FCC SAR Test Report

Report No.	:	**W7L-P24040002SA01**
Applicant	:	**Bluebird Inc.**
Address	:	**3F, 115, Irwon-ro, Gangnam-gu, Seoul, Republic of Korea**
Manufacturer	:	**Bluebird Inc.**
Address	:	**3F, 115, Irwon-ro, Gangnam-gu, Seoul, Republic of Korea**
Product	:	**Enterprise Full Touch Handheld Computer**
FCC ID	:	**SS4S50F1**
Brand	:	**Bluebird**
Model No.	:	**S50**
Standards	:	**FCC 47 CFR Part 2 (2.1093) / IEEE C95.1:1992 / IEEE 1528:2013 KDB 865664 D01 v01r04 / KDB 865664 D02 v01r02 / KDB 248227 D01 v02r02 KDB 447498 D04 v01 / KDB 648474 D04 v01r03 / KDB 941225 D06 v02r01**
Sample Received Date	:	**May. 10, 2024**
Date of Testing	:	**Jun. 10, 2024 ~ Jun. 20, 2024**
FCC Designation No.	:	**CN1325 FCC Site Registration No. : 434559**
Issued By	:	**Huarui 7layers High Technology (Suzhou) Co., Ltd.**
Address	:	**Tower N, Innovation Center, 88 Zuyi Road, High-tech District, Suzhou City, Anhui Province China**

CERTIFICATION: The above equipment have been tested by **Huarui 7layers High Technology (Suzhou) Co., Ltd.**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's SAR characteristics under the conditions specified in this report. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product certification, approval, or endorsement by A2LA or any government agencies.

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Release Control Record

Report No.	Reason for Change	Date Issued
W7L-P24040002SA01	Initial release	Jul. 22, 2024

1. Summary of Maximum SAR Value

Equipment Class	Mode	Highest Reported Head SAR_{1g} (W/kg)	Highest Reported Body-worn SAR_{1g} (1.0 cm Gap) (W/kg)	Highest Reported Hotspot SAR_{1g} (1.0 cm Gap) (W/kg)	Highest Reported Extremity SAR_{10g} (0 cm Gap) (W/kg)
DTS	2.4G WLAN	0.38	0.43	0.43	N/A
NII	5.2G WLAN	0.53	0.52	0.63	N/A
	5.3G WLAN	0.74	0.55	N/A	1.38
	5.6G WLAN	0.41	0.28	N/A	0.79
	5.8G WLAN	0.88	0.42	0.84	N/A

Note:

1. The SAR limit **(Head & Body: SAR_{1g} 1.6 W/kg, Extremity: SAR_{10g} 4.0 W/kg)** for general population / uncontrolled exposure is specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992.

2. Description of Equipment Under Test

EUT Type	Enterprise Full Touch Handheld Computer
FCC ID	SS4S50F1
Brand Name	Bluebird
Model Name	S50
Additional Models	S70
Sample1 SN Code	S50ANLBBA013
Sample2 SN Code	S70ANLBBA004
HW Version	REV0.1
SW Version	20230911_R1.17
Tx Frequency Bands (Unit: MHz)	WLAN : 2412 ~ 2462, 5180 ~ 5240, 5260 ~ 5320, 5500 ~ 5700, 5745 ~ 5825
Uplink Modulations	802.11b : DSSS 802.11a/g/n/ac : OFDM 802.11ax : OFDMA
Maximum Tune-up Conducted Power (Unit: dBm)	Please refer to section 4.5.1 of this report.
EUT Stage	Identical Prototype

Note:

1. The above EUT information is declared by manufacturer and for more detailed features description please refers to the manufacturer's specifications or User's Manual.
2. The difference between sample 1/2 is only the shell material, so sample 2 verifies the worst case of sample 1.

3. SAR Measurement System

3.1 Definition of Specific Absorption Rate (SAR)

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/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

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 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 RMS electrical field strength.

3.2 SPEAG DASY System

DASY system consists of high precision robot, probe alignment sensor, phantom, robot controller, controlled measurement server and near-field probe. The robot includes six axes that can move to the precision position of the DASY5 software defined. The DASY software can define the area that is detected by the probe. The robot is connected to controlled box. Controlled measurement server is connected to the controlled robot box. The DAE includes amplifier, signal multiplexing, AD converter, offset measurement and surface detection. It is connected to the Electro-optical coupler (ECO). The ECO performs the conversion form the optical into digital electric signal of the DAE and transfers data to the PC.

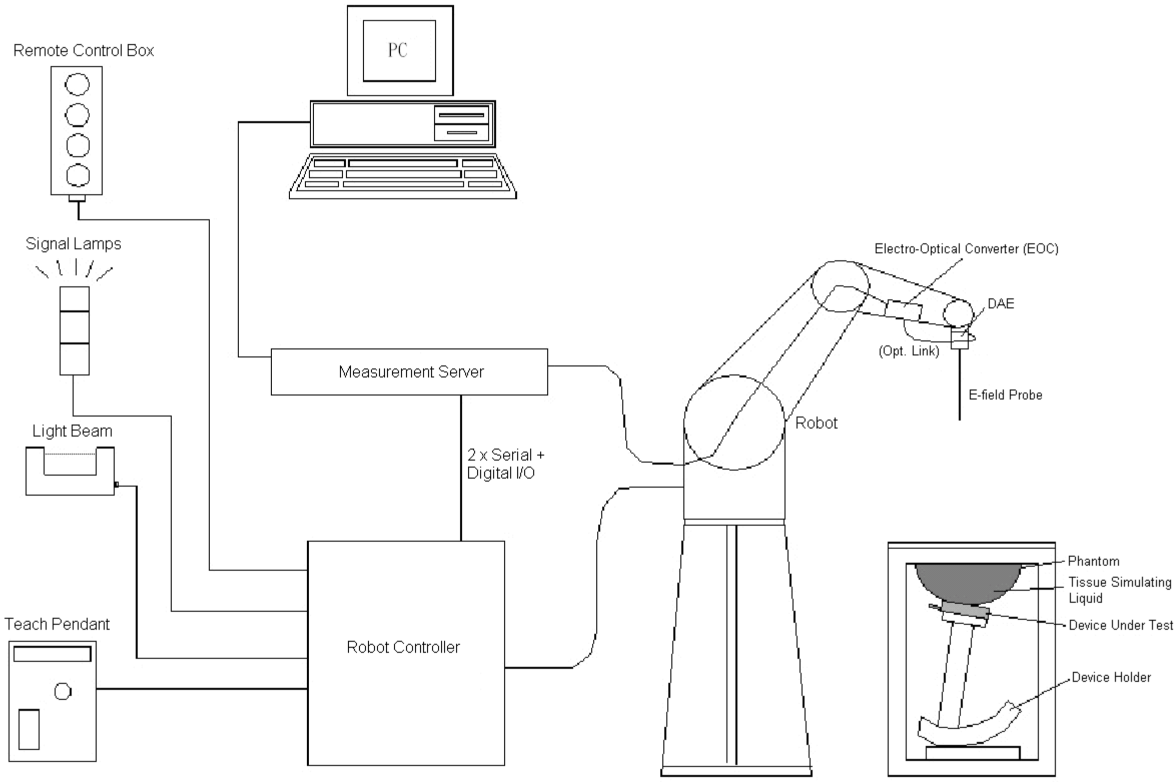


Fig-3.1 DASY System Setup

3.2.1 Robot

The DASY system uses the high precision robots from Stäubli SA (France). For the 6-axis controller system, the robot controller version (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-3.2 DASY6

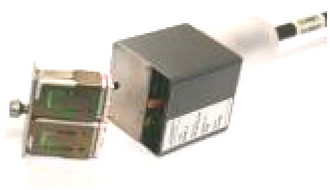
3.2.2 Probes

The SAR measurement is conducted with the dosimetric probe. 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.

Model	EX3DV4	
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 6 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 (noise: typically < 1 μW/g)	
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

Model	ES3DV3	
Construction	Symmetrical design with triangular core. Interleaved sensors. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).	
Frequency	10 MHz to 4 GHz Linearity: ± 0.2 dB	
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.3 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	5 μW/g to 100 mW/g Linearity: ± 0.2 dB	
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 3.9 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.0 mm	

3.2.3 Data Acquisition Electronics (DAE)

Model	DAE3, DAE4	
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.	
Measurement Range	-100 to +300 mV (16 bit resolution and two range settings: 4mV, 400mV)	
Input Offset Voltage	< 5μV (with auto zero)	
Input Bias Current	< 50 fA	
Dimensions	60 x 60 x 68 mm	

3.2.4 Phantoms

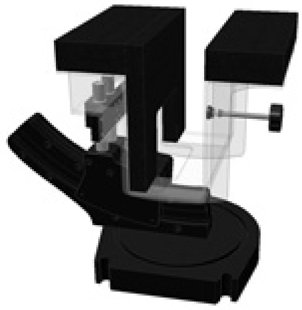
Model	Twin SAM	
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.	
Material	Vinylester, glass fiber reinforced (VE-GF)	
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)	
Dimensions	Length: 1000 mm Width: 500 mm Height: adjustable feet	
Filling Volume	approx. 25 liters	

Model	ELI	
Construction	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.	
Material	Vinylester, glass fiber reinforced (VE-GF)	
Shell Thickness	2.0 ± 0.2 mm (bottom plate)	
Dimensions	Major axis: 600 mm Minor axis: 400 mm	
Filling Volume	approx. 30 liters	

3.2.5 Device Holder

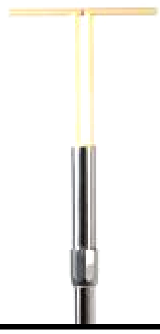
Model	Mounting Device
Construction	In combination with the Twin SAM Phantom or ELI4, the Mounting Device enables the rotation of the mounted transmitter device in spherical coordinates. Rotation point is the ear opening point. Transmitter devices can be easily and accurately positioned according to IEC, IEEE, FCC or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat).
Material	POM

Model	Laptop Extensions Kit
Construction	Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices according to IEC 62209-2 (e.g., laptops, cameras, etc.). It is lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner.
Material	POM, Acrylic glass, Foam



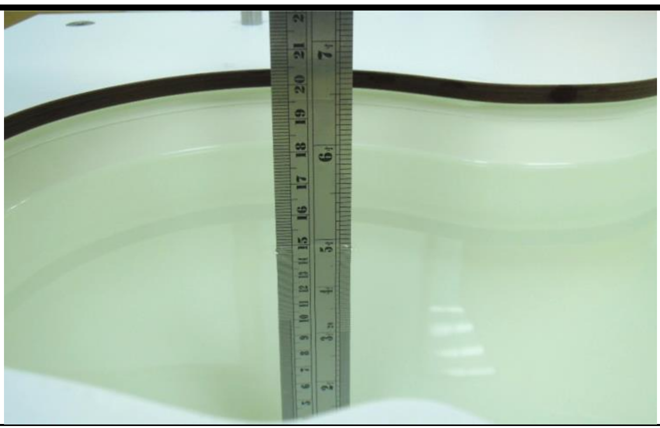
3.2.6 System Validation Dipoles

Model	D-Serial
Construction	Symmetrical dipole with l/4 balun. Enables measurement of feed point impedance with NWA. Matched for use near flat phantoms filled with tissue simulating solutions.
Frequency	750 MHz to 5800 MHz
Return Loss	> 20 dB
Power Capability	> 100 W (f < 1GHz), > 40 W (f > 1GHz)



3.2.7 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 15 cm. 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. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5% are listed in Table-3.1.



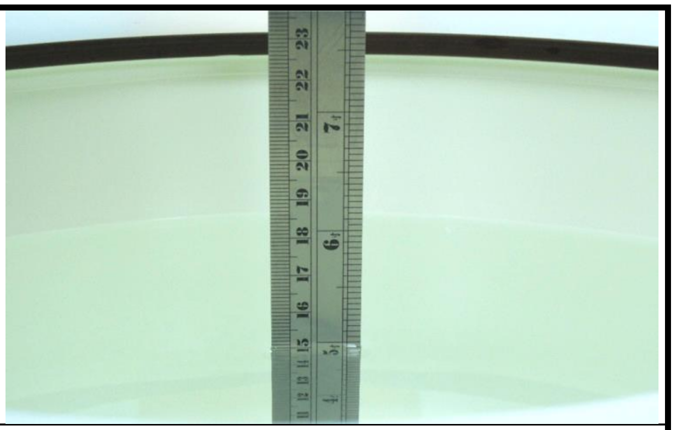


Photo of Liquid Height for Head Position	Photo of Liquid Height for Body Position

The dielectric properties of the head tissue simulating liquids are defined in IEEE 1528, and KDB 865664 D01 Appendix A. For the body tissue simulating liquids, the dielectric properties are defined in KDB 865664 D01 Appendix A. The dielectric properties of the tissue simulating liquids were verified prior to the SAR evaluation using a dielectric assessment kit and a network analyzer.

Table-3.1 Targets of Tissue Simulating Liquid

Frequency (MHz)	Target Permittivity	Range of ±5%	Target Conductivity	Range of ±5%
For Head				
750	41.9	39.8 ~ 44.0	0.89	0.85 ~ 0.93
835	41.5	39.4 ~ 43.6	0.90	0.86 ~ 0.95
900	41.5	39.4 ~ 43.6	0.97	0.92 ~ 1.02
1450	40.5	38.5 ~ 42.5	1.20	1.14 ~ 1.26
1640	40.3	38.3 ~ 42.3	1.29	1.23 ~ 1.35
1750	40.1	38.1 ~ 42.1	1.37	1.30 ~ 1.44
1800	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
1900	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
2000	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
2300	39.5	37.5 ~ 41.5	1.67	1.59 ~ 1.75
2450	39.2	37.2 ~ 41.2	1.80	1.71 ~ 1.89
2600	39.0	37.1 ~ 41.0	1.96	1.86 ~ 2.06
3500	37.9	36.0 ~ 39.8	2.91	2.76 ~ 3.06
5200	36.0	34.2 ~ 37.8	4.66	4.43 ~ 4.89
5300	35.9	34.1 ~ 37.7	4.76	4.52 ~ 5.00
5500	35.6	33.8 ~ 37.4	4.96	4.71 ~ 5.21
5600	35.5	33.7 ~ 37.3	5.07	4.82 ~ 5.32
5800	35.3	33.5 ~ 37.1	5.27	5.01 ~ 5.53

The following table gives the recipes for tissue simulating liquids.

Table-3.2 Recipes of Tissue Simulating Liquid

Tissue Type	Bactericide	DGBE	HEC	NaCl	Sucrose	Triton X-100	Water	Diethylene Glycol Mono-hexylether
H750	0.2	-	0.2	1.5	56.0	-	42.1	-
H835	0.2	-	0.2	1.5	57.0	-	41.1	-
H900	0.2	-	0.2	1.4	58.0	-	40.2	-
H1450	-	43.3	-	0.6	-	-	56.1	-
H1640	-	45.8	-	0.5	-	-	53.7	-
H1750	-	47.0	-	0.4	-	-	52.6	-
H1800	-	44.5	-	0.3	-	-	55.2	-
H1900	-	44.5	-	0.2	-	-	55.3	-
H2000	-	44.5	-	0.1	-	-	55.4	-
H2300	-	44.9	-	0.1	-	-	55.0	-
H2450	-	45.0	-	0.1	-	-	54.9	-
H2600	-	45.1	-	0.1	-	-	54.8	-
H3500	-	28.0	-	0.2	-	20.0	71.8	-
H5G	-	-	-	-	-	17.2	65.5	17.3

3.3 SAR System Verification

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.

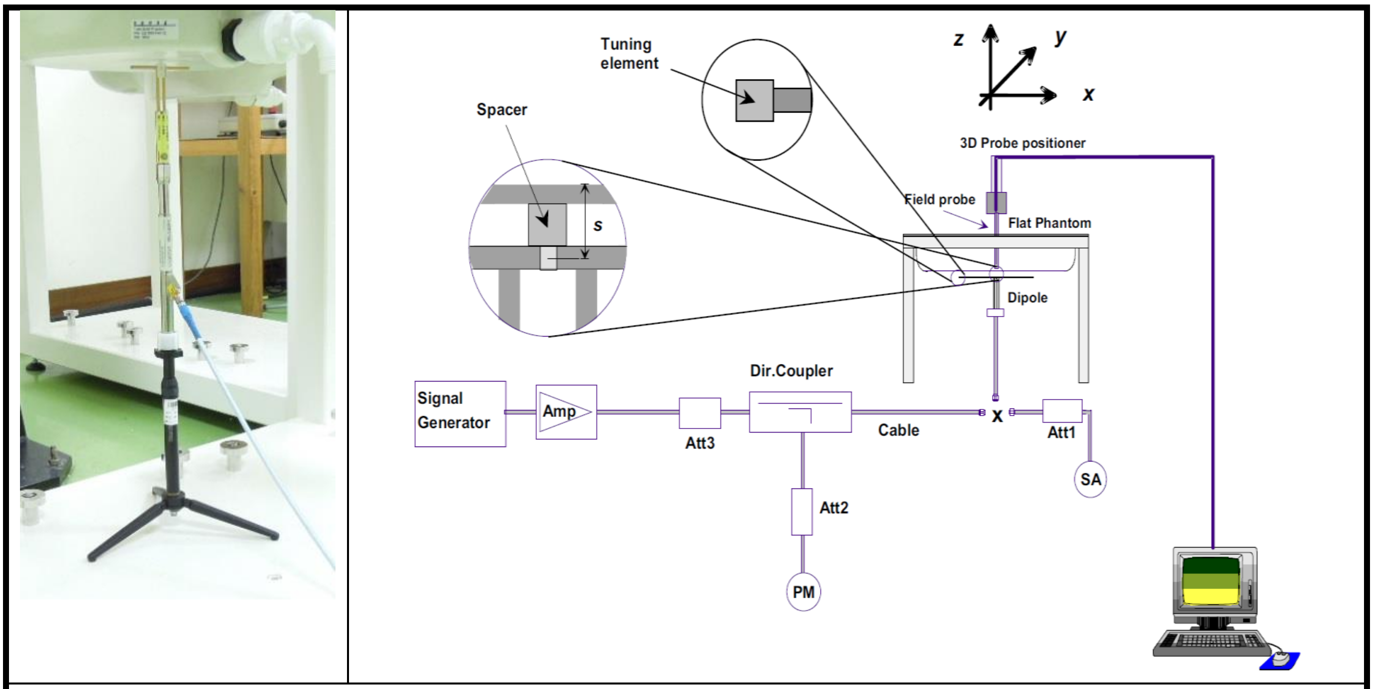


Fig-3.4 System Verification Setup

The validation dipole is placed beneath the flat phantom with the specific spacer in place. The distance spacer is touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The spectrum analyzer measures the forward power at the location of the system check dipole connector. The signal generator is adjusted for the desired forward power (250 mW is used for 700 MHz to 3 GHz, 100 mW is used for 3.5 GHz to 6 GHz) at the dipole connector and the power meter is read at that level. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter.

After system check testing, the SAR result will be normalized to 1W 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 %.

3.4 SAR Measurement Procedure

According to the SAR 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

The SAR measurement procedures for each of test conditions are as follows:

(a) Make EUT to transmit maximum output power
(b) Measure conducted output power through RF cable
(c) Place the EUT in the specific position of phantom
(d) Perform SAR testing steps on the DASY system
(e) Record the SAR value

3.4.1 Area & Zoom Scan Procedure

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. According to KDB 865664 D01, the resolution for Area and Zoom scan is specified in the table below.

Items	<= 2 GHz	2-3 GHz	3-4 GHz	4-5 GHz	5-6 GHz
Area Scan (Δx, Δy)	<= 15 mm	<= 12 mm	<= 12 mm	<= 10 mm	<= 10 mm
Zoom Scan (Δx, Δy)	<= 8 mm	<= 5 mm	<= 5 mm	<= 4 mm	<= 4 mm
Zoom Scan (Δz)	<= 5 mm	<= 5 mm	<= 4 mm	<= 3 mm	<= 2 mm
Zoom Scan Volume	>= 30 mm	>= 30 mm	>= 28 mm	>= 25 mm	>= 22 mm

Note:

When zoom scan is required and report SAR is <= 1.4 W/kg, the zoom scan resolution of Δx / Δy (2-3GHz: <= 8 mm, 3-4GHz: <= 7 mm, 4-6GHz: <= 5 mm) may be applied.

3.4.2 Volume Scan Procedure

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 postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

3.4.3 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 drift more than 5%, the SAR will be retested.

3.4.4 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

3.4.5 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 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.

4. SAR Measurement Evaluation

4.1 EUT Configuration and Setting

<Considerations Related to WLAN for Setup and Testing>

In general, various vendor specific external test software and chipset based internal test modes are typically used for SAR measurement. These chipset based test mode utilities are generally hardware and manufacturer dependent, and often include substantial flexibility to reconfigure or reprogram a device. 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. 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. The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

According to KDB 248227 D01, this device has installed WLAN engineering testing software which can provide continuous transmitting RF signal. During WLAN SAR testing, this device was operated to transmit continuously at the maximum transmission duty with specified transmission mode, operating frequency, lowest data rate, and maximum output power.

Initial Test Configuration

An initial test configuration is determined for OFDM transmission modes in 2.4 GHz and 5 GHz bands according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band.

Subsequent Test Configuration

SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units. Additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. When the highest reported SAR for the initial test configuration according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for that subsequent test configuration.

SAR Test Configuration and Channel Selection

When multiple channel bandwidth configurations in a frequency band have the same specified maximum output power, the initial test configuration is using largest channel bandwidth, lowest order modulation, lowest data rate, and lowest order 802.11 mode (i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n).

After an initial test configuration is determined, if multiple test channels have the same measured maximum output power, the channel chosen for SAR measurement is determined according to the following.
1) The channel closest to mid-band frequency is selected for SAR measurement.
2) For channels with equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.

Test Reduction for U-NII-1 (5.2 GHz) and U-NII-2A (5.3 GHz) Bands
For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following.
1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition).
2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration.

4.2 EUT Testing Position

According to KDB 648474 D04, handsets are tested for SAR compliance in head, body-worn accessory and other use configurations described in the following subsections.

4.2.1 Head Exposure Conditions

Head exposure is limited to next to the ear voice mode operations. Head SAR compliance is tested according to the test positions defined in IEEE Std 1528-2013 using the SAM phantom illustrated as below.

1. Define two imaginary lines on the handset
(a) The vertical centerline passes through two points on the front side of the handset - the midpoint of the width w_t of the handset at the level of the acoustic output, and the midpoint of the width w_b of the bottom of the handset.
(b) The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output. The horizontal line is also tangential to the face of the handset at point A.
(c) 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 centerline is not necessarily parallel to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.

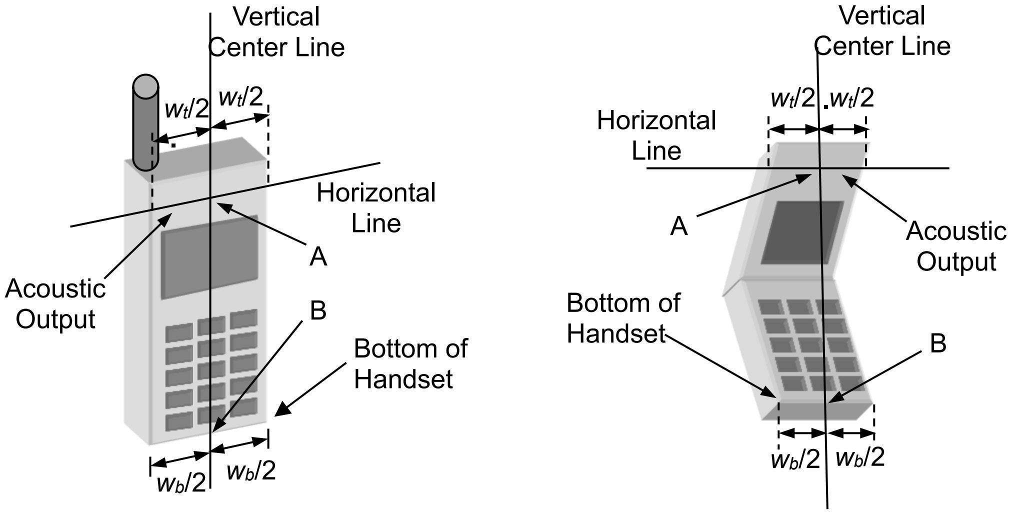


Fig-4.1 Illustration for Handset Vertical and Horizontal Reference Lines

2. Cheek Position
(a) 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.
(b) 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 Fig-4.2).

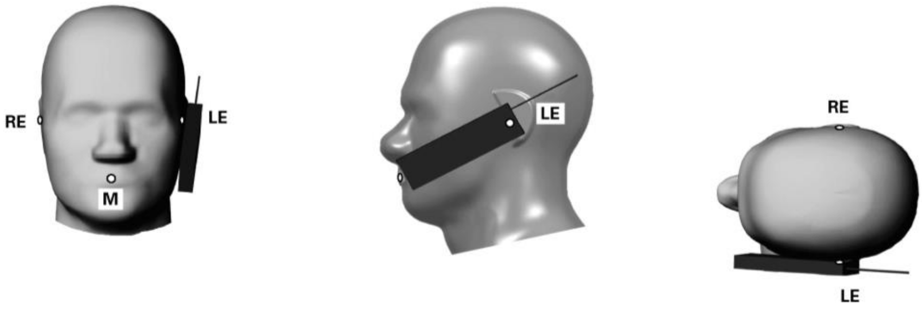


Fig-4.2 Illustration for Cheek Position

3. Tilted Position
(a) To position the device in the “cheek” position described above.
(b) 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 Fig-4.3).

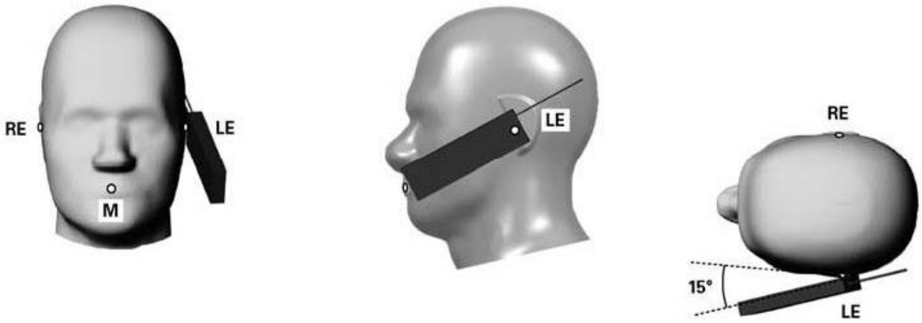


Fig-4.3 Illustration for Tilted Position

4.2.2 Body-worn Accessory Exposure Conditions

Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in KDB 447498 D01 are used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

Body-worn accessories that do not contain metallic or conductive components may be tested according to worst-case exposure configurations, typically according to the smallest test separation distance required for the group of body-worn accessories with similar operating and exposure characteristics. All body-worn accessories containing metallic components are tested in conjunction with the host device.

Body-worn accessory SAR compliance is based on a single minimum test separation distance for all wireless and operating modes applicable to each body-worn accessory used by the host, and according to the relevant voice and/or data mode transmissions and operations. If a body-worn accessory supports voice only operations in its normal and expected use conditions, testing of data mode for body-worn compliance is not required.

A conservative minimum test separation distance for supporting off-the-shelf body-worn accessories that may be acquired by users of consumer handsets is used to test for body-worn accessory SAR compliance. This distance is determined by the handset manufacturer, according to the requirements of Supplement C 01-01. Devices that are designed to operate on the body of users using lanyards and straps, or without requiring additional body-worn accessories, will be tested using a conservative minimum test separation distance <= 5 mm to support compliance.

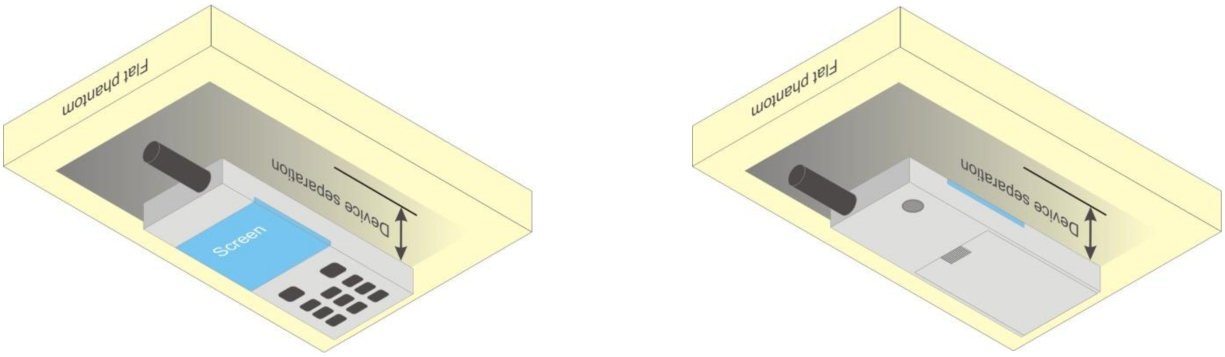
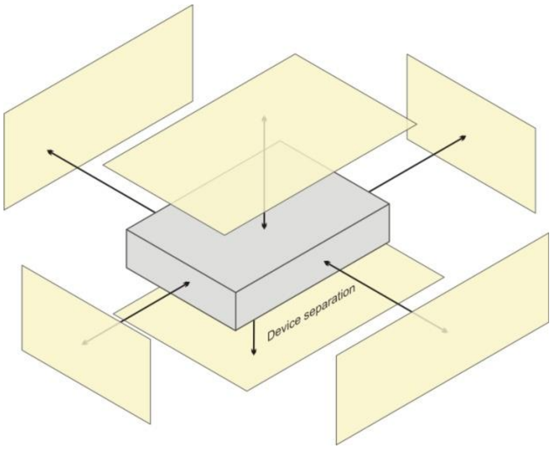


Fig-4.4 Illustration for Body Worn Position

4.2.3 Hotspot Mode Exposure 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 D06. 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).



Based on the antenna location shown on appendix E of this report, the SAR testing required for hotspot mode is listed as below.

Antenna	Front Face	Rear Face	Left Side	Right Side	Top Side	Bottom Side
WLAN-Ant 8	V	V		V	V	
WLAN-Ant 9	V	V	V		V	

4.2.4 Extremity Exposure Conditions

For smart phones with a display diagonal dimension > 15 cm or an overall diagonal dimension > 16 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance.

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.
2. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at <= 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions. The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g SAR > 1.2 W/kg. The normal tablet procedures in KDB 616217 are required when the over diagonal dimension of the device is > 20 cm. Hotspot mode SAR is not required when normal tablet procedures are applied. Extremity 10-g SAR is also not required for the front (top) surface of large form factor full size tablets. The more conservative tablet SAR results can be used to support the 10-g extremity SAR for phablet mode.
3. The simultaneous transmission operating configurations applicable to voice and data transmissions for both phone and mini-tablet modes must be taken into consideration separately for 1-g and 10-g SAR to determine the simultaneous transmission SAR test exclusion and measurement requirements for the relevant wireless modes and exposure conditions.

4.3 Tissue Verification

The measuring results for tissue simulating liquid are shown as below.

Test Date	Tissue Type	Frequency (MHz)	Liquid Temp. (℃)	Measured Conductivity (σ)	Measured Permittivity (ε_r)	Target Conductivity (σ)	Target Permittivity (ε_r)	Conductivity Deviation (%)	Permittivity Deviation (%)
Jun. 11, 2024	Head	2450	22.5	1.878	39.629	1.80	39.20	4.33	1.09
Jun. 12, 2024	Head	5250	22.6	4.551	35.048	4.76	35.90	-4.39	-2.37
Jun. 13, 2024	Head	5250	22.5	4.555	35.056	4.76	35.90	-4.31	-2.35
Jun. 14, 2024	Head	5600	22.4	4.943	34.548	5.07	35.50	-2.50	-2.68
Jun. 15, 2024	Head	5750	22.4	5.134	34.175	5.27	35.30	-2.58	-3.19

Note:

The dielectric properties of the tissue simulating liquid must be measured within 24 hours before the SAR testing and within ±5% of the target values. Liquid temperature during the SAR testing must be within ±2 ℃.

4.4 System Verification

The measuring result for system verification is tabulated as below.

<1g>

Test Date	Mode	Frequency (MHz)	1W Target SAR-1g (W/kg)	Measured SAR-1g (W/kg)	Normalized to 1W SAR-1g (W/kg)	Deviation (%)	Dipole S/N	Probe S/N	DAE S/N
Jun. 11, 2024	Head	2450	52.80	13.00	52.00	-1.52	1048	3985	1633
Jun. 12, 2024	Head	5250	76.90	7.71	77.10	0.26	1315	3985	1633
Jun. 13, 2024	Head	5250	76.90	7.59	75.90	-1.30	1315	3985	1633
Jun. 14, 2024	Head	5600	81.90	8.02	80.20	-2.08	1315	3985	1633
Jun. 15, 2024	Head	5750	76.10	7.41	74.10	-2.63	1315	3985	1633

<10g>

Test Date	Mode	Frequency (MHz)	1W Target SAR-10g (W/kg)	Measured SAR-10g (W/kg)	Normalized to 1W SAR-10g (W/kg)	Deviation (%)	Dipole S/N	Probe S/N	DAE S/N
Jun. 11, 2024	Head	2450	24.20	6.02	24.08	-0.50	1048	3985	1633
Jun. 12, 2024	Head	5250	22.10	2.23	22.30	0.90	1315	3985	1633
Jun. 13, 2024	Head	5250	22.10	2.18	21.80	-1.36	1315	3985	1633
Jun. 14, 2024	Head	5600	23.50	2.29	22.90	-2.55	1315	3985	1633
Jun. 15, 2024	Head	5750	21.70	2.11	21.10	-2.76	1315	3985	1633

Note:

Comparing to the reference SAR value provided by SPEAG, the validation data should be within its specification of 10 %. The result indicates the system check can meet the variation criterion and the plots can be referred to Appendix A of this report.

4.5 Maximum Output Power

4.5.1 Maximum Conducted Power

The maximum conducted average power (Unit: dBm) including tune-up tolerance please refer to Appendix D.

4.5.2 Measured Conducted Power Result

The measuring conducted average power (Unit: dBm) please refer to Appendix D.

4.6 SAR Testing Results

4.6.1 SAR Test Reduction Considerations

<KDB 447498 D04, General RF Exposure Guidance>

Testing of other required channels within the operating mode of a frequency band is not required when the reported SAR for the mid-band or highest output power channel is:

(1) ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz

(2) ≤ 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

(3) ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

<KDB 248227 D01, SAR Guidance for Wi-Fi Transmitters>

(1) For handsets operating next to ear, hotspot mode or mini-tablet configurations, 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 the reported SAR of initial test position is <= 0.4 W/kg, SAR testing for remaining test positions is not 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.

(2) For WLAN 2.4 GHz, the highest measured maximum output power channel for DSSS was selected for SAR measurement. When the reported SAR is <= 0.8 W/kg, no further SAR testing is required. Otherwise, SAR is evaluated at the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel. For OFDM modes (802.11g/n), 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 it is <= 1.2 W/kg.

(3) For WLAN 5 GHz, the initial test configuration was selected according to the transmission mode with the highest maximum output power. When the reported SAR of initial test configuration is > 0.8 W/kg, SAR is required for the subsequent highest measured output power channel until the reported SAR result is <= 1.2 W/kg or all required channels are measured. For other transmission modes, SAR is not required when the highest reported SAR for initial test configuration is adjusted by the ratio of subsequent test configuration to initial test configuration specified maximum output power and it is <= 1.2 W/kg.

(4) For WLAN MIMO mode, the power-based standalone SAR test exclusion or the sum of SAR provision in KDB 447498 to determine simultaneous transmission SAR test exclusion should be applied. Otherwise, SAR for MIMO mode will be measured with all applicable antennas transmitting simultaneously at the specified maximum output power of MIMO operation.

4.6.2 SAR Results for Head Exposure Condition

Plot No.	Band	Mode	Test Position	Ch.	Sample	Antenna	Duty Cycle %	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-1g (W/kg)	Duty Cycle Scaling Factor	Tune-up Scaling Factor	Scaled SAR-1g (W/kg)
	WLAN2.4G	802.11b	Right Cheek	6	1	Ant8	100	16.00	15.75	-0.09	0.177	1.000	1.059	0.19
	WLAN2.4G	802.11b	Right Tilted	6	1	Ant8	100	16.00	15.75	0.12	0.113	1.000	1.059	0.12
P01	WLAN2.4G	802.11b	Left Cheek	6	1	Ant8	100	16.00	15.75	0.06	0.358	1.000	1.059	**0.38**
	WLAN2.4G	802.11b	Left Tilted	6	1	Ant8	100	16.00	15.75	-0.07	0.162	1.000	1.059	0.17
	WLAN2.4G	802.11b	Left Cheek	1	1	Ant8	100	13.50	13.42	0.05	0.265	1.000	1.019	0.27
	WLAN2.4G	802.11b	Left Cheek	11	1	Ant8	100	13.00	12.91	0.12	0.264	1.000	1.021	0.27
	WLAN2.4G	802.11b	Right Cheek	6	1	Ant9	100	15.50	15.19	-0.13	0.338	1.000	1.074	0.36
	WLAN2.4G	802.11b	Right Tilted	6	1	Ant9	100	15.50	15.19	0.02	0.170	1.000	1.074	0.18
	WLAN2.4G	802.11b	Left Cheek	6	1	Ant9	100	15.50	15.19	-0.14	0.097	1.000	1.074	0.10
	WLAN2.4G	802.11b	Left Tilted	6	1	Ant9	100	15.50	15.19	0.15	0.068	1.000	1.074	0.07
	WLAN2.4G	802.11b	Right Cheek	1	1	Ant9	100	13.00	12.71	-0.08	0.210	1.000	1.069	0.22
	WLAN2.4G	802.11b	Right Cheek	11	1	Ant9	100	12.50	12.25	0.11	0.216	1.000	1.059	0.23
	WLAN2.4G	802.11b	Right Cheek	6	1	Ant8+9	100	18.50	18.49	0.01	0.323	1.000	1.002	0.32
	WLAN2.4G	802.11b	Right Tilted	6	1	Ant8+9	100	18.50	18.49	0.05	0.210	1.000	1.002	0.21
	WLAN2.4G	802.11b	Left Cheek	6	1	Ant8+9	100	18.50	18.49	-0.07	0.300	1.000	1.002	0.30
	WLAN2.4G	802.11b	Left Tilted	6	1	Ant8+9	100	18.50	18.49	0.15	0.177	1.000	1.002	0.18
	WLAN2.4G	802.11b	Right Cheek	1	1	Ant8+9	100	16.50	16.09	0.13	0.227	1.000	1.099	0.25
	WLAN2.4G	802.11b	Right Cheek	11	1	Ant8+9	100	16.00	15.60	-0.06	0.263	1.000	1.096	0.29
	WLAN2.4G	802.11b	Left Cheek	6	2	Ant8	100	16.00	15.75	-0.05	0.283	1.000	1.059	0.30
	WLAN5G	802.11ax-HE20	Right Cheek	48	1	Ant8	99.63	14.50	14.12	0.04	0.210	1.004	1.091	0.23
	WLAN5G	802.11ax-HE20	Right Tilted	48	1	Ant8	99.63	14.50	14.12	-0.06	0.186	1.004	1.091	0.20
	WLAN5G	802.11ax-HE20	Left Cheek	48	1	Ant8	99.63	14.50	14.12	0.07	0.348	1.004	1.091	0.38
	WLAN5G	802.11ax-HE20	Left Tilted	48	1	Ant8	99.63	14.50	14.12	0.13	0.293	1.004	1.091	0.32
	WLAN5G	802.11ax-HE20	Left Cheek	36	1	Ant8	99.63	12.50	12.18	0.01	0.278	1.004	1.076	0.30
	WLAN5G	802.11ax-HE20	Left Cheek	40	1	Ant8	99.63	13.00	12.67	0.06	0.320	1.004	1.079	0.35
	WLAN5G	802.11ax-HE20	Left Cheek	44	1	Ant8	99.63	12.50	12.42	0.09	0.318	1.004	1.019	0.33
	WLAN5G	802.11ax-HE20	Right Cheek	36	1	Ant9	99.63	10.00	9.91	-0.09	0.076	1.004	1.021	0.08
	WLAN5G	802.11ax-HE20	Right Tilted	36	1	Ant9	99.63	10.00	9.91	0.03	0.056	1.004	1.021	0.06
	WLAN5G	802.11ax-HE20	Left Cheek	36	1	Ant9	99.63	10.00	9.91	0.01	0.052	1.004	1.021	0.05
	WLAN5G	802.11ax-HE20	Left Tilted	36	1	Ant9	99.63	10.00	9.91	-0.05	0.034	1.004	1.021	0.03
	WLAN5G	802.11ax-HE20	Right Cheek	40	1	Ant9	99.63	10.00	9.55	0.03	0.108	1.004	1.109	0.12
	WLAN5G	802.11ax-HE20	Right Cheek	44	1	Ant9	99.63	9.50	9.42	-0.07	0.104	1.004	1.019	0.11
	WLAN5G	802.11ax-HE20	Right Cheek	48	1	Ant9	99.63	9.50	9.03	0.12	0.108	1.004	1.114	0.12
	WLAN5G	802.11ax-HE20	Right Cheek	48	1	Ant8+9	99.63	15.50	15.29	0.11	0.217	1.004	1.050	0.23
	WLAN5G	802.11ax-HE20	Right Tilted	48	1	Ant8+9	99.63	15.50	15.29	0.15	0.191	1.004	1.050	0.20
P02	WLAN5G	802.11ax-HE20	Left Cheek	48	1	Ant8+9	99.63	15.50	15.29	-0.10	0.502	1.004	1.050	**0.53**
	WLAN5G	802.11ax-HE20	Left Tilted	48	1	Ant8+9	99.63	15.50	15.29	-0.07	0.285	1.004	1.050	0.30
	WLAN5G	802.11ax-HE20	Left Cheek	36	1	Ant8+9	99.63	14.50	14.20	0.13	0.273	1.004	1.072	0.29
	WLAN5G	802.11ax-HE20	Left Cheek	40	1	Ant8+9	99.63	14.50	14.39	0.16	0.320	1.004	1.026	0.33
	WLAN5G	802.11ax-HE20	Left Cheek	44	1	Ant8+9	99.63	14.50	14.31	-0.08	0.380	1.004	1.045	0.40
	WLAN5G	802.11ax-HE20	Left Cheek	48	2	Ant8+9	99.63	15.50	15.29	-0.12	0.276	1.004	1.050	0.29
	WLAN5G	802.11a	Right Cheek	60	1	Ant8	99.05	14.50	14.27	0.06	0.315	1.010	1.054	0.34
	WLAN5G	802.11a	Right Tilted	60	1	Ant8	99.05	14.50	14.27	-0.15	0.268	1.010	1.054	0.29
P03	WLAN5G	802.11a	Left Cheek	60	1	Ant8	99.05	14.50	14.27	0.05	0.699	1.010	1.054	**0.74**
	WLAN5G	802.11a	Left Tilted	60	1	Ant8	99.05	14.50	14.27	0.07	0.406	1.010	1.054	0.43
	WLAN5G	802.11a	Left Cheek	52	1	Ant8	99.05	14.00	13.78	0.03	0.499	1.010	1.052	0.53
	WLAN5G	802.11a	Left Cheek	56	1	Ant8	99.05	14.00	13.56	0.13	0.570	1.010	1.107	0.64
	WLAN5G	802.11a	Left Cheek	64	1	Ant8	99.05	13.50	13.04	0.04	0.493	1.010	1.112	0.55
	WLAN5G	802.11n-HT40	Right Cheek	54	1	Ant9	99.63	9.00	8.95	-0.02	0.095	1.004	1.012	0.10
	WLAN5G	802.11n-HT40	Right Tilted	54	1	Ant9	99.63	9.00	8.95	-0.11	0.084	1.004	1.012	0.09
	WLAN5G	802.11n-HT40	Left Cheek	54	1	Ant9	99.63	9.00	8.95	0.06	0.066	1.004	1.012	0.07
	WLAN5G	802.11n-HT40	Left Tilted	54	1	Ant9	99.63	9.00	8.95	-0.09	0.044	1.004	1.012	0.04
	WLAN5G	802.11n-HT40	Right Cheek	62	1	Ant9	99.63	7.50	7.48	0.07	0.204	1.004	1.005	0.21
	WLAN5G	802.11n-HT40	Right Cheek	54	1	Ant8+9	99.63	15.50	15.33	0.12	0.232	1.004	1.040	0.24
	WLAN5G	802.11n-HT40	Right Tilted	54	1	Ant8+9	99.63	15.50	15.33	0.07	0.173	1.004	1.040	0.18
	WLAN5G	802.11n-HT40	Left Cheek	54	1	Ant8+9	99.63	15.50	15.33	0.01	0.528	1.004	1.040	0.55
	WLAN5G	802.11n-HT40	Left Tilted	54	1	Ant8+9	99.63	15.50	15.33	-0.01	0.323	1.004	1.040	0.34
	WLAN5G	802.11n-HT40	Left Cheek	62	1	Ant8+9	99.63	14.00	13.94	0.04	0.436	1.004	1.014	0.44
	WLAN5G	802.11a	Left Cheek	60	2	Ant8	99.05	14.50	14.27	0.07	0.484	1.010	1.054	0.52
	WLAN5G	802.11ac-VHT40	Right Cheek	142	1	Ant8	99.63	14.00	13.91	0.05	0.108	1.004	1.021	0.11
	WLAN5G	802.11ac-VHT40	Right Tilted	142	1	Ant8	99.63	14.00	13.91	-0.03	0.086	1.004	1.021	0.09
	WLAN5G	802.11ac-VHT40	Left Cheek	142	1	Ant8	99.63	14.00	13.91	0.07	0.281	1.004	1.021	0.29
	WLAN5G	802.11ac-VHT40	Left Tilted	142	1	Ant8	99.63	14.00	13.91	0.11	0.120	1.004	1.021	0.12
	WLAN5G	802.11ac-VHT40	Left Cheek	102	1	Ant8	99.63	11.50	11.29	-0.09	0.259	1.004	1.050	0.27

Plot No.	Band	Mode	Test Position	Ch.	Sample	Antenna	Duty Cycle %	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-1g (W/kg)	Duty Cycle Scaling Factor	Tune-up Scaling Factor	Scaled SAR-1g (W/kg)
	WLAN5G	802.11ac-VHT40	Left Cheek	110	1	Ant8	99.63	13.00	12.76	0.13	0.268	1.004	1.057	0.28
	WLAN5G	802.11ac-VHT40	Left Cheek	126	1	Ant8	99.63	13.00	12.56	0.04	0.304	1.004	1.107	0.34
	WLAN5G	802.11ac-VHT40	Left Cheek	134	1	Ant8	99.63	13.00	12.68	0.08	0.235	1.004	1.076	0.25
	WLAN5G	802.11a	Right Cheek	116	1	Ant9	99.05	13.50	13.11	-0.05	0.278	1.010	1.094	0.31
	WLAN5G	802.11a	Right Tilted	116	1	Ant9	99.05	13.50	13.11	0.06	0.169	1.010	1.094	0.19
	WLAN5G	802.11a	Left Cheek	116	1	Ant9	99.05	13.50	13.11	0.03	0.105	1.010	1.094	0.12
	WLAN5G	802.11a	Left Tilted	116	1	Ant9	99.05	13.50	13.11	-0.07	0.096	1.010	1.094	0.11
	WLAN5G	802.11a	Right Cheek	100	1	Ant9	99.05	13.00	12.98	0.09	0.290	1.010	1.005	0.29
	WLAN5G	802.11a	Right Cheek	124	1	Ant9	99.05	13.00	12.76	-0.17	0.214	1.010	1.057	0.23
	WLAN5G	802.11a	Right Cheek	132	1	Ant9	99.05	12.50	12.43	0.18	0.181	1.010	1.016	0.19
	WLAN5G	802.11a	Right Cheek	140	1	Ant9	99.05	11.50	11.16	0.03	0.147	1.010	1.081	0.16
	WLAN5G	802.11a	Right Cheek	144	1	Ant9	99.05	8.50	8.13	0.12	0.149	1.010	1.089	0.16
	WLAN5G	802.11a	Right Cheek	116	1	Ant8+9	99.05	16.50	16.04	0.11	0.230	1.010	1.112	0.26
	WLAN5G	802.11a	Right Tilted	116	1	Ant8+9	99.05	16.50	16.04	-0.06	0.187	1.010	1.112	0.21
P04	WLAN5G	802.11a	Left Cheek	116	1	Ant8+9	99.05	16.50	16.04	-0.09	0.364	1.010	1.112	**0.41**
	WLAN5G	802.11a	Left Tilted	116	1	Ant8+9	99.05	16.50	16.04	0.13	0.196	1.010	1.112	0.22
	WLAN5G	802.11a	Left Cheek	100	1	Ant8+9	99.05	15.50	15.37	0.05	0.360	1.010	1.030	0.37
	WLAN5G	802.11a	Left Cheek	124	1	Ant8+9	99.05	15.50	15.21	0.06	0.295	1.010	1.069	0.32
	WLAN5G	802.11a	Left Cheek	132	1	Ant8+9	99.05	15.50	15.02	-0.07	0.283	1.010	1.117	0.32
	WLAN5G	802.11a	Left Cheek	140	1	Ant8+9	99.05	15.00	14.98	0.13	0.324	1.010	1.005	0.33
	WLAN5G	802.11a	Left Cheek	144	1	Ant8+9	99.05	14.50	14.42	0.08	0.378	1.010	1.019	0.39
	WLAN5G	802.11a	Left Cheek	116	2	Ant8+9	99.05	16.50	16.04	0.13	0.255	1.010	1.112	0.29
	WLAN5G	802.11a	Right Cheek	165	1	Ant8	99.05	15.00	14.72	0.12	0.308	1.010	1.067	0.33
	WLAN5G	802.11a	Right Tilted	165	1	Ant8	99.05	15.00	14.72	-0.07	0.256	1.010	1.067	0.28
P05	WLAN5G	802.11a	Left Cheek	165	1	Ant8	99.05	15.00	14.72	-0.03	0.819	1.010	1.067	**0.88**
	WLAN5G	802.11a	Left Tilted	165	1	Ant8	99.05	15.00	14.72	0.12	0.374	1.010	1.067	0.40
	WLAN5G	802.11a	Left Cheek	157	1	Ant8	99.05	14.50	14.14	0.08	0.463	1.010	1.086	0.51
	WLAN5G	802.11a	Left Cheek	149	1	Ant8	99.05	14.00	13.71	0.11	0.415	1.010	1.069	0.45
	WLAN5G	802.11a	Right Cheek	149	1	Ant9	99.05	8.00	7.88	-0.08	0.151	1.010	1.028	0.16
	WLAN5G	802.11a	Right Tilted	149	1	Ant9	99.05	8.00	7.88	0.05	0.089	1.010	1.028	0.09
	WLAN5G	802.11a	Left Cheek	149	1	Ant9	99.05	8.00	7.88	0.04	0.054	1.010	1.028	0.06
	WLAN5G	802.11a	Left Tilted	149	1	Ant9	99.05	8.00	7.88	0.11	0.050	1.010	1.028	0.05
	WLAN5G	802.11a	Right Cheek	157	1	Ant9	99.05	7.50	7.27	0.14	0.117	1.010	1.054	0.12
	WLAN5G	802.11a	Right Cheek	165	1	Ant9	99.05	7.00	6.84	0.07	0.148	1.010	1.038	0.16
	WLAN5G	802.11a	Right Cheek	165	1	Ant8+9	99.05	15.50	15.38	0.11	0.321	1.010	1.028	0.33
	WLAN5G	802.11a	Right Tilted	165	1	Ant8+9	99.05	15.50	15.38	-0.09	0.268	1.010	1.028	0.28
	WLAN5G	802.11a	Left Cheek	165	1	Ant8+9	99.05	15.50	15.38	-0.08	0.767	1.010	1.028	0.80
	WLAN5G	802.11a	Left Tilted	165	1	Ant8+9	99.05	15.50	15.38	-0.14	0.376	1.010	1.028	0.39
	WLAN5G	802.11a	Left Cheek	157	1	Ant8+9	99.05	15.00	14.95	0.02	0.482	1.010	1.012	0.49
	WLAN5G	802.11a	Left Cheek	149	1	Ant8+9	99.05	15.00	14.72	0.05	0.365	1.010	1.067	0.39
	WLAN5G	802.11a	Left Cheek	165	2	Ant8	99.05	15.00	14.72	-0.07	0.468	1.010	1.067	0.50

4.6.3 SAR Results for Body-worn Exposure Condition (Separation Distance is 1.0 cm Gap)

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	Sample	Antenna	Duty Cycle %	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-1g (W/kg)	Duty Cycle Scaling Factor	Tune-up Scaling Factor	Scaled SAR-1g (W/kg)
	WLAN2.4G	802.11b	Front Face	1	6	1	Ant8	100	16.00	15.75	-0.01	0.079	1.000	1.059	0.08
	WLAN2.4G	802.11b	Rear Face	1	6	1	Ant8	100	16.00	15.75	0.14	0.071	1.000	1.059	0.08
	WLAN2.4G	802.11b	Front Face	1	1	1	Ant8	100	13.50	13.42	0.13	0.058	1.000	1.019	0.06
	WLAN2.4G	802.11b	Front Face	1	11	1	Ant8	100	13.00	12.91	0.04	0.062	1.000	1.021	0.06
	WLAN2.4G	802.11b	Front Face	1	6	1	Ant9	100	15.50	15.19	0.03	0.075	1.000	1.074	0.08
P06	WLAN2.4G	802.11b	Rear Face	1	6	1	Ant9	100	15.50	15.19	-0.11	0.405	1.000	1.074	**0.43**
	WLAN2.4G	802.11b	Rear Face	1	1	1	Ant9	100	13.00	12.71	0.13	0.310	1.000	1.069	0.33
	WLAN2.4G	802.11b	Rear Face	1	11	1	Ant9	100	12.50	12.25	0.04	0.283	1.000	1.059	0.30
	WLAN2.4G	802.11b	Front Face	1	6	1	Ant8+9	100	18.50	18.49	0.05	0.069	1.000	1.002	0.07
	WLAN2.4G	802.11b	Rear Face	1	6	1	Ant8+9	100	18.50	18.49	-0.03	0.419	1.000	1.002	0.42
	WLAN2.4G	802.11b	Rear Face	1	1	1	Ant8+9	100	16.50	16.09	0.11	0.334	1.000	1.099	0.37
	WLAN2.4G	802.11b	Rear Face	1	11	1	Ant8+9	100	16.00	15.60	0.05	0.216	1.000	1.096	0.24
	WLAN2.4G	802.11b	Rear Face	1	6	2	Ant9	100	15.50	15.19	-0.09	0.247	1.000	1.074	0.27
	WLAN5G	802.11ax-HE20	Front Face	1	48	1	Ant8	99.63	14.50	14.12	0.11	0.205	1.004	1.091	0.22
	WLAN5G	802.11ax-HE20	Rear Face	1	48	1	Ant8	99.63	14.50	14.12	0.02	0.464	1.004	1.091	0.51
	WLAN5G	802.11ax-HE20	Rear Face	1	36	1	Ant8	99.63	12.50	12.18	0.13	0.331	1.004	1.076	0.36
	WLAN5G	802.11ax-HE20	Rear Face	1	40	1	Ant8	99.63	13.00	12.67	0.07	0.375	1.004	1.079	0.41

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	Sample	Antenna	Duty Cycle %	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-1g (W/kg)	Duty Cycle Scaling Factor	Tune-up Scaling Factor	Scaled SAR-1g (W/kg)
	WLAN5G	802.11ax-HE20	Rear Face	1	44	1	Ant8	99.63	12.50	12.42	0.16	0.420	1.004	1.019	0.43
	WLAN5G	802.11ax-HE20	Front Face	1	36	1	Ant9	99.63	10.00	9.91	0.05	0.066	1.004	1.021	0.07
	WLAN5G	802.11ax-HE20	Rear Face	1	36	1	Ant9	99.63	10.00	9.91	0.01	0.082	1.004	1.021	0.08
	WLAN5G	802.11ax-HE20	Rear Face	1	40	1	Ant9	99.63	10.00	9.55	0.04	0.096	1.004	1.109	0.11
	WLAN5G	802.11ax-HE20	Rear Face	1	44	1	Ant9	99.63	9.50	9.42	0.07	0.125	1.004	1.019	0.13
	WLAN5G	802.11ax-HE20	Rear Face	1	48	1	Ant9	99.63	9.50	9.03	-0.01	0.099	1.004	1.114	0.11
	WLAN5G	802.11ax-HE20	Front Face	1	48	1	Ant8+9	99.63	15.50	15.29	0.04	0.202	1.004	1.050	0.21
P07	WLAN5G	802.11ax-HE20	Rear Face	1	48	1	Ant8+9	99.63	15.50	15.29	0.06	0.493	1.004	1.050	**0.52**
	WLAN5G	802.11ax-HE20	Rear Face	1	36	1	Ant8+9	99.63	14.50	14.20	-0.06	0.328	1.004	1.072	0.35
	WLAN5G	802.11ax-HE20	Rear Face	1	40	1	Ant8+9	99.63	14.50	14.39	0.13	0.352	1.004	1.026	0.36
	WLAN5G	802.11ax-HE20	Rear Face	1	44	1	Ant8+9	99.63	14.50	14.31	0.08	0.419	1.004	1.045	0.44
	WLAN5G	802.11ax-HE20	Rear Face	1	48	2	Ant8+9	99.63	15.50	15.29	0.16	0.350	1.004	1.050	0.37
	WLAN5G	802.11a	Front Face	1	60	1	Ant8	99.05	14.50	14.27	0.11	0.289	1.010	1.054	0.31
P08	WLAN5G	802.11a	Rear Face	1	60	1	Ant8	99.05	14.50	14.27	0.09	0.518	1.010	1.054	**0.55**
	WLAN5G	802.11a	Rear Face	1	52	1	Ant8	99.05	14.00	13.78	0.13	0.421	1.010	1.052	0.45
	WLAN5G	802.11a	Rear Face	1	56	1	Ant8	99.05	14.00	13.56	0.06	0.429	1.010	1.107	0.48
	WLAN5G	802.11a	Rear Face	1	64	1	Ant8	99.05	13.50	13.04	0.09	0.335	1.010	1.112	0.38
	WLAN5G	802.11n-HT40	Front Face	1	54	1	Ant9	99.63	9.00	8.95	-0.05	0.066	1.004	1.012	0.07
	WLAN5G	802.11n-HT40	Rear Face	1	54	1	Ant9	99.63	9.00	8.95	-0.09	0.096	1.004	1.012	0.10
	WLAN5G	802.11n-HT40	Rear Face	1	62	1	Ant9	99.63	7.50	7.48	0.13	0.218	1.004	1.005	0.22
	WLAN5G	802.11n-HT40	Front Face	1	54	1	Ant8+9	99.63	15.50	15.33	0.13	0.239	1.004	1.040	0.25
	WLAN5G	802.11n-HT40	Rear Face	1	54	1	Ant8+9	99.63	15.50	15.33	-0.09	0.442	1.004	1.040	0.46
	WLAN5G	802.11n-HT40	Rear Face	1	62	1	Ant8+9	99.63	14.00	13.94	0.07	0.504	1.004	1.014	0.51
	WLAN5G	802.11a	Rear Face	1	60	2	Ant8	99.05	14.50	14.27	-0.05	0.473	1.010	1.054	0.50
	WLAN5G	802.11ac-VHT40	Front Face	1	142	1	Ant8	99.63	14.00	13.91	0.06	0.098	1.004	1.021	0.10
	WLAN5G	802.11ac-VHT40	Rear Face	1	142	1	Ant8	99.63	14.00	13.91	-0.03	0.147	1.004	1.021	0.15
	WLAN5G	802.11ac-VHT40	Rear Face	1	102	1	Ant8	99.63	11.50	11.29	0.08	0.157	1.004	1.050	0.17
	WLAN5G	802.11ac-VHT40	Rear Face	1	110	1	Ant8	99.63	13.00	12.76	-0.09	0.154	1.004	1.057	0.16
	WLAN5G	802.11ac-VHT40	Rear Face	1	126	1	Ant8	99.63	13.00	12.56	0.14	0.155	1.004	1.107	0.17
	WLAN5G	802.11ac-VHT40	Rear Face	1	134	1	Ant8	99.63	13.00	12.68	0.07	0.129	1.004	1.076	0.14
	WLAN5G	802.11a	Front Face	1	116	1	Ant9	99.05	13.50	13.11	0.14	0.127	1.010	1.094	0.14
	WLAN5G	802.11a	Rear Face	1	116	1	Ant9	99.05	13.50	13.11	0.01	0.164	1.010	1.094	0.18
	WLAN5G	802.11a	Rear Face	1	100	1	Ant9	99.05	13.00	12.98	0.05	0.172	1.010	1.005	0.17
	WLAN5G	802.11a	Rear Face	1	124	1	Ant9	99.05	13.00	12.76	0.07	0.128	1.010	1.057	0.14
	WLAN5G	802.11a	Rear Face	1	132	1	Ant9	99.05	12.50	12.43	-0.02	0.109	1.010	1.016	0.11
	WLAN5G	802.11a	Rear Face	1	140	1	Ant9	99.05	11.50	11.16	0.13	0.093	1.010	1.081	0.10
	WLAN5G	802.11a	Rear Face	1	144	1	Ant9	99.05	8.50	8.13	0.05	0.098	1.010	1.089	0.11
	WLAN5G	802.11a	Front Face	1	116	1	Ant8+9	99.05	16.50	16.04	0.01	0.190	1.010	1.112	0.21
P09	WLAN5G	802.11a	Rear Face	1	116	1	Ant8+9	99.05	16.50	16.04	-0.09	0.246	1.010	1.112	**0.28**
	WLAN5G	802.11a	Rear Face	1	100	1	Ant8+9	99.05	15.50	15.37	0.06	0.227	1.010	1.030	0.24
	WLAN5G	802.11a	Rear Face	1	124	1	Ant8+9	99.05	15.50	15.21	0.08	0.201	1.010	1.069	0.22
	WLAN5G	802.11a	Rear Face	1	132	1	Ant8+9	99.05	15.50	15.02	-0.14	0.212	1.010	1.117	0.24
	WLAN5G	802.11a	Rear Face	1	140	1	Ant8+9	99.05	15.00	14.98	0.09	0.193	1.010	1.005	0.20
	WLAN5G	802.11a	Rear Face	1	144	1	Ant8+9	99.05	14.50	14.42	0.12	0.195	1.010	1.019	0.20
	WLAN5G	802.11a	Rear Face	1	116	2	Ant8+9	99.05	16.50	16.04	0.14	0.231	1.010	1.112	0.26
	WLAN5G	802.11a	Front Face	1	165	1	Ant8	99.05	15.00	14.72	0.07	0.304	1.010	1.067	0.33
	WLAN5G	802.11a	Rear Face	1	165	1	Ant8	99.05	15.00	14.72	-0.18	0.380	1.010	1.067	0.41
	WLAN5G	802.11a	Rear Face	1	157	1	Ant8	99.05	14.50	14.14	0.08	0.299	1.010	1.086	0.33
	WLAN5G	802.11a	Rear Face	1	149	1	Ant8	99.05	14.00	13.71	0.14	0.260	1.010	1.069	0.28
	WLAN5G	802.11a	Front Face	1	149	1	Ant9	99.05	8.00	7.88	0.05	0.041	1.010	1.028	0.04
	WLAN5G	802.11a	Rear Face	1	149	1	Ant9	99.05	8.00	7.88	-0.04	0.052	1.010	1.028	0.05
	WLAN5G	802.11a	Rear Face	1	157	1	Ant9	99.05	7.50	7.27	0.07	0.107	1.010	1.054	0.11
	WLAN5G	802.11a	Rear Face	1	165	1	Ant9	99.05	7.00	6.84	0.14	0.087	1.010	1.038	0.09
	WLAN5G	802.11a	Front Face	1	165	1	Ant8+9	99.05	15.50	15.38	0.15	0.298	1.010	1.028	0.31
P10	WLAN5G	802.11a	Rear Face	1	165	1	Ant8+9	99.05	15.50	15.38	0.02	0.409	1.010	1.028	**0.42**
	WLAN5G	802.11a	Rear Face	1	157	1	Ant8+9	99.05	15.00	14.95	0.05	0.328	1.010	1.012	0.33
	WLAN5G	802.11a	Rear Face	1	149	1	Ant8+9	99.05	15.00	14.72	-0.09	0.243	1.010	1.067	0.26
	WLAN5G	802.11a	Rear Face	1	165	2	Ant8+9	99.05	15.50	15.38	-0.03	0.373	1.010	1.028	0.39

4.6.4 SAR Results for Hotspot Exposure Condition (Separation Distance is 1.0 cm Gap)

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	Sample	Antenna	Duty Cycle %	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-1g (W/kg)	Duty Cycle Scaling Factor	Tune-up Scaling Factor	Scaled SAR-1g (W/kg)
	WLAN2.4G	802.11b	Front Face	1	6	1	Ant8	100	16.00	15.75	-0.01	0.079	1.000	1.059	0.08
	WLAN2.4G	802.11b	Rear Face	1	6	1	Ant8	100	16.00	15.75	0.14	0.071	1.000	1.059	0.08
	WLAN2.4G	802.11b	Left Side	1	6	1	Ant8	100	16.00	15.75	0.00	0.000	1.000	1.059	0.00
	WLAN2.4G	802.11b	Right Side	1	6	1	Ant8	100	16.00	15.75	0.05	0.060	1.000	1.059	0.06
	WLAN2.4G	802.11b	Top Side	1	6	1	Ant8	100	16.00	15.75	0.02	0.050	1.000	1.059	0.05
	WLAN2.4G	802.11b	Front Face	1	1	1	Ant8	100	13.50	13.42	0.13	0.058	1.000	1.019	0.06
	WLAN2.4G	802.11b	Front Face	1	11	1	Ant8	100	13.00	12.91	0.04	0.062	1.000	1.021	0.06
	WLAN2.4G	802.11b	Front Face	1	6	1	Ant9	100	15.50	15.19	0.03	0.075	1.000	1.074	0.08
P11	WLAN2.4G	802.11b	Rear Face	1	6	1	Ant9	100	15.50	15.19	-0.11	0.405	1.000	1.074	**0.43**
	WLAN2.4G	802.11b	Left Side	1	6	1	Ant9	100	15.50	15.19	0.04	0.398	1.000	1.074	0.43
	WLAN2.4G	802.11b	Right Side	1	6	1	Ant9	100	15.50	15.19	0.00	0.000	1.000	1.074	0.00
	WLAN2.4G	802.11b	Top Side	1	6	1	Ant9	100	15.50	15.19	0.11	0.043	1.000	1.074	0.05
	WLAN2.4G	802.11b	Rear Face	1	1	1	Ant9	100	13.00	12.71	0.13	0.310	1.000	1.069	0.33
	WLAN2.4G	802.11b	Rear Face	1	11	1	Ant9	100	12.50	12.25	0.04	0.283	1.000	1.059	0.30
	WLAN2.4G	802.11b	Front Face	1	6	1	Ant8+9	100	18.50	18.49	0.05	0.069	1.000	1.002	0.07
	WLAN2.4G	802.11b	Rear Face	1	6	1	Ant8+9	100	18.50	18.49	-0.03	0.419	1.000	1.002	0.42
	WLAN2.4G	802.11b	Left Side	1	6	1	Ant8+9	100	18.50	18.49	-0.03	0.407	1.000	1.002	0.41
	WLAN2.4G	802.11b	Right Side	1	6	1	Ant8+9	100	18.50	18.49	0.04	0.052	1.000	1.002	0.05
	WLAN2.4G	802.11b	Top Side	1	6	1	Ant8+9	100	18.50	18.49	0.01	0.068	1.000	1.002	0.07
	WLAN2.4G	802.11b	Rear Face	1	1	1	Ant8+9	100	16.50	16.09	0.11	0.334	1.000	1.099	0.37
	WLAN2.4G	802.11b	Rear Face	1	11	1	Ant8+9	100	16.00	15.60	0.05	0.216	1.000	1.096	0.24
	WLAN2.4G	802.11b	Rear Face	1	6	2	Ant9	100	15.50	15.19	-0.09	0.247	1.000	1.074	0.27
	WLAN5G	802.11ax-HE20	Front Face	1	48	1	Ant8	99.63	14.50	14.12	0.11	0.205	1.004	1.091	0.22
	WLAN5G	802.11ax-HE20	Rear Face	1	48	1	Ant8	99.63	14.50	14.12	0.02	0.464	1.004	1.091	0.51
	WLAN5G	802.11ax-HE20	Left Side	1	48	1	Ant8	99.63	14.50	14.12	-0.05	0.107	1.004	1.091	0.12
	WLAN5G	802.11ax-HE20	Right Side	1	48	1	Ant8	99.63	14.50	14.12	0.06	0.564	1.004	1.091	0.62
	WLAN5G	802.11ax-HE20	Top Side	1	48	1	Ant8	99.63	14.50	14.12	0.03	0.162	1.004	1.091	0.18
	WLAN5G	802.11ax-HE20	Right Side	1	40	1	Ant8	99.63	13.00	12.67	0.13	0.464	1.004	1.079	0.50
	WLAN5G	802.11ax-HE20	Right Side	1	36	1	Ant8	99.63	12.50	12.18	0.03	0.377	1.004	1.076	0.41
	WLAN5G	802.11ax-HE20	Right Side	1	44	1	Ant8	99.63	12.50	12.42	-0.07	0.529	1.004	1.019	0.54
	WLAN5G	802.11ax-HE20	Front Face	1	36	1	Ant9	99.63	10.00	9.91	0.05	0.066	1.004	1.021	0.07
	WLAN5G	802.11ax-HE20	Rear Face	1	36	1	Ant9	99.63	10.00	9.91	0.01	0.082	1.004	1.021	0.08
	WLAN5G	802.11ax-HE20	Left Side	1	36	1	Ant9	99.63	10.00	9.91	0.06	0.078	1.004	1.021	0.08
	WLAN5G	802.11ax-HE20	Right Side	1	36	1	Ant9	99.63	10.00	9.91	0.02	0.052	1.004	1.021	0.05
	WLAN5G	802.11ax-HE20	Top Side	1	36	1	Ant9	99.63	10.00	9.91	0.01	0.063	1.004	1.021	0.06
	WLAN5G	802.11ax-HE20	Rear Face	1	40	1	Ant9	99.63	10.00	9.55	0.04	0.096	1.004	1.109	0.11
	WLAN5G	802.11ax-HE20	Rear Face	1	44	1	Ant9	99.63	9.50	9.42	0.07	0.125	1.004	1.019	0.13
	WLAN5G	802.11ax-HE20	Rear Face	1	48	1	Ant9	99.63	9.50	9.03	-0.01	0.099	1.004	1.114	0.11
	WLAN5G	802.11ax-HE20	Front Face	1	48	1	Ant8+9	99.63	15.50	15.29	0.04	0.202	1.004	1.050	0.21
	WLAN5G	802.11ax-HE20	Rear Face	1	48	1	Ant8+9	99.63	15.50	15.29	0.06	0.493	1.004	1.050	0.52
	WLAN5G	802.11ax-HE20	Left Side	1	48	1	Ant8+9	99.63	15.50	15.29	-0.17	0.123	1.004	1.050	0.13
P12	WLAN5G	802.11ax-HE20	Right Side	1	48	1	Ant8+9	99.63	15.50	15.29	-0.08	0.602	1.004	1.050	**0.63**
	WLAN5G	802.11ax-HE20	Top Side	1	48	1	Ant8+9	99.63	15.50	15.29	0.05	0.119	1.004	1.050	0.13
	WLAN5G	802.11ax-HE20	Right Side	1	40	1	Ant8+9	99.63	14.50	14.39	-0.07	0.522	1.004	1.026	0.54
	WLAN5G	802.11ax-HE20	Right Side	1	36	1	Ant8+9	99.63	14.50	14.20	0.13	0.385	1.004	1.072	0.41
	WLAN5G	802.11ax-HE20	Right Side	1	44	1	Ant8+9	99.63	14.50	14.31	0.07	0.546	1.004	1.045	0.57
	WLAN5G	802.11ax-HE20	Right Side	1	48	2	Ant8+9	99.63	15.50	15.29	0.11	0.375	1.004	1.050	0.40
	WLAN5G	802.11a	Front Face	1	165	1	Ant8	99.05	15.00	14.72	0.07	0.304	1.010	1.067	0.33
	WLAN5G	802.11a	Rear Face	1	165	1	Ant8	99.05	15.00	14.72	-0.18	0.380	1.010	1.067	0.41
	WLAN5G	802.11a	Left Side	1	165	1	Ant8	99.05	15.00	14.72	0.05	0.125	1.010	1.067	0.13
P13	WLAN5G	802.11a	Right Side	1	165	1	Ant8	99.05	15.00	14.72	0.11	0.784	1.010	1.067	**0.84**
	WLAN5G	802.11a	Top Side	1	165	1	Ant8	99.05	15.00	14.72	0.12	0.146	1.010	1.067	0.16
	WLAN5G	802.11a	Right Side	1	157	1	Ant8	99.05	14.50	14.14	0.13	0.708	1.010	1.086	0.78
	WLAN5G	802.11a	Right Side	1	149	1	Ant8	99.05	14.00	13.71	-0.08	0.455	1.010	1.069	0.49
	WLAN5G	802.11a	Front Face	1	149	1	Ant9	99.05	8.00	7.88	0.05	0.041	1.010	1.028	0.04
	WLAN5G	802.11a	Rear Face	1	149	1	Ant9	99.05	8.00	7.88	-0.04	0.052	1.010	1.028	0.05
	WLAN5G	802.11a	Left Side	1	149	1	Ant9	99.05	8.00	7.88	0.02	0.043	1.010	1.028	0.04
	WLAN5G	802.11a	Right Side	1	149	1	Ant9	99.05	8.00	7.88	-0.18	0.039	1.010	1.028	0.04
	WLAN5G	802.11a	Top Side	1	149	1	Ant9	99.05	8.00	7.88	0.16	0.045	1.010	1.028	0.05
	WLAN5G	802.11a	Rear Face	1	157	1	Ant9	99.05	7.50	7.27	0.07	0.107	1.010	1.054	0.11
	WLAN5G	802.11a	Rear Face	1	165	1	Ant9	99.05	7.00	6.84	0.14	0.087	1.010	1.038	0.09
	WLAN5G	802.11a	Front Face	1	165	1	Ant8+9	99.05	15.50	15.38	0.15	0.298	1.010	1.028	0.31

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	Sample	Antenna	Duty Cycle %	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-1g (W/kg)	Duty Cycle Scaling Factor	Tune-up Scaling Factor	Scaled SAR-1g (W/kg)
	WLAN5G	802.11a	Rear Face	1	165	1	Ant8+9	99.05	15.50	15.38	0.02	0.409	1.010	1.028	0.42
	WLAN5G	802.11a	Left Side	1	165	1	Ant8+9	99.05	15.50	15.38	0.07	0.165	1.010	1.028	0.17
	WLAN5G	802.11a	Right Side	1	165	1	Ant8+9	99.05	15.50	15.38	0.02	0.802	1.010	1.028	0.83
	WLAN5G	802.11a	Top Side	1	165	1	Ant8+9	99.05	15.50	15.38	0.03	0.150	1.010	1.028	0.16
	WLAN5G	802.11a	Right Side	1	157	1	Ant8+9	99.05	15.00	14.95	0.09	0.756	1.010	1.012	0.77
	WLAN5G	802.11a	Right Side	1	149	1	Ant8+9	99.05	15.00	14.72	0.05	0.479	1.010	1.067	0.52
	WLAN5G	802.11a	Right Side	1	165	2	Ant8	99.05	15.00	14.72	0.06	0.539	1.010	1.067	0.58

4.6.5 SAR Results for Extremity Exposure Condition (Separation Distance is 0 cm Gap)

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	Sample	Antenna	Duty Cycle %	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-10g (W/kg)	Duty Cycle Scaling Factor	Tune-up Scaling Factor	Scaled SAR-10g (W/kg)
	WLAN5G	802.11a	Front Face	0	60	1	Ant8	99.05	14.50	14.27	0.17	0.392	1.010	1.054	0.42
	WLAN5G	802.11a	Rear Face	0	60	1	Ant8	99.05	14.50	14.27	0.08	0.791	1.010	1.054	0.84
	WLAN5G	802.11a	Left Side	0	60	1	Ant8	99.05	14.50	14.27	-0.06	0.022	1.010	1.054	0.02
P14	WLAN5G	802.11a	Right Side	0	60	1	Ant8	99.05	14.50	14.27	-0.04	1.300	1.010	1.054	**1.38**
	WLAN5G	802.11a	Top Side	0	60	1	Ant8	99.05	14.50	14.27	0.11	0.099	1.010	1.054	0.11
	WLAN5G	802.11a	Right Side	0	52	1	Ant8	99.05	14.00	13.78	0.07	0.842	1.010	1.052	0.89
	WLAN5G	802.11a	Right Side	0	56	1	Ant8	99.05	14.00	13.56	0.11	0.988	1.010	1.107	1.10
	WLAN5G	802.11a	Right Side	0	64	1	Ant8	99.05	13.50	13.04	-0.05	0.953	1.010	1.112	1.07
	WLAN5G	802.11n-HT40	Front Face	0	54	1	Ant9	99.63	9.00	8.95	0.01	0.066	1.004	1.012	0.07
	WLAN5G	802.11n-HT40	Rear Face	0	54	1	Ant9	99.63	9.00	8.95	0.12	0.102	1.004	1.012	0.10
	WLAN5G	802.11n-HT40	Left Side	0	54	1	Ant9	99.63	9.00	8.95	-0.06	0.114	1.004	1.012	0.12
	WLAN5G	802.11n-HT40	Right Side	0	54	1	Ant9	99.63	9.00	8.95	-0.09	0.032	1.004	1.012	0.03
	WLAN5G	802.11n-HT40	Top Side	0	54	1	Ant9	99.63	9.00	8.95	0.10	0.033	1.004	1.012	0.03
	WLAN5G	802.11n-HT40	Left Side	0	62	1	Ant9	99.63	7.50	7.48	0.13	0.274	1.004	1.005	0.28
	WLAN5G	802.11n-HT40	Front Face	0	54	1	Ant8+9	99.63	15.50	15.33	0.14	0.288	1.004	1.040	0.30
	WLAN5G	802.11n-HT40	Rear Face	0	54	1	Ant8+9	99.63	15.50	15.33	-0.08	0.658	1.004	1.040	0.69
	WLAN5G	802.11n-HT40	Left Side	0	54	1	Ant8+9	99.63	15.50	15.33	0.13	0.171	1.004	1.040	0.18
	WLAN5G	802.11n-HT40	Right Side	0	54	1	Ant8+9	99.63	15.50	15.33	0.01	1.070	1.004	1.040	1.12
	WLAN5G	802.11n-HT40	Top Side	0	54	1	Ant8+9	99.63	15.50	15.33	0.07	0.088	1.004	1.040	0.09
	WLAN5G	802.11n-HT40	Right Side	0	62	1	Ant8+9	99.63	14.00	13.94	0.04	1.280	1.004	1.014	1.30
	WLAN5G	802.11a	Right Side	0	60	2	Ant8	99.05	14.50	14.27	-0.08	0.867	1.010	1.054	0.92
	WLAN5G	802.11ac-VHT40	Front Face	0	142	1	Ant8	99.63	14.00	13.91	0.07	0.171	1.004	1.021	0.18
	WLAN5G	802.11ac-VHT40	Rear Face	0	142	1	Ant8	99.63	14.00	13.91	0.15	0.318	1.004	1.021	0.33
	WLAN5G	802.11ac-VHT40	Left Side	0	142	1	Ant8	99.63	14.00	13.91	0.09	0.024	1.004	1.021	0.02
P15	WLAN5G	802.11ac-VHT40	Right Side	0	142	1	Ant8	99.63	14.00	13.91	-0.05	0.771	1.004	1.021	**0.79**
	WLAN5G	802.11ac-VHT40	Top Side	0	142	1	Ant8	99.63	14.00	13.91	0.04	0.041	1.004	1.021	0.04
	WLAN5G	802.11ac-VHT40	Right Side	0	102	1	Ant8	99.63	11.50	11.29	0.02	0.597	1.004	1.050	0.63
	WLAN5G	802.11ac-VHT40	Right Side	0	110	1	Ant8	99.63	13.00	12.76	-0.07	0.635	1.004	1.057	0.67
	WLAN5G	802.11ac-VHT40	Right Side	0	126	1	Ant8	99.63	13.00	12.56	0.14	0.706	1.004	1.107	0.78
	WLAN5G	802.11ac-VHT40	Right Side	0	134	1	Ant8	99.63	13.00	12.68	0.05	0.555	1.004	1.076	0.60
	WLAN5G	802.11a	Front Face	0	116	1	Ant9	99.05	13.50	13.11	-0.13	0.151	1.010	1.094	0.17
	WLAN5G	802.11a	Rear Face	0	116	1	Ant9	99.05	13.50	13.11	0.09	0.183	1.010	1.094	0.20
	WLAN5G	802.11a	Left Side	0	116	1	Ant9	99.05	13.50	13.11	-0.07	0.339	1.010	1.094	0.37
	WLAN5G	802.11a	Right Side	0	116	1	Ant9	99.05	13.50	13.11	0.03	0.045	1.010	1.094	0.05
	WLAN5G	802.11a	Top Side	0	116	1	Ant9	99.05	13.50	13.11	0.14	0.065	1.010	1.094	0.07
	WLAN5G	802.11a	Left Side	0	100	1	Ant9	99.05	13.00	12.98	0.06	0.462	1.010	1.005	0.47
	WLAN5G	802.11a	Left Side	0	124	1	Ant9	99.05	13.00	12.76	0.13	0.306	1.010	1.057	0.33
	WLAN5G	802.11a	Left Side	0	132	1	Ant9	99.05	12.50	12.43	0.04	0.264	1.010	1.016	0.27
	WLAN5G	802.11a	Left Side	0	140	1	Ant9	99.05	11.50	11.16	0.07	0.231	1.010	1.081	0.25
	WLAN5G	802.11a	Left Side	0	144	1	Ant9	99.05	8.50	8.13	-0.02	0.260	1.010	1.089	0.29
	WLAN5G	802.11a	Front Face	0	116	1	Ant8+9	99.05	16.50	16.04	0.09	0.218	1.010	1.112	0.24
	WLAN5G	802.11a	Rear Face	0	116	1	Ant8+9	99.05	16.50	16.04	0.15	0.510	1.010	1.112	0.57
	WLAN5G	802.11a	Left Side	0	116	1	Ant8+9	99.05	16.50	16.04	0.03	0.315	1.010	1.112	0.35
	WLAN5G	802.11a	Right Side	0	116	1	Ant8+9	99.05	16.50	16.04	-0.08	0.684	1.010	1.112	0.77
	WLAN5G	802.11a	Top Side	0	116	1	Ant8+9	99.05	16.50	16.04	0.02	0.079	1.010	1.112	0.09
	WLAN5G	802.11a	Right Side	0	100	1	Ant8+9	99.05	15.50	15.37	0.11	0.726	1.010	1.030	0.76
	WLAN5G	802.11a	Right Side	0	124	1	Ant8+9	99.05	15.50	15.21	0.07	0.672	1.010	1.069	0.73
	WLAN5G	802.11a	Right Side	0	132	1	Ant8+9	99.05	15.50	15.02	-0.02	0.639	1.010	1.117	0.72
	WLAN5G	802.11a	Right Side	0	140	1	Ant8+9	99.05	15.00	14.98	0.05	0.673	1.010	1.005	0.68
	WLAN5G	802.11a	Right Side	0	144	1	Ant8+9	99.05	14.50	14.42	-0.13	0.698	1.010	1.019	0.72

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	Sample	Antenna	Duty Cycle %	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-10g (W/kg)	Duty Cycle Scaling Factor	Tune-up Scaling Factor	Scaled SAR-10g (W/kg)
	WLAN5G	802.11ac-VHT40	Right Side	0	142	2	Ant8	99.63	14.00	13.91	0.13	0.596	1.004	1.021	0.61

4.6.6 SAR Measurement Variability

According to KDB 865664 D01, SAR measurement variability was assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. Alternatively, if the highest measured SAR for both head and body tissue-equivalent media are ≤ 1.45 W/kg and the ratio of these highest SAR values, i.e., largest divided by smallest value, is ≤ 1.10, the highest SAR configuration for either head or body tissue-equivalent medium may be used to perform the repeated measurement. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR repeated measurement procedure:
1. When the highest measured SAR is < 0.80 W/kg, repeated measurement is not required.
2. When the highest measured SAR is >= 0.80 W/kg, repeat that measurement once.
3. If the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20, or when the original or repeated measurement is >= 1.45 W/kg, perform a second repeated measurement.
4. If the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20, and the original, first or second repeated measurement is >= 1.5 W/kg, perform a third repeated measurement.

Band	Mode	Test Position	Ch.	Original Measured SAR-1g (W/kg)	1st Repeated SAR-1g (W/kg)	L/S Ratio	2nd Repeated SAR-1g (W/kg)	L/S Ratio	3rd Repeated SAR-1g (W/kg)	L/S Ratio
WLAN5G	802.11a	Left Cheek	60	0.699	0.652	1.072	N/A	N/A	N/A	N/A
WLAN5G	802.11a	Left Cheek	165	0.767	0.735	1.044	N/A	N/A	N/A	N/A
WLAN5G	802.11a	Right Side	165	0.802	0.773	1.038	N/A	N/A	N/A	N/A

Test Engineer：Zixiao Xia, and Renjie Liu

5. Calibration of Test Equipment

Equipment	Manufacturer	Model	SN	Cal. Date	Cal. Interval
System Validation Dipole	SPEAG	D2450V2	1048	Oct. 21, 2021	3 Years
System Validation Dipole	SPEAG	D5GHzV2	1315	Oct. 22, 2021	3 Years
Data Acquisition Electronics	SPEAG	DAE4	1633	Mar. 06, 2024	1 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	3985	Jul. 10, 2023	1 Year
Magnetic Field Probe	SPEAG	DAK-3.5	1119	Feb. 19, 2024	1 Year
ENA Series Network Analyzer	SPEAG	DAKS_VNA R140	0121219	Feb. 19, 2024	1 Year
Power Meter	Rohde&Schwarz	NRX	102380	Mar. 28, 2024	1 Year
Power Sensor	Rohde&Schwarz	NRP6A	102942	Mar. 20, 2024	1 Year
Power Sensor	Rohde&Schwarz	NRP6A	102943	Mar. 20, 2024	1 Year
ESG Analog Signal Generator	Rohde&Schwarz	SMB100B	102507	Mar. 28, 2024	1 Year
Coupler	Woken	0110A056020-10	COM27RW1A3	May. 09, 2024	1 Year
Temp.&Humi.Recorder	Deli	8813	SZ011	Sep. 06, 2022	2 Years

Note:

1. Referring to KDB 865664 D01 v01r04, the dipole calibration interval can be extended to 3 years with justification. The dipole are also not physically damaged, or repaired during the interval. The dipole justification can be found in appendix C.
   The return loss is ＜ -20dB, within 20% of prior calibration, the impedance is with 5ohm of prior calibration.

6. Measurement Uncertainty

DASY6 Uncertainty Budget According to IEEE 1528-2013 and IEC 62209-1/2016 (0.3 - 3 GHz range)								
Error Description	**Uncertainty Value (±%)**	**Probability**	**Divisor**	**(Ci) 1g**	**(Ci) 10g**	**Standard Uncertainty (1g) (±%)**	**Standard Uncertainty (10g) (±%)**	**(Vi) Veff**
Measurement System								
Probe Calibration	6.05	N	1	1	1	6.1	6.1	∞
Axial Isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9	∞
Hemispherical Isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9	∞
Boundary Effects	2.0	R	1.732	1	1	1.2	1.2	∞
Linearity	4.7	R	1.732	1	1	2.7	2.7	∞
System Detection Limits	1.0	R	1.732	1	1	0.6	0.6	∞
Modulation Response	3.2	R	1.732	1	1	1.8	1.8	∞
Readout Electronics	0.3	N	1	1	1	0.3	0.3	∞
Response Time	0.0	R	1.732	1	1	0.0	0.0	∞
Integration Time	2.6	R	1.732	1	1	1.5	1.5	∞
RF Ambient Noise	3.0	R	1.732	1	1	1.7	1.7	∞
RF Ambient Reflections	3.0	R	1.732	1	1	1.7	1.7	∞
Probe Positioner	0.4	R	1.732	1	1	0.2	0.2	∞
Probe Positioning	6.7	R	1.732	1	1	3.9	3.9	∞
Max. SAR Eval.	4.0	R	1.732	1	1	2.3	2.3	∞
Test Sample Related								
Device Positioning	4.0	N	1	1	1	4.0	4.0	35
Device Holder	4.9	N	1	1	1	4.9	4.9	12
Power Drift	5.0	R	1.732	1	1	2.9	2.9	∞
Power Scaling	0.0	R	1.732	1	1	0.0	0.0	∞
Phantom and Setup								
Phantom Uncertainty	6.6	R	1.732	1	1	3.8	3.8	∞
SAR correction	0.0	R	1.732	1	0.84	0.0	0.0	∞
Liquid Conductivity Repeatability	0.14	N	1	0.78	0.71	0.1	0.1	5
Liquid Conductivity (target)	10.0	R	1.732	0.78	0.71	4.5	4.1	∞
Liquid Conductivity (mea.)	2.5	R	1.732	0.78	0.71	1.1	1.0	∞
Temp. unc. - Conductivity	2.61	R	1.732	0.78	0.71	1.2	1.1	∞
Liquid Permittivity Repeatability	0.03	N	1	0.23	0.26	0.0	0.0	5
Liquid Permittivity (target)	10.0	R	1.732	0.23	0.26	1.3	1.5	∞
Liquid Permittivity (mea.)	2.5	R	1.732	0.23	0.26	0.3	0.4	∞
Temp. unc. - Permittivity	1.78	R	1.732	0.23	0.26	0.2	0.3	∞
Combined Std. Uncertainty						13.6%	13.5%	578
Coverage Factor for 95 %						K=2	K=2	
Expanded STD Uncertainty						27.2%	26.9%	

Uncertainty budget for frequency range 300 MHz to 3 GHz

DASY6 Uncertainty Budget According to IEC 62209-2/2010 (30 MHz - 6 GHz range)								
Error Description	**Uncertainty Value (±%)**	**Probability**	**Divisor**	**(Ci) 1g**	**(Ci) 10g**	**Standard Uncertainty (1g) (±%)**	**Standard Uncertainty (10g) (±%)**	**(Vi) Veff**
Measurement System								
Probe Calibration	6.65	N	1	1	1	6.7	6.7	∞
Axial Isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9	∞
Hemispherical Isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9	∞
Boundary Effects	2.0	R	1.732	1	1	1.2	1.2	∞
Linearity	4.7	R	1.732	1	1	2.7	2.7	∞
System Detection Limits	1.0	R	1.732	1	1	0.6	0.6	∞
Modulation Response	3.2	R	1.732	1	1	1.8	1.8	∞
Readout Electronics	0.3	N	1	1	1	0.3	0.3	∞
Response Time	0.0	R	1.732	1	1	0.0	0.0	∞
Integration Time	2.6	R	1.732	1	1	1.5	1.5	∞
RF Ambient Noise	3.0	R	1.732	1	1	1.7	1.7	∞
RF Ambient Reflections	3.0	R	1.732	1	1	1.7	1.7	∞
Probe Positioner	0.4	R	1.732	1	1	0.2	0.2	∞
Probe Positioning	6.7	R	1.732	1	1	3.9	3.9	∞
Max. SAR Eval.	4.0	R	1.732	1	1	2.3	2.3	∞
Test Sample Related								
Device Positioning	4.3	N	1	1	1	4.3	4.3	35
Device Holder	4.9	N	1	1	1	4.9	4.9	12
Power Drift	5.0	R	1.732	1	1	2.9	2.9	∞
Power Scaling	0.0	R	1.732	1	1	0.0	0.0	∞
Phantom and Setup								
Phantom Uncertainty	6.6	R	1.732	1	1	3.8	3.8	∞
SAR correction	0.0	R	1.732	1	0.84	0.0	0.0	∞
Liquid Conductivity Repeatability	0.16	N	1	0.78	0.71	0.1	0.1	5
Liquid Conductivity (target)	10.0	R	1.732	0.78	0.71	4.5	4.1	∞
Liquid Conductivity (mea.)	2.5	R	1.732	0.78	0.71	1.1	1.0	∞
Temp. unc. - Conductivity	3.64	R	1.732	0.78	0.71	1.6	1.5	∞
Liquid Permittivity Repeatability	0.08	N	1	0.23	0.26	0.0	0.0	5
Liquid Permittivity (target)	10.0	R	1.732	0.23	0.26	1.3	1.5	∞
Liquid Permittivity (mea.)	2.5	R	1.732	0.23	0.26	0.3	0.4	∞
Temp. unc. - Permittivity	1.78	R	1.732	0.23	0.26	0.2	0.3	∞
Combined Std. Uncertainty						14.0%	13.9%	624
Coverage Factor for 95 %						K=2	K=2	
Expanded STD Uncertainty						28.0%	27.7%	

Uncertainty budget for frequency range 30 MHz to 6 GHz

7. Information on the Testing Laboratories

We, Huarui 7layers High Technology (Suzhou) Co., Ltd., were founded in 2020 to provide our best service in EMC, Radio, Telecom and Safety consultation.

If you have any comments, please feel free to contact us at the following:

Add: Tower N, Innovation Center, 88 Zuyi Road, High-tech District, Suzhou City, Anhui Province
Tel: +86 (0557) 368 1008

The road map of all our labs can be found in our web site also
Web: http://www.7Layers.com

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Appendix A. SAR Plots of System Verification

The plots for system verification with largest deviation for each SAR system combination are shown as follows.

Test Laboratory: ritt 7 Layers SAR/HAC Testing Lab Date: 2024/06/11

System Check_HSL2450_240611

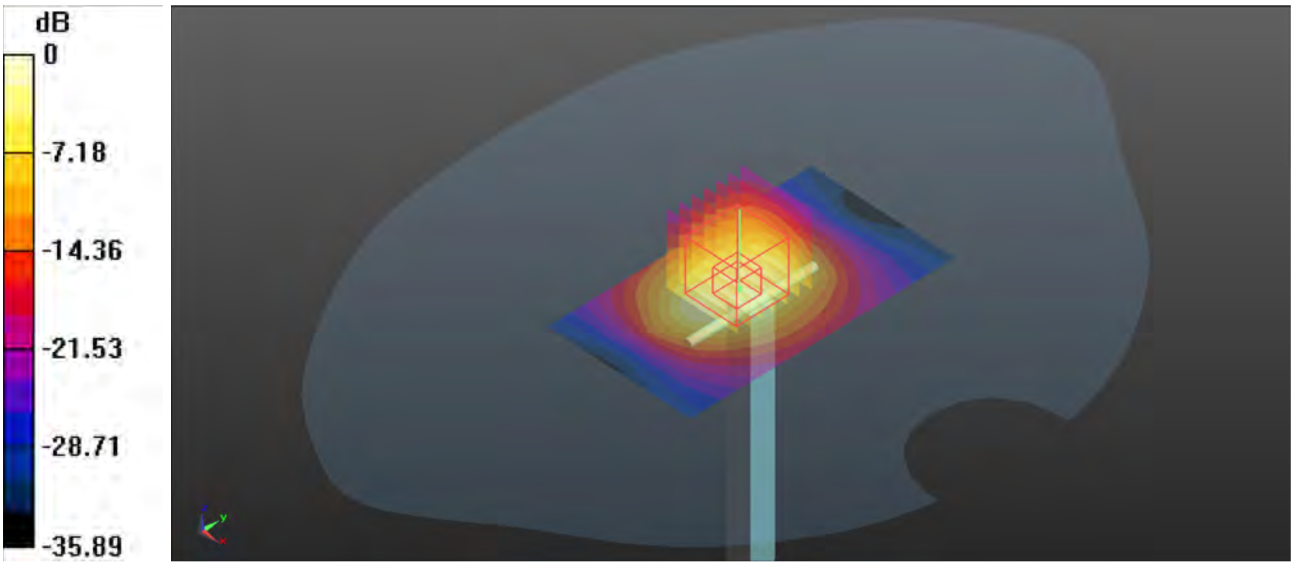
DUT: Dipole 2450 MHz; Type: D2450V2

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL2450_0611 Medium parameters used: f = 2450 MHz; σ = 1.878 S/m; ε_r = 39.629; ρ = 1000 kg/m^3
Ambient Temperature：23.3℃; Liquid Temperature：22.5℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(7.8, 7.8, 7.8) @ 2450 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (51x91x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 22.7 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 84.31 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 27.0 W/kg
SAR(1 g) = 13 W/kg; SAR(10 g) = 6.02 W/kg
Smallest distance from peaks to all points 3 dB below = 9 mm
Ratio of SAR at M2 to SAR at M1 = 48.3%
Maximum value of SAR (measured) = 21.9 W/kg



0 dB = 21.9 W/kg

System Check_HSL5250_240612

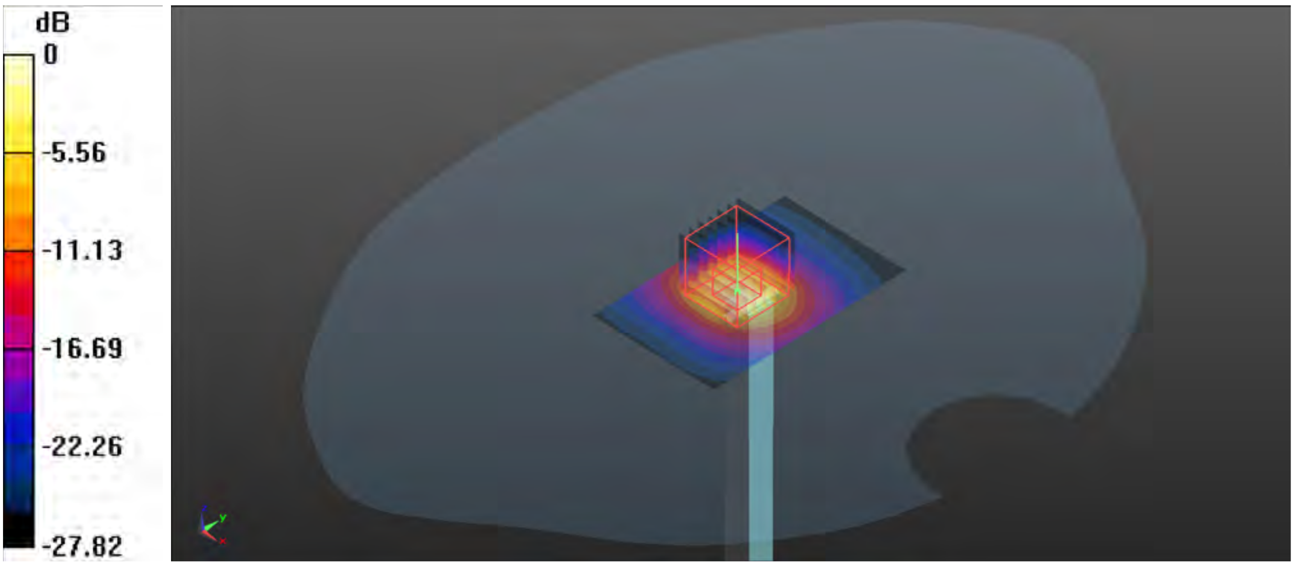
DUT: Dipole 5GHz; Type: D5GHzV2

Communication System: CW; Frequency: 5250 MHz;Duty Cycle: 1:1
Medium: HSL5G_0612 Medium parameters used: f = 5250 MHz; $\sigma = 4.551$ S/m; $\varepsilon_r = 35.048$; $\rho = 1000$ kg/m^3
Ambient Temperature：23.4℃; Liquid Temperature：22.6℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(5.6, 5.6, 5.6) @ 5250 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=100mW/Area Scan (51x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 20.0 W/kg

Pin=100mW/Zoom Scan (7x7x6)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 41.60 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 31.7 W/kg
SAR(1 g) = 7.71 W/kg; SAR(10 g) = 2.23 W/kg
Smallest distance from peaks to all points 3 dB below = 7.4 mm
Ratio of SAR at M2 to SAR at M1 = 53.2%
Maximum value of SAR (measured) = 19.5 W/kg



0 dB = 19.5 W/kg

Test Laboratory: ritt 7 Layers SAR/HAC Testing Lab Date: 2024/06/13

System Check_HSL5250_240613

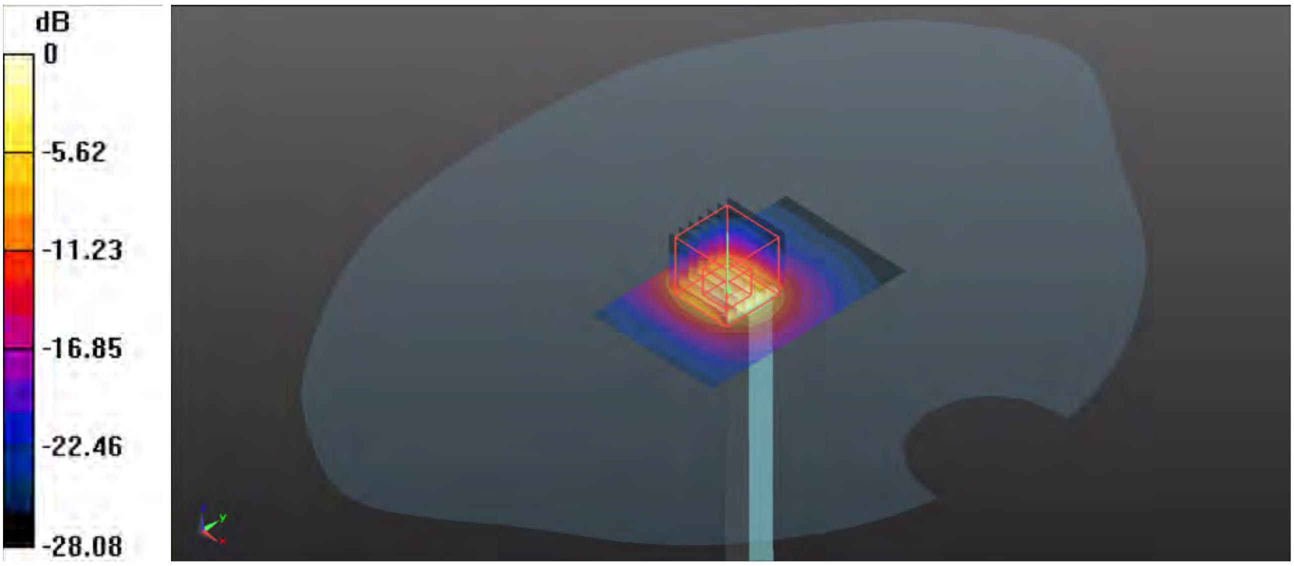
DUT: Dipole 5GHz; Type: D5GHzV2

Communication System: CW; Frequency: 5250 MHz;Duty Cycle: 1:1
Medium: HSL5G_0613 Medium parameters used: f = 5250 MHz; σ = 4.555 S/m; ε_r = 35.056; ρ = 1000 kg/m^3
Ambient Temperature：23.6℃; Liquid Temperature：22.5℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(5.6, 5.6, 5.6) @ 5250 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=100mW/Area Scan (51x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 20.2 W/kg

Pin=100mW/Zoom Scan (7x7x6)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 35.23 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 29.8 W/kg
SAR(1 g) = 7.59 W/kg; SAR(10 g) = 2.18 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 55.3%
Maximum value of SAR (measured) = 19.1 W/kg



0 dB = 19.1 W/kg

System Check_HSL5600_240614

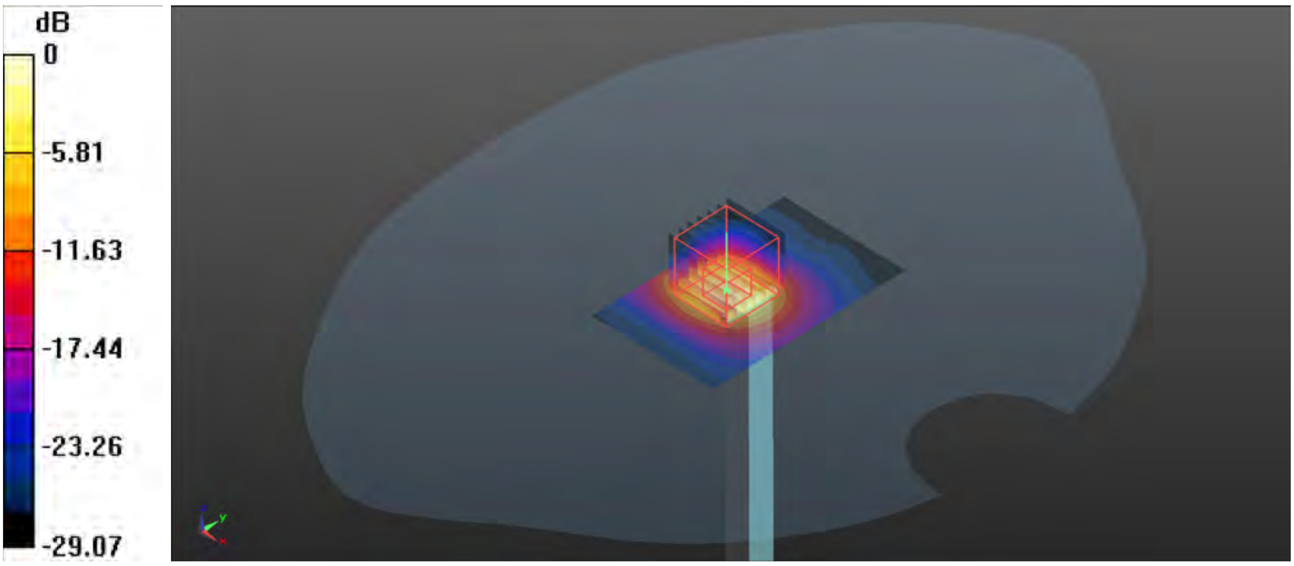
DUT: Dipole 5GHz; Type: D5GHzV2

Communication System: CW; Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: HSL5G_0614 Medium parameters used: f = 5600 MHz; σ = 4.943 S/m; ε_r = 34.548; ρ = 1000 kg/m^3
Ambient Temperature：23.2℃; Liquid Temperature：22.4℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(5.08, 5.08, 5.08) @ 5600 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=100mW/Area Scan (51x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 22.2 W/kg

Pin=100mW/Zoom Scan (7x7x6)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 34.29 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 34.1 W/kg
SAR(1 g) = 8.02 W/kg; SAR(10 g) = 2.29 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 52.6%
Maximum value of SAR (measured) = 21.1 W/kg



0 dB = 21.1 W/kg

System Check_HSL5750_240615

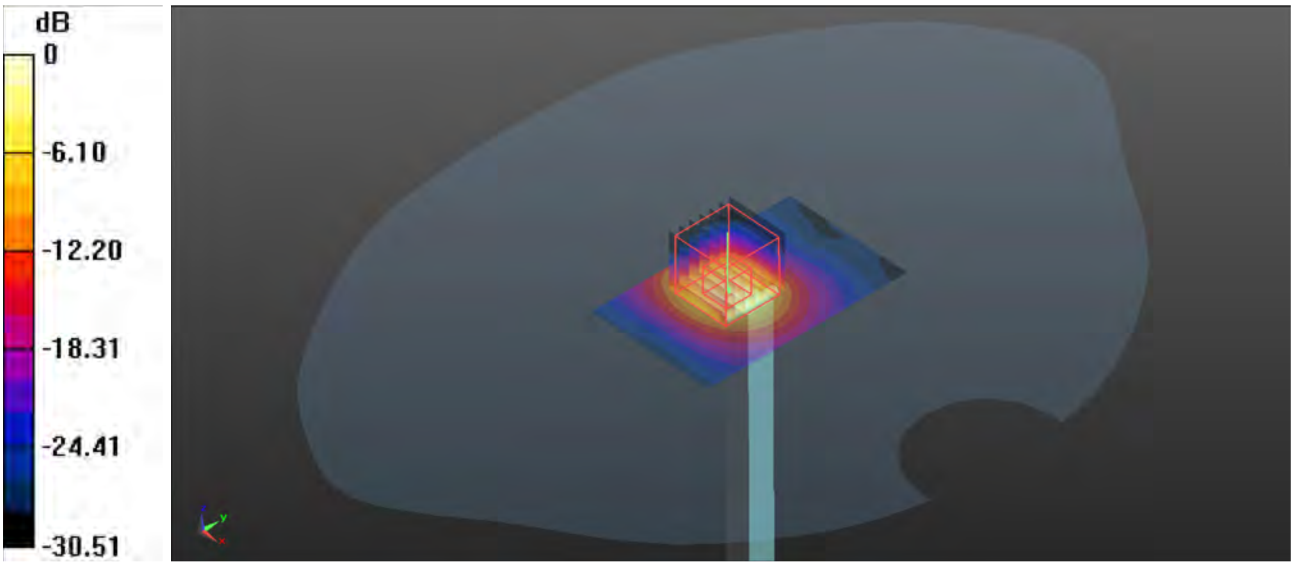
DUT: Dipole 5GHz; Type: D5GHzV2

Communication System: CW; Frequency: 5750 MHz;Duty Cycle: 1:1
Medium: HSL5G_0615 Medium parameters used: f = 5750 MHz; σ = 5.134 S/m; ε_r = 34.175; ρ = 1000 kg/m^3
Ambient Temperature：23.4℃; Liquid Temperature：22.4℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(5.16, 5.16, 5.16) @ 5750 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=100mW/Area Scan (51x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 20.2 W/kg

Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 32.89 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 31.5 W/kg
SAR(1 g) = 7.41 W/kg; SAR(10 g) = 2.11 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 51.9%
Maximum value of SAR (measured) = 19.1 W/kg



0 dB = 19.1 W/kg

Appendix B. SAR Plots of SAR Measurement

The SAR plots for highest measured SAR in each exposure configuration, wireless mode and frequency band combination, and measured SAR > 1.5 W/kg are shown as follows.

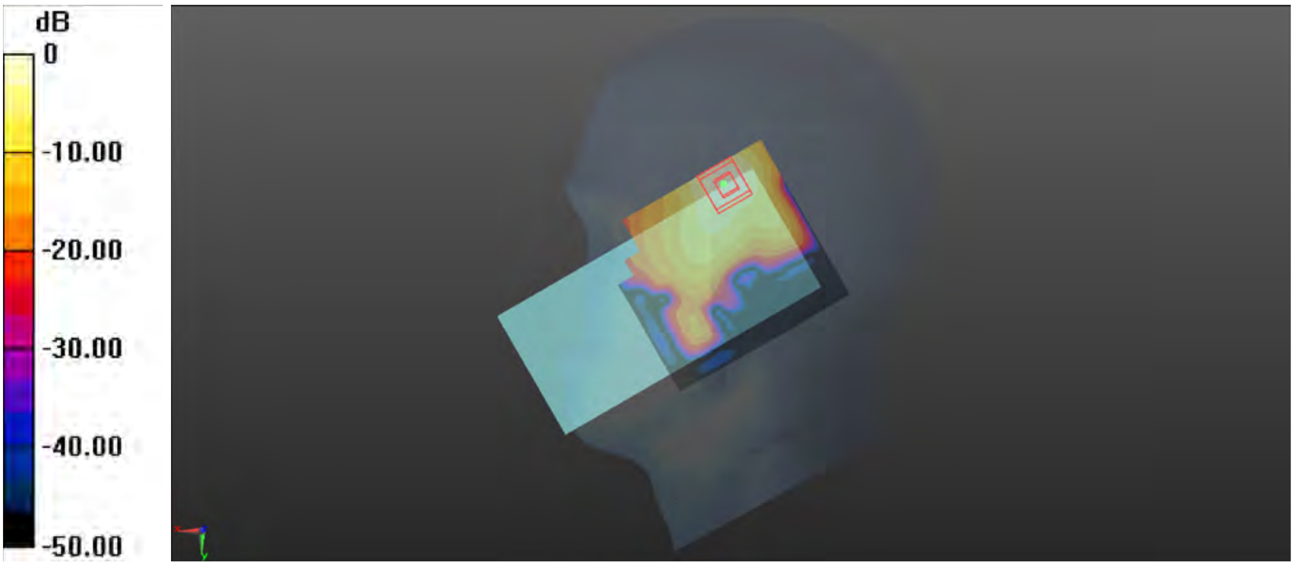
P01 WLAN2.4G_802.11b_Right Cheek_Ch6

Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: HSL2450_0611 Medium parameters used: f = 2437 MHz; σ = 1.87 S/m; ε_r = 39.646; ρ = 1000 kg/m^3
Ambient Temperature：23.3°C; Liquid Temperature：22.5°C

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(7.8, 7.8, 7.8) @ 2437 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

-Area Scan (101x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.487 W/kg

-Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.588 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.655 W/kg
SAR(1 g) = 0.338 W/kg; SAR(10 g) = 0.157 W/kg
Smallest distance from peaks to all points 3 dB below = 8.3 mm
Ratio of SAR at M2 to SAR at M1 = 79.1%
Maximum value of SAR (measured) = 0.497 W/kg



0 dB = 0.497 W/kg

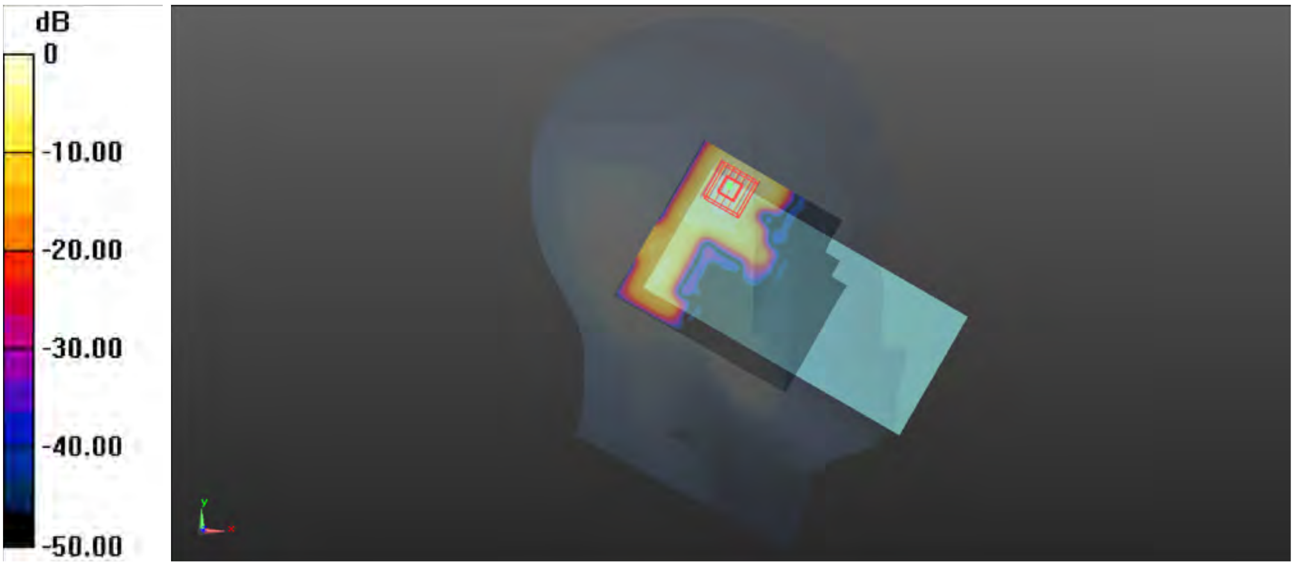
P02 WLAN5G_802.11ax-HE20_Left Cheek_Ch48

Communication System: 802.11ax-HE20; Frequency: 5240 MHz;Duty Cycle: 1:1.004
Medium: HSL5G_0612 Medium parameters used: f = 5240 MHz; σ = 4.526 S/m; ε_r = 35.065; ρ = 1000 kg/m^3
Ambient Temperature：23.4°C; Liquid Temperature：22.6°C

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(5.6, 5.6, 5.6) @ 5240 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

-Area Scan (101x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.888 W/kg

-Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.758 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 1.73 W/kg
SAR(1 g) = 0.502 W/kg; SAR(10 g) = 0.177 W/kg
Smallest distance from peaks to all points 3 dB below = 8.6 mm
Ratio of SAR at M2 to SAR at M1 = 57.4%
Maximum value of SAR (measured) = 0.967 W/kg



0 dB = 0.967 W/kg

Test Laboratory: ritt 7 Layers SAR/HAC Testing Lab Date: 2024/06/13

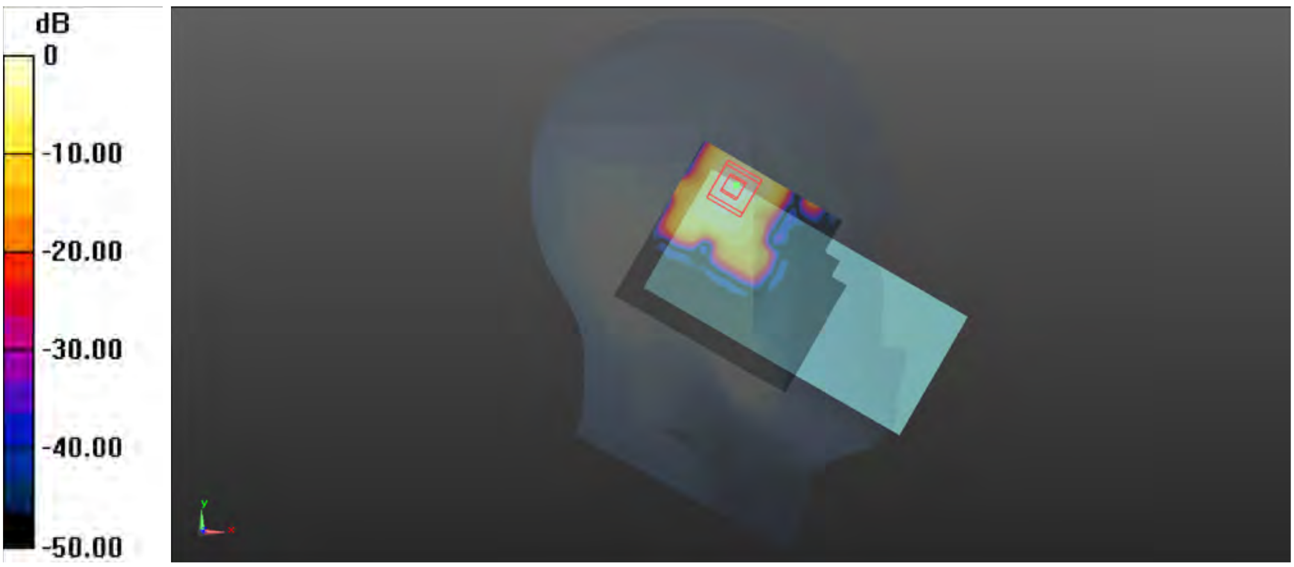
P03 WLAN5G_802.11a_Left Cheek_Ch60

Communication System: 802.11a; Frequency: 5300 MHz;Duty Cycle: 1:1.01
Medium: HSL5G_0613 Medium parameters used: f = 5300 MHz; σ = 4.651 S/m; ε_r = 34.922; ρ = 1000 kg/m^3
Ambient Temperature：23.6℃; Liquid Temperature：22.5℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(5.6, 5.6, 5.6) @ 5300 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

-Area Scan (101x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.27 W/kg

-Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.338 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 2.46 W/kg
SAR(1 g) = 0.699 W/kg; SAR(10 g) = 0.244 W/kg
Smallest distance from peaks to all points 3 dB below = 7.9 mm
Ratio of SAR at M2 to SAR at M1 = 57.2%
Maximum value of SAR (measured) = 1.31 W/kg



0 dB = 1.31 W/kg

Test Laboratory: ritt 7 Layers SAR/HAC Testing Lab Date: 2024/06/14

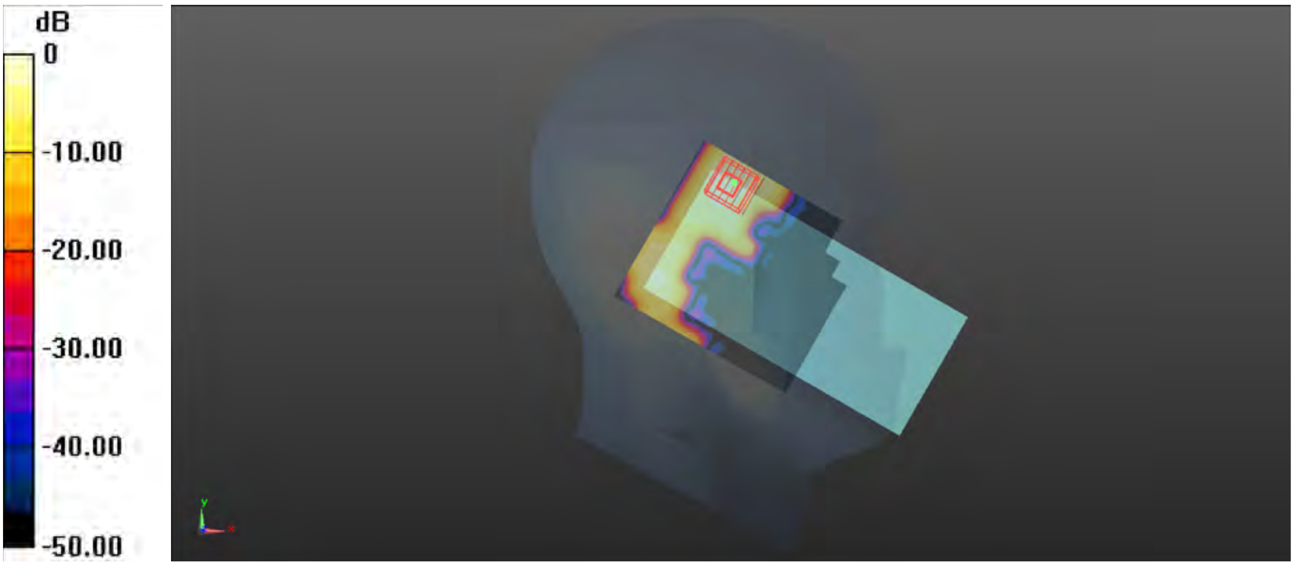
P04 WLAN5G_802.11a_Left Cheek_Ch116

Communication System: 802.11a; Frequency: 5580 MHz;Duty Cycle: 1:1.01
Medium: HSL5G_0614 Medium parameters used: f = 5580 MHz; σ = 4.916 S/m; ε_r = 34.674; ρ = 1000 kg/m^3
Ambient Temperature：23.2℃; Liquid Temperature：22.4℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(5.08, 5.08, 5.08) @ 5580 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

-Area Scan (101x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.651 W/kg

-Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.190 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 0.364 W/kg; SAR(10 g) = 0.117 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 54.6%
Maximum value of SAR (measured) = 0.721 W/kg



0 dB = 0.721 W/kg

Test Laboratory: ritt 7 Layers SAR/HAC Testing Lab Date: 2024/06/15

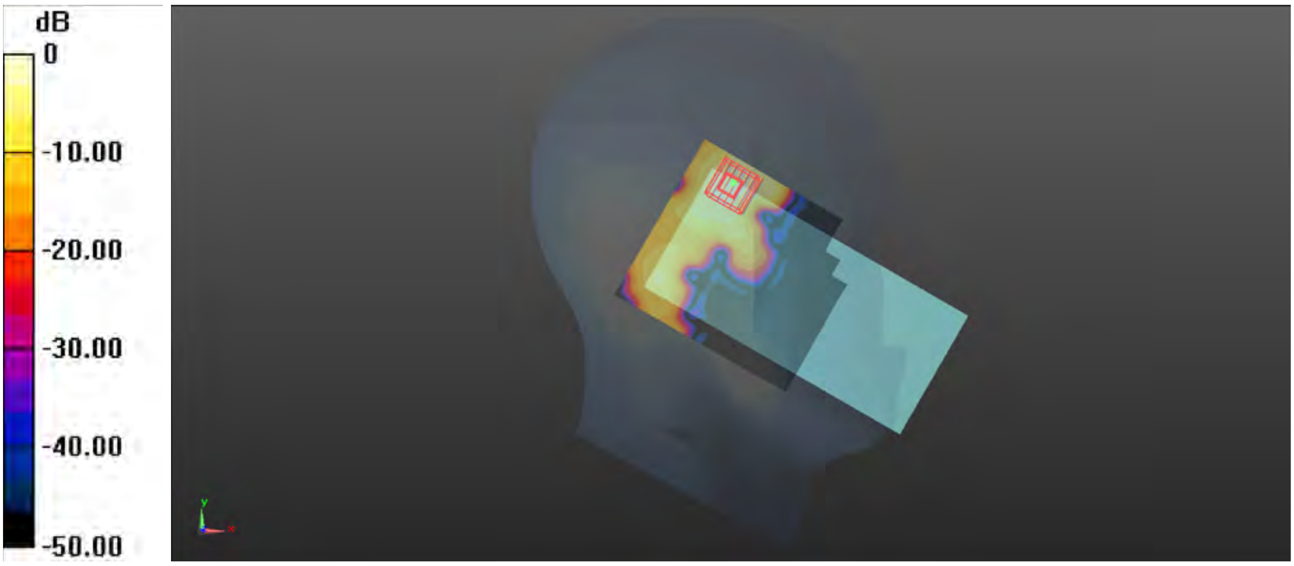
P05 WLAN5G_802.11a_Left Cheek_Ch165

Communication System: 802.11a; Frequency: 5825 MHz;Duty Cycle: 1:1.01
Medium: HSL5G_0615 Medium parameters used: f = 5825 MHz; σ = 5.163 S/m; ε_r = 34.147; ρ = 1000 kg/m^3
Ambient Temperature：23.4℃; Liquid Temperature：22.4℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(5.16, 5.16, 5.16) @ 5825 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

-Area Scan (101x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.47 W/kg

-Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.714 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 3.05 W/kg
SAR(1 g) = 0.767 W/kg; SAR(10 g) = 0.253 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 52.9%
Maximum value of SAR (measured) = 1.54 W/kg



0 dB = 1.54 W/kg

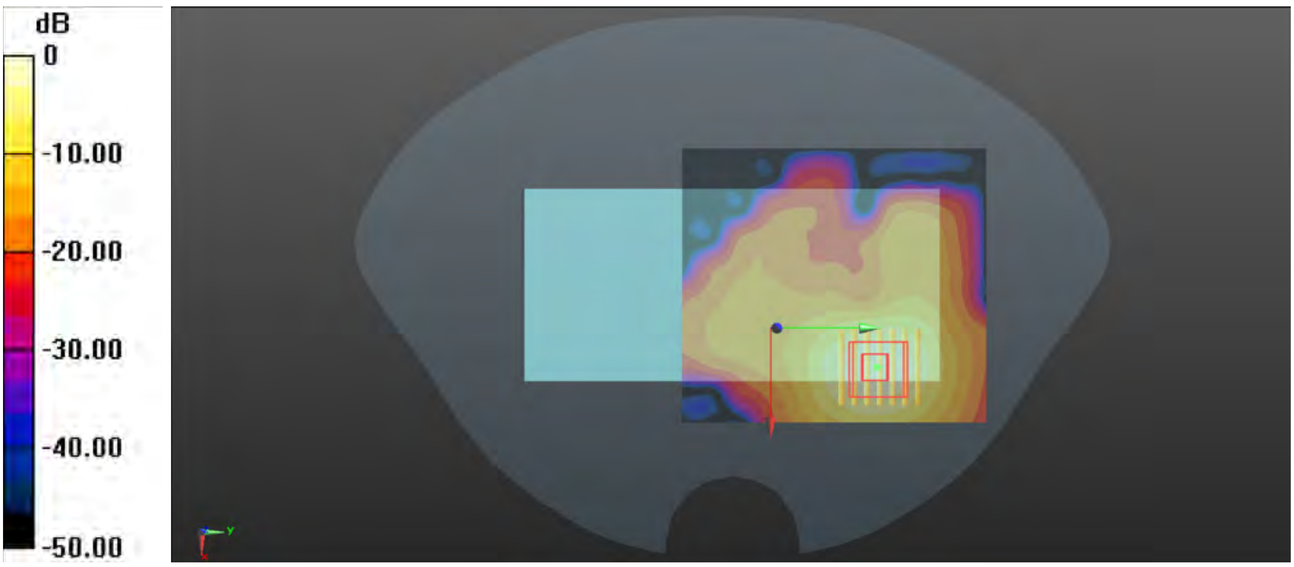
P06 WLAN2.4G_802.11b_Rear Face_1cm_Ch6

Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: HSL2450_0611 Medium parameters used: f = 2437 MHz; σ = 1.87 S/m; ε_r = 39.646; ρ = 1000 kg/m^3
Ambient Temperature：23.3°C; Liquid Temperature：22.5°C

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(7.8, 7.8, 7.8) @ 2437 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

-Area Scan (91x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.628 W/kg

-Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.690 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.779 W/kg
SAR(1 g) = 0.405 W/kg; SAR(10 g) = 0.195 W/kg
Smallest distance from peaks to all points 3 dB below = 10.4 mm
Ratio of SAR at M2 to SAR at M1 = 53.1%
Maximum value of SAR (measured) = 0.598 W/kg



0 dB = 0.598 W/kg

Test Laboratory: ritt 7 Layers SAR/HAC Testing Lab Date: 2024/06/12

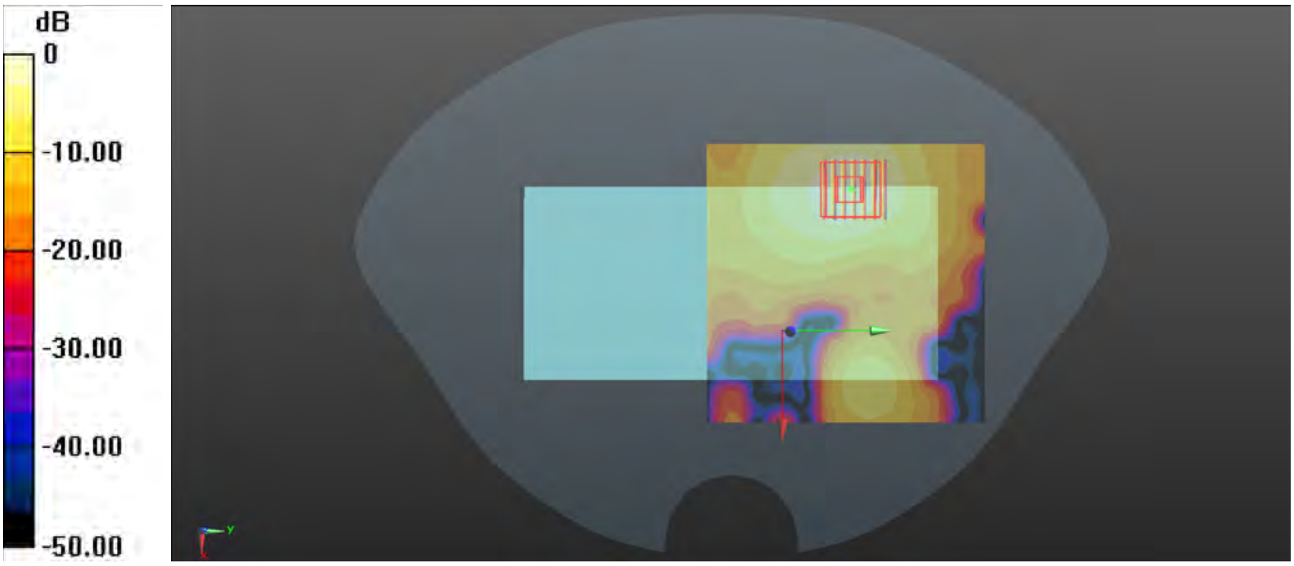
P07 WLAN5G_802.11ax-HE20_Rear Face_1cm_Ch48

Communication System: 802.11ax-HE20; Frequency: 5240 MHz;Duty Cycle: 1:1.004
Medium: HSL5G_0612 Medium parameters used: f = 5240 MHz; σ = 4.526 S/m; ε_r = 35.065; ρ = 1000 kg/m^3
Ambient Temperature：23.4°C; Liquid Temperature：22.6°C

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(5.6, 5.6, 5.6) @ 5240 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

-Area Scan (111x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.894 W/kg

-Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.647 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.56 W/kg
SAR(1 g) = 0.493 W/kg; SAR(10 g) = 0.193 W/kg
Smallest distance from peaks to all points 3 dB below = 11.1 mm
Ratio of SAR at M2 to SAR at M1 = 58.8%
Maximum value of SAR (measured) = 0.881 W/kg



0 dB = 0.881 W/kg

Test Laboratory: ritt 7 Layers SAR/HAC Testing Lab Date: 2024/06/13

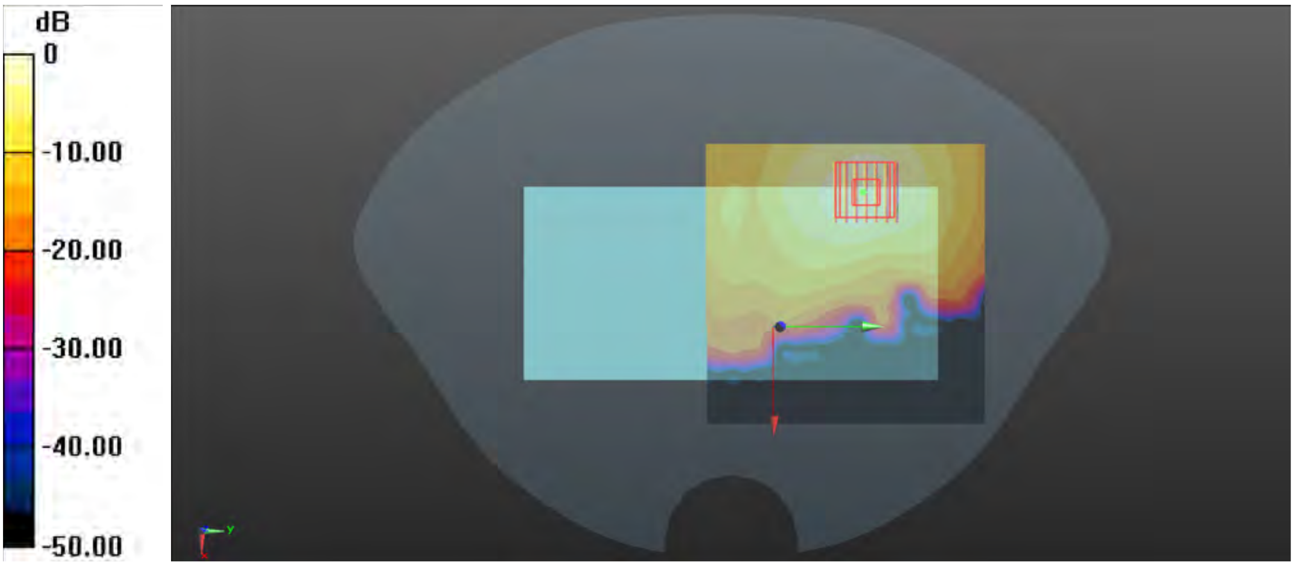
P08 WLAN5G_802.11a_Rear Face_1cm_Ch60

Communication System: 802.11a; Frequency: 5300 MHz;Duty Cycle: 1:1.01
Medium: HSL5G_0613 Medium parameters used: f = 5300 MHz; σ = 4.651 S/m; ε_r = 34.922; ρ = 1000 kg/m^3
Ambient Temperature：23.6℃; Liquid Temperature：22.5℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(5.6, 5.6, 5.6) @ 5300 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

-Area Scan (111x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.916 W/kg

-Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.247 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.70 W/kg
SAR(1 g) = 0.518 W/kg; SAR(10 g) = 0.205 W/kg
Smallest distance from peaks to all points 3 dB below = 11.1 mm
Ratio of SAR at M2 to SAR at M1 = 57.6%
Maximum value of SAR (measured) = 0.928 W/kg



0 dB = 0.928 W/kg

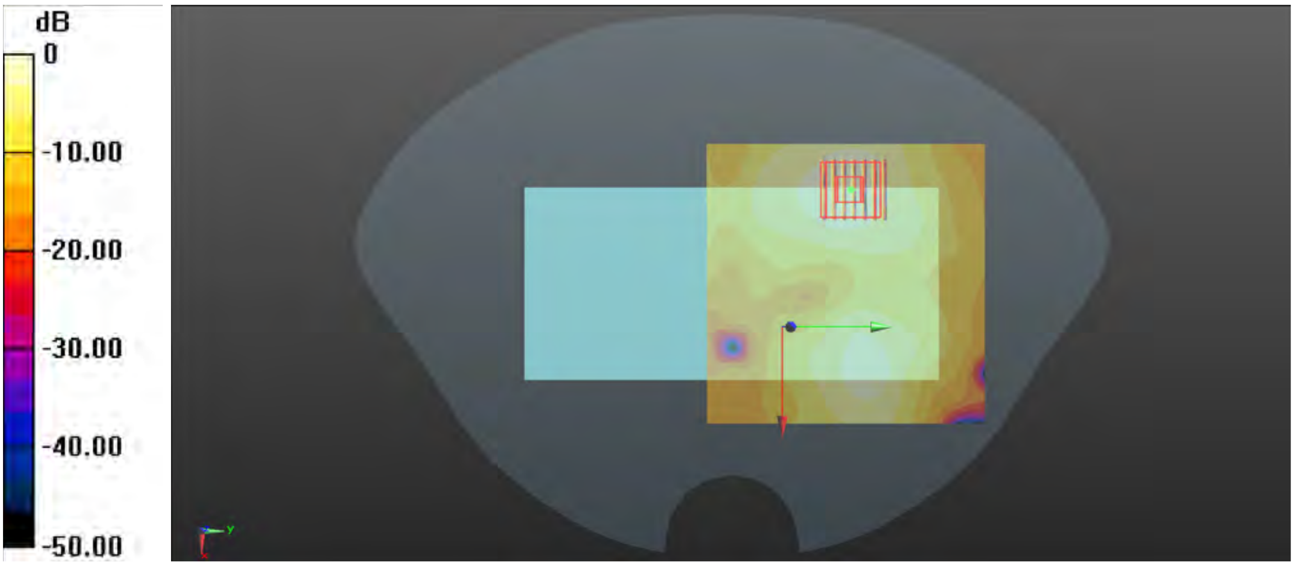
P09 WLAN5G_802.11a_Rear Face_1cm_Ch116

Communication System: 802.11a; Frequency: 5580 MHz;Duty Cycle: 1:1.01
Medium: HSL5G_0614 Medium parameters used: f = 5580 MHz; σ = 4.916 S/m; ε_r = 34.674; ρ = 1000 kg/m^3
Ambient Temperature：23.2℃; Liquid Temperature：22.4℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(5.08, 5.08, 5.08) @ 5580 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

-Area Scan (111x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.453 W/kg

-Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.333 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.847 W/kg
SAR(1 g) = 0.246 W/kg; SAR(10 g) = 0.099 W/kg
Smallest distance from peaks to all points 3 dB below = 13.6 mm
Ratio of SAR at M2 to SAR at M1 = 54.9%
Maximum value of SAR (measured) = 0.452 W/kg



0 dB = 0.452 W/kg

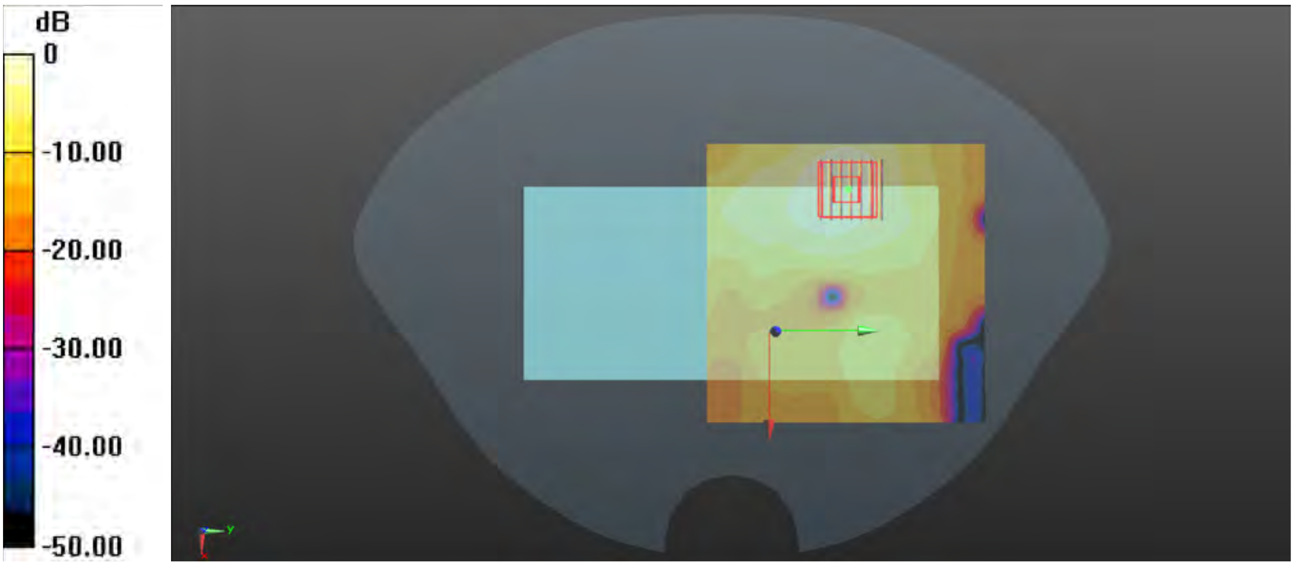
P10 WLAN5G_802.11a_Rear Face_1cm_Ch165

Communication System: 802.11a; Frequency: 5825 MHz;Duty Cycle: 1:1.01
Medium: HSL5G_0615 Medium parameters used: f = 5825 MHz; σ = 5.163 S/m; ε_r = 34.147; ρ = 1000 kg/m^3
Ambient Temperature：23.4℃; Liquid Temperature：22.4℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(5.16, 5.16, 5.16) @ 5825 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

-Area Scan (111x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.770 W/kg

-Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.928 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.45 W/kg
SAR(1 g) = 0.409 W/kg; SAR(10 g) = 0.164 W/kg
Smallest distance from peaks to all points 3 dB below = 12.6 mm
Ratio of SAR at M2 to SAR at M1 = 54%
Maximum value of SAR (measured) = 0.751 W/kg



0 dB = 0.751 W/kg

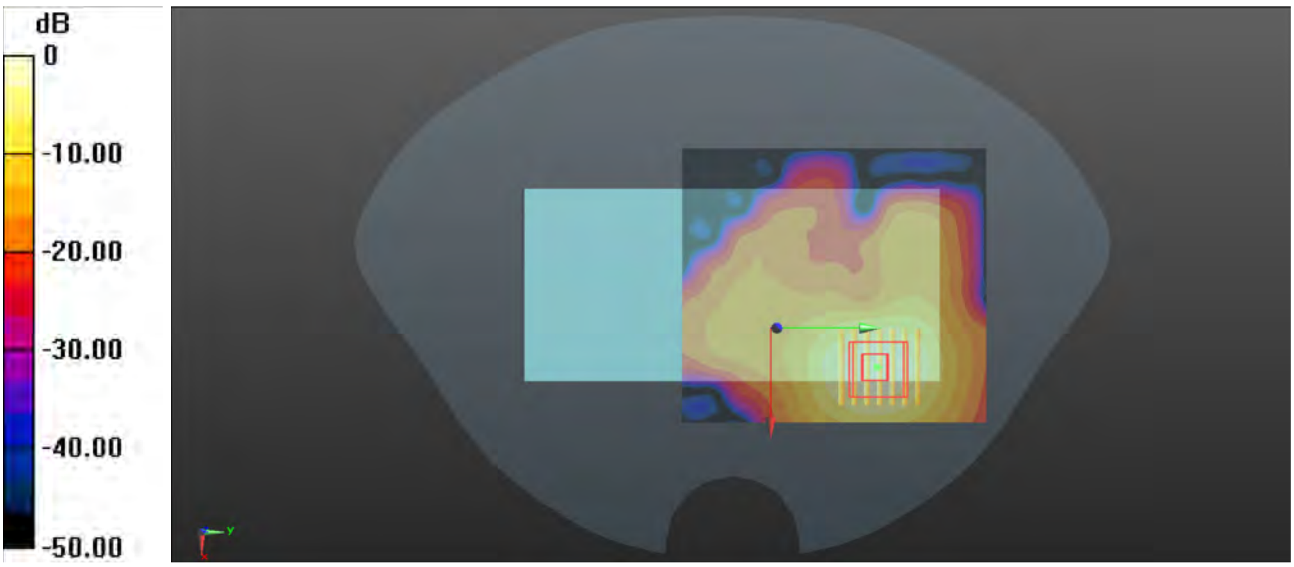
P11 WLAN2.4G_802.11b_Rear Face_1cm_Ch6

Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: HSL2450_0611 Medium parameters used: f = 2437 MHz; σ = 1.87 S/m; ε_r = 39.646; ρ = 1000 kg/m^3
Ambient Temperature：23.3°C; Liquid Temperature：22.5°C

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(7.8, 7.8, 7.8) @ 2437 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

-Area Scan (91x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.628 W/kg

-Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.690 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.779 W/kg
SAR(1 g) = 0.405 W/kg; SAR(10 g) = 0.195 W/kg
Smallest distance from peaks to all points 3 dB below = 10.4 mm
Ratio of SAR at M2 to SAR at M1 = 53.1%
Maximum value of SAR (measured) = 0.598 W/kg



0 dB = 0.598 W/kg

Test Laboratory: ritt 7 Layers SAR/HAC Testing Lab Date: 2024/06/12

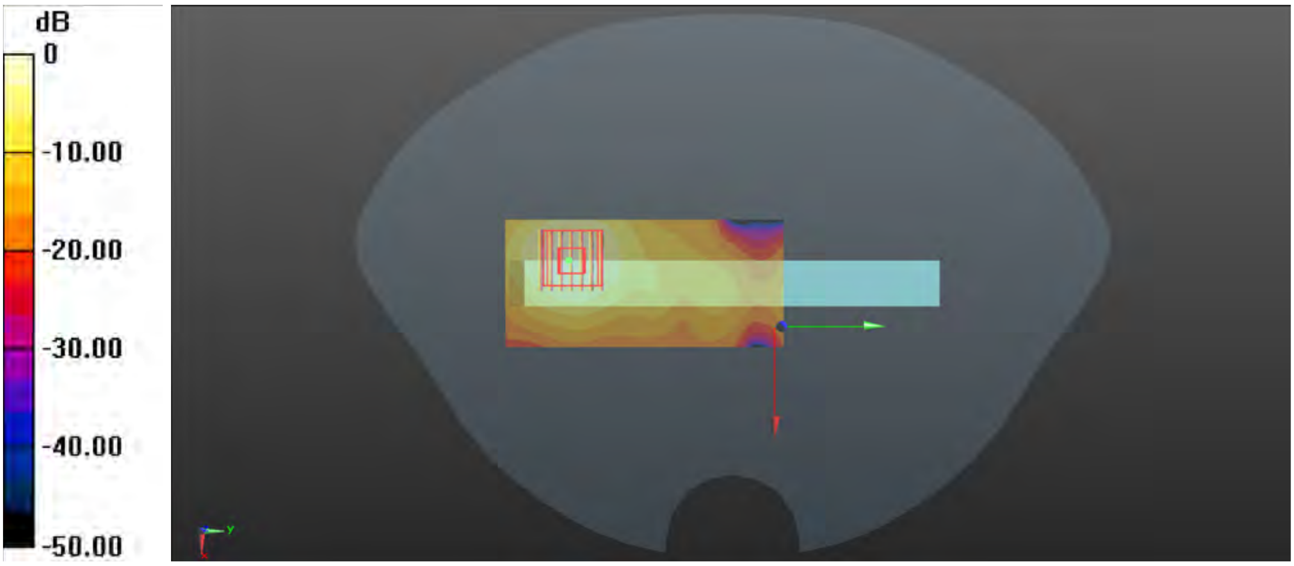
P12 WLAN5G_802.11ax-HE20_Right Side_1cm_Ch48

Communication System: 802.11ax-HE20; Frequency: 5240 MHz;Duty Cycle: 1:1.004
Medium: HSL5G_0612 Medium parameters used: f = 5240 MHz; σ = 4.526 S/m; ε_r = 35.065; ρ = 1000 kg/m^3
Ambient Temperature：23.4℃; Liquid Temperature：22.6℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(5.6, 5.6, 5.6) @ 5240 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

-Area Scan (51x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.12 W/kg

-Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.010 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 2.01 W/kg
SAR(1 g) = 0.602 W/kg; SAR(10 g) = 0.217 W/kg
Smallest distance from peaks to all points 3 dB below = 10.1 mm
Ratio of SAR at M2 to SAR at M1 = 57.6%
Maximum value of SAR (measured) = 1.12 W/kg



0 dB = 1.12 W/kg

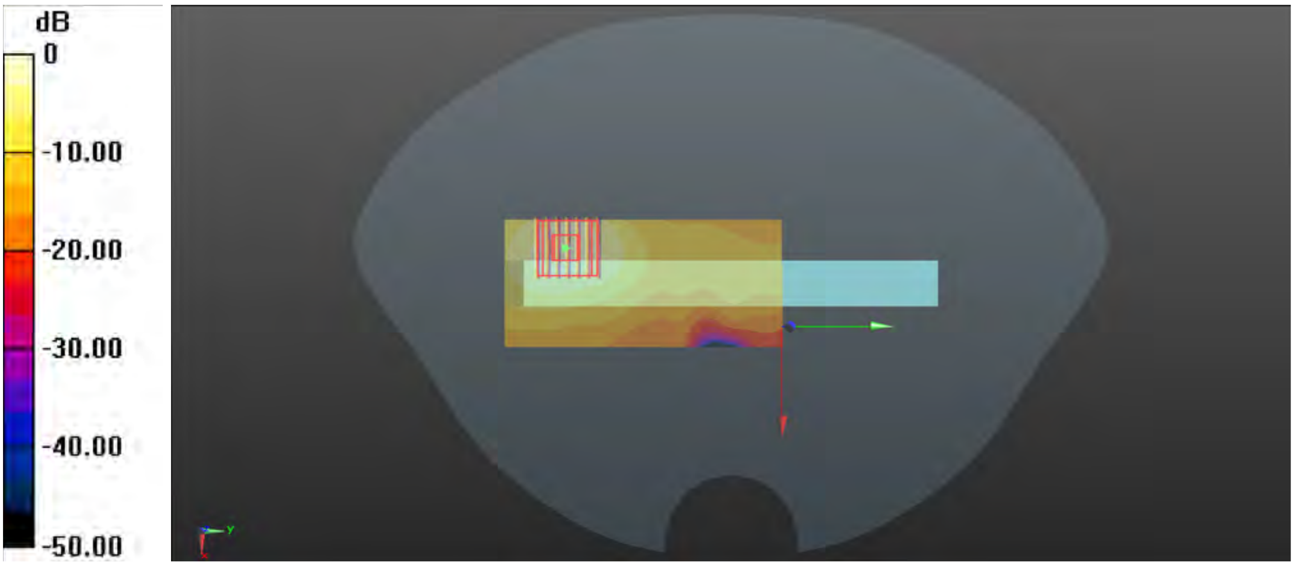
P13 WLAN5G_802.11a_Right Side_1cm_Ch165

Communication System: 802.11a; Frequency: 5825 MHz;Duty Cycle: 1:1.01
Medium: HSL5G_0615 Medium parameters used: f = 5825 MHz; σ = 5.163 S/m; ε_r = 34.147; ρ = 1000 kg/m^3
Ambient Temperature：23.4℃; Liquid Temperature：22.4℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(5.16, 5.16, 5.16) @ 5825 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

-Area Scan (51x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.54 W/kg

-Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.173 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 2.92 W/kg
SAR(1 g) = 0.802 W/kg; SAR(10 g) = 0.292 W/kg
Smallest distance from peaks to all points 3 dB below = 10.4 mm
Ratio of SAR at M2 to SAR at M1 = 53.5%
Maximum value of SAR (measured) = 1.53 W/kg



0 dB = 1.53 W/kg

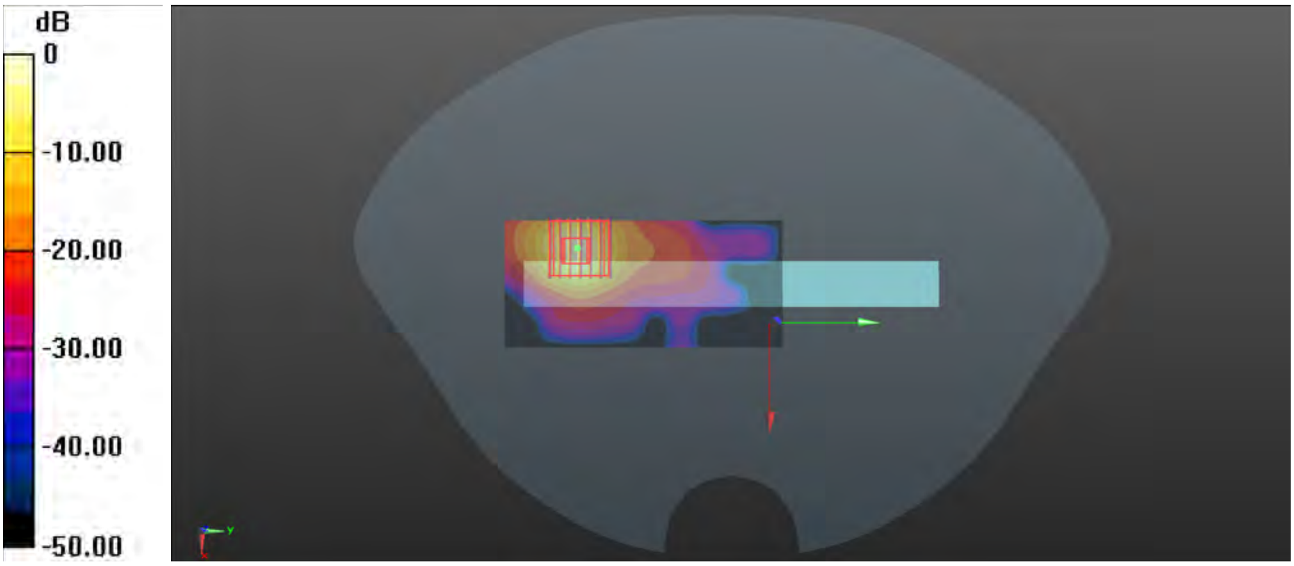
P14 WLAN5G_802.11a_Right Side_0cm_Ch60

Communication System: 802.11a; Frequency: 5300 MHz;Duty Cycle: 1:1.01
Medium: HSL5G_0613 Medium parameters used: f = 5300 MHz; σ = 4.651 S/m; ε_r = 34.922; ρ = 1000 kg/m^3
Ambient Temperature：23.6℃; Liquid Temperature：22.5℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(5.6, 5.6, 5.6) @ 5300 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

-Area Scan (51x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 12.1 W/kg

-Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.768 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 27.7 W/kg
SAR(1 g) = 5.7 W/kg; SAR(10 g) = 1.3 W/kg
Smallest distance from peaks to all points 3 dB below = 5.6 mm
Ratio of SAR at M2 to SAR at M1 = 53.7%
Maximum value of SAR (measured) = 13.3 W/kg



0 dB = 13.3 W/kg

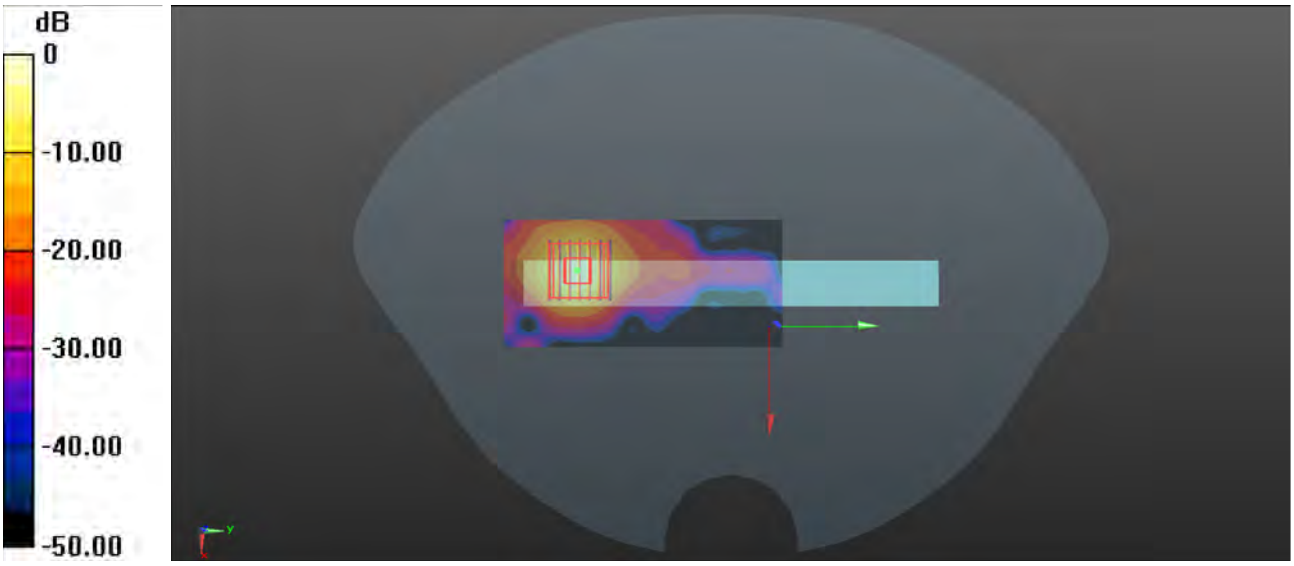
P15 WLAN5G_802.11a_Right Side_0cm_Ch116

Communication System: 802.11a; Frequency: 5580 MHz;Duty Cycle: 1:1.01
Medium: HSL5G_0614 Medium parameters used: f = 5580 MHz; σ = 4.916 S/m; ε_r = 34.674; ρ = 1000 kg/m^3
Ambient Temperature：23.2℃; Liquid Temperature：22.4℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3985; ConvF(5.08, 5.08, 5.08) @ 5580 MHz; Calibrated: 2023/07/10
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1633; Calibrated: 2024/03/06
- Phantom: SAM Right ; Type: QD000P40CD; Serial: TP:1611
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

-Area Scan (51x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 8.47 W/kg

-Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.616 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 21.1 W/kg
SAR(1 g) = 3.23 W/kg; SAR(10 g) = 0.68 W/kg
Smallest distance from peaks to all points 3 dB below = 3.6 mm
Ratio of SAR at M2 to SAR at M1 = 51.4%
Maximum value of SAR (measured) = 7.42 W/kg



0 dB = 7.42 W/kg

Appendix C. Calibration Certificate for Probe and Dipole

The SPEAG calibration certificates are shown as follows.

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CALIBRATION LABORATORY

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2117
E-mail: emf@caict.ac.cn http://www.caict.ac.cn

中国认可 国际互认 校准 CALIBRATION CNAS L0570

Client : 7layers

Certificate No: 24J02Z000051

CALIBRATION CERTIFICATE

Object: DAE4 - SN: 1633

Calibration Procedure(s): FF-Z11-002-01
Calibration Procedure for the Data Acquisition Electronics (DAEx)

Calibration date: March 06, 2024

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature(22±3)℃ and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Process Calibrator 753	1971018	12-Jun-23 (CTTL, No.J23X05436)	Jun-24

	Name	Function	Signature
Calibrated by:	Yu Zongying	SAR Test Engineer	
Reviewed by:	Lin Jun	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: March 09, 2024

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2117
E-mail: emf@caict.ac.cn http://www.caict.ac.cn

Glossary:

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters:

- *DC Voltage Measurement*: Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.

- *Connector angle*: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.

- The report provide only calibration results for DAE, it does not contain other performance test results.

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DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1μV , full range = -100…+300 mV
Low Range: 1LSB = 61nV , full range = -1…….+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	405.281 ± 0.15% (k=2)	405.563 ± 0.15% (k=2)	405.060 ± 0.15% (k=2)
Low Range	4.00166 ± 0.7% (k=2)	4.00153 ± 0.7% (k=2)	4.01219 ± 0.7% (k=2)

Connector Angle

Connector Angle to be used in DASY system	319° ± 1 °

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中国认可 国际互认 校准 CALIBRATION CNAS L0570

Client 7layers

Certificate No: J23Z60310

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN : 3985
Calibration Procedure(s)	FF-Z11-004-02 Calibration Procedures for Dosimetric E-field Probes
Calibration date:	July 10, 2023

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature(22±3)℃ and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	101919	12-Jun-23(CTTL, No.J23X05435)	Jun-24
Power sensor NRP-Z91	101547	12-Jun-23(CTTL, No.J23X05435)	Jun-24
Power sensor NRP-Z91	101548	12-Jun-23(CTTL, No.J23X05435)	Jun-24
Reference 10dBAttenuator	18N50W-10dB	19-Jan-23(CTTL, No.J23X00212)	Jan-25
Reference 20dBAttenuator	18N50W-20dB	19-Jan-23(CTTL, No.J23X00211)	Jan-25
Reference Probe EX3DV4	SN 7517	27-Jan-23(SPEAG, No.EX-7517_Jan23)	Jan-24
DAE4	SN 1555	25-Aug-22(SPEAG, No.DAE4-1555_Aug22)	Aug-23
Secondary Standards	**ID #**	**Cal Date(Calibrated by, Certificate No.)**	**Scheduled Calibration**
SignalGenerator MG3700A	6201052605	12-Jun-23(CTTL, No.J23X05434)	Jun-24
Network Analyzer E5071C	MY46110673	10-Jan-23(CTTL, No.J23X00104)	Jan-24
Reference 10dBAttenuator	BT0520	11-May-23(CTTL, No.J23X04061)	May-25
Reference 20dBAttenuator	BT0267	11-May-23(CTTL, No.J23X04062)	May-25
OCP DAK-3.5	SN 1040	18-Jan-23(SPEAG, No.OCP-DAK3.5-1040_Jan23)	Jan-24

	Name	Function	Signature
Calibrated by:	Yu Zongying	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: July 13, 2023

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
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E-mail: emf@caict.ac.cn http://www.caict.ac.cn

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A,B,C,D	modulation dependent linearization parameters
Polarization Φ	Φ rotation around probe axis
Polarization θ	θ rotation around an axis that is in the plane normal to probe axis (at measurement center), i θ=0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization θ=0 (f≤900MHz in TEM-cell; f>1800MHz: waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E^2-field uncertainty inside TSL (see below ConvF).
- *NORM(f)x,y,z = NORMx,y,z* frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics.
- *Ax,y,z; Bx,y,z; Cx,y,z;VRx,y,z:*A,B,C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f≤800MHz) and inside waveguide using analytical field distributions based on power measurements for f >800MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty valued are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx,y,z* ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from±50MHz to±100MHz.
- *Spherical isotropy (3D deviation from isotropy):* in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset:* The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle:* The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

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DASY/EASY – Parameters of Probe: EX3DV4 – SN: 3985

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (*k*=2)
Norm(µV/(V/m)^2)[A]	0.53	0.42	0.42	±10.0%
DCP(mV)[B]	103.2	104.9	105.5	

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB√µV	C	D dB	VR mV	Max Dev.	Max Unc[E] (*k*=2)
0	CW	X	0.0	0.0	1.0	0.00	194.4	±2.0%	±4.7%
		Y	0.0	0.0	1.0		166.0		
		Z	0.0	0.0	1.0		164.3		
10352-AAA	Pulse Waveform (200Hz, 10%)	X	1.84	60.00	6.42		60	±4.6%	±9.6%
		Y	1.92	60.83	6.71	10.00	60		
		Z	1.73	60.23	6.19		60		
10353-AAA	Pulse Waveform (200Hz, 20%)	X	1.81	61.30	6.47		80	±2.9%	±9.6%
		Y	1.47	60.65	5.94	6.99	80		
		Z	1.26	60.00	5.34		80		
10354-AAA	Pulse Waveform (200Hz, 40%)	X	1.15	60.59	5.55		95	±1.7%	±9.6%
		Y	0.89	60.00	5.02	3.98	95		
		Z	0.82	60.00	4.74		95		
10355-AAA	Pulse Waveform (200Hz, 60%)	X	0.67	60.00	4.81		120	±1.7%	±9.6%
		Y	0.56	60.00	4.51	2.22	120		
		Z	0.53	60.00	4.11		120		
10387-AAA	QPSK Waveform, 1 MHz	X	1.70	66.82	15.13		150	±2.7%	±9.6%
		Y	1.42	64.28	13.00	1.00	150		
		Z	1.28	63.88	12.33		150		
10388-AAA	QPSK Waveform, 10 MHz	X	2.35	69.17	16.09		150	±1.8%	±9.6%
		Y	1.94	66.11	14.06	0.00	150		
		Z	1.81	65.45	13.67		150		
10396-AAA	64-QAM Waveform, 100 kHz	X	3.45	74.91	21.84		150	±0.8%	±9.6%
		Y	3.19	74.08	20.94	3.01	150		
		Z	2.45	69.15	18.58		150		
10414-AAA	WLAN CCDF, 64-QAM, 40MHz	X	4.92	66.09	15.74		150	±3.4%	±9.6%
		Y	4.67	65.39	15.07	0.00	150		
		Z	4.63	65.62	15.18		150		

Note: For details on UID parameters see Appendix

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor *k*=2, which for a normal distribution Corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of Norm X, Y, Z do not affect the E^2-field uncertainty inside TSL (see Page 5).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainly is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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DASY/EASY – Parameters of Probe: EX3DV4 – SN: 3985

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $ms.V^{-2}$	T2 $ms.V^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
X	46.25	343.75	35.22	30.98	0.00	4.90	0.78	0.26	1.02
Y	40.17	292.77	33.74	22.92	0.00	4.91	1.59	0.02	1.02
Z	33.39	245.07	34.11	19.77	0.00	4.90	0.67	0.14	1.02

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	54.2
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disable
Probe Overall Length	337mm
Probe Body Diameter	10mm
Tip Length	9mm
Tip Diameter	2.5mm
Probe Tip to Sensor X Calibration Point	1mm
Probe Tip to Sensor Y Calibration Point	1mm
Probe Tip to Sensor Z Calibration Point	1mm
Recommended Measurement Distance from Surface	1.4mm

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DASY/EASY – Parameters of Probe: EX3DV4 – SN:3985

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz][C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha[G]	Depth[G] (mm)	Unct. (*k*=2)
750	41.9	0.89	10.30	10.30	10.30	0.15	1.31	±12.7%
835	41.5	0.90	9.90	9.90	9.90	0.15	1.34	±12.7%
900	41.5	0.97	9.95	9.95	9.95	0.15	1.42	±12.7%
1750	40.1	1.37	8.53	8.53	8.53	0.30	0.99	±12.7%
1900	40.0	1.40	8.26	8.26	8.26	0.32	0.92	±12.7%
2100	39.8	1.49	8.30	8.30	8.30	0.25	1.08	±12.7%
2300	39.5	1.67	8.08	8.08	8.08	0.65	0.68	±12.7%
2450	39.2	1.80	7.80	7.80	7.80	0.58	0.71	±12.7%
2600	39.0	1.96	7.69	7.69	7.69	0.65	0.68	±12.7%
3300	38.2	2.71	7.18	7.18	7.18	0.41	0.96	±13.9%
3500	37.9	2.91	7.01	7.01	7.01	0.40	1.01	±13.9%
3700	37.7	3.12	6.82	6.82	6.82	0.42	1.04	±13.9%
3900	37.5	3.32	6.72	6.72	6.72	0.35	1.35	±13.9%
5250	35.9	4.71	5.60	5.60	5.60	0.40	1.52	±13.9%
5600	35.5	5.07	5.08	5.08	5.08	0.45	1.35	±13.9%
5800	35.3	5.27	5.16	5.16	5.16	0.45	1.35	±13.9%

[C] Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.
[F] At frequency up to 6 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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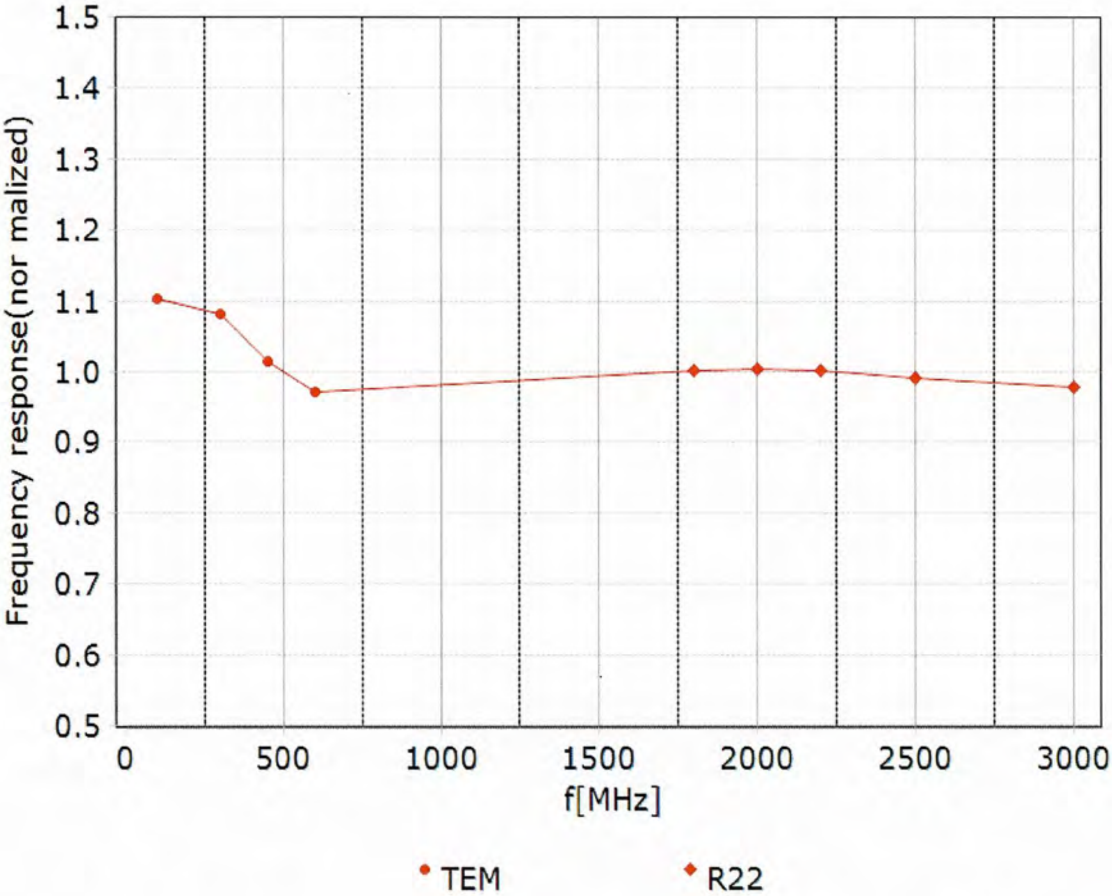
Frequency Response of E-Field
(TEM-Cell: ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ±7.4% (*k*=2)