TEST REPORT FOR SAR TESTING

Report No.:	SRTC2024-9004(F)-24031801(H)
Product Name:	Smart Phone
Applicant:	Juniper Systems, Inc.
FCC ID:	VSFAR4

Reference Specification
Part 2.1093
IEEE Std 1528
IEC/IEEE 62209-1528
KDB Procedures

The State Radio_monitoring_center Testing Center (SRTC)

15th Building, No.30 Shixing Street, ShijingshanDistrict, Beijing,P.R.China

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1 GENERAL INFORMATION

1.1 Notes of the test report

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1.2 Information about the testing laboratory

Company:	The State Radio_monitoring_center Testing Center (SRTC)
Designation number:	CN1267
Registration number:	239125
CAB identifier	CN0049
Test lab Number	7308A
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1.3 Applicant's details

Company:	Juniper Systems, Inc.
Address:	1132 W 1700 N Logan, UT 84321 USA

1.4 Manufacturer's details

Company:	Borqs BeiJing Ltd.
Address:	Office 309, 3/F, Dongfeng KASO, Dongfengbeiqiao, Chaoyang District, Beijing, 100016, China

1.5 Test Environment

Date of Receipt of test sample at SRTC:	2024/03/19
Testing Start Date:	2024/03/20
Testing End Date:	2024/04/15

2 DESCRIPTION OF THE EQUIPMENT UNDER TEST

2.1 DUT information

Network	Band Information
WLAN	WIFI6GHz UNII-5
WLAN	WIFI6GHz UNII-6
WLAN	WIFI6GHz UNII-7
WLAN	WIFI6GHz UNII-8

Mode supported	Note
802.11a(6GHz)	NA
802.11ax HE20(6GHz)	NA
802.11ax HE40(6GHz)	NA
802.11ax HE80(6GHz)	NA
802.11ax HE160(6GHz)	NA

2.2 Exposure conditions

General description

Head Configuration: Measurements were made in “cheek” and “tilt” positions on both the left hand and right-hand sides of the phantom. The positions used in the measurements were according to IEEE 1528 "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques".

Body Worn Configuration: The device was placed in the SPEAG holder below the flat section of the phantom. The distance between the device and the phantom was kept at the separation distance using a separate flat spacer that was removed before the start of the measurements. And the distance is normally determined according to the actual scene which might be the worst use condition for general exposure. The device’s front and rear were oriented facing the phantom since these orientations give higher results for most regular portable devices.

Hotspot Configuration: Hotspot mode SAR is measured for all edges and surfaces of the device with a transmitting antenna located within 25 mm from that surface or edge; for the data modes, wireless technologies and frequency bands supporting Hotspot mode.

Body Configuration: Body SAR is measured for all edges and surfaces of the device or refer to Body Worn configuration. (For the device such as tablet and mobile phone etc.)

Limb Configuration: Extremity limb SAR is measured for all edges and surfaces of the device or refer to Hotspot configuration.

Body-support Configuration: Body -support device such as laptop is not commonly require SAR test.

DUT Exposure Condition	Distance(mm)
Head	0
Body-worn	10
Body	10

2.3 Other information

Testing Start Date:	2024/03/20
Testing End Date:	2024/04/15
DUT IMEI:	354346330018069 354346330021063
DUT H/W Version:	DVT2
DUT S/W Version:	JH_UQ_000.00.02.00
Ambient Temperature:	22℃
Humidity:	40%
Note	NA
Testing Start Date:	2024/03/20

3 SPECIFICATION

Specification	Version	Title
Part 2.1093	2020	Radio frequency radiation exposure evaluation: portable devices.
IEEE Std 1528	2013	IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
IEC/IEEE 62209-1528	2020	Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1528: Human models, instrumentation, and (Frequency range of 4 MHz to 10 GHz)
KDB 248227 D01	v02r02	SAR GUIDANCE FOR IEEE 802.11 (Wi-Fi) TRANSMITTERS
KDB 447498 D01	v06	General RF Exposure Guidance
KDB 447498 D02	v02r01	SAR MEASUREMENT PROCEDURES FOR USB DONGLE TRANSMITTERS
KDB 643646 D01	v01r03	SAR TEST REDUCTION CONSIDERATIONS FOR OCCUPATIONAL PTT RADIOS
KDB 616217 D04	v01r02	SAR for laptop and tablets
KDB 648474 D04	v01r03	Handset SAR
KDB 865664 D01	v01r04	SAR Measurement from 100 MHz to 6 GHz
KDB 865664 D02	v01r02	RF Exposure Reporting
KDB 941225 D01	v03r01	3G SAR MEAUREMENT PROCEDURES
KDB 941225 D05	v02r05	SAR for LTE Devices
KDB 941225 D06	v02r01	SAR EVALUATION PROCEDURES FOR PORTABLE DEVICES WITH WIRELESS ROUTER CAPABILITIES
KDB 941225 D07	v01r02	SAR EVALUATION PROCEDURES FOR UMPC MINI-TABLET DEVICES

4 TEST CONDITIONS

4.1 Test signal, frequencies and output power

The device was put into operation by using a call tester. Communication between the device and the call tester was established by air link. Non-signaling mode also applied.The device output power was set to maximum power level for all tests; a fully charged battery was used for every test sequence.In all operating bands the measurements were performed on lowest, middle and highest channels.

4.2 SAR measurement set-up

The system is based on a high precision robot (working range greater than 0.9m), which positions the probes with a positional repeatability of better than ± 0.02mm. Special E- probe have been developed for measurements close to material discontinuity, the sensors of which are directly loaded with a Schottky diode and connected via highly resistive lines (length =300mm) to the data acquisition unit. A cell controller system contains the power supply, robot controller, teaches pendant (Joystick), and remote control, is used to drive the robot motors. The PC consists of the Micron Pentium IV computer with Win7 system and SAR Measurement Software DASY5 Professional, A/D interface card, monitor, mouse, and keyboard. The Stäubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card. The DAE consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical Downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection .The robot uses its own controller with a built in VME-bus computer.

4.3 Phantoms

The phantom used for all tests i.e. for both system checks and device testing, was the twin headed "SAM Phantom", manufactured by SPEAG. The phantom conforms to the requirements. System checking was performed using the flat section, whilst Head SAR tests used the left and right head profile sections. Hotspot SAR testing also used the flat section between the head profiles. The SPEAG device holder (see Section 4.6.1) was used to position the device in all tests whilst a tripod was used to position the validation dipoles against the flat section of phantom.

Shell thickness: 2 ± 0.2 mm on flat section (6 ± 0.2 mm at ear point)

4.4 Tissue stimulants

Recommended values for the dielectric parameters of the tissue simulants are given in reference standards. The depth of the tissue simulant was 15.0 ± 0.5 cm measured from the ear reference point during system checking and device measurements. The following tissue stimulants were used for test:

Name	Broadband tissue-equivalent liquid
Type	HBBL600-10000V6 Simulating Liquid
Supplier	SPEAG
Component	Material used refer to 62209-1528 Annex F, the details are confidential.

Liquid depth for SAR Measurement

4.5 Device holder

The device was placed in the device holder (illustrated below) that is supplied by SPEAG as an integral part of the Dasy52 system.

4.6 Scan procedure

First, area scans were used for determination of the field distribution and the approximate location of the local peak SAR values. The SAR distribution is scanned along the inside surface, at least for an area larger than the projection of the handset and antenna. The angle between the probe axis and the surface normal line is recommended but not required to be less than 30°. The SAR distribution is first measured on a 2-D coarse grid. The scan region should cover all areas that are exposed and encompassed by the projection of the handset. There are 15 mm × 15 mm (equal or less than 2GHz), 12 mm × 12 mm (from 2GHz~4GHz) and 10mm x 10mm (from 4GHz~6GHz) measurement grid used when two staggered one-dimensional cubic splines are used to estimate the maximum SAR location.

When the reported 1g-SAR estimated by area scan is less than 1.40 w/kg.

Zoom scan was performed by using the configuration mentioned below or more conservative scan area and step to determine the averaged SAR value. Drift was determined by measuring the same point at the start of the area scan and again at the end of the zoom scan.

Below 3GHz：32mmX32mmX30mm scan area with 8 mm X8 mm X5 mm steps

2GHz-3GHz：32mmX32mmX30mm scan area with 8 mm X8 mm X5 mm steps

3GHz-4GHz：28mmX28mmX28mm scan area with 7 mm X7 mm X4 mm steps

4GHz-5GHz： 25mmX25mmX24mm scan area with 5 mm X5 mm X3 mm steps

5GHz-6GHz： 25mmX25mmX22mm scan area with 5 mm X5 mm X2 mm steps

4.7 SAR averaging methods

The maximum SAR value was averaged over a cube of tissue using interpolation and extrapolation.

The interpolation, extrapolation and maximum search routines within Dasy5 are all based on the modified Quadratic Shepard’s method (Robert J. Renka, “Multivariate Interpolation Of Large Sets Of Scattered Data”, University of North Texas ACM Transactions on Mathematical Software, vol. 14, no. 2, June 1988, pp. 139-148).

The interpolation scheme combines a least-square fitted function method with a weighted average method. A triradiate 3-D / bivariate 2-D quadratic function is computed for each measurement point and fitted to neighbouring points by a least-square method. For the zoom scan, inverse distance weighting is incorporated to fit distant points more accurately. The interpolating function is finally calculated as a weighted average of the quadratics.

In the zoom scan, the interpolation function is used to extrapolate the Peak SAR from the deepest measurement points to the inner surface of the phantom.

5 RESULT SUMMARY

The maximum reported SAR values for all exposure conditions supported are given as following. The device meet the compliance.

Unlicensed Band Standalone Transmission Summary (MIMO)					
Exposure Position	Ant6+Ant8	SAR Result(W/kg) 1g	Highest SAR Result(W/kg) 1g	Limit(W/kg) 1g	Verdict
Head	WIFI 6G UNII-6	0.011	0.027	1.6	Pass
Body-Worn	WIFI 6G UNII-5	0.027			
Body	WIFI 6G UNII-5	0.027			

This Test Report Is Approved by: Mr. Peng Zhen	Review by: Mr. Li Bin
Tested and issued by: Mr. Huang Yubin	Approved date: 20240424

6 SAR RESULTS

6.1 T-issue and System Check

The manufacturer calibrates the probes annually. Dielectric parameters of the tissue stimulants were measured every day using the dielectric probe kit and the network analyser. For the measurement of the following parameters the SPEAG DAKS-3.5 dielectric parameter probe is used, representing the open-ended coaxial probe measurement procedure. All tests were carried out within 24 hours of measuring the dielectric parameters.

Freq.(MHz)	Date	Liquid parameters	Measured	Target	Delta (%)	Tolerance (%)	Verdict
6500	2024/4/10	εr	34.0	34.50	-1.45	±5	Pass
	2024/4/10	σ[S/m]	6.08	6.07	0.16	±5	Pass

A system check measurement was made following the determination of the dielectric parameters of the stimulant, using the dipole validation kit. Dipole was placed under the flat section of the twin SAM phantom. The system checking results (dielectric parameters and SAR values) are given in the table below. All tests were carried out within 24 hours of checking system. Plots of the system checking scans are given in Annex A. Tissue Stimulants used in the Measurements. **For the same frequency range, SAR measurement is the same day with system check, and there is no need to manually add test date in ANNEX A.**

Freq.(MHz)	Date	SAR measured (normalized to 1W)		Target (Ref. Value)	Delta(%)	Tolerance(%)	Verdict
6500	2024/4/10	1g	270.00	287.00	-3.13	±10	Pass
	2024/4/10	10g	50.90	53.20	-4.32	±10	Pass

6.2 SAR Test result

In order to determine the largest value of the peak spatial-average SAR of a handset, all device positions, configurations, and operational modes should be tested for each frequency band according to Steps 1 to 3 below.

Step 1: The tests should be performed at the channel that is closest to the centre of the transmit frequency band.

a) All device positions (cheek and tilt, for both left and right sides of the SAM phantom),

b) All configurations for each device position in a), e.g., antenna extended and retracted, and

c) All operational modes for each device position in item a) and configuration in item b) in each frequency band, e.g., analogy and digital, If more than three frequencies need to be tested (i.e., Nc > 3), then all frequencies, configurations and modes shall be tested for all of the above test conditions.

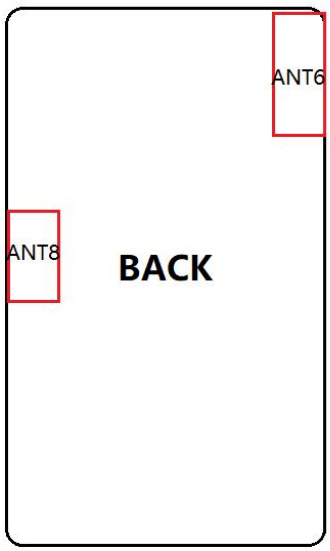
Step 2: For the condition providing the highest peak spatial-average SAR determined in Step 1 for each frequency, perform all tests at all other test frequency channels, e.g., lowest and highest frequencies. In addition, for all other conditions (device position, configuration, and operational mode) where the peak spatial-average SAR value determined in Step 1 is within 3 dB of the applicable SAR limit, it is recommended that all other test frequencies should be tested as well.

Step 3: Examine all data to determine the largest value of the peak.

Test and antenna position describe as follow:

Note: SRTC defined these positions (Back, Front, Left, Right, Top, Bottom) when facing the DUT screen.

Unlicensed antenna	Note
Ant8	WIFI6GHz
Ant6	



	Right	2.0	YES	

Note: L<1GHz; 1GHz<M<2GHz; H>2GHz

The measured and reported SAR values are tabulated below:

Non-signaling mode duty cycle could be the most conservative condition which with 100% duty cycle. So duty factor=1/ duty cycle shall be taken into consideration for SAR measurement with Non-signaling mode.

6.2.1 Unlicensed MIMO

Test case				Meas power(dBm)	Tune-up (dBm)	Scaling factor	Duty cycle	Duty factor	Meas SAR(w/kg)		Report SAR(w/kg)	
WLAN 6GHz UNII-5	Exposure condition	Position	Channel						First	Second	First	Second
802.11ax	Head	Left Cheek	L	10.91	11.00	1.02	100%	1.00	---	---	---	---
			M	10.91	11.00	1.02	100%	1.00	0.014	---	0.014	---
			H	10.91	11.00	1.02	100%	1.00	---	---	---	---
		Left tilt	L	10.91	11.00	1.02	100%	1.00	---	---	---	---
			M	10.91	11.00	1.02	100%	1.00	0.004	---	0.004	---
			H	10.91	11.00	1.02	100%	1.00	---	---	---	---
		Right Cheek	L	10.91	11.00	1.02	100%	1.00	---	---	---	---
			M	10.91	11.00	1.02	100%	1.00	0.006	---	0.006	---
			H	10.91	11.00	1.02	100%	1.00	---	---	---	---
		Right tilt	L	10.91	11.00	1.02	100%	1.00	---	---	---	---
			M	10.91	11.00	1.02	100%	1.00	0.007	---	0.007	---
			H	10.91	11.00	1.02	100%	1.00	---	---	---	---
	Body-worn	Back	L	10.91	11.00	1.02	100%	1.00	---	---	---	---
			M	10.91	11.00	1.02	100%	1.00	0.026	---	0.027	---
			H	10.91	11.00	1.02	100%	1.00	---	---	---	---
		Front	L	10.91	11.00	1.02	100%	1.00	---	---	---	---
			M	10.91	11.00	1.02	100%	1.00	0.013	---	0.013	---
			H	10.91	11.00	1.02	100%	1.00	---	---	---	---
	Body	Back	L	10.91	11.00	1.02	100%	1.00	---	---	---	---
			M	10.91	11.00	1.02	100%	1.00	0.026	---	0.027	---
			H	10.91	11.00	1.02	100%	1.00	---	---	---	---
		Front	L	10.91	11.00	1.02	100%	1.00	---	---	---	---
			M	10.91	11.00	1.02	100%	1.00	0.013	---	0.013	---
			H	10.91	11.00	1.02	100%	1.00	---	---	---	---
		Top	L	10.91	11.00	1.02	100%	1.00	---	---	---	---
			M	10.91	11.00	1.02	100%	1.00	0.008	---	0.008	---
			H	10.91	11.00	1.02	100%	1.00	---	---	---	---
		Bottom	L	10.91	11.00	1.02	100%	1.00	---	---	---	---
			M	10.91	11.00	1.02	100%	1.00	0.003	---	0.003	---
			H	10.91	11.00	1.02	100%	1.00	---	---	---	---
		Left	L	10.91	11.00	1.02	100%	1.00	---	---	---	---
			M	10.91	11.00	1.02	100%	1.00	0.003	---	0.003	---
			H	10.91	11.00	1.02	100%	1.00	---	---	---	---
		Right	L	10.91	11.00	1.02	100%	1.00	---	---	---	---
			M	10.91	11.00	1.02	100%	1.00	0.009	---	0.009	---
			H	10.91	11.00	1.02	100%	1.00	---	---	---	---

Test case				Meas power(dBm)	Tune-up (dBm)	Scaling factor	Duty cycle	Duty factor	Meas SAR(w/kg)		Report SAR(w/kg)	
WLAN 6GHz UNII-6	Exposure condition	Position	Channel						First	Second	First	Second
802.11ax	Head	Left Cheek	L	10.79	11.00	1.05	100%	1.00	---	---	---	---
			M	10.79	11.00	1.05	100%	1.00	0.010	---	0.011	---
			H	10.79	11.00	1.05	100%	1.00	---	---	---	---
		Left tilt	L	10.79	11.00	1.05	100%	1.00	---	---	---	---
			M	10.79	11.00	1.05	100%	1.00	0.006	---	0.006	---
			H	10.79	11.00	1.05	100%	1.00	---	---	---	---
		Right Cheek	L	10.79	11.00	1.05	100%	1.00	---	---	---	---
			M	10.79	11.00	1.05	100%	1.00	0.008	---	0.008	---
			H	10.79	11.00	1.05	100%	1.00	---	---	---	---
		Right tilt	L	10.79	11.00	1.05	100%	1.00	---	---	---	---
			M	10.79	11.00	1.05	100%	1.00	0.010	---	0.011	---
			H	10.79	11.00	1.05	100%	1.00	---	---	---	---
	Body-worn	Back	L	10.79	11.00	1.05	100%	1.00	---	---	---	---
			M	10.79	11.00	1.05	100%	1.00	0.022	---	0.023	---
			H	10.79	11.00	1.05	100%	1.00	---	---	---	---
		Front	L	10.79	11.00	1.05	100%	1.00	---	---	---	---
			M	10.79	11.00	1.05	100%	1.00	0.011	---	0.012	---
			H	10.79	11.00	1.05	100%	1.00	---	---	---	---
	Body	Back	L	10.79	11.00	1.05	100%	1.00	---	---	---	---
			M	10.79	11.00	1.05	100%	1.00	0.022	---	0.023	---
			H	10.79	11.00	1.05	100%	1.00	---	---	---	---
		Front	L	10.79	11.00	1.05	100%	1.00	---	---	---	---
			M	10.79	11.00	1.05	100%	1.00	0.011	---	0.012	---
			H	10.79	11.00	1.05	100%	1.00	---	---	---	---
		Top	L	10.79	11.00	1.05	100%	1.00	---	---	---	---
			M	10.79	11.00	1.05	100%	1.00	0.008	---	0.008	---
			H	10.79	11.00	1.05	100%	1.00	---	---	---	---
		Bottom	L	10.79	11.00	1.05	100%	1.00	---	---	---	---
			M	10.79	11.00	1.05	100%	1.00	0.008	---	0.008	---
			H	10.79	11.00	1.05	100%	1.00	---	---	---	---
		Left	L	10.79	11.00	1.05	100%	1.00	---	---	---	---
			M	10.79	11.00	1.05	100%	1.00	0.008	---	0.008	---
			H	10.79	11.00	1.05	100%	1.00	---	---	---	---
		Right	L	10.79	11.00	1.05	100%	1.00	---	---	---	---
			M	10.79	11.00	1.05	100%	1.00	0.003	---	0.003	---
			H	10.79	11.00	1.05	100%	1.00	---	---	---	---

Test case				Meas power(dBm)	Tune-up (dBm)	Scaling factor	Duty cycle	Duty factor	Meas SAR(w/kg)		Report SAR(w/kg)	
WLAN 6GHz UNII-7	Exposure condition	Position	Channel						First	Second	First	Second
802.11ax	Head	Left Cheek	L	11.08	11.50	1.10	100%	1.00	---	---	---	---
			M	11.08	11.50	1.10	100%	1.00	0.002	---	0.002	---
			H	11.08	11.50	1.10	100%	1.00	---	---	---	---
		Left tilt	L	11.08	11.50	1.10	100%	1.00	---	---	---	---
			M	11.08	11.50	1.10	100%	1.00	0.002	---	0.002	---
			H	11.08	11.50	1.10	100%	1.00	---	---	---	---
		Right Cheek	L	11.08	11.50	1.10	100%	1.00	---	---	---	---
			M	11.08	11.50	1.10	100%	1.00	0.002	---	0.002	---
			H	11.08	11.50	1.10	100%	1.00	---	---	---	---
		Right tilt	L	11.08	11.50	1.10	100%	1.00	---	---	---	---
			M	11.08	11.50	1.10	100%	1.00	0.002	---	0.002	---
			H	11.08	11.50	1.10	100%	1.00	---	---	---	---
	Body-worn	Back	L	11.08	11.50	1.10	100%	1.00	---	---	---	---
			M	11.08	11.50	1.10	100%	1.00	0.004	---	0.004	---
			H	11.08	11.50	1.10	100%	1.00	---	---	---	---
		Front	L	11.08	11.50	1.10	100%	1.00	---	---	---	---
			M	11.08	11.50	1.10	100%	1.00	0.003	---	0.003	---
			H	11.08	11.50	1.10	100%	1.00	---	---	---	---
	Body	Back	L	11.08	11.50	1.10	100%	1.00	---	---	---	---
			M	11.08	11.50	1.10	100%	1.00	0.004	---	0.004	---
			H	11.08	11.50	1.10	100%	1.00	---	---	---	---
		Front	L	11.08	11.50	1.10	100%	1.00	---	---	---	---
			M	11.08	11.50	1.10	100%	1.00	0.003	---	0.003	---
			H	11.08	11.50	1.10	100%	1.00	---	---	---	---
		Top	L	11.08	11.50	1.10	100%	1.00	---	---	---	---
			M	11.08	11.50	1.10	100%	1.00	0.001	---	0.001	---
			H	11.08	11.50	1.10	100%	1.00	---	---	---	---
		Bottom	L	11.08	11.50	1.10	100%	1.00	---	---	---	---
			M	11.08	11.50	1.10	100%	1.00	0.002	---	0.002	---
			H	11.08	11.50	1.10	100%	1.00	---	---	---	---
		Left	L	11.08	11.50	1.10	100%	1.00	---	---	---	---
			M	11.08	11.50	1.10	100%	1.00	0.002	---	0.002	---
			H	11.08	11.50	1.10	100%	1.00	---	---	---	---
		Right	L	11.08	11.50	1.10	100%	1.00	---	---	---	---
			M	11.08	11.50	1.10	100%	1.00	0.001	---	0.001	---
			H	11.08	11.50	1.10	100%	1.00	---	---	---	---

Test case				Meas power(dBm)	Tune-up (dBm)	Scaling factor	Duty cycle	Duty factor	Meas SAR(w/kg)		Report SAR(w/kg)	
WLAN 6GHz UNII-8	Exposure condition	Position	Channel						First	Second	First	Second
802.11ax	Head	Left Cheek	L	11.01	11.50	1.12	100%	1.00	---	---	---	---
			M	11.01	11.50	1.12	100%	1.00	0.004	---	0.004	---
			H	11.01	11.50	1.12	100%	1.00	---	---	---	---
		Left tilt	L	11.01	11.50	1.12	100%	1.00	---	---	---	---
			M	11.01	11.50	1.12	100%	1.00	0.002	---	0.002	---
			H	11.01	11.50	1.12	100%	1.00	---	---	---	---
		Right Cheek	L	11.01	11.50	1.12	100%	1.00	---	---	---	---
			M	11.01	11.50	1.12	100%	1.00	0.002	---	0.002	---
			H	11.01	11.50	1.12	100%	1.00	---	---	---	---
		Right tilt	L	11.01	11.50	1.12	100%	1.00	---	---	---	---
			M	11.01	11.50	1.12	100%	1.00	0.002	---	0.002	---
			H	11.01	11.50	1.12	100%	1.00	---	---	---	---
	Body-worn	Back	L	11.01	11.50	1.12	100%	1.00	---	---	---	---
			M	11.01	11.50	1.12	100%	1.00	0.009	---	0.010	---
			H	11.01	11.50	1.12	100%	1.00	---	---	---	---
		Front	L	11.01	11.50	1.12	100%	1.00	---	---	---	---
			M	11.01	11.50	1.12	100%	1.00	0.006	---	0.007	---
			H	11.01	11.50	1.12	100%	1.00	---	---	---	---
	Body	Back	L	11.01	11.50	1.12	100%	1.00	---	---	---	---
			M	11.01	11.50	1.12	100%	1.00	0.009	---	0.010	---
			H	11.01	11.50	1.12	100%	1.00	---	---	---	---
		Front	L	11.01	11.50	1.12	100%	1.00	---	---	---	---
			M	11.01	11.50	1.12	100%	1.00	0.006	---	0.007	---
			H	11.01	11.50	1.12	100%	1.00	---	---	---	---
		Top	L	11.01	11.50	1.12	100%	1.00	---	---	---	---
			M	11.01	11.50	1.12	100%	1.00	0.003	---	0.003	---
			H	11.01	11.50	1.12	100%	1.00	---	---	---	---
		Bottom	L	11.01	11.50	1.12	100%	1.00	---	---	---	---
			M	11.01	11.50	1.12	100%	1.00	0.005	---	0.006	---
			H	11.01	11.50	1.12	100%	1.00	---	---	---	---
		Left	L	11.01	11.50	1.12	100%	1.00	---	---	---	---
			M	11.01	11.50	1.12	100%	1.00	0.003	---	0.003	---
			H	11.01	11.50	1.12	100%	1.00	---	---	---	---
		Right	L	11.01	11.50	1.12	100%	1.00	---	---	---	---
			M	11.01	11.50	1.12	100%	1.00	0.002	---	0.002	---
			H	11.01	11.50	1.12	100%	1.00	---	---	---	---

NOTE: This project actually only supports SISO (WLAN 2.4GHz/5GHz/Bluetooth), and users can only use SISO. Therefore, SAR testing was only conducted on SISO (WLAN 2.4GHz/5GHz/Bluetooth).

7 MEASUREMENT UNCERTAINTY

Uncertainty Budget

(Frequency band: 300 MHz–10 GHz range)

Symbol	Error Description	Uncert. value	Prob. Dist.	Div.	(c_i) (1 g)	(c_i) (10 g)	Std. Unc. (1 g)	Std. Unc. (10 g)
Measurement System Errors								
CF	Probe Calibration	±18.6%	N	2	1	1	±9.3%	±9.3%
CF_{drift}	Probe Calibration Drift	±1.7%	R	$\sqrt{3}$	1	1	±0.98%	±0.98%
LIN	Probe Linearity	±4.7%	R	$\sqrt{3}$	1	1	±2.71%	±2.71%
BBS	Broadband Signal	±2.8%	R	$\sqrt{3}$	1	1	±1.62%	±1.62%
ISO	Probe Isotropy (axial)	±9.6%	R	$\sqrt{3}$	1	1	±5.54%	±5.54%
DAE	Other Probe+Electronic	±2.4%	N	1	1	1	±2.4%	±2.4%
AMB	RF Ambient	±0.0%	N	1	1	1	±0.0%	±0.0%
Δ_{sys}	Probe Positioning	±0.005mm	N	1	0.5	0.5	±0.25%	±0.25%
DAT	Data Processing	±4.0%	N	1	1	1	±4.0%	±4.0%
Phantom and Device Errors								
LIQ(σ)	Conductivity (meas.)^{DAK}	±3.0%	N	1	0.78	0.71	±2.34%	±2.13%
LIQ(T_σ)	Conductivity (temp.)^{BB}	±2.43%	R	$\sqrt{3}$	0.78	0.71	±1.09%	±1.00%
EPS	Phantom Permittivity	±14.0%	R	$\sqrt{3}$	0.5	0.5	±4.04%	±4.04%
DIS	Distance DUT – TSL	±2.6%	N	1	2	2	±1.30%	±1.30%
D_{xyz}	Device Positioning	±0.9%	N	1	1	1	±0.9%	±0.9%
H	Device Holder	±2.8%	N	1	1	1	±2.8%	±2.8%
MOD	DUT Modulation	±2.4%	R	$\sqrt{3}$	1	1	±1.39%	±1.39%
TAS	Time-average SAR	±1.73%	R	$\sqrt{3}$	1	1	±1.00%	±1.00%
RF_{drift}	DUT drift	±1.78%	N	1	1	1	±1.78%	±1.78%
VAL	Validation antenna	±3.2%	N	1	1	1	±3.2%	±3.2%
P_{in}	Accepted power	±2.0%	N	1	1	1	±2.0%	±2.0%
Correction to the SAR results								
C(ε, σ)	Deviation to Target	±1.9%	N	1	1	0.84	±1.9%	±1.60%
C(R)	SAR scaling^{p}	±0%	R	$\sqrt{3}$	1	1	±0%	±0%
u(ΔSAR)	Combined Uncertainty						14.39	14.32
U	**Expanded Uncertainty**						28.78	28.64

Note: SRTC evaluate the components of uncertainty periodically to make sure there is no influence on SAR result.

8 TEST EQUIPMENTS

The measurements were performed using an automated near-field scanning system, DASY, manufactured by Schmid & Partner Engineering AG (SPEAG) in Switzerland, all the components and supplement devices listed below.

Test Equipment	Model	Serial Number	Calibration date	Calibration due data
DAE	DAE4	546	2023/09/15	2024/09/14
Dosimetric E-field Probe	EX3DV4	3708	2023/10/30	2024/10/29
Dipole Validation Kit	D750V3	1101	2023/10/19	2026/10/18
Dipole Validation Kit	D835V2	4d023	2023/10/25	2026/10/24
Dipole Validation Kit	D900V2	171	2023/09/19	2026/09/18
Dipole Validation Kit	D1450V2	1065	2023/10/17	2026/10/16
Dipole Validation Kit	D1800V2	2d084	2023/09/18	2026/09/17
Dipole Validation Kit	D2000V2	1009	2023/10/23	2026/10/22
Dipole Validation Kit	D2450V2	738	2023/10/23	2026/10/22
Dipole Validation Kit	D2600V2	1166	2022/10/19	2025/10/18
Dipole Validation Kit	D3300V2	1014	2022/10/19	2025/10/18
Dipole Validation Kit	D3500V2	1090	2022/10/20	2025/10/19
Dipole Validation Kit	D3700V2	1058	2022/10/19	2025/10/18
Dipole Validation Kit	D3900V2	1033	2022/10/21	2025/10/20
Dipole Validation Kit	D4200V2	1013	2022/10/19	2025/10/18
Dipole Validation Kit	D4600V2	1033	2022/10/20	2025/10/19
Dipole Validation Kit	D4900V2	1025	2022/10/21	2025/10/20
Dipole Validation Kit	D5GHzV2	1079	2023/10/29	2026/10/28
Dipole Validation Kit	D6GHzV2	1055	2021/11/29	2024/11/28

Note: Longer calibration intervals of up to **3 years is acceptable** when it is demonstrated that the SAR target, impedance and return loss of a dipole have remain stable.

Test Equipment	Model	Serial Number	Calibration within 1year
Signal Generator	E8257dD	MY46522016	Comply
Power meter	E4417A	MY45101004	Comply
Power Sensor	E9300B	MY41496001	Comply
Power Sensor	E9300B	MY41496003	Comply
Vector Network Analyzer	VNA R140	0011213	Comply
Dielectric Parameter Probe	DAKS-3.5	1042	Comply
Communication Tester	E5515C	MY48367401	Comply
Communication Tester	CMW500	161702	Comply
Communication Tester	MT8820C	6201300660	Comply
Communication Tester	SP9500	20334	Comply

Software	Version
DASY5	52.10.4.1527
DASY6	16.0.0.116
SEMCAD X	14.6.14

DAK	3.0.4.1

SAR Target: Refers to system check, measured SAR (1g and 10g) deviates from the Target SAR value of calibration report within 10%.

Impedance and Return loss measured by Network analyzer: The most recent measurement of the real or imaginary parts of the impedance deviates within 5 Ω from the previous measurement. The most recent return-loss result deviates within 20% from the previous measurement. (Target from the last calibration report, Return loss<20db)

Dipole450 TSL Parameters		
(feed point 450MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	55.2Ω+6.09jΩ	55.5Ω+6.40jΩ
Return loss	-22.1 dB	-21.9 dB
Dipole750 TSL Parameters		
(feed point 750MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	53.9Ω-1.98jΩ	53.7Ω-1.63jΩ
Return loss	-28.5 dB	-28.2dB
Dipole835 TSL Parameters		
(feed point 835MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	53.2Ω-3.16jΩ	52.6Ω-2.37jΩ
Return loss	-29.6 dB	-29.3dB
Dipole900 TSL Parameters		
(feed point 900MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	50.4Ω-5.89jΩ	49.1Ω-6.69jΩ
Return loss	-23.6 dB	-23.4dB
Dipole1450 TSL Parameters		
(feed point 1450MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	52.7Ω-1.65jΩ	52.4Ω-1.35jΩ
Return loss	-31.8 dB	-31.5dB
Dipole1800 TSL Parameters		
(feed point 1800MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	48.2Ω-3.06jΩ	48.9Ω-2.71jΩ
Return loss	-30.9 dB	-30.6dB
Dipole2000 TSL Parameters		
(feed point 2000MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	50.5Ω-2.37jΩ	49.4Ω-2.46jΩ
Return loss	-32.3 dB	-31.9dB
Dipole2450 TSL Parameters		
(feed point 2450MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	53.9Ω+5.98jΩ	53.3Ω+6.38jΩ
Return loss	-22.9 dB	-23.1dB
Dipole2600 TSL Parameters		

(feed point 2600MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	48.3Ω-6.89jΩ	47.9Ω-7.80jΩ
Return loss	-22.1 dB	-21.7dB
Dipole3300 TSL Parameters		
(feed point 3300MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	54.4Ω-6.1jΩ	54.7Ω-6.3jΩ
Return loss	-23.1dB	-22.5dB
Dipole3500 TSL Parameters		
(feed point 3500MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	53.1Ω+3.68jΩ	52.6Ω+3.5jΩ
Return loss	-27.8dB	-27.4dB
Dipole3700 TSL Parameters		
(feed point 3700MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	47.8Ω+1.39jΩ	48.3Ω+1.1jΩ
Return loss	-33.9 dB	-33.6dB
Dipole3900 TSL Parameters		
(feed point 3900MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	49.1Ω-5.08jΩ	48.3Ω-4.9jΩ
Return loss	-25.9 dB	-25.6dB
(feed point 4100MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	58.6Ω-1.01jΩ	59.0Ω-0.8jΩ
Return loss	-21.8 dB	-21.6dB
Dipole4200 TSL Parameters		
(feed point 4300MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	51.9Ω-1.52jΩ	52.1Ω-1.6jΩ
Return loss	-32.1 dB	-31.7dB
Dipole4600 TSL Parameters		
(feed point 4500MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	46.9Ω-4.64jΩ	46.4Ω-4.5jΩ
Return loss	-24.9dB	-24.5dB
(feed point 4700MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	54.8Ω-2.98jΩ	55.9Ω-3.20jΩ
Return loss	-24.4 dB	-24.0dB
Dipole4900 TSL Parameters		
(feed point 4900MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	50.8Ω-4.90jΩ	50.6Ω-5.2jΩ
Return loss	-25.9 dB	-25.7dB
Dipole5GHz TSL Parameters		
(feed point 5200MHz)		
Parameters	Measured data	Target (Ref. Value)

Impedance	51.2Ω-10.89jΩ	50.2Ω-10.0jΩ
Return loss	-20.4 dB	-20.0dB
(feed point 5300MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	48.0Ω-6.95jΩ	47.2Ω-7.33jΩ
Return loss	-22.3 dB	-21.9dB
(feed point 5500MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	51.6Ω-7.61jΩ	52.0Ω-7.96jΩ
Return loss	-22.3 dB	-21.9dB
(feed point 5600MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	55.4Ω-4.28jΩ	55.7Ω-3.78jΩ
Return loss	-24.1 dB	-23.8dB
(feed point 5800MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	53.8Ω-5.96jΩ	53.7Ω-5.87jΩ
Return loss	-23.9 dB	-23.5dB
Dipole6500 TSL Parameters		
(feed point 6500MHz)		
Parameters	Measured data	Target (Ref. Value)
Impedance	51.3Ω-2.6jΩ	51.1Ω-2.2jΩ
Return loss	-32.5 dB	-32.3dB