NVLAP TESTING

NVLAP LAB CODE 600341-0

BACL Bay Area Compliance Labs Corp.

FCC SAR TEST REPORT

Applicant: **QUANZHOU BINQI ELECTRONIC TECHNOLOGY CO.LTD**

Address: **No.132 Xiaguang Si, Xiamei Village, Xiamei Tow，Nan'an city ,Quanzhou City ,Fujian ,China**

Product Name: **4G LTE POC RADIO**

FCC ID: **2BNNE-BQ-300**

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

Report Number: **2402A69105E-20**

Report Date: **2025/02/16**

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

Mark Dong

Reviewed By: Mark Dong

Title: SAR Engineer

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 Head SAR(Face Up)	0.15	1.6
	1g Body SAR(Body Back)	0.26	
LTE Band 4	1g Head SAR(Face Up)	**0.38**	
	1g Body SAR(Body Back)	0.58	
LTE Band 5	1g Head SAR(Face Up)	0.27	
	1g Body SAR(Body Back)	0.67	
LTE Band 7	1g Head SAR(Face Up)	0.36	
	1g Body SAR(Body Back)	**1.18**	
LTE Band 66	1g Head SAR(Face Up)	0.36	
	1g Body SAR(Body Back)	0.54	

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
	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
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	2402A69105E-20	Original Report	2025/02/16

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	4G LTE POC RADIO
EUT Model:	BQ-300
Multiple Model:	AI-300
Device Type:	Portable
Exposure Category:	Population / Uncontrolled
Antenna Type(s):	Internal Antenna
Body-Worn Accessories:	Belt Clip
Proximity Sensor:	None
Carrier Aggregation:	None
Operation Modes:	FDD-LTE
Frequency Band:	LTE Band 2: 1850-1910 MHz(TX); 1930-1990 MHz(RX)
	LTE Band 4: 1710-1755 MHz(TX); 2110-2155 MHz(RX)
	LTE Band 5: 824-849 MHz(TX); 869-894 MHz(RX)
	LTE Band 7: 2500-2570 MHz(TX); 2620-2690 MHz(RX)
	LTE Band 66: 1710-1780 MHz(TX); 2110-2200 MHz(RX)
Rated Input Voltage:	DC 3.7V from Rechargeable Battery
Serial Number:	2W0E-1
Normal Operation:	Face Up and Body
EUT Received Date:	2024/12/10
Test Date:	2025/01/23 ~ 2025/01/24
EUT Received Status:	Good

Note:
The Multiple model is electrically identical with the test model. Please refer to the declaration letter for more detail, which was provided by manufacturer.

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).

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.

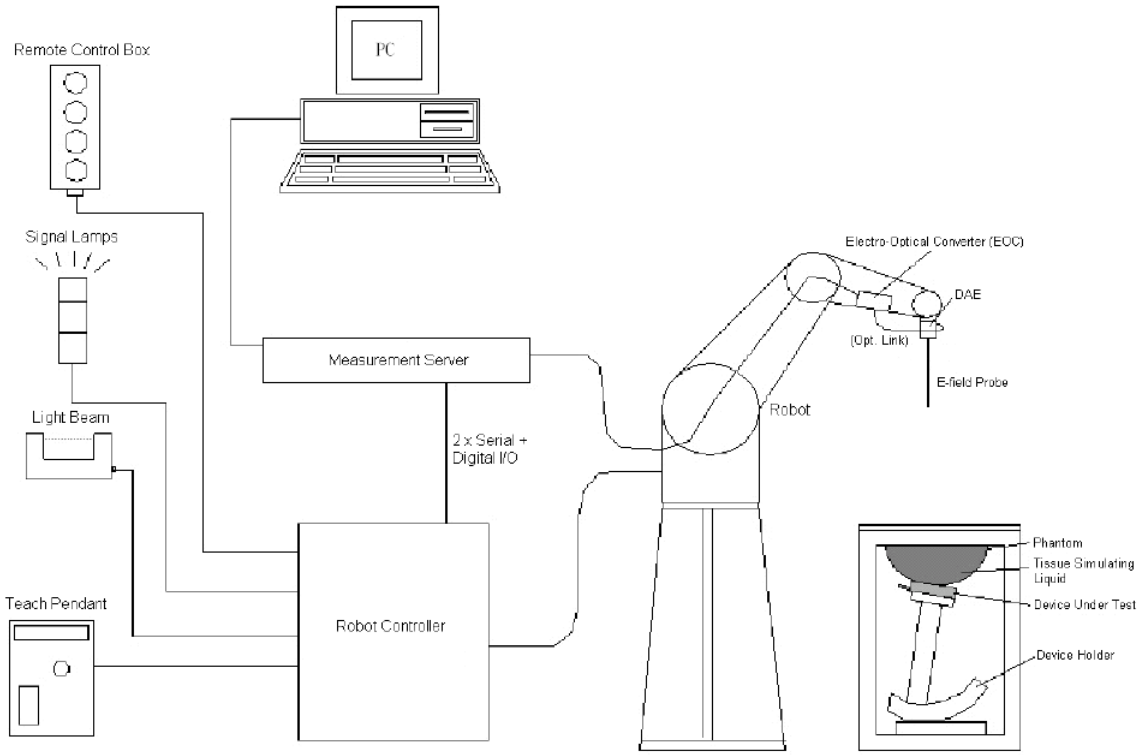
The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. :829273, the FCC Designation No. : CN5044.

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 200MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

ES3DV3 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 µW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/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.

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/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.

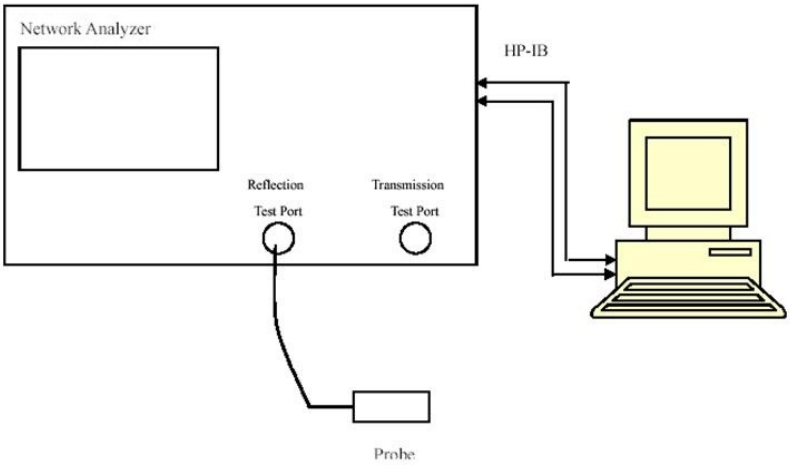
4. EQUIPMENT LIST AND CALIBRATION

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	1493	2024/3/27	2025/3/26
E-Field Probe	ES3DV3	3220	2024/10/15	2025/10/14
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, 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
Simulated Tissue Liquid Head	HBBL600-10000V6	SL AAH U16 BC (Batch:220809-1)	Each Time	/
Network Analyzer	8753C +85047A	3029A01355 +3033A02857	2024/5/9	2025/5/8
Dielectric assessment kit	1253	SM DAK 040 CA	NCR	NCR
synthesized signal generator	8665B	3438a00584	2024/10/18	2025/10/17
EPM Series Power Meter	E4419B	MY45103907	2024/10/18	2025/10/17
Power Sensor	8482A	US37296108	2024/10/19	2025/10/18
Power Meter	EPM-441A	GB37481494	2024/10/19	2025/10/18
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	2024/8/12	2025/8/11
Hygrothermograph	HTC-2	EM072	2024/11/4	2025/11/3
Wideband Radio Communication Tester	CMW500	147473	2024/9/5	2025/9/4

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)	$\Delta\varepsilon_r$	Δσ (S/m)	
750	Simulated Tissue Liquid Head	42.495	0.899	41.90	0.89	1.42	1.01	±5
829	Simulated Tissue Liquid Head	42.106	0.908	41.53	0.90	1.39	0.89	±5
836.5	Simulated Tissue Liquid Head	41.893	0.915	41.50	0.90	0.95	1.67	±5
844	Simulated Tissue Liquid Head	41.667	0.919	41.50	0.91	0.40	0.99	±5

**Liquid Verification above was performed on 2025/01/24.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	σ (S/m)	ε_r	σ (S/m)	$\Delta\varepsilon_r$	Δσ (S/m)	
1720	Simulated Tissue Liquid Head	40.664	1.339	40.13	1.35	1.33	-0.81	±5
1732.5	Simulated Tissue Liquid Head	40.612	1.341	40.12	1.36	1.23	-1.40	±5
1745	Simulated Tissue Liquid Head	40.592	1.345	40.10	1.37	1.23	-1.82	±5
1750	Simulated Tissue Liquid Head	40.426	1.351	40.10	1.37	0.81	-1.39	±5
1770	Simulated Tissue Liquid Head	40.397	1.366	40.06	1.38	0.84	-1.01	±5

**Liquid Verification above was performed on 2025/01/23.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	σ (S/m)	ε_r	σ (S/m)	$\Delta\varepsilon_r$	Δσ (S/m)	
1860	Simulated Tissue Liquid Head	40.269	1.426	40.00	1.40	0.67	1.86	±5
1880	Simulated Tissue Liquid Head	40.106	1.439	40.00	1.40	0.27	2.79	±5
1900	Simulated Tissue Liquid Head	39.888	1.441	40.00	1.40	-0.28	2.93	±5

**Liquid Verification above was performed on 2025/01/24.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	σ (S/m)	ε_r	σ (S/m)	$\Delta\varepsilon_r$	Δσ (S/m)	
2450	Simulated Tissue Liquid Head	41.104	1.889	39.2	1.8	4.86	4.94	±5
2510	Simulated Tissue Liquid Head	40.992	1.934	39.12	1.86	4.79	3.98	±5
2535	Simulated Tissue Liquid Head	40.958	1.942	39.09	1.89	4.78	2.75	±5

**Liquid Verification above was performed on 2025/01/24.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	σ (S/m)	ε_r	σ (S/m)	$\Delta\varepsilon_r$	Δσ (S/m)	
2560	Simulated Tissue Liquid Head	40.736	1.958	39.05	1.92	4.32	1.98	±5
2600	Simulated Tissue Liquid Head	40.336	1.962	39.00	1.96	3.43	0.10	±5

**Liquid Verification above was performed on 2025/01/24.*

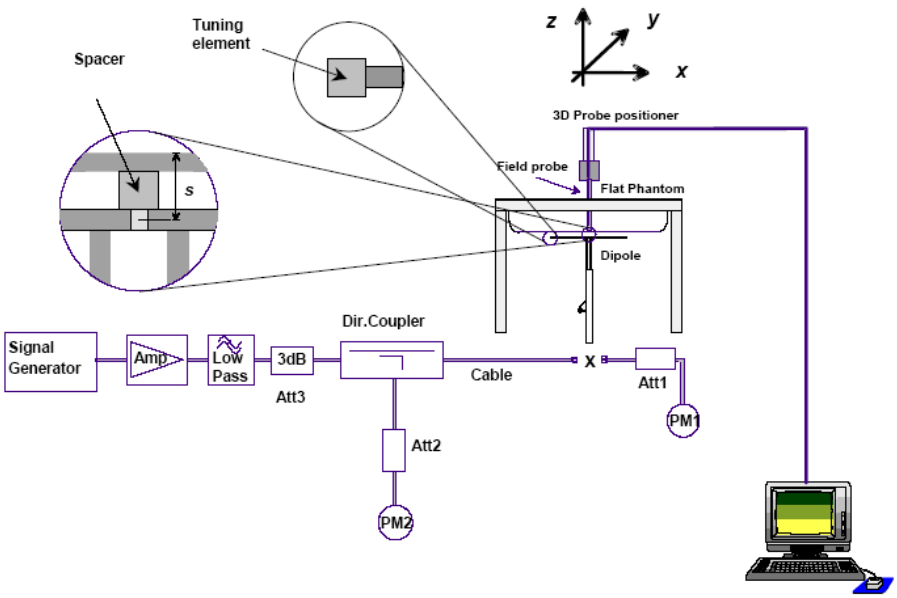
5.3 System Accuracy Verification

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

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

a) s = 15 mm ± 0,2 mm for 300 MHz ≤ f ≤ 1 000 MHz;
b) s = 10 mm ± 0,2 mm for 1 000 MHz < f ≤ 3 000 MHz;
c) s = 10 mm ± 0,2 mm for 3 000 MHz < f ≤ 6 000 MHz.

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 (%)
2025/01/24	750	Simulated Tissue Liquid Head	100	1g	0.852	8.52	8.48	0.47	±10
2025/01/23	1750	Simulated Tissue Liquid Head	100	1g	3.26	32.6	36.1	-9.7	±10
2025/01/24	1900	Simulated Tissue Liquid Head	100	1g	4.35	43.5	40.2	8.21	±10
2025/01/24	2450	Simulated Tissue Liquid Head	100	1g	5.36	53.6	52.7	1.71	±10
2025/01/24	2600	Simulated Tissue Liquid Head	100	1g	5.66	56.6	55.8	1.43	±10

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

5.5 SAR SYSTEM VALIDATION DATA

System Performance 750 MHz Head

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

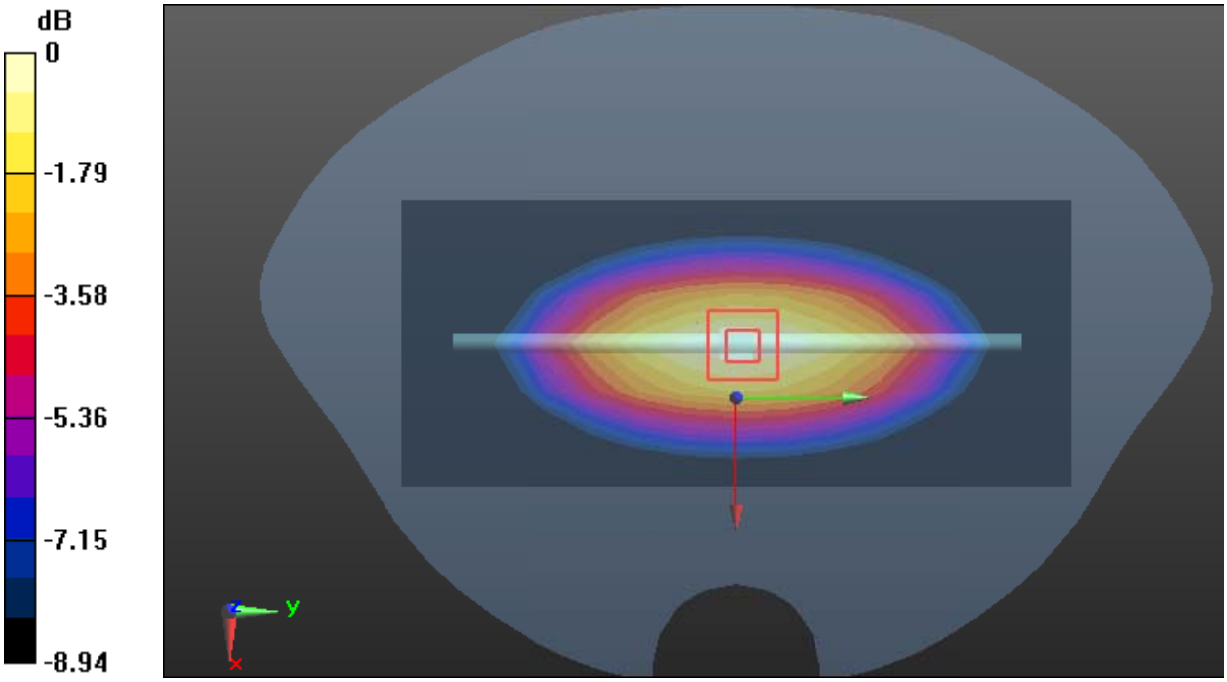
Communication System: CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 750 MHz; σ = 0.899 S/m; ε_r = 42.495; ρ = 1000 kg/m^3;
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3220; ConvF(6.68, 6.68, 6.68) @ 750 MHz; Calibrated: 2024/10/15
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1493; Calibrated: 2024/3/27
- 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 (7x15x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.991 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.10 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.852 W/kg; SAR(10 g) = 0.591 W/kg
Maximum value of SAR (measured) = 0.960 W/kg



0 dB = 0.960 W/kg = -0.18 dBW/kg

System Performance 1750 MHz Head

DUT: D1750V2; Type: 1750 MHz; Serial: 1141

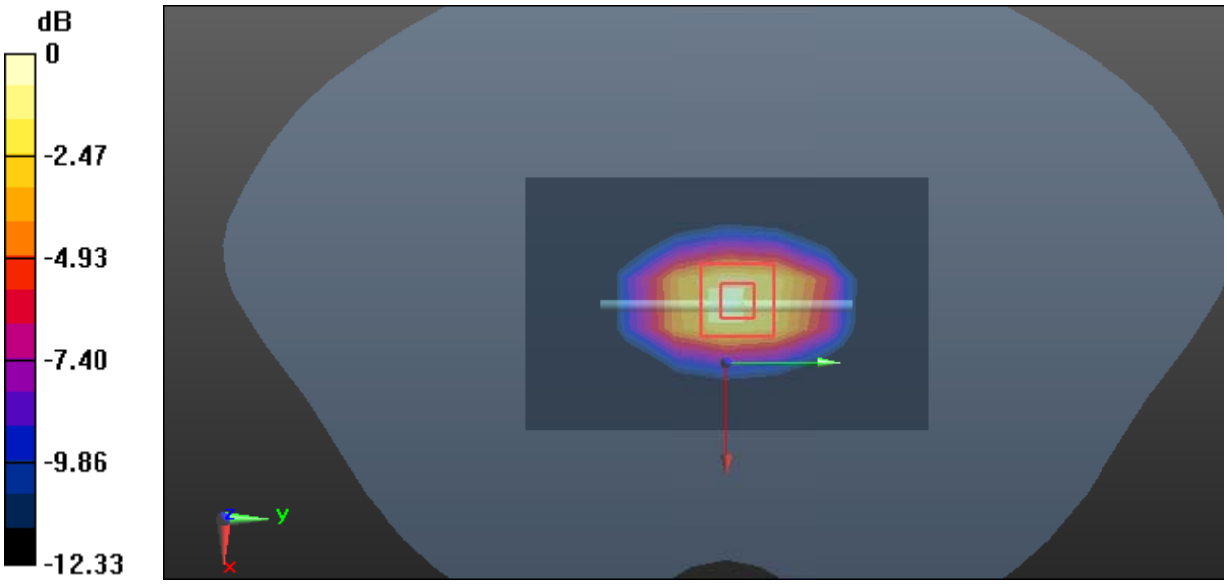
Communication System: CW (0); Frequency: 1750 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1750 MHz; σ =1.351 S/m; ε_r = 40.426; ρ = 1000 kg/m^3;
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3220; ConvF(5.53, 5.53, 5.53) @ 1750 MHz; Calibrated: 2024/10/15
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1493; Calibrated: 2024/3/27
- 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) = 5.42 W/kg

Zoom Scan (5x5x7) /Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 60.26 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 5.77 W/kg
SAR(1 g) = 3.26 W/kg; SAR(10 g) = 2.03 W/kg
Maximum value of SAR (measured) = 5.49 W/kg



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

System Performance 1900 MHz Head

DUT: D1900V2; Type: 1900 MHz; Serial: 543

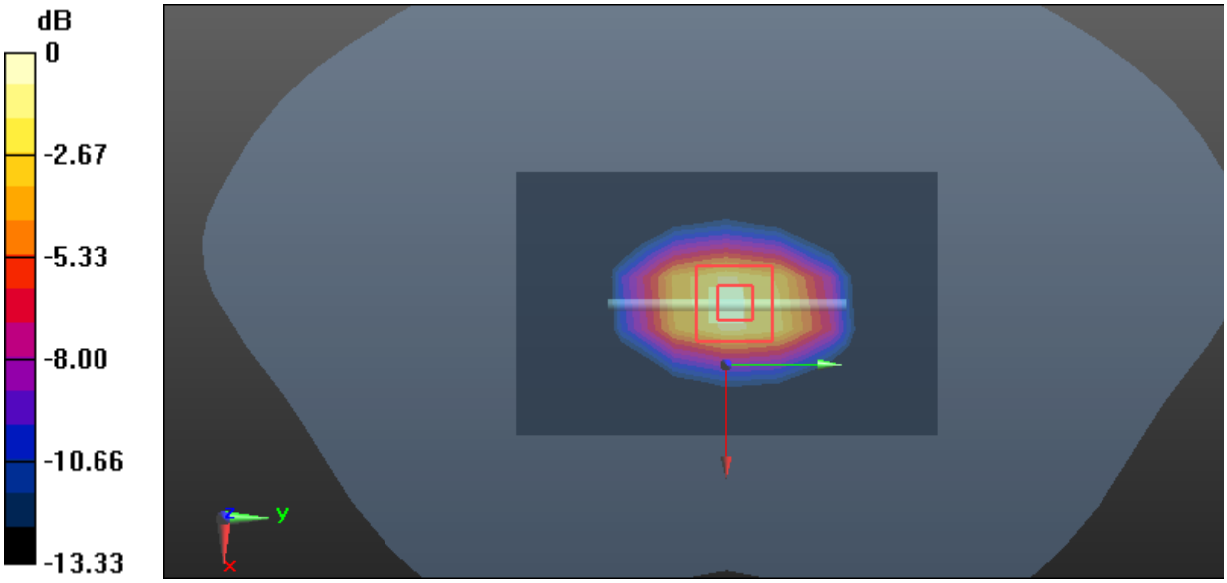
Communication System: CW (0); Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ =1.441 S/m; ε_r = 39.888; ρ = 1000 kg/m^3;
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3220; ConvF(5.24, 5.24, 5.24) @ 1900 MHz; Calibrated: 2024/10/15
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1493; Calibrated: 2024/3/27
- 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) = 4.76 W/kg

Zoom Scan (5x5x7) /Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 54.35 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 5.93 W/kg
SAR(1 g) = 4.35 W/kg; SAR(10 g) = 2.29 W/kg
Maximum value of SAR (measured) = 4.83 W/kg



0 dB = 4.83 W/kg = 6.84 dBW/kg

System Performance 2450MHz Head

DUT: D2450V2; Type: 2450 MHz; Serial: 971

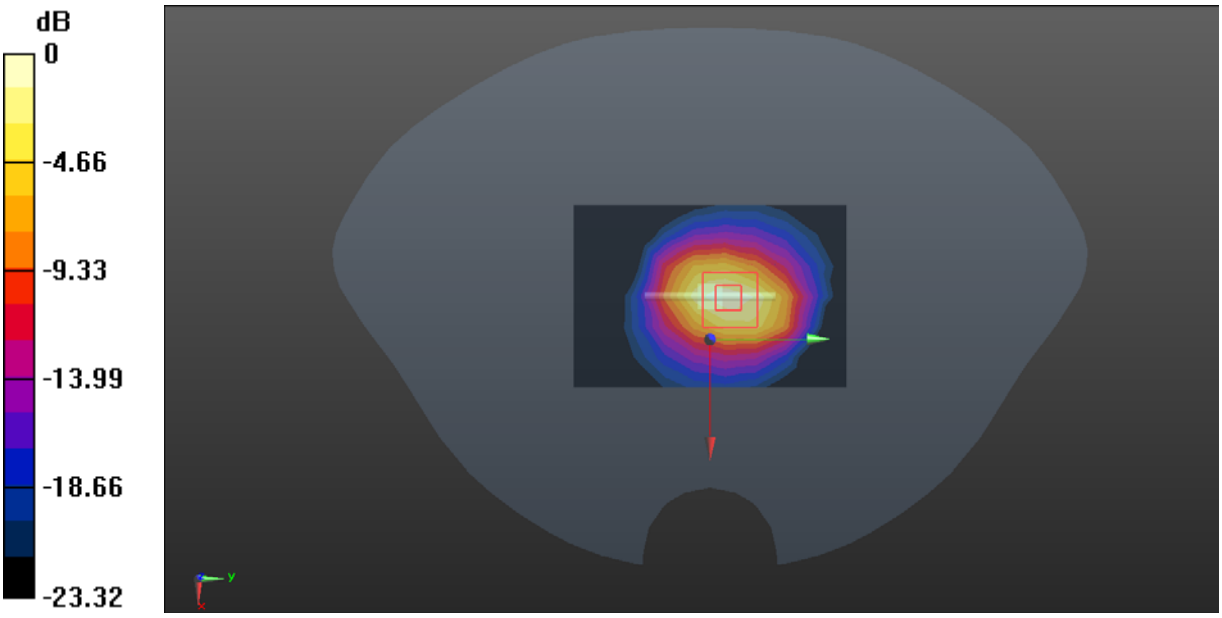
Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.889 S/m; ε_r = 41.104; ρ = 1000 kg/m^3;
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3220; ConvF(4.83, 4.83, 4.83) @ 2450 MHz; Calibrated: 2024/10/15
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1493; Calibrated: 2024/3/27
- 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) = 5.67 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 52.36 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 6.25 W/kg
SAR(1 g) = 5.36 W/kg; SAR(10 g) = 2.61 W/kg
Maximum value of SAR (measured) = 5.86 W/kg



0 dB = 5.86 W/kg = 7.68 dBW/kg

System Performance 2600 MHz Head

DUT: D2600V2; Type: 2600 MHz; Serial: 1132

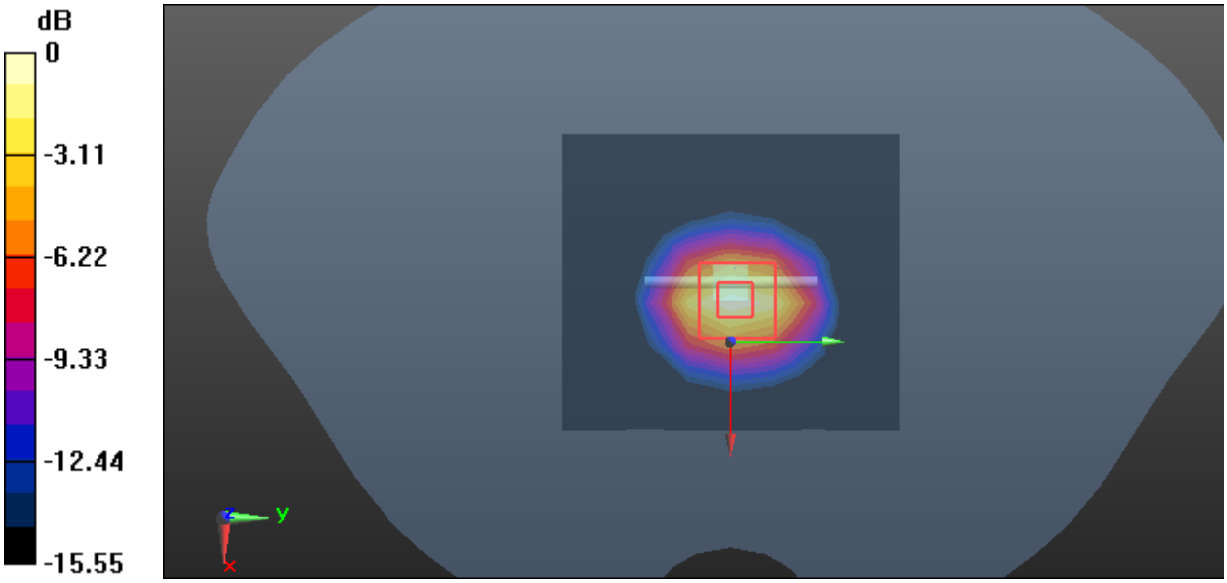
Communication System: CW (0); Frequency: 2600 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2600 MHz; σ =1.962 S/m; ε_r = 40.336; ρ = 1000 kg/m^3;
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3220; ConvF(4.66, 4.66, 4.66) @ 2600 MHz; Calibrated: 2024/10/15
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1493; Calibrated: 2024/3/27
- 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) = 6.69 W/kg

Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 66.55 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 6.83 W/kg
SAR(1 g) = 5.66 W/kg; SAR(10 g) = 2.41 W/kg
Maximum value of SAR (measured) = 6.09 W/kg

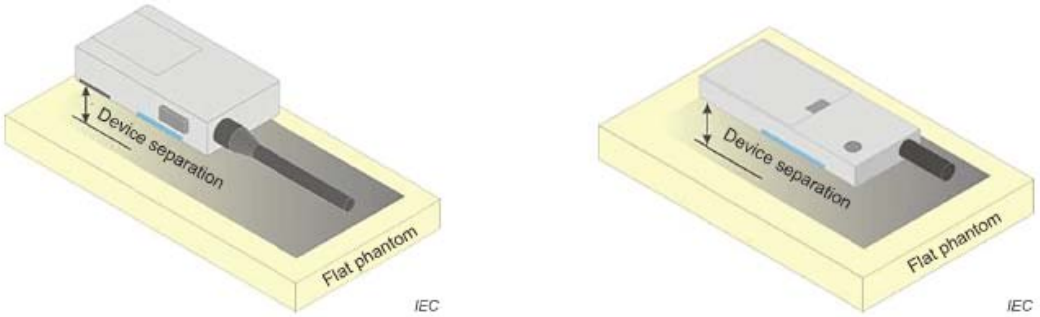


0 dB = 6.09 W/kg = 7.85 dBW/kg

6. EUT TEST STRATEGY AND METHODOLOGY

6.1 Test positions for Front-of-face configurations

Passive body-worn and audio accessories generally do not apply to the head SAR of PTT radios. Head SAR is measured with the front surface of the radio positioned at 2.5 cm parallel to a flat phantom. A phantom shell thickness of 2 mm is required. When the front of the radio has a contour or non-uniform surface with a variation of 1.0 cm or more, the average distance of such variations is used to establish the 2.5 cm test separation from the phantom.



b) Two-way radios

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

6.2 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.

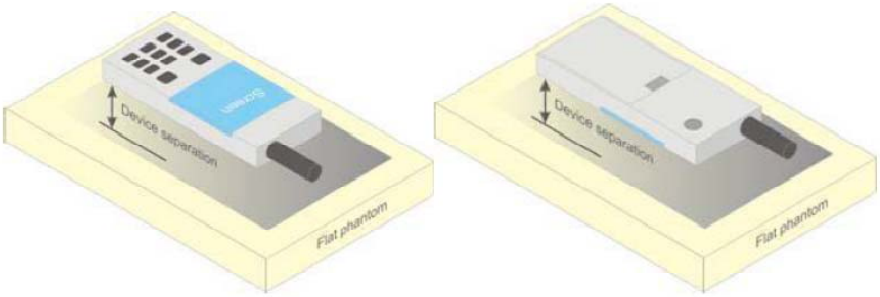


Figure 5 – Test positions for body-worn devices

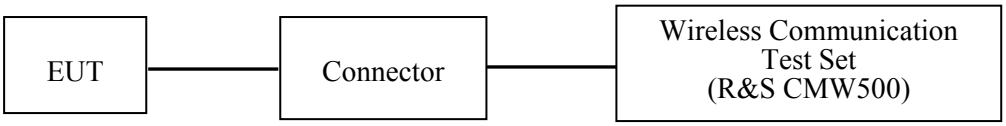
6.3 Test Distance for SAR Evaluation

For Head mode(1g Head SAR) the EUT(Equipment Under Test) is set 25mm against the phantom, the test distance is 25mm;
For Body mode(1g Body SAR) the EUT is set 0mm away from the phantom, the test distance of Body Back is 0mm.

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.



LTE

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 6.2.2-1due 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	25	25	25
LTE Band 4	25	25	25
LTE Band 5	20.5	20.5	20.5
LTE Band 7	23	23.5	22.5
LTE Band 66	23	23	23

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

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	1@0	24.85	24.01	24.05
		1@3	24.75	23.97	23.11
		1@5	**24.92**	23.96	23.2
		3@0	24.69	23.99	23.19
		3@1	24.66	24.08	23.05
		3@3	24.66	23.96	23.22
		6@0	23.7	23.23	22.88
	16-QAM	1@0	24.18	23.06	22.99
		1@3	24.19	23.04	22.43
		1@5	24.28	23.14	22.17
		3@0	24.16	23.4	23.33
		3@1	24.15	23.3	23.13
		3@3	24.13	23.29	22.73
		6@0	22.7	22.42	22.45
3M	QPSK	1@0	24.41	23.71	23.9
		1@8	24.48	23.79	23.79
		1@14	24.23	23.62	23.21
		8@0	23.67	22.98	22.94
		8@4	23.63	23.07	22.94
		8@7	23.42	23.02	22.94
		15@0	23.57	22.92	22.88
	16-QAM	1@0	23.29	23.01	23.17
		1@8	23.38	23.06	23.34
		1@14	23.15	22.8	22.55
		8@0	22.55	22.23	22.21
		8@4	22.63	22.16	22.19
		8@7	22.56	22.27	22.26
		15@0	22.65	22.12	22.08
5M	QPSK	1@0	24.59	24.13	23.49
		1@12	24.34	23.86	23.73
		1@24	24.24	23.76	23.1
		12@0	23.61	22.93	22.75
		12@7	23.33	22.92	22.77
		12@13	23.25	22.88	22.91
		25@0	23.25	22.86	22.76
	16-QAM	1@0	23.47	23.35	23.28
		1@12	23.39	22.96	23.39
		1@24	23.29	23.01	22.76
		12@0	22.71	22.27	21.98
		12@7	22.57	22.16	22.1
		12@13	22.59	22.13	22.2
		25@0	22.61	22.01	22.07
10M	QPSK	1@0	24.71	24.45	23.41
		1@25	24.41	24.01	23.42
		1@49	24.28	24.29	23.06
		25@0	23.41	23.14	**22.21**
		25@12	23.56	22.95	22.71
		25@25	23.25	22.82	22.74
		50@0	23.36	22.91	22.77

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	16-QAM	1@0	23.67	23.76	22.42
		1@25	23.54	23.45	22.55
		1@49	23.18	23.62	22.15
		12@0	23.62	23.25	22.49
		12@19	23.54	23.1	22.69
		12@38	23.19	23.26	23.14
		25@0	22.63	22.22	21.4
		25@12	22.67	22.33	21.96
		25@25	22.45	22.15	21.96
15M	QPSK	1@0	24.68	23.97	24.54
		1@37	24.28	23.89	23.38
		1@74	24.04	24.1	23.52
		36@0	23.5	23.28	22.76
		36@20	23.2	23.12	22.61
		36@39	22.96	23.11	22.82
		75@0	23.14	23	22.61
	16-QAM	1@0	23.8	23.26	23.96
		1@37	23.4	23.14	22.77
		1@74	23.27	23.34	22.83
		12@0	23.69	23.29	23.21
		12@31	23.5	23	22.45
		12@63	22.95	23.38	23.09
		25@0	22.49	22.55	22.25
		25@25	22.48	22.28	21.65
		25@50	21.92	22.44	22.16
20M	QPSK	1@0	24.44	24.11	24.43
		1@49	23.88	23.97	23.49
		1@99	23.98	24.35	23.25
		50@0	23.38	23.45	23.26
		50@24	23.12	23.03	22.78
		50@50	22.89	23.16	22.62
		100@0	22.85	22.9	22.71
	16-QAM	1@0	23.96	23.98	23.87
		1@49	23.31	23.81	23.14
		1@99	23.62	24.11	23.36
		12@0	23.49	23.24	23.62
		12@43	23.09	23.32	22.93
		12@88	23.15	23.41	22.97
		25@0	22.39	22.43	22.55
		25@37	22.29	22.32	22.06
		25@75	21.99	22.49	21.93

LTE Band 4:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	1@0	24.55	24.27	23.98
		1@3	24.44	24.06	23.81
		1@5	24.46	24.13	23.86
		3@0	24.54	24.09	23.02
		3@1	24.24	24.07	23.91
		3@3	24.38	24.12	23.88
		6@0	23.21	23.05	23.05
	16-QAM	1@0	23.95	23.37	23.77
		1@3	23.98	23.34	23.91
		1@5	23.23	23.4	23.85
		3@0	23.46	23.35	23.14
		3@1	23.38	23.41	23.09
		3@3	23.56	23.38	23.15
		6@0	23.63	23.16	23.39
3M	QPSK	1@0	24.35	23.99	23.28
		1@8	24.26	24.1	23.44
		1@14	23.84	24	23.02
		8@0	23.37	23.23	23.17
		8@4	23.27	23.16	23.17
		8@7	23.29	23.1	23.1
		15@0	23.13	23.1	23.1
	16-QAM	1@0	23.17	23.03	23.54
		1@8	23.12	23.1	23.6
		1@14	23.85	23.02	23.46
		8@0	23.52	23.27	23.67
		8@4	23.37	23.3	23.32
		8@7	23.41	23.39	23.29
		15@0	23.48	23.44	23.42
5M	QPSK	1@0	**24.62**	24.2	23.59
		1@12	24.19	24.13	23.19
		1@24	23.88	24.27	23.06
		12@0	23.36	23.14	23.25
		12@7	23.4	23.25	23.29
		12@13	23.15	23.11	23.27
		25@0	23.14	23.16	23.18
	16-QAM	1@0	23.6	23.23	23.13
		1@12	23.39	23.2	23.03
		1@24	23.28	23.32	23.79
		12@0	23.69	23.44	23.61
		12@7	23.54	23.49	23.6
		12@13	23.39	23.41	23.44
		25@0	23.27	23.38	23.61
10M	QPSK	1@0	24.3	23.97	23.95
		1@25	23.61	23.97	23.66
		1@49	23.75	24.15	23.14
		25@0	23.93	23.01	23.55
		25@12	23.84	23.05	23.37
		25@25	23.81	23.03	23.19
		50@0	23.7	23.93	23.37

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	16-QAM	1@0	23.23	23.09	23.15
		1@25	23.78	23.05	23.78
		1@49	23.86	23.17	23.51
		12@0	23.34	23.13	23.77
		12@19	23.93	23.14	23.46
		12@38	23.16	23.21	23.08
		25@0	23.07	23.17	22.94
		25@12	22.98	23.02	22.85
		25@25	23.34	23.19	23.75
15M	QPSK	1@0	22.02	22.86	21.66
		1@37	21.42	23	20.68
		1@74	22.7	22.03	20.74
		36@0	20.12	21.91	20.34
		36@20	20.55	22	19.9
		36@39	20.99	21.66	19.83
		75@0	20.53	21.64	20.08
	16-QAM	1@0	21.16	21.83	20.83
		1@37	20.99	21.96	19.89
		1@74	22.18	21.23	20.02
		12@0	20.58	21.91	20.52
		12@31	20.62	22.14	20.09
		12@63	21.53	21.23	19.9
		25@0	19.43	20.97	19.62
		25@25	19.7	21.27	19.33
		25@50	20.47	20.61	19.1
20M	QPSK	1@0	24.03	24.09	24.05
		1@49	23.93	23.93	23.61
		1@99	23.49	23.77	23.17
		50@0	23.66	23.43	23.36
		50@24	23.23	23.1	23.9
		50@50	23.02	23.45	23.33
		100@0	23.49	23.52	23.86
	16-QAM	1@0	23.8	23.84	23.39
		1@49	23.79	23.21	23.01
		1@99	23.14	23.29	23.74
		12@0	23.08	23.97	23.05
		12@43	23.4	23.66	23.8
		12@88	23.57	23.99	23.37
		25@0	23.56	23.82	23.32
		25@37	23.42	23.79	23.28
		25@75	23.98	23.67	23.79

LTE Band 5:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	1@0	19.69	17.44	17.18
		1@3	19.94	17.7	17.14
		1@5	19.42	17.74	17.33
		3@0	19.48	17.39	17.11
		3@1	19.52	17.58	17.14
		3@3	19.64	17.59	17.25
		6@0	18.72	16.61	16.37
	16-QAM	1@0	18.39	16.95	16.16
		1@3	18.66	17.06	16.29
		1@5	18.68	17.24	16.47
		3@0	18.72	16.94	16.62
		3@1	18.67	17.05	16.67
		3@3	18.77	17.06	16.64
		6@0	17.85	15.84	15.91
3M	QPSK	1@0	19.73	17.1	17.32
		1@8	19.42	17.75	17.2
		1@14	19.12	18.01	17.46
		8@0	18.75	16.73	16.24
		8@4	18.79	16.91	16.15
		8@7	18.45	17.16	16.26
		15@0	18.63	16.84	16.27
	16-QAM	1@0	18.37	16.39	16.63
		1@8	18.53	16.84	16.89
		1@14	18.05	17.17	16.65
		8@0	17.96	15.81	15.99
		8@4	17.94	16.15	15.99
		8@7	17.74	16.22	15.86
		15@0	17.8	16.08	15.92
5M	QPSK	1@0	**20.03**	17.4	18.25
		1@12	19.42	18.1	17.28
		1@24	18.15	18.69	17.55
		12@0	18.9	16.81	16.79
		12@7	18.46	17.23	16.49
		12@13	17.9	17.46	16.59
		25@0	18.44	17.18	16.74
	16-QAM	1@0	19.14	16.52	17.83
		1@12	18.64	17.24	17.1
		1@24	17.33	17.76	17.27
		12@0	18.24	16.16	16.1
		12@7	17.76	16.64	16.06
		12@13	17.16	16.84	15.89
		25@0	17.58	16.51	16.02
10M	QPSK	1@0	19.98	17.07	18.75
		1@25	17.78	17.88	18.1
		1@49	16.95	18.95	17.59
		25@0	18.05	16.21	17.52
		25@12	17.11	17	17.26
		25@25	16.28	18.52	16.38
		50@0	17.16	17.12	17.15

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	16-QAM	1@0	18.86	16.16	18.16
		1@25	16.71	17.06	17.55
		1@49	15.95	17.85	16.89
		12@0	18.68	16.24	18
		12@19	16.96	17.01	17.25
		12@38	16.15	17.71	16.66
		25@0	17.2	15.72	16.8
		25@12	16.47	16.45	16.66
		25@25	15.51	16.9	15.84

LTE Band 7:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	1@0	22.64	22.46	20.73
		1@12	22.77	22.53	20.33
		1@24	22.82	22.76	20.52
		12@0	21.77	21.53	19.46
		12@7	22	21.79	19.39
		12@13	21.92	21.81	19.42
		25@0	21.86	21.73	19.36
	16-QAM	1@0	22.49	21.53	19.73
		1@12	22.59	21.73	19.64
		1@24	22.6	22.11	19.6
		12@0	21.14	20.84	18.99
		12@7	21.08	21.01	18.83
		12@13	21.24	21.28	18.81
		25@0	21.11	20.78	18.59
10M	QPSK	1@0	22.86	22.05	21.25
		1@25	22.69	22.74	20.71
		1@49	22.74	**23.15**	20.93
		25@0	21.8	21.44	19.85
		25@12	21.83	21.77	19.8
		25@25	21.76	21.88	19.61
		50@0	21.75	21.67	19.73
	16-QAM	1@0	21.68	21.2	20.55
		1@25	21.89	21.83	20.11
		1@49	21.63	22.24	20.26
		12@0	21.85	21.52	20.2
		12@19	21.88	21.85	20
		12@38	21.77	22.26	19.93
		25@0	21.08	20.9	19.24
		25@12	21.15	21.14	19.26
		25@25	21.13	21.36	19.09
15M	QPSK	1@0	22.84	21.97	21.68
		1@37	22.76	22.74	20.87
		1@74	22.25	23.04	20.67
		36@0	21.82	21.34	20.12
		36@20	22.01	21.83	19.83
		36@39	21.41	21.97	19.77
		75@0	21.69	21.89	19.98
	16-QAM	1@0	22.07	21.1	20.86
		1@37	22.02	21.98	20.1
		1@74	21.39	22.28	19.93
		12@0	21.93	21.17	20.15
		12@31	22.08	22	19.93
		12@63	21.41	22.16	19.4
		25@0	21.14	20.6	19.38
		25@25	21.17	21.25	19.08
		25@50	20.79	21.42	18.94

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
20M	QPSK	1@0	22.68	21.61	22.11
		1@49	22.19	22.76	20.77
		1@99	21.42	22.99	20.41
		50@0	21.72	21.23	21.41
		50@24	21.75	21.87	20.14
		50@50	21.12	22.29	19.82
		100@0	21.59	21.85	21.22
	16-QAM	1@0	22.17	21.28	21.29
		1@49	21.8	22.55	19.97
		1@99	20.9	22.67	19.86
		12@0	21.78	20.95	20.86
		12@43	21.67	22.08	19.86
		12@88	20.66	22.08	19.4
		25@0	21.05	20.22	19.93
		25@37	21	21.14	19.29
		25@75	20.05	21.13	18.81

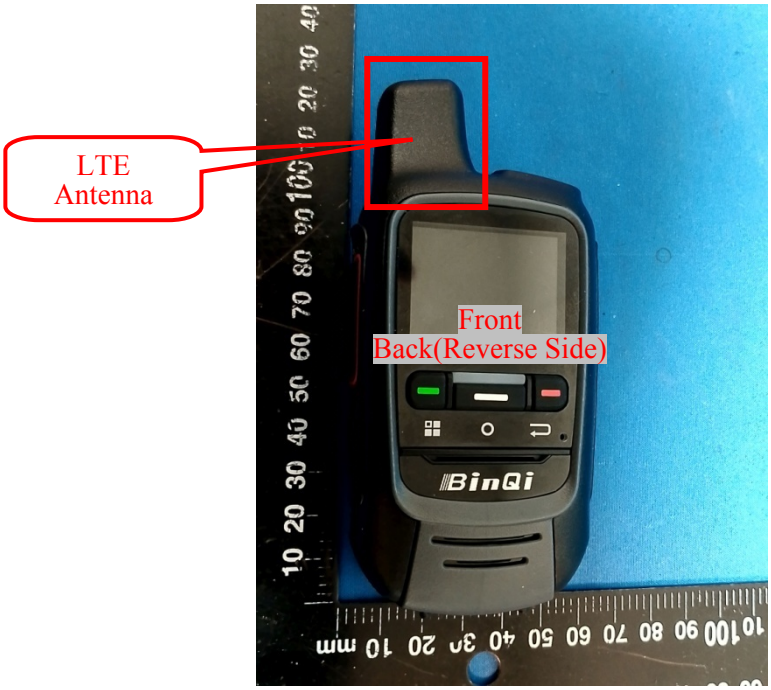
LTE Band 66:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	1@0	21.63	20.6	19.27
		1@3	21.37	20.44	19.58
		1@5	21.72	20.44	19.74
		3@0	21.74	20.69	19.47
		3@1	21.65	20.53	19.54
		3@3	21.88	20.47	19.51
		6@0	20.88	19.55	18.46
	16-QAM	1@0	21.37	19.56	18.26
		1@3	21.07	19.45	18.37
		1@5	21.09	19.49	18.37
		3@0	21.16	19.83	18.51
		3@1	20.97	19.74	18.71
		3@3	21.05	19.9	18.74
		6@0	19.7	19.01	17.83
3M	QPSK	1@0	21.78	20.58	19.26
		1@8	21.52	20.47	19.23
		1@14	21.22	20.25	19.33
		8@0	20.43	19.61	18.02
		8@4	20.29	19.48	18.34
		8@7	20.18	19.51	18.23
		15@0	20.28	19.5	18.32
	16-QAM	1@0	20.88	19.54	18.02
		1@8	20.76	19.45	18.24
		1@14	20.55	19.45	18.26
		8@0	19.67	18.72	17.37
		8@4	19.53	18.44	17.45
		8@7	19.4	18.51	17.62
		15@0	19.52	18.74	17.4
5M	QPSK	1@0	21.9	20.91	19.82
		1@12	21.21	20.56	19.37
		1@24	21.2	20.71	19.58
		12@0	20.49	19.81	18.69
		12@7	20.36	19.78	18.54
		12@13	20.16	19.56	18.44
		25@0	20.38	19.76	18.49
	16-QAM	1@0	21.49	19.97	18.79
		1@12	20.92	19.82	18.53
		1@24	21.01	19.86	18.82
		12@0	19.54	19.19	17.73
		12@7	19.38	18.98	17.43
		12@13	19.26	18.95	17.59
		25@0	19.41	18.82	17.54
10M	QPSK	1@0	21.71	21.19	21.2
		1@25	20.71	20.65	19.54
		1@49	21.44	20.77	19.89
		25@0	20.04	19.64	19.57
		25@12	20.21	19.7	19.13
		25@25	20.11	19.43	18.55
		50@0	20.16	19.58	19.07

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	16-QAM	1@0	20.7	20.1	20.99
		1@25	19.92	19.51	19.42
		1@49	20.34	19.63	19.23
		12@0	20.58	19.99	20.26
		12@19	20.2	19.36	19.21
		12@38	20.42	19.34	18.75
		25@0	19.23	18.89	18.93
		25@12	19.13	18.83	18.32
		25@25	19.32	18.57	17.85
15M	QPSK	1@0	21.86	21.8	22.44
		1@37	21.39	20.67	20.87
		1@74	**22.62**	20.88	19.74
		36@0	20.08	20.22	20.77
		36@20	20.32	19.9	19.93
		36@39	20.57	19.54	18.98
		75@0	20.29	19.95	20.18
	16-QAM	1@0	21.18	20.84	21.6
		1@37	20.54	20.07	19.94
		1@74	21.81	19.77	18.71
		12@0	20.55	20.56	21.25
		12@31	20.19	20.02	20.09
		12@63	21.14	19.67	18.48
		25@0	19.23	19.52	20.32
		25@25	19.22	19.08	19.11
		25@50	19.86	18.65	17.83
20M	QPSK	1@0	21.45	21.97	22.15
		1@49	21.49	20.57	21.61
		1@99	22.62	20.63	19.58
		50@0	20.04	21.07	21.01
		50@24	20.5	19.77	20.52
		50@50	21.2	19.55	19.16
		100@0	20.57	19.9	20.32
	16-QAM	1@0	20.87	21.28	21.71
		1@49	20.73	20.01	21.13
		1@99	21.88	20.12	19.3
		12@0	20.53	20.74	21.15
		12@43	20.48	19.88	20.69
		12@88	21.67	19.57	18.48
		25@0	18.98	19.68	20.36
		25@37	19.42	18.98	19.88
		25@75	20.34	18.51	17.74

8. STANDALONE SAR TEST EXCLUSION CONSIDERATIONS

8.1 Antennas Location:



9. SAR MEASUREMENT RESULTS

This page summarizes the results of the performed dosimetric evaluation.

9.1 SAR Test Data

Environmental Conditions

Temperature:	22.5-23.4℃	21.7-22.4℃
Relative Humidity:	29%	33%
ATM Pressure:	101.1kPa	100.9kPa
Test Date:	2025/01/23	2025/01/24

Testing was performed by Lily Yang, Mark Dong, 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 (25mm)	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	24.11	25	1.227	0.121	**0.15**	**1#**
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	23.45	25	1.429	0.102	0.15	/
Body Back With Belt Clip (0mm)	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	24.11	25	1.227	0.213	**0.26**	**2#**
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	23.45	25	1.429	0.182	0.26	/

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 (25mm)	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	24.09	25	1.233	0.309	**0.38**	**3#**
	1745	20	1RB	/	/	/	/	/	/
	1732.5	20	50%RB	23.45	25	1.429	0.266	0.38	/
Body Back With Belt Clip (0mm)	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	24.09	25	1.233	0.467	**0.58**	**4#**
	1745	20	1RB	/	/	/	/	/	/
	1732.5	20	50%RB	23.45	25	1.429	0.381	0.54	/

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 (25mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	18.95	20.5	1.429	0.186	**0.27**	**5#**
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	18.52	20.5	1.578	0.159	0.25	/
Body Back With Belt Clip (0mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	18.95	20.5	1.429	0.468	**0.67**	**6#**
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	18.52	20.5	1.578	0.409	0.65	/

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 (25mm)	2510	20	1RB	/	/	/	/	/	/
	2535	20	1RB	22.99	23.5	1.125	0.32	**0.36**	**7#**
	2560	20	1RB	/	/	/	/	/	/
	2535	20	50%RB	22.29	23.5	1.321	0.238	0.31	/
Body Back With Belt Clip (0mm)	2510	20	1RB	22.68	23	1.076	0.951	1.02	/
	2535	20	1RB	22.99	23.5	1.125	0.956	1.08	/
	2560	20	1RB	22.11	22.5	1.094	1.02	1.12	/
	2510	20	50%RB	21.75	23	1.334	0.729	0.97	/
	2535	20	50%RB	22.29	23.5	1.321	0.892	**1.18**	**8#**
	2560	20	50%RB	21.41	22.5	1.285	0.866	1.11	/
	2560	20	100%RB	21.22	22.5	1.343	0.828	1.11	/

LTE Band 66:

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 (25mm)	1720	20	1RB	/	/	/	/	/	/
	1745	20	1RB	21.97	23	1.268	0.287	**0.36**	**9#**
	1770	20	1RB	/	/	/	/	/	/
	1745	20	50%RB	21.07	23	1.56	0.213	0.33	/
Body Back With Belt Clip (0mm)	1720	20	1RB	/	/	/	/	/	/
	1745	20	1RB	21.97	23	1.268	0.428	**0.54**	**10#**
	1770	20	1RB	/	/	/	/	/	/
	1745	20	50%RB	21.07	23	1.56	0.281	0.44	/

Note:
1. When the 1-g SAR is ≤ 0.8W/Kg, testing for other channels are optional.
2. SAR for LTE band exposure configurations is measured according to the procedures of KDB 941225 D05 SAR for LTE Devices v02.
3. KDB941225D05-SAR for higher order modulation is required only when the highest maximum output power for the configuration in the higher order modulation is > 0.5 dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg
4. KDB941225D05-For QPSK with 100% RB allocation, when the reported SAR measured for the Highest output power channel is <1.45 W/kg, tests for the remaining required test channels are optional.
5.KDB941225D05- For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg.
6. KDB941225D05- Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offset the upper edge, middle and lower edge of each required test channel.
7. KDB941225D05- other channel bandwidths SAR test is required when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > 0.5 dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.

10. SAR SIMULTANEOUS TRANSMISSION DESCRIPTION

10.1 Simultaneous Transmission:

Note: There is no multiple transmitters for the product, so simultaneous transmission need not to evaluate.

11. MEASUREMENT VARIABILITY

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

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

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

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

Body

SAR probe calibration point	Frequency Band	Freq.(MHz)	EUT Position	Meas. SAR (W/kg)		Largest to Smallest SAR Ratio
				Original	Repeated	
2450 MHz	LTE Band 7	2535	Body Back	0.956	0.923	1.04
2600 MHz	LTE Band 7	2560	Body Back	1.02	0.986	1.03

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.

12. 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 $vi = \infty$ 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	1g Meas. SAR (W/kg)		The Device holder perturbation uncertainty
			With holder	Without holder	
/	/	/	/	/	/

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	√3	√0.5	√0.5	1.9	1.9
Hemispherical isotropy	9.6	R	√3	√0.5	√0.5	3.9	3.9
Boundary effect	1.0	R	√3	1	1	0.6	0.6
Linearity	4.7	R	√3	1	1	2.7	2.7
System detection limits	1.0	R	√3	1	1	0.6	0.6
Modulation response	0.0	R	√3	1	1	0.0	0.0
Readout electronics	0.3	N	1	1	1	0.3	0.3
Response time	0.0	R	√3	1	1	0.0	0.0
Integration time	0.0	R	√3	1	1	0.0	0.0
RF ambientconditions-noise	1.0	R	√3	1	1	0.6	0.6
RF ambient conditions-reflections	1.0	R	√3	1	1	0.6	0.6
Probe positioner mech.tolerance	0.8	R	√3	1	1	0.5	0.5
Probe positioning with respect to phantom shell	6.7	R	√3	1	1	3.9	3.9
Extrapolation, interpolation, and integrationsalgorithms for max. SAR evaluation	2.0	R	√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	4.4	N	1	1	1	4.4	4.4
Output power variation –SAR draft measurement	5.0	R	√3	1	1	2.9	2.9
SAR scaling	2.8	R	√3	1	1	1.6	1.6
Phantom and tissue parameters							
Phantom shell uncertainty– shape, thicknessand permittivity	4.0	R	√3	1	1	2.3	2.3
Uncertainty in SARcorrection for deviationsin 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 – temperatureuncertainty	1.7	R	√3	0.78	0.71	0.8	0.7
Liquid permittivity – temperatureuncertainty	0.3	R	√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.

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