



FCC SAR Test Report

FCC ID: 2BWNC-M1

Project No. : 2606C022
Equipment : Vision Perception Exoskeleton
Brand Name : IRMO
Model Name : M1 Pure, M1 Neo, M1 Pro, M1 Ultra
Date of Receipt : Jun. 03, 2026
Date of Test : Jun. 03, 2026 ~ Jun. 29, 2026
Issued Date : Jul. 10, 2026
Test Sample : Engineering Sample No.: DG920260602296
Standard(s) : Please refer to page 2.
Applicant : IRMO BOT LIMITED
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HONG KONG
Manufacturer : Shenzhen Shenmo Robot Co., Ltd.
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The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc. (Dongguan).

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Standard(s)	: IEEE Std C95.1:2019 IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 kHz to 300 GHz IEEE Std 1528™-2013 IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques KDB865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
Test Method	: KDB865664 D02 SAR Reporting v01r02 KDB447498 D04 Interim General RF Exposure Guidance v01

Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

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BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

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REVISION HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCC SAR-1-2606C022	R00	Original Report.	Jul. 10, 2026	Valid

1. GENERAL INFORMATION

1.1 STATEMENT OF COMPLIANCE

Mode	Highest Body-worn SAR-1g (W/kg)
WiFi 2.4G	1.23
Bluetooth	0.40

Note: The device is in compliance with Specific Absorption Rate (SAR) for general population uncontrolled exposure limits according to the FCC rule §2.1093, the ANSI/IEEE C95.1, the NCRP Report Number 86 for uncontrolled environment, and had been tested in accordance with the measurement methods and procedures specified in IEEE Std 1528™.

1.2 LABORATORY ENVIRONMENT

Temperature	Min. = 18°C, Max. = 25°C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5Ω
Ambient noise is checked and found very low and in compliance with requirement of standards.	
Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

1.3 GENERAL DESCRIPTION OF EUT

Equipment	Vision Perception Exoskeleton					
Brand Name	IRMO					
Test Model	M1 Pure					
Model Name	M1 Pure, M1 Neo, M1 Pro, M1 Ultra					
Model Difference(s)	The only differences among all the models are: variations in the material of the case, differences in water resistance levels, and variations in the number of cameras used.					
Hardware Version	3.0					
Software Version	1.0					
Modulation	BLE(GFSK), WiFi(DSSS/OFDM)					
Operation Frequency Range(s)	Band	TX (MHz)			RX (MHz)	
	Bluetooth	2400~2483.5				
	WiFi 2.4G	2400~2483.5				
Test Channels (low-mid-high)	0-19-39 (BLE)					
	1-6-11 (WiFi 2.4G 802.11b/g/n HT20)					
	3-6-9 (WiFi 2.4G 802.11n HT40)					
Antenna Information	Manufacturer	P/N	Antenna Type	Connector	Gain (dBi)	Note
	SHENZHEN XINHENG YANG TECHNOLOGY CO., LTD	CP.21.000510	FPC	N/A	3.13	BLE Ant.
		CP.21.000508	FPC	N/A	5.17	WiFi 2.4G AUX Ant.
		CP.21.000509	FPC	N/A	2.77	WiFi 2.4G MAIN Ant.
Other Information						
Battery	Model Name	NZ212				
	Power Rating	Nominal Voltage: 21.60V Rated Capacity: 3000mAh Rated Energy: 64.8Wh				

Note: The antenna gain is provided by the manufacturer.

1.4 MAIN TEST INSTRUMENTS

Item	Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Interval
1	DASY5 System	Speag	DASY 5	N/A	N/A	N/A
2	Data Acquisition Electronics	Speag	DAE4	1390	Nov. 19, 2025	1 Year
3	E-field Probe	Speag	EX3DV4	3809	Feb. 09, 2026	1 Year
4	System Validation Dipole	Speag	D2450V2	919	Apr. 22, 2024	3 Years
5	ELI Phantom	Speag	ELI Phantom V5.0	1222	N/A	N/A
6	Power Amplifier	Mini-Circuits	ZHL-42W+	QA1333003	Apr. 26, 2026	1 Year
7	DC Source metter	Iteck	IT6154	0061041267682 01001	Apr. 26, 2026	1 Year
8	Vector Network Analyzer	Agilent	E5071C	MY46102965	Dec. 20, 2025	1 Year
9	Signal Generator	Agilent	N5172B	MY53050758	Dec. 20, 2025	1 Year
10	Signal Generator	Keysight	N5173B	MY59101420	Dec. 20, 2025	1 Year
11	Smart Power Sensor	R&S	NRP-Z21	102209	Dec. 20, 2025	1 Year
12	3.5mm Economy Calibration Kit	Agilent	85052D	MY43252246	Nov. 20, 2025	1 Year
13	Dielectric Assessment Kit	Speag	DAK-3.5	1226	Feb. 19, 2026	1 Year
14	Directional Coupler	Talent Microwave	TC-05180-20S	210628013	Dec. 20, 2025	1 Year
15	Coupler	Woken	ATD10-400M-6G-A2	2021008	Apr. 26, 2026	1 Year
16	Liquid Thermometer	Nscing Es	YZ6021S	/	Nov. 13, 2025	1 Year

Note:

1. "N/A" denotes no model name, serial No. or calibration specified.
2. 1) Per KDB865664 D01 requirements for dipole calibration, the test laboratory has adopted three-year extended calibration interval. Each measured dipole is expected to evaluate with the following criteria at least on annual interval in Appendix C.
 - a) There is no physical damage on the dipole;
 - b) System check with specific dipole is within 10% of calibrated value;
 - c) The most recent return-loss result, measured at least annually, deviates by no more than 20% from the previous measurement;
 - d) The most recent measurement of the real or imaginary parts of the impedance, measured at least annually is within 5Ω from the previous measurement.
- 2) Network analyzer probe calibration against air, distilled water and a short block performed before measuring liquid parameters.

2. RF EMISSIONS MEASUREMENT

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is SAR room at the location of No.3, Jinshagang 1st Road, Dalang, Dongguan, Guangdong People's Republic of China.

BTL's Registration Number for FCC: 747969

BTL's Designation Number for FCC: CN1377

2.2 MEASUREMENT UNCERTAINTY

Uncertainty Budget for Frequency range of 300 MHz to 3 GHz (IEC/IEEE 62209-1528)

Symbol	Input quantity X_i (source of uncertainty)	Unc. Value	Prob. Dist.	Div.	ci (1g)	ci (10g)	Std.Unc. (1g) (±%)	Std.Unc. (10g) (±%)
Measurement system errors								
CF	Probe calibration(±%)	13.0	N	2	1	1	6.5	6.5
CF_{drift}	Probe calibration drift(±%)	1.7	R	$\sqrt{3}$	1	1	1.0	1.0
LIN	Probe linearity and detection limit(±%)	4.7	R	$\sqrt{3}$	1	1	2.7	2.7
BBS	Broadband signal(±%)	3.0	R	$\sqrt{3}$	1	1	1.7	1.7
ISO	Probe isotropy(±%)	7.6	R	$\sqrt{3}$	1	1	4.4	4.4
DAE	Other probe and data acquisition errors(±%)	0.7	N	1	1	1	0.7	0.7
AMB	RF ambient and noise(±%)	1.8	N	1	1	1	1.8	1.8
Δ_{xyz}	Probe positioning errors(±mm)	0.006	N	1	0.14	0.14	0.08	0.08
DAT	Data processing errors(±%)	1.2	N	1	1	1	1.2	1.2
Phantom and device (DUT or validation antenna) errors								
LIQ(σ)	Conductivity (meas.)(±%)	2.7	N	1	0.78	0.71	2.1	1.9
LIQ(T_c)	Conductivity (temp.)(±%)	4.16	R	$\sqrt{3}$	0.78	0.71	1.9	1.7
EPS	Phantom Permittivity(±%)	14	R	$\sqrt{3}$	0	0	0.0	0.0
DIS	Distance DUT - TSL(±%)	2	N	1	2	2	4.0	4.0
D_{xyz}	Device Positioning(±%)	1.1	N	1	1	1	1.1	1.1
H	Device Holder(±%)	2.4	N	1	1	1	2.4	2.4
MOD	DUT Modulationm(±%)	2.4	R	$\sqrt{3}$	1	1	1.4	1.4
TAS	Time-average SAR(±%)	1.7	R	$\sqrt{3}$	1	1	1.0	1.0
RF_{drift}	DUT drift(±%)	1.7	N	1	1	1	1.7	1.7
VAL	Val Antenna Unc.(±%)	0	N	1	1	1	0.0	0.0
P_{in}	Unc. Input Power(±%)	0	N	1	1	1	0.0	0.0
Corrections to the SAR result								
C(ϵ', σ)	Deviation to Target(±%)	1.9	N	1	1	0.84	1.9	1.6
C(R)	SAR scaling(±%)	0	R	$\sqrt{3}$	1	1	0.0	0.0
u(ΔSAR)	Combined uncertainty						10.9	10.8
	Coverage Factor for 95%						k=2	k=2
U	Expanded uncertainty					U =	21.8	21.5
a Other probability distributions and divisors may be used if they better represent available knowledge of the quantities concerned.								

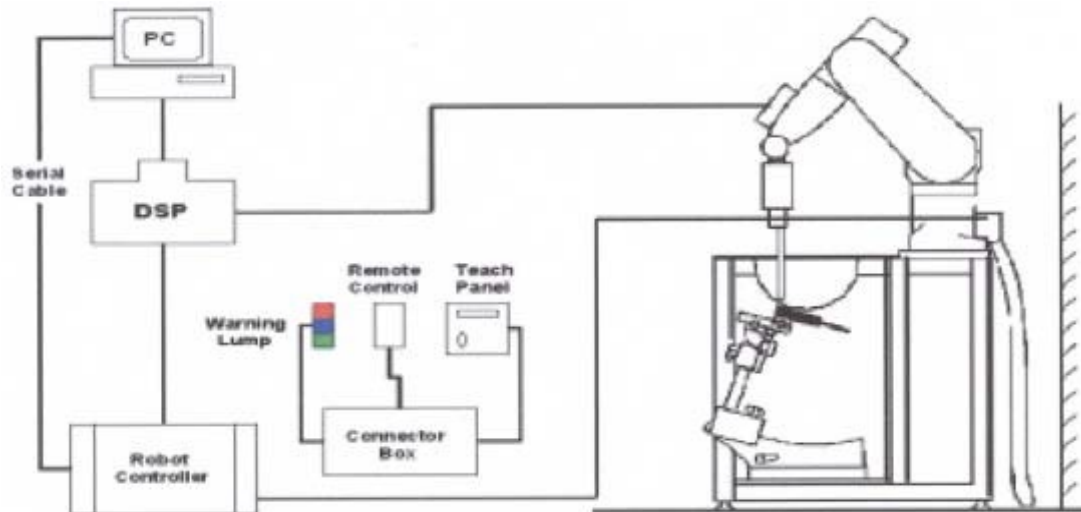
3. SAR MEASUREMENTS SYSTEM CONFIGURATION

3.1 SAR MEASUREMENT SET-UP

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

1. A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).
2. A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
3. A data acquisition electronic (DAE) which performs the signal amplification, 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.
4. A unit to operate the optical surface detector which is connected to the EOC.
5. The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY measurement server.
6. The DASY measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. A computer operating Windows.
7. DASY software and SEMCAD data evaluation software.
8. Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
9. The generic twin phantom enabling the testing of left-hand and right-hand usage.
10. The device holder for handheld mobile phones.
11. Tissue simulating liquid mixed according to the given recipes.
12. System validation dipoles allowing to validate the proper functioning of the system.

3.1.1 TEST SETUP LAYOUT



3.2 DASY E-FIELD PROBE SYSTEM

The SAR measurements were conducted with the dosimetric probe EX3DV4 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation.

3.2.1 PROBE SPECIFICATION

EX3DV4

Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available
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 μ W/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically <1 μ W/g)
Dimensions	Overall length: 337 mm (Tip: 9 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1.0 mm

Note: This size is only the standard information for the E-Field Probe device. For the exact dimensions, please refer to the calibration report in the appendix.



E-field Probe

3.2.2 E-FIELD PROBE CALIBRATION

Each probe is calibrated according to a dosimetric assessment procedure with accuracy better than $\pm 10\%$. The spherical isotropy was evaluated and found to be better than $\pm 0.25\text{dB}$. The sensitivity parameters (NormX, NormY, NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested.

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies below 1 GHz, and in a wave guide above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The measured free space E-field in the medium correlates to temperature rise in a dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$\text{SAR} = C \frac{\Delta T}{\Delta t}$$

Where: Δt =Exposure time (30 seconds),

C =Heat capacity of tissue (brain or muscle),

ΔT =Temperature increase due to RF exposure.

Or
$$\text{SAR} = \frac{|E|^2 \sigma}{\rho}$$

Where: σ =Simulated tissue conductivity,

ρ =Tissue density (kg/m^3).

3.2.3 OTHER TEST EQUIPMENT

3.2.3.1. Device Holder for Transmitters

Construction: Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices (e.g., laptops, cameras, etc.) It is lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner. The extension is fully compatible with the Twin SAM, ELI Phantoms.

Material: POM, Acrylic glass, Foam

3.2.3.2 Phantom

Model	ELI Phantom	
Construction	The ELI phantom is used for compliance testing of handheld and body-mounted wireless devices in the frequency range of 4 MHz to 10 GHz. ELI is fully compatible with the IEC/IEEE 62209-1528 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. 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 is compatible with all of SPEAG's dosimetric probes and dipoles.	
Shell Thickness	2±0.2 mm	
Filling Volume	Approx. 30 liters	
Dimensions	Length: 600 mm; Width: 190mm Height: adjustable feet	
Available	Special	

3.2.4 SCANNING PROCEDURE

The DASY system installation includes predefined files with recommended procedures for measurements and validation. They are read-only document files and destined as fully defined but unmeasured masks. All test positions (head or body-worn) are tested with the same configuration of test steps differing only in the grid definition for the different test positions.

The “reference” and “drift” measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the DUT’s output power and should vary max. $\pm 5\%$.

Both area scanning and zoom scanning comply with the IEC/IEEE 62209-1528 standard.

- Area Scan

Table 3 – Area scan parameters

Parameter	DUT transmit frequency being tested	
	$f \leq 3 \text{ GHz}$	$3 \text{ GHz} < f \leq 10 \text{ GHz}$
Maximum distance between the measured points (geometric centre of the sensors) and the inner phantom surface (z_{M1} in Figure 20 in mm)	5 ± 1	$\delta \ln(2)/2 \pm 0,5^a$
Maximum spacing between adjacent measured points in mm (see O.8.3.1) ^b	20, or half of the corresponding zoom scan length, whichever is smaller	$60/f$, or half of the corresponding zoom scan length, whichever is smaller
Maximum angle between the probe axis and the phantom surface normal (α in Figure 20) ^c	5° (flat phantom only) 30° (other phantoms)	5° (flat phantom only) 20° (other phantoms)
Tolerance in the probe angle	1°	1°
^a δ is the penetration depth for a plane-wave incident normally on a planar half-space. ^b See Clause O.8 on how Δx and Δy may be selected for individual area scan requirements. ^c The probe angle relative to the phantom surface normal is restricted due to the degradation in the measurement accuracy in fields with steep spatial gradients. The measurement accuracy decreases with increasing probe angle and increasing frequency. This is the reason for the tighter probe angle restriction at frequencies above 3 GHz.		

- Zoom Scan

Table 4 – Zoom scan parameters

Parameter	DUT transmit frequency being tested	
	$f \leq 3 \text{ GHz}$	$3 \text{ GHz} < f \leq 10 \text{ GHz}$
Maximum distance between the closest measured points and the phantom surface (z_{M1} in Figure 20 and Table 3, in mm)	5	$\delta \ln(2)/2^a$
Maximum angle between the probe axis and the phantom surface normal (α in Figure 20)	5° (flat phantom only) 30° (other phantoms)	5° (flat phantom only) 20° (other phantoms)
Maximum spacing between measured points in the x - and y -directions (Δx and Δy , in mm)	8	$24/f^b$
For uniform grids: Maximum spacing between measured points in the direction normal to the phantom shell (Δz_1 in Figure 20, in mm)	5	$10/(f - 1)$
For graded grids: Maximum spacing between the two closest measured points in the direction normal to the phantom shell (Δz_1 in Figure 20, in mm)	4	$12/f$
For graded grids: Maximum incremental increase in the spacing between measured points in the direction normal to the phantom shell ($R_z = \Delta z_2/\Delta z_1$ in Figure 20)	1,5	1,5
Minimum edge length of the zoom scan volume in the x - and y -directions (L_z in O.8.3.2, in mm)	30	22
Minimum edge length of the zoom scan volume in the direction normal to the phantom shell (L_h in O.8.3.2 in mm)	30	22
Tolerance in the probe angle	1°	1°
^a δ is the penetration depth for a plane-wave incident normally on a planar half-space.		
^b This is the maximum spacing allowed, which might not work for all circumstances.		

4. SYSTEM VERIFICATION PROCEDURE

4.1 TISSUE VERIFICATION

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine if the dielectric parameter are within the tolerances of the specified target values. The measured conductivity and relative permittivity should be within $\pm 5\%$ of the target values.

The following materials are used for producing the tissue-equivalent materials.

Tissue Type	Bactericide	DGBE	HEC	NaCl	Sucrose	Triton X-100	Water	Diethylene Glycol Mono-hexylether
Head 2450	-	45.0	-	0.1	-	-	54.9	-

Salt: 99+% Pure Sodium Chloride; Sugar: 98+% Pure Sucrose; Water: De-ionized, 16M + resistivity

HEC: Hydroxyethyl Cellulose; DGBE: 99+% Di(ethylene glycol) butyl ether,[2-(2-butoxyethoxy)ethanol]

Triton X-100(ultra pure): Polyethylene glycol mono [4-(1,1,3,3-tetramethylbutyl)phenyl]ether

Tissue Verification									
Tissue Type	Frequency (MHz)	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ϵ_r)	Targeted Conductivity (σ)	Targeted Permittivity (ϵ_r)	Deviation Conductivity (σ) (%)	Deviation Permittivity (ϵ_r) (%)	Date
Head	2450	22.3	1.818	40.879	1.80	39.2	1.00	4.28	Jun. 26, 2026

Note:

- 1) The dielectric parameters of the tissue-equivalent liquid should be measured under similar ambient conditions and within 2 °C of the conditions expected during the SAR evaluation to satisfy protocol requirements.
- 2) KDB 865664 was ensured to be applied for probe calibration frequencies greater than or equal to 50MHz of the EUT frequencies.
- 3) The above measured tissue parameters were used in the DASY software to perform interpolation via the DASY software to determine actual dielectric parameters at the test frequencies. The SAR test plots may slightly differ from the table above since the DASY rounds to three significant digits.

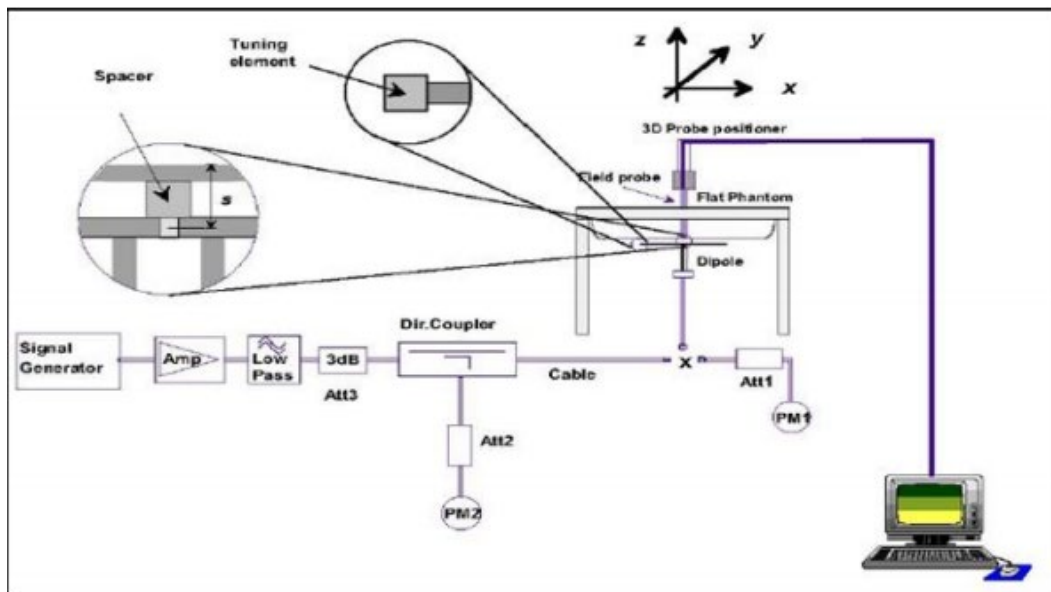
4.2 SYSTEM CHECK

The system check is performed for verifying the accuracy of the complete measurement system and performance of the software. The system check is performed with tissue equivalent material according to IEC/IEEE 62209-1528 (described above). The following table shows system check results for all frequency bands and tissue liquids used during the tests.

System Check	Date	Frequency (MHz)	Targeted SAR-1g (W/kg)	Measured SAR-1g (W/kg)	normalized SAR-1g (W/kg)	Deviation-1g (%)	Dipole S/N
Head	Jun. 26, 2026	2450	53.10	5.50	55.00	3.58	919

4.3 SYSTEM CHECK PROCEDURE

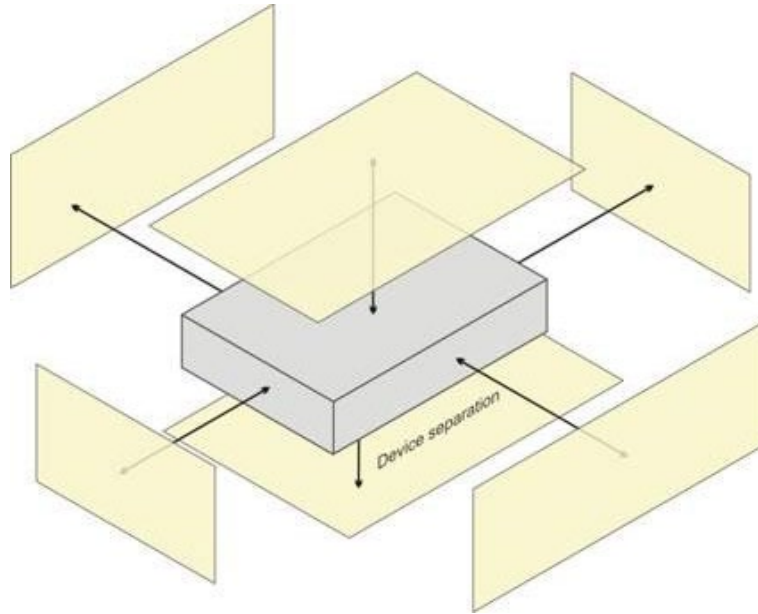
The system check is performed by using a system check dipole which is positioned parallel to the planar part of the phantom at the reference point. The distance of the dipole to the SAM phantom is determined by a plexiglass spacer. The dipole is connected to the signal source consisting of signal generator and amplifier via a directional coupler, N-connector cable and adaption to SMA. The forward power supplied to the system check antenna shall produce a psSAR of at least 0,4 W/kg. The 1 g or 10 g psSAR range is 0,4 W/kg to 10 W/kg. The power sensor is connected to the cable before the system check to measure the power at this point and do adjustments at the signal generator. At the outputs of the directional coupler both return loss as well as forward power are controlled during the system check to make sure that emitted power at the dipole is kept constant. This can also be checked by the power drift measurement after the test. System check results have to be equal or near the values determined during dipole calibration (target SAR in table above) with the relevant liquids and test system ($\pm 10\%$).



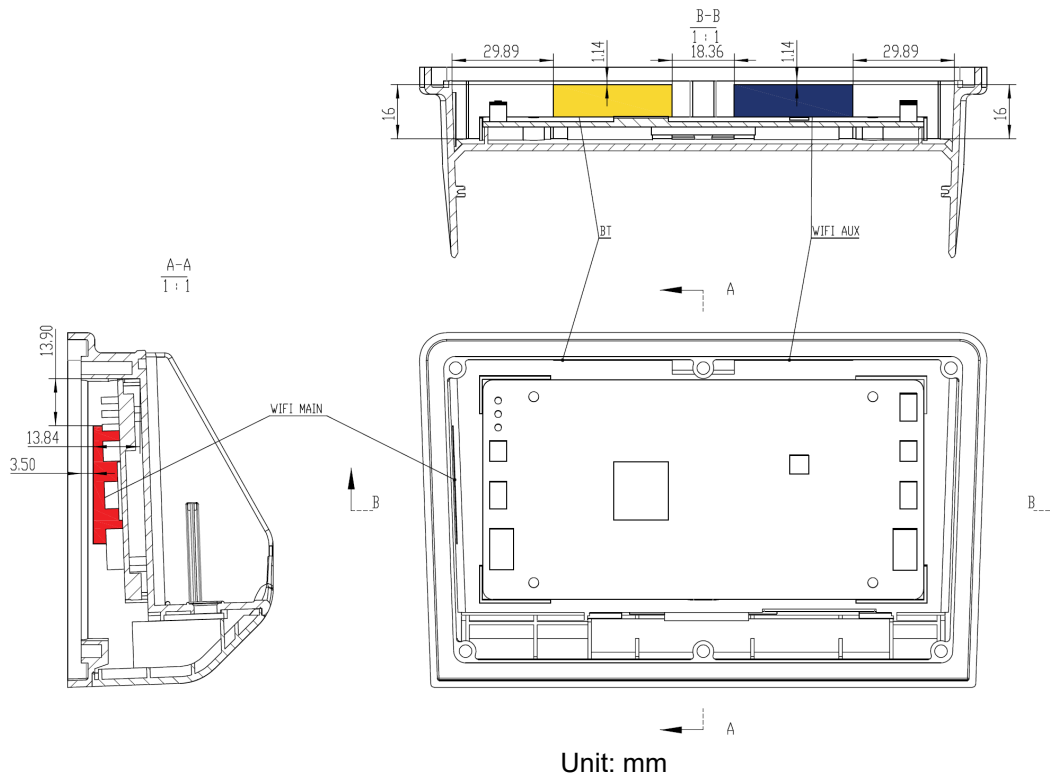
5. OPERATIONAL CONDITIONS DURING TEST

5.1 TEST POSITION

This device is worn around the waist and requires a strap for secure fastening. The strap cannot be removed. The evaluation test was conducted with the device in the strap-equipped state, following the Generic device method in IEEE 1528, with 6 sides tested at 0cm.



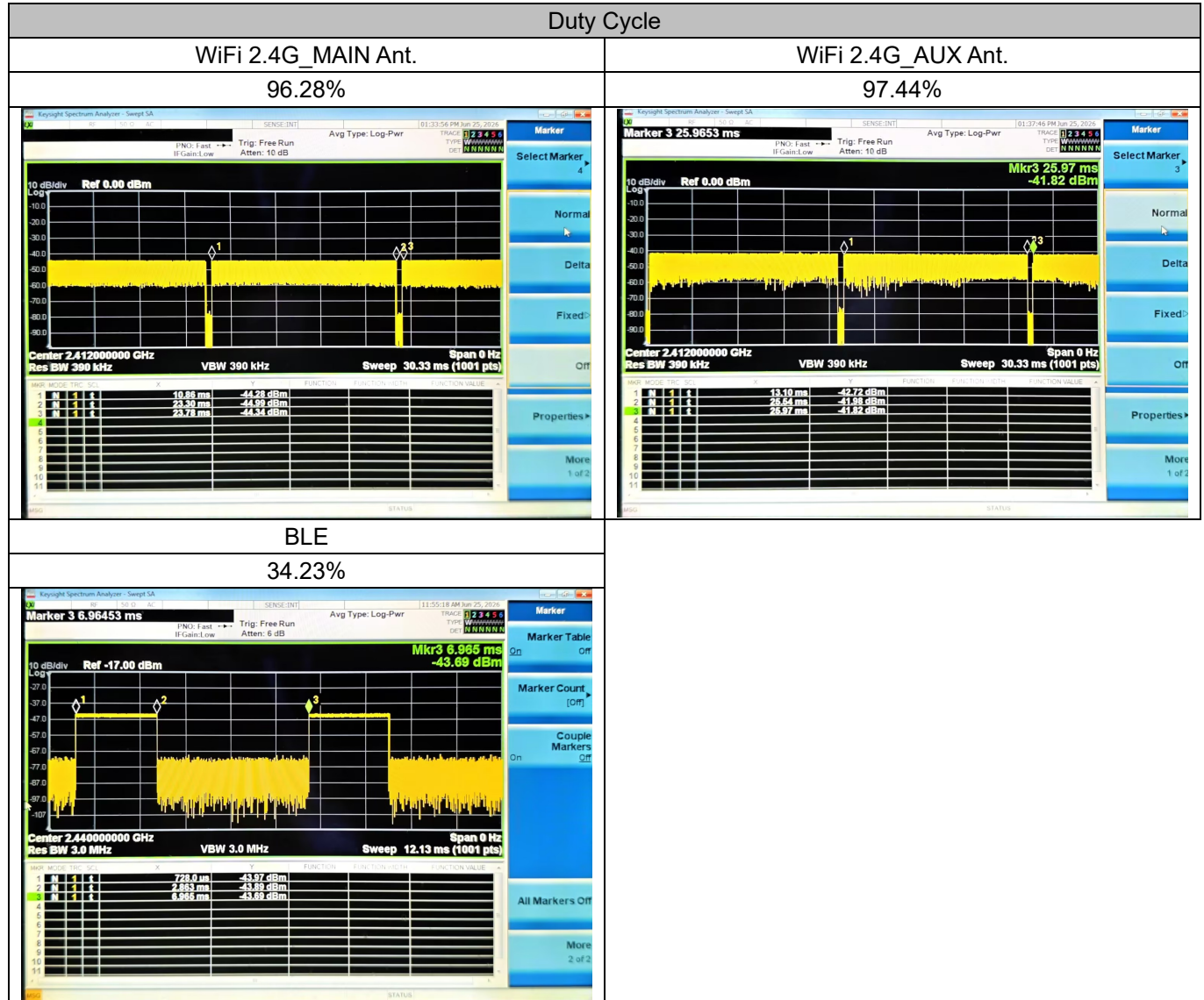
The location of the antennas inside EUT are shown as below:



5.2 TEST CONFIGURATION

For WLAN SAR testing, WLAN engineering testing software installed on the DUT can provide continuous transmitting RF signal.

For WiFi SAR testing, a communication link is set up with the test mode software for WiFi mode test. During the test, at the each test frequency channel, the EUT is operated at the RF continuous emission mode. The RF signal utilized in SAR measurement has 100% duty cycle and its crest factor is 1. The test procedures in KDB 248227 D01 are applied.



5.2.1 2.4G SAR Test Requirements

802.11b DSSS SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either a fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

- 1) When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
- 2) When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

2.4 GHz 802.11g/n OFDM SAR Test Exclusion Requirements

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied. SAR is not required for the following 2.4 GHz OFDM conditions.

- 1) When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.
- 2) When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

SAR Test Requirements for OFDM configurations

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.

6. TEST RESULT

6.1 CONDUCTED POWER RESULTS

6.1.1 CONDUCTED POWER MEASUREMENTS OF BLUETOOTH

BLE	Average Conducted Power(dBm)			
	Max. Tune up	CH0	CH19	CH39
		2402MHz	2440MHz	2480MHz
BLE(1M)	6.00	5.34	5.48	5.16
BLE(2M)	6.00	3.07	3.12	2.81

Note:

- 1) The Average conducted power of Bluetooth is measured with RMS detector.
- 2) The tested channel results are marks in bold.

6.1.2 CONDUCTED POWER MEASUREMENTS OF WIFI 2.4G

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Max. Tune up	Average Power(dBm)
2.4G WIFI_ 1TX_ ANT MAIN	802.11b	1	2412	1	13.50	13.38
		6	2437		13.50	13.29
		11	2462		13.50	12.86
	802.11g	1	2412	6	13.50	12.92
		6	2437		13.50	13.01
		11	2462		13.50	12.82
	802.11n HT20	1	2412	HT0	13.50	13.12
		6	2437		13.50	12.85
		11	2462		13.50	12.67
	802.11n HT40	3	2422	HT0	13.50	13.02
		6	2437		13.50	12.94
		9	2452		13.50	12.76

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Max. Tune up	Average Power(dBm)
2.4G WIFI_ 1TX_ ANT AUX	802.11b	1	2412	1	13.50	13.25
		6	2437		13.50	13.22
		11	2462		13.50	12.71
	802.11g	1	2412	6	13.50	12.86
		6	2437		13.50	12.91
		11	2462		13.50	12.69
	802.11n HT20	1	2412	HT0	13.50	12.99
		6	2437		13.50	12.88
		11	2462		13.50	12.76
	802.11n HT40	3	2422	HT0	13.50	12.87
		6	2437		13.50	12.95
		9	2452		13.50	12.82

Note:

- 1) The Average conducted power of WiFi 2.4G is measured with RMS detector.
- 2) The tested channel results are marks in bold.

6.2 SAR TEST RESULTS

General Notes:

- 1) Per KDB447498 D04, all measurement SAR results are scaled to the maximum tune-up tolerance limit to demonstrate compliant.
- 2) Per KDB447498 D04, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is: ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz. When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel must be used.
- 3) Per KDB865664 D01, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg; if the deviation among the repeated measurement is $\leq 20\%$, and the measured SAR < 1.45 W/kg, only one repeated measurement is required.
- 4) Per KDB865664 D02, SAR plot is only required for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination; Plots are also required when the measured SAR is > 1.5 W/kg, or > 7.0 W/kg for occupational exposure. The published RF exposure KDB procedures may require additional plots; for example, to support SAR to peak location separation ratio test exclusion and/or volume scan post-processing.

WLAN Notes:

- 1) For exposure conditions with multiple test positions, such as handset operating next to the ear, devices with hotspot mode, procedures for initial test position can be applied. Using the transmission mode determined by the DSSS procedure or initial test configuration, area scans are measured for all positions in an exposure condition. The test position with the highest extrapolated (peak) SAR is used as the initial test position. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other (remaining) test positions. Otherwise, SAR is evaluated at the subsequent highest peak SAR position until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.
- 2) Justification for test configurations for WLAN per KDB Publication 248227 for 2.4GHz WIFI single transmission chain operations, the highest measured maximum output power Channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4GHz 802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 7.1.5 for more information.

6.2.1 SAR MEASUREMENT RESULT

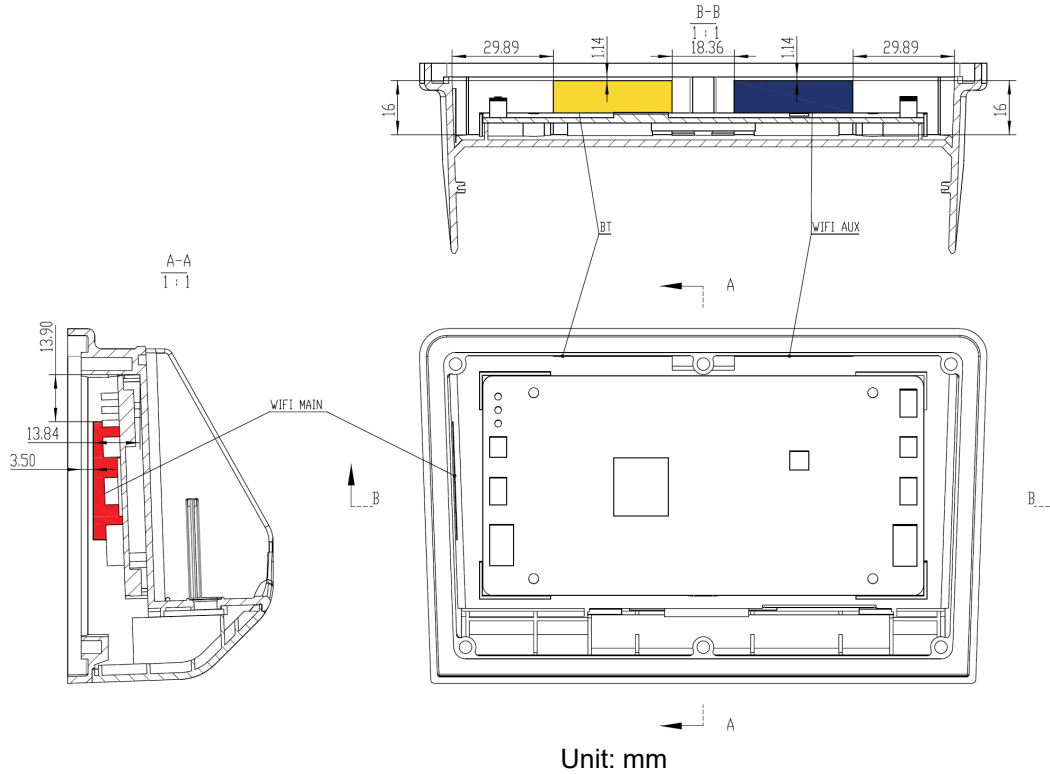
Test No.	Band	Mode	Channel	Test Position	Separation Distance (mm)	Ant	Data Rate	Duty Cycle (%)	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift (dB)	SAR 1g (W/kg)	SAR 10g (W/kg)	Reported 1g SAR (W/kg)
W01	WiFi 2.4G	802.11b	1	Front Side	0	MAIN	1M	96.28	13.50	13.38	0.05	0.055	0.031	0.059
W02	WiFi 2.4G	802.11b	1	Back Side	0	MAIN	1M	96.28	13.50	13.38	-0.05	0.052	0.023	0.056
W03	WiFi 2.4G	802.11b	1	Left Side	0	MAIN	1M	96.28	13.50	13.38	0.09	0.011	0.002	0.012
W04	WiFi 2.4G	802.11b	1	Right Side	0	MAIN	1M	96.28	13.50	13.38	-0.11	1.150	0.459	1.228
W05	WiFi 2.4G	802.11b	1	Top Side	0	MAIN	1M	96.28	13.50	13.38	0	0.011	0.004	0.012
W06	WiFi 2.4G	802.11b	1	Bottom Side	0	MAIN	1M	96.28	13.50	13.38	-0.09	0.008	0.002	0.008
W07	WiFi 2.4G	802.11b	6	Right Side	0	MAIN	1M	96.28	13.50	13.29	-0.07	0.831	0.337	0.906
W08	WiFi 2.4G	802.11b	11	Right Side	0	MAIN	1M	96.28	13.50	12.86	0.05	0.601	0.241	0.723
W10	WiFi 2.4G	802.11b	1	Front Side	0	AUX	1M	97.44	13.50	13.25	0.06	0.235	0.126	0.255
W11	WiFi 2.4G	802.11b	1	Back Side	0	AUX	1M	97.44	13.50	13.25	-0.08	0.157	0.088	0.171
W12	WiFi 2.4G	802.11b	1	Left Side	0	AUX	1M	97.44	13.50	13.25	0.03	0.497	0.267	0.540
W13	WiFi 2.4G	802.11b	1	Right Side	0	AUX	1M	97.44	13.50	13.25	-0.05	0.096	0.039	0.105
W14	WiFi 2.4G	802.11b	1	Top Side	0	AUX	1M	97.44	13.50	13.25	-0.16	0.907	0.378	0.986
W15	WiFi 2.4G	802.11b	1	Bottom Side	0	AUX	1M	97.44	13.50	13.25	0.01	0.027	0.010	0.029
W16	WiFi 2.4G	802.11b	6	Top Side	0	AUX	1M	97.44	13.50	13.22	-0.03	0.897	0.368	0.982
W17	WiFi 2.4G	802.11b	11	Top Side	0	AUX	1M	97.44	13.50	12.71	0.08	0.788	0.349	0.970
W19	Bluetooth	BLE_1M	19	Front Side	0	/	1M	34.23	6.00	5.48	-0.05	0.055	0.036	0.181
W20	Bluetooth	BLE_1M	19	Back Side	0	/	1M	34.23	6.00	5.48	0.01	0.047	0.027	0.153
W21	Bluetooth	BLE_1M	19	Left Side	0	/	1M	34.23	6.00	5.48	-0.01	0.039	0.022	0.130
W22	Bluetooth	BLE_1M	19	Right Side	0	/	1M	34.23	6.00	5.48	0.02	0.045	0.024	0.149
W23	Bluetooth	BLE_1M	19	Top Side	0	/	1M	34.23	6.00	5.48	0.05	0.121	0.046	0.398
W24	Bluetooth	BLE_1M	19	Bottom Side	0	/	1M	34.23	6.00	5.48	-0.03	0.006	0.001	0.018
W25	Bluetooth	BLE_1M	0	Top Side	0	/	1M	34.23	6.00	5.34	0.05	0.087	0.035	0.296
W26	Bluetooth	BLE_1M	39	Top Side	0	/	1M	34.23	6.00	5.16	-0.11	0.091	0.035	0.323

Note: The value with boldface is the maximum SAR Value of each test band.

7 MULTIPLE TRANSMITTER EVALUATION

The following tables list information which is relevant for the decision if a simultaneous transmit evaluation is necessary according to FCC KDB447498 D04 Interim General RF Exposure Guidance v01.

The location of the antenna inside the EUT is shown as below:



7.1 SIMULTANEOUS TRANSMISSION CONDITIONS

Per FCC KDB447498 D01, SAR compliance for simultaneous transmission must be considered when the maximum duration of overlapping transmissions, including network hand-offs, is greater than 30 seconds. This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis.

The Simultaneous Transmission Possibilities of this device are as below:

NO.	Simultaneous Tx Combination	Body-worn
1	WiFi 2.4G (MAIN Ant.) + BLE	Yes
2	WiFi 2.4G (AUX Ant.) + BLE	Yes

Note: WiFi 2.4G MAIN Ant. and WiFi 2.4G AUX Ant. can't transmit simultaneously.

7.2 SAR SUMMATION SCENARIO

Test Position		Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
SAR _{1g} (W/Kg)							
MAIN	WiFi 2.4G	0.059	0.056	0.012	1.228	0.012	0.008
AUX	WiFi 2.4G	0.255	0.171	0.540	0.105	0.986	0.029
Bluetooth		0.181	0.153	0.130	0.149	0.398	0.018
WiFi MAIN+BT		0.240	0.209	0.142	1.376	0.410	0.026
WiFi AUX+BT		0.437	0.324	0.670	0.253	1.384	0.047

Note:

- 1) MAX. $\sum \text{SAR}_{1g} = 1.384 \text{ W/Kg} < 1.6 \text{ W/Kg}$, so the SAR to peak location separation ratio should not be considered.
- 2) The maximum SAR summation is calculated based on the same configuration and test position.

APPENDIX

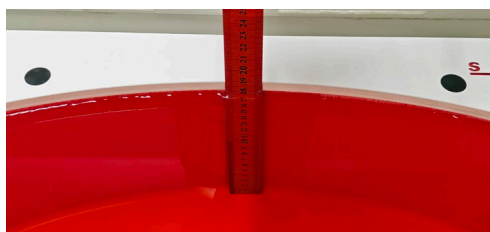
1. TEST LAYOUT

Specific Absorption Rate Test Layout



Liquid depth in the flat Phantom ($\geq 15\text{cm}$ depth)

Body_H2300-2700_17.8cm



Appendix A. SAR Plots of System Verification

(Pls See BTL-FCC SAR-1-2606C022_Appendix A.)

Appendix B. SAR Plots of SAR Measurement

(Pls See BTL-FCC SAR-1-2606C022_Appendix B.)

Appendix C. Calibration Certificate

(Pls See BTL-FCC SAR-1-2606C022_Appendix C.)

Appendix D. Photographs of the Test Set-Up

(Pls See BTL-FCC SAR-1-2606C022_Appendix D.)

End of Test Report