SAR EVALUATION REPORT

For

FEITIAN Technologies Co., Ltd.

17th Floor, Tower B, Huizhi Mansion, No.9 Xueqing Road, Haidian District, Beijing, China.

FCC ID: ZD3FTF310P

Report Type: Original Report	**Product Type:** Android POS Terminal	
Project Engineer:	Bard Liu	
Report Number:	RKSA240112001-20B	
Report Date:	2024-05-09	
Reviewed By:	Oscar Ye EMC Manager	
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Kunshan) No.248, Chenghu Road, Development Zone, Yushan, Kunshan, Suzhou, Jiangsu, China Tel: +86-512-86175000 Fax: +86-512-88934268 www.baclcorp.com.cn	

Attestation of Test Results			
EUT Information	EUT Description	Android POS Terminal	
	Tested Model	F310 P	
	Series Model:	F310	
	Model Difference:	Model name, see the declaration letter for details	
	FCC ID	ZD3FTF310P	
	Serial Number	RKSA240112001-1	
	Test Date	2024-04-08~ 2024-04-12	
MODE		Max. SAR Level(s) Reported(W/kg)	Limit
GSM850		0.208 W/kg 1g Body SAR	1.6 W/kg(Body)
GSM1900		0.287 W/kg 1g Body SAR	
WCDMA II		0.279 W/kg 1g Body SAR	
WCDMA lV		0.138W/kg 1g Body SAR	
WCDMA V		0.115 W/kg 1g Body SAR	
LTE Band 2		0.464 W/kg 1g Body SAR	
LTE Band 4		0.364 W/kg 1g Body SAR	
LTE Band 5		0.081 W/kg 1g Body SAR	
LTE Band 7		0.359 W/kg 1g Body SAR	
LTE Band 38		0.118 W/kg 1g Body SAR	
2.4GHz WLAN		0.063 W/kg 1g Body SAR	
5.2GHz WLAN		0.24 W/kg 1g Body SAR	
5.8GHz WLAN		0.335 W/kg 1g Body SAR	
Simultaneous		0.799 W/kg 1g Body SAR(Hotspot) 0.799 W/kg 1g Body SAR	
Applicable Standards	**FCC 47 CFR part 2.1093** Radiofrequency radiation exposure evaluation: portable devices		
	RF Exposure Procedures: TCB Workshop April 2019		
	IEEE 1528:2013 IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques		
	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)		

	KDB procedures KDB 447498 D01 General RF Exposure Guidance v06 KDB 648474 D04 Handset SAR v01r03 KDB 941225 D01 3G SAR Procedures v03r01 KDB 941225 D05 SAR for LTE Devices v02r05 KDB 941225 D06 Hot Spot SAR v02r01 KDB 248227 D01 802.11 Wi-Fi SAR v02r02 KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04 KDB 865664 D02 RF Exposure Reporting v01r02
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.**	

Note:
We chose a device with a 3000MA battery for testing because of its small size and relatively poor results

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	RKSA240112001-20B	Original Report	2024-05-09

EUT DESCRIPTION

**All measurement and test data in this report was gathered from production sample serial number: : RKSA240112001-1 Assigned by BACL (kunshan).The EUT supplied by the applicant was received on 2024-01-12.*

Technical Specification

Device Type:	portable
Exposure Category:	Population / Uncontrolled
Antenna Type(s):	FPC Antenna
Body-Worn Accessories:	None
Face-Head Accessories:	None
Operation Mode :	GPRS/EGPRS WCDMA FDD-LTE/ TDD-LTE WLAN2.4G/WLAN 5G Bluetooth
Frequency Band:	GSM 850: 824-849 MHz(TX), 869-894 MHz(RX) GSM1900: 1850-1910MHz(TX), 1930-1990MHz(RX) WCDMA Band II: 1850-1910 MHz MHz(TX), 1930-1990 MHz(RX) WCDMA Band IV: 1710-1755 MHz(TX), 2110-2155MHz(RX) WCDMA Band V: 824-849 MHz(TX), 869-894 MHz(RX) LTE Band 2: 1850-1910 MHz(TX), 1930-1990MHz(RX) LTE Band 4: 1710-1755 MHz(TX), 2110-2155MHz(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 38: 2570-2620 MHz(TX), 2570-2520 MHz(RX) 2.4G Wi-Fi: 2412-2462 MHz(802.11b/g/n20), 2422-2452 MHz(802.11n40) BT/BLE(1Mbps): 2402 -2480 MHz 5G Wi-Fi B1: 5180-5240 MHz,B4: 5745-5825 MHz
Power Source:	DC 3.8V from battery
Normal Operation:	Body Supported

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.

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 for 1g Body SAR applied to the EUT

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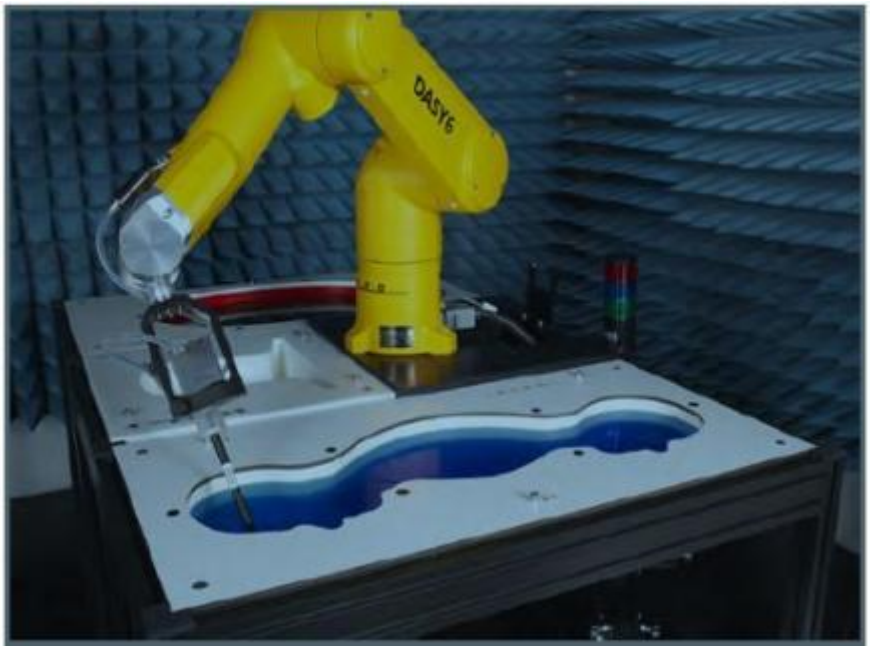
FACILITIES

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China.

Bay Area Compliance Laboratories Corp. (Kunshan) is accredited in accordance with ISO/IEC 17025:2017 by NVLAP (Lab code: 600338-0), and the lab has been recognized as the FCC accredited lab under the KDB 974614 D01, the FCC Designation No. : CN5055.

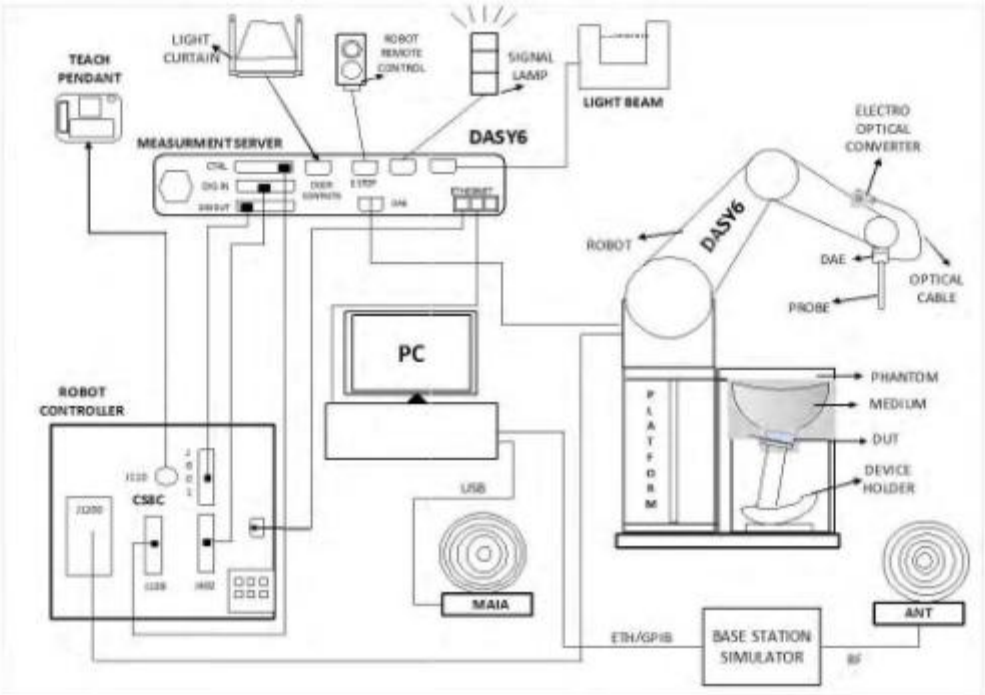
DESCRIPTION OF TEST SYSTEM

These measurements were performed with the automated near-field scanning system DASY6 from Schmid & Partner Engineering AG (SPEAG) which is the Fifth generation of the system shown in the figure hereinafter:



DASY6 System Description

The DASY6 system for performing compliance tests consists of the following items:



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

DASY6 Measurement Server

The DASY6 measurement server is based on a PC/104 CPU board with a 400 MHz Intel ULV Celeron, 128 MB chip-disk and 128 MB RAM. The necessary circuits for communication with the DAE4 (or DAE3) electronics box, as well as the 16-bit AD converter system for optical detection and digital I/O interface are contained on the DASY6 I/O board, which is directly connected to the PC/104 bus of the CPU board.

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

Data Acquisition Electronics

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

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

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

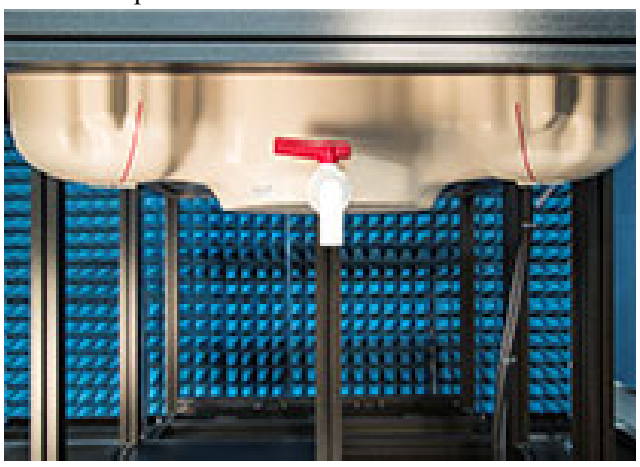
EX3DV4 E-Field Probes

Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 µW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)
Dimensions	Overall length: 337 mm (Tip: 9 mm) Tip diameter: 2.5 mm (Body: 10 mm) Typical distance from probe tip to dipole centers: 1 mm
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%.
Compatibility	DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI

SAM Twin Phantom

The SAM Twin Phantom (shown in front of DASY6) is a fiberglass shell phantom with shell thickness 2 mm, except in the ear region where the thickness is increased to 6 mm. The phantom has three measurement areas: 1) Left Head, 2) Right Head, and 3) Flat Section. For larger devices, the use of the ELI-Phantom (shown behind DASY6) is required. For devices such as glasses with a wireless link, the Face Down Phantom is the most suitable (between the SAM Twin and ELI phantoms).
When the phantom is mounted inside allocated slot of the DASY6 platform, phantom reference points can be taught directly in the DASY5 V5.2 software. When the DASY6 platform is used to mount the Phantom, some of the phantom teaching points cannot be reached by the robot in DASY5 V5.2. A special tool called P1a-P2aX-Former is provided to transform two of the three points, P1 and P2, to reachable locations. To use these new teaching points, a revised phantom configuration file is required.

In addition to our standard broadband liquids, the phantom can be used with the following tissue simulating liquids:
Sugar-water-based liquids can be left permanently in the phantom. Always cover the liquid when the system is not in use to prevent changes in liquid parameters due to water evaporation.
DGBE-based liquids should be used with care. As DGBE is a softener for most plastics, the liquid should be taken out of the phantom, and the phantom should be dried when the system is not in use (desirable at least once a week).
Do not use other organic solvents without previously testing the solvent resistivity of the phantom.
Approximately 25 liters of liquid is required to fill the SAM Twin phantom.



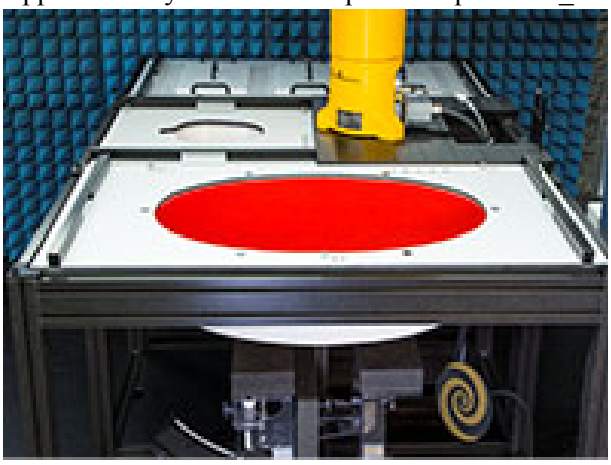
ELI Phantom

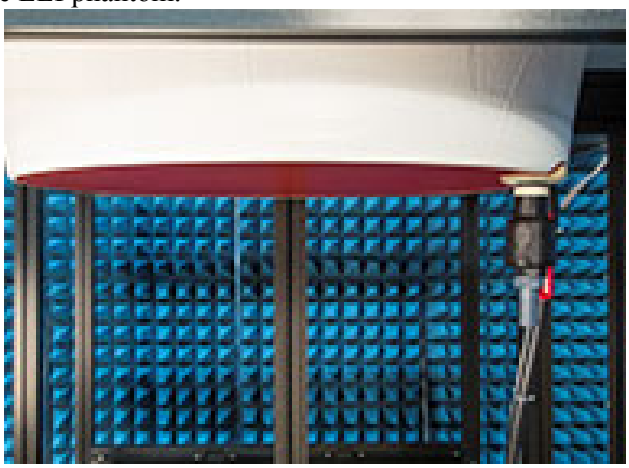
The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30MHz to 6 GHz. ELI is fully compatible with the latest draft of the standard IEEE 1528:2013 and the use of all known tissue simulating liquids. ELI has been optimized for performance and can be integrated into a SPEAG standard phantom table. A cover is provided to prevent evaporation of water and changes in liquid parameters. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points.

The phantom can be used with the following tissue simulating liquids:

- Sugar-water-based liquids can be left permanently in the phantom. Always cover the liquid when the system is not in use to prevent changes in liquid parameters due to water evaporation.
- DGBE-based liquids should be used with care. As DGBE is a softener for most plastics, the liquid should be taken out of the phantom, and the phantom should be dried when the system is not in use (desirable at least once a week).
- Do not use other organic solvents without previously testing the solvent resistivity of the phantom.

Approximately 25 liters of liquid is required to _fill the ELI phantom.





Robots

The DASY6 system uses the high-precision industrial robots TX60L, TX90XL, and RX160L from St aubli SA (France). The TX robot family - the successor of the well-known RX robot family - continues to offer the features important for DASY6 applications:

- 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 robots are controlled by the Staubli CS8c robot controllers. All information regarding the use and maintenance of the robot arm and the robot controller is provided

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 IEEE 1528:2013

Recommended Tissue Dielectric Parameters for Head liquid

Table 2 – Dielectric properties of the tissue-equivalent medium

Frequency MHz	Real part of the complex relative permittivity, ε_r'	Conductivity, σ S/m	Penetration depth (E-field), δ mm
4	*55,0*	*0,75*	293,0
13	*55,0*	*0,75*	165,5
30	55,0	0,75	112,8
150	52,3	0,76	62,0
300	45,3	0,87	46,1
450	43,5	0,87	43,0
750	*41,9*	*0,89*	39,8
835	41,5	0,90	39,0
900	41,5	0,97	36,2
1 450	40,5	1,20	28,6
1 800	40,0	1,40	24,3
1 900	40,0	1,40	24,3
1 950	40,0	1,40	24,3
2 000	40,0	1,40	24,3
2 100	*39,8*	*1,49*	22,8
2 450	39,2	1,80	18,7
2 600	*39,0*	*1,96*	17,2
3 000	38,5	2,40	14,0
3 500	*37,9*	*2,91*	11,4
4 000	*37,4*	*3,43*	10,0
4 500	*36,8*	*3,94*	9,7

5 000	*36,2*	*4,45*	1,5
5 200	*36,0*	*4,66*	8,4
5 400	*35,8*	*4,86*	8,1
5 600	*35,5*	*5,07*	7,5
5 800	35,3	5,27	7,3
6 000	*35,1*	*5,48*	7,0
6 500	*34,5*	*6,07*	6,7
7 000	*33,9*	*6,65*	6,4
7 500	*33,3*	*7,24*	6,1
8 000	*32,7*	*7,84*	5,9
8 500	*32,1*	*8,46*	5,3
9 000	*31,6*	*9,08*	4,8
9 500	*31,0*	*9,71*	4,4
10 000	*30,4*	*10,40*	4,0
NOTE For convenience, permittivity and conductivity values are linearly interpolated for frequencies that are not a part of the original data from Drossos et al. [2]. They are shown in italics in Table 2. The italicized values are linearly interpolated (below 5800 MHz) or extrapolated (above 5800 MHz) from the non-italicized values that are immediately above and below these values.			

Note:

1, Effective February 19, 2019, FCC has permitted the use of single head-tissue simulating liquid specified in IEC 62209-1 for all SAR tests.

2, Mix and Match of traditional FCC SAR TSLs and IEC 62209-1 TSL in a single application is not permitted TSL can be changed in a Permissive Change.

3, If SAR increases and original SAR > 1.2 W/kg, additional SAR measurements will be required IEC 62209-1 TSL is an alternative, not mandatory at this time.

4, If FCC parameters are used, ±5% tolerance. If IEC parameters, ±10%.

5, In this case, IEC parameters applied.

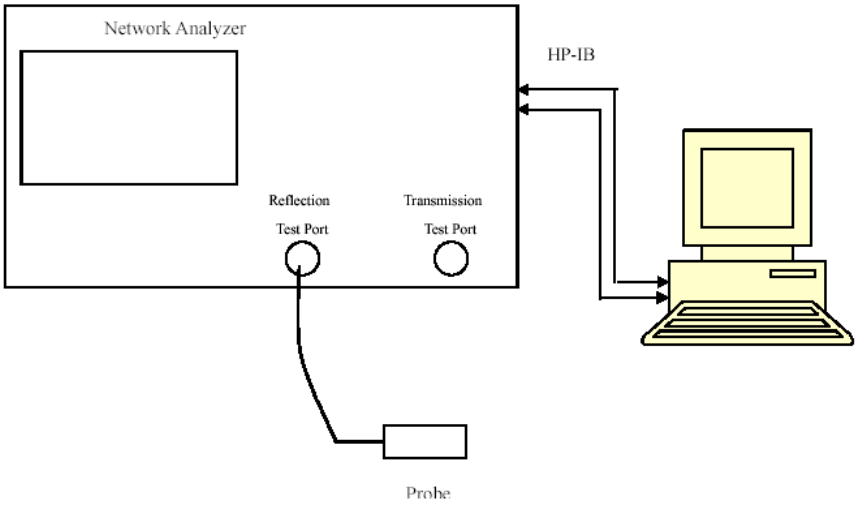
EQUIPMENT LIST AND CALIBRATION

Equipments List & Calibration Information

Equipment	Model	S/N	Calibration Date	Calibration Due Date
DASY5 Test Software	DASY52 52.10.2	N/A	N/A	N/A
DASY6 Measurement Server	DASY6 6.0.31	N/A	N/A	N/A
Data Acquisition Electronics	DAE4	527	2024/03/26	2025/03/25
E-Field Probe	EX3DV4	7557	2024/03/26	2025/03/25
Mounting Device	MD4HHTV5	SD 000 H01 KA	N/A	N/A
SAM-Twin V8.0 Phantom	QD 000 P41 AA	1963	N/A	N/A
Dipole, 835MHz	D835V2	445	2023/02/10	2026/02/09
Dipole,1750MHz	D1750V2	1140	2021/06/29	2024/06/28
Dipole,1900MHz	D1900V2	5d206	2021/09/01	2024/08/31
Dipole,2450MHz	D2450V2	970	2021/06/28	2024/06/27
Dipole,2600MHz	D2600V2	1162	2022/08/22	2025/08/21
Dipole,5GHz	D5GHzV2	1296	2022/08/17	2025/08/16
Simulated Tissue LiquidHead	HBBL600-6000V6	180611-3	Each Time	
Network Analyzer	E5071B	SG42400155	2023/05/23	2024/05/22
Dielectric Assessment Kit	DAK-3.5	SM DAK 300AB	N/A	N/A
Signal Generator	N5182B	MY53051592	2023/05/23	2024/05/22
Power Amplifier	5S1G4	71377	N/A	N/A
Directional Coupler	4242-10	3307	N/A	N/A
Attenuator	3dB	5402	N/A	N/A
Attenuator	10dB	AU 3842	N/A	N/A
Radio Communication Analyzer	MT8820C	6200930956	2023/06/15	2024/06/14
Hygrothermograph	HTC-1	N/A	2023/5/22	2024/5/21
Thermometer	UL-IL01	N/A	2023/5/22	2024/5/21
Power Meter	E4419B	MY41291878	2023/05/23	2024/05/22

SAR MEASUREMENT SYSTEM VERIFICATION

Liquid Verification



Liquid Verification Setup Block Diagram

Liquid Verification Results

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		σ (S/m)	ε_r	σ (S/m)	ε_r	Δ σ	Δ ε_r	
835	Head	0.912	41.632	0.900	41.500	1.33	0.32	±5
836.6	Head	0.914	41.615	0.901	41.500	1.44	0.28	±5
836.5	Head	0.914	41.622	0.901	41.500	1.44	0.29	±5

**Liquid Verification above was performed on 2024/04/08*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		σ (S/m)	ε_r	σ (S/m)	ε_r	Δ σ	Δ ε_r	
1750	Head	1.349	40.850	1.370	40.100	-1.53	1.87	±5
1732.6	Head	1.332	40.916	1.377	40.069	-3.27	2.11	±5
1732.5	Head	1.332	40.916	1.377	40.065	-3.27	2.12	±5

**Liquid Verification above was performed on 2024/04/09.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		σ (S/m)	ε_r	σ (S/m)	ε_r	Δ σ	Δ ε_r	
1900	Head	1.422	39.142	1.400	40.000	1.57	-2.14	±5
1880	Head	1.402	39.232	1.400	40.000	0.14	-1.92	±5

**Liquid Verification above was performed on 2024/04/10.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		σ (S/m)	ε_r	σ (S/m)	ε_r	Δ σ	Δ ε_r	
2600	Head	2.049	37.811	1.960	39.000	4.54	-3.05	±5
2595	Head	2.044	37.824	1.955	39.006	4.55	-3.03	±5

**Liquid Verification above was performed on 2024/04/11.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		Ơ (S/m)	ε_r	Ơ (S/m)	ε_r	Δ Ơ	Δ ε_r	
2450	Head	1.861	38.318	1.800	39.200	3.39	-2.25	±5
2437	Head	1.846	38.379	1.788	39.219	3.24	-2.14	±5
2535	Head	1.961	37.961	1.888	39.084	3.87	-2.87	±5

**Liquid Verification above was performed on 2024/04/11.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		Ơ (S/m)	ε_r	Ơ (S/m)	ε_r	Δ Ơ	Δ ε_r	
5250	Head	4.731	37.468	4.710	35.900	0.45	4.37	±5
5200	Head	4.680	37.542	4.660	36.000	0.43	4.28	±5

**Liquid Verification above was performed on 2024/04/12.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		Ơ (S/m)	ε_r	Ơ (S/m)	ε_r	Δ Ơ	Δ ε_r	
5750	Head	5.249	36.781	5.220	35.400	0.56	3.90	±5
5785	Head	5.283	36.743	5.255	35.315	0.53	4.04	±5

**Liquid Verification above was performed on 2024/04/12.*

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.

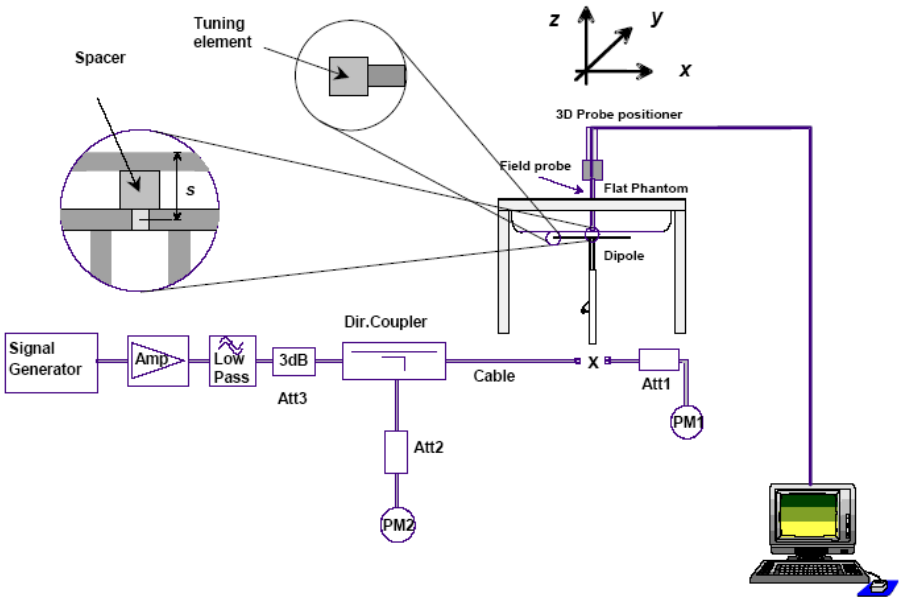
The spacing distance*s* in the **System Verification Setup Block Diagram** is given by the following:

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



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 (%)
2024/04/08	835 MHz	Head	250	1g	2.42	9.68	9.53	1.57	±10
2024/04/09	1750 MHz	Head	250	1g	9.48	37.92	35.90	5.63	±10
2024/04/10	1900MHz	Head	250	1g	9.15	36.6	39.60	-7.58	±10
2024/04/11	2600 MHz	Head	250	1g	13.80	55.2	54.90	0.55	±10
2024/04/11	2450 MHz	Head	250	1g	14.40	57.6	53.10	8.47	±10
2024/04/12	5250 MHz	Head	100	1g	8.54	85.4	79.40	7.56	±10
2024/04/12	5750 MHz	Head	100	1g	8.33	83.3	79.00	5.44	±10

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

SAR SYSTEM VALIDATION DATA

System Check_Head_835MHz

DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:445

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1

Medium parameters used: f = 835 MHz; σ = 0.912 S/m; ε_r = 41.632; ρ = 1000 kg/m^3

DASY5 Configuration:

- Probe: EX3DV4 - SN7557; ConvF(9.88, 9.88, 9.88); Calibrated: 3/26/2024;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn527; Calibrated: 3/26/2024
- Phantom: Twin-SAM; Type: QD 000 P41 Ax; Serial: 1963
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Pin=250mW/Area Scan (6x6x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.63 W/kg

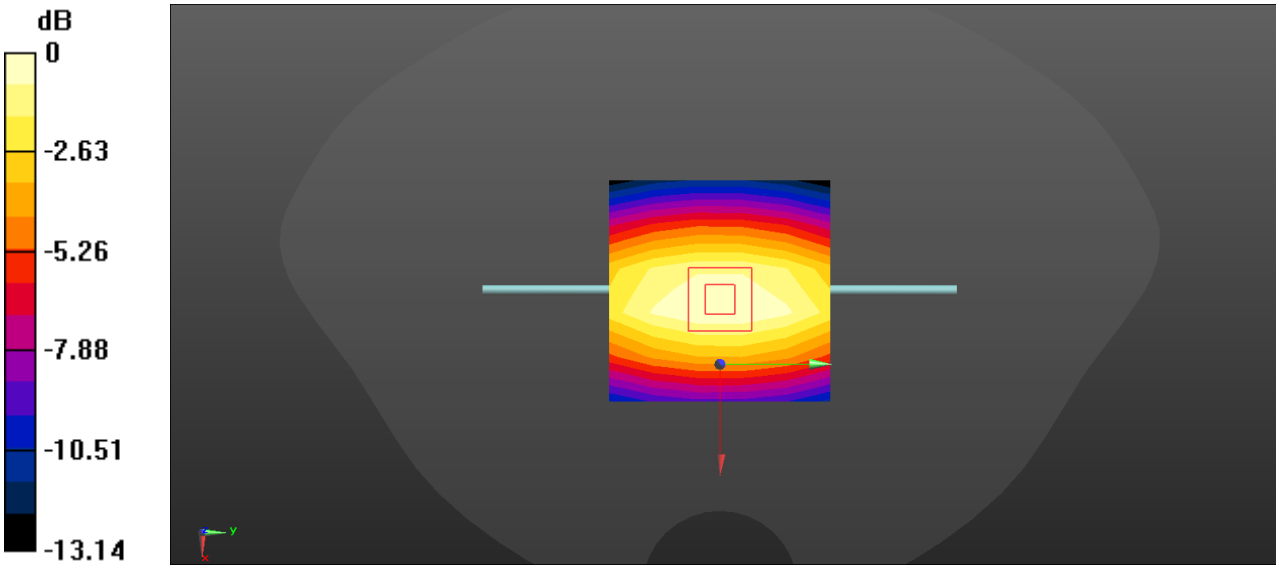
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 55.52 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 3.54 W/kg

SAR(1 g) = 2.42 W/kg; SAR(10 g) = 1.6 W/kg

Maximum value of SAR (measured) = 2.82 W/kg



0 dB = 2.82 W/kg = 4.50 dBW/kg

System Check_Head_1750MHz

DUT: Dipole 1750 MHz D1750V2; Type: D1750V2; Serial: D1750V2 - SN:1140

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

Medium parameters used: f = 1750 MHz; σ = 1.349 S/m; ε_r = 40.85; ρ = 1000 kg/m^3

DASY5 Configuration:

- Probe: EX3DV4 - SN7557; ConvF(8.28, 8.28, 8.28); Calibrated: 3/26/2024;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn527; Calibrated: 3/26/2024
- Phantom: Twin-SAM; Type: QD 000 P41 Ax; Serial: 1963
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Pin=250mW/Area Scan (6x6x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 9.26 W/kg

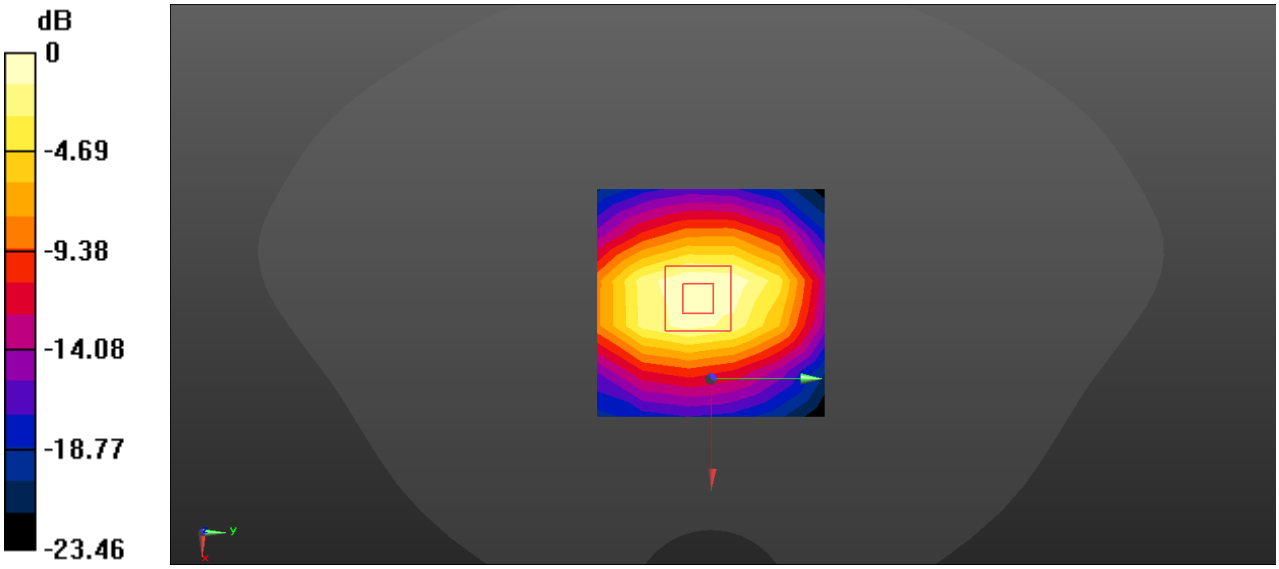
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 93.30 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 16.6 W/kg

SAR(1 g) = 9.48 W/kg; SAR(10 g) = 5.11 W/kg

Maximum value of SAR (measured) = 11.8 W/kg



0 dB = 11.8 W/kg = 10.72 dBW/kg

System Check_Head_1900MHz

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2; Serial: D1900V2 - SN:5d206

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

Medium parameters used: f = 1900 MHz; σ = 1.422 S/m; ε_r = 39.142; ρ = 1000 kg/m^3

DASY5 Configuration:

- Probe: EX3DV4 - SN7557; ConvF(7.92, 7.92, 7.92); Calibrated: 3/26/2024;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn527; Calibrated: 3/26/2024
- Phantom: Twin-SAM; Type: QD 000 P41 Ax; Serial: 1963
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Pin=250mW/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 11.0 W/kg

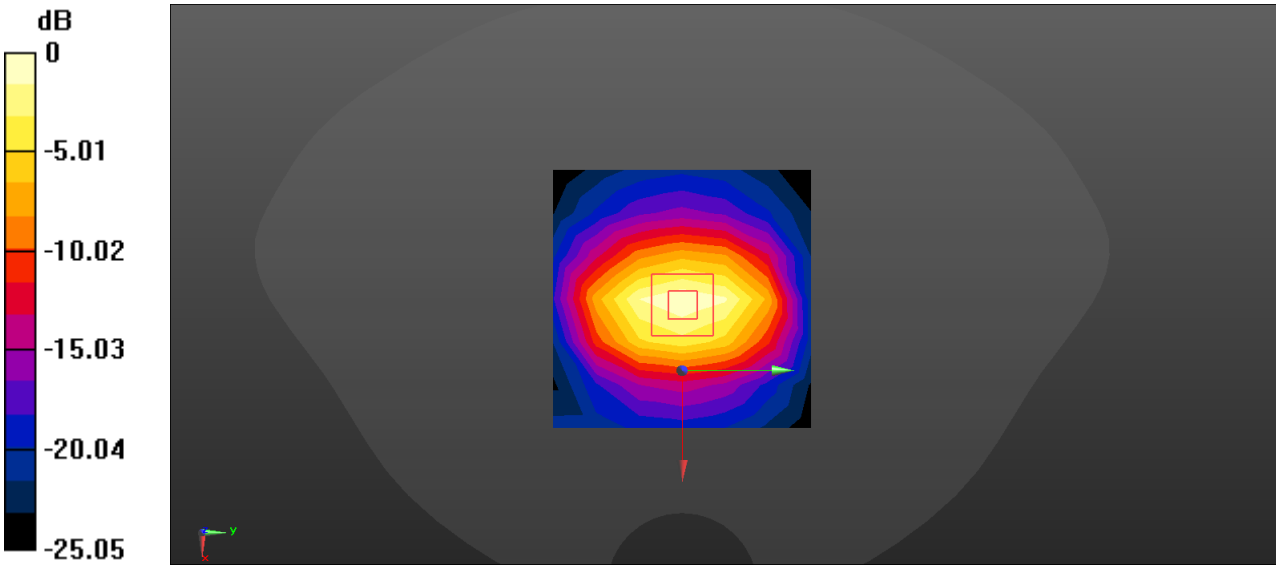
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 88.48 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 16.2 W/kg

SAR(1 g) = 9.15 W/kg; SAR(10 g) = 4.86 W/kg

Maximum value of SAR (measured) = 11.4 W/kg



0 dB = 11.4 W/kg = 10.57 dBW/kg

System Check_Head_2450MHz

DUT: Dipole 2450 MHz D2450V2; Type: D2450V2; Serial: D2450V2 - SN:970

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

Medium parameters used: f = 2450 MHz; σ = 1.861 S/m; ε_r = 38.318; ρ = 1000 kg/m^3

DASY5 Configuration:

- Probe: EX3DV4 - SN7557; ConvF(7.27, 7.27, 7.27); Calibrated: 3/26/2024;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn527; Calibrated: 3/26/2024
- Phantom: Twin-SAM; Type: QD 000 P41 Ax; Serial: 1963
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Pin=250mW/Area Scan (7x7x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 20.6 W/kg

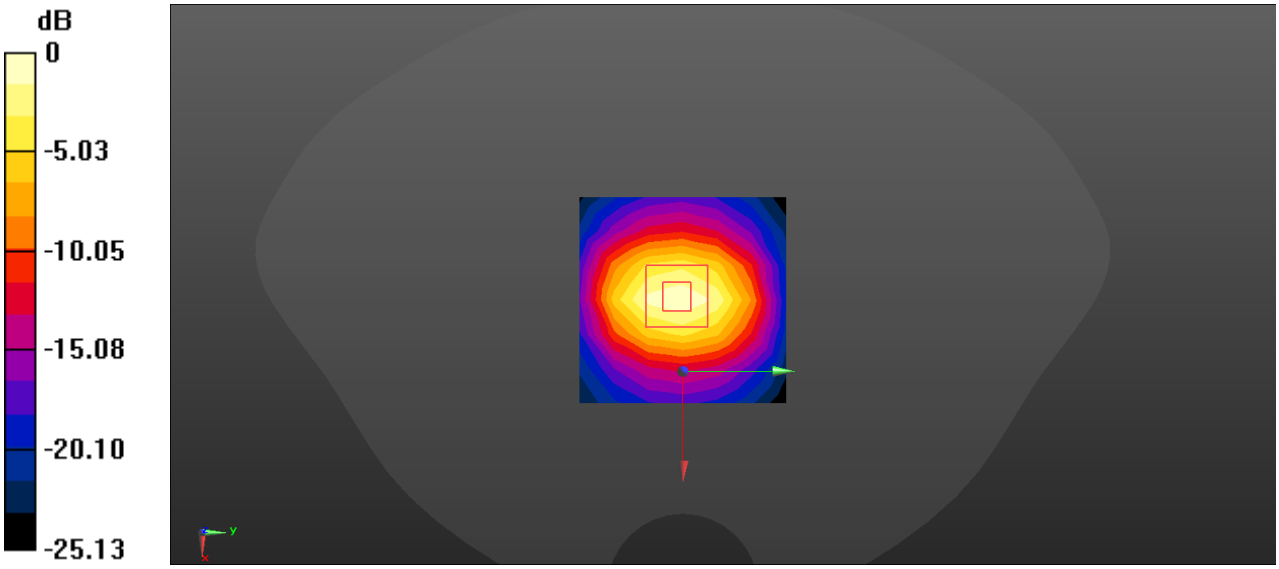
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 106.2 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 32.7 W/kg

SAR(1 g) = 14.4 W/kg; SAR(10 g) = 6.46 W/kg

Maximum value of SAR (measured) = 20.7 W/kg



0 dB = 20.7 W/kg = 13.16 dBW/kg

System Check_Head_2600MHz

DUT: D2600V2-1162; Type: D2600V2; Serial: D2600V2 - SN:1162

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

Medium parameters used: f = 2600 MHz; σ = 2.049 S/m; ε_r = 37.811; ρ = 1000 kg/m^3

DASY5 Configuration:

- Probe: EX3DV4 - SN7557; ConvF(7.02, 7.02, 7.02); Calibrated: 3/26/2024;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn527; Calibrated: 3/26/2024
- Phantom: Twin-SAM; Type: QD 000 P41 Ax; Serial: 1963
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Pin=250mW/Area Scan (7x7x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 22.9 W/kg

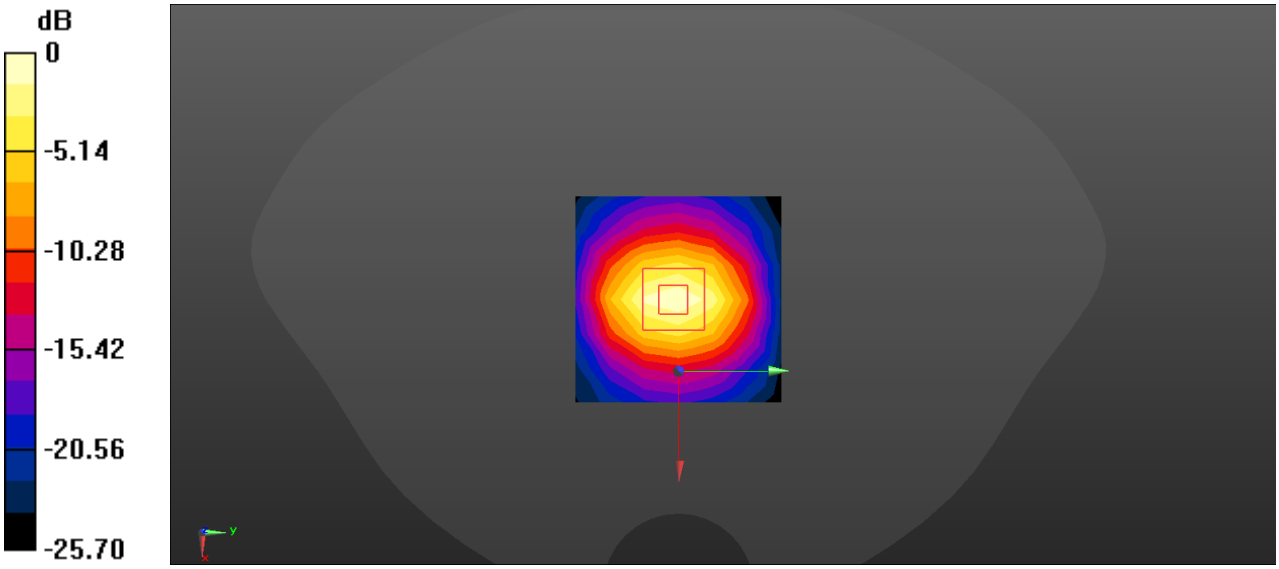
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 111.3 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 28.5 W/kg

SAR(1 g) = 13.8 W/kg; SAR(10 g) = 6.32 W/kg

Maximum value of SAR (measured) = 23.0 W/kg



0 dB = 23.0 W/kg = 13.62 dBW/kg

System Check_Head_5250MHz

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1296

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

Medium parameters used: f = 5250 MHz; σ = 4.731 S/m; ε_r = 37.468; ρ = 1000 kg/m^3

DASY5 Configuration:

- Probe: EX3DV4 - SN7557; ConvF(5.25, 5.25, 5.25); Calibrated: 3/26/2024;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn527; Calibrated: 3/26/2024
- Phantom: Twin-SAM; Type: QD 000 P41 Ax; Serial: 1963
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Pin=250mW/Area Scan (9x9x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 19.6 W/kg

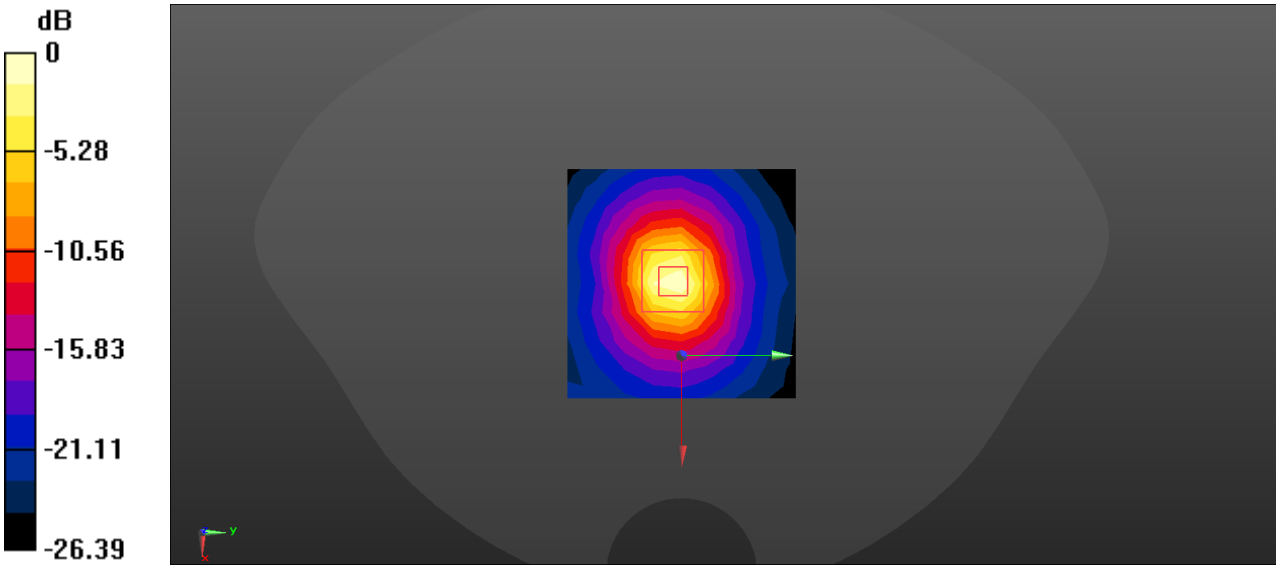
Pin=250mW/Zoom Scan (7x7x17)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 69.90 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 33.2 W/kg

SAR(1 g) = 8.54 W/kg; SAR(10 g) = 2.45 W/kg

Maximum value of SAR (measured) = 22.5 W/kg



0 dB = 22.5 W/kg = 13.52 dBW/kg

System Check_Head_5750MHz

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1296

Communication System: UID 0, CW (0); Frequency: 5750 MHz;Duty Cycle: 1:1

Medium parameters used: f = 5750 MHz; σ = 5.249 S/m; ε_r = 36.781; ρ = 1000 kg/m^3

DASY5 Configuration:

- Probe: EX3DV4 - SN7557; ConvF(4.78, 4.78, 4.78); Calibrated: 3/26/2024;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn527; Calibrated: 3/26/2024
- Phantom: Twin-SAM; Type: QD 000 P41 Ax; Serial: 1963
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7437)

Pin=100mW/Area Scan (8x8x1): Measurement grid: dx=10mm, dy=10mm

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

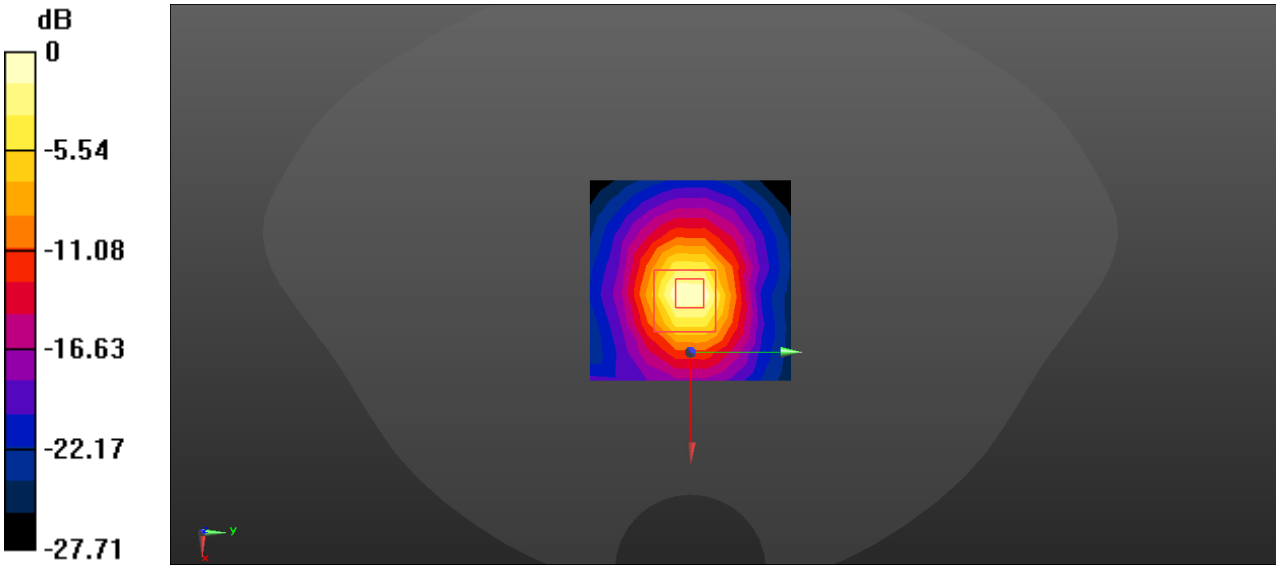
Pin=100mW/Zoom Scan (7x7x17)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 59.63 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 34.4 W/kg

SAR(1 g) = 8.33 W/kg; SAR(10 g) = 2.4 W/kg

Maximum value of SAR (measured) = 20.5 W/kg



0 dB = 20.5 W/kg = 13.12 dBW/kg

EUT TEST STRATEGY AND METHODOLOGY

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.

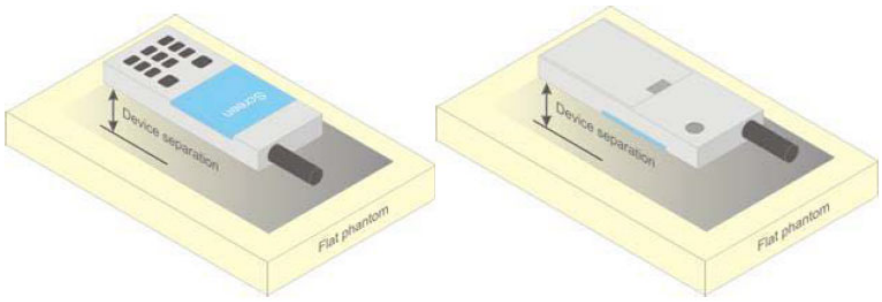


Figure 5 – Test positions for body-worn devices

Test Distance for SAR Evaluation

In this case the EUT (Equipment under Test) is set against from the phantom, the test distance is 10mm(Body supported).

SAR Evaluation Procedure

The evaluation was performed with the following procedure:

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

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

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

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

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

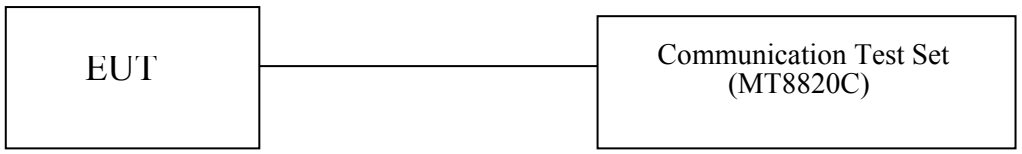
All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

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

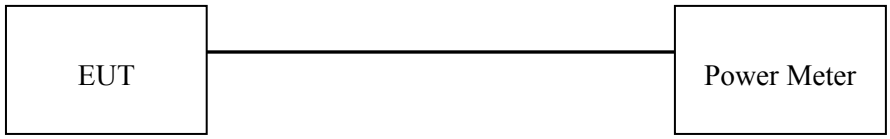
CONDUCTED OUTPUT POWER MEASUREMENT

Test Procedure

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



GPRS&WCDMA&LTE



WLAN/Bluetooth

Radio Configuration

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

GPRS/EGPRS

Function: Menu select > GSM Mobile Station > GSM 850/1900
Press Connection control to choose the different menus
Press RESET > choose all the reset all settings
Connection Press Signal Off to turn off the signal and change settings
Network Support > GSM + GPRS or GSM + EGSM
Main Service > Packet Data
Service selection > Test Mode A – Auto Slot Config. off
MS Signal Press Slot Config Bottom on the right twice to select and change the number of time slots and power setting
> Slot configuration > Uplink/Gamma
> 33 dBm for GPRS 850
> 30 dBm for GPRS 1900
> 27 dBm for EGPRS 850
> 26 dBm for EGPRS 1900
BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel
Frequency Offset > + 0 Hz
Mode > BCCH and TCH
BCCH Level > -85 dBm (May need to adjust if link is not stabe)
BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]

Channel Type > Off
P0 > 4 dB

Slot Config >Unchanged (if already set under MS signal)
TCH > choose desired test channel
Hopping > Off

Main Timeslot > 3
Network Coding Scheme > CS4 (GPRS) and MCS5 (EGPRS)
Bit Stream >2E9-1 PSR Bit Stream
AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input
Connection Press Signal on to turn on the signal and change settings

WCDMA Release 99

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

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

HSDPA

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

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subset	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm2			
	β_c	2/15	12/15	15/15	15/15
	β_d	15/15	15/15	8/15	4/15
	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				
	$Ahs=\beta_{hs}/\beta_c$	30/15				
HSUPA Specific Settings	DE-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_FCIs	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27		E-TFCI 11 E-TFCI PO4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27	

HSPA+

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

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	-	-	-	-	-

Maximum Target Output Power

Full Power Target power

Max Target Power(dBm)			
Mode/Band	Channel		
	Low	Middle	High
GSM850 GPRS 1Tx	33.5	33.5	33.5
GSM850 GPRS 2Tx	32.5	32.5	32.5
GSM850 GPRS 3Tx	31	31	31
GSM850 GPRS 4Tx	29.5	29.5	29.5
GSM850 EGPRS 1Tx	27.5	27.5	27.5
GSM850 EGPRS 2Tx	25.5	25.5	25.5
GSM850 EGPRS 3Tx	25	25	25
GSM850 EGPRS 4Tx	23.2	23.2	23.2
GSM1900 GPRS 1Tx	29	29	29
GSM1900 GPRS 2Tx	28.5	28.5	28.5
GSM1900 GPRS 3Tx	29	29	29
GSM1900 GPRS 4Tx	25.5	25.5	25.5
GSM1900 EGPRS 1Tx	26	26	26
GSM1900 EGPRS 2Tx	25.5	25.5	25.5
GSM1900 EGPRS 3Tx	24	24	24
GSM1900 EGPRS 4Tx	22.8	22.8	22.8
WCDMA Band 2(RMC12.2k)	22.5	22.5	22.5
WCDMA Band 2(HSDPA)	22.3	22.3	22.3
WCDMA Band 2(HSUPA)	22.3	22.3	22.3
WCDMA Band 2(HSPA+)	22.3	22.3	22.3
WCDMA Band 4	22.5	22.5	22.5
WCDMA Band 5	22.5	22.5	22.5
LTE Band 2	23.7	23.7	23.7
LTE Band 4	22.9	22.9	22.9
LTE Band 5	22.8	22.8	22.8
LTE Band 7	22.9	22.9	22.9
LTE Band 38	22.9	22.9	22.9
WLAN 2.4G（802.11b）	16	16	16
WLAN 2.4G（802.11g）	15.6	15.6	15.6
WLAN 2.4G（802.11n-HT20）	12	12	12
WLAN 2.4G（802.11n-HT40）	11	11	11
Bluetooth	9	9	9
BLE(1Mbps)	-1.0	-1.0	-1.0
WLAN 5.2G(802 11 a)	8.3	8.3	8.3
WLAN 5.2G(802 11 n20)	7	7	7
WLAN 5.2G(802 11 n40)	6.5	6.5	6.5
WLAN 5.2G(802 11 ac20)	7	7	7
WLAN 5.2G(802 11 ac40)	6.5	6.5	6.5

WLAN 5.2G(802 11 ac80)	5.5	5.5	5.5
WLAN 5.8G(802 11 a)	7.5	7.5	7.5
WLAN 5.8G(802 11 n20)	6.2	5.8	5.0
WLAN 5.8G(802 11 n40)	5.0	5.0	5.0
WLAN 5.8G(802 11 ac20)	5.7	5.7	5.7
WLAN 5.8G(802 11 ac40)	5.0	5.0	5.0
WLAN 5.8G(802 11 ac80)	4	4	4

Test Results:

GPRS:

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)			
			1 slot	2 slots	3 slots	4 slots
GSM 850	128	824.2	33.01	31.87	30.62	29.25
	190	836.6	33.24	31.96	30.73	29.34
	251	848.8	33.19	31.91	30.69	29.32
PCS 1900	512	1850.2	28.81	28.15	27.11	25.14
	661	1880.0	28.85	28.19	27.05	25.05
	810	1909.8	28.79	28.13	27.07	25.09

EDGE:

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)			
			1 slot	2 slots	3 slots	4 slots
GSM 850	128	824.2	26.94	25.08	24.51	22.95
	190	836.6	26.81	24.97	24.43	22.87
	251	848.8	26.91	25.03	24.47	22.92
PCS 1900	512	1850.2	25.71	25.05	23.78	22.64
	661	1880.0	25.88	25.11	23.81	22.68
	810	1909.8	25.57	25.01	23.74	22.61

For SAR, the time based average power is relevant, the difference in between depends on the duty cycle of the TDMA signal.

Number of Time slot	1	2	3	4
Duty Cycle	1:8	1:4	1:2.66	1:2
Time based Ave. power compared to slotted Ave. power	-9 dB	-6 dB	-4.25 dB	-3 dB
Crest Factor	8	4	2.66	2

The time based average power for GPRS

Band	Channel No.	Frequency (MHz)	Time based average Power (dBm)			
			1 slot	2 slot	3 slots	4 slots
GSM 850	128	824.2	24.01	25.87	26.37	26.25
	190	836.6	24.24	25.96	26.48	26.34
	251	848.8	24.19	25.91	26.44	26.32
PCS 1900	512	1850.2	19.81	22.15	22.86	22.14
	661	1880	19.85	22.19	22.80	22.05
	810	1909.8	19.79	22.13	22.82	22.09

The time based average power for EDGE

Band	Channel No.	Frequency (MHz)	Time based average Power (dBm)			
			1 slot	2 slot	3 slots	4 slots
GSM 850	128	824.2	17.94	19.08	20.26	19.95
	190	836.6	17.81	18.97	20.18	19.87
	251	848.8	17.91	19.03	20.22	19.92
PCS 1900	512	1850.2	16.71	19.05	19.53	19.64
	661	1880	16.88	19.11	19.56	19.68
	810	1909.8	16.57	19.01	19.49	19.61

Note:

1. Rohde & Schwarz Radio Communication Tester (MT8820C) was used for the measurement of GSM peak and average output power for active timeslots.
2. .For GPRS, 1, 2, 3 and 4 timeslots has been activated separately with power level 3(850 MHz band) and 3(1900 MHz band).
3. According to KDB941225D01-SAR for EGPRS mode are not required when the source-based time-averaged output power for data mode is lower than that in the normal GPRS mode.

WCDMA:

WCDMA Band II

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band II)	Normal	RMC12.2k	1	22.12	22.16	21.96
		HSDPA	1	22.09	22.12	22.03
			2	22.13	22.15	21.99
			3	22.12	22.13	21.95
			4	22.13	22.11	21.99
		HSUPA	1	22.15	22.13	22.01
			2	22.15	22.14	22.03
			3	22.14	22.12	22.02
			4	22.14	22.15	21.99
			5	22.15	22.14	21.96
		HSPA+	1	22.16	22.18	22.17

WCDMA Band lV

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band lV)	Normal	RMC12.2k	1	22.38	22.15	22.24
		HSDPA	1	22.32	22.11	22.28
			2	22.34	22.13	22.26
			3	22.37	22.15	22.21
			4	22.37	22.16	22.26
		HSUPA	1	22.34	22.13	22.23
			2	22.33	22.18	22.24
			3	22.36	22.13	22.28
			4	22.31	22.16	22.21
			5	22.35	22.17	22.26
		HSPA+	1	22.31	22.19	22.31

WCDMA Band V

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band V)	Normal	RMC12.2k	1	22.22	22.19	22.11
		HSDPA	1	22.21	22.16	22.11
			2	22.19	22.12	22.14
			3	22.18	22.15	22.12
			4	22.18	22.18	22.16
		HSUPA	1	22.09	22.13	22.17
			2	22.12	22.15	22.14
			3	22.17	22.18	22.14
			4	22.06	22.09	22.13
			5	22.11	22.12	22.11
		HSPA+	1	22.12	22.21	22.19

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.

Maximum Output Power:

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	22.65	22.55	22.19
		1#3	22.53	22.46	22.27
		1#5	22.51	22.47	22.25
		3#0	22.53	22.56	22.19
		3#3	22.49	22.52	22.35
		6#0	22.56	22.54	22.39
	16-QAM	1#0	22.51	22.59	22.23
		1#3	22.59	22.53	22.17
		1#5	22.57	22.45	22.25
		3#0	22.54	22.43	22.37
		3#3	22.53	22.48	22.26
		6#0	22.51	22.55	22.18
3M	QPSK	1#0	23.48	22.54	22.28
		1#8	23.51	22.57	22.26
		1#14	23.50	22.58	22.35
		6#0	22.45	22.51	22.37
		6#9	22.46	22.53	22.41
		15#0	22.49	22.56	22.28
	16-QAM	1#0	23.16	22.42	22.39
		1#8	23.46	22.39	22.17
		1#14	23.38	22.47	22.42
		6#0	23.45	22.57	22.19
		6#9	23.51	22.74	22.54
		15#0	23.00	22.83	22.70

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	1#0	22.61	22.95	22.76
		1#13	22.89	22.80	22.68
		1#24	22.75	22.81	22.58
		15#0	22.55	22.90	22.75
		15#10	22.60	22.68	22.51
		25#0	22.57	22.64	22.93
	16-QAM	1#0	22.96	22.71	22.87
		1#13	22.56	22.76	22.62
		1#24	22.86	22.95	22.62
		15#0	22.82	22.95	22.62
		15#10	22.87	22.83	22.72
		25#0	22.52	22.73	22.91
10M	QPSK	1#0	22.81	22.61	22.62
		1#25	22.72	22.99	22.55
		1#49	22.75	22.66	22.53
		25#0	22.82	22.91	22.96
		25#25	22.91	22.55	22.65
		50#0	22.71	22.97	22.66
	16-QAM	1#0	22.82	22.67	22.57
		1#25	22.79	22.79	22.81
		1#49	22.96	22.69	22.51
		25#0	22.52	22.51	22.83
		25#25	22.65	22.79	22.77
		50#0	22.87	22.89	22.71

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15M	QPSK	1#0	22.73	22.77	22.85
		1#38	22.84	22.84	22.81
		1#74	22.86	22.93	22.58
		36#0	22.98	22.58	22.62
		36#39	22.66	22.98	22.64
		75#0	22.95	22.52	22.95
	16-QAM	1#0	22.82	22.73	22.52
		1#38	22.85	22.63	22.63
		1#74	22.89	22.99	22.73
		36#0	22.51	22.89	22.64
		36#39	22.74	22.93	22.55
		75#0	22.99	22.63	22.59
20M	QPSK	1#0	23.59	22.59	22.23
		1#50	22.64	22.70	22.79
		1#99	22.76	22.88	22.95
		50#0	22.78	22.74	22.52
		50#50	22.52	22.71	22.55
		100#0	22.57	22.90	22.58
	16-QAM	1#0	22.83	22.56	22.62
		1#50	22.96	22.70	22.94
		1#99	22.69	22.92	22.60
		50#0	22.93	22.86	22.65
		50#50	22.86	22.58	22.63
		100#0	22.92	22.75	22.99

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	22.71	22.46	22.76
		1#3	22.61	22.65	22.49
		1#5	22.43	22.46	22.59
		3#0	22.59	22.68	22.71
		3#3	22.54	22.32	22.51
		6#0	22.76	22.51	22.34
	16-QAM	1#0	22.49	22.70	22.51
		1#3	22.72	22.64	22.38
		1#5	22.66	22.67	22.79
		3#0	22.61	22.68	22.60
		3#3	22.72	22.79	22.36
		6#0	22.69	22.69	22.69
3M	QPSK	1#0	22.43	22.61	22.57
		1#8	22.72	22.72	22.35
		1#14	22.72	22.32	22.78
		6#0	22.78	22.69	22.34
		6#9	22.31	22.55	22.77
		15#0	22.47	22.62	22.44
	16-QAM	1#0	22.42	22.67	22.74
		1#8	22.69	22.33	22.37
		1#14	22.65	22.70	22.77
		6#0	22.57	22.79	22.68
		6#9	22.37	22.79	22.51
		15#0	22.60	22.70	22.71

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	1#0	22.56	22.76	22.44
		1#13	22.39	22.69	22.59
		1#24	22.73	22.44	22.72
		15#0	22.35	22.43	22.63
		15#10	22.33	22.66	22.66
		25#0	22.48	22.74	22.33
	16-QAM	1#0	22.73	22.38	22.79
		1#13	22.77	22.50	22.72
		1#24	22.32	22.33	22.74
		15#0	22.66	22.68	22.70
		15#10	22.38	22.54	22.47
		25#0	22.63	22.65	22.71
10M	QPSK	1#0	22.75	22.33	22.79
		1#25	22.66	22.79	22.56
		1#49	22.57	22.69	22.75
		25#0	22.59	22.32	22.55
		25#25	22.54	22.65	22.35
		50#0	22.55	22.70	22.45
	16-QAM	1#0	22.75	22.34	22.69
		1#25	22.57	22.56	22.71
		1#49	22.57	22.31	22.75
		25#0	22.42	22.66	22.77
		25#25	22.34	22.35	22.44
		50#0	22.71	22.42	22.39

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15M	QPSK	1#0	22.77	22.44	22.74
		1#38	22.49	22.39	22.79
		1#74	22.50	22.79	22.44
		36#0	22.36	22.41	22.56
		36#39	22.62	22.66	22.64
		75#0	22.71	22.40	22.64
	16-QAM	1#0	22.67	22.36	22.78
		1#38	22.66	22.39	22.37
		1#74	22.45	22.69	22.72
		36#0	22.75	22.56	22.79
		36#39	22.59	22.70	22.32
		75#0	22.38	22.32	22.35
20M	QPSK	1#0	22.80	22.80	22.63
		1#50	22.39	22.63	22.67
		1#99	22.58	22.61	22.48
		50#0	22.31	22.51	22.48
		50#50	22.45	22.79	22.73
		100#0	22.48	22.65	22.39
	16-QAM	1#0	22.73	22.70	22.31
		1#50	22.48	22.73	22.64
		1#99	22.41	22.36	22.35
		50#0	22.44	22.79	22.57
		50#50	22.32	22.72	22.63
		100#0	22.70	22.32	22.35

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	22.34	22.65	22.65
		1#3	22.64	22.44	22.42
		1#5	22.46	22.62	22.45
		3#0	22.51	22.55	22.35
		3#3	22.44	22.26	22.50
		6#0	22.56	22.51	22.60
	16-QAM	1#0	22.53	22.31	22.37
		1#3	22.55	22.39	22.58
		1#5	22.48	22.33	22.43
		3#0	22.46	22.55	22.47
		3#3	22.64	22.32	22.60
		6#0	22.47	22.65	22.55
3M	QPSK	1#0	22.38	22.66	22.68
		1#8	22.50	22.38	22.67
		1#14	22.34	22.67	22.36
		6#0	22.68	22.43	22.58
		6#9	22.46	22.42	22.68
		15#0	22.56	22.52	22.32
	16-QAM	1#0	22.67	22.41	22.60
		1#8	22.51	22.30	22.45
		1#14	22.68	22.39	22.52
		6#0	22.46	22.56	22.42
		6#9	22.36	22.49	22.49
		15#0	22.63	22.52	22.39

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	1#0	22.43	22.38	22.14
		1#13	22.36	22.11	22.33
		1#24	22.50	22.10	22.42
		15#0	22.34	22.50	22.13
		15#10	22.30	22.41	22.30
		25#0	22.36	22.19	22.30
	16-QAM	1#0	22.39	22.44	22.32
		1#13	22.21	22.29	22.47
		1#24	22.22	22.42	22.48
		15#0	22.19	22.19	22.37
		15#10	22.16	22.24	22.49
		25#0	22.41	22.49	22.38
10M	QPSK	1#0	22.69	22.50	22.47
		1#25	22.47	22.11	22.45
		1#49	22.24	22.39	22.15
		25#0	22.24	22.40	22.49
		25#25	22.35	22.28	22.35
		50#0	22.32	22.23	22.22
	16-QAM	1#0	22.35	22.46	22.47
		1#25	22.31	22.18	22.27
		1#49	22.28	22.39	22.27
		25#0	22.42	22.13	22.17
		25#25	22.15	22.42	22.34
		50#0	22.28	22.48	22.23

LTE Band 7

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	1#0	22.63	22.46	22.32
		1#13	22.66	22.68	22.63
		1#24	22.32	22.61	22.54
		15#0	22.39	22.52	22.39
		15#10	22.55	22.66	22.41
		25#0	22.32	22.59	22.58
	16-QAM	1#0	22.46	22.50	22.46
		1#13	22.52	22.65	22.37
		1#24	22.42	22.53	22.33
		15#0	22.45	22.65	22.46
		15#10	22.66	22.57	22.52
		25#0	22.33	22.60	22.60
10M	QPSK	1#0	22.43	22.55	22.44
		1#25	22.39	22.39	22.57
		1#49	22.37	22.50	22.34
		25#0	22.41	22.40	22.67
		25#25	22.33	22.65	22.53
		50#0	22.59	22.48	22.64
	16-QAM	1#0	22.39	22.38	22.68
		1#25	22.44	22.41	22.38
		1#49	22.37	22.58	22.57
		25#0	22.44	22.58	22.36
		25#25	22.60	22.51	22.38
		50#0	22.50	22.49	22.68

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15M	QPSK	1#0	22.60	22.41	22.65
		1#38	22.56	22.34	22.49
		1#74	22.35	22.41	22.55
		36#0	22.42	22.44	22.62
		36#39	22.46	22.51	22.55
		75#0	22.68	22.63	22.42
	16-QAM	1#0	22.41	22.35	22.53
		1#38	22.52	22.41	22.56
		1#74	22.55	22.48	22.50
		36#0	22.49	22.68	22.40
		36#39	22.53	22.68	22.68
		75#0	22.67	22.59	22.56
20M	QPSK	1#0	22.69	22.61	22.34
		1#50	22.38	22.36	22.45
		1#99	22.31	22.38	22.58
		50#0	22.65	22.45	22.53
		50#50	22.46	22.36	22.57
		100#0	22.42	22.44	22.43
	16-QAM	1#0	22.58	22.46	22.43
		1#50	22.66	22.40	22.68
		1#99	22.30	22.61	22.39
		50#0	22.57	22.62	22.30
		50#50	22.30	22.45	22.53
		100#0	22.53	22.34	22.59

LTE Band 38

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	1#0	22.57	22.45	22.30
		1#13	22.44	22.47	22.63
		1#24	22.32	22.33	22.31
		15#0	22.55	22.32	22.33
		15#10	22.32	22.59	22.37
		25#0	22.35	22.41	22.42
	16-QAM	1#0	22.46	22.56	22.52
		1#13	22.64	22.35	22.37
		1#24	22.39	22.55	22.41
		15#0	22.35	22.32	22.34
		15#10	22.68	22.46	22.61
		25#0	22.63	22.56	22.53
10M	QPSK	1#0	22.56	22.58	22.62
		1#25	22.35	22.68	22.55
		1#49	22.56	22.43	22.50
		25#0	22.46	22.62	22.35
		25#25	22.50	22.65	22.69
		50#0	22.51	22.53	22.49
	16-QAM	1#0	22.51	22.34	22.39
		1#25	22.40	22.59	22.68
		1#49	22.53	22.44	22.63
		25#0	22.45	22.49	22.47
		25#25	22.50	22.63	22.69
		50#0	22.54	22.67	22.42

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15M	QPSK	1#0	22.63	22.49	22.65
		1#38	22.47	22.32	22.37
		1#74	22.68	22.30	22.47
		36#0	22.53	22.63	22.60
		36#39	22.64	22.33	22.57
		75#0	22.34	22.54	22.35
	16-QAM	1#0	22.45	22.55	22.57
		1#38	22.38	22.65	22.68
		1#74	22.68	22.43	22.61
		36#0	22.33	22.48	22.55
		36#39	22.40	22.40	22.39
		75#0	22.38	22.66	22.33
20M	QPSK	1#0	22.70	22.52	22.54
		1#50	22.44	22.64	22.35
		1#99	22.62	22.37	22.58
		50#0	22.59	22.52	22.69
		50#50	22.58	22.46	22.51
		100#0	22.38	22.41	22.52
	16-QAM	1#0	22.35	22.39	22.63
		1#50	22.32	22.32	22.50
		1#99	22.69	22.48	22.38
		50#0	22.46	22.53	22.66
		50#50	22.56	22.39	22.67
		100#0	22.57	22.38	22.60

WLAN 2.4G:

Mode	Channel frequency (MHz)	Data Rate	Conducted Average Output Power(dBm)
802.11b	2412	1Mbps	14.88
	2437		15.29
	2462		14.91
802.11g	2412	6Mbps	14.80
	2437		15.30
	2462		14.83
802.11n HT20	2412	MCS0	11.01
	2437		11.60
	2462		11.19
802.11n HT40	2422	MCS0	9.83
	2437		10.57
	2452		10.56

Note:
2.4G wifi duty cycle is 100%. Refer to the report for details RKSA240112001-00B

WLAN 5.2G:

Mode	Channel frequency (MHz)	Data Rate	Average Power (dBm)
802.11a	5180	6Mbps	8.11
	5200		7.81
	5240		6.95
802.11 n20	5180	MCS0	6.8
	5200		6.45
	5240		5.58
802.11 n40	5190	MCS0	6.17
	5230		5.46
802.11 ac20	5180	MCS0	6.69
	5200		6.33
	5240		5.48
802.11 ac40	5190	MCS0	5.95
	5230		5.17
802.11 ac80	5210	MCS0	4.91

Note:
5.2G wifi duty cycle is 90.14%. Refer to the report for details RKSA240112001-00D

WLAN 5.8G:

Mode	Channel frequency (MHz)	Data Rate	Average Power (dBm)
802.11a	5745	6Mbps	7.38
	5785		6.69
	5825		5.98
802.11 n20	5745	MCS0	6.02
	5785		5.1
	5825		4.27
802.11 n40	5755	MCS0	4.76
	5795		4.18
802.11 ac20	5745	MCS0	5.57
	5785		4.96
	5825		4.14
802.11 ac40	5755	MCS0	4.61
	5795		3.97
802.11 ac80	5775	MCS0	3.71

Note:
5.8G wifi duty cycle is 90.59%. Refer to the report for details RKSA240112001-00D

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Bluetooth:

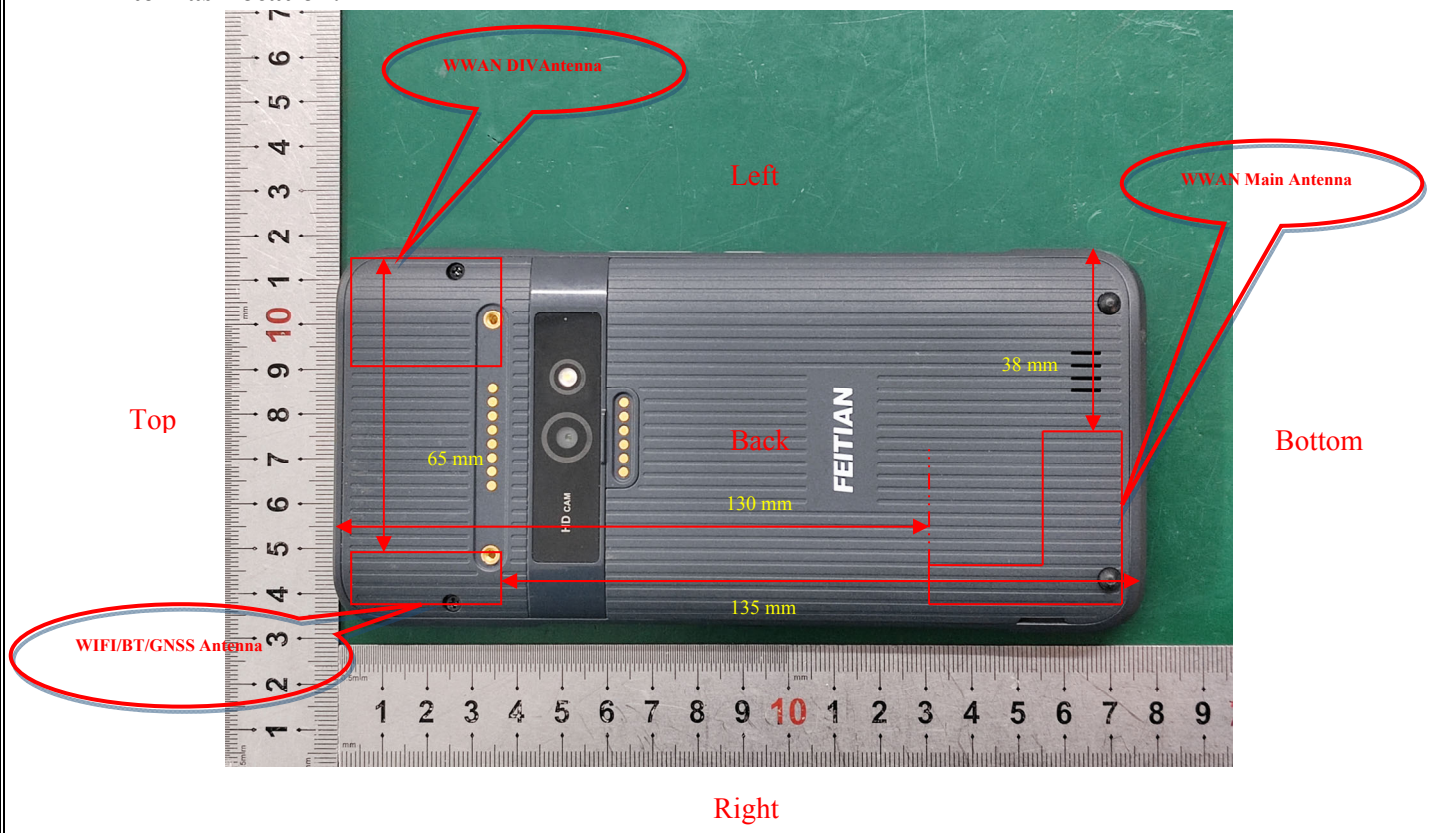
Mode	Channel frequency (MHz)	RF Output Power (dBm)
BDR(GFSK)	2402	7.48
	2441	7.14
	2480	7.63
EDR(π/4-DQPSK)	2402	8.22
	2441	7.98
	2480	8.46
EDR(8DPSK)	2402	8.39
	2441	8.24
	2480	8.62

BLE:

Channel	Frequency (MHz)	Max Conducted Peak Output Power (dBm)
BLE(1Mbps) Mode		
Low	2402	-1.95
Middle	2440	-1.96
High	2480	-1.24

Standalone SAR test exclusion considerations

Antennas Location:



Antenna Distance To Edge

	Antenna Distance To Edge(mm)					
Antenna	**Back**	**Front**	**Left**	**Right**	**Top**	**Bottom**
WWAN Main	<5	<5	38	<5	130	<5
WIFI/BT	<5	<5	65	<5	<5	135

Note: The Main antenna has transmitting and receiving functions, while the DIV antenna only has receiving functions

SAR Test Exclusion For The EUT Edge Considerations Result

Mode	Back	Front	Left	Right	Top	Bottom
WWAN Main	**Required**	**Required**	Exclusion	**Required**	Exclusion	**Required**
WIFI/BT	**Required**	**Required**	Exclusion	**Required**	**Required**	Exclusion

Note:

Required：The distance to Edge is less than 25mm, testing is required.

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

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

Extremity Exposure Considerations

Per KDB 648474 D04 D04v01r03, this device is considered a “Phablet” since the diagonal dimension is >160mm and < 200mm, when hotspot mode applies, extremity SAR is required only for the surfaces and edges with hotspot mode scaled to the maximum output power (with tolerance is 1g SAR > 1.2W/kg)

Extremity Exposure Condition		
Worst Mode	**Hotspot SAR value**	**Extremity Condition Test**
LTE B2	0.464 W/kg	Exclusion

Standalone SAR test exclusion considerations

Mode	Frequency (MHz)	Pavg (dBm)	Pavg (mW)	Distance (mm)	Calculated value	Threshold (1-g)	SAR Test Exclusion
Bluetooth	2480	9	7.94	5	2.5	3(1g)	YES
BLE	2480	-1	0.79	5	0.25	3(1g)	YES

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

Standalone SAR estimation:

Mode	Frequency (MHz)	Pavg (dBm)	Pavg (mW)	Distance (mm)	Estimated 1-g (W/kg)
BT Body	2480	9	7.94	10	0.17
BLE Body	2480	-1	0.79	10	0.02

Note: *The bluetooth based Peak power for calculation.*

When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:
[(max. power of channel, including tune-up tolerance , mW)/(min. test separation distance,mm)] · [√f(GHz)/x]
W/kg for test separation distances ≤50 mm;
where x = 7.5 for 1-g SAR. and x= 18.75 for 10-g SAR.
When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion

According to KDB447498 D01 General RF Exposure Guidance v06: 4.3. General SAR test exclusion guidance
c) For frequencies below 100 MHz, the following may be considered for SAR test exclusion (also illustrated in Appendix C):
1) For test separation distances > 50 mm and < 200 mm, the power threshold at the corresponding test separation distance at 100 MHz in step b) is multiplied by [1 + log(100/f(MHz))]
2) For test separation distances ≤ 50 mm, the power threshold determined by the equation in c) 1) for 50 mm and 100 MHz is multiplied by ½
3) SAR measurement procedures are not established below 100 MHz

Measurement Result:
For NFC, the power of EUT: E Field@3m is 81.13dBuV/m =-14.07dBm (0.04mW)
Note: E[dBμV/m] = EIRP[dBm] + 95.2 for d = 3 m.
SAR test exclusion threshold for NFC(13.56MHz) separation distance < 50mm
=[474*(1 + log(100/f(MHz)))]/2
= 443mW
>0.04mW

Conclusion:
The NFC SAR evaluation can be exempted.

Note:
For NFC,please refer to report RKSA240112001-00E

SAR MEASUREMENT RESULTS

This page summarizes the results of the performed dosimetric evaluation.

SAR Test Data

Environmental Conditions

Temperature:	22.5-23.4 ℃	22.4-23.5 ℃	22.4-23.6 ℃
Relative Humidity:	53 %	46 %	52 %
Test Date:	2024/04/08	2024/04/09	2024/04/10
Temperature:	22.1-23.5 ℃	22.4-23.6 ℃	/
Relative Humidity:	51 %	48 %	/
Test Date:	2024/04/11	2024/04/12	/

Testing was performed by Jason and Allen

GSM 850：

EUT Position	Freq. (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Scaled Factor	Meas. (W/Kg)	Scaled SAR (W/Kg)	Limit (W/Kg)	Plot
Body-Front(10mm)	836.6	GPRS 3 Tx slots	30.73	31	1.064	0.064	0.068	1.6	1#
Body -Back(10mm)	836.6	GPRS 3 Tx slots	30.73	31	1.064	0.195	0.208	1.6	2#
Body -Left Side(10mm)	836.6	GPRS 3 Tx slots	30.73	31	1.064	0.097	0.103	1.6	3#
Body -Right Side(10mm)	836.6	GPRS 3 Tx slots	30.73	31	1.064	0.133	0.142	1.6	4#
Body -Top Side(10mm)	836.6	GPRS 3 Tx slots	30.73	31	1.064	0.033	0.035	1.6	5#
Body -Bottom Side(10mm)	836.6	GPRS 3 Tx slots	30.73	31	1.064	0.141	0.150	1.6	6#

GSM 1900：

EUT Position	Freq. (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Scaled Factor	Meas. (W/Kg)	Scaled SAR (W/Kg)	Limit (W/Kg)	Plot
Body-Front(10mm)	1880	GPRS 3 Tx slots	27.05	29	1.567	0.027	0.042	1.6	7#
Body -Back(10mm)	1880	GPRS 3 Tx slots	27.05	29	1.567	0.183	0.287	1.6	8#
Body -Left Side(10mm)	1880	GPRS 3 Tx slots	27.05	29	1.567	0.008	0.013	1.6	9#
Body -Right Side(10mm)	1880	GPRS 3 Tx slots	27.05	29	1.567	0.033	0.052	1.6	10#
Body -Top Side(10mm)	1880	GPRS 3 Tx slots	27.05	29	1.567	0.002	0.002	1.6	11#
Body -Bottom Side(10mm)	1880	GPRS 3 Tx slots	27.05	29	1.567	0.088	0.137	1.6	12#

Note:

1. When the SAR value is less than half of the limit, testing for other channels are optional.
2. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.
3. When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel must be used.

WCDMA Band II：

EUT Position	Freq. (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Scaled Factor	Meas. (W/Kg)	Scaled SAR (W/Kg)	Limit (W/Kg)	Plot
Body-Front(10mm)	1880	RMC	22.16	22.5	1.081	0.040	0.043	1.6	13#
Body -Back(10mm)	1880	RMC	22.16	22.5	1.081	0.258	0.279	1.6	14#
Body -Left Side(10mm)	1880	RMC	22.16	22.5	1.081	0.011	0.012	1.6	15#
Body -Right Side(10mm)	1880	RMC	22.16	22.5	1.081	0.048	0.052	1.6	16#
Body -Top Side(10mm)	1880	RMC	22.16	22.5	1.081	0.002	0.002	1.6	17#
Body -Bottom Side(10mm)	1880	RMC	22.16	22.5	1.081	0.157	0.170	1.6	18#

WCDMA Band IV：

EUT Position	Freq. (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Scaled Factor	Meas. (W/Kg)	Scaled SAR (W/Kg)	Limit (W/Kg)	Plot
Body-Front(10mm)	1732.6	RMC	22.15	22.5	1.084	0.013	0.014	1.6	19#
Body -Back(10mm)	1732.6	RMC	22.15	22.5	1.084	0.127	0.138	1.6	20#
Body -Left Side(10mm)	1732.6	RMC	22.15	22.5	1.084	0.006	0.006	1.6	21#
Body -Right Side(10mm)	1732.6	RMC	22.15	22.5	1.084	0.020	0.021	1.6	22#
Body -Top Side(10mm)	1732.6	RMC	22.15	22.5	1.084	0.000	0.000	1.6	23#
Body -Bottom Side(10mm)	1732.6	RMC	22.15	22.5	1.084	0.072	0.078	1.6	24#

WCDMA Band V：

EUT Position	Freq. (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Scaled Factor	Meas. (W/Kg)	Scaled SAR (W/Kg)	Limit (W/Kg)	Plot
Body-Front(10mm)	836.6	RMC	22.19	22.5	1.074	0.037	0.040	1.6	25#
Body -Back(10mm)	836.6	RMC	22.19	22.5	1.074	0.107	0.115	1.6	26#
Body -Left Side(10mm)	836.6	RMC	22.19	22.5	1.074	0.060	0.065	1.6	27#
Body -Right Side(10mm)	836.6	RMC	22.19	22.5	1.074	0.087	0.093	1.6	28#
Body -Top Side(10mm)	836.6	RMC	22.19	22.5	1.074	0.012	0.013	1.6	29#
Body -Bottom Side(10mm)	836.6	RMC	22.19	22.5	1.074	0.086	0.092	1.6	30#

Note:

1. When the SAR value is less than half of the limit, 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 HSUPA/HSDPA /HSPA+ when the maximum average output of each RF channel is less than ¼ dB higher than measured 12.2kbps RMC or the maximum SAR for 12.2kbps RMC is < 75% of SAR limit.
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 FDD Band 2:

EUT Position	Freq. (MHz)	Modulation Type	Bandwidth (MHz)	RB	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Scaled Factor	Meas. (W/Kg)	Scaled SAR (W/Kg)	Limit (W/Kg)	Plot
Body-Front(10mm)	1880	QPSK	20M	1	22.59	23.7	1.291	0.042	0.054	1.6	31#
Body-Front(10mm)	1880	QPSK	20M	50	22.74	23.7	1.247	0.034	0.042	1.6	32#
Body -Back(10mm)	1880	QPSK	20M	1	22.59	23.7	1.291	0.359	0.464	1.6	33#
Body -Back(10mm)	1880	QPSK	20M	50	22.74	23.7	1.247	0.282	0.352	1.6	34#
Body -Left Side(10mm)	1880	QPSK	20M	1	22.59	23.7	1.291	0.018	0.024	1.6	35#
Body -Left Side(10mm)	1880	QPSK	20M	50	22.74	23.7	1.247	0.013	0.016	1.6	36#
Body -Right Side(10mm)	1880	QPSK	20M	1	22.59	23.7	1.291	0.057	0.074	1.6	37#
Body -Right Side(10mm)	1880	QPSK	20M	50	22.74	23.7	1.247	0.046	0.057	1.6	38#
Body -Top Side(10mm)	1880	QPSK	20M	1	22.59	23.7	1.291	0.002	0.003	1.6	39#
Body -Top Side(10mm)	1880	QPSK	20M	50	22.74	23.7	1.247	0.002	0.003	1.6	40#
Body -Bottom Side(10mm)	1880	QPSK	20M	1	22.59	23.7	1.291	0.116	0.150	1.6	41#
Body -Bottom Side(10mm)	1880	QPSK	20M	50	22.74	23.7	1.247	0.088	0.110	1.6	42#

LTE FDD Band 4:

EUT Position	Freq. (MHz)	Modulation Type	Bandwidth (MHz)	RB	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Scaled Factor	Meas. (W/Kg)	Scaled SAR (W/Kg)	Limit (W/Kg)	Plot
Body-Front(10mm)	1732.5	QPSK	20M	1	22.8	22.9	1.023	0.029	0.029	1.6	43#
Body-Front(10mm)	1732.5	QPSK	20M	50	22.51	22.9	1.094	0.024	0.026	1.6	44#
Body -Back(10mm)	1732.5	QPSK	20M	1	22.8	22.9	1.023	0.356	0.364	1.6	45#
Body -Back(10mm)	1732.5	QPSK	20M	50	22.51	22.9	1.094	0.297	0.325	1.6	46#
Body -Left Side(10mm)	1732.5	QPSK	20M	1	22.8	22.9	1.023	0.020	0.021	1.6	47#
Body -Left Side(10mm)	1732.5	QPSK	20M	50	22.51	22.9	1.094	0.017	0.019	1.6	48#
Body -Right Side(10mm)	1732.5	QPSK	20M	1	22.8	22.9	1.023	0.062	0.064	1.6	49#
Body -Right Side(10mm)	1732.5	QPSK	20M	50	22.51	22.9	1.094	0.048	0.052	1.6	50#
Body -Top Side(10mm)	1732.5	QPSK	20M	1	22.8	22.9	1.023	0.002	0.002	1.6	51#
Body -Top Side(10mm)	1732.5	QPSK	20M	50	22.51	22.9	1.094	0.001	0.001	1.6	52#
Body -Bottom Side(10mm)	1732.5	QPSK	20M	1	22.8	22.9	1.023	0.146	0.149	1.6	53#
Body -Bottom Side(10mm)	1732.5	QPSK	20M	50	22.51	22.9	1.094	0.112	0.123	1.6	54#

LTE Band 5：

EUT Position	Freq. (MHz)	Modulation Type	Bandwidth (MHz)	RB	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Scaled Factor	Meas. (W/Kg)	Scaled SAR (W/Kg)	Limit (W/Kg)	Plot
Body-Front(10mm)	836.5	QPSK	10M	1	22.5	22.8	1.072	0.020	0.021	1.6	55#
Body-Front(10mm)	836.5	QPSK	10M	25	22.4	22.8	1.096	0.017	0.019	1.6	56#
Body -Back(10mm)	836.5	QPSK	10M	1	22.5	22.8	1.072	0.076	0.081	1.6	57#
Body -Back(10mm)	836.5	QPSK	10M	25	22.4	22.8	1.096	0.065	0.072	1.6	58#
Body -Left Side(10mm)	836.5	QPSK	10M	1	22.5	22.8	1.072	0.018	0.020	1.6	59#
Body -Left Side(10mm)	836.5	QPSK	10M	25	22.4	22.8	1.096	0.015	0.017	1.6	60#
Body -Right Side(10mm)	836.5	QPSK	10M	1	22.5	22.8	1.072	0.025	0.027	1.6	61#
Body -Right Side(10mm)	836.5	QPSK	10M	25	22.4	22.8	1.096	0.021	0.023	1.6	62#
Body -Top Side(10mm)	836.5	QPSK	10M	1	22.5	22.8	1.072	0.003	0.003	1.6	63#
Body -Top Side(10mm)	836.5	QPSK	10M	25	22.4	22.8	1.096	0.002	0.002	1.6	64#
Body -Bottom Side(10mm)	836.5	QPSK	10M	1	22.5	22.8	1.072	0.029	0.031	1.6	65#
Body -Bottom Side(10mm)	836.5	QPSK	10M	25	22.4	22.8	1.096	0.025	0.027	1.6	66#

LTE FDD Band 7:

EUT Position	Freq. (MHz)	Modulation Type	Bandwidth (MHz)	RB	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Scaled Factor	Meas. (W/Kg)	Scaled SAR (W/Kg)	Limit (W/Kg)	Plot
Body-Front(10mm)	2535	QPSK	20M	1	22.61	22.9	1.069	0.055	0.059	1.6	67#
Body-Front(10mm)	2535	QPSK	20M	50	22.45	22.9	1.109	0.045	0.050	1.6	68#
Body -Back(10mm)	2535	QPSK	20M	1	22.61	22.9	1.069	0.336	0.359	1.6	69#
Body -Back(10mm)	2535	QPSK	20M	50	22.45	22.9	1.109	0.271	0.301	1.6	70#
Body -Left Side(10mm)	2535	QPSK	20M	1	22.61	22.9	1.069	0.028	0.030	1.6	71#
Body -Left Side(10mm)	2535	QPSK	20M	50	22.45	22.9	1.109	0.023	0.025	1.6	72#
Body -Right Side(10mm)	2535	QPSK	20M	1	22.61	22.9	1.069	0.061	0.065	1.6	73#
Body -Right Side(10mm)	2535	QPSK	20M	50	22.45	22.9	1.109	0.046	0.050	1.6	74#
Body -Top Side(10mm)	2535	QPSK	20M	1	22.61	22.9	1.069	0.008	0.009	1.6	75#
Body -Top Side(10mm)	2535	QPSK	20M	50	22.45	22.9	1.109	0.007	0.008	1.6	76#
Body -Bottom Side(10mm)	2535	QPSK	20M	1	22.61	22.9	1.069	0.145	0.155	1.6	77#
Body -Bottom Side(10mm)	2535	QPSK	20M	50	22.45	22.9	1.109	0.122	0.135	1.6	78#

LTE TDD Band 38:

EUT Position	Freq. (MHz)	Modulation Type	Bandwidth (MHz)	RB	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Scaled Factor	Meas. (W/Kg)	Scaled SAR (W/Kg)	Limit (W/Kg)	Plot
Body-Front(10mm)	2595	QPSK	20M	1	22.52	22.9	1.091	0.021	0.023	1.6	79#
Body-Front(10mm)	2595	QPSK	20M	50	22.52	22.9	1.091	0.017	0.018	1.6	80#
Body -Back(10mm)	2595	QPSK	20M	1	22.52	22.9	1.091	0.108	0.118	1.6	81#
Body -Back(10mm)	2595	QPSK	20M	50	22.52	22.9	1.091	0.085	0.092	1.6	82#
Body -Left Side(10mm)	2595	QPSK	20M	1	22.52	22.9	1.091	0.009	0.010	1.6	83#
Body -Left Side(10mm)	2595	QPSK	20M	50	22.52	22.9	1.091	0.007	0.008	1.6	84#
Body -Right Side(10mm)	2595	QPSK	20M	1	22.52	22.9	1.091	0.021	0.023	1.6	85#
Body -Right Side(10mm)	2595	QPSK	20M	50	22.52	22.9	1.091	0.017	0.019	1.6	86#
Body -Top Side(10mm)	2595	QPSK	20M	1	22.52	22.9	1.091	0.004	0.004	1.6	87#
Body -Top Side(10mm)	2595	QPSK	20M	50	22.52	22.9	1.091	0.003	0.004	1.6	88#
Body -Bottom Side(10mm)	2595	QPSK	20M	1	22.52	22.9	1.091	0.047	0.051	1.6	89#
Body -Bottom Side(10mm)	2595	QPSK	20M	50	22.52	22.9	1.091	0.050	0.054	1.6	90#

Note:

1. When the SAR value is less than half of the limit, testing for other channels are optional.
2. Worst case SAR for 50% RB allocation is selected to be tested.
3. 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.
4. 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 > ½ 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.

WLAN 2.4G:

Band	EUT Position	Freq. (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Scaled Factor	Meas. (W/Kg)	Scaled SAR (W/Kg)	Limit (W/Kg)	Plot
WLAN2.4G	Body-Front(10mm)	2437	802.11b 6Mbps	15.29	16	1.178	0.008	0.009	1.6	91#
WLAN2.4G	Body -Back(10mm)	2437	802.11b 6Mbps	15.29	16	1.178	0.053	0.063	1.6	92#
WLAN2.4G	Body -Left Side(10mm)	2437	802.11b 6Mbps	15.29	16	1.178	0.002	0.002	1.6	93#
WLAN2.4G	Body -Right Side(10mm)	2437	802.11b 6Mbps	15.29	16	1.178	0.018	0.021	1.6	94#
WLAN2.4G	Body -Top Side(10mm)	2437	802.11b 6Mbps	15.29	16	1.178	0.006	0.007	1.6	95#
WLAN2.4G	Body -Bottom Side(10mm)	2437	802.11b 6Mbps	15.29	16	1.178	0.005	0.006	1.6	96#

2.4 GHz 802.11g/n OFDM SAR Test Exclusion Requirements：

Mode	Target Power(dBm)	Target Power(mW)	Reported SAR(W/kg)	Adjusted SAR(W/kg)	Limit (W/kg)	SAR Test Exclusion
802.11b(DSSS)	16	39.81	0.063	/	/	/
802.11g(OFDM)	15.6	36.31	/	0.06	1.2	Yes
802.11n ht20(OFDM)	12	15.85	/	0.03	1.2	Yes
802.11n ht40(OFDM)	11	12.59	/	0.02	1.2	Yes

Note：

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

a) When KDB Publication 447498 D01 SAR test exclusion applies to the OFDM configuration.

b) When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

WLAN 5.2G:

Band	EUT Position	Freq. (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Scaled Factor	Duct Cycle Factor	Meas. (W/Kg)	Scaled SAR (W/Kg)	Limit (W/Kg)	Plot
WLAN5.2G	Body-Front(10mm)	5200	802.11a 6Mbps	7.81	8.3	1.119	1.109	0.018	0.022	1.6	97#
WLAN5.2G	Body -Back(10mm)	5200	802.11a 6Mbps	7.81	8.3	1.119	1.109	0.193	0.240	1.6	98#
WLAN5.2G	Body -Left Side(10mm)	5200	802.11a 6Mbps	7.81	8.3	1.119	1.109	0.001	0.002	1.6	99#
WLAN5.2G	Body -Right Side(10mm)	5200	802.11a 6Mbps	7.81	8.3	1.119	1.109	0.097	0.120	1.6	100#
WLAN5.2G	Body -Top Side(10mm)	5200	802.11a 6Mbps	7.81	8.3	1.119	1.109	0.019	0.023	1.6	101#
WLAN5.2G	Body -Bottom Side(10mm)	5200	802.11a 6Mbps	7.81	8.3	1.119	1.109	0.012	0.015	1.6	102#

WLAN 5.8G:

Band	EUT Position	Freq. (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Scaled Factor	Duct Cycle Factor	Meas. (W/Kg)	Scaled SAR (W/Kg)	Limit (W/Kg)	Plot
WLAN5.8G	Body-Front(10mm)	5785	802.11a 6Mbps	6.69	7.5	1.205	1.104	0.035	0.047	1.6	115#
WLAN5.8G	Body -Back(10mm)	5785	802.11a 6Mbps	6.69	7.5	1.205	1.104	0.252	0.335	1.6	116#
WLAN5.8G	Body -Left Side(10mm)	5785	802.11a 6Mbps	6.69	7.5	1.205	1.104	0.011	0.014	1.6	117#
WLAN5.8G	Body -Right Side(10mm)	5785	802.11a 6Mbps	6.69	7.5	1.205	1.104	0.192	0.255	1.6	118#
WLAN5.8G	Body -Top Side(10mm)	5785	802.11a 6Mbps	6.69	7.5	1.205	1.104	0.068	0.090	1.6	119#
WLAN5.8G	Body -Bottom Side(10mm)	5785	802.11a 6Mbps	6.69	7.5	1.205	1.104	0.015	0.020	1.6	120#

Note:

1. When the SAR Value is less than half of the limit, testing for other channels are optional.
2.When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.
3. When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel must be used.
4.According to IEEE 1528:2013, If the correction ΔSAR is within ± 5%, the measured SAR results should not be corrected.

SAR SIMULTANEOUS TRANSMISSION DESCRIPTION

Simultaneous Transmission:

Description of Simultaneous Transmit Capabilities		
Transmitter Combination	**Simultaneous?**	**Hotspot?**
WWAN(GSM/WCDMA/LTE) + 2.4GWLAN+NFC	√	√
WWAN(GSM/WCDMA/LTE) + 5GWLAN+NFC	√	√
WWAN(GSM/WCDMA/LTE) + Bluetooth+NFC	√	√
2.4GWLAN/5GWLAN+ Bluetooth	×	×

Simultaneous Transmission Consideration Detail

Transmitter Combination	Position	Max SAR(W/kg)		∑SAR< 1.6W/kg
		SAR1(WWAN)	SAR2(WLAN)	
WWAN(GSM/WCDMA/LTE) + 2.4GWLAN	Body	0.464	0.063	0.527
WWAN(GSM/WCDMA/LTE) + 5GWLAN	Body	0.464	0.335	0.799
WWAN(GSM/WCDMA/LTE) + Bluetooth	Body	0.464	0.17	0.634

Note:

For the EIRP of NFC is 0.04mW, per KDB447498 D01 clause 4.3, the estimated SAR is so lower, so the NFC almost have no influence on the results of simultaneous transmission.

Conclusion:

Sum of SAR: **1.6 W/kg(Body)** therefore simultaneous transmission SAR result is **Compliance**.

APPENDIX A SAR PLOTS OF SAR MEASUREMENT

Please Refer to the Attachment.

APPENDIX B MEASUREMENT UNCERTAINTY

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

Measurement uncertainty evaluation for IEEE 1528:2013 SAR test

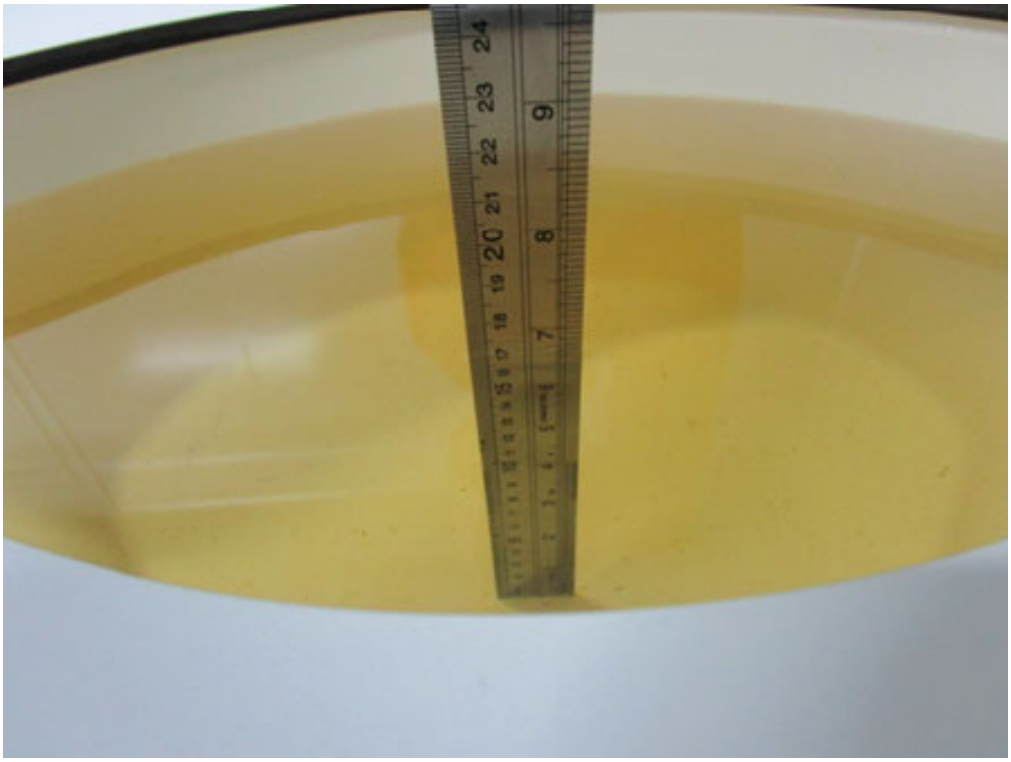
Source of uncertainty	Tolerance/ uncertainty ± %	Probability distribution	Divisor	ci (1 g)	ci (10 g)	Standard uncertainty ± %, (1 g)	Standard uncertainty ± %, (10 g)
Measurement system							
Probe calibration	6.55	N	1	1	1	6.6	6.6
Axial Isotropy	4.7	R	√3	1	1	2.7	2.7
Hemispherical Isotropy	9.6	R	√3	0	0	0.0	0.0
Boundary effect	1.0	R	√3	1	1	0.6	0.6
Linearity	4.7	R	√3	1	1	2.7	2.7
Detection limits	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							
Test sample positioning	2.8	N	1	1	1	2.8	2.8
Device holder uncertainty	6.3	N	1	1	1	6.3	6.3
Drift of output power	5.0	R	√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
Liquid conductivity target)	5.0	R	√3	0.64	0.43	1.8	1.2
Liquid conductivity meas.)	2.5	N	1	0.64	0.43	1.6	1.1
Liquid permittivity target)	5.0	R	√3	0.6	0.49	1.7	1.4
Liquid permittivity meas.)	2.5	N	1	0.6	0.49	1.5	1.2
Combined standard uncertainty		RSS				12.2	12.0
Expanded uncertainty 95 % confidence interval)						24.3	23.9

Measurement uncertainty evaluation for IEC 62209-2:2010 SAR test

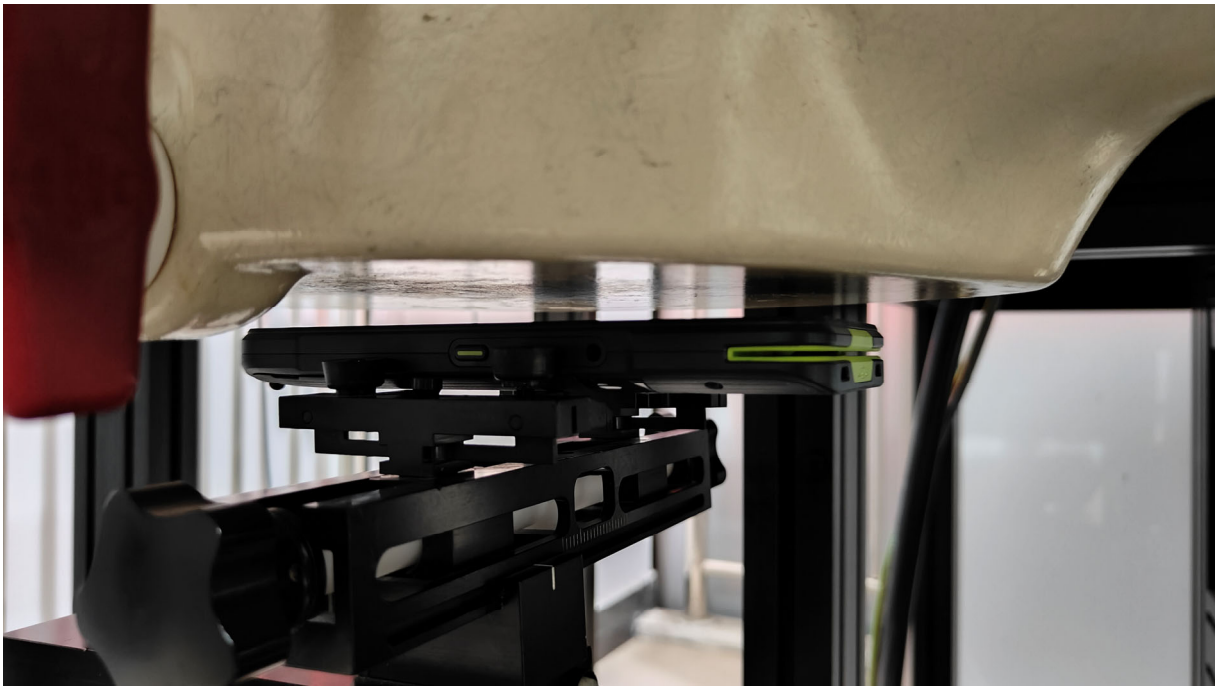
Source of uncertainty	Tolerance/ uncertainty ± %	Probability distribution	Divisor	ci (1 g)	ci (10 g)	Standard uncertainty ± %, (1 g)	Standard uncertainty ± %, (10 g)
Measurement system							
Probe calibration	6.55	N	1	1	1	6.6	6.6
Axial Isotropy	4.7	R	√3	1	1	2.7	2.7
Hemispherical Isotropy	9.6	R	√3	0	0	0.0	0.0
Linearity	4.7	R	√3	1	1	2.7	2.7
Modulation Response	0.0	R	√3	1	1	0.0	0.0
Detection limits	1.0	R	√3	1	1	0.6	0.6
Boundary effect	1.0	R	√3	1	1	0.6	0.6
Readout electronics	0.3	N	1	1	1	0.3	0.3
Response time	0.0	R	√3	1	1	0.0	0.0
Integration time	0.0	R	√3	1	1	0.0	0.0
RF ambient conditions – noise	1.0	R	√3	1	1	0.6	0.6
RF ambient conditions–reflections	1.0	R	√3	1	1	0.6	0.6
Probe positioner mech. Restrictions	0.8	R	√3	1	1	0.5	0.5
Probe positioning with respect to phantom shell	6.7	R	√3	1	1	3.9	3.9
Post-processing	2.0	R	√3	1	1	1.2	1.2
Test sample related							
Device holder Uncertainty	6.3	N	1	1	1	6.3	6.3
Test sample positioning	2.8	N	1	1	1	2.8	2.8
Power scaling	4.5	R	√3	1	1	2.6	2.6
Drift of output power	5.0	R	√3	1	1	2.9	2.9
Phantom and set-up							
Phantom uncertainty (shape and thickness tolerances)	4.0	R	√3	1	1	2.3	2.3
Algorithm for correcting SAR for deviations in permittivity and conductivity	1.9	N	1	1	0.84	1.1	0.9
Liquid conductivity (meas.)	2.5	N	1	0.64	0.43	1.6	1.1
Liquid permittivity (meas.)	2.5	N	1	0.6	0.49	1.5	1.2
Temp. unc. - Conductivity	1.7	R	√3	0.78	0.71	0.8	0.7
Temp. unc. - Permittivity	0.3	R	√3	0.23	0.26	0.0	0.0
Combined standard uncertainty		RSS				12.2	12.1
Expanded uncertainty 95 % confidence interval)						24.5	24.2

APPENDIX C EUT TEST POSITION PHOTOS

Liquid depth ≥ 15cm



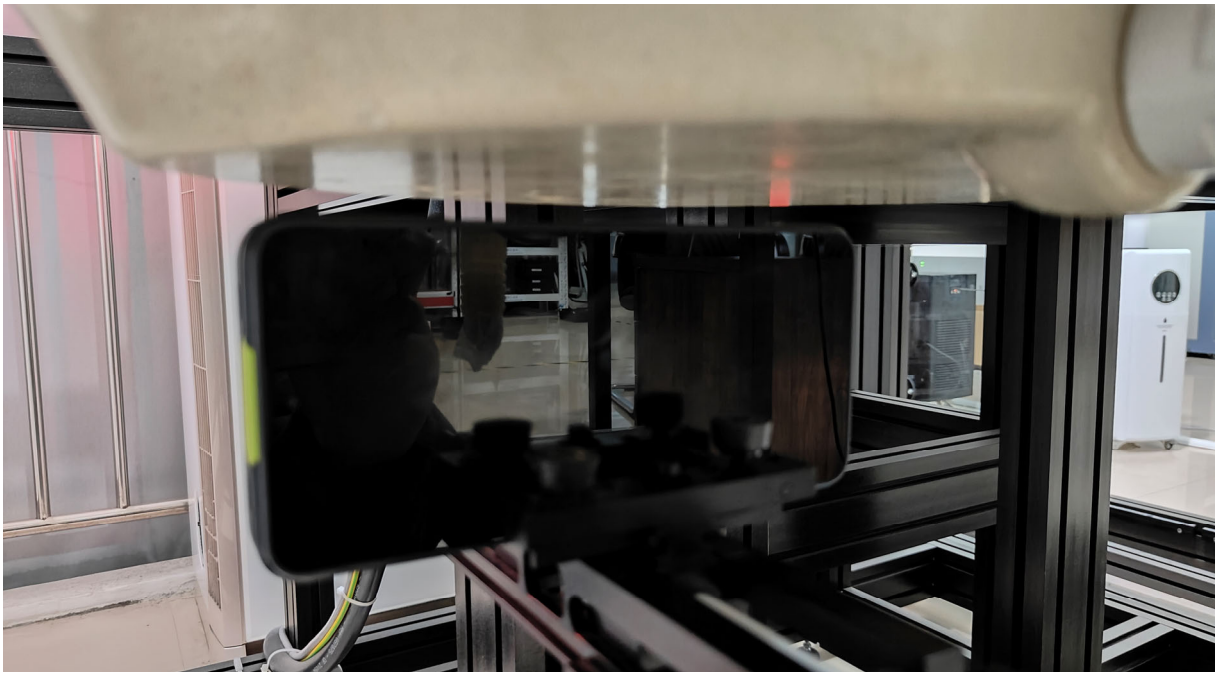
WWAN - Body Front(10mm)



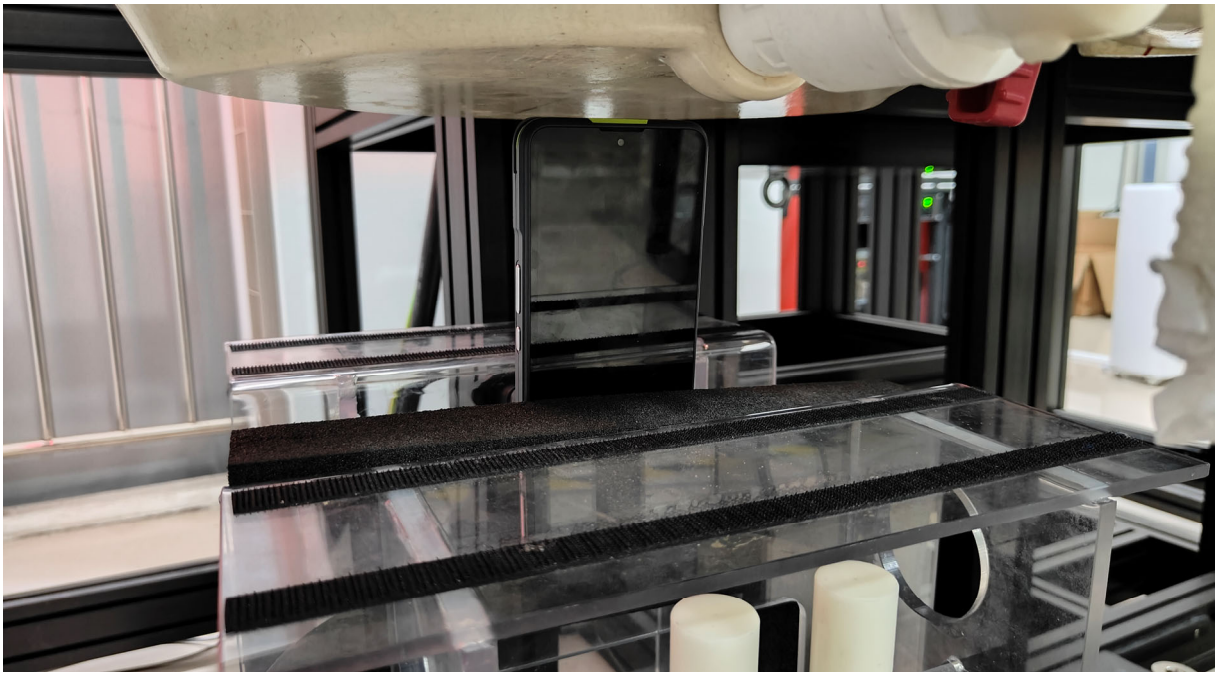
WWAN - Body Back(10mm)

WWAN - Body Left(10mm)

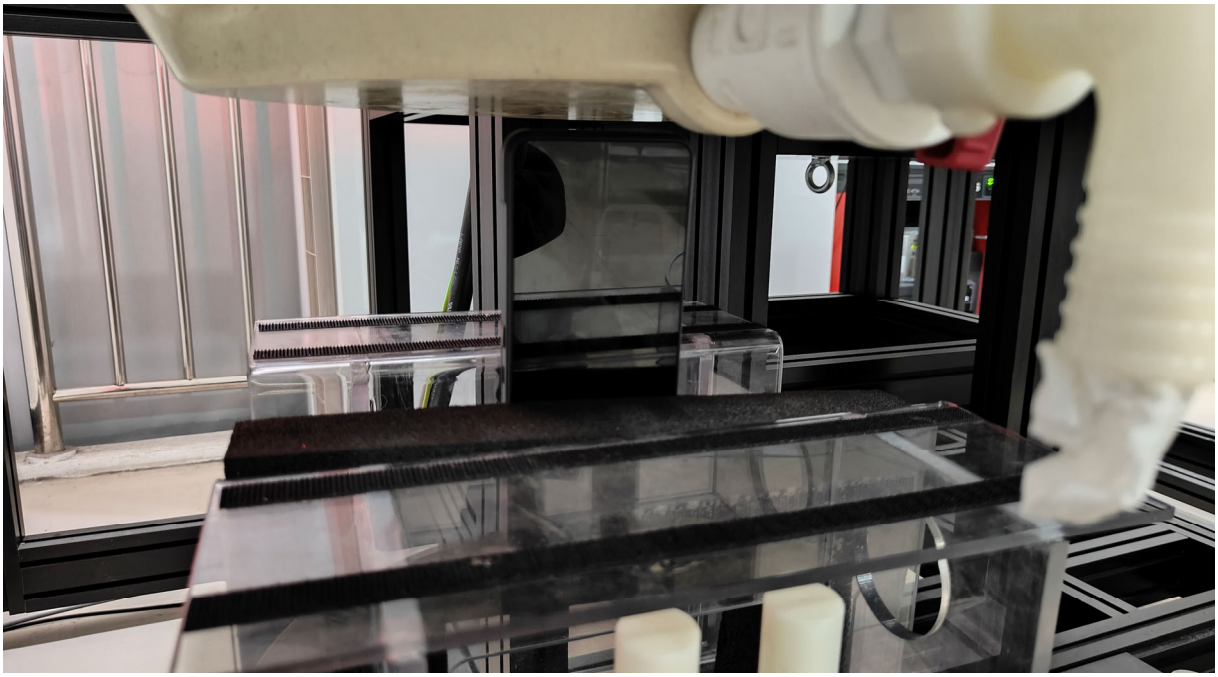
WWAN - Body Right(10mm)



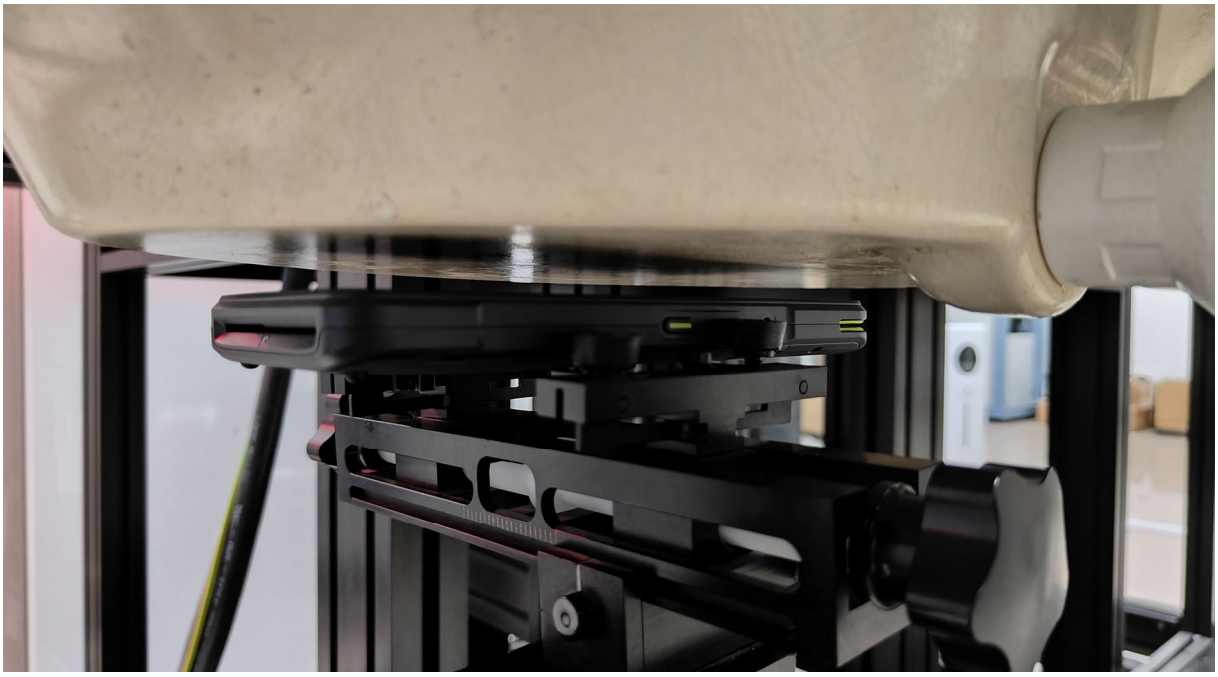
WWAN/WLAN - Body Top(10mm)



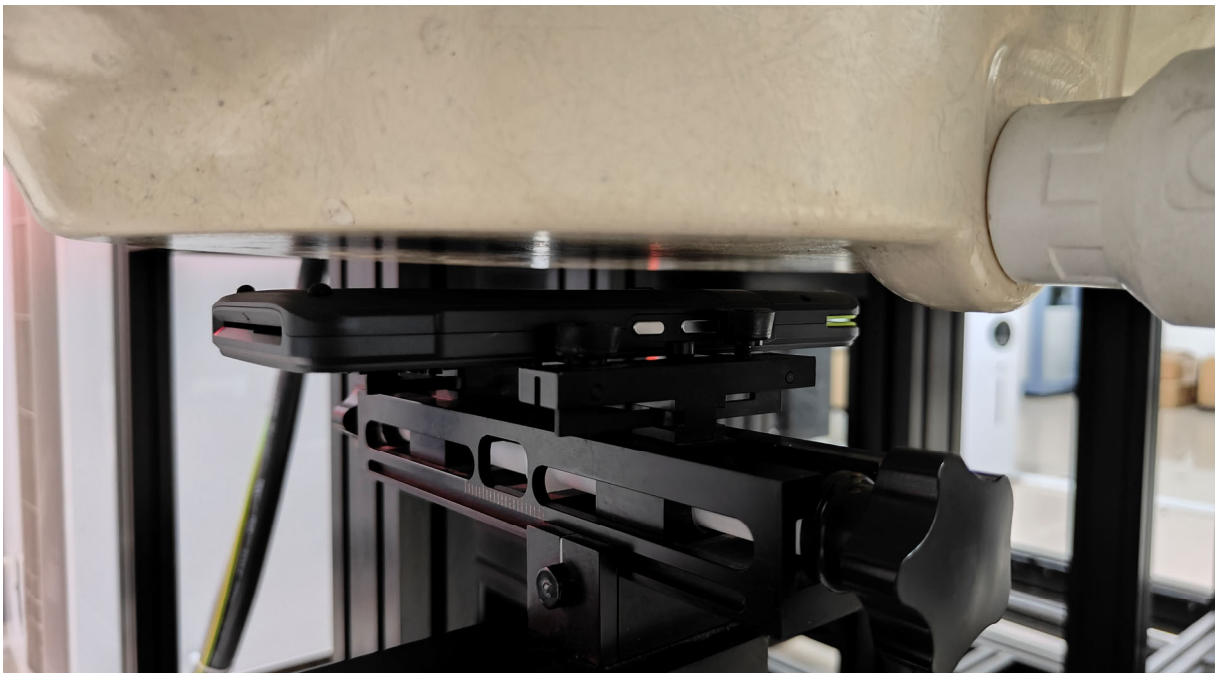
WWAN/WLAN - Body Bottom(10mm)



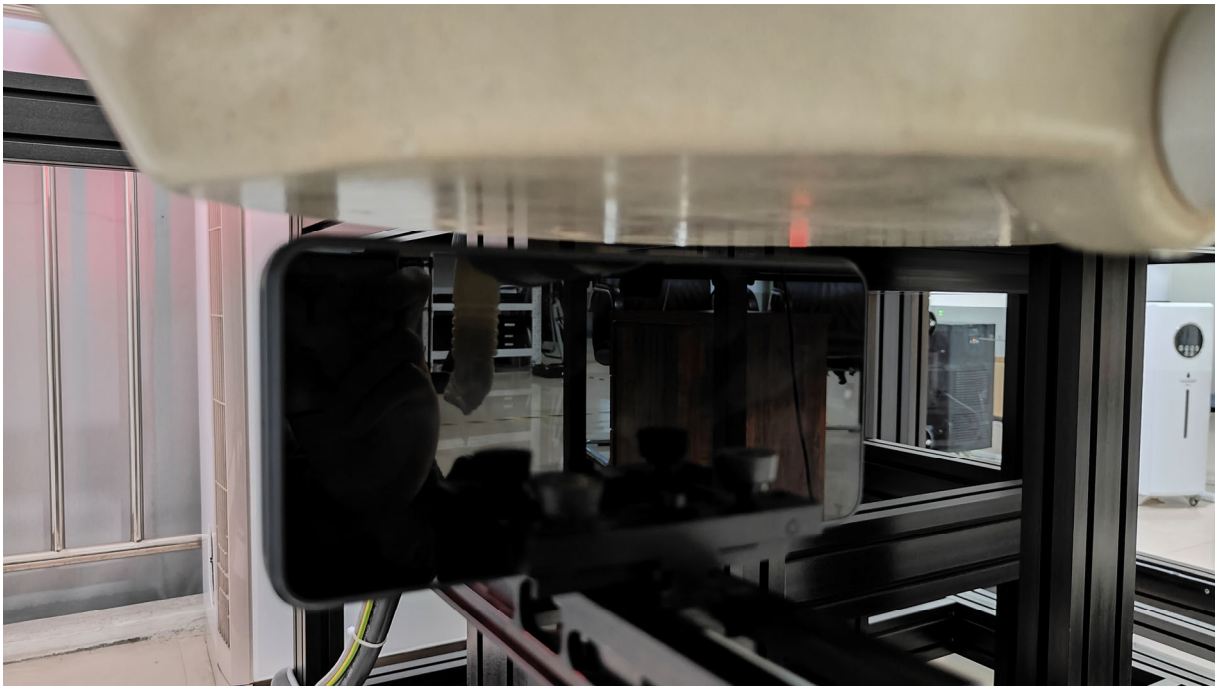
WLAN – Body Front(10mm)



WLAN – Body Back(10mm)



WLAN – Body Left(10mm)



WLAN – Body Right(10mm)

APPENDIX D CALIBRATION CERTIFICATES

Please Refer to the Attachment.

Declarations

1. The laboratory is not responsible for the authenticity of any information provided by the applicant. Information from the applicant that may affect test results is marked with "★".

2. The test data was only valid for the test sample(s).

3. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

4. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

5. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor k=2 with the 95.45% confidence interval.

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