

FCC SAR TEST REPORT

Applicant: Kirisun Communication Co.,Ltd.

Address: 3rd Floor, Building A, Tongfang Information Harbour, No.11
Langshan Road Nanshan District, Shenzhen 518057 China

Product Name: Dual-mode Portable Radio

FCC ID: Q5ETD60

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

Report Number: 2502Y05440E-20AM1

Report Date: 2026/03/26

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

Rocky Xiao

Reviewed By: Rocky Xiao
Title: RF Supervisor

Brave Lu

Approved By: Brave Lu
Title: SAR Supervisor

Bay Area Compliance Laboratories Corp. (Dongguan)
No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China

Tel: +86-769-86858888

Fax: +86-769-86858891

www.baclcorp.com.cn

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SAR TEST RESULTS SUMMARY

Mode	Max. Reported SAR Level(s) (W/kg)		Limit (W/kg)
LTE Band 2	1g Body SAR	0.93	1.6
	1g Face Up SAR	0.09	
LTE Band 4	1g Body SAR	0.84	
	1g Face Up SAR	0.10	
LTE Band 5	1g Body SAR	0.70	
	1g Face Up SAR	0.18	
LTE Band 7	1g Body SAR	1.13	
	1g Face Up SAR	0.03	
LTE Band 12	1g Body SAR	0.55	
	1g Face Up SAR	0.07	
LTE Band 13	1g Body SAR	1.03	
	1g Face Up SAR	0.29	
WLAN 2.4G	1g Body SAR	0.01	
	1g Face Up SAR	0.01	
WLAN 5.2G	1g Body SAR	0.01	
	1g Face Up SAR	0.02	
WLAN 5.8G	1g Body SAR	0.01	
	1g Face Up SAR	0.05	
Simultaneous	1g Body SAR	1.39	
	1g Face Up SAR	0.34	

PTT:

Mode		Max. Reported SAR Level(s) (W/kg)	Limit (W/kg)
PTT (400-470MHz)	1g Head SAR(Face Up)	3.12	8.0
	1g Body SAR(Body Back)	3.98	
Simultaneous	1g Head SAR(Face Up)	3.17	
	1g Body SAR(Body Back)	4.24	

Applicable Standards	FCC 47 CFR part 2.1093 Radiofrequency radiation exposure evaluation: portable devices
	IEEE 1528:2013 IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
	RF Exposure Procedures: TCB Workshop April 2019
	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 D05 SAR for LTE Devices v02r05 KDB 248227 D01 802.11 Wi-Fi SAR v02r02 KDB 643646 D01 SAR Test for PTT Radios v01r03
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	2502Y05440E-20A	Original Report	2026/01/09
2.0	2502Y05440E-20AM1	Removed the PTT FM 25kHz mode	2026/03/26

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	Dual-mode Portable Radio
EUT Model:	TD60
Multiple Models:	TD66
Device Type:	Portable
Exposure Category:	Occupational/Controlled Exposure for PTT Population /Uncontrolled Exposure for WWAN/WLAN/Bluetooth/BLE
Antenna Type(s):	External Antenna for PTT Internal Antenna for WWAN/WLAN/Bluetooth/BLE
Body-Worn Accessories:	Belt Clip, Headset
Proximity Sensor:	None
Carrier Aggregation:	None
Operation Modes:	FDD-LTE, WLAN, Bluetooth, BLE, PTT_FM/PTT_4FSK
Frequency Band:	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) WLAN 2.4G: 2412-2462 MHz (TX/RX) WLAN 5.2G: 5150 -5250 MHz (TX/RX) WLAN 5.8G: 5725-5850 MHz (TX/RX) Bluetooth: 2402-2480MHz (TX/RX) BLE_1M:2402-2480 MHz (TX/RX) PTT_FM/PTT_4FSK: 400-470MHz
Dimensions (L*W*H):	145 × 56 × 45 mm(The dimensions are the same for each model)
Power Source:	DC 7.6V from Rechargeable Battery
Serial Number:	3BA4-1
Normal Operation:	Head, Body and Face UP
EUT Received Date:	2025/09/14
Test Date:	2025/09/30 ~ 2025/11/26
EUT Received Status:	Good
Note: The differences between the two models are limited to the model name and keyboard. Please refer to the DOS letter▲ and the EUT External Photos for further details. Both models underwent pre-scanning, and the worst-case scenario was identified. Accordingly, the worst-case data (TD60) have been presented in the SAR test report.	

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)	1.6	8
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4	20

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 maybe incurred by people who are aware of the potential for exposure (i.e. as a result of employment or occupation).

Occupational /Controlled environments Spatial Peak limit 8.0 W/kg (FCC) applied to the PTT.
General Population/Uncontrolled environments Spatial Peak limit 1.6W/kg (FCC) applied to the WWAN/WLAN/Bluetooth/BLE.

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.

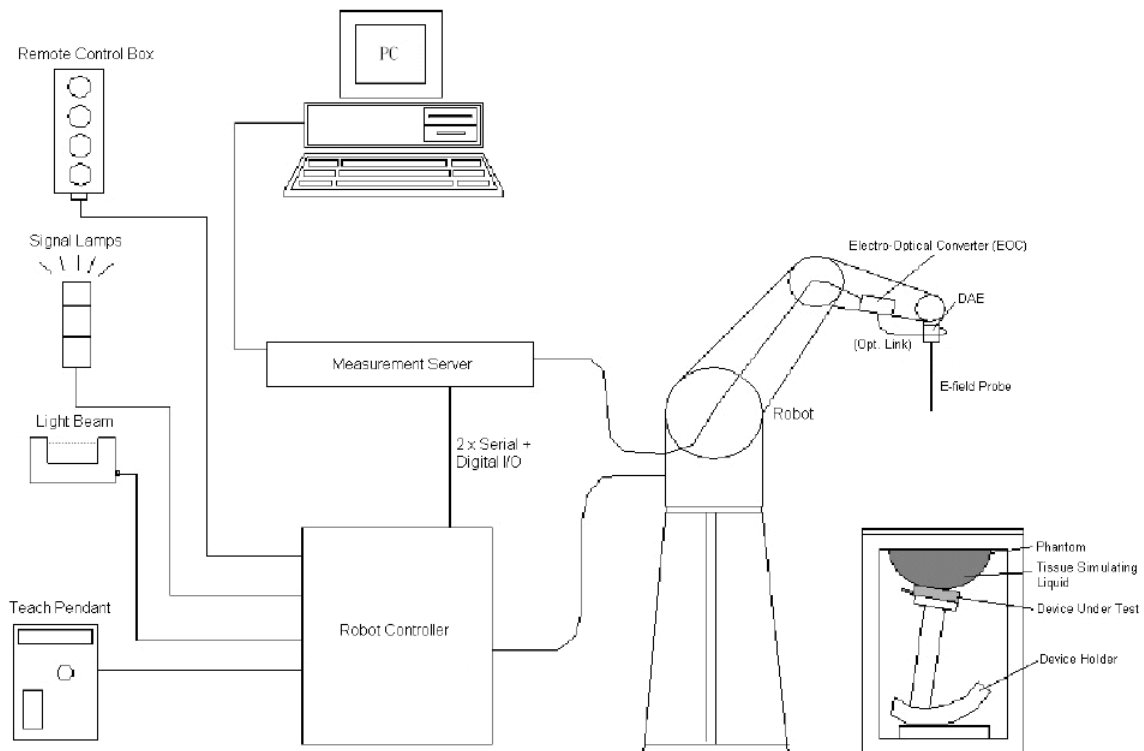
3. DESCRIPTION OF TEST SYSTEM

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–6 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

ES3DV2 E-Field Probes

Frequency	10 MHz - 4 GHz Linearity: ± 0.2 dB (30 MHz to 4 GHz)
Directivity	± 0.2 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)
Dynamic Range	5 μ W/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μ W/g)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 3.9 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 2.0 mm
Application	General dosimetry up to 4 GHz Dosimetry in strong gradient fields Compliance tests of mobile phones
Compatibility	DASY3, DASY4, DASY52, DASY6, DASY8 SAR, 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)

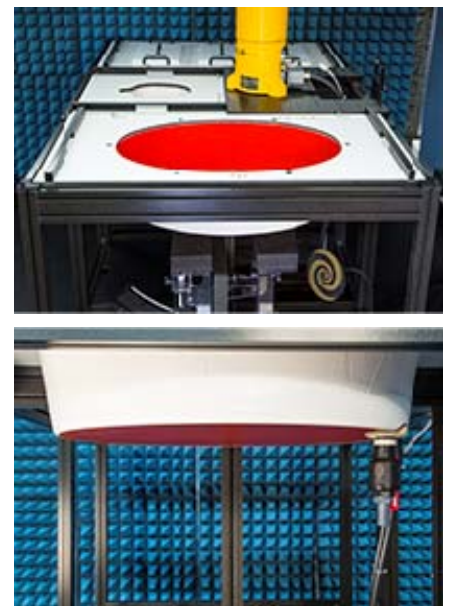


A white cover is provided to cover the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. Free space scans of devices on top of this phantom cover are possible.

Three reference marks are provided on the phantom counter. These reference marks are used to teach the absolute phantom position relative to the robot.

ELI Phantom

The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30MHz to 6 GHz. ELI is fully compatible with the latest draft of the standard EN IEC/IEEE 62209-1528:2021 and the use of all known tissue simulating liquids. ELI has been optimized for performance and can be integrated into a SPEAG standard phantom table. A cover is provided to prevent evaporation of water and changes in liquid parameters. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points.



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 15mm² step integral, with 1.5mm interpolation used to locate the peak SAR area used for zoom scan assessments.

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

Zoom Scan (Cube Scan Averaging)

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

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

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

Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE 1528:2013

Recommended Tissue Dielectric Parameters for Head liquid

Table 3—Target dielectric properties of head tissue-equivalent material in the 300 MHz to 6000 MHz frequency range

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
1450	40.5	1.20
1500	40.4	1.23
1640	40.2	1.31
1750	40.1	1.37
1800	40.0	1.40
1900	40.0	1.40
2000	40.0	1.40
2100	39.8	1.49
2300	39.5	1.67
2450	39.2	1.80
2600	39.0	1.96
3000	38.5	2.40
3500	37.9	2.91
4000	37.4	3.43
4500	36.8	3.94
5000	36.2	4.45
5200	36.0	4.66
5400	35.8	4.86
5600	35.5	5.07
5800	35.3	5.27
6000	35.1	5.48

NOTE—For convenience, permittivity and conductivity values at some frequencies that are not part of the original data from Drossos et al. [B60] or the extension to 5800 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 6000 MHz that were linearly extrapolated from the values at 3000 MHz and 5800 MHz.

4. EQUIPMENT LIST AND CALIBRATION

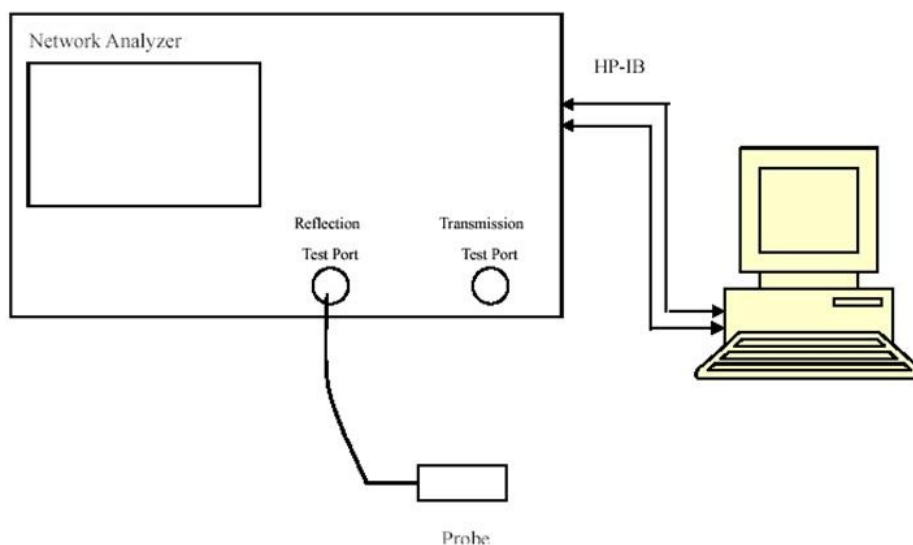
4.1 Equipments List & Calibration Information

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	2025/2/17	2026/2/16
E-Field Probe	EX3DV4	7329	2025/5/26	2026/5/25
E-Field Probe	ES3DV2	3019	2025/1/30	2026/1/29
Mounting Device	MD4HHTV5	SD 000 H01 KA	NCR	NCR
Twin SAM	Twin SAM V5.0	1097	NCR	NCR
Oval Flat Phantom	ELI V8.0	2051	NCR	NCR
Dipole, 450MHz	D450V3	1096	2025/7/7	2028/7/6
Dipole, 750 MHz	D750V3	1167	2022/10/31	2025/10/30
Dipole, 1750 MHz	D1750V2	1141	2024/6/17	2027/6/16
Dipole, 1900 MHz	D1900V2	543	2022/11/2	2025/11/1
Dipole, 2450 MHz	D2450V2	971	2024/6/15	2027/6/14
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 U126 CA (Batch:250429-1)	N/A	N/A
Simulated Tissue 450 MHz Head	TS-450H	2409045001	Each Time	/
Network Analyzer	8753C +85047A	3029A01355 +3033A02857	2025/7/3	2026/7/2
Dielectric assessment kit	DAK-3.5	1253	NCR	NCR
Signal Generator	8665B	3438a00584	2025/7/29	2026/7/28
EPM Series Power Meter	E4419B	MY45103907	2025/7/29	2026/7/28
Power Sensor	8482A	US37296108	2025/7/29	2026/7/28
Power Meter	EPM-441A	GB37481494	2025/7/29	2026/7/28
Power Amplifier	ZHL-5W-202-S+	416402204	NCR	NCR
Power Amplifier	ZVE-6W-83+	637202210	NCR	NCR
Directional Coupler	520Z	441493	NCR	NCR
Directional Coupler	1818	0955-0101	NCR	NCR
Attenuator	20dB, 100W	LN749	NCR	NCR
Attenuator	6dB, 150W	2754	NCR	NCR
Thermometer	DTM3000	3635	2025/8/8	2026/8/7
Hygrothermograph	HTC-2	EM072	2025/8/4	2026/8/3
Wideband Radio Communication Tester	CMW500	147473	2025/7/28	2026/7/27
Wireless Communication Test Set	E5515C	MY50266471	2025/7/28	2026/7/27
Spectrum Analyzer	FSU 26	200160/026	2025/7/28	2026/7/27
Spectrum Analyzer	FSV40	101461	2025/8/3	2026/8/2

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

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)	$\Delta\epsilon_r$	$\Delta\sigma$	
704	Simulated Tissue Liquid Head	43.263	0.855	42.15	0.89	2.64	-3.93	± 5
707.5	Simulated Tissue Liquid Head	43.227	0.855	42.13	0.89	2.60	-3.93	± 5
711	Simulated Tissue Liquid Head	43.191	0.855	42.11	0.89	2.57	-3.93	± 5
750	Simulated Tissue Liquid Head	42.791	0.858	41.90	0.89	2.13	-3.60	± 5
782	Simulated Tissue Liquid Head	42.462	0.861	41.75	0.89	1.71	-3.26	± 5

*Liquid Verification was performed on 2025/09/30.

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$	
750	Simulated Tissue Liquid Head	42.136	0.895	41.90	0.89	0.56	0.56	± 5
829	Simulated Tissue Liquid Head	41.165	0.923	41.53	0.90	-0.88	2.56	± 5
836.5	Simulated Tissue Liquid Head	41.149	0.928	41.50	0.90	-0.85	3.11	± 5
844	Simulated Tissue Liquid Head	41.133	0.933	41.50	0.91	-0.88	2.53	± 5

*Liquid Verification was performed on 2025/10/01.

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$	
1720	Simulated Tissue Liquid Head	39.027	1.332	40.11	1.35	-2.70	-1.33	± 5
1732.5	Simulated Tissue Liquid Head	39.023	1.343	40.10	1.36	-2.69	-1.25	± 5
1745	Simulated Tissue Liquid Head	39.018	1.353	40.08	1.37	-2.65	-1.24	± 5
1750	Simulated Tissue Liquid Head	39.017	1.357	40.07	1.37	-2.63	-0.95	± 5

*Liquid Verification was performed on 2025/10/24.

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$	
1860	Simulated Tissue Liquid Head	39.455	1.393	40.00	1.40	-1.36	-0.50	± 5
1880	Simulated Tissue Liquid Head	39.442	1.395	40.00	1.40	-1.40	-0.36	± 5
1900	Simulated Tissue Liquid Head	39.430	1.397	40.00	1.40	-1.43	-0.21	± 5

*Liquid Verification was performed on 2025/10/01.

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$	
2412	Simulated Tissue Liquid Head	38.017	1.753	39.27	1.77	-3.19	-0.96	± 5
2437	Simulated Tissue Liquid Head	37.960	1.761	39.22	1.79	-3.21	-1.62	± 5
2450	Simulated Tissue Liquid Head	37.931	1.765	39.20	1.80	-3.24	-1.94	± 5
2462	Simulated Tissue Liquid Head	37.904	1.769	39.18	1.81	-3.26	-2.27	± 5

*Liquid Verification was performed on 2025/10/02.

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$	
2510	Simulated Tissue Liquid Head	37.961	1.865	39.12	1.86	-2.96	0.27	± 5
2535	Simulated Tissue Liquid Head	37.952	1.891	39.09	1.89	-2.91	0.05	± 5
2560	Simulated Tissue Liquid Head	37.942	1.918	39.05	1.92	-2.84	-0.10	± 5
2600	Simulated Tissue Liquid Head	37.926	1.959	39.00	1.96	-2.75	-0.05	± 5

*Liquid Verification was performed on 2025/10/03.

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$	
5180	Simulated Tissue Liquid Head	34.946	4.701	36.02	4.64	-2.98	1.31	± 5
5200	Simulated Tissue Liquid Head	34.908	4.730	36.00	4.66	-3.03	1.50	± 5
5240	Simulated Tissue Liquid Head	34.831	4.788	35.96	4.70	-3.14	1.87	± 5
5250	Simulated Tissue Liquid Head	34.812	4.802	35.95	4.71	-3.17	1.95	± 5

*Liquid Verification was performed on 2025/10/03.

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$	
5745	Simulated Tissue Liquid Head	35.302	5.153	35.36	5.22	-0.16	-1.28	± 5
5785	Simulated Tissue Liquid Head	35.263	5.164	35.32	5.26	-0.16	-1.83	± 5
5800	Simulated Tissue Liquid Head	35.248	5.168	35.30	5.27	-0.15	-1.94	± 5
5825	Simulated Tissue Liquid Head	35.224	5.175	35.28	5.30	-0.16	-2.36	± 5

*Liquid Verification was performed on 2025/10/02.

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)	
400.0125	Simulated Tissue 450 MHz Head	44.254	0.847	44.1	0.87	0.35	-2.64	± 5
417.4875	Simulated Tissue 450 MHz Head	44.018	0.853	43.89	0.87	0.29	-1.95	± 5
435	Simulated Tissue 450 MHz Head	43.991	0.862	43.68	0.87	0.71	-0.92	± 5
450	Simulated Tissue 450 MHz Head	43.976	0.884	43.5	0.87	1.09	1.61	± 5
452.9825	Simulated Tissue 450 MHz Head	43.589	0.891	43.48	0.87	0.25	2.41	± 5
469.9875	Simulated Tissue 450 MHz Head	43.554	0.904	43.39	0.87	0.38	3.91	± 5

*Liquid Verification above was performed on 2025/11/26.

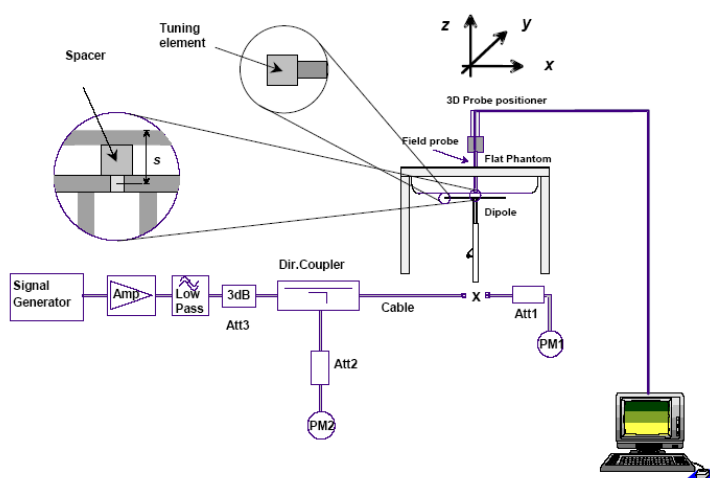
5.3 System Accuracy Verification

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 $3\,000 \text{ MHz} < f \leq 6\,000 \text{ MHz}$.
- $s = 0 \text{ mm}$ for $f = 150 \text{ MHz}$ (Loop Antenna).

System Verification Setup Block Diagram



5.4 System Accuracy Check Results

Date	Frequency Band (MHz)	Liquid Type	Input Power (mW)	Measured SAR (W/kg)	Normalized to 1W (W/kg)	Target Value (W/Kg)	Delta (%)	Tolerance (%)
2025/09/30	750	Head	100	1g 0.803	8.03	8.48	-5.307	± 10
2025/10/01	750	Head	100	1g 0.840	8.40	8.48	-0.943	± 10
2025/10/24	1750	Head	100	1g 3.48	34.8	36.1	-3.601	± 10
2025/10/01	1900	Head	100	1g 3.69	36.9	40.2	-8.209	± 10
2025/10/02	2450	Head	100	1g 5.47	54.7	52.7	3.795	± 10
2025/10/03	2600	Head	100	1g 5.29	52.9	55.8	-5.197	± 10
2025/10/03	5250	Head	100	1g 7.66	76.6	77.5	-1.161	± 10
2025/10/02	5800	Head	100	1g 7.70	77.0	78.4	-1.786	± 10

Note: All the SAR values are normalized to 1Watt forward power.

Date	Frequency Band	Liquid Type	Input Power (mW)	Measured SAR (W/kg)	Target Value (W/kg)	Delta (%)	Tolerance (%)
2025/11/26	450 MHz	Simulated Tissue 450 MHz Head	1000	1g 4.69	4.58	2.4	± 10

5.5 SAR SYSTEM VALIDATION DATA

System Performance 750 MHz Head (Date 2025/09/30)

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

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

Medium parameters used: $f = 750$ MHz; $\sigma = 0.858$ S/m; $\epsilon_r = 42.791$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(10.2, 10.2, 10.2) @ 750 MHz; Calibrated: 2025/5/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2025/2/17
- Phantom: Twin SAM V5.0; Type: QD000P40CC; Serial: TP:1097
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Configuration/Head 750MHz Pin=100mW/Area Scan (11x19x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.901 W/kg

Configuration/Head 750MHz Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 31.12 V/m; Power Drift = 0.01 dB

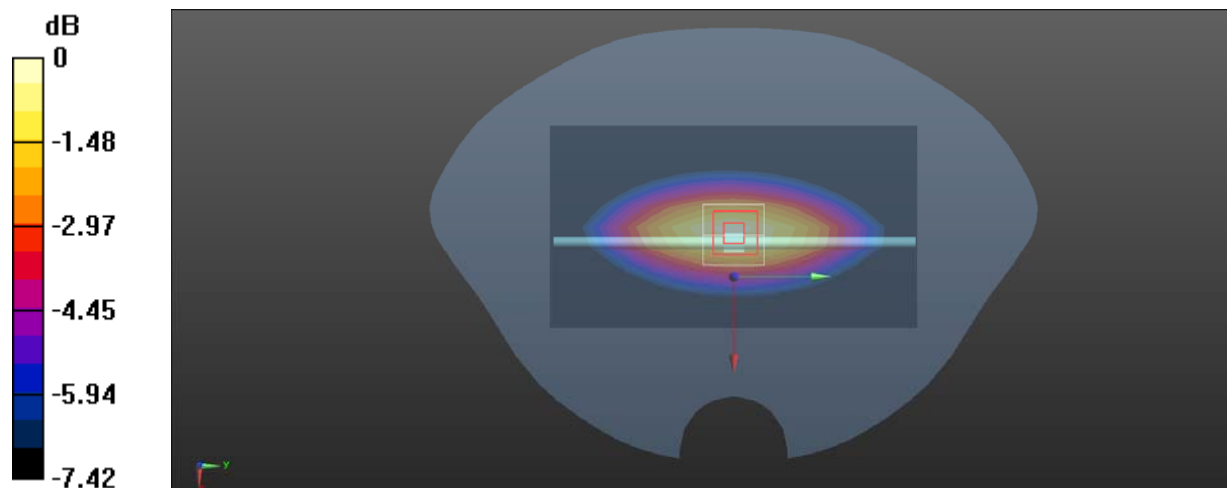
Peak SAR (extrapolated) = 1.05 W/kg

SAR(1 g) = 0.803 W/kg; SAR(10 g) = 0.574 W/kg

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid (> 15 mm)

Ratio of SAR at M2 to SAR at M1 = 74.7%

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



0 dB = 0.968 W/kg = -0.14 dBW/kg

System Performance 750 MHz Head (Date 2025/10/01)**DUT: Dipole 750 MHz; Type: D750V3; Serial: 1167**

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

Medium parameters used: $f = 750$ MHz; $\sigma = 0.895$ S/m; $\epsilon_r = 42.136$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(10.2, 10.2, 10.2) @ 750 MHz; Calibrated: 2025/5/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2025/2/17
- Phantom: Twin SAM V5.0; Type: QD000P40CC; Serial: TP:1097
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Configuration/Head 750MHz Pin=100mW/Area Scan (11x19x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.970 W/kg

Configuration/Head 750MHz Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 32.50 V/m; Power Drift = 0.03 dB

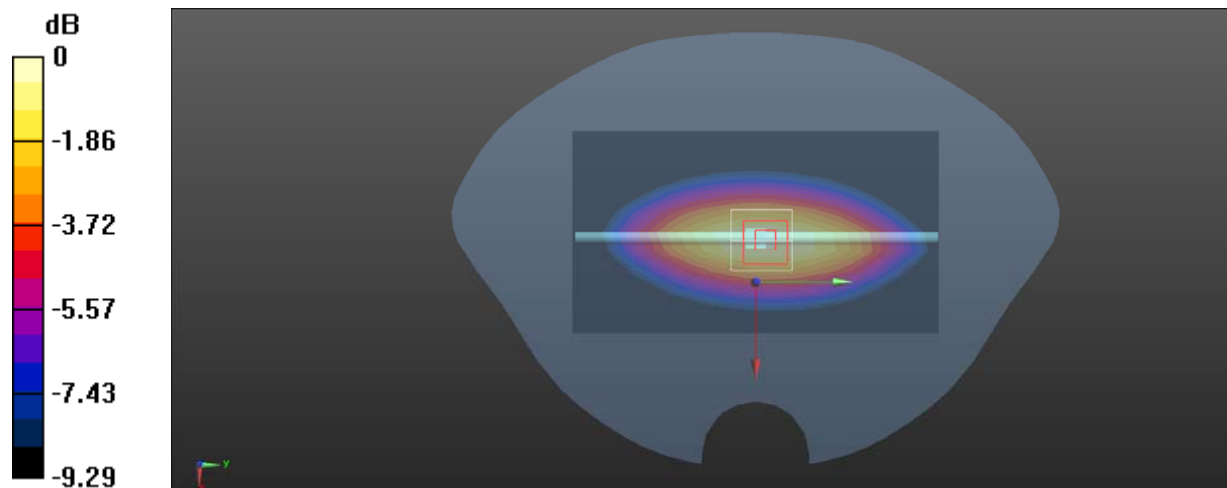
Peak SAR (extrapolated) = 1.19 W/kg

SAR(1 g) = 0.840 W/kg; SAR(10 g) = 0.575 W/kg

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid (> 15 mm)

Ratio of SAR at M2 to SAR at M1 = 70.7%

Maximum value of SAR (measured) = 1.08 W/kg



0 dB = 1.08 W/kg = 0.33 dBW/kg

System Performance 1750 MHz Head (Date 2025/10/24)**DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1141**

Communication System: UID 0, CW (0); Frequency: 1750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.357$ S/m; $\epsilon_r = 39.017$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(8.45, 8.45, 8.45) @ 1750 MHz; Calibrated: 2025/5/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2025/2/17
- Phantom: Twin SAM V5.0; Type: QD000P40CC; Serial: TP:1097
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Configuration/Head 1750MHz Pin=100mW/Area Scan (7x8x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 4.77 W/kg

Configuration/Head 1750MHz Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 54.11 V/m; Power Drift = -0.08 dB

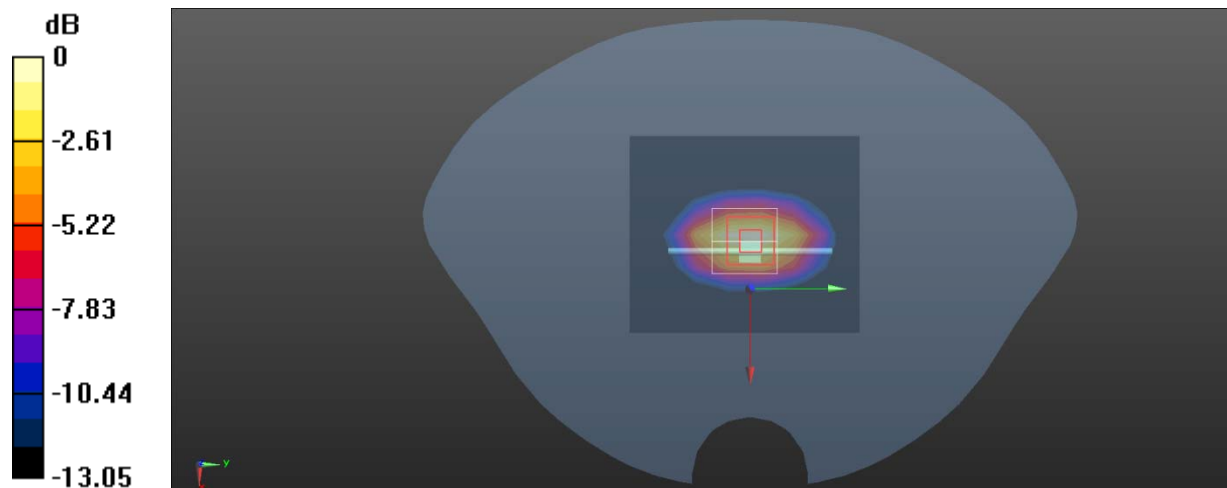
Peak SAR (extrapolated) = 5.89 W/kg

SAR(1 g) = 3.48 W/kg; SAR(10 g) = 2.05 W/kg

Smallest distance from peaks to all points 3 dB below = 11 mm

Ratio of SAR at M2 to SAR at M1 = 60.8%

Maximum value of SAR (measured) = 5.00 W/kg



0 dB = 5.00 W/kg = 6.99 dBW/kg

System Performance 1900 MHz Head (Date 2025/10/01)**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 543**

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

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.397$ S/m; $\epsilon_r = 39.43$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(8.12, 8.12, 8.12) @ 1900 MHz; Calibrated: 2025/5/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2025/2/17
- Phantom: Twin SAM V5.0; Type: QD000P40CC; Serial: TP:1097
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Configuration/Head 1900MHz Pin=100mW/Area Scan (9x13x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 4.62 W/kg

Configuration/Head 1900MHz Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 51.95 V/m; Power Drift = -0.08 dB

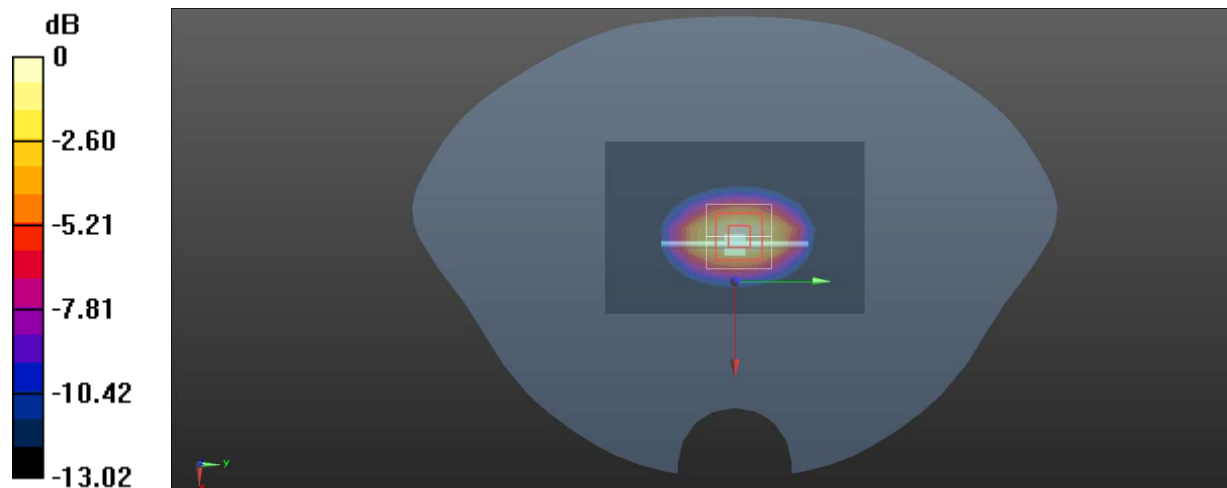
Peak SAR (extrapolated) = 5.99 W/kg

SAR(1 g) = 3.69 W/kg; SAR(10 g) = 2.17 W/kg

Smallest distance from peaks to all points 3 dB below = 10.4 mm

Ratio of SAR at M2 to SAR at M1 = 63.4%

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



0 dB = 5.27 W/kg = 7.22 dBW/kg

System Performance 2450 MHz Head (Date 2025/10/02)**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 971**

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

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.765$ S/m; $\epsilon_r = 37.931$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(7.68, 7.68, 7.68) @ 2450 MHz; Calibrated: 2025/5/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2025/2/17
- Phantom: Twin SAM V5.0; Type: QD000P40CC; Serial: TP:1097
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Configuration/Head 2450MHz Pin=100mW/Area Scan (9x10x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 6.74 W/kg

Configuration/Head 2450MHz Pin=100mW/Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.40 V/m; Power Drift = 0.11 dB

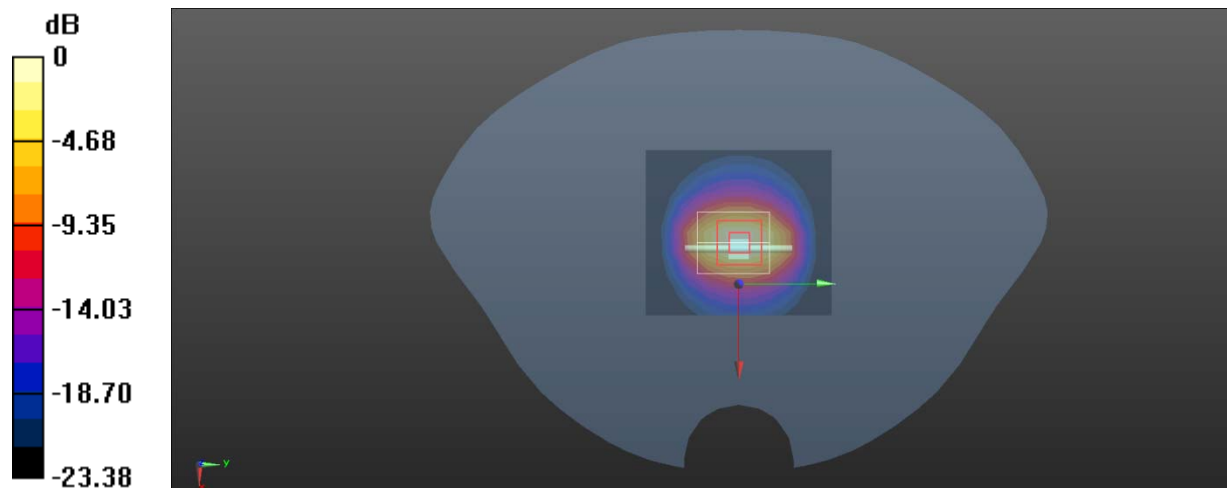
Peak SAR (extrapolated) = 10.7 W/kg

SAR(1 g) = 5.47 W/kg; SAR(10 g) = 2.55 W/kg

Smallest distance from peaks to all points 3 dB below = 9 mm

Ratio of SAR at M2 to SAR at M1 = 51.4%

Maximum value of SAR (measured) = 8.95 W/kg



0 dB = 8.95 W/kg = 9.52 dBW/kg

System Performance 2600 MHz Head (Date 2025/10/03)**DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1132**

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

Medium parameters used: $f = 2600$ MHz; $\sigma = 1.959$ S/m; $\epsilon_r = 37.926$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(7.5, 7.5, 7.5) @ 2600 MHz; Calibrated: 2025/5/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2025/2/17
- Phantom: Twin SAM V5.0; Type: QD000P40CC; Serial: TP:1097
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Configuration/Head 2600MHz Pin=100mW/Area Scan (9x10x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 7.90 W/kg

Configuration/Head 2600MHz Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.30 V/m; Power Drift = -0.19 dB

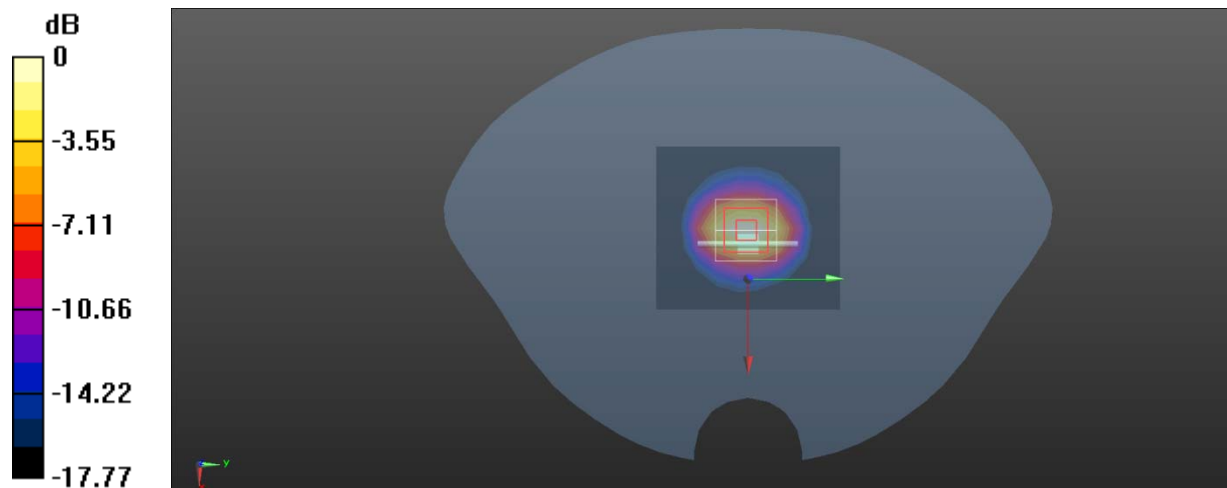
Peak SAR (extrapolated) = 9.10 W/kg

SAR(1 g) = 5.29 W/kg; SAR(10 g) = 2.68 W/kg

Smallest distance from peaks to all points 3 dB below = 9.5 mm

Ratio of SAR at M2 to SAR at M1 = 59.5%

Maximum value of SAR (measured) = 7.99 W/kg



0 dB = 7.99 W/kg = 9.03 dBW/kg

System Performance 5250 MHz Head (Date 2025/10/03)**DUT: Dipole D5GHz; Type: D5GHzV2; Serial: 1246**

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

Medium parameters used: $f = 5250$ MHz; $\sigma = 4.802$ S/m; $\epsilon_r = 34.812$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(5.5, 5.5, 5.5) @ 5250 MHz; Calibrated: 2025/5/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2025/2/17
- Phantom: Twin SAM V5.0; Type: QD000P40CC; Serial: TP:1097
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Configuration/Head 5250MHz Pin=100mW/Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 16.8 W/kg

Configuration/Head 5250MHz Pin=100mW/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 45.72 V/m; Power Drift = 0.10 dB

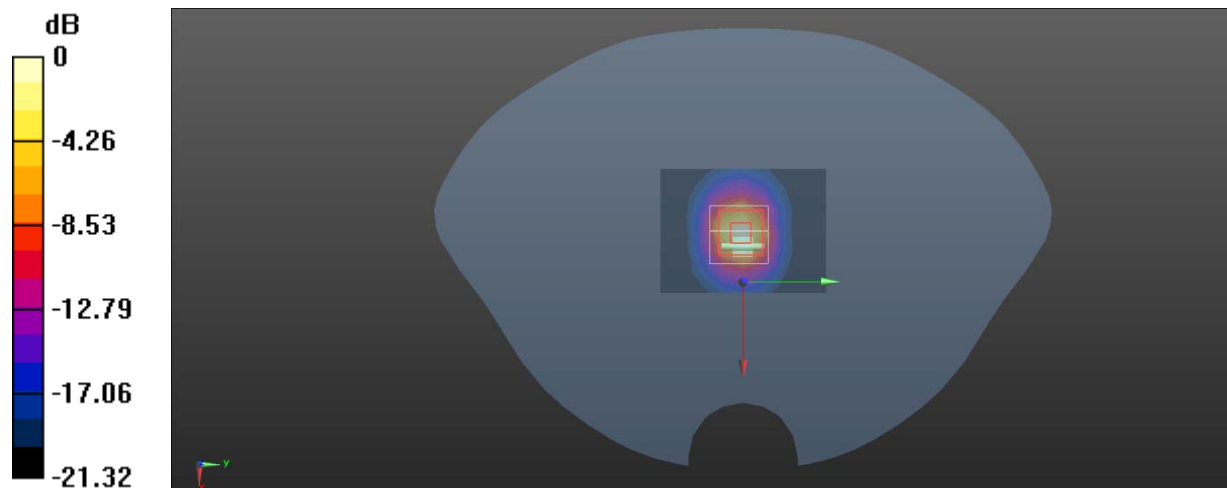
Peak SAR (extrapolated) = 21.8 W/kg

SAR(1 g) = 7.66 W/kg; SAR(10 g) = 2.45 W/kg

Smallest distance from peaks to all points 3 dB below = 7.2 mm

Ratio of SAR at M2 to SAR at M1 = 66.6%

Maximum value of SAR (measured) = 15.5 W/kg



0 dB = 15.5 W/kg = 11.90 dBW/kg

System Performance 5800 MHz Head (Date 2025/10/02)**DUT: Dipole D5GHz; Type: D5GHzV2; Serial: 1246**

Communication System: UID 0, CW (0); Frequency: 5800 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5800$ MHz; $\sigma = 5.168$ S/m; $\epsilon_r = 35.248$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(5.02, 5.02, 5.02) @ 5800 MHz; Calibrated: 2025/5/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn772; Calibrated: 2025/2/17
- Phantom: Twin SAM V5.0; Type: QD000P40CC; Serial: TP:1097
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Configuration/Head 5800MHz Pin=100mW/Area Scan (11x13x1): Measurement grid: dx=10mm, dy=10mm

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

Configuration/Head 5800MHz Pin=100mW/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 40.44 V/m; Power Drift = 0.13 dB

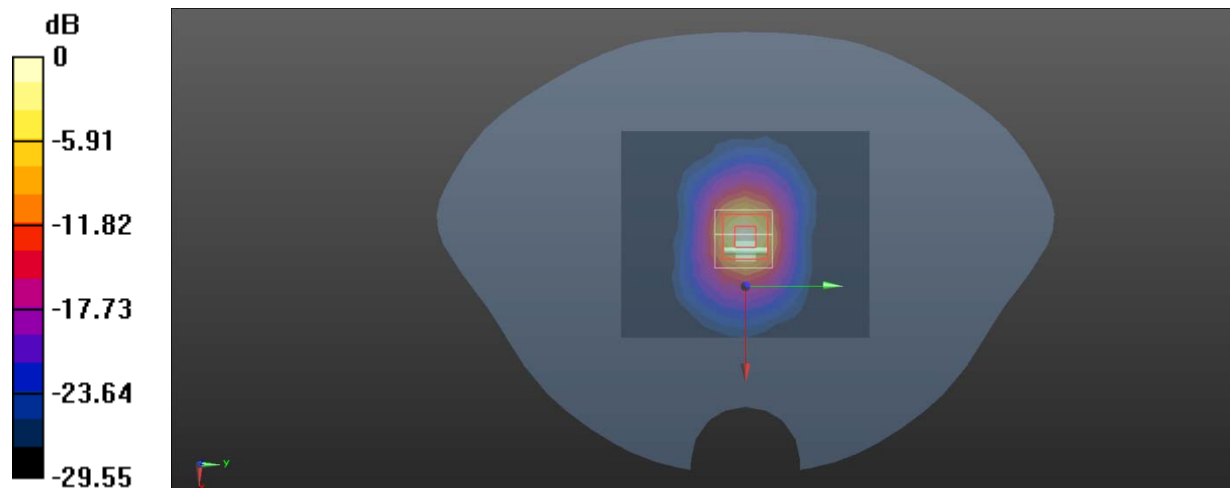
Peak SAR (extrapolated) = 23.4 W/kg

SAR(1 g) = 7.7 W/kg; SAR(10 g) = 2.46 W/kg

Smallest distance from peaks to all points 3 dB below = 7.5 mm

Ratio of SAR at M2 to SAR at M1 = 64.3%

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



0 dB = 16.2 W/kg = 12.10 dBW/kg

System Performance 450 MHz Head (Date 2025/11/26)**DUT: Dipole 450 MHz; Type: D450V3; Serial: 1096**

Communication System: UID 0, CW (0); Frequency: 450 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 450$ MHz; $\sigma = 0.884$ S/m; $\epsilon_r = 43.976$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV2 - SN3019; ConvF(6.76, 6.76, 6.76) @ 450 MHz; Calibrated: 1/30/2025
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1325; Calibrated: 9/28/2025
- Phantom: ELI V8.0 P1aP2a; Type: QD OVA 004 AA; Serial: 2092
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Head 450MHz Pin=1000mW/Area Scan (7x23x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 6.93 W/kg

Head 450MHz Pin=1000mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 67.74 V/m; Power Drift = -0.17 dB

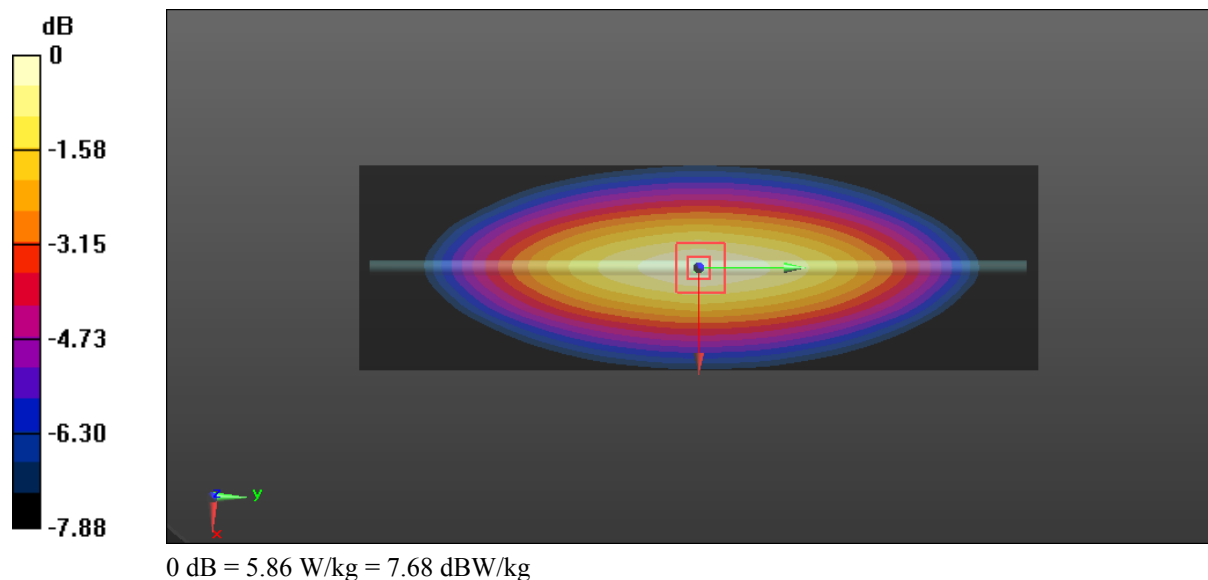
Peak SAR (extrapolated) = 7.86 W/kg

SAR(1 g) = 4.69 W/kg; SAR(10 g) = 3.13 W/kg

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid (> 16 mm)

Ratio of SAR at M2 to SAR at M1 = 62.4%

Maximum value of SAR (measured) = 5.86 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.

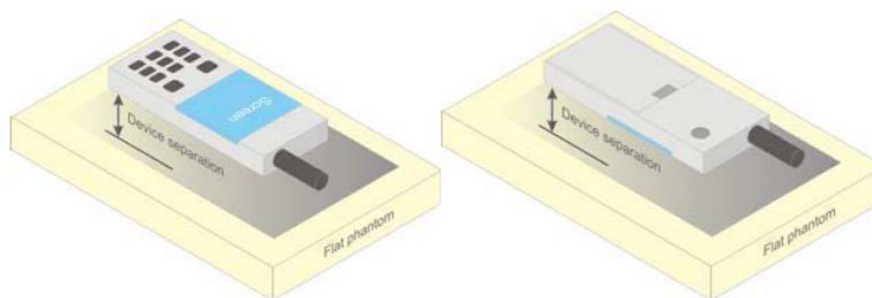


Figure 5 – Test positions for body-worn devices

6.2 Test positions for Front-of-face device

A typical example of a front-of-face device is a two-way radio that is held at a close distance from the face of the user while transmitting. Other devices that fall into this category include wireless-enabled still cameras and video cameras capable of sending data to a network or other device (Figure 10 b)).

To assess this type of device, the following apply:

- The DUT shall be positioned at a test separation distance to the phantom surface in accordance with the conditions of 7.2.4.1.2.
- For a device with intended use that requires contact with the user's face (e.g. device with an optical viewfinder), such a device shall be placed directly against the phantom (Figure 10 b), right side).

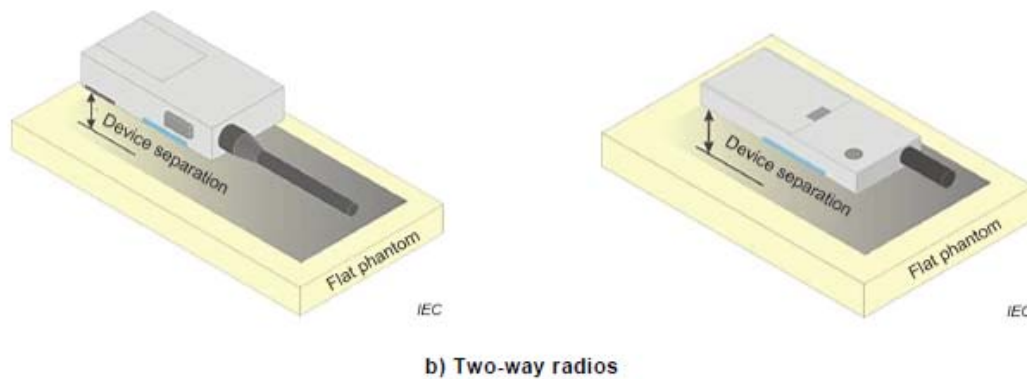


Figure 10 – Test positions for front-of-face devices

6.3 Test Distance for SAR Evaluation

In this case the DUT(Device Under Test) is set directly against the phantom, the test distance is 0mm for Body Back mode; for Face Up mode the distance is 25mm.

6.4 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.

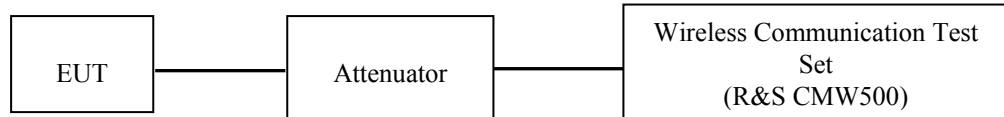
All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

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

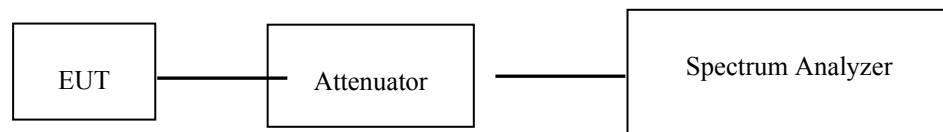
7.1 Test Procedure

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



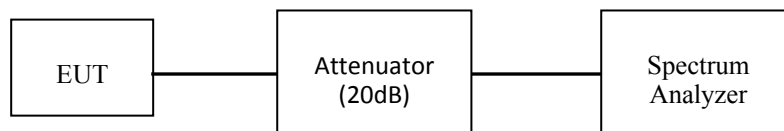
LTE

The RF output of the transmitter was connected to the input port of the Spectrum Analyzer through attenuator.



BT/BLE/WLAN

The RF output of the transmitter was connected to the input of the Spectrum Analyzer through sufficient attenuation.



PTT

The Signal Analyzer setting:

RBW	VBW
100 kHz	300 kHz

7.2 Radio Configuration

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

FDD-LTE

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

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1 and 3

Modulation	Channel bandwidth / Transmission bandwidth (N_{RB})						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

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

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

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

7.3 Maximum Target Output Power

Max Target Power(dBm)			
Mode/Band	Channel		
	Low	Middle	High
LTE Band 2 $\leq$ 18 RB	24.0	24.0	24.0
LTE Band 2 $>$ 18 RB	23.0	23.0	23.0
LTE Band 4 $\leq$ 18 RB	24.5	24.5	24.5
LTE Band 4 $>$ 18 RB	23.5	23.5	23.5
LTE Band 5 $\leq$ 12 RB	24.5	24.5	24.5
LTE Band 5 $>$ 12 RB	23.5	23.5	23.5
LTE Band 7 $\leq$ 18 RB	24.5	24.5	24.5
LTE Band 7 $\leq$ 18 RB	23.5	23.5	23.5
LTE Band 12 $\leq$ 12 RB	24.0	24.0	24.0
LTE Band 12 $>$ 12 RB	23.0	23.0	23.0
LTE Band 13 $\leq$ 12 RB	24.0	24.0	24.0
LTE Band 13 $>$ 12 RB	23.0	23.0	23.0
Bluetooth	8.0	8.0	8.0
BLE	3.0	3.0	3.0
WLAN 2.4G (802.11b)	16.5	16.5	16.5
WLAN 2.4G (802.11g)	14.5	14.5	14.5
WLAN 2.4G (802.11n20)	14.0	14.0	14.0
WLAN 2.4G (802.11n40)	14.0	14.0	14.0
WLAN 5.2G (802.11a)	13.0	13.0	13.0
WLAN 5.2G (802.11 n20)	14.0	14.0	14.0
WLAN 5.2G (802.11 n40)	13.5	/	13.5
WLAN 5.8G (802.11a)	12.5	12.5	12.5
WLAN 5.8G (802.11 n20)	12.0	12.0	12.0
WLAN 5.8G (802.11 n40)	11.0	/	11.0

Note: The Maximum Target Power for LTE band corresponds to their maximum power in QPSK modes with maximum bandwidth.

Test Mode		Max. tune-up tolerance power limit for Production(dBm)
PTT (400-470MHz)	FM_12.5kHz	37(High Power Level)
	4FSK_12.5kHz	37(High Power Level)

7.4 Test Results:**LTE Band 2:**

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	22.61	22.82	22.55
		RB1#3	22.79	23.35	22.67
		RB1#5	22.69	23.16	22.92
		RB3#0	23.06	23.36	22.75
		RB3#1	22.92	23.34	22.88
		RB3#3	22.83	23.41	23.19
		RB6#0	22.11	22.33	21.90
	16-QAM	RB1#0	21.51	22.70	21.73
		RB1#3	21.95	22.74	21.92
		RB1#5	21.96	22.21	21.52
		RB3#0	21.89	22.28	22.26
		RB3#1	22.13	21.97	22.03
		RB3#3	21.85	22.24	22.20
		RB6#0	21.02	20.79	20.95
3M	QPSK	RB1#0	23.22	23.09	23.33
		RB1#8	23.19	23.50	22.82
		RB1#14	22.93	22.81	22.67
		RB8#0	22.10	21.87	21.96
		RB8#4	21.77	22.28	22.07
		RB8#7	22.03	21.99	21.86
		RB15#0	22.19	22.19	22.00
	16-QAM	RB1#0	22.08	22.41	22.30
		RB1#8	22.21	22.51	21.42
		RB1#14	22.50	21.95	21.81
		RB8#0	20.82	20.96	20.62
		RB8#4	20.92	20.97	20.91
		RB8#7	21.27	20.97	21.07
		RB15#0	21.18	20.90	20.88
5M	QPSK	RB1#0	23.32	22.96	22.96
		RB1#12	23.16	22.79	22.87
		RB1#24	23.33	22.79	22.97
		RB12#0	22.26	22.03	21.91
		RB12#7	21.80	22.05	21.76
		RB12#13	22.39	21.90	21.76
		RB25#0	22.34	22.02	22.29
	16-QAM	RB1#0	22.54	22.56	22.33
		RB1#12	21.93	22.54	22.01
		RB1#24	22.48	22.28	22.23
		RB12#0	20.75	21.15	21.12
		RB12#7	20.61	21.26	21.17
		RB12#13	21.15	20.75	21.04
		RB25#0	21.02	21.00	21.20

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	QPSK	RB1#0	23.30	23.30	22.99
		RB1#25	23.45	22.77	23.22
		RB1#49	23.24	23.53	22.84
		RB25#0	22.21	22.49	21.99
		RB25#12	22.03	22.44	22.35
		RB25#25	22.34	22.19	22.11
		RB50#0	22.10	22.26	21.97
	16-QAM	RB1#0	22.42	23.09	22.55
		RB1#25	21.64	21.82	22.35
		RB1#49	22.00	22.50	22.29
		RB25#0	21.54	21.03	20.76
		RB25#12	21.16	21.48	20.70
		RB25#25	21.36	21.14	20.70
		RB50#0	21.18	21.19	21.15
15M	QPSK	RB1#0	23.30	23.30	22.99
		RB1#37	23.45	22.77	23.22
		RB1#74	23.24	23.53	22.84
		RB36#0	22.21	22.49	21.99
		RB36#20	22.03	22.44	22.35
		RB36#39	22.34	22.19	22.11
		RB75#0	22.10	22.26	21.97
	16-QAM	RB1#0	22.66	22.81	21.97
		RB1#37	22.53	22.38	21.61
		RB1#74	22.23	22.30	21.55
		RB36#0	21.02	21.42	21.44
		RB36#20	21.12	21.36	21.25
		RB36#39	21.30	21.15	21.13
		RB75#0	21.38	21.19	21.08
20M	QPSK	RB1#0	23.35	23.56	23.41
		RB1#49	23.30	23.20	23.22
		RB1#99	23.10	22.95	22.76
		RB50#0	22.40	22.42	22.01
		RB50#24	21.93	22.02	22.28
		RB50#50	22.07	22.41	21.98
		RB100#0	22.29	22.35	21.99
	16-QAM	RB1#0	22.42	23.09	22.55
		RB1#49	21.64	21.82	22.35
		RB1#99	22.00	22.50	22.29
		RB50#0	21.54	21.03	20.76
		RB50#24	21.16	21.48	20.70
		RB50#50	21.36	21.14	20.70
		RB100#0	21.18	21.19	21.15

LTE Band 4:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	23.28	23.56	23.25
		RB1#3	23.79	23.49	22.83
		RB1#5	23.49	23.05	22.73
		RB3#0	23.78	23.14	23.19
		RB3#1	23.59	23.50	23.25
		RB3#3	23.29	23.69	23.05
		RB6#0	22.37	22.13	22.30
	16-QAM	RB1#0	23.07	22.24	22.40
		RB1#3	22.87	22.05	22.48
		RB1#5	22.65	22.40	22.55
		RB3#0	22.41	22.15	22.25
		RB3#1	22.71	22.52	22.34
		RB3#3	22.40	22.66	22.32
		RB6#0	20.96	21.38	20.89
3M	QPSK	RB1#0	23.59	23.42	23.69
		RB1#8	23.25	23.34	23.50
		RB1#14	23.27	23.58	23.20
		RB8#0	22.17	22.21	22.25
		RB8#4	22.35	22.34	22.41
		RB8#7	22.05	22.39	22.07
		RB15#0	22.41	22.39	22.04
	16-QAM	RB1#0	22.14	22.84	22.84
		RB1#8	22.58	22.21	22.01
		RB1#14	22.68	22.61	22.27
		RB8#0	21.69	21.21	21.10
		RB8#4	21.55	21.24	21.48
		RB8#7	21.63	21.15	21.36
		RB15#0	21.56	21.23	21.41
5M	QPSK	RB1#0	23.59	23.19	23.43
		RB1#12	23.45	23.71	23.39
		RB1#24	23.24	23.47	23.48
		RB12#0	22.72	22.63	22.51
		RB12#7	22.46	22.45	22.62
		RB12#13	21.99	22.55	22.04
		RB25#0	22.44	22.63	22.51
	16-QAM	RB1#0	22.48	22.70	22.60
		RB1#12	22.64	22.32	22.01
		RB1#24	22.84	22.90	22.33
		RB12#0	21.53	21.50	21.42
		RB12#7	21.39	21.14	21.63
		RB12#13	21.42	20.94	21.33
		RB25#0	21.56	21.29	21.43

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	QPSK	RB1#0	23.33	23.59	23.60
		RB1#25	23.67	23.52	23.52
		RB1#49	23.32	23.47	23.15
		RB25#0	22.83	22.63	22.61
		RB25#12	22.67	22.16	22.44
		RB25#25	22.28	22.33	22.65
		RB50#0	22.77	22.68	22.56
	16-QAM	RB1#0	23.07	22.17	22.83
		RB1#25	22.12	22.44	22.53
		RB1#49	21.99	22.61	22.44
		RB25#0	21.70	21.67	21.87
		RB25#12	21.82	21.59	21.01
		RB25#25	21.46	21.70	21.31
		RB50#0	21.44	21.45	21.47
15M	QPSK	RB1#0	23.43	23.49	23.27
		RB1#37	23.31	23.48	23.28
		RB1#74	23.50	23.22	23.46
		RB36#0	22.93	22.61	22.78
		RB36#20	22.28	22.37	22.56
		RB36#39	22.69	22.65	22.18
		RB75#0	22.28	22.45	22.49
	16-QAM	RB1#0	22.36	23.09	22.55
		RB1#37	22.08	22.27	22.40
		RB1#74	21.99	21.96	22.41
		RB36#0	21.67	21.48	21.21
		RB36#20	21.36	21.45	21.69
		RB36#39	21.37	21.13	21.47
		RB75#0	21.64	21.05	21.52
20M	QPSK	RB1#0	23.50	23.63	23.89
		RB1#49	23.33	23.02	23.21
		RB1#99	23.37	23.17	23.33
		RB50#0	22.42	22.25	22.73
		RB50#24	21.95	22.69	22.23
		RB50#50	22.20	22.52	22.12
		RB100#0	22.34	22.56	22.31
	16-QAM	RB1#0	23.12	22.94	22.48
		RB1#49	22.91	22.76	22.49
		RB1#99	22.12	22.40	22.48
		RB50#0	21.63	21.21	21.69
		RB50#24	21.58	20.97	21.16
		RB50#50	21.11	21.40	21.28
		RB100#0	21.29	21.37	21.58

LTE Band 5:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	24.00	24.16	23.97
		RB1#3	24.28	23.99	23.84
		RB1#5	23.88	23.85	23.50
		RB3#0	23.92	24.10	23.74
		RB3#1	23.80	24.03	23.86
		RB3#3	23.56	24.04	23.66
		RB6#0	22.76	22.79	22.60
	16-QAM	RB1#0	22.82	23.16	22.55
		RB1#3	22.97	24.00	22.24
		RB1#5	22.74	22.98	22.30
		RB3#0	22.68	23.40	22.75
		RB3#1	22.75	22.84	23.22
		RB3#3	22.65	22.79	22.68
		RB6#0	22.06	21.53	22.18
3M	QPSK	RB1#0	24.23	24.06	23.99
		RB1#8	23.93	23.93	23.64
		RB1#14	24.20	24.11	23.69
		RB8#0	23.23	23.09	22.86
		RB8#4	22.94	22.89	22.75
		RB8#7	22.75	23.13	22.97
		RB15#0	23.16	23.14	22.67
	16-QAM	RB1#0	23.42	24.04	22.83
		RB1#8	22.96	24.10	22.72
		RB1#14	23.12	23.61	22.85
		RB8#0	21.47	22.22	22.01
		RB8#4	21.43	21.85	21.54
		RB8#7	21.60	22.12	21.96
		RB15#0	22.54	21.83	21.81
5M	QPSK	RB1#0	23.88	23.59	24.16
		RB1#12	24.06	23.99	24.04
		RB1#24	23.89	24.01	23.80
		RB12#0	22.99	22.87	22.95
		RB12#7	22.52	22.83	22.93
		RB12#13	23.00	22.64	22.69
		RB25#0	22.58	22.76	23.24
	16-QAM	RB1#0	23.28	22.75	22.80
		RB1#12	22.86	22.71	23.52
		RB1#24	23.48	22.23	23.34
		RB12#0	21.48	22.22	21.86
		RB12#7	21.63	21.34	21.82
		RB12#13	21.76	21.60	21.56
		RB25#0	21.50	21.94	21.84

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	QPSK	RB1#0	23.98	23.77	24.29
		RB1#25	23.49	24.27	24.11
		RB1#49	24.19	23.85	23.83
		RB25#0	23.02	23.01	22.81
		RB25#12	23.04	23.02	22.68
		RB25#25	23.23	23.20	23.13
		RB50#0	22.65	22.80	22.89
	16-QAM	RB1#0	22.65	23.26	23.48
		RB1#25	22.69	23.08	23.46
		RB1#49	22.75	22.86	22.98
		RB25#0	21.77	22.19	22.24
		RB25#12	22.16	22.16	21.89
		RB25#25	21.71	22.29	21.85
		RB50#0	21.67	21.60	22.19

LTE Band 7:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	23.62	23.33	24.07
		RB1#12	23.68	23.55	24.12
		RB1#24	23.30	23.61	24.09
		RB12#0	22.72	23.19	23.14
		RB12#7	22.74	22.73	23.13
		RB12#13	22.62	22.98	23.23
		RB25#0	22.89	22.77	22.62
	16-QAM	RB1#0	23.56	22.66	23.19
		RB1#12	22.74	22.39	23.04
		RB1#24	22.91	22.60	23.38
		RB12#0	21.77	21.63	21.70
		RB12#7	21.50	22.04	21.85
		RB12#13	21.40	21.83	21.74
		RB25#0	21.81	22.07	22.18
10M	QPSK	RB1#0	23.94	23.65	23.62
		RB1#25	23.96	23.76	24.04
		RB1#49	23.50	24.02	23.85
		RB25#0	22.63	22.85	23.00
		RB25#12	22.65	22.96	22.68
		RB25#25	22.30	22.85	23.07
		RB50#0	22.47	22.83	22.81
	16-QAM	RB1#0	22.66	23.13	23.25
		RB1#25	22.18	23.32	22.97
		RB1#49	22.81	22.82	23.26
		RB25#0	21.69	21.92	21.65
		RB25#12	21.41	21.82	21.97
		RB25#25	21.61	22.06	21.70
		RB50#0	21.42	22.17	21.85
15M	QPSK	RB1#0	23.75	24.01	23.90
		RB1#37	23.74	24.04	23.64
		RB1#74	23.52	23.99	23.89
		RB36#0	22.67	22.89	22.78
		RB36#20	22.84	22.75	22.76
		RB36#39	22.38	22.86	23.06
		RB75#0	22.92	22.79	22.79
	16-QAM	RB1#0	23.17	23.55	23.32
		RB1#37	22.57	23.21	23.19
		RB1#74	22.40	23.02	23.22
		RB36#0	21.56	21.60	21.52
		RB36#20	21.57	21.63	21.71
		RB36#39	21.44	21.84	21.84
		RB75#0	21.88	21.74	22.16

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
20M	QPSK	RB1#0	24.36	23.97	23.93
		RB1#49	23.86	24.23	23.65
		RB1#99	23.73	24.01	24.20
		RB50#0	22.84	22.67	23.19
		RB50#24	22.82	23.09	23.10
		RB50#50	22.86	23.12	22.87
		RB100#0	22.81	22.92	22.99
	16-QAM	RB1#0	23.02	23.52	23.43
		RB1#49	22.28	23.65	23.34
		RB1#99	23.19	23.46	23.19
		RB50#0	21.59	22.22	21.79
		RB50#24	21.55	21.93	21.61
		RB50#50	21.59	21.88	22.12
		RB100#0	21.63	21.97	22.02

LTE Band 12:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	23.08	23.30	23.21
		RB1#3	23.49	23.44	23.03
		RB1#5	22.87	23.57	23.27
		RB3#0	23.51	23.14	23.36
		RB3#1	23.27	23.43	23.04
		RB3#3	23.53	23.38	23.30
		RB6#0	22.29	22.29	22.38
	16-QAM	RB1#0	22.32	22.29	22.60
		RB1#3	22.51	22.33	22.66
		RB1#5	22.48	22.04	22.63
		RB3#0	21.99	22.41	22.41
		RB3#1	22.52	22.66	22.49
		RB3#3	22.35	22.40	22.45
		RB6#0	21.15	20.85	21.28
3M	QPSK	RB1#0	23.50	23.27	23.56
		RB1#8	23.56	23.14	23.41
		RB1#14	23.04	23.22	23.71
		RB8#0	22.66	22.42	22.47
		RB8#4	22.34	22.46	22.25
		RB8#7	22.05	22.40	22.52
		RB15#0	22.20	22.16	22.51
	16-QAM	RB1#0	21.87	22.48	22.29
		RB1#8	22.16	22.22	22.40
		RB1#14	22.26	22.42	22.72
		RB8#0	21.43	21.12	21.37
		RB8#4	21.13	21.12	21.35
		RB8#7	21.60	21.70	21.02
		RB15#0	21.24	21.65	21.55
5M	QPSK	RB1#0	23.66	23.21	22.98
		RB1#12	23.66	23.16	23.36
		RB1#24	23.12	23.40	23.40
		RB12#0	22.10	21.92	22.65
		RB12#7	22.20	22.42	22.41
		RB12#13	22.12	22.32	22.51
		RB25#0	22.40	22.43	22.19
	16-QAM	RB1#0	22.76	22.63	22.49
		RB1#12	22.42	22.45	22.69
		RB1#24	22.50	22.34	21.97
		RB12#0	21.28	21.07	20.71
		RB12#7	20.91	21.07	21.17
		RB12#13	21.25	21.17	21.00
		RB25#0	21.41	20.94	21.22

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	QPSK	RB1#0	22.87	23.00	23.47
		RB1#25	23.55	23.77	23.31
		RB1#49	23.06	23.68	23.48
		RB25#0	21.99	22.41	22.60
		RB25#12	22.03	22.40	22.21
		RB25#25	22.23	22.72	22.35
		RB50#0	22.30	22.30	22.18
	16-QAM	RB1#0	22.88	22.80	22.42
		RB1#25	22.50	22.55	22.37
		RB1#49	22.61	22.47	22.13
		RB25#0	21.28	21.19	21.66
		RB25#12	21.08	21.17	21.86
		RB25#25	21.18	21.76	21.63
		RB50#0	20.98	21.01	21.17

LTE Band 13:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	23.36	/	23.01
		RB1#12	23.54	/	23.46
		RB1#24	23.24	/	23.11
		RB12#0	22.32	/	21.91
		RB12#7	21.93	/	22.58
		RB12#13	21.85	/	22.36
		RB25#0	22.19	/	21.87
	16-QAM	RB1#0	22.62	/	22.41
		RB1#12	22.48	/	22.48
		RB1#24	21.93	/	22.72
		RB12#0	21.05	/	20.65
		RB12#7	21.32	/	20.84
		RB12#13	20.84	/	20.89
		RB25#0	21.16	/	21.02
10M	QPSK	RB1#0	/	23.58	/
		RB1#25	/	23.36	/
		RB1#49	/	23.40	/
		RB25#0	/	22.02	/
		RB25#12	/	21.93	/
		RB25#25	/	22.42	/
		RB50#0	/	22.35	/
	16-QAM	RB1#0	/	22.72	/
		RB1#25	/	21.84	/
		RB1#49	/	22.24	/
		RB25#0	/	21.28	/
		RB25#12	/	21.56	/
		RB25#25	/	21.40	/
		RB50#0	/	21.28	/

WLAN 2.4G:

Mode	Channel frequency (MHz)	Data Rate	Duty Cycle [%]	RF Average Output Power (dBm)
802.11b	2412	1Mbps	97.93	15.61
	2437			15.53
	2462			15.42
802.11g	2412	6Mbps	87.50	13.96
	2437			13.42
	2462			12.25
802.11 n20	2412	MCS0	86.76	12.89
	2437			12.57
	2462			12.24
802.11 n40	2422	MCS0	86.29	12.18
	2437			12.58
	2452			12.27

Note[▲]: Duty cycle was from module report: FR741007C (model:SC20-A, FCC ID: XMR201706SC20A, Date of Grant 08/14/2017)

WLAN 5.2G:

Mode	Channel frequency (MHz)	Data Rate	Duty Cycle [%]	RF Average Output Power (dBm)
802.11a	5180	6Mbps	87.51	12.40
	5200			12.99
	5240			12.70
802.11 n20	5180	MCS0	86.76	13.36
	5200			13.91
	5240			13.81
802.11 n40	5190	MCS0	86.29	12.71
	5230			13.04

Note[▲]: Duty cycle was from module report: FR741007D (model:SC20-A, FCC ID: XMR201706SC20A, Date of Grant 08/14/2017)

WLAN 5.8G:

Mode	Channel frequency (MHz)	Data Rate	Duty Cycle [%]	RF Average Output Power (dBm)
802.11a	5745	6Mbps	87.51	11.72
	5785			11.89
	5825			11.51
802.11 n20	5745	MCS0	86.76	11.53
	5785			11.63
	5825			10.78
802.11 n40	5755	MCS0	86.29	10.40
	5795			10.84

Note[▲]: Duty cycle was from module report: FR741007E (model:SC20-A, FCC ID: XMR201706SC20A, Date of Grant 08/14/2017)

Bluetooth:

Mode	Channel frequency (MHz)	Average Output Power (dBm)
BDR(GFSK)_DH5	2402	7.13
	2441	6.29
	2480	7.72
EDR($\pi/4$ -DQPSK)_2DH5	2402	7.42
	2441	6.38
	2480	7.68
EDR(8DPSK)_3DH5	2402	7.52
	2441	6.86
	2480	7.95
BLE 1M	2402	2.86
	2440	1.51
	2480	2.93

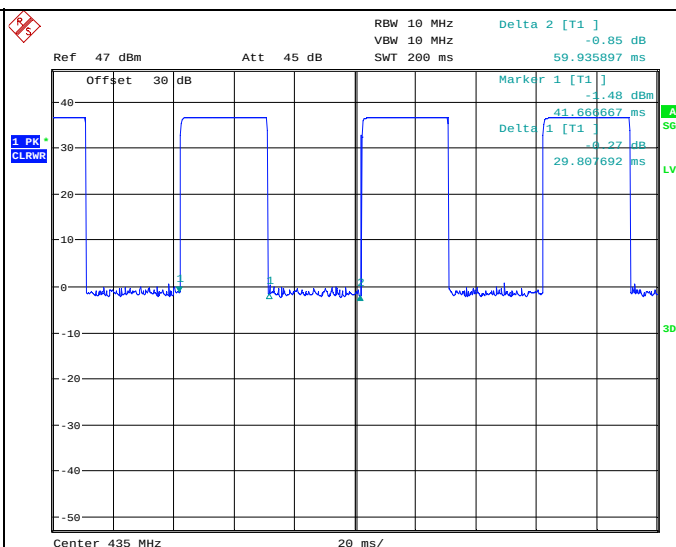
PTT(400-470MHz)

Test Mode		Frequency (MHz)	Conducted Output Power(dBm)	Power Level
PTT (400-470MHz)	FM 12.5kHz	400.0125	36.74	High
		417.4875	36.86	High
		435	36.79	High
		452.9875	36.78	High
		469.9875	36.68	High
	4FSK 12.5kHz	400.0125	36.54	High
		417.4875	36.82	High
		435	36.78	High
		452.9875	36.77	High
		469.9875	36.65	High

Test Mode	Ton (ms)	Ton+off (ms)	Duty Cycle (%)	Scaled Factor (1/duty cycle)
4FSK 12.5kHz_435MHz	29.808	59.936	49.73	2

Duty Cycle

4FSK 12.5kHz_435MHz

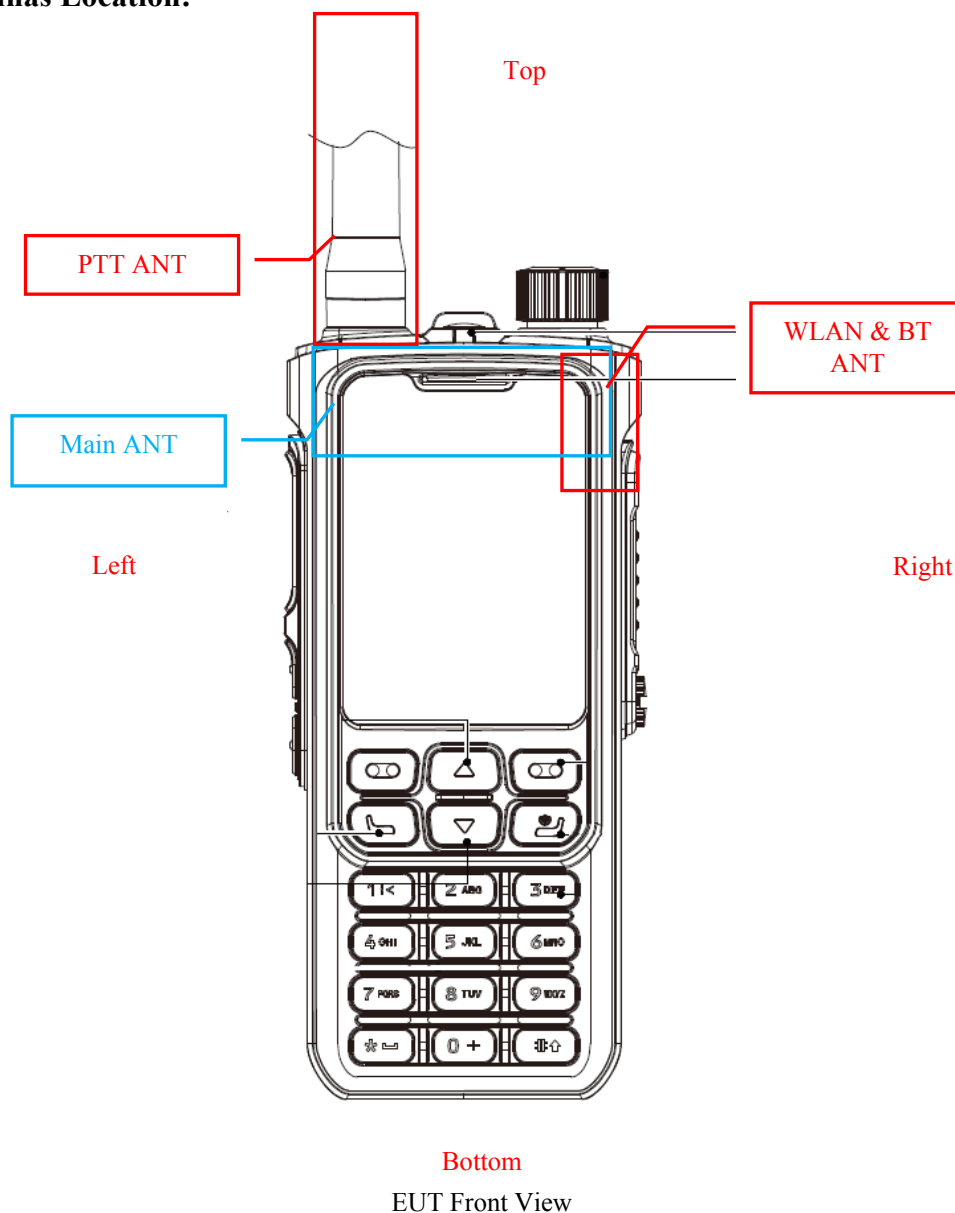


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Note: The duty cycle of 4FSK mode was measured under radiation method.

8. STANDALONE SAR TEST EXCLUSION CONSIDERATIONS

8.1 Antennas Location:



Antenna	Description
Main Ant	LTE B2/4/5/7/12/13
WLAN & BT Ant	WLAN 2.4G/ WLAN 5G/ Bluetooth/ BLE

Note: The above statistics only include antennas with transmitting

8.2 Standalone SAR test exclusion considerations

Mode	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Distance (mm)	Calculated value	Threshold (1-g)	SAR Test Exclusion
Bluetooth & BLE	2480	8.0	6.31	0	2.0	3.0	YES

Note: The Bluetooth based peak power for calculation.

NOTE:

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

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

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

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

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

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

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

8.3 Standalone SAR estimation:

Mode	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Distance (mm)	Estimated 1-g (W/kg)
Bluetooth & BLE	2480	8.0	6.31	0	0.26
Bluetooth & BLE	2480	8.0	6.31	0	0.26
Bluetooth & BLE	2480	8.0	6.31	25	0.05

Note: The Bluetooth based peak power for calculation.

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

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

$[\sqrt{f(\text{GHz})/x}]$

W/kg for test separation distances ≤ 50 mm;

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

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

9. SAR MEASUREMENT RESULTS

This page summarizes the results of the performed dosimetric evaluation.

9.1 SAR Test Data

Temperature:	22.2 ~ 23℃	21.1 ~ 21.9℃	21.6 ~ 22.4℃	21.2 ~ 21.8℃	21.3 ~ 21.9℃	20.5 ~ 21.3℃
Relative Humidity:	41%	37%	43%	36%	32%	31%
ATM Pressure:	100.8 kPa	100.7 kPa	100.8 kPa	101.4 kPa	101.2 kPa	101.4 kPa
Test Date:	2025/09/30	2025/10/01	2025/10/02	2025/10/03	2025/10/24	2025/11/26

Testing was performed by Mikasa Mo, Led Lu.

LTE Band 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
Face Up (25 mm)	1860	20	1RB	23.35	24.0	1.161	0.072	0.09	1#
	1880	20	1RB	23.56	24.0	1.107	0.064	0.08	/
	1900	20	1RB	23.41	24.0	1.146	0.058	0.07	/
	1880	20	50%RB	22.42	23.0	1.143	0.047	0.06	/
Body Back (0 mm)	1860	20	1RB	23.35	24.0	1.161	0.794	0.93	2#
	1880	20	1RB	23.56	24.0	1.107	0.773	0.86	/
	1900	20	1RB	23.41	24.0	1.146	0.748	0.86	/
	1860	20	50%RB	22.40	23.0	1.148	0.594	0.69	/
	1880	20	50%RB	22.42	23.0	1.143	0.618	0.71	/
	1900	20	50%RB	22.28	23.0	1.180	0.545	0.65	/
	1860	20	100%RB	22.29	23.0	1.178	0.579	0.69	/
	1880	20	100%RB	22.35	23.0	1.161	0.602	0.70	/
	1900	20	100%RB	21.99	23.0	1.262	0.569	0.72	/

LTE Band 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
Face Up (25 mm)	1720	20	1RB	23.50	24.5	1.259	0.064	0.09	/
	1732.5	20	1RB	23.63	24.5	1.222	0.074	0.10	3#
	1745	20	1RB	23.89	24.5	1.151	0.078	0.09	/
	1732.5	20	50%RB	22.69	23.5	1.205	0.054	0.07	/
Body Back (0 mm)	1720	20	1RB	23.50	24.5	1.259	0.596	0.76	/
	1732.5	20	1RB	23.63	24.5	1.222	0.682	0.84	4#
	1745	20	1RB	23.89	24.5	1.151	0.710	0.82	/
	1732.5	20	50%RB	22.69	23.5	1.205	0.526	0.64	/

LTE Band 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
Face Up (25 mm)	829	10	1RB	24.19	24.5	1.074	0.161	0.18	5#
	836.5	10	1RB	24.27	24.5	1.054	0.137	0.15	/
	844	10	1RB	24.29	24.5	1.050	0.123	0.13	/
	836.5	10	50%RB	23.20	23.5	1.072	0.108	0.12	/
Body Back (0 mm)	829	10	1RB	24.19	24.5	1.074	0.643	0.70	6#
	836.5	10	1RB	24.27	24.5	1.054	0.550	0.58	/
	844	10	1RB	24.29	24.5	1.050	0.505	0.54	/
	836.5	10	50%RB	23.20	23.5	1.072	0.448	0.49	/

Note: The test data above was performed on 2025/10/01.

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
Face Up (25 mm)	2510	20	1RB	24.36	24.5	1.033	0.020	0.03	/
	2535	20	1RB	24.23	24.5	1.064	0.019	0.03	/
	2560	20	1RB	24.20	24.5	1.072	0.025	0.03	7#
	2535	20	50%RB	23.12	23.5	1.091	0.019	0.03	/
Body Back (0 mm)	2510	20	1RB	24.36	24.5	1.033	1.090	1.13	8#
	2535	20	1RB	24.23	24.5	1.064	0.778	0.83	/
	2560	20	1RB	24.20	24.5	1.072	0.756	0.82	/
	2510	20	50%RB	22.86	23.5	1.159	0.742	0.86	/
	2535	20	50%RB	23.12	23.5	1.091	0.618	0.68	/
	2560	20	50%RB	23.19	23.5	1.074	0.687	0.74	/
	2510	20	100%RB	22.81	23.5	1.172	0.711	0.84	/
	2535	20	100%RB	22.92	23.5	1.143	0.570	0.66	/
	2560	20	100%RB	22.99	23.5	1.125	0.661	0.75	/

LTE Band 12 :

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
Face Up (25 mm)	704	10	1RB	23.55	24.0	1.109	0.054	0.06	/
	707.5	10	1RB	23.77	24.0	1.054	0.054	0.06	/
	711	10	1RB	23.48	24.0	1.127	0.059	0.07	9#
	707.5	10	50%RB	22.72	23.0	1.067	0.043	0.05	/
Body Back (0 mm)	704	10	1RB	23.55	24.0	1.109	0.425	0.48	/
	707.5	10	1RB	23.77	24.0	1.054	0.397	0.42	/
	711	10	1RB	23.48	24.0	1.127	0.486	0.55	10#
	707.5	10	50%RB	22.72	23.0	1.067	0.343	0.37	/

Note: The test data above was performed on 2025/9/30.

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
Face Up (25 mm)	782	10	1RB	23.58	24.0	1.102	0.263	0.29	11#
	782	10	50%RB	22.42	23.0	1.143	0.206	0.24	/
Body Back (0 mm)	782	10	1RB	23.58	24.0	1.102	0.926	1.03	12#
	782	10	50%RB	22.42	23.0	1.143	0.725	0.83	/
	782	10	100%RB	22.35	23.0	1.161	0.737	0.86	/

Note: The test data above was performed on 202509/30.

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 v02r05.
3. KDB 941225 D05-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. KDB 941225 D05-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. KDB 941225 D05- 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. KDB 941225 D05- 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. KDB 941225 D05- other channel bandwidths SAR test is required when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is $> 0.5\text{ dB}$ 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 $> 1.45\text{ W/kg}$.

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
Face Up (25 mm)	2412	802.11b	15.61	16.5	1.227	1.021	<0.001	0.01	/
	2437	802.11b	15.53	16.5	1.250	1.021	<0.001	0.01	/
	2462	802.11b	15.42	16.5	1.282	1.021	0.002	0.01	13#
Body Back (0 mm)	2412	802.11b	15.61	16.5	1.227	1.021	<0.001	0.01	/
	2437	802.11b	15.53	16.5	1.250	1.021	0.001	0.01	/
	2462	802.11b	15.42	16.5	1.282	1.021	0.002	0.01	14#

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. According KDB 248227 D01, for SAR testing of 802.11 WIFI 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)".

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
Face Up (25 mm)	5180	802.11 n20	13.36	14.0	1.159	1.153	0.009	0.02	/
	5200	802.11 n20	13.91	14.0	1.021	1.153	0.009	0.02	/
	5240	802.11 n20	13.81	14.0	1.045	1.153	0.014	0.02	15#
Body Back (0 mm)	5180	802.11 n20	13.36	14.0	1.159	1.153	<0.001	0.01	/
	5200	802.11 n20	13.91	14.0	1.021	1.153	<0.001	0.01	/
	5240	802.11 n20	13.81	14.0	1.045	1.153	<0.001	0.01	/

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 802.11 n20 mode power is the largest among 802.11a/n20/n40, 802.11 n20 mode as initial test configuration is selected to test.
4. According KDB 248227 D01, for SAR testing of 802.11 WIFI 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)".

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
Face Up (25 mm)	5745	802.11 a	11.72	12.5	1.197	1.143	<0.001	0.01	/
	5785	802.11 a	11.89	12.5	1.151	1.143	<0.001	0.01	/
	5825	802.11 a	11.51	12.5	1.256	1.143	0.033	0.05	16#
Body Back (0 mm)	5745	802.11 a	11.72	12.5	1.197	1.143	0.007	0.01	17#
	5785	802.11 a	11.89	12.5	1.151	1.143	<0.001	0.01	/
	5825	802.11 a	11.51	12.5	1.256	1.143	<0.001	0.01	/

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 802.11a mode power is the largest among 802.11a/n20/n40, 802.11 a mode as initial test configuration is selected to test.
4. According KDB 248227 D01, for SAR testing of 802.11 WIFI 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)".

PTT(400-470MHz)

Pre-Scan all 5 Channels, the peak SAR located on 417.4875MHz for Face Up mode and Body Back mode.

Test Position	Channel Separation	Frequency (MHz)	Worn Accessories	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1 g SAR Value(W/kg)				
						Power Scaled Factor	Meas. SAR	PTT 50% Factor	Scaled SAR	Plot
Face Up (25 mm)	FM 12.5kHz	400.0125	None	/	/	/	/	/	/	/
		417.4875	None	36.86	37	1.033	6.04	3.02	3.12	18#
		435	None	/	/	/	/	/	/	/
		452.9875	None	/	/	/	/	/	/	/
		469.9875	None	/	/	/	/	/	/	/
	4FSK 12.5kHz	400.0125	None	/	/	/	/	/	/	/
		417.4875	None	36.82	37	1.042	2.82	1.41	1.47	/
		435	None	/	/	/	/	/	/	/
		452.9875	None	/	/	/	/	/	/	/
		469.9875	None	/	/	/	/	/	/	/
Body Back With Belt Clip (0 mm)	FM 12.5kHz	400.0125	Belt Clip+Headset	36.74	37	1.062	5.1	2.55	2.71	/
		417.4875	Belt Clip+Headset	36.86	37	1.033	7.7	3.85	3.98	19#
		435	Belt Clip+Headset	36.79	37	1.05	6.98	3.49	3.66	/
		452.9875	Belt Clip+Headset	36.78	37	1.052	5.41	2.705	2.85	/
		469.9875	Belt Clip+Headset	36.68	37	1.076	5.9	2.95	3.17	/
	4FSK 12.5kHz	400.0125	Belt Clip+Headset	/	/	/	/	/	/	/
		417.4875	Belt Clip+Headset	36.82	37	1.042	4.44	2.22	2.31	/
		435	Belt Clip+Headset	/	/	/	/	/	/	/
		452.9875	Belt Clip+Headset	/	/	/	/	/	/	/
		469.9875	Belt Clip+Headset	/	/	/	/	/	/	/

Note:

1. When the 1-g SAR is $\leq 3.5\text{W/kg}$, testing for other channels are optional.
2. KDB 447498 D01 - A duty factor of 50% should be applied to determine compliance for radios with maximum operating duty factors $\leq 50\%$. The 50% duty factor only applies to exposure conditions where the radio operates with a mechanical PTT button.
3. Passive body-worn and audio accessories generally do not apply to the head SAR of PTT radios.
4. The whole antenna and radiating structures that may contribute to the measured SAR or influence the SAR distribution has been included in the area scan.

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

Head(Face Up)

SAR probe calibration point	Frequency Band	Freq. (MHz)	EUT Position	1g Meas. SAR (W/kg)			Largest to Smallest SAR Ratio
				Original	First Repeated	Second Repeated	
450 MHz	PTT (400-470MHz)	417.4875	Face Up (25mm)	6.04	5.49	NA	1.1

Body

SAR probe calibration point	Frequency Band	Freq. (MHz)	EUT Position	1g Meas. SAR (W/kg)			Largest to Smallest SAR Ratio
				Original	First Repeated	Second Repeated	
450 MHz	PTT (400-470MHz)	417.4875	Body Back (0mm)	7.7	7.56	7.28	1.06
750 MHz	LTE Band 13	782	Body Back (0mm)	0.926	0.912	NA	1.02
2600 MHz	LTE Band 7	2510	Body Back (0mm)	1.09	0.972	NA	1.12

Note:

1. The measured SAR results **do not** have to be scaled to the maximum tune-up tolerance to determine if repeated measurements are required.
2. 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	
PTT (400-470MHz)	417.4875	Body Back (0mm)	7.7	7.5	2.7%

12. SAR SIMULTANEOUS TRANSMISSION DESCRIPTION

12.1 Simultaneous Transmission:

Description of Simultaneous Transmit Capabilities		
Transmitter Combination	Simultaneous?	Hotspot?
WWAN(LTE) Antenna + WIFI 2.4G	√	×
WWAN(LTE) Antenna + WIFI 5.2G	√	×
WWAN(LTE) Antenna + WIFI 5.8G	√	×
WWAN(LTE) Antenna + Bluetooth	√	×
WLAN 2.4G +Bluetooth	×	×
WLAN 5G + Bluetooth	×	×
WWAN(LTE) + PTT	×	×
PTT + WIFI	√	×
PTT + Bluetooth	√	×

12.2 Simultaneous SAR test exclusion considerations:

Mode (SAR1+SAR2)	Position	Reported SAR(W/kg)		ΣSAR < 1.6W/kg
		SAR1	SAR2	
MAX.WWAN(LTE) + Bluetooth	Body	1.13	0.26	1.39
	Face Up	0.29	0.05	0.34
MAX.WWAN(LTE) + WIFI 2.4G	Body	1.13	0.01	1.14
	Face Up	0.29	0.01	0.30
MAX.WWAN(LTE) + WIFI 5.2G	Body	1.13	0.01	1.14
	Face Up	0.29	0.02	0.31
MAX.WWAN(LTE) + WIFI 5.8G	Body	1.13	0.01	1.14
	Face Up	0.29	0.05	0.34

Conclusion:

Sum of SAR: $\Sigma \text{SAR} \leq 1.6 \text{ W/kg}$ therefore simultaneous transmission SAR with Volume Scans is **not required**.

PTT

Mode(SAR1+SAR2)	Position	Reported SAR(W/kg)		Sum of SAR-to-limit ratios	Σ SAR < 8.0W/kg
		SAR1	SAR2		
PTT + Bluetooth/BLE	Face Up	3.12	0.05	0.42	3.17
	Body Back	3.98	0.26	0.66	4.24
PTT + WIFI 2.4G	Face Up	3.12	0.01	0.40	3.13
	Body Back	3.98	0.01	0.50	3.99
PTT + WIFI 5G	Face Up	3.12	0.05	0.42	3.17
	Body Back	3.98	0.01	0.50	3.99

Conclusion:

Sum of SAR: Σ SAR $\leq$ 8.0 W/kg therefore simultaneous transmission SAR with Volume Scans is **not required**.

Note:

- 1, KDB 447498 D01, Occupational exposure limits do not apply to consumer devices and radio services intended for supporting public networks or Part 15 unlicensed operations, thus the limits is 1.6 W/kg for WIFI/Bluetooth/BLE and 8.0W/kg for PTT(PLMRS).
- 2, The initial simultaneous transmission SAR test exclusion is to be based on ratios of SAR to the applicable limit for each transmit mode (similar to basic concept of ratios for "mixed limits" in 7.2 of KDB Pub. 447498 D01 v06 and FCC-13-39).

Conclusion:

The **sum of SAR-to-limit ratios** is less than 1.0, thus additional analysis or simultaneous-transmit extended-volume-scan SAR is not needed.

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	2.7	N	1	1	1	2.7	2.7
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

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.

APPENDIX F - RETURN LOSS AND IMPEDANCE MEASUREMENT

Please refer to the attachment.

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