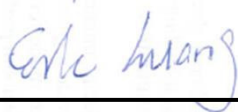


FCC SAR Test Report

APPLICANT : HTC Corporation
EQUIPMENT : Smartphone
MODEL NAME : 2PZF100
FCC ID : NM82PZF100
STANDARD : FCC 47 CFR Part 2 (2.1093)
ANSI/IEEE C95.1-1992
IEEE 1528-2013

We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.



Reviewed by: Eric Huang / Manager



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.)



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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA6N2506-02	Rev. 01	Initial issue of report	Jan. 25, 2017



1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for HTC Corporation, Smartphone, 2PZF100, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary				Highest Simultaneous Transmission 1g SAR (W/kg)
		Head (Separation 0mm)	Body-worn (Separation 10mm)	Hotspot (Separation 10mm)	Product Specific (Separation 0mm)	
		1g SAR (W/kg)			10g SAR (W/kg)	
Licensed	GSM850	0.08	0.20	0.20		1.39
	GSM1900	0.04	0.27	0.61		
	WCDMA II	0.04	0.30	0.60		
	WCDMA IV	0.06	0.64	1.19		
	WCDMA V	0.08	0.18	0.18		
	LTE Band 2	0.04	0.33	0.68		
	LTE Band 4	0.05	0.55	1.02		
	LTE Band 5	0.07	0.12	0.12		
	LTE Band 7	0.09	0.68	1.00		
	LTE Band 12 / 17	0.06	0.14	0.14		
LTE Band 38 / 41	0.05	0.47	0.67			
DTS	2.4GHz WLAN	0.72	0.14	0.14		1.39
NII	5GHz WLAN	1.03	0.22	0.16	0.54	1.26
DSS	Bluetooth	0.07	< 0.01			1.19
Date of Testing:		2016/12/27 ~ 2017/1/15				
Remark :						
1. LTE B17 / B38 SAR test was covered by B12 / B41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if <ol style="list-style-type: none"> the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band 						

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body, 4.0 W/kg for Product Specific) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications



2. Administration Data

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978

Applicant	
Company Name	HTC Corporation
Address	1F, 6-3 Baoqiang Rd., Xindian District, New Taipei City, Taiwan 231

Manufacturer	
Company Name	HTC Corporation
Address	1F, 6-3 Baoqiang Rd., Xindian District, New Taipei City, Taiwan 231

3. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01



4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Smartphone
Model Name	2PZF100
FCC ID	NM82PZF100
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS/DTM RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA LTE: QPSK, 16QAM 802.11 a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC:ASK
GSM / (E)GPRS Dual Transfer mode	Class A – EUT can support Packet Switched and Circuit Switched Network simultaneously.
EUT Stage	Production Unit
Remark:	
<ol style="list-style-type: none"> This device WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation. RF Exposure selected Sample 1 as the main testing and Sample 2 will select worst case found in Sample 1 performs, Sample list information please refer to the following table. 	



Sample List			
Sample 1	EUT with battery 1 and memory 1	S/N	HT6C51700070
Sample 2	EUT with battery 2 and memory 2	S/N	HT6C91700005

Accessories Information		
Battery 1	Brand Name	HTC
	Manufacturer	ATL
	Model Name	B2PFZ100
Battery 2	Brand Name	HTC
	Manufacturer	WTE
	Model Name	B2PFZ100
Earphone 1	Brand Name	Cotron
	Model Name	MAX 320
LCD Panel	Brand Name	LG
	Model Name	LH570
Memory 1	Brand Name	Hynix
	Model Name	H28U74301AMR
Memory 2	Brand Name	Samsung
	Model Name	KLUCG4J1CB-B0B1



4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																							
FCC ID	NM82PZF100																																						
Equipment Name	Smartphone																																						
Operating Frequency Range of each LTE transmission band	LTE Band 02: 1850 MHz ~ 1910 MHz LTE Band 04: 1710 MHz ~ 1755 MHz LTE Band 05: 824 MHz ~ 849 MHz LTE Band 07: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz																																						
Channel Bandwidth	LTE Band 02: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 04: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 05: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 07: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 12: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz																																						
uplink modulations used	QPSK, and 16QAM																																						
LTE Voice / Data requirements	Voice and Data : LTE Band 2 / 4 / 12 Data only : LTE Band 5 / 7 / 17 / 38 /41																																						
LTE MPR permanently built-in by design	<p align="center">Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (RB)</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 2</td> </tr> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)																																
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz																																	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1																																
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2																																
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)																																						
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																						
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations as below page and the detail power verification please referred to section12.																																						
LTE Carrier Aggregation Additional Information	This device does not support full CA features on 3GPP Release 10. It supports a maximum of 2 carriers in the downlink only. 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 features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.																																						



Transmission (H, M, L) channel numbers and frequencies in each LTE band																
LTE Band 2																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860				
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880				
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900				
LTE Band 4																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720				
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5				
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745				
LTE Band 5																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	20407	824.7	20415	825.5	20425	826.5	20450	829	20450	829	20450	829				
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5				
H	20643	848.3	20635	847.5	20625	846.5	20600	844	20600	844	20600	844				
LTE Band 7																
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510	20850	2510	20850	2510				
M	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535				
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560	21350	2560	21350	2560				
LTE Band 12																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	23017	699.7	23025	700.5	23035	701.5	23060	704	23060	704	23060	704				
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5				
H	23173	715.3	23165	714.5	23155	713.5	23130	711	23130	711	23130	711				
LTE Band 17																
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)		Channel #		Freq. (MHz)		Channel #		Freq. (MHz)	
L	23755		706.5		23780		709		23780		709		23780		709	
M	23790		710		23790		710		23790		710		23790		710	
H	23825		713.5		23800		711		23800		711		23800		711	
LTE Band 38																
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580	37850	2580	37850	2580				
M	38000	2595	38000	2595	38000	2595	38000	2595	38000	2595	38000	2595				
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610	38150	2610	38150	2610				
LTE Band 41																
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506	39750	2506	39750	2506				
L	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5	40185	2549.5	40185	2549.5				
M	40620	2593	40620	2593	40620	2593	40620	2593	40620	2593	40620	2593				
H	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5	41055	2636.5	41055	2636.5				
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680	41490	2680	41490	2680				



5. RF Exposure Limits

5.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

5.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The 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.

Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

1. Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

6. Specific Absorption Rate (SAR)

6.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

6.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

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

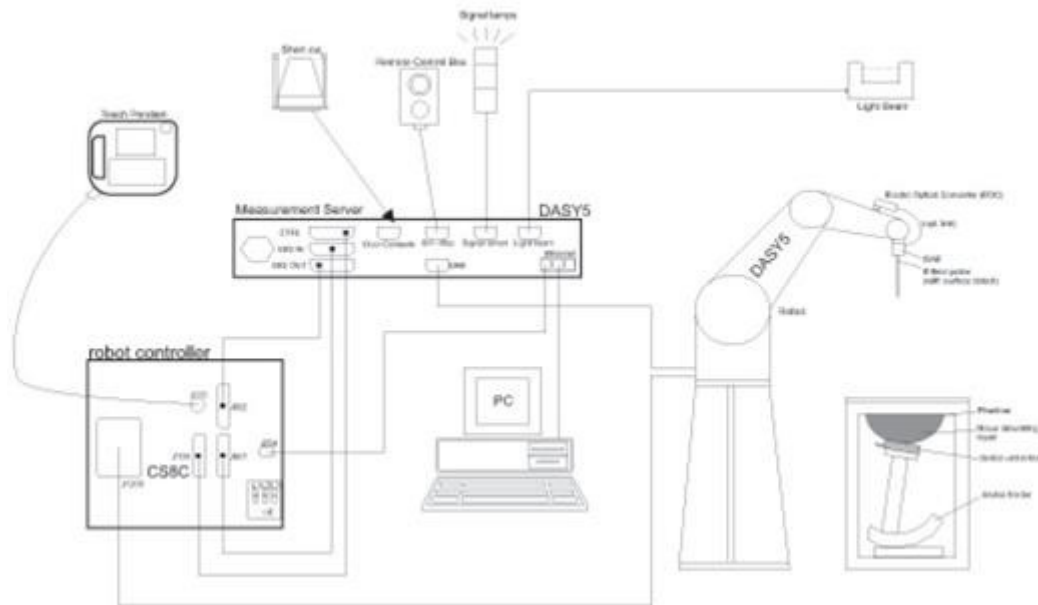
SAR is expressed in units of Watts per kilogram (W/kg)

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

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

7. System Description and Setup

The DASY system used for performing compliance tests consists of the following items:




- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.


7.1 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG). The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

<ES3DV3 Probe>

Construction	Symmetric design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – 4 GHz; Linearity: ± 0.2 dB (30 MHz – 4 GHz)	
Directivity	± 0.2 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)	
Dynamic Range	5 μ W/g – >100 mW/g; Linearity: ± 0.2 dB	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 3.9 mm (body: 12 mm) Distance from probe tip to dipole centers: 3.0 mm	

<EX3DV4 Probe>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – >6 GHz Linearity: ± 0.2 dB (30 MHz – 6 GHz)	
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)	
Dynamic Range	10 μ W/g – >100 mW/g Linearity: ± 0.2 dB (noise: typically <1 μ W/g)	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

7.2 Data Acquisition Electronics (DAE)

The data acquisition electronics (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 measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.


The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.



Fig 5.1 Photo of DAE

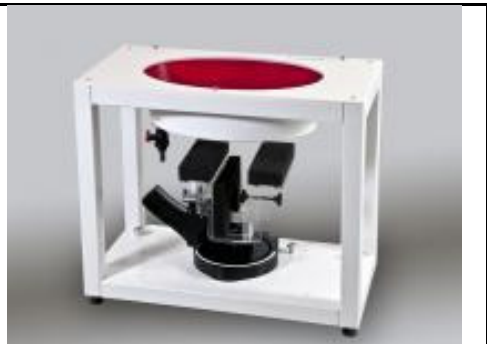
7.3 Phantom

<SAM Twin Phantom>

Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm	
Filling Volume	Approx. 25 liters	
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet	
Measurement Areas	Left Hand, Right Hand, Flat Phantom	

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

<ELI Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)	
Filling Volume	Approx. 30 liters	
Dimensions	Major ellipse axis: 600 mm Minor axis: 400 mm	

The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

7.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

In combination with the Twin SAM V5.0/V5.0c or ELI phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat). And upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

<Mounting Device for Laptops and other Body-Worn Transmitters>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.



Mounting Device for Laptops



8. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

- (a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
- (b) Read the WWAN RF power level from the base station simulator.
- (c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
- (d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

- (a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
- (b) Place the EUT in the positions as Appendix D demonstrates.
- (c) Set scan area, grid size and other setting on the DASY software.
- (d) Measure SAR results for the highest power channel on each testing position.
- (e) Find out the largest SAR result on these testing positions of each band
- (f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- (a) Power reference measurement
- (b) Area scan
- (c) Zoom scan
- (d) Power drift measurement

8.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- (a) Extraction of the measured data (grid and values) from the Zoom Scan
- (b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- (c) Generation of a high-resolution mesh within the measured volume
- (d) Interpolation of all measured values from the measurement grid to the high-resolution grid
- (e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- (f) Calculation of the averaged SAR within masses of 1g and 10g

8.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

8.3 Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

	≤ 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° ± 1°	20° ± 1°
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 ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

8.4 Zoom Scan

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

		≤ 3 GHz	> 3 GHz	
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 <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> 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.				

8.5 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

8.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASYS measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.



9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1012	May. 18, 2016	May. 17, 2017
SPEAG	835MHz System Validation Kit	D835V2	499	Mar. 21, 2016	Mar. 20, 2017
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 16, 2016	Nov. 15, 2017
SPEAG	1900MHz System Validation Kit	D1900V2	5d041	Sep. 30, 2016	Sep. 29, 2017
SPEAG	2450MHz System Validation Kit	D2450V2	926	Jul. 25, 2016	Jul. 24, 2017
SPEAG	2600MHz System Validation Kit	D2600V2	1008	Aug. 30, 2016	Aug. 29, 2017
SPEAG	5GHz System Validation Kit	D5GHzV2	1006	Sep. 27, 2016	Sep. 26, 2017
SPEAG	5GHz System Validation Kit	D5GHzV2	1040	Jun. 17, 2016	Jun. 16, 2017
SPEAG	5GHz System Validation Kit	D5GHzV2	1128	Jul. 27, 2016	Jul. 26, 2017
SPEAG	Data Acquisition Electronics	DAE3	495	May. 27, 2016	May. 26, 2017
SPEAG	Data Acquisition Electronics	DAE4	1399	Nov. 17, 2016	Nov. 16, 2017
SPEAG	Data Acquisition Electronics	DAE3	577	Sep. 28, 2016	Sep. 27, 2017
SPEAG	Data Acquisition Electronics	DAE4	778	May. 12, 2016	May. 11, 2017
SPEAG	Dosimetric E-Field Probe	EX3DV4	3925	May. 26, 2016	May. 25, 2017
SPEAG	Dosimetric E-Field Probe	EX3DV4	3955	Nov. 24, 2016	Nov. 23, 2017
SPEAG	Dosimetric E-Field Probe	EX3DV4	3931	Oct. 03, 2016	Oct. 02, 2017
SPEAG	Dosimetric E-Field Probe	ES3DV3	3270	Aug. 26, 2016	Aug. 25, 2017
WonDer	Thermometer	WD-5015	TM642	Oct. 12, 2016	Oct. 11, 2017
WonDer	Thermometer	WD-5015	TM281	Oct. 12, 2016	Oct. 11, 2017
Wisewind	Thermometer	HTC-1	TM560	Oct. 12, 2016	Oct. 11, 2017
Wisewind	Thermometer	HTC-1	TM225	Oct. 12, 2016	Oct. 11, 2017
Anritsu	Radio Communication Analyzer	MT8820C	6201381760	May. 10, 2016	May. 09, 2017
Agilent	Wireless Communication Test Set	E5515C	MY50266977	May. 17, 2016	May. 16, 2017
R&S	BT Base Station	CBT32	100519	Jun. 03, 2016	Jun. 02, 2017
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Dec. 09, 2016	Dec. 08, 2017
Agilent	ENA Network Analyzer	E5071C	MY46316648	Jan. 12, 2016	Jan. 11, 2017
Agilent	ENA Network Analyzer	E5071C	MY46316648	Jan. 04, 2017	Jan. 03, 2018
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Jul. 19, 2016	Jul. 18, 2017
LINE SEIKI	Digital Thermometer	LKMelectronic	DTM3000SPEZIAL	Sep. 05, 2016	Sep. 04, 2017
Anritsu	Power Meter	ML2495A	1419002	May. 10, 2016	May. 09, 2017
Anritsu	Power Sensor	MA2411B	1339124	May. 10, 2016	May. 09, 2017
Agilent	Spectrum Analyzer	E4408B	MY44211028	Aug. 22, 2016	Aug. 21, 2017
Mini-Circuits	Power Amplifier	ZVE-8G+	D120604	Mar. 16, 2016	Mar. 15, 2017
Mini-Circuits	Power Amplifier	ZHL-42W+	QA1344002	Mar. 16, 2016	Mar. 15, 2017
ATM	Dual Directional Coupler	C122H-10	P610410z-02	Note 1	
Woken	Attenuator 1	WK0602-XX	N/A	Note 1	
PE	Attenuator 2	PE7005-10	N/A	Note 1	
PE	Attenuator 3	PE7005- 3	N/A	Note 1	

General Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.

10. System Verification

10.1 Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASy, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 10.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 10.2.

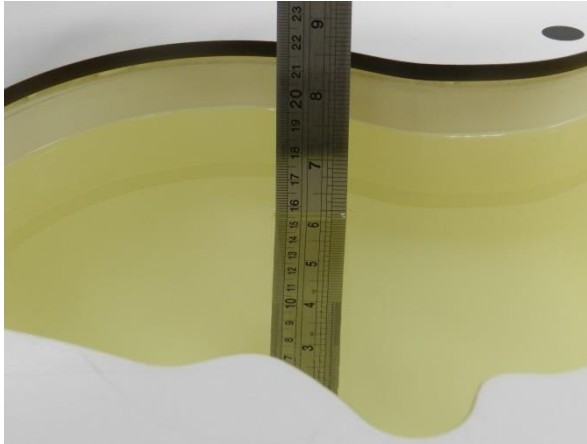


Fig 10.1 Photo of Liquid Height for Head SAR

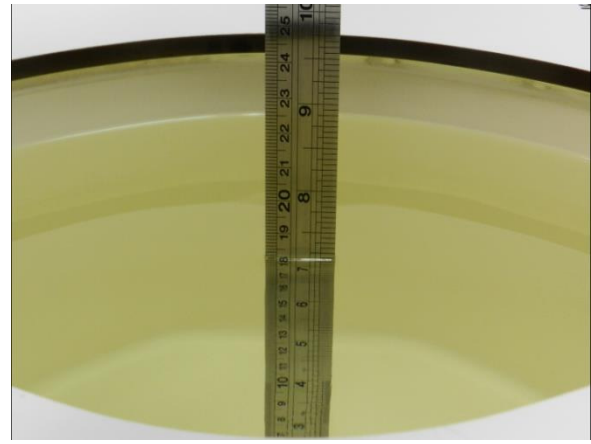


Fig 10.2 Photo of Liquid Height for Body SAR



10.2 Tissue Verification

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0
For Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7
2600	68.1	0	0	0.1	0	31.8	2.16	52.5

Simulating Liquid for 5GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%



<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ε _r)	Conductivity Target (σ)	Permittivity Target (ε _r)	Delta (σ) (%)	Delta (ε _r) (%)	Limit (%)	Date
750	HSL	22.6	0.892	43.159	0.89	41.90	0.22	3.00	±5	2017/1/11
750	MSL	22.4	0.957	56.062	0.96	55.50	-0.31	1.01	±5	2017/1/15
835	HSL	22.6	0.868	41.243	0.90	41.50	-3.56	-0.62	±5	2016/12/29
835	HSL	22.3	0.880	41.187	0.90	41.50	-2.22	-0.75	±5	2017/1/12
835	MSL	22.4	0.938	55.456	0.97	55.20	-3.30	0.46	±5	2017/1/15
1750	HSL	22.4	1.359	39.716	1.37	40.10	-0.80	-0.96	±5	2017/1/3
1750	HSL	22.0	1.369	40.623	1.37	40.10	-0.07	1.30	±5	2017/1/10
1750	MSL	22.4	1.493	54.569	1.49	53.40	0.20	2.19	±5	2017/1/14
1900	HSL	22.8	1.402	41.186	1.40	40.00	0.14	2.97	±5	2017/1/11
1900	MSL	22.6	1.552	54.953	1.52	53.30	2.11	3.10	±5	2017/1/13
2450	HSL	22.4	1.804	40.515	1.80	39.20	0.22	3.35	±5	2016/12/28
2450	HSL	22.2	1.823	40.656	1.80	39.20	1.28	3.71	±5	2017/1/4
2450	HSL	22.6	1.760	39.500	1.80	39.20	-2.22	0.77	±5	2017/1/12
2450	HSL	22.6	1.758	39.523	1.80	39.20	-2.33	0.82	±5	2017/1/12
2450	HSL	22.1	1.810	40.100	1.80	39.20	0.56	2.30	±5	2017/1/13
2450	MSL	22.4	1.953	52.970	1.95	52.70	0.15	0.51	±5	2016/12/28
2450	MSL	22.4	1.953	52.970	1.95	52.70	0.15	0.51	±5	2016/12/28
2600	HSL	22.1	1.995	38.999	1.96	39.00	1.79	0.00	±5	2017/1/10
2600	MSL	22.1	2.159	52.893	2.16	52.50	-0.05	0.75	±5	2017/1/10
2600	MSL	22.3	2.203	51.971	2.16	52.50	1.99	-1.01	±5	2017/1/12
5250	HSL	22.5	4.704	37.572	4.71	35.95	-0.13	4.51	±5	2016/12/27
5250	HSL	22.5	4.530	37.000	4.71	35.95	-3.82	2.92	±5	2017/1/14
5250	MSL	22.4	5.440	46.883	5.36	48.95	1.49	-4.22	±5	2016/12/29
5250	MSL	22.6	5.424	47.020	5.36	48.95	1.19	-3.94	±5	2017/1/5
5300	HSL	22.2	4.600	34.228	4.76	35.90	-3.36	-4.66	±5	2017/1/4
5600	HSL	22.5	5.061	37.049	5.07	35.50	-0.18	4.36	±5	2016/12/27
5600	HSL	22.2	4.874	33.825	5.07	35.50	-3.87	-4.72	±5	2017/1/4
5600	HSL	22.5	4.860	36.500	5.07	35.50	-4.14	2.82	±5	2017/1/14
5600	MSL	22.4	5.892	46.262	5.77	48.50	2.11	-4.61	±5	2016/12/29
5600	MSL	22.6	5.875	46.399	5.77	48.50	1.82	-4.33	±5	2017/1/5
5750	HSL	22.5	5.226	36.847	5.22	35.35	0.11	4.23	±5	2016/12/27
5750	HSL	22.5	5.020	36.100	5.22	35.35	-3.83	2.12	±5	2017/1/14
5750	MSL	22.4	6.098	46.020	5.94	48.28	2.66	-4.68	±5	2016/12/29
5800	HSL	22.2	5.060	33.574	5.27	35.30	-3.98	-4.89	±5	2017/1/4



10.3 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2017/1/11	750	HSL	250	D750V3-1012	ES3DV3 - SN3270	DAE4 Sn778	2.15	8.21	8.60	4.75
2017/1/15	750	MSL	250	D750V3-1012	ES3DV3 - SN3270	DAE4 Sn778	2.29	8.72	9.16	5.05
2016/12/29	835	HSL	250	D835V2-499	EX3DV4 - SN3931	DAE3 Sn577	2.22	9.14	8.88	-2.84
2017/1/12	835	HSL	250	D835V2-499	ES3DV3 - SN3270	DAE4 Sn778	2.43	9.14	9.72	6.35
2017/1/15	835	MSL	250	D835V2-499	ES3DV3 - SN3270	DAE4 Sn778	2.38	9.52	9.52	0.00
2017/1/3	1750	HSL	250	D1750V2-1068	EX3DV4 - SN3931	DAE3 Sn577	9.30	36.60	37.20	1.64
2017/1/10	1750	HSL	250	D1750V2-1068	ES3DV3 - SN3270	DAE4 Sn778	8.97	36.60	35.88	-1.97
2017/1/14	1750	MSL	250	D1750V2-1068	ES3DV3 - SN3270	DAE4 Sn778	9.34	36.20	37.36	3.20
2017/1/11	1900	HSL	250	D1900V2-5d041	ES3DV3 - SN3270	DAE4 Sn778	9.81	40.50	39.24	-3.11
2017/1/13	1900	MSL	250	D1900V2-5d041	ES3DV3 - SN3270	DAE4 Sn778	10.10	38.80	40.40	4.12
2016/12/28	2450	HSL	250	D2450V2-926	EX3DV4 - SN3955	DAE3 Sn495	13.20	52.80	52.80	0.00
2017/1/4	2450	HSL	250	D2450V2-926	EX3DV4 - SN3925	DAE3 Sn495	12.90	52.80	51.60	-2.27
2017/1/12	2450	HSL	250	D2450V2-926	EX3DV4 - SN3931	DAE3 Sn577	13.50	52.80	54.00	2.27
2017/1/12	2450	HSL	250	D2450V2-926	EX3DV4 - SN3925	DAE3 Sn495	13.00	52.80	52.00	-1.52
2017/1/13	2450	HSL	250	D2450V2-926	EX3DV4 - SN3931	DAE3 Sn577	13.90	52.80	55.60	5.30
2016/12/28	2450	MSL	250	D2450V2-926	EX3DV4 - SN3955	DAE3 Sn495	12.50	51.20	50.00	-2.34
2016/12/28	2450	MSL	250	D2450V2-926	EX3DV4 - SN3931	DAE3 Sn577	13.40	51.20	53.60	4.69
2017/1/10	2600	HSL	250	D2600V2-1008	ES3DV3 - SN3270	DAE4 Sn778	14.40	56.80	57.60	1.41
2017/1/10	2600	MSL	250	D2600V2-1008	ES3DV3 - SN3270	DAE4 Sn778	14.20	55.20	56.80	2.90
2017/1/12	2600	MSL	250	D2600V2-1008	ES3DV3 - SN3270	DAE4 Sn778	14.60	55.20	58.40	5.80
2016/12/27	5250	HSL	100	D5GHzV2-1128	EX3DV4 - SN3931	DAE3 Sn577	7.33	77.90	73.30	-5.91
2017/1/14	5250	HSL	100	D5GHzV2-1006	EX3DV4 - SN3931	DAE3 Sn577	7.71	80.60	77.10	-4.34
2016/12/29	5250	MSL	100	D5GHzV2-1128	EX3DV4 - SN3955	DAE3 Sn495	7.78	74.50	77.80	4.43
2017/1/5	5250	MSL	100	D5GHzV2-1006	EX3DV4 - SN3931	DAE3 Sn577	7.44	75.50	74.40	-1.46
2017/1/4	5300	HSL	100	D5GHzV2-1040	EX3DV4 - SN3925	DAE3 Sn495	8.03	81.70	80.30	-1.71
2016/12/27	5600	HSL	100	D5GHzV2-1128	EX3DV4 - SN3955	DAE4 Sn1399	8.59	81.20	85.90	5.79
2017/1/4	5600	HSL	100	D5GHzV2-1040	EX3DV4 - SN3925	DAE3 Sn495	8.59	80.50	85.90	6.71
2017/1/14	5600	HSL	100	D5GHzV2-1006	EX3DV4 - SN3931	DAE3 Sn577	8.60	83.80	86.00	2.63
2016/12/29	5600	MSL	100	D5GHzV2-1128	EX3DV4 - SN3955	DAE3 Sn495	8.36	78.00	83.60	7.18
2017/1/5	5600	MSL	100	D5GHzV2-1006	EX3DV4 - SN3931	DAE3 Sn577	8.19	78.60	81.90	4.20
2016/12/27	5750	HSL	100	D5GHzV2-1128	EX3DV4 - SN3955	DAE4 Sn1399	7.46	77.90	74.60	-4.24
2017/1/14	5750	HSL	100	D5GHzV2-1006	EX3DV4 - SN3931	DAE3 Sn577	8.30	80.50	83.00	3.11
2016/12/29	5750	MSL	100	D5GHzV2-1006	EX3DV4 - SN3955	DAE3 Sn495	6.91	74.60	69.10	-7.37
2017/1/4	5800	HSL	100	D5GHzV2-1040	EX3DV4 - SN3925	DAE3 Sn495	7.94	75.90	79.40	4.61

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2017/1/5	5250	MSL	100	D5GHzV2-1006	EX3DV4 - SN3931	DAE3 Sn577	1.98	21.20	19.80	-6.60
2017/1/5	5600	MSL	100	D5GHzV2-1006	EX3DV4 - SN3931	DAE3 Sn577	2.27	22.00	22.70	3.18

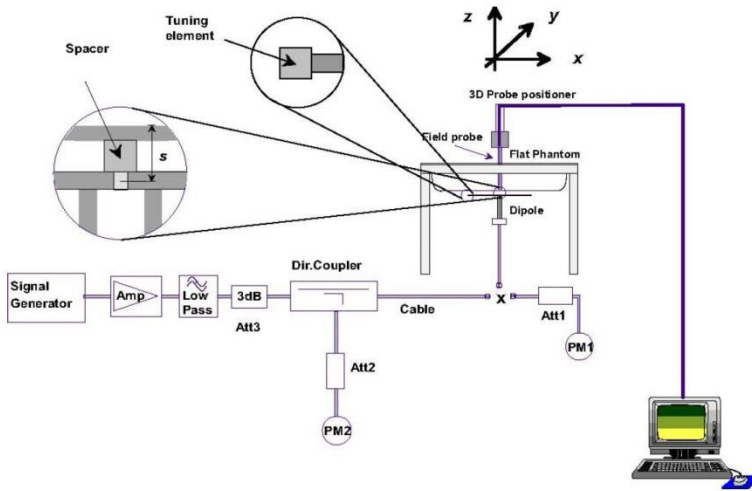


Fig 8.3.1 System Performance Check Setup



Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 Ear and handset reference point

Figure 9.1.1 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 15 mm along the B-M (back-mouth) line behind the entrance-to-ear-canal (EEC) point, as shown in Figure 9.1.2 The Reference Plane is defined as passing through the two ear reference points and point M. The line N-F (neck-front), also called the reference pivoting line, is normal to the Reference Plane and perpendicular to both a line passing through RE and LE and the B-M line (see Figure 9.1.3). Both N-F and B-M lines should be marked on the exterior of the phantom shell to facilitate handset positioning. Posterior to the N-F line the ear shape is a flat surface with 6 mm thickness at each ERP, and forward of the N-F line the ear is truncated, as illustrated in Figure 9.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

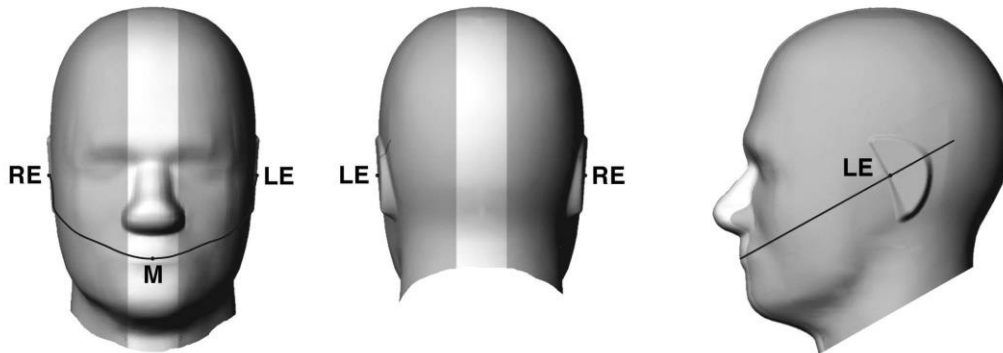


Fig 9.1.1 Front, back, and side views of SAM twin phantom

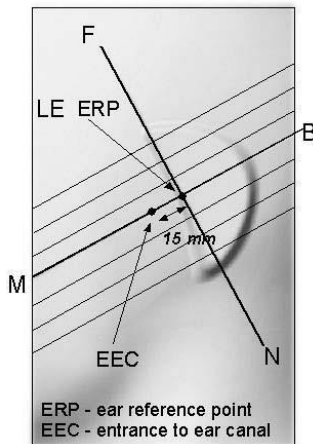


Fig 9.1.2 Close-up side view of phantom showing the ear region.

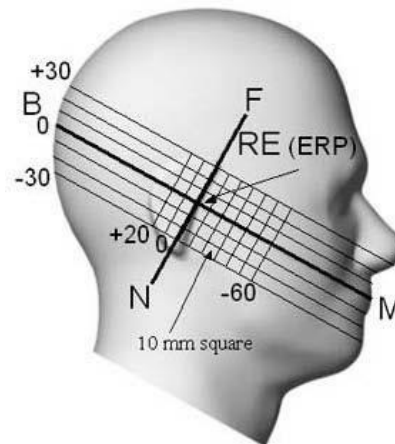


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

11.2 Definition of the cheek position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width w_t of the handset at the level of the acoustic output (point A in Figure 9.2.1 and Figure 9.2.2), and the midpoint of the width w_b of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 9.2.1). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 9.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 9.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 9.2.3. The actual rotation angles should be documented in the test report.

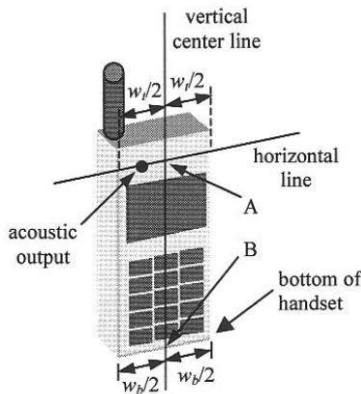


Fig 9.2.1 Handset vertical and horizontal reference lines—“fixed case”

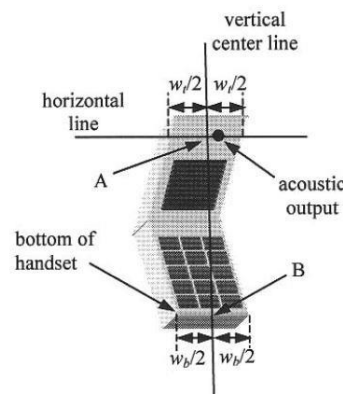


Fig 9.2.2 Handset vertical and horizontal reference lines—“clam-shell case”

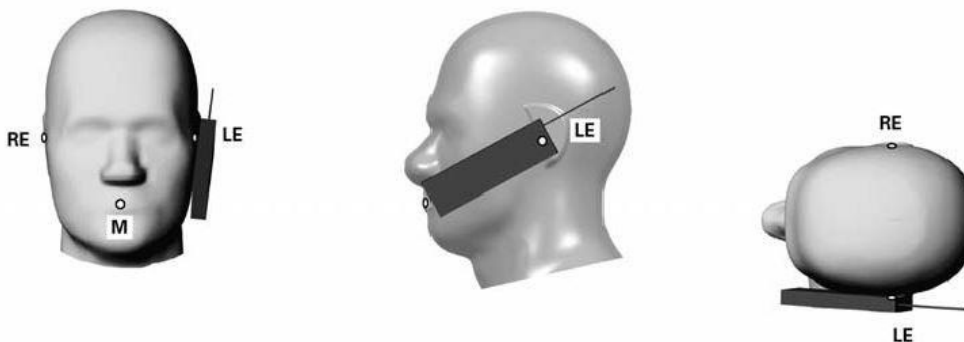


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

11.3 Definition of the tilt position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. While maintaining the orientation of the handset, move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15°.
3. Rotate the handset around the horizontal line by 15°.
4. While maintaining the orientation of the handset, move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact point is on the pinna. See Figure 9.3.1. If contact occurs at any location other than the pinna, e.g., the antenna at the back of the phantom head, the angle of the handset should be reduced. In this case, the tilt position is obtained if any point on the handset is in contact with the pinna and a second point

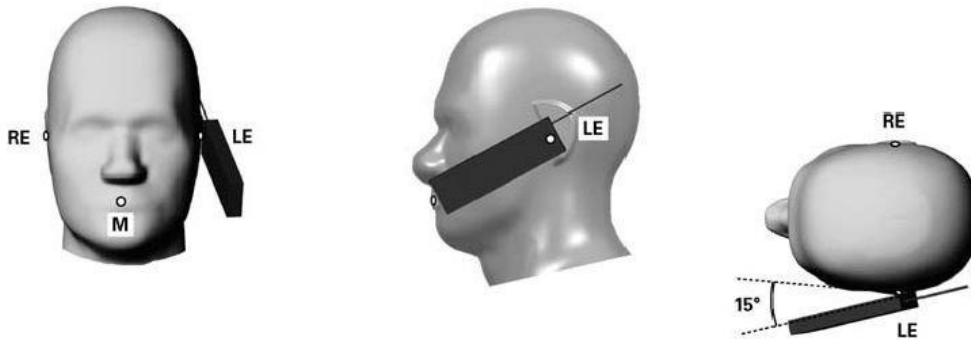


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

11.4 Body Worn Accessory

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 9.4). Per KDB648474 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 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 body-worn accessory, measured without a headset connected to the handset is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.

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

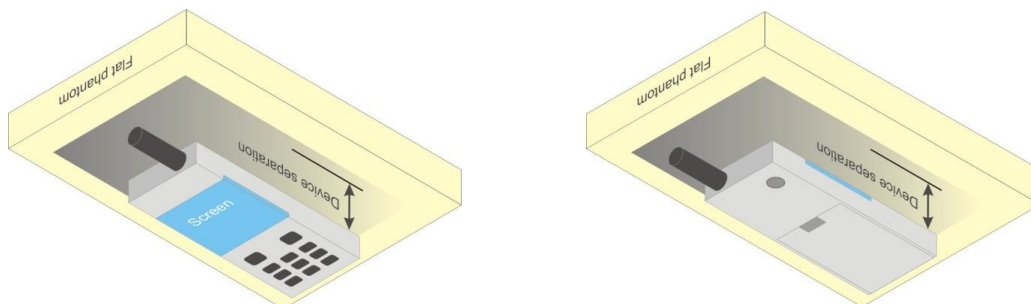


Fig 9.4 Body Worn Position



11.5 Product specific Exposure Configurations

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, According to KDB648474 D04v01r03, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.
2. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions.6 The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

11.6 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets ($L \times W \geq 9$ cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm 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.



12. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

1. For DTM multi-slot class mode, the device was linked with base station simulator (Agilent E5515C) and transmit maximum power on maximum number of TX slots, i.e. one CS timeslot, and additional PS timeslots (1 for DTM class 5 and 9, 2 for DTM class 11) in one TDMA frame.
2. Agilent E5515C was used to setup the device operated under DTM mode for power measurement and SAR testing. For conducted power, the power of the burst for voice and the power of the bursts for data was reported separately in the table above, and the frame-average power is derived below to determine SAR testing.

$$DTM \text{ frame average power (dBm)} = 10 * \log [\sum(\text{power of each slot, in mW})/8]$$

3. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
4. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE / DTM modes is determined by the source-based time-averaged output power including tune-up tolerance. The 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. Therefore, the GPRS (4Tx slots) for GSM850 and GPRS (3Tx slots) for GSM1900 are considered as the primary mode.
5. Other configurations of GSM / GPRS / EDGE / DTM are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq \frac{1}{4}$ dB higher than the primary mode, SAR measurement is not required for the secondary mode



GSM850		Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel		128	189	251		128	189	251	
Frequency (MHz)		824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot		32.51	32.59	32.65	33.00	23.51	23.59	23.65	24.00
GPRS 1 Tx slot		32.56	32.62	32.68	33.00	23.56	23.62	23.68	24.00
GPRS 2 Tx slots		31.32	31.35	31.33	31.50	25.32	25.35	25.33	25.50
GPRS 3 Tx slots		29.87	29.90	29.96	30.00	25.61	25.64	25.70	25.74
GPRS 4 Tx slots		28.65	28.70	28.71	29.00	25.65	25.70	25.71	26.00
EDGE 1 Tx slot		26.67	26.66	26.66	27.00	17.67	17.66	17.66	18.00
EDGE 2 Tx slots		26.00	25.99	25.99	26.50	20.00	19.99	19.99	20.50
EDGE 3 Tx slots		25.80	25.78	25.77	26.00	21.54	21.52	21.51	21.74
EDGE 4 Tx slots		23.69	23.68	23.65	24.00	20.69	20.68	20.65	21.00
DTM 5 (2Tx slots)	GSM 1 Tx slot	31.27	31.34	31.29	31.50	25.16	25.22	25.17	25.48
	GPRS 1 Tx slot	31.08	31.14	31.08	31.50				
DTM 9 (2Tx slots)	GSM 1 Tx slot	31.31	31.33	31.35	31.50	25.20	25.21	25.22	25.48
	GPRS 1 Tx slot	31.12	31.13	31.13	31.50				
DTM 11 (3Tx slots)	GSM 1 Tx slot	29.95	29.94	29.98	30.00	25.59	25.58	25.59	25.74
	GPRS 2 Tx slots	29.80	29.79	29.79	30.00				
DTM 5 (2Tx slots)	GSM 1 Tx slot	31.22	31.28	31.23	31.50	23.29	23.33	23.29	23.66
	EDGE 1 Tx slot	25.80	25.77	25.79	26.50				
DTM 9 (2Tx slots)	GSM 1 Tx slot	31.35	31.36	31.36	31.50	23.35	23.36	23.36	23.66
	EDGE 1 Tx slot	25.65	25.62	25.62	26.50				
DTM 11 (3Tx slots)	GSM 1 Tx slot	29.85	29.98	29.94	30.00	23.26	23.32	23.33	23.51
	EDGE 2 Tx slots	25.61	25.57	25.66	26.00				

GSM1900		Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel		512	661	810		512	661	810	
Frequency (MHz)		1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot		30.07	29.78	29.89	30.50	21.07	20.78	20.89	21.50
GPRS 1 Tx slot		30.16	29.88	29.98	30.50	21.16	20.88	20.98	21.50
GPRS 2 Tx slots		28.79	28.98	29.06	29.50	22.79	22.98	23.06	23.50
GPRS 3 Tx slots		28.33	28.49	28.53	29.00	24.07	24.23	24.27	24.74
GPRS 4 Tx slots		27.06	27.26	26.92	27.50	24.06	24.26	23.92	24.50
EDGE 1 Tx slot		25.68	25.89	25.96	26.00	16.68	16.89	16.96	17.00
EDGE 2 Tx slots		25.05	25.29	25.33	25.50	19.05	19.29	19.33	19.50
EDGE 3 Tx slots		23.87	24.10	24.16	24.50	19.61	19.84	19.90	20.24
EDGE 4 Tx slots		22.67	22.88	22.97	23.00	19.67	19.88	19.97	20.00
DTM 5 (2Tx slots)	GSM 1 Tx slot	28.63	28.84	28.93	29.50	22.57	22.78	22.87	23.48
	GPRS 1 Tx slot	28.55	28.76	28.85	29.50				
DTM 9 (2Tx slots)	GSM 1 Tx slot	28.63	28.84	28.93	29.50	22.57	22.78	22.86	23.48
	GPRS 1 Tx slot	28.55	28.76	28.84	29.50				
DTM 11 (3Tx slots)	GSM 1 Tx slot	28.23	28.48	28.47	29.00	23.92	24.17	24.15	24.74
	GPRS 2 Tx slots	28.15	28.40	28.38	29.00				
DTM 5 (2Tx slots)	GSM 1 Tx slot	28.62	28.83	28.93	29.50	21.16	21.38	21.48	21.92
	EDGE 1 Tx slot	25.01	25.25	25.34	25.50				
DTM 9 (2Tx slots)	GSM 1 Tx slot	28.69	28.91	29.02	29.50	21.18	21.41	21.51	21.92
	EDGE 1 Tx slot	24.92	25.16	25.25	25.50				
DTM 11 (3Tx slots)	GSM 1 Tx slot	28.19	28.39	28.43	29.00	21.53	21.75	21.81	22.30
	EDGE 2 Tx slots	23.80	24.03	24.13	24.50				

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01v03r01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.
3. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
 - i. Set Gain Factors (β_c and β_d) and parameters were set according to each
 - ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
 - iii. Set RMC 12.2Kbps + HSDPA mode.
 - iv. Set Cell Power = -86 dBm
 - v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
 - vi. Select HSDPA Uplink Parameters
 - vii. Set Delta ACK, Delta NACK and Delta CQI = 8
 - viii. Set Ack-Nack Repetition Factor to 3
 - ix. Set CQI Feedback Cycle (k) to 4 ms
 - x. Set CQI Repetition Factor to 2
 - xi. Power Ctrl Mode = All Up bits
- d. The transmitted maximum output power was recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: $\Delta_{ACK}, \Delta_{NACK}$ and $\Delta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and $\Delta_{NACK} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$, and $\Delta_{CQI} = 24/15$ with $\beta_{HS} = 24/15 * \beta_c$.

Note 3: CM = 1 for $\beta_c/\beta_d = 12/15, \beta_{HS}/\beta_c = 24/15$. For all other combinations of DPCCH, DPDCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$.

Setup Configuration

HSUPA Setup Configuration:

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting * :
 - i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
 - ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
 - iii. Set Cell Power = -86 dBm
 - iv. Set Channel Type = 12.2k + HSPA
 - v. Set UE Target Power
 - vi. Power Ctrl Mode= Alternating bits
 - vii. Set and observe the E-TFCl
 - viii. Confirm that E-TFCl is equal to the target E-TFCl of 75 for sub-test 1, and other subtest's E-TFCl
- d. The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1)	β_{ec}	β_{ed} (Note 5) (Note 6)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	E-TFCl
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed1}: 47/15$ $\beta_{ed2}: 47/15$	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: $\Delta_{ACK}, \Delta_{NACK}$ and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$.

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$.

Note 5: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 6: β_{ed} can not be set directly, it is set by Absolute Grant Value.

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration below
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
 - i. Set RMC 12.2Kbps + HSDPA mode.
 - ii. Set Cell Power = -25 dBm
 - iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
 - iv. Select HSDPA Uplink Parameters
 - v. Set Gain Factors (β_c and β_d) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
 - a). Subtest 1: $\beta_c/\beta_d=2/15$
 - b). Subtest 2: $\beta_c/\beta_d=12/15$
 - c). Subtest 3: $\beta_c/\beta_d=15/8$
 - d). Subtest 4: $\beta_c/\beta_d=15/4$
 - vi. Set Delta ACK, Delta NACK and Delta CQI = 8
 - vii. Set Ack-Nack Repetition Factor to 3
 - viii. Set CQI Feedback Cycle (k) to 4 ms
 - ix. Set CQI Repetition Factor to 2
 - x. Power Ctrl Mode = All Up bits
- d. The transmitted maximum output power was recorded.

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification. A summary of these settings are illustrated below:

C.8.1.12 Fixed Reference Channel Definition H-Set 12

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table. Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

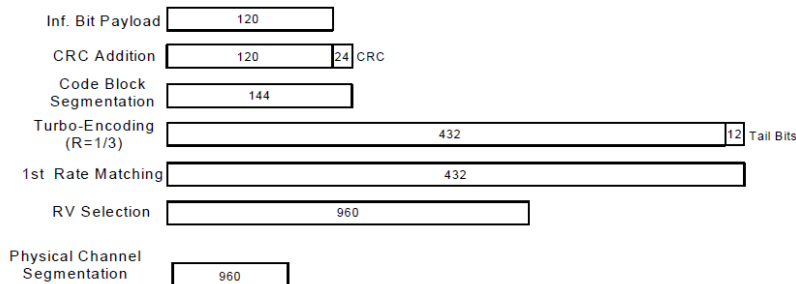


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration



<WCDMA Conducted Power>

General Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is $\leq \frac{1}{4}$ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938	1537	1638	1738	4357	4407	4458			
Frequency (MHz)		1852.4	1880	1907.6	1712.4	1732.6	1752.6	826.4	836.4	846.6			
3GPP Rel 99	AMR 12.2Kbps	23.62	23.75	24.10	24.50	23.07	23.27	23.10	23.50	23.86	23.94	23.93	24.50
3GPP Rel 99	RMC 12.2Kbps	23.62	23.75	24.11	24.50	23.08	23.28	23.10	23.50	23.86	23.95	23.94	24.50
3GPP Rel 6	HSDPA Subtest-1	22.59	22.79	23.01	23.50	22.03	22.25	22.08	22.50	22.78	22.99	22.97	23.50
3GPP Rel 6	HSDPA Subtest-2	22.57	22.81	23.04	23.50	22.04	22.25	22.07	22.50	22.90	22.96	22.97	23.50
3GPP Rel 6	HSDPA Subtest-3	22.13	22.24	22.62	23.00	21.57	21.80	21.62	22.00	22.36	22.45	22.43	23.00
3GPP Rel 6	HSDPA Subtest-4	22.12	22.23	22.60	23.00	21.58	21.80	21.56	22.00	22.37	22.46	22.45	23.00
3GPP Rel 8	DC-HSDPA Subtest-1	22.43	22.69	22.93	23.50	21.96	22.18	21.98	22.50	22.76	22.89	22.87	23.50
3GPP Rel 8	DC-HSDPA Subtest-2	22.41	22.65	22.90	23.50	21.94	22.15	21.95	22.50	22.74	22.91	22.85	23.50
3GPP Rel 8	DC-HSDPA Subtest-3	22.03	22.16	22.52	23.00	21.47	21.70	21.52	22.00	22.26	22.35	22.35	23.00
3GPP Rel 8	DC-HSDPA Subtest-4	22.01	22.13	22.49	23.00	21.41	21.66	21.45	22.00	22.24	22.30	22.32	23.00
3GPP Rel 6	HSUPA Subtest-1	22.47	22.59	22.96	23.50	22.02	22.10	21.96	22.50	22.90	22.99	23.01	23.50
3GPP Rel 6	HSUPA Subtest-2	20.58	20.72	20.96	21.50	20.05	20.14	20.03	20.50	20.96	21.03	21.05	21.50
3GPP Rel 6	HSUPA Subtest-3	21.56	21.68	21.98	22.50	21.03	21.14	20.94	21.50	21.92	21.99	21.53	22.50
3GPP Rel 6	HSUPA Subtest-4	20.51	20.71	20.95	21.50	20.03	20.16	20.06	20.50	20.93	21.09	21.04	21.50
3GPP Rel 6	HSUPA Subtest-5	22.50	22.73	22.93	23.50	22.06	22.19	22.01	22.50	22.83	22.91	22.93	23.50

**<LTE Conducted Power>****General Note:**

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B12 / B5 / B4 the maximum 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 middle channel of the group of overlapping channels should be selected for testing.
9. LTE B17 / B38 SAR test was covered by B12 / B41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
 - a. the maximum output power, including tolerance, for the smaller band is \leq the larger band to qualify for the SAR test exclusion
 - b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band



<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	22.65	22.91	23.23	24	0
20	QPSK	1	49	22.64	22.71	23.10		
20	QPSK	1	99	22.86	23.27	23.55		
20	QPSK	50	0	21.57	21.86	22.21	23	1
20	QPSK	50	24	21.49	21.82	22.26		
20	QPSK	50	50	21.62	21.99	22.35		
20	QPSK	100	0	21.62	21.91	22.31		
20	16QAM	1	0	21.92	22.20	22.48	23	1
20	16QAM	1	49	21.74	21.96	22.36		
20	16QAM	1	99	22.12	22.48	22.75		
20	16QAM	50	0	20.55	20.89	21.23	22	2
20	16QAM	50	24	20.48	20.85	21.27		
20	16QAM	50	50	20.61	21.01	21.34		
20	16QAM	100	0	20.56	20.92	21.33		
Channel				18675	18900	19125		
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.66	23.04	23.49	24	0
15	QPSK	1	37	22.53	22.63	23.18		
15	QPSK	1	74	22.68	23.28	23.54		
15	QPSK	36	0	21.41	21.77	22.29	23	1
15	QPSK	36	20	21.33	21.83	22.30		
15	QPSK	36	39	21.48	21.89	22.30		
15	QPSK	75	0	21.39	21.91	22.27	23	1
15	16QAM	1	0	21.93	22.37	22.73		
15	16QAM	1	37	21.83	21.96	22.50		
15	16QAM	1	74	21.89	22.54	22.85	22	2
15	16QAM	36	0	20.37	20.75	21.25		
15	16QAM	36	20	20.30	20.84	21.31		
15	16QAM	36	39	20.40	20.88	21.24	22	2
15	16QAM	75	0	20.35	20.90	21.22		
Channel				18650	18900	19150		
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	22.74	23.07	23.52	24	0
10	QPSK	1	25	22.51	22.81	23.28		
10	QPSK	1	49	22.73	23.20	23.38		
10	QPSK	25	0	21.55	21.95	22.48	23	1
10	QPSK	25	12	21.52	21.86	22.37		
10	QPSK	25	25	21.58	21.98	22.54		
10	QPSK	50	0	21.61	21.95	22.43	23	1
10	16QAM	1	0	22.11	22.36	22.84		
10	16QAM	1	25	21.80	22.07	22.54		
10	16QAM	1	49	22.01	22.45	22.67	22	2
10	16QAM	25	0	20.53	20.96	21.52		
10	16QAM	25	12	20.51	20.88	21.32		
10	16QAM	25	25	20.54	20.98	21.49	22	2
10	16QAM	50	0	20.60	20.96	21.40		



Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.48	22.93	23.46	24	0
5	QPSK	1	12	22.41	22.82	23.32		
5	QPSK	1	24	22.45	22.85	23.32		
5	QPSK	12	0	21.41	21.88	22.40	23	1
5	QPSK	12	7	21.34	21.86	22.41		
5	QPSK	12	13	21.33	21.77	22.33		
5	QPSK	25	0	21.32	21.85	22.32	23	1
5	16QAM	1	0	21.74	22.17	22.71		
5	16QAM	1	12	21.65	22.13	22.65		
5	16QAM	1	24	21.61	22.07	22.57	22	2
5	16QAM	12	0	20.46	20.93	21.44		
5	16QAM	12	7	20.41	20.90	21.38		
5	16QAM	12	13	20.36	20.84	21.37	22	2
5	16QAM	25	0	20.34	20.87	21.34		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.37	22.84	23.30	24	0
3	QPSK	1	8	22.36	22.83	23.34		
3	QPSK	1	14	22.35	22.85	23.28		
3	QPSK	8	0	21.40	21.80	22.38	23	1
3	QPSK	8	4	21.40	21.86	22.37		
3	QPSK	8	7	21.34	21.81	22.35		
3	QPSK	15	0	21.38	21.84	22.34	23	1
3	16QAM	1	0	21.65	22.12	22.58		
3	16QAM	1	8	21.62	22.08	22.60		
3	16QAM	1	14	21.60	22.10	22.51	22	2
3	16QAM	8	0	20.43	20.88	21.42		
3	16QAM	8	4	20.47	20.92	21.43		
3	16QAM	8	7	20.40	20.87	21.39	22	2
3	16QAM	15	0	20.40	20.90	21.39		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.30	22.72	23.27	24	0
1.4	QPSK	1	3	22.37	22.84	23.35		
1.4	QPSK	1	5	22.29	22.76	23.24		
1.4	QPSK	3	0	22.35	22.82	23.34		
1.4	QPSK	3	1	22.39	22.89	23.36		
1.4	QPSK	3	3	22.37	22.84	23.33		
1.4	QPSK	6	0	21.33	21.77	22.30	23	1
1.4	16QAM	1	0	21.62	22.02	22.59	23	1
1.4	16QAM	1	3	21.67	22.12	22.66		
1.4	16QAM	1	5	21.57	22.01	22.57		
1.4	16QAM	3	0	21.38	21.84	22.37		
1.4	16QAM	3	1	21.45	21.90	22.44		
1.4	16QAM	3	3	21.39	21.86	22.38		
1.4	16QAM	6	0	20.41	20.90	21.38	22	2



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	23.01	23.07	23.04	23.5	0
20	QPSK	1	49	22.67	22.75	22.77		
20	QPSK	1	99	22.87	22.89	22.82		
20	QPSK	50	0	21.74	21.90	21.78	22.5	1
20	QPSK	50	24	21.63	21.82	21.76		
20	QPSK	50	50	21.75	21.79	21.74		
20	QPSK	100	0	21.76	21.91	21.78		
20	16QAM	1	0	22.18	22.15	22.21	22.5	1
20	16QAM	1	49	21.84	21.94	21.93		
20	16QAM	1	99	22.14	22.09	22.02		
20	16QAM	50	0	20.82	20.90	20.81	21.5	2
20	16QAM	50	24	20.65	20.78	20.72		
20	16QAM	50	50	20.76	20.77	20.73		
20	16QAM	100	0	20.77	20.88	20.80		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.99	22.98	22.97	23.5	0
15	QPSK	1	37	22.53	22.70	22.51		
15	QPSK	1	74	22.98	23.00	22.79		
15	QPSK	36	0	21.84	21.86	21.69	22.5	1
15	QPSK	36	20	21.72	21.80	21.57		
15	QPSK	36	39	21.72	21.76	21.58		
15	QPSK	75	0	21.73	21.79	21.61		
15	16QAM	1	0	22.30	22.37	22.21	22.5	1
15	16QAM	1	37	21.90	21.91	21.89		
15	16QAM	1	74	22.18	22.28	21.98		
15	16QAM	36	0	20.84	20.85	20.69	21.5	2
15	16QAM	36	20	20.71	20.76	20.55		
15	16QAM	36	39	20.70	20.72	20.55		
15	16QAM	75	0	20.69	20.75	20.58		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	23.05	22.97	22.97	23.5	0
10	QPSK	1	25	22.74	22.67	22.70		
10	QPSK	1	49	23.02	22.95	22.87		
10	QPSK	25	0	21.87	21.79	21.93	22.5	1
10	QPSK	25	12	21.79	21.74	21.70		
10	QPSK	25	25	21.80	21.86	21.82		
10	QPSK	50	0	21.83	21.84	21.84		
10	16QAM	1	0	22.41	22.28	22.31	22.5	1
10	16QAM	1	25	21.99	21.93	21.96		
10	16QAM	1	49	22.26	22.18	22.18		
10	16QAM	25	0	20.88	20.80	20.89	21.5	2
10	16QAM	25	12	20.80	20.69	20.69		
10	16QAM	25	25	20.78	20.82	20.79		
10	16QAM	50	0	20.86	20.80	20.84		



Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.98	22.76	22.75	23.5	0
5	QPSK	1	12	22.84	22.66	22.70		
5	QPSK	1	24	22.79	22.68	22.63		
5	QPSK	12	0	21.93	21.70	21.79	22.5	1
5	QPSK	12	7	21.88	21.75	21.67		
5	QPSK	12	13	21.84	21.69	21.67		
5	QPSK	25	0	21.81	21.68	21.63		
5	16QAM	1	0	22.20	22.03	22.05	22.5	1
5	16QAM	1	12	22.13	21.94	22.08		
5	16QAM	1	24	22.03	21.91	21.87		
5	16QAM	12	0	20.96	20.68	20.78	21.5	2
5	16QAM	12	7	20.92	20.73	20.72		
5	16QAM	12	13	20.89	20.72	20.72		
5	16QAM	25	0	20.83	20.71	20.69		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	22.88	22.72	22.56	23.5	0
3	QPSK	1	8	22.86	22.70	22.55		
3	QPSK	1	14	22.80	22.57	22.46		
3	QPSK	8	0	21.92	21.69	21.63	22.5	1
3	QPSK	8	4	21.84	21.72	21.63		
3	QPSK	8	7	21.83	21.71	21.53		
3	QPSK	15	0	21.84	21.70	21.60		
3	16QAM	1	0	22.12	21.98	21.86	22.5	1
3	16QAM	1	8	22.09	21.94	21.85		
3	16QAM	1	14	22.07	21.81	21.71		
3	16QAM	8	0	20.97	20.73	20.70	21.5	2
3	16QAM	8	4	20.93	20.80	20.68		
3	16QAM	8	7	20.92	20.78	20.58		
3	16QAM	15	0	20.86	20.71	20.66		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.50	22.69	22.56	23.5	0
1.4	QPSK	1	3	22.67	22.73	22.50		
1.4	QPSK	1	5	22.56	22.53	22.62		
1.4	QPSK	3	0	22.70	22.71	22.63		
1.4	QPSK	3	1	22.68	22.70	22.72		
1.4	QPSK	3	3	22.75	22.68	22.72		
1.4	QPSK	6	0	21.56	21.66	21.75	22.5	1
1.4	16QAM	1	0	21.56	21.54	21.60	22.5	1
1.4	16QAM	1	3	21.83	21.76	21.74		
1.4	16QAM	1	5	21.64	21.55	21.63		
1.4	16QAM	3	0	21.87	21.81	21.76		
1.4	16QAM	3	1	21.73	21.83	21.93		
1.4	16QAM	3	3	21.68	21.73	21.64		
1.4	16QAM	6	0	20.77	20.86	20.76	21.5	2



<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	22.87	23.01	22.73	23.5	0
10	QPSK	1	25	22.95	22.94	22.53		
10	QPSK	1	49	22.74	22.25	22.15		
10	QPSK	25	0	22.05	22.16	21.57	22.5	1
10	QPSK	25	12	22.11	22.10	21.62		
10	QPSK	25	25	22.01	21.78	21.58		
10	QPSK	50	0	22.04	22.07	21.55		
10	16QAM	1	0	22.20	22.25	21.99	22.5	1
10	16QAM	1	25	22.28	22.25	21.79		
10	16QAM	1	49	22.06	21.53	21.43	21.5	2
10	16QAM	25	0	21.00	21.09	20.59		
10	16QAM	25	12	21.07	21.15	20.64		
10	16QAM	25	25	20.96	20.81	20.61		
10	16QAM	50	0	21.05	21.05	20.58		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.90	22.93	22.58	23.5	0
5	QPSK	1	12	22.88	22.87	22.65		
5	QPSK	1	24	22.99	22.71	22.04		
5	QPSK	12	0	22.16	22.15	21.71	22.5	1
5	QPSK	12	7	22.11	22.05	21.75		
5	QPSK	12	13	22.07	21.94	21.44		
5	QPSK	25	0	22.13	22.07	21.59		
5	16QAM	1	0	22.32	22.30	21.86	22.5	1
5	16QAM	1	12	22.37	22.28	21.92		
5	16QAM	1	24	22.34	21.99	21.30		
5	16QAM	12	0	21.21	21.15	20.73	21.5	2
5	16QAM	12	7	21.14	21.16	20.78		
5	16QAM	12	13	21.15	20.98	20.47		
5	16QAM	25	0	21.14	21.10	20.62		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	22.92	22.96	22.77	23.5	0
3	QPSK	1	8	22.90	22.92	22.41		
3	QPSK	1	14	22.83	22.85	22.01		
3	QPSK	8	0	22.00	22.10	21.71	22.5	1
3	QPSK	8	4	22.03	22.02	21.49		
3	QPSK	8	7	21.93	21.98	21.30		
3	QPSK	15	0	22.02	22.10	21.50		
3	16QAM	1	0	22.24	22.32	22.04	22.5	1
3	16QAM	1	8	22.25	22.21	21.67		
3	16QAM	1	14	22.15	22.11	21.27		
3	16QAM	8	0	21.08	21.17	20.78	21.5	2
3	16QAM	8	4	21.11	21.17	20.57		
3	16QAM	8	7	21.00	21.07	20.38		
3	16QAM	15	0	21.07	21.12	20.55		



Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.85	22.90	22.24	23.5	0
1.4	QPSK	1	3	22.92	22.92	22.10		
1.4	QPSK	1	5	22.82	22.74	21.86		
1.4	QPSK	3	0	22.96	22.95	22.15		
1.4	QPSK	3	1	22.98	23.00	22.15		
1.4	QPSK	3	3	22.91	22.84	21.96		
1.4	QPSK	6	0	22.00	22.00	21.13	22.5	1
1.4	16QAM	1	0	22.16	22.18	21.51	22.5	1
1.4	16QAM	1	3	22.27	22.21	21.38		
1.4	16QAM	1	5	22.12	22.01	21.14		
1.4	16QAM	3	0	22.02	22.00	21.22		
1.4	16QAM	3	1	22.05	22.06	21.22		
1.4	16QAM	3	3	21.96	21.91	21.02		
1.4	16QAM	6	0	21.06	21.11	20.23	21.5	2



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	23.71	24.00	23.39		
20	QPSK	1	49	22.91	23.32	23.22	24.5	0
20	QPSK	1	99	23.67	22.92	23.18		
20	QPSK	50	0	22.36	22.63	22.65		
20	QPSK	50	24	22.16	22.49	22.42	23.5	1
20	QPSK	50	50	22.34	22.35	22.62		
20	QPSK	100	0	22.36	22.72	22.59		
20	16QAM	1	0	22.74	23.18	22.48	23.5	1
20	16QAM	1	49	22.20	22.60	22.67		
20	16QAM	1	99	23.01	22.19	22.52		
20	16QAM	50	0	21.36	21.62	21.62	22.5	2
20	16QAM	50	24	21.19	21.46	21.41		
20	16QAM	50	50	21.36	21.38	21.61		
20	16QAM	100	0	21.37	21.67	21.55		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	23.41	23.68	23.65	24.5	0
15	QPSK	1	37	22.99	23.40	23.37		
15	QPSK	1	74	23.17	22.96	23.13		
15	QPSK	36	0	22.42	22.51	22.49	23.5	1
15	QPSK	36	20	22.20	22.47	22.47		
15	QPSK	36	39	22.11	22.43	22.46		
15	QPSK	75	0	22.27	22.56	22.53	23.5	1
15	16QAM	1	0	22.72	22.94	22.92		
15	16QAM	1	37	22.28	22.57	22.61		
15	16QAM	1	74	22.44	22.25	22.45	22.5	2
15	16QAM	36	0	21.36	21.47	21.42		
15	16QAM	36	20	21.21	21.43	21.44		
15	16QAM	36	39	21.14	21.45	21.39		
15	16QAM	75	0	21.28	21.50	21.44		
Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	23.32	23.60	23.61	24.5	0
10	QPSK	1	25	23.25	23.34	23.26		
10	QPSK	1	49	22.72	22.96	22.91		
10	QPSK	25	0	22.38	22.53	22.55	23.5	1
10	QPSK	25	12	22.39	22.44	22.41		
10	QPSK	25	25	22.09	22.59	22.42		
10	QPSK	50	0	22.24	22.52	22.47	23.5	1
10	16QAM	1	0	22.54	22.91	22.98		
10	16QAM	1	25	22.51	22.64	22.60		
10	16QAM	1	49	22.00	22.24	22.22	22.5	2
10	16QAM	25	0	21.35	21.51	21.50		
10	16QAM	25	12	21.36	21.43	21.39		
10	16QAM	25	25	21.11	21.58	21.46		
10	16QAM	50	0	21.24	21.47	21.44		



Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	23.29	23.48	23.33	24.5	0
5	QPSK	1	12	23.26	23.35	23.25		
5	QPSK	1	24	23.18	23.34	22.92		
5	QPSK	12	0	22.37	22.42	22.38	23.5	1
5	QPSK	12	7	22.37	22.43	22.38		
5	QPSK	12	13	22.30	22.44	22.29		
5	QPSK	25	0	22.34	22.41	22.34		
5	16QAM	1	0	22.57	22.74	22.59	23.5	1
5	16QAM	1	12	22.61	22.66	22.56		
5	16QAM	1	24	22.45	22.59	22.22		
5	16QAM	12	0	21.36	21.42	21.37	22.5	2
5	16QAM	12	7	21.40	21.41	21.36		
5	16QAM	12	13	21.34	21.45	21.36		
5	16QAM	25	0	21.33	21.38	21.39		



<LTE Band 12>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23060	23095	23130		
Frequency (MHz)				704	707.5	711		
10	QPSK	1	0	22.87	22.72	22.84	23.5	0
10	QPSK	1	25	23.02	22.87	23.06		
10	QPSK	1	49	23.03	23.11	23.08		
10	QPSK	25	0	22.02	21.93	22.07	22.5	1
10	QPSK	25	12	22.07	22.01	22.15		
10	QPSK	25	25	22.12	22.03	22.18		
10	QPSK	50	0	22.10	22.14	22.10		
10	16QAM	1	0	22.18	22.02	22.09	22.5	1
10	16QAM	1	25	22.26	22.17	22.33		
10	16QAM	1	49	22.31	22.24	22.38		
10	16QAM	25	0	21.02	20.90	21.08	21.5	2
10	16QAM	25	12	21.04	21.03	21.15		
10	16QAM	25	25	21.07	20.99	21.18		
10	16QAM	50	0	21.12	20.91	21.08		
Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	22.81	22.85	22.89	23.5	0
5	QPSK	1	12	22.85	22.82	22.94		
5	QPSK	1	24	22.86	22.99	23.10		
5	QPSK	12	0	22.00	21.85	22.04	22.5	1
5	QPSK	12	7	21.92	21.95	22.03		
5	QPSK	12	13	21.97	21.97	22.02		
5	QPSK	25	0	21.91	21.91	21.99		
5	16QAM	1	0	22.09	22.05	22.18	22.5	1
5	16QAM	1	12	22.13	22.17	22.23		
5	16QAM	1	24	22.15	22.25	22.33		
5	16QAM	12	0	20.96	20.87	21.04	21.5	2
5	16QAM	12	7	20.92	20.97	21.06		
5	16QAM	12	13	20.99	21.01	21.06		
5	16QAM	25	0	20.94	20.94	21.03		
Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	22.97	22.91	23.09	23.5	0
3	QPSK	1	8	23.06	22.86	23.02		
3	QPSK	1	14	22.91	22.89	23.07		
3	QPSK	8	0	22.01	21.89	22.06	22.5	1
3	QPSK	8	4	22.11	21.93	22.15		
3	QPSK	8	7	22.03	21.96	22.06		
3	QPSK	15	0	22.08	21.92	22.06		
3	16QAM	1	0	22.26	22.13	22.36	22.5	1
3	16QAM	1	8	22.34	22.15	22.35		
3	16QAM	1	14	22.19	22.19	22.37		
3	16QAM	8	0	21.09	20.93	21.14	21.5	2
3	16QAM	8	4	21.21	20.98	21.25		
3	16QAM	8	7	21.12	21.01	21.13		
3	16QAM	15	0	21.12	20.95	21.11		



Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	22.93	22.75	22.94	23.5	0
1.4	QPSK	1	3	23.01	22.82	23.11		
1.4	QPSK	1	5	22.94	22.80	22.95		
1.4	QPSK	3	0	22.94	22.80	22.91		
1.4	QPSK	3	1	22.98	22.83	22.97		
1.4	QPSK	3	3	22.95	22.82	23.00		
1.4	QPSK	6	0	21.89	21.80	21.97	22.5	1
1.4	16QAM	1	0	22.20	22.06	22.17	22.5	1
1.4	16QAM	1	3	22.29	22.12	22.32		
1.4	16QAM	1	5	22.21	22.09	22.14		
1.4	16QAM	3	0	21.96	21.87	21.99		
1.4	16QAM	3	1	22.03	21.90	21.97		
1.4	16QAM	3	3	22.01	21.86	22.01		
1.4	16QAM	6	0	21.02	20.95	21.11	21.5	2



<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	22.72	22.65	22.65	23.5	0
10	QPSK	1	25	22.88	22.94	22.82		
10	QPSK	1	49	22.76	22.86	22.86		
10	QPSK	25	0	21.88	21.96	21.95	22.5	1
10	QPSK	25	12	22.05	22.06	22.01		
10	QPSK	25	25	22.01	21.98	21.97		
10	QPSK	50	0	21.97	21.99	21.97		
10	16QAM	1	0	21.98	21.92	21.94	22.5	1
10	16QAM	1	25	22.19	22.17	22.09		
10	16QAM	1	49	22.06	22.12	22.09		
10	16QAM	25	0	20.84	20.94	20.91	21.5	2
10	16QAM	25	12	21.05	20.98	21.01		
10	16QAM	25	25	21.00	21.01	20.93		
10	16QAM	50	0	20.92	20.92	20.94		
Channel				23755	23790	23825	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	22.82	22.88	22.78	23.5	0
5	QPSK	1	12	22.79	22.88	22.92		
5	QPSK	1	24	22.85	22.87	22.89		
5	QPSK	12	0	21.87	21.93	22.00	22.5	1
5	QPSK	12	7	21.89	21.93	22.02		
5	QPSK	12	13	21.89	21.89	22.00		
5	QPSK	25	0	21.94	21.94	22.00		
5	16QAM	1	0	22.05	22.14	22.08	22.5	1
5	16QAM	1	12	22.11	22.18	22.25		
5	16QAM	1	24	22.22	22.22	22.20		
5	16QAM	12	0	20.91	21.04	21.00	21.5	2
5	16QAM	12	7	20.92	20.95	21.05		
5	16QAM	12	13	21.01	20.89	21.02		
5	16QAM	25	0	20.96	20.95	21.02		

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

SAR was tested with a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by 3GPP.

- a. 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations
- b. "special subframe S" contains both uplink and downlink transmissions, it has been taken into consideration to determine the transmission duty factor according to the worst case uplink and downlink cyclic prefix requirements for UpPTS
- c. Establishing connections with base station simulators ensure a consistent means for testing SAR and recommended for evaluating SAR. The Anritsu MT8820C (firmware: #22.52#004) was used for LTE output power measurements and SAR testing.

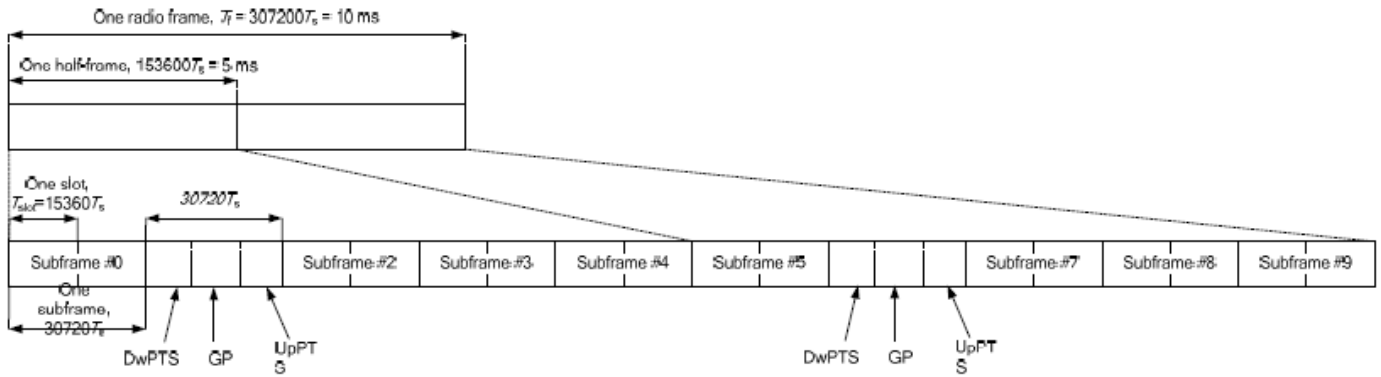


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink				Extended cyclic prefix in downlink			
	DwPTS	UpPTS		DwPTS	UpPTS			
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		
0	6592 · Ts	2192 · Ts	2560 · Ts	7680 · Ts	2192 · Ts	2560 · Ts		
1	19760 · Ts			20480 · Ts				
2	21952 · Ts			23040 · Ts				
3	24144 · Ts			25600 · Ts				
4	26336 · Ts	7680 · Ts	4384 · Ts	5120 · Ts				
5	6592 · Ts	20480 · Ts						
6	19760 · Ts	23040 · Ts						
7	21952 · Ts	4384 · Ts	5120 · Ts	12800 · Ts	4384 · Ts	5120 · Ts		
8	24144 · Ts			-				-
9	13168 · Ts			-			-	

Special subframe (30720·T_s): Normal cyclic prefix in downlink (UpPTS)			
	Special subframe configuration	Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
Uplink duty factor in one special subframe	0~4	7.13%	8.33%
	5~9	14.3%	16.7%

Special subframe(30720·T_s): Extended cyclic prefix in downlink (UpPTS)			
	Special subframe configuration	Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
Uplink duty factor in one special subframe	0~3	7.13%	8.33%
	4~7	14.3%	16.7%

The highest duty factor is resulted from:

- i. Uplink-downlink configuration: 0. In a half-frame consisted of 5 subframes, uplink operation is in 3 uplink subframes and 1 special subframe.
- ii. special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink
- iii. for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is: $(3+0.167)/5 = 63.3\%$
- iv. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is: $(3+0.143)/5 = 62.9\%$
- v. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix $63.3\%/62.9\% = 1.006$ is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.



<LTE Band 38>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				37850	38000	38150		
Frequency (MHz)				2580	2595	2610		
20	QPSK	1	0	22.72	22.63	22.60		
20	QPSK	1	49	22.55	22.44	22.39	23	0
20	QPSK	1	99	22.65	22.55	22.56		
20	QPSK	50	0	21.70	21.64	21.59		
20	QPSK	50	24	21.69	21.59	21.56	22	1
20	QPSK	50	50	21.62	21.56	21.51		
20	QPSK	100	0	21.63	21.52	21.52		
20	16QAM	1	0	21.70	21.64	21.56	22	1
20	16QAM	1	49	21.58	21.50	21.44		
20	16QAM	1	99	21.61	21.48	21.61		
20	16QAM	50	0	20.67	20.49	20.51	21	2
20	16QAM	50	24	20.63	20.52	20.48		
20	16QAM	50	50	20.58	20.49	20.47		
20	16QAM	100	0	20.62	20.56	20.53		
Channel				37825	38000	38175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2577.5	2595	2612.5		
15	QPSK	1	0	22.64	22.55	22.47	23	0
15	QPSK	1	37	22.37	22.21	22.17		
15	QPSK	1	74	22.61	22.53	22.55		
15	QPSK	36	0	21.44	21.24	21.31	22	1
15	QPSK	36	20	21.36	21.29	21.25		
15	QPSK	36	39	21.37	21.33	21.39		
15	QPSK	75	0	21.40	21.35	21.32		
15	16QAM	1	0	21.67	21.56	21.51	22	1
15	16QAM	1	37	21.34	21.24	21.20		
15	16QAM	1	74	21.57	21.51	21.57		
15	16QAM	36	0	20.36	20.13	20.23	21	2
15	16QAM	36	20	20.29	20.23	20.20		
15	16QAM	36	39	20.31	20.25	20.32		
15	16QAM	75	0	20.35	20.30	20.23		
Channel				37800	38000	38200	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2575	2595	2615		
10	QPSK	1	0	22.63	22.60	22.57	23	0
10	QPSK	1	25	22.48	22.34	22.36		
10	QPSK	1	49	22.65	22.62	22.57		
10	QPSK	25	0	21.64	21.51	21.47	22	1
10	QPSK	25	12	21.49	21.44	21.40		
10	QPSK	25	25	21.59	21.46	21.41		
10	QPSK	50	0	21.68	21.56	21.47	22	1
10	16QAM	1	0	21.81	21.63	21.60		
10	16QAM	1	25	21.52	21.35	21.33		
10	16QAM	1	49	21.74	21.59	21.60	21	2
10	16QAM	25	0	20.62	20.41	20.44		
10	16QAM	25	12	20.49	20.40	20.37		
10	16QAM	25	25	20.57	20.42	20.44		
10	16QAM	50	0	20.67	20.49	20.49		



Channel				37775	38000	38225	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2572.5	2595	2617.5		
5	QPSK	1	0	22.51	22.38	22.30	23	0
5	QPSK	1	12	22.46	22.31	22.25		
5	QPSK	1	24	22.37	22.21	22.22		
5	QPSK	12	0	21.47	21.31	21.33	22	1
5	QPSK	12	7	21.51	21.39	21.35		
5	QPSK	12	13	21.45	21.30	21.29		
5	QPSK	25	0	21.46	21.34	21.30		
5	16QAM	1	0	21.49	21.36	21.30	22	1
5	16QAM	1	12	21.54	21.39	21.37		
5	16QAM	1	24	21.36	21.25	21.28		
5	16QAM	12	0	20.46	20.26	20.28	21	2
5	16QAM	12	7	20.45	20.34	20.35		
5	16QAM	12	13	20.38	20.23	20.25		
5	16QAM	25	0	20.52	20.39	20.36		



<LTE Band 41>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490		
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	23.00	22.97	22.88	22.78	22.55	23.5	0
20	QPSK	1	49	22.80	22.80	22.64	22.63	22.33		
20	QPSK	1	99	22.75	23.08	22.87	22.75	22.40		
20	QPSK	50	0	21.91	21.99	21.83	21.76	21.46	22.5	1
20	QPSK	50	24	21.88	21.93	21.75	21.66	21.44		
20	QPSK	50	50	21.85	21.89	21.75	21.70	21.38		
20	QPSK	100	0	21.88	21.93	21.70	21.67	21.28		
20	16QAM	1	0	22.05	22.17	21.96	21.73	21.60	22.5	1
20	16QAM	1	49	21.86	21.91	21.69	21.76	21.37		
20	16QAM	1	99	21.76	22.07	21.89	21.83	21.38		
20	16QAM	50	0	20.90	20.90	20.80	20.74	20.41	21.5	2
20	16QAM	50	24	20.85	20.91	20.71	20.65	20.41		
20	16QAM	50	50	20.84	20.97	20.70	20.71	20.36		
20	16QAM	100	0	20.86	20.92	20.70	20.65	20.34		
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	22.99	22.99	22.94	22.73	22.52	23.5	0
15	QPSK	1	37	22.74	22.79	22.53	22.55	22.07		
15	QPSK	1	74	23.03	23.02	22.89	22.78	22.47		
15	QPSK	36	0	21.85	21.89	21.84	21.66	21.41	22.5	1
15	QPSK	36	20	21.77	21.98	21.67	21.66	21.28		
15	QPSK	36	39	21.87	22.02	21.71	21.75	21.32		
15	QPSK	75	0	21.81	21.89	21.74	21.69	21.30		
15	16QAM	1	0	22.25	22.22	22.01	21.87	21.68	22.5	1
15	16QAM	1	37	21.84	21.82	21.62	21.60	21.46		
15	16QAM	1	74	22.25	22.20	21.93	21.91	21.47		
15	16QAM	36	0	20.79	20.78	20.75	20.60	20.35	21.5	2
15	16QAM	36	20	20.73	20.92	20.59	20.61	20.23		
15	16QAM	36	39	20.80	20.87	20.61	20.63	20.23		
15	16QAM	75	0	20.79	20.85	20.66	20.60	20.27		
Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	23.06	23.07	23.06	22.90	22.70	23.5	0
10	QPSK	1	25	22.72	22.89	22.60	22.58	22.43		
10	QPSK	1	49	23.02	23.05	22.90	22.86	22.56		
10	QPSK	25	0	21.97	22.07	21.87	21.77	21.44	22.5	1
10	QPSK	25	12	21.87	22.06	21.72	21.75	21.35		
10	QPSK	25	25	21.93	22.10	21.82	21.80	21.41		
10	QPSK	50	0	22.04	22.15	21.83	21.84	21.44		
10	16QAM	1	0	22.24	22.39	22.07	22.02	21.74	22.5	1
10	16QAM	1	25	21.70	22.02	21.65	21.71	21.46		
10	16QAM	1	49	22.05	22.32	21.90	21.99	21.54		
10	16QAM	25	0	20.96	21.01	20.84	20.72	20.42	21.5	2
10	16QAM	25	12	20.91	21.03	20.72	20.77	20.35		
10	16QAM	25	25	20.93	21.07	20.79	20.77	20.44		
10	16QAM	50	0	21.04	21.13	20.83	20.86	20.45		



Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5		
5	QPSK	1	0	22.82	22.93	22.74	22.63	22.34	23.5	0
5	QPSK	1	12	22.76	22.89	22.61	22.59	22.26		
5	QPSK	1	24	22.70	22.93	22.64	22.57	22.20		
5	QPSK	12	0	21.85	21.98	21.73	21.72	21.29	22.5	1
5	QPSK	12	7	21.87	22.02	21.68	21.69	21.31		
5	QPSK	12	13	21.83	21.97	21.72	21.65	21.25		
5	QPSK	25	0	21.83	21.96	21.67	21.64	21.26	22.5	1
5	16QAM	1	0	21.89	21.99	21.75	21.76	21.32		
5	16QAM	1	12	21.92	22.04	21.66	21.67	21.33		
5	16QAM	1	24	21.80	22.03	21.67	21.69	21.20	21.5	2
5	16QAM	12	0	20.84	20.88	20.69	20.65	20.27		
5	16QAM	12	7	20.83	20.95	20.62	20.63	20.26		
5	16QAM	12	13	20.76	20.91	20.65	20.59	20.20	21.5	2
5	16QAM	25	0	20.87	20.97	20.69	20.65	20.28		



<LTE Carrier Aggregation>

General Note:

- This device supports Carrier Aggregation on downlink only for intra band, Uplink CA is not supported. For the device supports bands and bandwidths and configurations are provided as follow table was according to 3GPP.

E-UTRA CA Configuration	E-UTRA Bands	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	Maximum aggregated bandwidth [MHz]	Bandwidth combination set
CA_2A-12A	2			Yes	Yes	Yes	Yes	30	0
	12			Yes	Yes				
CA_2A-12A	2			Yes	Yes	Yes	Yes	30	1
	12		Yes	Yes	Yes				
CA_2A-12A	2			Yes	Yes			20	2
	12			Yes	Yes				
CA_4A-12A	4	Yes	Yes	Yes	Yes			20	0
	12			Yes	Yes				
CA_4A-12A	4	Yes	Yes	Yes	Yes	Yes	Yes	30	1
	12			Yes	Yes				
CA_4A-12A	4			Yes	Yes	Yes	Yes	30	2
	12		Yes	Yes	Yes				
CA_4A-12A	4			Yes	Yes			20	3
	12			Yes	Yes				
CA_4A-12A	4			Yes	Yes	Yes	Yes	30	4
	12			Yes	Yes				
CA_4A-12A	4			Yes	Yes	Yes		20	5
	12			Yes					

E-UTRA CA Configuration	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]	Maximum aggregated bandwidth [MHz]	Bandwidth combination set
CA_2C	5	20	40	0
	10	15,20		
	15	10,15,20	40	
	20	5,10,15,20		
CA_7C	15	15	40	0
	20	20		
	10	20		
	15	15,20	40	1
	20	10,15,20		
	15	10,15		
20	15,20	40	2	
20	15,20			
2A-2A	5,10,15,20	5,10,15,20	40	0
4A-4A	5,10,15,20	5,10,15,20	40	0
	5,10	5,10	20	1
CA_7A-7A	5	15	40	0
	10	10,15		
	15	15,20		
	20	20		
	5,10,15,20	5,10,15,20	40	1
	5,10,15,20	5,10	30	2
	10,15,20	10,15,20	40	3



LTE Carrier Aggregation Conducted Power

General Note:

- i. According to KDB941225 D05A v01r02, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.
- ii. Uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.
- iii. The device supports downlink carrier aggregation only. Uplink carrier aggregation is not supported. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
- iv. Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.
- v. For non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band. For SCC DL RB size and offset will base on the PCC corresponding RB allocation.
- vi. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

$$\text{Nominal channel spacing} = \left\lceil \frac{BW_{\text{Channel}(1)} + BW_{\text{Channel}(2)} - 0.1|BW_{\text{Channel}(1)} - BW_{\text{Channel}(2)}|}{0.6} \right\rceil 0.3 \text{ [MHz]}$$

- vii. For inter-band CA, the SCC selected highest bandwidth and near the middle of its transmission band. For SCC DL RB size and offset will base on the PCC corresponding RB allocation.

Configure		PCC						SCC				Power		
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band		Band 2	20	1900	19100	QPSK	1	99	Band 12	10	737.5	5095	23.54	23.55
		Band 12	10	707.5	23095	QPSK	1	49	Band 2	20	1960	900	23.08	23.11
		Band 4	20	1732.5	20175	QPSK	1	0	Band 12	10	737.5	5095	23.00	23.07
		Band 12	10	707.5	23095	QPSK	1	49	Band 4	20	2132.5	2175	23.10	23.11
Intra-Band	Non-Contiguous	Band 2	20	1900	19100	QPSK	1	99	Band 2	5	1932.5	625	23.55	23.55
		Band 4	20	1732.5	20175	QPSK	1	0	Band 4	5	2112.5	1975	23.05	23.07
		Band 7	20	2535	21100	QPSK	1	0	Band 7	5	2687.5	3425	23.99	24.00
	Contiguous	Band 2	20	1900	19100	QPSK	1	99	Band 2	20	902	1960.2	23.51	23.55
		Band 7	20	2535	21100	QPSK	1	0	Band 7	20	3298	2674.8	23.98	24.00

**<WLAN Conducted Power>****General Note:**

1. For each antenna, transmit power in SISO operation is larger than (or equal to) the power in MIMO operation, RF exposure compliance of MIMO mode can be deduced from the compliance simultaneous transmission of antennas operating in SISO mode.
2. Per KDB 248227 D01v02r02, the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is $< 1.6\text{W/kg}$ and SAR peak to location ratio ≤ 0.04 , no additional SAR measurements for MIMO.
3. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
4. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
5. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
6. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
 - a. When the reported SAR of the initial test position is $\leq 0.4\text{ W/kg}$, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
 - b. When the reported SAR of the test position is $> 0.4\text{ W/kg}$, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is $\leq 0.8\text{ W/kg}$ or all required test position are tested.
 - c. For all positions/configurations, when the reported SAR is $> 0.8\text{ W/kg}$, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is $\leq 1.2\text{ W/kg}$ or all required channels are tested.



<2.4GHz WLAN ANT 1>

Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
802.11b	CH 1	2412	1Mbps	17.96	19.50	98.73
	CH 6	2437		17.91	19.50	
	CH 11	2462		17.89	19.50	
802.11g	CH 1	2412	6Mbps	15.95	17.50	94.50
	CH 6	2437		15.99	17.50	
	CH 11	2462		15.90	17.50	
802.11n-HT20	CH 1	2412	MCS0	11.22	12.00	95.05
	CH 6	2437		15.67	17.50	
	CH 11	2462		13.57	14.00	
802.11n-HT40	CH 3	2422	MCS0	15.87	17.00	97.94
	CH 6	2437		15.61	17.00	
	CH 9	2452		15.58	17.00	

<2.4GHz WLAN ANT 2>

Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
802.11b	CH 1	2412	1Mbps	17.51	19.50	98.72
	CH 6	2437		17.53	19.50	
	CH 11	2462		17.50	19.50	
802.11g	CH 1	2412	6Mbps	15.55	17.50	93.58
	CH 6	2437		15.64	17.50	
	CH 11	2462		15.79	17.50	
802.11n-HT20	CH 1	2412	MCS0	11.28	12.00	94.12
	CH 6	2437		15.58	17.50	
	CH 11	2462		13.56	14.00	
802.11n-HT40	CH 3	2422	MCS0	15.83	17.00	95.92
	CH 6	2437		15.81	17.00	
	CH 9	2452		15.78	17.00	

<2.4GHz WLAN ANT 1+2>

Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
802.11n-HT20	CH 1	2412	MCS0	14.49	15.00	89.91
	CH 6	2437		18.68	20.00	
	CH 11	2462		16.64	17.00	
802.11n-HT40	CH 3	2422	MCS0	18.89	20.00	94.62
	CH 6	2437		18.87	20.00	
	CH 9	2452		18.86	20.00	



<5GHz WLAN ANT1>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN ANT 1	802.11a	CH 36	5180	6Mbps	15.95	17.50	95.41
		CH 40	5200		15.88	17.50	
		CH 44	5220		15.90	17.50	
		CH 48	5240		15.91	17.50	
	802.11n-HT20	CH 36	5180	MCS0	15.76	17.50	94.12
		CH 40	5200		15.70	17.50	
		CH 44	5220		15.71	17.50	
		CH 48	5240		15.69	17.50	
	802.11n-HT40	CH 38	5190	MCS0	10.83	12.00	96.91
		CH 46	5230		15.68	17.50	
	802.11ac-VHT20	CH 36	5180	MCS0	15.71	17.50	94.12
		CH 40	5200		15.70	17.50	
		CH 44	5220		15.58	17.50	
		CH 48	5240		15.56	17.50	
	802.11ac-VHT40	CH 38	5190	MCS0	10.73	12.00	97.94
		CH 46	5230		15.56	17.50	
802.11ac-VHT80	CH 42	5210	MCS0	15.92	17.50	95.04	

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN ANT 1	802.11a	CH 52	5260	6Mbps	15.88	17.50	95.41
		CH 56	5280		15.75	17.50	
		CH 60	5300		15.85	17.50	
		CH 64	5320		15.94	17.50	
	802.11n-HT20	CH 52	5260	MCS0	15.70	17.50	94.12
		CH 56	5280		15.69	17.50	
		CH 60	5300		15.67	17.50	
		CH 64	5320		15.71	17.50	
	802.11n-HT40	CH 54	5270	MCS0	15.69	17.50	96.91
		CH 62	5310		14.72	15.00	
	802.11ac-VHT20	CH 52	5260	MCS0	15.60	17.50	94.12
		CH 56	5280		15.65	17.50	
		CH 60	5300		15.57	17.50	
		CH 64	5320		15.67	17.50	
	802.11ac-VHT40	CH 54	5270	MCS0	15.57	17.50	97.94
		CH 62	5310		14.58	15.00	
802.11ac-VHT80	CH 58	5290	MCS0	15.87	17.50	95.04	



5.5GHz WLAN ANT 1	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 100	5500	6Mbps	15.90	17.50	95.41
		CH 116	5580		15.61	17.50	
		CH 132	5660		15.59	17.50	
		CH 140	5700		15.76	17.50	
	802.11n-HT20	CH 100	5500	MCS0	15.75	17.50	94.12
		CH 116	5580		15.66	17.50	
		CH 132	5660		15.50	17.50	
		CH 140	5700		15.70	17.50	
	802.11n-HT40	CH 102	5510	MCS0	13.88	15.00	96.91
CH 110		5550	15.83		17.50		
CH 134		5670	15.86		17.50		
802.11ac-VHT20	CH 100	5500	MCS0	15.67	17.50	94.12	
	CH 116	5580		15.59	17.50		
	CH 132	5660		15.63	17.50		
	CH 140	5700		15.66	17.50		
802.11ac-VHT40	CH 102	5510	MCS0	13.69	15.00	97.94	
	CH 110	5550		15.64	17.50		
	CH 134	5670		15.67	17.50		
802.11ac-VHT80	CH 106	5530	MCS0	11.90	13.00	95.04	

5.8GHz WLAN ANT 1	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 149	5745	MCS0	15.58	17.50	94.50
		CH 157	5785		15.54	17.50	
		CH 165	5825		15.57	17.50	
	802.11n-HT20	CH 149	5745	MCS0	15.57	17.50	95.00
		CH 157	5785		15.58	17.50	
		CH 165	5825		15.56	17.50	
	802.11n-HT40	CH 151	5755	MCS0	15.95	17.50	96.91
		CH 159	5795		15.89	17.50	
	802.11ac-VHT20	CH 149	5745	MCS0	15.51	17.50	94.12
CH 157		5785	15.50		17.50		
CH 165		5825	15.53		17.50		
802.11ac-VHT40	CH 151	5755	MCS0	15.84	17.50	97.94	
	CH 159	5795		15.79	17.50		
802.11ac-VHT80	CH 155	5775	MCS0	15.82	17.50	95.04	



<5GHz WLAN ANT2>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN ANT 2	802.11a	CH 36	5180	6Mbps	15.95	17.50	94.50
		CH 40	5200		15.90	17.50	
		CH 44	5220		15.86	17.50	
		CH 48	5240		15.80	17.50	
	802.11n-HT20	CH 36	5180	MCS0	15.81	17.50	94.12
		CH 40	5200		15.75	17.50	
		CH 44	5220		15.61	17.50	
		CH 48	5240		15.72	17.50	
	802.11n-HT40	CH 38	5190	MCS0	10.73	12.00	96.91
		CH 46	5230		15.52	17.50	
	802.11ac-VHT20	CH 36	5180	MCS0	15.66	17.50	94.12
		CH 40	5200		15.55	17.50	
		CH 44	5220		15.51	17.50	
		CH 48	5240		15.56	17.50	
	802.11ac-VHT40	CH 38	5190	MCS0	10.72	12.00	96.94
		CH 46	5230		15.51	17.50	
802.11ac-VHT80	CH 42	5210	MCS0	15.52	17.50	95.00	

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN ANT 2	802.11a	CH 52	5260	6Mbps	15.50	17.50	94.50
		CH 56	5280		15.52	17.50	
		CH 60	5300		15.57	17.50	
		CH 64	5320		15.60	17.50	
	802.11n-HT20	CH 52	5260	MCS0	15.61	17.50	94.12
		CH 56	5280		15.55	17.50	
		CH 60	5300		15.59	17.50	
		CH 64	5320		15.71	17.50	
	802.11n-HT40	CH 54	5270	MCS0	15.53	17.50	96.91
		CH 62	5310		14.62	15.00	
	802.11ac-VHT20	CH 52	5260	MCS0	15.51	17.50	94.12
		CH 56	5280		15.50	17.50	
		CH 60	5300		15.52	17.50	
		CH 64	5320		15.61	17.50	
	802.11ac-VHT40	CH 54	5270	MCS0	15.51	17.50	96.94
		CH 62	5310		14.53	15.00	
802.11ac-VHT80	CH 58	5290	MCS0	15.50	17.50	95.00	



5.5GHz WLAN ANT 2	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 100	5500	6Mbps	15.98	17.50	94.50
		CH 116	5580		15.95	17.50	
		CH 132	5660		15.85	17.50	
		CH 140	5700		15.97	17.50	
	802.11n-HT20	CH 100	5500	MCS0	15.70	17.50	94.12
		CH 116	5580		15.61	17.50	
		CH 132	5660		15.59	17.50	
		CH 140	5700		15.64	17.50	
	802.11n-HT40	CH 102	5510	MCS0	13.62	15.00	96.91
CH 110		5550	15.58		17.50		
CH 134		5670	15.60		17.50		
802.11ac-VHT20	CH 100	5500	MCS0	15.61	17.50	94.12	
	CH 116	5580		15.51	17.50		
	CH 132	5660		15.55	17.50		
	CH 140	5700		15.54	17.50		
802.11ac-VHT40	CH 102	5510	MCS0	13.59	15.00	96.94	
	CH 110	5550		15.57	17.50		
	CH 134	5670		15.58	17.50		
802.11ac-VHT80	CH 106	5530	MCS0	11.64	13.00	95.00	

5.8GHz WLAN ANT 2	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a	CH 149	5745	MCS0	15.53	17.50	95.37
		CH 157	5785		15.50	17.50	
		CH 165	5825		15.52	17.50	
	802.11n-HT20	CH 149	5745	MCS0	15.60	17.50	95.05
		CH 157	5785		15.61	17.50	
		CH 165	5825		15.58	17.50	
	802.11n-HT40	CH 151	5755	MCS0	15.89	17.50	96.91
		CH 159	5795		15.86	17.50	
	802.11ac-VHT20	CH 149	5745	MCS0	15.57	17.50	94.12
		CH 157	5785		15.56	17.50	
		CH 165	5825		15.50	17.50	
	802.11ac-VHT40	CH 151	5755	MCS0	15.79	17.50	96.94
CH 159		5795	15.60		17.50		
802.11ac-VHT80	CH 155	5775	MCS0	15.62	17.50	95.00	



<5GHz WLAN ANT1+2>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
5.2GHz WLAN ANT 1+2	802.11n-HT20	CH 36	5180	MCS0	18.87	20.00	89.91	
		CH 40	5200		18.75	20.00		
		CH 44	5220		18.73	20.00		
		CH 48	5240		18.74	20.00		
	802.11n-HT40	CH 38	5190	MCS0	14.19	15.00	95.39	
		CH 46	5230		18.78	20.00		
	802.11ac-VHT20	802.11ac-VHT20	CH 36	5180	MCS0	18.75	20.00	90.91
			CH 40	5200		18.70	20.00	
			CH 44	5220		18.65	20.00	
			CH 48	5240		18.60	20.00	
802.11ac-VHT40	802.11ac-VHT40	CH 38	5190	MCS0	14.14	15.00	94.32	
		CH 46	5230		18.67	20.00		
802.11ac-VHT80	802.11ac-VHT80	CH 42	5210	MCS0	18.96	20.00	91.43	

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
5.3GHz WLAN ANT 1+2	802.11n-HT20	CH 52	5260	MCS0	18.76	20.00	89.91	
		CH 56	5280		18.78	20.00		
		CH 60	5300		18.77	20.00		
		CH 64	5320		18.81	20.00		
	802.11n-HT40	802.11n-HT40	CH 54	5270	MCS0	18.86	20.00	95.39
			CH 62	5310		17.94	18.00	
	802.11ac-VHT20	802.11ac-VHT20	CH 52	5260	MCS0	18.60	20.00	90.91
			CH 56	5280		18.62	20.00	
			CH 60	5300		18.60	20.00	
			CH 64	5320		18.69	20.00	
802.11ac-VHT40	802.11ac-VHT40	CH 54	5270	MCS0	18.70	20.00	94.32	
		CH 62	5310		17.71	18.00		
802.11ac-VHT80	802.11ac-VHT80	CH 58	5290	MCS0	18.92	20.00	91.43	



	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN ANT 1+2	802.11n-HT20	CH 100	5500	MCS0	18.78	20.00	89.91
		CH 116	5580		18.68	20.00	
		CH 132	5660		18.70	20.00	
		CH 140	5700		18.73	20.00	
	802.11n-HT40	CH 102	5510	MCS0	17.02	18.00	95.39
		CH 110	5550		18.89	20.00	
		CH 134	5670		18.90	20.00	
	802.11ac-VHT20	CH 100	5500	MCS0	18.68	20.00	90.91
		CH 116	5580		18.55	20.00	
		CH 132	5660		18.60	20.00	
		CH 140	5700		18.67	20.00	
	802.11ac-VHT40	CH 102	5510	MCS0	16.77	18.00	94.32
		CH 110	5550		18.69	20.00	
CH 134		5670	18.74		20.00		
802.11ac-VHT80	CH 106	5530	MCS0	15.06	16.00	91.43	

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN ANT 1+2	802.11n-HT20	CH 149	5745	MCS0	18.97	20.00	89.91
		CH 157	5785		18.82	20.00	
		CH 165	5825		18.90	20.00	
	802.11n-HT40	CH 151	5755	MCS0	18.98	20.00	95.39
		CH 159	5795		18.93	20.00	
	802.11ac-VHT20	CH 149	5745	MCS0	18.86	20.00	90.91
		CH 157	5785		18.71	20.00	
		CH 165	5825		18.79	20.00	
	802.11ac-VHT40	CH 151	5755	MCS0	18.94	20.00	94.32
		CH 159	5795		18.91	20.00	
	802.11ac-VHT80	CH 155	5775	MCS0	18.85	20.00	91.43

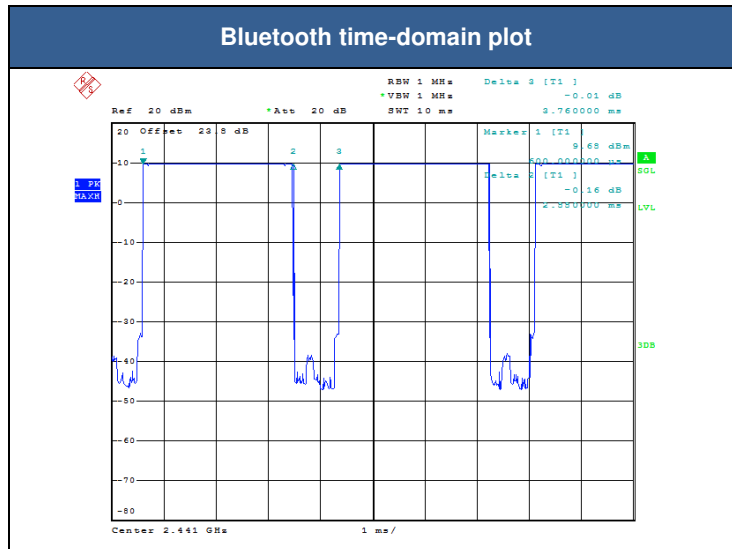
<2.4GHz Bluetooth>

Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402	9.67	6.26	6.28
	CH 39	2441	9.96	6.71	6.72
	CH 78	2480	8.90	4.89	4.91
Tune-up Limit			10.0	7.00	7.00

Mode	Channel	Frequency (MHz)	Average power (dBm)
			GFSK
LE	CH 00	2402	5.80
	CH 19	2440	6.39
	CH 39	2480	4.33
Tune-up Limit			6.50

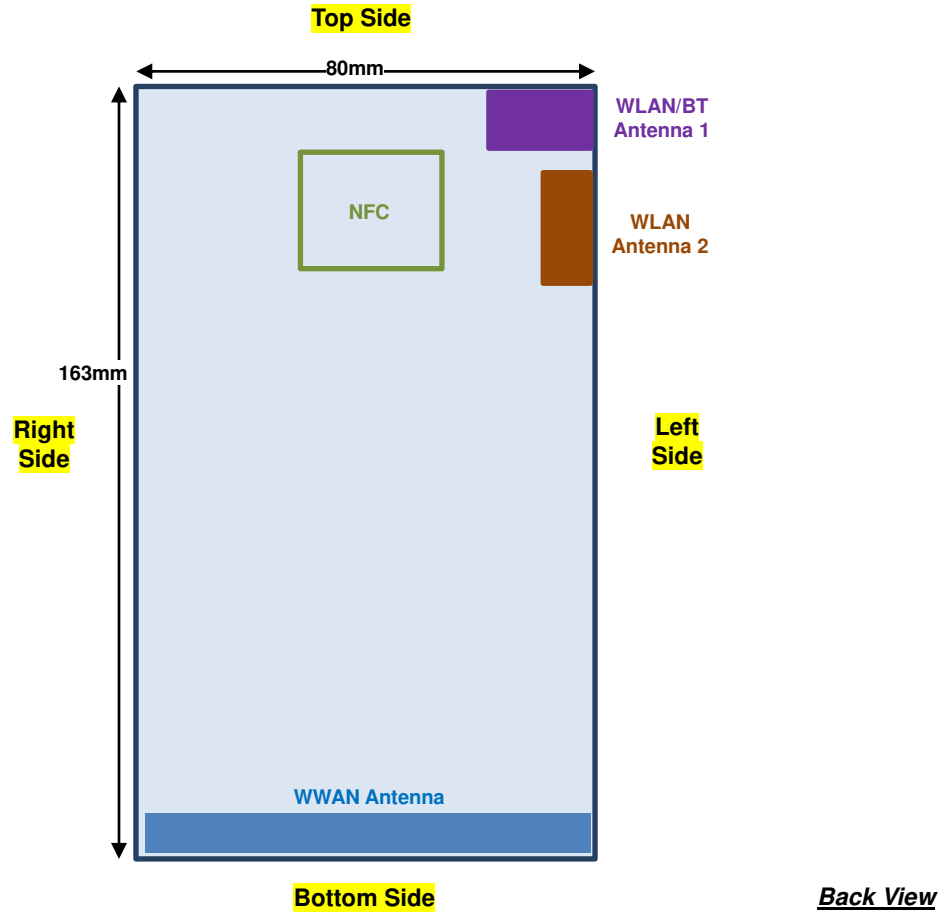
General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The Bluetooth duty cycle is 76.6 % as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the theoretical duty cycle is 83.3%, therefore the actual duty cycle will be scaled up to the theoretical value of Bluetooth reported SAR calculation



13. Antenna Location

<Mobile Phone>



Back View

Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Main	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	≤ 25mm
BT&WLAN Antenna 1	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	>25mm	≤ 25mm
WLAN Antenna 2	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	>25mm	≤ 25mm

Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Main	Yes	Yes	No	Yes	Yes	Yes
BT&WLAN Antenna 1	Yes	Yes	Yes	No	No	Yes
WLAN Antenna 2	Yes	Yes	Yes	No	No	Yes

General Note:

- Referring to KDB 941225 D06 v02r01, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge



14. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
 - b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
 - c. For WWAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - d. For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
 - e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
 - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
 - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg.
4. Pre KDB648474 D04v01r03, when the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.
5. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15 cm or an overall diagonal dimension > 16 cm, when hotspot mode applies, 10-g Product Specific SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, in this report all the hotspot mode results are < 1.2 W/kg.
6. Per KDB648474 D04v01r03, for 5.3GHz / 5.5GHz WLAN product specific SAR is necessary, due to an overall diagonal dimension is > 16 cm.

GSM Note:

1. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE / DTM modes is determined by the source-based time-averaged output power including tune-up tolerance. The 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. Therefore, the GPRS (4Tx slots) for GSM850 and GPRS (3Tx slots) GSM1900 are considered as the primary mode.
2. Other configurations of GSM / GPRS / EDGE / DTM are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq 1/4$ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

UMTS Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is $\leq 1/4$ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

**LTE Note:**

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B12 / B5 / B4 the maximum 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 middle channel of the group of overlapping channels should be selected for testing.
7. LTE B17 / B38 SAR test was covered by B12 / B41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
 - a. the maximum output power, including tolerance, for the smaller band is \leq the larger band to qualify for the SAR test exclusion
 - b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, for U-NII-1 Head and Body-worn SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. For WLAN SAR testing was performed on single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode.
6. Per KDB 248227 D01v02r02, the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6 W/kg and SAR peak to location ratio ≤ 0.04 , no additional SAR measurements for MIMO.
7. During SAR testing the WLAN transmission was verified using a spectrum analyzer.



14.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (4 Tx slots)	Right Cheek	0mm	Sample 1	251	848.8	28.71	29.00	1.069	0.09	0.043	0.046
	GSM850	GPRS (4 Tx slots)	Right Tilted	0mm	Sample 1	251	848.8	28.71	29.00	1.069	0.07	0.025	0.027
	GSM850	GPRS (4 Tx slots)	Left Cheek	0mm	Sample 1	251	848.8	28.71	29.00	1.069	0.13	0.066	0.071
	GSM850	GPRS (4 Tx slots)	Left Cheek	0mm	Sample 1	128	824.2	28.65	29.00	1.084	0.06	0.075	0.081
	GSM850	GPRS (4 Tx slots)	Left Cheek	0mm	Sample 1	189	836.4	28.70	29.00	1.072	0.13	0.069	0.074
	GSM850	GPRS (4 Tx slots)	Left Tilted	0mm	Sample 1	251	848.8	28.71	29.00	1.069	0.12	0.024	0.026
01	GSM850	GPRS (4 Tx slots)	Left Cheek	0mm	Sample 2	128	824.2	28.65	29.00	1.084	0.09	0.077	0.083
	GSM1900	GPRS (3 Tx slots)	Right Cheek	0mm	Sample 1	810	1909.8	28.53	29.00	1.114	0.08	0.021	0.023
	GSM1900	GPRS (3 Tx slots)	Right Cheek	0mm	Sample 1	512	1850.2	28.33	29.00	1.167	-0.15	0.028	0.033
	GSM1900	GPRS (3 Tx slots)	Right Cheek	0mm	Sample 1	661	1880	28.49	29.00	1.125	0.16	0.025	0.028
	GSM1900	GPRS (3 Tx slots)	Right Tilted	0mm	Sample 1	810	1909.8	28.53	29.00	1.114	0.1	0.011	0.012
	GSM1900	GPRS (3 Tx slots)	Left Cheek	0mm	Sample 1	810	1909.8	28.53	29.00	1.114	0.01	0.020	0.022
	GSM1900	GPRS (3 Tx slots)	Left Tilted	0mm	Sample 1	810	1909.8	28.33	29.00	1.167	-0.05	0.018	0.021
02	GSM1900	GPRS (3 Tx slots)	Right Cheek	0mm	Sample 2	512	1850.2	28.33	29.00	1.167	-0.1	0.034	0.040

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Right Cheek	0mm	Sample 1	9538	1907.6	24.11	24.50	1.094	0	0.033	0.036
03	WCDMA II	RMC 12.2Kbps	Right Cheek	0mm	Sample 1	9262	1852.4	23.62	24.50	1.225	-0.13	0.034	0.042
	WCDMA II	RMC 12.2Kbps	Right Cheek	0mm	Sample 1	9400	1880	23.75	24.50	1.189	0.05	0.034	0.040
	WCDMA II	RMC 12.2Kbps	Right Tilted	0mm	Sample 1	9538	1907.6	24.11	24.50	1.094	-0.09	0.014	0.015
	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	Sample 1	9538	1907.6	24.11	24.50	1.094	-0.1	0.029	0.032
	WCDMA II	RMC 12.2Kbps	Left Tilted	0mm	Sample 1	9538	1907.6	24.11	24.50	1.094	0.11	0.023	0.025
	WCDMA II	RMC 12.2Kbps	Right Cheek	0mm	Sample 2	9262	1852.4	23.62	24.50	1.225	-0.04	0.031	0.038
	WCDMA IV	RMC 12.2Kbps	Right Cheek	0mm	Sample 1	1413	1732.6	23.28	23.50	1.052	0.13	0.023	0.024
	WCDMA IV	RMC 12.2Kbps	Right Tilted	0mm	Sample 1	1413	1732.6	23.28	23.50	1.052	0.12	0.010	0.010
04	WCDMA IV	RMC 12.2Kbps	Left Cheek	0mm	Sample 1	1413	1732.6	23.28	23.50	1.052	0	0.055	0.058
	WCDMA IV	RMC 12.2Kbps	Left Cheek	0mm	Sample 1	1312	1712.4	23.08	23.50	1.102	-0.11	0.040	0.044
	WCDMA IV	RMC 12.2Kbps	Left Cheek	0mm	Sample 1	1513	1752.6	23.10	23.50	1.096	-0.1	0.041	0.045
	WCDMA IV	RMC 12.2Kbps	Left Tilted	0mm	Sample 1	1413	1732.6	23.28	23.50	1.052	-0.1	0.012	0.013
	WCDMA IV	RMC 12.2Kbps	Left Cheek	0mm	Sample 2	1413	1732.6	23.28	23.50	1.052	-0.04	0.046	0.048
	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	Sample 1	4182	836.4	23.95	24.50	1.135	0.12	0.040	0.045
	WCDMA V	RMC 12.2Kbps	Right Tilted	0mm	Sample 1	4182	836.4	23.95	24.50	1.135	-0.14	0.008	0.009
	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	Sample 1	4182	836.4	23.95	24.50	1.135	0.13	0.069	0.078
05	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	Sample 1	4132	826.4	23.86	24.50	1.159	0.1	0.070	0.081
	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	Sample 1	4233	846.6	23.94	24.50	1.138	0.05	0.065	0.074
	WCDMA V	RMC 12.2Kbps	Left Tilted	0mm	Sample 1	4182	836.4	23.95	24.50	1.135	0.09	0.008	0.009
	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	Sample 2	4132	826.4	23.86	24.50	1.159	0.1	0.047	0.054



<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Sample 1	39750	2506	23.00	23.50	1.122	62.90	1.006	0.04	0.038	0.043
11	LTE Band 41	20M	QPSK	1	99	Right Cheek	0mm	Sample 1	40185	2549.5	23.08	23.50	1.102	62.90	1.006	0.13	0.041	0.045
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Sample 1	40620	2593	22.88	23.50	1.153	62.90	1.006	-0.1	0.036	0.042
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Sample 1	41055	2636.5	22.78	23.50	1.180	62.90	1.006	0.13	0.032	0.038
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Sample 1	41490	2680	22.55	23.50	1.245	62.90	1.006	0.06	0.021	0.026
	LTE Band 41	20M	QPSK	50	0	Right Cheek	0mm	Sample 1	40185	2549.5	21.99	22.50	1.125	62.90	1.006	0.16	0.031	0.035
	LTE Band 41	20M	QPSK	1	99	Right Tilted	0mm	Sample 1	40185	2549.5	23.08	23.50	1.102	62.90	1.006	0.14	0.021	0.023
	LTE Band 41	20M	QPSK	50	0	Right Tilted	0mm	Sample 1	40185	2549.5	21.99	22.50	1.125	62.90	1.006	0.02	0.018	0.020
	LTE Band 41	20M	QPSK	1	99	Left Cheek	0mm	Sample 1	40185	2549.5	23.08	23.50	1.102	62.90	1.006	0.03	0.030	0.033
	LTE Band 41	20M	QPSK	50	0	Left Cheek	0mm	Sample 1	40185	2549.5	21.99	22.50	1.125	62.90	1.006	-0.03	0.026	0.029
	LTE Band 41	20M	QPSK	1	99	Left Tilted	0mm	Sample 1	40185	2549.5	23.08	23.50	1.102	62.90	1.006	-0.04	0.032	0.035
	LTE Band 41	20M	QPSK	50	0	Left Tilted	0mm	Sample 1	40185	2549.5	21.99	22.50	1.125	62.90	1.006	-0.11	0.028	0.032
	LTE Band 41	20M	QPSK	1	99	Right Cheek	0mm	Sample 2	40185	2549.5	23.08	23.50	1.102	62.90	1.006	0.01	0.041	0.045

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 1	Sample 1	1	2412	17.96	19.50	1.427	98.73	1.013	0.07	0.387	0.559
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 1	Sample 1	1	2412	17.96	19.50	1.427	98.73	1.013	0.06	0.284	0.411
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 1	Sample 1	1	2412	17.96	19.50	1.427	98.73	1.013	0.08	0.109	0.158
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 1	Sample 1	1	2412	17.96	19.50	1.427	98.73	1.013	0.01	0.079	0.114
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 1	Sample 2	1	2412	17.96	19.50	1.427	98.73	1.013	0.17	0.400	0.578
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 2	Sample 1	6	2437	17.53	19.5	1.575	98.72	1.013	-0.095	0.206	0.329
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 2	Sample 1	6	2437	17.53	19.5	1.575	98.72	1.013	0.14	0.062	0.099
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 2	Sample 1	6	2437	17.53	19.5	1.575	98.72	1.013	0.1	0.049	0.078
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 2	Sample 1	6	2437	17.53	19.5	1.575	98.72	1.013	-0.107	0.021	0.034
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 2	Sample 1	6	2437	17.53	19.5	1.575	98.72	1.013	-0.14	0.371	0.592
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 2	Sample 1	1	2412	17.51	19.5	1.583	98.72	1.013	-0.17	0.183	0.293
12	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 2	Sample 2	11	2462	17.50	19.5	1.586	98.72	1.013	0.15	0.448	0.720



Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 1	Sample 1	58	5290	15.87	17.50	1.455	95.04	1.052	0.13	0.205	0.314
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 1	Sample 1	58	5290	15.87	17.50	1.455	95.04	1.052	0.18	0.141	0.216
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1	Sample 1	58	5290	15.87	17.50	1.455	95.04	1.052	0.1	0.062	0.095
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 1	Sample 1	58	5290	15.87	17.50	1.455	95.04	1.052	-0.15	0.061	0.093
13	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 1	Sample 2	58	5290	15.87	17.50	1.455	95.04	1.052	0.11	0.370	0.567
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 2	Sample 1	58	5290	15.50	17.50	1.585	95.00	1.053	0.125	0.052	0.087
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 2	Sample 1	58	5290	15.50	17.50	1.585	95.00	1.053	0	0.030	0.050
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 2	Sample 1	58	5290	15.50	17.50	1.585	95.00	1.053	0	0.012	0.020
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 2	Sample 1	58	5290	15.50	17.50	1.585	95.00	1.053	0	0.011	0.018
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 2	Sample 2	58	5290	15.50	17.50	1.585	95.00	1.053	0.17	0.071	0.118
	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 1	Sample 1	134	5670	15.86	17.50	1.460	96.91	1.032	0.05	0.484	0.729
	WLAN5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	Ant 1	Sample 1	134	5670	15.86	17.50	1.460	96.91	1.032	0	0.362	0.545
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 1	Sample 1	134	5670	15.86	17.50	1.460	96.91	1.032	0.12	0.075	0.113
	WLAN5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 1	Sample 1	134	5670	15.86	17.50	1.460	96.91	1.032	0.01	0.069	0.104
14	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 1	Battery 2	134	5670	15.86	17.50	1.460	96.91	1.032	0.09	0.615	0.927
	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 1	Sample 2	110	5550	15.83	17.50	1.470	96.91	1.032	-0.13	0.510	0.774
	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 2	Sample 1	134	5670	15.60	17.50	1.550	96.91	1.032	0.139	0.037	0.059
	WLAN5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	Ant 2	Sample 1	134	5670	15.60	17.50	1.550	96.91	1.032	0	0.001	0.002
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 2	Sample 1	134	5670	15.60	17.50	1.550	96.91	1.032	0	0.001	0.002
	WLAN5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 2	Sample 1	134	5670	15.60	17.50	1.550	96.91	1.032	0	0.001	0.002
	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 2	Sample 2	134	5670	15.60	17.50	1.550	96.91	1.032	0.15	0.090	0.144
15	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 1	Sample 1	155	5775	15.82	17.50	1.472	95.04	1.052	-0.1	0.663	1.027
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 1	Sample 1	155	5775	15.82	17.50	1.472	95.04	1.052	-0.19	0.391	0.605
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1	Sample 1	155	5775	15.82	17.50	1.472	95.04	1.052	0.14	0.099	0.153
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 1	Sample 1	155	5775	15.82	17.50	1.472	95.04	1.052	0.11	0.089	0.138
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 1	Sample 2	155	5775	15.82	17.50	1.472	96.91	1.032	0.18	0.644	0.978
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 2	Sample 1	155	5775	15.62	17.50	1.541	95.00	1.053	0.007	0.026	0.042
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 2	Sample 1	155	5775	15.62	17.50	1.541	95.00	1.053	0	0.001	0.002
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 2	Sample 1	155	5775	15.62	17.50	1.541	95.00	1.053	0	0.001	0.002
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 2	Sample 1	155	5775	15.62	17.50	1.541	95.00	1.053	0	0.001	0.002
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 2	Sample 2	155	5775	15.62	17.50	1.541	95.00	1.053	0.19	0.071	0.115

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Right Cheek	0mm	Ant 1	Sample 1	39	2441	9.96	10.00	1.009	76.60	1.087	0.053	0.066	0.072
	Bluetooth	1Mbps	Right Cheek	0mm	Ant 1	Sample 1	0	2402	9.67	10.00	1.079	76.60	1.087	0.1	0.040	0.047
	Bluetooth	1Mbps	Right Cheek	0mm	Ant 1	Sample 1	78	2480	8.90	10.00	1.288	76.60	1.087	0.035	0.046	0.064
	Bluetooth	1Mbps	Right Tilted	0mm	Ant 1	Sample 1	39	2441	9.96	10.00	1.009	76.60	1.087	0.14	0.040	0.044
	Bluetooth	1Mbps	Left Cheek	0mm	Ant 1	Sample 1	39	2441	9.96	10.00	1.009	76.60	1.087	0.168	0.020	0.022
	Bluetooth	1Mbps	Left Tilted	0mm	Ant 1	Sample 1	39	2441	9.96	10.00	1.009	76.60	1.087	0.17	0.021	0.023
16	Bluetooth	1Mbps	Right Cheek	0mm	Ant 1	Sample 2	39	2441	9.96	10.00	1.009	76.60	1.087	0.127	0.066	0.072



14.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (4 Tx slots)	Front	10mm	Sample 1	251	848.8	28.71	29.00	1.069	-0.16	0.130	0.139
	GSM850	GPRS (4 Tx slots)	Back	10mm	Sample 1	251	848.8	28.71	29.00	1.069	-0.01	0.155	0.166
	GSM850	GPRS (4 Tx slots)	Back	10mm	Sample 1	128	824.2	28.65	29.00	1.084	-0.14	0.175	0.190
	GSM850	GPRS (4 Tx slots)	Back	10mm	Sample 1	189	836.4	28.70	29.00	1.072	-0.08	0.171	0.183
	GSM850	GPRS (4 Tx slots)	Left Side	10mm	Sample 1	251	848.8	28.71	29.00	1.069	-0.16	0.103	0.110
	GSM850	GPRS (4 Tx slots)	Right Side	10mm	Sample 1	251	848.8	28.71	29.00	1.069	-0.03	0.040	0.043
	GSM850	GPRS (4 Tx slots)	Bottom Side	10mm	Sample 1	251	848.8	28.71	29.00	1.069	-0.05	0.078	0.083
17	GSM850	GPRS (4 Tx slots)	Back	10mm	Sample 2	128	824.2	28.65	29.00	1.084	0.17	0.182	0.197
	GSM1900	GPRS (3 Tx slots)	Front	10mm	Sample 1	810	1909.8	28.53	29.00	1.114	-0.05	0.145	0.162
	GSM1900	GPRS (3 Tx slots)	Back	10mm	Sample 1	810	1909.8	28.53	29.00	1.114	-0.16	0.181	0.202
	GSM1900	GPRS (3 Tx slots)	Back	10mm	Sample 1	512	1850.2	28.33	29.00	1.167	-0.04	0.197	0.230
	GSM1900	GPRS (3 Tx slots)	Back	10mm	Sample 1	661	1880	28.49	29.00	1.125	-0.04	0.211	0.237
	GSM1900	GPRS (3 Tx slots)	Left Side	10mm	Sample 1	810	1909.8	28.53	29.00	1.114	-0.07	0.032	0.036
	GSM1900	GPRS (3 Tx slots)	Right Side	10mm	Sample 1	810	1909.8	28.53	29.00	1.114	-0.07	0.065	0.072
	GSM1900	GPRS (3 Tx slots)	Bottom Side	10mm	Sample 1	810	1909.8	28.53	29.00	1.114	0.01	0.413	0.460
	GSM1900	GPRS (3 Tx slots)	Bottom Side	10mm	Sample 1	512	1850.2	28.33	29.00	1.167	-0.13	0.380	0.443
	GSM1900	GPRS (3 Tx slots)	Bottom Side	10mm	Sample 1	661	1880	28.49	29.00	1.125	0.04	0.458	0.515
18	GSM1900	GPRS (3 Tx slots)	Bottom Side	10mm	Sample 2	661	1880	28.49	29.00	1.125	0.01	0.541	0.608

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Front	10mm	Sample 1	9538	1907.6	24.11	24.50	1.094	-0.1	0.218	0.238
	WCDMA II	RMC 12.2Kbps	Back	10mm	Sample 1	9538	1907.6	24.11	24.50	1.094	0.02	0.249	0.272
	WCDMA II	RMC 12.2Kbps	Back	10mm	Sample 1	9262	1852.4	23.62	24.50	1.225	-0.03	0.225	0.276
	WCDMA II	RMC 12.2Kbps	Back	10mm	Sample 1	9400	1880	23.75	24.50	1.189	-0.02	0.248	0.295
	WCDMA II	RMC 12.2Kbps	Left Side	10mm	Sample 1	9538	1907.6	24.11	24.50	1.094	-0.03	0.033	0.036
	WCDMA II	RMC 12.2Kbps	Right Side	10mm	Sample 1	9538	1907.6	24.11	24.50	1.094	0.1	0.089	0.097
19	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	Sample 1	9538	1907.6	24.11	24.50	1.094	-0.04	0.552	0.604
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	Sample 1	9262	1852.4	23.62	24.50	1.225	0.03	0.433	0.530
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	Sample 1	9400	1880	23.75	24.50	1.189	0	0.446	0.530
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	Sample 2	9538	1907.6	24.11	24.50	1.094	0.01	0.531	0.581
	WCDMA IV	RMC 12.2Kbps	Front	10mm	Sample 1	1413	1732.6	23.28	23.50	1.052	-0.03	0.490	0.515
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Sample 1	1413	1732.6	23.28	23.50	1.052	-0.19	0.521	0.548
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Sample 1	1312	1712.4	23.08	23.50	1.102	-0.04	0.583	0.642
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Sample 1	1513	1752.6	23.10	23.50	1.096	0	0.413	0.453
	WCDMA IV	RMC 12.2Kbps	Left Side	10mm	Sample 1	1413	1732.6	23.28	23.50	1.052	0.04	0.048	0.050
	WCDMA IV	RMC 12.2Kbps	Right Side	10mm	Sample 1	1413	1732.6	23.28	23.50	1.052	0.15	0.013	0.014
	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	Sample 1	1413	1732.6	23.28	23.50	1.052	-0.15	0.867	0.912
20	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	Sample 1	1312	1712.4	23.08	23.50	1.102	-0.18	1.080	1.190
	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	Sample 1	1513	1752.6	23.10	23.50	1.096	-0.18	0.676	0.741
	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	Sample 2	1312	1712.4	23.08	23.50	1.102	-0.15	0.832	0.916
	WCDMA V	RMC 12.2Kbps	Front	10mm	Sample 1	4182	836.4	23.95	24.50	1.135	0.01	0.125	0.142
	WCDMA V	RMC 12.2Kbps	Back	10mm	Sample 1	4182	836.4	23.95	24.50	1.135	-0.12	0.147	0.167
21	WCDMA V	RMC 12.2Kbps	Back	10mm	Sample 1	4132	826.4	23.86	24.50	1.159	-0.04	0.156	0.181
	WCDMA V	RMC 12.2Kbps	Back	10mm	Sample 1	4233	846.6	23.94	24.50	1.138	0	0.139	0.158
	WCDMA V	RMC 12.2Kbps	Left Side	10mm	Sample 1	4182	836.4	23.95	24.50	1.135	0	0.101	0.115
	WCDMA V	RMC 12.2Kbps	Right Side	10mm	Sample 1	4182	836.4	23.95	24.50	1.135	-0.02	0.046	0.052
	WCDMA V	RMC 12.2Kbps	Bottom Side	10mm	Sample 1	4182	836.4	23.95	24.50	1.135	0.11	0.069	0.078
	WCDMA V	RMC 12.2Kbps	Back	10mm	Sample 2	4132	826.4	23.86	24.50	1.159	-0.07	0.153	0.177



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2	20M	QPSK	1	99	Front	10mm	Sample 1	19100	1900	23.55	24.00	1.109	-0.04	0.192	0.213
	LTE Band 2	20M	QPSK	50	50	Front	10mm	Sample 1	19100	1900	22.35	23.00	1.161	0	0.178	0.207
	LTE Band 2	20M	QPSK	1	99	Back	10mm	Sample 1	19100	1900	23.55	24.00	1.109	-0.12	0.228	0.253
	LTE Band 2	20M	QPSK	1	99	Back	10mm	Sample 1	18700	1860	22.86	24.00	1.300	0.02	0.251	0.326
	LTE Band 2	20M	QPSK	1	99	Back	10mm	Sample 1	18900	1880	23.27	24.00	1.183	-0.04	0.274	0.324
	LTE Band 2	20M	QPSK	50	50	Back	10mm	Sample 1	19100	1900	22.35	23.00	1.161	0.02	0.211	0.245
	LTE Band 2	20M	QPSK	1	99	Left Side	10mm	Sample 1	19100	1900	23.55	24.00	1.109	-0.02	0.028	0.031
	LTE Band 2	20M	QPSK	50	50	Left Side	10mm	Sample 1	19100	1900	22.35	23.00	1.161	-0.14	0.024	0.028
	LTE Band 2	20M	QPSK	1	99	Right Side	10mm	Sample 1	19100	1900	23.55	24.00	1.109	-0.08	0.075	0.083
	LTE Band 2	20M	QPSK	50	50	Right Side	10mm	Sample 1	19100	1900	22.35	23.00	1.161	-0.01	0.070	0.081
	LTE Band 2	20M	QPSK	1	99	Bottom Side	10mm	Sample 1	19100	1900	23.55	24.00	1.109	-0.04	0.491	0.545
	LTE Band 2	20M	QPSK	1	99	Bottom Side	10mm	Sample 1	18700	1860	22.86	24.00	1.300	-0.01	0.511	0.664
	LTE Band 2	20M	QPSK	1	99	Bottom Side	10mm	Sample 1	18900	1880	23.27	24.00	1.183	-0.03	0.560	0.663
	LTE Band 2	20M	QPSK	50	50	Bottom Side	10mm	Sample 1	19100	1900	22.35	23.00	1.161	-0.03	0.438	0.509
22	LTE Band 2	20M	QPSK	1	99	Bottom Side	10mm	Sample 2	18700	1860	22.86	24.00	1.300	0.03	0.522	0.679
	LTE Band 4	20M	QPSK	1	0	Front	10mm	Sample 1	20175	1732.5	23.07	23.50	1.104	-0.07	0.482	0.532
	LTE Band 4	20M	QPSK	50	0	Front	10mm	Sample 1	20175	1732.5	21.90	22.50	1.148	0	0.371	0.426
	LTE Band 4	20M	QPSK	1	0	Back	10mm	Sample 1	20175	1732.5	23.07	23.50	1.104	-0.05	0.500	0.552
	LTE Band 4	20M	QPSK	50	0	Back	10mm	Sample 1	20175	1732.5	21.90	22.50	1.148	-0.11	0.394	0.452
	LTE Band 4	20M	QPSK	1	0	Left Side	10mm	Sample 1	20175	1732.5	23.07	23.50	1.104	0.06	0.035	0.039
	LTE Band 4	20M	QPSK	50	0	Left Side	10mm	Sample 1	20175	1732.5	21.90	22.50	1.148	0.04	0.030	0.034
	LTE Band 4	20M	QPSK	1	0	Right Side	10mm	Sample 1	20175	1732.5	23.07	23.50	1.104	0.11	0.018	0.020
	LTE Band 4	20M	QPSK	50	0	Right Side	10mm	Sample 1	20175	1732.5	21.90	22.50	1.148	0.02	0.012	0.014
23	LTE Band 4	20M	QPSK	1	0	Bottom Side	10mm	Sample 1	20175	1732.5	23.07	23.50	1.104	-0.13	0.919	1.015
	LTE Band 4	20M	QPSK	50	0	Bottom Side	10mm	Sample 1	20175	1732.5	21.90	22.50	1.148	0.01	0.676	0.776
	LTE Band 4	20M	QPSK	100	0	Bottom Side	10mm	Sample 1	20175	1732.5	21.91	22.50	1.146	-0.18	0.662	0.758
	LTE Band 4	20M	QPSK	1	0	Bottom Side	10mm	Sample 2	20175	1732.5	23.07	23.50	1.104	0.01	0.701	0.774
	LTE Band 5	10M	QPSK	1	0	Front	10mm	Sample 1	20525	836.5	23.01	23.50	1.119	0.02	0.096	0.107
	LTE Band 5	10M	QPSK	25	0	Front	10mm	Sample 1	20525	836.5	22.16	22.50	1.081	0.03	0.079	0.085
24	LTE Band 5	10M	QPSK	1	0	Back	10mm	Sample 1	20525	836.5	23.01	23.50	1.119	0.05	0.108	0.121
	LTE Band 5	10M	QPSK	25	0	Back	10mm	Sample 1	20525	836.5	22.16	22.50	1.081	0	0.084	0.091
	LTE Band 5	10M	QPSK	1	0	Left Side	10mm	Sample 1	20525	836.5	23.01	23.50	1.119	0.03	0.065	0.073
	LTE Band 5	10M	QPSK	25	0	Left Side	10mm	Sample 1	20525	836.5	22.16	22.50	1.081	0.02	0.054	0.058
	LTE Band 5	10M	QPSK	1	0	Right Side	10mm	Sample 1	20525	836.5	23.01	23.50	1.119	0	0.030	0.034
	LTE Band 5	10M	QPSK	25	0	Right Side	10mm	Sample 1	20525	836.5	22.16	22.50	1.081	0.04	0.024	0.026
	LTE Band 5	10M	QPSK	1	0	Bottom Side	10mm	Sample 1	20525	836.5	23.01	23.50	1.119	0	0.053	0.059
	LTE Band 5	10M	QPSK	25	0	Bottom Side	10mm	Sample 1	20525	836.5	22.16	22.50	1.081	0.01	0.044	0.048
	LTE Band 5	10M	QPSK	1	0	Back	10mm	Sample 2	20525	836.5	23.01	23.50	1.119	0.04	0.107	0.120



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Sample 1	21100	2535	24.00	24.50	1.122	0.01	0.421	0.472
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Sample 1	20850	2510	23.71	24.50	1.199	-0.06	0.397	0.476
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Sample 1	21350	2560	23.39	24.50	1.291	0.01	0.461	0.595
	LTE Band 7	20M	QPSK	50	0	Front	10mm	Sample 1	21350	2560	22.65	23.50	1.216	0.01	0.337	0.410
	LTE Band 7	20M	QPSK	1	0	Back	10mm	Sample 1	21100	2535	24.00	24.50	1.122	-0.02	0.356	0.399
	LTE Band 7	20M	QPSK	50	0	Back	10mm	Sample 1	21350	2560	22.65	23.50	1.216	-0.01	0.286	0.348
	LTE Band 7	20M	QPSK	1	0	Left Side	10mm	Sample 1	21100	2535	24.00	24.50	1.122	-0.02	0.063	0.071
	LTE Band 7	20M	QPSK	50	0	Left Side	10mm	Sample 1	21350	2560	22.65	23.50	1.216	0.01	0.046	0.056
	LTE Band 7	20M	QPSK	1	0	Right Side	10mm	Sample 1	21100	2535	24.00	24.50	1.122	0.13	0.308	0.346
	LTE Band 7	20M	QPSK	50	0	Right Side	10mm	Sample 1	21350	2560	22.65	23.50	1.216	-0.04	0.249	0.303
	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	Sample 1	21100	2535	24.00	24.50	1.122	-0.03	0.614	0.689
	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	Sample 1	20850	2510	23.71	24.50	1.199	0	0.599	0.719
25	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	Sample 1	21350	2560	23.39	24.50	1.291	-0.16	0.773	0.998
	LTE Band 7	20M	QPSK	50	0	Bottom Side	10mm	Sample 1	21350	2560	22.65	23.50	1.216	-0.04	0.454	0.552
	LTE Band 7	20M	QPSK	100	0	Bottom Side	10mm	Sample 1	21100	2535	22.72	23.50	1.197	0	0.450	0.539
	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	Sample 2	21350	2560	23.39	24.50	1.291	0	0.633	0.817
	LTE Band 12	10M	QPSK	1	49	Front	10mm	Sample 1	23095	707.5	23.11	23.50	1.094	-0.02	0.098	0.107
	LTE Band 12	10M	QPSK	25	25	Front	10mm	Sample 1	23095	707.5	22.03	22.50	1.114	-0.01	0.081	0.090
	LTE Band 12	10M	QPSK	1	49	Back	10mm	Sample 1	23095	707.5	23.11	23.50	1.094	0.03	0.122	0.133
	LTE Band 12	10M	QPSK	25	25	Back	10mm	Sample 1	23095	707.5	22.03	22.50	1.114	0.01	0.100	0.111
26	LTE Band 12	10M	QPSK	1	49	Back	10mm	Sample 2	23095	707.5	23.11	23.50	1.094	-0.01	0.124	0.136
	LTE Band 12	10M	QPSK	1	49	Left Side	10mm	Sample 1	23095	707.5	23.11	23.50	1.094	0.01	0.077	0.084
	LTE Band 12	10M	QPSK	25	25	Left Side	10mm	Sample 1	23095	707.5	22.03	22.50	1.114	-0.02	0.065	0.072
	LTE Band 12	10M	QPSK	1	49	Right Side	10mm	Sample 1	23095	707.5	23.11	23.50	1.094	-0.01	0.046	0.050
	LTE Band 12	10M	QPSK	25	25	Right Side	10mm	Sample 1	23095	707.5	22.03	22.50	1.114	-0.01	0.039	0.043
	LTE Band 12	10M	QPSK	1	49	Bottom Side	10mm	Sample 1	23095	707.5	23.11	23.50	1.094	0.13	0.051	0.056
	LTE Band 12	10M	QPSK	25	25	Bottom Side	10mm	Sample 1	23095	707.5	22.03	22.50	1.114	0.19	0.041	0.046

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20M	QPSK	1	0	Front	10mm	Sample 1	39750	2506	23.00	23.50	1.122	62.90	1.006	0.1	0.245	0.277
	LTE Band 41	20M	QPSK	1	99	Front	10mm	Sample 1	40185	2549.5	23.08	23.50	1.102	62.90	1.006	-0.03	0.303	0.336
	LTE Band 41	20M	QPSK	1	0	Front	10mm	Sample 1	40620	2593	22.88	23.50	1.153	62.90	1.006	0.08	0.333	0.386
	LTE Band 41	20M	QPSK	1	0	Front	10mm	Sample 1	41055	2636.5	22.78	23.50	1.180	62.90	1.006	-0.04	0.315	0.374
	LTE Band 41	20M	QPSK	1	0	Front	10mm	Sample 1	41490	2680	22.55	23.50	1.245	62.90	1.006	-0.03	0.237	0.297
	LTE Band 41	20M	QPSK	50	0	Front	10mm	Sample 1	40185	2549.5	21.99	22.50	1.125	62.90	1.006	-0.13	0.225	0.255
	LTE Band 41	20M	QPSK	1	0	Back	10mm	Sample 1	40185	2549.5	23.08	23.50	1.102	62.90	1.006	-0.04	0.216	0.239
	LTE Band 41	20M	QPSK	50	0	Back	10mm	Sample 1	40185	2549.5	21.99	22.50	1.125	62.90	1.006	0.03	0.195	0.221
	LTE Band 41	20M	QPSK	1	0	Left Side	10mm	Sample 1	40185	2549.5	23.08	23.50	1.102	62.90	1.006	-0.16	0.035	0.039
	LTE Band 41	20M	QPSK	50	0	Left Side	10mm	Sample 1	40185	2549.5	21.99	22.50	1.125	62.90	1.006	-0.1	0.027	0.031
	LTE Band 41	20M	QPSK	1	0	Right Side	10mm	Sample 1	40185	2549.5	23.08	23.50	1.102	62.90	1.006	0.04	0.146	0.162
	LTE Band 41	20M	QPSK	50	0	Right Side	10mm	Sample 1	40185	2549.5	21.99	22.50	1.125	62.90	1.006	0.07	0.172	0.195
27	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	Sample 1	40620	2593	22.88	23.50	1.153	62.90	1.006	0.04	0.578	0.671
	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	Sample 1	39750	2506	23.00	23.50	1.122	62.90	1.006	0.04	0.505	0.570
	LTE Band 41	20M	QPSK	1	99	Bottom Side	10mm	Sample 1	40185	2549.5	23.08	23.50	1.102	62.90	1.006	0.02	0.552	0.612
	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	Sample 1	41055	2636.5	22.78	23.50	1.180	62.90	1.006	0.01	0.543	0.645
	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	Sample 1	41490	2680	22.55	23.50	1.245	62.90	1.006	0.03	0.368	0.461
	LTE Band 41	20M	QPSK	50	0	Bottom Side	10mm	Sample 1	40185	2549.5	21.99	22.50	1.125	62.90	1.006	-0.03	0.306	0.346
	LTE Band 41	20M	QPSK	100	0	Bottom Side	10mm	Sample 1	40185	2549.5	21.93	22.50	1.140	62.90	1.006	-0.03	0.382	0.438
	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	Sample 2	40620	2593	22.88	23.50	1.153	62.90	1.006	-0.03	0.405	0.470



<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 1	Sample 1	1	2412	17.96	19.50	1.427	98.73	1.013	0.09	0.035	0.051
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 1	Sample 1	1	2412	17.96	19.50	1.427	98.73	1.013	0.14	0.032	0.046
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 1	Sample 1	1	2412	17.96	19.50	1.427	98.73	1.013	-0.1	0.033	0.048
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 1	Sample 1	1	2412	17.96	19.50	1.427	98.73	1.013	-0.09	0.011	0.016
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 1	Sample 2	1	2412	17.96	19.50	1.427	98.73	1.013	0.15	0.031	0.045
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 2	Sample 1	6	2437	17.53	19.50	1.575	98.72	1.013	0.15	0.061	0.097
28	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 2	Sample 1	6	2437	17.53	19.50	1.575	98.72	1.013	-0.13	0.088	0.140
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 2	Sample 1	1	2412	17.51	19.50	1.583	98.72	1.013	-0.09	0.078	0.125
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 2	Sample 1	11	2462	17.50	19.50	1.585	98.72	1.013	-0.12	0.078	0.125
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 2	Sample 1	6	2437	17.53	19.50	1.575	98.72	1.013	0.17	0.050	0.080
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 2	Sample 1	6	2437	17.53	19.50	1.575	98.72	1.013	-0.16	0.016	0.026
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 2	Sample 2	6	2437	17.53	19.50	1.575	98.72	1.013	-0.14	0.071	0.113
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 1	Sample 1	42	5210	15.92	17.50	1.439	95.04	1.052	0.16	0.029	0.044
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 1	Sample 1	42	5210	15.92	17.50	1.439	95.04	1.052	0.12	0.019	0.029
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	10mm	Ant 1	Sample 1	42	5210	15.92	17.50	1.439	95.04	1.052	-0.17	0.003	0.004
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	10mm	Ant 1	Sample 1	42	5210	15.92	17.50	1.439	95.04	1.052	-0.16	0.001	0.002
29	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 1	Sample 2	42	5210	15.92	17.50	1.439	95.04	1.052	-0.01	0.051	0.077
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 2	Sample 1	42	5210	15.52	17.50	1.578	95.00	1.053	-0.13	0.027	0.045
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 2	Sample 1	42	5210	15.52	17.50	1.578	95.00	1.053	-0.15	0.025	0.042
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	10mm	Ant 2	Sample 1	42	5210	15.52	17.50	1.578	95.00	1.053	0.01	0.008	0.014
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	10mm	Ant 2	Sample 1	42	5210	15.52	17.50	1.578	95.00	1.053	-0.11	0.003	0.006
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 2	Sample 2	42	5210	15.52	17.50	1.578	95.00	1.053	-0.12	0.021	0.035
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 1	Sample 1	155	5775	15.82	17.50	1.472	95.04	1.052	0.15	0.082	0.127
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 1	Sample 1	155	5775	15.82	17.50	1.472	95.04	1.052	-0.15	0.022	0.034
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	10mm	Ant 1	Sample 1	155	5775	15.82	17.50	1.472	95.04	1.052	-0.07	0.002	0.003
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	10mm	Ant 1	Sample 1	155	5775	15.82	17.50	1.472	95.04	1.052	-0.15	0.004	0.007
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 1	Sample 2	155	5775	15.82	17.50	1.472	95.04	1.052	0.1	0.037	0.057
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 2	Sample 1	155	5775	15.62	17.50	1.541	95.00	1.053	-0.11	0.001	0.002
30	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 2	Sample 1	155	5775	15.62	17.50	1.541	95.00	1.053	0.07	0.097	0.157
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	10mm	Ant 2	Sample 1	155	5775	15.62	17.50	1.541	95.00	1.053	0.19	0.009	0.014
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	10mm	Ant 2	Sample 1	155	5775	15.62	17.50	1.541	95.00	1.053	0.18	0.002	0.003
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 2	Sample 2	155	5775	15.62	17.50	1.541	95.00	1.053	-0.11	0.053	0.086



14.3 Product Specific SAR

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	WLAN5GHZ	802.11ac-VHT80 MCS0	Front	0mm	Ant 1	Sample 1	58	5290	15.87	17.50	1.455	95.04	1.052	0.16	0.095	0.145
	WLAN5GHZ	802.11ac-VHT80 MCS0	Back	0mm	Ant 1	Sample 1	58	5290	15.87	17.50	1.455	95.04	1.052	-0.1	0.023	0.035
	WLAN5GHZ	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 1	Sample 1	58	5290	15.87	17.50	1.455	95.04	1.052	0.11	0.031	0.047
	WLAN5GHZ	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 1	Sample 1	58	5290	15.87	17.50	1.455	95.04	1.052	0.12	0.007	0.011
31	WLAN5GHZ	802.11ac-VHT80 MCS0	Front	0mm	Ant 1	Sample 2	58	5290	15.87	17.50	1.455	95.04	1.052	0.11	0.192	0.294
	WLAN5GHZ	802.11ac-VHT80 MCS0	Front	0mm	Ant 2	Sample 1	58	5290	15.50	17.50	1.585	95.00	1.053	-0.12	0.094	0.157
	WLAN5GHZ	802.11ac-VHT80 MCS0	Back	0mm	Ant 2	Sample 1	58	5290	15.50	17.50	1.585	95.00	1.053	0.09	0.085	0.142
	WLAN5GHZ	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 2	Sample 1	58	5290	15.50	17.50	1.585	95.00	1.053	0.15	0.064	0.107
	WLAN5GHZ	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 2	Sample 1	58	5290	15.50	17.50	1.585	95.00	1.053	0.06	0.010	0.017
	WLAN5GHZ	802.11ac-VHT80 MCS0	Front	0mm	Ant 2	Sample 2	58	5290	15.50	17.50	1.585	95.00	1.053	-0.11	0.055	0.092
	WLAN5GHZ	802.11n-HT40 MCS0	Front	0mm	Ant 1	Sample 1	134	5670	15.86	17.50	1.460	96.91	1.032	0.12	0.209	0.315
	WLAN5GHZ	802.11n-HT40 MCS0	Back	0mm	Ant 1	Sample 1	134	5670	15.86	17.50	1.460	96.91	1.032	0.03	0.019	0.029
	WLAN5GHZ	802.11n-HT40 MCS0	Left Side	0mm	Ant 1	Sample 1	134	5670	15.86	17.50	1.460	96.91	1.032	0.14	0.047	0.071
	WLAN5GHZ	802.11n-HT40 MCS0	Top Side	0mm	Ant 1	Sample 1	134	5670	15.86	17.50	1.460	96.91	1.032	0.08	0.020	0.030
	WLAN5GHZ	802.11n-HT40 MCS0	Front	0mm	Ant 1	Sample 2	134	5670	15.86	17.50	1.460	96.91	1.032	0.11	0.347	0.523
	WLAN5GHZ	802.11n-HT40 MCS0	Front	0mm	Ant 2	Sample 1	134	5670	15.60	17.50	1.550	96.91	1.032	0.17	0.138	0.221
	WLAN5GHZ	802.11n-HT40 MCS0	Back	0mm	Ant 2	Sample 1	134	5670	15.60	17.50	1.550	96.91	1.032	-0.08	0.250	0.400
	WLAN5GHZ	802.11n-HT40 MCS0	Back	0mm	Ant 2	Sample 1	102	5510	13.62	15.00	1.375	96.91	1.032	-0.12	0.281	0.399
32	WLAN5GHZ	802.11n-HT40 MCS0	Back	0mm	Ant 2	Sample 1	110	5550	15.58	17.50	1.557	96.91	1.032	-0.13	0.333	0.535
	WLAN5GHZ	802.11n-HT40 MCS0	Left Side	0mm	Ant 2	Sample 1	134	5670	15.60	17.50	1.550	96.91	1.032	-0.19	0.104	0.166
	WLAN5GHZ	802.11n-HT40 MCS0	Top Side	0mm	Ant 2	Sample 1	134	5670	15.60	17.50	1.550	96.91	1.032	0.15	0.006	0.010
	WLAN5GHZ	802.11n-HT40 MCS0	Back	0mm	Ant 2	Sample 2	110	5550	15.58	17.50	1.557	96.91	1.032	-0.11	0.151	0.243



14.4 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (4 Tx slots)	Front	10mm	Sample 1	251	848.8	28.71	29.00	1.069	-0.16	0.130	0.139
	GSM850	GPRS (4 Tx slots)	Back	10mm	Sample 1	251	848.8	28.71	29.00	1.069	-0.01	0.155	0.166
	GSM850	GPRS (4 Tx slots)	Back	10mm	Sample 1	128	824.2	28.65	29.00	1.084	-0.14	0.175	0.190
	GSM850	GPRS (4 Tx slots)	Back	10mm	Sample 1	189	836.4	28.70	29.00	1.072	-0.08	0.171	0.183
33	GSM850	GPRS (4 Tx slots)	Back	10mm	Sample 2	128	824.2	28.65	29.00	1.084	0.17	0.182	0.197
	GSM1900	GPRS (3 Tx slots)	Front	10mm	Sample 1	810	1909.8	28.53	29.00	1.114	-0.05	0.145	0.162
	GSM1900	GPRS (3 Tx slots)	Back	10mm	Sample 1	810	1909.8	28.53	29.00	1.114	-0.16	0.181	0.202
	GSM1900	GPRS (3 Tx slots)	Back	10mm	Sample 1	512	1850.2	28.33	29.00	1.167	-0.04	0.197	0.230
	GSM1900	GPRS (3 Tx slots)	Back	10mm	Sample 1	661	1880	28.49	29.00	1.125	-0.04	0.211	0.237
34	GSM1900	GPRS (3 Tx slots)	Back	10mm	Sample 2	661	1880	28.49	29.00	1.125	-0.11	0.237	0.267

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Front	10mm	Sample 1	9538	1907.6	24.11	24.50	1.094	-0.1	0.218	0.238
	WCDMA II	RMC 12.2Kbps	Back	10mm	Sample 1	9538	1907.6	24.11	24.50	1.094	0.02	0.249	0.272
	WCDMA II	RMC 12.2Kbps	Back	10mm	Sample 1	9262	1852.4	23.62	24.50	1.225	-0.03	0.225	0.276
35	WCDMA II	RMC 12.2Kbps	Back	10mm	Sample 1	9400	1880	23.75	24.50	1.189	-0.02	0.248	0.295
	WCDMA II	RMC 12.2Kbps	Back	10mm	Sample 2	9400	1880	23.75	24.50	1.189	0.03	0.232	0.276
	WCDMA IV	RMC 12.2Kbps	Front	10mm	Sample 1	1413	1732.6	23.28	23.50	1.052	-0.03	0.490	0.515
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Sample 1	1413	1732.6	23.28	23.50	1.052	-0.19	0.521	0.548
36	WCDMA IV	RMC 12.2Kbps	Back	10mm	Sample 1	1312	1712.4	23.08	23.50	1.102	-0.04	0.583	0.642
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Sample 1	1513	1752.6	23.10	23.50	1.096	0	0.413	0.453
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Sample 2	1312	1712.4	23.08	23.50	1.102	-0.07	0.395	0.435
	WCDMA V	RMC 12.2Kbps	Front	10mm	Sample 1	4182	836.4	23.95	24.50	1.135	0.01	0.125	0.142
	WCDMA V	RMC 12.2Kbps	Back	10mm	Sample 1	4182	836.4	23.95	24.50	1.135	-0.12	0.147	0.167
37	WCDMA V	RMC 12.2Kbps	Back	10mm	Sample 1	4132	826.4	23.86	24.50	1.159	-0.04	0.156	0.181
	WCDMA V	RMC 12.2Kbps	Back	10mm	Sample 1	4233	846.6	23.94	24.50	1.138	0	0.139	0.158
	WCDMA V	RMC 12.2Kbps	Back	10mm	Sample 2	4132	826.4	23.86	24.50	1.159	-0.07	0.153	0.177



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2	20M	QPSK	1	99	Front	10mm	Sample 1	19100	1900	23.55	24.00	1.109	-0.04	0.192	0.213
	LTE Band 2	20M	QPSK	50	50	Front	10mm	Sample 1	19100	1900	22.35	23.00	1.161	0	0.178	0.207
	LTE Band 2	20M	QPSK	1	99	Back	10mm	Sample 1	19100	1900	23.55	24.00	1.109	-0.12	0.228	0.253
38	LTE Band 2	20M	QPSK	1	99	Back	10mm	Sample 1	18700	1860	22.86	24.00	1.300	0.02	0.251	0.326
	LTE Band 2	20M	QPSK	1	99	Back	10mm	Sample 1	18900	1880	23.27	24.00	1.183	-0.04	0.274	0.324
	LTE Band 2	20M	QPSK	50	50	Back	10mm	Sample 1	19100	1900	22.35	23.00	1.161	0.02	0.211	0.245
	LTE Band 2	20M	QPSK	1	99	Back	10mm	Sample 2	18700	1860	22.86	24.00	1.300	0.01	0.212	0.276
	LTE Band 4	20M	QPSK	1	0	Front	10mm	Sample 1	20175	1732.5	23.07	23.50	1.104	-0.07	0.482	0.532
	LTE Band 4	20M	QPSK	50	0	Front	10mm	Sample 1	20175	1732.5	21.90	22.50	1.148	0	0.371	0.426
39	LTE Band 4	20M	QPSK	1	0	Back	10mm	Sample 1	20175	1732.5	23.07	23.50	1.104	-0.05	0.500	0.552
	LTE Band 4	20M	QPSK	50	0	Back	10mm	Sample 1	20175	1732.5	21.90	22.50	1.148	-0.11	0.394	0.452
	LTE Band 4	20M	QPSK	1	0	Back	10mm	Sample 2	20175	1732.5	23.07	23.50	1.104	0.12	0.375	0.414
	LTE Band 5	10M	QPSK	1	0	Front	10mm	Sample 1	20525	836.5	23.01	23.50	1.119	0.02	0.096	0.107
	LTE Band 5	10M	QPSK	25	0	Front	10mm	Sample 1	20525	836.5	22.16	22.50	1.081	0.03	0.079	0.085
40	LTE Band 5	10M	QPSK	1	0	Back	10mm	Sample 1	20525	836.5	23.01	23.50	1.119	0.05	0.108	0.121
	LTE Band 5	10M	QPSK	25	0	Back	10mm	Sample 1	20525	836.5	22.16	22.50	1.081	0	0.084	0.091
	LTE Band 5	10M	QPSK	1	0	Back	10mm	Sample 2	20525	836.5	23.01	23.50	1.119	0.04	0.107	0.120
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Sample 1	21100	2535	24.00	24.50	1.122	0.01	0.421	0.472
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Sample 1	20850	2510	23.71	24.50	1.199	-0.06	0.397	0.476
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Sample 1	21350	2560	23.39	24.50	1.291	0.01	0.461	0.595
	LTE Band 7	20M	QPSK	50	0	Front	10mm	Sample 1	21350	2560	22.65	23.50	1.216	0.01	0.337	0.410
	LTE Band 7	20M	QPSK	1	0	Back	10mm	Sample 1	21100	2535	24.00	24.50	1.122	-0.02	0.356	0.399
	LTE Band 7	20M	QPSK	50	0	Back	10mm	Sample 1	21350	2560	22.65	23.50	1.216	-0.01	0.286	0.348
41	LTE Band 7	20M	QPSK	1	0	Front	10mm	Sample 2	21350	2560	23.39	24.50	1.291	-0.07	0.526	0.679
	LTE Band 12	10M	QPSK	1	49	Front	10mm	Sample 1	23095	707.5	23.11	23.50	1.094	-0.02	0.098	0.107
	LTE Band 12	10M	QPSK	25	25	Front	10mm	Sample 1	23095	707.5	22.03	22.50	1.114	-0.01	0.081	0.090
	LTE Band 12	10M	QPSK	1	49	Back	10mm	Sample 1	23095	707.5	23.11	23.50	1.094	0.03	0.122	0.133
	LTE Band 12	10M	QPSK	25	25	Back	10mm	Sample 1	23095	707.5	22.03	22.50	1.114	0.01	0.100	0.111
42	LTE Band 12	10M	QPSK	1	49	Back	10mm	Sample 2	23095	707.5	23.11	23.50	1.094	-0.01	0.124	0.136

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20M	QPSK	1	0	Front	10mm	Sample 1	39750	2506	23.00	23.50	1.122	62.90	1.006	0.1	0.245	0.277
	LTE Band 41	20M	QPSK	1	99	Front	10mm	Sample 1	40185	2549.5	23.08	23.50	1.102	62.90	1.006	-0.03	0.303	0.336
	LTE Band 41	20M	QPSK	1	0	Front	10mm	Sample 1	40620	2593	22.88	23.50	1.153	62.90	1.006	0.08	0.333	0.386
	LTE Band 41	20M	QPSK	1	0	Front	10mm	Sample 1	41055	2636.5	22.78	23.50	1.180	62.90	1.006	-0.04	0.315	0.374
	LTE Band 41	20M	QPSK	1	0	Front	10mm	Sample 1	41490	2680	22.55	23.50	1.245	62.90	1.006	-0.03	0.237	0.297
	LTE Band 41	20M	QPSK	50	0	Front	10mm	Sample 1	40185	2549.5	21.99	22.50	1.125	62.90	1.006	-0.13	0.225	0.255
	LTE Band 41	20M	QPSK	1	99	Back	10mm	Sample 1	40185	2549.5	23.08	23.50	1.102	62.90	1.006	-0.04	0.216	0.239
	LTE Band 41	20M	QPSK	50	0	Back	10mm	Sample 1	40185	2549.5	21.99	22.50	1.125	62.90	1.006	0.03	0.195	0.221
43	LTE Band 41	20M	QPSK	1	0	Front	10mm	Sample 2	40620	2593	22.88	23.50	1.153	62.90	1.006	-0.03	0.403	0.468



<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 1	Sample 1	1	2412	17.96	19.50	1.427	98.73	1.013	0.09	0.035	0.051
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 1	Sample 1	1	2412	17.96	19.50	1.427	98.73	1.013	0.14	0.032	0.046
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 1	Sample 2	1	2412	17.96	19.50	1.427	98.73	1.013	0.15	0.031	0.045
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 2	Sample 1	6	2437	17.53	19.50	1.575	98.72	1.013	0.15	0.061	0.097
44	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 2	Sample 1	6	2437	17.53	19.50	1.575	98.72	1.013	-0.13	0.088	0.140
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 2	Sample 1	1	2412	17.51	19.50	1.583	98.72	1.013	-0.09	0.078	0.125
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 2	Sample 1	11	2462	17.50	19.50	1.585	98.72	1.013	-0.12	0.078	0.125
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 2	Sample 2	6	2437	17.53	19.50	1.575	98.72	1.013	-0.14	0.071	0.113
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 1	Sample 1	58	5290	15.87	17.50	1.455	95.04	1.052	0.16	0.018	0.028
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 1	Sample 1	58	5290	15.87	17.50	1.455	95.04	1.052	0.1	0.010	0.015
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 1	Sample 2	58	5290	15.87	17.50	1.455	95.04	1.052	0.1	0.018	0.028
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 2	Sample 1	58	5290	15.50	17.50	1.585	95.00	1.053	-0.1	0.001	0.002
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 2	Sample 1	58	5290	15.50	17.50	1.585	95.00	1.053	-0.15	0.015	0.025
45	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 2	Sample 2	58	5290	15.50	17.50	1.585	95.00	1.053	0.14	0.028	0.047
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 1	Sample 1	134	5670	15.86	17.50	1.460	96.91	1.032	0.16	0.053	0.080
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 1	Sample 1	134	5670	15.86	17.50	1.460	96.91	1.032	0.19	0.003	0.005
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 1	Sample 2	134	5670	15.86	17.50	1.460	96.91	1.032	0.05	0.094	0.142
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 2	Sample 1	134	5670	15.60	17.50	1.550	96.91	1.032	0	0.001	0.002
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 2	Sample 1	134	5670	15.60	17.50	1.550	96.91	1.032	-0.13	0.084	0.134
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 2	Sample 1	102	5510	13.62	15.00	1.375	96.91	1.032	-0.12	0.080	0.114
46	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 2	Sample 1	110	5550	15.58	17.50	1.557	96.91	1.032	0.1	0.139	0.223
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 2	Sample 2	134	5670	15.60	17.50	1.550	96.91	1.032	0.1	0.051	0.082
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 1	Sample 1	155	5775	15.82	17.50	1.472	95.04	1.052	0.15	0.082	0.127
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 1	Sample 1	155	5775	15.82	17.50	1.472	95.04	1.052	-0.15	0.022	0.034
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 1	Sample 2	155	5775	15.82	17.50	1.472	95.04	1.052	0.1	0.037	0.057
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 2	Sample 1	155	5775	15.62	17.50	1.541	95.00	1.053	-0.11	0.001	0.002
47	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 2	Sample 1	155	5775	15.62	17.50	1.541	95.00	1.053	0.07	0.097	0.157
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 2	Sample 2	155	5775	15.62	17.50	1.541	95.00	1.053	-0.11	0.053	0.086

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Front	10mm	Ant 1	Sample 1	39	2441	9.96	10.00	1.009	76.60	1.087	0.16	0.001	0.001
48	Bluetooth	1Mbps	Back	10mm	Ant 1	Sample 1	39	2441	9.96	10.00	1.009	76.60	1.087	0.01	0.001	0.001
	Bluetooth	1Mbps	Back	10mm	Ant 1	Sample 1	0	2402	9.67	10.00	1.079	76.60	1.087	0.14	0.001	0.001
	Bluetooth	1Mbps	Back	10mm	Ant 1	Sample 1	78	2480	8.90	10.00	1.288	76.60	1.087	0.04	0.001	0.001
	Bluetooth	1Mbps	Back	10mm	Ant 1	Sample 2	39	2441	9.96	10.00	1.000	76.60	1.087	0.01	0.001	0.001



14.5 Repeated SAR Measurement

No.	Band	Mode	Test Position	Gap (mm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	Sample 1	1312	1712.4	23.08	23.50	1.102	-0.18	1.080		1.190
2nd	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	Sample 1	1312	1712.4	23.08	23.50	1.102	-0.13	1.080	1.00	1.190

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is $\geq 0.8W/kg$.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR $< 1.45W/kg$, only one repeated measurement is required.
3. The ratio is the difference in percentage between original and repeated *measured SAR*.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

15. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product Specific
1.	WWAN (Voice) + WLAN Ant 1	Yes	Yes		Yes
2.	WWAN (Data) + WLAN Ant 1	Yes	Yes	Yes	Yes
3.	WWAN (Voice) + Bluetooth Ant 1	Yes	Yes		Yes
4.	WWAN (Data) + Bluetooth Ant 1	Yes	Yes		Yes
5.	WWAN (Voice) + WLAN Ant 2	Yes	Yes		Yes
6.	WWAN (Data) + WLAN Ant 2	Yes	Yes	Yes	Yes
7.	WLAN Ant 1 + WLAN Ant 2	Yes	Yes	Yes	Yes
8.	Bluetooth Ant 1 + WLAN Ant 1	Yes	Yes		Yes
9.	Bluetooth Ant 1 + WLAN Ant 2	Yes	Yes		Yes
10.	WWAN (Voice) + WLAN Ant 1 + WLAN Ant 2	Yes	Yes		Yes
11.	WWAN (Data) + WLAN Ant 1 + WLAN Ant 2	Yes	Yes	Yes	Yes
12.	WWAN (Voice) + Bluetooth Ant 1 + WLAN Ant 1	Yes	Yes		Yes
13.	WWAN (Data) + Bluetooth Ant 1 + WLAN Ant 1	Yes	Yes		Yes
14.	WWAN (Voice) + Bluetooth Ant 1 + WLAN Ant 2	Yes	Yes		Yes
15.	WWAN (Data) + Bluetooth Ant 1 + WLAN Ant 2	Yes	Yes		Yes

General Note:

1. This device WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation.
2. The worst case WLAN reported SAR for each configuration was used for SAR summation. Therefore, the following summations represent the absolute worst cases for simultaneous transmission with WLAN.
3. WLAN RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode. Therefore SPLSR calculation was choose worst case with SAR test results of each antenna in SISO mode perform evaluation.
4. For SAR testing was performed on single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode.
5. WLAN and Bluetooth share the same antenna 1, and cannot transmit simultaneously.
6. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment.
7. The Scaled SAR summation is calculated based on the same configuration and test position.
8. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - i) Scalar SAR summation < 1.6W/kg.
 - ii) $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$, and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
 - iii) If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary.
 - iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.



15.1 Head Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+2+6 Summed 1g SAR (W/kg)	1+3+6 Summed 1g SAR (W/kg)	1+4+6 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)	
		WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1							
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)							
GSM	GSM850	Right Cheek	0.046	0.578	0.720	1.027	0.144	0.072	1.344	1.217	0.696	0.838	1.145	0.262
		Right Tilted	0.027	0.411	0.099	0.605	0.050	0.044	0.537	0.682	0.482	0.170	0.676	0.121
		Left Cheek	0.083	0.158	0.078	0.153	0.020	0.022	0.319	0.256	0.263	0.183	0.258	0.125
		Left Tilted	0.026	0.114	0.034	0.138	0.018	0.023	0.174	0.182	0.163	0.083	0.187	0.067
	GSM1900	Right Cheek	0.040	0.578	0.720	1.027	0.144	0.072	1.338	1.211	0.690	0.832	1.139	0.256
		Right Tilted	0.012	0.411	0.099	0.605	0.050	0.044	0.522	0.667	0.467	0.155	0.661	0.106
		Left Cheek	0.022	0.158	0.078	0.153	0.020	0.022	0.258	0.195	0.202	0.122	0.197	0.064
		Left Tilted	0.021	0.114	0.034	0.138	0.018	0.023	0.169	0.177	0.158	0.078	0.182	0.062
WCDMA	WCDMA II	Right Cheek	0.042	0.578	0.720	1.027	0.144	0.072	1.340	1.213	0.692	0.834	1.141	0.258
		Right Tilted	0.015	0.411	0.099	0.605	0.050	0.044	0.525	0.670	0.470	0.158	0.664	0.109
		Left Cheek	0.032	0.158	0.078	0.153	0.020	0.022	0.268	0.205	0.212	0.132	0.207	0.074
		Left Tilted	0.025	0.114	0.034	0.138	0.018	0.023	0.173	0.181	0.162	0.082	0.186	0.066
	WCDMA IV	Right Cheek	0.024	0.578	0.720	1.027	0.144	0.072	1.322	1.195	0.674	0.816	1.123	0.240
		Right Tilted	0.010	0.411	0.099	0.605	0.050	0.044	0.520	0.665	0.465	0.153	0.659	0.104
		Left Cheek	0.058	0.158	0.078	0.153	0.020	0.022	0.294	0.231	0.238	0.158	0.233	0.100
		Left Tilted	0.013	0.114	0.034	0.138	0.018	0.023	0.161	0.169	0.150	0.070	0.174	0.054
	WCDMA V	Right Cheek	0.045	0.578	0.720	1.027	0.144	0.072	1.343	1.216	0.695	0.837	1.144	0.261
		Right Tilted	0.009	0.411	0.099	0.605	0.050	0.044	0.519	0.664	0.464	0.152	0.658	0.103
		Left Cheek	0.081	0.158	0.078	0.153	0.020	0.022	0.317	0.254	0.261	0.181	0.256	0.123
		Left Tilted	0.009	0.114	0.034	0.138	0.018	0.023	0.157	0.165	0.146	0.066	0.170	0.050
LTE	LTE Band 2	Right Cheek	0.039	0.578	0.720	1.027	0.144	0.072	1.337	1.210	0.689	0.831	1.138	0.255
		Right Tilted	0.008	0.411	0.099	0.605	0.050	0.044	0.518	0.663	0.463	0.151	0.657	0.102
		Left Cheek	0.018	0.158	0.078	0.153	0.020	0.022	0.254	0.191	0.198	0.118	0.193	0.060
		Left Tilted	0.014	0.114	0.034	0.138	0.018	0.023	0.162	0.170	0.151	0.071	0.175	0.055
	LTE Band 4	Right Cheek	0.025	0.578	0.720	1.027	0.144	0.072	1.323	1.196	0.675	0.817	1.124	0.241
		Right Tilted	0.013	0.411	0.099	0.605	0.050	0.044	0.523	0.668	0.468	0.156	0.662	0.107
		Left Cheek	0.046	0.158	0.078	0.153	0.020	0.022	0.282	0.219	0.226	0.146	0.221	0.088
		Left Tilted	0.017	0.114	0.034	0.138	0.018	0.023	0.165	0.173	0.154	0.074	0.178	0.058
	LTE Band 5	Right Cheek	0.053	0.578	0.720	1.027	0.144	0.072	1.351	1.224	0.703	0.845	1.152	0.269
		Right Tilted	0.034	0.411	0.099	0.605	0.050	0.044	0.544	0.689	0.489	0.177	0.683	0.128
		Left Cheek	0.068	0.158	0.078	0.153	0.020	0.022	0.304	0.241	0.248	0.168	0.243	0.110
		Left Tilted	0.028	0.114	0.034	0.138	0.018	0.023	0.176	0.184	0.165	0.085	0.189	0.069
	LTE Band 7	Right Cheek	0.090	0.578	0.720	1.027	0.144	0.072	1.388	1.261	0.740	0.882	1.189	0.306
		Right Tilted	0.036	0.411	0.099	0.605	0.050	0.044	0.546	0.691	0.491	0.179	0.685	0.130
		Left Cheek	0.063	0.158	0.078	0.153	0.020	0.022	0.299	0.236	0.243	0.163	0.238	0.105
		Left Tilted	0.064	0.114	0.034	0.138	0.018	0.023	0.212	0.220	0.201	0.121	0.225	0.105
	LTE Band 12	Right Cheek	0.047	0.578	0.720	1.027	0.144	0.072	1.345	1.218	0.697	0.839	1.146	0.263
		Right Tilted	0.019	0.411	0.099	0.605	0.050	0.044	0.529	0.674	0.474	0.162	0.668	0.113
		Left Cheek	0.057	0.158	0.078	0.153	0.020	0.022	0.293	0.230	0.237	0.157	0.232	0.099
		Left Tilted	0.014	0.114	0.034	0.138	0.018	0.023	0.162	0.170	0.151	0.071	0.175	0.055
LTE Band 41	Right Cheek	0.045	0.578	0.720	1.027	0.144	0.072	1.343	1.216	0.695	0.837	1.144	0.261	
	Right Tilted	0.023	0.411	0.099	0.605	0.050	0.044	0.533	0.678	0.478	0.166	0.672	0.117	
	Left Cheek	0.033	0.158	0.078	0.153	0.020	0.022	0.269	0.206	0.213	0.133	0.208	0.075	
	Left Tilted	0.035	0.114	0.034	0.138	0.018	0.023	0.183	0.191	0.172	0.092	0.196	0.076	



15.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	5	1+2+3 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2		
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
GSM	GSM850	Front	0.139	0.051	0.097	0.127	0.045	0.287	0.311
		Back	0.197	0.046	0.140	0.034	0.157	0.383	0.388
		Left side	0.110	0.048	0.080	0.004	0.014	0.238	0.128
		Right side	0.043					0.043	0.043
		Top side		0.016	0.026	0.007	0.006	0.042	0.013
		Bottom side	0.083					0.083	0.083
	GSM1900	Front	0.162	0.051	0.097	0.127	0.045	0.310	0.334
		Back	0.237	0.046	0.140	0.034	0.157	0.423	0.428
		Left side	0.036	0.048	0.080	0.004	0.014	0.164	0.054
		Right side	0.072					0.072	0.072
		Top side		0.016	0.026	0.007	0.006	0.042	0.013
		Bottom side	0.608					0.608	0.608
WCDMA	WCDMA II	Front	0.238	0.051	0.097	0.127	0.045	0.386	0.410
		Back	0.295	0.046	0.140	0.034	0.157	0.481	0.486
		Left side	0.036	0.048	0.080	0.004	0.014	0.164	0.054
		Right side	0.097					0.097	0.097
		Top side		0.016	0.026	0.007	0.006	0.042	0.013
		Bottom side	0.604					0.604	0.604
	WCDMA IV	Front	0.515	0.051	0.097	0.127	0.045	0.663	0.687
		Back	0.642	0.046	0.140	0.034	0.157	0.828	0.833
		Left side	0.050	0.048	0.080	0.004	0.014	0.178	0.068
		Right side	0.014					0.014	0.014
		Top side		0.016	0.026	0.007	0.006	0.042	0.013
		Bottom side	1.190					1.190	1.190
	WCDMA V	Front	0.142	0.051	0.097	0.127	0.045	0.290	0.314
		Back	0.181	0.046	0.140	0.034	0.157	0.367	0.372
		Left side	0.115	0.048	0.080	0.004	0.014	0.243	0.133
		Right side	0.052					0.052	0.052
		Top side		0.016	0.026	0.007	0.006	0.042	0.013
		Bottom side	0.078					0.078	0.078



WWAN Band	Exposure Position	1	2	3	4	5	1+2+3 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	
		WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2			
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
LTE	LTE Band 2	Front	0.213	0.051	0.097	0.127	0.045	0.361	0.385
		Back	0.326	0.046	0.140	0.034	0.157	0.512	0.517
		Left side	0.031	0.048	0.080	0.004	0.014	0.159	0.049
		Right side	0.083					0.083	0.083
		Top side		0.016	0.026	0.007	0.006	0.042	0.013
		Bottom side	0.679					0.679	0.679
	LTE Band 4	Front	0.532	0.051	0.097	0.127	0.045	0.680	0.704
		Back	0.552	0.046	0.140	0.034	0.157	0.738	0.743
		Left side	0.039	0.048	0.080	0.004	0.014	0.167	0.057
		Right side	0.020					0.020	0.020
		Top side		0.016	0.026	0.007	0.006	0.042	0.013
		Bottom side	1.015					1.015	1.015
	LTE Band 5	Front	0.107	0.051	0.097	0.127	0.045	0.255	0.279
		Back	0.121	0.046	0.140	0.034	0.157	0.307	0.312
		Left side	0.073	0.048	0.080	0.004	0.014	0.201	0.091
		Right side	0.034					0.034	0.034
		Top side		0.016	0.026	0.007	0.006	0.042	0.013
		Bottom side	0.059					0.059	0.059
	LTE Band 7	Front	0.595	0.051	0.097	0.127	0.045	0.743	0.767
		Back	0.399	0.046	0.140	0.034	0.157	0.585	0.590
		Left side	0.071	0.048	0.080	0.004	0.014	0.199	0.089
		Right side	0.346					0.346	0.346
		Top side		0.016	0.026	0.007	0.006	0.042	0.013
		Bottom side	0.998					0.998	0.998
	LTE Band 12	Front	0.107	0.051	0.097	0.127	0.045	0.255	0.279
		Back	0.136	0.046	0.140	0.034	0.157	0.322	0.327
		Left side	0.084	0.048	0.080	0.004	0.014	0.212	0.102
		Right side	0.050					0.050	0.050
		Top side		0.016	0.026	0.007	0.006	0.042	0.013
		Bottom side	0.056					0.056	0.056
LTE Band 41	Front	0.386	0.051	0.097	0.127	0.045	0.534	0.558	
	Back	0.239	0.046	0.140	0.034	0.157	0.425	0.430	
	Left side	0.039	0.048	0.080	0.004	0.014	0.167	0.057	
	Right side	0.195					0.195	0.195	
	Top side		0.016	0.026	0.007	0.006	0.042	0.013	
	Bottom side	0.671					0.671	0.671	



15.3 Product Specific Conditions

Exposure Position	1	2	3	4	5	6	1+2+3 Summed 10g SAR (W/kg)	1+4+5 Summed 10g SAR (W/kg)	1+2+6 Summed 10g SAR (W/kg)	1+3+6 Summed 10g SAR (W/kg)	1+4+6 Summed 10g SAR (W/kg)	1+5+6 Summed 10g SAR (W/kg)
	WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1						
Product Specific	-	-	-	0.523	0.535	-	0.000	1.058	0.000	0.000	0.523	0.535

Remark:

- According to KDB 648474 D04v01r01, for WWAN / 2.4GHz WLAN hand SAR ("-") was excluded, since WWAN / 2.4GHz WLAN hotspot SAR was < 1.2W/kg.

15.4 Body-Worn Accessory Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+2+6 Summed 1g SAR (W/kg)	1+3+6 Summed 1g SAR (W/kg)	1+4+6 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)	
		WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1							
GSM	GSM850	Front	0.139	0.051	0.097	0.142	0.047	0.001	0.287	0.328	0.191	0.237	0.282	0.187
		Back	0.197	0.046	0.140	0.034	0.223	0.001	0.383	0.454	0.244	0.338	0.232	0.421
	GSM1900	Front	0.162	0.051	0.097	0.142	0.047	0.001	0.310	0.351	0.214	0.260	0.305	0.210
		Back	0.267	0.046	0.140	0.034	0.223	0.001	0.453	0.524	0.314	0.408	0.302	0.491
WCDMA	WCDMA II	Front	0.238	0.051	0.097	0.142	0.047	0.001	0.386	0.427	0.290	0.336	0.381	0.286
		Back	0.295	0.046	0.140	0.034	0.223	0.001	0.481	0.552	0.342	0.436	0.330	0.519
	WCDMA IV	Front	0.515	0.051	0.097	0.142	0.047	0.001	0.663	0.704	0.567	0.613	0.658	0.563
		Back	0.642	0.046	0.140	0.034	0.223	0.001	0.828	0.899	0.689	0.783	0.677	0.866
	WCDMA V	Front	0.142	0.051	0.097	0.142	0.047	0.001	0.290	0.331	0.194	0.240	0.285	0.190
		Back	0.181	0.046	0.140	0.034	0.223	0.001	0.367	0.438	0.228	0.322	0.216	0.405
LTE	LTE Band 2	Front	0.213	0.051	0.097	0.142	0.047	0.001	0.361	0.402	0.265	0.311	0.356	0.261
		Back	0.326	0.046	0.140	0.034	0.223	0.001	0.512	0.583	0.373	0.467	0.361	0.550
	LTE Band 4	Front	0.532	0.051	0.097	0.142	0.047	0.001	0.680	0.721	0.584	0.630	0.675	0.580
		Back	0.552	0.046	0.140	0.034	0.223	0.001	0.738	0.809	0.599	0.693	0.587	0.776
	LTE Band 5	Front	0.107	0.051	0.097	0.142	0.047	0.001	0.255	0.296	0.159	0.205	0.250	0.155
		Back	0.121	0.046	0.140	0.034	0.223	0.001	0.307	0.378	0.168	0.262	0.156	0.345
	LTE Band 7	Front	0.679	0.051	0.097	0.142	0.047	0.001	0.827	0.868	0.731	0.777	0.822	0.727
		Back	0.399	0.046	0.140	0.034	0.223	0.001	0.585	0.656	0.446	0.540	0.434	0.623
	LTE Band 12	Front	0.107	0.051	0.097	0.142	0.047	0.001	0.255	0.296	0.159	0.205	0.250	0.155
		Back	0.136	0.046	0.140	0.034	0.223	0.001	0.322	0.393	0.183	0.277	0.171	0.360
	LTE Band 41	Front	0.468	0.051	0.097	0.142	0.047	0.001	0.616	0.657	0.520	0.566	0.611	0.516
		Back	0.239	0.046	0.140	0.034	0.223	0.001	0.425	0.496	0.286	0.380	0.274	0.463

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16. Uncertainty Assessment

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty by the statistical analysis of a series of observations is termed a Type A evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture’s specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor ^(a)	1/k ^(b)	1/√3	1/√6	1/√2

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b) κ is the coverage factor

Table 16.1. Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual “root-sum-squares” (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.



Error Description	Uncertainty Value (±%)	Probability	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	6.00	N	1	1	1	6.0	6.0
Axial Isotropy	4.70	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.60	R	1.732	0.7	0.7	3.9	3.9
Boundary Effects	1.00	R	1.732	1	1	0.6	0.6
Linearity	4.70	R	1.732	1	1	2.7	2.7
System Detection Limits	1.00	R	1.732	1	1	0.6	0.6
Modulation Response	4.68	R	1.732	1	1	2.7	2.7
Readout Electronics	0.30	N	1	1	1	0.3	0.3
Response Time	0.00	R	1.732	1	1	0.0	0.0
Integration Time	2.60	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.00	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.00	R	1.732	1	1	1.7	1.7
Probe Positioner	0.40	R	1.732	1	1	0.2	0.2
Probe Positioning	2.90	R	1.732	1	1	1.7	1.7
Max. SAR Eval.	2.00	R	1.732	1	1	1.2	1.2
Test Sample Related							
Device Positioning	3.03	N	1	1	1	3.0	3.0
Device Holder	3.60	N	1	1	1	3.6	3.6
Power Drift	5.00	R	1.732	1	1	2.9	2.9
Power Scaling	0.00	R	1.732	1	1	0.0	0.0
Phantom and Setup							
Phantom Uncertainty	6.10	R	1.732	1	1	3.5	3.5
SAR correction	0.00	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.03	N	1	0.78	0.71	0.0	0.0
Liquid Conductivity (target)	5.00	R	1.732	0.78	0.71	2.3	2.0
Liquid Conductivity (mea.)	2.50	R	1.732	0.78	0.71	1.1	1.0
Temp. unc. - Conductivity	3.68	R	1.732	0.78	0.71	1.7	1.5
Liquid Permittivity Repeatability	0.02	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.00	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.50	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.84	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						11.6%	11.6%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						23.2%	23.1%

Table 16.2. Uncertainty Budget for frequency range 300 MHz to 3 GHz



Error Description	Uncertainty Value (±%)	Probability	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	7.00	N	1	1	1	7.0	7.0
Axial Isotropy	4.70	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.60	R	1.732	0.7	0.7	3.9	3.9
Boundary Effects	2.00	R	1.732	1	1	1.2	1.2
Linearity	4.70	R	1.732	1	1	2.7	2.7
System Detection Limits	1.00	R	1.732	1	1	0.6	0.6
Modulation Response	4.68	R	1.732	1	1	2.7	2.7
Readout Electronics	0.30	N	1	1	1	0.3	0.3
Response Time	0.00	R	1.732	1	1	0.0	0.0
Integration Time	2.60	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.00	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.00	R	1.732	1	1	1.7	1.7
Probe Positioner	0.40	R	1.732	1	1	0.2	0.2
Probe Positioning	6.70	R	1.732	1	1	3.9	3.9
Max. SAR Eval.	4.00	R	1.732	1	1	2.3	2.3
Test Sample Related							
Device Positioning	3.03	N	1	1	1	3.0	3.0
Device Holder	3.60	N	1	1	1	3.6	3.6
Power Drift	5.00	R	1.732	1	1	2.9	2.9
Power Scaling	0.00	R	1.732	1	1	0.0	0.0
Phantom and Setup							
Phantom Uncertainty	6.60	R	1.732	1	1	3.8	3.8
SAR correction	0.00	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.03	N	1	0.78	0.71	0.0	0.0
Liquid Conductivity (target)	5.00	R	1.732	0.78	0.71	2.3	2.0
Liquid Conductivity (mea.)	2.50	R	1.732	0.78	0.71	1.1	1.0
Temp. unc. - Conductivity	3.68	R	1.732	0.78	0.71	1.7	1.5
Liquid Permittivity Repeatability	0.02	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.00	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.50	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.84	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						12.9%	12.9%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						25.9%	25.8%

Table 16.3. Uncertainty Budget for frequency range 3 GHz to 6 GHz



17. References

- [1] FCC 47 CFR Part 2 "Frequency Allocations and Radio Treaty Matters; General Rules and Regulations"
- [2] ANSI/IEEE Std. C95.1-1992, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz", September 1992
- [3] IEEE Std. 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", Sep 2013
- [4] SPEAG DASY System Handbook
- [5] FCC KDB 248227 D01 v02r02, "SAR Guidance for IEEE 802.11 (WiFi) Transmitters", Oct 2015.
- [6] FCC KDB 447498 D01 v06, "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies", Oct 2015
- [7] FCC KDB 648474 D04 v01r03, "SAR Evaluation Considerations for Wireless Handsets", Oct 2015.
- [8] FCC KDB 941225 D01 v03r01, "3G SAR MEAUREMENT PROCEDURES", Oct 2015
- [9] FCC KDB 941225 D05 v02r05, "SAR Evaluation Considerations for LTE Devices", Dec 2015
- [10] FCC KDB 941225 D05A v01r02, "Rel. 10 LTE SAR Test Guidance and KDB Inquiries", Oct 2015
- [11] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.
- [12] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.
- [13] FCC KDB 865664 D02 v01r02, "RF Exposure Compliance Reporting and Documentation Considerations" Oct 2015.



Appendix A. Plots of System Performance Check

The plots are shown as follows.

System Check_Head_750MHz

DUT: D750V3-1012

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: HSL_750_170111 Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.892 \text{ S/m}$; $\epsilon_r = 43.159$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : $23.6 \text{ }^\circ\text{C}$; Liquid Temperature : $22.6 \text{ }^\circ\text{C}$

DASY5 Configuration:

- Probe: ES3DV3 - SN3270; ConvF(6.19, 6.19, 6.19); Calibrated: 2016/8/26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2016/5/12
- Phantom: SAM_Left; Type: QD000P40CD; Serial: TP:1644
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 2.71 W/kg

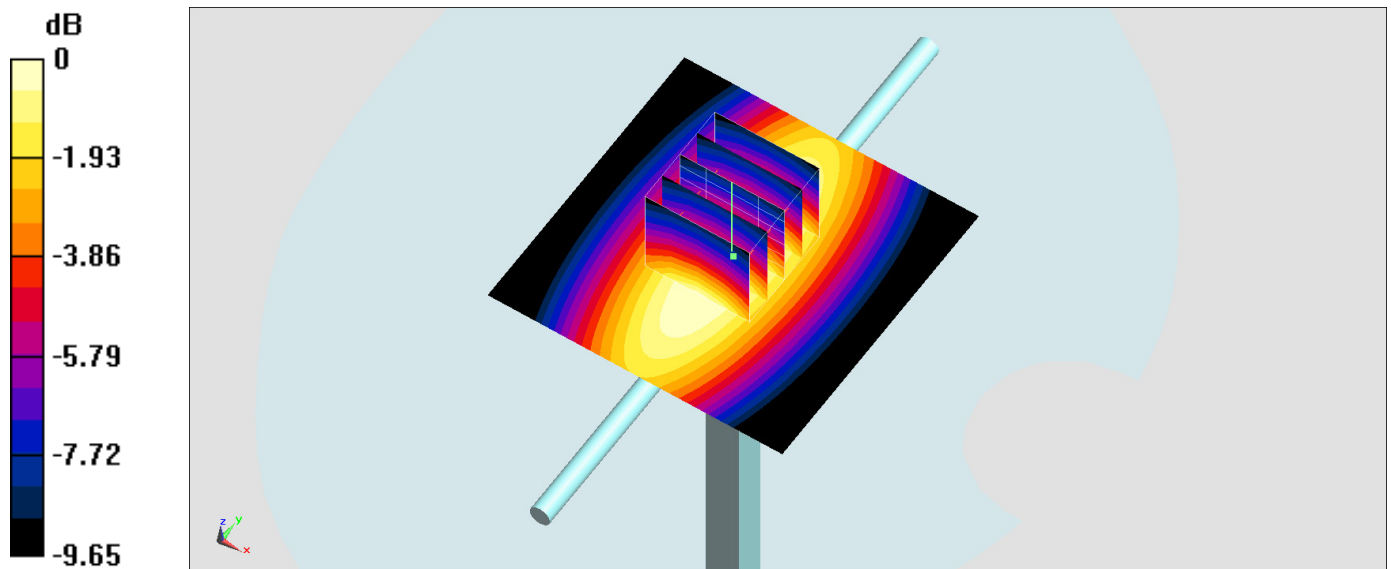
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 54.39 V/m ; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 3.13 W/kg

SAR(1 g) = 2.15 W/kg ; SAR(10 g) = 1.45 W/kg

Maximum value of SAR (measured) = 2.49 W/kg



0 dB = $2.49 \text{ W/kg} = 3.96 \text{ dBW/kg}$

System Check_Body_750MHz

DUT: D750V3-1012

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: MSL_750_170115 Medium parameters used: $f = 750$ MHz; $\sigma = 0.957$ S/m; $\epsilon_r = 56.062$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.4 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3270; ConvF(6.09, 6.09, 6.09); Calibrated: 2016/8/26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2016/5/12
- Phantom: SAM_Left; Type: QD000P40CD; Serial: TP:1644
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 2.81 W/kg

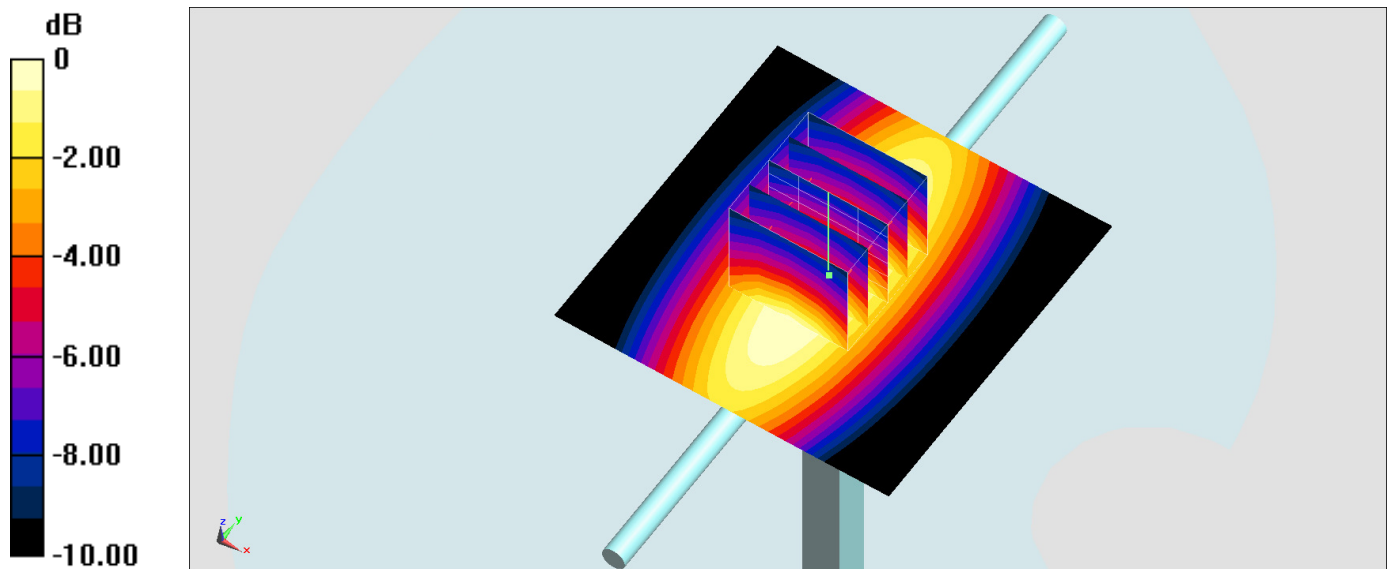
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 55.64 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 3.29 W/kg

SAR(1 g) = 2.29 W/kg; SAR(10 g) = 1.54 W/kg

Maximum value of SAR (measured) = 2.64 W/kg



0 dB = 2.64 W/kg = 4.22 dBW/kg

System Check_Head_835MHz

DUT: D835V2-499

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL_850_161229 Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.868 \text{ S/m}$; $\epsilon_r = 41.243$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : $23.6 \text{ }^\circ\text{C}$; Liquid Temperature : $22.6 \text{ }^\circ\text{C}$

DASY5 Configuration

- Probe: EX3DV4 - SN3931; ConvF(10.35, 10.35, 10.35); Calibrated: 2016/10/3;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2016/9/28
- Phantom: SAM_Right; Type: QD000P40CD; Serial: S/N:1801
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 3.11 W/kg

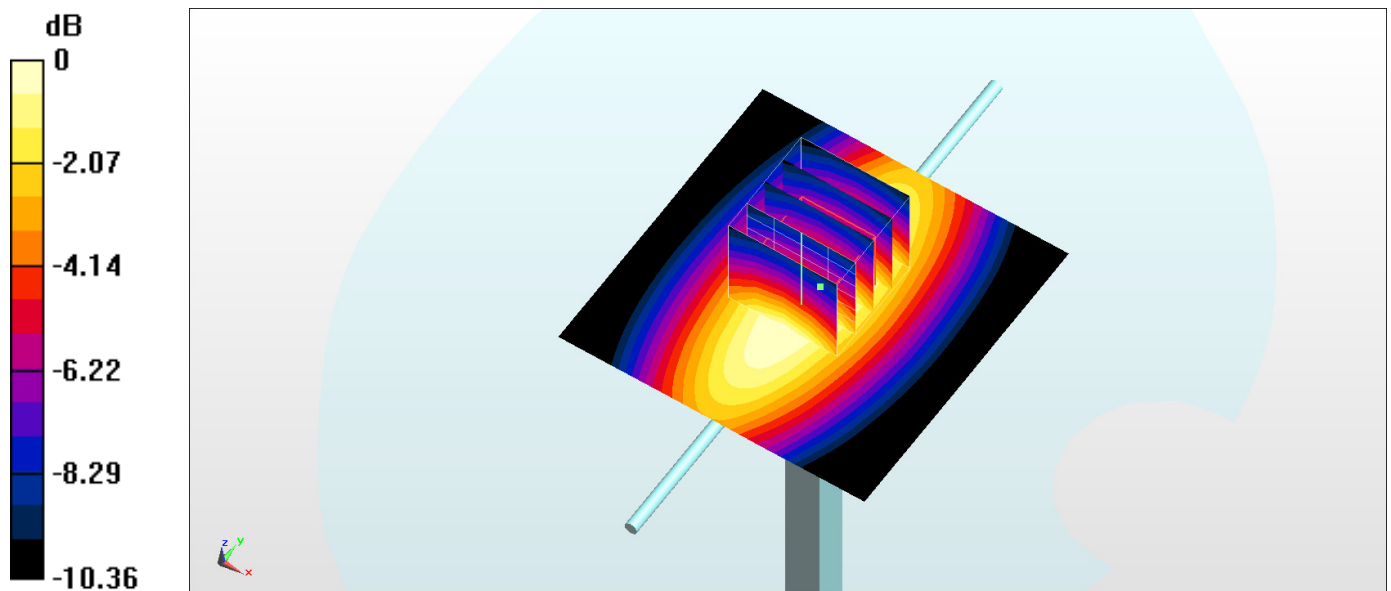
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 62.03 V/m ; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 3.28 W/kg

SAR(1 g) = 2.22 W/kg ; SAR(10 g) = 1.48 W/kg

Maximum value of SAR (measured) = 2.92 W/kg



0 dB = $2.92 \text{ W/kg} = 4.65 \text{ dBW/kg}$

System Check_Head_835MHz

DUT: D835V2-499

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL_850_170112 Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.88 \text{ S/m}$; $\epsilon_r = 41.187$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : $23.3 \text{ }^\circ\text{C}$; Liquid Temperature : $22.3 \text{ }^\circ\text{C}$

DASY5 Configuration:

- Probe: ES3DV3 - SN3270; ConvF(6.03, 6.03, 6.03); Calibrated: 2016/8/26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2016/5/12
- Phantom: SAM_Left; Type: QD000P40CD; Serial: TP:1644
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 2.81 W/kg

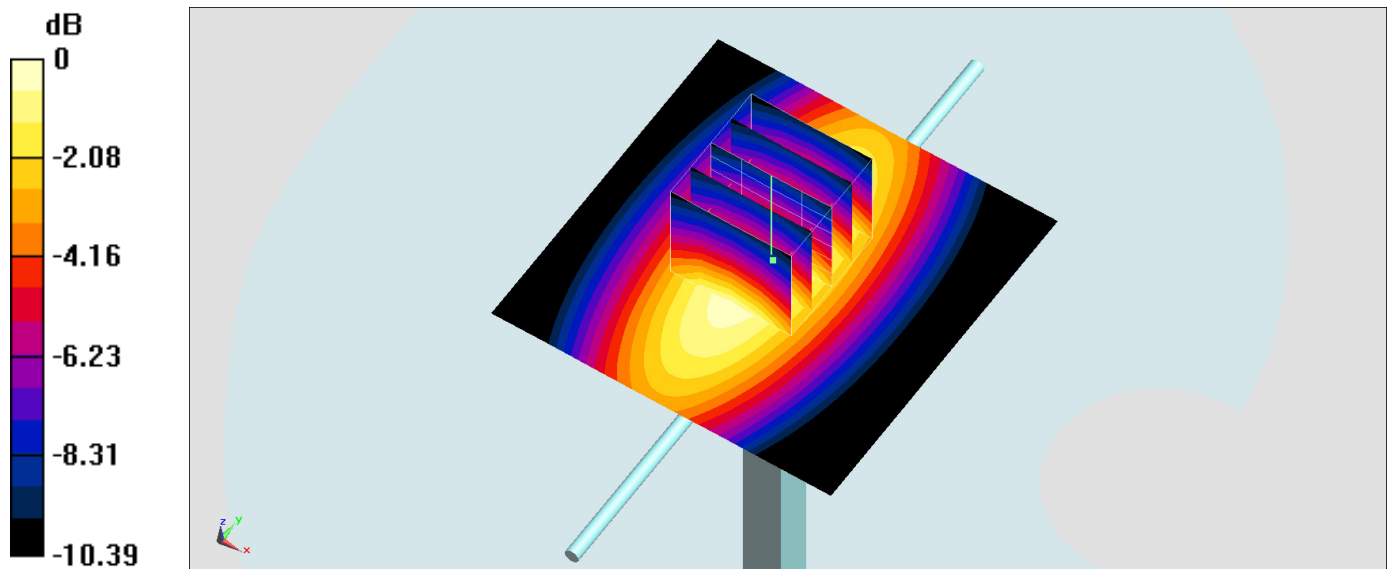
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 58.04 V/m ; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 3.60 W/kg

SAR(1 g) = 2.43 W/kg ; SAR(10 g) = 1.61 W/kg

Maximum value of SAR (measured) = 2.84 W/kg



0 dB = 2.84 W/kg = 4.53 dBW/kg

System Check_Body_835MHz

DUT: D835V2-499

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL_850_170115 Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.938 \text{ S/m}$; $\epsilon_r = 55.456$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : $23.4 \text{ }^\circ\text{C}$; Liquid Temperature : $22.4 \text{ }^\circ\text{C}$

DASY5 Configuration:

- Probe: ES3DV3 - SN3270; ConvF(6.01, 6.01, 6.01); Calibrated: 2016/8/26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2016/5/12
- Phantom: SAM_Left; Type: QD000P40CD; Serial: TP:1644
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 2.74 W/kg

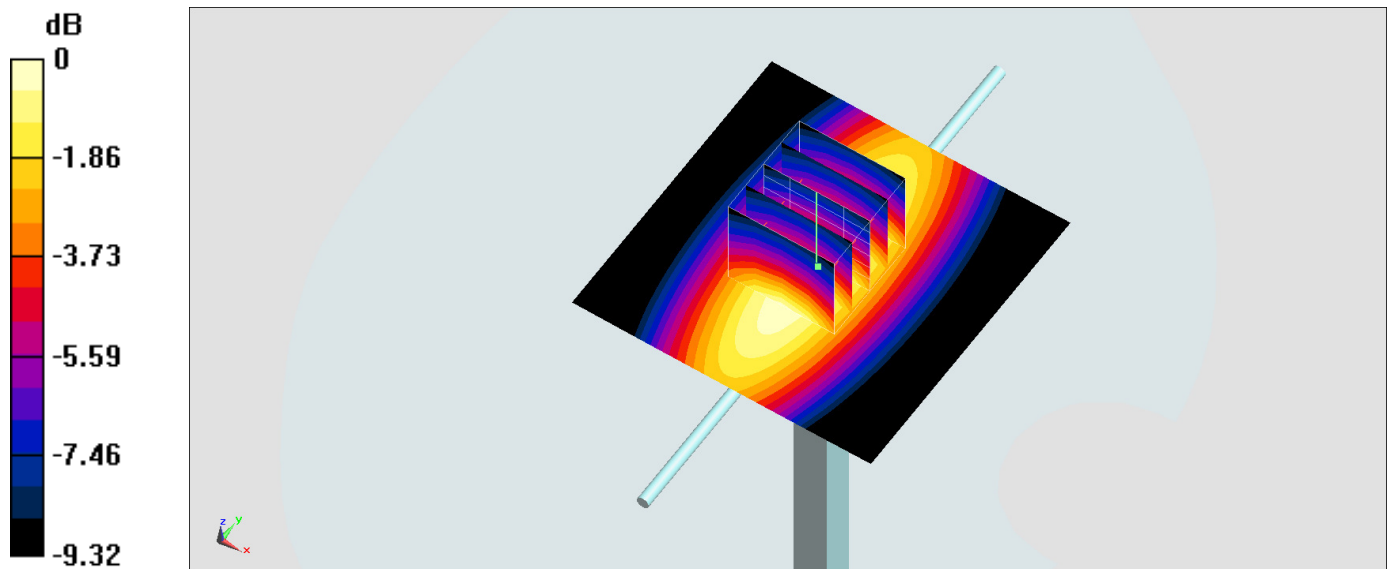
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 56.06 V/m ; Power Drift = -0.083 dB

Peak SAR (extrapolated) = 3.37 W/kg

SAR(1 g) = 2.38 W/kg ; SAR(10 g) = 1.61 W/kg

Maximum value of SAR (measured) = 2.74 W/kg



0 dB = $2.74 \text{ W/kg} = 4.38 \text{ dBW/kg}$

System Check_Head_1750MHz

DUT: D1750V2-1068

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: HSL_1750_170103 Medium parameters used: $f = 1750$ MHz; $\sigma = 1.359$ S/m; $\epsilon_r = 39.716$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.4 °C

DASY5 Configuration

- Probe: EX3DV4 - SN3931; ConvF(8.68, 8.68, 8.68); Calibrated: 2016/10/3;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2016/9/28
- Phantom: SAM_Left; Type: QD000P40CD; Serial: S/N:1796
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 14.3 W/kg

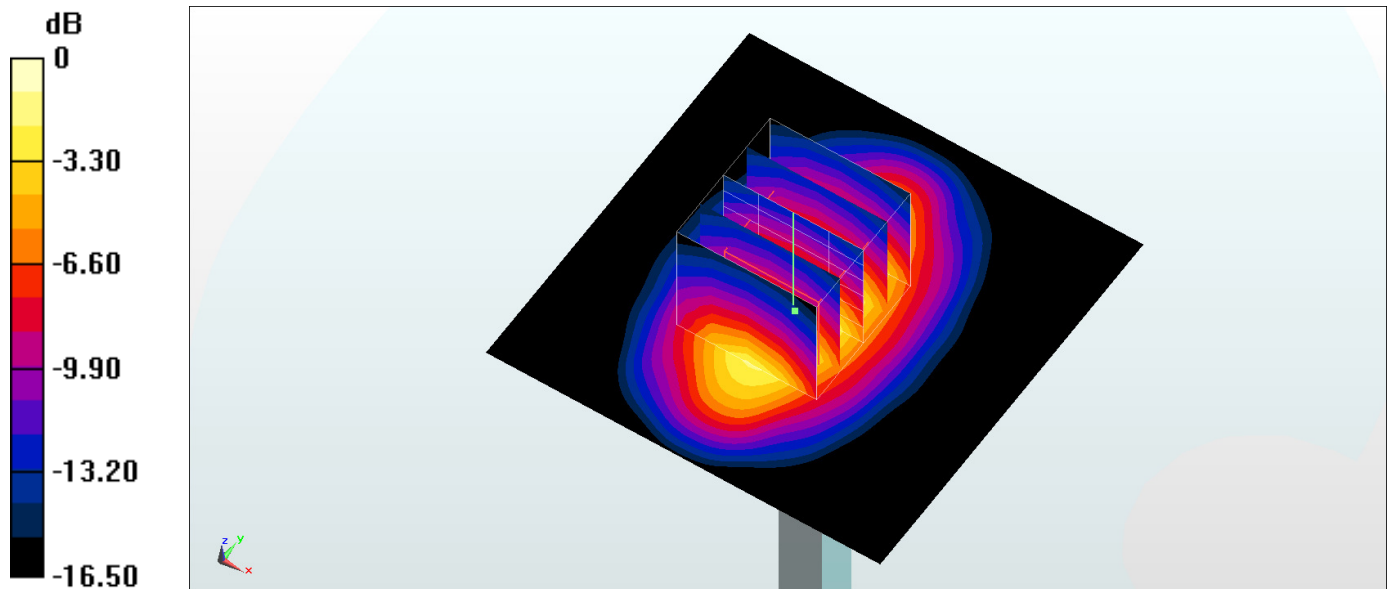
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 105.1 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 16.7 W/kg

SAR(1 g) = 9.3 W/kg; SAR(10 g) = 5.02 W/kg

Maximum value of SAR (measured) = 14.0 W/kg



0 dB = 14.0 W/kg = 11.46 dBW/kg

System Check_Head_1750MHz

DUT: D1750V2-1068

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: HSL_1750_170110 Medium parameters used: $f = 1750$ MHz; $\sigma = 1.369$ S/m; $\epsilon_r = 40.623$; $\rho = 1000$ kg/m³

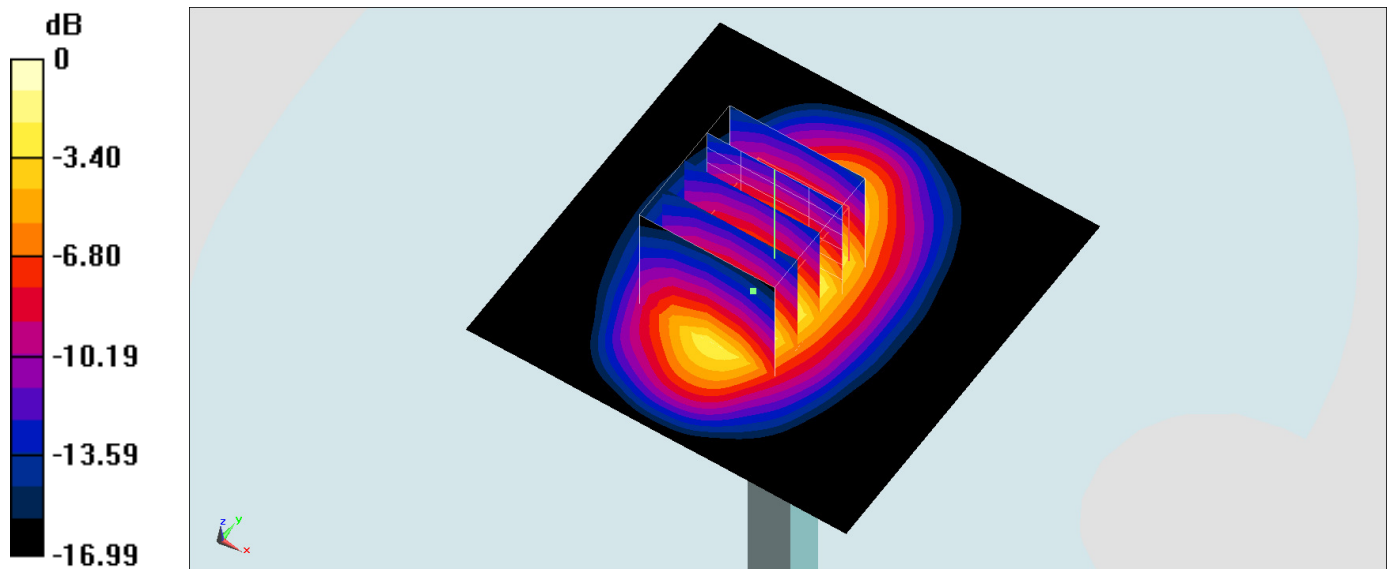
Ambient Temperature : 23 °C ; Liquid Temperature : 22 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3270; ConvF(5.21, 5.21, 5.21); Calibrated: 2016/8/26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2016/5/12
- Phantom: SAM_Left; Type: QD000P40CD; Serial: TP:1644
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
 Maximum value of SAR (interpolated) = 11.5 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
 Reference Value = 92.67 V/m; Power Drift = -0.07 dB
 Peak SAR (extrapolated) = 15.2 W/kg
SAR(1 g) = 8.97 W/kg; SAR(10 g) = 4.91 W/kg
 Maximum value of SAR (measured) = 11.0 W/kg



0 dB = 11.0 W/kg = 10.41 dBW/kg

System Check_Body_1750MHz

DUT: D1750V2-1068

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: MSL_1750_170114 Medium parameters used: $f = 1750$ MHz; $\sigma = 1.493$ S/m; $\epsilon_r = 54.569$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.4 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3270; ConvF(4.95, 4.95, 4.95); Calibrated: 2016/8/26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2016/5/12
- Phantom: SAM-Right; Type: SAM; Serial: 1795
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 12.1 W/kg

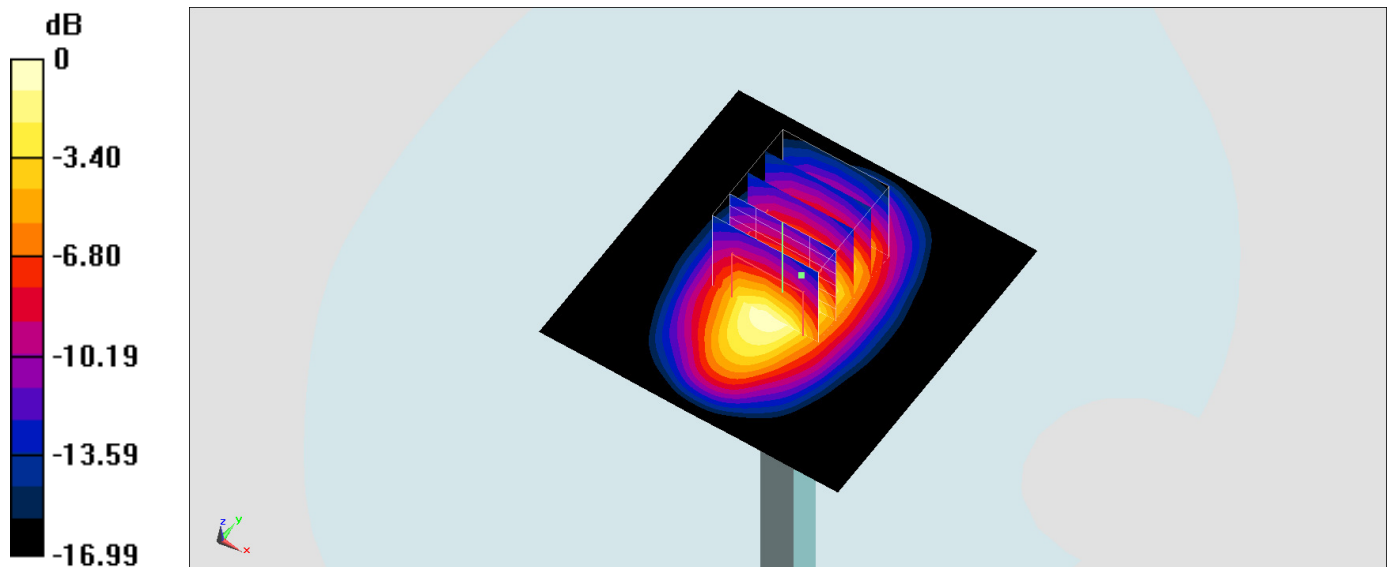
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 91.25 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 15.6 W/kg

SAR(1 g) = 9.34 W/kg; SAR(10 g) = 5.14 W/kg

Maximum value of SAR (measured) = 11.5 W/kg



0 dB = 11.5 W/kg = 10.61 dBW/kg

System Check_Head_1900MHz

DUT: D1900V2-5d041

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL_1900_170111 Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.402 \text{ S/m}$; $\epsilon_r = 41.186$; $\rho = 1000 \text{ kg/m}^3$

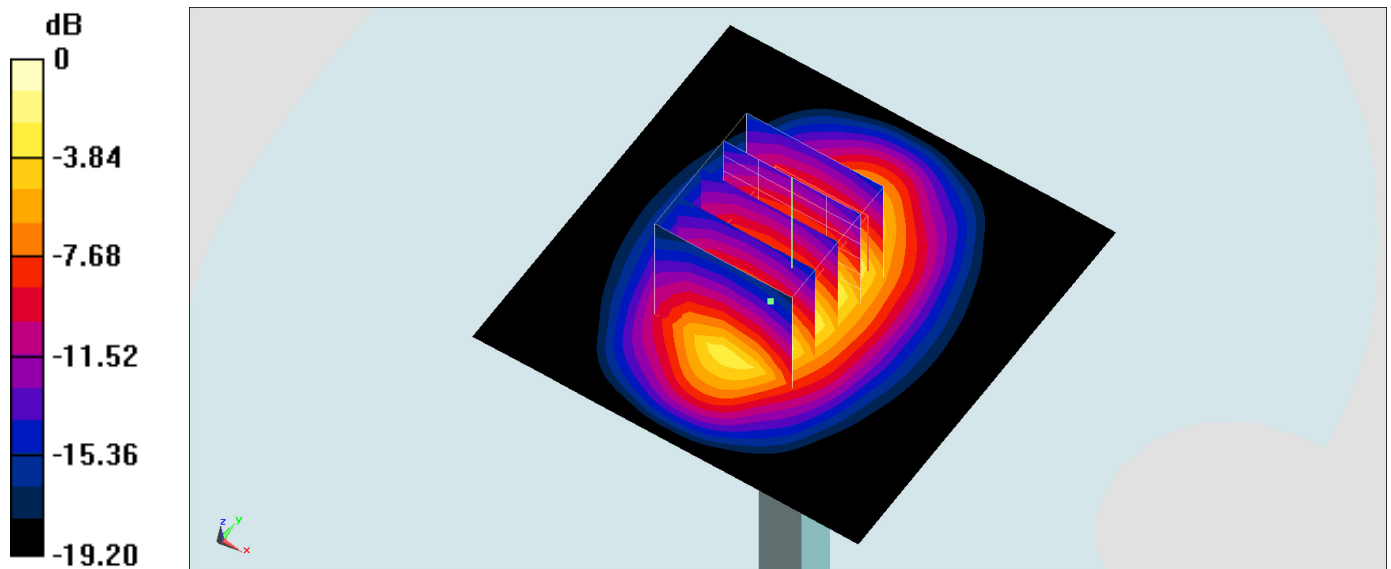
Ambient Temperature : $23.8 \text{ }^\circ\text{C}$; Liquid Temperature : $22.8 \text{ }^\circ\text{C}$

DASY5 Configuration:

- Probe: ES3DV3 - SN3270; ConvF(5.08, 5.08, 5.08); Calibrated: 2016/8/26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2016/5/12
- Phantom: SAM_Left; Type: QD000P40CD; Serial: TP:1644
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$
 Maximum value of SAR (interpolated) = 12.8 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
 Reference Value = 97.56 V/m ; Power Drift = -0.11 dB
 Peak SAR (extrapolated) = 17.1 W/kg
SAR(1 g) = 9.81 W/kg ; SAR(10 g) = 5.23 W/kg
 Maximum value of SAR (measured) = 12.0 W/kg



0 dB = $12.0 \text{ W/kg} = 10.79 \text{ dBW/kg}$

System Check_Body_1900MHz

DUT: D1900V2-5d041

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: MSL_1900_170113 Medium parameters used: $f = 1900$ MHz; $\sigma = 1.552$ S/m; $\epsilon_r = 54.953$; $\rho = 1000$ kg/m³

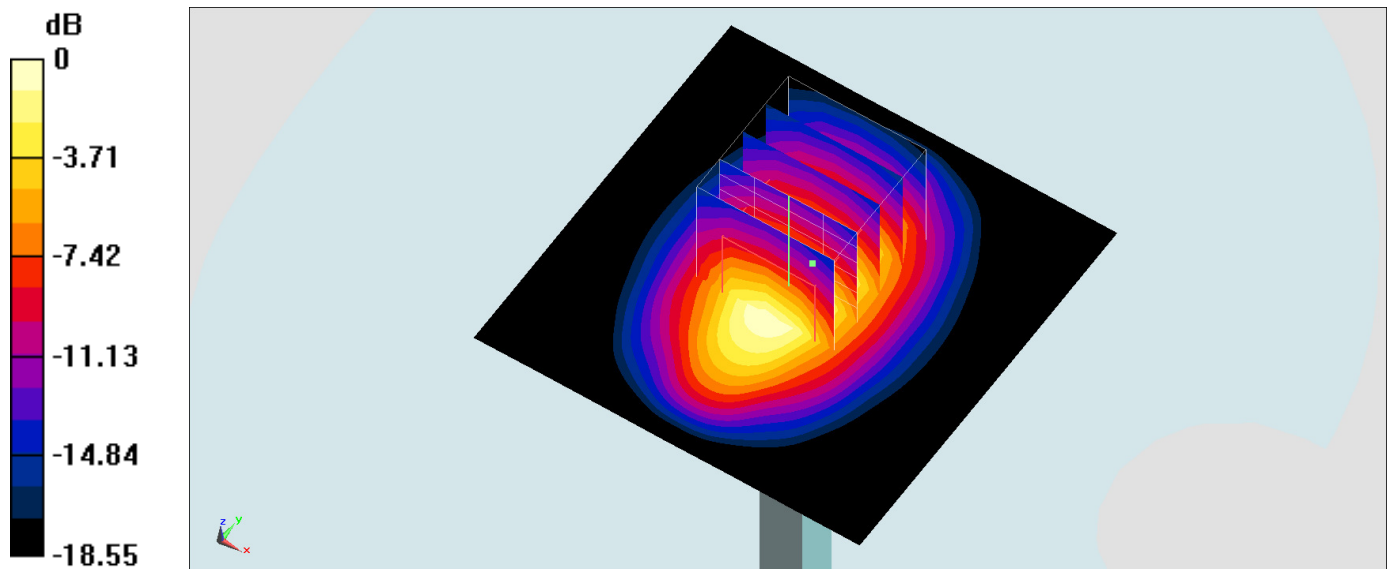
Ambient Temperature : 23.6 °C; Liquid Temperature : 22.6 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3270; ConvF(4.7, 4.7, 4.7); Calibrated: 2016/8/26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2016/5/12
- Phantom: SAM-Right; Type: SAM; Serial: 1795
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
 Maximum value of SAR (interpolated) = 13.2 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
 Reference Value = 93.85 V/m; Power Drift = 0.01 dB
 Peak SAR (extrapolated) = 17.4 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.36 W/kg
 Maximum value of SAR (measured) = 12.6 W/kg



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

System Check_Head_2450MHz

DUT: D2450V2-926

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL_2450_161228 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.804$ S/m; $\epsilon_r = 40.515$; $\rho = 1000$ kg/m³

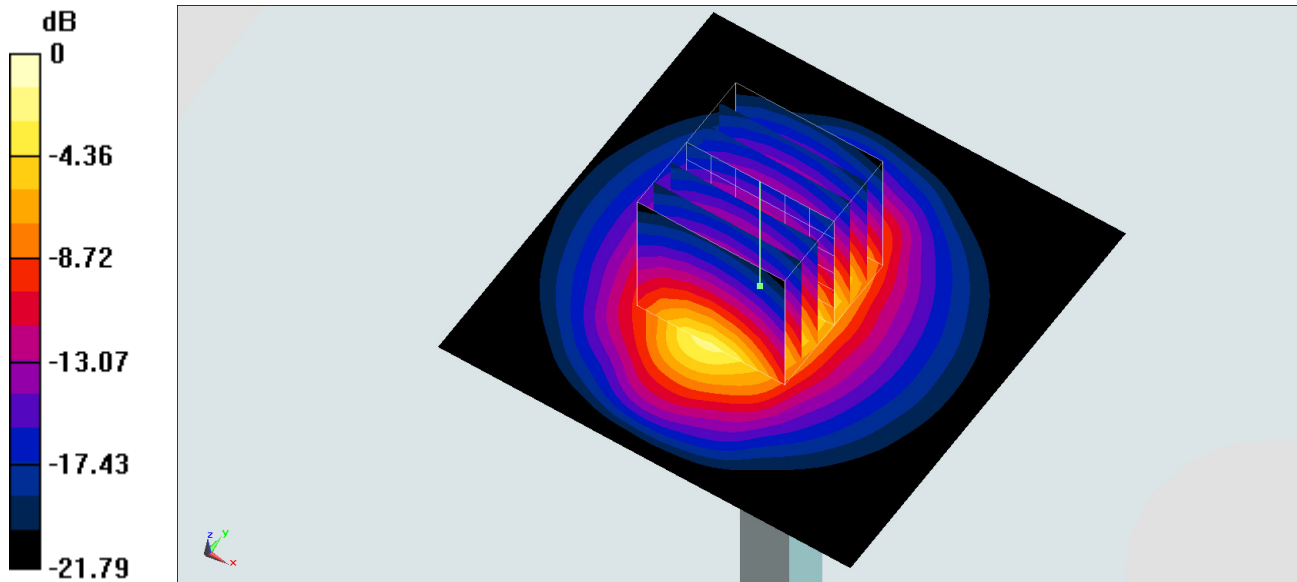
Ambient Temperature : 23.4 °C ; Liquid Temperature : 22.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3955; ConvF(7.56, 7.56, 7.56); Calibrated: 2016/11/24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2016/5/27
- Phantom: SAM_Left; Type: QD 000 P40 CB; Serial: TP-1478
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 23.1 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 110.8 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 27.5 W/kg
SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.11 W/kg
Maximum value of SAR (measured) = 22.2 W/kg



0 dB = 22.2 W/kg = 13.46 dBW/kg

System Check_Head_2450MHz

DUT: D2450V2-926

Communication System: CW ; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL_2450_170104 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.823$ S/m; $\epsilon_r = 40.656$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.2 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3925; ConvF(7.47, 7.47, 7.47); Calibrated: 2016/5/26;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2016/5/27
- Phantom: SAM_Right; Type: QD000P40CD; Serial: TP:1383
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 19.8 W/kg

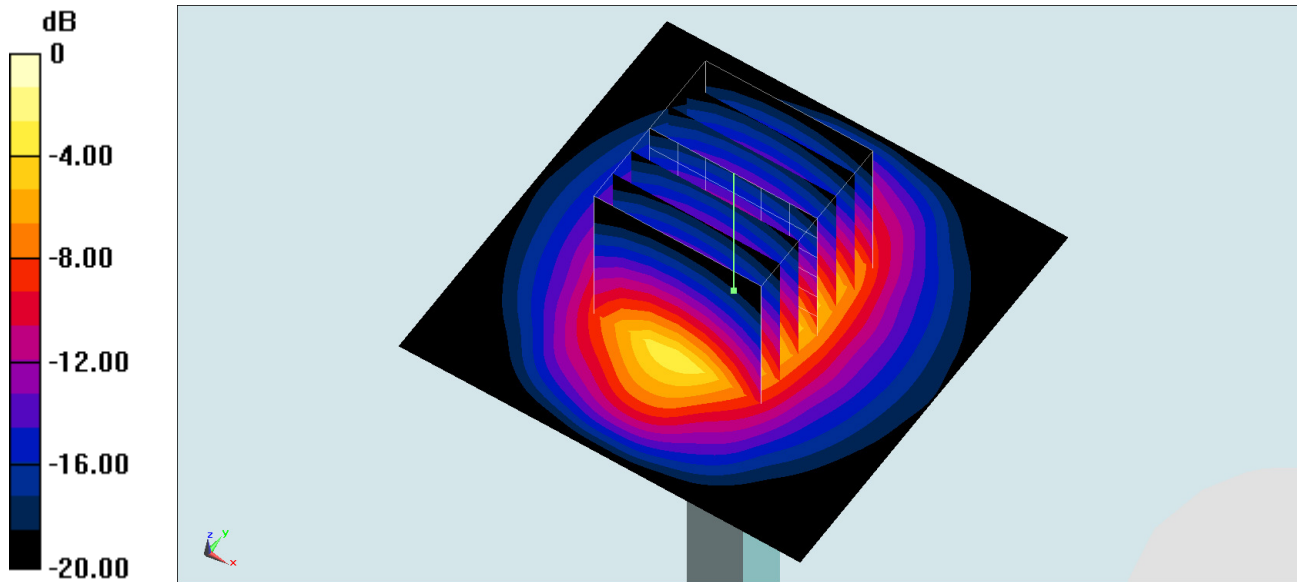
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 105.5 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 26.7 W/kg

SAR(1 g) = 12.9 W/kg; SAR(10 g) = 5.95 W/kg

Maximum value of SAR (measured) = 19.8 W/kg



0 dB = 19.8 W/kg = 12.97 dBW/kg

System Check_Head_2450MHz

DUT: D2450V2-926

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL_2450_170112 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.76$ mho/m; $\epsilon_r = 39.5$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.6 °C ; Liquid Temperature : 22.6 °C

DASY4 Configuration:

- Probe: EX3DV4 - SN3931; ConvF(7.6, 7.6, 7.6); Calibrated: 2016/10/3
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2016/9/28
- Phantom: SAM_Right; Type: QD000P40CD; Serial: TP:1383
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (interpolated) = 23.1 mW/g

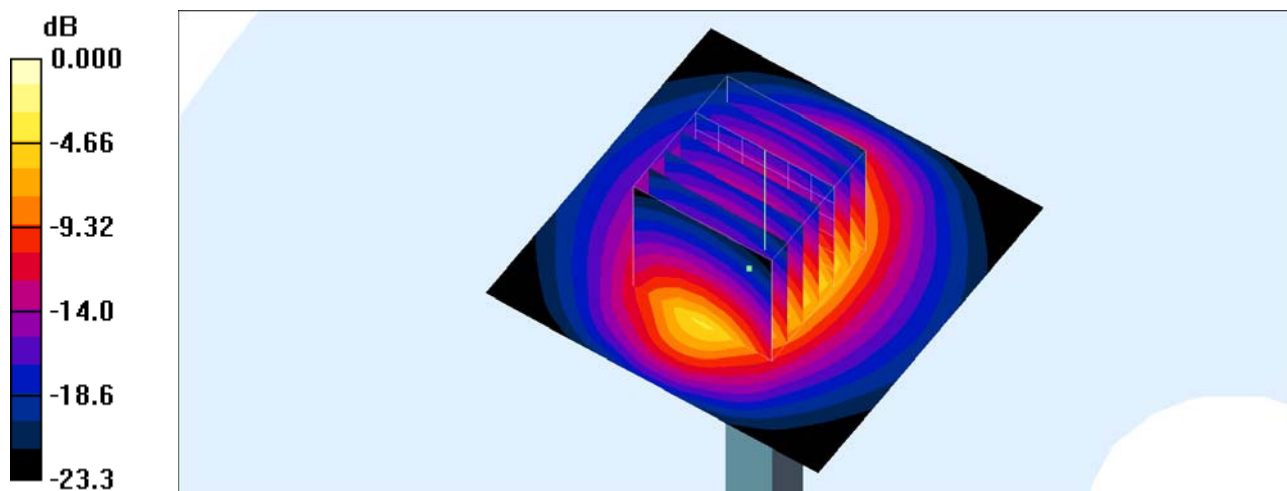
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 117.6 V/m; Power Drift = 0.016 dB

Peak SAR (extrapolated) = 28.4 W/kg

SAR(1 g) = 13.5 mW/g; SAR(10 g) = 6.2 mW/g

Maximum value of SAR (measured) = 22.9 mW/g



0 dB = 22.9mW/g

System Check_Head_2450MHz

DUT: D2450V2-926

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL_2450_170112 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.758$ S/m; $\epsilon_r = 39.523$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.6 °C; Liquid Temperature : 22.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3925; ConvF(7.47, 7.47, 7.47); Calibrated: 2016/5/26;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2016/5/27
- Phantom: SAM-Right; Type: SAM; Serial: 1795
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 21.7 W/kg

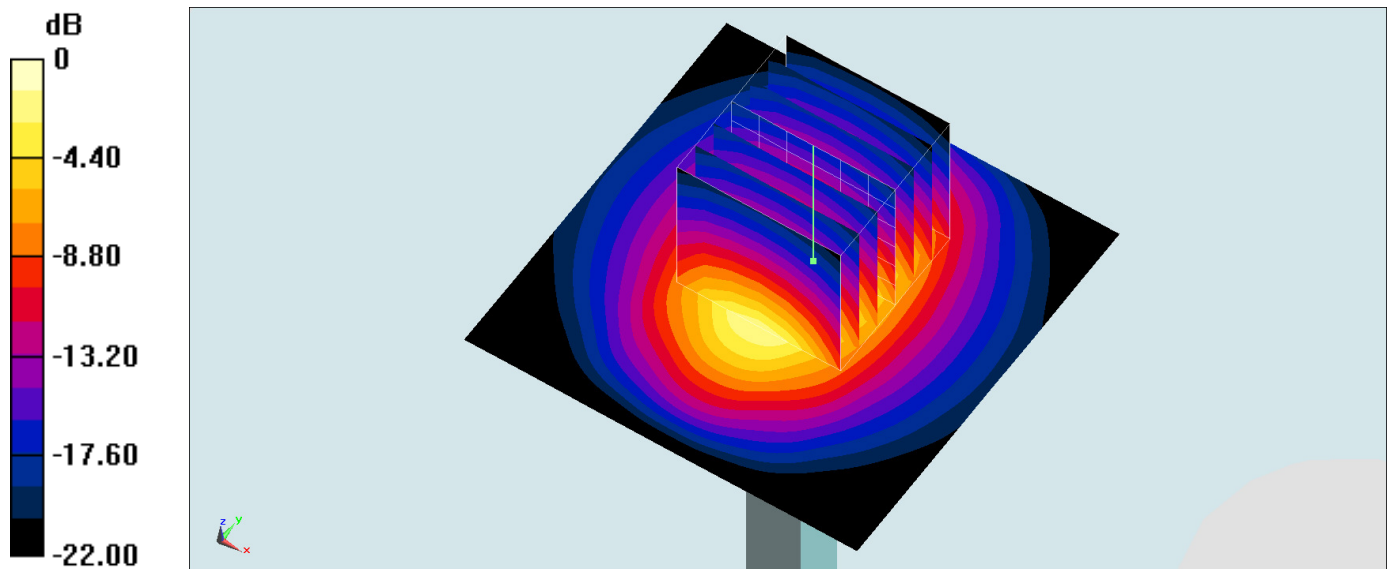
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 106.2 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 28.2 W/kg

SAR(1 g) = 13 W/kg; SAR(10 g) = 5.99 W/kg

Maximum value of SAR (measured) = 19.9 W/kg



0 dB = 19.9 W/kg = 12.99 dBW/kg

System Check_Head_2450MHz

DUT: D2450V2-926

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL_2450_170113 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.81$ mho/m; $\epsilon_r = 40.1$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.1 °C; Liquid Temperature : 22.1 °C

DASY4 Configuration:

- Probe: EX3DV4 - SN3931; ConvF(7.6, 7.6, 7.6); Calibrated: 2016/10/3
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2016/9/28
- Phantom: SAM_Right; Type: QD000P40CD; Serial: TP:1383
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (interpolated) = 23.7 mW/g

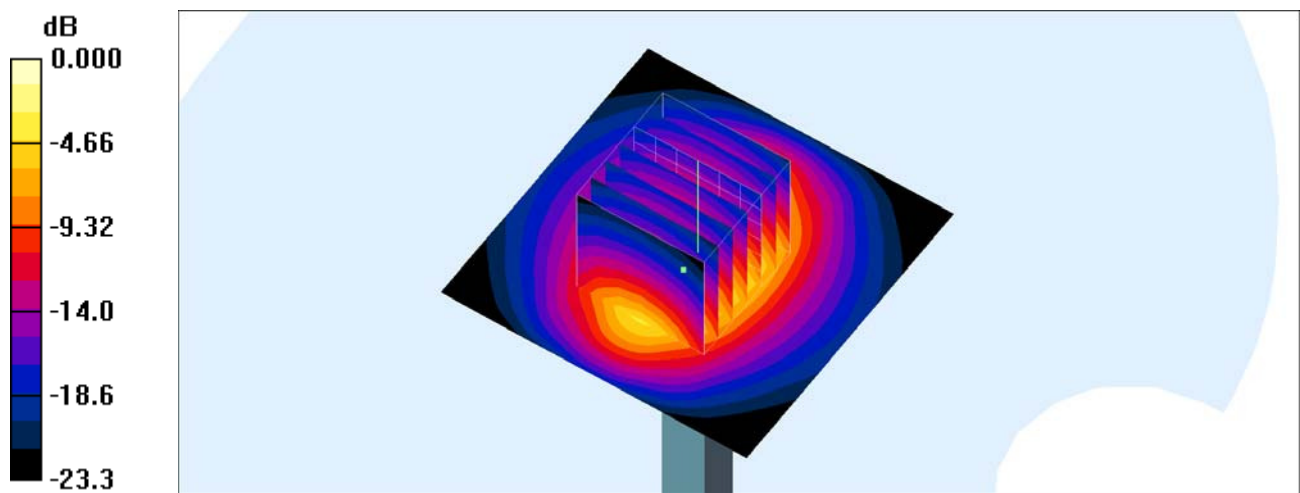
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 117.6 V/m; Power Drift = 0.011 dB

Peak SAR (extrapolated) = 29.2 W/kg

SAR(1 g) = 13.9 mW/g; SAR(10 g) = 6.38 mW/g

Maximum value of SAR (measured) = 23.6 mW/g



0 dB = 23.6mW/g

System Check_Body_2450MHz

DUT: D2450V2-926

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: MSL_2450_161228 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.953$ S/m; $\epsilon_r = 52.97$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C ; Liquid Temperature : 22.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3955; ConvF(7.65, 7.65, 7.65); Calibrated: 2016/11/24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2016/5/27
- Phantom: SAM_Left; Type: QD 000 P40 CB; Serial: TP-1478
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 20.6 W/kg

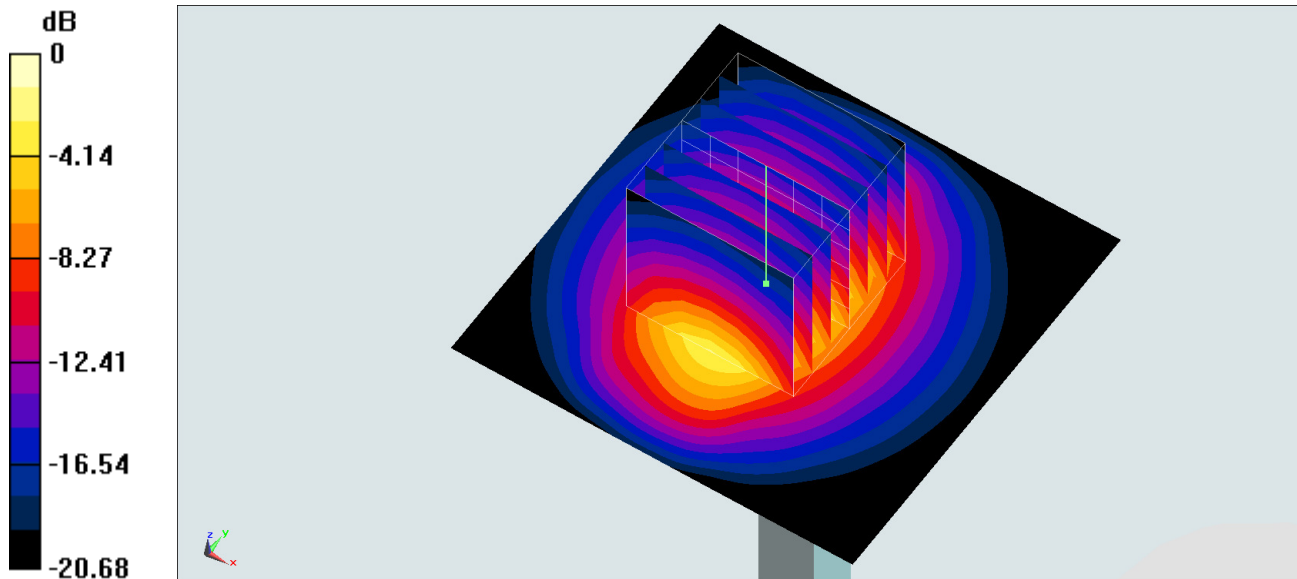
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 102.6 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 25.0 W/kg

SAR(1 g) = 12.5 W/kg; SAR(10 g) = 5.91 W/kg

Maximum value of SAR (measured) = 20.5 W/kg



0 dB = 20.5 W/kg = 13.12 dBW/kg

System Check_Body_2450MHz

DUT: D2450V2-926

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: MSL_2450_161228 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.953$ S/m; $\epsilon_r = 52.97$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C ; Liquid Temperature : 22.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3931; ConvF(7.73, 7.73, 7.73); Calibrated: 2016/10/3;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2016/9/28
- Phantom: SAM_Right; Type: QD000P40CD; Serial: TP:1383
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 20.1 W/kg

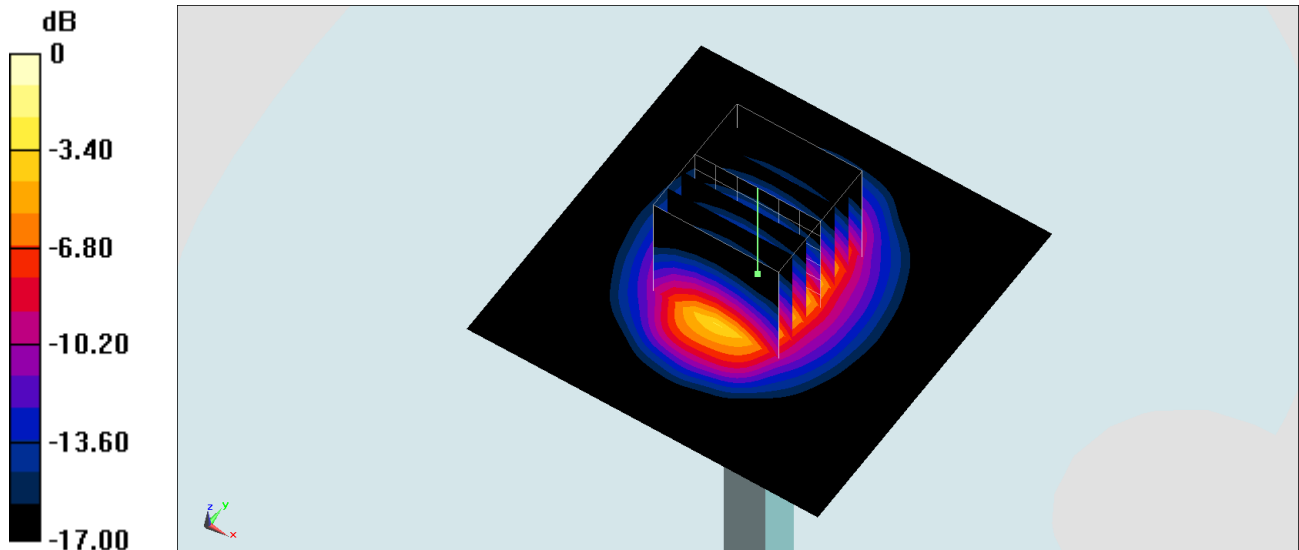
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 110.0 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 29.0 W/kg

SAR(1 g) = 13.4 W/kg; SAR(10 g) = 6.09 W/kg

Maximum value of SAR (measured) = 23.1 W/kg



0 dB = 23.1 W/kg = 13.64 dBW/kg

System Check_Head_2600MHz

DUT: D2600V2-1008

Communication System: CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: HSL_2600_170110 Medium parameters used: $f = 2600$ MHz; $\sigma = 1.995$ S/m; $\epsilon_r = 38.999$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.1 °C; Liquid Temperature : 22.1 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3270; ConvF(4.37, 4.37, 4.37); Calibrated: 2016/8/26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2016/5/12
- Phantom: SAM_Left; Type: QD000P40CD; Serial: TP:1644
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 22.5 W/kg

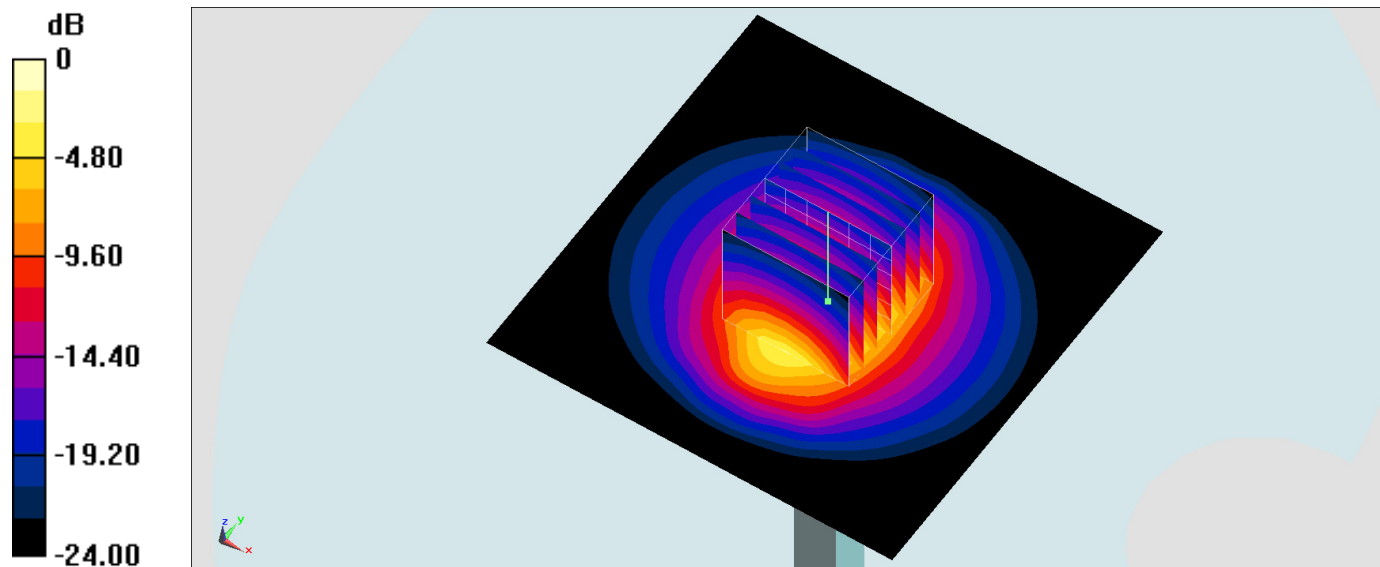
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 113.9 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 31.3 W/kg

SAR(1 g) = 14.4 W/kg; SAR(10 g) = 6.43 W/kg

Maximum value of SAR (measured) = 22.6 W/kg



0 dB = 22.6 W/kg = 13.54 dBW/kg

System Check_Body_2600MHz

DUT: D2600V2-1008

Communication System: CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: MSL_2600_170110 Medium parameters used: $f = 2600$ MHz; $\sigma = 2.159$ S/m; $\epsilon_r = 52.893$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.1 °C; Liquid Temperature : 22.1 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3270; ConvF(4.12, 4.12, 4.12); Calibrated: 2016/8/26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2016/5/12
- Phantom: SAM-Right; Type: SAM; Serial: 1795
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 19.9 W/kg

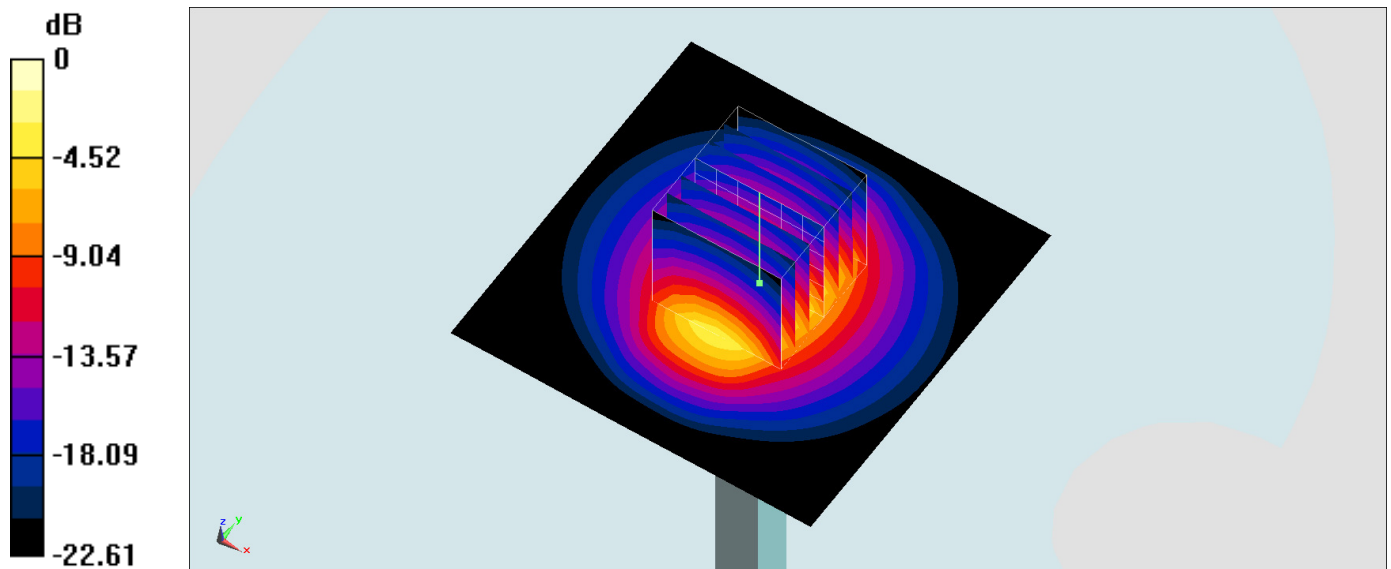
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 95.89 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 30.3 W/kg

SAR(1 g) = 14.2 W/kg; SAR(10 g) = 6.37 W/kg

Maximum value of SAR (measured) = 19.1 W/kg



0 dB = 19.1 W/kg = 12.81 dBW/kg

System Check_Body_2600MHz

DUT: D2600V2-1008

Communication System: CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: MSL_2600_170112 Medium parameters used: $f = 2600$ MHz; $\sigma = 2.203$ S/m; $\epsilon_r = 51.971$; $\rho = 1000$ kg/m³

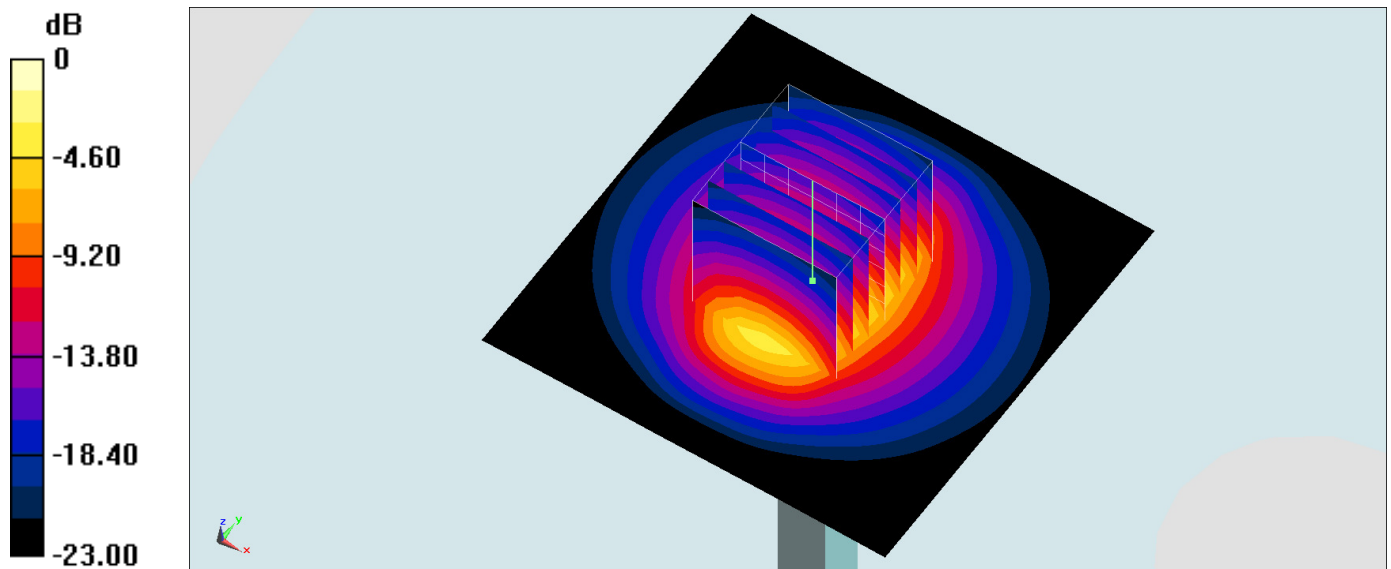
Ambient Temperature : 23.3 °C; Liquid Temperature : 22.3 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3270; ConvF(4.12, 4.12, 4.12); Calibrated: 2016/8/26;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2016/5/12
- Phantom: SAM-Right; Type: SAM; Serial: 1795
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 20.5 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 97.29 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 30.5 W/kg
SAR(1 g) = 14.6 W/kg; SAR(10 g) = 6.66 W/kg
Maximum value of SAR (measured) = 19.4 W/kg



System Check_Head_5250MHz

DUT: D5GHzV2-1128

Communication System: CW ; Frequency: 5250 MHz;Duty Cycle: 1:1

Medium: HSL_5G_161227 Medium parameters used: $f = 5250$ MHz; $\sigma = 4.704$ S/m; $\epsilon_r = 37.572$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5 °C ; Liquid Temperature : 22.5 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3931; ConvF(5.38, 5.38, 5.38); Calibrated: 2016/10/3;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2016/9/28
- Phantom: SAM_Right; Type: QD000P40CD; Serial: TP:1383
- Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 17.1 W/kg

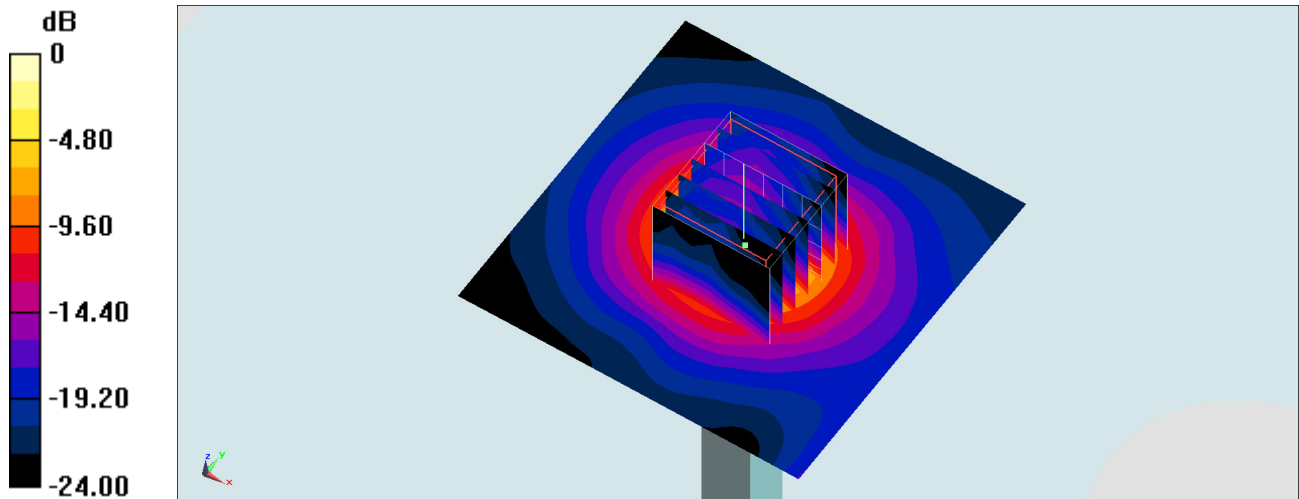
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 66.76 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 26.2 W/kg

SAR(1 g) = 7.33 W/kg; SAR(10 g) = 2.16 W/kg

Maximum value of SAR (measured) = 17.3 W/kg



0 dB = 17.3 W/kg = 12.38 dBW/kg

System Check_Head_5250MHz

DUT: D5GHzV2-1006

Communication System: CW; Frequency: 5250 MHz; Duty Cycle: 1:1

Medium: HSL_5G_170114 Medium parameters used: $f = 5250 \text{ MHz}$; $\sigma = 4.53 \text{ mho/m}$; $\epsilon_r = 37$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : $23.5 \text{ }^\circ\text{C}$; Liquid Temperature : $22.5 \text{ }^\circ\text{C}$

DASY4 Configuration:

- Probe: EX3DV4 - SN3931; ConvF(5.38, 5.38, 5.38); Calibrated: 2016/10/3
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2016/9/28
- Phantom: SAM_Right; Type: QD000P40CD; Serial: TP:1383
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Pin=100mW/Area Scan (71x71x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 20.6 mW/g

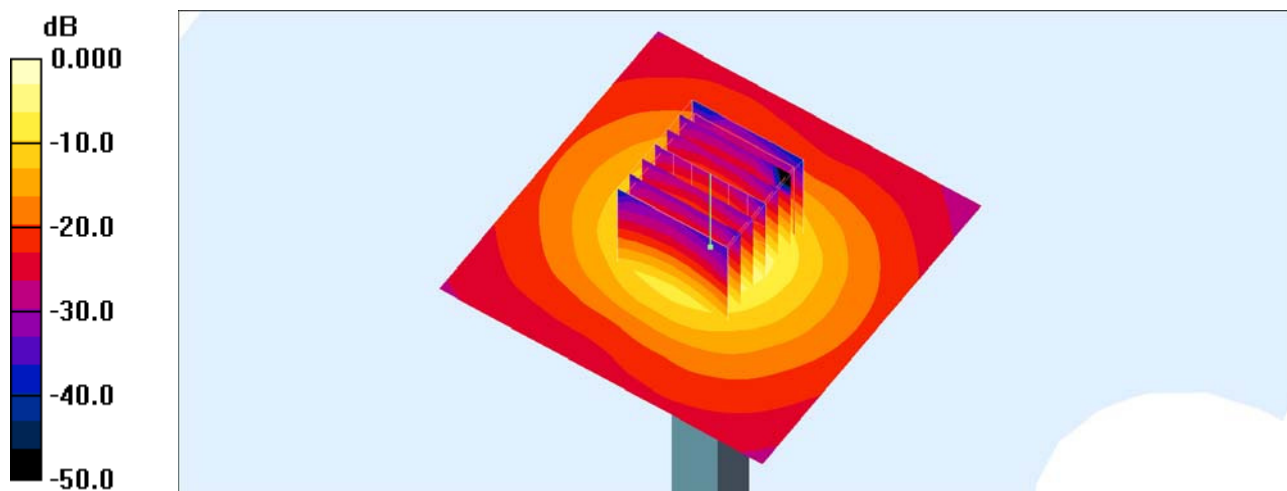
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$

Reference Value = 70.9 V/m ; Power Drift = 0.011 dB

Peak SAR (extrapolated) = 32.1 W/kg

SAR(1 g) = 7.71 mW/g ; SAR(10 g) = 2.2 mW/g

Maximum value of SAR (measured) = 19.3 mW/g



0 dB = 19.3mW/g

System Check_Body_5250MHz

DUT: D5GHzV2-1128

Communication System: CW; Frequency: 5250 MHz; Duty Cycle: 1:1

Medium: MSL_5G_161229 Medium parameters used: $f = 5250$ MHz; $\sigma = 5.44$ S/m; $\epsilon_r = 46.883$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C ; Liquid Temperature : 22.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3955; ConvF(4.51, 4.51, 4.51); Calibrated: 2016/11/24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2016/5/27
- Phantom: SAM_Right; Type: QD000P40CD; Serial: TP:1383
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 20.5 W/kg

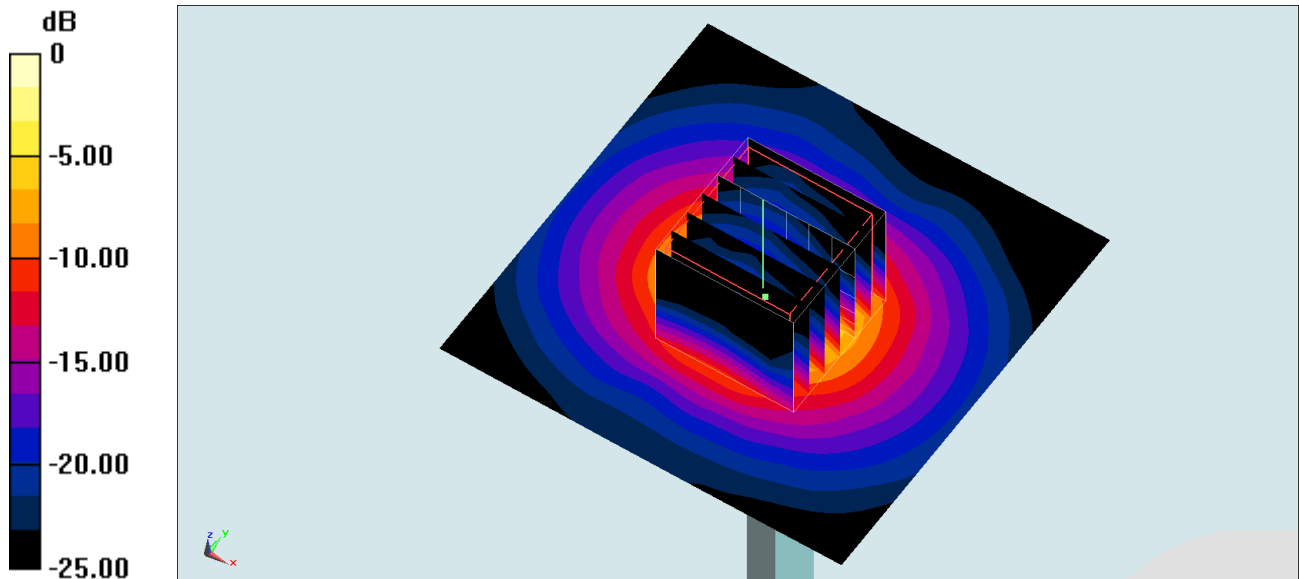
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 72.92 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 30.7 W/kg

SAR(1 g) = 7.78 W/kg; SAR(10 g) = 2.18 W/kg

Maximum value of SAR (measured) = 19.0 W/kg



0 dB = 19.0 W/kg = 12.79 dBW/kg

System Check_Body_5250MHz

DUT: D5GHzV2-1006

Communication System: CW; Frequency: 5250 MHz; Duty Cycle: 1:1

Medium: MSL_5G_170105 Medium parameters used: $f = 5250$ MHz; $\sigma = 5.424$ S/m; $\epsilon_r = 47.02$; $\rho = 1000$ kg/m³

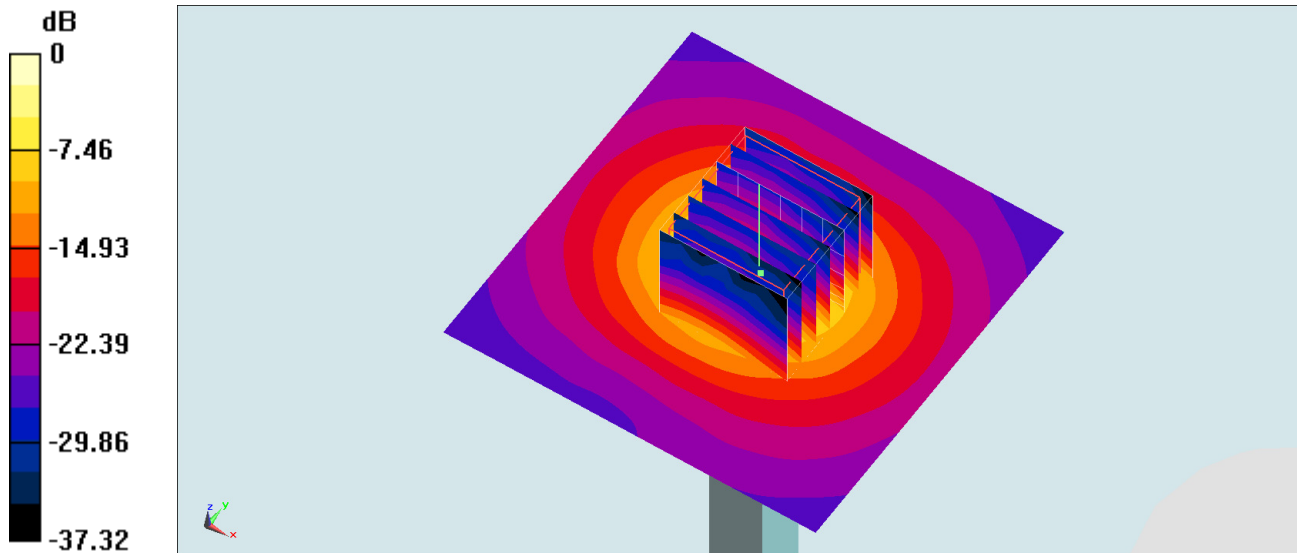
Ambient Temperature : 23.6 °C ; Liquid Temperature : 22.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3931; ConvF(4.57, 4.57, 4.57); Calibrated: 2016/10/3;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2016/9/28
- Phantom: SAM_Right; Type: QD000P40CD; Serial: TP:1383
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 17.6 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 66.78 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 30.4 W/kg
SAR(1 g) = 7.44 W/kg; SAR(10 g) = 1.98 W/kg
Maximum value of SAR (measured) = 18.8 W/kg



0 dB = 18.8 W/kg = 12.74 dBW/kg

System Check_Head_5300MHz

DUT: D5GHzV2-1040

Communication System: CW ; Frequency: 5300 MHz;Duty Cycle: 1:1

Medium: HSL_5G_170104 Medium parameters used: $f = 5300$ MHz; $\sigma = 4.6$ S/m; $\epsilon_r = 34.228$; $\rho = 1000$ kg/m³

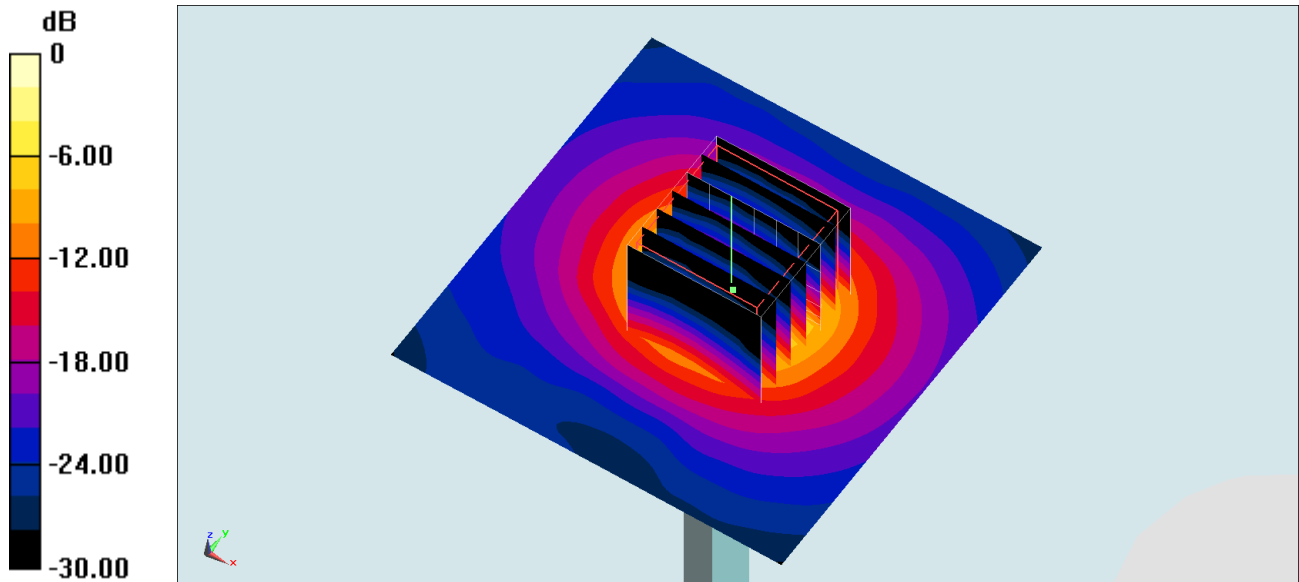
Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.2 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3925; ConvF(5.15, 5.15, 5.15); Calibrated: 2016/5/26;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2016/5/27
- Phantom: SAM_Right; Type: QD000P40CD; Serial: TP:1383
- Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 19.0 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 69.02 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 33.0 W/kg
SAR(1 g) = 8.03 W/kg; SAR(10 g) = 2.22 W/kg
Maximum value of SAR (measured) = 19.8 W/kg



0 dB = 19.8 W/kg = 12.97 dBW/kg

System Check_Head_5600MHz

DUT: D5GHzV2-1128

Communication System: CW ; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: HSL_5G_161227 Medium parameters used: $f = 5600$ MHz; $\sigma = 5.061$ S/m; $\epsilon_r = 37.049$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5 °C ; Liquid Temperature : 22.5 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3955; ConvF(4.5, 4.5, 4.5); Calibrated: 2016/11/24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1399; Calibrated: 2016/11/17
- Phantom: SAM_Right; Type: QD000P40CD; Serial: TP:1383
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 20.9 W/kg

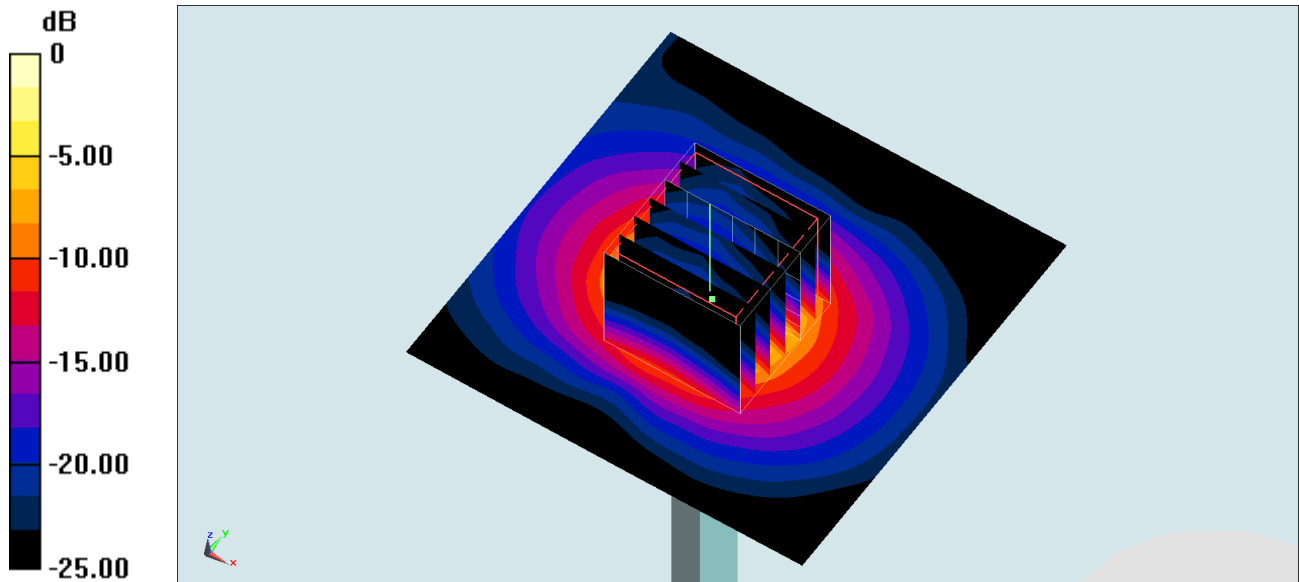
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 67.91 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 33.6 W/kg

SAR(1 g) = 8.59 W/kg; SAR(10 g) = 2.44 W/kg

Maximum value of SAR (measured) = 21.3 W/kg



0 dB = 21.3 W/kg = 13.28 dBW/kg

System Check_Head_5600MHz

DUT: D5GHzV2-1040

Communication System: CW ; Frequency: 5600 MHz;Duty Cycle: 1:1

Medium: HSL_5G_170104 Medium parameters used: $f = 5600$ MHz; $\sigma = 4.874$ S/m; $\epsilon_r = 33.825$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.2 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3925; ConvF(4.47, 4.47, 4.47); Calibrated: 2016/5/26;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2016/5/27
- Phantom: SAM_Right; Type: QD000P40CD; Serial: TP:1383
- Measurement SW: DASY52, Version 52.8 (8);SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 20.6 W/kg

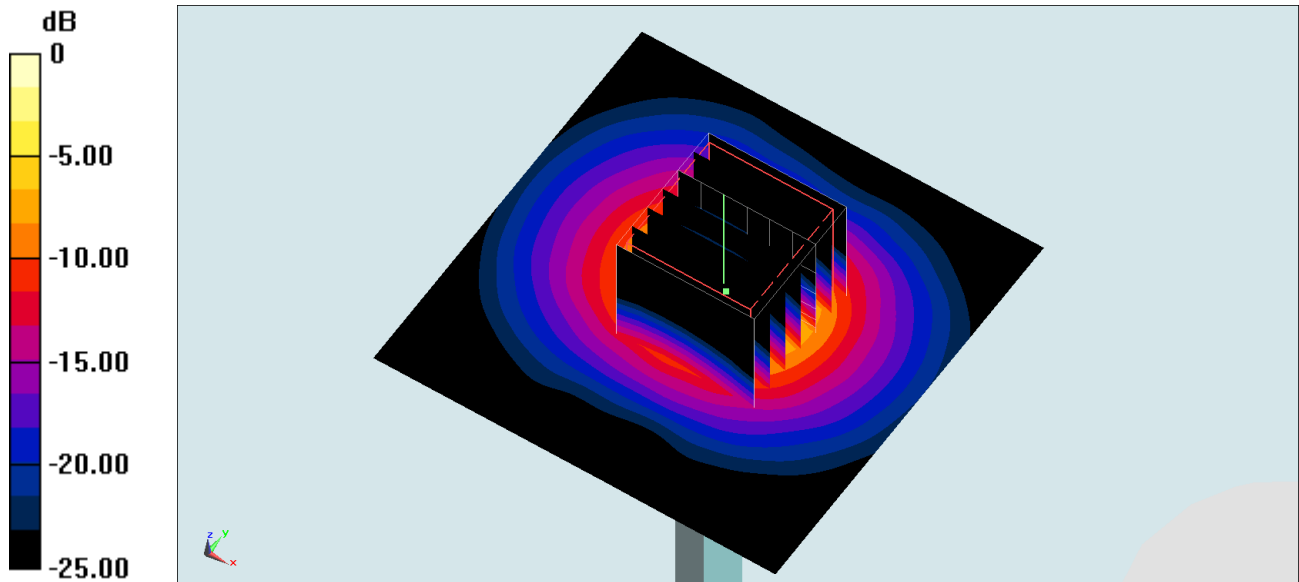
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 72.51 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 34.2 W/kg

SAR(1 g) = 8.59 W/kg; SAR(10 g) = 2.36 W/kg

Maximum value of SAR (measured) = 21.2 W/kg



0 dB = 21.2 W/kg = 13.26 dBW/kg

System Check_Head_5600MHz

DUT: D5GHzV2-1006

Communication System: CW; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: HSL_5G_170114 Medium parameters used: $f = 5600$ MHz; $\sigma = 4.86$ mho/m; $\epsilon_r = 36.5$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5 °C; Liquid Temperature : 22.5 °C

DASY4 Configuration:

- Probe: EX3DV4 - SN3931; ConvF(4.68, 4.68, 4.68); Calibrated: 2016/10/3
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2016/9/28
- Phantom: SAM_Right; Type: QD000P40CD; Serial: TP:1383
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Pin=100mW/Area Scan (71x71x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 22.8 mW/g

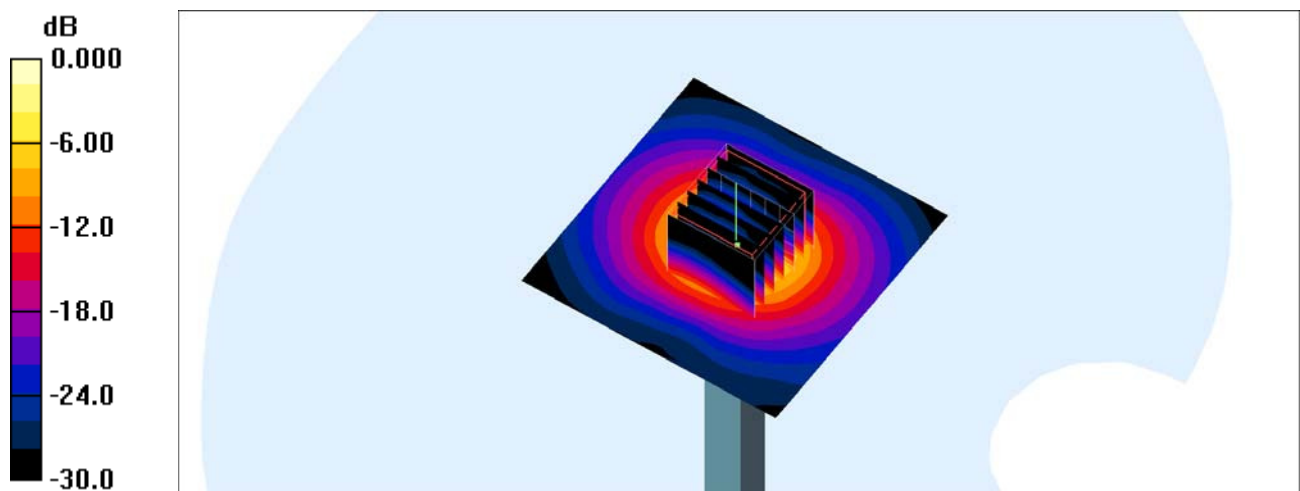
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 73.7 V/m; Power Drift = 0.080 dB

Peak SAR (extrapolated) = 38.7 W/kg

SAR(1 g) = 8.6 mW/g; SAR(10 g) = 2.35 mW/g

Maximum value of SAR (measured) = 22.1 mW/g



0 dB = 22.1mW/g

System Check_Body_5600MHz

DUT: D5GHzV2-1128

Communication System: CW; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: MSL_5G_161229 Medium parameters used: $f = 5600$ MHz; $\sigma = 5.892$ S/m; $\epsilon_r = 46.262$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C ; Liquid Temperature : 22.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3955; ConvF(3.91, 3.91, 3.91); Calibrated: 2016/11/24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2016/5/27
- Phantom: SAM_Right; Type: QD000P40CD; Serial: TP:1383
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 20.5 W/kg

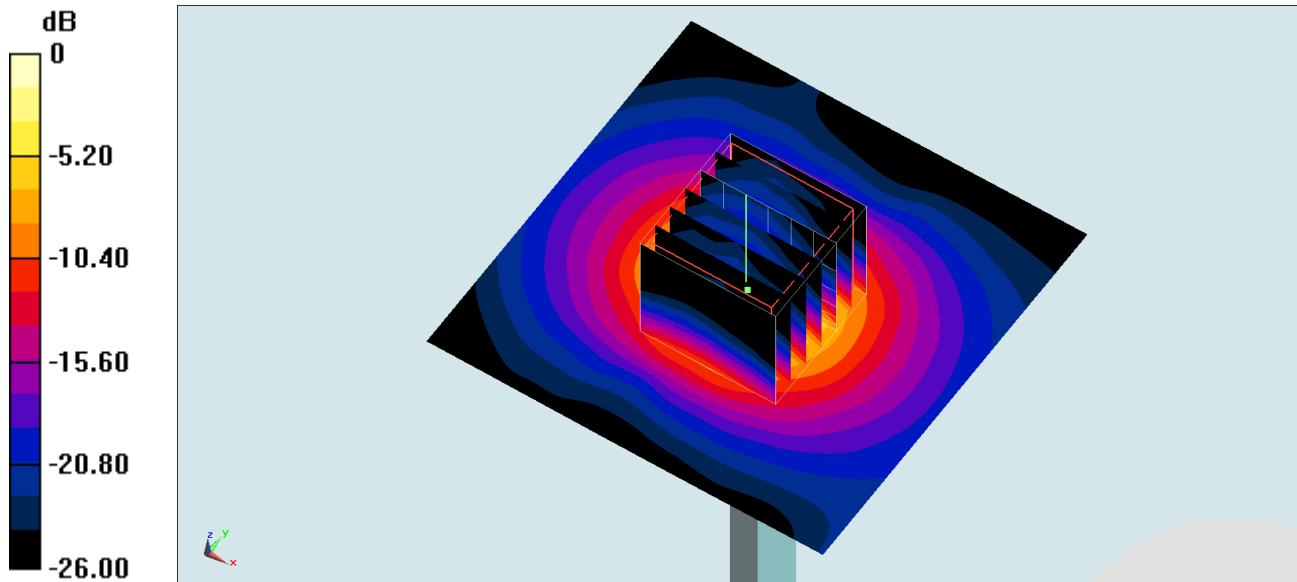
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 70.08 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 34.6 W/kg

SAR(1 g) = 8.36 W/kg; SAR(10 g) = 2.34 W/kg

Maximum value of SAR (measured) = 20.7 W/kg



0 dB = 20.7 W/kg = 13.16 dBW/kg

System Check_Body_5600MHz

DUT: D5GHzV2-1006

Communication System: CW; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: MSL_5G_170105 Medium parameters used: $f = 5600$ MHz; $\sigma = 5.875$ S/m; $\epsilon_r = 46.399$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.6 °C ; Liquid Temperature : 22.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3931; ConvF(3.71, 3.71, 3.71); Calibrated: 2016/10/3;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2016/9/28
- Phantom: SAM_Right; Type: QD000P40CD; Serial: TP:1383
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 19.7 W/kg

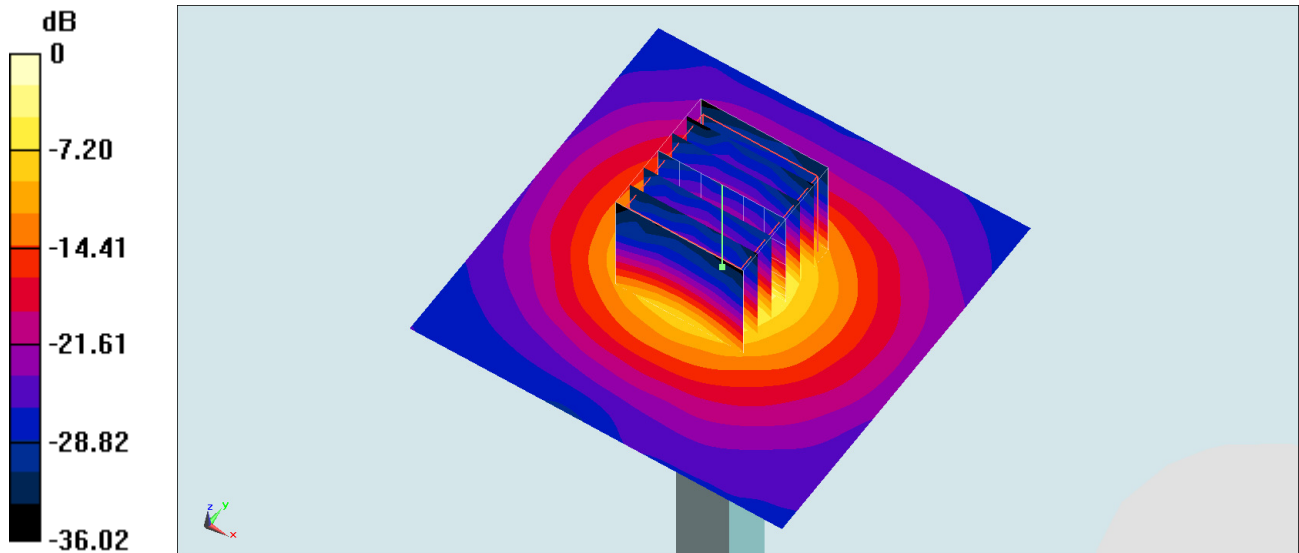
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 70.11 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 34.4 W/kg

SAR(1 g) = 8.19 W/kg; SAR(10 g) = 2.27 W/kg

Maximum value of SAR (measured) = 21.5 W/kg



0 dB = 21.5 W/kg = 13.32 dBW/kg

System Check_Head_5750MHz

DUT: D5GHzV2-1128

Communication System: CW; Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: HSL_5G_161227 Medium parameters used: $f = 5750$ MHz; $\sigma = 5.226$ S/m; $\epsilon_r = 36.847$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5 °C ; Liquid Temperature : 22.5 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3955; ConvF(4.63, 4.63, 4.63); Calibrated: 2016/11/24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1399; Calibrated: 2016/11/17
- Phantom: SAM_Right; Type: QD000P40CD; Serial: TP:1383
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 17.8 W/kg

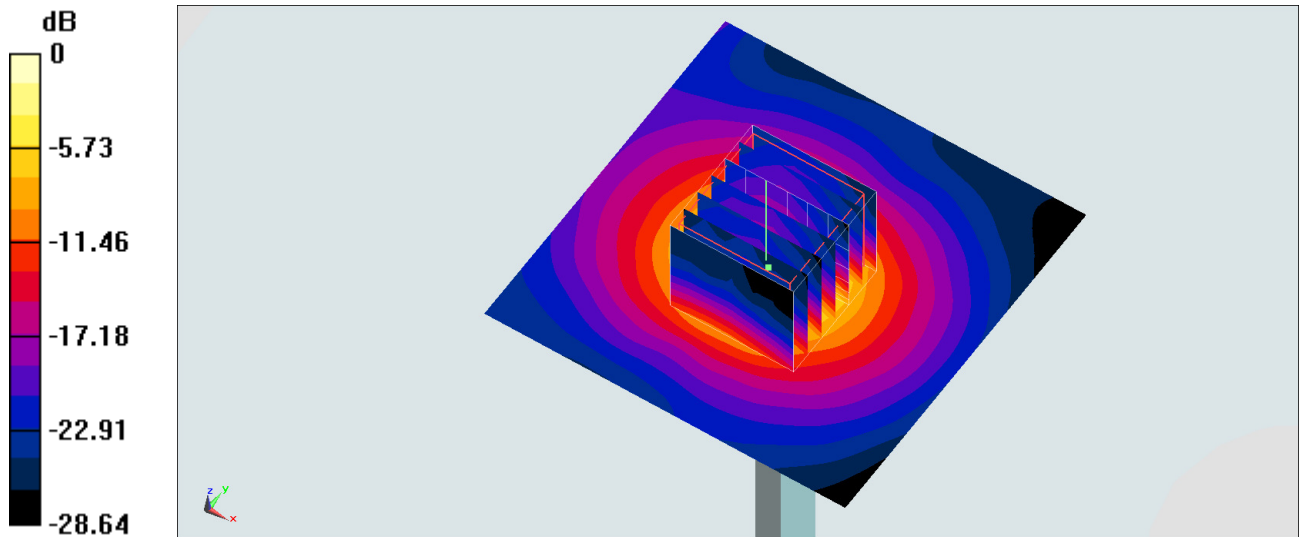
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 67.29 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 30.1 W/kg

SAR(1 g) = 7.46 W/kg; SAR(10 g) = 2.13 W/kg

Maximum value of SAR (measured) = 18.3 W/kg



0 dB = 18.3 W/kg = 12.62 dBW/kg

System Check_Head_5750MHz

DUT: D5GHzV2-1006

Communication System: CW; Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: HSL_5G_170114 Medium parameters used: $f = 5750$ MHz; $\sigma = 5.02$ mho/m; $\epsilon_r = 36.1$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.5 °C; Liquid Temperature : 22.5 °C

DASY4 Configuration:

- Probe: EX3DV4 - SN3931; ConvF(4.84, 4.84, 4.84); Calibrated: 2016/10/3
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2016/9/28
- Phantom: SAM_Right; Type: QD000P40CD; Serial: TP:1383
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Pin=100mW/Area Scan (71x71x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 22.5 mW/g

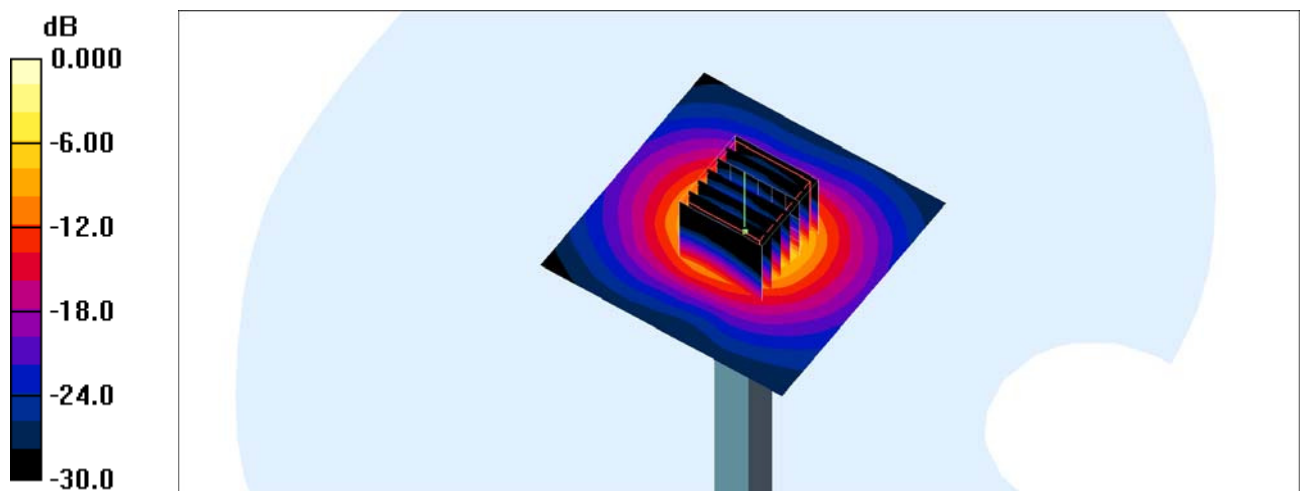
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 72.2 V/m; Power Drift = 0.024 dB

Peak SAR (extrapolated) = 37.8 W/kg

SAR(1 g) = 8.3 mW/g; SAR(10 g) = 2.27 mW/g

Maximum value of SAR (measured) = 21.1 mW/g



0 dB = 21.1mW/g

System Check_Body_5750MHz

DUT: D5GHzV2-1006

Communication System: CW ; Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: MSL_5G_161229 Medium parameters used: $f = 5750$ MHz; $\sigma = 6.098$ S/m; $\epsilon_r = 46.02$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C ; Liquid Temperature : 22.4 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3955; ConvF(4.12, 4.12, 4.12); Calibrated: 2016/11/24;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2016/5/27
- Phantom: SAM_Right; Type: QD000P40CD; Serial: TP:1383
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 18.3 W/kg

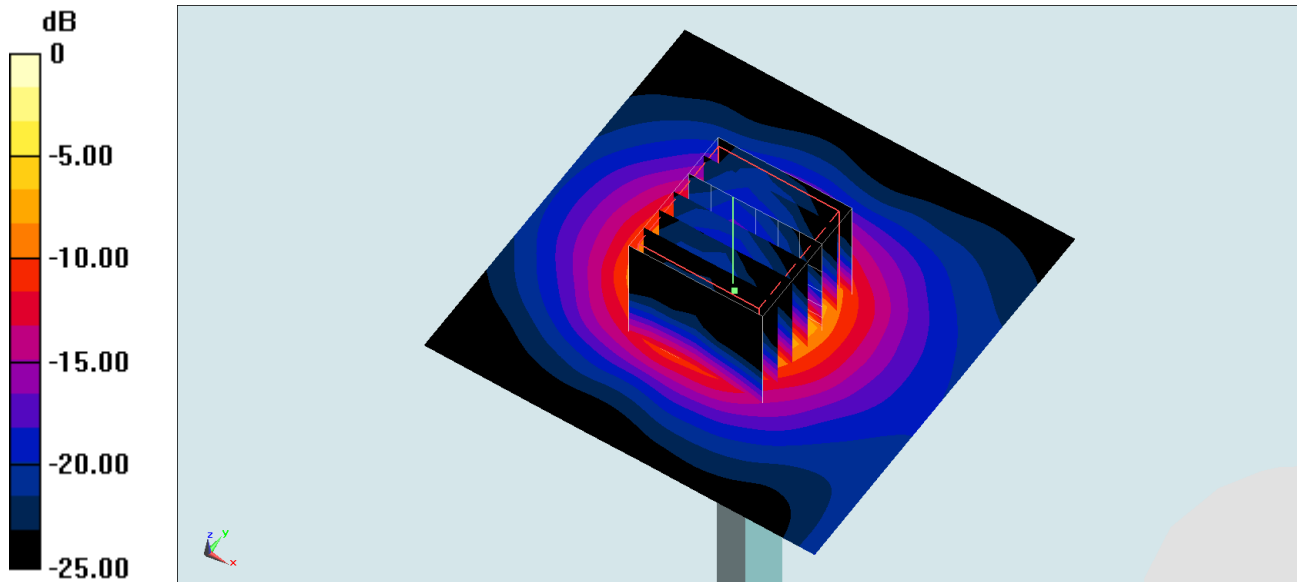
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 61.14 V/m; Power Drift = -0.19 dB

Peak SAR (extrapolated) = 29.6 W/kg

SAR(1 g) = 6.91 W/kg; SAR(10 g) = 1.9 W/kg

Maximum value of SAR (measured) = 17.7 W/kg



0 dB = 17.7 W/kg = 12.48 dBW/kg

System Check_Head_5800MHz

DUT: D5GHzV2-1040

Communication System: CW; Frequency: 5800 MHz; Duty Cycle: 1:1

Medium: HSL_5G_170104 Medium parameters used: $f = 5800$ MHz; $\sigma = 5.06$ S/m; $\epsilon_r = 33.574$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.2 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3925; ConvF(4.51, 4.51, 4.51); Calibrated: 2016/5/26;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2016/5/27
- Phantom: SAM_Right; Type: QD000P40CD; Serial: TP:1383
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 16.2 W/kg

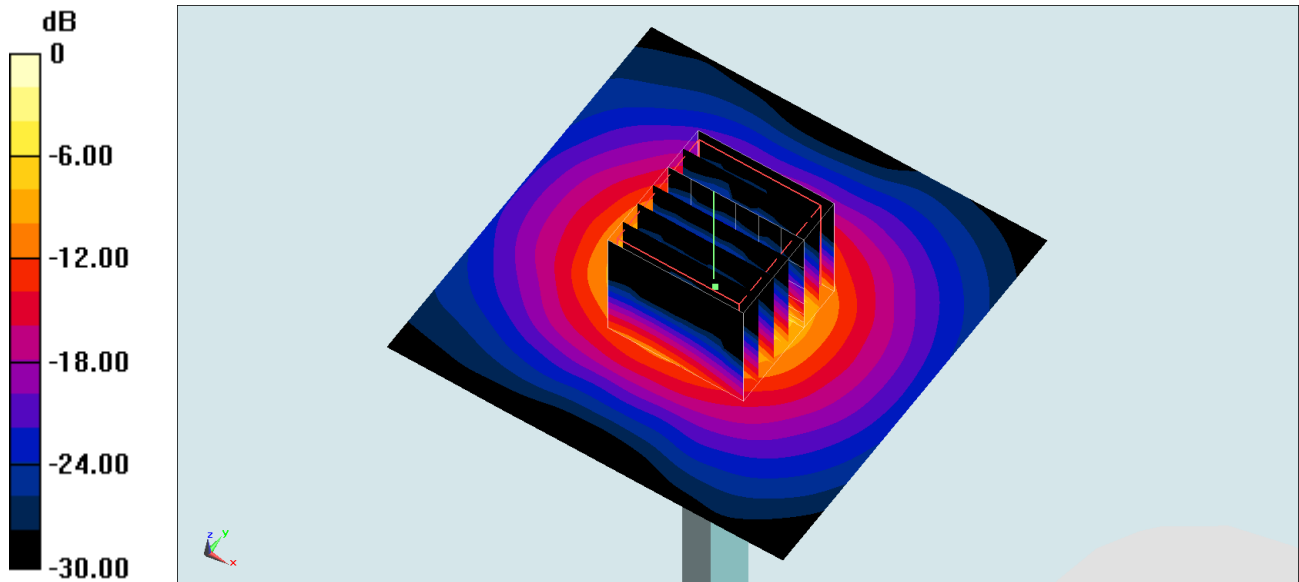
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 65.88 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 33.1 W/kg

SAR(1 g) = 7.94 W/kg; SAR(10 g) = 2.2 W/kg

Maximum value of SAR (measured) = 20.2 W/kg



0 dB = 20.2 W/kg = 13.05 dBW/kg