

TEST REPORT

Applicant/Manufacture: Epik One America Corporation
 Address : 801 Brickell avenue #900 Miami Florida 33131 United States.
 Report Number : SZNS211101-56012E-SA
 FCC ID: 2AO6ZTX1000

Test Standard (s)

FCC Part 2.1093

Sample Description

Product Type: 4G LTE Tablet
 Model No.: TX1000
 Multiple Model(s) No.: /
 Trade Mark: Epik One
 Date Received: 2021/11/03
 Date of Test: 2021/12/03-2021/12/05
 Report Date: 2021/12/07

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

Prepared and Checked By:



Lance Li
 EMC Engineer

Approved By:



Candy Li
 EMC Engineer

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "★".
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Attestation of Test Results			
EUT Information	EUT Description	4G LTE Tablet	
	Tested Model	TX1000	
	FCC ID	2AO6ZTX1000	
	Serial Number	SZNS211101-56012E-SA-S_OAN	
	Test Date	2021/12/03 to 2021/12/05	
MODE		Max. SAR Level(s) Reported(W/kg)	Limit (W/kg)
GSM 850	1g Body SAR	1.13	1.6
PCS 1900	1g Body SAR	1.34	
WCDMA Band 2	1g Body SAR	0.78	
WCDMA Band 5	1g Body SAR	0.78	
LTE Band 2	1g Body SAR	1.18	
LTE Band 4	1g Body SAR	1.33	
LTE Band 5	1g Body SAR	0.79	
LTE Band 7	1g Body SAR	0.67	
Simultaneous	1g Body SAR	1.58	
	1g Body SAR	1.58(Hotspot)	

Applicable Standards	FCC 47 CFR part 2.1093 Radiofrequency radiation exposure evaluation: portable devices
	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
	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)
	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>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	SZNS211101-56012E-SA	Original Report	2021-12-07

EUT DESCRIPTION

This report has been prepared on behalf of *Epik One America Corporation* and their product *4G LTE Tablet*, Model: *TX1000*, FCC ID: *2A06ZTX1000* or the EUT (Equipment under Test) as referred to in the rest of this report.

Technical Specification

Device Type:	Portable
Exposure Category:	Population / Uncontrolled
Antenna Type(s):	Internal Antenna
DTM Type:	Class B
Multi-slot Class:	GPRS/EGPRS (Class 12)
Proximity sensor for SAR reduction:	None
Body-Worn Accessories:	Headset
Face-Head Accessories:	None
Operation Mode :	GSM Voice, GPRS/ EDGE Data, WCDMA(R99 (Voice+Data), HSDPA/HSUPA/HSPA+), FDD-LTE, WLAN, Bluetooth
Frequency Band:	GSM 850: 824-849 MHz(TX); 869-894 MHz(RX) PCS 1900: 1850-1910 MHz(TX); 1930-1990 MHz(RX) WCDMA Band 2: 1850-1910 MHz(TX); 1930-1990 MHz(RX) WCDMA Band 5: 824-849 MHz(TX); 869-894 MHz(RX) LTE Band 2: 1850-1910 MHz(TX); 1930-1990 MHz(RX) LTE Band 4: 1710-1755 MHz(TX); 2110-2155 MHz(RX) LTE Band 5: 824-849 MHz(TX) ; 869-894 MHz(RX) LTE Band 7: 2500-2570 MHz(TX); 2620-2690MHz(RX) 2.4GWi-Fi:2412~2462MHz Bluetooth : 2402 MHz-2480 MHz
Conducted RF Power:	GSM 850 : 32.39 dBm PCS 1900: 30.02 dBm WCDMA Band 2: 23.18 dBm WCDMA Band 5: 22.73 dBm LTE Band 2: 23.01 dBm LTE Band 4: 22.67 dBm LTE Band 5: 22.91dBm LTE Band 7: 23.43 dBm WLAN (2.4G): 6.77 dBm Bluetooth(BDR/EDR): 7.34 dBm BLE_1M: 1.96 dBm
Power Source:	Rechargeable Battery
Normal Operation:	Body-Support

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.

CE:

The order requires routine SAR evaluation prior to equipment authorization of portable transmitter devices, including portable telephones. For consumer products, the applicable limit is 2 mW/g as recommended by EN62209-1 for an uncontrolled environment. According to the Standard, 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 Europe is 2 mW/g average over 10 gram of tissue mass.

The test configurations were laid out on a specially designed test fixture to ensure the reproducibility of measurements. Each configuration was scanned for SAR. Analysis of each scan was carried out to characterize the above effects in the device.

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)	1.60	8.0
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4.0	20.0

CE Limit(10g 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 10 g of tissue)	2.0	10
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 (FCC) & 2 W/kg (CE) 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.

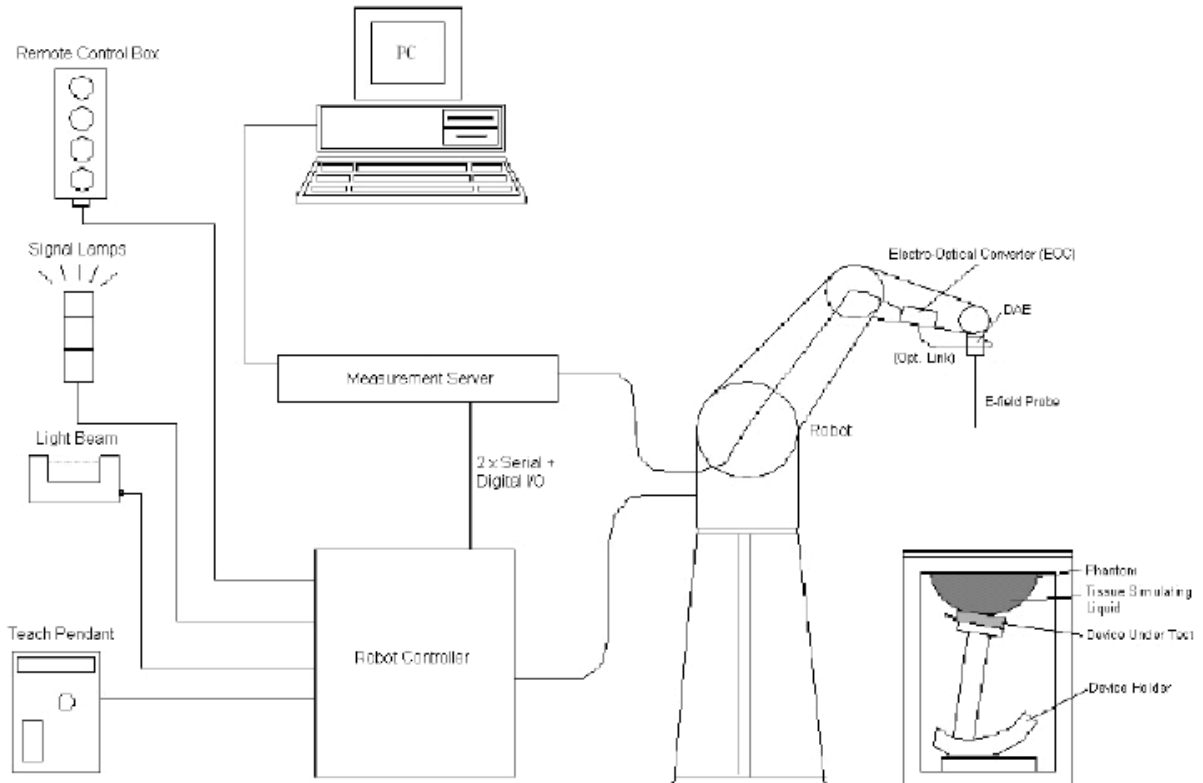
DESCRIPTION OF TEST SYSTEM

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 DASY5 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: 2021/02/23

Calibration Frequency Point(MHz)	Frequency Range(MHz)		Conversion Factor		
	From	To	X	Y	Z
750 Head	650	850	10.28	10.28	10.28
900 Head	850	1000	9.80	9.80	9.80
1450 Head	1350	1550	8.61	8.61	8.61
1750 Head	1650	1850	8.39	8.39	8.39
1900 Head	1850	1950	8.02	8.02	8.02
2000 Head	1950	2100	8.07	8.07	8.07
2300 Head	2200	2400	7.92	7.92	7.92
2450 Head	2400	2550	7.63	7.63	7.63
2600 Head	2550	2700	7.33	7.33	7.33
3300 Head	3200	3400	7.21	7.21	7.21
3500 Head	3400	3600	6.96	6.96	6.96
3700 Head	3600	3800	6.65	6.65	6.65
3900 Head	3800	4000	6.66	6.66	6.66
4400 Head	4300	4500	6.45	6.45	6.45
4600 Head	4500	4700	6.30	6.30	6.30
4800 Head	4700	4900	6.24	6.24	6.24
4950 Head	4900	5050	5.95	5.95	5.95

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 0mm, 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 x 7 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 and Body

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>
2 450	39,2	1,80
<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>
6 000	35,1	5,48

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.

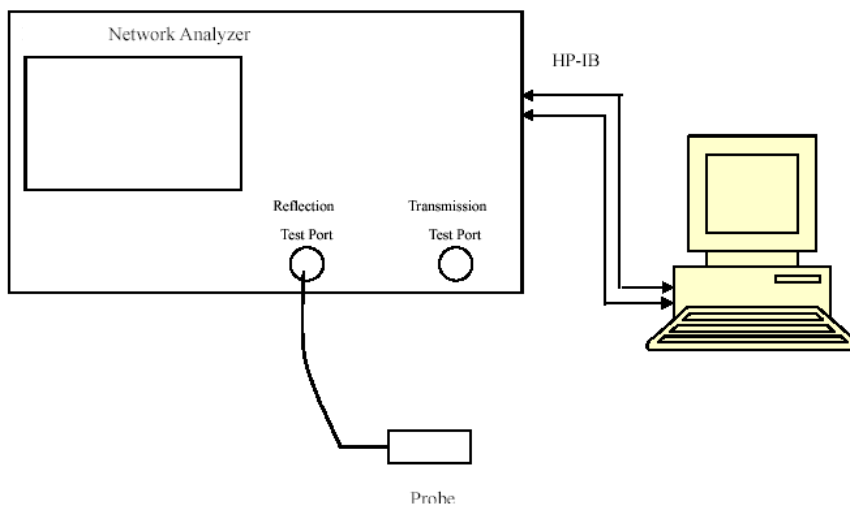
EQUIPMENT LIST AND CALIBRATION

Equipments List & Calibration Information

Equipment	Model	S/N	Calibration Date	Calibration Due Date
DASY5 Test Software	DASY52 52.10.2	N/A	NCR	NCR
DASY6 Measurement Server	DASY6 6.0.31	N/A	NCR	NCR
Data Acquisition Electronics	DAE4	1562	2021/1/19	2022/1/18
E-Field Probe	EX3DV4	7441	2021/02/23	2022/02/22
Mounting Device	MD4HHTV5	SD 000 H01 KA	NCR	NCR
SAM Twin Phantom	SAM-Twin V8.0	1962	NCR	NCR
Dipole, 750MHz	D750V3	1194	2020/1/13	2023/1/12
Dipole, 1800MHz	D1800V2	2d018	2020/10/15	2023/10/14
Dipole, 1900MHz	D1900V2	5d231	2020/1/14	2023/1/13
Dipole,2450MHz	D2450V2	751	2020/10/13	2023/10/12
Simulated Tissue Liquid Head(500-9500MHz)	HBBL600-10000V6	180622-2	Each Time	
Network Analyzer	8753D	3410A08288	2021/7/07	2022/7/06
Dielectric Assessment Kit	DAK-3.5	1248	NCR	NCR
Signal Generator	SMB100A	108362	2020/12/24	2021/12/23
USB wideband power sensor	U2021XA	MY52350001	2021/7/31	2022/7/30
Power Amplifier	CBA 1G-070	T44328	2020/12/24	2021/12/23
Linear Power Amplifier	AS0860-40/45	1060913	2020/12/24	2021/12/23
Directional Coupler	4223-20	3.113.277	2020/12/25	2021/12/24
6dB Attenuator	8493B 6dB Attenuator	2708A 04769	2020/12/25	2021/12/24
Wideband Radio Communication Tester	CMW500	143458	2021/03/03	2022/03/02

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)	$\Delta\epsilon_r$	$\Delta\sigma$	
750	Simulated Tissue Liquid Head	42.794	0.882	41.90	0.89	2.13	-0.9	± 5
824.2	Simulated Tissue Liquid Head	41.626	0.884	41.55	0.90	0.18	-1.78	± 5
826.4	Simulated Tissue Liquid Head	41.962	0.898	41.54	0.90	1.02	-0.22	± 5
829	Simulated Tissue Liquid Head	41.995	0.892	41.53	0.90	1.12	-0.89	± 5
836.5	Simulated Tissue Liquid Head	41.706	0.924	41.5	0.90	0.5	2.67	± 5
836.6	Simulated Tissue Liquid Head	42.087	0.923	41.5	0.90	1.41	2.56	± 5
844	Simulated Tissue Liquid Head	41.536	0.925	41.5	0.91	0.09	1.65	± 5
846.6	Simulated Tissue Liquid Head	41.515	0.928	41.5	0.91	0.04	1.98	± 5
848.8	Simulated Tissue Liquid Head	41.433	0.922	41.5	0.91	-0.16	1.32	± 5

*Liquid Verification above was performed on 2021/12/04.

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$	
1720	Simulated Tissue Liquid Head	40.748	1.377	40.13	1.35	1.54	2	± 5
1732.5	Simulated Tissue Liquid Head	40.667	1.367	40.11	1.36	1.39	0.51	± 5
1745	Simulated Tissue Liquid Head	41.694	1.394	40.1	1.37	3.98	1.75	± 5
1800	Simulated Tissue Liquid Head	40.007	1.404	40.0	1.40	0.02	0.29	± 5

*Liquid Verification above was performed on 2021/12/04.

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$	
1850.2	Simulated Tissue Liquid Head	39.613	1.382	40.0	1.40	-0.97	-1.29	± 5
1852.4	Simulated Tissue Liquid Head	39.207	1.393	40.0	1.40	-1.98	-0.5	± 5
1860	Simulated Tissue Liquid Head	40.11	1.39	40.0	1.40	0.27	-0.71	± 5
1880	Simulated Tissue Liquid Head	39.816	1.399	40.0	1.40	-0.46	-0.07	± 5
1900	Simulated Tissue Liquid Head	40.16	1.415	40.0	1.40	0.4	1.07	± 5
1907.6	Simulated Tissue Liquid Head	40.161	1.43	40.0	1.40	0.4	2.14	± 5
1909.8	Simulated Tissue Liquid Head	40.212	1.43	40.0	1.40	0.53	2.14	± 5

*Liquid Verification above was performed on 2021/12/05.

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$	
2412	Simulated Tissue Liquid Head	38.701	1.807	39.28	1.77	-1.47	2.09	± 5
2437	Simulated Tissue Liquid Head	38.674	1.842	39.22	1.79	-1.39	2.91	± 5
2450	Simulated Tissue Liquid Head	38.463	1.855	39.20	1.80	-1.88	3.06	± 5
2462	Simulated Tissue Liquid Head	38.44	1.868	39.17	1.82	-1.86	2.64	± 5
2510	Simulated Tissue Liquid Head	38.666	1.912	39.12	1.86	-1.16	2.8	± 5
2535	Simulated Tissue Liquid Head	38.165	1.924	39.09	1.89	-2.37	1.8	± 5

*Liquid Verification above was performed on 2021/12/03.

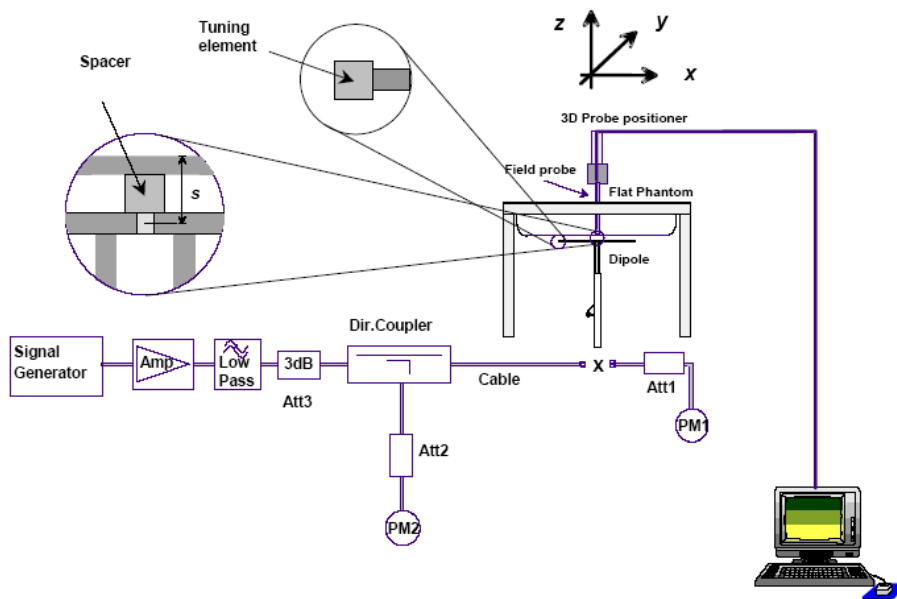
System Accuracy Verification

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

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 (%)
2021/12/04	750	Head	100	1g 0.865	8.65	8.55	1.170	± 10
2021/12/04	1800	Head	100	1g 4.11	41.1	39.3	4.580	± 10
2021/12/05	1900	Head	100	1g 4.15	41.5	40.3	2.978	± 10
2021/12/03	2450	Head	100	1g 5.25	52.5	53.0	-0.943	± 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: $f = 750 \text{ MHz}$; $\sigma = 0.882 \text{ S/m}$; $\epsilon_r = 42.794$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7441; ConvF(10.28, 10.28, 10.28) @ 750 MHz;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 SN1562; Calibrated: 2021/1/19
- Phantom: Head model; Type: QD000P40CC; Serial: TP: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 (71x91x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.946 W/kg

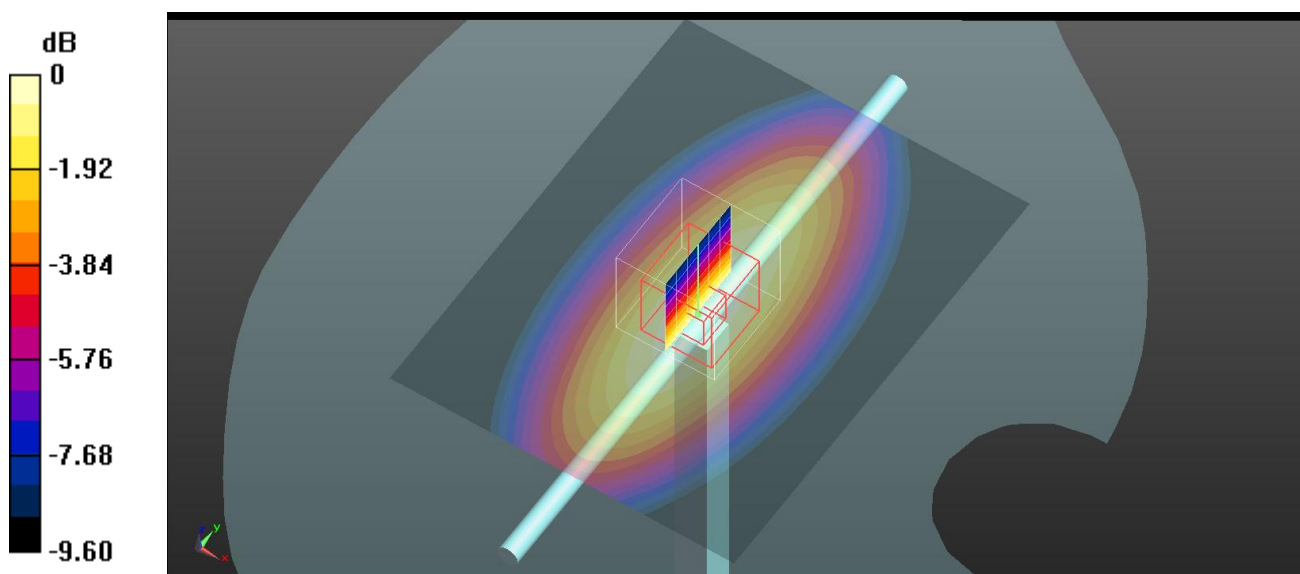
System Performance Check at 750MHz/d=15mm, Pin=100mw/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 33.00 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 1.27 W/kg

SAR(1 g) = 0.865 W/kg; SAR(10 g) = 0.575 W/kg

Maximum value of SAR (measured) = 0.924 W/kg



0 dB = 0.924 W/kg = -0.34 dBW/kg

System Performance 1800 MHz Head

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; $\sigma = 1.404$ S/m; $\epsilon_r = 40.007$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7441; ConvF(8.39, 8.39, 8.39) @ 1800 MHz;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 SN1562; Calibrated: 2021/1/19
- Phantom: Head model; Type: QD000P40CC; Serial: TP: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 (71x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 4.50 W/kg

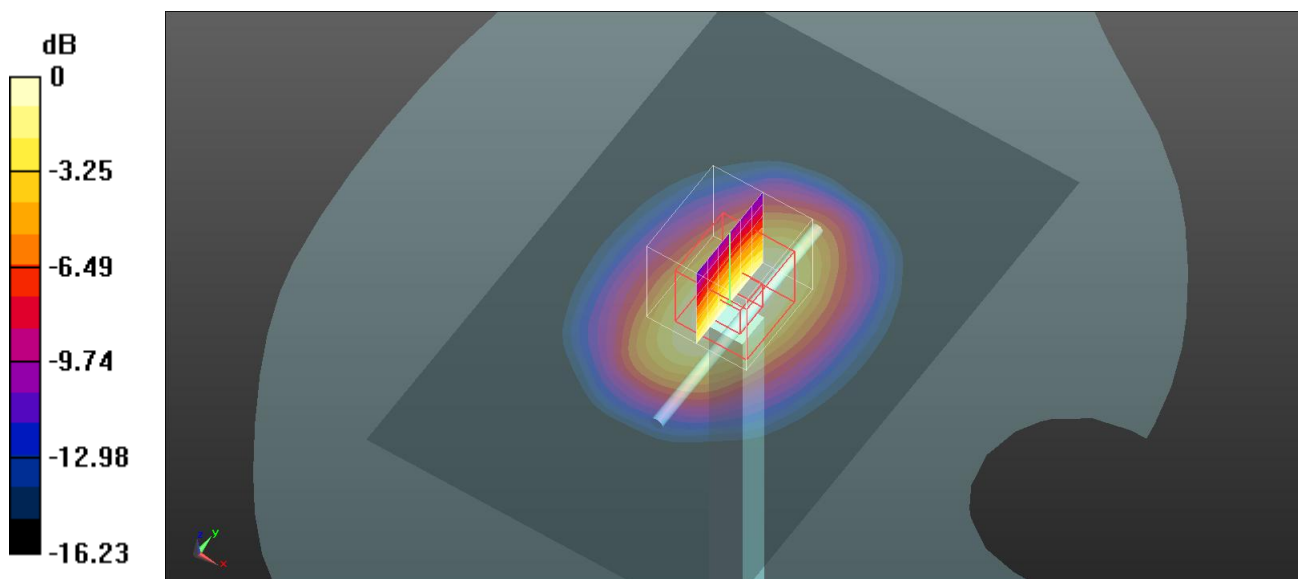
System Performance Check at 1800MHz/d=10mm, Pin=100mw/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 52.24 V/m; Power Drift = -0.19 dB

Peak SAR (extrapolated) = 6.87 W/kg

SAR(1 g) = 4.11 W/kg; SAR(10 g) = 2.25 W/kg

Maximum value of SAR (measured) = 4.23 W/kg



0 dB = 4.23 W/kg = 6.26 dBW/kg

System Performance 1900 MHz Head

DUT: D1900V2; Type: 1900 MHz; Serial: 5d321

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

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.415$ S/m; $\epsilon_r = 40.16$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7441; ConvF(8.02, 8.02, 8.02) @ 1900 MHz;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 SN1562; Calibrated: 2021/1/19
- Phantom: Head model; Type: QD000P40CC; Serial: TP: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 (71x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 4.64 W/kg

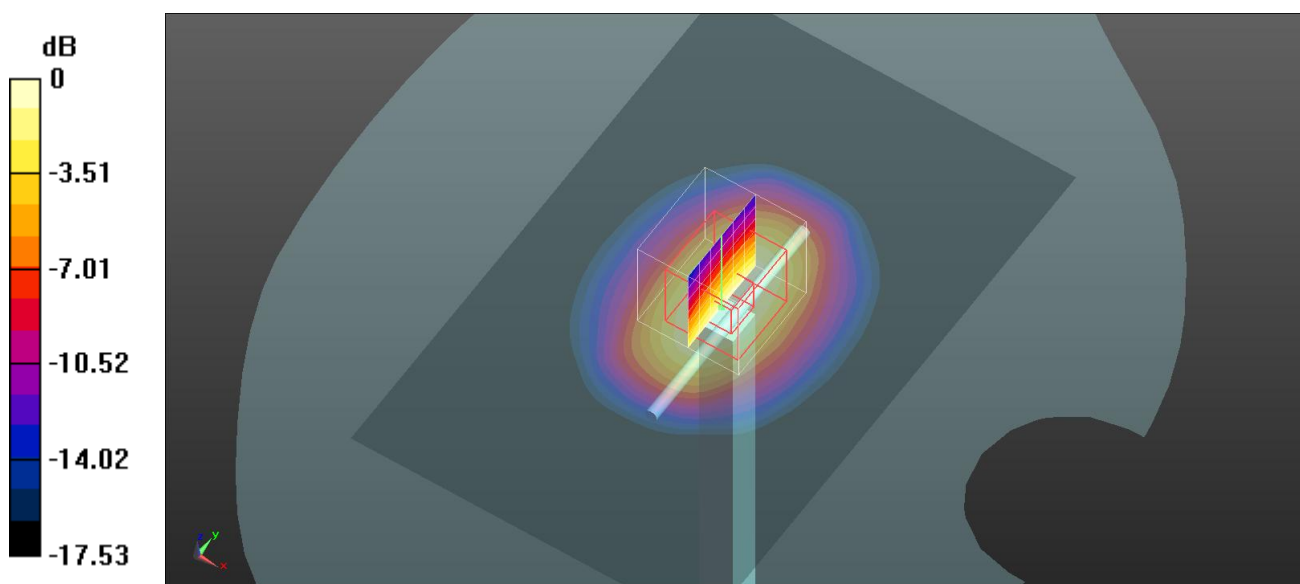
System Performance Check at 1900MHz/d=10mm, Pin=100mw/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 58.11 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 7.62 W/kg

SAR(1 g) = 4.15 W/kg; SAR(10 g) = 2.28 W/kg

Maximum value of SAR (measured) = 4.57 W/kg



0 dB = 4.57 W/kg = 6.60 dBW/kg

System Performance 2450 MHz Head

DUT: D2450V2; Type: 2450MHz; Serial: 751

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

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.855$ S/m; $\epsilon_r = 38.463$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7441; ConvF(7.63, 7.63, 7.63) @ 2450 MHz;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1562; Calibrated: 2021/1/19
- Phantom: Head model; Type: QD000P40CC; Serial: TP: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 (101x131x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 6.65 W/kg

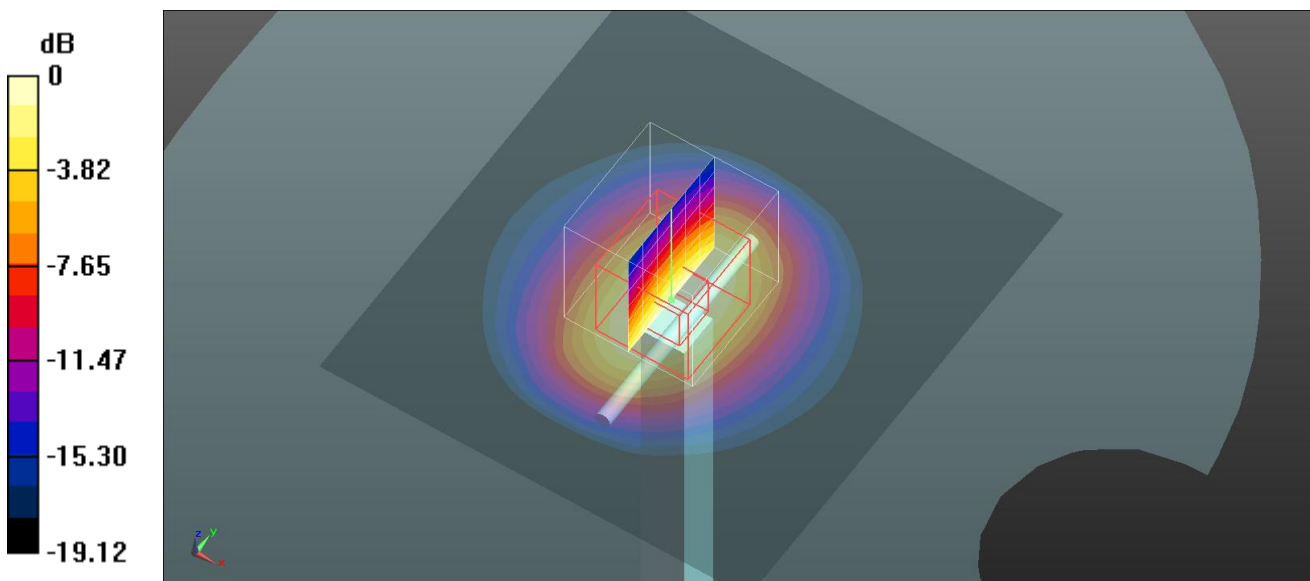
System Performance Check at 2450MHz/d=10mm, Pin=100mw/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 51.35 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 11.5 W/kg

SAR(1 g) = 5.25 W/kg; SAR(10 g) = 2.37 W/kg

Maximum value of SAR (measured) = 6.14 W/kg



0 dB = 6.14 W/kg = 7.88 dBW/kg

EUT TEST STRATEGY AND METHODOLOGY

Test Positions for Hand-held usage of the device, not at the head or torso

The device shall be placed directly against the flat phantom as shown in Figure J.1, for those sides of the device that are in contact with the hand during intended use.

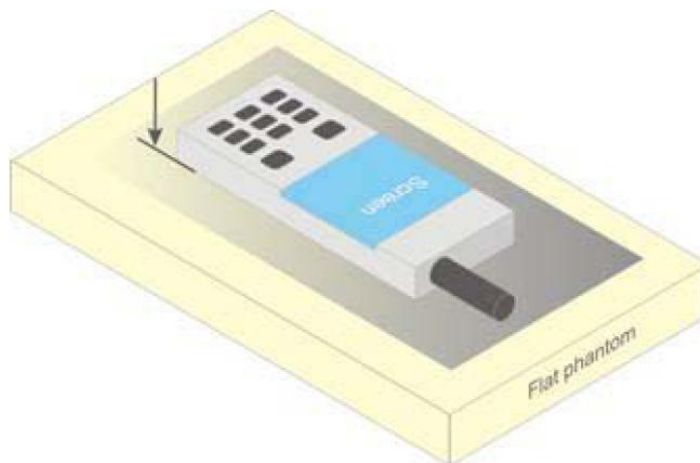


Figure J.1 – Test position for hand-held devices, not used at the head or torso

Test positions for body Supported and other configurations

A typical example of a body supported device is a wireless enabled laptop device that among other orientations may be supported on the thighs of a sitting user. To represent this orientation, the device shall be positioned with its base against the flat phantom. Other orientations may be specified by the manufacturer in the user instructions. If the intended use is not specified, the device shall be tested directly against the flat phantom in all usable orientations

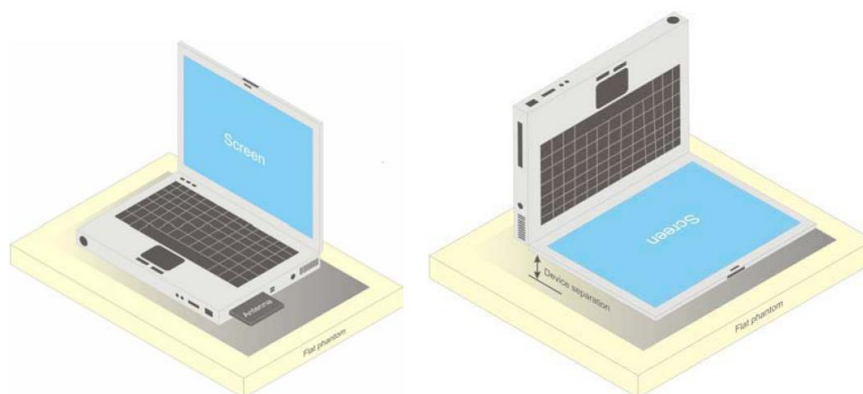
The screen portion of the device shall be in an open position at a 90 ° angle as seen in Figure 7a (left side), or at an operating angle specified for intended use by the manufacturer in the operating instructions. Where a body supported device has an integral screen required for normal operation, then the screen-side will not need to be tested if it ordinarily remains 200 mm from the body. Where a screen mounted antenna is present, this position shall be repeated with the screen against the flat phantom as shown in Figure 7a) (right side), if this is consistent with the intended use.

Other devices that fall into this category include tablet type portable computers and credit card transaction authorisation terminals, point-of-sale and/or inventory terminals. Where these devices may be torso or limb-supported, the same principles for body-supported devices are applied. The example in Figure 7b) shows a tablet form factor portable computer for which SAR should be separately assessed with

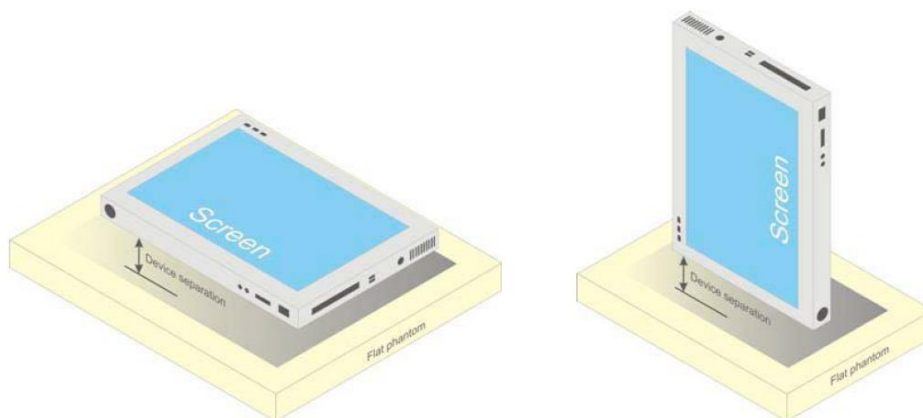
d) each surface and
e) the separation distances
positioned against the flat phantom that correspond to the intended use as specified by the manufacturer. If the intended use is not specified in the user instructions, the device shall be tested directly against the flat phantom in all usable orientations.

Some body-supported devices may allow testing with an external power supply (e.g. a.c.adapter) supplemental to the battery, but it shall be verified and documented in the measurement report that SAR is still conservative.

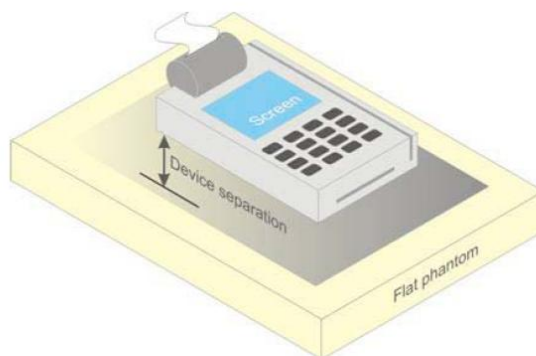
For devices that employ an external antenna with variable positions (e.g. swivel antenna), see 6.1.4.5 and Figure 6.



a) Portable computer with external antenna plug-in-radio-card (left side) or with internal antenna located in screen section (right side)



b) Tablet form factor portable computer



c) Wireless credit card transaction authorisation terminal

Figure 7 – Test positions for body supported devices

Test Distance for SAR Evaluation

For this case the EUT(Equipment Under Test) 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.

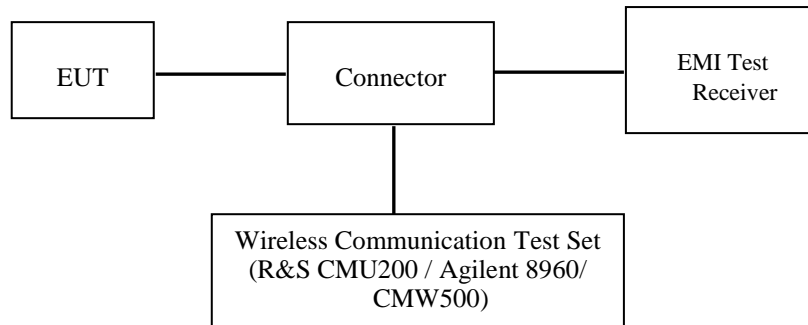
CONDUCTED OUTPUT POWER MEASUREMENT

Provision Applicable

The measured peak output power should be greater and within 5% than EMI measurement.

Test Procedure

The RF output of the transmitter was connected to the input of the EMI Test Receiver through Connector.



GSM/WCDMA/LTE

Radio Configuration

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

GSM/GPRS

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

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)

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 Specifi c Setting s	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	A _{hs} = β_{hs}/β_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_{cc}	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_FCIs	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 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+

HSPA+ 3GPP release 7 (uplink category 7) 16QAM, Setup Configuration:

Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

Sub-test	β_c (Note 3)	β_d	β_{HS} (Note 1)	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

- Note 1: $\Delta_{ACK}, \Delta_{NACK}$ and $\Delta_{CQI} = 30/15$ with $\beta_{in} = 30/15 * \beta_c$.
- Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).
- Note 3: DPDCH is not configured, therefore the β_c is set to 1 and $\beta_d = 0$ by default.
- Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.
- 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 signaled to use the extrapolation algorithm.

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
NS_04	6.6.2.2.2	41	20	>10	≤ 1
			5	>6	≤ 1
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 6.6.3.2	23	5, 10, 15, 20	Table 6.2.4-15	
...					
NS_32	-	-	-	-	-

Maximum Target Output Power

Max Target Power(dBm)			
Mode/Band	Channel		
	Low	Middle	High
GSM 850	32.5	32.5	32.5
GPRS 1 TX Slot	32.5	32.5	32.5
GPRS 2 TX Slot	30.5	30.5	30.5
GPRS 3 TX Slot	28.5	28.5	28.5
GPRS 4 TX Slot	27.0	27.0	27.0
EGPRS 1 TX Slot	26.5	26.5	26.5
EGPRS 2 TX Slot	26.0	26.0	26.0
EGPRS 3 TX Slot	24.5	24.5	24.5
EGPRS 4 TX Slot	22.0	22.0	22.0
PCS 1900	30.5	30.5	30.5
GPRS 1 TX Slot	30.0	30.0	30.0
GPRS 2 TX Slot	27.5	27.5	27.5
GPRS 3 TX Slot	26.0	26.0	26.0
GPRS 4 TX Slot	24.5	24.5	24.5
EGPRS 1 TX Slot	26.5	26.5	26.5
EGPRS 2 TX Slot	26.0	26.0	26.0
EGPRS 3 TX Slot	24.5	24.5	24.5
EGPRS 4 TX Slot	22.0	22.0	22.0
WCDMA Band 2	23.5	23.5	23.5
WCDMA Band 5	23.0	23.0	23.0
LTE Band 2 1RB	23.5	23.5	23.5
LTE Band 2 50%RB	22.0	22.0	22.0
LTE Band 2 100%RB	22.0	22.0	22.0
LTE Band 4 1RB	23.0	23.0	23.0
LTE Band 4 50%RB	22.0	22.0	22.0
LTE Band 4 100%RB	21.5	21.5	21.5
LTE Band 5 1RB	23.0	23.0	23.0
LTE Band 5 50%RB	23.0	23.0	23.0
LTE Band 5 100%RB	23.0	23.0	23.0
LTE Band 7 1RB	23.5	23.5	23.5
LTE Band 7 50%RB	23.5	23.5	23.5
LTE Band 7 100%RB	23.5	23.5	23.5
WLAN 2.4G	7.5	7.5	7.5
Bluetooth BDR/EDR	7.5	7.5	7.5
Bluetooth BLE_1M	2.0	2.0	2.0

Test Results:**GSM:**

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)
GSM 850	128	824.2	32.28
	190	836.6	32.32
	251	848.8	32.39
PCS 1900	512	1850.2	29.26
	661	1880.0	29.76
	810	1909.8	30.02

GPRS:

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)			
			1 slot	2 slots	3 slots	4 slots
GSM 850	128	824.2	32.09	30.42	28.14	26.55
	190	836.6	32.27	30.02	28.17	26.61
	251	848.8	32.26	30.15	28.33	26.65
PCS 1900	512	1850.2	28.99	26.96	25.39	23.40
	661	1880	29.31	27.10	25.76	23.51
	810	1909.8	29.81	27.19	25.65	24.02

EGPRS:

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)			
			1 slot	2 slots	3 slots	4 slots
GSM 850	128	824.2	26.04	25.47	24.44	21.67
	190	836.6	25.91	25.16	23.91	21.65
	251	848.8	26.03	25.56	24.40	21.75
PCS 1900	512	1850.2	26.09	25.69	23.79	21.63
	661	1880	26.08	25.63	24.42	21.83
	810	1909.8	25.69	25.34	23.30	21.30

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 GSM

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)
GSM 850	128	824.2	23.28
	190	836.6	23.32
	251	848.8	23.39
PCS 1900	512	1850.2	20.26
	661	1880.0	20.76
	810	1909.8	21.02

The time based average power for GPRS

Band	Channel No.	Frequency (MHz)	Time based average Power (dBm)			
			1 slot	2 slot	3 slots	4 slots
GSM 850	128	824.2	23.09	24.42	23.89	23.55
	190	836.6	23.27	24.02	23.92	23.61
	251	848.8	23.26	24.15	24.08	23.65
PCS 1900	512	1850.2	19.99	20.96	21.14	20.40
	661	1880	20.31	21.10	21.51	20.51
	810	1909.8	20.81	21.19	21.40	21.02

The time based average power for EGPRS

Band	Channel No.	Frequency (MHz)	Time based average Power (dBm)			
			1 slot	2 slot	3 slots	4 slots
GSM 850	128	824.2	17.04	19.47	20.19	18.67
	190	836.6	16.91	19.16	19.66	18.65
	251	848.8	17.03	19.56	20.15	18.75
PCS 1900	512	1850.2	17.09	19.69	19.54	18.63
	661	1880	17.08	19.63	20.17	18.83
	810	1909.8	16.69	19.34	19.05	18.30

Note:

1. Rohde & Schwarz Radio Communication Tester (CMU200) 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 3(850 MHz band) and 3(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		23.09	23.18	23.07
	HSDPA	1	21.99	21.77	21.54
		2	21.97	22.00	21.55
		3	22.16	21.95	21.54
		4	22.14	21.93	21.51
	HSUPA	1	22.63	22.23	22.28
		2	22.73	22.23	22.62
		3	22.53	22.69	22.43
		4	22.58	22.43	22.67
		5	22.52	22.47	22.52
	HSPA+	1	22.47	22.39	22.52

WCDMA Band 5:

Test Condition	Test Mode	3GPP Sub Test	Averaged Mean Power (dBm)		
			Low Frequency	Mid Frequency	High Frequency
Normal	RMC12.2k		22.68	22.73	22.62
	HSDPA	22.20	22.24	21.83	21.81
		22.30	22.21	21.86	21.87
		22.28	22.36	21.85	21.94
		22.20	22.41	21.74	21.72
	HSUPA	22.79	22.42	21.93	21.93
		22.57	22.43	21.96	21.98
		22.52	22.31	22.08	22.03
		22.57	22.34	22.06	21.92
		22.58	22.36	22.17	22.07
	HSPA+	22.63	22.56	22.33	22.34

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:

BW (MHz)	Modulation	Resource Block Size & Resource Block Offset	Target MPR	Meas MPR	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					1850.7MHz	1880MHz	1909.3MHz
1.4	QPSK	RB Size=1, RB Offset=0	0	0	22.56	22.80	22.42
		RB Size=1, RB Offset=3	0	0	22.56	22.60	22.38
		RB Size=1, RB Offset=5	0	0	22.66	22.71	22.48
		RB Size=3, RB Offset=0	1	1	22.88	22.61	22.45
		RB Size=3, RB Offset=3	1	1	22.87	22.57	22.47
		RB Size=6, RB Offset=0	1	1	21.75	21.58	21.56
	16QAM	RB Size=1, RB Offset=0	1	1	21.49	21.97	22.34
		RB Size=1, RB Offset=3	1	1	21.55	21.89	22.29
		RB Size=1, RB Offset=5	1	1	21.52	21.84	22.27
		RB Size=3, RB Offset=0	2	2	21.88	21.66	21.45
		RB Size=3, RB Offset=3	2	2	21.87	21.64	21.37
RB Size=6, RB Offset=0	2	2	21.15	20.83	20.59		
BW (MHz)	Modulation	Resource Block Size & Resource Block Offset	Target MPR	Meas MPR	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					1851.5MHz	1880MHz	1908.5MHz
3	QPSK	RB Size=1, RB Offset=0	0	0	22.74	22.51	22.34
		RB Size=1, RB Offset=8	0	0	22.58	22.50	22.38
		RB Size=1, RB Offset=14	0	0	22.53	22.65	22.40
		RB Size=6, RB Offset=0	1	1	21.87	21.63	21.45
		RB Size=6, RB Offset=9	1	1	21.66	21.68	21.41
		RB Size=15, RB Offset=0	1	1	21.70	21.72	21.48
	16QAM	RB Size=1, RB Offset=0	1	1	22.52	22.24	21.23
		RB Size=1, RB Offset=8	1	1	22.56	22.18	21.16
		RB Size=1, RB Offset=14	1	1	22.49	22.02	21.11
		RB Size=6, RB Offset=0	2	2	21.04	20.80	20.85
		RB Size=6, RB Offset=9	2	2	20.71	20.79	20.89
		RB Size=15, RB Offset=0	2	2	20.69	20.60	20.53

BW (MHz)	Modulation	Resource Block Size & Resource Block Offset	Target MP R	Meas M PR	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					1852.5MHz	1880MHz	1907.5MHz
5	QPSK	RB Size=1, RB Offset=0	0	0	22.60	22.66	22.49
		RB Size=1, RB Offset=13	0	0	22.53	22.78	22.50
		RB Size=1, RB Offset=24	0	0	22.52	22.74	22.51
		RB Size=15, RB Offset=0	1	1	21.78	21.69	21.61
		RB Size=15, RB Offset=10	1	1	21.75	21.79	21.55
		RB Size=25, RB Offset=0	1	1	21.73	21.72	21.61
	16QAM	RB Size=1, RB Offset=0	1	1	20.82	21.88	21.25
		RB Size=1, RB Offset=13	1	1	20.92	21.75	21.16
		RB Size=1, RB Offset=24	1	1	20.91	21.85	21.17
		RB Size=15, RB Offset=0	2	2	20.95	20.64	20.69
		RB Size=15, RB Offset=10	2	2	20.91	20.71	20.65
		RB Size=25, RB Offset=0	2	2	20.86	20.71	20.46
BW (MHz)	Modulation	Resource Block Size & Resource Block Offset	Target MP R	Meas M PR	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					1855MHz	1880MHz	1905MHz
10	QPSK	RB Size=1, RB Offset=0	0	0	22.73	22.80	22.60
		RB Size=1, RB Offset=25	0	0	22.59	22.72	22.52
		RB Size=1, RB Offset=49	0	0	22.63	22.94	22.61
		RB Size=25, RB Offset=0	1	1	21.80	21.83	21.57
		RB Size=25, RB Offset=25	1	1	21.75	21.76	21.59
		RB Size=50, RB Offset=0	1	1	21.71	21.86	21.58
	16QAM	RB Size=1, RB Offset=0	1	1	22.19	21.94	21.12
		RB Size=1, RB Offset=25	1	1	22.14	21.87	21.10
		RB Size=1, RB Offset=49	1	1	22.04	21.89	21.11
		RB Size=25, RB Offset=0	2	2	20.74	20.77	21.12
		RB Size=25, RB Offset=25	2	2	20.88	20.87	20.80
		RB Size=50, RB Offset=0	2	2	20.83	20.77	20.60

BW (MHz)	Modulation	Resource Block Size & Resource Block Offset	Target MP R	Meas M PR	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					1857.5MHz	1880MHz	1902.5MHz
15	QPSK	RB Size=1, RB Offset=0	0	0	22.72	22.70	22.63
		RB Size=1, RB Offset=38	0	0	22.73	22.71	22.55
		RB Size=1, RB Offset=74	0	0	22.65	22.65	22.56
		RB Size=36, RB Offset=0	1	1	21.68	21.73	21.69
		RB Size=36, RB Offset=39	1	1	21.81	21.66	21.70
		RB Size=75, RB Offset=0	1	1	21.77	21.79	21.62
	16QAM	RB Size=1, RB Offset=0	1	1	22.32	21.99	22.17
		RB Size=1, RB Offset=38	1	1	22.16	21.88	21.96
		RB Size=1, RB Offset=74	1	1	22.08	21.94	22.02
		RB Size=36, RB Offset=0	2	2	20.85	20.96	21.13
		RB Size=36, RB Offset=39	2	2	20.91	20.86	20.73
		RB Size=75, RB Offset=0	2	2	20.74	20.84	21.18
BW (MHz)	Modulation	Resource Block Size & Resource Block Offset	Target MP R	Meas M PR	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					1860MHz	1880MHz	1900MHz
20	QPSK	RB Size=1, RB Offset=0	0	0	23.01	22.80	22.77
		RB Size=1, RB Offset=50	0	0	22.95	22.89	22.96
		RB Size=1, RB Offset=99	0	0	22.96	22.79	22.75
		RB Size=50, RB Offset=0	1	1	22.08	21.80	21.94
		RB Size=50, RB Offset=50	1	1	21.85	21.83	21.73
		RB Size=100, RB Offset=0	1	1	21.87	21.75	21.84
	16QAM	RB Size=1, RB Offset=0	1	1	21.98	21.81	22.51
		RB Size=1, RB Offset=50	1	1	21.72	21.96	22.53
		RB Size=1, RB Offset=99	1	1	21.75	21.93	22.45
		RB Size=50, RB Offset=0	2	2	20.89	21.02	20.85
		RB Size=50, RB Offset=50	2	2	20.89	21.01	20.69
		RB Size=100, RB Offset=0	2	2	20.94	20.87	21.38

LTE Band 4:

BW (MHz)	Modulation	Resource Block Size & Resource Block Offset	Target MPR	Meas MPR	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					1710.7MHz	1732.5MHz	1754.3MHz
1.4	QPSK	RB Size=1, RB Offset=0	0	0	20.53	20.47	21.12
		RB Size=1, RB Offset=3	0	0	20.49	20.53	21.07
		RB Size=1, RB Offset=5	0	0	20.25	20.53	21.00
		RB Size=3, RB Offset=0	1	1	20.65	20.46	21.06
		RB Size=3, RB Offset=3	1	1	20.21	20.57	20.92
		RB Size=6, RB Offset=0	1	1	20.52	20.39	20.93
	16QAM	RB Size=1, RB Offset=0	1	1	20.87	20.45	20.83
		RB Size=1, RB Offset=3	1	1	20.86	20.26	20.93
		RB Size=1, RB Offset=5	1	1	20.87	20.52	21.07
		RB Size=3, RB Offset=0	2	2	20.44	20.32	20.86
		RB Size=3, RB Offset=3	2	2	20.41	20.29	20.95
		RB Size=6, RB Offset=0	2	2	20.95	20.63	20.30
BW (MHz)	Modulation	Resource Block Size & Resource Block Offset	Target MPR	Meas MPR	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					1711.5MHz	1732.5MHz	1753.5MHz
3	QPSK	RB Size=1, RB Offset=0	0	0	20.46	21.04	22.36
		RB Size=1, RB Offset=8	0	0	20.61	21.04	22.50
		RB Size=1, RB Offset=14	0	0	20.19	20.90	22.57
		RB Size=6, RB Offset=0	1	1	20.48	20.61	21.56
		RB Size=6, RB Offset=9	1	1	20.49	20.73	21.70
		RB Size=15, RB Offset=0	1	1	20.69	20.38	21.47
	16QAM	RB Size=1, RB Offset=0	1	1	20.66	20.41	21.78
		RB Size=1, RB Offset=8	1	1	20.74	20.73	21.92
		RB Size=1, RB Offset=14	1	1	20.64	20.73	22.01
		RB Size=6, RB Offset=0	2	2	20.54	20.33	20.33
		RB Size=6, RB Offset=9	2	2	20.30	20.45	20.46
		RB Size=15, RB Offset=0	2	2	20.36	20.38	20.62

BW (MHz)	Modulation	Resource Block Size & Resource Block Offset	Target MPR	Meas MPR	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					1712.5MHz	1732.5MHz	1752.5MHz
5	QPSK	RB Size=1, RB Offset=0	0	0	22.11	22.48	22.42
		RB Size=1, RB Offset=13	0	0	22.19	22.54	22.22
		RB Size=1, RB Offset=24	0	0	22.19	22.55	22.31
		RB Size=15, RB Offset=0	1	1	21.31	21.46	21.53
		RB Size=15, RB Offset=10	1	1	21.18	21.43	21.40
		RB Size=25, RB Offset=0	1	1	21.30	21.30	21.54
	16QAM	RB Size=1, RB Offset=0	1	1	20.53	21.46	21.36
		RB Size=1, RB Offset=13	1	1	20.50	21.35	21.33
		RB Size=1, RB Offset=24	1	1	20.53	21.38	21.36
		RB Size=15, RB Offset=0	2	2	20.61	20.44	20.60
		RB Size=15, RB Offset=10	2	2	20.74	20.32	20.49
		RB Size=25, RB Offset=0	2	2	20.84	20.46	20.34
BW (MHz)	Modulation	Resource Block Size & Resource Block Offset	Target MPR	Meas MPR	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					1715MHz	1732.5MHz	1750MHz
10	QPSK	RB Size=1, RB Offset=0	0	0	22.01	22.54	22.45
		RB Size=1, RB Offset=25	0	0	22.11	22.52	22.46
		RB Size=1, RB Offset=49	0	0	22.26	22.56	22.53
		RB Size=25, RB Offset=0	1	1	21.23	21.36	21.28
		RB Size=25, RB Offset=25	1	1	21.16	21.36	21.33
		RB Size=50, RB Offset=0	1	1	21.05	21.42	21.48
	16QAM	RB Size=1, RB Offset=0	1	1	20.80	21.06	21.07
		RB Size=1, RB Offset=25	1	1	20.85	21.20	21.04
		RB Size=1, RB Offset=49	1	1	21.00	21.34	21.23
		RB Size=25, RB Offset=0	2	2	20.65	20.60	20.54
		RB Size=25, RB Offset=25	2	2	20.24	20.61	20.54
		RB Size=50, RB Offset=0	2	2	20.25	20.54	20.45

BW (MHz)	Modulation	Resource Block Size & Resource Block Offset	Target MPR	Meas MPR	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					1717.5MHz	1732.5MHz	1747.5MHz
15	QPSK	RB Size=1, RB Offset=0	0	0	22.06	22.53	22.58
		RB Size=1, RB Offset=38	0	0	22.10	22.60	22.48
		RB Size=1, RB Offset=74	0	0	22.20	22.63	22.48
		RB Size=36, RB Offset=0	1	1	21.12	21.39	21.30
		RB Size=36, RB Offset=39	1	1	21.25	21.46	21.46
		RB Size=75, RB Offset=0	1	1	21.19	21.52	21.35
	16QAM	RB Size=1, RB Offset=0	1	1	20.88	21.22	21.61
		RB Size=1, RB Offset=38	1	1	21.04	21.35	21.65
		RB Size=1, RB Offset=74	1	1	21.11	21.22	21.74
		RB Size=36, RB Offset=0	2	2	20.34	20.58	20.58
		RB Size=36, RB Offset=39	2	2	20.37	20.53	20.67
		RB Size=75, RB Offset=0	2	2	20.17	20.44	20.56
BW (MHz)	Modulation	Resource Block Size & Resource Block Offset	Target MPR	Meas MPR	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					1720MHz	1732.5MHz	1745MHz
20	QPSK	RB Size=1, RB Offset=0	0	0	22.50	22.48	22.36
		RB Size=1, RB Offset=50	0	0	22.59	22.57	22.66
		RB Size=1, RB Offset=99	0	0	22.67	22.34	22.58
		RB Size=50, RB Offset=0	1	1	21.34	21.32	21.43
		RB Size=50, RB Offset=50	1	1	21.30	21.40	21.54
		RB Size=100, RB Offset=0	1	1	21.42	21.48	21.40
	16QAM	RB Size=1, RB Offset=0	1	1	20.80	21.44	21.59
		RB Size=1, RB Offset=50	1	1	20.99	21.58	21.67
		RB Size=1, RB Offset=99	1	1	21.09	21.60	21.69
		RB Size=50, RB Offset=0	2	2	20.32	20.44	20.44
		RB Size=50, RB Offset=50	2	2	20.45	20.62	20.45
		RB Size=100, RB Offset=0	2	2	20.34	20.45	20.47

LTE Band 5:

BW (MHz)	Modulation	Resource Block Size & Resource Block Offset	Target MP R	Meas M P R	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					824.7MHz	836.5MHz	848.3MHz
1.4	QPSK	RB Size=1, RB Offset=0	0	0	22.48	22.69	22.60
		RB Size=1, RB Offset=3	0	0	22.53	22.59	22.46
		RB Size=1, RB Offset=5	0	0	22.60	22.57	22.50
		RB Size=3, RB Offset=0	1	1	22.60	22.67	22.61
		RB Size=3, RB Offset=3	1	1	22.60	22.68	22.58
		RB Size=6, RB Offset=0	1	1	21.65	21.73	21.67
	16QAM	RB Size=1, RB Offset=0	1	1	22.31	22.21	21.48
		RB Size=1, RB Offset=3	1	1	22.17	22.04	21.59
		RB Size=1, RB Offset=5	1	1	22.22	21.97	21.44
		RB Size=3, RB Offset=0	2	2	21.31	21.39	21.45
		RB Size=3, RB Offset=3	2	2	21.33	21.27	21.39
RB Size=6, RB Offset=0	2	2	21.23	21.05	20.82		
BW (MHz)	Modulation	Resource Block Size & Resource Block Offset	Target MP R	Meas M P R	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					825.5MHz	836.5MHz	847.5MHz
3	QPSK	RB Size=1, RB Offset=0	0	0	22.52	22.69	22.65
		RB Size=1, RB Offset=8	0	0	22.53	22.60	22.67
		RB Size=1, RB Offset=14	0	0	22.57	22.73	22.52
		RB Size=6, RB Offset=0	1	1	21.59	21.68	21.66
		RB Size=6, RB Offset=9	1	1	22.21	21.58	21.54
		RB Size=15, RB Offset=0	1	1	21.69	21.48	21.42
	16QAM	RB Size=1, RB Offset=0	1	1	21.52	22.23	21.36
		RB Size=1, RB Offset=8	1	1	21.44	21.97	21.31
		RB Size=1, RB Offset=14	1	1	21.95	22.05	21.38
		RB Size=6, RB Offset=0	2	2	20.92	20.60	21.20
		RB Size=6, RB Offset=9	2	2	20.97	21.25	20.78
		RB Size=15, RB Offset=0	2	2	21.08	21.21	21.01

BW (MHz)	Modulation	Resource Block Size & Resource Block Offset	Target MPR	Meas MPR	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					826.5MHz	836.5MHz	846.5MHz
5	QPSK	RB Size=1, RB Offset=0	0	0	22.65	22.76	22.70
		RB Size=1, RB Offset=13	0	0	22.74	22.60	22.63
		RB Size=1, RB Offset=24	0	0	22.66	23.01	22.62
		RB Size=15, RB Offset=0	1	1	21.58	21.59	21.53
		RB Size=15, RB Offset=10	1	1	22.23	21.70	21.49
		RB Size=25, RB Offset=0	1	1	22.21	21.57	21.52
	16QAM	RB Size=1, RB Offset=0	1	1	20.90	21.72	21.46
		RB Size=1, RB Offset=13	1	1	21.49	21.53	21.37
		RB Size=1, RB Offset=24	1	1	21.01	21.65	21.70
		RB Size=15, RB Offset=0	2	2	21.11	20.57	21.18
		RB Size=15, RB Offset=10	2	2	21.26	21.12	21.14
RB Size=25, RB Offset=0	2	2	21.24	21.25	21.03		
BW (MHz)	Modulation	Resource Block Size & Resource Block Offset	Target MPR	Meas MPR	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					829MHz	836.5MHz	844MHz
10	QPSK	RB Size=1, RB Offset=0	0	0	22.63	22.85	22.58
		RB Size=1, RB Offset=25	0	0	22.59	22.91	22.45
		RB Size=1, RB Offset=49	0	0	22.62	22.89	22.48
		RB Size=25, RB Offset=0	1	1	22.10	21.71	21.65
		RB Size=25, RB Offset=25	1	1	21.77	21.89	21.43
		RB Size=50, RB Offset=0	1	1	21.59	21.41	21.80
	16QAM	RB Size=1, RB Offset=0	1	1	21.31	21.38	21.49
		RB Size=1, RB Offset=25	1	1	21.22	21.50	21.51
		RB Size=1, RB Offset=49	1	1	21.24	21.38	21.42
		RB Size=25, RB Offset=0	2	2	21.13	20.83	21.28
		RB Size=25, RB Offset=25	2	2	21.04	21.11	21.34
RB Size=50, RB Offset=0	2	2	21.23	21.25	20.62		

LTE Band 7:

BW	Modulation	Resource Block Size & Resource Block Offset	Target MPR	Meas MPR	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					2502.5MHz	2535MHz	2567.5MHz
5M	QPSK	RB Size=1, RB Offset=0	0	0	23.06	23.00	22.94
		RB Size=1, RB Offset=25	0	0	23.02	23.03	22.99
		RB Size=1, RB Offset=49	0	0	23.10	23.04	22.99
		RB Size=25, RB Offset=0	1	1	21.89	21.86	21.98
		RB Size=25, RB Offset=25	1	1	21.90	21.89	22.06
		RB Size=50, RB Offset=0	1	1	22.06	22.00	22.06
	16QAM	RB Size=1, RB Offset=0	1	1	21.39	21.85	21.99
		RB Size=1, RB Offset=25	1	1	21.39	21.77	21.93
		RB Size=1, RB Offset=49	1	1	21.42	21.83	22.08
		RB Size=25, RB Offset=0	2	2	21.03	20.92	21.10
		RB Size=25, RB Offset=25	2	2	21.06	20.92	21.12
RB Size=50, RB Offset=0	2	2	21.17	21.07	20.92		
BW	Modulation	Resource Block Size & Resource Block Offset	Target MPR	Meas MPR	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					2505MHz	2535MHz	2565MHz
10M	QPSK	RB Size=1, RB Offset=0	0	0	22.80	23.01	22.97
		RB Size=1, RB Offset=38	0	0	22.87	23.02	23.02
		RB Size=1, RB Offset=74	0	0	23.01	22.98	23.17
		RB Size=36, RB Offset=0	1	1	21.98	22.05	22.07
		RB Size=36, RB Offset=39	1	1	21.81	21.80	22.08
		RB Size=75, RB Offset=0	1	1	22.03	22.11	22.06
	16QAM	RB Size=1, RB Offset=0	1	1	21.77	21.87	21.66
		RB Size=1, RB Offset=38	1	1	21.57	21.90	21.66
		RB Size=1, RB Offset=74	1	1	21.72	21.96	21.63
		RB Size=36, RB Offset=0	2	2	20.91	21.10	21.16
		RB Size=36, RB Offset=39	2	2	21.10	21.16	21.23
RB Size=75, RB Offset=0	2	2	21.26	21.13	21.03		

BW	Modulation	Resource Block Size & Resource Block Offset	Target MP R	Meas M P R	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					2507.5MHz	2535MHz	2562.5MHz
15M	QPSK	RB Size=1, RB Offset=0	0	0	22.89	22.95	23.06
		RB Size=1, RB Offset=38	0	0	22.89	22.99	23.02
		RB Size=1, RB Offset=74	0	0	22.88	23.20	23.17
		RB Size=36, RB Offset=0	1	1	21.92	21.89	22.05
		RB Size=36, RB Offset=39	1	1	22.05	22.07	21.99
		RB Size=75, RB Offset=0	1	1	21.83	21.89	21.98
	16QAM	RB Size=1, RB Offset=0	1	1	21.78	22.12	22.30
		RB Size=1, RB Offset=38	1	1	21.68	22.21	22.35
		RB Size=1, RB Offset=74	1	1	21.81	22.29	22.42
		RB Size=36, RB Offset=0	2	2	21.15	21.06	21.24
		RB Size=36, RB Offset=39	2	2	21.07	21.10	21.32
RB Size=75, RB Offset=0	2	2	21.09	21.12	21.18		
BW	Modulation	Resource Block Size & Resource Block Offset	Target MP R	Meas M P R	Ave Tx Power (dBm)		
					Low Channel	Mid Channel	High Channel
					2510MHz	2535MHz	2560MHz
20M	QPSK	RB Size=1, RB Offset=0	0	0	23.10	22.94	23.25
		RB Size=1, RB Offset=50	0	0	23.08	22.91	23.26
		RB Size=1, RB Offset=99	0	0	23.15	23.12	23.43
		RB Size=50, RB Offset=0	1	1	22.06	22.03	21.99
		RB Size=50, RB Offset=50	1	1	21.92	21.81	22.02
		RB Size=100, RB Offset=0	1	1	21.96	21.97	22.11
	16QAM	RB Size=1, RB Offset=0	1	1	21.58	22.16	22.31
		RB Size=1, RB Offset=50	1	1	21.41	22.31	22.43
		RB Size=1, RB Offset=99	1	1	21.64	22.45	22.35
		RB Size=50, RB Offset=0	2	2	21.18	21.22	21.17
		RB Size=50, RB Offset=50	2	2	21.11	21.30	21.22
RB Size=100, RB Offset=0	2	2	20.92	21.16	21.06		

Note:

1. SAR for LTE band exposure configurations is measured according to the procedures of KDB 941225 D05 SAR for LTE Devices v02.
2. The CMW500 Wideband Radio Communication tester is used for LTE output power measurements and SAR testing. Closed loop power control is used to keep the radio transmitters the max output power during the test.

Bluetooth:

Mode	Channel frequency (MHz)	RF Output Power (dBm)
BDR(GFSK)	2402	3.45
	2441	3.95
	2480	6.63
EDR($\pi/4$ -DQPSK)	2402	3.74
	2441	4.58
	2480	7.14
EDR(8-DPSK)	2402	4.02
	2441	4.84
	2480	7.34
Bluetooth LE_1M	2402	-2.28
	2440	-0.16
	2480	1.96

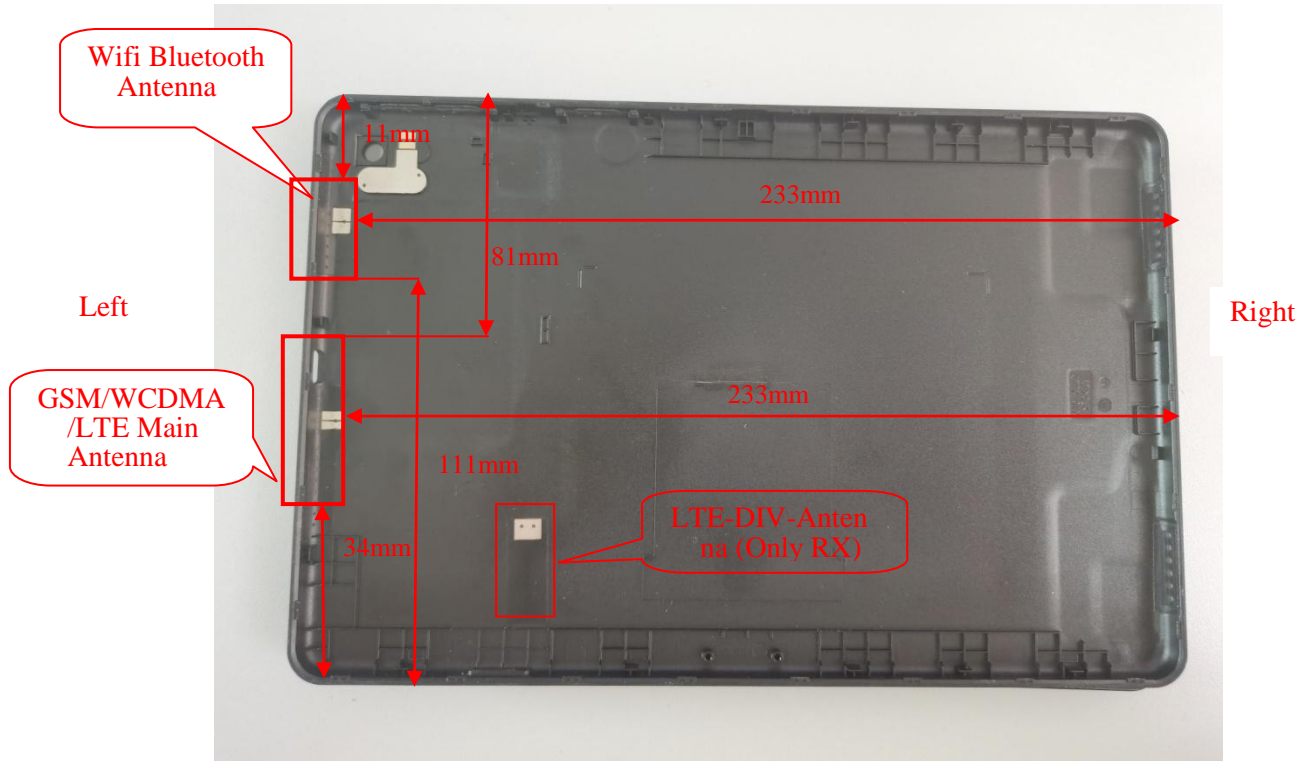
WLAN 2.4G:

Mode	Channel frequency (MHz)	Data Rate	RF Output Power(dBm)
802.11b	2412	1Mbps	5.75
	2437		6.28
	2462		4.68
802.11g	2412	6Mbps	5.01
	2437		7.27
	2462		4.99
802.11n HT20	2412	MCS0	4.09
	2437		5.04
	2462		3.03

Standalone SAR test exclusion considerations

Antennas Location:

Top



Bottom

Antenna Distance To Edge

Antenna Distance To Edge(mm)					
Antenna	Back	Left	Right	Top	Bottom
WLAN/Bluetooth Antenna	< 5	< 5	233	11	111
WWAN(GSM/WCDMA/LTE)	< 5	< 5	233	81	34

Standalone SAR test exclusion considerations

- a) For 100 MHz to 6 GHz and *test separation distances* ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{\text{GHz}}}]$
 ≤ 3.0 for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR, where

- f_{GHz} is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- The values 3.0 and 7.5 are referred to as *numeric thresholds* in step b) below

The test exclusions are applicable only when the minimum *test separation distance* is ≤ 50 mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum *test separation distance* is < 5 mm, a distance of 5 mm according to 4.1 f) is applied to determine SAR test exclusion.

- b) For 100 MHz to 6 GHz and *test separation distances* > 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following (also illustrated in Appendix B):

- 1) $\{[\text{Power allowed at numeric threshold for 50 mm in step a)}] + [(\text{test separation distance} - 50 \text{ mm}) (f_{\text{MHz}}/150)]\}$ mW, for 100 MHz to 1500 MHz
- 2) $\{[\text{Power allowed at numeric threshold for 50 mm in step a)}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot 10]\}$ mW, for > 1500 MHz and ≤ 6 GHz

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	<i>SAR Test Exclusion Threshold (mW)</i>
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	

MHz	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	mm
100	474	481	487	494	501	507	514	521	527	534	541	547	554	561	567	mW
150	387	397	407	417	427	437	447	457	467	477	487	497	507	517	527	
300	274	294	314	334	354	374	394	414	434	454	474	494	514	534	554	
450	224	254	284	314	344	374	404	434	464	494	524	554	584	614	644	
835	164	220	275	331	387	442	498	554	609	665	721	776	832	888	943	
900	158	218	278	338	398	458	518	578	638	698	758	818	878	938	998	
1500	122	222	322	422	522	622	722	822	922	1022	1122	1222	1322	1422	1522	
1900	109	209	309	409	509	609	709	809	909	1009	1109	1209	1309	1409	1509	
2450	96	196	296	396	496	596	696	796	896	996	1096	1196	1296	1396	1496	
3600	79	179	279	379	479	579	679	779	879	979	1079	1179	1279	1379	1479	
5200	66	166	266	366	466	566	666	766	866	966	1066	1166	1266	1366	1466	
5400	65	165	265	365	465	565	665	765	865	965	1065	1165	1265	1365	1465	
5800	62	162	262	362	462	562	662	762	862	962	1062	1162	1262	1362	1462	

Position	Distance (mm)	Mode	Frequency (MHz)	Max Pavg (dBm)	Max Pavg (mW)	Test exclusion Threshold (mW)	SAR test Exclusion
Back/Left/	<5	GSM 850	836.6	24.5	282	16	No
		PCS 1900	1880	22.0	158	11	No
		WCDMA Band 2	1880	23.5	224	11	No
		WCDMA Band 5	836.6	23.0	200	16	No
		LTE Band 2	1880	23.5	224	11	No
		LTE Band 4	1732.5	23.0	200	11	No
		LTE Band 5	836.5	23.0	200	16	No
		LTE Band 7	2535	23.5	224	10	No

Position	Distance (mm)	Mode	Frequency (MHz)	Max Pavg (dBm)	Max Pavg (mW)	Test exclusion Threshold (mW)	SAR test Exclusion
Bottom	>25	GSM 850	836.6	24.5	282	82	No
		PCS 1900	1880	22.0	158	54	No
		WCDMA Band 2	1880	23.5	224	54	No
		WCDMA Band 5	836.6	23.0	200	82	No
		LTE Band 2	1880	23.5	224	54	No
		LTE Band 4	1732.5	23.0	200	54	No
		LTE Band 5	836.5	23.0	200	82	No
LTE Band 7	2535	23.5	224	48	No		

Position	Distance (mm)	Mode	Frequency (MHz)	Max Pavg (dBm)	Max Pavg (mW)	Test exclusion Threshold (mW)	SAR test Exclusion
Top	>80	GSM 850	836.6	24.5	282	331	Yes
		PCS 1900	1880	22.0	158	409	Yes
		WCDMA Band 2	1880	23.5	224	409	Yes
		WCDMA Band 5	836.6	23.0	200	331	Yes
		LTE Band 2	1880	23.5	224	409	Yes
		LTE Band 4	1732.5	23.0	200	409	Yes
		LTE Band 5	836.6	23.0	200	331	Yes
LTE Band 7	2535	23.5	224	396	Yes		

Position	Distance (mm)	Mode	Frequency (MHz)	Max Pavg (dBm)	Max Pavg (mW)	Test exclusion Threshold (mW)	SAR test Exclusion
Right	>190	GSM 850	836.6	24.5	282	943	Yes
		PCS 1900	1880	22.0	158	1509	Yes
		WCDMA Band 2	1880	23.5	224	1509	Yes
		WCDMA Band 5	836.6	23.0	200	943	Yes
		LTE Band 2	1880	23.5	224	1509	Yes
		LTE Band 4	1732.5	23.0	200	1509	Yes
		LTE Band 5	836.5	23.0	200	943	Yes
LTE Band 7	2535	23.5	224	1496	Yes		

Position	Distance (mm)	Mode	Frequency (MHz)	Max Pavg (dBm)	Max Pavg (mW)	Test exclusion Threshold (mW)	SAR test Exclusion
Back/Left	<5	WLAN 2.4G	2412	7.5	6	10	Yes
		Bluetooth BDR/EDR	2402	7.5	6	10	Yes
Right	>110	WLAN 2.4G	2412	7.5	6	696	Yes
		Bluetooth BDR/EDR	2402	7.5	6	696	Yes
Bottom	>190	WLAN 2.4G	2412	7.5	6	1496	Yes
		Bluetooth BDR/EDR	2402	7.5	6	1496	Yes
Top	>10	WLAN 2.4G	2412	7.5	6	19	Yes
		Bluetooth BDR/EDR	2402	7.5	6	19	Yes

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.
5. EUT photos are secret

Standalone SAR estimation:

Mode	Frequency (MHz)	Pavg (dBm)	Pavg (mW)	Distance (mm)	Estimated 1-g (W/kg)
WLAN 2.4G Body	2462	7.5	5.62	0	0.24
Bluetooth Body	2480	7.5	5.62	0	0.24

Note: The bluetooth based peak power for calculation, and Wi-Fi based average power for calculation.

NOTE:

When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

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

W/kg for test separation distances ≤ 50 mm;

where $x = 7.5$ for 1-g SAR.

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion

SAR test exclusion for the EUT edge considerations Result

Exclusion Result					
Mode	Back	Left	Right	Top	Bottom
Bluetooth	Exclusion*	Exclusion*	Exclusion*	Exclusion*	Exclusion*
WLAN 2.4G	Exclusion*	Exclusion*	Exclusion*	Exclusion*	Exclusion*
WWAN	Required	Required	Exclusion*	Exclusion*	Required

Note:

Required: Testing is required.

Exclusion*: SAR test exclusion evaluation has been done above.

SAR MEASUREMENT RESULTS

This page summarizes the results of the performed dosimetric evaluation.

SAR Test Data

Environmental Conditions

Temperature:	22.1-23.8 °C	22.1-23.8 °C	22.1-23.7 °C
Relative Humidity:	42-56%	41-50 %	41-53 %
ATM Pressure:	101.3 kPa	101.2 kPa	101.3 kPa
Test Date:	2021/12/03	2021/12/04	2021/12/05

Testing was performed by Seven Liang, Jacky Yang and Kelly Wang.

GSM 850 :

EUT Position	Frequency (MHz)	Test Mode	Max Power (dBm)		Scaled Factor	1g SAR (W/kg)		Plot
			Meas.	Rated		Meas.	Scaled	
Body Worn Back (0mm)	824.2	GSM	32.28	32.5	1.052	0.965	1.02	1#
	836.6	GSM	32.32	32.5	1.042	0.801	0.83	2#
	848.8	GSM	32.39	32.5	1.026	0.653	0.67	3#
Body Back (0mm)	824.2	GPRS	30.42	30.5	1.019	1.110	1.13	4#
	836.6	GPRS	30.02	30.5	1.117	0.978	1.09	5#
	848.8	GPRS	30.15	30.5	1.084	0.806	0.87	6#
Body Left (0mm)	824.2	GPRS	30.42	30.5	1.019	0.908	0.92	7#
	836.6	GPRS	30.02	30.5	1.117	0.813	0.91	8#
	848.8	GPRS	30.15	30.5	1.084	0.713	0.77	9#
Body Bottom (0mm)	824.2	GPRS	/	/	/	/	/	/
	836.6	GPRS	30.02	30.5	1.117	0.047	0.05	10#
	848.8	GPRS	/	/	/	/	/	/

Note:

1. When the 1-g SAR is $\leq 0.8\text{W/Kg}$, 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 $> 0.5\text{ dB}$, 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.

PCS 1900 :

EUT Position	Frequency (MHz)	Test Mode	Max Power (dBm)		Scaled Factor	1g SAR (W/kg)		Plot
			Meas.	Rated		Meas.	Scaled	
Body Worn Back (0mm)	1850.2	GSM	29.26	30.5	1.330	0.858	1.14	11#
	1880	GSM	29.76	30.5	1.186	1.050	1.25	12#
	1909.8	GSM	30.02	30.5	1.117	1.200	1.34	13#
Body Back (0mm)	1850.2	GPRS	25.39	26.0	1.151	0.974	1.12	14#
	1880	GPRS	25.76	26.0	1.057	1.050	1.11	15#
	1909.8	GPRS	25.65	26.0	1.084	1.110	1.20	16#
Body Left (0mm)	1850.2	GPRS	/	/	/	/	/	/
	1880	GPRS	25.76	26.0	1.057	0.747	0.79	17#
	1909.8	GPRS	/	/	/	/	/	/
Body Bottom (0mm)	1850.2	GPRS	/	/	/	/	/	/
	1880	GPRS	25.76	26.0	1.057	0.057	0.06	18#
	1909.8	GPRS	/	/	/	/	/	/

Note:

1. When the 1-g SAR is $\leq 0.8\text{W/Kg}$, 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 $> 0.5\text{ dB}$, 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, 2DL+3UL is the worst case.

WCDMA Band 2 :

EUT Position	Frequency (MHz)	Test Mode	Max Power (dBm)		Scaled Factor	1g SAR (W/kg)		Plot
			Meas.	Rated		Meas.	Scaled	
Body Back (0mm)	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	23.18	23.5	1.076	0.722	0.78	19#
	1907.6	RMC	/	/	/	/	/	/
Body Left (0mm)	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	23.18	23.5	1.076	0.691	0.74	20#
	1907.6	RMC	/	/	/	/	/	/
Body Bottom (0mm)	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	23.18	23.5	1.076	0.056	0.06	21#
	1907.6	RMC	/	/	/	/	/	/

WCDMA Band 5 :

EUT Position	Frequency (MHz)	Test Mode	Max Power (dBm)		Scaled Factor	1g SAR (W/kg)		Plot
			Meas.	Rated		Meas.	Scaled	
Body Back (0mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.73	23.0	1.064	0.718	0.76	22#
	846.6	RMC	/	/	/	/	/	/
Body Left (0mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.73	23.0	1.064	0.737	0.78	23#
	846.6	RMC	/	/	/	/	/	/
Body Bottom (0mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.73	23.0	1.064	0.087	0.09	24#
	846.6	RMC	/	/	/	/	/	/

Note:

1. When the 1-g SAR is $\leq 0.8W/Kg$, 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 $\frac{1}{4}$ 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.

LTE Band 2 :

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max Power (dBm)		Scaled Factor	1g SAR (W/kg)		Plot
				Meas.	Rated		Meas.	Scaled	
Body Back (0mm)	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	22.89	23.5	1.151	0.688	0.79	25#
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	21.83	23.5	1.469	0.685	1.01	26#
Body Left (0mm)	1860	20	1RB	23.01	23.5	1.119	0.878	0.98	27#
	1880	20	1RB	22.89	23.5	1.151	0.915	1.05	28#
	1900	20	1RB	22.96	23.5	1.132	1.000	1.13	29#
	1860	20	50%RB	21.95	22.0	1.012	0.884	0.89	30#
	1880	20	50%RB	21.83	22.0	1.040	0.880	0.92	31#
	1900	20	50%RB	21.94	22.0	1.014	1.160	1.18	32#
	1860	20	100%RB	21.87	22.0	1.030	0.891	0.92	33#
	1880	20	100%RB	21.75	22.0	1.059	1.020	1.08	34#
	1900	20	100%RB	21.84	22.0	1.038	1.060	1.10	35#
Body Bottom (0mm)	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	22.89	23.5	1.151	0.038	0.04	36#
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	21.83	23.5	1.469	0.036	0.05	37#

LTE Band 4 :

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max Power (dBm)		Scaled Factor	1g SAR (W/kg)		Plot
				Meas.	Rated		Meas.	Scaled	
Body Back (0mm)	1720	20	1RB	22.67	23.0	1.079	1.130	1.22	38#
	1732.5	20	1RB	22.57	23.0	1.104	1.130	1.25	39#
	1745	20	1RB	22.66	23.0	1.081	1.180	1.28	40#
	1720	20	50%RB	21.34	22.0	1.164	0.941	1.10	41#
	1732.5	20	50%RB	21.40	22.0	1.148	0.889	1.02	42#
	1745	20	50%RB	21.54	22.0	1.112	0.941	1.05	43#
	1720	20	100%RB	21.42	21.5	1.019	0.874	0.89	44#
	1732.5	20	100%RB	21.48	21.5	1.005	0.894	0.90	45#
	1745	20	100%RB	21.40	21.5	1.023	0.916	0.94	46#
Body Left (0mm)	1720	20	1RB	22.67	23.0	1.079	1.230	1.33	47#
	1732.5	20	1RB	22.57	23.0	1.104	1.200	1.32	48#
	1745	20	1RB	22.66	23.0	1.081	1.190	1.29	49#
	1720	20	50%RB	21.34	22.0	1.164	0.963	1.12	50#
	1732.5	20	50%RB	21.40	22.0	1.148	0.935	1.07	51#
	1745	20	50%RB	21.54	22.0	1.112	0.910	1.01	52#
	1720	20	100%RB	21.42	21.5	1.019	0.957	0.97	53#
	1732.5	20	100%RB	21.48	21.5	1.005	0.953	0.96	54#
	1745	20	100%RB	21.40	21.5	1.023	0.924	0.95	55#
Body Bottom (0mm)	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	22.57	23.0	1.104	0.098	0.11	56#
	1745	20	1RB	/	/	/	/	/	/
	1732.5	20	50%RB	21.40	22.0	1.148	0.080	0.09	57#

LTE Band 5 :

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max Power (dBm)		Scaled Factor	1g SAR (W/kg)		Plot
				Meas.	Rated		Meas.	Scaled	
Body Back (0mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	22.91	23.0	1.021	0.757	0.77	58#
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	21.89	23.0	1.291	0.614	0.79	59#
Body Left (0mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	22.91	23.0	1.021	0.610	0.62	60#
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	21.89	23.0	1.291	0.488	0.63	61#
Body Bottom (0mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	22.91	23.0	1.021	0.083	0.08	62#
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	21.89	23.0	1.291	0.075	0.10	63#

LTE Band 7 :

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max Power (dBm)		Scaled Factor	1g SAR (W/kg)		Plot
				Meas.	Rated		Meas.	Scaled	
Body Back (0mm)	2510	20	1RB	/	/	/	/	/	/
	2535	20	1RB	23.12	23.5	1.091	0.404	0.44	64#
	2560	20	1RB	/	/	/	/	/	/
	2535	20	50%RB	22.03	23.5	1.403	0.285	0.40	65#
Body Left (0mm)	2510	20	1RB	/	/	/	/	/	/
	2535	20	1RB	23.12	23.5	1.091	0.614	0.67	66#
	2560	20	1RB	/	/	/	/	/	/
	2535	20	50%RB	22.03	23.5	1.403	0.434	0.61	67#
Body Bottom (0mm)	2510	20	1RB	/	/	/	/	/	/
	2535	20	1RB	23.12	23.5	1.091	0.035	0.04	68#
	2560	20	1RB	/	/	/	/	/	/
	2535	20	50%RB	22.03	23.5	1.403	0.026	0.04	69#

Note:

1. When the 1-g SAR is $\leq 0.8\text{W/Kg}$, 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.

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 ($\sim 10\%$ 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 .

Note: 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

Body

SAR probe calibration point	Frequency Band	Freq.(MHz)	EUT Position	Meas. SAR (W/kg)		Largest to Smallest SAR Ratio
				Original	Repeated	
750 MHz (650-850MHz)	GSM 850	824.2	Body Worn Back	0.965	0.964	1.00
750 MHz (650-850MHz)	GSM 850	824.2	Body Back	1.11	1.10	1.01
750 MHz (650-850MHz)	GSM 850	824.2	Body Left	0.908	0.906	1.00
1900 MHz (1850-1910MHz)	PCS 1900	1909.8	Body Worn Back	1.2	1.19	1.01
1900 MHz (1850-1910MHz)	PCS 1900	1909.8	Body Back	1.11	1.10	1.01
1900 MHz (1850-1910MHz)	LTE Band 2	1900	Body Back	1.16	1.15	1.01
1800 MHz (1710-1755MHz)	LTE Band 4	1745	Body Back	1.18	1.17	1.01
1800 MHz (1710-1755MHz)	LTE Band 4	1720	Body Left	1.23	1.21	1.02

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) + Bluetooth	√	×
WWAN(GSM/WCDMA) + WLAN	√	√
WLAN + Bluetooth	×	×

Simultaneous and Hotspot SAR test exclusion considerations:

Mode(SAR1+SAR2)	Position	Reported SAR(W/kg)		ΣSAR < 1.6W/kg
		SAR1	SAR2	
GSM 850+Bluetooth	Body Worn Back	1.02	0.24	1.26
	Body Back	1.13	0.24	1.37
	Body Left	0.92	0.24	1.16
	Body Bottom	0.05	0.24	0.29
PCS1900 +Bluetooth	Body Worn Back	1.34	0.24	1.58
	Body Back	1.20	0.24	1.44
	Body Left	0.79	0.24	1.03
	Body Bottom	0.06	0.24	0.30
WCDMA Band 2+Bluetooth	Body Back	0.78	0.24	1.02
	Body Left	0.74	0.24	0.98
	Body Bottom	0.06	0.24	0.30
WCDMA Band 5+Bluetooth	Body Back	0.76	0.24	1.00
	Body Left	0.78	0.24	1.02
	Body Bottom	0.09	0.24	0.33
LTE Band 2+Bluetooth	Body Back	1.01	0.24	1.25
	Body Left	1.18	0.24	1.42
	Body Bottom	0.05	0.24	0.29
LTE Band 4+Bluetooth	Body Back	1.28	0.24	1.52
	Body Left	1.33	0.24	1.57
	Body Bottom	0.11	0.24	0.35
LTE Band 5+Bluetooth	Body Back	0.79	0.24	1.03
	Body Left	0.63	0.24	0.87
	Body Bottom	0.10	0.24	0.34
LTE Band 7+Bluetooth	Body Back	0.44	0.24	0.68
	Body Left	0.67	0.24	0.91
	Body Bottom	0.04	0.24	0.28

Mode(SAR1+SAR2)	Position	Reported SAR(W/kg)		Σ SAR < 1.6W/kg
		SAR1	SAR2	
GSM 850+ WLAN(2.4G)	Body Worn Back	1.02	0.24	1.26
GPRS 850 +WLAN(2.4G) (Hotspot)	Body Back	1.13	0.24	1.37
	Body Left	0.92	0.24	1.16
	Body Bottom	0.05	0.24	0.29
PCS1900 + WLAN(2.4G)	Body Worn Back	1.34	0.24	1.58
GPRS 1900 +WLAN(2.4G) (Hotspot)	Body Back	1.20	0.24	1.44
	Body Left	0.79	0.24	1.03
	Body Bottom	0.06	0.24	0.30
WCDMA Band 2+ WLAN(2.4G) (Hotspot)	Body Back	0.78	0.24	1.02
	Body Left	0.74	0.24	0.98
	Body Bottom	0.06	0.24	0.30
WCDMA Band 5+ WLAN(2.4G) (Hotspot)	Body Back	0.76	0.24	1.00
	Body Left	0.78	0.24	1.02
	Body Bottom	0.09	0.24	0.33
LTE Band 2+ WLAN(2.4G) (Hotspot)	Body Back	1.01	0.24	1.25
	Body Left	1.18	0.24	1.42
	Body Bottom	0.05	0.24	0.29
LTE Band 4+ WLAN(2.4G) (Hotspot)	Body Back	1.28	0.24	1.52
	Body Left	1.33	0.24	1.57
	Body Bottom	0.11	0.24	0.35
LTE Band 5+ WLAN(2.4G) (Hotspot)	Body Back	0.79	0.24	1.03
	Body Left	0.63	0.24	0.87
	Body Bottom	0.10	0.24	0.34
LTE Band 7+ WLAN(2.4G) (Hotspot)	Body Back	0.44	0.24	0.68
	Body Left	0.67	0.24	0.91
	Body Bottom	0.04	0.24	0.28

Note:

- Hotspot Mode is not feasible during voice calls.

Conclusion:

Sum of SAR: Σ SAR \leq 1.6 W/kg therefore simultaneous transmission SAR with Volume Scans 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

Measurement uncertainty evaluation for IEC62209-2 SAR test

Source of uncertainty	Tolerance/uncertainty ± %	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	√3	1	1	2.7	2.7
Hemispherical Isotropy	9.6	R	√3	0	0	0.0	0.0
Linearity	4.7	R	√3	1	1	2.7	2.7
Modulation Response	0.0	R	√3	1	1	0.0	0.0
Detection limits	1.0	R	√3	1	1	0.6	0.6
Boundary effect	1.0	R	√3	1	1	0.6	0.6
Readout electronics	0.3	N	1	1	1	0.3	0.3
Response time	0.0	R	√3	1	1	0.0	0.0
Integration time	0.0	R	√3	1	1	0.0	0.0
RF ambient conditions – noise	1.0	R	√3	1	1	0.6	0.6
RF ambient conditions–reflections	1.0	R	√3	1	1	0.6	0.6
Probe positioner mech. Restrictions	0.8	R	√3	1	1	0.5	0.5
Probe positioning with respect to phantom shell	6.7	R	√3	1	1	3.9	3.9
Post-processing	2.0	R	√3	1	1	1.2	1.2
Test sample related							
Device holder Uncertainty	6.3	N	1	1	1	6.3	6.3
Test sample positioning	2.8	N	1	1	1	2.8	2.8
Power scaling	4.5	R	√3	1	1	2.6	2.6
Drift of output power	5.0	R	√3	1	1	2.9	2.9
Phantom and set-up							
Phantom uncertainty (shape and thickness tolerances)	4.0	R	√3	1	1	2.3	2.3
Algorithm for correcting SAR for deviations in permittivity and conductivity	1.9	N	1	1	0.84	1.1	0.9
Liquid conductivity (meas.)	2.5	N	1	0.64	0.43	1.6	1.1
Liquid permittivity (meas.)	2.5	N	1	0.6	0.49	1.5	1.2
Temp. unc. - Conductivity	1.7	R	√3	0.78	0.71	0.8	0.7
Temp. unc. - Permittivity	0.3	R	√3	0.23	0.26	0.0	0.0
Combined standard uncertainty		RSS				12.2	12.1
Expanded uncertainty 95 % confidence interval)						24.5	24.2

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 *******