MORLAB

REPORT No.: SZ25040036S02

TEST REPORT

APPLICANT	:	FOXX Development Inc.
PRODUCT NAME	:	Smart Phone
MODEL NAME	:	S67L
BRAND NAME	:	MIR, FOXX, FOXXD, AIRVOICE FOXXD HTH
FCC ID	:	2AQRM-S67L
STANDARD(S)	:	FCC 47 CFR Part 2 (2.1093) IEEE 1528-2013
RECEIPT DATE	:	2025-03-16
TEST DATE	:	2025-04-17 to 2025-04-28
ISSUE DATE	:	2025-04-30

Edited by: Pang Siyu (Rapporteur)

Approved by: Gan Yueming (Supervisor)

DIRECTORY

MORLAB
Shenzhen Morlab Communications Technology Co., Ltd.
FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road,
Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China
Tel: 86-755-36698555 Fax: 86-755-36698525
Http://www.morlab.cn E-mail: service@morlab.cn

Changed History		
Version	**Date**	**Reason for Change**
1.0	2025-04-30	First edition

1. SAR Results Summary

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

<Highest Reported SAR Summary>

Frequency Band		Highest SAR Summary			
		Head (Gap 0 mm)	Body-worn (Gap 10 mm)	Hotspot (Gap 10 mm)	Extremity (Gap 0mm)
		1g SAR (W/kg)			10g SAR (W/kg)
5G NR	n2	1.014	0.766	1.031	N/A
	n5	0.362	0.702	0.702	N/A
	n7	0.380	0.335	0.572	N/A
	n25	0.748	0.550	0.670	N/A
	n41	0.401	0.789	0.789	N/A
	n66	0.913	0.506	0.752	N/A
	n71	0.301	0.475	0.475	N/A
	n77	0.798	0.311	0.311	N/A
	n78	0.685	0.343	0.343	N/A

Highest Simultaneous Transmission SAR_{1g} (W/Kg):	1.517	Limit (W/kg): 1.6

Note:

1. This device is in compliance with Specific Absorption Rate (SAR) for general population or uncontrolled exposure limits (1.6W/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. When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.

2. Technical Information

Note: Provide by applicant.

2.1. Applicant and Manufacturer Information

Applicant:	FOXX Development Inc.
Applicant Address:	3480 Preston Ridge Road, Suite500, Alpharetta, GA 30005, USA
Manufacturer:	FOXX Development Inc.
Manufacturer Address:	3480 Preston Ridge Road, Suite500, Alpharetta, GA 30005, USA

2.2. Equipment under Test (EUT) Description

Product Name:	Smart Phone
EUT No.:	1#
Hardware Version:	N/A
Software Version:	N/A
Frequency Bands:	5G NR n2: 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n7: 2500 MHz ~ 2570 MHz 5G NR n25: 1850 MHz ~ 1915 MHz 5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n71: 663 MHz ~ 698 MHz 5G NR n77: 3450 MHz ~ 3550 MHz, 3700 MHz ~3980 MHz 5G NR n78: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3800 MHz
Modulation Mode:	5G NR: DFT-s-OFDM/CP-OFDM, PI/2 BPSK QPSK, 16QAM, 64QAM, 256QAM

Note:

For more detailed description, please refer to specification or user manual supplied by the applicant and/or manufacturer.

2.3. Environment of Test Site/Conditions

Normal Temperature (NT):	20-25 °C
Relative Humidity:	30-75 %

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 or 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 Middle 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:

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

SAR is expressed in units of Watts per kilogram (W/kg).
SAR measurement can be either related to the temperature elevation in tissue by,

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

Where C is the specific head capacity, δT is the temperature rise and δt the exposure duration, or related to the electrical field in the tissue by

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

Where σ is the conductivity of the tissue, ρ is the mass density of the tissue and $|E|$ is the rmselectrical 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/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.

Limits for General Population/Uncontrolled Exposure (W/kg)

Type Exposure	Uncontrolled Environment Limit
Spatial Peak SAR (1g cube tissue for head and trunk)	1.6 W/kg
Spatial Peak SAR (10g cube tissue for limbs)	4.0 W/kg
Spatial Peak SAR (1g cube tissue for whole body)	0.08 W/kg

Note:

1. Occupational/Uncontrolled Environments are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure (i.e. as a result of employment or occupation).
2. Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

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. The 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/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	Method Determination /Remark
FCC 47 CFR Part 2 (2.1093)	Radio Frequency Radiation Exposure	No deviation

Identity	Document Title	Method Determination /Remark
	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	No deviation
KDB 447498 D01v06	General RF Exposure Guidance	No deviation
KDB 865664 D01v01r04	SAR Measurement 100 MHz to 6 GHz	No deviation
KDB 865664 D02v01r02	RF Exposure Reporting	No deviation
KDB 648474 D04v01r03	Handset SAR	No deviation
KDB 941225 D01v03r01	3G SAR MEAUREMENT PROCEDURES	No deviation
KDB 941225 D05v02r05	SAR Evaluation Consideration for LTE Devices	No deviation
KDB 941225 D06v02r01	SAR Evaluation Procedures For Portable Devices With Wireless Router Capabilities	No deviation
Note: Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.		

6. SAR Measurement System

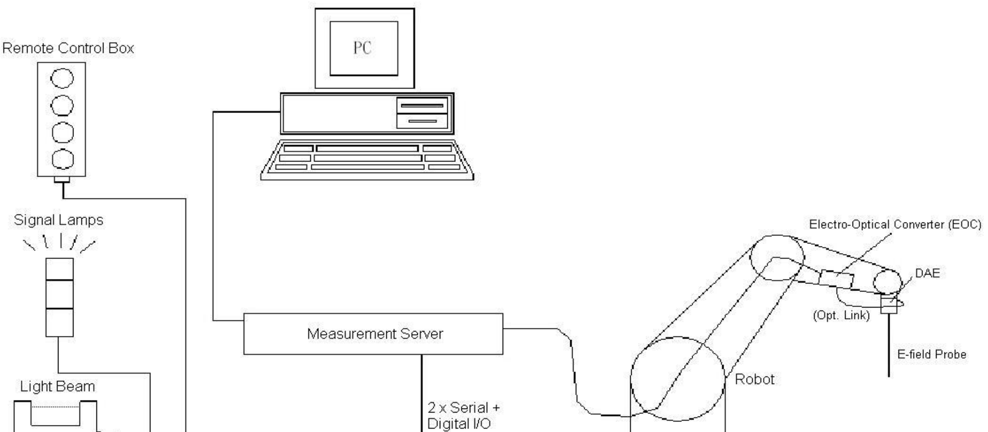


Fig 6.1 SPEAG DASY System Configurations

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 (ECO) 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.
- Some of the components are described in details 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

<ES3DV3 Probe>

Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection system. 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) ± 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) Tip diameter: 6.8 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.7 mm

Fig 6.2 Photo of ES3DV3

<EX3DV4 Probe>

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	10 MHz to 10 GHz; Linearity: ± 0.2 dB
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 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) Tip diameter: 2.5 mm (Body: 12 mm) 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 (NormX, NormY, and NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested. The calibration data can be referred to appendix C 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 fast16 bit AD-converter and a command decoder and control logic unit. 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 200MOhm; 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 (DASY4: RX90BL; DASY5: TX90XL) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY4: CS7MB; DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

High precision (repeatability ±0.035 mm)

High reliability (industrial design)

Jerk-free straight movements

Low ELF interference (the closed metallic construction shields against motor control fields)

Fig 6.5 Photo of DASY5

6.4. Measurement Server

The measurement server is based on a PC/104 CPU board with CPU (DASY4: 166 MHz, Intel Pentium; DASY5: 400 MHz, Intel Celeron), chip disk (DASY4: 32 MB; DASY5: 128 MB), RAM (DASY4: 64 MB, 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 than 0.1 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%) Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; 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 (EPR). Thus the device needs no repositioning when changing the angles.

The DASY device holder is constructed of low-loss 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 6.9 Device Holder

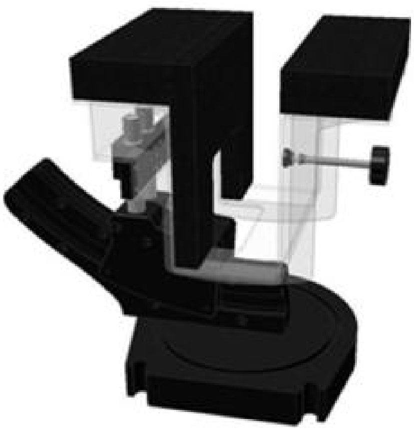


Fig 6.10 Laptop Extension Kit

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 verification 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], [A/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 factor	$ConvF_i$
	- Diode compression point	dcpi
Device parameters:	- Frequency	f
	- Crest factor	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:

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

With Vi = 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: $E_i = \sqrt{\frac{V_i}{Norm_i \times ConvF}}$

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

With V_i = compensated signal of channel i, (i = x, y, z)
$Norm_i$ = sensor sensitivity of channel i, (i = x, y, z), μV/(V/m)^2 forE-field
Probes ConvF = sensitivity enhancement in solution
a_{ij} = sensor sensitivity factors for H-field probes
f = carrier frequency [GHz]
E_i = electric field strength of channel i in V/m
H_i = 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.

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

with SAR = local specific absorption rate in mW/g
E_{tot} = total field strength in V/m
σ = conductivity in [mho/m] or [Siemens/m]
ρ = equivalent tissue density in g/cm^3

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	750MHz System Validation Kit	D750V2	1223	2022.08.22	2025.08.21
SPEAG	900MHz System Validation Kit	D900V2	1d064	2024.10.21	2027.10.20
SPEAG	1800MHz System Validation Kit	D1800V2	2d158	2024.10.21	2027.10.20
SPEAG	2000MHz System Validation Kit	D2000V2	1050	2024.10.22	2027.10.21
SPEAG	2450MHz System Validation Kit	D2450V2	805	2024.10.22	2027.10.21
SPEAG	2600MHz System Validation Kit	D2600V2	1175	2024.10.23	2027.10.22
SPEAG	3500MHz System Validation Kit	D3500V2	1085	2024.10.21	2027.10.20
SPEAG	3700MHz System Validation Kit	D3700V2	1050	2024.10.23	2027.10.22
SPEAG	3900MHz System Validation Kit	D3900V2	1046	2024.10.21	2027.10.20
SPEAG	DOSIMETRIC ASSESSMENT SYSTEM Software	DASY52	52.10.4.1527	NCR	NCR
SPEAG	Dosimetric E-Field Probe	EX3DV4	3823	2024.11.11	2025.11.10
SPEAG	Data Acquisition Electronics	DAE4	1324	2024.07.05	2025.07.04
SPEAG	Twin-SAM	QD 000 P41 Ax	2020	NCR	NCR
Agilent	Network Analyzer	E5071B	MY42404762	2025.01.11	2026.01.10
SPEAG	Dielectric Assessment KIT	DAK-3.5	1279	2025.03.18	2026.03.17
mini-circuits	Amplifier	ZHL-42W+	608501717	NCR	NCR
mini-circuits	Amplifier	ZVE-8G+	754401735	NCR	NCR
Agilent	Signal Generator	N5182B	MY53050509	2024.09.11	2025.09.10
R&S	Power Senor	NRP8S	103215	2025.01.11	2026.01.10
Agilent	Power Meter	E4416A	MY45102093	2024.09.11	2025.09.10
R&S	Power Sensor	NRP8S	103240	2025.01.11	2026.01.10
Anritsu	Power Meter	E4418B	GB43318055	2024.05.30	2025.05.29
Agilent	Dual Directional Coupler	778D	50422	NA	NA
MCL	Attenuation	351-218-010	N/A	NA	NA
R&S	Spectrum Analyzer	N9030A	MY54170556	2024.09.18	2025.09.17
KTJ	Thermo meter	TA298	N/A	2024.11.20	2025.11.19
SPEAG	Tissue Simulating Liquids	HBBL600-10000V6		24H	

Note:

1. The calibration certificate of DASY can be referred to annex F of this report.
2. The Insertion Loss calibration of Dual Directional Coupler and Attenuator were characterized via the network analyzer and compensated during system check.

3. 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 are provided by Speag.
4. 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 of1W 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.
5. Attenuator insertion loss is calibrated by the network Analyzer, which the calibration is valid, before system check.
6. N.C.R means No Calibration Requirement.

7. Tissue Simulating Liquids

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15cm.For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15cm, which is shown in Fig. 7.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 7.2. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5%are listed in below table.

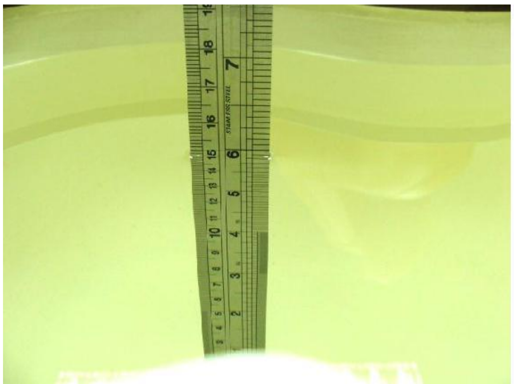


Fig 7.1 Photo of Liquid Height for Head SAR

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
Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
1800,1900,2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7
2600	68.1	0	0	0.1	0	31.8	2.16	52.5

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%

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Conductivity Target (σ)	Delta (σ) (%)	Limit (%)	Date
750	HSL	22.1	0.919	0.89	3.26	±5	2025/4/20
900	HSL	22.1	0.987	0.97	1.75	±5	2025/4/21
1800	HSL	22.1	1.396	1.40	-0.29	±5	2025/4/22
2000	HSL	22.1	1.421	1.40	1.50	±5	2025/4/17
2600	HSL	22.1	1.970	1.96	0.51	±5	2025/4/26
3500	HSL	22.1	2.777	2.91	-4.57	±5	2025/4/28
3700	HSL	22.1	2.964	3.05	-2.82	±5	2025/4/28
3900	HSL	22.1	3.120	3.15	-0.95	±5	2025/4/28

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Permittivity (εr)	Permittivity Target (εr)	Delta (εr) (%)	Limit (%)	Date
750	HSL	22.1	41.120	41.90	-1.86	±5	2025/4/20
900	HSL	22.1	40.558	41.50	-2.27	±5	2025/4/21
1800	HSL	22.1	40.468	40.00	1.17	±5	2025/4/22
2000	HSL	22.1	39.768	40.00	-0.58	±5	2025/4/17
2600	HSL	22.1	38.291	39.00	-1.82	±5	2025/4/26
3500	HSL	22.1	37.455	37.90	-1.17	±5	2025/4/28
3700	HSL	22.1	36.714	37.70	-2.62	±5	2025/4/28
3900	HSL	22.1	36.170	37.50	-3.55	±5	2025/4/28

Note:

Please refer to the validation results for dielectric parameters of each frequency band. The dielectric properties of the tissue simulating liquids were verified prior to the SAR evaluation using a SPEAG Dielectric Assessment KIT and an Agilent Network Analyzer.

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.

8.1. 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.

8.2. System Setup

The output power on dipole port must be calibrated to 24 dBm (250 mW) before dipole is connected. In the simplified setup for system evaluation, the DUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave which 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 system check verifies that the system operates within its specifications. It is performed daily or before every SAR measurement. The system check uses normal SAR measurements in the flat section of the phantom with a matched dipole at a specified distance. The system verification setup is shown as below.

Fig 8.1 Photo of Dipole Setup

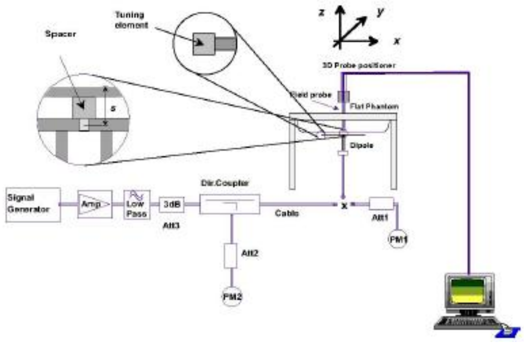


Fig 8.2 System Setup for System Evaluation

8.3. Validation Results

After system check testing, the SAR result will be normalized to 1 W forward input power and compared with the reference SAR value derived from validation dipole certificate report. The deviation of system check should be within 10%.

<Validation Setup>

Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N
750	HSL	250	D750V3-1173	3823	1324
900	HSL	250	D900V2-1d064	3823	1324
1800	HSL	250	D1800V2-2d158	3823	1324
2000	HSL	250	D2000V2-1050	3823	1324
2600	HSL	250	D2600V2-1139	3823	1324
3500	HSL	100	D3500V2-1104	3823	1324
3700	HSL	100	D3700V2-1079	3823	1324
3900	HSL	100	D3900V2-1179	3823	1324

<System Validation>

Frequency (MHz)	Tissue Type	Conductivity (σ)	Permittivity (εr)	CW Signal Validation		
				Sensitivity	Probe Linearity	Probe Isotropy
750	HSL	0.851	42.43	PASS	PASS	PASS
835	HSL	0.898	41.88	PASS	PASS	PASS
1750	HSL	1.386	39.91	PASS	PASS	PASS
1800	HSL	1.449	41.26	PASS	PASS	PASS
1900	HSL	1.435	39.65	PASS	PASS	PASS
2000	HSL	1.451	39.42	PASS	PASS	PASS
2300	HSL	1.764	38.99	PASS	PASS	PASS
2450	HSL	1.863	38.85	PASS	PASS	PASS
2600	HSL	1.973	38.58	PASS	PASS	PASS
3400	HSL	2.88	38.10	PASS	PASS	PASS
3500	HSL	2.91	37.90	PASS	PASS	PASS
3700	HSL	3.05	37.70	PASS	PASS	PASS
3900	HSL	3.15	37.50	PASS	PASS	PASS
4100	HSL	3.25	37.20	PASS	PASS	PASS
4200	HSL	3.34	37.00	PASS	PASS	PASS
4400	HSL	3.58	36.70	PASS	PASS	PASS
4600	HSL	3.70	36.60	PASS	PASS	PASS

4800	HSL	3.82	36.40	PASS	PASS	PASS
4900	HSL	3.96	36.20	PASS	PASS	PASS
5250	HSL	4.528	35.32	PASS	PASS	PASS
5600	HSL	4.905	34.89	PASS	PASS	PASS
5750	HSL	5.077	34.28	PASS	PASS	PASS

Frequency (MHz)	**Tissue Type**	**Conductivity (σ)**	**Permittivity (εr)**	**Modulation Signal Validation**		
				Mod. Type	**Duty Factor**	**PAR**
750	HSL	0.851	42.43	N/A	N/A	N/A
835	HSL	0.898	41.88	GMSK	PASS	N/A
1750	HSL	1.386	39.91	N/A	N/A	N/A
1800	HSL	1.449	41.26	N/A	N/A	N/A
1900	HSL	1.435	39.65	GMSK	PASS	N/A
2000	HSL	1.451	39.42	GMSK	PASS	N/A
2300	HSL	1.764	38.99	OFDM	PASS	PASS
2450	HSL	1.863	38.85	OFDM	PASS	PASS
2600	HSL	1.973	38.58	TDD	PASS	N/A
3400	HSL	2.88	38.10	OFDM	PASS	PASS
3500	HSL	2.91	37.90	OFDM	PASS	PASS
3700	HSL	3.05	37.70	OFDM	PASS	PASS
3900	HSL	3.15	37.50	OFDM	PASS	PASS
4100	HSL	3.25	37.20	OFDM	PASS	PASS
4200	HSL	3.34	37.00	OFDM	PASS	PASS
4400	HSL	3.58	36.70	OFDM	PASS	PASS
4600	HSL	3.70	36.60	OFDM	PASS	PASS
4800	HSL	3.82	36.40	OFDM	PASS	PASS
4900	HSL	3.96	36.20	OFDM	PASS	PASS
5250	HSL	4.528	35.32	OFDM	N/A	PASS
5600	HSL	4.905	34.89	OFDM	N/A	PASS
5750	HSL	5.077	34.28	OFDM	N/A	PASS

<Validation Results>

Date	Frequency (MHz)	Tissue Type	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2025/4/20	750	HSL	2.18	8.54	8.72	2.11
2025/4/21	900	HSL	2.91	10.90	11.64	6.79
2025/4/22	1800	HSL	10.41	39.20	41.64	6.22
2025/4/17	2000	HSL	11.12	41.40	44.48	7.44
2025/4/26	2600	HSL	15.12	55.90	60.48	8.19
2025/4/28	3500	HSL	7.32	66.70	73.2	9.75
2025/4/28	3700	HSL	7.38	67.50	73.8	9.33
2025/4/28	3900	HSL	7.14	68.00	71.4	5.00

Date	Frequency (MHz)	Tissue Type	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2025/4/20	750	HSL	1.41	5.57	5.64	1.26
2025/4/21	900	HSL	1.87	7.00	7.48	6.86
2025/4/22	1800	HSL	5.49	20.70	21.96	6.09
2025/4/17	2000	HSL	5.48	21.00	21.92	4.38
2025/4/26	2600	HSL	6.48	24.90	25.92	4.10
2025/4/28	3500	HSL	2.76	25.30	27.6	9.09
2025/4/28	3700	HSL	2.67	24.70	26.7	8.10
2025/4/28	3900	HSL	2.55	23.60	25.5	8.05

9. EUT Testing Position

This EUT was tested in ten different positions. They are right cheek/right tilted/left cheek/left tilted for head, Front/Back/Left/Right/Top/Bottom of the EUT with phantom 10 mm gap, as illustrated below, please refer to Appendix B for the test setup photos.

9.1. Handset Reference Points

The vertical centre line passes through two points on the front side of the handset – the midpoint of the width wt of the handset at the level of the acoustic output, and the midpoint of the width wb of the bottom of the handset.
The horizontal line is perpendicular to the vertical centre line and passes the center of the acoustic output. The horizontal line is also tangential to the handset at point A.
The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line.
Also note that the vertical centre line is not necessarily parallel to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.

Fig. 9.1 Illustration for Cheek Position

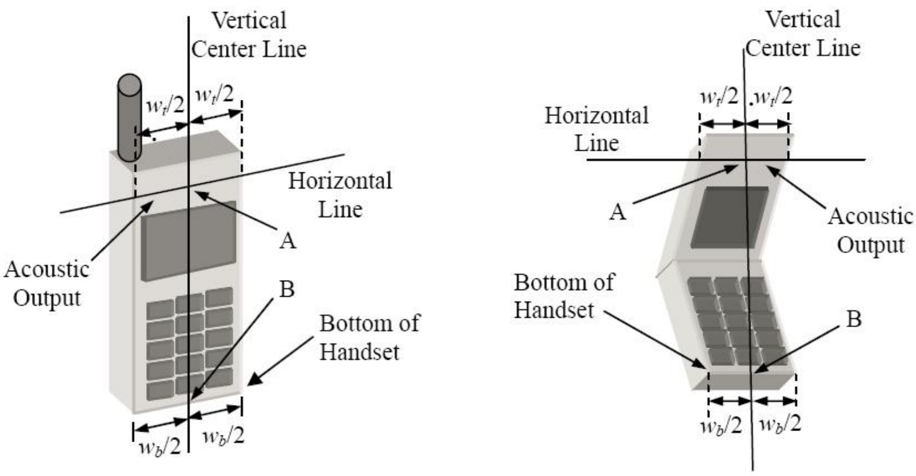


Fig. 9.2 Illustration for Handset Vertical and Horizontal Reference Lines

9.2. Positioning for Cheek / Touch

To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the three ear and mouth reference point (M: Mouth, RE: Right Ear and LE: Left Ear) and align the center of the ear piece with the line RE-LE.

To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost (see below figure)

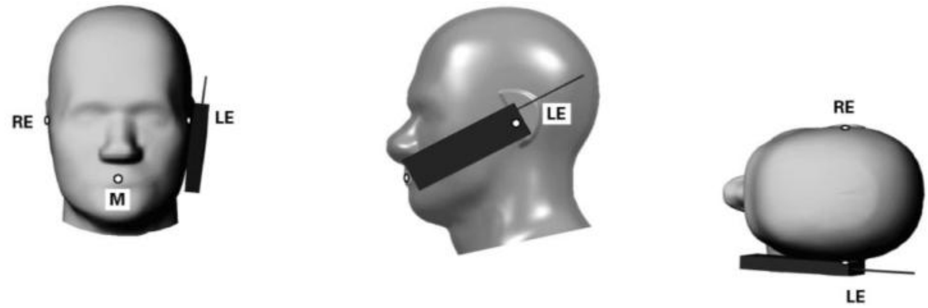


Fig 9.3 Illustration for Cheek Position

9.3. Positioning for Ear / 15º Tilt

To position the device in the “cheek” position described above.
While maintaining the device the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost (see figure below).

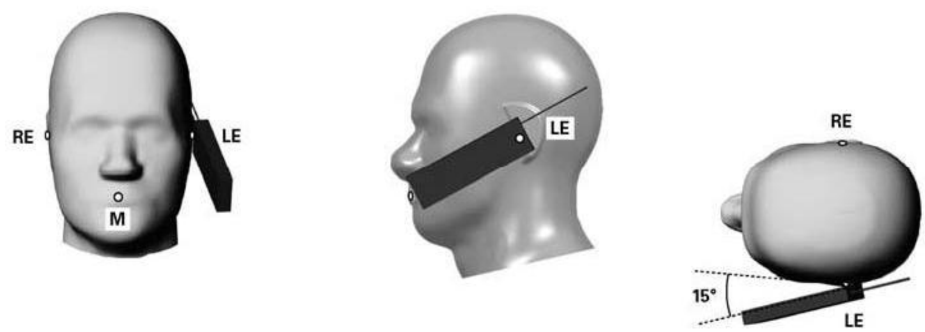


Fig 9.4 Illustration for Tilted Position

9.4. SAR Evaluation near the Mouth/Jaw Regions of the Phantom

Antennas located near the bottom of a phone may require SAR measurements around the mouth and jaw regions of the SAM head phantom. This typically applies to clam-shell style phones that are generally longer in the unfolded normal use positions or to certain older style long rectangular phones.

Under these circumstances, the following procedures apply, adopted from the FCC guidance on SAR handsets document FCC KDB Publication 648474 D04v01r03. The SAR required in these regions of SAM should be measured using a flat phantom. The phone should be positioned with a separation distance of 4 mm between the ear reference point (ERP) and the outer surface of the flat phantom shell. While maintaining this distance at the ERP location, the low (bottom) edge of the phone should be lowered from the phantom to establish the same separation distance between the peak SAR locations identified by the truncated partial SAR distribution measured with the SAM phantom. The distance from the peak SAR location to the phone is determined by the straight line passing perpendicularly through the phantom surface. When it is not feasible to maintain 4 mm separation at the ERP while also establishing the required separation at the peak SAR location, the top edge of the phone will be allowed to touch the phantom with a separation < 4 mm at the ERP. The phone should not be tilted to the left or right while placed in this inclined position to the flat phantom.

9.5. 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.

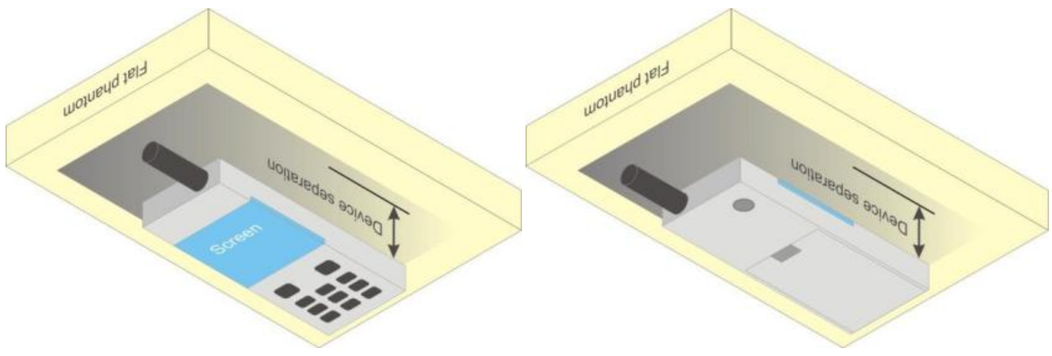


Fig 9.5 Illustration for Body Worn Position

9.6. 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).

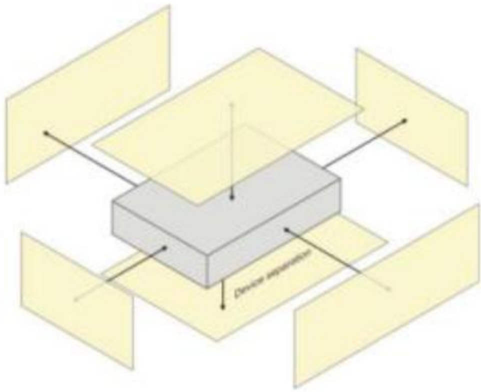


Fig 9.6 Illustration for Hotspot Position

10. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

(a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.

(b) Read the WWAN RF power level from the base station simulator.

(c) 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.

(d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power.

<SAR measurement>

(a) 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.

(b) Place the EUT in the positions as Appendix D demonstrates.

(c) Set scan area, grid size and other setting on the DASY software.

(d) Measure SAR results for the highest power channel on each testing position.

(e) Find out the largest SAR result on these testing positions of each band.

(f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of 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:

(a) Power reference measurement.

(b) Area scan.

(c) Zoom scan.

(d) 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 10g 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 the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

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

10.2. 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. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

10.3. Area Scan Procedures

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 10mm² step integral, with 1mm interpolation used to locate the peak SAR area used for zoom scan assessments.

When an Area Scan has measured all reachable points, it computes the field maxima founding the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE 1528-2013.

10.4. Zoom Scan Procedures

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. A density of 1000 kg/m³ is used to represent the head and body tissue density and not the phantom liquid density, in order to be consistent with the definition of the liquid dielectric properties, i.e. the side length of the 1g cube is 10mm, with the side length of the 10 g cube 21,5mm.The zoom scan integer steps can be user defined so as to reduce uncertainty, but normal practice for typical test applications utilize a physical step of 5 x 5 x 7 (8mm x 8mm x 5mm) providing a volume of 32mm in the X & Y axis, and 30mm in the Z axis.

10.5. SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Sheppard'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 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.

10.6. Power Drift Monitoring

All SAR testing is under the DUT 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 DUT 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 drift more than 5%, the SAR will be retested.

11. SAR Test Procedure

11.1. General Scan Requirements

Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1-g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std. 1528-2013.

<table>
<tr><td colspan="3"></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 mm ± 1 mm</td><td>½·δ·ln(2) mm ± 0.5 mm</td></tr>
<tr><td colspan="3">Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td colspan="3" rowspan="2">Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3 – 4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
<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">≤ 1.5·$\Delta z_{Zoom}(n-1)$ mm</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.
* When zoom scan is required and the reported 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>

11.2. Test Procedure

The Following steps are used for each test position

1. Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface.
2. Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible power drift.
3. Measurement of the SAR distribution with a grid of 8 to 16mm * 8 to16 mm and a constant distance to the inner surface of the phantom. Since the sensors cannot directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.
4. Around this point, a cube of 30 * 30 * 30 mm or 32 * 32 * 32 mm is assessed by measuring 5 or 8 * 5 or 8*4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

11.3. Description of Interpolation/Extrapolation Scheme

The local SAR inside the phantom is measured using small dipole sensing elements inside a probe body. The probe tip must not be in contact with the phantom surface in order to minimize measurements errors, but the highest local SAR will occur at the surface of the phantom.

An extrapolation is using to determinate this highest local SAR values. The extrapolation is based on a fourth-order least-square polynomial fit of measured data. The local SAR value is then extrapolated from the liquid surface with a 1mm step.

The measurements have to be performed over a limited time (due to the duration of the battery) so the step of measurement is high. It could vary between 5 and 8 mm. To obtain an accurate assessment of the maximum SAR averaged over 10 grams and 1 gram requires a very fine resolution in the three dimensional scanned data array.

11.4. Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10 from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined form general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 publication procedures. The “Portable Hotspot” feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

12. Conducted Power

➢ **Conducted Power List**

The output power of 5G NR was recorded in RF report except n77 & n78 for SAR measurement.

➢ **Tune-up Tolerance List**

Wireless Bands	Max. Power (dBm)	Tune-up (dBm)	Wireless Bands	Max. Power (dBm)	Tune-up (dBm)
5G NR n2	22.99	23.5	5G NR n66	21.41	22.0
5G NR n5	21.62	22.0	5G NR n71	18.50	19.0
5G NR n7	21.24	21.5	5G NR n77	25.60	26.5
5G NR n25	23.04	23.5	5G NR n78	25.51	26.5
5G NR n41	21.38	22.0			

13. Hotspot Mode Evaluation Procedure

➢ **Antenna Information**

Wireless Bands	ANT0	ANT1	ANT2	ANT3	ANT4	ANT5
5G NR n2	N/A	TX/PRX	DRX	DRX2	PRX2	N/A
5G NR n5	TX/PRX	N/A	DRX	N/A	N/A	N/A
5G NR n7	TX/PRX	N/A	DRX2	DRX	PRX2	N/A
5G NR n25	N/A	TX/PRX	DRX	DRX2	PRX2	N/A
5G NR n41	TX/PRX	N/A	SRS3/DRX2	SRS1/DRX	SRS2/PRX2	N/A
5G NR n66	N/A	TX/PRX	DRX	DRX2	PRX2	N/A
5G NR n71	TX/PRX	N/A	DRX	N/A	N/A	N/A
5G NR n77	N/A	SRX2DRX2	SRS3/DRX2	SRS1/DRX	TX/PRX	N/A
5G NR n78	N/A	SRX2DRX2	SRS3/DRX2	SRS1/DRX	TX/PRX	N/A

Note： The location of antenna was recorded in annex B

➢ **EUT Antenna Distance (mm)**

Antenna Location	Front	Back	Left	Right	Top	Bottom
ANT 0	＜5mm	＜5mm	＜25mm	＞25mm	＞25mm	＜5mm
ANT 1	＜5mm	＜5mm	＜5mm	＞25mm	＜25mm	＞25mm
ANT 2	＜5mm	＜5mm	＜5mm	＞25mm	＜25mm	＞25mm
ANT 3	＜5mm	＜5mm	＞25mm	＜5mm	＜25mm	＞25mm
ANT 4	＜5mm	＜5mm	＞25mm	＜25mm	＜5mm	＞25mm
ANT 5	＜5mm	＜5mm	＞25mm	＜25mm	＜5mm	＞25mm

➢ **Hotspot Evaluation (Hotspot Side for SAR Test Distance: 10 mm)**

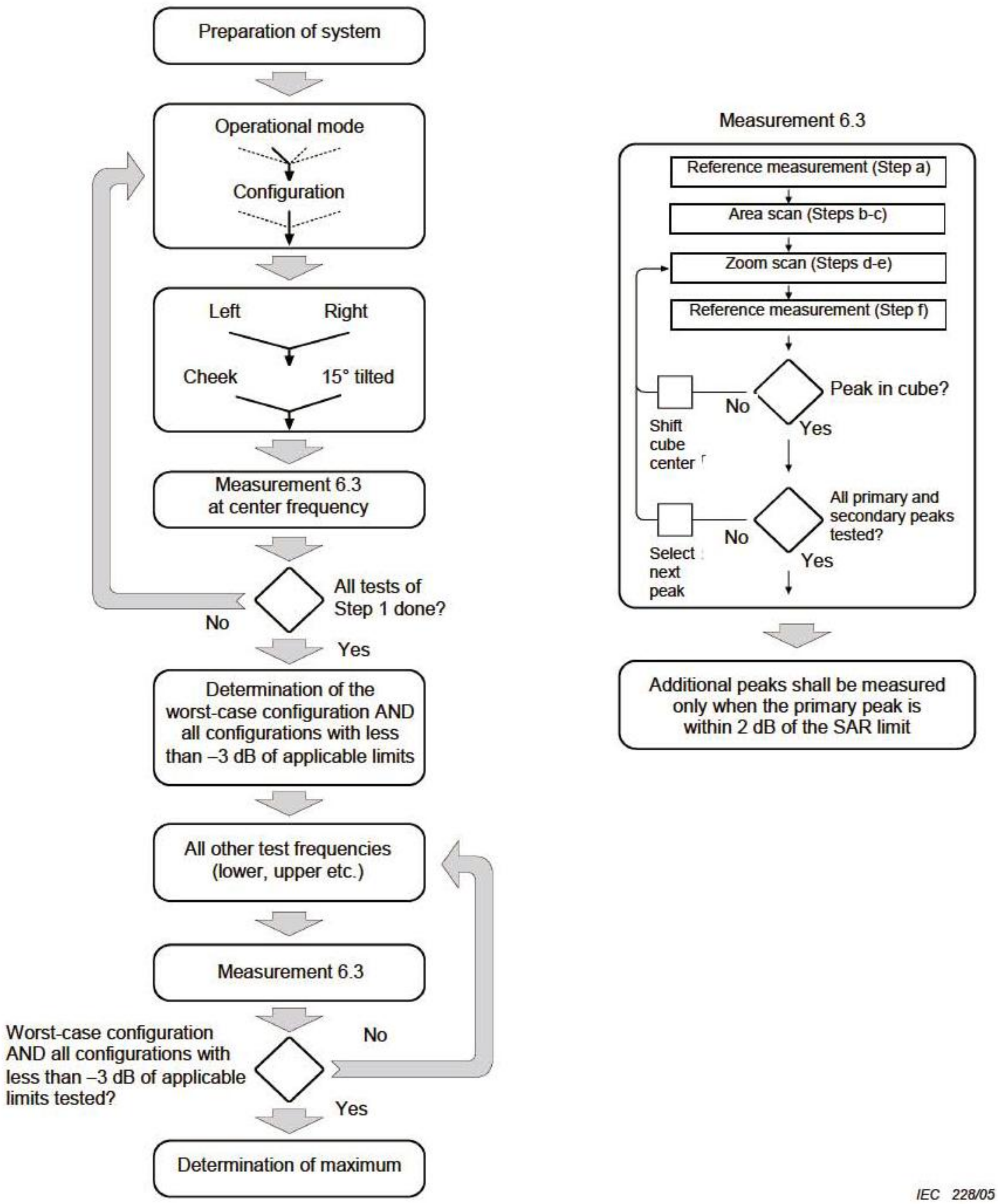
Antenna Location	Front	Back	Left	Right	Top	Bottom
ANT 0	Yes	Yes	Yes	No	No	No
ANT 1	Yes	Yes	Yes	No	Yes	No
ANT 2	Yes	Yes	Yes	No	Yes	No
ANT 3	Yes	Yes	No	Yes	Yes	No
ANT 4	Yes	Yes	No	Yes	Yes	No
ANT 5	Yes	Yes	No	Yes	Yes	No

Note :

1. The SAR evaluation procedures for Portable Devices with Wireless Router function is according to KDB 941225 D06 Hotspot SAR v02r01.
2. Head/Body-worn/Hotspot mode SAR assessments are required.
3. Referring to KDB 941225 D06, when the overall device length and width are ≥ 9cm*5cm, 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.

14. Block Diagram of the Tests to be Performed

14.1. Head



14.2. Body

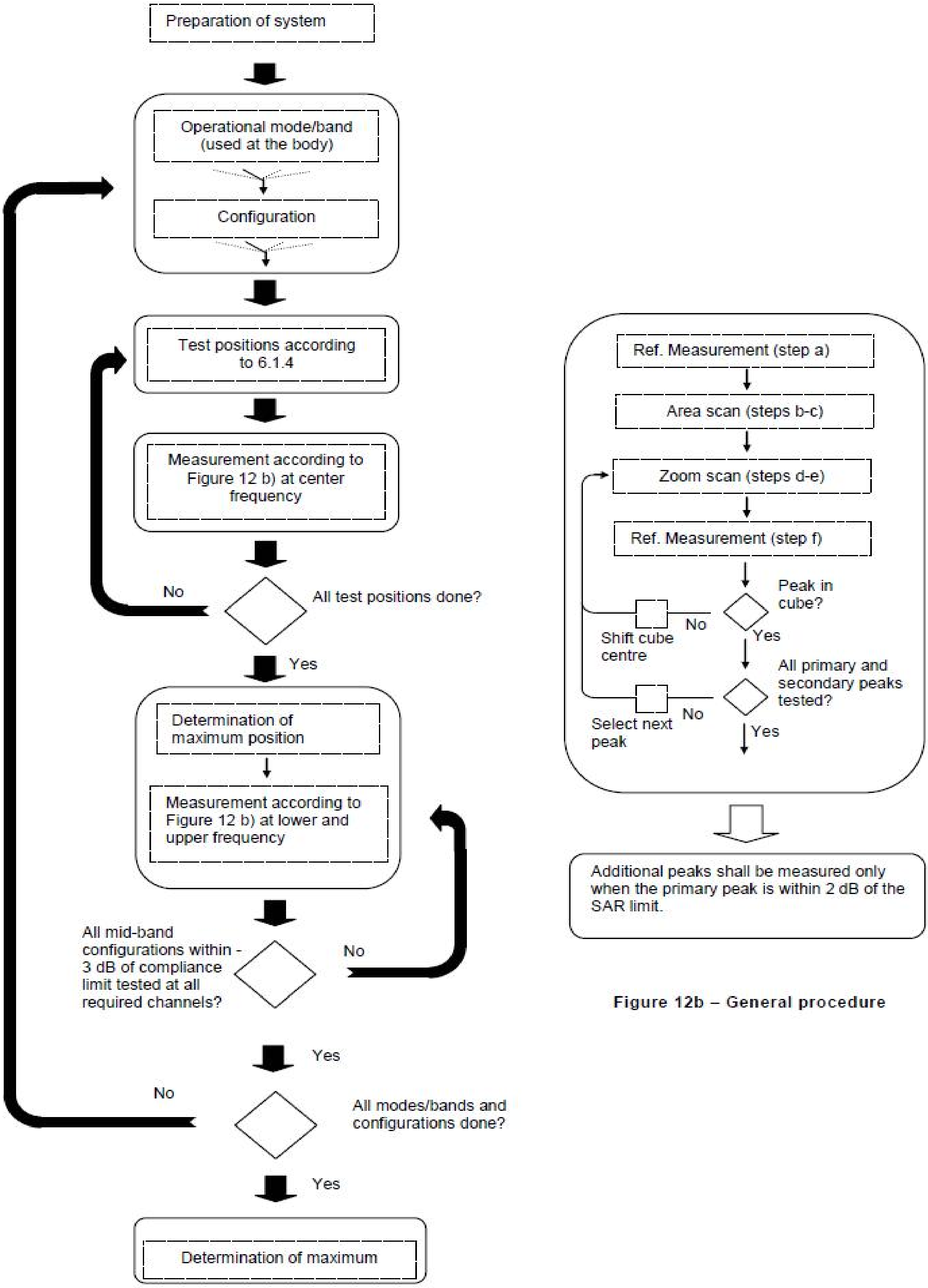


Figure 12b – General procedure

15. Test Results List

15.1. 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 WWAN: Reported SAR (W/kg) = Measured SAR (W/kg) * Tune-up Scaling Factor.
   d. 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 KDB 648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for tablet modes to compare with the 1.2 W/kg SAR test reduction threshold.
6. 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.

15.2. Head SAR Data List

Plot No.	Band/Mode	Test Position	CH.	Ave. Power (dBm)	Tune-up Limit (dBm)	Tune-up Scaling Factor	Meas. SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
1#	5G NR n2/1#1 20M	Right Cheek	376000	22.99	23.5	1.125	0.702	0.789
	5G NR n2/1#1 20M	Right Tilt	376000	22.99	23.5	1.125	0.154	0.173
	5G NR n2/1#1 20M	Left Cheek	376000	22.99	23.5	1.125	0.402	0.452
	5G NR n2/1#1 20M	Left Tilt	376000	22.99	23.5	1.125	0.062	0.070
	5G NR n2/50#25 20M	Right Cheek	376000	21.99	22.5	1.125	0.641	0.721
	5G NR n2/50#25 20M	Right Tilt	376000	21.99	22.5	1.125	0.145	0.163
	5G NR n2/50#25 20M	Left Cheek	376000	21.99	22.5	1.125	0.382	0.430
	5G NR n2/50#25 20M	Left Tilt	376000	21.99	22.5	1.125	0.058	0.065
	5G NR n5/1#1 20M	Right Cheek	167300	21.62	22.0	1.091	0.332	0.241
	5G NR n5/1#1 20M	Right Tilt	167300	21.62	22.0	1.091	0.092	0.085
2#	5G NR n5/1#1 20M	Left Cheek	167300	21.62	22.0	1.091	0.221	0.362
	5G NR n5/1#1 20M	Left Tilt	167300	21.62	22.0	1.091	0.078	0.100
	5G NR n5/50#25 20M	Right Cheek	167300	20.62	21.0	1.091	0.276	0.195
	5G NR n5/50#25 20M	Right Tilt	167300	20.62	21.0	1.091	0.087	0.081
	5G NR n5/50#25 20M	Left Cheek	167300	20.62	21.0	1.091	0.179	0.301
	5G NR n5/50#25 20M	Left Tilt	167300	20.62	21.0	1.091	0.074	0.095
	5G NR n7/1#1 20M	Right Cheek	512000	21.24	21.5	1.062	0.358	0.154
	5G NR n7/1#1 20M	Right Tilt	512000	21.24	21.5	1.062	0.191	0.073
3#	5G NR n7/1#1 20M	Left Cheek	512000	21.24	21.5	1.062	0.145	0.380
	5G NR n7/1#1 20M	Left Tilt	512000	21.24	21.5	1.062	0.069	0.203
	5G NR n7/50#25 20M	Right Cheek	512000	20.24	20.5	1.062	0.206	0.110
	5G NR n7/50#25 20M	Right Tilt	512000	20.24	20.5	1.062	0.155	0.045
	5G NR n7/50#25 20M	Left Cheek	512000	20.24	20.5	1.062	0.104	0.219
	5G NR n7/50#25 20M	Left Tilt	512000	20.24	20.5	1.062	0.042	0.165
4#	5G NR n25/1#1 20M	Right Cheek	376500	23.04	23.5	1.112	0.673	0.748
	5G NR n25/1#1 20M	Right Tilt	376500	23.04	23.5	1.112	0.164	0.182
	5G NR n25/1#1 20M	Left Cheek	376500	23.04	23.5	1.112	0.424	0.471
	5G NR n25/1#1 20M	Left Tilt	376500	23.04	23.5	1.112	0.071	0.079
	5G NR n25/50#25 20M	Right Cheek	376500	22.04	22.5	1.112	0.525	0.584
	5G NR n25/50#25 20M	Right Tilt	376500	22.04	22.5	1.112	0.161	0.179
	5G NR n25/50#25 20M	Left Cheek	376500	22.04	22.5	1.112	0.409	0.455

	5G NR n25/50#25 20M	Left Tilt	376500	22.04	22.5	1.112	0.058	0.064
	5G NR n41/1#1 100M	Right Cheek	518598	21.38	22.0	1.153	0.348	0.313
	5G NR n41/1#1 100M	Right Tilt	518598	21.38	22.0	1.153	0.159	0.091
5#	5G NR n41/1#1 100M	Left Cheek	518598	21.38	22.0	1.153	0.271	0.401
	5G NR n41/1#1 100M	Left Tilt	518598	21.38	22.0	1.153	0.079	0.183
	5G NR n41/137#67 100M	Right Cheek	518598	20.38	21.0	1.153	0.201	0.148
	5G NR n41/137#67 100M	Right Tilt	518598	20.38	21.0	1.153	0.171	0.085
	5G NR n41/137#67 100M	Left Cheek	518598	20.38	21.0	1.153	0.128	0.232
	5G NR n41/137#67 100M	Left Tilt	518598	20.38	21.0	1.153	0.074	0.197
6#	5G NR n66/1#1 20M	Right Cheek	349000	21.41	22.0	1.146	0.687	0.787
	5G NR n66/1#1 20M	Right Tilt	349000	21.41	22.0	1.146	0.177	0.203
	5G NR n66/1#1 20M	Left Cheek	349000	21.41	22.0	1.146	0.488	0.559
	5G NR n66/1#1 20M	Left Tilt	349000	21.41	22.0	1.146	0.075	0.086
	5G NR n66/50#25 20M	Right Cheek	349000	20.41	21.0	1.146	0.566	0.648
	5G NR n66/50#25 20M	Right Tilt	349000	20.41	21.0	1.146	0.519	0.595
	5G NR n66/50#25 20M	Left Cheek	349000	20.41	21.0	1.146	0.384	0.440
	5G NR n66/50#25 20M	Left Tilt	349000	20.41	21.0	1.146	0.328	0.376
	5G NR n71/1#1 20M	Right Cheek	134600	18.50	19.0	1.122	0.268	0.166
	5G NR n71/1#1 20M	Right Tilt	134600	18.50	19.0	1.122	0.096	0.089
7#	5G NR n71/1#1 20M	Left Cheek	134600	18.50	19.0	1.122	0.148	0.301
	5G NR n71/1#1 20M	Left Tilt	134600	18.50	19.0	1.122	0.079	0.108
	5G NR n71/50#25 20M	Right Cheek	134600	17.50	18.0	1.122	0.171	0.186
	5G NR n71/50#25 20M	Right Tilt	134600	17.50	18.0	1.122	0.072	0.076
	5G NR n71/50#25 20M	Left Cheek	134600	17.50	18.0	1.122	0.166	0.192
	5G NR n71/50#25 20M	Left Tilt	134600	17.50	18.0	1.122	0.068	0.081
	5G NR n77/1#1 100M	Right Cheek	633334	25.60	26.5	1.230	0.546	0.576
	5G NR n77/1#1 100M	Right Tilt	633334	25.60	26.5	1.230	0.371	0.528
	5G NR n77/1#1 100M	Left Cheek	633334	25.60	26.5	1.230	0.468	0.672
	5G NR n77/1#1 100M	Left Tilt	633334	25.60	26.5	1.230	0.429	0.456
	5G NR n77/50#25 100M	Right Cheek	633334	25.51	26.5	1.256	0.438	0.303
	5G NR n77/50#25 100M	Right Tilt	633334	25.51	26.5	1.256	0.326	0.268
	5G NR n77/50#25 100M	Left Cheek	633334	25.51	26.5	1.256	0.241	0.550
	5G NR n77/50#25 100M	Left Tilt	633334	25.51	26.5	1.256	0.213	0.409

	5G NR n77/1#1 100M	Right Cheek	656000	25.53	26.5	1.250	0.638	0.574
	5G NR n77/1#1 100M	Right Tilt	656000	25.53	26.5	1.250	0.566	0.460
8#	5G NR n77/1#1 100M	Left Cheek	656000	25.53	26.5	1.250	0.459	0.798
	5G NR n77/1#1 100M	Left Tilt	656000	25.53	26.5	1.250	0.368	0.708
	5G NR n77/50#25 100M	Right Cheek	656000	25.50	26.5	1.259	0.575	0.234
	5G NR n77/50#25 100M	Right Tilt	656000	25.50	26.5	1.259	0.406	0.181
	5G NR n77/50#25 100M	Left Cheek	656000	25.50	26.5	1.259	0.186	0.724
	5G NR n77/50#25 100M	Left Tilt	656000	25.50	26.5	1.259	0.144	0.511
	5G NR n78/1#1 100M	Right Cheek	633334	25.51	26.5	1.256	0.495	0.420
	5G NR n78/1#1 100M	Right Tilt	633334	25.51	26.5	1.256	0.295	0.255
	5G NR n78/1#1 100M	Left Cheek	633334	25.51	26.5	1.256	0.334	0.622
	5G NR n78/1#1 100M	Left Tilt	633334	25.51	26.5	1.256	0.203	0.371
	5G NR n78/50#25 100M	Right Cheek	633334	25.46	26.5	1.271	0.353	0.159
	5G NR n78/50#25 100M	Right Tilt	633334	25.46	26.5	1.271	0.268	0.121
	5G NR n78/50#25 100M	Left Cheek	633334	25.46	26.5	1.271	0.125	0.449
	5G NR n78/50#25 100M	Left Tilt	633334	25.46	26.5	1.271	0.095	0.341
	5G NR n78/1#1 100M	Right Cheek	650000	25.41	26.5	1.285	0.529	0.230
	5G NR n78/1#1 100M	Right Tilt	650000	25.41	26.5	1.285	0.388	0.181
	5G NR n78/1#1 100M	Left Cheek	650000	25.41	26.5	1.285	0.179	0.680
	5G NR n78/1#1 100M	Left Tilt	650000	25.41	26.5	1.285	0.141	0.499
	5G NR n78/50#25 100M	Right Cheek	650000	25.38	26.5	1.294	0.529	0.243
	5G NR n78/50#25 100M	Right Tilt	650000	25.38	26.5	1.294	0.384	0.176
9#	5G NR n78/50#25 100M	Left Cheek	650000	25.38	26.5	1.294	0.188	0.685
	5G NR n78/50#25 100M	Left Tilt	650000	25.38	26.5	1.294	0.136	0.497

Note:

1. Per KDB 447498 D01v06, for each exposure position, if the highest output power channel Reported SAR ≤ 0.8W/kg, other channels SAR testing is not necessary.
2. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8W/kg.
3. Per KDB 941225 D05v02r05, 100% RB allocation SAR measurement is not required when the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg.
4. According to KDB 865664 D02v01r02, SAR plot is required for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.

15.3. Body SAR Data List

Plot No.	Band/Mode	Test Position	CH.	Ave. Power (dBm)	Tune-up Limit (dBm)	Tune-up Scaling Factor	Meas. SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
	5G NR n2/1#1 20M	Front Side	376000	22.99	23.5	1.125	0.314	0.353
	5G NR n2/1#1 20M	Back Side	376000	22.99	23.5	1.125	0.681	0.766
	5G NR n2/1#1 20M	Left Side	376000	22.99	23.5	1.125	0.627	0.705
10#	5G NR n2/1#1 20M	Top Side	376000	22.99	23.5	1.125	0.701	0.788
	5G NR n2/50#25 20M	Front Side	376000	21.99	22.5	1.125	0.269	0.303
	5G NR n2/50#25 20M	Back Side	376000	21.99	22.5	1.125	0.432	0.486
	5G NR n2/50#25 20M	Left Side	376000	21.99	22.5	1.125	0.641	0.721
	5G NR n2/50#25 20M	Top Side	376000	21.99	22.5	1.125	0.040	0.045
	5G NR n5/1#1 20M	Front Side	167300	21.62	22.0	1.091	0.444	0.485
11#	5G NR n5/1#1 20M	Back Side	167300	21.62	22.0	1.091	0.643	0.702
	5G NR n5/1#1 20M	Left Side	167300	21.62	22.0	1.091	0.266	0.290
	5G NR n5/1#1 20M	Bottom Side	167300	21.62	22.0	1.091	0.401	0.438
	5G NR n5/50#25 20M	Front Side	167300	20.62	21.0	1.091	0.358	0.391
	5G NR n5/50#25 20M	Back Side	167300	20.62	21.0	1.091	0.516	0.563
	5G NR n5/50#25 20M	Left Side	167300	20.62	21.0	1.091	0.155	0.169
	5G NR n5/50#25 20M	Bottom Side	167300	20.62	21.0	1.091	0.042	0.046
	5G NR n7/1#1 20M	Front Side	512000	21.24	21.5	1.062	0.178	0.189
12#	5G NR n7/1#1 20M	Back Side	512000	21.24	21.5	1.062	0.539	0.572
	5G NR n7/1#1 20M	Left Side	512000	21.24	21.5	1.062	0.056	0.059
	5G NR n7/1#1 20M	Bottom Side	512000	21.24	21.5	1.062	0.238	0.253
	5G NR n7/50#25 20M	Front Side	512000	20.24	20.5	1.062	0.187	0.199
	5G NR n7/50#25 20M	Back Side	512000	20.24	20.5	1.062	0.316	0.335
	5G NR n7/50#25 20M	Left Side	512000	20.24	20.5	1.062	0.108	0.115
	5G NR n7/50#25 20M	Bottom Side	512000	20.24	20.5	1.062	0.404	0.429
	5G NR n25/1#1 20M	Front Side	376500	23.04	23.5	1.112	0.309	0.344
	5G NR n25/1#1 20M	Back Side	376500	23.04	23.5	1.112	0.467	0.519
	5G NR n25/1#1 20M	Left Side	376500	23.04	23.5	1.112	0.549	0.610
	5G NR n25/1#1 20M	Top Side	376500	23.04	23.5	1.112	0.162	0.180
	5G NR n25/50#25 20M	Front Side	376500	22.04	22.5	1.112	0.321	0.357
	5G NR n25/50#25 20M	Back Side	376500	22.04	22.5	1.112	0.495	0.550
13#	5G NR n25/50#25 20M	Left Side	376500	22.04	22.5	1.112	0.603	0.670

	5G NR n25/50#25 20M	Top Side	376500	22.04	22.5	1.112	0.151	0.168
	5G NR n41/1#1 100M	Front Side	518598	21.38	22.0	1.153	0.309	0.356
14#	5G NR n41/1#1 100M	Back Side	518598	21.38	22.0	1.153	0.684	0.789
	5G NR n41/1#1 100M	Left Side	518598	21.38	22.0	1.153	0.486	0.561
	5G NR n41/1#1 100M	Bottom Side	518598	21.38	22.0	1.153	0.464	0.535
	5G NR n41/137#67 100M	Front Side	518598	20.38	21.0	1.153	0.272	0.314
	5G NR n41/137#67 100M	Back Side	518598	20.38	21.0	1.153	0.514	0.593
	5G NR n41/137#67 100M	Left Side	518598	20.38	21.0	1.153	0.322	0.371
	5G NR n41/137#67 100M	Bottom Side	518598	20.38	21.0	1.153	0.457	0.527
	5G NR n66/1#1 20M	Front Side	349000	21.41	22.0	1.146	0.264	0.303
	5G NR n66/1#1 20M	Back Side	349000	21.41	22.0	1.146	0.372	0.426
15#	5G NR n66/1#1 20M	Left Side	349000	21.41	22.0	1.146	0.656	0.752
	5G NR n66/1#1 20M	Top Side	349000	21.41	22.0	1.146	0.261	0.299
	5G NR n66/50#25 20M	Front Side	349000	20.41	21.0	1.146	0.301	0.345
	5G NR n66/50#25 20M	Back Side	349000	20.41	21.0	1.146	0.442	0.506
	5G NR n66/50#25 20M	Left Side	349000	20.41	21.0	1.146	0.582	0.667
	5G NR n66/50#25 20M	Top Side	349000	20.41	21.0	1.146	0.167	0.192
	5G NR n71/1#1 20M	Front Side	134600	18.50	19.0	1.122	0.238	0.267
16#	5G NR n71/1#1 20M	Back Side	134600	18.50	19.0	1.122	0.423	0.475
	5G NR n71/1#1 20M	Left Side	134600	18.50	19.0	1.122	0.332	0.373
	5G NR n71/1#1 20M	Bottom Side	134600	18.50	19.0	1.122	0.110	0.123
	5G NR n71/50#25 20M	Front Side	134600	17.50	18.0	1.122	0.217	0.243
	5G NR n71/50#25 20M	Back Side	134600	17.50	18.0	1.122	0.415	0.466
	5G NR n71/50#25 20M	Left Side	134600	17.50	18.0	1.122	0.325	0.365
	5G NR n71/50#25 20M	Bottom Side	134600	17.50	18.0	1.122	0.082	0.092
	5G NR n77/1#1 100M	Front Side	633334	25.60	26.5	1.230	0.172	0.212
	5G NR n77/1#1 100M	Back Side	633334	25.60	26.5	1.230	0.186	0.229
	5G NR n77/1#1 100M	Left Side	633334	25.60	26.5	1.230	0.156	0.192
	5G NR n77/1#1 100M	Bottom Side	633334	25.60	26.5	1.230	0.108	0.133
	5G NR n77/50#25 100M	Front Side	633334	25.51	26.5	1.256	0.152	0.191
	5G NR n77/50#25 100M	Back Side	633334	25.51	26.5	1.256	0.151	0.190
	5G NR n77/50#25 100M	Left Side	633334	25.51	26.5	1.256	0.129	0.162
	5G NR n77/50#25 100M	Bottom Side	633334	25.51	26.5	1.256	0.103	0.129

	5G NR n77/1#1 100M	Front Side	656000	25.53	26.5	1.250	0.193	0.241
17#	5G NR n77/1#1 100M	Back Side	656000	25.53	26.5	1.250	0.249	0.311
	5G NR n77/1#1 100M	Left Side	656000	25.53	26.5	1.250	0.203	0.254
	5G NR n77/1#1 100M	Bottom Side	656000	25.53	26.5	1.250	0.176	0.220
	5G NR n77/50#25 100M	Front Side	656000	25.50	26.5	1.259	0.177	0.223
	5G NR n77/50#25 100M	Back Side	656000	25.50	26.5	1.259	0.236	0.297
	5G NR n77/50#25 100M	Left Side	656000	25.50	26.5	1.259	0.194	0.244
	5G NR n77/50#25 100M	Bottom Side	656000	25.50	26.5	1.259	0.160	0.201
	5G NR n78/1#1 100M	Front Side	633334	25.51	26.5	1.256	0.133	0.167
	5G NR n78/1#1 100M	Back Side	633334	25.51	26.5	1.256	0.273	0.343
	5G NR n78/1#1 100M	Left Side	633334	25.51	26.5	1.256	0.205	0.257
	5G NR n78/1#1 100M	Bottom Side	633334	25.51	26.5	1.256	0.145	0.182
	5G NR n78/50#25 100M	Front Side	633334	25.46	26.5	1.271	0.104	0.132
	5G NR n78/50#25 100M	Back Side	633334	25.46	26.5	1.271	0.184	0.234
	5G NR n78/50#25 100M	Left Side	633334	25.46	26.5	1.271	0.101	0.128
	5G NR n78/50#25 100M	Bottom Side	633334	25.46	26.5	1.271	0.098	0.125
	5G NR n78/1#1 100M	Front Side	650000	25.41	26.5	1.285	0.104	0.134
18#	5G NR n78/1#1 100M	Back Side	650000	25.41	26.5	1.285	0.194	0.249
	5G NR n78/1#1 100M	Left Side	650000	25.41	26.5	1.285	0.085	0.109
	5G NR n78/1#1 100M	Bottom Side	650000	25.41	26.5	1.285	0.113	0.145
	5G NR n78/50#25 100M	Front Side	650000	25.38	26.5	1.294	0.081	0.105
	5G NR n78/50#25 100M	Back Side	650000	25.38	26.5	1.294	0.115	0.149
	5G NR n78/50#25 100M	Left Side	650000	25.38	26.5	1.294	0.178	0.230
	5G NR n78/50#25 100M	Bottom Side	650000	25.38	26.5	1.294	0.118	0.153

Note:

1. Per KDB 447498 D01v06, for each exposure position, if the highest output power channel Reported SAR ≤ 0.8W/kg, other channels SAR testing is not necessary.
2. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8W/kg.
3. Per KDB 941225 D05v02r05, 100% RB allocation SAR measurement is not required when the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg.
4. According to KDB 865664 D02v01r02, SAR plot is required for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.

16. Simultaneous Transmission Evaluation

16.1. Simultaneous Transmission Consideration

No.	Simultaneous Transmission Consideration	Head	Body-Worn	Hotspot
1	WWAN+WLAN 2.4GHz/5GHz	Yes	Yes	Yes
2	WWAN+Bluetooth	No	Yes	No

Note:

1. When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of the WWAN and WLAN transmitters. The "Portable Hotspot" feature on the handset was NOT activated, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal.
2. The hotspot SAR result may overlap with the body-worn accessory SAR requirements, per KDB 941225 D06, the more conservative configurations can be considered, thus excluding some unnecessary body-worn accessory SAR tests.
3. Per KDB 447498D01v06, simultaneous transmission SAR evaluation procedures is as followed:
   Step 1: If sum of 1 g SAR < 1.6 W/kg, Simultaneous SAR measurement is not required.
   Step 2: If sum of 1 g SAR > 1.6 W/kg, ratio of SAR to peak separation distance for pair of transmitters calculated.
   Step 3: If the ratio of SAR to peak separation distance is ≤ 0.04, Simultaneous SAR measurement is not required.
   Step 4: If the ratio of SAR to peak separation distance is > 0.04, Simultaneous SAR measurement is required and simultaneous transmission SAR value is calculated.
   (The ratio is determined by: $(SAR_1 + SAR_2)$ ^ $1.5/R_i \leq 0.04$,
   Ri is the separation distance between the peak SAR locations for the antenna pair in mm.

16.2. Simultaneous Transmission Exposure Evaluation

➢ **Head Simultaneous Transmission for WWAN + WLAN 2.4GHz/5GHz**

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN 1g SAR (W/kg)	3 5GHz WLAN 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)
5G NR	5G NR n2	Right Cheek	0.789	0.604	0.190	1.393	0.979
		Right Tilt	0.173	0.444	0.115	0.617	0.288
		Left Cheek	0.452	0.416	0.098	0.868	0.550
		Left Tilt	0.070	0.239	0.072	0.309	0.142
	5G NR n5	Right Cheek	0.362	0.604	0.190	0.845	0.431
		Right Tilt	0.100	0.444	0.115	0.529	0.200
		Left Cheek	0.241	0.416	0.098	0.778	0.460
		Left Tilt	0.085	0.239	0.072	0.339	0.172
	5G NR n7	Right Cheek	0.380	0.604	0.190	0.758	0.344
		Right Tilt	0.203	0.444	0.115	0.517	0.188
		Left Cheek	0.154	0.416	0.098	0.796	0.478
		Left Tilt	0.073	0.239	0.072	0.442	0.275
	5G NR n25	Right Cheek	0.748	0.604	0.190	1.352	0.938
		Right Tilt	0.182	0.444	0.115	0.626	0.297
		Left Cheek	0.471	0.416	0.098	0.887	0.569
		Left Tilt	0.079	0.239	0.072	0.318	0.151
	5G NR n41	Right Cheek	0.401	0.604	0.190	0.917	0.503
		Right Tilt	0.197	0.444	0.115	0.535	0.206
		Left Cheek	0.313	0.416	0.098	0.817	0.499
		Left Tilt	0.091	0.239	0.072	0.436	0.269
	5G NR n66	Right Cheek	0.913	0.604	0.190	1.517	1.103
		Right Tilt	0.595	0.444	0.115	1.039	0.710
		Left Cheek	0.559	0.416	0.098	0.975	0.657
		Left Tilt	0.376	0.239	0.072	0.615	0.448
	5G NR n71	Right Cheek	0.301	0.604	0.190	0.790	0.376
		Right Tilt	0.108	0.444	0.115	0.533	0.204
		Left Cheek	0.186	0.416	0.098	0.717	0.399
		Left Tilt	0.089	0.239	0.072	0.347	0.180
	5G NR n77	Right Cheek	0.574	0.604	0.190	1.178	0.794
		Right Tilt	0.460	0.444	0.115	0.904	0.559
		Left Cheek	0.798	0.416	0.098	1.214	0.514

		Left Tilt	0.708	0.239	0.072	0.947	0.311
	5G NR n78	Right Cheek	0.243	0.604	0.190	0.847	0.794
		Right Tilt	0.181	0.444	0.115	0.625	0.559
		Left Cheek	0.685	0.416	0.098	1.101	0.514
		Left Tilt	0.499	0.239	0.072	0.738	0.311

➢ Body Simultaneous Transmission for WWAN + WLAN 2.4GHz/5GHz

WWAN Band		Exposure Position	1	2	3	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)
			WWAN 1g SAR (W/kg)	2.4GHz WLAN 1g SAR (W/kg)	5GHz WLAN 1g SAR (W/kg)		
5G NR	5G NR n2	Front Side	0.353	0.292	0.352	0.645	0.705
		Back Side	0.766	0.322	0.358	1.088	1.124
		Left Side	0.827			0.827	0.827
		Right Side		0.218	0.337	0.218	0.337
		Top Side	0.788	0.269	0.271	1.057	1.059
		Bottom Side					
	5G NR n5	Front Side	0.485	0.292	0.352	0.777	0.837
		Back Side	0.702	0.322	0.358	1.024	1.06
		Left Side	0.290			0.29	0.29
		Right Side		0.218	0.337	0.218	0.337
		Top Side		0.269	0.271	0.269	0.271
		Bottom Side	0.438			0.438	0.438
	5G NR n7	Front Side	0.199	0.292	0.352	0.491	0.551
		Back Side	0.335	0.322	0.358	0.657	0.693
		Left Side	0.115			0.115	0.115
		Right Side		0.218	0.337	0.218	0.337
		Top Side		0.269	0.271	0.269	0.271
		Bottom Side	0.572			0.572	0.572
	5G NR n25	Front Side	0.357	0.292	0.352	0.649	0.709
		Back Side	0.550	0.322	0.358	0.872	0.908
		Left Side	0.670			0.67	0.67
		Right Side		0.218	0.337	0.218	0.337
		Top Side	0.180	0.269	0.271	0.449	0.451
		Bottom Side	0.000				
	5G NR n41	Front Side	0.356	0.292	0.352	0.648	0.708
		Back Side	0.789	0.322	0.358	1.111	1.147
		Left Side	0.561			0.561	0.561

		Right Side		0.218	0.337	0.218	0.337
		Top Side		0.269	0.271	0.269	0.271
		Bottom Side	0.535			0.535	0.535
	5G NR n66	Front Side	0.345	0.292	0.352	0.637	0.697
		Back Side	0.506	0.322	0.358	0.828	0.864
		Left Side	0.752			0.752	0.752
		Right Side		0.218	0.337	0.218	0.337
		Top Side	0.299	0.269	0.271	0.568	0.57
		Bottom Side	0.000				
	5G NR n71	Front Side	0.267	0.292	0.352	0.559	0.619
		Back Side	0.475	0.322	0.358	0.797	0.833
		Left Side	0.373			0.373	0.373
		Right Side		0.218	0.337	0.218	0.337
		Top Side		0.269	0.271	0.269	0.271
		Bottom Side	0.123			0.123	0.123
	5G NR n77	Front Side	0.241	0.292	0.352	0.533	0.593
		Back Side	0.311	0.322	0.358	0.633	0.669
		Left Side	0.254			0.254	0.254
		Right Side		0.218	0.337	0.218	0.337
		Top Side	0.220	0.269	0.271	0.489	0.491
		Bottom Side					
	5G NR n78	Front Side	0.167	0.292	0.352	0.459	0.519
		Back Side	0.343	0.322	0.358	0.665	0.701
		Left Side	0.257			0.257	0.257
		Right Side		0.218	0.337	0.218	0.337
		Top Side	0.182	0.269	0.271	0.451	0.453
		Bottom Side					

➢ **Body Simultaneous Transmission for WWAN + WLAN 2.4GHz/5GHz/Bluetooth**

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 Bluetooth Estimated 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)
5G NR	5G NR n2	Front Side	0.353	0.047	0.405
		Back Side	0.766	0.047	0.776
		Left Side	0.827		0.258
		Right Side			
		Top Side	0.788		
		Bottom Side			0.258
	5G NR n5	Front Side	0.485	0.047	0.294
		Back Side	0.702	0.047	1.233
		Left Side	0.290		0.551
		Right Side			
		Top Side			0.79
		Bottom Side	0.438		
	5G NR n7	Front Side	0.199	0.047	0.465
		Back Side	0.335	0.047	0.862
		Left Side	0.115		0.467
		Right Side			
		Top Side			0.612
		Bottom Side	0.572		
	5G NR n25	Front Side	0.357	0.047	0.241
		Back Side	0.550	0.047	0.566
		Left Side	0.670		0.262
		Right Side			
		Top Side	0.180		0.347
		Bottom Side			
	5G NR n41	Front Side	0.356	0.047	0.623
		Back Side	0.789	0.047	0.808
		Left Side	0.561		0.677
		Right Side			
		Top Side			0.494
		Bottom Side	0.535		
	5G NR n66	Front Side	0.345	0.047	0.288
		Back Side	0.506	0.047	0.57
		Left Side	0.752		0.364

		Right Side			
		Top Side	0.299		
		Bottom Side			0.254
	5G NR n71	Front Side	0.267	0.047	0.353
		Back Side	0.475	0.047	0.374
		Left Side	0.373		0.173
		Right Side			
		Top Side			
		Bottom Side	0.123		0.31
	5G NR n77	Front Side	0.241	0.047	0.261
		Back Side	0.311	0.047	0.314
		Left Side	0.254		0.228
		Right Side			
		Top Side	0.220		
		Bottom Side			0.205
	5G NR n78	Front Side	0.167	0.047	0.359
		Back Side	0.343	0.047	0.746
		Left Side	0.257		0.203
		Right Side			
		Top Side	0.182		0.419
		Bottom Side			
		Back Side	0.198	0.047	0.245
		Left Side	0.103		0.103
		Right Side			
		Top Side			
		Bottom Side	0.148		0.148

17. Uncertainty Assessment

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.

Annex A General Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.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.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,F) will be submitted separately.

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