FCC SAR TEST REPORT

FCC ID	:	**MSQ-MT7922A12L**
Equipment	:	**2TX 11ax (WiFi6E) BW160 + BT/BLE Combo Card**
Brand Name	:	**ASUS**
Model Name	:	**MT7922A12L**
Applicant	:	**ASUSTeK COMPUTER INC. 1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan**
Manufacturer	:	**ASUSTeK COMPUTER INC. 1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan**
Standard	:	**FCC 47 CFR Part 2 (2.1093)**

The product was installed into Chromebook, Notebook PC (Brand Name: ASUS, Model Name: A7406CMA) during test.

The product was received on Jun. 30, 2026 and testing was started from Jul. 31, 2026 and completed on Aug. 01, 2026. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample provide by manufacturer and the test data has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been pass the FCC requirement.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Laboratory, the test report shall not be reproduced except in full.

Approved by: Cona Huang / Deputy Manager

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History of this test report

Report No.	Version	Description	Issued Date
FA633011	01	Initial issue of report	Aug. 19, 2026

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) for ASUSTeK COMPUTER INC., 2TX 11ax (WiFi6E) BW160 + BT/BLE Combo Card, MT7922A12L, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary Body (Separation: 0 mm) 1g SAR (W/kg)	Highest Body Simultaneous Transmission 1g SAR (W/kg)
DTS	2.4GHz WLAN	0.65	1.26
NII	5GHz WLAN	0.87	0.87
6CD	6GHz WLAN	0.62	0.87
DSS	Bluetooth	0.08	0.87
Frequency Band		Body Reported APD (mW/cm²)	Reported PD (mW/cm²)
WLAN	6GHz WLAN	0.53	0.68
Date of Testing:		2026/07/31 ~ 2026/08/03	

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation and the FCC designation No. TW3786 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test. This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR) specified in FCC 47 CFR part 2 (2.1093), Human Exposure to RF Radiation Limits (1.0 mW/cm^2=10 W/m^2) specified in FCC 47 CFR part 1.1310 and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

Reviewed by: Jason Wang
Report Producer: Carlie Tsai

2. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards, the below KDB standard may not including in the TAF code without accreditation.

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 616217 D04 SAR for laptop and tablets v01r02
- IEC/IEEE 62209-1528:2020
- SPEAG DASY6 System Handbook
- SPEAG DASY6 Application Note (Interim Procedure for Device Operation at 6GHz-10GHz)

3. Equipment Under Test (EUT) Information

3.1 General Information

Product Feature & Specification	
Equipment Name	2TX 11ax (WiFi6E) BW160 + BT/BLE Combo Card
Brand Name	ASUS
Model Name	MT7922A12L
FCC ID	MSQ-MT7922A12L
Wireless Technology and Frequency Range	WLAN 2.4 GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2 GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3 GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.6 GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8 GHz Band: 5725 MHz ~ 5850 MHz WLAN 5.9 GHz Band: 5850 MHz ~ 5895 MHz WLAN 6GHz Band: 5925 MHz ~ 6425 MHz, 6425 MHz ~ 6525 MHz, 6525 MHz ~ 6875 MHz, 6875 MHz ~ 7125 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz
Mode	WLAN: 802.11a/b/g/n/ac/ax HT20/HT40/VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE

Remark:

1. There are two antenna vendors. RF exposure evaluation selects Innowave as the main test sample, and ICT will be spot-checked based on the worst case found in Innowave.

Host Information	
Equipment Name	Chromebook, Notebook PC
Brand Name	ASUS
Model Name	A7406CMA

WLAN Antenna Information									
1_MAIN (Innowave)	Ant. Type	PIFA	connector		2_AUX (Innowave)	Ant. Type	PIFA	connector	
	Model No.	F235R7601112000				Model No.	F235R7601112000		
	Peak Gain (dBi)					Peak Gain (dBi)			
	2400~2483.5MHz	1.32	5850~5925MHz	3.22		2400~2483.5MHz	1.13	5850~5925MHz	2.96
	5150~5250MHz	1.35	5925~6425MHz	2.74		5150~5250MHz	1.55	5925~6425MHz	3.02
	5250~5350MHz	1.84	6425~6525MHz	2.88		5250~5350MHz	2.14	6425~6525MHz	3.15
	5470~5725MHz	2.85	6525~6875MHz	3.26		5470~5725MHz	2.53	6525~6875MHz	3.51
	5725~5875MHz	3.01	6875~7125MHz	2.72		5725~5875MHz	2.87	6875~7125MHz	2.97
3_MAIN (ICT)	Ant. Type	PIFA	connector		4_AUX (ICT)	Ant. Type	PIFA	connector	
	Model No.	RAN01-DA8800003				Model No.	RAN01-DA8800003		
	Peak Gain (dBi)					Peak Gain (dBi)			
	2400~2483.5MHz	0.96	5850~5925MHz	2.45		2400~2483.5MHz	1.03	5850~5925MHz	2.75
	5150~5250MHz	1.15	5925~6425MHz	2.41		5150~5250MHz	0.97	5925~6425MHz	2.21
	5250~5350MHz	1.04	6425~6525MHz	2.62		5250~5350MHz	0.85	6425~6525MHz	2.45
	5470~5725MHz	1.72	6525~6875MHz	2.45		5470~5725MHz	1.88	6525~6875MHz	2.19
	5725~5875MHz	2.36	6875~7125MHz	1.97		5725~5875MHz	2.6	6875~7125MHz	1.78

Bluetooth Antenna Information									
1 (Innowave)	Ant. Type	PIFA	Peak Gain	1.13	2 (ICT)	Ant. Type	PIFA	Peak Gain	1.03
	connector		Model No.	F235R7601112000		connector		Model No.	RAN01-DA8800003

4. RF Exposure Limits

4.1 Uncontrolled Environment

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

4.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

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

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

1. Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

4.3 RF Exposure limit for above 6GHz

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Peak Spatially Averaged Power Density was evaluated over a circular area of 4cm^2 per interim FCC Guidance for near-field power density evaluations per October 2018 TCB Workshop notes

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f2)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f2)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

5. Specific Absorption Rate (SAR)

5.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/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.

5.2 SAR Definition

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

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

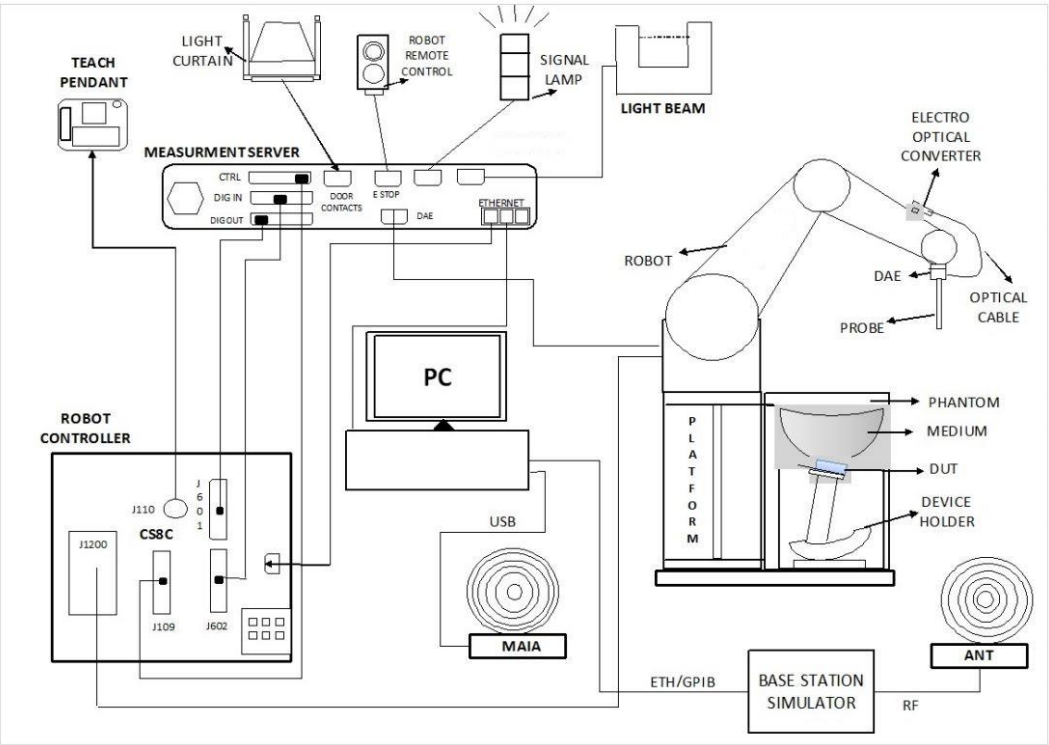
SAR is expressed in units of Watts per kilogram (W/kg)

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

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

6. System Description and Setup

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



- The DASY system in SAR Configuration is shown above
- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running windows software and the DASY software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

6.1 Test Site Location

The SAR measurement facilities used to collect data are within both Sporton Lab list below test site location are accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190 and 3786) and the FCC designation No. TW1190 and TW3786 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test.

Laboratory	EMC & Wireless Communications Laboratory		Wensan Laboratory				
Test Site Location	TW1190 No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan		TW3786 No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan				
Test Site No.	SAR01-HY	SAR03-HY	SAR08-HY	SAR11-HY	SAR14-HY	SAR17-HY	SAR20-HY
	SAR04-HY	SAR05-HY	SAR09-HY	SAR12-HY	SAR15-HY	SAR18-HY	SAR21-HY
	SAR06-HY		SAR10-HY	SAR13-HY	SAR16-HY	SAR19-HY	SAR22-HY

6.2 E-Field Probe

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

< ES3DV3 Probe >

Construction	Symmetric design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	4 MHz – 4 GHz; Linearity: ±0.2 dB (30 MHz – 4 GHz)	
Directivity	±0.2 dB in TSL (rotation around probe axis) ±0.3 dB in TSL (rotation normal to probe axis)	
Dynamic Range	5 μW/g – > 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: 3.0 mm	

< EX3DV4 Probe >

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	4 MHz – > 6 GHz Linearity: ±0.2 dB (30 MHz – 6 GHz)	
Directivity	±0.3 dB in TSL (rotation around probe axis) ±0.5 dB in TSL (rotation normal to probe axis)	
Dynamic Range	10 μW/g – > 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	

6.3 Data Acquisition Electronics (DAE)

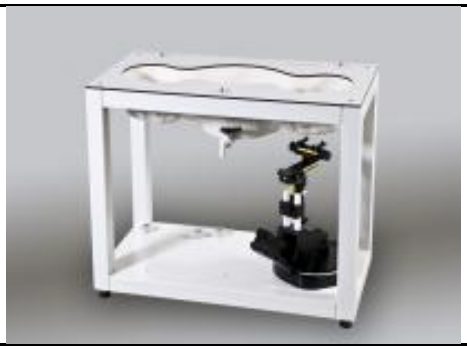
The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Fig 5.1 Photo of DAE

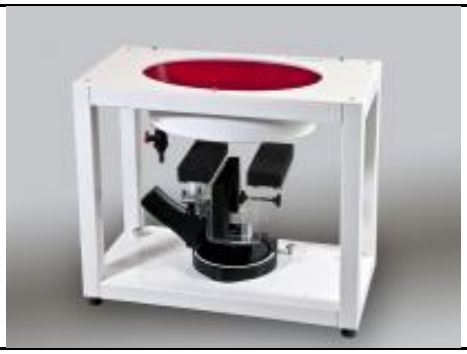
6.4 Phantom

< **SAM Twin Phantom** >

Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm	
Filling Volume	Approx. 25 liters	
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet	
Measurement Areas	Left Hand, Right Hand, Flat Phantom	

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

< **ELI Phantom** >

Shell Thickness	2 ± 0.2 mm (sagging: < 1%)	
Filling Volume	Approx. 30 liters	
Dimensions	Major ellipse axis: 600 mm Minor axis: 400 mm	

The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

6.5 Device Holder

< Mounting Device for Hand-Held Transmitter >

In combination with the Twin SAM V5.0/V5.0c or ELI phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat). And upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.

Mounting Device for Hand-Held Transmitters

Mounting Device Adaptor for Wide-Phones

< Mounting Device for Laptops and other Body-Worn Transmitters >

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

Mounting Device for Laptops

7. Measurement Procedures

The measurement procedures are as follows:

(a) Configure the device RF transmitters to be in continuous transmission mode., at maximum RF power, in the highest power channel.
(b) Place the EUT in the positions as Appendix D demonstrates.
(c) Set scan area, grid size and other setting on the DASY software.
(d) Measure SAR results for the highest power channel on each testing position.
(e) Find out the largest SAR result on these testing positions of each band
(f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

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

(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

7.1 Spatial Peak SAR Evaluation

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

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

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

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

7.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

7.3 Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

7.4 Zoom Scan

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

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

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

7.5 Volume Scan Procedures

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

7.6 Power Drift Monitoring

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

8. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Last Cal.	Due Date
SPEAG	2450MHz System Validation Kit(2)	D2450V2	736	Aug. 15, 2024	Aug. 13, 2026
SPEAG	6500MHz System Validation Kit	D6.5GHzV2	1083	Oct. 22, 2025	Oct. 21, 2026
SPEAG	5GHz System Validation Kit(2)	D5GHzV2	1006	Oct. 15, 2024	Oct. 13, 2026
SPEAG	5G Verification Source	10GHz	1052	Oct. 13, 2025	Oct. 12, 2026
SPEAG	Data Acquisition Electronics	DAE4	1694	Oct. 15, 2025	Oct. 14, 2026
SPEAG	Data Acquisition Electronics	DAE4	1805	May. 19, 2026	May. 18, 2027
SPEAG	Data Acquisition Electronics	DAE4	1696	Jun. 02, 2026	Jun. 01, 2027
SPEAG	Dosimetric E-Field Probe	EX3DV4	7785	Nov. 26, 2025	Nov. 25, 2026
SPEAG	Dosimetric E-Field Probe	EX3DV4	7590	Mar. 17, 2026	Mar. 16, 2027
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Sep. 16, 2025	Sep. 15, 2026
SPEAG	EUmmWV Probe Tip Protection	EUmmWV3	9424	Mar. 12, 2026	Mar. 11, 2027
Testo	Hygro meter	608-H1	45196600	Nov. 04, 2025	Nov. 03, 2026
Testo	Hygro meter	608-H1	45207528	Nov. 04, 2025	Nov. 03, 2026
R&S	BT Base Station	CBT	101136	Oct. 29, 2025	Oct. 28, 2026
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Sep. 24, 2025	Sep. 23, 2026
Keysight	ENA Network Analyzer	E5071C	MY46104758	Oct. 14, 2025	Oct. 13, 2026
LINE SEIKI	Digital Thermometer	DTM3000-spezial	3690	Aug. 14, 2025	Aug. 13, 2026
Anritsu	Power Meter	ML2495A	1804003	Aug. 18, 2025	Aug. 17, 2026
Anritsu	Power Sensor	MA2411B	1726150	Aug. 18, 2025	Aug. 17, 2026
Anritsu	Spectrum Analyzer	MS2830A	6272625959	Aug. 14, 2025	Aug. 13, 2026
Mini-Circuits	Power Amplifier	ZVE-8G+	D120604	Oct. 17, 2025	Oct. 16, 2026
Mini-Circuits	Power Amplifier	ZHL-42W+	QA1344002	Oct. 17, 2025	Oct. 16, 2026
ATM	Dual Directional Coupler	C122H-10	P610410z-02	Note 1	
Warison	Directional Coupler	WCOU-10-50S-10	WR889BMC4B1	Note 1	
Woken	Attenuator 1	WK0602-XX	N/A	Note 1	
PE	Attenuator 2	PE7005-10	N/A	Note 1	
PE	Attenuator 3	PE7005- 3	N/A	Note 1	

General Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.
2. The dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval. The justification data in appendix C can be found which the return loss is＜ -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration for each dipole.

9. System Verification

9.1 Tissue Verification

The tissue dielectric parameters of tissue-equivalent media used for SAR measurements must be characterized within a temperature range of 18℃ to 25℃, measured with calibrated instruments and apparatuses, such as network analyzers and temperature probes. The temperature of the tissue-equivalent medium during SAR measurement must also be within 18℃ to 25℃ and within ± 2℃ of the temperature when the tissue parameters are characterized. The tissue dielectric measurement system must be calibrated before use. The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements.
The liquid tissue depth was at least 15cm in the phantom for all SAR testing

The SPEAG Dasy Measurement system implement a SAR error compensation algorithm as documented in IEEE Std 1528-2013 to automatically compensate the measured SAR results for deviations between the measured and required tissue dielectric parameters, according to KDB 865664 D01 and IEC/IEEE 62209-1528, the tolerance for “Delta (σ)” and “Delta (εr)” can be relaxed to ± 10%

< Tissue Dielectric Parameter Check Results >

Frequency (MHz)	Liquid Temp (℃)	Conductivity (σ)	Permittivity (εr)	Conductivity Target (σ)	Permittivity Target (εr)	Delta (σ) (%)	Delta (εr) (%)	Limit (%)	Date
2450	22.5	1.853	39.846	1.80	39.2	2.94	1.65	±10.0	2026-07-31
5250	22.5	4.605	35.022	4.71	36.0	-2.23	-2.72	±10.0	2026-08-01
5600	22.5	4.985	34.302	5.07	35.5	-1.68	-3.37	±10.0	2026-08-01
5800	22.5	5.236	34.006	5.27	35.3	-0.65	-3.67	±10.0	2026-08-01
6500	22.4	6.04	32.2	6.07	34.5	-0.49	-6.67	±10.0	2026-07-31

9.2 System Performance Check Results

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

Test Site	Date	Frequency (MHz)	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
SAR08	2026-07-31	2450	50	D2450V2 - 736	EX3DV4 - SN7785	DAE4 Sn1694	2.66	51.4	53.2	3.50	1.25	24.2	25	3.31
SAR08	2026-08-01	5250	50	D5GHzV2 - SN1006	EX3DV4 - SN7785	DAE4 Sn1694	3.92	80.6	78.4	-2.73	1.12	22.8	22.4	-1.75
SAR08	2026-08-01	5600	50	D5GHzV2 - 1006	EX3DV4 - SN7785	DAE4 Sn1694	3.95	83.4	79	-5.28	1.13	23.7	22.6	-4.64
SAR08	2026-08-01	5800	50	D5GHzV2 - SN1006	EX3DV4 - SN7785	DAE4 Sn1694	3.84	80.6	76.8	-4.71	1.09	22.7	21.8	-3.96
SAR09	2026-07-31	6500	100	D6.5GHzV2 - SN1083	EX3DV4 - SN7590	DAE4 Sn1805	28.5	302	285	-5.63	5.24	56.5	52.4	-7.26

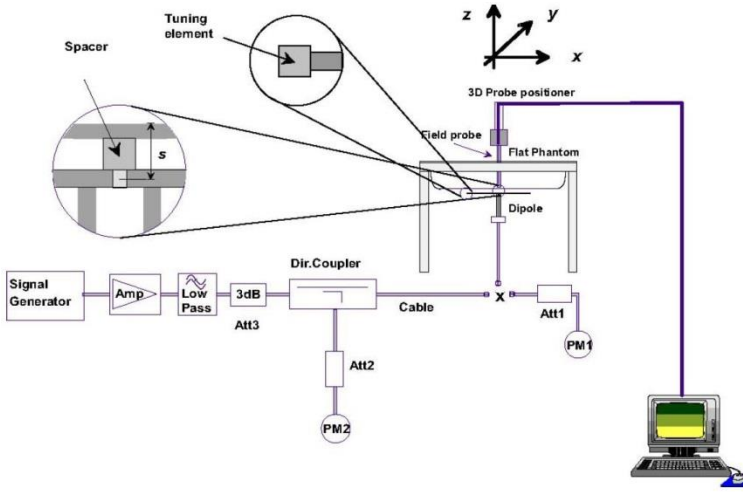


Fig 8.3.1 System Performance Check Setup

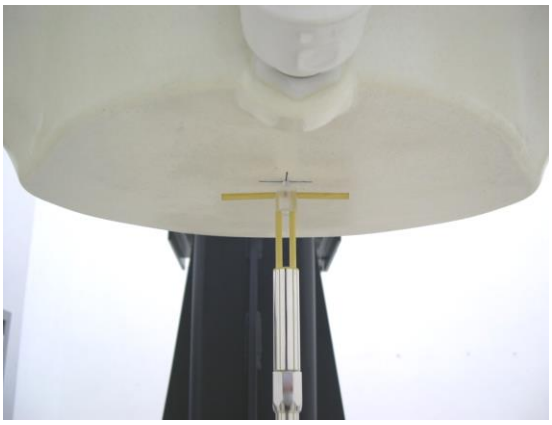


Fig 8.3.2 Setup Photo

9.3 PD System Performance Check Results

The system was verified to be within ±0.66 dB of the power density targets on the calibration certificate according to the test system specification in the user's manual and calibration facility recommendation. The 0.66 dB deviation threshold represents the expanded uncertainty for system performance checks using SPEAG's mmWave verification sources. The same spatial resolution and measurement region used in the source calibration was applied during the system check. The measured power density distribution of verification source was also confirmed through visual inspection to have no noticeable differences, both spatially (shape) and numerically (level) from the distribution provided by the manufacturer, per November 2017 TCBC Workshop Notes

Test Location	Frequency (GHz)	5G Verification Source	Probe S/N	DAE S/N	Distance (mm)	Measured 4 cm^2 (W/m^2)	Targeted 4 cm^2 (W/m^2)	Deviation (dB)	Date
SAR11	10G	10GHz_1052	EUmmWV3 - 9424	1696	10	56	54	0.16	2026/8/3

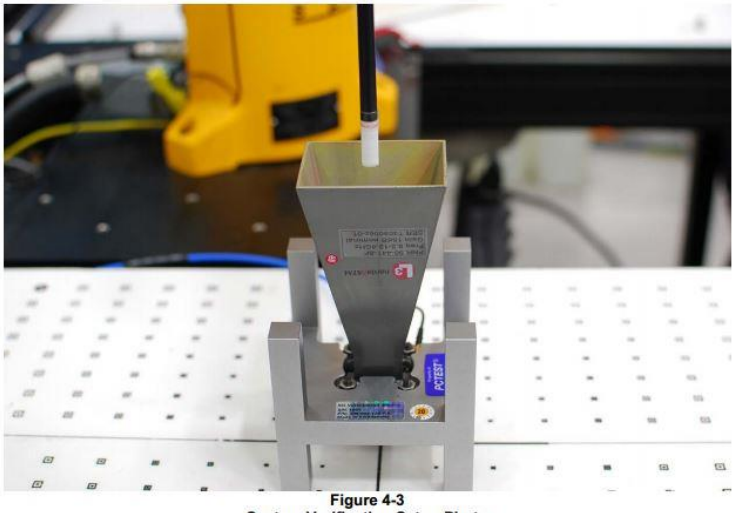


Figure 4-3
System Verification Setup Photo

System Performance Check Setup

10. RF Exposure Positions

10.1 SAR Testing for Tablet

This device can be used also in full sized tablet exposure conditions, due to its size. Per FCC KDB 616217, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR exclusion threshold in KDB 447498 D01v06 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

11. WiFi/Bluetooth Output Power (Unit: dBm)

General Note:

1. For each antenna, transmit power in SISO operation is larger than (or equal to) the power in MIMO operation, RF exposure compliance of MIMO mode can be deduced from the compliance simultaneous transmission of antennas operating in SISO mode.
2. Per KDB 248227 D01v02r02, the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6W/kg and SAR peak to location ratio ≤ 0.04, no additional SAR measurements for MIMO.
3. The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures. For “Not required”, SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) 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, additional output power measurements were not necessary.
4. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
5. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
6. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, 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 for each frequency band.
7. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
   a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
   b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
   c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
8. Per 201904 TCBC workshops, General principles of FCC KDB Publication 248227 D01 can be applied to determine the SAR Initial Test Configurations and test reduction for 802.11ax SAR testing. For the table below the 802.11ax maximum power is SU (non-OFDMA), and the SU maximum power also higher than RU (OFDMA)
9. In applying the test guidance, the IEEE 802.11 mode with the maximum output power (out of all modes) should be considered for testing
10. For modes with the same maximum output power, the guidance from section 5.3.2 a) of FCC KDB Publication 248227 D01 should be applied, with 802.11ax being considered as the highest 802.11 mode for the appropriate frequency bands
11. When SAR testing for 802.11ax is required
    a. If the maximum output power is highest for OFDMA scenarios, choose the tone size with the maximum number of tones and the highest maximum output power
    b. Otherwise, consider the fully allocated channel for SAR testing
    c. When SAR testing is required on RU sizes less than the fully allocated channel, use the RU number closest to the middle of the channel, choosing the higher RU number when two RUs are equidistant to the middle of the channel

【2.4GHz WLAN_Main】

			Main		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11b 1Mbps	1	2412	16.96	18.00	99.69
	6	2437	16.84	18.00	
	11	2462	16.75	17.50	
	12	2467	14.93	15.00	
	13	2472	13.15	13.50	
802.11g 6Mbps	1	2412	Not Required	17.50	Not Required
	6	2437	Not Required	18.50	
	11	2462	Not Required	18.00	
	12	2467	Not Required	14.50	
	13	2472	Not Required	11.50	
802.11n-HT20 MCS0	1	2412	Not Required	17.50	Not Required
	6	2437	Not Required	18.50	
	11	2462	Not Required	17.00	
	12	2467	Not Required	13.50	
	13	2472	Not Required	9.50	
802.11n-HT40 MCS0	3	2422	Not Required	15.00	Not Required
	6	2437	Not Required	17.50	
	9	2452	Not Required	15.00	
	10	2457	Not Required	12.00	
	11	2462	Not Required	10.00	
802.11ac-VHT20 MCS0	1	2412	Not Required	17.50	Not Required
	6	2437	Not Required	18.50	
	11	2462	Not Required	17.00	
	12	2467	Not Required	13.50	
	13	2472	Not Required	9.50	
802.11ac-VHT40 MCS0	3	2422	Not Required	15.00	Not Required
	6	2437	Not Required	17.50	
	9	2452	Not Required	15.00	
	10	2457	Not Required	12.00	
	11	2462	Not Required	10.00	
802.11ax-HE20 MCS0	1	2412	Not Required	17.50	Not Required
	6	2437	Not Required	18.50	
	11	2462	Not Required	17.50	
	12	2467	Not Required	14.00	
	13	2472	Not Required	10.00	
802.11ax-HE40 MCS0	3	2422	Not Required	15.00	Not Required
	6	2437	Not Required	18.00	
	9	2452	Not Required	15.00	
	10	2457	Not Required	12.50	
	11	2462	Not Required	10.00	

【2.4GHz WLAN_Aux】

			Aux		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11b 1Mbps	1	2412	16.55	18.00	99.68
	6	2437	16.57	18.00	
	11	2462	16.96	17.50	
	12	2467	14.69	15.00	
	13	2472	13.45	13.50	
802.11g 6Mbps	1	2412	Not Required	17.50	Not Required
	6	2437	Not Required	18.50	
	11	2462	Not Required	18.00	
	12	2467	Not Required	14.50	
	13	2472	Not Required	11.50	
802.11n-HT20 MCS0	1	2412	Not Required	17.50	Not Required
	6	2437	Not Required	18.50	
	11	2462	Not Required	17.00	
	12	2467	Not Required	13.50	
	13	2472	Not Required	9.50	
802.11n-HT40 MCS0	3	2422	Not Required	15.00	Not Required
	6	2437	Not Required	17.50	
	9	2452	Not Required	15.00	
	10	2457	Not Required	12.00	
	11	2462	Not Required	10.00	
802.11ac-VHT20 MCS0	1	2412	Not Required	17.50	Not Required
	6	2437	Not Required	18.50	
	11	2462	Not Required	17.00	
	12	2467	Not Required	13.50	
	13	2472	Not Required	9.50	
802.11ac-VHT40 MCS0	3	2422	Not Required	15.00	Not Required
	6	2437	Not Required	17.50	
	9	2452	Not Required	15.00	
	10	2457	Not Required	12.00	
	11	2462	Not Required	10.00	
802.11ax-HE20 MCS0	1	2412	Not Required	17.50	Not Required
	6	2437	Not Required	18.50	
	11	2462	Not Required	17.50	
	12	2467	Not Required	14.00	
	13	2472	Not Required	10.00	
802.11ax-HE40 MCS0	3	2422	Not Required	15.00	Not Required
	6	2437	Not Required	18.00	
	9	2452	Not Required	15.00	
	10	2457	Not Required	12.50	
	11	2462	Not Required	10.00	

【2.4GHz WLAN_MIMO】

			MIMO(Main)		MIMO(Aux)		MIMO		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11b 1Mbps	1	2412	Not Required	18.00	Not Required	18.00	Not Required	21.00	Not Required
	6	2437	Not Required	18.00	Not Required	18.00	Not Required	21.00	
	11	2462	Not Required	17.50	Not Required	17.50	Not Required	20.50	
	12	2467	Not Required	15.00	Not Required	15.00	Not Required	18.00	
	13	2472	Not Required	13.50	Not Required	13.50	Not Required	16.50	
802.11g 6Mbps	1	2412	Not Required	17.50	Not Required	17.50	Not Required	20.50	Not Required
	6	2437	Not Required	18.50	Not Required	18.50	Not Required	21.50	
	11	2462	Not Required	18.00	Not Required	18.00	Not Required	21.00	
	12	2467	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	13	2472	Not Required	11.50	Not Required	11.50	Not Required	14.50	
802.11n-HT20 MCS0	1	2412	Not Required	17.50	Not Required	17.50	Not Required	20.50	Not Required
	6	2437	Not Required	18.50	Not Required	18.50	Not Required	21.50	
	11	2462	Not Required	17.00	Not Required	17.00	Not Required	20.00	
	12	2467	Not Required	13.50	Not Required	13.50	Not Required	16.50	
	13	2472	Not Required	9.50	Not Required	9.50	Not Required	12.50	
802.11n-HT40 MCS0	3	2422	Not Required	15.00	Not Required	15.00	Not Required	18.00	Not Required
	6	2437	Not Required	17.50	Not Required	17.50	Not Required	20.50	
	9	2452	Not Required	15.00	Not Required	15.00	Not Required	18.00	
	10	2457	Not Required	12.00	Not Required	12.00	Not Required	15.00	
	11	2462	Not Required	10.00	Not Required	10.00	Not Required	13.00	
802.11ac-VHT20 MCS0	1	2412	Not Required	17.50	Not Required	17.50	Not Required	20.50	Not Required
	6	2437	Not Required	18.50	Not Required	18.50	Not Required	21.50	
	11	2462	Not Required	17.00	Not Required	17.00	Not Required	20.00	
	12	2467	Not Required	13.50	Not Required	13.50	Not Required	16.50	
	13	2472	Not Required	9.50	Not Required	9.50	Not Required	12.50	
802.11ac-VHT40 MCS0	3	2422	Not Required	15.00	Not Required	15.00	Not Required	18.00	Not Required
	6	2437	Not Required	17.50	Not Required	17.50	Not Required	20.50	
	9	2452	Not Required	15.00	Not Required	15.00	Not Required	18.00	
	10	2457	Not Required	12.00	Not Required	12.00	Not Required	15.00	
	11	2462	Not Required	10.00	Not Required	10.00	Not Required	13.00	
802.11ax-HE20 MCS0	1	2412	Not Required	17.50	Not Required	17.50	Not Required	20.50	Not Required
	6	2437	Not Required	18.50	Not Required	18.50	Not Required	21.50	
	11	2462	Not Required	17.50	Not Required	17.50	Not Required	20.50	
	12	2467	Not Required	14.00	Not Required	14.00	Not Required	17.00	
	13	2472	Not Required	10.00	Not Required	10.00	Not Required	13.00	
802.11ax-HE40 MCS0	3	2422	Not Required	15.00	Not Required	15.00	Not Required	18.00	Not Required
	6	2437	Not Required	18.00	Not Required	18.00	Not Required	21.00	
	9	2452	Not Required	15.00	Not Required	15.00	Not Required	18.00	
	10	2457	Not Required	12.50	Not Required	12.50	Not Required	15.50	
	11	2462	Not Required	10.00	Not Required	10.00	Not Required	13.00	

【5.2GHz WLAN_Main】

			Main		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	36	5180	Not Required	14.50	Not Required
	40	5200	Not Required	14.50	
	44	5220	Not Required	14.50	
	48	5240	Not Required	14.50	
802.11n-HT20 MCS0	36	5180	Not Required	14.50	Not Required
	40	5200	Not Required	14.50	
	44	5220	Not Required	14.50	
	48	5240	Not Required	14.50	
802.11n-HT40 MCS0	38	5190	Not Required	14.50	Not Required
	46	5230	Not Required	14.50	
802.11ac-VHT20 MCS0	36	5180	Not Required	14.50	Not Required
	40	5200	Not Required	14.50	
	44	5220	Not Required	14.50	
	48	5240	Not Required	14.50	
802.11ac-VHT40 MCS0	38	5190	Not Required	14.50	Not Required
	46	5230	Not Required	14.50	
802.11ac-VHT80 MCS0	42	5210	Not Required	13.50	Not Required
802.11ax-HE20 MCS0	36	5180	Not Required	14.50	Not Required
	40	5200	Not Required	14.50	
	44	5220	Not Required	14.50	
	48	5240	Not Required	14.50	
802.11ax-HE40 MCS0	38	5190	Not Required	14.50	Not Required
	46	5230	Not Required	14.50	
802.11ax-HE80 MCS0	42	5210	Not Required	13.50	Not Required

【5.2GHz WLAN_Aux】

			Aux		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	36	5180	Not Required	14.50	Not Required
	40	5200	Not Required	14.50	
	44	5220	Not Required	14.50	
	48	5240	Not Required	14.50	
802.11n-HT20 MCS0	36	5180	Not Required	14.50	Not Required
	40	5200	Not Required	14.50	
	44	5220	Not Required	14.50	
	48	5240	Not Required	14.50	
802.11n-HT40 MCS0	38	5190	Not Required	14.50	Not Required
	46	5230	Not Required	14.50	
802.11ac-VHT20 MCS0	36	5180	Not Required	14.50	Not Required
	40	5200	Not Required	14.50	
	44	5220	Not Required	14.50	
	48	5240	Not Required	14.50	
802.11ac-VHT40 MCS0	38	5190	Not Required	14.50	Not Required
	46	5230	Not Required	14.50	
802.11ac-VHT80 MCS0	42	5210	Not Required	13.50	Not Required
802.11ax-HE20 MCS0	36	5180	Not Required	14.50	Not Required
	40	5200	Not Required	14.50	
	44	5220	Not Required	14.50	
	48	5240	Not Required	14.50	
802.11ax-HE40 MCS0	38	5190	Not Required	14.50	Not Required
	46	5230	Not Required	14.50	
802.11ax-HE80 MCS0	42	5210	Not Required	13.50	Not Required

【5.2GHz WLAN_MIMO】

			MIMO(Main)		MIMO(Aux)		MIMO		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	36	5180	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	40	5200	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	44	5220	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	48	5240	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11n-HT20 MCS0	36	5180	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	40	5200	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	44	5220	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	48	5240	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11n-HT40 MCS0	38	5190	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	46	5230	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11ac-VHT20 MCS0	36	5180	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	40	5200	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	44	5220	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	48	5240	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11ac-VHT40 MCS0	38	5190	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	46	5230	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11ac-VHT80 MCS0	42	5210	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
802.11ax-HE20 MCS0	36	5180	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	40	5200	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	44	5220	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	48	5240	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11ax-HE40 MCS0	38	5190	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	46	5230	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11ax-HE80 MCS0	42	5210	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required

【5.3GHz WLAN_Main】

			Main		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	52	5260	Not Required	14.50	Not Required
	56	5280	Not Required	14.50	
	60	5300	Not Required	14.50	
	64	5320	Not Required	14.50	
802.11n-HT20 MCS0	52	5260	Not Required	14.50	Not Required
	56	5280	Not Required	14.50	
	60	5300	Not Required	14.50	
	64	5320	Not Required	14.50	
802.11n-HT40 MCS0	54	5270	14.19	14.50	94.84
	62	5310	14.36	14.50	
802.11ac-VHT20 MCS0	52	5260	Not Required	14.50	Not Required
	56	5280	Not Required	14.50	
	60	5300	Not Required	14.50	
	64	5320	Not Required	14.50	
802.11ac-VHT40 MCS0	54	5270	Not Required	14.50	Not Required
	62	5310	Not Required	14.50	
802.11ac-VHT80 MCS0	58	5290	14.20	14.50	90.50
802.11ac-VHT160 MCS0	50	5250	Not Required	13.50	Not Required
802.11ax-HE20 MCS0	52	5260	Not Required	14.50	Not Required
	56	5280	Not Required	14.50	
	60	5300	Not Required	14.50	
	64	5320	Not Required	14.50	
802.11ax-HE40 MCS0	54	5270	Not Required	14.50	Not Required
	62	5310	Not Required	14.50	
802.11ax-HE80 MCS0	58	5290	Not Required	14.50	Not Required
802.11ax-HE160 MCS0	50	5250	Not Required	13.50	Not Required

【5.3GHz WLAN_Aux】

			Aux		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	52	5260	Not Required	14.50	Not Required
	56	5280	Not Required	14.50	
	60	5300	Not Required	14.50	
	64	5320	Not Required	14.50	
802.11n-HT20 MCS0	52	5260	Not Required	14.50	Not Required
	56	5280	Not Required	14.50	
	60	5300	Not Required	14.50	
	64	5320	Not Required	14.50	
802.11n-HT40 MCS0	54	5270	14.17	14.50	94.84
	62	5310	14.11	14.50	
802.11ac-VHT20 MCS0	52	5260	Not Required	14.50	Not Required
	56	5280	Not Required	14.50	
	60	5300	Not Required	14.50	
	64	5320	Not Required	14.50	
802.11ac-VHT40 MCS0	54	5270	Not Required	14.50	Not Required
	62	5310	Not Required	14.50	
802.11ac-VHT80 MCS0	58	5290	14.10	14.50	90.50
802.11ac-VHT160 MCS0	50	5250	Not Required	13.50	Not Required
802.11ax-HE20 MCS0	52	5260	Not Required	14.50	Not Required
	56	5280	Not Required	14.50	
	60	5300	Not Required	14.50	
	64	5320	Not Required	14.50	
802.11ax-HE40 MCS0	54	5270	Not Required	14.50	Not Required
	62	5310	Not Required	14.50	
802.11ax-HE80 MCS0	58	5290	Not Required	14.50	Not Required
802.11ax-HE160 MCS0	50	5250	Not Required	13.50	Not Required

【5.3GHz WLAN_MIMO】

			MIMO(Main)		MIMO(Aux)		MIMO		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	52	5260	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	56	5280	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	60	5300	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	64	5320	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11n-HT20 MCS0	52	5260	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	56	5280	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	60	5300	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	64	5320	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11n-HT40 MCS0	54	5270	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	62	5310	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11ac-VHT20 MCS0	52	5260	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	56	5280	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	60	5300	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	64	5320	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11ac-VHT40 MCS0	54	5270	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	62	5310	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11ac-VHT80 MCS0	58	5290	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
802.11ac-VHT160 MCS0	50	5250	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
802.11ax-HE20 MCS0	52	5260	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	56	5280	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	60	5300	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	64	5320	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11ax-HE40 MCS0	54	5270	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	62	5310	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11ax-HE80 MCS0	58	5290	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
802.11ax-HE160 MCS0	50	5250	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required

【5.5GHz WLAN_Main】

			Main		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	100	5500	Not Required	14.50	Not Required
	116	5580	Not Required	14.50	
	124	5620	Not Required	14.50	
	132	5660	Not Required	14.50	
	144	5720	Not Required	14.50	
802.11n-HT20 MCS0	100	5500	Not Required	14.50	Not Required
	116	5580	Not Required	14.50	
	124	5620	Not Required	14.50	
	132	5660	Not Required	14.50	
	144	5720	Not Required	14.50	
802.11n-HT40 MCS0	102	5510	Not Required	14.50	Not Required
	110	5550	Not Required	14.50	
	126	5630	Not Required	14.50	
	134	5670	Not Required	14.50	
	142	5710	Not Required	14.50	
802.11ac-VHT20 MCS0	100	5500	Not Required	14.50	Not Required
	116	5580	Not Required	14.50	
	124	5620	Not Required	14.50	
	132	5660	Not Required	14.50	
	144	5720	Not Required	14.50	
802.11ac-VHT40 MCS0	102	5510	Not Required	14.50	Not Required
	110	5550	Not Required	14.50	
	126	5630	Not Required	14.50	
	134	5670	Not Required	14.50	
	142	5710	Not Required	14.50	
802.11ac-VHT80 MCS0	106	5530	14.26	14.50	90.50
	122	5610	14.12	14.50	
	138	5690	14.46	14.50	
802.11ac-VHT160 MCS0	114	5570	Not Required	12.50	Not Required
802.11ax-HE20 MCS0	100	5500	Not Required	14.50	Not Required
	116	5580	Not Required	14.50	
	124	5620	Not Required	12.50	
	132	5660	Not Required	14.50	
	144	5720	Not Required	14.50	
802.11ax-HE40 MCS0	102	5510	Not Required	14.50	Not Required
	110	5550	Not Required	14.50	
	126	5630	Not Required	14.50	
	134	5670	Not Required	14.50	
	142	5710	Not Required	14.50	
802.11ax-HE80 MCS0	106	5530	Not Required	14.50	Not Required
	122	5610	Not Required	14.50	
	138	5690	Not Required	14.50	
802.11ax-HE160 MCS0	114	5570	Not Required	12.50	Not Required

【5.5GHz WLAN_Aux】

			Aux		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	100	5500	Not Required	14.50	Not Required
	116	5580	Not Required	14.50	
	124	5620	Not Required	14.50	
	132	5660	Not Required	14.50	
	144	5720	Not Required	14.50	
802.11n-HT20 MCS0	100	5500	Not Required	14.50	Not Required
	116	5580	Not Required	14.50	
	124	5620	Not Required	14.50	
	132	5660	Not Required	14.50	
	144	5720	Not Required	14.50	
802.11n-HT40 MCS0	102	5510	Not Required	14.50	Not Required
	110	5550	Not Required	14.50	
	126	5630	Not Required	14.50	
	134	5670	Not Required	14.50	
	142	5710	Not Required	14.50	
802.11ac-VHT20 MCS0	100	5500	Not Required	14.50	Not Required
	116	5580	Not Required	14.50	
	124	5620	Not Required	14.50	
	132	5660	Not Required	14.50	
	144	5720	Not Required	14.50	
802.11ac-VHT40 MCS0	102	5510	Not Required	14.50	Not Required
	110	5550	Not Required	14.50	
	126	5630	Not Required	14.50	
	134	5670	Not Required	14.50	
	142	5710	Not Required	14.50	
802.11ac-VHT80 MCS0	106	5530	14.40	14.50	90.50
	122	5610	14.17	14.50	
	138	5690	14.41	14.50	
802.11ac-VHT160 MCS0	114	5570	Not Required	12.50	Not Required
802.11ax-HE20 MCS0	100	5500	Not Required	14.50	Not Required
	116	5580	Not Required	14.50	
	124	5620	Not Required	14.50	
	132	5660	Not Required	14.50	
	144	5720	Not Required	14.50	
802.11ax-HE40 MCS0	102	5510	Not Required	14.50	Not Required
	110	5550	Not Required	14.50	
	126	5630	Not Required	14.50	
	134	5670	Not Required	14.50	
	142	5710	Not Required	14.50	
802.11ax-HE80 MCS0	106	5530	Not Required	14.50	Not Required
	122	5610	Not Required	14.50	
	138	5690	Not Required	14.50	
802.11ax-HE160 MCS0	114	5570	Not Required	12.50	Not Required

【5.5GHz WLAN_MIMO】

			MIMO(Main)		MIMO(Aux)		MIMO		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	100	5500	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	116	5580	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	124	5620	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	132	5660	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	144	5720	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11n-HT20 MCS0	100	5500	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	116	5580	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	124	5620	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	132	5660	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	144	5720	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11n-HT40 MCS0	102	5510	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	110	5550	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	126	5630	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	134	5670	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	142	5710	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11ac-VHT20 MCS0	100	5500	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	116	5580	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	124	5620	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	132	5660	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	144	5720	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11ac-VHT40 MCS0	102	5510	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	110	5550	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	126	5630	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	134	5670	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	142	5710	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11ac-VHT80 MCS0	106	5530	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	122	5610	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	138	5690	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11ac-VHT160 MCS0	114	5570	Not Required	12.50	Not Required	12.50	Not Required	15.50	Not Required
802.11ax-HE20 MCS0	100	5500	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	116	5580	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	124	5620	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	132	5660	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	144	5720	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11ax-HE40 MCS0	102	5510	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	110	5550	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	126	5630	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	134	5670	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	142	5710	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11ax-HE80 MCS0	106	5530	Not Required	14.50	Not Required	14.50	Not Required	17.50	Not Required
	122	5610	Not Required	14.50	Not Required	14.50	Not Required	17.50	
	138	5690	Not Required	14.50	Not Required	14.50	Not Required	17.50	
802.11ax-HE160 MCS0	114	5570	Not Required	12.50	Not Required	12.50	Not Required	15.50	Not Required

【5.8GHz WLAN_Main】

			Main		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	149	5745	Not Required	13.50	Not Required
	157	5785	Not Required	13.50	
	165	5825	Not Required	13.50	
802.11n-HT20 MCS0	149	5745	Not Required	13.50	Not Required
	157	5785	Not Required	13.50	
	165	5825	Not Required	13.50	
802.11n-HT40 MCS0	151	5755	13.49	13.50	94.84
	159	5795	13.45	13.50	
802.11ac-VHT20 MCS0	149	5745	Not Required	13.50	Not Required
	157	5785	Not Required	13.50	
	165	5825	Not Required	13.50	
802.11ac-VHT40 MCS0	151	5755	Not Required	13.50	Not Required
	159	5795	Not Required	13.50	
802.11ac-VHT80 MCS0	155	5775	13.47	13.50	90.50
802.11ax-HE20 MCS0	149	5745	Not Required	13.50	Not Required
	157	5785	Not Required	13.50	
	165	5825	Not Required	13.50	
802.11ax-HE40 MCS0	151	5755	Not Required	13.50	Not Required
	159	5795	Not Required	13.50	
802.11ax-HE80 MCS0	155	5775	Not Required	13.50	Not Required

【5.8GHz WLAN_Aux】

			Aux		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	149	5745	Not Required	13.50	Not Required
	157	5785	Not Required	13.50	
	165	5825	Not Required	13.50	
802.11n-HT20 MCS0	149	5745	Not Required	13.50	Not Required
	157	5785	Not Required	13.50	
	165	5825	Not Required	13.50	
802.11n-HT40 MCS0	151	5755	13.37	13.50	94.84
	159	5795	13.40	13.50	
802.11ac-VHT20 MCS0	149	5745	Not Required	13.50	Not Required
	157	5785	Not Required	13.50	
	165	5825	Not Required	13.50	
802.11ac-VHT40 MCS0	151	5755	Not Required	13.50	Not Required
	159	5795	Not Required	13.50	
802.11ac-VHT80 MCS0	155	5775	13.43	13.50	90.50
802.11ax-HE20 MCS0	149	5745	Not Required	13.50	Not Required
	157	5785	Not Required	13.50	
	165	5825	Not Required	13.50	
802.11ax-HE40 MCS0	151	5755	Not Required	13.50	Not Required
	159	5795	Not Required	13.50	
802.11ax-HE80 MCS0	155	5775	Not Required	13.50	Not Required

【5.8GHz WLAN_MIMO】

			MIMO(Main)		MIMO(Aux)		MIMO		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	149	5745	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
	157	5785	Not Required	13.50	Not Required	13.50	Not Required	16.50	
	165	5825	Not Required	13.50	Not Required	13.50	Not Required	16.50	
802.11n-HT20 MCS0	149	5745	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
	157	5785	Not Required	13.50	Not Required	13.50	Not Required	16.50	
	165	5825	Not Required	13.50	Not Required	13.50	Not Required	16.50	
802.11n-HT40 MCS0	151	5755	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
	159	5795	Not Required	13.50	Not Required	13.50	Not Required	16.50	
802.11ac-VHT20 MCS0	149	5745	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
	157	5785	Not Required	13.50	Not Required	13.50	Not Required	16.50	
	165	5825	Not Required	13.50	Not Required	13.50	Not Required	16.50	
802.11ac-VHT40 MCS0	151	5755	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
	159	5795	Not Required	13.50	Not Required	13.50	Not Required	16.50	
802.11ac-VHT80 MCS0	155	5775	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
802.11ax-HE20 MCS0	149	5745	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
	157	5785	Not Required	13.50	Not Required	13.50	Not Required	16.50	
	165	5825	Not Required	13.50	Not Required	13.50	Not Required	16.50	
802.11ax-HE40 MCS0	151	5755	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
	159	5795	Not Required	13.50	Not Required	13.50	Not Required	16.50	
802.11ax-HE80 MCS0	155	5775	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required

【5.9GHz WLAN UNII 4_Main】

			Main		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	169	5845	Not Required	13.50	Not Required
	173	5865	Not Required	13.50	
	177	5885	Not Required	13.50	
802.11n-HT20 MCS0	169	5845	Not Required	13.50	Not Required
	173	5865	Not Required	13.50	
	177	5885	Not Required	13.50	
802.11n-HT40 MCS0	167	5835	Not Required	13.50	Not Required
	175	5875	Not Required	13.50	
802.11ac-VHT20 MCS0	169	5845	Not Required	13.50	Not Required
	173	5865	Not Required	13.50	
	177	5885	Not Required	13.50	
802.11ac-VHT40 MCS0	167	5835	Not Required	13.50	Not Required
	175	5875	Not Required	13.50	
802.11ac-VHT80 MCS0	171	5855	13.46	13.50	90.50
802.11ac-VHT160 MCS0	163	5815	13.47	13.50	90.53
802.11ax-HE20 MCS0	169	5845	Not Required	13.50	Not Required
	173	5865	Not Required	13.50	
	177	5885	Not Required	13.50	
802.11ax-HE40 MCS0	167	5835	Not Required	13.50	Not Required
	175	5875	Not Required	13.50	
802.11ax-HE80 MCS0	171	5855	Not Required	13.50	Not Required
802.11ax-HE160 MCS0	163	5815	Not Required	13.50	Not Required

【5.9GHz WLAN UNII 4_Aux】

			Aux		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	169	5845	Not Required	13.50	Not Required
	173	5865	Not Required	13.50	
	177	5885	Not Required	13.50	
802.11n-HT20 MCS0	169	5845	Not Required	13.50	Not Required
	173	5865	Not Required	13.50	
	177	5885	Not Required	13.50	
802.11n-HT40 MCS0	167	5835	Not Required	13.50	Not Required
	175	5875	Not Required	13.50	
802.11ac-VHT20 MCS0	169	5845	Not Required	13.50	Not Required
	173	5865	Not Required	13.50	
	177	5885	Not Required	13.50	
802.11ac-VHT40 MCS0	167	5835	Not Required	13.50	Not Required
	175	5875	Not Required	13.50	
802.11ac-VHT80 MCS0	171	5855	13.49	13.50	90.50
802.11ac-VHT160 MCS0	163	5815	13.43	13.50	90.53
802.11ax-HE20 MCS0	169	5845	Not Required	13.50	Not Required
	173	5865	Not Required	13.50	
	177	5885	Not Required	13.50	
802.11ax-HE40 MCS0	167	5835	Not Required	13.50	Not Required
	175	5875	Not Required	13.50	
802.11ax-HE80 MCS0	171	5855	Not Required	13.50	Not Required
802.11ax-HE160 MCS0	163	5815	Not Required	13.50	Not Required

【5.9GHz WLAN UNII 4_MIMO】

			MIMO(Main)		MIMO(Aux)		MIMO		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	169	5845	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
	173	5865	Not Required	13.50	Not Required	13.50	Not Required	16.50	
	177	5885	Not Required	13.50	Not Required	13.50	Not Required	16.50	
802.11n-HT20 MCS0	169	5845	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
	173	5865	Not Required	13.50	Not Required	13.50	Not Required	16.50	
	177	5885	Not Required	13.50	Not Required	13.50	Not Required	16.50	
802.11n-HT40 MCS0	167	5835	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
	175	5875	Not Required	13.50	Not Required	13.50	Not Required	16.50	
802.11ac-VHT20 MCS0	169	5845	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
	173	5865	Not Required	13.50	Not Required	13.50	Not Required	16.50	
	177	5885	Not Required	13.50	Not Required	13.50	Not Required	16.50	
802.11ac-VHT40 MCS0	167	5835	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
	175	5875	Not Required	13.50	Not Required	13.50	Not Required	16.50	
802.11ac-VHT80 MCS0	171	5855	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
802.11ac-VHT160 MCS0	163	5815	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
802.11ax-HE20 MCS0	169	5845	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
	173	5865	Not Required	13.50	Not Required	13.50	Not Required	16.50	
	177	5885	Not Required	13.50	Not Required	13.50	Not Required	16.50	
802.11ax-HE40 MCS0	167	5835	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
	175	5875	Not Required	13.50	Not Required	13.50	Not Required	16.50	
802.11ax-HE80 MCS0	171	5855	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required
802.11ax-HE160 MCS0	163	5815	Not Required	13.50	Not Required	13.50	Not Required	16.50	Not Required

【6GHz WLAN_SP_Main】

			Main		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	1	5955	Not Required	13.00	Not Required
	57	6235	Not Required	13.00	
	173	6815	Not Required	11.50	
802.11ax-HE20 MCS0	1	5955	Not Required	13.00	Not Required
	57	6235	Not Required	13.00	
	173	6815	Not Required	11.50	
802.11ax-HE40 MCS0	3	5965	Not Required	13.00	Not Required
	59	6245	Not Required	13.00	
	171	6805	Not Required	11.50	
802.11ax-HE80 MCS0	7	5985	Not Required	13.00	Not Required
	71	6305	Not Required	13.00	
	167	6785	Not Required	11.50	
802.11ax-HE160 MCS0	15	6025	12.87	13.00	89.76
	47	6185	12.79	13.00	
	143	6665	12.69	13.00	

【6GHz WLAN_LPI_Main】

			Main		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	1	5955	Not Required	7.00	Not Required
	57	6235	Not Required	7.00	
	113	6515	Not Required	7.50	
	173	6815	Not Required	7.00	
	233	7115	Not Required	7.50	
802.11ax-HE20 MCS0	1	5955	Not Required	1.00	Not Required
	57	6235	Not Required	1.00	
	113	6515	Not Required	1.50	
	173	6815	Not Required	1.50	
	233	7115	Not Required	2.00	
802.11ax-HE40 MCS0	3	5965	Not Required	3.50	Not Required
	59	6245	Not Required	3.50	
	107	6485	Not Required	4.00	
	171	6805	Not Required	4.00	
	227	7085	Not Required	4.50	
802.11ax-HE80 MCS0	7	5985	Not Required	7.00	Not Required
	71	6305	Not Required	7.00	
	119	6545	Not Required	7.00	
	167	6785	Not Required	7.00	
	215	7025	Not Required	7.50	
802.11ax-HE160 MCS0	15	6025	12.37	12.50	89.76
	47	6185	12.29	12.50	
	111	6505	12.19	12.50	
	143	6665	12.19	12.50	
	207	6985	11.35	11.50	

【6GHz WLAN_VLP_Main】

			Main		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	1	5955	Not Required	2.50	Not Required
	57	6235	Not Required	2.50	
	113	6515	Not Required	3.00	
	173	6815	Not Required	2.50	
	233	7115	Not Required	3.00	
802.11ax-HE20 MCS0	1	5955	Not Required	-3.50	Not Required
	57	6235	Not Required	-3.50	
	113	6515	Not Required	-3.00	
	173	6815	Not Required	-3.50	
	233	7115	Not Required	-3.00	
802.11ax-HE40 MCS0	3	5965	Not Required	-0.50	Not Required
	59	6245	Not Required	-0.50	
	107	6485	Not Required	0.00	
	171	6805	Not Required	-0.50	
	227	7085	Not Required	0.00	
802.11ax-HE80 MCS0	7	5985	Not Required	2.50	Not Required
	71	6305	Not Required	2.50	
	119	6545	Not Required	2.50	
	167	6785	Not Required	2.50	
	215	7025	Not Required	3.00	
802.11ax-HE160 MCS0	15	6025	Not Required	9.00	Not Required
	47	6185	Not Required	9.00	
	111	6505	Not Required	9.50	
	143	6665	Not Required	9.00	
	207	6985	Not Required	9.50	

【6GHz WLAN_SP_Aux】

			Aux		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	1	5955	Not Required	13.00	Not Required
	57	6235	Not Required	13.00	
	173	6815	Not Required	11.50	
802.11ax-HE20 MCS0	1	5955	Not Required	13.00	Not Required
	57	6235	Not Required	13.00	
	173	6815	Not Required	11.50	
802.11ax-HE40 MCS0	3	5965	Not Required	13.00	Not Required
	59	6245	Not Required	13.00	
	171	6805	Not Required	11.50	
802.11ax-HE80 MCS0	7	5985	Not Required	13.00	Not Required
	71	6305	Not Required	13.00	
	167	6785	Not Required	11.50	
802.11ax-HE160 MCS0	15	6025	12.92	13.00	89.73
	47	6185	12.56	13.00	
	143	6665	12.91	13.00	

【6GHz WLAN_LPI_Aux】

			Aux		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	1	5955	Not Required	7.00	Not Required
	57	6235	Not Required	7.00	
	113	6515	Not Required	7.50	
	173	6815	Not Required	7.00	
	233	7115	Not Required	7.50	
802.11ax-HE20 MCS0	1	5955	Not Required	1.00	Not Required
	57	6235	Not Required	1.00	
	113	6515	Not Required	1.50	
	173	6815	Not Required	1.50	
	233	7115	Not Required	2.00	
802.11ax-HE40 MCS0	3	5965	Not Required	3.50	Not Required
	59	6245	Not Required	3.50	
	107	6485	Not Required	4.00	
	171	6805	Not Required	4.00	
	227	7085	Not Required	4.50	
802.11ax-HE80 MCS0	7	5985	Not Required	7.00	Not Required
	71	6305	Not Required	7.00	
	119	6545	Not Required	7.00	
	167	6785	Not Required	7.00	
	215	7025	Not Required	7.50	
802.11ax-HE160 MCS0	15	6025	12.42	12.50	89.73
	47	6185	12.06	12.50	
	111	6505	12.32	12.50	
	143	6665	12.41	12.50	
	207	6985	11.38	11.50	

【6GHz WLAN_VLP_Aux】

			Aux		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	1	5955	Not Required	2.50	Not Required
	57	6235	Not Required	2.50	
	113	6515	Not Required	3.00	
	173	6815	Not Required	2.50	
	233	7115	Not Required	3.00	
802.11ax-HE20 MCS0	1	5955	Not Required	-3.50	Not Required
	57	6235	Not Required	-3.50	
	113	6515	Not Required	-3.00	
	173	6815	Not Required	-3.50	
	233	7115	Not Required	-3.00	
802.11ax-HE40 MCS0	3	5965	Not Required	-0.50	Not Required
	59	6245	Not Required	-0.50	
	107	6485	Not Required	0.00	
	171	6805	Not Required	-0.50	
	227	7085	Not Required	0.00	
802.11ax-HE80 MCS0	7	5985	Not Required	2.50	Not Required
	71	6305	Not Required	2.50	
	119	6545	Not Required	2.50	
	167	6785	Not Required	2.50	
	215	7025	Not Required	3.00	
802.11ax-HE160 MCS0	15	6025	Not Required	9.00	Not Required
	47	6185	Not Required	9.00	
	111	6505	Not Required	9.50	
	143	6665	Not Required	9.00	
	207	6985	Not Required	9.50	

【6GHz WLAN_SP_MIMO】

			MIMO(Main)		MIMO(Aux)		MIMO		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	1	5955	Not Required	13.00	Not Required	13.00	Not Required	16.00	Not Required
	57	6235	Not Required	13.00	Not Required	13.00	Not Required	16.00	
	173	6815	Not Required	11.50	Not Required	11.50	Not Required	14.50	
802.11ax-HE20 MCS0	1	5955	Not Required	13.00	Not Required	13.00	Not Required	16.00	Not Required
	57	6235	Not Required	13.00	Not Required	13.00	Not Required	16.00	
	173	6815	Not Required	11.50	Not Required	11.50	Not Required	14.50	
802.11ax-HE40 MCS0	3	5965	Not Required	13.00	Not Required	13.00	Not Required	16.00	Not Required
	59	6245	Not Required	13.00	Not Required	13.00	Not Required	16.00	
	171	6805	Not Required	11.50	Not Required	11.50	Not Required	14.50	
802.11ax-HE80 MCS0	7	5985	Not Required	13.00	Not Required	13.00	Not Required	16.00	Not Required
	71	6305	Not Required	13.00	Not Required	13.00	Not Required	16.00	
	167	6785	Not Required	11.50	Not Required	11.50	Not Required	14.50	
802.11ax-HE160 MCS0	15	6025	Not Required	13.00	Not Required	13.00	Not Required	16.00	Not Required
	47	6185	Not Required	13.00	Not Required	13.00	Not Required	16.00	
	143	6665	Not Required	13.00	Not Required	13.00	Not Required	16.00	

【6GHz WLAN_LPI_MIMO】

			MIMO(Main)		MIMO(Aux)		MIMO		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	1	5955	Not Required	1.00	Not Required	1.00	Not Required	4.00	Not Required
	57	6235	Not Required	1.00	Not Required	1.00	Not Required	4.00	
	113	6515	Not Required	1.50	Not Required	1.50	Not Required	4.50	
	173	6815	Not Required	1.00	Not Required	1.00	Not Required	4.00	
	233	7115	Not Required	1.50	Not Required	1.50	Not Required	4.50	
802.11ax-HE20 MCS0	1	5955	Not Required	1.00	Not Required	1.00	Not Required	4.00	Not Required
	57	6235	Not Required	1.00	Not Required	1.00	Not Required	4.00	
	113	6515	Not Required	1.50	Not Required	1.50	Not Required	4.50	
	173	6815	Not Required	1.50	Not Required	1.50	Not Required	4.50	
	233	7115	Not Required	2.00	Not Required	2.00	Not Required	5.00	
802.11ax-HE40 MCS0	3	5965	Not Required	3.50	Not Required	3.50	Not Required	6.50	Not Required
	59	6245	Not Required	3.50	Not Required	3.50	Not Required	6.50	
	107	6485	Not Required	4.00	Not Required	4.00	Not Required	7.00	
	171	6805	Not Required	4.00	Not Required	4.00	Not Required	7.00	
	227	7085	Not Required	4.50	Not Required	4.50	Not Required	7.50	
802.11ax-HE80 MCS0	7	5985	Not Required	7.00	Not Required	7.00	Not Required	10.00	Not Required
	71	6305	Not Required	7.00	Not Required	7.00	Not Required	10.00	
	119	6545	Not Required	7.00	Not Required	7.00	Not Required	10.00	
	167	6785	Not Required	7.00	Not Required	7.00	Not Required	10.00	
	215	7025	Not Required	7.50	Not Required	7.50	Not Required	10.50	
802.11ax-HE160 MCS0	15	6025	Not Required	9.50	Not Required	9.50	Not Required	12.50	Not Required
	47	6185	Not Required	9.50	Not Required	9.50	Not Required	12.50	
	111	6505	Not Required	9.50	Not Required	9.50	Not Required	12.50	
	143	6665	Not Required	9.50	Not Required	9.50	Not Required	12.50	
	207	6985	Not Required	9.50	Not Required	9.50	Not Required	12.50	

【6GHz WLAN_VLP_MIMO】

			MIMO(Main)		MIMO(Aux)		MIMO		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps	1	5955	Not Required	-3.50	Not Required	-3.50	Not Required	-0.50	Not Required
	57	6235	Not Required	-3.50	Not Required	-3.50	Not Required	-0.50	
	113	6515	Not Required	-3.00	Not Required	-3.00	Not Required	0.00	
	173	6815	Not Required	-3.50	Not Required	-3.50	Not Required	-0.50	
	233	7115	Not Required	-3.00	Not Required	-3.00	Not Required	0.00	
802.11ax-HE20 MCS0	1	5955	Not Required	-3.50	Not Required	-3.50	Not Required	2.50	Not Required
	57	6235	Not Required	-3.50	Not Required	-3.50	Not Required	2.50	
	113	6515	Not Required	-3.00	Not Required	-3.00	Not Required	3.00	
	173	6815	Not Required	-3.50	Not Required	-3.50	Not Required	2.50	
	233	7115	Not Required	-3.00	Not Required	-3.00	Not Required	3.00	
802.11ax-HE40 MCS0	3	5965	Not Required	-0.50	Not Required	-0.50	Not Required	5.50	Not Required
	59	6245	Not Required	-0.50	Not Required	-0.50	Not Required	5.50	
	107	6485	Not Required	0.00	Not Required	0.00	Not Required	5.50	
	171	6805	Not Required	-0.50	Not Required	-0.50	Not Required	5.50	
	227	7085	Not Required	0.00	Not Required	0.00	Not Required	3.00	
802.11ax-HE80 MCS0	7	5985	Not Required	2.50	Not Required	2.50	Not Required	5.50	Not Required
	71	6305	Not Required	2.50	Not Required	2.50	Not Required	5.50	
	119	6545	Not Required	2.50	Not Required	2.50	Not Required	5.50	
	167	6785	Not Required	2.50	Not Required	2.50	Not Required	5.50	
	215	7025	Not Required	3.00	Not Required	3.00	Not Required	6.00	
802.11ax-HE160 MCS0	15	6025	Not Required	5.50	Not Required	5.50	Not Required	8.50	Not Required
	47	6185	Not Required	5.50	Not Required	5.50	Not Required	8.50	
	111	6505	Not Required	6.00	Not Required	6.00	Not Required	9.00	
	143	6665	Not Required	5.50	Not Required	5.50	Not Required	8.50	
	207	6985	Not Required	6.00	Not Required	6.00	Not Required	9.00	

< **2.4GHz Bluetooth** >

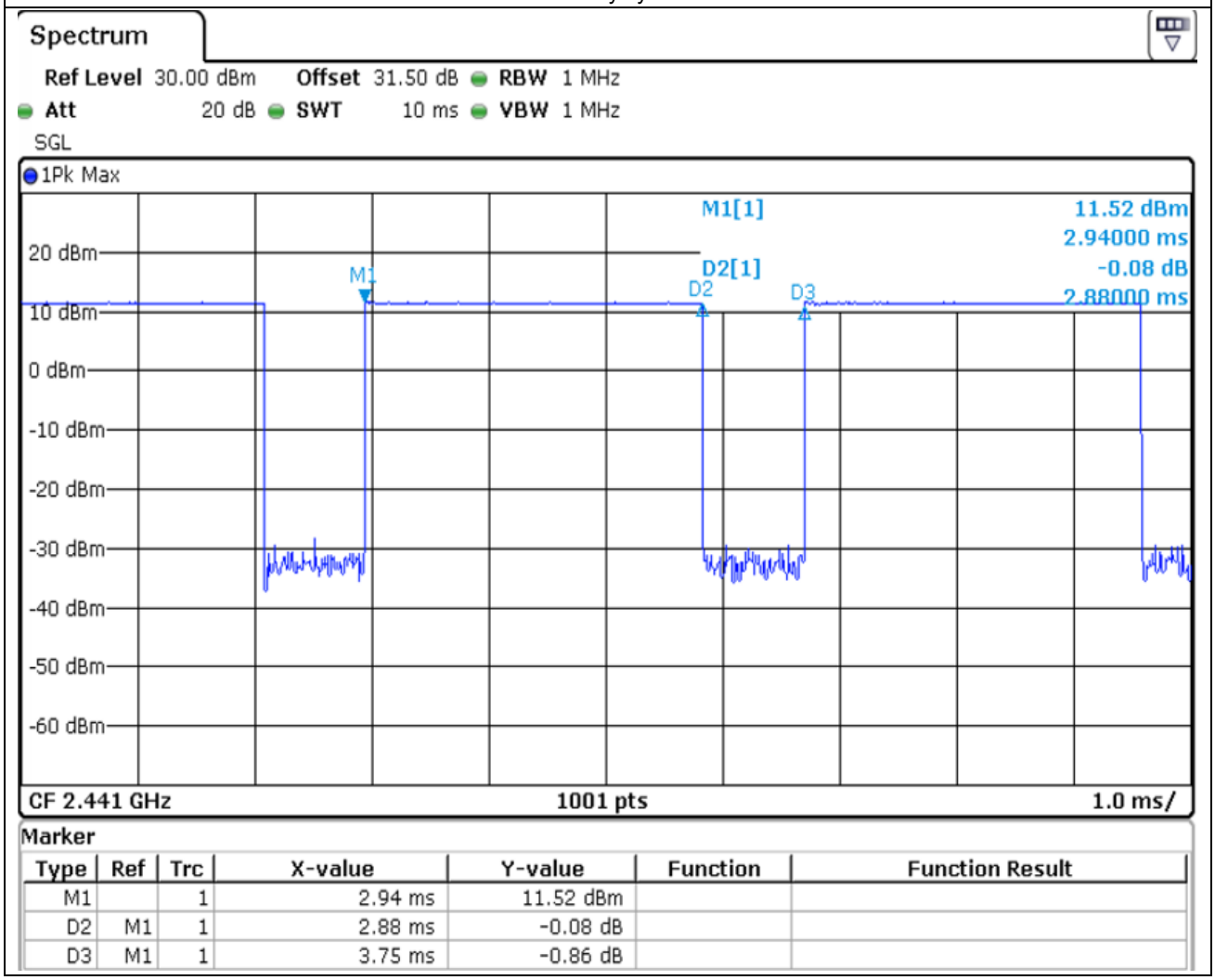
【Bluetooth】

			Aux		
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-Up Limit	Duty Cycle %
BR / EDR 1Mbps	0	2402	11.49	11.50	76.80
	39	2441	11.42	11.50	
	78	2480	11.48	11.50	
BR / EDR 2Mbps	0	2402	Not Required	8.50	Not Required
	39	2441	Not Required	8.50	
	78	2480	Not Required	8.50	
BR / EDR 3Mbps	0	2402	Not Required	8.50	Not Required
	39	2441	Not Required	8.50	
	78	2480	Not Required	8.50	
LE 1Mbps	0	2402	Not Required	11.50	Not Required
	19	2440	Not Required	11.50	
	39	2480	Not Required	11.50	
LE 2Mbps	0	2402	Not Required	11.50	Not Required
	19	2440	Not Required	11.50	
	39	2480	Not Required	11.50	

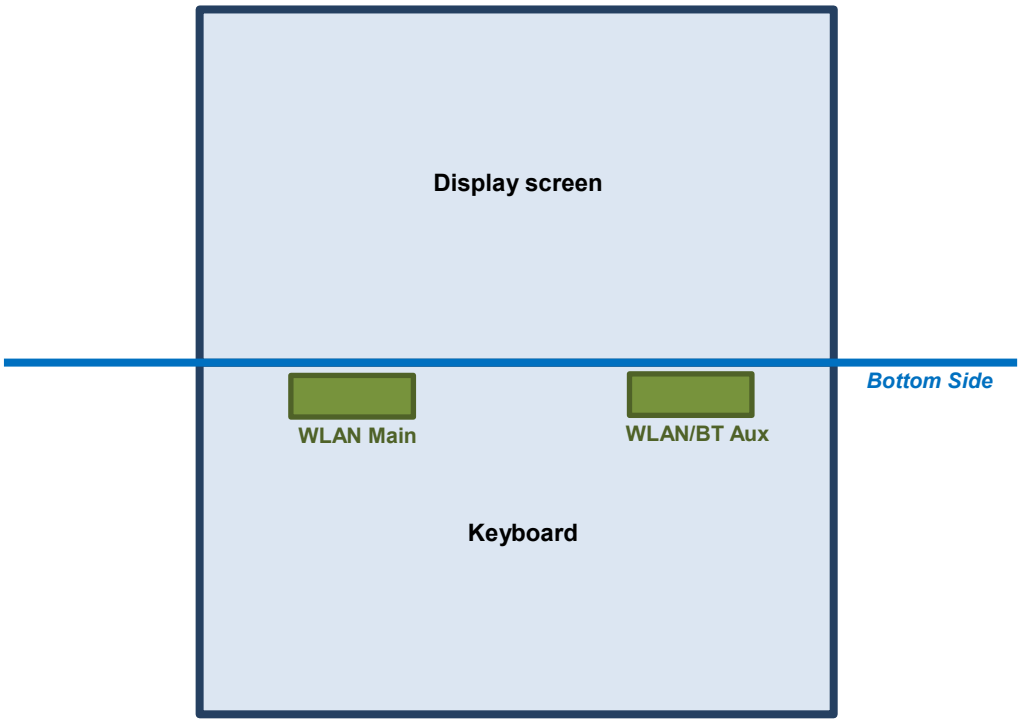
General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps due to its highest average power and duty cycle is 76.80% considered in SAR testing, and the duty cycle would be scaled to theoretical 83.3% in reported SAR calculation.

BT Duty cycle



12. Antenna Location



The separation distance for antenna to edge :

Antenna	To Bottom Side (mm)
WLAN Main Antenna	6.2
WLAN/BT Aux Antenna	6.2

13. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 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
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, WLAN5.2GHz SAR testing is not required for hotspot and body-worn condition when the WLAN5.3GHz band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for WLAN5.2GHz band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. For WLAN SAR testing was performed on single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode.
6. Per KDB 248227 D01v02r02, the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6W/kg and SAR peak to location ratio ≤ 0.04, no additional SAR measurements for MIMO.
7. During SAR testing, the WLAN transmit signal was continuously monitored using a spectrum analyzer to ensure continuous and stable signal output throughout the measurement.

WLAN PD Note:

1. The WiFi 6E PD was performed according 2020 TCB workshop RF Exposure 5G RFX Policies Interim Procedures.
2. First, evaluate SAR using 6-7 GHz parameters per IEC/IEEE 62209-1528:2020 and evaluate incident PD using the mmw near-field probe and total-field/power-density reconstruction method.
3. Per Interim Procedures. The power density results were scaled according to IEC 62479:2010 for the portion of the measurement uncertainty > 30%. Total expanded uncertainty of 2.68 dB (85.4%) was used to determine the psPD measurement scaling factor
4. The manufacturer has confirmed that the devices tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. The WiFi 6E RF Exposure results are used for simultaneous transmission analysis with the other transmitters and total exposure ratio, the analysis can be found in this report section 14.
6. Absorbed power density (APD) using a 4cm2 averaging area is reported based on SAR measurements.
7. Power density was calculated by repeated E-field measurements on two measurement planes separated by λ/4.
8. The device was 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.
9. The measurement procedure consists of measuring the PDinc at two different distances: 2 mm (compliance distance) and λ/5. The grid extents should be large enough to fully capture the transmitted energy. The grid step should be fine enough to demonstrate that the integrated Power Density iPDn fulfill the criterion described below. Since iPD ratio between the two distances is ≥ -1dB, the grid step (0.0625) was sufficient for determining compliance at d=2mm.

$$10 \cdot log_{10} \frac{iPD_n(2mm)}{iPD_n(\lambda/5)} \geq -1$$

13.1 Body SAR

【WLAN 2.4GHz_5GHz SAR】

Plot No	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-Up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
01	WLAN2.4GHz	802.11b 1Mbps	Bottom Side	0mm	Main	1	2412	Innowave	16.96	18.00	1.271	99.69	1.003	-0.04	0.511	0.651
	WLAN2.4GHz	802.11b 1Mbps	Bottom Side	0mm	Main	1	2412	ICT	16.96	18.00	1.271	99.69	1.003	-0.03	0.506	0.645
	WLAN2.4GHz	802.11b 1Mbps	Bottom Side	0mm	Aux	6	2437	Innowave	16.57	18.00	1.39	99.68	1.003	-0.13	0.433	0.604
	WLAN2.4GHz	802.11b 1Mbps	Bottom Side	0mm	Aux	6	2437	ICT	16.57	18.00	1.39	99.68	1.003	0.03	0.303	0.422
02	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Side	0mm	Main	58	5290	Innowave	14.20	14.50	1.072	90.5	1.105	-0.11	0.716	0.848
	WLAN5GHz	802.11n-HT40 MCS0	Bottom Side	0mm	Main	62	5310	Innowave	14.36	14.50	1.033	90.5	1.105	0.12	0.738	0.842
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Side	0mm	Main	58	5290	ICT	14.20	14.50	1.072	90.5	1.105	0.16	0.610	0.723
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Side	0mm	Aux	58	5290	Innowave	14.10	14.50	1.096	90.5	1.105	-0.05	0.311	0.377
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Side	0mm	Aux	58	5290	ICT	14.10	14.50	1.096	90.5	1.105	-0.15	0.303	0.367
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Side	0mm	Main	138	5690	Innowave	14.46	14.50	1.009	90.5	1.105	-0.17	0.724	0.807
03	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Side	0mm	Main	106	5530	Innowave	14.26	14.50	1.057	90.5	1.105	0.03	0.744	0.869
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Side	0mm	Main	122	5610	Innowave	14.12	14.50	1.091	90.5	1.105	-0.03	0.685	0.826
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Side	0mm	Main	106	5530	ICT	14.26	14.50	1.057	90.5	1.105	-0.16	0.610	0.712
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Side	0mm	Aux	138	5690	Innowave	14.41	14.50	1.021	90.5	1.105	-0.03	0.674	0.760
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Side	0mm	Aux	138	5690	ICT	14.41	14.50	1.021	90.5	1.105	0.14	0.673	0.759
04	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Side	0mm	Main	155	5775	Innowave	13.47	13.50	1.007	90.5	1.105	-0.01	0.575	0.640
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Side	0mm	Main	155	5775	ICT	13.47	13.50	1.007	90.5	1.105	0.15	0.543	0.604
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Side	0mm	Aux	155	5775	Innowave	13.43	13.50	1.016	90.5	1.105	-0.11	0.530	0.595
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Side	0mm	Aux	155	5775	ICT	13.43	13.50	1.016	90.5	1.105	0.17	0.516	0.579
05	WLAN5GHz	802.11ac-VHT160 MCS0	Bottom Side	0mm	Main	163	5815	Innowave	13.47	13.50	1.007	90.53	1.105	-0.05	0.589	0.655
	WLAN5GHz	802.11ac-VHT160 MCS0	Bottom Side	0mm	Main	163	5815	ICT	13.47	13.50	1.007	90.53	1.105	-0.01	0.563	0.626
	WLAN5GHz	802.11ac-VHT160 MCS0	Bottom Side	0mm	Aux	163	5815	Innowave	13.43	13.50	1.016	90.53	1.105	-0.08	0.521	0.585
	WLAN5GHz	802.11ac-VHT160 MCS0	Bottom Side	0mm	Aux	163	5815	ICT	13.43	13.50	1.016	90.53	1.105	0.04	0.514	0.577

【WLAN 6GHz SAR】

Plot No	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-Up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Measured APD (W/m²)	Reported APD (W/m²)
	WLAN6GHz	802.11ax-HE160 MCS0	Bottom Side	0mm	Main	15	6025	Innowave	12.87	13.00	1.03	89.76	1.114	0.15	0.416	0.477	3.450	3.959
	WLAN6GHz	802.11ax-HE160 MCS0	Bottom Side	0mm	Main	47	6185	Innowave	12.79	13.00	1.05	89.76	1.114	0.14	0.356	0.416	2.880	3.369
	WLAN6GHz	802.11ax-HE160 MCS0	Bottom Side	0mm	Main	111	6505	Innowave	12.19	12.50	1.074	89.76	1.114	0.12	0.363	0.434	2.830	3.386
	WLAN6GHz	802.11ax-HE160 MCS0	Bottom Side	0mm	Main	143	6665	Innowave	12.69	13.00	1.074	89.76	1.114	-0.12	0.397	0.475	3.100	3.709
	WLAN6GHz	802.11ax-HE160 MCS0	Bottom Side	0mm	Main	207	6985	Innowave	11.35	11.50	1.035	89.76	1.114	-0.17	0.237	0.273	1.680	1.937
06	WLAN6GHz	802.11ax-HE160 MCS0	Bottom Side	0mm	Main	15	6025	ICT	12.87	13.00	1.03	89.76	1.114	0.07	0.542	0.622	4.580	5.255
	WLAN6GHz	802.11ax-HE160 MCS0	Bottom Side	0mm	Aux	15	6025	Innowave	12.92	13.00	1.019	89.73	1.114	-0.17	0.377	0.428	2.970	3.371
	WLAN6GHz	802.11ax-HE160 MCS0	Bottom Side	0mm	Aux	47	6185	Innowave	12.56	13.00	1.107	89.73	1.114	0.19	0.332	0.409	2.600	3.206
	WLAN6GHz	802.11ax-HE160 MCS0	Bottom Side	0mm	Aux	111	6505	Innowave	12.32	12.50	1.042	89.73	1.114	0.11	0.375	0.435	3.240	3.761
	WLAN6GHz	802.11ax-HE160 MCS0	Bottom Side	0mm	Aux	143	6665	Innowave	12.91	13.00	1.021	89.73	1.114	0.02	0.509	0.579	4.240	4.823
	WLAN6GHz	802.11ax-HE160 MCS0	Bottom Side	0mm	Aux	207	6985	Innowave	11.38	11.50	1.028	89.73	1.114	0.13	0.381	0.436	2.900	3.321
	WLAN6GHz	802.11ax-HE160 MCS0	Bottom Side	0mm	Aux	143	6665	ICT	12.91	13.00	1.021	89.73	1.114	-0.11	0.478	0.544	4.100	4.663

【Bluetooth SAR】

Plot No	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-Up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
07	Bluetooth	BR / EDR 1Mbps	Bottom Side	0mm	Aux	0	2402	Innowave	11.49	11.50	1.002	76.8	1.085	-0.12	0.075	0.082
	Bluetooth	BR / EDR 1Mbps	Bottom Side	0mm	Aux	0	2402	ICT	11.49	11.50	1.002	76.8	1.085	0.13	0.061	0.066

13.2 6GHz PD Test Result

Band	Mode	Test Position	Gap (mm)	Antenna	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Grid Step (λ)	iPDn	iPD ratio (≥ -1)	Normal psPD (W/m^2)	Total psPD (W/m^2)
WLAN6GHz	802.11ax-HE160 MCS0	Bottom Side	2mm	Aux	Innowave	15	6025	12.92	0.0625	1.93	-0.56865372	1.57	1.71
WLAN6GHz	802.11ax-HE160 MCS0	Bottom Side	10mm	Aux	Innowave	15	6025	12.92	0.25	2.2		1.02	1.06
WLAN6GHz	802.11ax-HE160 MCS0	Bottom Side	2mm	Aux	Innowave	207	6985	11.38	0.0625	1.14	-0.73428917	1.57	1.75
WLAN6GHz	802.11ax-HE160 MCS0	Bottom Side	8.59mm	Aux	Innowave	207	6985	11.38	0.25	1.35		1.05	1.2

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Grid Step (λ)	Scaling Factor for Measurement Uncertainty	Power Drift (dB)	Normal psPD (W/m^2)	Scaled Normal psPD (W/m^2)	Total psPD (W/m^2)	Scaled Total psPD (W/m^2)
	WLAN6GHz	802.11ax-HE160 MCS0	Bottom Side	2mm	Main	ICT	15	6025	12.87	13.00	1.030	89.76	1.114	0.0625	1.5535	0.16	1.75	3.12	2.3	4.10
01	WLAN6GHz	802.11ax-HE160 MCS0	Bottom Side	2mm	Aux	Innowave	143	6665	12.91	13.00	1.021	89.73	1.114	0.0625	1.5535	-0.05	3.38	5.97	3.85	6.80

14. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Body
1.	2.4GHz WLAN Main + 2.4GHz WLAN Aux	Yes
2.	5/6GHz WLAN Main + Bluetooth Aux + Bluetooth Aux	Yes

General Note:

1. The worst case WLAN reported SAR for each configuration was used for SAR summation. Therefore, the following summations represent the absolute worst cases for simultaneous transmission with WLAN.
2. The Scaled SAR summation is calculated based on the same configuration and test position.
3. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1g 1.6W/kg or 10g 4.0W/kg.
   ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
   iii) If SPLSR ≤ 0.04 for 1g SAR, ≤ 0.1 for 10g SAR, simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg or 10g SAR < 4.0W/kg.
   v) Simultaneously transmission SAR measurement, and the reported multi-band SAR＜1.6W/kg.
   vi) The SPLSR calculated results please refer to section 14.2.

14.1 Body Exposure Conditions

Exposure Position	1	2	3	4	5	1+2 Summed 1g SAR (W/kg)	3+4+5 Summed 1g SAR (W/kg)	3+4+5 SPLSR	3+4+5 Case No.
	2.4GHz WLAN Main	2.4GHz WLAN Aux	5/6GHz WLAN Main	5/6GHz WLAN Aux	Bluetooth Aux				
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)				
Bottom Side at 0mm	0.651	0.604	0.869	0.760	0.082	1.255	1.711	0.030	Case 1

14.2 SPLSR Evaluation and Analysis

General Note:

1. Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneously transmitting antenna. When the sum of 1-g or 10-g SAR of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit, SAR test exclusion applies to that simultaneous transmission configuration. Therefore, the adjacent transmit antennas will be summed first, and then the SPLSR calculation will be evaluated with the farther transmitted antennas.
2. SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*). If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary

Case 1	Band	Position	SAR (W/kg)	SAR Peak Location (mm)			3D Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				X	Y	Z				
	5/6GHz WLAN Main	Bottom Side at 0mm	0.869	100.3	47.7	-177.0	76.5	1.71	0.03	Not required
	5/6GHz WLAN Aux+Bluetooth Aux	Bottom Side at 0mm	0.842	102.2	-28.8	-177.0				

Test Engineer： Lev Lo and Barry Huang

15. Uncertainty Assessment

Declaration of Conformity:
The test results with all measurement uncertainty excluded is presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

The component of uncertainly may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainly by the statistical analysis of a series of observations is termed a Type An evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor[(a)]	1/k[(b)]	$1/\sqrt{3}$	$1/\sqrt{6}$	$1/\sqrt{2}$

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b) κ is the coverage factor

Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

The judgment of conformity in the report is based on the measurement results excluding the measurement uncertainty.

Applicable for SAR Measurements:

Uncertainty Budget (4 MHz - 10 GHz range)							
Error Description	Uncertainty Value (±%)	Probability	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	18.60	N	2	1	1	9.3	9.3
Axial Isotropy	4.70	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.60	R	1.732	0.7	0.7	3.9	3.9
Linearity	4.70	R	1.732	1	1	2.7	2.7
Modulation Response	4.68	R	1.732	1	1	2.7	2.7
System Detection Limits	1.00	R	1.732	1	1	0.6	0.6
Boundary Effects	2.00	R	1.732	1	1	1.2	1.2
Readout Electronics	0.30	N	1	1	1	0.3	0.3
Response Time	0.00	R	1.732	1	1	0.0	0.0
Integration Time	2.60	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.00	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.00	R	1.732	1	1	1.7	1.7
Probe Positioner	0.40	R	1.732	1	1	0.2	0.2
Probe Positioning	6.70	R	1.732	1	1	3.9	3.9
Post-processing	4.00	R	1.732	1	1	2.3	2.3
Test Sample Related							
Device Holder	3.60	N	1	1	1	3.6	3.6
Test sample Positioning	3.03	N	1	1	1	3.0	3.0
Power Scaling	0.00	R	1.732	1	1	0.0	0.0
Power Drift	5.00	R	1.732	1	1	2.9	2.9
Phantom and Setup							
Phantom Uncertainty	7.60	R	1.732	1	1	4.4	4.4
SAR correction	0.00	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.03	N	1	0.78	0.77	0.0	0.0
Liquid Conductivity (target)	5.00	R	1.732	0.78	0.77	2.3	2.2
Liquid Conductivity (mea.)	2.50	R	1.732	0.78	0.77	1.1	1.1
Temp. unc. - Conductivity	3.68	R	1.732	0.78	0.77	1.7	1.6
Liquid Permittivity Repeatability	0.02	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.00	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.50	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.84	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						14.5%	14.2%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						29.0%	28.4%

Applicable for Power Density Measurements:

Error Description	Uncertainty Value (±dB)	Probability	Divisor	(Ci)	Standard Uncertainty (±dB)
Probe Calibration	0.49	N	1	1	0.49
Probe correction	0.00	R	1.732	1	0.00
Frequency response (BW ≤ 1 GHz)	0.20	R	1.732	1	0.12
Sensor cross coupling	0.00	R	1.732	1	0.00
Isotropy	0.50	R	1.732	1	0.29
Linearity	0.20	R	1.732	1	0.12
Probe scattering	0.00	R	1.732	1	0.00
Probe positioning offset	0.30	R	1.732	1	0.17
Probe positioning repeatability	0.04	R	1.732	1	0.02
Sensor mechanical offset	0.00	R	1.732	1	0.00
Probe spatial resolution	0.00	R	1.732	1	0.00
Field impedance dependance	0.00	R	1.732	1	0.00
Amplitude and phase drift	0.00	R	1.732	1	0.00
Amplitude and phase noise	0.04	R	1.732	1	0.02
Measurement area truncation	0.00	R	1.732	1	0.00
Data acquisition	0.03	N	1	1	0.03
Sampling	0.00	R	1.732	1	0.00
Field reconstruction	2.00	R	1.732	1	1.15
Forward transformation	0.00	R	1.732	1	0.00
Power density scaling	0.00	R	1.732	1	0.00
Spatial averaging	0.10	R	1.732	1	0.06
System detection limit	0.04	R	1.732	1	0.02
Uncertainty terms dep endent on the DUT and environmental factors					
Probe coupling with DUT	0.00	R	1.732	1	0.0
Modulation response	0.40	R	1.732	1	0.2
Integration time	0.00	R	1.732	1	0.0
Response time	0.00	R	1.732	1	0.0
Device holder influence	0.10	R	1.732	1	0.1
DUT alignment	0.00	R	1.732	1	0.0
RF ambient conditions	0.04	R	1.732	1	0.0
Ambient reflections	0.04	R	1.732	1	0.0
Immunity / secondary reception	0.00	R	1.732	1	0.0
Drift of the DUT		R	1.732	1	
Combined Std. Uncertainty					1.34
Expanded STD Uncertainty (95%)					**2.68**

16. References

[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] 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”, Sep 2013

[4] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

[5] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015

[6] FCC KDB 616217 D04 v01r02, “SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers”, Oct 2015

[7] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.

[8] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.

[9] 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 procedures (Frequency range of 4 MHz to 10 GHz)”, Oct. 2020

[10] SPEAG DASY6 System Handbook

[11] SPEAG DASY6 Application Note (Interim Procedure for Device Operation at 6GHz-10GHz)