

FCC SAR TEST REPORT

Applicant: Fujian LANDI Commercial Equipment Co.,Ltd.

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Gulou District, Fuzhou Municipality, Fujian Province, China

Product Name: Mobile Terminal

FCC ID: 2AG6N-M20

Standard(s): 47 CFR Part 2(2.1093)

Report Number: XMDN240206-08120E-20C

Report Date: 2024/06/20

The above device has been tested and found compliant with the requirement of the relative standards by Bay Area Compliance Laboratories Corp. (Dongguan).

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SAR TEST RESULTS SUMMARY

Mode		Max. Reported SAR Level(s) (W/kg)	Limit (W/kg)
GSM 850	1g Body SAR	0.54	1.6
PCS 1900	1g Body SAR	0.37	
WCDMA Band 2	1g Body SAR	0.71	
WCDMA Band 4	1g Body SAR	0.75	
WCDMA Band 5	1g Body SAR	0.72	
LTE Band 7	1g Body SAR	0.77	
LTE Band 12&17	1g Body SAR	0.64	
LTE Band 13	1g Body SAR	0.69	
LTE Band 25&2	1g Body SAR	0.62	
LTE Band 26&5	1g Body SAR	0.71	
LTE Band 41	1g Body SAR	0.24	
LTE Band 66&4	1g Body SAR	0.56	
LTE Band 71	1g Body SAR	0.79	
Wi-Fi 2.4G	1g Body SAR	0.03	
Wi-Fi 5.2G	1g Body SAR	0.73	
Wi-Fi 5.3G	1g Body SAR	0.49	
Wi-Fi 5.6G	1g Body SAR	0.68	
Wi-Fi 5.8G	1g Body SAR	0.64	
Bluetooth	1g Body SAR	0.11	
Simultaneous	1g Body SAR	1.52	
	1g Body SAR	1.52 (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 62209-2:2010 Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices-Human models, instrumentation, and procedures-Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)
	IEC 62209-2:2010/AMD1:2019 Amendment 1 - Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)
	KDB procedures KDB 447498 D01 General RF Exposure Guidance v06 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
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. The results and statements contained in this report pertain only to the device(s) evaluated.	

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	XMDN240206-08120E-20C	Original Report	2024/06/20

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	Mobile Terminal
EUT Model:	M20
Device Type:	Portable
Exposure Category:	Population / Uncontrolled
Antenna Type(s):	Internal Antenna
Body-Worn Accessories:	None
Proximity Sensor:	None
Carrier Aggregation:	None
Operation Modes:	GPRS/EDGE Data, WCDMA(R99 (Data), HSUPA/HSDPA/DC-HSDPA/HSPA+), FDD-LTE, TDD-LTE,WLAN, Bluetooth and NFC
Operation Frequency:	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 4: 1710-1755MHz(TX) ; 2110-2155 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: 1710-1755MHz(TX) ; 2110-2155 MHz(RX) LTE Band 5: 824-849 MHz(TX); 869-894 MHz(RX) LTE Band 7: 2500-2570 MHz(TX); 2620-2690 MHz(RX) LTE Band 12: 699-716 MHz(TX); 729-746 MHz(RX) LTE Band 13:777-787 MHz(TX); 746-756 MHz(RX) LTE Band 17: 704-716 MHz(TX); 734-746 MHz(RX) LTE Band 25: 1850-1915 MHz(TX); 1930-1995MHz(RX) LTE Band 26: 814-849 MHz(TX); 859-894MHz(RX) LTE Band 41: 2496-2690 MHz(TX/RX) LTE Band 66: 1710-1780 MHz(TX) ; 2110-2180 MHz(RX) LTE Band 71: 663-698 MHz(TX); 617-652 MHz(RX) WLAN 2.4G: 2412-2462 MHz/2422MHz-2452 MHz(TX/RX) WLAN 5.2G: 5150 -5250 MHz(TX/RX) WLAN 5.3G: 5250-5350 MHz MHz(TX/RX) WLAN 5.6G: 5470-5725 MHz(TX/RX) WLAN 5.8G: 5725-5850 MHz(TX/RX) Bluetooth: 2402-2480MHz(TX/RX) NFC: 13.56MHz
Maximum Output Power (Conducted):	GSM 850: 34.36dBm; PCS 1900: 31.87dBm WCDMA Band 2: 23.72dBm; WCDMA Band 4: 23.7dBm WCDMA Band 5: 24.33dBm LTE Band 2: 23.62dBm; LTE Band 4: 23.86dBm LTE Band 5:23.76dBm; LTE Band 7: 22.99dBm LTE Band 12:24.09dBm; LTE Band 13: 23.93dBm LTE Band 17:24.02dBm; LTE Band 25: 23.83dBm LTE Band 26:23.72dBm; LTE Band 41:23.77dBm LTE Band 66: 23.84dBm; LTE Band 71:23.97dBm WLAN 2.4G: 14.83dBm; WLAN 5.2G: 15.36dBm; WLAN 5.3G: 15.39dBm WLAN 5.6G: 15.89dBm; WLAN 5.8G: 16.48dBm Bluetooth(BDR/EDR): 10.48dBm BLE: 7.39dBm
Dimensions (L*W*H):	230mm (L) *78mm (W) *50mm (H)
Rated Input Voltage:	DC7.7V from Rechargeable Battery
Serial Number:	2II2-2
Normal Operation:	Body
EUT Received Date:	2024/03/12

Test Date:	2024/06/12 ~ 2024/06/19
EUT Received Status:	Good

Note: The model M20 of device have two configurations, the difference see the below table and the declaration letter for more detail, which was provided by manufacturer, the configuration 1(full functions) was selected to full testing.

Configurations:

Configuration	HVIN	Model	Configuration Description
1	M20S1	M20	With Printer, with Scanning camera, wired loop NFC Antenna, M20 Housing and antennas
2	M20S0	M20	With Printer, without Scanning camera, wired loop NFC Antenna, M20 Housing and antennas

2. 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.

2.1 SAR Limits

FCC Limit

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

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) applied to the EUT.

2.2 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 829273, the FCC Designation No. : CN5044.

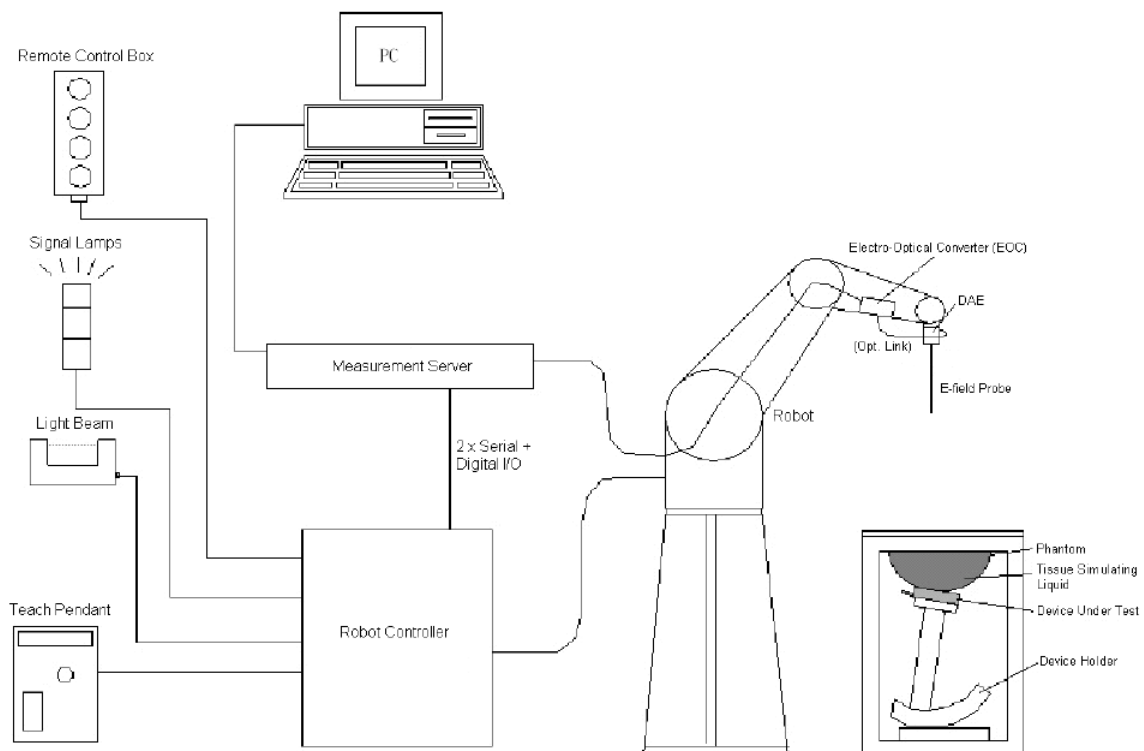
3. DESCRIPTION OF TEST SYSTEM

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 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 400MHz Intel ULV Celeron, 128MB chip-disk and 128MB 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 evaluation of field measurements and surface detection, controls robot movements and handles safety operation. 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 point out, and therefore only devices provided by SPEAG can be connected. 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	4 MHz – 10 GHz Linearity: ± 0.2 dB (30 MHz – 10 GHz)
Directivity(typical)	± 0.1 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 μ W/g – > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μ W/g)
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Applications	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, DASY6, DASY8, EASY6, EASY4/MRI

SAM Twin Phantom

The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region, where shell thickness

increases to 6 mm). The phantom has three measurement areas:

- _ Left Head
- _ Right Head
- _ Flat phantom

The phantom table for the DASY systems based on the robots have the size of 100 x 50 x 85 cm (L x W x H). For easy dislocation these tables have fork lift cut outs at the bottom.

The bottom plate contains three pairs of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. Only one device holder is necessary if two phantoms are used (e.g., for different liquids)



A white cover is provided to cover the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. Free space scans of devices on top of this phantom cover are possible. Three reference marks are provided on the phantom counter. These reference marks are used to teach the absolute phantom position relative to the robot.

Robots

The DASY5 system uses the high precision industrial robot. The robot offers the same features important for our application:

- High precision (repeatability 0.02mm)
- High reliability (industrial design)
- Low maintenance costs (virtually maintenance free due to direct drive gears; no belt drives)
- Jerk-free straight movements (brushless synchrony motors; no stepper motors)
- Low ELF interference (motor control fields shielded via the closed metallic construction shields)

The above mentioned robots are controlled by the Staubli CS7MB robot controllers. All information regarding the use and maintenance of the robot arm and the robot controller is contained on the CDs delivered along with the robot. Paper manuals are available upon request direct from Staubli.

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/m^3 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 liquid

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
750	41,9	0,89
835	41,5	0,90
900	41,5	0,97
1 450	40,5	1,20
1 500	40,4	1,23
1 640	40,2	1,31
1 750	40,1	1,37
1 800	40,0	1,40
1 900	40,0	1,40
2 000	40,0	1,40
2 100	39,8	1,49
2 300	39,5	1,67
2 450	39,2	1,80
2 600	39,0	1,96
3 000	38,5	2,40
3 500	37,9	2,91
4 000	37,4	3,43
4 500	36,8	3,94
5 000	36,2	4,45
5 200	36,0	4,66
5 400	35,8	4,86
5 600	35,5	5,07
5 800	35,3	5,27
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.

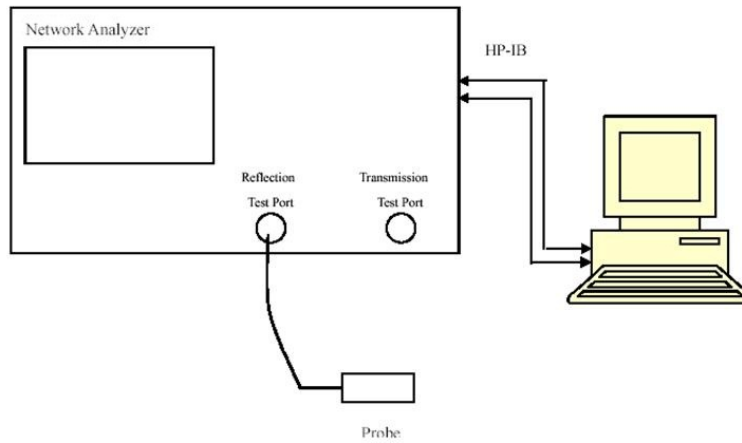
4. EQUIPMENT LIST AND CALIBRATION

4.1 Equipments List & Calibration Information

Equipment	Model	S/N	Calibration Date	Calibration Due Date
DASY5 Test Software	DASY52.10	N/A	NCR	NCR
DASY5 Measurement Server	DASY5 4.5.12	1470	NCR	NCR
Data Acquisition Electronics	DAE4	772	2024/1/23	2025/1/22
E-Field Probe	EX3DV4	7839	2023/9/21	2024/9/20
Mounting Device	MD4HHTV5	SD 000 H01 KA	NCR	NCR
Twin SAM	Twin SAM V5.0	1874	NCR	NCR
Dipole, 750 MHz	D750V3	1167	2022/10/31	2025/10/30
Dipole, 835 MHz	D835V2	453	2021/8/31	2024/8/30
Dipole, 1750 MHz	D1750V2	1141	2021/6/29	2024/6/28
Dipole, 1900 MHz	D1900V2	543	2022/11/2	2025/11/1
Dipole, 2450 MHz	D2450V2	971	2021/6/28	2024/6/27
Dipole, 2600 MHz	D2600V2	1132	2022/11/1	2025/10/31
Dipole, 5 GHz	D5GHzV2	1246	2022/11/1	2025/10/31
Simulated Tissue Liquid Head	HBBL600-10000V6	SL AAH U16 BC (Batch:220809-1)	Each Time	/
Network Analyzer	8753C	3033A02857	2023/11/18	2024/11/17
Dielectric assessment kit	1253	SM DAK 040 CA	NCR	NCR
synthesized signal generator	8665B	3438a00584	2023/10/18	2024/10/17
EPM Series Power Meter	E4419B	MY45103907	2023/10/18	2024/10/17
USB Wideband Power Sensor	U2022XA	MY54170006	2023/10/18	2024/10/17
Power Amplifier	ZHL-5W-202-S+	416402204	NCR	NCR
Power Amplifier	ZVE-6W-83+	637202210	NCR	NCR
Directional Coupler	441493	520Z	NCR	NCR
Attenuator	20dB, 100W	LN749	NCR	NCR
Attenuator	6dB, 150W	2754	NCR	NCR
Thermometer	DTM3000	3635	2023/8/11	2024/8/10
Hygrothermograph	HTC-2	EM072	2023/11/6	2024/11/5
Wireless communication tester	8960	MY50266471	2023/10/18	2024/10/17
Wideband Radio Communication Tester	CMW500	147473	2023/10/18	2024/10/17

5. SAR MEASUREMENT SYSTEM VERIFICATION

5.1 Liquid Verification



5.2 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)	
750	Simulated Tissue Liquid Head	42.498	0.911	41.9	0.89	1.43	2.36	± 5
673	Simulated Tissue Liquid Head	43.454	0.858	42.32	0.88	2.68	-2.5	± 5
680.5	Simulated Tissue Liquid Head	43.365	0.863	42.27	0.89	2.59	-3.03	± 5
688	Simulated Tissue Liquid Head	43.278	0.869	42.22	0.89	2.51	-2.36	± 5
704	Simulated Tissue Liquid Head	43.075	0.88	42.15	0.89	2.19	-1.12	± 5
707.5	Simulated Tissue Liquid Head	43.03	0.883	42.13	0.89	2.14	-0.79	± 5
711	Simulated Tissue Liquid Head	42.986	0.886	42.11	0.89	2.08	-0.45	± 5
782	Simulated Tissue Liquid Head	42.078	0.929	41.75	0.89	0.79	4.38	± 5

*Liquid Verification above was performed on 2024/06/17.

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)	
835	Simulated Tissue Liquid Head	41.47	0.936	41.5	0.9	-0.07	4	± 5
821.5	Simulated Tissue Liquid Head	41.622	0.934	41.56	0.9	0.15	3.78	± 5
824.2	Simulated Tissue Liquid Head	41.58	0.934	41.55	0.9	0.07	3.78	± 5
826.4	Simulated Tissue Liquid Head	41.545	0.935	41.54	0.9	0.01	3.89	± 5
831.5	Simulated Tissue Liquid Head	41.483	0.935	41.52	0.9	-0.09	3.89	± 5
836.6	Simulated Tissue Liquid Head	41.464	0.936	41.5	0.9	-0.09	4	± 5
841.5	Simulated Tissue Liquid Head	41.427	0.937	41.5	0.91	-0.18	2.97	± 5
846.6	Simulated Tissue Liquid Head	41.344	0.936	41.5	0.91	-0.38	2.86	± 5
848.8	Simulated Tissue Liquid Head	41.308	0.936	41.5	0.91	-0.46	2.86	± 5

*Liquid Verification above was performed on 2024/06/18.

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)	
1750	Simulated Tissue Liquid Head	39.54	1.358	40.1	1.37	-1.4	-0.88	± 5
1712.4	Simulated Tissue Liquid Head	39.696	1.319	40.13	1.35	-1.08	-2.3	± 5
1720	Simulated Tissue Liquid Head	39.659	1.327	40.13	1.35	-1.17	-1.7	± 5
1732.6	Simulated Tissue Liquid Head	39.612	1.34	40.12	1.36	-1.27	-1.47	± 5
1745	Simulated Tissue Liquid Head	39.561	1.353	40.1	1.37	-1.34	-1.24	± 5
1752.6	Simulated Tissue Liquid Head	39.529	1.361	40.09	1.37	-1.4	-0.66	± 5
1770	Simulated Tissue Liquid Head	39.454	1.379	40.06	1.38	-1.51	-0.07	± 5

*Liquid Verification above was performed on 2024/06/17.

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)	
1900	Simulated Tissue Liquid Head	38.938	1.43	40	1.4	-2.65	2.14	± 5
1850.2	Simulated Tissue Liquid Head	39.262	1.416	40	1.4	-1.85	1.14	± 5
1852.4	Simulated Tissue Liquid Head	39.233	1.417	40	1.4	-1.92	1.21	± 5
1860	Simulated Tissue Liquid Head	39.133	1.42	40	1.4	-2.17	1.43	± 5
1880	Simulated Tissue Liquid Head	39.044	1.425	40	1.4	-2.39	1.79	± 5
1882.5	Simulated Tissue Liquid Head	39.034	1.426	40	1.4	-2.42	1.86	± 5
1905	Simulated Tissue Liquid Head	38.923	1.432	40	1.4	-2.69	2.29	± 5
1907.6	Simulated Tissue Liquid Head	38.914	1.432	40	1.4	-2.72	2.29	± 5
1909.8	Simulated Tissue Liquid Head	38.908	1.433	40	1.4	-2.73	2.36	± 5

*Liquid Verification above was performed on 2024/06/18.

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)	
2450	Simulated Tissue Liquid Head	40.451	1.748	39.2	1.8	3.19	-2.89	± 5
2402	Simulated Tissue Liquid Head	40.607	1.696	39.3	1.76	3.33	-3.64	± 5
2412	Simulated Tissue Liquid Head	40.576	1.708	39.28	1.77	3.3	-3.5	± 5
2437	Simulated Tissue Liquid Head	40.503	1.735	39.23	1.79	3.24	-3.07	± 5
2441	Simulated Tissue Liquid Head	40.49	1.739	39.19	1.79	3.32	-2.85	± 5
2462	Simulated Tissue Liquid Head	40.416	1.76	39.18	1.81	3.15	-2.76	± 5
2480	Simulated Tissue Liquid Head	40.355	1.781	39.16	1.83	3.05	-2.68	± 5

*Liquid Verification above was performed on 2024/06/19.

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)	
2600	Simulated Tissue Liquid Head	40.01	2.005	39	1.96	2.59	2.3	± 5
2510	Simulated Tissue Liquid Head	40.671	1.893	39.12	1.86	3.96	1.77	± 5
2535	Simulated Tissue Liquid Head	40.443	1.924	39.09	1.89	3.46	1.8	± 5
2560	Simulated Tissue Liquid Head	40.135	1.955	39.05	1.92	2.78	1.82	± 5
2595	Simulated Tissue Liquid Head	40.027	1.998	39.01	1.95	2.61	2.46	± 5
2680	Simulated Tissue Liquid Head	39.78	2.083	38.9	2.05	2.26	1.61	± 5

*Liquid Verification above was performed on 2024/06/19.

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)	
5250	Simulated Tissue Liquid Head	35.406	4.578	35.95	4.71	-1.51	-2.8	± 5
5180	Simulated Tissue Liquid Head	35.452	4.52	36.02	4.64	-1.58	-2.59	± 5
5200	Simulated Tissue Liquid Head	35.562	4.53	36	4.66	-1.22	-2.79	± 5
5240	Simulated Tissue Liquid Head	35.443	4.584	35.96	4.7	-1.44	-2.47	± 5
5260	Simulated Tissue Liquid Head	35.319	4.578	35.94	4.72	-1.73	-3.01	± 5
5280	Simulated Tissue Liquid Head	35.322	4.62	35.92	4.74	-1.66	-2.53	± 5
5320	Simulated Tissue Liquid Head	35.18	4.646	35.88	4.78	-1.95	-2.8	± 5

*Liquid Verification above was performed on 2024/06/19.

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)	
5600	Simulated Tissue Liquid Head	34.475	5.005	35.5	5.07	-2.89	-1.28	± 5
5500	Simulated Tissue Liquid Head	34.697	4.89	35.65	4.97	-2.67	-1.61	± 5
5580	Simulated Tissue Liquid Head	34.479	4.96	35.52	5.05	-2.93	-1.78	± 5
5700	Simulated Tissue Liquid Head	34.329	5.123	35.4	5.17	-3.03	-0.91	± 5
5720	Simulated Tissue Liquid Head	34.302	5.144	35.38	5.19	-3.05	-0.89	± 5

*Liquid Verification above was performed on 2024/06/12.

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)	
5750	Simulated Tissue Liquid Head	34.147	5.167	35.35	5.22	-3.4	-1.02	± 5
5745	Simulated Tissue Liquid Head	34.188	5.158	35.36	5.22	-3.31	-1.19	± 5
5785	Simulated Tissue Liquid Head	34.057	5.199	35.32	5.26	-3.58	-1.16	± 5
5825	Simulated Tissue Liquid Head	34.097	5.304	35.28	5.3	-3.35	0.08	± 5

*Liquid Verification above was performed on 2024/06/12.

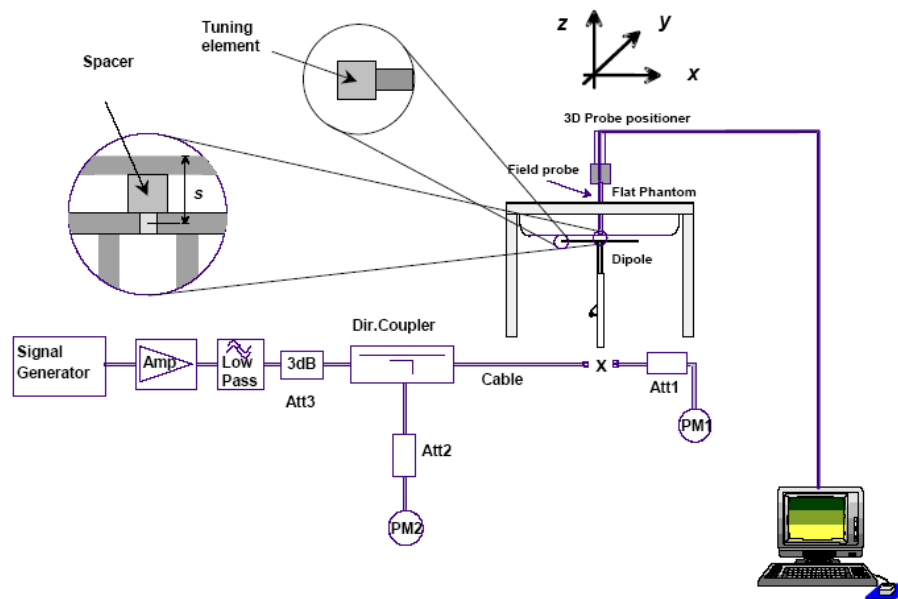
5.3 System Accuracy Verification

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:

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

System Verification Setup Block Diagram



5.4 System Accuracy Check Results

Date	Frequency Band	Liquid Type	Input Power (mW)	Measured SAR (W/kg)	Normalized to 1W (W/kg)	Target Value (W/kg)	Delta (%)	Tolerance (%)
2024/06/17	750 MHz	Simulated Tissue Liquid Head	100	1g 0.832	8.32	8.48	-1.89	± 10
2024/06/18	835 MHz	Simulated Tissue Liquid Head	100	1g 0.954	9.54	9.33	2.25	± 10
2024/06/17	1750 MHz	Simulated Tissue Liquid Head	100	1g 3.26	32.6	36.1	-9.7	± 10
2024/06/18	1900 MHz	Simulated Tissue Liquid Head	100	1g 3.85	38.5	40.2	-4.23	± 10
2024/06/19	2450 MHz	Simulated Tissue Liquid Head	100	1g 5.63	56.3	53.5	5.23	± 10
2024/06/19	2600 MHz	Simulated Tissue Liquid Head	100	1g 6.07	60.7	55.8	8.78	± 10
2024/06/19	5250 MHz	Simulated Tissue Liquid Head	100	1g 7.25	72.5	77.5	-6.45	± 10
2024/06/12	5600 MHz	Simulated Tissue Liquid Head	100	1g 7.35	73.5	80.7	-8.92	± 10
2024/06/12	5750 MHz	Simulated Tissue Liquid Head	100	1g 7.17	71.7	78.4	-8.55	± 10

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

5.5 SAR SYSTEM VALIDATION DATA

System Performance 750 MHz Head

DUT: D750V3; Type: 750 MHz; Serial: 1167

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

Medium parameters used: $f = 750$ MHz; $\sigma = 0.911$ S/m; $\epsilon_r = 42.498$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7839; ConvF(9.95, 8.96, 8.82) @ 750 MHz; Calibrated: 2023/9/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: SAM (30deg probe tilt) with CRP v5.0_20150321; Type: QD000P40CD; Serial: TP:1874
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.12 W/kg

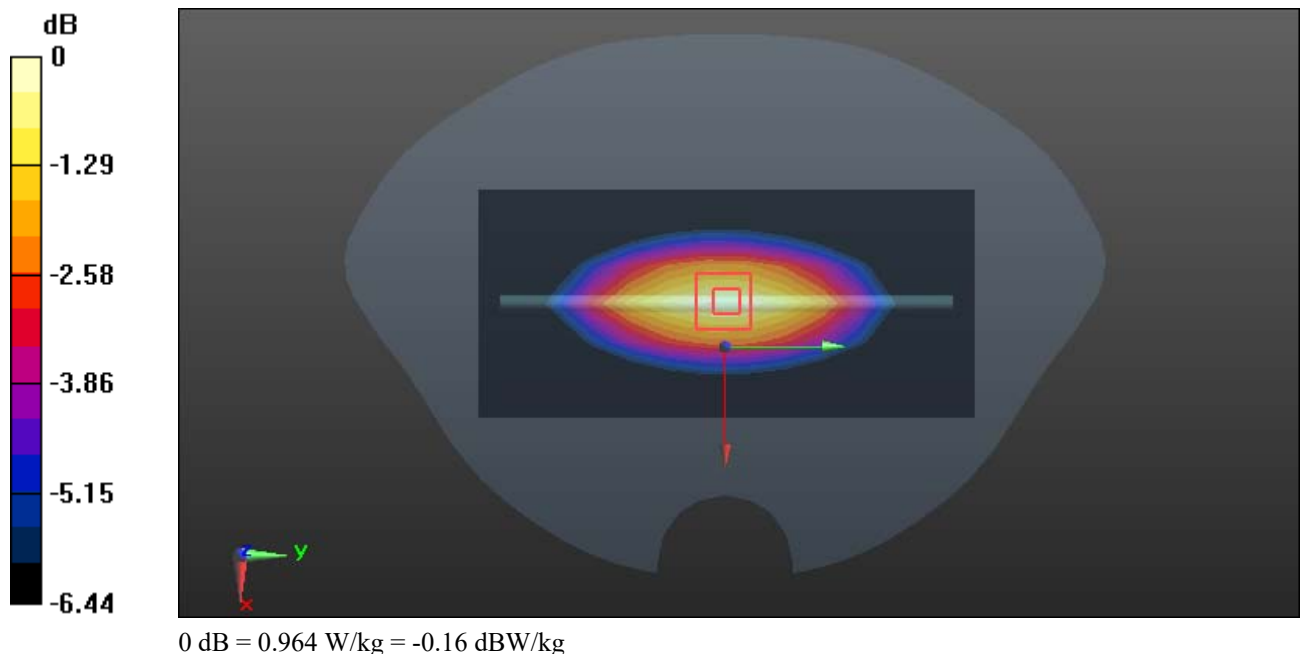
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 32.24 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 1.22 W/kg

SAR(1 g) = 0.832 W/kg; SAR(10 g) = 0.562 W/kg

Maximum value of SAR (measured) = 0.964 W/kg



System Performance 835 MHz Head**DUT: D835V2; Type: 835 MHz; Serial: 453**

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

Medium parameters used: $f = 835$ MHz; $\sigma = 0.936$ S/m; $\epsilon_r = 41.47$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7839; ConvF(9.55, 8.6, 8.54) @ 835 MHz; Calibrated: 2023/9/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: SAM (30deg probe tilt) with CRP v5.0_20150321; Type: QD000P40CD; Serial: TP:1874
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.985 W/kg

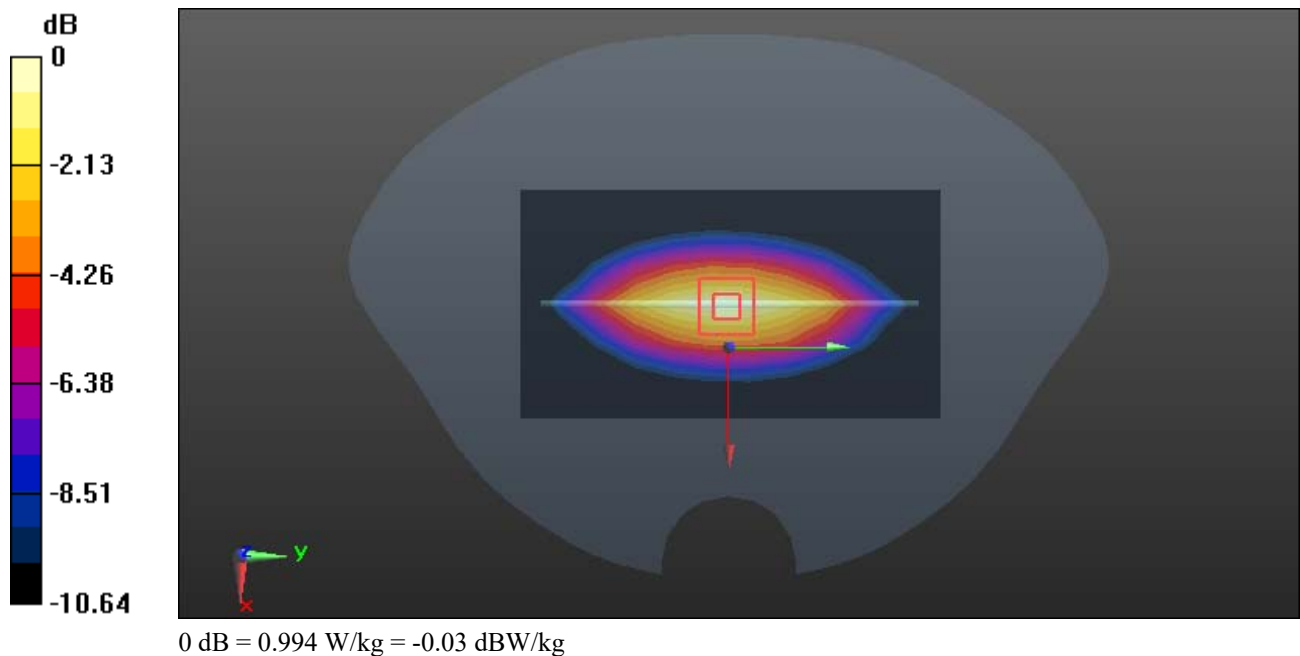
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 31.27 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 1.42 W/kg

SAR(1 g) = 0.954 W/kg; SAR(10 g) = 0.611 W/kg

Maximum value of SAR (measured) = 0.994 W/kg



System Performance 1750MHz Head**DUT: D1750V2; Type: 1750 MHz; Serial: 1141**

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

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.358$ S/m; $\epsilon_r = 39.54$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7839; ConvF(8.54, 7.65, 7.43) @ 1750 MHz; Calibrated: 2023/9/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: SAM (30deg probe tilt) with CRP v5.0_20150321; Type: QD000P40CD; Serial: TP:1874
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 4.25 W/kg

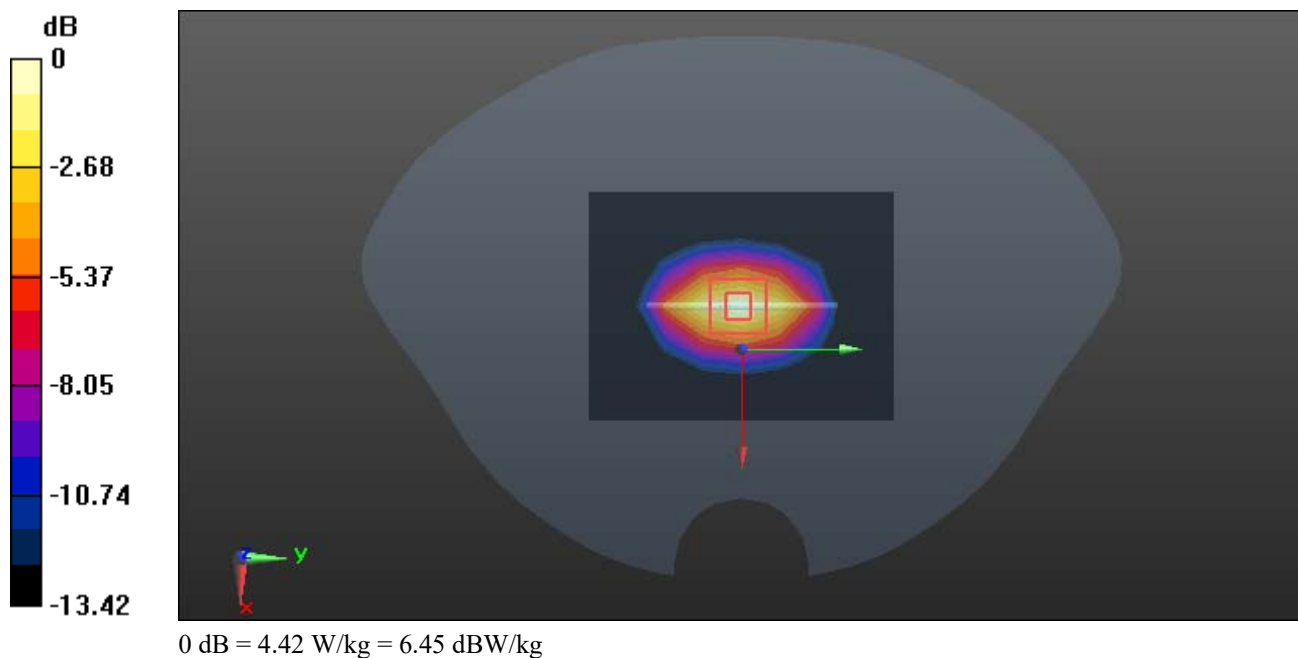
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 50.63 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 5.44 W/kg

SAR(1 g) = 3.26 W/kg; SAR(10 g) = 1.73 W/kg

Maximum value of SAR (measured) = 4.42 W/kg



System Performance 1900MHz Head**DUT: D1900V2; Type: 1900 MHz; Serial: 543**

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

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.43$ S/m; $\epsilon_r = 38.938$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7839; ConvF(8, 7.27, 7.03) @ 1900 MHz; Calibrated: 2023/9/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: SAM (30deg probe tilt) with CRP v5.0_20150321; Type: QD000P40CD; Serial: TP:1874
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (7x8x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 4.35 W/kg

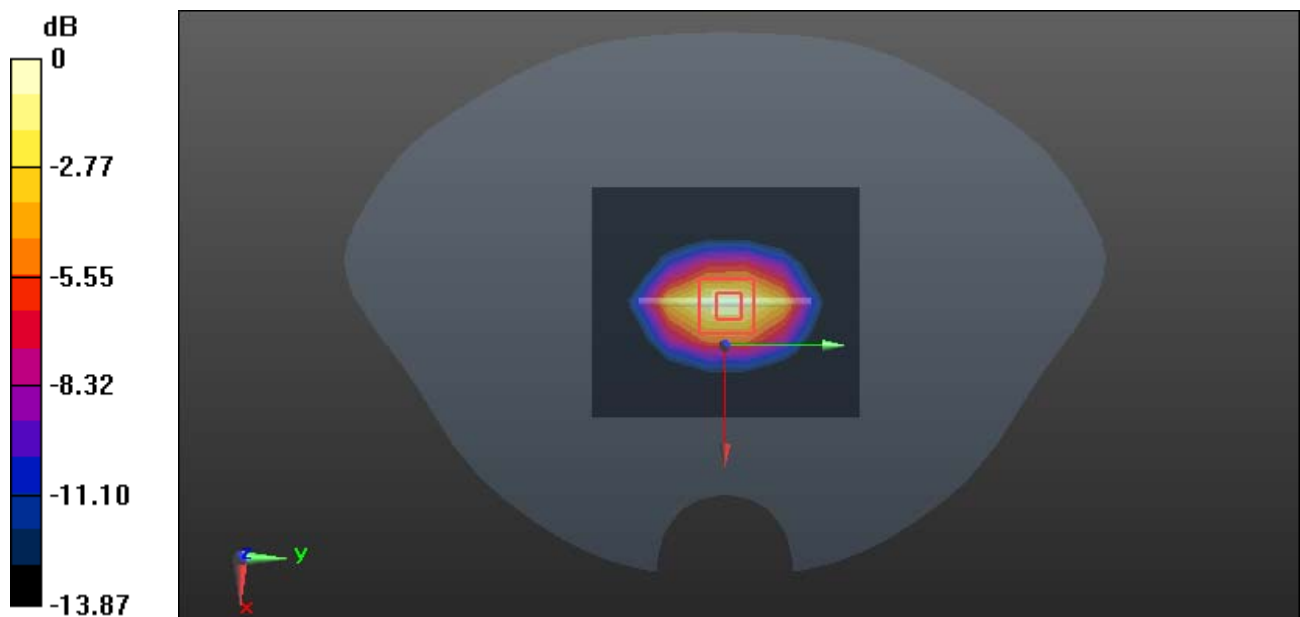
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 50.37 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 5.93 W/kg

SAR(1 g) = 3.85 W/kg; SAR(10 g) = 2.24 W/kg

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



0 dB = 4.64 W/kg = 6.67 dBW/kg

System Performance 2450MHz Head**DUT: D2450V2; Type: 2450 MHz; Serial: 971**

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

Medium parameters used : $f = 2450$ MHz; $\sigma = 1.748$ S/m; $\epsilon_r = 40.451$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7839; ConvF(7.49, 6.81, 6.61) @ 2450 MHz; Calibrated: 2023/9/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: SAM (30deg probe tilt) with CRP v5.0_20150321; Type: QD000P40CD; Serial: TP:1874
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (7x10x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 7.52 W/kg

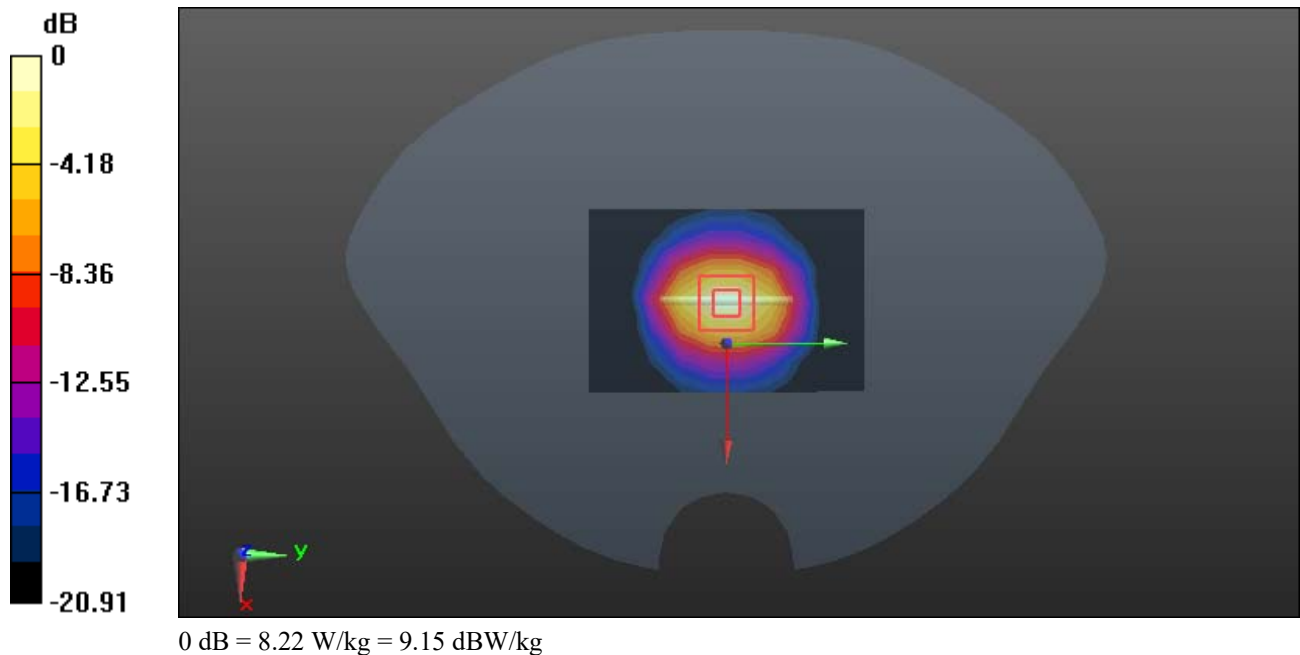
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 62.57 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 12.4 W/kg

SAR(1 g) = 5.63 W/kg; SAR(10 g) = 2.47 W/kg

Maximum value of SAR (measured) = 8.22 W/kg



System Performance 2600MHz Head**DUT: D2600V2; Type: 2600 MHz; Serial: 1132**

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

Medium parameters used: $f = 2600$ MHz; $\sigma = 2.005$ S/m; $\epsilon_r = 40.01$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7839; ConvF(7.61, 6.94, 6.73) @ 2600 MHz; Calibrated: 2023/9/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: SAM (30deg probe tilt) with CRP v5.0_20150321; Type: QD000P40CD; Serial: TP:1874
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 6.45 W/kg

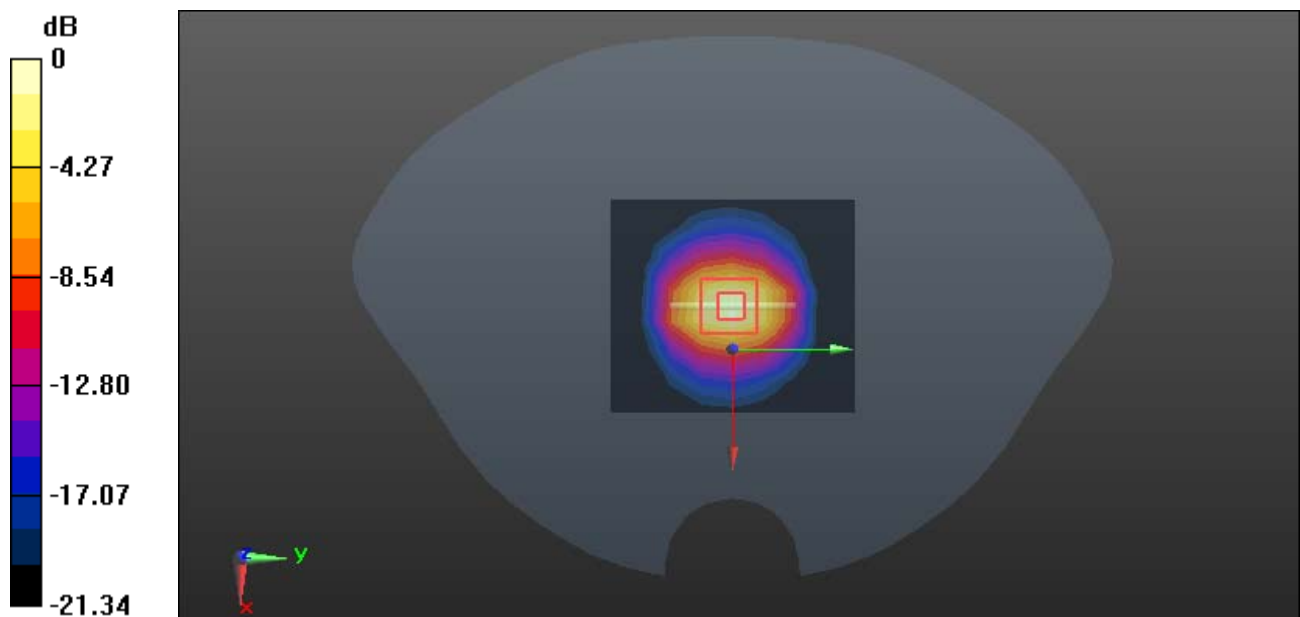
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 63.75 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 12.1 W/kg

SAR(1 g) = 6.07 W/kg; SAR(10 g) = 2.37 W/kg

Maximum value of SAR (measured) = 8.04 W/kg



0 dB = 8.04 W/kg = 9.05 dBW/kg

System Performance 5250 MHz Head**DUT: D5GHzV2; Type: 5250 MHz; Serial: 1246**

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

Medium parameters used: $f = 5250$ MHz; $\sigma = 4.578$ S/m; $\epsilon_r = 35.406$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7839; ConvF(5.62, 5.1, 4.97) @ 5250 MHz; Calibrated: 2023/9/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: SAM (30deg probe tilt) with CRP v5.0_20150321; Type: QD000P40CD; Serial: TP:1874
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 16.4 W/kg

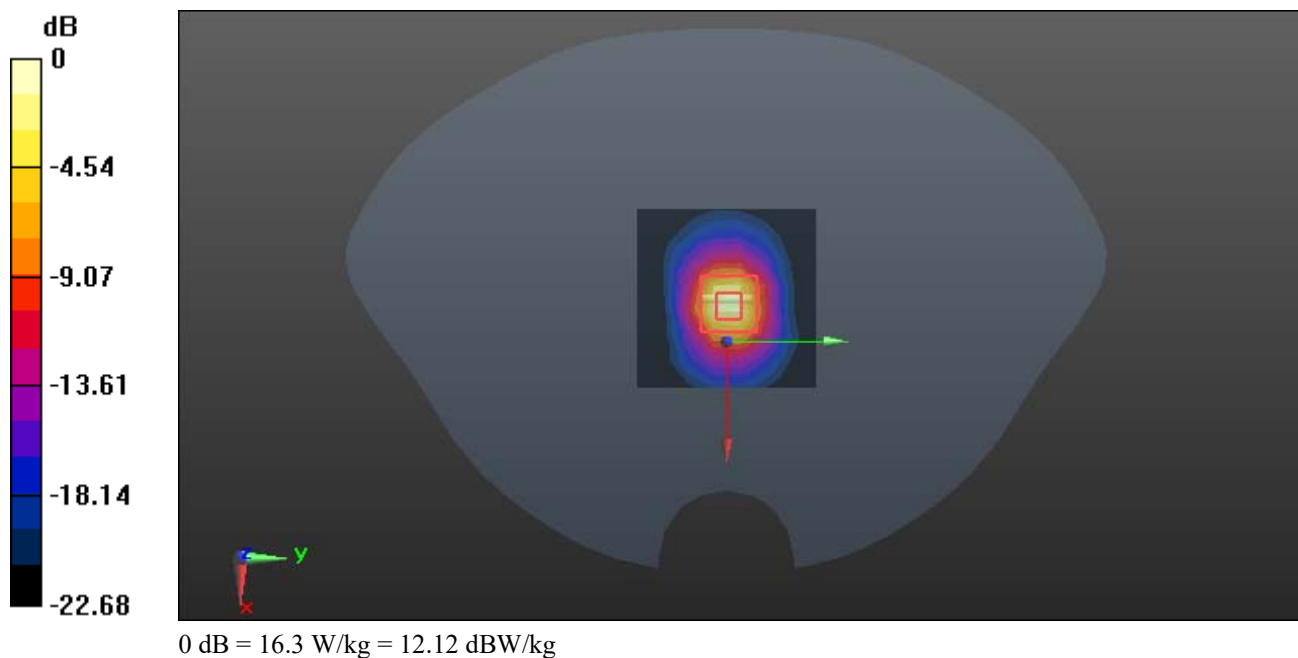
Zoom Scan (7x7x16)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 42.47 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 27.3 W/kg

SAR(1 g) = 7.25 W/kg; SAR(10 g) = 2.01 W/kg

Maximum value of SAR (measured) = 16.3 W/kg



System Performance 5600 MHz Head**DUT: D5GHzV2; Type: 5600 MHz; Serial: 1246**

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

Medium parameters used: $f = 5600$ MHz; $\sigma = 5.005$ S/m; $\epsilon_r = 34.475$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7839; ConvF(4.94, 4.48, 4.39) @ 5600 MHz; Calibrated: 2023/9/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: SAM (30deg probe tilt) with CRP v5.0_20150321; Type: QD000P40CD; Serial: TP:1874
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

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

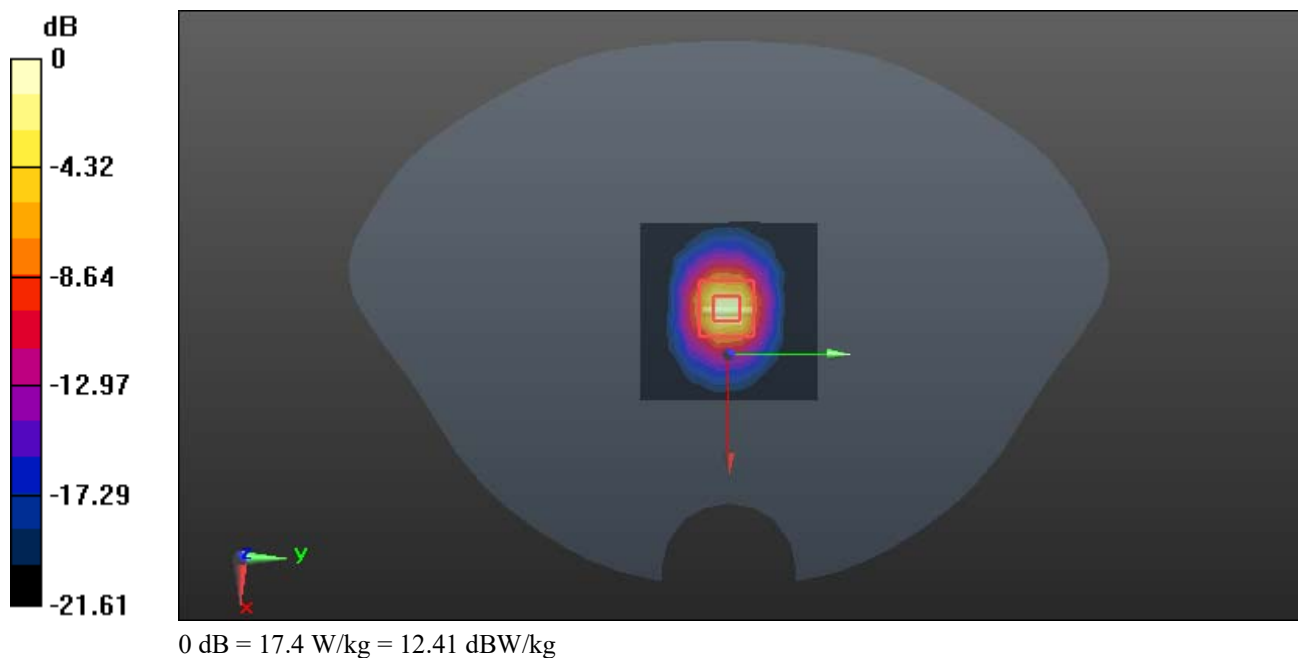
Zoom Scan (7x7x16)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 40.23 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 31.2 W/kg

SAR(1 g) = 7.35 W/kg; SAR(10 g) = 2.09 W/kg

Maximum value of SAR (measured) = 17.4 W/kg



System Performance 5750 MHz Head**DUT: D5GHzV2; Type: 5750 MHz; Serial: 1246**

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

Medium parameters used: $f = 5750$ MHz; $\sigma = 5.167$ S/m; $\epsilon_r = 34.147$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7839; ConvF(5.04, 4.65, 4.62) @ 5750 MHz; Calibrated: 2023/9/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2024/1/23
- Phantom: SAM (30deg probe tilt) with CRP v5.0_20150321; Type: QD000P40CD; Serial: TP:1874
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 18.7 W/kg

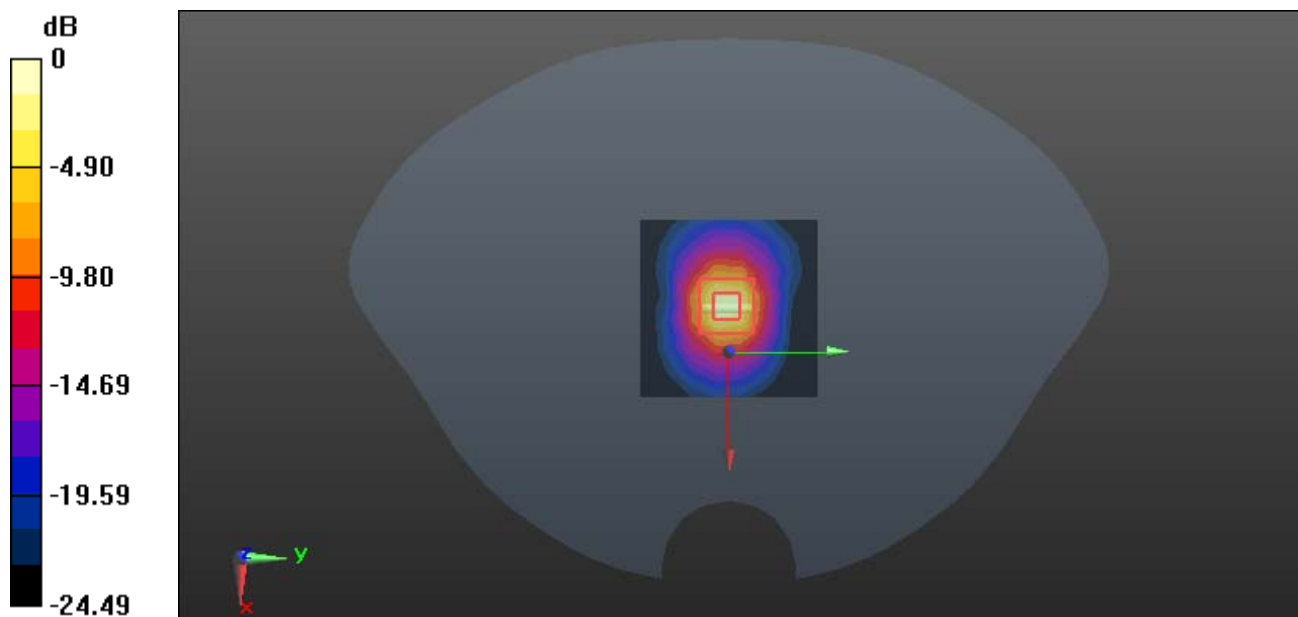
Zoom Scan (7x7x16)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 38.37 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 29.1 W/kg

SAR(1 g) = 7.17 W/kg; SAR(10 g) = 2.02 W/kg

Maximum value of SAR (measured) = 17.5 W/kg



6. EUT TEST STRATEGY AND METHODOLOGY

6.1 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.

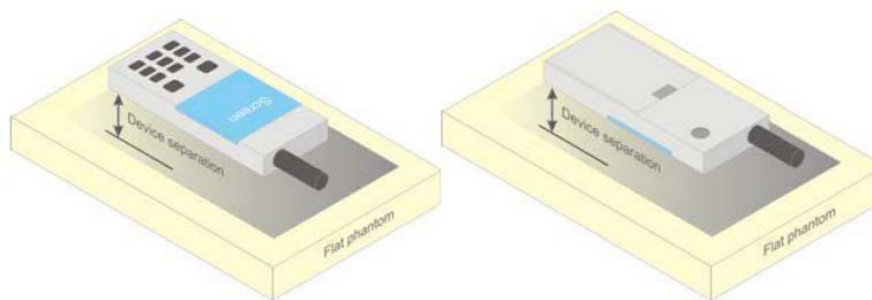


Figure 5 – Test positions for body-worn devices

6.2 Test Distance for SAR Evaluation

In this case the EUT(Equipment Under Test) is set 10mm away from the phantom, the test distance is 10mm.

6.3 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.

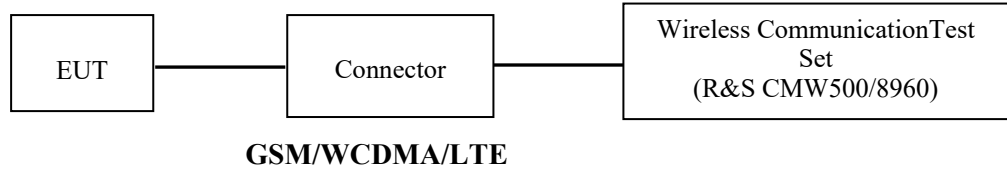
All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

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.

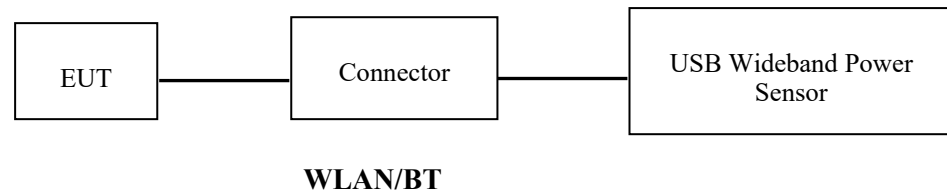
7. CONDUCTED OUTPUT POWER MEASUREMENT

7.1 Test Procedure

The RF output of the transmitter was connected to the input of the Wireless Communication Test Set through Connector.



The RF output of the transmitter was connected to the input port of the USB Wideband Power Sensor through Connector.



7.2 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
	$\beta_d(\text{SF})$	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's	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

DC-HSDPA

The following tests were conducted according to the test requirements in Table C.8.1.12 of 3GPP TS 34.121-1

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

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

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
Note 1: Δ_{ACK} , Δ_{NACK} and Δ_{CQI} = 30/15 with $\beta_{hs} = 30/15 * \beta_c$.											
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 β_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 signalled to use the extrapolation algorithm.											

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
NS_05	6.6.3.3.1	1	10, 15, 20	Table 6.2.4-4	
NS_06	6.6.2.2.3	12, 13, 14, 17	10, 15, 20	≥ 50	≤ 1
NS_07	6.6.2.2.3	13	10	Table 6.2.4-2	
NS_08	6.6.3.3.2			Table 6.2.4-2	
NS_09	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_10	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_11	6.6.2.2.1	20	15, 20	Table 6.2.4-3	
NS_12	6.6.2.2.1	23	1.4, 3, 5, 10, 15, 20	Table 6.2.4-5	
NS_13	6.6.3.3.5	26	1.4, 3, 5	Table 6.2.4-6	
NS_14	6.6.3.3.6	26	5	Table 6.2.4-7	
NS_15	6.6.3.3.7	26	10, 15	Table 6.2.4-8	
NS_16	6.6.3.3.8	26	1.4, 3, 5, 10, 15	Table 6.2.4-9	
NS_17	6.6.3.3.9	27	3, 5, 10	Table 6.2.4-10	
NS_18	6.6.3.3.10	28	5, 10	Table 6.2.4-11, Table 6.2.4-12, Table 6.2.4-13	
NS_19	6.6.3.3.11	28	5	Table 5.6-1	N/A
NS_20	6.6.2.2.1 6.6.3.2	23	5, 10, 15, 20	≥ 2	≤ 1
				≥ 1	≤ 4
NS_21	6.6.3.3.12	44	10, 15, 20	Table 6.2.4-14	
NS_22	6.6.2.2.1 6.6.3.2	23	5, 10, 15, 20	Table 6.2.4-15	
...					
NS_32	-	-	-	-	-

TDD-LTE

P TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special subframe configurations.

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

We used configuration 0 for LTE Band 41 SAR test, that is 63.33%(1:1.58) for duty cycle.

7.3 Maximum Target Output Power

Max Target Power(dBm)			
Mode/Band	Channel		
	Low	Middle	High
GSM 850 GPRS 1 TX Slot	34.5	34.5	34.5
GSM 850 GPRS 2 TX Slot	33.5	33.5	33.5
GSM 850 GPRS 3 TX Slot	32.5	32.5	32.5
GSM 850 GPRS 4 TX Slot	30	30	30
GSM 850 EDGE 1 TX Slot	30	30	30
GSM 850 EDGE 2 TX Slot	29	29	29
GSM 850 EDGE 3 TX Slot	28	28	28
GSM 850 EDGE 4 TX Slot	26	26	26
PCS 1900 GPRS 1 TX Slot	32	32	32
PCS 1900 GPRS 2 TX Slot	31	31	31
PCS 1900 GPRS 3 TX Slot	30	30	30
PCS 1900 GPRS 4 TX Slot	27.5	27.5	27.5
PCS 1900 EDGE 1 TX Slot	28	28	28
PCS 1900 EDGE 2 TX Slot	27	27	27
PCS 1900 EDGE 3 TX Slot	26	26	26
PCS 1900 EDGE 4 TX Slot	24	24	24
WCDMA Band 2	24	24	24
HSDPA	23	23	23
HSUPA	22	22	22
DC-HSDPA	23.7	23.7	23.7
HSPA+	23.5	23.5	23.5
WCDMA Band 4	24	24	24
HSDPA	22	22	22
HSUPA	22	22	22
DC-HSDPA	23.8	23.8	23.8
HSPA+	23.5	23.5	23.5
WCDMA Band 5	24.5	24.5	24.5
HSDPA	22	22	22
HSUPA	22.5	22.5	22.5
DC-HSDPA	24.3	24.3	24.3
HSPA+	24	24	24
LTE Band 2(20M)	24	24	24
LTE Band 4(20M)	24.1	24.1	24.1
LTE Band 5(10M)	24.3	24.3	24.3
LTE Band 7(20M)	23	23	23
LTE Band 12(10M)	24.1	24.1	24.1
LTE Band 13(10M)	24	24	24
LTE Band 17(10M)	24.1	24.1	24.1
LTE Band 25(20M)	24	24	24

Max Target Power(dBm)			
Mode/Band	Channel		
	Low	Middle	High
LTE Band 26(15M)	24.3	24.3	24.3
LTE Band 41(20M)	24	24	24
LTE Band 66(20M)	24.1	24.1	24.1
LTE Band 71(20M)	24	24	24
Wi-Fi 2.4G(802.11b)	8.2	8.2	8.2
Wi-Fi 2.4G (802.11g)	15	15	15
Wi-Fi 2.4G (802.11n ht20)	14.8	14.8	14.8
Wi-Fi 2.4G (802.11n ht40)	13.5	13.5	13.5
Wi-Fi 5.2G(802.11a)	13	13	13
Wi-Fi 5.2G (802.11n20)	15.5	15.5	15.5
Wi-Fi 5.2G (802.11n40)	14	/	14
Wi-Fi 5.2G (802.11ac80)	/	15	/
Wi-Fi 5.3G(802.11a)	13	13	13
Wi-Fi 5.3G (802.11n20)	15.5	15.5	15.5
Wi-Fi 5.3G (802.11n40)	13.5	/	13.5
Wi-Fi 5.3G (802.11ac80)	/	14.5	/
Wi-Fi 5.6G(802.11a)	13	13	13
Wi-Fi 5.6G (802.11n20)	16	16	16
Wi-Fi 5.6G (802.11n40)	14	14	14
Wi-Fi 5.6G (802.11ac80)	14.5	/	15
Wi-Fi 5.8G(802.11a)	13.5	13.5	13.5
Wi-Fi 5.8G (802.11n20)	16.5	16.5	16.5
Wi-Fi 5.8G (802.11n40)	14	/	14
Wi-Fi 5.8G (802.11ac80)	/	15	/
Bluetooth BDR	10.5	10.5	10.5
Bluetooth EDR	10.5	10.5	8.5
BLE 1M	8	7	6

7.4 Test Results:**GPRS:**

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)			
			1 slot	2 slots	3 slots	4 slots
GSM 850	128	824.2	34.25	33.06	32.23	29.75
	190	836.6	34.36	33.37	32.31	29.71
	251	848.8	34.09	33.16	32.29	29.65
PCS 1900	512	1850.2	31.87	30.58	29.86	27.02
	661	1880	31.68	30.73	29.51	27.08
	810	1909.8	31.77	30.68	29.80	27.07

EDGE:

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)			
			1 slot	2 slots	3 slots	4 slots
GSM 850	128	824.2	29.75	28.58	27.81	25.72
	190	836.6	29.49	28.79	27.76	25.79
	251	848.8	29.63	28.52	27.58	25.55
PCS 1900	512	1850.2	27.77	26.86	25.74	23.68
	661	1880	27.78	26.76	25.75	23.77
	810	1909.8	27.66	26.64	25.60	23.55

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)	Time based average Power (dBm)			
			1 slot	2 slot	3 slots	4 slots
GSM 850	128	824.2	25.25	27.06	27.98	26.75
	190	836.6	25.36	27.37	28.06	26.71
	251	848.8	25.09	27.16	28.04	26.65
PCS 1900	512	1850.2	22.87	24.58	25.61	24.02
	661	1880	22.68	24.73	25.26	24.08
	810	1909.8	22.77	24.68	25.55	24.07

The time based average power for EDGE

Band	Channel No.	Frequency (MHz)	Time based average Power (dBm)			
			1 slot	2 slot	3 slots	4 slots
GSM 850	128	824.2	20.75	22.58	23.56	22.72
	190	836.6	20.49	22.79	23.51	22.79
	251	848.8	20.63	22.52	23.33	22.55
PCS 1900	512	1850.2	18.77	20.86	21.49	20.68
	661	1880	18.78	20.76	21.50	20.77
	810	1909.8	18.66	20.64	21.35	20.55

Note:

1. Agilent Technologies Communication Tester (8960) 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).
4. According to KDB941225D01-SAR for EGPRS mode are not required when the source-based time-averaged output power for data mode is lower than that in the normal GPRS mode.

WCDMA:
Results (12.2kbps RMC)

Band	Frequency (MHz)	RF Output Power (dBm)
WCDMA Band 2	1852.4	23.62
	1880	23.72
	1907.6	23.69
WCDMA Band 4	1712.4	23.7
	1732.6	23.55
	1752.6	23.62
WCDMA Band 5	826.4	24.15
	836.6	24.33
	846.6	24.14

Results (HSDPA)

Band	Frequency (MHz)	RF Output Power (dBm)			
		Subset 1	Subset 2	Subset 3	Subset 4
WCDMA Band 2	1852.4	22.77	22.53	22.54	22.54
	1880	22.54	22.61	22.89	22.57
	1907.6	22.52	22.88	22.79	22.72
WCDMA Band 4	1712.4	21.54	21.66	21.67	21.71
	1732.6	21.87	21.77	21.74	21.83
	1752.6	21.52	21.76	21.88	21.54
WCDMA Band 5	826.4	21.85	21.87	21.6	21.72
	836.6	21.82	21.63	21.75	21.62
	846.6	21.62	21.59	21.56	21.51

Results (HSUPA)

Band	Frequency (MHz)	RF Output Power (dBm)				
		Subset 1	Subset 2	Subset 3	Subset 4	Subset 5
WCDMA Band 2	1852.4	21.85	21.73	21.77	21.85	21.64
	1880	21.74	21.76	21.78	21.76	21.65
	1907.6	21.75	21.53	21.69	21.5	21.63
WCDMA Band 4	1712.4	21.74	21.66	21.82	21.61	21.87
	1732.6	21.63	21.77	21.69	21.7	21.68
	1752.6	21.54	21.54	21.78	21.78	21.73
WCDMA Band 5	826.4	22.02	22.05	22.17	22.27	22.26
	836.6	22.2	22.07	22	22.26	22.35
	846.6	22.14	22	22.34	22.06	22.19

Results (DC-HSDPA)

Band	Frequency (MHz)	RF Output Power (dBm)			
		Subset 1	Subset 2	Subset 3	Subset 4
WCDMA Band 2	1852.4	23.54	23.31	23.21	23.41
	1880	23.56	23.58	23.43	23.35
	1907.6	23.42	23.22	23.5	23.3
WCDMA Band 4	1712.4	23.6	23.5	23.45	23.6
	1732.6	23.42	23.51	23.4	23.45
	1752.6	23.3	23.38	23.63	23.46
WCDMA Band 5	826.4	24.12	24.05	24.07	23.79
	836.6	23.93	23.89	23.81	23.91
	846.6	24.01	23.86	23.84	23.96

Results (HSPA+)

Band	Frequency (MHz)	RF Output Power (dBm)
WCDMA Band 2	1852.4	23.02
	1880	23.11
	1907.6	23.06
WCDMA Band 4	1712.4	23.02
	1732.6	23.14
	1752.6	23.07
WCDMA Band 5	826.4	23.59
	836.6	23.62
	846.6	23.6

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/DC-HSDPA/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	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	0	0	23.37	23.31	23.37
		RB1#3	0	0	23.46	23.53	23.25
		RB1#5	0	0	23.26	23.29	23.36
		RB3#0	1	1	22.63	22.51	22.41
		RB3#3	1	1	22.66	22.63	22.54
		RB6#0	1	1	22.64	22.73	22.57
	16-QAM	RB1#0	1	1	22.89	22.91	23
		RB1#3	1	1	22.76	22.79	22.95
		RB1#5	2	2	23	22.9	22.84
		RB3#0	2	2	22.09	21.92	21.95
		RB3#3	2	2	22.18	22.1	22.13
		RB6#0	2	2	21.96	22.11	21.99
3M	QPSK	RB1#0	0	0	23.54	23.46	23.54
		RB1#8	0	0	23.49	23.48	23.43
		RB1#14	0	0	23.62	23.42	23.36
		RB6#0	1	1	22.5	22.63	22.58
		RB6#9	1	1	22.62	22.63	22.72
		RB15#0	1	1	22.62	22.69	22.76
	16-QAM	RB1#0	1	1	22.65	22.62	22.65
		RB1#8	1	1	22.54	22.72	22.59
		RB1#14	1	1	22.65	22.68	22.5
		RB6#0	2	2	21.82	21.86	21.89
		RB6#9	2	2	21.75	21.73	21.72
		RB15#0	2	2	21.8	22.01	21.91
5M	QPSK	RB1#0	0	0	23.34	23.45	23.36
		RB1#13	0	0	23.42	23.45	23.23
		RB1#24	0	0	23.28	23.5	23.27
		RB15#0	1	1	22.43	22.49	22.62
		RB15#10	1	1	22.41	22.52	22.38
		RB25#0	1	1	22.48	22.49	22.52
	16-QAM	RB1#0	1	1	22.81	22.83	22.98
		RB1#13	1	1	22.79	22.88	22.74
		RB1#24	1	1	22.92	22.74	22.95
		RB15#0	2	2	22.19	22.16	22.15
		RB15#10	2	2	22.03	22	22.16
		RB25#0	2	2	22.07	22.2	22.1

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	QPSK	RB1#0	0	0	23.21	23.27	23.27
		RB1#25	0	0	23.38	23.23	23.23
		RB1#49	1	1	23.34	23.21	23.41
		RB25#0	1	1	22.44	22.43	22.39
		RB25#25	1	1	22.5	22.37	22.49
		RB50#0	1	1	22.47	22.39	22.58
	16-QAM	RB1#0	1	1	22.58	22.51	22.45
		RB1#25	1	1	22.62	22.47	22.48
		RB1#49	1	1	22.57	22.54	22.57
		RB25#0	2	2	21.66	21.6	21.82
		RB25#25	2	2	21.8	21.68	21.69
		RB50#0	2	2	21.7	21.7	21.76
15M	QPSK	RB1#0	0	0	22.76	23.01	22.83
		RB1#38	0	0	22.94	22.74	22.86
		RB1#74	1	1	22.9	22.82	23
		RB36#0	1	1	21.96	22.06	22.06
		RB36#39	1	1	22.03	21.98	22.13
		RB75#0	1	1	22.14	22.11	22.06
	16-QAM	RB1#0	1	1	22.22	22.16	22.31
		RB1#38	1	1	22.23	22.3	22.22
		RB1#74	2	2	22.22	22.34	22.26
		RB36#0	2	2	21.26	21.29	21.36
		RB36#39	2	2	21.32	21.31	21.32
		RB75#0	2	2	21.28	21.38	21.25
20M	QPSK	RB1#0	0	0	23.46	23.53	23.54
		RB1#50	0	0	23.5	23.43	23.44
		RB1#99	0	0	23.61	23.58	23.56
		RB50#0	1	1	22.75	22.66	22.72
		RB50#50	1	1	22.64	22.71	22.74
		RB100#0	1	1	22.86	22.69	22.73
	16-QAM	RB1#0	1	1	23.01	23.11	23.08
		RB1#50	1	1	23.1	23.1	23.03
		RB1#99	2	2	22.99	22.92	23.01
		RB50#0	2	2	22.38	22.23	22.37
		RB50#50	2	2	22.38	22.43	22.26
		RB100#0	2	2	22.35	22.24	22.26

LTE Band 4:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	0	0	23.51	23.65	23.39
		RB1#3	0	0	23.57	23.6	23.6
		RB1#5	0	0	23.54	23.5	23.48
		RB3#0	1	1	22.75	22.63	22.86
		RB3#3	1	1	22.72	22.74	22.62
		RB6#0	1	1	22.82	22.65	22.65
	16-QAM	RB1#0	1	1	22.63	22.7	22.56
		RB1#3	1	1	22.58	22.52	22.55
		RB1#5	2	2	22.56	22.69	22.44
		RB3#0	2	2	21.69	21.73	21.85
		RB3#3	2	2	21.76	21.68	21.59
		RB6#0	2	2	21.66	21.8	21.75
3M	QPSK	RB1#0	0	0	23.47	23.35	23.44
		RB1#8	0	0	23.43	23.26	23.43
		RB1#14	0	0	23.25	23.17	23.23
		RB6#0	1	1	22.47	22.43	22.5
		RB6#9	1	1	22.72	22.68	22.55
		RB15#0	1	1	22.6	22.57	22.51
	16-QAM	RB1#0	1	1	22.31	22.42	22.36
		RB1#8	1	1	22.32	22.34	22.38
		RB1#14	1	1	22.35	22.52	22.24
		RB6#0	2	2	21.59	21.47	21.47
		RB6#9	2	2	21.64	21.5	21.57
		RB15#0	2	2	21.7	21.67	21.61
5M	QPSK	RB1#0	0	0	23.43	23.27	23.44
		RB1#13	0	0	23.22	23.31	23.25
		RB1#24	0	0	23.36	23.38	23.19
		RB15#0	1	1	22.48	22.65	22.55
		RB15#10	1	1	22.43	22.37	22.4
		RB25#0	1	1	22.45	22.46	22.38
	16-QAM	RB1#0	1	1	22.46	22.46	22.52
		RB1#13	1	1	22.52	22.39	22.41
		RB1#24	1	1	22.51	22.45	22.54
		RB15#0	2	2	21.86	21.75	21.75
		RB15#10	2	2	21.7	21.73	21.96
		RB25#0	2	2	21.75	21.83	21.86

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	QPSK	RB1#0	0	0	23.48	23.55	23.51
		RB1#25	0	0	23.56	23.73	23.65
		RB1#49	1	1	23.58	23.66	23.51
		RB25#0	1	1	22.71	22.79	22.94
		RB25#25	1	1	22.86	22.73	22.88
		RB50#0	1	1	22.87	22.83	22.84
	16-QAM	RB1#0	1	1	23.23	23.39	23.23
		RB1#25	1	1	23.32	23.05	23.09
		RB1#49	1	1	23.34	23.28	23.26
		RB25#0	2	2	22.24	22.36	22.28
		RB25#25	2	2	22.53	22.51	22.43
		RB50#0	2	2	22.45	22.48	22.41
15M	QPSK	RB1#0	0	0	23.83	23.84	23.56
		RB1#38	0	0	23.78	23.67	23.64
		RB1#74	1	1	23.69	23.71	23.86
		RB36#0	1	1	22.83	22.88	22.91
		RB36#39	1	1	22.91	22.93	22.9
		RB75#0	1	1	22.92	23	22.99
	16-QAM	RB1#0	1	1	23.35	23.22	23.1
		RB1#38	1	1	23.14	23.29	23.25
		RB1#74	2	2	23.34	23.24	23.37
		RB36#0	2	2	22.46	22.45	22.53
		RB36#39	2	2	22.49	22.47	22.47
		RB75#0	2	2	22.6	22.52	22.41
20M	QPSK	RB1#0	0	0	23.6	23.31	23.59
		RB1#50	0	0	23.41	23.3	23.41
		RB1#99	0	0	23.29	23.33	23.52
		RB50#0	1	1	22.55	22.73	22.45
		RB50#50	1	1	22.72	22.76	22.8
		RB100#0	1	1	22.68	22.54	22.69
	16-QAM	RB1#0	1	1	23.29	23.38	23.34
		RB1#50	1	1	23.29	23.22	23.41
		RB1#99	2	2	23.23	23.3	23.36
		RB50#0	2	2	22.57	22.43	22.43
		RB50#50	2	2	22.49	22.59	22.4
		RB100#0	2	2	22.55	22.55	22.35

LTE Band 5:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	0	0	23.25	23.2	23.27
		RB1#3	0	0	23.26	23.32	23.42
		RB1#5	0	0	23.44	23.38	23.34
		RB3#0	1	1	22.54	22.53	22.44
		RB3#3	1	1	22.59	22.44	22.49
		RB6#0	1	1	22.56	22.61	22.51
	16-QAM	RB1#0	1	1	22.22	22.17	22.17
		RB1#3	1	1	22.2	22.21	22.11
		RB1#5	2	2	22.3	22.38	22.27
		RB3#0	2	2	21.43	21.53	21.44
		RB3#3	2	2	21.47	21.47	21.47
		RB6#0	2	2	21.38	21.4	21.44
3M	QPSK	RB1#0	0	0	23.37	23.22	23.23
		RB1#8	0	0	23.19	23.21	23.12
		RB1#14	1	1	23.29	23.09	23.04
		RB6#0	1	1	22.4	22.38	22.47
		RB6#9	1	1	22.5	22.25	22.41
		RB15#0	1	1	22.36	22.39	22.43
	16-QAM	RB1#0	1	1	22.52	22.5	22.43
		RB1#8	1	1	22.49	22.34	22.58
		RB1#14	2	2	22.42	22.42	22.52
		RB6#0	2	2	21.5	21.78	21.6
		RB6#9	2	2	21.68	21.61	21.63
		RB15#0	2	2	21.64	21.81	21.65
5M	QPSK	RB1#0	0	0	23.05	23.17	23.19
		RB1#13	0	0	22.99	23.19	23.14
		RB1#24	0	0	23.1	23.17	23.06
		RB15#0	1	1	22.24	22.45	22.47
		RB15#10	1	1	22.39	22.4	22.24
		RB25#0	1	1	22.44	22.4	22.3
	16-QAM	RB1#0	1	1	22.09	22.12	22.21
		RB1#13	1	1	22.11	22.29	22.15
		RB1#24	1	1	22.14	22.21	22.22
		RB15#0	2	2	21.49	21.48	21.51
		RB15#10	2	2	21.44	21.51	21.58
		RB25#0	2	2	21.61	21.64	21.5

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	QPSK	RB1#0	0	0	23.36	23.68	23.61
		RB1#25	0	0	23.57	23.57	23.61
		RB1#49	1	1	23.59	23.42	23.69
		RB25#0	1	1	22.75	22.63	22.65
		RB25#25	1	1	22.74	22.71	22.66
		RB50#0	1	1	22.71	22.69	22.63
	16-QAM	RB1#0	1	1	23.61	23.58	23.62
		RB1#25	1	1	23.76	23.55	23.48
		RB1#49	2	2	23.62	23.65	23.55
		RB25#0	2	2	22.85	22.7	22.86
		RB25#25	2	2	22.63	22.67	22.73
		RB50#0	2	2	22.71	22.8	22.74

LTE Band 7:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	0	0	22.84	22.58	22.71
		RB1#13	0	0	22.72	22.58	22.78
		RB1#24	0	0	22.62	22.7	22.74
		RB15#0	1	1	22.16	22.19	22.1
		RB15#10	1	1	22.29	22.06	22.15
		RB25#0	1	1	22.37	22.12	22.24
	16-QAM	RB1#0	1	1	22.33	22.21	22.28
		RB1#13	1	1	22.41	22.25	22.32
		RB1#24	1	1	22.38	22.28	22.19
		RB15#0	2	2	21.89	21.81	21.84
		RB15#10	2	2	21.71	21.79	21.85
		RB25#0	2	2	21.69	21.58	21.77
10M	QPSK	RB1#0	0	0	22.82	22.87	22.89
		RB1#25	0	0	22.77	22.84	22.86
		RB1#49	0	0	22.86	22.89	22.91
		RB25#0	1	1	22.24	22.42	22.47
		RB25#25	1	1	22.36	22.55	22.43
		RB50#0	1	1	22.31	22.24	22.33
	16-QAM	RB1#0	1	1	22.57	22.49	22.72
		RB1#25	1	1	22.68	22.83	22.74
		RB1#49	1	1	22.65	22.64	22.65
		RB25#0	2	2	22.27	22.29	22.09
		RB25#25	2	2	22.24	22.17	22.31
		RB50#0	2	2	22.18	22.12	22.15
15M	QPSK	RB1#0	0	0	22.99	22.72	22.85
		RB1#38	0	0	22.8	22.93	22.85
		RB1#74	0	0	22.9	22.8	22.91
		RB36#0	1	1	22.41	22.38	22.47
		RB36#39	1	1	22.35	22.51	22.31
		RB75#0	1	1	22.34	22.39	22.52
	16-QAM	RB1#0	1	1	22.75	22.7	22.66
		RB1#38	1	1	22.71	22.61	22.59
		RB1#74	1	1	22.64	22.64	22.68
		RB36#0	2	2	22.26	22.17	22.2
		RB36#39	2	2	22.2	22.33	22.3
		RB75#0	2	2	22.15	22.31	22.18

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
20M	QPSK	RB1#0	0	0	22.89	22.78	22.49
		RB1#50	0	0	22.95	22.81	22.86
		RB1#99	0	0	22.93	22.96	22.7
		RB50#0	1	1	22.31	22.24	22.26
		RB50#50	1	1	22.25	22.4	22.44
		RB100#0	1	1	22.38	22.4	22.35
	16-QAM	RB1#0	1	1	22.67	22.45	22.56
		RB1#50	1	1	22.48	22.47	22.42
		RB1#99	1	1	22.57	22.44	22.6
		RB50#0	2	2	22.01	21.93	21.94
		RB50#50	2	2	22.14	21.9	21.8
		RB100#0	2	2	21.81	22.01	21.95

LTE Band 12:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	0	0	23.88	23.86	23.94
		RB1#3	0	0	23.87	24.03	23.91
		RB1#5	0	0	23.89	23.87	23.89
		RB3#0	1	1	23.46	23.39	23.43
		RB3#3	1	1	23.49	23.54	23.38
		RB6#0	1	1	23.51	23.45	23.43
	16-QAM	RB1#0	1	1	23.3	23.08	23.1
		RB1#3	1	1	23.05	23.17	23.16
		RB1#5	1	1	23.12	23.16	23.15
		RB3#0	2	2	22.64	22.66	22.62
		RB3#3	2	2	22.61	22.64	22.63
		RB6#0	2	2	22.48	22.57	22.59
3M	QPSK	RB1#0	0	0	23.79	23.61	23.86
		RB1#8	0	0	23.66	23.72	23.74
		RB1#14	0	0	23.71	23.8	23.78
		RB6#0	1	1	23.2	23.24	23.26
		RB6#9	1	1	23.29	23.2	23.01
		RB15#0	1	1	23.19	23.14	23.17
	16-QAM	RB1#0	1	1	23.21	23.46	23.39
		RB1#8	1	1	23.52	23.22	23.36
		RB1#14	1	1	23.38	23.31	23.21
		RB6#0	2	2	22.9	22.88	22.96
		RB6#9	2	2	22.97	22.95	22.86
		RB15#0	2	2	23.02	22.82	22.92
5M	QPSK	RB1#0	0	0	23.7	23.61	23.6
		RB1#13	0	0	23.55	23.76	23.64
		RB1#24	0	0	23.8	23.66	23.67
		RB15#0	1	1	23.09	23.16	23.32
		RB15#10	1	1	23.09	23.18	23.14
		RB25#0	1	1	23.23	23.19	23.18
	16-QAM	RB1#0	1	1	23.41	23.52	23.32
		RB1#13	1	1	23.33	23.43	23.55
		RB1#24	1	1	23.45	23.21	23.42
		RB15#0	2	2	22.97	23.03	22.81
		RB15#10	2	2	23	22.97	22.86
		RB25#0	2	2	23.08	22.86	22.93

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	QPSK	RB1#0	0	0	23.98	24.05	24.01
		RB1#25	0	0	24.09	24.07	24.08
		RB1#49	0	0	24.08	24.04	23.98
		RB25#0	1	1	23.52	23.56	23.34
		RB25#25	1	1	23.45	23.42	23.52
		RB50#0	1	1	23.39	23.42	23.42
	16-QAM	RB1#0	1	1	23.43	23.47	23.38
		RB1#25	1	1	23.53	23.3	23.42
		RB1#49	1	1	23.31	23.34	23.36
		RB25#0	2	2	22.81	22.81	22.97
		RB25#25	2	2	22.77	22.9	22.7
		RB50#0	2	2	22.8	22.8	22.81

LTE Band 13:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	0	0	23.75	/	23.62
		RB1#13	0	0	23.92	/	23.84
		RB1#24	0	0	23.77	/	23.74
		RB15#0	1	1	22.87	/	22.97
		RB15#10	1	1	22.89	/	22.87
		RB25#0	1	1	22.94	/	22.95
	16-QAM	RB1#0	1	1	22.9	/	22.85
		RB1#13	1	1	22.93	/	22.99
		RB1#24	1	1	22.96	/	22.89
		RB15#0	2	2	22.11	/	22.24
		RB15#10	2	2	22.15	/	21.97
		RB25#0	2	2	22.19	/	22.14
10M	QPSK	RB1#0	0	0	/	23.78	/
		RB1#25	0	0	/	23.93	/
		RB1#49	1	1	/	23.74	/
		RB25#0	1	1	/	23.12	/
		RB25#25	1	1	/	23.03	/
		RB50#0	1	1	/	22.95	/
	16-QAM	RB1#0	1	1	/	23.43	/
		RB1#25	1	1	/	23.47	/
		RB1#49	1	1	/	23.27	/
		RB25#0	2	2	/	22.55	/
		RB25#25	2	2	/	22.5	/
		RB50#0	2	2	/	22.63	/

LTE Band 17:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	0	0	23.89	23.87	23.93
		RB1#13	0	0	23.92	23.79	24.02
		RB1#24	0	0	23.94	23.9	23.94
		RB15#0	1	1	22.94	22.98	23.02
		RB15#10	1	1	22.98	22.97	23.06
		RB25#0	1	1	23.08	23.13	23.12
	16-QAM	RB1#0	1	1	23.09	23.21	22.97
		RB1#13	1	1	23.09	23.17	23.16
		RB1#24	1	1	23.24	23.13	23.24
		RB15#0	2	2	22.23	22.39	22.16
		RB15#10	2	2	22.31	22.31	22.37
		RB25#0	2	2	22.46	22.36	22.33
10M	QPSK	RB1#0	0	0	23.64	23.8	23.53
		RB1#25	0	0	23.77	23.6	23.69
		RB1#49	1	1	23.69	23.65	23.73
		RB25#0	1	1	22.98	22.83	22.84
		RB25#25	1	1	22.88	22.94	22.95
		RB50#0	1	1	22.8	22.76	22.96
	16-QAM	RB1#0	1	1	23.44	23.38	23.42
		RB1#25	1	1	23.36	23.45	23.38
		RB1#49	1	1	23.3	23.25	23.44
		RB25#0	2	2	22.54	22.55	22.65
		RB25#25	2	2	22.69	22.59	22.51
		RB50#0	2	2	22.66	22.54	22.54

LTE Band 25:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	0	0	23.37	23.28	23.42
		RB1#3	0	0	23.35	23.38	23.36
		RB1#5	0	0	23.25	23.29	23.33
		RB3#0	1	1	22.77	22.64	22.88
		RB3#3	1	1	22.69	22.77	22.85
		RB6#0	1	1	22.93	22.71	22.68
	16-QAM	RB1#0	1	1	22.8	22.9	22.89
		RB1#3	1	1	22.71	22.85	22.8
		RB1#5	2	2	22.84	22.72	22.93
		RB3#0	2	2	22.34	22.3	22.47
		RB3#3	2	2	22.52	22.3	22.3
		RB6#0	2	2	22.27	22.18	22.2
3M	QPSK	RB1#0	0	0	23.35	23.29	23.35
		RB1#8	0	0	23.6	23.51	23.39
		RB1#14	0	0	23.42	23.39	23.42
		RB6#0	1	1	22.82	22.83	22.8
		RB6#9	1	1	22.98	22.82	22.88
		RB15#0	1	1	22.99	22.9	22.8
	16-QAM	RB1#0	1	1	22.45	22.55	22.67
		RB1#8	1	1	22.53	22.58	22.5
		RB1#14	1	1	22.55	22.53	22.59
		RB6#0	2	2	21.97	21.93	22.15
		RB6#9	2	2	21.99	22.16	22.07
		RB15#0	2	2	22.17	22.2	21.99
5M	QPSK	RB1#0	0	0	23.32	23.37	23.36
		RB1#13	0	0	23.44	23.37	23.31
		RB1#24	0	0	23.33	23.22	23.38
		RB15#0	1	1	22.9	22.92	22.72
		RB15#10	1	1	22.61	22.71	22.84
		RB25#0	1	1	22.72	22.84	22.84
	16-QAM	RB1#0	1	1	22.91	22.79	22.82
		RB1#13	1	1	22.76	22.7	22.87
		RB1#24	1	1	22.71	22.69	22.86
		RB15#0	2	2	22.19	22.46	22.21
		RB15#10	2	2	22.42	22.32	22.44
		RB25#0	2	2	22.42	22.42	22.35

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	QPSK	RB1#0	0	0	23.38	23.4	23.16
		RB1#25	0	0	23.34	23.08	23.19
		RB1#49	1	1	23.24	23.21	23.32
		RB25#0	1	1	22.69	22.67	22.65
		RB25#25	1	1	22.63	22.72	22.61
		RB50#0	1	1	22.78	22.76	22.67
	16-QAM	RB1#0	1	1	22.45	22.44	22.54
		RB1#25	1	1	22.39	22.41	22.34
		RB1#49	1	1	22.5	22.55	22.49
		RB25#0	2	2	21.94	22.09	22.05
		RB25#25	2	2	21.97	22.01	21.82
		RB50#0	2	2	21.95	21.81	21.85
15M	QPSK	RB1#0	0	0	22.85	22.82	22.89
		RB1#38	0	0	23	22.71	22.84
		RB1#74	1	1	22.7	22.94	22.85
		RB36#0	1	1	22.34	22.44	22.31
		RB36#39	1	1	22.33	22.33	22.29
		RB75#0	1	1	22.34	22.28	22.12
	16-QAM	RB1#0	1	1	22.1	22.03	22.26
		RB1#38	1	1	22.2	22.35	22.18
		RB1#74	2	2	22.33	22.26	22.24
		RB36#0	2	2	21.6	21.73	21.68
		RB36#39	2	2	21.58	21.71	21.58
		RB75#0	2	2	21.77	21.77	21.65
20M	QPSK	RB1#0	0	0	23.64	23.64	23.58
		RB1#50	0	0	23.66	23.73	23.76
		RB1#99	0	0	23.59	23.83	23.59
		RB50#0	1	1	23.17	23.11	23.07
		RB50#50	1	1	23.08	23.31	23.22
		RB100#0	1	1	23.12	23	23.16
	16-QAM	RB1#0	1	1	22.95	23.04	22.92
		RB1#50	1	1	22.97	22.99	23.05
		RB1#99	2	2	23.02	22.98	22.82
		RB50#0	2	2	22.61	22.53	22.42
		RB50#50	2	2	22.4	22.65	22.48
		RB100#0	2	2	22.64	22.52	22.59

LTE Band 26:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	0	0	23.25	23.37	23.31
		RB1#3	0	0	23.19	23.43	23.24
		RB1#5	0	0	23.25	23.2	23.37
		RB3#0	1	1	22.82	23.08	23.02
		RB3#3	1	1	23.04	23.07	22.97
		RB6#0	1	1	22.94	23.09	23.08
	16-QAM	RB1#0	1	1	22.22	22.12	22.15
		RB1#3	1	1	22.24	22.05	22.03
		RB1#5	2	2	22.17	22.17	22.18
		RB3#0	2	2	21.75	22.01	21.85
		RB3#3	2	2	22	21.88	21.84
		RB6#0	2	2	21.88	21.91	21.77
3M	QPSK	RB1#0	0	0	23.05	23.3	23.22
		RB1#8	0	0	23.1	23.06	23.25
		RB1#14	0	0	23.25	23.26	23.27
		RB6#0	1	1	22.8	22.91	22.98
		RB6#9	1	1	22.9	22.73	22.87
		RB15#0	1	1	22.68	22.87	22.66
	16-QAM	RB1#0	1	1	22.44	22.53	22.49
		RB1#8	1	1	22.31	22.5	22.4
		RB1#14	1	1	22.42	22.38	22.48
		RB6#0	2	2	21.99	22.16	22.16
		RB6#9	2	2	22.07	22.27	22.03
		RB15#0	2	2	22.08	22.13	22.07
5M	QPSK	RB1#0	0	0	23.1	23.12	23.16
		RB1#13	0	0	23.16	23.11	23.01
		RB1#24	0	0	22.94	22.89	23.12
		RB15#0	1	1	22.65	22.69	22.6
		RB15#10	1	1	22.63	22.73	22.8
		RB25#0	1	1	22.85	22.76	22.91
	16-QAM	RB1#0	1	1	22.17	22	22.03
		RB1#13	1	1	22.13	22.08	22.24
		RB1#24	1	1	22.2	22.16	22.24
		RB15#0	2	2	22.02	21.94	21.84
		RB15#10	2	2	22.02	21.96	21.78
		RB25#0	2	2	21.93	21.91	21.77

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	QPSK	RB1#0	0	0	23.47	23.58	23.58
		RB1#25	0	0	23.48	23.49	23.64
		RB1#49	1	1	23.39	23.53	23.63
		RB25#0	1	1	23.11	23.05	23.23
		RB25#25	1	1	23.2	23.09	23.25
		RB50#0	1	1	23.06	23.17	23.08
	16-QAM	RB1#0	1	1	23.62	23.44	23.44
		RB1#25	1	1	23.51	23.42	23.51
		RB1#49	1	1	23.4	23.61	23.72
		RB25#0	2	2	23.16	23.36	23.14
		RB25#25	2	2	23.34	23.26	23.39
		RB50#0	2	2	23.24	23.26	23.2
15M	QPSK	RB1#0	0	0	23.66	23.55	23.6
		RB1#38	0	0	23.56	23.59	23.37
		RB1#74	1	1	23.36	23.52	23.66
		RB36#0	1	1	23.21	23.23	23.22
		RB36#39	1	1	23.09	23.23	23.3
		RB75#0	1	1	23.16	23.34	23.15
	16-QAM	RB1#0	1	1	22.99	23.08	23.03
		RB1#38	1	1	23.17	23.23	23.17
		RB1#74	2	2	23.11	23.29	23.26
		RB36#0	2	2	22.92	22.71	22.9
		RB36#39	2	2	22.75	22.86	22.64
		RB75#0	2	2	22.94	22.68	22.81

LTE Band 41:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	2570 MHz (dBm)	Middle Channel (dBm)	2636 MHz (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	0	0	22.94	23.1	22.93	23.02	22.98
		RB1#13	0	0	23.11	22.96	23.08	23.04	22.85
		RB1#24	1	1	23.01	23.05	23.15	23.23	23.02
		RB15#0	1	1	22.24	22.15	22.13	22.23	22.22
		RB15#10	1	1	22.26	22.11	22.23	22.14	22.12
		RB25#0	1	1	22.17	22.28	22.27	22.15	22.3
	16-QAM	RB1#0	1	1	22.58	22.48	22.59	22.69	22.51
		RB1#13	1	1	22.53	22.63	22.51	22.6	22.68
		RB1#24	1	1	22.54	22.67	22.55	22.72	22.49
		RB15#0	2	2	21.84	21.73	21.61	21.77	21.81
		RB15#10	2	2	21.66	21.61	21.8	21.92	21.66
		RB25#0	2	2	21.75	21.82	21.79	21.66	21.75
10M	QPSK	RB1#0	0	0	23.15	23.11	23.19	23.37	23.39
		RB1#25	0	0	23.28	23.33	23.2	23.2	23.21
		RB1#49	1	1	23.38	23.28	23.2	23.44	23.25
		RB25#0	1	1	22.48	22.35	22.45	22.58	22.46
		RB25#25	1	1	22.59	22.51	22.43	22.28	22.51
		RB50#0	1	1	22.43	22.57	22.4	22.32	22.38
	16-QAM	RB1#0	1	1	23.15	23.21	23.36	22.99	23.27
		RB1#25	1	1	23.12	23.27	23.33	23.13	23.12
		RB1#49	2	2	23.11	23.25	23.08	23.2	23.2
		RB25#0	2	2	22.31	22.26	22.48	22.4	22.41
		RB25#25	2	2	22.46	22.4	22.36	22.4	22.53
		RB50#0	2	2	22.39	22.4	22.39	22.38	22.21
15M	QPSK	RB1#0	0	0	23.34	23.28	23.27	23.26	23.24
		RB1#38	0	0	23.37	23.24	23.24	23.47	23.29
		RB1#74	1	1	23.43	23.3	23.34	23.15	23.19
		RB36#0	1	1	22.51	22.65	22.39	22.65	22.4
		RB36#39	1	1	22.34	22.59	22.5	22.39	22.57
		RB75#0	1	1	22.59	22.53	22.55	22.47	22.49
	16-QAM	RB1#0	1	1	22.52	22.58	22.46	22.65	22.62
		RB1#38	1	1	22.69	22.58	22.46	22.44	22.53
		RB1#74	1	1	22.67	22.54	22.53	22.64	22.62
		RB36#0	2	2	21.78	21.85	21.7	21.79	21.86
		RB36#39	2	2	21.71	21.83	21.79	21.88	22
		RB75#0	2	2	21.95	21.83	21.93	21.83	21.86

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	2570 MHz (dBm)	Middle Channel (dBm)	2636 MHz (dBm)	High Channel (dBm)
20M	QPSK	RB1#0	0	0	23.51	23.63	23.63	23.63	23.72
		RB1#50	0	0	23.77	23.56	23.68	23.5	23.56
		RB1#99	1	1	23.55	23.54	23.48	23.42	23.59
		RB50#0	1	1	22.84	22.67	22.64	22.74	22.71
		RB50#50	1	1	22.76	22.72	22.61	22.81	22.68
		RB100#0	1	1	22.67	22.77	22.67	22.77	22.78
	16-QAM	RB1#0	1	1	23.18	23.19	23.16	23.08	23.05
		RB1#50	1	1	23.14	23.17	23.1	23.14	23.1
		RB1#99	2	2	23.15	23.03	23.24	23.14	23
		RB50#0	2	2	22.23	22.24	22.26	22.13	22.31
		RB50#50	2	2	22.32	22.4	22.23	22.25	22.18
		RB100#0	2	2	22.41	22.35	22.21	22.29	22.28

LTE Band 66:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	0	0	23.48	23.48	23.43
		RB1#3	0	0	23.59	23.43	23.48
		RB1#5	0	0	23.6	23.57	23.42
		RB3#0	1	1	23.22	23.34	23.14
		RB3#3	1	1	23.19	23.31	23.21
		RB6#0	1	1	23.28	23.24	23.24
	16-QAM	RB1#0	1	1	22.59	22.44	22.35
		RB1#3	1	1	22.55	22.46	22.58
		RB1#5	1	1	22.61	22.48	22.58
		RB3#0	2	2	22.36	22.17	22.14
		RB3#3	2	2	22.2	22.37	22.28
		RB6#0	2	2	22.16	22.31	22.26
3M	QPSK	RB1#0	0	0	23.33	23.2	23.32
		RB1#8	0	0	23.36	23.32	23.44
		RB1#14	0	0	23.24	23.25	23.36
		RB6#0	1	1	23.03	23.04	23.06
		RB6#9	1	1	22.84	23.04	22.83
		RB15#0	1	1	22.88	23.16	23.02
	16-QAM	RB1#0	1	1	22.42	22.31	22.32
		RB1#8	1	1	22.38	22.26	22.27
		RB1#14	1	1	22.43	22.31	22.32
		RB6#0	2	2	21.98	22.11	21.95
		RB6#9	2	2	21.96	22.12	22.11
		RB15#0	2	2	22.06	22.02	22.11
5M	QPSK	RB1#0	0	0	23.3	23.32	23.28
		RB1#13	0	0	23.32	23.25	23.14
		RB1#24	0	0	23.24	23.28	23.17
		RB15#0	1	1	22.95	23.07	22.84
		RB15#10	1	1	22.8	22.99	23.15
		RB25#0	1	1	22.86	22.92	22.9
	16-QAM	RB1#0	1	1	22.38	22.34	22.49
		RB1#13	1	1	22.48	22.4	22.48
		RB1#24	1	1	22.5	22.59	22.53
		RB15#0	2	2	22.25	22.13	22.29
		RB15#10	2	2	22.14	22.18	22.2
		RB25#0	2	2	22.21	22.41	22.1

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	QPSK	RB1#0	0	0	23.56	23.6	23.55
		RB1#25	0	0	23.54	23.65	23.62
		RB1#49	0	0	23.65	23.57	23.63
		RB25#0	1	1	23.3	23.39	23.24
		RB25#25	1	1	23.21	23.22	23.25
		RB50#0	1	1	23.22	23.26	23.17
	16-QAM	RB1#0	1	1	23.1	23.04	23.28
		RB1#25	1	1	23.18	23.06	23.22
		RB1#49	1	1	23.17	23.28	23.12
		RB25#0	2	2	22.74	22.79	22.83
		RB25#25	2	2	22.85	22.69	22.79
		RB50#0	2	2	22.87	22.75	22.81
15M	QPSK	RB1#0	0	0	23.75	23.6	23.84
		RB1#38	0	0	23.74	23.68	23.62
		RB1#74	0	0	23.58	23.68	23.74
		RB36#0	1	1	23.4	23.2	23.33
		RB36#39	1	1	23.23	23.2	23.37
		RB75#0	1	1	23.2	23.47	23.4
	16-QAM	RB1#0	1	1	23.38	23.25	23.07
		RB1#38	1	1	23.37	23.22	23.27
		RB1#74	1	1	23.21	23.17	23.29
		RB36#0	2	2	22.94	23	22.9
		RB36#39	2	2	22.9	22.94	22.91
		RB75#0	2	2	22.83	22.87	22.94
20M	QPSK	RB1#0	0	0	23.72	23.54	23.75
		RB1#50	0	0	23.5	23.54	23.49
		RB1#99	0	0	23.49	23.68	23.63
		RB50#0	1	1	23.25	23.32	23.22
		RB50#50	1	1	23.22	23.27	23.28
		RB100#0	1	1	23.23	23.27	23.29
	16-QAM	RB1#0	1	1	23.32	23.4	23.19
		RB1#50	1	1	23.23	23.21	23.42
		RB1#99	1	1	23.07	23.36	23.12
		RB50#0	2	2	22.88	22.95	22.92
		RB50#50	2	2	23.06	23	22.9
		RB100#0	2	2	22.92	23.05	22.94

LTE Band 71:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	0	0	23.33	23.34	23.25
		RB1#13	0	0	23.32	23.38	23.42
		RB1#24	1	1	23.37	23.4	23.37
		RB15#0	1	1	23.1	23.08	23.04
		RB15#10	1	1	23.01	22.95	23.02
		RB25#0	1	1	22.95	22.96	23.03
	16-QAM	RB1#0	1	1	22.72	22.62	22.7
		RB1#13	1	1	22.65	22.77	22.58
		RB1#24	1	1	22.67	22.63	22.77
		RB15#0	2	2	22.42	22.41	22.2
		RB15#10	2	2	22.29	22.38	22.22
		RB25#0	2	2	22.47	22.53	22.46
10M	QPSK	RB1#0	0	0	23.75	23.76	23.67
		RB1#25	0	0	23.83	23.83	23.92
		RB1#49	1	1	23.82	23.78	23.76
		RB25#0	1	1	23.46	23.4	23.53
		RB25#25	1	1	23.43	23.43	23.47
		RB50#0	1	1	23.61	23.35	23.54
	16-QAM	RB1#0	1	1	23.43	23.39	23.36
		RB1#25	1	1	23.28	23.31	23.32
		RB1#49	2	2	23.35	23.49	23.31
		RB25#0	2	2	23.03	22.98	23.02
		RB25#25	2	2	23.01	23.1	23.08
		RB50#0	2	2	23.01	23.13	23.05
15M	QPSK	RB1#0	0	0	23.54	23.68	23.66
		RB1#38	0	0	23.68	23.57	23.64
		RB1#74	1	1	23.76	23.61	23.66
		RB36#0	1	1	23.48	23.27	23.38
		RB36#39	1	1	23.49	23.34	23.39
		RB75#0	1	1	23.43	23.23	23.41
	16-QAM	RB1#0	1	1	23.35	23.15	23.35
		RB1#38	1	1	23.39	23.4	23.33
		RB1#74	1	1	23.33	23.08	23.2
		RB36#0	2	2	23.02	22.99	23
		RB36#39	2	2	22.9	22.96	23.09
		RB75#0	2	2	23.06	22.87	22.88

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
20M	QPSK	RB1#0	0	0	23.86	23.96	23.95
		RB1#50	0	0	23.91	23.82	23.97
		RB1#99	1	1	23.85	23.72	23.78
		RB50#0	1	1	23.71	23.64	23.59
		RB50#50	1	1	23.64	23.52	23.39
		RB100#0	1	1	23.54	23.55	23.56
	16-QAM	RB1#0	1	1	23.79	23.89	23.75
		RB1#50	1	1	23.81	23.8	23.64
		RB1#99	2	2	23.9	23.87	23.77
		RB50#0	2	2	23.45	23.53	23.32
		RB50#50	2	2	23.49	23.44	23.43
		RB100#0	2	2	23.32	23.46	23.31

WLAN 2.4G:

Mode	Channel frequency (MHz)	Data Rate	Duty Cycle (%)	Conducted Average Output Power(dBm)
802.11b	2412	1Mbps	98.95	8.06
	2437			8.13
	2462			7.96
802.11g	2412	6Mbps	98.11	14.46
	2437			14.83
	2462			14.76
802.11n ht20	2412	MCS0	97.87	14.62
	2437			14.45
	2462			14.31
802.11n ht40	2422	MCS0	97.81	13.03
	2437			13.23
	2452			13.24

Note: The duty cycle plots, please refer to the radio report: XMDN240206-08120E-RF-00C.

Wi-Fi 5.2G:

Mode	Channel frequency (MHz)	Data Rate	Duty Cycle (%)	Max Average Output Power(dBm)
802.11a	5180	6Mbps	98.11	12.54
	5200			12.74
	5240			12.67
802.11n20	5180	MCS0	97.87	15.34
	5200			15.36
	5240			15.3
802.11n40	5190	MCS0	95.77	13.75
	5230			13.47
802.11ac80	5210	MCS0	91.74	14.44

Note: The duty cycle plots, please refer to the radio report: XMDN240206-08120E-RF-00D.

Wi-Fi 5.3G:

Mode	Channel frequency (MHz)	Data Rate	Duty Cycle (%)	Max Average Output Power(dBm)
802.11a	5260	6Mbps	98.11	12.77
	5280			12.62
	5320			12.7
802.11n20	5260	MCS0	97.87	15.27
	5280			15.39
	5320			14.98
802.11n40	5270	MCS0	95.77	13.08
	5310			13.02
802.11ac80	5290	MCS0	91.74	14.04

Note: The duty cycle plots, please refer to the radio report: XMDN240206-08120E-RF-00D.

Wi-Fi 5.6G:

Mode	Channel frequency (MHz)	Data Rate	Duty Cycle (%)	Max Average Output Power(dBm)
802.11a	5500	6Mbps	98.11	12.6
	5580			12.55
	5700			12.53
	5720			12.42
802.11n20	5500	MCS0	97.87	15.42
	5580			15.89
	5700			15.58
	5720			15.76
802.11n40	5510	MCS0	95.77	13.64
	5590			13.9
	5670			13.68
	5710			13.78
802.11ac80	5530	MCS0	91.74	13.96
	5690			14.71

Note: The duty cycle plots, please refer to the radio report: XMDN240206-08120E-RF-00D.

Wi-Fi 5.8G:

Mode	Channel frequency (MHz)	Data Rate	Duty Cycle (%)	Max Average Output Power(dBm)
802.11a	5745	6Mbps	98.11	13.13
	5785			13.01
	5825			13.26
802.11n20	5745	MCS0	97.87	16.06
	5785			16.29
	5825			16.48
802.11n40	5755	MCS0	95.77	13.58
	5795			13.55
802.11ac80	5775	MCS0	91.74	14.9

Note: The duty cycle plots, please refer to the radio report: XMDN240206-08120E-RF-00D.

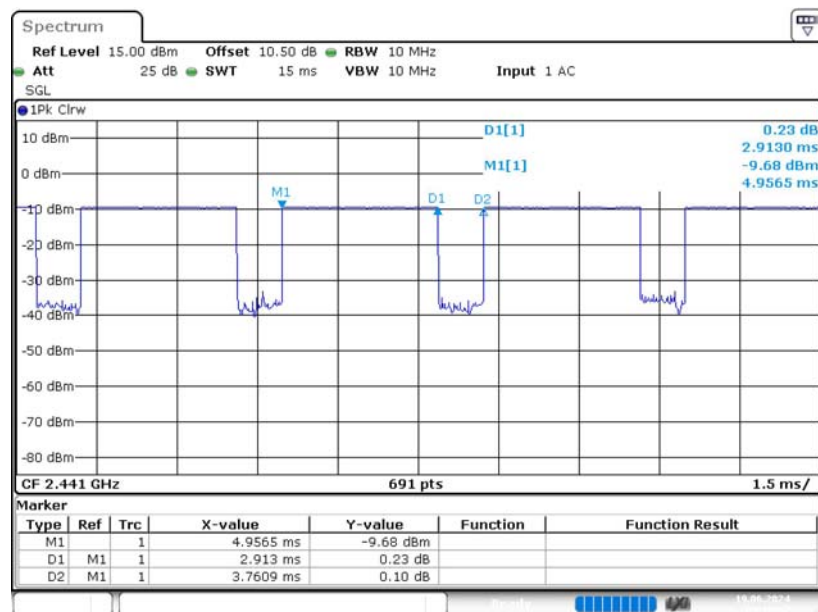
Bluetooth:

Mode	Channel frequency (MHz)	RF Output Power (dBm)
BDR(GFSK)	2402	10.48
	2441	9.9
	2480	8.84
EDR($\pi/4$ -DQPSK)	2402	9.72
	2441	8.85
	2480	7.49
EDR(8DPSK)	2402	10.29
	2441	9.51
	2480	8.29
Bluetooth LE	2402	7.39
	2440	6.75
	2480	5.94

Test Modes	Ton (ms)	Ton+off (ms)	Duty cycle (%)	Scaled Factor (1/duty cycle)
BDR(GFSK)	2.913	3.7609	77.5	1.3

Duty Cycle

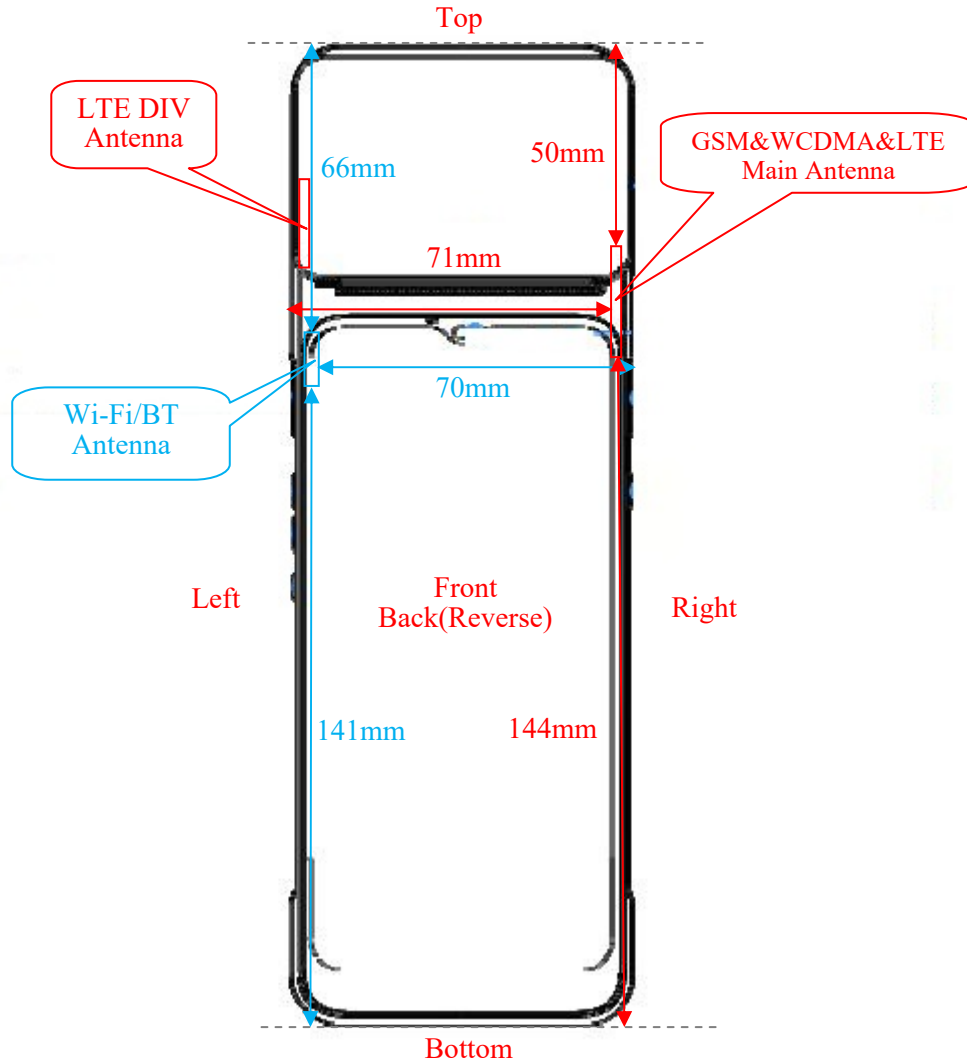
BDR(GFSK)



ProjectNo.:XMDN240206-08120E-SA Tester:Mark Dong
 Date: 19.JUN.2024 09:18:37

8. STANDALONE SAR TEST EXCLUSION CONSIDERATIONS

8.1 Antennas Location:



Note: The LTE DIV antenna can not transmit, and is receiving only.

8.2 Antenna Distance To Edge

Antenna Distance To Edge(mm)						
Antenna	Back	Front	Left	Right	Top	Bottom
WWAN (GSM/WCDMA/LTE) Antenna	< 5	< 5	71	< 5	50	144
Wi-Fi/BT Antenna	< 5	< 5	< 5	70	66	141

8.3 Standalone SAR test exclusion considerations

Mode	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Distance (mm)	Calculated value	Threshold (1-g)	SAR Test Exclusion
WLAN 2.4G	2462	15	31.62	10	5	3	NO
Wi-Fi 5.2G	5240	15.5	35.48	10	8.1	3	NO
Wi-Fi 5.3G	5320	15.5	35.48	10	8.2	3	NO
Wi-Fi 5.6G	5700	16	39.81	10	9.5	3	NO
Wi-Fi 5.8G	5825	16.5	44.67	10	10.5	3	NO
Bluetooth	2480	10.5	11.22	10	1.8	3	YES

Note: The WLAN based average power for calculation. and bluetooth based peak output power for calculation. The Bluetooth SAR was seleted to test.

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 KDB447498 D01 General RF Exposure Guidance v06: 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

Measurement Result:

For NFC, the power of EUT: E Field@3m is 75.77dBuV/m = -19.43dBm (0.01mW)

Note: $E[\text{dB}\mu\text{V/m}] = \text{EIRP}[\text{dBm}] + 95.2$ for $d = 3$ m.

SAR test exclusion threshold for NFC(13.56MHz) separation distance < 50 mm

$= [474 * (1 + \log(100/f(\text{MHz}))) / 2]$

$= 443\text{mW}$

$> 0.01\text{mW}$

Conclusion:

The NFC SAR evaluation can be exempted.

8.4 SAR test exclusion for the EUT edge considerations Result

Antenna Distance To Edge(mm)						
Mode	Back	Front	Left	Right	Top	Bottom
BT	Required	Required	Required	Exclusion	Exclusion	Exclusion
WLAN	Required	Required	Required	Exclusion	Exclusion	Exclusion
WWAN(GSM/WCDMA/LTE)	Required	Required	Exclusion	Required	Exclusion	Exclusion

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.

Extremity Exposure Considerations

Per KDB 648474 D04 D04v01r03, this device is considered a “Phablet” since the diagonal dimension is >160mm and < 200mm, 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 > 1.2W/kg)

Extremity Exposure Condition		
Worst Mode	Hotspot SAR value	Extremity Condition Test
LTE Band 71	0.79	Exclusion

9. SAR MEASUREMENT RESULTS

This page summarizes the results of the performed dosimetric evaluation.

9.1 SAR Test Data

Environmental Conditions

Temperature:	22.6-23.3 °C	23.7-24.2 °C	22.4-23 °C	22.6-23.5 °C
Relative Humidity:	37 %	36%	35 %	36 %
ATM Pressure:	100.7 kPa	99.9 kPa	100 kPa	100 kPa
Test Date:	2024/06/12	2024/06/17	2024/06/18	2024/06/19

Testing was performed by Rain Yu, Wen Wang, Mark Dong.

GSM 850:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	824.2	GPRS	32.23	32.5	1.064	0.484	0.51	/
	836.6	GPRS	32.31	32.5	1.045	0.515	0.54	1#
	848.8	GPRS	32.29	32.5	1.05	0.453	0.48	/
Body Front (10mm)	824.2	GPRS	/	/	/	/	/	/
	836.6	GPRS	32.31	32.5	1.045	0.205	0.21	/
	848.8	GPRS	/	/	/	/	/	/
Body Right (10mm)	824.2	GPRS	/	/	/	/	/	/
	836.6	GPRS	32.31	32.5	1.045	0.204	0.21	/
	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, 2DL+3UL is the worst case.

PCS 1900:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	1850.2	GPRS	29.86	30	1.033	0.232	0.24	/
	1880	GPRS	29.51	30	1.119	0.279	0.31	/
	1909.8	GPRS	29.80	30	1.047	0.354	0.37	2#
Body Front (10mm)	1850.2	GPRS	/	/	/	/	/	/
	1880	GPRS	29.51	30	1.119	0.097	0.11	/
	1909.8	GPRS	/	/	/	/	/	/
Body Right (10mm)	1850.2	GPRS	/	/	/	/	/	/
	1880	GPRS	29.51	30	1.119	0.223	0.25	/
	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. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	1852.4	RMC	23.62	24.00	1.091	0.558	0.61	/
	1880	RMC	23.72	24.00	1.067	0.664	0.71	3#
	1907.6	RMC	23.69	24.00	1.074	0.642	0.69	/
Body Front (10mm)	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	23.72	24.00	1.067	0.212	0.23	/
	1907.6	RMC	/	/	/	/	/	/
Body Right (10mm)	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	23.72	24.00	1.067	0.642	0.69	/
	1907.6	RMC	/	/	/	/	/	/

WCDMA Band 4:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	1712.4	RMC	23.7	24.00	1.072	0.7	0.75	4#
	1732.6	RMC	23.55	24.00	1.109	0.646	0.72	/
	1752.6	RMC	23.62	24.00	1.091	0.556	0.61	/
Body Front (10mm)	1712.4	RMC	/	/	/	/	/	/
	1732.6	RMC	23.55	24.00	1.109	0.379	0.42	/
	1752.6	RMC	/	/	/	/	/	/
Body Right (10mm)	1712.4	RMC	/	/	/	/	/	/
	1732.6	RMC	23.55	24.00	1.109	0.584	0.65	/
	1752.6	RMC	/	/	/	/	/	/

WCDMA Band 5:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	826.4	RMC	24.15	24.50	1.084	0.649	0.7	/
	836.6	RMC	24.33	24.50	1.04	0.689	0.72	5#
	846.6	RMC	24.14	24.50	1.086	0.636	0.69	/
Body Front (10mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	24.33	24.50	1.04	0.187	0.19	/
	846.6	RMC	/	/	/	/	/	/
Body Right (10mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	24.33	24.50	1.04	0.319	0.33	/
	846.6	RMC	/	/	/	/	/	/

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 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 7:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	2510	20	1RB	/	/	/	/	/	/
	2535	20	1RB	22.96	23	1.009	0.151	0.15	/
	2560	20	1RB	/	/	/	/	/	/
	2535	20	50%RB	22.4	23	1.148	0.173	0.2	/
Body Front (10mm)	2510	20	1RB	/	/	/	/	/	/
	2535	20	1RB	22.96	23	1.009	0.421	0.42	/
	2560	20	1RB	/	/	/	/	/	/
	2535	20	50%RB	22.4	23	1.148	0.427	0.49	/
Body Right (10mm)	2510	20	1RB	22.95	23	1.012	0.76	0.77	6#
	2535	20	1RB	22.96	23	1.009	0.66	0.67	/
	2560	20	1RB	22.86	23	1.033	0.499	0.52	/
	2535	20	50%RB	22.4	23	1.148	0.568	0.65	/

LTE Band 12&17:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	704	10	1RB	24.09	24.1	1.002	0.536	0.54	/
	707.5	10	1RB	24.07	24.1	1.007	0.635	0.64	7#
	711	10	1RB	24.08	24.1	1.005	0.5	0.5	/
	707.5	10	50%RB	23.56	24.1	1.132	0.523	0.59	/
Body Front (10mm)	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	24.07	24.1	1.007	0.372	0.37	/
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	23.56	24.1	1.132	0.267	0.3	/
Body Right (10mm)	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	24.07	24.1	1.007	0.46	0.46	/
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	23.56	24.1	1.132	0.39	0.44	/

Note: The E-UTRA Operating Band 17 is a subset of band 12, and they are same in modulation type and rated output power, therefore, they were considered as one frequency band during SAR measurement, LTE Band 12 (the wide frequency range) was selected to test.

LTE Band 13:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	782	10	1RB	23.93	24	1.016	0.683	0.69	8#
	782	10	50%RB	23.12	24	1.225	0.47	0.58	/
Body Front (10mm)	782	10	1RB	23.93	24	1.016	0.316	0.32	/
	782	10	50%RB	23.12	24	1.225	0.256	0.31	/
Body Right (10mm)	782	10	1RB	23.93	24	1.016	0.441	0.45	/
	782	10	50%RB	23.12	24	1.225	0.357	0.44	/

LTE Band 25&2:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	1860	20	1RB	/	/	/	/	/	/
	1882.5	20	1RB	23.83	24	1.04	0.268	0.28	/
	1905	20	1RB	/	/	/	/	/	/
	1882.5	20	50%RB	23.31	24	1.172	0.244	0.29	/
Body Front (10mm)	1860	20	1RB	/	/	/	/	/	/
	1882.5	20	1RB	23.83	24	1.04	0.451	0.47	/
	1905	20	1RB	/	/	/	/	/	/
	1882.5	20	50%RB	23.31	24	1.172	0.365	0.43	/
Body Right (10mm)	1860	20	1RB	23.66	24	1.081	0.477	0.52	/
	1882.5	20	1RB	23.83	24	1.04	0.484	0.5	/
	1905	20	1RB	23.76	24	1.057	0.585	0.62	9#
	1882.5	20	50%RB	23.31	24	1.172	0.402	0.47	/

Note: The E-UTRA Operating Band 2 is a subset of band 25, and they are same in modulation type and rated output power, therefore, they were considered as one frequency band during SAR measurement, LTE Band 25 (the wide frequency range) was selected to test.

LTE Band 26&5:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	821.5	15	1RB	23.66	24.3	1.159	0.538	0.62	/
	831.5	15	1RB	23.59	24.3	1.178	0.606	0.71	10#
	841.5	15	1RB	23.66	24.3	1.159	0.499	0.58	/
	831.5	15	50%RB	23.23	24.3	1.279	0.413	0.53	/
Body Front (10mm)	821.5	15	1RB	/	/	/	/	/	/
	831.5	15	1RB	23.59	24.3	1.178	0.211	0.25	/
	841.5	15	1RB	/	/	/	/	/	/
	831.5	15	50%RB	23.23	24.3	1.279	0.165	0.21	/
Body Right (10mm)	821.5	15	1RB	/	/	/	/	/	/
	831.5	15	1RB	23.59	24.3	1.178	0.265	0.31	/
	841.5	15	1RB	/	/	/	/	/	/
	831.5	15	50%RB	23.23	24.3	1.279	0.211	0.27	/

Note: The E-UTRA Operating Band 5 is a subset of band 26, and they are same in modulation type and rated output power, therefore, they were considered as one frequency band during SAR measurement, LTE Band 26 (the wide frequency range) was selected to test.

LTE Band 41:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	2510	20	1RB	/	/	/	/	/	/
	2570	20	1RB	/	/	/	/	/	/
	2595	20	1RB	23.68	24	1.076	0.142	0.15	/
	2636	20	1RB	/	/	/	/	/	/
	2680	20	1RB	/	/	/	/	/	/
	2595	20	50%RB	22.64	24	1.368	0.117	0.16	/
Body Front (10mm)	2510	20	1RB	/	/	/	/	/	/
	2570	20	1RB	/	/	/	/	/	/
	2595	20	1RB	23.68	24	1.076	0.081	0.09	/
	2636	20	1RB	/	/	/	/	/	/
	2680	20	1RB	/	/	/	/	/	/
	2595	20	50%RB	22.64	24	1.368	0.081	0.11	/
Body Right (10mm)	2510	20	1RB	/	/	/	/	/	/
	2570	20	1RB	/	/	/	/	/	/
	2595	20	1RB	23.68	24	1.076	0.165	0.18	/
	2636	20	1RB	/	/	/	/	/	/
	2680	20	1RB	/	/	/	/	/	/
	2595	20	50%RB	22.64	24	1.368	0.179	0.24	11#

Note:

1. The frequency range of LTE Band 41 is 2496~ 2690MHz. Per KDB 447498 D01, according to the following formula Calculate N_c is 5.

KDB procedures, the following should be applied to determine the number of required test channels. The test channels should be evenly spread across the transmission frequency band of each wireless mode.¹⁴

$$N_c = \text{Round} \left\{ \left[100(f_{\text{high}} - f_{\text{low}}) / f_c \right]^{0.5} \times (f_c / 100)^{0.2} \right\},$$

where

- N_c is the number of test channels, rounded to the nearest integer.
- f_{high} and f_{low} are the highest and lowest channel frequencies within the transmission band,
- f_c is the mid-band channel frequency,
- all frequencies are in MHz.

2. The power class 3 used for LTE Band 41 SAR testing.

LTE Band 66&4:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	1720	20	1RB	/	/	/	/	/	/
	1745	20	1RB	23.68	24.1	1.102	0.281	0.31	/
	1770	20	1RB	/	/	/	/	/	/
	1745	20	50%RB	23.32	24.1	1.197	0.201	0.24	/
Body Front (10mm)	1720	20	1RB	/	/	/	/	/	/
	1745	20	1RB	23.68	24.1	1.102	0.374	0.41	/
	1770	20	1RB	/	/	/	/	/	/
	1745	20	50%RB	23.32	24.1	1.197	0.287	0.34	/
Body Right (10mm)	1720	20	1RB	23.72	24.1	1.091	0.476	0.52	/
	1745	20	1RB	23.68	24.1	1.102	0.39	0.43	/
	1770	20	1RB	23.75	24.1	1.084	0.517	0.56	12#
	1745	20	50%RB	23.32	24.1	1.197	0.388	0.46	/

Note: The E-UTRA Operating Band 4 is a subset of band 66, and they are same in modulation type and rated output power, therefore, they were considered as one frequency band during SAR measurement, LTE Band 66 (the wide frequency range) was selected to test.

LTE Band 71:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	673	10	1RB	23.91	24	1.021	0.484	0.49	/
	680.5	10	1RB	23.96	24	1.009	0.783	0.79	13#
	688	10	1RB	23.97	24	1.007	0.702	0.71	/
	680.5	10	50%RB	23.64	24	1.086	0.62	0.67	/
Body Front (10mm)	673	10	1RB	/	/	/	/	/	/
	680.5	10	1RB	23.96	24	1.009	0.236	0.24	/
	688	10	1RB	/	/	/	/	/	/
	680.5	10	50%RB	23.64	24	1.086	0.184	0.2	/
Body Right (10mm)	673	10	1RB	/	/	/	/	/	/
	680.5	10	1RB	23.96	24	1.009	0.332	0.33	/
	688	10	1RB	/	/	/	/	/	/
	680.5	10	50%RB	23.64	24	1.086	0.273	0.3	/

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 $> 0.5\text{ dB}$ higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is $> 1.45\text{ W/kg}$
4. KDB941225D05-For QPSK with 100% RB allocation, when the reported SAR measured for the Highest output power channel is $< 1.45\text{ W/kg}$, 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 $\leq 0.8\text{ W/kg}$.

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.

WLAN 2.4G:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	2412	802.11b	8.06	8.2	1.033	1.01	0.016	0.02	/
	2437	802.11b	8.13	8.2	1.016	1.01	0.023	0.02	/
	2462	802.11b	7.96	8.2	1.057	1.01	0.025	0.03	14#
Body Front (10mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	8.13	8.2	1.016	1.01	0.00187	0.01	/
	2462	802.11b	/	/	/	/	/	/	/
Body Left (10mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	8.13	8.2	1.016	1.01	0.00467	0.01	/
	2462	802.11b	/	/	/	/	/	/	/

Note:

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

2.4 GHz 802.11g/n OFDM SAR Test Exclusion Requirements

Mode	Target Output Power (dBm)	Target Output Power (mW)	Reported SAR(W/kg)	Adjusted SAR(W/kg)	Limit(W/kg)	SAR Test Exclusion
802.11b(DSSS)	8.2	6.61	0.03	/	/	/
802.11g(OFDM)	15	31.62	/	0.15	1.2	Yes
802.11n ht20(OFDM)	14.8	30.2	/	0.14	1.2	Yes
802.11n ht40(OFDM)	13.5	22.39	/	0.11	1.2	Yes

Per KDB 248227 D01, When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied (see 5.3, including subclauses). SAR is not required for the following 2.4 GHz OFDM conditions.

- a) When KDB Publication 447498 D01 SAR test exclusion applies to the OFDM configuration.
- b) 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 $\leq 1.2\text{ W/kg}$.

WLAN 5.2G:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	5180	802.11n20	15.34	15.50	1.038	1.02	0.69	0.73	15#
	5200	802.11n20	15.36	15.50	1.033	1.02	0.487	0.51	/
	5240	802.11n20	15.3	15.50	1.047	1.02	0.534	0.57	/
Body Front (10mm)	5180	802.11n20	/	/	/	/	/	/	/
	5200	802.11n20	15.36	15.50	1.033	1.02	0.021	0.02	/
	5240	802.11n20	/	/	/	/	/	/	/
Body Left (10mm)	5180	802.11n20	/	/	/	/	/	/	/
	5200	802.11n20	15.36	15.50	1.033	1.02	0.194	0.2	/
	5240	802.11n20	/	/	/	/	/	/	/

WLAN 5.3G:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	5260	802.11n20	15.27	15.50	1.054	1.02	0.434	0.47	/
	5280	802.11n20	15.39	15.50	1.026	1.02	0.471	0.49	16#
	5320	802.11n20	14.98	15.50	1.127	1.02	0.389	0.45	/
Body Front (10mm)	5260	802.11n20	/	/	/	/	/	/	/
	5280	802.11n20	15.39	15.50	1.026	1.02	0.033	0.03	/
	5320	802.11n20	/	/	/	/	/	/	/
Body Left (10mm)	5260	802.11n20	/	/	/	/	/	/	/
	5280	802.11n20	15.39	15.50	1.026	1.02	0.214	0.22	/
	5320	802.11n20	/	/	/	/	/	/	/

WLAN 5.6G:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	5500	802.11n20	/	/	/	/	/	/	/
	5580	802.11n20	15.89	16.00	1.026	1.02	0.648	0.68	17#
	5700	802.11n20	/	/	/	/	/	/	/
	5720	802.11n20	/	/	/	/	/	/	/
Body Front (10mm)	5500	802.11n20	/	/	/	/	/	/	/
	5580	802.11n20	15.89	16.00	1.026	1.02	0.046	0.05	/
	5700	802.11n20	/	/	/	/	/	/	/
	5720	802.11n20	/	/	/	/	/	/	/
Body Left (10mm)	5500	802.11n20	/	/	/	/	/	/	/
	5580	802.11n20	15.89	16.00	1.026	1.02	0.413	0.43	/
	5700	802.11n20	/	/	/	/	/	/	/
	5720	802.11n20	/	/	/	/	/	/	/

WLAN 5.8G:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	5745	802.11n20	16.06	16.50	1.107	1.02	0.499	0.56	/
	5785	802.11n20	16.29	16.50	1.05	1.02	0.601	0.64	18#
	5825	802.11n20	16.48	16.50	1.005	1.02	0.516	0.53	/
Body Front (10mm)	5745	802.11n20	/	/	/	/	/	/	/
	5785	802.11n20	16.29	16.50	1.05	1.02	0.122	0.13	/
	5825	802.11n20	/	/	/	/	/	/	/
Body Left (10mm)	5745	802.11n20	/	/	/	/	/	/	/
	5785	802.11n20	16.29	16.50	1.05	1.02	0.599	0.64	/
	5825	802.11n20	/	/	/	/	/	/	/

Note:

1. When the 1-g SAR is $\leq 0.8\text{W/kg}$, 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. For 802.11n20 mode power is the largest among 802.11a/n20/n40/ac, 802.11 n20 mode as initial test configuration is selected to test.
4. According 2016 Oct. TCB, 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)".

Bluetooth:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	2402	GFSK	10.48	10.50	1.005	1.3	0.028	0.04	/
	2441	GFSK	9.9	10.50	1.148	1.3	0.044	0.07	/
	2480	GFSK	8.84	10.50	1.466	1.3	0.059	0.11	19#
Body Front (10mm)	2402	GFSK	/	/	/	/	/	/	/
	2441	GFSK	9.9	10.50	1.148	1.3	0.033	0.05	/
	2480	GFSK	/	/	/	/	/	/	/
Body Left (10mm)	2402	GFSK	/	/	/	/	/	/	/
	2441	GFSK	9.9	10.50	1.148	1.3	0.042	0.06	/
	2480	GFSK	/	/	/	/	/	/	/

Note:

1. When the 1-g SAR is less than half of the limit, testing for low and high channel is optional.
2. For GFSK mode power is the largest among GFSK, $\pi/4$ -DQPSK and 8DPSK, GFSK mode as initial test configuration is selected to test.

10. 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	
/	/	/	/	/	/	/

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.

11. DUT HOLDER PERTURBATIONS

In accordance with TCB workshop October 2016:

- 1) SAR perturbation due to test device holders, depending on antenna locations, buttons locations on phones or device, form factor (e.g. dongles etc.), the measured SAR could be influenced by the relative positions of the test device and its holder
- 2) SAR measurement standards have included protocols to evaluate this with a flat phantom, with and without the device holder
- 3) When the highest reported SAR of an antenna is > 1.2 W/kg, holder perturbation verification is required for each antenna, using the highest SAR configuration among all applicable frequency bands in the same exact device and holder positions used for head and body SAR measurements; i.e. same device/button locations in the holder

Per IEEE 1528: 2013/Annex E/E.4.1.1: Device holder perturbation tolerance for a specific test device: Type B

When it is unknown if a device holder perturbs the fields of a test device, the SAR uncertainty shall be assessed with a flat phantom (see Clause 5) by comparing the SAR with and without the device holder according to the following tests:

The SAR tolerance for device holder disturbance is computed using Equation (E.21) and entered in the corresponding row of the appropriate uncertainty table with an assumed rectangular probability distribution and $\nu_i = \infty$ degrees of freedom:

$$SAR_{\text{tolerance}} [\%] = 100 \times \left(\frac{SAR_{\text{w/holder}} - SAR_{\text{w/o holder}}}{SAR_{\text{w/o holder}}} \right) \quad (\text{E.21})$$

The Highest Measured SAR Configuration among all applicable Frequency Band

Frequency Band	Freq.(MHz)	EUT Position	Meas. SAR (W/kg)		The Device holder perturbation uncertainty
			With holder	Without holder	
/	/	/	/	/	/

12. SAR SIMULTANEOUS TRANSMISSION DESCRIPTION

12.1 Simultaneous Transmission:

Description of Simultaneous Transmit Capabilities		
Transmitter Combination	Simultaneous?	Hotspot?
WWAN(GSM/WCDMA/LTE)Antenna + WLAN 2.4G/5G + NFC	√	√
WWAN(GSM/WCDMA/LTE) Antenna + Bluetooth + NFC	√	×
2.4G WLAN + BT + NFC	×	×
2.4G WLAN + 5G WLAN + NFC	×	×
5G WLAN + BT + NFC	×	×

12.2 Simultaneous SAR test exclusion considerations:

Mode(SAR1+SAR2)	Position	Reported SAR(W/kg)		ΣSAR < 1.6W/kg
		SAR1	SAR2	
MAX.WWAN(GSM/WCDMA/LTE)+Bluetooth	Body	0.79	0.11	0.90
MAX.WWAN(GSM/WCDMA/LTE)+ WLAN 2.4G (Hotspot)	Body	0.79	0.03	0.82
MAX.WWAN(GSM/WCDMA/LTE)+ WLAN 5G (Hotspot)	Body	0.79	0.73	1.52

Note:

1.For the EIRP of NFC is 0.01mW, 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.

Conclusion:

Sum of SAR:ΣSAR ≤1.6 W/kg therefore simultaneous transmission SAR with Volume Scans is **not required**.

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

Uncertainty component	Tolerance/uncertainty ± %	Probability distribution	Divisor	ci (1 g)	ci (10 g)	Standard uncertainty ± %, (1 g)	Standard uncertainty ± %, (10 g)
Measurement system							
Probe calibration(k=1)	6.55	N	1	1	1	6.6	6.6
Axial isotropy	4.7	R	$\sqrt{3}$	$\sqrt{0.5}$	$\sqrt{0.5}$	1.9	1.9
Hemispherical isotropy	9.6	R	$\sqrt{3}$	$\sqrt{0.5}$	$\sqrt{0.5}$	3.9	3.9
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
System detection limits	1.0	R	$\sqrt{3}$	1	1	0.6	0.6
Modulation response	0.0	R	$\sqrt{3}$	1	1	0.0	0.0
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. tolerance	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
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	2.0	R	$\sqrt{3}$	1	1	1.2	1.2
Test sample related							
Test sample positioning	3.3	N	1	1	1	3.3	3.3
Device holder uncertainty	4.7	N	1	1	1	4.7	4.7
Output power variation – SAR draft measurement	5.0	R	$\sqrt{3}$	1	1	2.9	2.9
SAR scaling	2.8	R	$\sqrt{3}$	1	1	1.6	1.6
Phantom and tissue parameters							
Phantom shell uncertainty – shape, thickness and permittivity	4.0	R	$\sqrt{3}$	1	1	2.3	2.3
Uncertainty in SAR correction for deviations in permittivity and conductivity	1.9	N	1	1	0.84	1.9	1.6
Liquid conductivity meas.	2.5	N	1	0.78	0.71	2.0	1.8
Liquid permittivity meas.	2.5	N	1	0.23	0.26	0.6	0.7
Liquid conductivity – temperature uncertainty	1.7	R	$\sqrt{3}$	0.78	0.71	0.8	0.7
Liquid permittivity – temperature uncertainty	0.3	R	$\sqrt{3}$	0.23	0.26	0.0	0.0
Combined standard uncertainty		RSS				12.1	12.0
Expanded uncertainty (95 % confidence interval)		k=2				24.2	24.0

Measurement uncertainty evaluation for IEC62209-2 SAR test

Source of uncertainty	Tolerance/ Uncertainty value $\pm$ %	Probability Distribution	Divisor	ci (1 g)	ci (10 g)	Standard uncertainty $\pm$ %, (1 g)	Standard uncertainty $\pm$ %, (10 g)
Measurement system							
Probe calibration	6.55	N	1	1	1	6.6	6.6
Isotropy	4.7	R	$\sqrt{3}$	1	1	2.7	2.7
Linearity	4.7	R	$\sqrt{3}$	1	1	2.7	2.7
Probe modulation response	0.0	R	$\sqrt{3}$	1	1	0.0	0.0
Detection limits	1.0	R	$\sqrt{3}$	1	1	0.6	0.6
Boundary effect	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							
Device holder uncertainty	4.7	N	1	1	1	4.7	4.7
Test sample positioning	3.3	N	1	1	1	3.3	3.3
Power scaling	4.5	R	$\sqrt{3}$	1	1	2.6	2.6
Drift of output power (measured SAR drift)	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
Algorithm for correcting SAR for deviations in permittivity and conductivity	1.9	N	1	1	0.84	1.9	1.6
Liquid conductivity (meas.)	2.5	N	1	0.78	0.71	2.0	1.8
Liquid permittivity (meas.)	2.5	N	1	0.23	0.26	0.6	0.7
Liquid conductivity – temperature uncertainty	1.7	R	$\sqrt{3}$	0.78	0.71	0.8	0.7
Liquid permittivity – temperature uncertainty	0.3	R	$\sqrt{3}$	0.23	0.26	0.0	0.0
Combined standard uncertainty		RSS				11.8	11.7
Expanded uncertainty (95 % confidence interval)						23.6	23.4

APPENDIX B - SAR PLOTS

Please refer to the attachment.

APPENDIX C - EUT TEST POSITION PHOTOS

Please refer to the attachment.

APPENDIX D - PROBE CALIBRATION CERTIFICATES

Please refer to the attachment.

APPENDIX E - DIPOLE CALIBRATION CERTIFICATES

Please refer to the attachment.

===== END OF REPORT =====