NVLAP TESTING
NVLAP LAB CODE 600341-0

BACL Bay Area Compliance Labs Corp.

FCC SAR TEST REPORT

Applicant:	**Shenzhen Zijin Technology Co., Ltd.**
Address:	**Rm 2895, Pengrunda COMM Plaza, No.3368 Hubin Rd., Yuehai St., Nanshan Dist., Shenzhen, Guangdong, China**
Product Name:	**4G LTE Pocket WiFi**
FCC ID:	**2BHDCMF67MIFI**
Standard(s):	**47 CFR Part 2(2.1093)**
Report Number:	**SZ1240124-05544E-20**
Report Date:	**2024/4/15**

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

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SAR TEST RESULTS SUMMARY

Mode		Max. Reported SAR Level(s) (W/kg)	Limit (W/kg)
WCDMA Band 2	1g Body SAR	0.51	**1.6**
WCDMA Band 5	1g Body SAR	0.16	
LTE Band 2	1g Body SAR	0.91	
LTE Band 4	1g Body SAR	**1.08**	
LTE Band 12&17	1g Body SAR	0.63	
Wi-Fi 2.4G	1g Body SAR	0.34	
Simultaneous	1g Body SAR	**1.13**	
	1g Body SAR	**1.13** (Hotspot)	
Applicable Standards	**FCC 47 CFR part 2.1093** Radiofrequency radiation exposure evaluation: portable devices		
	IEEE1528:2013 IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques		
	IEC 62209-2:2010 Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices-Human models, instrumentation, and procedures-Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)		
	IEC 62209-2:2010/AMD1:2019 ED1 Amendment 1 - Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)		
	KDB procedures KDB 447498 D01 General RF Exposure Guidance v06 KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04 KDB 865664 D02 RF Exposure Reporting v01r02 KDB 941225 D01 3G SAR Procedures v03r01 KDB 941225 D05 SAR for LTE Devices v02r05 KDB 941225 D06 Hotspot Mode v02r01 KDB 248227 D01 802.11 Wi-Fi SAR v02r02		
Note: This wireless device has been shown to be capable of compliance for localized specific absorption rate (SAR) for General Population/Uncontrolled Exposure limits specified in **FCC 47 CFR part 2.1093** and has been tested in accordance with the measurement procedures specified in IEEE 1528-2013 and RF exposure KDB procedures. **The results and statements contained in this report pertain only to the device(s) evaluated.**			

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	SZ1240124-05544E-20	Original Report	2024/04/15

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	4G LTE Pocket WiFi
EUT Model:	MF67
Device Type:	Portable
Exposure Category:	Population / Uncontrolled
Antenna Type(s):	Internal Antenna
Body-Worn Accessories:	None
Proximity Sensor:	None
Carrier Aggregation:	None
Operation Modes:	WCDMA(R99 (Data), HSUPA/HSDPA/HSPA+), FDD-LTE, WLAN
Operation Frequency:	WCDMA Band 2: 1850-1910 MHz(TX); 1930-1990 MHz(RX) WCDMA Band 5: 824-849 MHz(TX); 869-894 MHz(RX) LTE Band 2: 1850-1910 MHz(TX); 1930-1990 MHz(RX) LTE Band 4: 1710-1755MHz(TX); 2110-2155 MHz(RX) LTE Band 12: 699-716 MHz(TX); 729-746 MHz(RX) LTE Band 17: 704-716 MHz(TX); 734-746 MHz(RX) WLAN 2.4G: 2412-2462 MHz/2422MHz-2452 MHz(TX/RX)
Maximum Output Power (Conducted):	WCDMA Band 2: 22.56 dBm; WCDMA Band 5: 21.18 dBm; LTE Band 2: 22.84 dBm; LTE Band 4: 23.44 dBm; LTE Band 12: 23.01 dBm; LTE Band 17: 23.06 dBm; WLAN 2.4G: 11.92 dBm;
Dimensions (L*W*H):	100mm (L) *60mm (W) *23mm (H)
Rated Input Voltage:	DC3.7V from Rechargeable Battery
Serial Number:	2H2V-1
Normal Operation:	Hotspot and Body Worn
EUT Received Date:	2024/01/24
Test Date:	2024/04/13 ~ 2024/04/14
EUT Received Status:	Good

2. REFERENCE, STANDARDS, AND GUIDELINES

FCC:

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

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

2.1 SAR Limits

FCC Limit

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average (averaged over the whole body)	0.08	0.4
Spatial Peak (averaged over any 1 g of tissue)	**1.60**	8.0
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4.0	20.0

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

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

General Population/Uncontrolled environments Spatial Peak limit 1.6W/kg (FCC) applied to the EUT.

2.2 Test Facility

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

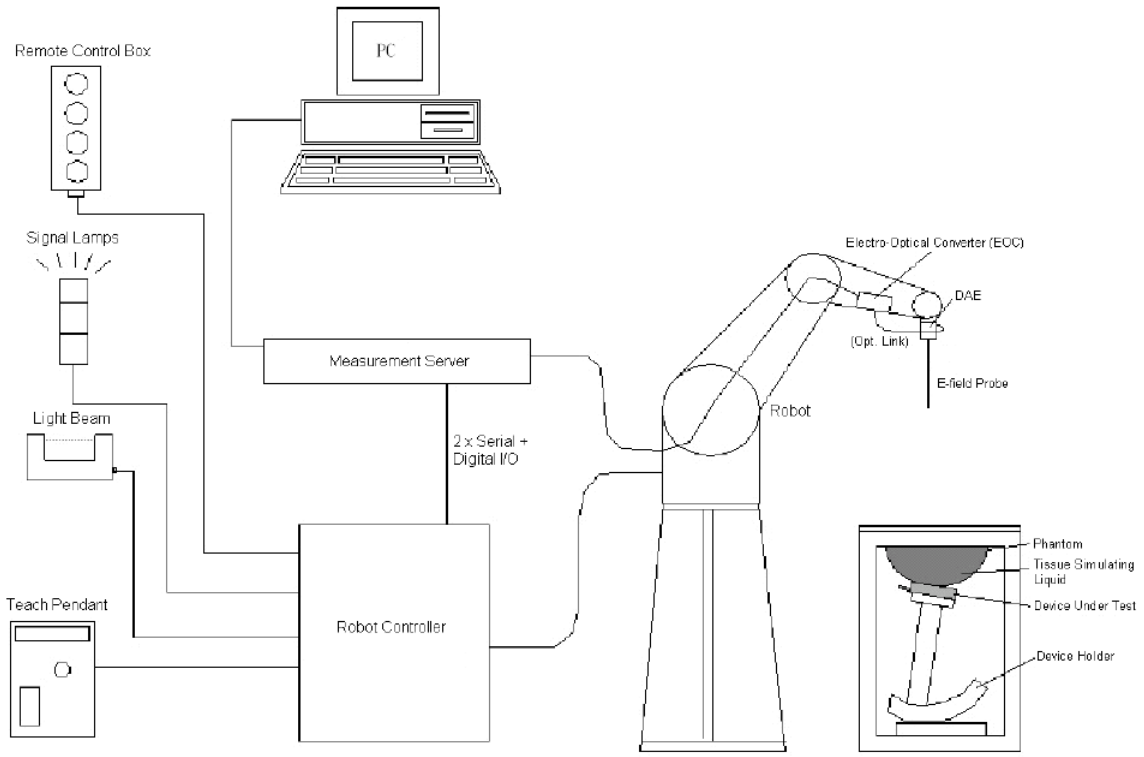
The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 829273, the FCC Designation No. : CN5044.

3. DESCRIPTION OF TEST SYSTEM

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

DASY5 System Description

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



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal application, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win7 professional operating system and the DASY52 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

DASY5 Measurement Server

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

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

Data Acquisition Electronics

The data acquisition electronics (DAE4) consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.

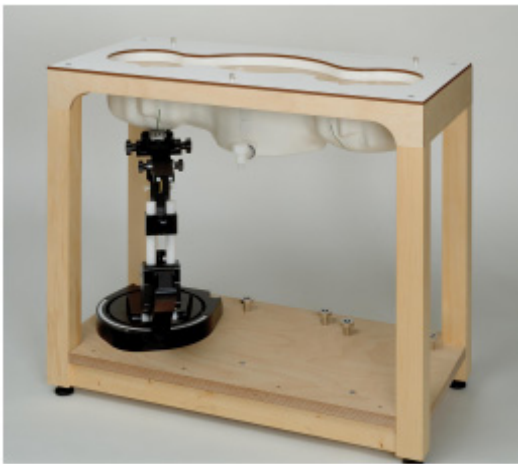
The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

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

EX3DV4 E-Field Probes

Frequency	4 MHz – 10 GHz Linearity: ± 0.2 dB (30 MHz – 10 GHz)
Directivity(typical)	± 0.1 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 µW/g – > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Applications	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%.
Compatibility	DASY3, DASY4, DASY52, DASY6, DASY8, EASY6, EASY4/MRI

SAM Twin Phantom



The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region, where shell thickness
increases to 6 mm). The phantom has three measurement areas:
_ Left Head
_ Right Head
_ Flat phantom

The phantom table for the DASY systems based on the robots have the size of 100 x 50 x 85 cm (L x W x H).
For easy dislocation these tables have fork lift cut outs at the bottom.
The bottom plate contains three pairs of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. Only one device holder is necessary if two phantoms are used (e.g., for different liquids)

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

Robots

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

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

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

Area Scans

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

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

Zoom Scan (Cube Scan Averaging)

The averaging zoom scan volume utilized in the DASY5 software is in the shape of a cube and the side dimension of a 1 g or 10 g mass is dependent on the density of the liquid representing the simulated tissue. A density of 1000 kg/m^3 is used to represent the head and body tissue density and not the phantom liquid density, in order to be consistent with the definition of the liquid dielectric properties, i.e. the side length of the 1g cube is 10mm,with the side length of the 10g cube is 21.5mm.

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

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

Tissue Dielectric Parameters for Head and Body Phantoms

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

Recommended Tissue Dielectric Parameters for Head liquid

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

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

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

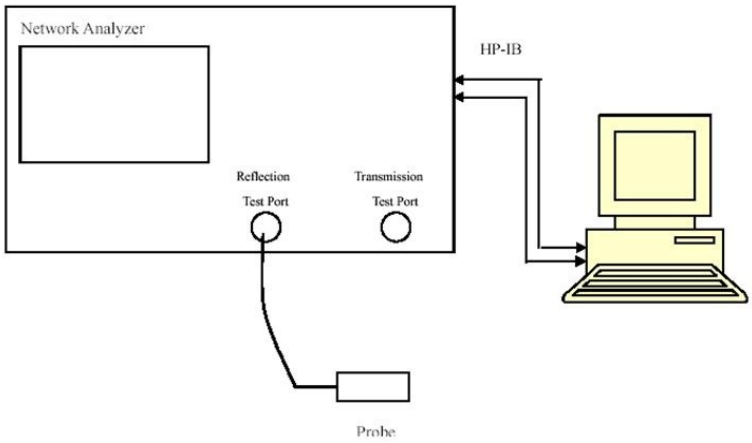
4. EQUIPMENT LIST AND CALIBRATION

4.1 Equipments List & Calibration Information

Equipment	Model	S/N	Calibration Date	Calibration Due Date
DASY5 Test Software	DASY52.10	N/A	NCR	NCR
DASY5 Measurement Server	DASY5 4.5.12	1470	NCR	NCR
Data Acquisition Electronics	DAE4	772	2024/1/23	2025/1/22
E-Field Probe	EX3DV4	7839	2023/9/21	2024/9/20
Mounting Device	MD4HHTV5	SD 000 H01 KA	NCR	NCR
Twin SAM	Twin SAM V5.0	1874	NCR	NCR
Dipole, 750 MHz	D750V3	1167	2022/10/31	2025/10/30
Dipole, 835 MHz	D835V2	453	2021/8/31	2024/8/30
Dipole, 1750 MHz	D1750V2	1141	2021/6/29	2024/6/28
Dipole, 1900 MHz	D1900V2	543	2022/11/2	2025/11/1
Dipole, 2450 MHz	D2450V2	971	2021/6/28	2024/6/27
Simulated Tissue Liquid Head	HBBL600-10000V6	SL AAH U16 BC (Batch:220809-1)	Each Time	/
Network Analyzer	8753C	3033A02857	2023/11/18	2024/11/17
Dielectric assessment kit	1253	SM DAK 040 CA	NCR	NCR
synthesized signal generator	8665B	3438a00584	2023/10/18	2024/10/17
EPM Series Power Meter	E4419B	MY45103907	2023/10/18	2024/10/17
Power Sensor	8482A	US37296108	2023/10/19	2024/10/18
Power Meter	EPM-441A	GB37481494	2023/10/19	2024/10/18
USB Wideband Power Sensor	U2022XA	MY54170006	2023/10/18	2024/10/17
Power Amplifier	ZHL-5W-202-S+	416402204	NCR	NCR
Power Amplifier	ZVE-6W-83+	637202210	NCR	NCR
Directional Coupler	441493	520Z	NCR	NCR
Attenuator	20dB, 100W	LN749	NCR	NCR
Attenuator	6dB, 150W	2754	NCR	NCR
Thermometer	DTM3000	3635	2023/8/11	2024/8/10
Hygrothermograph	HTC-2	EM072	2023/11/6	2024/11/5
Wideband Radio Communication Tester	CMW500	147473	2023/10/18	2024/10/17

5. SAR MEASUREMENT SYSTEM VERIFICATION

5.1 Liquid Verification



5.2 Liquid Verification Results

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	σ (S/m)	ε_r	σ (S/m)	$\Delta\varepsilon_r$	$\Delta\sigma$ (S/m)	
704	Simulated Tissue Liquid Head	43.285	0.888	42.15	0.89	2.69	-0.22	±5
707.5	Simulated Tissue Liquid Head	43.277	0.889	42.13	0.89	2.72	-0.11	±5
711	Simulated Tissue Liquid Head	43.268	0.889	42.11	0.89	2.75	-0.11	±5
750	Simulated Tissue Liquid Head	43.157	0.909	41.9	0.89	3	2.13	±5

**Liquid Verification above was performed on 2024/04/13.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	σ (S/m)	ε_r	σ (S/m)	$\Delta\varepsilon_r$	$\Delta\sigma$ (S/m)	
826.4	Simulated Tissue Liquid Head	42.87	0.93	41.54	0.9	3.2	3.33	±5
835	Simulated Tissue Liquid Head	42.838	0.887	41.5	0.9	3.22	-1.44	±5
836.6	Simulated Tissue Liquid Head	42.83	0.872	41.5	0.9	3.2	-3.11	±5
846.6	Simulated Tissue Liquid Head	42.807	0.911	41.5	0.91	3.15	0.11	±5

**Liquid Verification above was performed on 2024/04/14.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	σ (S/m)	ε_r	σ (S/m)	$\Delta\varepsilon_r$	$\Delta\sigma$ (S/m)	
1720	Simulated Tissue Liquid Head	39.591	1.334	40.13	1.35	-1.34	-1.19	±5
1732.5	Simulated Tissue Liquid Head	39.546	1.347	40.12	1.36	-1.43	-0.96	±5
1745	Simulated Tissue Liquid Head	39.493	1.359	40.1	1.37	-1.51	-0.8	±5
1750	Simulated Tissue Liquid Head	39.472	1.363	40.1	1.37	-1.57	-0.51	±5

**Liquid Verification above was performed on 2024/04/14.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	σ (S/m)	ε_r	σ (S/m)	$\Delta\varepsilon_r$	$\Delta\sigma$ (S/m)	
1852.4	Simulated Tissue Liquid Head	39.627	1.332	40	1.4	-0.93	-4.86	±5
1860	Simulated Tissue Liquid Head	39.595	1.338	40	1.4	-1.01	-4.43	±5
1880	Simulated Tissue Liquid Head	39.506	1.354	40	1.4	-1.24	-3.29	±5
1900	Simulated Tissue Liquid Head	39.43	1.373	40	1.4	-1.43	-1.93	±5
1907.6	Simulated Tissue Liquid Head	39.399	1.38	40	1.4	-1.5	-1.43	±5

**Liquid Verification above was performed on 2024/04/13.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	σ (S/m)	ε_r	σ (S/m)	$\Delta\varepsilon_r$	$\Delta\sigma$ (S/m)	
2412	Simulated Tissue Liquid Head	40.531	1.811	39.28	1.77	3.18	2.32	±5
2437	Simulated Tissue Liquid Head	40.435	1.839	39.23	1.79	3.07	2.74	±5
2450	Simulated Tissue Liquid Head	40.388	1.852	39.2	1.8	3.03	2.89	±5
2462	Simulated Tissue Liquid Head	40.349	1.865	39.18	1.81	2.98	3.04	±5

**Liquid Verification above was performed on 2024/04/13.*

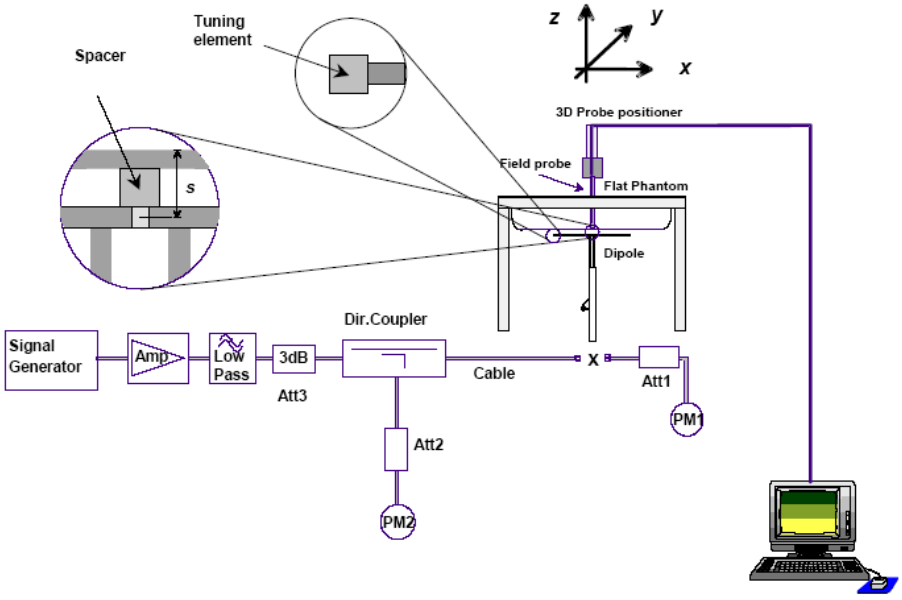
5.3 System Accuracy Verification

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	Liquid Type	Input Power (mW)	Measured SAR (W/kg)		Normalized to 1W (W/kg)	Target Value (W/kg)	Delta (%)	Tolerance (%)
2024/04/13	750 MHz	Simulated Tissue Liquid Head	100	1g	0.826	8.26	8.48	-2.59	±10
2024/04/14	835 MHz	Simulated Tissue Liquid Head	100	1g	0.958	9.58	9.33	2.68	±10
2024/04/14	1750 MHz	Simulated Tissue Liquid Head	100	1g	3.47	34.7	36.1	-3.88	±10
2024/04/13	1900 MHz	Simulated Tissue Liquid Head	100	1g	3.73	37.3	40.2	-7.21	±10
2024/04/13	2450 MHz	Simulated Tissue Liquid Head	100	1g	4.91	49.1	53.5	-8.22	±10

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

5.5 SAR SYSTEM VALIDATION DATA

System Performance 750 MHz Head

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

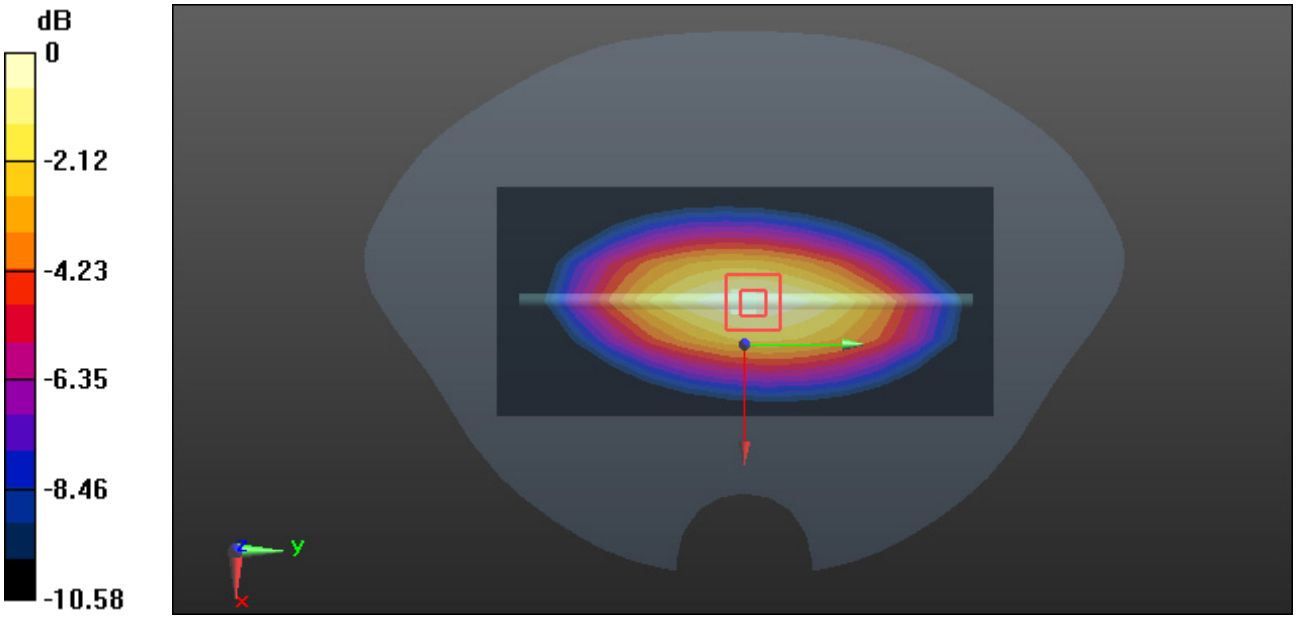
Communication System:CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 750 MHz; σ = 0.909 S/m; ε_r = 43.157; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

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

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.933 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.98 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.20 W/kg
SAR(1 g) = 0.826 W/kg; SAR(10 g) = 0.549 W/kg
Maximum value of SAR (measured) = 0.982 W/kg



0 dB = 0.982 W/kg = -0.08 dBW/kg

System Performance 835 MHz Head

DUT: D835V2; Type: 835 MHz; Serial: 453

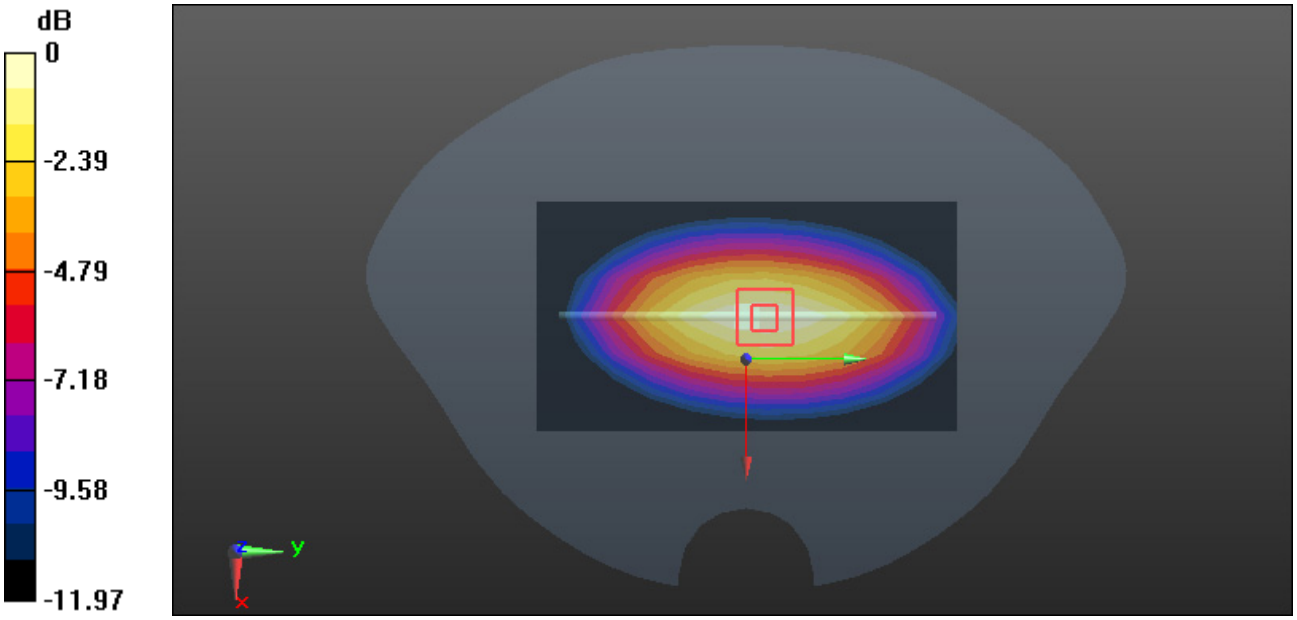
Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.887 S/m; ε_r = 42.838; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

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

Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.989 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 36.81 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.32 W/kg
SAR(1 g) = 0.958 W/kg; SAR(10 g) = 0.616 W/kg
Maximum value of SAR (measured) = 1.02 W/kg



0 dB = 1.02 W/kg = 0.09 dBW/kg

System Performance 1750MHz Head

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

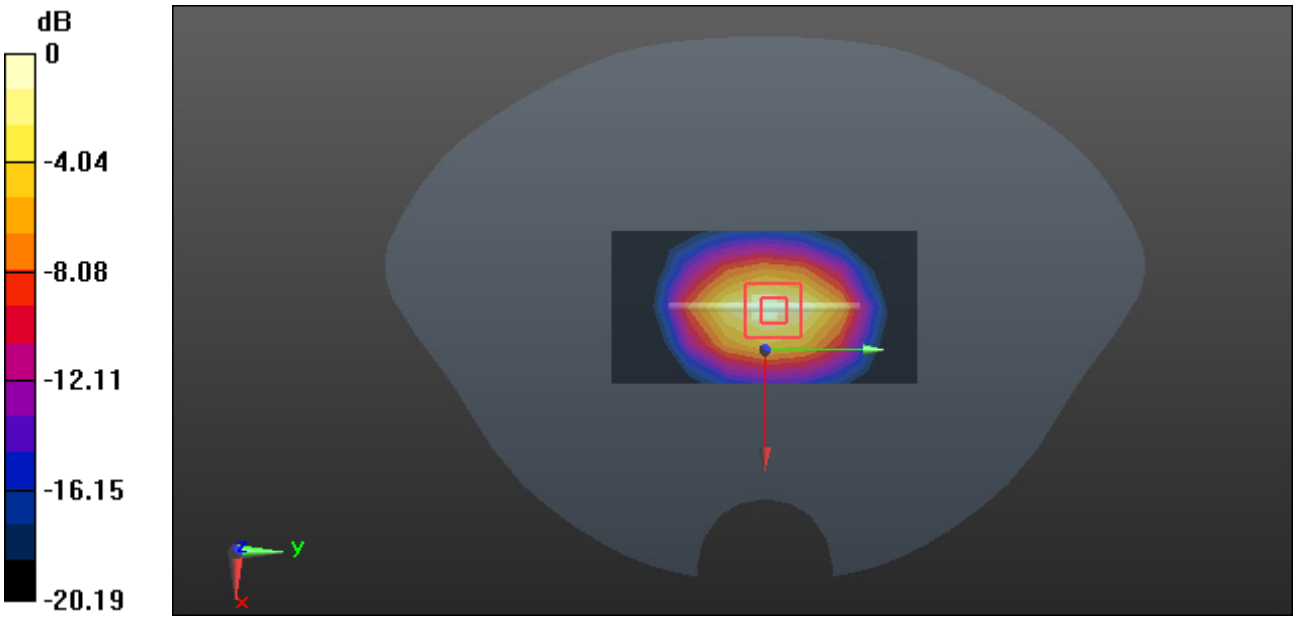
Communication System: CW ; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1750 MHz; σ = 1.363 S/m; ε_r = 39.472; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

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

Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 4.24 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 53.94 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 5.37 W/kg
SAR(1 g) = 3.47 W/kg; SAR(10 g) = 2.03 W/kg
Maximum value of SAR (measured) = 3.79 W/kg



0 dB = 3.79 W/kg = 5.79 dBW/kg

System Performance 1900MHz Head

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

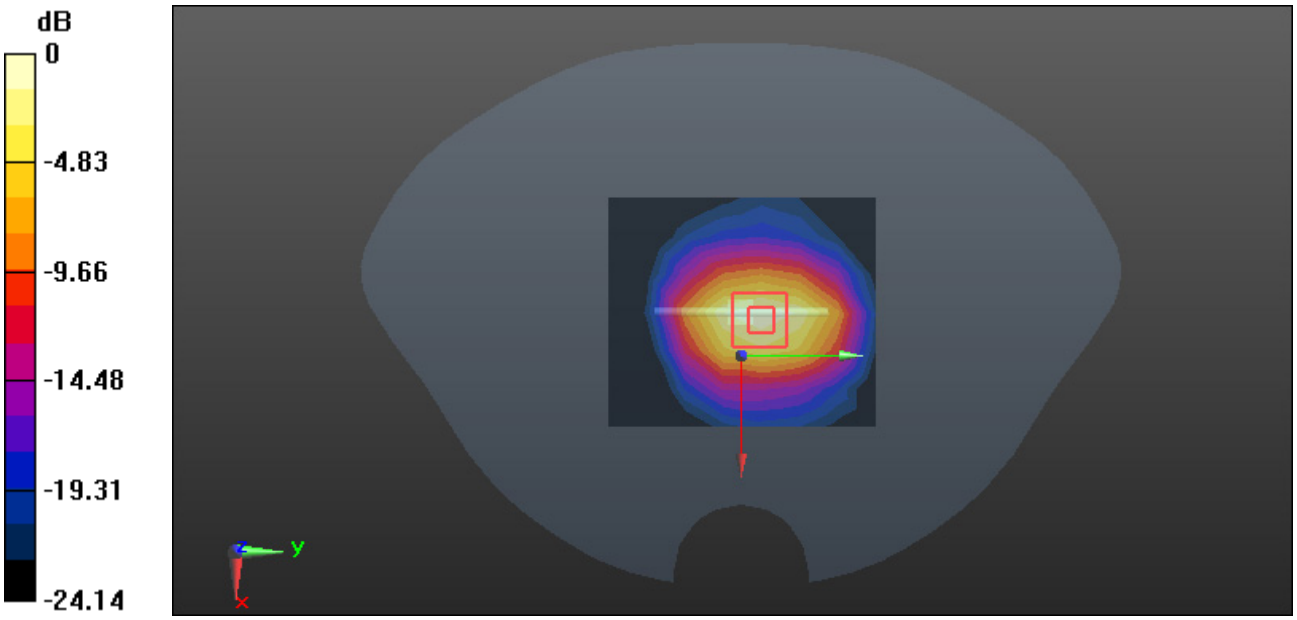
Communication System: CW ; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.373 S/m; ε_r = 39.43; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

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

Area Scan (7x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 4.22 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 56.17 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 5.86 W/kg
SAR(1 g) = 3.73 W/kg; SAR(10 g) = 2.22 W/kg
Maximum value of SAR (measured) = 4.37 W/kg



0 dB = 4.37 W/kg = 6.40 dBW/kg

System Performance 2450MHz Head

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

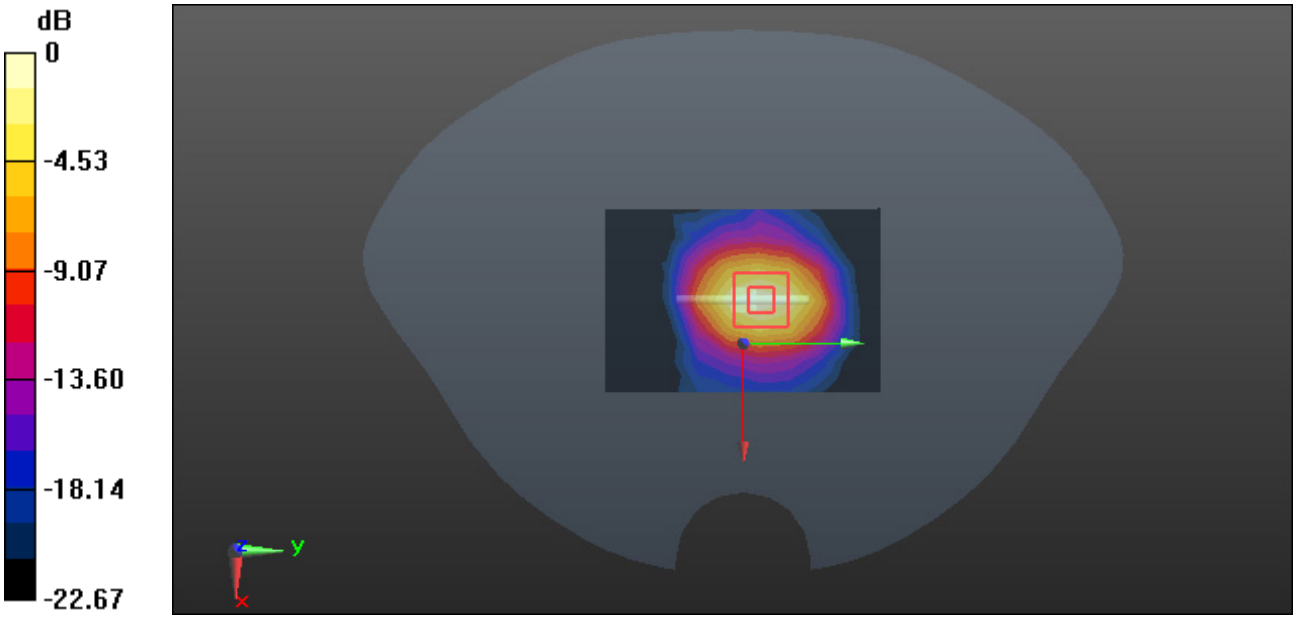
Communication System:CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used : f = 2450 MHz; σ = 1.852 S/m; ε_r = 40.388; ρ = 1000 kg/m3
Phantom section: Flat Section

DASY5 Configuration:

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

Area Scan (7x10x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 7.56 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 59.45 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 8.47 W/kg
SAR(1 g) = 4.91 W/kg; SAR(10 g) = 2.47 W/kg
Maximum value of SAR (measured) = 7.36 W/kg



0 dB = 7.36 W/kg = 8.67 dBW/kg

6. EUT TEST STRATEGY AND METHODOLOGY

6.1 Test positions for body-worn and other configurations

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

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

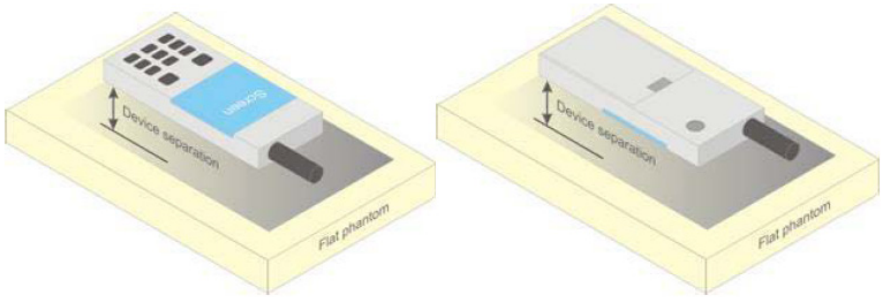


Figure 5 – Test positions for body-worn devices

6.2 Test Distance for SAR Evaluation

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

6.3 SAR Evaluation Procedure

The evaluation was performed with the following procedure:

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

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

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

1) The data at the surface were extrapolated, since the center of the dipoles is 1.2 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.3 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.

2) The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed by the 3D-Spline interpolation algorithm. The 3D-Spline is composed of three one dimensional splines with the “Not a knot"-condition (in x, y and z-directions). The volume was integrated with the trapezoidal-algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the averages.

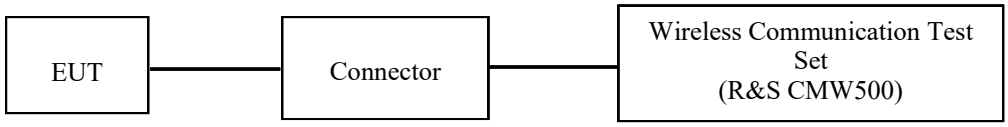
All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

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

7. CONDUCTED OUTPUT POWER MEASUREMENT

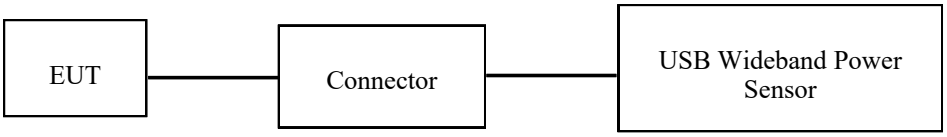
7.1 Test Procedure

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



WCDMA/LTE

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



WLAN

7.2 Radio Configuration

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

WCDMA Release 99

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

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

HSDPA

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

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

HSUPA

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

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

HSPA+

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed}1: 30/15 β_{ed}2: 30/15	β_{ed}3: 24/15 β_{ed}4: 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.

Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).

Note 3: DPDCH is not configured, therefore the β_c is set to 1 and β_d = 0 by default.

Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.

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

FDD-LTE

For UE Power Class 1 and 3, the allowed Maximum Power Reduction (MPR) for the maximum output power in Table 6.2.2-1due 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
WCDMA Band 2	23	23	23
HSDPA	22.5	22.5	22.5
HSUPA	21.5	21.5	21.5
HSPA+	21.5	21.5	21.5
WCDMA Band 5	21.5	21.5	21.5
HSDPA	19.5	21.5	21.5
HSUPA	18.5	20.5	20.5
HSPA+	19	20.5	20
LTE Band 2(20M)	23	23	23
LTE Band 4(20M)	23.5	23.5	23.5
LTE Band 12(10M)	23.5	23.5	23.5
LTE Band 17(10M)	23.5	23.5	23.5
WLAN 2.4G(802.11b)	11.5	11.5	10.5
WLAN 2.4G(802.11g)	12	12	12
WLAN 2.4G(802.11n ht20)	11.5	11	10.5
WLAN 2.4G(802.11n ht40)	10	10	10

7.4 Test Results:

WCDMA:
Results (12.2kbps RMC)

Band	Frequency (MHz)	RF Output Power (dBm)
WCDMA Band 2	1852.4	22.36
	1880	**22.56**
	1907.6	22.55
WCDMA Band 5	826.4	20.87
	836.6	20.93
	846.6	**21.18**

Results (HSDPA)

Band	Frequency (MHz)	RF Output Power (dBm)			
		Subset 1	Subset 2	Subset 3	Subset 4
WCDMA Band 2	1852.4	21.34	21.30	21.12	21.76
	1880	22.01	22.20	21.94	22.04
	1907.6	22.02	22.07	22.23	21.98
WCDMA Band 5	826.4	19.10	18.95	19.31	19.18
	836.6	20.55	20.30	20.63	20.59
	846.6	20.83	20.75	20.65	21.13

Results (HSUPA)

Band	Frequency (MHz)	RF Output Power (dBm)				
		Subset 1	Subset 2	Subset 3	Subset 4	Subset 5
WCDMA Band 2	1852.4	20.32	20.06	20.69	20.45	20.55
	1880	20.96	21.06	21.06	20.88	20.83
	1907.6	21.05	21.00	21.26	20.87	21.07
WCDMA Band 5	826.4	18.29	18.38	18.31	18.00	18.08
	836.6	19.97	20.12	20.04	19.82	19.58
	846.6	19.23	19.40	19.49	18.88	19.34

Results (HSPA+)

Band	Frequency (MHz)	RF Output Power (dBm)
WCDMA Band 2	1852.4	20.64
	1880	21.05
	1907.6	21.18
WCDMA Band 5	826.4	18.57
	836.6	20.12
	846.6	19.43

Note:

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

LTE Band 2:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	0	0	21.19	22.69	22.8
		RB1#3	0	0	20.96	22.69	22.43
		RB1#5	0	0	21.47	22.72	22.77
		RB3#0	1	1	21.36	22.65	22.48
		RB3#3	1	1	21.29	22.64	22.66
		RB6#0	1	1	20.61	21.76	21.95
	16-QAM	RB1#0	1	1	20.86	22.23	21.88
		RB1#3	1	1	20.9	22.03	21.93
		RB1#5	2	2	21.19	22.05	22.2
		RB3#0	2	2	20.95	21.92	21.96
		RB3#3	2	2	20.94	22.06	22.08
		RB6#0	2	2	19.95	21.11	21.24
3M	QPSK	RB1#0	0	0	21.05	22.35	22.06
		RB1#8	0	0	20.46	21.86	21.92
		RB1#14	0	0	21.02	22.45	22.37
		RB6#0	1	1	20.22	21.23	21.37
		RB6#9	1	1	20.24	21.55	21.52
		RB15#0	1	1	20.15	21.43	21.61
	16-QAM	RB1#0	1	1	20.67	21.79	21.75
		RB1#8	1	1	19.96	21.04	21.3
		RB1#14	1	1	20.5	22.18	21.94
		RB6#0	2	2	19.55	20.84	20.57
		RB6#9	2	2	19.5	21.02	20.92
		RB15#0	2	2	19.36	20.66	20.8
5M	QPSK	RB1#0	0	0	21.05	22.6	22.03
		RB1#13	0	0	20.62	22.03	21.86
		RB1#24	0	0	20.96	21.58	22.36
		RB15#0	1	1	20.16	21.15	21.14
		RB15#10	1	1	20.1	21.56	21.54
		RB25#0	1	1	20.28	21.35	21.5
	16-QAM	RB1#0	1	1	20.5	22.1	21.59
		RB1#13	1	1	20.22	21.32	21.45
		RB1#24	1	1	20.57	21.11	21.9
		RB15#0	2	2	19.4	20.5	20.63
		RB15#10	2	2	19.5	20.77	20.89
		RB25#0	2	2	19.43	20.65	20.87

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	QPSK	RB1#0	0	0	21.61	22.78	22.51
		RB1#25	0	0	20.47	21.68	21.43
		RB1#49	1	1	22.01	22.66	**22.84**
		RB25#0	1	1	20.1	21.73	20.97
		RB25#25	1	1	20.18	20.75	21.4
		RB50#0	1	1	20.16	21.45	21.41
	16-QAM	RB1#0	1	1	20.96	22.31	22.14
		RB1#25	1	1	19.9	21.13	21.07
		RB1#49	1	1	21.37	22.12	22.51
		RB25#0	2	2	19.41	20.95	20.37
		RB25#25	2	2	19.87	19.99	20.76
		RB50#0	2	2	19.58	20.83	20.64
15M	QPSK	RB1#0	0	0	21.52	22.59	21.67
		RB1#38	0	0	20.58	21.72	21.51
		RB1#74	1	1	21.96	22.07	22.6
		RB36#0	1	1	20.37	21.58	20.78
		RB36#39	1	1	20.41	21.17	21.34
		RB75#0	1	1	20.37	21.78	21.43
	16-QAM	RB1#0	1	1	20.93	22.3	21.13
		RB1#38	1	1	20.09	21.45	20.89
		RB1#74	2	2	21.37	21.48	22.5
		RB36#0	2	2	19.49	20.94	20.13
		RB36#39	2	2	19.87	20.59	20.82
		RB75#0	2	2	19.68	20.93	20.72
20M	QPSK	RB1#0	0	0	21.3	22.75	21.94
		RB1#50	0	0	21.08	22	21.94
		RB1#99	0	0	22.46	21.95	22.38
		RB50#0	1	1	22.34	22.58	22.5
		RB50#50	1	1	22.56	22.3	22.5
		RB100#0	1	1	22.47	22.65	22.56
	16-QAM	RB1#0	1	1	21.84	22.08	21.16
		RB1#50	1	1	21.37	21.47	21.39
		RB1#99	2	2	22.17	21.47	22.48
		RB50#0	2	2	21.56	21.02	21.87
		RB50#50	2	2	21.2	21.71	21.76
		RB100#0	2	2	21.06	21.97	21.27

LTE Band 4:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	0	0	21.41	23.02	21.7
		RB1#3	0	0	21.37	22.82	21.57
		RB1#5	0	0	21.4	22.98	21.57
		RB3#0	1	1	21.32	22.83	21.66
		RB3#3	1	1	21.18	22.8	21.5
		RB6#0	1	1	20.77	22	20.72
	16-QAM	RB1#0	1	1	20.49	22.1	21.08
		RB1#3	1	1	20.33	21.93	20.75
		RB1#5	2	2	20.69	22.61	20.75
		RB3#0	2	2	20.58	22.59	20.87
		RB3#3	2	2	20.59	22.48	20.79
		RB6#0	2	2	19.97	21.71	19.97
3M	QPSK	RB1#0	0	0	21.68	23.26	21.32
		RB1#8	0	0	21.02	22.42	20.73
		RB1#14	0	0	21.66	23.08	21.32
		RB6#0	1	1	20.67	21.96	20.25
		RB6#9	1	1	20.57	21.99	20.47
		RB15#0	1	1	20.62	21.99	20.25
	16-QAM	RB1#0	1	1	21.1	22.6	20.74
		RB1#8	1	1	20.52	21.91	20.26
		RB1#14	1	1	20.98	22.28	21.02
		RB6#0	2	2	19.74	21.19	19.84
		RB6#9	2	2	19.92	21.25	19.61
		RB15#0	2	2	19.83	21.1	19.48
5M	QPSK	RB1#0	0	0	21.35	22.95	21.06
		RB1#13	0	0	21.02	22.33	20.71
		RB1#24	0	0	21.3	22.67	21.23
		RB15#0	1	1	20.35	21.73	20.04
		RB15#10	1	1	20.36	21.8	20.06
		RB25#0	1	1	20.33	21.83	20.39
	16-QAM	RB1#0	1	1	20.65	22.14	20.56
		RB1#13	1	1	20.23	21.59	20.21
		RB1#24	1	1	20.68	21.72	20.69
		RB15#0	2	2	19.79	21.34	19.66
		RB15#10	2	2	19.77	20.96	19.62
		RB25#0	2	2	19.76	21.26	19.52

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	QPSK	RB1#0	0	0	22.08	23.12	21.79
		RB1#25	0	0	20.88	22.18	20.34
		RB1#49	1	1	22.17	22.71	21.77
		RB25#0	1	1	20.21	21.83	20
		RB25#25	1	1	20.53	21.57	20.22
		RB50#0	1	1	20.34	21.74	20.26
	16-QAM	RB1#0	1	1	21.31	22.35	20.86
		RB1#25	1	1	20.01	21.47	19.81
		RB1#49	1	1	21.32	22.01	21.02
		RB25#0	2	2	19.54	21.1	19.53
		RB25#25	2	2	19.75	20.97	19.36
		RB50#0	2	2	19.73	21.14	19.57
15M	QPSK	RB1#0	0	0	21.79	22.99	22.38
		RB1#38	0	0	20.82	22.36	20.44
		RB1#74	1	1	22.85	22.32	21.56
		RB36#0	1	1	20.38	21.79	20.77
		RB36#39	1	1	20.79	21.3	20.18
		RB75#0	1	1	20.66	21.74	20.26
	16-QAM	RB1#0	1	1	21.18	22.04	21.57
		RB1#38	1	1	20.18	21.58	20.03
		RB1#74	2	2	21.96	21.61	21.03
		RB36#0	2	2	19.87	20.95	20.11
		RB36#39	2	2	20.19	20.77	19.57
		RB75#0	2	2	19.89	21.13	19.49
20M	QPSK	RB1#0	0	0	22.55	22.3	22.84
		RB1#50	0	0	22.69	22.53	22.7
		RB1#99	0	0	**23.44**	23.39	23.38
		RB50#0	1	1	23.34	23.32	23.18
		RB50#50	1	1	23.42	23.23	23.36
		RB100#0	1	1	23.34	23.36	23.15
	16-QAM	RB1#0	1	1	21.77	22.88	23.25
		RB1#50	1	1	22.74	22.54	22.53
		RB1#99	2	2	22.38	22.58	22.93
		RB50#0	2	2	22.89	22.05	22.43
		RB50#50	2	2	22.92	22.76	22.57
		RB100#0	2	2	22.33	22.32	22.7

LTE Band 12:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	0	0	22.22	22.11	21.46
		RB1#3	0	0	22.43	22.08	21.2
		RB1#5	0	0	22.61	22.46	21.25
		RB3#0	1	1	22.4	21.96	21.4
		RB3#3	1	1	22.59	22.17	21.17
		RB6#0	1	1	21.54	21.29	20.56
	16-QAM	RB1#0	1	1	21.21	21.29	20.44
		RB1#3	1	1	21.53	21.14	20.37
		RB1#5	2	2	21.71	21.51	20.32
		RB3#0	2	2	21.17	21.29	20.68
		RB3#3	2	2	21.69	21.26	20.59
		RB6#0	2	2	20.8	20.43	19.9
3M	QPSK	RB1#0	0	0	22.27	22.05	22.25
		RB1#8	0	0	22.21	21.78	20.82
		RB1#14	1	1	22.43	22.07	21.29
		RB6#0	1	1	21.35	20.77	21.12
		RB6#9	1	1	21.48	21.08	20.27
		RB15#0	1	1	21.5	21.19	20.56
	16-QAM	RB1#0	1	1	21.33	21.22	21.57
		RB1#8	1	1	21.37	20.65	20.36
		RB1#14	2	2	21.82	21.49	20.67
		RB6#0	2	2	20.57	20.16	20.36
		RB6#9	2	2	20.74	20.27	19.62
		RB15#0	2	2	20.71	20.35	19.81
5M	QPSK	RB1#0	0	0	22.33	21.65	22.54
		RB1#13	0	0	22.23	21.83	21.77
		RB1#24	0	0	21.78	22.28	21.33
		RB15#0	1	1	21.6	20.75	21.5
		RB15#10	1	1	21.3	20.96	20.56
		RB25#0	1	1	21.37	21.14	21.23
	16-QAM	RB1#0	1	1	21.46	21.01	21.73
		RB1#13	1	1	21.34	20.84	20.99
		RB1#24	1	1	20.95	21.69	20.54
		RB15#0	2	2	20.78	20.12	20.44
		RB15#10	2	2	20.52	20.38	19.93
		RB25#0	2	2	20.66	20.46	20.31

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	QPSK	RB1#0	0	0	22.6	22.71	22.44
		RB1#25	0	0	22.81	21.5	22.05
		RB1#49	1	1	22.56	**23.01**	22.76
		RB25#0	1	1	22.6	22.78	22.38
		RB25#25	1	1	22.06	22.52	22.1
		RB50#0	1	1	22.24	22.31	22.49
	16-QAM	RB1#0	1	1	22.24	22.88	22.57
		RB1#25	1	1	22.49	22.82	22.46
		RB1#49	2	2	22	22.36	22.96
		RB25#0	2	2	22.83	22.01	22.57
		RB25#25	2	2	22.24	22.64	22.61
		RB50#0	2	2	22.33	22.76	22.59

LTE Band 17:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	0	0	21.84	22.32	22.53
		RB1#13	0	0	21.67	21.99	21.99
		RB1#24	0	0	21.96	22.48	22.07
		RB15#0	1	1	20.69	21.31	21.48
		RB15#10	1	1	20.96	21.69	21.23
		RB25#0	1	1	21.01	21.59	21.38
	16-QAM	RB1#0	1	1	20.85	21.3	21.77
		RB1#13	1	1	20.72	21.24	21.05
		RB1#24	1	1	21.44	21.8	21.38
		RB15#0	2	2	19.92	20.63	20.66
		RB15#10	2	2	20.18	20.81	20.56
		RB25#0	2	2	20.11	20.6	20.55
10M	QPSK	RB1#0	0	0	22.14	22.25	22.49
		RB1#25	0	0	22.54	22.97	22.92
		RB1#49	0	0	**23.06**	22.68	22.76
		RB25#0	1	1	22.91	22.12	22.15
		RB25#25	1	1	22.43	22.32	22.35
		RB50#0	1	1	22.22	22.26	22.32
	16-QAM	RB1#0	1	1	22.55	22.41	22.53
		RB1#25	1	1	22.06	22.08	22.32
		RB1#49	1	1	22.33	22.04	22.16
		RB25#0	2	2	22.14	22.39	22.25
		RB25#25	2	2	22.76	22.61	22.45
		RB50#0	2	2	22.45	22.46	22.5

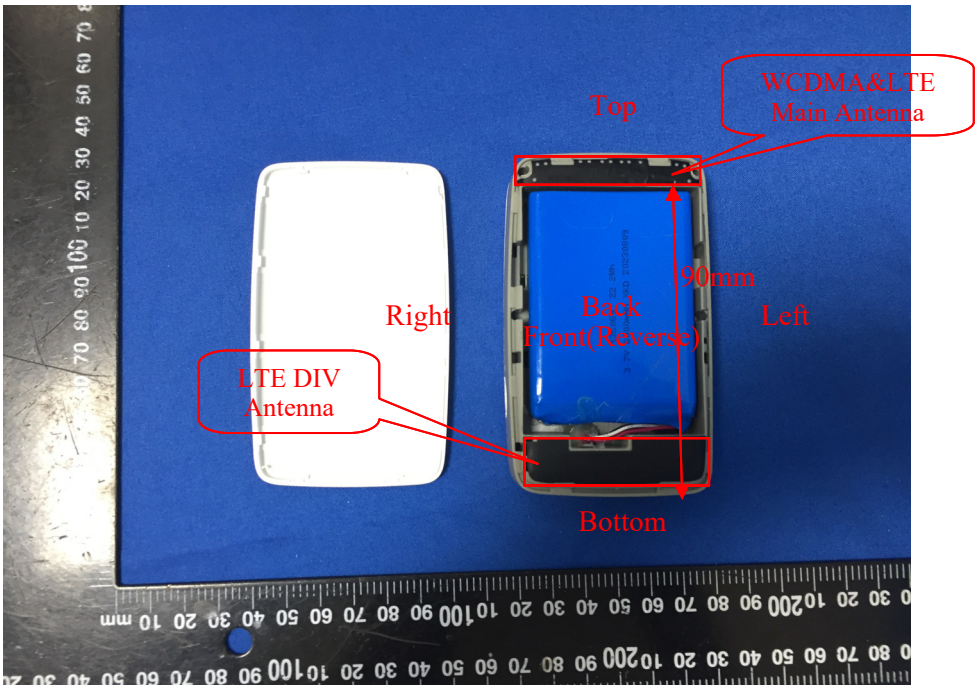
WLAN 2.4G:

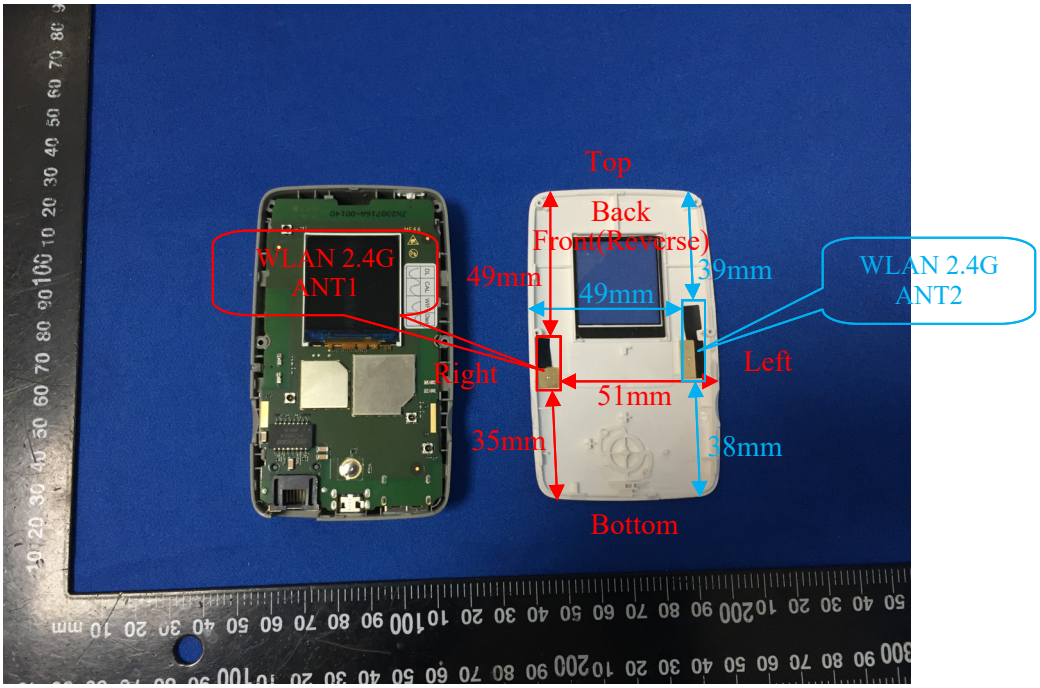
Mode	Channel frequency (MHz)	Data Rate	Duty Cycle (%)	Conducted Peak Output Power(dBm)		
				ANT1	ANT2	Total
802.11b	2412	1Mbps	100	11.25	11.41	/
	2437			11.20	11.18	/
	2462			9.70	10.41	/
802.11g	2412	6Mbps	100	11.75	**11.92**	/
	2437			11.63	11.64	/
	2462			10.66	11.16	/
802.11n ht20	2412	MCS0	100	11.22	11.38	14.31
	2437			10.97	10.69	13.84
	2462			9.94	10.08	13.02
802.11n ht40	2422	MCS0	100	9.91	9.47	12.71
	2437			9.96	9.64	12.81
	2452			9.84	9.75	12.81

Note: The duty cycle plots, please refer to the radio report: SZ1240124-05544E-RF-00A.

8. STANDALONE SAR TEST EXCLUSION CONSIDERATIONS

8.1 Antennas Location:





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

8.2 Antenna Distance To Edge

Antenna Distance To Edge(mm)						
Antenna	**Back**	**Front**	**Left**	**Right**	**Top**	**Bottom**
WWAN Main Antenna(WCDMA/LTE)	< 5	20	< 5	< 5	< 5	90
WLAN 2.4G ANT1	20	< 5	51	< 5	49	35
WLAN 2.4G ANT2	20	< 5	< 5	49	39	38

8.3 Standalone SAR test exclusion considerations

Mode	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Distance (mm)	Calculated value	Threshold (1-g)	SAR Test Exclusion
WLAN 2.4G ANT1	2462	12	15.85	0	5.0	3	NO
WLAN 2.4G ANT2	2462	12	15.85	0	5.0	3	NO

Note: *The WLAN 2.4G based peak output 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:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤7.5 for 10-g extremity SAR, where
1. f(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.

8.4 SAR test exclusion for the EUT edge considerations Result

Antenna Distance To Edge(mm)						
Mode	**Back**	**Front**	**Left**	**Right**	**Top**	**Bottom**
WWAN Main Antenna(WCDMA/LTE)	**Required**	**Required**	**Required**	**Required**	**Required**	Exclusion
WLAN 2.4G ANT1	**Required**	**Required**	Exclusion	**Required**	Exclusion	Exclusion
WLAN 2.4G ANT2	**Required**	**Required**	**Required**	Exclusion	Exclusion	Exclusion

Note:

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

9. SAR MEASUREMENT RESULTS

This page summarizes the results of the performed dosimetric evaluation.

9.1 SAR Test Data

Environmental Conditions

Temperature:	21.6-22.5 ℃	21.7-22.3℃
Relative Humidity:	48 %	48 %
ATM Pressure:	100.5 kPa	101.2 kPa
Test Date:	2024/04/13	2024/04/14

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

WCDMA Band 2:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Front (10mm)	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	22.56	23	1.107	0.195	0.22	1#
	1907.6	RMC	/	/	/	/	/	/
Body Back (10mm)	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	22.56	23	1.107	0.465	**0.51**	2#
	1907.6	RMC	/	/	/	/	/	/
Body Left (10mm)	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	22.56	23	1.107	0.279	0.31	3#
	1907.6	RMC	/	/	/	/	/	/
Body Right (10mm)	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	22.56	23	1.107	0.085	0.09	4#
	1907.6	RMC	/	/	/	/	/	/
Body Top (10mm)	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	22.56	23	1.107	0.455	0.50	5#
	1907.6	RMC	/	/	/	/	/	/

WCDMA Band 5:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Front (10mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	20.93	21.5	1.14	0.035	0.04	6#
	846.6	RMC	/	/	/	/	/	/
Body Back (10mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	20.93	21.5	1.14	0.138	**0.16**	7#
	846.6	RMC	/	/	/	/	/	/
Body Left (10mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	20.93	21.5	1.14	0.033	0.04	8#
	846.6	RMC	/	/	/	/	/	/
Body Right (10mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	20.93	21.5	1.14	0.028	0.03	9#
	846.6	RMC	/	/	/	/	/	/
Body Top (10mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	20.93	21.5	1.14	0.110	0.13	10#
	846.6	RMC	/	/	/	/	/	/

Note:

1. When the 1-g SAR is≤ 0.8W/Kg, testing for other channels are optional.
2. The EUT transmit and receive through the same antenna while testing SAR.
3. The default test configuration is to measure SAR with an established radio link between the EUT and a communication test set using a 12.2 kbps RMC (reference measurement Channel) Configured in Test Loop Model.
4. KDB 941225 D01-Body SAR is not required for HSDPA/HSUPA/HSPA+ when the maximum average output of each RF channel is less than ¼ dB higher than measured 12.2kbps RMC or the maximum SAR for 12.2kbps RMC is < 75% of SAR limit.
5. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.

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
Body Front (10mm)	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	22.75	23	1.059	0.266	0.28	11#
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	22.58	23	1.102	0.284	0.31	12#
Body Back (10mm)	1860	20	1RB	22.46	23	1.132	0.316	0.36	13#
	1880	20	1RB	22.75	23	1.059	0.863	**0.91**	14#
	1900	20	1RB	22.38	23	1.153	0.336	0.39	15#
	1880	20	50%RB	22.58	23	1.102	0.641	0.71	16#
	1880	20	100%RB	22.65	23	1.084	0.434	0.47	17#
Body Left (10mm)	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	22.75	23	1.059	0.242	0.26	18#
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	22.58	23	1.102	0.183	0.20	19#
Body Right (10mm)	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	22.75	23	1.059	0.169	0.18	20#
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	22.58	23	1.102	0.132	0.15	21#
Body Top (10mm)	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	22.75	23	1.059	0.619	0.66	22#
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	22.58	23	1.102	0.471	0.52	23#

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
Body Front (10mm)	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	23.39	23.5	1.026	0.448	0.46	24#
	1745	20	1RB	/	/	/	/	/	/
	1732.5	20	50%RB	23.32	23.5	1.042	0.393	0.41	25#
Body Back (10mm)	1720	20	1RB	23.44	23.5	1.014	0.524	0.53	26#
	1732.5	20	1RB	23.39	23.5	1.026	1.03	1.06	27#
	1745	20	1RB	23.38	23.5	1.028	1.05	**1.08**	28#
	1720	20	50%RB	23.42	23.5	1.019	0.449	0.46	29#
	1732.5	20	50%RB	23.32	23.5	1.042	0.926	0.96	30#
	1745	20	50%RB	23.36	23.5	1.033	0.691	0.71	31#
	1732.5	20	100%RB	23.36	23.5	1.033	0.915	0.95	32#
Body Left (10mm)	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	23.39	23.5	1.026	0.255	0.26	33#
	1745	20	1RB	/	/	/	/	/	/
	1732.5	20	50%RB	23.32	23.5	1.042	0.253	0.26	34#
Body Right (10mm)	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	23.39	23.5	1.026	0.194	0.20	35#
	1745	20	1RB	/	/	/	/	/	/
	1732.5	20	50%RB	23.32	23.5	1.042	0.203	0.21	36#
Body Top (10mm)	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	23.39	23.5	1.026	0.728	0.75	37#
	1745	20	1RB	/	/	/	/	/	/
	1732.5	20	50%RB	23.32	23.5	1.042	0.668	0.70	38#

LTE Band 12&17:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Front (10mm)	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	23.01	23.5	1.119	0.100	0.11	39#
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	22.78	23.5	1.18	0.063	0.07	40#
Body Back (10mm)	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	23.01	23.5	1.119	0.559	**0.63**	41#
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	22.78	23.5	1.18	0.333	0.39	42#
Body Left (10mm)	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	23.01	23.5	1.119	0.106	0.12	43#
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	22.78	23.5	1.18	0.054	0.06	44#
Body Right (10mm)	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	23.01	23.5	1.119	0.183	0.20	45#
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	22.78	23.5	1.18	0.097	0.11	46#
Body Top (10mm)	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	23.01	23.5	1.119	0.120	0.13	47#
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	22.78	23.5	1.18	0.065	0.08	48#

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.
8. Worst case SAR for 50% RB allocation is selected to be tested.
9. The E-UTRA Operating Band 17 is a subset of band 12, and they are same in modulation type and rated output power, therefore, they were considered as one frequency band during SAR measurement, LTE Band 12 (the wide frequency range) was selected to test.

WLAN 2.4G ANT1:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Body Front (10mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	11.2	11.5	1.072	1	0.268	0.29	49#
	2462	802.11b	/	/	/	/	/	/	/
Body Back (10mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	11.2	11.5	1.072	1	0.014	0.02	50#
	2462	802.11b	/	/	/	/	/	/	/
Body Right (10mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	11.2	11.5	1.072	1	0.314	**0.34**	51#
	2462	802.11b	/	/	/	/	/	/	/

WLAN 2.4G ANT2:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Body Front (10mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	11.18	11.5	1.076	1	0.231	**0.25**	52#
	2462	802.11b	/	/	/	/	/	/	/
Body Back (10mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	11.18	11.5	1.076	1	0.028	0.03	53#
	2462	802.11b	/	/	/	/	/	/	/
Body Left (10mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	11.18	11.5	1.076	1	0.103	0.11	54#
	2462	802.11b	/	/	/	/	/	/	/

Note:

1. When the 1-g SAR is≤ 0.8W/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.

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 (~ 10% from the 1-g SAR limit).
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

Note: The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

The Highest Measured SAR Configuration in Each Frequency Band

Body

SAR probe calibration point	Frequency Band	Freq.(MHz)	EUT Position	Meas. SAR (W/kg)		Largest to Smallest SAR Ratio
				Original	Repeated	
1750MHz	LTE Band 4	1745	Body Back	1.05	1.01	1.04
1900MHz	LTE Band 2	1880	Body Back	0.863	0.849	1.02

Note:

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

11. SAR SIMULTANEOUS TRANSMISSION DESCRIPTION

11.1 Simultaneous Transmission:

Description of Simultaneous Transmit Capabilities		
Transmitter Combination	**Simultaneous?**	**Hotspot?**
WWAN(WCDMA/LTE)Antenna + WLAN 2.4G ANT1	√	√
WWAN(WCDMA/LTE)Antenna + WLAN 2.4G ANT2	√	√
WLAN 2.4G ANT1+ WLAN 2.4G ANT2	√	√
WWAN(WCDMA/LTE)Antenna + WLAN 2.4G ANT1+ WLAN 2.4G ANT2	√	√

11.2 Simultaneous SAR test exclusion considerations:

Mode(SAR1+SAR2)	Position	Reported SAR(W/kg)		ΣSAR < 1.6W/kg
		SAR1	SAR2	
WWAN(WCDMA/LTE)+ WLAN 2.4G ANT1	Body Front	0.46	0.29	0.75
	Body Back	1.08	0.02	1.10
	Body Left	0.31	NA	0.31
	Body Right	0.21	0.34	0.55
	Body Top	0.75	NA	0.75
WWAN(WCDMA/LTE)+ WLAN 2.4G ANT2	Body Front	0.46	0.25	0.71
	Body Back	1.08	0.03	**1.11**
	Body Left	0.31	0.11	0.42
	Body Right	0.21	NA	0.21
	Body Top	0.75	NA	0.75
WLAN 2.4G ANT1 + WLAN 2.4G ANT2	Body Front	0.29	0.25	0.54
	Body Back	0.02	0.03	0.05
	Body Left	NA	0.11	0.11
	Body Right	0.34	NA	0.34

Mode(SAR1+SAR2+SAR3)	Position	Reported SAR(W/kg)			ΣSAR < 1.6W/kg
		SAR1	SAR2	SAR3	
WWAN(WCDMA/LTE)Antenna + WLAN 2.4G ANT1+ WLAN 2.4G ANT2	Body Front	0.46	0.29	0.25	1.00
	Body Back	1.08	0.02	0.03	**1.13**
	Body Left	0.31	NA	0.11	0.42
	Body Right	0.21	0.34	NA	0.55
	Body Top	0.75	NA	NA	0.75

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

APPENDIX A - MEASUREMENT UNCERTAINTY

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

Measurement uncertainty evaluation for IEEE1528-2013 SAR test

Uncertainty component	Tolerance/ uncertainty ± %	Probability distribution	Divisor	ci (1 g)	ci (10 g)	Standard uncertainty ± %, (1 g)	Standard uncertainty ± %, (10 g)
Measurement system							
Probe calibration(k=1)	6.55	N	1	1	1	6.6	6.6
Axial isotropy	4.7	R	√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 ambient conditions-noise	1.0	R	√3	1	1	0.6	0.6
RF ambient conditions-reflections	1.0	R	√3	1	1	0.6	0.6
Probe positioner mech. 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 integrations algorithms 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	4.7	N	1	1	1	4.7	4.7
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, thickness and permittivity	4.0	R	√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	√3	0.78	0.71	0.8	0.7
Liquid permittivity – temperature uncertainty	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

Measurement uncertainty evaluation for IEC62209-2 SAR test

Source of uncertainty	Tolerance/ Uncertainty value ± %	Probability Distribution	Divisor	ci (1 g)	ci (10 g)	Standard uncertainty ± %, (1 g)	Standard uncertainty ± %, (10 g)
Measurement system							
Probe calibration	6.55	N	1	1	1	6.6	6.6
Isotropy	4.7	R	√3	1	1	2.7	2.7
Linearity	4.7	R	√3	1	1	2.7	2.7
Probe modulation response	0.0	R	√3	1	1	0.0	0.0
Detection limits	1.0	R	√3	1	1	0.6	0.6
Boundary effect	1.0	R	√3	1	1	0.6	0.6
Readout electronics	0.3	N	1	1	1	0.3	0.3
Response time	0.0	R	√3	1	1	0.0	0.0
Integration time	0.0	R	√3	1	1	0.0	0.0
RF ambient conditions – noise	1.0	R	√3	1	1	0.6	0.6
RF ambient conditions – reflections	1.0	R	√3	1	1	0.6	0.6
Probe positioner mech. restrictions	0.8	R	√3	1	1	0.5	0.5
Probe positioning with respect to phantom shell	6.7	R	√3	1	1	3.9	3.9
Post-processing	2.0	R	√3	1	1	1.2	1.2
Test sample related							
Device holder uncertainty	4.7	N	1	1	1	4.7	4.7
Test sample positioning	3.3	N	1	1	1	3.3	3.3
Power scaling	4.5	R	√3	1	1	2.6	2.6
Drift of output power (measured SAR drift)	5.0	R	√3	1	1	2.9	2.9
Phantom and set-up							
Phantom uncertainty (shape and thickness tolerances)	4.0	R	√3	1	1	2.3	2.3
Algorithm for correcting SAR for deviations in permittivity and conductivity	1.9	N	1	1	0.84	1.9	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	√3	0.78	0.71	0.8	0.7
Liquid permittivity – temperature uncertainty	0.3	R	√3	0.23	0.26	0.0	0.0
Combined standard uncertainty		RSS				11.8	11.7
Expanded uncertainty (95 % confidence interval)						23.6	23.4

APPENDIX B - SAR PLOTS

Please refer to the attachment.

APPENDIX C - EUT TEST POSITION PHOTOS

Please refer to the attachment.

APPENDIX D - PROBE CALIBRATION CERTIFICATES

Please refer to the attachment.

APPENDIX E - DIPOLE CALIBRATION CERTIFICATES

Please refer to the attachment.

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