

SAR TEST REPORT

Applicant Name:

SAMSUNG Electronics Co., Ltd.

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Gyeonggi-do, 16677 Rep. of Korea

Date of Issue: 04. 01, 2016

Test Report No.: HCT-A-1603-F009-7

Test Site: HCT CO., LTD.

FCC ID:

A3LSMJ700T

Equipment Type:

Model Name:

Additional Model Names:

Mobile Phone

SM-J700T

SM-J700T1

Testing has been carried out in accordance with:

47CFR §2.1093
ANSI/ IEEE C95.1 - 1992
IEEE 1528-2013

Date of Test:

02/29/2016 ~ 03/11/2016, 03/22/2016

This device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in FCC KDB procedures and had been tested in accordance with the measurement procedures specified in FCC KDB procedures.

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.

Tested By



Yun-Jeang Heo
Test Engineer / SAR Team
Certification Division

Reviewed By



Dong-Seob Kim
Technical Manager / SAR Team
Certification Division

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Version

Rev.	DATE	DESCRIPTION
HCT-A-1603-F009	03. 15, 2016	First Approval Report
HCT-A-1603-F009-1	03. 23, 2016	5GHz Head SAR were retested and below sec were revised. Sec. 1. Was revised. Sec.2.5.1 WLAN Reduction Target power was revised Sec.9.4 WiFi Power were revised. Sec. 11.1 5GHz Head SAR was revised.
HCT-A-1603-F009-2	03. 25, 2016	Sec.2.8 SAR Test Exclusions Applied (B) was revised. Sec.11.2 GSM/UMTS Body-worn were revised (Typo) Sec.11.3 5GHz WLAN Hotspot were revised for summation. Sec.12.3 Simultaneous Transmission Summation for Hotspot were revised. P.246 Attachment 5. – SAR Tissue Characterization: 750MHz TSL characterizations were revised.
HCT-A-1603-F009-3	03. 28, 2016	- Sec.2.8 SAR Test Exclusions Applied (B) was revised. (Recalculate BT SAR test exclusions) - Revised table of contents. - Revised U-NII Band descriptions on the report.
HCT-A-1603-F009-4	03. 29, 2016	Page 52. LTE CA Power were revised.
HCT-A-1603-F009-5	03. 30, 2016	- Revised sec. 2.1 DUT sepcification (Revised LTE operation mode) - Revised sec. 9.4 (Revised U-NII 2C Band) - Revised sec. 9.3 LTE conducted Power (Revised LTE 2 and 4 reduced conducted Power table) - Page 52. LTE CA Power were revised.
HCT-A-1603-F009-6	03. 31, 2016	Sec.1 was revised. Sec.2.1 DUT description were revised. Sec.2.7 Note 9. was added. Sec 2.8.B) was revised. Sec 12.2 was revised.
HCT-A-1603-F009-7	04. 01, 2016	Sec.9.3 Reduced Power (Active- Hotspot mode) MPR of LTE B2 and LTE B4 were revised.

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1. Attestation of Test Result of Device Under Test

Test Laboratory	
Company Name:	HCT Co., LTD
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Attestation of SAR test result						
Applicant Name:	SAMSUNG Electronics Co., Ltd.					
FCC ID:	A3LSMJ700T					
Model:	SM-J700T					
Additional Model:	SM-J700T1					
EUT Type:	Mobile Phone					
Application Type:	Certification					
The Highest Reported SAR						
Band	Tx. Frequency	Equipment Class	Reported SAR (W/kg)			
			1g Head	1g Body-Worn	1g Hotspot	10g Extremity
	(MHz)		(W/Kg)	(W/Kg)	(W/Kg)	(W/Kg)
GSM/GPRS/EDGE 850	824.2 - 848.8	PCE	0.18	0.17	0.40	N/A
GSM/GPRS/EDGE 1900	1 850.2 -1 909.8	PCE	0.15	0.15	0.77	N/A
UMTS 850	826.4 - 846.6	PCE	0.14	0.16	0.22	N/A
UMTS 1700	1 712.4 ~ 1 752.6	PCE	0.25	0.42	0.92	N/A
UMTS 1900	1 852.4 - 1 907.6	PCE	0.22	0.39	0.76	N/A
LTE 2 (PCS)	1 850.7 ~ 1 909.3	PCE	0.19	0.32	0.76	N/A
LTE 4 (AWS)	1 710.7 – 1 754.3	PCE	0.20	0.39	0.90	N/A
LTE 5 (Cell)	824.7 - 843	PCE	0.14	0.12	0.16	N/A
LTE 12	699.7 – 715.3	PCE	0.36	0.35	0.43	N/A
802.11b	2 412 - 2 462	DTS	0.80	0.16	0.42	N/A
U-NII-1	5 180 - 5 240	NII	N/A			
U-NII-2A	5 260 - 5 320	NII	0.44	0.24	N/A	1.19
U-NII-2C	5 500 - 5 720	NII	0.51	0.07	N/A	0.98
U-NII-3	5 745 - 5 850	NII	0.65	0.06	0.69	N/A
Bluetooth	2 402 - 2 480	DSS/DTS	N/A	0.02	N/A	
Simultaneous SAR per KDB 690783 D01v01r03			1.16	0.66	1.59	N/A
Date(s) of Tests:	02/29/2016 ~ 03/11/2016, 03/22/2016					

2. Device Under Test Description

2.1 DUT specification

Device Wireless specification overview		
Band & Mode	Operating Mode	Tx Frequency
GSM/GPRS/EDGE 850	Voice / Data	824.2 – 848.8 MHz
GSM/GPRS/EDGE 1900	Voice / Data	1 850.0 – 1 909.8 MHz
UMTS 850	Voice / Data	826.4 – 846.6 MHz
UMTS 1700	Voice / Data	1 712.4 – 1 752.6 MHz
UMTS 1900	Voice / Data	1 852.4 – 1 907.6 MHz
LTE Band 2 (PCS)	Voice / Data	1850.7 – 1909.3 MHz
LTE Band 4 (AWS)	Voice / Data	1710.7 – 1754.3 MHz
LTE Band 5 (Cell)	Voice / Data	824.7 – 848.3 MHz
LTE Band 12	Voice / Data	699.7 – 715.3 MHz
2.4 GHz WLAN	Voice / Data	2 412 – 2 462 MHz
U-NII-1	Voice / Data	5 180 – 5 240 MHz
U-NII-2A	Voice / Data	5 260 – 5 320 MHz
U-NII-2C	Voice / Data	5 500 – 5 720 MHz
U-NII-3	Voice / Data	5 745 – 5 850 MHz
Bluetooth	Data	2 402 – 2 480 MHz
NFC	Data	13.56 MHz
ANT+	Data	2402 – 2480 MHz
Device Description		
Device Dimension:	Overall (Length x Width) : 152.4 mm x 78.7 mm Overall Diagonal : 164.21 mm Display Diagonal : 139.30 mm	
Back Cover:	Normal Battery cover	
Battery Options:	Batteries with NFC antenna (EB-BJ700BBU)	
Hardware Version:	REV0.5	
Software Version :	J700T.001	
Device Serial Numbers	Mode	Serial Number
	GSM 850,1900 / UMTS 850, 1700, 1900 / WiFi 2.4GHz, 5GHz / Bluetooth	R38H10RQQHW R38H10RQLWX
	LTE 2/4/5/12	R38H10RQMHH R38H10RQKER
	Several samples with identical hardware were used to SAR testing. The manufacturer has confirmed that the devices tested have the same physical, mechanical and thermal characteristics are within operational tolerances expected for production units.	

2.2 DUT Wireless mode

Wireless Modulation	Band	Operating Mode		Duty Cycle
GSM	850 1900	Voice(GMSK) GPRS (GMSK) EGPRS (8PSK)	GPRS/ EDGE Multi-Slot Class: Class 12 – 4 Up, 4 Down Mode class B	GSM Voice: 12.5% GPRS 1 Slot: 12.5% 2 Slots : 25% 3 Slots : 37.5% 4 Slots : 50%
WCDMA (UMTS)	Band 5 Band 4 Band 2	UMTS Rel.99 (Voice / DATA) HSDPA (Rel. 5) HSUPA (Rel. 6) DC- HSDPA (Rel. 8) HSPA+ (Rel. 9) (Uplink QPSK Only)		100 %
LTE Band	2 (PCS)	Data (QPSK, 16QAM)		100 % (FDD)
	4 (AWS)	Data (QPSK, 16QAM)		100 % (FDD)
	5 (Cell)	Data (QPSK, 16QAM)		100 % (FDD)
	12	Data (QPSK, 16QAM)		100 % (FDD)
2.4 GHz WLAN		Data	802.11b, 802.11g, 802.11n (HT20)	98.85 %
5 GHz WLAN		Data	802.11 a, 802.11 n (HT20/HT40) 802.11 ac (VHT20/40/80)	93.14%
Bluetooth		Data	4.1 LE	N/A

2.2.1 Power Reduction for SAR

This device utilizes independent power reduction mechanisms for SAR compliance for the licensed transmitter and the WLAN Transmitter. For the licensed transmitter, the device utilizes power reduction under portable Hotspot active conditions for some wireless modes as outlined in section 2.5.

Detail descriptions of the power reduction mechanism are included in an operational description.

Additionally, this device uses an independent single-step fixed level power reduction mechanism for WLAN operations during voice or VoIP held to ear scenarios (IR Sensor). Per FCC Guidance, the held-to-ear exposure conditions were evaluated at reduced power according to the Head SAR positions described in IEEE1528. The reduced Powers for the power reduction mechanisms were conformed via conducted power measurements at the RF Port Sec.9.4

Detail descriptions of the power reduction mechanism are included in an operational description.

2.3 LTE information

Item.				Description							
Frequency Range:				Band 2: 1 850.7 MHz ~ 1 909.3 MHz							
				Band 4: 1 710.7 MHz ~ 1 754.3 MHz							
				Band 5: 824.7 MHz ~ 848.3 MHz							
				Band 12: 699.7 MHz~ 715.3 MHz							
Channel Bandwidths				Band 2: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz							
				Band 4: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz							
				Band 5: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz							
				Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz							
Channel Number s& Frequencies(MHz):											
Band 2											
1.4 MHz		3 MHz		5 MHz		10 MHz		15 MHz		20 MHz	
Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)
18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
18900	1880.0	18900	1880.0	18900	1880.0	18900	1880	18900	1880.0	18900	1880
19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900
Band 4											
1.4 MHz		3 MHz		5 MHz		10 MHz		15 MHz		20 MHz	
Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)
19957	1 710.7	19965	1 711.5	19975	1 712.5	20000	1 715.0	20025	1 717.5	20050	1 720.0
20175	1 732.5	20175	1 732.5	20175	1 732.5	20175	1 732.5	20175	1 732.5	20175	1 732.5
20393	1 754.3	20385	1 753.5	20375	1 752.5	20350	1 750.0	20325	1 747.5	20300	1 745.0
Band 5											
1.4 MHz		3 MHz		5 MHz		10 MHz					
Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)
20407	824.7	20415	825.5	20425	826.5	20450	829.0				
20525	836.5	20525	836.5	20525	836.5	20525	836.5				
20643	848.3	20635	847.5	20625	846.5	20600	844.0				
Band 12											
1.4 MHz		3 MHz		5 MHz		10 MHz					
Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)
23017	699.7	23025	700.5	23035	701.5	23060	704.0				
23095	707.5	23095	707.5	23095	707.5	23095	707.5				
23173	715.3	23165	714.5	23155	713.5	23130	711.0				

Item.	Description
UE Category	UE Category 6
LTE Carrier Aggregation Possible Combinations	LTE Band 2 (PCC) + LTE Band 4 (SCC) LTE Band 2 (PCC) + LTE Band 12 (SCC) LTE Band 4 (PCC) + LTE Band 4 (SCC) LTE Band 4 (PCC) + LTE Band 2 (SCC) LTE Band 4 (PCC) + LTE Band 12 (SCC) LTE Band 12 (PCC) + LTE Band 2 (SCC) LTE Band 12 (PCC) + LTE Band 4 (SCC)
Modulations Supported in UL	QPSK, 16QAM
LTE voice/data requirements	Data Only, LTE voice is available via VoIP. Considering the users may install 3rd party software to enable VoIP, LTE Head SAR is also evaluated.
LTE MPR options	The EUT incorporates MPR as per 3GPP TS 36.101 sec. 6.2.3 ~ 6.2.5 (Manufacturer attestation to be provided) The MPR is permanently built-in by design as a mandatory. A-MPR is not implemented in the DUT.
Description of the LTE Transmitter & antenna	This model has two Tx. paths. One is for GSM and WCDMA and LTE. It can not transmit simultaneously. The other is for BT & WLAN. It can not transmit simultaneously.
LTE Carrier aggregation Possible combinations	A3LSMJ700T LTE Rel.10 Check list includes all the possible carrier combinations
LTE Release 10 Additional Information	This device does not support full CA feature on 3GPP Release 10. It supports a maximum of 2 carriers in the downlink. All uplink communications are identical to the Release 8 specifications. Uplink communications are done on the PCC. Due to carrier capability, only the combinations listed above are supported. The following LTE release 10 features are not supported: Replay, HetNet, Enhanced MIMO, eICI, WIFI offloading, MDH, eMBHA, Cross-Carrier Scheduling, Enhanced SC-FDMA.

2.4 TEST METHODOLOGY and Procedures

The tests documented in this report were performed in accordance with IEEE Standard 1528-2013 & IEEE 1528-2005 and the following published KDB procedures.

- FCC KDB Publication 941225 D01 3G SAR Procedures v03r01
- FCC KDB Publication 941225 D06 Hot Spot SAR v02r01
- FCC KDB Publication 941225 D05 SAR for LTE Devices v02r05
- FCC KDB Publication 941225 D05A LTE Rel.10 KDB Inquiry sheet v01r02
- FCC KDB Publication 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB Publication 447498 D01 General SAR Guidance v06
- FCC KDB Publication 648474 D04 Handset SAR v01r03
- FCC KDB Publication 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- FCC KDB Publication 865664 D02 SAR Reporting v01r02
- October 2013 TCB Workshop Notes (GPRS testing criteria)
- April 2015 TCB Workshop Notes (Simultaneous transmission summation clarified)

2.5 Nominal and Maximum Output Power Specifications

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

2.5.1 Maximum Output Power

- Maximum Conducted Power

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 Tx Slot	1 Tx Slot	2 Tx Slot	3 Tx Slot	4 Tx Slot	1 Tx Slot	2 Tx Slot	3 Tx Slot	4 Tx Slot
GSM/GPRS/EDGE 850	Maximum	33.5	33.5	32.5	30.0	28.5	27.5	26.5	24.5	23.5
	Nominal	33.0	33.0	32.0	29.5	28.0	27.0	26.0	24.0	23.0
GSM/GPRS/EDGE 1900	Maximum	30.5	30.5	29.5	27.5	25.5	26.5	25.5	24.0	22.5
	Nominal	30.0	30.0	29.0	27.0	25.0	26.0	25.0	23.5	22.0

Mode / Band		3GPP WCDMA (dBm)	3GPP HSDPA (dBm)	3GPP HSUPA (dBm)	DC-HSDPA (dBm)
UMTS Band 5 (850 MHz)	Maximum	23.5	22.0	22.0	22.5
	Nominal	23.0	21.5	21.5	22.0
UMTS Band 4 (1700 MHz)	Maximum	23.5	23.5	22.5	23.0
	Nominal	23.0	23.0	22.0	22.5
UMTS Band 2 (1900 MHz)	Maximum	23.5	23.5	22.5	23.0
	Nominal	23.0	23.0	22.0	22.5

Mode / Band		Modulated Average (dBm)
LTE Band 2 (PCS)	Maximum	23.8
	Nominal	23.3
LTE Band 4 (AWS)	Maximum	23.8
	Nominal	23.3
LTE Band 5 (Cell)	Maximum	23.8
	Nominal	23.3
LTE Band 12	Maximum	24.7
	Nominal	24.2

- Reduced Power Active- Hotspot mode

Mode / Band		3GPP WCDMA (dBm)	3GPP HSDPA (dBm)	3GPP HSUPA (dBm)	DC-HSDPA (dBm)
UMTS Band 4 (1700 MHz)	Maximum	22.5	22.5	22.5	22.5
	Nominal	22.0	22.0	22.0	22.0
UMTS Band 2 (1900 MHz)	Maximum	22.5	22.5	22.5	22.5
	Nominal	22.0	22.0	22.0	22.0

Mode / Band		Modulated Average (dBm)
LTE Band 2 (PCS)	Maximum	22.8
	Nominal	22.3
LTE Band 4 (AWS)	Maximum	22.8
	Nominal	22.3

- Maximum Conducted Power when Proximity Sensor is inactive:

Mode/Band		Modulated Average (dBm)				
		a	b	g	n	ac
2.4 GHz WIFI	Maximum		18.5	16.5	17.5(11ch : 16.5)	
	Nominal		18.0	16.0	17.0(11ch : 16)	
5 GHz WIFI (20MHz BW)						
5200MHz (36ch~48ch)	Maximum	17.0(36ch:15.0)			17.0(36ch:15.0)	17.0(36ch:15.0)
	Nominal	16.5(36ch:14.5)			16.5(36ch:14.5)	16.5(36ch:14.5)
5300 MHz (52ch~64ch)	Maximum	17.0(64ch:15.0)			17.0(64ch:15.0)	17.0(64ch:15.0)
	Nominal	16.5(64ch:14.5)			16.5(64ch:14.5)	16.5(64ch:14.5)
5500 MHz (100ch~144ch)	Maximum	17.0(100ch:15.0)			17.0(100ch:15.0)	17.0(100ch:15.0)
	Nominal	16.5(100ch:14.5)			16.5(100ch:14.5)	16.5(100ch:14.5)
5800 MHz (149ch~165ch)	Maximum	17.0(165ch:15.0)			17.0(165ch:15.0)	17.0(165ch:15.0)
	Nominal	16.5(165ch:14.5)			16.5(165ch:14.5)	16.5(165ch:14.5)
5 GHz WIFI (40MHz BW)						
5200 MHz	Maximum				15.5(38ch:9.5)	15.5(38ch:9.5)
	Nominal				15.0(38ch:9.0)	15.0(38ch:9.0)
5300 MHz	Maximum				15.5(62ch:9.5)	15.5(62ch:9.5)
	Nominal				15.0(62ch:9.0)	15.0(62ch:9.0)
5500 MHz	Maximum				15.5(102ch:9.5)	15.5(102ch:9.5)
	Nominal				15.0(102ch:9.0)	15.0(102ch:9.0)
5800 MHz	Maximum				15.5(159ch:9.5)	15.5(159ch:9.5)
	Nominal				15.0(159ch:9.0)	15.0(159ch:9.0)
5 GHz WIFI (80MHz BW)						
5200 MHz	Maximum					9.5
	Nominal					9.0
5300 MHz	Maximum					9.5
	Nominal					9.0
5500 MHz	Maximum					14.5(106ch:9.5)
	Nominal					14.0(106ch:9.0)
5800 MHz	Maximum					9.5
	Nominal					9.0

- Reduced Power at VOIP Held to ear

Mode/Band		Modulated Average (dBm)				
		a	b	g	n	ac
2.4 GHz WIFI	Maximum		14.5	14.5	14.5	
	Nominal		14.0	14.0	14.0	
5 GHz WIFI (20MHz BW)						
5200 MHz	Maximum	9.5			9.5	9.5
	Nominal	9.0			9.0	9.0
5300 MHz	Maximum	9.5			9.5	9.5
	Nominal	9.0			9.0	9.0
5500 MHz	Maximum	9.5			9.5	9.5
	Nominal	9.0			9.0	9.0
5800 MHz	Maximum	9.5			9.5	9.5
	Nominal	9.0			9.0	9.0
5 GHz WIFI (40MHz BW)						
5200 MHz	Maximum				9.3	9.3
	Nominal				8.8	8.8
5300 MHz	Maximum				9.3	9.3
	Nominal				8.8	8.8
5500 MHz	Maximum				9.3	9.3
	Nominal				8.8	8.8
5800 MHz	Maximum				9.3	9.3
	Nominal				8.8	8.8
5 GHz WIFI (80MHz BW)						
5200 MHz	Maximum					9.3
	Nominal					8.8
5300 MHz	Maximum					9.3
	Nominal					8.8
5500 MHz	Maximum					9.3
	Nominal					8.8
5800 MHz	Maximum					9.3
	Nominal					8.8

Mode / Band		Modulated Average (dBm)
Bluetooth (DH5)	Maximum	10.5
	Nominal	10.0
Bluetooth LE	Maximum	6.5
	Nominal	6.0

2.6 DUT Antenna Locations

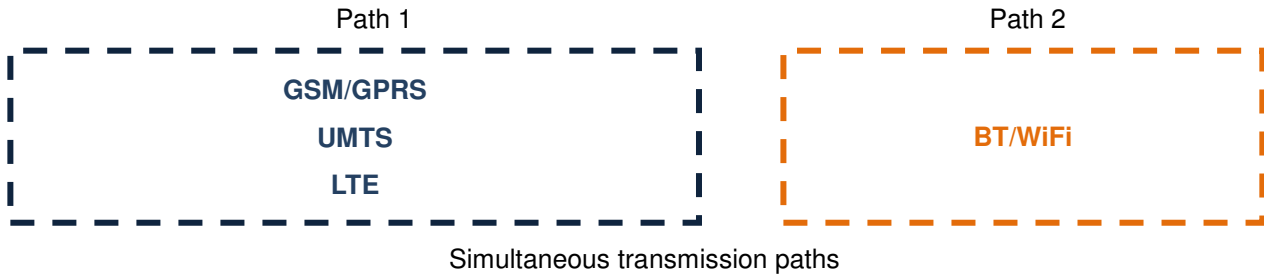
Device Edges / Sides for SAR Testing						
Mode	Rear	Front	Left	Right	Bottom	Top
GSM/GPRS/EDGE 850	Yes	Yes	Yes	Yes	Yes	No
GSM/GPRS/EDGE 1900	Yes	Yes	Yes	Yes	Yes	No
UMTS 850	Yes	Yes	Yes	Yes	Yes	No
UMTS 1700	Yes	Yes	Yes	Yes	Yes	No
UMTS 1900	Yes	Yes	Yes	Yes	Yes	No
LTE Band 2	Yes	Yes	Yes	Yes	Yes	No
LTE Band 4	Yes	Yes	Yes	Yes	Yes	No
LTE Band 5	Yes	Yes	Yes	Yes	Yes	No
LTE Band 12	Yes	Yes	Yes	Yes	Yes	No
2.4 GHz WLAN	Yes	Yes	No	Yes	No	Yes
5 GHz WLAN	Yes	Yes	No	Yes	No	Yes

Particular EUT edges were not required to be evaluated for Wireless Router SAR if the edges were > 25 mm from the transmitting antenna according to FCC KDB 941225 D06v02r01 on page 2. The distance between the transmit antennas and the edges of the device are included in the filing. The overall dimensions of this device are > 9 X 5 cm. A diagram showing device antenna can be found in SAR_setup_photos. Since the diagonal dimension of this device is > 160 mm and < 200 mm, it is considered a “phablet”.

Note; All test configurations are based on front view.

2.7 SAR Summation Scenario

According to FCC KDB 447498 D01v06, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds. Possible transmission paths for the EUT are shown below paths and are mode in same rectangle to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.



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

FCC KDB 447498 D01v06 General RF Exposure Guidance introduces a new formula for calculating the SAR a Peak Location Ratio(SPLSR) between pairs of simultaneously transmitting antennas:

$$SPLSR = (SAR_1 + SAR_2)^{1.5} / Ri$$

Where:

SAR_1 is the highest measured or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition

SAR_2 is the highest measured of estimated SAR for the second of a pair of simultaneous transmitting antennas, in the same test operating mode and exposure condition as the first

Ri is the separation distance between the pair of simultaneous transmitting antennas, When the SAR is measured, for both antennas in the pair, it is determined by the actual x, y and z coordinates in the 1-g SAR for each SAR peak location, based on the extrapolated and interpolated result in the zoom scan measurement, using the formula of $[(X_1 - X_2)^2 + (Y_1 - Y_2)^2 + (Z_1 - Z_2)^2]$

In order for a pair of simultaneous transmitting antennas with the sum of 1-g SAR > 1.6 W/kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:

$$(SAR_1 + SAR_2)^{1.5} / Ri \leq 0.04$$

Simultaneous Transmission Scenarios			
Applicable Combination	Head	Body-Worn	Hotspot
GSM Voice + 2.4 GHz WiFi	Yes	Yes	N/A
GSM Voice + 5 GHz WiFi	Yes	Yes	N/A
GSM Voice + 2.4 GHz Bluetooth	N/A	Yes	N/A
GPRS + 2.4 GHz WiFi	N/A	N/A	Yes
GPRS + 5 GHz WiFi	N/A	N/A	Yes
UMTS + 2.4 GHz WiFi	Yes	Yes	Yes
UMTS + 5 GHz WiFi	Yes	Yes	Yes
UMTS + 2.4 GHz Bluetooth	N/A	Yes	N/A
LTE + 2.4 GHz WiFi	Yes	Yes	Yes
LTE + 5 GHz WiFi	Yes	Yes	Yes
LTE+ 2.4 GHz Bluetooth	N/A	Yes	N/A

- 2.4 GHz WLAN, 5GHz WLAN and 2.4 GHz Bluetooth share antenna path and cannot transmit simultaneously.
- All licensed modes share the same antenna path and cannot transmit simultaneously.
- UMTS +WLAN scenario also represents the UMTS Voice/DATA + WLAN hotspot scenario.
- Per the manufacturer, GPRS does not support VOIP service.
- 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.
- This device support VoLTE.
- The highest reported SAR for each exposure condition is used for SAR summation purpose.
- 5 GHz wireless Mobile Hotsopt is only supported for the U-NII-3 Band, therefore , U-NII1,U-NII-2A and U-NII-2C bands were not evaluated for Mobile Hotsopt conditions.
- This device support VoWIFI.

2.8 SAR Test Exclusions Applied

(A) WiFi

Since wireless router operations are not allowed by the chipset firmware using U-NII-1, U-NII-2A & U-NII-2C WiFi, WiFi Hotspot SAR test and combinations are considered only 2.4 GHz and U-NII-3 for SAR with respected to wireless router configurations according to FCC KDB 941225 D06v02.

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 for 1g SAR and is less than 3.0 W/kg for 10g SAR, SAR is not required for U-NII-1 band according to FCC KDB 248227 D01v02r02.

This device supports IEEE 802.11 ac with the following features:

- Up to 80 MHz Bandwidth only
- No aggregate channel configurations
- 1 Tx antenna output
- 256 QAM is supported

(B) Bluetooth

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

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

Mode	Frequency	Maximum Allowed Power	Separation Distance	≤ 3.0
	[MHz]	[mW]	[mm]	
Bluetooth LE	2 480	4	15	0.4

[SAR Test exclusion 1 g]

Based on the maximum allowed power of Bluetooth LE and antenna to use separation distance, Bluetooth LE SAR was not required $[(4/15)*\sqrt{2.480}] = 0.4 < 3.0$.

Per FCC KDB 447498 D01v06, The 10-g extremity SAR exclusion threshold for distance < 50mm is defined by the following

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

Mode	Frequency	Maximum Allowed Power	Separation Distance	≤ 7.5
	[MHz]	[mW]	[mm]	
Bluetooth	2 480	11	5	3.5
Bluetooth LE	2 480	4	5	1.3

[SAR Test exclusion 10 g]

Based on the maximum allowed power of Bluetooth and antenna to use separation distance, Extremity Bluetooth SAR was not required $[(11/5)*\sqrt{2.480}] = 3.5 < 7.5$

Based on the maximum allowed power of Bluetooth LE and antenna to use separation distance, Extremity Bluetooth LE SAR was not required $[(4/5)*\sqrt{2.480}] = 1.3 < 7.5$

Note :

1) Held-to ear configurations are not applicable to Bluetooth and Bluetooth LE operations and therefore were not considered for simultaneous transmission

(B) Licensed Transmitter(s)

GSM/GPRS/EDGE 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 D05v02r05.

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

Per FCC KDB 648474 D04v01r03, this device is considered a "Phablet" since the diagonal dimension is greater than 160 mm and less than 200 mm. Therefore, extremity SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR >1.2 W/kg. When hotspot mode applies, 10g SAR required only for the surfaces and edges with hotspot mode scaled to the maximum output power (including tolerance) is 1g SAR > 1.2 W/kg.

Per FCC KDB 941225 D01v03r01, 12.2 kbps RMC is the primary mode and HSPA (HSUPA/HSDPA with RMC) is the secondary mode.

Per FCC KDB 941225 D01v03r01, The SAR test exclusion is applied to the secondary mode by the following equation.

$$\text{Adjusted SAR} = \text{Highest Reported SAR} * \frac{\text{Secondary Max tune - up (mW)}}{\text{Primary Max tune tune - up(mW)}} \leq 1.2 \text{ W/kg.}$$

Based on the highest Reported SAR, the secondary mode is not required.

$$[0.924 * (178/178)] = 0.924 \text{ W/kg} \leq 1.2 \text{ W/kg}$$

And the maximum output power and tune-up tolerance in secondary mode is ≤ 0.25 dB higher than the primary mode.

3. INTRODUCTION

The FCC has adopted the guidelines for evaluating the environmental effects of radio frequency radiation in ET Docket 93-62 on Aug. 6, 1996 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices.

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 C95.1-2005 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz. 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017. The measurement procedure described in IEEE/ANSI C95.3-1992 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave is used for guidance in measuring 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 National Council on Radiation Protection and Measurements (NCRP) in Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields," NCRP Report No. 86 NCRP, 1986, Bethesda, MD 20814. 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.

SAR Definition

Specific Absorption Rate (SAR) is defined as the time derivative of the incremental electromagnetic energy (dW) 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.

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

Figure 1. SAR Mathematical Equation

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

$$SAR = \sigma E^2 / \rho$$

Where:

- σ = conductivity of the tissue-simulant material (S/m)
- ρ = mass density of the tissue-simulant 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 relations 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.

4. DESCRIPTION OF TEST EQUIPMENT

4.1 SAR MEASUREMENT SETUP

These measurements are performed using the DASY4 automated dosimetric assessment system. It is made by Schmid & Partner Engineering AG (SPEAG) in Zurich, Switzerland. It consists of high precision robotics system (Staubli), robot controller, Pentium III computer, near-field probe, probe alignment sensor, and the generic twin phantom containing the brain equivalent material. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF) (see Figure.2).

A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and remote control, is used to drive the robot motors. The PC with Windows XP or Windows 7 is working with SAR Measurement system DASY4 & DASY5, A/D interface card, monitor, mouse, and keyboard. The Staubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card.

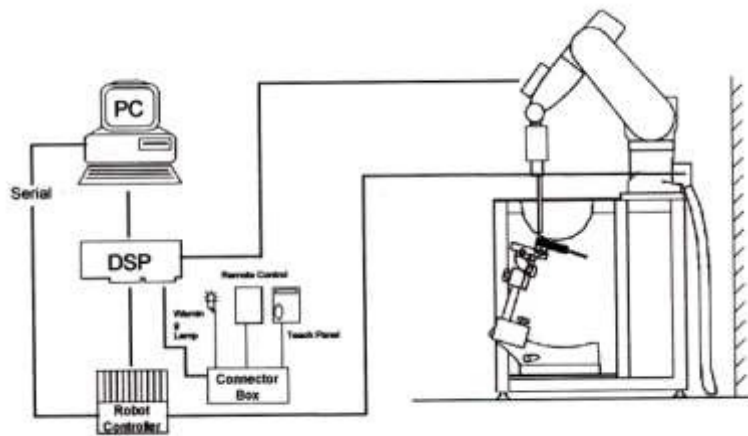


Figure 2. HCT SAR Lab. Test Measurement Set-up

The DAE consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer. The system is described in detail in.

5. SAR MEASUREMENT PROCEDURE

The evaluation was performed with the following procedure:

1. The SAR distribution at the exposed side of the head or body was measured at a distance no more than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the DUT's head and body area and the horizontal grid resolution was depending on the FCC KDB 865664 D01v01r04 table 4-1 & IEEE 1528-2013.
2. Based on step, the area of the maximum absorption was determined by sophisticated interpolations routines implemented in DASY software. When an Area Scan has measured all reachable point. DASY system computes the field maximal found in the scanned are, within a range of the maximum. SAR at this fixed point was measured and used as a reference value.
3. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB 865664 D01v01r04 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 (reference from the DASY manual.)
 - a. The data at the surface were extrapolated, since the center of the dipoles is no more than 2.7 mm away from the tip of the probe (it is different from the probe type) and the distance between the surface and the lowest measuring point is 1.2 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.
 - b. The maximum interpolated value was searched with a straight-forward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed using the 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 integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.
 - 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. If the value changed by more than 5 %, the SAR evaluation and drift measurements were repeated.

Area scan and zoom scan resolution setting follow KDB 865664 D01v01r04 quoted below.

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2)\pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			$30^{\circ}\pm 1^{\circ}$	$20^{\circ}\pm 1^{\circ}$
Maximum area scan Spatial resolution: $\Delta x_{Area}, \Delta y_{Area}$			≤ 2 GHz: ≤ 15 mm 2-3 GHz: ≤ 12 mm	3-4 GHz: ≤ 12 mm 4-6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan Spatial resolution: $\Delta x_{zoom}, \Delta y_{zoom}$			≤ 2 GHz: ≤ 8 mm 2-3 GHz: ≤ 5 mm*	3-4 GHz: ≤ 5 mm* 4-6 GHz: ≤ 4 mm*
Maximum zoom scan Spatial resolution normal to phantom surface	uniform grid: $\Delta z_{zoom}(n)$		≤ 5 mm	3-4 GHz: ≤ 4 mm 4-5 GHz: ≤ 3 mm 5-6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{zoom}(1)$: between 1 st two Points closest to phantom surface	≤ 4 mm	3-4 GHz: ≤ 3 mm 4-5 GHz: ≤ 2.5 mm 5-6 GHz: ≤ 2 mm
		$\Delta z_{zoom}(n>1)$: between subsequent Points	$\leq 1.5 \cdot \Delta z_{zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3-4 GHz: ≥ 28 mm 4-5 GHz: ≥ 25 mm 5-6 GHz: ≥ 22 mm
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.				
* When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

6. DESCRIPTION OF TEST POSITION

6.1 EAR REFERENCE POINT

Figure 6-2 shows the front, back and side views of the SAM phantom. The center-of-mouth reference point is labeled “M”, the left ear reference point (ERP) is marked “LE”, and the right ERP is marked “RE.” Each ERP is on the B-M (back-mouth) line located 15 mm behind the entrance-to-ear-canal (EEC) point, as shown in Figure 6-1. The Reference Plane is defined as passing through the two ear reference point and point M. 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.

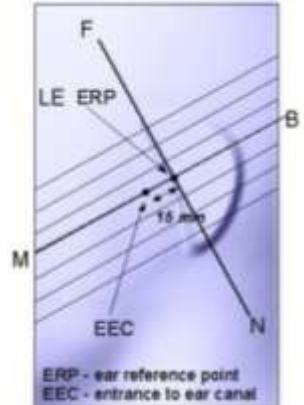


Figure 6-1
Close-up side view of ERP

6.2 HEAD POSITION

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The device under test 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 6-3). The acoustic output was then located at the same level as the center of the ear reference point. The device under test 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 6-2
Front, back and side views of SAM Twin Phantom

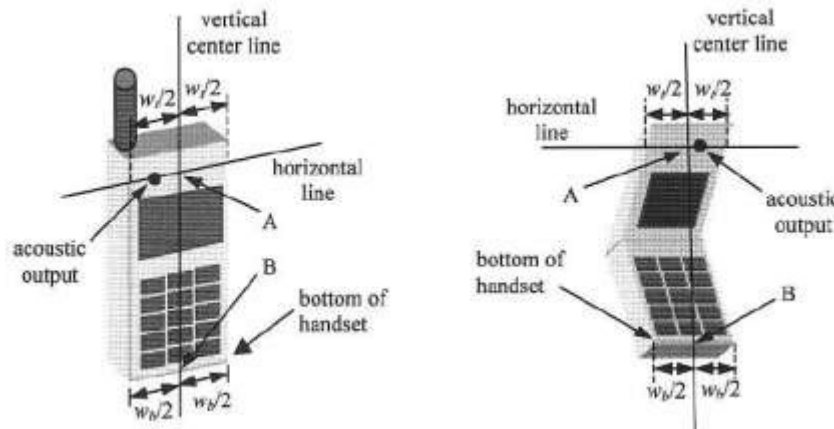


Figure 6-3. Handset vertical and horizontal reference lines

6.3 Body Holster/Belt Clip 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. A device with a headset output is tested with a headset connected to the device. Body dielectric parameters are used.

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with 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.

Since this EUT does not supply any body worn accessory to the end user a distance of 1.5 cm from the EUT back surface to the liquid interface is configured for the generic test.

"See the Test SET-UP Photo"

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. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessory(ies), including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

In all cases SAR measurements are performed to investigate the worst-case positioning. Worst case positioning is then documented and used to perform Body SAR testing.

6.4 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 $> 1.2 \text{ W/kg}$, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body- worn accessory with a headset attached to the handset.



Figure 6-4
Sample Body-Worn Diagram

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-dip 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.

6.5 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 publication 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.

7. ANSI/ IEEE C95.1 - 1992 RF EXPOSURE LIMITS

HUMAN EXPOSURE	UNCONTROLLED ENVIRONMENT General Population	CONTROLLED ENVIRONMENT Occupational
	(W/kg) or (mW/g)	(W/kg) or (mW/g)
SPATIAL PEAK SAR * (Brain)	1.60	8.00
SPATIAL AVERAGE SAR ** (Whole Body)	0.08	0.40
SPATIAL PEAK SAR *** (Hands / Feet / Ankle / Wrist)	4.00	20.00

Table 8.1 Safety Limits for Partial Body Exposure

NOTES:

* The Spatial Peak value of the SAR averaged over any 1 g of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

** The Spatial Average value of the SAR averaged over the whole-body.

*** The Spatial Peak value of the SAR averaged over any 10 g of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

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.

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.

8. FCC SAR GENERAL MEASUREMENT PROCEDURES

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

8.2.1 GSM, GPRS AND EDGE

The following procedures may be considered for each frequency band to determine SAR test reduction for devices operating in GSM/GPRS/EDGE modes to demonstrate RF exposure compliance. GSM voice mode transmits with 1 time slot. GPRS and EDGE may transmit up to 4 time slots in the 8 time-slot frame according to the multi-slot class implemented in a device.

8.2.2 SAR Test Reduction

In FCC KDB 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.

SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested

8.3 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB 941225 D01v03r01 - 3G SAR Measurement Procedures. The handset was placed into a simulated call using a base station simulator in a shielded chamber. Such test signals offer a consistent means for testing SAR and are recommended for evaluation SAR measurements were taken with a fully charged battery. In order to verify that the device was tested and maintained at full power, this was configured with the base station simulator. The SAR measurement Software calculates a reference point at the start and end of the test to Check for power drifts. If conducted Power deviations of more than 5 % occurred, the tests were 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 sec. 5.2 of 3GPP TS 34.121, using the appropriate RMC with TPC (transmit power control) set to all "1s" or applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HS-DPCCH etc) are tabulated in this test report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations are identified.

8.4.2 Head SAR Measurements

SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1s". 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 12.2kbps RMC with the TPC bits all "1s". the 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCHn configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using and applicable RMC configuration with the corresponding spreading code or DPDCHn, for the highest reported SAR configuration in 12.2kbps 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 and FRC with H-SET 1 in Sub-test and a 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 Measurement 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 12.2kbps 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.

8.4.5 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-Set1 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.

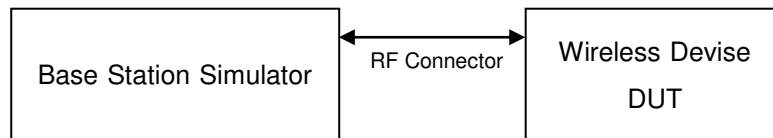
8.4.5 DC-HSDPA

UMTS SAR was tested under RMC 12.2 kbps with HSPA inactive per KDB publication 941225 D01v03r01. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.

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
- Measured maximum output powers for DC-HSDPA were not greater than 1/4 dB higher than the WCDMA 12.2 kbps RMC maximum output and as a result, SAR is not required for DC-HSDPA
- The DUT supports UE category 24 for HSDPA.

It is expected by the manufacturer that MPR for some HSUPA subtests may be up to 1 dB more than specified by 3GPP, but also as low as 0 dB according to the chipset implementation in this model.



8.5 SAR Measurement Conditions for LTE

LTE modes are tested according to FCC KDB 941225 D05v02r05 publication. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluation SAR [4]. The R&S CMW500 or Anritsu MT8820C simulators are used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

8.5.1 Spectrum Plots for RB Configurations

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

8.5.2 MPR

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

8.5.3 A-MPR

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

8.5.4 Required RB Size and RB offsets for SAR testing

According to FCC KDB 941225 D05v02r05

- a. Per sec 4.2.1, 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 Sec 4.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Sec 4.2.1.

- c. Per Sec. 4.2.3, 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 $< 0.8 \text{ W/kg}$.
- d. Per Sec. 4.2.4 and 4.3, SAR test for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sec. 4.2.1 through 4.2.3 is less than or equal to 1/2 dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is $< 1.45 \text{ W/Kg}$.

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 system 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 $> 1.2 \text{ W/kg}$ for 1g SAR or $> 3.0 \text{ W/kg}$ for 10g SAR. 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 $> 1.2 \text{ W/kg}$ for 1g SAR or $> 3.0 \text{ W/kg}$ for 10g SAR.

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

The frequency range covered by U-NII-2C and U-NII-3 is 380MHz (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.

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 $\leq 0.4 \text{ W/kg}$ for 1g SAR and $\leq 1.0 \text{ W/kg}$ for 10g SAR, no additional testing for the remaining test position is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is $\leq 0.8 \text{ W/kg}$ for 1g SAR and $\leq 2.0 \text{ W/kg}$ for 10g SAR 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 is 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

For the 2.4 GHz and 5 GHz bands, 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 and lowest order 802.11 a/g/n/ac mode. When the maximum output power of a channel is the same for equivalent OFDM configurations; for example, 802.11a, 802.11n and 802.11 ac 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, in both 2.4 GHz and 5 GHz bands, 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, and lowest data rate. If the average RF output powers of the highest identical transmission modes are within 0.25 dB of each other, mid channel of the transmission mode with highest average RF output power is the initial test channel. Otherwise, the channel of the transmission mode with the highest average RF output conducted power will be the initial test configuration.

When the reported SAR is ≤ 0.8 W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is 1.2 W/kg or all channels are measured. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest 802.11 mode is considered for SAR measurements.

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 on 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 for 1g SAR and ≤ 3.0 W/kg for 10g SAR, no additional SAR tests for the subsequent test configurations are required.

9. Output Power Specifications

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

9.1 GSM

GSM Conducted output powers (Burst-Average)

Band	Channel	Voice	GPRS(GMSK) Data – CS1				EDGE Data			
		GSM (dBm)	GPRS 1 TX Slot (dBm)	GPRS 2 TX Slot (dBm)	GPRS 3 TX Slot (dBm)	GPRS 4 TX Slot (dBm)	EDGE 1 TX Slot (dBm)	EDGE 2 TX Slot (dBm)	EDGE 3 TX Slot (dBm)	EDGE 4 TX Slot (dBm)
GSM 850	128	33.37	33.39	31.30	29.48	27.77	26.69	25.02	23.75	22.17
	190	33.47	33.49	31.42	29.68	28.02	26.82	25.23	23.71	22.43
	251	33.39	33.40	31.25	29.37	27.74	26.65	24.96	23.62	22.29
GSM 1900	512	30.20	30.21	27.80	25.84	23.94	25.45	23.94	22.24	20.55
	661	30.41	30.43	27.94	25.98	24.14	25.59	24.02	22.36	20.87
	810	30.42	30.45	28.07	26.08	24.13	25.73	24.20	22.55	20.93

GSM Conducted output powers (Frame-Average)

Band	Channel	Voice	GPRS(GMSK) Data – CS1				EDGE Data			
		GSM (dBm)	GPRS 1 TX Slot (dBm)	GPRS 2 TX Slot (dBm)	GPRS 3 TX Slot (dBm)	GPRS 4 TX Slot (dBm)	EDGE 1 TX Slot (dBm)	EDGE 2 TX Slot (dBm)	EDGE 3 TX Slot (dBm)	EDGE 4 TX Slot (dBm)
GSM 850	128	24.34	24.36	25.28	25.22	24.76	17.66	19.00	19.49	19.16
	190	24.44	24.46	25.40	25.42	25.01	17.79	19.21	19.45	19.42
	251	24.36	24.37	25.23	25.11	24.73	17.62	18.94	19.36	19.28
GSM 1900	512	21.17	21.18	21.78	21.58	20.93	16.42	17.92	17.98	17.54
	661	21.38	21.40	21.92	21.72	21.13	16.56	18.00	18.10	17.86
	810	21.39	21.42	22.05	21.82	21.12	16.70	18.18	18.29	17.92

Note:

Time slot average factor is as follows:

1 Tx slot = 9.03 dB, Frame-Average output power = Burst-Average output power – 9.03 dB

2 Tx slot = 6.02 dB, Frame-Average output power = Burst-Average output power – 6.02 dB

3 Tx slot = 4.26 dB, Frame-Average output power = Burst-Average output power – 4.26 dB

4 Tx slot = 3.01 dB, Frame-Average output power = Burst-Average output power – 3.01 dB

GSM Class : B

GSM voice/GPRS VOIP: Head SAR , Body worn SAR

GPRS/EDGE Multi-slots 12 : Hotspot SAR with GPRS/EDGE

Multi-slot Class 12 with CS 1 (GMSK)



9.2 UMTS

HSPA+

This DUT is only capable of QPSK HSPA+ in uplink. Therefore, the RF conducted power is not measured according to 941225 D01 3G SAR.

WCDMA850 Maximum Conducted Power

3GPP Release Version	Mode	3GPP 34.121	WCDMA Band 5 [dBm]		
		Subtest	UL 4132 DL 4357	UL 4183 DL 4408	UL 4233 DL 4458
99	WCDMA	12.2 kbps RMC	22.71	22.70	22.54
99	WCDMA	12.2 kbps AMR	22.72	22.67	22.51
5	HSDPA	Subtest 1	21.33	21.39	21.34
5		Subtest 2	21.34	21.32	21.32
5		Subtest 3	20.94	20.89	20.93
5		Subtest 4	20.91	20.86	20.92
6	HSUPA	Subtest 1	21.37	21.32	21.27
6		Subtest 2	18.82	18.95	18.86
6		Subtest 3	19.73	19.74	19.53
6		Subtest 4	18.76	18.74	18.80
6		Subtest 5	20.45	20.29	20.35
8	DC-HSDPA	Subtest 1	22.42	22.34	22.15
8		Subtest 2	21.44	21.34	21.10
8		Subtest 3	20.56	20.46	20.20
8		Subtest 4	20.58	20.44	20.18

WCDMA Average Conducted output powers

WCDMA1700 Maximum Conducted Power

3GPP Release Version	Mode	3GPP 34.121	WCDMA Band 4 [dBm]		
		Subtest	UL 1312 DL 1537	UL 1412 DL 1637	UL 1512 DL 1737
99	WCDMA	12.2 kbps RMC	23.15	23.13	23.24
99	WCDMA	12.2 kbps AMR	23.12	23.11	23.21
5	HSDPA	Subtest 1	22.35	22.23	22.29
5		Subtest 2	22.40	22.35	22.34
5		Subtest 3	21.91	21.88	21.92
5		Subtest 4	21.90	21.87	21.92
6	HSUPA	Subtest 1	21.38	21.31	21.36
6		Subtest 2	19.34	19.31	19.33
6		Subtest 3	20.23	20.21	20.21
6		Subtest 4	19.67	19.48	19.34
6		Subtest 5	21.37	21.28	21.37
8	DC-HSDPA	Subtest 1	22.91	22.65	22.71
8		Subtest 2	22.21	21.93	21.97
8		Subtest 3	21.19	20.92	20.97
8		Subtest 4	21.20	20.93	21.00

WCDMA Average Conducted output powers

WCDMA1700 (Reduced Power Active- Hotspot mode)

3GPP Release Version	Mode	3GPP 34.121	WCDMA Band 4 [dBm]		
		Subtest	UL 1312 DL 1537	UL 1412 DL 1637	UL 1512 DL 1737
99	WCDMA	12.2 kbps RMC	22.23	22.19	22.24
99	WCDMA	12.2 kbps AMR	22.19	22.16	22.23
5	HSDPA	Subtest 1	22.16	22.12	22.15
5		Subtest 2	22.18	22.13	22.17
5		Subtest 3	21.90	21.84	21.89
5		Subtest 4	21.92	21.87	21.94
6	HSUPA	Subtest 1	21.40	21.33	21.38
6		Subtest 2	19.36	19.34	19.36
6		Subtest 3	20.26	20.24	20.25
6		Subtest 4	19.35	19.33	19.36
6		Subtest 5	21.36	21.37	21.41
8	DC-HSDPA	Subtest 1	22.14	21.86	21.93
8		Subtest 2	22.18	21.90	21.99
8		Subtest 3	21.39	21.09	21.17
8		Subtest 4	21.39	21.08	21.16

WCDMA Average Conducted output powers

WCDMA1900 (Maximum Conducted Power)

3GPP Release Version	Mode	3GPP 34.121	WCDMA Band 2 [dBm]		
		Subtest	UL 9262 DL 9662	UL 9400 DL 9800	UL 9538 DL 9938
99	WCDMA	12.2 kbps RMC	23.03	23.11	23.08
99	WCDMA	12.2 kbps AMR	23.01	23.10	23.04
5	HSDPA	Subtest 1	22.22	22.39	22.30
5		Subtest 2	22.24	22.36	22.28
5		Subtest 3	21.78	21.92	21.73
5		Subtest 4	21.75	21.86	21.72
6	HSUPA	Subtest 1	21.07	21.25	21.13
6		Subtest 2	19.48	19.25	19.37
6		Subtest 3	20.35	20.23	20.18
6		Subtest 4	19.29	19.34	19.26
6		Subtest 5	21.10	21.24	21.15
8	DC-HSDPA	Subtest 1	22.83	22.66	22.79
8		Subtest 2	22.16	21.94	22.01
8		Subtest 3	21.05	20.79	20.91
8		Subtest 4	21.05	20.73	20.95

WCDMA Average Conducted output powers

WCDMA1900 (Reduced Power Active- Hotspot mode)

3GPP Release Version	Mode	3GPP 34.121	WCDMA Band 2 [dBm]		
		Subtest	UL 9262 DL 9662	UL 9400 DL 9800	UL 9538 DL 9938
99	WCDMA	12.2 kbps RMC	22.10	22.19	22.02
99	WCDMA	12.2 kbps AMR	22.08	22.17	22.00
5	HSDPA	Subtest 1	22.04	22.15	22.03
5		Subtest 2	22.06	22.18	22.05
5		Subtest 3	21.76	21.89	21.74
5		Subtest 4	21.79	21.88	21.76
6	HSUPA	Subtest 1	21.12	21.30	21.19
6		Subtest 2	19.48	19.28	19.34
6		Subtest 3	20.34	20.32	20.29
6		Subtest 4	19.37	19.36	19.28
6		Subtest 5	21.15	21.31	21.18
8	DC-HSDPA	Subtest 1	21.93	21.78	21.94
8		Subtest 2	21.97	21.82	21.91
8		Subtest 3	21.00	20.84	21.00
8		Subtest 4	21.04	20.83	21.01

WCDMA Average Conducted output powers

9.3 LTE

- LTE Band 2 Maximum Conducted Power

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				18607	18900	19193		
				1850.7 MHz	1880 MHz	1909.3 MHz	[dB]	[dB]
1.4 MHz	QPSK	1	0	23.49	23.43	23.39	0	0
		1	3	23.46	23.48	23.38	0	0
		1	5	23.51	23.50	23.39	0	0
		3	0	23.47	23.53	23.40	0	0
		3	1	23.45	23.50	23.40	0	0
		3	3	23.50	23.46	23.37	0	0
		6	0	22.44	22.45	22.36	0-1	1
	16QAM	1	0	22.34	22.57	22.32	0-1	1
		1	3	22.39	22.51	22.34	0-1	1
		1	5	22.44	22.57	22.35	0-1	1
		3	0	22.41	22.41	22.31	0-1	1
		3	1	22.39	22.42	22.27	0-1	1
		3	3	22.40	22.41	22.30	0-1	1
		6	0	21.44	21.30	21.39	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				18615	18900	19185		
				1851.5 MHz	1880 MHz	1908.5 MHz	[dB]	[dB]
3 MHz	QPSK	1	0	23.57	23.68	23.53	0	0
		1	7	23.54	23.65	23.51	0	0
		1	14	23.62	23.68	23.54	0	0
		8	0	22.44	22.47	22.42	0-1	1
		8	3	22.43	22.44	22.41	0-1	1
		8	7	22.42	22.45	22.45	0-1	1
		15	0	22.47	22.44	22.46	0-1	1
	16QAM	1	0	22.54	22.45	22.58	0-1	1
		1	7	22.45	22.4	22.66	0-1	1
		1	14	22.51	22.47	22.68	0-1	1
		8	0	21.35	21.33	21.40	0-2	2
		8	3	21.38	21.30	21.37	0-2	2
		8	7	21.37	21.31	21.40	0-2	2
		15	0	21.40	21.38	21.47	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				18625	18900	19175		
				1852.5 MHz	1880 MHz	1907.5 MHz	[dB]	[dB]
5 MHz	QPSK	1	0	23.59	23.60	23.51	0	0
		1	12	23.58	23.53	23.49	0	0
		1	24	23.68	23.56	23.55	0	0
		12	0	22.44	22.49	22.43	0-1	1
		12	6	22.47	22.49	22.43	0-1	1
		12	11	22.45	22.50	22.41	0-1	1
		25	0	22.46	22.47	22.45	0-1	1
	16QAM	1	0	22.15	22.29	22.30	0-1	1
		1	12	22.13	22.21	22.32	0-1	1
		1	24	22.18	22.28	22.34	0-1	1
		12	0	21.38	21.36	21.39	0-2	2
		12	6	21.38	21.37	21.38	0-2	2
		12	11	21.38	21.36	21.39	0-2	2
		25	0	21.46	21.47	21.44	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				18650	18900	19150		
				1855 MHz	1880 MHz	1905 MHz	[dB]	[dB]
10 MHz	QPSK	1	0	23.39	23.62	23.52	0	0
		1	24	23.42	23.64	23.54	0	0
		1	49	23.52	23.64	23.64	0	0
		25	0	22.39	22.44	22.43	0-1	1
		25	12	22.41	22.43	22.47	0-1	1
		25	24	22.42	22.44	22.50	0-1	1
		50	0	22.45	22.47	22.51	0-1	1
	16QAM	1	0	22.14	22.42	22.37	0-1	1
		1	24	22.15	22.38	22.35	0-1	1
		1	49	22.23	22.40	22.37	0-1	1
		25	0	21.49	21.54	21.51	0-2	2
		25	12	21.47	21.53	21.53	0-2	2
		25	24	21.51	21.52	21.57	0-2	2
		50	0	21.47	21.48	21.48	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				18675	18900	19125		
				1857.5 MHz	1880 MHz	1902.5 MHz	[dB]	[dB]
15 MHz	QPSK	1	0	23.26	23.40	23.37	0	0
		1	36	23.31	23.40	23.43	0	0
		1	74	23.35	23.39	23.51	0	0
		36	0	22.39	22.41	22.41	0-1	1
		36	18	22.41	22.46	22.45	0-1	1
		36	38	22.46	22.41	22.51	0-1	1
		75	0	22.47	22.42	22.46	0-1	1
	16QAM	1	0	22.03	22.53	22.17	0-1	1
		1	36	22.15	22.59	22.23	0-1	1
		1	74	22.16	22.53	22.30	0-1	1
		36	0	21.35	21.45	21.48	0-2	2
		36	18	21.36	21.44	21.51	0-2	2
		36	38	21.40	21.42	21.55	0-2	2
		75	0	21.41	21.47	21.44	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				18700	18900	19100		
				1860 MHz	1880 MHz	1900 MHz	[dB]	[dB]
20 MHz	QPSK	1	0	23.35	23.52	23.48	0	0
		1	49	23.40	23.50	23.54	0	0
		1	99	23.49	23.55	23.67	0	0
		50	0	22.38	22.47	22.47	0-1	1
		50	25	22.43	22.47	22.47	0-1	1
		50	49	22.42	22.44	22.55	0-1	1
		100	0	22.42	22.44	22.48	0-1	1
	16QAM	1	0	21.91	22.49	22.02	0-1	1
		1	49	21.93	22.42	22.09	0-1	1
		1	99	22.02	22.50	22.20	0-1	1
		50	0	21.38	21.45	21.49	0-2	2
		50	25	21.40	21.43	21.53	0-2	2
		50	49	21.41	21.43	21.57	0-2	2
		100	0	21.46	21.50	21.57	0-2	2

- LTE Band 2 (Reduced Power Active- Hotspot mode)

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP
				18607	18900	19193	[dB]
				1850.7 MHz	1880 MHz	1909.3 MHz	
1.4 MHz	QPSK	1	0	22.39	22.46	22.48	0
		1	3	22.41	22.40	22.43	0
		1	5	22.40	22.44	22.46	0
		3	0	22.39	22.39	22.41	0
		3	1	22.46	22.43	22.45	0
		3	3	22.42	22.43	22.45	0
	16QAM	6	0	22.42	22.43	22.42	0
		1	0	22.36	22.23	22.60	0
		1	3	22.14	22.30	22.40	0
		1	5	22.47	22.37	22.48	0
		3	0	22.32	22.36	22.39	0
		3	1	22.32	22.31	22.40	0
		3	3	22.31	22.44	22.42	0
		6	0	21.39	21.44	21.47	0-2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP
				18615	18900	19185	[dB]
				1851.5 MHz	1880 MHz	1908.5 MHz	
3 MHz	QPSK	1	0	22.38	22.68	22.57	0
		1	7	22.44	22.66	22.45	0
		1	14	22.48	22.68	22.55	0
		8	0	22.44	22.48	22.44	0
		8	3	22.46	22.44	22.44	0
		8	7	22.50	22.46	22.46	0
		15	0	22.49	22.47	22.47	0
	16QAM	1	0	22.50	22.50	22.55	0
		1	7	22.59	22.45	22.63	0
		1	14	22.66	22.54	22.67	0
		8	0	21.25	21.26	21.45	0-2
		8	3	21.28	21.31	21.45	0-2
		8	7	21.27	21.32	21.47	0-2
		15	0	21.43	21.31	21.49	0-2

Bandwidth	Modulation	RB Size	RB Offset	Max. Average Power (dBm)			MPR Allowed Per 3GPP
				18625	18900	19175	[dB]
				1852.5 MHz	1880 MHz	1907.5 MHz	
5 MHz	QPSK	1	0	22.62	22.54	22.53	0
		1	12	22.58	22.51	22.47	0
		1	24	22.69	22.55	22.54	0
		12	0	22.51	22.49	22.44	0
		12	6	22.49	22.48	22.45	0
		12	11	22.51	22.51	22.46	0
		25	0	22.49	22.44	22.46	0
	16QAM	1	0	22.44	22.53	22.41	0
		1	12	22.38	22.45	22.35	0
		1	24	22.40	22.52	22.46	0
		12	0	21.39	21.41	21.46	0-2
		12	6	21.39	21.40	21.44	0-2
		12	11	21.40	21.42	21.44	0-2
		25	0	21.51	21.44	21.48	0-2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP
				18650	18900	19150	[dB]
				1855 MHz	1880 MHz	1905 MHz	
10 MHz	QPSK	1	0	22.38	22.51	22.40	0
		1	24	22.40	22.47	22.36	0
		1	49	22.47	22.52	22.44	0
		25	0	22.42	22.45	22.43	0
		25	12	22.43	22.45	22.46	0
		25	24	22.46	22.42	22.46	0
		50	0	22.43	22.50	22.53	0
	16QAM	1	0	22.30	22.56	22.20	0
		1	24	22.32	22.53	22.24	0
		1	49	22.42	22.55	22.28	0
		25	0	21.48	21.55	21.55	0-2
		25	12	21.49	21.53	21.57	0-2
		25	24	21.50	21.52	21.58	0-2
		50	0	21.46	21.52	21.47	0-2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP
				18675	18900	19125	[dB]
				1857.5 MHz	1880 MHz	1902.5 MHz	
15 MHz	QPSK	1	0	22.35	22.49	22.35	0
		1	36	22.42	22.46	22.38	0
		1	74	22.44	22.48	22.50	0
		36	0	22.42	22.47	22.45	0
		36	18	22.44	22.49	22.49	0
		36	38	22.47	22.46	22.52	0
		75	0	22.43	22.48	22.45	0
	16QAM	1	0	22.14	22.25	21.96	0
		1	36	22.10	22.23	22.01	0
		1	74	22.18	22.30	22.09	0
		36	0	21.36	21.46	21.55	0-2
		36	18	21.41	21.48	21.55	0-2
		36	38	21.40	21.45	21.56	0-2
		75	0	21.45	21.49	21.51	0-2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP
				18700	18900	19100	[dB]
				1860 MHz	1880 MHz	1900 MHz	
20 MHz	QPSK	1	0	22.37	22.39	22.61	0
		1	49	22.42	22.42	22.69	0
		1	99	22.47	22.49	22.66	0
		50	0	22.42	22.49	22.46	0
		50	25	22.44	22.51	22.56	0
		50	49	22.47	22.48	22.56	0
		100	0	22.43	22.47	22.56	0
	16QAM	1	0	21.94	22.33	22.13	0
		1	49	21.97	22.36	22.26	0
		1	99	22.01	22.35	22.36	0
		50	0	21.44	21.48	21.52	0-2
		50	25	21.45	21.47	21.56	0-2
		50	49	21.44	21.50	21.64	0-2
		100	0	21.48	21.53	21.61	0-2

- LTE Band 4 Maximum Conducted Power

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				19957	20175	20393		
				1710.7 MHz	1732.5 MHz	1754.3 MHz	[dB]	[dB]
1.4 MHz	QPSK	1	0	23.58	23.39	23.38	0	0
		1	3	23.59	23.38	23.40	0	0
		1	5	23.59	23.42	23.43	0	0
		3	0	23.53	23.53	23.45	0	0
		3	1	23.50	23.52	23.46	0	0
		3	3	23.51	23.46	23.48	0	0
	16QAM	6	0	22.48	22.44	22.42	0-1	1
		1	0	22.66	22.50	22.53	0-1	1
		1	3	22.67	22.49	22.45	0-1	1
		1	5	22.70	22.50	22.54	0-1	1
		3	0	22.28	22.31	22.23	0-1	1
		3	1	22.31	22.29	22.21	0-1	1
		3	3	22.32	22.31	22.24	0-1	1
		6	0	21.30	21.19	21.44	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				19965	20175	20385		
				1711.5 MHz	1732.5 MHz	1753.5 MHz	[dB]	[dB]
3 MHz	QPSK	1	0	23.65	23.73	23.58	0	0
		1	7	23.54	23.69	23.55	0	0
		1	14	23.59	23.74	23.59	0	0
		8	0	22.48	22.50	22.40	0-1	1
		8	3	22.44	22.51	22.46	0-1	1
		8	7	22.45	22.46	22.48	0-1	1
	16QAM	15	0	22.46	22.53	22.48	0-1	1
		1	0	22.62	22.68	22.56	0-1	1
		1	7	22.59	22.57	22.52	0-1	1
		1	14	22.67	22.70	22.54	0-1	1
		8	0	21.23	21.24	21.25	0-2	2
		8	3	21.22	21.27	21.26	0-2	2
		8	7	21.22	21.26	21.25	0-2	2
		15	0	21.42	21.35	21.40	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				19975	20175	20375		
				1712.5 MHz	1732.5 MHz	1752.5 MHz	[dB]	[dB]
5 MHz	QPSK	1	0	23.57	23.60	23.53	0	0
		1	12	23.51	23.56	23.48	0	0
		1	24	23.62	23.58	23.57	0	0
		12	0	22.42	22.52	22.44	0-1	1
		12	6	22.40	22.53	22.45	0-1	1
		12	11	22.42	22.53	22.43	0-1	1
		25	0	22.43	22.50	22.43	0-1	1
	16QAM	1	0	22.59	22.45	22.63	0-1	1
		1	12	22.53	22.41	22.55	0-1	1
		1	24	22.63	22.43	22.66	0-1	1
		12	0	21.33	21.3	21.33	0-2	2
		12	6	21.35	21.33	21.31	0-2	2
		12	11	21.36	21.34	21.32	0-2	2
		25	0	21.40	21.43	21.38	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				20000	20175	20350		
				1715 MHz	1732.5 MHz	1750 MHz	[dB]	[dB]
10 MHz	QPSK	1	0	23.46	23.62	23.49	0	0
		1	24	23.47	23.60	23.46	0	0
		1	49	23.56	23.62	23.53	0	0
		25	0	22.44	22.51	22.40	0-1	1
		25	12	22.42	22.49	22.41	0-1	1
		25	24	22.43	22.46	22.42	0-1	1
		50	0	22.46	22.47	22.43	0-1	1
	16QAM	1	0	22.09	22.56	22.05	0-1	1
		1	24	22.05	22.47	21.96	0-1	1
		1	49	22.10	22.57	22.07	0-1	1
		25	0	21.45	21.47	21.42	0-2	2
		25	12	21.39	21.47	21.38	0-2	2
		25	24	21.44	21.46	21.36	0-2	2
		50	0	21.38	21.47	21.32	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				20025	20175	20325		
				1717.5 MHz	1732.5 MHz	1747.5 MHz	[dB]	[dB]
15 MHz	QPSK	1	0	23.45	23.59	23.50	0	0
		1	36	23.45	23.62	23.49	0	0
		1	74	23.43	23.62	23.52	0	0
		36	0	22.41	22.49	22.40	0-1	1
		36	18	22.43	22.44	22.39	0-1	1
		36	38	22.42	22.48	22.42	0-1	1
		75	0	22.41	22.44	22.41	0-1	1
	16QAM	1	0	22.20	22.41	22.02	0-1	1
		1	36	22.14	22.41	22.04	0-1	1
		1	74	22.20	22.44	22.05	0-1	1
		36	0	21.34	21.41	21.43	0-2	2
		36	18	21.35	21.41	21.45	0-2	2
		36	38	21.37	21.36	21.46	0-2	2
		75	0	21.43	21.42	21.34	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)	MPR Allowed Per 3GPP	MPR
				20175	[dB]	[dB]
				1732.5 MHz		
20 MHz	QPSK	1	0	23.51	0	0
		1	49	23.46	0	0
		1	99	23.50	0	0
		50	0	22.48	0-1	1
		50	25	22.47	0-1	1
		50	49	22.45	0-1	1
		100	0	22.42	0-1	1
	16QAM	1	0	22.04	0-1	1
		1	49	22.02	0-1	1
		1	99	22.10	0-1	1
		50	0	21.35	0-2	2
		50	25	21.38	0-2	2
		50	49	21.37	0-2	2
		100	0	21.43	0-2	2

Note: LTE Band 4 (AWS) at 20 MHz Bandwidth does not support three non-overlapping channels. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the mid channel of the group of overlapping channels should be selected for testing.

- LTE Band 4 (Reduced Power Active- Hotspot mode)

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP
				19957	20175	20393	[dB]
				1710.7 MHz	1732.5 MHz	1754.3 MHz	
1.4 MHz	QPSK	1	0	22.47	22.57	22.37	0
		1	3	22.48	22.57	22.37	0
		1	5	22.49	22.62	22.40	0
		3	0	22.51	22.50	22.43	0
		3	1	22.51	22.43	22.48	0
		3	3	22.56	22.54	22.47	0
		6	0	22.52	22.51	22.45	0
	16QAM	1	0	22.32	22.56	22.62	0
		1	3	22.49	22.55	22.36	0
		1	5	22.63	22.61	22.3	0
		3	0	22.44	22.58	22.33	0
		3	1	22.43	22.46	22.38	0
		3	3	22.46	22.42	22.46	0
		6	0	21.39	21.46	21.36	0-2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP
				19965	20175	20385	[dB]
				1711.5 MHz	1732.5 MHz	1753.5 MHz	
3 MHz	QPSK	1	0	22.54	22.67	22.51	0
		1	7	22.51	22.64	22.44	0
		1	14	22.62	22.66	22.51	0
		8	0	22.5	22.49	22.45	0
		8	3	22.47	22.44	22.49	0
		8	7	22.46	22.45	22.46	0
		15	0	22.49	22.53	22.48	0
	16QAM	1	0	22.35	22.49	22.67	0
		1	7	22.29	22.49	22.67	0
		1	14	22.34	22.42	22.66	0
		8	0	21.26	21.27	21.39	0-2
		8	3	21.27	21.23	21.34	0-2
		8	7	21.26	21.25	21.37	0-2
		15	0	21.37	21.34	21.34	0-2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP
				19975	20175	20375	[dB]
				1712.5 MHz	1732.5 MHz	1752.5 MHz	
5 MHz	QPSK	1	0	22.67	22.59	22.52	0
		1	12	22.61	22.57	22.47	0
		1	24	22.65	22.59	22.54	0
		12	0	22.42	22.52	22.43	0
		12	6	22.42	22.53	22.46	0
		12	11	22.47	22.52	22.46	0
		25	0	22.42	22.52	22.47	0
	16QAM	1	0	22.33	22.43	22.57	0
		1	12	22.29	22.47	22.44	0
		1	24	22.38	22.56	22.61	0
		12	0	21.29	21.39	21.41	0-2
		12	6	21.29	21.39	21.43	0-2
		12	11	21.28	21.35	21.37	0-2
		25	0	21.41	21.40	21.48	0-2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP
				20000	20175	20350	[dB]
				1715 MHz	1732.5 MHz	1750 MHz	
10 MHz	QPSK	1	0	22.42	22.62	22.46	0
		1	24	22.45	22.56	22.47	0
		1	49	22.52	22.61	22.56	0
		25	0	22.46	22.50	22.41	0
		25	12	22.45	22.52	22.43	0
		25	24	22.47	22.5	22.44	0
		50	0	22.47	22.53	22.48	0
	16QAM	1	0	22.27	22.22	22.05	0
		1	24	22.20	22.14	21.98	0
		1	49	22.3	22.22	22.09	0
		25	0	21.47	21.51	21.45	0-2
		25	12	21.47	21.51	21.46	0-2
		25	24	21.48	21.48	21.42	0-2
		50	0	21.43	21.50	21.37	0-2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP
				20025	20175	20325	[dB]
				1717.5 MHz	1732.5 MHz	1747.5 MHz	
15 MHz	QPSK	1	0	22.49	22.42	22.33	0
		1	36	22.49	22.41	22.34	0
		1	74	22.47	22.44	22.38	0
		36	0	22.48	22.51	22.44	0
		36	18	22.45	22.52	22.46	0
		36	38	22.45	22.53	22.46	0
		75	0	22.48	22.50	22.46	0
	16QAM	1	0	22.19	22.32	22.29	0
		1	36	22.21	22.32	22.24	0
		1	74	22.24	22.25	22.29	0
		36	0	21.36	21.39	21.46	0-2
		36	18	21.36	21.38	21.45	0-2
		36	38	21.36	21.41	21.47	0-2
		75	0	21.39	21.41	21.38	0-2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)	MPR Allowed Per 3GPP
				20175	[dB]
				1732.5 MHz	
20 MHz	QPSK	1	0	22.40	0
		1	49	22.54	0
		1	99	22.57	0
		50	0	22.54	0
		50	25	22.53	0
		50	49	22.50	0
		100	0	22.52	0
	16QAM	1	0	22.43	0
		1	49	22.41	0
		1	99	22.47	0
		50	0	21.53	0-2
		50	25	21.49	0-2
		50	49	21.46	0-2
		100	0	21.54	0-2

Note: LTE Band 4 (AWS) at 20 MHz Bandwidth does not support three non-overlapping channels. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the mid channel of the group of overlapping channels should be selected for testing.

- LTE Band 5 Maximum Conducted Power

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				20407	20525	20643		
				824.7 MHz	836.5 MHz	848.3 MHz	[dB]	[dB]
1.4 MHz	QPSK	1	0	22.77	22.78	22.76	0	0
		1	3	22.74	22.78	22.77	0	0
		1	5	22.77	22.79	22.79	0	0
		3	0	22.76	22.79	22.72	0	0
		3	1	22.73	22.78	22.69	0	0
		3	3	22.75	22.72	22.68	0	0
	16QAM	6	0	21.73	21.75	21.69	0-1	1
		1	0	21.74	21.76	21.86	0-1	1
		1	3	21.74	21.80	21.86	0-1	1
		1	5	21.80	21.80	21.72	0-1	1
		3	0	21.72	21.54	21.60	0-1	1
		3	1	21.67	21.50	21.62	0-1	1
		3	3	21.66	21.51	21.64	0-1	1
		6	0	20.88	20.66	20.79	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				20415	20525	20635		
				825.5 MHz	836.5 MHz	847.5 MHz	[dB]	[dB]
3 MHz	QPSK	1	0	22.79	22.97	22.84	0	0
		1	7	22.71	22.95	22.74	0	0
		1	14	22.80	22.95	22.74	0	0
		8	0	21.73	21.78	21.75	0-1	1
		8	3	21.75	21.75	21.72	0-1	1
		8	7	21.75	21.75	21.74	0-1	1
		15	0	21.74	21.78	21.78	0-1	1
	16QAM	1	0	21.62	21.81	22.11	0-1	1
		1	7	21.54	21.73	22.09	0-1	1
		1	14	21.67	21.74	22.08	0-1	1
		8	0	20.72	20.75	20.69	0-2	2
		8	3	20.74	20.76	20.66	0-2	2
		8	7	20.72	20.76	20.65	0-2	2
		15	0	20.78	20.76	20.90	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP [dB]	MPR [dB]
				20425	20525	20625		
				826.5 MHz	836.5 MHz	846.5 MHz	[dB]	[dB]
5 MHz	QPSK	1	0	22.91	22.90	22.78	0	0
		1	12	22.87	22.73	22.67	0	0
		1	24	22.93	22.82	22.68	0	0
		12	0	21.75	21.80	21.77	0-1	1
		12	6	21.73	21.80	21.70	0-1	1
		12	11	21.75	21.76	21.71	0-1	1
		25	0	21.75	21.75	21.75	0-1	1
	16QAM	1	0	21.73	21.57	21.47	0-1	1
		1	12	21.66	21.42	21.35	0-1	1
		1	24	21.70	21.50	21.34	0-1	1
		12	0	20.82	20.88	20.82	0-2	2
		12	6	20.82	20.84	20.77	0-2	2
		12	11	20.82	20.84	20.78	0-2	2
		25	0	20.87	20.85	20.85	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)	MPR Allowed Per 3GPP	MPR
				20525	[dB]	[dB]
				836.5 MHz		
10 MHz	QPSK	1	0	22.92	0	0
		1	24	22.85	0	0
		1	49	22.89	0	0
		25	0	21.82	0-1	1
		25	12	21.75	0-1	1
		25	24	21.73	0-1	1
		50	0	21.81	0-1	1
	16QAM	1	0	21.51	0-1	1
		1	24	21.44	0-1	1
		1	49	21.49	0-1	1
		25	0	20.92	0-2	2
		25	12	20.93	0-2	2
		25	24	20.91	0-2	2
		50	0	20.92	0-2	2

Note: LTE Band 5 at 10 MHz Bandwidth does not support three non-overlapping channels. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the mid channel of the group of overlapping channels should be selected for testing.

- LTE Band 12 Maximum Conducted Power

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				23017	23095	23173		
				699.7 MHz	707.5 MHz	715.3 MHz	[dB]	[dB]
1.4 MHz	QPSK	1	0	24.43	24.31	24.39	0	0
		1	3	24.41	24.29	23.99	0	0
		1	5	24.40	24.32	23.59	0	0
		3	0	24.45	24.34	24.18	0	0
		3	1	24.41	24.34	24.06	0	0
		3	3	24.39	24.37	23.71	0	0
	16QAM	6	0	23.38	23.39	23.32	0-1	1
		1	0	23.40	23.32	23.32	0-1	1
		1	3	23.37	23.28	23.22	0-1	1
		1	5	23.40	23.31	22.88	0-1	1
		3	0	23.24	23.24	23.28	0-1	1
		3	1	23.26	23.23	23.27	0-1	1
		3	3	23.20	23.21	23.19	0-1	1
		6	0	22.17	22.30	22.17	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				23025	23095	23165		
				700.5 MHz	707.5 MHz	714.5 MHz	[dB]	[dB]
3 MHz	QPSK	1	0	24.45	24.48	24.49	0	0
		1	7	24.43	24.46	24.46	0	0
		1	14	24.48	24.47	23.52	0	0
		8	0	23.42	23.37	23.35	0-1	1
		8	3	23.38	23.4	23.35	0-1	1
		8	7	23.37	23.38	23.34	0-1	1
		15	0	23.38	23.42	23.36	0-1	1
	16QAM	1	0	23.31	23.54	23.55	0-1	1
		1	7	23.24	23.44	23.56	0-1	1
		1	14	23.28	23.56	23.07	0-1	1
		8	0	22.22	22.25	22.23	0-2	2
		8	3	22.21	22.27	22.26	0-2	2
		8	7	22.20	22.21	22.24	0-2	2
		15	0	22.28	22.29	22.36	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)			MPR Allowed Per 3GPP	MPR
				23035	23095	23155		
				701.5 MHz	707.5 MHz	713.5 MHz	[dB]	[dB]
5 MHz	QPSK	1	0	24.48	24.47	24.47	0	0
		1	12	24.40	24.35	24.43	0	0
		1	24	24.37	24.39	23.58	0	0
		12	0	23.39	23.40	23.36	0-1	1
		12	6	23.34	23.36	23.33	0-1	1
		12	11	23.37	23.37	23.32	0-1	1
		25	0	23.36	23.35	23.33	0-1	1
	16QAM	1	0	23.20	23.28	23.15	0-1	1
		1	12	23.16	23.19	23.09	0-1	1
		1	24	23.17	23.23	23.14	0-1	1
		12	0	22.33	22.30	22.26	0-2	2
		12	6	22.31	22.31	22.30	0-2	2
		12	11	22.28	22.25	22.25	0-2	2
		25	0	22.34	22.32	22.34	0-2	2

Bandwidth	Modulation	RB Size	RB Offset	Max.Average Power (dBm)	MPR Allowed Per 3GPP	MPR
				23095	[dB]	[dB]
				707.5 MHz		
10 MHz	QPSK	1	0	24.48	0	0
		1	24	24.40	0	0
		1	49	24.36	0	0
		25	0	23.40	0-1	1
		25	12	23.34	0-1	1
		25	24	23.31	0-1	1
		50	0	23.34	0-1	1
	16QAM	1	0	23.28	0-1	1
		1	24	23.16	0-1	1
		1	49	23.12	0-1	1
		25	0	22.45	0-2	2
		25	12	22.43	0-2	2
		25	24	22.38	0-2	2
		50	0	22.41	0-2	2

Note: LTE Band 12 at 10 MHz Bandwidth does not support three non-overlapping channels. Per KDB 941225 D05v02r03, when a device supports overlapping channel assignment in a channel bandwidth configuration, the mid channel of the group of overlapping channels should be selected for testing.

LTE Carrier Aggregation

This device supports intra-band/inter-band 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.

Downlink Carrier Aggregation

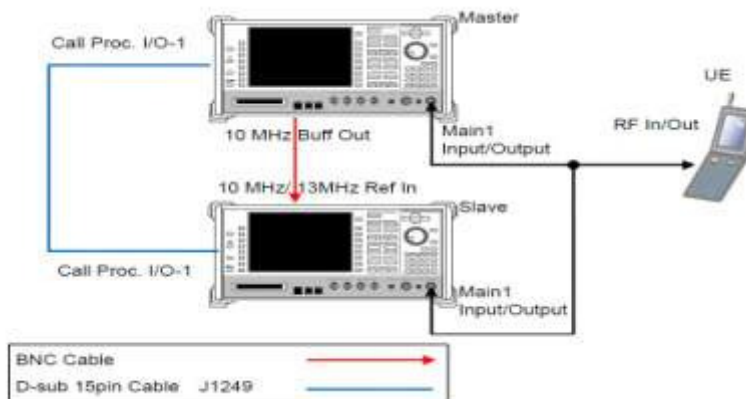
LTE Carrier Aggregation (CA) measurement are made in accordance to 3GPP TS 36.521-1 V10.4.0(2012-12). The RRC connection is only handled by one cell, the Primary component carrier(PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds the Secondary component carrier (SCC) on the downlink only. All uplink communications and acknowledgements remain identical to release 8 specifications on the PCC. Additional output powers are measured using two carriers in the downlink for the release 8 configurations with the highest SAR among all channels, RB configurations and bandwidths for each uplink band. Per FCC KDB Publication 941225 D05A v01r02, no SAR measurements are required when the average output power with downlink carrier aggregation active is not more than 0.25 dB higher than the average output power with downlink carrier aggregation inactive.

LTE Carrier Aggregation Conducted Powers

PCC									SCC				Power	
PCC Band	PCC BW (MHz)	PCC (UL) channel	PCC (UL) Frequency	Modulation	PCC (UL) #RB	PCC UL RB offset	PCC (DL) channel	PCC (DL) Frequency	SCC	SCC BW (MHz)	SCC (DL) channel	SCC (DL) Frequency	LTE Rel.10 Tx Power(dBm)	LTE Rel.8 Tx Power(dBm)
B2	5	18625	1852.5	QPSK	1	24	625	1932.5	B4	20	2175	2132.5	23.64	23.68
B2	5	18625	1852.5	QPSK	1	24	625	1932.5	B12	10	5095	737.5	23.65	23.68
B4	10	20175	1732.5	QPSK	1	0	2175	2132.5	B4	20	2320	2147	23.72	23.74
B4	10	20175	1732.5	QPSK	1	0	2175	2132.5	B2	20	900	1960	23.71	23.74
B4	10	20175	1732.5	QPSK	1	0	2175	2132.5	B12	10	5095	737.5	23.72	23.74
B12	10	23095	707.5	QPSK	1	0	5095	737.5	B2	20	900	1960	24.45	24.48
B12	10	23095	707.5	QPSK	1	0	5095	737.5	B4	20	2175	2132.5	24.44	24.48

LTE Carrier Aggregation Conducted Powers - Hotspot Mode active

PCC									SCC				Power	
PCC Band	PCC BW (MHz)	PCC (UL) channel	PCC (UL) Frequency	Modulation	PCC (UL) #RB	PCC UL RB offset	PCC (DL) channel	PCC (DL) Frequency	SCC Band	SCC BW (MHz)	SCC (DL) channel	SCC (DL) Frequency	LTE Rel.10 Tx Power(dBm)	LTE Rel.8 Tx Power(dBm)
B2	20	19100	1900	QPSK	1	49	1100	1980	B4	20	2175	2132.5	22.62	22.69
B2	20	19100	1900	QPSK	1	49	1100	1980	B12	10	5095	737.5	22.64	22.69
B4	5	19975	1712.5	QPSK	1	0	1975	2112.5	B4	20	2100	2125	22.65	22.67
B4	5	19975	1712.5	QPSK	1	0	1975	2112.5	B2	20	900	1960	22.62	22.67
B4	5	19975	1712.5	QPSK	1	0	1975	2112.5	B12	10	5095	737.5	22.64	22.67



Notes:

. This device only supports downlink Carrier Aggregation. Uplink Carrier Aggregation is not supported. For every supported combination of downlink carrier aggregation , power measurements were performed with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation and RB combinations in each frequency band

9.4 WiFi

- Maximum Conducted Power when IR Proximity Sensor is inactive:

IEEE 802.11 Average RF Power

Mode	Freq.	Channel	IEEE 802.11 (2.4 GHz) Conducted Power
	[MHz]		[dBm]
802.11b	2412	1	17.32
	2437	6	17.66
	2462	11	17.37
802.11g	2412	1	15.94
	2437	6	15.93
	2462	11	15.94
802.11n	2412	1	16.48
	2437	6	16.82
	2462	11	15.13

IEEE 802.11a Average RF Power– 20 MHz Bandwidth

Mode	Freq.	Channel	IEEE 802.11 (5 GHz) Conducted Power
	[MHz]		[dBm]
802.11a	5 180	36	14.41
	5 200	40	16.29
	5 220	44	15.87
	5 240	48	16.46
	5 260	52	16.56
	5 280	56	16.14
	5 300	60	16.54
	5 320	64	14.62
	5 500	100	14.17
	5 520	104	14.48
	5 580	116	16.25
	5 600	120	16.18
	5 620	124	16.04
	5 720	144	16.35
	5 745	149	16.12
	5 785	157	16.05
	5 825	165	14.22

-Reduced Power when IR Proximity Sensor is active (Held to ear):

IEEE 802.11 Average RF Power

Mode	Freq.	Channel	IEEE 802.11 (2.4 GHz) Conducted Power
	[MHz]		[dBm]
802.11b	2412	1	13.48
	2437	6	13.42
	2462	11	13.07
802.11g	2412	1	13.83
	2437	6	14.00
	2462	11	13.63
802.11n	2412	1	13.50
	2437	6	13.75
	2462	11	13.33

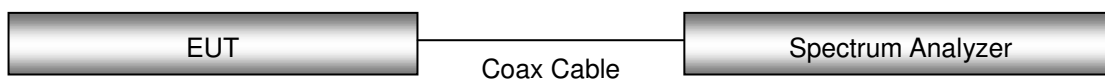
IEEE 802.11a Average RF Power– 20 MHz Bandwidth

Mode	Freq.	Channel	IEEE 802.11 (5 GHz) Conducted Power
	[MHz]		[dBm]
802.11a	5180	36	9.19
	5200	40	9.14
	5220	44	9.01
	5240	48	8.94
	5260	52	8.96
	5280	56	9.02
	5300	60	8.99
	5320	64	9.04
	5500	100	8.12
	5520	104	8.22
	5580	116	8.19
	5600	120	8.19
	5620	124	8.17
	5720	144	8.38
	5745	149	8.14
	5785	157	8.21
	5825	165	8.23

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 mode 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.
- Output power and SAR measurement is not required for 802.11n channels when the specified tune-up tolerances for 802.11n are lower than 802.11a by more than 1/2dB and the measured SAR is ≤ 1.2 W/kg

Test Configuration



9.5 BT

Averaged-conducted Power

Mode	Channel	BT Power
		[dBm]
DH5	0	9.50
	39	10.12
	78	8.69
2-DH5	0	4.98
	39	5.77
	78	4.00
3-DH5	0	4.99
	39	5.78
	78	4.02

10. SYSTEM VERIFICATION

10.1 Tissue Verification

The Head /body simulating material is calibrated by HCT using the DAKS 3.5 to determine the conductivity and permittivity.

Table for Head Tissue Verification

Date of Tests	Tissue Temp. (°C)	Tissue Type	Freq. (MHz)	Measured Conductivity σ (S/m)	Measured Dielectric Constant, ϵ	Target Conductivity σ (S/m)	Target Dielectric Constant, ϵ	% dev σ	% dev ϵ
03/04/2016	19.6	750H	700	0.866	45.530	0.889	42.200	-2.59%	7.89%
			725	0.887	43.130	0.891	42.071	-0.45%	2.52%
			750	0.910	42.819	0.893	41.940	1.90%	2.10%
02/29/2016	19.9	835H	820	0.900	41.940	0.899	41.578	0.11%	0.87%
			835	0.910	41.760	0.900	41.500	1.11%	0.63%
			850	0.927	41.580	0.916	41.500	1.20%	0.19%
03/02/2016	19.7	1800H	1710	1.302	40.130	1.348	40.142	-3.41%	-0.03%
			1750	1.344	39.960	1.371	40.079	-1.97%	-0.30%
			1800	1.390	39.722	1.400	40.000	-0.71%	-0.69%
03/03/2016	19.4	1900H	1850	1.331	39.400	1.400	40.000	-4.93%	-1.50%
			1900	1.380	39.151	1.400	40.000	-1.43%	-2.12%
			1910	1.390	39.110	1.400	40.000	-0.71%	-2.23%
03/10/2016	19.6	2450H	2400	1.749	39.970	1.756	39.290	-0.40%	1.73%
			2450	1.803	39.778	1.800	39.200	0.17%	1.47%
			2500	1.857	39.680	1.855	39.140	0.11%	1.38%
03/22/2016	20.4	5200H-5800H	5250	4.56	36.6	4.723	35.918	-3.45%	1.90%
			5280	4.6	36.5	4.744	35.894	-3.04%	1.69%
			5300	4.63	36.4	4.785	35.846	-3.24%	1.55%
			5500	4.86	35.9	4.963	35.64	-2.08%	0.73%
			5600	4.99	35.7	5.065	35.53	-1.48%	0.48%
			5720	5.13	35.4	5.133	35.458	-0.06%	-0.16%
			5750	5.15	35.3	5.221	35.365	-1.36%	-0.18%
			5800	5.24	35.1	5.27	35.3	-0.57%	-0.57%
			5850	5.28	35	5.303	35.27	-0.43%	-0.77%

Table for Body Tissue Verification

Date of Tests	Tissue Temp. (°C)	Tissue Type	Freq. (MHz)	Measured Conductivity σ (S/m)	Measured Dielectric Constant, ϵ	Target Conductivity σ (S/m)	Target Dielectric Constant, ϵ	% dev σ	% dev ϵ
03/08/2016	19.2	750B	700	0.940	55.100	0.959	55.730	-1.98%	-1.13%
			725	0.962	54.700	0.961	55.629	0.10%	-1.67%
			750	0.986	54.500	0.963	55.530	2.39%	-1.85%
02/29/2016	20.2	835B	820	0.956	54.200	0.969	55.258	-1.34%	-1.91%
			835	0.967	54.100	0.970	55.200	-0.31%	-1.99%
			850	0.978	54.100	0.988	55.154	-1.01%	-1.91%
03/10/2016	21.2	1800B	1710	1.450	52.800	1.463	53.537	-0.89%	-1.38%
			1750	1.490	52.700	1.488	53.432	0.13%	-1.37%
			1800	1.540	52.500	1.520	53.300	1.32%	-1.50%
03/02/2016	20.5	1900B	1850	1.450	52.600	1.520	53.300	-4.61%	-1.31%
			1900	1.500	52.300	1.520	53.300	-1.32%	-1.88%
			1910	1.510	52.300	1.520	53.300	-0.66%	-1.88%
03/09/2016	21.5	2450B	2400	1.925	53.670	1.902	52.770	1.21%	1.71%
			2450	1.990	53.500	1.950	52.700	2.05%	1.52%
			2500	2.066	53.310	2.021	52.640	2.23%	1.27%
03/10/2016	22.0	5200B-5800B	5200	5.109	48.250	5.377	48.936	-4.98%	-1.40%
			5280	5.250	48.000	5.400	48.908	-2.78%	-1.86%
			5320	5.310	47.900	5.447	48.852	-2.52%	-1.95%
			5500	5.610	47.400	5.650	48.610	-0.71%	-2.49%
			5600	5.760	47.180	5.766	48.470	-0.10%	-2.66%
			5720	5.960	46.900	5.845	48.388	1.97%	-3.08%
			5750	6.010	46.800	5.944	48.277	1.11%	-3.06%
			5800	6.088	46.680	6.000	48.200	1.47%	-3.15%
			5850	6.130	46.600	6.037	48.165	1.54%	-3.25%

10.2 System Verification

Prior to assessment, the system is verified to the $\pm 10\%$ of the specifications at 750 MHz/ 835 MHz / 1800 MHz/ 1 900 MHz / 2 450 MHz / 5 250 MHz /5 600 MHz / 5 750 MHz by using the system Verification kit.
(Graphic Plots Attached)

System Verification Results

Freq.	Date	Probe (S/N)	Dipole (S/N)	Liquid	Amb. Temp.	Liquid Temp.	1 W Target SAR _{1g} (SPEAG)	Measured SAR _{1g}	1 W Normalized SAR _{1g}	Deviation	Limit [%]
[MHz]					[°C]	[°C]	[W/kg]	[W/kg]	[W/kg]	[%]	[%]
750	03/04/2016	1605	1014	Head	19.8	19.6	8.15	0.882	8.82	+ 8.22	± 10
750	03/08/2016	3967		Body	19.4	19.2	8.49	0.841	8.41	- 0.94	± 10
835	02/29/2016	1605	4d165	Head	20.1	19.9	9.06	0.924	9.24	+ 1.99	± 10
835	02/29/2016	3903		Body	20.4	20.2	9.47	0.919	9.19	- 2.96	± 10
1 800	03/02/2016	1605	2d006	Head	19.9	19.7	38.5	3.83	38.3	- 0.52	± 10
1 800	03/10/2016	3903		Body	21.4	21.2	38.3	3.77	37.7	- 1.57	± 10
1 900	03/03/2016	1605	5d032	Head	19.6	19.4	41.1	4.06	40.6	- 1.22	± 10
1 900	03/02/2016	3903		Body	20.7	20.5	40.9	4.07	40.7	- 0.49	± 10
2 450	03/10/2016	3903	743	Head	19.9	19.6	53.4	5.29	52.9	- 0.94	± 10
2 450	03/09/2016	7370		Body	21.8	21.5	52.1	5.33	53.3	+ 2.30	± 10
5 250	03/22/2016	3968	1107	Head	20.6	20.4	77.8	7.82	78.2	+ 0.51	± 10
5 250	03/10/2016	7370		Body	22.2	22.0	74.0	7.73	77.3	+ 4.46	± 10
5 750	03/22/2016	3968		Head	20.6	20.4	76.8	7.29	72.9	- 5.08	± 10
5 750	03/10/2016	7370		Body	22.2	22.0	74.9	7.25	72.5	- 3.20	± 10

System Verification Results – Extremity SAR

Freq.	Date	Probe (S/N)	Dipole (S/N)	Liquid	Amb. Temp.	Liquid Temp.	1 W Target SAR _{10g} (SPEAG)	Measured SAR _{10g}	1 W Normalized SAR _{10g}	Deviation	Limit [%]
[MHz]					[°C]	[°C]	[W/kg]	[W/kg]	[W/kg]	[%]	[%]
5 250	03/10/2016	7370	1107	Body	22.2	22.0	20.9	2.19	21.9	+ 4.78	± 10
5 750	03/10/2016	7370		Body	22.2	22.0	21.0	2.02	20.2	- 3.81	± 10

10.3 System Verification Procedure

SAR measurement was prior to assessment, the system is verified to the $\pm 10\%$ of the specifications at each frequency band by using the system Verification kit. (Graphic Plots Attached)

- Cabling the system, using the Verification kit equipments.
- Generate about 100 mW Input Level from the Signal generator to the Dipole Antenna.
- Dipole Antenna was placed below the Flat phantom.
- The measured one-gram SAR at the surface of the phantom above the dipole feed-point should be within 10 % of the target reference value.
- The results are normalized to 1 W input power.

NOTE;

SAR Verification was performed according to the FCC KDB 865664 D01v01r04.

11. SAR TEST DATA SUMMARY

11.1 HEAD SAR Measurement Results

GSM 850 Head SAR											
Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)			(W/kg)		(W/kg)	
836.6	190	Voice	33.5	33.47	0.12	Left Cheek	1:8.3	0.176	1.007	0.177	1
836.6	190	Voice	33.5	33.47	-0.05	Left Tilt	1:8.3	0.082	1.007	0.083	-
836.6	190	Voice	33.5	33.47	0.02	Right Cheek	1:8.3	0.109	1.007	0.110	-
836.6	190	Voice	33.5	33.47	0.08	Right Tilt	1:8.3	0.068	1.007	0.068	-
ANSI/ IEEE C95.1 - 1992- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Head 1.6 W/kg (mW/g) Averaged over 1 gram					

GSM 1900 Head SAR											
Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)			(W/kg)		(W/kg)	
1 880.0	661	Voice	30.5	30.41	-0.12	Left Cheek	1:8.3	0.111	1.021	0.113	-
1 880.0	661	Voice	30.5	30.41	0.14	Left Tilt	1:8.3	0.051	1.021	0.052	-
1 880.0	661	Voice	30.5	30.41	0.06	Right Cheek	1:8.3	0.147	1.021	0.150	2
1 880.0	661	Voice	30.5	30.41	-0.02	Right Tilt	1:8.3	0.077	1.021	0.079	-
ANSI/ IEEE C95.1 - 1992- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Head 1.6 W/kg (mW/g) Averaged over 1 gram					

UMTS 850 Head SAR											
Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)			(W/kg)		(W/kg)	
836.6	4183	RMC	23.5	22.70	0.13	Left Cheek	1:1	0.119	1.202	0.143	3
836.6	4183	RMC	23.5	22.70	-0.04	Left Tilt	1:1	0.060	1.202	0.072	-
836.6	4183	RMC	23.5	22.70	-0.08	Right Cheek	1:1	0.074	1.202	0.089	-
836.6	4183	RMC	23.5	22.70	-0.03	Right Tilt	1:1	0.047	1.202	0.056	-
ANSI/ IEEE C95.1 - 1992- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Head 1.6 W/kg (mW/g) Averaged over 1 gram					

UMTS 1700 Head SAR

Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)			(W/kg)		(W/kg)	
1 732.4	1412	RMC	23.5	23.13	-0.12	Left Cheek	1:1	0.233	1.089	0.254	4
1 732.4	1412	RMC	23.5	23.13	0.04	Left Tilt	1:1	0.125	1.089	0.136	-
1 732.4	1412	RMC	23.5	23.13	0.17	Right Cheek	1:1	0.206	1.089	0.224	-
1 732.4	1412	RMC	23.5	23.13	-0.14	Right Tilt	1:1	0.173	1.089	0.188	-
ANSI/ IEEE C95.1 - 1992- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Head 1.6 W/kg (mW/g) Averaged over 1 gram					

UMTS 1900 Head SAR

Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)			(W/kg)		(W/kg)	
1 880.0	9400	RMC	23.5	23.11	-0.07	Left Cheek	1:1	0.147	1.094	0.161	-
1 880.0	9400	RMC	23.5	23.11	0.10	Left Tilt	1:1	0.070	1.094	0.077	-
1 880.0	9400	RMC	23.5	23.11	0.01	Right Cheek	1:1	0.198	1.094	0.217	5
1 880.0	9400	RMC	23.5	23.11	-0.10	Right Tilt	1:1	0.104	1.094	0.114	-
ANSI/ IEEE C95.1 - 1992- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Head 1.6 W/kg (mW/g) Averaged over 1 gram					

LTE Band 2 (PCS) Head SAR

Frequency		Mode	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	RB Size	RB offset	Duty Cycle	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(dBm)	(dBm)	(dB)					(W/kg)		(W/kg)	
1 900.0	19100	QPSK	20	23.8	23.67	-0.08	Left Cheek	1	99	1:1	0.129	1.030	0.133	-
1 900.0	19100	QPSK	20	22.8	22.55	-0.06	Left Cheek	50	49	1:1	0.133	1.059	0.141	-
1 900.0	19100	QPSK	20	23.8	23.67	-0.02	Left Tilt	1	99	1:1	0.066	1.030	0.068	-
1 900.0	19100	QPSK	20	22.8	22.55	0.06	Left Tilt	50	49	1:1	0.065	1.059	0.069	-
1 900.0	19100	QPSK	20	23.8	23.67	0.04	Right Cheek	1	99	1:1	0.172	1.030	0.177	-
1 900.0	19100	QPSK	20	22.8	22.55	0.00	Right Cheek	50	49	1:1	0.177	1.059	0.187	6
1 900.0	19100	QPSK	20	23.8	23.67	-0.01	Right Tilt	1	99	1:1	0.097	1.030	0.100	-
1 900.0	19100	QPSK	20	22.8	22.55	-0.06	Right Tilt	50	49	1:1	0.101	1.059	0.107	-
ANSI/ IEEE C95.1 - 1992- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Head 1.6 W/kg (mW/g) Averaged over 1 gram								

LTE Band 4 (AWS) Head SAR

Frequency		Mode	Band width (MHz)	Tune- Up Limit (dBm)	Meas. Power (dBm)	Power Drift (dB)	Test Position	RB Size	RB offset	Duty Cycle	Meas. SAR (W/kg)	Scaling Factor	Scaled SAR (W/kg)	Plot No.
MHz	Ch.													
1 732.5	20175	QPSK	20	23.8	23.51	-0.08	Left Cheek	1	0	1:1	0.176	1.069	0.188	-
1 732.5	20175	QPSK	20	22.8	22.48	-0.06	Left Cheek	50	0	1:1	0.185	1.076	0.199	7
1 732.5	20175	QPSK	20	23.8	23.51	-0.02	Left Tilt	1	0	1:1	0.095	1.069	0.102	-
1 732.5	20175	QPSK	20	22.8	22.48	-0.07	Left Tilt	50	0	1:1	0.095	1.076	0.102	-
1 732.5	20175	QPSK	20	23.8	23.51	-0.06	Right Cheek	1	0	1:1	0.172	1.069	0.184	-
1 732.5	20175	QPSK	20	22.8	22.48	-0.02	Right Cheek	50	0	1:1	0.171	1.076	0.184	-
1 732.5	20175	QPSK	20	23.8	23.51	-0.07	Right Tilt	1	0	1:1	0.137	1.069	0.146	-
1 732.5	20175	QPSK	20	22.8	22.48	-0.08	Right Tilt	50	0	1:1	0.146	1.076	0.157	-
ANSI/ IEEE C95.1 - 1992- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Head 1.6 W/kg (mW/g) Averaged over 1 gram							

LTE Band 5 (Cell) Head SAR

Frequency		Mode	Band width (MHz)	Tune- Up Limit (dBm)	Meas. Power (dBm)	Power Drift (dB)	Test Position	RB Size	RB offset	Duty Cycle	Meas. SAR (W/kg)	Scaling Factor	Scaled SAR (W/kg)	Plot No.
MHz	Ch.													
836.5	20525	QPSK	10	23.8	22.92	-0.01	Left Cheek	1	0	1:1	0.110	1.225	0.135	8
836.5	20525	QPSK	10	22.8	21.82	0.08	Left Cheek	25	0	1:1	0.088	1.253	0.110	-
836.5	20525	QPSK	10	23.8	22.92	0.03	Left Tilt	1	0	1:1	0.050	1.225	0.061	-
836.5	20525	QPSK	10	22.8	21.82	-0.00	Left Tilt	25	0	1:1	0.040	1.253	0.050	-
836.5	20525	QPSK	10	23.8	22.92	0.04	Right Cheek	1	0	1:1	0.065	1.225	0.080	-
836.5	20525	QPSK	10	22.8	21.82	-0.08	Right Cheek	25	0	1:1	0.054	1.253	0.068	-
836.5	20525	QPSK	10	23.8	22.92	-0.10	Right Tilt	1	0	1:1	0.040	1.225	0.049	-
836.5	20525	QPSK	10	22.8	21.82	0.13	Right Tilt	25	0	1:1	0.033	1.253	0.041	-
ANSI/ IEEE C95.1 - 1992- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Head 1.6 W/kg (mW/g) Averaged over 1 gram							

LTE Band 12 Head SAR

Frequency		Mode	Band width (MHz)	Tune- Up Limit (dBm)	Meas. Power (dBm)	Power Drift (dB)	Test Position	RB Size	RB offset	Duty Cycle	Meas. SAR (W/kg)	Scaling Factor	Scaled SAR (W/kg)	Plot No.
MHz	Ch.													
707.5	23095	QPSK	10	24.7	24.48	0.04	Left Cheek	1	0	1:1	0.344	1.052	0.362	9
707.5	23095	QPSK	10	23.7	23.40	-0.15	Left Cheek	25	0	1:1	0.275	1.072	0.295	-
707.5	23095	QPSK	10	24.7	24.48	-0.01	Left Tilt	1	0	1:1	0.186	1.052	0.196	-
707.5	23095	QPSK	10	23.7	23.40	-0.17	Left Tilt	25	0	1:1	0.154	1.072	0.165	-
707.5	23095	QPSK	10	24.7	24.48	0.04	Right Cheek	1	0	1:1	0.240	1.052	0.252	-
707.5	23095	QPSK	10	23.7	23.40	-0.10	Right Cheek	25	0	1:1	0.215	1.072	0.230	-
707.5	23095	QPSK	10	24.7	24.48	-0.15	Right Tilt	1	0	1:1	0.155	1.052	0.163	-
707.5	23095	QPSK	10	23.7	23.40	-0.06	Right Tilt	25	0	1:1	0.126	1.072	0.135	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Head 1.6 W/kg (mW/g) Averaged over 1 gram							

DTS Head SAR

Frequency		Mode	Band width (MHz)	Data Rate (Mbps)	Tune- Up Limit (dBm)	Meas. Power (dBm)	Power Drift (dB)	Test Position	Duty Cycle	Area Scan Peak SAR (W/kg)	Meas. SAR (W/kg)	Scaling Factor	Scaling Factor (Duty)	Scaled SAR (W/kg)	Plot No.
MHz	Ch.														
2 412	1	802.11b	22	1	14.5	13.48	0.14	Left Cheek	98.85	0.945	0.622	1.265	1.012	0.796	10
2 412	1	802.11b	22	1	14.5	13.48	0.18	Left Tilt	98.85	0.817	0.565	1.265	1.012	0.723	-
2 412	1	802.11b	22	1	14.5	13.48	0.09	Right Cheek	98.85	0.522	0.392	1.265	1.012	0.502	-
2 412	1	802.11b	22	1	14.5	13.48		Right Tilt	98.85	0.511		1.265	1.012		-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Head 1.6 W/kg (mW/g) Averaged over 1 gram								

NII Head SAR																
Frequency		Mode	Band width	Data Rate	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Area Scan Peak SAR	Meas. SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(Mbps)	(dBm)	(dBm)	(dB)									
5320	64	802.11a	20	6Mbps	9.5	9.04	-0.134	Left Cheek	93.14	0	1	0.369	1.112	1.074	0.441	-
5320	64	802.11a	20	6Mbps	9.5	9.04	-0.060	Left Tilt	93.14	0	0.906	0.318	1.112	1.074	0.380	-
5320	64	802.11a	20	6Mbps	9.5	9.04		Right Cheek	93.14	0	0.799		1.112	1.074		-
5320	64	802.11a	20	6Mbps	9.5	9.04		Right Tilt	93.14	0	0.822		1.112	1.074		-
5720	144	802.11a	20	6Mbps	9.5	8.38	-0.112	Left Cheek	93.14	0	1.11	0.339	1.294	1.074	0.471	-
5720	144	802.11a	20	6Mbps	9.5	8.38		Left Tilt	93.14	0	0.788		1.294	1.074		-
5720	144	802.11a	20	6Mbps	9.5	8.38		Right Cheek	93.14	0	0.954		1.294	1.074		-
5720	144	802.11a	20	6Mbps	9.5	8.38	-0.099	Right Tilt	93.14	0	0.973	0.368	1.294	1.074	0.511	-
5 825	165	802.11a	20	6Mbps	9.5	8.23	0.171	Left Cheek	93.14	0	1.25	0.452	1.340	1.074	0.651	11
5 825	165	802.11a	20	6Mbps	9.5	8.23		Left Tilt	93.14	0	0.582		1.340	1.074		-
5 825	165	802.11a	20	6Mbps	9.5	8.23	0.195	Right Cheek	93.14	0	0.977	0.372	1.340	1.074	0.535	-
5 825	165	802.11a	20	6Mbps	9.5	8.23		Right Tilt	93.14	0	0.895		1.340	1.074		-
ANSI/ IEEE C95.1 - 1992- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population								Head 1.6 W/kg (mW/g) Averaged over 1 gram								

11.2 Body-worn SAR Measurement Results

GSM/UMTS Body-Worn SAR												
Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)			(mm)	(W/kg)		(W/kg)	
836.6	190	GSM	33.5	33.47	-0.097	Rear	1:8.3	15	0.172	1.007	0.173	12
1 880.0	661	GSM	30.5	30.41	0.008	Rear	1:8.3	15	0.151	1.021	0.154	13
836.6	4183	RMC	23.5	22.70	0.068	Rear	1:1	15	0.133	1.202	0.160	14
1 732.4	1412	RMC	23.5	23.13	0.010	Rear	1:1	15	0.386	1.089	0.420	15
1 880.0	9400	RMC	23.5	23.11	-0.105	Rear	1:1	15	0.358	1.094	0.392	16
ANSI/ IEEE C95.1 - 1992- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Head 1.6 W/kg (mW/g) Averaged over 1 gram						

LTE Body-Worn SAR															
Frequency		Mode	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	RB Size	RB offset	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(dBm)	(dBm)	(dB)		(mm)	(W/kg)	(W/kg)					
1 900.0	19100	LTE 2	20	23.8	23.67	-0.089	Rear	1	99	1:1	15	0.315	1.030	0.324	17
1 900.0	19100	QPSK	20	22.8	22.55	-0.063	Rear	50	49	1:1	15	0.245	1.059	0.259	-
1 732.5	20175	LTE 4	20	23.8	23.51	0.123	Rear	1	0	1:1	15	0.361	1.069	0.386	18
1 732.5	20175	QPSK	20	22.8	22.48	0.143	Rear	50	0	1:1	15	0.289	1.076	0.311	-
836.5	20525	LTE 5	10	23.8	22.92	0.020	Rear	1	0	1:1	15	0.098	1.225	0.120	19
836.5	20525	QPSK	10	22.8	21.82	-0.009	Rear	25	0	1:1	15	0.078	1.253	0.098	-
707.5	23095	LTE 12	10	24.7	24.48	-0.025	Rear	1	0	1:1	15	0.335	1.052	0.352	20
707.5	23095	QPSK	10	23.7	23.40	-0.049	Rear	25	0	1:1	15	0.269	1.072	0.288	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population								Body 1.6 W/kg Averaged over 1 gram							

DTS Body-Worn SAR

Frequency		Mode	Band width	Data Rate	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance (mm)	Area Scan Peak SAR	Meas. SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(Mbps)	(dBm)	(dBm)	(dB)				(W/kg)	(W/kg)		(Duty)	(W/kg)	
2 437	6	802.11b	22	1	18.5	17.66	0.162	Rear	98.85	15	0.179	0.129	1.213	1.012	0.158	21
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population								Head 1.6 W/kg (mW/g) Averaged over 1 gram								

Bluetooth Body-Worn SAR

Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance (mm)	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)				(W/kg)		(W/kg)	
2 441	39	Bluetooth DH5	10.5	10.12	-0.130	Rear	1:1	15	0.022	1.091	0.024	22
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Head 1.6 W/kg (mW/g) Averaged over 1 gram						

NII Body-Worn SAR

Frequency		Mode	Band width	Data Rate	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance (mm)	Area Scan Peak SAR	Meas. SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(Mbps)	(dBm)	(dBm)	(dB)				(W/kg)	(W/kg)		(Duty)	(W/kg)	
5 260	52	802.11a	20	6Mbps	17.0	16.56	0.170	Rear	93.14	15	0.469	0.201	1.107	1.074	0.239	23
5 720	144	802.11a	20	6Mbps	17.0	16.35	0.000	Rear	93.14	15	0.187	0.059	1.161	1.074	0.074	-
5 745	149	802.11a	20	6Mbps	17.0	16.12	0.000	Rear	93.14	15	0.195	0.047	1.225	1.074	0.062	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population								Head 1.6 W/kg (mW/g) Averaged over 1 gram								

11.3 Hotspot SAR Measurement Results

GSM 850 Hotspot SAR												
Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)			(mm)	(W/kg)		(W/kg)	
836.6	190	GPRS 2Tx	32.5	31.42	-0.118	Rear	1:4.15	10	0.311	1.282	0.399	24
836.6	190	GPRS 2Tx	32.5	31.42	-0.029	Front	1:4.15	10	0.285	1.282	0.365	-
836.6	190	GPRS 2Tx	32.5	31.42	-0.052	Left	1:4.15	10	0.181	1.282	0.232	-
836.6	190	GPRS 2Tx	32.5	31.42	-0.046	Right	1:4.15	10	0.113	1.282	0.145	-
836.6	190	GPRS 2Tx	32.5	31.42	-0.039	Bottom	1:4.15	10	0.082	1.282	0.105	-
ANSI/ IEEE C95.1 - 1992- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Body 1.6 W/kg (mW/g) Averaged over 1 gram						

GSM 1900 Hotspot SAR												
Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)			(mm)	(W/kg)		(W/kg)	
1 880.0	661	GPRS 2Tx	29.5	27.94	-0.111	Rear	1:4.15	10	0.351	1.432	0.503	-
1 880.0	661	GPRS 2Tx	29.5	27.94	0.057	Front	1:4.15	10	0.534	1.432	0.765	25
1 880.0	661	GPRS 2Tx	29.5	27.94	-0.107	Left	1:4.15	10	0.082	1.432	0.117	-
1 880.0	661	GPRS 2Tx	29.5	27.94	-0.077	Right	1:4.15	10	0.075	1.432	0.107	-
1 880.0	661	GPRS 2Tx	29.5	27.94	0.007	Bottom	1:4.15	10	0.476	1.432	0.682	-
ANSI/ IEEE C95.1 - 1992- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Body 1.6 W/kg (mW/g) Averaged over 1 gram						

UMTS 850 Hotspot SAR												
Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)			(mm)	(W/kg)		(W/kg)	
836.6	4183	RMC	23.5	22.70	0.057	Rear	1:1	10	0.180	1.202	0.216	26
836.6	4183	RMC	23.5	22.70	0.009	Front	1:1	10	0.159	1.202	0.191	-
836.6	4183	RMC	23.5	22.70	0.041	Left	1:1	10	0.099	1.202	0.119	-
836.6	4183	RMC	23.5	22.70	0.007	Right	1:1	10	0.059	1.202	0.071	-
836.6	4183	RMC	23.5	22.70	-0.016	Bottom	1:1	10	0.044	1.202	0.053	-
ANSI/ IEEE C95.1 - 1992- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Body 1.6 W/kg (mW/g) Averaged over 1 gram						

UMTS 1700 Hotspot SAR

Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)			(mm)	(W/kg)		(W/kg)	
1 732.4	1412	RMC	22.5	22.19	-0.129	Rear	1:1	10	0.617	1.074	0.663	-
1712.4	1312	RMC	22.5	22.23	-0.059	Front	1:1	10	0.849	1.064	0.903	-
1 732.4	1412	RMC	22.5	22.19	-0.190	Front	1:1	10	0.854	1.074	0.917	-
1752.6	1512	RMC	22.5	22.24	0.050	Front	1:1	10	0.870	1.062	0.924	27
1 732.4	1412	RMC	22.5	22.19	0.052	Left	1:1	10	0.116	1.074	0.125	-
1 732.4	1412	RMC	22.5	22.19	0.063	Right	1:1	10	0.069	1.074	0.074	-
1 732.4	1412	RMC	22.5	22.19	-0.040	Bottom	1:1	10	0.511	1.074	0.549	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Body 1.6 W/kg (mW/g) Averaged over 1 gram						

UMTS 1900 Hotspot SAR

Frequency		Mode	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(dB)	(dB)	(dB)			(mm)	(W/kg)		(W/kg)	
1 880.0	9400	RMC	22.5	22.19	-0.045	Rear	1:1	10	0.461	1.074	0.495	-
1 880.0	9400	RMC	22.5	22.19	-0.038	Front	1:1	10	0.707	1.074	0.759	28
1 880.0	9400	RMC	22.5	22.19	-0.194	Left	1:1	10	0.098	1.074	0.105	-
1 880.0	9400	RMC	22.5	22.19	0.034	Right	1:1	10	0.078	1.074	0.084	-
1 880.0	9400	RMC	22.5	22.19	0.014	Bottom	1:1	10	0.595	1.074	0.639	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population						Body 1.6 W/kg (mW/g) Averaged over 1 gram						

LTE Band 2 (PCS) Hotspot SAR

Frequency		Mode	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	RB Size	RB offset	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(dBm)	(dBm)	(dB)					(mm)	(W/kg)		(W/kg)	
1 900.0	19100	QPSK	20	22.8	22.69	-0.113	Rear	1	49	1:1	10	0.401	1.026	0.411	-
1 900.0	19100	QPSK	20	22.8	22.56	0.014	Rear	50	25	1:1	10	0.455	1.057	0.481	-
1 900.0	19100	QPSK	20	22.8	22.69	-0.147	Front	1	49	1:1	10	0.723	1.026	0.742	-
1 900.0	19100	QPSK	20	22.8	22.56	-0.115	Front	50	25	1:1	10	0.723	1.057	0.764	29
1 900.0	19100	QPSK	20	22.8	22.69	-0.075	Left	1	49	1:1	10	0.092	1.026	0.094	-
1 900.0	19100	QPSK	20	22.8	22.56	-0.122	Left	50	25	1:1	10	0.090	1.057	0.095	-
1 900.0	19100	QPSK	20	22.8	22.69	0.107	Right	1	49	1:1	10	0.073	1.026	0.075	-
1 900.0	19100	QPSK	20	22.8	22.56	-0.006	Right	50	25	1:1	10	0.075	1.057	0.079	-
1 900.0	19100	QPSK	20	22.8	22.69	0.003	Bottom	1	49	1:1	10	0.670	1.026	0.687	-
1 900.0	19100	QPSK	20	22.8	22.56	0.042	Bottom	50	25	1:1	10	0.666	1.057	0.704	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Body 1.6 W/kg (mW/g) Averaged over 1 gram								

LTE Band 4 (AWS) Hotspot SAR

Frequency		Mode	Band width (MHz)	Tune- Up Limit (dBm)	Meas. Power (dBm)	Power Drift (dB)	Test Position	RB Size	RB offset	Duty Cycle	Distance (mm)	Meas. SAR (W/kg)	Scaling Factor	Scaled SAR (W/kg)	Plot No.
MHz	Ch.														
1 732.5	20175	QPSK	20	22.8	22.57	-0.178	Rear	1	99	1:1	10	0.769	1.054	0.811	-
1 732.5	20175	QPSK	20	22.8	22.54	-0.110	Rear	50	0	1:1	10	0.604	1.062	0.641	-
1 732.5	20175	QPSK	20	22.8	22.52	0.115	Rear	100	0	1:1	10	0.607	1.067	0.648	-
1 732.5	20175	QPSK	20	22.8	22.57	-0.050	Front	1	99	1:1	10	0.856	1.054	0.902	30
1 732.5	20175	QPSK	20	22.8	22.54	0.015	Front	50	0	1:1	10	0.829	1.062	0.880	-
1 732.5	20175	QPSK	20	22.8	22.52	0.012	Front	100	0	1:1	10	0.809	1.067	0.863	-
1 732.5	20175	QPSK	20	22.8	22.57	0.060	Left	1	99	1:1	10	0.120	1.054	0.126	-
1 732.5	20175	QPSK	20	22.8	22.54	0.026	Left	50	0	1:1	10	0.113	1.062	0.120	-
1 732.5	20175	QPSK	20	22.8	22.57	0.012	Right	1	99	1:1	10	0.057	1.054	0.060	-
1 732.5	20175	QPSK	20	22.8	22.54	0.106	Right	50	0	1:1	10	0.062	1.062	0.066	-
1 732.5	20175	QPSK	20	22.8	22.57	0.002	Bottom	1	99	1:1	10	0.514	1.054	0.542	-
1 732.5	20175	QPSK	20	22.8	22.54	0.077	Bottom	50	0	1:1	10	0.485	1.062	0.515	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population								Body 1.6 W/kg (mW/g) Averaged over 1 gram							

LTE Band 5 (Cell) Hotspot SAR

Frequency		Mode	Band width (MHz)	Tune- Up Limit (dBm)	Meas. Power (dBm)	Power Drift (dB)	Test Position	RB Size	RB offset	Duty Cycle	Distance (mm)	Meas. SAR (W/kg)	Scaling Factor	Scaled SAR (W/kg)	Plot No.
MHz	Ch.														
836.5	20525	QPSK	10	23.8	22.92	0.075	Rear	1	0	1:1	10	0.133	1.225	0.163	31
836.5	20525	QPSK	10	22.8	21.82	0.051	Rear	25	0	1:1	10	0.104	1.253	0.130	-
836.5	20525	QPSK	10	23.8	22.92	-0.138	Front	1	0	1:1	10	0.123	1.225	0.151	-
836.5	20525	QPSK	10	22.8	21.82	-0.162	Front	25	0	1:1	10	0.098	1.253	0.123	-
836.5	20525	QPSK	10	23.8	22.92	0.030	Left	1	0	1:1	10	0.078	1.225	0.096	-
836.5	20525	QPSK	10	22.8	21.82	0.044	Left	25	0	1:1	10	0.063	1.253	0.079	-
836.5	20525	QPSK	10	23.8	22.92	-0.090	Right	1	0	1:1	10	0.049	1.225	0.060	-
836.5	20525	QPSK	10	22.8	21.82	-0.026	Right	25	0	1:1	10	0.038	1.253	0.048	-
836.5	20525	QPSK	10	23.8	22.92	-0.039	Bottom	1	0	1:1	10	0.034	1.225	0.042	-
836.5	20525	QPSK	10	22.8	21.82	0.161	Bottom	25	0	1:1	10	0.027	1.253	0.034	-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population								Body 1.6 W/kg (mW/g) Averaged over 1 gram							

LTE Band 12 Hotspot SAR

Frequency		Mode	Band width	Tune-Up Limit	Meas. Power	Power Drift	Test Position	RB Size	RB offset	Duty Cycle	Distance	Meas. SAR	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(dBm)	(dBm)	(dB)					(mm)	(W/kg)		(W/kg)	
707.5	23095	QPSK	10	24.7	24.48	0.070	Rear	1	0	1:1	10	0.412	1.052	0.433	32
707.5	23095	QPSK	10	23.7	23.40	0.061	Rear	25	0	1:1	10	0.329	1.072	0.353	-
707.5	23095	QPSK	10	24.7	24.48	-0.031	Front	1	0	1:1	10	0.344	1.052	0.362	-
707.5	23095	QPSK	10	23.7	23.40	-0.032	Front	25	0	1:1	10	0.274	1.072	0.294	-
707.5	23095	QPSK	10	24.7	24.48	-0.072	Left	1	0	1:1	10	0.268	1.052	0.282	-
707.5	23095	QPSK	10	23.7	23.40	0.015	Left	25	0	1:1	10	0.211	1.072	0.226	-
707.5	23095	QPSK	10	24.7	24.48	-0.065	Right	1	0	1:1	10	0.157	1.052	0.165	-
707.5	23095	QPSK	10	23.7	23.40	-0.063	Right	25	0	1:1	10	0.129	1.072	0.138	-
707.5	23095	QPSK	10	24.7	24.48	-0.045	Bottom	1	0	1:1	10	0.131	1.052	0.138	-
707.5	23095	QPSK	10	23.7	23.40	-0.010	Bottom	25	0	1:1	10	0.104	1.072	0.111	-
ANSI/ IEEE C95.1 - 1992- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Body 1.6 W/kg (mW/g) Averaged over 1 gram								

DTS Hotspot SAR

Frequency		Mode	Band width	Data Rate	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Area Scan Peak SAR	Meas. SAR	Scaling Factor	Scaling Factor (Duty)	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(Mbps)	(dBm)	(dBm)	(dB)			(mm)	(W/kg)	(W/kg)			(W/kg)	
2 437	6	802.11b	22	1	18.5	17.66	-0.150	Rear	98.85	10	0.673	0.339	1.213	1.012	0.416	33
2 437	6	802.11b	22	1	18.5	17.66		Front	98.85	10	0.381		1.213	1.012		-
2 437	6	802.11b	22	1	18.5	17.66		Right	98.85	10	0.0726		1.213	1.012		-
2 437	6	802.11b	22	1	18.5	17.66	0.163	Top	98.85	10	0.456	0.318	1.213	1.012	0.390	-
ANSI/ IEEE C95.1 - 1992- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Body 1.6 W/kg (mW/g) Averaged over 1 gram									

5GHz WLAN Hotspot SAR

Frequency		Mode	Band width	Data Rate	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Area Scan Peak SAR	Meas. SAR	Scaling Factor	Scaling Factor (Duty)	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(Mbps)	(dBm)	(dBm)	(dB)			(mm)	(W/kg)	(W/kg)			(W/kg)	
5 745	149	802.11a	20	6Mbps	17.0	16.12	-0.140	Rear	93.14	10	0.39	0.119	1.225	1.074	0.157	-
5 745	149	802.11a	20	6Mbps	17.0	16.12	-0.176	Front	93.14	10	1.32	0.523	1.225	1.074	0.688	34
5 745	149	802.11a	20	6Mbps	17.0	16.12	-0.100	Right	93.14	10	0.116	0.098	1.225	1.074	0.129	-
5 745	149	802.11a	20	6Mbps	17.0	16.12	-0.066	Top	93.14	10	1.29	0.517	1.225	1.074	0.680	-
ANSI/ IEEE C95.1 - 1992- Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							Body 1.6 W/kg (mW/g) Averaged over 1 gram									

NII Hand SAR																
Frequency		Mode	Band width	Data Rate	Tune-Up Limit	Meas. Power	Power Drift	Test Position	Duty Cycle	Distance	Area Scan Peak SAR	Meas. SAR	Scaling Factor	Scaling Factor	Scaled SAR	Plot No.
MHz	Ch.		(MHz)	(Mbps)	(dBm)	(dBm)	(dB)			(mm)	(W/kg)	(W/kg)		(Duty)	(W/kg)	
5 260	52	802.11a	20	6Mbps	17.0	16.56	-0.102	Rear	93.14	0	6.42	0.694	1.107	1.074	0.825	-
5 260	52	802.11a	20	6Mbps	17.0	16.56	-0.110	Front	93.14	0	10.4	1	1.107	1.074	1.189	35
5 260	52	802.11a	20	6Mbps	17.0	16.56		Right	93.14	0	0.641		1.107	1.074		-
5 260	52	802.11a	20	6Mbps	17.0	16.56	-0.031	Top	93.14	0	7.93	0.722	1.107	1.074	0.858	-
5 720	144	802.11a	20	6Mbps	17.0	16.35		Rear	93.14	0	2.8		1.161	1.074		-
5 720	144	802.11a	20	6Mbps	17.0	16.35	-0.167	Front	93.14	0	11.6	0.782	1.161	1.074	0.975	-
5 720	144	802.11a	20	6Mbps	17.0	16.35		Right	93.14	0	0.229		1.161	1.074		-
5 720	144	802.11a	20	6Mbps	17.0	16.35		Top	93.14	0	6.26		1.161	1.074		-
ANSI/ IEEE C95.1 - 1992– Safety Limit Spatial Peak Uncontrolled Exposure/ General Population								Hand 4.0 W/kg Averaged over 10 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, FCC KDB Procedure.
2. Batteries are fully charged at the beginning of the SAR measurements. A standard battery was used for all 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 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 648474 D04v01r03, SAR was evaluated without a headset connected to the device. Since the standalone reported SAR was ≤ 1.2 W/kg, no additional SAR evaluation using a headset cable were required.
8. Per KDB 648474 D04v01r03, this device is considered a "Phablet" since the diagonal dimension is > 160 mm and < 200 mm. When hotspot mode applies, extremity SAR is required only for the surfaces and edges with hotspot mode scaled to the maximum output power (with tolerance) is 1 g SAR > 1.2 W/kg.
9. This device utilizes power reduction for some wireless mode and technologies, as outlined in sec. 2.5 and sec.9. The maximum output power allowed for each transmitter and exposure condition was evaluated for SAR compliance based on expected use conditions and simultaneous scenarios.
10. During SAR testing for the Hotspot conditions per KDB 941225 D06v02r01, the actual portable hotspot operation (with actual simultaneous transmission of a transmitter with WiFi) was not activated

GSM/GPRS Test Notes:

1. This EUT'S GSM and GPRS device class is B.
2. Body-Worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
3. Justification for reduced test configurations per KDB 941225 D01v03r01: The source-based time-averaged output power was evaluated for all multi-slot operations. The multi-slot configuration with the highest frame averaged output power including tolerance was evaluated for SAR.
4. Per FCC KDB 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is 1/2 dB, instead of the middle channel, the highest output power channel must be used.
5. 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.

UMTS Notes:

1. The 12.2 kbps RMC mode is the primary mode per KDB 941225 D01v03r01.
2. UMTS mode in Body SAR was tested under RMC 12.2 kbps with HSPA inactive per KDB 941225 D01v03r01. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and Adjusted SAR value was less than 1.2 W/kg.
3. Per FCC KDB 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the channel highest output power channel was used.
4. UMTS SAR was tested under RMC 12.2 kbps with HSPA inactive per KDB publication 941225 D01v03r01. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Consideration for LTE Devices in FCC KDB 941225 D05v02r05.
2. According to FCC KDB 941225 D05v02r05:
When the reported SAR is ≤ 0.8 W/kg, testing of the 100%RB allocation and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the 1RB, 50%RB and 100%RB allocation with highest output power for that channel.
Only one channel, and as reported SAR values for 1RB allocation and 50%RB allocation were less than 1.45W/Kg only the highest power RB offset for each allocation was required.
3. 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 target MPR is indicated alongside the SAR results.
4. A-MPR was disabled for all SAR tests by setting NS=01 on the base station simulator.
5. Pre-installed VOIP applications are considered.
6. Per KDB 941225 D05Av01r02, SAR for LTE Carrier Aggregation operations was not needed because the maximum average output power in LTE CA mode was not > 0.25 dB higher than the maximum output power when downlink CA was not activated.
7. SAR test reduction is applied using the following criteria:
Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB, and 50% RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is > 0.8 W/kg, testing for other Channels is performed at the highest output power level for 1RB, and 50% RB configuration for that channel. Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are > 0.8 W/kg, Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg. Testing for 16-QAM modulation is not required because the reported SAR for QPSK is < 1.45 W/kg and its output power is not more than 0.5 dB higher than that a QPSK. Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is < 1.45 W/kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.

WLAN Notes:

1. For held-to-ear and hotspot operations, the initial test position procedures were applied. For initial test position, the highest extrapolated peak SAR will be used. When reported SAR for the initial test position is ≤ 0.4 W/kg for 1g SAR and ≤ 1.0 W/kg for 10g SAR, 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 results is ≤ 0.8 W/kg for 1g SAR and ≤ 2.0 W/kg for 10g SAR or all test position are measured.
2. Per KDB 248227 D01v02r02 justification for test configurations of 2.4 GHz WiFi Single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11 g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR.
3. Per KDB 248227 D01v02r02 justification for test configurations of 5 GHz WiFi Single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission mode were not investigated since the highest reported SAR for initial test configuration adjusted by the ration of maximum output powers is less than 1.2 W/kg for 1g SAR and less than 3.0 W/kg for 10 g SAR.
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 or all test channels were measured.
5. The device was configured to transmit continuously at the required data rated, 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 WLAN test reports.
6. Only channels in the U-NII-2C (> 5.65 GHz WIFI) & U-NII-3 aggregate band that support wireless router were considered for hotspot SAR tests.

12. Simultaneous SAR Analysis

12.1 Simultaneous Transmission Summation for Head

Simultaneous Transmission Summation Scenario with 2.4 GHz WLAN					
Exposure condition	Band	WWAN SAR	2.4 GHz WLAN SAR	Σ 1-g SAR	SPLSR
		(W/kg)	(W/kg)	(W/kg)	(Yes/No)
Head SAR	GSM 850	0.177	0.796	0.973	No
	GSM 1900	0.150	0.796	0.946	No
	UMTS 850	0.143	0.796	0.939	No
	UTMS 1700	0.254	0.796	1.050	No
	UTMS 1900	0.217	0.796	1.013	No
	LTE Band 2	0.187	0.796	0.983	No
	LTE Band 4	0.199	0.796	0.995	No
	LTE Band 5	0.135	0.796	0.931	No
	LTE Band 12	0.362	0.796	1.158	No

Simultaneous Transmission Summation Scenario with 5 GHz WLAN					
Exposure condition	Band	WWAN SAR	5 GHz WLAN SAR	Σ 1-g SAR	SPLSR
		(W/kg)	(W/kg)	(W/kg)	(Yes/No)
Head SAR	GSM 850	0.177	0.651	0.828	No
	GSM 1900	0.150	0.651	0.801	No
	UMTS 850	0.143	0.651	0.794	No
	UMTS 1700	0.254	0.651	0.905	No
	UTMS 1900	0.217	0.651	0.868	No
	LTE Band 2	0.187	0.651	0.838	No
	LTE Band 4	0.199	0.651	0.850	No
	LTE Band 5	0.135	0.651	0.786	No
	LTE Band 12	0.362	0.651	1.013	No

12.2 Simultaneous Transmission Summation for Body-Worn

Simultaneous Transmission Summation Scenario with 2.4 GHz WLAN						
Exposure condition	Distance	Band	WWAN SAR	2.4 GHz WLAN SAR	$\sum$ 1-g SAR	SPLSR
	(mm)		(W/kg)	(W/kg)	(W/kg)	(Yes/No)
Body-worn	15	GSM 850	0.173	0.158	0.331	No
		GSM 1900	0.154	0.158	0.312	No
		UMTS 850	0.160	0.158	0.318	No
		UMTS 1700	0.420	0.158	0.578	No
		UTMS 1900	0.392	0.158	0.550	No
		LTE Band 2	0.324	0.158	0.482	No
		LTE Band 4	0.386	0.158	0.544	No
		LTE Band 5	0.120	0.158	0.278	No
		LTE Band 12	0.352	0.158	0.510	No

Simultaneous Transmission Summation Scenario with 5 GHz WLAN						
Exposure condition	Distance	Band	WWAN SAR	5 GHz WLAN SAR	$\sum$ 1-g SAR	SPLSR
	(mm)		(W/kg)	(W/kg)	(W/kg)	(Yes/No)
Body-worn	15	GSM 850	0.173	0.239	0.412	No
		GSM 1900	0.154	0.239	0.393	No
		UMTS 850	0.160	0.239	0.399	No
		UMTS 1700	0.420	0.239	0.659	No
		UTMS 1900	0.392	0.239	0.631	No
		LTE Band 2	0.324	0.239	0.563	No
		LTE Band 4	0.386	0.239	0.625	No
		LTE Band 5	0.120	0.239	0.359	No
		LTE Band 12	0.352	0.239	0.591	No

Simultaneous Transmission Summation Scenario with Bluetooth						
Exposure condition	Distance	Band	WWAN SAR	Bluetooth SAR	$\sum$ 1-g SAR	SPLSR
	(mm)		(W/kg)	(W/kg)	(W/kg)	(Yes/No)
Body-worn	15	GSM 850	0.173	0.024	0.197	No
		GSM 1900	0.154	0.024	0.178	No
		UMTS 850	0.160	0.024	0.184	No
		UMTS 1700	0.420	0.024	0.444	No
		UTMS 1900	0.392	0.024	0.416	No
		LTE Band 2	0.324	0.024	0.348	No
		LTE Band 4	0.386	0.024	0.410	No
		LTE Band 5	0.120	0.024	0.144	No
		LTE Band 12	0.352	0.024	0.376	No

12.3 Simultaneous Transmission Summation for Hotspot

Simultaneous Transmission Summation Scenario with 2.4 GHz WLAN						
Exposure condition	Distance	Band	WWAN SAR	2.4 GHz WLAN SAR	$\sum$ 1-g SAR	SPLSR
	(mm)		(W/kg)	(W/kg)	(W/kg)	(Yes/No)
Hotspot	10	GSM 850	0.399	0.416	0.815	No
		GSM 1900	0.765	0.416	1.181	No
		UMTS 850	0.216	0.416	0.632	No
		UMTS 1700	0.924	0.416	1.340	No
		UTMS 1900	0.759	0.416	1.175	No
		LTE Band 2	0.764	0.416	1.180	No
		LTE Band 4	0.902	0.416	1.318	No
		LTE Band 5	0.163	0.416	0.579	No
		LTE Band 12	0.433	0.416	0.849	No

Simultaneous Transmission Summation Scenario with 5 GHz WLAN							
Exposure condition	Distance	Band	Test Position	WWAN SAR	5 GHz WLAN SAR	Σ 1-g SAR	SPLSR
	(mm)			(W/kg)	(W/kg)	(W/kg)	(Yes/No)
Hotspot	10	GSM 850	Rear	0.399	0.157	0.556	No
			Front	0.365	0.688	1.053	No
			Left	0.232	N/A	0.232	No
			Right	0.145	0.129	0.274	No
			Top	N/A	0.680	0.680	No
			Bottom	0.105	N/A	0.105	No
		GSM 1900	Rear	0.503	0.157	0.660	No
			Front	0.765	0.688	1.453	No
			Left	0.117	N/A	0.117	No
			Right	0.107	0.129	0.236	No
			Top	N/A	0.680	0.680	No
			Bottom	0.682	N/A	0.682	No
		UMTS 850	Rear	0.216	0.157	0.373	No
			Front	0.191	0.688	0.879	No
			Left	0.119	N/A	0.119	No
			Right	0.071	0.129	0.200	No
			Top	N/A	0.680	0.680	No
			Bottom	0.053	N/A	0.053	No
		UMTS 1700	Rear	0.663	0.157	0.820	No
			Front	0.924	0.688	1.612	Yes
			Left	0.125	N/A	0.125	No
			Right	0.074	0.129	0.203	No
			Top	N/A	0.680	0.680	No
			Bottom	0.549	N/A	0.549	No
		UTMS 1900	Rear	0.495	0.157	0.652	No
			Front	0.759	0.688	1.447	No
			Left	0.105	N/A	0.105	No
			Right	0.084	0.129	0.213	No
			Top	N/A	0.680	0.680	No
			Bottom	0.639	N/A	0.639	No
		LTE Band 2	Rear	0.481	0.157	0.638	No
			Front	0.764	0.688	1.452	No
			Left	0.095	N/A	0.095	No
			Right	0.079	0.129	0.208	No
			Top	N/A	0.680	0.680	No
			Bottom	0.704	N/A	0.704	No
		LTE Band 4	Rear	0.811	0.157	0.968	No
			Front	0.902	0.688	1.590	No
			Left	0.126	N/A	0.126	No
			Right	0.066	0.129	0.195	No
			Top	N/A	0.680	0.680	No
			Bottom	0.542	N/A	0.542	No
		LTE Band 5	Rear	0.163	0.157	0.320	No
			Front	0.151	0.688	0.839	No
			Left	0.096	N/A	0.096	No
			Right	0.060	0.129	0.189	No
			Top	N/A	0.680	0.680	No
			Bottom	0.042	N/A	0.042	No
		LTE Band 12	Rear	0.433	0.157	0.590	No
			Front	0.362	0.688	1.050	No
			Left	0.282	N/A	0.282	No
			Right	0.165	0.129	0.294	No
			Top	N/A	0.680	0.680	No
			Bottom	0.138	N/A	0.138	No

12.4 SAR to Peak Location Ratio (SPLSR)

FCC KDB 447498 D01v06 General RF Exposure Guidance introduces a new formula for calculating the SAR a Peak Location Ratio(SPLSR) between pairs of simultaneously transmitting antennas:

$$SPLSR = (SAR_1 + SAR_2)^{1.5} / Ri$$

Where:

SAR_1 is the highest measured or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition

SAR_2 is the highest measured of estimated SAR for the second of a pair of simultaneous transmitting antennas, in the same test operating mode and exposure condition as the first

Ri is the separation distance between the pair of simultaneous transmitting antennas, When the SAR is measured, for both antennas in the pair, it is determined by the actual x, y and z coordinates in the 1-g SAR for each SAR peak location, based on the extrapolated and interpolated result in the zoom scan measurement, using the formula of $[(X_1 - X_2)^2 + (Y_1 - Y_2)^2 + (Z_1 - Z_2)^2]$

In order for a pair of simultaneous transmitting antennas with the sum of 1-g SAR > 1.6 W/kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:

$$(SAR_1 + SAR_2)^{1.5} / Ri \leq 0.04$$

UMTS 1700 & 5 GHz WiFi

Mode	Peak SAR mW/g	X M	Y M	Z M	Distance mm
UMTS 1700	0.935	0.0154	-171.0	0.924	147.50
5 GHz WIFI	0.999	0.05	-172.0	0.688	

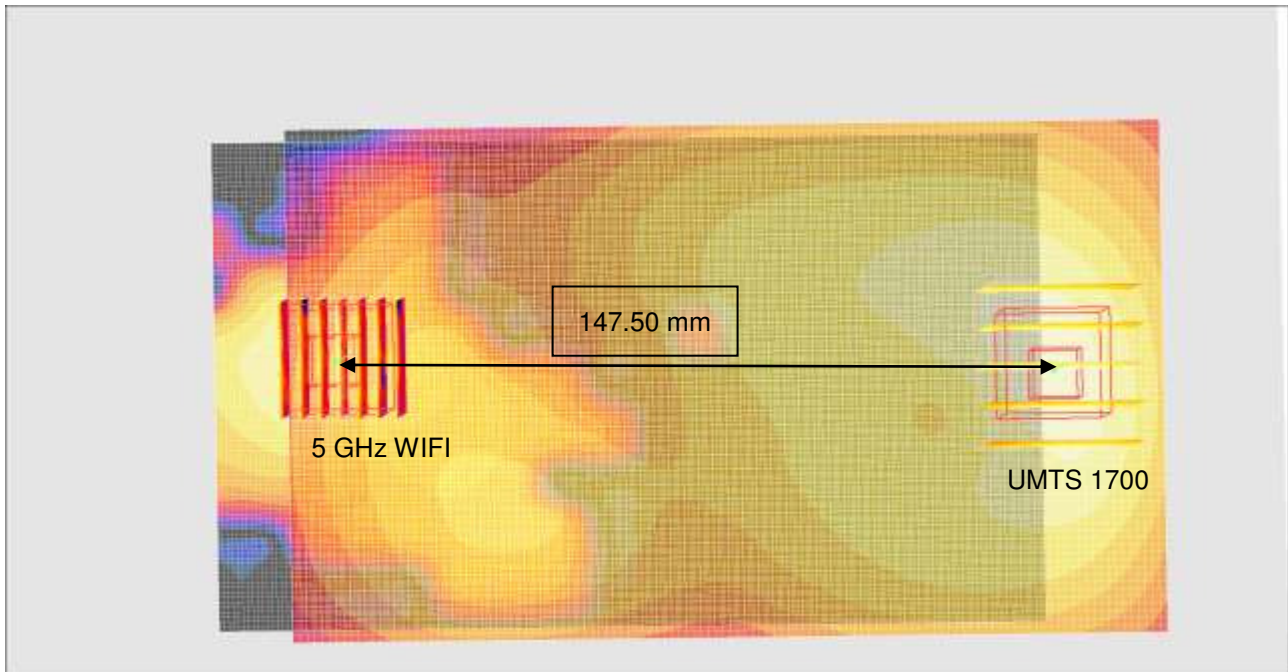
SAR to Peak Location Separation Ratio (SPLSR)

Simultaneous Transmission Scenario		Standalone SAR Value	Σ 1-g SAR	Calculated Distance	SPLSR	Volume Scan
Position	Combination	(W/kg)	(W/kg)	(mm)	(≤ 0.04)	(Yes/No)
Front	UMTS 1700	0.924	1.612	147.50	0.014	No
Front	5 GHz WIFI	0.688				

Conclusion

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is ≤ 0.04 for all circumstances that require SPLSR calculation.

12.4.6 SAR to Peak Location Ratio (SPLSR) illustrations



12.4 Simultaneous Transmission Conclusion

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

13. SAR Measurement Variability and Uncertainty

In accordance with KDB procedure 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz, SAR additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is 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) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg for 1g SAR or < 2.0 W/kg for 10g SAR ; steps 2) through 4) do not apply.
- 2) When the original highest measured 1g SAR is ≥ 0.80 W/kg or 10g SAR ≥ 2.0 W/kg, repeat that measurement once.
- 3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg for 1g SAR or ≥ 3.625 W/kg for 10g SAR (~ 10% from the 1-g SAR limit).
- 4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg for 1g SAR or ≥ 3.75 W/kg for 10g SAR and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .

Frequency		Modulation	Battery	Configuration	Original SAR	Repeated SAR	Largest to Smallest SAR Ratio	Plot No.
MHz	Channel				(W/kg)	(W/kg)		
1 752.6	1512	UMTS 1700	Standard	Front	0.870	0.869	1.00	36

14. MEASUREMENT UNCERTAINTY

Uncertainty (700 MHz ~ 5000 MHz)						
Error Description	Tol	Prob.	Div.	C _i	Standard Uncertainty (± %)	V _{eff}
	(± %)	dist.				
1. Measurement System						
Probe Calibration	6.55	N	1	1	6.55	∞
Axial Isotropy	4.70	R	1.73	0.7	1.90	∞
Hemispherical Isotropy	9.60	R	1.73	0.7	3.88	∞
Boundary Effects	1.00	R	1.73	1	0.58	∞
Linearity	4.70	R	1.73	1	2.71	∞
System Detection Limits	1.00	R	1.73	1	0.58	∞
Readout Electronics	0.30	N	1.00	1	0.30	∞
Response Time	0.8	R	1.73	1	0.46	∞
Integration Time	2.6	R	1.73	1	1.50	∞
RF Ambient Conditions	3.00	R	1.73	1	1.73	∞
Probe Positioner	0.40	R	1.73	1	0.23	∞
Probe Positioning	2.90	R	1.73	1	1.67	∞
Max SAR Eval	1.00	R	1.73	1	0.58	∞
2.Test Sample Related						
Device Positioning	2.25	N	1.00	1	2.25	9
Device Holder	3.60	N	1.00	1	3.60	∞
Power Drift	5.00	R	1.73	1	2.89	∞
3.Phantom and Setup						
Phantom Uncertainty	4.00	R	1.73	1	2.31	∞
Liquid Conductivity(target)	5.00	R	1.73	0.64	1.85	∞
Liquid Conductivity(meas.)	3.00	N	1	0.64	1.73	∞
Liquid Permittivity(target)	5.00	R	1.73	0.6	1.73	∞
Liquid Permittivity(meas.)	2.30	N	1	0.6	1.14	∞
Combine Standard Uncertainty					10.99	
Coverage Factor for 95 %					k=2	
Expanded STD Uncertainty					21.98	

15. SAR TEST EQUIPMENT

Manufacturer	Type / Model	S/N	Calib. Date	Calib.Interval	Calib.Due
SPEAG	SAM Phantom	-	N/A	N/A	N/A
SPEAG	Triple Modular Phantom	-	N/A	N/A	N/A
HP	SAR System Control PC	-	N/A	N/A	N/A
Staubli	Robot TX90 XLSpeag	F13/5R4XF1/A/01	N/A	N/A	N/A
Staubli	Robot RX90B L	F01/5K09A1/A/01	N/A	N/A	N/A
Staubli	CS8Cspeag-TX90	F13/5R4XF1/C/01	N/A	N/A	N/A
Staubli	Robot ControllerCS7MB	F01/5K09A1/C/01	N/A	N/A	N/A
SCHMID & PARTNER	Light Alignment Sensor	273	N/A	N/A	N/A
SCHMID & PARTNER	Light Alignment Sensor	265	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick)	D21142605	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick)	D221340.01	N/A	N/A	N/A
SPEAG	DAE3	446	01/25/2016	Annual	01/25/2017
SPEAG	DAE4	652	01/22/2016	Annual	01/22/2017
SPEAG	DAE4	614	09/29/2015	Annual	09/29/2016
SPEAG	DAE4	869	10/07/2015	Annual	10/07/2016
SPEAG	DAE4	1417	01/27/2016	Annual	01/27/2017
SPEAG	E-Field Probe ET3DV6	1605	04/27/2015	Annual	04/27/2016
SPEAG	E-Field Probe EX3DV4	3967	12/16/2015	Annual	12/16/2016
SPEAG	E-Field Probe EX3DV4	7370	09/01/2015	Annual	09/01/2016
SPEAG	E-Field Probe EX3DV4	3903	09/28/2015	Annual	09/28/2016
SPEAG	E-Field Probe EX3DV4	3968	06/18/2015	Annual	06/18/2016
SPEAG	Dipole D750V3	1014	07/23/2015	Annual	07/23/2016
SPEAG	Dipole D835V2	4d165	11/24/2015	Annual	11/24/2016
SPEAG	Dipole D1800V2	2d006	01/22/2016	Annual	01/22/2017
SPEAG	Dipole D1900V2	5d032	05/20/2015	Annual	05/20/2016
SPEAG	Dipole D2450V2	743	05/19/2015	Annual	05/19/2016
SPEAG	Dipole D5GHzV2	1107	01/29/2016	Annual	01/29/2017
HP	Directional Bridge	86205A	05/20/2015	Annual	05/20/2016
Agilent	Base Station E5515C	GB444400269	02/05/2016	Annual	02/05/2017
HP	Signal Generator N5182A	MY4770230	05/13/2015	Annual	05/13/2016
Agilent	MXA Signal Analyzer N9020A	MY50510407	03/23/2015	Annual	03/23/2016
HP	Network Analyzer 8753ES	JP39240221	03/23/2015	Annual	03/23/2016
HP	Notebook(DAKS)	-	N/A	N/A	N/A
HP	Dual Directional Coupler	16072	10/20/2015	Annual	10/20/2016
Rohde & Schwarz	CBT / Bluetooth Tester	100422	05/11/2015	Annual	05/11/2016
R&S	Wideband Radio Communication Tester CMW500	115733	09/18/2015	Annual	09/18/2016
Hewlett Packard	11636B/Power Divider	58698	02/27/2016	Annual	02/27/2017

NOTE:

1. The E-field probe was calibrated by SPEAG, by the waveguide technique procedure. Dipole Verification measurement is performed by HCT Lab. before each test. The brain/body simulating material is calibrated by HCT using the DAKS 3.5 to determine the conductivity and permittivity (dielectric constant) of the brain/body-equivalent material.

16. CONCLUSION

The SAR measurement indicates that the EUT complies with the RF radiation exposure limits of the ANSI/IEEE C95.1 1992.

These measurements are taken to simulate the RF effects exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests.

The SAR measurement indicates that the EUT complies with the RF radiation exposure limits of the FCC and Industry Canada. 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.

17. REFERENCES

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Attachment 1. – SAR Test Plots

Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 19.9 °C
Ambient Temperature: 20.1 °C
Test Date: 02/29/2016
Plot No.: 1

DUT: SM-J700T; Type: Bar

Communication System: UID 0, GSM 850 (0); Frequency: 836.6 MHz; Duty Cycle: 1:8.30042
Medium parameters used (interpolated): $f = 836.6 \text{ MHz}$; $\sigma = 0.915 \text{ S/m}$; $\epsilon_r = 41.741$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Left Section

DASY5 Configuration:

- Probe: ET3DV6 - SN1605; ConvF(6.33, 6.33, 6.33); Calibrated: 2015-04-27;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn614; Calibrated: 2015-09-29
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (8);

SM-J700T/GSM850 Head Left Touch 190ch/Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 0.184 W/kg

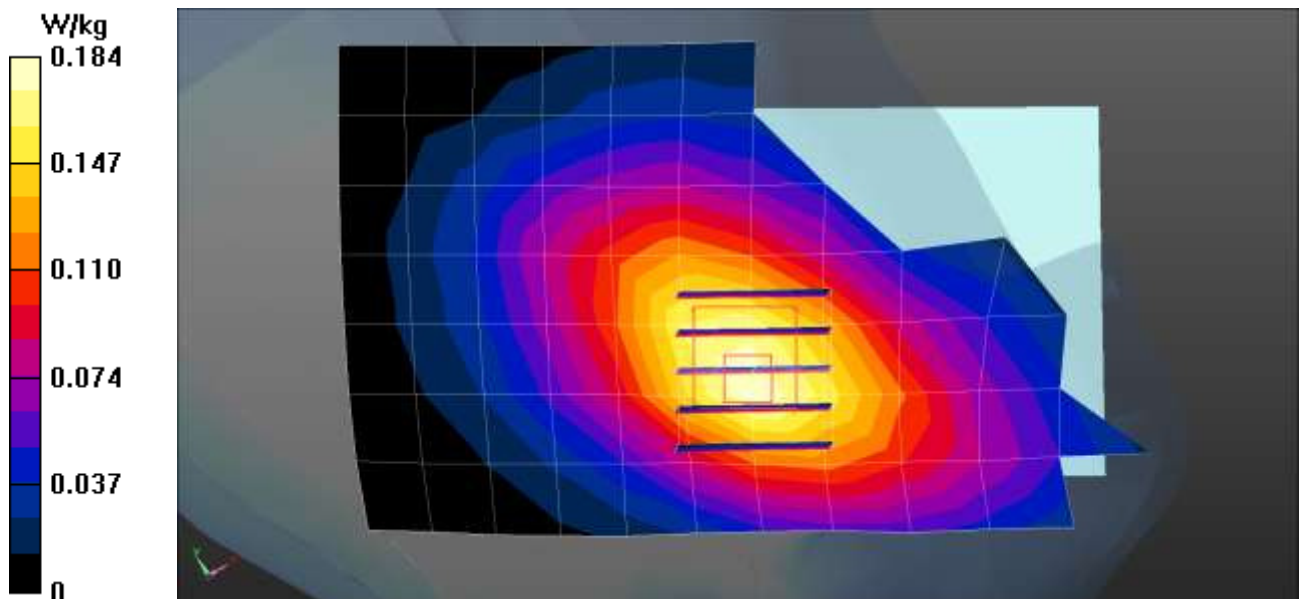
SM-J700T/GSM850 Head Left Touch 190ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 5.343 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.230 W/kg

SAR(1 g) = 0.176 W/kg; SAR(10 g) = 0.131 W/kg

Maximum value of SAR (measured) = 0.185 W/kg



Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 19.4 °C
Ambient Temperature: 19.6 °C
Test Date: 03/03/2016
Plot No.: 2

DUT: SM-J700T; Type: Bar

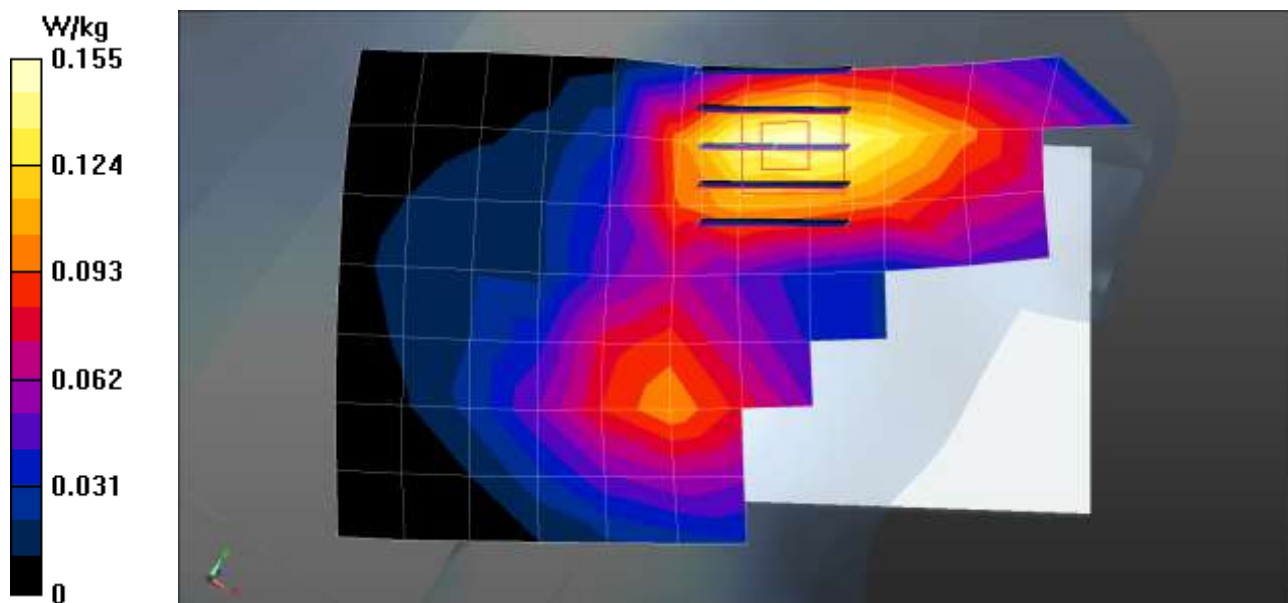
Communication System: UID 0, GSM 1900 (0); Frequency: 1880 MHz; Duty Cycle: 1:8.30042
Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.358 \text{ S/m}$; $\epsilon_r = 39.253$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: ET3DV6 - SN1605; ConvF(5.01, 5.01, 5.01); Calibrated: 2015-04-27;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn614; Calibrated: 2015-09-29
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (8);

SM-J700T/GSM1900 Right Touch 661ch/Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 0.155 W/kg

SM-J700T/GSM1900 Right Touch 661ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 3.559 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.203 W/kg
SAR(1 g) = 0.147 W/kg; SAR(10 g) = 0.093 W/kg
Maximum value of SAR (measured) = 0.163 W/kg



Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 19.9 °C
Ambient Temperature: 20.1 °C
Test Date: 02/29/2016
Plot No.: 3

DUT: SM-J700T; Type: Bar

Communication System: UID 0, WCDMA850 (0); Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.915$ S/m; $\epsilon_r = 41.741$; $\rho = 1000$ kg/m³
Phantom section: Left Section

DASY5 Configuration:

- Probe: ET3DV6 - SN1605; ConvF(6.33, 6.33, 6.33); Calibrated: 2015-04-27;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn614; Calibrated: 2015-09-29
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (8);

SM-J700T/WCDMA850 Head Left Touch 4183ch/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.125 W/kg

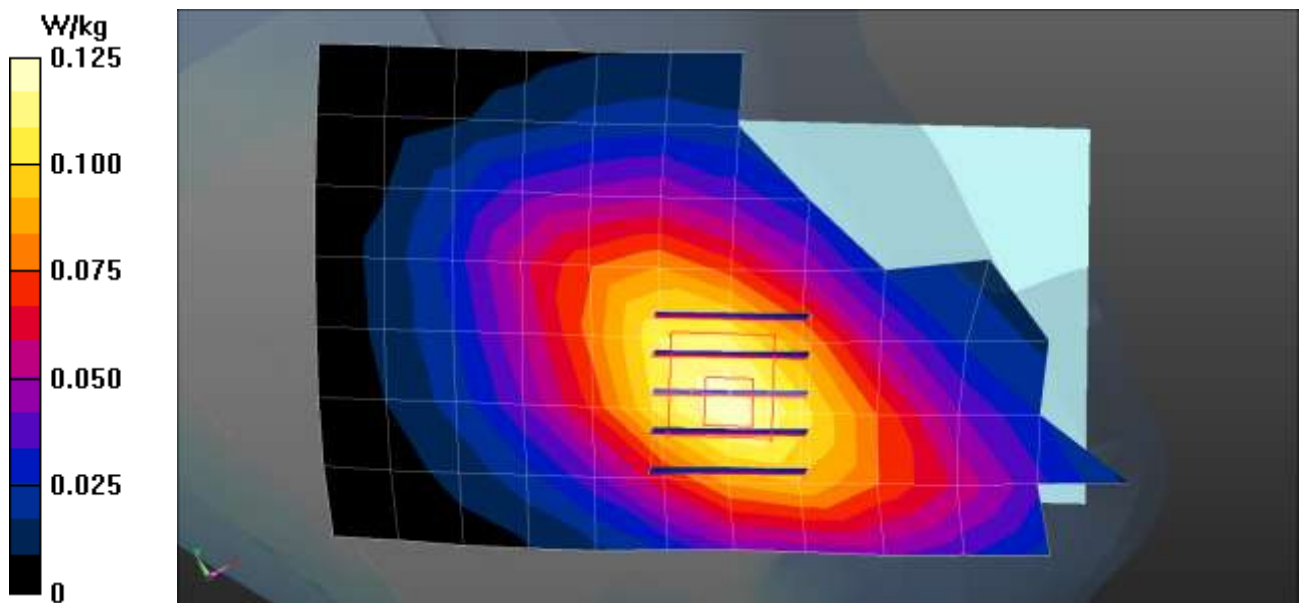
SM-J700T/WCDMA850 Head Left Touch 4183ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.351 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.151 W/kg

SAR(1 g) = 0.119 W/kg; SAR(10 g) = 0.090 W/kg

Maximum value of SAR (measured) = 0.126 W/kg



Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 19.7 °C
Ambient Temperature: 19.9 °C
Test Date: 03/02/2016
Plot No.: 4

DUT: SM-J700T; Type: Bar

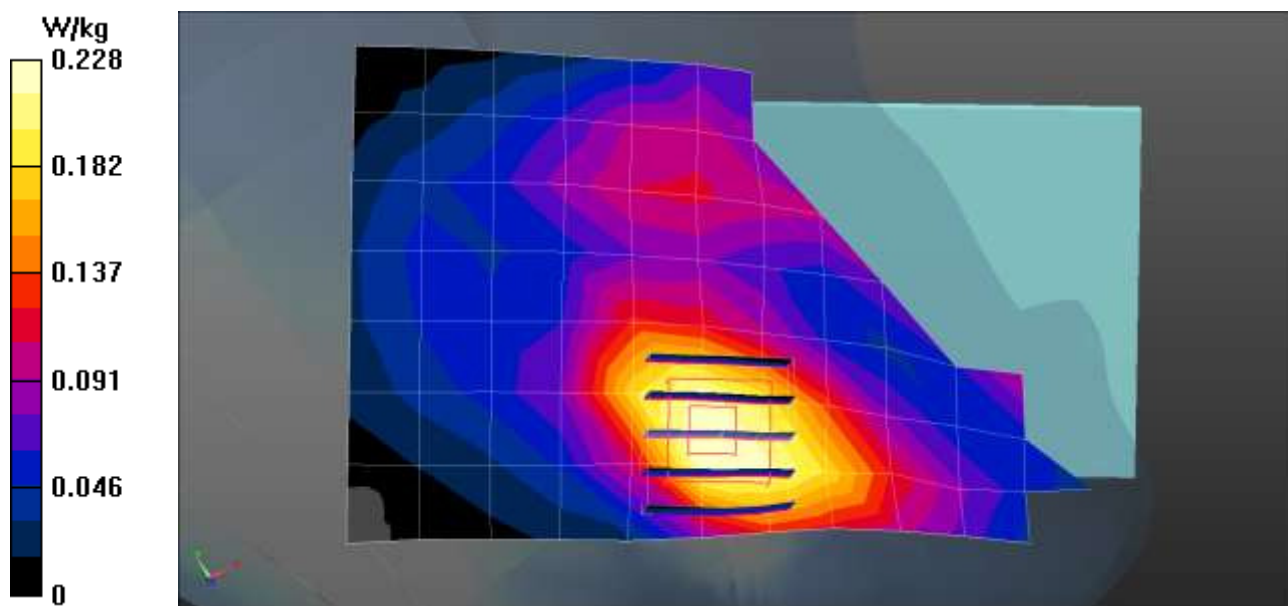
Communication System: UID 0, WCDMA 1700 (0); Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 1732.4$ MHz; $\sigma = 1.327$ S/m; $\epsilon_r = 40.024$; $\rho = 1000$ kg/m³
Phantom section: Left Section

DASY5 Configuration:

- Probe: ET3DV6 - SN1605; ConvF(5.2, 5.2, 5.2); Calibrated: 2015-04-27;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn614; Calibrated: 2015-09-29
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (8);

SM-J700T/WCDMA1700 Left Touch 1412ch/Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.228 W/kg

SM-J700T/WCDMA1700 Left Touch 1412ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.000 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.323 W/kg
SAR(1 g) = 0.233 W/kg; SAR(10 g) = 0.149 W/kg
Maximum value of SAR (measured) = 0.254 W/kg



Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 19.4 °C
Ambient Temperature: 19.6 °C
Test Date: 03/03/2016
Plot No.: 5

DUT: SM-J700T; Type: Bar

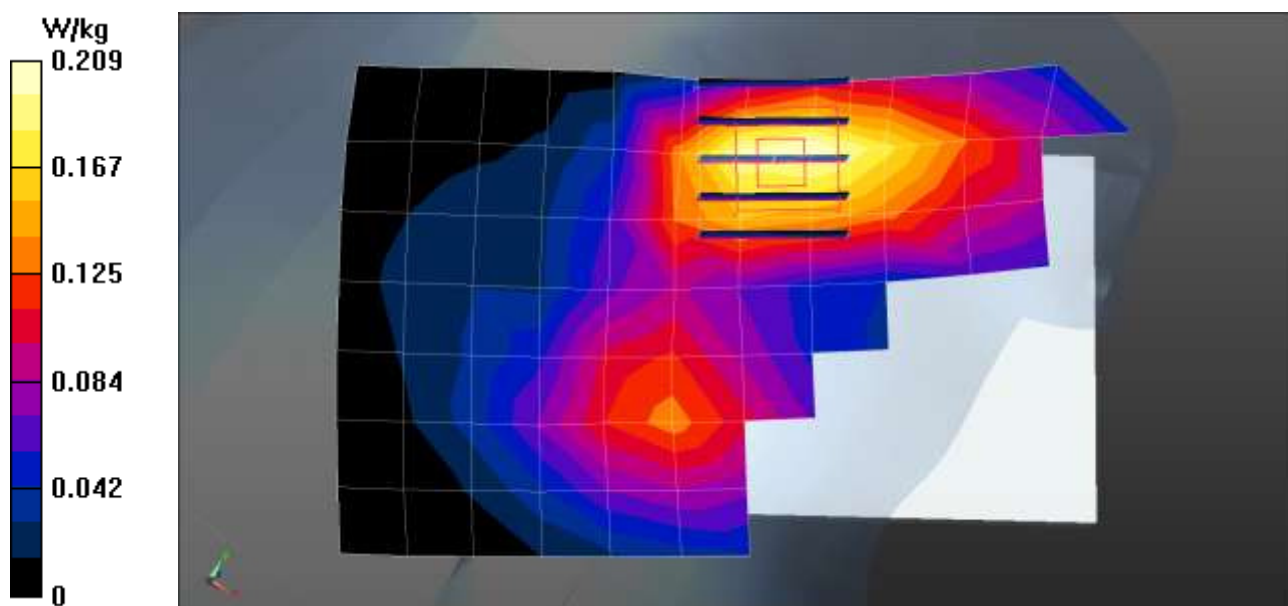
Communication System: UID 0, WCDMA1900 (0); Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.358 \text{ S/m}$; $\epsilon_r = 39.253$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: ET3DV6 - SN1605; ConvF(5.01, 5.01, 5.01); Calibrated: 2015-04-27;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn614; Calibrated: 2015-09-29
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (8);

SM-J700T/WCDMA1900 Right Touch 9400ch/Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 0.209 W/kg

SM-J700T/WCDMA1900 Right Touch 9400ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 4.017 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.276 W/kg
SAR(1 g) = 0.198 W/kg; SAR(10 g) = 0.124 W/kg
Maximum value of SAR (measured) = 0.221 W/kg



Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 19.4 °C
Ambient Temperature: 19.6 °C
Test Date: 03/03/2016
Plot No.: 6

DUT: SM-J700T; Type: Bar

Communication System: UID 0, LTE Band 2 (0); Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.38 \text{ S/m}$; $\epsilon_r = 39.151$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: ET3DV6 - SN1605; ConvF(5.01, 5.01, 5.01); Calibrated: 2015-04-27;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn614; Calibrated: 2015-09-29
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (8);

SM-J700T/LTE band 2 Head Right Touch QPSK 20MHz 50RB 49offset 19100ch/Area Scan (8x13x1):

Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 0.181 W/kg

SM-J700T/LTE band 2 Head Right Touch QPSK 20MHz 50RB 49offset 19100ch/Zoom Scan

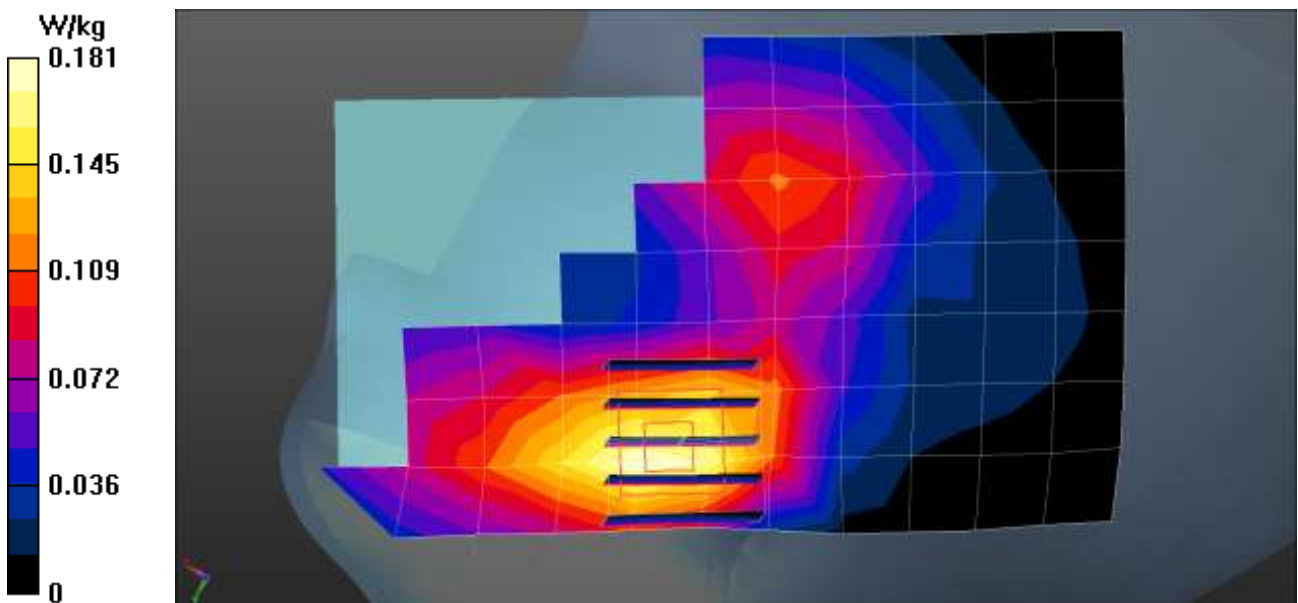
(5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 3.781 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.248 W/kg

SAR(1 g) = 0.177 W/kg; SAR(10 g) = 0.110 W/kg

Maximum value of SAR (measured) = 0.198 W/kg



Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 19.7 °C
Ambient Temperature: 19.9 °C
Test Date: 03/02/2016
Plot No.: 7

DUT: SM-J700T; Type: Bar

Communication System: UID 0, LTE Band 4 (0); Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.327$ S/m; $\epsilon_r = 40.023$; $\rho = 1000$ kg/m³
Phantom section: Left Section

DASY5 Configuration:

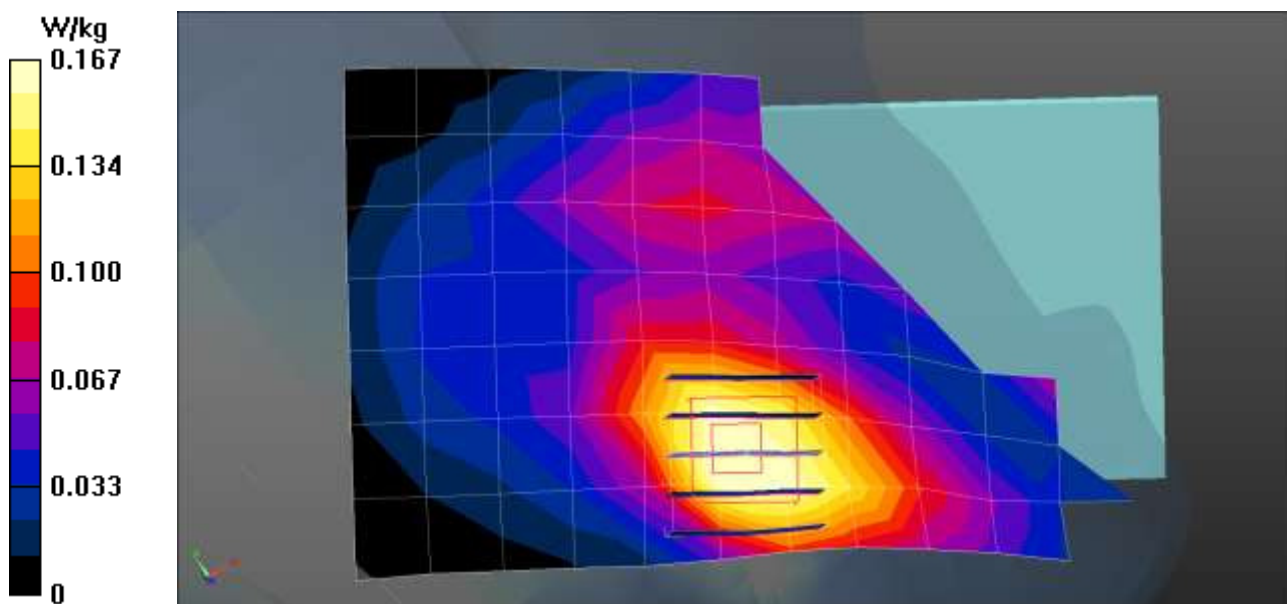
- Probe: ET3DV6 - SN1605; ConvF(5.2, 5.2, 5.2); Calibrated: 2015-04-27;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn614; Calibrated: 2015-09-29
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (8);

SM-J700T/LTE band 4 Head Left Touch QPSK 20MHz 50RB 0offset 20175ch/Area Scan (8x13x1):

Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.167 W/kg

SM-J700T/LTE band 4 Head Left Touch QPSK 20MHz 50RB 0offset 20175ch/Zoom Scan (5x5x7)/Cube

0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.153 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.267 W/kg
SAR(1 g) = 0.185 W/kg; SAR(10 g) = 0.115 W/kg
Maximum value of SAR (measured) = 0.209 W/kg



Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 19.9 °C
Ambient Temperature: 20.1 °C
Test Date: 02/29/2016
Plot No.: 8

DUT: SM-J700T; Type: Bar

Communication System: UID 0, LTE Band 5 (0); Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 836.5 \text{ MHz}$; $\sigma = 0.915 \text{ S/m}$; $\epsilon_r = 41.742$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Left Section

DASY5 Configuration:

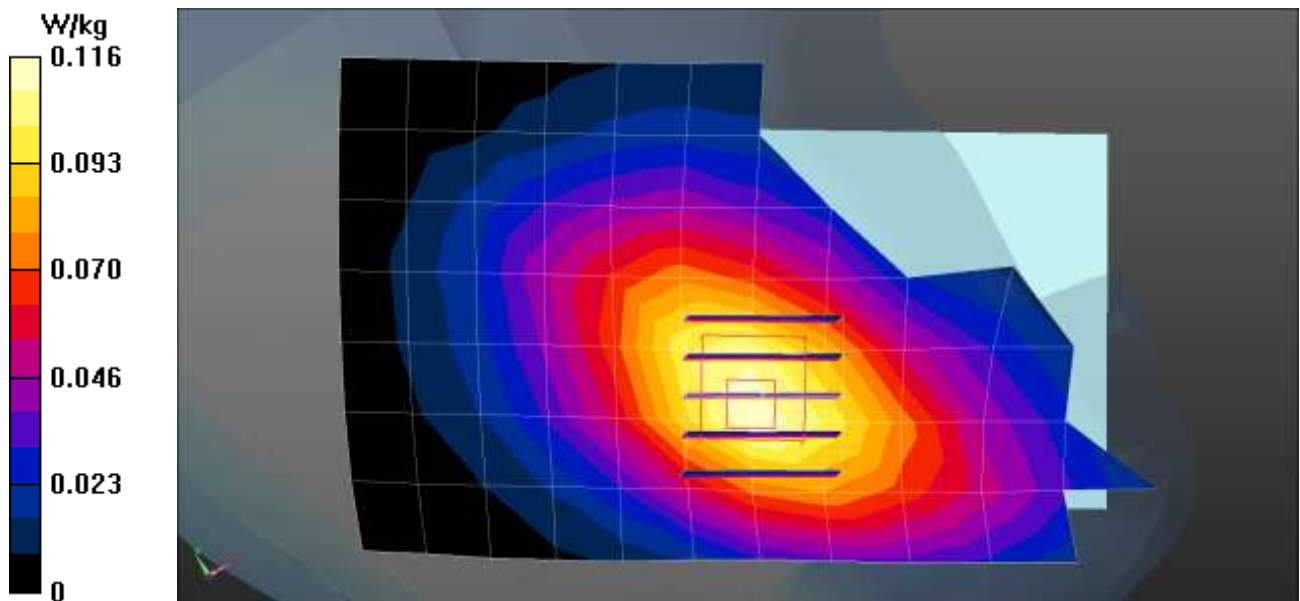
- Probe: ET3DV6 - SN1605; ConvF(6.33, 6.33, 6.33); Calibrated: 2015-04-27;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn614; Calibrated: 2015-09-29
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (8);

SM-J700T/LTE band 5 Head Left Touch QPSK 10MHz 1RB 0offset 20525ch/Area Scan (8x13x1):

Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 0.116 W/kg

SM-J700T/LTE band 5 Head Left Touch QPSK 10MHz 1RB 0offset 20525ch/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 4.182 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.141 W/kg
SAR(1 g) = 0.110 W/kg; SAR(10 g) = 0.083 W/kg
Maximum value of SAR (measured) = 0.115 W/kg



Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 19.6 °C
Ambient Temperature: 19.8 °C
Test Date: 03/04/2016
Plot No.: 9

DUT: SM-J700T; Type: Bar

Communication System: UID 0, LTE Band12 (0); Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 707.5 \text{ MHz}$; $\sigma = 0.872 \text{ S/m}$; $\epsilon_r = 43.433$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Left Section

DASY5 Configuration:

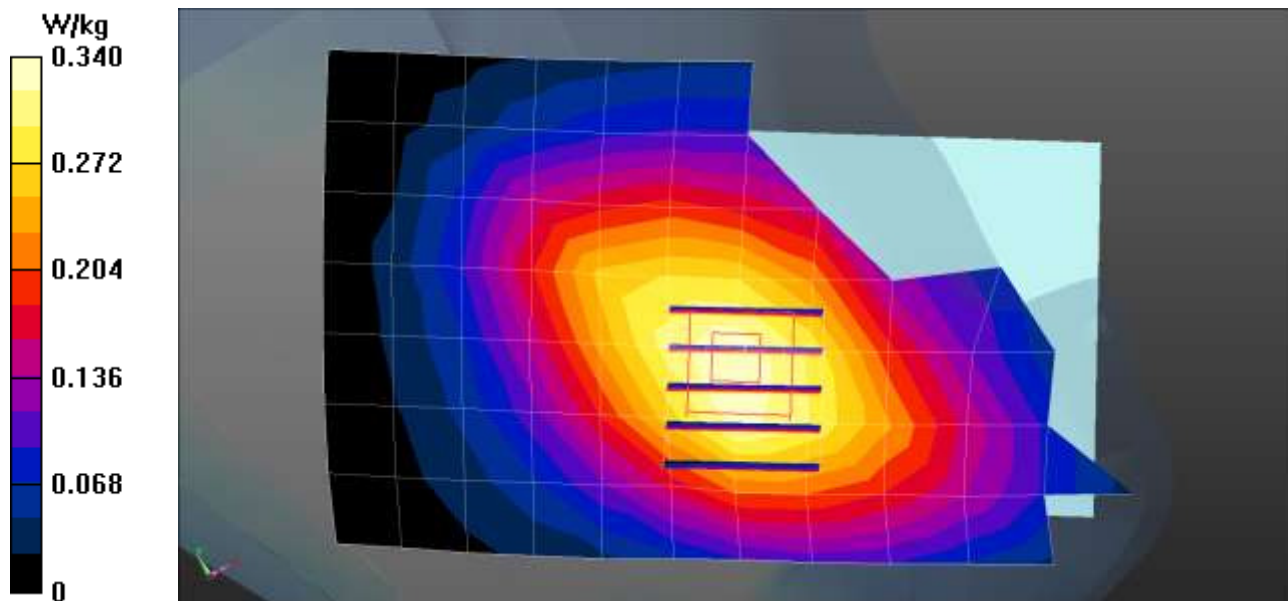
- Probe: ET3DV6 - SN1605; ConvF(6.64, 6.64, 6.64); Calibrated: 2015-04-27;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn614; Calibrated: 2015-09-29
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (8);

SM-J700T/LTE band 12 Head Left Touch QPSK 10MHz 1RB 0offset 23095ch/Area Scan (8x13x1):

Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 0.340 W/kg

SM-J700T/LTE band 12 Head Left Touch QPSK 10MHz 1RB 0offset 23095ch/Zoom Scan (5x5x7)/Cube

0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 8.250 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.390 W/kg
SAR(1 g) = 0.344 W/kg; SAR(10 g) = 0.274 W/kg
Maximum value of SAR (measured) = 0.358 W/kg



Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 19.6 °C
Ambient Temperature: 19.9 °C
Test Date: 03/10/2016
Plot No.: 10

DUT: SM-J700T; Type: Bar

Communication System: UID 0, 2450MHz FCC (0); Frequency: 2412 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 2412 \text{ MHz}$; $\sigma = 1.757 \text{ S/m}$; $\epsilon_r = 39.914$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.35, 7.35, 7.35); Calibrated: 2015-09-28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2016-01-25
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (8);

SM-J700T/802.11b Head Left Touch 1Mbps 1ch/Area Scan (10x16x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Maximum value of SAR (measured) = 0.872 W/kg

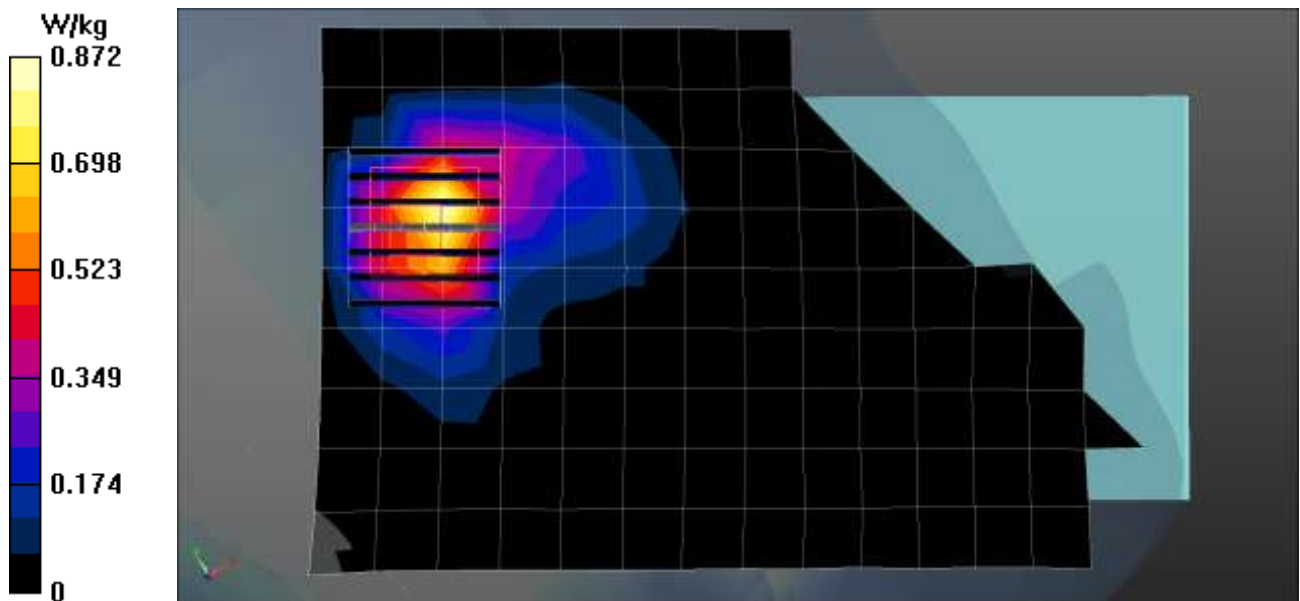
SM-J700T/802.11b Head Left Touch 1Mbps 1ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 13.82 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 1.54 W/kg

SAR(1 g) = 0.622 W/kg; SAR(10 g) = 0.250 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 1.04 W/kg



Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 20.4 °C
Ambient Temperature: 20.6 °C
Test Date: 03/22/2016
Plot No.: 11

DUT: SM-J700T; Type: Bar

Communication System: WIFI 5GHz; Frequency: 5825 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5825 \text{ MHz}$; $\sigma = 5.26 \text{ mho/m}$; $\epsilon_r = 35.1$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Left Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3968; ConvF(4.68, 4.68, 4.68); Calibrated: 2015-06-18
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1417; Calibrated: 2016-01-27
- Phantom: SAM
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

802.11a Head Left touch 6Mbps 165ch/Area Scan (10x18x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$
Maximum value of SAR (measured) = 0.867 mW/g

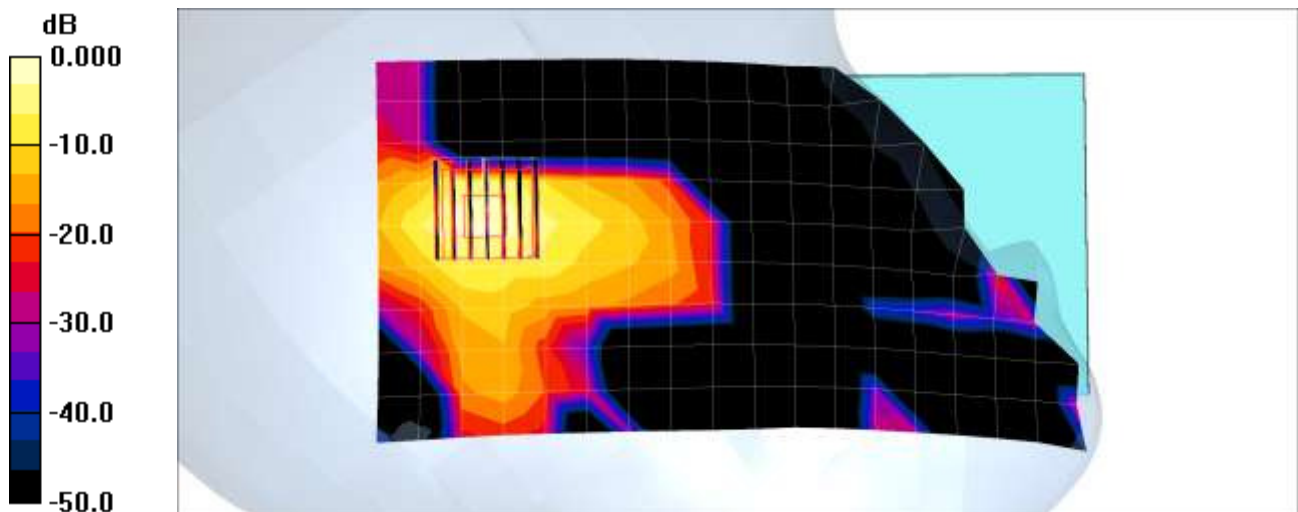
802.11a Head Left touch 6Mbps 165ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$

Reference Value = 10.4 V/m; Power Drift = 0.171 dB

Peak SAR (extrapolated) = 1.81 W/kg

SAR(1 g) = 0.452 mW/g; SAR(10 g) = 0.124 mW/g

Maximum value of SAR (measured) = 1.12 mW/g



0 dB = 1.12mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 20.2 °C
Ambient Temperature: 20.4 °C
Test Date: 02/29/2016
Plot No.: 12

DUT: SM-J700T; Type: Bar

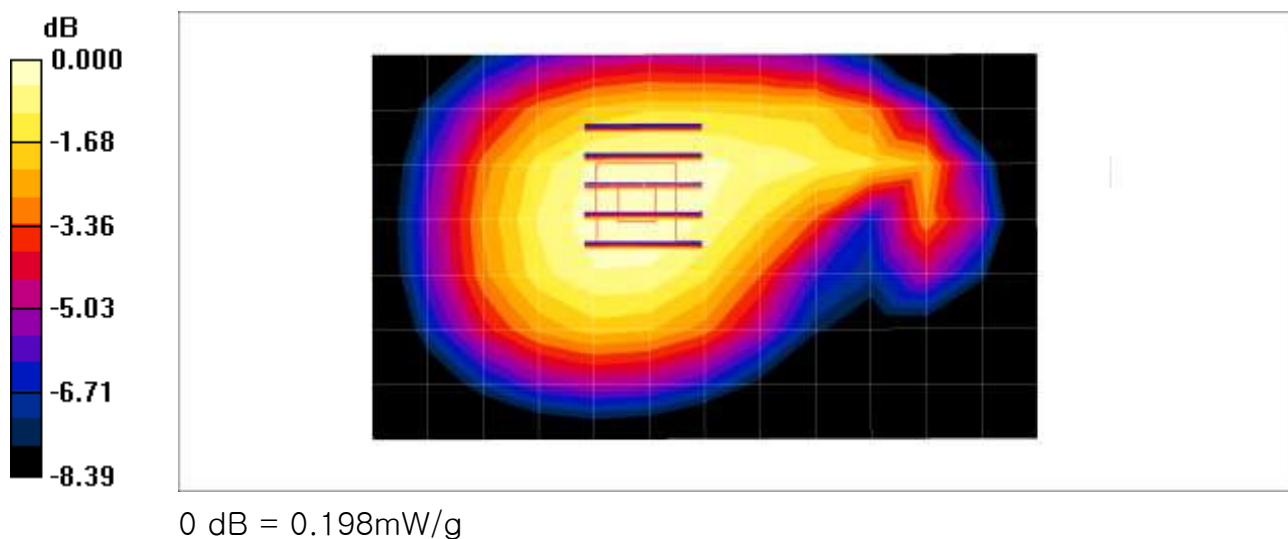
Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.968$ mho/m; $\epsilon_r = 54.1$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(10.05, 10.05, 10.05); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

GSM850 Body Rear 190ch/Area Scan (13x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.194 mW/g

GSM850 Body Rear 190ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.3 V/m; Power Drift = -0.097 dB
Peak SAR (extrapolated) = 0.217 W/kg
SAR(1 g) = 0.172 mW/g; SAR(10 g) = 0.130 mW/g
Maximum value of SAR (measured) = 0.198 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 20.5 °C
Ambient Temperature: 20.7 °C
Test Date: 03/02/2016
Plot No.: 13

DUT: SM-J700T; Type: Bar

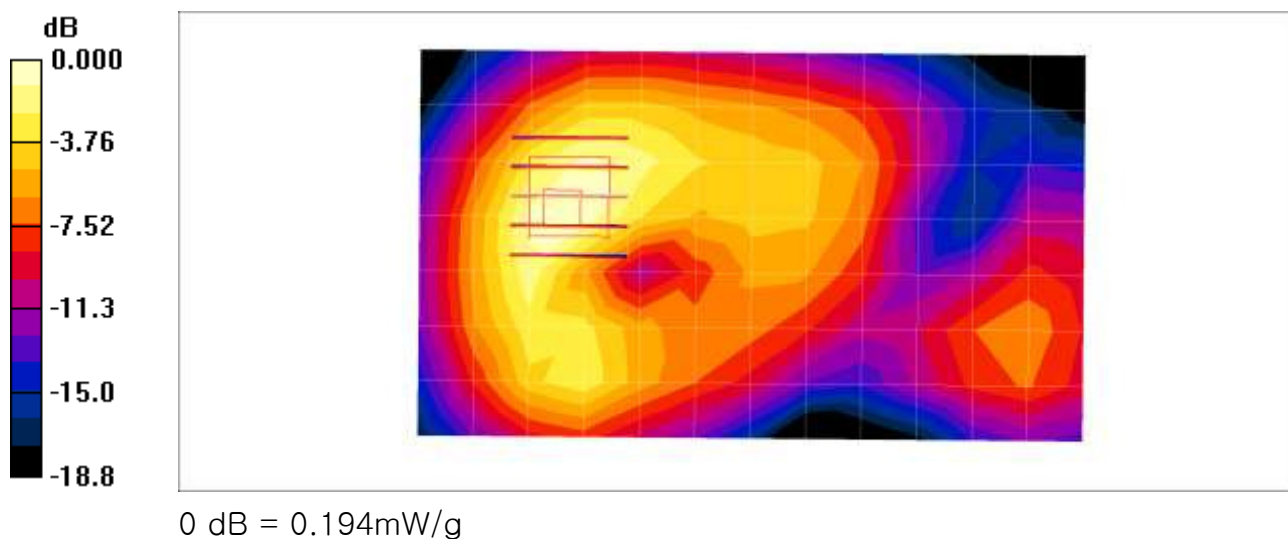
Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.48$ mho/m; $\epsilon_r = 52.4$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.72, 7.72, 7.72); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

GSM1900 Body Rear 661ch/Area Scan (13x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.176 mW/g

GSM1900 Body Rear 661ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.90 V/m; Power Drift = 0.008 dB
Peak SAR (extrapolated) = 0.239 W/kg
SAR(1 g) = 0.151 mW/g; SAR(10 g) = 0.090 mW/g
Maximum value of SAR (measured) = 0.194 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 20.2 °C
Ambient Temperature: 20.4 °C
Test Date: 02/29/2016
Plot No.: 14

DUT: SM-J700T; Type: Bar

Communication System: WCDMA850; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.968$ mho/m; $\epsilon_r = 54.1$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(10.05, 10.05, 10.05); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA850 Body Rear 4183ch/Area Scan (13x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.152 mW/g

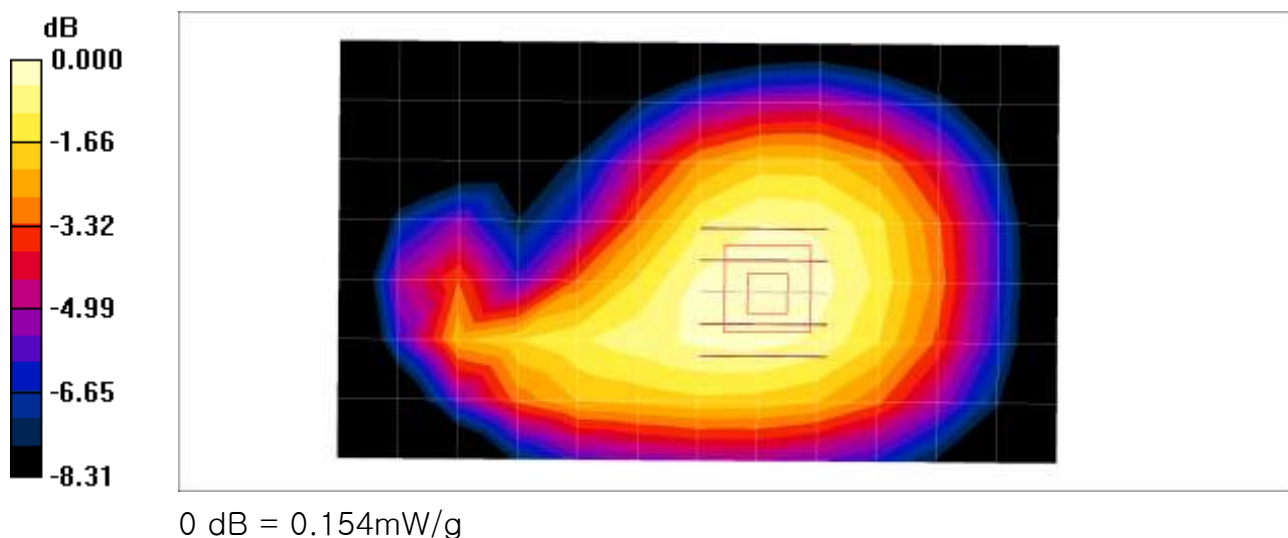
WCDMA850 Body Rear 4183ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.3 V/m; Power Drift = 0.068 dB

Peak SAR (extrapolated) = 0.169 W/kg

SAR(1 g) = 0.133 mW/g; SAR(10 g) = 0.100 mW/g

Maximum value of SAR (measured) = 0.154 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: 03/10/2016
Plot No.: 15

DUT: SM-J700T; Type: Bar

Communication System: WCDMA IV; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 1732.4$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52.8$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.94, 7.94, 7.94); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA1700 Body Rear 1412ch/Area Scan (13x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.426 mW/g

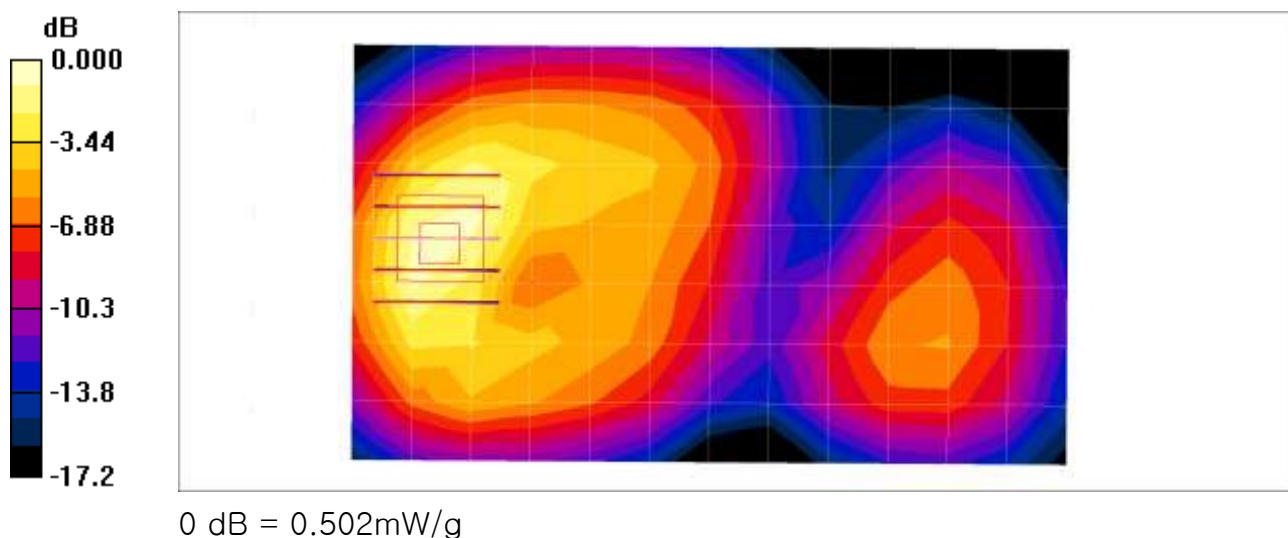
WCDMA1700 Body Rear 1412ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.06 V/m; Power Drift = 0.010 dB

Peak SAR (extrapolated) = 0.600 W/kg

SAR(1 g) = 0.386 mW/g; SAR(10 g) = 0.230 mW/g

Maximum value of SAR (measured) = 0.502 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 20.5 °C
Ambient Temperature: 20.7 °C
Test Date: 03/02/2016
Plot No.: 16

DUT: SM-J700T; Type: Bar

Communication System: WCDMA1900; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.48$ mho/m; $\epsilon_r = 52.4$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.72, 7.72, 7.72); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA1900 Body Rear 9400ch/Area Scan (13x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.417 mW/g

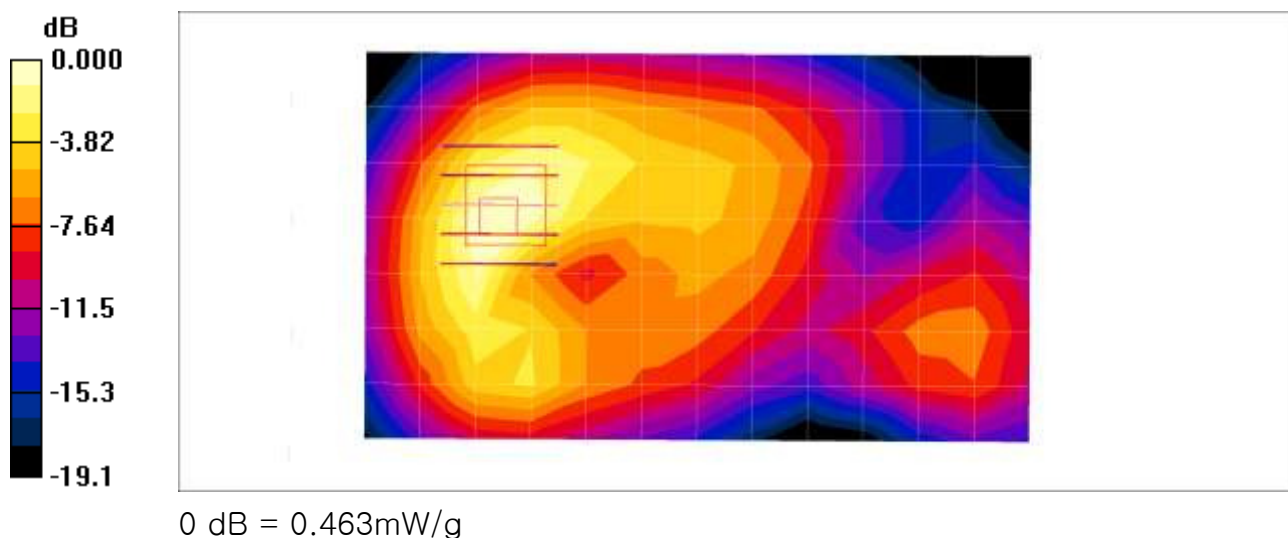
WCDMA1900 Body Rear 9400ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.55 V/m; Power Drift = -0.105 dB

Peak SAR (extrapolated) = 0.575 W/kg

SAR(1 g) = 0.358 mW/g; SAR(10 g) = 0.210 mW/g

Maximum value of SAR (measured) = 0.463 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 20.5 °C
Ambient Temperature: 20.7 °C
Test Date: 03/02/2016
Plot No.: 17

DUT: SM-J700T; Type: Bar

Communication System: LTE Band 2; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.5 \text{ mho/m}$; $\epsilon_r = 52.3$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.72, 7.72, 7.72); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

LTE2 Body Rear QPSK 20MHz 1RB 99offset 19100ch/Area Scan (13x8x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.402 mW/g

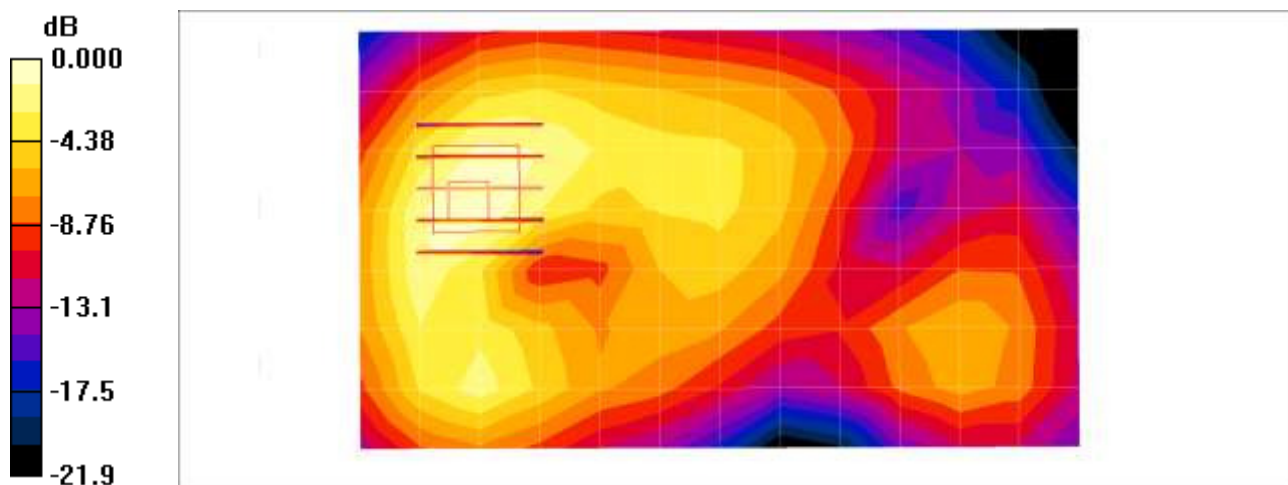
LTE2 Body Rear QPSK 20MHz 1RB 99offset 19100ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 6.37 V/m; Power Drift = -0.089 dB

Peak SAR (extrapolated) = 0.511 W/kg

SAR(1 g) = 0.315 mW/g; SAR(10 g) = 0.185 mW/g

Maximum value of SAR (measured) = 0.404 mW/g



0 dB = 0.404mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: 03/10/2016
Plot No.: 18

DUT: SM-J700T; Type: Bar

Communication System: LTE Band 4; Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52.8$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.94, 7.94, 7.94); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

LTE4 Body Rear QPSK 20MHz 1RB 0offset 20175ch/Area Scan (13x8x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.415 mW/g

LTE4 Body Rear QPSK 20MHz 1RB 0offset 20175ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

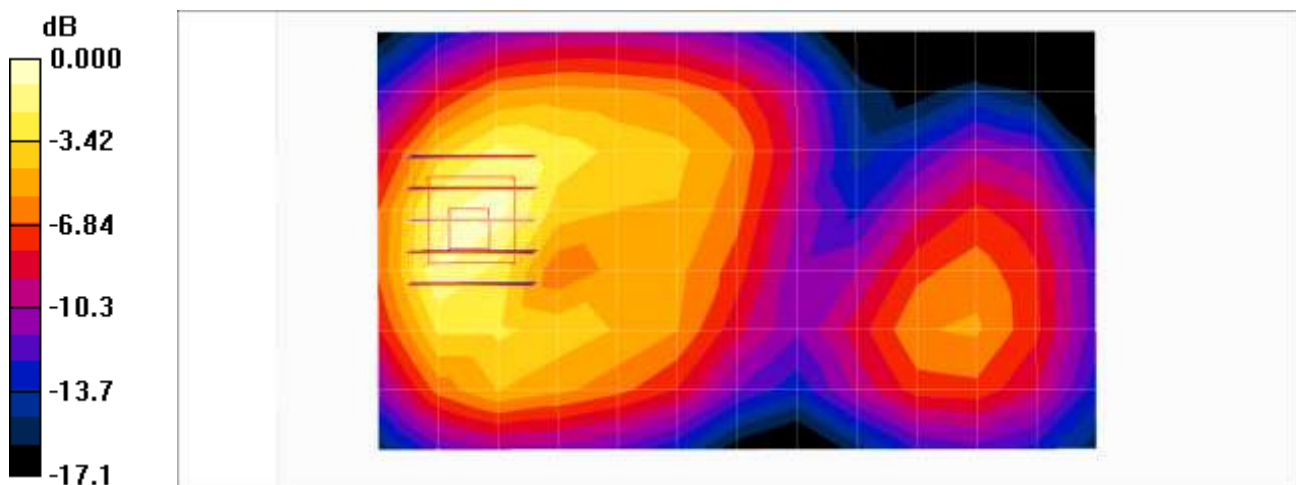
dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.48 V/m; Power Drift = 0.123 dB

Peak SAR (extrapolated) = 0.561 W/kg

SAR(1 g) = 0.361 mW/g; SAR(10 g) = 0.216 mW/g

Maximum value of SAR (measured) = 0.470 mW/g



0 dB = 0.470mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 20.2 °C
Ambient Temperature: 20.4 °C
Test Date: 02/29/2016
Plot No.: 19

DUT: SM-J700T; Type: Bar

Communication System: LTE Band 5; Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 836.5$ MHz; $\sigma = 0.968$ mho/m; $\epsilon_r = 54.1$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(10.05, 10.05, 10.05); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

LTE5 Body Rear QPSK 10MHz 1RB 0offset 20525ch/Area Scan (13x8x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.110 mW/g

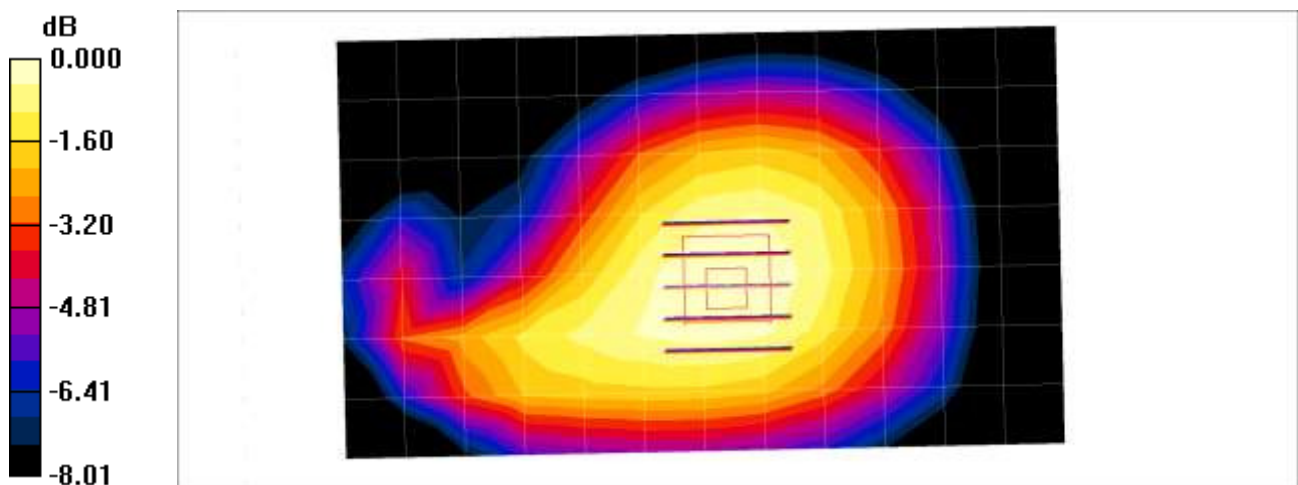
LTE5 Body Rear QPSK 10MHz 1RB 0offset 20525ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.4 V/m; Power Drift = 0.020 dB

Peak SAR (extrapolated) = 0.123 W/kg

SAR(1 g) = 0.098 mW/g; SAR(10 g) = 0.074 mW/g

Maximum value of SAR (measured) = 0.112 mW/g



0 dB = 0.112mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 19.2 °C
Ambient Temperature: 19.4 °C
Test Date: 03/08/2016
Plot No.: 20

DUT: SM-J700T; Type: Bar

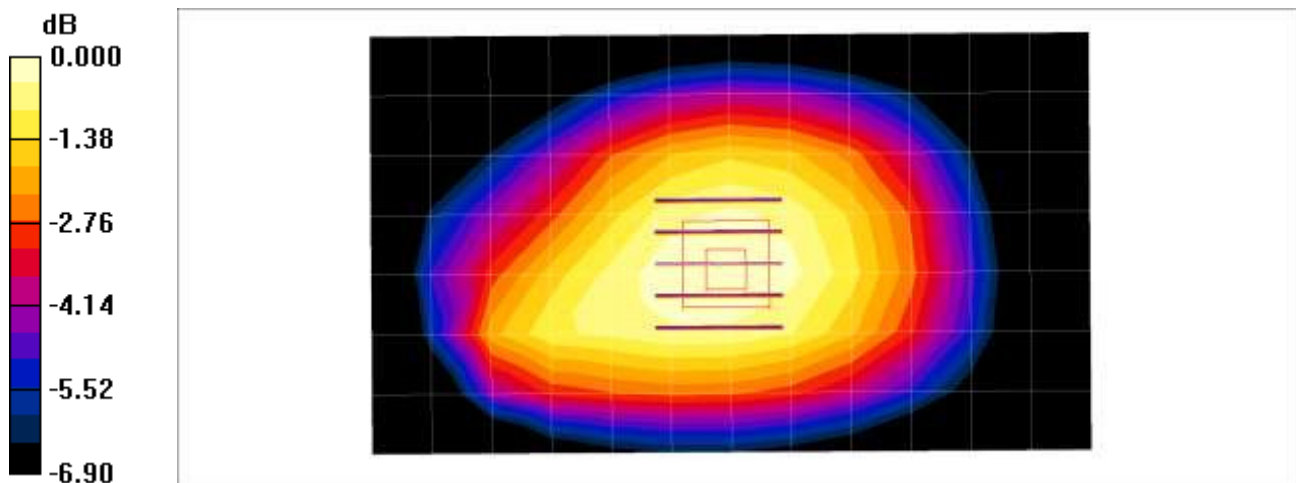
Communication System: LTE band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 707.5 \text{ MHz}$; $\sigma = 0.946 \text{ mho/m}$; $\epsilon_r = 55$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3967; ConvF(9.92, 9.92, 9.92); Calibrated: 2015-12-16
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

LTE band 12 Body Rear QPSK 10MHz 1RB 0offset 23095ch/Area Scan (13x8x1): Measurement grid:
 $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 0.373 mW/g

LTE band 12 Body Rear QPSK 10MHz 1RB 0offset 23095ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 18.7 V/m; Power Drift = -0.025 dB
Peak SAR (extrapolated) = 0.405 W/kg
SAR(1 g) = 0.335 mW/g; SAR(10 g) = 0.264 mW/g
Maximum value of SAR (measured) = 0.376 mW/g



0 dB = 0.376mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 21.5 °C
Ambient Temperature: 21.8 °C
Test Date: 03/09/2016
Plot No.: 21

DUT: SM-J700T; Type: Bar

Communication System: 2450MHz FCC; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 2437$ MHz; $\sigma = 1.97$ mho/m; $\epsilon_r = 53.6$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN7370; ConvF(7.16, 7.16, 7.16); Calibrated: 2015-09-01
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2015-10-07
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

802.11b Body-Worn Rear 1Mbps 6ch/Area Scan (10x15x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.169 mW/g

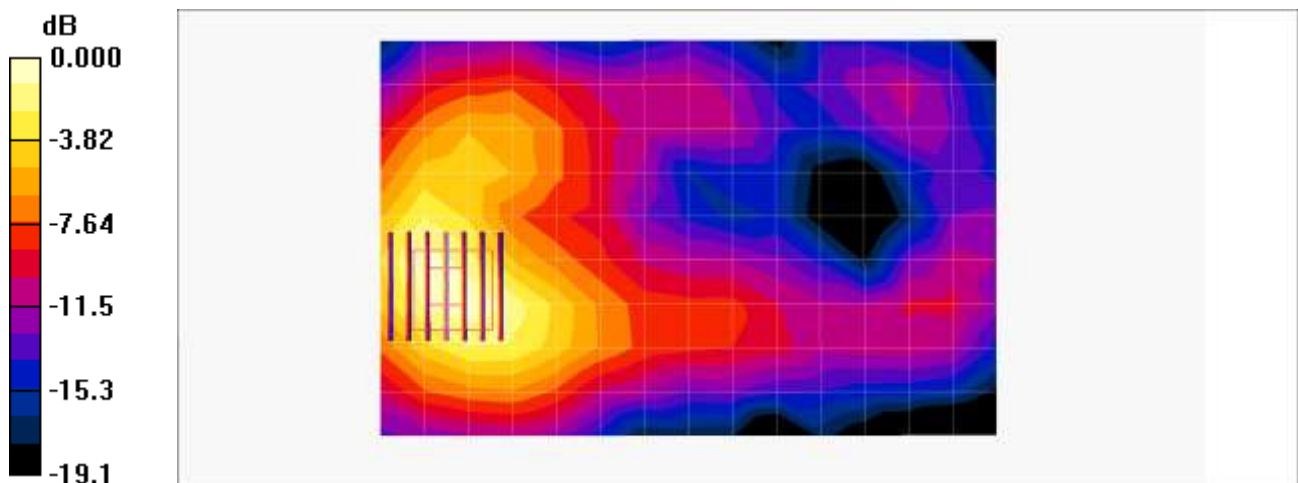
802.11b Body-Worn Rear 1Mbps 6ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.17 V/m; Power Drift = 0.162 dB

Peak SAR (extrapolated) = 0.238 W/kg

SAR(1 g) = 0.129 mW/g; SAR(10 g) = 0.070 mW/g

Maximum value of SAR (measured) = 0.182 mW/g



0 dB = 0.182mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 21.5 °C
Ambient Temperature: 21.8 °C
Test Date: 03/09/2016
Plot No.: 22

DUT: SM-J700T; Type: Bar

Communication System: Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 2441$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 53.5$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN7370; ConvF(7.16, 7.16, 7.16); Calibrated: 2015-09-01
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2015-10-07
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

BT Body-Worn Rear DH5 39ch/Area Scan (10x15x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.029 mW/g

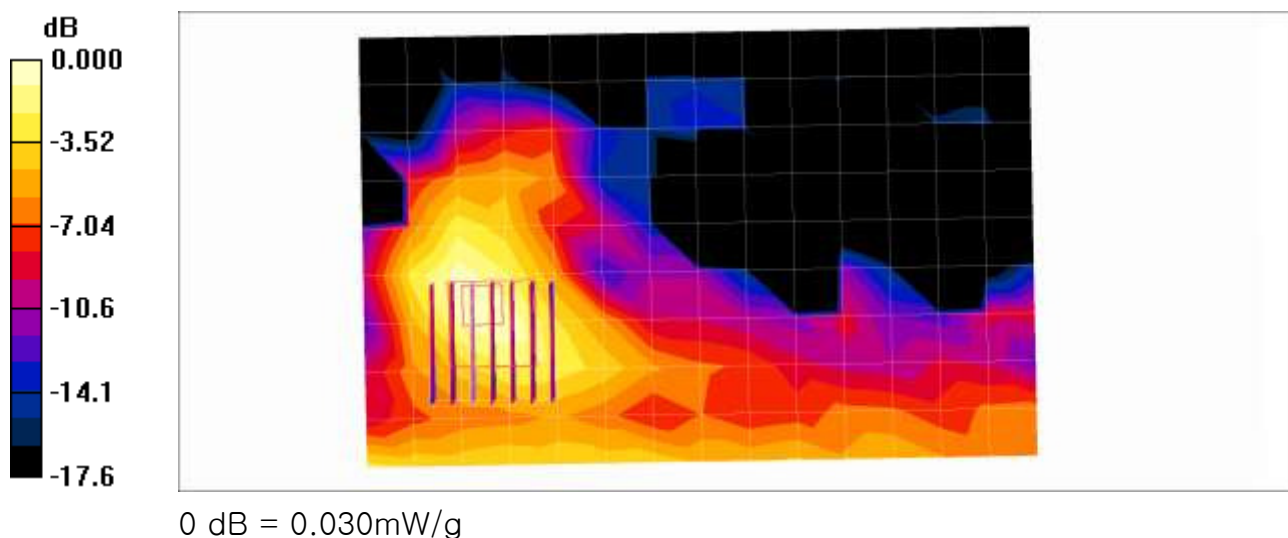
BT Body-Worn Rear DH5 39ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.41 V/m; Power Drift = -0.130 dB

Peak SAR (extrapolated) = 0.041 W/kg

SAR(1 g) = 0.022 mW/g; SAR(10 g) = 0.011 mW/g

Maximum value of SAR (measured) = 0.030 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 22.0 °C
Ambient Temperature: 22.2 °C
Test Date: 03/10/2016
Plot No.: 23

DUT: SM-J700T; Type: Bar

Communication System: WIFI 5GHz; Frequency: 5260 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5260$ MHz; $\sigma = 5.22$ mho/m; $\epsilon_r = 48.1$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN7370; ConvF(4.46, 4.46, 4.46); Calibrated: 2015-09-01
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2015-10-07
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

802.11a body Rear 52ch 6Mbps 15mm/Area Scan (11x18x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.408 mW/g

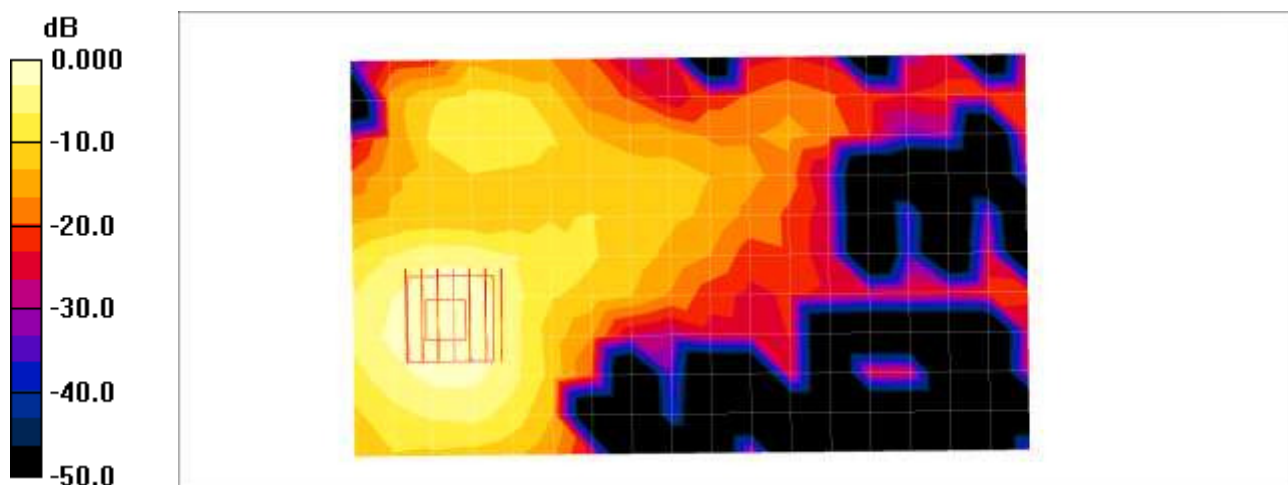
802.11a body Rear 52ch 6Mbps 15mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 1.14 V/m; Power Drift = 0.170 dB

Peak SAR (extrapolated) = 0.736 W/kg

SAR(1 g) = 0.201 mW/g; SAR(10 g) = 0.077 mW/g

Maximum value of SAR (measured) = 0.460 mW/g



0 dB = 0.460mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 20.2 °C
Ambient Temperature: 20.4 °C
Test Date: 02/29/2016
Plot No.: 24

DUT: SM-J700T; Type: Bar

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:4.15
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.968$ mho/m; $\epsilon_r = 54.1$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(10.05, 10.05, 10.05); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

GSM850 Body Rear 2Tx 190ch/Area Scan (13x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.403 mW/g

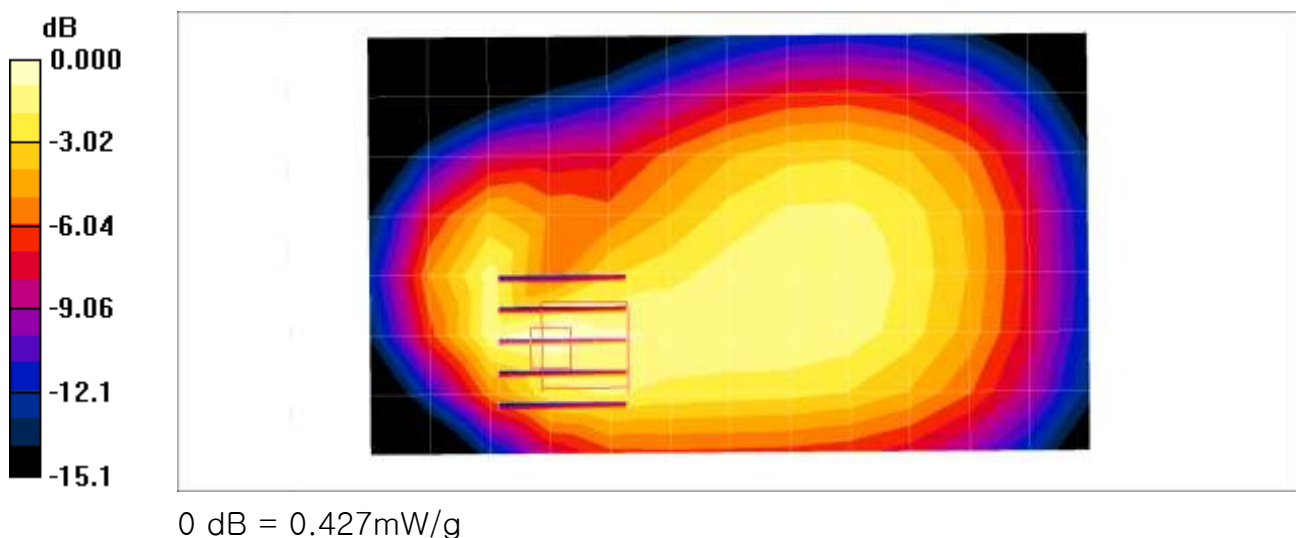
GSM850 Body Rear 2Tx 190ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.3 V/m; Power Drift = -0.118 dB

Peak SAR (extrapolated) = 0.530 W/kg

SAR(1 g) = 0.311 mW/g; SAR(10 g) = 0.199 mW/g

Maximum value of SAR (measured) = 0.427 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 20.5 °C
Ambient Temperature: 20.7 °C
Test Date: 03/02/2016
Plot No.: 25

DUT: SM-J700T; Type: Bar

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:4.15
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.48$ mho/m; $\epsilon_r = 52.4$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.72, 7.72, 7.72); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

GSM1900 Body Front 2Tx 661ch/Area Scan (13x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.575 mW/g

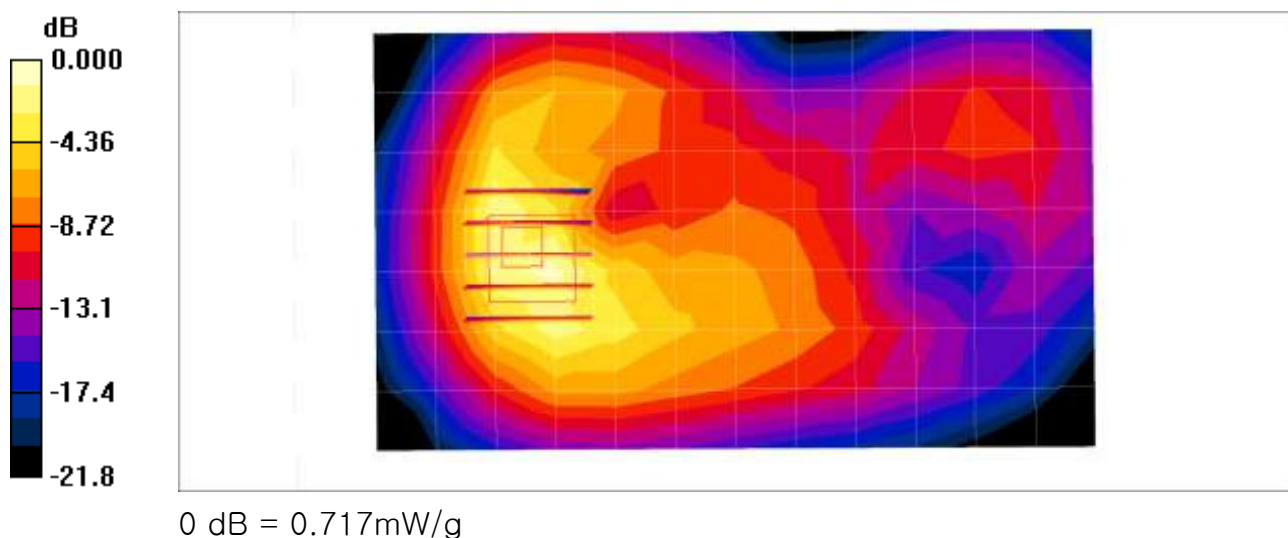
GSM1900 Body Front 2Tx 661ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.10 V/m; Power Drift = 0.057 dB

Peak SAR (extrapolated) = 0.888 W/kg

SAR(1 g) = 0.534 mW/g; SAR(10 g) = 0.299 mW/g

Maximum value of SAR (measured) = 0.717 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 20.2 °C
Ambient Temperature: 20.4 °C
Test Date: 02/29/2016
Plot No.: 26

DUT: SM-J700T; Type: Bar

Communication System: WCDMA850; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.968$ mho/m; $\epsilon_r = 54.1$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(10.05, 10.05, 10.05); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA850 Body Rear 4183ch/Area Scan (13x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.231 mW/g

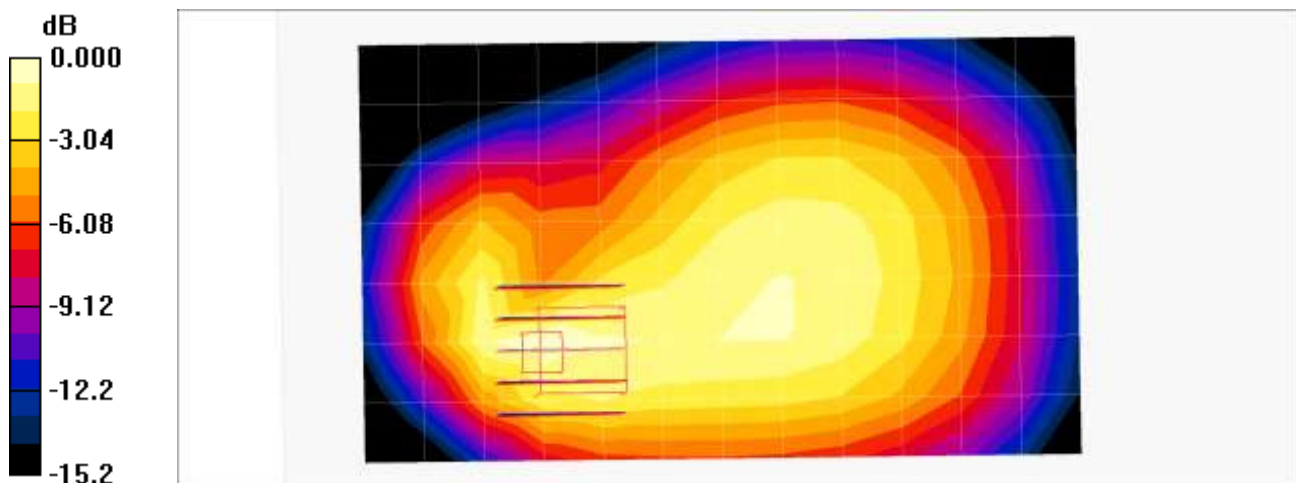
WCDMA850 Body Rear 4183ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 14.0 V/m; Power Drift = 0.057 dB

Peak SAR (extrapolated) = 0.302 W/kg

SAR(1 g) = 0.180 mW/g; SAR(10 g) = 0.117 mW/g

Maximum value of SAR (measured) = 0.246 mW/g



0 dB = 0.246mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: 03/10/2016
Plot No.: 27

DUT: SM-J700T; Type: Bar

Communication System: WCDMA IV; Frequency: 1752.6 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 1752.6$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.94, 7.94, 7.94); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA1700 Body Front 1512ch/Area Scan (13x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.935 mW/g

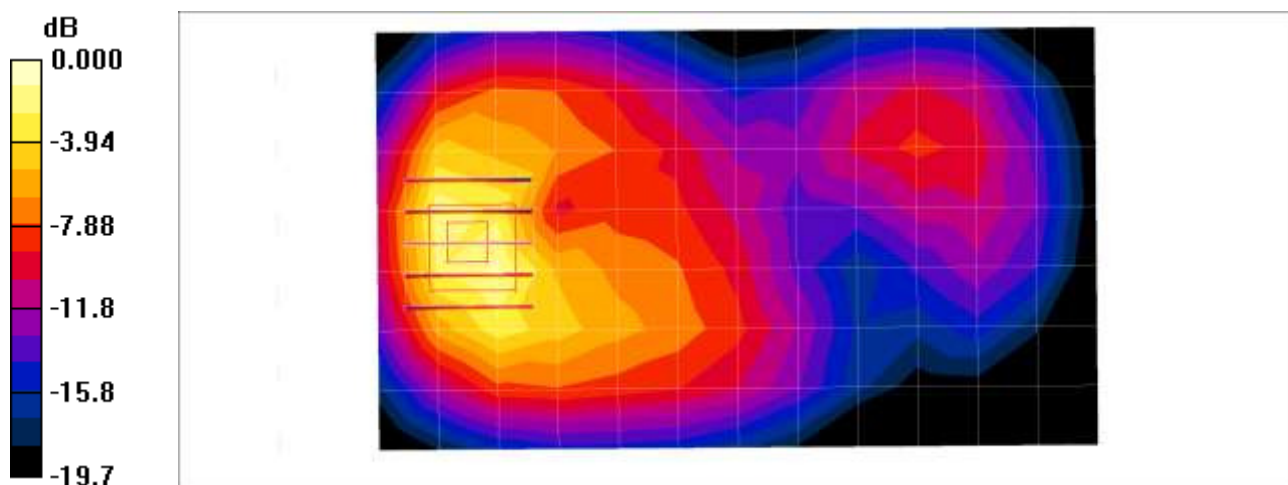
WCDMA1700 Body Front 1512ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.81 V/m; Power Drift = 0.050 dB

Peak SAR (extrapolated) = 1.43 W/kg

SAR(1 g) = 0.870 mW/g; SAR(10 g) = 0.479 mW/g

Maximum value of SAR (measured) = 1.18 mW/g



0 dB = 1.18mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 20.5 °C
Ambient Temperature: 20.7 °C
Test Date: 03/02/2016
Plot No.: 28

DUT: SM-J700T; Type: Bar

Communication System: WCDMA1900; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.48$ mho/m; $\epsilon_r = 52.4$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.72, 7.72, 7.72); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA1900 Body Front 9400ch/Area Scan (13x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.841 mW/g

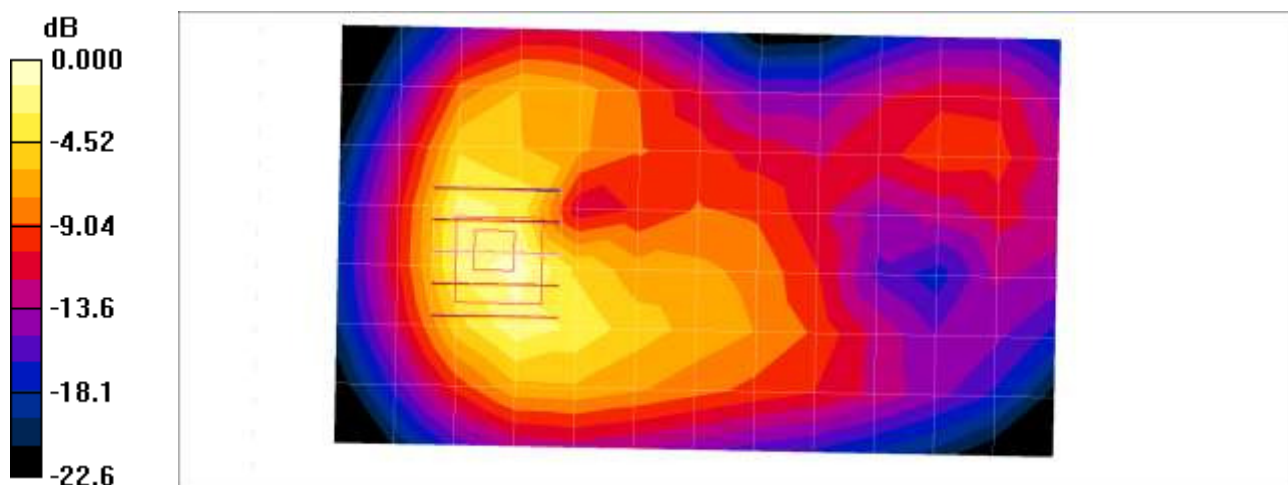
WCDMA1900 Body Front 9400ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.20 V/m; Power Drift = -0.038 dB

Peak SAR (extrapolated) = 1.18 W/kg

SAR(1 g) = 0.707 mW/g; SAR(10 g) = 0.394 mW/g

Maximum value of SAR (measured) = 0.962 mW/g



0 dB = 0.962mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 20.5 °C
Ambient Temperature: 20.7 °C
Test Date: 03/02/2016
Plot No.: 29

DUT: SM-J700T; Type: Bar

Communication System: LTE Band 2; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 1900$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 52.3$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.72, 7.72, 7.72); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

LTE2 Body Front QPSK 20MHz 50RB 25offset 19100ch/Area Scan (13x8x1): Measurement grid:

$dx=15$ mm, $dy=15$ mm

Maximum value of SAR (measured) = 0.952 mW/g

LTE2 Body Front QPSK 20MHz 50RB 25offset 19100ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

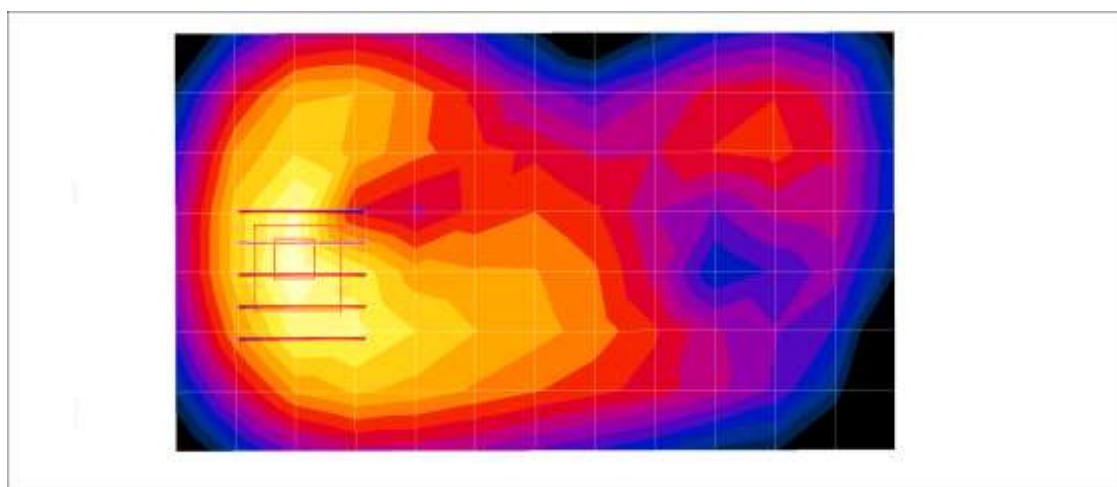
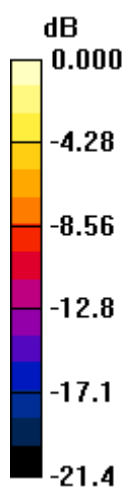
$dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 7.13 V/m; Power Drift = -0.115 dB

Peak SAR (extrapolated) = 1.22 W/kg

SAR(1 g) = 0.723 mW/g; SAR(10 g) = 0.399 mW/g

Maximum value of SAR (measured) = 0.942 mW/g



0 dB = 0.942mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: 03/10/2016
Plot No.: 30

DUT: SM-J700T; Type: Bar

Communication System: LTE Band 4; Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52.8$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.94, 7.94, 7.94); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

LTE4 Body Front QPSK 20MHz 1RB 99offset 20175ch/Area Scan (13x8x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.06 mW/g

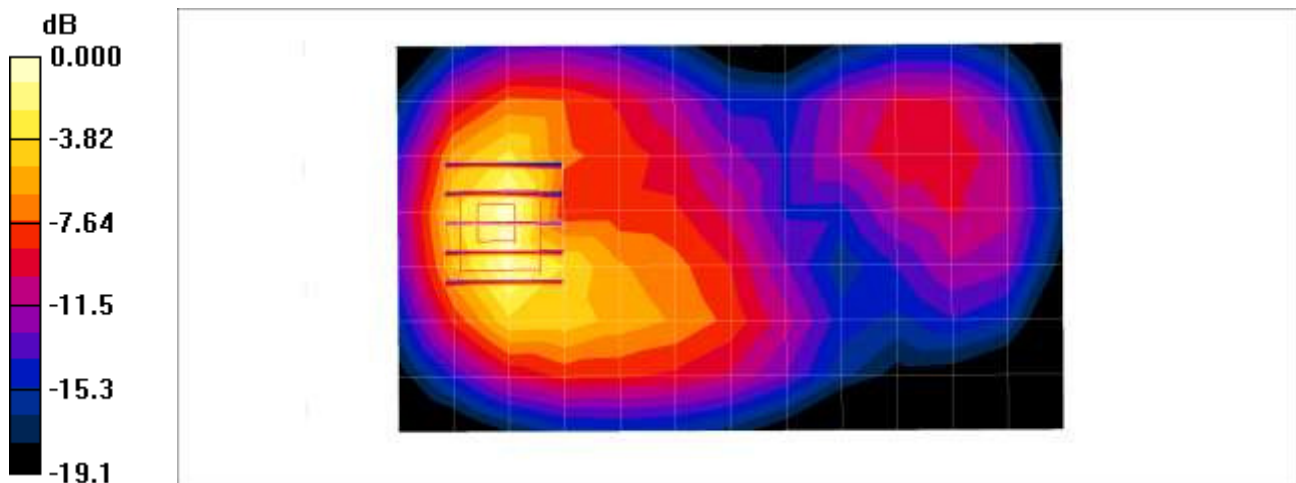
LTE4 Body Front QPSK 20MHz 1RB 99offset 20175ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.65 V/m; Power Drift = -0.050 dB

Peak SAR (extrapolated) = 1.42 W/kg

SAR(1 g) = 0.856 mW/g; SAR(10 g) = 0.472 mW/g

Maximum value of SAR (measured) = 1.16 mW/g



0 dB = 1.16mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 20.2 °C
Ambient Temperature: 20.4 °C
Test Date: 02/29/2016
Plot No.: 31

DUT: SM-J700T; Type: Bar

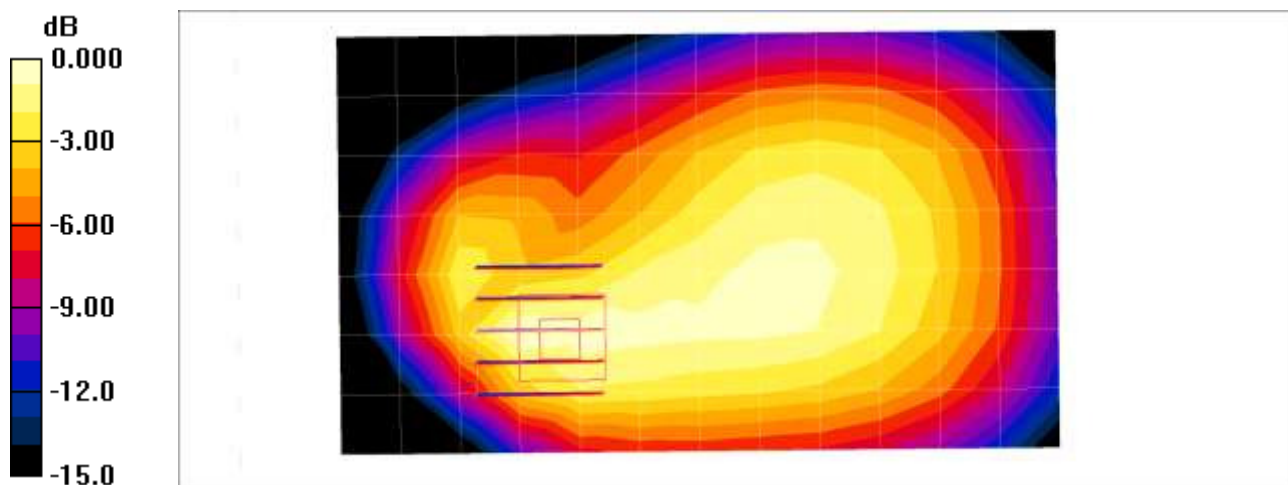
Communication System: LTE Band 5; Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 836.5$ MHz; $\sigma = 0.968$ mho/m; $\epsilon_r = 54.1$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(10.05, 10.05, 10.05); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

LTE5 Body Rear QPSK 10MHz 1RB 0offset 20525ch/Area Scan (13x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.181 mW/g

LTE5 Body Rear QPSK 10MHz 1RB 0offset 20525ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.5 V/m; Power Drift = 0.075 dB
Peak SAR (extrapolated) = 0.219 W/kg
SAR(1 g) = 0.133 mW/g; SAR(10 g) = 0.084 mW/g
Maximum value of SAR (measured) = 0.179 mW/g



0 dB = 0.179mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 19.2 °C
Ambient Temperature: 19.4 °C
Test Date: 03/08/2016
Plot No.: 32

DUT: SM-J700T; Type: Bar

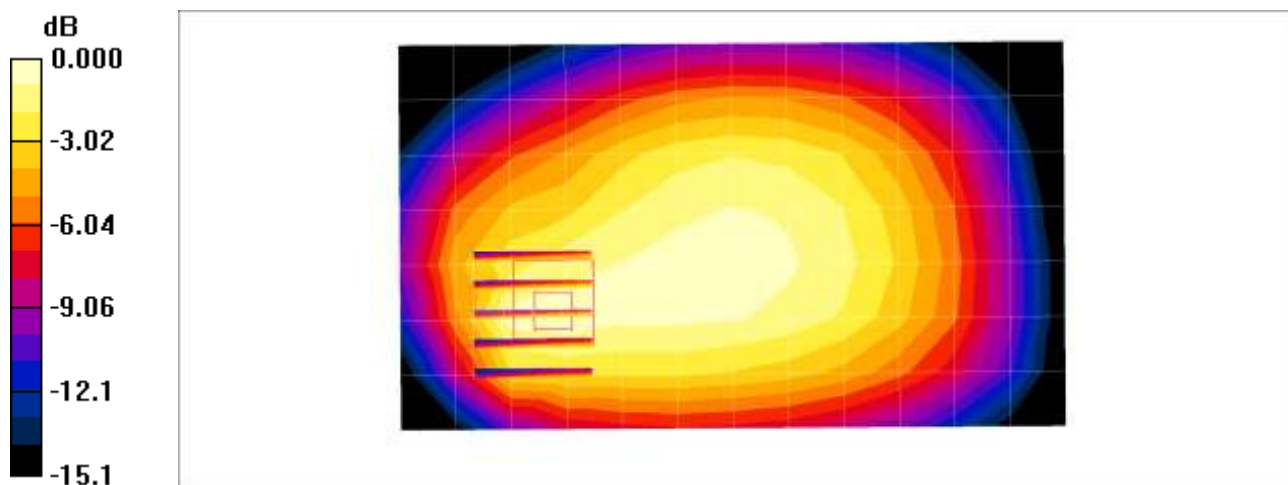
Communication System: LTE band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 707.5$ MHz; $\sigma = 0.946$ mho/m; $\epsilon_r = 55$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3967; ConvF(9.92, 9.92, 9.92); Calibrated: 2015-12-16
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

LTE band 12 Body Rear QPSK 10MHz 1RB 0offset 23095ch/Area Scan (13x8x1): Measurement grid:
dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.476 mW/g

LTE band 12 Body Rear QPSK 10MHz 1RB 0offset 23095ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.5 V/m; Power Drift = 0.070 dB
Peak SAR (extrapolated) = 0.621 W/kg
SAR(1 g) = 0.412 mW/g; SAR(10 g) = 0.279 mW/g
Maximum value of SAR (measured) = 0.518 mW/g



0 dB = 0.518mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 21.5 °C
Ambient Temperature: 21.8 °C
Test Date: 03/09/2016
Plot No.: 33

DUT: SM-J700T; Type: Bar

Communication System: 2450MHz FCC; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 2437$ MHz; $\sigma = 1.97$ mho/m; $\epsilon_r = 53.6$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN7370; ConvF(7.16, 7.16, 7.16); Calibrated: 2015-09-01
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2015-10-07
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

802.11b Body Rear 1Mbps 6ch/Area Scan (10x15x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 0.434 mW/g

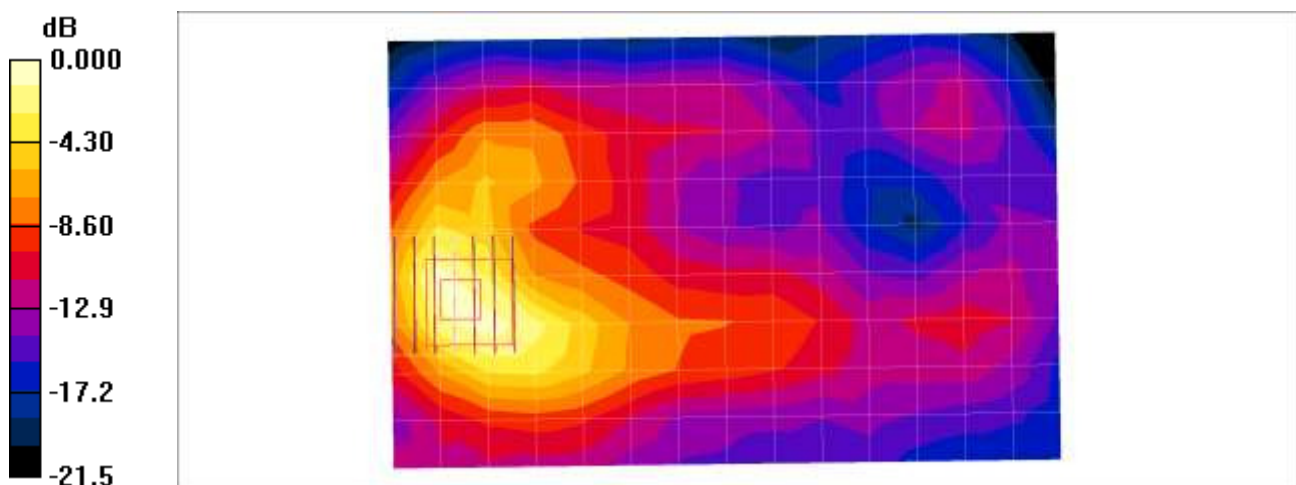
802.11b Body Rear 1Mbps 6ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.61 V/m; Power Drift = -0.150 dB

Peak SAR (extrapolated) = 0.673 W/kg

SAR(1 g) = 0.339 mW/g; SAR(10 g) = 0.166 mW/g

Maximum value of SAR (measured) = 0.499 mW/g



0 dB = 0.499mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 22.0 °C
Ambient Temperature: 22.4 °C
Test Date: 03/10/2016
Plot No.: 34

DUT: SM-J700T; Type: Bar

Communication System: WIFI 5GHz; Frequency: 5745 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5745 \text{ MHz}$; $\sigma = 6 \text{ mho/m}$; $\epsilon_r = 46.8$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN7370; ConvF(4.03, 4.03, 4.03); Calibrated: 2015-09-01
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2015-10-07
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

802.11a body Front 149ch 6Mbps/Area Scan (11x18x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$
Maximum value of SAR (measured) = 0.999 mW/g

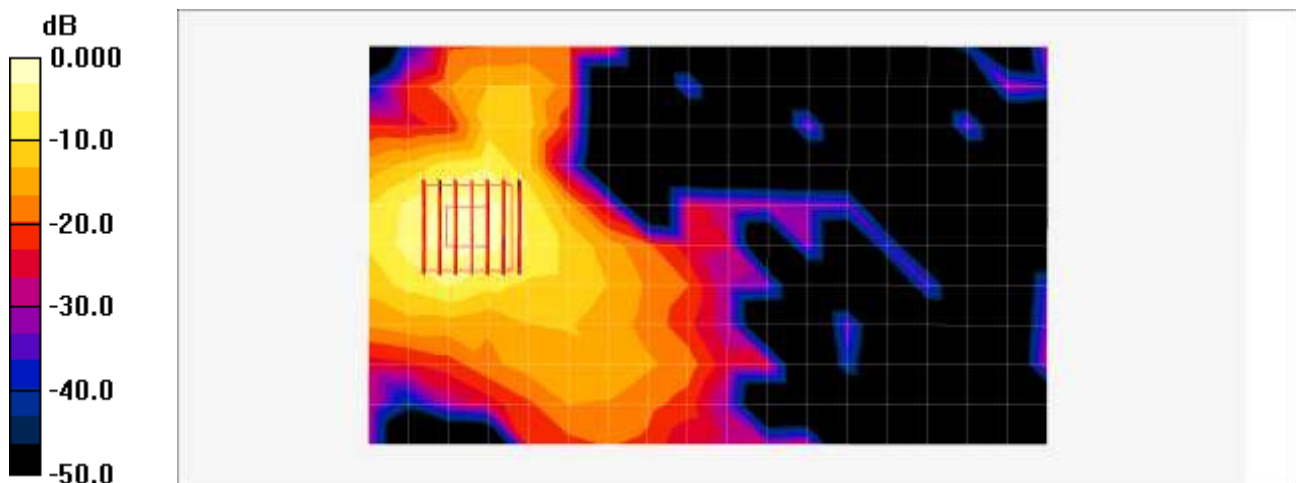
802.11a body Front 149ch 6Mbps/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$

Reference Value = 0.807 V/m; Power Drift = -0.176 dB

Peak SAR (extrapolated) = 2.19 W/kg

SAR(1 g) = 0.523 mW/g; SAR(10 g) = 0.171 mW/g

Maximum value of SAR (measured) = 1.31 mW/g



0 dB = 1.31mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 22.0 °C
Ambient Temperature: 22.4 °C
Test Date: 03/10/2016
Plot No.: 35

DUT: SM-J700T; Type: Bar

Communication System: WIFI 5GHz; Frequency: 5260 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5260$ MHz; $\sigma = 5.22$ mho/m; $\epsilon_r = 48.1$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN7370; ConvF(4.46, 4.46, 4.46); Calibrated: 2015-09-01
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2015-10-07
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

802.11a body Front 52ch 6Mbps/Area Scan (11x18x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 8.30 mW/g

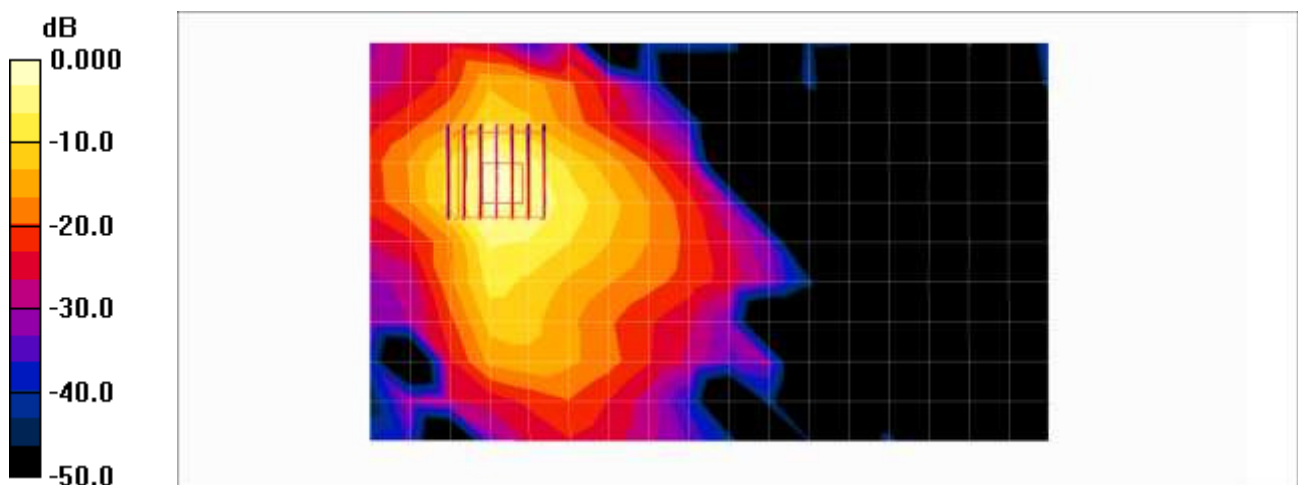
802.11a body Front 52ch 6Mbps/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 4.54 V/m; Power Drift = -0.110 dB

Peak SAR (extrapolated) = 19.6 W/kg

SAR(1 g) = 3.95 mW/g; SAR(10 g) = 1 mW/g

Maximum value of SAR (measured) = 10.8 mW/g



0 dB = 10.8mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Mobile Phone
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: 03/10/2016
Plot No.: 36

DUT: SM-J700T; Type: Bar

Communication System: WCDMA IV; Frequency: 1752.6 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 1752.6$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.94, 7.94, 7.94); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

WCDMA1700 Body Front 1512ch/Area Scan (13x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.932 mW/g

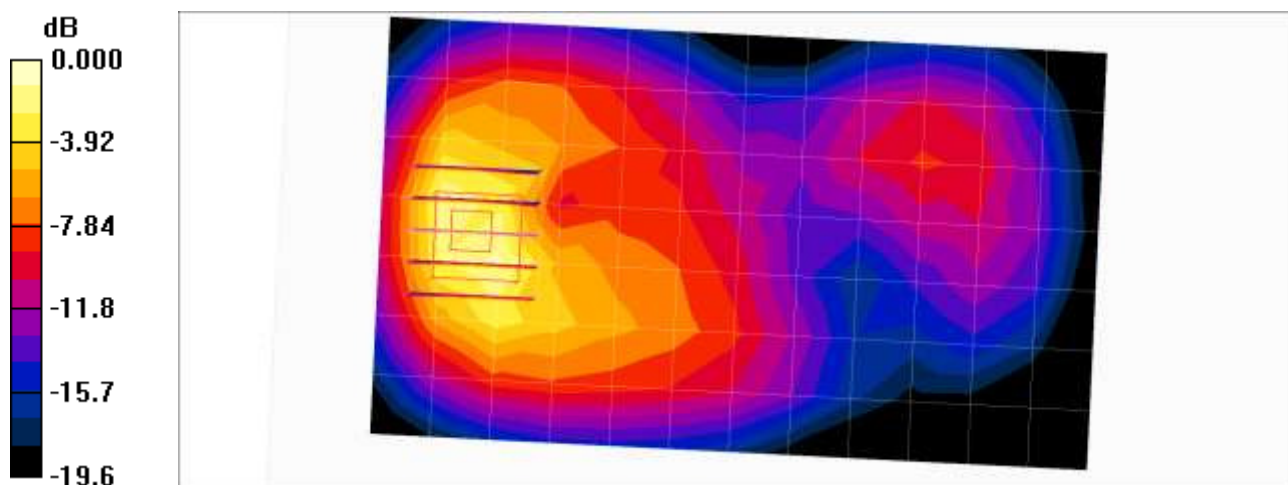
WCDMA1700 Body Front 1512ch/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.85 V/m; Power Drift = -0.116 dB

Peak SAR (extrapolated) = 1.43 W/kg

SAR(1 g) = 0.869 mW/g; SAR(10 g) = 0.480 mW/g

Maximum value of SAR (measured) = 1.18 mW/g



0 dB = 1.18mW/g

Attachment 2. – Dipole Verification Plots

■ Verification Data (750 MHz Head)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 19.6 °C
Test Date: 03/04/2016

DUT: Dipole 750 MHz D750V3; Type: D750V3

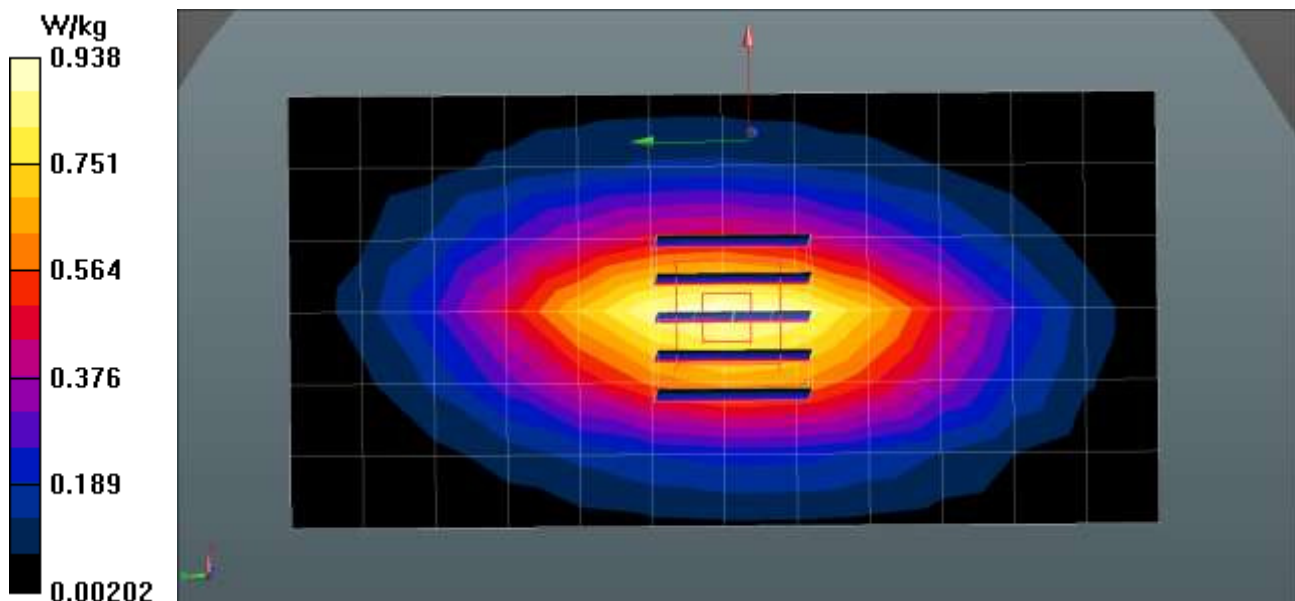
Communication System: UID 0, CW (0); Frequency: 750 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.91 \text{ S/m}$; $\epsilon_r = 42.819$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ET3DV6 - SN1605; ConvF(6.64, 6.64, 6.64); Calibrated: 2015-04-27;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn614; Calibrated: 2015-09-29
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (8);

750MHz Verification /Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 0.938 W/kg

750MHz Verification /Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 33.19 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.29 W/kg
SAR(1 g) = 0.882 W/kg; SAR(10 g) = 0.577 W/kg
Maximum value of SAR (measured) = 0.951 W/kg



■ Verification Data (750 MHz Body)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 19.2 °C
Test Date: 03/08/2016

DUT: Dipole 750 MHz; Type: D750V3

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.986 \text{ mho/m}$; $\epsilon_r = 54.5$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3967; ConvF(9.92, 9.92, 9.92); Calibrated: 2015-12-16
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

750MHz Body Verification/Area Scan (12x7x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 0.905 mW/g

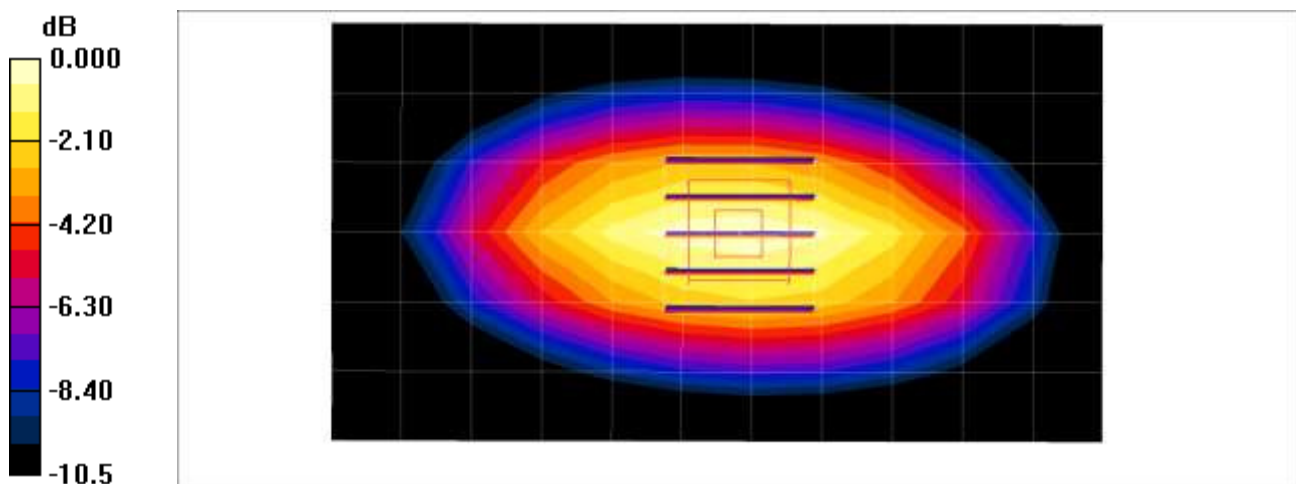
750MHz Body Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 30.4 V/m; Power Drift = 0.026 dB

Peak SAR (extrapolated) = 1.23 W/kg

SAR(1 g) = 0.841 mW/g; SAR(10 g) = 0.551 mW/g

Maximum value of SAR (measured) = 0.906 mW/g



0 dB = 0.906mW/g

■ Verification Data (835 MHz Head)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 19.9 °C
Test Date: 02/29/2016

DUT: Dipole 835 MHz D835V2; Type: D835V2

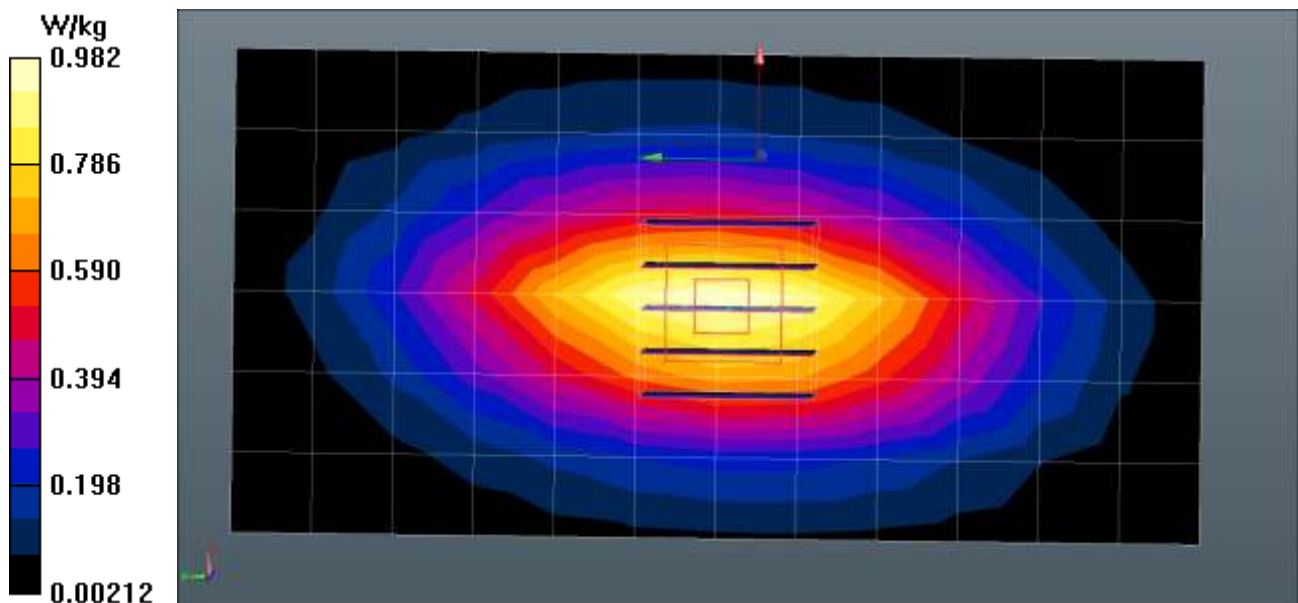
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.914 \text{ S/m}$; $\epsilon_r = 41.756$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ET3DV6 - SN1605; ConvF(6.33, 6.33, 6.33); Calibrated: 2015-04-27;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn614; Calibrated: 2015-09-29
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (8);

835MHz Head Verification/Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 0.982 W/kg

835MHz Head Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 33.99 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.34 W/kg
SAR(1 g) = 0.924 W/kg; SAR(10 g) = 0.606 W/kg
Maximum value of SAR (measured) = 0.997 W/kg



■ Verification Data (835 MHz Body)

Test Laboratory: HCT CO., LTD
Input Power 100 mW (20 dBm)
Liquid Temp: 20.2 °C
Test Date: 02/29/2016

DUT: Dipole 835 MHz; Type: D835V2

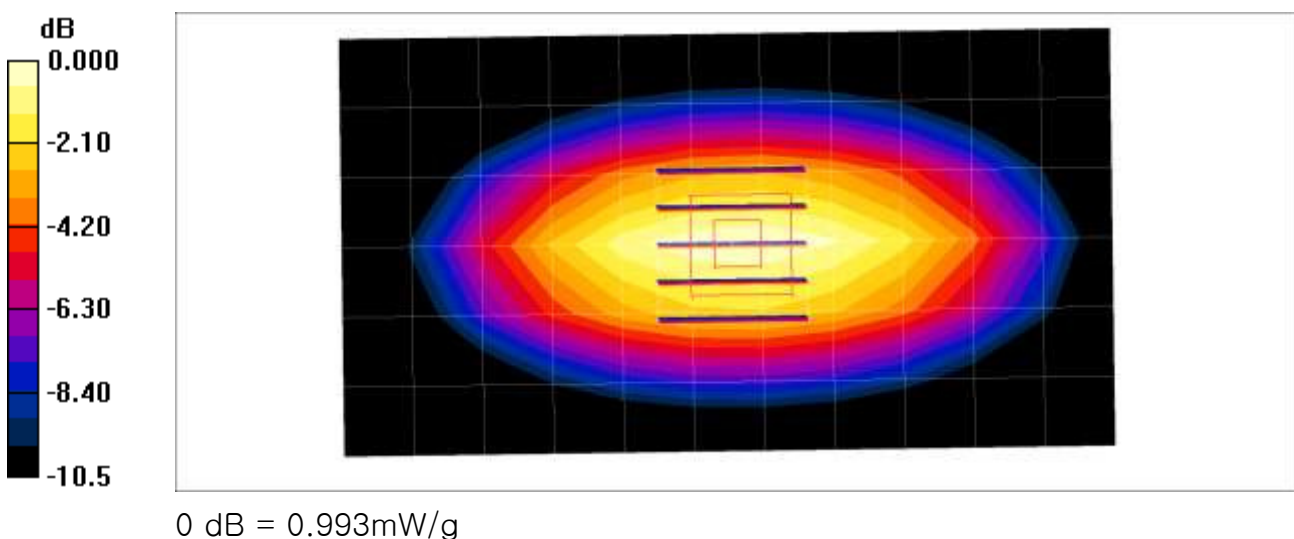
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.967 \text{ mho/m}$; $\epsilon_r = 54.1$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(10.05, 10.05, 10.05); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

835MHz Body Verification/Area Scan (12x7x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 0.985 mW/g

835MHz Body Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 32.1 V/m; Power Drift = 0.023 dB
Peak SAR (extrapolated) = 1.36 W/kg
SAR(1 g) = 0.919 mW/g; SAR(10 g) = 0.600 mW/g
Maximum value of SAR (measured) = 0.993 mW/g



■ Verification Data (1800 MHz Head)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 19.7 °C
Test Date: 03/02/2016

DUT: Dipole 1800 MHz D1800V2; Type: D1800V2

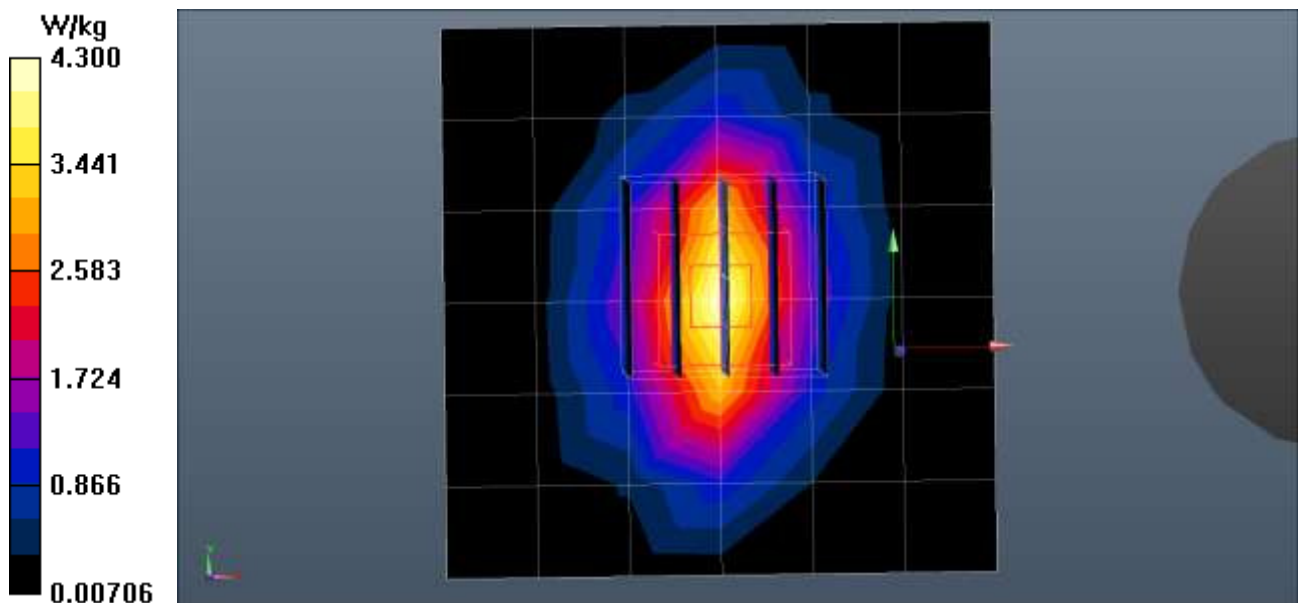
Communication System: UID 0, CW; Frequency: 1800 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 1800 \text{ MHz}$; $\sigma = 1.39 \text{ S/m}$; $\epsilon_r = 39.722$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ET3DV6 - SN1605; ConvF(5.2, 5.2, 5.2); Calibrated: 2015-04-27;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn614; Calibrated: 2015-09-29
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (8);

1800MHz Head Verification/Area Scan (7x7x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 4.30 W/kg

1800MHz Head Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 59.18 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 6.71 W/kg
SAR(1 g) = 3.83 W/kg; SAR(10 g) = 2 W/kg
Maximum value of SAR (measured) = 4.25 W/kg



■ Verification Data (1 800 MHz Body)

Test Laboratory: HCT CO., LTD
Input Power 100 mW (20 dBm)
Liquid Temp: 21.2 °C
Test Date: 03/10/2016

DUT: Dipole 1800 MHz; Type: D1800V2

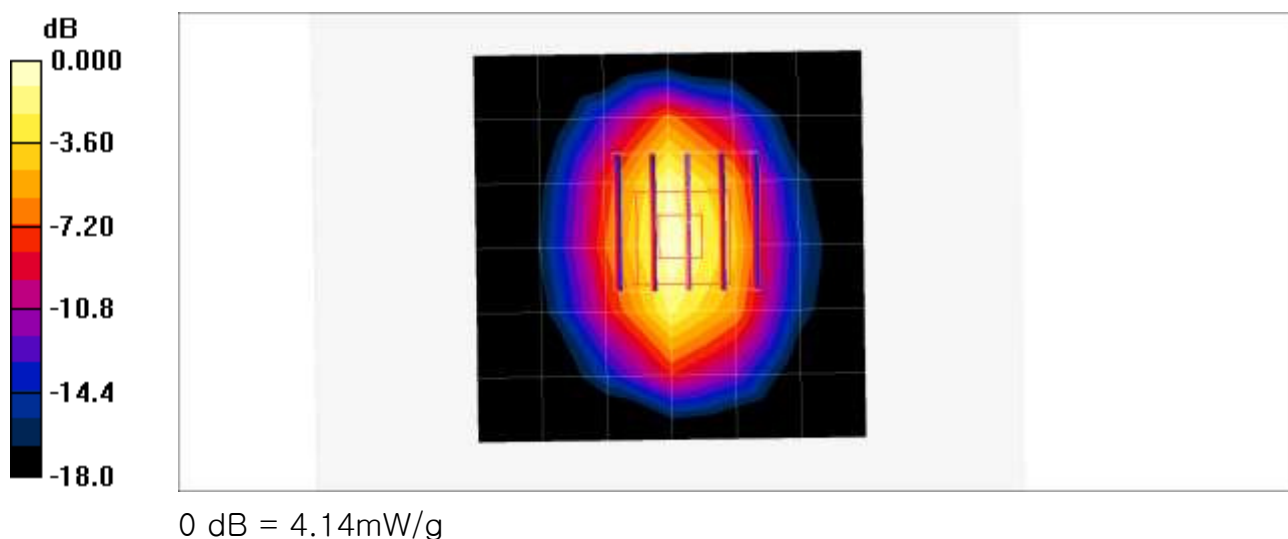
Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 1800$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 52.5$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.94, 7.94, 7.94); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

1800MHz Body Verification/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 4.07 mW/g

1800MHz Body Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 51.5 V/m; Power Drift = 0.006 dB
Peak SAR (extrapolated) = 6.79 W/kg
SAR(1 g) = 3.77 mW/g; SAR(10 g) = 1.99 mW/g
Maximum value of SAR (measured) = 4.14 mW/g



■ Verification Data (1900 MHz Head)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 19.4 °C
Test Date: 03/03/2016

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2

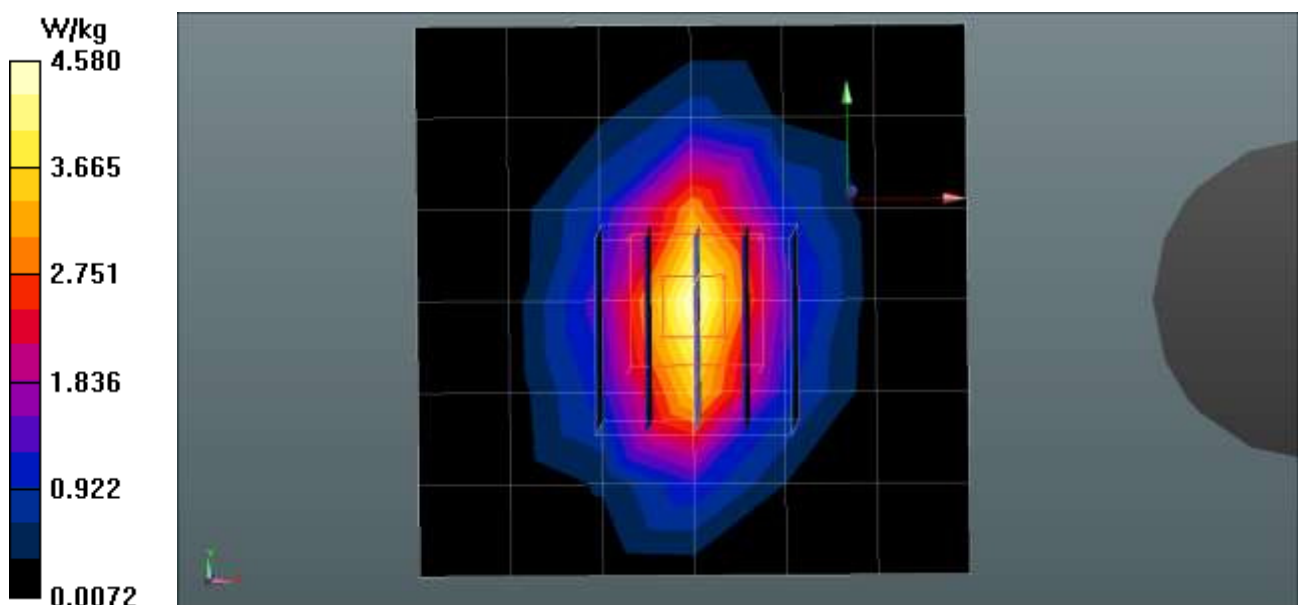
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 1900$ MHz; $\sigma = 1.38$ S/m; $\epsilon_r = 39.151$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ET3DV6 - SN1605; ConvF(5.01, 5.01, 5.01); Calibrated: 2015-04-27;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn614; Calibrated: 2015-09-29
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (8);

1900MHz Head Verification/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 4.58 W/kg

1900MHz Head Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 61.39 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 7.26 W/kg
SAR(1 g) = 4.06 W/kg; SAR(10 g) = 2.07 W/kg
Maximum value of SAR (measured) = 4.50 W/kg



■ Verification Data (1900 MHz Body)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 20.5 °C
Test Date: 03/02/2016

DUT: Dipole 1900 MHz; Type: D1900V2

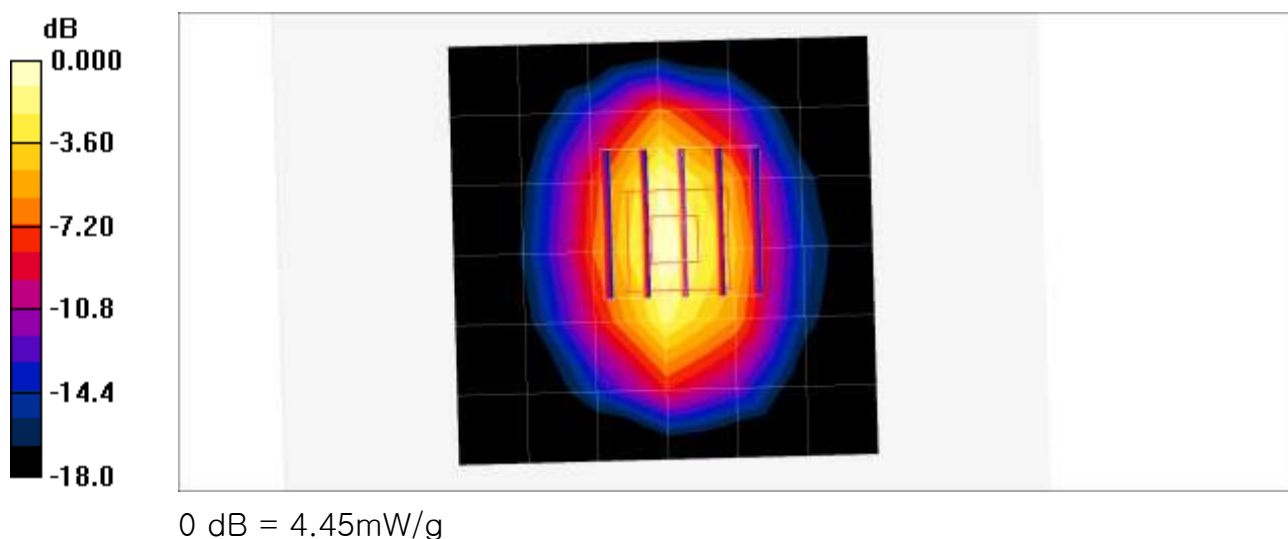
Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 1900$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 52.3$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.72, 7.72, 7.72); Calibrated: 2015-09-28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn652; Calibrated: 2016-01-22
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

1900MHz Body Verification/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 4.44 mW/g

1900MHz Body Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 54.3 V/m; Power Drift = -0.007 dB
Peak SAR (extrapolated) = 7.33 W/kg
SAR(1 g) = 4.07 mW/g; SAR(10 g) = 2.15 mW/g
Maximum value of SAR (measured) = 4.45 mW/g



■ Verification Data (2 450 MHz Head)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 19.6 °C
Test Date: 03/10/2016

DUT: Dipole 2450 MHz D2450V2; Type: D2450V2

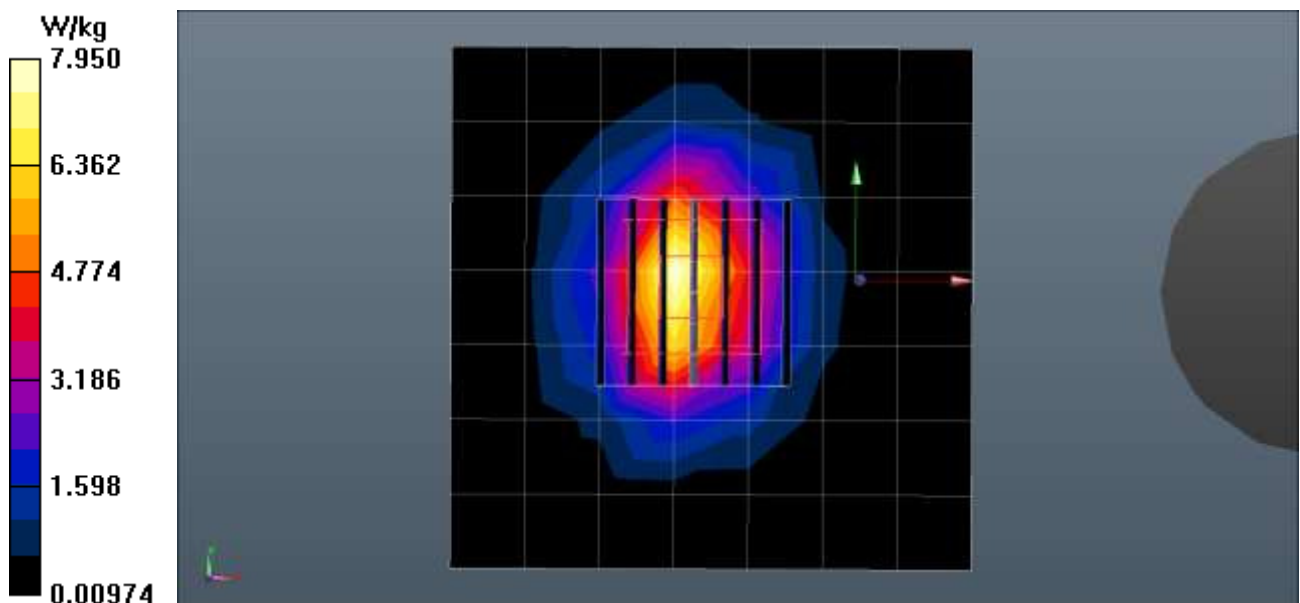
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 2450$ MHz; $\sigma = 1.803$ S/m; $\epsilon_r = 39.778$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3903; ConvF(7.35, 7.35, 7.35); Calibrated: 2015-09-28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2016-01-25
- Phantom: SAM
- Measurement SW: DASY52, Version 52.8 (8);

2450MHz Head Verification/Area Scan (8x8x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 7.95 W/kg

2450MHz Head Verification/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 68.71 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 11.6 W/kg
SAR(1 g) = 5.29 W/kg; SAR(10 g) = 2.41 W/kg
Maximum value of SAR (measured) = 8.29 W/kg



■ Verification Data (2 450 MHz Head)

Test Laboratory: HCT CO., LTD
Input Power 100 mW (20 dBm)
Liquid Temp: 21.5 °C
Test Date: 03/09/2016

DUT: Dipole 2450 MHz; Type: D2450V2

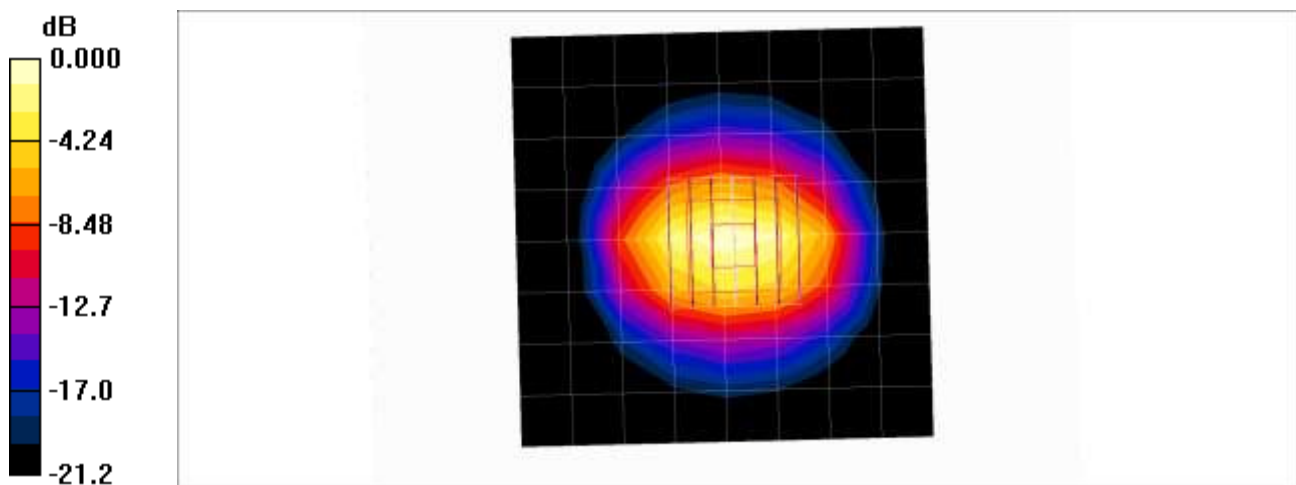
Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 2450$ MHz; $\sigma = 1.99$ mho/m; $\epsilon_r = 53.5$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN7370; ConvF(7.16, 7.16, 7.16); Calibrated: 2015-09-01
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2015-10-07
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

2450MHz Body Verification/Area Scan (9x9x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 7.69 mW/g

2450MHz Body Verification/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.8 V/m; Power Drift = -0.073 dB
Peak SAR (extrapolated) = 10.7 W/kg
SAR(1 g) = 5.33 mW/g; SAR(10 g) = 2.51 mW/g
Maximum value of SAR (measured) = 8.00 mW/g



0 dB = 8.00mW/g

■ Verification Data (5.25 GHz Head)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 20.4 °C
Test Date: 03/22/2016

DUT: Dipole 5GHz; Type: D5000V2

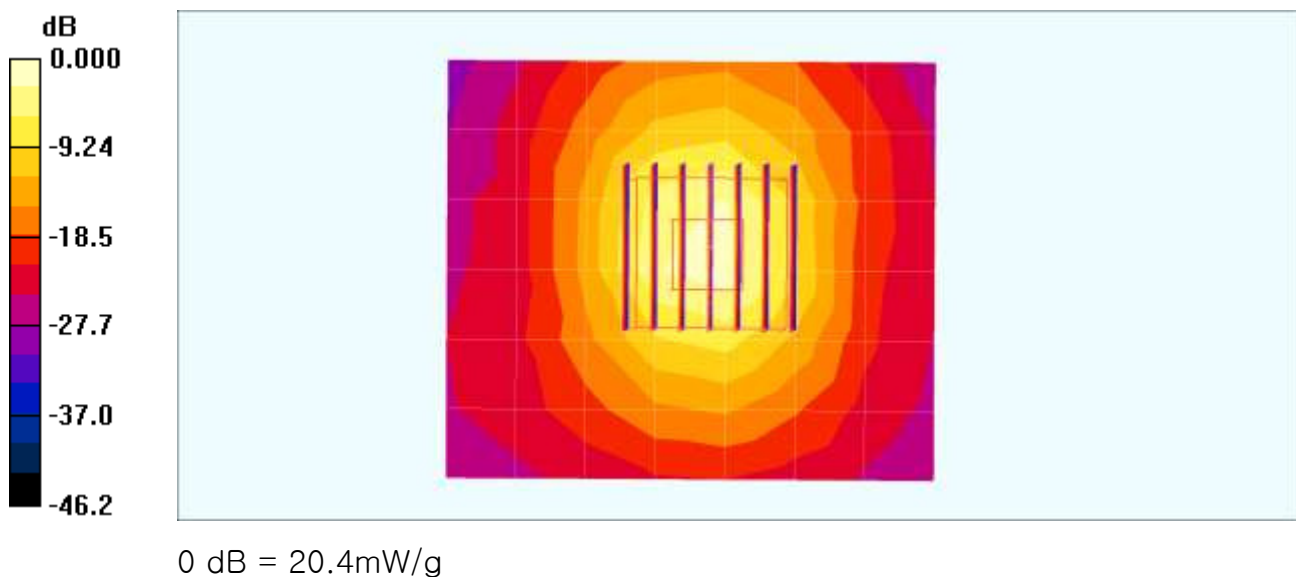
Communication System: CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 5250$ MHz; $\sigma = 4.56$ mho/m; $\epsilon_r = 36.6$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3968; ConvF(5.26, 5.26, 5.26); Calibrated: 2015-06-18
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1417; Calibrated: 2016-01-27
- Phantom: SAM
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

Verification 5250MHz/Area Scan (7x8x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 16.3 mW/g

Verification 5250MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 64.5 V/m; Power Drift = -0.082 dB
Peak SAR (extrapolated) = 33.6 W/kg
SAR(1 g) = 7.82 mW/g; SAR(10 g) = 2.2 mW/g
Maximum value of SAR (measured) = 20.4 mW/g



■ Verification Data (5.25 GHz Body)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 22.0 °C
Test Date: 03/10/2016

DUT: Dipole D5GHzV2; Type: D5GHzV2

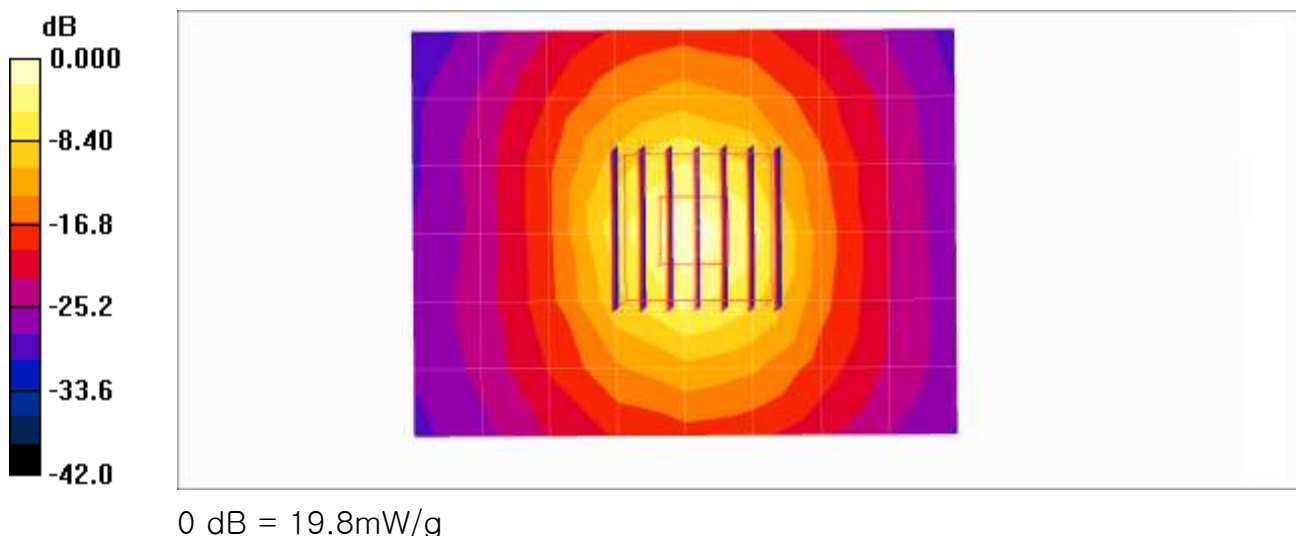
Communication System: CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 5250$ MHz; $\sigma = 5.2$ mho/m; $\epsilon_r = 48.1$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN7370; ConvF(4.64, 4.64, 4.64); Calibrated: 2015-09-01
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2015-10-07
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

5250MHz Body Verification/Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 19.0 mW/g

5250MHz Body Verification/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 70.0 V/m; Power Drift = -0.009 dB
Peak SAR (extrapolated) = 32.4 W/kg
SAR(1 g) = 7.73 mW/g; SAR(10 g) = 2.19 mW/g
Maximum value of SAR (measured) = 19.8 mW/g



■ Verification Data (5.75 GHz Head)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 20.4 °C
Test Date: 03/22/2016

DUT: Dipole 5GHz; Type: D5000V2

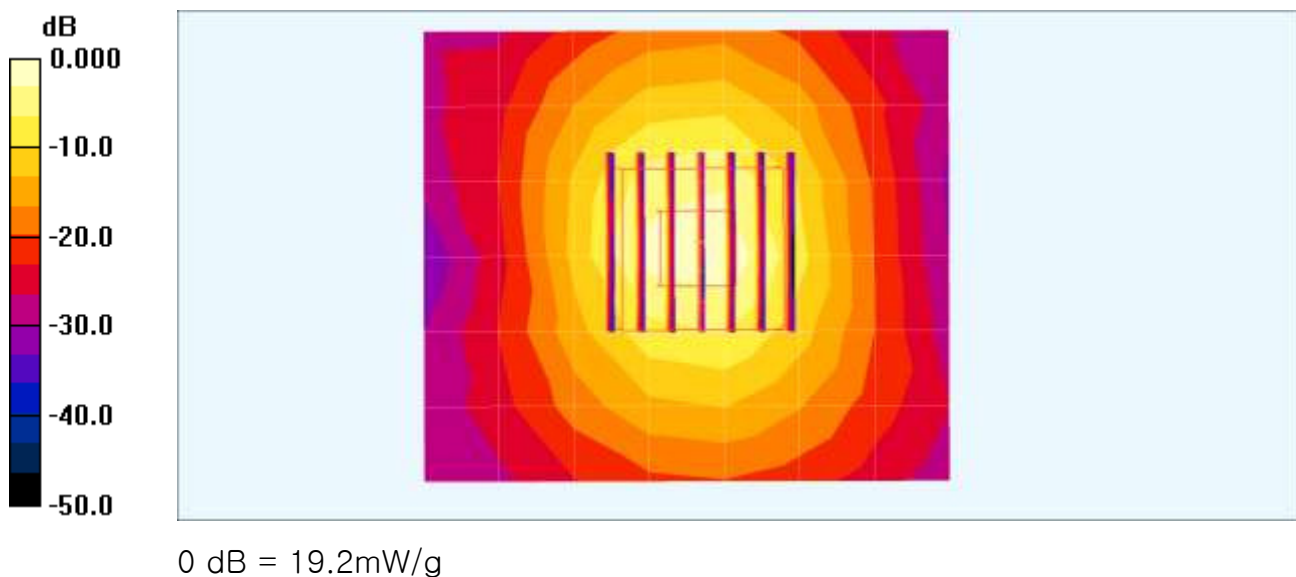
Communication System: CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 5750$ MHz; $\sigma = 5.15$ mho/m; $\epsilon_r = 35.3$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3968; ConvF(4.68, 4.68, 4.68); Calibrated: 2015-06-18
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1417; Calibrated: 2016-01-27
- Phantom: SAM
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

Verification 5750MHz/Area Scan (7x8x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 16.4 mW/g

Verification 5750MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 66.1 V/m; Power Drift = -0.062 dB
Peak SAR (extrapolated) = 32.9 W/kg
SAR(1 g) = 7.29 mW/g; SAR(10 g) = 2.08 mW/g
Maximum value of SAR (measured) = 19.2 mW/g



■ Verification Data (5.75 GHz Body)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 22.0 °C
Test Date: 03/10/2016

DUT: Dipole D5GHzV2; Type: D5GHzV2

Communication System: CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 5750$ MHz; $\sigma = 6.01$ mho/m; $\epsilon_r = 46.8$; $\rho = 1000$ kg/m³
Phantom section: Center Section

DASY4 Configuration:

- Probe: EX3DV4 - SN7370; ConvF(4.03, 4.03, 4.03); Calibrated: 2015-09-01
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2015-10-07
- Phantom: Triple Flat Phantom
- Measurement SW: DASY4, V4.7 Build 80
- Postprocessing SW: SEMCAD, V1.8 Build 186

5800MHz Body Verification/Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 19.8 mW/g

5800MHz Body Verification/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 66.6 V/m; Power Drift = 0.036 dB
Peak SAR (extrapolated) = 33.9 W/kg
SAR(1 g) = 7.25 mW/g; SAR(10 g) = 2.02 mW/g
Maximum value of SAR (measured) = 19.2 mW/g

