# TEST REPORT

| | | |
|---|---|---|
| **APPLICANT** | : | MeiZhou WorldLove Technology Co., Ltd |
| **PRODUCT NAME** | : | TX16S MK3 |
| **MODEL NAME** | : | TX16S MK3 |
| **TRADE NAME** | : | N/A |
| **FCC ID** | : | 2BUHG-TX16SMK3 |
| **STANDARD(S)** | : | FCC 47 CFR Part 2 (2.1093)<br>IEEE 1528-2013 |
| **RECEIPT DATE** | : | 2026-01-15 |
| **TEST DATE** | : | 2026-01-19 |
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Edited by: Pang Siyu

Pang Siyu(Rapporteur)

Approved by: Gan Yueming

Gan Yueming(Supervisor)

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| Changed History | | |
|---|---|---|
| Version | Date | Reason for Change |
| 1.0 | 2026-01-20 | First edition |
| | | |

# 1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during test as bellows:

| Frequency Band | | Highest SAR Summary |
|---|---|---|
| | | Body (Separation 0 mm) |
| | | 1g(W/kg) |
| 900M Band | - | 0.852 |
| 2.4GHz Bands | SRD 2.4GHz | 0.986 |
| | WLAN 2.4GHz | 0.583 |
| | Bluetooth (Estimated) | 0.037 |

**Note:**

1. This device is in compliance with Specific Absorption Rate (SAR) for general population or uncontrolled exposure limits (1.6 W/kg as averaged over any 1 gram of tissue; specified in FCC 47 CFR part 1 (1.1310) and ANSI/IEEE C95.1-1992), and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.
2. The declarations of EUT presented in the report are provided by applicant and/or manufacturer, and the test laboratory is not responsible for the accuracy of the information.

# 2. Technical Information

**Note:** Provide by Applicant.

## 2.1. Applicant and Manufacturer Information

| | |
|---|---|
| **Applicant:** | MeiZhou WorldLove Technology Co., Ltd |
| **Applicant Address:** | No. 3, Building D, Luole Road, Guangdong Meizhou Economic Development Zone, Meijiang District, Meizhou Guangdong 51400 China |
| **Manufacturer:** | MeiZhou WorldLove Technology Co., Ltd |
| **Manufacturer Address:** | No. 3, Building D, Luole Road, Guangdong Meizhou Economic Development Zone, Meijiang District, Meizhou Guangdong 51400 China |

## 2.2. Equipment under Test (EUT) Description

| | |
|---|---|
| **Product Name:** | TX16S MK3 |
| **EUT No.:** | 1# |
| **Hardware Version:** | N/A |
| **Software Version:** | N/A |
| **Operation Frequency**: | 900M Band: 903.5 MHz ~ 926.9 MHz<br>WLAN 2.4GHz: 2412 MHz ~ 2462 MHz<br>SRD 2.4GHz: 2402.4 MHz ~ 2479.4 MHz<br>Bluetooth: 2402 MHz ~ 2480 MHz |
| **Modulation Technology:** | 900M Band: CSS<br>802.11b: DSSS<br>802.11g: OFDM<br>802.11n-HT20/40 : OFDM<br>SRD 2.4GHz: CSS<br>Bluetooth: GFSK, $\pi$/4-DQPSK, 8-DPSK |

**Note:** For a more detailed description, please refer to specification or user's manual supplied by the applicant and/or manufacturer.

## 2.3. Environment of Test Site

| | |
|---|---|
| **Temperature:** | 18°C ~ 25°C |
| **Humidity:** | 35% ~ 75% RH |

During SAR test, EUT is in Traffic Mode (Channel Allocated) at Normal Voltage Condition. A communication link is set up with a System Simulator (SS) by air link, and a call is established.

The EUT shall use its internal transmitter. The antenna(s), battery and accessories shall be those specified by the Factory. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. If a wireless link is used, the antenna connected to the output of the base station simulator shall be placed at least 50 cm away from the handset.
The signal transmitted by the simulator to the antenna feeding point shall be lower than the output power level of the handset by at least 35 dB.

# 3. Specific Absorption Rate (SAR)

## 3.1. Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational or controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational or controlled exposure limits are higher than the limits for general population or uncontrolled.

## 3.2. SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$SAR = \frac{d}{dt}\left(\frac{dU}{dm}\right) = \frac{d}{dt}\left(\frac{dU}{\rho dv}\right)$$

SAR is expressed in units of Watts per kilogram (W/kg)

SAR measurement can be either related to the temperature elevation in tissue by

$$SAR = C\left(\frac{\delta T}{\delta t}\right)$$

Where: C is the specific heat capacity, $\delta T$ is the temperature rise and $\delta t$ is the exposure duration, or related to the electrical field in the tissue by

$$SAR = \frac{\sigma \cdot E^2}{\rho}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength. However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

# 4. RF Exposure Limits

## 4.1. Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population or uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

**SAR Human Exposure Specified in ANSI/IEEE C95.1-1992 and Health Canada Safety Code 6**

| HUMAN EXPOSURE LIMITS | | |
|---|---|---|
| | UNCONTROLLED ENVIRONMENT *General Population* (W/kg) or (mW/g) | CONTROLLED ENVIRONMENT *Occupational* (W/kg) or (mW/g) |
| SPATIAL PEAK SAR Brain | 1.6 | 8.0 |
| SPATIAL AVERAGE SAR Whole Body | 0.08 | 0.4 |
| SPATIAL PEAK SAR Hands, Feet, Ankles, Wrists | 4.0 | 20 |

**Note:**

1. The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
2. The Spatial Average value of the SAR averaged over the whole body.
3. The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of acube) and over the appropriate averaging time.

## 4.2. Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population or uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

# 5. Applied Reference Documents

Leading reference documents for testing:

| Identity | Document Title | Remark |
|---|---|---|
| FCC 47 CFR Part 2 (2.1093) | Radio Frequency Radiation Exposure Evaluation: Portable Devices | / |
| IEEE 1528-2013 | IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques | / |
| KDB 447498 D01v06 | General RF Exposure Guidance | / |
| KDB 248227 D01v02r02 | SAR Measurement Procedures for 802.11 Transmitters | / |
| KDB 865664 D01v01r04 | SAR Measurement 100 MHz to 6 GHz | / |
| KDB 865664 D02v01r02 | RF Exposure Reporting | / |
| KDB 941225 D06v02r01 | SAR Evaluation Procedures For Portable Devices With Wireless Router Capabilities | / |
| **Note:** Any additions, deviation, or exclusions from the method shall be noted in the “Remark”. | | |

# 6. SAR Measurement System

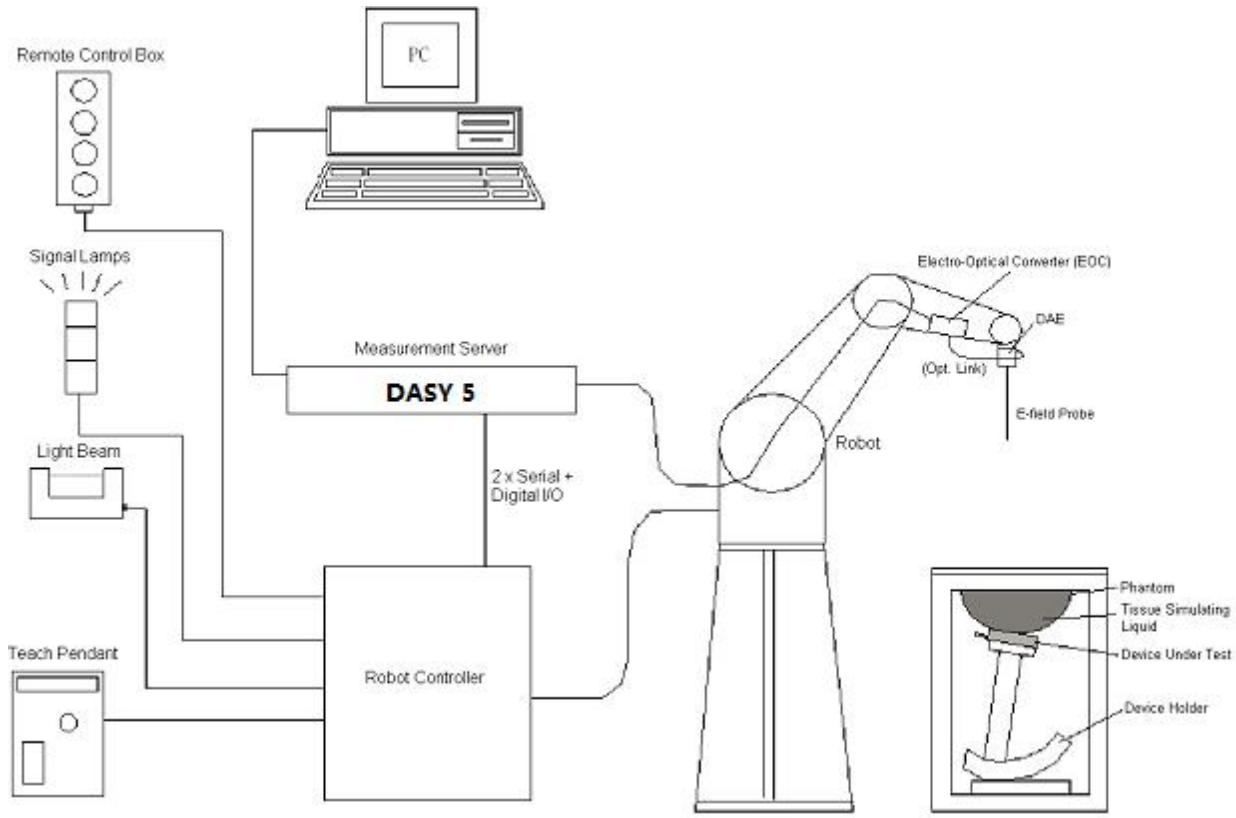


**Fig.6.1 SPEAG DASY System Configurations**

The DASY system for performance compliance tests is illustrated above graphically. This system consists of the following items:

- A standard high precision 6-axis robot with controller, a teach pendant and software.
- A data acquisition electronic (DAE) attached to the robot arm extension.
- A dosimetric probe equipped with an optical surface detector system.
- The electro-optical converter (EOC) performs the conversion between optical and electrical signals.
- A measurement server performs the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the accuracy of the probe positioning.
- A computer operating Windows XP.
- DASY software.
- Remove control with teach pendant and additional circuitry for robot safety such as warming lamps, etc.
- The SAM twin phantom.
- A device holder.
- Tissue simulating liquid.
- Dipole for evaluating the proper functioning of the system.

Component details are described in the following sub-sections.

## 6.1. E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG). The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

➢ **E-Field Probe Specification**

**<EX3DV3 Probe>**

| | |
|---|---|
| **Construction** | Symmetrical design with triangular core<br>Built-in optical fiber for surface detection system.<br>Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |
| **Frequency** | 10 MHz to 3 GHz; Linearity: ± 0.2 dB |
| **Directivity** | ± 0.2 dB in HSL (rotation around probe axis)<br>± 0.4 dB in HSL (rotation normal to probe axis) |
| **Dynamic Range** | 5 μW/g to 100 mW/g; Linearity: ± 0.2 dB |
| **Dimensions** | Overall length: 330 mm (Tip: 16 mm)<br>Tip diameter: 6.8 mm (Body: 12 mm)<br>Distance from probe tip to dipole centers: 2.7 mm |

**Fig 6.2 Photo of ES3DV3**

**<EX3DV4 Probe>**

| | |
|---|---|
| Construction | Symmetrical design with triangular core<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |
| Frequency | 10 MHz to 6 GHz; Linearity: ± 0.2 dB |
| Directivity | ± 0.3 dB in HSL (rotation around probe axis)<br>± 0.5 dB in tissue material (rotation normal to probe axis) |
| Dynamic Range | 10 μW/g to 100 mW/g; Linearity: ± 0.2 dB |
| Dimensions | Overall length: 330 mm (Tip: 20 mm)<br>Tip diameter: 2.5 mm (Body: 12 mm)<br>Typical distance from probe tip to dipole centers: 1 mm |

Fig 6.3 Photo of EX3DV4

➢ **E-Field Probe Calibration**

Each probe needs to be calibrated according to a dosimetric assessment procedure with accuracy better than ±10%. The spherical isotropy shall be evaluated and within ±0.25 dB. The sensitivity parameters (Norm X, Norm Y and Norm Z), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested. The calibration data can be referred to Annex E of this report.

## 6.2. Data Acquisition Electronics (DAE)

The Data acquisition electronics (DAE) consists 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 and 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 input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

**Fig. 6.4 Photo of DAE**

## 6.3. Robot

The SPEAG DASY system uses the high precision robots (DASY5: TX60XL) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY5: CS8c) from Stäubliis used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability 0.02 mm)
- High reliability (industrial design)
- Low maintenance costs (virtually maintenance free due to direct drive gears; no belt drives)
- Jerk-free straight movements
- Low ELF interference (motor control fields shielded via the closed metallic construction shields)

**Fig. 6.5 Photo of Robot**

## 6.4. Measurement Server

The measurement server is based on a PC/104 CPU board with CPU (DASY5: 400MHz, Intel Celeron), chip-disk (DASY5: 128 MB), RAM (DASY5: 128 MB). The necessary circuits for communication with the DAE electronic box, as well as the 16 bits AD converter system for optical detection and digital I/O interface are contained on the DASY I/O board, which is directly connected to the PC/104 bus of the CPU board.

The measurement server performs all the real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operations.

**Fig. 6.6 Photo of Server for DASY5**

## 6.5. Light Beam Unit

The light beam switch allows automatic "tooling" of the probe. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip.

The repeatability of this process is better than0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.

**Fig. 6.7 Photo of Light Beam**

## 6.6. Phantom

**<SAM Twin Phantom>**

| | | |
|---|---|---|
| **Shell Thickness** | 2 ± 0.2 mm (sagging: <1%)<br>Center ear point: 6 ± 0.2 mm | |
| **Filling Volume Dimensions** | Approx. 25 liters<br>Length: 1000 mm; Width: 500 mm;<br>Height: adjustable feet | |
| **Measurement Areas** | Left Head, Right Head, Flat phantom | |

**Fig. 6.8 Photo of SAM Phantom**

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

## 6.7. Device Holder

**<Device Holder for SAM Twin Phantom>**

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of ±0.5 mm would produce a SAR uncertainty of ± 20 %. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with

respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (ERP).
Thus the device needs no repositioning when changing the angles.
The DASY device holder is constructed of low-low POM material having the following dielectric parameters: relative permittivity ε = 3 and loss tangent δ = 0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

**<Laptop Extension Kit>**
The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.

**Fig 6.9Device Holder**

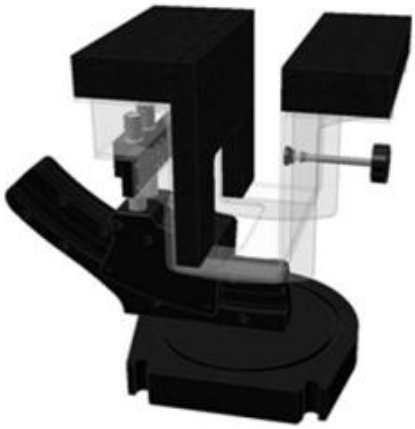

**Fig 6.10 Laptop Extension Kit**

## 6.8. Data Storage and Evaluation

- **Data Storage**

The DASY software stores the assessed data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all the necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files. The post-processing software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verifications of the complete software setup even after the measurement and allows correction of erroneous parameter settings. For example, if a measurement has been performed with an incorrect crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be reevaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type (e.g., [V/m], [mW/g]). Some of these units are not available in certain situations or give meaningless results, e.g., a SAR-output in a non-lose media, will always be zero. Raw data

can also be exported to perform the evaluation with other software packages.

➢ **Data Evaluation**

The DASY post-processing software (SEMCAD) automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

| | | |
|---|---|---|
| **Probe Parameters:** | - Sensitivity | $Norm_i$, $a_{i0}$, $a_{i1}$, $a_{i2}$ |
| | - Conversion | $ConvF_i$ |
| | - Diode compression point | $dcp_i$ |
| **Device Parameters:** | - Frequency | f |
| | - Crest | cf |
| **Media Parameters:** | - Conductivity | σ |
| | - Density | ρ |

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multi-meter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power.

The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}$$

WithVi = compensated signal of channel i, (i = x, y, z)

Ui= input signal of channel i, (i = x, y, z)

cf = crest factor of exciting field (DASY parameter)

dcpi= diode compression point (DASY parameter)

From the compensated input signals, the primary field data for each channel can be evaluated:

E- Field Probes: $E_i = \sqrt{\frac{v_i}{Norm_i \cdot ConvF}}$

H-Field Probes: $H_i = \sqrt{V_i} \cdot \frac{a_{i0} + a_{i1} f + a_{i2} f^2}{f}$

WithVi = compensated signal of channel i, (i = x, y, z)

Normi= senor sensitivity of channel i, (i = x, y, z), μV/ (V/m) 2

ConvF = sensitivity enhancement in solution

aij = sensor sensitivity factors for H-field probes

f = carrier frequency (GHz)

Ei = electric field strength of channel i in V/m

Hi = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot}=\sqrt{E_x^2+E_y^2+E_z^2}$$

The primary field data are used to calculate the derived field units.

$$SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1000}$$

With SAR = local specific absorption rate in mW/g

Etot= total field strength in V/m

σ = conductivity in (mho/m) or (Siemens/m)

ρ= equipment tissue density in g/cm3

Note that the density is set to 1, to account for actual head tissue density rather than the density of the tissue simulating liquid.

## 6.9. Test Equipment List

| Manufacturer | Name of Equipment | Type/Model | Serial No./ SW Version | Calibration | |
|---|---|---|---|---|---|
| | | | | Last Cal. | Due Date |
| SPEAG | 900MHz System Validation Kit | D900V2 | 1d064 | 2024.10.21 | 2027.10.20 |
| SPEAG | 2450MHz System Validation Kit | D2450V2 | 805 | 2024.10.22 | 2027.10.21 |
| SPEAG | DOSIMETRIC ASSESSMENT SYSTEM Software | DASY5 | 52.10.4.1527 | NCR | NCR |
| SPEAG | Dosimetric E-Field Probe | EX3DV4 | 7628 | 2025.07.06 | 2026.07.05 |
| SPEAG | Data Acquisition Electronics | DAE4 | 913 | 2025.06.26 | 2026.06.25 |
| SPEAG | Dielectric Assessment KIT | DAK-3.5 | 1279 | 2025.03.18 | 2026.03.17 |
| SPEAG | ELI V5.0 | QD OVA 004 Ax | N/A | NCR | NCR |
| SPEAG | Phone Positioner | N/A | N/A | NCR | NCR |
| Agilent | Network Analyzer | E5071B | MY42404762 | 2025.12.26 | 2026.12.25 |
| mini-circuits | Amplifier | ZHL-42W+ | 608501717 | NCR | NCR |
| Agilent | Signal Generator | N5182B | MY53050509 | 2025.09.02 | 2026.09.01 |
| R&S | Power Senor | NRP8S | 103215 | 2025.12.26 | 2026.12.25 |
| Agilent | Power Meter | E4416A | MY45102093 | 2025.09.02 | 2026.09.01 |
| R&S | Power Sensor | NRP8S | 103240 | 2025.12.26 | 2026.12.25 |
| Anritsu | Power Meter | E4418B | GB43318055 | 2025.05.15 | 2026.05.14 |
| Agilent | Dual Directional Coupler | 778D | 50422 | NA | NA |
| MCL | Attenuation | 351-218-010 | N/A | NA | NA |
| R&S | Spectrum Analyzer | N9030A | MY54170556 | 2025.09.02 | 2026.09.01 |
| KTJ | Thermo meter | TA298 | N/A | 2025.11.20 | 2026.11.19 |
| SPEAG | Tissue Simulating Liquids | HBBL600-10000V6 | | 24H | |

**Note:**

1. The calibration certificate of DASY can be referred to annex C of this report.
2. Referring to KDB 865664 D01v01r04, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The Insertion Loss calibration of Dual Directional Coupler and Attenuator were characterized via the network analyzer and compensated during system check.
4. The dielectric probe kit was calibrated via the network analyzer, with the specified procedure (calibrated in pure water) and calibration kit (standard) short circuit, before the dielectric measurement. The specific procedure and calibration kit is provided by SPEAG.
5. In system check we need to monitor the level on the power meter, and adjust the power amplifier level to have precise power level to the dipole; the measured SAR will be normalized to 1 W input power according to the ratio of 1 W to the input power to the dipole. For system check, the calibration of the power amplifier is deemed not critically required for correct

measurement; the power meter is critical and we do have calibration for it.

6. Attenuator insertion loss is calibrated by the network Analyzer, which the calibration is valid, before system check.
7. N.C.R means No Calibration Requirement.

# 7. Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 7.1, for body SAR testing, the liquid height from the centre of the flat phantom to liquid top surface is larger than 15 cm, which is shown in Fig. 7.2.

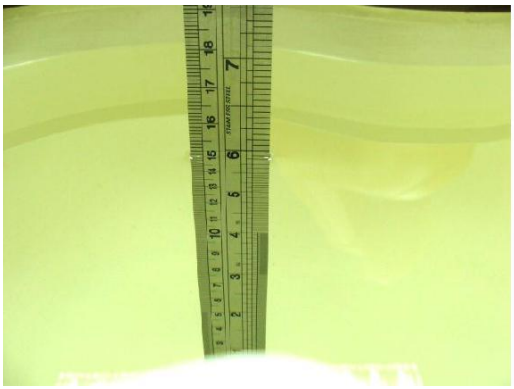

**Fig 7.1 Photo of Liquid Height for Head SAR**

**Fig 7.2 Photo of Liquid Height for Body SAR**

The following table gives the recipes for tissue simulating liquids

| Frequency (MHz) | Water (%) | Sugar (%) | Cellulose (%) | Salt (%) | Preventol (%) | DGBE (%) | Conductivity (σ) | Permittivity (εr) |
|---|---|---|---|---|---|---|---|---|
| Head | | | | | | | | |
| 750 | 41.1 | 57.0 | 0.2 | 1.4 | 0.2 | 0 | 0.89 | 41.9 |
| 835 | 40.3 | 57.9 | 0.2 | 1.4 | 0.2 | 0 | 0.90 | 41.5 |
| 1800,1900,2000 | 55.2 | 0 | 0 | 0.3 | 0 | 44.5 | 1.40 | 40.0 |
| 2450 | 55.0 | 0 | 0 | 0 | 0 | 45.0 | 1.80 | 39.2 |
| 2600 | 54.8 | 0 | 0 | 0.1 | 0 | 45.1 | 1.96 | 39.0 |

Simulating Liquid for 5GHz, Manufactured by SPEAG

| Ingredients | (% by weight) |
|---|---|
| Water | 64~78% |
| Mineral oil | 11~18% |
| Emulsifiers | 9~15% |
| Additives and Salt | 2~3% |

The relative permittivity and conductivity of the tissue material should be within±5% of the values given in the table below recommended by the FCC OET 65supplement C and RSS 102 Issue 5.

| Target Frequency | Head | | Body | |
|---|---|---|---|---|
| (MHz) | εr | σ(S/m) | εr | σ(S/m) |
| 150 | 52.3 | 0.76 | 61.9 | 0.80 |
| 300 | 45.3 | 0.87 | 58.2 | 0.92 |
| 450 | 43.5 | 0.87 | 56.7 | 0.94 |
| 835 | 41.5 | 0.90 | 55.2 | 0.97 |
| 900 | 41.5 | 0.97 | 55.0 | 1.05 |
| 915 | 41.5 | 0.98 | 55.0 | 1.06 |
| 1450 | 40.5 | 1.20 | 54.0 | 1.30 |
| 1610 | 40.3 | 1.29 | 53.8 | 1.40 |
| 1800-2000 | 40.0 | 1.40 | 53.3 | 1.52 |
| 2450 | 39.2 | 1.80 | 52.7 | 1.95 |
| 3000 | 38.5 | 2.40 | 52.0 | 2.73 |
| 5800 | 35.3 | 5.27 | 48.2 | 6.00 |

( εr = relative permittivity, σ = conductivity and ρ = 1000 kg/m$^3$)

The dielectric parameters of liquids were verified prior to the SAR evaluation using a SPEAG. Dielectric Probe Kit and an Agilent Network Analyzer.

The following table shows the measuring results for simulating liquid

| **Frequency (MHz)** | **Tissue Type** | **Liquid Temp. (℃)** | **Conductivity (σ)** | **Conductivity Target (σ)** | **Delta (σ)(%)** | **Limit (%)** | **Date** |
|---|---|---|---|---|---|---|---|
| 900 | HSL | 22.1 | 0.951 | 0.97 | -1.96 | ±5 | 2026/1/19 |
| 2450 | HSL | 22.1 | 1.871 | 1.80 | 3.94 | ±5 | 2026/1/19 |

| **Frequency (MHz)** | **Tissue Type** | **Liquid Temp. (℃)** | **Permittivity (εr)** | **Permittivity Target (εr)** | **Delta (εr) (%)** | **Limit (%)** | **Date** |
|---|---|---|---|---|---|---|---|
| 900 | HSL | 22.1 | 42.612 | 41.5 | 2.68 | ±5 | 2026/1/19 |
| 2450 | HSL | 22.1 | 39.825 | 39.20 | 1.59 | ±5 | 2026/1/19 |

# 8. SAR System Verification

Each DASY system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system performance check and system validation. System validation kit includes a dipole, tripod holder to fix it underneath the flat phantom and a corresponding distance holder.

- **Purpose of System Performance Check**

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

- **System Setup**

In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The equipment setup is shown below:

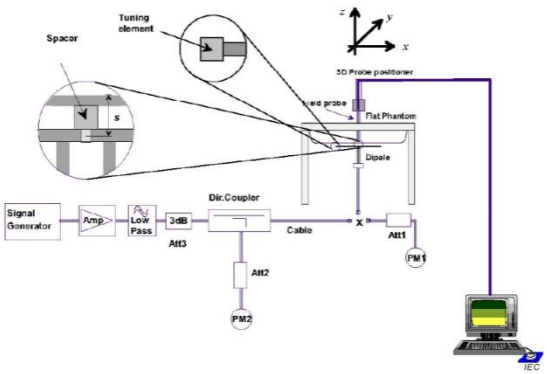


**Fig.8.1 System Verification Setup Diagram**

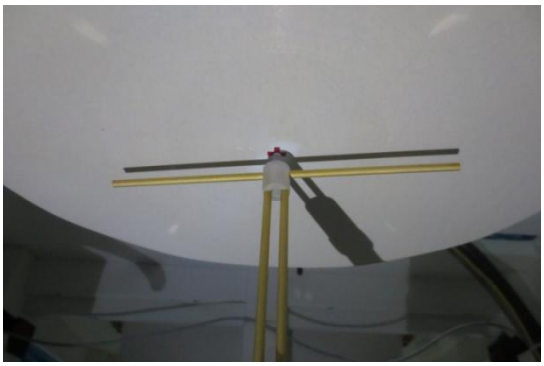

**Fig.8.2 Photo of Dipole setup**

➢ **System Verification Results**

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10%. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table as below indicates the system performance check can meet the variation criterion and the plots can be referred to annex C of this report.

| Frequency (MHz) | Input Power (mW) | Dipole S/N | Probe S/N | DAE S/N |
|---|---|---|---|---|
| 900 | 250 | D900V2-1d064 | 7628 | 913 |
| 2450 | 100 | D2450V2-805 | 7628 | 913 |

**<1g SAR>**

| Date | Frequency (MHz) | Tissue Type | Measured 1g SAR (W/kg) | Targeted 1g SAR (W/kg) | Normalized 1g SAR (W/kg) | Deviation (%) |
|---|---|---|---|---|---|---|
| 2026/1/19 | 900 | HSL | 2.81 | 10.90 | 11.24 | 3.12 |
| 2026/1/19 | 2450 | HSL | 5.27 | 52.80 | 52.7 | -0.19 |

**<10g SAR>**

| Date | Frequency (MHz) | Tissue Type | Measured 10g SAR (W/kg) | Targeted 10g SAR (W/kg) | Normalized 10g SAR (W/kg) | Deviation (%) |
|---|---|---|---|---|---|---|
| 2026/1/19 | 900 | HSL | 1.86 | 7.00 | 7.44 | 6.29 |
| 2026/1/19 | 2450 | HSL | 2.58 | 24.50 | 25.8 | 5.31 |

**Note:** System checks the specific test data please see annex C

# 9. EUT Testing Position

This EUT was tested in four different positions. They are front/ left/right/ bottom of the EUT with phantom 0 mm gap, as illustrated below, please refer to annex B for the test setup photos.

## 9.1. Body-worn Configurations

The body-worn configurations shall be tested with the supplied accessories (belt-clips, holsters, etc.) attached to the device in normal use configuration.

For body-worn and other configurations a flat phantom shall be used which is comprised of material with electrical properties similar to the corresponding tissues.

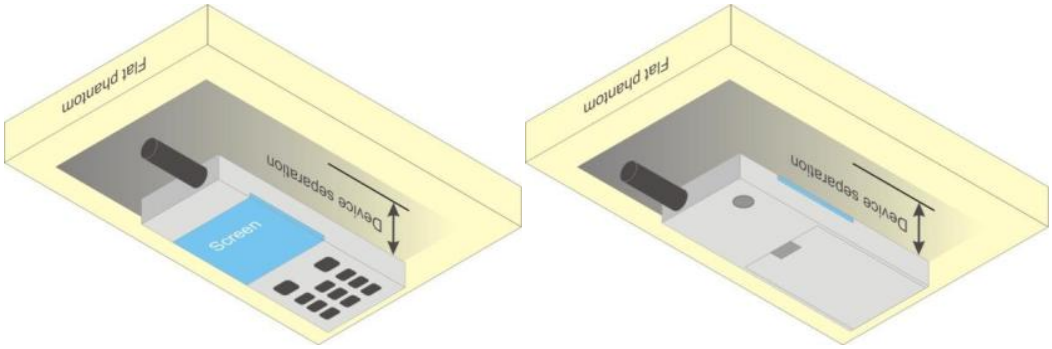


**Fig 9.1 Illustration for Body Worn Position**

## 9.2. Hotspot Mode Exposure Position Conditions

For handsets that support hotspot mode operations, with wireless router capabilities and various web browsing functions, the relevant hand and body exposure conditions are tested according to the hotspot SAR procedures in KDB 941225. A test separation distance of 10 mm is required between the phantom and all surfaces and edges with a transmitting antenna located within 25 mm from that surface or edge. When the form factor of a handset is smaller than 9 cm x 5 cm, a test separation distance of 5 mm (instead of 10 mm) is required for testing hotspot mode. When the separation distance required for body-worn accessory testing is larger than or equal to that tested for hotspot mode, in the same wireless mode and for the same surface of the phone, the hotspot mode SAR data may be used to support body-worn accessory SAR compliance for that particular configuration (surface).

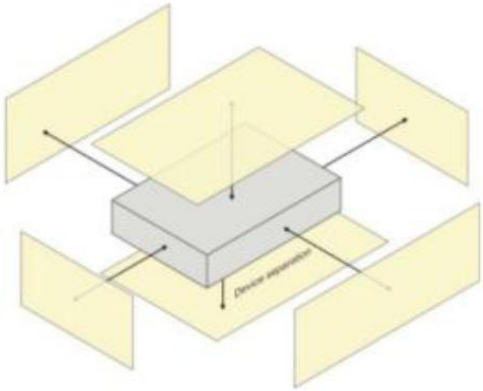


**Fig 9.2 Illustration for Hotspot Position**

# 10.Measurement Procedures

The measurement procedures are as bellows:

**<Conducted power measurement>**

- For WWAN power measurement, use base station simulator to configure EUT WWAN transition in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
- Read the WWAN RF power level from the base station simulator.
- For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band.
- Connect EUT RF port through RF cable to the power meter or spectrum analyzer, and measure WLAN/BT output power.

**<Conducted power measurement>**

- Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
- Place the EUT in positions as Annex B demonstrates.
- Set scan area, grid size and other setting on the DASY software.
- Measure SAR results for the highest power channel on each testing position.
- Find out the largest SAR result on these testing positions of each band.
- Measure SAR results for other channels in worst SAR testing position if the Reported SAR or highest power channel is larger than 0.8 W/kg.

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- Power reference measurement
- Area scan
- Zoom scan
- Power drift measurement

## 10.1. Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a “cube” measurement. The measured volume must include the 1g and 10 g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- Extraction of the measured data (grid and values) from the Zoom Scan.
- Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters).
- Generation of a high-resolution mesh within the measured volume.
- Interpolation of all measured values form the measurement grid to the high-resolution grid
- Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- Calculation of the averaged SAR within masses of 1 g and 10 g.

## 10.2. Power Reference Measurement

The Power Reference Measurement and Power Drift Measurement 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. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

## 10.3. Area & Zoom Scan Procedures

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g. Area scan and zoom scan resolution setting follows KDB 865664 D01v01r04 quoted below.

| | | | ≤ 3 GHz | > 3 GHz |
|---|---|---|---|---|
| Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface | | | 5 ± 1 mm | ½·δ·ln(2) ± 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: $\Delta x_{Area}$, $\Delta y_{Area}$ | | | ≤ 2 GHz: ≤ 15 mm<br>2 – 3 GHz: ≤ 12 mm | 3 – 4 GHz: ≤ 12 mm<br>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. | |
| Maximum zoom scan spatial resolution: $\Delta x_{Zoom}$, $\Delta y_{Zoom}$ | | | ≤ 2 GHz: ≤ 8 mm<br>2 – 3 GHz: ≤ 5 mm* | 3 – 4 GHz: ≤ 5 mm*<br>4 – 6 GHz: ≤ 4 mm* |
| Maximum zoom scan spatial resolution, normal to phantom surface | uniform grid: $\Delta z_{Zoom}(n)$ | | ≤ 5 mm | 3 – 4 GHz: ≤ 4 mm<br>4 – 5 GHz: ≤ 3 mm<br>5 – 6 GHz: ≤ 2 mm |
| | graded grid | $\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface | ≤ 4 mm | 3 – 4 GHz: ≤ 3 mm<br>4 – 5 GHz: ≤ 2.5 mm<br>5 – 6 GHz: ≤ 2 mm |
| | | $\Delta z_{Zoom}(n>1)$: between subsequent points | $\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$ | |
| Minimum zoom scan volume | x, y, z | | ≥ 30 mm | 3 – 4 GHz: ≥ 28 mm<br>4 – 5 GHz: ≥ 25 mm<br>5 – 6 GHz: ≥ 22 mm |

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 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.

## 10.4. Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD post-processor scan combine and subsequently superpose these measurement data to calculating the multiband SAR.

## 10.5. SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Shepard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1g and 10g cubes, the extrapolation distance should not be larger than 5 mm.

## 10.6. Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.

# 11.SAR Test Configuration

**<WLAN 2.4GHz>**

1. SAR is measured for 2.4 GHz 802.11b DSSS using either the fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:
   a. 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.
   b. When the reported SAR is > 0.8 W/kg, SAR is required for that position 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. 2.4 GHz 802.11 g/n OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power, is > 1.2 W/kg. When SAR is required for OFDM modes in 2.4 GHz band, the Initial Test configuration Procedures should be followed.
3. For held-to-ear and hotspot operations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining test positions was required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.
4. Justification for test configurations for WLAN per KDB Publication 248227 D02DR02-41929 for 2.4 GHz WI-FI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSSSAR.
5. A fixed level power reduction is applied for WiFi when handset operates "held to the body" condition or "held to the ear" condition, the power reduction triggered by audio receiver detection and call establish status.
6. Per KDB 248227 D01v02r02, In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements.SAR is not required for the following 2.4 GHz OFDM conditions:
   a. When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.
   b. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

# 12.Conducted Output Power

**Remark:** This report only recorded in the maximum output power of this device.

**<900M Band>**

| Test Mode | Antenna | Channel | Frequency [MHz] | Peak Power [dBm] | Tune-up Limit [dBm] | Duty Cycle [%] |
|---|---|---|---|---|---|---|
| - | Ant1 | - | 903.445 | 19.689 | 20.0 | N/A |
| - | Ant1 | - | 914.825 | 19.383 | 20.0 | N/A |
| - | Ant1 | - | 926.825 | 19.08 | 20.0 | N/A |

**<SRD 2.4GHz>**

| Test Mode | Antenna | Channel | Frequency [MHz] | Peak Power [dBm] | Tune-up Limit [dBm] | Duty Cycle [%] |
|---|---|---|---|---|---|---|
| SRD 2.4GHz | Ant1 | N/A | 2402.4 | 13.06 | 13.5 | N/A |
| SRD 2.4GHz | Ant1 | N/A | 2441.4 | 12.7 | 13.5 | N/A |
| SRD 2.4GHz | Ant1 | N/A | 2479.4 | 11.94 | 12.5 | N/A |

**<900M Band>**

| Test Mode | Antenna | Channel | Frequency [MHz] | Peak Power [dBm] | Tune-up Limit [dBm] | Duty Cycle [%] |
|---|---|---|---|---|---|---|
| - | Ant2 | - | 903.445 | 20.426 | 21.0 | N/A |
| - | Ant2 | - | 914.825 | 20.246 | 21.0 | N/A |
| - | Ant2 | - | 926.825 | 19.868 | 20.5 | N/A |

**<SRD 2.4GHz>**

| Test Mode | Antenna | Channel | Frequency [MHz] | Peak Power [dBm] | Tune-up Limit [dBm] | Duty Cycle [%] |
|---|---|---|---|---|---|---|
| SRD 2.4GHz | Ant2 | N/A | 2402.4 | 12.66 | 13.0 | N/A |
| SRD 2.4GHz | Ant2 | N/A | 2441.4 | 12.63 | 13.0 | N/A |
| SRD 2.4GHz | Ant2 | N/A | 2479.4 | 11.91 | 12.5 | N/A |

**<WLAN 2.4GHz>**

| Test Mode | Antenna | Channel | Frequency [MHz] | Average Power [dBm] | Tune-up Limit [dBm] | Duty Cycle [%] |
|---|---|---|---|---|---|---|
| 11B | Ant1 | 1 | 2412 | 14.22 | 15.0 | N/A |
| 11B | Ant1 | 6 | 2437 | 14.02 | 15.0 | N/A |
| 11B | Ant1 | 11 | 2462 | 14.14 | 15.0 | N/A |

**<Bluetooth>**

| Test Mode | Antenna | Channel | Frequency [MHz] | Peak Power [dBm] | Tune-up Limit [dBm] | Duty Cycle [%] |
|---|---|---|---|---|---|---|
| 3DH5 | Ant1 | 9 | 2402 | 1.46 | 2.0 | N/A |
| 3DH5 | Ant1 | 39 | 2441 | 1.72 | 2.5 | N/A |
| 3DH5 | Ant1 | 78 | 2480 | 1.99 | 2.5 | N/A |

# 13.RF Exposure Assessment

➢ **Standalone Transmission SAR Assessment:**

1. According to KDB 447498 section 4.3.1, the 1-g SAR test exclusion thresholds 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.
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison

2. When the device is used, the most conservative minimum test separation distance of 5 mm was used for evaluating.

| Channel | Frequency (GHz) | Max. Tune-up (dBm) | Maximum Power (mW) | Test Distance (mm) | Result | Exclusion Thresholds for 1-g SAR |
|---|---|---|---|---|---|---|
| CH 78 | 2.48 | 2.5 | 1.8 | 5 | 0.56 | 3.0 |

**Note:** SAR measurement is not required for Bluetooth.

**<Estimated SAR Evaluation>**

| Channel | Frequency (GHz) | Test Distance (mm) | Maximum Power (mW) | Estimated SAR (W/kg) |
|---|---|---|---|---|
| CH 78 | 2.48 | 5 | 1.8 | 0.075 |

# 14.Body Mode Evaluation Procedure

## ➢ EUT Antenna Location

The location of antenna was recorded in annex B

## ➢ EUT Antenna Distance

| Antenna | Antenna distance to surface or edges (mm) | | | | | |
|---|---|---|---|---|---|---|
| | Front | Back | Left | Right | Top | Bottom |
| 900M/SRD 2.4G ANT1 | <25 | <25 | <25 | <25 | <5 | >25 |
| 900M/SRD 2.4G ANT2 | <25 | <25 | >25 | >25 | >25 | >25 |
| WLAN/BT ANT | <25 | <25 | >25 | >25 | >25 | >25 |

## ➢ Body Evaluation

| Body Side for SAR Test Distance: 0 mm | | | | | | |
|---|---|---|---|---|---|---|
| Antenna | Front | Back | Left | Right | Top | Bottom |
| 900M/SRD 2.4G ANT1 | Yes | Yes | Yes | Yes | Yes | No |
| 900M/SRD 2.4G ANT2 | Yes | Yes | No | No | No | No |
| WLAN/BT ANT | Yes | Yes | No | No | No | No |

**Note :**

1. Body mode SAR assessments are required.
2. Referring to KDB 941225 D06, when the overall device length and width are ≥ 9 cm * 5 cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25 mm from that surface or edge.

# 15. Block Diagram of the Tests to be Performed

## 15.1. Body

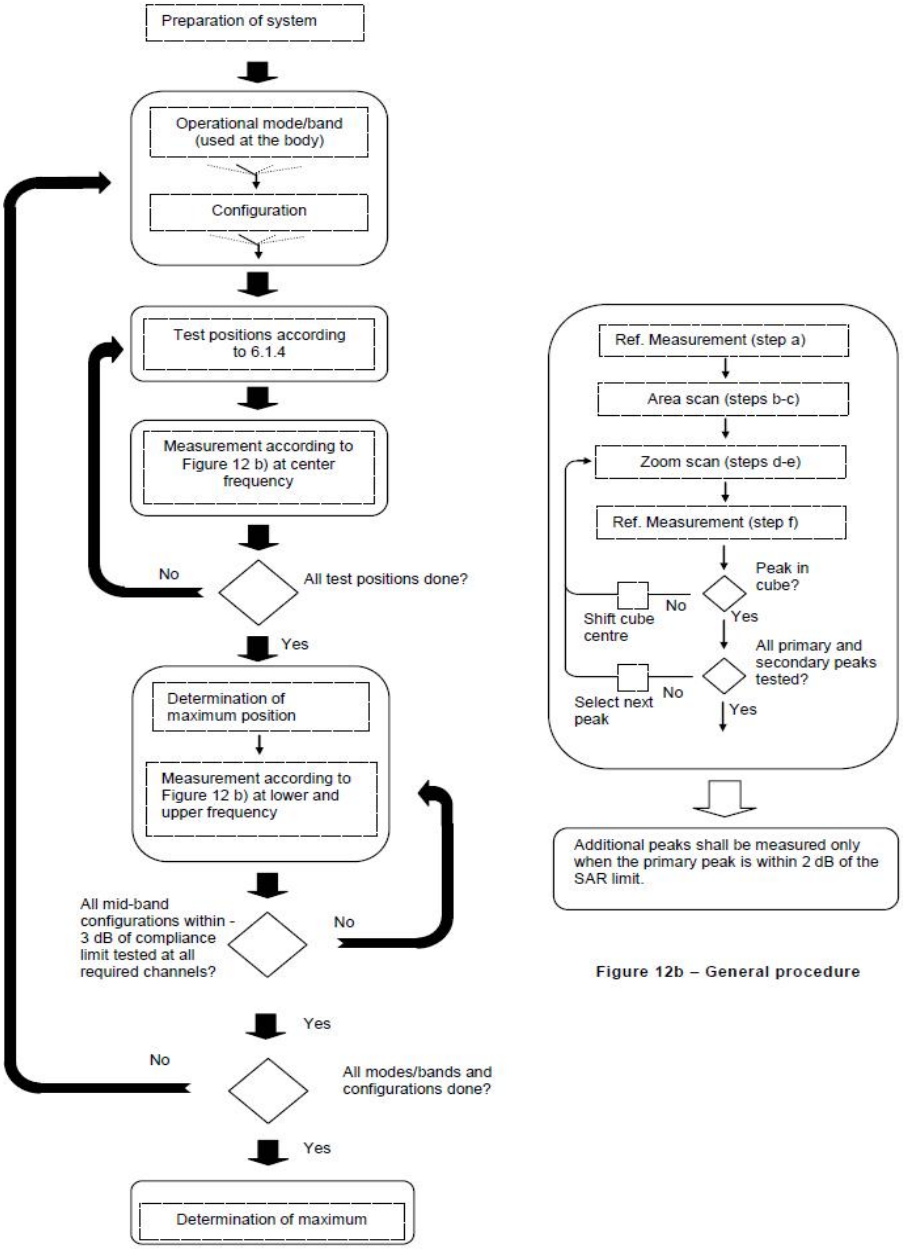


**Figure 12b – General procedure**

# 16. Test Results List

## 16.1. Test Guidance

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1 / (duty cycle)".
   c. For WLAN/Bluetooth: Reported SAR (W/kg) = Measured SAR (W/kg) * Duty Cycle scaling factor * Tune-up scaling factor.
2. Per KDB 447498 D01v06, for each exposure position, 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:
   a. ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   b. ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   c. ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
4. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.
5. Per KDB248227 D01v02r02, a Wi-Fi device must be configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools for SAR measurement. The test frequencies established using test mode must correspond to the actual channel frequencies required for operations in the U.S. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92 - 96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. In addition, a periodic transmission duty factor is required for current generation SAR systems to measure SAR correctly. Unless it is permitted by specific KDB procedures or continuous transmission is specifically restricted by the device, the reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. When a device is not capable of sustaining continuous transmission or the output can become nonlinear, and it is limited by hardware design and unable to transmit at higher than 85% duty factor, a periodic duty factor within 15% of the maximum duty factor the device is capable of transmitting should be used. The reported SAR must be scaled to the maximum transmission duty factor to

determine compliance. Descriptions of the procedures applied to establish the specific duty factor used for SAR testing are required in SAR reports to support the test results.

## 16.2. SAR Test Results

➢ **SAR Test Results**

| Plot No. | Band/Mode | Test Position | CH./Fre. (MHz) | Output Power (dBm) | Tune-up Limit (dBm) | Tune-up Scaling Factor | Meas. $SAR_{1g}$ (W/kg) | Reported $SAR_{1g}$ (W/kg) |
|---|---|---|---|---|---|---|---|---|
| 900M/SRD 2.4G ANT1 | | | | | | | | |
| | 900M | Front Side | 903.5 | 19.689 | 20.0 | 1.074 | 0.558 | 0.599 |
| | 900M | Back Side | 903.5 | 19.689 | 20.0 | 1.074 | 0.472 | 0.507 |
| | 900M | Left Side | 903.5 | 19.689 | 20.0 | 1.074 | 0.401 | 0.431 |
| | 900M | Right Side | 903.5 | 19.689 | 20.0 | 1.074 | 0.444 | 0.477 |
| 1# | 900M | Top Side | 903.5 | 19.689 | 20.0 | 1.074 | 0.798 | 0.857 |
| | 900M | Top Side | 914.9 | 19.383 | 20.0 | 1.153 | 0.736 | 0.848 |
| | 900M | Top Side | 926.9 | 19.08 | 20.0 | 1.236 | 0.666 | 0.823 |
| 900M/SRD 2.4G ANT2 | | | | | | | | |
| | 900M | Front Side | 903.5 | 20.426 | 21.0 | 1.141 | 0.648 | 0.740 |
| | 900M | Back Side | 903.5 | 20.426 | 21.0 | 1.141 | 0.536 | 0.612 |
| 900M/SRD 2.4G ANT1 | | | | | | | | |
| | SRD 2.4GHz | Front Side | 2402.4 | 13.06 | 13.5 | 1.107 | 0.638 | 0.706 |
| | SRD 2.4GHz | Back Side | 2402.4 | 13.06 | 13.5 | 1.107 | 0.596 | 0.660 |
| | SRD 2.4GHz | Left Side | 2402.4 | 13.06 | 13.5 | 1.107 | 0.503 | 0.557 |
| | SRD 2.4GHz | Right Side | 2402.4 | 13.06 | 13.5 | 1.107 | 0.479 | 0.530 |
| 2# | SRD 2.4GHz | Top Side | 2402.4 | 13.06 | 13.5 | 1.107 | 0.891 | 0.986 |
| | SRD 2.4GHz | Top Side | 2441.4 | 12.7 | 13.5 | 1.202 | 0.824 | 0.991 |
| | SRD 2.4GHz | Top Side | 2479.4 | 11.94 | 12.5 | 1.138 | 0.803 | 0.914 |
| 900M/SRD 2.4G ANT2 | | | | | | | | |
| | SRD 2.4GHz | Front Side | 2402.4 | 12.66 | 13.0 | 1.081 | 0.458 | 0.495 |
| | SRD 2.4GHz | Back Side | 2402.4 | 12.66 | 13.0 | 1.081 | 0.296 | 0.320 |
| WLAN/BT ANT | | | | | | | | |
| 3# | WLAN 2.4GHz/802.11b | Front Side | 1 | 14.22 | 15.0 | 1.197 | 0.487 | 0.583 |
| | WLAN 2.4GHz/802.11b | Back Side | 1 | 14.22 | 15.0 | 1.197 | 0.359 | 0.430 |

**Note:**

1. Per KDB 447498 D01v06, for each exposure position, if the highest output channel Reported SAR ≤ 0.8 W/kg, other channels SAR testing is not necessary.
2. Additional WLAN SAR testing was performed for simultaneous transmission analysis.

3. Per KDB 248227 D01v02r02, OFDM SAR is not required 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.

# 17. Simultaneous Transmission Evaluation

All of the antennas of this device can not transmit simultaneously, so simultaneous transmission evaluation is not required.

# 18. Measurement Uncertainty

According to KDB 865664 D01 SAR measurement 100 MHz to 6GHz, when the highest measured 1-g SAR is less than 1.5 W/kg and 10-g extremity SAR less than 3.75 W/kg, the expanded SAR measurement uncertainty must be less than 30% with a confidence interval of k=2. When these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE 1528-2013 is not required in the SAR report and submitted for equipment approval. For this device, both the 1-g SAR is less than 1.5 W/kg and 10-g extremity SAR less than 3.75 W/kg. Therefore the measurement uncertainty table is not required in this report.

# 19. Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of FCC, with respect to all parameters subject to this test. These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested. Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables.

# Annex A General Information

## 1. Identification of the Responsible Testing Laboratory

| | |
|---|---|
| Laboratory Name: | Shenzhen Morlab Communications Technology Co., Ltd. |
| Laboratory Address: | FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China |
| Telephone: | +86 755 36698555 |
| Facsimile: | +86 755 36698525 |

## 2. Identification of the Responsible Testing Location

| | |
|---|---|
| Name: | Shenzhen Morlab Communications Technology Co., Ltd. |
| Address: | FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China |

## 3. Facilities and Accreditations

The FCC designation number is CN1192, the test firm registration number is 226174.

**Note:**

The main report is end here and the other Annex (B,C,D,E) will be submitted separately.

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