NVLAP LAB CODE 600341-0

FCC SAR TEST REPORT

Applicant: Fujian LANDI Commercial Equipment Co.,Ltd.

Address: Building 17, Section A, Software Park, No. 89 Software Road, Gulou District, Fuzhou Municipality, Fujian Province, China

Product Name: Smart POS Terminal

FCC ID: 2AG6N-A8S

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

Report Number: 2402X94972E-20

Report Date: 2024/10/24

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

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Title: SAR Engineer

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SAR TEST RESULTS SUMMARY

Mode		Max. Reported SAR Level(s) (W/kg)	Limit (W/kg)
WCDMA Band 5	1g Body SAR	0.38	1.6
LTE Band 5	1g Body SAR	0.32	
LTE Band 41	1g Body SAR	**0.99**	
WIFI 2.4G	1g Body SAR	0.08	
Simultaneous	1g Body SAR	**1.29**	

Mode		Max. Reported SAR Level(s) (W/kg)	Limit (W/kg)
WCDMA Band 5	10g Extremity SAR	0.51	4.0
LTE Band 5	10g Extremity SAR	0.46	
LTE Band 41	10g Extremity SAR	**0.94**	
WIFI 2.4G	10g Extremity SAR	0.10	
Simultaneous	10g Extremity SAR	**1.06**	

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 +AMD1:2019 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 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	2402X94972E-20	Original Report	2024/10/24

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	Smart POS Terminal
EUT Model:	AxPOS A8S
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, DC-HSDPA, HSPA+) FDD-LTE, TDD-LTE,WLAN, Bluetooth, BLE, NFC
Frequency Band:	WCDMA Band 5: 824-849 MHz(TX); 869-894 MHz(RX)
	LTE Band 5: 824-849 MHz(TX); 869-894 MHz(RX)
	LTE Band 41: 2496-2690 MHz(TX); 2496-2690 MHz(RX)
	WLAN 2.4G: 2412-2462 MHz (TX/RX)
	Bluetooth/BLE: 2402-2480MHz(TX/RX)
	NFC: 13.56MHz
Maximum Output Power	WCDMA Band 5: 22.8 dBm
	LTE Band 5: 22.95 dBm
	LTE Band 41: 22.79 dBm
	WLAN 2.4G: 15.72 dBm
	Bluetooth(BDR/EDR): 8.27 dBm
	BLE: -0.15 dBm
Dimensions (L*W*H):	190mm (L) *80mm (W) *67mm (H)
Rated Input Voltage:	DC 7.2V from Rechargeable Battery
Serial Number:	2RQS-1
Normal Operation:	Body and Limbs
EUT Received Date:	2024/09/14
Test Date:	2024/10/15 ~ 2024/10/16
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)	**1.6**	8
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4	20

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

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

General Population/Uncontrolled environments Spatial Peak limit 1.6W/kg (FCC) for Body SAR and limit 4.0W/kg (FCC) for Extremity SAR 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.

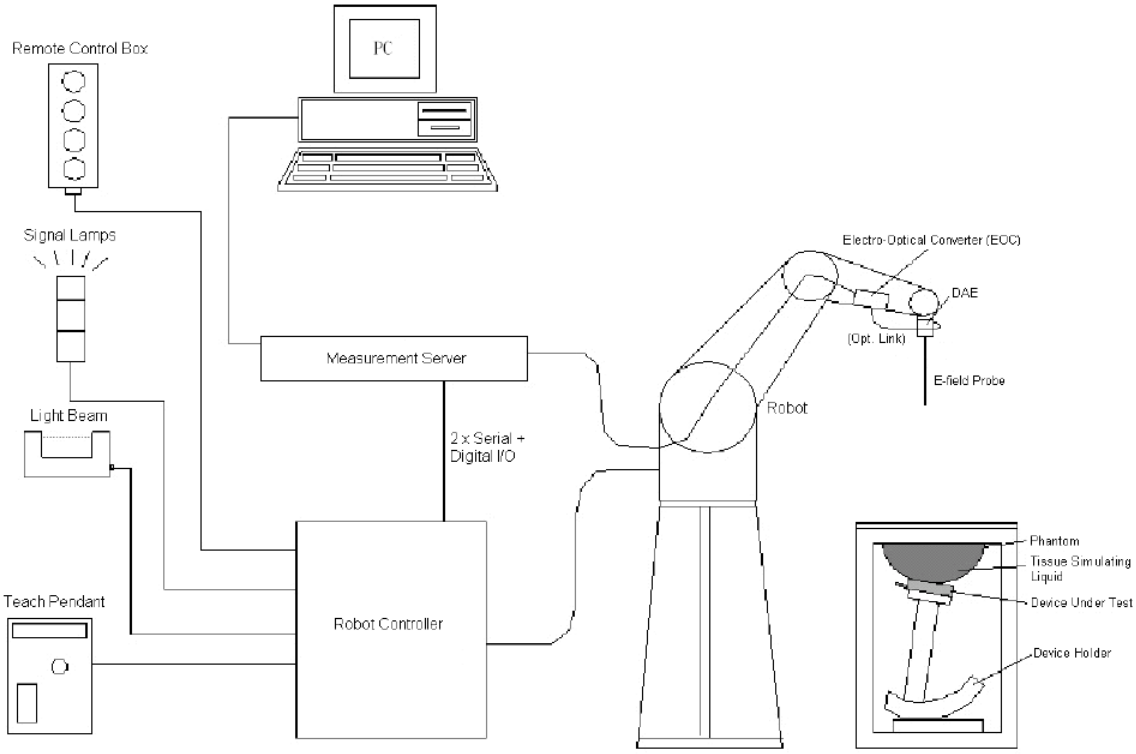
The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. :829273, the FCC Designation No. : CN5044.

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

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

Zoom Scan (Cube Scan Averaging)

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

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

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

Tissue Dielectric Parameters for Head and Body Phantoms

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

Recommended Tissue Dielectric Parameters for Head liquid

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

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

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

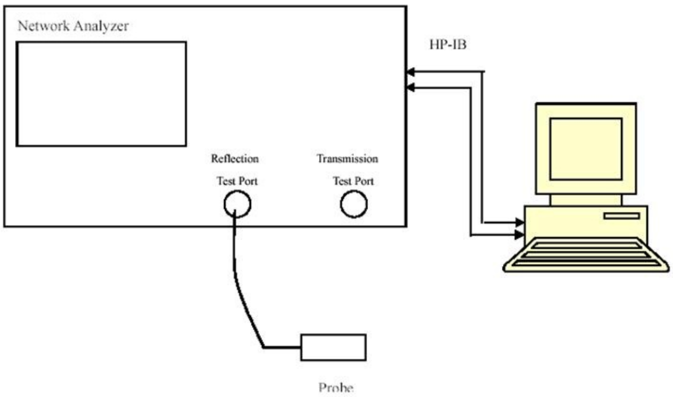
4. EQUIPMENT LIST AND CALIBRATION

4.1 Equipments List & Calibration Information

Equipment	Model	S/N	Calibration Date	Calibration Due Date
DASY5 Test Software	DASY52.10	N/A	NCR	NCR
DASY5 Measurement Server	DASY5 4.5.12	1470	NCR	NCR
Data Acquisition Electronics	DAE4	772	2024/1/23	2025/1/22
E-Field Probe	EX3DV4	7783	2024/4/12	2025/4/11
Mounting Device	MD4HHTV5	SD 000 H01 KA	NCR	NCR
Twin SAM	Twin SAM V5.0	1874	NCR	NCR
Dipole, 835 MHz	D835V2	453	2024/8/20	2027/8/19
Dipole,2450 MHz	D2450V2	971	2024/6/15	2027/6/14
Dipole, 2600 MHz	D2600V2	1132	2022/11/1	2025/10/31
Simulated Tissue Liquid Head	HBBL600-10000V6	SL AAH U16 BC (Batch: 220809-1)	Each Time	/
Network Analyzer	8753C	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
Power Amplifier	ZHL-5W-202-S+	416402204	NCR	NCR
Power Amplifier	ZVE-6W-83+	637202210	NCR	NCR
Directional Coupler	441493	520Z	NCR	NCR
Attenuator	20dB, 100W	LN749	NCR	NCR
Attenuator	6dB, 150W	2754	NCR	NCR
Thermometer	DTM3000	3635	2024/8/12	2025/8/11
Hygrothermograph	HTC-2	EM072	2023/11/6	2024/11/5
Wireless communication tester	8960	MY50266471	2023/10/18	2024/10/17
Wideband Radio Communication Tester	CMW500	147473	2023/10/18	2024/10/17

5. SAR MEASUREMENT SYSTEM VERIFICATION

5.1 Liquid Verification



5.2 Liquid Verification Results

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	σ (S/m)	ε_r	σ (S/m)	$\Delta\varepsilon_r$	Δσ (S/m)	
826.4	Simulated Tissue Liquid Head	41.758	0.922	41.54	0.90	0.52	2.44	±5
829	Simulated Tissue Liquid Head	41.725	0.923	41.53	0.90	0.47	2.56	±5
835	Simulated Tissue Liquid Head	41.651	0.927	41.50	0.90	0.36	3.00	±5
836.5	Simulated Tissue Liquid Head	41.632	0.928	41.50	0.90	0.32	3.11	±5
836.6	Simulated Tissue Liquid Head	41.631	0.928	41.50	0.90	0.32	3.11	±5
844	Simulated Tissue Liquid Head	41.531	0.932	41.50	0.91	0.07	2.42	±5
846.6	Simulated Tissue Liquid Head	41.494	0.934	41.50	0.91	-0.01	2.64	±5

**Liquid Verification above was performed on 2024/10/15.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	σ (S/m)	ε_r	σ (S/m)	$\Delta\varepsilon_r$	Δσ (S/m)	
2412	Simulated Tissue Liquid Head	40.193	1.730	39.28	1.77	2.32	-2.26	±5
2437	Simulated Tissue Liquid Head	40.073	1.760	39.23	1.79	2.15	-1.68	±5
2450	Simulated Tissue Liquid Head	39.988	1.778	39.20	1.80	2.01	-1.22	±5
2462	Simulated Tissue Liquid Head	39.969	1.788	39.18	1.81	2.01	-1.22	±5
2506	Simulated Tissue Liquid Head	40.104	1.911	39.12	1.86	2.52	2.74	±5

**Liquid Verification above was performed on 2024/10/16.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	Ơ (S/m)	ε_r	Ơ (S/m)	$\Delta\varepsilon_r$	ΔƠ (S/m)	
2550	Simulated Tissue Liquid Head	39.659	1.913	39.07	1.91	1.51	0.16	±5
2593	Simulated Tissue Liquid Head	39.873	2.015	39.01	1.95	2.21	3.33	±5
2600	Simulated Tissue Liquid Head	39.842	2.023	39.00	1.96	2.16	3.21	±5
2636	Simulated Tissue Liquid Head	39.734	2.068	38.96	2	1.99	3.4	±5
2680	Simulated Tissue Liquid Head	39.597	2.107	38.90	2.05	1.79	2.78	±5

**Liquid Verification above was performed on 2024/10/16.*

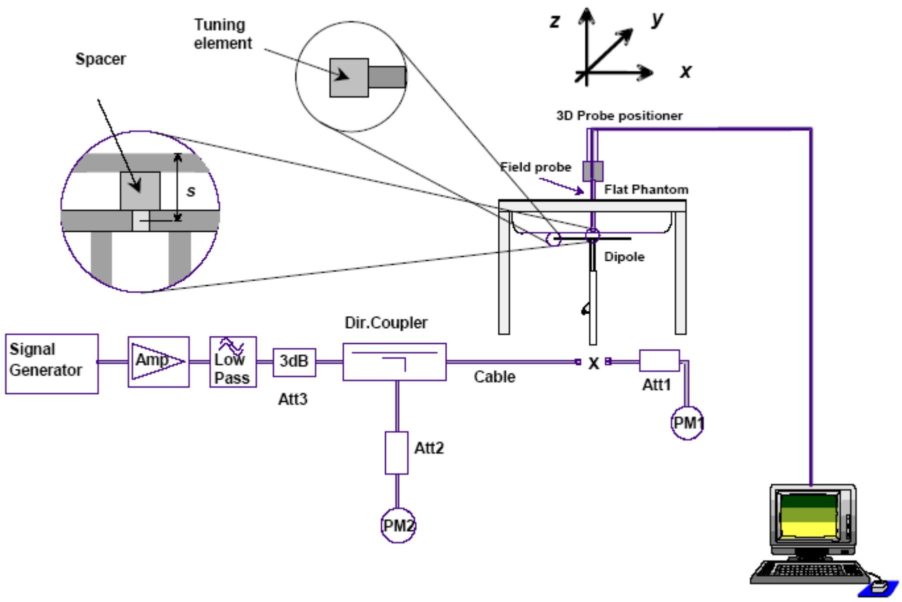
5.3 System Accuracy Verification

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

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

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

System Verification Setup Block Diagram



5.4 System Accuracy Check Results

Date	Frequency Band (MHz)	Liquid Type	Input Power (mW)	Measured SAR (W/kg)		Normalized to 1W (W/kg)	Target Value (W/Kg)	Delta (%)	Tolerance (%)
2024/10/15	835	Head	100	1g	0.856	8.56	9.44	-9.32	±10
2024/10/16	2450	Head	100	1g	5.69	56.9	52.7	7.97	±10
2024/10/16	2600	Head	100	1g	5.46	54.6	55.8	-2.15	±10

Date	Frequency Band (MHz)	Liquid Type	Input Power (mW)	Measured SAR (W/kg)		Normalized to 1W (W/kg)	Target Value (W/Kg)	Delta (%)	Tolerance (%)
2024/10/15	835	Head	100	10g	0.635	6.35	6.28	1.11	±10
2024/10/16	2450	Head	100	10g	2.66	26.6	24.8	7.26	±10
2024/10/16	2600	Head	100	10g	2.55	25.5	25.4	0.39	±10

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

5.5 SAR SYSTEM VALIDATION DATA

System Performance 835 MHz Head

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

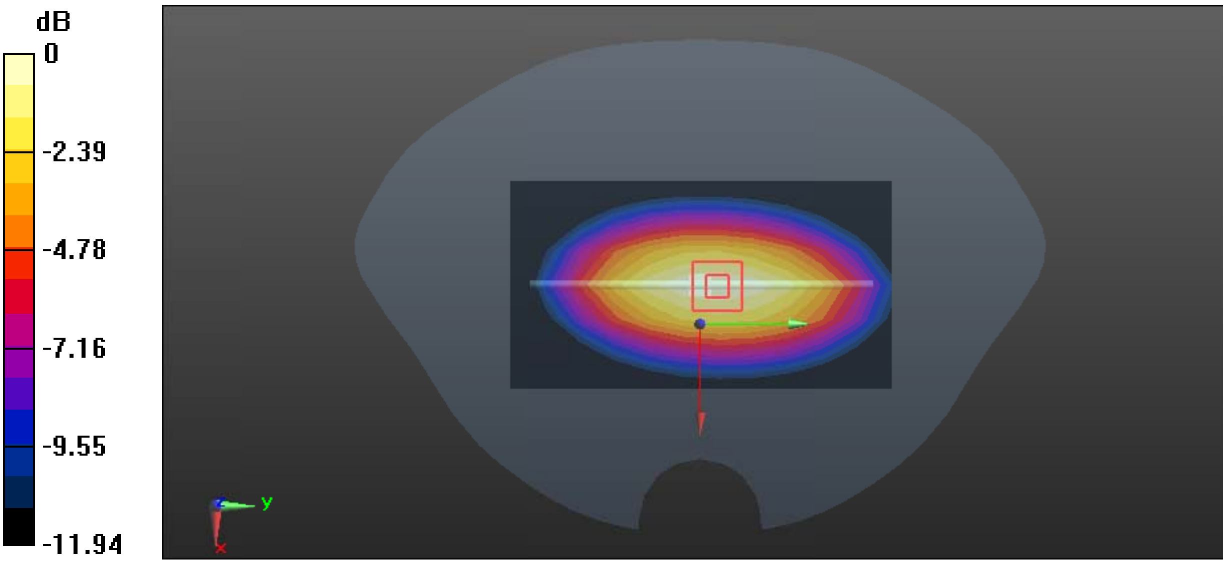
Communication System: CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.927 S/m; ε_r =41.651; ρ = 1000 kg/m^3;
Phantom section: Flat Section

DASY5 Configuration:

- Probe:EX3DV4 - SN7783; ConvF(9.1, 9.1, 9.1) @ 835 MHz; Calibrated: 2024/4/12
- 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) = 1.10 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value =32.9 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 1.26 W/kg
SAR(1 g) = 0.856 W/kg; SAR(10 g) = 0.635 W/kg
Maximum value of SAR (measured) = 1.19 W/kg



0 dB = 1.19 W/kg = 0.76 dBW/kg

System Performance 2450 MHz Head

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

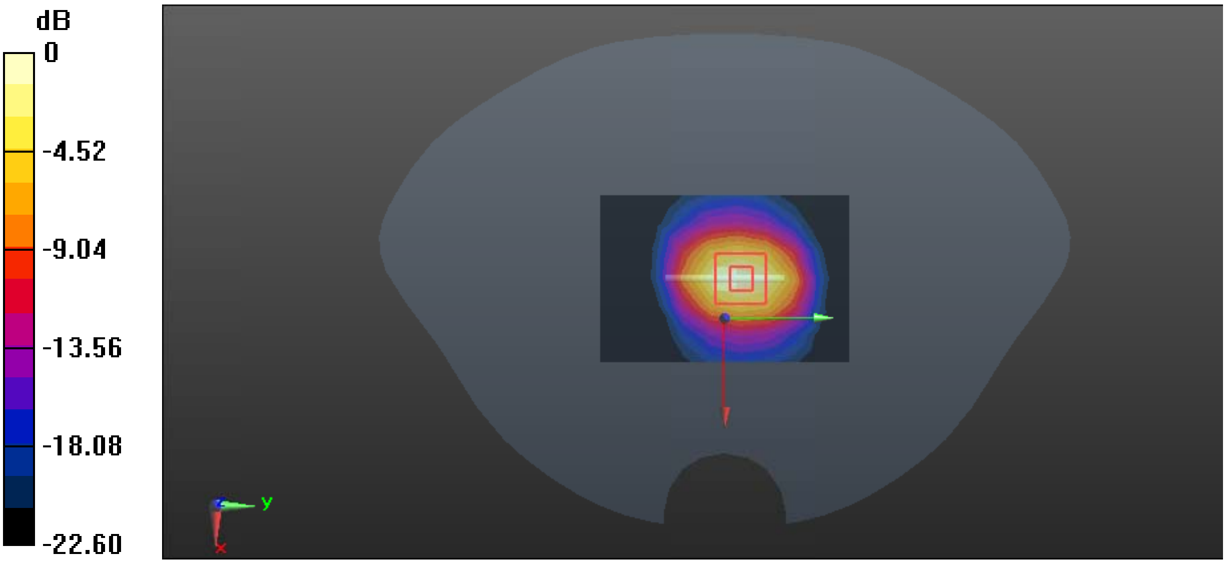
Communication System: CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.778 S/m; ε_r =39.988; ρ = 1000 kg/m^3;
Phantom section: Flat Section

DASY5 Configuration:

- Probe:EX3DV4 - SN7783; ConvF(6.85, 6.85, 6.85) @ 2450 MHz; Calibrated: 2024/4/12
- 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) = 6.84 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =55.36 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 10.2 W/kg
SAR(1 g) = 5.69 W/kg; SAR(10 g) = 2.66 W/kg
Maximum value of SAR (measured) = 7.09 W/kg



0 dB = 7.09 W/kg = 8.51 dBW/kg

System Performance 2600 MHz Head

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

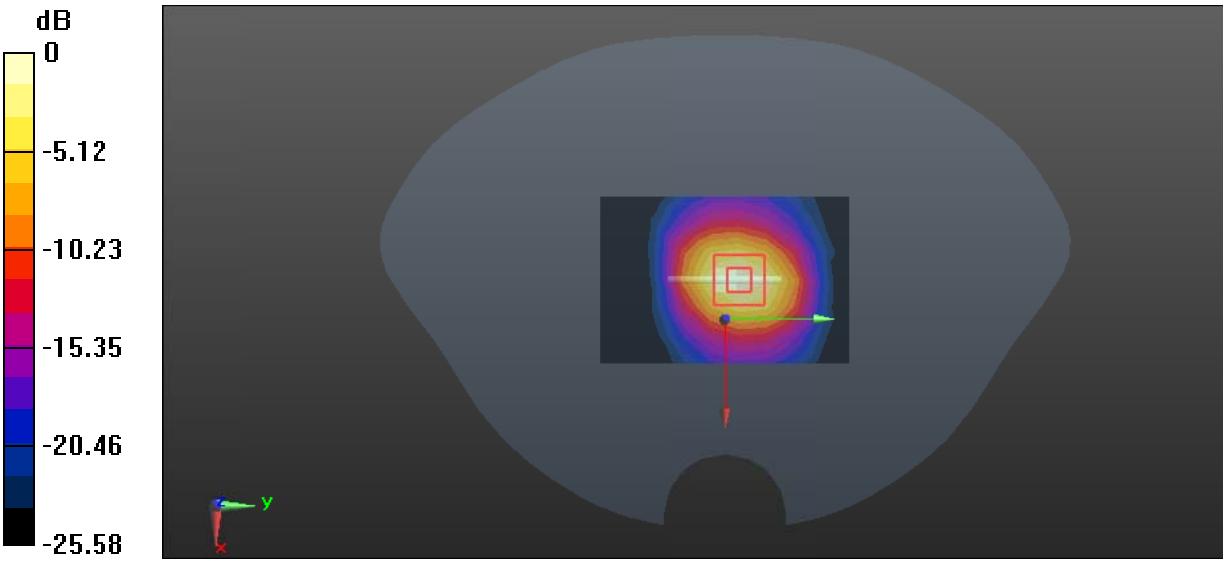
Communication System: CW (0); Frequency: 2600 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2600 MHz; σ = 2.023 S/m; ε_r =39.842; ρ = 1000 kg/m^3;
Phantom section: Flat Section

DASY5 Configuration:

- Probe:EX3DV4 - SN7783; ConvF(6.65, 6.65, 6.65) @ 2600 MHz; Calibrated: 2024/4/12
- 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) = 7.44 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =55.12 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 11.9 W/kg
SAR(1 g) = 5.46 W/kg; SAR(10 g) = 2.55 W/kg
Maximum value of SAR (measured) = 7.48W/kg



0 dB = 7.48 W/kg = 8.74 dBW/kg

6. EUT TEST STRATEGY AND METHODOLOGY

6.1Test 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.

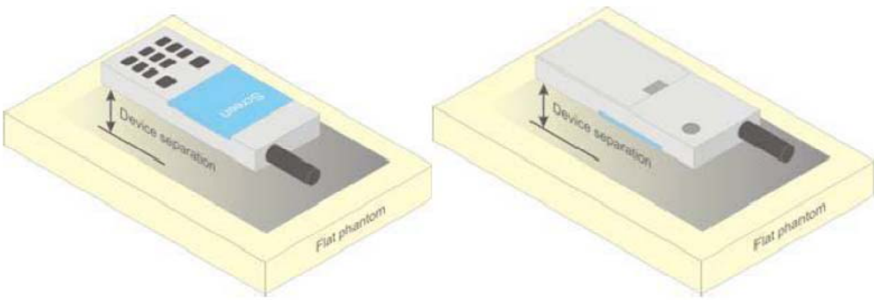


Figure 5 – Test positions for body-worn devices

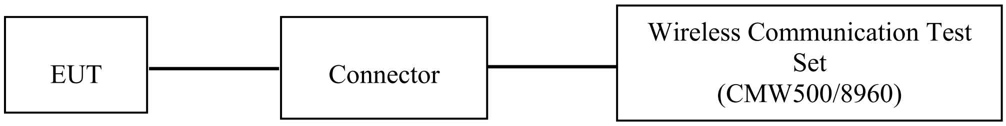
6.2Test Distance for SAR Evaluation

For Body mode(1g Body SAR) the EUT is set 5mm away from the phantom, the test distance is 5mm
For Limb mode(10g Extremity SAR) the EUT(Equipment Under Test) is set directly against the phantom, the test distance is 0mm

7. CONDUCTED OUTPUT POWER MEASUREMENT

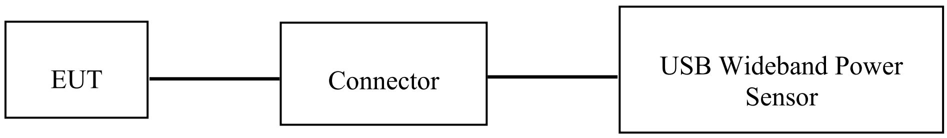
7.1 Test Procedure

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



WCDMA/LTE

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



WLAN/BT

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.

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

DC-HSDPA

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

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

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

HSPA+

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

TDD-LTE

LTE TDD Band 41 supports 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special subframe configurations.

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Table 4.2-2: Uplink-downlink configurations.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

Calculated Duty Cycle

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

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

7.3 Maximum Target Output Power

Max Target Power(dBm)			
Mode/Band	Channel		
	Low	Middle	High
WCDMA Band 5	23	23	23
HSDPA	23	23	23
HSUPA	23	23	23
DC-HSDPA	23	23	23
HSPA+	23	23	23
LTE Band 5	23	23	23
LTE Band 41	23	23	23
WIFI 2.4G(802.11b)	16	16	16
WIFI 2.4G(802.11g)	13	14	14
WIFI 2.4G(802.11n ht20)	12	13	13
Bluetooth BDR/EDR	8.5	7.5	6
BLE 1Mbps	0	-0.5	-1

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

7.4 Test Results:

WCDMA:
WCDMA Band 5:

Test Mode	Conducted Average Output Power(dBm)		
	Lowest Channel	Middle Channel	Highest Channel
WCDMA	22.59	**22.80**	22.60
HSDPA Subset 1	21.91	22.11	21.91
HSDPA Subset 2	22.48	22.74	22.27
HSDPA Subset 3	22.52	22.70	22.19
HSDPA Subset 4	22.44	22.78	22.35
HSUPA Subset 1	22.29	22.63	22.28
HSUPA Subset 2	22.37	22.64	22.14
HSUPA Subset 3	22.29	22.76	22.13
HSUPA Subset 4	22.28	22.69	22.22
HSUPA Subset 5	22.33	22.66	22.14
DC-HSDPA Subset 1	22.49	22.44	22.28
DC-HSDPA Subset 2	22.76	22.4	22.19
DC-HSDPA Subset 3	22.54	22.64	22.18
DC-HSDPA Subset 4	22.7	22.6	22.36
HSPA+	22.58	22.42	22.30

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

LTE Band 5:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	1@0	22.69	22.85	22.75
		1@3	22.66	22.75	22.82
		1@5	22.64	22.79	22.76
		3@0	22.76	22.71	22.71
		3@1	22.67	22.81	22.72
		3@3	22.58	22.67	22.75
		6@0	21.65	21.71	21.60
	16-QAM	1@0	21.41	22.43	22.26
		1@3	21.38	22.44	22.27
		1@5	21.42	22.48	22.24
		3@0	21.35	21.96	21.86
		3@1	21.44	21.98	21.85
		3@3	21.38	21.94	21.81
		6@0	20.62	20.96	20.63
3M	QPSK	1@0	22.83	22.82	22.76
		1@8	22.72	22.94	22.73
		1@14	22.76	22.78	22.72
		8@0	21.66	21.81	21.71
		8@4	21.61	21.70	21.79
		8@7	21.77	21.73	21.76
		15@0	21.62	21.70	21.68
	16-QAM	1@0	21.71	22.00	22.31
		1@8	21.74	21.97	22.10
		1@14	21.82	22.06	22.34
		8@0	20.67	20.70	20.95
		8@4	20.78	20.56	20.77
		8@7	20.73	20.75	20.64
		15@0	20.57	20.74	20.70
5M	QPSK	1@0	22.77	22.58	22.52
		1@12	22.64	22.56	22.65
		1@24	22.64	22.58	22.65
		12@0	21.68	21.70	21.56
		12@7	21.57	21.79	21.65
		12@13	21.63	21.90	21.77
		25@0	21.51	21.78	21.72
	16-QAM	1@0	21.80	21.33	21.23
		1@12	21.81	21.42	21.37
		1@24	21.93	21.23	21.19
		12@0	20.64	20.69	20.50
		12@7	20.62	20.75	20.81
		12@13	20.57	20.77	20.83
		25@0	20.66	20.70	20.98
10M	QPSK	1@0	22.84	22.78	**22.95**
		1@25	22.83	22.76	22.72

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
		1@49	22.85	22.61	22.89
		25@0	21.63	21.70	21.72
		25@12	21.78	21.99	21.69
		25@25	21.91	21.79	21.80
		50@0	21.80	21.80	21.68
	16-QAM	1@0	22.28	21.54	22.02
		1@25	22.57	21.49	22.01
		1@49	22.37	21.40	22.10
		25@0	21.65	21.77	21.73
		25@12	21.83	21.94	21.71
		25@25	21.94	21.82	21.02
		50@0	21.79	21.84	21.62

LTE Band 41:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	2550MHz (dBm)	Middle Channel (dBm)	2636MHz (dBm)	High Channel (dBm)
5M	QPSK	1@0	22.70	22.35	22.36	21.29	21.28
		1@12	**22.79**	22.62	22.49	21.68	21.57
		1@24	22.56	22.54	22.53	21.08	20.99
		12@0	21.55	21.21	21.17	21.07	20.95
		12@7	21.66	21.29	21.22	20.78	20.77
		12@13	21.55	21.39	21.37	21.08	21.03
		25@0	21.39	21.18	21.22	20.89	20.91
	16-QAM	1@0	21.98	20.42	20.38	20.67	20.70
		1@12	21.94	20.4	20.36	20.64	20.57
		1@24	21.92	20.48	20.45	20.69	20.59
		12@0	20.67	20.12	20.12	19.89	19.88
		12@7	20.54	20.14	20.17	19.69	19.73
		12@13	20.54	20.24	20.19	19.74	19.79
		25@0	20.80	20.52	20.53	20.25	20.10
10M	QPSK	1@0	22.63	22.2	22.06	21.45	21.32
		1@25	22.75	22.34	22.31	21.5	21.52
		1@49	22.75	22.22	22.12	21.5	21.51
		25@0	21.47	21.08	21.08	20.59	20.62
		25@12	21.52	21.23	21.11	20.77	20.81
		25@25	21.53	21.18	21.22	20.75	20.73
		50@0	21.50	21.32	21.24	20.8	20.76
	16-QAM	1@0	21.58	21.62	21.63	20.88	20.88
		1@25	21.49	21.82	21.82	21.35	21.39
		1@49	21.41	21.92	21.89	21.29	21.30
		25@0	20.55	20.24	20.24	19.67	19.72
		25@12	20.62	20.36	20.34	19.87	19.87
		25@25	20.63	20.27	20.22	19.99	19.88
		50@0	20.63	20.43	20.43	19.73	19.69
15M	QPSK	1@0	22.78	22.12	22.03	21.53	21.42
		1@37	22.74	22.25	22.21	21.78	21.64
		1@74	22.46	22.03	22.03	21.26	21.27
		36@0	21.52	21.18	21.08	20.43	20.33
		36@20	21.52	21.27	21.19	20.62	20.58
		36@39	21.31	21.21	21.13	20.68	20.71
		75@0	21.47	21.25	21.15	20.75	20.66
	16-QAM	1@0	21.50	21.4	21.27	21.15	21.03
		1@37	21.53	21.61	21.48	21.2	21.14
		1@74	21.34	21.4	21.30	21.43	21.29
		36@0	20.40	20.23	20.09	19.24	19.26
		36@20	20.48	20.4	20.28	19.59	19.50
		36@39	20.20	20.13	20.11	19.82	19.81
		75@0	20.61	20.49	20.34	19.74	19.75
20M	QPSK	1@0	22.74	22.12	22.15	21.87	21.76
		1@49	22.68	22.42	22.32	21.53	21.48

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	2550MHz (dBm)	Middle Channel (dBm)	2636MHz (dBm)	High Channel (dBm)
		1@99	22.5	22.13	22.09	21.08	22.03
		50@0	21.45	21.21	21.18	21.56	21.49
		50@24	21.61	21.43	21.38	21.56	21.59
		50@50	21.54	21.3	22.33	21.35	21.3
		100@0	21.32	21.32	21.28	22.03	21.94
	16-QAM	1@0	21.14	21.48	21.66	21.43	21.28
		1@49	21.08	21.52	21.45	21.01	21.05
		1@99	21.95	21.34	21.37	21.72	21.57
		50@0	21.5	21.39	21.33	21.41	21.45
		50@24	21.48	21.13	21.16	21.58	21.59
		50@50	21.45	21.29	21.32	21.54	21.43
		100@0	21.28	21.31	21.3	21.08	21

WLAN: 2.4G

Mode	Channel frequency (MHz)	Data Rate	Duty cycle (%)	RF Output Power (dBm)
802.11b	2412	1Mbps	99.44	15.28
	2437			**15.72**
	2462			15.66
802.11g	2412	6Mbps	97.48	12.95
	2437			13.34
	2462			13.25
802.11n ht20	2412	MCS0	97.38	11.77
	2437			12.49
	2462			12.47

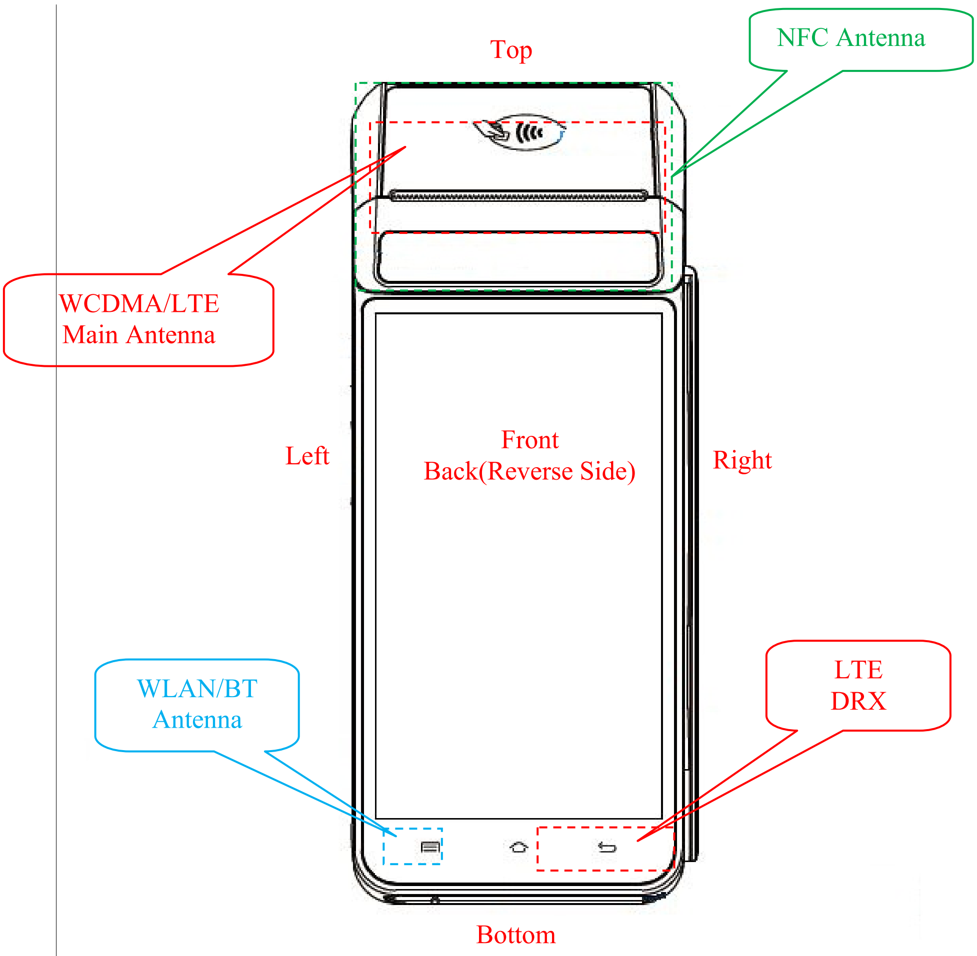
Note: The test plots of duty cycle, please refer to the radio report: 2402X94972E-RF-00C, which was issued by Bay Area Compliance Laboratories Corp. (Dongguan).

Bluetooth:

Mode	Channel frequency (MHz)	RF Output Power (dBm)
BDR(GFSK)	2402	7.00
	2441	6.04
	2480	4.92
EDR(π/4-DQPSK)	2402	7.78
	2441	6.54
	2480	5.33
EDR(8DPSK)	2402	**8.27**
	2441	6.96
	2480	5.87
BLE 1Mbps	2402	**-0.15**
	2440	-0.96
	2480	-1.54

8. STANDALONE SAR TEST EXCLUSION CONSIDERATIONS

8.1 Antennas Location:



Note: The LTE DRX 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 Antenna(WCDMA/LTE)	< 5	< 5	10	10	< 5	170
WLAN/BT Antenna	< 5	< 5	9	55	170	< 5

8.3 Standalone SAR test exclusion considerations

Mode	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Distance (mm)	Calculated value	Threshold	SAR Test Exclusion
WLAN 2.4G	2462	16	39.8	0	12.5	3@1-g	NO
Bluetooth	2480	8.5	7.1	0	2.2	3@1-g	YES
WLAN 2.4G	2462	16	39.8	0	12.5	7.5@10-g	NO
Bluetooth	2480	8.5	7.1	0	2.2	7.5@10-g	YES
Note: The WLAN based average power for calculation. and bluetooth 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.

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 77.61dBuV/m =-17.59dBm (0.02mW)
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

>0.02mW

Conclusion:

The NFC SAR evaluation can be exempted.

8.4 Standalone SAR estimation:

Mode	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Distance (mm)	Estimated (W/kg)
BT Body	2480	8.5	7.1	5	0.30@1-g
BT Limb	2480	8.5	7.1	0	0.12@10-g

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

8.5 SAR test exclusion for the EUT edge considerations Result

Body Mode:

Mode	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Test Exclusion Distance (mm)
WCDMA Band 5	846.6	23	199.5	56.4
LTE Band 5	844	23	199.5	56.4
LTE Band 41	2680	23	199.5	60.7
WLAN 2.4G	2462	16	39.8	20.8

Limb Mode:

Mode	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Test Exclusion Distance (mm)
WCDMA Band 5	846.6	23	199.5	24.4
LTE Band 5	844	23	199.5	24.4
LTE Band 41	2680	23	199.5	43.5
WLAN 2.4G	2462	16	39.8	8.3

Mode	Back	Front	Left	Right	Top	Bottom
WCDMA Band 5	**Required**	**Required**	**Required**	**Required**	**Required**	Exclusion
LTE Band 5	**Required**	**Required**	**Required**	**Required**	**Required**	Exclusion
LTE Band 41	**Required**	**Required**	**Required**	**Required**	**Required**	Exclusion
WLAN 2.4G	**Required**	**Required**	**Required**	Exclusion	Exclusion	**Required**
BT	Exclusion*	Exclusion*	Exclusion*	Exclusion*	Exclusion*	Exclusion*

Note:

Required: The distance is less than **Test Exclusion Distance**, the SAR test is required.
Exclusion*: SAR test exclusion evaluation has been done above.
Exclusion: The distance is large than **Test Exclusion Distance**, SAR test is not required.

SAR test exclusion for the EUT edge considerations detail:

Distance< 50mm(To Edges)

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.
5. The Time based average Power is used for calculation

Distance> 50mm(To Edges)

At 100 MHz to 6 GHz and for *test separation distances* > 50 mm, the SAR test exclusion threshold is determined according to the following:

a) [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz

b) [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz.

9. SAR MEASUREMENT RESULTS

This page summarizes the results of the performed dosimetric evaluation.

9.1 SAR Test Data

Environmental Conditions

Temperature:	21.6-22.3 ℃	22.1-22.7℃
Relative Humidity:	45%	45%
ATM Pressure:	101.3 kPa	101.1 kPa
Test Date:	2024/10/15	2024/10/16

Testing was performed by Lily Yang, Petre Ma, Mark Dong.

WCDMA Band 5:

Body Mode:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (5mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.8	23.0	1.047	0.359	**0.38**	1#
	846.6	RMC	/	/	/	/	/	/

Limb Mode:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	10g SAR (W/kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Limb Front (0mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.8	23.0	1.047	0.157	0.16	/
	846.6	RMC	/	/	/	/	/	/
Limb Back1 (0mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.8	23.0	1.047	0.486	**0.51**	2#
	846.6	RMC	/	/	/	/	/	/
Limb Back2 (0mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.8	23.0	1.047	0.294	0.31	/
	846.6	RMC	/	/	/	/	/	/
Limb Left (0mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.8	23.0	1.047	0.404	0.42	/
	846.6	RMC	/	/	/	/	/	/
Limb Right (0mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.8	23.0	1.047	0.071	0.08	/
	846.6	RMC	/	/	/	/	/	/
Limb Top (0mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.8	23.0	1.047	0.207	0.22	/
	846.6	RMC	/	/	/	/	/	/

Note:

1. When the SAR value is less than half of the limit, testing for low and high channel is 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/DC-HSDPA/HSPA+ when the maximum average output of each RF channel is less than ¼ dB higher than measured 12.2kbps RMC or the maximum SAR for 12.2kbps RMC is < 75% of SAR limit.
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 5:

Body Mode:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (5mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	22.78	23	1.052	0.306	**0.32**	3#
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	21.99	23	1.262	0.247	0.31	/

Limb Mode:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	10g SAR (W/kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Limb Front (0mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	22.78	23	1.052	0.119	0.13	/
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	21.99	23	1.262	0.085	0.11	/
Limb Back1 (0mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	22.78	23	1.052	0.439	**0.46**	4#
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	21.99	23	1.262	0.363	0.46	/
Limb Back2 (0mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	22.78	23	1.052	0.268	0.28	/
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	21.99	23	1.262	0.222	0.28	/
Limb Left (0mm)	829	10	1RB	/	23	/	/	/	/
	836.5	10	1RB	22.78	/	1.052	0.286	0.30	/
	844	10	1RB	/	23	/	/	/	/
	836.5	10	50%RB	21.99	23	1.262	0.241	0.30	/
Limb Right (0mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	22.78	23	1.052	0.072	0.08	/
	844	10	1RB	/	23	/	/	/	/
	836.5	10	50%RB	21.99	23	1.262	0.056	0.07	/
Limb Top (0mm)	829	10	1RB	/	23	/	/	/	/
	836.5	10	1RB	22.78	23	1.052	0.190	0.20	/
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	21.99	23	1.262	0.166	0.21	/

LTE Band 41:

Body Mode:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (5mm)	2506	20	1RB	22.74	23	1.062	0.638	0.68	/
	2550	20	1RB	22.42	23	1.143	0.809	0.92	/
	2593	20	1RB	22.32	23	1.169	0.845	**0.99**	5#
	2636	20	1RB	21.87	23	1.297	0.415	0.54	/
	2680	20	1RB	22.03	23	1.25	0.766	0.96	/
	2593	20	50%RB	22.33	23	1.167	0.674	0.79	/
	2593	20	100%RB	21.28	23	1.486	0.567	0.84	/

Limb Mode:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	10g SAR (W/kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Limb Front (0mm)	2506	20	1RB	/	/	/	/	/	/
	2550	20	1RB	/	/	/	/	/	/
	2593	20	1RB	22.32	23	1.169	0.144	0.17	/
	2636	20	1RB	/	/	/	/	/	/
	2680	20	1RB	/	/	/	/	/	/
	2593	20	50%RB	22.33	23	1.167	0.226	0.26	/
Limb Back1 (0mm)	2506	20	1RB	/	/	/	/	/	/
	2550	20	1RB	/	/	/	/	/	/
	2593	20	1RB	22.32	23	1.169	0.806	**0.94**	6#
	2636	20	1RB	/	/	/	/	/	/
	2680	20	1RB	/	/	/	/	/	/
	2593	20	50%RB	22.33	23	1.167	0.271	0.32	/
Limb Back2 (0mm)	2506	20	1RB	/	/	/	/	/	/
	2550	20	1RB	/	/	/	/	/	/
	2593	20	1RB	22.32	23	1.169	0.499	0.58	/
	2636	20	1RB	/	/	/	/	/	/
	2680	20	1RB	/	/	/	/	/	/
	2593	20	50%RB	22.33	23	1.167	0.417	0.49	/
Limb Left (0mm)	2506	20	1RB	/	/	/	/	/	/
	2550	20	1RB	/	/	/	/	/	/
	2593	20	1RB	22.32	23	1.169	0.439	0.51	/
	2636	20	1RB	/	/	/	/	/	/
	2680	20	1RB	/	/	/	/	/	/
	2593	20	50%RB	22.33	23	1.167	0.261	0.30	/
Limb Right (0mm)	2506	20	1RB	/	/	/	/	/	/
	2550	20	1RB	/	/	/	/	/	/
	2593	20	1RB	22.32	23	1.169	0.134	0.16	/
	2636	20	1RB	/	/	/	/	/	/
	2680	20	1RB	/	/	/	/	/	/
	2593	20	50%RB	22.33	23	1.167	0.098	0.11	/

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	10g SAR (W/kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Limb Top (0mm)	2506	20	1RB	/	/	/	/	/	/
	2550	20	1RB	/	/	/	/	/	/
	2593	20	1RB	22.32	23	1.169	0.221	0.26	/
	2636	20	1RB	/	/	/	/	/	/
	2680	20	1RB	/	/	/	/	/	/
	2593	20	50%RB	22.33	23	1.167	0.185	0.22	/

Note:
1.The frequency range of LTE Band 41 is 2496~ 2690MHz. Per KDB 447498 D01, according to the following formula Calculate Nc is 5.
2.KDB procedures *the following should be applied to determine the number of required test channels. The test channels should be evenly spread across the transmission frequency band of each wireless mode.*

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

where

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

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

Note:
1. When the SAR value is less than half of the limit, testing for low and high channel is 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.

WIFI 2.4G:

Body Mode:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Body Back (5mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	15.72	16	1.067	1.006	0.074	**0.08**	7#
	2462	802.11b	/	/	/	/	/	/	/

Limb Mode:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	10g SAR (W/kg)				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Limb Front (0mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	15.72	16	1.067	1.006	0.069	0.07	/
	2462	802.11b	/	/	/	/	/	/	/
Limb Back (0mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	15.72	16	1.067	1.006	0.074	0.08	/
	2462	802.11b	/	/	/	/	/	/	/
Limb Left (0mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	15.72	16	1.067	1.006	0.028	0.03	/
	2462	802.11b	/	/	/	/	/	/	/
Limb Bottom (0mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	15.72	16	1.067	1.006	0.091	**0.10**	8#
	2462	802.11b	/	/	/	/	/	/	/

Note:
1. When the SAR value is less than half of the limit, testing for low and high channel is 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.KDB 248227 D01-SAR measurement is not required for 2.4 GHz OFDM(802.11g/n)when the highest reported SAR for DSSS(802.11b) is ≤ 1.2 W/kg, and the output power for DSSS is not less than that for OFDM.
4. According KDB 248227 D01, for SAR testing of WLAN with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to “1/(duty cycle)”.

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	
2600 MHz	LTE Band 41	2593	Body Back	0.845	0.833	1.01

Note:

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

11. DUT HOLDER PERTURBATIONS

In accordance with TCB workshop October 2016:

1) SAR perturbation due to test device holders, depending on antenna locations, buttons locations on phones or device, form factor (e.g. dongles etc.), the measured SAR could be influenced by the relative positions of the test device and its holder

2) SAR measurement standards have included protocols to evaluate this with a flat phantom, with and without the device holder

3) When the highest reported SAR of an antenna is > 1.2 W/kg, holder perturbation verification is required for each antenna, using the highest SAR configuration among all applicable frequency bands in the same exact device and holder positions used for head and body SAR measurements; i.e. same device/button locations in the holder

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

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

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

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

The Highest Measured SAR Configuration among all applicable Frequency Band

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

12. SAR SIMULTANEOUS TRANSMISSION DESCRIPTION

12.1 Simultaneous Transmission:

Description of Simultaneous Transmit Capabilities		
Transmitter Combination	**Simultaneous?**	**Hotspot?**
WWAN(WCDMA/LTE) + WIFI 2.4G + NFC	√	×
WWAN(WCDMA/LTE) + Bluetooth+ NFC	√	×
WLAN 2.4G+ Bluetooth	×	×

Note:
1.For the EIRP of NFC is 0.02mW, 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.

Test reduction evaluation

Simultaneous SAR test exclusion considerations:

Body Mode:

Mode(SAR1+SAR2)	Position	Reported SAR(W/kg)		ΣSAR < 1.6W/kg
		SAR1	SAR2	
WWAN(WCDMA/LTE) + Bluetooth	Body	0.99	0.30	**1.29**
WWAN(WCDMA/LTE) + WIFI 2.4G	Body	0.99	0.08	1.07

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

Limb Mode:

Mode(SAR1+SAR2)	Position	Reported SAR(W/kg)		ΣSAR < 4.0W/kg
		SAR1	SAR2	
WWAN(WCDMA/LTE) + Bluetooth	Limb	0.94	0.12	**1.06**
WWAN(WCDMA/LTE) + WIFI 2.4G	Limb	0.94	0.10	1.04

Conclusion:
Sum of SAR:**ΣSAR ≤4.0 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 ambientconditions-noise	1.0	R	√3	1	1	0.6	0.6
RF ambient conditions-reflections	1.0	R	√3	1	1	0.6	0.6
Probe positioner mech.tolerance	0.8	R	√3	1	1	0.5	0.5
Probe positioning with respect to phantom shell	6.7	R	√3	1	1	3.9	3.9
Extrapolation, interpolation, and integrationsalgorithms for max. SAR evaluation	2.0	R	√3	1	1	1.2	1.2
Test sample related							
Test sample positioning	3.3	N	1	1	1	3.3	3.3
Device holder uncertainty	4.7	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, thicknessand permittivity	4.0	R	√3	1	1	2.3	2.3
Uncertainty in SARcorrection for deviationsin permittivity and conductivity	1.9	N	1	1	0.84	1.9	1.6
Liquid conductivity meas.	2.5	N	1	0.78	0.71	2.0	1.8
Liquid permittivity meas.	2.5	N	1	0.23	0.26	0.6	0.7
Liquid conductivity – temperatureuncertainty	1.7	R	√3	0.78	0.71	0.8	0.7
Liquid permittivity – temperatureuncertainty	0.3	R	√3	0.23	0.26	0.0	0.0
Combined standard uncertainty		RSS				12.1	12.0
Expanded uncertainty (95 % confidence interval)		k=2				24.2	24.0

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 ambientconditions – noise	1.0	R	√3	1	1	0.6	0.6
RF ambient conditions–reflections	1.0	R	√3	1	1	0.6	0.6
Probe positioner mech. 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 – temperatureuncertainty	1.7	R	√3	0.78	0.71	0.8	0.7
Liquid permittivity – temperatureuncertainty	0.3	R	√3	0.23	0.26	0.0	0.0
Combined standard uncertainty		RSS				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 ====