FCC PART 15.247

TEST REPORT

For

Heilongjiang Huida Technology Co., Ltd

Building 1, Science and Technology Innovation Headquarters, Shenzhen (Harbin) Industrial Park, No. 288, Zhigu Street, Songbei District, Harbin, China

FCC ID: 2BBNT-HD402

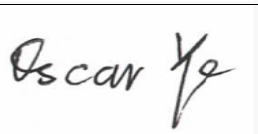
Report Type:	**Product Name:**
Original Report	Intelligent Remote Control

Report Number: RSHA240322001-00B

Report Date: 2024-12-20

Reviewed By: Jenny Yang

Approved By: Oscar Ye



Prepared By:

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

TABLE OF CONTENTS

REPORT REVISION HISTORY **4**

GENERAL INFORMATION **5**

PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) 5
OBJECTIVE 5
TEST METHODOLOGY 6
MEASUREMENT UNCERTAINTY 6
TEST FACILITY 6

SYSTEM TEST CONFIGURATION **7**

DESCRIPTION OF TEST CONFIGURATION 7
EQUIPMENT MODIFICATIONS 7
EUT EXERCISE SOFTWARE 7
SUPPORT EQUIPMENT LIST AND DETAILS 9
EXTERNAL I/O CABLE 9
BLOCK DIAGRAM OF TEST SETUP 9

SUMMARY OF TEST RESULTS **11**

TEST EQUIPMENT LIST **12**

FCC §15.203 - ANTENNA REQUIREMENT **13**

APPLICABLE STANDARD 13
ANTENNA CONNECTOR CONSTRUCTION 13

FCC §15.207 (a) - AC LINE CONDUCTED EMISSIONS **14**

APPLICABLE STANDARD 14
TEST SYSTEM SETUP 14
EMI TEST RECEIVER SETUP 14
TEST PROCEDURE 15
TEST RESULTS SUMMARY 15
TEST DATA: SEE APPENDIX 15

FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS **16**

APPLICABLE STANDARD 16
TEST SYSTEM SETUP 16
EMI TEST RECEIVER SETUP 18
TEST PROCEDURE 18
TEST RESULTS SUMMARY 18
TEST DATA: SEE APPENDIX 18

FCC §15.247(A) (2) - 6 DB EMISSION BANDWIDTH **19**

APPLICABLE STANDARD 19
TEST PROCEDURE 19
TEST DATA: SEE APPENDIX 19

FCC §15.247(B) (3) - MAXIMUM CONDUCTED OUTPUT POWER **20**

APPLICABLE STANDARD 20
TEST PROCEDURE 20
TEST DATA: SEE APPENDIX 20

FCC §15.247(D) – 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE **21**

APPLICABLE STANDARD 21
TEST PROCEDURE 21
TEST DATA: SEE APPENDIX 21

FCC §15.247(E) - POWER SPECTRAL DENSITY **22**

APPLICABLE STANDARD 22
TEST PROCEDURE 22
TEST DATA: SEE APPENDIX 22

APPENDIX - TEST DATA 23

ENVIRONMENTAL CONDITIONS & TEST INFORMATION 23
AC LINE CONDUCTED EMISSIONS 24
SPURIOUS EMISSIONS 26
6 DB EMISSION BANDWIDTH 45
OCCUPIED BANDWIDTH 48
POWER SPECTRAL DENSITY 51
TRANSMITTER OUTPUT POWER MEASUREMENT 54
OUT OF BAND EMISSIONS 55

EUT PHOTOGRAPHS 57

TEST SETUP PHOTOGRAPHS 58

REPORT REVISION HISTORY

Number of Revisions	Report No.	Version	Issue Date	Description
0	RSHA240322001-00B	R1V1	2024-12-20	Initial Release

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant:	Heilongjiang Huida Technology Co., Ltd
Tested Model:	HD402
Product Name:	Intelligent Remote Control
Power Supply:	DC 7.4V from battery and charging by DC 7.3V 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: 11.77 dBm 802.11g: 13.72 dBm 802.11n20: 13.73 dBm 802.11n40: 16.58 dBm
Channel Number:	11(802.11b/g/n20), 7(802.11n40)
Channel Separation:	5 MHz
Modulation Type:	DSSS, OFDM
Antenna Type:	PCB Antenna
★Maximum Antenna Gain:	2.92 dBi

Note: The maximum antenna gain is provided by the applicant.

All measurement and test data in this report was gathered from production sample serial number: RSHA240322001-1 (Assigned by the BACL (Kunshan). The EUT supplied by the applicant was received on 2024-03-22.)

Objective

This report is prepared for *Heilongjiang Huida Technology Co., Ltd* 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 C63.10-2013, 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℃
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	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

RF test tool: QRCT 3

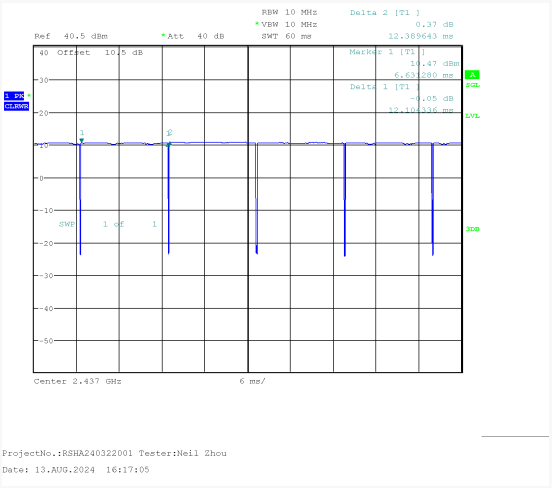
Pre-scan with all the data rates, and the worst case was performed as below:

Mode	Data rate	★Power Level		
		Low Channel	Middle Channel	High Channel
802.11b	1Mbps	10	10	10
802.11g	6Mbps	10	10	10
802.11n-HT20	MCS0	10	10	10
802.11n-HT40	MCS0	10	10	10

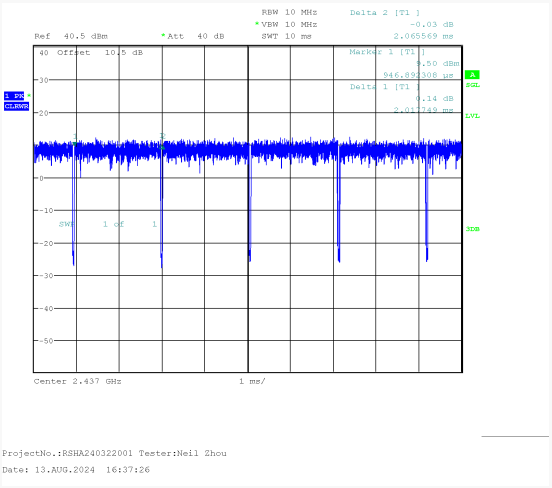
Note: The power level was declared by the applicant.

Duty Cycle:

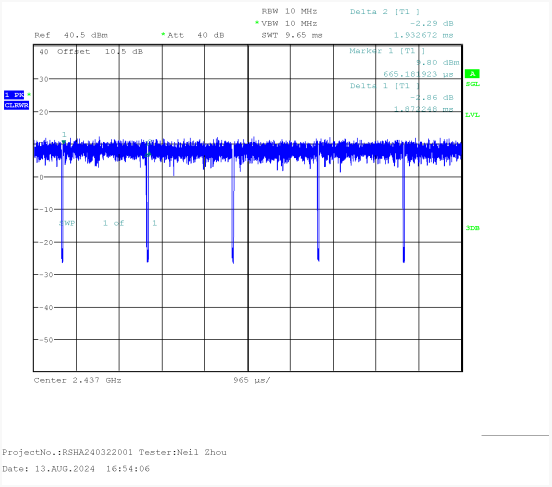
802.11b Mode Middle Channel



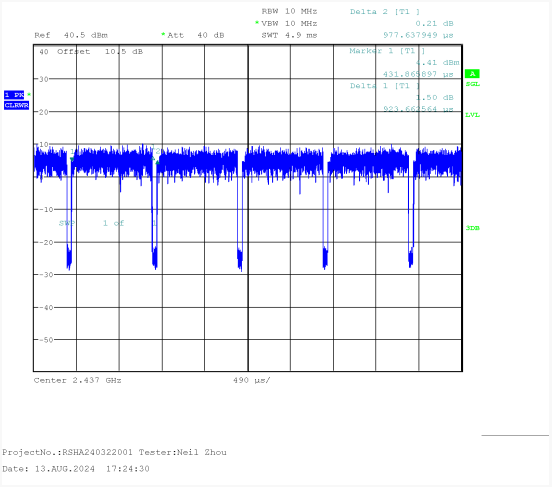
802.11g Mode Middle Channel



802.11n-HT20 Mode Middle Channel



802.11n-HT40 Mode Middle Channel



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

Test Mode	Channel	Transmission Duration (ms)	Transmission Period	Duty Cycle (%)
802.11b	2437	12.104	12.390	97.69
802.11g	2437	2.018	2.066	97.68
802.11n-HT20	2437	1.872	1.933	96.84
802.11n-HT40	2437	0.924	0.978	94.48

Note: “x” means the Duty Cycle.

Support Equipment List and Details

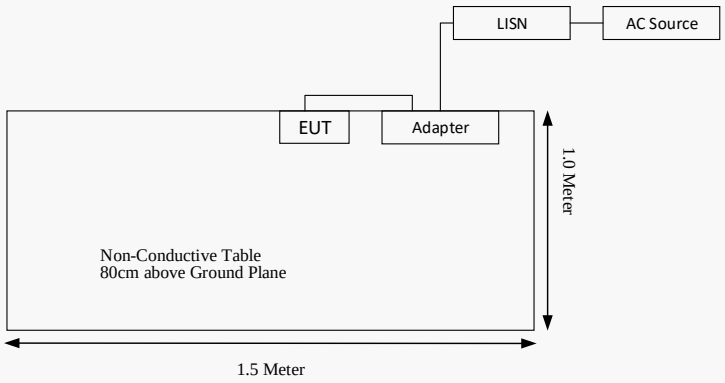
Manufacturer	Description	Model	Serial Number
Huntkey	Adapter	HK06520033-0C1	/

External I/O Cable

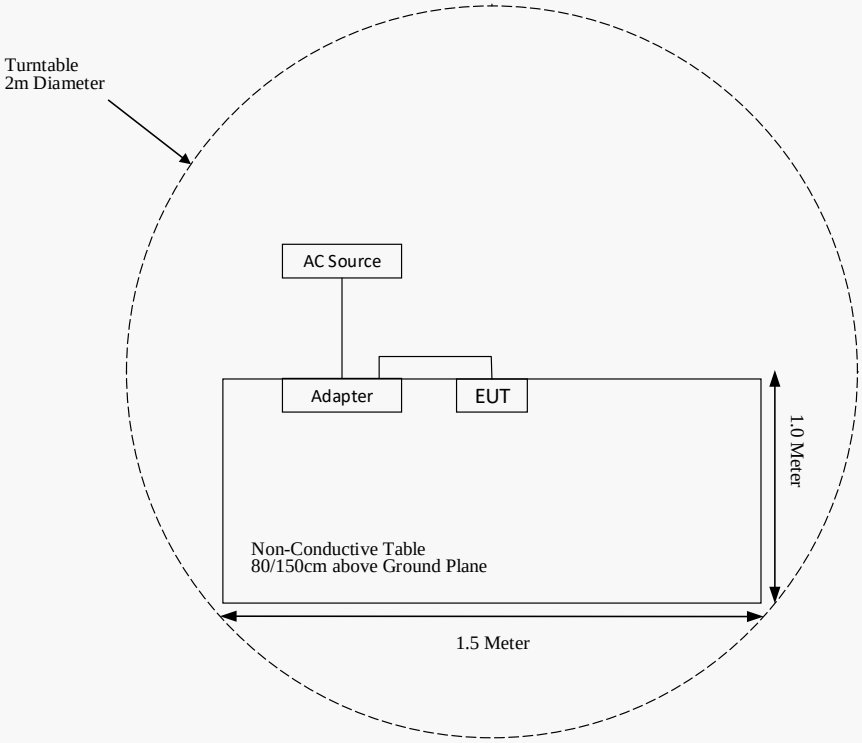
Cable Description	Length(m)	From Port	To
Power Cable	1.0	LISN/AC Source	Adapter
USB Cable	1.0	Adapter	EUT

Block Diagram of Test Setup

For Conducted Emissions:



For Radiated Emissions(Below 1GHz & Above 1 GHz):



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§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(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	2024-04-23	2025-04-22
Sunol Sciences	Broadband Antenna	JB3	A090314-1	2023-11-11	2024-11-10
Narda	6dB Attenuator	773-6	10690812-2-1	2023-11-11	2024-11-10
ETS-LINDGREN	Loop Antenna	6512	108100	2023-11-09	2024-11-08
Sonoma Instrument	Pre-amplifier	310N	171205	2024-04-23	2025-04-22
Rohde & Schwarz	Auto Test Software	EMC32	100361	N/A	N/A
MICRO-COAX	Coaxial Cable	Cable-8	008	2024-04-23	2025-04-22
MICRO-COAX	Coaxial Cable	Cable-9	009	2024-04-23	2025-04-22
MICRO-COAX	Coaxial Cable	Cable-10	010	2024-04-23	2025-04-22
Radiated Emission Test (Chamber #2)					
Rohde & Schwarz	EMI Test Receiver	ESU40	100207/040	2024-04-25	2025-04-24
ETS-LINDGREN	Horn Antenna	3115	9311-4159	2023-12-02	2024-12-01
ETS-LINDGREN	Horn Antenna	3116	2516	2023-12-08	2024-12-07
A.H.Systems, inc	Amplifier	PAM-0118P	512	2024-04-25	2025-04-24
SELECTOR	Amplifier	EM18G40G	060726	2024-04-25	2025-04-24
MICRO-TRONICS	Band Reject Filter	BRM50702	G024	2023-08-05	2024-08-04
Narda	Attenuator	10dB	010	2023-08-15	2024-08-14
Rohde & Schwarz	Auto test Software	EMC32	100361	N/A	N/A
MICRO-COAX	Coaxial Cable	Cable-6	006	2024-04-25	2025-04-24
MICRO-COAX	Coaxial Cable	Cable-11	011	2024-04-25	2025-04-24
MICRO-COAX	Coaxial Cable	Cable-12	012	2024-04-25	2025-04-24
MICRO-COAX	Coaxial Cable	Cable-13	013	2024-04-25	2025-04-24
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSU26	200103	2024-04-24	2025-04-23
Narda	Attenuator	10dB	010	2024-04-23	2025-04-22
Anritsu	Power Sensor	MA24418A	12621	2023-09-27	2024-09-26
Conducted Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESR3	102154	2024-04-23	2025-04-22
Rohde & Schwarz	LISN	ENV216	101115	2024-04-23	2025-04-22
Audix	Test Software	e3	V9	N/A	N/A
Narda	Attenuator	10 dB	N/A	2024-04-23	2025-04-22
MICRO-COAX	Coaxial Cable	Cable-15	015	2024-04-23	2025-04-22

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 §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 has a PCB antenna for 2.4G Wi-Fi, and the antenna gain is 2.92 dBi, which permanently attached to the unit, fulfill the requirement of this section. Please refer to the EUT photos.

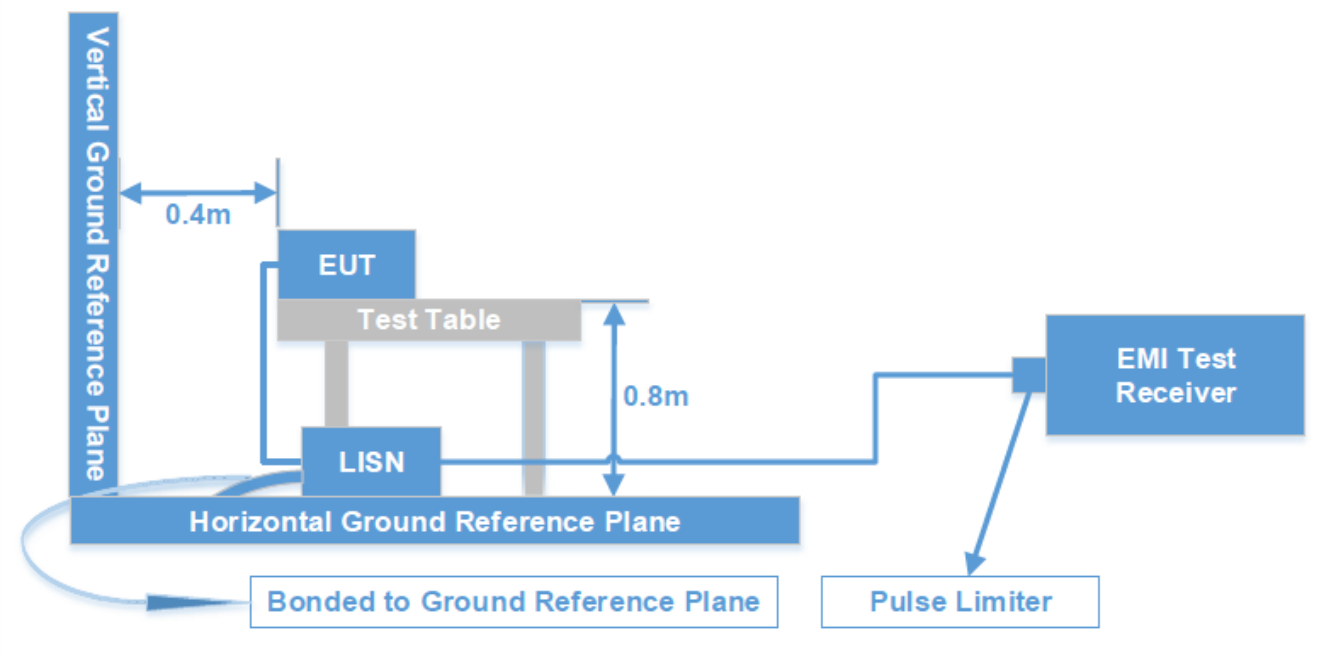
Result: Compliant.

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 C63.10-2013. 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	VBW
150 kHz - 30 MHz	9 kHz	30 kHz

Test Procedure

ANSI C63.10-2013 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

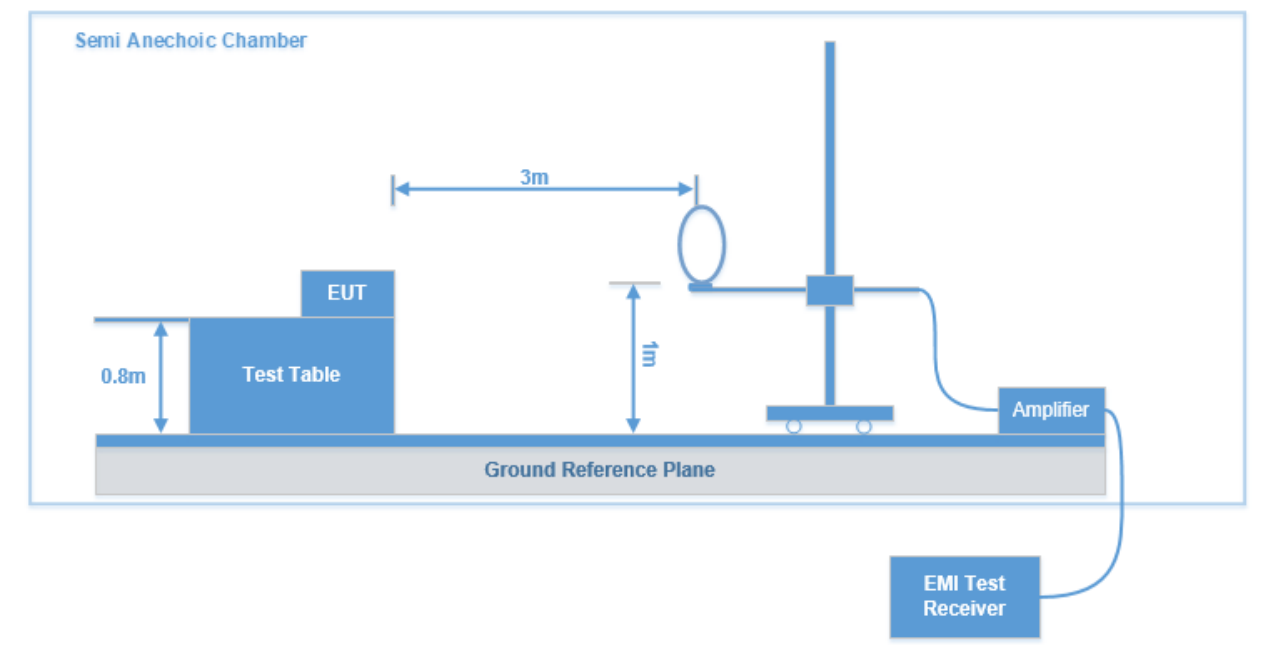
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

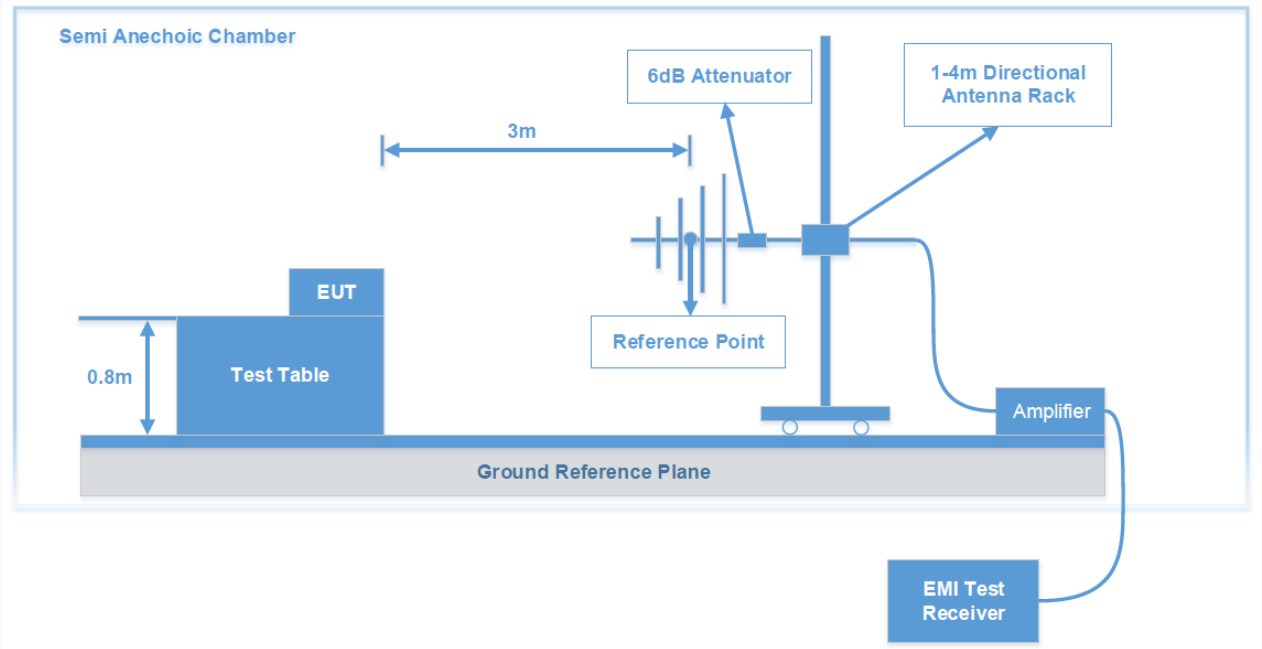
FCC §15.247 (d); §15.209; §15.205;

Test System Setup

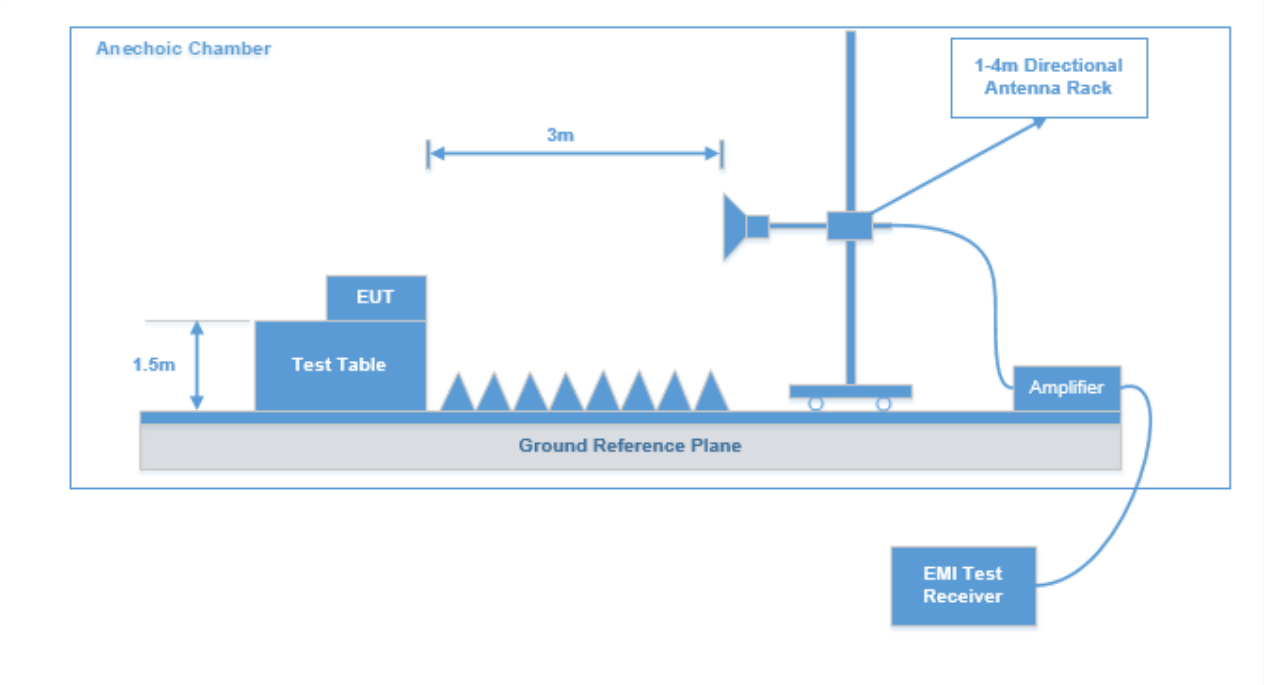
9 kHz-30MHz:



30MHz-1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.10-2013. 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
9 kHz – 150 kHz	200 Hz	1 kHz	200 Hz	QP/Average
150 kHz – 30 MHz	9 kHz	30 kHz	9 kHz	QP/ Average
30 MHz – 1000 MHz	100 kHz	300 kHz	/	Peak
	/	/	120 kHz	QP
Above 1GHz	1MHz	3 MHz	/	Peak
	1MHz	3 MHz	/	Average

Test Procedure

According to ANSI C63.10-2013 clause 6.5, 6.6 and 6.7.

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 (dBμV/m) = Meter Reading (dBμV) + 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 (dBμV/m) – Corrected Amplitude (dBμV/m)

Test Results Summary

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

Test Data: See Appendix

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

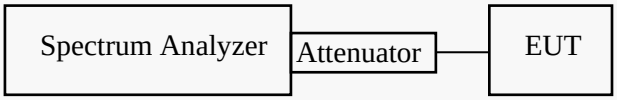
Applicable Standard

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 C63.10-2013 sub-clause 11.8.1

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 * RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



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.

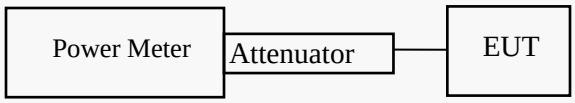
Test Procedure

According to ANSI C63.10-2013 sub-clause 11.9.1.3

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

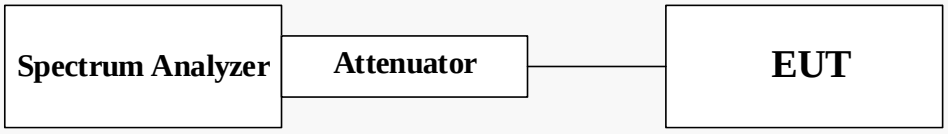
Applicable Standard

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 C63.10-2013 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)

Test Data: See Appendix

FCC §15.247(E) - POWER SPECTRAL DENSITY

Applicable Standard

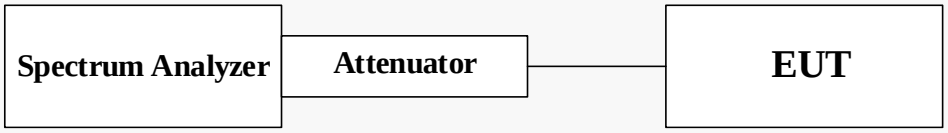
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of 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 C63.10-2013 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:

1. Set the RBW to: 3kHz≤ RBW≤100 kHz.
2. Set the VBW ≥ 3*RBW.
3. Set the span to 1.5 times the DTS bandwidth.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the maximum amplitude level within the RBW.
9. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.



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

Test Data: See Appendix

APPENDIX - TEST DATA

Environmental Conditions & Test Information

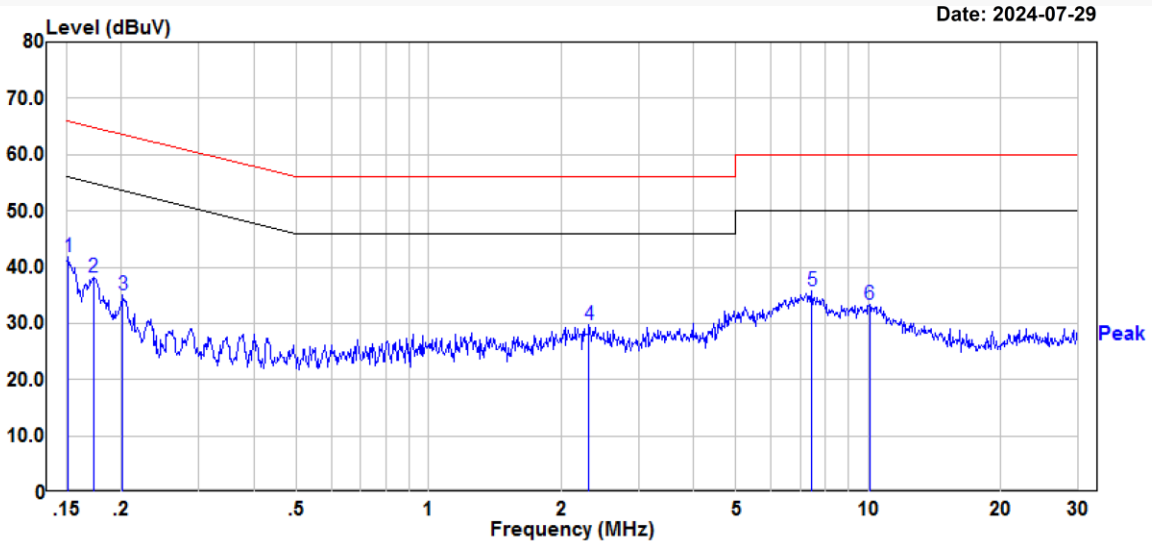
Test Item:	DUTY CYCLE	AC LINE CONDUCTED EMISSIONS
Test Date:	2024-08-13	2024-07-29
Temperature:	22.5 ℃	28.1 ℃
Relative Humidity:	53 %	56 %
ATM Pressure:	100.0kPa	101.1kPa
Test Result:	/	Pass
Test Engineer:	Neil Zhou	Leah Li

Test Item:	UNWANTED EMISSIONS & RESTRICTED FREQUENCY BANDS			6 DB EMISSION BANDWIDTH
	9kHz - 1GHz	1 GHz – 18 GHz	18 GHz – 25 GHz	
Test Date:	2024-04-29 & 2024-07-13	2024-07-13	2024-07-13	2024-08-13
Temperature:	25.5 ℃ - 26 ℃	25.5 ℃	25.5 ℃	22.5 ℃
Relative Humidity:	52 % - 55 %	52 %	52 %	53 %
ATM Pressure:	100.5kPa – 101.0kPa	100.5kPa	100.5kPa	100.0kPa
Test Result:	Pass	Pass	Pass	Pass
Test Engineer:	Leah Li	Peter Wang	Hugh Wu	Neil Zhou

Test Item:	OCCUPIED BANDWIDTH	POWER SPECTRAL DENSITY	TRANSMITTER OUTPUT POWER MEASUREMENT	OUT OF BAND EMISSIONS
Test Date:	2024-08-13	2024-08-13	2024-08-13	2024-08-13
Temperature:	22.5 ℃	22.5 ℃	22.5 ℃	22.5 ℃
Relative Humidity:	53 %	53 %	53 %	53 %
ATM Pressure:	100.0kPa	100.0kPa	100.0kPa	100.0kPa
Test Result:	Pass	Pass	Pass	Pass
Test Engineer:	Neil Zhou	Neil Zhou	Neil Zhou	Neil Zhou

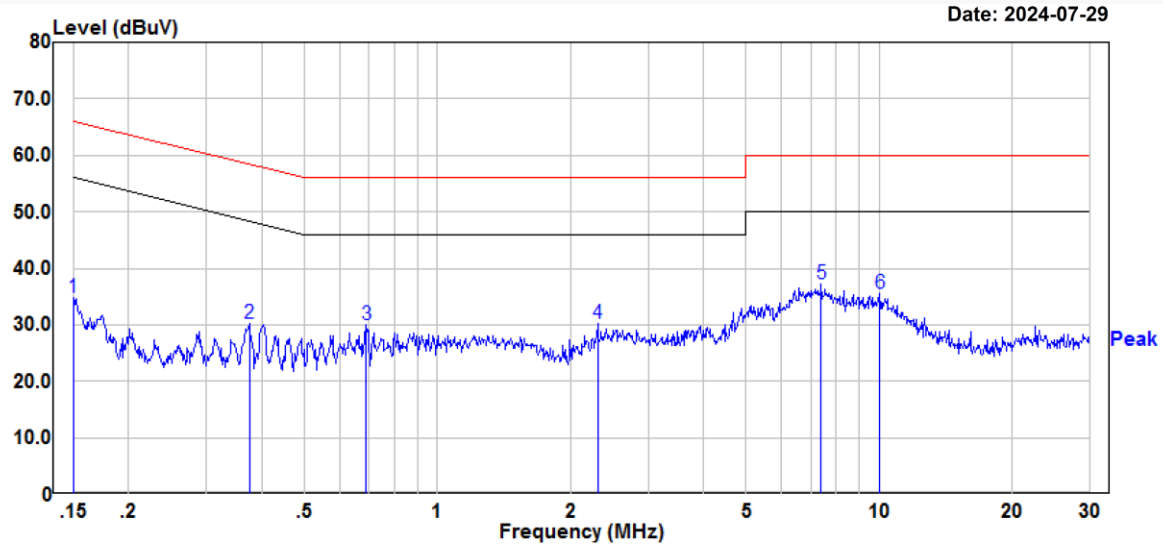
AC LINE CONDUCTED EMISSIONS

EUT operation mode: Transmitting in maximum output power 802.11 n40 mode and high channel




```
Site                : CE
Condition           : limit\FCC PART 15.207
                    : DET:Peak
Project No.         : RSHA240322001
Model               : HD402
Phase               : L
Voltage             : 120V/60Hz
Mode                : 2.4G WIFI
Test Equipment      : ENV216,ESR
Temperature         : 28.1℃
Humidity            : 56%
Atmospheric pressure: 101.1kPa
Test Engineer       : Leah Li
```

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.152	21.75	20.12	41.87	65.92	-24.05	Peak
2	0.172	18.02	20.11	38.13	64.84	-26.71	Peak
3	0.201	14.86	20.11	34.97	63.56	-28.59	Peak
4	2.315	9.47	20.19	29.66	56.00	-26.34	Peak
5	7.430	15.66	20.15	35.81	60.00	-24.19	Peak
6	10.071	13.26	20.00	33.26	60.00	-26.74	Peak



Site : CE
Condition : limit\FCC PART 15.207
: DET:Peak
Project No. : RSHA240322001
Model : HD402
Phase : N
Voltage : 120V/60Hz
Mode : 2.4G WIFI
Test Equipment : ENV216,ESR
Temperature : 28.1℃
Humidity : 56%
Atmospheric pressure: 101.1kPa
Test Engineer : Leah Li

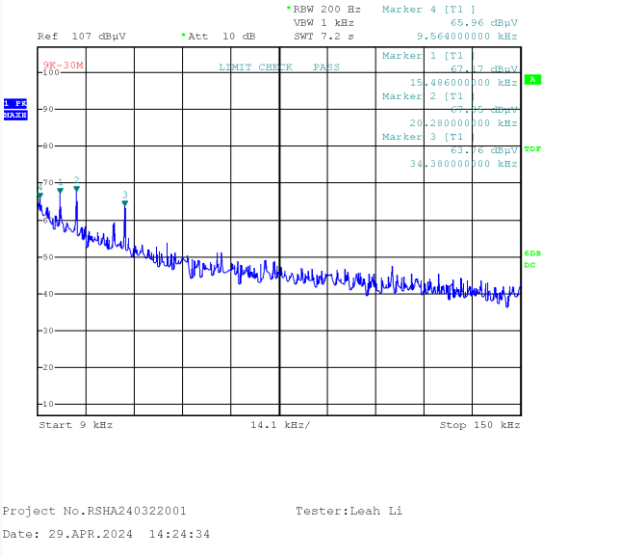
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.150	14.58	20.12	34.70	66.00	-31.30	Peak
2	0.375	9.94	20.19	30.13	58.38	-28.25	Peak
3	0.689	9.84	20.07	29.91	56.00	-26.09	Peak
4	2.303	10.03	20.19	30.22	56.00	-25.78	Peak
5	7.394	17.12	20.15	37.27	60.00	-22.73	Peak
6	10.021	15.44	20.01	35.45	60.00	-24.55	Peak

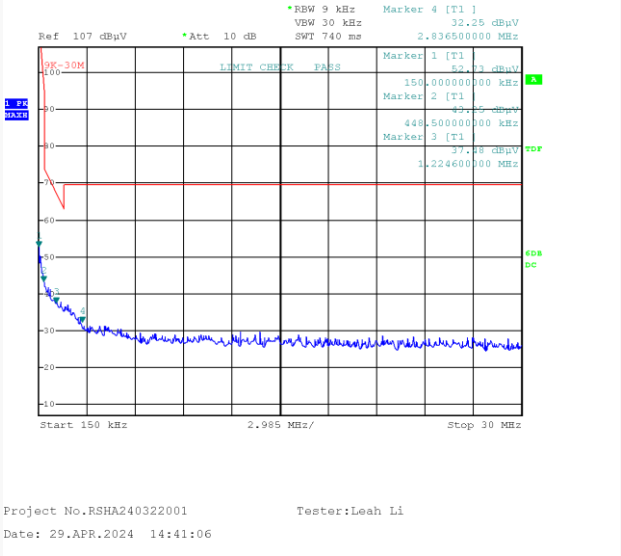
SPURIOUS EMISSIONS

Test Result: Compliant

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

9 kHz - 30 MHz: (*Transmitting in maximum output power 802.11 n40 mode and high channel)*
(Parallel worst)





9 kHz - 150 kHz

Frequency (MHz)	Corrected Amplitude (dBµV/m) @3m	Detector PK/QP/Ave.	Corrected Factor (dB/m)	Limit (dBµV/m) @3m	Margin (dB)
0.009564	65.96	PK	56.64	127.99	62.03
0.015486	67.17	PK	52.87	123.81	56.64
0.020280	67.85	PK	49.92	121.46	53.61
0.034380	63.76	PK	46.06	116.88	53.12

150 kHz - 30 MHz

Frequency (MHz)	Corrected Amplitude (dBµV/m) @3m	Detector PK/QP/Ave.	Corrected Factor (dB/m)	Limit (dBµV/m) @3m	Margin (dB)
0.15000	52.73	PK	50.90	104.08	51.35
0.44850	43.25	PK	24.52	94.57	51.32
1.22460	37.48	PK	4.32	65.84	28.36
2.83650	32.25	PK	10.89	69.54	37.29

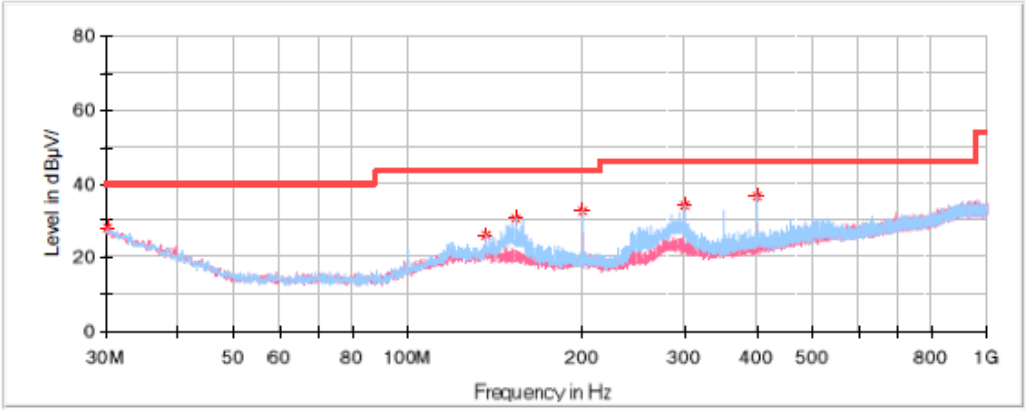
30 MHz - 1 GHz:

Transmitting in maximum output power 802.11 n40 mode

Low channel: 2422MHz

Common Information

Project No:	RSHA240322001
Test Mode:	Transmitting in 802.11n 40 mode 2422 channel
Standard:	FCC Part 15.205&FCC Part 15.209&FCC Part 15.247
Test Engineer:	Leah Li



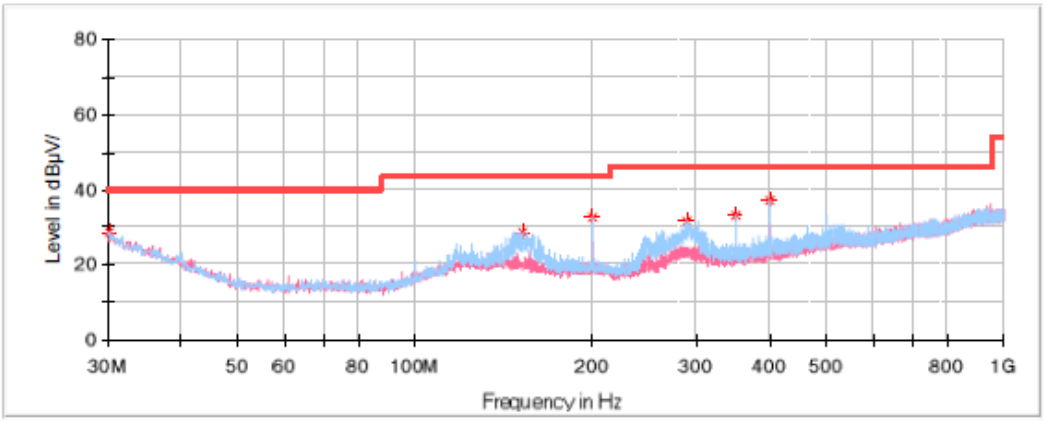
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµ V/m)	Limit (dBµ V/m)	Margin (dB)	Pol	Corr. (dB/m)
30.121250	28.20	40.00	11.80	V	-4.5
136.457500	26.39	43.50	17.11	H	-11.5
153.553750	30.59	43.50	12.91	H	-12.2
199.992500	32.72	43.50	10.78	H	-12.5
300.023750	34.09	46.00	11.91	H	-11.0
400.055000	36.82	46.00	9.18	H	-8.6

Middle channel: 2437MHz

Common Information

Project No:	RSHA240322001
Test Mode:	Transmitting in 802.11n 40 mode 2437 channel
Standard:	FCC Part 15.205&FCC Part 15.209&FCC Part 15.247
Test Engineer:	Leah Li



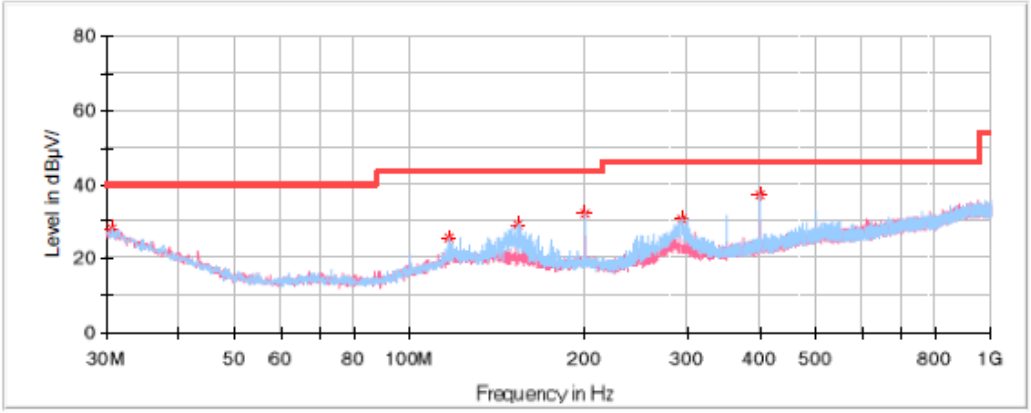
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµ V/m)	Limit (dBµ V/m)	Margin (dB)	Pol	Corr. (dB/m)
30.121250	28.53	40.00	11.47	H	-4.5
151.977500	28.55	43.50	14.95	H	-12.2
199.992500	32.53	43.50	10.97	H	-12.5
289.232500	31.54	46.00	14.46	H	-11.0
349.978750	33.26	46.00	12.74	H	-9.8
400.055000	37.09	46.00	8.91	H	-8.6

High Channel: 2452MHz

Common Information

Project No:	RSHA240322001
Test Mode:	Transmitting in 802.11n 40mode 2452 channel
Standard:	FCC Part 15.205&FCC Part 15.209&FCC Part 15.247
Test Engineer:	Leah Li



Critical_Freqs

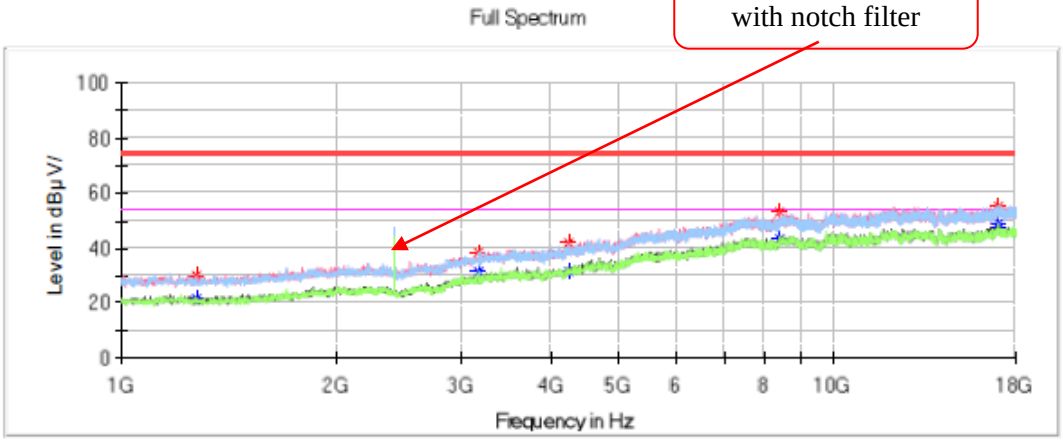
Frequency (MHz)	MaxPeak (dBµ V/m)	Limit (dBµ V/m)	Margin (dB)	Pol	Corr. (dB/m)
30.727500	27.97	40.00	12.03	H	-4.9
116.330000	25.53	43.50	17.97	H	-11.9
153.190000	29.42	43.50	14.08	H	-12.2
199.992500	32.41	43.50	11.09	H	-12.5
293.961250	30.68	46.00	15.32	H	-11.0
400.055000	37.27	46.00	8.73	H	-8.6

1GHz-18GHz:
802.11b Mode:

Low Channel: 2412MHz

Common Information

Project No.:	RSHA240322001
Test Mode:	Transmitting in 802.11b mode 2412 channel
Standard:	FCC Part 15.205&FCC Part 15.209&FCC Part 15.247
Test Engineer:	Peter Wang



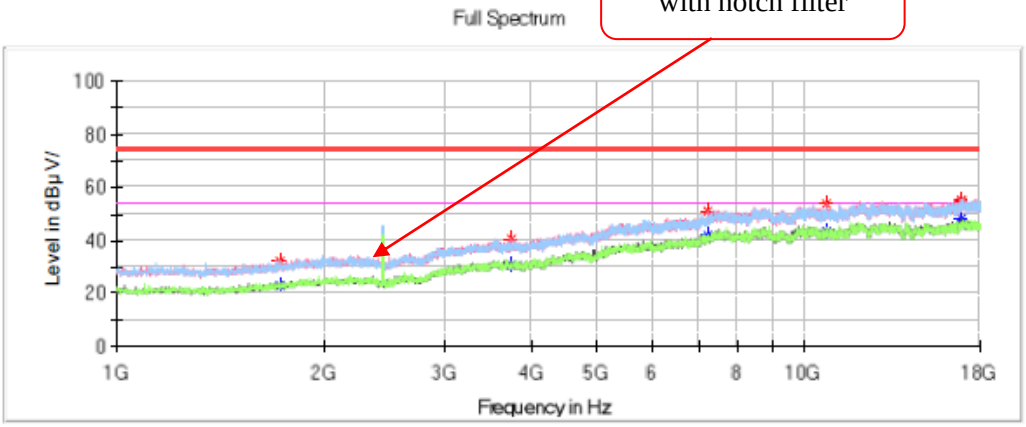
Critical_Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1275.400000	---	21.99	54.00	32.01	V	-15.1
1275.400000	30.31	---	74.00	43.69	V	-15.1
3172.600000	---	31.36	54.00	22.64	H	-7.7
3172.600000	38.28	---	74.00	35.72	H	-7.7
4231.700000	---	31.73	54.00	22.27	V	-5.1
4231.700000	42.15	---	74.00	31.85	V	-5.1
8401.800000	---	43.19	54.00	10.81	V	5.1
8401.800000	52.83	---	74.00	21.17	V	5.1
16974.900000	---	47.84	54.00	6.16	H	12.2
16974.900000	55.50	---	74.00	18.50	H	12.2
16997.000000	53.35	---	74.00	20.65	H	12.3
16997.000000	---	48.66	54.00	5.34	H	12.3

Middle Channel: 2437MHz

Common Information

Project No.:	RSHA240322001
Test Mode:	Transmitting in 802.11b mode 2437 channel
Standard:	FCC Part 15.205&FCC Part 15.209&FCC Part 15.247
Test Engineer:	Peter Wang



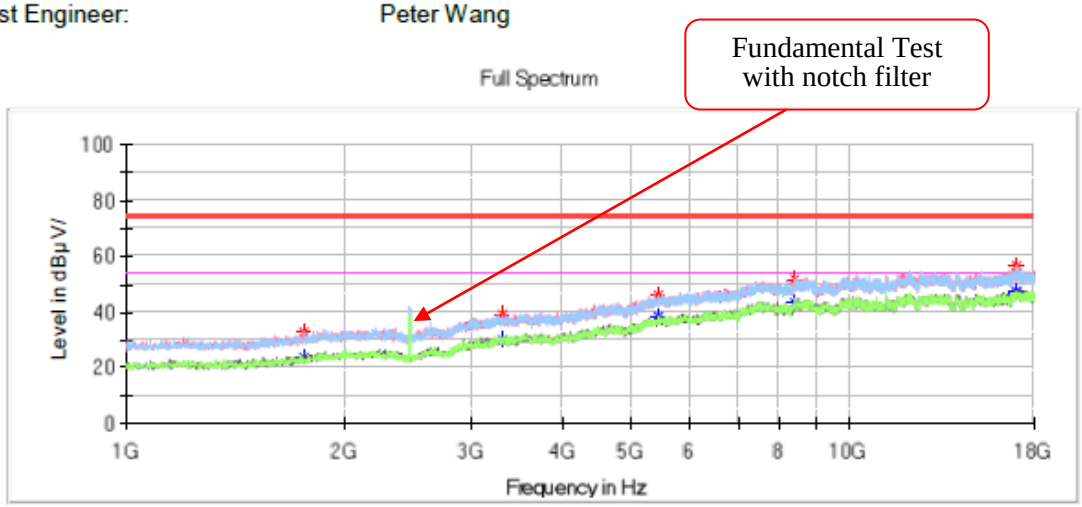
Critical_Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Pol	Corr. (dB/m)
1720.800000	---	23.12	54.00	30.88	V	-13.4
1720.800000	32.06	---	74.00	41.94	V	-13.4
3743.800000	---	30.80	54.00	23.20	V	-6.1
3743.800000	40.26	---	74.00	33.74	V	-6.1
7254.300000	---	41.63	54.00	12.37	H	3.3
7254.300000	50.77	---	74.00	23.23	H	3.3
10759.700000	---	43.60	54.00	10.40	H	7.2
10759.700000	53.62	---	74.00	20.38	H	7.2
16934.100000	55.56	---	74.00	18.44	V	12.1
16934.100000	---	46.23	54.00	7.77	V	12.1
16969.800000	54.37	---	74.00	19.63	V	12.2
16969.800000	---	48.32	54.00	5.68	V	12.2

High Channel: 2462MHz

Common Information

Project No.:	RSHA240322001
Test Mode:	Transmitting in 802.11b mode 2462 channel
Standard:	FCC Part 15.205&FCC Part 15.209&FCC Part 15.247
Test Engineer:	Peter Wang



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)
1761.600000	---	23.65	54.00	30.35	V	-13.2
1761.600000	32.75	---	74.00	41.25	V	-13.2
3310.300000	---	30.15	54.00	23.85	V	-7.1
3310.300000	38.89	---	74.00	35.11	V	-7.1
5454.000000	---	38.25	54.00	15.75	H	-0.5
5454.000000	46.30	---	74.00	27.70	H	-0.5
8410.300000	---	43.11	54.00	10.89	V	5.2
8410.300000	52.00	---	74.00	22.00	V	5.2
16990.200000	56.38	---	74.00	17.62	H	12.3
16990.200000	---	46.53	54.00	7.47	H	12.3
17015.700000	53.92	---	74.00	20.08	V	12.3
17015.700000	---	47.65	54.00	6.35	V	12.3

802.11g Mode

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
Low Channel: 2412 MHz						
1198.900000	---	24.64	54.00	29.36	H	-14.9
1198.900000	31.45	---	74.00	42.55	H	-14.9
1765.000000	---	28.46	54.00	25.54	V	-12.1
1765.000000	35.70	---	74.00	38.30	V	-12.1
4080.400000	---	32.39	54.00	21.61	V	-4.8
4080.400000	41.42	---	74.00	32.58	V	-4.8
7262.800000	---	39.33	54.00	14.67	H	4.0
7262.800000	48.62	---	74.00	25.38	H	4.0
9925.000000	---	43.40	54.00	10.60	H	7.6
9925.000000	52.46	---	74.00	21.54	H	7.6
17558.000000	---	47.27	54.00	6.73	V	13.4
17558.000000	55.92	---	74.00	18.08	V	13.4
Middle Channel: 2437 MHz						
1224.400000	---	23.83	54.00	30.17	V	-14.8
1224.400000	32.81	---	74.00	41.19	V	-14.8
1997.900000	---	28.68	54.00	25.32	V	-10.6
1997.900000	37.21	---	74.00	36.79	V	-10.6
3153.900000	---	29.45	54.00	24.55	V	-7.4
3153.900000	39.45	---	74.00	34.55	V	-7.4
5018.800000	---	36.84	54.00	17.16	H	-1.1
5018.800000	44.01	---	74.00	29.99	H	-1.1
9918.200000	---	43.22	54.00	10.78	H	7.6
9918.200000	51.19	---	74.00	22.81	H	7.6
15215.400000	---	46.00	54.00	8.00	H	10.8
15215.400000	55.68	---	74.00	18.32	H	10.8
High Channel: 2462 MHz						
1153.000000	---	23.26	54.00	30.74	H	-15.0
1153.000000	33.19	---	74.00	40.81	H	-15.0
1997.900000	---	29.69	54.00	24.31	V	-10.6
1997.900000	36.95	---	74.00	37.05	V	-10.6
3551.700000	---	32.18	54.00	21.82	H	-6.0
3551.700000	41.28	---	74.00	32.72	H	-6.0
7174.400000	---	39.39	54.00	14.61	V	3.9
7174.400000	48.24	---	74.00	25.76	V	3.9
14001.600000	---	45.35	54.00	8.65	H	10.5
14001.600000	54.92	---	74.00	19.08	H	10.5
17668.500000	---	46.56	54.00	7.44	V	12.9
17668.500000	54.63	---	74.00	19.37	V	12.9

802.11n20 Mode

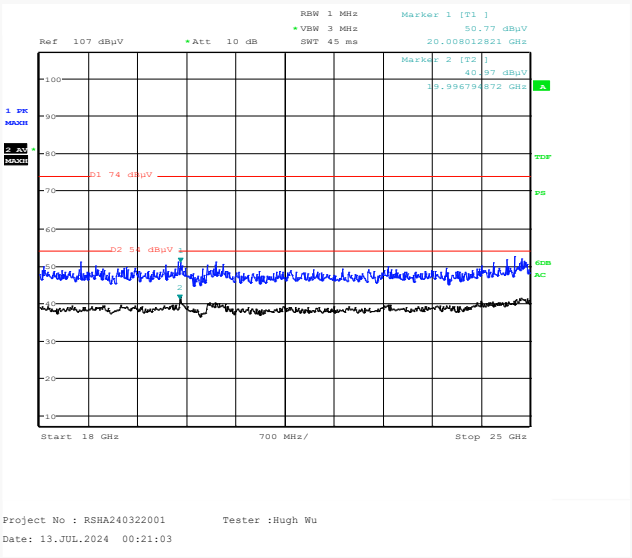
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
Low Channel: 2412 MHz						
1326.400000	---	27.82	54.00	26.18	V	-14.5
1326.400000	33.42	---	74.00	40.58	V	-14.5
1991.100000	---	28.42	54.00	25.58	V	-10.6
1991.100000	38.49	---	74.00	35.51	V	-10.6
3077.400000	---	30.05	54.00	23.95	H	-7.7
3077.400000	38.03	---	74.00	35.97	H	-7.7
4833.500000	---	34.24	54.00	19.76	H	-2.1
4833.500000	43.88	---	74.00	30.12	H	-2.1
10363.600000	---	41.57	54.00	12.43	H	7.4
10363.600000	51.33	---	74.00	22.67	H	7.4
17568.200000	---	47.41	54.00	6.59	H	13.3
17568.200000	55.80	---	74.00	18.20	H	13.3
Middle Channel: 2437 MHz						
1295.800000	---	22.44	54.00	31.56	V	-14.6
1295.800000	31.66	---	74.00	42.34	V	-14.6
1991.100000	---	30.48	54.00	23.52	H	-10.6
1991.100000	39.72	---	74.00	34.28	H	-10.6
3126.700000	---	30.77	54.00	23.23	H	-7.5
3126.700000	38.86	---	74.00	35.14	H	-7.5
4920.200000	---	35.47	54.00	18.53	H	-1.6
4920.200000	44.26	---	74.00	29.74	H	-1.6
9449.000000	---	40.11	54.00	13.89	V	6.0
9449.000000	49.44	---	74.00	24.56	V	6.0
15172.900000	---	45.65	54.00	8.35	H	10.7
15172.900000	55.49	---	74.00	18.51	H	10.7
High Channel: 2462 MHz						
1161.500000	---	24.75	54.00	29.25	V	-15.0
1161.500000	34.62	---	74.00	39.38	V	-15.0
1991.100000	---	29.67	54.00	24.33	V	-10.6
1991.100000	39.61	---	74.00	34.39	V	-10.6
3405.500000	---	30.79	54.00	23.21	H	-6.5
3405.500000	39.88	---	74.00	34.12	H	-6.5
7159.100000	---	39.25	54.00	14.75	V	3.9
7159.100000	47.42	---	74.00	26.58	V	3.9
9921.600000	---	43.28	54.00	10.72	V	7.6
9921.600000	49.73	---	74.00	24.27	V	7.6
15213.700000	---	46.42	54.00	7.58	V	10.8
15213.700000	55.44	---	74.00	18.56	V	10.8

802.11n40 Mode

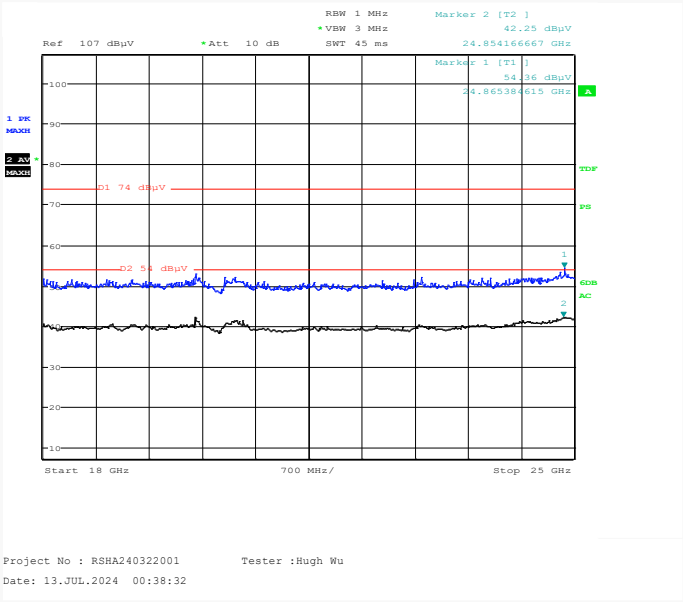
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
Low Channel: 2422MHz						
1323.000000	31.47	---	74.00	42.53	V	-14.5
1323.000000	---	23.31	54.00	30.69	V	-14.5
1994.500000	---	27.97	54.00	26.03	V	-10.6
1994.500000	37.93	---	74.00	36.07	V	-10.6
4138.200000	---	32.63	54.00	21.37	V	-4.7
4138.200000	41.35	---	74.00	32.65	V	-4.7
6849.700000	---	37.74	54.00	16.26	H	2.9
6849.700000	46.41	---	74.00	27.59	H	2.9
9993.000000	---	41.57	54.00	12.43	H	7.8
9993.000000	51.39	---	74.00	22.61	H	7.8
15257.900000	---	45.36	54.00	8.64	V	11.0
15257.900000	55.33	---	74.00	18.67	V	11.0
Middle Channel: 2437 MHz						
1079.900000	---	23.41	54.00	30.59	H	-15.3
1079.900000	32.11	---	74.00	41.89	H	-15.3
1996.200000	---	29.26	54.00	24.74	H	-10.6
1996.200000	37.48	---	74.00	36.52	H	-10.6
3930.800000	---	31.57	54.00	22.43	H	-5.2
3930.800000	39.18	---	74.00	34.82	H	-5.2
5909.600000	---	36.80	54.00	17.20	H	0.3
5909.600000	46.76	---	74.00	27.24	H	0.3
10161.300000	---	40.02	54.00	13.98	V	7.6
10161.300000	50.28	---	74.00	23.72	V	7.6
17221.400000	---	46.02	54.00	7.98	H	12.9
17221.400000	54.95	---	74.00	19.05	H	12.9
High Channel: 2452 MHz						
1265.200000	31.62	---	68.20	36.58	H	-15.1
1265.200000	---	23.57	---	---	H	-15.1
3703.000000	---	29.92	54.00	24.08	V	-6.2
3703.000000	39.49	---	74.00	34.51	V	-6.2
5097.000000	---	33.51	54.00	20.49	V	-2.0
5097.000000	42.18	---	74.00	31.82	V	-2.0
8124.700000	---	38.30	54.00	15.70	H	4.3
8124.700000	46.52	---	74.00	27.48	H	4.3
12135.000000	---	42.64	54.00	11.36	V	9.2
12135.000000	51.00	---	74.00	23.00	V	9.2
15733.900000	---	41.94	54.00	12.06	H	9.6
15733.900000	50.79	---	74.00	23.21	H	9.6

18GHz-25GHz: Transmitting in maximum output power 802.11n-HT40 mode high channel

Horizontal



Vertical



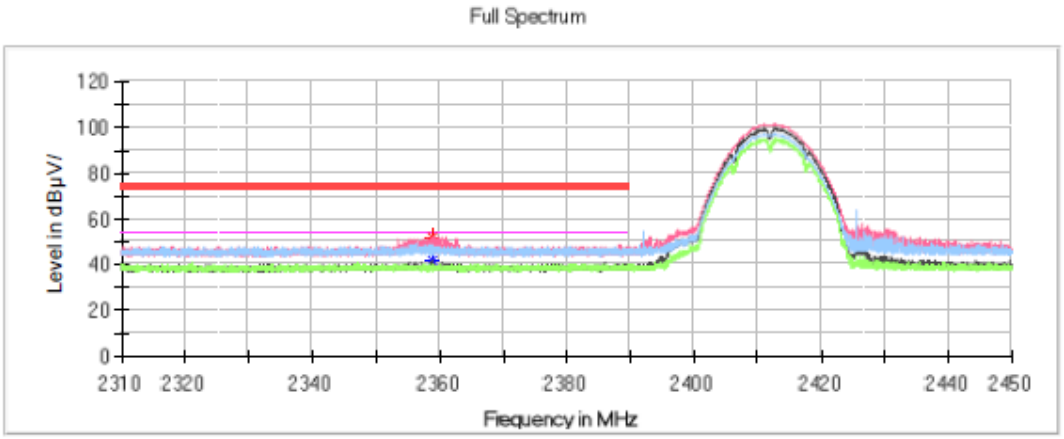
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
24854.17	---	42.25	54	11.75	V	15.19
24865.38	54.36	---	74	19.64	V	15.21
19996.79	---	40.97	54	13.03	H	12.64
20008.01	50.77	---	74	23.23	H	12.69

Band Edge:
802.11b Mode:

Low Channel

Common Information

Project No.:	RSHA240322001
Test Mode:	802.11b Tansmitting in Low Channel
Standard:	FCC Part 15.205&FCC Part 15.209&FCC Part 15.247
Test Engineer:	Peter Wang



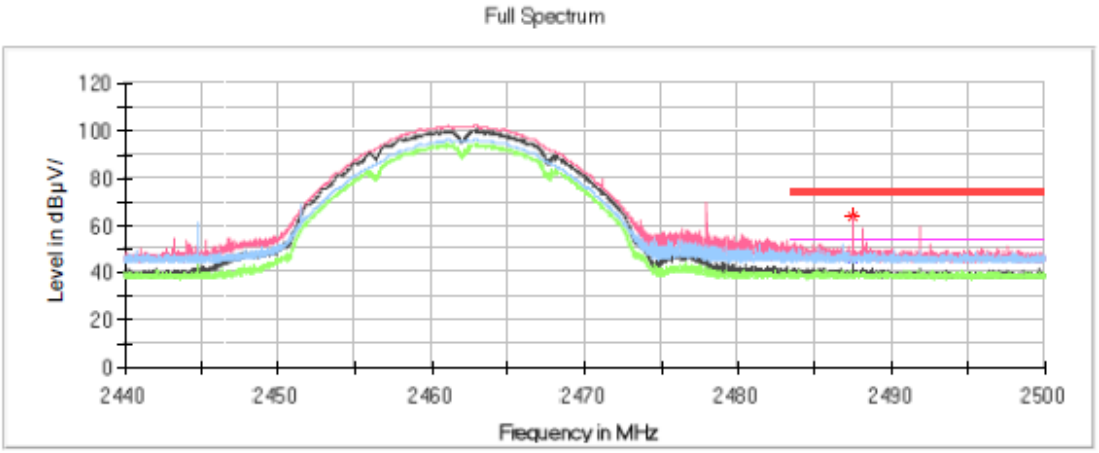
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµ V/m)	Average (dBµ V/m)	Limit (dBµ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2358.902000	51.98	---	74.00	22.02	V	0.0
2358.902000	---	41.73	54.00	12.27	V	0.0

High Channel

Common Information

Project No.:	RSHA240322001
Test Mode:	802.11b Tansmitting in High Channel
Standard:	FCC Part 15.205&FCC Part 15.209&FCC Part 15.247
Test Engineer:	Peter Wang



Critical_Freqs

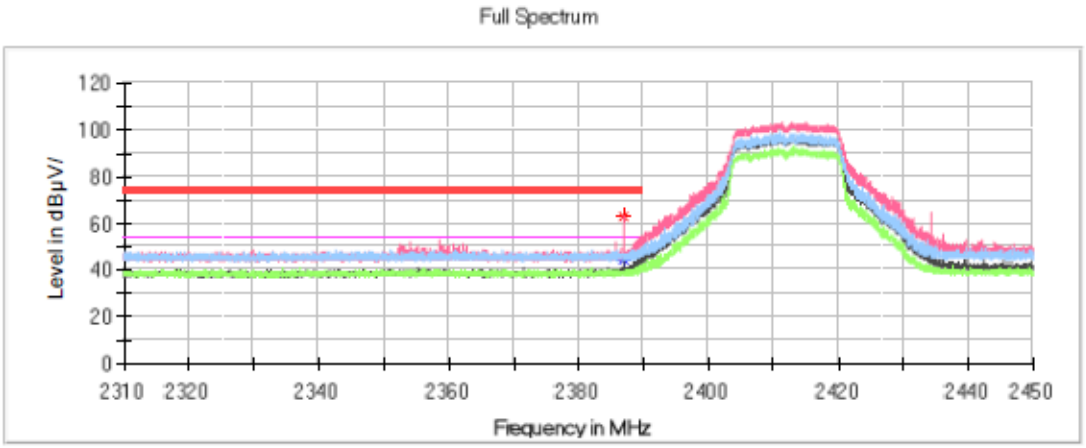
Frequency (MHz)	MaxPeak (dBµ V/m)	Average (dBµ V/m)	Limit (dBµ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2487.484000	63.55	---	74.00	10.45	V	0.2
2487.484000	---	46.53	54.00	7.47	V	0.2

802.11g Mode :

Low Channel

Common Information

Project No.:	RSHA240322001
Test Mode:	802.11g Tansmitting in Low Channel
Standard:	FCC Part 15.205&FCC Part 15.209&FCC Part 15.247
Test Engineer:	Peter Wang



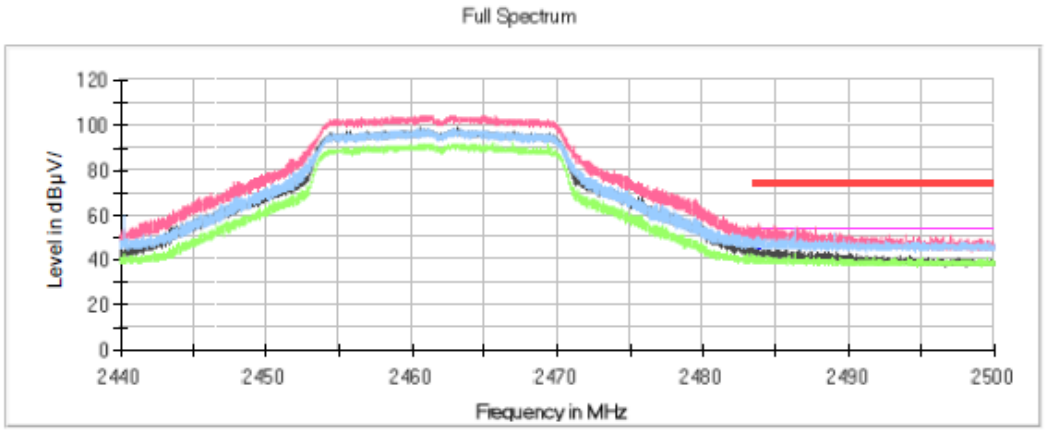
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµ V/m)	Average (dBµ V/m)	Limit (dBµ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2387.000000	---	44.65	54.00	9.35	V	0.1
2387.000000	63.12	---	74.00	10.88	V	0.1

High Channel

Common Information

Project No.:	RSHA240322001
Test Mode:	802.11g Tansmitting in High Channel
Standard:	FCC Part 15.205&FCC Part 15.209&FCC Part 15.247
Test Engineer:	Peter Wang



Critical_Freqs

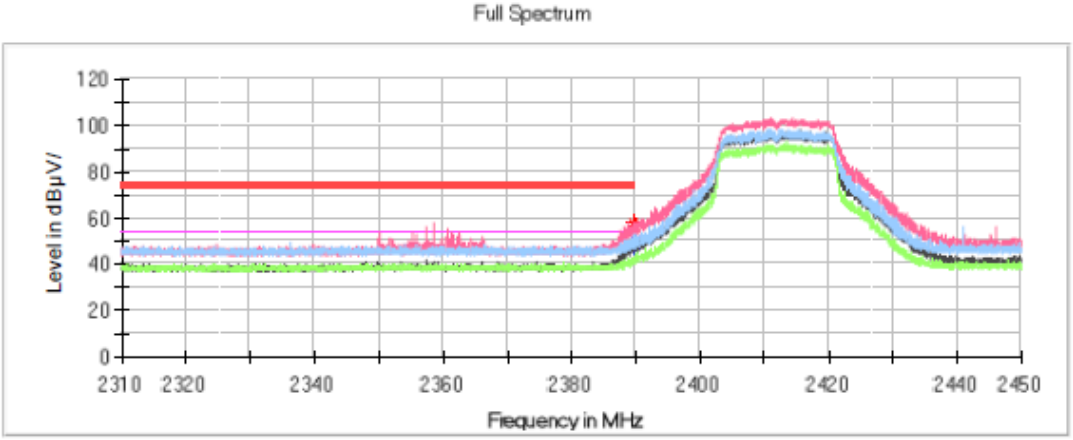
Frequency (MHz)	MaxPeak (dBµ V/m)	Average (dBµ V/m)	Limit (dBµ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2483.554000	50.26	---	74.00	23.74	V	0.2
2483.554000	---	45.18	54.00	8.82	V	0.2

802.11n-HT20 Mode:

Low Channel

Common Information

Project No.:	RSHA240322001
Test Mode:	802.11n20 Tansmitting in Low Channel
Standard:	FCC Part 15.205&FCC Part 15.209&FCC Part 15.247
Test Engineer:	Peter Wang



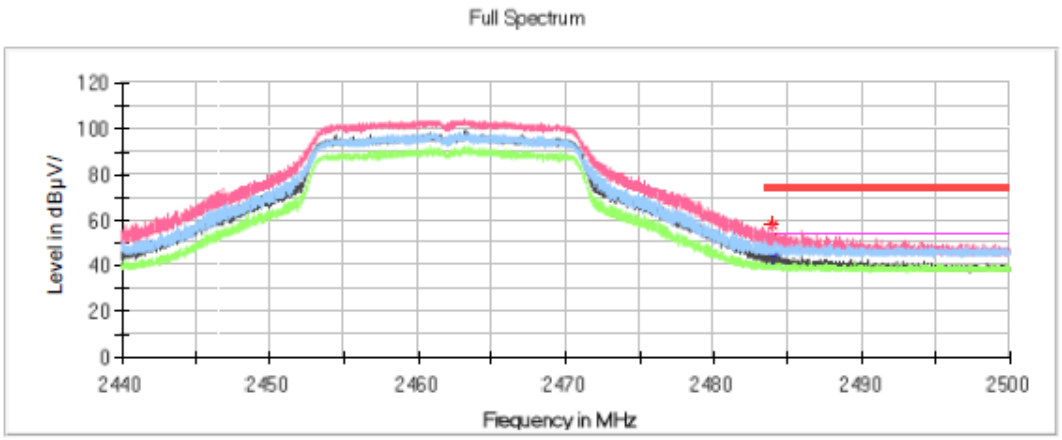
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµ V/m)	Average (dBµ V/m)	Limit (dBµ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2389.758000	57.93	---	74.00	16.07	V	0.1
2389.758000	---	46.76	54.00	7.24	V	0.1
2389.912000	56.26	---	74.00	17.74	V	0.1
2389.912000	---	50.30	54.00	3.70	V	0.1

High Channel

Common Information

Project No.:	RSHA240322001
Test Mode:	802.11n20 Tansmitting in High Channel
Standard:	FCC Part 15.205&FCC Part 15.209&FCC Part 15.247
Test Engineer:	Peter Wang



Critical_Freqs

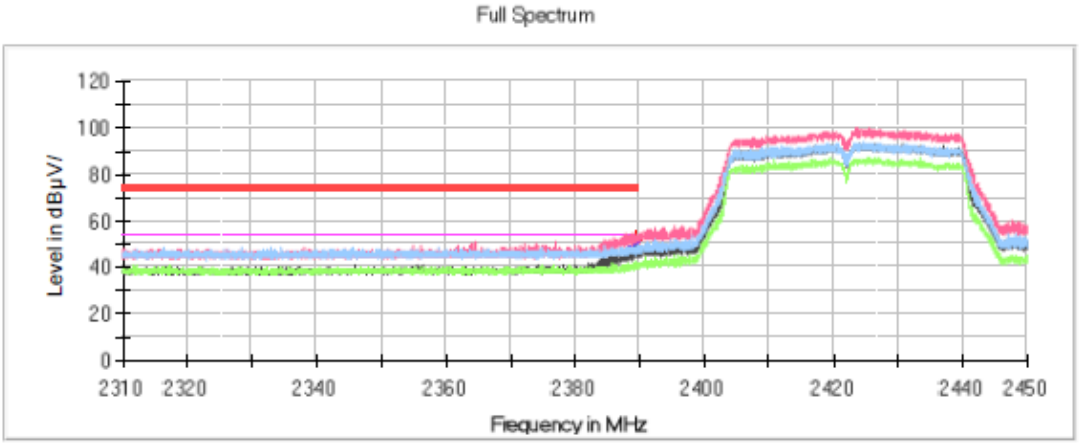
Frequency (MHz)	MaxPeak (dBµ V/m)	Average (dBµ V/m)	Limit (dBµ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2483.992000	---	43.93	54.00	10.07	V	0.2
2483.992000	57.73	---	74.00	16.27	V	0.2
2484.190000	---	45.23	54.00	8.77	V	0.2
2484.190000	51.56	---	74.00	22.44	V	0.2

802.11n-HT40 Mode:

Low Channel

Common Information

Project No.:	RSHA240322001
Test Mode:	802.11n40 Tansmitting in Low Channel
Standard:	FCC Part 15.205&FCC Part 15.209&FCC Part 15.247
Test Engineer:	Peter Wang



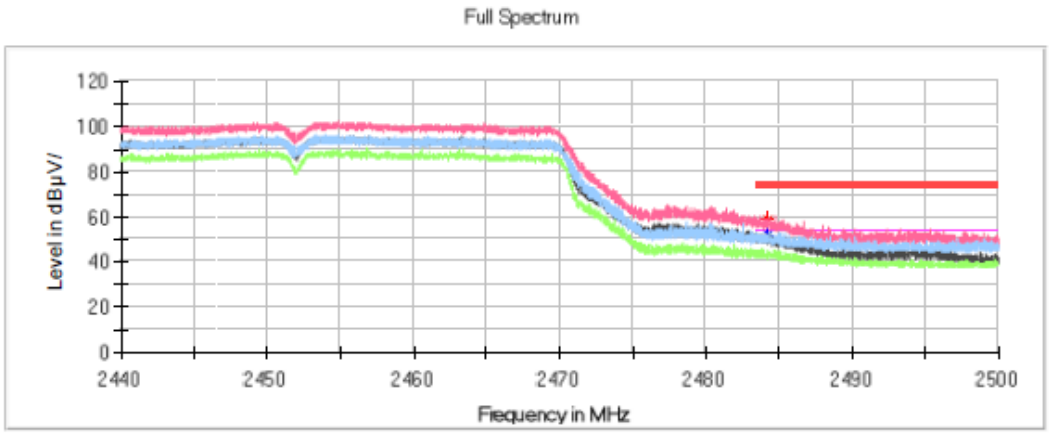
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµ V/m)	Average (dBµ V/m)	Limit (dBµ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2389.324000	52.02	---	74.00	21.98	V	0.1
2389.324000	---	49.47	54.00	4.53	V	0.1

High Channel

Common Information

Project No.:	RSHA240322001
Test Mode:	802.11n40 Tansmitting in High Channel
Standard:	FCC Part 15.205&FCC Part 15.209&FCC Part 15.247
Test Engineer:	Peter Wang



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµ V/m)	Average (dBµ V/m)	Limit (dBµ V/m)	Margin (dB)	Pol	Corr. (dB/m)
2484.172000	59.02	---	74.00	14.98	V	0.2
2484.172000	---	51.93	54.00	2.07	V	0.2

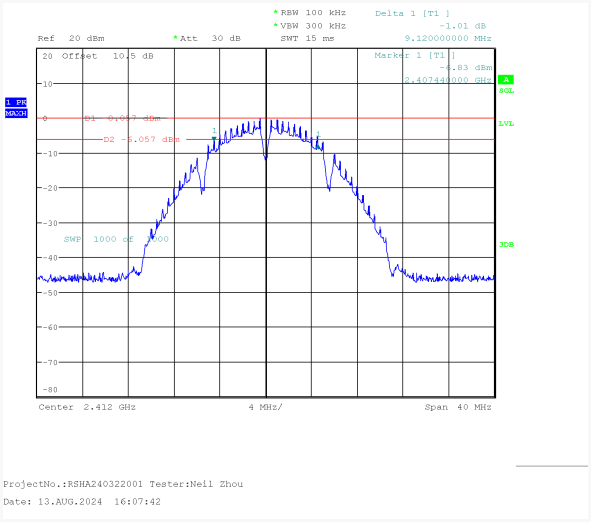
6 dB EMISSION BANDWIDTH

Test Result: Compliant.

EUT operation mode: Transmitting

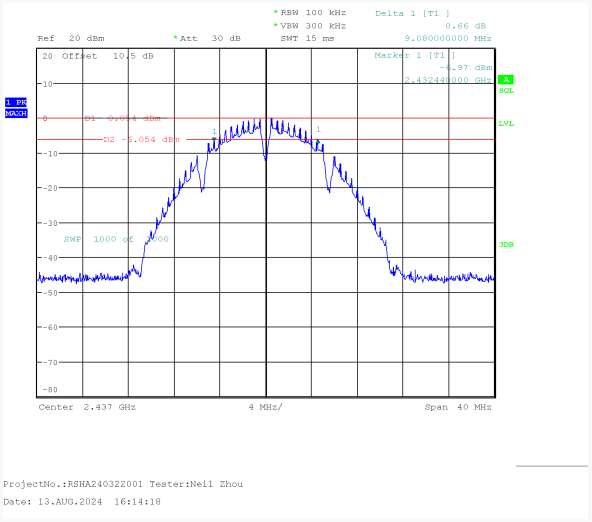
Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	Limit (MHz)
802.11b Mode			
Low	2412	9.120	≥0.5
Middle	2437	9.080	≥0.5
High	2462	9.120	≥0.5
802.11g Mode			
Low	2412	16.160	≥0.5
Middle	2437	15.840	≥0.5
High	2462	16.120	≥0.5
802.11n-HT20 Mode			
Low	2412	16.200	≥0.5
Middle	2437	16.360	≥0.5
High	2462	16.320	≥0.5
802.11n-HT40 Mode			
Low	2422	35.920	≥0.5
Middle	2437	35.920	≥0.5
High	2452	35.680	≥0.5

802.11b Mode Low Channel



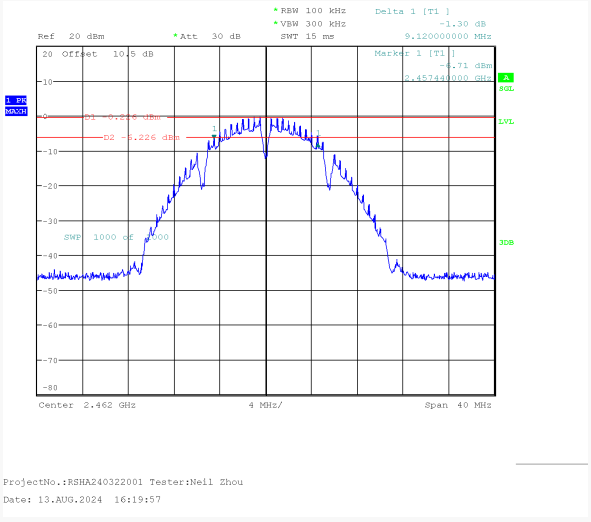
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:07:42

802.11b Mode Middle Channel



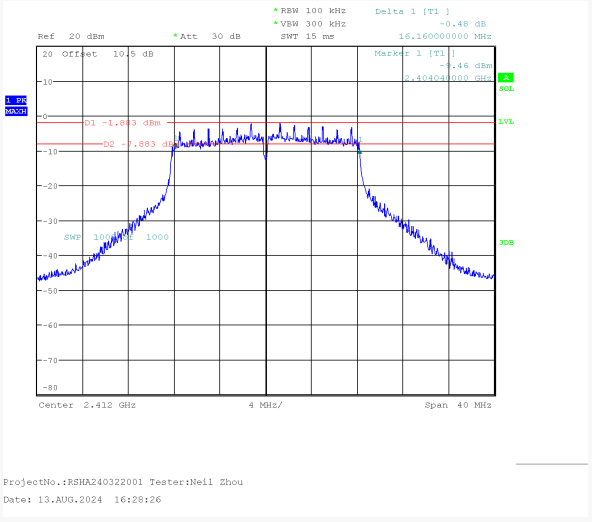
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:14:18

802.11b Mode High Channel



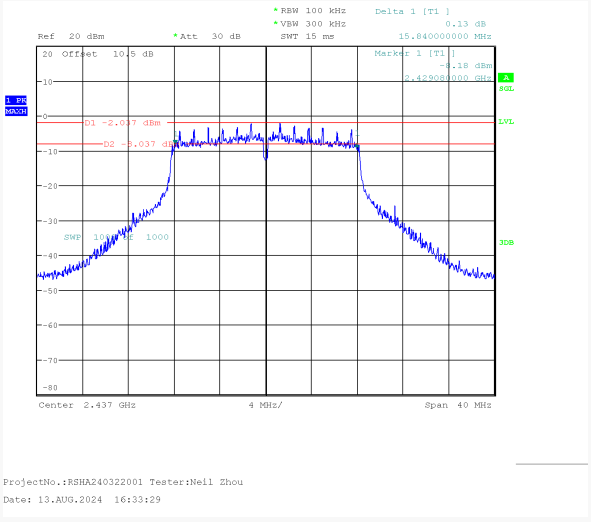
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:19:57

802.11g Mode Low Channel



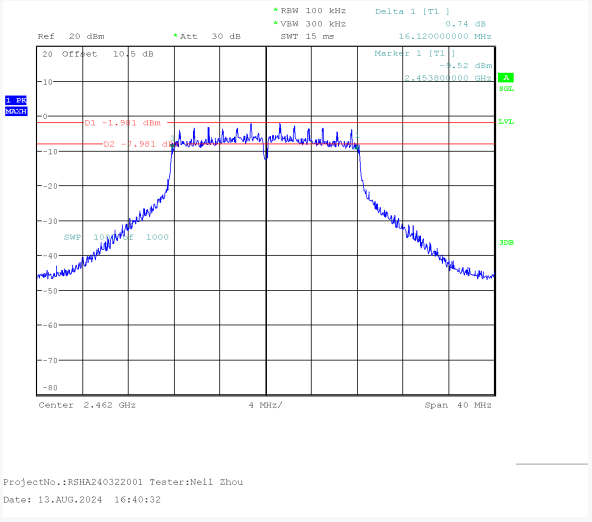
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:28:26

802.11g Mode Middle Channel



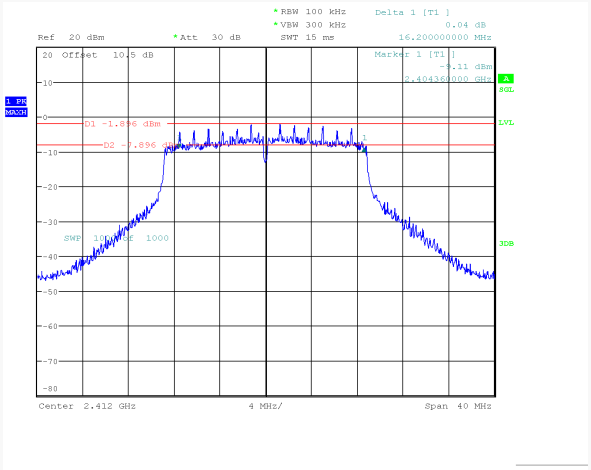
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:33:29

802.11g Mode High Channel



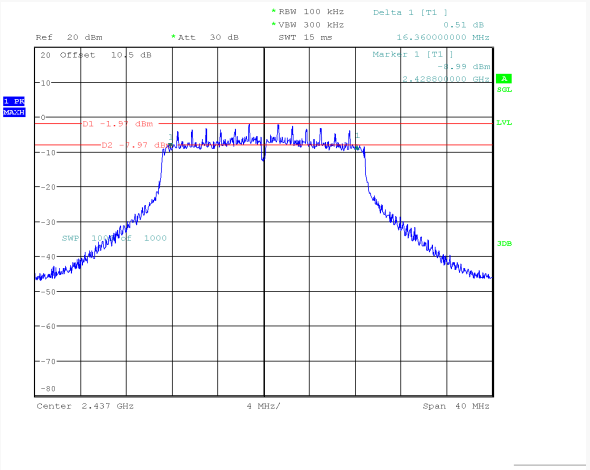
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:40:32

802.11n-HT20 Mode Low Channel



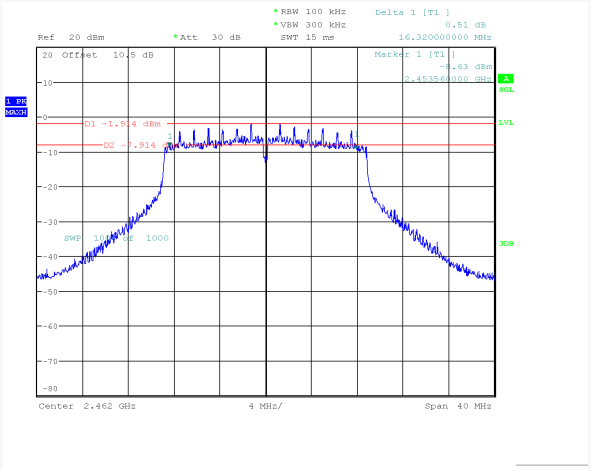
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:47:08

802.11n-HT20 Mode Middle Channel



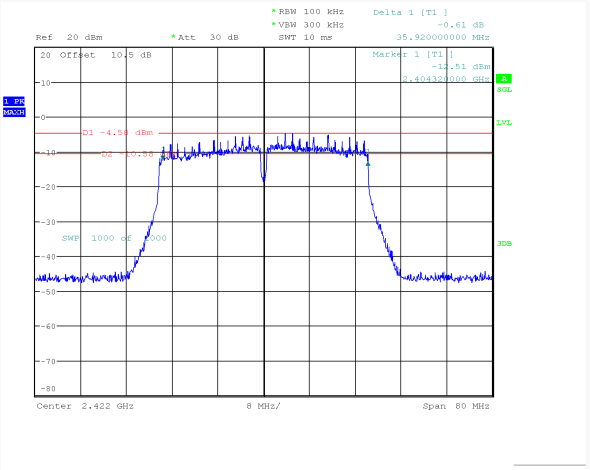
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:51:27

802.11n-HT20 Mode High Channel



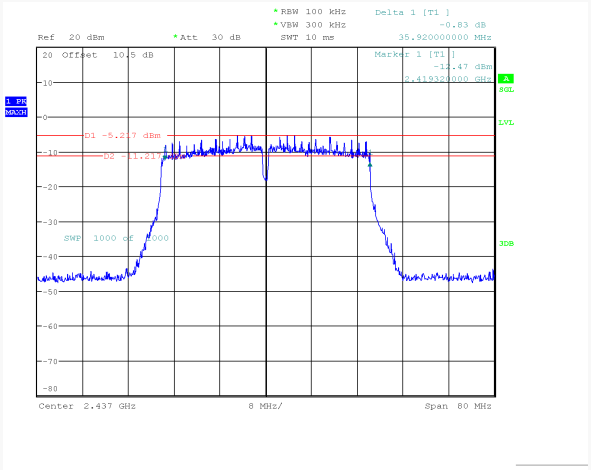
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:57:30

802.11n-HT40 Mode Low Channel



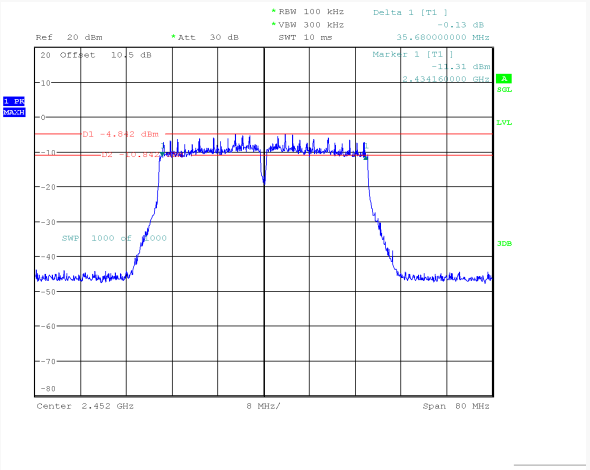
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 17:03:35

802.11n-HT40 Mode Middle Channel



ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 17:21:37

802.11n-HT40 Mode High Channel



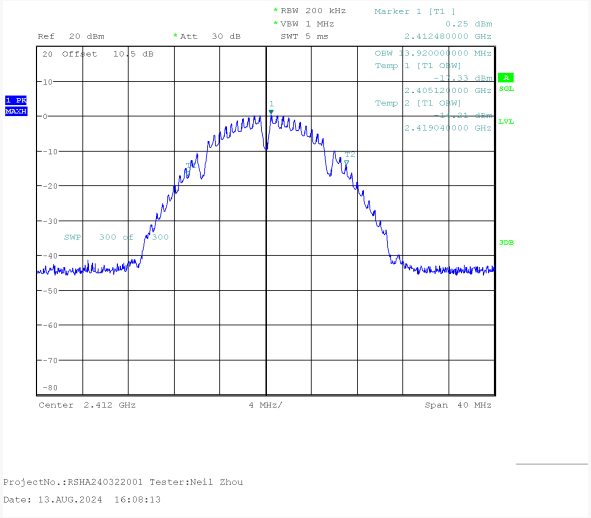
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 17:27:03

OCCUPIED BANDWIDTH

EUT operation mode: Transmitting

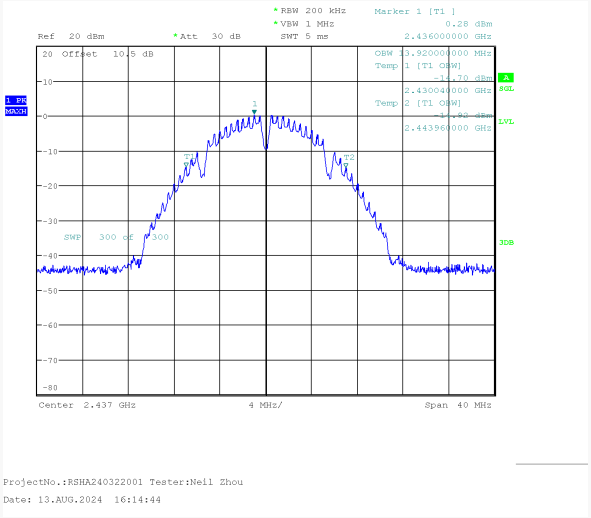
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
802.11b Mode		
Low	2412	13.920
Middle	2437	13.920
High	2462	13.920
802.11g Mode		
Low	2412	16.720
Middle	2437	16.640
High	2462	16.680
802.11n-HT20 mode		
Low	2412	17.840
Middle	2437	17.800
High	2462	17.840
802.11n-HT40 mode		
Low	2422	36.320
Middle	2437	36.240
High	2452	36.320

802.11b Mode Low Channel



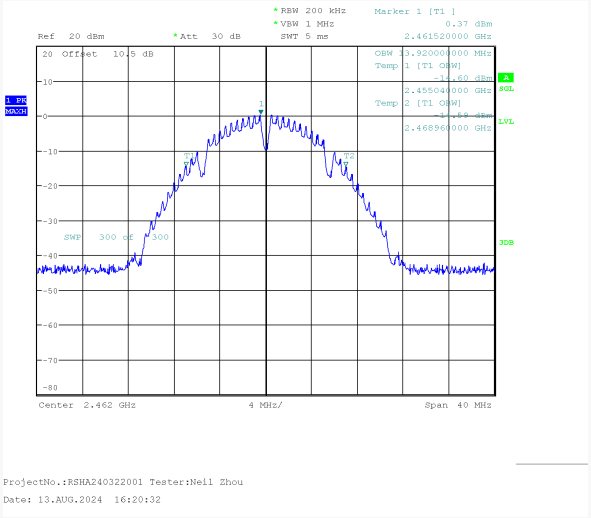
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:08:13

802.11b Mode Middle Channel



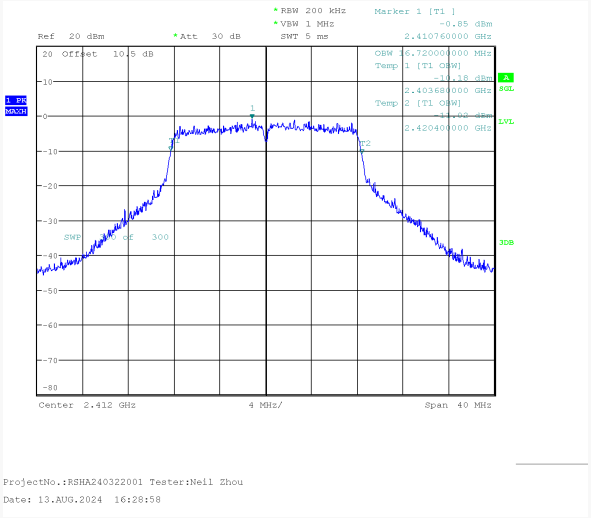
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:14:44

802.11b Mode High Channel



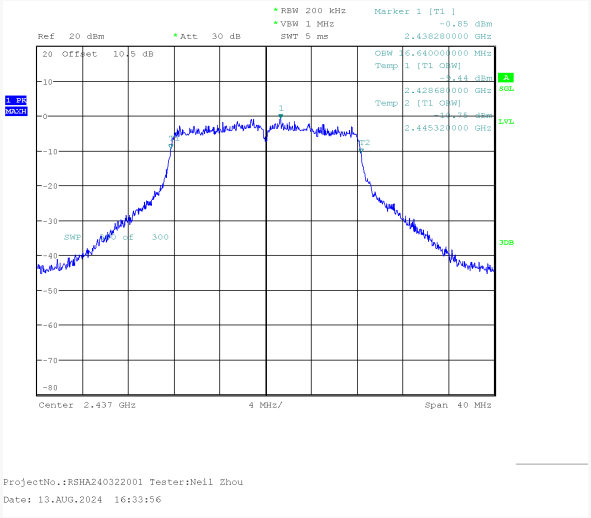
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:20:32

802.11g Mode Low Channel



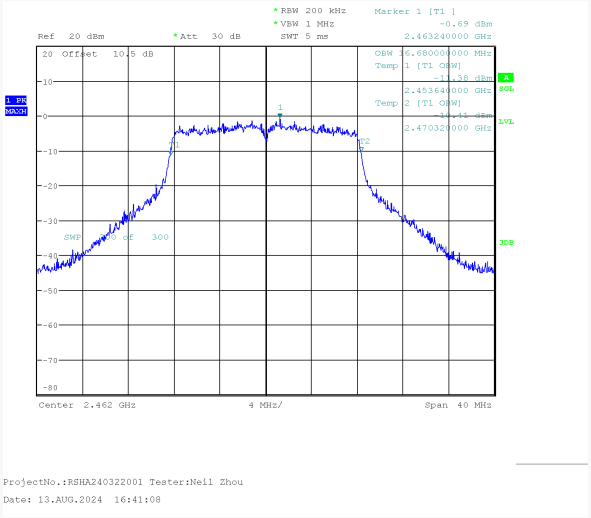
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:28:58

802.11g Mode Middle Channel



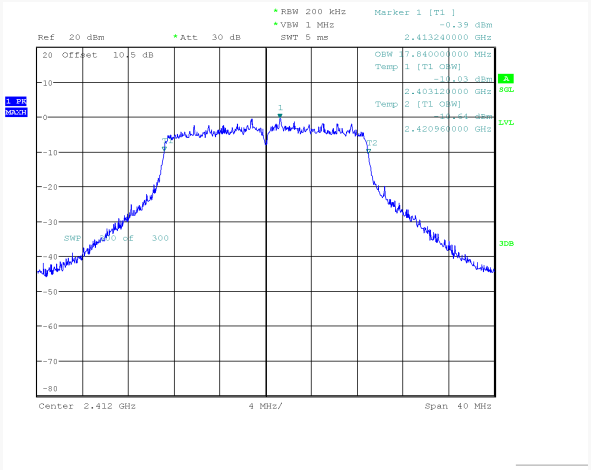
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:33:56

802.11g Mode High Channel



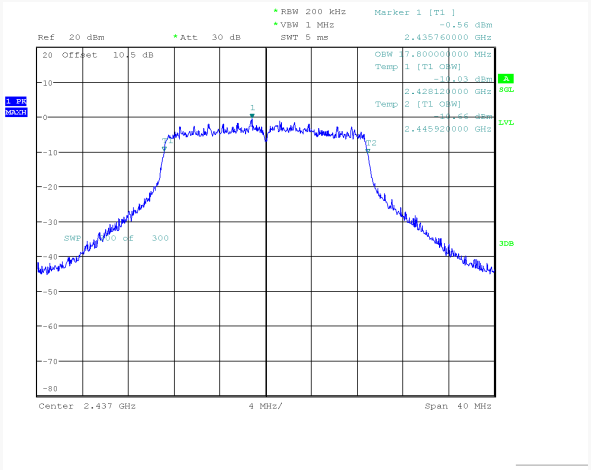
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:41:08

802.11n-HT20 Mode Low Channel



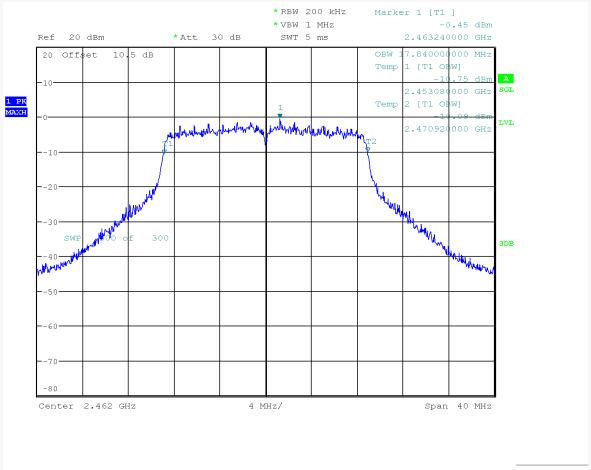
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:47:40

802.11n-HT20 Mode Middle Channel



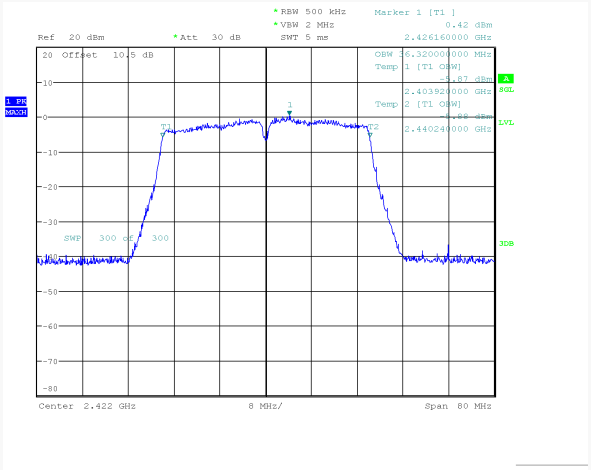
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:51:53

802.11n-HT20 Mode High Channel



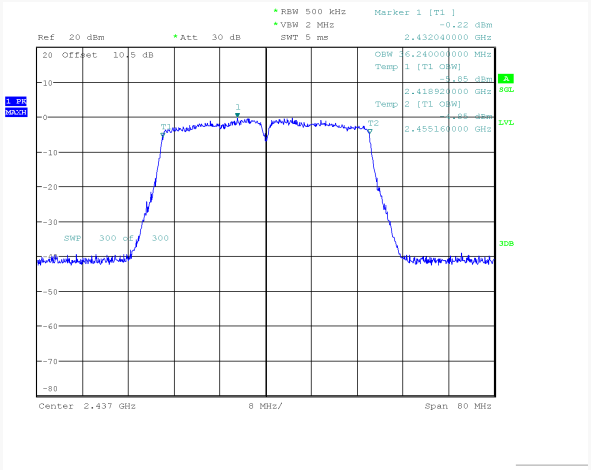
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:58:05

802.11n-HT40 Mode Low Channel



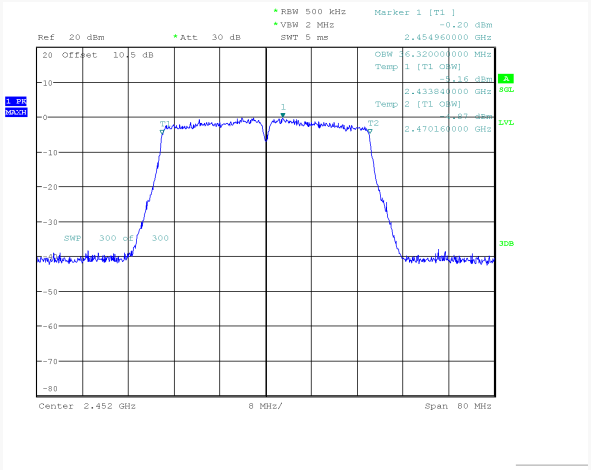
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 17:03:59

802.11n-HT40 Mode Middle Channel



ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 17:22:01

802.11n-HT40 Mode High Channel



ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 17:27:25

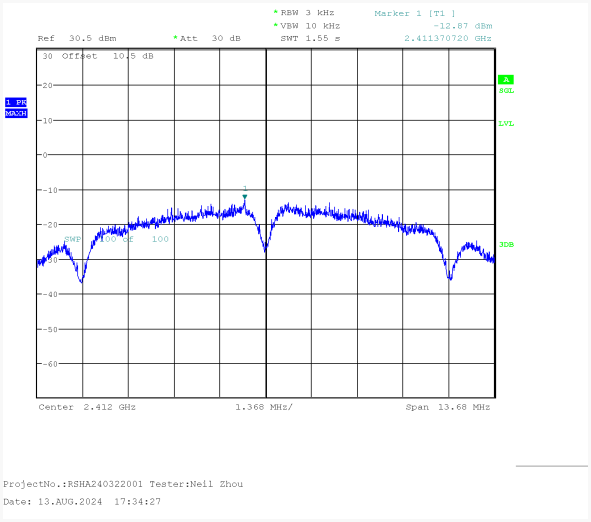
POWER SPECTRAL DENSITY

Test Result: Compliant.

EUT operation mode: Transmitting

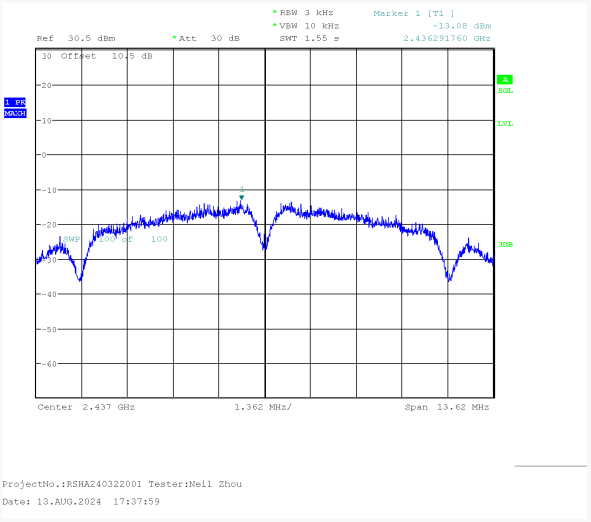
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)
802.11b Mode			
Low	2412	-12.87	≤8
Middle	2437	-13.08	≤8
High	2462	-12.90	≤8
802.11g Mode			
Low	2412	-15.06	≤8
Middle	2437	-15.63	≤8
High	2462	-15.38	≤8
802.11n-HT20 mode			
Low	2412	-16.28	≤8
Middle	2437	-15.97	≤8
High	2462	-16.45	≤8
802.11n-HT40 mode			
Low	2422	-17.92	≤8
Middle	2437	-18.00	≤8
High	2452	-18.37	≤8

802.11b Mode Low Channel



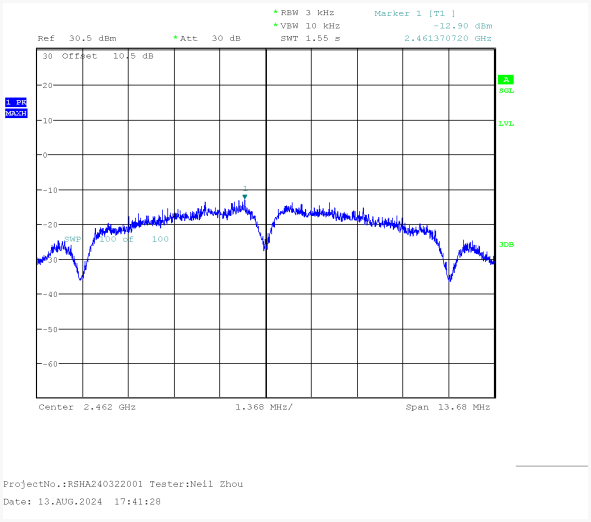
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 17:34:27

802.11b Mode Middle Channel



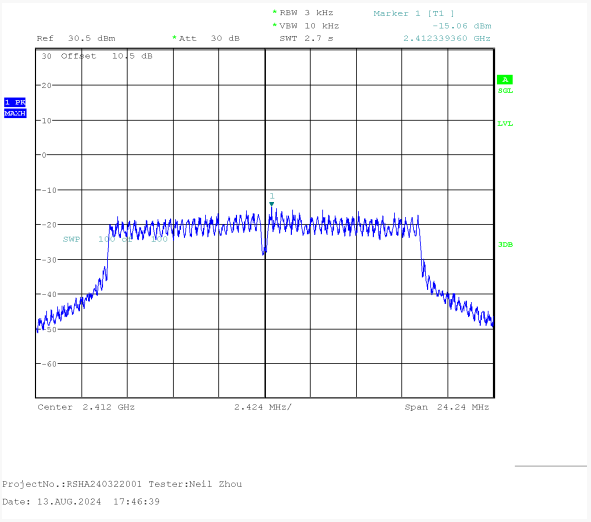
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 17:37:59

802.11b Mode High Channel



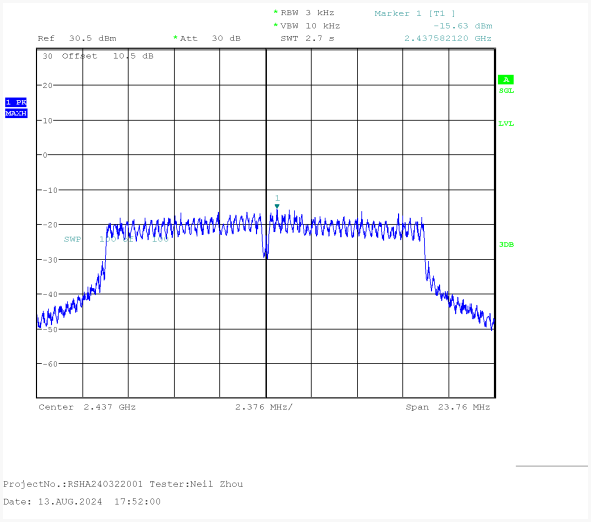
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 17:41:28

802.11g Mode Low Channel



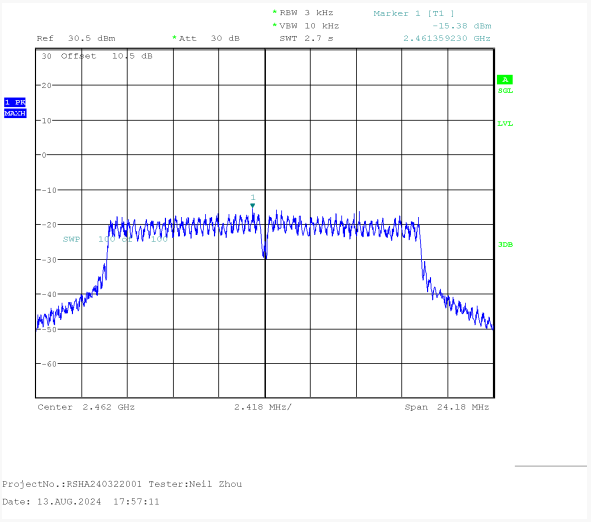
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 17:46:39

802.11g Mode Middle Channel



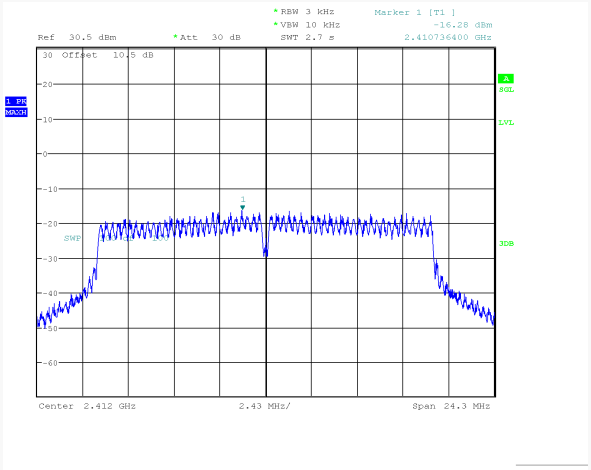
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 17:52:00

802.11g Mode High Channel



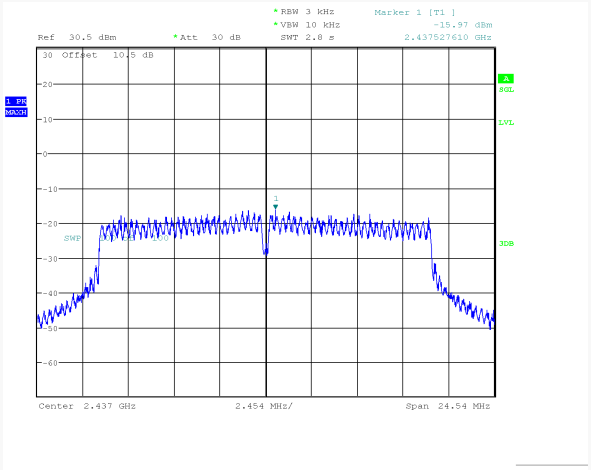
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 17:57:11

802.11n-HT20 Mode Low Channel



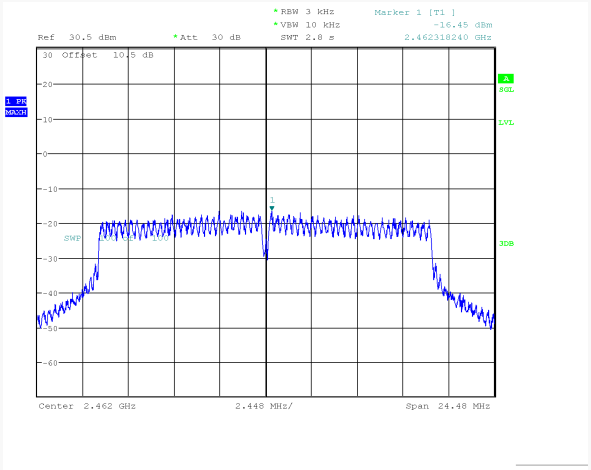
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 18:02:33

802.11n-HT20 Mode Middle Channel



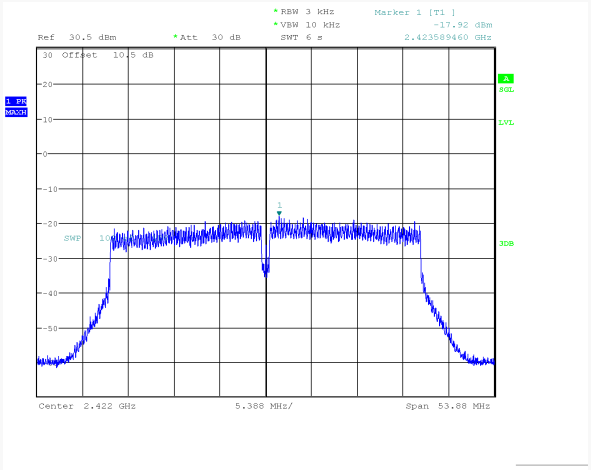
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 18:07:42

802.11n-HT20 Mode High Channel



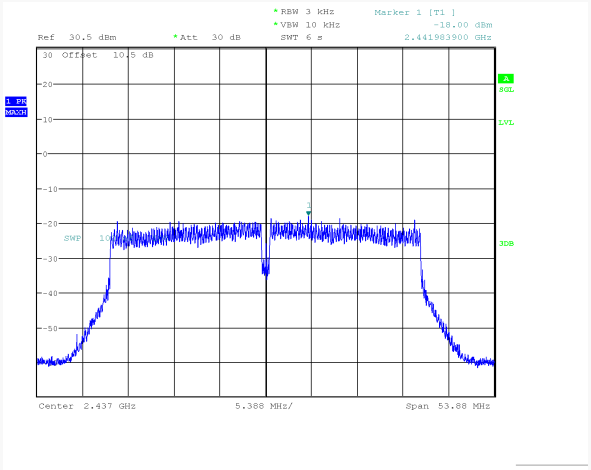
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 18:12:52

802.11n-HT40 Mode Low Channel



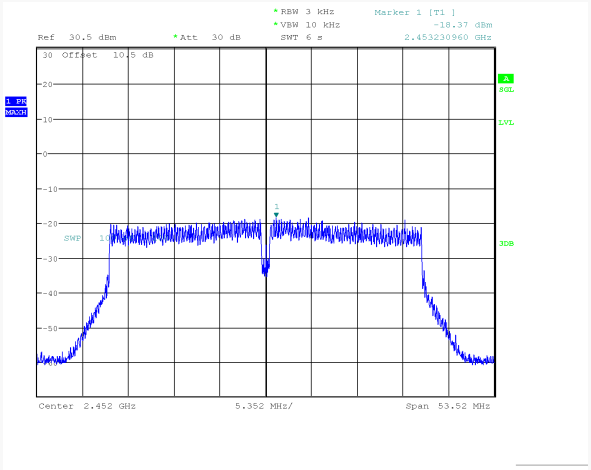
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 18:23:57

802.11n-HT40 Mode Middle Channel



ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 18:34:59

802.11n-HT40 Mode High Channel



ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 18:46:08

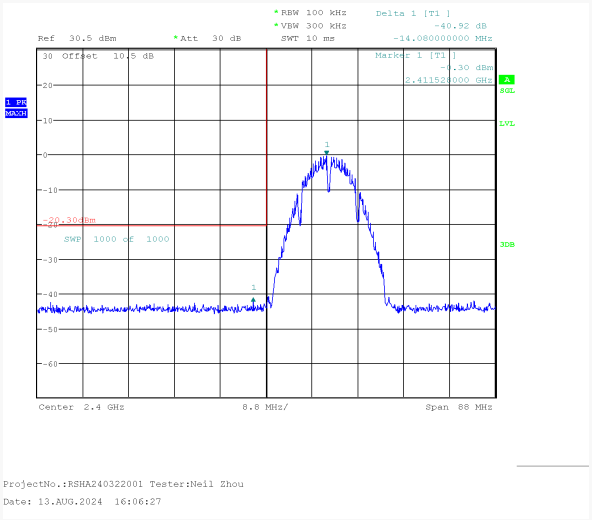
TRANSMITTER OUTPUT POWER MEASUREMENT

Channel	Frequency (MHz)	Max Conducted Average Output Power	Max Conducted Peak Output Power (dBm)	Peak Output Power Limit (dBm)
802.11b Mode				
Low	2412	8.96	11.51	≤30
Middle	2437	9.02	11.54	≤30
High	2462	9.21	11.77	≤30
802.11g Mode				
Low	2412	8.67	13.68	≤30
Middle	2437	8.58	13.51	≤30
High	2462	8.77	13.72	≤30
802.11n-HT20 Mode				
Low	2412	8.51	13.58	≤30
Middle	2437	8.48	13.55	≤30
High	2462	8.61	13.73	≤30
802.11n-HT40 Mode				
Low	2422	9.09	16.37	≤30
Middle	2437	9.03	16.42	≤30
High	2452	9.29	16.58	≤30

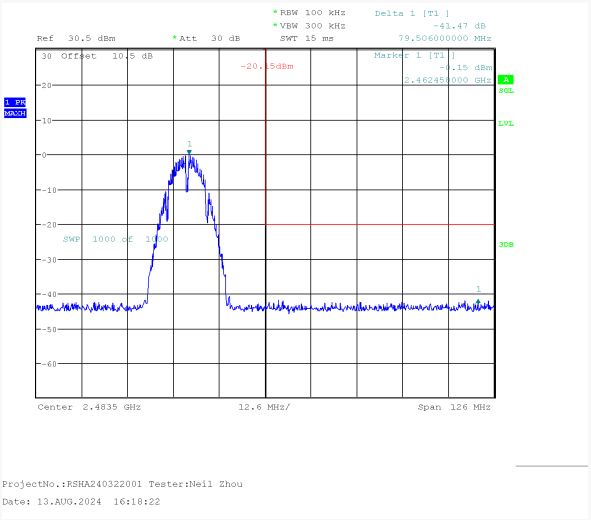
OUT OF BAND EMISSIONS

EUT operation mode: Transmitting

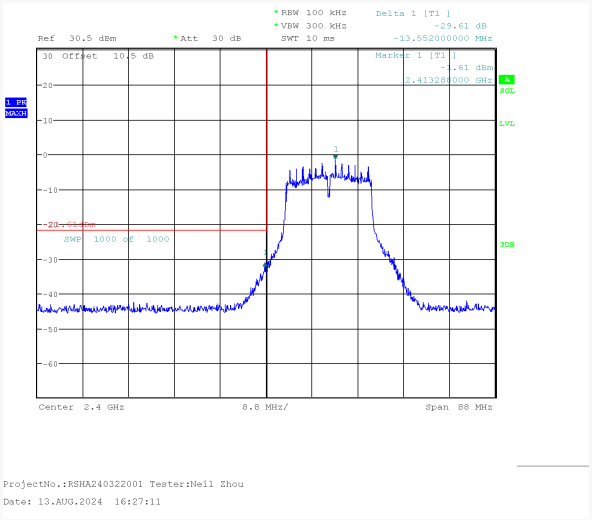
802.11b Mode Left Side



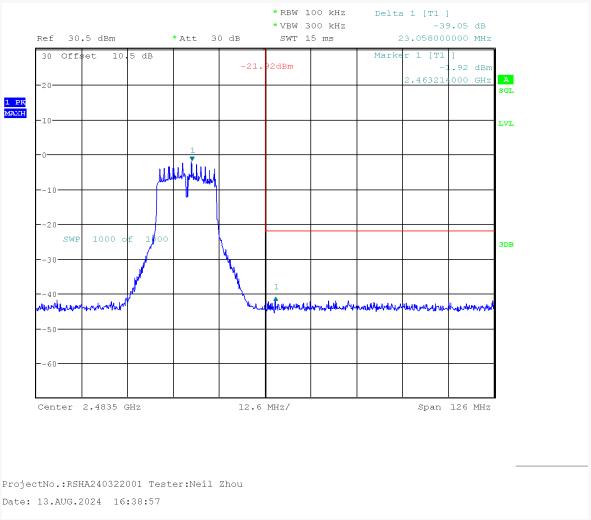
802.11b Mode Right Side



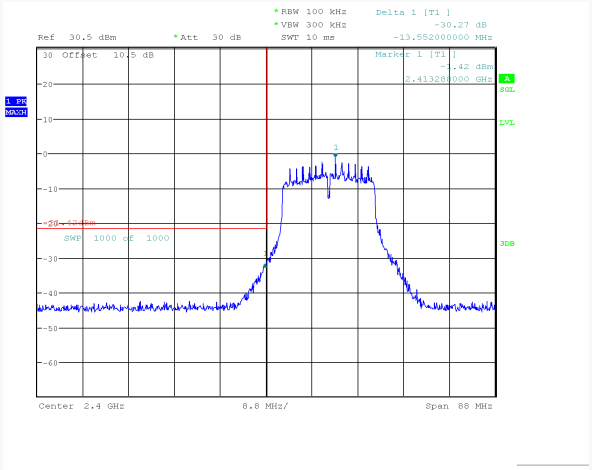
802.11g Mode Right Side



802.11g Mode Right Side

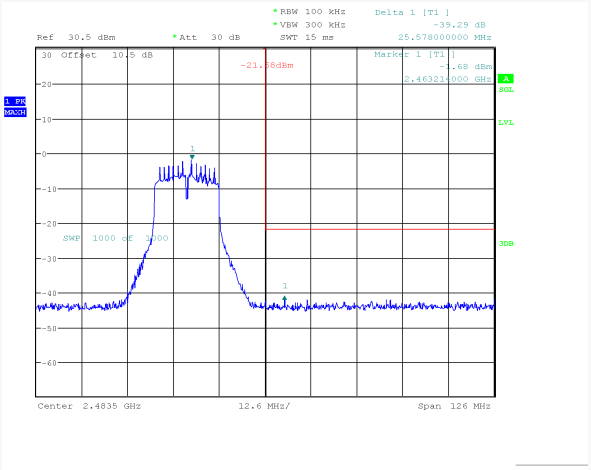


802.11n-HT20 Mode Left Side



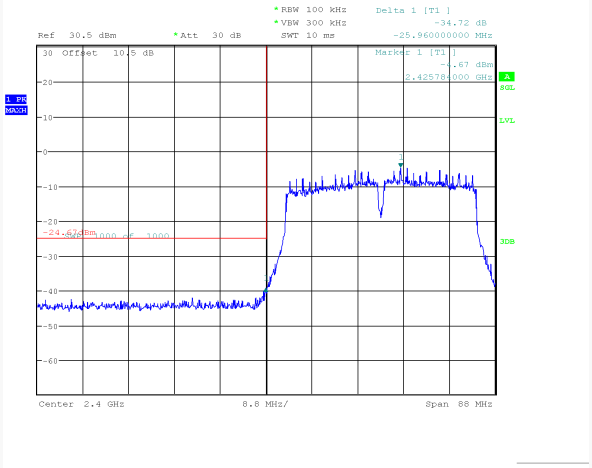
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:45:52

802.11n-HT20 Mode Right Side



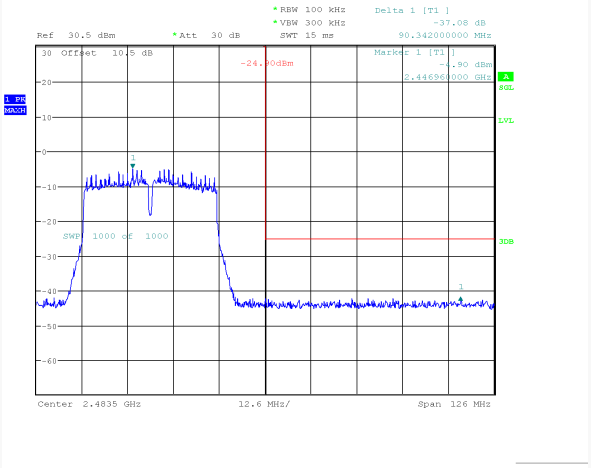
ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 16:55:54

802.11n-HT40 Mode Left Side



ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 17:02:46

802.11n-HT40 Mode Right Side



ProjectNo.:RSHA240322001 Tester:Neil Zhou
Date: 13.AUG.2024 17:26:21

EUT PHOTOGRAPHS

Please refer to the attachment EXHIBIT A - EUT EXTERNAL PHOTOGRAPHS and EXHIBIT B - EUT INTERNAL PHOTOGRAPHS.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment EXHIBIT C - TEST SETUP PHOTOGRAPHS.

Declarations

1. The laboratory is not responsible for the authenticity of any information provided by the applicant. Information from the applicant that may affect test results is marked with "★".

2. The test data was only valid for the test sample(s).

3. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

4. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

5. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor k=2 with the 95.45% confidence interval.

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