FCC SAR Test Report

APPLICANT	:	Motorola Solutions Inc.
EQUIPMENT	:	NITRO Portable
BRAND NAME	:	Motorola Solutions
MODEL NAME	:	EVOLVE
MODEL NUMBER	:	HK2136A
FCC ID	:	AZ489FT7134
STANDARD	:	FCC 47 CFR Part 2 (2.1093)

The product was received on May 26, 2020 and testing was started from Sep. 03, 2020 and completed on Oct. 21, 2020. We, Sporton International (ShenZhen) 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 (ShenZhen) Inc., the test report shall not be reproduced except in full.

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Reviewed by: Long Liang / Supervisor

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Approved by: Johnny Chen / Manager

ACCREDITED
Cert #5145.01

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA052616	Rev. 01	Initial issue of report	Oct. 23, 2020

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Solutions Inc., NITRO Portable, EVOLVE,** are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 10mm)	Body-worn (Separation 0mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	WCDMA	Band II	**1.11**	**1.19**	**0.49**	1.29
		Band V	0.71	0.17	<0.10	
	LTE	Band12/Band 17	0.28	0.12	<0.10	
		Band 13	0.43	<0.10	<0.10	
		Band 5	0.60	0.14	<0.10	
		Band 4	1.05	0.85	0.43	
		Band 2	1.01	0.93	0.45	
		Band 7	0.99	1.17	0.32	
		Band 48/42/43	1.05	0.42	0.22	
DTS	WLAN	2.4GHz WLAN	0.21	0.12	<0.10	1.29
NII		5GHz WLAN	<0.10		<0.10	1.23
DSS	Bluetooth	2.4GHz Bluetooth	<0.10	<0.10	<0.10	1.23

Highest 10g SAR Summary			
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)
NII	WLAN	5GHz WLAN	**0.21**
Date of Testing:			2020/9/3~2020/10/21

Remark: This device supports LTE B17/42/43 and B12/48. Since the supported frequency span for LTE B17/42/43 falls completely within the supports frequency span for LTE B12/48, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B12/48.

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR, 4.0 W/kg for Product Specific 10g SAR) 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

Sporton International (Shenzhen) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Testing Laboratory			
Test Firm	Sporton International (Shenzhen) Inc.		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR01-SZ / SAR02-SZ SAR03-SZ /SAR04-SZ SAR05-SZ	CN1256	421272

Applicant	
Company Name	Motorola Solutions Inc.
Address	8000 West Sunrise Boulevard, Fort Lauderdale, Florida

Manufacturer	
Company Name	Motorola Solutions Malaysia Sdn. Bhd.
Address	Plot 2A, Medan Bayan Lepas, Mukim 12, S.W.D. 11900 Bayan Lepas, Penang, Malaysia.

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 616217 D04 SAR for laptop and tablets v01r02
- 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	NITRO Portable
Brand Name	Motorola Solutions
Model Name	EVOLVE
Model Number	HK2136A
FCC ID	AZ489FT7134
IMEI Code	SIM1: 354850210004958 SIM2: 354850215004953
Wireless Technology and Frequency Range	WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 42: 3552.5 MHz ~ 3597.5 MHz LTE Band 43: 3602.5 MHz ~ 3697.5MHz LTE Band 48: 3552.5 MHz ~ 3697.5 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
Mode	RMC/AMR 12.2Kbps HSDPA HSUPA LTE: QPSK, 16QAM WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 Bluetooth BR/EDR/LE
HW Version	P2.0
SW Version	IQN5000-userdebug 10 QKQ1.200405.002 D01.00.17 test-keys
EUT Stage	Identical Prototype

Remark:

1. This device supports VoIP in WCDMA and LTE (e.g. for 3rd-party VoIP).
2. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
3. This device WLAN5GHz has no hotspot function.
4. For dual SIM card mobile has two SIM slots and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active). After pre-scan two SIM cards power, we found test result of the SIM1 was the worse, so we chose SIM1 slot to perform all tests.
5. This device support the receiver detection mechanism, the main purpose is to minimize triggering associated with power reduction scenarios by receiver detection mechanisms and provide enhanced user experience. When the phone is in talking mode and receiver worked, WCDMA band II and LTE band 2/4/7/42/43/48 reduced power will be active.
6. There are two batteries which described at the following table.

4.2 Specification of Accessory

Accessories Information				
Wired Remote Speaker Mic	**Brand Name**	Motorola Solutions	**P/N**	PMMN4125B
	Signal Line	0.54 meter(normal), 2.5 meter (stretch) shielded cable, without ferrite core		
Bluetooth Wired Speaker Mic	**Brand Name**	Motorola Solutions	**P/N**	PMMN4127A
Bluetooth Earpiece 1	**Brand Name**	Motorola Solutions	**P/N**	EP900
Bluetooth Earpiece 2	**Brand Name**	Motorola Solutions	**P/N**	PMLN8123A
Earpiece	**Brand Name**	Motorola Solutions	**P/N**	PMLN8191A
	Signal Line	1.128meter, non-shielded cable, without ferrite core		
Battery 1	**Brand Name**	Motorola Solutions	**P/N**	BT000593A01
	Rated	5800mAh		
Battery 2	**Brand Name**	Motorola Solutions	**P/N**	BT000592A01
	Rated	2900mAh		
Belt Clip Holster	**Brand Name**	Motorola Solutions	**Model Name**	PMLN6970A
Belt Clip Holster (Long)	**Brand Name**	Motorola Solutions	**Model Name**	NTN8266B
Belt Clip Holster (Short)	**Brand Name**	Motorola Solutions	**Model Name**	PMLN7965A

4.3 Power Reduction Specification of 3G/4G Main Antenna

The following tables summarize the key power reduction information of 3G/4G main antenna triggered by specific use conditions via receiver detection mechanism. The detailed full power and reduced conducted power measurement results are provided in Section 12 of this report:

WWAN Bands	WWAN Main Antenna Maximum Tune up Power Limit (dBm)		Power Reduction (dB)
	Receiver off (Full Power)	Receiver on (for head)	
UMTS Band II	24.0	19.0	5.0
LTE Band 2	23.0	19.0	4.0
LTE Band 4	23.0	19.5	3.5
LTE Band 7	23.5	16.5	7.0
LTE Band 42	20.5	17.5	3.0
LTE Band 43	20.5	17.5	3.0
LTE Band 48	20.5	17.5	3.0

Note: For Head SAR test of 3G/4G Main Antenna, Head SAR should be evaluated at with audio receiver on. As the audio receiver only works in voice mode when the user is making a call in head scenario, and the lack of the third-party VoIP server and the unstandardized VOIP operating characteristics, so a test script may be used to trigger the receiver on during the test. The test script function is only used to trigger audio receiver on and simulate voice and VOIP usage scene. It can be ensured that the unmodified settings in production units, including maximum output power, amplifier gain and other RF performance or tuning parameters, are used for SAR measurement.

4.4 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05	
FCC ID	AZ489FT7134
Equipment Name	NITRO Portable
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 42: 3552.5 MHz ~ 3597.5 MHz LTE Band 43: 3602.5 MHz ~ 3697.5MHz LTE Band 48: 3552.5 MHz ~ 3697.5 MHz
Channel Bandwidth	LTE Band 2:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 42: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 43: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 48: 5MHz, 10MHz, 15MHz, 20MHz
uplink modulations used	QPSK / 16QAM
LTE Voice / Data requirements	Voice and Data
LTE Release Version	R10, Cat6
CA Support	Downlink only
LTE MPR permanently built-in by design	**Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3** Modulation | Channel bandwidth / Transmission bandwidth (N_{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 64 QAM | ≤ 5 | ≤ 4 | ≤ 8 | ≤ 12 | ≤ 16 | ≤ 18 | ≤ 2 64 QAM | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 3 256 QAM | ≥ 1 | ≤ 5
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.
Power reduction applied to satisfy SAR compliance	This device support the receiver detection mechanism, When the phone is in talking mode and receiver worked, LTE band 2/4/7/42/43/48 reduced power will be active.
LTE Carrier Aggregation Combinations	Intra-Band combinations and the detail power verification please referred to section 12.
LTE Carrier Aggregation Additional Information	This device supports maximum of 2 carriers in the downlink. Additional 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					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	20407	824.7	20415	825.5	20425	826.5	20450	829				
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5				
H	20643	848.3	20635	847.5	20625	846.5	20600	844				
LTE Band 7												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510				
M	21100	2535	21100	2535	21100	2535	21100	2535				
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560				
LTE Band 12												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 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				
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5				
H	23173	715.3	23165	714.5	23155	713.5	23130	711				
LTE Band 13												
	Bandwidth 5 MHz				Bandwidth 10 MHz							
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)					
L	23205		779.5		23230		782					
M	23230		782									
H	23255		784.5									
LTE Band 17												
	Bandwidth 5 MHz				Bandwidth 10 MHz							
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)					
L	23755		706.5		23780		709					
M	23790		710		23790		710					
H	23825		713.5		23800		711					

LTE Band 42								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	43115	3552.5	43140	3555	43165	3557.5	43190	3560
M	43340	3575	43340	3575	43340	3575	43340	3575
H	43565	3597.5	43540	3595	43515	3592.5	43490	3590
LTE Band 43								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	43615	3602.5	43640	3605	43665	3607.5	43690	3610
M	44090	3650	44090	3650	44090	3650	44090	3650
H	44565	3697.5	44540	3695	44515	3692.5	44490	3690
LTE Band 48								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	55265	3552.5	55290	3555	55315	3557.5	55340	3560
LM	55810	3607	55815	3607.5	55820	3608	55830	3609
MH	56170	3643	56165	3642.5	56160	3642	56150	3641
H	56715	3697.5	56690	3695	56665	3692.5	56640	3690

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

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:

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

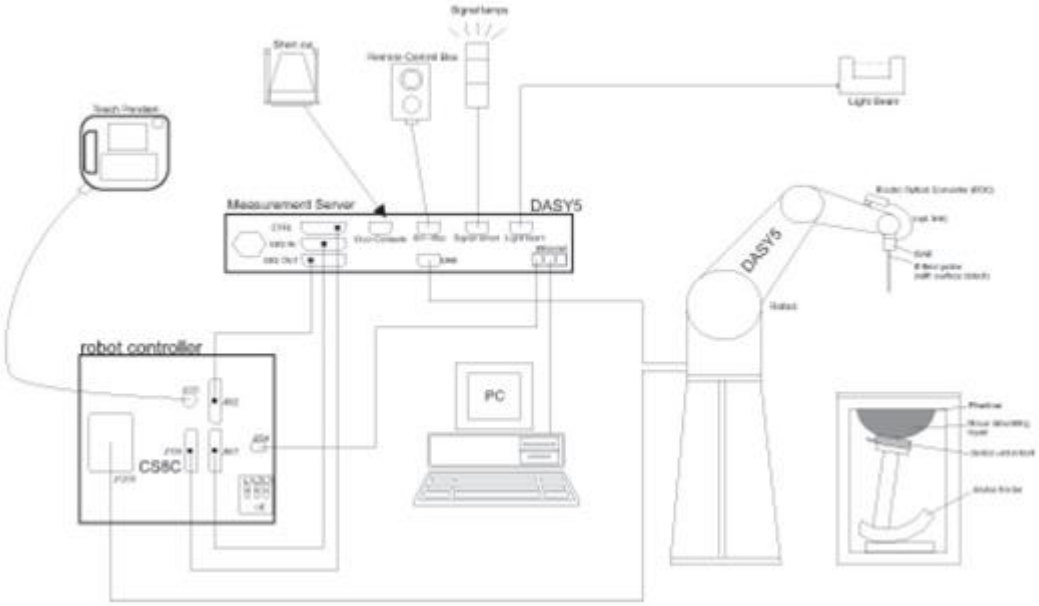
SAR is expressed in units of Watts per kilogram (W/kg)

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

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 µW/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 µW/g – >100 mW/g Linearity: ±0.2 dB (noise: typically <1 µW/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.

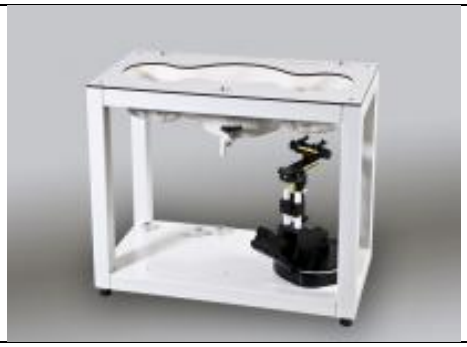
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Photo of DAE

7.3 Phantom

<SAM Twin Phantom>

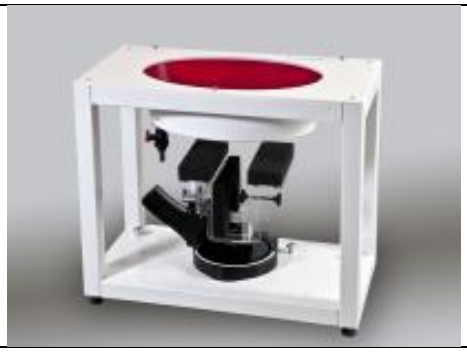
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom



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 form 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	½·δ·ln(2) ± 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: Δx_{Area}, Δy_{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: Δx_{Zoom}, Δy_{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 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

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 DASY 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	1099	Dec. 06, 2018	Dec. 05, 2021
SPEAG	835MHz System Validation Kit	D835V2	4d162	Dec. 05, 2018	Dec. 04, 2021
SPEAG	1750MHz System Validation Kit	D1750V2	1137	Jul. 30, 2018	Jul. 29, 2021
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	Dec. 07, 2018	Dec. 06, 2021
SPEAG	2450MHz System Validation Kit	D2450V2	908	Mar. 25, 2019	Mar. 24, 2022
SPEAG	2600MHz System Validation Kit	D2600V2	1070	Dec. 07, 2018	Dec. 06, 2021
SPEAG	3500MHz System Validation Kit	D3500V2	1076	Apr. 29, 2019	Apr. 28, 2022
SPEAG	3700MHz System Validation Kit	D3700V2	1037	Apr. 29, 2019	Apr. 28, 2022
SPEAG	5000MHz System Validation Kit	D5GHzV2	1113	Sep. 24, 2019	Sep. 23, 2022
SPEAG	5000MHz System Validation Kit	D5GHzV2	1128	Dec. 16, 2019	Dec. 15, 2020
SPEAG	Data Acquisition Electronics	DAE4	1338	Nov. 20, 2019	Nov. 19, 2020
SPEAG	Data Acquisition Electronics	DAE4	1437	Nov. 19, 2019	Nov. 18, 2020
SPEAG	Data Acquisition Electronics	DAE4	1226	May 15, 2020	May 14, 2021
SPEAG	Data Acquisition Electronics	DAE3	528	Mar. 16, 2020	Mar. 15, 2021
SPEAG	Dosimetric E-Field Probe	EX3DV4	3819	Apr. 30, 2020	Apr. 29, 2021
SPEAG	Dosimetric E-Field Probe	EX3DV4	3976	Jan. 27, 2020	Jan. 26, 2021
SPEAG	Dosimetric E-Field Probe	ES3DV3	3241	May 14, 2020	May 13, 2021
SPEAG	Dosimetric E-Field Probe	EX3DV4	7576	Jan. 22, 2020	Jan. 21, 2021
SPEAG	SAM Twin Phantom	SAM V4.0	1503	NCR	NCR
SPEAG	SAM Twin Phantom	QD000P40CC	TP-1500	NCR	NCR
SPEAG	SAM Twin Phantom	SAM V4.0	1575	NCR	NCR
SPEAG	SAM Twin Phantom	SAM V5.0	1795	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201300653	Jul. 21, 2020	Jul. 20, 2021
Anritsu	Radio communication analyzer	MT8821C	6201588572	Dec. 26, 2019	Dec. 25, 2020
Agilent	Wireless Communication Test Set	E5515C	MY50267224	Jul. 21, 2020	Jul. 20, 2021
Agilent	Network Analyzer	E5071C	MY46523671	Oct. 17, 2019	Oct. 16, 2020
Agilent	Network Analyzer	E5071C	MY46523671	Oct. 15, 2020	Oct. 14, 2021
Speag	Dielectric Assessment KIT	DAK-3.5	1071	Oct. 28, 2019	Oct. 27, 2020
Agilent	Signal Generator	N5181A	MY50145381	Dec. 26, 2019	Dec. 25, 2020
Anritsu	Power Senor	MA2411B	1306099	Jul. 21, 2020	Jul. 20, 2021
Anritsu	Power Meter	ML2495A	1349001	Jul. 21, 2020	Jul. 20, 2021
Anritsu	Power Sensor	MA2411B	1207253	Dec. 26, 2019	Dec. 25, 2020
Anritsu	Power Meter	ML2495A	1218010	Dec. 26, 2019	Dec. 25, 2020
R&S	CBT BLUETOOTH TESTER	CBT	100963	Dec. 26, 2019	Dec. 25, 2020
R&S	Spectrum Analyzer	FSP7	100818	Jul. 21, 2020	Jul. 20, 2021
TES	Hygrometer	1310	200505600	Jul. 30, 2020	Jul. 29, 2021
Anymetre	Thermo-Hygrometer	JR593	2018100802	Apr. 19, 2020	Apr. 18, 2021
Anymetre	Thermo-Hygrometer	JR593	2020062101	Jul. 21, 2020	Jul. 20, 2021
AR	Amplifier	5S1G4	0333096	Note 1	
mini-circuits	Amplifier	ZVE-3W-83+	599201528	Note 1	
ARRA	Power Divider	A3200-2	N/A	Note 1	
PASTERNACK	Dual Directional Coupler	PE2214-10	N/A	Note 1	
Agilent	Dual Directional Coupler	778D	50422	Note 1	
MCL	Attenuator 1	BW-S10W5	N/A	Note 1	
Weinschel	Attenuator 2	3M-20	N/A	Note 1	
Zhongjilianhe	Attenuator 3	MVE2214-03	N/A	Note 1	

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
2. The dipole calibration interval can be extended to 3 years with justification according to KDB 865664 D01. The dipoles are also not physically damaged, or repaired during the interval. The justification data in appendix C can be found which the return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration for each dipole.

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. 11.1. 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. 11.2.

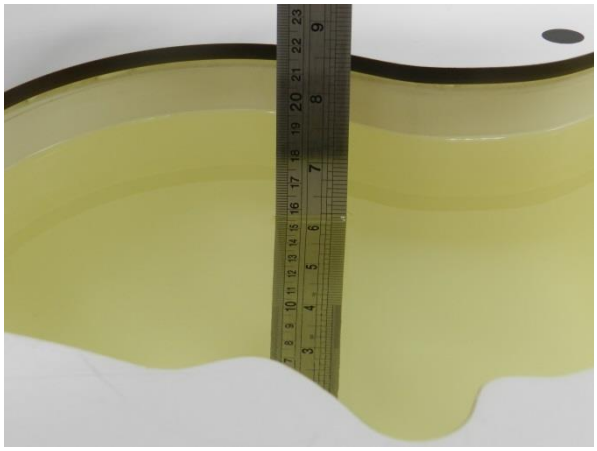


Fig 11.1 Photo of Liquid Height for Head SAR

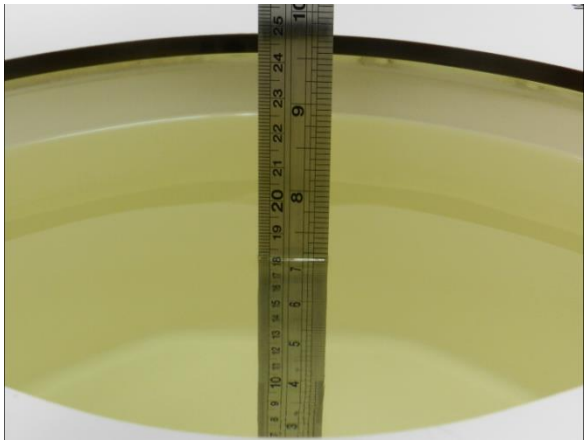


Fig 11.2 Photo of Liquid Height for Body SAR

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

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. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	Head	22.4	0.880	40.936	0.89	41.90	-1.12	-2.30	±5	2020/9/3
750	Head	22.2	0.893	41.008	0.89	41.90	0.34	-2.13	±5	2020/9/6
835	Head	22.3	0.897	40.781	0.90	41.50	-0.33	-1.73	±5	2020/9/4
835	Head	22.3	0.938	42.518	0.90	41.50	4.22	2.45	±5	2020/9/7
1750	Head	22.5	1.355	38.395	1.37	40.10	-1.09	-4.25	±5	2020/9/6
1750	Head	22.4	1.395	40.742	1.37	40.10	1.82	1.60	±5	2020/9/9
1750	Head	22.9	1.388	41.364	1.37	40.10	1.31	3.15	±5	2020/10/15
1900	Head	22.6	1.460	40.899	1.40	40.00	4.29	2.25	±5	2020/9/5
1900	Head	22.5	1.458	40.906	1.40	40.00	4.14	2.27	±5	2020/9/10
1900	Head	22.9	1.448	39.150	1.40	40.00	3.43	-2.13	±5	2020/9/29
1900	Head	22.6	1.453	39.107	1.40	40.00	3.79	-2.23	±5	2020/10/15
2450	Head	22.7	1.854	38.442	1.80	39.20	3.00	-1.93	±5	2020/9/14
2600	Head	22.7	1.995	40.438	1.96	39.00	1.79	3.69	±5	2020/9/8
2600	Head	22.9	2.009	39.626	1.96	39.00	2.50	1.61	±5	2020/9/12
2600	Head	22.4	2.053	38.007	1.96	39.00	4.74	-2.55	±5	2020/9/29
2600	Head	22.7	2.050	38.344	1.96	39.00	4.59	-1.68	±5	2020/10/15
3500	Head	22.6	2.934	39.288	2.91	37.90	0.82	3.66	±5	2020/9/7
3500	Head	22.4	2.935	39.300	2.91	37.90	0.86	3.69	±5	2020/9/11
3500	Head	22.7	2.866	37.003	2.91	37.90	-1.51	-2.37	±5	2020/10/14
3700	Head	22.7	3.039	36.561	3.12	37.70	-2.60	-3.02	±5	2020/9/9
3700	Head	22.9	3.054	38.374	3.12	37.70	-2.12	1.79	±5	2020/9/13
3700	Head	22.5	3.007	38.198	3.12	37.70	-3.62	1.32	±5	2020/9/29
3700	Head	22.5	3.010	36.788	3.12	37.70	-3.53	-2.42	±5	2020/10/15
5250	Head	22.6	4.600	36.382	4.71	35.95	-2.34	1.20	±5	2020/9/5
5600	Head	22.8	4.990	35.804	5.07	35.50	-1.58	0.86	±5	2020/9/6
5750	Head	22.7	5.166	35.550	5.22	35.35	-1.03	0.57	±5	2020/9/13
5750	Head	22.6	5.375	34.941	5.22	35.40	2.97	-1.30	±5	2020/10/21

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.

<1g SAR>

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 (%)
2020/9/3	750	Head	250	1099	3241	1437	2.29	8.52	9.16	7.51
2020/9/6	750	Head	250	1099	3241	1437	2.03	8.52	8.12	-4.69
2020/9/4	835	Head	250	4d162	3241	1437	2.58	9.61	10.32	7.39
2020/9/7	835	Head	250	4d162	3241	1437	2.47	9.61	9.88	2.81
2020/9/6	1750	Head	250	1137	3241	1437	9.98	36.50	39.92	9.37
2020/9/9	1750	Head	250	1137	3241	1437	9.42	36.50	37.68	3.23
2020/10/15	1750	Head	250	1137	3241	1437	9.56	36.50	38.24	4.77
2020/9/5	1900	Head	250	5d182	3241	1437	10.20	39.60	40.8	3.03
2020/9/10	1900	Head	250	5d182	3241	1437	10.80	39.60	43.2	9.09
2020/9/29	1900	Head	250	5d182	3241	1437	10.50	39.60	42	6.06
2020/10/15	1900	Head	250	5d182	3241	1437	10.60	39.60	42.4	7.07
2020/9/14	2450	Head	250	908	3976	1338	13.10	52.80	52.4	-0.76
2020/9/8	2600	Head	250	1070	3241	1437	13.10	58.10	52.4	-9.81
2020/9/12	2600	Head	250	1070	3241	1437	13.50	58.10	54	-7.06
2020/9/29	2600	Head	250	1070	3241	1437	13.30	58.10	53.2	-8.43
2020/10/15	2600	Head	250	1070	3241	1437	14.10	58.10	56.4	-2.93
2020/9/7	3500	Head	100	1076	3819	1226	6.76	67.90	67.6	-0.44
2020/9/11	3500	Head	100	1076	3819	1226	6.74	67.90	67.4	-0.74
2020/10/14	3500	Head	100	1076	3819	1226	6.43	67.90	64.3	-5.30
2020/9/9	3700	Head	100	1037	3819	1226	6.89	68.50	68.9	0.58
2020/9/13	3700	Head	100	1037	3819	1226	6.92	68.50	69.2	1.02
2020/9/29	3700	Head	100	1037	7576	528	6.81	68.50	68.1	-0.58
2020/10/15	3700	Head	100	1037	3819	1226	6.79	68.50	67.9	-0.88
2020/9/5	5250	Head	100	1113	3976	1338	7.60	80.50	76	-5.59
2020/9/6	5600	Head	100	1113	3976	1338	7.68	83.40	76.8	-7.91
2020/9/13	5750	Head	100	1113	3976	1338	7.63	80.00	76.3	-4.63

<10g SAR>

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 (%)
2020/9/5	5250	Head	100	1113	3976	1338	2.14	23.10	21.4	-7.36
2020/9/6	5600	Head	100	1113	3976	1338	2.15	23.80	21.5	-9.66
2020/10/21	5750	Head	100	1128	3976	1338	2.08	22.60	20.8	-7.96

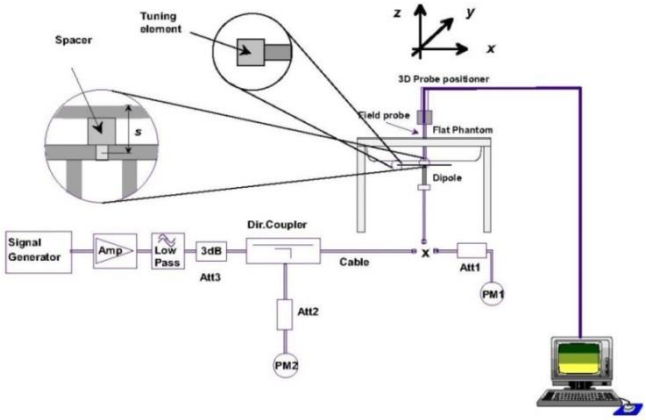


Fig 11.3.1 System Performance Check Setup

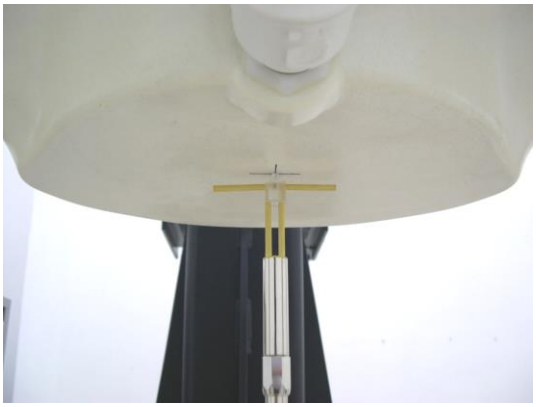


Fig 11.3.2 Setup Photo

11. RF Exposure Positions

11.1 Ear and handset reference point

Figure 12.1.1 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 12.1.2 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 12.1.3). 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 12.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

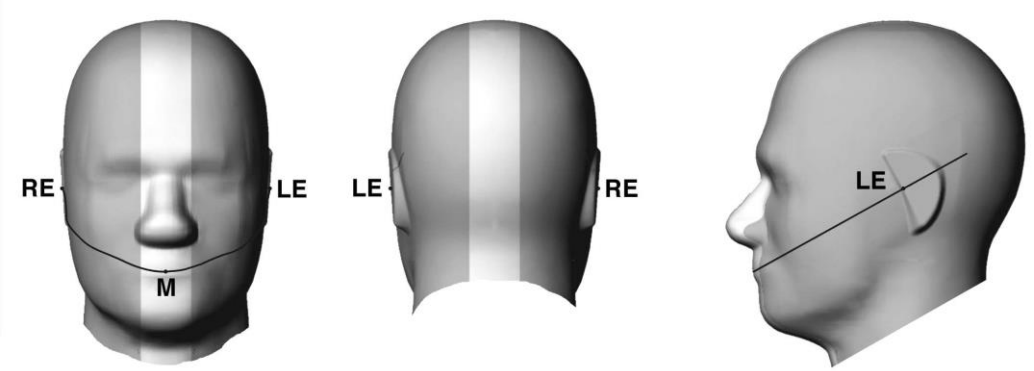


Fig 12.1.1 Front, back, and side views of SAM twin phantom

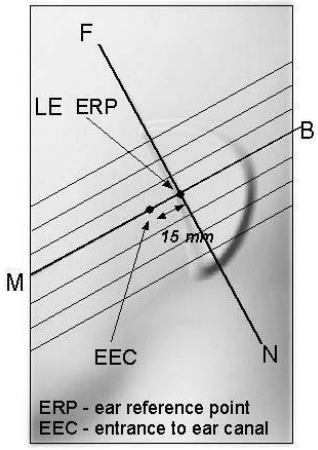


Fig 12.1.2 Close-up side view of phantom showing the ear region.

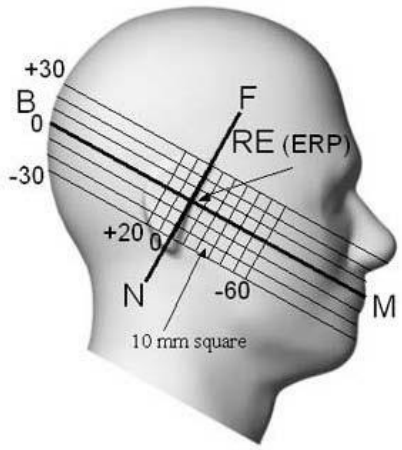


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

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 wt of the handset at the level of the acoustic output (point A in Figure 12.2.1 and Figure 12.2.2), and the midpoint of the width wb 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 12.2.1). 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 12.2.2), 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 12.2.3), 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 12.2.3. The actual rotation angles should be documented in the test report.

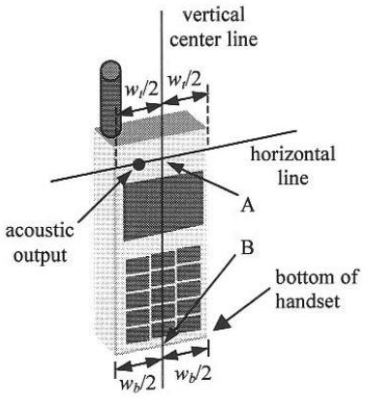


Fig 12.2.1 Handset vertical and horizontal reference lines—"fixed case

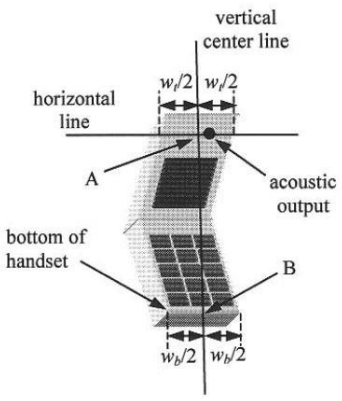


Fig 12.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

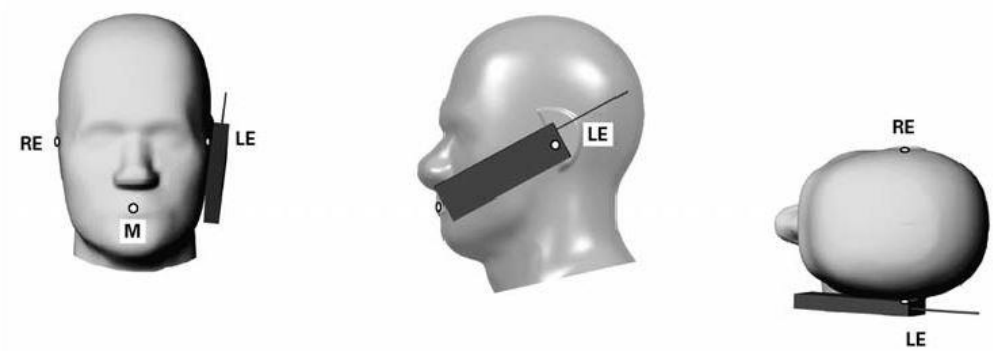


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

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 12.3.1. 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

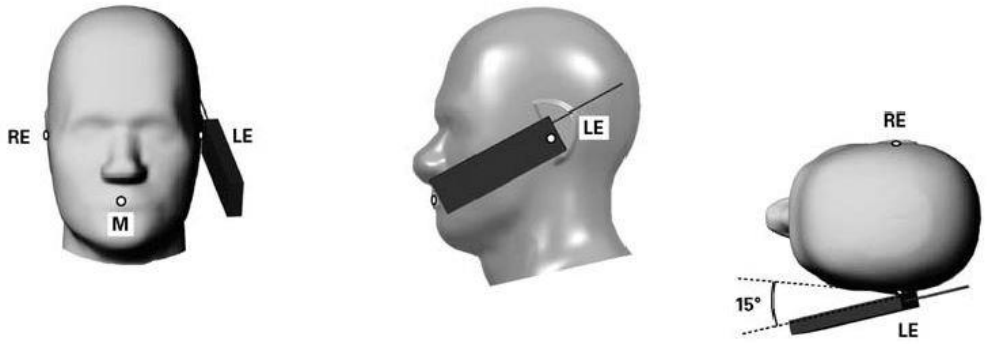


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

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 12.4). 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 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.

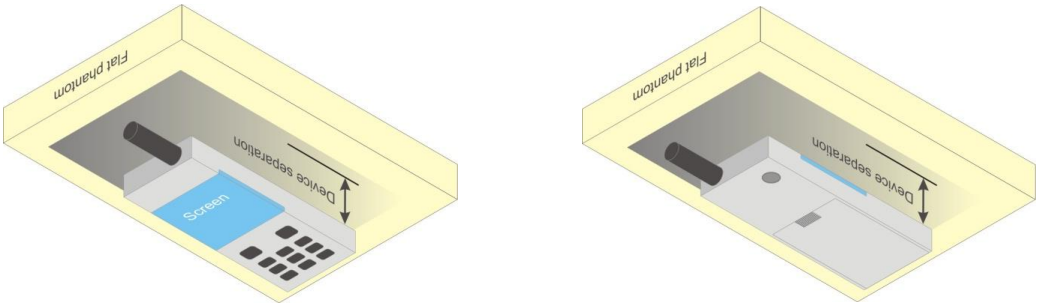


Fig 12.4 Body Worn Position

11.5 Product Specific 10g SAR Exposure

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 x W ≥ 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 form 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)

The detailed conducted power table can refer to Appendix E.

<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} (Note1, 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: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_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 Δ_{NACK} = 30/15 with β_{hs} = 30/15 * β_c, and Δ_{CQI} = 24/15 with β_{hs} = 24/15 * β_c.

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH 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 β_c = 11/15 and β_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-TFCI
   viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
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} (Note1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	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	$\beta_{ed}1$: 47/15 $\beta_{ed}2$: 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	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c . For sub-test 5, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 5/15 with β_{hs} = 5/15 * β_c .
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_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 β_c = 10/15 and β_d = 15/15.
Note 4: 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 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.
Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

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. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA is ≤ ¼ 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 to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA

<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/64QAM output power for each RB allocation configuration is > not ½ 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/64QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ 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 B4 / B5 / B12 / B17 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 B4/42/43 SAR test was covered by B66/48; 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 ≤ 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

<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.

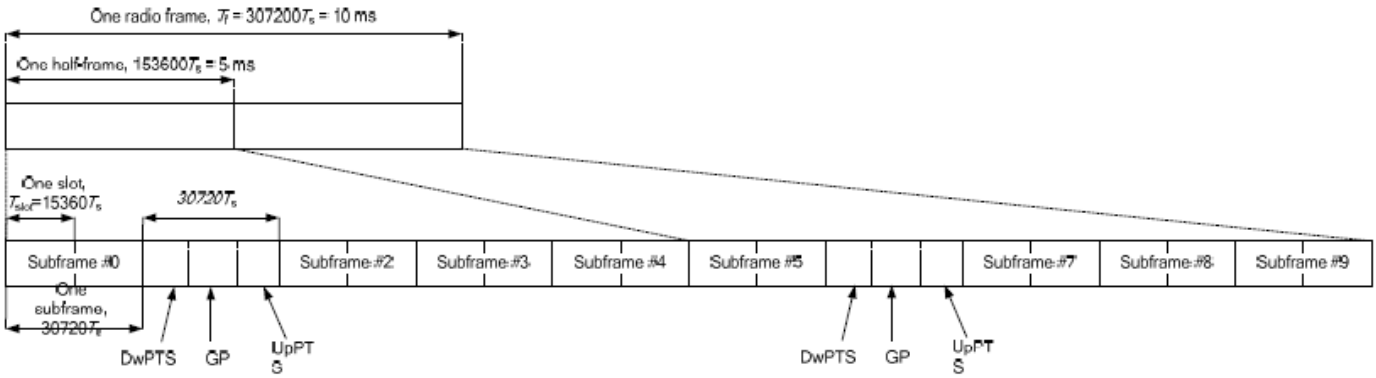


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

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	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

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 subfames, 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 Carrier Aggregation>

General Note:

1. This device supports Carrier Aggregation on downlink for intra band. For the device supports bands and bandwidths and configurations are provided as follow table was according to 3GPP.
2. In applying the existing power measurement procedures of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of frequency bands and CCs in each row need combination, and for this device that all the configurations were choose to power measurement.

Index	2CC
2CC #1	CA_42C
2CC #2	CA_43C
2CC #3	CA_48C

LTE Carrier Aggregation Conducted Power (Downlink)

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 two carrier aggregation. 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 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.

vi. 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.

vii. 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.

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

<WLAN Conducted Power>

General Note:

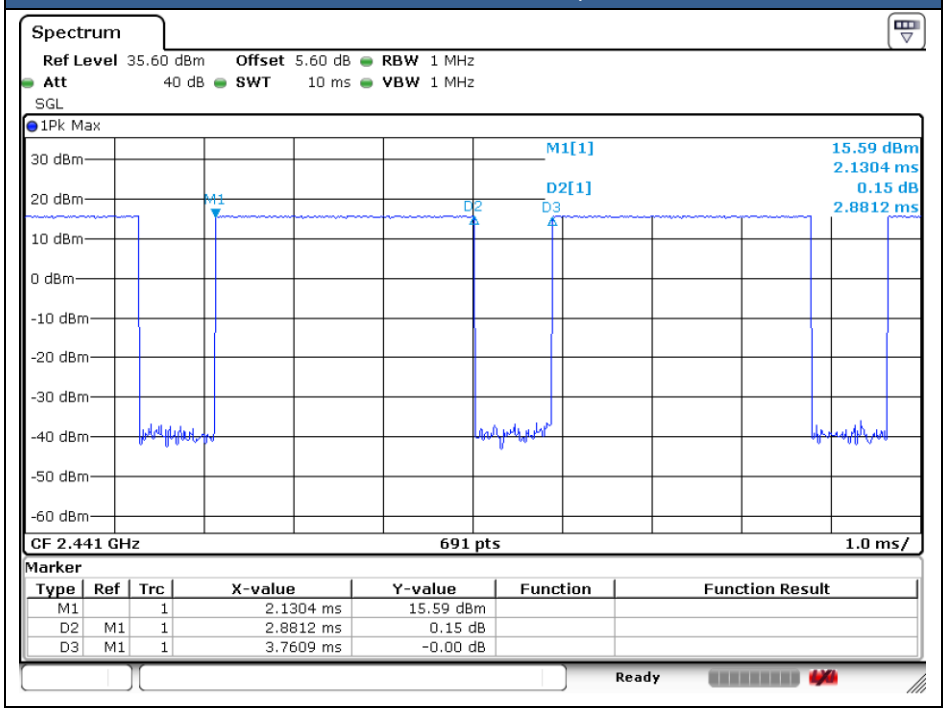
1. For each antenna, transmit power in SISO operation is larger than (or equal to) the power in MIMO operation, RF exposure compliance of MIMO mode can be deduced from the compliance simultaneous transmission of antennas operating in SISO mode.
2. Per KDB 248227 D01v02r02, the simultaneous SAR provisions 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 < 1.6W/kg and SAR peak to location ratio ≤ 0.04, no additional SAR measurements for MIMO.
3. The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures. For "Not required", SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) 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 in the initial test configuration, for each frequency band or when MIMO mode was not performed, due to 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. Additional output power measurements were not necessary.
4. 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.
5. 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).
6. 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.
7. 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 ≤ 0.4 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 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.
   c. 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.

<2.4GHz Bluetooth>

General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The Bluetooth duty cycle is 76.61 % 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

Bluetooth time-domain plot



13. Antenna Location

The detailed antenna location information can refer to SAR Test Setup Photos.

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: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For BT/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 when the measured SAR is ≥ 0.8W/kg. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15cm or an overall diagonal dimension > 16cm, 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 < 1.2W/kg
5. 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. When headset SAR is less than or equal than without headset SAR, no need to verify the remaining channels for headset SAR.
6. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, 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, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power (for handheld on state, the maximum full power means reduced power), including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.
   a. WLAN 5.2/5.3/5.5/5.8GHz tested the product specific 10g SAR since it has no hotspot mode.
   b. When 10-g product specific 10g SAR is considered, SAR thresholds is specified in the procedures for SAR test reduction and exclusion should be multiplied by 2.5.

WCDMA 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. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA is ≤ ¼ 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 to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA.

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/64QAM output power for each RB allocation configuration is > not ½ 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/64QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ 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. This device supports HPUE for LTE band 41 with class 2 level, so HPUE SAR has been performed.
7. For LTE B4 / B5 / B12 / B17 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.
8. LTE B4/42/43 SAR test was covered by LTE B66/48; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   c. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
   d. 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, U-NII-1 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. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

14.1 Head SAR

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Power Reduction	Ch.	Freq. (MHz)	Accessory	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	Reduced	9400	1880	Non-IS Sku with 5800mAh Battery and Cover 1	18.12	19.00	1.225	-0.01	0.396	0.485
	WCDMA II	RMC 12.2Kbps	Right Tilted	Reduced	9400	1880	Non-IS Sku with 5800mAh Battery and Cover 1	18.12	19.00	1.225	-0.04	0.321	0.393
	WCDMA II	RMC 12.2Kbps	Left Cheek	Reduced	9400	1880	Non-IS Sku with 5800mAh Battery and Cover 1	18.12	19.00	1.225	-0.11	0.632	0.774
	WCDMA II	RMC 12.2Kbps	Left Tilted	Reduced	9400	1880	Non-IS Sku with 5800mAh Battery and Cover 1	18.12	19.00	1.225	-0.15	0.862	1.056
	WCDMA II	RMC 12.2Kbps	Left Tilted	Reduced	9262	1852.4	Non-IS Sku with 5800mAh Battery and Cover 1	18.11	19.00	1.227	0.05	0.820	1.007
01	WCDMA II	RMC 12.2Kbps	Left Tilted	Reduced	9538	1907.6	Non-IS Sku with 5800mAh Battery and Cover 1	18.04	19.00	1.247	0.11	0.893	**1.114**
	WCDMA II	RMC 12.2Kbps	Left Tilted	Reduced	9538	1907.6	Non-IS Sku with 2900mAh Battery and Cover 2	18.04	19.00	1.247	0.08	0.860	1.073
	WCDMA II	RMC 12.2Kbps	Left Tilted	Reduced	9400	1880	Non-IS Sku with 2900mAh Battery and Cover 2	18.12	19.00	1.225	-0.06	0.837	1.025
	WCDMA II	RMC 12.2Kbps	Left Tilted	Reduced	9262	1852.4	Non-IS Sku with 2900mAh Battery and Cover 2	18.11	19.00	1.227	0.03	0.814	0.999
	WCDMA V	RMC 12.2Kbps	Right Cheek	Full	4182	836.4	Non-IS Sku with 5800mAh Battery and Cover 1	23.33	24.00	1.167	-0.13	0.342	0.399
	WCDMA V	RMC 12.2Kbps	Right Tilted	Full	4182	836.4	Non-IS Sku with 5800mAh Battery and Cover 1	23.33	24.00	1.167	-0.04	0.335	0.391
	WCDMA V	RMC 12.2Kbps	Left Cheek	Full	4182	836.4	Non-IS Sku with 5800mAh Battery and Cover 1	23.33	24.00	1.167	0.01	0.420	0.490
	WCDMA V	RMC 12.2Kbps	Left Tilted	Full	4182	836.4	Non-IS Sku with 5800mAh Battery and Cover 1	23.33	24.00	1.167	0.05	0.577	0.673
02	WCDMA V	RMC 12.2Kbps	Left Tilted	Full	4182	836.4	Non-IS Sku with 2900mAh Battery and Cover 2	23.33	24.00	1.167	-0.07	0.608	**0.709**

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Power Reduction	Ch.	Freq. (MHz)	Accessory	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 12	10M	QPSK	1	0	Right Cheek	Full	23095	707.5	Non-IS Sku with 5800mAh Battery and Cover 1	22.86	23.50	1.159	-0.04	0.120	0.139
	LTE Band 12	10M	QPSK	1	0	Right Tilted	Full	23095	707.5	Non-IS Sku with 5800mAh Battery and Cover 1	22.86	23.50	1.159	0.06	0.113	0.131
	LTE Band 12	10M	QPSK	1	0	Left Cheek	Full	23095	707.5	Non-IS Sku with 5800mAh Battery and Cover 1	22.86	23.50	1.159	0.03	0.189	0.219
03	LTE Band 12	10M	QPSK	1	0	Left Tilted	Full	23095	707.5	Non-IS Sku with 5800mAh Battery and Cover 1	22.86	23.50	1.159	0.11	0.237	**0.275**
	LTE Band 12	10M	QPSK	1	0	Left Tilted	Full	23095	707.5	Non-IS Sku with 2900mAh Battery and Cover 2	22.86	23.50	1.159	0.08	0.220	0.255
	LTE Band 12	10M	QPSK	25	0	Right Cheek	Full	23095	707.5	Non-IS Sku with 5800mAh Battery and Cover 1	21.96	22.50	1.132	-0.01	0.100	0.113
	LTE Band 12	10M	QPSK	25	0	Right Tilted	Full	23095	707.5	Non-IS Sku with 5800mAh Battery and Cover 1	21.96	22.50	1.132	-0.06	0.093	0.105
	LTE Band 12	10M	QPSK	25	0	Left Cheek	Full	23095	707.5	Non-IS Sku with 5800mAh Battery and Cover 1	21.96	22.50	1.132	-0.05	0.157	0.178
	LTE Band 12	10M	QPSK	25	0	Left Tilted	Full	23095	707.5	Non-IS Sku with 5800mAh Battery and Cover 1	21.96	22.50	1.132	-0.1	0.185	0.209
	LTE Band 13	10M	QPSK	1	0	Right Cheek	Full	23230	782	Non-IS Sku with 5800mAh Battery and Cover 1	22.83	23.50	1.167	-0.17	0.221	0.258
	LTE Band 13	10M	QPSK	1	0	Right Tilted	Full	23230	782	Non-IS Sku with 5800mAh Battery and Cover 1	22.83	23.50	1.167	-0.08	0.214	0.250
	LTE Band 13	10M	QPSK	1	0	Left Cheek	Full	23230	782	Non-IS Sku with 5800mAh Battery and Cover 1	22.83	23.50	1.167	-0.16	0.268	0.313
04	LTE Band 13	10M	QPSK	1	0	Left Tilted	Full	23230	782	Non-IS Sku with 5800mAh Battery and Cover 1	22.83	23.50	1.167	-0.02	0.369	**0.431**
	LTE Band 13	10M	QPSK	1	0	Left Tilted	Full	23230	782	Non-IS Sku with 2900mAh Battery and Cover 2	22.83	23.50	1.167	0.02	0.345	0.403
	LTE Band 13	10M	QPSK	25	0	Right Cheek	Full	23230	782	Non-IS Sku with 5800mAh Battery and Cover 1	21.92	22.50	1.143	0.02	0.199	0.227
	LTE Band 13	10M	QPSK	25	0	Right Tilted	Full	23230	782	Non-IS Sku with 5800mAh Battery and Cover 1	21.92	22.50	1.143	0.07	0.186	0.213
	LTE Band 13	10M	QPSK	25	0	Left Cheek	Full	23230	782	Non-IS Sku with 5800mAh Battery and Cover 1	21.92	22.50	1.143	0.05	0.235	0.269
	LTE Band 13	10M	QPSK	25	0	Left Tilted	Full	23230	782	Non-IS Sku with 5800mAh Battery and Cover 1	21.92	22.50	1.143	-0.07	0.313	0.358
	LTE Band 5	10M	QPSK	1	0	Right Cheek	Full	20525	836.5	Non-IS Sku with 5800mAh Battery and Cover 1	22.89	23.50	1.151	0.15	0.287	0.330
	LTE Band 5	10M	QPSK	1	0	Right Tilted	Full	20525	836.5	Non-IS Sku with 5800mAh Battery and Cover 1	22.89	23.50	1.151	0.13	0.325	0.374
	LTE Band 5	10M	QPSK	1	0	Left Cheek	Full	20525	836.5	Non-IS Sku with 5800mAh Battery and Cover 1	22.89	23.50	1.151	0.17	0.359	0.413
05	LTE Band 5	10M	QPSK	1	0	Left Tilted	Full	20525	836.5	Non-IS Sku with 5800mAh Battery and Cover 1	22.89	23.50	1.151	0.03	0.517	**0.595**
	LTE Band 5	10M	QPSK	1	0	Left Tilted	Full	20525	836.5	Non-IS Sku with 2900mAh Battery and Cover 2	22.89	23.50	1.151	0.1	0.476	0.548
	LTE Band 5	10M	QPSK	25	0	Right Cheek	Full	20525	836.5	Non-IS Sku with 5800mAh Battery and Cover 1	21.92	22.50	1.143	0.01	0.246	0.281
	LTE Band 5	10M	QPSK	25	0	Right Tilted	Full	20525	836.5	Non-IS Sku with 5800mAh Battery and Cover 1	21.92	22.50	1.143	0.04	0.279	0.319
	LTE Band 5	10M	QPSK	25	0	Left Cheek	Full	20525	836.5	Non-IS Sku with 5800mAh Battery and Cover 1	21.92	22.50	1.143	0.03	0.299	0.342
	LTE Band 5	10M	QPSK	25	0	Left Tilted	Full	20525	836.5	Non-IS Sku with 5800mAh Battery and Cover 1	21.92	22.50	1.143	0.07	0.424	0.485

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Power Reduction	Ch.	Freq. (MHz)	Accessory	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 4	20M	QPSK	1	0	Right Cheek	Reduced	20175	1732.5	Non-IS Sku with 5800mAh Battery and Cover 1	18.64	19.50	1.219	0.02	0.447	0.545
	LTE Band 4	20M	QPSK	1	0	Right Tilted	Reduced	20175	1732.5	Non-IS Sku with 5800mAh Battery and Cover 1	18.64	19.50	1.219	0.11	0.415	0.506
	LTE Band 4	20M	QPSK	1	0	Left Cheek	Reduced	20175	1732.5	Non-IS Sku with 5800mAh Battery and Cover 1	18.64	19.50	1.219	0.02	0.778	0.948
	LTE Band 4	20M	QPSK	1	0	Left Tilted	Reduced	20175	1732.5	Non-IS Sku with 5800mAh Battery and Cover 1	18.64	19.50	1.219	0.04	0.834	1.017
	LTE Band 4	20M	QPSK	50	0	Right Cheek	Reduced	20175	1732.5	Non-IS Sku with 5800mAh Battery and Cover 1	18.61	19.50	1.227	0.09	0.453	0.556
	LTE Band 4	20M	QPSK	50	0	Right Tilted	Reduced	20175	1732.5	Non-IS Sku with 5800mAh Battery and Cover 1	18.61	19.50	1.227	0.02	0.423	0.519
	LTE Band 4	20M	QPSK	50	0	Left Cheek	Reduced	20175	1732.5	Non-IS Sku with 5800mAh Battery and Cover 1	18.61	19.50	1.227	-0.13	0.782	0.960
06	LTE Band 4	20M	QPSK	50	0	Left Tilted	Reduced	20175	1732.5	Non-IS Sku with 5800mAh Battery and Cover 1	18.61	19.50	1.227	0.1	0.855	**1.049**
	LTE Band 4	20M	QPSK	50	0	Left Tilted	Reduced	20175	1732.5	Non-IS Sku with 2900mAh Battery and Cover 2	18.61	19.50	1.227	0.05	0.852	1.046
	LTE Band 4	20M	QPSK	100	0	Left Cheek	Reduced	20175	1732.5	Non-IS Sku with 5800mAh Battery and Cover 1	18.53	19.50	1.250	0.07	0.779	0.974
	LTE Band 4	20M	QPSK	100	0	Left Tilted	Reduced	20175	1732.5	Non-IS Sku with 5800mAh Battery and Cover 1	18.53	19.50	1.250	0.06	0.833	1.041
	LTE Band 2	20M	QPSK	1	0	Right Cheek	Reduced	18900	1880	Non-IS Sku with 5800mAh Battery and Cover 1	18.43	19.00	1.140	0.09	0.365	0.416
	LTE Band 2	20M	QPSK	1	0	Right Tilted	Reduced	18900	1880	Non-IS Sku with 5800mAh Battery and Cover 1	18.43	19.00	1.140	-0.04	0.384	0.438
	LTE Band 2	20M	QPSK	1	0	Left Cheek	Reduced	18900	1880	Non-IS Sku with 5800mAh Battery and Cover 1	18.43	19.00	1.140	0.05	0.673	0.767
	LTE Band 2	20M	QPSK	1	0	Left Tilted	Reduced	18900	1880	Non-IS Sku with 5800mAh Battery and Cover 1	18.43	19.00	1.140	0.01	0.805	0.918
	LTE Band 2	20M	QPSK	1	0	Left Tilted	Reduced	18700	1860	Non-IS Sku with 5800mAh Battery and Cover 1	18.31	19.00	1.172	0.13	0.789	0.925
	LTE Band 2	20M	QPSK	1	0	Left Tilted	Reduced	19100	1900	Non-IS Sku with 5800mAh Battery and Cover 1	18.24	19.00	1.191	0.03	0.817	0.973
	LTE Band 2	20M	QPSK	50	0	Right Cheek	Reduced	18900	1880	Non-IS Sku with 5800mAh Battery and Cover 1	18.39	19.00	1.151	0.09	0.376	0.433
	LTE Band 2	20M	QPSK	50	0	Right Tilted	Reduced	18900	1880	Non-IS Sku with 5800mAh Battery and Cover 1	18.39	19.00	1.151	-0.01	0.389	0.448
	LTE Band 2	20M	QPSK	50	0	Left Cheek	Reduced	18900	1880	Non-IS Sku with 5800mAh Battery and Cover 1	18.39	19.00	1.151	-0.02	0.683	0.786
	LTE Band 2	20M	QPSK	50	0	Left Tilted	Reduced	18900	1880	Non-IS Sku with 5800mAh Battery and Cover 1	18.39	19.00	1.151	-0.01	0.814	0.937
	LTE Band 2	20M	QPSK	50	0	Left Tilted	Reduced	18700	1860	Non-IS Sku with 5800mAh Battery and Cover 1	18.38	19.00	1.153	-0.05	0.788	0.909
	LTE Band 2	20M	QPSK	50	0	Left Tilted	Reduced	19100	1900	Non-IS Sku with 5800mAh Battery and Cover 1	18.32	19.00	1.169	-0.05	0.857	1.002
07	LTE Band 2	20M	QPSK	50	0	Left Tilted	Reduced	19100	1900	Non-IS Sku with 2900mAh Battery and Cover 2	18.32	19.00	1.169	0.03	0.865	**1.012**
	LTE Band 2	20M	QPSK	50	0	Left Tilted	Reduced	18900	1880	Non-IS Sku with 2900mAh Battery and Cover 2	18.39	19.00	1.151	0.09	0.807	0.929
	LTE Band 2	20M	QPSK	50	0	Left Tilted	Reduced	18700	1860	Non-IS Sku with 2900mAh Battery and Cover 2	18.38	19.00	1.153	-0.11	0.797	0.919
	LTE Band 2	20M	QPSK	100	0	Left Tilted	Reduced	18900	1880	Non-IS Sku with 5800mAh Battery and Cover 1	18.35	19.00	1.161	0.03	0.831	0.965
	LTE Band 7	20M	QPSK	1	0	Right Cheek	Reduced	21100	2535	Non-IS Sku with 5800mAh Battery and Cover 1	16.01	16.50	1.119	0.02	0.292	0.327
	LTE Band 7	20M	QPSK	1	0	Right Tilted	Reduced	21100	2535	Non-IS Sku with 5800mAh Battery and Cover 1	16.01	16.50	1.119	0.09	0.360	0.403
	LTE Band 7	20M	QPSK	1	0	Left Cheek	Reduced	21100	2535	Non-IS Sku with 5800mAh Battery and Cover 1	16.01	16.50	1.119	-0.12	0.525	0.588
08	LTE Band 7	20M	QPSK	1	0	Left Tilted	Reduced	21100	2535	Non-IS Sku with 5800mAh Battery and Cover 1	16.01	16.50	1.119	0.02	0.888	**0.994**
	LTE Band 7	20M	QPSK	1	0	Left Tilted	Reduced	20850	2510	Non-IS Sku with 5800mAh Battery and Cover 1	15.96	16.50	1.132	-0.01	0.776	0.879
	LTE Band 7	20M	QPSK	1	0	Left Tilted	Reduced	21350	2560	Non-IS Sku with 5800mAh Battery and Cover 1	15.97	16.50	1.130	0.03	0.815	0.921
	LTE Band 7	20M	QPSK	1	0	Left Tilted	Reduced	21100	2535	Non-IS Sku with 2900mAh Battery and Cover 2	16.01	16.50	1.119	0.09	0.838	0.938
	LTE Band 7	20M	QPSK	1	0	Left Tilted	Reduced	20850	2510	Non-IS Sku with 2900mAh Battery and Cover 2	15.96	16.50	1.132	0.16	0.813	0.921
	LTE Band 7	20M	QPSK	1	0	Left Tilted	Reduced	21350	2560	Non-IS Sku with 2900mAh Battery and Cover 2	15.97	16.50	1.130	0.01	0.818	0.924
	LTE Band 7	20M	QPSK	50	0	Right Cheek	Reduced	21100	2535	Non-IS Sku with 5800mAh Battery and Cover 1	15.97	16.50	1.130	0.07	0.272	0.307
	LTE Band 7	20M	QPSK	50	0	Right Tilted	Reduced	21100	2535	Non-IS Sku with 5800mAh Battery and Cover 1	15.97	16.50	1.130	0.01	0.358	0.404
	LTE Band 7	20M	QPSK	50	0	Left Cheek	Reduced	21100	2535	Non-IS Sku with 5800mAh Battery and Cover 1	15.97	16.50	1.130	0.03	0.507	0.573
	LTE Band 7	20M	QPSK	50	0	Left Tilted	Reduced	21100	2535	Non-IS Sku with 5800mAh Battery and Cover 1	15.97	16.50	1.130	-0.05	0.864	0.976
	LTE Band 7	20M	QPSK	50	0	Left Tilted	Reduced	20850	2510	Non-IS Sku with 5800mAh Battery and Cover 1	15.92	16.50	1.143	0.12	0.712	0.814
	LTE Band 7	20M	QPSK	50	0	Left Tilted	Reduced	21350	2560	Non-IS Sku with 5800mAh Battery and Cover 1	15.86	16.50	1.159	0.08	0.744	0.862
	LTE Band 7	20M	QPSK	100	0	Left Tilted	Reduced	21100	2535	Non-IS Sku with 5800mAh Battery and Cover 1	15.81	16.50	1.172	0.06	0.785	0.920

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Power Reduction	Ch.	Freq. (MHz)	Accessory	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 48	20M	QPSK	1	0	Right Cheek	Reduced	55340	3560	Non-IS Sku with 5800mAh Battery and Cover 1	17.13	17.50	1.089	62.9	1.006	0.01	0.270	0.296
	LTE Band 48	20M	QPSK	1	0	Right Tilted	Reduced	55340	3560	Non-IS Sku with 5800mAh Battery and Cover 1	17.13	17.50	1.089	62.9	1.006	-0.05	0.386	0.423
	LTE Band 48	20M	QPSK	1	0	Left Cheek	Reduced	55340	3560	Non-IS Sku with 5800mAh Battery and Cover 1	17.13	17.50	1.089	62.9	1.006	0.05	0.412	0.451
	LTE Band 48	20M	QPSK	1	0	Left Tilted	Reduced	55340	3560	Non-IS Sku with 5800mAh Battery and Cover 1	17.13	17.50	1.089	62.9	1.006	0.07	0.907	0.994
	LTE Band 48	20M	QPSK	1	0	Left Tilted	Reduced	55830	3609	Non-IS Sku with 5800mAh Battery and Cover 1	17.03	17.50	1.114	62.9	1.006	0.02	0.829	0.929
	LTE Band 48	20M	QPSK	1	0	Left Tilted	Reduced	56150	3641	Non-IS Sku with 5800mAh Battery and Cover 1	17.06	17.50	1.107	62.9	1.006	0.14	0.847	0.943
	LTE Band 48	20M	QPSK	1	0	Left Tilted	Reduced	56640	3690	Non-IS Sku with 5800mAh Battery and Cover 1	17.05	17.50	1.109	62.9	1.006	-0.11	0.895	0.999
	LTE Band 48	20M	QPSK	50	0	Right Cheek	Reduced	55340	3560	Non-IS Sku with 5800mAh Battery and Cover 1	17.10	17.50	1.096	62.9	1.006	0.16	0.273	0.301
	LTE Band 48	20M	QPSK	50	0	Right Tilted	Reduced	55340	3560	Non-IS Sku with 5800mAh Battery and Cover 1	17.10	17.50	1.096	62.9	1.006	0.05	0.391	0.431
	LTE Band 48	20M	QPSK	50	0	Left Cheek	Reduced	55340	3560	Non-IS Sku with 5800mAh Battery and Cover 1	17.10	17.50	1.096	62.9	1.006	0.04	0.418	0.461
09	LTE Band 48	20M	QPSK	50	0	Left Tilted	Reduced	55340	3560	Non-IS Sku with 5800mAh Battery and Cover 1	17.10	17.50	1.096	62.9	1.006	0.11	0.948	**1.046**
	LTE Band 48	20M	QPSK	50	0	Left Tilted	Reduced	55830	3609	Non-IS Sku with 5800mAh Battery and Cover 1	17.02	17.50	1.117	62.9	1.006	0.05	0.837	0.940
	LTE Band 48	20M	QPSK	50	0	Left Tilted	Reduced	56150	3641	Non-IS Sku with 5800mAh Battery and Cover 1	17.05	17.50	1.109	62.9	1.006	-0.16	0.873	0.974
	LTE Band 48	20M	QPSK	50	0	Left Tilted	Reduced	56640	3690	Non-IS Sku with 5800mAh Battery and Cover 1	17.04	17.50	1.112	62.9	1.006	0.03	0.901	1.008
	LTE Band 48	20M	QPSK	50	0	Left Tilted	Reduced	55340	3560	Non-IS Sku with 2900mAh Battery and Cover 2	17.10	17.50	1.096	62.9	1.006	0.09	0.907	1.000
	LTE Band 48	20M	QPSK	50	0	Left Tilted	Reduced	55830	3609	Non-IS Sku with 2900mAh Battery and Cover 2	17.02	17.50	1.117	62.9	1.006	0.06	0.836	0.939
	LTE Band 48	20M	QPSK	50	0	Left Tilted	Reduced	56150	3641	Non-IS Sku with 2900mAh Battery and Cover 2	17.05	17.50	1.109	62.9	1.006	0.09	0.861	0.961
	LTE Band 48	20M	QPSK	50	0	Left Tilted	Reduced	56640	3690	Non-IS Sku with 2900mAh Battery and Cover 2	17.04	17.50	1.112	62.9	1.006	-0.19	0.899	1.005
	LTE Band 48	20M	QPSK	100	0	Left Tilted	Reduced	55340	3560	Non-IS Sku with 5800mAh Battery and Cover 1	17.09	17.50	1.099	62.9	1.006	0.18	0.910	1.006

<WLAN2.4G SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Accessory	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)
10	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	1	2412	Non-IS Sku with 5800mAh Battery and Cover 1	17.38	18.00	1.153	100	1.000	-0.08	0.185	**0.213**
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	1	2412	Non-IS Sku with 5800mAh Battery and Cover 1	17.38	18.00	1.153	100	1.000	0.06	0.155	0.179
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	1	2412	Non-IS Sku with 5800mAh Battery and Cover 1	17.38	18.00	1.153	100	1.000	-0.06	0.070	0.080
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	1	2412	Non-IS Sku with 5800mAh Battery and Cover 1	17.38	18.00	1.153	100	1.000	0.09	0.082	0.094
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	1	2412	Non-IS Sku with 2900mAh Battery and Cover 2	17.38	18.00	1.153	100	1.000	-0.03	0.172	0.198

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Accessory	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	0	2402	Non-IS Sku with 5800mAh Battery and Cover 1	16.74	17.50	1.191	76.61	1.087	-0.04	0.062	0.080
	Bluetooth	1Mbps	Right Tilted	0	2402	Non-IS Sku with 5800mAh Battery and Cover 1	16.74	17.50	1.191	76.61	1.087	0.06	0.063	0.082
	Bluetooth	1Mbps	Left Cheek	0	2402	Non-IS Sku with 5800mAh Battery and Cover 1	16.74	17.50	1.191	76.61	1.087	0.01	0.022	0.029
	Bluetooth	1Mbps	Left Tilted	0	2402	Non-IS Sku with 5800mAh Battery and Cover 1	16.74	17.50	1.191	76.61	1.087	-0.05	0.031	0.040
11	Bluetooth	1Mbps	Right Tilted	0	2402	Non-IS Sku with 2900mAh Battery and Cover 2	16.74	17.50	1.191	76.61	1.087	-0.08	0.064	**0.083**

<WLAN5G SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Accessory	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)
	WLAN5.3GHz	802.11a 6Mbps	Right Cheek	52	5260	Non-IS Sku with 5800mAh Battery and Cover 1	13.4	14.00	1.148	97.93	1.021	0.11	0.056	0.066
12	WLAN5.3GHz	802.11a 6Mbps	Right Tilted	52	5260	Non-IS Sku with 5800mAh Battery and Cover 1	13.4	14.00	1.148	97.93	1.021	0.09	0.061	**0.072**
	WLAN5.3GHz	802.11a 6Mbps	Left Cheek	52	5260	Non-IS Sku with 5800mAh Battery and Cover 1	13.4	14.00	1.148	97.93	1.021	0.04	0.031	0.036
	WLAN5.3GHz	802.11a 6Mbps	Left Tilted	52	5260	Non-IS Sku with 5800mAh Battery and Cover 1	13.4	14.00	1.148	97.93	1.021	-0.05	0.052	0.061
	WLAN5.3GHz	802.11a 6Mbps	Right Tilted	52	5260	Non-IS Sku with 2900mAh Battery and Cover 2	13.4	14.00	1.148	97.93	1.021	-0.07	0.057	0.067
	WLAN5.5GHz	802.11a 6Mbps	Right Cheek	124	5620	Non-IS Sku with 5800mAh Battery and Cover 1	13.74	14.00	1.062	97.93	1.021	0.11	0.031	0.034
	WLAN5.5GHz	802.11a 6Mbps	Right Tilted	124	5620	Non-IS Sku with 5800mAh Battery and Cover 1	13.74	14.00	1.062	97.93	1.021	-0.16	0.070	0.076
	WLAN5.5GHz	802.11a 6Mbps	Left Cheek	124	5620	Non-IS Sku with 5800mAh Battery and Cover 1	13.74	14.00	1.062	97.93	1.021	-0.06	0.057	0.061
	WLAN5.5GHz	802.11a 6Mbps	Left Tilted	124	5620	Non-IS Sku with 5800mAh Battery and Cover 1	13.74	14.00	1.062	97.93	1.021	0.09	0.068	0.074
13	WLAN5.5GHz	802.11a 6Mbps	Right Tilted	124	5620	Non-IS Sku with 2900mAh Battery and Cover 2	13.74	14.00	1.062	97.93	1.021	0.04	0.074	**0.080**
	WLAN5.8GHz	802.11a 6Mbps	Right Cheek	149	5745	Non-IS Sku with 5800mAh Battery and Cover 1	12.24	13.00	1.191	97.93	1.021	0.01	0.032	0.039
14	WLAN5.8GHz	802.11a 6Mbps	Right Tilted	149	5745	Non-IS Sku with 5800mAh Battery and Cover 1	12.24	13.00	1.191	97.93	1.021	-0.04	0.037	**0.045**
	WLAN5.8GHz	802.11a 6Mbps	Left Cheek	149	5745	Non-IS Sku with 5800mAh Battery and Cover 1	12.24	13.00	1.191	97.93	1.021	0.11	0.031	0.038
	WLAN5.8GHz	802.11a 6Mbps	Left Tilted	149	5745	Non-IS Sku with 5800mAh Battery and Cover 1	12.24	13.00	1.191	97.93	1.021	0.01	0.033	0.040
	WLAN5.8GHz	802.11a 6Mbps	Right Tilted	149	5745	Non-IS Sku with 2900mAh Battery and Cover 2	12.24	13.00	1.191	97.93	1.021	0.09	0.035	0.043

14.2 Hotspot SAR

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Accessory	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	Full	9400	1880	Non-IS Sku with 2900mAh Battery and Cover 2	23.10	24.00	1.230	0.13	0.896	1.102
	WCDMA II	RMC 12.2Kbps	Back	10mm	Full	9400	1880	Non-IS Sku with 2900mAh Battery and Cover 2	23.10	24.00	1.230	0.11	0.578	0.711
	WCDMA II	RMC 12.2Kbps	Right Side	10mm	Full	9400	1880	Non-IS Sku with 2900mAh Battery and Cover 2	23.10	24.00	1.230	0.15	0.890	1.095
	WCDMA II	RMC 12.2Kbps	Top Side	10mm	Full	9400	1880	Non-IS Sku with 2900mAh Battery and Cover 2	23.10	24.00	1.230	-0.01	0.163	0.201
	WCDMA II	RMC 12.2Kbps	Right Side	10mm	Full	9262	1852.4	Non-IS Sku with 2900mAh Battery and Cover 2	23.08	24.00	1.236	0.08	0.834	1.031
	WCDMA II	RMC 12.2Kbps	Right Side	10mm	Full	9538	1907.6	Non-IS Sku with 2900mAh Battery and Cover 2	23.02	24.00	1.253	0.03	0.925	1.159
	WCDMA II	RMC 12.2Kbps	Front	10mm	Full	9262	1852.4	Non-IS Sku with 2900mAh Battery and Cover 2	23.08	24.00	1.236	-0.08	0.856	1.058
	WCDMA II	RMC 12.2Kbps	Front	10mm	Full	9538	1907.6	Non-IS Sku with 2900mAh Battery and Cover 2	23.02	24.00	1.253	-0.09	0.932	1.168
15	WCDMA II	RMC 12.2Kbps	Front	10mm	Full	9538	1907.6	Non-IS Sku with 5800mAh Battery and Cover 1	23.02	24.00	1.253	-0.03	0.948	**1.188**
	WCDMA II	RMC 12.2Kbps	Front	10mm	Full	9400	1880	Non-IS Sku with 5800mAh Battery and Cover 1	23.10	24.00	1.230	0.15	0.929	1.143
	WCDMA II	RMC 12.2Kbps	Front	10mm	Full	9262	1852.4	Non-IS Sku with 5800mAh Battery and Cover 1	23.08	24.00	1.236	0.11	0.860	1.063
16	WCDMA V	RMC 12.2Kbps	Front	10mm	Full	4182	836.4	Non-IS Sku with 2900mAh Battery and Cover 2	23.33	24.00	1.167	0.14	0.144	**0.168**
	WCDMA V	RMC 12.2Kbps	Back	10mm	Full	4182	836.4	Non-IS Sku with 2900mAh Battery and Cover 2	23.33	24.00	1.167	-0.03	0.103	0.120
	WCDMA V	RMC 12.2Kbps	Right Side	10mm	Full	4182	836.4	Non-IS Sku with 2900mAh Battery and Cover 2	23.33	24.00	1.167	-0.04	0.045	0.052
	WCDMA V	RMC 12.2Kbps	Top Side	10mm	Full	4182	836.4	Non-IS Sku with 2900mAh Battery and Cover 2	23.33	24.00	1.167	0.05	0.036	0.042
	WCDMA V	RMC 12.2Kbps	Front	10mm	Full	4182	836.4	Non-IS Sku with 5800mAh Battery and Cover 1	23.33	24.00	1.167	-0.06	0.124	0.145

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Accessory	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 12	10M	QPSK	1	0	Front	10mm	Full	23095	707.5	Non-IS Sku with 2900mAh Battery and Cover 2	22.86	23.50	1.159	0.14	0.078	0.090
	LTE Band 12	10M	QPSK	1	0	Back	10mm	Full	23095	707.5	Non-IS Sku with 2900mAh Battery and Cover 2	22.86	23.50	1.159	0.12	0.076	0.088
	LTE Band 12	10M	QPSK	1	0	Right Side	10mm	Full	23095	707.5	Non-IS Sku with 2900mAh Battery and Cover 2	22.86	23.50	1.159	-0.12	0.074	0.086
	LTE Band 12	10M	QPSK	1	0	Top Side	10mm	Full	23095	707.5	Non-IS Sku with 2900mAh Battery and Cover 2	22.86	23.50	1.159	-0.08	0.013	0.015
17	LTE Band 12	10M	QPSK	1	0	Front	10mm	Full	23095	707.5	Non-IS Sku with 5800mAh Battery and Cover 1	22.86	23.50	1.159	0.12	0.101	**0.117**
	LTE Band 12	10M	QPSK	25	0	Front	10mm	Full	23095	707.5	Non-IS Sku with 2900mAh Battery and Cover 2	21.96	22.50	1.132	-0.03	0.065	0.073
	LTE Band 12	10M	QPSK	25	0	Back	10mm	Full	23095	707.5	Non-IS Sku with 2900mAh Battery and Cover 2	21.96	22.50	1.132	0.09	0.064	0.073
	LTE Band 12	10M	QPSK	25	0	Right Side	10mm	Full	23095	707.5	Non-IS Sku with 2900mAh Battery and Cover 2	21.96	22.50	1.132	0.02	0.062	0.070
	LTE Band 12	10M	QPSK	25	0	Top Side	10mm	Full	23095	707.5	Non-IS Sku with 2900mAh Battery and Cover 2	21.96	22.50	1.132	0.01	0.011	0.012
	LTE Band 13	10M	QPSK	1	0	Front	10mm	Full	23230	782	Non-IS Sku with 2900mAh Battery and Cover 2	22.83	23.50	1.167	0.08	0.074	0.087
	LTE Band 13	10M	QPSK	1	0	Back	10mm	Full	23230	782	Non-IS Sku with 2900mAh Battery and Cover 2	22.83	23.50	1.167	0.02	0.066	0.077
	LTE Band 13	10M	QPSK	1	0	Right Side	10mm	Full	23230	782	Non-IS Sku with 2900mAh Battery and Cover 2	22.83	23.50	1.167	-0.04	0.039	0.045
	LTE Band 13	10M	QPSK	1	0	Top Side	10mm	Full	23230	782	Non-IS Sku with 2900mAh Battery and Cover 2	22.83	23.50	1.167	0.05	0.022	0.026
18	LTE Band 13	10M	QPSK	1	0	Front	10mm	Full	23230	782	Non-IS Sku with 5800mAh Battery and Cover 1	22.83	23.50	1.167	0.03	0.076	**0.088**
	LTE Band 13	10M	QPSK	25	0	Front	10mm	Full	23230	782	Non-IS Sku with 2900mAh Battery and Cover 2	21.92	22.50	1.143	0.06	0.064	0.073
	LTE Band 13	10M	QPSK	25	0	Back	10mm	Full	23230	782	Non-IS Sku with 2900mAh Battery and Cover 2	21.92	22.50	1.143	-0.02	0.061	0.069
	LTE Band 13	10M	QPSK	25	0	Right Side	10mm	Full	23230	782	Non-IS Sku with 2900mAh Battery and Cover 2	21.92	22.50	1.143	0.01	0.033	0.038
	LTE Band 13	10M	QPSK	25	0	Top Side	10mm	Full	23230	782	Non-IS Sku with 2900mAh Battery and Cover 2	21.92	22.50	1.143	0.11	0.019	0.022

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Accessory	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 5	10M	QPSK	1	0	Front	10mm	Full	20525	836.5	Non-IS Sku with 2900mAh Battery and Cover 2	22.89	23.50	1.151	0.03	0.112	0.129
	LTE Band 5	10M	QPSK	1	0	Back	10mm	Full	20525	836.5	Non-IS Sku with 2900mAh Battery and Cover 2	22.89	23.50	1.151	-0.09	0.095	0.110
	LTE Band 5	10M	QPSK	1	0	Right Side	10mm	Full	20525	836.5	Non-IS Sku with 2900mAh Battery and Cover 2	22.89	23.50	1.151	0.09	0.034	0.039
	LTE Band 5	10M	QPSK	1	0	Top Side	10mm	Full	20525	836.5	Non-IS Sku with 2900mAh Battery and Cover 2	22.89	23.50	1.151	0.05	0.030	0.035
19	LTE Band 5	10M	QPSK	1	0	Front	10mm	Full	20525	836.5	Non-IS Sku with 5800mAh Battery and Cover 1	22.89	23.50	1.151	0.06	0.118	**0.136**
	LTE Band 5	10M	QPSK	25	0	Front	10mm	Full	20525	836.5	Non-IS Sku with 2900mAh Battery and Cover 2	21.92	22.50	1.143	-0.03	0.093	0.107
	LTE Band 5	10M	QPSK	25	0	Back	10mm	Full	20525	836.5	Non-IS Sku with 2900mAh Battery and Cover 2	21.92	22.50	1.143	0.08	0.080	0.091
	LTE Band 5	10M	QPSK	25	0	Right Side	10mm	Full	20525	836.5	Non-IS Sku with 2900mAh Battery and Cover 2	21.92	22.50	1.143	0.03	0.028	0.032
	LTE Band 5	10M	QPSK	25	0	Top Side	10mm	Full	20525	836.5	Non-IS Sku with 2900mAh Battery and Cover 2	21.92	22.50	1.143	0.01	0.025	0.028
	LTE Band 4	20M	QPSK	1	0	Front	10mm	Full	20175	1732.5	Non-IS Sku with 2900mAh Battery and Cover 2	22.26	23.00	1.186	0.01	0.696	0.825
	LTE Band 4	20M	QPSK	1	0	Back	10mm	Full	20175	1732.5	Non-IS Sku with 2900mAh Battery and Cover 2	22.26	23.00	1.186	0.11	0.386	0.458
	LTE Band 4	20M	QPSK	1	0	Right Side	10mm	Full	20175	1732.5	Non-IS Sku with 2900mAh Battery and Cover 2	22.26	23.00	1.186	-0.07	0.549	0.651
	LTE Band 4	20M	QPSK	1	0	Top Side	10mm	Full	20175	1732.5	Non-IS Sku with 2900mAh Battery and Cover 2	22.26	23.00	1.186	0.06	0.162	0.192
20	LTE Band 4	20M	QPSK	1	0	Front	10mm	Full	20175	1732.5	Non-IS Sku with 5800mAh Battery and Cover 1	22.26	23.00	1.186	-0.02	0.713	**0.845**
	LTE Band 4	20M	QPSK	50	0	Front	10mm	Full	20175	1732.5	Non-IS Sku with 2900mAh Battery and Cover 2	21.26	22.00	1.186	0.08	0.579	0.687
	LTE Band 4	20M	QPSK	50	0	Back	10mm	Full	20175	1732.5	Non-IS Sku with 2900mAh Battery and Cover 2	21.26	22.00	1.186	0.03	0.317	0.376
	LTE Band 4	20M	QPSK	50	0	Right Side	10mm	Full	20175	1732.5	Non-IS Sku with 2900mAh Battery and Cover 2	21.26	22.00	1.186	0.04	0.463	0.549
	LTE Band 4	20M	QPSK	50	0	Top Side	10mm	Full	20175	1732.5	Non-IS Sku with 2900mAh Battery and Cover 2	21.26	22.00	1.186	-0.05	0.134	0.159
	LTE Band 4	20M	QPSK	100	0	Front	10mm	Full	20175	1732.5	Non-IS Sku with 2900mAh Battery and Cover 2	21.18	22.00	1.208	0.03	0.609	0.736
	LTE Band 2	20M	QPSK	1	0	Front	10mm	Full	18900	1880	Non-IS Sku with 2900mAh Battery and Cover 2	22.42	23.00	1.143	0.03	0.800	0.914
	LTE Band 2	20M	QPSK	1	0	Back	10mm	Full	18900	1880	Non-IS Sku with 2900mAh Battery and Cover 2	22.42	23.00	1.143	0.02	0.505	0.577
	LTE Band 2	20M	QPSK	1	0	Right Side	10mm	Full	18900	1880	Non-IS Sku with 2900mAh Battery and Cover 2	22.42	23.00	1.143	0.08	0.682	0.779
	LTE Band 2	20M	QPSK	1	0	Top Side	10mm	Full	18900	1880	Non-IS Sku with 2900mAh Battery and Cover 2	22.42	23.00	1.143	0.07	0.147	0.168
	LTE Band 2	20M	QPSK	1	0	Front	10mm	Full	18700	1860	Non-IS Sku with 2900mAh Battery and Cover 2	22.24	23.00	1.191	0.07	0.720	0.858
	LTE Band 2	20M	QPSK	1	0	Front	10mm	Full	19100	1900	Non-IS Sku with 2900mAh Battery and Cover 2	22.23	23.00	1.194	0.05	0.685	0.818
21	LTE Band 2	20M	QPSK	1	0	Front	10mm	Full	18900	1880	Non-IS Sku with 5800mAh Battery and Cover 1	22.42	23.00	1.143	0.05	0.810	**0.926**
	LTE Band 2	20M	QPSK	1	0	Front	10mm	Full	18700	1860	Non-IS Sku with 5800mAh Battery and Cover 1	22.24	23.00	1.191	0.07	0.735	0.876
	LTE Band 2	20M	QPSK	1	0	Front	10mm	Full	19100	1900	Non-IS Sku with 5800mAh Battery and Cover 1	22.23	23.00	1.194	0.06	0.718	0.857
	LTE Band 2	20M	QPSK	50	0	Front	10mm	Full	18900	1880	Non-IS Sku with 2900mAh Battery and Cover 2	21.35	22.00	1.161	-0.04	0.638	0.741
	LTE Band 2	20M	QPSK	50	0	Back	10mm	Full	18900	1880	Non-IS Sku with 2900mAh Battery and Cover 2	21.35	22.00	1.161	0.07	0.417	0.484
	LTE Band 2	20M	QPSK	50	0	Right Side	10mm	Full	18900	1880	Non-IS Sku with 2900mAh Battery and Cover 2	21.35	22.00	1.161	0.08	0.557	0.647
	LTE Band 2	20M	QPSK	50	0	Top Side	10mm	Full	18900	1880	Non-IS Sku with 2900mAh Battery and Cover 2	21.35	22.00	1.161	0.09	0.116	0.135
	LTE Band 2	20M	QPSK	50	24	Front	10mm	Full	18700	1860	Non-IS Sku with 2900mAh Battery and Cover 2	21.24	22.00	1.191	0.02	0.603	0.718
	LTE Band 2	20M	QPSK	50	50	Front	10mm	Full	19100	1900	Non-IS Sku with 2900mAh Battery and Cover 2	21.34	22.00	1.164	0.08	0.658	0.766
	LTE Band 2	20M	QPSK	100	0	Front	10mm	Full	18900	1880	Non-IS Sku with 2900mAh Battery and Cover 2	21.26	22.00	1.186	-0.08	0.654	0.775

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Accessory	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	Full	21100	2535	Non-IS Sku with 2900mAh Battery and Cover 2	22.61	23.50	1.227	0.03	0.829	1.018
	LTE Band 7	20M	QPSK	1	0	Back	10mm	Full	21100	2535	Non-IS Sku with 2900mAh Battery and Cover 2	22.61	23.50	1.227	0.07	0.711	0.873
	LTE Band 7	20M	QPSK	1	0	Right Side	10mm	Full	21100	2535	Non-IS Sku with 2900mAh Battery and Cover 2	22.61	23.50	1.227	-0.03	0.595	0.730
	LTE Band 7	20M	QPSK	1	0	Top Side	10mm	Full	21100	2535	Non-IS Sku with 2900mAh Battery and Cover 2	22.61	23.50	1.227	0.08	0.168	0.206
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Full	20850	2510	Non-IS Sku with 2900mAh Battery and Cover 2	22.47	23.50	1.268	0.06	0.851	1.079
	LTE Band 7	20M	QPSK	1	99	Front	10mm	Full	21350	2560	Non-IS Sku with 2900mAh Battery and Cover 2	22.51	23.50	1.256	0.01	0.811	1.019
	LTE Band 7	20M	QPSK	1	0	Back	10mm	Full	20850	2510	Non-IS Sku with 2900mAh Battery and Cover 2	22.47	23.50	1.268	0.13	0.740	0.938
22	LTE Band 7	20M	QPSK	1	99	Back	10mm	Full	21350	2560	Non-IS Sku with 2900mAh Battery and Cover 2	22.51	23.50	1.256	0.01	0.930	**1.168**
	LTE Band 7	20M	QPSK	1	0	Back	10mm	Full	20850	2510	Non-IS Sku with 5800mAh Battery and Cover 1	22.47	23.50	1.268	0.17	0.541	0.686
	LTE Band 7	20M	QPSK	1	0	Back	10mm	Full	21100	2535	Non-IS Sku with 5800mAh Battery and Cover 1	22.61	23.50	1.227	-0.11	0.583	0.716
	LTE Band 7	20M	QPSK	1	99	Back	10mm	Full	21350	2560	Non-IS Sku with 5800mAh Battery and Cover 1	22.51	23.50	1.256	0.07	0.761	0.956
	LTE Band 7	20M	QPSK	50	0	Front	10mm	Full	21100	2535	Non-IS Sku with 2900mAh Battery and Cover 2	21.58	22.50	1.236	0.05	0.676	0.836
	LTE Band 7	20M	QPSK	50	0	Back	10mm	Full	21100	2535	Non-IS Sku with 2900mAh Battery and Cover 2	21.58	22.50	1.236	0.03	0.612	0.756
	LTE Band 7	20M	QPSK	50	0	Right Side	10mm	Full	21100	2535	Non-IS Sku with 2900mAh Battery and Cover 2	21.58	22.50	1.236	0.05	0.462	0.571
	LTE Band 7	20M	QPSK	50	0	Top Side	10mm	Full	21100	2535	Non-IS Sku with 2900mAh Battery and Cover 2	21.58	22.50	1.236	0.07	0.132	0.163
	LTE Band 7	20M	QPSK	50	0	Front	10mm	Full	20850	2510	Non-IS Sku with 2900mAh Battery and Cover 2	21.56	22.50	1.242	0.02	0.720	0.894
	LTE Band 7	20M	QPSK	50	24	Front	10mm	Full	21350	2560	Non-IS Sku with 2900mAh Battery and Cover 2	21.48	22.50	1.265	0.05	0.705	0.892
	LTE Band 7	20M	QPSK	100	0	Front	10mm	Full	21100	2535	Non-IS Sku with 2900mAh Battery and Cover 2	21.53	22.50	1.250	0.05	0.639	0.799
	LTE Band 7	20M	QPSK	100	0	Back	10mm	Full	21100	2535	Non-IS Sku with 2900mAh Battery and Cover 2	21.53	22.50	1.250	0.06	0.568	0.710

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Accessory	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 48	20M	QPSK	1	0	Front	10mm	Full	55340	3560	Non-IS Sku with 2900mAh Battery and Cover 2	19.91	20.50	1.146	62.9	1.006	0.04	0.353	0.407
	LTE Band 48	20M	QPSK	1	0	Back	10mm	Full	55340	3560	Non-IS Sku with 2900mAh Battery and Cover 2	19.91	20.50	1.146	62.9	1.006	0.09	0.156	0.180
	LTE Band 48	20M	QPSK	1	0	Right Side	10mm	Full	55340	3560	Non-IS Sku with 2900mAh Battery and Cover 2	19.91	20.50	1.146	62.9	1.006	0.01	0.278	0.320
	LTE Band 48	20M	QPSK	1	0	Top Side	10mm	Full	55340	3560	Non-IS Sku with 2900mAh Battery and Cover 2	19.91	20.50	1.146	62.9	1.006	-0.08	0.102	0.118
23	LTE Band 48	20M	QPSK	1	0	Front	10mm	Full	55340	3560	Non-IS Sku with 5800mAh Battery and Cover 1	19.91	20.50	1.146	62.9	1.006	0.03	0.362	**0.417**
	LTE Band 48	20M	QPSK	50	0	Front	10mm	Full	55340	3560	Non-IS Sku with 2900mAh Battery and Cover 2	18.89	19.50	1.151	62.9	1.006	0.06	0.279	0.323
	LTE Band 48	20M	QPSK	50	0	Back	10mm	Full	55340	3560	Non-IS Sku with 2900mAh Battery and Cover 2	18.89	19.50	1.151	62.9	1.006	0.08	0.129	0.149
	LTE Band 48	20M	QPSK	50	0	Right Side	10mm	Full	55340	3560	Non-IS Sku with 2900mAh Battery and Cover 2	18.89	19.50	1.151	62.9	1.006	0.04	0.226	0.262
	LTE Band 48	20M	QPSK	50	0	Top Side	10mm	Full	55340	3560	Non-IS Sku with 2900mAh Battery and Cover 2	18.89	19.50	1.151	62.9	1.006	0.04	0.084	0.097

<WLAN2.4G SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Accessory	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	1	2412	Non-IS Sku with 2900mAh Battery and Cover 2	17.38	18.00	1.153	100	1.000	0.03	0.059	0.068
24	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	1	2412	Non-IS Sku with 2900mAh Battery and Cover 2	17.38	18.00	1.153	100	1.000	-0.04	0.104	**0.120**
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	1	2412	Non-IS Sku with 2900mAh Battery and Cover 2	17.38	18.00	1.153	100	1.000	-0.04	0.099	0.114
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	1	2412	Non-IS Sku with 2900mAh Battery and Cover 2	17.38	18.00	1.153	100	1.000	0.05	0.018	0.020
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	1	2412	Non-IS Sku with 5800mAh Battery and Cover 1	17.38	18.00	1.153	100	1.000	0.07	0.084	0.096

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Accessory	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	0	2402	Non-IS Sku with 2900mAh Battery and Cover 2	16.74	17.50	1.191	76.61	1.087	-0.04	0.021	0.027
25	Bluetooth	1Mbps	Back	10mm	0	2402	Non-IS Sku with 2900mAh Battery and Cover 2	16.74	17.50	1.191	76.61	1.087	-0.17	0.038	**0.049**
	Bluetooth	1Mbps	Left Side	10mm	0	2402	Non-IS Sku with 2900mAh Battery and Cover 2	16.74	17.50	1.191	76.61	1.087	-0.04	0.034	0.044
	Bluetooth	1Mbps	Top Side	10mm	0	2402	Non-IS Sku with 2900mAh Battery and Cover 2	16.74	17.50	1.191	76.61	1.087	-0.06	0.010	0.013
	Bluetooth	1Mbps	Back	10mm	0	2402	Non-IS Sku with 5800mAh Battery and Cover 1	16.74	17.50	1.191	76.61	1.087	-0.01	0.030	0.039

14.3 Body Worn Accessory SAR

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Accessory	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	0mm	Full	9400	1880	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	23.10	24.00	1.230	0.07	0.346	0.426
	WCDMA II	RMC 12.2Kbps	Front	0mm	Full	9400	1880	Non-IS Sku with 5800mAh Battery and Belt Clip PMLN7965	23.10	24.00	1.230	0.05	0.355	0.437
28	WCDMA II	RMC 12.2Kbps	Front	0mm	Full	9400	1880	Non-IS Sku with 5800mAh Battery and Belt Clip NNTN8266	23.10	24.00	1.230	0.18	0.401	**0.493**
	WCDMA V	RMC 12.2Kbps	Front	0mm	Full	4182	836.4	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	23.33	24.00	1.167	0.03	0.071	0.083
	WCDMA V	RMC 12.2Kbps	Front	0mm	Full	4182	836.4	Non-IS Sku with 5800mAh Battery and Belt Clip PMLN7965	23.33	24.00	1.167	0.07	0.072	0.084
29	WCDMA V	RMC 12.2Kbps	Front	0mm	Full	4182	836.4	Non-IS Sku with 5800mAh Battery and Belt Clip NNTN8266	23.33	24.00	1.167	0.08	0.074	**0.086**

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Accessory	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 12	10M	QPSK	1	0	Front	0mm	Full	23095	707.5	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	22.86	23.50	1.159	0.09	0.061	0.070
	LTE Band 12	10M	QPSK	25	0	Front	0mm	Full	23095	707.5	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	21.96	22.50	1.132	0.16	0.049	0.056
	LTE Band 12	10M	QPSK	1	0	Front	0mm	Full	23095	707.5	Non-IS Sku with 5800mAh Battery and Belt Clip PMLN7965	22.86	23.50	1.159	0.09	0.060	0.070
30	LTE Band 12	10M	QPSK	1	0	Front	0mm	Full	23095	707.5	Non-IS Sku with 2900mAh Battery and Belt Clip NNTN8266	22.86	23.50	1.159	0.04	0.064	**0.074**
	LTE Band 13	10M	QPSK	1	0	Front	0mm	Full	23230	782	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	22.83	23.50	1.167	0.06	0.051	0.060
	LTE Band 13	10M	QPSK	25	0	Front	0mm	Full	23230	782	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	21.92	22.50	1.143	0.01	0.041	0.046
	LTE Band 13	10M	QPSK	1	0	Front	0mm	Full	23230	782	Non-IS Sku with 5800mAh Battery and Belt Clip PMLN7965	22.83	23.50	1.167	0.01	0.048	0.056
31	LTE Band 13	10M	QPSK	1	0	Front	0mm	Full	23230	782	Non-IS Sku with 2900mAh Battery and Belt Clip NNTN8266	22.83	23.50	1.167	0.04	0.052	**0.061**
	LTE Band 5	10M	QPSK	1	0	Front	0mm	Full	20525	836.5	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	22.89	23.50	1.151	0.09	0.059	0.067
	LTE Band 5	10M	QPSK	25	0	Front	0mm	Full	20525	836.5	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	21.92	22.50	1.143	0.01	0.048	0.055
	LTE Band 5	10M	QPSK	1	0	Front	0mm	Full	20525	836.5	Non-IS Sku with 5800mAh Battery and Belt Clip PMLN7965	22.89	23.50	1.151	-0.1	0.055	0.063
32	LTE Band 5	10M	QPSK	1	0	Front	0mm	Full	20525	836.5	Non-IS Sku with 2900mAh Battery and Belt Clip NNTN8266	22.89	23.50	1.151	0.08	0.066	**0.076**
	LTE Band 4	20M	QPSK	1	0	Front	0mm	Full	20175	1732.5	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	22.26	23.00	1.186	0.08	0.317	0.376
	LTE Band 4	20M	QPSK	50	0	Front	0mm	Full	20175	1732.5	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	21.26	22.00	1.186	0.06	0.256	0.304
	LTE Band 4	20M	QPSK	1	0	Front	0mm	Full	20175	1732.5	Non-IS Sku with 5800mAh Battery and Belt Clip PMLN7965	22.26	23.00	1.186	0.03	0.304	0.360
33	LTE Band 4	20M	QPSK	1	0	Front	0mm	Full	20175	1732.5	Non-IS Sku with 2900mAh Battery and Belt Clip NNTN8266	22.26	23.00	1.186	0.05	0.362	**0.429**
	LTE Band 2	20M	QPSK	1	0	Front	0mm	Full	18900	1880	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	22.42	23.00	1.143	0.02	0.326	0.373
	LTE Band 2	20M	QPSK	50	0	Front	0mm	Full	18900	1880	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	21.35	22.00	1.161	0.02	0.264	0.307
	LTE Band 2	20M	QPSK	1	0	Front	0mm	Full	18900	1880	Non-IS Sku with 5800mAh Battery and Belt Clip PMLN7965	22.42	23.00	1.143	0.06	0.324	0.370
34	LTE Band 2	20M	QPSK	1	0	Front	0mm	Full	18900	1880	Non-IS Sku with 2900mAh Battery and Belt Clip NNTN8266	22.42	23.00	1.143	0.17	0.389	**0.445**
	LTE Band 7	20M	QPSK	1	0	Front	0mm	Full	21100	2535	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	22.61	23.50	1.227	0.09	0.228	0.280
	LTE Band 7	20M	QPSK	50	0	Front	0mm	Full	21100	2535	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	21.58	22.50	1.236	0.05	0.185	0.229
	LTE Band 7	20M	QPSK	1	0	Front	0mm	Full	21100	2535	Non-IS Sku with 5800mAh Battery and Belt Clip PMLN7965	22.61	23.50	1.227	-0.09	0.242	0.297
35	LTE Band 7	20M	QPSK	1	0	Front	0mm	Full	21100	2535	Non-IS Sku with 5800mAh Battery and Belt Clip NNTN8266	22.61	23.50	1.227	0.13	0.259	**0.318**

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Accessory	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)
36	LTE Band 48	20M	QPSK	1	0	Front	0mm	Full	55340	3560	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	19.91	20.50	1.146	62.9	1.006	-0.02	0.189	**0.218**
	LTE Band 48	20M	QPSK	50	0	Front	0mm	Full	55340	3560	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	18.89	19.50	1.151	62.9	1.006	0.08	0.149	0.172
	LTE Band 48	20M	QPSK	1	0	Front	0mm	Full	55340	3560	Non-IS Sku with 5800mAh Battery and Belt Clip PMLN7965	19.91	20.50	1.146	62.9	1.006	0.06	0.161	0.186
	LTE Band 48	20M	QPSK	1	0	Front	0mm	Full	55340	3560	Non-IS Sku with 2900mAh Battery and Belt Clip NNTN8266	19.91	20.50	1.146	62.9	1.006	-0.07	0.164	0.189

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Accessory	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	0mm	1	2412	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	17.38	18.00	1.153	100	1.000	-0.04	0.013	0.015
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	1	2412	Non-IS Sku with 5800mAh Battery and Belt Clip PMLN7965	17.38	18.00	1.153	100	1.000	-0.03	0.015	0.017
37	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	1	2412	Non-IS Sku with 5800mAh Battery and Belt Clip NNTN8266	17.38	18.00	1.153	100	1.000	0.07	0.0175	**0.020**

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Accessory	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	0mm	0	2402	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	16.74	17.50	1.191	76.61	1.087	-0.09	0.007	0.010
	Bluetooth	1Mbps	Front	0mm	0	2402	Non-IS Sku with 5800mAh Battery and Belt Clip PMLN7965	16.74	17.50	1.191	76.61	1.087	-0.05	0.001	0.001
38	Bluetooth	1Mbps	Front	0mm	0	2402	Non-IS Sku with 2900mAh Battery and Belt Clip NNTN8266	16.74	17.50	1.191	76.61	1.087	-0.08	0.00788	**0.010**

<WLAN5G SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Accessory	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)
	WLAN5.3GHz	802.11a 6Mbps	Front	0mm	52	5260	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	13.4	14.00	1.148	97.93	1.021	-0.01	0.010	0.011
39	WLAN5.3GHz	802.11a 6Mbps	Front	0mm	52	5260	Non-IS Sku with 5800mAh Battery and Belt Clip PMLN7965	13.4	14.00	1.148	97.93	1.021	-0.06	0.013	**0.015**
	WLAN5.3GHz	802.11a 6Mbps	Front	0mm	52	5260	Non-IS Sku with 5800mAh Battery and Belt Clip NNTN8266	13.4	14.00	1.148	97.93	1.021	-0.07	0.011	0.012
	WLAN5.5GHz	802.11a 6Mbps	Front	0mm	124	5620	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	13.74	14.00	1.062	97.93	1.021	-0.09	0.017	0.018
	WLAN5.5GHz	802.11a 6Mbps	Front	0mm	124	5620	Non-IS Sku with 5800mAh Battery and Belt Clip PMLN7965	13.74	14.00	1.062	97.93	1.021	0.07	0.022	0.024
40	WLAN5.5GHz	802.11a 6Mbps	Front	0mm	124	5620	Non-IS Sku with 5800mAh Battery and Belt Clip NNTN8266	13.74	14.00	1.062	97.93	1.021	-0.04	0.031	**0.033**
	WLAN5.8GHz	802.11a 6Mbps	Front	0mm	149	5745	Non-IS Sku with 2900mAh Battery and Belt Clip PMLN7965	12.24	13.00	1.191	97.93	1.021	0.19	0.023	0.028
41	WLAN5.8GHz	802.11a 6Mbps	Front	0mm	149	5745	Non-IS Sku with 5800mAh Battery and Belt Clip PMLN7965	12.24	13.00	1.191	97.93	1.021	-0.09	0.032	**0.039**
	WLAN5.8GHz	802.11a 6Mbps	Front	0mm	149	5745	Non-IS Sku with 5800mAh Battery and Belt Clip NNTN8266	12.24	13.00	1.191	97.93	1.021	0.01	0.019	0.023

14.4 Product Specific SAR

<WLAN5G SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Accessory	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)
	WLAN5.3GHz	802.11a 6Mbps	Front	0mm	52	5260	Non-IS Sku with 2900mAh Battery and Cover 2	13.4	14.00	1.148	97.93	1.021	0.01	0.030	0.036
42	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	52	5260	Non-IS Sku with 2900mAh Battery and Cover 2	13.4	14.00	1.148	97.93	1.021	-0.08	0.118	**0.138**
	WLAN5.3GHz	802.11a 6Mbps	Left Side	0mm	52	5260	Non-IS Sku with 2900mAh Battery and Cover 2	13.4	14.00	1.148	97.93	1.021	0.02	0.077	0.090
	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	52	5260	Non-IS Sku with 2900mAh Battery and Cover 2	13.4	14.00	1.148	97.93	1.021	-0.04	0.027	0.032
	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	52	5260	Non-IS Sku with 5800mAh Battery and Cover 1	13.4	14.00	1.148	97.93	1.021	-0.02	0.056	0.066
	WLAN5.5GHz	802.11a 6Mbps	Front	0mm	124	5620	Non-IS Sku with 2900mAh Battery and Cover 2	13.74	14.00	1.062	97.93	1.021	0.04	0.040	0.043
43	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	124	5620	Non-IS Sku with 2900mAh Battery and Cover 2	13.74	14.00	1.062	97.93	1.021	-0.05	0.196	**0.212**
	WLAN5.5GHz	802.11a 6Mbps	Left Side	0mm	124	5620	Non-IS Sku with 2900mAh Battery and Cover 2	13.74	14.00	1.062	97.93	1.021	0.03	0.163	0.177
	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	124	5620	Non-IS Sku with 2900mAh Battery and Cover 2	13.74	14.00	1.062	97.93	1.021	-0.18	0.037	0.041
	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	124	5620	Non-IS Sku with 5800mAh Battery and Cover 1	13.74	14.00	1.062	97.93	1.021	-0.02	0.124	0.134
	WLAN5.8GHz	802.11a 6Mbps	Front	0mm	149	5745	Non-IS Sku with 2900mAh Battery and Cover 2	12.24	13.00	1.191	97.93	1.021	0.01	0.032	0.038
44	WLAN5.8GHz	802.11a 6Mbps	Back	0mm	149	5745	Non-IS Sku with 2900mAh Battery and Cover 2	12.24	13.00	1.191	97.93	1.021	0.01	0.173	**0.210**
	WLAN5.8GHz	802.11a 6Mbps	Left Side	0mm	149	5745	Non-IS Sku with 2900mAh Battery and Cover 2	12.24	13.00	1.191	97.93	1.021	-0.05	0.142	0.173
	WLAN5.8GHz	802.11a 6Mbps	Top Side	0mm	149	5745	Non-IS Sku with 2900mAh Battery and Cover 2	12.24	13.00	1.191	97.93	1.021	0.02	0.028	0.034
	WLAN5.8GHz	802.11a 6Mbps	Back	0mm	149	5745	Non-IS Sku with 5800mAh Battery and Cover 1	12.24	13.00	1.191	97.93	1.021	0.01	0.139	0.169

14.5 Repeated SAR Measurement

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Accessory	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)	Ratio	Reported 1g SAR (W/kg)
1st	LTE Band 4	20M	QPSK	50	0		Left Tilted	0mm	Reduced	20175	1732.5	Non-IS Sku with 5800mAh Battery and Cover 1	18.61	19.50	1.227		1.000	0.1	0.855	1	1.049
2nd	LTE Band 4	20M	QPSK	50	0		Left Tilted	0mm	Reduced	20175	1732.5	Non-IS Sku with 5800mAh Battery and Cover 1	18.61	19.50	1.227		1.000	0.04	0.851	1.005	1.045
1st	LTE Band 7	20M	QPSK	1	99		Back	10mm	full power	21350	2560	Non-IS Sku with 2900mAh Battery and Cover 2	22.51	23.50	1.256		1.000	0.01	0.930	1	1.168
2nd	LTE Band 7	20M	QPSK	1	99		Back	10mm	full power	21350	2560	Non-IS Sku with 2900mAh Battery and Cover 2	22.51	23.50	1.256		1.000	0.08	0.922	1.009	1.158
1st	LTE Band 48	20M	QPSK	50	0		Left Tilted	0mm	Reduced	55340	3560	Non-IS Sku with 5800mAh Battery and Cover 1	17.10	17.50	1.096	62.9	1.006	0.11	0.948	1	1.046
2nd	LTE Band 48	20M	QPSK	50	0		Left Tilted	0mm	Reduced	55340	3560	Non-IS Sku with 5800mAh Battery and Cover 1	17.10	17.50	1.096	62.9	1.006	0.08	0.933	1.016	1.029
1st	WCDMA II					RMC 12.2Kbps	Front	10mm	full power	9538	1907.6	Non-IS Sku with 5800mAh Battery and Cover 1	23.02	24.00	1.253		1.000	-0.03	0.948	1	1.188
2nd	WCDMA II					RMC 12.2Kbps	Front	10mm	full power	9538	1907.6	Non-IS Sku with 5800mAh Battery and Cover 1	23.02	24.00	1.253		1.000	-0.11	0.915	1.036	1.147

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥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 10g SAR
1.	WCDMA + WLAN2.4GHz	Yes	Yes	Yes	Yes
2.	LTE + WLAN2.4GHz	Yes	Yes	Yes	Yes
3.	WCDMA + WLAN5GHz	Yes	Yes		Yes
4.	LTE + WLAN5GHz	Yes	Yes		Yes
5.	WCDMA + WLAN5GHz +Bluetooth	Yes	Yes		Yes
6.	LTE + WLAN5GHz +Bluetooth	Yes	Yes		Yes
7.	WLAN5GHz + Bluetooth	Yes	Yes		Yes
8.	WCDMA + Bluetooth	Yes	Yes	Yes	Yes
9.	LTE + Bluetooth	Yes	Yes	Yes	Yes

General Note:

1. EUT will choose each WCDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
2. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
3. This device 5GHZ WLAN has no hotspot function.
4. 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 though they have independent antenna.
5. WLAN 2.4GHz and Bluetooth share the same antenna so can't transmit simultaneously.
6. According to the EUT character, WLAN 5GHz and Bluetooth can transmit simultaneously. WWAN + WLAN5GHz + Bluetooth can represent WWAN + WLAN5GHz or WWAN + Bluetooth, So no need to do co-located analysis separately.
7. Chose the worst zoom scan SAR of WLAN correspondingly for co-located with WWAN analysis.
8. The reported SAR summation is calculated based on the same configuration and test position.
9. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
   i) 1g Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/kg.
   ii) SPLSR = (SAR1 + SAR2)^1.5 / (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 ≤ 0.04 for 1g SAR and SPLSR≤ 0.10 for 10g SAR , simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.

15.1 Head Exposure Conditions

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN 1g SAR (W/kg)	3 5GHz WLAN 1g SAR (W/kg)	4 Bluetooth 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)
WCDMA	WCDMA II	Right Cheek	0.485	0.213	0.066	0.080	0.70	0.63
		Right Tilted	0.393	0.179	0.080	0.083	0.57	0.56
		Left Cheek	0.774	0.080	0.061	0.029	0.85	0.86
		Left Tilted	1.114	0.094	0.074	0.040	1.21	**1.23**
	WCDMA V	Right Cheek	0.399	0.213	0.066	0.080	0.61	0.55
		Right Tilted	0.391	0.179	0.080	0.083	0.57	0.55
		Left Cheek	0.490	0.080	0.061	0.029	0.57	0.58
		Left Tilted	0.709	0.094	0.074	0.040	0.80	0.82
LTE	LTE Band 12	Right Cheek	0.139	0.213	0.066	0.080	0.35	0.29
		Right Tilted	0.131	0.179	0.080	0.083	0.31	0.29
		Left Cheek	0.219	0.080	0.061	0.029	0.30	0.31
		Left Tilted	0.275	0.094	0.074	0.040	0.37	0.39
	LTE Band 13	Right Cheek	0.258	0.213	0.066	0.080	0.47	0.40
		Right Tilted	0.250	0.179	0.080	0.083	0.43	0.41
		Left Cheek	0.313	0.080	0.061	0.029	0.39	0.40
		Left Tilted	0.431	0.094	0.074	0.040	0.53	0.55
	LTE Band 5	Right Cheek	0.330	0.213	0.066	0.080	0.54	0.48
		Right Tilted	0.374	0.179	0.080	0.083	0.55	0.54
		Left Cheek	0.413	0.080	0.061	0.029	0.49	0.50
		Left Tilted	0.595	0.094	0.074	0.040	0.69	0.71
	LTE Band 4	Right Cheek	0.556	0.213	0.066	0.080	0.77	0.70
		Right Tilted	0.519	0.179	0.080	0.083	0.70	0.68
		Left Cheek	0.974	0.080	0.061	0.029	1.05	1.06
		Left Tilted	1.049	0.094	0.074	0.040	1.14	1.16
	LTE Band 2	Right Cheek	0.433	0.213	0.066	0.080	0.65	0.58
		Right Tilted	0.448	0.179	0.080	0.083	0.63	0.61
		Left Cheek	0.786	0.080	0.061	0.029	0.87	0.88
		Left Tilted	1.012	0.094	0.074	0.040	1.11	1.13
	LTE Band 7	Right Cheek	0.327	0.213	0.066	0.080	0.54	0.47
		Right Tilted	0.404	0.179	0.080	0.083	0.58	0.57
		Left Cheek	0.588	0.080	0.061	0.029	0.67	0.68
		Left Tilted	0.994	0.094	0.074	0.040	1.09	1.11
	LTE Band 48	Right Cheek	0.301	0.213	0.066	0.080	0.51	0.45
		Right Tilted	0.431	0.179	0.080	0.083	0.61	0.59
		Left Cheek	0.461	0.080	0.061	0.029	0.54	0.55
		Left Tilted	1.046	0.094	0.074	0.040	1.14	1.16

15.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN 1g SAR (W/kg)	4 Bluetooth 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)
WCDMA	WCDMA II	Front	1.188	0.068	0.027	1.26	1.22
		Back	0.711	0.120	0.049	0.83	0.76
		Left side		0.114	0.044	0.11	0.04
		Right side	1.159			1.16	1.16
		Top side	0.201	0.020	0.013	0.22	0.21
	WCDMA V	Front	0.168	0.068	0.027	0.24	0.20
		Back	0.120	0.120	0.049	0.24	0.17
		Left side		0.114	0.044	0.11	0.04
		Right side	0.052			0.05	0.05
		Top side	0.042	0.020	0.013	0.06	0.06
LTE	LTE Band 12	Front	0.117	0.068	0.027	0.19	0.14
		Back	0.088	0.120	0.049	0.21	0.14
		Left side		0.114	0.044	0.11	0.04
		Right side	0.086			0.09	0.09
		Top side	0.015	0.020	0.013	0.04	0.03
	LTE Band 13	Front	0.088	0.068	0.027	0.16	0.12
		Back	0.077	0.120	0.049	0.20	0.13
		Left side		0.114	0.044	0.11	0.04
		Right side	0.045			0.05	0.05
		Top side	0.026	0.020	0.013	0.05	0.04
	LTE Band 5	Front	0.136	0.068	0.027	0.20	0.16
		Back	0.110	0.120	0.049	0.23	0.16
		Left side		0.114	0.044	0.11	0.04
		Right side	0.039			0.04	0.04
		Top side	0.035	0.020	0.013	0.06	0.05
	LTE Band 4	Front	0.845	0.068	0.027	0.91	0.87
		Back	0.458	0.120	0.049	0.58	0.51
		Left side		0.114	0.044	0.11	0.04
		Right side	0.651			0.65	0.65
		Top side	0.192	0.020	0.013	0.21	0.21
	LTE Band 2	Front	0.926	0.068	0.027	0.99	0.95
		Back	0.577	0.120	0.049	0.70	0.63
		Left side		0.114	0.044	0.11	0.04
		Right side	0.779			0.78	0.78
		Top side	0.168	0.020	0.013	0.19	0.18
	LTE Band 7	Front	1.079	0.068	0.027	1.15	1.11
		Back	1.168	0.120	0.049	**1.29**	1.22
		Left side		0.114	0.044	0.11	0.04
		Right side	0.730			0.73	0.73
		Top side	0.206	0.020	0.013	0.23	0.22
	LTE Band 48	Front	0.417	0.068	0.027	0.49	0.44
		Back	0.180	0.120	0.049	0.30	0.23
		Left side		0.114	0.044	0.11	0.04
		Right side	0.320			0.32	0.32
		Top side	0.118	0.020	0.013	0.14	0.13

15.3 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth		
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
WCDMA	WCDMA II	Front	0.493	0.020	0.039	0.010	0.51	0.54
	WCDMA V	Front	0.086	0.020	0.039	0.010	0.11	0.14
LTE	LTE Band 12	Front	0.074	0.020	0.039	0.010	0.09	0.12
	LTE Band 13	Front	0.061	0.020	0.039	0.010	0.08	0.11
	LTE Band 5	Front	0.076	0.020	0.039	0.010	0.10	0.13
	LTE Band 4	Front	0.429	0.020	0.039	0.010	0.45	0.48
	LTE Band 2	Front	0.445	0.020	0.039	0.010	0.47	0.49
	LTE Band 7	Front	0.318	0.020	0.039	0.010	0.34	0.37
	LTE Band 48	Front	0.218	0.020	0.039	0.010	0.24	0.27

Test Engineer : Changlin Huang, Bin He, Mengming Dai

16. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg and highest measured 10-g SAR is less 3.75W/kg. Therefore, the measurement uncertainty table is not required in this report.

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 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.

[6] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.

[7] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015

[8] FCC KDB 648474 D04 v01r03, “SAR Evaluation Considerations for Wireless Handsets”, Oct 2015.

[9] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

[10] FCC KDB 616217 D04 v01r02, “SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers”, Oct 2015

[11] FCC KDB 941225 D01 v03r01, “3G SAR MEAUREMENT PROCEDURES”, Oct 2015

[12] FCC KDB 941225 D05 v02r05, “SAR Evaluation Considerations for LTE Devices”, Dec 2015

[13] FCC KDB 941225 D05A v01r02, “Rel. 10 LTE SAR Test Guidance and KDB Inquiries”, Oct 2015

[14] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.

------THE END------

Appendix A. Plots of System Performance Check

The plots are shown as follows.

System Check_Head_750MHz

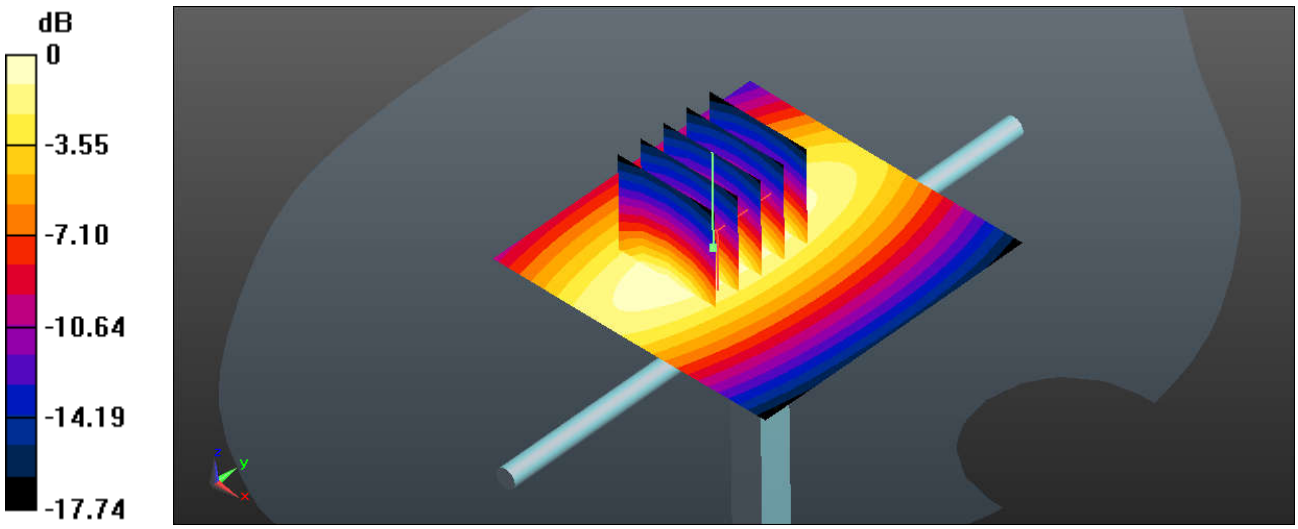
DUT: D750V3-SN:1099

Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium: HSL_750_200903 Medium parameters used: f = 750 MHz; σ = 0.88 S/m; ε_r = 40.936; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.4 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3241; ConvF(6.45, 6.45, 6.45); Calibrated: 2020.05.14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2019.11.19
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- 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) = 2.57 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 51.68 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 3.29 W/kg
SAR(1 g) = 2.29 W/kg; SAR(10 g) = 1.53 W/kg
Maximum value of SAR (measured) = 2.66 W/kg



0 dB = 2.57 W/kg

System Check_Head_750MHz

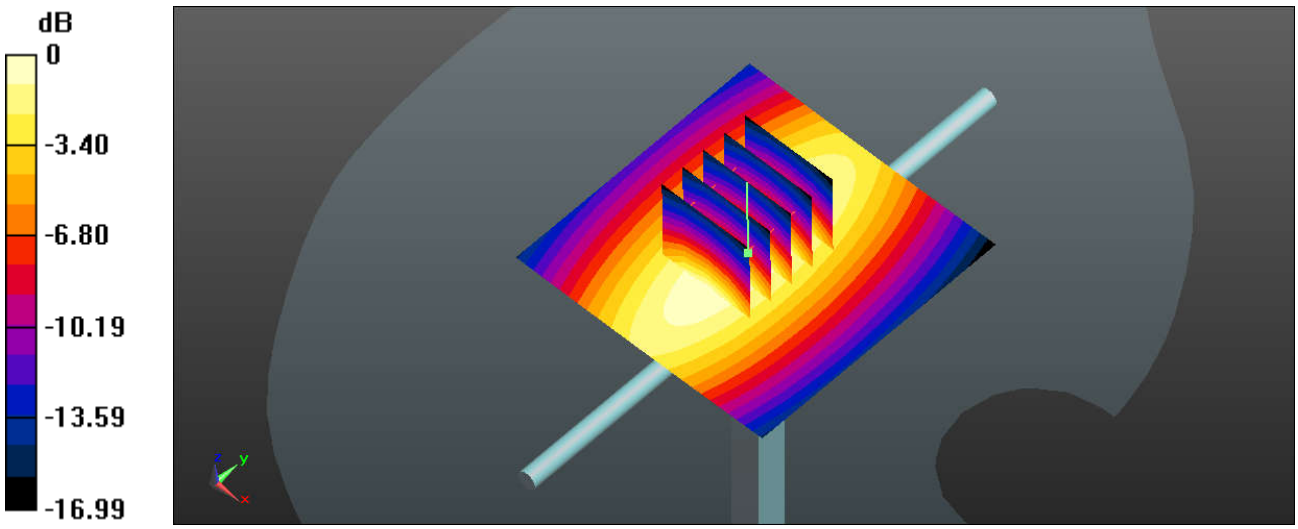
DUT: D750V3-SN:1099

Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium: HSL_750_200906 Medium parameters used: f = 750 MHz; σ = 0.893 S/m; ε_r = 41.008; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.2 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3241; ConvF(6.45, 6.45, 6.45); Calibrated: 2020.05.14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2019.11.19
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- 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) = 2.31 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 52.53 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 2.82 W/kg
SAR(1 g) = 2.03 W/kg; SAR(10 g) = 1.41 W/kg
Maximum value of SAR (measured) = 2.29 W/kg



0 dB = 2.31 W/kg

System Check_Head_835MHz

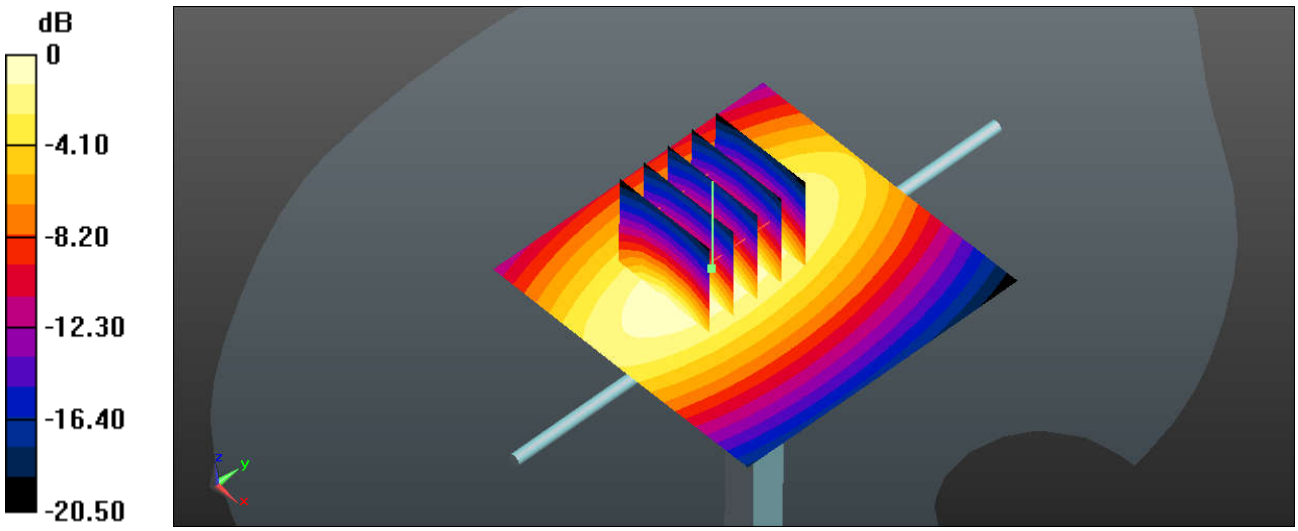
DUT: D835V2-SN:4d162

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835_200904 Medium parameters used: f = 835 MHz; σ = 0.897 S/m; ε_r = 40.781; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.3 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3241; ConvF(6.26, 6.26, 6.26); Calibrated: 2020.05.14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2019.11.19
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- 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) = 3.07 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 54.18 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 3.91 W/kg
SAR(1 g) = 2.58 W/kg; SAR(10 g) = 1.74 W/kg
Maximum value of SAR (measured) = 3.12 W/kg



0 dB = 3.12 W/kg

System Check_Head_835MHz

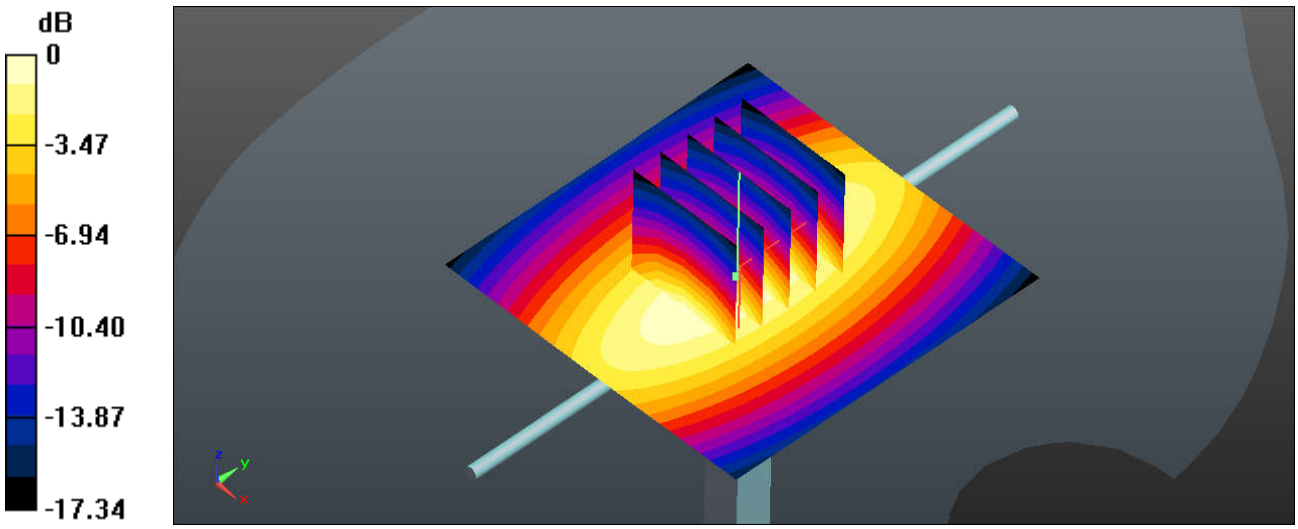
DUT: D835V2-SN:4d162

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835_200907 Medium parameters used: f = 835 MHz; σ = 0.938 S/m; ε_r = 42.518; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.3 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3241; ConvF(6.26, 6.26, 6.26); Calibrated: 2020.05.14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2019.11.19
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- 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) = 2.89 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 57.34 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.61 W/kg
SAR(1 g) = 2.47 W/kg; SAR(10 g) = 1.61 W/kg
Maximum value of SAR (measured) = 2.87 W/kg



0 dB = 2.89 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.09.06

System Check_Head_1750MHz

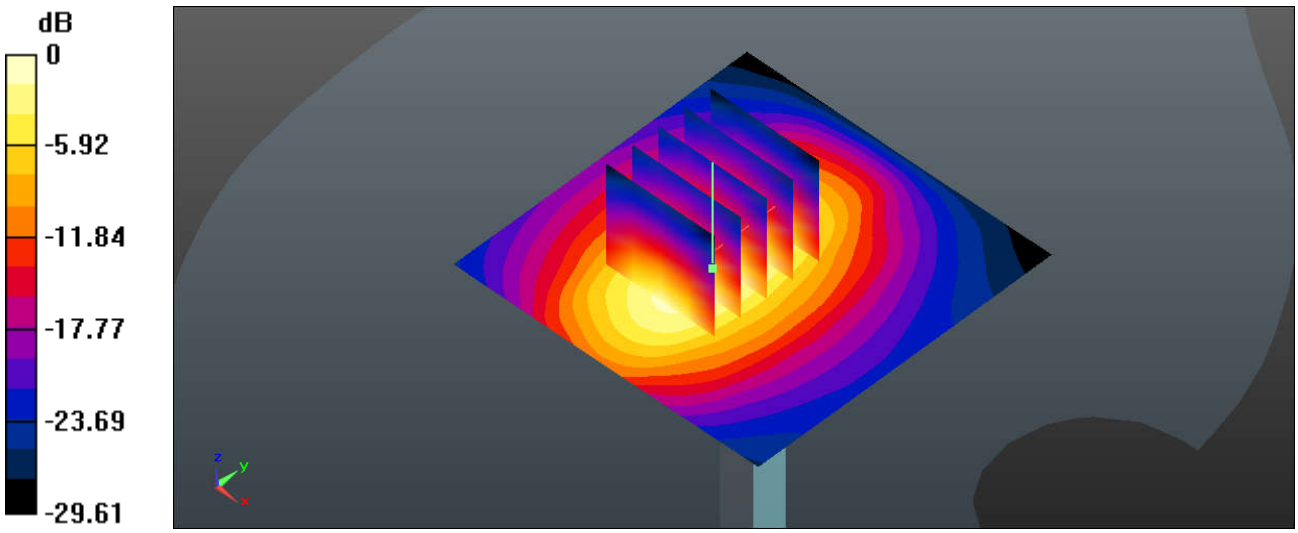
DUT: D1750V2-SN:1137

Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1750_200906 Medium parameters used: f = 1750 MHz; σ = 1.355 S/m; ε_r = 38.395; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3241; ConvF(5.22, 5.22, 5.22); Calibrated: 2020.05.14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2019.11.19
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- 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) = 13.4 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 88.38 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 18.6 W/kg
SAR(1 g) = 9.98 W/kg; SAR(10 g) = 5.34 W/kg
Maximum value of SAR (measured) = 13.0 W/kg



0 dB = 13.4 W/kg

System Check_Head_1750MHz

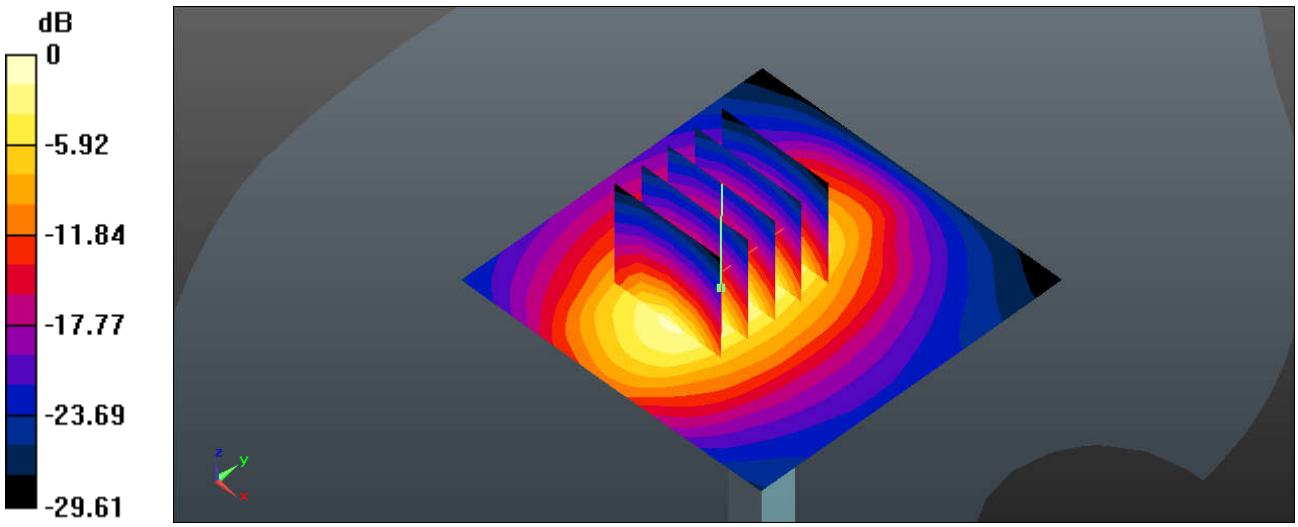
DUT: D1750V2-SN:1137

Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1750_200909 Medium parameters used: f = 1750 MHz; σ = 1.395 S/m; ε_r = 40.742; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：22.4 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3241; ConvF(5.22, 5.22, 5.22); Calibrated: 2020.05.14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2019.11.19
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- 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) = 13.8 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 88.38 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 19.1 W/kg
SAR(1 g) = 9.42 W/kg; SAR(10 g) = 5.26 W/kg
Maximum value of SAR (measured) = 13.4 W/kg



0 dB = 13.8 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.10.15

System Check_Head_1750MHz

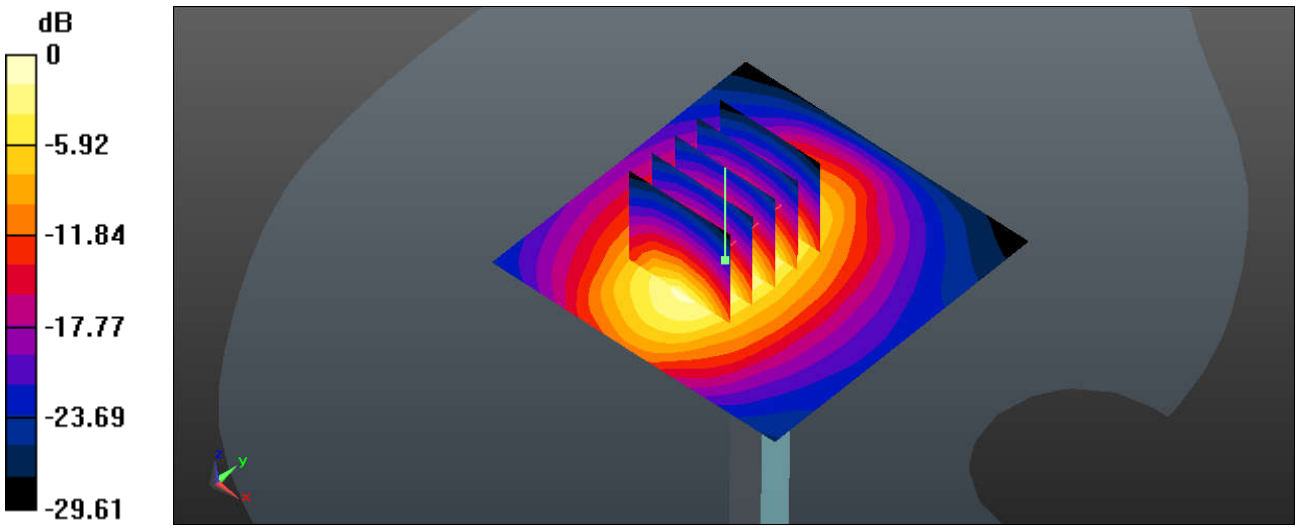
DUT: D1750V2-SN:1137

Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1750_201015 Medium parameters used: f = 1750 MHz; σ = 1.388 S/m; ε_r = 41.364; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3241; ConvF(5.22, 5.22, 5.22); Calibrated: 2020.05.14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2019.11.19
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- 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) = 13.7 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 88.38 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 19.0 W/kg
SAR(1 g) = 9.56 W/kg; SAR(10 g) = 5.19 W/kg
Maximum value of SAR (measured) = 13.3 W/kg



0 dB = 13.7 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.09.05

System Check_Head_1900MHz

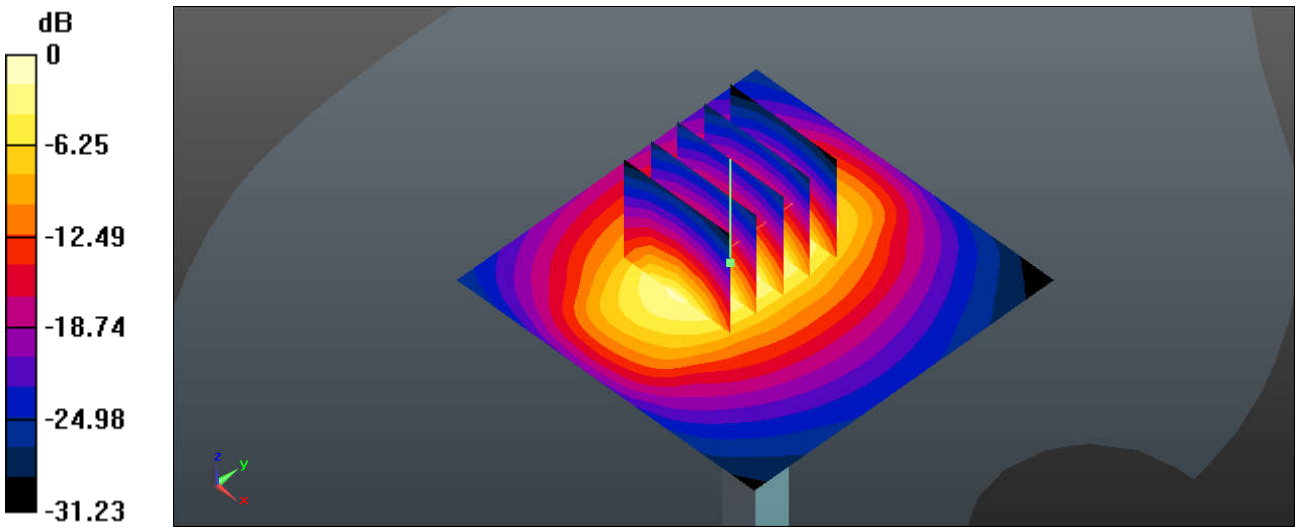
DUT: D1900V2-SN:5d182

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_200905 Medium parameters used: f = 1900 MHz; σ = 1.46 S/m; ε_r = 40.899; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3241; ConvF(5.04, 5.04, 5.04); Calibrated: 2020.05.14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2019.11.19
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- 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) = 14.4 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 82.20 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 21.2 W/kg
SAR(1 g) = 10.2 W/kg; SAR(10 g) = 5.62 W/kg
Maximum value of SAR (measured) = 14.4 W/kg



0 dB = 14.4 W/kg

System Check_Head_1900MHz

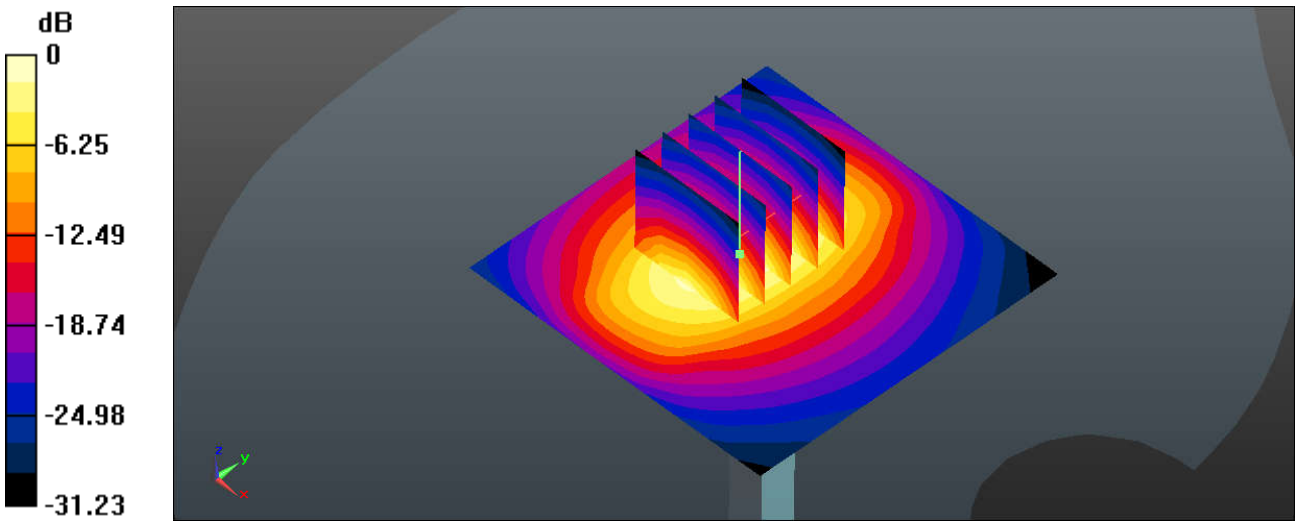
DUT: D1900V2-SN:5d182

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_200910 Medium parameters used: f = 1900 MHz; σ = 1.458 S/m; ε_r = 40.906; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3241; ConvF(5.04, 5.04, 5.04); Calibrated: 2020.05.14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2019.11.19
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- 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) = 14.4 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 82.20 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 21.1 W/kg
SAR(1 g) = 10.8 W/kg; SAR(10 g) = 5.54 W/kg
Maximum value of SAR (measured) = 14.4 W/kg



0 dB = 14.4 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.09.29

System Check_Head_1900MHz

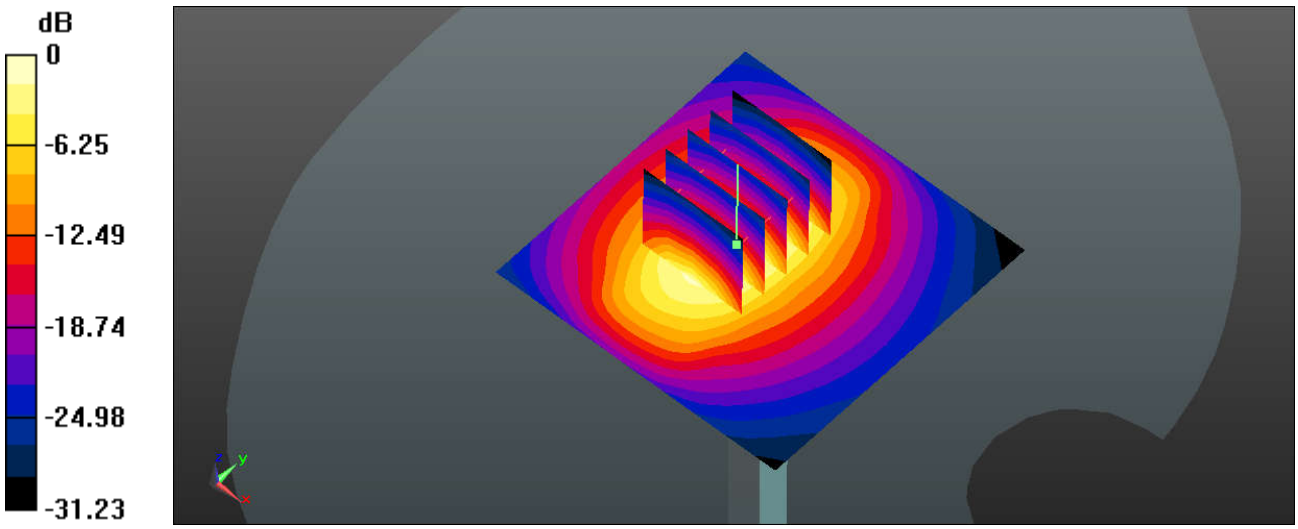
DUT: D1900V2-SN:5d182

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_200929 Medium parameters used: f = 1900 MHz; σ = 1.448 S/m; ε_r = 39.15; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3241; ConvF(5.04, 5.04, 5.04); Calibrated: 2020.05.14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2019.11.19
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- 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) = 14.3 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 82.20 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 21.0 W/kg
SAR(1 g) = 10.5 W/kg; SAR(10 g) = 5.37 W/kg
Maximum value of SAR (measured) = 14.3 W/kg



0 dB = 14.3 W/kg

System Check_Head_1900MHz

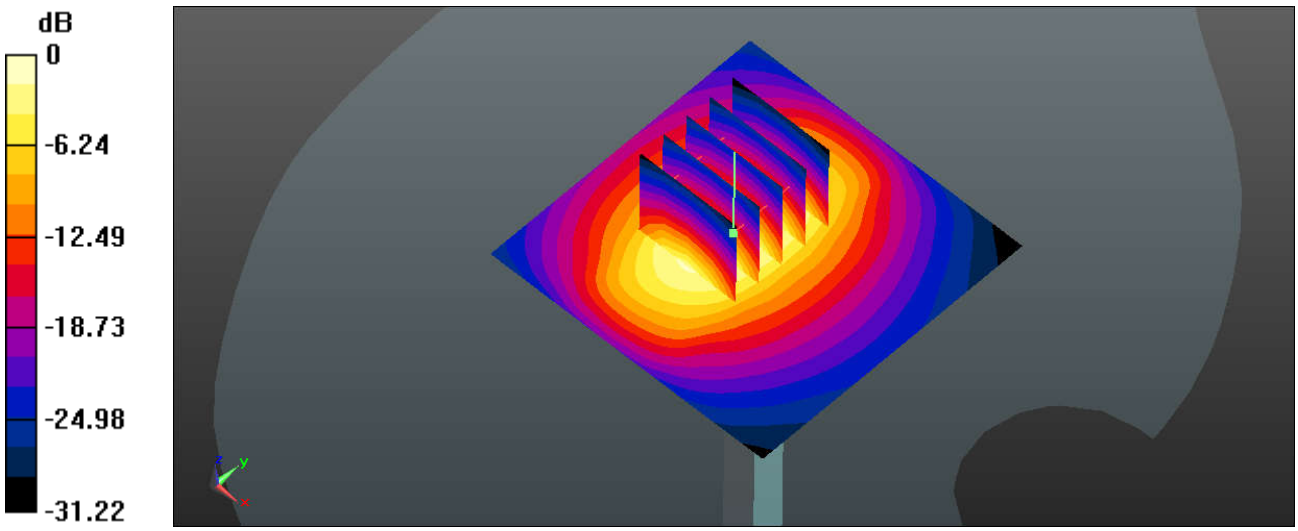
DUT: D1900V2-SN:5d182

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_201015 Medium parameters used: f = 1900 MHz; σ = 1.453 S/m; ε_r = 39.107; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3241; ConvF(5.04, 5.04, 5.04); Calibrated: 2020.05.14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2019.11.19
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- 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) = 14.3 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 82.20 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 21.1 W/kg
SAR(1 g) = 10.6 W/kg; SAR(10 g) = 5.47 W/kg
Maximum value of SAR (measured) = 14.4 W/kg



0 dB = 14.3 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.9.14

System Check_Head_2450MHz

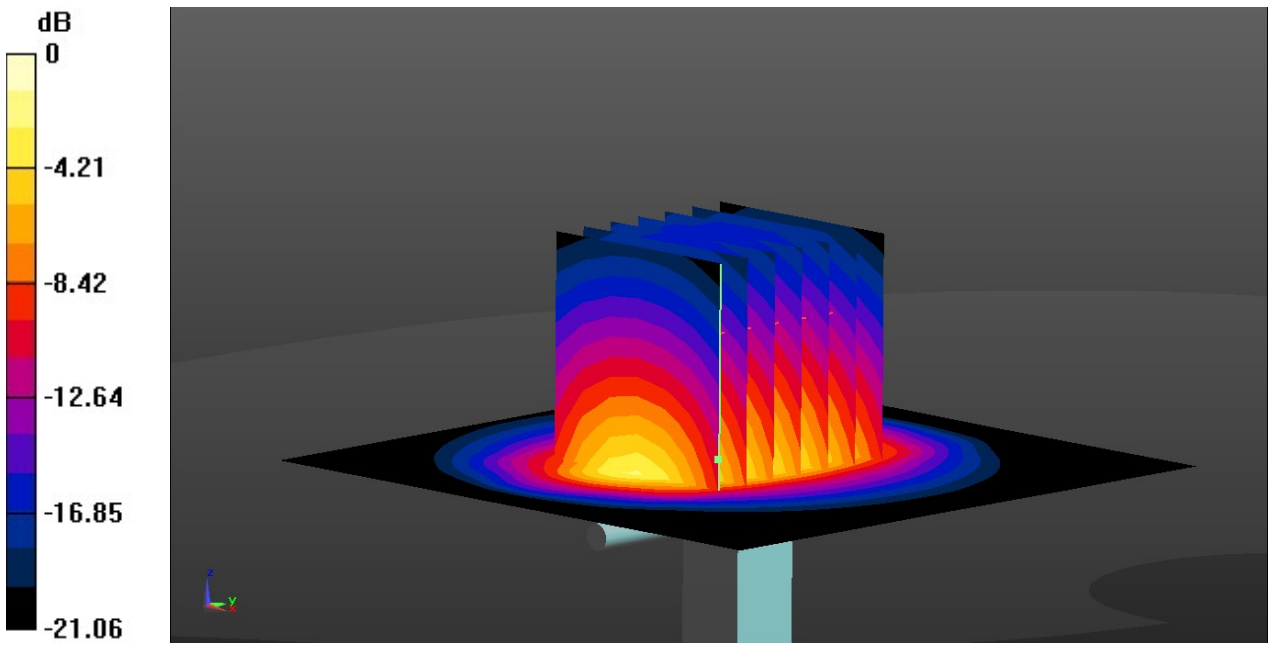
DUT: D2450V2 - SN:908

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450 Medium parameters used: f = 2450 MHz; σ = 1.854 S/m; ε_r = 38.442; ρ = 1000 kg/m^3
Ambient Temperature：23.2 °C; Liquid Temperature：22.7 °C

DASY5 Configuration:
- Probe: EX3DV4 - SN3976; ConvF(7.74, 7.74, 7.74); Calibrated: 2020.1.27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2019.11.20
- Phantom: SAM1; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

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 = 85.02 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 26.2 W/kg
SAR(1 g) = 13.1 W/kg; SAR(10 g) = 6.17 W/kg
Maximum value of SAR (measured) = 19.8 W/kg



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

System Check_Head_2600MHz

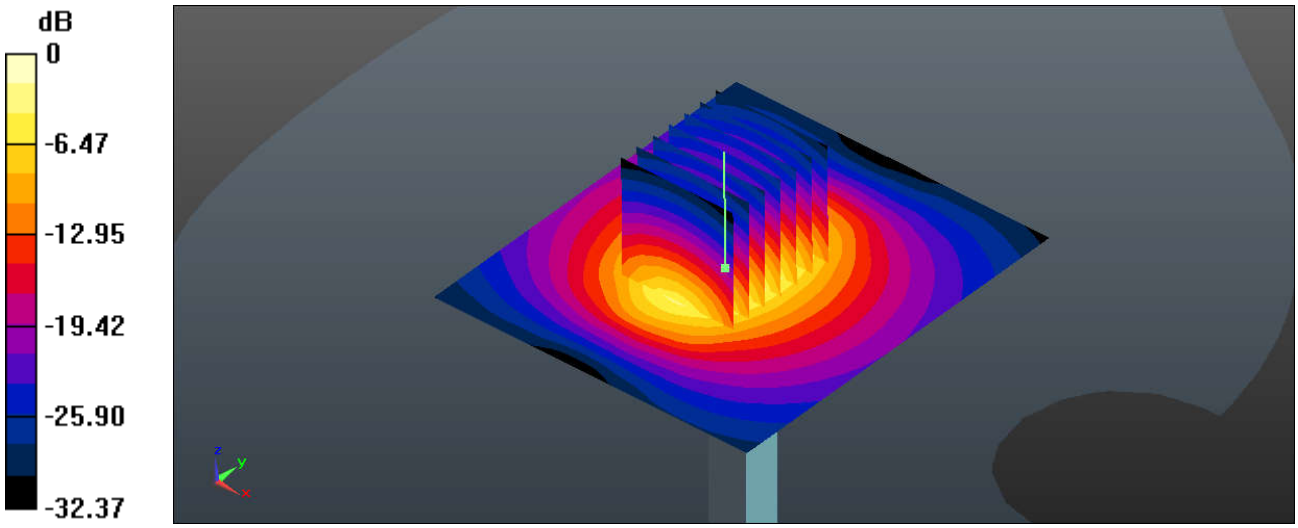
DUT: D2600V2-SN:1070

Communication System: UID 0, CW (0); Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: HSL_2600_200908 Medium parameters used: f = 2600 MHz; σ = 1.995 S/m; ε_r = 40.438; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3241; ConvF(4.42, 4.42, 4.42); Calibrated: 2020.05.14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2019.11.19
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (71x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 15.8 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.27 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 19.4 W/kg
SAR(1 g) = 13.1 W/kg; SAR(10 g) = 6.52 W/kg
Maximum value of SAR (measured) = 15.4 W/kg



0 dB = 15.8 W/kg

System Check_Head_2600MHz

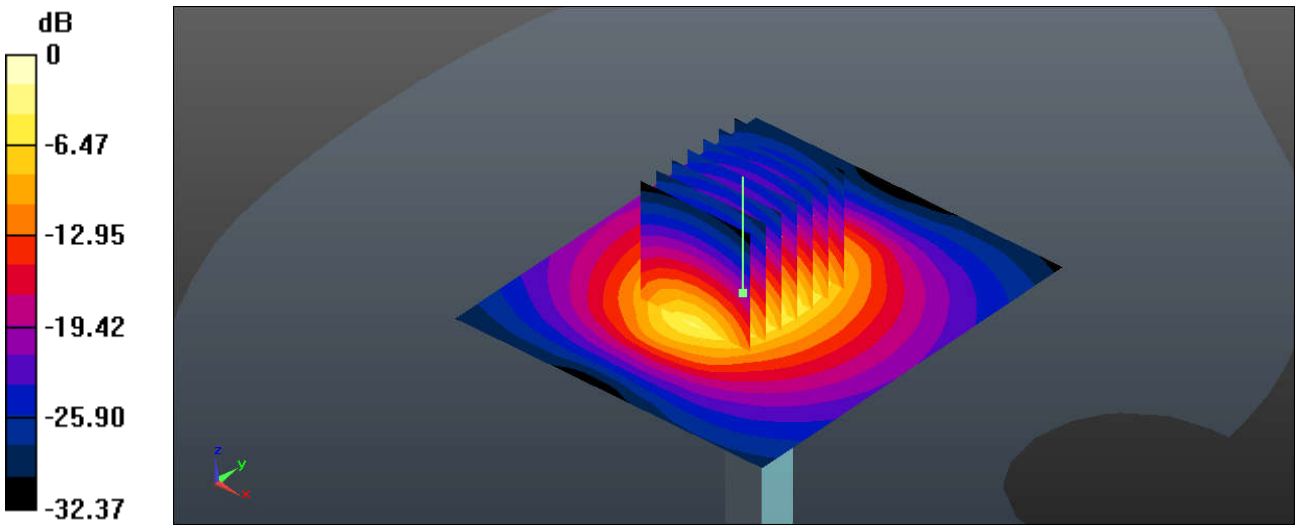
DUT: D2600V2-SN:1070

Communication System: UID 0, CW (0); Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: HSL_2600_200912 Medium parameters used: f = 2600 MHz; σ = 2.009 S/m; ε_r = 39.626; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3241; ConvF(4.42, 4.42, 4.42); Calibrated: 2020.05.14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2019.11.19
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (71x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 15.9 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.27 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 19.6 W/kg
SAR(1 g) = 13.5 W/kg; SAR(10 g) = 6.63 W/kg
Maximum value of SAR (measured) = 15.6 W/kg



0 dB = 15.9 W/kg

System Check_Head_2600MHz

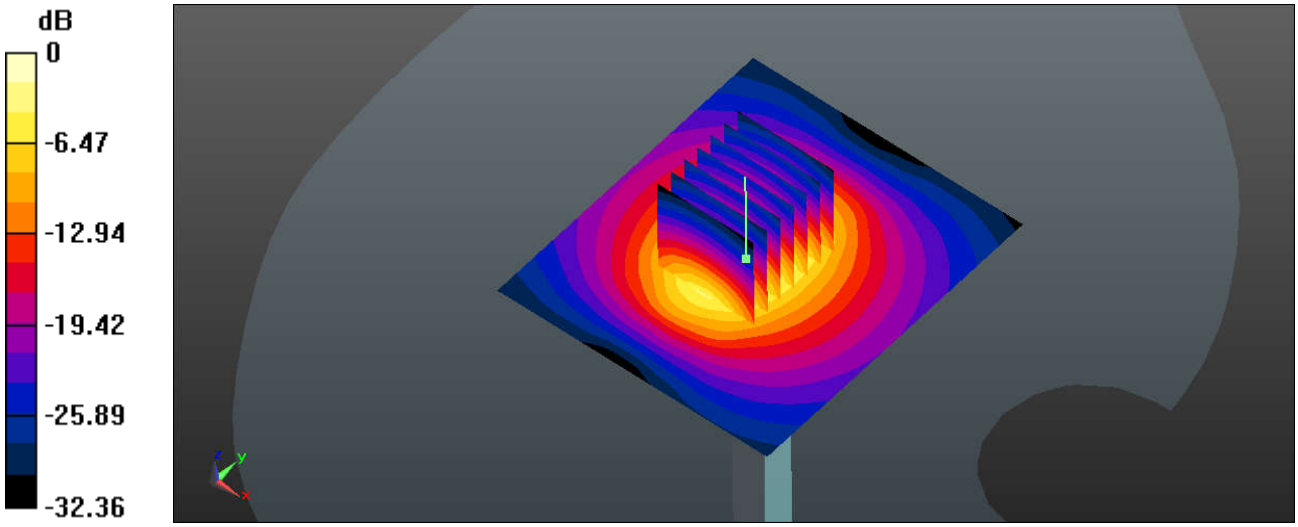
DUT: D2600V2-SN:1070

Communication System: UID 0, CW (0); Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: HSL_2600_200929 Medium parameters used: f = 2600 MHz; σ = 2.053 S/m; ε_r = 38.007; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：22.4 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3241; ConvF(4.42, 4.42, 4.42); Calibrated: 2020.05.14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2019.11.19
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (71x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 16.2 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.27 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 20.0 W/kg
SAR(1 g) = 13.3 W/kg; SAR(10 g) = 6.58 W/kg
Maximum value of SAR (measured) = 15.9 W/kg



0 dB = 16.2 W/kg

System Check_Head_2600MHz

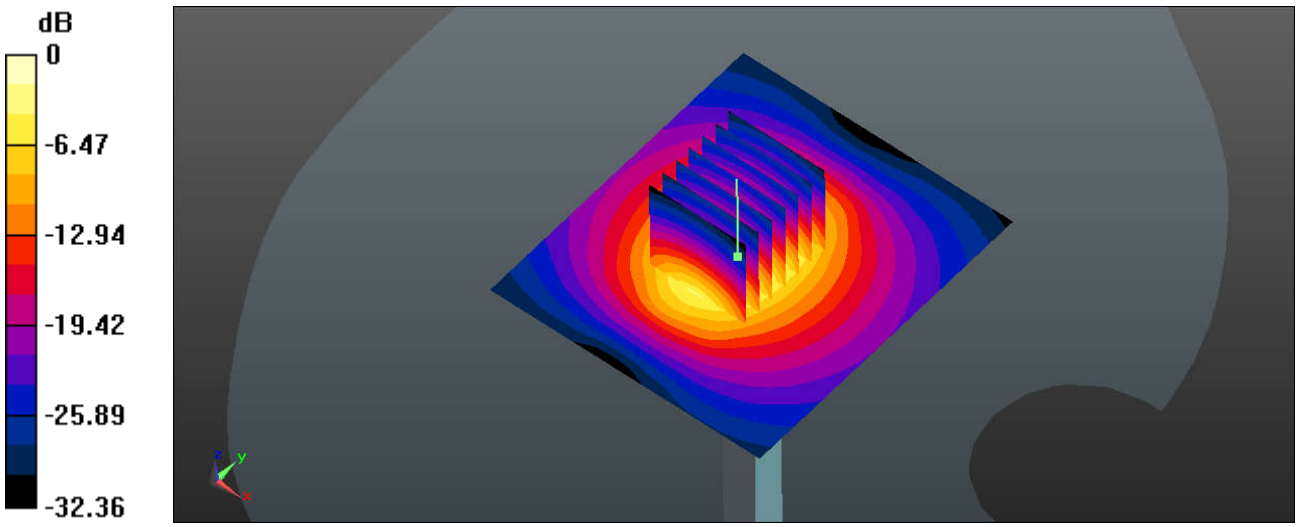
DUT: D2600V2-SN:1070

Communication System: UID 0, CW (0); Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: HSL_2600_201015 Medium parameters used: f = 2600 MHz; σ = 2.05 S/m; ε_r = 38.344; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3241; ConvF(4.42, 4.42, 4.42); Calibrated: 2020.05.14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1437; Calibrated: 2019.11.19
- Phantom: SAM with CRP v4.0(Front); Type: QD000P40CC; Serial: TP:1575
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (71x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 16.2 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.27 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 20.0 W/kg
SAR(1 g) = 14.1 W/kg; SAR(10 g) = 6.73 W/kg
Maximum value of SAR (measured) = 15.9 W/kg



0 dB = 16.2 W/kg

System Check_Head_3500MHz

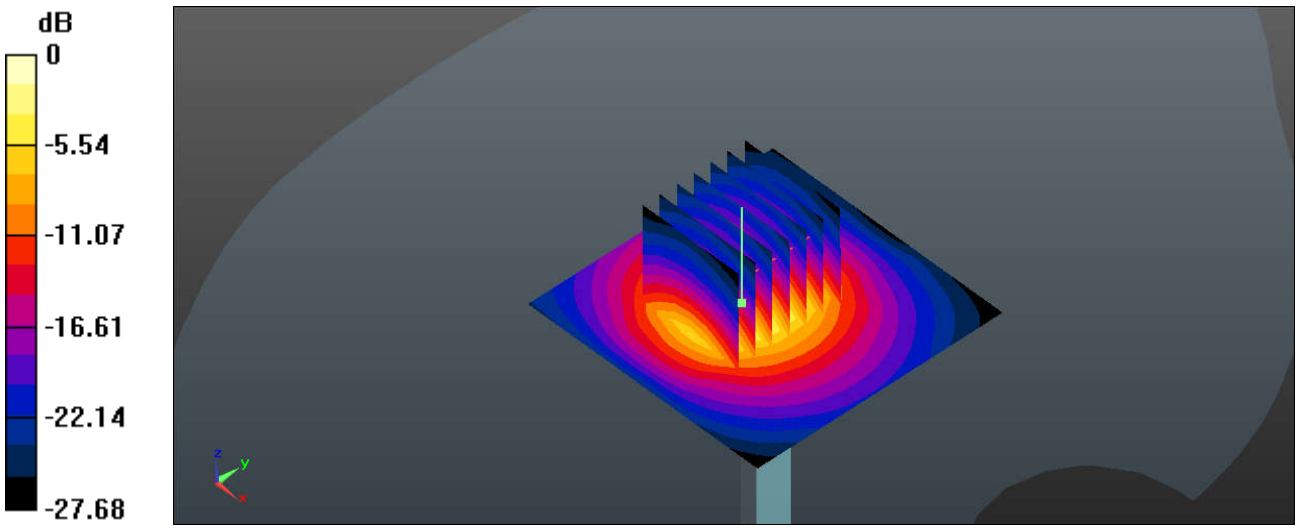
DUT: D3500V2-SN:1076

Communication System: UID 0, CW (0); Frequency: 3500 MHz;Duty Cycle: 1:1
Medium: HSL_3500_200907 Medium parameters used: f = 3500 MHz; σ = 2.934 S/m; ε_r = 39.288; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(6.84, 6.84, 6.84); Calibrated: 2020.04.30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 2020.05.15
- Phantom: SAM (30deg probe tilt) with CRP v4.0; Type: QD000P40CC; Serial: TP:1500
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (61x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 13.1 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=1.4mm
Reference Value = 53.91 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 19.2 W/kg
SAR(1 g) = 6.76 W/kg; SAR(10 g) = 2.53 W/kg
Maximum value of SAR (measured) = 13.6 W/kg



0 dB = 13.1 W/kg

System Check_Head_3500MHz

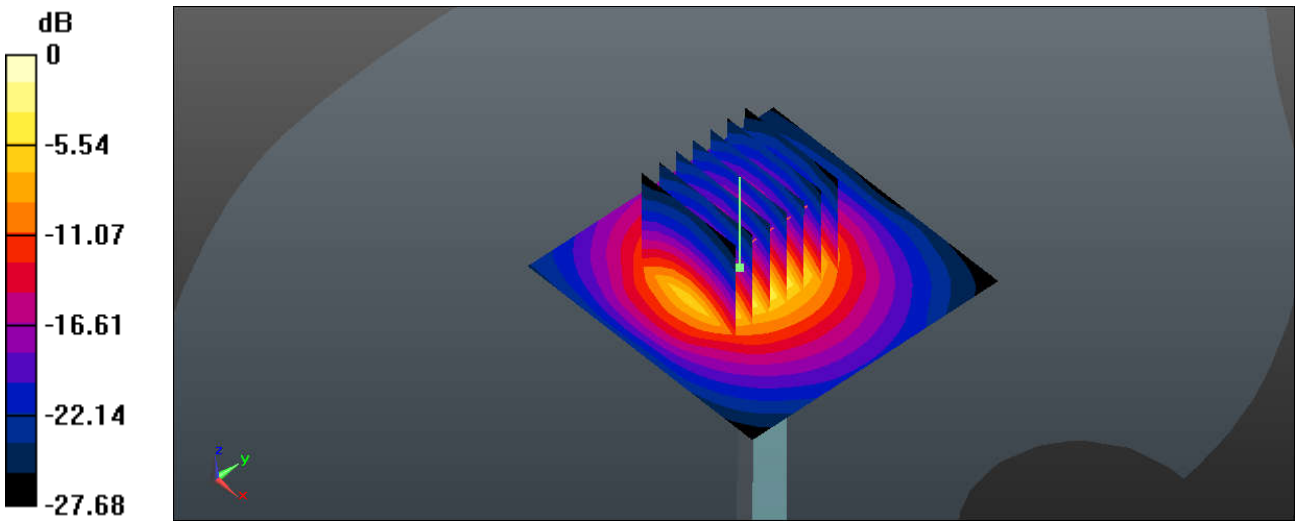
DUT: D3500V2-SN:1076

Communication System: UID 0, CW (0); Frequency: 3500 MHz;Duty Cycle: 1:1
Medium: HSL_3500_200911 Medium parameters used: f = 3500 MHz; σ = 2.935 S/m; ε_r = 39.3; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：22.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(6.84, 6.84, 6.84); Calibrated: 2020.04.30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 2020.05.15
- Phantom: SAM (30deg probe tilt) with CRP v4.0; Type: QD000P40CC; Serial: TP:1500
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (61x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 13.1 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=1.4mm
Reference Value = 53.91 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 19.2 W/kg
SAR(1 g) = 6.74 W/kg; SAR(10 g) = 2.52 W/kg
Maximum value of SAR (measured) = 13.6 W/kg



0 dB = 13.1 W/kg

System Check_Head_3500MHz

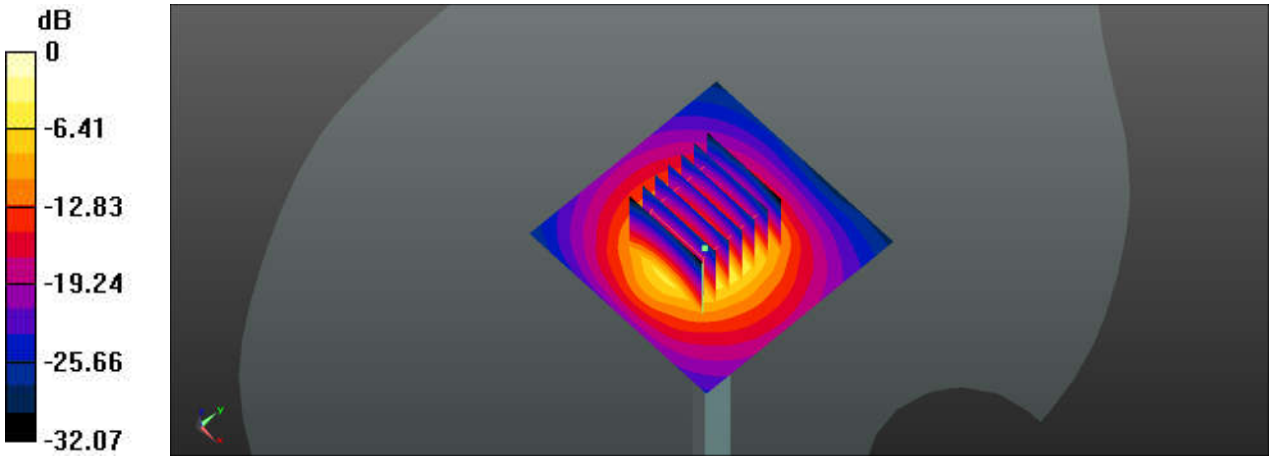
DUT: D3500V2-SN:1076

Communication System: UID 0, CW (0); Frequency: 3500 MHz;Duty Cycle: 1:1
Medium: HSL_3500_201014 Medium parameters used: f = 3500 MHz; σ = 2.866 S/m; ε_r = 37.003; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(6.84, 6.84, 6.84); Calibrated: 2020.04.30
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 2020.05.15
- Phantom: SAM (30deg probe tilt) with CRP v4.0; Type: QD000P40CC; Serial: TP:1500
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Pin=100mW/Area Scan (61x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 13.1 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=1.4mm
Reference Value = 57.85 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 18.0 W/kg
SAR(1 g) = 6.43 W/kg; SAR(10 g) = 2.42 W/kg
Maximum value of SAR (measured) = 12.9 W/kg



0 dB = 12.9 W/kg

System Check_Head_3700MHz

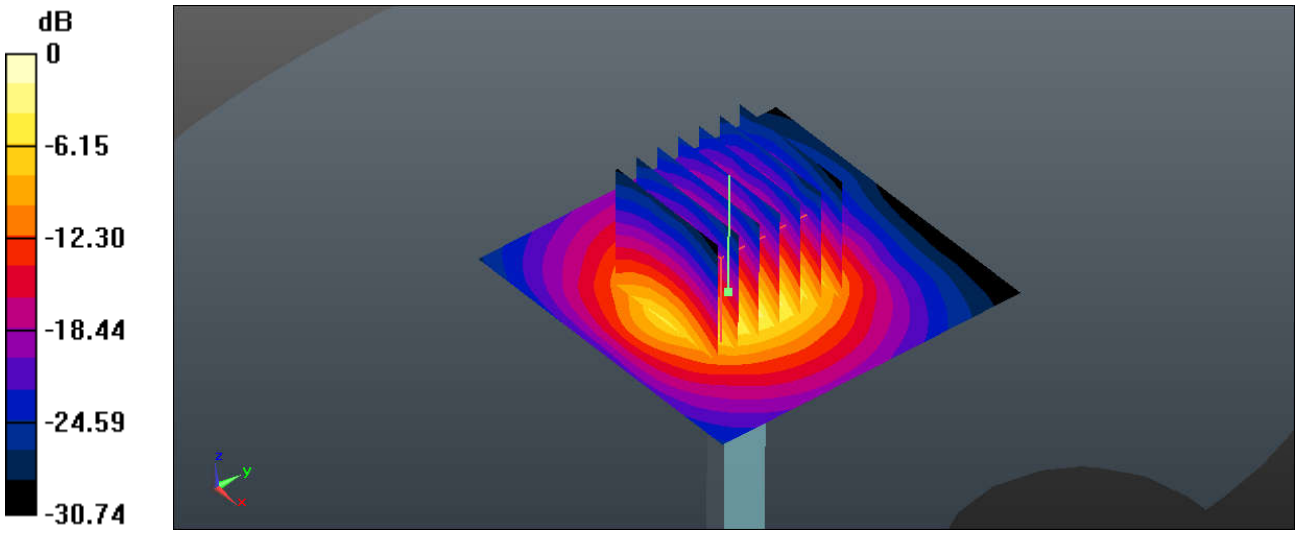
DUT: D3700V2-SN:1037

Communication System: UID 0, CW (0); Frequency: 3700 MHz;Duty Cycle: 1:1
Medium: HSL_3700_200909 Medium parameters used: f = 3700 MHz; σ = 3.039 S/m; ε_r = 36.561; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(6.75, 6.75, 6.75); Calibrated: 2020.04.30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 2020.05.15
- Phantom: SAM (30deg probe tilt) with CRP v4.0; Type: QD000P40CC; Serial: TP:1500
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (61x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 14.7 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=1.4mm
Reference Value = 59.83 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 20.4 W/kg
SAR(1 g) = 6.89 W/kg; SAR(10 g) = 2.52 W/kg
Maximum value of SAR (measured) = 14.1 W/kg



0 dB = 14.7 W/kg

System Check_Head_3700MHz

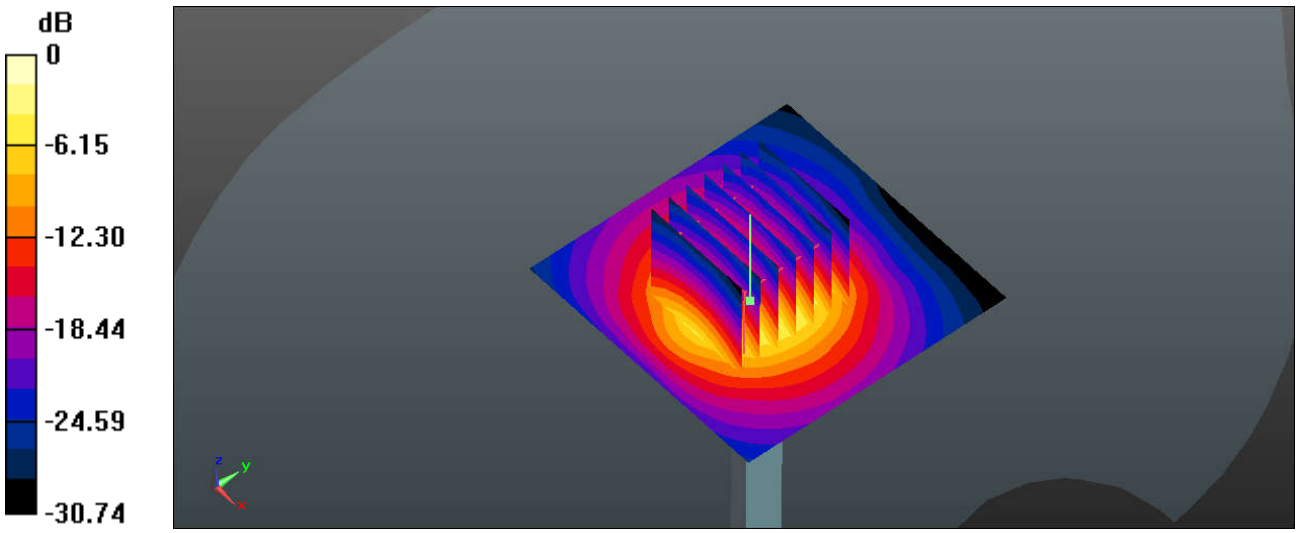
DUT: D3700V2-SN:1037

Communication System: UID 0, CW (0); Frequency: 3700 MHz;Duty Cycle: 1:1
Medium: HSL_3700_200913 Medium parameters used: f = 3700 MHz; σ = 3.054 S/m; ε_r = 38.374; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(6.75, 6.75, 6.75); Calibrated: 2020.04.30;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 2020.05.15
- Phantom: SAM (30deg probe tilt) with CRP v4.0; Type: QD000P40CC; Serial: TP:1500
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (61x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 14.8 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=1.4mm
Reference Value = 59.83 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 20.5 W/kg
SAR(1 g) = 6.92 W/kg; SAR(10 g) = 2.53 W/kg
Maximum value of SAR (measured) = 14.2 W/kg



0 dB = 14.8 W/kg

System Check_Head_3700MHz

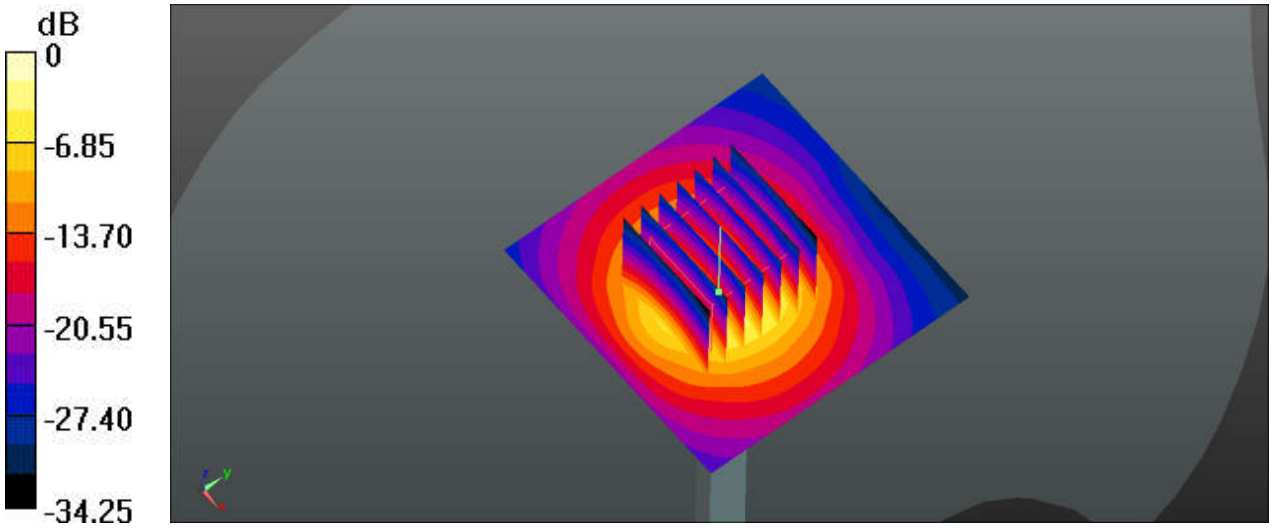
DUT: D3700V2-SN:1037

Communication System: UID 0, CW (0); Frequency: 3700 MHz;Duty Cycle: 1:1
Medium: HSL_3700_200929 Medium parameters used: f = 3700 MHz; σ = 3.007 S/m; ε_r = 38.198; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7576; ConvF(6.74, 6.74, 6.74); Calibrated: 2020.01.22;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn528; Calibrated: 2020.03.16
- Phantom: SAM (Front) with CRP v5.0; Type: QD000P40CD; Serial: TP:1795
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=100mW/Area Scan (61x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 14.5 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=1.4mm
Reference Value = 59.85 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 20.1 W/kg
SAR(1 g) = 6.81 W/kg; SAR(10 g) = 2.48 W/kg
Maximum value of SAR (measured) = 14.0 W/kg



0 dB = 14.0 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.10.15

System Check_Head_3700MHz

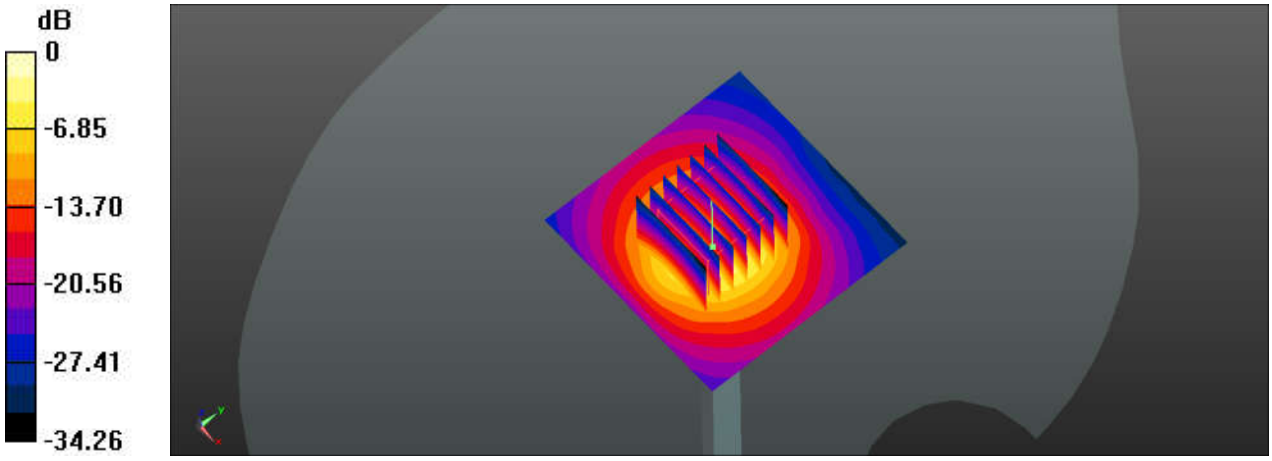
DUT: D3700V2-SN:1037

Communication System: UID 0, CW (0); Frequency: 3700 MHz;Duty Cycle: 1:1
Medium: HSL_3700_201015 Medium parameters used: f = 3700 MHz; σ = 3.01 S/m; ε_r = 36.788; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(6.75, 6.75, 6.75); Calibrated: 2020.04.30
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 2020.05.15
- Phantom: SAM (30deg probe tilt) with CRP v4.0; Type: QD000P40CC; Serial: TP:1500
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.13 (7474)

Pin=100mW/Area Scan (61x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 14.5 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=1.4mm
Reference Value = 59.79 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 20.1 W/kg
SAR(1 g) = 6.79 W/kg; SAR(10 g) = 2.47 W/kg
Maximum value of SAR (measured) = 14.0 W/kg



0 dB = 14.0 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.9.5

System Check_Head_5250MHz

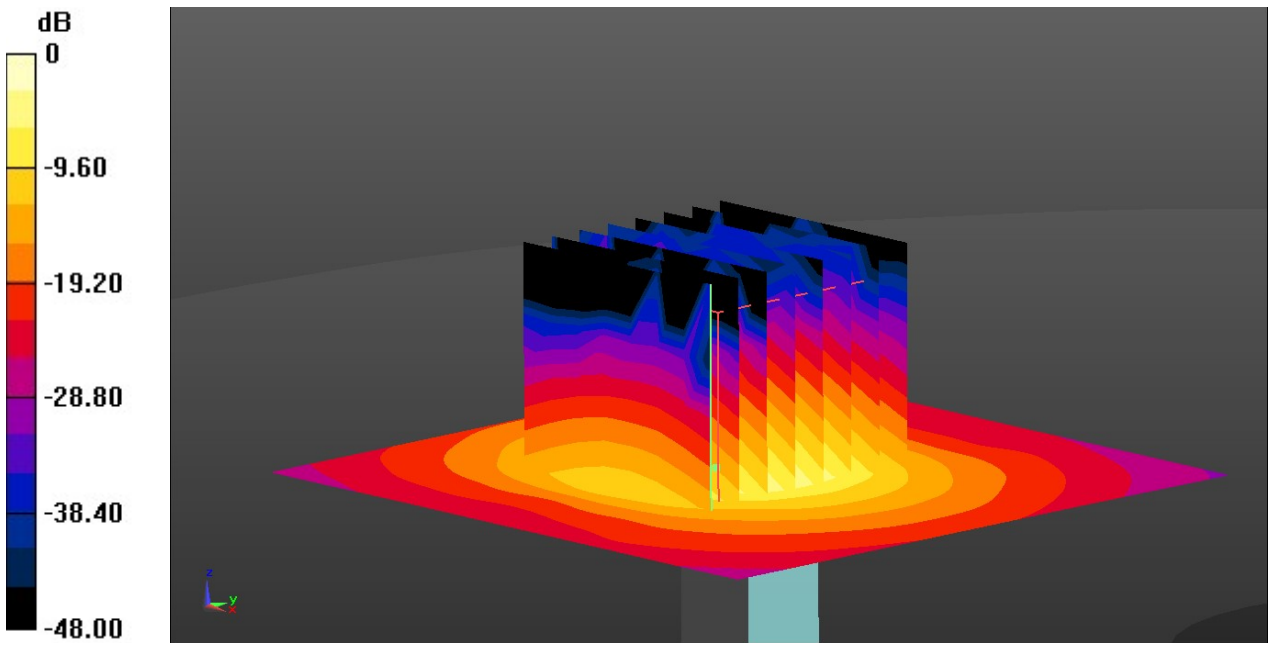
DUT: D5GHzV2 - SN:1113

Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5250 MHz; σ = 4.6 S/m; ε_r = 36.382; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3976; ConvF(5.37, 5.37, 5.37); Calibrated: 2020.1.27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2019.11.20
- Phantom: SAM1; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 18.7 W/kg

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 40.92 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 32.4 W/kg
SAR(1 g) = 7.6 W/kg; SAR(10 g) = 2.14 W/kg
Maximum value of SAR (measured) = 18.7 W/kg



0 dB = 18.7 W/kg = 12.72 dBW/kg