TEST REPORT

Applicant Name:	Whoop International Trading Limited
Address:	Flat-B 8/F Chong Gming Building 72 Cheung Sha Wan Road, Kowloon Hong Kong, China
Report Number:	2401V58287E-SA
FCC ID:	2AP7LWT003

Test Standard (s)

FCC 47 CFR part 2.1093

Sample Description

Product Type:	4G smart watch
Model No.:	FLEX
Multiple Model(s) No.:	N/A
Trade Mark:	SUNTAK
Serial Number:	2OQI-1
Date Received:	2024/07/19
Date of Test:	2024/08/07~2024/08/14
Issue Date:	2024/08/24
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

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<tr><th colspan="5">Attestation of Test Results</th></tr>
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(W/kg)</th></tr>
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<tr><td>PCS 1900</td><td>0.11</td><td>0.37</td></tr>
<tr><td>LTE Band 2</td><td>0.33</td><td>1.03</td></tr>
<tr><td>LTE Band 5</td><td>0.19</td><td>0.46</td></tr>
<tr><td>LTE Band 12</td><td>0.15</td><td>0.44</td></tr>
<tr><td>LTE Band 66 & 4</td><td>0.35</td><td>1.27</td></tr>
<tr><td>Simultaneous(tx)</td><td>0.59</td><td>1.46</td></tr>
<tr><td rowspan="4">Applicable Standards</td><td colspan="4">FCC 47 CFR part 2.1093
Radiofrequency radiation exposure evaluation: portable devices</td></tr>
<tr><td colspan="4">RF Exposure Procedures: TCB Workshop April 2019 (Tissue Simulating Liquids)</td></tr>
<tr><td colspan="4">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</td></tr>
<tr><td colspan="4">KDB procedures
KDB 248227 D01 802.11 Wi-Fi SAR v02r02
KDB 447498 D01 General RF Exposure Guidance v06
KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
KDB 865664 D02 RF Exposure Reporting v01r02
KDB 941225 D05 SAR for LTE Devices v02r05</td></tr>
<tr><td colspan="5">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.</td></tr>
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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	2401V58287E-SA	Original Report	2024/08/24

EUT DESCRIPTION

This report has been prepared on behalf of **Whoop International Trading Limited** and their product **4G smart watch**, Model: **FLEX,** FCC ID: **2AP7LWT003** or the EUT (Equipment under Test) as referred to in the rest of this report.

**All measurement and test data in this report was gathered from production sample serial number:*2OQI-1*(Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2024-07-19.*

Technical Specification

Product Type:	Portable
Exposure Category:	Population / Uncontrolled
Antenna Type(s):	Internal Antenna
Body-Worn Accessories:	Watchband
Proximity Sensor:	None
Operation modes:	GSM Voice, GPRS Data, LTE, WLAN, Bluetooth, BLE
Frequency Band:	GSM 850: 824-849 MHz(TX); 869-894 MHz(RX) PCS 1900: 1850-1910 MHz(TX); 1930-1990 MHz(RX) LTE Band 2: 1850-1910 MHz(TX); 1930-1990 MHz(RX) LTE Band 4: 1710-1755MHz(TX) ; 2110-2155 MHz(RX) LTE Band 5: 824-849 MHz(TX); 869-894 MHz(RX) LTE Band 12: 699-716 MHz(TX); 729-746 MHz(RX) LTE Band 66: 1710-1780 MHz(TX) ; 2110-2180 MHz(RX) WLAN 2.4G: 2412-2462 MHz (TX/RX) Bluetooth: 2402-2480MHz(TX/RX) BLE_1M:2402-2480 MHz(TX/RX)
Dimensions (L×W×H):	56 × 48 × 15 mm
Rated Input Voltage:	DC 3.85V from Rechargeable Battery
Normal Operation:	Next to Mouth and Limb

REFERENCE, STANDARDS, AND GUILDELINES

FCC:

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

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

SAR Limits

FCC Limit

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average (averaged over the whole body)	0.08	0.4
Spatial Peak (averaged over any 1 g of tissue)	**1.6**	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 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 (Next to Mouth) and Spatial Peak limit 4.0W/kg (Limb) applied to the EUT.

FACILITIES

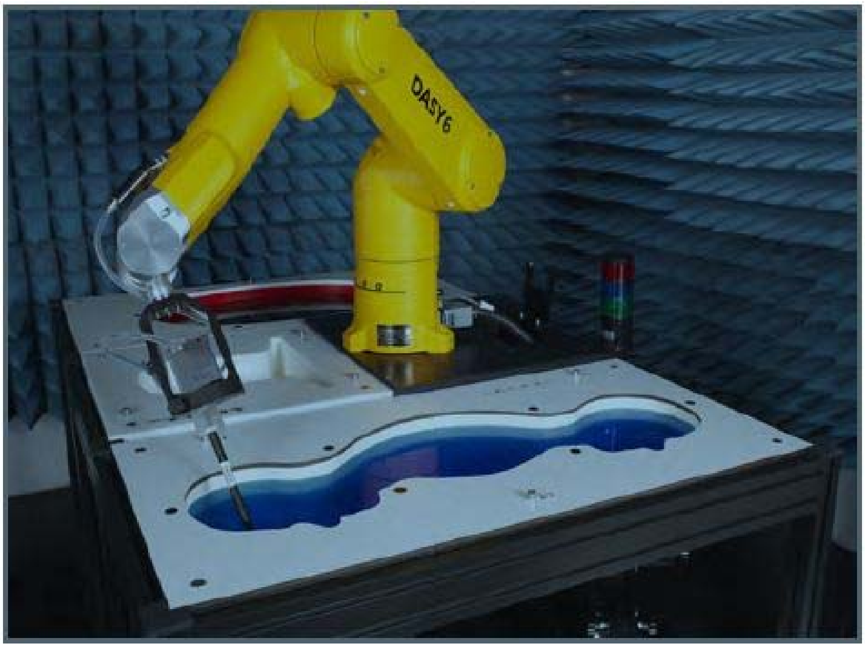
The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect data is located at 5F(B-West) ,6F,7F,the 3rd Phase of Wan Li Industrial Building D,Shihua Rd, FuTian Free Trade Zone, Shenzhen, China

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.

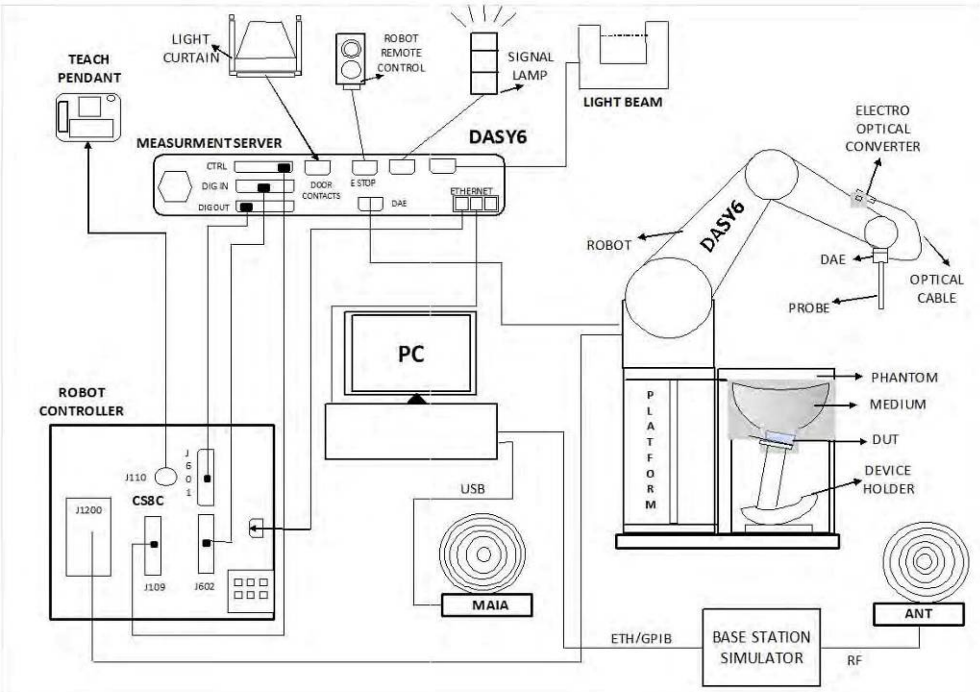
DESCRIPTION OF TEST SYSTEM

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).

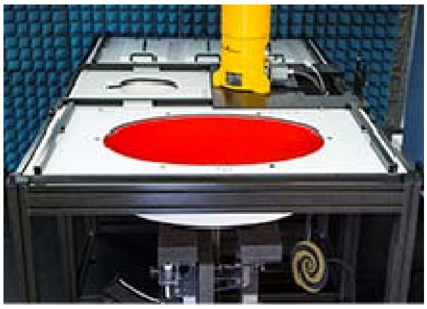
When the phantom is mounted inside allocated slot of the DASY6 platform, phantom reference points can be taught directly in the DASY5 V5.2software. When the DASY6 platform is used to mount the

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 IEEE 1528 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

SAR Scan Procedures

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 1.4 mm. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: 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.

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

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 mm ± 1 mm	$\frac{1}{2}\cdot\delta\cdot\ln(2)$ mm ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	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.	

Step 3: 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 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

<table>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm*</td><td>3 – 4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<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">$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$ 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>

Step 4: Power Drift Measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

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

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

Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE 1528:2013

Recommended Tissue Dielectric Parameters for Head liquid

Table 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.

EQUIPMENT LIST AND CALIBRATION

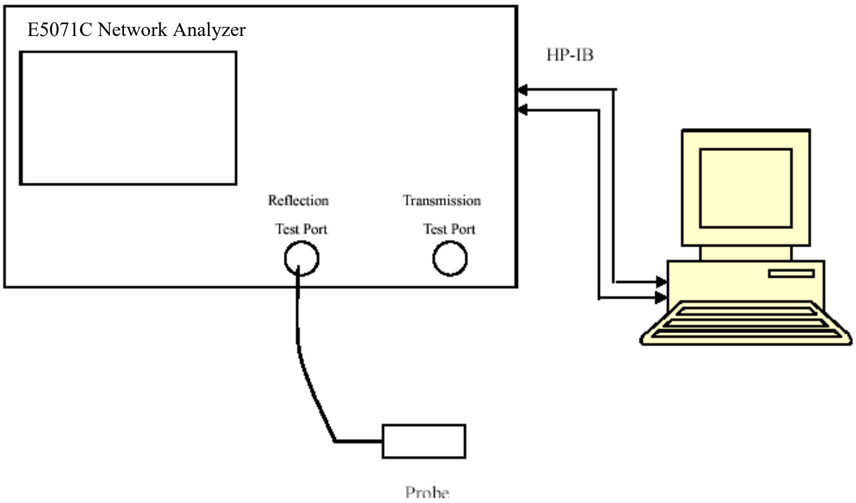
Equipment's List & Calibration Information

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	2023/09/27	2024/09/26
E-Field Probe	EX3DV4	7382	2023/09/27	2024/09/26
Mounting Device	MD4HHTV5	SD 000 H01 KA	NCR	NCR
SAM Twin Phantom	SAM-Twin V8.0	1962	NCR	NCR
Dipole, 750MHz	D750V3	1229	2023/03/24	2026/03/23
Dipole, 1750MHz	D1750V2	1199	2023/03/27	2026/03/26
Dipole, 1900MHz	D1900V2	5d231	2023/02/17	2026/02/16
Simulated Tissue Liquid Head	HBBL600-10000V6	2200808-2	Each Time	/
Network Analyzer	E5071C	SER MY46519680	2024/05/21	2025/05/20
Dielectric Assessment Kit	DAK-3.5	1248	NCR	NCR
MXG Analog Signal Generator	N5181A	MY48180408	2024/01/16	2025/01/15
USB wideband power sensor	U2021XA	MY52350001	2024/05/21	2025/05/20
Directional Coupler	855673	3307	NCR	NCR
20dB Attenuator	2	BH9879	NCR	NCR
RF Power Amplifier	5205FE	1014	NCR	NCR
Wideband Radio Communication Tester	CMW500	146520	2024/05/21	2025/05/20
Spectrum Analyzer	FSV40	101942	2023/12/18	2024/12/17
Thermometer	DTM3000	N/A	2024/01/16	2025/01/15
Temperature & Humidity Meter	10316377	N/A	2024/01/17	2025/01/16

NCR: No Calibration Required.

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	41.886	0.887	42.15	0.89	-0.63	-0.34	±5
707.5	Simulated Tissue Liquid Head	41.870	0.888	42.13	0.89	-0.62	-0.22	±5
711	Simulated Tissue Liquid Head	41.855	0.888	42.11	0.89	-0.61	-0.22	±5
750	Simulated Tissue Liquid Head	41.680	0.890	41.90	0.89	-0.53	0.00	±5
824.2	Simulated Tissue Liquid Head	41.347	0.894	41.55	0.90	-0.49	-0.67	±5
829	Simulated Tissue Liquid Head	41.326	0.895	41.53	0.90	-0.49	-0.56	±5
836.5	Simulated Tissue Liquid Head	41.292	0.895	41.50	0.90	-0.50	-0.56	±5
836.6	Simulated Tissue Liquid Head	41.292	0.895	41.50	0.90	-0.50	-0.56	±5
844	Simulated Tissue Liquid Head	41.259	0.895	41.50	0.91	-0.58	-1.65	±5
848.8	Simulated Tissue Liquid Head	41.237	0.896	41.50	0.91	-0.63	-1.54	±5

**Liquid Verification above was performed on 2024/08/14.*

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)	
1720	Simulated Tissue Liquid Head	40.997	1.351	40.11	1.35	2.21	0.07	±5
1745	Simulated Tissue Liquid Head	40.972	1.359	40.08	1.37	2.23	-0.80	±5
1750	Simulated Tissue Liquid Head	40.968	1.360	40.07	1.37	2.24	-0.73	±5
1770	Simulated Tissue Liquid Head	40.948	1.366	40.04	1.38	2.27	-1.01	±5

**Liquid Verification above was performed on 2024/08/07.*

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	39.181	1.369	40.00	1.40	-2.05	-2.21	±5
1860	Simulated Tissue Liquid Head	39.166	1.370	40.00	1.40	-2.09	-2.14	±5
1880	Simulated Tissue Liquid Head	39.135	1.371	40.00	1.40	-2.16	-2.07	±5
1900	Simulated Tissue Liquid Head	39.103	1.372	40.00	1.40	-2.24	-2.00	±5
1909.8	Simulated Tissue Liquid Head	39.088	1.373	40.00	1.40	-2.28	-1.93	±5

**Liquid Verification above was performed on 2024/08/14.*

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.

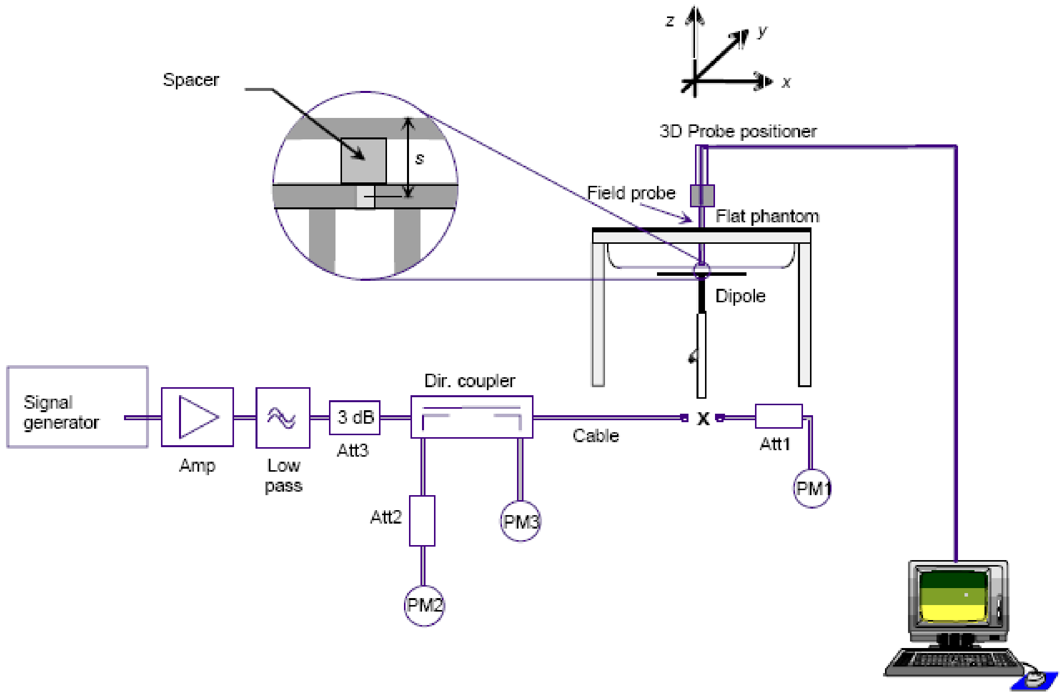
The spacing distances in the **System Verification Setup Block Diagram** is given by the following:

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



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 (%)
2024/08/14	750	Head	100	1g	0.797	7.97	8.41	-5.232	±10
2024/08/07	1750	Head	100	1g	3.65	36.50	36	1.389	±10
2024/08/14	1900	Head	100	1g	3.96	39.6	39.9	-0.752	±10
2024/08/14	750	Head	100	10g	0.534	5.3	5.46	-2.198	±10
2024/08/07	1750	Head	100	10g	2.03	20.3	18.9	7.407	±10
2024/08/14	1900	Head	100	10g	2.15	21.5	20.8	3.365	±10

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

SAR SYSTEM VALIDATION DATA

System Performance 750 MHz Head

DUT: Dipole 750 MHz Type: D750V2; Serial: 1229

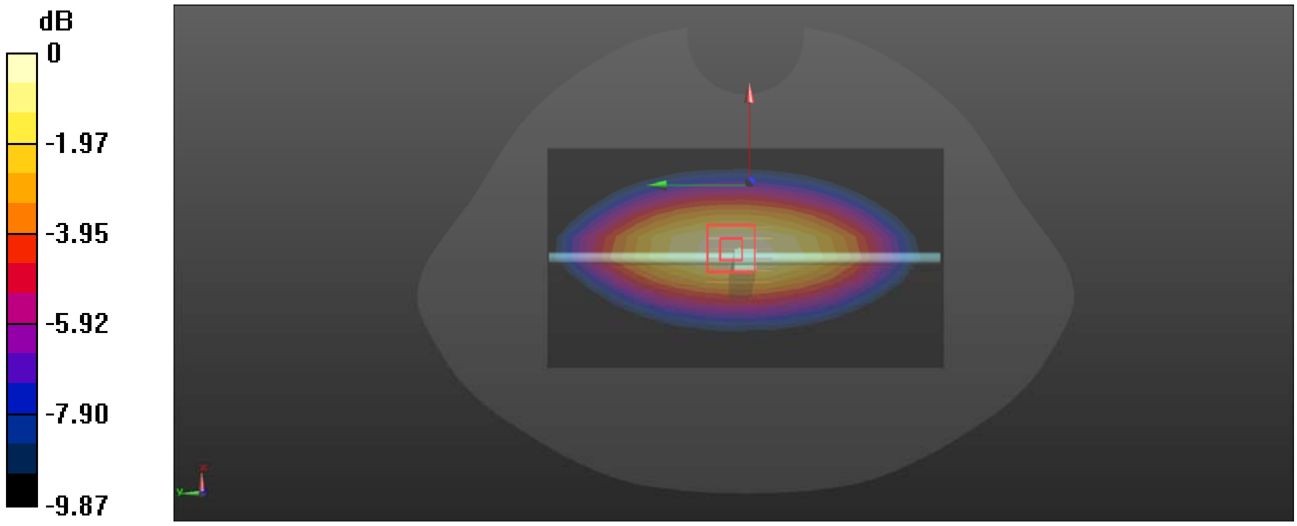
Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 750 MHz; σ = 0.89 S/m; ε_r = 41.68; ρ = 1000 kg/m^3
Phantom section: Flat Section

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) = 1.03 W/kg

Configuration/Head 750MHz Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 30.36 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.21 W/kg
SAR(1 g) = 0.797 W/kg; SAR(10 g) = 0.534 W/kg
Maximum value of SAR (measured) = 1.06 W/kg



0 dB = 1.06 W/kg = 0.25 dBW/kg

System Performance 1750 MHz Head

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1199

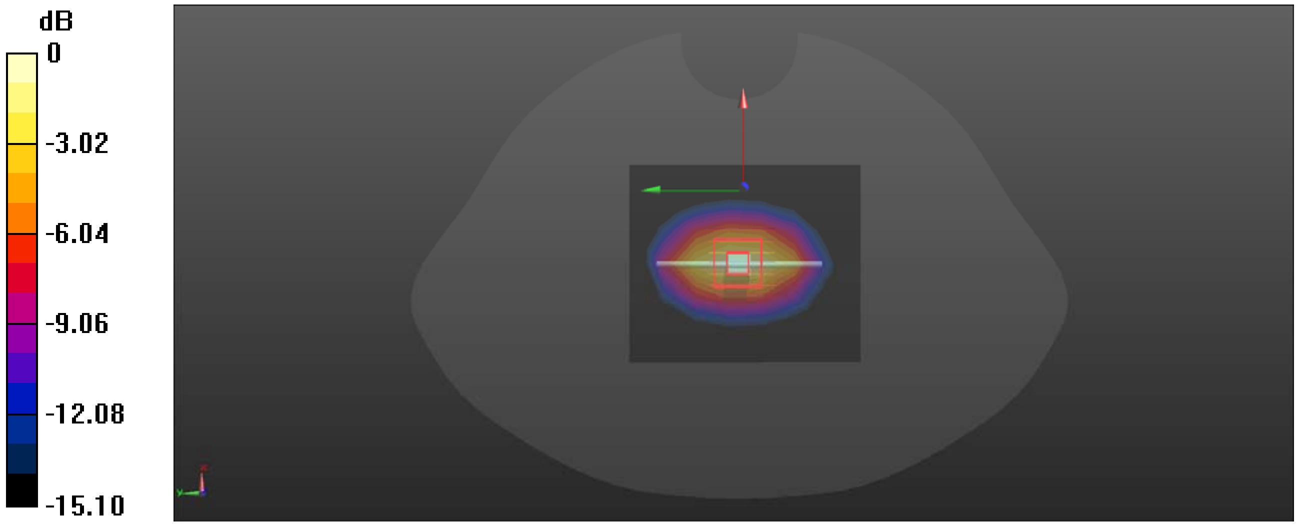
Communication System: UID 0, CW (0); Frequency: 1750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1750 MHz; σ = 1.36 S/m; ε_r = 40.968; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7382; ConvF(8.6, 8.6, 8.6) @ 1750 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 1750MHz Pin=100mW/Area Scan (7x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 5.30 W/kg

Configuration/Head 1750MHz Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.46 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 6.29 W/kg
SAR(1 g) = 3.65 W/kg; SAR(10 g) = 2.03 W/kg
Maximum value of SAR (measured) = 5.36 W/kg



0 dB = 5.36 W/kg = 7.29 dBW/kg

System Performance 1900 MHz Head

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

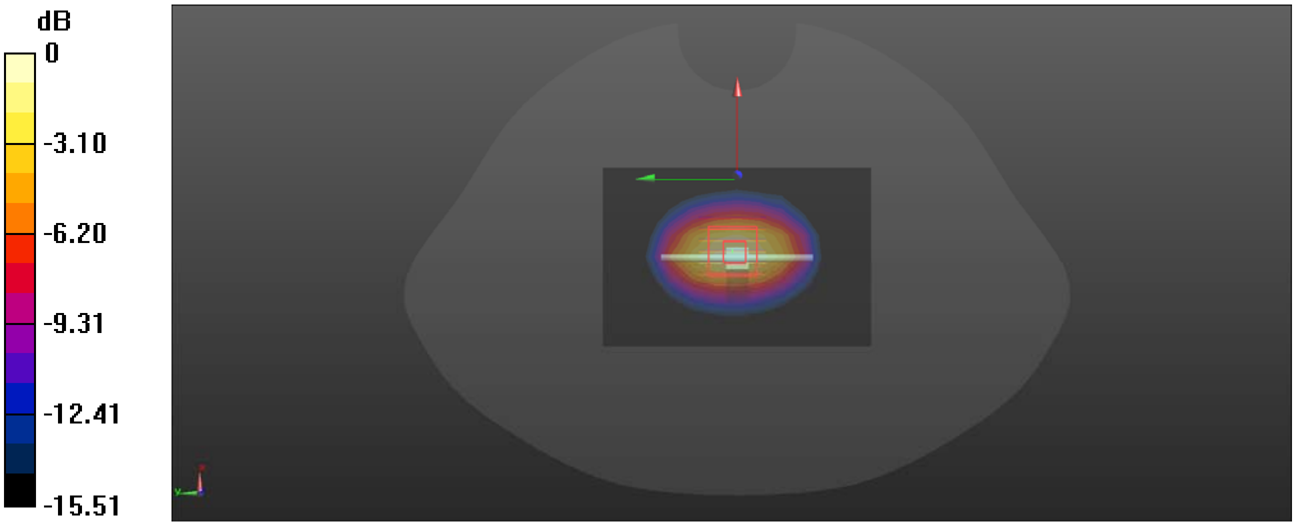
Communication System: UID 0, CW (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.372 S/m; ε_r = 39.103; ρ = 1000 kg/m^3
Phantom section: Flat Section

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) = 5.72 W/kg

Configuration/Head 1900MHz Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.06 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 6.94 W/kg
SAR(1 g) = 3.96 W/kg; SAR(10 g) = 2.15 W/kg
Maximum value of SAR (measured) = 5.93 W/kg

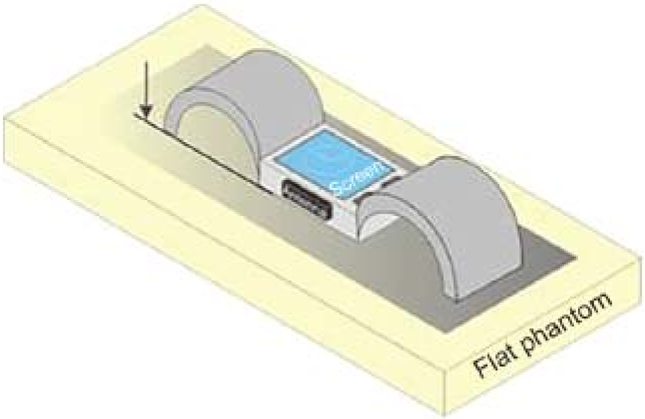


0 dB = 5.93 W/kg = 7.73 dBW/kg

EUT TEST STRATEGY AND METHODOLOGY

Test Positions for Wrist watch and wrist-worn transmitters

Transmitters that are built-in within a wrist watch or similar wrist-worn devices typically operate in speaker mode for voice communication, with the device worn on the wrist and positioned next to the mouth. Next to the mouth exposure requires 1-g SAR and the wrist-worn condition requires 10-g extremity SAR. When SAR evaluation is required, next to the mouth use is evaluated with the front of the device positioned at 10 mm from a flat phantom filled with head tissue-equivalent medium. The wrist bands should be strapped together to represent normal use conditions. SAR for wrist exposure is evaluated with the back of the device positioned in direct contact against a flat phantom filled with body tissue-equivalent medium. The wrist bands should be unstrapped and touching the phantom. The space introduced by the watch or wrist bands and the phantom must be representative of actual use conditions.



Test Distance for SAR Evaluation

For device worn on the wrist (Limb) the EUT (Equipment Under Test) is set directly against the phantom, the test distance is 0 mm.
For Next to mouth the EUT (Equipment Under Test) is set 10mm away from the phantom, the test distance is 10mm.

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 Measured 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 Measured to calculate the averages.

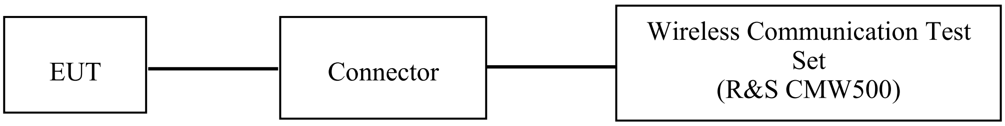
All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

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

CONDUCTED OUTPUT POWER MEASUREMENT

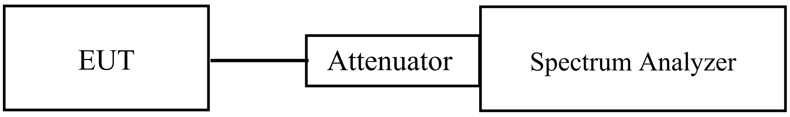
Test Procedure

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



GSM/LTE

The RF output of the transmitter was connected to the input of the Spectrum Analyzer.



Bluetooth/BLE/2.4G WLAN

Description of Test Configuration

EUT Operation Condition:

EUT Operation Mode:	The system was configured for testing in each operation mode.
Equipment Modifications:	No
EUT Exercise Software:	No

The maximum power was configured per 3GPP Standard for each operation modes as below setting:

GSM/GPRS/EGPRS

Function: Menu select > GSM Mobile Station > GSM 850/1900
Press Connection control to choose the different menus
Press RESET > choose all the reset all settings
Connection Press Signal Off to turn off the signal and change settings
Network Support > GSM + GPRS or GSM + EGSM
Main Service > Packet Data
Service selection > Test Mode A – Auto Slot Config. off
MS Signal Press Slot Config Bottom on the right twice to select and change the number of time slots and power setting
> Slot configuration > Uplink/Gamma
> 33 dBm for GPRS 850
> 30 dBm for GPRS 1900
> 27 dBm for EGPRS 850
> 26 dBm for EGPRS 1900
BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel
Frequency Offset > + 0 Hz
Mode > BCCH and TCH

BCCH Level > -85 dBm (May need to adjust if link is not stable)
BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]

Channel Type > Off
P0 > 4 dB
Slot Config> Unchanged (if already set under MS signal)
TCH > choose desired test channel
Hopping > Off
Main Timeslot > 3
Network Coding Scheme > CS4 (GPRS) and MCS5 (EGPRS)

Bit Stream > 2E9-1 PSR Bit Stream
AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input
Connection Press Sign

LTE (FDD):

The following tests were conducted according to the test requirements in 3GPP TS36.101

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

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

Modulation	Channel bandwidth / Transmission bandwidth (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

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS_01".

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

Network Signalling value	Requirements (sub-clause)	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	NA
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	See 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	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	Table 6.2.4-3
NS_11	6.6.2.2.1	23[1]	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-
Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.					

Maximum Target Output Power

Max Target Power(dBm)			
Mode/Band	Channel		
	Low	Middle	High
GSM 850	28.5	28.5	28.5
GPRS 1 TX Slot	28.5	28.5	28.5
GPRS 2 TX Slot	27.0	27.0	27.0
GPRS 3 TX Slot	25.2	25.2	25.2
GPRS 4 TX Slot	23.5	23.5	23.5
PCS 1900	29.8	29.8	29.8
GPRS 1 TX Slot	29.8	29.8	29.8
GPRS 2 TX Slot	27.8	27.8	27.8
GPRS 3 TX Slot	26.3	26.3	26.3
GPRS 4 TX Slot	24.3	24.3	24.3
LTE Band 2	23.0	21.9	21.7
LTE Band 4	22.6	22.8	22.7
LTE Band 5	20.3	19.7	19.5
LTE Band 12	20.2	20.3	20.2
LTE Band 66	22.9	22.9	22.9
WLAN 2.4G(802.11b)	10.6	9.5	10.5
WLAN 2.4G(802.11g)	2.0	2.0	3.0
WLAN 2.4G(802.11n20)	2.0	2.0	3.0
Bluetooth BDR	6.0	6.0	6.0
Bluetooth EDR	6.5	7.5	8.5
BLE	-1.0	0.2	0.2

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

Test Results

GSM:

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)
GSM 850	128	824.2	**28.41**
	190	836.6	28.22
	251	848.8	28.27
PCS 1900	512	1850.2	29.37
	661	1880	29.36
	810	1909.8	**29.68**

GPRS:

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)			
			1 slot	2 slots	3 slots	4 slots
GSM 850	128	824.2	28.32	26.67	25.06	23.26
	190	836.6	28.36	26.69	24.85	22.95
	251	848.8	28.21	26.39	24.62	22.59
PCS 1900	512	1850.2	29.31	27.22	25.59	23.65
	661	1880	29.42	27.40	25.87	23.92
	810	1909.8	29.63	27.51	26.06	24.06

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

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

The time based average power for GPRS

Band	Channel No.	Frequency (MHz)	Time based average Power (dBm)			
			1 slot	2 slot	3 slots	4 slots
GSM 850	128	824.2	19.32	20.67	**20.81**	20.26
	190	836.6	19.36	20.69	20.60	19.95
	251	848.8	19.21	20.39	20.20	19.59
PCS 1900	512	1850.2	20.31	21.22	21.34	20.65
	661	1880	20.42	21.40	21.62	20.92
	810	1909.8	20.63	21.51	**21.81**	21.06

Note:

1. Rohde & Schwarz Radio Communication Tester (CMW500) 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).
3. For GPRS, 1, 2, 3 and 4timeslots has been activated separately with power level 3(850 MHz band) and 3(1900 MHz band).

LTE Band 2:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	22.53	21.71	21.49
		RB1#3	22.55	21.71	21.40
		RB1#5	22.67	21.71	21.51
		RB3#0	22.51	21.55	21.38
		RB3#1	22.54	21.59	21.41
		RB3#3	22.42	21.43	21.42
		RB6#0	21.53	20.50	20.32
	16-QAM	RB1#0	22.32	20.97	21.18
		RB1#3	22.30	20.96	21.15
		RB1#5	22.36	20.88	21.22
		RB3#0	21.82	20.62	20.68
		RB3#1	21.87	20.64	20.61
		RB3#3	21.89	20.59	20.71
		RB6#0	20.70	19.36	19.56
3M	QPSK	RB1#0	22.68	21.71	21.49
		RB1#8	22.75	21.59	21.48
		RB1#14	22.82	21.51	21.51
		RB8#0	21.55	20.58	20.34
		RB8#4	21.48	20.49	20.30
		RB8#7	21.40	20.47	20.38
		RB15#0	21.57	20.50	20.37
	16-QAM	RB1#0	21.85	20.25	21.10
		RB1#8	21.82	20.16	21.09
		RB1#14	21.87	20.19	21.16
		RB8#0	20.82	19.62	19.38
		RB8#4	20.83	19.63	19.36
		RB8#7	20.80	19.55	19.32
		RB15#0	20.76	19.65	19.54
5M	QPSK	RB1#0	22.76	21.34	21.16
		RB1#13	22.62	21.34	21.20
		RB1#24	22.66	21.30	21.23
		RB12#0	21.56	20.46	20.42
		RB12#7	21.61	20.46	20.33
		RB12#13	21.51	20.46	20.37
		RB25#0	21.54	20.46	20.28
	16-QAM	RB1#0	22.18	20.39	19.88
		RB1#13	22.12	20.34	19.90
		RB1#24	21.98	20.32	20.05
		RB12#0	20.57	19.67	19.47
		RB12#7	20.63	19.65	19.47
		RB12#13	20.65	19.59	19.44
		RB25#0	20.80	19.62	19.58

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	QPSK	RB1#0	22.76	21.58	21.47
		RB1#25	22.71	21.62	21.41
		RB1#49	22.35	21.46	21.64
		RB25#0	21.60	20.51	20.37
		RB25#12	21.42	20.53	20.37
		RB25#25	21.25	20.45	20.44
		RB50#0	21.50	20.59	20.47
	16-QAM	RB1#0	22.47	20.89	21.12
		RB1#25	22.34	20.75	21.14
		RB1#49	21.97	20.72	21.12
		RB25#0	20.80	19.88	19.38
		RB25#12	20.74	19.82	19.53
		RB25#25	20.62	19.82	19.55
		RB50#0	20.72	19.80	19.50
15M	QPSK	RB1#0	**22.83**	21.82	21.44
		RB1#37	22.58	21.70	21.55
		RB1#74	22.14	21.65	21.57
		RB36#0	21.47	20.65	20.34
		RB36#20	21.28	20.52	20.46
		RB36#39	21.18	20.54	20.37
		RB75#0	21.27	20.58	20.43
	16-QAM	RB1#0	21.94	21.50	21.09
		RB1#37	21.64	21.33	21.12
		RB1#74	21.29	21.28	21.14
		RB36#0	20.78	19.78	19.43
		RB36#20	20.50	19.66	19.56
		RB36#39	20.34	19.64	19.64
		RB75#0	20.53	19.76	19.53
20M	QPSK	RB1#0	22.76	21.69	21.50
		RB1#49	22.31	21.53	21.42
		RB1#99	21.82	21.39	21.64
		RB50#0	21.60	20.60	20.30
		RB50#24	21.15	20.69	20.36
		RB50#50	21.08	20.36	20.32
		RB100#0	21.23	20.68	20.23
	16-QAM	RB1#0	21.87	20.27	20.48
		RB1#49	21.48	20.23	20.29
		RB1#99	21.03	20.36	20.53
		RB50#0	20.77	19.79	19.60
		RB50#24	20.36	19.79	19.54
		RB50#50	20.08	19.75	19.58
		RB100#0	20.38	19.70	19.50

LTE Band 4:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	22.05	22.55	22.34
		RB1#3	22.14	22.61	22.41
		RB1#5	22.16	22.56	22.37
		RB3#0	22.22	22.44	22.49
		RB3#1	22.28	22.50	22.37
		RB3#3	22.19	22.52	22.45
		RB6#0	21.05	21.38	21.47
	16-QAM	RB1#0	21.23	22.27	21.67
		RB1#3	21.15	22.30	21.61
		RB1#5	21.25	22.21	21.59
		RB3#0	21.09	21.72	21.33
		RB3#1	21.15	21.70	21.27
		RB3#3	21.17	21.72	21.27
		RB6#0	20.35	20.70	20.50
3M	QPSK	RB1#0	22.34	22.57	22.35
		RB1#8	22.27	22.50	22.43
		RB1#14	22.33	22.51	22.39
		RB8#0	21.18	21.40	21.48
		RB8#4	21.20	21.43	21.41
		RB8#7	21.15	21.41	21.44
		RB15#0	21.18	21.33	21.42
	16-QAM	RB1#0	21.49	21.65	21.64
		RB1#8	21.57	21.58	21.61
		RB1#14	21.45	21.64	21.67
		RB8#0	20.50	20.48	20.44
		RB8#4	20.48	20.48	20.50
		RB8#7	20.50	20.48	20.43
		RB15#0	20.43	20.49	20.69
5M	QPSK	RB1#0	22.37	22.16	22.44
		RB1#13	22.35	22.24	22.39
		RB1#24	22.36	22.20	22.37
		RB12#0	21.21	21.38	21.47
		RB12#7	21.18	21.48	21.49
		RB12#13	21.32	21.34	21.44
		RB25#0	21.25	21.41	21.40
	16-QAM	RB1#0	21.68	21.22	21.06
		RB1#13	21.66	21.20	21.09
		RB1#24	21.70	21.26	21.09
		RB12#0	20.21	20.58	20.50
		RB12#7	20.21	20.58	20.54
		RB12#13	20.34	20.55	20.49
		RB25#0	20.34	20.55	20.72

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	QPSK	RB1#0	22.29	22.41	22.32
		RB1#25	22.38	22.50	22.38
		RB1#49	22.47	22.53	22.31
		RB25#0	21.08	21.35	21.37
		RB25#12	21.08	21.40	21.43
		RB25#25	21.17	21.32	21.33
		RB50#0	21.22	21.41	21.46
	16-QAM	RB1#0	22.12	21.57	22.18
		RB1#25	22.14	21.60	22.16
		RB1#49	22.20	21.61	22.20
		RB25#0	20.30	20.62	20.51
		RB25#12	20.37	20.72	20.51
		RB25#25	20.35	20.76	20.50
		RB50#0	20.40	20.51	20.58
15M	QPSK	RB1#0	22.32	22.56	22.24
		RB1#37	22.37	22.58	22.23
		RB1#74	22.53	**22.67**	22.35
		RB36#0	21.08	21.38	21.43
		RB36#20	21.14	21.43	21.27
		RB36#39	21.22	21.32	21.42
		RB75#0	21.23	21.36	21.46
	16-QAM	RB1#0	22.04	22.19	22.14
		RB1#37	22.14	22.26	22.16
		RB1#74	22.30	22.23	22.21
		RB36#0	20.35	20.49	20.74
		RB36#20	20.40	20.56	20.64
		RB36#39	20.42	20.54	20.67
		RB75#0	20.25	20.59	20.55
20M	QPSK	RB1#0	22.09	22.12	22.35
		RB1#49	22.29	22.21	22.28
		RB1#99	22.46	22.35	22.35
		RB50#0	21.12	21.32	21.50
		RB50#24	21.30	21.43	21.39
		RB50#50	21.25	21.47	21.43
		RB100#0	21.33	21.48	21.48
	16-QAM	RB1#0	21.34	21.64	21.63
		RB1#49	21.48	21.76	21.49
		RB1#99	21.65	21.74	21.51
		RB50#0	20.28	20.63	20.55
		RB50#24	20.42	20.66	20.49
		RB50#50	20.54	20.63	20.58
		RB100#0	20.37	20.62	20.63

LTE Band 5:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	19.94	19.52	18.30
		RB1#3	19.96	19.48	18.02
		RB1#5	20.02	19.36	18.12
		RB3#0	19.81	19.45	18.26
		RB3#1	19.85	19.45	18.19
		RB3#3	19.87	19.37	18.14
		RB6#0	18.82	18.30	17.08
	16-QAM	RB1#0	19.43	18.32	17.89
		RB1#3	19.36	18.31	17.31
		RB1#5	19.32	18.40	17.28
		RB3#0	19.15	18.37	17.27
		RB3#1	19.21	18.29	17.35
		RB3#3	19.22	18.30	17.37
		RB6#0	18.04	17.78	16.18
3M	QPSK	RB1#0	**20.12**	19.56	18.40
		RB1#8	20.01	19.45	18.12
		RB1#14	20.06	19.34	18.06
		RB8#0	19.03	18.22	17.39
		RB8#4	18.89	18.25	17.37
		RB8#7	18.91	18.22	17.11
		RB15#0	18.93	18.31	17.31
	16-QAM	RB1#0	19.33	18.83	18.01
		RB1#8	19.29	18.78	17.82
		RB1#14	19.14	18.64	17.81
		RB8#0	18.17	17.66	16.22
		RB8#4	18.03	17.65	16.11
		RB8#7	18.40	17.58	16.10
		RB15#0	17.95	17.63	16.46
5M	QPSK	RB1#0	20.02	19.07	18.32
		RB1#13	19.82	18.82	18.07
		RB1#24	19.76	18.68	17.97
		RB12#0	18.85	18.21	17.36
		RB12#7	18.79	18.06	17.22
		RB12#13	18.84	18.08	17.01
		RB25#0	18.78	18.08	17.31
	16-QAM	RB1#0	19.25	17.99	17.10
		RB1#13	19.19	17.85	16.78
		RB1#24	18.96	18.00	16.64
		RB12#0	17.91	17.64	16.34
		RB12#7	18.21	17.59	16.18
		RB12#13	18.16	17.46	16.12
		RB25#0	18.36	17.53	16.42

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	QPSK	RB1#0	19.85	19.50	19.38
		RB1#25	19.62	19.20	18.94
		RB1#49	19.40	18.77	18.78
		RB25#0	18.71	18.20	17.95
		RB25#12	18.54	18.04	17.65
		RB25#25	18.48	18.28	17.55
		RB50#0	18.57	18.08	17.69
	16-QAM	RB1#0	19.71	18.49	18.79
		RB1#25	19.36	18.16	18.24
		RB1#49	19.07	17.82	17.74
		RB25#0	18.23	17.88	17.02
		RB25#12	17.79	17.77	16.81
		RB25#25	17.57	17.55	16.32
		RB50#0	17.57	17.55	16.87

LTE Band 12:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	19.79	**20.12**	19.77
		RB1#3	19.79	19.93	19.91
		RB1#5	19.90	19.92	19.96
		RB3#0	19.78	19.83	19.97
		RB3#1	19.81	19.87	20.00
		RB3#3	19.82	19.90	19.95
		RB6#0	18.99	18.89	18.89
	16-QAM	RB1#0	18.87	19.46	19.29
		RB1#3	18.92	19.57	19.12
		RB1#5	18.89	19.68	19.07
		RB3#0	18.73	19.15	19.09
		RB3#1	18.64	19.14	18.94
		RB3#3	18.68	19.14	18.93
		RB6#0	18.31	18.13	18.24
3M	QPSK	RB1#0	20.00	20.10	19.85
		RB1#8	19.84	20.04	19.78
		RB1#14	19.96	19.99	19.63
		RB8#0	18.88	19.00	19.03
		RB8#4	18.92	18.81	18.93
		RB8#7	18.95	19.04	18.91
		RB15#0	18.83	18.92	19.13
	16-QAM	RB1#0	19.09	19.41	19.65
		RB1#8	19.09	19.51	19.55
		RB1#14	19.13	19.52	19.58
		RB8#0	18.43	18.28	17.85
		RB8#4	18.45	17.90	17.91
		RB8#7	18.07	17.92	18.13
		RB15#0	18.35	17.90	18.18
5M	QPSK	RB1#0	19.81	19.71	19.78
		RB1#13	19.90	19.65	19.69
		RB1#24	19.86	19.69	19.74
		RB12#0	18.73	18.98	18.84
		RB12#7	18.89	18.93	18.87
		RB12#13	18.88	19.03	18.81
		RB25#0	18.93	19.04	18.99
	16-QAM	RB1#0	19.13	18.96	18.39
		RB1#13	19.25	18.82	18.56
		RB1#24	19.10	19.02	18.33
		RB12#0	18.22	18.26	18.19
		RB12#7	17.85	18.04	17.85
		RB12#13	17.89	18.04	17.90
		RB25#0	17.96	18.09	18.08

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	QPSK	RB1#0	20.02	20.04	20.01
		RB1#25	19.97	19.89	20.00
		RB1#49	20.03	20.01	19.93
		RB25#0	19.02	18.86	19.03
		RB25#12	18.87	19.01	19.13
		RB25#25	18.91	19.22	19.06
		RB50#0	18.88	18.93	19.21
	16-QAM	RB1#0	19.69	19.58	19.55
		RB1#25	19.67	19.56	19.84
		RB1#49	19.72	19.69	19.53
		RB25#0	18.10	18.40	17.92
		RB25#12	18.17	18.21	18.16
		RB25#25	18.39	18.48	18.02
		RB50#0	18.17	18.01	18.32

LTE Band 66:

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	RB1#0	22.28	22.41	22.51
		RB1#3	22.61	22.33	22.63
		RB1#5	22.60	22.44	22.68
		RB3#0	22.41	22.44	22.40
		RB3#1	22.34	22.49	22.47
		RB3#3	22.39	22.51	22.35
		RB6#0	21.46	21.49	21.38
	16-QAM	RB1#0	22.31	21.85	21.69
		RB1#3	22.62	21.80	22.62
		RB1#5	21.73	21.93	22.03
		RB3#0	21.79	21.50	22.33
		RB3#1	21.82	21.47	22.53
		RB3#3	21.40	21.43	22.37
		RB6#0	20.55	20.47	20.88
3M	QPSK	RB1#0	22.58	22.47	22.58
		RB1#8	22.59	22.48	22.50
		RB1#14	22.62	22.40	22.49
		RB8#0	21.49	21.47	21.46
		RB8#4	21.47	21.43	21.43
		RB8#7	21.41	21.51	21.40
		RB15#0	21.36	21.46	21.48
	16-QAM	RB1#0	22.24	22.46	21.72
		RB1#8	22.22	22.39	21.82
		RB1#14	22.22	22.42	21.77
		RB8#0	20.51	20.80	20.62
		RB8#4	20.47	20.83	20.58
		RB8#7	20.50	20.86	20.66
		RB15#0	20.75	20.69	20.58
5M	QPSK	RB1#0	22.58	22.37	22.35
		RB1#13	22.59	22.26	22.31
		RB1#24	22.56	22.26	22.41
		RB12#0	21.49	21.46	21.49
		RB12#7	21.44	21.48	21.45
		RB12#13	21.47	21.51	21.51
		RB25#0	21.46	21.35	21.54
	16-QAM	RB1#0	21.57	21.32	21.10
		RB1#13	21.57	21.29	21.14
		RB1#24	21.63	21.36	21.15
		RB12#0	20.53	20.64	20.62
		RB12#7	20.57	20.60	20.71
		RB12#13	20.61	20.58	20.63
		RB25#0	20.76	20.61	20.85

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10M	QPSK	RB1#0	22.67	22.45	22.71
		RB1#25	22.68	22.40	22.60
		RB1#49	22.79	22.42	22.64
		RB25#0	21.50	21.47	21.49
		RB25#12	21.49	21.46	21.53
		RB25#25	21.52	21.38	21.57
		RB50#0	21.52	21.46	21.56
	16-QAM	RB1#0	22.43	22.54	22.26
		RB1#25	22.38	22.45	22.24
		RB1#49	22.36	22.45	22.20
		RB25#0	20.62	20.72	20.62
		RB25#12	20.70	20.79	20.66
		RB25#25	20.76	20.65	20.55
		RB50#0	20.63	20.69	20.62
15M	QPSK	RB1#0	22.66	22.53	22.79
		RB1#37	22.73	22.40	**22.80**
		RB1#74	22.71	22.51	22.67
		RB36#0	21.44	21.46	21.43
		RB36#20	21.39	21.41	21.52
		RB36#39	21.53	21.49	21.48
		RB75#0	21.48	21.41	21.53
	16-QAM	RB1#0	22.37	22.34	22.23
		RB1#37	22.37	22.17	22.27
		RB1#74	22.40	22.18	22.16
		RB36#0	20.65	20.64	20.70
		RB36#20	20.67	20.64	20.69
		RB36#39	20.61	20.68	20.67
		RB75#0	20.70	20.58	20.74
20M	QPSK	RB1#0	22.48	22.45	22.54
		RB1#49	22.59	22.32	22.52
		RB1#99	22.59	22.33	22.59
		RB50#0	21.58	21.46	21.49
		RB50#24	21.53	21.40	21.41
		RB50#50	21.48	21.47	21.51
		RB100#0	21.56	21.48	21.51
	16-QAM	RB1#0	21.80	21.87	21.79
		RB1#49	21.78	21.81	21.85
		RB1#99	21.79	21.88	21.94
		RB50#0	20.72	20.66	20.64
		RB50#24	20.64	20.71	20.60
		RB50#50	20.68	20.57	20.59
		RB100#0	20.67	20.68	20.57

WLAN 2.4G:

Mode	Channel frequency (MHz)	Data Rate	Duty Cycle [%]	RF Average Output Power (dBm)
802.11b	2412	1Mbps	99.50	**10.41**
	2437			9.07
	2462			10.33
802.11g	2412	6Mbps	96.93	1.81
	2437			1.62
	2462			2.53
802.11 n20	2412	MCS0	98.03	1.41
	2437			1.36
	2462			2.14

Note: Duty cycle data for 2.4G WLAN, please refer to FCC ID: 2AP7LWT003, RF report of 2405V58287EC #, issued by World Alliance Testing & Certification (Shenzhen) Co., Ltd.

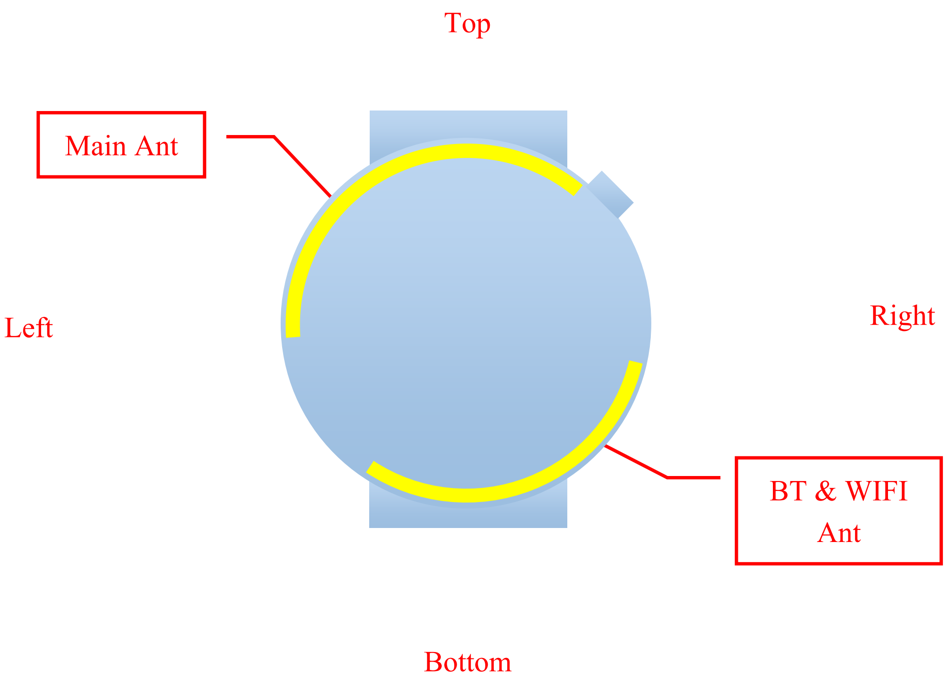
Bluetooth:

Mode	Channel frequency (MHz)	Duty cycle (%)	RF Conducted Output Power (dBm)
BDR(GFSK)	2402	/	5.58
	2441		5.26
	2480		5.92
EDR(π/4-DQPSK)	2402		5.47
	2441		6.69
	2480		7.55
EDR(8DPSK)	2402		5.91
	2441		7.13
	2480		7.99
BLE 1M	2402	62.88	-2.69
	2440		-0.07
	2480		-0.15

Note: Duty cycle data for 2.4G WLAN, please refer to FCC ID: 2AP7LWT003, RF report of 2405V58287ED #, issued by World Alliance Testing & Certification (Shenzhen) Co., Ltd.

STANDALONE SAR TEST EXCLUSION CONSIDERATIONS

Antennas Location:



EUT Front View

Standalone SAR test exclusion considerations

Mode	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Distance (mm)	Calculated value	Threshold (1-g)	SAR Test Exclusion
2.4G WLAN	2462	10.6	11.48	10	1.8	3	YES
Bluetooth	2480	8.5	7.08	10	1.1	3	YES
Mode	**Frequency (MHz)**	**Output Power (dBm)**	**Output Power (mW)**	**Distance (mm)**	**Calculated value**	**Threshold (10-g)**	**SAR Test Exclusion**
2.4G WLAN	2462	10.6	11.48	< 5	3.6	7.5	YES
Bluetooth	2480	8.5	7.08	< 5	2.2	7.5	YES

Note:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] ·
[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤7.5 for 10-g extremity SAR, where
1. f(GHz) is the RF channel transmit frequency in GHz.
2. Power and distance are rounded to the nearest mW and mm before calculation.
3. The result is rounded to one decimal place for comparison.
4. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion.

Standalone SAR estimation:

2.4G WLAN:

Mode	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Distance (mm)	Estimated 1-g (W/kg)	Estimated 10-g (W/kg)
Next to Mouth	2462	10.6	11.48	10	0.24	/
Limb	2462	10.6	11.48	0	/	0.19

Bluetooth:

Mode	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Distance (mm)	Estimated 1-g (W/kg)	Estimated 10-g (W/kg)
Next to Mouth	2480	8.5	7.08	10	0.15	/
Limb	2480	8.5	7.08	0	/	0.12

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; x = 18.5 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

SAR MEASUREMENT RESULTS

This page summarizes the results of the performed dosimetry evaluation.

Test Results:

Environmental Conditions:

Temperature:	22.3 ~ 23.3℃	21.6 ~ 22.8℃
Relative Humidity:	51 ~ 68%	51 ~ 63%
ATM Pressure:	101.3 kPa	101.3 kPa
Test Date:	*2024/08/07*	*2024/08/14*

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

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
Next to Mouth (10 mm)	824.2	GSM	/	/	/	/	/	/
	836.6	GSM	28.22	28.5	1.067	0.159	**0.17**	1#
	848.8	GSM	/	/	/	/	/	/
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 Back (Voice) (0 mm)	824.2	GSM	/	/	/	/	/	/
	836.6	GSM	28.22	28.5	1.067	0.333	**0.36**	2#
	848.8	GSM	/	/	/	/	/	/
Limb Back (Data) (0 mm)	824.2	GPRS	/	/	/	/	/	/
	836.6	GPRS	24.85	25.2	1.084	0.315	0.35	3#
	848.8	GPRS	/	/	/	/	/	/

The data above was performed on 2024/08/14.

Note:

1. When the 1-g SAR is ≤ 0.8W/Kg, testing for other channels are optional.
2. When the 10-g SAR is ≤ 2.0 W/Kg, testing for other channels are optional.
3. The EUT transmit and receive through the same GSM antenna while testing SAR.
4. 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.
5. 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.
6. The Multi-slot Classes of EUT is Class 12 which has maximum 4 Downlink slots and 4 Uplink slots, the maximum active slots is 5, when perform the multiple slots scan, 2DL+3UL is the worst case.

GSM 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
Next to Mouth (10 mm)	1850.2	GSM	/	/	/	/	/	/
	1880	GSM	29.36	29.8	1.107	0.093	**0.11**	4#
	1909.8	GSM	/	/	/	/	/	/
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 Back (Voice) (0 mm)	1850.2	GSM	/	/	/	/	/	/
	1880	GSM	29.36	29.8	1.107	0.334	**0.37**	5#
	1909.8	GSM	/	/	/	/	/	/
Limb Back (Data) (0 mm)	1850.2	GPRS	/	/	/	/	/	/
	1880	GPRS	25.87	26.3	1.104	0.304	0.34	6#
	1909.8	GPRS	/	/	/	/	/	/

The data above was performed on 2024/08/14.

Note:

1. When the 1-g SAR is ≤ 0.8W/Kg, testing for other channels are optional.
2. When the 10-g SAR is ≤ 2.0 W/Kg, testing for other channels are optional.
3. The EUT transmit and receive through the same GSM antenna while testing SAR.
4. 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.
5. 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.
6. The Multi-slot Classes of EUT is Class 12 which has maximum 4 Downlink slots and 4 Uplink slots, the maximum active slots is 5, when perform the multiple slots scan, 2DL+3UL is the worst case.

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
Next to Mouth (10 mm)	1860	20	1RB	22.76	23.0	1.057	0.308	**0.33**	7#
	1880	20	1RB	/	/	/	/	/	/
	1900	20	1RB	/	/	/	/	/	/
	1860	20	50%RB	21.60	23.0	1.380	0.238	0.33	8#
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 Back (0 mm)	1860	20	1RB	22.76	23.0	1.057	0.970	**1.03**	9#
	1880	20	1RB	/	/	/	/	/	/
	1900	20	1RB	/	/	/	/	/	/
	1860	20	50%RB	21.60	23.0	1.380	0.728	1.01	10#

The data above was performed on 2024/08/14.

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
Next to Mouth (10 mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	19.50	19.7	1.047	0.167	0.18	11#
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	18.28	19.7	1.387	0.134	**0.19**	12#
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 Back (0 mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	19.50	19.7	1.047	0.407	0.43	13#
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	18.28	19.7	1.387	0.326	**0.46**	14#

The data above was performed on 2024/08/14.

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
Next to Mouth (10 mm)	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	20.04	20.3	1.062	0.137	**0.15**	15#
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	19.22	20.3	1.282	0.113	0.15	16#
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 Back (0 mm)	704	10	1RB	/	/	/	/	/	/
	707.5	10	1RB	20.04	20.3	1.062	0.409	**0.44**	17#
	711	10	1RB	/	/	/	/	/	/
	707.5	10	50%RB	19.22	20.3	1.282	0.336	0.44	18#

The data above was performed on 2024/08/14.

LTE Band 66&4:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Next to Mouth (10 mm)	1720	20	1RB	/	/	/	/	/	/
	1745	20	1RB	22.45	22.9	1.109	0.310	**0.35**	19#
	1770	20	1RB	/	/	/	/	/	/
	1745	20	50%RB	21.47	22.9	1.390	0.249	0.35	20#
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 Back (0 mm)	1720	20	1RB	/	/	/	/	/	/
	1745	20	1RB	22.45	22.9	1.109	1.140	**1.27**	21#
	1770	20	1RB	/	/	/	/	/	/
	1745	20	50%RB	21.47	22.9	1.390	0.849	1.19	22#

The data above was performed on 2024/08/07.

Note: The E-UTRA Operating Band 4 is a subset of band 66, and they are same in modulation type and rated output power, therefore, they were considered as one frequency band during SAR measurement.

Note:

1. When the 1-g SAR is ≤ 0.8 W/Kg, testing for other channels are optional.
2. When the 10-g SAR is ≤ 2.0 W/Kg, testing for other channels are optional.
3. SAR for LTE band exposure configurations is measured according to the procedures of KDB 941225 D05 SAR for LTE Devices v02.
4. 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
5. 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.
6.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.
7. 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.
8. 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.

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

Head

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

Body

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

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 (GSM/ LTE) Antenna + WLAN 2.4G	√	×
WWAN (GSM/ LTE) Antenna + Bluetooth	√	×
WLAN 2.4G+Bluetooth	×	×

Simultaneous SAR test exclusion considerations:

Position	Mode (SAR1+SAR2)	Reported SAR(W/kg)		ΣSAR < 1.6W/kg
		SAR1	SAR2	
Next to Mouth	MAX.WWAN(GSM/ LTE) + WLAN 2.4G	0.35	0.24	**0.59**
	MAX.WWAN(GSM/ LTE) + Bluetooth	0.35	0.15	0.50

Position	Mode (SAR1+SAR2)	Reported SAR(W/kg)		ΣSAR < 4.0W/kg
		SAR1	SAR2	
Limb Back	MAX.WWAN(GSM/ LTE) + WLAN 2.4G	1.27	0.19	**1.46**
	MAX.WWAN(GSM/ LTE) + Bluetooth	1.27	0.12	1.39

Simultaneous Transmission Conclusion:

The above numerical summed SAR results for all the case simultaneous transmission conditions were below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is 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	13.9	N	1	1	1	13.9	13.9
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
Modulation response	4.0	R	√3	1	1	2.3	2.3
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
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	3.9	R	√3	1	1	2.3	2.3
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
SAR scaling	2.0	R	√3	1	1	1.2	1.2
Phantom and tissue parameters							
Phantom uncertainty (shape and thickness tolerances)	4.0	R	√3	1	1	2.3	2.3
Uncertainty in SAR correction for deviations in permittivity and conductivity	1.9	N	1	1	0.84	1.9	1.6
Liquid conductivity measurement	5.5	N	1	0.78	0.71	4.3	3.9
Liquid permittivity measurement	2.9	N	1	0.23	0.26	0.7	0.8
Liquid conductivity—temperature uncertainty	1.7	R	√3	0.78	0.71	0.8	0.7
Liquid permittivity—temperature uncertainty	2.7	R	√3	0.23	0.26	0.4	0.4
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 CALIBRATION CERTIFICATES

Please Refer to the Attachment.

APPENDIX D RETURN LOSS&IMPEDANCE MEASUREMENT

Please Refer to the Attachment.

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