

FCC PART 15.247

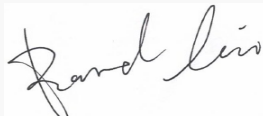
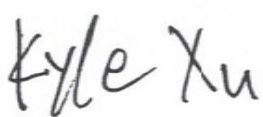
TEST REPORT

For

Tersus GNSS Inc.

Rm 601, Bldg E2, No. 88, Jinjihu Ave, Suzhou, China

FCC ID: 2AMDJ-TS21

Report Type: Original Report	Product Name: GNSS Receiver
Report Number: RSHA250514001-00B	
Report Date: 2025-12-29	
Reviewed By:	Bard Liu 
Approved By:	Kyle Xu 
Test Laboratory: Bay Area Compliance Laboratories Corp. (Kunshan) No.248 Chenghu Road, Kunshan, Jiangsu Province, China Tel: +86-512-86175000 Fax: +86-512-88934268 www.baclcorp.com.cn	

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Kunshan). This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, or any agency of the U.S. Government.

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REPORT REVISION HISTORY

Number of Revisions	Report No.	Version	Issue Date	Description
0	RSHA250514001-00B	R1V1	2025-12-29	Initial Release

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant:	Tersus GNSS Inc.
Tested Model:	TS21
Series Model:	TS20
Model Difference:	TS21 has two cameras, TS20 has one camera
Product Name:	GNSS Receiver
Power Supply:	DC 5V from adapter or DC 7.4V from battery
RF Function:	2.4G Wi-Fi
Operating Band/Frequency:	2412-2462 MHz(802.11b/g/n20), 2422-2452 MHz(802.11n40)
Maximum Peak Output Power:	802.11b: 11.345 dBm 802.11g: 13.767 dBm 802.11n20: 12.854 dBm 802.11n40: 13.130 dBm
Channel Number:	2.4G Wi-Fi: 11(802.11b/g/n20), 7(802.11n40)
Channel Separation:	5 MHz
Modulation Type:	DSSS, OFDM
Antenna Type	PCB Antenna
★Maximum Antenna Gain:	1.33 dBi
Sample/EUT Status	Good condition

Adapter Information:

Model: QL015-0503000U1

Input: 100-240V, 50/60Hz, 0.5A

Output: 5.0V, 3.0A

Note: The maximum antenna gain was declared by the manufacturer, after pre-scan, the model TS21 is the worst, only the worst data is recorded in the report.

All measurement and test data in this report was gathered from production sample serial number: RSHA250514001-1 (Assigned by the BACL (Kunshan). The EUT supplied by the applicant was received on 2025-05-14.)

Objective

This report is prepared for *Tersus GNSS Inc.* in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commissions' rules.

The tests were performed in order to determine Compliant with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2020, American National Standard of Procedures for Compliant Testing of Unlicensed Wireless Devices and FCC 558074 D01 15.247 Meas Guidance v05r02.

Measurement Uncertainty

Item		Uncertainty
AC Power Lines Conducted Emissions		3.19dB
RF conducted test with spectrum		0.9dB
RF Output Power with Power meter		0.5dB
Radiated emission	9 kHz~150 kHz	3.8dB
	150 kHz~30 MHz	3.4dB
	30MHz~1GHz	6.11dB
	1GHz~6GHz	4.45dB
	6GHz~18GHz	5.23dB
	18GHz~40GHz	5.65dB
Occupied Bandwidth		0.5kHz
Temperature		1.0°C
Humidity		6%

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu Province, China.

Bay Area Compliance Laboratories Corp. (Kunshan) is accredited in accordance with ISO/IEC 17025:2017 by NVLAP (Lab code: 600338-0), and the lab has been recognized as the FCC accredited lab under the KDB 974614 D01, the FCC Designation No.: CN5055.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

Channel List for Wi-Fi Mode:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437	/	/

For 802.11b, 802.11g and 802.11n-HT20 mode, EUT was tested with Channel 1, 6 and 11.

For 802.11n-HT40 mode, EUT was tested with Channel 3, 6 and 9.

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

The system was configured for testing in an engineering mode, which was provided by manufacturer

RF test software: QRCT 3

Pre-scan with all the data rates, and the worst case was performed as below:

Mode	Data Rate	Channel	★Power Level
802.11b	1 Mbps	Low	14
		Middle	14
		High	14
802.11g	6 Mbps	Low	14
		Middle	14
		High	14
802.11n-HT20	MCS0	Low	13
		Middle	13
		High	13
802.11n-HT40	MCS0	Low	11
		Middle	11
		High	11

Note: The power level was declared by the applicant.

Environmental Conditions & Test Information

Test Date:	2025-06-20 to 2025-06-21
Temperature:	22.5-23.1 °C
Relative Humidity:	50-51 %
ATM Pressure:	100.2-100.7 kPa
Test Engineer:	Neil Zhou

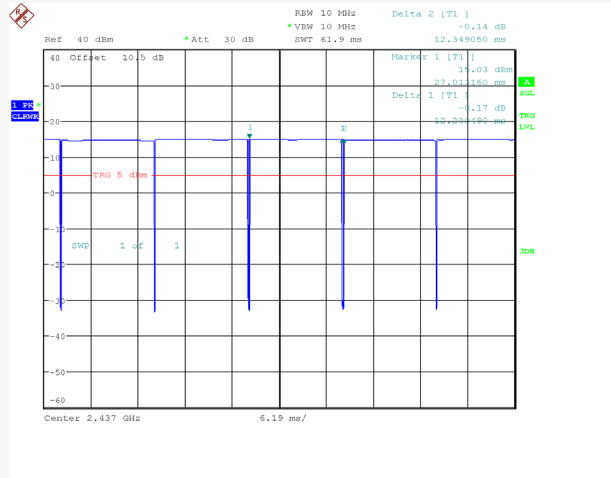
Mode	Duty Cycle (%)	Ton(ms)	Ton+off(ms)	$10\log(1/x)$ (dB)
802.11b	98.79	12.200	12.349	/
802.11g	97.49	2.017	2.069	0.11
802.11n-HT20	98.03	1.887	1.925	/
802.11n-HT40	94.26	0.919	0.975	0.26

Note:

1. “x” means the Duty Cycle.
2. Note: Offset (10.5dB) = Attenuator (10dB) + Cable Loss (0.5dB)

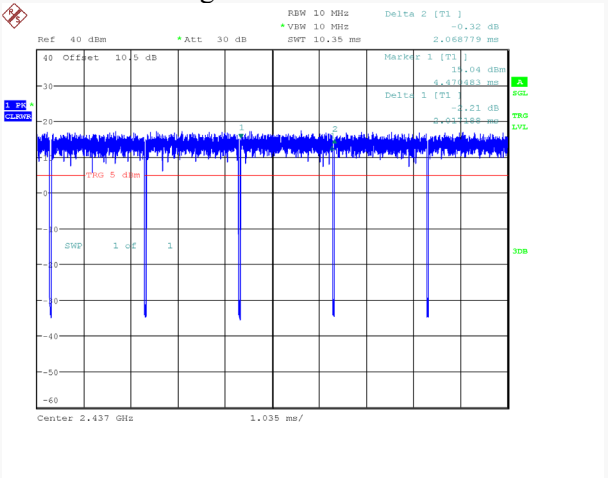
Duty Cycle:

802.11b Mode Middle Channel



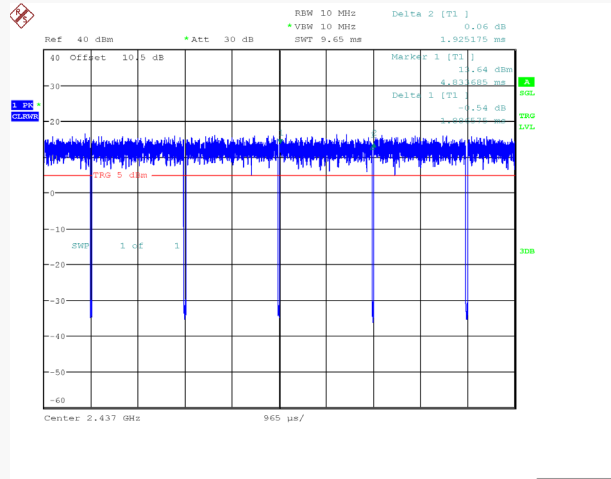
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Date: 20.JUN.2025 16:37:05

802.11g Mode Middle Channel



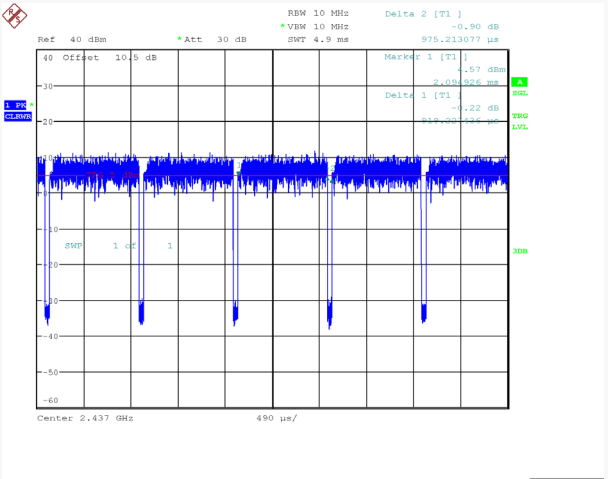
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Date: 20.JUN.2025 17:17:08

802.11n-HT20 Mode Middle Channel



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Date: 21.JUN.2025 10:21:05

802.11n-HT40 Mode Middle Channel



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Date: 21.JUN.2025 11:26:50

Support Equipment List and Details

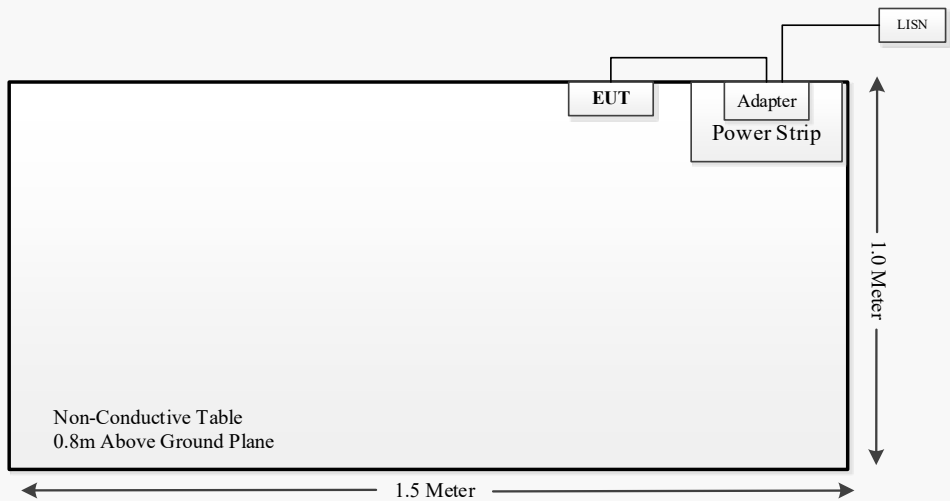
Manufacturer	Description	Model	Serial Number
/	Power Strip	/	/

External I/O Cable

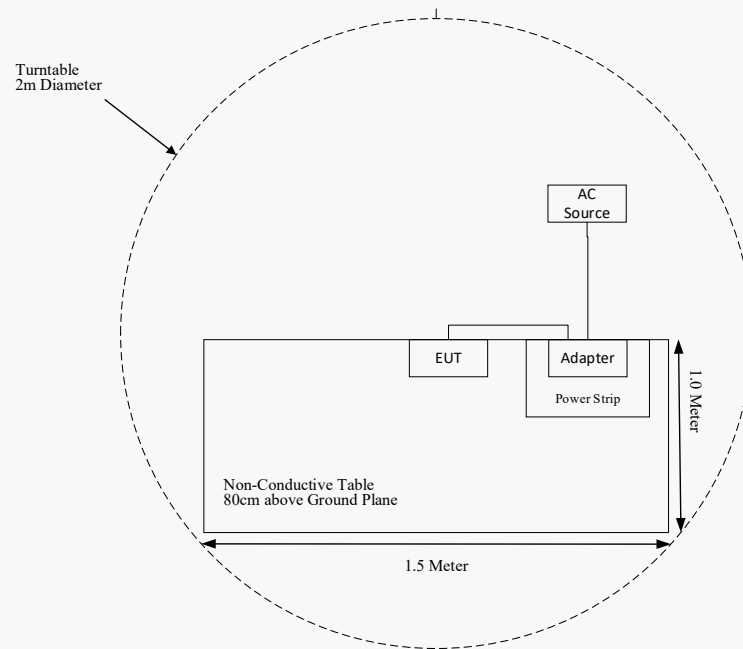
Cable Description	Length (m)	From Port	To Port
Power Cable 1	1.0	AC Source/LISN	Power Strip
Power Cable 2	1.0	Adapter	EUT

Block Diagram of Test Setup

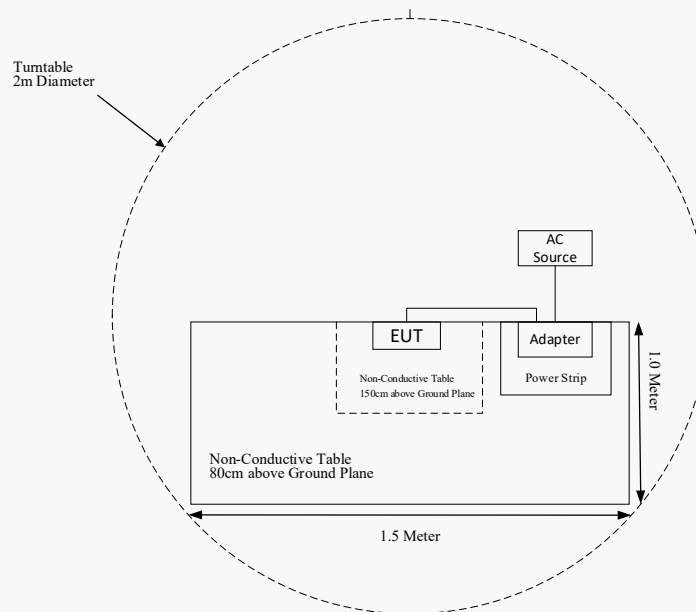
For Conducted Emissions:



For Radiated Emissions (Below 1GHz):



For Radiated Emissions (Above 1GHz):



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310 & §2.1091	MAXIMUM PERMISSIBLE EXPOSURE (MPE)	Compliant
§15.203	Antenna Requirement	Compliant
§15.207 (a)	AC Line Conducted Emissions	Compliant
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliant
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliant
§15.247(b)(3)	Maximum Conducted Output Power	Compliant
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliant
§15.247(d)	Conducted Spurious Emission	Compliant
§15.247(e)	Power Spectral Density	Compliant

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test (Chamber #1)					
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2025-04-09	2026-04-08
Sunol Sciences	Broadband Antenna	JB3	A090314-1	2024-11-08	2027-11-07
Narda	6dB Attenuator	773-6	10690812-2-1	2024-11-08	2027-11-07
BACL	Active Loop Antenna	1313-1A	4041511	2024-11-22	2027-11-21
Sonoma Instrument	Pre-amplifier	310N	171205	2025-04-09	2026-04-08
Rohde & Schwarz	Auto Test Software	EMC32	100361	N/A	N/A
MICRO-COAX	Coaxial Cable	Cable-8	008	2025-04-09	2026-04-08
MICRO-COAX	Coaxial Cable	Cable-9	009	2025-04-09	2026-04-08
MICRO-COAX	Coaxial Cable	Cable-10	010	2025-04-09	2026-04-08
Radiated Emission Test (Chamber #2)					
Rohde & Schwarz	EMI Test Receiver	ESU40	100207/040	2025-04-09	2026-04-08
ETS-LINDGREN	Horn Antenna	3115	9311-4159	2024-12-02	2025-12-01
ETS-LINDGREN	Horn Antenna	3116	2516	2024-12-12	2027-12-11
A.H.Systems, inc	Amplifier	PAM-0118P	512	2025-04-09	2026-04-08
SELECTOR	Amplifier	EM18G40G	060726	2025-04-09	2026-04-08
MICRO-TRONICS	Band Reject Filter	BRM50702	G024	2025-04-08	2026-04-07
Narda	Attenuator	10dB	010	2025-04-08	2026-04-07
Rohde & Schwarz	Auto test Software	EMC32	100361	N/A	N/A
MICRO-COAX	Coaxial Cable	Cable-6	006	2025-04-09	2026-04-08
MICRO-COAX	Coaxial Cable	Cable-11	011	2025-04-09	2026-04-08
MICRO-COAX	Coaxial Cable	Cable-12	012	2025-04-09	2026-04-08
MICRO-COAX	Coaxial Cable	Cable-13	013	2025-04-09	2026-04-08
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSU26	200103	2025-04-09	2026-04-08
Narda	Attenuator	10dB	010	2025-04-08	2026-04-07
XHFDZ	RG316 Coaxial Cable	SMA-316	XHF-1175	Each time	N/A
Anritsu	Power Sensor	MA24418A	12621	2025-04-09	2026-04-08

Conducted Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2025-04-09	2026-04-08
Rohde & Schwarz	LISN	ENV216	101115	2025-04-08	2026-04-07
Audix	Test Software	e3	V9	N/A	N/A
Rohde & Schwarz	Pulse limiter	ESH3-Z2	100552	2025-04-08	2026-04-07
MICRO-COAX	Coaxial Cable	Cable-15	015	2025-04-08	2026-04-07

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §1.1310 & §2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart §2.1091 and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E , H or S (minutes)
0.3- 3.0	614	1.63	(100)*	6
3.0 - 30	1842/f	4.89/f	(900/f ²)*	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				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

Calculation Data:

General Population/Uncontrolled

Mode	Frequency Range (MHz)	Antenna Gain		Tune-up Output Power*		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)	MPE ratio
		(dBi)	(numeric)	(dBm)	(mW)				
2.4G Wi-Fi	2412-2462	1.33	1.36	14.0	25.12	20	0.0068	1.00	0.0068
BT	2402-2480	1.33	1.36	9.0	7.94	20	0.0021	1.00	0.0021
5G Wi-Fi	5150-5250	-1.32	0.74	8.0	6.31	20	0.0009	1.00	0.0009
	5725-5850	-2.61	0.55	11.0	12.59	20	0.0014	1.00	0.0014
LTE band 2	1850-1910	1.93	1.56	22.5	177.83	20	0.0552	1.0	0.0552
LTE band 4	1710-1755	-2.87	0.52	24.5	281.84	20	0.0292	1.0	0.0292
LTE band 5	824-849	-0.03	0.99	24.5	281.84	20	0.0557	0.5493	0.1014
LTE band 7	2500-2570	0.74	1.19	23.0	199.53	20	0.0472	1.0	0.0472
LTE band 25	1850-1915	1.93	1.56	25.0	316.23	20	0.0981	1.0	0.0981
LTE band 38	2570-2620	0.74	1.19	22.5	177.83	20	0.0421	1.0	0.0421
LTE band 41	2496-2690	0.74	1.19	23.0	199.53	20	0.0472	1.0	0.0472

Occupational/Controlled

Mode	Frequency Range (MHz)	Antenna Gain		★Tune-up Output Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)	MPE ratio
		(dBi)	(numeric)	(dBm)	(mW)				
UHF	410-470	4.29	2.69	33.00	1995.26	20	1.0658	1.3667	0.7798

Note:

- The target output powers are all declared by the Manufacturer.
- Wi-Fi, BT, WWAN and UHF can transmit simultaneously, the worst condition is as below:

$$\sum_i \frac{S_i}{S_{Limit,i}} = 0.0068 + 0.0021 + 0.1014 + 0.7798 = 0.8901 < 1.0$$

Result: The device meet FCC MPE at 20 cm distance.

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine Compliant with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

- a. Antenna must be permanently attached to the unit.
- b. Antenna must use a unique type of connector to attach to the EUT.
- c. Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT have a PCB antenna which permanently attached to the unit fulfill the requirement of this section. Please refer to the EUT photos.

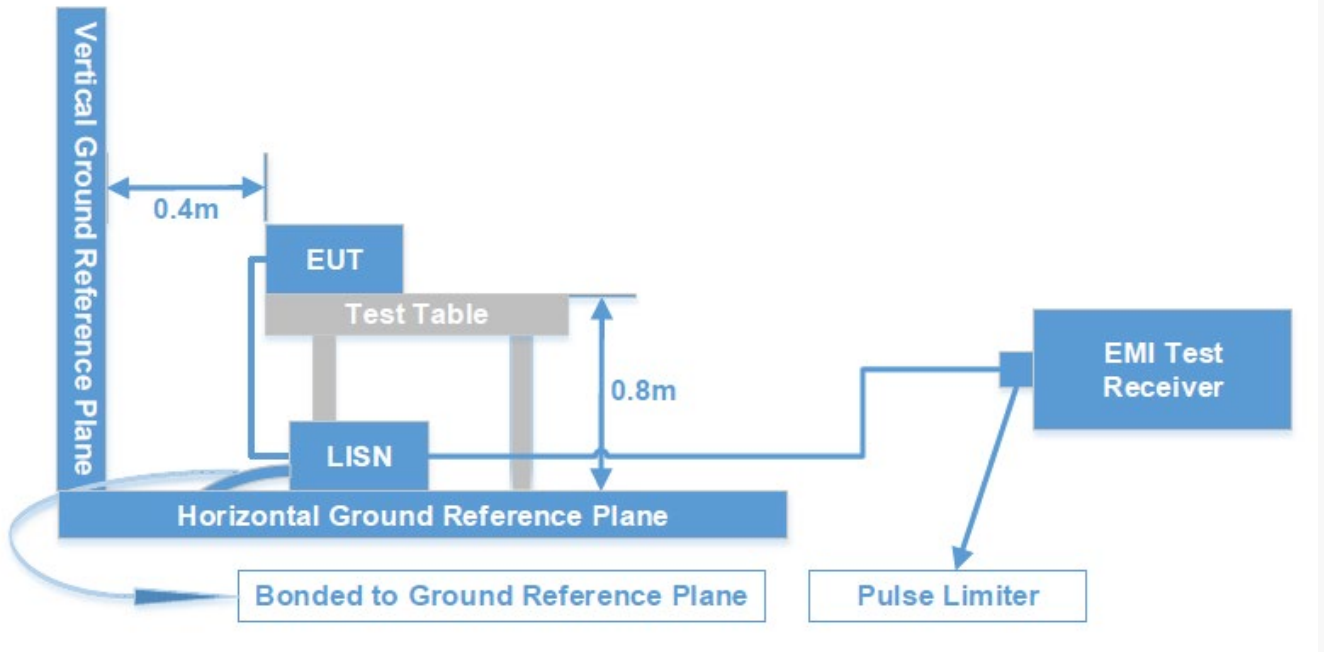
Result: Compliant.

FCC §15.207 (a) - AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207(a)

Test System Setup



The measurement procedure of EUT setup is according with ANSI C63.10-2020. The related limit was specified in FCC Part 15.207.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW
150 kHz - 30 MHz	9 kHz

Test Procedure

ANSI C63.10-2020 clause 6.2

During the conducted emission test, the EUT was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

If the maximum peak value of the emissions is below the average limit, the QP value and average value measurement will not need to be performed and only record the maximum peak measured value to meet the requirements.

Level & Over Limit Calculation

The Level is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation from the Meter Reading. The basic equation is as follows:

Factor (dB) = LISN VDF (dB) + Cable Loss (dB) + Transient Limiter Attenuation (dB)

Level (dBμV) = Read level (dBμV) + Factor (dB)

The “**Over Limit**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over Limit of 7 dB means the emission is 7 dB above the limit. The equation for Over Limit calculation is as follows:

Over Limit (dB) = Level (dBμV) - Limit (dBμV)

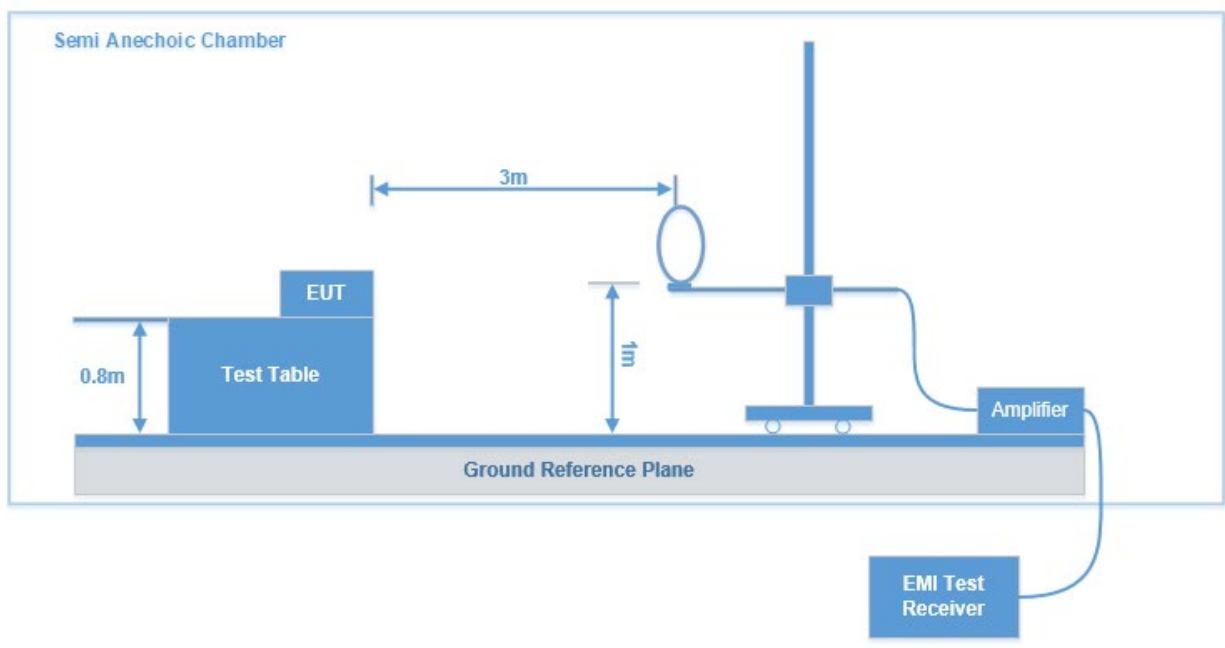
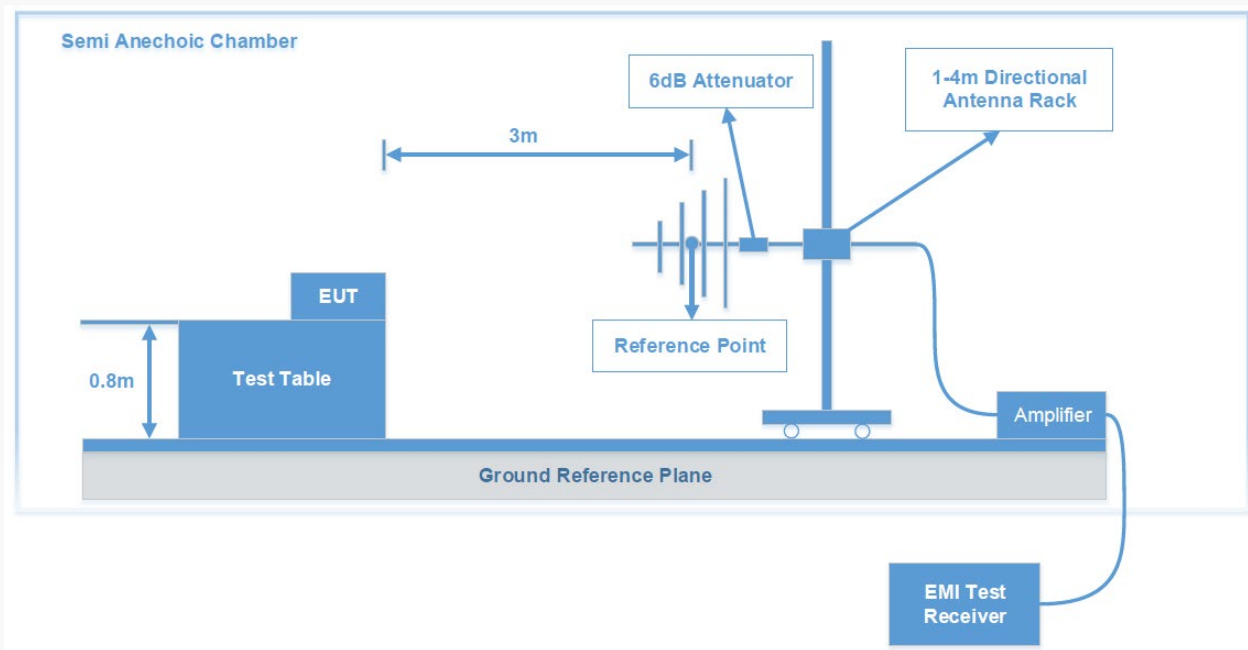
Test Results Summary

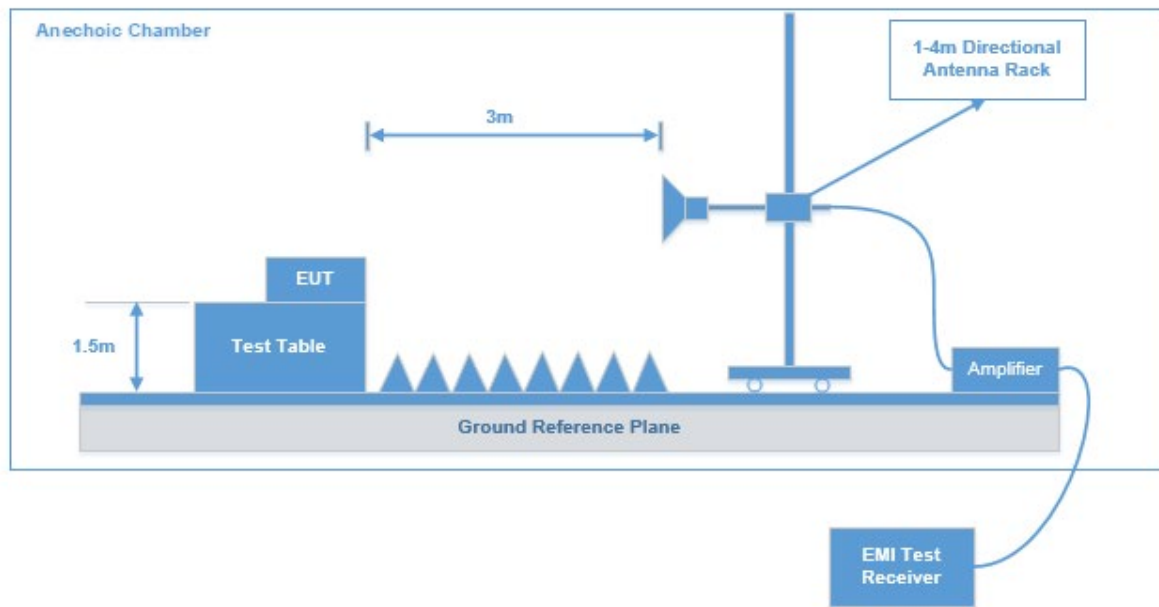
According to the recorded data in following table, the EUT complied with the FCC Part 15.207.

Test Data: See Appendix

FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS**Applicable Standard**

FCC §15.247 (d); §15.209; §15.205;

Test System Setup**9 kHz-30 MHz:****30 MHz-1 GHz:**

Above 1 GHz:

The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.10-2020. The specification used was the FCC 15.209, and FCC 15.247 limits.

EMI Test Receiver Setup

During the radiated emission test, the EMI test receiver setup was set with the following configurations:

Frequency Range	RBW	VBW	IF B/W	Measurement	Detector
9 kHz - 150 kHz	200 Hz	1 kHz	200 Hz	Peak/QP/Average	Peak/QP/Average
150 kHz - 30 MHz	9 kHz	30 kHz	9 kHz	Peak/QP/Average	Peak/QP/Average
30 MHz - 1000 MHz	100 kHz	300 kHz	/	Peak	Peak
	/	/	120 kHz	QP	QP
Above 1GHz	1MHz	3 MHz	/	Peak	Peak
	1MHz	3 MHz	/	Average	Average

Test Procedure

According to ANSI C63.10-2020 clause 6.4, 6.5 and 6.6.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

If the measured peak level of the emissions that the measuring receiver reading level plus corrected factor is at least 6 dB below the QP emission limit, there's no need to record the measured QP level of the emissions in the report.

For 9 kHz-30MHz test, the lowest height of the magnetic antenna shall be 1 m above the ground and three antenna orientations (parallel, perpendicular, and ground-parallel) shall be measured.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude (dB μ V/m) = Meter Reading (dB μ V) + Antenna Factor (dB/m) + Cable Loss (dB) - Amplifier Gain (dB)

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin (dB) = Limit (dB μ V/m) – Corrected Amplitude (dB μ V/m)

Note: The QuasiPeak (dB μ V/m), MaxPeak (dB μ V/m), Average (dB μ V/m) which shown in the data table are all Corrected Amplitude.

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, and Subpart C, section 15.205, 15.209 and 15.247.

Test Data: See Appendix

FCC §15.247(A) (2) - 6 DB EMISSION BANDWIDTH

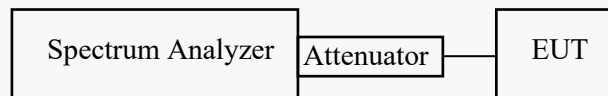
Applicable Standard

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Test Procedure

According to ANSI C63.10-2020 sub-clause 11.8.1

- a) Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz.
- b) Set the VBW $\geq [3 \times \text{RBW}]$.
- c) Detector = peak.
- d) Trace mode = max-hold.
- e) Sweep = No faster than coupled (auto) time.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission by placing two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “– 6 dB down amplitude” . If a marker is below this “– 6 dB down amplitude” value, then it shall be as close as possible to this value.



Note: Offset (10.5dB) = Attenuator (10dB) + Cable Loss (0.5dB)

Test Data: See Appendix

FCC §15.247(B) (3) - MAXIMUM CONDUCTED OUTPUT POWER

Applicable Standard

According to FCC §15.247(b) (3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, Compliant with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

Test Procedure

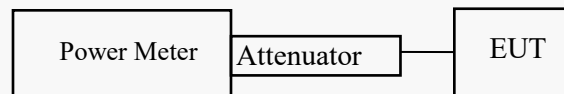
For 2.4G Wi-Fi:

According to ANSI C63.10-2020 sub-clause 11.9.1.2

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall use a fast-responding diode detector.

11.9.2.3.2 Method AVGPM-G

Method AVGPM-G is a measurement using a gated RF average power meter. Alternatively, measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Because the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.



Note: Offset (10.5dB) = Attenuator (10dB) + Cable Loss (0.5dB)

Test Data: See Appendix

FCC §15.247(D) – 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE & CONDUCTED SPURIOUS EMISSION

Band Edges

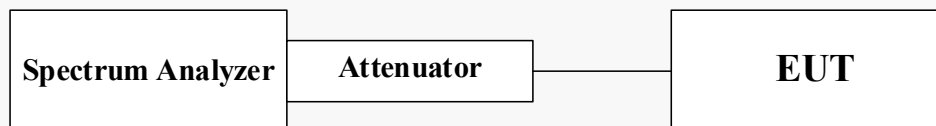
Applicable Standard

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates Compliant with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Procedure

According to ANSI C63.10-2020 sub-clause 6.10.

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.



Note: Offset (10.5dB) = Attenuator (10dB) + Cable Loss (0.5dB)

Conducted Spurious Emission

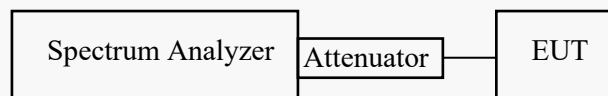
Applicable Standard

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Procedure

According to ANSI C63.10-2020 Section 11.11

- a) Set the center frequency and span to encompass frequency range to be measured
 - b) Set the RBW = 100 kHz.
 - c) Set the VBW $\geq [3 \times \text{RBW}]$.
 - d) Detector = peak.
 - e) Sweep time = No faster than coupled (auto) time.
 - f) Trace mode = max hold.
 - g) Allow trace to fully stabilize.
 - h) Use the peak marker function to determine the maximum amplitude level.
- Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.



Note: Offset (11dB) = Attenuator (10dB) + Cable Loss (1.0 dB)

Test Data: See Appendix

FCC §15.247(E) - POWER SPECTRAL DENSITY

Applicable Standard

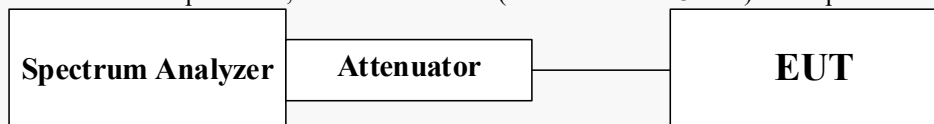
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

Test Procedure

According to ANSI C63.10-2020 sub-clause 11.10.2

The following procedure shall be used if maximum peak conducted output power was used to determine Compliant, and it is optional if the maximum conducted (average) output power was used to determine Compliant:

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span >1.5 times the DTS bandwidth.
- c) Set the RBW to $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- d) Set the VBW $\geq [3 \times \text{RBW}]$.
- e) Detector = peak.
- f) Sweep time = No faster than coupled (auto) time.
- g) Trace mode = max-hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.



Note: Offset (10.5dB) = Attenuator (10dB) + Cable Loss (0.5dB)

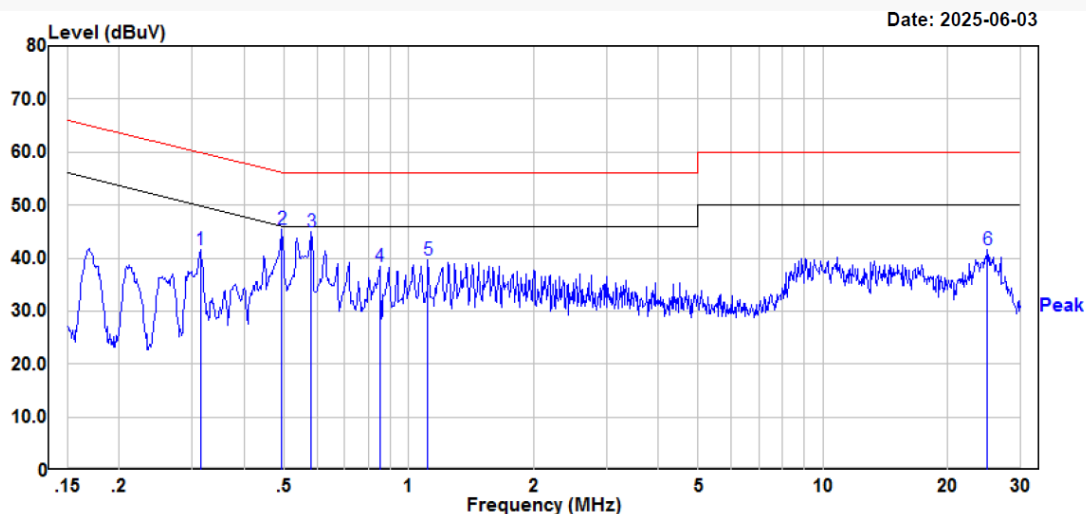
Test Data: See Appendix

APPENDIX - TEST DATA

AC LINE CONDUCTED EMISSIONS

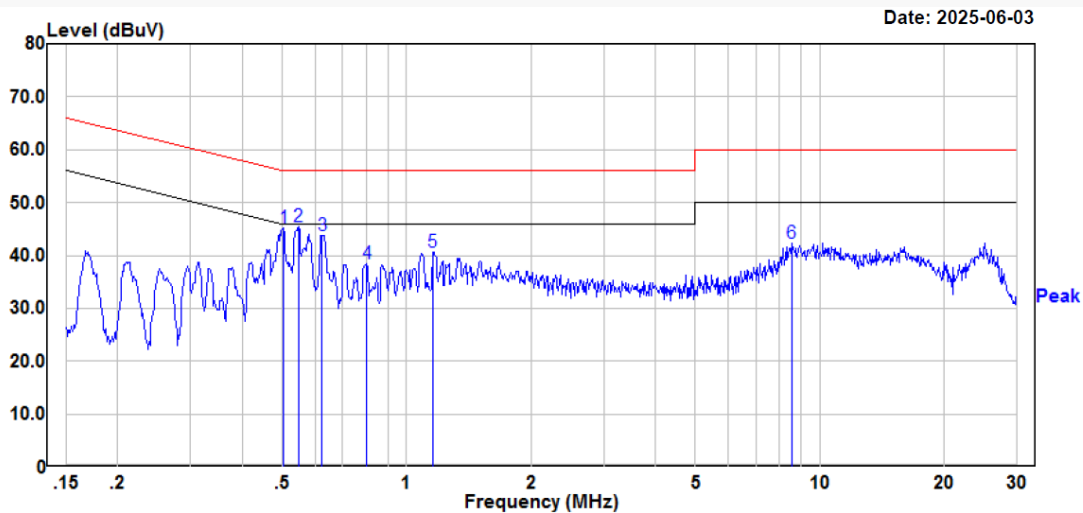
Environmental Conditions & Test Information

Test Date:	2025-06-03.
Temperature:	22.4 °C
Relative Humidity:	51 %
ATM Pressure:	100.8 kPa
Test Result:	Pass
Test Engineer:	Myles Miao

For Wi-Fi Mode:*EUT operation mode: Transmitting in maximum output power mode and 802.11g mode low channel*

Site : CE
Condition : limit\FCC PART 15.207
Project No. : RSHA250514001
Model : TS21
Phase : L
Voltage : 120V/60Hz
Mode : 2.4G WIFI
Test Equipment : ENV216,ESR3
Receiver Setting : RBW: 9 kHz,Sweep Time: Auto
Temperature : 22.4℃
Humidity : 51%
Atmospheric pressure: 100.8KPa
Test Engineer : Myles Miao

		Read		Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB	dBuV	dBuV	dB
1	0.314	21.29	20.23	41.52	59.87	-18.35 Peak
2	0.494	25.16	20.18	45.34	56.11	-10.77 Peak
3	0.582	24.67	20.23	44.90	56.00	-11.10 Peak
4	0.850	18.19	20.19	38.38	56.00	-17.62 Peak
5	1.112	19.58	20.10	39.68	56.00	-16.32 Peak
6	24.948	20.74	20.72	41.46	60.00	-18.54 Peak



Site : CE
 Condition : limit\FCC PART 15.207
 : DET:Peak
 Project No. : RSHA250514001
 Model : TS21
 Phase : N
 Voltage : 120V/60Hz
 Mode : 2.4G WIFI
 Test Equipment : ENV216,ESR3
 Receiver Setting : RBW: 9 kHz,Sweep Time: Auto
 Temperature : 22.4℃
 Humidity : 51%
 Atmospheric pressure: 100.8KPa
 Test Engineer : Myles Miao

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.504	25.11	20.17	45.28	56.00	-10.72	Peak
2	0.548	25.30	20.21	45.51	56.00	-10.49	Peak
3	0.624	23.56	20.25	43.81	56.00	-12.19	Peak
4	0.801	18.32	20.22	38.54	56.00	-17.46	Peak
5	1.158	20.52	20.10	40.62	56.00	-15.38	Peak
6	8.543	22.22	20.19	42.41	60.00	-17.59	Peak

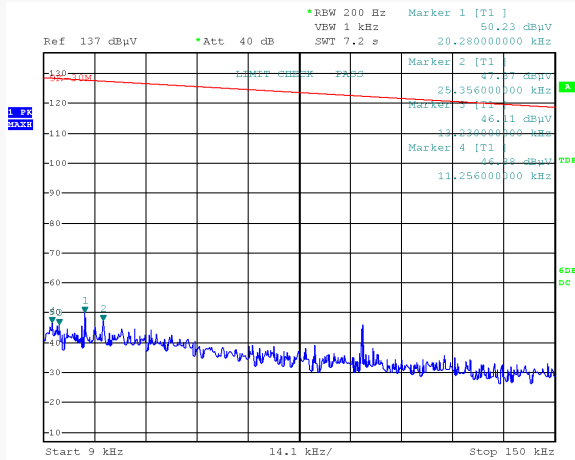
SPURIOUS EMISSIONS**Environmental Conditions & Test Information**

Test Item:	SPURIOUS EMISSIONS			
	9kHz – 30MHz	30MHz - 1GHz	1 GHz - 18 GHz	18 GHz - 25 GHz
Test Date:	2025-06-16	2025-05-29	2025-05-30	2025-06-20
Temperature:	23.4℃	24.6 °C	24.5 °C	23.1 °C
Relative Humidity:	48%	47 %	52 %	51 %
ATM Pressure:	101.2 kPa	101.6 kPa	101.6 kPa	100.7 kPa
Test Result:	Pass	Pass	Pass	Pass
Test Engineer:	Jonathan	Jonathan	Danny Zhu	Hugh Wu

Test Result: Compliant

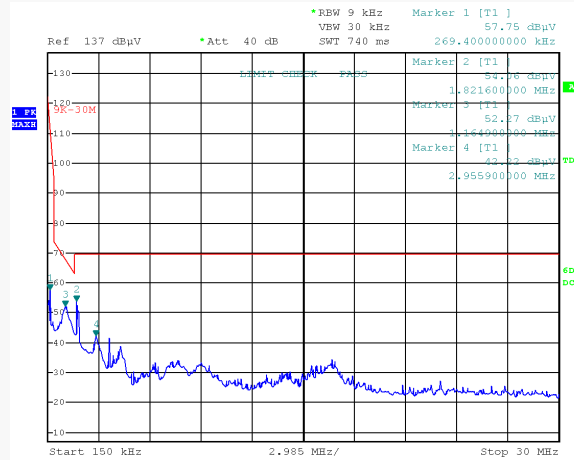
After pre-scan in the X, Y and Z axes of orientation, the worst case is below:

EUT operation mode: Transmitting

For Wi-Fi Mode:**9 kHz-30MHz:** (Transmitting in maximum output power mode and 802.11g mode low channel)**Parallel(worst case)****9kHz-150kHz**

Project No.RSHA250514001
 Date: 16.JUN.2025 20:35:05

Tester:Jonathan

150kHz-30MHz

Project No.RSHA250514001
 Date: 16.JUN.2025 20:38:38

Tester:Jonathan

9kHz-150kHz

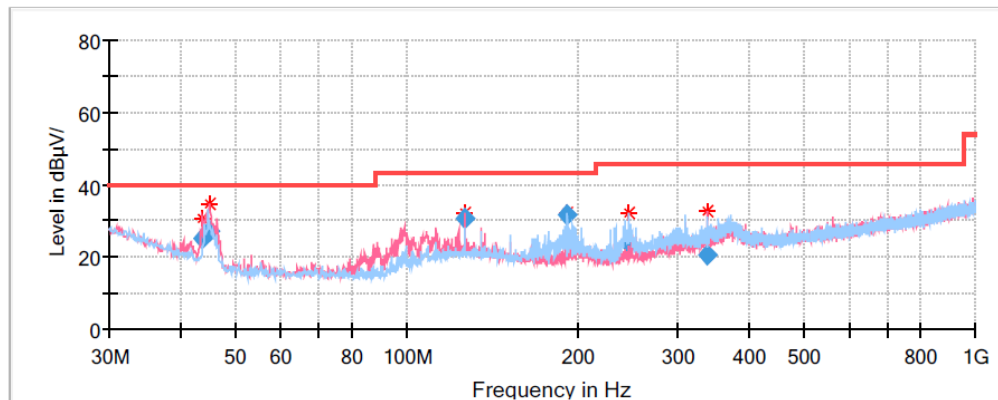
Frequency (MHz)	Corrected Amplitude (dBμV/m) @3m	Detector PK/QP/Ave.	Corrected Factor (dB/m)	Limit (dBμV/m) @3m	Margin (dB)
0.011256	46.88	PK	-0.52	126.58	79.70
0.013230	46.11	PK	-0.53	125.17	79.06
0.020280	50.23	PK	-0.56	121.46	71.23
0.025356	47.37	PK	-0.59	119.52	72.15

150kHz-30MHz

Frequency (MHz)	Corrected Amplitude (dBμV/m) @3m	Detector PK/QP/Ave.	Corrected Factor (dB/m)	Limit (dBμV/m) @3m	Margin (dB)
0.269400	57.75	PK	-16.41	99.00	41.25
1.164900	52.27	PK	-28.15	66.28	14.01
1.821600	54.06	PK	-30.32	69.54	15.48
2.955900	42.22	PK	-31.39	69.54	27.32

30MHz-1GHz (Transmitting in maximum output power 802.11g mode and low channel):**Low Channel: 2412MHz****Common Information**

Project No: RSHA250514001
EUT Model: TS21
Test Mode: Transmitting in 802.11g mode low channel
Standard: FCC Part 15.205 & FCC Part 15.209 & FCC Part 15.247
Test Equipment: ESCI, JB3, 310N
Receiver Setting: RBW:100 kHz, VBW: 300 kHz, Sweep Time: Auto
Temperature: 24.6°C
Humidity: 47%
Barometric Pressure: 101.6kPa
Test Engineer: Jonathan
Test Date: 2025/5/29

**Final Result**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
43.701050	25.31	40.00	14.69	V	-13.7
45.035000	27.41	40.00	12.59	V	-14.0
126.633500	30.54	43.50	12.96	V	-11.0
191.992060	31.50	43.50	12.00	H	-12.5
246.188450	23.43	46.00	22.57	H	-12.2
337.611350	20.55	46.00	25.45	V	-9.5

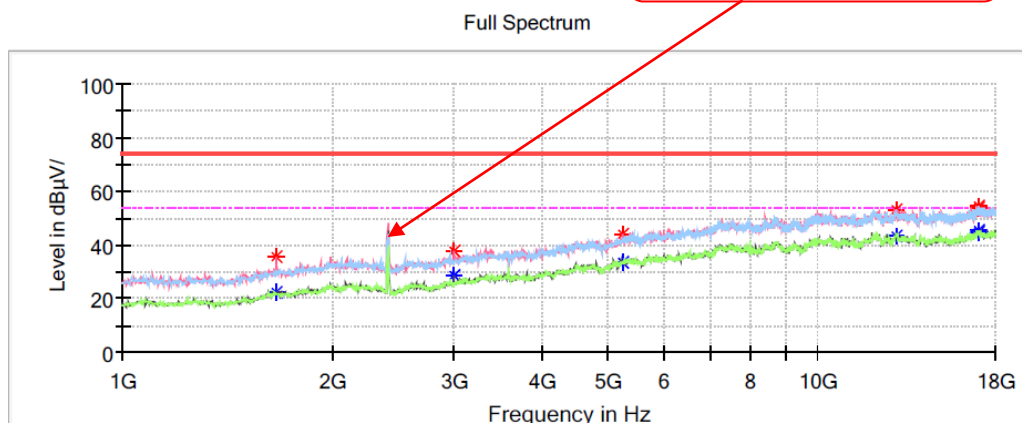
1GHz-18GHz:
802.11b Mode:

Low Channel: 2412MHz

Common Information

Project No.:	RSHA250514001
EUT Model:	TS21
Test Mode:	2.4G WIFI 802.11b mode Low Channel
Standard:	FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment:	ESU40,3115,PAM-0118P
Receiver Setting:	RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature:	24.5°C
Humidity:	52%
Atmospheric Pressure:	101.6kPa
Test Engineer:	Danny Zhu
Test Date:	2025/5/30

Fundamental Test with
Band Reject Filter



Critical_Freqs

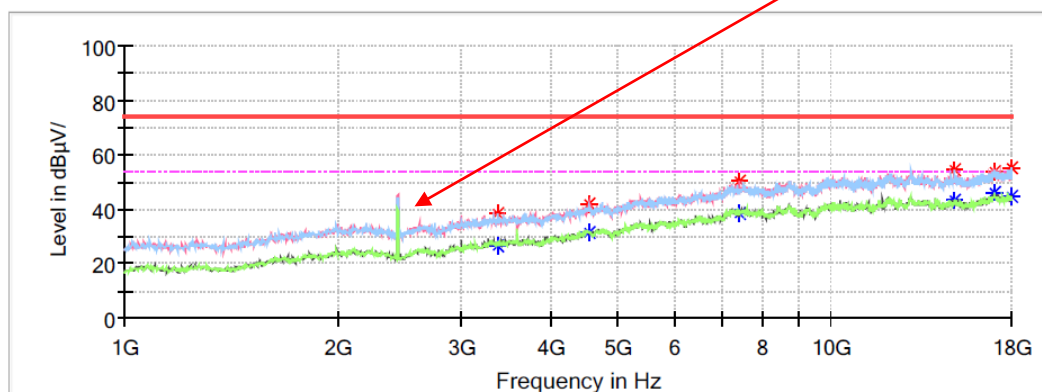
Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1663.000000	---	22.23	54.00	31.77	V	-13.4
1663.000000	35.49	---	74.00	38.51	V	-13.4
2992.400000	37.72	---	74.00	36.28	V	-9.1
2992.400000	---	28.36	54.00	25.64	V	-9.1
5233.000000	---	33.66	54.00	20.34	H	-2.6
5233.000000	43.89	---	74.00	30.11	H	-2.6
12974.800000	---	43.62	54.00	10.38	V	8.7
12974.800000	53.45	---	74.00	20.55	V	8.7
17024.200000	---	45.58	54.00	8.42	H	11.2
17024.200000	53.93	---	74.00	20.07	H	11.2
17037.800000	---	45.02	54.00	8.98	V	11.2
17037.800000	54.45	---	74.00	19.55	V	11.2

Middle Channel: 2437MHz**Common Information**

Project No.: RSHA250514001
EUT Model: TS21
Test Mode: 2.4G WIFI 802.11b mode Middle Channel
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 24.5℃
Humidity: 52%
Atmospheric Pressure: 101.6kPa
Test Engineer: Danny Zhu
Test Date: 2025/5/30

Fundamental Test with
Band Reject Filter

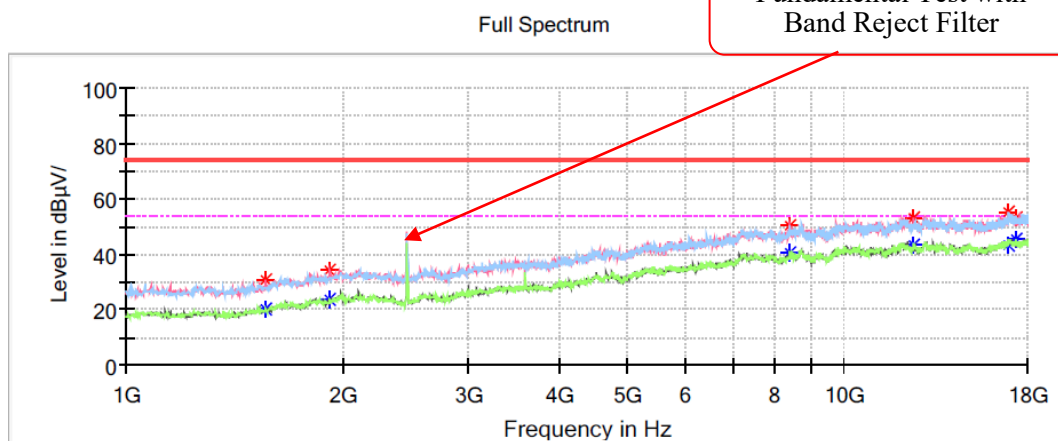
Full Spectrum

**Critical Freqs**

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
3366.400000	38.73	---	74.00	35.27	H	-7.8
3366.400000	---	26.81	54.00	27.19	H	-7.8
4529.200000	---	31.35	54.00	22.65	V	-4.8
4529.200000	41.65	---	74.00	32.35	V	-4.8
7405.600000	50.10	---	74.00	23.90	V	2.6
7405.600000	---	38.21	54.00	15.79	V	2.6
14929.800000	---	43.20	54.00	10.80	V	8.3
14929.800000	54.41	---	74.00	19.59	V	8.3
16990.200000	---	46.21	54.00	7.79	H	11.2
16990.200000	53.61	---	74.00	20.39	H	11.2
17962.600000	---	44.91	54.00	9.09	H	11.7
17962.600000	55.51	---	74.00	18.49	H	11.7

High Channel: 2462MHz**Common Information**

Project No.: RSHA250514001
EUT Model: TS21
Test Mode: 2.4G WIFI 802.11b mode High Channel
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 24.5°C
Humidity: 52%
Atmospheric Pressure: 101.6kPa
Test Engineer: Danny Zhu
Test Date: 2025/5/30

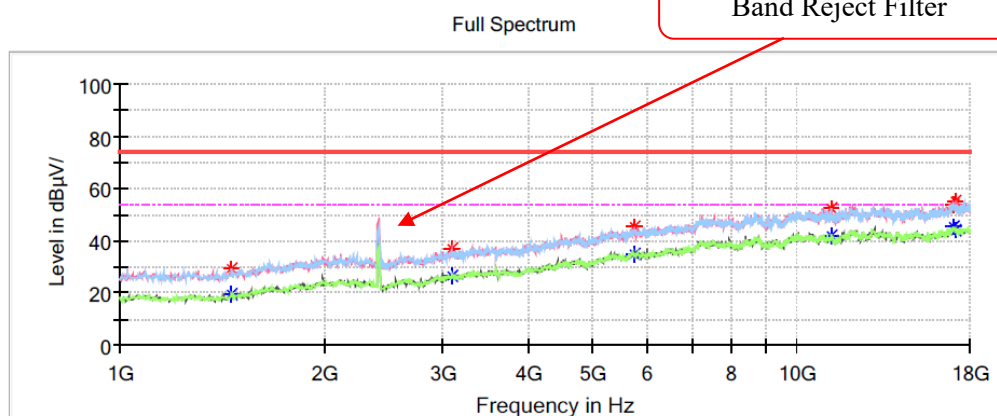
**Critical_Freqs**

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1564.400000	31.08	---	74.00	42.92	V	-14.2
1564.400000	---	20.42	54.00	33.58	V	-14.2
1921.400000	---	23.44	54.00	30.56	H	-11.2
1921.400000	34.37	---	74.00	39.63	H	-11.2
8418.800000	50.00	---	74.00	24.00	V	4.1
8418.800000	---	40.33	54.00	13.67	V	4.1
12481.800000	---	43.18	54.00	10.82	V	8.6
12481.800000	52.97	---	74.00	21.03	V	8.6
16918.800000	55.13	---	74.00	18.87	H	11.0
16918.800000	---	43.46	54.00	10.54	H	11.0
17299.600000	53.09	---	74.00	20.91	V	10.8
17299.600000	---	45.56	54.00	8.44	V	10.8

802.11g Mode:**Low Channel: 2412MHz****Common Information**

Project No.: RSHA250514001
EUT Model: TS21
Test Mode: 2.4G WIFI 802.11g mode Low Channel
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 24.5°C
Humidity: 52%
Atmospheric Pressure: 101.6kPa
Test Engineer: Danny Zhu
Test Date: 2025/5/30

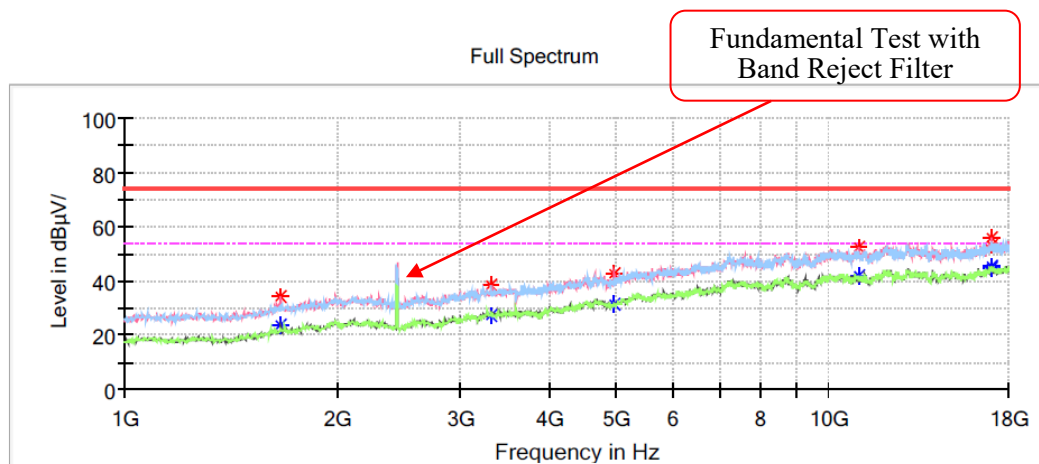
Fundamental Test with
Band Reject Filter

**Critical_Freqs**

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1462.400000	29.28	---	74.00	44.72	H	-14.8
1462.400000	---	19.56	54.00	34.44	H	-14.8
3084.200000	---	26.28	54.00	27.72	V	-8.8
3084.200000	37.10	---	74.00	36.90	V	-8.8
5743.000000	45.40	---	74.00	28.60	V	-1.3
5743.000000	---	34.99	54.00	19.01	V	-1.3
11223.800000	---	42.30	54.00	11.70	V	7.0
11223.800000	52.35	---	74.00	21.65	V	7.0
17037.800000	---	45.75	54.00	8.25	H	11.2
17037.800000	53.53	---	74.00	20.47	H	11.2
17099.000000	---	43.92	54.00	10.08	V	11.1
17099.000000	54.93	---	74.00	19.07	V	11.1

Middle Channel: 2437MHz**Common Information**

Project No.: RSHA250514001
EUT Model: TS21
Test Mode: 2.4G WIFI 802.11g mode Middle Channel
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 24.5°C
Humidity: 52%
Atmospheric Pressure: 101.6kPa
Test Engineer: Danny Zhu
Test Date: 2025/5/30

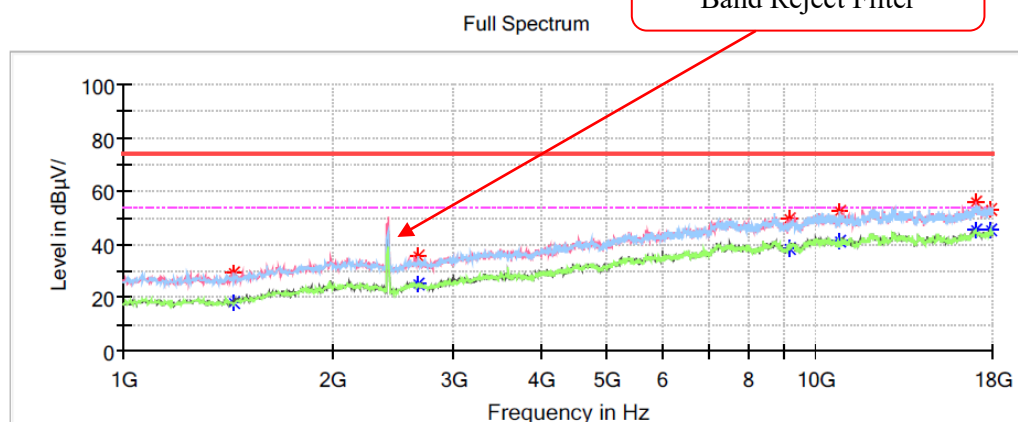
**Critical_Freqs**

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1666.400000	34.30	---	74.00	39.70	V	-13.3
1666.400000	---	23.53	54.00	30.47	V	-13.3
3305.200000	---	27.56	54.00	26.44	V	-8.0
3305.200000	38.35	---	74.00	35.65	V	-8.0
4967.800000	42.97	---	74.00	31.03	V	-3.6
4967.800000	---	31.73	54.00	22.27	V	-3.6
11030.000000	---	42.28	54.00	11.72	H	6.4
11030.000000	52.60	---	74.00	21.40	H	6.4
16990.200000	---	45.46	54.00	8.54	H	11.2
16990.200000	53.44	---	74.00	20.56	H	11.2
17031.000000	---	44.83	54.00	9.17	V	11.2
17031.000000	55.95	---	74.00	18.05	V	11.2

High Channel: 2462MHz**Common Information**

Project No.: RSHA250514001
 EUT Model: TS21
 Test Mode: 2.4G WIFI 802.11g mode High Channel
 Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
 Test Equipment: ESU40,3115,PAM-0118P
 Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
 Temperature: 24.5°C
 Humidity: 52%
 Atmospheric Pressure: 101.6kPa
 Test Engineer: Danny Zhu
 Test Date: 2025/5/30

Fundamental Test with
Band Reject Filter

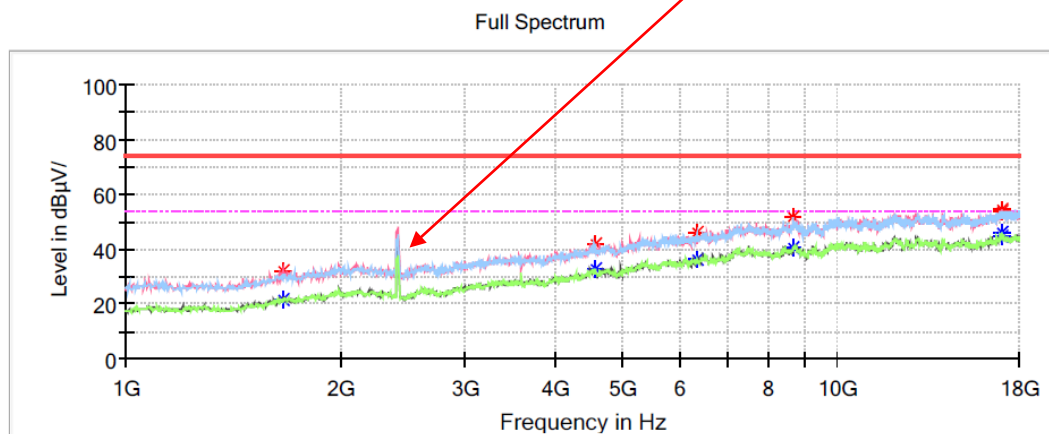
**Critical Freqs**

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1442.000000	29.41	---	74.00	44.59	H	-14.8
1442.000000	---	18.31	54.00	35.69	H	-14.8
2666.000000	---	25.23	54.00	28.77	V	-9.8
2666.000000	35.47	---	74.00	38.53	V	-9.8
9132.800000	49.94	---	74.00	24.06	V	4.4
9132.800000	---	38.71	54.00	15.29	V	4.4
10822.600000	---	41.23	54.00	12.77	H	6.2
10822.600000	52.48	---	74.00	21.52	H	6.2
17003.800000	56.05	---	74.00	17.95	V	11.3
17003.800000	---	45.37	54.00	8.63	V	11.3
17915.000000	52.85	---	74.00	21.15	H	11.5
17915.000000	---	45.53	54.00	8.47	H	11.5

802.11n-HT20 Mode :**Low Channel: 2412MHz****Common Information**

Project No.: RSHA250514001
EUT Model: TS21
Test Mode: 2.4G WIFI 802.11n20 mode Low Channel
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 24.5°C
Humidity: 52%
Atmospheric Pressure: 101.6kPa
Test Engineer: Danny Zhu
Test Date: 2025/5/30

Fundamental Test with
Band Reject Filter

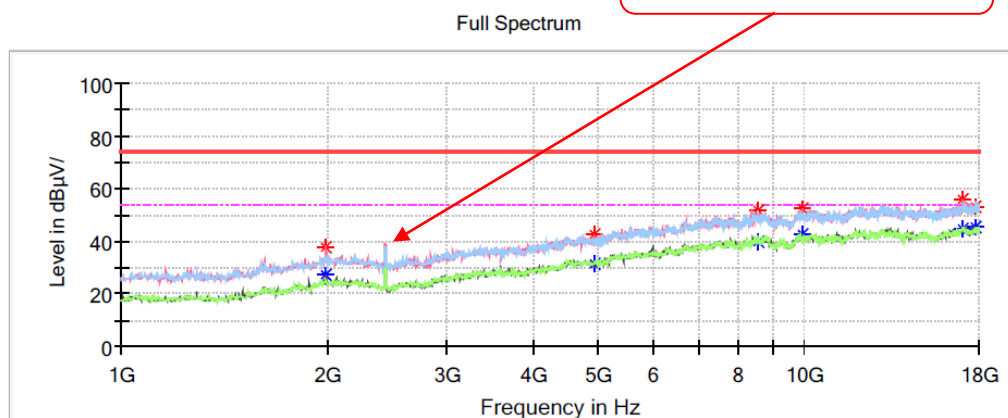
**Critical_Freqs**

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1659.600000	32.16	---	74.00	41.84	V	-13.4
1659.600000	---	21.61	54.00	32.39	V	-13.4
4570.000000	---	33.16	54.00	20.84	H	-4.7
4570.000000	42.28	---	74.00	31.72	H	-4.7
6361.800000	46.22	---	74.00	27.78	V	-0.7
6361.800000	---	36.29	54.00	17.71	V	-0.7
8677.200000	---	40.42	54.00	13.58	V	4.4
8677.200000	51.58	---	74.00	22.42	V	4.4
16986.800000	---	44.65	54.00	9.35	V	11.2
16986.800000	54.52	---	74.00	19.48	V	11.2
16993.600000	---	45.88	54.00	8.12	H	11.2
16993.600000	53.66	---	74.00	20.34	H	11.2

Middle Channel: 2437MHz**Common Information**

Project No.: RSHA250514001
EUT Model: TS21
Test Mode: 2.4G WIFI 802.11n20 mode Middle Channel
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 24.5℃
Humidity: 52%
Atmospheric Pressure: 101.6kPa
Test Engineer: Danny Zhu
Test Date: 2025/5/30

Fundamental Test with
Band Reject Filter

**Critical_Freqs**

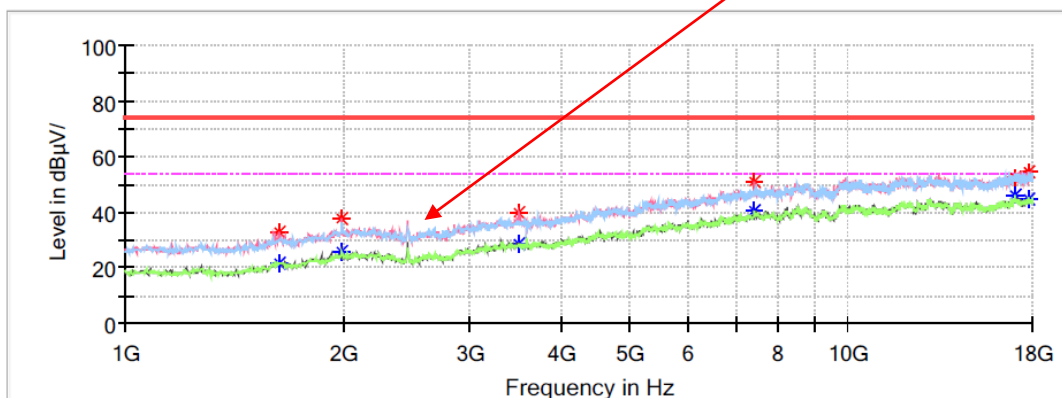
Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1996.200000	---	27.28	54.00	26.72	V	-10.5
1996.200000	38.09	---	74.00	35.91	V	-10.5
4916.800000	---	31.76	54.00	22.24	V	-3.7
4916.800000	42.59	---	74.00	31.41	V	-3.7
8531.000000	---	40.11	54.00	13.89	H	4.4
8531.000000	51.76	---	74.00	22.24	H	4.4
9925.000000	---	42.94	54.00	11.06	V	5.8
9925.000000	52.20	---	74.00	21.80	V	5.8
17000.400000	---	45.03	54.00	8.97	V	11.3
17000.400000	55.78	---	74.00	18.22	V	11.3
17813.000000	53.46	---	74.00	20.54	V	11.3
17813.000000	---	45.43	54.00	8.57	V	11.3

High Channel: 2462MHz**Common Information**

Project No.: RSHA250514001
EUT Model: TS21
Test Mode: 2.4G WIFI 802.11n20 mode High Channel
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 24.5℃
Humidity: 52%
Atmospheric Pressure: 101.6kPa
Test Engineer: Danny Zhu
Test Date: 2025/5/30

Fundamental Test with
Band Reject Filter

Full Spectrum

**Critical_Freqs**

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1629.000000	---	21.69	54.00	32.31	V	-13.6
1629.000000	33.11	---	74.00	40.89	V	-13.6
1992.800000	---	25.90	54.00	28.10	V	-10.6
1992.800000	37.78	---	74.00	36.22	V	-10.6
3509.200000	---	28.78	54.00	25.22	V	-7.3
3509.200000	39.99	---	74.00	34.01	V	-7.3
7429.400000	---	40.39	54.00	13.61	H	2.7
7429.400000	50.93	---	74.00	23.07	H	2.7
17065.000000	---	45.81	54.00	8.19	H	11.2
17065.000000	52.60	---	74.00	21.40	H	11.2
17792.600000	---	45.01	54.00	8.99	V	11.2
17792.600000	54.79	---	74.00	19.21	V	11.2

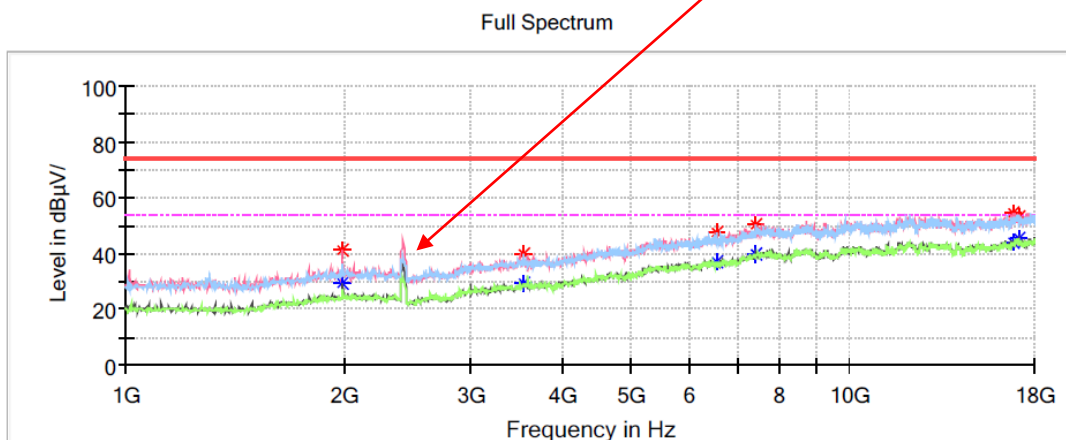
802.11n-HT40 Mode :

Low Channel: 2422MHz

Common Information

Project No.:	RSHA250514001
EUT Model:	TS21
Test Mode:	2.4G WIFI 802.11n40 mode Low Channel
Standard:	FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment:	ESU40,3115,PAM-0118P
Receiver Setting:	RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature:	24.5°C
Humidity:	52%
Atmospheric Pressure:	101.6kPa
Test Engineer:	Danny Zhu
Test Date:	2025/5/30

Fundamental Test with
Band Reject Filter



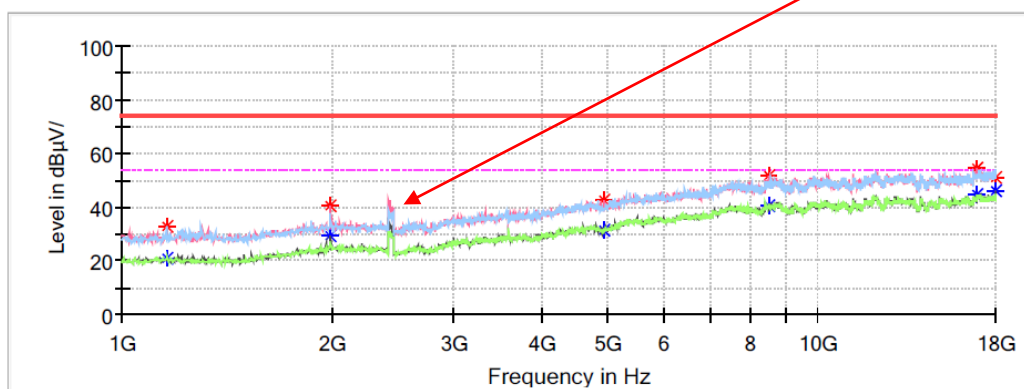
Critical_Freqs

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1992.800000	---	29.40	54.00	24.60	V	-10.6
1992.800000	41.59	---	74.00	32.41	V	-10.6
3539.800000	---	29.49	54.00	24.51	H	-7.2
3539.800000	39.54	---	74.00	34.46	H	-7.2
6565.800000	47.73	---	74.00	26.27	H	-0.2
6565.800000	---	36.88	54.00	17.12	H	-0.2
7426.000000	---	40.05	54.00	13.95	H	2.7
7426.000000	50.61	---	74.00	23.39	H	2.7
16786.200000	54.59	---	74.00	19.41	V	10.6
16786.200000	---	43.97	54.00	10.03	V	10.6
17078.600000	---	45.59	54.00	8.41	V	11.1
17078.600000	53.40	---	74.00	20.60	V	11.1

Middle Channel: 2437MHz**Common Information**

Project No.: RSHA250514001
EUT Model: TS21
Test Mode: 2.4G WIFI 802.11n40 mode Middle Channel
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 24.5°C
Humidity: 52%
Atmospheric Pressure: 101.6kPa
Test Engineer: Danny Zhu
Test Date: 2025/5/30

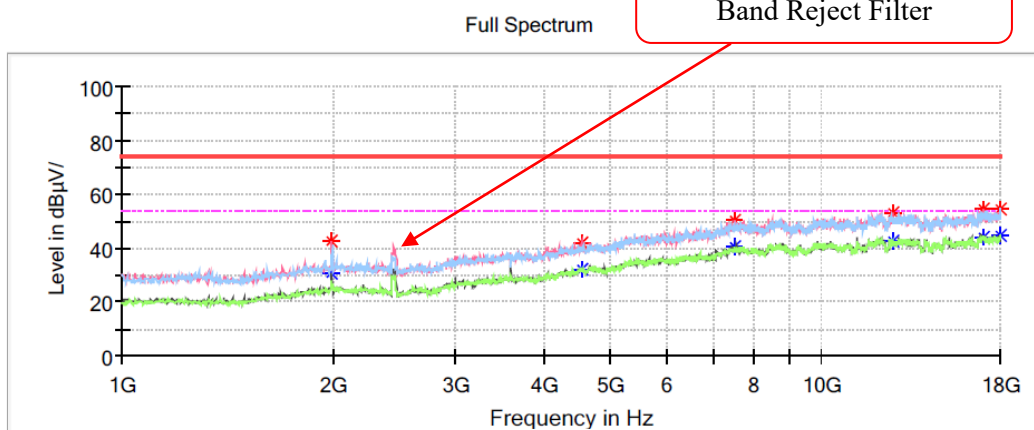
Full Spectrum

**Critical Freqs**

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1159.800000	---	20.79	54.00	33.21	H	-15.4
1159.800000	33.03	---	74.00	40.97	H	-15.4
1992.800000	---	29.72	54.00	24.28	V	-10.6
1992.800000	40.31	---	74.00	33.69	V	-10.6
4927.000000	---	31.53	54.00	22.47	V	-3.7
4927.000000	42.37	---	74.00	31.63	V	-3.7
8480.000000	51.64	---	74.00	22.36	V	4.3
8480.000000	---	40.24	54.00	13.76	V	4.3
16963.000000	54.25	---	74.00	19.75	H	11.1
16963.000000	---	44.57	54.00	9.43	H	11.1
17969.400000	51.33	---	74.00	22.67	V	11.7
17969.400000	---	45.88	54.00	8.12	V	11.7

High Channel: 2452MHz**Common Information**

Project No.: RSHA250514001
EUT Model: TS21
Test Mode: 2.4G WIFI 802.11n40 mode High Channel
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 24.5°C
Humidity: 52%
Atmospheric Pressure: 101.6kPa
Test Engineer: Danny Zhu
Test Date: 2025/5/30

**Critical_Freqs**

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1989.400000	42.72	---	74.00	31.28	V	-10.6
1989.400000	---	30.73	54.00	23.27	V	-10.6
4529.200000	---	32.08	54.00	21.92	V	-4.8
4529.200000	42.28	---	74.00	31.72	V	-4.8
7521.200000	50.34	---	74.00	23.66	V	2.9
7521.200000	---	40.37	54.00	13.63	V	2.9
12604.200000	---	42.56	54.00	11.44	H	8.7
12604.200000	52.98	---	74.00	21.02	H	8.7
17014.000000	54.51	---	74.00	19.49	V	11.2
17014.000000	---	44.31	54.00	9.69	V	11.2
18000.000000	54.23	---	74.00	19.77	H	11.8
18000.000000	---	44.79	54.00	9.21	H	11.8

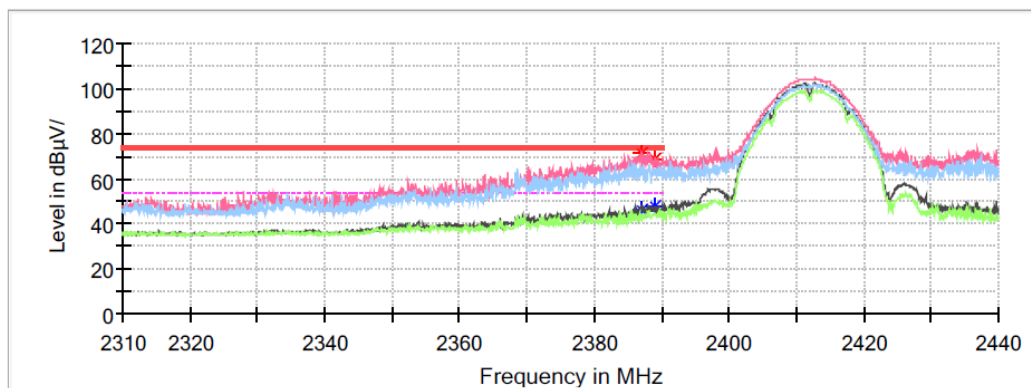
Band Edge:
802.11b Mode:

Low Channel

Common Information

Project No.: RSHA250514001
EUT Model: TS21
Test Mode: 2.4G WIFI 802.11b mode Low Channel
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 24.5℃
Humidity: 52%
Atmospheric Pressure: 101.6kPa
Test Engineer: Danny Zhu
Test Date: 2025/5/30

Full Spectrum



Critical Freqs

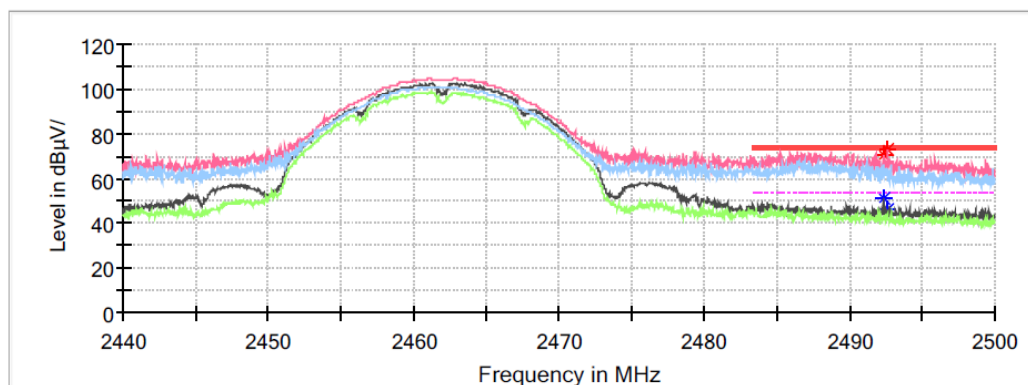
Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2387.168000	71.04	---	74.00	2.96	V	-0.3
2387.168000	---	45.92	54.00	8.08	V	-0.3
2388.988000	68.40	---	74.00	5.60	V	-0.3
2388.988000	---	48.08	54.00	5.92	V	-0.3

High Channel

Common Information

Project No.: RSHA250514001
EUT Model: TS21
Test Mode: 2.4G WIFI 802.11b mode High Channel
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 24.5℃
Humidity: 52%
Atmospheric Pressure: 101.6kPa
Test Engineer: Danny Zhu
Test Date: 2025/5/30

Full Spectrum



Critical Freqs

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2492.320000	70.84	---	74.00	3.16	V	-0.2
2492.320000	---	51.04	54.00	2.96	V	-0.2
2492.656000	72.59	---	74.00	1.41	V	-0.2
2492.656000	---	46.29	54.00	7.71	V	-0.2

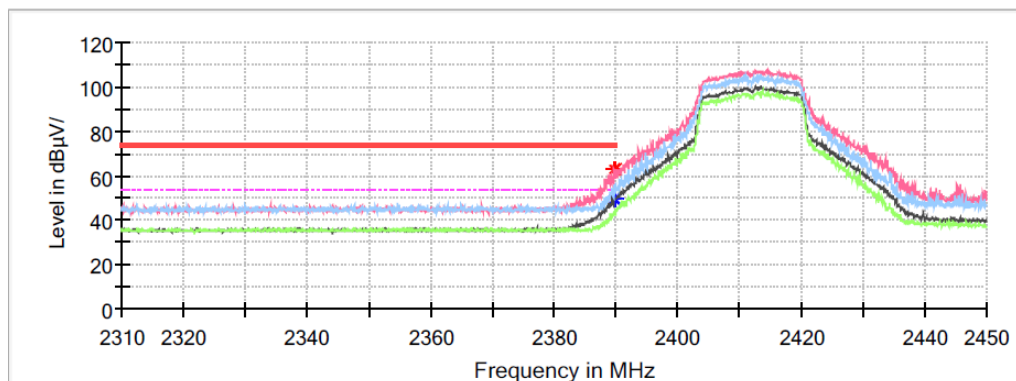
802.11g Mode :

Low Channel

Common Information

Project No.: RSHA250514001
EUT Model: TS21
Test Mode: 2.4G WIFI 802.11g mode Low Channel
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 24.5°C
Humidity: 52%
Atmospheric Pressure: 101.6kPa
Test Engineer: Danny Zhu
Test Date: 2025/5/30

Full Spectrum



Critical_Freqs

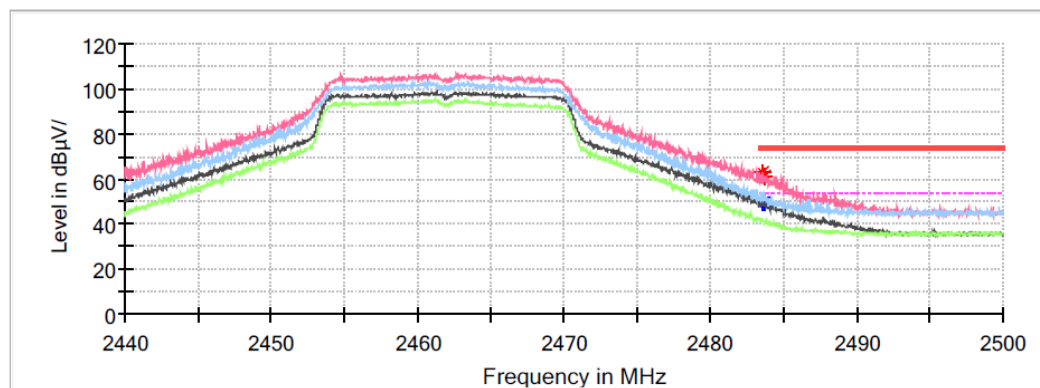
Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2389.800000	63.10	---	74.00	10.90	V	-0.3
2389.800000	---	49.23	54.00	4.77	V	-0.3
2389.968000	62.69	---	74.00	11.31	V	-0.3
2389.968000	---	49.70	54.00	4.30	V	-0.3

High Channel

Common Information

Project No.: RSHA250514001
EUT Model: TS21
Test Mode: 2.4G WIFI 802.11g mode High Channel
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 24.5°C
Humidity: 52%
Atmospheric Pressure: 101.6kPa
Test Engineer: Danny Zhu
Test Date: 2025/5/30

Full Spectrum

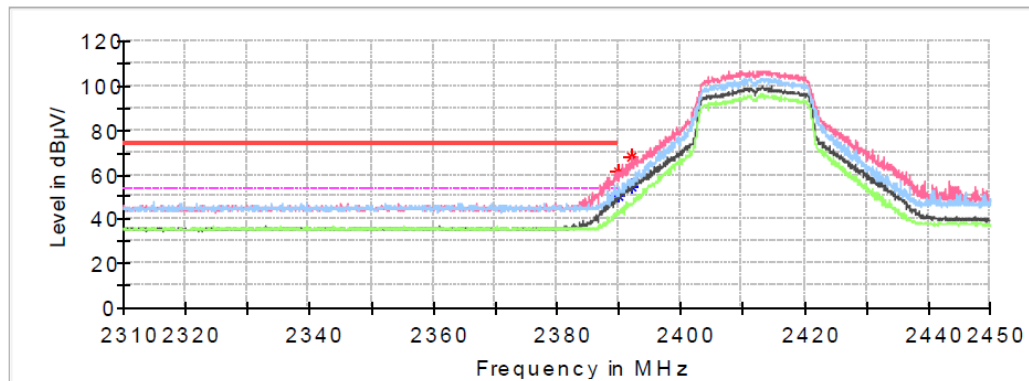


Critical_Freqs

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2483.608000	---	49.33	54.00	4.67	V	-0.2
2483.608000	63.27	---	74.00	10.73	V	-0.2
2483.656000	---	49.79	54.00	4.21	V	-0.2
2483.656000	60.90	---	74.00	13.10	V	-0.2

802.11n-HT20 Mode:**Low Channel****Common Information**

Project No.: RSHA250514001
EUT Model: TS21
Test Mode: 2.4G WIFI 802.11n20 mode Low Channel
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 24.5°C
Humidity: 52%
Atmospheric Pressure: 101.6kPa
Test Engineer: Danny Zhu
Test Date: 2025/5/30

Full Spectrum**Critical Freqs**

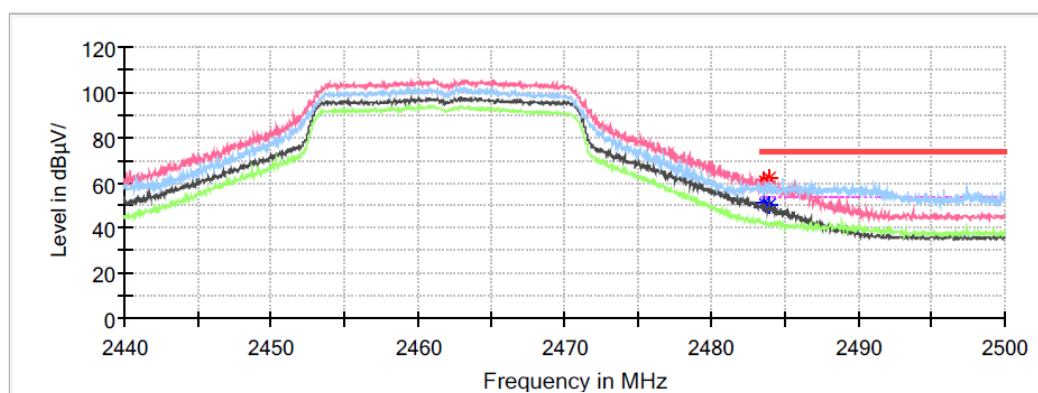
Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2389.912000	---	50.64	54.00	3.36	V	-0.3
2389.912000	61.11	---	74.00	12.89	V	-0.3

High Channel

Common Information

Project No.: RSHA250514001
EUT Model: TS21
Test Mode: 2.4G WIFI 802.11n20 mode High Channel
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 24.5°C
Humidity: 52%
Atmospheric Pressure: 101.6kPa
Test Engineer: Danny Zhu
Test Date: 2025/5/30

Full Spectrum



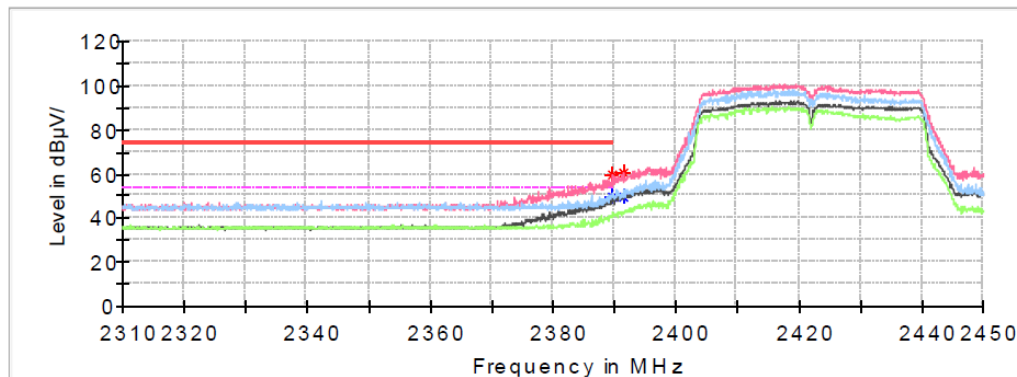
Critical_Freqs

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2483.584000	61.46	---	74.00	12.54	V	-0.2
2483.584000	---	51.09	54.00	2.91	V	-0.2
2483.968000	---	50.17	54.00	3.83	V	-0.2
2483.968000	62.45	---	74.00	11.55	V	-0.2

802.11n-HT40 Mode:**Low Channel****Common Information**

Project No.: RSHA250514001
EUT Model: TS21
Test Mode: 2.4G WIFI 802.11n40 mode Low Channel
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 24.5°C
Humidity: 52%
Atmospheric Pressure: 101.6kPa
Test Engineer: Danny Zhu
Test Date: 2025/5/30

Full Spectrum

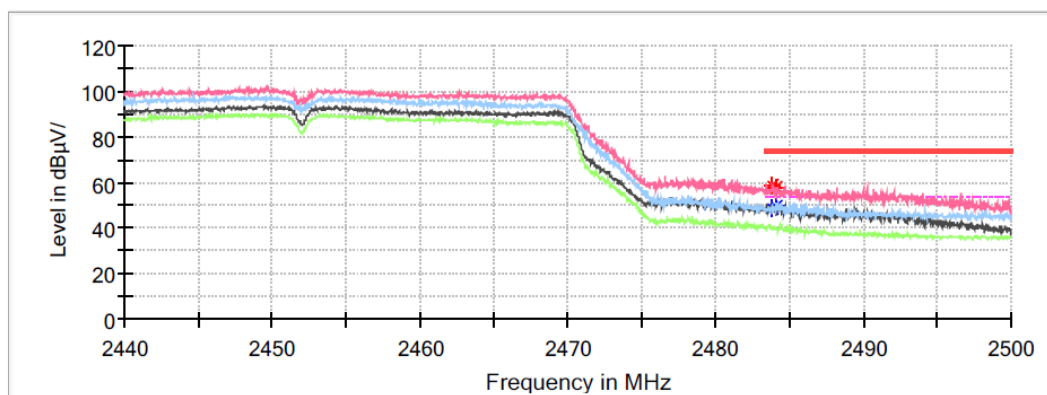
**Critical_Freqs**

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2389.800000	---	49.58	54.00	4.42	V	-0.3
2389.800000	59.30	---	74.00	14.70	V	-0.3

High Channel**Common Information**

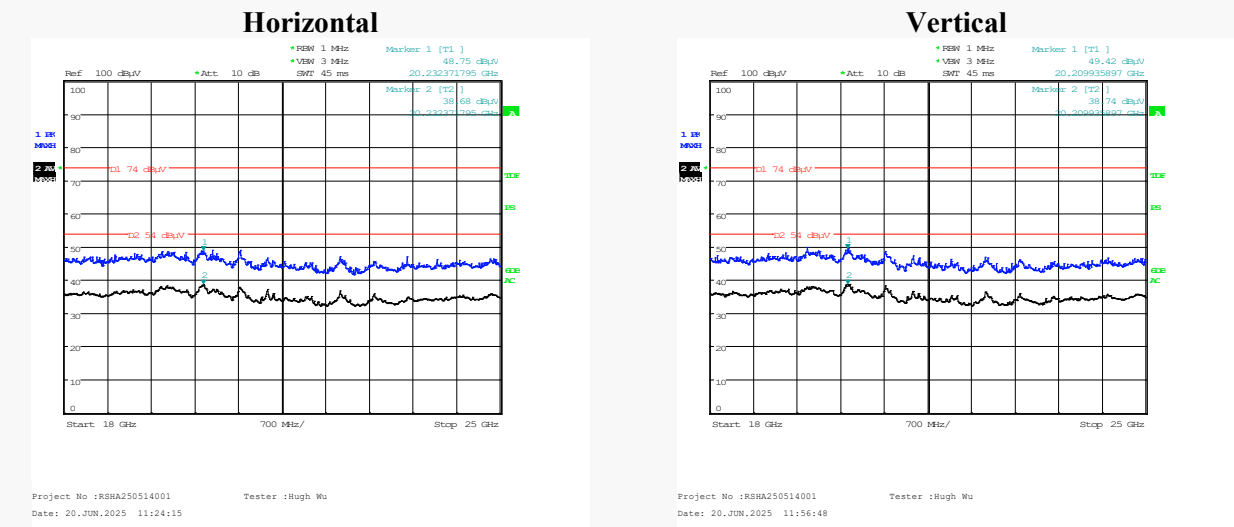
Project No.: RSHA250514001
EUT Model: TS21
Test Mode: 2.4G WIFI 802.11n40 mode High Channel
Standard: FCC Part 15.247& FCC Part 15.205& FCC Part 15.209
Test Equipment: ESU40,3115,PAM-0118P
Receiver Setting: RBW: 1MHz, VBW: 3MHz, Sweep Time: Auto
Temperature: 24.5°C
Humidity: 52%
Atmospheric Pressure: 101.6kPa
Test Engineer: Danny Zhu
Test Date: 2025/5/30

Full Spectrum

**Critical_Freqs**

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2483.848000	58.43	---	74.00	15.57	V	-0.2
2483.848000	---	48.49	54.00	5.51	V	-0.2
2484.088000	57.55	---	74.00	16.45	V	-0.2
2484.088000	---	49.85	54.00	4.15	V	-0.2

18GHz-25GHz: Transmitting in maximum output power mode and 802.11g mode low channel



Frequency (GHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Pol	Corr. (dB/m)
20.21	---	38.74	54	15.26	V	12.47
20.21	49.42	---	74	24.58	V	12.47
20.23	---	38.68	54	15.32	H	12.49
20.23	48.75	---	74	25.25	H	12.49

Note: The test distance is 3m. The limit is 74dBμV/m (Peak) and 54dBμV/m (Average).

6 dB EMISSION BANDWIDTH**Environmental Conditions & Test Information**

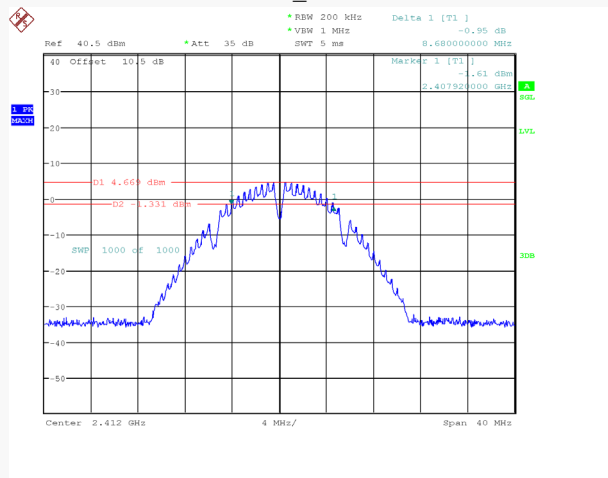
Test Date:	2025-06-20 to 2025-06-21
Temperature:	22.5-23.1 °C
Relative Humidity:	50-51 %
ATM Pressure:	100.2-100.7 kPa
Test Engineer:	Neil Zhou

Test Result: Compliant.*EUT operation mode: Transmitting***For Wi-Fi Mode:**

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	Limit (MHz)	Result
802.11b Mode				
Low	2412	8.680	≥ 0.5	Pass
Middle	2437	9.160	≥ 0.5	Pass
High	2462	9.160	≥ 0.5	Pass
802.11g Mode				
Low	2412	16.040	≥ 0.5	Pass
Middle	2437	16.360	≥ 0.5	Pass
High	2462	16.480	≥ 0.5	Pass
802.11n-HT20 Mode				
Low	2412	17.040	≥ 0.5	Pass
Middle	2437	17.480	≥ 0.5	Pass
High	2462	17.640	≥ 0.5	Pass
802.11n-HT40 Mode				
Low	2422	36.400	≥ 0.5	Pass
Middle	2437	36.560	≥ 0.5	Pass
High	2452	36.560	≥ 0.5	Pass

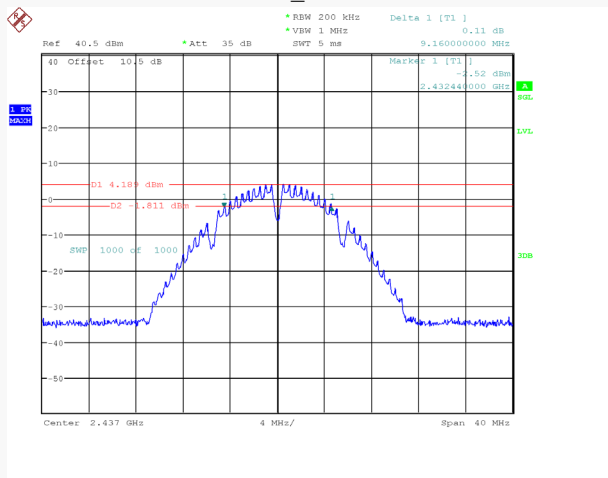
For Wi-Fi Mode:

802.11b_2412MHz



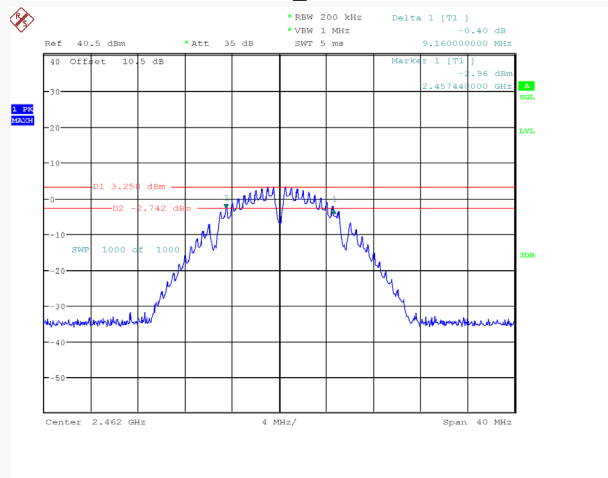
ProjectNo.:RSHA250514001 Tester:Neil Zhou
Date: 20.JUN.2025 16:25:38

802.11b_2437MHz



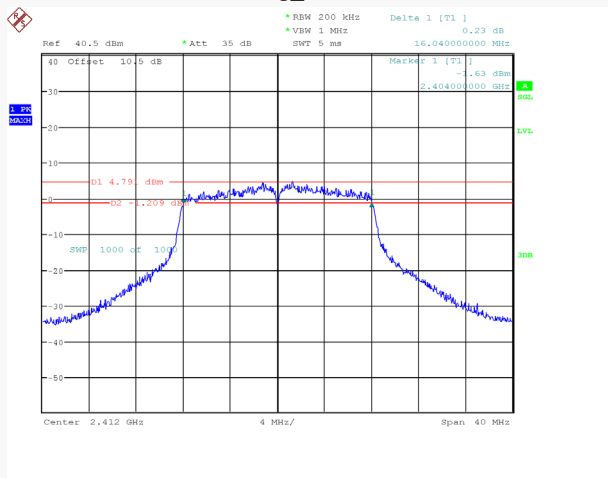
ProjectNo.:RSHA250514001 Tester:Neil Zhou
Date: 20.JUN.2025 16:38:24

802.11b_2462MHz

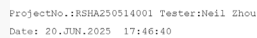
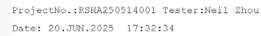
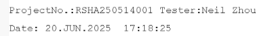


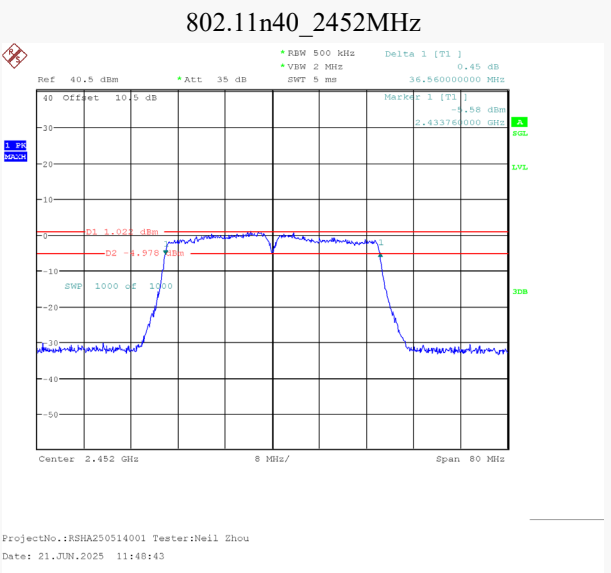
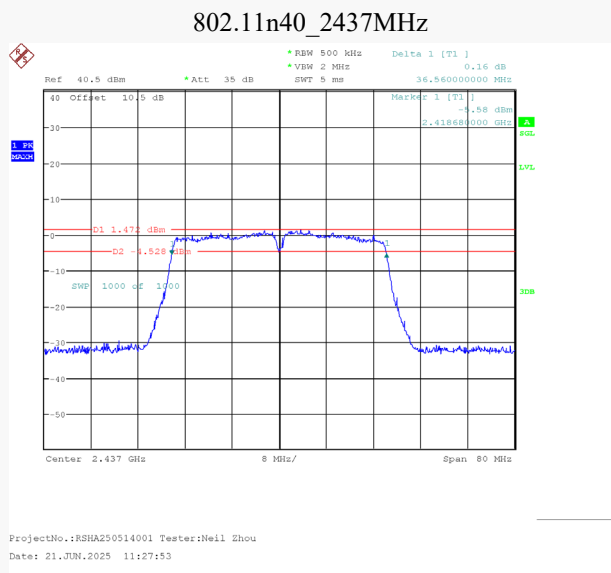
ProjectNo.:RSHA250514001 Tester:Neil Zhou
Date: 20.JUN.2025 16:51:53

802.11g_2412MHz



ProjectNo.:RSHA250514001 Tester:Neil Zhou
Date: 20.JUN.2025 17:03:35





MAXIMUM CONDUCTED OUTPUT POWER**Environmental Conditions & Test Information**

Test Date:	2025-06-20 to 2025-06-21
Temperature:	22.5-23.1 °C
Relative Humidity:	50-51 %
ATM Pressure:	100.2-100.7 kPa
Test Result:	Pass
Test Engineer:	Neil Zhou

Test Result: Compliant.*EUT operation mode: Transmitting***For Wi-Fi Mode:**

Channel	Frequency (MHz)	Peak Output Power(dBm)	Peak Output Power Limit (dBm)
802.11b Mode			
Low	2412	11.326	≤30
Middle	2437	11.345	≤30
High	2462	10.742	≤30
802.11g Mode			
Low	2412	13.767	≤30
Middle	2437	13.645	≤30
High	2462	13.237	≤30
802.11n-HT20 Mode			
Low	2412	12.854	≤30
Middle	2437	12.743	≤30
High	2462	12.426	≤30
802.11n-HT40 Mode			
Low	2422	12.569	≤30
Middle	2437	13.130	≤30
High	2452	12.615	≤30

100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE**Environmental Conditions & Test Information**

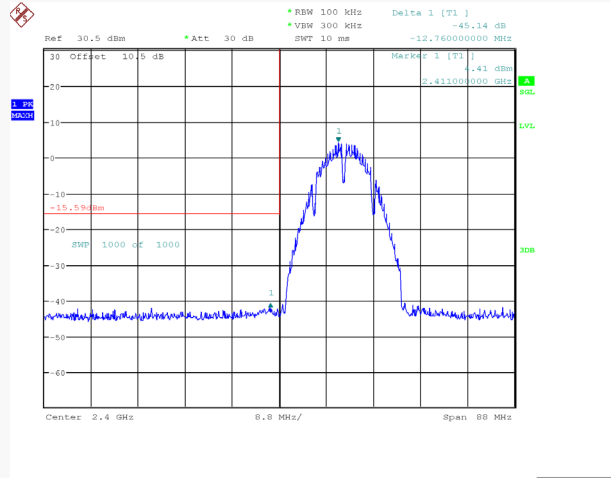
Test Date:	2025-06-20 to 2025-06-21
Temperature:	22.5-23.1 °C
Relative Humidity:	50-51 %
ATM Pressure:	100.2-100.7 kPa
Test Engineer:	Neil Zhou

*EUT operation mode: Transmitting***Test Result:** Compliant

Mode	Channel	Test Frequency (MHz)	Result (dB)	Limit (dB)
802.11b	Low	2412	45.14	20
	High	2462	44.50	20
802.11g	Low	2412	30.89	20
	High	2462	43.33	20
802.11n20	Low	2412	30.63	20
	High	2462	42.51	20
802.11n40	Low	2422	35.27	20
	High	2452	36.70	20

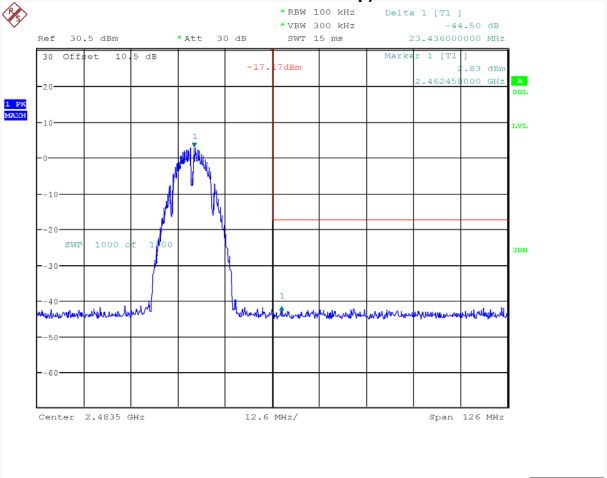
For Wi-Fi Mode:

802.11b Mode Left Side



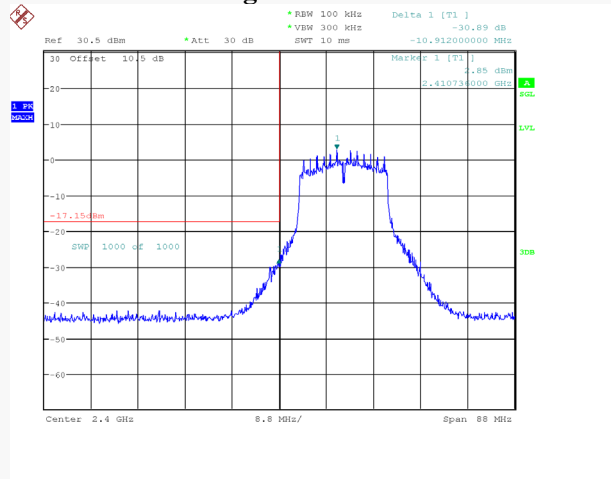
ProjectNo.:RSHA250514001 Tester:Neil Zhou
Date: 20.JUN.2025 16:28:01

802.11b Mode Right Side



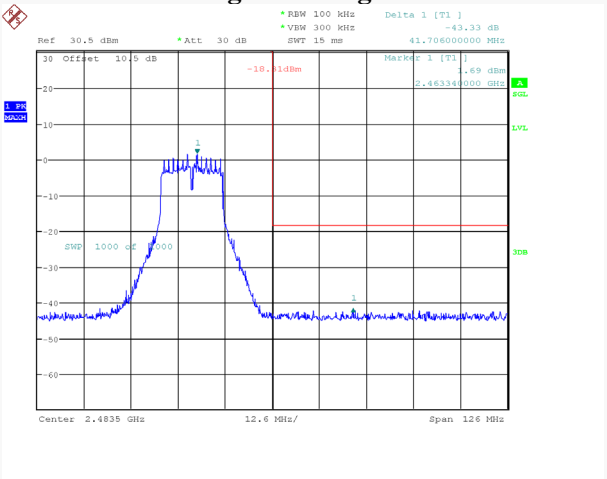
ProjectNo.:RSHA250514001 Tester:Neil Zhou
Date: 20.JUN.2025 16:52:42

802.11g Mode Left Side



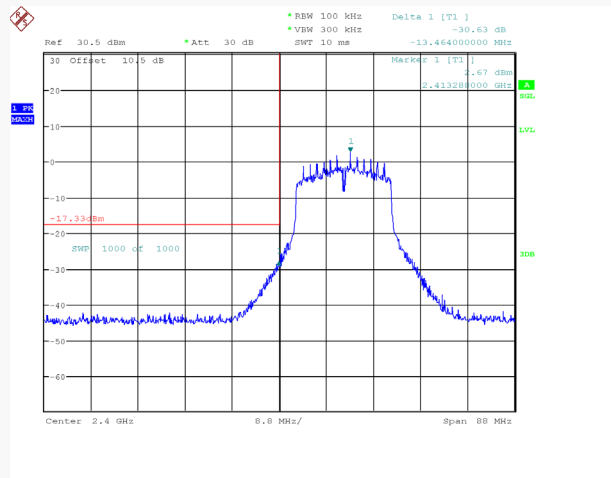
ProjectNo.:RSHA250514001 Tester:Neil Zhou
Date: 20.JUN.2025 17:04:24

802.11g Mode Right Side



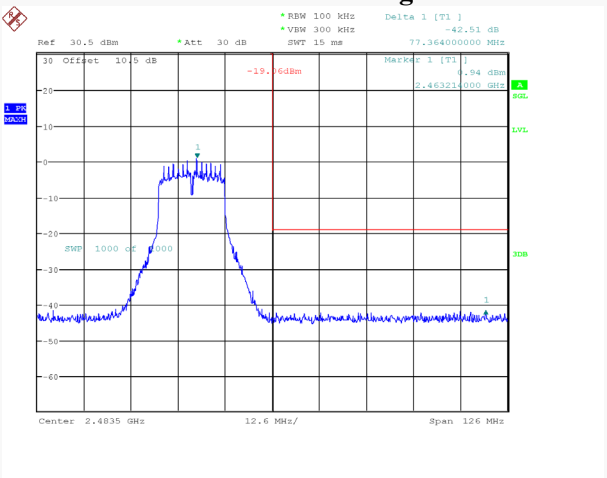
ProjectNo.:RSHA250514001 Tester:Neil Zhou
Date: 20.JUN.2025 17:33:23

802.11n-HT20 Mode Left Side



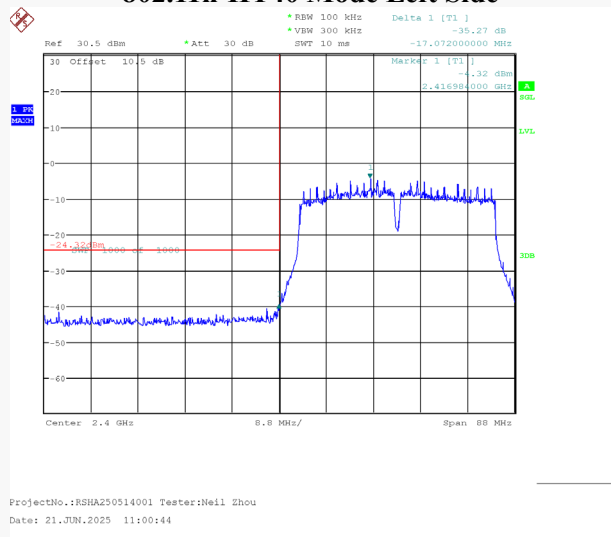
ProjectNo.:RSHA250514001 Tester:Neil Zhou
Date: 20.JUN.2025 17:47:29

802.11n-HT20 Mode Right Side

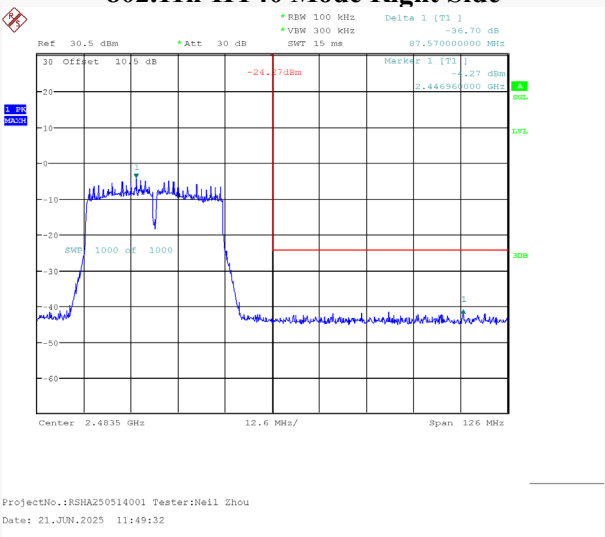


ProjectNo.:RSHA250514001 Tester:Neil Zhou
Date: 21.JUN.2025 10:40:46

802.11n-HT40 Mode Left Side



802.11n-HT40 Mode Right Side



CONDUCTED SPURIOUS EMISSION**Environmental Conditions & Test Information**

Test Date:	2025-12-03 to 2025-12-04
Temperature:	24.1-24.5 °C
Relative Humidity:	52-54 %
ATM Pressure:	102.5-103.1 kPa
Test Engineer:	Neil Zhou

Mode	Channel	Frequency (MHz)	Result (dB)	Limit (dB)
802.11b	Low	2412	43.20	20
	Middle	2437	42.49	20
	High	2462	43.24	20
802.11g	Low	2412	40.52	20
	Middle	2437	40.82	20
	High	2462	41.18	20
802.11n20	Low	2412	39.19	20
	Middle	2437	40.39	20
	High	2462	39.45	20
802.11n40	Low	2422	35.23	20
	Middle	2437	35.86	20
	High	2452	35.39	20