TEST REPORT

Applicant Name :	Shenzhen Youmi Intelligent Technology Co., Ltd.
Address :	406-407 Jinqi Zhigu Building, 4/F, 1 Tangling Road, Nanshan District, Shenzhen City, China
Report Number :	SZ1231208-73855E-20A
FCC ID:	2ATZ4-G7TABPRO

Test Standard (s)

FCC Part 2.1093

Sample Description

Product Type:	Smart Tablet
Model No.:	TG2403GBA
Multiple Models:	N/A
Trade Mark:	UMIDIGI
Date Received:	2023/12/12
Date of Test:	2024/03/05-2024/03/07
Issue Date:	2024/03/15

Test Result:	Pass*

* In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

Sid Luo
SAR Engineer

Approved By:

Luke Jiang
SAR Engineer

Attestation of Test Results			
MODE		**Max. SAR Level(s) Reported(W/kg)**	**Limit (W/kg)**
GSM 850	1g Body SAR	0.64	**1.6**
PCS 1900	1g Body SAR	0.94	
WCDMA Band 2	1g Body SAR	**1.02**	
WCDMA Band 5	1g Body SAR	0.49	
LTE Band 2	1g Body SAR	0.78	
LTE Band 5	1g Body SAR	0.66	
LTE Band 7	1g Body SAR	0.79	
LTE Band 12	1g Body SAR	0.73	
LTE Band 41	1g Body SAR	0.92	
2.4G Wi-Fi	1g Body SAR	0.38	
5.2G Wi-Fi	1g Body SAR	0.42	
5.8G Wi-Fi	1g Body SAR	**0.54**	
Simultaneous	1g Body SAR	**1.56**	
Applicable Standards	**FCC 47 CFR part 2.1093** Radiofrequency radiation exposure evaluation: portable devices		
	RF Exposure Procedures: TCB Workshop October 2016(Bluetooth Duty Factor)		
	IEEE1528:2013 IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques		
	KDB procedures KDB 447498 D01 General RF Exposure Guidance v06 KDB 616217 D04 SAR for laptop and tablets v01r02 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
0	SZ1231208-73855E-20A	Original Report	2024/03/15

EUT DESCRIPTION

This report has been prepared on behalf of ***Shenzhen Youmi Intelligent Technology Co., Ltd.*** and their product ***Smart Tablet*** , Model: **TG2403GBA**, SN: ***2F2C-1***, FCC: **2ATZ4-G7TABPRO** or the EUT (Equipment under Test) as referred to in the rest of this report.

Technical Specification

Device Type:	Portable
Device Size:	256mm x 166mm x 7mm
Exposure Category:	Population / Uncontrolled
Antenna Type(s):	Internal Antenna
Power Sensor	None
DTM Type:	Class B
Multi-slot Class:	GPRS/EGPRS(Class 12)
Power Class	LTE Band 41 for power class 3
Body-Worn Accessories:	Headset
Face-Head Accessories:	None
Proximity Sensor:	None Proximity Sensor for power reduction
Operation Mode :	GSM Voice WCDMA(R99 (Voice+Data)) FDD-LTE, TDD-LTE, Wi-Fi and Bluetooth
Frequency Band:	GSM 850: 824-849 MHz(TX); 869-894 MHz(RX) PCS 1900: 1850-1910 MHz(TX); 1930-1990 MHz(RX) WCDMA Band 2: 1850-1910 MHz(TX); 1930-1990 MHz(RX) WCDMA Band 5: 824-849 MHz(TX); 869-894 MHz(RX) LTE Band 2: 1850-1910 MHz(TX); 1930-1990 MHz(RX) LTE Band 5: 824-849 MHz(TX) ; 869-894 MHz (RX) LTE Band 7: 2500-2570MHz(TX); 2620-2690MHz(RX) LTE Band 12: 699-716 MHz(TX) ; 729-746 MHz(RX) LTE Band 41: 2535-2655 MHz(TX&RX) Wi-Fi 2.4G: 2412 -2462 MHz(TX&RX) Wi-Fi 5.2G:5180-5240MHz(TX&RX) Wi-Fi 5.8G:5745-5825MHz(TX&RX) Bluetooth: 2402 -2480 MHz(TX&RX) BLE: 2402 -2480 MHz(TX&RX)
Power Source:	Rechargeable Battery
Normal Operation:	Body-worn

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.

IC:

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 ISS-102 for an uncontrolled environment. According to the Safety Code 6 Health Canada's Radiofrequency Exposure Guidelines, 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(1g Tissue)

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

IC Limit(1g Tissue)

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

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

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

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

FACILITIES

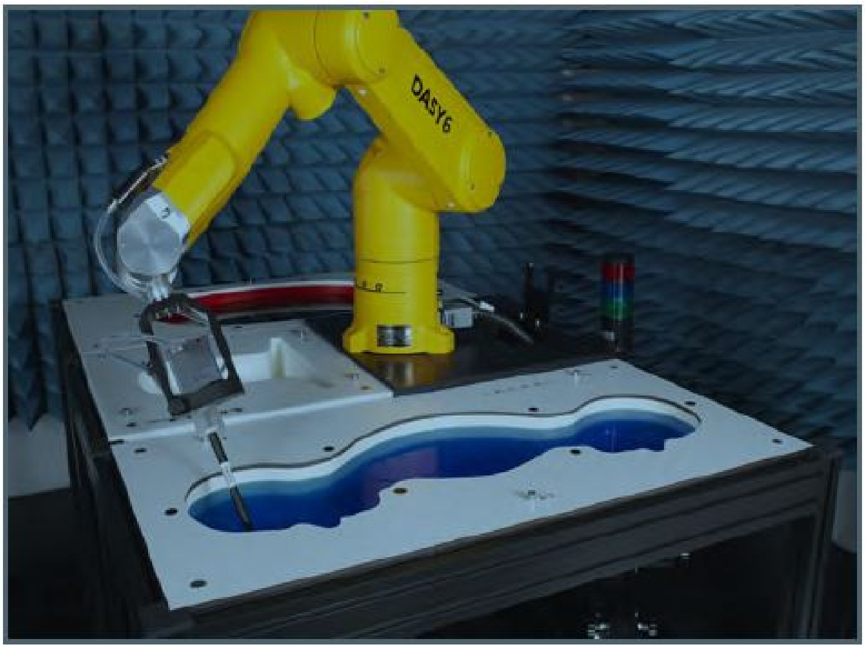
The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect data is located at 5F(B-West) ,6F,7F,the 3rd Phase of Wan Li Industrial Building D,Shihua Rd, FuTian Free Trade Zone, Shenzhen, China

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.: 715558, the FCC Designation No.: CN5045.

Each test item follows test standards and with no deviation.

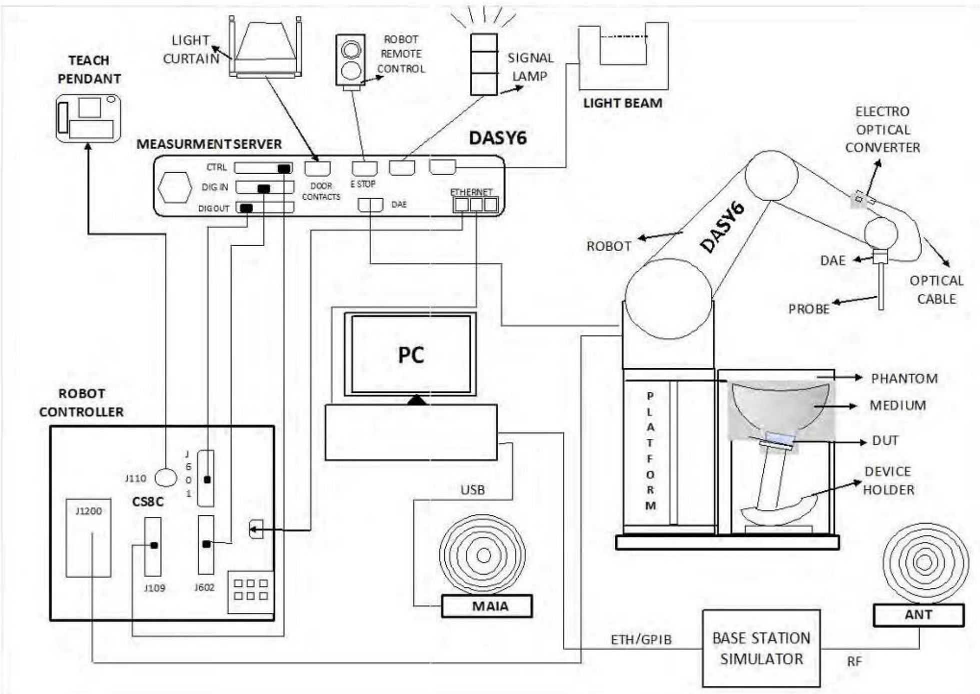
DESCRIPTION OF TEST SYSTEM

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.

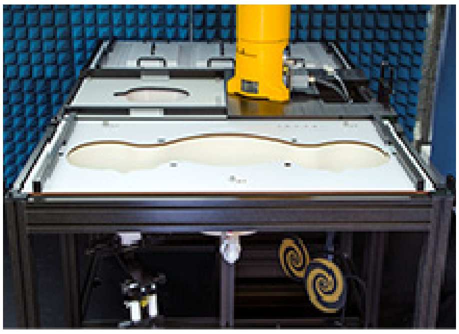
The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

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	4 MHz to >10 GHz Linearity: ± 0.2 dB (30 MHz to 10 GHz)
Directivity	± 0.1 dB in TSL (rotation around probe axis) ± 0.3 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: 20 mm) Tip diameter: 2.5 mm (Body: 12 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, EASY6, 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 V5.2software. 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.

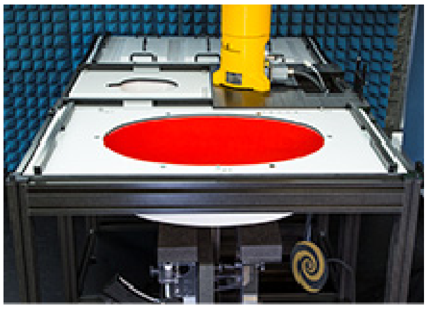
In addition to our standard broadband liquids, the phantom can be used with the following tissue simulating liquids:

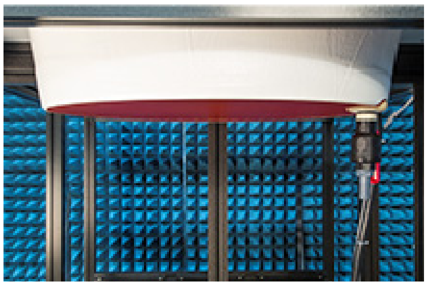
Sugar-water-based liquids can be left permanently in the phantom. Always cover the liquid when the system is not in use to prevent changes in liquid parameters due to water evaporation.

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 IEC 62209-2 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 Staubli 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

Calibration Frequency Points for EX3DV4 E-Field Probes SN: 7382 Calibrated: 2023/09/27

Calibration Frequency Point(MHz)	Frequency Range(MHz)		Conversion Factor		
	From	To	X	Y	Z
750 Head	650	850	10.65	10.65	10.65
900 Head	850	1000	10.19	10.19	10.19
1750 Head	1650	1850	8.60	8.60	8.60
1900 Head	1850	2000	8.30	8.30	8.30
2300 Head	2200	2400	8.16	8.16	8.16
2450 Head	2400	2550	7.89	7.89	7.89
2600 Head	2550	2700	7.65	7.65	7.65
3300 Head	3200	3400	7.39	7.39	7.39
3500 Head	3400	3600	7.24	7.24	7.24
3700 Head	3600	3800	7.10	7.10	7.10
3900 Head	3800	4000	6.98	6.98	6.98
5250 Head	5140	5360	5.62	5.62	5.62
5500 Head	5390	5610	5.10	5.10	5.10
5750 Head	5640	5860	5.08	5.08	5.08

Area scan parameters

<table>
<tr><th></th><th>≤ 3 GHz</th><th>> 3 GHz</th></tr>
<tr><td>Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 mm ± 1 mm</td><td>½·δ·ln(2) mm ± 0.5 mm</td></tr>
<tr><td>Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td rowspan="2">Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3 – 4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
</table>

Zoom scan parameters

<table>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤ 5 mm</td><td>3 – 4 GHz: ≤ 4 mm
4 – 5 GHz: ≤ 3 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤ 4 mm</td><td>3 – 4 GHz: ≤ 3 mm
4 – 5 GHz: ≤ 2.5 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">≤ 1.5·$\Delta z_{Zoom}(n-1)$ mm</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.
* When zoom scan is required and the <u>*reported*</u> SAR from the *area scan based 1-g SAR estimation* procedures of KDB Publication 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

Tissue Dielectric Parameters for Head

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 5mm,with the side length of the 10g cube is 21.5mm.

Zoom Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			$\leq$ 2 GHz: $\leq$ 8 mm 2 – 3 GHz: $\leq$ 5 mm*	3 – 4 GHz: $\leq$ 5 mm* 4 – 6 GHz: $\leq$ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		$\leq$ 5 mm	3 – 4 GHz: $\leq$ 4 mm 4 – 5 GHz: $\leq$ 3 mm 5 – 6 GHz: $\leq$ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	$\leq$ 4 mm	3 – 4 GHz: $\leq$ 3 mm 4 – 5 GHz: $\leq$ 2.5 mm 5 – 6 GHz: $\leq$ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$ mm	
Minimum zoom scan volume	x, y, z		$\geq$ 30 mm	3 – 4 GHz: $\geq$ 28 mm 4 – 5 GHz: $\geq$ 25 mm 5 – 6 GHz: $\geq$ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB Publication 447498 is $\leq$ 1.4 W/kg, $\leq$ 8 mm, $\leq$ 7 mm and $\leq$ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the KDB 865664 D01

Recommended Tissue Dielectric Parameters for Head 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.

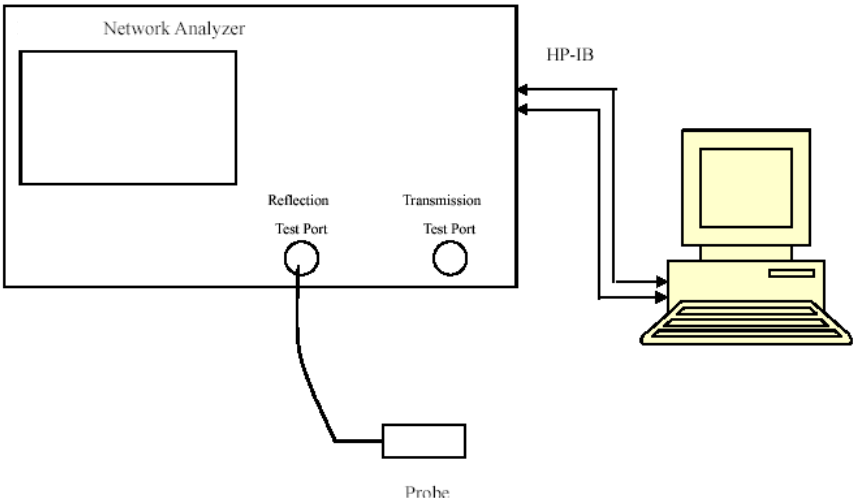
EQUIPMENT LIST AND CALIBRATION

Equipments List & Calibration Information

Equipment	Model	S/N	Calibration Date	Calibration Due Date
DASY5 Test Software	DASY52 52.10.2	N/A	NCR	NCR
DASY6 Measurement Server	DASY6 6.0.31	N/A	NCR	NCR
Data Acquisition Electronics	DAE4	1325	2023/9/27	2024/9/26
E-Field Probe	EX3DV4	7382	2023/9/27	2024/9/26
Mounting Device	MD4HHTV5	SD 000 H01 KA	NCR	NCR
SAM Twin Phantom	SAM-Twin V8.0	1962	NCR	NCR
Dipole, 750 MHz	D750V3	1229	2023/3/24	2026/3/23
Dipole, 1900 MHz	D1900V2	5d231	2023/2/17	2026/2/16
Dipole, 2450 MHz	D2450V2	1103	2023/3/27	2026/3/26
Dipole,2600 MHz	D2600V2	1207	2023/3/27	2026/3/26
Dipole,5GHz	D5GHzV2	1374	2023/3/27	2026/3/26
Simulated Tissue Liquid Head	HBBL600-10000V6	180622-2	Each Time	/
Network Analyzer	E5071C	SER MY46519680	2023/06/08	2024/06/07
Dielectric Assessment Kit	DAK-3.5	1248	NCR	NCR
MXG Analog Signal Generator	N5181A	MY48180408	2023/06/08	2024/06/07
USB wideband power sensor	U2021XA	MY52350001	2023/06/08	2024/06/07
Directional Coupler	855673	3307	NCR	NCR
20dB Attenuator	2	BH9879	NCR	NCR
RF Power Amplifier	5205FE	1014	NCR	NCR
Temperature & Humidity Meter	DTM3000	N/A	2024/01/16	2025/01/15
Universal Radio Communication Tester	CMU200	110 825	2023/3/31	2024/3/30
Wideband Radio Communication Tester	CMW500	149218	2023/3/31	2024/3/30
Spectrum Analyzer	FSV40	101943	2023/3/31	2024/3/30

SAR MEASUREMENT SYSTEM VERIFICATION

Liquid Verification



Liquid Verification Setup Block Diagram

Liquid Verification Results

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)	
704	Simulated Tissue Liquid Head	43.495	0.869	42.18	0.89	3.12	-2.36	±5
707.5	Simulated Tissue Liquid Head	43.53	0.865	42.13	0.89	3.32	-2.81	±5
711	Simulated Tissue Liquid Head	43.565	0.869	42.11	0.89	3.46	-2.36	±5
750	Simulated Tissue Liquid Head	43.402	0.867	41.90	0.89	3.58	-2.58	±5
824.2	Simulated Tissue Liquid Head	42.677	0.925	41.55	0.90	2.71	2.78	±5
826.4	Simulated Tissue Liquid Head	42.875	0.922	41.54	0.90	3.21	2.44	±5
829	Simulated Tissue Liquid Head	42.831	0.918	41.53	0.90	3.13	2	±5
836.5	Simulated Tissue Liquid Head	42.716	0.92	41.50	0.90	2.93	2.22	±5
836.6	Simulated Tissue Liquid Head	42.79	0.925	41.50	0.90	3.11	2.78	±5
844	Simulated Tissue Liquid Head	42.734	0.924	41.50	0.91	2.97	1.54	±5
846.6	Simulated Tissue Liquid Head	42.631	0.918	41.50	0.91	2.73	0.88	±5
848.8	Simulated Tissue Liquid Head	42.645	0.92	41.50	0.91	2.76	1.1	±5

**Liquid Verification above was performed on 2024/03/05.*

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)	
1850.2	Simulated Tissue Liquid Head	41.231	1.449	40.00	1.40	3.08	3.5	±5
1852.4	Simulated Tissue Liquid Head	41.38	1.459	40.00	1.40	3.45	4.21	±5
1860	Simulated Tissue Liquid Head	41.476	1.451	40.00	1.40	3.69	3.64	±5
1880	Simulated Tissue Liquid Head	41.379	1.459	40.00	1.40	3.45	4.21	±5
1900	Simulated Tissue Liquid Head	41.498	1.465	40.00	1.40	3.74	4.64	±5
1907.6	Simulated Tissue Liquid Head	41.339	1.448	40.00	1.40	3.35	3.43	±5
1909.8	Simulated Tissue Liquid Head	41.137	1.446	40.00	1.40	2.84	3.29	±5

**Liquid Verification above was performed on 2024/03/05.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	Ơ (S/m)	ε_r	Ơ (S/m)	$\Delta\varepsilon_r$	ΔƠ	
2412	Simulated Tissue Liquid Head	40.708	1.801	39.26	1.78	3.69	1.18	±5
2437	Simulated Tissue Liquid Head	40.484	1.831	39.22	1.79	3.22	2.29	±5
2450	Simulated Tissue Liquid Head	40.159	1.839	39.20	1.80	2.45	2.17	±5
2462	Simulated Tissue Liquid Head	39.692	1.841	39.18	1.81	1.31	1.71	±5

**Liquid Verification above was performed on 2024/03/06.*

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)	
2510	Simulated Tissue Liquid Head	39.443	1.85	39.12	1.87	0.83	-1.07	±5
2535	Simulated Tissue Liquid Head	40.112	1.885	39.09	1.89	2.61	-0.26	±5
2545	Simulated Tissue Liquid Head	40.281	1.902	39.07	1.90	3.1	0.11	±5
2560	Simulated Tissue Liquid Head	40.333	1.928	39.06	1.92	3.26	0.42	±5
2570	Simulated Tissue Liquid Head	40.537	1.943	39.03	1.94	3.86	0.15	±5
2595	Simulated Tissue Liquid Head	40.787	1.987	39.01	1.95	4.56	1.9	±5
2600	Simulated Tissue Liquid Head	40.629	1.997	39.00	1.96	4.18	1.89	±5
2620	Simulated Tissue Liquid Head	40.268	1.999	38.99	1.97	3.28	1.47	±5
2645	Simulated Tissue Liquid Head	39.953	2.004	38.94	2.01	2.6	-0.3	±5

**Liquid Verification above was performed on 2024/03/06.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	Ơ (S/m)	ε_r	Ơ (S/m)	$\Delta\varepsilon_r$	ΔƠ	
5180	Simulated Tissue Liquid Head	37.529	4.786	36.02	4.65	4.19	2.92	±5
5200	Simulated Tissue Liquid Head	37.361	4.794	36.00	4.66	3.78	2.88	±5
5240	Simulated Tissue Liquid Head	37.399	4.81	35.96	4.70	4	2.34	±5
5250	Simulated Tissue Liquid Head	36.08	4.876	35.95	4.71	0.36	3.52	±5

**Liquid Verification above was performed on 2024/03/06.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	Ơ (S/m)	ε_r	Ơ (S/m)	$\Delta\varepsilon_r$	ΔƠ	
5745	Simulated Tissue Liquid Head	35.658	5.188	35.36	5.21	0.84	-0.42	±5
5785	Simulated Tissue Liquid Head	36.164	5.271	35.32	5.26	2.39	0.21	±5
5800	Simulated Tissue Liquid Head	36.047	5.268	35.30	5.27	2.12	-0.04	±5
5825	Simulated Tissue Liquid Head	36.244	5.265	35.28	5.29	2.73	-0.47	±5

**Liquid Verification above was performed on 2024/03/07.*

System Accuracy Verification

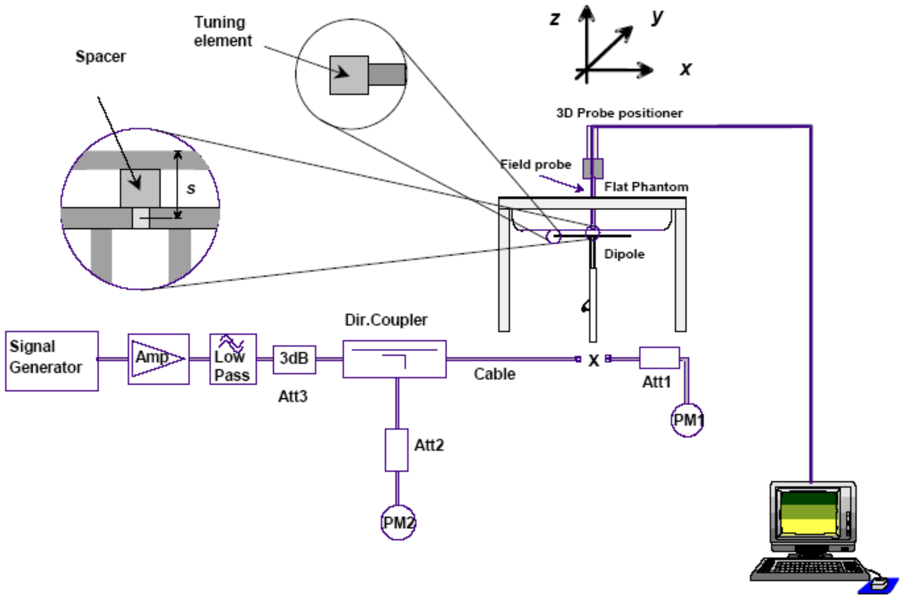
Prior to the assessment, the system validation kit was used to test whether the system was operating within its specifications of ±10%. The validation results are tabulated below. And also the corresponding SAR plot is attached as well in the SAR plots files.

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 ≤ 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 (%)
2024/03/05	750 MHz	Head	100	1g	0.859	8.59	8.41	2.140	±10
2024/03/05	1900 MHz	Head	100	1g	4.12	41.2	39.9	3.258	±10
2024/03/06	2450 MHz	Head	100	1g	5.45	54.5	51.7	5.416	±10
2024/03/06	2600 MHz	Head	100	1g	5.73	57.3	55.2	3.804	±10
2024/03/06	5250 MHz	Head	100	1g	7.86	78.6	80.1	-1.873	±10
2024/03/07	5800 MHz	Head	100	1g	7.94	79.4	81.4	-2.457	±10

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

SAR SYSTEM VALIDATION DATA

System Performance 750 MHz

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1229

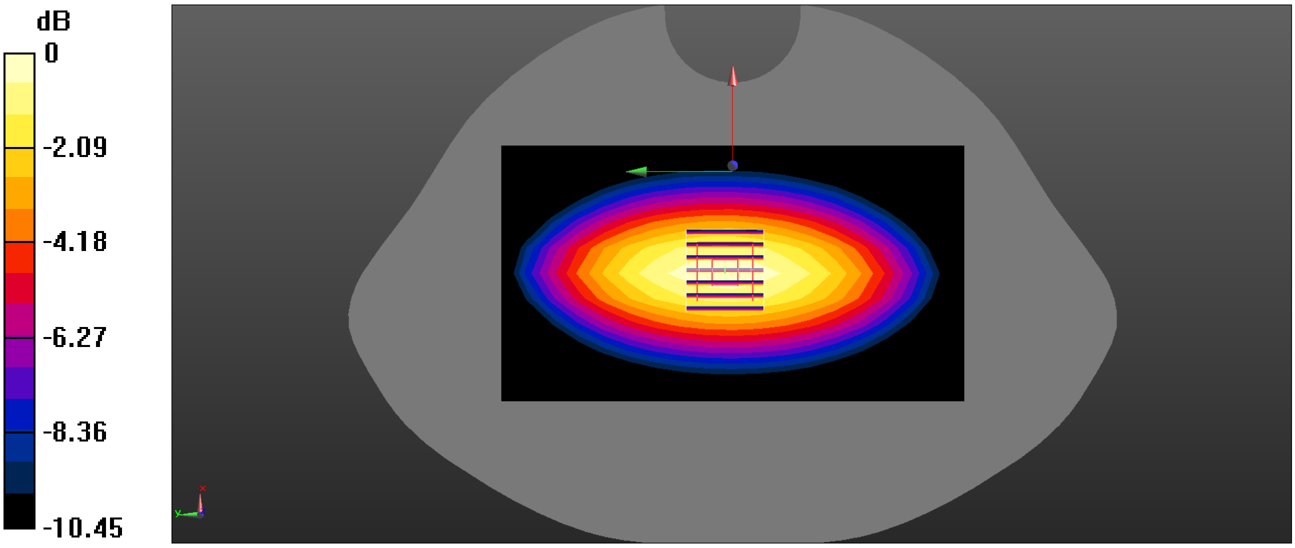
Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 750 MHz; σ = 0.867 S/m; ε_r = 43.402; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7382; ConvF(10.65, 10.65, 10.65) @ 750 MHz;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1325; Calibrated: 9/27/2023
- Phantom: SAM-Twin V8.0 P1aP2a; Type: QD 000 P41 AA ; Serial: 1962
- Measurement SW: DASY52, Version 52.10 (2);

Configuration/Head 750MHz Pin=100mW/Area Scan (11x19x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.877 W/kg

Configuration/Head 750MHz Pin=100mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 32.73 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.25 W/kg
SAR(1 g) = 0.871 W/kg; SAR(10 g) = 0.539 W/kg
Maximum value of SAR (measured) = 0.887 W/kg



0 dB = 0.887 W/kg = -0.52 dBW/kg

System Performance 1900MHz

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d231

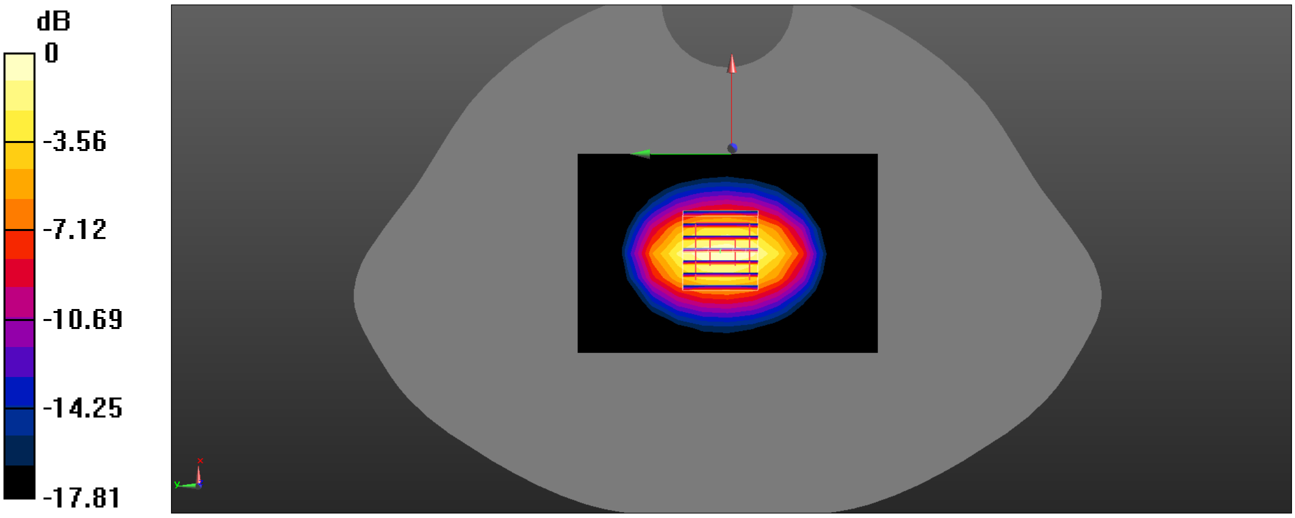
Communication System: UID 0, CW (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.465 S/m; ε_r = 41.498; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7382; ConvF(8.3, 8.3, 8.3) @ 1900 MHz;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1325; Calibrated: 9/27/2023
- Phantom: SAM-Twin V8.0 P1aP2a; Type: QD 000 P41 AA ; Serial: 1962
- Measurement SW: DASY52, Version 52.10 (2);

Configuration/Head 1900MHz Pin=100mW/Area Scan (9x13x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 6.99 W/kg

Configuration/Head 1900MHz Pin=100mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 59.45 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 8.23 W/kg
SAR(1 g) = 4.12 W/kg; SAR(10 g) = 2.25 W/kg
Maximum value of SAR (measured) = 6.84 W/kg



0 dB = 6.84 W/kg = 8.35 dBW/kg

System Performance 2450MHz

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 1103

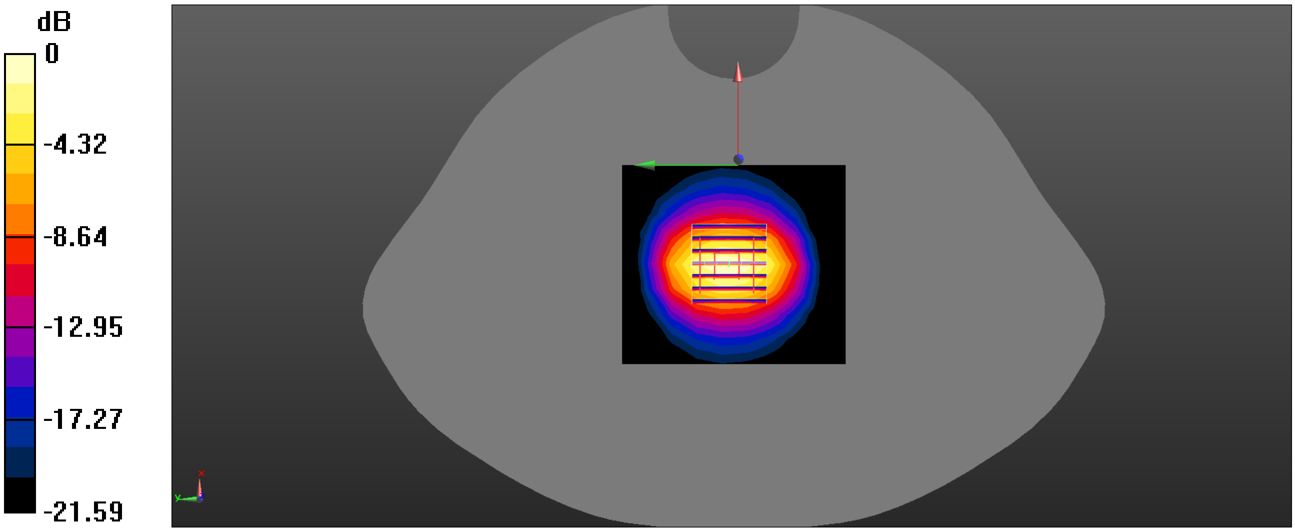
Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.839 S/m; ε_r = 40.159; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7382; ConvF(7.89, 7.89, 7.89) @ 2450 MHz;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1325; Calibrated: 9/27/2023
- Phantom: SAM-Twin V8.0 P1aP2a; Type: QD 000 P41 AA ; Serial: 1962
- Measurement SW: DASY52, Version 52.10 (2);

Configuration/Head 2450MHz Pin=100mW/Area Scan (9x10x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 9.03 W/kg

Configuration/Head 2450MHz Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 60.86 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 11.0 W/kg
SAR(1 g) = 5.45 W/kg; SAR(10 g) = 2.53 W/kg
Maximum value of SAR (measured) = 8.98 W/kg



0 dB = 8.98 W/kg = 9.53 dBW/kg

System Performance 2600MHz

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1207

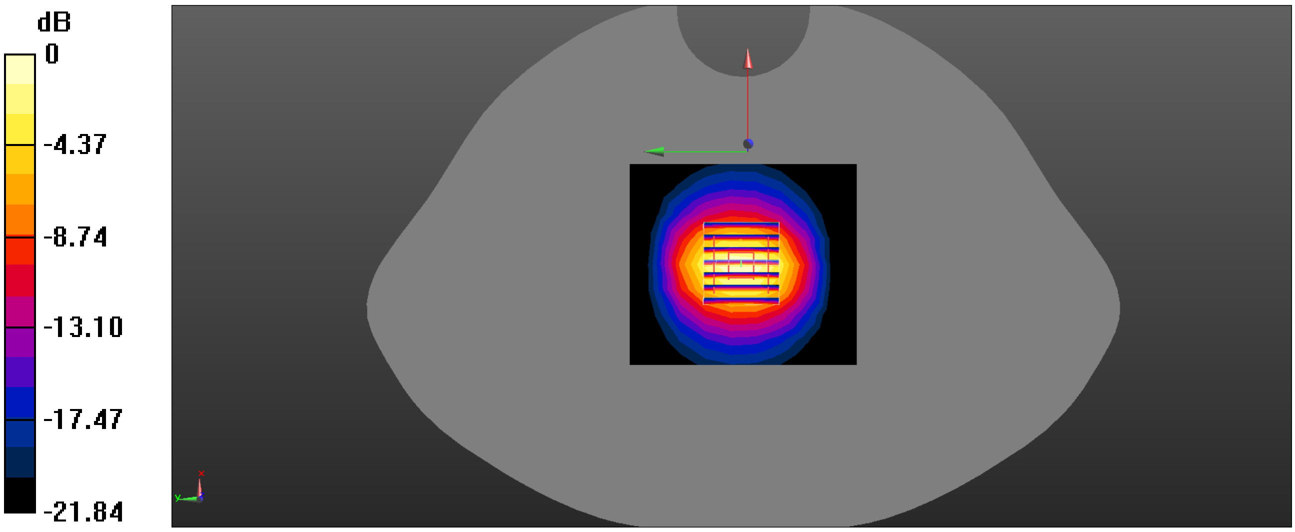
Communication System: UID 0, CW (0); Frequency: 2600 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2600 MHz; σ = 1.997 S/m; ε_r = 40.629; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7382; ConvF(7.65, 7.65, 7.65) @ 2600 MHz;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1325; Calibrated: 9/27/2023
- Phantom: SAM-Twin V8.0 P1aP2a; Type: QD 000 P41 AA ; Serial: 1962
- Measurement SW: DASY52, Version 52.10 (2);

Configuration/Head 2600MHz Pin=100mW/Area Scan (9x10x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 8.28 W/kg

Configuration/Head 2600MHz Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 58.47 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 10.2 W/kg
SAR(1 g) = 5.73 W/kg; SAR(10 g) = 2.38 W/kg
Maximum value of SAR (measured) = 8.46 W/kg



0 dB = 8.46 W/kg = 9.27 dBW/kg

System Performance 5250 MHz

DUT: Dipole D5GHz; Type: D5GHzV2; Serial: 1374

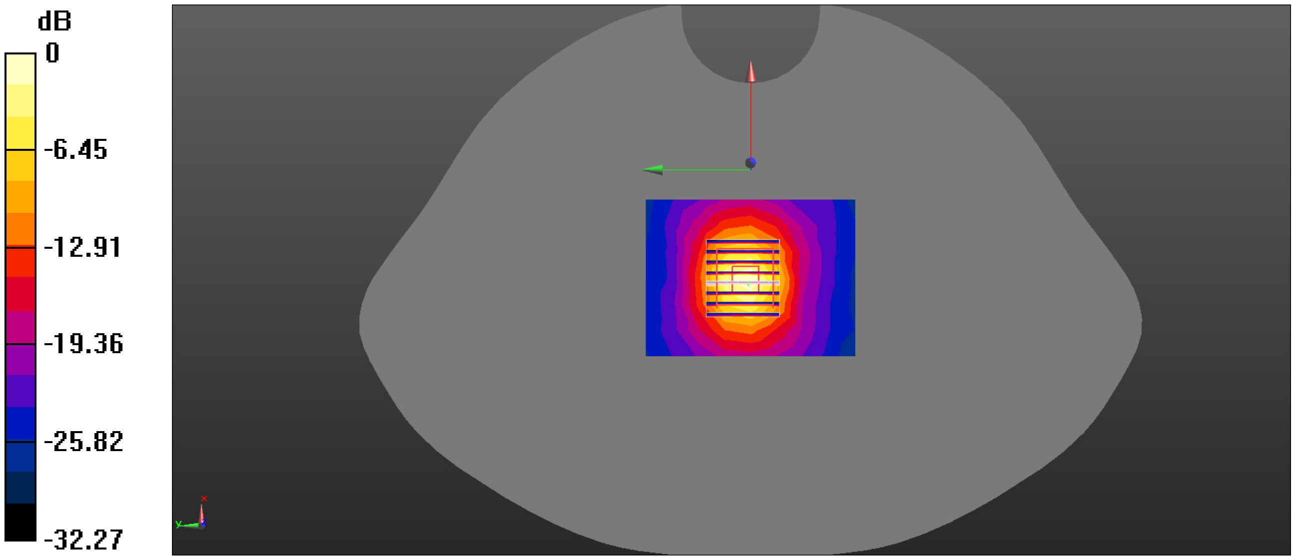
Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5250 MHz; σ = 4.876 S/m; ε_r = 36.08; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7382; ConvF(5.62, 5.62, 5.62) @ 5250 MHz;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1325; Calibrated: 9/27/2023
- Phantom: SAM-Twin V8.0 P1aP2a; Type: QD 000 P41 AA ; Serial: 1962
- Measurement SW: DASY52, Version 52.10 (2);

Configuration/Head 5250MHz Pin=100mW/Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 15.2 W/kg

Configuration/Head 5250MHz Pin=100mW/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 43.71 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 29.5 W/kg
SAR(1 g) = 7.86 W/kg; SAR(10 g) = 2.28 W/kg
Maximum value of SAR (measured) = 15.2 W/kg



0 dB = 15.2 W/kg = 11.82 dBW/kg

System Performance 5800 MHz

DUT: Dipole D5GHz; Type: D5GHzV2; Serial: 1374

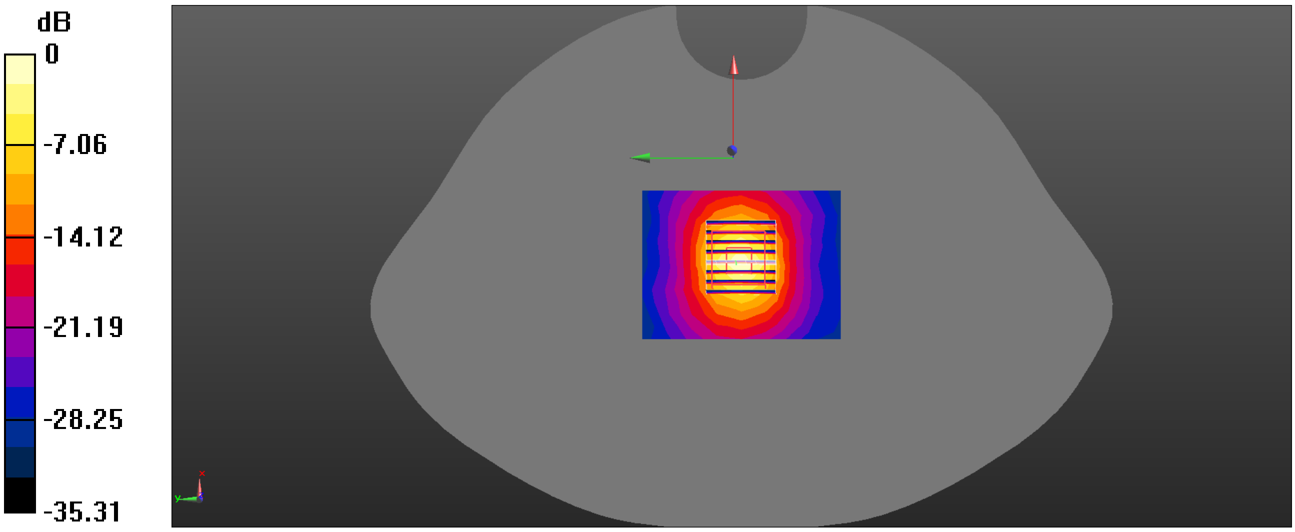
Communication System: UID 0, CW (0); Frequency: 5800 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5800 MHz; σ = 5.268 S/m; ε_r = 36.047; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7382; ConvF(5.08, 5.08, 5.08) @ 5800 MHz;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1325; Calibrated: 9/27/2023
- Phantom: SAM-Twin V8.0 P1aP2a; Type: QD 000 P41 AA ; Serial: 1962
- Measurement SW: DASY52, Version 52.10 (2);

Configuration/Head 5800MHz Pin=100mW/Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 21.4 W/kg

Configuration/Head 5800MHz Pin=100mW/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 42.44 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 35.2 W/kg
SAR(1 g) = 7.94 W/kg; SAR(10 g) = 2.43 W/kg
Maximum value of SAR (measured) = 21.1 W/kg



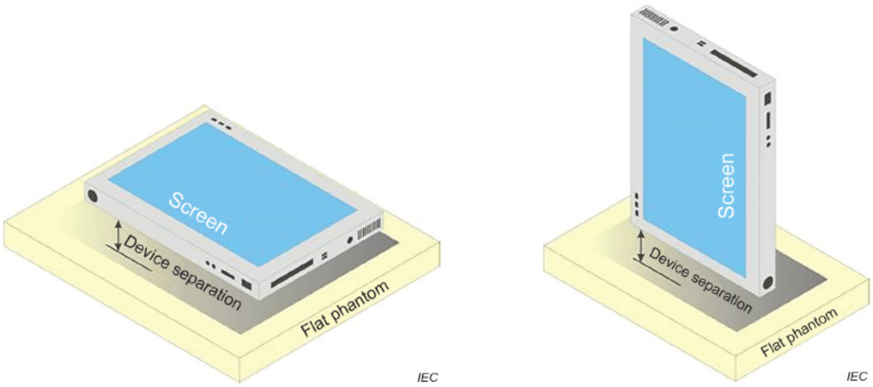
0 dB = 21.1 W/kg = 13.24 dBW/kg

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.



a) Tablet form factor portable computer

Test Distance for SAR Evaluation

For this case the EUT(Equipment Under Test) is set 0mm away from the phantom, the test distance is 0mm.

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.

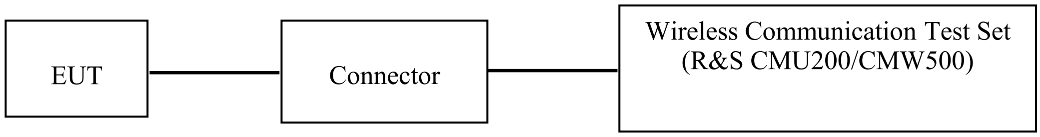
2) The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed by the 3D-Spline interpolation algorithm. The 3D-Spline is composed of three one dimensional splines with the “Not a knot"-condition (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.

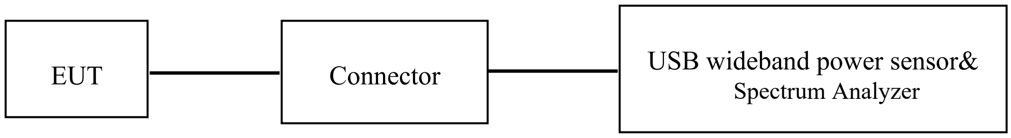
Step 4: Re-measurement of the SAR value at the same location as in Step 1. If the value changed by more than 5%, the evaluation was repeated.

CONDUCTED OUTPUT POWER MEASUREMENT

Test Procedure



GSM/WCDMA/LTE



WLAN/ Bluetooth

Radio Configuration

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

GSM/GPRS

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
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
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)
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_FCls	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27		E-TFCI 11 E-TFCI PO4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27	

HSPA+

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

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c .
Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).
Note 3: DPDCH is not configured, therefore the β_c is set to 1 and β_d = 0 by default.
Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.
Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.

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

FDD-LTE

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

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

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

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

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

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

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

Note: This device supports uplink-downlink configurations 0-6. The configuration with highest duty cycle was used for SAR Testing: configuration 0 at 63.33% duty cycle.

Maximum Target Output Power

Max Target Power(dBm)			
Mode/Band	Channel		
	Low	Middle	High
GSM 850	24.5	24.5	24.5
PCS 1900	24.5	24.5	24.5
WCDMA Band 2	17	17	17
WCDMA Band 5	17	17	17
LTE Band 2	17	17	17
LTE Band 5	17.5	17.5	17.5
LTE Band 7	17	17	17
LTE Band 12	18	18	18
LTE Band 41	16.5	16.5	16.5
WLAN 2.4G 802.11b	12	12	12
WLAN 2.4G 802.11g/n	7	7	7
WLAN 5.2G	13.5	13.5	13.5
WLAN 5.8G	13.5	13.5	13.5
Bluetooth	1	1	1
BLE	3	3	3

Test Results:

GSM:

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)
GSM 850	128	824.2	24.22
	190	836.6	24.36
	251	848.8	24.17
PCS 1900	512	1850.2	24.32
	661	1880	24.37
	810	1909.8	24.35

Note:
1. Rohde & Schwarz Radio Communication Tester (CMU500) was used for the measurement of GSM peak and average output power for active timeslots.
2 .For GSM voice, 1 timeslot has been activated with power level 5 (850 MHz band) and 0 (1900 MHz band).

WCDMA Band 2:

Test Condition	Test Mode	3GPP Sub Test	Averaged Mean Power (dBm)		
			Low Frequency	Mid Frequency	High Frequency
Normal	RMC12.2k		16.72	16.78	16.69
	HSDPA	1	/	/	/
		2	/	/	/
		3	/	/	/
		4	/	/	/
	HSUPA	1	/	/	/
		2	/	/	/
		3	/	/	/
		4	/	/	/
		5	/	/	/
	HSPA+	1	/	/	/

WCDMA Band 5:

Test Condition	Test Mode	3GPP Sub Test	Averaged Mean Power (dBm)		
			Low Frequency	Mid Frequency	High Frequency
Normal	RMC12.2k		16.64	16.75	16.67
	HSDPA	1	/	/	/
		2	/	/	/
		3	/	/	/
		4	/	/	/
	HSUPA	1	/	/	/
		2	/	/	/
		3	/	/	/
		4	/	/	/
		5	/	/	/
	HSPA+	1	/	/	/

Note:

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

LTE Band 2:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	0	0	16.57	16.49	16.46
		RB1#3	0	0	16.38	16.48	16.42
		RB1#5	0	0	16.40	16.51	16.44
		RB3#0	1	1	16.56	16.48	16.45
		RB3#3	1	1	16.37	16.47	16.41
		RB6#0	1	1	16.39	16.50	16.43
	16-QAM	RB1#0	1	1	16.26	16.32	16.11
		RB1#3	1	1	16.19	16.27	16.10
		RB1#5	1	1	16.26	16.28	16.08
		RB3#0	2	2	16.24	16.30	16.09
		RB3#3	2	2	16.17	16.25	16.08
		RB6#0	2	2	16.24	16.26	16.06
3M	QPSK	RB1#0	0	0	16.60	16.52	16.49
		RB1#8	0	0	16.41	16.51	16.45
		RB1#14	0	0	16.43	16.54	16.47
		RB6#0	1	1	16.40	16.35	16.31
		RB6#9	1	1	16.28	16.49	16.24
		RB15#0	1	1	16.30	16.33	16.14
	16-QAM	RB1#0	1	1	16.29	16.35	16.14
		RB1#8	1	1	16.22	16.30	16.13
		RB1#14	1	1	16.29	16.31	16.11
		RB6#0	2	2	16.11	16.18	16.00
		RB6#9	2	2	16.19	16.16	15.99
		RB15#0	2	2	16.06	16.19	16.01
5M	QPSK	RB1#0	0	0	16.63	16.55	16.52
		RB1#13	0	0	16.44	16.54	16.48
		RB1#24	0	0	16.46	16.57	16.50
		RB15#0	1	1	16.43	16.38	16.34
		RB15#10	1	1	16.31	16.52	16.27
		RB25#0	1	1	16.33	16.36	16.17
	16-QAM	RB1#0	1	1	16.32	16.38	16.17
		RB1#13	1	1	16.25	16.33	16.16
		RB1#24	1	1	16.32	16.34	16.14
		RB15#0	2	2	16.14	16.21	16.03
		RB15#10	2	2	16.22	16.19	16.02
		RB25#0	2	2	16.09	16.22	16.04
10M	QPSK	RB1#0	0	0	16.65	16.57	16.54
		RB1#25	0	0	16.46	16.56	16.50
		RB1#49	0	0	16.48	16.59	16.52
		RB25#0	1	1	16.45	16.40	16.36
		RB25#25	1	1	16.33	16.54	16.29
		RB50#0	1	1	16.35	16.38	16.19
	16-QAM	RB1#0	1	1	16.34	16.40	16.19
		RB1#25	1	1	16.27	16.35	16.18

		RB1#49	1	1	16.34	16.36	16.16
		RB25#0	2	2	16.16	16.23	16.05
		RB25#25	2	2	16.24	16.21	16.04
		RB50#0	2	2	16.11	16.24	16.06
15M	QPSK	RB1#0	0	0	16.68	16.60	16.57
		RB1#38	0	0	16.49	16.59	16.53
		RB1#74	0	0	16.51	16.62	16.55
		RB36#0	1	1	16.48	16.43	16.39
		RB36#39	1	1	16.36	16.57	16.32
		RB75#0	1	1	16.38	16.41	16.22
	16-QAM	RB1#0	1	1	16.37	16.43	16.22
		RB1#38	1	1	16.30	16.38	16.21
		RB1#74	1	1	16.37	16.39	16.19
		RB36#0	2	2	16.19	16.26	16.08
		RB36#39	2	2	16.27	16.24	16.07
		RB75#0	2	2	16.14	16.27	16.09
20M	QPSK	RB1#0	0	0	16.75	**16.82**	16.68
		RB1#50	0	0	16.72	16.78	16.61
		RB1#99	0	0	16.69	16.74	16.58
		RB50#0	1	1	16.63	16.65	16.50
		RB50#50	1	1	16.56	16.61	16.47
		RB100#0	1	1	16.51	16.58	16.39
	16-QAM	RB1#0	1	1	16.45	16.52	16.33
		RB1#50	1	1	16.42	16.49	16.30
		RB1#99	1	1	16.41	16.48	16.29
		RB50#0	2	2	16.33	16.40	16.21
		RB50#50	2	2	16.32	16.39	16.20
		RB100#0	2	2	16.27	16.34	16.15

LTE Band 5:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	0	0	16.91	16.95	16.87
		RB1#3	0	0	16.78	16.80	16.82
		RB1#5	0	0	16.78	16.74	16.70
		RB3#0	1	1	16.89	16.93	16.85
		RB3#3	1	1	16.76	16.78	16.80
		RB6#0	1	1	16.76	16.72	16.68
	16-QAM	RB1#0	1	1	16.63	16.57	16.48
		RB1#3	1	1	16.57	16.60	16.48
		RB1#5	1	1	16.52	16.53	16.49
		RB3#0	2	2	16.62	16.56	16.47
		RB3#3	2	2	16.56	16.59	16.47
		RB6#0	2	2	16.51	16.52	16.48
3M	QPSK	RB1#0	0	0	16.95	16.99	16.91
		RB1#8	0	0	16.82	16.84	16.86
		RB1#14	0	0	16.82	16.78	16.74
		RB6#0	1	1	16.78	16.81	16.71
		RB6#9	1	1	16.70	16.64	16.63
		RB15#0	1	1	16.70	16.65	16.61
	16-QAM	RB1#0	1	1	16.67	16.61	16.52
		RB1#8	1	1	16.61	16.64	16.52
		RB1#14	1	1	16.56	16.57	16.53
		RB6#0	2	2	16.32	16.27	16.27
		RB6#9	2	2	16.28	16.29	16.24
		RB15#0	2	2	16.22	16.23	16.13
5M	QPSK	RB1#0	0	0	17.01	17.05	16.97
		RB1#13	0	0	16.88	16.90	16.92
		RB1#24	0	0	16.88	16.84	16.80
		RB15#0	1	1	16.84	16.87	16.77
		RB15#10	1	1	16.76	16.70	16.69
		RB25#0	1	1	16.76	16.71	16.67
	16-QAM	RB1#0	1	1	16.73	16.67	16.58
		RB1#13	1	1	16.67	16.70	16.58
		RB1#24	1	1	16.62	16.63	16.59
		RB15#0	2	2	16.38	16.33	16.33
		RB15#10	2	2	16.34	16.35	16.30
		RB25#0	2	2	16.28	16.29	16.19
10M	QPSK	RB1#0	0	0	17.09	**17.11**	17.04
		RB1#25	0	0	17.02	17.04	16.99
		RB1#49	0	0	16.95	16.97	16.95
		RB25#0	1	1	16.91	16.94	16.88
		RB25#25	1	1	16.88	16.86	16.82
		RB50#0	1	1	16.82	16.83	16.77
	16-QAM	RB1#0	1	1	16.77	16.78	16.72
		RB1#25	1	1	16.74	16.75	16.69

		RB1#49	1	1	16.73	16.74	16.68
		RB25#0	2	2	16.44	16.45	16.39
		RB25#25	2	2	16.43	16.44	16.38
		RB50#0	2	2	16.38	16.39	16.33

LTE Band 7:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	0	0	16.40	16.45	16.36
		RB1#13	0	0	16.36	16.46	16.25
		RB1#24	0	0	16.29	16.39	16.23
		RB15#0	1	1	16.23	16.30	16.21
		RB15#10	1	1	16.15	16.31	16.21
		RB25#0	1	1	16.18	16.21	16.14
	16-QAM	RB1#0	1	1	16.17	16.19	16.13
		RB1#13	1	1	16.11	16.18	16.10
		RB1#24	1	1	16.10	16.20	16.10
		RB15#0	2	2	16.07	16.08	15.97
		RB15#10	2	2	16.02	16.09	15.99
		RB25#0	2	2	16.00	16.02	15.96
10M	QPSK	RB1#0	0	0	16.44	16.49	16.40
		RB1#25	0	0	16.40	16.50	16.29
		RB1#49	0	0	16.33	16.43	16.27
		RB25#0	1	1	16.27	16.34	16.25
		RB25#25	1	1	16.19	16.35	16.25
		RB50#0	1	1	16.22	16.25	16.18
	16-QAM	RB1#0	1	1	16.21	16.23	16.17
		RB1#25	1	1	16.15	16.22	16.14
		RB1#49	1	1	16.14	16.24	16.14
		RB25#0	2	2	16.11	16.12	16.01
		RB25#25	2	2	16.06	16.13	16.03
		RB50#0	2	2	16.04	16.06	16.00
15M	QPSK	RB1#0	0	0	16.50	16.55	16.46
		RB1#38	0	0	16.46	16.56	16.35
		RB1#74	0	0	16.39	16.49	16.33
		RB36#0	1	1	16.33	16.40	16.31
		RB36#39	1	1	16.25	16.41	16.31
		RB75#0	1	1	16.28	16.31	16.24
	16-QAM	RB1#0	1	1	16.27	16.29	16.23
		RB1#38	1	1	16.21	16.28	16.20
		RB1#74	1	1	16.20	16.30	16.20
		RB36#0	2	2	16.17	16.18	16.07
		RB36#39	2	2	16.12	16.19	16.09
		RB75#0	2	2	16.10	16.12	16.06
20M	QPSK	RB1#0	0	0	16.58	**16.66**	16.52
		RB1#50	0	0	16.52	16.61	16.49
		RB1#99	0	0	16.45	16.55	16.46
		RB50#0	1	1	16.42	16.52	16.43
		RB50#50	1	1	16.39	16.49	16.38
		RB100#0	1	1	16.37	16.42	16.32
	16-QAM	RB1#0	1	1	16.32	16.37	16.27
		RB1#50	1	1	16.29	16.34	16.24

		RB1#99	1	1	16.28	16.33	16.23
		RB50#0	2	2	16.20	16.25	16.15
		RB50#50	2	2	16.19	16.24	16.14
		RB100#0	2	2	16.14	16.19	16.09

LTE Band 12:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	0	0	17.31	17.44	17.31
		RB1#3	0	0	17.29	17.44	17.22
		RB1#5	0	0	17.28	17.26	17.13
		RB3#0	1	1	17.29	17.42	17.29
		RB3#3	1	1	17.27	17.42	17.20
		RB6#0	1	1	17.26	17.24	17.11
	16-QAM	RB1#0	1	1	17.04	17.11	16.88
		RB1#3	1	1	16.97	17.02	16.85
		RB1#5	1	1	17.01	17.01	16.85
		RB3#0	2	2	17.03	17.10	16.87
		RB3#3	2	2	16.96	17.01	16.84
		RB6#0	2	2	17.00	17.00	16.84
3M	QPSK	RB1#0	0	0	17.35	17.48	17.35
		RB1#8	0	0	17.33	17.48	17.26
		RB1#14	0	0	17.32	17.30	17.17
		RB6#0	1	1	17.21	17.25	17.12
		RB6#9	1	1	17.15	17.23	17.07
		RB15#0	1	1	17.13	17.12	16.96
	16-QAM	RB1#0	1	1	17.08	17.15	16.92
		RB1#8	1	1	17.01	17.06	16.89
		RB1#14	1	1	17.05	17.05	16.89
		RB6#0	2	2	16.86	16.91	16.80
		RB6#9	2	2	16.86	16.93	16.74
		RB15#0	2	2	16.81	16.85	16.69
5M	QPSK	RB1#0	0	0	17.41	17.54	17.41
		RB1#13	0	0	17.39	17.54	17.32
		RB1#24	0	0	17.38	17.36	17.23
		RB15#0	1	1	17.27	17.31	17.18
		RB15#10	1	1	17.21	17.29	17.13
		RB25#0	1	1	17.19	17.18	17.02
	16-QAM	RB1#0	1	1	17.14	17.21	16.98
		RB1#13	1	1	17.07	17.12	16.95
		RB1#24	1	1	17.11	17.11	16.95
		RB15#0	2	2	16.92	16.97	16.86
		RB15#10	2	2	16.92	16.99	16.80
		RB25#0	2	2	16.87	16.91	16.75
10M	QPSK	RB1#0	0	0	17.56	**17.68**	17.49
		RB1#25	0	0	17.51	17.61	17.40
		RB1#49	0	0	17.47	17.51	17.35
		RB25#0	1	1	17.40	17.46	17.24
		RB25#25	1	1	17.32	17.37	17.19
		RB50#0	1	1	17.25	17.32	17.13
	16-QAM	RB1#0	1	1	17.20	17.27	17.08
		RB1#25	1	1	17.17	17.24	17.05

		RB1#49	1	1	17.16	17.23	17.04
		RB25#0	2	2	17.03	17.10	16.91
		RB25#25	2	2	17.02	17.09	16.90
		RB50#0	2	2	16.97	17.04	16.85

LTE Band 41:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Target MPR	Meas MPR	Low Channel (dBm)	Low-Mid Channel (dBm)	Mid Channel (dBm)	Mid-High Channel (dBm)	High Channel (dBm)
5M	QPSK	RB1#0	0	0	16.16	16.12	16.19	16.07	16.00
		RB1#13	0	0	15.98	16.05	16.10	15.93	15.85
		RB1#24	0	0	15.89	15.98	16.04	15.89	15.84
		RB15#0	1	1	15.83	15.96	16.02	15.84	15.80
		RB15#10	1	1	15.72	15.95	16.01	15.76	15.72
		RB25#0	1	1	15.67	15.87	15.99	15.73	15.66
	16-QAM	RB1#0	1	1	15.66	15.80	15.98	15.70	15.59
		RB1#13	1	1	15.62	15.75	15.94	15.68	15.57
		RB1#24	1	1	15.48	15.63	15.90	15.53	15.55
		RB15#0	2	2	15.47	15.60	15.89	15.50	15.52
		RB15#10	2	2	15.32	15.45	15.88	15.34	15.38
		RB25#0	2	2	15.31	15.44	15.81	15.29	15.29
10M	QPSK	RB1#0	0	0	16.19	16.15	16.22	16.10	16.03
		RB1#25	0	0	16.01	16.08	16.13	15.96	15.88
		RB1#49	0	0	15.92	16.01	16.07	15.92	15.87
		RB25#0	1	1	15.86	15.99	16.05	15.87	15.83
		RB25#25	1	1	15.75	15.98	16.04	15.79	15.75
		RB50#0	1	1	15.70	15.90	16.02	15.76	15.69
	16-QAM	RB1#0	1	1	15.69	15.83	16.01	15.73	15.62
		RB1#25	1	1	15.65	15.78	15.97	15.71	15.60
		RB1#49	1	1	15.51	15.66	15.93	15.56	15.58
		RB25#0	2	2	15.50	15.63	15.92	15.53	15.55
		RB25#25	2	2	15.35	15.48	15.91	15.37	15.41
		RB50#0	2	2	15.34	15.47	15.84	15.32	15.32
15M	QPSK	RB1#0	0	0	16.23	16.19	16.26	16.14	16.07
		RB1#38	0	0	16.05	16.12	16.17	16.00	15.92
		RB1#74	0	0	15.96	16.05	16.11	15.96	15.91
		RB36#0	1	1	15.90	16.03	16.09	15.91	15.87
		RB36#39	1	1	15.79	16.02	16.08	15.83	15.79
		RB75#0	1	1	15.74	15.94	16.06	15.80	15.73
	16-QAM	RB1#0	1	1	15.73	15.87	16.05	15.77	15.66
		RB1#38	1	1	15.69	15.82	16.01	15.75	15.64
		RB1#74	1	1	15.55	15.70	15.97	15.60	15.62
		RB36#0	2	2	15.54	15.67	15.96	15.57	15.59
		RB36#39	2	2	15.39	15.52	15.95	15.41	15.45
		RB75#0	2	2	15.38	15.51	15.88	15.36	15.36
20M	QPSK	RB1#0	0	0	16.28	16.25	**16.30**	16.19	16.13
		RB1#50	0	0	16.11	16.18	16.23	16.06	15.98
		RB1#99	0	0	16.02	16.11	16.17	16.02	15.97
		RB50#0	1	1	15.96	16.09	16.15	15.97	15.93
		RB50#50	1	1	15.85	16.08	16.14	15.89	15.85
		RB100#0	1	1	15.80	16.00	16.12	15.86	15.79
	16-QAM	RB1#0	1	1	15.79	15.93	16.11	15.83	15.72

		RB1#50	1	1	15.75	15.88	16.07	15.81	15.70
		RB1#99	1	1	15.61	15.76	16.03	15.66	15.68
		RB50#0	2	2	15.60	15.73	16.02	15.63	15.65
		RB50#50	2	2	15.45	15.58	16.01	15.47	15.51
		RB100#0	2	2	15.43	15.56	15.99	15.46	15.49

The frequency range of LTE Band 41 is 2535 ~ 2655MHz. Per KDB 447498 D01, according to the following formula Calculate N_c is 4, We chose to test 5 frequency points.

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.[14]

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

where

- N_c is the number of test channels, rounded to the 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.

Bluetooth:

Mode	Channel frequency (MHz)	RF Output Power (dBm)
BDR(GFSK)	2402	-0.56
	2441	0.71
	2480	-0.22
EDR(π/4-DQPSK)	2402	-1.18
	2441	0.17
	2480	-0.78
EDR(8DPSK)	2402	-1.26
	2441	0.09
	2480	-1.01
BLE(1M)	2402	1.21
	2440	2.91
	2480	1.90
BLE(2M)	2402	1.15
	2440	2.82
	2480	1.79

Wi-Fi 2.4G:

Mode	Channel frequency (MHz)	Data Rate	Conducted Average Output Power(dBm)
802.11b	2412	1Mbps	11.65
	2437		11.84
	2462		11.72
802.11g	2412	6Mbps	6.56
	2437		6.76
	2462		6.34
802.11n HT20	2412	MCS0	6.53
	2437		6.53
	2462		6.56
802.11n HT40	2422	MCS0	6.85
	2437		6.91
	2452		6.72

WLAN 5G:

Mode	Channel frequency	Data Rate	RF Output Power(dBm)
802.11a	5180	6Mbps	12.95
	5200		12.98
	5240		13.12
802.11AC20	5180	MCS0	12.79
	5200		12.88
	5240		12.91
802.11AC40	5190	MCS0	12.93
	5230		13.02

Mode	Channel frequency	Data Rate	RF Output Power(dBm)
802.11a	5745	6Mbps	12.89
	5785		12.96
	5825		13.15
802.11AC20	5745	MCS0	12.86
	5785		12.91
	5825		13.02
802.11AC40	5755	MCS0	12.98
	5795		13.12

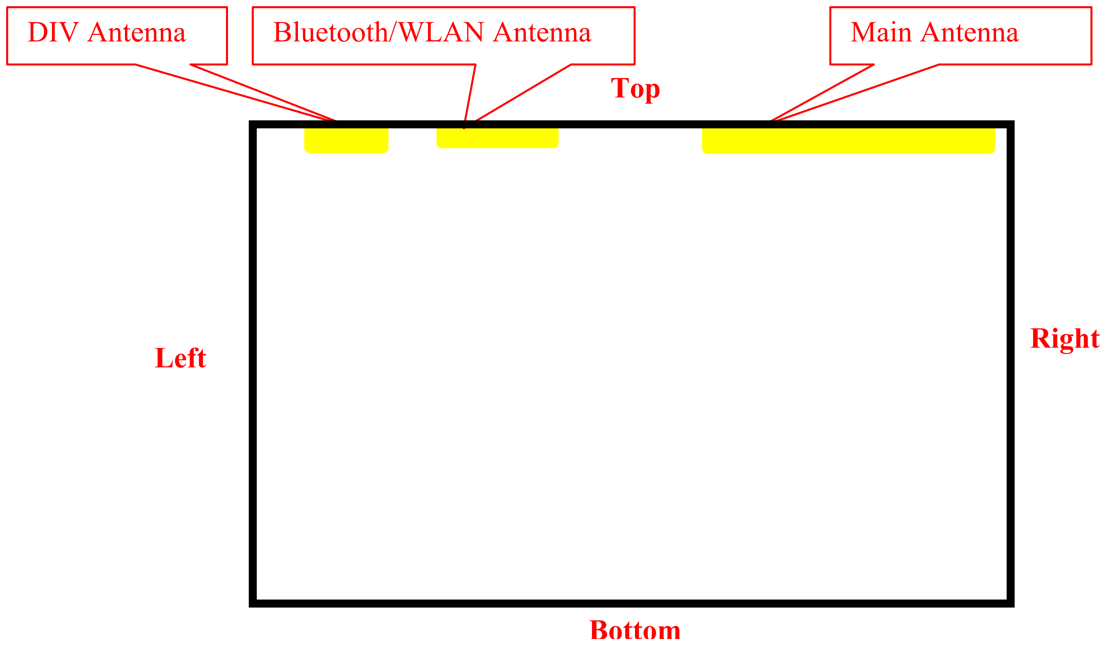
Duty Cycle:

Test Mode	Duty Cycle [%]
802.11b	100.00
802.11g	100.00
802.11n-HT20	100.00
802.11n-HT40	100.00
BLE 1M	85.03
BLE 2M	57.18
802.11A	100.00
802.11AC-VHT20	100.00
802.11AC-VHT40	100.00

Note: Duty cycle data is derived from radio reports.

Standalone SAR test exclusion considerations

Antennas Location:



EUT Front View

Note: The DIV antenna can only receive.

Antenna Distance To Edge:

Antenna Distance To Edge(mm)						
Antenna	**Front**	**Back**	**Left**	**Right**	**Top**	**Bottom**
Main Antenna	< 5	< 5	152	< 5	< 5	151
BT/BLE/WLAN Antenna	< 5	< 5	62	164	< 5	153

Standalone SAR test exclusion considerations:

Mode	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Distance (mm)	Calculated value	Threshold (1-g)	SAR Test Exclusion
Bluetooth/BLE	2480	3	2	0	0.6	3	Yes
2.4G WLAN	2462	12	15.85	0	5.0	3	No
5.2G WLAN	5240	13.5	22.39	0	10.2	3	No
5.8G WLAN	5825	13.5	22.39	0	10.8	3	No

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)	Output Power (dBm)	Output Power (mW)	Distance (mm)	Estimated 1-g (W/kg)
BT Body	2441	4	2.51	0	0.10

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.

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

Standalone SAR test exclusion considerations:

According to KDB 616217 Section 4.3, SAR evaluation for the front surface of tablet display screens are generally not necessary.

Mode	Back	Left	Right	Top	Bottom
2.4G Wi-Fi	**Required**	Exclusion	Exclusion	**Required**	Exclusion
5G Wi-Fi	**Required**	Exclusion	Exclusion	**Required**	Exclusion
WWAN	**Required**	Exclusion	**Required**	**Required**	Exclusion
Bluetooth	Exclusion*	Exclusion*	Exclusion*	Exclusion*	Exclusion*

Note:

Required： The distance to Edge is less than 25mm, testing is required.
Exclusion： The distance to Edge is more than 25 mm, testing is not required.
Exclusion*：SAR test exclusion evaluation has been done above.

SAR MEASUREMENT RESULTS

This page summarizes the results of the performed dosimetric evaluation.

SAR Test Data

Environmental Conditions

Temperature:	22.6-23.8 ℃	22.3-23.6 ℃	22.5-23.4 ℃
Relative Humidity:	52-63 %	46-58 %	42-56 %
ATM Pressure:	101 kPa	105 kPa	102 kPa
Test Date:	2024/03/05	2024/03/06	2024/03/07

Testing was performed by Sid Luo, Calvin Li and Bob Lu.

GSM 850：

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 Worn Back (0mm)	824.2	GSM	24.22	24.5	1.067	0.598	0.64	**1#**
	836.6	GSM	24.36	24.5	1.033	0.552	0.57	2#
	848.8	GSM	24.17	24.5	1.079	0.586	0.63	3#

Note:

1. The EUT transmit and receive through the same GSM antenna while testing SAR.
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 > 0.5 dB, instead of the middle channel, the highest output power channel must be used.

PCS 1900：

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 Worn Back (0mm)	1850.2	GSM	24.32	24.5	1.042	0.862	0.90	4#
	1880	GSM	24.37	24.5	1.030	0.889	0.92	5#
	1909.8	GSM	24.35	24.5	1.035	0.906	0.94	**6#**

Note:

1. The EUT transmit and receive through the same GSM antenna while testing SAR.
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 > 0.5 dB, instead of the middle channel, the highest output power channel must be used.

WCDMA Band 2：

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	16.78	17.0	1.052	0.881	0.93	7#
	1907.6	RMC	/	/	/	/	/	/
Body Right (0mm)	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	16.78	17.0	1.052	0.252	0.27	8#
	1907.6	RMC	/	/	/	/	/	/
Body Top (0mm)	1852.4	RMC	16.72	17.0	1.067	0.957	1.02	9#
	1880	RMC	16.78	17.0	1.052	0.972	1.02	**10#**
	1907.6	RMC	16.69	17.0	1.074	0.916	0.98	11#

WCDMA Band 5：

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	826.4	RMC	16.64	17.0	1.086	0.425	0.46	12#
	836.6	RMC	16.75	17.0	1.059	0.46	0.49	**13#**
	846.6	RMC	16.67	17.0	1.079	0.45	0.49	14#
Body Right (0mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	16.75	17.0	1.059	0.127	0.13	15#
	846.6	RMC	/	/	/	/	/	/
Body Top (0mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	16.75	17.0	1.059	0.405	0.43	16#
	846.6	RMC	/	/	/	/	/	/

Note:

1. The EUT transmit and receive through the same antenna while testing SAR.
2. 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.
3. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.

LTE Band 2：

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	16.82	17.0	1.042	0.656	0.68	17#
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	16.65	17.0	1.084	0.601	0.65	18#
Body Right (0mm)	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	16.82	17.0	1.042	0.209	0.22	19#
	1900	20	1RB	/	/	/	/	/	/
	1880	20	50%RB	16.65	17.0	1.084	0.187	0.20	20#
Body Top (0mm)	1860	20	1RB	16.75	17.0	1.059	0.724	0.77	21#
	1880	20	1RB	16.82	17.0	1.042	0.753	0.78	**22#**
	1900	20	1RB	16.68	17.0	1.076	0.705	0.76	23#
	1880	20	50%RB	16.65	17.0	1.084	0.701	0.76	24#

LTE Band 5：

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	17.11	17.5	1.094	0.322	0.35	25#
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	16.94	17.5	1.138	0.301	0.34	26#
Body Right (0mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	17.11	17.5	1.094	0.119	0.13	27#
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	16.94	17.5	1.138	0.108	0.12	28#
Body Top (0mm)	829	10	1RB	17.09	17.5	1.099	0.584	0.64	29#
	836.5	10	1RB	17.11	17.5	1.094	0.599	0.66	**30#**
	844	10	1RB	17.04	17.5	1.112	0.587	0.65	31#
	836.5	10	50%RB	16.94	17.5	1.138	0.43	0.49	32#

LTE Band 7：

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	2510	20	1RB	16.58	17.0	1.102	0.703	0.77	33#
	2535	20	1RB	16.66	17.0	1.081	0.728	0.79	**34#**
	2560	20	1RB	16.52	17.0	1.117	0.704	0.79	35#
	2510	20	50%RB	16.52	17.0	1.117	0.708	0.79	36#
Body Right (0mm)	2510	20	1RB	/	/	/	/	/	/
	2535	20	1RB	16.66	17.0	1.081	0.169	0.18	37#
	2560	20	1RB	/	/	/	/	/	/
	2510	20	50%RB	16.52	17.0	1.117	0.141	0.16	38#
Body Top (0mm)	2510	20	1RB	/	/	/	/	/	/
	2535	20	1RB	16.66	17.0	1.081	0.604	0.65	39#
	2560	20	1RB	/	/	/	/	/	/
	2510	20	50%RB	16.52	17.0	1.117	0.565	0.63	40#

LTE Band 12：

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	17.68	18.0	1.076	0.303	0.33	41#
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	17.46	18.0	1.132	0.257	0.29	42#
Body Right (0mm)	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	17.68	18.0	1.076	0.116	0.12	43#
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	17.46	18.0	1.132	0.107	0.12	44#
Body Top (0mm)	704	10	1RB	17.56	18.0	1.107	0.619	0.69	45#
	707.5	10	1RB	17.68	18.0	1.076	0.614	0.66	46#
	711	10	1RB	17.49	18.0	1.125	0.645	0.73	**47#**
	707.5	10	50%RB	17.46	18.0	1.132	0.525	0.59	48#

LTE Band 41 (Power Class 3):

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 (0mm)	2545	20	1RB	/	/	/	/	/	/
	2570	20	1RB	/	/	/	/	/	/
	2595	20	1RB	16.30	16.5	1.047	0.6	0.63	49#
	2620	20	1RB	/	/	/	/	/	/
	2645	20	1RB	/	/	/	/	/	/
	2595	20	50%RB	16.15	16.5	1.084	0.594	0.64	50#
Body Right (0mm)	2545	20	1RB	/	/	/	/	/	/
	2570	20	1RB	/	/	/	/	/	/
	2595	20	1RB	16.30	16.5	1.047	0.146	0.15	51#
	2620	20	1RB	/	/	/	/	/	/
	2645	20	1RB	/	/	/	/	/	/
	2595	20	50%RB	16.15	16.5	1.084	0.107	0.12	52#
Body Top (0mm)	2545	20	1RB	16.28	16.5	1.052	0.824	0.87	53#
	2570	20	1RB	16.25	16.5	1.059	0.703	0.74	54#
	2595	20	1RB	16.30	16.5	1.047	0.875	0.92	**55#**
	2620	20	1RB	16.19	16.5	1.074	0.647	0.69	56#
	2645	20	1RB	16.13	16.5	1.089	0.752	0.82	57#
	2595	20	50%RB	16.15	16.5	1.084	0.777	0.84	58#
	2595	20	100%RB	16.12	16.5	1.091	0.694	0.76	59#

Note:

1. SAR for LTE band exposure configurations is measured according to the procedures of KDB 941225 D05 SAR for LTE Devices v02.
2. 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
3. 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.
4. 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.
5. 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.
6. 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.
7. Worst case SAR for 50% RB allocation is selected to be tested.
8. From May 2017 TCB Workshop, SAR tested were performed using Power Class 3 and maximum output power (Tune-up Limit) PC3 is higher from PC2.

WLAN 2.4G:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Scaled Factor	1g SAR (W/kg)			
						Duty Cycle (%)	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	11.84	12.0	1.038	100	0.294	0.31	60#
	2462	802.11b	/	/	/	/	/	/	/
Body Top (0mm)	2412	802.11b	11.65	12.0	1.084	100	0.263	0.29	61#
	2437	802.11b	11.84	12.0	1.038	100	0.305	0.32	62#
	2462	802.11b	11.72	12.0	1.067	100	0.36	0.38	**63#**

Note:
1. For 802.11b DSSS SAR measurements, DSSS SAR procedure applies to fixed exposure test position and initial test position procedure. When OFDM tune up power is greater than DSSS, 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, OFDM SAR is not required.
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 same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 80211b/g/n mode is use for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band.
4. According 2016 Oct. TCB, for SAR testing of 2.4G WIFI 802.11b signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to “1/(duty cycle)”.

WLAN 5G:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Scaled Factor	1g SAR (W/kg)			
						Duty Cycle (%)	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	5180	802.11a	12.95	13.5	1.135	100	0.374	0.42	**64#**
	5200	802.11a	12.98	13.5	1.127	100	0.354	0.40	65#
	5240	802.11a	13.12	13.5	1.091	100	0.363	0.40	66#
Body Top (0mm)	5180	802.11a	/	/	/	/	/	/	/
	5200	802.11a	12.98	13.5	1.127	100	0.283	0.32	67#
	5240	802.11a	/	/	/	/	/	/	/

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Scaled Factor	1g SAR (W/kg)			
						Duty Cycle (%)	Meas. SAR	Scaled SAR	Plot
Body Back (0mm)	5745	802.11a	12.89	13.5	1.151	100	0.444	0.50	68#
	5785	802.11a	12.96	13.5	1.132	100	0.469	0.54	**69#**
	5825	802.11a	13.15	13.5	1.084	100	0.343	0.37	70#
Body Top (0mm)	5745	802.11a	/	/	/	/	/	/	/
	5785	802.11a	12.96	13.5	1.132	100	0.299	0.34	71#
	5825	802.11a	/	/	/	/	/	/	/

Note:
1. 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
2. When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/n20/n40/ac20/ac40/ac80 mode is use for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band, 802.11a is the initial position for the SAR test.
2. According 2016 Oct. TCB, for SAR testing of 5G WIFI 802.11a signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to “1/(duty cycle)”.

SAR 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.

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	
1900 MHz (1850-1950MHz)	PCS 1900	1880	Body Top	0.906	0.902	1.00
1900 MHz (1850-1950MHz)	WCDMA Band 2	1880	Body Top	0.972	0.962	1.01
2600 MHz (2550-2700MHz)	LTE Band 41	2545	Body Top	0.875	0.866	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.

SAR SIMULTANEOUS TRANSMISSION DESCRIPTION

Simultaneous Transmission:

Description of Simultaneous Transmit Capabilities		
Transmitter Combination	**Simultaneous?**	**Hotspot?**
WWAN + Bluetooth	√	×
WWAN + WLAN	√	√
WLAN + Bluetooth	×	×

Simultaneous and Hotspot SAR test exclusion considerations:

Mode(SAR1+SAR2)	Position	Reported SAR(W/kg)		ΣSAR < 1.6W/kg
		SAR1	SAR2	
WWAN+WLAN	Body	1.02	0.54	**1.56**
WWAN+BT	Body	1.02	0.10	1.12

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

SAR Plots

Please Refer to the Attachment.

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

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

APPENDIX B EUT TEST POSITION PHOTOS

Please Refer to the Attachment.

APPENDIX C PROBE CALIBRATION CERTIFICATES

Please Refer to the Attachment.

APPENDIX D DIPOLE CALIBRATION CERTIFICATES

Please Refer to the Attachment.

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