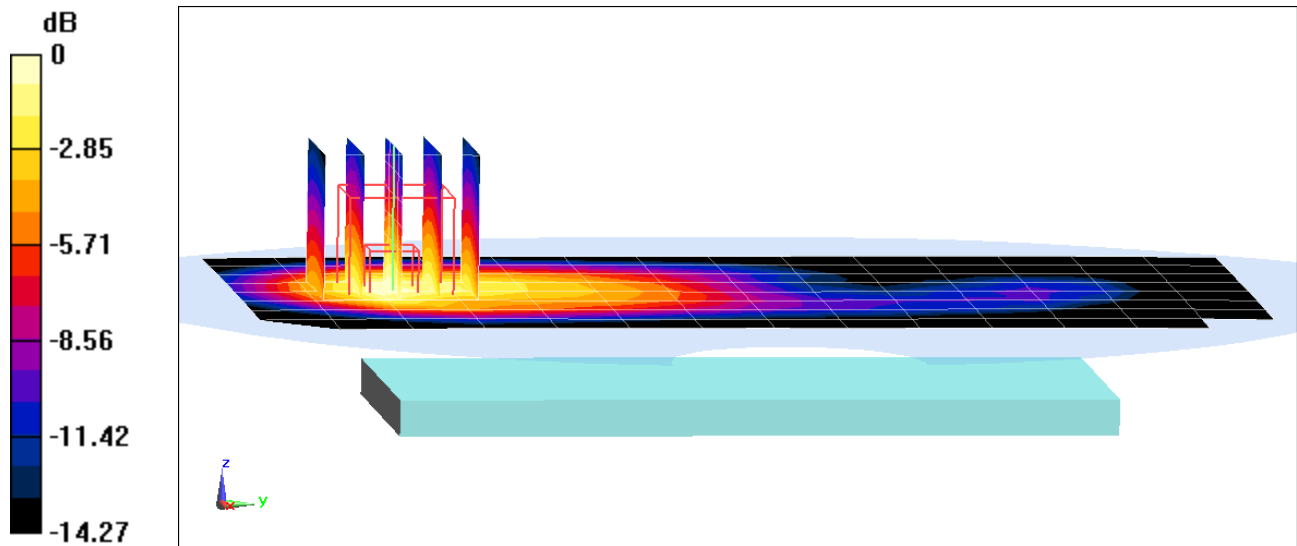
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 19.31 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.798 W/kg

SAR(1 g) = 0.509 W/kg



0 dB = 0.698 W/kg = -1.56 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 39289

Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.4 \text{ MHz}$; $\sigma = 1.473 \text{ S/m}$; $\epsilon_r = 52.215$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-20-2017; Ambient Temp: 23.5°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7406; ConvF(8.08, 8.08, 8.08); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

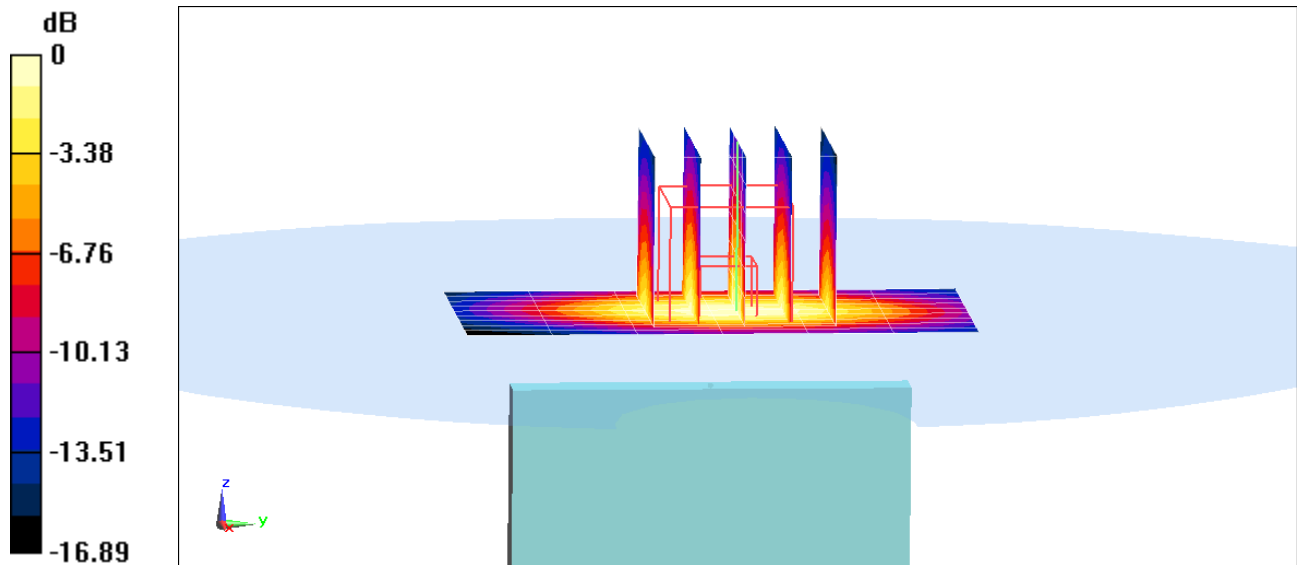
Area Scan (10x7x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 19.77 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.892 W/kg

SAR(1 g) = 0.523 W/kg



0 dB = 0.763 W/kg = -1.17 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76720

Communication System: UID 0, UMTS; Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1907.6 \text{ MHz}$; $\sigma = 1.592 \text{ S/m}$; $\epsilon_r = 52.207$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-18-2017; Ambient Temp: 22.3°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Left; Type: QD000P40CD; Serial: 1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

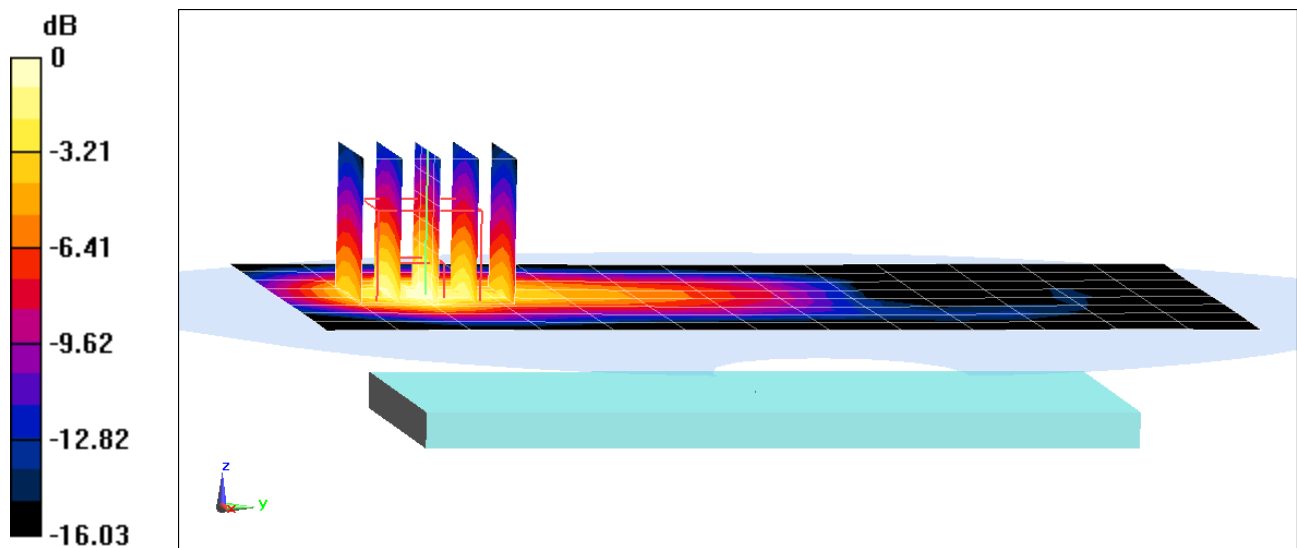
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 22.97 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 1.17 W/kg

SAR(1 g) = 0.735 W/kg



0 dB = 0.876 W/kg = -0.57 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76720

Communication System: UID 0, UMTS; Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1907.6 \text{ MHz}$; $\sigma = 1.592 \text{ S/m}$; $\epsilon_r = 52.207$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-18-2017; Ambient Temp: 22.3°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Left; Type: QD000P40CD; Serial: 1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

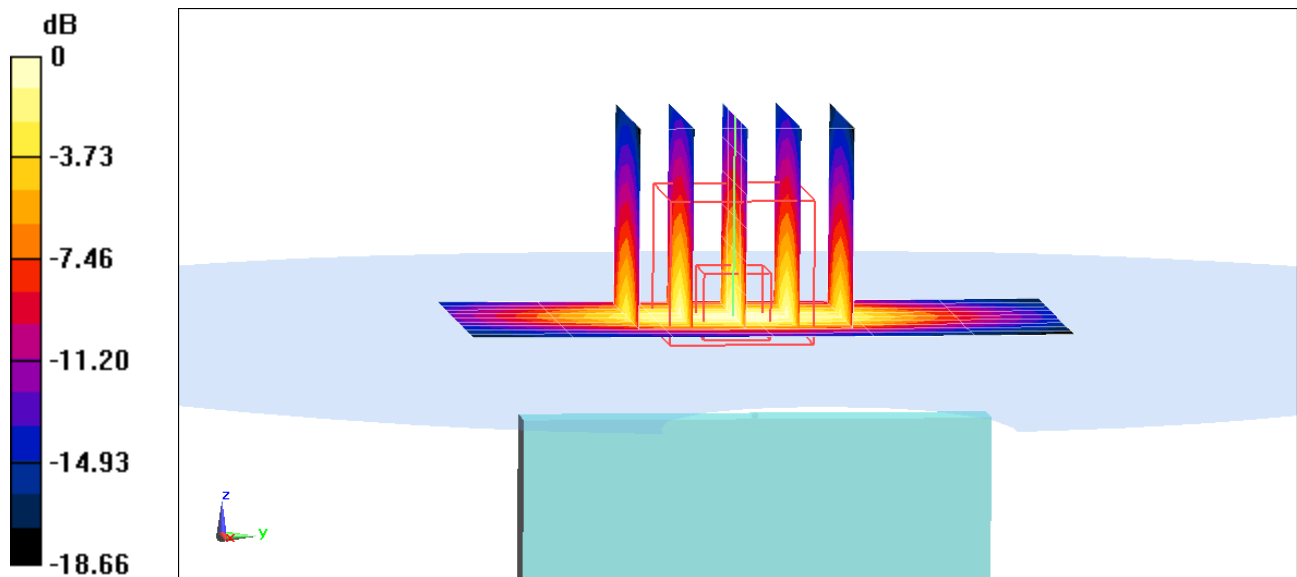
Area Scan (10x7x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 26.64 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.65 W/kg

SAR(1 g) = 0.955 W/kg



0 dB = 1.20 W/kg = 0.79 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 77074

Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium: 750 Body Medium parameters used (interpolated):

$f = 707.5 \text{ MHz}$; $\sigma = 0.936 \text{ S/m}$; $\epsilon_r = 56.179$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

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

Probe: ES3DV3 - SN3213; ConvF(6.38, 6.38, 6.38); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

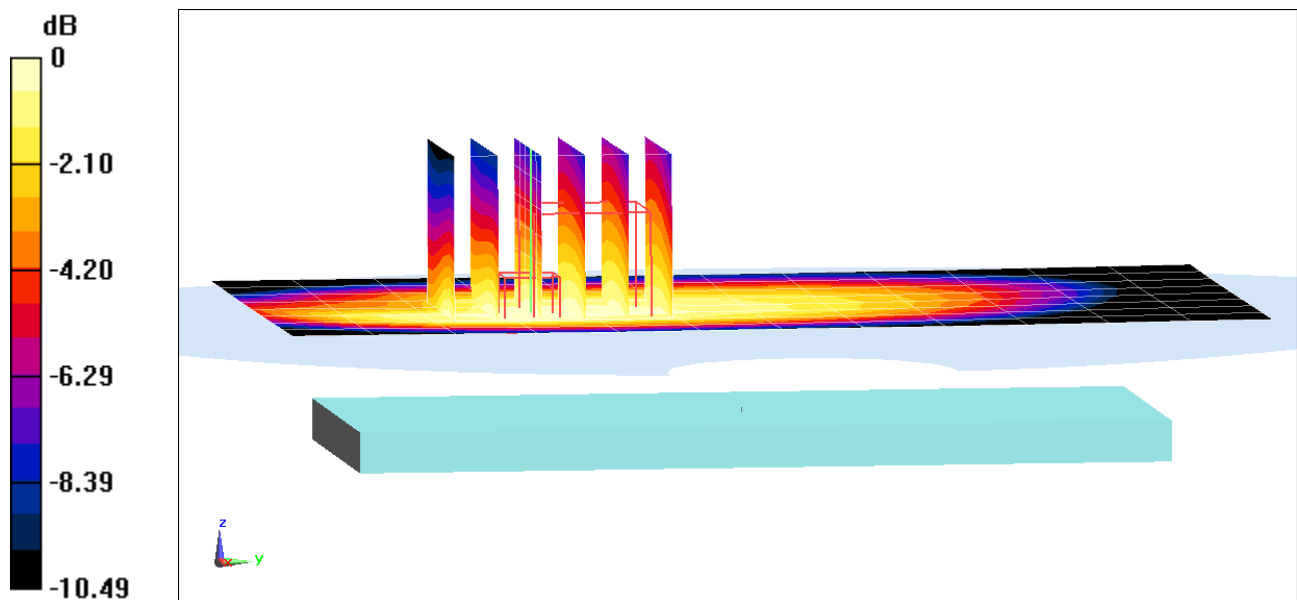
Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 16.13 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.315 W/kg

SAR(1 g) = 0.225 W/kg



0 dB = 0.253 W/kg = -5.97 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 77074

Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium: 750 Body Medium parameters used (interpolated):

$f = 707.5 \text{ MHz}$; $\sigma = 0.936 \text{ S/m}$; $\epsilon_r = 56.179$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

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

Probe: ES3DV3 - SN3213; ConvF(6.38, 6.38, 6.38); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

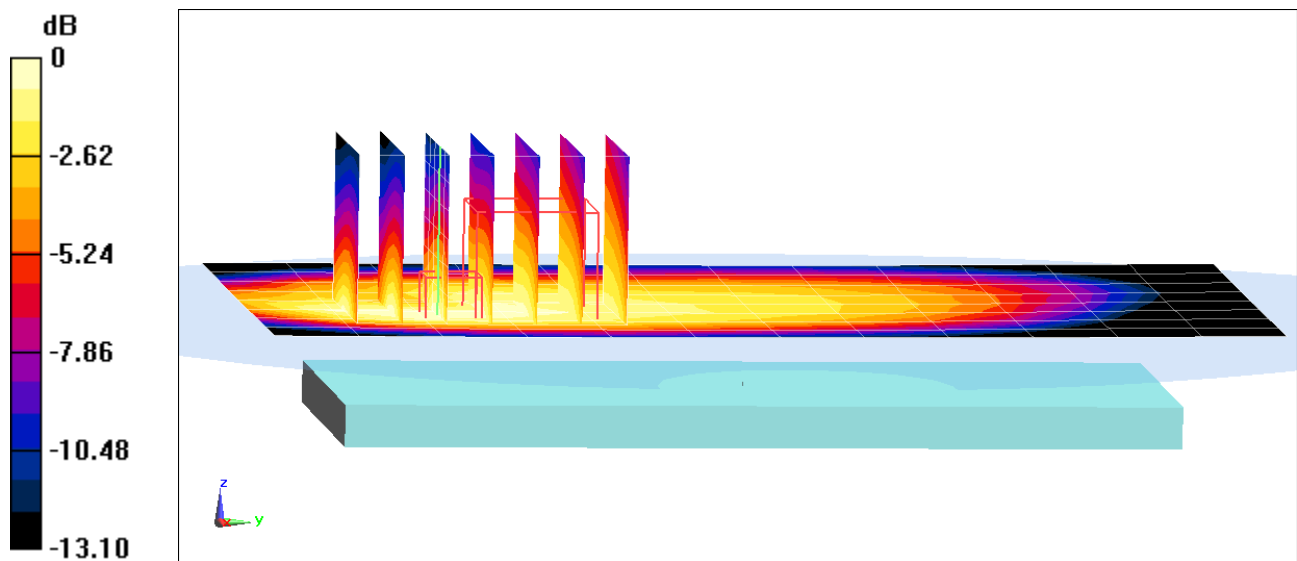
Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.29 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.461 W/kg

SAR(1 g) = 0.286 W/kg



0 dB = 0.336 W/kg = -4.74 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 77074

Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: 750 Body Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 1.008 \text{ S/m}$; $\epsilon_r = 55.392$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

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

Probe: ES3DV3 - SN3213; ConvF(6.38, 6.38, 6.38); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 13, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

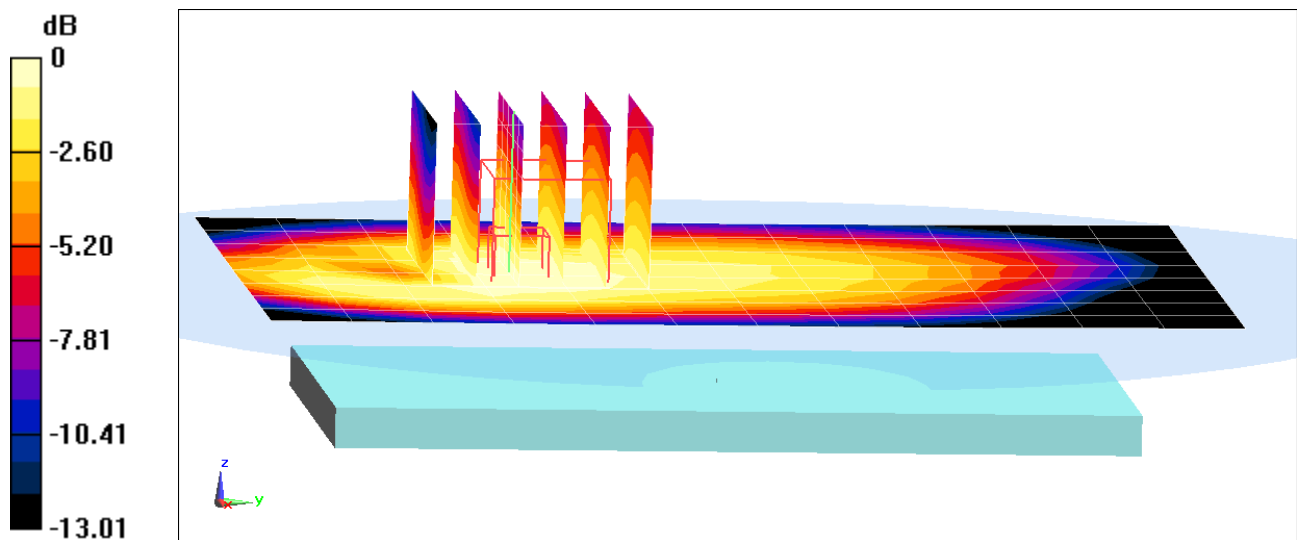
Area Scan (9x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 17.44 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.396 W/kg

SAR(1 g) = 0.290 W/kg



0 dB = 0.324 W/kg = -4.89 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 77074

Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: 750 Body Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 1.008 \text{ S/m}$; $\epsilon_r = 55.392$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

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

Probe: ES3DV3 - SN3213; ConvF(6.38, 6.38, 6.38); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 13, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

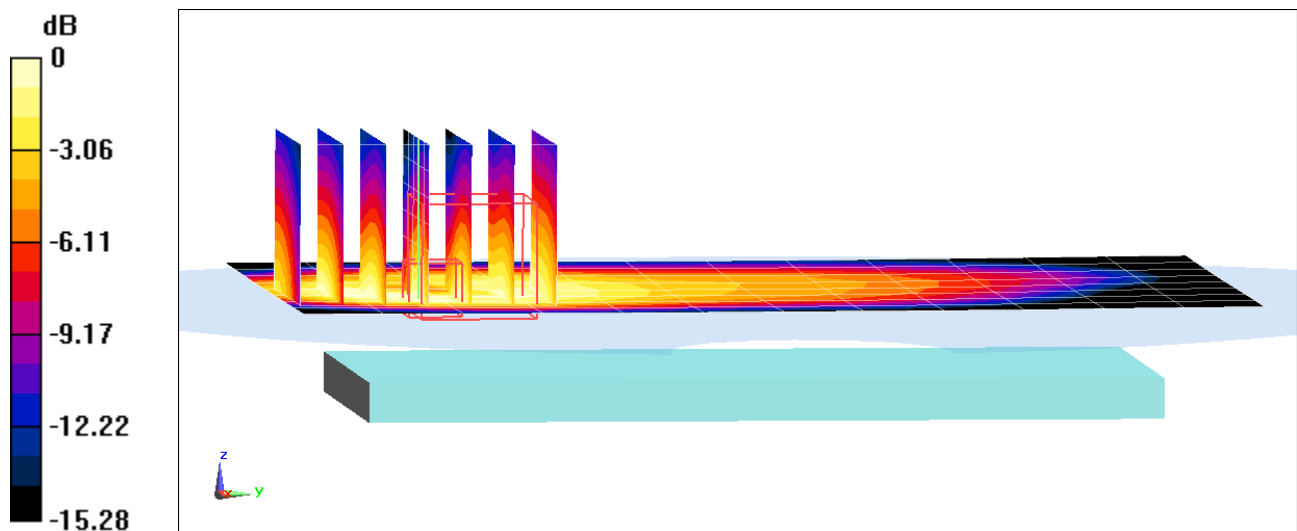
Area Scan (9x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x7x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 22.67 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.817 W/kg

SAR(1 g) = 0.475 W/kg



0 dB = 0.576 W/kg = -2.40 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76720

Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 831.5 \text{ MHz}$; $\sigma = 0.956 \text{ S/m}$; $\epsilon_r = 52.981$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-18-2017; Ambient Temp: 21.7°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3213; ConvF(6.28, 6.28, 6.28); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

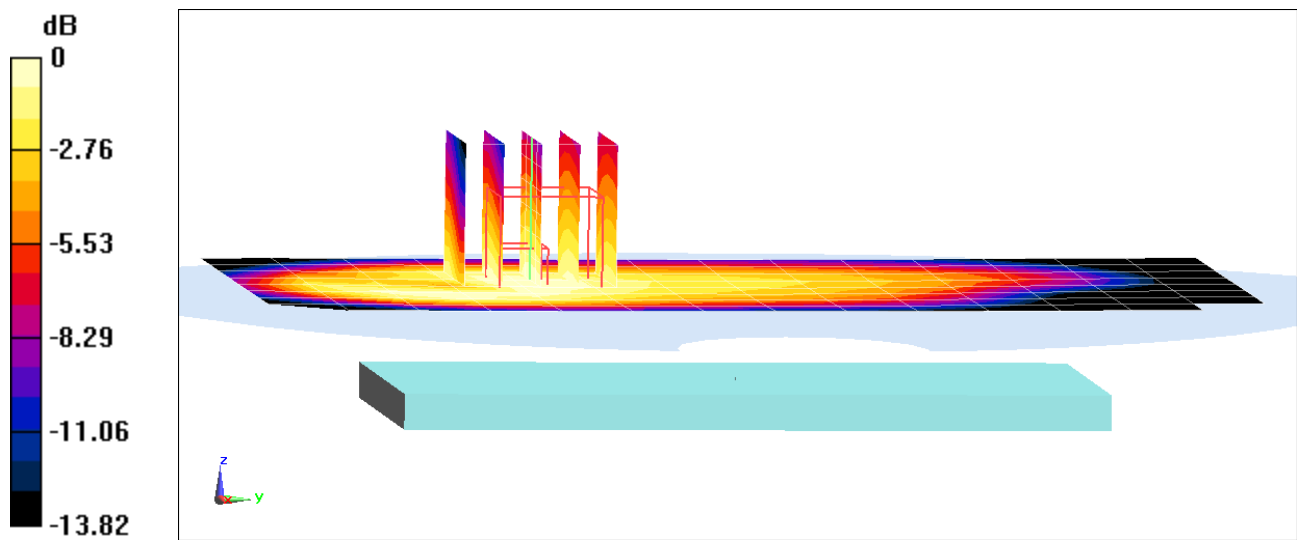
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 18.19 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.397 W/kg

SAR(1 g) = 0.291 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76720

Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 831.5 \text{ MHz}$; $\sigma = 0.956 \text{ S/m}$; $\epsilon_r = 52.981$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-18-2017; Ambient Temp: 21.7°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3213; ConvF(6.28, 6.28, 6.28); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

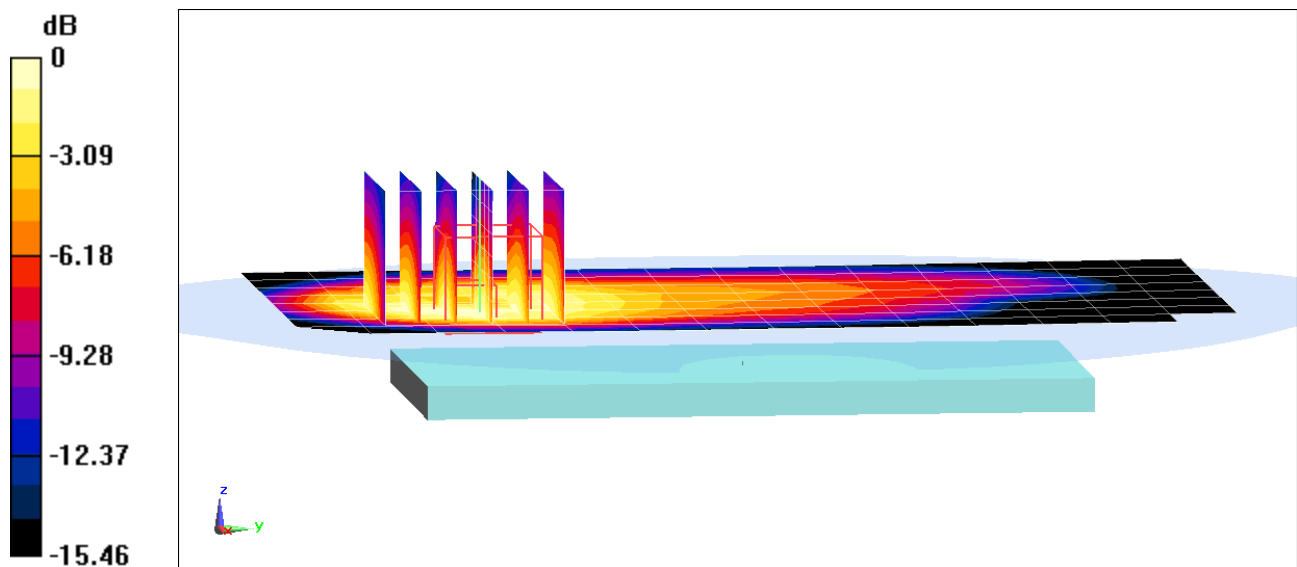
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 24.01 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.818 W/kg

SAR(1 g) = 0.500 W/kg



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

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 39099

Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1720 \text{ MHz}$; $\sigma = 1.46 \text{ S/m}$; $\epsilon_r = 52.254$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-20-2017; Ambient Temp: 23.5°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7406; ConvF(8.08, 8.08, 8.08); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 66 (AWS), Body SAR, Back side, Low.ch,
20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset**

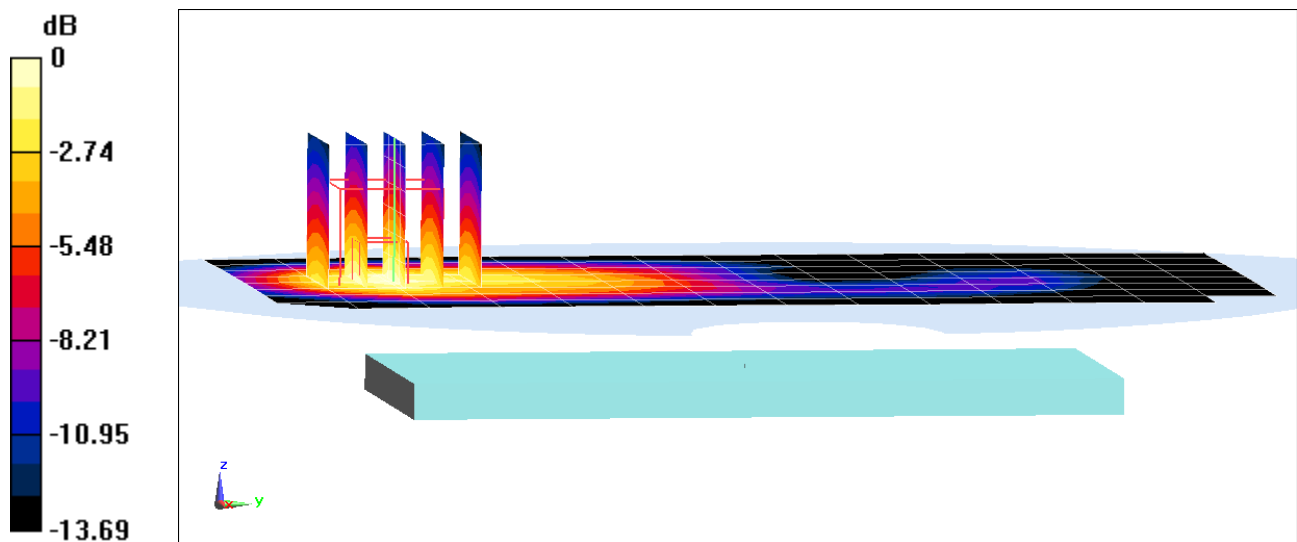
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 18.13 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.710 W/kg

SAR(1 g) = 0.458 W/kg



0 dB = 0.608 W/kg = -2.16 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 39099

Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1770 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1770 \text{ MHz}$; $\sigma = 1.515 \text{ S/m}$; $\epsilon_r = 52.086$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-20-2017; Ambient Temp: 23.5°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7406; ConvF(8.08, 8.08, 8.08); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

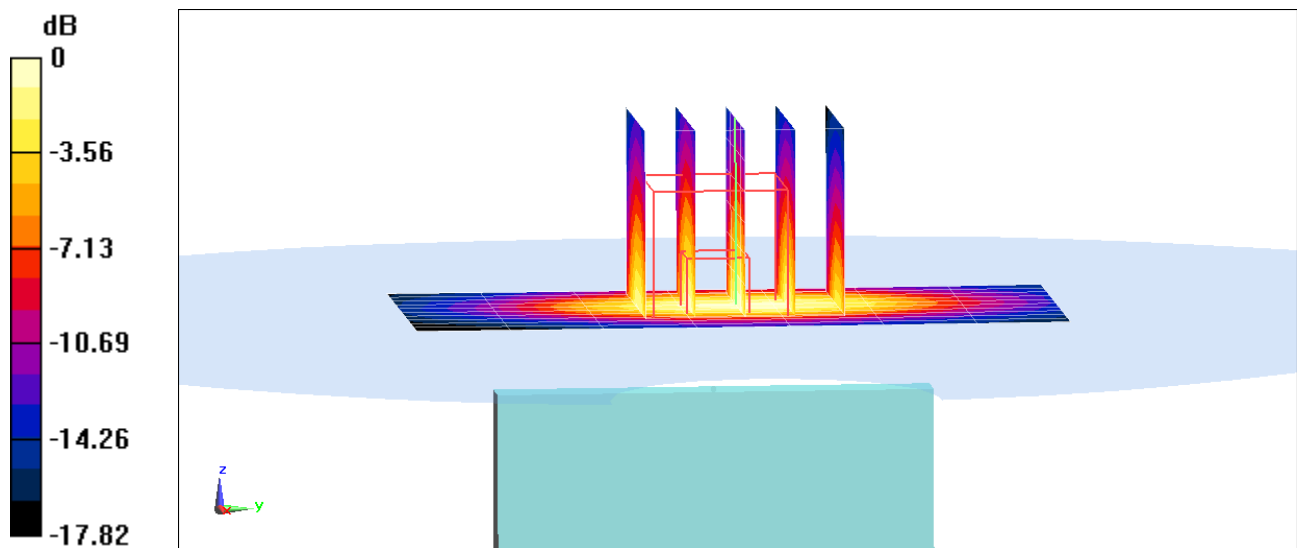
Area Scan (11x8x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 21.22 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 1.21 W/kg

SAR(1 g) = 0.700 W/kg



0 dB = 0.920 W/kg = -0.36 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76720

Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.583 \text{ S/m}$; $\epsilon_r = 52.231$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-18-2017; Ambient Temp: 22.3°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Left; Type: QD000P40CD; Serial: 1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 2 (PCS), Body SAR, Back side, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset**

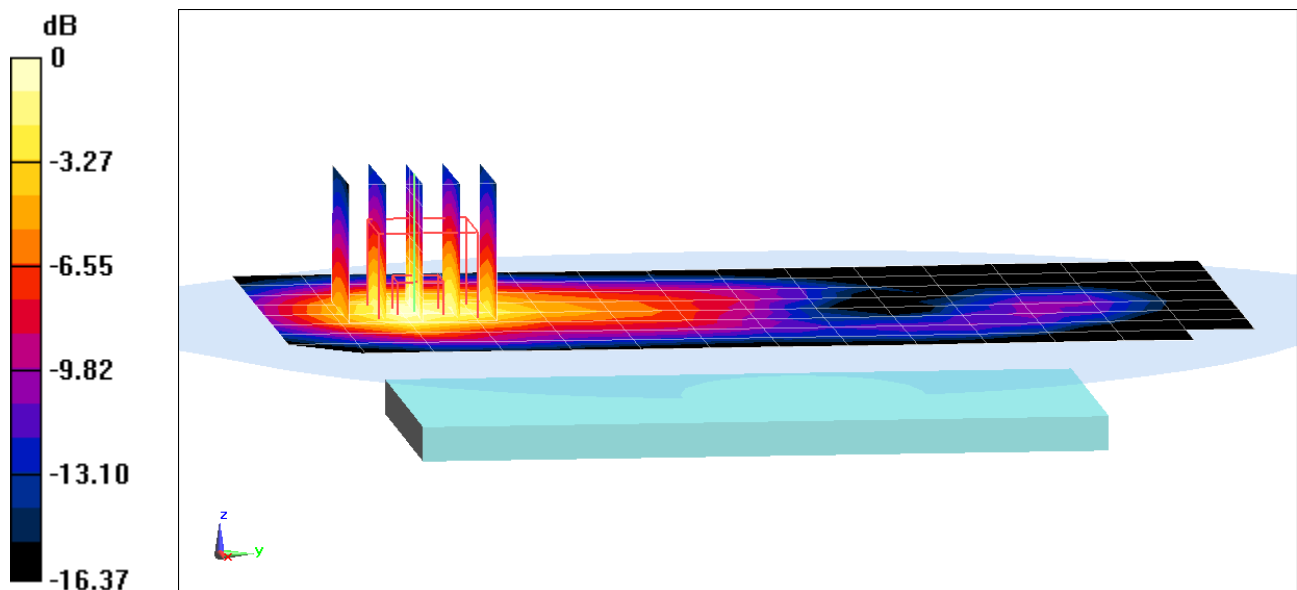
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 21.64 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.03 W/kg

SAR(1 g) = 0.642 W/kg



0 dB = 0.775 W/kg = -1.11 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76720

Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.56 \text{ S/m}$; $\epsilon_r = 52.294$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-18-2017; Ambient Temp: 22.3°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Left; Type: QD000P40CD; Serial: 1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 2 (PCS), Body SAR, Bottom Edge, Mid.ch,
20 MHz Bandwidth, QPSK, 50 RB, 25 RB Offset**

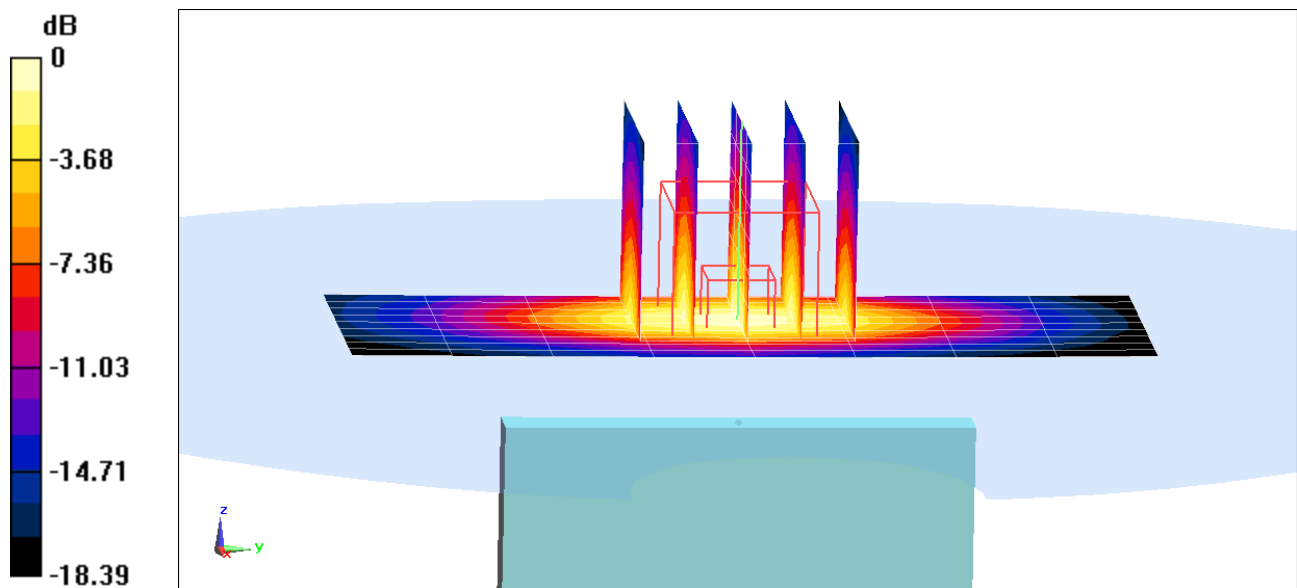
Area Scan (10x9x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 24.72 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 1.38 W/kg

SAR(1 g) = 0.810 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76217

Communication System: UID 0, LTE Band 41; Frequency: 2680 MHz; Duty Cycle: 1:1.58

Medium: 2600 Body Medium parameters used (interpolated):

$f = 2680 \text{ MHz}$; $\sigma = 2.357 \text{ S/m}$; $\epsilon_r = 50.029$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-18-2017; Ambient Temp: 23.3°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3319; ConvF(4.18, 4.18, 4.18); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: 1648

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

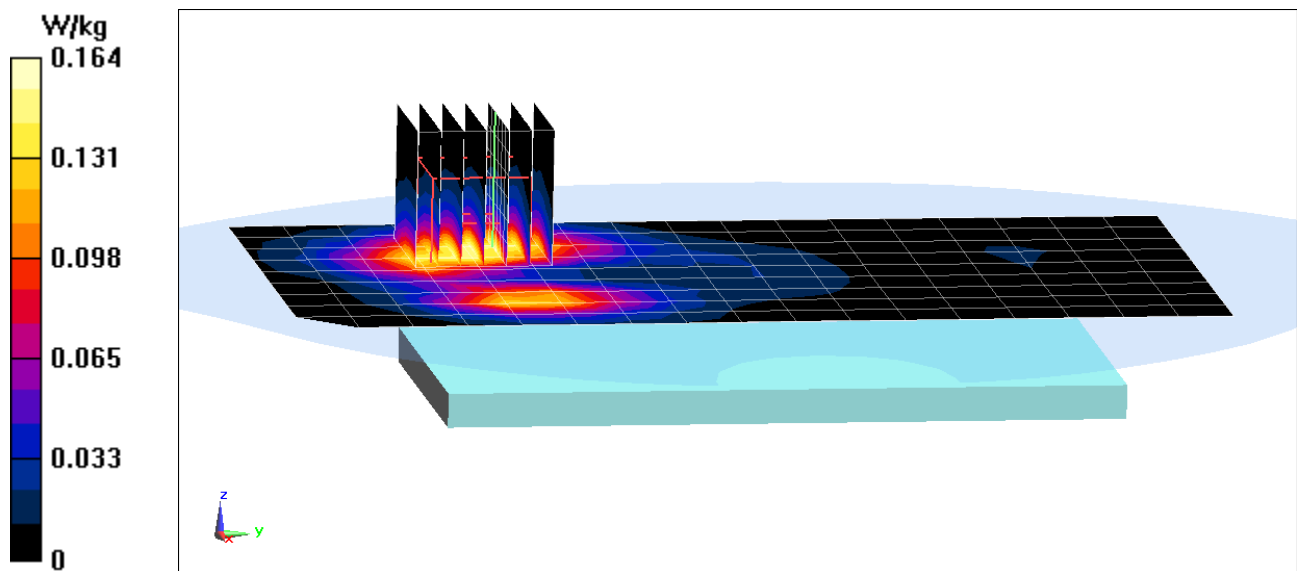
Area Scan (10x18x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 7.854 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.274 W/kg

SAR(1 g) = 0.131 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76720

Communication System: UID 0, _LTE Band 41; Frequency: 2506 MHz; Duty Cycle: 1:1.58

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2506 \text{ MHz}$; $\sigma = 2.108 \text{ S/m}$; $\epsilon_r = 51.254$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-09-2017; Ambient Temp: 22.6°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3213; ConvF(4.53, 4.53, 4.53); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

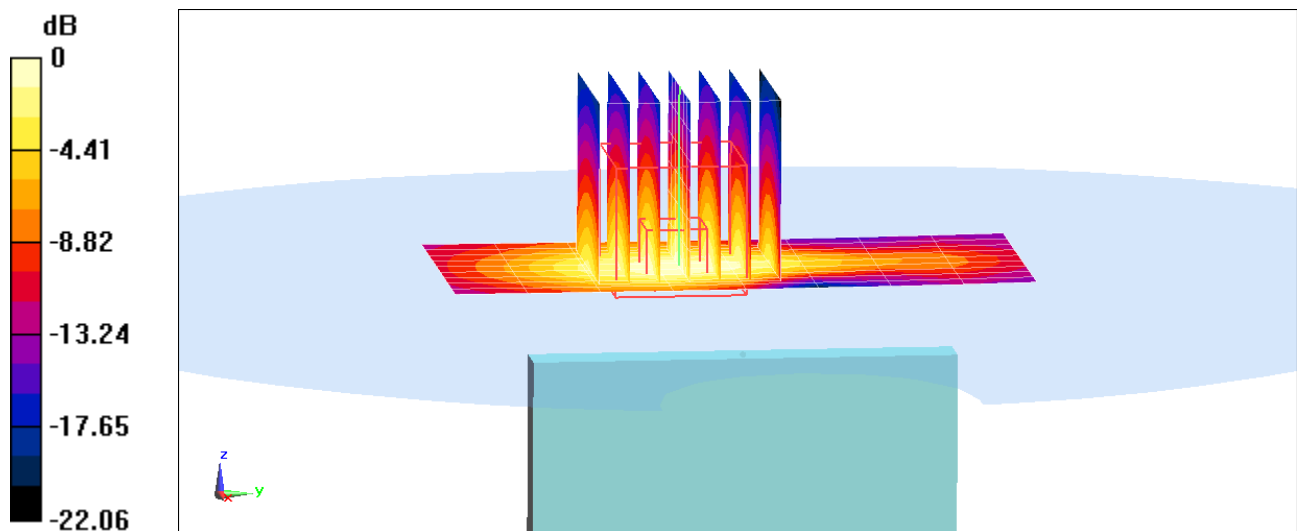
Area Scan (10x9x1): Measurement grid: dx=5mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.14 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 1.41 W/kg

SAR(1 g) = 0.720 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76720

Communication System: UID 0, IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2437 \text{ MHz}$; $\sigma = 2.004 \text{ S/m}$; $\epsilon_r = 52.002$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-23-2017; Ambient Temp: 21.0°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3319; ConvF(4.42, 4.42, 4.42); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: 1648

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11b, 22 MHz Bandwidth, Body SAR, Ch 06, 1 Mbps, Back Side

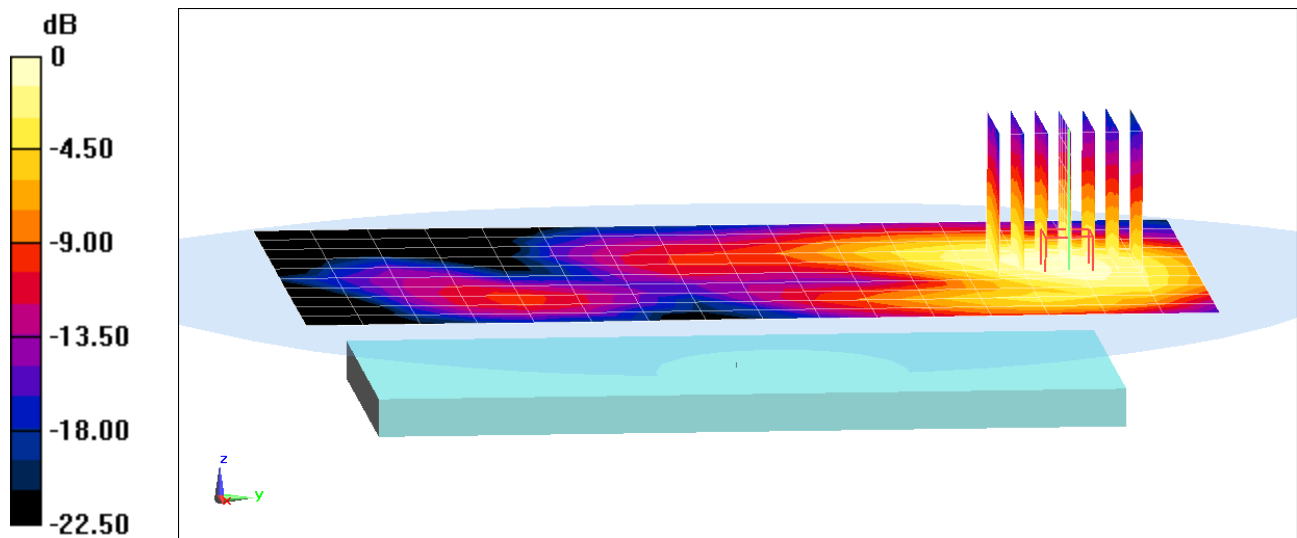
Area Scan (11x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 9.566 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 0.280 W/kg

SAR(1 g) = 0.158 W/kg



0 dB = 0.198 W/kg = -7.03 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76720

Communication System: UID 0, IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2437 \text{ MHz}$; $\sigma = 2.004 \text{ S/m}$; $\epsilon_r = 52.002$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-23-2017; Ambient Temp: 21.0°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3319; ConvF(4.42, 4.42, 4.42); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: 1648

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11b, 22 MHz Bandwidth, Body SAR, Ch 06, 1 Mbps, Top Edge

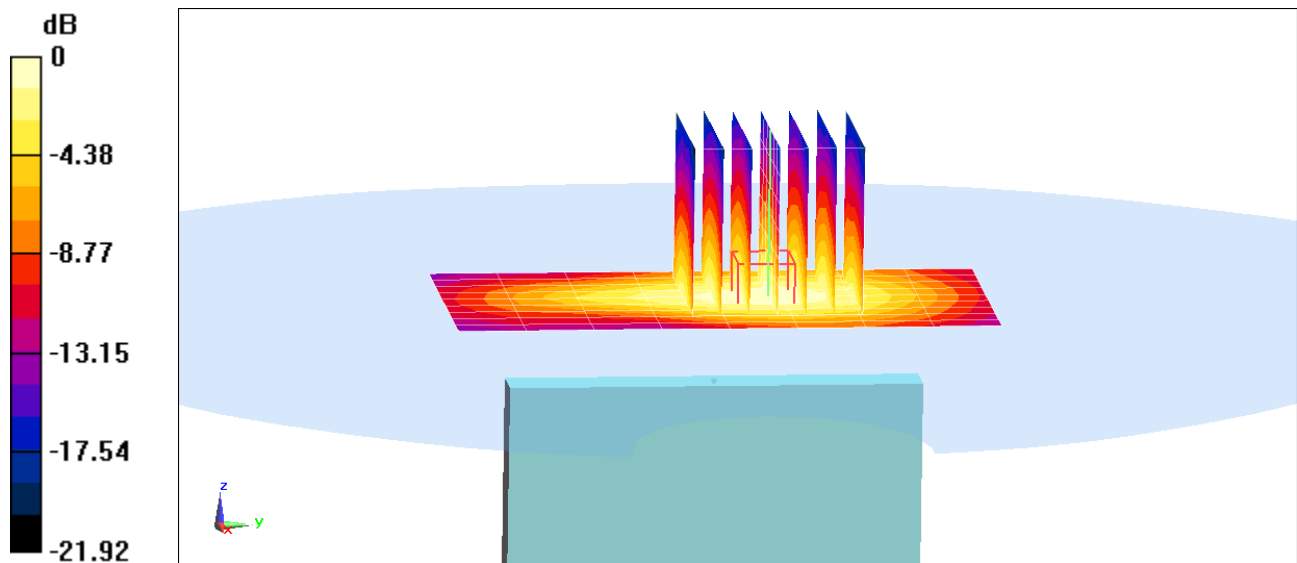
Area Scan (10x9x1): Measurement grid: $dx=5\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 12.22 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 0.667 W/kg

SAR(1 g) = 0.339 W/kg



0 dB = 0.434 W/kg = -3.63 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76217

Communication System: UID 0, IEEE 802.11n; Frequency: 5795 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used (interpolated):

$f = 5795 \text{ MHz}$; $\sigma = 6.194 \text{ S/m}$; $\epsilon_r = 47.447$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-24-2017; Ambient Temp: 22.5°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7308; ConvF(4.5, 4.5, 4.5); Calibrated: 8/16/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/14/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: IEEE 802.11n, UNII-3, 40 MHz Bandwidth,
Body SAR, Ch 159, 13.5 Mbps, Back Side**

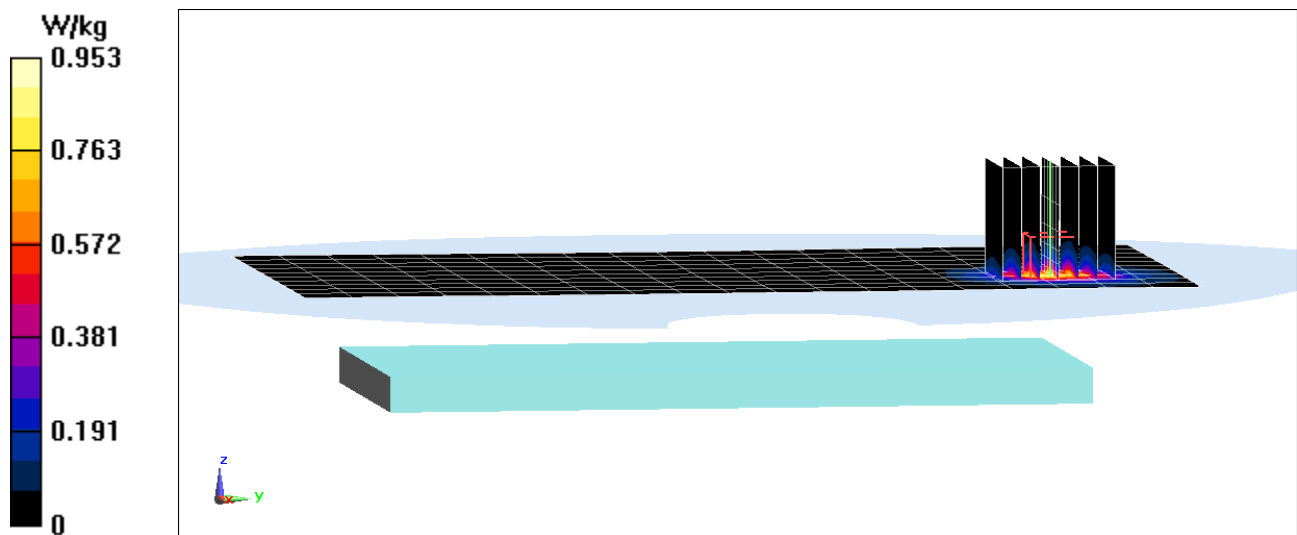
Area Scan (11x20x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 7.942 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 1.76 W/kg

SAR(1 g) = 0.373 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 76217

Communication System: UID 0, IEEE 802.11n; Frequency: 5755 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used (interpolated):

$f = 5755 \text{ MHz}$; $\sigma = 6.142 \text{ S/m}$; $\epsilon_r = 47.533$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-24-2017; Ambient Temp: 22.5°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7308; ConvF(4.5, 4.5, 4.5); Calibrated: 8/16/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/14/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

**Mode: IEEE 802.11n, UNII-3, 40 MHz Bandwidth,
Body SAR, Ch 151, 13.5 Mbps, Back Side**

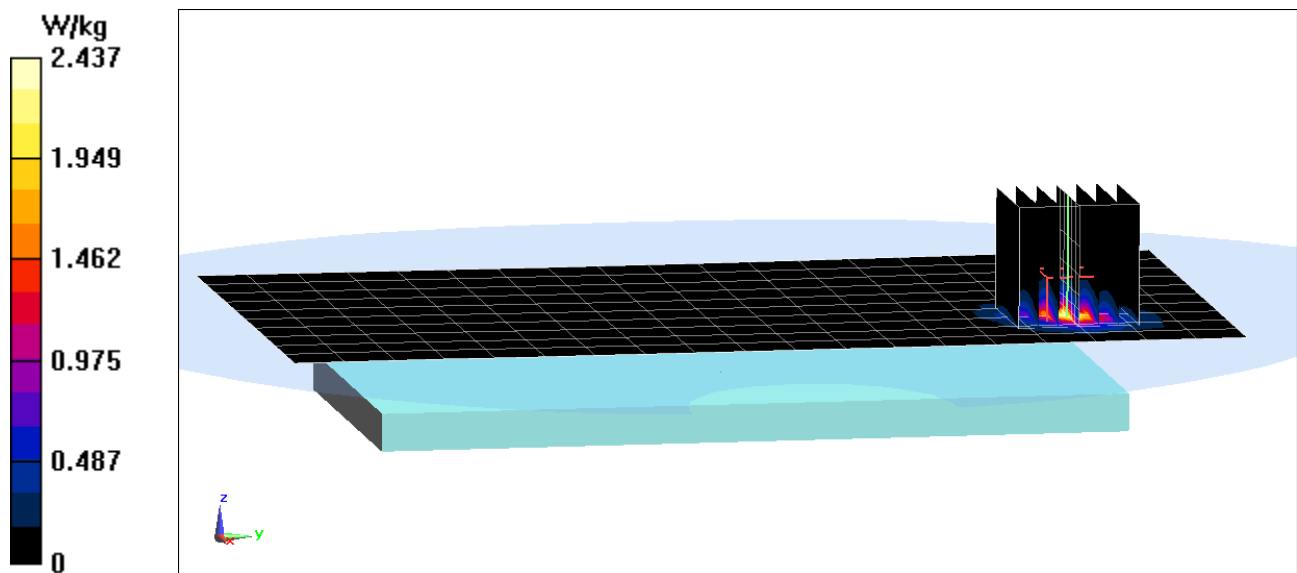
Area Scan (11x20x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Reference Value = 12.95 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 4.43 W/kg

SAR(1 g) = 0.892 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 77264

Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.302

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2441 \text{ MHz}$; $\sigma = 2.01 \text{ S/m}$; $\epsilon_r = 51.988$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-23-2017; Ambient Temp: 21.0°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3319; ConvF(4.42, 4.42, 4.42); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: 1648

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

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

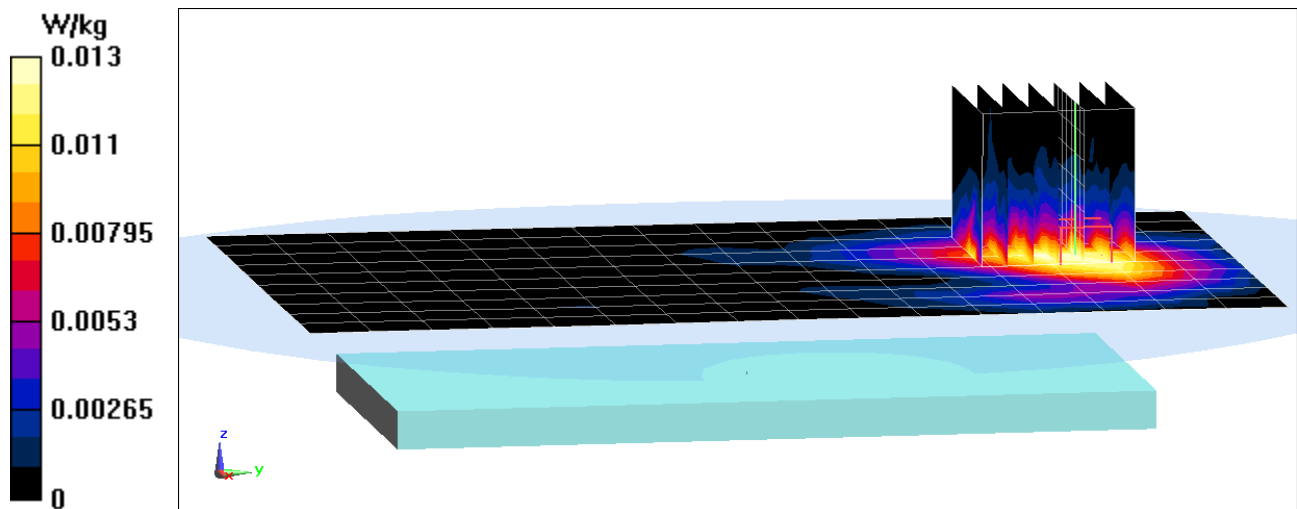
Area Scan (11x17x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (8x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 2.219 V/m; Power Drift = -0.20 dB

Peak SAR (extrapolated) = 0.0190 W/kg

SAR(1 g) = 0.010 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMA530F; Type: Portable Handset; Serial: 77264

Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.302

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2441 \text{ MHz}$; $\sigma = 2.01 \text{ S/m}$; $\epsilon_r = 51.988$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-23-2017; Ambient Temp: 21.0°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3319; ConvF(4.42, 4.42, 4.42); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: 1648

Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Bluetooth, Body SAR, Ch 39, 1 Mbps, Top Edge

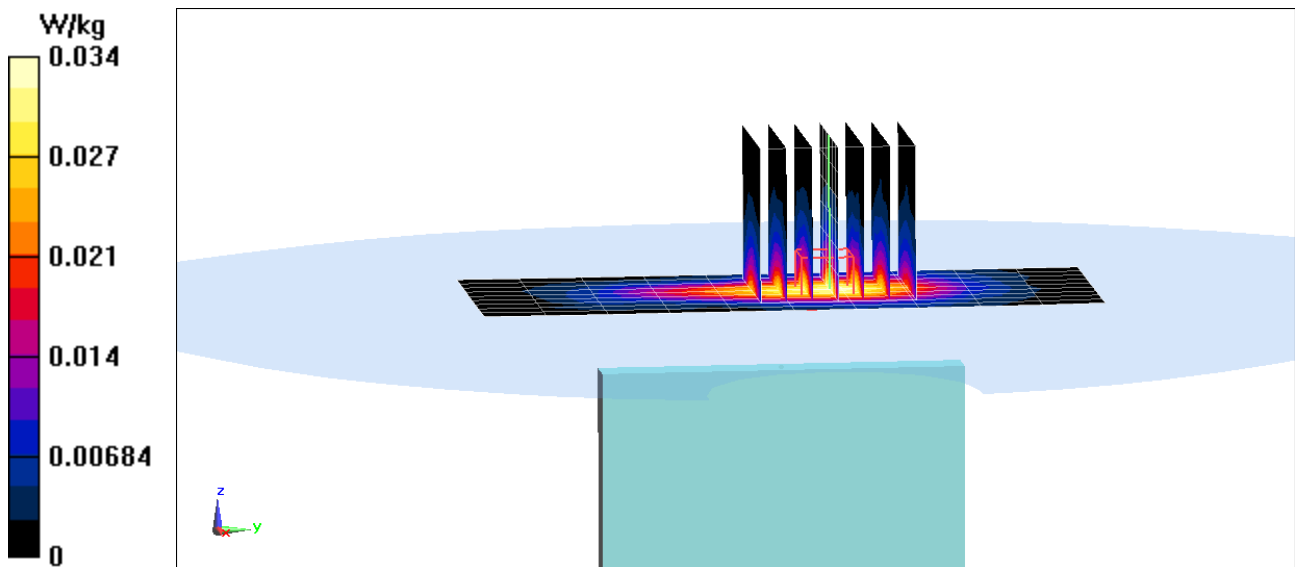
Area Scan (10x11x1): Measurement grid: dx=5mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.957 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 0.0530 W/kg

SAR(1 g) = 0.027 W/kg



APPENDIX B: SYSTEM VERIFICATION

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: 750 Head Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.893 \text{ S/m}$; $\epsilon_r = 41.67$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-18-2017; Ambient Temp: 21.3°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3332; ConvF(6.81, 6.81, 6.81); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

750 MHz System Verification at 23.0 dBm (200 mW)

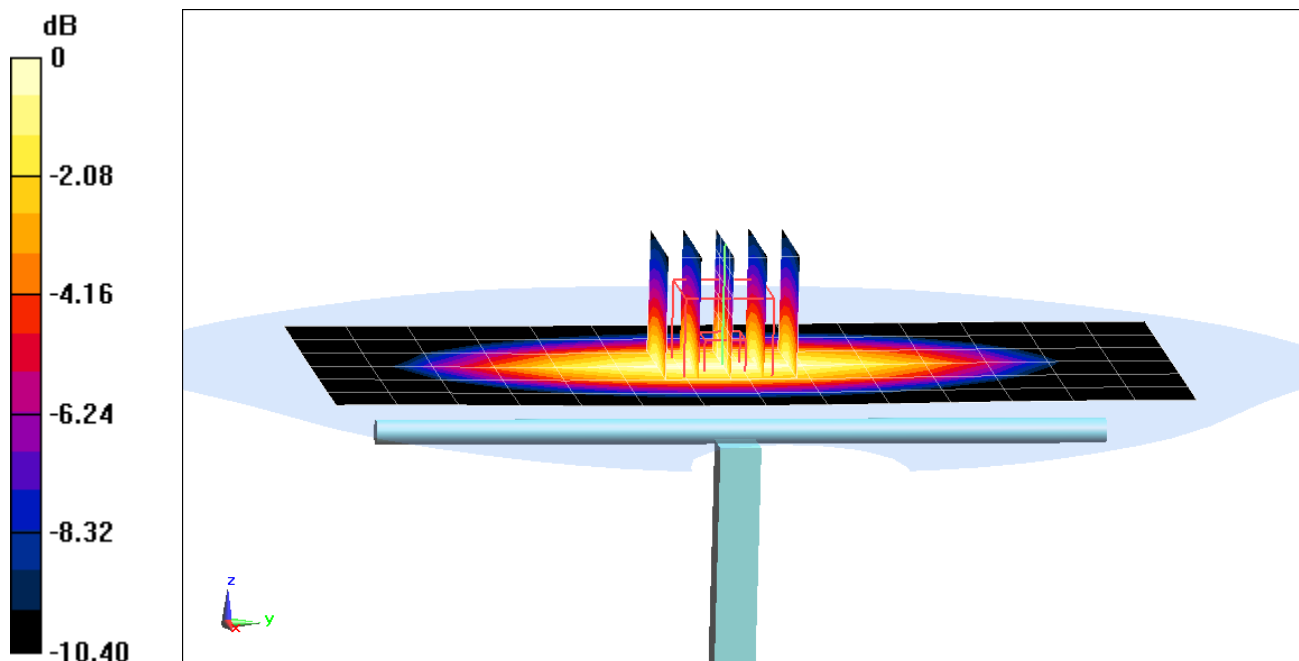
Area Scan (7x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 2.26 W/kg

SAR(1 g) = 1.55 W/kg

Deviation(1 g) = -7.41%



0 dB = 1.81 W/kg = 2.58 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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:

$f = 835 \text{ MHz}$; $\sigma = 0.894 \text{ S/m}$; $\epsilon_r = 41.162$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-19-2017; Ambient Temp: 22.8°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7406; ConvF(9.97, 9.97, 9.97); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

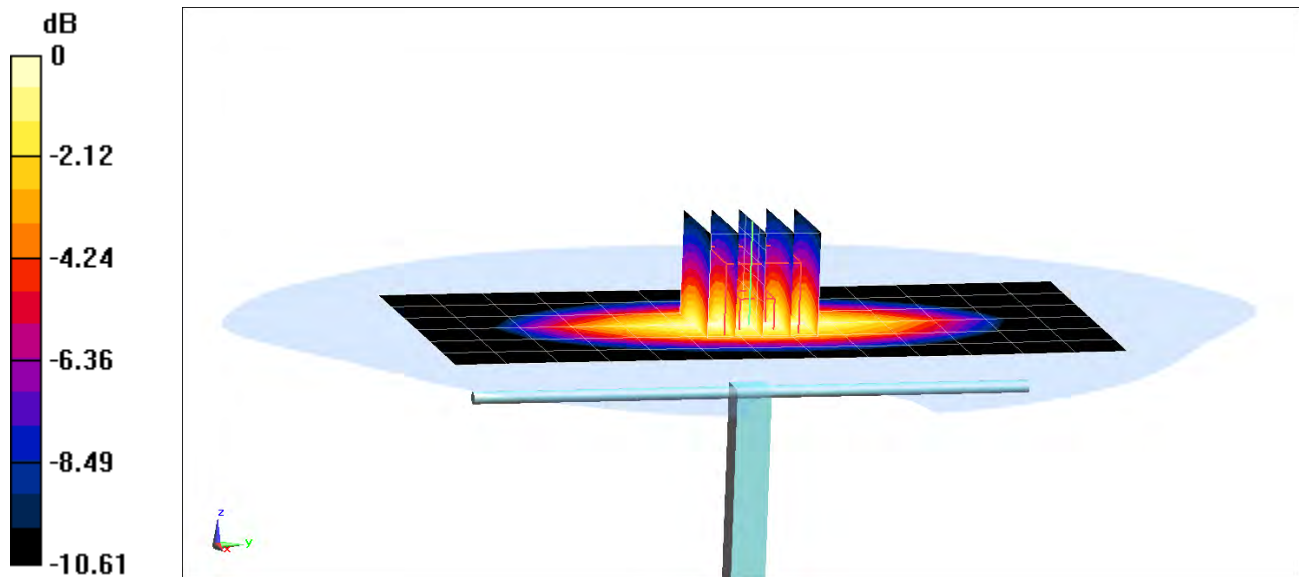
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 2.79 W/kg

SAR(1 g) = 1.87 W/kg

Deviation(1 g) = 2.41%



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

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.384 \text{ S/m}$; $\epsilon_r = 39.785$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-23-2017; Ambient Temp: 22.7°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3209; ConvF(5.5, 5.5, 5.5); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Right; Type: QD000P40CD; Serial: 1800

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

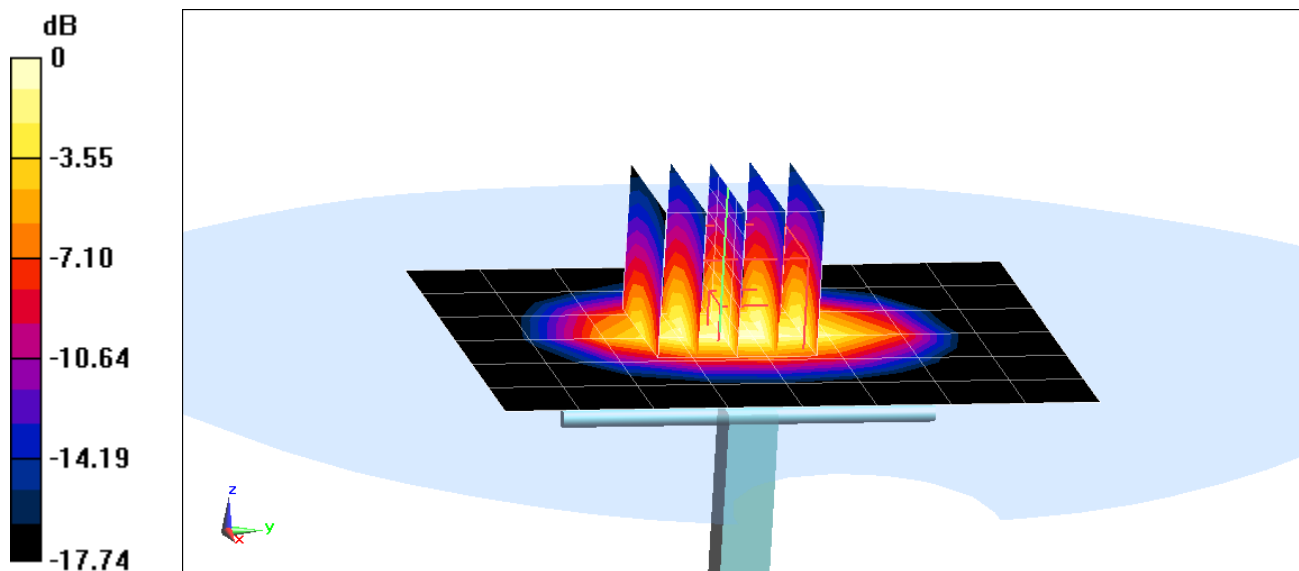
Area Scan (7x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 6.56 W/kg

SAR(1 g) = 3.62 W/kg

Deviation(1 g) = 0.28%



0 dB = 4.48 W/kg = 6.51 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.456 \text{ S/m}$; $\epsilon_r = 39.744$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-21-2017; Ambient Temp: 20.7°C; Tissue Temp: 20.7°C

Probe: ES3DV3 - SN3213; ConvF(5.29, 5.29, 5.29); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

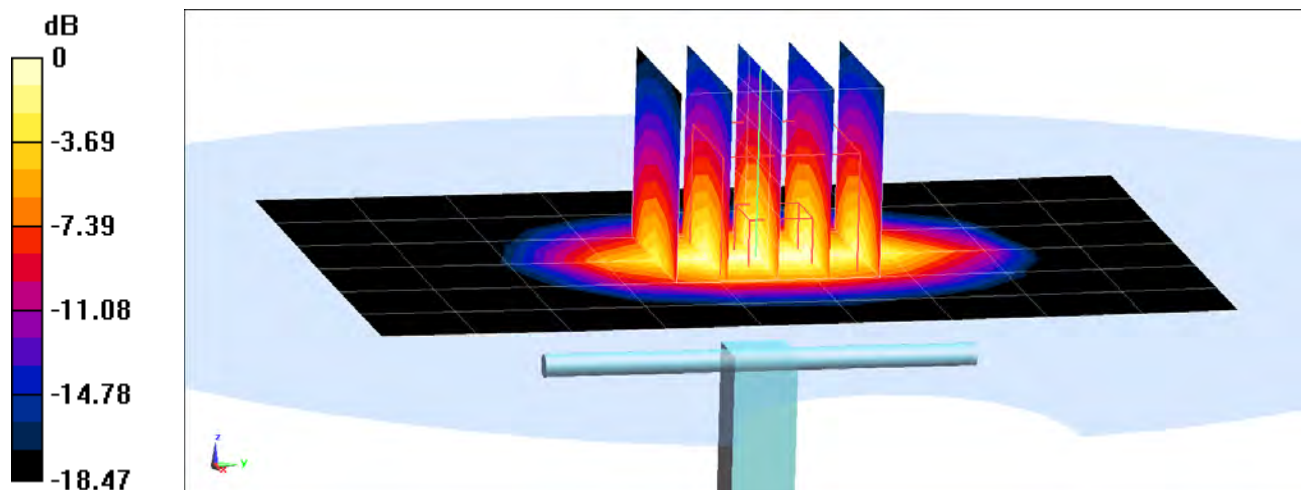
Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 7.60 W/kg

SAR(1 g) = 4.10 W/kg

Deviation(1 g) = 4.33%



0 dB = 5.19 W/kg = 7.15 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.871 \text{ S/m}$; $\epsilon_r = 38.587$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-23-2017; Ambient Temp: 20.6°C; Tissue Temp: 20.5°C

Probe: ES3DV3 - SN3332; ConvF(4.68, 4.68, 4.68); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

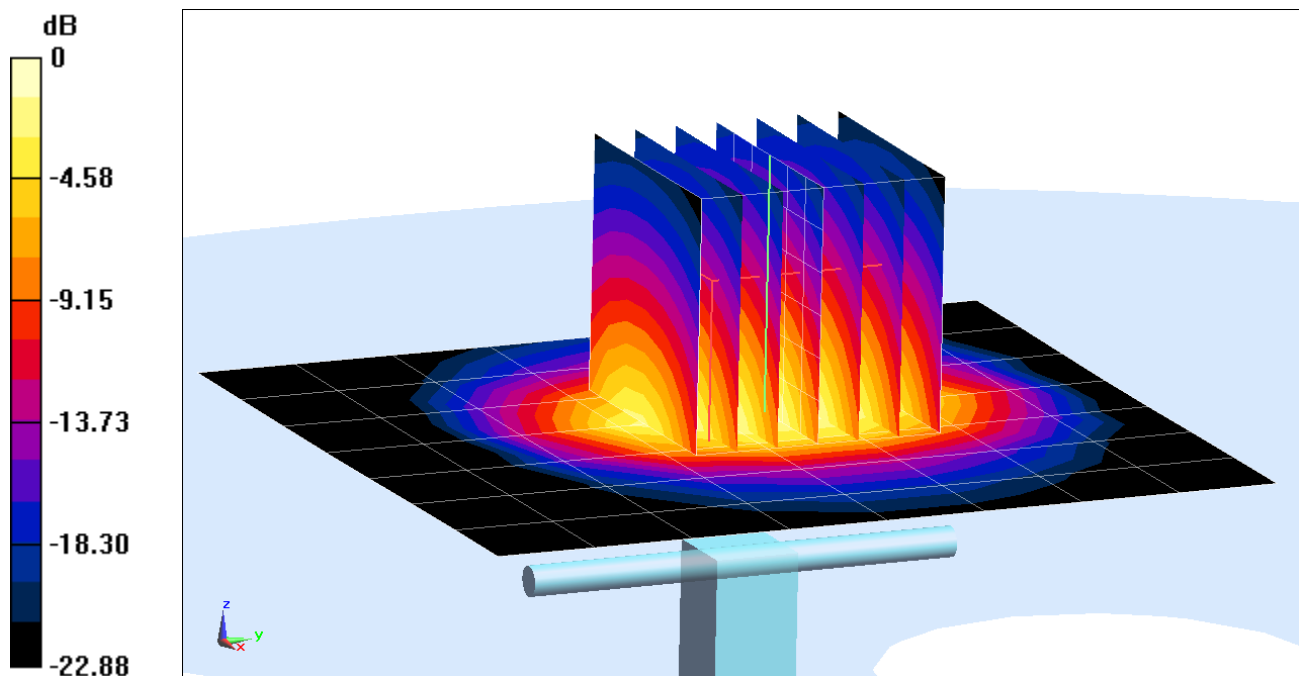
Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 11.4 W/kg

SAR(1 g) = 5.52 W/kg

Deviation(1 g) = 6.36%



0 dB = 7.06 W/kg = 8.49 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: 2450 MHz Head Medium parameters used:

$f = 2600$ MHz; $\sigma = 2.054$ S/m; $\epsilon_r = 38.023$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-20-2017; Ambient Temp: 22.0°C; Tissue Temp: 20.9°C

Probe: ES3DV3 - SN3332; ConvF(4.56, 4.56, 4.56); Calibrated: 8/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 8/9/2017

Phantom: SAM Front; Type: SAM; Serial: 1686

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

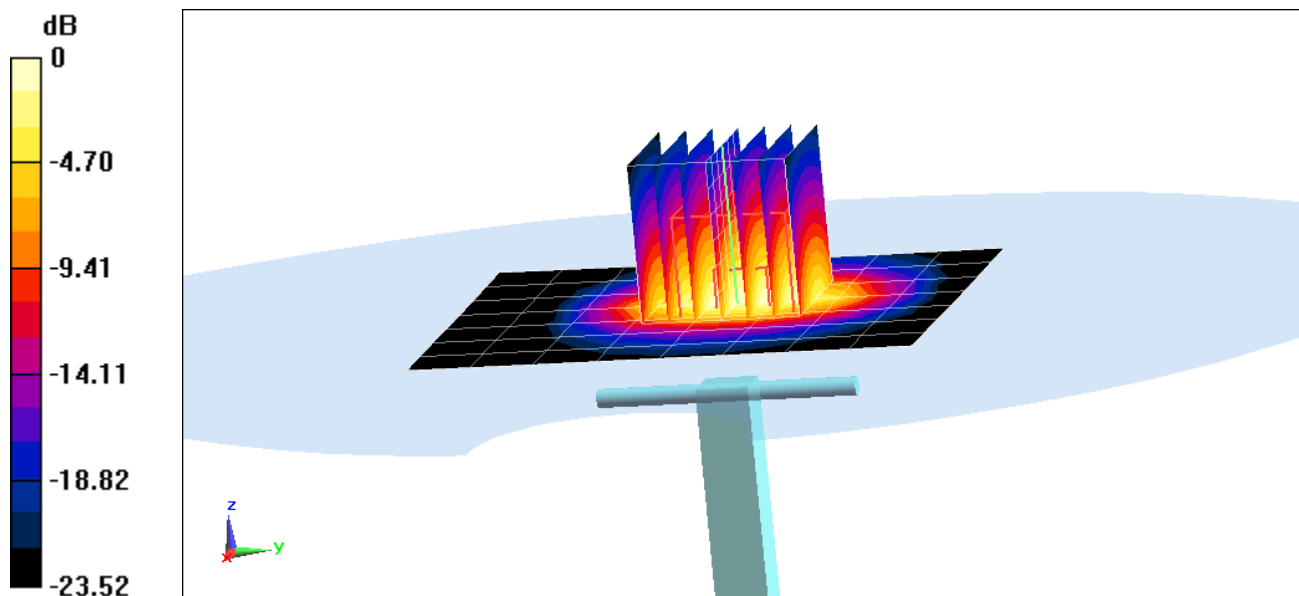
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Peak SAR (extrapolated) = 12.1 W/kg

SAR(1 g) = 5.65 W/kg

Deviation(1 g) = 0.18%



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

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1

Medium: 5 GHz Medium parameters used (interpolated):

$f = 5250 \text{ MHz}$; $\sigma = 4.606 \text{ S/m}$; $\epsilon_r = 35.56$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-25-2017; Ambient Temp: 22.8°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN3914; ConvF(5.49, 5.49, 5.49); Calibrated: 2/13/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/9/2017

Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715

Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5250 MHz System Verification at 17.0 dBm (50 mW)

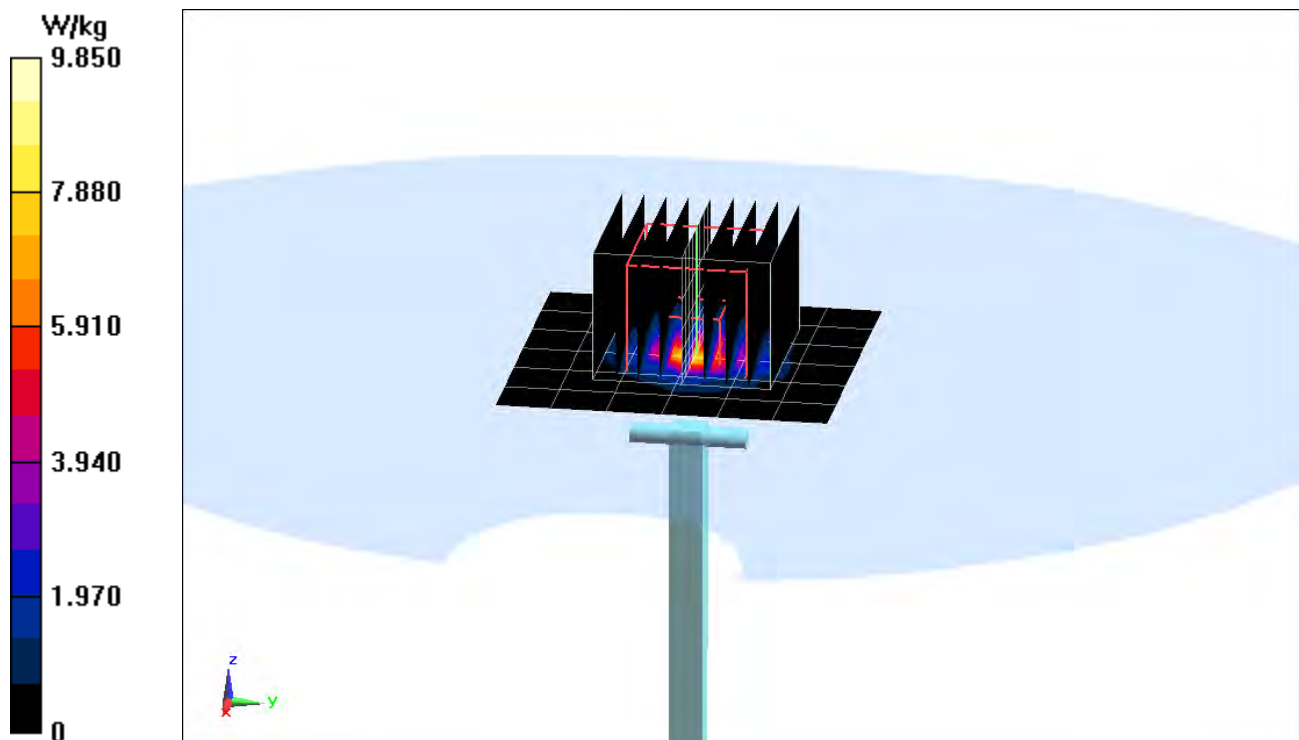
Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (9x9x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Peak SAR (extrapolated) = 16.3 W/kg

SAR(1 g) = 3.84 W/kg

Deviation(1 g) = -2.66%



PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: 5 GHz Medium parameters used:

$f = 5600 \text{ MHz}$; $\sigma = 4.96 \text{ S/m}$; $\epsilon_r = 35.069$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-25-2017; Ambient Temp: 22.8°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN3914; ConvF(4.94, 4.94, 4.94); Calibrated: 2/13/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/9/2017

Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

5600 MHz System Verification at 17.0 dBm (50 mW)

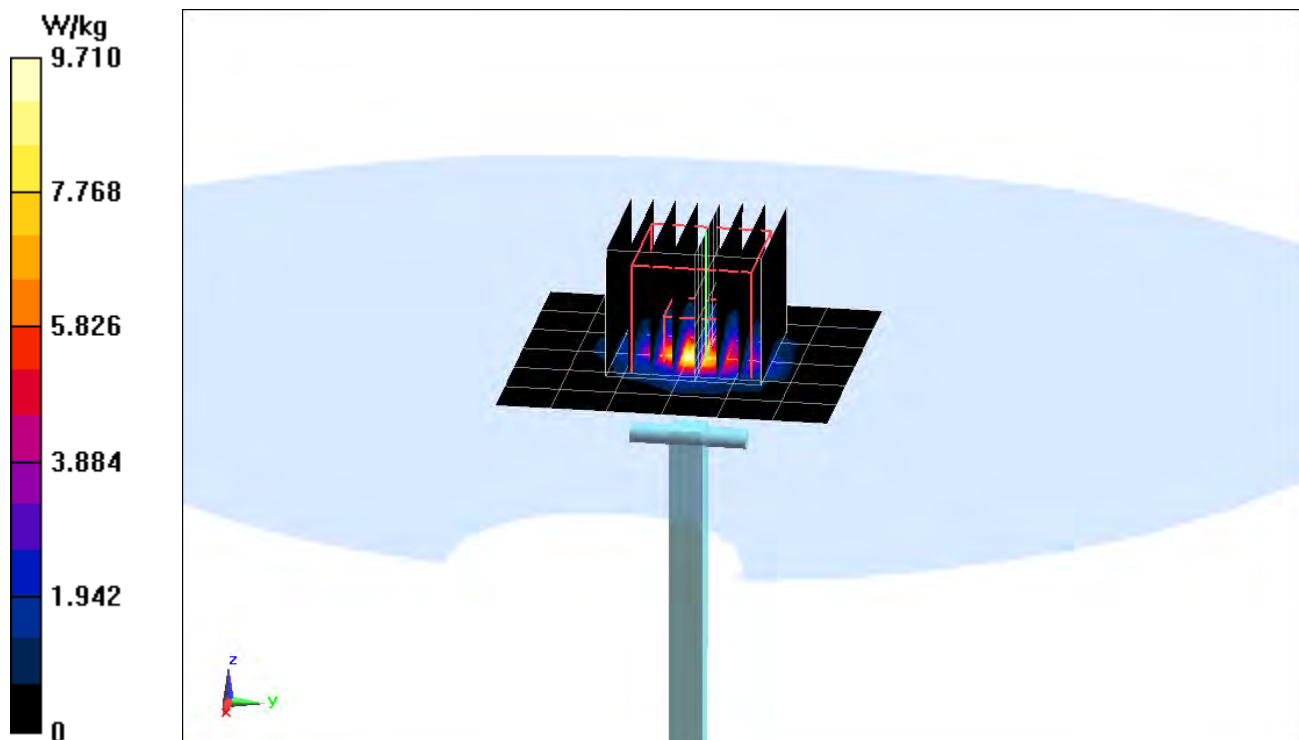
Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Peak SAR (extrapolated) = 17.7 W/kg

SAR(1 g) = 4.06 W/kg

Deviation(1 g) = -2.87%



PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: 5 GHz Medium parameters used (interpolated):

$f = 5750 \text{ MHz}$; $\sigma = 5.131 \text{ S/m}$; $\epsilon_r = 34.815$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-25-2017; Ambient Temp: 22.8°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN3914; ConvF(4.91, 4.91, 4.91); Calibrated: 2/13/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/9/2017

Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

5750 MHz System Verification at 17.0 dBm (50 mW)

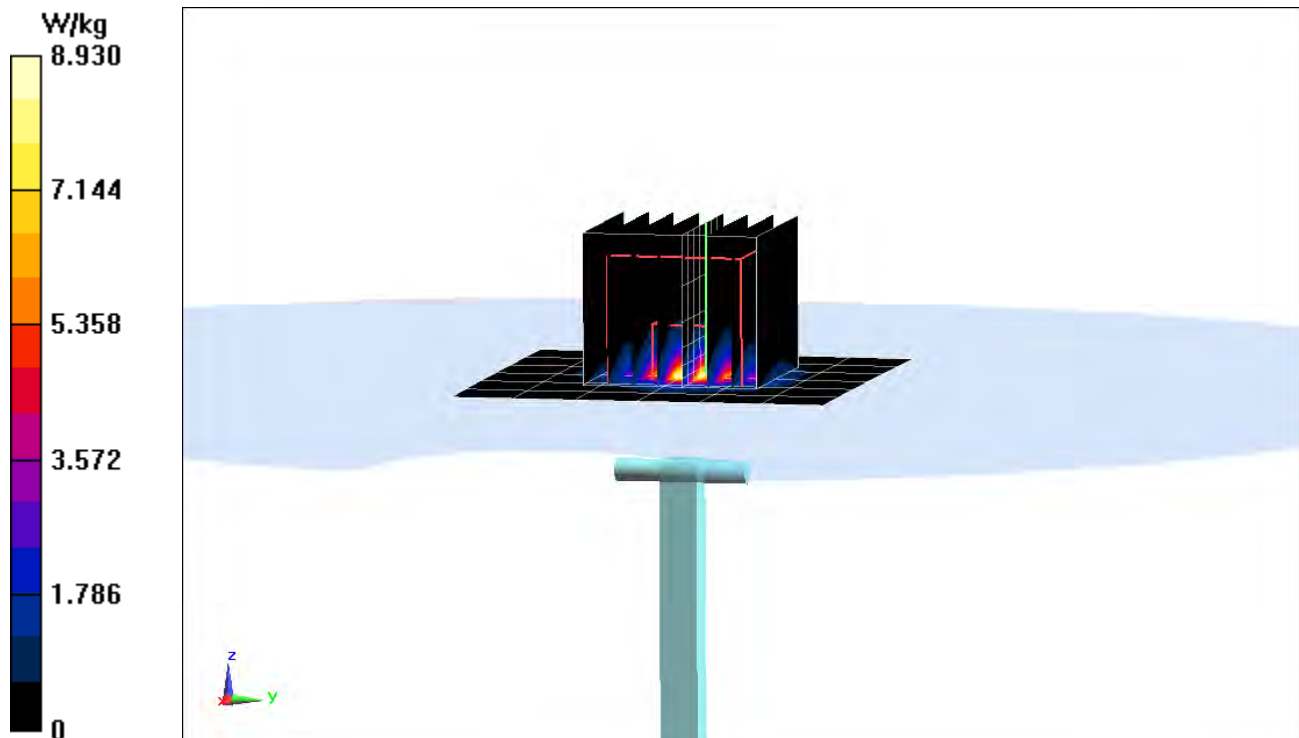
Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Peak SAR (extrapolated) = 16.5 W/kg

SAR(1 g) = 3.71 W/kg

Deviation(1 g) = -6.19%



PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: 750 Body Medium parameters used (interpolated):

$f = 750 \text{ MHz}$; $\sigma = 0.977 \text{ S/m}$; $\epsilon_r = 55.734$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

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

Probe: ES3DV3 - SN3213; ConvF(6.38, 6.38, 6.38); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

750 MHz System Verification at 23.0 dBm (200 mW)

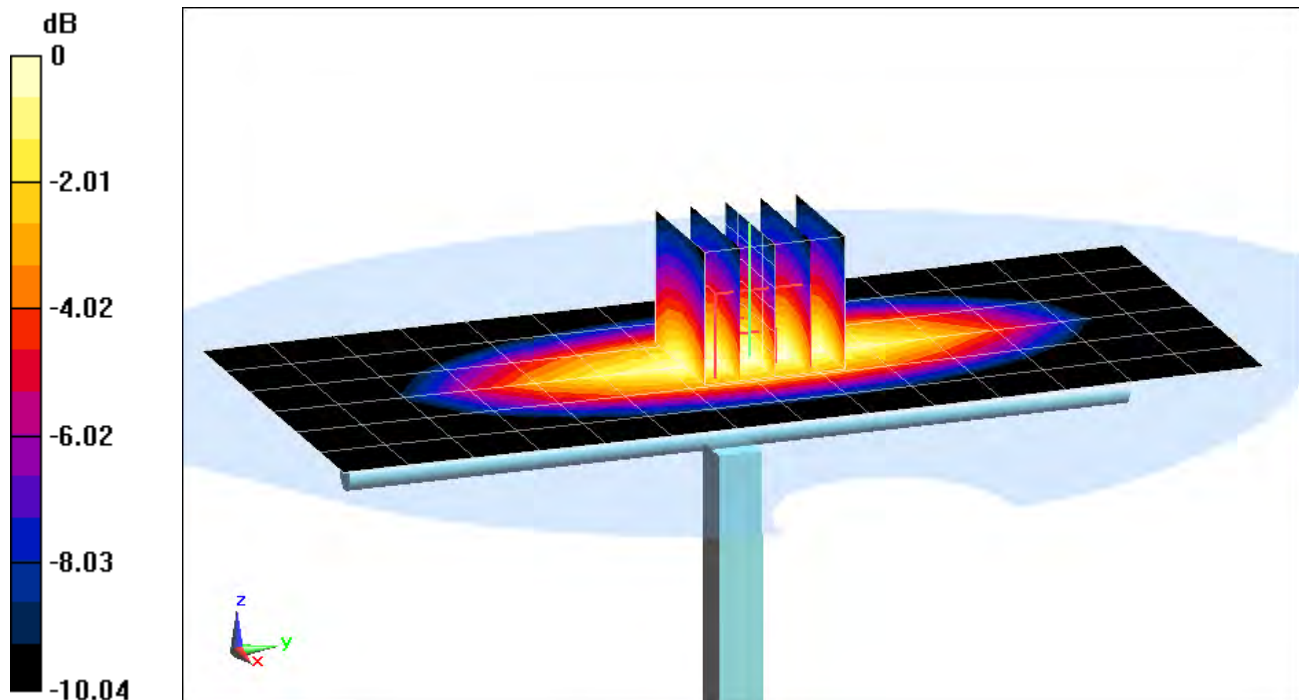
Area Scan (7x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 2.54 W/kg

SAR(1 g) = 1.73 W/kg

Deviation(1 g) = -1.59%



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

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.959 \text{ S/m}$; $\epsilon_r = 52.949$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-18-2017; Ambient Temp: 21.7°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3213; ConvF(6.28, 6.28, 6.28); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

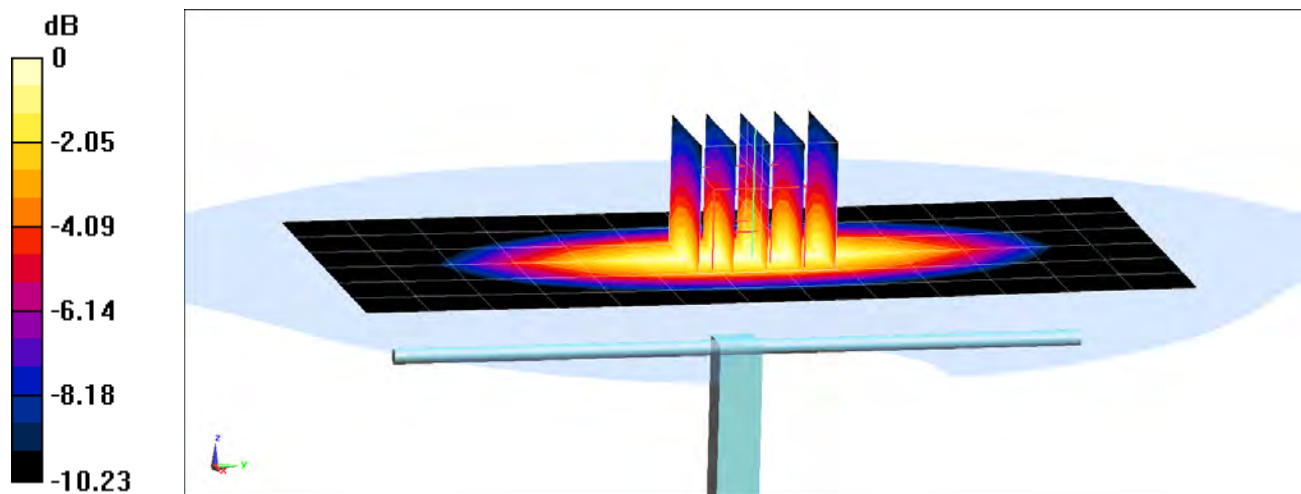
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 2.82 W/kg

SAR(1 g) = 1.93 W/kg

Deviation(1 g) = 2.55%



0 dB = 2.25 W/kg = 3.52 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.977 \text{ S/m}$; $\epsilon_r = 54.812$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 10-23-2017; Ambient Temp: 20.6°C; Tissue Temp: 20.3°C

Probe: ES3DV3 - SN3288; ConvF(6.3, 6.3, 6.3); Calibrated: 1/13/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1466; Calibrated: 1/16/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

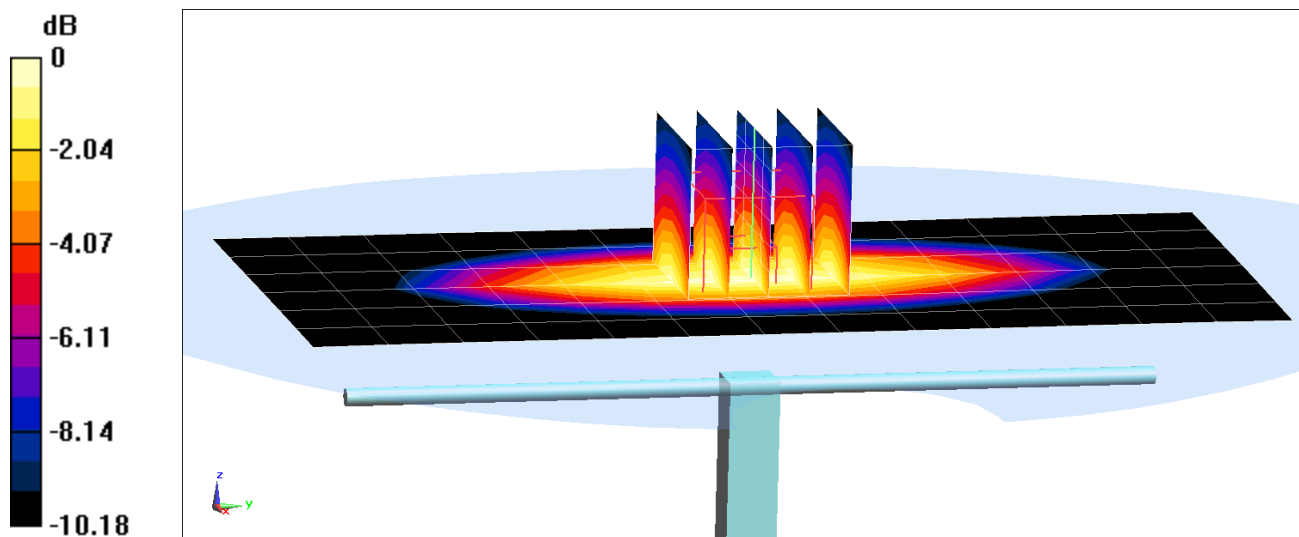
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 3.04 W/kg

SAR(1 g) = 2.10 W/kg

Deviation(1 g) = 7.14%



PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.492 \text{ S/m}$; $\epsilon_r = 52.159$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-20-2017; Ambient Temp: 23.5°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7406; ConvF(8.08, 8.08, 8.08); Calibrated: 4/18/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/11/2017

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

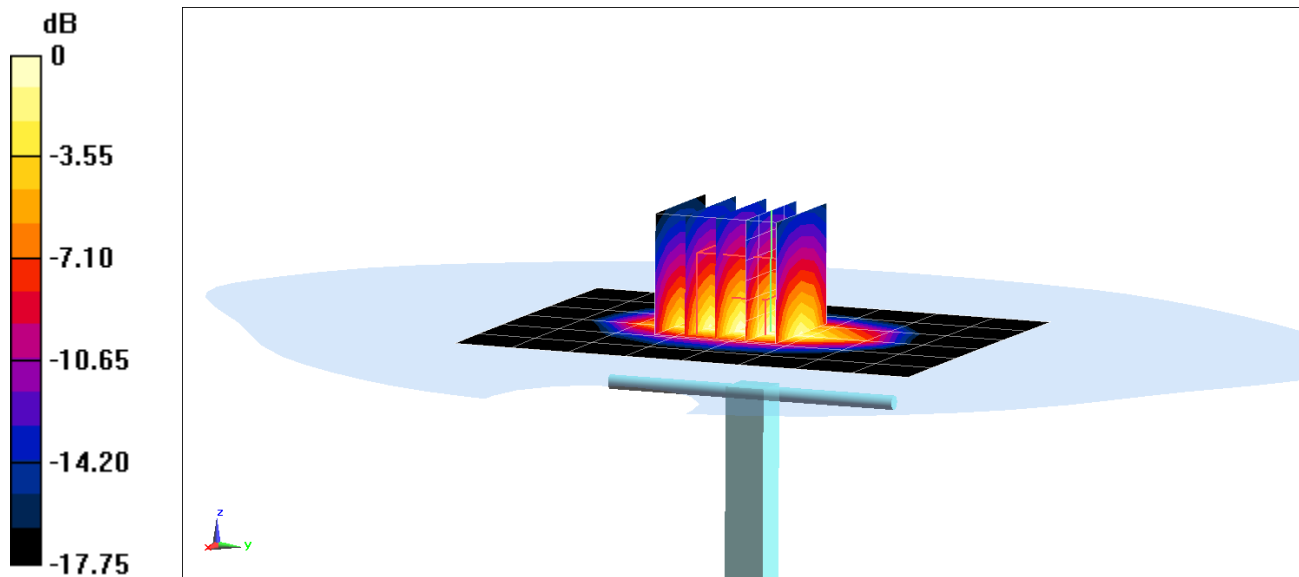
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Peak SAR (extrapolated) = 7.03 W/kg

SAR(1 g) = 3.82 W/kg

Deviation(1 g) = 4.66%



0 dB = 5.80 W/kg = 7.63 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.583 \text{ S/m}$; $\epsilon_r = 52.231$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-18-2017; Ambient Temp: 22.3°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3209; ConvF(4.93, 4.93, 4.93); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1415; Calibrated: 3/13/2017

Phantom: SAM Left; Type: QD000P40CD; Serial: 1692

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

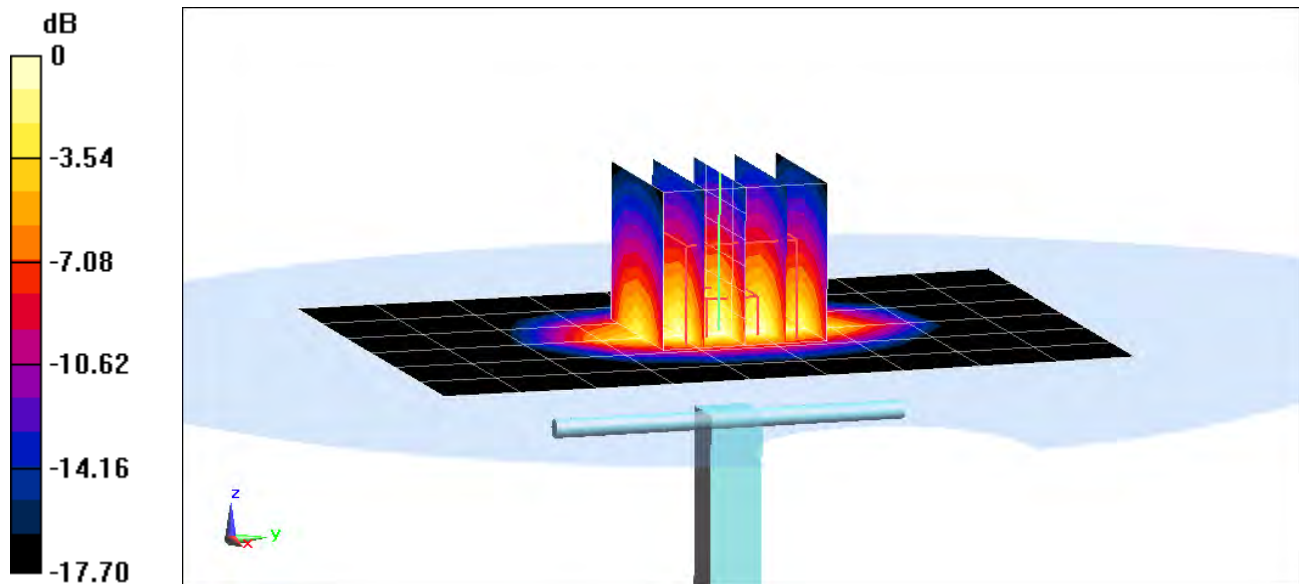
Area Scan (7x10x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 7.34 W/kg

SAR(1 g) = 4.09 W/kg

Deviation(1 g) = 4.60%



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

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used:

$f = 2450$ MHz; $\sigma = 2.022$ S/m; $\epsilon_r = 51.957$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-23-2017; Ambient Temp: 21.0°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3319; ConvF(4.42, 4.42, 4.42); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: 1648

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

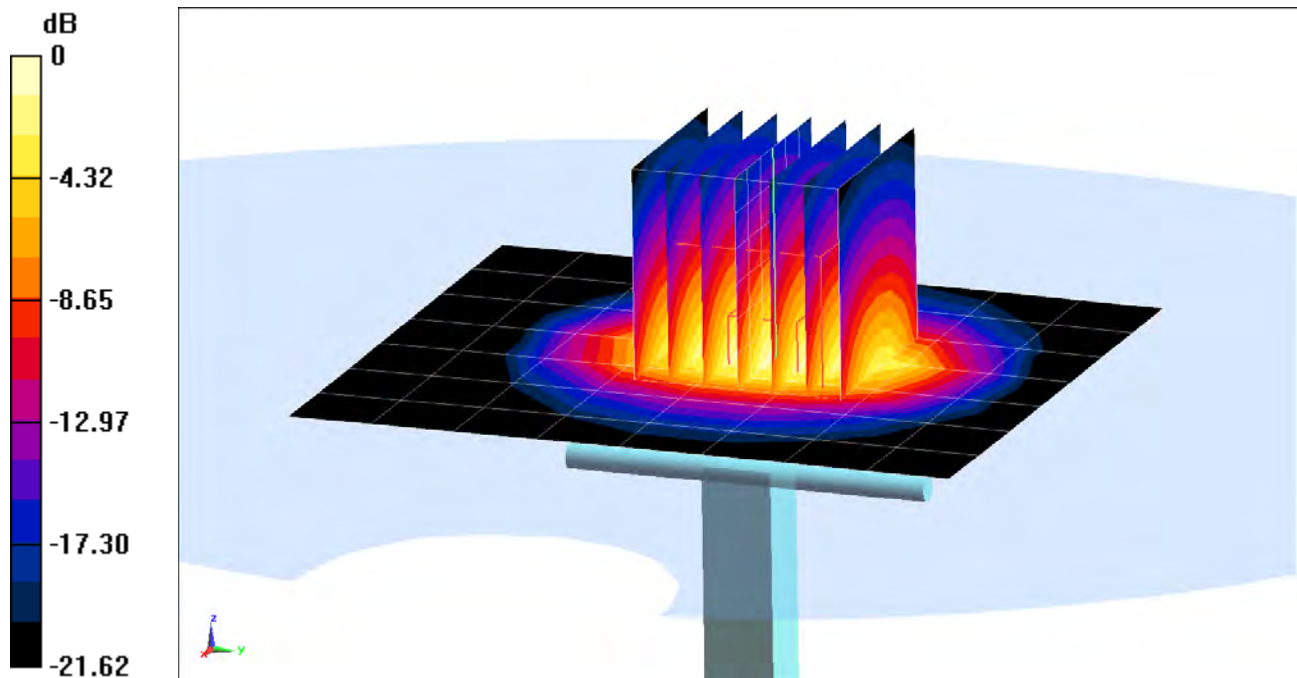
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Peak SAR (extrapolated) = 10.2 W/kg

SAR(1 g) = 4.94 W/kg

Deviation(1 g) = -2.76%



0 dB = 6.41 W/kg = 8.07 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 2.03 \text{ S/m}$; $\epsilon_r = 51.483$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-09-2017; Ambient Temp: 22.6°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3213; ConvF(4.53, 4.53, 4.53); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

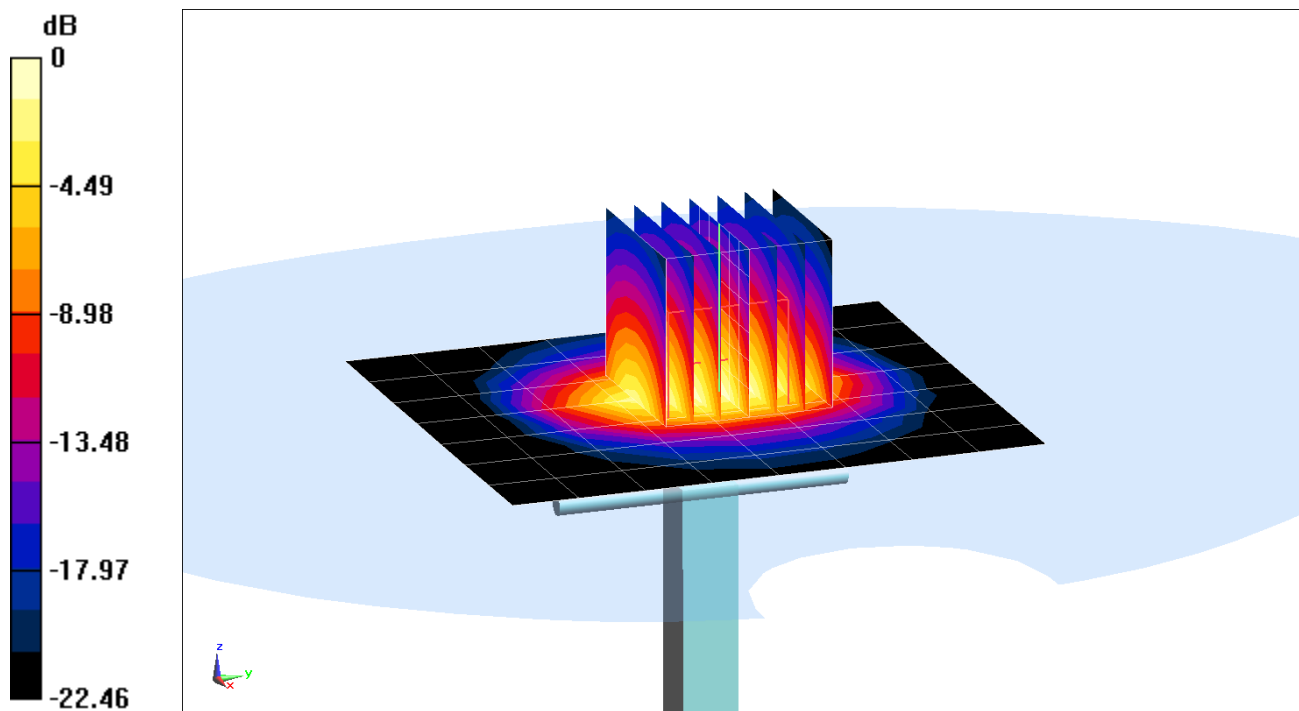
Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 10.8 W/kg

SAR(1 g) = 5.17 W/kg

Deviation(1 g) = 1.77%



0 dB = 6.83 W/kg = 8.34 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: 2600 Body Medium parameters used:

$f = 2600 \text{ MHz}$; $\sigma = 2.244 \text{ S/m}$; $\epsilon_r = 50.325$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-18-2017; Ambient Temp: 23.3°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3319; ConvF(4.18, 4.18, 4.18); Calibrated: 3/14/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1368; Calibrated: 3/8/2017

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: 1648

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

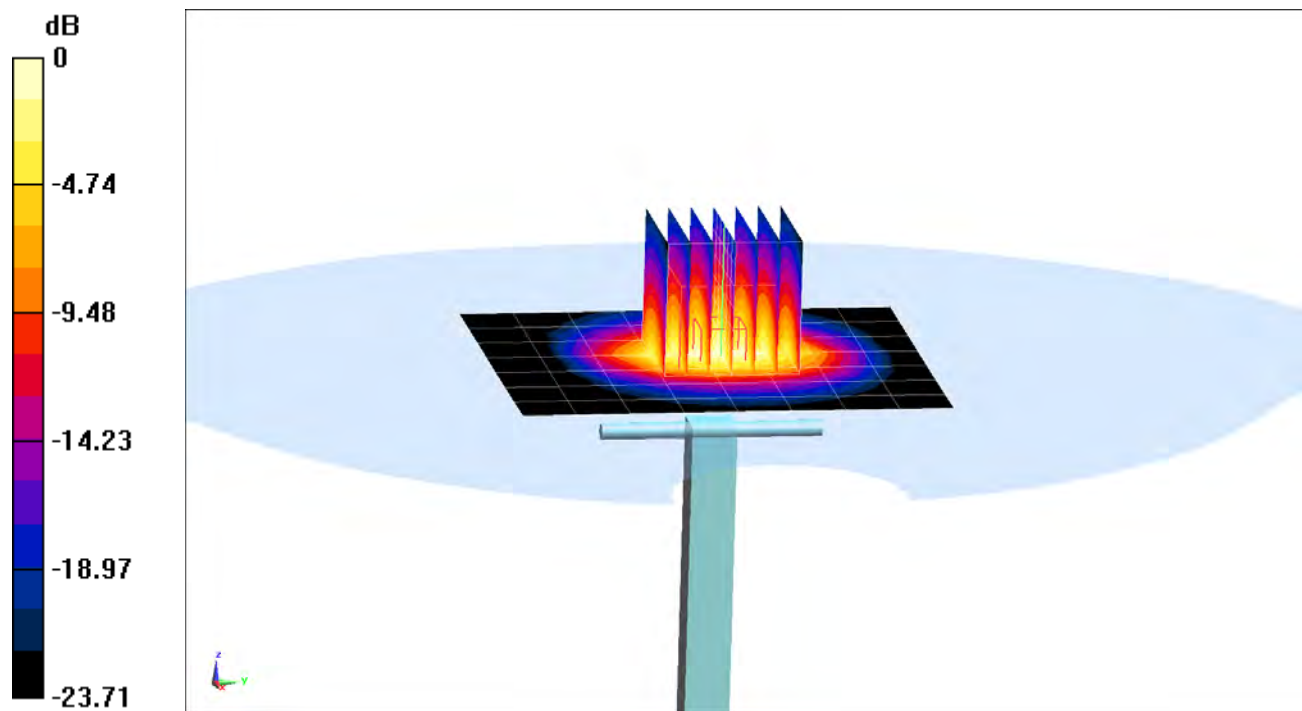
Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 11.8 W/kg

SAR(1 g) = 5.48 W/kg

Deviation(1 g) = 0.18%



0 dB = 7.23 W/kg = 8.59 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used:

$f = 2600 \text{ MHz}$; $\sigma = 2.24 \text{ S/m}$; $\epsilon_r = 50.865$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-09-2017; Ambient Temp: 22.6°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3213; ConvF(4.32, 4.32, 4.32); Calibrated: 2/10/2017;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/9/2017

Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

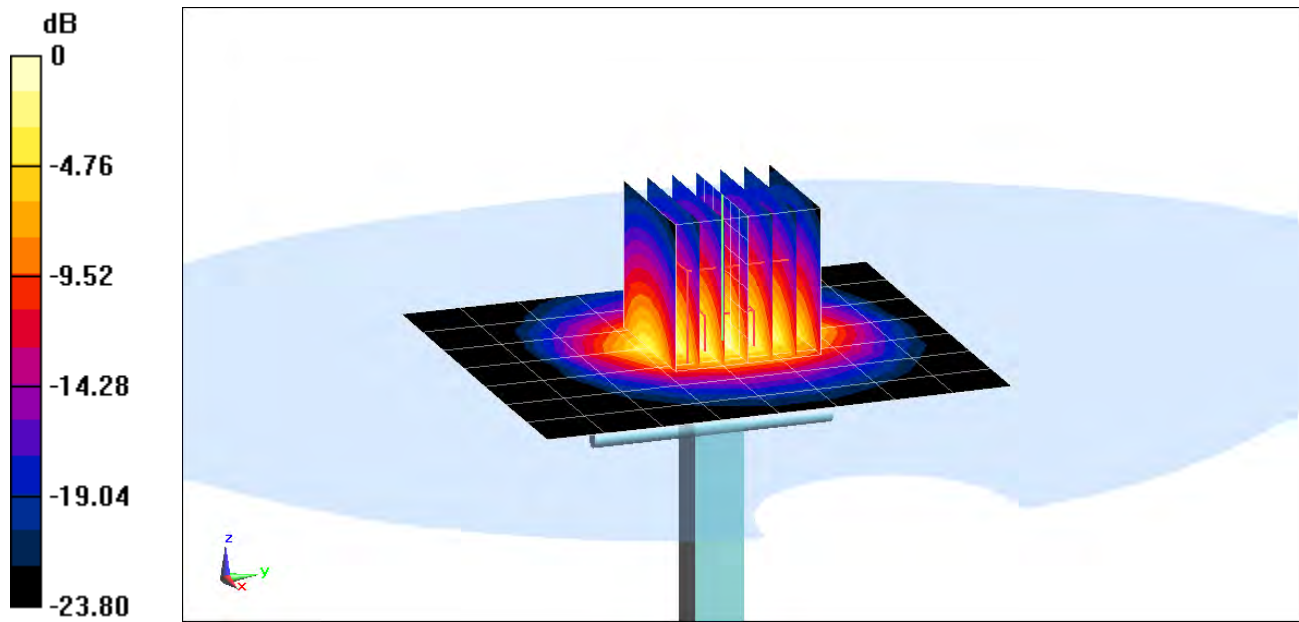
Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Peak SAR (extrapolated) = 12.6 W/kg

SAR(1 g) = 5.64 W/kg

Deviation(1 g) = 3.87%



0 dB = 7.56 W/kg = 8.79 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used (interpolated):

$f = 5250 \text{ MHz}$; $\sigma = 5.405 \text{ S/m}$; $\epsilon_r = 48.529$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-24-2017; Ambient Temp: 22.5°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7308; ConvF(4.84, 4.84, 4.84); Calibrated: 8/16/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/14/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5250 MHz System Verification at 17.0 dBm (50 mW)

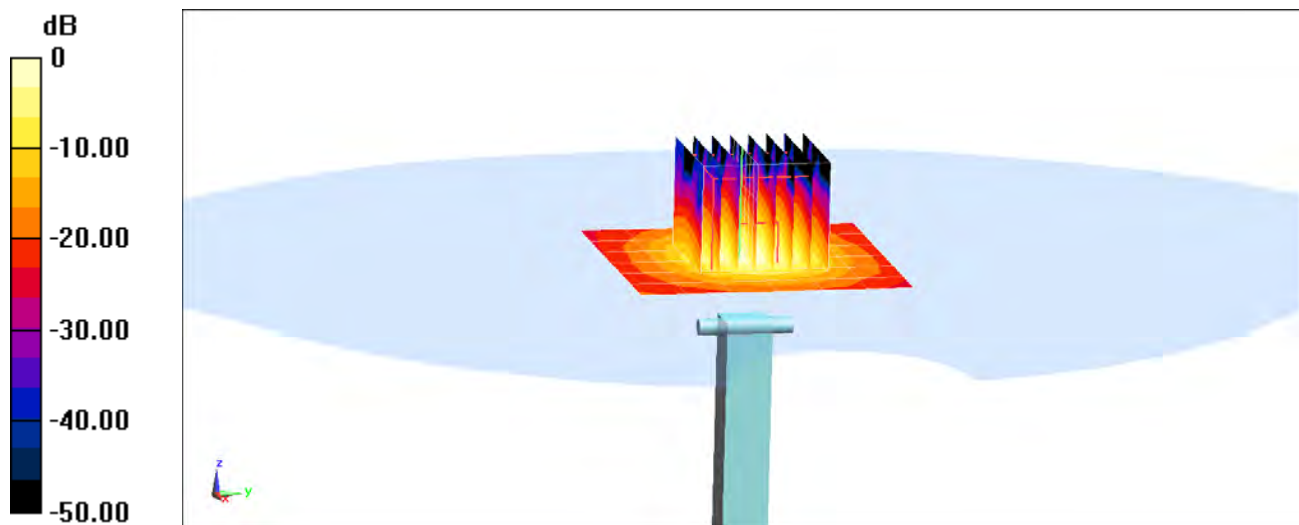
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 17.0 W/kg

SAR(1 g) = 3.75 W/kg

Deviation(1 g) = -2.47%



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

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used:

$f = 5600 \text{ MHz}$; $\sigma = 5.91 \text{ S/m}$; $\epsilon_r = 47.818$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-24-2017; Ambient Temp: 22.5°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7308; ConvF(4.23, 4.23, 4.23); Calibrated: 8/16/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/14/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

5600 MHz System Verification at 17.0 dBm (50 mW)

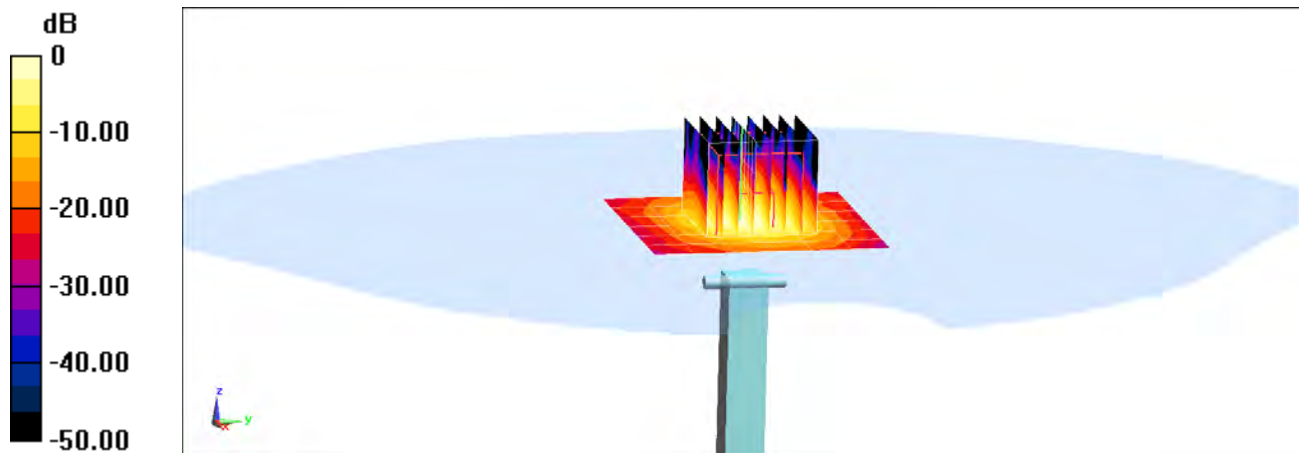
Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Peak SAR (extrapolated) = 18.5 W/kg

SAR(1 g) = 3.81 W/kg

Deviation(1 g) = -2.93%



0 dB = 9.27 W/kg = 9.67 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: 5 GHz Body Medium parameters used (interpolated):

$f = 5750 \text{ MHz}$; $\sigma = 6.135 \text{ S/m}$; $\epsilon_r = 47.546$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 10-24-2017; Ambient Temp: 22.5°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7308; ConvF(4.5, 4.5, 4.5); Calibrated: 8/16/2017;

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/14/2017

Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646

Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

5750 MHz System Verification at 17.0 dBm (50 mW)

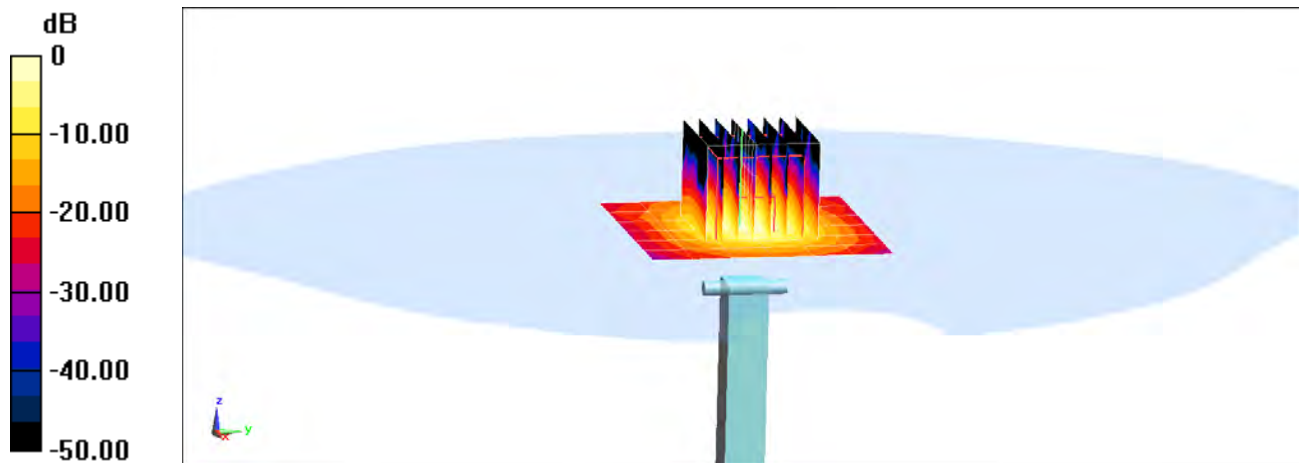
Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Peak SAR (extrapolated) = 17.8 W/kg

SAR(1 g) = 3.54 W/kg

Deviation(1 g) = -8.17%



0 dB = 8.70 W/kg = 9.40 dBW/kg

APPENDIX C: PROBE CALIBRATION



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: **ES3-3332_Aug17**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3332**

Calibration procedure(s) **QA CAL-01.v9, QA CAL-23.v5, QA CAL-25.v6**
Calibration procedure for dosimetric E-field probes

Calibration date: **August 14, 2017**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
 The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02525)	Apr-18
Reference 20 dB Attenuator	SN: S5277 (20x)	07-Apr-17 (No. 217-02528)	Apr-18
Reference Probe ES3DV2	SN: 3013	31-Dec-16 (No. ES3-3013_Dec16)	Dec-17
DAE4	SN: 660	7-Dec-16 (No. DAE4-660_Dec16)	Dec-17
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-16)	In house check: Jun-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

Calibrated by:	Name Jeton Kastrati	Function Laboratory Technician	Signature
Approved by:	Name Katja Pokovic	Function Technical Manager	Signature

Issued: August 16, 2017

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

The Swiss Accreditation Service is one of the signatories to the EA
 Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

- 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
- 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
- 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
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not affect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z}** = NORM_{x,y,z} * frequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCPx,y,z**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; D_{x,y,z}; VR_{x,y,z}; A, B, C, D** are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle**: The angle is assessed using the information gained by determining the NORM_x (no uncertainty required).

Probe ES3DV3

SN:3332

Manufactured: January 24, 2012
Calibrated: August 14, 2017

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3332

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	1.00	0.93	0.88	$\pm 10.1 \%$
DCP (mV) ^B	104.0	103.0	103.0	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Unc ^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	192.0	$\pm 3.5 \%$
		Y	0.0	0.0	1.0		194.3	
		Z	0.0	0.0	1.0		179.9	

Note: For details on UID parameters see Appendix.

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $\text{ms}\cdot\text{V}^{-2}$	T2 $\text{ms}\cdot\text{V}^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
X	76.72	548.9	35.46	56.44	4.600	5.1	0.000	0.903	1.011
Y	44.78	323.3	35.85	29.01	2.529	5.1	0.000	0.546	1.009
Z	38.01	268.3	34.56	26.38	1.777	5.1	0.096	0.424	1.004

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%.

^A The uncertainties of Norm X,Y,Z do not affect the E^2 -field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter: uncertainty not required.

^E Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3332

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc (k=2)
750	41.9	0.89	6.81	6.81	6.81	0.72	1.31	± 12.0 %
835	41.5	0.90	6.64	6.64	6.64	0.80	1.21	± 12.0 %
1750	40.1	1.37	5.56	5.56	5.56	0.80	1.20	± 12.0 %
1900	40.0	1.40	5.33	5.33	5.33	0.76	1.26	± 12.0 %
2300	39.5	1.67	4.99	4.99	4.99	0.70	1.36	± 12.0 %
2450	39.2	1.80	4.68	4.68	4.68	0.63	1.48	± 12.0 %
2600	39.0	1.96	4.56	4.56	4.56	0.80	1.23	± 12.0 %

^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^G Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3332

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc (k=2)
750	55.5	0.96	6.54	6.54	6.54	0.55	1.43	± 12.0 %
835	55.2	0.97	6.47	6.47	6.47	0.71	1.27	± 12.0 %
1750	53.4	1.49	5.16	5.16	5.16	0.80	1.22	± 12.0 %
1900	53.3	1.52	4.95	4.95	4.95	0.54	1.56	± 12.0 %
2300	52.9	1.81	4.74	4.74	4.74	0.80	1.30	± 12.0 %
2450	52.7	1.95	4.55	4.55	4.55	0.80	1.17	± 12.0 %
2600	52.5	2.16	4.43	4.43	4.43	0.80	1.12	± 12.0 %

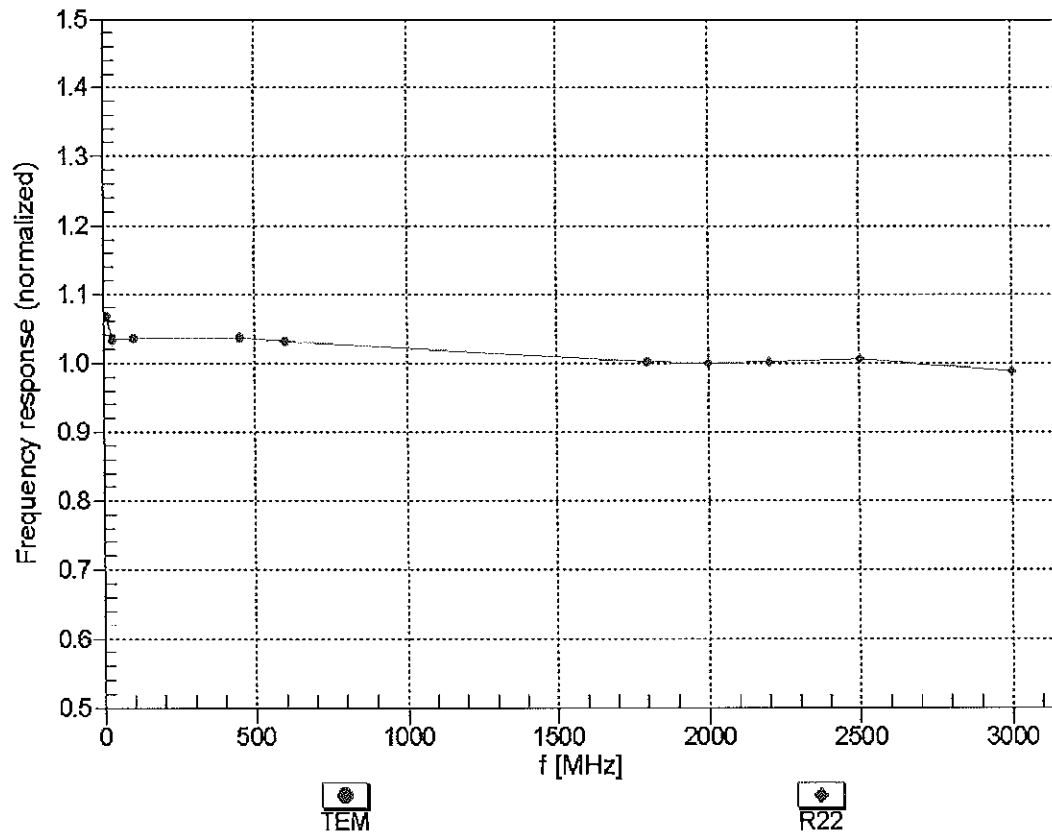
^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^G Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

Frequency Response of E-Field

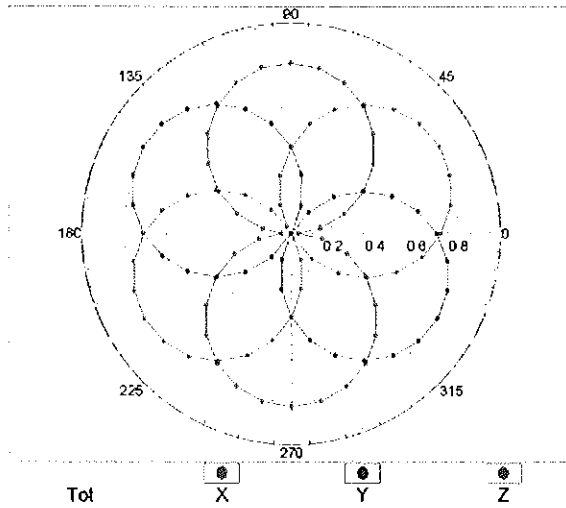
(TEM-Cell:ifi110 EXX, Waveguide: R22)



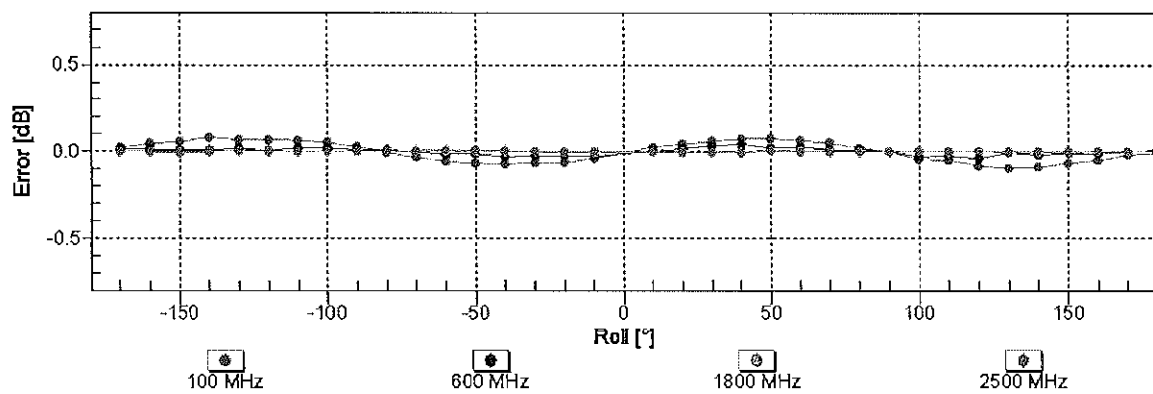
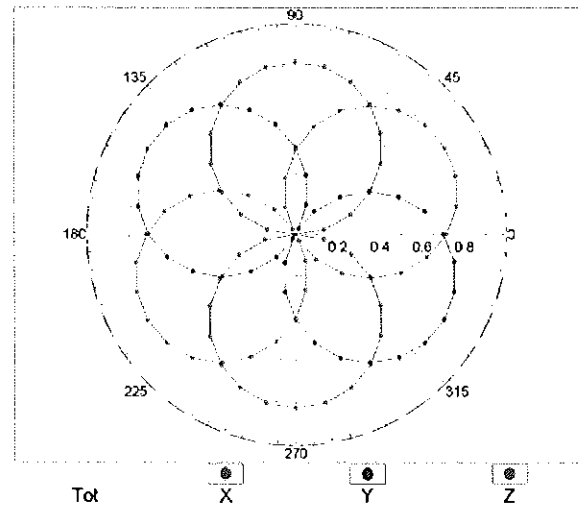
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

Receiving Pattern (ϕ), $\theta = 0^\circ$

f=600 MHz, TEM

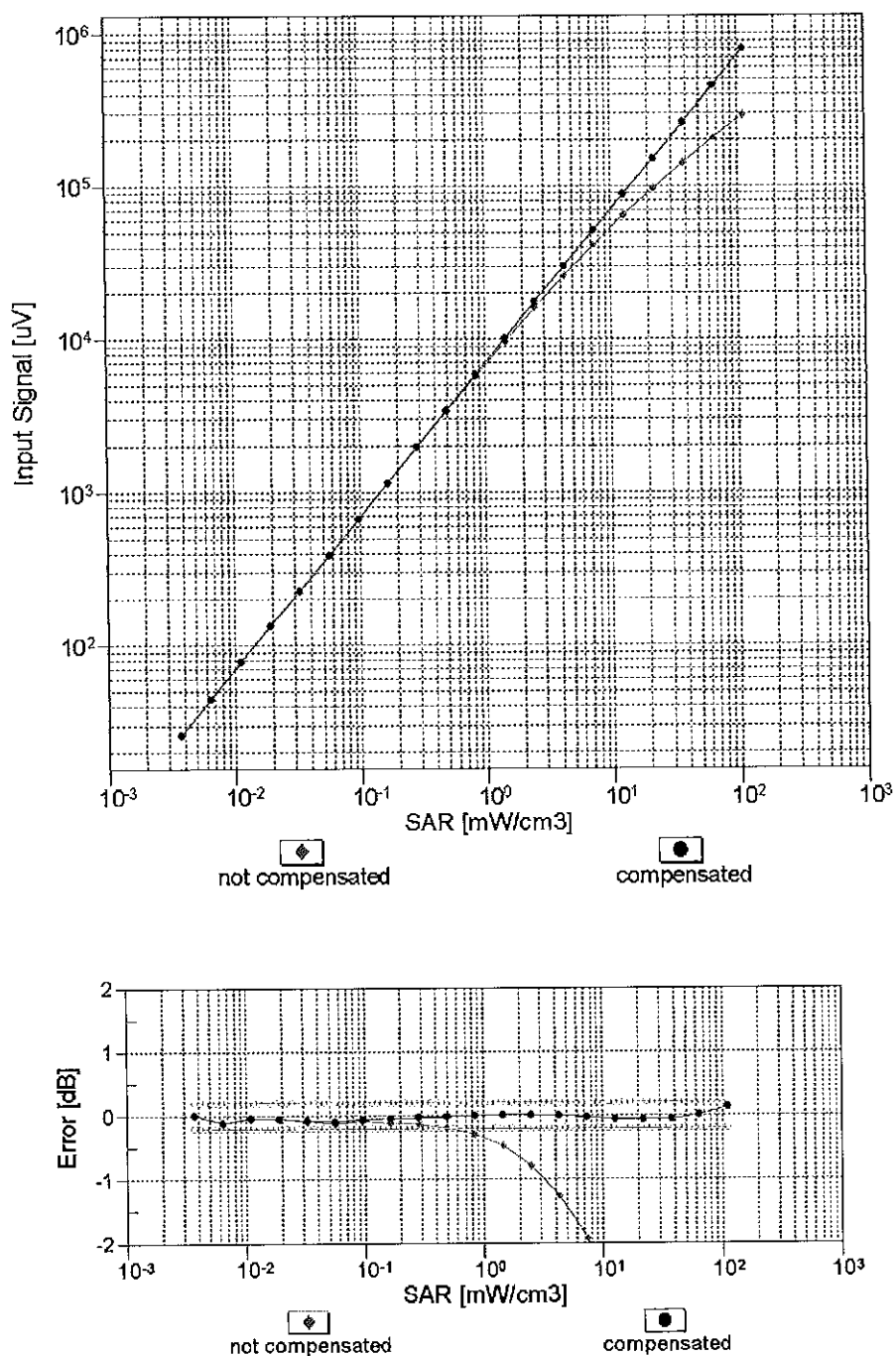


f=1800 MHz, R22



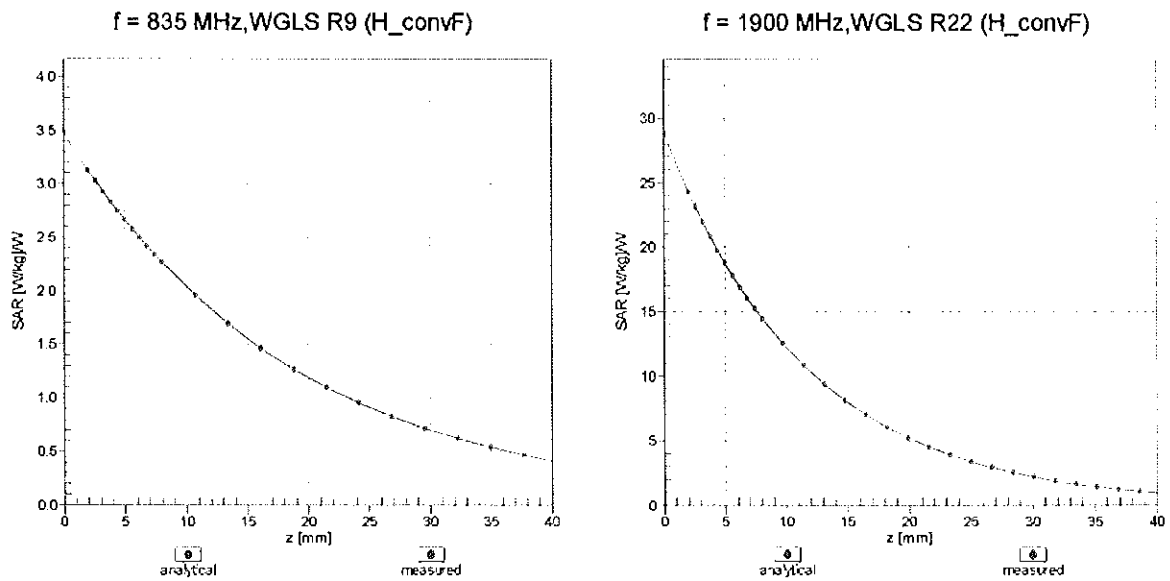
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

Dynamic Range $f(\text{SAR}_{\text{head}})$ (TEM cell , $f_{\text{eval}} = 1900 \text{ MHz}$)



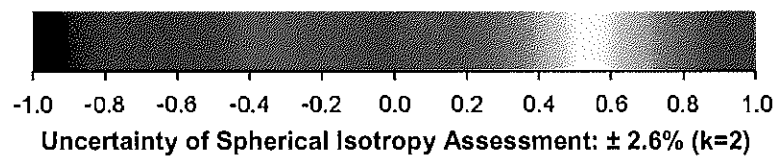
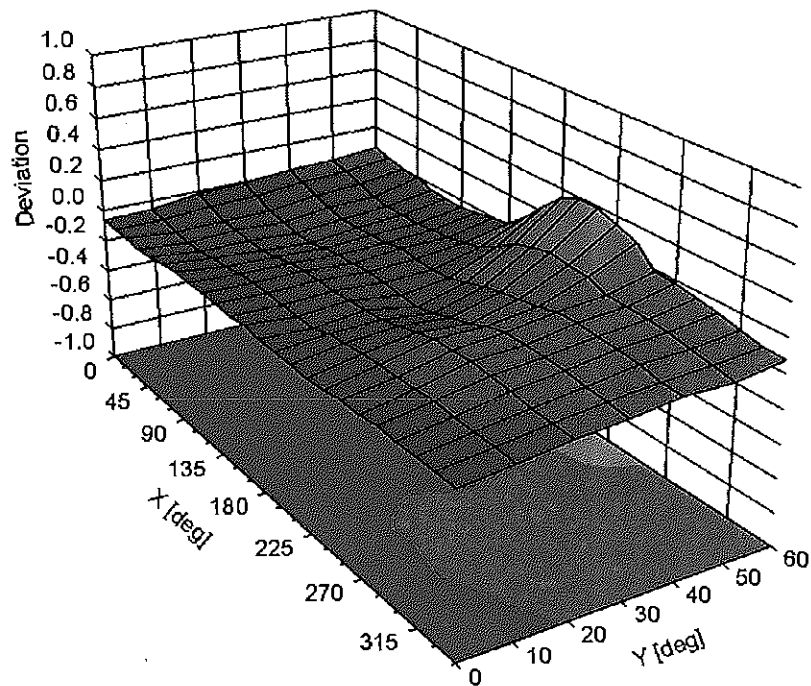
Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), $f = 900 \text{ MHz}$



DASY/EASY - Parameters of Probe: ES3DV3 - SN:3332

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	50
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	4 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

Appendix: Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB/μV	C	D dB	VR mV	Max Unc ^E (k=2)
0	CW	X	0.00	0.00	1.00	0.00	192.0	± 3.5 %
		Y	0.00	0.00	1.00		194.3	
		Z	0.00	0.00	1.00		179.9	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	X	9.02	77.08	18.94	10.00	25.0	± 9.6 %
		Y	12.19	85.73	21.41		25.0	
		Z	23.02	95.31	23.86		25.0	
10011- CAB	UMTS-FDD (WCDMA)	X	1.60	76.05	19.77	0.00	150.0	± 9.6 %
		Y	1.08	68.15	15.73		150.0	
		Z	1.25	71.36	17.60		150.0	
10012- CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.52	68.53	17.98	0.41	150.0	± 9.6 %
		Y	1.33	65.39	16.06		150.0	
		Z	1.37	66.35	16.79		150.0	
10013- CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	5.37	67.71	17.82	1.46	150.0	± 9.6 %
		Y	5.07	67.50	17.57		150.0	
		Z	4.99	67.81	17.71		150.0	
10021- DAC	GSM-FDD (TDMA, GMSK)	X	11.16	81.48	22.11	9.39	50.0	± 9.6 %
		Y	61.59	115.23	32.13		50.0	
		Z	100.00	122.78	33.35		50.0	
10023- DAC	GPRS-FDD (TDMA, GMSK, TN 0)	X	11.07	81.20	22.06	9.57	50.0	± 9.6 %
		Y	43.11	109.07	30.52		50.0	
		Z	100.00	122.63	33.33		50.0	
10024- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	12.88	85.34	22.06	6.56	60.0	± 9.6 %
		Y	100.00	120.15	31.36		60.0	
		Z	100.00	120.25	30.99		60.0	
10025- DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	X	19.49	99.22	36.41	12.57	50.0	± 9.6 %
		Y	15.67	100.74	38.44		50.0	
		Z	29.43	124.69	47.97		50.0	
10026- DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	18.92	96.32	32.19	9.56	60.0	± 9.6 %
		Y	17.33	101.02	35.08		60.0	
		Z	24.89	113.23	39.81		60.0	
10027- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	24.19	95.70	24.33	4.80	80.0	± 9.6 %
		Y	100.00	119.30	30.03		80.0	
		Z	100.00	120.36	30.17		80.0	
10028- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	115.36	28.49	3.55	100.0	± 9.6 %
		Y	100.00	119.83	29.45		100.0	
		Z	100.00	122.10	30.18		100.0	
10029- DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	16.27	93.78	30.32	7.80	80.0	± 9.6 %
		Y	11.67	92.24	30.90		80.0	
		Z	13.37	97.80	33.46		80.0	
10030- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	15.68	88.86	22.54	5.30	70.0	± 9.6 %
		Y	100.00	118.49	29.99		70.0	
		Z	100.00	118.88	29.80		70.0	
10031- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	100.00	116.01	27.12	1.88	100.0	± 9.6 %
		Y	100.00	121.13	28.42		100.0	
		Z	100.00	126.03	30.32		100.0	

10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	100.00	119.38	27.36	1.17	100.0	± 9.6 %
		Y	100.00	126.54	29.58		100.0	
		Z	100.00	136.16	33.43		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	13.27	88.21	24.10	5.30	70.0	± 9.6 %
		Y	20.91	99.02	27.13		70.0	
		Z	58.05	115.59	31.27		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	16.18	96.67	25.44	1.88	100.0	± 9.6 %
		Y	10.83	91.57	22.94		100.0	
		Z	52.78	113.06	28.24		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	12.45	95.04	24.79	1.17	100.0	± 9.6 %
		Y	5.49	83.70	20.10		100.0	
		Z	18.62	100.06	24.56		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	14.34	89.63	24.62	5.30	70.0	± 9.6 %
		Y	26.79	103.24	28.41		70.0	
		Z	95.10	123.67	33.30		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	15.98	96.45	25.32	1.88	100.0	± 9.6 %
		Y	9.62	89.98	22.43		100.0	
		Z	37.04	108.35	27.08		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	13.91	96.94	25.41	1.17	100.0	± 9.6 %
		Y	5.69	84.50	20.47		100.0	
		Z	19.52	101.18	25.01		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	3.28	80.46	20.53	0.00	150.0	± 9.6 %
		Y	1.92	73.09	15.89		150.0	
		Z	3.08	80.13	18.22		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	11.60	82.51	21.10	7.78	50.0	± 9.6 %
		Y	100.00	118.83	31.00		50.0	
		Z	100.00	118.47	30.39		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.02	128.88	9.05	0.00	150.0	± 9.6 %
		Y	0.00	96.92	0.26		150.0	
		Z	0.02	60.00	140.78		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	10.75	78.30	22.86	13.80	25.0	± 9.6 %
		Y	15.61	90.30	26.65		25.0	
		Z	32.75	104.57	30.45		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	10.92	80.23	22.15	10.79	40.0	± 9.6 %
		Y	20.87	96.36	27.22		40.0	
		Z	64.62	115.72	32.06		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	11.51	81.76	22.84	9.03	50.0	± 9.6 %
		Y	15.28	90.93	25.77		50.0	
		Z	25.94	101.11	28.65		50.0	
10058-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	14.19	91.88	29.00	6.55	100.0	± 9.6 %
		Y	8.68	86.53	28.09		100.0	
		Z	9.12	89.51	29.70		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	2.01	72.72	19.70	0.61	110.0	± 9.6 %
		Y	1.51	67.62	17.16		110.0	
		Z	1.56	68.78	17.99		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	100.00	126.29	32.07	1.30	110.0	± 9.6 %
		Y	100.00	132.71	34.39		110.0	
		Z	100.00	137.07	36.21		110.0	

10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	36.66	112.50	30.92	2.04	110.0	± 9.6 %
		Y	11.07	98.15	27.76		110.0	
		Z	22.12	112.16	32.18		110.0	
10062-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	5.03	67.33	17.05	0.49	100.0	± 9.6 %
		Y	4.77	67.19	16.82		100.0	
		Z	4.70	67.51	16.97		100.0	
10063-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	5.09	67.56	17.23	0.72	100.0	± 9.6 %
		Y	4.81	67.36	16.96		100.0	
		Z	4.74	67.68	17.11		100.0	
10064-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	5.47	67.93	17.49	0.86	100.0	± 9.6 %
		Y	5.10	67.63	17.20		100.0	
		Z	5.00	67.90	17.32		100.0	
10065-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	5.40	68.08	17.70	1.21	100.0	± 9.6 %
		Y	5.02	67.68	17.39		100.0	
		Z	4.92	67.92	17.50		100.0	
10066-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	5.49	68.31	17.98	1.46	100.0	± 9.6 %
		Y	5.08	67.82	17.62		100.0	
		Z	4.97	68.04	17.73		100.0	
10067-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	5.84	68.47	18.45	2.04	100.0	± 9.6 %
		Y	5.42	68.13	18.14		100.0	
		Z	5.31	68.42	18.28		100.0	
10068-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	6.07	69.08	18.91	2.55	100.0	± 9.6 %
		Y	5.53	68.32	18.44		100.0	
		Z	5.39	68.51	18.54		100.0	
10069-CAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	6.13	68.90	19.06	2.67	100.0	± 9.6 %
		Y	5.61	68.37	18.66		100.0	
		Z	5.48	68.58	18.76		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	5.56	68.08	18.26	1.99	100.0	± 9.6 %
		Y	5.22	67.75	17.96		100.0	
		Z	5.14	68.03	18.10		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	5.71	68.87	18.66	2.30	100.0	± 9.6 %
		Y	5.28	68.28	18.29		100.0	
		Z	5.18	68.53	18.42		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	5.93	69.43	19.17	2.83	100.0	± 9.6 %
		Y	5.43	68.68	18.74		100.0	
		Z	5.32	68.95	18.89		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	6.04	69.75	19.56	3.30	100.0	± 9.6 %
		Y	5.49	68.80	18.99		100.0	
		Z	5.38	69.07	19.15		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	6.35	70.65	20.23	3.82	90.0	± 9.6 %
		Y	5.63	69.18	19.44		90.0	
		Z	5.49	69.37	19.56		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	6.37	70.50	20.38	4.15	90.0	± 9.6 %
		Y	5.68	69.10	19.63		90.0	
		Z	5.56	69.34	19.78		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	6.43	70.65	20.50	4.30	90.0	± 9.6 %
		Y	5.73	69.22	19.75		90.0	
		Z	5.61	69.48	19.91		90.0	

10081-CAB	CDMA2000 (1xRTT, RC3)	X	1.62	75.66	18.40	0.00	150.0	± 9.6 %
		Y	0.87	66.71	12.69		150.0	
		Z	1.13	71.02	14.45		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	3.53	66.20	10.93	4.77	80.0	± 9.6 %
		Y	2.19	64.40	9.18		80.0	
		Z	1.96	64.15	8.74		80.0	
10090-DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	12.79	85.25	22.06	6.56	60.0	± 9.6 %
		Y	100.00	120.23	31.42		60.0	
		Z	100.00	120.31	31.04		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	2.06	70.06	17.46	0.00	150.0	± 9.6 %
		Y	1.88	68.31	15.96		150.0	
		Z	2.04	70.38	16.98		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	2.02	70.12	17.47	0.00	150.0	± 9.6 %
		Y	1.84	68.27	15.94		150.0	
		Z	2.00	70.37	16.98		150.0	
10099-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	18.80	96.14	32.13	9.56	60.0	± 9.6 %
		Y	17.28	100.91	35.04		60.0	
		Z	24.81	113.10	39.77		60.0	
10100-CAD	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	3.84	73.61	18.19	0.00	150.0	± 9.6 %
		Y	3.15	70.58	16.91		150.0	
		Z	3.25	71.69	17.61		150.0	
10101-CAD	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	3.58	69.11	16.83	0.00	150.0	± 9.6 %
		Y	3.26	67.74	16.10		150.0	
		Z	3.26	68.29	16.47		150.0	
10102-CAD	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.66	68.88	16.84	0.00	150.0	± 9.6 %
		Y	3.36	67.71	16.19		150.0	
		Z	3.36	68.23	16.52		150.0	
10103-CAD	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	9.75	77.78	20.81	3.98	65.0	± 9.6 %
		Y	8.78	79.16	21.83		65.0	
		Z	9.34	81.38	22.82		65.0	
10104-CAD	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	9.87	77.22	21.49	3.98	65.0	± 9.6 %
		Y	8.42	77.09	21.77		65.0	
		Z	8.44	78.16	22.31		65.0	
10105-CAD	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	9.19	75.82	21.15	3.98	65.0	± 9.6 %
		Y	8.07	76.20	21.66		65.0	
		Z	8.27	77.70	22.41		65.0	
10108-CAE	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	3.37	72.69	18.02	0.00	150.0	± 9.6 %
		Y	2.75	69.90	16.77		150.0	
		Z	2.82	71.09	17.51		150.0	
10109-CAE	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	3.26	68.97	16.85	0.00	150.0	± 9.6 %
		Y	2.91	67.66	16.01		150.0	
		Z	2.92	68.36	16.42		150.0	
10110-CAE	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	2.79	71.81	17.85	0.00	150.0	± 9.6 %
		Y	2.23	69.12	16.39		150.0	
		Z	2.31	70.62	17.23		150.0	
10111-CAE	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.96	69.58	17.27	0.00	150.0	± 9.6 %
		Y	2.63	68.64	16.31		150.0	
		Z	2.69	69.84	16.85		150.0	

10112-CAE	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	3.36	68.71	16.80	0.00	150.0	± 9.6 %
		Y	3.03	67.66	16.06		150.0	
		Z	3.04	68.35	16.45		150.0	
10113-CAE	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	3.10	69.46	17.27	0.00	150.0	± 9.6 %
		Y	2.78	68.78	16.44		150.0	
		Z	2.83	69.92	16.93		150.0	
10114-CAB	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	5.34	67.65	16.76	0.00	150.0	± 9.6 %
		Y	5.17	67.50	16.64		150.0	
		Z	5.08	67.64	16.74		150.0	
10115-CAB	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.80	68.17	17.01	0.00	150.0	± 9.6 %
		Y	5.44	67.60	16.69		150.0	
		Z	5.33	67.71	16.77		150.0	
10116-CAB	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	5.47	67.90	16.79	0.00	150.0	± 9.6 %
		Y	5.25	67.68	16.65		150.0	
		Z	5.17	67.85	16.77		150.0	
10117-CAB	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	5.34	67.65	16.78	0.00	150.0	± 9.6 %
		Y	5.12	67.32	16.56		150.0	
		Z	5.07	67.59	16.73		150.0	
10118-CAB	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.79	68.04	16.95	0.00	150.0	± 9.6 %
		Y	5.52	67.82	16.81		150.0	
		Z	5.42	67.93	16.89		150.0	
10119-CAB	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	5.44	67.84	16.78	0.00	150.0	± 9.6 %
		Y	5.24	67.66	16.65		150.0	
		Z	5.17	67.84	16.77		150.0	
10140-CAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.72	68.86	16.76	0.00	150.0	± 9.6 %
		Y	3.39	67.72	16.10		150.0	
		Z	3.39	68.26	16.45		150.0	
10141-CAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.82	68.79	16.84	0.00	150.0	± 9.6 %
		Y	3.51	67.83	16.27		150.0	
		Z	3.51	68.36	16.60		150.0	
10142-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	2.57	71.96	17.88	0.00	150.0	± 9.6 %
		Y	2.01	69.21	16.02		150.0	
		Z	2.13	71.18	16.95		150.0	
10143-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	2.89	70.53	17.42	0.00	150.0	± 9.6 %
		Y	2.49	69.45	15.95		150.0	
		Z	2.62	71.11	16.52		150.0	
10144-CAD	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	2.69	68.52	16.05	0.00	150.0	± 9.6 %
		Y	2.23	66.92	14.20		150.0	
		Z	2.23	67.85	14.42		150.0	
10145-CAE	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	2.07	72.06	16.97	0.00	150.0	± 9.6 %
		Y	1.17	64.90	11.31		150.0	
		Z	1.08	64.84	10.72		150.0	
10146-CAE	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	4.64	77.66	18.95	0.00	150.0	± 9.6 %
		Y	1.89	66.33	11.57		150.0	
		Z	1.28	62.78	8.70		150.0	
10147-CAE	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	5.86	81.36	20.54	0.00	150.0	± 9.6 %
		Y	2.26	68.50	12.73		150.0	
		Z	1.39	63.59	9.24		150.0	

10149-CAD	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	3.27	69.03	16.89	0.00	150.0	± 9.6 %
		Y	2.92	67.72	16.06		150.0	
		Z	2.93	68.43	16.47		150.0	
10150-CAD	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	3.37	68.76	16.84	0.00	150.0	± 9.6 %
		Y	3.04	67.71	16.11		150.0	
		Z	3.05	68.41	16.50		150.0	
10151-CAD	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	9.88	78.98	21.39	3.98	65.0	± 9.6 %
		Y	9.54	82.00	22.98		65.0	
		Z	10.52	85.01	24.21		65.0	
10152-CAD	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	9.59	77.49	21.44	3.98	65.0	± 9.6 %
		Y	8.05	77.33	21.53		65.0	
		Z	8.15	78.63	22.11		65.0	
10153-CAD	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	9.88	78.01	21.96	3.98	65.0	± 9.6 %
		Y	8.51	78.32	22.28		65.0	
		Z	8.64	79.68	22.87		65.0	
10154-CAE	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	2.88	72.43	18.21	0.00	150.0	± 9.6 %
		Y	2.28	69.53	16.65		150.0	
		Z	2.36	71.01	17.47		150.0	
10155-CAE	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.96	69.57	17.27	0.00	150.0	± 9.6 %
		Y	2.63	68.66	16.33		150.0	
		Z	2.70	69.87	16.88		150.0	
10156-CAE	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	2.50	72.75	18.17	0.00	150.0	± 9.6 %
		Y	1.86	69.32	15.77		150.0	
		Z	2.00	71.53	16.72		150.0	
10157-CAE	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	2.58	69.56	16.46	0.00	150.0	± 9.6 %
		Y	2.07	67.52	14.21		150.0	
		Z	2.11	68.66	14.46		150.0	
10158-CAE	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	3.11	69.51	17.31	0.00	150.0	± 9.6 %
		Y	2.79	68.85	16.49		150.0	
		Z	2.84	70.00	16.99		150.0	
10159-CAE	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	2.70	69.94	16.71	0.00	150.0	± 9.6 %
		Y	2.17	67.94	14.47		150.0	
		Z	2.21	69.05	14.68		150.0	
10160-CAD	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	3.17	70.70	17.47	0.00	150.0	± 9.6 %
		Y	2.80	69.22	16.63		150.0	
		Z	2.84	70.27	17.24		150.0	
10161-CAD	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	3.25	68.62	16.80	0.00	150.0	± 9.6 %
		Y	2.93	67.68	16.03		150.0	
		Z	2.94	68.43	16.42		150.0	
10162-CAD	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	3.34	68.54	16.80	0.00	150.0	± 9.6 %
		Y	3.04	67.85	16.15		150.0	
		Z	3.05	68.62	16.54		150.0	
10166-CAE	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	4.29	71.19	20.11	3.01	150.0	± 9.6 %
		Y	3.58	69.86	19.45		150.0	
		Z	3.34	69.55	19.26		150.0	
10167-CAE	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	5.65	74.34	20.64	3.01	150.0	± 9.6 %
		Y	4.34	72.64	19.86		150.0	
		Z	3.97	72.28	19.65		150.0	

10168-CAE	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	6.08	75.90	21.58	3.01	150.0	± 9.6 %
		Y	4.83	75.01	21.26		150.0	
		Z	4.38	74.50	20.98		150.0	
10169-CAD	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	4.41	74.54	21.42	3.01	150.0	± 9.6 %
		Y	2.96	68.83	19.02		150.0	
		Z	2.72	67.99	18.57		150.0	
10170-CAD	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	6.70	80.82	23.44	3.01	150.0	± 9.6 %
		Y	3.91	74.17	21.18		150.0	
		Z	3.42	72.70	20.49		150.0	
10171-AAD	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	5.50	76.54	20.93	3.01	150.0	± 9.6 %
		Y	3.29	70.45	18.57		150.0	
		Z	2.94	69.58	18.14		150.0	
10172-CAD	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	25.76	101.07	30.32	6.02	65.0	± 9.6 %
		Y	18.45	102.75	32.10		65.0	
		Z	20.86	107.70	33.85		65.0	
10173-CAD	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	19.21	92.24	26.33	6.02	65.0	± 9.6 %
		Y	26.29	105.14	31.12		65.0	
		Z	28.49	108.55	32.12		65.0	
10174-CAD	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	17.46	89.68	25.13	6.02	65.0	± 9.6 %
		Y	21.35	100.13	29.12		65.0	
		Z	22.92	103.28	30.05		65.0	
10175-CAE	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	4.34	74.12	21.15	3.01	150.0	± 9.6 %
		Y	2.93	68.55	18.79		150.0	
		Z	2.70	67.77	18.36		150.0	
10176-CAE	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	6.71	80.84	23.45	3.01	150.0	± 9.6 %
		Y	3.92	74.20	21.19		150.0	
		Z	3.42	72.72	20.50		150.0	
10177-CAG	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	4.38	74.32	21.26	3.01	150.0	± 9.6 %
		Y	2.95	68.69	18.87		150.0	
		Z	2.71	67.87	18.43		150.0	
10178-CAE	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	6.59	80.50	23.29	3.01	150.0	± 9.6 %
		Y	3.89	74.02	21.09		150.0	
		Z	3.41	72.61	20.43		150.0	
10179-CAE	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	6.03	78.45	22.01	3.01	150.0	± 9.6 %
		Y	3.58	72.24	19.76		150.0	
		Z	3.16	71.11	19.23		150.0	
10180-CAE	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	5.47	76.42	20.86	3.01	150.0	± 9.6 %
		Y	3.28	70.40	18.53		150.0	
		Z	2.94	69.55	18.12		150.0	
10181-CAD	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	4.38	74.30	21.25	3.01	150.0	± 9.6 %
		Y	2.95	68.67	18.87		150.0	
		Z	2.71	67.86	18.43		150.0	
10182-CAD	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	6.58	80.48	23.29	3.01	150.0	± 9.6 %
		Y	3.88	74.00	21.08		150.0	
		Z	3.40	72.59	20.42		150.0	
10183-AAC	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	5.46	76.40	20.85	3.01	150.0	± 9.6 %
		Y	3.28	70.38	18.52		150.0	
		Z	2.93	69.53	18.11		150.0	

10184-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	4.39	74.34	21.27	3.01	150.0	± 9.6 %
		Y	2.96	68.71	18.89		150.0	
		Z	2.72	67.89	18.44		150.0	
10185-CAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	6.61	80.55	23.32	3.01	150.0	± 9.6 %
		Y	3.90	74.06	21.11		150.0	
		Z	3.42	72.64	20.45		150.0	
10186-AAD	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	5.49	76.46	20.88	3.01	150.0	± 9.6 %
		Y	3.29	70.44	18.55		150.0	
		Z	2.95	69.59	18.14		150.0	
10187-CAE	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	4.40	74.38	21.31	3.01	150.0	± 9.6 %
		Y	2.97	68.77	18.95		150.0	
		Z	2.73	67.95	18.51		150.0	
10188-CAE	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	6.86	81.30	23.70	3.01	150.0	± 9.6 %
		Y	4.01	74.64	21.46		150.0	
		Z	3.49	73.09	20.74		150.0	
10189-AAE	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	5.63	76.95	21.16	3.01	150.0	± 9.6 %
		Y	3.36	70.82	18.81		150.0	
		Z	3.00	69.90	18.37		150.0	
10193-CAB	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.76	66.98	16.56	0.00	150.0	± 9.6 %
		Y	4.53	66.89	16.29		150.0	
		Z	4.48	67.27	16.46		150.0	
10194-CAB	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.98	67.40	16.66	0.00	150.0	± 9.6 %
		Y	4.70	67.19	16.42		150.0	
		Z	4.63	67.53	16.59		150.0	
10195-CAB	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	5.02	67.38	16.65	0.00	150.0	± 9.6 %
		Y	4.74	67.22	16.44		150.0	
		Z	4.67	67.55	16.61		150.0	
10196-CAB	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.79	67.12	16.61	0.00	150.0	± 9.6 %
		Y	4.53	66.94	16.30		150.0	
		Z	4.47	67.29	16.46		150.0	
10197-CAB	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	5.00	67.41	16.67	0.00	150.0	± 9.6 %
		Y	4.71	67.21	16.43		150.0	
		Z	4.64	67.54	16.60		150.0	
10198-CAB	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	5.02	67.39	16.66	0.00	150.0	± 9.6 %
		Y	4.74	67.23	16.45		150.0	
		Z	4.67	67.55	16.61		150.0	
10219-CAB	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.75	67.15	16.58	0.00	150.0	± 9.6 %
		Y	4.48	66.96	16.27		150.0	
		Z	4.43	67.33	16.43		150.0	
10220-CAB	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	5.00	67.42	16.67	0.00	150.0	± 9.6 %
		Y	4.70	67.17	16.42		150.0	
		Z	4.63	67.50	16.58		150.0	
10221-CAB	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	5.03	67.33	16.65	0.00	150.0	± 9.6 %
		Y	4.75	67.16	16.44		150.0	
		Z	4.68	67.49	16.60		150.0	
10222-CAB	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	5.32	67.70	16.79	0.00	150.0	± 9.6 %
		Y	5.10	67.32	16.56		150.0	
		Z	5.04	67.57	16.71		150.0	

10223-CAB	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.69	67.90	16.90	0.00	150.0	± 9.6 %
		Y	5.41	67.62	16.73		150.0	
		Z	5.32	67.79	16.83		150.0	
10224-CAB	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	5.40	67.86	16.79	0.00	150.0	± 9.6 %
		Y	5.14	67.44	16.54		150.0	
		Z	5.08	67.68	16.69		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	3.04	66.91	16.27	0.00	150.0	± 9.6 %
		Y	2.80	66.45	15.40		150.0	
		Z	2.79	67.13	15.62		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	19.62	92.68	26.54	6.02	65.0	± 9.6 %
		Y	28.14	106.53	31.60		65.0	
		Z	30.74	110.09	32.63		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	17.31	89.65	25.20	6.02	65.0	± 9.6 %
		Y	25.62	103.45	30.17		65.0	
		Z	27.71	106.63	31.05		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	25.12	101.14	30.46	6.02	65.0	± 9.6 %
		Y	22.85	107.40	33.58		65.0	
		Z	23.56	110.42	34.69		65.0	
10229-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	19.21	92.22	26.33	6.02	65.0	± 9.6 %
		Y	26.37	105.18	31.14		65.0	
		Z	28.56	108.58	32.13		65.0	
10230-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	16.99	89.27	25.02	6.02	65.0	± 9.6 %
		Y	24.08	102.25	29.76		65.0	
		Z	25.76	105.25	30.60		65.0	
10231-CAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	24.47	100.57	30.23	6.02	65.0	± 9.6 %
		Y	21.54	106.10	33.13		65.0	
		Z	22.10	109.02	34.22		65.0	
10232-CAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	19.21	92.23	26.33	6.02	65.0	± 9.6 %
		Y	26.35	105.17	31.13		65.0	
		Z	28.56	108.59	32.14		65.0	
10233-CAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	16.99	89.29	25.03	6.02	65.0	± 9.6 %
		Y	24.05	102.24	29.76		65.0	
		Z	25.73	105.25	30.60		65.0	
10234-CAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	23.75	99.87	29.94	6.02	65.0	± 9.6 %
		Y	20.44	104.88	32.66		65.0	
		Z	20.94	107.73	33.73		65.0	
10235-CAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	19.23	92.26	26.34	6.02	65.0	± 9.6 %
		Y	26.43	105.24	31.16		65.0	
		Z	28.68	108.68	32.16		65.0	
10236-CAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	17.05	89.34	25.04	6.02	65.0	± 9.6 %
		Y	24.28	102.38	29.79		65.0	
		Z	26.05	105.43	30.64		65.0	
10237-CAD	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	24.65	100.72	30.28	6.02	65.0	± 9.6 %
		Y	21.67	106.26	33.17		65.0	
		Z	22.28	109.22	34.28		65.0	
10238-CAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	19.21	92.24	26.33	6.02	65.0	± 9.6 %
		Y	26.34	105.18	31.13		65.0	
		Z	28.55	108.60	32.14		65.0	

10239-CAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	17.00	89.31	25.04	6.02	65.0	± 9.6 %
		Y	24.00	102.22	29.75		65.0	
		Z	25.68	105.23	30.60		65.0	
10240-CAD	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	24.60	100.69	30.26	6.02	65.0	± 9.6 %
		Y	21.61	106.21	33.16		65.0	
		Z	22.24	109.18	34.27		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	14.83	87.15	27.43	6.98	65.0	± 9.6 %
		Y	11.87	87.25	27.69		65.0	
		Z	12.27	89.81	28.71		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	14.03	85.86	26.85	6.98	65.0	± 9.6 %
		Y	11.07	85.73	27.03		65.0	
		Z	11.88	89.15	28.39		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	12.50	85.61	27.61	6.98	65.0	± 9.6 %
		Y	8.91	82.53	26.67		65.0	
		Z	9.40	85.62	28.06		65.0	
10244-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	10.84	80.28	21.46	3.98	65.0	± 9.6 %
		Y	8.60	79.06	19.82		65.0	
		Z	7.30	76.79	18.14		65.0	
10245-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	10.80	80.00	21.33	3.98	65.0	± 9.6 %
		Y	8.32	78.30	19.47		65.0	
		Z	7.01	75.95	17.75		65.0	
10246-CAB	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	10.19	81.67	21.72	3.98	65.0	± 9.6 %
		Y	9.19	82.92	21.40		65.0	
		Z	10.28	85.26	21.82		65.0	
10247-CAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	9.24	78.33	20.99	3.98	65.0	± 9.6 %
		Y	7.42	77.41	19.87		65.0	
		Z	7.44	78.18	19.81		65.0	
10248-CAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	9.29	78.02	20.88	3.98	65.0	± 9.6 %
		Y	7.28	76.69	19.57		65.0	
		Z	7.17	77.21	19.40		65.0	
10249-CAD	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	10.52	82.18	22.29	3.98	65.0	± 9.6 %
		Y	10.94	86.37	23.51		65.0	
		Z	13.59	90.89	24.82		65.0	
10250-CAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	9.84	79.38	22.27	3.98	65.0	± 9.6 %
		Y	8.59	80.24	22.59		65.0	
		Z	8.91	81.95	23.17		65.0	
10251-CAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	9.48	77.77	21.45	3.98	65.0	± 9.6 %
		Y	7.96	77.76	21.28		65.0	
		Z	8.06	79.03	21.69		65.0	
10252-CAD	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	10.35	81.23	22.32	3.98	65.0	± 9.6 %
		Y	10.67	85.75	24.25		65.0	
		Z	12.80	90.26	25.85		65.0	
10253-CAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	9.41	77.10	21.37	3.98	65.0	± 9.6 %
		Y	7.89	76.83	21.30		65.0	
		Z	7.98	78.11	21.82		65.0	
10254-CAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	9.73	77.64	21.86	3.98	65.0	± 9.6 %
		Y	8.31	77.74	21.96		65.0	
		Z	8.42	79.03	22.48		65.0	

10255-CAD	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	9.76	78.98	21.63	3.98	65.0	± 9.6 %
		Y	9.21	81.58	22.99		65.0	
		Z	10.10	84.50	24.17		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	10.36	79.33	20.55	3.98	65.0	± 9.6 %
		Y	6.89	75.10	17.29		65.0	
		Z	5.38	71.84	15.02		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	10.33	78.98	20.36	3.98	65.0	± 9.6 %
		Y	6.60	74.15	16.79		65.0	
		Z	5.14	70.90	14.50		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	9.84	80.89	21.06	3.98	65.0	± 9.6 %
		Y	6.93	77.80	18.67		65.0	
		Z	6.67	77.68	18.06		65.0	
10259-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	9.48	78.65	21.42	3.98	65.0	± 9.6 %
		Y	7.89	78.48	20.85		65.0	
		Z	8.05	79.67	21.05		65.0	
10260-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	9.52	78.48	21.39	3.98	65.0	± 9.6 %
		Y	7.84	78.08	20.70		65.0	
		Z	7.93	79.11	20.83		65.0	
10261-CAB	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	10.28	81.56	22.27	3.98	65.0	± 9.6 %
		Y	10.28	85.25	23.51		65.0	
		Z	12.40	89.51	24.85		65.0	
10262-CAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	9.83	79.35	22.25	3.98	65.0	± 9.6 %
		Y	8.56	80.18	22.55		65.0	
		Z	8.88	81.87	23.12		65.0	
10263-CAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	9.48	77.78	21.46	3.98	65.0	± 9.6 %
		Y	7.94	77.74	21.28		65.0	
		Z	8.05	79.01	21.68		65.0	
10264-CAD	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	10.32	81.15	22.28	3.98	65.0	± 9.6 %
		Y	10.57	85.55	24.15		65.0	
		Z	12.63	90.00	25.74		65.0	
10265-CAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	9.59	77.50	21.45	3.98	65.0	± 9.6 %
		Y	8.04	77.33	21.54		65.0	
		Z	8.14	78.63	22.11		65.0	
10266-CAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	9.89	78.01	21.96	3.98	65.0	± 9.6 %
		Y	8.50	78.31	22.27		65.0	
		Z	8.64	79.67	22.86		65.0	
10267-CAD	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	9.88	78.96	21.38	3.98	65.0	± 9.6 %
		Y	9.52	81.96	22.96		65.0	
		Z	10.50	84.95	24.19		65.0	
10268-CAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	9.95	76.96	21.54	3.98	65.0	± 9.6 %
		Y	8.52	76.88	21.79		65.0	
		Z	8.53	77.92	22.30		65.0	
10269-CAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	9.89	76.68	21.52	3.98	65.0	± 9.6 %
		Y	8.46	76.46	21.67		65.0	
		Z	8.45	77.44	22.15		65.0	
10270-CAD	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	9.66	77.24	20.86	3.98	65.0	± 9.6 %
		Y	8.81	78.78	21.90		65.0	
		Z	9.16	80.58	22.73		65.0	

10274-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	X	2.74	67.26	16.17	0.00	150.0	± 9.6 %
		Y	2.61	66.92	15.38		150.0	
		Z	2.66	67.94	15.80		150.0	
10275-CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	X	2.05	72.21	18.03	0.00	150.0	± 9.6 %
		Y	1.65	68.50	15.87		150.0	
		Z	1.80	70.74	17.08		150.0	
10277-CAA	PHS (QPSK)	X	8.03	72.61	16.76	9.03	50.0	± 9.6 %
		Y	5.31	69.07	13.45		50.0	
		Z	4.52	67.70	12.08		50.0	
10278-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	X	10.53	79.27	21.29	9.03	50.0	± 9.6 %
		Y	8.21	77.64	19.35		50.0	
		Z	7.62	76.93	18.36		50.0	
10279-CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	X	10.71	79.48	21.37	9.03	50.0	± 9.6 %
		Y	8.29	77.74	19.41		50.0	
		Z	7.68	77.01	18.42		50.0	
10290-AAB	CDMA2000, RC1, SO55, Full Rate	X	2.46	75.92	18.53	0.00	150.0	± 9.6 %
		Y	1.45	69.17	13.90		150.0	
		Z	1.74	72.52	15.01		150.0	
10291-AAB	CDMA2000, RC3, SO55, Full Rate	X	1.54	75.02	18.13	0.00	150.0	± 9.6 %
		Y	0.85	66.46	12.55		150.0	
		Z	1.09	70.54	14.22		150.0	
10292-AAB	CDMA2000, RC3, SO32, Full Rate	X	2.85	86.00	22.76	0.00	150.0	± 9.6 %
		Y	1.20	72.00	15.52		150.0	
		Z	3.37	86.48	20.58		150.0	
10293-AAB	CDMA2000, RC3, SO3, Full Rate	X	6.08	98.98	27.50	0.00	150.0	± 9.6 %
		Y	2.38	81.80	19.81		150.0	
		Z	91.77	132.75	32.89		150.0	
10295-AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	X	11.42	82.00	23.75	9.03	50.0	± 9.6 %
		Y	13.54	88.04	25.23		50.0	
		Z	20.14	95.71	27.34		50.0	
10297-AAC	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	3.39	72.81	18.09	0.00	150.0	± 9.6 %
		Y	2.76	70.00	16.84		150.0	
		Z	2.84	71.20	17.58		150.0	
10298-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	2.33	72.89	17.78	0.00	150.0	± 9.6 %
		Y	1.54	67.89	13.96		150.0	
		Z	1.61	69.51	14.40		150.0	
10299-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	4.61	76.96	19.19	0.00	150.0	± 9.6 %
		Y	2.70	70.48	14.61		150.0	
		Z	1.96	66.96	12.10		150.0	
10300-AAC	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	3.49	71.59	16.26	0.00	150.0	± 9.6 %
		Y	1.91	65.24	11.36		150.0	
		Z	1.47	63.13	9.40		150.0	
10301-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	X	6.59	70.34	20.04	4.17	80.0	± 9.6 %
		Y	5.68	68.74	18.85		80.0	
		Z	5.70	69.67	19.26		80.0	
10302-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols)	X	7.28	71.73	21.22	4.96	80.0	± 9.6 %
		Y	6.10	69.04	19.43		80.0	
		Z	6.04	69.77	19.77		80.0	

10303-AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	7.35	72.51	21.62	4.96	80.0	± 9.6 %
		Y	5.94	69.06	19.41		80.0	
		Z	5.89	69.82	19.76		80.0	
10304-AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	X	6.69	70.97	20.39	4.17	80.0	± 9.6 %
		Y	5.59	68.42	18.66		80.0	
		Z	5.56	69.20	19.00		80.0	
10305-AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	X	14.75	90.64	29.58	6.02	50.0	± 9.6 %
		Y	10.18	84.38	26.41		50.0	
		Z	10.30	85.54	26.72		50.0	
10306-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	X	9.44	79.58	25.56	6.02	50.0	± 9.6 %
		Y	7.33	75.98	23.40		50.0	
		Z	6.44	73.04	21.64		50.0	
10307-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)	X	10.22	81.50	26.08	6.02	50.0	± 9.6 %
		Y	7.67	77.32	23.80		50.0	
		Z	7.49	77.77	23.93		50.0	
10308-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	X	10.67	82.66	26.55	6.02	50.0	± 9.6 %
		Y	7.93	78.29	24.23		50.0	
		Z	7.77	78.85	24.42		50.0	
10309-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	X	9.59	79.83	25.67	6.02	50.0	± 9.6 %
		Y	7.43	76.26	23.57		50.0	
		Z	6.50	73.23	21.79		50.0	
10310-AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	9.69	80.24	25.70	6.02	50.0	± 9.6 %
		Y	7.48	76.59	23.59		50.0	
		Z	7.35	77.19	23.79		50.0	
10311-AAC	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	3.76	71.88	17.62	0.00	150.0	± 9.6 %
		Y	3.12	69.22	16.46		150.0	
		Z	3.20	70.27	17.11		150.0	
10313-AAA	IDEN 1:3	X	8.04	75.55	17.71	6.99	70.0	± 9.6 %
		Y	8.89	81.65	20.17		70.0	
		Z	12.54	87.83	22.26		70.0	
10314-AAA	IDEN 1:6	X	10.06	79.94	21.38	10.00	30.0	± 9.6 %
		Y	12.66	89.89	25.48		30.0	
		Z	20.06	99.62	28.65		30.0	
10315-AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	1.30	67.68	17.69	0.17	150.0	± 9.6 %
		Y	1.18	64.90	15.80		150.0	
		Z	1.23	65.94	16.59		150.0	
10316-AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)	X	4.90	67.26	16.78	0.17	150.0	± 9.6 %
		Y	4.64	67.10	16.54		150.0	
		Z	4.58	67.43	16.69		150.0	
10317-AAB	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	X	4.90	67.26	16.78	0.17	150.0	± 9.6 %
		Y	4.64	67.10	16.54		150.0	
		Z	4.58	67.43	16.69		150.0	
10400-AAC	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	X	5.01	67.47	16.66	0.00	150.0	± 9.6 %
		Y	4.68	67.24	16.42		150.0	
		Z	4.61	67.58	16.60		150.0	
10401-AAC	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)	X	5.58	67.43	16.66	0.00	150.0	± 9.6 %
		Y	5.46	67.62	16.70		150.0	
		Z	5.29	67.47	16.64		150.0	

10402-AAC	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)	X	5.90	68.07	16.80	0.00	150.0	± 9.6 %
		Y	5.66	67.67	16.59		150.0	
		Z	5.60	67.87	16.71		150.0	
10403-AAB	CDMA2000 (1xEV-DO, Rev. 0)	X	2.46	75.92	18.53	0.00	115.0	± 9.6 %
		Y	1.45	69.17	13.90		115.0	
		Z	1.74	72.52	15.01		115.0	
10404-AAB	CDMA2000 (1xEV-DO, Rev. A)	X	2.46	75.92	18.53	0.00	115.0	± 9.6 %
		Y	1.45	69.17	13.90		115.0	
		Z	1.74	72.52	15.01		115.0	
10406-AAB	CDMA2000, RC3, SO32, SCH0, Full Rate	X	38.96	111.40	30.01	0.00	100.0	± 9.6 %
		Y	96.63	125.46	32.24		100.0	
		Z	100.00	123.89	30.87		100.0	
10410-AAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	79.33	113.95	29.40	3.23	80.0	± 9.6 %
		Y	100.00	123.80	32.02		80.0	
		Z	100.00	124.20	31.74		80.0	
10415-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)	X	1.01	64.64	16.23	0.00	150.0	± 9.6 %
		Y	1.03	63.36	14.90		150.0	
		Z	1.08	64.37	15.69		150.0	
10416-AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)	X	4.76	67.00	16.58	0.00	150.0	± 9.6 %
		Y	4.53	66.92	16.37		150.0	
		Z	4.48	67.28	16.53		150.0	
10417-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)	X	4.76	67.00	16.58	0.00	150.0	± 9.6 %
		Y	4.53	66.92	16.37		150.0	
		Z	4.48	67.28	16.53		150.0	
10418-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preamble)	X	4.74	67.14	16.57	0.00	150.0	± 9.6 %
		Y	4.53	67.10	16.40		150.0	
		Z	4.48	67.49	16.59		150.0	
10419-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preamble)	X	4.77	67.10	16.59	0.00	150.0	± 9.6 %
		Y	4.55	67.04	16.39		150.0	
		Z	4.49	67.42	16.58		150.0	
10422-AAA	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	X	4.90	67.10	16.59	0.00	150.0	± 9.6 %
		Y	4.66	67.03	16.41		150.0	
		Z	4.60	67.38	16.58		150.0	
10423-AAA	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	X	5.14	67.54	16.75	0.00	150.0	± 9.6 %
		Y	4.81	67.33	16.51		150.0	
		Z	4.74	67.65	16.67		150.0	
10424-AAA	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	X	5.04	67.47	16.71	0.00	150.0	± 9.6 %
		Y	4.74	67.28	16.49		150.0	
		Z	4.66	67.61	16.65		150.0	
10425-AAA	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	X	5.61	67.86	16.86	0.00	150.0	± 9.6 %
		Y	5.36	67.59	16.69		150.0	
		Z	5.29	67.80	16.81		150.0	
10426-AAA	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	X	5.62	67.87	16.86	0.00	150.0	± 9.6 %
		Y	5.40	67.74	16.76		150.0	
		Z	5.31	67.91	16.86		150.0	

10427-AAA	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	X	5.65	67.92	16.88	0.00	150.0	± 9.6 %
		Y	5.39	67.63	16.70		150.0	
		Z	5.28	67.70	16.75		150.0	
10430-AAB	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	X	4.50	70.33	18.46	0.00	150.0	± 9.6 %
		Y	4.28	71.46	18.38		150.0	
		Z	4.28	72.32	18.56		150.0	
10431-AAB	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	X	4.56	67.66	16.75	0.00	150.0	± 9.6 %
		Y	4.19	67.51	16.33		150.0	
		Z	4.12	67.97	16.50		150.0	
10432-AAB	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	X	4.83	67.55	16.72	0.00	150.0	± 9.6 %
		Y	4.50	67.35	16.43		150.0	
		Z	4.43	67.74	16.61		150.0	
10433-AAB	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	X	5.06	67.54	16.75	0.00	150.0	± 9.6 %
		Y	4.75	67.32	16.51		150.0	
		Z	4.68	67.64	16.67		150.0	
10434-AAA	W-CDMA (BS Test Model 1, 64 DPCH)	X	4.58	70.97	18.48	0.00	150.0	± 9.6 %
		Y	4.39	72.38	18.32		150.0	
		Z	4.42	73.36	18.48		150.0	
10435-AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	73.07	112.66	29.06	3.23	80.0	± 9.6 %
		Y	100.00	123.60	31.93		80.0	
		Z	100.00	123.98	31.64		80.0	
10447-AAB	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	3.91	67.87	16.49	0.00	150.0	± 9.6 %
		Y	3.47	67.50	15.53		150.0	
		Z	3.41	68.08	15.62		150.0	
10448-AAB	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	4.36	67.43	16.61	0.00	150.0	± 9.6 %
		Y	4.04	67.29	16.20		150.0	
		Z	3.99	67.77	16.38		150.0	
10449-AAB	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	4.59	67.37	16.63	0.00	150.0	± 9.6 %
		Y	4.32	67.18	16.33		150.0	
		Z	4.27	67.58	16.51		150.0	
10450-AAB	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	4.75	67.29	16.62	0.00	150.0	± 9.6 %
		Y	4.52	67.08	16.36		150.0	
		Z	4.47	67.43	16.54		150.0	
10451-AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	X	3.88	68.25	16.35	0.00	150.0	± 9.6 %
		Y	3.34	67.60	15.06		150.0	
		Z	3.25	68.08	15.03		150.0	
10456-AAA	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)	X	6.45	68.48	17.01	0.00	150.0	± 9.6 %
		Y	6.28	68.20	16.88		150.0	
		Z	6.24	68.43	17.01		150.0	
10457-AAA	UMTS-FDD (DC-HSDPA)	X	3.87	65.68	16.38	0.00	150.0	± 9.6 %
		Y	3.81	65.57	16.07		150.0	
		Z	3.81	65.98	16.26		150.0	
10458-AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	X	3.63	67.17	15.82	0.00	150.0	± 9.6 %
		Y	3.13	66.82	14.32		150.0	
		Z	2.97	66.93	13.99		150.0	
10459-AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	X	4.79	65.36	16.37	0.00	150.0	± 9.6 %
		Y	4.24	65.27	15.46		150.0	
		Z	4.13	65.72	15.38		150.0	

10460-AAA	UMTS-FDD (WCDMA, AMR)	X	1.54	79.74	21.99	0.00	150.0	± 9.6 %
		Y	0.95	69.06	16.64		150.0	
		Z	1.16	73.20	19.00		150.0	
10461-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	118.00	30.59	3.29	80.0	± 9.6 %
		Y	100.00	127.27	33.69		80.0	
		Z	100.00	128.13	33.61		80.0	
10462-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	108.76	26.18	3.23	80.0	± 9.6 %
		Y	100.00	111.69	26.26		80.0	
		Z	100.00	109.78	24.92		80.0	
10463-AAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	61.06	101.21	23.94	3.23	80.0	± 9.6 %
		Y	100.00	108.45	24.70		80.0	
		Z	9.38	82.48	17.38		80.0	
10464-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	116.66	29.84	3.23	80.0	± 9.6 %
		Y	100.00	125.35	32.64		80.0	
		Z	100.00	125.94	32.43		80.0	
10465-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	108.47	26.02	3.23	80.0	± 9.6 %
		Y	100.00	111.17	26.01		80.0	
		Z	44.16	100.58	22.73		80.0	
10466-AAA	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	42.58	96.75	22.75	3.23	80.0	± 9.6 %
		Y	42.99	98.93	22.41		80.0	
		Z	5.89	77.61	15.84		80.0	
10467-AAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	116.79	29.90	3.23	80.0	± 9.6 %
		Y	100.00	125.60	32.75		80.0	
		Z	100.00	126.22	32.56		80.0	
10468-AAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	108.56	26.07	3.23	80.0	± 9.6 %
		Y	100.00	111.35	26.09		80.0	
		Z	61.74	104.33	23.64		80.0	
10469-AAC	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	43.83	97.08	22.83	3.23	80.0	± 9.6 %
		Y	46.06	99.70	22.59		80.0	
		Z	6.04	77.89	15.93		80.0	
10470-AAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	116.81	29.90	3.23	80.0	± 9.6 %
		Y	100.00	125.63	32.76		80.0	
		Z	100.00	126.25	32.56		80.0	
10471-AAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	108.53	26.05	3.23	80.0	± 9.6 %
		Y	100.00	111.31	26.07		80.0	
		Z	61.64	104.26	23.61		80.0	
10472-AAC	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	44.10	97.14	22.84	3.23	80.0	± 9.6 %
		Y	46.39	99.73	22.59		80.0	
		Z	6.02	77.83	15.90		80.0	
10473-AAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	100.00	116.79	29.89	3.23	80.0	± 9.6 %
		Y	100.00	125.60	32.74		80.0	
		Z	100.00	126.23	32.55		80.0	
10474-AAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	108.54	26.05	3.23	80.0	± 9.6 %
		Y	100.00	111.32	26.07		80.0	
		Z	60.20	104.02	23.55		80.0	
10475-AAC	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	43.66	97.03	22.81	3.23	80.0	± 9.6 %
		Y	44.87	99.39	22.51		80.0	
		Z	5.94	77.72	15.87		80.0	

10477-AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	100.00	108.43	26.00	3.23	80.0	± 9.6 %
		Y	100.00	111.14	25.99		80.0	
		Z	48.11	101.47	22.92		80.0	
10478-AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	43.04	96.84	22.76	3.23	80.0	± 9.6 %
		Y	43.24	98.94	22.39		80.0	
		Z	5.86	77.55	15.80		80.0	
10479-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	18.43	95.26	26.62	3.23	80.0	± 9.6 %
		Y	47.63	113.17	30.89		80.0	
		Z	79.42	120.84	32.18		80.0	
10480-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	15.38	87.90	23.16	3.23	80.0	± 9.6 %
		Y	35.80	101.51	25.84		80.0	
		Z	33.10	99.76	24.57		80.0	
10481-AAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	14.20	86.14	22.35	3.23	80.0	± 9.6 %
		Y	23.64	94.76	23.60		80.0	
		Z	17.83	90.68	21.64		80.0	
10482-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	11.00	86.13	22.59	2.23	80.0	± 9.6 %
		Y	6.54	80.66	19.81		80.0	
		Z	10.00	86.91	21.46		80.0	
10483-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	11.81	84.53	22.26	2.23	80.0	± 9.6 %
		Y	9.59	82.56	20.08		80.0	
		Z	5.79	75.74	16.81		80.0	
10484-AAA	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	11.16	83.50	21.93	2.23	80.0	± 9.6 %
		Y	8.15	80.18	19.27		80.0	
		Z	5.05	73.86	16.10		80.0	
10485-AAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	11.03	86.44	23.15	2.23	80.0	± 9.6 %
		Y	6.87	82.16	21.41		80.0	
		Z	9.87	88.59	23.41		80.0	
10486-AAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	6.95	77.02	19.85	2.23	80.0	± 9.6 %
		Y	4.98	74.27	17.96		80.0	
		Z	5.53	76.50	18.48		80.0	
10487-AAC	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	6.82	76.43	19.65	2.23	80.0	± 9.6 %
		Y	4.85	73.54	17.65		80.0	
		Z	5.25	75.41	18.04		80.0	
10488-AAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	9.46	82.96	22.30	2.23	80.0	± 9.6 %
		Y	5.99	78.96	21.12		80.0	
		Z	6.82	82.33	22.47		80.0	
10489-AAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	6.62	75.52	19.96	2.23	80.0	± 9.6 %
		Y	4.91	73.20	18.90		80.0	
		Z	5.11	74.84	19.54		80.0	
10490-AAC	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	6.56	74.88	19.76	2.23	80.0	± 9.6 %
		Y	4.94	72.82	18.76		80.0	
		Z	5.10	74.33	19.33		80.0	
10491-AAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	7.98	78.75	20.93	2.23	80.0	± 9.6 %
		Y	5.56	75.73	20.09		80.0	
		Z	5.84	77.68	21.00		80.0	
10492-AAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	6.52	73.74	19.47	2.23	80.0	± 9.6 %
		Y	5.01	71.66	18.63		80.0	
		Z	5.04	72.68	19.10		80.0	

10493-AAC	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	6.52	73.38	19.36	2.23	80.0	± 9.6 %
		Y	5.05	71.42	18.55		80.0	
		Z	5.05	72.38	18.97		80.0	
10494-AAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	9.30	81.16	21.56	2.23	80.0	± 9.6 %
		Y	6.19	77.55	20.65		80.0	
		Z	6.63	79.81	21.68		80.0	
10495-AAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	6.75	74.54	19.74	2.23	80.0	± 9.6 %
		Y	5.09	72.10	18.86		80.0	
		Z	5.10	73.07	19.34		80.0	
10496-AAC	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	6.67	73.87	19.53	2.23	80.0	± 9.6 %
		Y	5.11	71.66	18.72		80.0	
		Z	5.11	72.57	19.16		80.0	
10497-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	9.58	84.00	21.43	2.23	80.0	± 9.6 %
		Y	4.27	74.12	16.39		80.0	
		Z	5.12	76.54	16.66		80.0	
10498-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	6.19	75.19	17.72	2.23	80.0	± 9.6 %
		Y	2.33	64.39	11.23		80.0	
		Z	1.83	62.54	9.68		80.0	
10499-AAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	6.08	74.60	17.40	2.23	80.0	± 9.6 %
		Y	2.20	63.55	10.68		80.0	
		Z	1.70	61.64	9.07		80.0	
10500-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	9.69	83.97	22.50	2.23	80.0	± 9.6 %
		Y	6.26	80.30	21.12		80.0	
		Z	7.99	85.23	22.80		80.0	
10501-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	6.73	76.14	19.79	2.23	80.0	± 9.6 %
		Y	4.97	73.89	18.33		80.0	
		Z	5.41	76.03	18.94		80.0	
10502-AAA	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	6.66	75.65	19.59	2.23	80.0	± 9.6 %
		Y	4.97	73.54	18.13		80.0	
		Z	5.36	75.51	18.67		80.0	
10503-AAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	9.33	82.74	22.21	2.23	80.0	± 9.6 %
		Y	5.90	78.70	21.01		80.0	
		Z	6.71	82.03	22.35		80.0	
10504-AAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	6.59	75.44	19.92	2.23	80.0	± 9.6 %
		Y	4.88	73.08	18.84		80.0	
		Z	5.07	74.71	19.47		80.0	
10505-AAC	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	6.52	74.79	19.72	2.23	80.0	± 9.6 %
		Y	4.91	72.71	18.70		80.0	
		Z	5.07	74.21	19.27		80.0	
10506-AAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	9.21	81.00	21.50	2.23	80.0	± 9.6 %
		Y	6.13	77.37	20.57		80.0	
		Z	6.56	79.62	21.60		80.0	
10507-AAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	6.72	74.48	19.71	2.23	80.0	± 9.6 %
		Y	5.07	72.03	18.82		80.0	
		Z	5.08	73.01	19.31		80.0	

10508-AAC	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	6.65	73.80	19.50	2.23	80.0	± 9.6 %
		Y	5.09	71.58	18.67		80.0	
		Z	5.09	72.48	19.12		80.0	
10509-AAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	8.15	77.43	20.26	2.23	80.0	± 9.6 %
		Y	5.99	74.82	19.62		80.0	
		Z	6.17	76.24	20.35		80.0	
10510-AAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	6.94	73.36	19.32	2.23	80.0	± 9.6 %
		Y	5.42	71.16	18.60		80.0	
		Z	5.37	71.81	18.97		80.0	
10511-AAC	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	6.87	72.87	19.19	2.23	80.0	± 9.6 %
		Y	5.44	70.83	18.50		80.0	
		Z	5.39	71.45	18.85		80.0	
10512-AAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	X	9.41	80.22	21.09	2.23	80.0	± 9.6 %
		Y	6.52	76.83	20.24		80.0	
		Z	6.84	78.58	21.10		80.0	
10513-AAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	7.03	74.19	19.61	2.23	80.0	± 9.6 %
		Y	5.36	71.56	18.76		80.0	
		Z	5.31	72.21	19.14		80.0	
10514-AAC	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	X	6.85	73.42	19.39	2.23	80.0	± 9.6 %
		Y	5.32	71.03	18.59		80.0	
		Z	5.27	71.61	18.94		80.0	
10515-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)	X	0.98	65.05	16.44	0.00	150.0	± 9.6 %
		Y	1.00	63.56	14.97		150.0	
		Z	1.05	64.66	15.82		150.0	
10516-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)	X	100.00	168.11	45.87	0.00	150.0	± 9.6 %
		Y	0.67	71.83	18.15		150.0	
		Z	1.04	80.65	22.82		150.0	
10517-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	X	0.96	70.11	18.69	0.00	150.0	± 9.6 %
		Y	0.85	65.61	15.70		150.0	
		Z	0.93	67.57	17.12		150.0	
10518-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)	X	4.76	67.10	16.57	0.00	150.0	± 9.6 %
		Y	4.53	67.01	16.35		150.0	
		Z	4.47	67.38	16.53		150.0	
10519-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	X	5.02	67.44	16.72	0.00	150.0	± 9.6 %
		Y	4.70	67.22	16.46		150.0	
		Z	4.63	67.55	16.62		150.0	
10520-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	X	4.86	67.45	16.66	0.00	150.0	± 9.6 %
		Y	4.55	67.17	16.38		150.0	
		Z	4.48	67.50	16.54		150.0	
10521-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	X	4.79	67.47	16.66	0.00	150.0	± 9.6 %
		Y	4.48	67.16	16.36		150.0	
		Z	4.42	67.48	16.53		150.0	
10522-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)	X	4.82	67.32	16.63	0.00	150.0	± 9.6 %
		Y	4.55	67.29	16.46		150.0	
		Z	4.47	67.62	16.63		150.0	

10523-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle)	X	4.69	67.31	16.53	0.00	150.0	± 9.6 %
		Y	4.44	67.17	16.32		150.0	
		Z	4.39	67.59	16.54		150.0	
10524-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle)	X	4.78	67.32	16.64	0.00	150.0	± 9.6 %
		Y	4.49	67.20	16.43		150.0	
		Z	4.42	67.57	16.62		150.0	
10525-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)	X	4.72	66.35	16.23	0.00	150.0	± 9.6 %
		Y	4.49	66.26	16.02		150.0	
		Z	4.45	66.66	16.22		150.0	
10526-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)	X	4.95	66.78	16.37	0.00	150.0	± 9.6 %
		Y	4.64	66.60	16.16		150.0	
		Z	4.58	66.96	16.34		150.0	
10527-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)	X	4.86	66.80	16.35	0.00	150.0	± 9.6 %
		Y	4.57	66.56	16.10		150.0	
		Z	4.51	66.93	16.29		150.0	
10528-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)	X	4.89	66.82	16.38	0.00	150.0	± 9.6 %
		Y	4.58	66.57	16.13		150.0	
		Z	4.52	66.94	16.32		150.0	
10529-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)	X	4.89	66.82	16.38	0.00	150.0	± 9.6 %
		Y	4.58	66.57	16.13		150.0	
		Z	4.52	66.94	16.32		150.0	
10531-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)	X	4.92	67.00	16.42	0.00	150.0	± 9.6 %
		Y	4.57	66.66	16.14		150.0	
		Z	4.49	66.99	16.31		150.0	
10532-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)	X	4.76	66.93	16.40	0.00	150.0	± 9.6 %
		Y	4.43	66.51	16.07		150.0	
		Z	4.37	66.85	16.25		150.0	
10533-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)	X	4.90	66.82	16.35	0.00	150.0	± 9.6 %
		Y	4.59	66.64	16.13		150.0	
		Z	4.53	67.03	16.33		150.0	
10534-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)	X	5.38	66.99	16.41	0.00	150.0	± 9.6 %
		Y	5.14	66.65	16.20		150.0	
		Z	5.08	66.89	16.34		150.0	
10535-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)	X	5.47	67.13	16.46	0.00	150.0	± 9.6 %
		Y	5.21	66.87	16.30		150.0	
		Z	5.13	67.05	16.42		150.0	
10536-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)	X	5.32	67.12	16.45	0.00	150.0	± 9.6 %
		Y	5.08	66.81	16.25		150.0	
		Z	5.02	67.06	16.40		150.0	
10537-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)	X	5.39	67.07	16.42	0.00	150.0	± 9.6 %
		Y	5.13	66.76	16.23		150.0	
		Z	5.08	67.03	16.39		150.0	
10538-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)	X	5.52	67.19	16.52	0.00	150.0	± 9.6 %
		Y	5.21	66.77	16.27		150.0	
		Z	5.14	66.99	16.41		150.0	
10540-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)	X	5.40	67.10	16.49	0.00	150.0	± 9.6 %
		Y	5.15	66.79	16.30		150.0	
		Z	5.07	66.96	16.41		150.0	

10541-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)	X	5.41	67.10	16.49	0.00	150.0	± 9.6 %
		Y	5.12	66.64	16.21		150.0	
		Z	5.05	66.85	16.34		150.0	
10542-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)	X	5.53	67.02	16.46	0.00	150.0	± 9.6 %
		Y	5.28	66.73	16.27		150.0	
		Z	5.21	66.95	16.40		150.0	
10543-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)	X	5.65	67.09	16.50	0.00	150.0	± 9.6 %
		Y	5.35	66.75	16.31		150.0	
		Z	5.28	67.01	16.46		150.0	
10544-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)	X	5.63	67.05	16.36	0.00	150.0	± 9.6 %
		Y	5.46	66.75	16.19		150.0	
		Z	5.42	66.95	16.31		150.0	
10545-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)	X	5.85	67.43	16.48	0.00	150.0	± 9.6 %
		Y	5.67	67.24	16.39		150.0	
		Z	5.61	67.44	16.52		150.0	
10546-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)	X	5.76	67.40	16.49	0.00	150.0	± 9.6 %
		Y	5.52	66.93	16.25		150.0	
		Z	5.45	67.09	16.35		150.0	
10547-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)	X	5.86	67.50	16.53	0.00	150.0	± 9.6 %
		Y	5.59	67.00	16.28		150.0	
		Z	5.54	67.20	16.40		150.0	
10548-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)	X	6.21	68.68	17.08	0.00	150.0	± 9.6 %
		Y	5.87	68.02	16.76		150.0	
		Z	5.72	67.95	16.76		150.0	
10550-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)	X	5.77	67.31	16.45	0.00	150.0	± 9.6 %
		Y	5.57	67.05	16.32		150.0	
		Z	5.52	67.30	16.47		150.0	
10551-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)	X	5.80	67.45	16.48	0.00	150.0	± 9.6 %
		Y	5.55	67.00	16.26		150.0	
		Z	5.45	67.07	16.32		150.0	
10552-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)	X	5.69	67.19	16.37	0.00	150.0	± 9.6 %
		Y	5.47	66.81	16.17		150.0	
		Z	5.43	67.06	16.31		150.0	
10553-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)	X	5.78	67.21	16.40	0.00	150.0	± 9.6 %
		Y	5.54	66.82	16.20		150.0	
		Z	5.48	67.01	16.32		150.0	
10554-AAB	IEEE 802.11ac WiFi (160MHz, MCS0, 99pc duty cycle)	X	6.03	67.43	16.45	0.00	150.0	± 9.6 %
		Y	5.89	67.12	16.28		150.0	
		Z	5.84	67.28	16.38		150.0	
10555-AAB	IEEE 802.11ac WiFi (160MHz, MCS1, 99pc duty cycle)	X	6.22	67.88	16.64	0.00	150.0	± 9.6 %
		Y	6.02	67.44	16.43		150.0	
		Z	5.95	67.54	16.50		150.0	
10556-AAB	IEEE 802.11ac WiFi (160MHz, MCS2, 99pc duty cycle)	X	6.20	67.79	16.59	0.00	150.0	± 9.6 %
		Y	6.04	67.49	16.44		150.0	
		Z	5.99	67.66	16.55		150.0	
10557-AAB	IEEE 802.11ac WiFi (160MHz, MCS3, 99pc duty cycle)	X	6.21	67.81	16.62	0.00	150.0	± 9.6 %
		Y	5.99	67.35	16.39		150.0	
		Z	5.93	67.50	16.49		150.0	

10558-AAB	IEEE 802.11ac WiFi (160MHz, MCS4, 99pc duty cycle)	X	6.28	68.03	16.75	0.00	150.0	± 9.6 %
		Y	6.04	67.52	16.49		150.0	
		Z	5.95	67.59	16.55		150.0	
10560-AAB	IEEE 802.11ac WiFi (160MHz, MCS6, 99pc duty cycle)	X	6.28	67.87	16.71	0.00	150.0	± 9.6 %
		Y	6.03	67.35	16.44		150.0	
		Z	5.96	67.49	16.53		150.0	
10561-AAB	IEEE 802.11ac WiFi (160MHz, MCS7, 99pc duty cycle)	X	6.18	67.80	16.71	0.00	150.0	± 9.6 %
		Y	5.96	67.36	16.48		150.0	
		Z	5.90	67.49	16.57		150.0	
10562-AAB	IEEE 802.11ac WiFi (160MHz, MCS8, 99pc duty cycle)	X	6.37	68.38	17.01	0.00	150.0	± 9.6 %
		Y	6.06	67.66	16.63		150.0	
		Z	5.96	67.67	16.66		150.0	
10563-AAB	IEEE 802.11ac WiFi (160MHz, MCS9, 99pc duty cycle)	X	6.58	68.54	17.02	0.00	150.0	± 9.6 %
		Y	6.18	67.65	16.59		150.0	
		Z	6.05	67.62	16.60		150.0	
10564-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)	X	5.11	67.26	16.76	0.46	150.0	± 9.6 %
		Y	4.86	67.10	16.52		150.0	
		Z	4.80	67.44	16.68		150.0	
10565-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle)	X	5.41	67.77	17.08	0.46	150.0	± 9.6 %
		Y	5.08	67.53	16.83		150.0	
		Z	5.00	67.82	16.97		150.0	
10566-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle)	X	5.23	67.67	16.93	0.46	150.0	± 9.6 %
		Y	4.92	67.38	16.66		150.0	
		Z	4.84	67.67	16.80		150.0	
10567-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle)	X	5.26	68.03	17.24	0.46	150.0	± 9.6 %
		Y	4.95	67.77	17.01		150.0	
		Z	4.87	68.04	17.15		150.0	
10568-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle)	X	5.14	67.36	16.67	0.46	150.0	± 9.6 %
		Y	4.84	67.19	16.45		150.0	
		Z	4.75	67.49	16.60		150.0	
10569-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle)	X	5.19	68.02	17.24	0.46	150.0	± 9.6 %
		Y	4.92	67.92	17.11		150.0	
		Z	4.86	68.27	17.29		150.0	
10570-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle)	X	5.23	67.81	17.17	0.46	150.0	± 9.6 %
		Y	4.94	67.74	17.02		150.0	
		Z	4.86	68.06	17.18		150.0	
10571-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)	X	1.68	70.36	18.73	0.46	130.0	± 9.6 %
		Y	1.37	66.32	16.49		130.0	
		Z	1.41	67.39	17.29		130.0	
10572-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	X	1.75	71.47	19.28	0.46	130.0	± 9.6 %
		Y	1.40	67.01	16.89		130.0	
		Z	1.45	68.17	17.74		130.0	
10573-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)	X	100.00	142.31	37.38	0.46	130.0	± 9.6 %
		Y	5.69	99.12	27.30		130.0	
		Z	66.26	143.73	39.41		130.0	
10574-AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)	X	3.57	87.71	25.60	0.46	130.0	± 9.6 %
		Y	1.70	74.22	20.29		130.0	
		Z	1.88	76.94	21.86		130.0	

10575-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)	X	4.95	67.19	16.89	0.46	130.0	± 9.6 %
		Y	4.69	67.03	16.64		130.0	
		Z	4.63	67.35	16.80		130.0	
10576-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)	X	4.98	67.35	16.96	0.46	130.0	± 9.6 %
		Y	4.72	67.20	16.72		130.0	
		Z	4.66	67.55	16.88		130.0	
10577-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle)	X	5.24	67.69	17.13	0.46	130.0	± 9.6 %
		Y	4.90	67.46	16.87		130.0	
		Z	4.82	67.76	17.01		130.0	
10578-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle)	X	5.14	67.89	17.23	0.46	130.0	± 9.6 %
		Y	4.81	67.63	16.98		130.0	
		Z	4.73	67.92	17.12		130.0	
10579-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle)	X	4.94	67.39	16.68	0.46	130.0	± 9.6 %
		Y	4.58	66.91	16.29		130.0	
		Z	4.50	67.21	16.45		130.0	
10580-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle)	X	4.98	67.29	16.65	0.46	130.0	± 9.6 %
		Y	4.62	66.97	16.32		130.0	
		Z	4.54	67.27	16.48		130.0	
10581-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle)	X	5.07	68.07	17.23	0.46	130.0	± 9.6 %
		Y	4.72	67.70	16.95		130.0	
		Z	4.65	68.04	17.12		130.0	
10582-AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle)	X	4.90	67.13	16.49	0.46	130.0	± 9.6 %
		Y	4.51	66.68	16.07		130.0	
		Z	4.43	67.00	16.24		130.0	
10583-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	X	4.95	67.19	16.89	0.46	130.0	± 9.6 %
		Y	4.69	67.03	16.64		130.0	
		Z	4.63	67.35	16.80		130.0	
10584-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	X	4.98	67.35	16.96	0.46	130.0	± 9.6 %
		Y	4.72	67.20	16.72		130.0	
		Z	4.66	67.55	16.88		130.0	
10585-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	X	5.24	67.69	17.13	0.46	130.0	± 9.6 %
		Y	4.90	67.46	16.87		130.0	
		Z	4.82	67.76	17.01		130.0	
10586-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	X	5.14	67.89	17.23	0.46	130.0	± 9.6 %
		Y	4.81	67.63	16.98		130.0	
		Z	4.73	67.92	17.12		130.0	
10587-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	X	4.94	67.39	16.68	0.46	130.0	± 9.6 %
		Y	4.58	66.91	16.29		130.0	
		Z	4.50	67.21	16.45		130.0	
10588-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)	X	4.98	67.29	16.65	0.46	130.0	± 9.6 %
		Y	4.62	66.97	16.32		130.0	
		Z	4.54	67.27	16.48		130.0	
10589-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	X	5.07	68.07	17.23	0.46	130.0	± 9.6 %
		Y	4.72	67.70	16.95		130.0	
		Z	4.65	68.04	17.12		130.0	
10590-AAA	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	X	4.90	67.13	16.49	0.46	130.0	± 9.6 %
		Y	4.51	66.68	16.07		130.0	
		Z	4.43	67.00	16.24		130.0	

10591-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	X	5.10	67.21	16.96	0.46	130.0	± 9.6 %
		Y	4.84	67.07	16.74		130.0	
		Z	4.77	67.39	16.89		130.0	
10592-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle)	X	5.29	67.56	17.07	0.46	130.0	± 9.6 %
		Y	4.98	67.40	16.87		130.0	
		Z	4.90	67.69	17.01		130.0	
10593-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle)	X	5.23	67.57	17.01	0.46	130.0	± 9.6 %
		Y	4.90	67.30	16.75		130.0	
		Z	4.82	67.59	16.88		130.0	
10594-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	X	5.28	67.68	17.13	0.46	130.0	± 9.6 %
		Y	4.96	67.47	16.91		130.0	
		Z	4.88	67.75	17.04		130.0	
10595-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle)	X	5.27	67.71	17.06	0.46	130.0	± 9.6 %
		Y	4.93	67.44	16.81		130.0	
		Z	4.85	67.75	16.96		130.0	
10596-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle)	X	5.21	67.70	17.06	0.46	130.0	± 9.6 %
		Y	4.86	67.44	16.81		130.0	
		Z	4.78	67.74	16.97		130.0	
10597-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle)	X	5.16	67.68	17.00	0.46	130.0	± 9.6 %
		Y	4.81	67.32	16.68		130.0	
		Z	4.73	67.61	16.83		130.0	
10598-AAA	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle)	X	5.15	67.96	17.27	0.46	130.0	± 9.6 %
		Y	4.80	67.55	16.95		130.0	
		Z	4.72	67.82	17.08		130.0	
10599-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	X	5.77	67.84	17.13	0.46	130.0	± 9.6 %
		Y	5.52	67.58	16.96		130.0	
		Z	5.45	67.81	17.10		130.0	
10600-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle)	X	6.05	68.67	17.52	0.46	130.0	± 9.6 %
		Y	5.68	68.13	17.21		130.0	
		Z	5.58	68.26	17.30		130.0	
10601-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle)	X	5.85	68.16	17.28	0.46	130.0	± 9.6 %
		Y	5.55	67.80	17.06		130.0	
		Z	5.46	67.98	17.17		130.0	
10602-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	X	5.99	68.30	17.27	0.46	130.0	± 9.6 %
		Y	5.68	67.95	17.06		130.0	
		Z	5.60	68.17	17.19		130.0	
10603-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	X	6.09	68.64	17.55	0.46	130.0	± 9.6 %
		Y	5.74	68.19	17.31		130.0	
		Z	5.66	68.42	17.44		130.0	
10604-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle)	X	5.79	67.86	17.16	0.46	130.0	± 9.6 %
		Y	5.59	67.76	17.08		130.0	
		Z	5.54	68.06	17.25		130.0	
10605-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle)	X	5.90	68.15	17.31	0.46	130.0	± 9.6 %
		Y	5.67	68.01	17.21		130.0	
		Z	5.56	68.12	17.28		130.0	
10606-AAA	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle)	X	5.65	67.59	16.91	0.46	130.0	± 9.6 %
		Y	5.37	67.19	16.65		130.0	
		Z	5.33	67.51	16.83		130.0	

10607-AAA	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	X	4.92	66.49	16.57	0.46	130.0	± 9.6 %
		Y	4.68	66.39	16.37		130.0	
		Z	4.62	66.76	16.54		130.0	
10608-AAA	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle)	X	5.16	66.93	16.72	0.46	130.0	± 9.6 %
		Y	4.85	66.77	16.53		130.0	
		Z	4.77	67.10	16.69		130.0	
10609-AAA	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle)	X	5.06	66.87	16.62	0.46	130.0	± 9.6 %
		Y	4.74	66.62	16.36		130.0	
		Z	4.67	66.96	16.53		130.0	
10610-AAA	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle)	X	5.11	67.01	16.76	0.46	130.0	± 9.6 %
		Y	4.79	66.78	16.53		130.0	
		Z	4.72	67.11	16.69		130.0	
10611-AAA	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle)	X	5.05	66.92	16.66	0.46	130.0	± 9.6 %
		Y	4.71	66.59	16.38		130.0	
		Z	4.64	66.93	16.55		130.0	
10612-AAA	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle)	X	5.07	67.04	16.68	0.46	130.0	± 9.6 %
		Y	4.72	66.76	16.43		130.0	
		Z	4.64	67.09	16.61		130.0	
10613-AAA	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle)	X	5.09	66.98	16.60	0.46	130.0	± 9.6 %
		Y	4.71	66.61	16.29		130.0	
		Z	4.63	66.91	16.45		130.0	
10614-AAA	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle)	X	5.02	67.21	16.84	0.46	130.0	± 9.6 %
		Y	4.67	66.81	16.53		130.0	
		Z	4.59	67.11	16.69		130.0	
10615-AAA	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle)	X	5.05	66.70	16.43	0.46	130.0	± 9.6 %
		Y	4.71	66.43	16.16		130.0	
		Z	4.64	66.79	16.34		130.0	
10616-AAA	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	X	5.58	67.10	16.74	0.46	130.0	± 9.6 %
		Y	5.33	66.79	16.55		130.0	
		Z	5.25	67.00	16.67		130.0	
10617-AAA	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle)	X	5.66	67.25	16.77	0.46	130.0	± 9.6 %
		Y	5.41	67.04	16.65		130.0	
		Z	5.31	67.19	16.74		130.0	
10618-AAA	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle)	X	5.54	67.29	16.82	0.46	130.0	± 9.6 %
		Y	5.29	67.03	16.66		130.0	
		Z	5.22	67.24	16.78		130.0	
10619-AAA	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle)	X	5.56	67.09	16.66	0.46	130.0	± 9.6 %
		Y	5.30	66.81	16.48		130.0	
		Z	5.23	67.05	16.63		130.0	
10620-AAA	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle)	X	5.71	67.30	16.81	0.46	130.0	± 9.6 %
		Y	5.38	66.84	16.54		130.0	
		Z	5.30	67.04	16.67		130.0	
10621-AAA	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle)	X	5.66	67.28	16.90	0.46	130.0	± 9.6 %
		Y	5.39	66.98	16.73		130.0	
		Z	5.30	67.12	16.82		130.0	
10622-AAA	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle)	X	5.65	67.37	16.94	0.46	130.0	± 9.6 %
		Y	5.40	67.13	16.80		130.0	
		Z	5.30	67.22	16.87		130.0	

10623-AAA	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)	X	5.58	67.14	16.73	0.46	130.0	± 9.6 %
		Y	5.28	66.65	16.43		130.0	
		Z	5.18	66.78	16.52		130.0	
10624-AAA	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)	X	5.72	67.10	16.77	0.46	130.0	± 9.6 %
		Y	5.47	66.85	16.60		130.0	
		Z	5.38	67.03	16.70		130.0	
10625-AAA	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)	X	6.05	67.87	17.19	0.46	130.0	± 9.6 %
		Y	5.77	67.66	17.06		130.0	
		Z	5.49	67.24	16.87		130.0	
10626-AAA	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	X	5.80	67.08	16.64	0.46	130.0	± 9.6 %
		Y	5.63	66.82	16.50		130.0	
		Z	5.57	66.99	16.60		130.0	
10627-AAA	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)	X	6.05	67.56	16.82	0.46	130.0	± 9.6 %
		Y	5.90	67.51	16.81		130.0	
		Z	5.83	67.67	16.91		130.0	
10628-AAA	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)	X	5.89	67.33	16.66	0.46	130.0	± 9.6 %
		Y	5.66	66.90	16.43		130.0	
		Z	5.58	67.01	16.51		130.0	
10629-AAA	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)	X	6.01	67.46	16.71	0.46	130.0	± 9.6 %
		Y	5.74	67.00	16.48		130.0	
		Z	5.68	67.19	16.60		130.0	
10630-AAA	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)	X	6.66	69.52	17.74	0.46	130.0	± 9.6 %
		Y	6.23	68.64	17.29		130.0	
		Z	5.99	68.32	17.17		130.0	
10631-AAA	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)	X	6.51	69.16	17.72	0.46	130.0	± 9.6 %
		Y	6.05	68.21	17.27		130.0	
		Z	5.91	68.16	17.27		130.0	
10632-AAA	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)	X	6.07	67.76	17.04	0.46	130.0	± 9.6 %
		Y	5.87	67.57	16.97		130.0	
		Z	5.81	67.79	17.10		130.0	
10633-AAA	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)	X	6.04	67.71	16.86	0.46	130.0	± 9.6 %
		Y	5.71	67.04	16.54		130.0	
		Z	5.62	67.14	16.61		130.0	
10634-AAA	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)	X	6.01	67.64	16.89	0.46	130.0	± 9.6 %
		Y	5.69	67.06	16.60		130.0	
		Z	5.63	67.23	16.71		130.0	
10635-AAA	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)	X	5.88	66.99	16.33	0.46	130.0	± 9.6 %
		Y	5.57	66.39	16.00		130.0	
		Z	5.49	66.55	16.11		130.0	
10636-AAB	IEEE 802.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	X	6.20	67.47	16.73	0.46	130.0	± 9.6 %
		Y	6.06	67.19	16.58		130.0	
		Z	6.01	67.33	16.67		130.0	
10637-AAB	IEEE 802.11ac WiFi (160MHz, MCS1, 90pc duty cycle)	X	6.43	68.00	16.96	0.46	130.0	± 9.6 %
		Y	6.23	67.63	16.79		130.0	
		Z	6.14	67.69	16.84		130.0	
10638-AAB	IEEE 802.11ac WiFi (160MHz, MCS2, 90pc duty cycle)	X	6.38	67.82	16.85	0.46	130.0	± 9.6 %
		Y	6.23	67.59	16.75		130.0	
		Z	6.16	67.71	16.83		130.0	

10639-AAB	IEEE 802.11ac WiFi (160MHz, MCS3, 90pc duty cycle)	X	6.40	67.91	16.95	0.46	130.0	± 9.6 %
		Y	6.18	67.47	16.73		130.0	
		Z	6.11	67.58	16.80		130.0	
10640-AAB	IEEE 802.11ac WiFi (160MHz, MCS4, 90pc duty cycle)	X	6.45	68.06	16.97	0.46	130.0	± 9.6 %
		Y	6.19	67.49	16.68		130.0	
		Z	6.09	67.54	16.73		130.0	
10641-AAB	IEEE 802.11ac WiFi (160MHz, MCS5, 90pc duty cycle)	X	6.42	67.72	16.82	0.46	130.0	± 9.6 %
		Y	6.26	67.48	16.70		130.0	
		Z	6.18	67.60	16.78		130.0	
10642-AAB	IEEE 802.11ac WiFi (160MHz, MCS6, 90pc duty cycle)	X	6.51	68.09	17.16	0.46	130.0	± 9.6 %
		Y	6.27	67.64	16.94		130.0	
		Z	6.19	67.74	17.01		130.0	
10643-AAB	IEEE 802.11ac WiFi (160MHz, MCS7, 90pc duty cycle)	X	6.33	67.78	16.92	0.46	130.0	± 9.6 %
		Y	6.13	67.39	16.71		130.0	
		Z	6.05	67.49	16.79		130.0	
10644-AAB	IEEE 802.11ac WiFi (160MHz, MCS8, 90pc duty cycle)	X	6.62	68.66	17.38	0.46	130.0	± 9.6 %
		Y	6.24	67.74	16.91		130.0	
		Z	6.11	67.69	16.91		130.0	
10645-AAB	IEEE 802.11ac WiFi (160MHz, MCS9, 90pc duty cycle)	X	6.82	68.76	17.37	0.46	130.0	± 9.6 %
		Y	6.42	67.94	16.97		130.0	
		Z	6.29	67.89	16.97		130.0	
10646-AAD	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)	X	22.37	99.45	32.18	9.30	60.0	± 9.6 %
		Y	34.93	118.52	39.50		60.0	
		Z	65.31	137.01	45.15		60.0	
10647-AAC	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	X	23.87	101.54	32.95	9.30	60.0	± 9.6 %
		Y	35.03	119.53	39.96		60.0	
		Z	61.92	136.93	45.35		60.0	
10648-AAA	CDMA2000 (1x Advanced)	X	1.11	70.04	15.37	0.00	150.0	± 9.6 %
		Y	0.68	63.85	10.64		150.0	
		Z	0.72	65.39	11.21		150.0	
10652-AAB	LTE-TDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	X	5.43	70.91	18.53	2.23	80.0	± 9.6 %
		Y	4.44	69.41	17.59		80.0	
		Z	4.46	70.35	17.94		80.0	
10653-AAB	LTE-TDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	X	5.75	69.79	18.37	2.23	80.0	± 9.6 %
		Y	4.85	68.29	17.59		80.0	
		Z	4.80	68.81	17.83		80.0	
10654-AAB	LTE-TDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	X	5.63	69.47	18.36	2.23	80.0	± 9.6 %
		Y	4.81	67.88	17.59		80.0	
		Z	4.76	68.31	17.81		80.0	
10655-AAB	LTE-TDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	X	5.69	69.55	18.41	2.23	80.0	± 9.6 %
		Y	4.87	67.81	17.62		80.0	
		Z	4.82	68.18	17.82		80.0	

^F Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.