

TEST REPORT

Applicant Name : Invengo Information Technology Co., Ltd.
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 Report Number : SZNS1220914-41680E-SA
 FCC ID: TQ4-XC2908

Test Standard (s)
 FCC Part 2.1093

Sample Description

Product Type: Portable reader
 Model No.: XC2908
 Multiple Models: See page 6
 Trade Mark: N/A
 Serial Number: SZNS1220914-41680E-SA-S1
 Date Received: 2022/11/15
 Date of Test: 2023/02/21~2023/02/27
 Report Date: 2023/03/01

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

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Approved By:

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Attestation of Test Results			
MODE		Max. SAR Level(s) Reported(W/kg)	Limit (W/kg)
GSM 850	1g Head SAR	0.08	1.6
	1g Body SAR	0.13	
PCS 1900	1g Head SAR	0.06	
	1g Body SAR	0.20	
WCDMA Band 2	1g Head SAR	0.16	
	1g Body SAR	0.32	
WCDMA Band 5	1g Head SAR	0.07	
	1g Body SAR	0.07	
LTE Band 2	1g Head SAR	0.11	
	1g Body SAR	0.21	
LTE Band 4	1g Head SAR	0.08	
	1g Body SAR	0.18	
LTE Band 5	1g Head SAR	0.05	
	1g Body SAR	0.04	
LTE Band 7	1g Head SAR	0.09	
	1g Body SAR	0.36	
LTE Band 12&17	1g Head SAR	0.02	
	1g Body SAR	0.03	
LTE Band 38	1g Head SAR	0.02	
	1g Body SAR	0.12	
LTE Band 40A	1g Head SAR	0.01	
	1g Body SAR	0.08	
LTE Band 40B	1g Head SAR	0.02	
	1g Body SAR	0.16	
LTE Band 41	1g Head SAR	0.02	
	1g Body SAR	0.09	
2.4G Wi-Fi	1g Head SAR	0.11	
	1g Body SAR	0.08	
U-NII-1& U-NII-2A	1g Head SAR	0.05	
	1g Body SAR	0.07	
U-NII-3	1g Head SAR	0.20	
	1g Body SAR	0.25	
Bluetooth	1g Head SAR	0.01	
	1g Body SAR	0.01	
Simultaneous	1g Head SAR	0.36	
	1g Body SAR	0.61	
	1g Body SAR	0.61(Hotspot)	
RFID	10g Extremity SAR	2.08	4.0
Simultaneous	10g Extremity SAR	2.42	
Applicable Standards	FCC 47 CFR part 2.1093 Radiofrequency radiation exposure evaluation: portable devices		
	RF Exposure Procedures: TCB Workshop April 2015(Overlapping LTE Bands); TCB Workshop October 2020(Handheld RFID/Barcode Scanner)		

	<p>IEEE1528:2013 IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques</p>
	<p>IEC 62209-1:2016 Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Part 1: Devices used next to the ear (Frequency range of 300 MHz to 6 GHz)</p>
	<p>KDB procedures KDB 447498 D01 General RF Exposure Guidance v06 KDB 648474 D04 Handset SAR v01r03 KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04 KDB 865664 D02 RF Exposure Reporting v01r02 KDB 941225 D01 3G SAR Procedures v03r01 KDB 941225 D05 SAR for LTE Devices v02r05 KDB 941225 D06 Hotspot Mode v02r01 KDB 248227 D01 802.11 Wi-Fi SAR v02r02</p>
<p>Note: This wireless device has been shown to be capable of compliance for localized specific absorption rate (SAR) for General Population/Uncontrolled Exposure limits specified in FCC 47 CFR part 2.1093 and has been tested in accordance with the measurement procedures specified in IEEE 1528-2013 and RF exposure KDB procedures.</p> <p>The results and statements contained in this report pertain only to the device(s) evaluated.</p>	

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	SZNS1220914-41680E-SA	Original Report	2023/03/01

EUT DESCRIPTION

This report has been prepared on behalf of **Invengo Information Technology Co., Ltd.** and their product **Portable reader**, Model: **XC2908**, FCC ID: **TQ4-XC2908** or the EUT (Equipment under Test) as referred to in the rest of this report.

Technical Specification

Multiple Models:	XC2908-A, XC2908-B, XC2908-C, XC2908-D, XC2908-E, XC2908-F, XC2908-G, XC2908-H, XC2908-I, XC2908-J, XC2908-K, XC2908-L, XC2908-M, XC2908-N, XC2908-BM, XC-BM500, XC-RH500, AT908, XC2002, XC2005, XC9915
Device Type:	Portable
Dimension	Handset: 168×81×26 mm RFID: 100×100×18 mm
Exposure Category:	Population / Uncontrolled
Antenna Type(s):	Internal Antenna
DTM Type:	Class B
Multi-slot Class:	GPRS(Class 12); EDGE(Class 12)
Body-Worn Accessories:	Headset
Face-Head Accessories:	None
Operation Mode:	GSM Voice, GPRS/EDGE Data, WCDMA(R99 (Voice+Data), HSDPA/HSUPA/ HSPA+), FDD-LTE, TDD-LTE, Wi-Fi, Bluetooth, RFID and NFC
Frequency Band:	GSM 850: 824-849MHz(TX); 869-894MHz(RX) PCS 1900: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) LTE Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX) LTE Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 7: 2500-2570MHz(TX); 2620-2690MHz(RX) LTE Band 12: 699-716MHz(TX); 729-746MHz(RX) LTE Band 17: 704-716MHz(TX); 734-746MHz(RX) LTE Band 38: 2570-2620MHz(TX/RX) LTE Band 40 A: 2305-2315MHz(TX/RX) LTE Band 40 B: 2350-2360MHz(TX/RX) LTE Band 41: 2575-2635MHz(TX/RX) Wi-Fi 2.4G: 2412 -2462 MHz(TX&RX) U-NII-1: 5150 -5250 MHz(TX&RX) U-NII-2A: 5250 -5350 MHz(TX&RX) U-NII-3: 5725 -5850 MHz(TX&RX) Bluetooth: 2402 -2480 MHz(TX&RX) BLE: 2402 -2480 MHz(TX&RX) RFID: 902.75-927.25MHz NFC: 13.56 MHz
Power Source:	Rechargeable Battery
Normal Operation:	Head and Body-worn

REFERENCE, STANDARDS, AND GUIDELINES

FCC:

The Report and Order requires routine SAR evaluation prior to equipment authorization of portable transmitter devices, including portable telephones. For consumer products, the applicable limit is 1.6 mW/g as recommended by the ANSI/IEEE standard C95.1-1992 [6] for an uncontrolled environment (Paragraph 65). According to the Supplement C of OET Bulletin 65 "Evaluating Compliance with FCC Guide-lines for Human Exposure to Radio frequency Electromagnetic Fields", released on Jun 29, 2001 by the FCC, the device should be evaluated at maximum output power (radiated from the antenna) under "worst-case" conditions for normal or intended use, incorporating normal antenna operating positions, device peak performance frequencies and positions for maximum RF energy coupling.

This report describes the methodology and results of experiments performed on wireless data terminal. The objective was to determine if there is RF radiation and if radiation is found, what is the extent of radiation with respect to safety limits. SAR (Specific Absorption Rate) is the measure of RF exposure determined by the amount of RF energy absorbed by human body (or its parts) – to determine how the RF energy couples to the body or head which is a primary health concern for body worn devices. The limit below which the exposure to RF is considered safe by regulatory bodies in North America is 1.6 mW/g average over 1 gram of tissue mass.

SAR Limits

FCC Limit (1g Tissue)

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average (averaged over the whole body)	0.08	0.4
Spatial Peak (averaged over any 1 g of tissue)	1.6	8.0
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4.0	20.0

Population/Uncontrolled Environments are defined as locations where there is the exposure of individual who have no knowledge or control of their exposure.

Occupational/Controlled Environments are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure (i.e. as a result of employment or occupation).

General Population/Uncontrolled environments Spatial Peak limit 1.6W/kg (Head&Body) (averaged over any 1 g of tissue) & 4.0 W/kg (extremity) (hands/wrists/feet/ankles averaged over 10 g) applied to the EUT.

FACILITIES

The test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 708358, the FCC Designation No.: CN1189. Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 4297.01 .

Listed by Innovation, Science and Economic Development Canada (ISED), the Registration Number is 5077A.

The test site has been registered with ISED Canada under ISED Canada Registration Number CN0016.

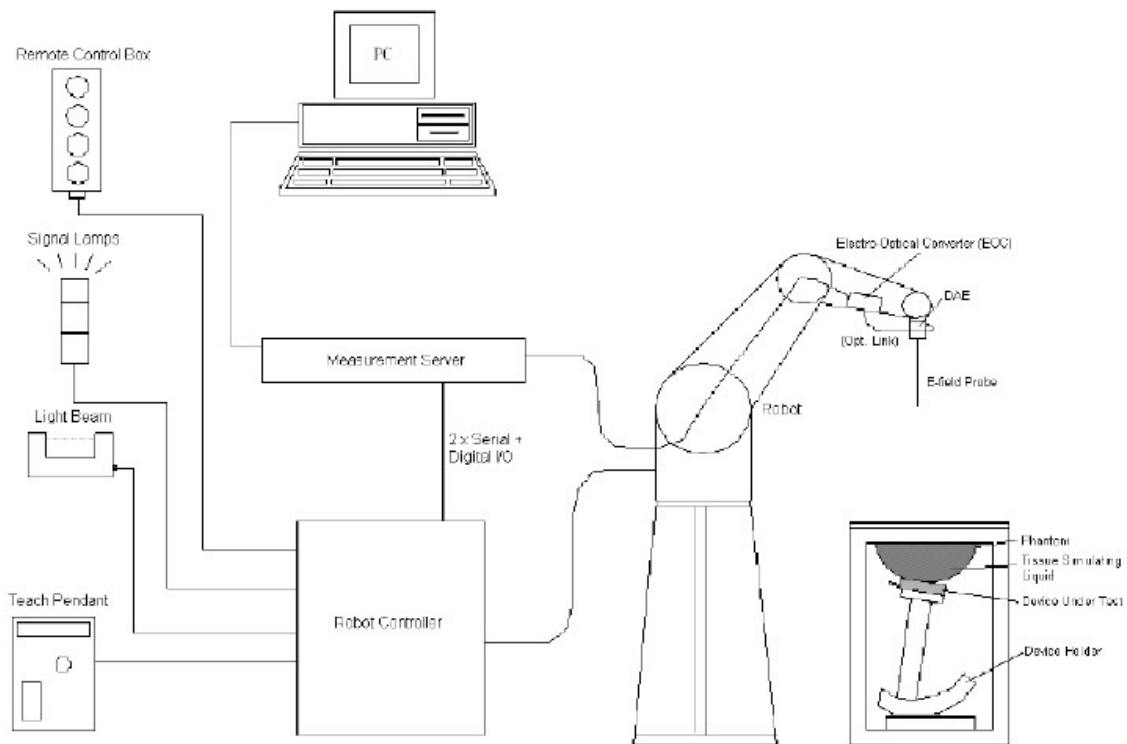
DESCRIPTION OF TEST SYSTEM

These measurements were performed with the automated near-field scanning system DASY5 from Schmid & Partner Engineering AG (SPEAG) which is the Fifth generation of the system shown in the figure hereinafter:



DASY5 System Description

The DASY5 system for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot (Staubli TX=RX family) 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 application, 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 Win7 professional operating system and the DASY52 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.

DASY5 Measurement Server

The DASY5 measurement server is based on a PC/104 CPU board with a 400 MHz Intel ULV Celeron, 128 MB chip-disk and 128 MB RAM. The necessary circuits for communication with the DAE4 (or DAE3) electronics box, as well as the 16-bit AD converter system for optical detection and digital I/O interface are contained on the DASY6 I/O board, which is directly connected to the PC/104 bus of the CPU board.

The measurement server performs all real-time data evaluations of field measurements and surface detection, controls robot movements, and handles safety operations. The PC operating system cannot interfere with these time-critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program-controlled robot movements. Furthermore, the measurement server is equipped with an expansion port, which is reserved for future applications. Please note that this expansion port does not have a standardized pinout, and therefore only devices provided by SPEAG can be connected. Connection of devices from any other supplier could seriously damage the measurement server.

Data Acquisition Electronics

The data acquisition electronics (DAE4) consist 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 with a 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 mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

The input impedance of both the DAE4 as well as of the DAE3 box is 200M Ω ; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

EX3DV4 E-Field Probes

Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 μ W/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μ W/g)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%.
Compatibility	DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI

SAM Twin Phantom

The SAM Twin Phantom (shown in front of DASY5) is a fiberglass shell phantom with shell thickness 2 mm, except in the ear region where the thickness is increased to 6 mm..

When the phantom is mounted inside allocated slot of the DASY5 platform, phantom reference points can be taught directly in the DASY5 V5.2 software. When the DASY5 platform is used to mount the

Phantom, some of the phantom teaching points cannot be reached by the robot in DASY5 V5.2. A special tool called P1a-P2aX-Former is provided to transform two of the three points, P1 and P2, to reachable locations. To use these new teaching points, a revised phantom configuration file is required.

In addition to our standard broadband liquids, the phantom can be used with the following tissue simulating liquids:

Sugar-water-based liquids can be left permanently in the phantom. Always cover the liquid when the system is not in use to prevent changes in liquid parameters due to water evaporation.

DGBE-based liquids should be used with care. As DGBE is a softener for most plastics, the liquid should be taken out of the phantom, and the phantom should be dried when the system is not in use (desirable at least once a week).

Do not use other organic solvents without previously testing the solvent resistivity of the phantom. Approximately 25 liters of liquid is required to fill the SAM Twin phantom.

Calibration Frequency Points for EX3DV4 E-Field Probes SN: 7441 Calibrated: 2022/05/16

Calibration Frequency Point(MHz)	Frequency Range(MHz)		Conversion Factor		
	From	To	X	Y	Z
750 Head	650	850	10.04	10.04	10.04
900 Head	850	1000	9.61	9.61	9.61
1450 Head	1350	1550	8.52	8.52	8.52
1750 Head	1650	1850	8.32	8.32	8.32
1900 Head	1850	1950	7.94	7.94	7.94
2000 Head	1950	2100	7.99	7.99	7.99
2300 Head	2200	2400	7.78	7.78	7.78
2450 Head	2400	2550	7.54	7.54	7.54
2600 Head	2550	2700	7.30	7.30	7.30
3300 Head	3200	3400	7.09	7.09	7.09
3500 Head	3400	3600	6.89	6.89	6.89
3700 Head	3600	3800	6.55	6.55	6.55
3900 Head	3800	4000	6.60	6.60	6.60
4400 Head	4300	4500	6.34	6.34	6.34
4600 Head	4500	4700	6.26	6.26	6.26
4800 Head	4700	4900	6.16	6.16	6.16
4950 Head	4900	5050	5.85	5.85	5.85
5250 Head	5140	5360	5.35	5.35	5.35
5600 Head	5490	5700	4.85	4.85	4.85
5750 Head	5700	5860	4.83	4.83	4.83

Area Scans

Area scans are defined prior to the measurement process being executed with a user defined variable spacing between each measurement point (integral) allowing low uncertainty measurements to be conducted. Scans defined for FCC applications utilize a 15mm 2 step integral, with 1.5mm interpolation used to locate the peak SAR area used for zoom scan assessments.

Where the system identifies multiple SAR peaks (which are within 25% of peak value) the system will provide the user with the option of assessing each peak location individually for zoom scan averaging.

Zoom Scan (Cube Scan Averaging)

The averaging zoom scan volume utilized in the DASY5 software is in the shape of a cube and the side dimension of a 1 g or 10 g mass is dependent on the density of the liquid representing the simulated tissue. A density of 1000 kg/m³ is used to represent the head and body tissue density and not the phantom liquid density, in order to be consistent with the definition of the liquid dielectric properties, i.e. the side length of the 1g cube is 10mm, with the side length of the 10g cube is 21.5mm.

When the cube intersects with the surface of the phantom, it is oriented so that 3 vertices touch the surface of the shell or the center of a face is tangent to the surface. The face of the cube closest to the surface is modified in order to conform to the tangent surface.

The zoom scan integer steps can be user defined so as to reduce uncertainty, but normal practice for typical test applications (including FCC) utilize a physical step of 7 x7 x 7 (5mmx5mmx5mm) providing a volume of 30 mm in the X & Y & Z axis.

Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEC 62209-1:2016

Recommended Tissue Dielectric Parameters for Head

Table A.3 – Dielectric properties of the head tissue-equivalent liquid

Frequency MHz	Relative permittivity ϵ_r	Conductivity (σ) S/m
300	45,3	0,87
450	43,5	0,87
<i>750</i>	<i>41,9</i>	<i>0,89</i>
835	41,5	0,90
900	41,5	0,97
1 450	40,5	1,20
<i>1 500</i>	<i>40,4</i>	<i>1,23</i>
<i>1 640</i>	<i>40,2</i>	<i>1,31</i>
<i>1 750</i>	<i>40,1</i>	<i>1,37</i>
1 800	40,0	1,40
1 900	40,0	1,40
2 000	40,0	1,40
<i>2 100</i>	<i>39,8</i>	<i>1,49</i>
<i>2 300</i>	<i>39,5</i>	<i>1,67</i>
<i>2 450</i>	<i>39,2</i>	<i>1,80</i>
<i>2 600</i>	<i>39,0</i>	<i>1,96</i>
3 000	38,5	2,40
<i>3 500</i>	<i>37,9</i>	<i>2,91</i>
<i>4 000</i>	<i>37,4</i>	<i>3,43</i>
<i>4 500</i>	<i>36,8</i>	<i>3,94</i>
<i>5 000</i>	<i>36,2</i>	<i>4,45</i>
<i>5 200</i>	<i>36,0</i>	<i>4,66</i>
<i>5 400</i>	<i>35,8</i>	<i>4,86</i>
<i>5 600</i>	<i>35,5</i>	<i>5,07</i>
<i>5 800</i>	<i>35,3</i>	<i>5,27</i>
<i>6 000</i>	<i>35,1</i>	<i>5,48</i>

NOTE For convenience, permittivity and conductivity values at those frequencies which are not part of the original data provided by Drossos et al. [33] or the extension to 5 800 MHz are provided (i.e. the values shown *in italics*). These values were linearly interpolated between the values in this table that are immediately above and below these values, except the values at 6 000 MHz that were linearly extrapolated from the values at 3 000 MHz and 5 800 MHz.

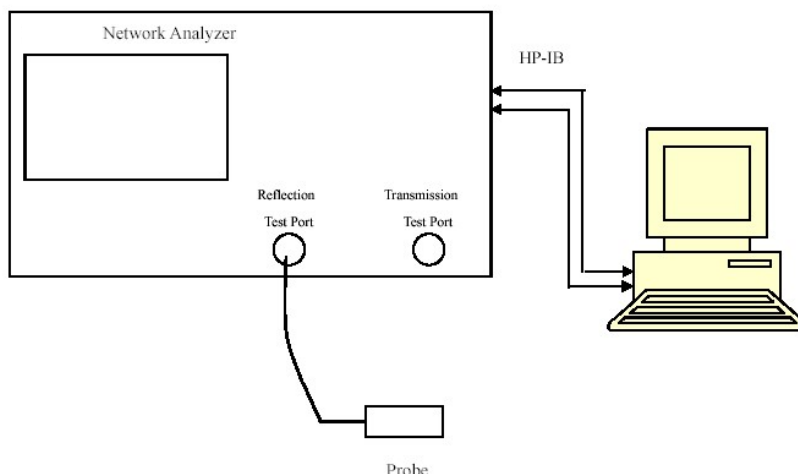
EQUIPMENT LIST AND CALIBRATION

Equipments List & Calibration Information

Equipment	Model	S/N	Calibration Date	Calibration Due Date
DASY5 Test Software	DASY52 52.10.4	N/A	NCR	NCR
DASY5 Measurement Server	DASY5 6.0.31	N/A	NCR	NCR
Data Acquisition Electronics	DAE4	1211	2022/03/01	2023/02/28
E-Field Probe	EX3DV4	7441	2022/05/16	2023/05/15
Mounting Device	MD4HHTV5	SD 000 H01 KA	NCR	NCR
SAM Twin Phantom	SAM-Twin V5.0	1744	NCR	NCR
Dipole,750MHz	D750V3	1194	2023/02/17	2026/02/16
Dipole,835MHz	D835V2	4d103	2021/10/27	2024/10/26
Dipole,900MHz	D900V2	132	2020/10/15	2023/10/14
Dipole,1800MHz	D1800V2	2d018	2020/10/15	2023/10/14
Dipole,1900MHz	D1900V2	5d128	2021/10/27	2024/10/26
Dipole, 2300MHz	D2300V2	1103	2023/02/16	2026/02/15
Dipole,2450MHz	D2450V2	751	2020/10/13	2023/10/12
Dipole,2600MHz	D2600V2	1073	2023/02/17	2026/02/16
Dipole,5GHz	D5GHZV2	1301	2023/02/16	2026/02/15
Simulated Tissue Liquid Head(500-9500MHz)	HBBL600-10000V6	180622-2	Each Time	/
Network Analyzer	8753D	3410A08288	2022/07/05	2023/07/04
Dielectric Assessment Kit	DAK-3.5	1320	NCR	NCR
Signal Generator	SMB100A	108362	2022/12/13	2023/12/12
USB wideband power sensor	U2021XA	MY52350001	2022/12/13	2023/12/12
Power Amplifier	CBA 1G-070	T44328	2022/12/13	2023/12/12
Linear Power Amplifier	AS0860-40/45	1060913	2022/12/13	2023/12/12
Directional Coupler	4223-20	3.113.277	2022/12/13	2023/12/12
6dB Attenuator	8493B	2708A 04769	2022/12/13	2023/12/12
Spectrum Analyzer	FSV40	101949	2022/11/25	2023/11/24
Wideband Radio Communication Tester	CMW500	143458	2022/11/25	2023/11/24

SAR MEASUREMENT SYSTEM VERIFICATION

Liquid Verification



Liquid Verification Setup Block Diagram

Liquid Verification Results

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$ (S/m)	
704	Simulated Tissue Liquid Head	43.008	0.873	42.15	0.89	2.04	-1.91	± 5
707.5	Simulated Tissue Liquid Head	44.013	0.871	42.13	0.89	4.47	-2.13	± 5
711	Simulated Tissue Liquid Head	43.155	0.882	42.11	0.89	2.48	-0.9	± 5
750	Simulated Tissue Liquid Head	43.175	0.895	41.90	0.89	3.04	0.56	± 5

*Liquid Verification above was performed on 2023/02/27

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$ (S/m)	
824.2	Simulated Tissue Liquid Head	42.635	0.902	41.55	0.90	2.61	0.22	± 5
826.4	Simulated Tissue Liquid Head	42.547	0.908	41.54	0.90	2.42	0.89	± 5
829	Simulated Tissue Liquid Head	42.266	0.932	41.53	0.90	1.77	3.56	± 5
835	Simulated Tissue Liquid Head	42.178	0.931	41.50	0.90	1.63	3.44	± 5
836.5	Simulated Tissue Liquid Head	42.638	0.914	41.50	0.90	2.74	1.56	± 5
836.6	Simulated Tissue Liquid Head	42.638	0.914	41.50	0.90	2.74	1.56	± 5
844	Simulated Tissue Liquid Head	42.523	0.941	41.50	0.91	2.47	3.41	± 5
846.6	Simulated Tissue Liquid Head	42.523	0.941	41.50	0.91	2.47	3.41	± 5
848.8	Simulated Tissue Liquid Head	42.922	0.944	41.50	0.91	3.43	3.74	± 5
902.75	Simulated Tissue Liquid Head	43.494	0.938	41.50	0.97	4.8	-3.3	± 5
914.75	Simulated Tissue Liquid Head	43.466	0.943	41.47	0.98	4.81	-3.78	± 5
927.25	Simulated Tissue Liquid Head	43.439	0.947	41.45	0.98	4.8	-3.37	± 5

*Liquid Verification above was performed on 2023/02/21.

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$ (S/m)	
900	Simulated Tissue Liquid Head	43.531	0.925	41.50	0.97	4.89	-4.64	± 5
902.75	Simulated Tissue Liquid Head	43.494	0.938	41.50	0.97	4.8	-3.3	± 5
914.75	Simulated Tissue Liquid Head	43.466	0.943	41.47	0.98	4.81	-3.78	± 5
927.25	Simulated Tissue Liquid Head	43.439	0.947	41.45	0.98	4.8	-3.37	± 5

*Liquid Verification above was performed on 2023/02/21.

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$ (S/m)	
1720	Simulated Tissue Liquid Head	41.088	1.362	40.13	1.35	2.39	0.89	± 5
1732.5	Simulated Tissue Liquid Head	41.961	1.334	40.12	1.36	4.59	-1.91	± 5
1745	Simulated Tissue Liquid Head	39.777	1.393	40.10	1.37	-0.81	1.68	± 5
1800	Simulated Tissue Liquid Head	39.743	1.393	40.00	1.40	-0.64	-0.5	± 5

*Liquid Verification above was performed on 2023/02/22.

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$ (S/m)	
1850.2	Simulated Tissue Liquid Head	41.622	1.419	40.0	1.40	4.06	1.36	± 5
1852.4	Simulated Tissue Liquid Head	41.233	1.413	40.0	1.40	3.08	0.93	± 5
1860	Simulated Tissue Liquid Head	41.526	1.419	40.0	1.40	3.82	1.36	± 5
1880	Simulated Tissue Liquid Head	41.743	1.423	40.0	1.40	4.36	1.64	± 5
1900	Simulated Tissue Liquid Head	41.743	1.423	40.0	1.40	4.36	1.64	± 5
1907.6	Simulated Tissue Liquid Head	41.947	1.423	40.0	1.40	4.87	1.64	± 5
1909.8	Simulated Tissue Liquid Head	41.514	1.423	40.0	1.40	3.79	1.64	± 5

*Liquid Verification above was performed on 2023/02/25.

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$ (S/m)	
2300	Simulated Tissue Liquid Head	39.622	1.629	39.50	1.67	0.31	-2.46	± 5
2310	Simulated Tissue Liquid Head	40.165	1.716	39.48	1.68	1.74	2.14	± 5
2355	Simulated Tissue Liquid Head	40.104	1.749	39.39	1.72	1.81	1.69	± 5

*Liquid Verification above was performed on 2023/02/26.

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$	
2402	Simulated Tissue Liquid Head	39.926	1.795	39.30	1.76	1.59	1.99	± 5
2412	Simulated Tissue Liquid Head	40.211	1.817	39.28	1.77	2.37	2.66	± 5
2437	Simulated Tissue Liquid Head	40.981	1.817	39.23	1.79	4.46	1.51	± 5
2441	Simulated Tissue Liquid Head	40.927	1.846	39.22	1.79	4.35	3.13	± 5
2450	Simulated Tissue Liquid Head	40.418	1.857	39.20	1.80	3.11	3.17	± 5
2462	Simulated Tissue Liquid Head	40.229	1.861	39.18	1.81	2.68	2.82	± 5
2480	Simulated Tissue Liquid Head	40.306	1.877	39.16	1.83	2.93	2.57	± 5

*Liquid Verification above was performed on 2023/02/27.

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$	
2510	Simulated Tissue Liquid Head	39.477	1.871	39.12	1.86	0.91	0.59	± 5
2535	Simulated Tissue Liquid Head	39.529	1.921	39.09	1.89	1.12	1.64	± 5
2545	Simulated Tissue Liquid Head	39.586	1.939	39.07	1.90	1.32	2.05	± 5
2560	Simulated Tissue Liquid Head	39.592	1.941	39.05	1.92	1.39	1.09	± 5
2570	Simulated Tissue Liquid Head	39.541	1.876	39.04	1.93	1.28	-2.8	± 5
2585	Simulated Tissue Liquid Head	39.431	1.919	39.02	1.94	1.05	-1.08	± 5
2595	Simulated Tissue Liquid Head	40.753	1.94	39.01	1.95	4.47	-0.51	± 5
2600	Simulated Tissue Liquid Head	39.519	1.943	39.00	1.96	1.33	-0.87	± 5
2605	Simulated Tissue Liquid Head	40.737	1.948	38.99	1.97	4.48	-1.12	± 5
2610	Simulated Tissue Liquid Head	39.592	1.977	38.99	1.97	1.54	0.36	± 5
2625	Simulated Tissue Liquid Head	39.859	1.977	38.97	1.99	2.28	-0.65	± 5

*Liquid Verification above was performed on 2023/02/23.

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$	
5250	Simulated Tissue Liquid Head	36.056	4.687	35.95	4.71	0.29	-0.49	± 5
5260	Simulated Tissue Liquid Head	36.222	4.611	35.94	4.72	0.78	-2.31	± 5
5280	Simulated Tissue Liquid Head	36.188	4.629	35.92	4.74	0.75	-2.34	± 5
5320	Simulated Tissue Liquid Head	36.751	4.626	35.88	4.78	2.43	-3.22	± 5
5745	Simulated Tissue Liquid Head	36.681	5.085	35.36	5.22	3.74	-2.59	± 5
5750	Simulated Tissue Liquid Head	36.212	5.416	35.35	5.22	2.44	3.75	± 5
5785	Simulated Tissue Liquid Head	35.288	5.213	35.32	5.26	-0.09	-0.89	± 5
5825	Simulated Tissue Liquid Head	36.715	5.465	35.28	5.30	4.07	3.11	± 5

*Liquid Verification above was performed on 2023/02/22.

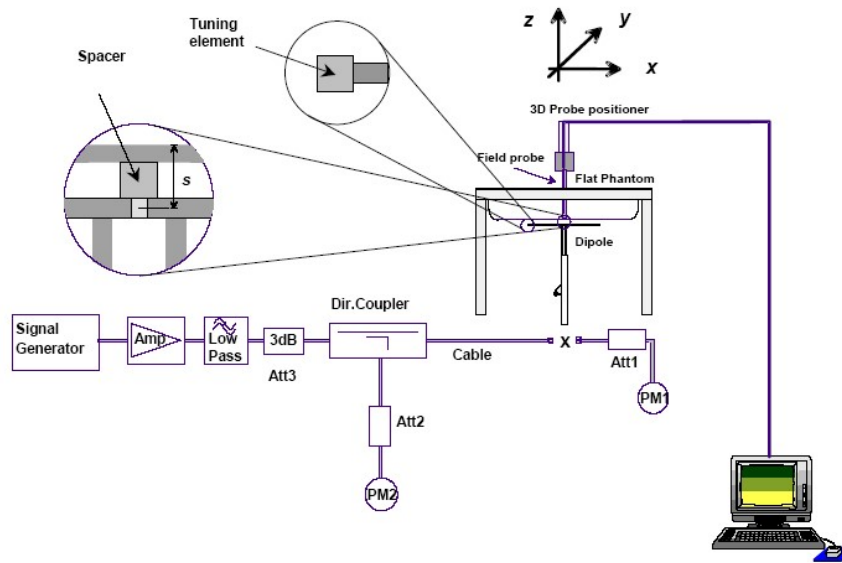
System Accuracy Verification

Prior to the assessment, the system validation kit was used to test whether the system was operating within its specifications of $\pm 10\%$. The validation results are tabulated below. And also the corresponding SAR plot is attached as well in the SAR plots files.

The spacing distances in the **System Verification Setup Block Diagram** is given by the following:

- a) $s = 15 \text{ mm} \pm 0,2 \text{ mm}$ for $300 \text{ MHz} \leq f \leq 1 \text{ 000 MHz}$;
- b) $s = 10 \text{ mm} \pm 0,2 \text{ mm}$ for $1 \text{ 000 MHz} < f \leq 3 \text{ 000 MHz}$;
- c) $s = 10 \text{ mm} \pm 0,2 \text{ mm}$ for $3 \text{ 000 MHz} < f \leq 6 \text{ 000 MHz}$.

System Verification Setup Block Diagram



System Accuracy Check Results

Date	Frequency Band(MHz)	Liquid Type	Input Power (mW)	Measured SAR (W/kg)	Normalized to 1W (W/kg)	Target Value (W/kg)	Delta (%)	Tolerance (%)	
2023/02/27	750	Head	100	1g	0.823	8.23	8.57	-3.967	± 10
				10g	0.532	5.32	5.61	-5.169	± 10
2023/02/21	835	Head	100	1g	0.931	9.31	9.65	-3.523	± 10
				10g	0.620	6.20	6.27	-1.116	± 10
2023/02/21	900	Head	100	10g	0.769	7.69	7.10	8.310	± 10
2023/02/22	1800	Head	100	1g	4.05	40.5	39.3	3.053	± 10
				10g	2.16	21.6	20.5	5.366	± 10
2023/02/25	1900	Head	100	1g	4.09	40.9	40.0	2.250	± 10
				10g	2.05	20.5	20.3	0.985	± 10
2023/02/26	2300	Head	100	1g	4.68	46.8	49.2	-4.878	± 10
				10g	2.46	24.6	23.9	2.929	± 10
2023/02/27	2450	Head	100	1g	5.15	51.5	53.0	-2.830	± 10
				10g	2.54	25.4	24.4	4.098	± 10

*The SAR values above are normalized to 1 Watt forward power.

Date	Frequency Band(MHz)	Liquid Type	Input Power (mW)	Measured SAR (W/kg)		Normalized to 1W (W/kg)	Target Value (W/kg)	Delta (%)	Tolerance (%)
				1g	10g				
2023/02/23	2600	Head	100	1g	5.62	56.2	56.8	-1.056	±10
				10g	2.54	25.4	25.5	-0.392	±10
2023/02/22	5250	Head	100	1g	7.95	79.5	77.7	2.317	±10
				10g	2.26	22.6	22.0	2.727	±10
2023/02/22	5750	Head	100	1g	7.92	79.2	78.0	1.538	±10
				10g	2.23	22.3	21.9	1.826	±10

*The SAR values above are normalized to 1 Watt forward power.

SAR SYSTEM VALIDATION DATA

System Performance 750 MHz

DUT: D750V3; Type: 750 MHz; Serial: 1194

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

Medium parameters used: $f = 750$ MHz; $\sigma = 0.895$ S/m; $\epsilon_r = 43.175$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4- SN7441; ConvF(10.04, 10.04, 10.04); Calibrated: 2022/05/16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1211; Calibrated: 2022/03/01
- Phantom: Twin SAM; Type: QD000P40CD; Serial: 1744
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

System Performance Check at 750MHz/d=15mm, Pin=100mw/Area Scan (7x9x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.845 W/kg

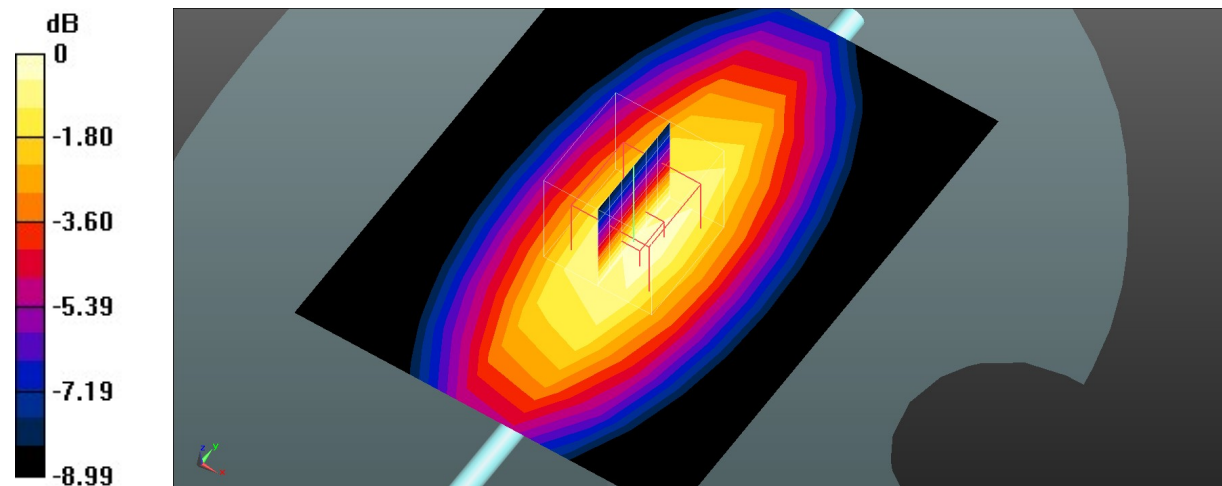
System Performance Check at 750MHz/d=15mm, Pin=100mw/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 34.69 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 1.34 W/kg

SAR(1 g) = 0.823 W/kg; SAR(10 g) = 0.532 W/kg

Maximum value of SAR (measured) = 0.841 W/kg



0 dB = 0.841 W/kg = -0.75 dBW/kg

System Performance 835 MHz**DUT: Dipole D835V2; Type: 835MHz; Serial: 4d103**

Communication System: UID 0, CW (0); Frequency: 835 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 835$ MHz; $\sigma = 0.931$ S/m; $\epsilon_r = 42.178$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4- SN7441; ConvF(10.04, 10.04, 10.04); Calibrated: 2022/05/16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1211; Calibrated: 2022/03/01
- Phantom: Twin SAM; Type: QD000P40CD; Serial: 1744
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

System Performance Check at 835MHz/d=15mm, Pin=100mw/Area Scan (7x9x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.968 W/kg

System Performance Check at 835MHz/d=15mm, Pin=100mw/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

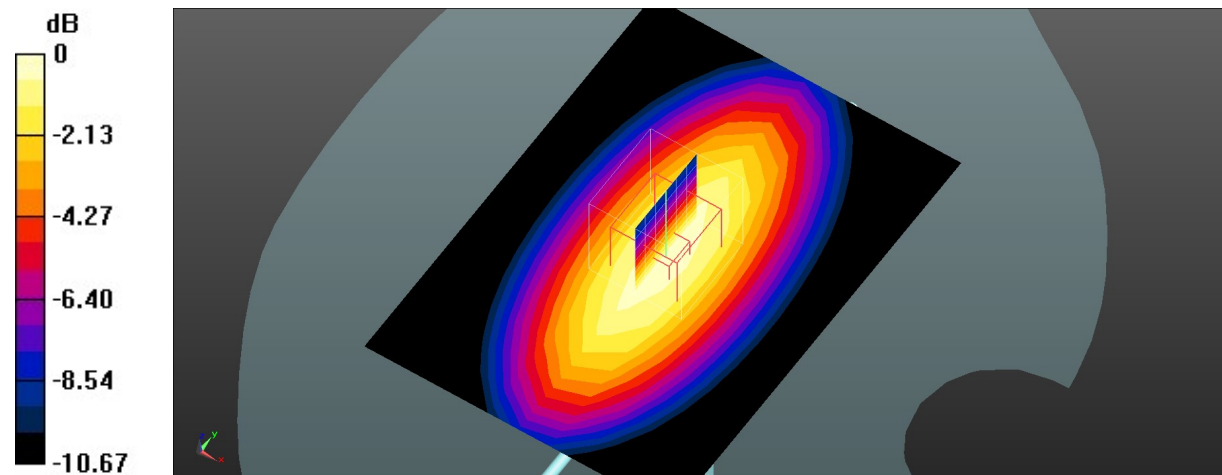
dx=5mm, dy=5mm, dz=5mm

Reference Value = 32.49 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 1.41 W/kg

SAR(1 g) = 0.931 W/kg; SAR(10 g) = 0.620 W/kg

Maximum value of SAR (measured) = 0.972 W/kg



0 dB = 0.972 W/kg = -0.12 dBW/kg

System Performance 900 MHz**DUT: Dipole D900V2; Type: 900MHz; Serial: 132**

Communication System: UID 0, CW (0); Frequency: 900 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 900$ MHz; $\sigma = 0.925$ S/m; $\epsilon_r = 43.531$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4- SN7441; ConvF(9.61, 9.61, 9.61); Calibrated: 2022/05/16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1211; Calibrated: 2022/03/01
- Phantom: Twin SAM; Type: QD000P40CD; Serial: 1744
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

System Performance Check at 900MHz/d=15mm, Pin=100mw/Area Scan (7x9x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.25 W/kg

System Performance Check at 900MHz/d=15mm, Pin=100mw/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

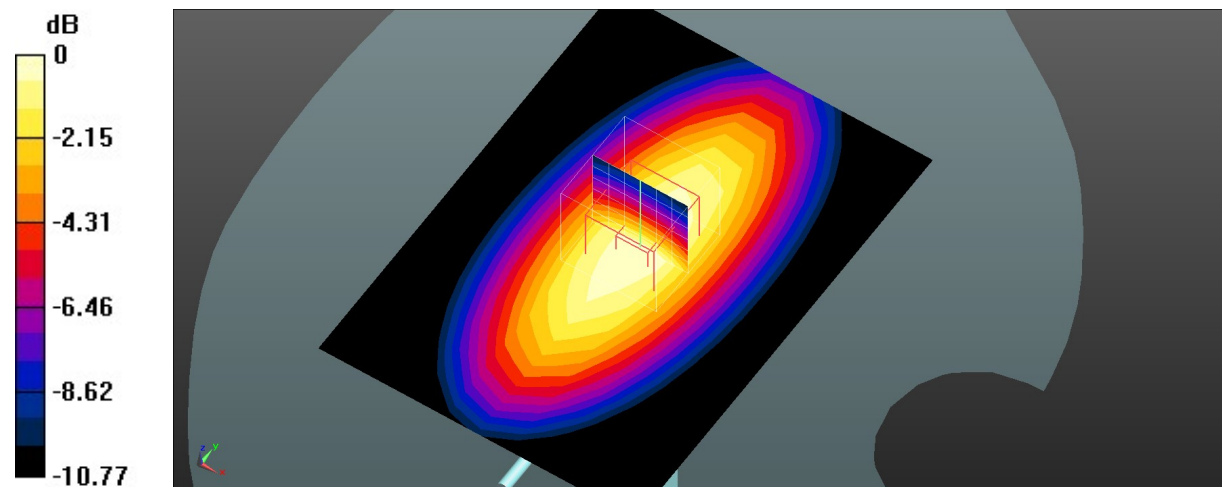
dx=5mm, dy=5mm, dz=5mm

Reference Value = 35.38 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 1.66 W/kg

SAR(1 g) = 1.15 W/kg; SAR(10 g) = 0.769 W/kg

Maximum value of SAR (measured) = 1.23 W/kg



0 dB = 1.23 W/kg = 0.90 dBW/kg

System Performance 1800 MHz**DUT: D1800V2; Type: 1800MHz; Serial: 2d018**

Communication System: UID 0, CW (0); Frequency: 1800 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1800$ MHz; $\sigma = 1.393$ S/m; $\epsilon_r = 39.743$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4- SN7441; ConvF(8.32, 8.32, 8.32); Calibrated: 2022/05/16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1211; Calibrated: 2022/03/01
- Phantom: Twin SAM; Type: QD000P40CD; Serial: 1744
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

System Performance Check at 1800MHz/d=10mm, Pin=100mw/Area Scan (7x11x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 4.38 W/kg

System Performance Check at 1800MHz/d=10mm, Pin=100mw/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

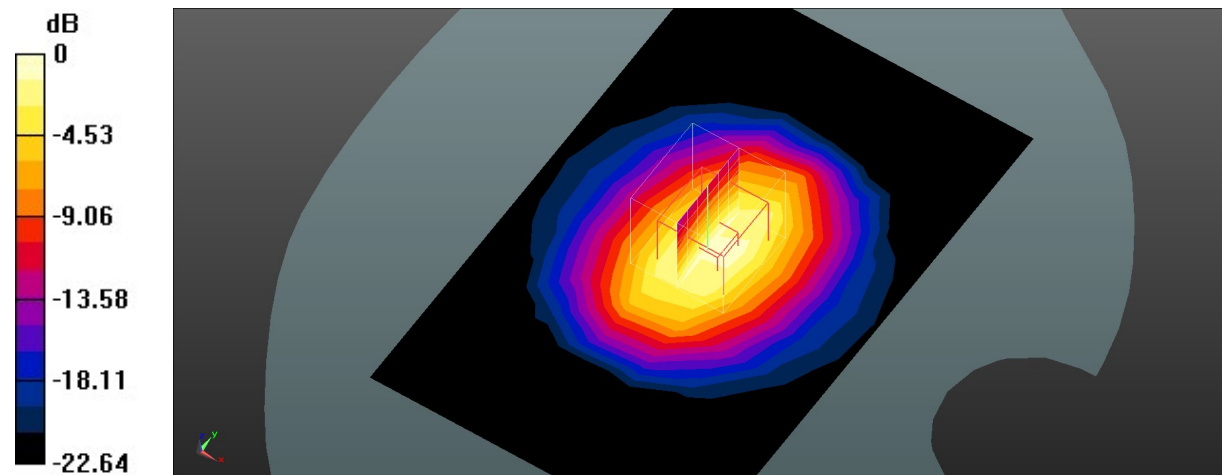
dx=5mm, dy=5mm, dz=5mm

Reference Value = 61.13 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 7.67 W/kg

SAR(1 g) = 4.05 W/kg; SAR(10 g) = 2.16 W/kg

Maximum value of SAR (measured) = 4.58 W/kg



0 dB = 4.58 W/kg = 6.61 dBW/kg

System Performance 1900MHz**DUT: D1900V2; Type: 1900 MHz; Serial: 5d128**

Communication System: UID 0, CW (0); Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.423$ S/m; $\epsilon_r = 41.743$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4- SN7441; ConvF(7.94, 7.94, 7.94); Calibrated: 2022/05/16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1211; Calibrated: 2022/03/01
- Phantom: Twin SAM; Type: QD000P40CD; Serial: 1744
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

System Performance Check at 1900MHz/d=10mm, Pin=100mw/Area Scan (7x11x1): Measurement grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 4.63 W/kg

System Performance Check at 1900MHz/d=10mm, Pin=100mw/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

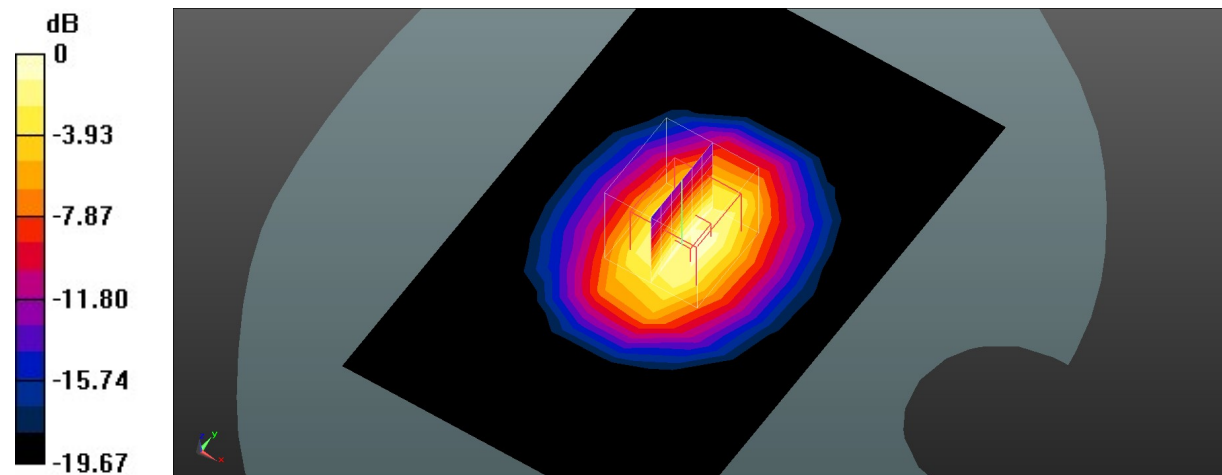
dx=5mm, dy=5mm, dz=5mm

Reference Value = 61.09 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 7.65 W/kg

SAR(1 g) = 4.09 W/kg; SAR(10 g) = 2.05 W/kg

Maximum value of SAR (measured) = 4.41 W/kg



System Performance 2300MHz**DUT: Dipole 2300 MHz; Type: D2300V2; Serial: 1103**

Communication System: UID 0, CW (0); Frequency: 2300 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2300$ MHz; $\sigma = 1.629$ S/m; $\epsilon_r = 39.622$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4- SN7441; ConvF(7.78, 7.78, 7.78); Calibrated: 2022/05/16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1211; Calibrated: 2022/03/01
- Phantom: Twin SAM; Type: QD000P40CD; Serial: 1744
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

System Performance Check at 1900MHz/d=10mm, Pin=100mw/Area Scan (8x12x1): Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 6.48 W/kg

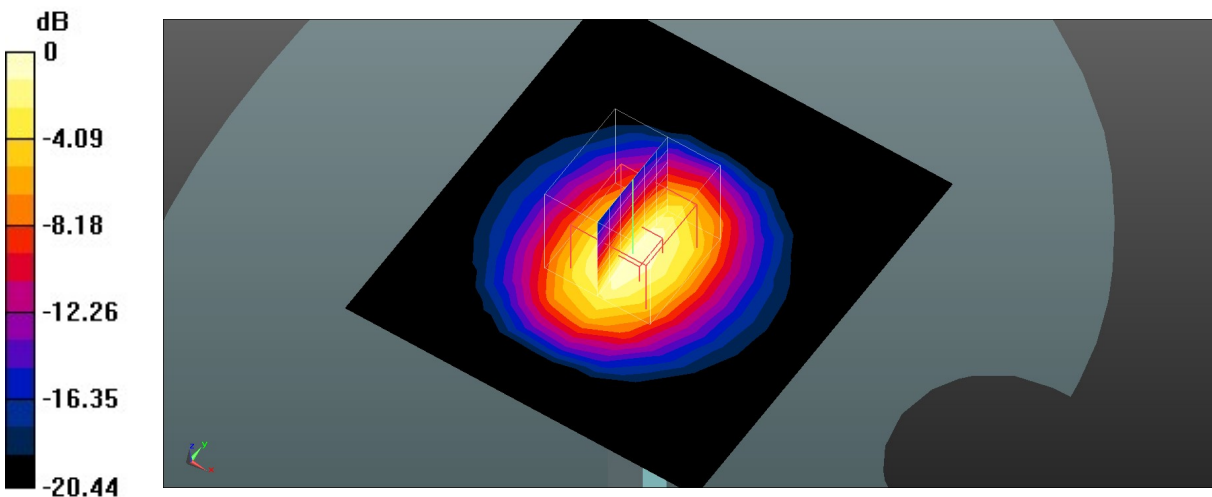
System Performance Check at 1900MHz/d=10mm, Pin=100mw/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 49.28 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 10.2 W/kg

SAR(1 g) = 4.68 W/kg; SAR(10 g) = 2.46 W/kg

Maximum value of SAR (measured) = 5.99 W/kg



0 dB = 5.99 W/kg = 7.77 dBW/kg

System Performance 2450MHz**DUT: D2450V2; Type: 2450 MHz; Serial: 751**

Communication System: UID 0, CW (0); Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.857$ S/m; $\epsilon_r = 40.418$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4- SN7441; ConvF(7.54, 7.54, 7.54); Calibrated: 2022/05/16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1211; Calibrated: 2022/03/01
- Phantom: Twin SAM; Type: QD000P40CD; Serial: 1744
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

System Performance Check at 2450MHz/d=10mm, Pin=100mw/Area Scan (10x11x1): Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 5.27 W/kg

System Performance Check at 2450MHz/d=10mm, Pin=100mw/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

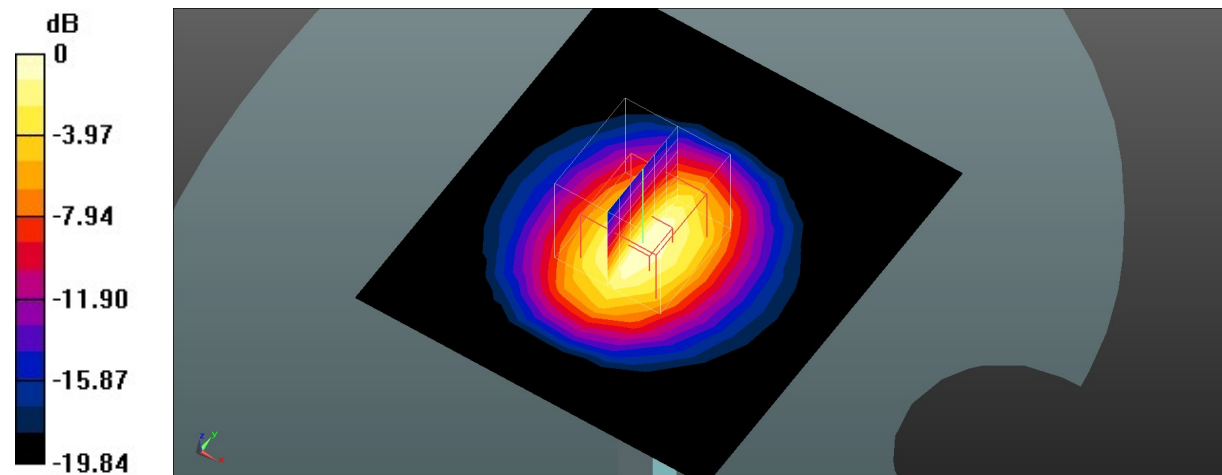
dx=5mm, dy=5mm, dz=5mm

Reference Value = 58.26 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 10.5 W/kg

SAR(1 g) = 5.15 W/kg; SAR(10 g) = 2.54 W/kg

Maximum value of SAR (measured) = 5.49 W/kg



0 dB = 5.49 W/kg = 7.40 dBW/kg

System Performance 2600MHz**DUT: D2600V2; Type: 2600 MHz; Serial: 1073**

Communication System: UID 0, CW (0); Frequency: 2600 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2600$ MHz; $\sigma = 1.943$ S/m; $\epsilon_r = 39.519$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4- SN7441; ConvF(7.3, 7.3, 7.3); Calibrated: 2022/05/16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1211; Calibrated: 2022/03/01
- Phantom: Twin SAM; Type: QD000P40CD; Serial: 1744
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

System Performance Check at 2600MHz/d=10mm, Pin=100mw/Area Scan (10x13x1): Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 6.06 W/kg

System Performance Check at 2600MHz/d=10mm, Pin=100mw/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

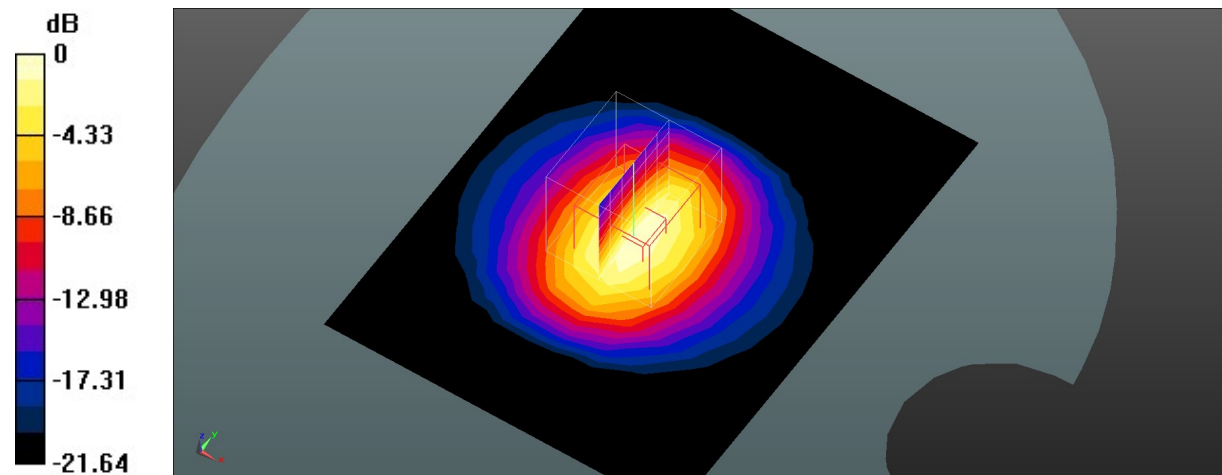
dx=5mm, dy=5mm, dz=5mm

Reference Value = 61.53 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 10.6 W/kg

SAR(1 g) = 5.62 W/kg; SAR(10 g) = 2.54 W/kg

Maximum value of SAR (measured) = 7.37 W/kg



0 dB = 7.37 W/kg = 8.67 dBW/kg

System Performance 5250 MHz**DUT: Dipole 5GHz Type: D5GHZV2; Serial: 1301**

Communication System: UID 0, CW (0); Frequency: 5250 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5250$ MHz; $\sigma = 4.687$ S/m; $\epsilon_r = 36.056$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4- SN7441; ConvF(5.35, 5.35, 5.35); Calibrated: 2022/05/16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1211; Calibrated: 2022/03/01
- Phantom: Twin SAM; Type: QD000P40CD; Serial: 1744
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

System Performance Check at 5250MHz/d=10mm, Pin=100mw/Area Scan (6x8x1): Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 15.1 W/kg

System Performance Check at 5250MHz/d=10mm, Pin=100mw/Zoom Scan (8x8x12)/Cube 0: Measurement grid:

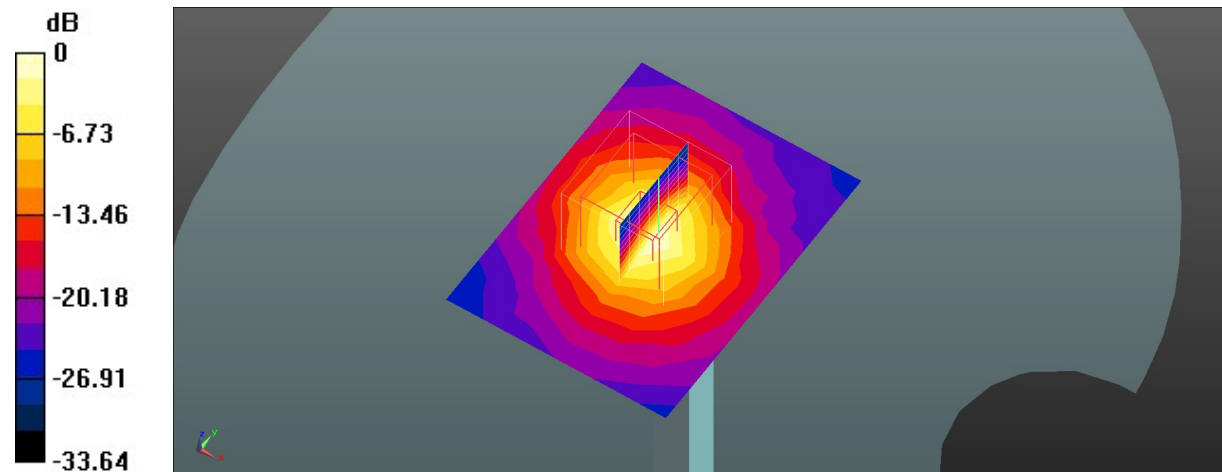
dx=4mm, dy=4mm, dz=2mm

Reference Value = 42.38 V/m; Power Drift = -0.17 dB

Peak SAR (extrapolated) = 32.1 W/kg

SAR(1 g) = 7.95 W/kg; SAR(10 g) = 2.26 W/kg

Maximum value of SAR (measured) = 14.4 W/kg



0 dB = 14.4 W/kg = 11.58 dBW/kg

System Performance 5750 MHz**DUT: Dipole 5GHz Type: D5GHZV2; Serial: 1301**

Communication System: UID 0, CW (0); Frequency: 5750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5750$ MHz; $\sigma = 5.416$ S/m; $\epsilon_r = 36.212$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4- SN7441; ConvF(4.83, 4.83, 4.83); Calibrated: 2022/05/16
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1211; Calibrated: 2022/03/01
- Phantom: Twin SAM; Type: QD000P40CD; Serial: 1744
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

System Performance Check at 5750MHz/d=10mm, Pin=100mw/Area Scan (6x8x1): Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 9.1 W/kg

System Performance Check at 5750MHz/d=10mm, Pin=100mw/Zoom Scan (8x8x12)/Cube 0: Measurement grid:

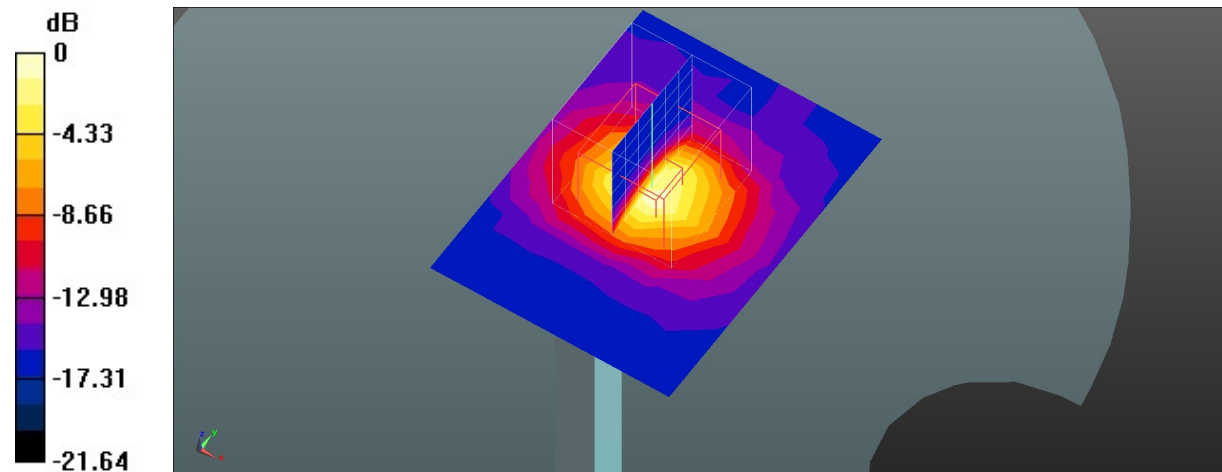
dx=4mm, dy=4mm, dz=2mm

Reference Value = 38.82 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 32.9 W/kg

SAR(1 g) = 7.92 W/kg; SAR(10 g) = 2.23 W/kg

Maximum value of SAR (measured) = 9.16 W/kg



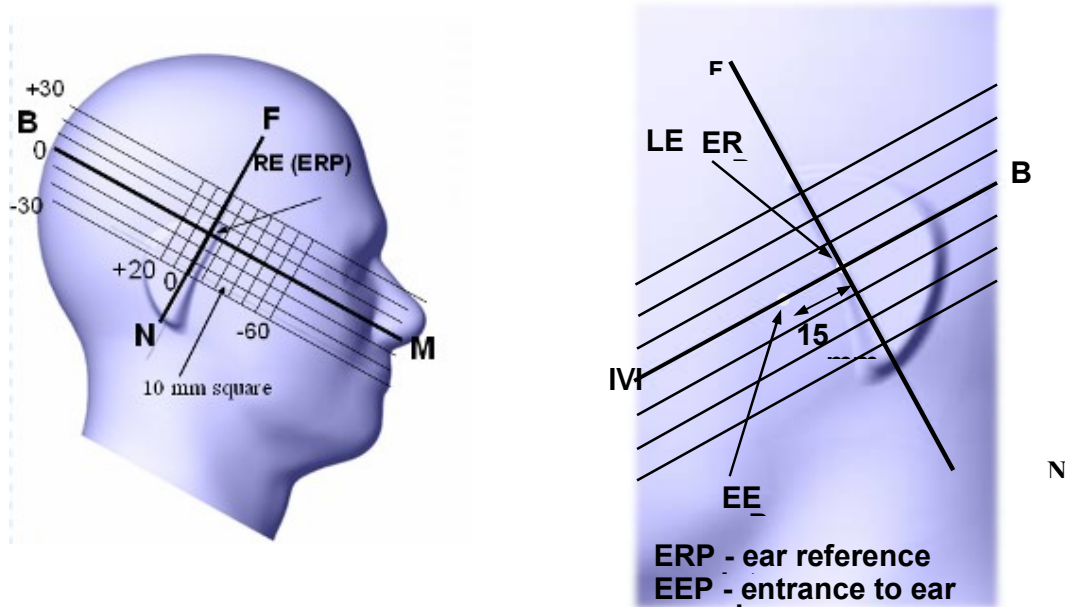
0 dB = 9.16 W/kg = 9.62 dBW/kg

EUT TEST STRATEGY AND METHODOLOGY

Test Positions for Device Operating Next to a Person’s Ear

This category includes most wireless handsets with fixed, retractable or internal antennas located toward the top half of the device, with or without a foldout, sliding or similar keypad cover. The handset should have its earpiece located within the upper ¼ of the device, either along the centerline or off-centered, as perceived by its users. This type of handset should be positioned in a normal operating position with the “test device reference point” located along the “vertical centerline” on the front of the device aligned to the “ear reference point”. The “test device reference point” should be located at the same level as the center of the earpiece region. The “vertical centerline” should bisect the front surface of the handset at its top and bottom edges. A “ear reference point” is located on the outer surface of the head phantom on each ear spacer. It is located 1.5 cm above the center of the ear canal entrance in the “phantom reference plane” defined by the three lines joining the center of each “ear reference point” (left and right) and the tip of the mouth.

A handset should be initially positioned with the earpiece region pressed against the ear spacer of a head phantom. For the SCC-34/SC-2 head phantom, the device should be positioned parallel to the “N-F” line defined along the base of the ear spacer that contains the “ear reference point”. For interim head phantoms, the device should be positioned parallel to the cheek for maximum RF energy coupling. The “test device reference point” is aligned to the “ear reference point” on the head phantom and the “vertical centerline” is aligned to the “phantom reference plane”. This is called the “initial ear position”. While maintaining these three alignments, the body of the handset is gradually adjusted to each of the following positions for evaluating SAR:



Cheek/Touch Position

The device is brought toward the mouth of the head phantom by pivoting against the “ear reference point” or along the “N-F” line for the SCC-34/SC-2 head phantom.

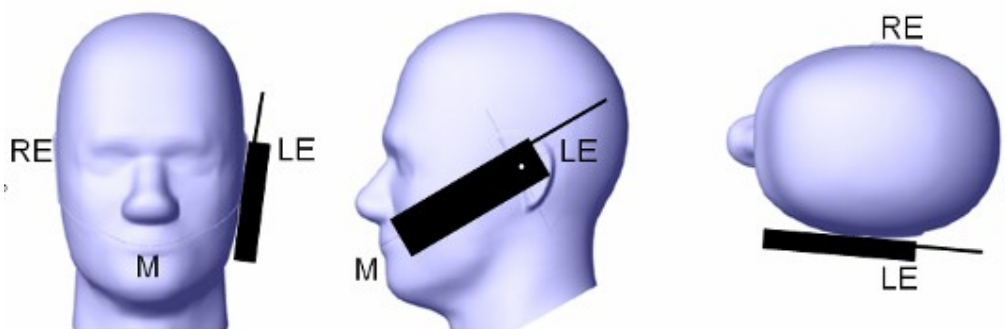
This test position is established:

When any point on the display, keypad or mouthpiece portions of the handset is in contact with the phantom.

(or) When any portion of a foldout, sliding or similar keypad cover opened to its intended self-adjusting normal use position is in contact with the cheek or mouth of the phantom.

For existing head phantoms – when the handset loses contact with the phantom at the pivoting point, rotation should continue until the device touches the cheek of the phantom or breaks its last contact from the ear spacer.

Cheek /Touch Position



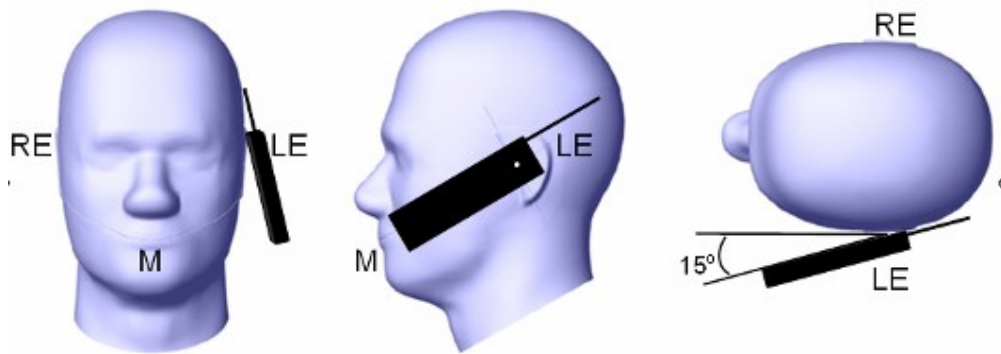
Ear/Tilt Position

With the handset aligned in the “Cheek/Touch Position”:

- 1) If the earpiece of the handset is not in full contact with the phantom’s ear spacer (in the “Cheek/Touch position”) and the peak SAR location for the “Cheek/Touch” position is located at the ear spacer region or corresponds to the earpiece region of the handset, the device should be returned to the “initial ear position” by rotating it away from the mouth until the earpiece is in full contact with the ear spacer.
- 2) (otherwise) The handset should be moved (translated) away from the cheek perpendicular to the line passes through both “ear reference points” (note: one of these ear reference points may not physically exist on a split head model) for approximate 2-3 cm. While it is in this position, the device handset is tilted away from the mouth with respect to the “test device reference point” until the inside angle between the vertical centerline on the front surface of the phone and the horizontal line passing through the ear reference point is by 15 80°. After the tilt, it is then moved (translated) back toward the head perpendicular to the line passes through both “ear reference points” until the device touches the phantom or the ear spacer. If the antenna touches the head first, the positioning process should be repeated with a tilt angle less than 15° so that the device and its antenna would touch the phantom simultaneously. This test position may require a device holder or positioner to achieve the translation and tilting with acceptable positioning repeatability.

If a device is also designed to transmit with its keypad cover closed for operating in the head position, such positions should also be considered in the SAR evaluation. The device should be tested on the left and right side of the head phantom in the “Cheek/Touch” and “Ear/Tilt” positions. When applicable, each configuration should be tested with the antenna in its fully extended and fully retracted positions. These test configurations should be tested at the high, middle and low frequency channels of each operating mode; for example, AMPS, CDMA, and TDMA. If the SAR measured at the middle channel for each test configuration (left, right, Cheek/Touch, Tilt/Ear, extended and retracted) is at least 2.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s). If the transmission band of the test device is less than 10 MHz, testing at the high and low frequency channels is optional.

Ear /Tilt 15° Position



Test positions for body-worn and other configurations

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations. Devices with a headset output should be tested with a headset connected to the device. When multiple accessories that do not contain metallic components are supplied with the device, the device may be tested with only the accessory that dictates the closest spacing to the body. When multiple accessories that contain metallic components are supplied with the device, the device must be tested with each accessory that contains a unique metallic component. If multiple accessories share an identical metallic component (e.g., the same metallic belt-clip used with different holsters with no other metallic components), only the accessory that dictates the closest spacing to the body must be tested.

Body-worn accessories may not always be supplied or available as options for some devices that are intended to be authorized for body-worn use. A separation distance of 1.5 cm between the back of the device and a flat phantom is recommended for testing body-worn SAR compliance under such circumstances. Other separation distances may be used, but they should not exceed 2.5 cm. In these cases, the device may use body-worn accessories that provide a separation distance greater than that tested for the device provided however that the accessory contains no metallic components.

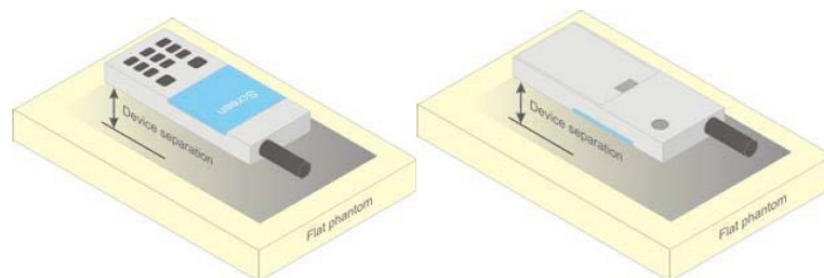


Figure 5 – Test positions for body-worn devices

Test Distance for SAR Evaluation

For this case the EUT(Hotspot mode) is set 10mm away from the phantom, the test distance is 10mm.
For this case the EUT(Handheld mode) is set 0mm away from the phantom, the test distance is 0mm.

SAR Evaluation Procedure

The evaluation was performed with the following procedure:

Step 1: Measurement of the SAR value at a fixed location above the ear point or central position was used as a reference value for assessing the power drop. The SAR at this point is measured at the start of the test and then again at the end of the testing.

Step 2: The SAR distribution at the exposed side of the head was measured at a distance of 4 mm from the inner surface of the shell. The area covered the entire dimension of the head or radiating structures of the EUT, the horizontal grid spacing was 15 mm x 15 mm, and the SAR distribution was determined by integrated grid of 1.5mm x 1.5mm. Based on these data, the area of the maximum absorption was determined by spline interpolation. The first Area Scan covers the entire dimension of the EUT to ensure that the hotspot was correctly identified.

Step 3: Around this point, a volume of 30 mm x 30 mm x 30 mm was assessed by measuring 7x 7 x 7 points. On the basis of this data set, the spatial peak SAR value was evaluated under the following procedure:

- 1) The data at the surface were extrapolated, since the center of the dipoles is 1.2 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.3 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.
- 2) The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed by the 3D-Spline interpolation algorithm. The 3D-Spline is composed of three one dimensional splines with the "Not a knot"-condition (in x, y and z-directions). The volume was integrated with the trapezoidal-algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the averages.

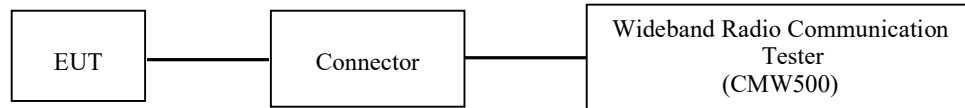
All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

Step 4: Re-measurement of the SAR value at the same location as in Step 1. If the value changed by more than 5%, the evaluation was repeated.

CONDUCTED OUTPUT POWER MEASUREMENT

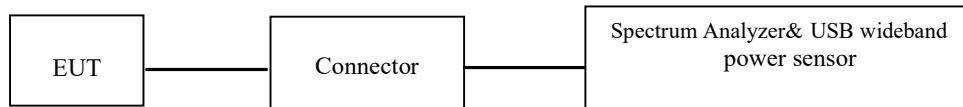
Test Procedure

The RF output of the transmitter was connected to the input of the Wideband Radio Communication Tester through Connector.



GSM/WCDMA/LTE

The RF output of the transmitter was connected to the input of the Spectrum Analyzer& USB wideband power sensor through Connector.



WLAN&BT&RFID

Radio Configuration

The power measurement was configured by the Wireless Communication Test Set.

GSM/GPRS/EGPRS

Function: Menu select > GSM Mobile Station > GSM 850/1900

Press Connection control to choose the different menus

Press RESET > choose all the reset all settings

Connection Press Signal Off to turn off the signal and change settings

Network Support > GSM + GPRS or GSM + EGSM

Main Service > Packet Data

Service selection > Test Mode A – Auto Slot Config. off

MS Signal Press Slot Config Bottom on the right twice to select and change the number of time slots and power setting

> Slot configuration > Uplink/Gamma

> 33 dBm for GPRS 850

> 30 dBm for GPRS 1900

> 27 dBm for EGPRS 850

> 26 dBm for EGPRS 1900

BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel

Frequency Offset > + 0 Hz

Mode > BCCH and TCH

BCCH Level > -85 dBm (May need to adjust if link is not stable)

BCCH Channel > choose desired test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]

Channel Type > Off

P0 > 4 dB

Slot Config > Unchanged (if already set under MS signal)

TCH > choose desired test channel

Hopping > Off

Main Timeslot > 3

Network Coding Scheme > CS4 (GPRS) and MCS5 (EGPRS)

Bit Stream > 2E9-1 PSR Bit Stream

AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input

Connection Press Signal on to turn on the signal and change settings

WCDMA Release 99

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification. The EUT has a nominal maximum output power of 24dBm (+1.7/-3.7).

WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	β_c/β_d	8/15

HSDPA

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subset	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm2			
	β_c	2/15	12/15	15/15	15/15
	β_d	15/15	15/15	8/15	4/15
	β_d (SF)	64			
	β_c/β_d	2/15	12/15	15/8	15/4
	β_{hs}	4/15	24/15	30/15	30/15
MPR(dB)	0	0	0.5	0.5	
HSDPA Specific Settings	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	$A_{hs}=\beta_{hs}/\beta_c$	30/15			

HSUPA

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

	Mode	HSUPA	HSUPA	HSUPA	HSUPA	HSUPA
	Subset	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	β_c	11/15	6/15	15/15	2/15	15/15
	β_d	15/15	15/15	9/15	15/15	0
	β_{ec}	209/225	12/15	30/15	2/15	5/15
	β_c / β_d	11/15	6/15	15/9	2/15	-
	β_{hs}	22/15	12/15	30/15	4/15	5/15
	CM(dB)	1.0	3.0	2.0	3.0	1.0
MPR(dB)	0	2	1	2	0	
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback	4ms				
	CQI Repetition Factor	2				
	$A_{hs} = \beta_{hs} / \beta_c$	30/15				
HSUPA Specific Settings	DE-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_FCI	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27	E-TFCI 11 E-TFCI PO4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E-TFCI PO4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27	

HSPA+

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed1} : 30/15 β_{ed2} : 30/15	β_{ed3} : 24/15 β_{ed4} : 24/15	3.5	2.5	14	105	105
<p>Note 1: Δ_{ACK}, Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$.</p> <p>Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).</p> <p>Note 3: DPDCH is not configured, therefore the β_c is set to 1 and $\beta_d = 0$ by default.</p> <p>Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.</p> <p>Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.</p>											

The following tests were conducted according to the test requirements in Table C.11.1.4 of 3GPP TS 34.121-1

FDD-LTE

For UE Power Class 1 and 3, the allowed Maximum Power Reduction (MPR) for the maximum output power in Table 6.2.2-1 due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1 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

For UE Power Class 1 and 3 the specific requirements and identified sub clauses are specified in Table 6.2.4-1 along with the allowed A-MPR values that may be used to meet these requirements. The allowed A-MPR values specified below in Table 6.2.4.-1 to 6.2.4-15 are in addition to the allowed MPR requirements specified in sub clause 6.2.3.

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (subclause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	N/A
NS_03	6.6.2.2.1	2, 4, 10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10, 15, 20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	N/A
NS_07	6.6.2.2.3 6.6.3.3.2	13	10	Table 6.2.4-2	
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	
NS_11	6.6.2.2.1	23	1.4, 3, 5, 10, 15, 20	Table 6.2.4-5	
NS_12	6.6.3.3.5	26	1.4, 3, 5	Table 6.2.4-6	
NS_13	6.6.3.3.6	26	5	Table 6.2.4-7	
NS_14	6.6.3.3.7	26	10, 15	Table 6.2.4-8	
NS_15	6.6.3.3.8	26	1.4, 3, 5, 10, 15	Table 6.2.4-9 Table 6.2.4-10	
NS_16	6.6.3.3.9	27	3, 5, 10	Table 6.2.4-11, Table 6.2.4-12, Table 6.2.4-13	
NS_17	6.6.3.3.10	28	5, 10	Table 5.6-1	N/A
NS_18	6.6.3.3.11	28	5	≥ 2	≤ 1
			10, 15, 20	≥ 1	≤ 4
NS_19	6.6.3.3.12	44	10, 15, 20	Table 6.2.4-14	
NS_20	6.2.2 6.6.2.2.1	23	5, 10, 15, 20	Table 6.2.4-15	
	6.6.3.2				
NS_32	-	-	-	-	-

TDD-LTE

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	$26336 \cdot T_s$			$7680 \cdot T_s$		
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-		
9	$13168 \cdot T_s$			-		

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

Calculated Duty Cycle

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

- Note: 1. This device supports uplink-downlink configurations 0-6. The configuration with highest duty cycle was used for SAR Testing; configuration 0 at 63.33% duty cycle for LTE band 38<E band 41.
2. LTE band 40 test conditions followed the RF test report.

Maximum Target Output Power

Max Target Power(dBm)			
Mode/Band	Channel		
	Low	Middle	High
GSM 850	33.0	33.0	33.0
GPRS 1 TX Slot	32.0	32.0	32.0
GPRS 2 TX Slot	31.0	31.0	31.0
GPRS 3 TX Slot	29.5	29.5	29.5
GPRS 4 TX Slot	28.0	28.0	28.0
EDGE 1 TX Slot	26.0	26.0	26.0
EDGE 2 TX Slot	25.0	25.0	25.0
EDGE 3 TX Slot	23.5	23.5	23.5
EDGE 4 TX Slot	22.0	22.0	22.0
PCS 1900	32.5	32.5	32.5
GPRS 1 TX Slot	30.5	30.5	30.5
GPRS 2 TX Slot	29.5	29.5	29.5
GPRS 3 TX Slot	27.5	27.5	27.5
GPRS 4 TX Slot	26.0	26.0	26.0
EDGE 1 TX Slot	25.5	25.5	25.5
EDGE 2 TX Slot	24.5	24.5	24.5
EDGE 3 TX Slot	22.0	22.0	22.0
EDGE 4 TX Slot	21.0	21.0	21.0
WCDMA Band 2	23.0	23.0	23.0
WCDMA Band 5	23.0	23.0	23.0
LTE Band 2	19.5	19.5	19.5
LTE Band 4	20.0	20.0	20.0
LTE Band 5	22.0	22.0	22.0
LTE Band 7	17.5	17.5	17.5
LTE Band 12	22.0	22.0	22.0
LTE Band 17	22.0	22.0	22.0
LTE Band 38	17.5	17.5	17.5
LTE Band 40A	18.0	18.0	18.0
LTE Band 40B	18.0	18.0	18.0
LTE Band 41	17.5	17.5	17.5
2.4G Wi-Fi	19.0	19.0	19.0
U-NII-1	15.0	15.0	15.0
U-NII-2A	15.0	15.0	15.0
U-NII-3	15.0	15.0	15.0
Bluetooth BDR/EDR	12.5	12.5	12.5
BLE	0	0	0
RFID	18.0	18.0	18.0

Test Results:**GSM:**

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)
GSM 850	128	824.2	32.65
	190	836.6	32.57
	251	848.8	32.61
PCS 1900	512	1850.2	32.13
	661	1880	32.03
	810	1909.8	32.05

GPRS:

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)			
			1 slot	2 slots	3 slots	4 slots
GSM 850	128	824.2	31.83	30.97	29.14	27.76
	190	836.6	31.92	30.83	28.75	27.46
	251	848.8	31.59	30.67	28.43	27.47
PCS 1900	512	1850.2	30.08	28.99	27.13	25.90
	661	1880	29.94	28.96	26.84	25.55
	810	1909.8	29.72	28.78	26.62	25.53

EDGE:

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)			
			1 slot	2 slots	3 slots	4 slots
GSM 850	128	824.2	25.87	24.86	22.96	21.62
	190	836.6	25.70	24.71	22.69	21.31
	251	848.8	25.56	24.64	22.40	21.41
PCS 1900	512	1850.2	25.20	24.10	21.95	20.64
	661	1880	24.78	23.65	21.39	20.18
	810	1909.8	24.37	23.32	21.04	19.75

For SAR, the time based average power is relevant, the difference in between depends on the duty cycle of the TDMA signal.

Number of Time slot	1	2	3	4
Duty Cycle	1:8	1:4	1:2.66	1:2
Time based Ave. power compared to slotted Ave. power	-9 dB	-6 dB	-4.25 dB	-3 dB
Crest Factor	8	4	2.66	2

The time based average power for GPRS

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)			
			1 slot	2 slots	3 slots	4 slots
GSM 850	128	824.2	22.83	24.97	24.89	24.76
	190	836.6	22.92	24.83	24.50	24.46
	251	848.8	22.59	24.67	24.18	24.47
PCS 1900	512	1850.2	21.08	22.99	22.88	22.90
	661	1880	20.94	22.96	22.59	22.55
	810	1909.8	20.72	22.78	22.37	22.53

The time based average power for EDGE

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)			
			1 slot	2 slots	3 slots	4 slots
GSM 850	128	824.2	16.87	18.86	18.71	18.62
	190	836.6	16.70	18.71	18.44	18.31
	251	848.8	16.56	18.64	18.15	18.41
PCS 1900	512	1850.2	16.20	18.10	17.70	17.64
	661	1880	15.78	17.65	17.14	17.18
	810	1909.8	15.37	17.32	16.79	16.75

Note:

1. Rohde & Schwarz Radio Communication Tester (CMU500) was used for the measurement of GSM peak and average output power for active timeslots.
2. For GSM voice, 1 timeslot has been activated with power level 5 (850 MHz band) and 0 (1900 MHz band).
3. For GPRS, 1, 2, 3 and 4 timeslots has been activated separately with power level 4(850 MHz band) and 4(1900 MHz band).

WCDMA Band 2:

Test Condition	Test Mode	3GPP Sub Test	Averaged Mean Power (dBm)		
			Low Frequency	Mid Frequency	High Frequency
Normal	RMC12.2k		22.33	22.77	22.65
	HSDPA	1	19.76	19.74	19.83
		2	19.79	19.72	19.75
		3	19.77	19.63	19.71
		4	19.69	19.61	19.67
	HSUPA	1	21.38	20.95	20.91
		2	21.43	20.72	20.95
		3	21.35	20.85	20.74
		4	21.41	20.81	20.91
		5	21.57	20.94	20.78
	HSPA+	1	21.52	20.82	20.49

WCDMA Band 5:

Test Condition	Test Mode	3GPP Sub Test	Averaged Mean Power (dBm)		
			Low Frequency	Mid Frequency	High Frequency
Normal	RMC12.2k		22.40	22.60	22.36
	HSDPA	1	19.71	19.74	19.92
		2	19.95	19.86	19.72
		3	19.76	19.56	19.62
		4	19.68	19.66	19.55
	HSUPA	1	21.42	21.07	20.82
		2	21.38	20.70	20.83
		3	21.33	20.90	20.83
		4	21.41	20.96	20.91
		5	21.67	20.98	20.76
	HSPA+	1	21.55	20.79	20.46

Note:

1. The default test configuration is to measure SAR with an established radio link between the EUT and a communication test set using a 12.2 kbps RMC (reference measurement Channel) Configured in Test Loop Model 1.
2. KDB 941225 D01-Body SAR is not required for HSDPA/HSUPA/ HSPA+ when the maximum average output of each RF channel is less than ¼ dB higher than measured 12.2kbps RMC or the maximum SAR for 12.2kbps RMC is < 75% of SAR limit.

LTE Band 2:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	19.00	19.15	19.03
		RB1#3	18.90	19.11	18.85
		RB1#5	18.70	18.87	18.85
		RB3#0	18.99	19.14	19.02
		RB3#3	18.89	19.10	18.84
		RB6#0	18.69	18.86	18.84
	16-QAM	RB1#0	18.58	18.74	18.61
		RB1#3	18.63	18.73	18.60
		RB1#5	18.54	18.77	18.54
		RB3#0	18.56	18.72	18.59
		RB3#3	18.61	18.71	18.58
		RB6#0	18.52	18.75	18.52
3M	QPSK	RB1#0	19.03	19.18	19.06
		RB1#8	18.93	19.14	18.88
		RB1#14	18.73	18.90	18.88
		RB6#0	18.82	18.91	18.93
		RB6#9	18.67	18.91	18.75
		RB15#0	18.66	18.77	18.72
	16-QAM	RB1#0	18.61	18.77	18.64
		RB1#8	18.66	18.76	18.63
		RB1#14	18.57	18.80	18.57
		RB6#0	18.53	18.73	18.50
		RB6#9	18.48	18.72	18.54
		RB15#0	18.53	18.66	18.52
5M	QPSK	RB1#0	19.06	19.21	19.09
		RB1#13	18.96	19.17	18.91
		RB1#24	18.76	18.93	18.91
		RB15#0	18.85	18.94	18.96
		RB15#10	18.70	18.94	18.78
		RB25#0	18.69	18.80	18.75
	16-QAM	RB1#0	18.64	18.80	18.67
		RB1#13	18.69	18.79	18.66
		RB1#24	18.60	18.83	18.60
		RB15#0	18.56	18.76	18.53
		RB15#10	18.51	18.75	18.57
		RB25#0	18.56	18.69	18.55
10M	QPSK	RB1#0	19.08	19.23	19.11
		RB1#25	18.98	19.19	18.93
		RB1#49	18.78	18.95	18.93
		RB25#0	18.87	18.96	18.98
		RB25#25	18.72	18.96	18.80
		RB50#0	18.71	18.82	18.77
	16-QAM	RB1#0	18.66	18.82	18.69
		RB1#25	18.71	18.81	18.68

15M	QPSK	RB1#49	18.62	18.85	18.62
		RB25#0	18.58	18.78	18.55
		RB25#25	18.53	18.77	18.59
		RB50#0	18.58	18.71	18.57
	QPSK	RB1#0	19.11	19.26	19.14
		RB1#38	19.01	19.22	18.96
		RB1#74	18.81	18.98	18.96
		RB36#0	18.90	18.99	19.01
		RB36#39	18.75	18.99	18.83
		RB75#0	18.74	18.85	18.80
	16-QAM	RB1#0	18.69	18.85	18.72
		RB1#38	18.74	18.84	18.71
RB1#74		18.65	18.88	18.65	
RB36#0		18.61	18.81	18.58	
RB36#39		18.56	18.80	18.62	
RB75#0		18.61	18.74	18.60	
20M	QPSK	RB1#0	19.16	19.33	19.24
		RB1#50	19.07	19.27	19.18
		RB1#99	19.04	19.20	19.13
		RB50#0	18.98	19.16	19.06
		RB50#50	18.92	19.11	18.97
		RB100#0	18.89	19.03	18.90
	16-QAM	RB1#0	18.83	18.97	18.84
		RB1#50	18.80	18.94	18.81
		RB1#99	18.79	18.93	18.80
		RB50#0	18.71	18.85	18.72
		RB50#50	18.70	18.84	18.71
		RB100#0	18.65	18.79	18.66

LTE Band 4:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	19.27	19.37	19.47
		RB1#3	19.27	19.30	19.44
		RB1#5	19.25	19.20	19.31
		RB3#0	19.25	19.35	19.45
		RB3#3	19.25	19.28	19.42
		RB6#0	19.23	19.18	19.29
	16-QAM	RB1#0	18.87	19.14	19.15
		RB1#3	18.85	19.11	19.11
		RB1#5	18.85	19.07	19.12
		RB3#0	18.86	19.13	19.14
		RB3#3	18.84	19.10	19.10
		RB6#0	18.84	19.06	19.11
3M	QPSK	RB1#0	19.28	19.38	19.48
		RB1#8	19.28	19.31	19.45
		RB1#14	19.26	19.21	19.32
		RB6#0	19.14	19.26	19.37

			RB6#9	19.07	19.21	19.22		
			RB15#0	18.99	19.15	19.26		
		16-QAM	RB1#0	18.88	19.15	19.16		
			RB1#8	18.86	19.12	19.12		
			RB1#14	18.86	19.08	19.13		
			RB6#0	18.78	18.96	19.06		
			RB6#9	18.75	18.95	19.05		
			RB15#0	18.74	18.91	18.99		
			5M	QPSK	RB1#0	19.31	19.41	19.51
					RB1#13	19.31	19.34	19.48
RB1#24	19.29	19.24			19.35			
RB15#0	19.17	19.29			19.40			
RB15#10	19.10	19.24			19.25			
16-QAM	RB25#0	19.02		19.18	19.29			
	RB1#0	18.91		19.18	19.19			
	RB1#13	18.89		19.15	19.15			
	RB1#24	18.89		19.11	19.16			
	RB15#0	18.81		18.99	19.09			
10M	QPSK	RB15#10	18.78	18.98	19.08			
		RB25#0	18.77	18.94	19.02			
		RB1#0	19.35	19.45	19.55			
		RB1#25	19.35	19.38	19.52			
		RB1#49	19.33	19.28	19.39			
		RB25#0	19.21	19.33	19.44			
	16-QAM	RB25#25	19.14	19.28	19.29			
		RB50#0	19.06	19.22	19.33			
		RB1#0	18.95	19.22	19.23			
		RB1#25	18.93	19.19	19.19			
		RB1#49	18.93	19.15	19.20			
		RB25#0	18.85	19.03	19.13			
15M	QPSK	RB25#25	18.82	19.02	19.12			
		RB50#0	18.81	18.98	19.06			
		RB1#0	19.41	19.51	19.61			
		RB1#38	19.41	19.44	19.58			
		RB1#74	19.39	19.34	19.45			
	16-QAM	RB36#0	19.27	19.39	19.50			
		RB36#39	19.20	19.34	19.35			
		RB75#0	19.12	19.28	19.39			
		RB1#0	19.01	19.28	19.29			
		RB1#38	18.99	19.25	19.25			
20M	QPSK	RB1#74	18.99	19.21	19.26			
		RB36#0	18.91	19.09	19.19			
		RB36#39	18.88	19.08	19.18			
		RB75#0	18.87	19.04	19.12			
		RB1#0	19.57	19.68	19.72			
		RB1#50	19.49	19.62	19.67			
			RB1#99	19.43	19.56	19.59		
			RB50#0	19.35	19.50	19.55		
			RB50#50	19.28	19.43	19.51		
			RB100#0	19.20	19.39	19.45		

	16-QAM	RB1#0	19.15	19.34	19.40
		RB1#50	19.12	19.31	19.37
		RB1#99	19.11	19.30	19.36
		RB50#0	19.03	19.22	19.28
		RB50#50	19.02	19.21	19.27
		RB100#0	18.97	19.16	19.22

LTE Band 5:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	21.26	21.56	21.41
		RB1#3	21.20	21.45	21.28
		RB1#5	21.11	21.42	21.32
		RB3#0	21.24	21.54	21.39
		RB3#3	21.18	21.43	21.26
		RB6#0	21.09	21.40	21.30
	16-QAM	RB1#0	20.85	21.19	21.09
		RB1#3	20.88	21.22	21.07
		RB1#5	20.85	21.16	21.02
		RB3#0	20.84	21.18	21.08
		RB3#3	20.87	21.21	21.06
		RB6#0	20.84	21.15	21.01
3M	QPSK	RB1#0	21.30	21.60	21.45
		RB1#8	21.24	21.49	21.32
		RB1#14	21.15	21.46	21.36
		RB6#0	21.11	21.35	21.28
		RB6#9	21.09	21.34	21.19
		RB15#0	20.98	21.29	21.09
	16-QAM	RB1#0	20.89	21.23	21.13
		RB1#8	20.92	21.26	21.11
		RB1#14	20.89	21.20	21.06
		RB6#0	20.59	20.94	20.77
		RB6#9	20.61	20.96	20.81
		RB15#0	20.56	20.93	20.68
5M	QPSK	RB1#0	21.36	21.66	21.51
		RB1#13	21.30	21.55	21.38
		RB1#24	21.21	21.52	21.42
		RB15#0	21.17	21.41	21.34
		RB15#10	21.15	21.40	21.25
		RB25#0	21.04	21.35	21.15
	16-QAM	RB1#0	20.95	21.29	21.19
		RB1#13	20.98	21.32	21.17
		RB1#24	20.95	21.26	21.12
		RB15#0	20.65	21.00	20.83
		RB15#10	20.67	21.02	20.87
		RB25#0	20.62	20.99	20.74
10M	QPSK	RB1#0	21.49	21.72	21.61
		RB1#25	21.43	21.66	21.53

		RB1#49	21.34	21.62	21.49
		RB25#0	21.30	21.57	21.42
		RB25#25	21.22	21.51	21.37
		RB50#0	21.14	21.48	21.31
	16-QAM	RB1#0	21.09	21.43	21.26
		RB1#25	21.06	21.40	21.23
		RB1#49	21.05	21.39	21.22
		RB25#0	20.76	21.10	20.93
		RB25#25	20.75	21.09	20.92
		RB50#0	20.70	21.04	20.87

LTE Band 7:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	16.91	16.86	17.10
		RB1#13	16.88	16.84	17.03
		RB1#24	16.91	16.81	17.01
		RB15#0	16.78	16.77	16.97
		RB15#10	16.78	16.79	16.95
		RB25#0	16.70	16.73	16.92
	16-QAM	RB1#0	16.69	16.69	16.87
		RB1#13	16.67	16.70	16.86
		RB1#24	16.66	16.67	16.86
		RB15#0	16.59	16.56	16.78
		RB15#10	16.56	16.60	16.72
		RB25#0	16.54	16.52	16.70
10M	QPSK	RB1#0	16.95	16.90	17.14
		RB1#25	16.92	16.88	17.07
		RB1#49	16.95	16.85	17.05
		RB25#0	16.82	16.81	17.01
		RB25#25	16.82	16.83	16.99
		RB50#0	16.74	16.77	16.96
	16-QAM	RB1#0	16.73	16.73	16.91
		RB1#25	16.71	16.74	16.90
		RB1#49	16.70	16.71	16.90
		RB25#0	16.63	16.60	16.82
		RB25#25	16.60	16.64	16.76
		RB50#0	16.58	16.56	16.74
15M	QPSK	RB1#0	17.01	16.96	17.20
		RB1#38	16.98	16.94	17.13
		RB1#74	17.01	16.91	17.11
		RB36#0	16.88	16.87	17.07
		RB36#39	16.88	16.89	17.05
		RB75#0	16.80	16.83	17.02
	16-QAM	RB1#0	16.79	16.79	16.97
		RB1#38	16.77	16.80	16.96
		RB1#74	16.76	16.77	16.96
		RB36#0	16.69	16.66	16.88

20M		RB36#39	16.66	16.70	16.82
		RB75#0	16.64	16.62	16.80
	QPSK	RB1#0	17.14	17.09	17.31
		RB1#50	17.11	17.03	17.25
		RB1#99	17.06	16.99	17.21
		RB50#0	17.02	16.96	17.16
		RB50#50	16.98	16.94	17.10
		RB100#0	16.92	16.91	17.08
	16-QAM	RB1#0	16.87	16.86	17.03
		RB1#50	16.84	16.83	17.00
		RB1#99	16.83	16.82	16.99
		RB50#0	16.75	16.74	16.91
		RB50#50	16.74	16.73	16.90
		RB100#0	16.69	16.68	16.85

LTE Band 12:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)		
1.4M	QPSK	RB1#0	21.62	21.51	21.27		
		RB1#3	21.42	21.42	21.24		
		RB1#5	21.32	21.32	21.11		
		RB3#0	21.60	21.49	21.25		
		RB3#3	21.40	21.40	21.22		
		RB6#0	21.30	21.30	21.09		
	16-QAM	RB1#0	21.12	21.06	20.85		
		RB1#3	21.09	21.08	20.86		
		RB1#5	21.10	21.07	20.88		
		RB3#0	21.11	21.05	20.84		
		RB3#3	21.08	21.07	20.85		
3M	QPSK	RB1#0	21.66	21.55	21.31		
		RB1#8	21.46	21.46	21.28		
		RB1#14	21.36	21.36	21.15		
		RB6#0	21.34	21.27	21.12		
		RB6#9	21.30	21.26	21.05		
		RB15#0	21.24	21.21	21.01		
		RB1#0	21.16	21.10	20.89		
	16-QAM	RB1#8	21.13	21.12	20.90		
		RB1#14	21.14	21.11	20.92		
		RB6#0	20.98	20.93	20.72		
		RB6#9	20.97	20.96	20.70		
		RB15#0	20.96	20.92	20.73		
		5M	QPSK	RB1#0	21.72	21.61	21.37
				RB1#13	21.52	21.52	21.34
RB1#24	21.42			21.42	21.21		
RB15#0	21.40			21.33	21.18		
RB15#10	21.36			21.32	21.11		
RB25#0	21.30			21.27	21.07		

10M	16-QAM	RB1#0	21.22	21.16	20.95	
		RB1#13	21.19	21.18	20.96	
		RB1#24	21.20	21.17	20.98	
		RB15#0	21.04	20.99	20.78	
		RB15#10	21.03	21.02	20.76	
		RB25#0	21.02	20.98	20.79	
	QPSK	RB1#0	21.78	21.67	21.52	
		RB1#25	21.67	21.61	21.44	
		RB1#49	21.58	21.51	21.35	
		RB25#0	21.47	21.47	21.24	
		RB25#25	21.43	21.39	21.17	
		RB50#0	21.39	21.33	21.13	
		16-QAM	RB1#0	21.34	21.28	21.08
			RB1#25	21.31	21.25	21.05
RB1#49	21.30		21.24	21.04		
RB25#0	21.17		21.11	20.91		
RB25#25	21.16		21.10	20.90		
RB50#0	21.11		21.05	20.85		

LTE Band 17:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	21.41	21.12	21.35
		RB1#13	21.37	21.12	21.36
		RB1#24	21.42	21.08	21.27
		RB15#0	20.44	20.20	20.35
		RB15#10	20.37	20.16	20.34
		RB25#0	20.35	20.08	20.30
	16-QAM	RB1#0	20.36	20.13	20.29
		RB1#13	20.31	20.01	20.27
		RB1#24	20.27	20.03	20.21
		RB15#0	19.38	19.18	19.29
		RB15#10	19.34	19.11	19.27
		RB25#0	19.38	19.14	19.30
10M	QPSK	RB1#0	21.52	21.28	21.46
		RB1#25	21.51	21.27	21.45
		RB1#49	21.48	21.24	21.42
		RB25#0	20.52	20.29	20.46
		RB25#25	20.50	20.27	20.44
		RB50#0	20.45	20.22	20.39
	16-QAM	RB1#0	20.40	20.17	20.34
		RB1#25	20.37	20.14	20.31
		RB1#49	20.36	20.13	20.30
		RB25#0	19.48	19.25	19.42
		RB25#25	19.47	19.24	19.41
		RB50#0	19.42	19.19	19.36

LTE Band 38

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB1#0	16.93	17.21	17.17
		RB1#13	16.86	17.17	17.17
		RB1#24	16.84	17.17	17.14
		RB15#0	16.72	17.13	17.07
		RB15#10	16.73	17.15	16.96
		RB25#0	16.64	17.08	16.92
	16QAM	RB1#0	16.68	17.04	16.96
		RB1#13	16.61	17.03	16.89
		RB1#24	16.62	17.00	16.88
		RB15#0	16.57	16.94	16.85
		RB15#10	16.51	16.89	16.81
		RB25#0	16.51	16.85	16.78
10.0	QPSK	RB1#0	16.97	17.25	17.21
		RB1#25	16.90	17.21	17.21
		RB1#49	16.88	17.21	17.18
		RB25#0	16.76	17.17	17.11
		RB25#25	16.77	17.19	17.00
		RB50#0	16.68	17.12	16.96
	16QAM	RB1#0	16.72	17.08	17.00
		RB1#25	16.65	17.07	16.93
		RB1#49	16.66	17.04	16.92
		RB25#0	16.61	16.98	16.89
		RB25#25	16.55	16.93	16.85
		RB50#0	16.55	16.89	16.82
15.0	QPSK	RB1#0	17.03	17.31	17.27
		RB1#38	16.96	17.27	17.27
		RB1#74	16.94	17.27	17.24
		RB36#0	16.82	17.23	17.17
		RB36#39	16.83	17.25	17.06
		RB75#0	16.74	17.18	17.02
	16QAM	RB1#0	16.78	17.14	17.06
		RB1#38	16.71	17.13	16.99
		RB1#74	16.72	17.10	16.98
		RB36#0	16.67	17.04	16.95

20.0		RB36#39	16.61	16.99	16.91
		RB75#0	16.61	16.95	16.88
	QPSK	RB1#0	17.08	17.42	17.36
		RB1#50	17.04	17.40	17.32
		RB1#99	16.99	17.36	17.29
		RB50#0	16.94	17.34	17.27
		RB50#50	16.92	17.30	17.20
		RB100#0	16.87	17.24	17.15
	16QAM	RB1#0	16.82	17.19	17.10
		RB1#50	16.79	17.16	17.07
		RB1#99	16.78	17.15	17.06
		RB50#0	16.70	17.07	16.98
		RB50#50	16.69	17.06	16.97
		RB100#0	16.64	17.01	16.92

LTE Band 40 A:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB1#0	17.79	17.86	17.78
		RB1#13	17.73	17.85	17.76
		RB1#24	17.75	17.82	17.79
		RB15#0	16.79	16.91	16.84
		RB15#10	16.72	16.89	16.88
		RB25#0	16.73	16.84	16.83
	16QAM	RB1#0	16.71	16.79	16.72
		RB1#13	16.61	16.76	16.72
		RB1#24	16.59	16.75	16.70
		RB15#0	15.78	15.87	15.85
		RB15#10	15.69	15.86	15.85
		RB25#0	15.68	15.81	15.73
10.0	QPSK	RB1#0	/	17.89	/
		RB1#25	/	17.88	/
		RB1#49	/	17.85	/
		RB25#0	/	16.83	/
		RB25#25	/	16.81	/
		RB50#0	/	16.76	/
	16QAM	RB1#0	/	16.71	/

		RB1#25	/	16.68	/
		RB1#49	/	16.67	/
		RB25#0	/	15.79	/
		RB25#25	/	15.78	/
		RB50#0	/	15.73	/

LTE Band 40B:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5	QPSK	RB1#0	17.63	17.78	17.69
		RB1#13	17.60	17.77	17.74
		RB1#24	17.64	17.74	17.65
		RB15#0	16.76	16.83	16.82
		RB15#10	16.72	16.81	16.72
		RB25#0	16.65	16.76	16.75
	16QAM	RB1#0	16.60	16.71	16.67
		RB1#13	16.58	16.68	16.62
		RB1#24	16.58	16.67	16.64
		RB15#0	15.67	15.79	15.73
		RB15#10	15.64	15.78	15.75
		RB25#0	15.64	15.73	15.64
10	QPSK	RB1#0	/	17.81	/
		RB1#25	/	17.80	/
		RB1#49	/	17.77	/
		RB25#0	/	16.75	/
		RB25#25	/	16.73	/
		RB50#0	/	16.68	/
	16QAM	RB1#0	/	16.63	/
		RB1#25	/	16.60	/
		RB1#49	/	16.59	/
		RB25#0	/	15.71	/
		RB25#25	/	15.70	/
		RB50#0	/	15.65	/

LTE Band 41:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB1#0	16.97	17.18	17.10
		RB1#13	16.94	17.15	17.08
		RB1#24	16.89	17.17	17.02
		RB15#0	16.85	17.15	16.97
		RB15#10	16.82	17.07	16.96
		RB25#0	16.74	17.02	16.91
	16QAM	RB1#0	16.80	17.05	16.88
		RB1#13	16.72	17.02	16.87
		RB1#24	16.72	16.99	16.86
		RB15#0	16.65	16.92	16.74
		RB15#10	16.67	16.94	16.73
		RB25#0	16.58	16.90	16.67
10.0	QPSK	RB1#0	17.01	17.22	17.14
		RB1#25	16.98	17.19	17.12
		RB1#49	16.93	17.21	17.06
		RB25#0	16.89	17.19	17.01
		RB25#25	16.86	17.11	17.00
		RB50#0	16.78	17.06	16.95
	16QAM	RB1#0	16.84	17.09	16.92
		RB1#25	16.76	17.06	16.91
		RB1#49	16.76	17.03	16.90
		RB25#0	16.69	16.96	16.78
		RB25#25	16.71	16.98	16.77
		RB50#0	16.62	16.94	16.71
15.0	QPSK	RB1#0	17.07	17.28	17.20
		RB1#38	17.04	17.25	17.18
		RB1#74	16.99	17.27	17.12
		RB36#0	16.95	17.25	17.07
		RB36#39	16.92	17.17	17.06
		RB75#0	16.84	17.12	17.01
	16QAM	RB1#0	16.90	17.15	16.98
		RB1#38	16.82	17.12	16.97
		RB1#74	16.82	17.09	16.96

		RB36#0	16.75	17.02	16.84
		RB36#39	16.77	17.04	16.83
		RB75#0	16.68	17.00	16.77
20.0	QPSK	RB1#0	17.17	17.39	17.29
		RB1#50	17.14	17.37	17.26
		RB1#99	17.09	17.35	17.24
		RB50#0	17.06	17.30	17.18
		RB50#50	17.01	17.28	17.15
		RB100#0	16.98	17.26	17.08
	16QAM	RB1#0	16.93	17.21	17.03
		RB1#50	16.90	17.18	17.00
		RB1#99	16.89	17.17	16.99
		RB50#0	16.81	17.09	16.91
		RB50#50	16.80	17.08	16.90
		RB100#0	16.75	17.03	16.85

WLAN 2.4G:

Mode	Channel frequency (MHz)	Data Rate	Conducted Average Output Power(dBm)
802.11b	2412	1Mbps	18.37
	2437		18.29
	2462		18.45
802.11g	2412	6Mbps	16.13
	2437		16.34
	2462		16.08
802.11n HT20	2412	MCS0	16.30
	2437		16.35
	2462		16.18
802.11n HT40	2422	MCS0	15.91
	2437		15.92
	2452		15.68

Bluetooth:

Mode	Channel frequency (MHz)	Maximum conducted Peak Output Power(dBm)
BDR(GFSK)	2402	11.99
	2441	11.91
	2480	11.71
EDR($\pi/4$ -DQPSK)	2402	11.33
	2441	11.20
	2480	10.96
EDR(8DPSK)	2402	11.34
	2441	11.22
	2480	10.95
BLE_1M	2402	-0.40
	2440	-0.54
	2480	-0.64
BLE_2M	2402	-0.45
	2440	-0.59
	2480	-0.69

RFID:

Channel	Channel frequency (MHz)	Maximum conducted Peak Output Power(dBm)
Low	902.75	17.64
Middle	914.75	17.75
High	927.25	17.44

U-NII-1:

Frequency (MHz)	Conducted Average Output Power (dBm)
802.11a	
5180	14.21
5200	14.12
5240	14.17
802.11ac20	
5180	14.18
5200	14.11
5240	14.17
802.11ac40	
5190	14.42
5230	14.80
802.11ac80	
5210	14.66

U-NII-2A:

Frequency (MHz)	Conducted Average Output Power (dBm)
802.11a	
5260	14.68
5280	14.58
5320	14.57
802.11ac20	
5260	14.12
5280	14.31
5320	14.77
802.11ac40	
5270	14.80
5310	14.85
802.11ac80	
5290	14.93

U-NII-3:

Frequency (MHz)	Conducted Average Output Power (dBm)
802.11a	
5745	14.48
5785	14.51
5825	14.63
802.11ac20	
5745	14.91
5785	14.78

5825	14.71
802.11ac40	
5755	14.75
5795	14.54
802.11ac80	
5775	14.68

Duty Cycle:**(2.4G Wi-Fi&BLE):**

Mode	Duty Cycle (%)
802.11b	99.52
802.11g	97.22
802.11n-HT20	96.30
802.11n-HT40	94.20
BLE_1M	84.86
BLE_2M	56.91

U-NII-1:

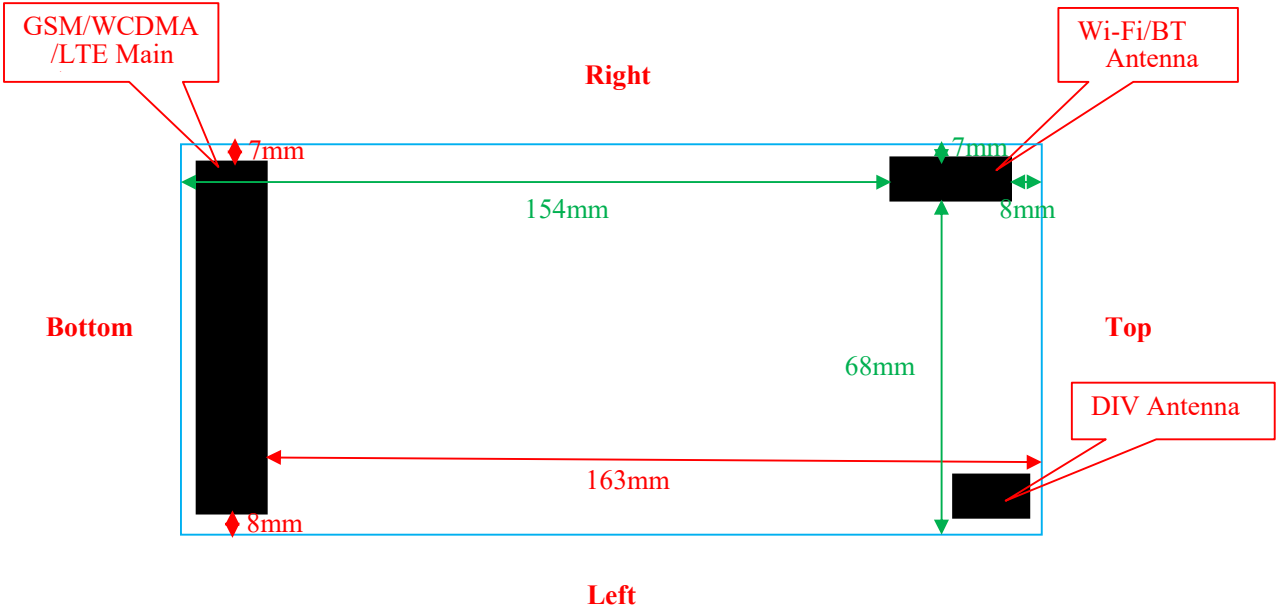
Mode	Duty Cycle (%)
802.11a	96.53
802.11n20	96.30
802.11n40	92.86
802.11ac20	96.32
802.11ac40	92.86
802.11ac80	89.19

U-NII-3:

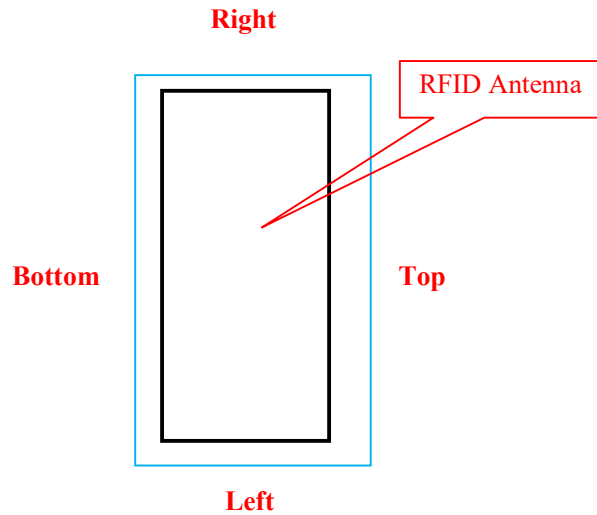
Mode	Duty Cycle (%)
802.11a	96.53
802.11ac20	96.32
802.11ac40	92.86
802.11ac80	86.49

Standalone SAR test exclusion considerations

Antennas Location:



Hotspot Device Back View



RFID Back View



Distance From Hand To Hotspot Device

Note:

- 1. The DIV antenna can only receive.*
- 2. RFID and smart phone parts can't be separated, otherwise, the whole function can't be used, except in engineering mode*

Antenna Distance To Edge

Antenna Distance To Edge(mm)						
Antenna	Front	Back	Left	Right	Top	Bottom
Wi-Fi/Bluetooth ANT	15	11	68	7	8	154
Main ANT (GSM/WCDMA/LTE)	14	12	8	7	163	< 5
RFID ANT	33	< 5	< 5	< 5	< 5	< 5

Standalone SAR test exclusion considerations

Mode	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Distance (mm)	Calculated value	Threshold (1-g)	Threshold (10-g)	SAR Test Exclusion
2.4G Wi-Fi	2462	19.0	79.43	< 5	24.9	3	/	NO
U-NII-1	5240	15.0	31.62	< 5	14.5	3	/	NO
U-NII-2A	5320	15.0	31.62	< 5	14.6	3	/	NO
U-NII-3	5825	15.0	31.62	< 5	15.3	3	/	NO
Bluetooth	2480	12.5	17.78	< 5	5.6	3	/	NO
RFID	927.25	18.0	96.61	< 5	12.2	/	7.5	NO

NOTE:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot$

$\sqrt{f(\text{GHz})} \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

1. $f(\text{GHz})$ is the RF channel transmit frequency in GHz.
2. Power and distance are rounded to the nearest mW and mm before calculation.
3. The result is rounded to one decimal place for comparison.
4. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion.

According to KDB 447498 D01 General RF Exposure Guidance v06, clause 4.3. General SAR test exclusion guidance:

c) For frequencies below 100 MHz, the following may be considered for SAR test exclusion (also illustrated in Appendix C):

- 1) For test separation distances > 50 mm and < 200 mm, the power threshold at the corresponding test separation distance at 100 MHz in step b) is multiplied by $[1 + \log(100/f(\text{MHz}))]$
- 2) For test separation distances ≤ 50 mm, the power threshold determined by the equation in c) 1) for 50 mm and 100 MHz is multiplied by $\frac{1}{2}$
- 3) SAR measurement procedures are not established below 100 MHz.

For NFC SAR test exclusion consideration as follow:

$$P_{th} = [474 * (1 + \log(100/f_{(MHz)}))] / 2 = 443 \text{ mW.}$$

$$E[\text{dB}\mu\text{V/m}] = \text{EIRP}[\text{dBm}] + 95.2$$

$$E[\text{dB}\mu\text{V/m}] = 56.96 \text{ dB}\mu\text{V/m}@3\text{m,}$$

The antenna gain is 0dBi

$$\text{EIRP} = 56.96 \text{ dB}\mu\text{V/m} - 95.2 = -38.24 \text{ dBm} = 0.00015 \text{ mW} < P_{th} = 443 \text{ mW}$$

Conclusion:

The NFC SAR evaluation can be exempted.

SAR test exclusion for the EUT edge considerations Result

SAR test exclusion						
Mode	Front	Back	Left	Right	Top	Bottom
Bluetooth	Required	Required	Exclusion	Required	Required	Exclusion
2.4G Wi-Fi	Required	Required	Exclusion	Required	Required	Exclusion
5G Wi-Fi	Required	Required	Exclusion	Required	Required	Exclusion
Main ANT(GSM/WCDMA/LTE)	Required	Required	Required	Required	Exclusion	Required
RFID	Exclusion	Required	Required	Required	Required	Required*

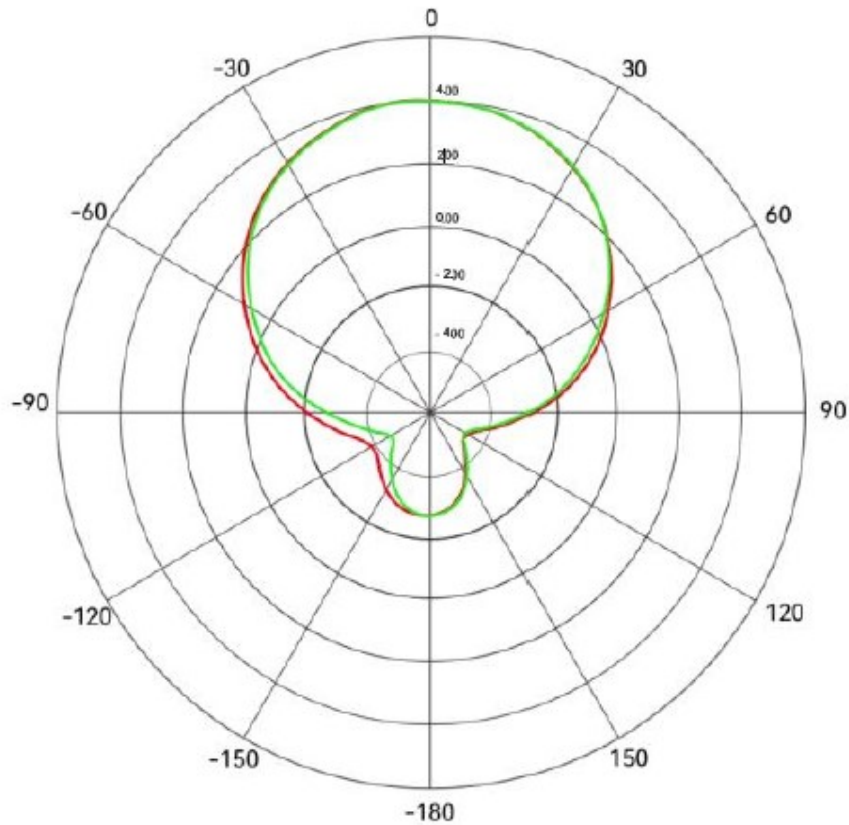
Note:

Required: The distance to Edge is less than 25mm, testing is required.

Exclusion: The distance to Edge is more than 25 mm, testing is not required.

Required*: Do not test Bottom side(side facing away from user during normal operation), it is used as a substitute test for the following test.

According to FCC TCB Workshop October 2020 RF Exposure guidance, if the RFID antenna is highly oriented, we can use the top test position instead of the bottom test position, and the conservative distance of the top test position is less than or equal to the minimum distance from the bottom antenna-to-finger.



Field diagram

Extremity Exposure Configurations

Per KDB 648474 D04v01r03, this device is considered a “Phablet” since the diagonal dimension is >160 mm and <200 mm, when hotspot mode applies, extremity SAR is required only for the surfaces and edges with hotspot mode scaled to the maximum output power (with tolerance is 1g SAR >1.2 W/kg)

Extremity Exposure Condition		
Worst Mode	Hotspot SAR value	Extremity Condition Test
LTE Band 7	0.45 W/kg@1g	Exclusion

Exclusion: Extremity Condition SAR testing is not required.

SAR MEASUREMENT RESULTS

This page summarizes the results of the performed dosimetric evaluation.

SAR Test Data

Environmental Conditions

Temperature:	22.5-23.2 °C	22.2-23.8 °C	22.0-23.4 °C	22.1-23.4 °C	22.8-24.5 °C	22.6-24.2 °C
Relative Humidity:	50-60%	46-59 %	43-55 %	43-59 %	42-59 %	41-58 %
ATM Pressure:	101.4 kPa	101.6 kPa	101.4 kPa	101.3 kPa	101.3 kPa	101.5 kPa
Test Date:	2023/02/21	2023/02/22	2023/02/23	2023/02/24	2023/02/25	2023/02/26

Temperature:	22.5-23.2 °C
Relative Humidity:	45-56%
ATM Pressure:	101.2 kPa
Test Date:	2023/02/27

Testing was performed by Jack Yang, Ryse Chai.

GSM 850 :

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg) for Head and Body SAR 10g SAR (W/kg) for Handheld SAR			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Head Left Cheek	824.2	GSM	/	/	/	/	/	/
	836.6	GSM	32.57	33.0	1.104	0.07	0.08	1
	848.8	GSM	/	/	/	/	/	/
Head Left Tilt	824.2	GSM	/	/	/	/	/	/
	836.6	GSM	32.57	33.0	1.104	0.046	0.05	2
	848.8	GSM	/	/	/	/	/	/
Head Right Cheek	824.2	GSM	/	/	/	/	/	/
	836.6	GSM	32.57	33.0	1.104	0.074	0.08	3
	848.8	GSM	/	/	/	/	/	/
Head Right Tilt	824.2	GSM	/	/	/	/	/	/
	836.6	GSM	32.57	33.0	1.104	0.037	0.04	4
	848.8	GSM	/	/	/	/	/	/
Body Front (10mm)	824.2	GPRS	/	/	/	/	/	/
	836.6	GPRS	30.83	31.0	1.040	0.102	0.11	5
	848.8	GPRS	/	/	/	/	/	/
Handheld Back	824.2	GPRS	/	/	/	/	/	/
	836.6	GPRS	30.83	31.0	1.040	0.191	0.20	6
	848.8	GPRS	/	/	/	/	/	/
Body Left (10mm)	824.2	GPRS	/	/	/	/	/	/
	836.6	GPRS	30.83	31.0	1.040	0.068	0.07	7
	848.8	GPRS	/	/	/	/	/	/
Body Right (10mm)	824.2	GPRS	/	/	/	/	/	/
	836.6	GPRS	30.83	31.0	1.040	0.129	0.13	8
	848.8	GPRS	/	/	/	/	/	/
Body Bottom (10mm)	824.2	GPRS	/	/	/	/	/	/
	836.6	GPRS	30.83	31.0	1.040	0.01	0.01	9
	848.8	GPRS	/	/	/	/	/	/

Note:

1. When the SAR value is less than half of the limit, testing for other channels are optional.
2. The EUT transmit and receive through the same GSM antenna while testing SAR.
3. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.
4. When the maximum output power variation across the required test channels is > 0.5 dB, instead of the middle channel, the highest output power channel must be used.
5. The Multi-slot Classes of EUT is Class 12 which has maximum 4 Downlink slots and 4 Uplink slots, the maximum active slots is 5, when perform the multiple slots scan, 3DL+2UL is the worst case.
6. The worst case of body SAR was selected to evaluate and calculate 10-g extremity SAR.

PCS 1900 :

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg) for Head and Body SAR 10g SAR (W/kg) for Handheld SAR			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Head Left Cheek	1850.2	GSM	/	/	/	/	/	/
	1880	GSM	32.03	32.5	1.114	0.058	0.06	10
	1909.8	GSM	/	/	/	/	/	/
Head Left Tilt	1850.2	GSM	/	/	/	/	/	/
	1880	GSM	32.03	32.5	1.114	0.028	0.03	11
	1909.8	GSM	/	/	/	/	/	/
Head Right Cheek	1850.2	GSM	/	/	/	/	/	/
	1880	GSM	32.03	32.5	1.114	0.034	0.04	12
	1909.8	GSM	/	/	/	/	/	/
Head Right Tilt	1850.2	GSM	/	/	/	/	/	/
	1880	GSM	32.03	32.5	1.114	0.043	0.05	13
	1909.8	GSM	/	/	/	/	/	/
Body Front (10mm)	1850.2	GPRS	/	/	/	/	/	/
	1880	GPRS	28.96	29.5	1.132	0.174	0.20	14
	1909.8	GPRS	/	/	/	/	/	/
Handheld Back	1850.2	GPRS	/	/	/	/	/	/
	1880	GPRS	28.96	29.5	1.132	0.203	0.23	15
	1909.8	GPRS	/	/	/	/	/	/
Body Left (10mm)	1850.2	GPRS	/	/	/	/	/	/
	1880	GPRS	28.96	29.5	1.132	0.129	0.15	16
	1909.8	GPRS	/	/	/	/	/	/
Body Right (10mm)	1850.2	GPRS	/	/	/	/	/	/
	1880	GPRS	28.96	29.5	1.132	0.05	0.06	17
	1909.8	GPRS	/	/	/	/	/	/
Body Bottom (10mm)	1850.2	GPRS	/	/	/	/	/	/
	1880	GPRS	28.96	29.5	1.132	0.031	0.04	18
	1909.8	GPRS	/	/	/	/	/	/

Note:

1. When the SAR value is less than half of the limit, testing for other channels are optional.
2. The EUT transmit and receive through the same GSM antenna while testing SAR.
3. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.
4. When the maximum output power variation across the required test channels is > 0.5 dB, instead of the middle channel, the highest output power channel must be used.
5. The Multi-slot Classes of EUT is Class 12 which has maximum 4 Downlink slots and 4 Uplink slots, the maximum active slots is 5, when perform the multiple slots scan, 3DL+2UL is the worst case.
6. The worst case of body SAR was selected to evaluate and calculate 10-g extremity SAR.

WCDMA Band 2 :

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg) for Head and Body SAR 10g SAR (W/kg) for Handheld SAR			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Head Left Cheek	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	22.77	23.0	1.054	0.154	0.16	19
	1907.6	RMC	/	/	/	/	/	/
Head Left Tilt	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	22.77	23.0	1.054	0.062	0.07	20
	1907.6	RMC	/	/	/	/	/	/
Head Right Cheek	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	22.77	23.0	1.054	0.088	0.09	21
	1907.6	RMC	/	/	/	/	/	/
Head Right Tilt	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	22.77	23.0	1.054	0.09	0.09	22
	1907.6	RMC	/	/	/	/	/	/
Body Front (10mm)	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	22.77	23.0	1.054	0.214	0.23	23
	1907.6	RMC	/	/	/	/	/	/
Handheld Back	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	22.77	23.0	1.054	0.122	0.13	24
	1907.6	RMC	/	/	/	/	/	/
Body Left (10mm)	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	22.77	23.0	1.054	0.17	0.18	25
	1907.6	RMC	/	/	/	/	/	/
Body Right (10mm)	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	22.77	23.0	1.054	0.065	0.07	26
	1907.6	RMC	/	/	/	/	/	/
Body Bottom (10mm)	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	22.77	23.0	1.054	0.301	0.32	27
	1907.6	RMC	/	/	/	/	/	/
Handheld Bottom	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	22.77	23.0	1.054	0.180	0.19	27
	1907.6	RMC	/	/	/	/	/	/

WCDMA Band 5 :

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg) for Head and Body SAR 10g SAR (W/kg) for Handheld SAR			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Head Left Cheek	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.60	23.0	1.096	0.06	0.07	28
	846.6	RMC	/	/	/	/	/	/
Head Left Tilt	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.60	23.0	1.096	0.034	0.04	29
	846.6	RMC	/	/	/	/	/	/
Head Right Cheek	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.60	23.0	1.096	0.06	0.07	30
	846.6	RMC	/	/	/	/	/	/
Head Right Tilt	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.60	23.0	1.096	0.027	0.03	31
	846.6	RMC	/	/	/	/	/	/
Body Front (10mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.60	23.0	1.096	0.058	0.06	32
	846.6	RMC	/	/	/	/	/	/
Handheld Back	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.60	23.0	1.096	0.057	0.06	33
	846.6	RMC	/	/	/	/	/	/
Body Left (10mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.60	23.0	1.096	0.025	0.03	34
	846.6	RMC	/	/	/	/	/	/
Body Right (10mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.60	23.0	1.096	0.067	0.07	35
	846.6	RMC	/	/	/	/	/	/
Body Bottom (10mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.60	23.0	1.096	0.065	0.07	36
	846.6	RMC	/	/	/	/	/	/

Note:

1. When the SAR value is less than half of the limit, testing for other channels are optional.
2. The EUT transmit and receive through the same antenna while testing SAR.
3. The default test configuration is to measure SAR with an established radio link between the EUT and a communication test set using a 12.2 kbps RMC (reference measurement Channel) Configured in Test Loop Model.
4. KDB 941225 D01-Body SAR is not required for HSDPA/HSUPA/ HSPA+ when the maximum average output of each RF channel is less than ¼ dB higher than measured 12.2kbps RMC or the maximum SAR for 12.2kbps RMC is < 75% of SAR limit.
5. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.
6. The worst case of body SAR was selected to evaluate and calculate 10-g extremity SAR.

LTE Band 2 :

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg) for Head and Body SAR 10g SAR (W/kg) for Handheld SAR			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Head Left Cheek	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	19.33	19.5	1.040	0.11	0.11	37
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	19.16	19.5	1.081	0.088	0.10	38
Head Left Tilt	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	19.33	19.5	1.040	0.034	0.04	39
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	19.16	19.5	1.081	0.024	0.03	40
Head Right Cheek	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	19.33	19.5	1.040	0.046	0.05	41
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	19.16	19.5	1.081	0.035	0.04	42
Head Right Tilt	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	19.33	19.5	1.040	0.057	0.06	43
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	19.16	19.5	1.081	0.045	0.05	44
Body Front (10mm)	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	19.33	19.5	1.040	0.154	0.16	45
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	19.16	19.5	1.081	0.121	0.13	46
Handheld Back	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	19.33	19.5	1.040	0.107	0.11	47
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	19.16	19.5	1.081	0.088	0.10	48
Body Left (10mm)	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	19.33	19.5	1.040	0.158	0.16	49
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	19.16	19.5	1.081	0.122	0.13	50
Body Right (10mm)	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	19.33	19.5	1.040	0.044	0.05	51
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	19.16	19.5	1.081	0.035	0.04	52
Body Bottom (10mm)	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	19.33	19.5	1.040	0.202	0.21	53
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	19.16	19.5	1.081	0.162	0.18	54
Handheld Bottom	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	19.33	19.5	1.040	0.121	0.13	53
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	19.16	19.5	1.081	0.098	0.11	54

LTE Band 4 :

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg) for Head and Body SAR 10g SAR (W/kg) for Handheld SAR			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Head Left Cheek	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	19.68	20.0	1.076	0.072	0.08	55
	1745	20	1RB	/	/	/	/	/	/
	1732.5	20	50%RB	19.50	20.0	1.122	0.061	0.07	56
Head Left Tilt	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	19.68	20.0	1.076	0.04	0.04	57
	1745	20	1RB	/	/	/	/	/	/
	1732.5	20	50%RB	19.50	20.0	1.122	0.033	0.04	58
Head Right Cheek	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	19.68	20.0	1.076	0.051	0.05	59
	1745	20	1RB	/	/	/	/	/	/
	1732.5	20	50%RB	19.50	20.0	1.122	0.041	0.05	60
Head Right Tilt	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	19.68	20.0	1.076	0.064	0.07	61
	1745	20	1RB	/	/	/	/	/	/
	1732.5	20	50%RB	19.50	20.0	1.122	0.057	0.06	62
Body Front (10mm)	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	19.68	20.0	1.076	0.086	0.09	63
	1745	20	1RB	/	/	/	/	/	/
	1732.5	20	50%RB	19.50	20.0	1.122	0.069	0.08	64
Handheld Back	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	19.68	20.0	1.076	0.160	0.17	65
	1745	20	1RB	/	/	/	/	/	/
	1732.5	20	50%RB	19.50	20.0	1.122	0.128	0.14	66
Body Left (10mm)	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	19.68	20.0	1.076	0.093	0.10	67
	1745	20	1RB	/	/	/	/	/	/
	1732.5	20	50%RB	19.50	20.0	1.122	0.072	0.08	68
Body Right (10mm)	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	19.68	20.0	1.076	0.042	0.05	69
	1745	20	1RB	/	/	/	/	/	/
	1732.5	20	50%RB	19.50	20.0	1.122	0.034	0.04	70
Body Bottom (10mm)	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	19.68	20.0	1.076	0.163	0.18	71
	1745	20	1RB	/	/	/	/	/	/
	1732.5	20	50%RB	19.50	20.0	1.122	0.137	0.15	72

LTE Band 5 :

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg) for Head and Body SAR 10g SAR (W/kg) for Handheld SAR			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Head Left Cheek	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	21.72	22.0	1.067	0.045	0.05	73
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	21.57	22.0	1.104	0.037	0.04	74
Head Left Tilt	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	21.72	22.0	1.067	0.026	0.03	75
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	21.57	22.0	1.104	0.018	0.02	76
Head Right Cheek	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	21.72	22.0	1.067	0.036	0.04	77
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	21.57	22.0	1.104	0.028	0.03	78
Head Right Tilt	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	21.72	22.0	1.067	0.016	0.02	79
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	21.57	22.0	1.104	0.012	0.01	80
Body Front (10mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	21.72	22.0	1.067	0.034	0.04	81
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	21.57	22.0	1.104	0.026	0.03	82
Handheld Back	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	21.72	22.0	1.067	0.036	0.04	83
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	21.57	22.0	1.104	0.028	0.03	84
Body Left (10mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	21.72	22.0	1.067	0.017	0.02	85
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	21.57	22.0	1.104	0.013	0.01	86
Body Right (10mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	21.72	22.0	1.067	0.036	0.04	87
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	21.57	22.0	1.104	0.028	0.03	88
Body Bottom (10mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	21.72	22.0	1.067	0.031	0.03	89
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	21.57	22.0	1.104	0.024	0.03	90

LTE Band 7 :

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg) for Head and Body SAR 10g SAR (W/kg) for Handheld SAR			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Head Left Cheek	2510	20	1RB	/	/	/	/	/	/
	2535	20	1RB	17.09	17.5	1.099	0.081	0.09	91
	2560	20	1RB	/	/	/	/	/	/
	2535	20	50%RB	16.96	17.5	1.132	0.064	0.07	92
Head Left Tilt	2510	20	1RB	/	/	/	/	/	/
	2535	20	1RB	17.09	17.5	1.099	0.049	0.05	93
	2560	20	1RB	/	/	/	/	/	/
	2535	20	50%RB	16.96	17.5	1.132	0.034	0.04	94
Head Right Cheek	2510	20	1RB	/	/	/	/	/	/
	2535	20	1RB	17.09	17.5	1.099	0.042	0.05	95
	2560	20	1RB	/	/	/	/	/	/
	2535	20	50%RB	16.96	17.5	1.132	0.032	0.04	96
Head Right Tilt	2510	20	1RB	/	/	/	/	/	/
	2535	20	1RB	17.09	17.5	1.099	0.068	0.07	97
	2560	20	1RB	/	/	/	/	/	/
	2535	20	50%RB	16.96	17.5	1.132	0.05	0.06	98
Body Front (10mm)	2510	20	1RB	/	/	/	/	/	/
	2535	20	1RB	17.09	17.5	1.099	0.05	0.05	99
	2560	20	1RB	/	/	/	/	/	/
	2535	20	50%RB	16.96	17.5	1.132	0.037	0.04	100
Handheld Back	2510	20	1RB	/	/	/	/	/	/
	2535	20	1RB	17.09	17.5	1.099	0.221	0.24	101
	2560	20	1RB	/	/	/	/	/	/
	2535	20	50%RB	16.96	17.5	1.132	0.170	0.19	102
Body Left (10mm)	2510	20	1RB	/	/	/	/	/	/
	2535	20	1RB	17.09	17.5	1.099	0.114	0.13	103
	2560	20	1RB	/	/	/	/	/	/
	2535	20	50%RB	16.96	17.5	1.132	0.085	0.10	104
Body Right (10mm)	2510	20	1RB	/	/	/	/	/	/
	2535	20	1RB	17.09	17.5	1.099	0.00286	0.01	105
	2560	20	1RB	/	/	/	/	/	/
	2535	20	50%RB	16.96	17.5	1.132	0.00104	0.01	106
Body Bottom (10mm)	2510	20	1RB	/	/	/	/	/	/
	2535	20	1RB	17.09	17.5	1.099	0.328	0.36	107
	2560	20	1RB	/	/	/	/	/	/
	2535	20	50%RB	16.96	17.5	1.132	0.281	0.32	108

LTE Band 12&17 :

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg) for Head and Body SAR 10g SAR (W/kg) for Handheld SAR			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Head Left Cheek	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	21.67	22.0	1.079	0.019	0.02	109
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	21.47	22.0	1.130	0.015	0.02	110
Head Left Tilt	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	21.67	22.0	1.079	0.016	0.02	111
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	21.47	22.0	1.130	0.013	0.01	112
Head Right Cheek	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	21.67	22.0	1.079	0.02	0.02	113
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	21.47	22.0	1.130	0.017	0.02	114
Head Right Tilt	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	21.67	22.0	1.079	0.00948	0.01	115
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	21.47	22.0	1.130	0.00746	0.01	116
Body Front (10mm)	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	21.67	22.0	1.079	0.022	0.02	117
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	21.47	22.0	1.130	0.017	0.02	118
Handheld Back	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	21.67	22.0	1.079	0.034	0.04	119
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	21.47	22.0	1.130	0.027	0.03	120
Body Left (10mm)	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	21.67	22.0	1.079	0.031	0.03	121
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	21.47	22.0	1.130	0.025	0.03	122
Body Right (10mm)	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	21.67	22.0	1.079	0.028	0.03	123
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	21.47	22.0	1.130	0.023	0.03	124
Body Bottom (10mm)	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	21.67	22.0	1.079	0.00676	0.01	125
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	21.47	22.0	1.130	0.00528	0.01	126

LTE Band 38 :

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg) for Head and Body SAR 10g SAR (W/kg) for Handheld SAR			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Head Left Cheek	2570	20	1RB	/	/	/	/	/	/
	2595	20	1RB	17.42	17.5	1.019	0.017	0.02	127
	2610	20	1RB	/	/	/	/	/	/
	2595	20	50%RB	17.34	17.5	1.038	0.013	0.01	128
Head Left Tilt	2570	20	1RB	/	/	/	/	/	/
	2595	20	1RB	17.42	17.5	1.019	0.00967	0.01	129
	2610	20	1RB	/	/	/	/	/	/
	2595	20	50%RB	17.34	17.5	1.038	0.00212	0.01	130
Head Right Cheek	2570	20	1RB	/	/	/	/	/	/
	2595	20	1RB	17.42	17.5	1.019	0.011	0.01	131
	2610	20	1RB	/	/	/	/	/	/
	2595	20	50%RB	17.34	17.5	1.038	0.011	0.01	132
Head Right Tilt	2570	20	1RB	/	/	/	/	/	/
	2595	20	1RB	17.42	17.5	1.019	0.012	0.01	133
	2610	20	1RB	/	/	/	/	/	/
	2595	20	50%RB	17.34	17.5	1.038	0.011	0.01	134
Body Front (10mm)	2570	20	1RB	/	/	/	/	/	/
	2595	20	1RB	17.42	17.5	1.019	0.011	0.01	135
	2610	20	1RB	/	/	/	/	/	/
	2595	20	50%RB	17.34	17.5	1.038	0.011	0.01	136
Handheld Back	2570	20	1RB	/	/	/	/	/	/
	2595	20	1RB	17.42	17.5	1.019	0.142	0.14	137
	2610	20	1RB	/	/	/	/	/	/
	2595	20	50%RB	17.34	17.5	1.038	0.120	0.12	138
Body Left (10mm)	2570	20	1RB	/	/	/	/	/	/
	2595	20	1RB	17.42	17.5	1.019	0.035	0.04	139
	2610	20	1RB	/	/	/	/	/	/
	2595	20	50%RB	17.34	17.5	1.038	0.024	0.02	140
Body Right (10mm)	2570	20	1RB	/	/	/	/	/	/
	2595	20	1RB	17.42	17.5	1.019	0.00212	0.01	141
	2610	20	1RB	/	/	/	/	/	/
	2595	20	50%RB	17.34	17.5	1.038	0.00204	0.01	142
Body Bottom (10mm)	2570	20	1RB	/	/	/	/	/	/
	2595	20	1RB	17.42	17.5	1.019	0.115	0.12	143
	2610	20	1RB	/	/	/	/	/	/
	2595	20	50%RB	17.34	17.5	1.038	0.093	0.10	144

LTE Band 40A :

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg) for Head and Body SAR 10g SAR (W/kg) for Handheld SAR			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Head Left Cheek	/	/	/	/	/	/	/	/	/
	2310	20	1RB	17.89	18.0	1.026	0.012	0.01	145
	/	/	/	/	/	/	/	/	/
Head Left Tilt	2310	20	50%RB	16.83	18.0	1.309	0.00913	0.01	146
	/	/	/	/	/	/	/	/	/
	2310	20	1RB	17.89	18.0	1.026	0.00666	0.01	147
Head Right Cheek	/	/	/	/	/	/	/	/	/
	2310	20	50%RB	16.83	18.0	1.309	0.0037	0.01	148
	/	/	/	/	/	/	/	/	/
Head Right Tilt	2310	20	1RB	17.89	18.0	1.026	0.00744	0.01	149
	/	/	/	/	/	/	/	/	/
	2310	20	50%RB	16.83	18.0	1.309	0.00594	0.01	150
Body Front (10mm)	/	/	/	/	/	/	/	/	/
	2310	20	1RB	17.89	18.0	1.026	0.00503	0.01	151
	/	/	/	/	/	/	/	/	/
Handheld Back	2310	20	50%RB	16.83	18.0	1.309	0.00453	0.01	152
	/	/	/	/	/	/	/	/	/
	2310	20	1RB	17.89	18.0	1.026	0.016	0.02	153
Body Left (10mm)	/	/	/	/	/	/	/	/	/
	2310	20	50%RB	16.83	18.0	1.309	0.014	0.02	154
	/	/	/	/	/	/	/	/	/
Body Right (10mm)	2310	20	1RB	17.89	18.0	1.026	0.068	0.07	155
	/	/	/	/	/	/	/	/	/
	2310	20	50%RB	16.83	18.0	1.309	0.054	0.07	156
Body Bottom (10mm)	/	/	/	/	/	/	/	/	/
	2310	20	1RB	17.89	18.0	1.026	0.05	0.05	157
	/	/	/	/	/	/	/	/	/
Body Bottom (10mm)	2310	20	50%RB	16.83	18.0	1.309	0.041	0.05	158
	/	/	/	/	/	/	/	/	/
	2310	20	1RB	17.89	18.0	1.026	0.033	0.03	159
Body Bottom (10mm)	/	/	/	/	/	/	/	/	/
	2310	20	50%RB	16.83	18.0	1.309	0.027	0.04	160
	/	/	/	/	/	/	/	/	/
Body Bottom (10mm)	2310	20	1RB	17.89	18.0	1.026	0.072	0.07	161
	/	/	/	/	/	/	/	/	/
	2310	20	50%RB	16.83	18.0	1.309	0.058	0.08	162

LTE Band 40B :

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg) for Head and Body SAR 10g SAR (W/kg) for Handheld SAR			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Head Left Cheek	/	/	/	/	/	/	/	/	/
	2355	20	1RB	17.81	18.0	1.045	0.021	0.02	163
	/	/	/	/	/	/	/	/	/
Head Left Tilt	2355	20	50%RB	16.75	18.0	1.334	0.017	0.02	164
	/	/	/	/	/	/	/	/	/
	2355	20	1RB	17.81	18.0	1.045	0.01	0.01	165
Head Right Cheek	/	/	/	/	/	/	/	/	/
	2355	20	50%RB	16.75	18.0	1.334	0.00802	0.01	166
	/	/	/	/	/	/	/	/	/
Head Right Tilt	2355	20	1RB	17.81	18.0	1.045	0.016	0.02	167
	/	/	/	/	/	/	/	/	/
	2355	20	50%RB	16.75	18.0	1.334	0.013	0.02	168
Body Front (10mm)	/	/	/	/	/	/	/	/	/
	2355	20	1RB	17.81	18.0	1.045	0.012	0.01	169
	/	/	/	/	/	/	/	/	/
Handheld Back	2355	20	50%RB	16.75	18.0	1.334	0.011	0.01	170
	/	/	/	/	/	/	/	/	/
	2355	20	1RB	17.81	18.0	1.045	0.014	0.01	171
Body Left (10mm)	/	/	/	/	/	/	/	/	/
	2355	20	50%RB	16.75	18.0	1.334	0.00877	0.01	172
	/	/	/	/	/	/	/	/	/
Handheld Bottom	2355	20	1RB	17.81	18.0	1.045	0.062	0.06	173
	/	/	/	/	/	/	/	/	/
	2355	20	50%RB	16.75	18.0	1.334	0.045	0.06	174
Body Right (10mm)	/	/	/	/	/	/	/	/	/
	2355	20	1RB	17.81	18.0	1.045	0.024	0.03	175
	/	/	/	/	/	/	/	/	/
Body Bottom (10mm)	2355	20	50%RB	16.75	18.0	1.334	0.019	0.03	176
	/	/	/	/	/	/	/	/	/
	2355	20	1RB	17.81	18.0	1.045	0.00076	0.01	177
Handheld Bottom	/	/	/	/	/	/	/	/	/
	2355	20	50%RB	16.75	18.0	1.334	0.000398	0.01	178
	/	/	/	/	/	/	/	/	/
Handheld Bottom	2355	20	1RB	17.81	18.0	1.045	0.147	0.15	179
	/	/	/	/	/	/	/	/	/
	2355	20	50%RB	16.75	18.0	1.334	0.121	0.16	180
Handheld Bottom	/	/	/	/	/	/	/	/	/
	2355	20	1RB	17.81	18.0	1.045	0.079	0.08	179
	/	/	/	/	/	/	/	/	/
Handheld Bottom	2355	20	50%RB	16.75	18.0	1.334	0.068	0.09	180
	/	/	/	/	/	/	/	/	/
	2355	20	1RB	17.81	18.0	1.045	0.079	0.08	179

LTE Band 41 :

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg) for Head and Body SAR 10g SAR (W/kg) for Handheld SAR			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Head Left Cheek	2585	20	1RB	/	/	/	/	/	/
	2605	20	1RB	17.39	17.5	1.026	0.016	0.02	181
	2625	20	1RB	/	/	/	/	/	/
	2605	20	50%RB	17.30	17.5	1.047	0.012	0.01	182
Head Left Tilt	2585	20	1RB	/	/	/	/	/	/
	2605	20	1RB	17.39	17.5	1.026	0.013	0.01	183
	2625	20	1RB	/	/	/	/	/	/
	2605	20	50%RB	17.30	17.5	1.047	0.011	0.01	184
Head Right Cheek	2585	20	1RB	/	/	/	/	/	/
	2605	20	1RB	17.39	17.5	1.026	0.015	0.02	185
	2625	20	1RB	/	/	/	/	/	/
	2605	20	50%RB	17.30	17.5	1.047	0.012	0.01	186
Head Right Tilt	2585	20	1RB	/	/	/	/	/	/
	2605	20	1RB	17.39	17.5	1.026	0.021	0.02	187
	2625	20	1RB	/	/	/	/	/	/
	2605	20	50%RB	17.30	17.5	1.047	0.016	0.02	188
Body Front (10mm)	2585	20	1RB	/	/	/	/	/	/
	2605	20	1RB	17.39	17.5	1.026	0.015	0.02	189
	2625	20	1RB	/	/	/	/	/	/
	2605	20	50%RB	17.30	17.5	1.047	0.011	0.01	190
Handheld Back	2585	20	1RB	/	/	/	/	/	/
	2605	20	1RB	17.39	17.5	1.026	0.014	0.01	191
	2625	20	1RB	/	/	/	/	/	/
	2605	20	50%RB	17.30	17.5	1.047	0.012	0.01	192
Body Left (10mm)	2585	20	1RB	/	/	/	/	/	/
	2605	20	1RB	17.39	17.5	1.026	0.026	0.03	193
	2625	20	1RB	/	/	/	/	/	/
	2605	20	50%RB	17.30	17.5	1.047	0.018	0.02	194
Body Right (10mm)	2585	20	1RB	/	/	/	/	/	/
	2605	20	1RB	17.39	17.5	1.026	0.00265	0.01	195
	2625	20	1RB	/	/	/	/	/	/
	2605	20	50%RB	17.30	17.5	1.047	0.00275	0.01	196
Body Bottom (10mm)	2585	20	1RB	/	/	/	/	/	/
	2605	20	1RB	17.39	17.5	1.026	0.087	0.09	197
	2625	20	1RB	/	/	/	/	/	/
	2605	20	50%RB	17.30	17.5	1.047	0.077	0.08	198
Handheld Bottom	2585	20	1RB	/	/	/	/	/	/
	2605	20	1RB	17.39	17.5	1.026	0.046	0.05	197
	2625	20	1RB	/	/	/	/	/	/
	2605	20	50%RB	17.30	17.5	1.047	0.040	0.04	198

Note:

1. When the SAR value is less than half of the limit, testing for other channels are optional.
2. SAR for LTE band exposure configurations is measured according to the procedures of KDB 941225 D05 SAR for LTE Devices v02.
3. KDB941225D05-SAR for higher order modulation is required only when the highest maximum output power for the configuration in the higher order modulation is > 0.5 dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg
4. KDB941225D05-For QPSK with 100% RB allocation, when the reported SAR measured for the Highest output power channel is < 1.45 W/kg, tests for the remaining required test channels are optional.
5. KDB941225D05- 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.
6. KDB941225D05- 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 among RB offset the upper edge, middle and lower edge of each required test channel.
7. KDB941225D05- other channel bandwidths SAR test is required when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > 0.5 dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.
8. Worst case SAR for 50% RB allocation is selected to be tested.
9. KDB 648474 D04-When the peak SAR located in regions that probe is unable to access, a flat phantom is used for SAR measurement.
10. The E-UTRA Operating Band 17 is a subset of band 12, and they are same in modulation type, therefore, they were considered as one frequency band during SAR measurement, LTE Band 12 (the wide frequency range) was selected to test.
11. According to the RF report, the LTE Band 40A&40B has a maximum Duty cycle of 32.65%.
12. The worst case of body SAR was selected to evaluate and calculate 10-g extremity SAR.

WLAN 2.4G:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg) for Head and Body SAR 10g SAR (W/kg) for Handheld SAR				
					Scaled Factor	Duty Cycle (%)	Meas. SAR	Scaled SAR	Plot
Head Left Cheek	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	18.29	19.0	1.178	99.52	0.086	0.10	199
	2462	802.11b	/	/	/	/	/	/	/
Head Left Tilt	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	18.29	19.0	1.178	99.52	0.091	0.11	200
	2462	802.11b	/	/	/	/	/	/	/
Head Right Cheek	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	18.29	19.0	1.178	99.52	0.032	0.04	201
	2462	802.11b	/	/	/	/	/	/	/
Head Right Tilt	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	18.29	19.0	1.178	99.52	0.035	0.04	202
	2462	802.11b	/	/	/	/	/	/	/
Body Front (10mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	18.29	19.0	1.178	99.52	0.068	0.08	203
	2462	802.11b	/	/	/	/	/	/	/
Handheld Front	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	18.29	19.0	1.178	99.52	0.036	0.04	203
	2462	802.11b	/	/	/	/	/	/	/
Handheld Back	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	18.29	19.0	1.178	99.52	0.029	0.03	204
	2462	802.11b	/	/	/	/	/	/	/
Body Right (10mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	18.29	19.0	1.178	99.52	0.011	0.01	205
	2462	802.11b	/	/	/	/	/	/	/
Body Top (10mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	18.29	19.0	1.178	99.52	0.048	0.06	206
	2462	802.11b	/	/	/	/	/	/	/

Note:

1. 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, OFDM SAR is not required.
2. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.
3. 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 802.11b/g/n mode is use for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band.
4. According KDB 248227 D01, for SAR testing of 2.4G WIFI 802.11b 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)".

U-NII-2A:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg) for Head and Body SAR 10g SAR (W/kg) for Handheld SAR				
					Scaled Factor	Duty Cycle (%)	Meas. SAR	Scaled SAR	Plot
Head Left Cheek	5260	802.11a	/	/	/	/	/	/	/
	5280	802.11a	14.58	15.0	1.102	96.53	0.023	0.03	207
	5320	802.11a	/	/	/	/	/	/	/
Head Left Tilt	5260	802.11a	/	/	/	/	/	/	/
	5280	802.11a	14.58	15.0	1.102	96.53	0.025	0.03	208
	5320	802.11a	/	/	/	/	/	/	/
Head Right Cheek	5260	802.11a	/	/	/	/	/	/	/
	5280	802.11a	14.58	15.0	1.102	96.53	0.022	0.03	209
	5320	802.11a	/	/	/	/	/	/	/
Head Right Tilt	5260	802.11a	/	/	/	/	/	/	/
	5280	802.11a	14.58	15.0	1.102	96.53	0.044	0.05	210
	5320	802.11a	/	/	/	/	/	/	/
Body Front (10mm)	5260	802.11a	/	/	/	/	/	/	/
	5280	802.11a	14.58	15.0	1.102	96.53	0.024	0.03	211
	5320	802.11a	/	/	/	/	/	/	/
Handheld Back	5260	802.11a	/	/	/	/	/	/	/
	5280	802.11a	14.58	15.0	1.102	96.53	0.074	0.08	212
	5320	802.11a	/	/	/	/	/	/	/
Body Right (10mm)	5260	802.11a	/	/	/	/	/	/	/
	5280	802.11a	14.58	15.0	1.102	96.53	0.058	0.07	213
	5320	802.11a	/	/	/	/	/	/	/
Body Top (10mm)	5260	802.11a	/	/	/	/	/	/	/
	5280	802.11a	14.58	15.0	1.102	96.53	0.052	0.06	214
	5320	802.11a	/	/	/	/	/	/	/

Note:

1. When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, each band is tested independently for SAR.
2. When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, each band is tested independently for SAR.
3. The worst case of body SAR was selected to evaluate and calculate 10-g extremity SAR.

U-NII-3

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg) for Head and Body SAR 10g SAR (W/kg) for Handheld SAR				
					Scaled Factor	Duty Cycle (%)	Meas. SAR	Scaled SAR	Plot
Head Left Cheek	5745	802.11a	/	/	/	/	/	/	/
	5785	802.11a	14.51	15.0	1.119	96.53	0.051	0.06	215
	5825	802.11a	/	/	/	/	/	/	/
Head Left Tilt	5745	802.11a	/	/	/	/	/	/	/
	5785	802.11a	14.51	15.0	1.119	96.53	0.103	0.12	216
	5825	802.11a	/	/	/	/	/	/	/
Head Right Cheek	5745	802.11a	/	/	/	/	/	/	/
	5785	802.11a	14.51	15.0	1.119	96.53	0.093	0.11	217
	5825	802.11a	/	/	/	/	/	/	/
Head Right Tilt	5745	802.11a	/	/	/	/	/	/	/
	5785	802.11a	14.51	15.0	1.119	96.53	0.171	0.20	218
	5825	802.11a	/	/	/	/	/	/	/
Body Front (10mm)	5745	802.11a	/	/	/	/	/	/	/
	5785	802.11a	14.51	15.0	1.119	96.53	0.041	0.05	219
	5825	802.11a	/	/	/	/	/	/	/
Handheld Back	5745	802.11a	/	/	/	/	/	/	/
	5785	802.11a	14.51	15.0	1.119	96.53	0.037	0.04	220
	5825	802.11a	/	/	/	/	/	/	/
Body Right (10mm)	5745	802.11a	/	/	/	/	/	/	/
	5785	802.11a	14.51	15.0	1.119	96.53	0.051	0.06	221
	5825	802.11a	/	/	/	/	/	/	/
Body Top (10mm)	5745	802.11a	/	/	/	/	/	/	/
	5785	802.11a	14.51	15.0	1.119	96.53	0.214	0.25	222
	5825	802.11a	/	/	/	/	/	/	/
Handheld Top	5745	802.11a	/	/	/	/	/	/	/
	5785	802.11a	14.51	15.0	1.119	96.53	0.083	0.10	222
	5825	802.11a	/	/	/	/	/	/	/

Note:

1. When the SAR value is less than half of the limit, testing for other channels are optional.
2. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance
3. According KDB 248227 D01, for SAR testing of 5G WIFI 802.11a 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)".
4. The worst case of body SAR was selected to evaluate and calculate 10-g extremity SAR.

Bluetooth:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg) for Head and Body SAR 10g SAR (W/kg) for Handheld SAR				
					Scaled Factor	Duty Cycle (%)	Meas. SAR	Scaled SAR	Plot
Head Left Cheek	2402	GFSK	/	/	/	/	/	/	/
	2441	GFSK	11.91	12.5	1.146	76.74	<0.01	0.01	223
	2480	GFSK	/	/	/	/	/	/	/
Head Left Tilt	2402	GFSK	/	/	/	/	/	/	/
	2441	GFSK	11.91	12.5	1.146	76.74	<0.01	0.01	224
	2480	GFSK	/	/	/	/	/	/	/
Head Right Cheek	2402	GFSK	/	/	/	/	/	/	/
	2441	GFSK	11.91	12.5	1.146	76.74	<0.01	0.01	225
	2480	GFSK	/	/	/	/	/	/	/
Head Right Tilt	2402	GFSK	/	/	/	/	/	/	/
	2441	GFSK	11.91	12.5	1.146	76.74	<0.01	0.01	226
	2480	GFSK	/	/	/	/	/	/	/
Body Front (10mm)	2402	GFSK	/	/	/	/	/	/	/
	2441	GFSK	11.91	12.5	1.146	76.74	<0.01	0.01	227
	2480	GFSK	/	/	/	/	/	/	/
Handheld Back	2402	GFSK	/	/	/	/	/	/	/
	2441	GFSK	11.91	12.5	1.146	76.74	<0.01	0.01	228
	2480	GFSK	/	/	/	/	/	/	/
Body Right (10mm)	2402	GFSK	/	/	/	/	/	/	/
	2441	GFSK	11.91	12.5	1.146	76.74	<0.01	0.01	229
	2480	GFSK	/	/	/	/	/	/	/
Handheld Right	2402	GFSK	/	/	/	/	/	/	/
	2441	GFSK	11.91	12.5	1.146	76.74	<0.01	0.01	229
	2480	GFSK	/	/	/	/	/	/	/
Body Top (10mm)	2402	GFSK	/	/	/	/	/	/	/
	2441	GFSK	11.91	12.5	1.146	76.74	<0.01	0.01	230
	2480	GFSK	/	/	/	/	/	/	/

Note:

1. When the SAR value is less than half of the limit, testing for other channels are optional.
2. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.
3. From October 2016 TCB workshop, for SAR testing of Bluetooth 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)".
4. The measurements are too small to show.
5. The worst case of body SAR was selected to evaluate and calculate 10-g extremity SAR.

RFID:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	10g SAR (W/kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Handheld Back (0mm)	902.75	GFSK	/	/	/	/	/	/
	914.75	GFSK	17.75	18.0	1.059	0.303	0.32	231
	927.25	GFSK	/	/	/	/	/	/
Handheld Front (0mm)	902.75	GFSK	/	/	/	/	/	/
	914.75	GFSK	17.75	18.0	1.059	0.699	0.74	232
	927.25	GFSK	/	/	/	/	/	/
Handheld Left (0mm)	902.75	GFSK	/	/	/	/	/	/
	914.75	GFSK	17.75	18.0	1.059	1.02	1.08	233
	927.25	GFSK	/	/	/	/	/	/
Handheld Right (0mm)	902.75	GFSK	/	/	/	/	/	/
	914.75	GFSK	17.75	18.0	1.059	1.11	1.18	234
	927.25	GFSK	/	/	/	/	/	/
Handheld Top (0mm)	902.75	GFSK	17.64	18.0	1.086	1.91	2.08	235
	914.75	GFSK	17.75	18.0	1.059	1.92	2.03	236
	927.25	GFSK	17.44	18.0	1.138	1.73	1.97	237

Note:

1. When the 10-g SAR is $\leq 2.0\text{W/Kg}$ for extremity, testing for other channels are optional.
2. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.
3. SAR measurement were performed at a minimum conservative distance of 0mm.

SAR Measurement Variability

In accordance with published RF Exposure KDB procedure 865664 D01 SAR measurement 100 MHz to 6 GHz v01. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results

- 1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
- 2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
- 3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
- 4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .
- 5) 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.

The Highest Measured SAR Configuration in Each Frequency Band

Head

SAR probe calibration point	Frequency Band	Freq.(MHz)	EUT Position	Meas. SAR (W/kg)		Largest to Smallest SAR Ratio
				Original	Repeated	
-	-	-	-	-	-	-

Body

SAR probe calibration point	Frequency Band	Freq.(MHz)	EUT Position	Meas. SAR (W/kg)		Largest to Smallest SAR Ratio
				Original	Repeated	
-	-	-	-	-	-	-

Extremity

SAR probe calibration point	Frequency Band	Freq.(MHz)	EUT Position	Meas. SAR (W/kg)		Largest to Smallest SAR Ratio
				Original	Repeated	
-	-	-	-	-	-	-

Note:

1. Second Repeated Measurement is not required since the ratio of the largest to smallest SAR for the original and first repeated measurement is not > 1.20 .
2. The measured SAR results **do not** have to be scaled to the maximum tune-up tolerance to determine if repeated measurements are required.
3. SAR measurement variability must be assessed for each frequency band, which is determined by the **SAR probe calibration point and tissue-equivalent medium** used for the device measurements..

SAR SIMULTANEOUS TRANSMISSION DESCRIPTION

Simultaneous Transmission:

Description of Simultaneous Transmit Capabilities		
Transmitter Combination	Simultaneous?	Hotspot?
WWAN(GSM/WCDMA/LTE) + Bluetooth + NFC + RFID	√	×
WWAN(GSM/WCDMA/LTE) + WLAN + NFC + RFID	√	√
WLAN + Bluetooth	×	×

Note: All combinations can be implemented except those containing WLAN + Bluetooth.

Simultaneous and Hotspot SAR test exclusion considerations:

For Head&Body:

Mode(SAR1+SAR2)	Position	Reported SAR(W/kg) _{1g}		ΣSAR < 1.6W/kg
		MAX _{SAR1}	MAX _{SAR2}	
WWAN+WLAN	Head	0.16	0.20	0.36
	Body	0.36	0.25	0.61
WWAN+BT	Head	0.16	0.01	0.17
	Body	0.36	0.01	0.37
WWAN(Hotspot)+WLAN	Body	0.36	0.25	0.61

For Extremity:

Mode(SAR1+SAR2+SAR3)	Position	Reported SAR(W/kg) _{10g}			ΣSAR < 4.0W/kg
		MAX _{SAR1}	MAX _{SAR2}	MAX _{SAR3}	
WWAN+WLAN+RFID	Extremity	0.24	0.10	2.08	2.42
WWAN+BT+RFID	Extremity	0.24	0.01	2.08	2.33

Note:

- Hotspot mode SAR is measured for all edges and surfaces of the device with a transmitting antenna located within 25 mm from that surface or edge; for the data modes, wireless technologies and frequency bands supporting hotspot mode.
- Hotspot Mode is not feasible during voice calls.
- The smartphone(combined with the EUT) has already been tested for standalone head and body SAR. In its function as an APP to control the scanner, it will be used in the extremity exposure condition. Considering the smartphone has already been tested for a more conservative exposure, simultaneous of extremity transmission should not be require and this evaluation procedure was confirmed by the FCC.
- For the EIRP of NFC is 0.00015mW, per KDB447498 D01 clause 4.3, the estimated SAR is so lower, so the NFC almost have no influence on the results of simultaneous transmission.
- For the simultaneous exclusion of Extremity SAR, in normal use, the distance between the hand and the back of the smartphone is 10mm, so it is acceptable to select 10mm conservative 10g Extremity SAR Max value together with RFID 10g Extremity SAR.

Conclusion:

Sum of SAR: $\Sigma \text{SAR} \leq 1.6 \text{ W/kg}$ for 1g SAR, and $\Sigma \text{SAR} \leq 4.0 \text{ W/kg}$ for 10g SAR, therefore simultaneous transmission SAR with SPLSR is **not required**.

SAR Plots

Please Refer to the Attachment.

APPENDIX A MEASUREMENT UNCERTAINTY

The uncertainty budget has been determined for the measurement system and is given in the following Table.

Measurement uncertainty evaluation for IEEE1528-2013 SAR test

Source of uncertainty	Tolerance/ uncertainty y ± %	Probability distribution	Divisor	ci (1 g)	ci (10 g)	Standard uncertainty ± %, (1 g)	Standard uncertainty ± %, (10 g)
Measurement system							
Probe calibration	6.55	N	1	1	1	6.6	6.6
Axial Isotropy	4.7	R	$\sqrt{3}$	1	1	2.7	2.7
Hemispherical Isotropy	9.6	R	$\sqrt{3}$	0	0	0.0	0.0
Boundary effect	1.0	R	$\sqrt{3}$	1	1	0.6	0.6
Linearity	4.7	R	$\sqrt{3}$	1	1	2.7	2.7
Detection limits	1.0	R	$\sqrt{3}$	1	1	0.6	0.6
Readout electronics	0.3	N	1	1	1	0.3	0.3
Response time	0.0	R	$\sqrt{3}$	1	1	0.0	0.0
Integration time	0.0	R	$\sqrt{3}$	1	1	0.0	0.0
RF ambient conditions – noise	1.0	R	$\sqrt{3}$	1	1	0.6	0.6
RF ambient conditions–reflections	1.0	R	$\sqrt{3}$	1	1	0.6	0.6
Probe positioner mech. Restrictions	0.8	R	$\sqrt{3}$	1	1	0.5	0.5
Probe positioning with respect to phantom shell	6.7	R	$\sqrt{3}$	1	1	3.9	3.9
Post-processing	2.0	R	$\sqrt{3}$	1	1	1.2	1.2
Test sample related							
Test sample positioning	2.8	N	1	1	1	2.8	2.8
Device holder uncertainty	6.3	N	1	1	1	6.3	6.3
Drift of output power	5.0	R	$\sqrt{3}$	1	1	2.9	2.9
Phantom and set-up							
Phantom uncertainty (shape and thickness tolerances)	4.0	R	$\sqrt{3}$	1	1	2.3	2.3
Liquid conductivity target)	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2
Liquid conductivity meas.)	2.5	N	1	0.64	0.43	1.6	1.1
Liquid permittivity target)	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4
Liquid permittivity meas.)	2.5	N	1	0.6	0.49	1.5	1.2
Combined standard uncertainty		RSS				12.2	12.0
Expanded uncertainty 95 % confidence interval)						24.3	23.9

APPENDIX B EUT TEST POSITION PHOTOS

Please Refer to the Attachment.

APPENDIX C PROBE CALIBRATION CERTIFICATES

Please Refer to the Attachment.

APPENDIX D DIPOLE CALIBRATION CERTIFICATES

Please Refer to the Attachment.

******* END OF REPORT *******