

TEST REPORT

Application No.: GZCR2509001502LM
Applicant: Good Earth Lighting, Inc.
Address of Applicant: 2100 Golf Road, Suite 460, Rolling Meadows, IL 60008, USA
Manufacturer: MEKO INTELLIGENT (CAMBODIA) CO., LTD.
Address of Manufacturer: (58km, National 3th Highway), VEAS POU VILLAGE KHVAV COMMUNE, SAMRONG DISTRICT, TAKEO PROVINCE, KINGDOM OF CAMBODIA
Factory: MEKO INTELLIGENT (CAMBODIA) CO., LTD.
Address of Factory: (58km, National 3th Highway), VEAS POU VILLAGE KHVAV COMMUNE, SAMRONG DISTRICT, TAKEO PROVINCE, KINGDOM OF CAMBODIA
Product Name: Fixed luminaires
Model No.: FP1247-BLK-48LFW-G, FP1247-AL5-24LFW-G ♣
 ♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Standard(s) : 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2025-09-23
Date of Test: 2025-10-31 to 2025-11-07
Date of Issue: 2025-11-07

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.



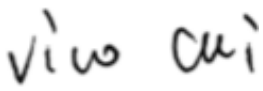
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Revision Record			
Version	Report No.	Date	Remark
01	GZCR250900150203	2025-11-07	Original

Authorized for issue by:			
			
		Allen Zhou/Project Engineer	
Approved By			
		Vico Cui/Reviewer	



2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2020) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass
Radiated Emissions which fall in the restricted bands		ANSI C63.10 (2020) Section 11.12	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Below 1GHz		ANSI C63.10 (2020) Section 6.4,6.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Above 1GHz		ANSI C63.10 (2020) Section 6.6	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Conducted Peak Output Power		ANSI C63.10 (2020) Section 11.9.1	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass
Minimum 6dB Bandwidth		ANSI C63.10 (2020) Section 11.8.1	47 CFR Part 15, Subpart C 15.247a(2)	Pass
Power Spectrum Density		ANSI C63.10 (2020) Section 11.10.2	47 CFR Part 15, Subpart C 15.247(e)	Pass
Conducted Band Edges Measurement		ANSI C63.10 (2020) Section 6.10.4	47 CFR Part 15, Subpart C 15.247(d)	Pass
Conducted Spurious Emissions		ANSI C63.10 (2020) Section 11.11	47 CFR Part 15, Subpart C 15.247(d)	Pass

Note:

E.U.T./EUT means Equipment Under Test.

N/A: Not applicable.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.

✱ Declaration of EUT Family Grouping:

Model No.: FP1247-BLK-48LFW-G, FP1247-AL5-24LFW-G

According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, with only difference on the appearance of color and packaging.

Therefore, only one model **FP1247-BLK-48LFW-G** was tested in this report.



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4 General Information

4.1 Details of E.U.T.

Power supply: AC 120V,60Hz
Cable(s): AC mains cable:2 wires 1.0m unshielded
Test Voltage: AC 120V,60Hz
Operation Frequency: 802.11b/g/n(HT20): 2412MHz to 2472MHz
Modulation Type: 802.11b: DSSS (DBPSK, DQPSK, CCK);
802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
Number of Channels: 802.11b/g/n(HT20):11;
Channel Spacing: 5MHz
Antenna Type: Integral Antenna
Antenna Gain: 2.67dBi max according to antenna specification
Antenna Number: 1

Remark: The information in this section is provided by the applicant or manufacturer, SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Note Book Computer	LENOVO	ThinkPad T490	PF1D1MVJ



4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Power Line (150kHz-30MHz)	±3.22dB
Radiated Emissions which fall in the restricted bands	±5.14dB (3m); ±4.90dB (10m); ±4.88dB (1GHz-6GHz); ±5.06dB (6GHz-18GHz); ±5.30dB (18GHz-40GHz)
Radiated Spurious Emissions Below 1GHz	±3.08dB (9kHz to 150kHz); ±3.19dB (150kHz to 30MHz); ±5.14dB (30MHz-1GHz) (3m); ±4.90dB (30MHz-1GHz) (10m)
Radiated Spurious Emissions Above 1GHz	±4.88dB (1GHz-6GHz); ±5.06dB (6GHz-18GHz); ±5.30dB (18GHz-40GHz)
Conducted Peak Output Power	± 0.75dB
Minimum 6dB Bandwidth	± 0.274%
Power Spectrum Density	± 2.84dB
Conducted Band Edges Measurement	± 0.75dB
Conducted Spurious Emissions	± 0.75dB
Remark: The U_{lab} (lab Uncertainty) is less than U_{CISPR} (CISPR Uncertainty) or U_{ETSI} (ETSI Uncertainty). Emission decision rule: – Compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit, marked as Pass in the report. – Non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit, marked as Fail in the report.	

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
No.198, Kezhu Road, Science City, Economic & Technological Development Area, Guangzhou,
Guangdong, China 510663

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No tests were sub-contracted.



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4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● ACMA

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

● SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

● FCC Recognized Accredited Test Firm(Registration No.: 486818)

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818.

● ISED (Registration No.: 4620B, CAB identifier: CN0052)

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

● VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)

The 10m Semi-anechoic chamber, 966 Anechoic Chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-20107 and T-11179 respectively.

● CBTL (Lab Code: TL129)

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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5 Equipment List

Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Coaxial Cable	HangTianXing	2m	EMC0107	2025-08-12	2026-08-11
Shielding Room	ChangZhou ZhongYu	8m x 3m x 3.8m	EMC0306	2025-08-14	2028-08-13
Two-Line V-Network-GZ	Rohde & Schwarz	ENV216	EMC2135	2025-08-13	2026-08-12
EMI Test Receiver (9kHz-3.6GHz)	Rohde & Schwarz	ESR3	EMC2221	2024-12-04	2025-12-03
Test Software E3r	Audix	Ver.6.191211	GZE100-77	N/A	N/A

Radiated Emissions which fall in the restricted bands					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
1-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2025-08-11	2026-08-10
EMI Test Receiver (10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2025-08-11	2026-08-10
Chamber cable (Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2024-08-19	2026-08-18
Horn Antenna (1-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2025-05-13	2027-05-12
Horn Antenna (14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2023-06-18	2026-06-17
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2025-08-12	2026-08-11
MXE EMI Receiver (10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2025-08-11	2026-08-10
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2023-12-23	2026-12-22
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

Radiated Spurious Emissions Below 1GHz					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
966 Anechoic Chamber	Shenzhen C.R.T	CRTSGSSAC966	EMC2230	2025-03-22	2028-03-21
EMI Test Receiver(1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2229	2024-12-03	2025-12-02
Amplifier(9k-1000MHz)	SONOMA	310	EMC2237	2024-12-03	2025-12-02
Trilog Broadband Antenna (25MHz-2GHz)	Schwarzbeck Mess-Elektronik	VULB 9168	EMC2238	2025-03-24	2027-03-23
Coaxial Cable	Mirco-COAX UTIFLEX ve	LA2-C125-8000	EMC2239	2024-12-04	2026-12-03
Test Software E3	Audix	Ver.6.191211	GZE100-81	N/A	N/A
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2024-04-16	2026-04-15



Radiated Spurious Emissions Above 1GHz					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
1-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2025-08-11	2026-08-10
EMI Test Receiver (10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2025-08-11	2026-08-10
Chamber cable (Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2024-08-19	2026-08-18
Horn Antenna (1-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2025-05-13	2027-05-12
Horn Antenna (14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2023-06-18	2026-06-17
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2025-08-12	2026-08-11
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2025-08-12	2026-08-11
MXE EMI Receiver (10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2025-08-11	2026-08-10
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2023-12-23	2026-12-22
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

RF Conducted Test					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
MI CABLE	SGS-EMC	0.8M	EMC2137	2025-11-02	2027-11-01
4X4 Power sensor Unit	TST	TSPS2023R	EMC2226	2025-08-12	2026-08-11
Test Software	TST	V2.0	GZE100-78	N/A	N/A
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2025-08-12	2026-08-11

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2025-06-03	2026-06-02



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6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)

6.1.2 Conclusion

Standard Requirement:

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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(b)

(4) requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 2.67 dBi.

Antenna location: Refer to internal photo.

7 Radio Spectrum Matter Test Results

7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207

Test Method: ANSI C63.10 (2020) Section 6.2

Limit:

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency.		
Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz		

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22.8 °C

Humidity: 53.3 % RH

Atmospheric Pressure: 1015 mbar

7.1.2 Test Mode Description

Pre-scan / Mode
Final test Code Description

TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.



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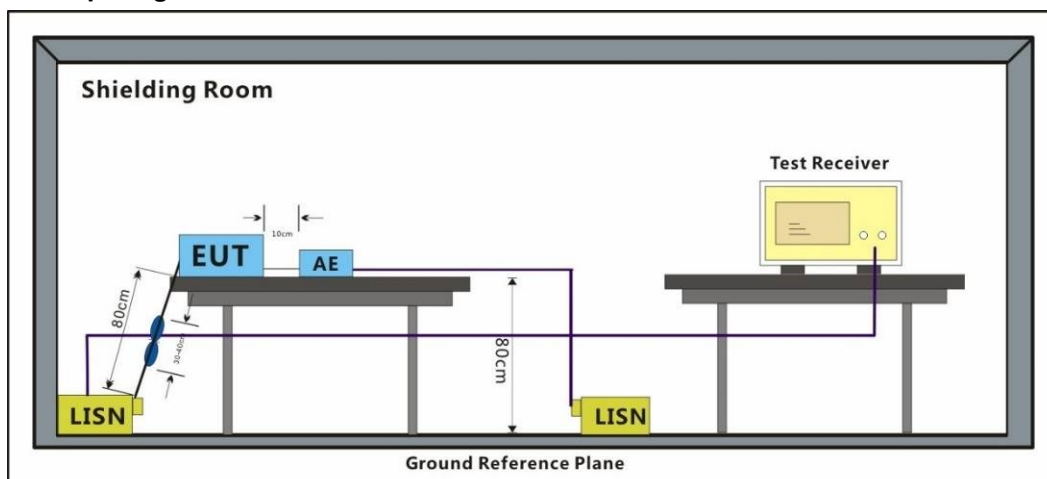
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7.1.3 Test Setup Diagram

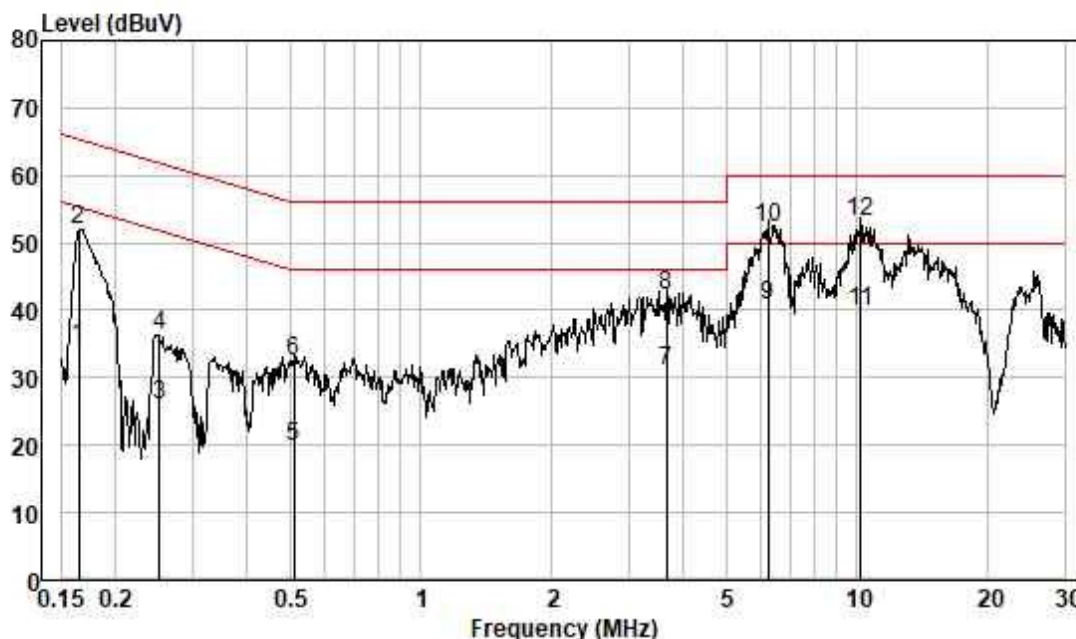


7.1.4 Measurement Procedure and Data

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane.
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Remark: Level=Read Level+ Cable Loss+ LISN Factor

Test Mode: 02; Line: Live line

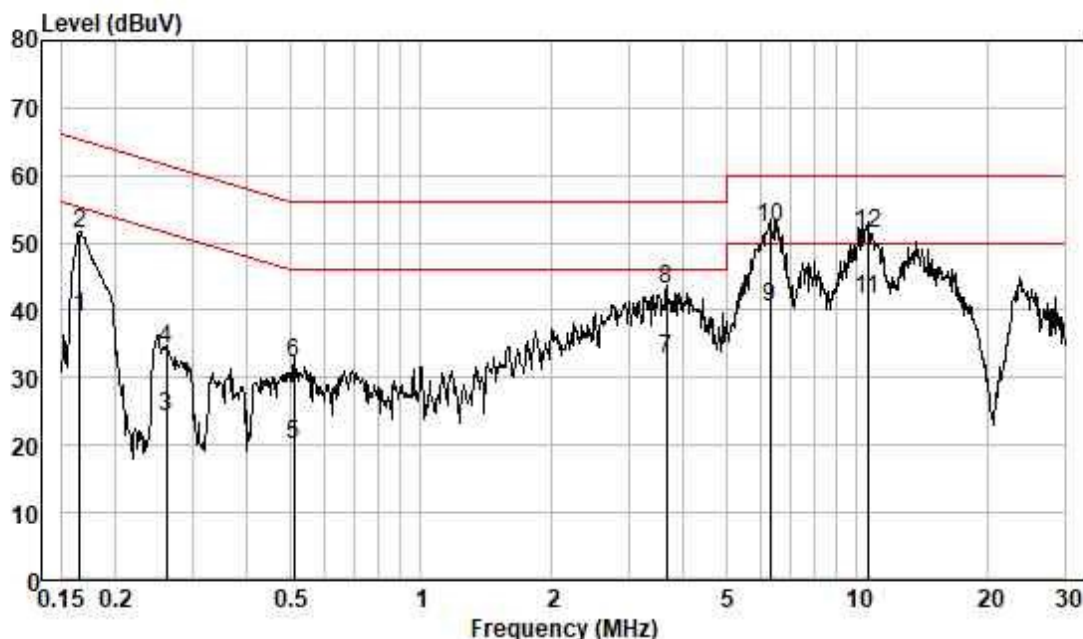


Pol : LINE
Mode :
Model :
Power :

	Frequency MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
1	0.164	24.95	0.04	9.55	34.54	55.25	-20.71	Average
2	0.164	42.31	0.04	9.55	51.90	65.25	-13.35	QP
3	0.252	16.35	0.04	9.60	25.99	51.69	-25.70	Average
4	0.252	26.58	0.04	9.60	36.22	61.69	-25.47	QP
5	0.513	10.27	0.05	9.58	19.90	46.00	-26.10	Average
6	0.513	22.89	0.05	9.58	32.52	56.00	-23.48	QP
7	3.661	21.12	0.17	9.61	30.90	46.00	-15.10	Average
8	3.661	32.39	0.17	9.61	42.17	56.00	-13.83	QP
9	6.252	30.86	0.21	9.65	40.72	50.00	-9.28	Average
10	6.252	42.42	0.21	9.65	52.28	60.00	-7.72	QP
11	10.179	29.83	0.25	9.72	39.80	50.00	-10.20	Average
12	10.179	43.05	0.25	9.72	53.02	60.00	-6.98	QP



Test Mode: 02; Line: Neutral Line



Pol : NEUTRAL
Mode :
Model :
Power :

	Frequency MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
1	0.165	29.49	0.04	9.53	39.06	55.21	-16.15	Average
2	0.165	41.88	0.04	9.53	51.45	65.21	-13.76	QP
3	0.262	14.67	0.04	9.53	24.24	51.38	-27.14	Average
4	0.262	24.75	0.04	9.53	34.32	61.38	-27.06	QP
5	0.513	10.50	0.05	9.58	20.13	46.00	-25.87	Average
6	0.513	22.54	0.05	9.58	32.17	56.00	-23.83	QP
7	3.661	23.13	0.17	9.58	32.88	46.00	-13.12	Average
8	3.661	33.42	0.17	9.58	43.17	56.00	-12.83	QP
9	6.319	30.64	0.21	9.65	40.50	50.00	-9.50	Average
10	6.319	42.44	0.21	9.65	52.30	60.00	-7.70	QP
11	10.564	31.63	0.26	9.79	41.68	50.00	-8.32	Average
12	10.564	41.41	0.26	9.79	51.46	60.00	-8.54	QP



7.2 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2020) Section 11.12

Limit:

Test Distance: 3 m

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 23.7 °C Humidity: 57.2 % RH Atmospheric Pressure: 1018 mbar

7.2.2 Test Mode Description

Pre-scan / Mode
Final test Code Description

TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

Final test 02



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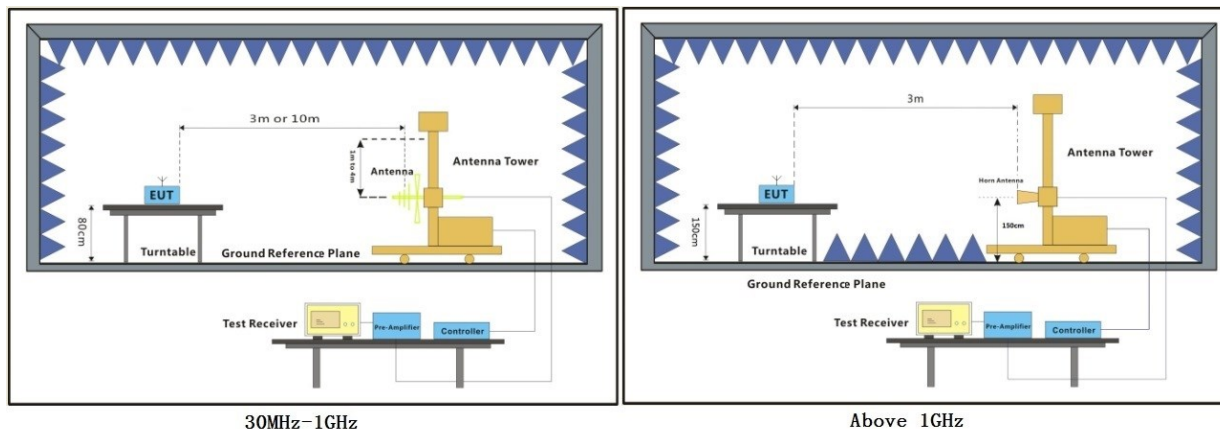
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7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Test the EUT in the lowest channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

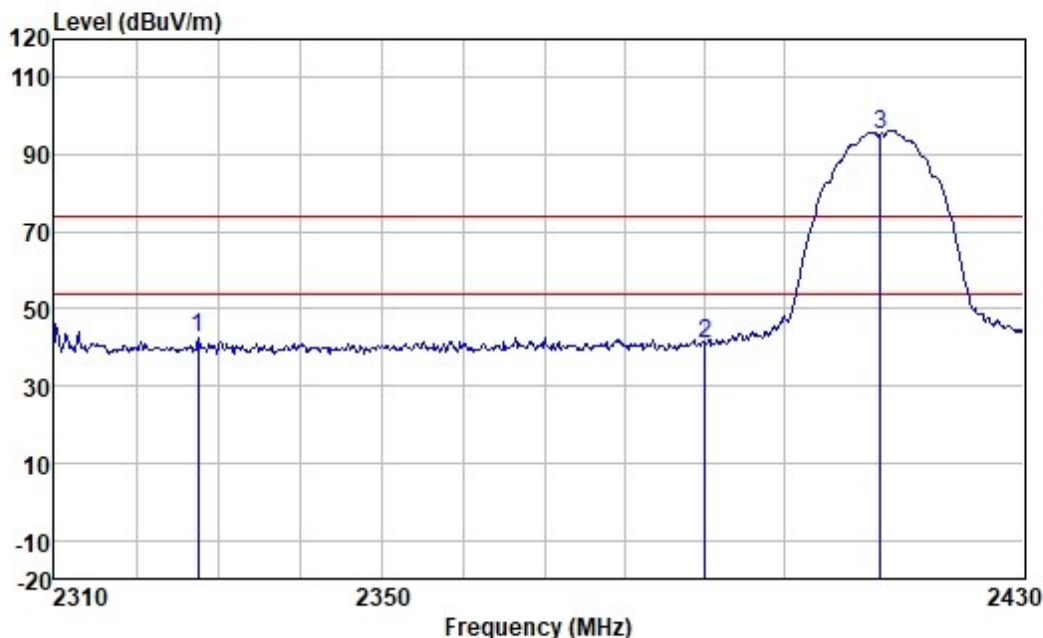
Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

Remark 3: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for Peak detection (PK) and Average detection (AV) at frequency above 1GHz.

Remark 4: For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.



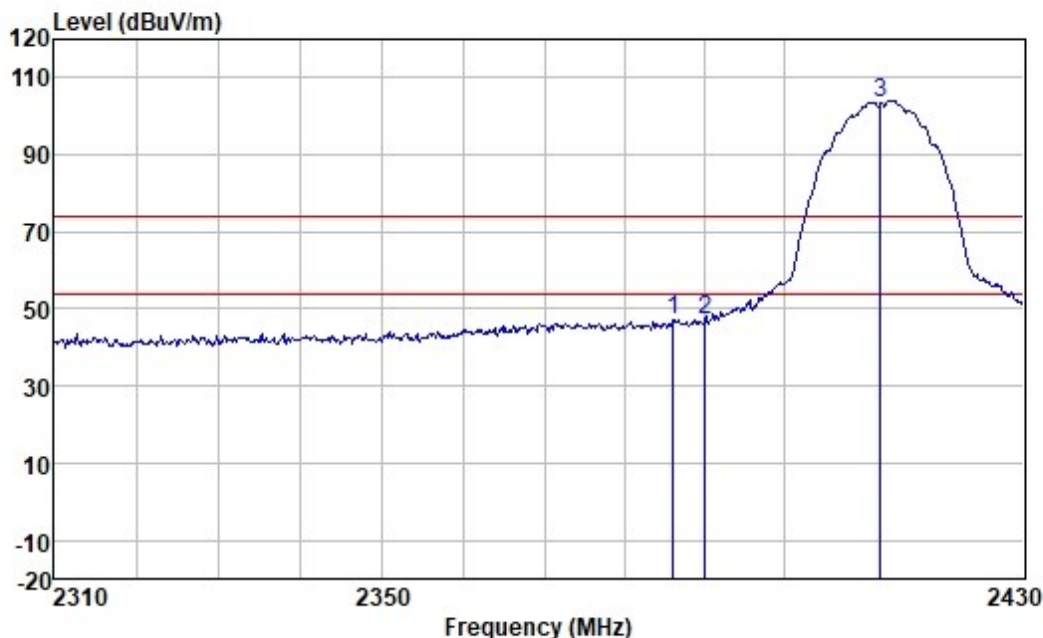
Test Mode: 02; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



	Freq	ReadAntenna	Cable	Preamp	Limit	Over			
	MHz	Level	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2327.497	49.39	27.52	3.41	37.77	42.55	74.00	-31.45	VERTICAL
2	2390.000	47.77	27.63	3.44	37.77	41.07	74.00	-32.93	VERTICAL
3 *	2412.000	102.08	27.67	3.46	37.77	95.44	74.00	21.44	VERTICAL



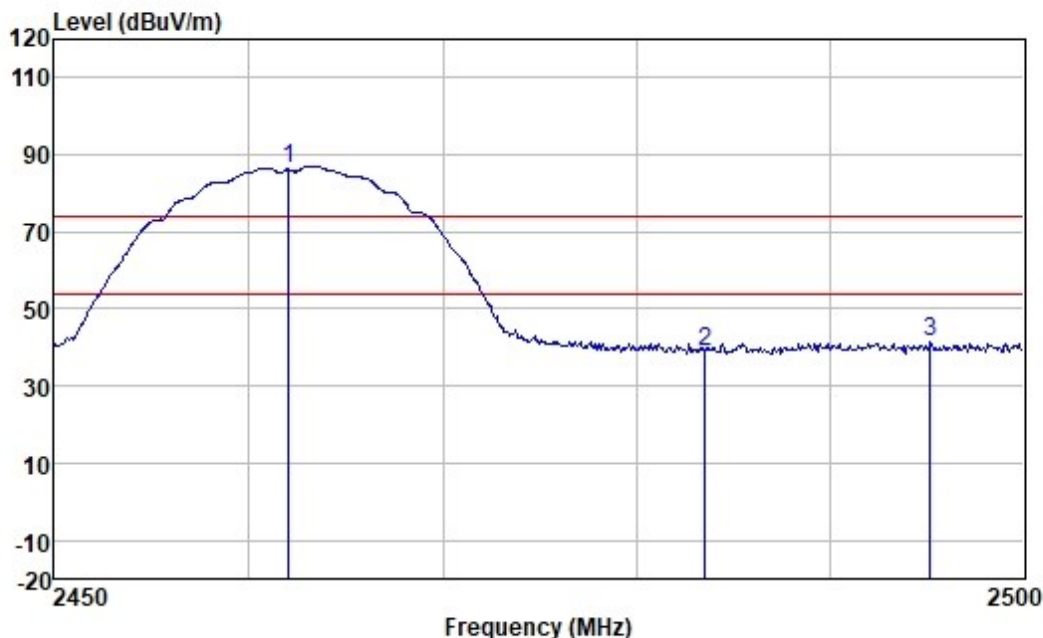
Test Mode: 02; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2385.978	53.96	27.63	3.44	37.77	47.26	74.00	-26.74	HORIZONTAL	peak
2	2390.000	53.89	27.63	3.44	37.77	47.19	74.00	-26.81	HORIZONTAL	peak
3 *	2412.000	109.99	27.67	3.46	37.77	103.35	74.00	29.35	HORIZONTAL	peak



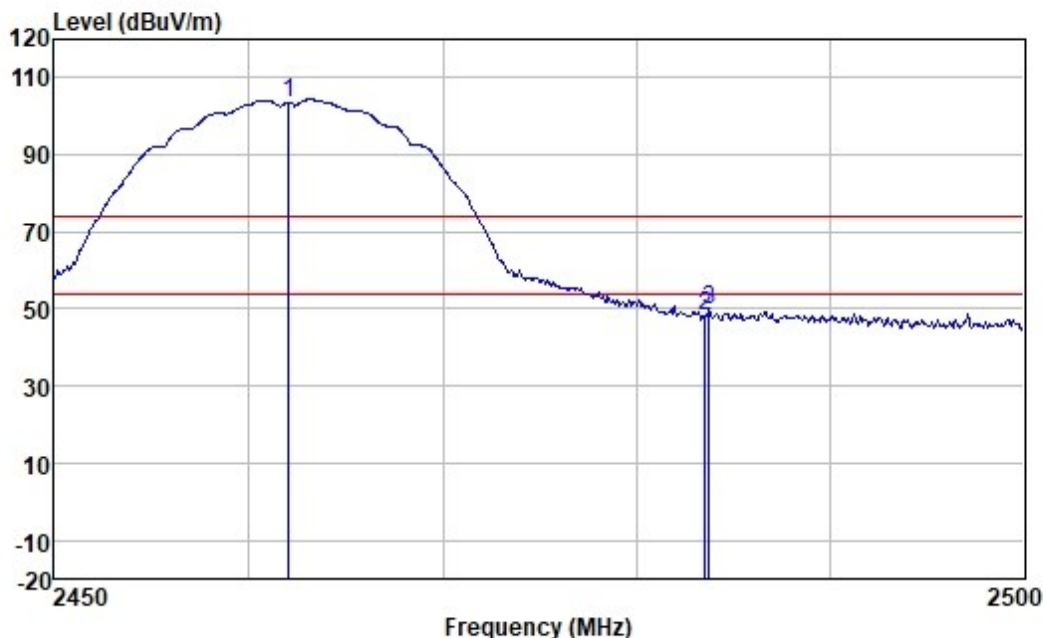
Test Mode: 02; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High



	Freq	ReadAntenna		Cable	Preamp		Limit	Over		
		Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2462.000	92.75	27.73	3.48	37.76	86.20	74.00	12.20	VERTICAL	peak
2	2483.500	45.39	27.76	3.49	37.76	38.88	74.00	-35.12	VERTICAL	peak
3	2495.207	48.00	27.76	3.49	37.76	41.49	74.00	-32.51	VERTICAL	peak



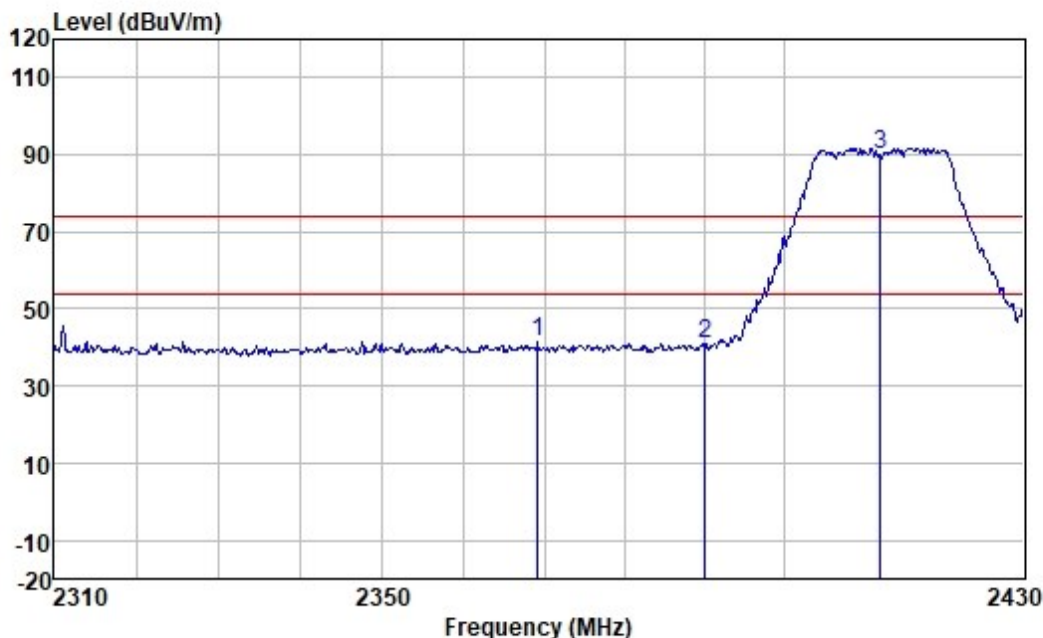
Test Mode: 02; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2462.000	110.23	27.73	3.48	37.76	103.68	74.00	29.68	HORIZONTAL	peak
2	2483.500	54.58	27.76	3.49	37.76	48.07	74.00	-25.93	HORIZONTAL	peak
3	2483.689	56.31	27.76	3.49	37.76	49.80	74.00	-24.20	HORIZONTAL	peak



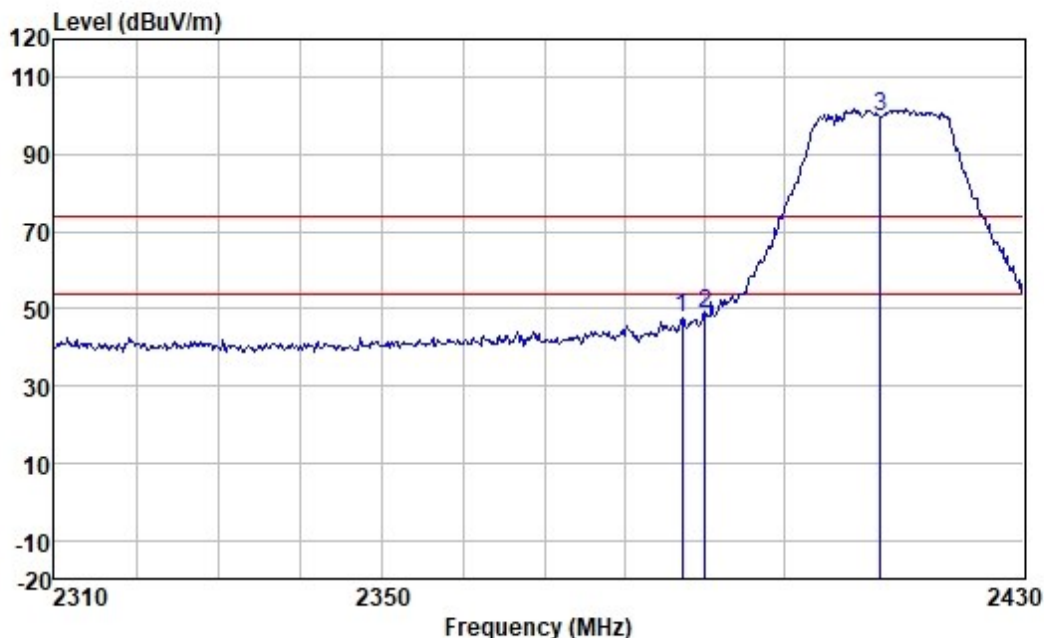
Test Mode: 02; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2369.120	48.41	27.60	3.43	37.77	41.67	74.00	-32.33	VERTICAL	peak
2	2390.000	47.73	27.63	3.44	37.77	41.03	74.00	-32.97	VERTICAL	peak
3 *	2412.000	96.62	27.67	3.46	37.77	89.98	74.00	15.98	VERTICAL	peak



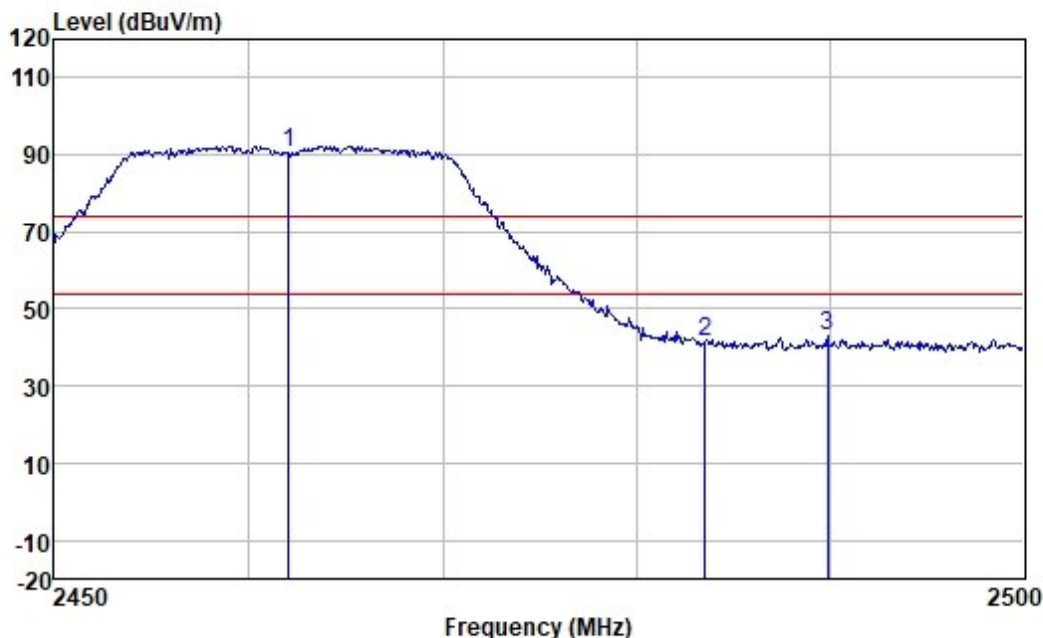
Test Mode: 02; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2387.186	54.18	27.63	3.44	37.77	47.48	74.00	-26.52	HORIZONTAL	peak
2	2390.000	55.57	27.63	3.44	37.77	48.87	74.00	-25.13	HORIZONTAL	peak
3 *	2412.000	106.44	27.67	3.46	37.77	99.80	74.00	25.80	HORIZONTAL	peak



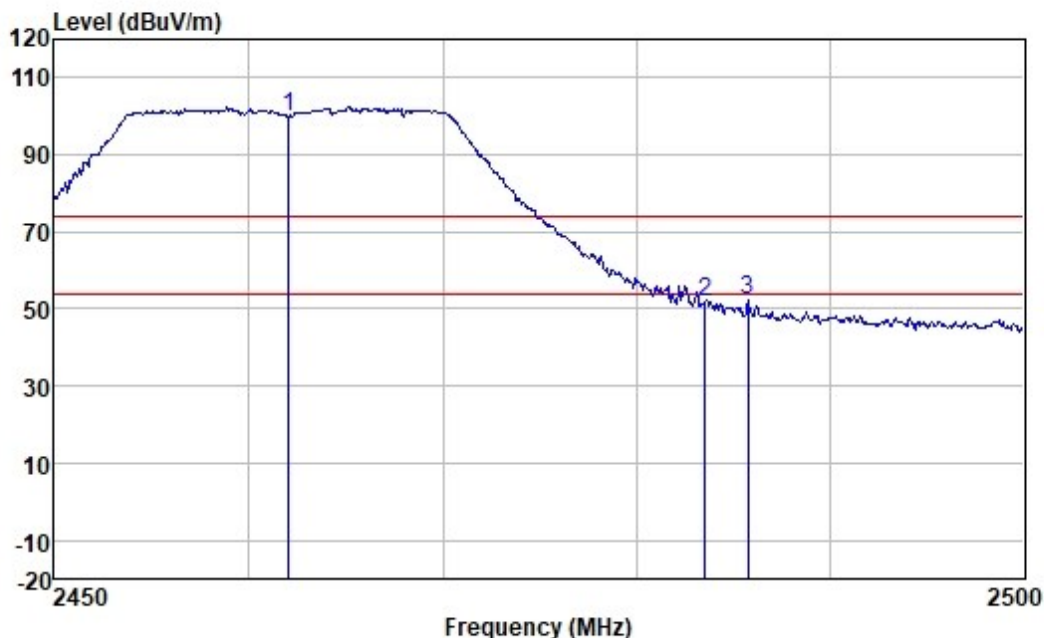
Test Mode: 02; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



	Freq	ReadAntenna		Cable	Preamp		Limit	Over		
		Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2462.000	97.26	27.73	3.48	37.76	90.71	74.00	16.71	VERTICAL	peak
2	2483.500	48.23	27.76	3.49	37.76	41.72	74.00	-32.28	VERTICAL	peak
3	2489.869	49.32	27.76	3.49	37.76	42.81	74.00	-31.19	VERTICAL	peak



Test Mode: 02; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 *	2462.000	106.47	27.73	3.48	37.76	99.92	74.00	25.92	HORIZONTAL peak
2	2483.500	58.43	27.76	3.49	37.76	51.92	74.00	-22.08	HORIZONTAL peak
3	2485.747	58.58	27.76	3.49	37.76	52.07	74.00	-21.93	HORIZONTAL peak



7.3 Radiated Spurious Emissions Below 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2020) Section 6.4,6.5

Limit:

Test Distance: 3 m

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
960-1000	500	3

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 24.4 °C

Humidity: 52.8 % RH

Atmospheric Pressure: 1018 mbar

7.3.2 Test Mode Description

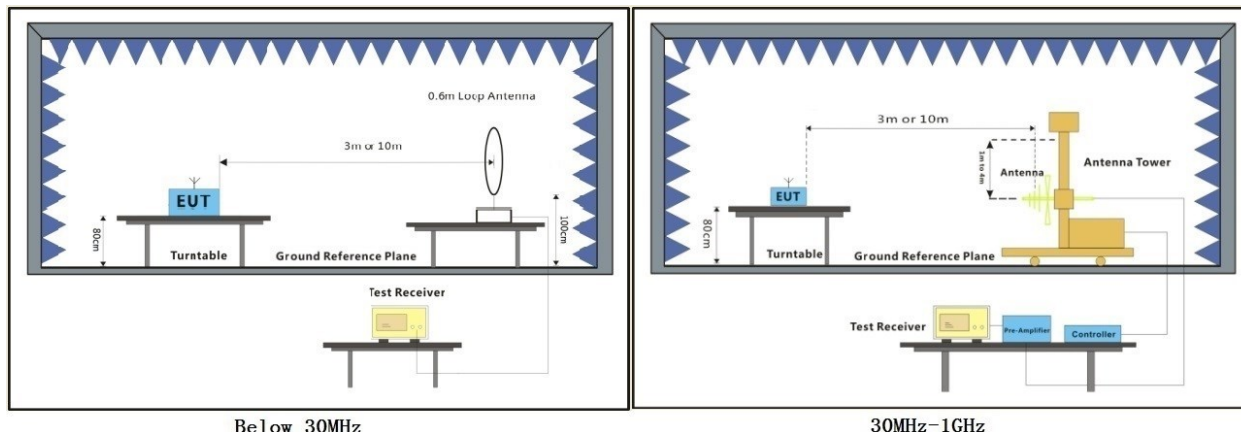
Pre-scan / Mode	Description
Final test Code	

Final test 02

TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.



7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

- For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet.
- Test the EUT in the lowest channel, the middle channel, the Highest channel.
- The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- Repeat above procedures until all frequencies measured was complete.

Remark:

- Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
- Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.



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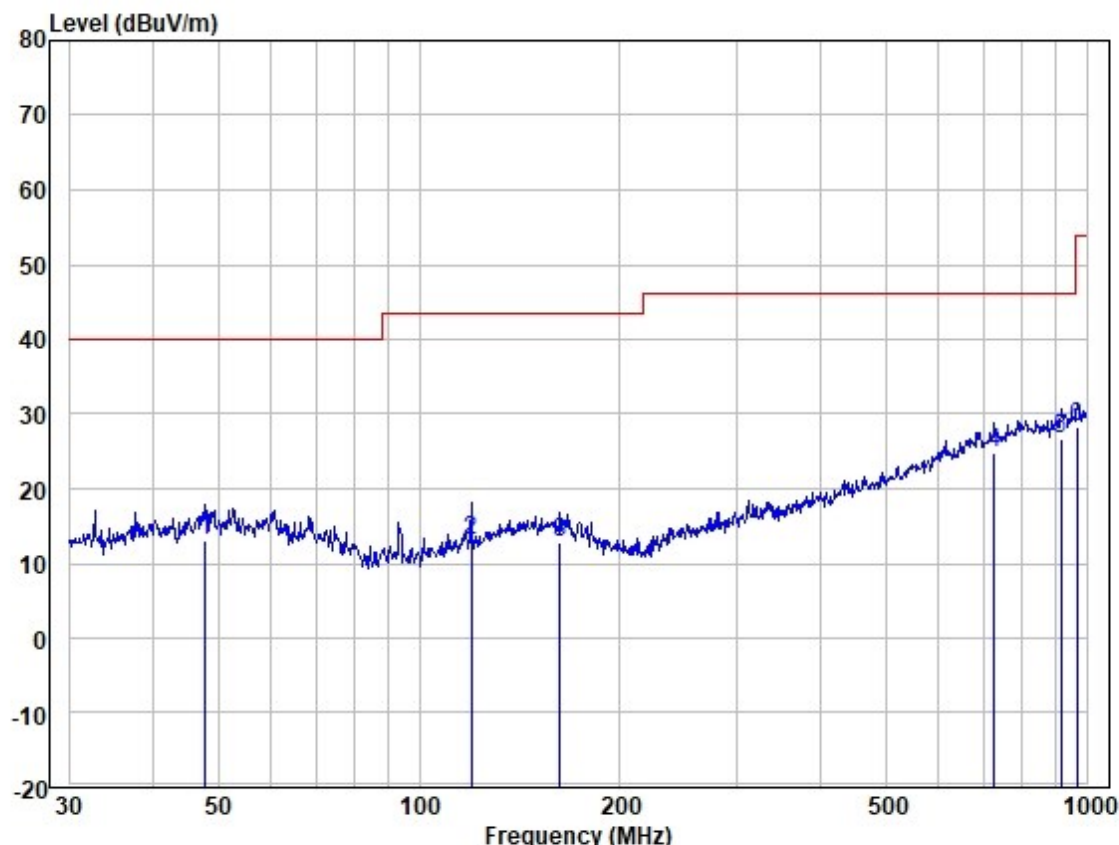
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Test Mode: 02; Polarity: Horizontal

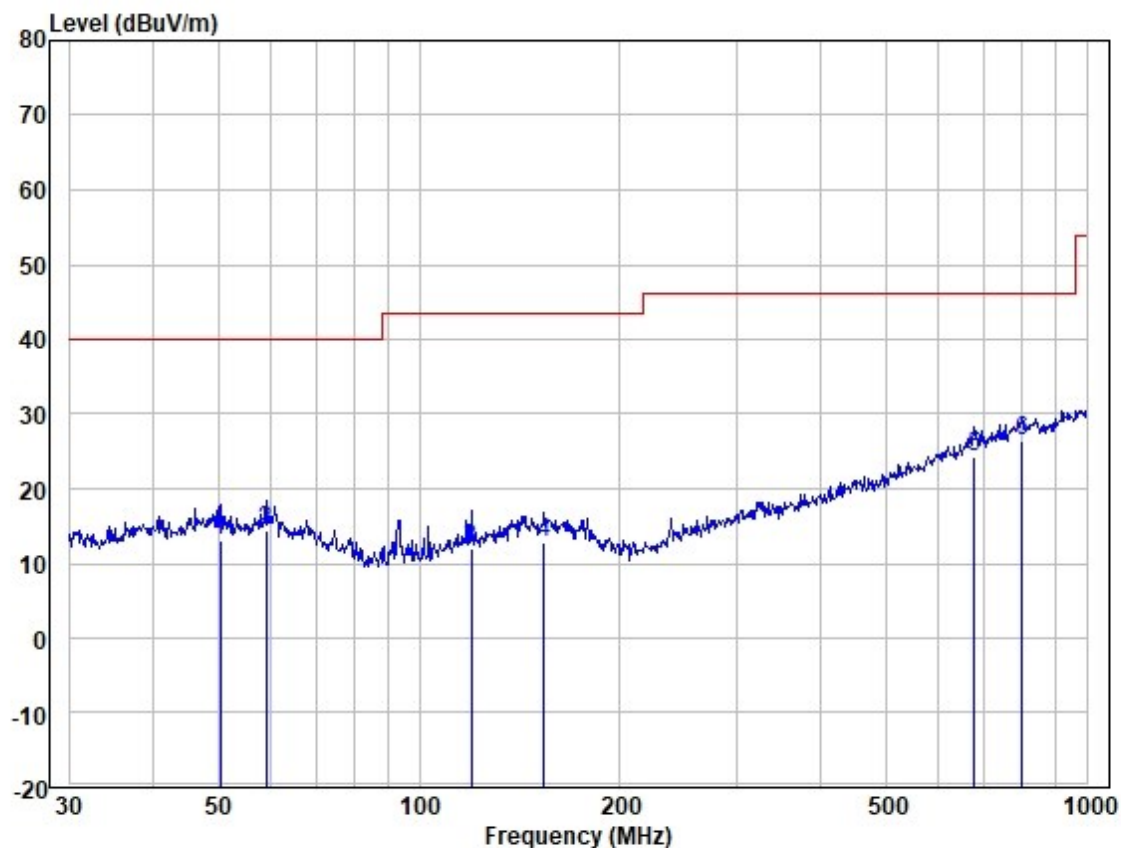


Site : 966 Chamber
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	47.826	25.78	19.62	0.38	32.79	12.99	40.00	-27.01	HORIZONTAL	QP
2	119.856	28.20	16.94	0.60	32.71	13.03	43.52	-30.49	HORIZONTAL	QP
3	162.611	25.78	19.01	0.71	32.78	12.72	43.52	-30.80	HORIZONTAL	QP
4	726.805	27.57	27.41	1.56	31.76	24.78	46.02	-21.24	HORIZONTAL	QP
5	912.862	26.47	29.31	1.77	30.96	26.59	46.02	-19.43	HORIZONTAL	QP
6	965.542	26.96	30.12	1.82	30.71	28.19	53.98	-25.79	HORIZONTAL	QP



Test Mode: 02; Polarity: Vertical



Site : 966 Chamber
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	50.409	25.73	19.66	0.39	32.79	12.99	40.00	-27.01	VERTICAL	QP
2	59.025	27.82	19.00	0.41	32.78	14.45	40.00	-25.55	VERTICAL	QP
3	119.856	27.27	16.94	0.60	32.71	12.10	43.52	-31.42	VERTICAL	QP
4	153.739	25.69	19.18	0.68	32.77	12.78	43.52	-30.74	VERTICAL	QP
5	677.580	27.87	26.91	1.53	31.95	24.36	46.02	-21.66	VERTICAL	QP
6	798.980	27.62	28.83	1.66	31.61	26.50	46.02	-19.52	VERTICAL	QP



7.4 Radiated Spurious Emissions Above 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2020) Section 6.6

Limit:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance(meters)
Above 1000	500	3

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 23.7 °C

Humidity: 57.2 % RH

Atmospheric Pressure: 1018 mbar

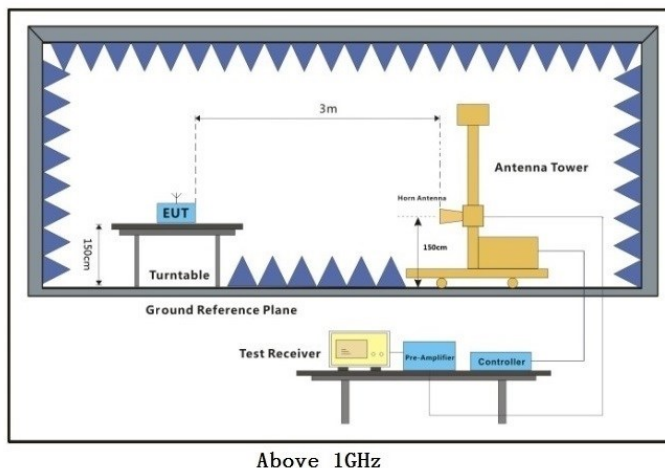
7.4.2 Test Mode Description

Pre-scan / Mode
Final test Code Description

TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

Final test 02

7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

- a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- i. Repeat above procedures until all frequencies measured was complete.

Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. Scan from 1GHz to 25GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for Peak detection (PK) and Average detection (AV) at frequency above 1GHz.
- 5:For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $\leq 98\%$) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.



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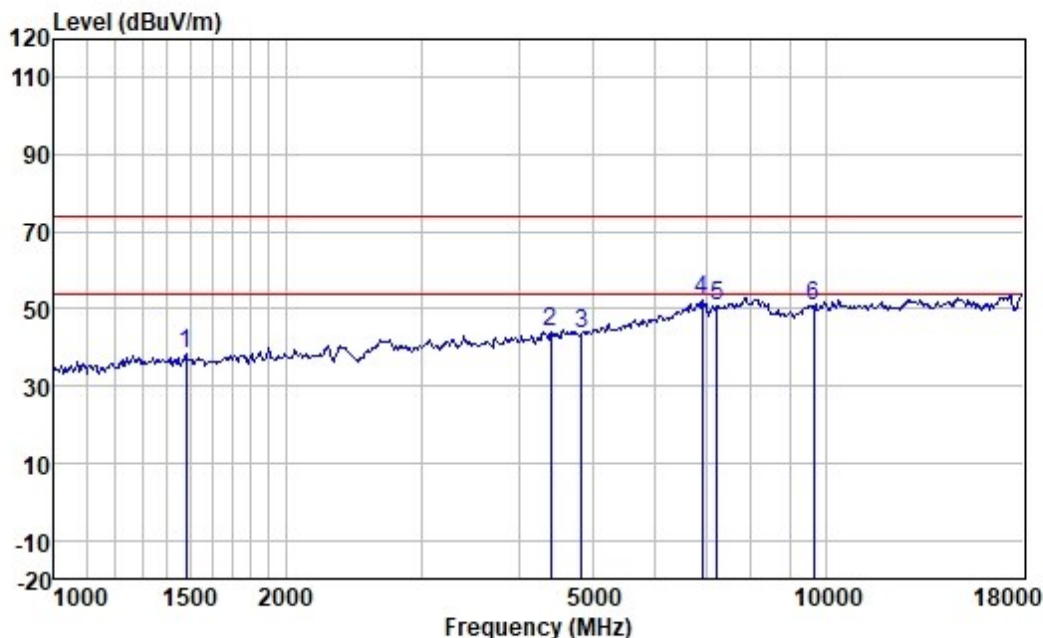
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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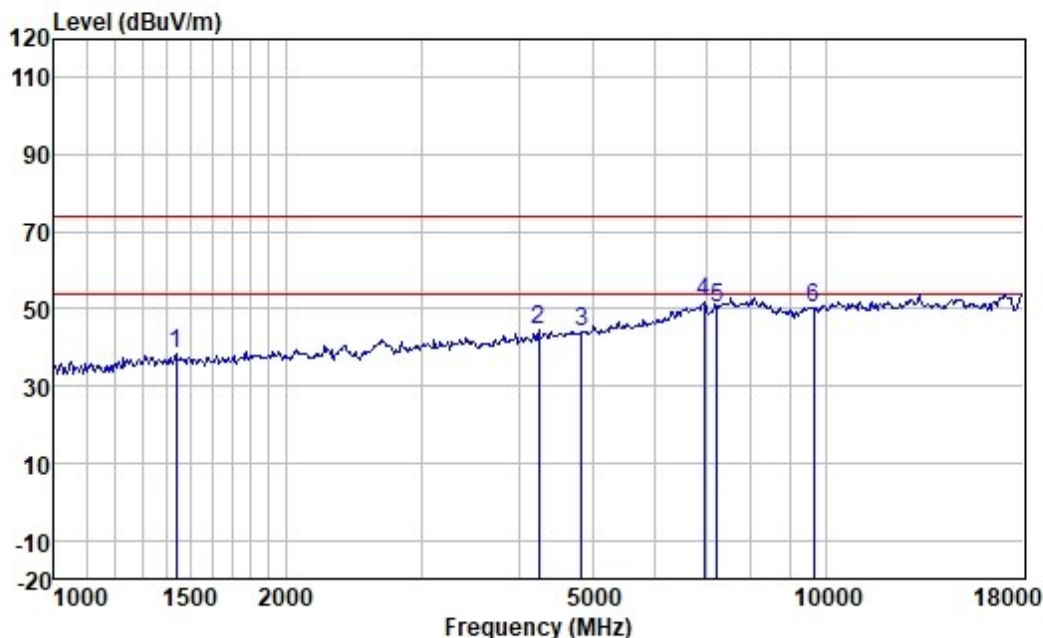
Test Mode: 02; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1481.553	47.96	25.89	2.69	38.37	38.17	74.00	-35.83	VERTICAL	peak
2	4405.090	46.35	30.80	4.61	37.46	44.30	74.00	-29.70	VERTICAL	peak
3	4824.000	44.37	31.54	4.82	37.37	43.36	74.00	-30.64	VERTICAL	peak
4	6914.763	48.33	35.11	5.84	37.14	52.14	74.00	-21.86	VERTICAL	peak
5	7236.000	46.27	35.97	5.95	37.17	51.02	74.00	-22.98	VERTICAL	peak
6	9648.000	47.10	38.73	7.05	41.94	50.94	74.00	-23.06	VERTICAL	peak



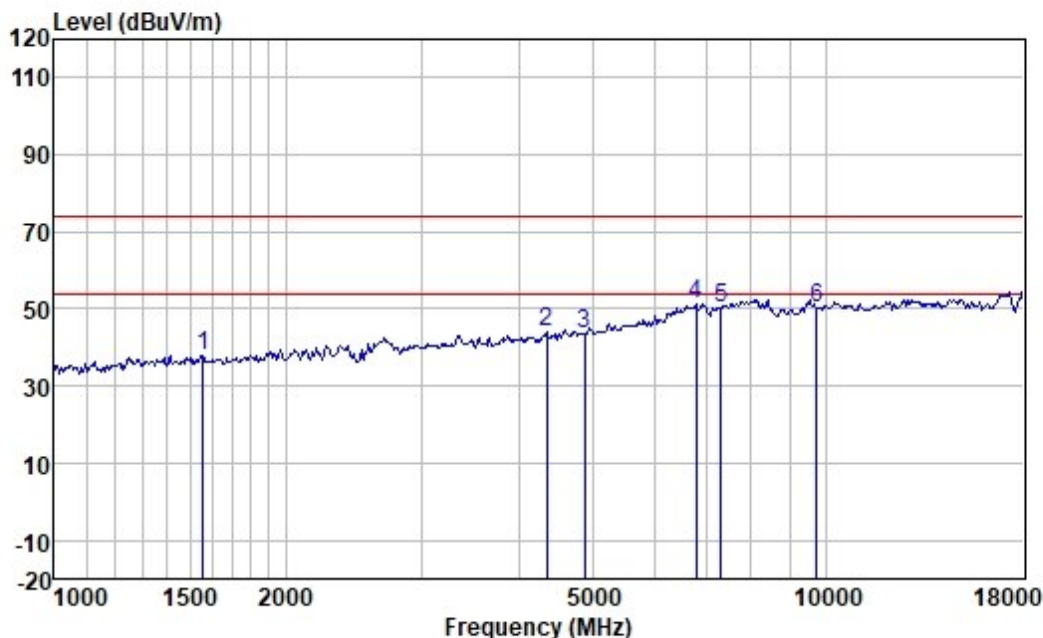
Test Mode: 02; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1439.343	48.08	25.85	2.68	38.42	38.19	74.00	-35.81	HORIZONTAL	peak
2	4254.921	46.73	30.49	4.57	37.47	44.32	74.00	-29.68	HORIZONTAL	peak
3	4824.000	45.22	31.54	4.82	37.37	44.21	74.00	-29.79	HORIZONTAL	peak
4	6954.852	47.72	35.17	5.86	37.14	51.61	74.00	-22.39	HORIZONTAL	peak
5	7236.000	45.36	35.97	5.95	37.17	50.11	74.00	-23.89	HORIZONTAL	peak
6	9648.000	46.32	38.73	7.05	41.94	50.16	74.00	-23.84	HORIZONTAL	peak



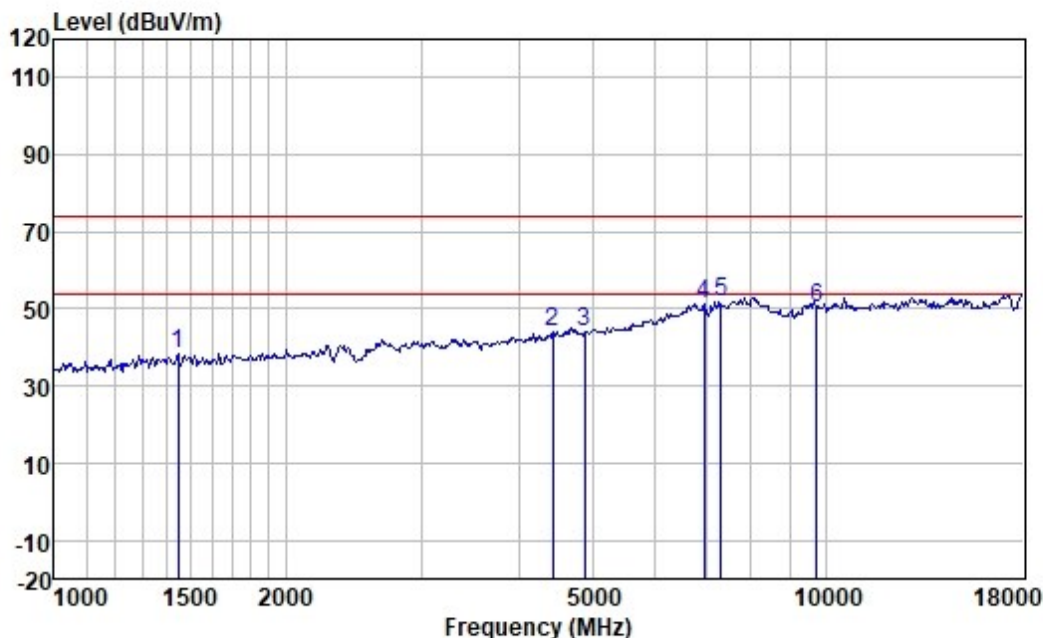
Test Mode: 02; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:middle



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1560.673	47.57	25.96	2.73	38.20	38.06	74.00	-35.94	VERTICAL	peak
2	4354.454	45.99	30.72	4.60	37.46	43.85	74.00	-30.15	VERTICAL	peak
3	4874.000	44.55	31.63	4.85	37.35	43.68	74.00	-30.32	VERTICAL	peak
4	6795.879	47.83	34.87	5.79	37.13	51.36	74.00	-22.64	VERTICAL	peak
5	7311.000	45.36	36.22	5.98	37.18	50.38	74.00	-23.62	VERTICAL	peak
6	9748.000	46.06	38.87	7.11	42.04	50.00	74.00	-24.00	VERTICAL	peak



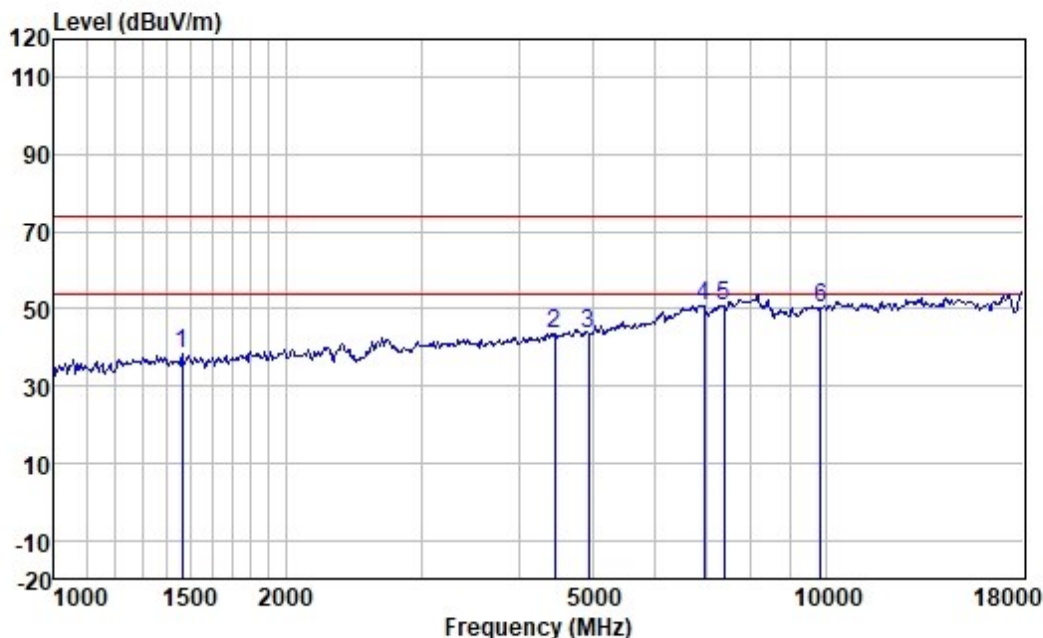
Test Mode: 02; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:middle



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1447.688	48.09	25.86	2.68	38.42	38.21	74.00	-35.79	HORIZONTAL	peak
2	4430.628	46.21	30.83	4.61	37.45	44.20	74.00	-29.80	HORIZONTAL	peak
3	4874.000	45.03	31.63	4.85	37.35	44.16	74.00	-29.84	HORIZONTAL	peak
4	6954.852	47.43	35.17	5.86	37.14	51.32	74.00	-22.68	HORIZONTAL	peak
5	7311.000	46.54	36.22	5.98	37.18	51.56	74.00	-22.44	HORIZONTAL	peak
6	9748.000	46.28	38.87	7.11	42.04	50.22	74.00	-23.78	HORIZONTAL	peak



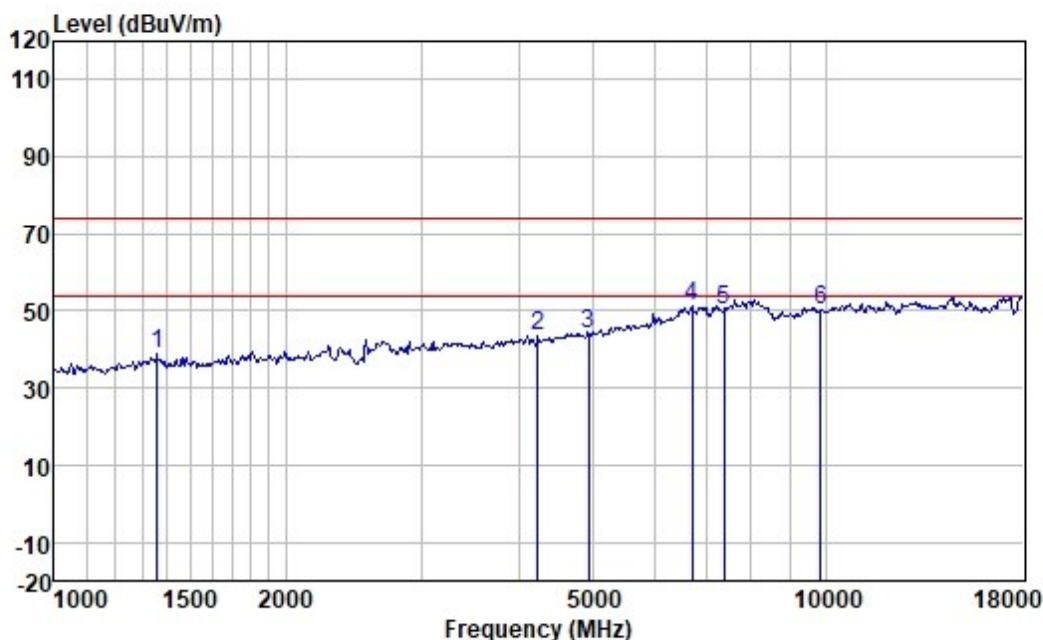
Test Mode: 02; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1464.522	47.94	25.88	2.69	38.39	38.12	74.00	-35.88	VERTICAL	peak
2	4456.315	45.76	30.87	4.61	37.45	43.79	74.00	-30.21	VERTICAL	peak
3	4924.000	44.47	31.70	4.88	37.33	43.72	74.00	-30.28	VERTICAL	peak
4	6954.852	47.09	35.17	5.86	37.14	50.98	74.00	-23.02	VERTICAL	peak
5	7386.000	45.51	36.47	6.00	37.18	50.80	74.00	-23.20	VERTICAL	peak
6	9848.000	46.29	38.98	7.15	42.10	50.32	74.00	-23.68	VERTICAL	peak



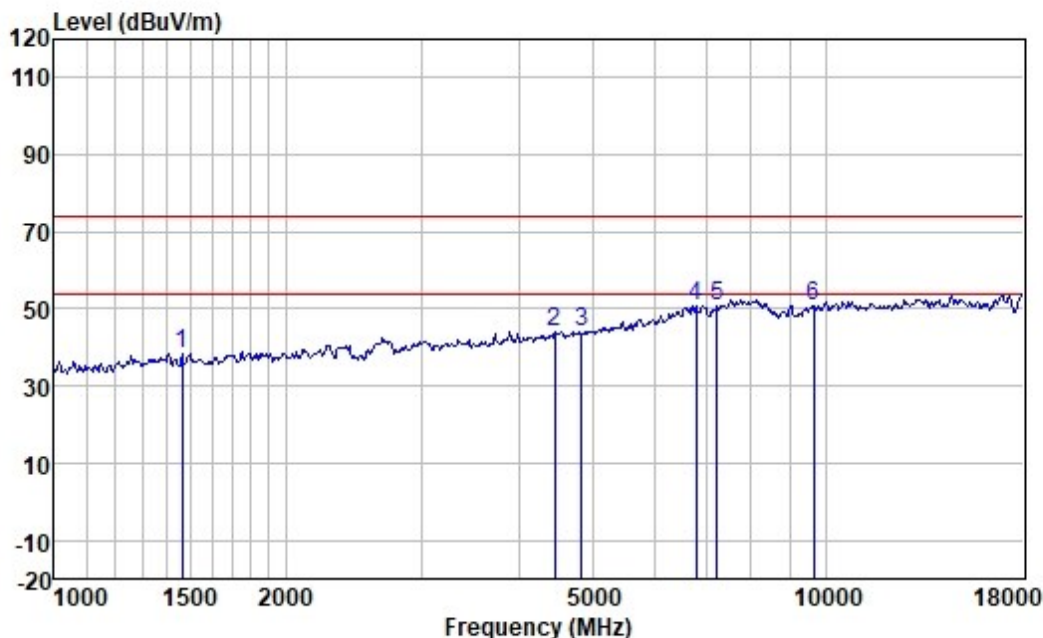
Test Mode: 02; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1358.498	49.15	25.73	2.63	38.53	38.98	74.00	-35.02	HORIZONTAL	peak
2	4230.396	46.20	30.42	4.55	37.48	43.69	74.00	-30.31	HORIZONTAL	peak
3	4924.000	44.70	31.70	4.88	37.33	43.95	74.00	-30.05	HORIZONTAL	peak
4	6717.762	48.05	34.64	5.75	37.12	51.32	74.00	-22.68	HORIZONTAL	peak
5	7386.000	44.89	36.47	6.00	37.18	50.18	74.00	-23.82	HORIZONTAL	peak
6	9848.000	46.18	38.98	7.15	42.10	50.21	74.00	-23.79	HORIZONTAL	peak



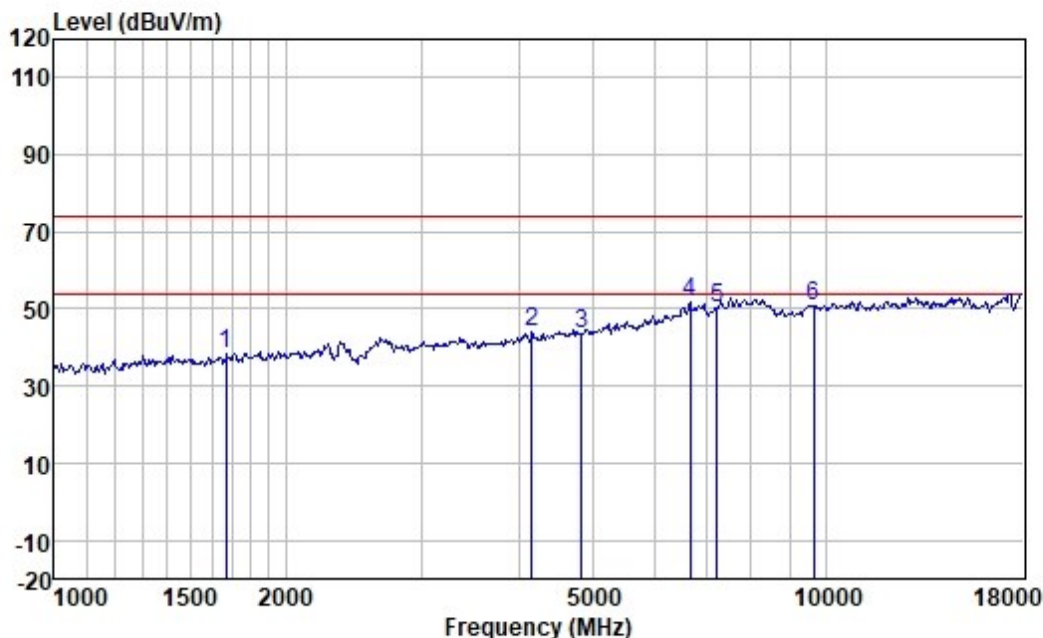
Test Mode: 02; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1464.522	48.36	25.88	2.69	38.39	38.54	74.00	-35.46	VERTICAL	peak
2	4456.315	46.11	30.87	4.61	37.45	44.14	74.00	-29.86	VERTICAL	peak
3	4824.000	44.97	31.54	4.82	37.37	43.96	74.00	-30.04	VERTICAL	peak
4	6795.879	47.38	34.87	5.79	37.13	50.91	74.00	-23.09	VERTICAL	peak
5	7236.000	46.12	35.97	5.95	37.17	50.87	74.00	-23.13	VERTICAL	peak
6	9648.000	47.02	38.73	7.05	41.94	50.86	74.00	-23.14	VERTICAL	peak



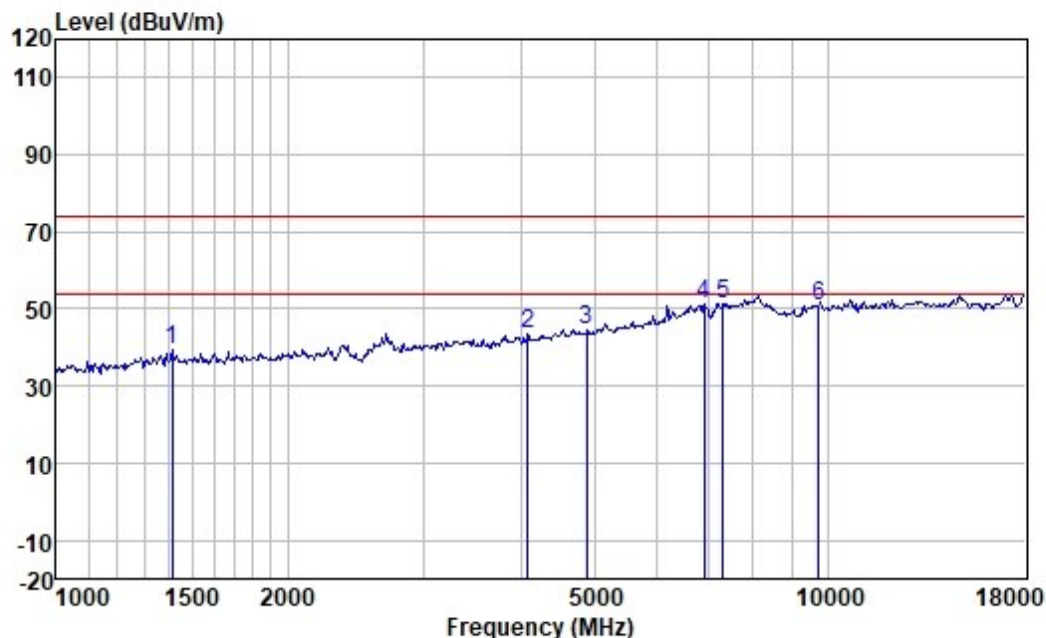
Test Mode: 02; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1672.779	47.35	26.12	2.82	38.05	38.24	74.00	-35.76	HORIZONTAL	peak
2	4157.664	46.64	30.24	4.53	37.48	43.93	74.00	-30.07	HORIZONTAL	peak
3	4824.000	44.52	31.54	4.82	37.37	43.51	74.00	-30.49	HORIZONTAL	peak
4	6679.040	48.73	34.53	5.72	37.12	51.86	74.00	-22.14	HORIZONTAL	peak
5	7236.000	45.30	35.97	5.95	37.17	50.05	74.00	-23.95	HORIZONTAL	peak
6	9648.000	47.00	38.73	7.05	41.94	50.84	74.00	-23.16	HORIZONTAL	peak



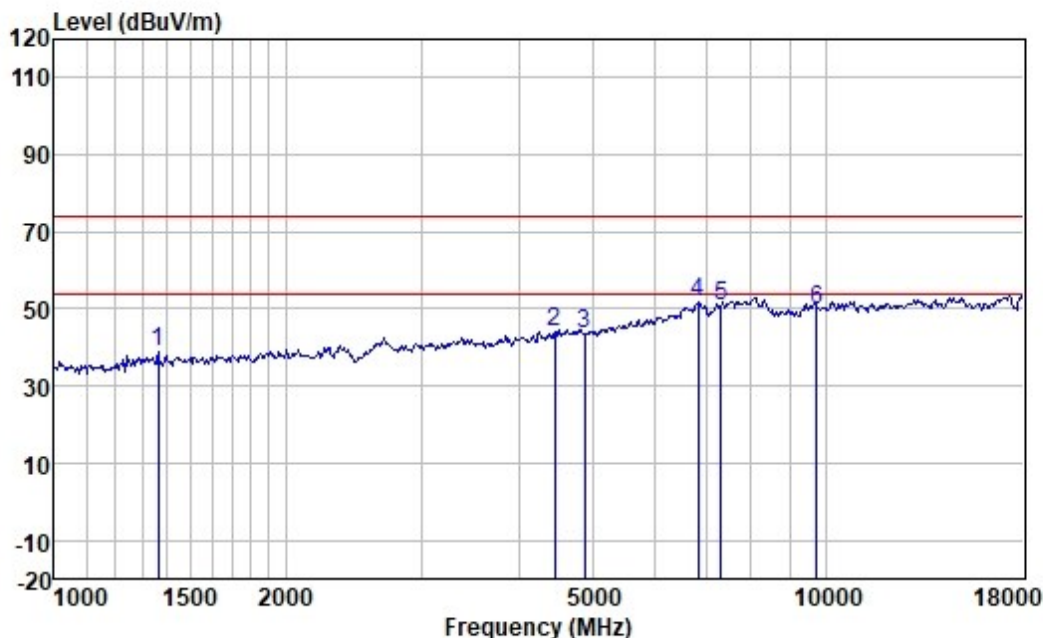
Test Mode: 02; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1414.597	49.32	25.82	2.67	38.47	39.34	74.00	-34.66	VERTICAL	peak
2	4086.182	46.46	30.11	4.51	37.49	43.59	74.00	-30.41	VERTICAL	peak
3	4874.000	45.46	31.63	4.85	37.35	44.59	74.00	-29.41	VERTICAL	peak
4	6914.763	47.73	35.11	5.84	37.14	51.54	74.00	-22.46	VERTICAL	peak
5	7311.000	46.52	36.22	5.98	37.18	51.54	74.00	-22.46	VERTICAL	peak
6	9748.000	46.70	38.87	7.11	42.04	50.64	74.00	-23.36	VERTICAL	peak



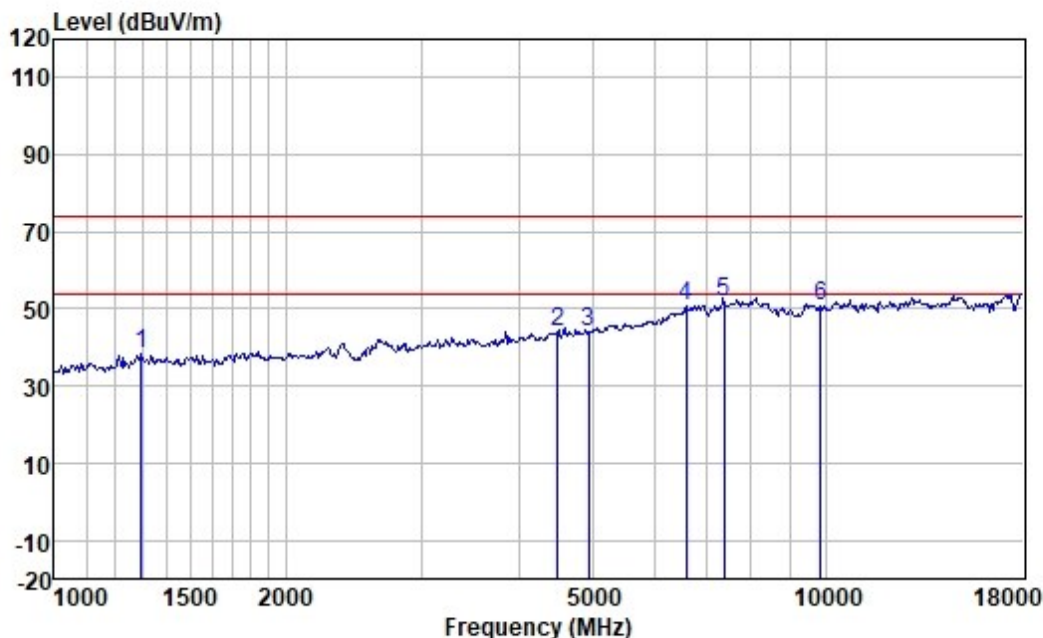
Test Mode: 02; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1366.374	49.04	25.74	2.64	38.51	38.91	74.00	-35.09	HORIZONTAL	peak
2	4456.315	45.95	30.87	4.61	37.45	43.98	74.00	-30.02	HORIZONTAL	peak
3	4874.000	44.40	31.63	4.85	37.35	43.53	74.00	-30.47	HORIZONTAL	peak
4	6835.278	48.23	34.96	5.81	37.13	51.87	74.00	-22.13	HORIZONTAL	peak
5	7311.000	45.67	36.22	5.98	37.18	50.69	74.00	-23.31	HORIZONTAL	peak
6	9748.000	46.02	38.87	7.11	42.04	49.96	74.00	-24.04	HORIZONTAL	peak



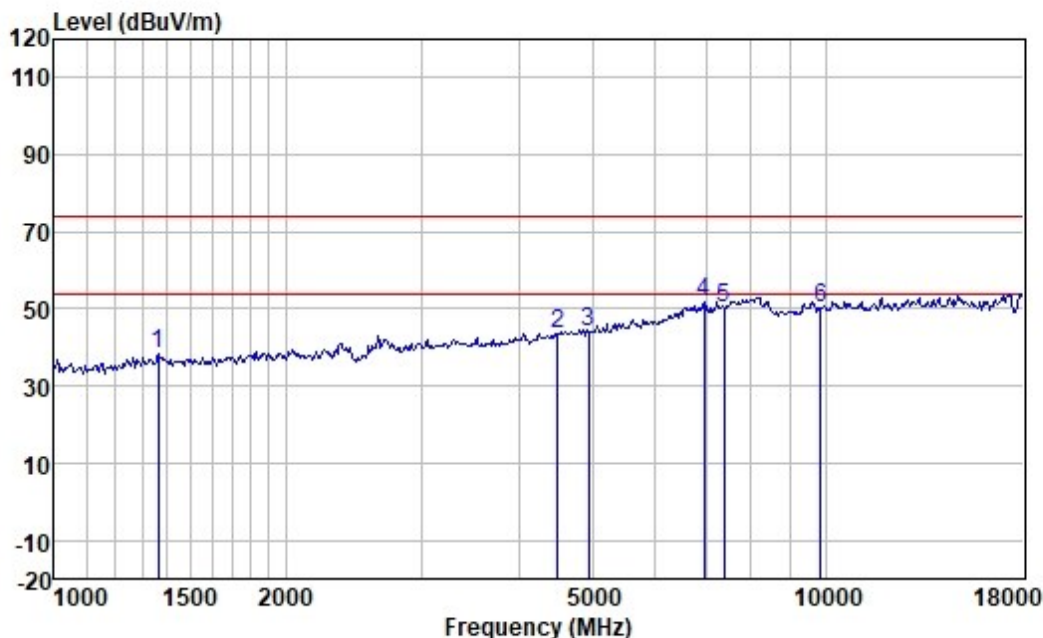
Test Mode: 02; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1297.103	48.68	25.59	2.58	38.60	38.25	74.00	-35.75	VERTICAL	peak
2	4495.125	45.86	30.91	4.62	37.44	43.95	74.00	-30.05	VERTICAL	peak
3	4924.000	44.66	31.70	4.88	37.33	43.91	74.00	-30.09	VERTICAL	peak
4	6602.265	48.09	34.35	5.69	37.12	51.01	74.00	-22.99	VERTICAL	peak
5	7386.000	46.46	36.47	6.00	37.18	51.75	74.00	-22.25	VERTICAL	peak
6	9848.000	46.82	38.98	7.15	42.10	50.85	74.00	-23.15	VERTICAL	peak



Test Mode: 02; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1366.374	48.71	25.74	2.64	38.51	38.58	74.00	-35.42	HORIZONTAL	peak
2	4495.125	45.63	30.91	4.62	37.44	43.72	74.00	-30.28	HORIZONTAL	peak
3	4924.000	45.04	31.70	4.88	37.33	44.29	74.00	-29.71	HORIZONTAL	peak
4	6954.852	47.76	35.17	5.86	37.14	51.65	74.00	-22.35	HORIZONTAL	peak
5	7386.000	45.21	36.47	6.00	37.18	50.50	74.00	-23.50	HORIZONTAL	peak
6	9848.000	46.27	38.98	7.15	42.10	50.30	74.00	-23.70	HORIZONTAL	peak



7.5 Conducted Peak Output Power

Test Requirement 47 CFR Part 15, Subpart C 15.247(b)(3)

Test Method: ANSI C63.10 (2020) Section 11.9.1

Limit:

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for ≥ 50 hopping channels
	0.25 for $25 \leq$ hopping channels < 50
	1 for digital modulation
2400-2483.5	1 for ≥ 75 non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 25.3 °C

Humidity: 58.4 % RH

Atmospheric Pressure: 1015 mbar

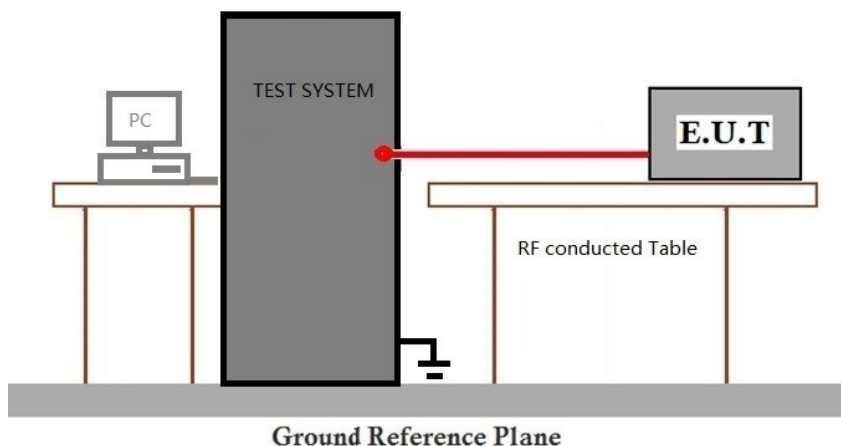
7.5.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	

Final test 02

TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

Note: Since the verify power the same operating range bandwidth and smaller power can be covered by the higher power.

Please Refer to Appendix for Details



7.6 Minimum 6dB Bandwidth

Test Requirement	47 CFR Part 15, Subpart C 15.247a(2)
Test Method:	ANSI C63.10 (2020) Section 11.8.1
Limit:	≥500 kHz

7.6.1 E.U.T. Operation

Operating Environment:

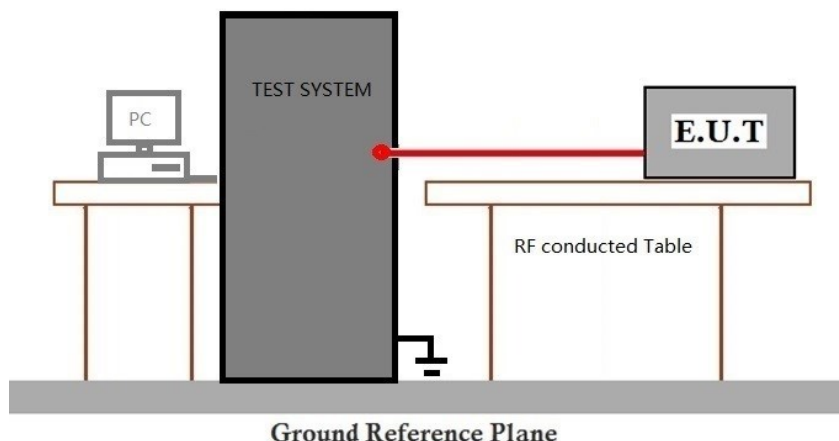
Temperature: 25.3 °C Humidity: 58.4 % RH Atmospheric Pressure: 1015 mbar

7.6.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	

TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.6.3 Test Setup Diagram



7.6.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.7 Power Spectrum Density

Test Requirement	47 CFR Part 15, Subpart C 15.247(e)
Test Method:	ANSI C63.10 (2020) Section 11.10.2
Limit:	≤8dBm in any 3 kHz band during any time interval of continuous transmission

7.7.1 E.U.T. Operation

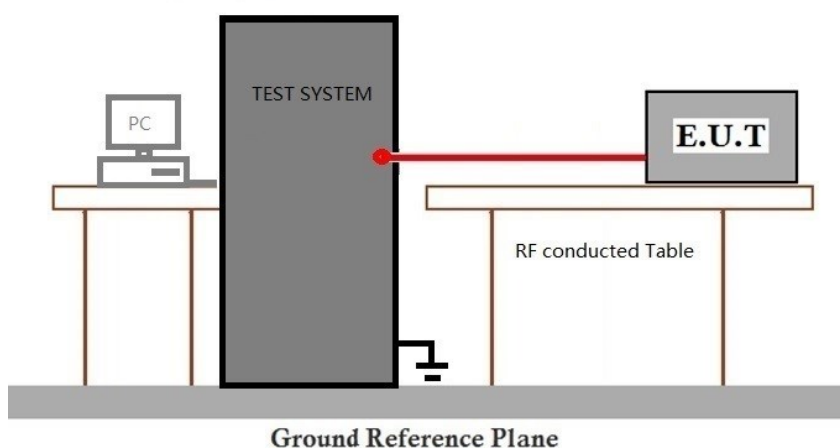
Operating Environment:

Temperature: 25.3 °C Humidity: 58.4 % RH Atmospheric Pressure: 1015 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.7.3 Test Setup Diagram



7.7.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.8 Conducted Band Edges Measurement

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)

Test Method: ANSI C63.10 (2020) Section 6.10.4

Limit:

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)).

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 25.3 °C

Humidity: 58.4 % RH

Atmospheric Pressure: 1015 mbar

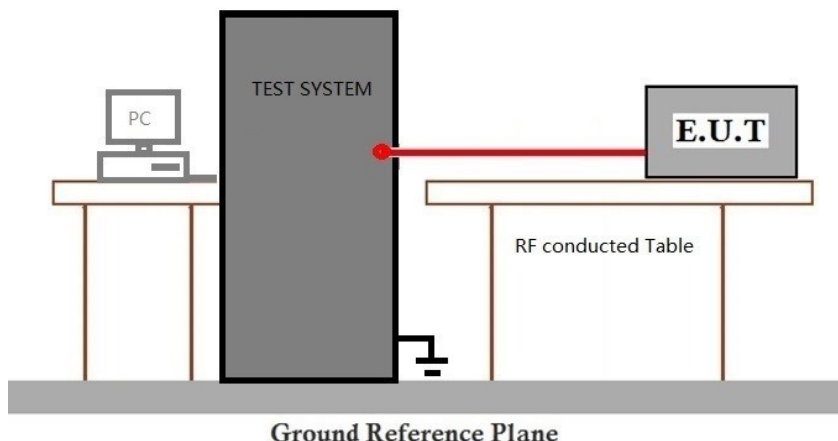
7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
--------------------------	--------------	-------------

Final test	02	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.
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7.8.3 Test Setup Diagram



7.8.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.9 Conducted Spurious Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)

Test Method: ANSI C63.10 (2020) Section 11.11

Limit:

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)).

7.9.1 E.U.T. Operation

Operating Environment:

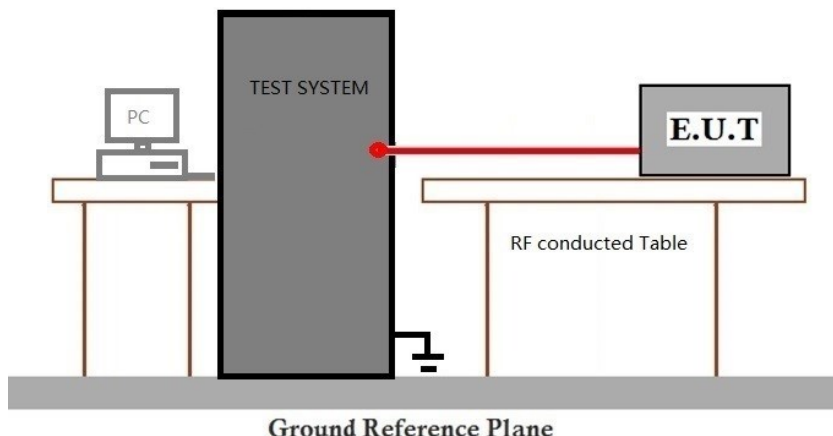
Temperature: 25.3 °C Humidity: 58.4 % RH Atmospheric Pressure: 1015 mbar

7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.



7.9.3 Test Setup Diagram



7.9.4 Measurement Procedure and Data

Please Refer to Appendix for Details

8 Test Setup Photo

Refer to Appendix - Test Setup Photos for GZCR250900150203

9 EUT Constructional Details (EUT Photos)

Refer to Appendix - External and Internal Photos for GZCR2509001502LM



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10 Appendix

1. Duty Cycle

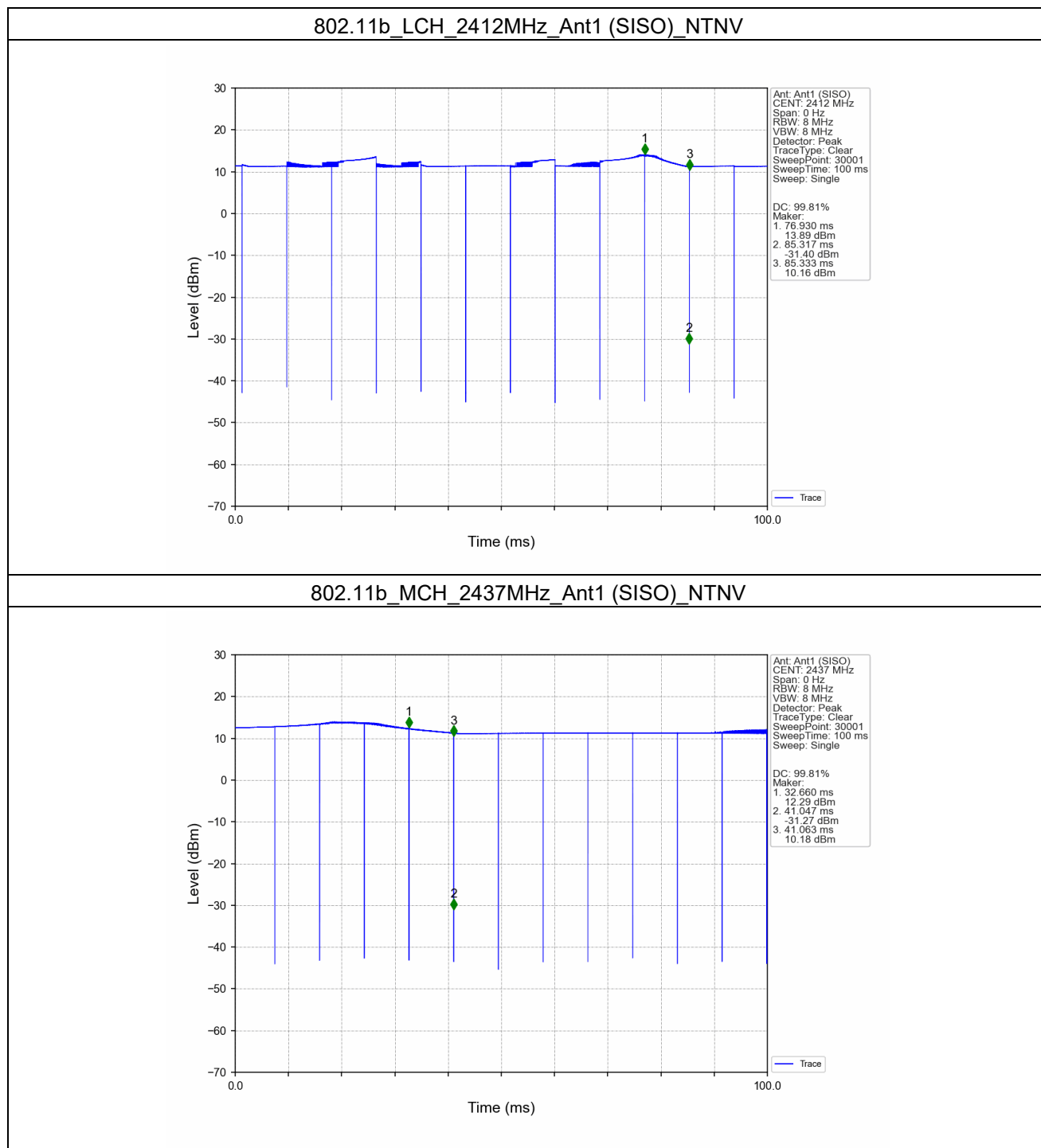
1.1 Test Result

1.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11b	SISO	2412	8.387	8.403	99.81	0.01	0.04
		2437	8.387	8.403	99.81	0.01	0.04
		2462	8.386	8.403	99.80	0.01	0.04
802.11g	SISO	2412	1.396	1.410	99.01	0.04	0.03
		2437	1.396	1.411	98.94	0.05	0.03
		2462	1.396	1.410	99.01	0.04	0.03
802.11n (HT20)	SISO	2412	1.304	1.318	98.94	0.05	0.03
		2437	1.304	1.318	98.94	0.05	0.03
		2462	1.304	1.318	98.94	0.05	0.03

1.2 Test Graph

1.2.1 Ant1



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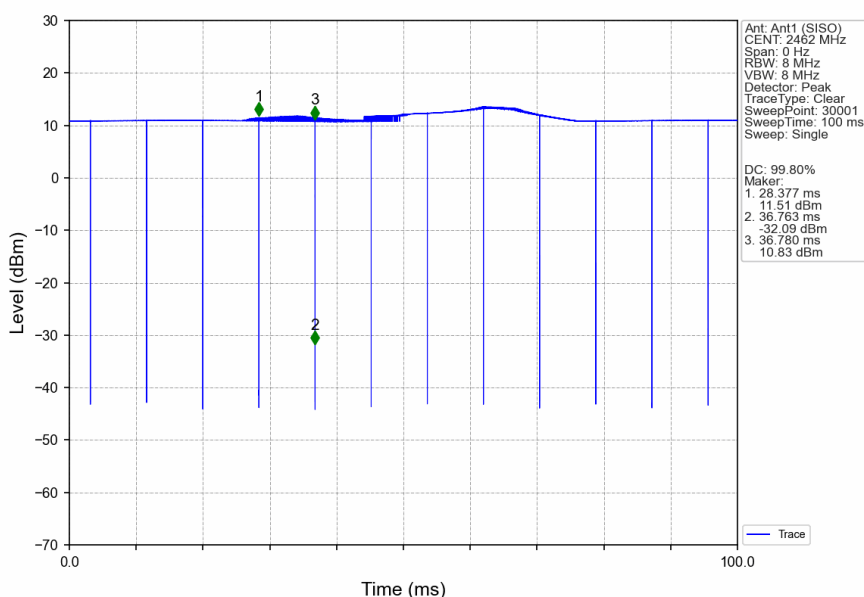
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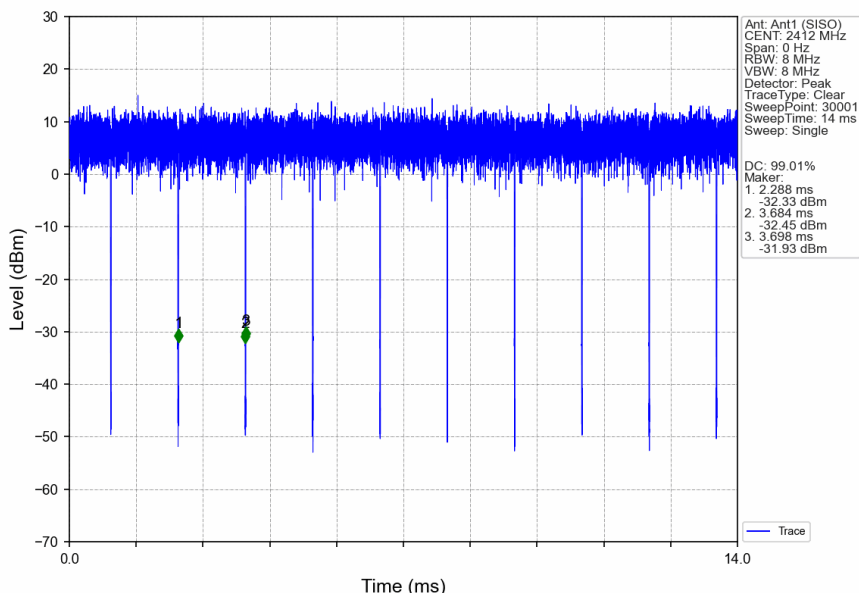
No.198, Kezhu Road, Science City, Economic & Technological Development Area, Guangzhou, Guangdong, China 510663
中国·广东·广州高新技术产业开发区科学城科珠路198号 邮编: 510663

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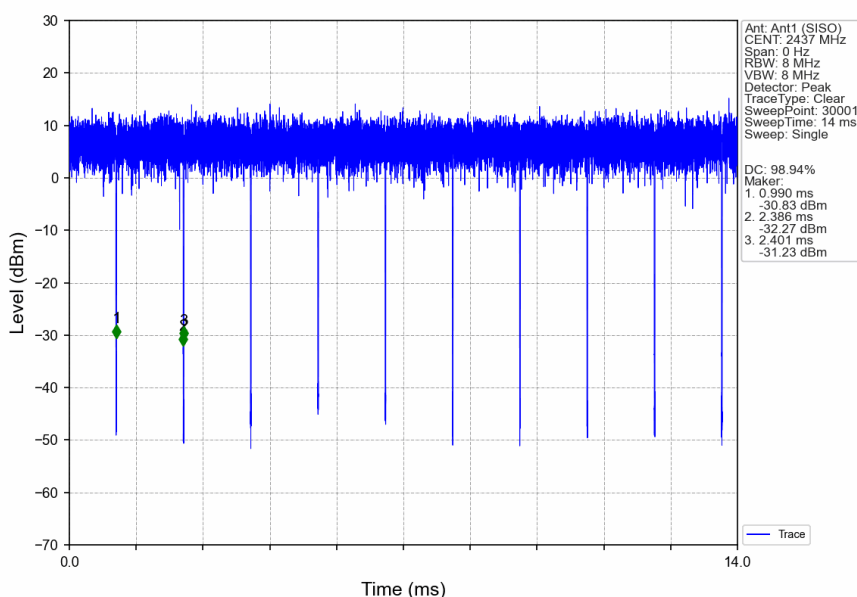
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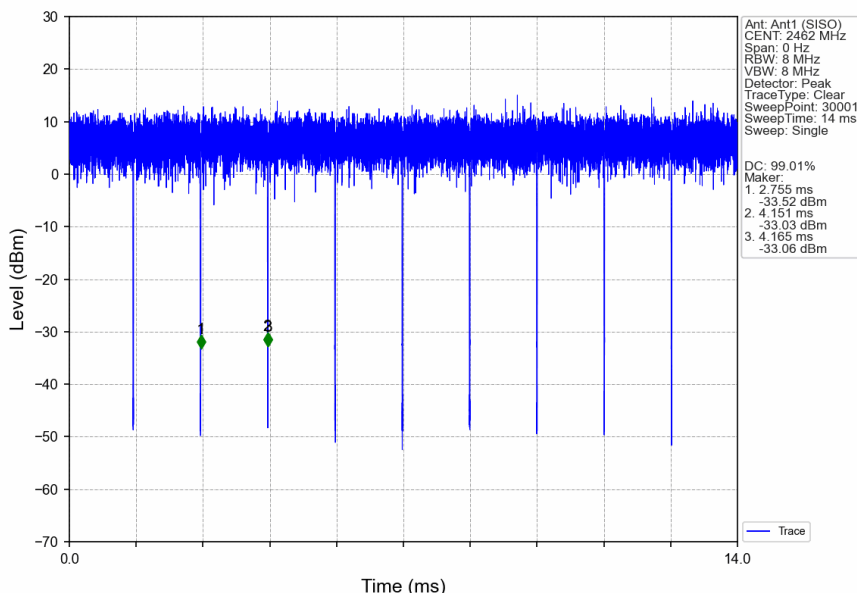
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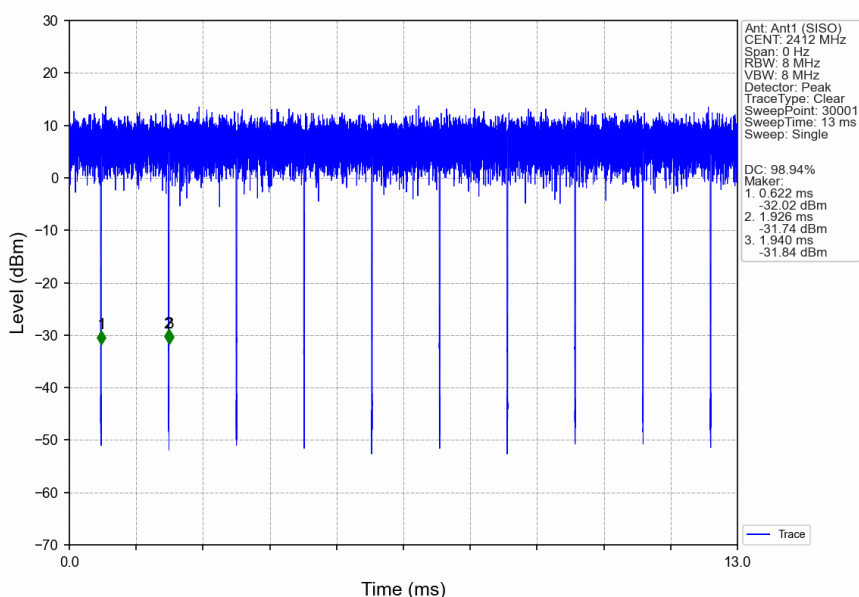
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



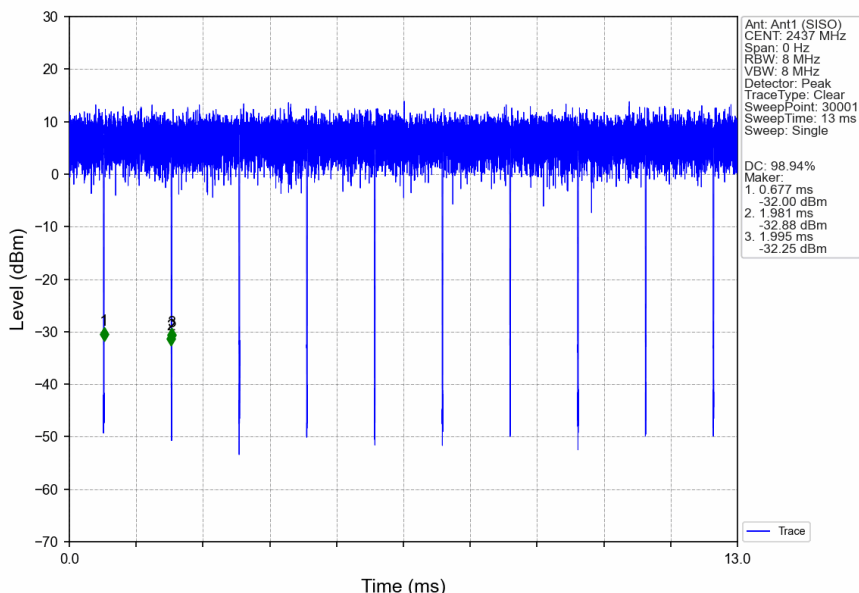
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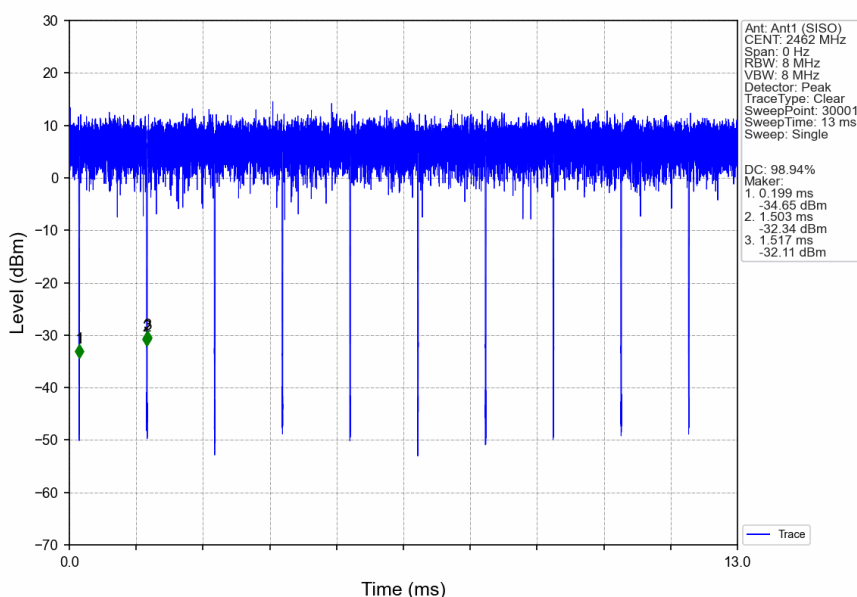
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



2. Bandwidth

2.1 Test Result

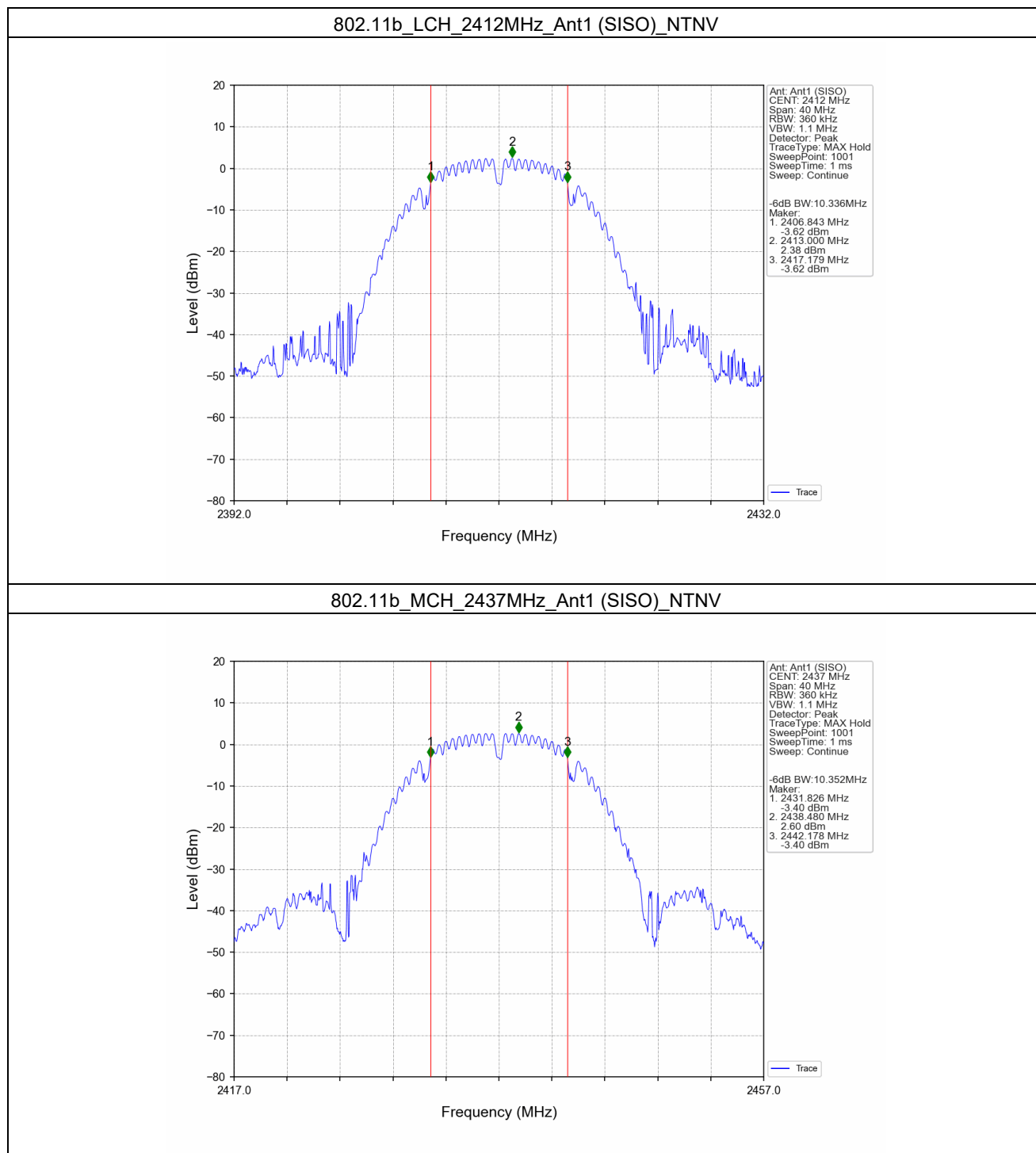
2.1.1 6dB BW

802.11b	SISO	2412	1	10.336	≥ 0.5	Pass
		2437	1	10.352	≥ 0.5	Pass
		2462	1	10.348	≥ 0.5	Pass
802.11g	SISO	2412	1	16.367	≥ 0.5	Pass
		2437	1	16.347	≥ 0.5	Pass
		2462	1	16.445	≥ 0.5	Pass
802.11n (HT20)	SISO	2412	1	17.429	≥ 0.5	Pass
		2437	1	17.679	≥ 0.5	Pass
		2462	1	17.524	≥ 0.5	Pass



2.2 Test Graph

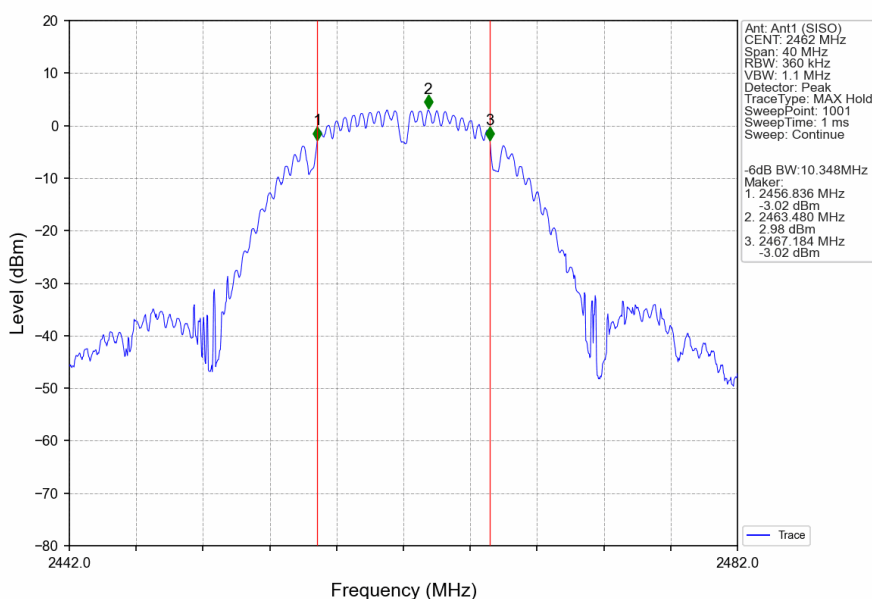
2.2.1 6dB BW



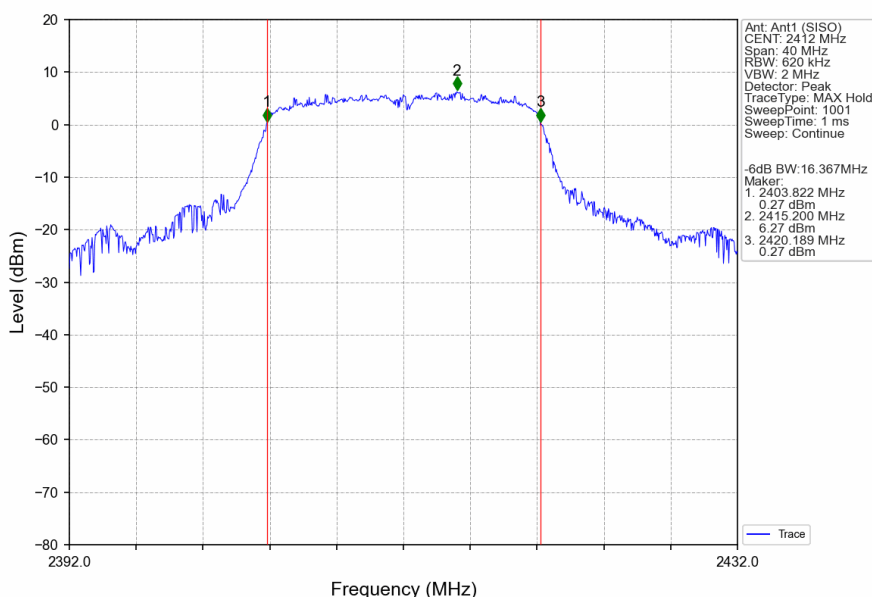
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802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



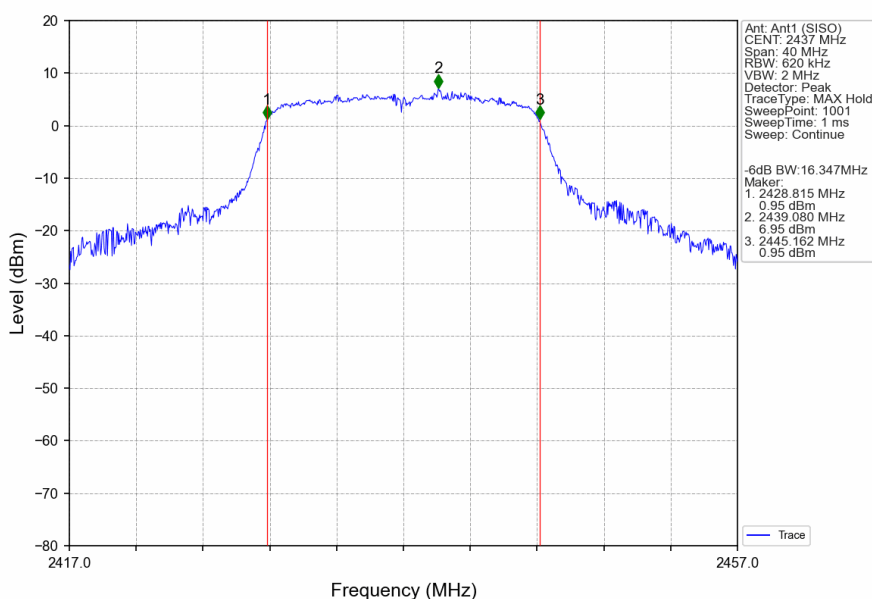
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



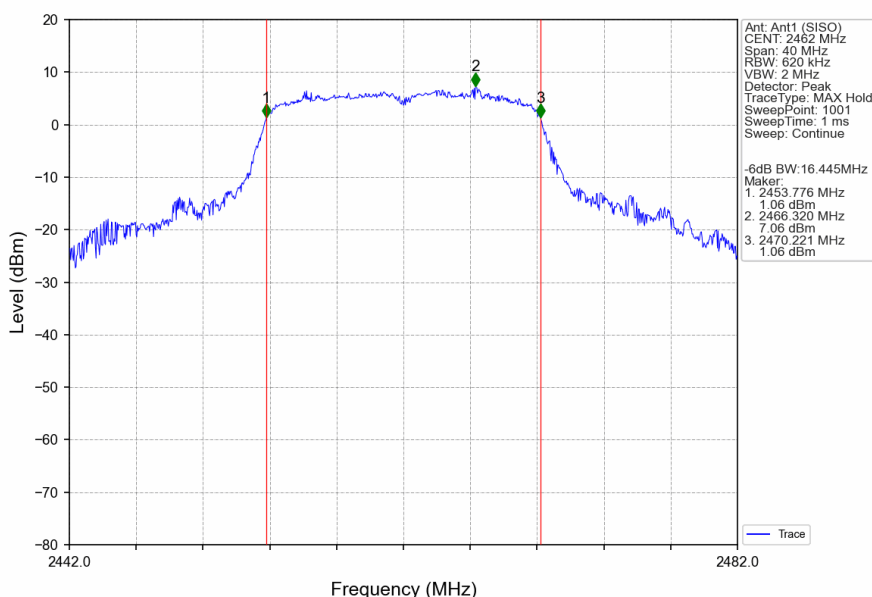
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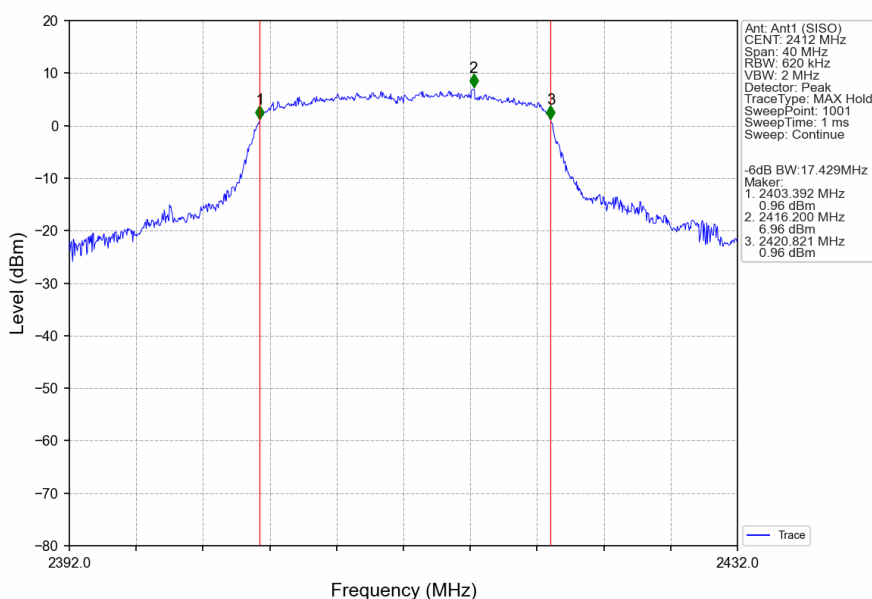
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



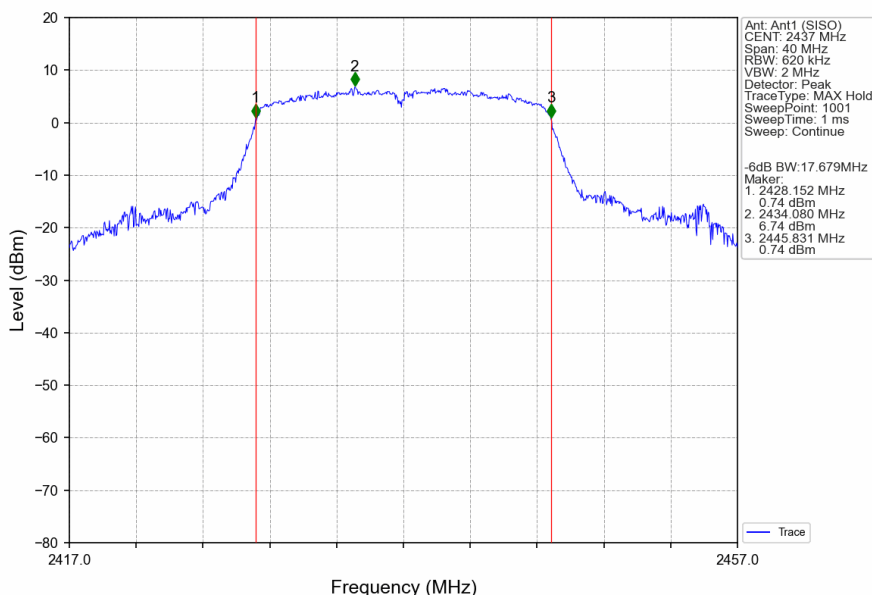
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



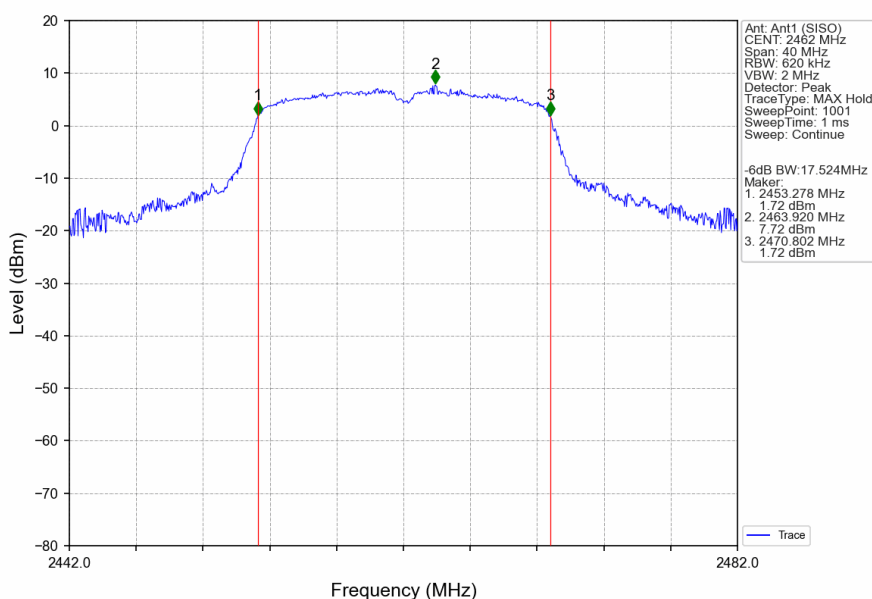
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



3. Maximum Conducted Output Power

3.1 Test Result

3.1.1 Power

Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
802.11b	SISO	2412	12.26	<=30	Pass
		2437	12.18	<=30	Pass
		2462	11.86	<=30	Pass
802.11g	SISO	2412	14.52	<=30	Pass
		2437	14.49	<=30	Pass
		2462	14.24	<=30	Pass
802.11n (HT20)	SISO	2412	14.56	<=30	Pass
		2437	14.55	<=30	Pass
		2462	14.21	<=30	Pass

4. Maximum Power Spectral Density

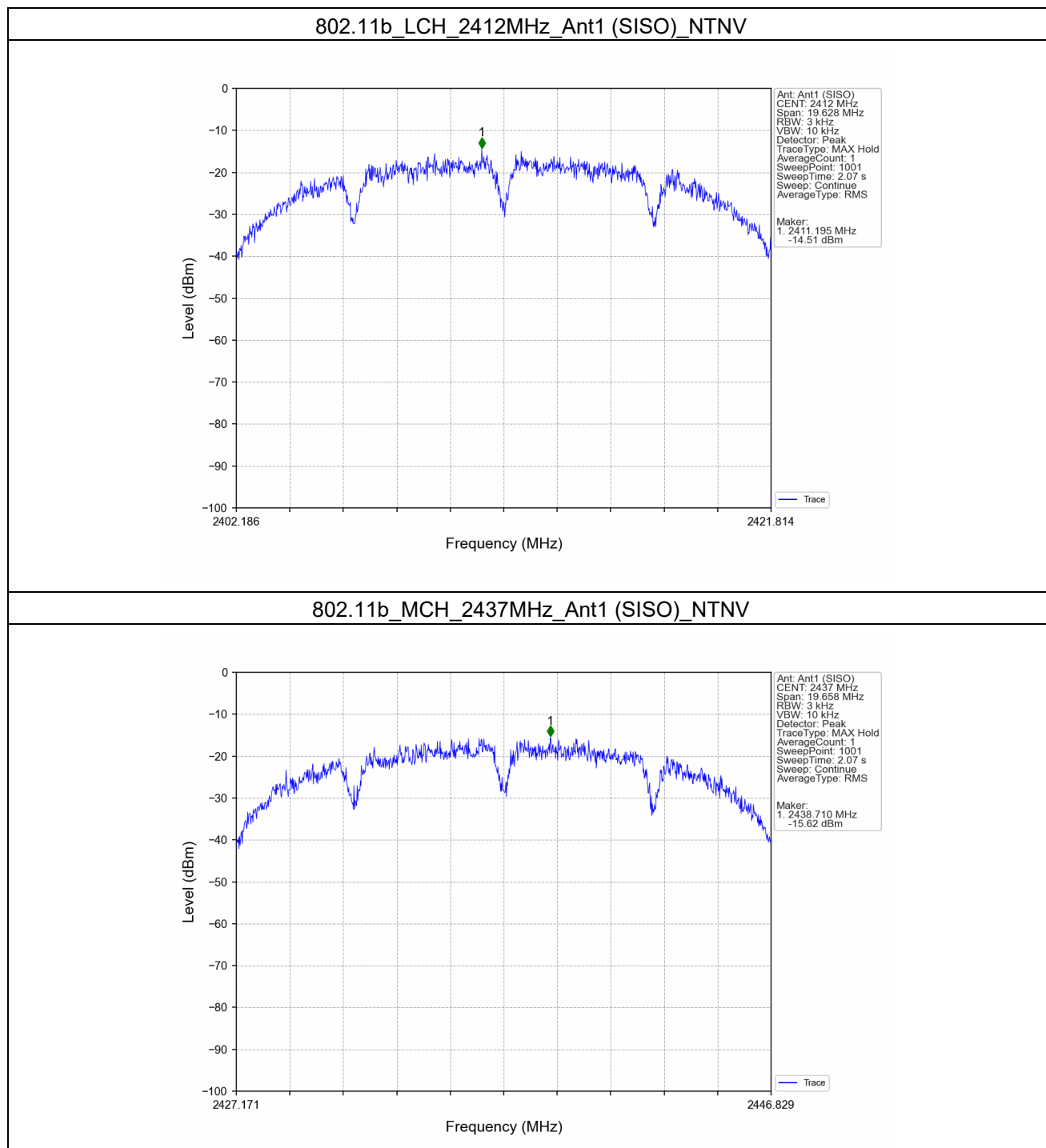
4.1 Test Result

4.1.1 PSD

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm)		Verdict
			ANT1	Limit	
802.11b	SISO	2412	-14.51	<=8	Pass
		2437	-15.62	<=8	Pass
		2462	-14.23	<=8	Pass
802.11g	SISO	2412	-18.36	<=8	Pass
		2437	-17.96	<=8	Pass
		2462	-19.47	<=8	Pass
802.11n (HT20)	SISO	2412	-19.42	<=8	Pass
		2437	-18.99	<=8	Pass
		2462	-19.18	<=8	Pass

4.2 Test Graph

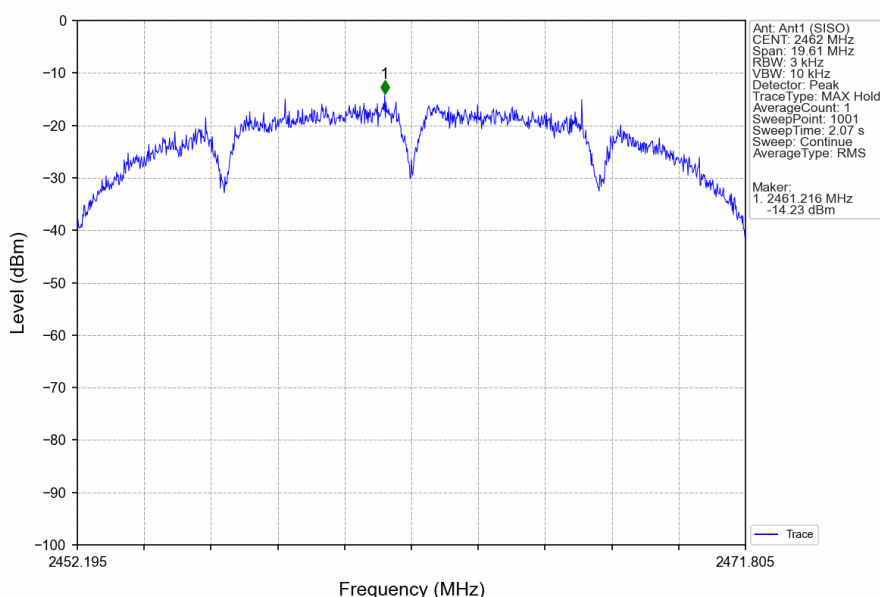
4.2.1 PSD



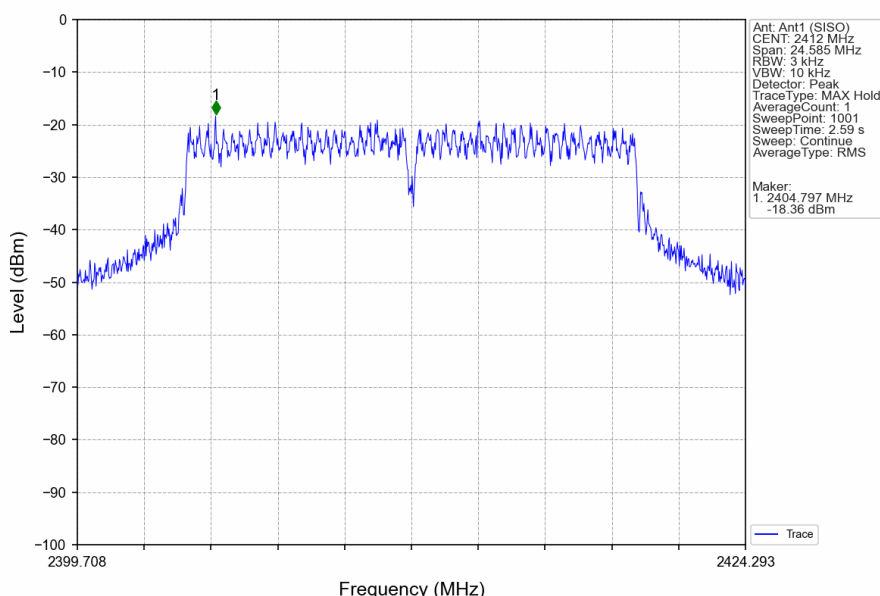
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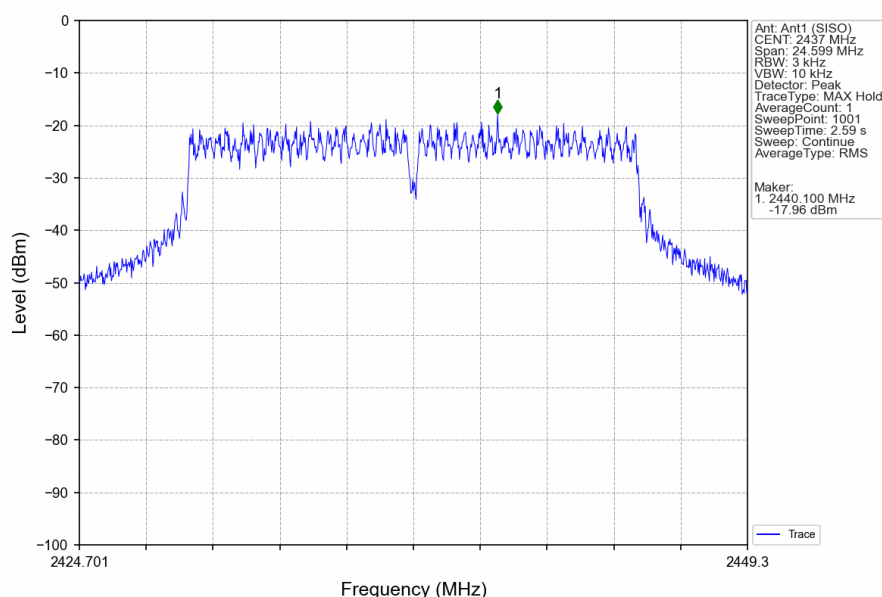
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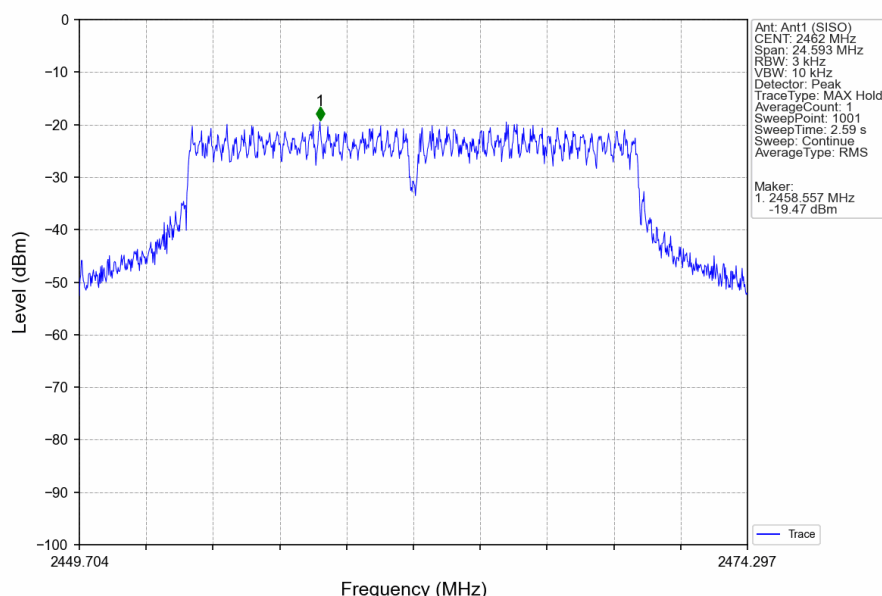
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



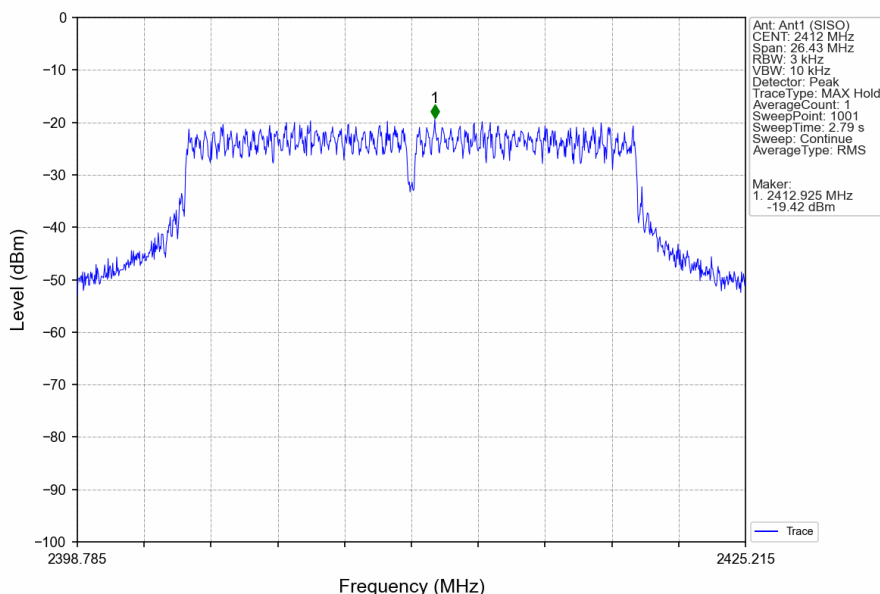
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



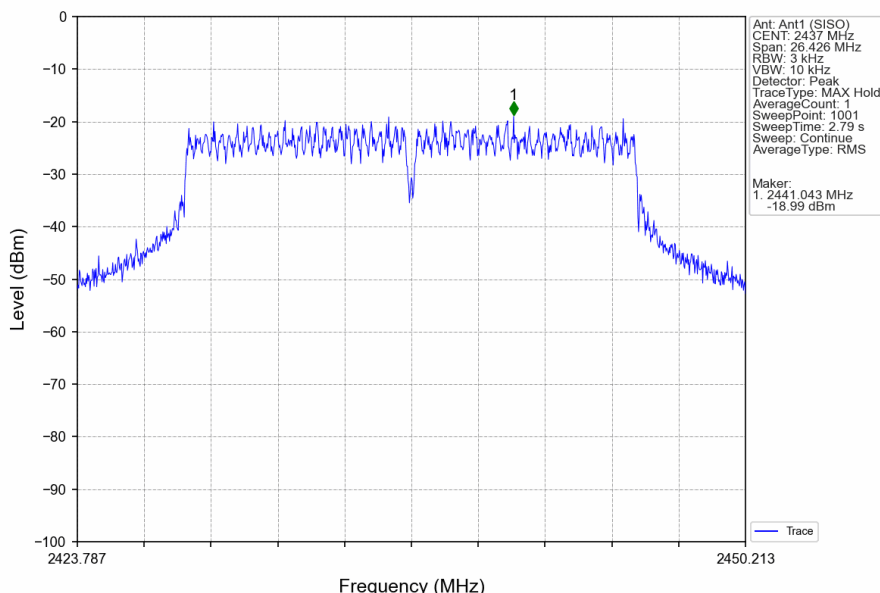
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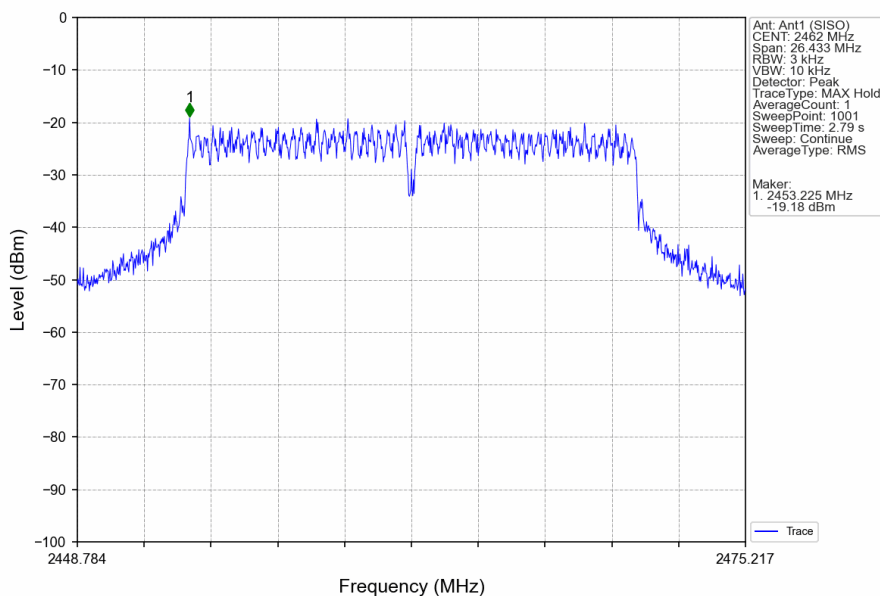
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



5. Unwanted Emissions In Non-restricted Frequency Bands

5.1 Test Result

5.1.1 Ref

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
802.11b	SISO	2412	1	-0.80
		2437	1	-0.51
		2462	1	-1.11
802.11g	SISO	2412	1	-4.54
		2437	1	-4.57
		2462	1	-5.30
802.11n (HT20)	SISO	2412	1	-4.50
		2437	1	-4.78
		2462	1	-5.31

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.

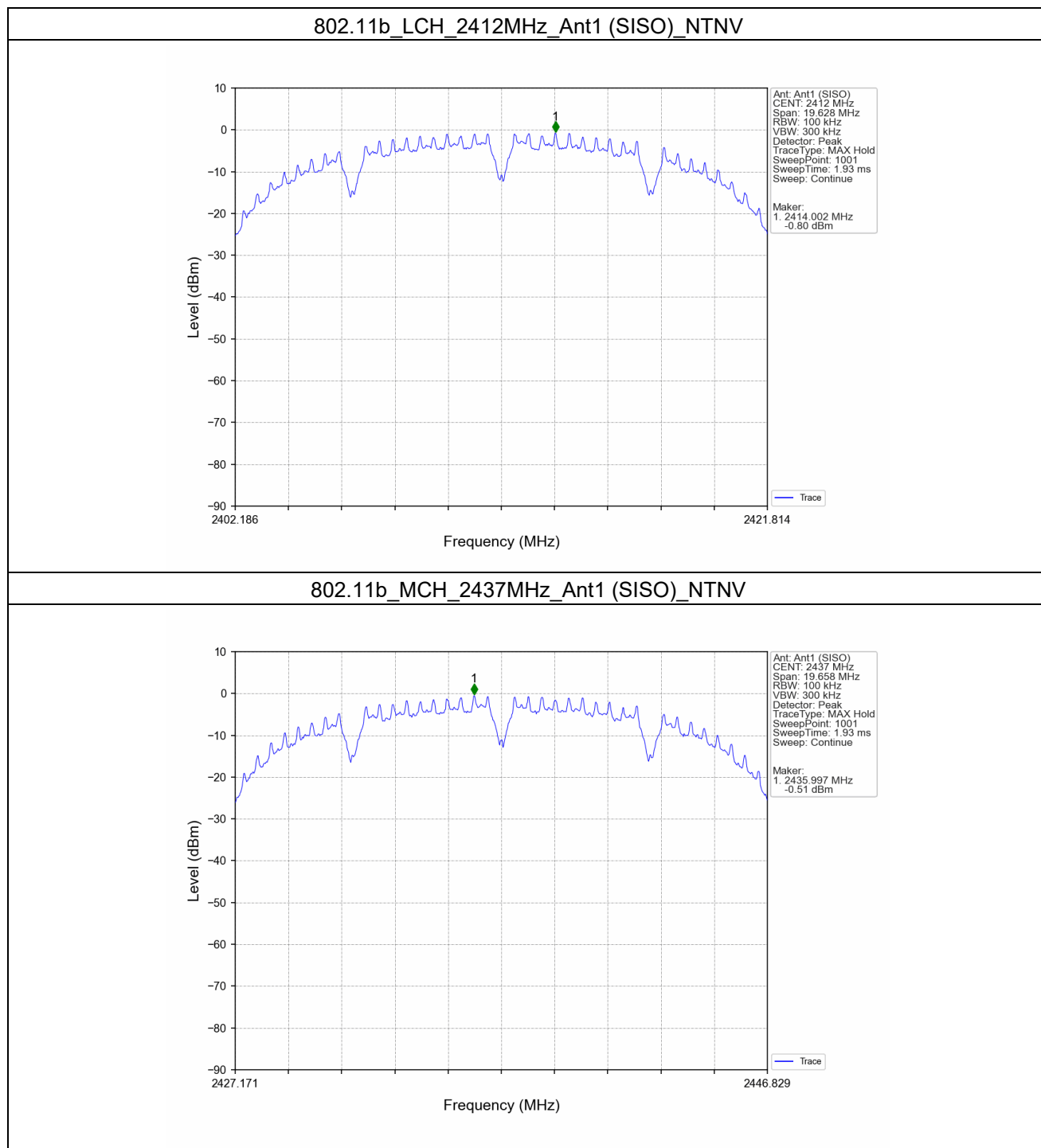
5.1.2 CSE and Band Edges

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
802.11b	SISO	2412	1	-0.51	-20.51	Pass
		2437	1	-0.51	-20.51	Pass
		2462	1	-0.51	-20.51	Pass
802.11g	SISO	2412	1	-4.54	-24.54	Pass
		2437	1	-4.54	-24.54	Pass
		2462	1	-4.54	-24.54	Pass
802.11n (HT20)	SISO	2412	1	-4.50	-24.50	Pass
		2437	1	-4.50	-24.50	Pass
		2462	1	-4.50	-24.50	Pass

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.

5.2 Test Graph

5.2.1 Ref



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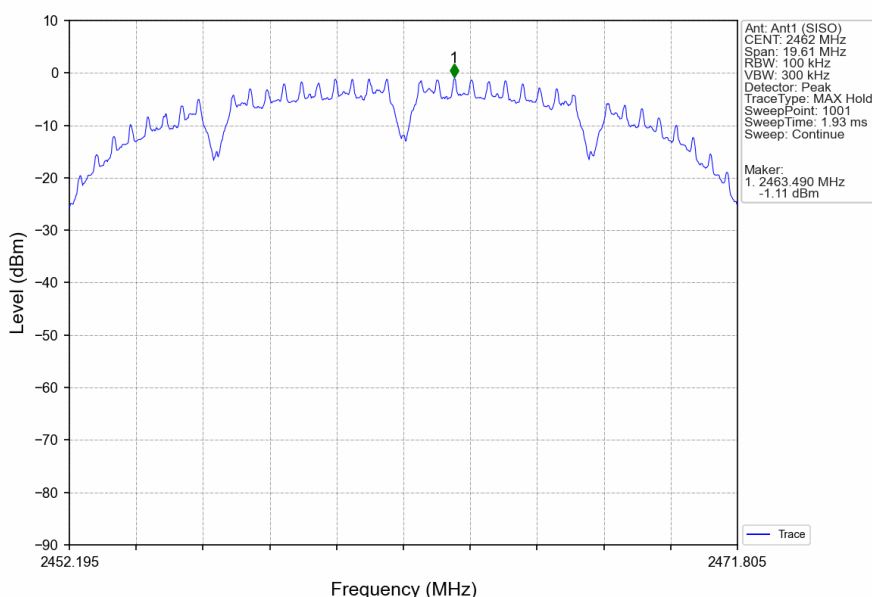
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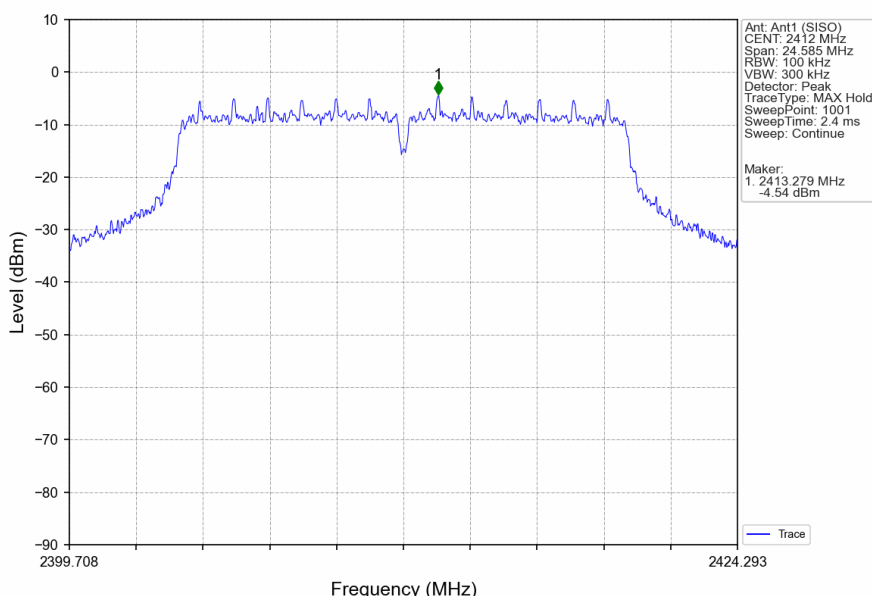
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中国·广东·广州高新技术产业开发区科学城科珠路198号 邮编: 510663

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802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



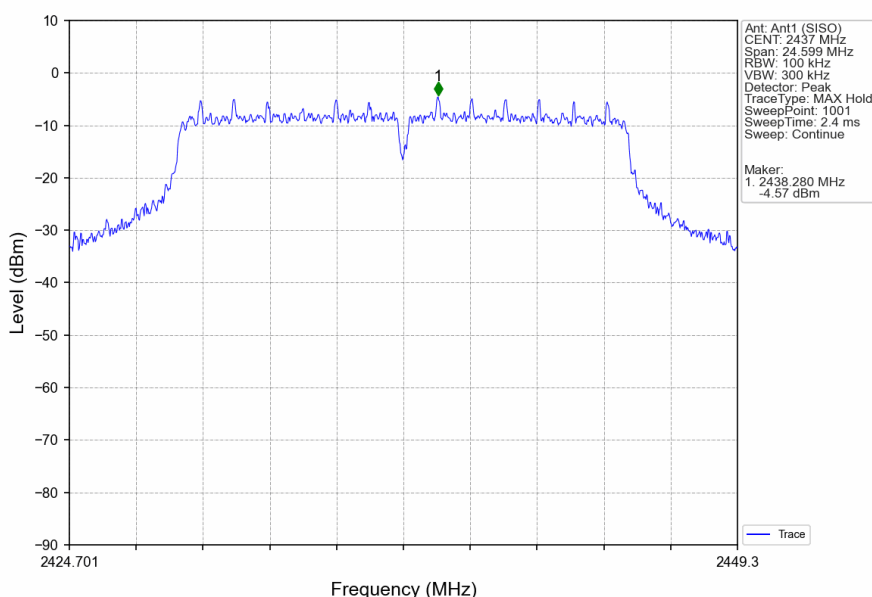
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



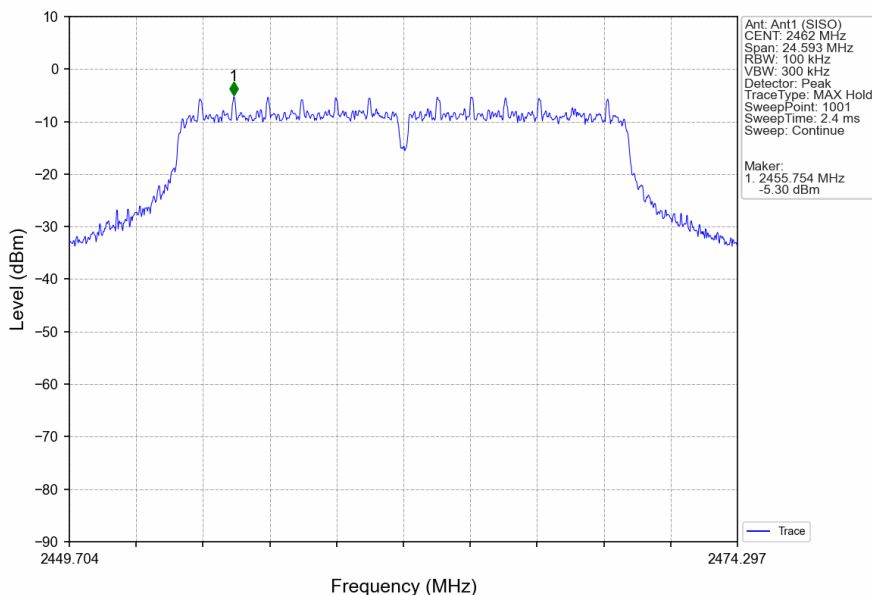
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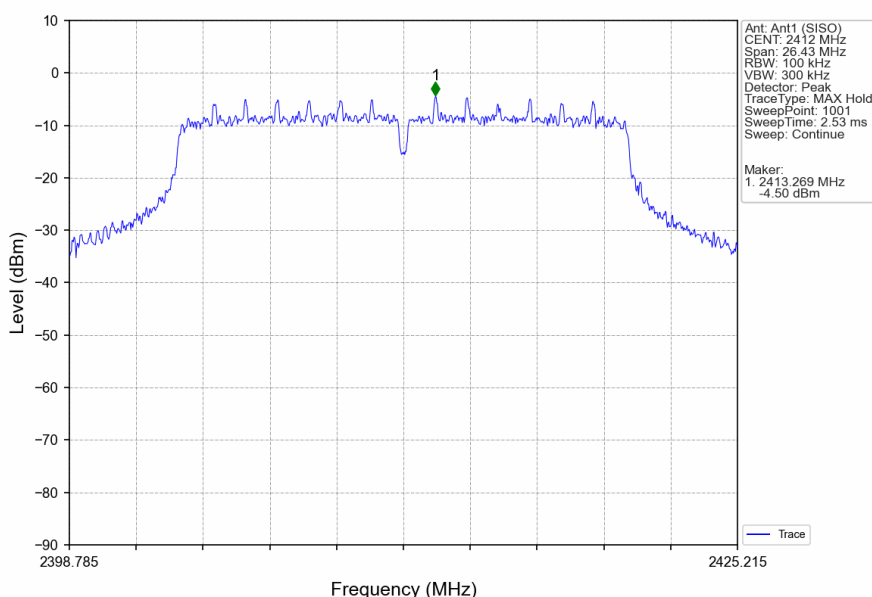
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



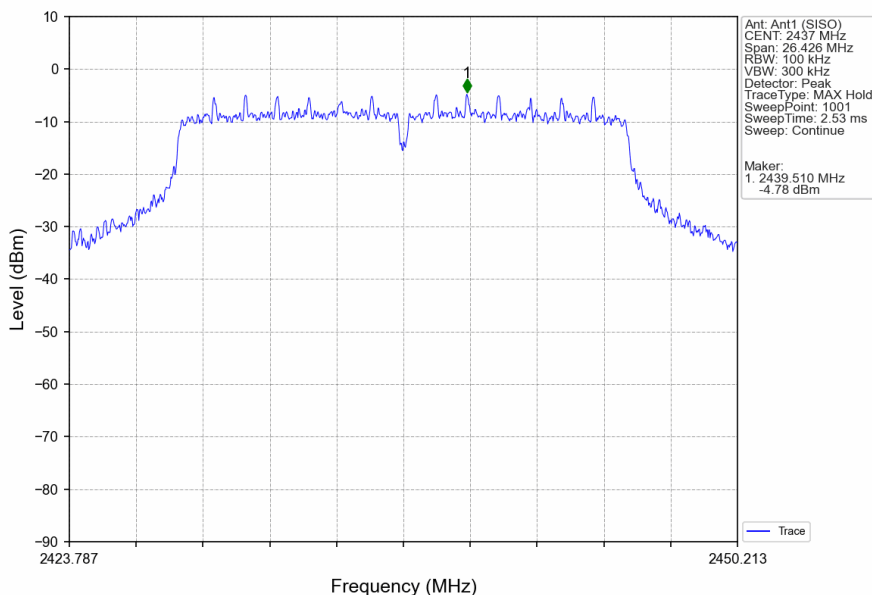
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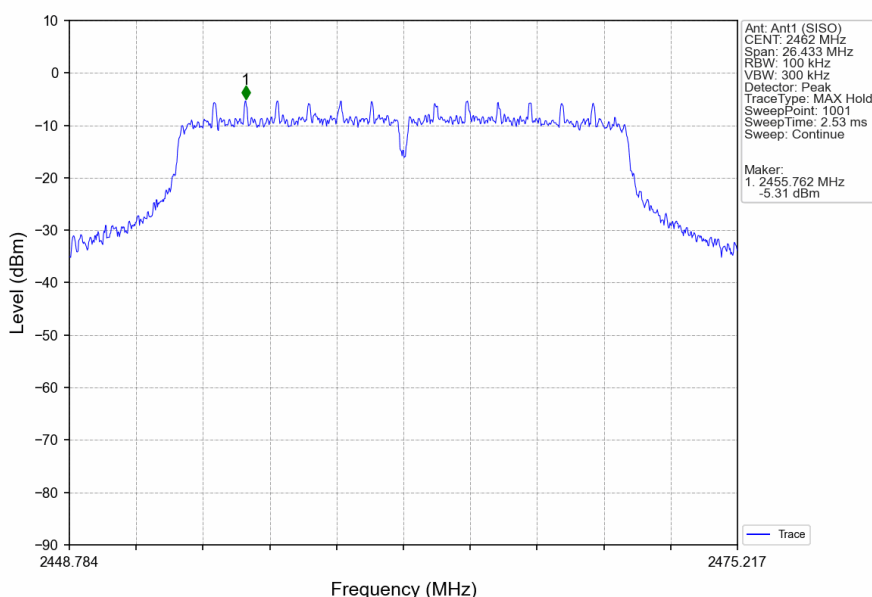
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



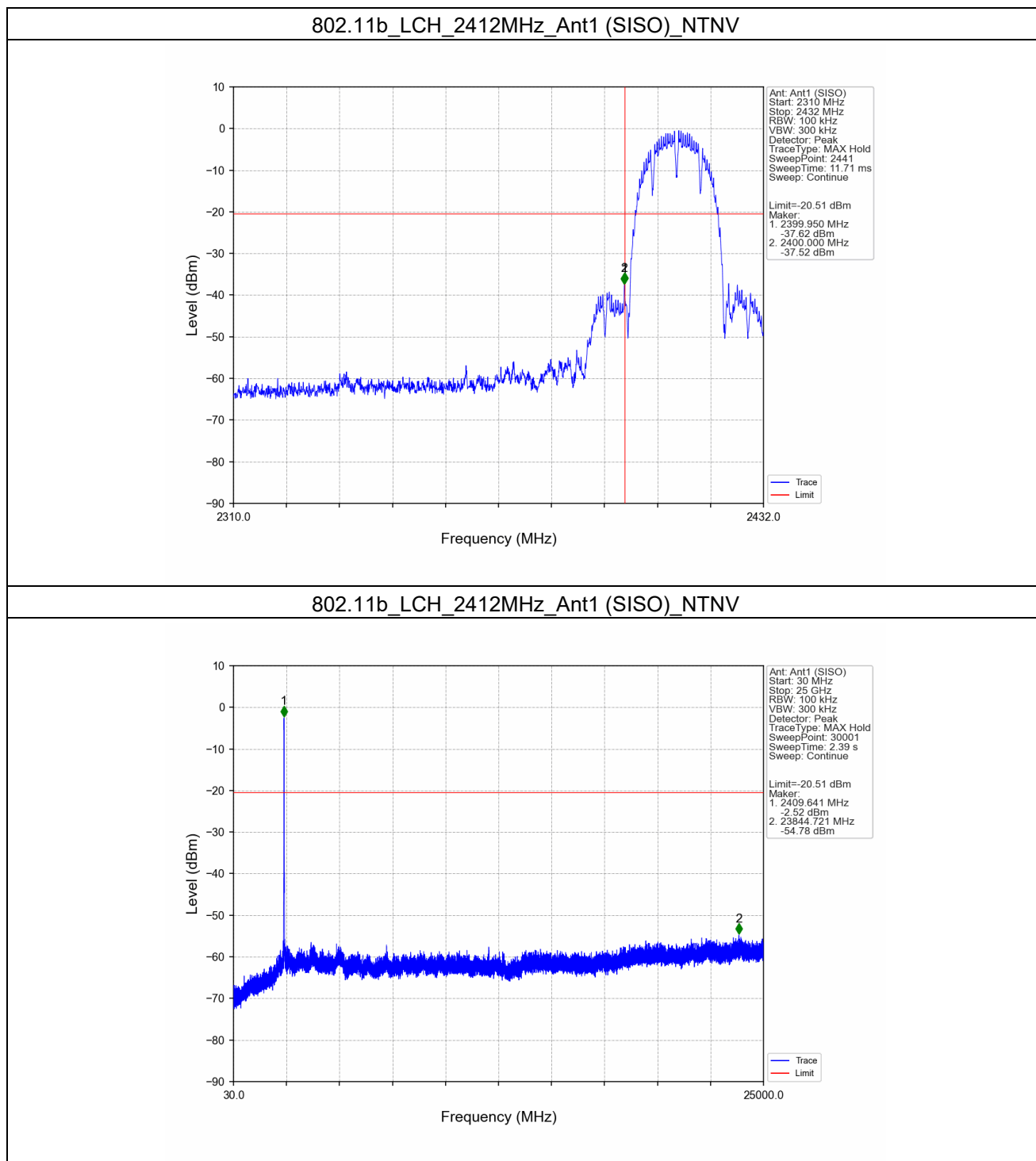
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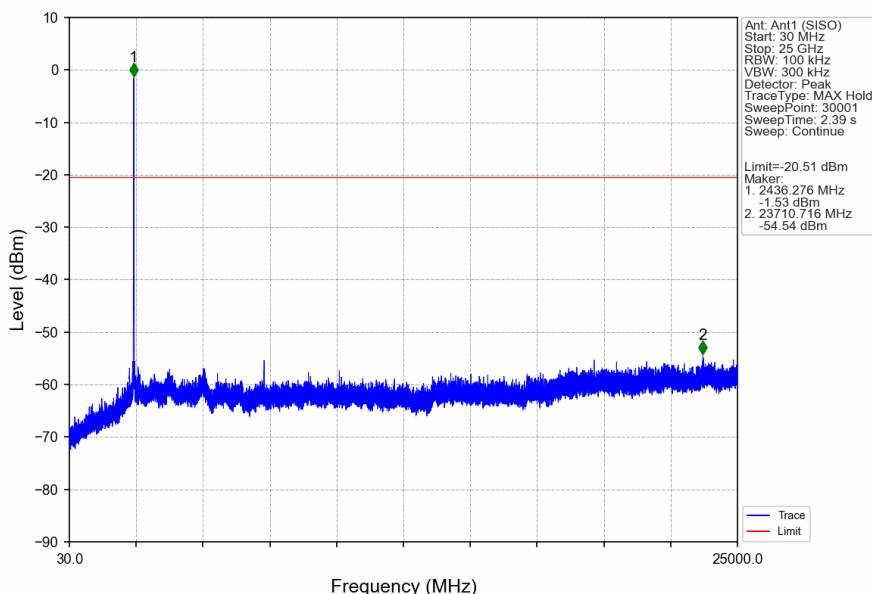
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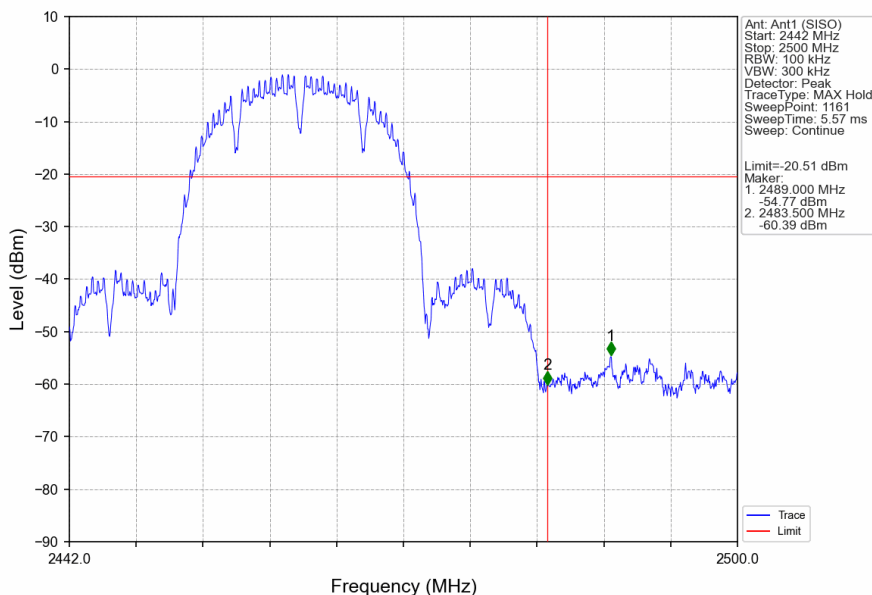
5.2.2 CSE and Band Edges



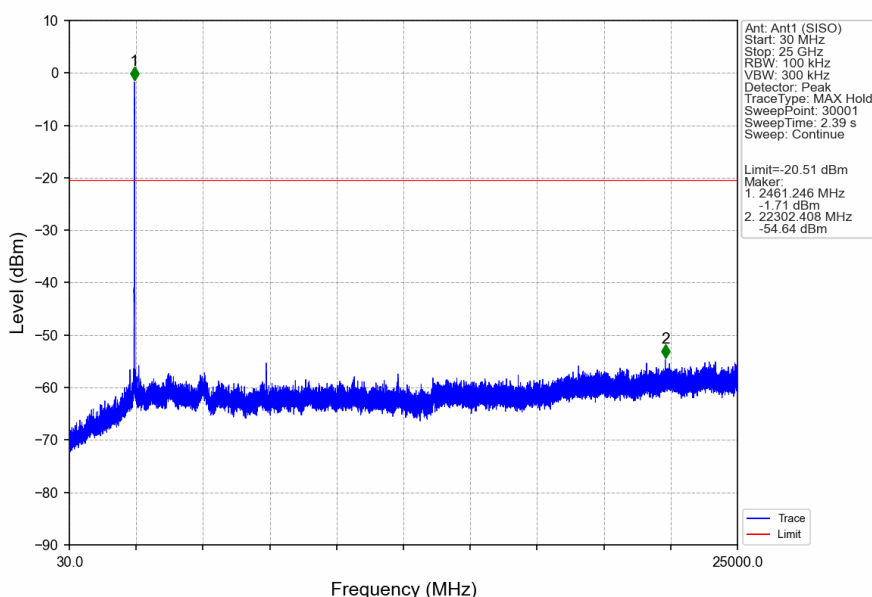
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



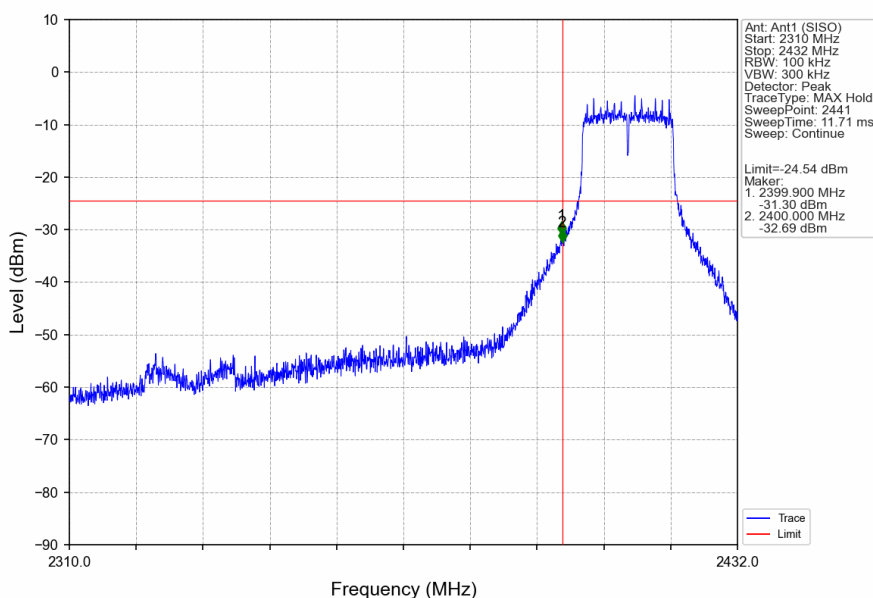
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802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



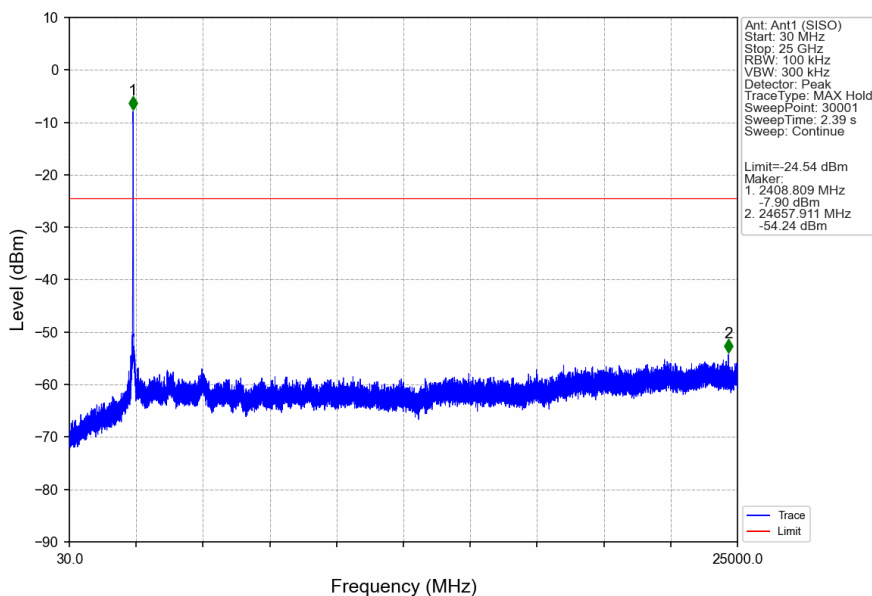
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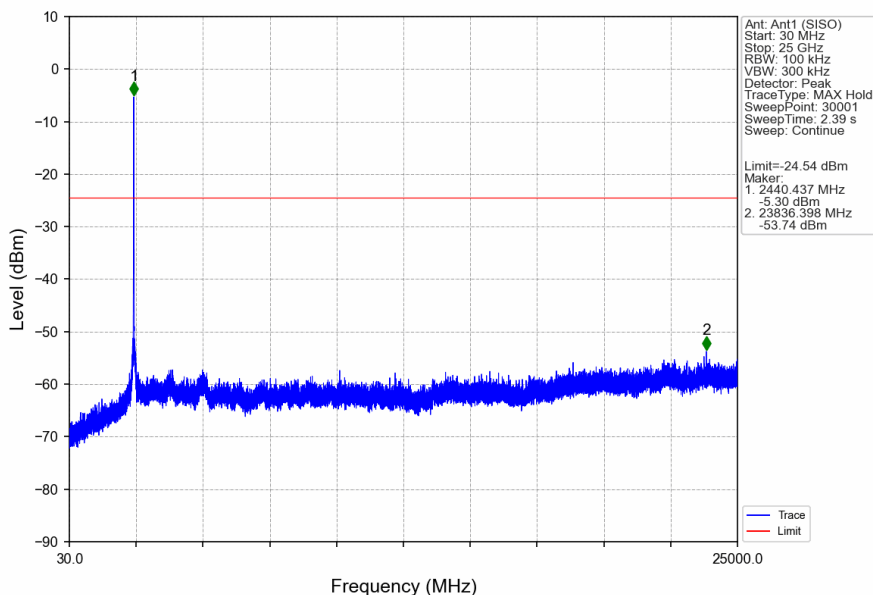
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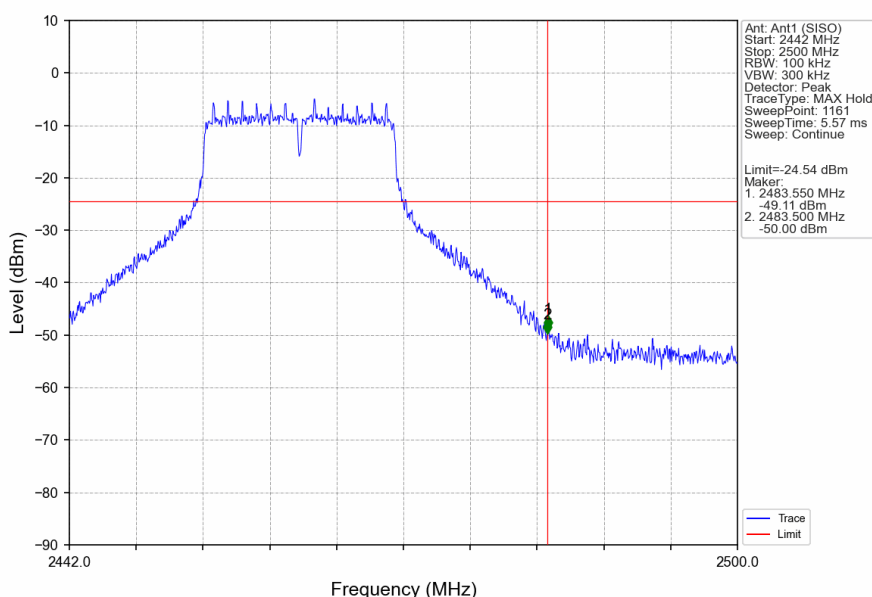
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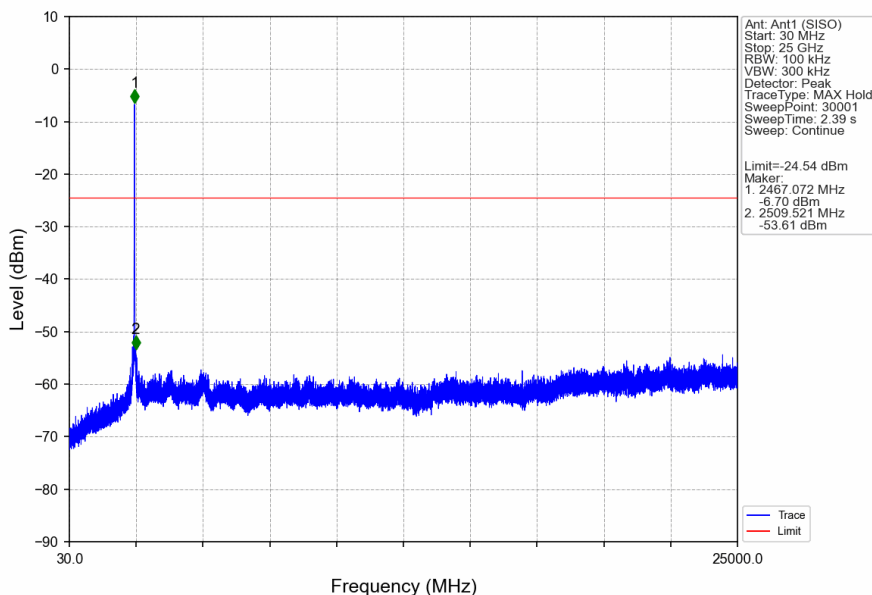
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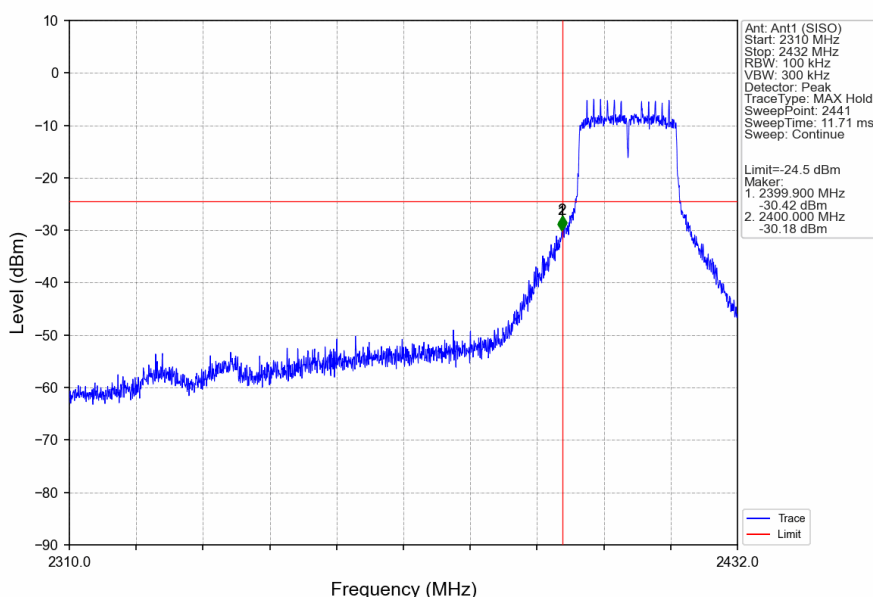
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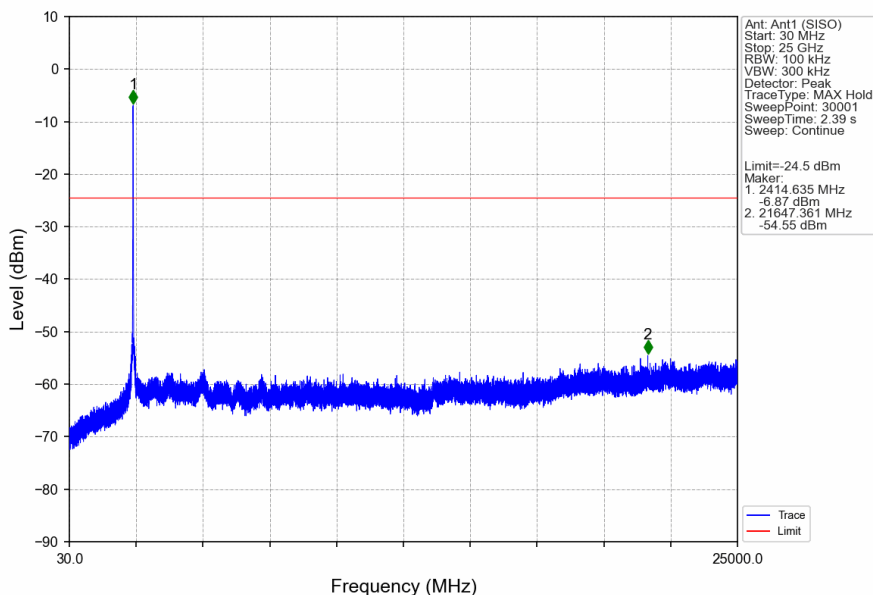
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



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