



Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR240400073804

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TEST REPORT

Application No.: KSCR2404000738AU
FCC ID: 2BBDIVBK30C21
Applicant: Wuxi Auto-link world Information Technology Co., Ltd.
Address of Applicant: No. 2, Gaokai Road, Economic Development Zone, Wuxi City, Jiangsu Province, China
Manufacturer: Wuxi Auto-link world Information Technology Co., Ltd.
Address of Manufacturer: No. 2, Gaokai Road, Economic Development Zone, Wuxi City, Jiangsu Province, China
Factory: Wuxi Auto-link world Information Technology Co., Ltd.
Address of Factory: No. 2, Gaokai Road, Economic Development Zone, Wuxi City, Jiangsu Province, China
Equipment Under Test (EUT):
EUT Name: Telematics Headunit
Model No.: 30C21
Trade Mark: 
Standard(s) : 47 CFR Part 15, Subpart E 15.407
Date of Receipt: 2024-04-28
Date of Test: 2024-04-29 to 2024-05-29
Date of Issue: 2024-05-30

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	Description	Date	Remark
00	Original	2024-05-30	/

Authorized for issue by:			
Tested By		Maker Qi	
		Maker Qi /Project Engineer	
Approved By		Terry Hou	
		Terry Hou /Reviewer	



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2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart E 15.407	N/A	47 CFR Part 15, Subpart C 15.203	N/A
Transmission in the Absence of Data		N/A	47 CFR Part 15, Subpart E 15.407 (c)	N/A

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Maximum Conducted output power	47 CFR Part 15, Subpart E 15.407	KDB 789033 D02 II E	47 CFR Part 15, Subpart E 15.407 (a)	Pass
Radiated Emissions (Below 1GHz)		KDB 789033 D02 II G	47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)	Pass
Radiated Emissions (Above 1GHz)		KDB 789033 D02 II G	47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)	Pass
Radiated Emissions which fall in the restricted bands		KDB 789033 D02 II G	47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)	Pass
Duty Cycle		KDB 789033 II B 1	KDB 789033 D02 II B 1	Pass
99% Bandwidth		KDB 789033 II D	N/A	Pass
26dB Emission bandwidth		KDB 789033 D02 II C 1	47 CFR Part 15, Subpart E 15.407 (a)	Pass
Minimum 6 dB bandwidth (5.725-5.85 GHz band)		KDB 789033 D02 II C 2	47 CFR Part 15, Subpart E 15.407 (e)	Pass
Peak Power spectrum density		KDB 789033 D02 II F	47 CFR Part 15, Subpart E 15.407 (a)	Pass
Frequency Stability		ANSI C63.10 (2013) Section 6.8	47 CFR Part 15, Subpart E 15.407 (g)	Pass

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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 12V
Operation Frequency/Number of channels (20MHz):	5180-5240MHz (4 Channels); U-NII-3: 5745-5825MHz (5 Channels)
Operation Frequency/Number of channels/(40MHz):	5190-5230MHz (2 Channels); U-NII-3: 5755-5795MHz (2 Channels)
Operation Frequency/Number of channels (80MHz):	5210MHz (1 Channel); U-NII-3: 5775MHz (1 Channel)
Modulation Type:	OFDM (64QAM, 16QAM, QPSK, BPSK); 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM); 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Channel Spacing:	802.11a/n/ac 20: 20MHz; 802.11n/ac 40: 40MHz; 802.11ac 80: 80MHz
Antenna Type:	Internal antenna
Antenna Gain:	5100MHz-5250MHz: ANT1: 3.49dBi (Provided by the manufacturer) ANT2: 0.93dBi (Provided by the manufacturer) 5825MHz-5850MHz: ANT1: 1.47dBi (Provided by the manufacturer) ANT2: -0.32dBi (Provided by the manufacturer) Directional Gain: 5100MHz-5250MHz ANT1&2: 3.49dBi (Provided by the manufacturer) 5825MHz-5850MHz ANT1&2: 1.47dBi (Provided by the manufacturer)
Remark:	Two antennas can simultaneous transmission

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
DC power supply	Agilent	E3632A	/
Notebook	LENOVO	K27	EB24537645

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4.3 Power level setting using in test

Channel	802.11a		802.11n(HT20)	
	Ant 1	Ant 2	Ant 1	Ant 2
36	13	13	10	10
40	13	13	10	10
48	13	13	10	10
149	13	13	10	10
157	13	13	10	10
165	13	13	10	10
Channel	802.11n(HT40)			
	Ant 1	Ant 2		
38	7	7		
46	7	7		
151	10	10		
159	10	10		
Channel	802.11ac(VHT80)			
	Ant 1	Ant 2		
42	7	7		
155	10	10		

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4.4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	8.4×10^{-8}
2	Timeout	2s
3	Duty Cycle	0.37%
4	Occupied Bandwidth	3%
5	RF Conducted Power	0.6dB
6	RF Power Density	2.9dB
7	Conducted Spurious Emissions	0.75dB
8	RF Radiated Power	5.2dB (Below 1GHz)
		5.9dB (Above 1GHz)
9	Radiated Spurious Emission Test	4.2dB (Below 30MHz)
		4.5dB (30MHz-1GHz)
		5.1dB (1GHz-18GHz)
		5.4dB (Above 18GHz)
10	Temperature Test	1°C
11	Humidity Test	3%
12	Supply Voltages	1.5%
13	Time	3%
Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.		

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4.5 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.

Note:

1. SGS is not responsible for wrong test results due to incorrect information (e.g., max. internal working frequency, antenna gain, cable loss, etc) is provided by the applicant. (If applicable).
2. SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (If applicable).
3. Sample source: sent by customer.

4.6 Test Facility

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

• A2LA

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

• FCC

Compliance Certification Services (Kunshan) Inc. has been recognized as an accredited testing laboratory. Designation Number: CN1172.

• ISED

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 2324E

• VCCI

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

None

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5 Equipment List

Item	Equipment	Manufacturer	Model	Inventory No	Cal Date	Cal. Due Date
Conducted Emission at Mains Terminals						
1	EMI Test Receive	R&S	ESCI	KS301101	01/15/2024	01/14/2025
2	LISN	R&S	ENV216	KS301197	01/15/2024	01/14/2025
3	LISN	Schwarzbeck	NNLK 8129	KS301091	01/15/2024	01/14/2025
4	Pulse Limiter	R&S	ESH3-Z2	KUS1902E001	01/15/2024	01/14/2025
5	CE test Cable	Thermax	/	CZ301102	01/15/2024	01/14/2025
6	Test Software	Farad	EZ-EMC	/	N.C.R	N.C.R
RF Conducted Test						
1	Spectrum Analyzer	Keysight	N9020A	KUS1911E004-2	08/24/2023	08/23/2024
2	Spectrum Analyzer	Keysight	N9020A	KUS2001M001-2	08/24/2023	08/23/2024
3	Spectrum Analyzer	Keysight	N9030B	KSEM021-1	01/15/2024	01/14/2025
4	Signal Generator	R&S	SMBV100B	KSEM032	03/19/2024	03/18/2025
5	Signal Generator	R&S	SMW200A	KSEM020-1	08/24/2023	08/23/2024
6	Signal Generator	Agilent	N5182A	KUS2001M001-1	08/24/2023	08/23/2024
7	Radio Communication Test Station	Anritsu	MT8000A	KSEM001-1	08/24/2023	08/23/2024
8	Radio Communication Analyzer	Anritsu	MT8821C	KSEM002-1	03/19/2024	03/18/2025
9	Universal Radio Communication Tester	R&S	CMW500	KUS1911E004-1	08/24/2023	08/23/2024
10	Switcher	TST	FY562	KUS2001M001-4	01/15/2024	01/14/2025
11	AC Power Source	EXTECH	6605	KS301178	N.C.R	N.C.R
12	DC Power Supply	Aglient	E3632A	KS301180	N.C.R	N.C.R
13	Conducted Test Cable	Thermax	RF01-RF04	CZ301111- CZ301120	01/15/2024	01/14/2025
14	Temp. / Humidity Chamber	TERCHY	MHK-120AK	KS301190	08/24/2023	08/23/2024
15	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-5	03/19/2024	03/18/2025
16	Software	BST	TST-PASS	/	NCR	NCR
RF Radiated Test						
1	Spectrum Analyzer	R&S	FSV40	KUS1806E003	08/24/2023	08/23/2024
2	Universal Radio Communication Tester	R&S	CMW500	KSEM009-1	03/19/2024	03/18/2025
3	Signal Generator	Agilent	E8257C	KS301066	08/24/2023	08/23/2024
4	Loop Antenna	COM-POWER	AL-130R	KUS1806E001	03/18/2023	03/17/2025
5	Bilog Antenna	TESEQ	CBL 6112D	KUS1806E005	06/29/2023	06/28/2025
6	Bilog Antenna	TESEQ	CBL 6112D	KUS1806E006	03/19/2024	03/18/2025
7	Horn-antenna(1-18GHz)	Schwarzbeck	BBHA9120D	KS301079	08/24/2023	08/23/2024
8	Horn-antenna(1-18GHz)	ETS-LINDGREN	3117	KS301186	04/07/2023	04/06/2025
9	Horn Antenna(18-40GHz)	Schwarzbeck	BBHA9170	CZ301058	01/07/2024	01/06/2026
10	Amplifier(30MHz~18GHz)	PANSHAN TECHNOLOGY	LNA: 1~18G	KSEM010-1	01/15/2024	01/14/2025
11	Amplifier(18~40GHz)	PANSHAN TECHNOLOGY	LNA180400G40	KSEM038	08/24/2023	08/23/2024
12	RE Test Cable	REBES MICROWAVE	/	CZ301097	08/24/2023	08/23/2024
13	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-4	03/19/2024	03/18/2025
14	Software	Faratronic	EZ_EMV-3A1	/	NCR	NCR
15	Software	ESE	E3_V 6.111221a	/	NCR	NCR

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203

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 antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit permanently attached antenna or of an so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the U-NII-1:ANT1 3.49dBi,ANT2 0.93dBi; U-NII-3: ANT1 1.47dBi,ANT2 -0.32dBi.

Antenna location: Refer to internal photo.



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6.2 Transmission in the Absence of Data

6.2.1 Test Requirement:

47 CFR Part 15, Subpart E 15.407 (c)

6.2.2 Conclusion

Conclusion

Standard Requirement:

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signalling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals.

Applicants shall include in their application for equipment authorization a description of how this requirement is met.

EUT Details:

WIFI chip support automatically discontinue transmission in case of either absence of information to transmit or operational failure, if the chip detect absence of information to transmit or operational failure, it will be automatically shut off.

7 Radio Spectrum Matter Test Results

7.1 Maximum Conducted output power

Test Requirement 47 CFR Part 15, Subpart E 15.407 (a)

Test Method: KDB 789033 D02 II E

Limit:

Frequency band(MHz)	Limit
5150-5250	≤1W(30dBm) for master device
	≤250mW(24dBm) for client device
5250-5350	≤250mW(24dBm) or 11dBm+10logB*
5470-5725	≤250mW(24dBm) or 11dBm+10logB*
5725-5850	≤1W(30dBm)
Remark:	* Where B is the 26dB emission bandwidth in MHz. The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C

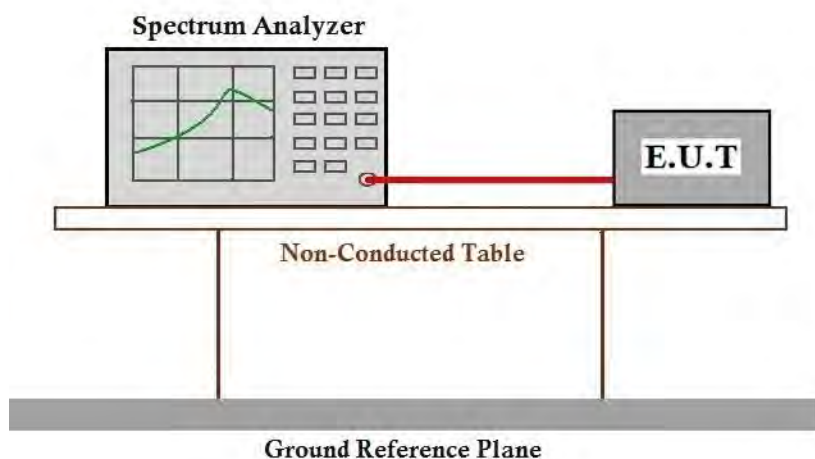
Humidity: 52 % RH

Atmospheric Pressure: 1010 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode (U-NII-1)_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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	02	TX mode (U-NII-3) _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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

7.1.3 Test Setup Diagram



7.1.4 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

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7.2 Radiated Emissions (Below 1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)

Test Method: KDB 789033 D02 II G

Limit:

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

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 20.5 °C

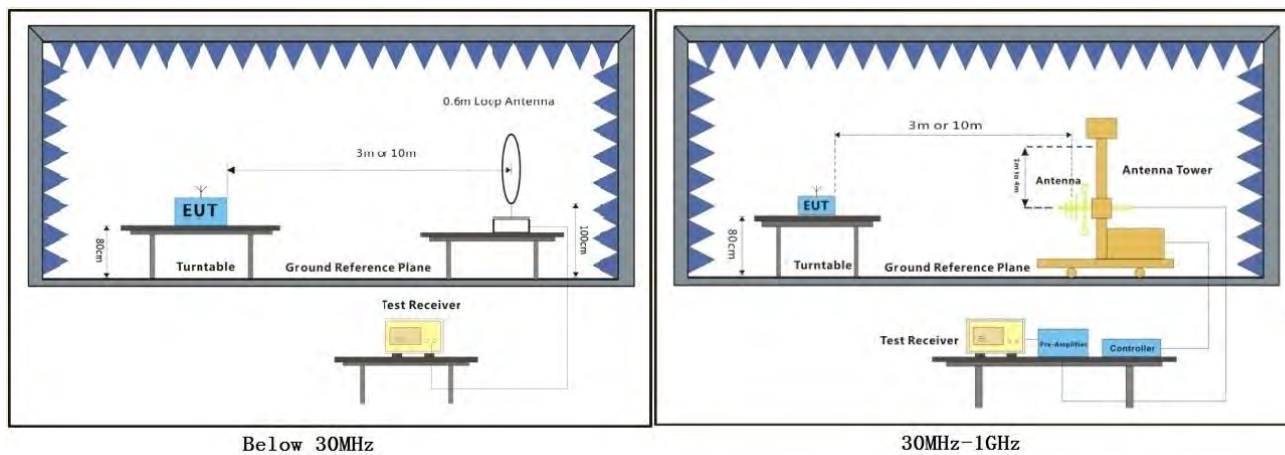
Humidity: 50.5 % RH

Atmospheric Pressure: 1010 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode (U-NII-1)_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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	02	TX mode (U-NII-3) _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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

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 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. 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.
- 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 quasi-peak 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- Preamplifier Factor
2. For emission below 1GHz, through the pre-scan found the worst case is the lowest channel of 802.11a. Only the worst case is recorded in the report.
3. 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.
4. The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
5. This test item was investigated while operating in SISO and MIMO mode, however, it was determined that SISO antenna 1 operation for a modulation and MIMO antenna operation for n/ac modulation produced the worst emissions. So the emissions produced from other operation are not recorded in report.

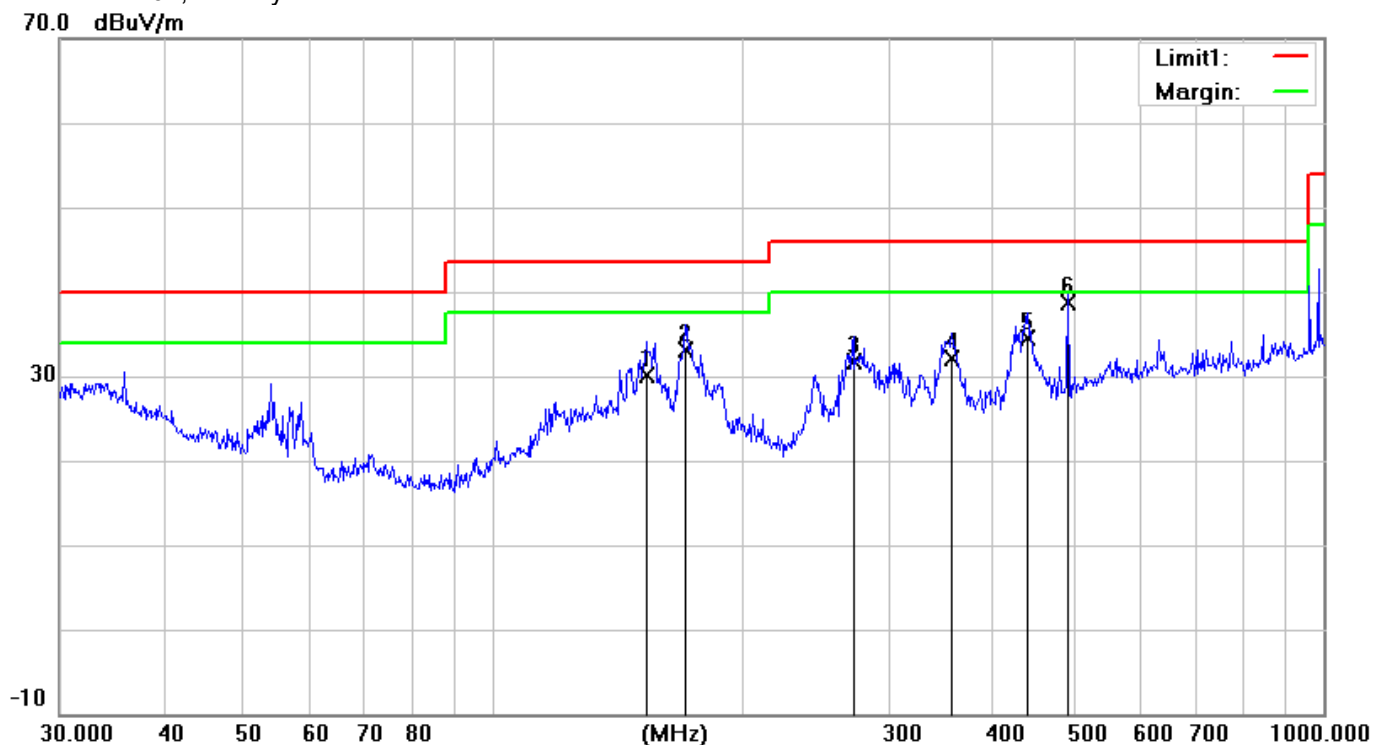
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Test Mode: 01; Polarity: Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	152.6641	12.24	17.77	30.01	43.50	-13.49	100	359	QP
2	170.1948	16.12	16.99	33.11	43.50	-10.39	100	85	QP
3	271.3246	11.41	20.29	31.70	46.00	-14.30	100	345	QP
4	356.6758	10.11	22.04	32.15	46.00	-13.85	100	103	QP
5	440.1963	10.51	24.00	34.51	46.00	-11.49	100	211	QP
6	492.4685	13.11	25.64	38.75	46.00	-7.25	100	354	QP

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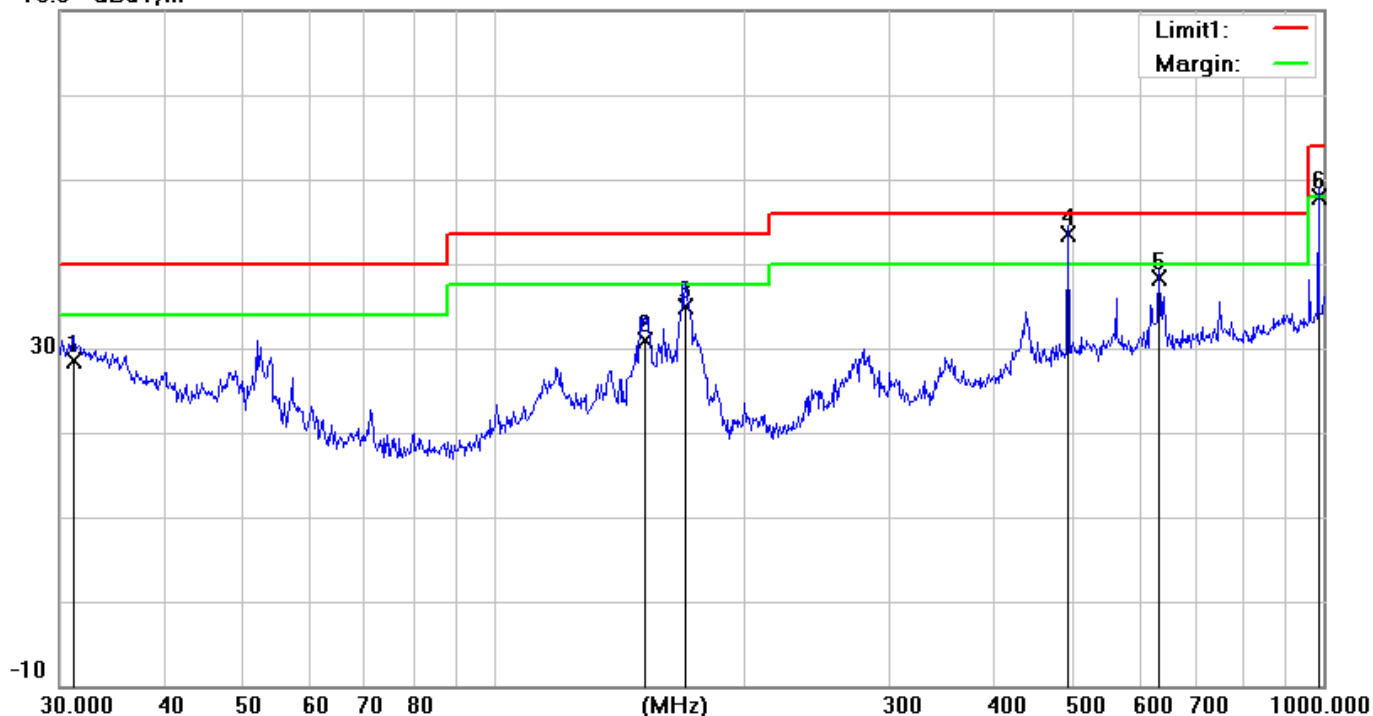
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Test Mode: 01; Polarity: Vertical

70.0 dBuV/m



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	31.1798	3.22	25.19	28.41	40.00	-11.59	100	199	QP
2	152.1297	13.18	17.79	30.97	43.50	-12.53	100	33	QP
3	170.1948	17.99	16.99	34.98	43.50	-8.52	100	47	QP
4	492.4685	17.83	25.64	43.47	46.00	-2.53	100	359	QP
5	633.9073	10.64	27.74	38.38	46.00	-7.62	100	359	QP
6	986.0717	17.85	29.99	47.84	54.00	-6.16	100	153	QP

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7.3 Radiated Emissions (Above 1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)

Test Method: KDB 789033 D02 II G

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
Above 1GHz	500	3
*(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. (4) For transmitters operating in the 5.725-5.85 GHz band: (i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. 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.		

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 20.5 °C

Humidity: 50.5 % RH

Atmospheric Pressure: 1010 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode (U-NII-1) _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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	02	TX mode (U-NII-3) _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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

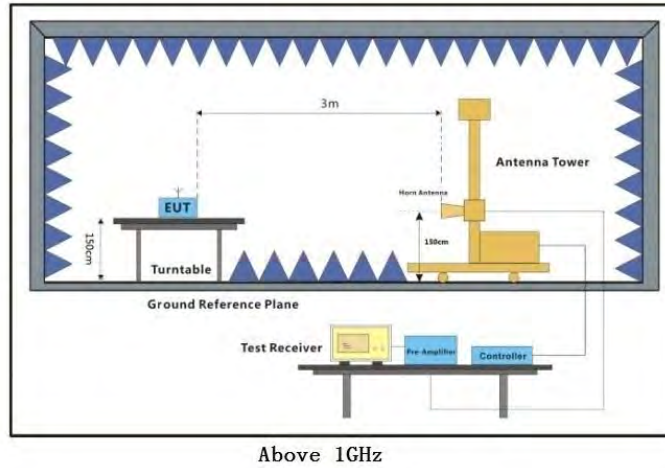
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7.3.3 Test Setup Diagram



7.3.4 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 fully-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. $\text{Level} = \text{Read Level} + \text{Cable Loss} + \text{Antenna Factor} - \text{Preamplifier Factor}$
2. Scan from 18GHz to 40GHz, 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 disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
5. For devices with multiple operating modes, measurements on the middle channel is used to determine the worst-case mode(s). Only the worst case mode with the highest output power and the mode with the highest output power spectral density for each modulation family (e.g., OFDM and direct sequence spread spectrum) is recorded in the test report.
6. This test item was investigated while operating in SISO and MIMO mode, however, it was determined that SISO antenna 1 operation for a modulation and MiMO antenna operation for n/ac modulation produced the worst emissions. So the emissions produced from other operation are not recorded in report.

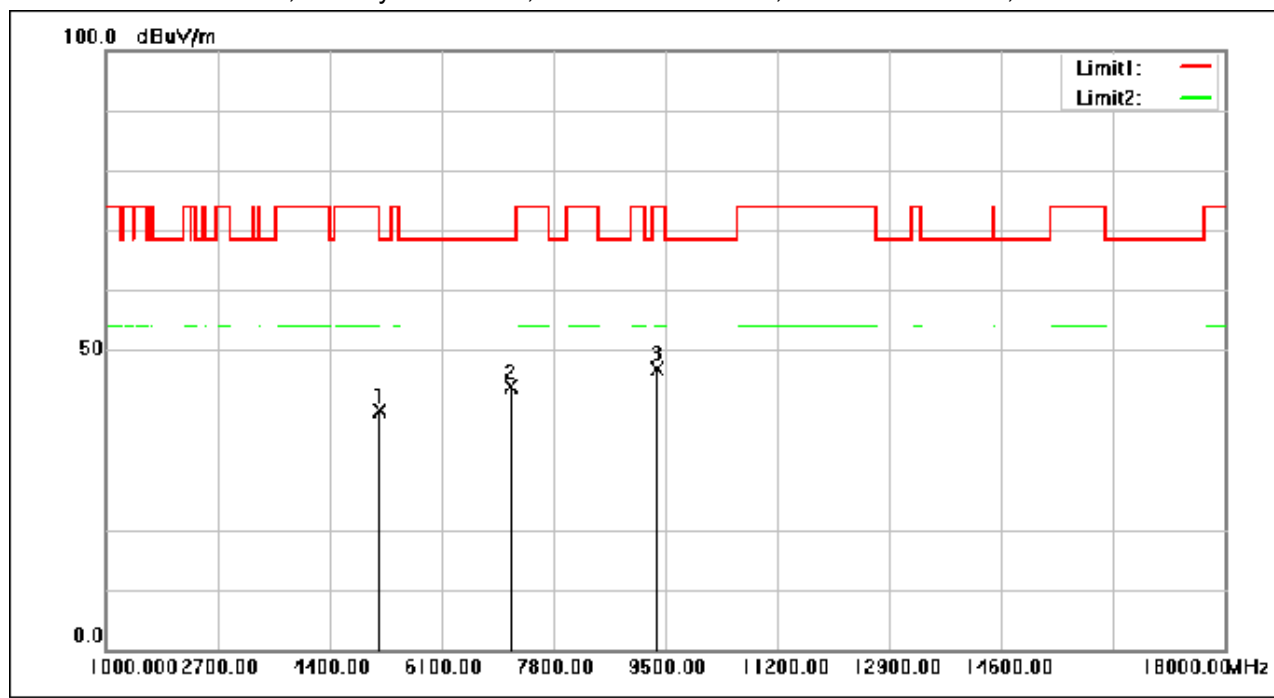
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5151.566	56.93	-17.07	39.86	68.30	-28.44	peak
2	7158.326	55.81	-11.88	43.93	68.30	-24.37	peak
3	9376.575	56.41	-9.64	46.77	74.00	-27.23	peak

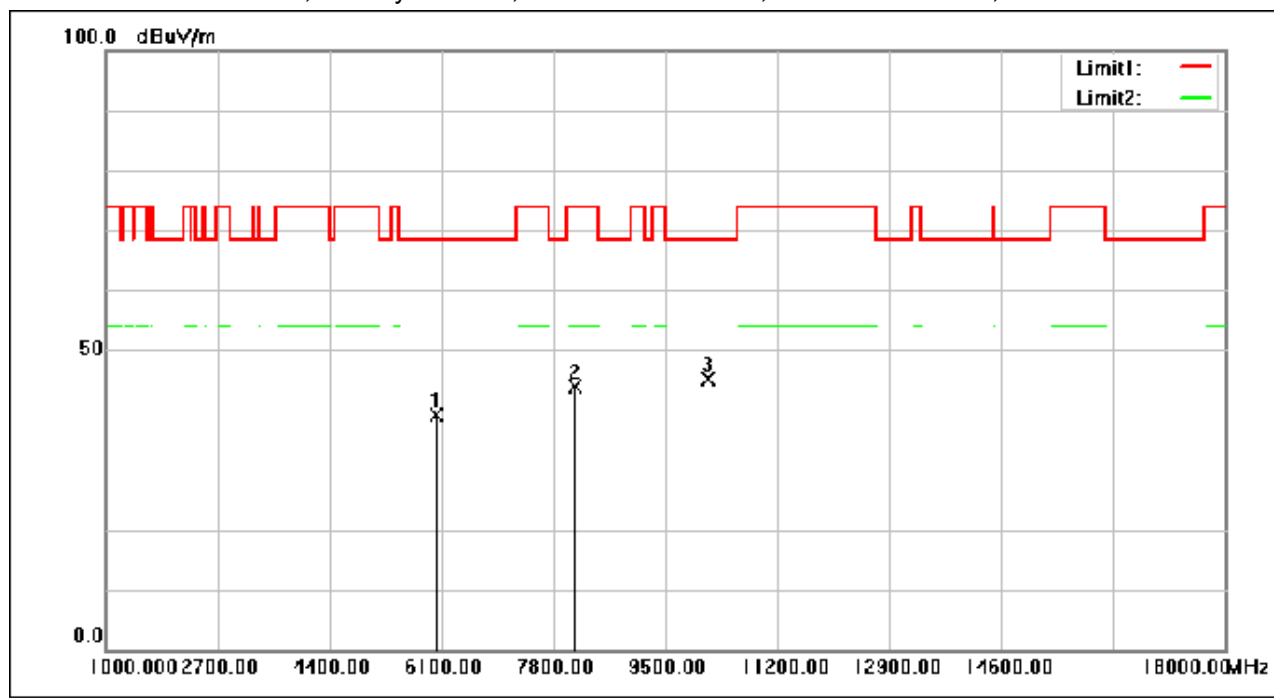
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Test Mode: 01; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6017.241	54.70	-15.63	39.07	68.30	-29.23	peak
2	8124.645	55.26	-11.43	43.83	74.00	-30.17	peak
3	10138.206	53.83	-8.71	45.12	68.30	-23.18	peak

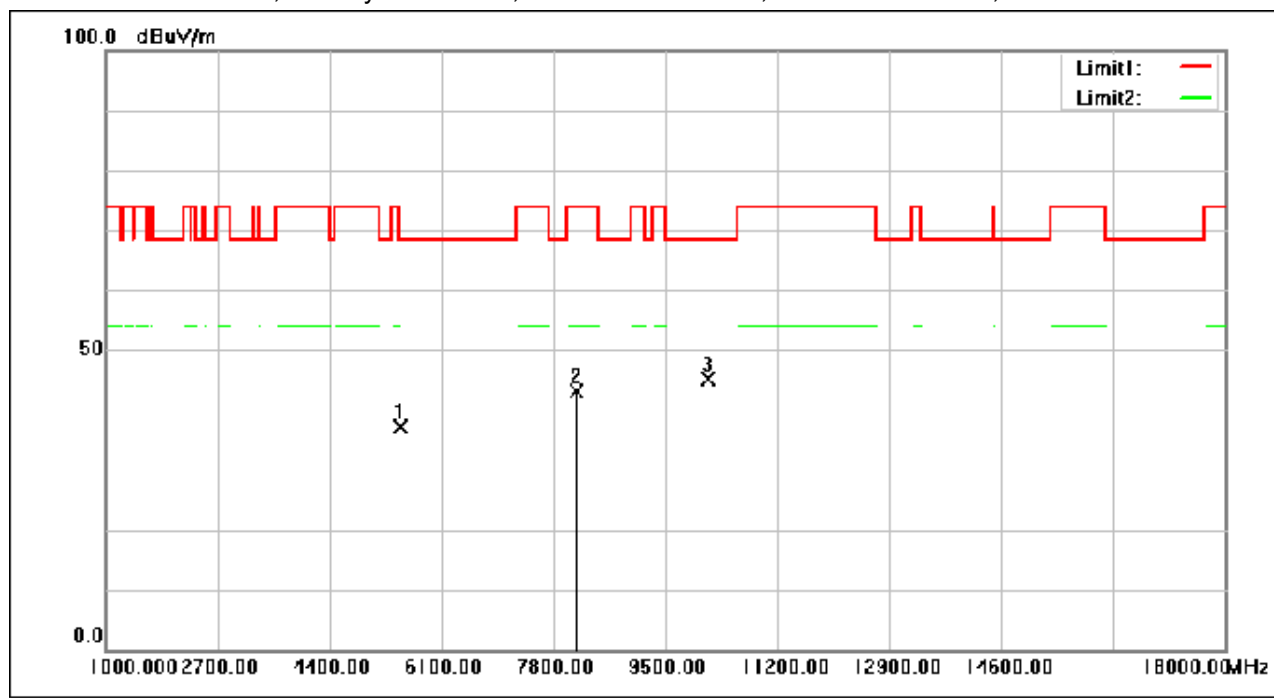
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5477.979	53.84	-16.83	37.01	68.30	-31.29	peak
2	8172.927	54.54	-11.38	43.16	74.00	-30.84	peak
3	10151.126	53.70	-8.68	45.02	68.30	-23.28	peak

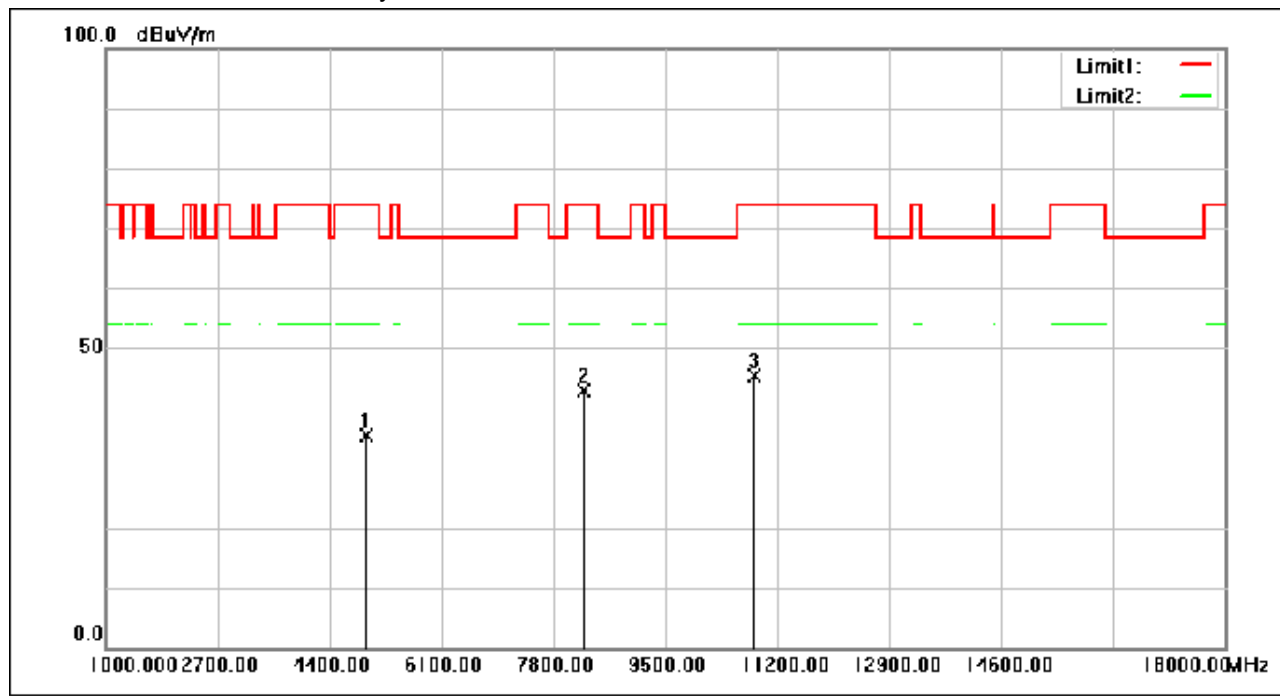
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Test Mode: 01; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4976.799	52.92	-17.58	35.34	74.00	-38.66	peak
2	8266.091	54.23	-11.27	42.96	74.00	-31.04	peak
3	10852.914	52.97	-7.47	45.50	74.00	-28.50	peak

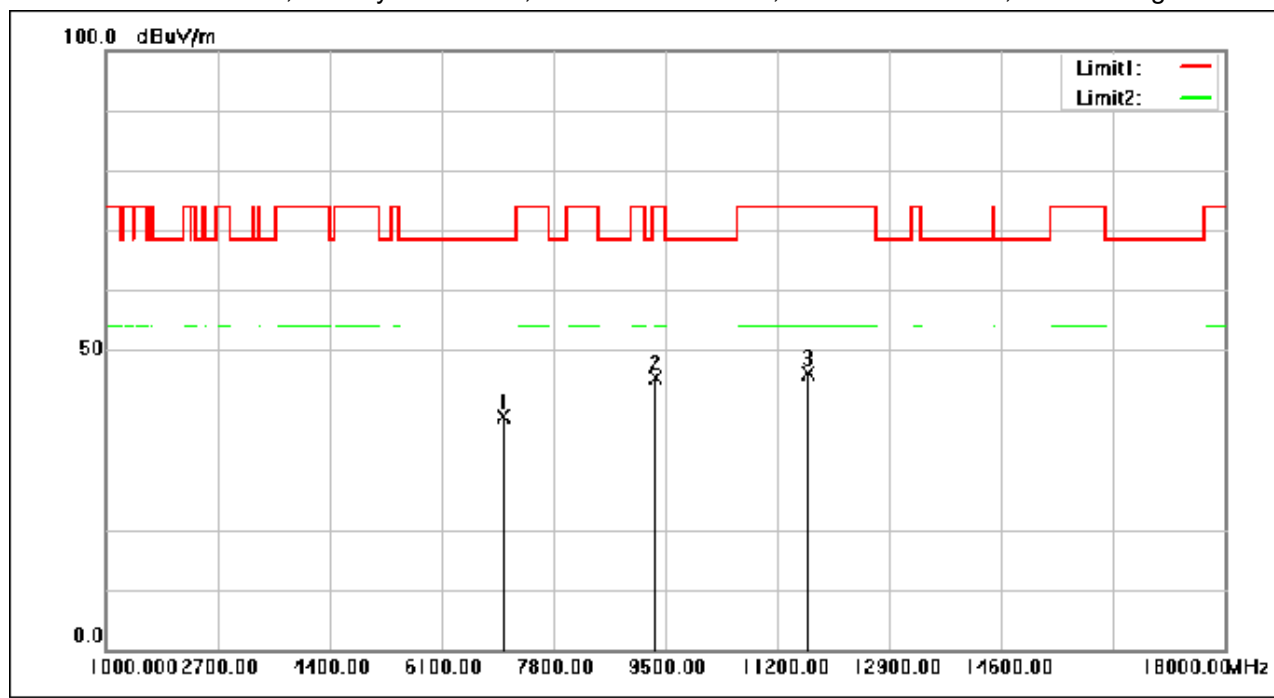
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7037.281	51.29	-12.37	38.92	68.30	-29.38	peak
2	9347.334	54.93	-9.67	45.26	74.00	-28.74	peak
3	11666.907	53.60	-7.36	46.24	74.00	-27.76	peak

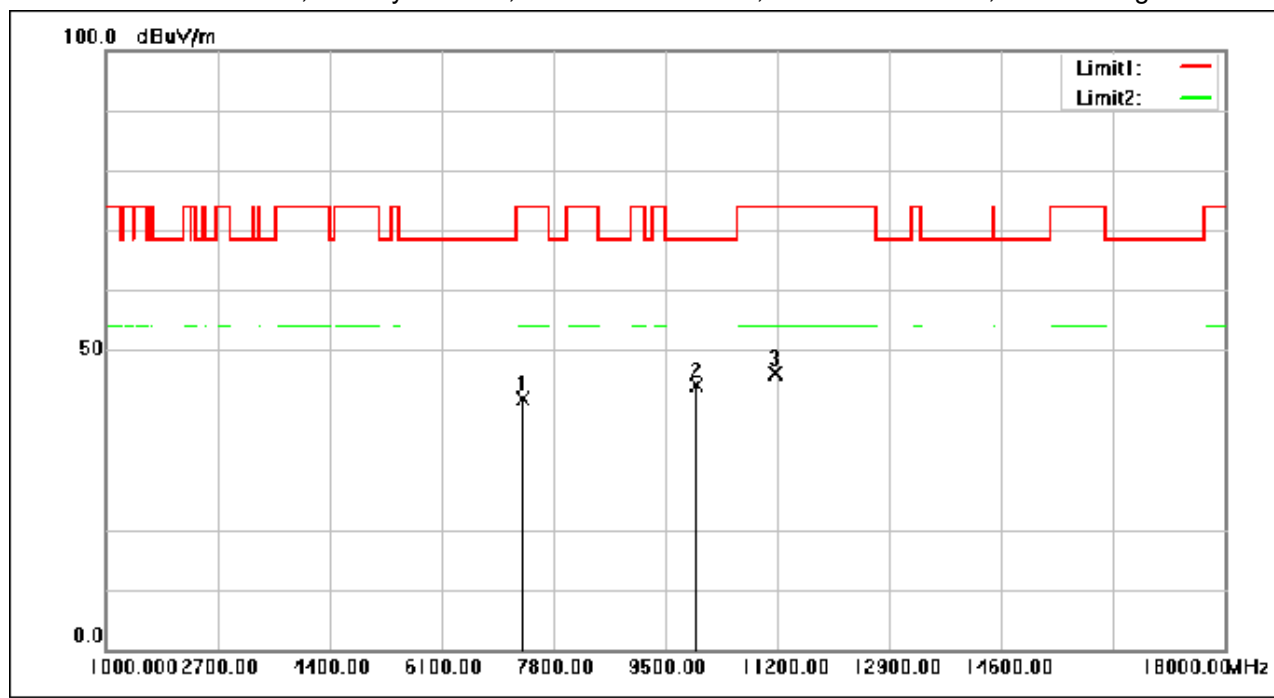
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Test Mode: 01; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7354.854	53.00	-11.08	41.92	74.00	-32.08	peak
2	9956.638	53.14	-9.00	44.14	68.30	-24.16	peak
3	11158.926	53.55	-7.39	46.16	74.00	-27.84	peak

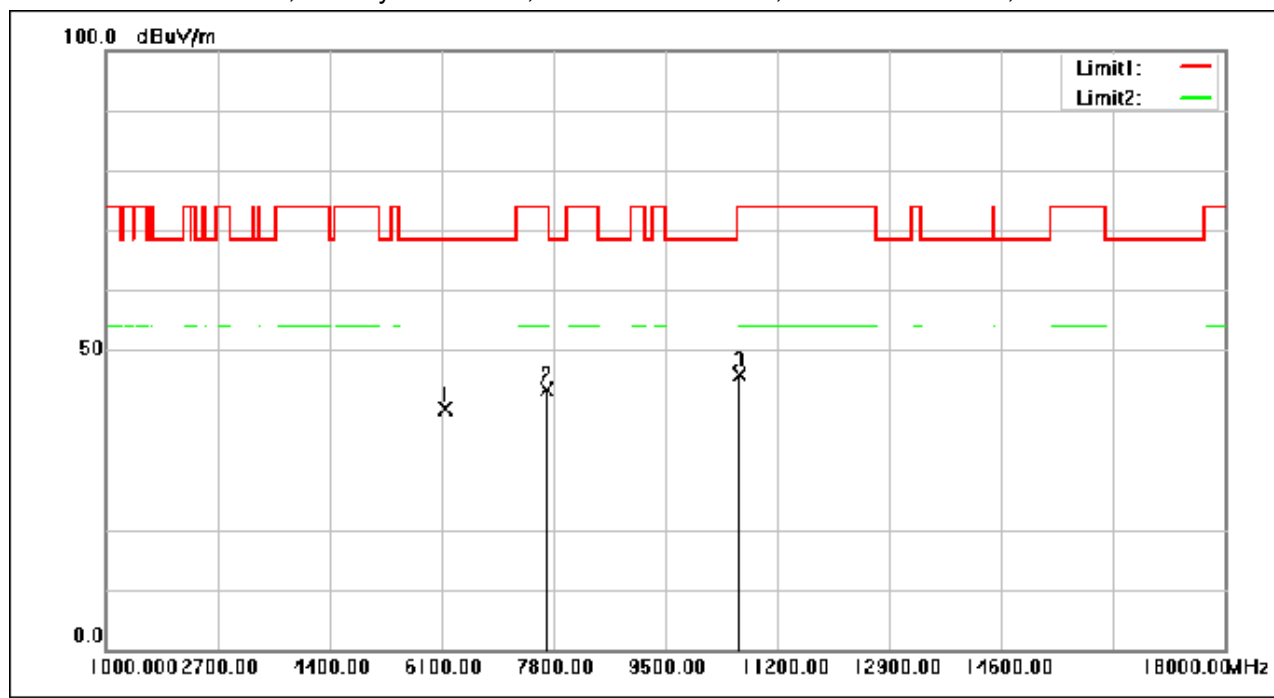
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6164.807	55.43	-15.34	40.09	68.30	-28.21	peak
2	7686.707	54.41	-11.08	43.33	74.00	-30.67	peak
3	10625.785	53.62	-7.86	45.76	74.00	-28.24	peak

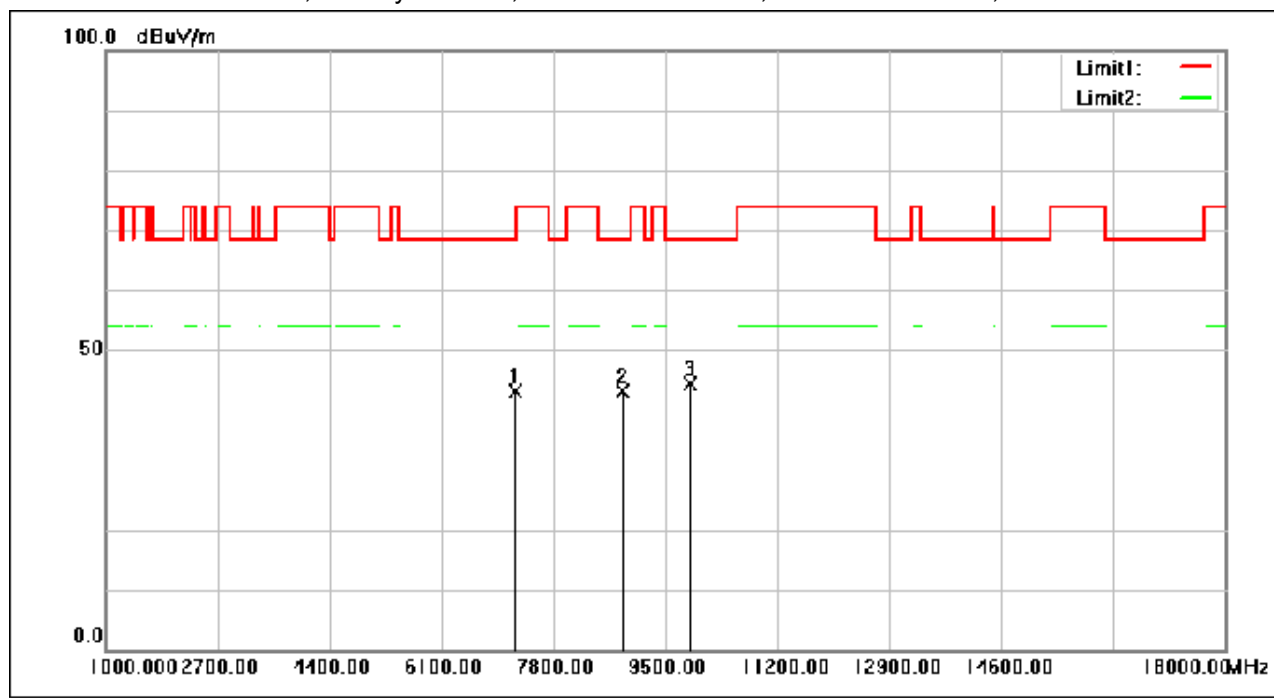
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Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7228.369	54.74	-11.59	43.15	68.30	-25.15	peak
2	8861.114	53.45	-10.25	43.20	68.30	-25.10	peak
3	9864.835	53.52	-9.13	44.39	68.30	-23.91	peak

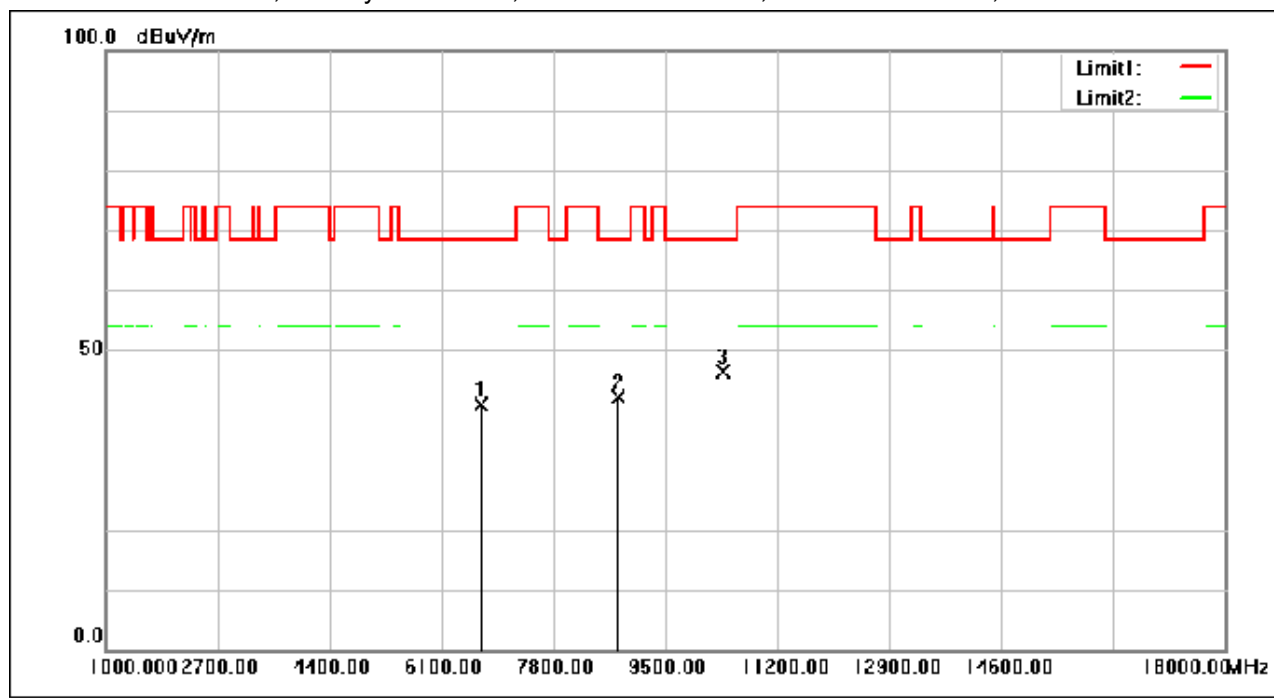
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6693.188	54.60	-13.69	40.91	68.30	-27.39	peak
2	8789.712	52.64	-10.40	42.24	68.30	-26.06	peak
3	10369.415	54.67	-8.32	46.35	68.30	-21.95	peak

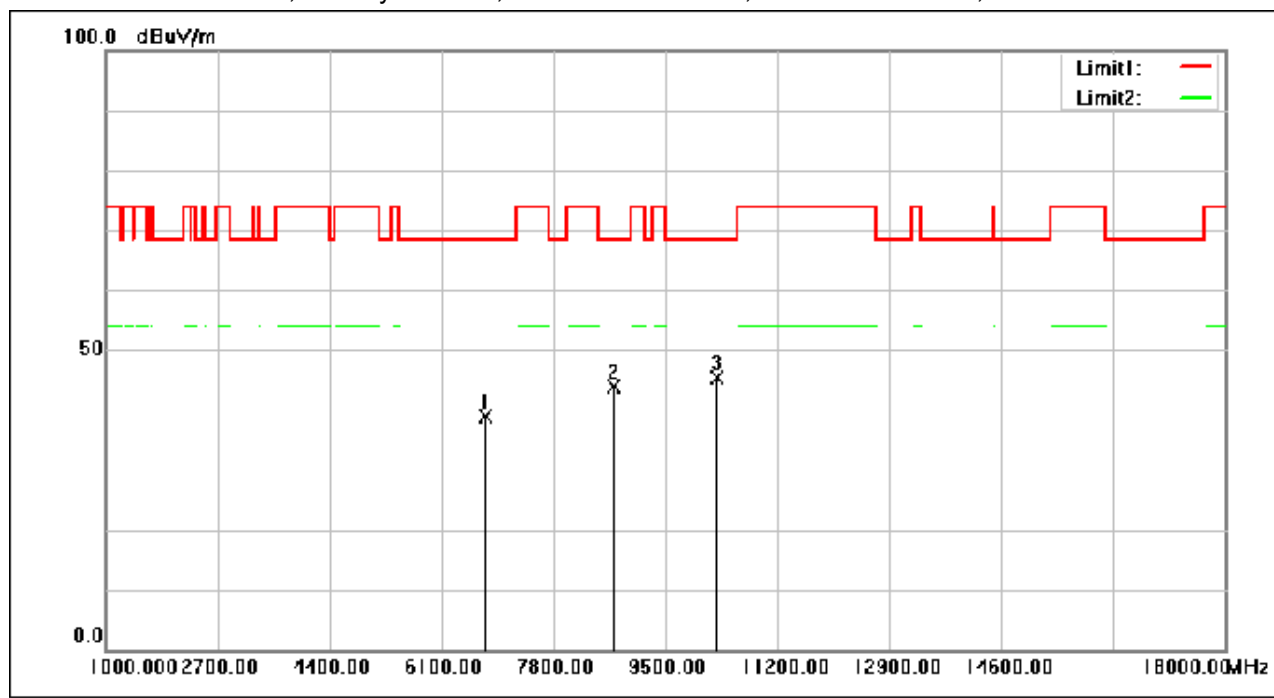
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Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6761.190	52.21	-13.45	38.76	68.30	-29.54	peak
2	8712.869	54.39	-10.55	43.84	68.30	-24.46	peak
3	10282.371	53.75	-8.46	45.29	68.30	-23.01	peak

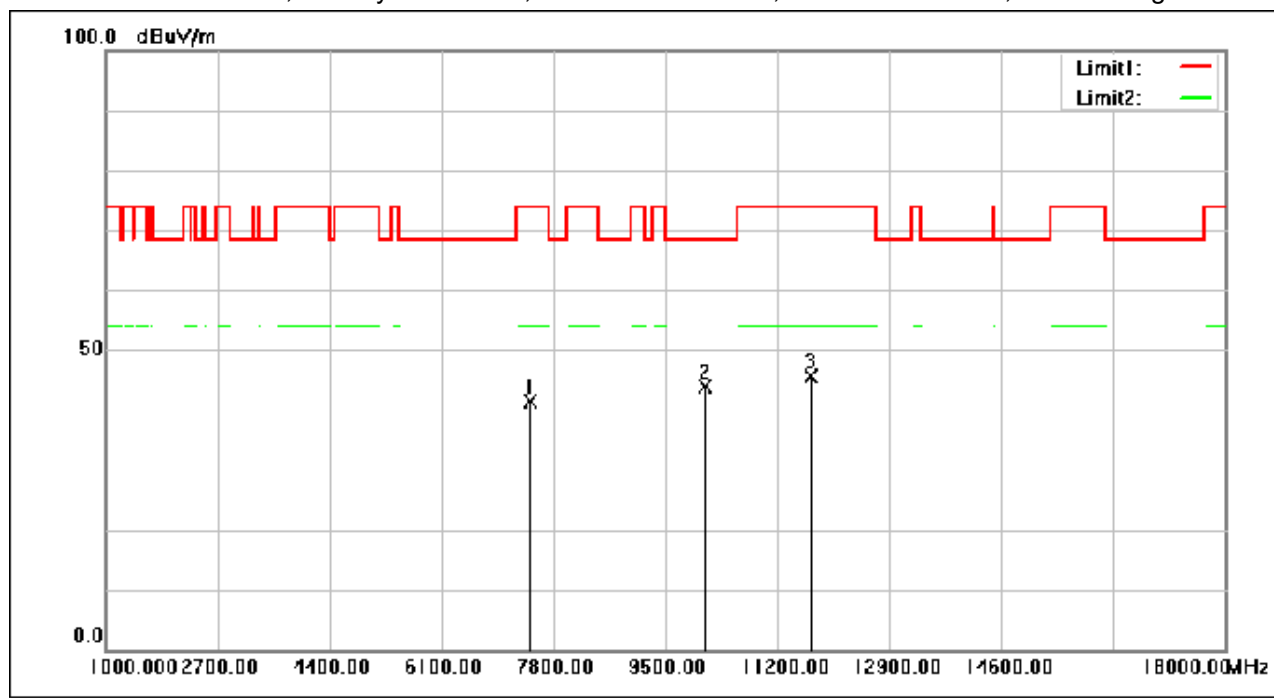
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7441.218	52.38	-10.88	41.50	74.00	-32.50	peak
2	10091.284	52.66	-8.78	43.88	68.30	-24.42	peak
3	11713.149	53.10	-7.40	45.70	74.00	-28.30	peak

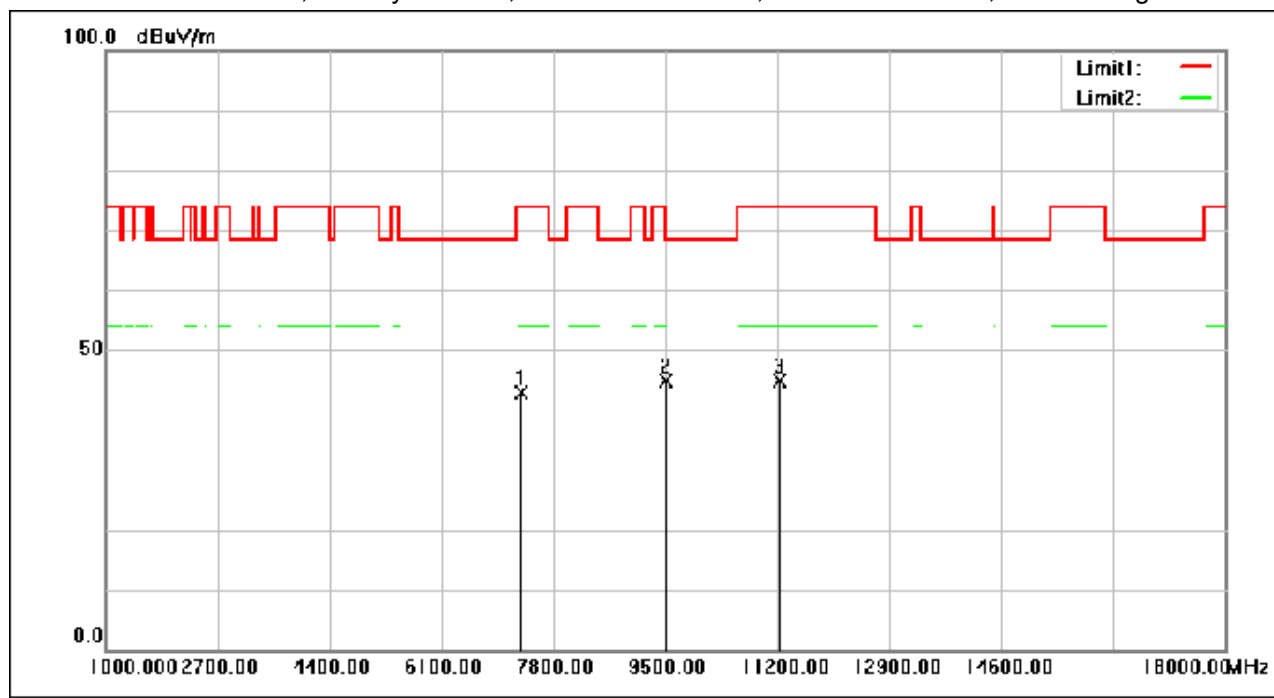
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Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7304.532	54.11	-11.29	42.82	74.00	-31.18	peak
2	9518.021	54.29	-9.51	44.78	68.30	-23.52	peak
3	11229.649	52.14	-7.36	44.78	74.00	-29.22	peak

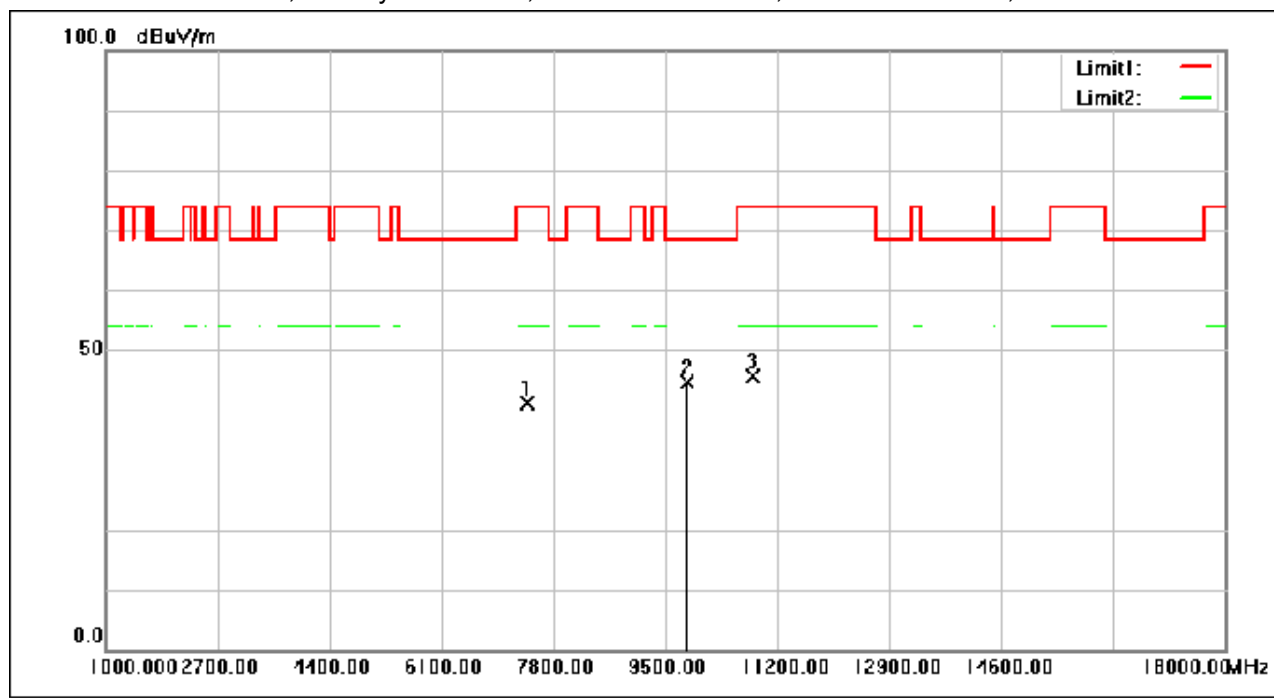
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7409.936	52.07	-10.90	41.17	74.00	-32.83	peak
2	9824.713	53.87	-9.18	44.69	68.30	-23.61	peak
3	10826.393	53.10	-7.48	45.62	74.00	-28.38	peak

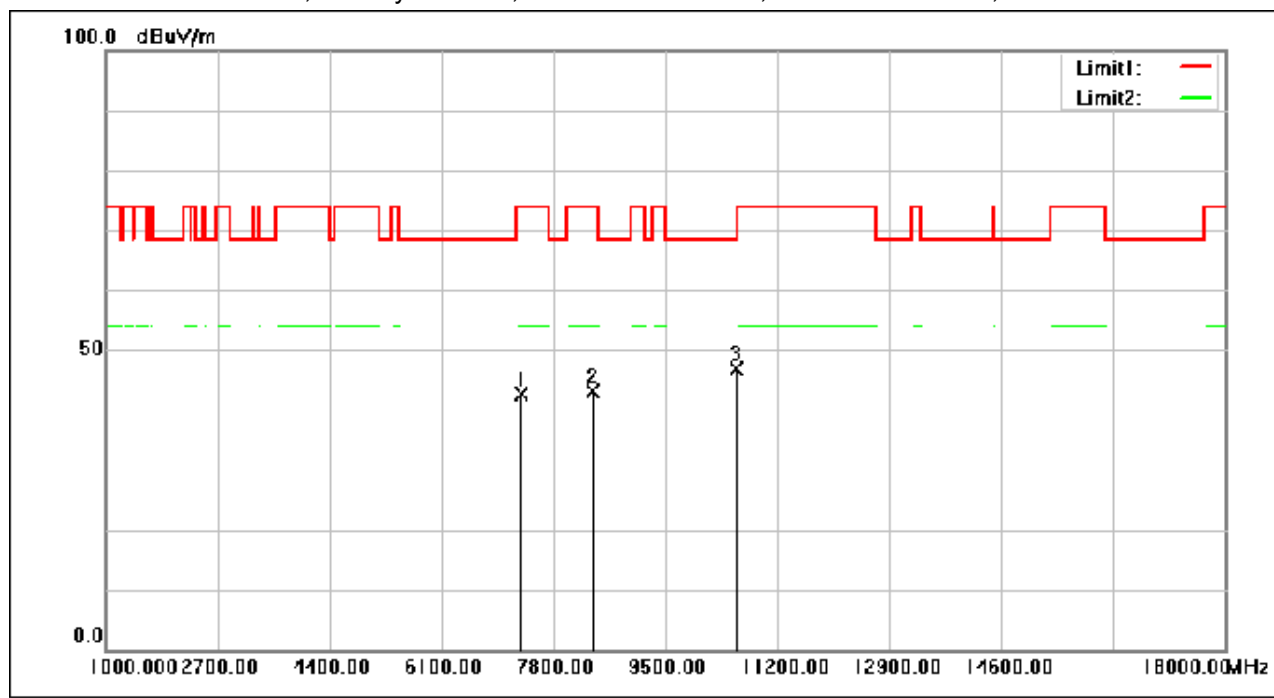
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Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7303.852	53.94	-11.29	42.65	74.00	-31.35	peak
2	8410.256	54.14	-11.09	43.05	74.00	-30.95	peak
3	10576.143	54.77	-7.95	46.82	68.30	-21.48	peak

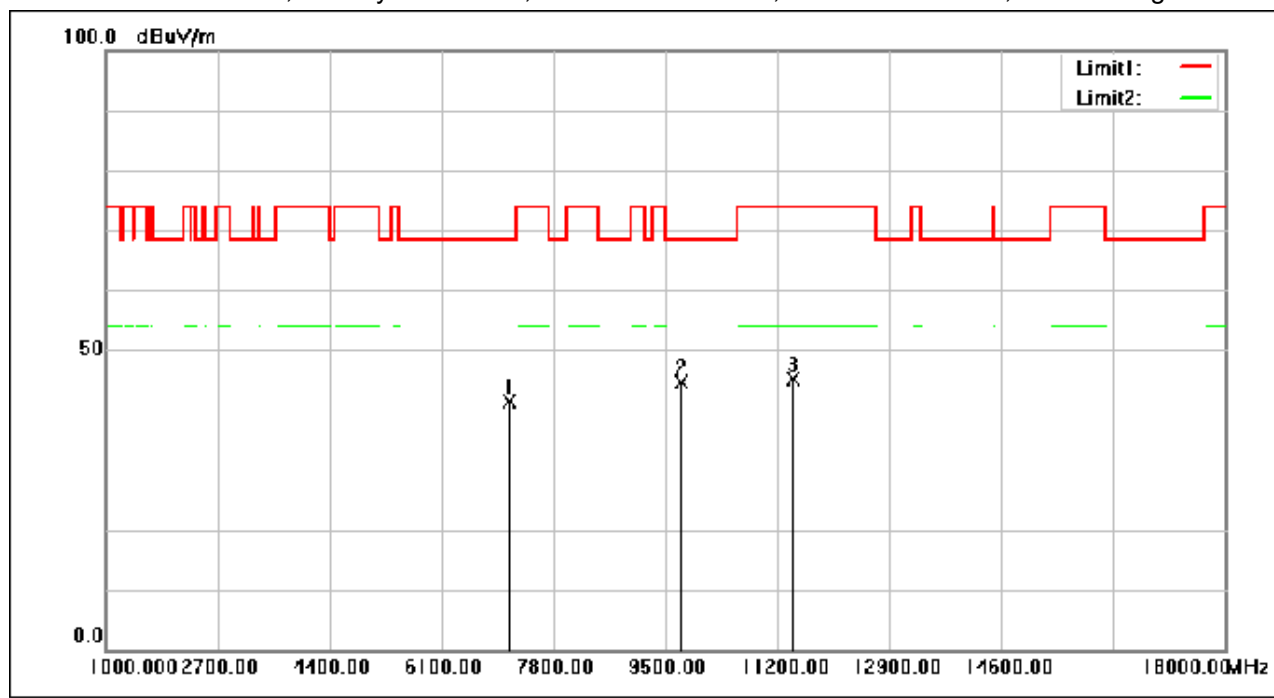
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7152.206	53.29	-11.91	41.38	68.30	-26.92	peak
2	9754.670	53.93	-9.26	44.67	68.30	-23.63	peak
3	11440.458	52.36	-7.25	45.11	74.00	-28.89	peak

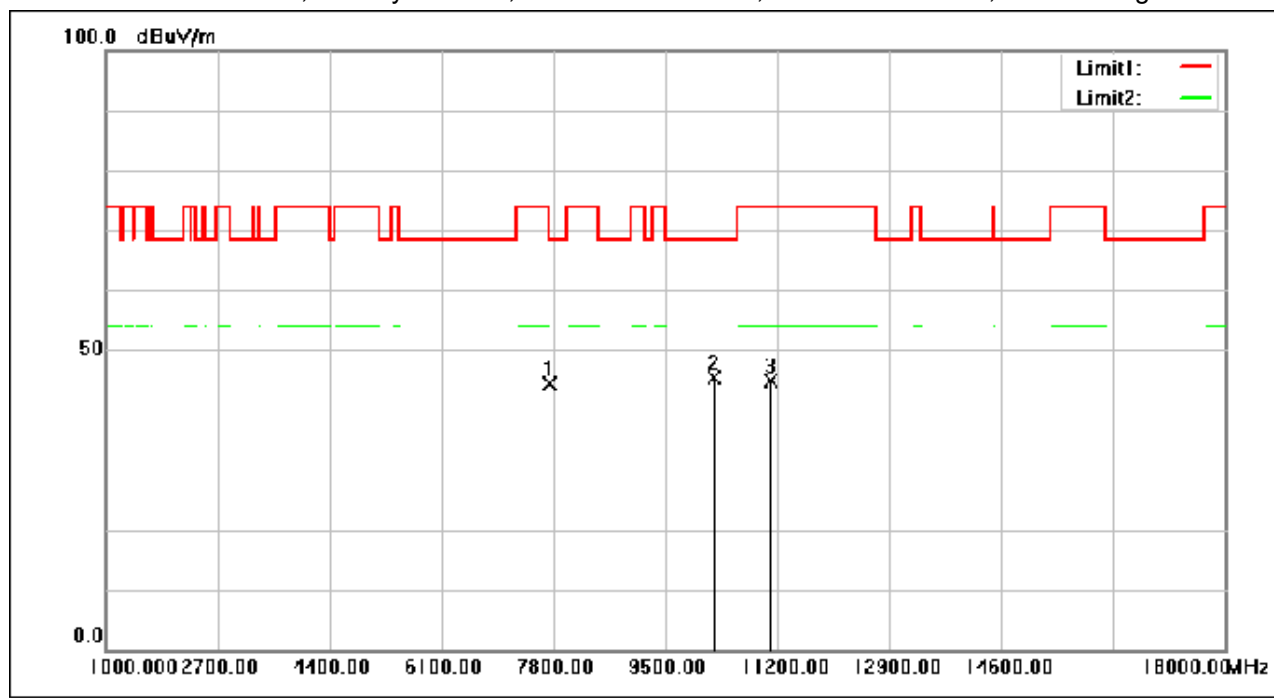
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Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7752.670	55.44	-11.16	44.28	68.30	-24.02	peak
2	10229.329	53.97	-8.55	45.42	68.30	-22.88	peak
3	11101.124	52.23	-7.43	44.80	74.00	-29.20	peak

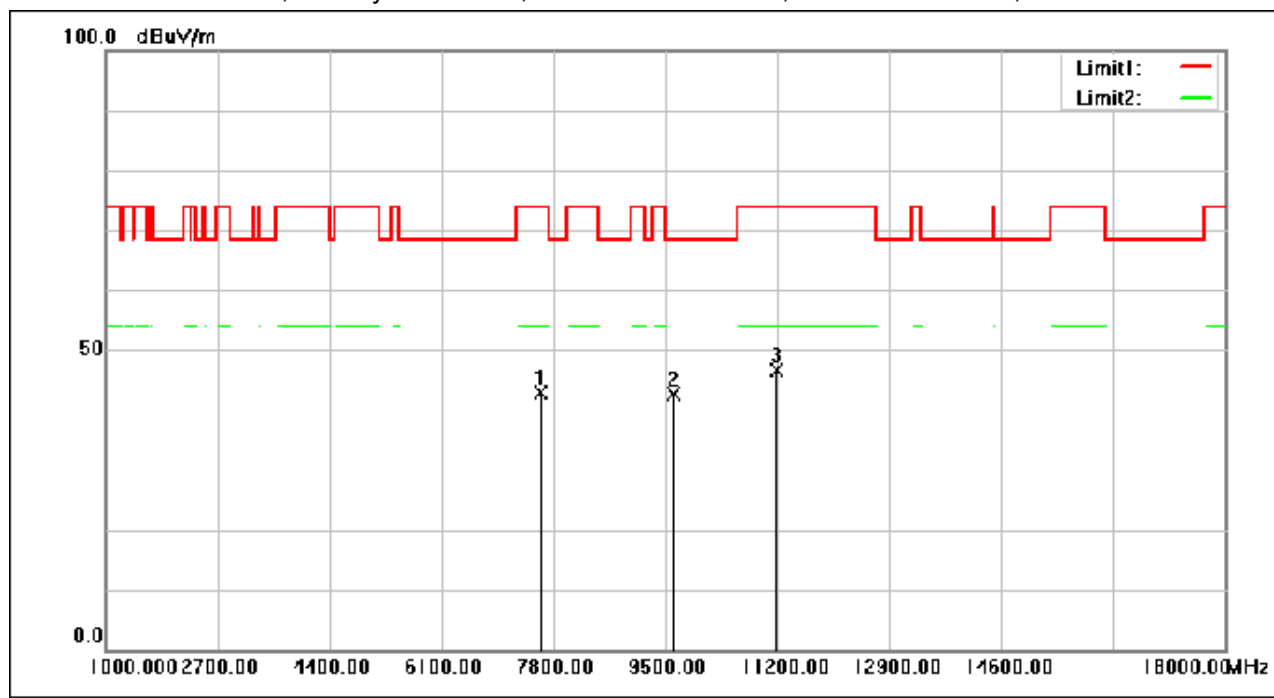
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7613.945	53.74	-10.98	42.76	74.00	-31.24	peak
2	9631.585	51.93	-9.40	42.53	68.30	-25.77	peak
3	11182.047	54.04	-7.38	46.66	74.00	-27.34	peak

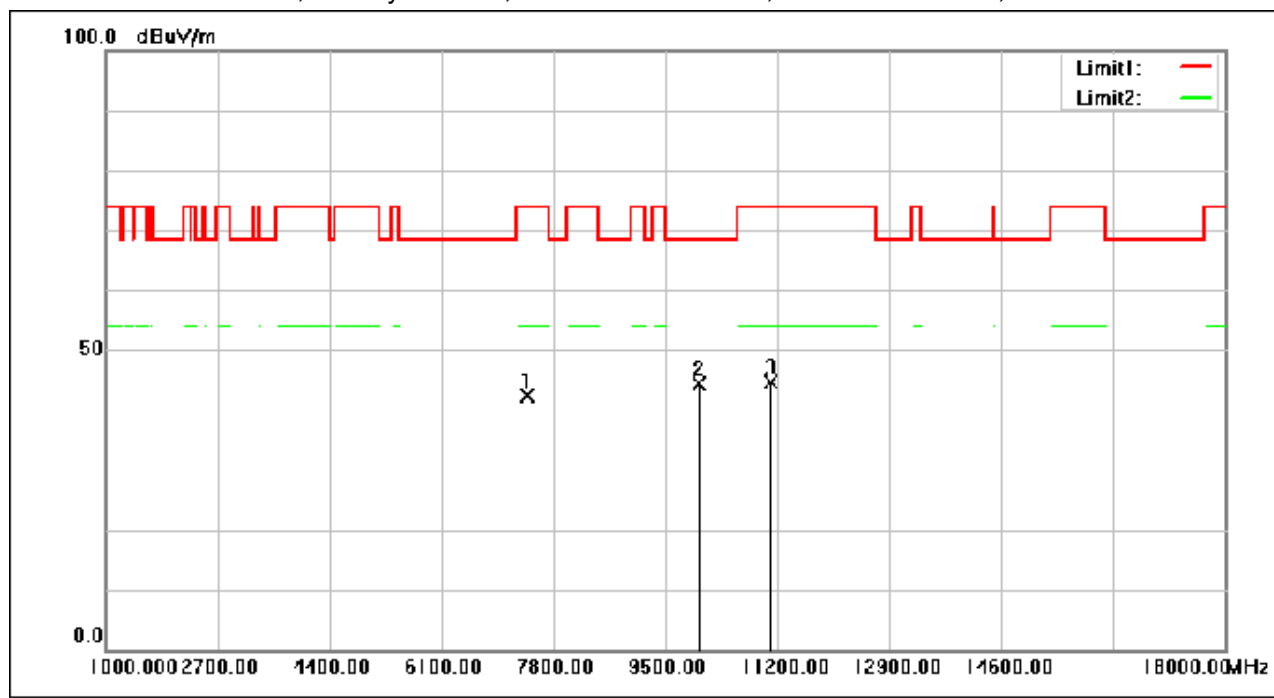
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Test Mode: 01; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7412.657	53.37	-10.90	42.47	74.00	-31.53	peak
2	10022.601	53.18	-8.90	44.28	68.30	-24.02	peak
3	11103.844	51.99	-7.43	44.56	74.00	-29.44	peak

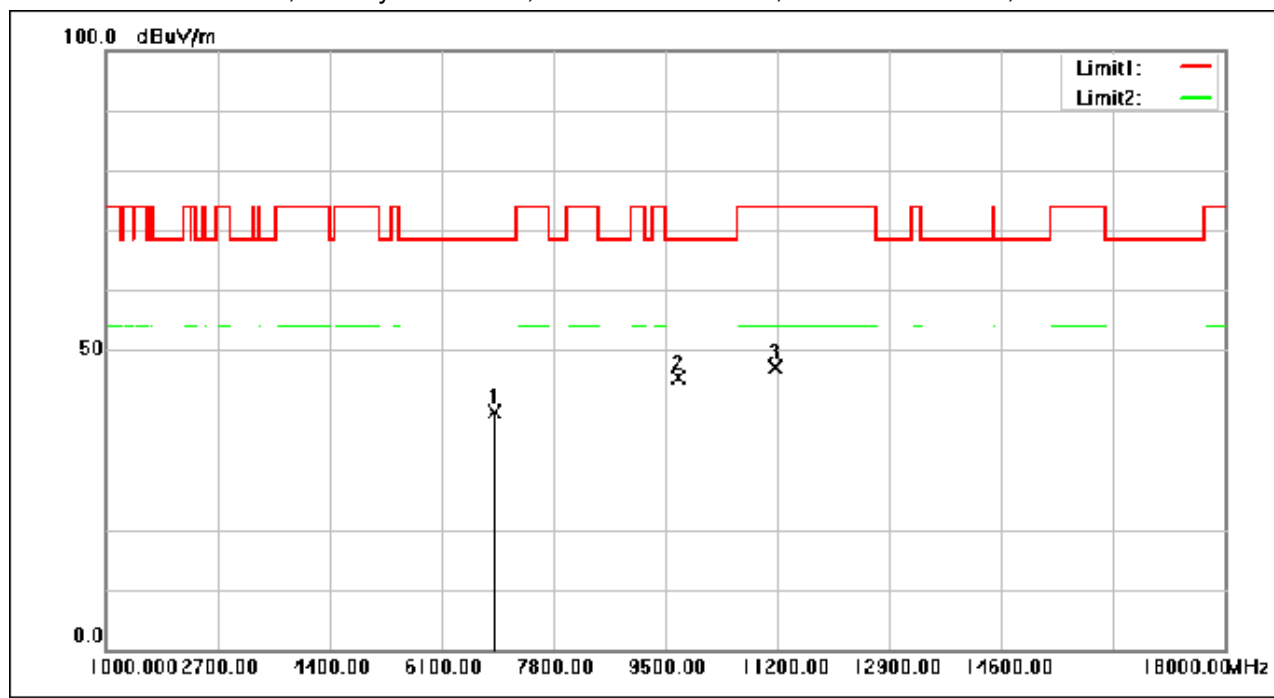
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Test Mode: 02; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6912.156	52.59	-12.86	39.73	68.30	-28.57	peak
2	9686.667	54.64	-9.34	45.30	68.30	-23.00	peak
3	11167.087	54.50	-7.40	47.10	74.00	-26.90	peak

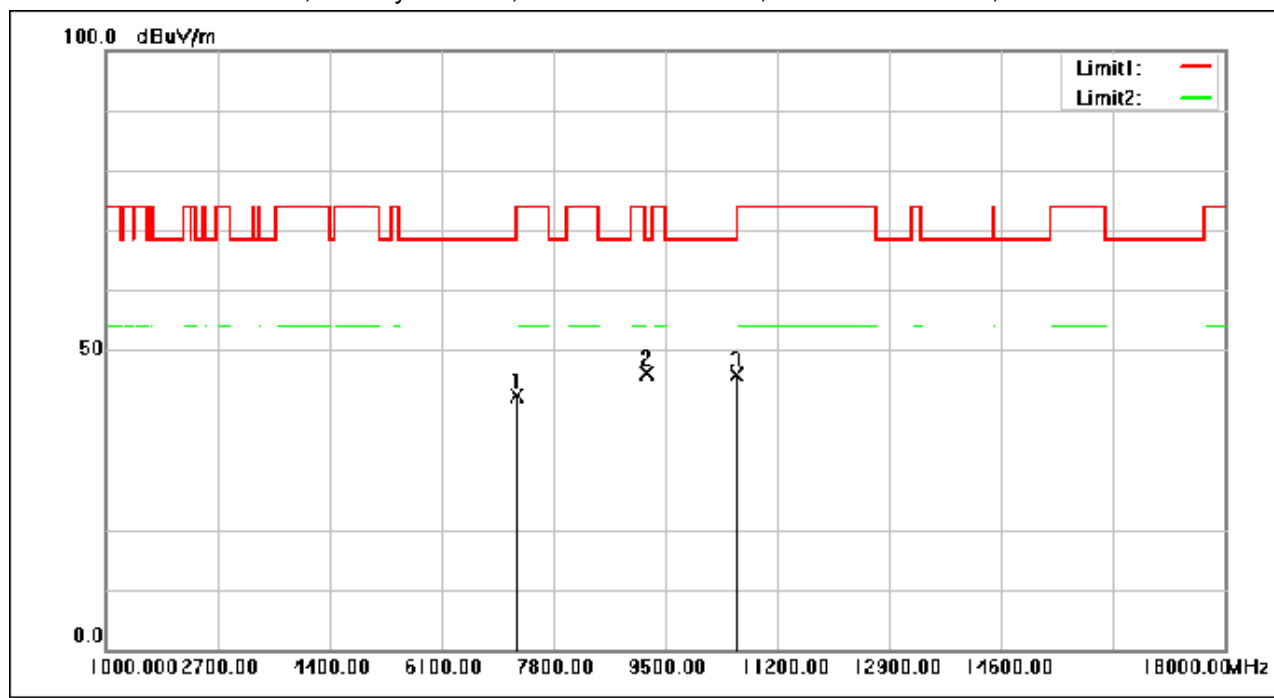
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Test Mode: 02; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7244.010	53.81	-11.53	42.28	68.30	-26.02	peak
2	9227.649	55.86	-9.77	46.09	68.30	-22.21	peak
3	10576.823	53.78	-7.95	45.83	68.30	-22.47	peak

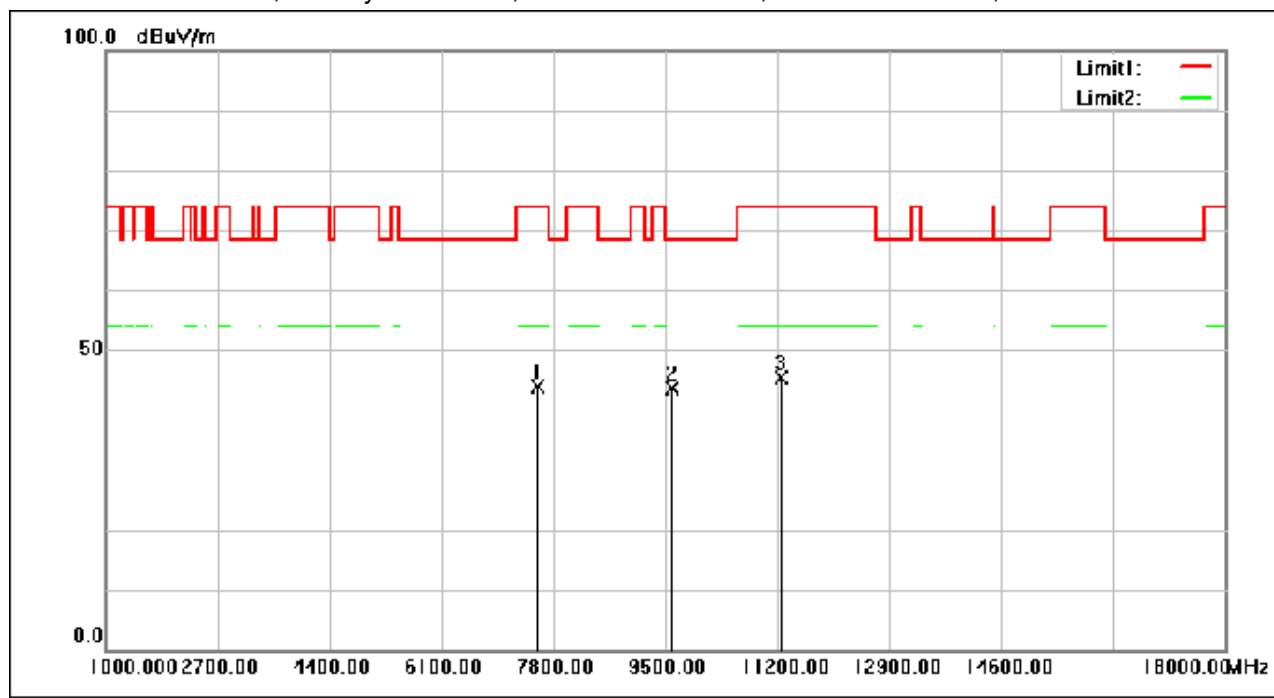
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Test Mode: 02; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7577.223	54.79	-10.94	43.85	74.00	-30.15	peak
2	9607.104	53.10	-9.42	43.68	68.30	-24.62	peak
3	11256.850	52.82	-7.34	45.48	74.00	-28.52	peak

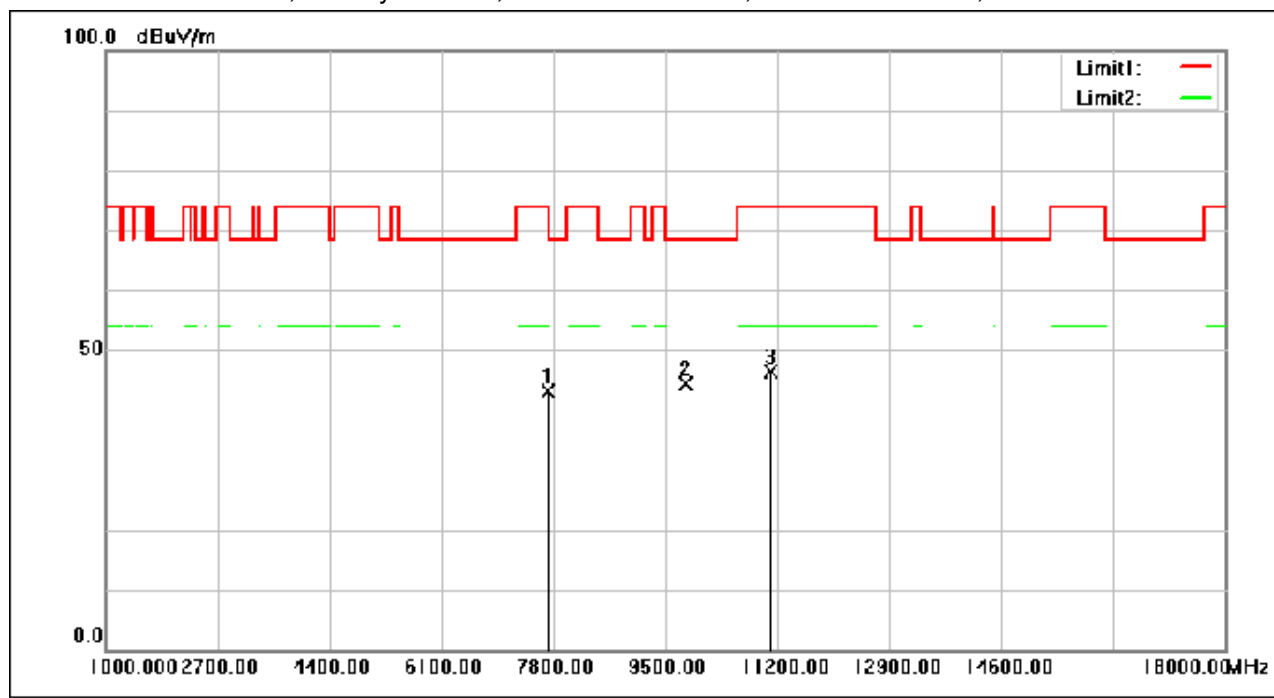
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Test Mode: 02; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7726.829	54.30	-11.13	43.17	74.00	-30.83	peak
2	9797.512	53.53	-9.22	44.31	68.30	-23.99	peak
3	11089.564	53.76	-7.44	46.32	74.00	-27.68	peak

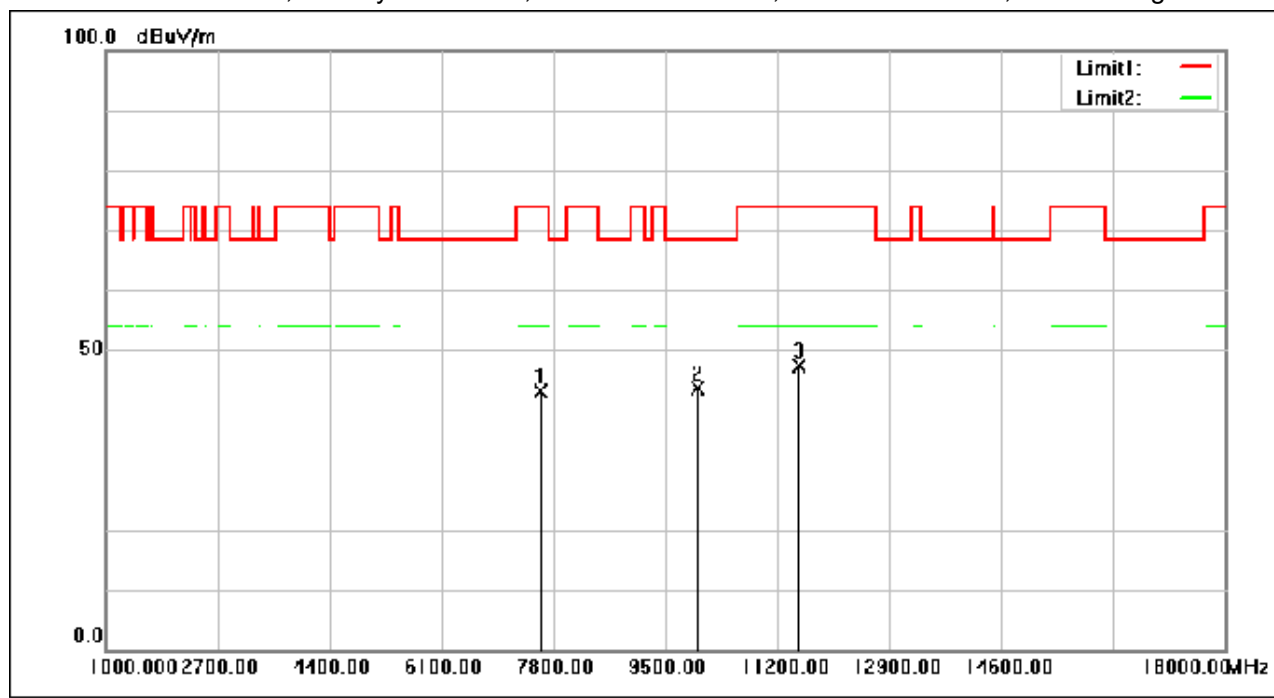
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Test Mode: 02; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7613.945	54.18	-10.98	43.20	74.00	-30.80	peak
2	9995.400	52.66	-8.95	43.71	68.30	-24.59	peak
3	11529.541	54.62	-7.24	47.38	74.00	-26.62	peak

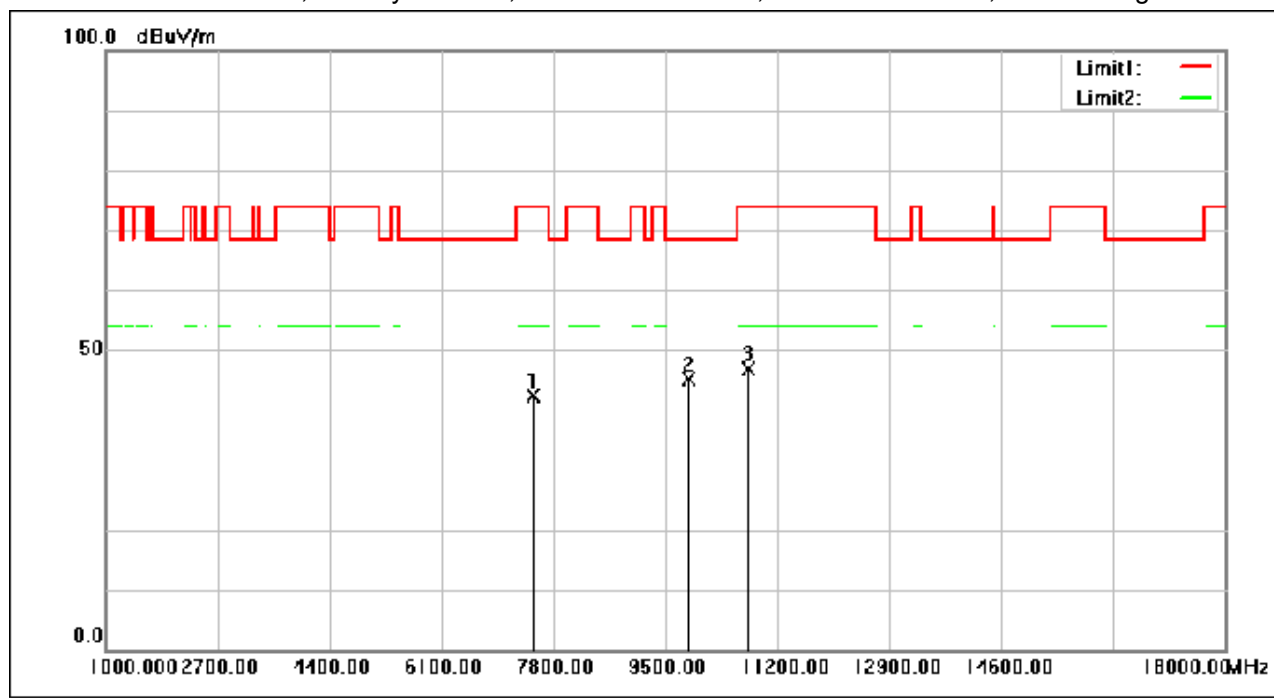
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Test Mode: 02; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7486.099	53.27	-10.85	42.42	74.00	-31.58	peak
2	9859.394	54.23	-9.14	45.09	68.30	-23.21	peak
3	10763.831	54.43	-7.61	46.82	74.00	-27.18	peak

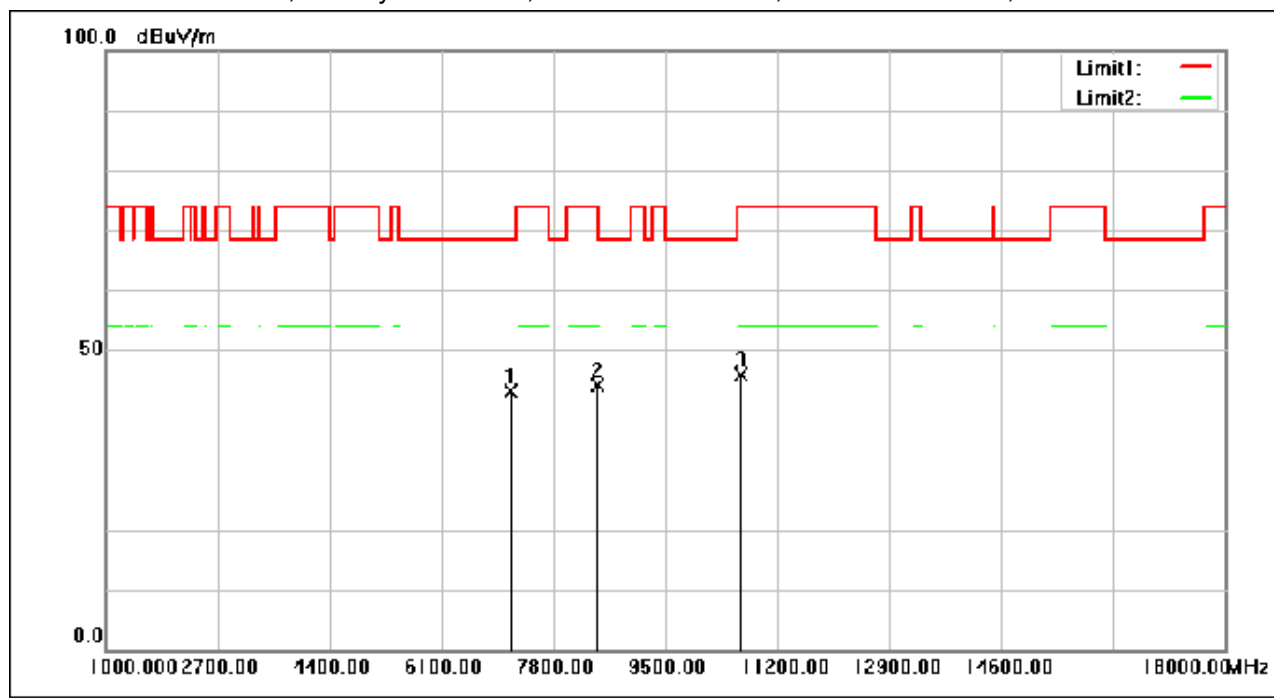
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Test Mode: 02; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7156.966	54.94	-11.89	43.05	68.30	-25.25	peak
2	8474.859	55.24	-11.01	44.23	74.00	-29.77	peak
3	10652.986	53.73	-7.81	45.92	74.00	-28.08	peak

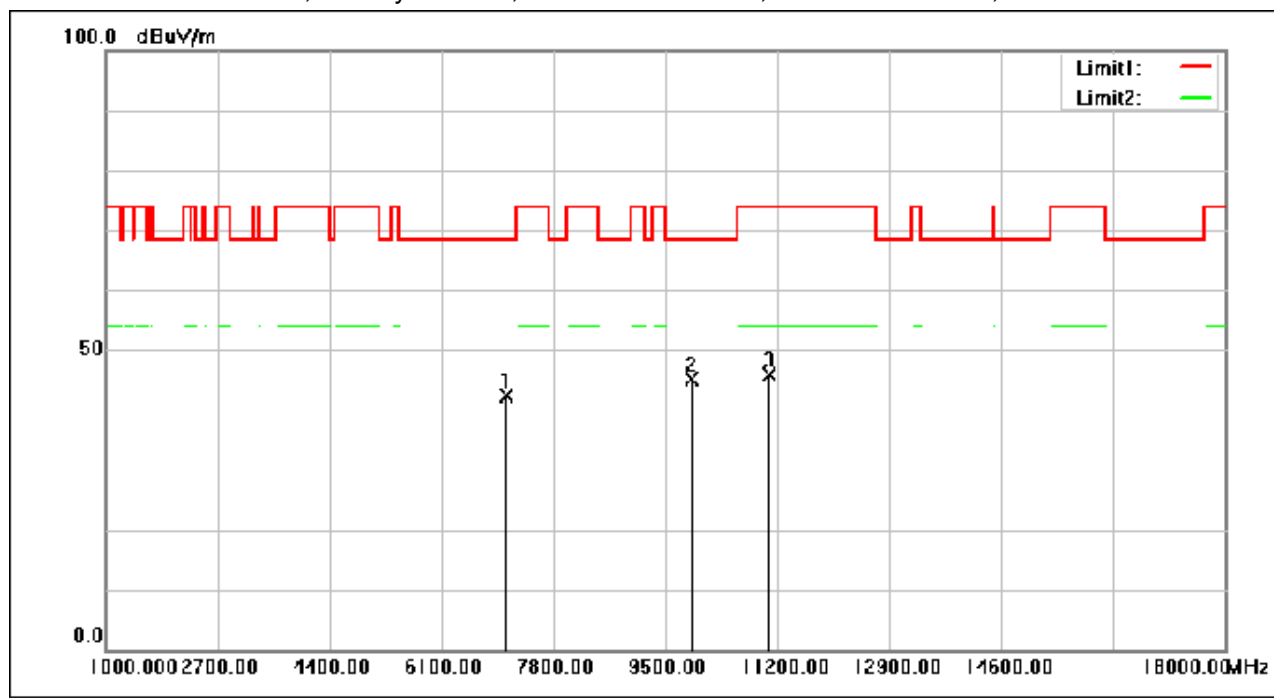
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Test Mode: 02; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7081.483	54.46	-12.19	42.27	68.30	-26.03	peak
2	9889.316	54.21	-9.10	45.11	68.30	-23.19	peak
3	11097.724	53.31	-7.43	45.88	74.00	-28.12	peak

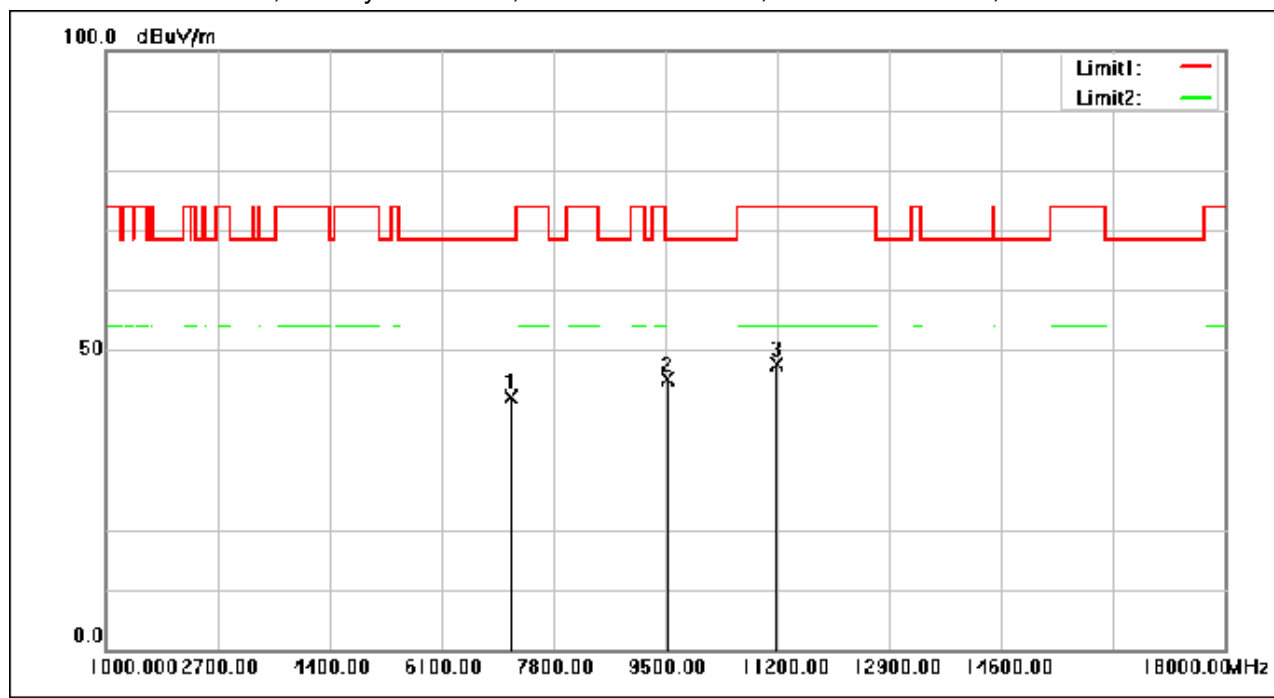
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Test Mode: 02; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7147.446	53.95	-11.93	42.02	68.30	-26.28	peak
2	9533.661	54.69	-9.50	45.19	68.30	-23.11	peak
3	11183.407	55.05	-7.38	47.67	74.00	-26.33	peak

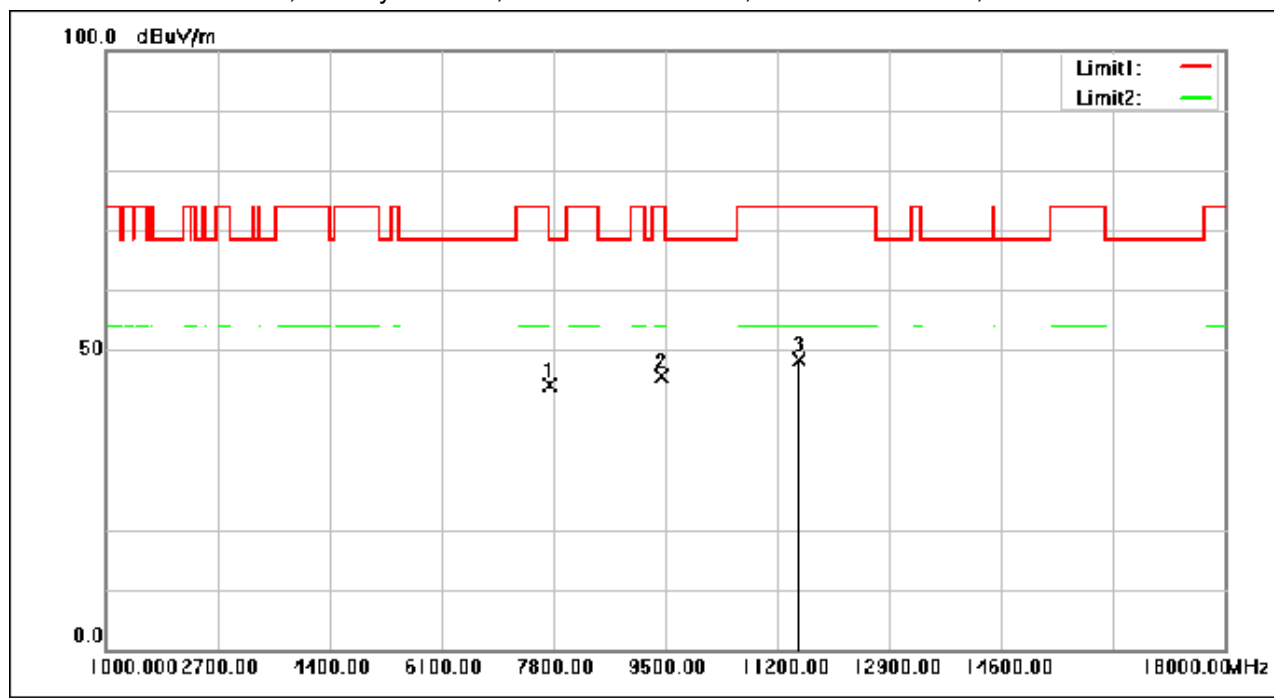
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Test Mode: 02; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7752.670	55.21	-11.16	44.05	68.30	-24.25	peak
2	9454.098	55.19	-9.57	45.62	74.00	-28.38	peak
3	11538.382	55.56	-7.24	48.32	74.00	-25.68	peak

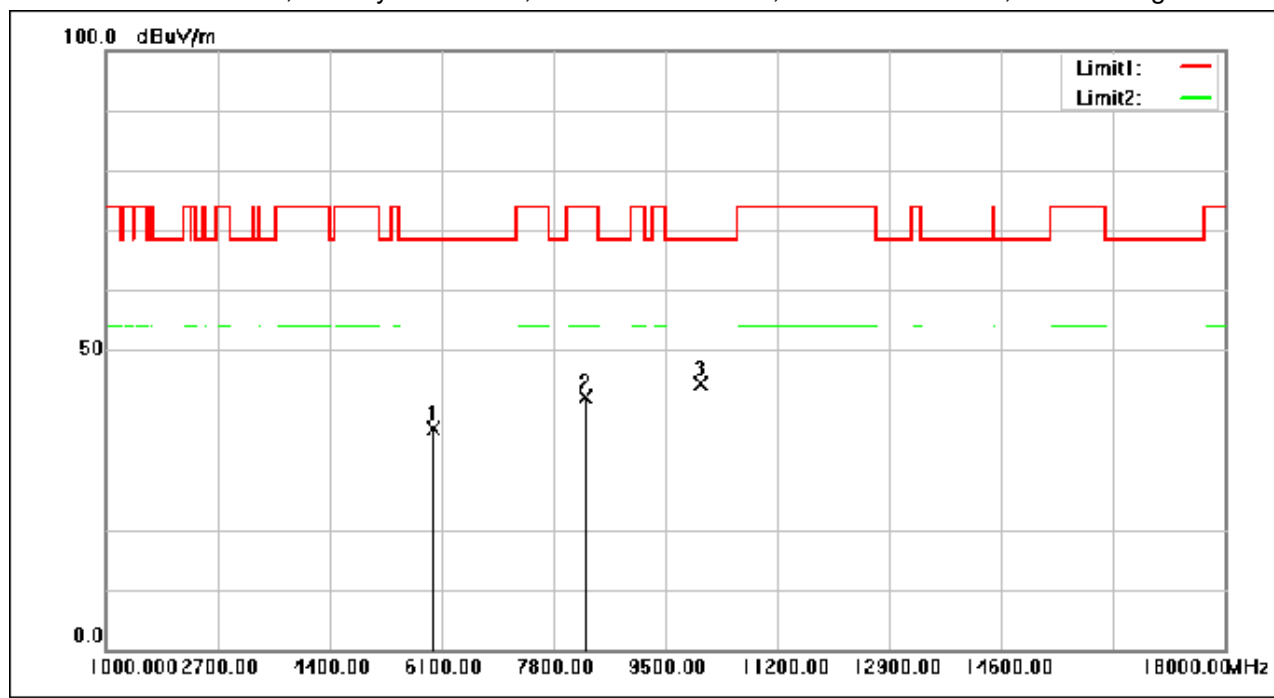
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Test Mode: 02; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5985.959	52.61	-15.71	36.90	68.30	-31.40	peak
2	8302.132	53.37	-11.22	42.15	74.00	-31.85	peak
3	10038.922	53.22	-8.87	44.35	68.30	-23.95	peak

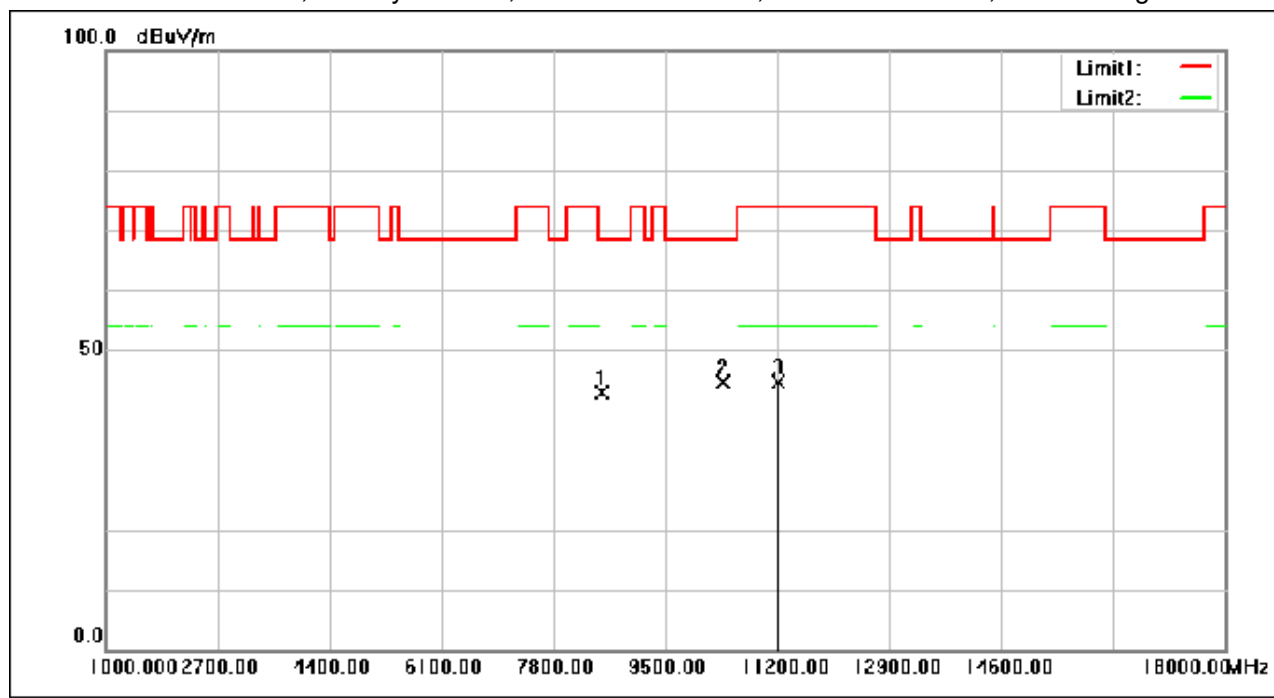
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Test Mode: 02; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8534.021	53.90	-10.91	42.99	68.30	-25.31	peak
2	10362.615	52.99	-8.33	44.66	68.30	-23.64	peak
3	11217.409	52.05	-7.37	44.68	74.00	-29.32	peak

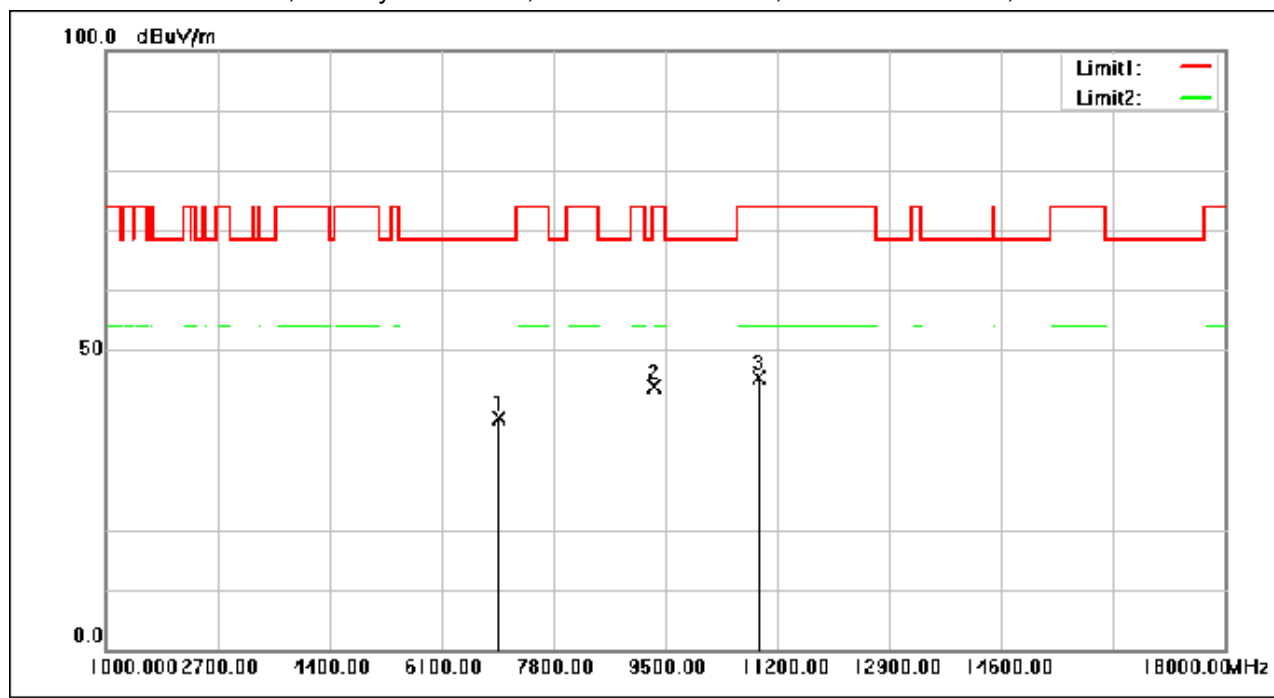
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Test Mode: 02; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6980.159	51.23	-12.60	38.63	68.30	-29.67	peak
2	9322.173	53.57	-9.69	43.88	74.00	-30.12	peak
3	10916.157	52.95	-7.48	45.47	74.00	-28.53	peak

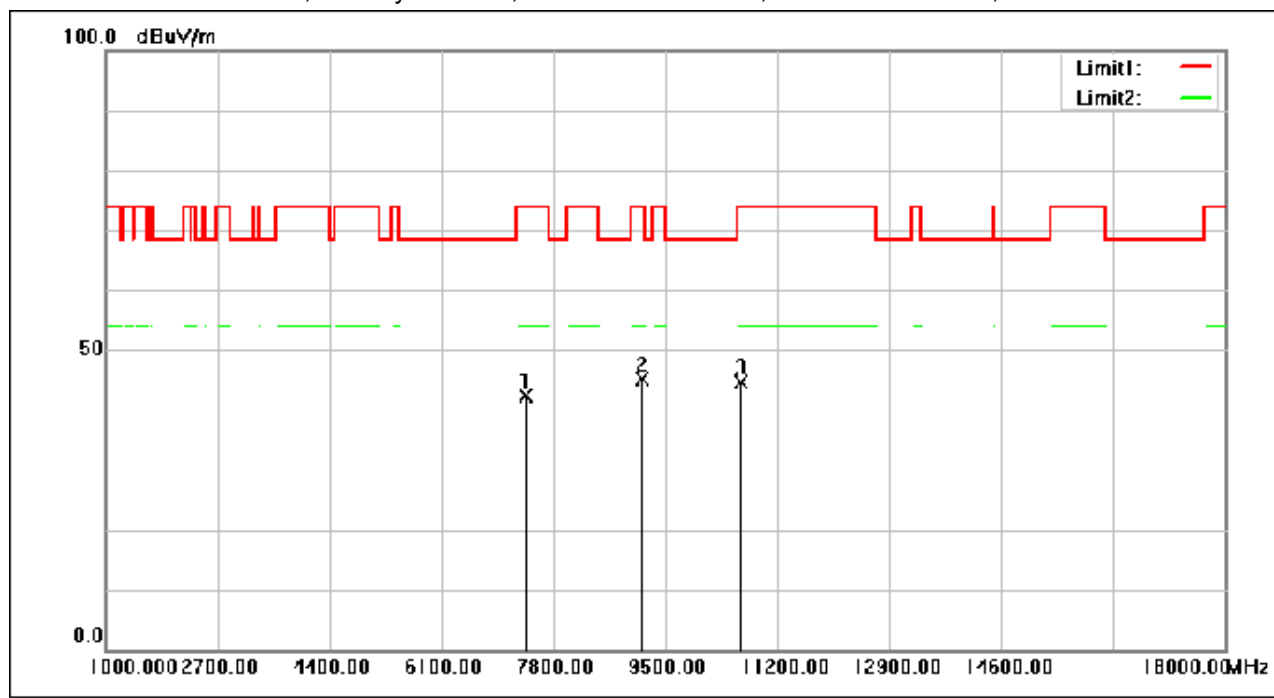
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Test Mode: 02; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7381.375	53.46	-10.97	42.49	74.00	-31.51	peak
2	9144.686	55.02	-9.85	45.17	74.00	-28.83	peak
3	10651.626	52.41	-7.82	44.59	74.00	-29.41	peak

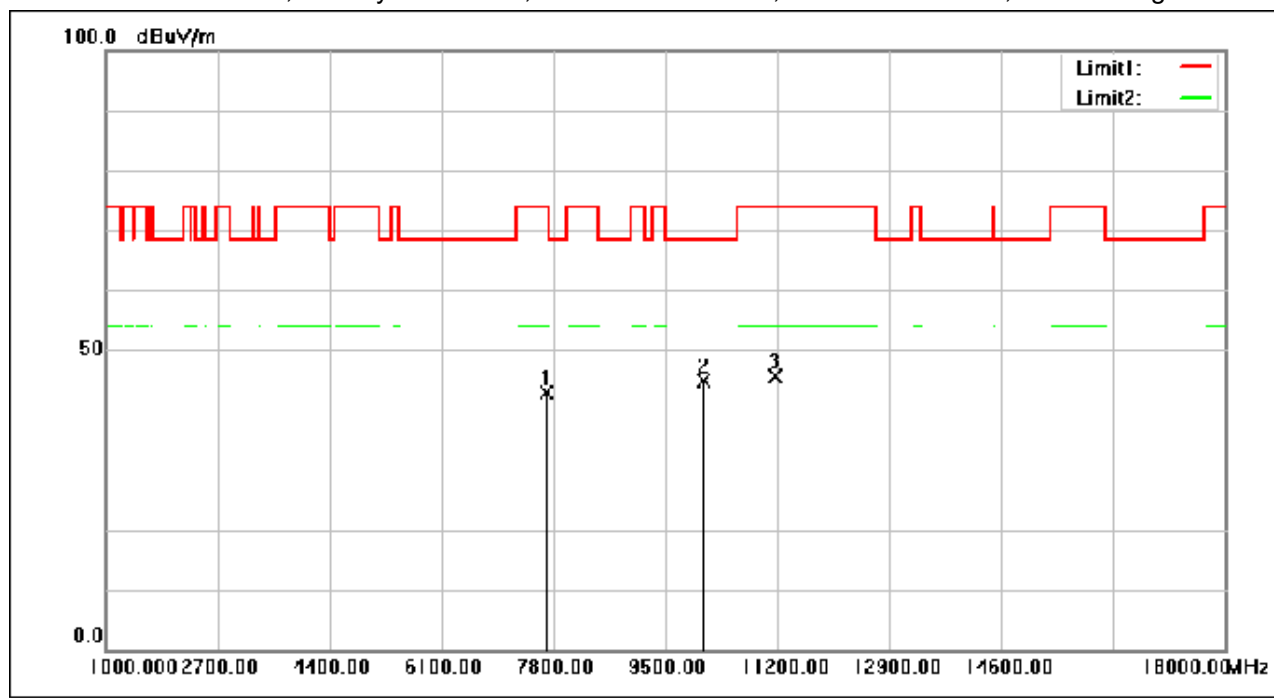
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Test Mode: 02; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7689.428	53.84	-11.08	42.76	74.00	-31.24	peak
2	10079.043	53.81	-8.81	45.00	68.30	-23.30	peak
3	11169.807	53.12	-7.39	45.73	74.00	-28.27	peak

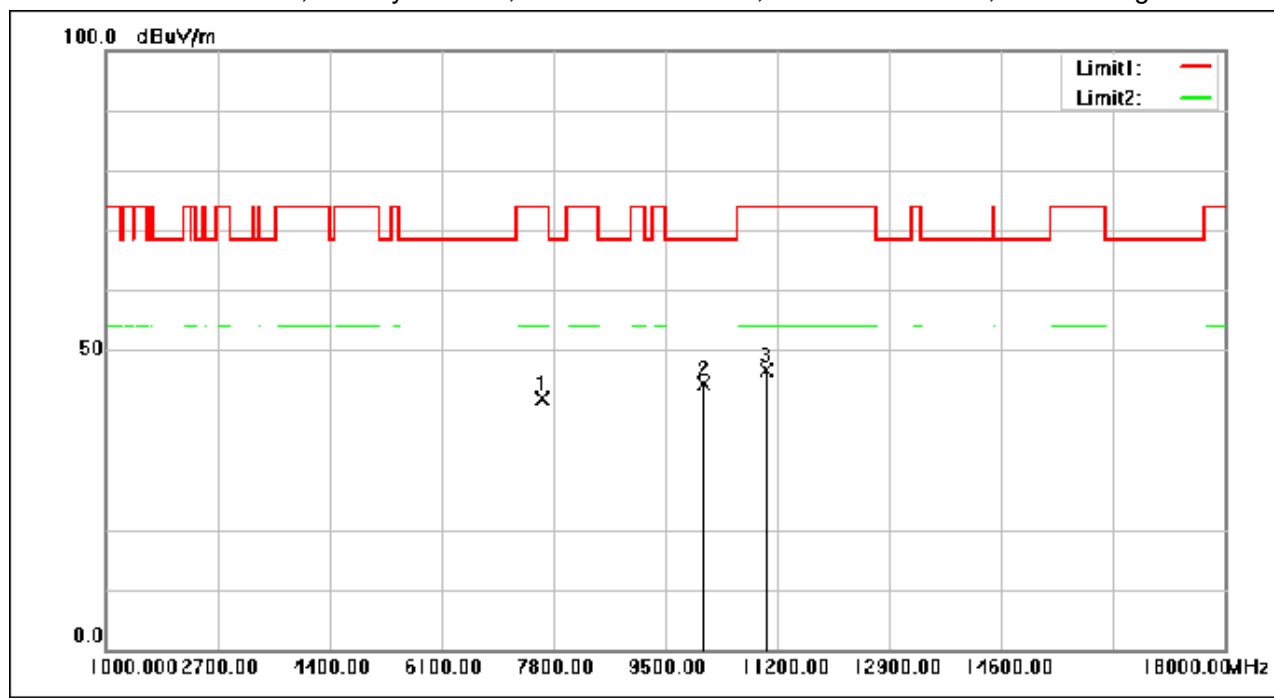
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Test Mode: 02; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7630.265	52.94	-11.01	41.93	74.00	-32.07	peak
2	10070.883	53.19	-8.82	44.37	68.30	-23.93	peak
3	11037.882	54.11	-7.46	46.65	74.00	-27.35	peak

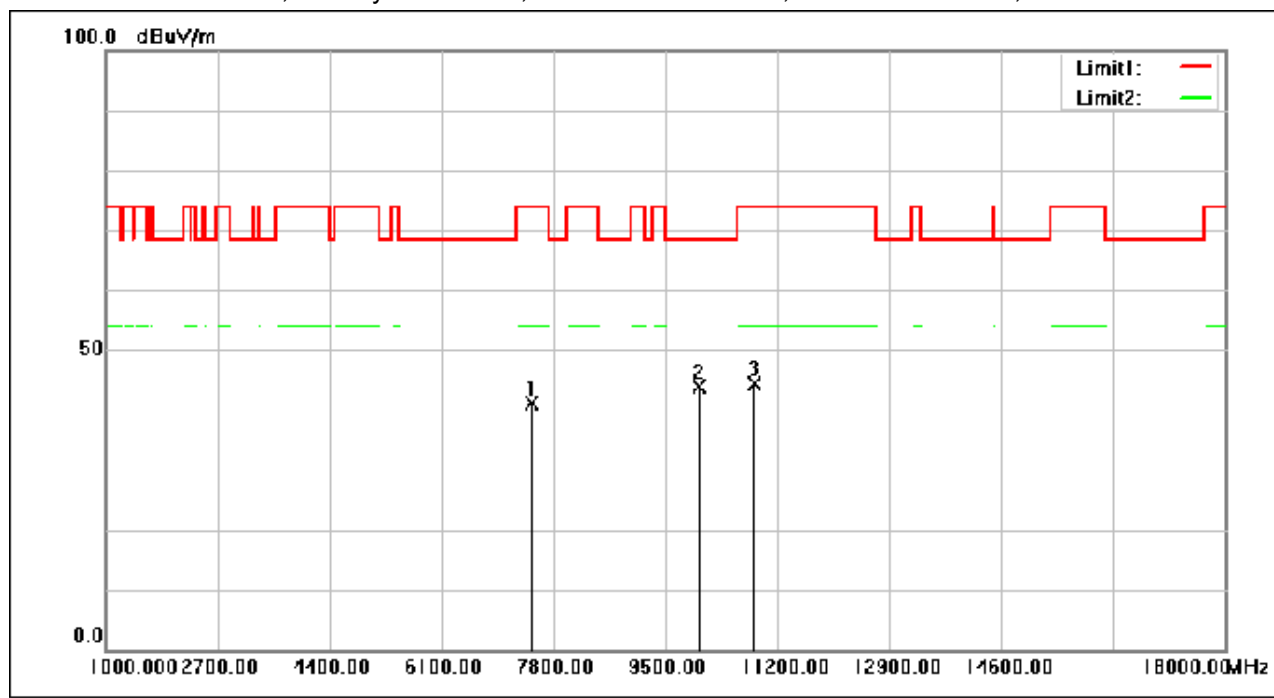
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Test Mode: 02; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7479.299	51.99	-10.85	41.14	74.00	-32.86	peak
2	10023.961	52.76	-8.90	43.86	68.30	-24.44	peak
3	10842.714	51.82	-7.47	44.35	74.00	-29.65	peak

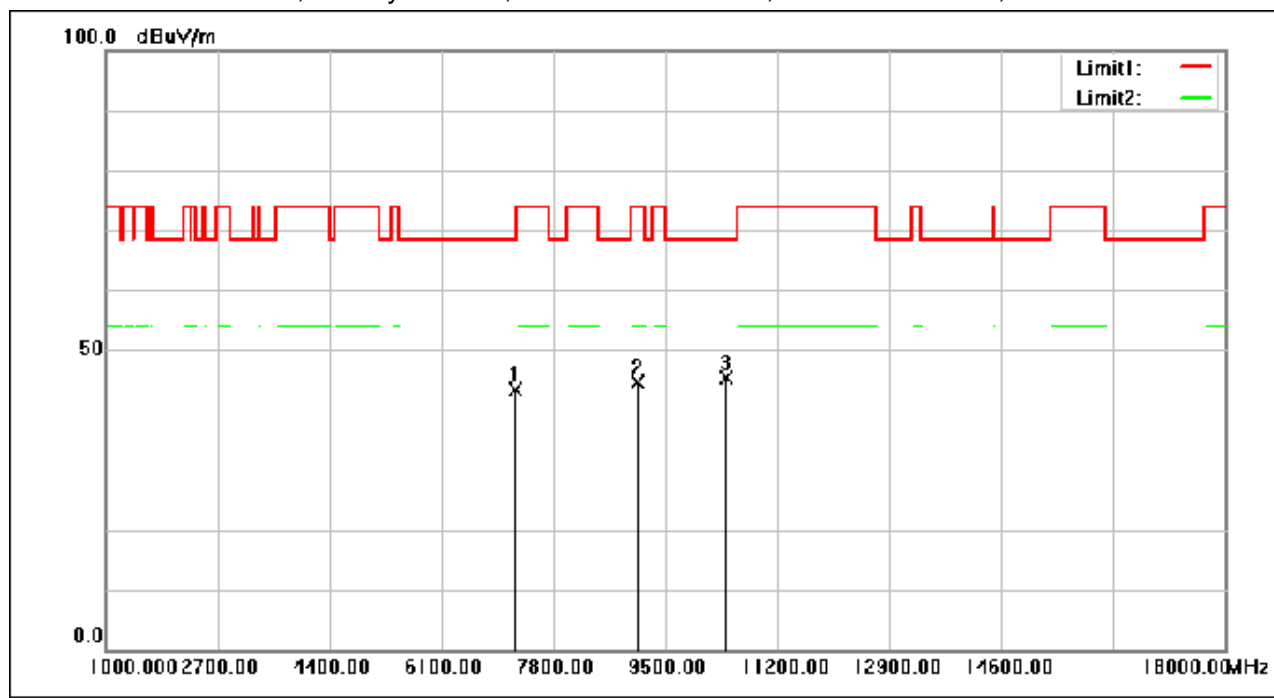
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Test Mode: 02; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7224.289	55.07	-11.62	43.45	68.30	-24.85	peak
2	9090.284	54.52	-9.90	44.62	74.00	-29.38	peak
3	10415.657	53.56	-8.24	45.32	68.30	-22.98	peak

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7.4 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)

Test Method: KDB 789033 D02 II G

Limit:

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
*(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. (4) For transmitters operating in the 5.725-5.85 GHz band: (i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. 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.		

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 20.5 °C

Humidity: 50.5 % RH

Atmospheric Pressure: 1010 mbar

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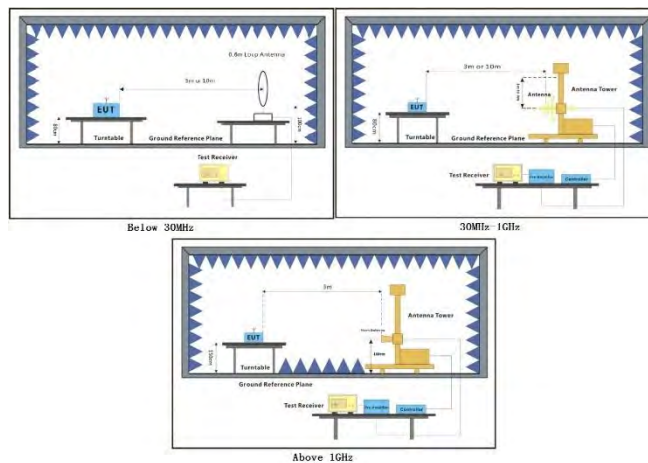
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7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode (U-NII-1)_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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	02	TX mode (U-NII-3)_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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

7.4.3 Test Setup Diagram



7.4.4 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 middle 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. $\text{Level} = \text{Read Level} + \text{Cable Loss} + \text{Antenna Factor} - \text{Preamplifier Factor}$.
2. This test item was investigated while operating in SISO and MIMO mode, however, it was determined that SISO antenna 1 operation for a modulation and MIMO antenna operation for n/ac modulation produced the worst emissions. So the emissions produced from other operation are not recorded in report.

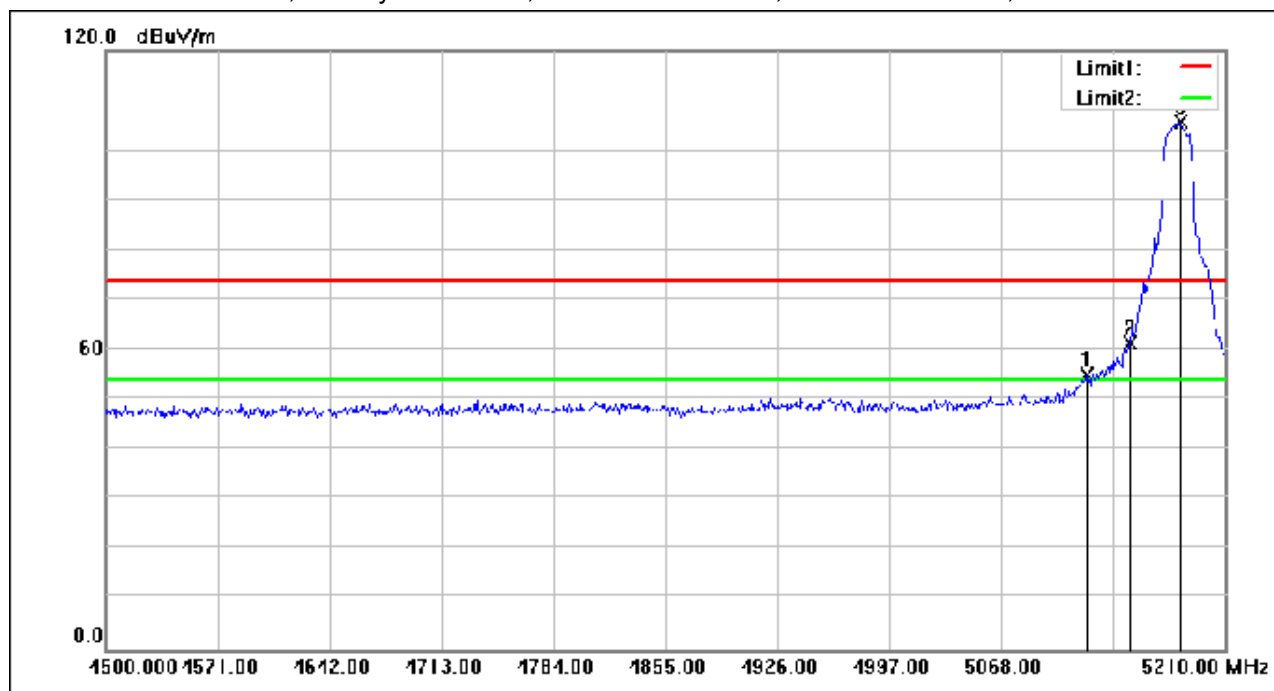
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5121.960	72.20	-17.14	55.06	74.00	-18.94	peak
2	5150.000	78.35	-17.07	61.28	74.00	-12.72	peak
3	5181.600	122.76	-17.04	105.72	74.00	31.72	peak

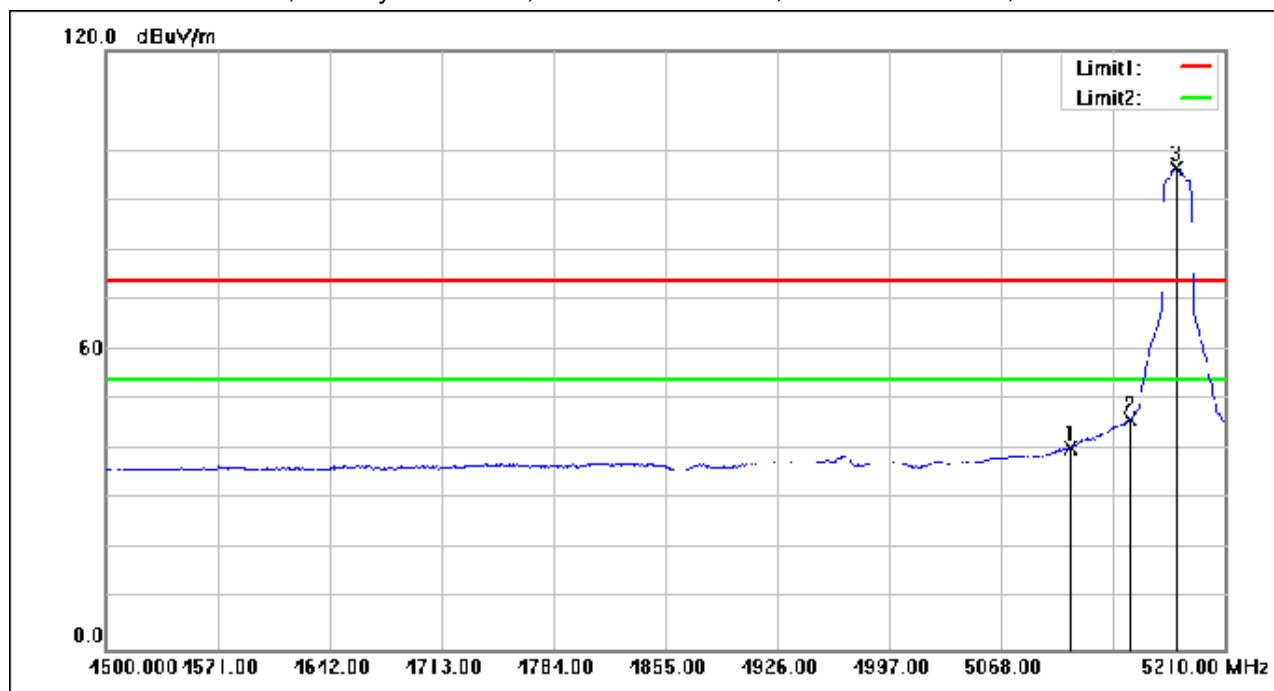
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5112.375	57.57	-17.16	40.41	54.00	-13.59	AVG
2	5150.000	63.13	-17.07	46.06	54.00	-7.94	AVG
3	5179.115	113.60	-17.04	96.56	54.00	42.56	AVG

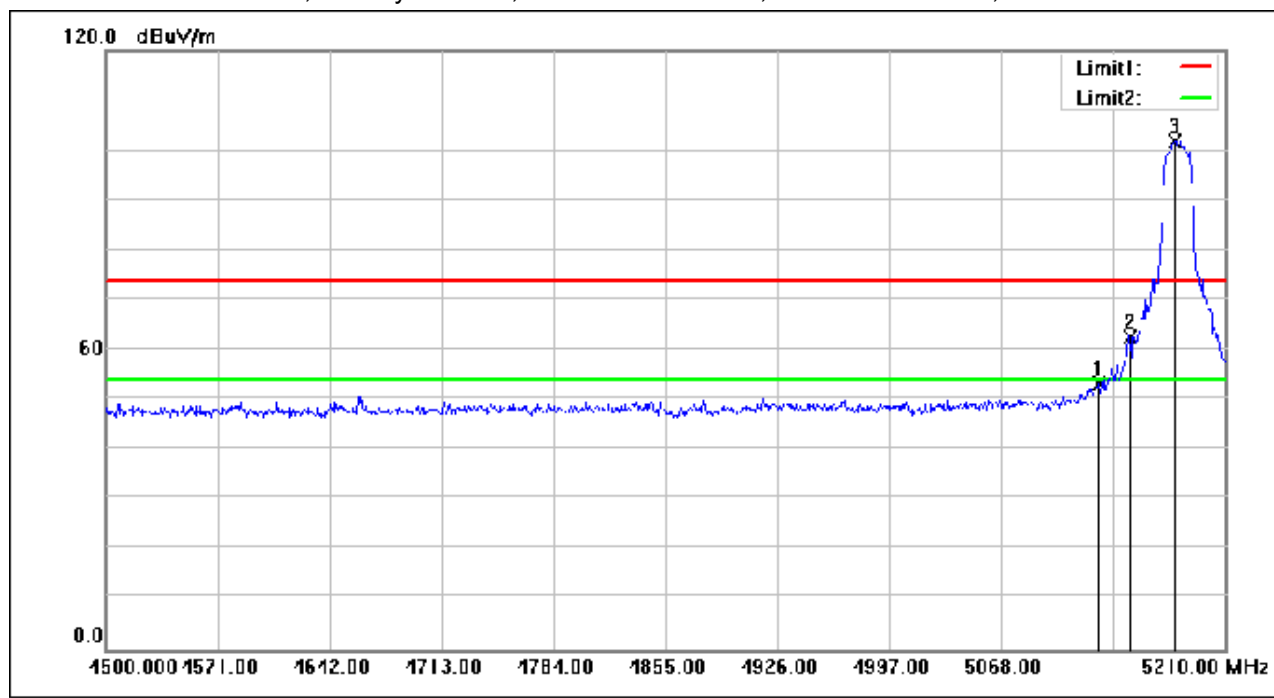
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Test Mode: 01; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5129.770	70.27	-17.12	53.15	74.00	-20.85	peak
2	5150.000	79.75	-17.07	62.68	74.00	-11.32	peak
3	5178.405	119.02	-17.04	101.98	74.00	27.98	peak

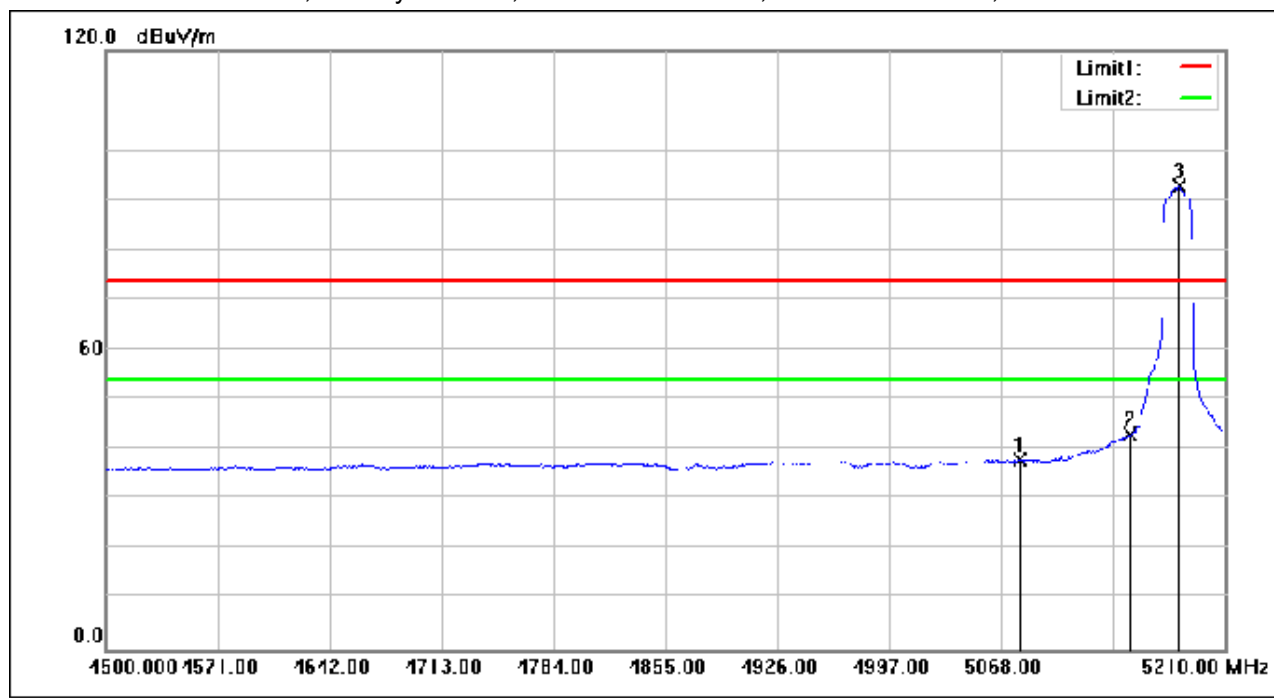
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Test Mode: 01; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5080.070	55.23	-17.23	38.00	54.00	-16.00	AVG
2	5150.000	60.14	-17.07	43.07	54.00	-10.93	AVG
3	5181.245	109.77	-17.04	92.73	54.00	38.73	AVG

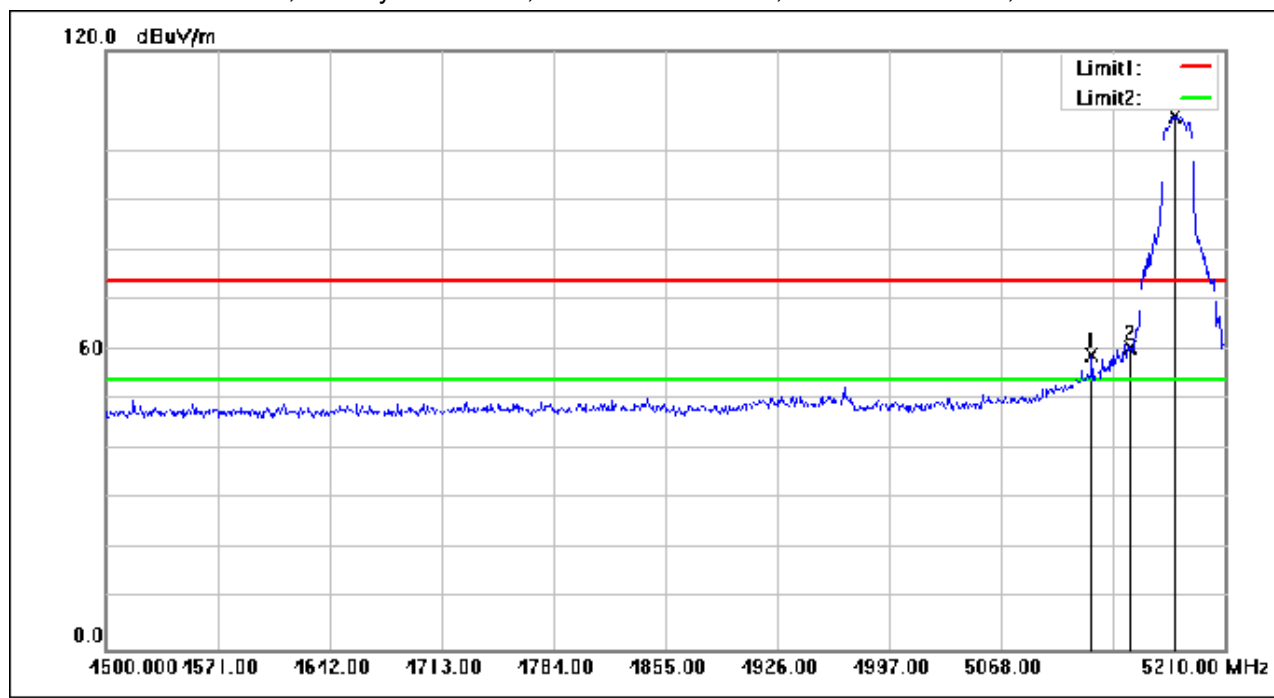
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5125.865	75.96	-17.13	58.83	74.00	-15.17	peak
2	5150.000	77.54	-17.07	60.47	74.00	-13.53	peak
3	5178.050	123.91	-17.04	106.87	74.00	32.87	peak

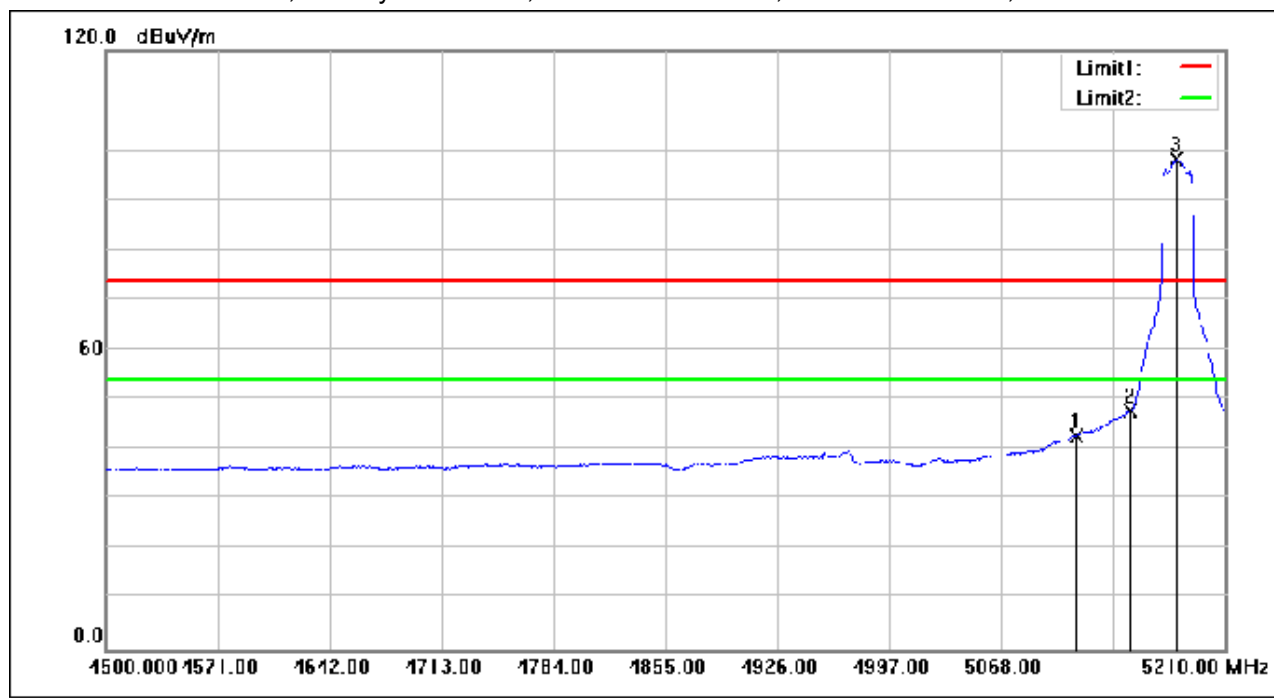
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5115.925	60.06	-17.16	42.90	54.00	-11.10	AVG
2	5150.000	65.05	-17.07	47.98	54.00	-6.02	AVG
3	5179.115	115.28	-17.04	98.24	54.00	44.24	AVG

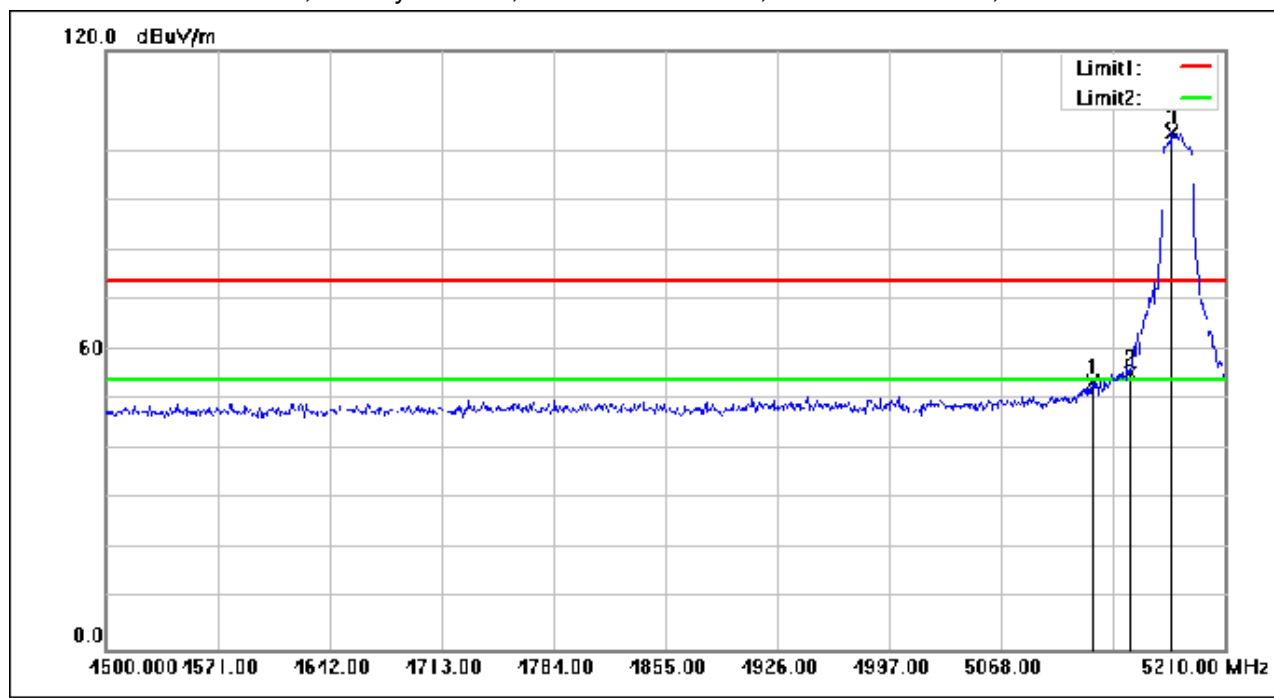
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5126.220	70.58	-17.13	53.45	74.00	-20.55	peak
2	5150.000	72.55	-17.07	55.48	74.00	-18.52	peak
3	5176.985	120.59	-17.04	103.55	74.00	29.55	peak

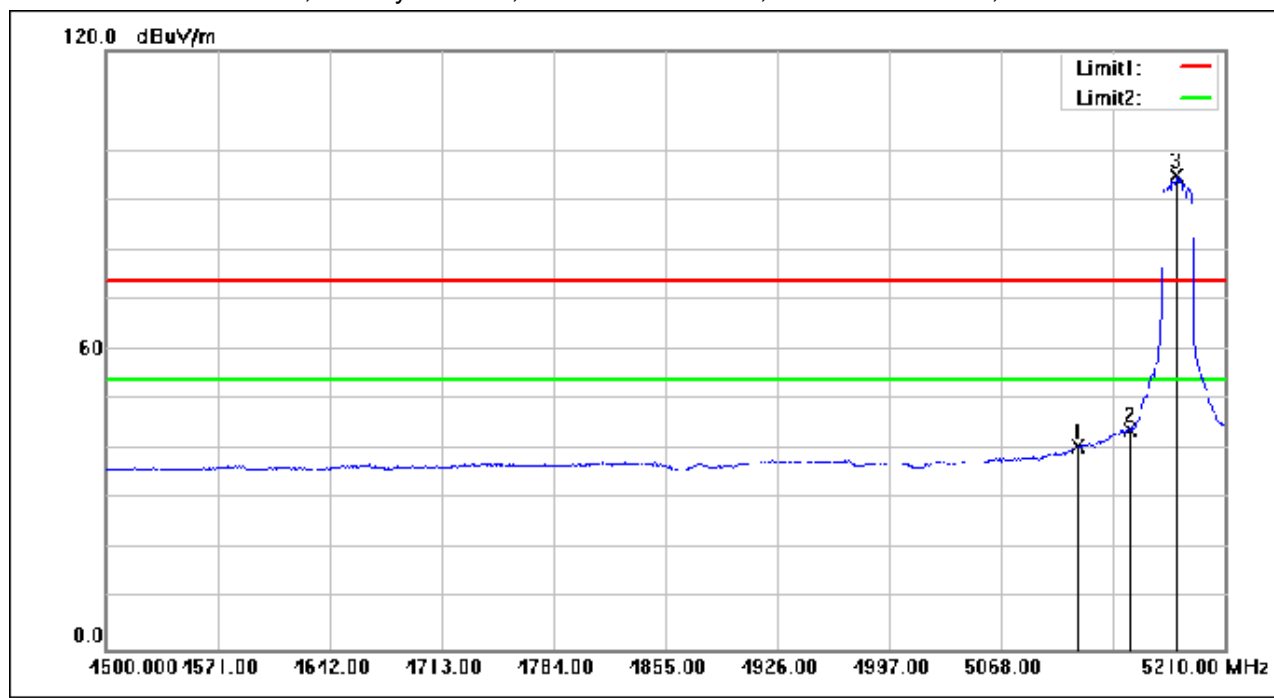
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5116.635	57.94	-17.15	40.79	54.00	-13.21	AVG
2	5150.000	61.14	-17.07	44.07	54.00	-9.93	AVG
3	5179.470	112.12	-17.04	95.08	54.00	41.08	AVG

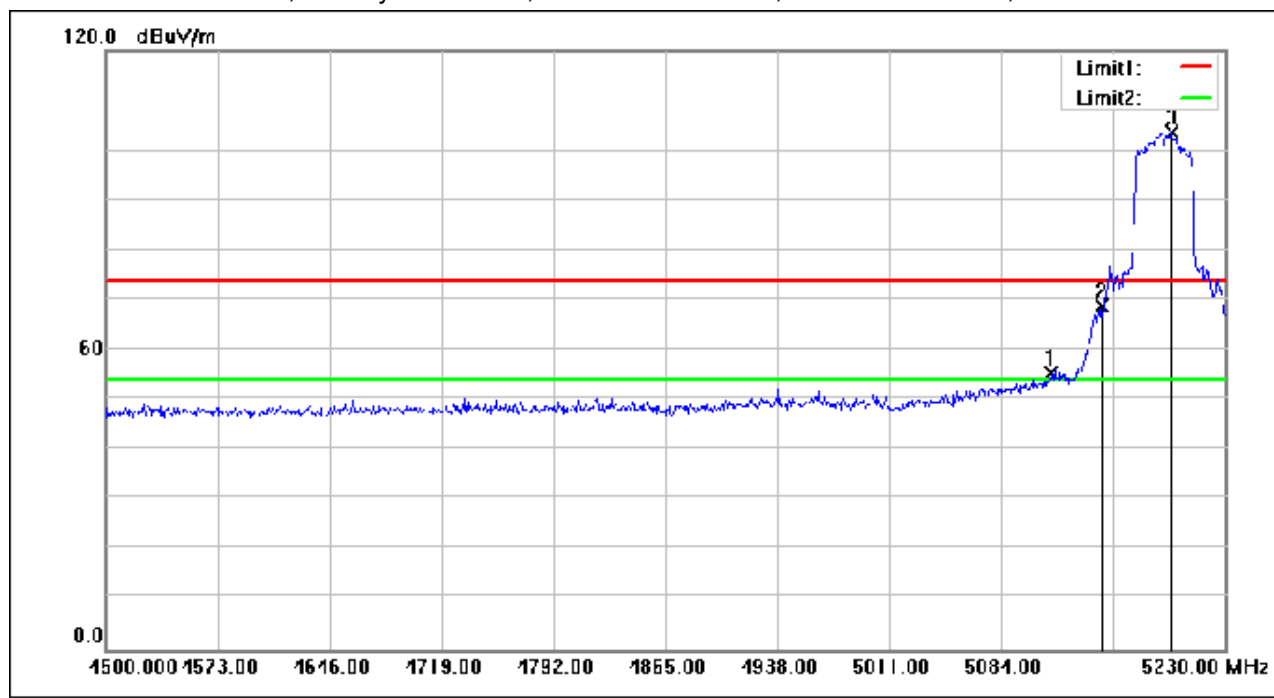
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5116.485	72.56	-17.15	55.41	74.00	-18.59	peak
2	5150.000	86.05	-17.07	68.98	74.00	-5.02	peak
3	5195.325	120.72	-17.02	103.70	74.00	29.70	peak

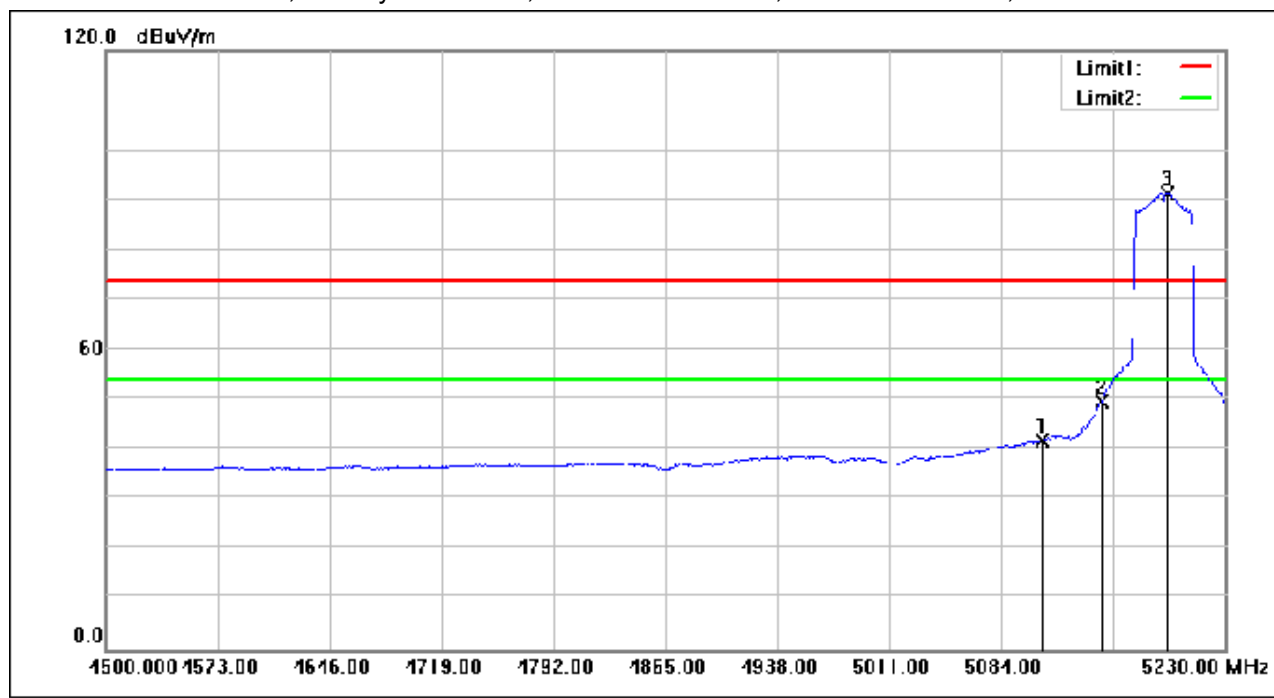
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5110.280	59.03	-17.16	41.87	54.00	-12.13	AVG
2	5150.000	66.66	-17.07	49.59	54.00	-4.41	AVG
3	5192.770	108.48	-17.03	91.45	54.00	37.45	AVG

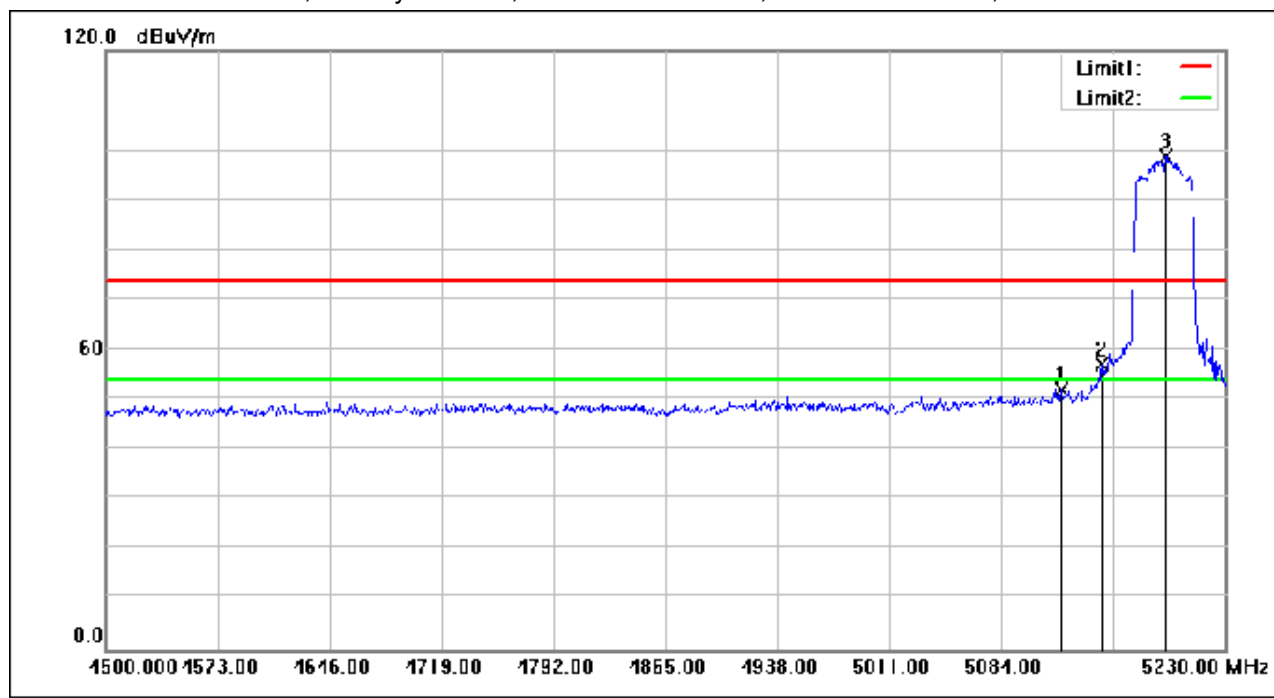
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5123.785	69.26	-17.13	52.13	74.00	-21.87	peak
2	5150.000	74.17	-17.07	57.10	74.00	-16.90	peak
3	5191.675	116.00	-17.03	98.97	74.00	24.97	peak

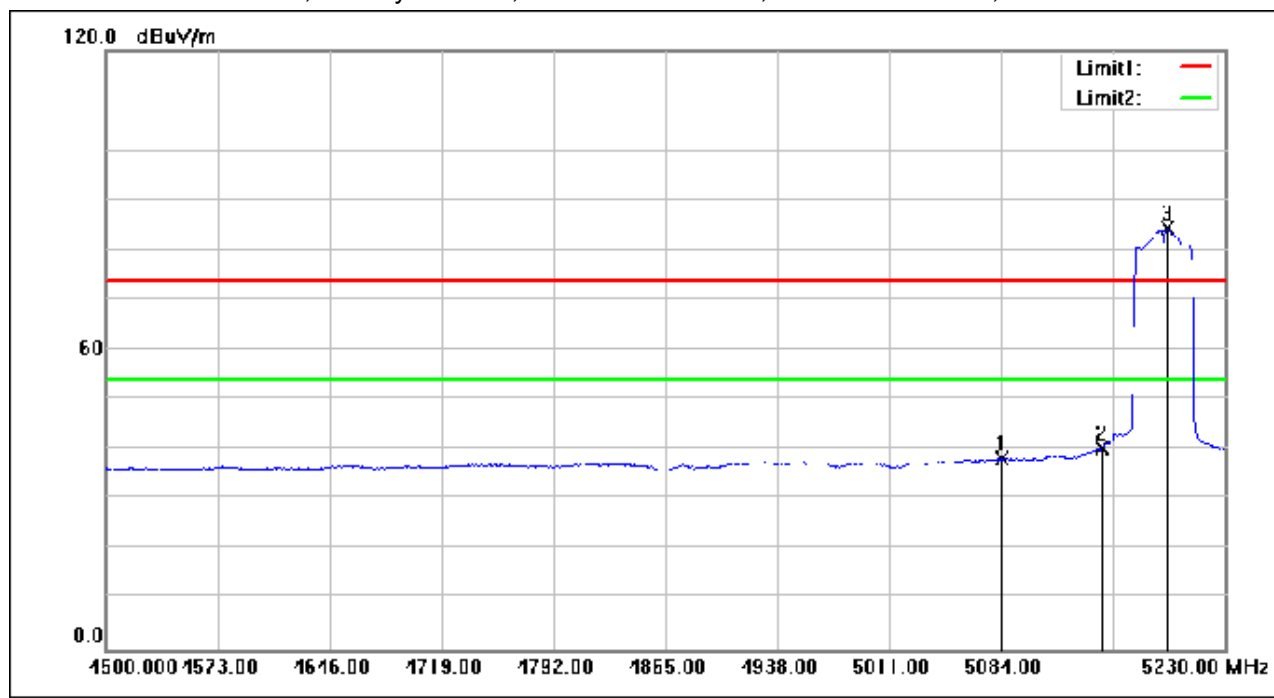
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5084.000	55.43	-17.23	38.20	54.00	-15.80	AVG
2	5150.000	57.52	-17.07	40.45	54.00	-13.55	AVG
3	5192.040	101.41	-17.03	84.38	54.00	30.38	AVG

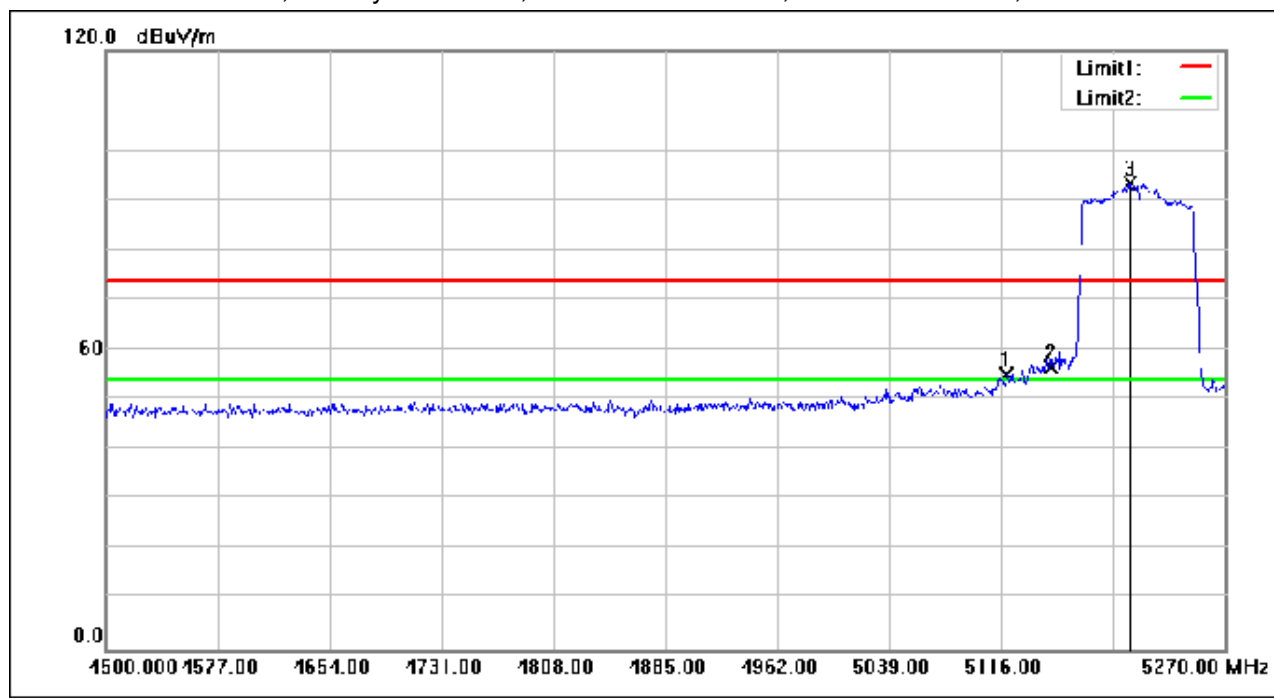
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 01; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5119.850	72.05	-17.14	54.91	74.00	-19.09	peak
2	5150.000	73.68	-17.07	56.61	74.00	-17.39	peak
3	5204.550	110.41	-17.01	93.40	74.00	19.40	peak

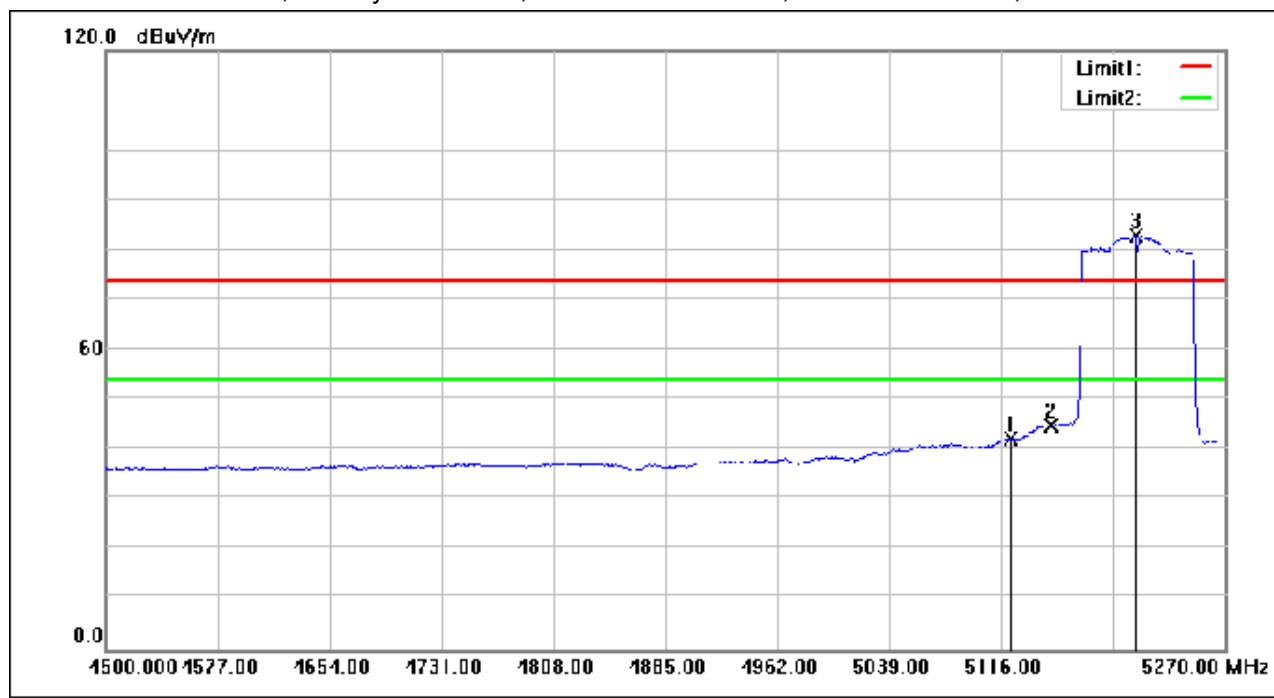
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 01; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5122.160	59.34	-17.14	42.20	74.00	-31.80	peak
2	5150.000	61.96	-17.07	44.89	74.00	-29.11	peak
3	5208.400	99.97	-17.01	82.96	74.00	8.96	peak

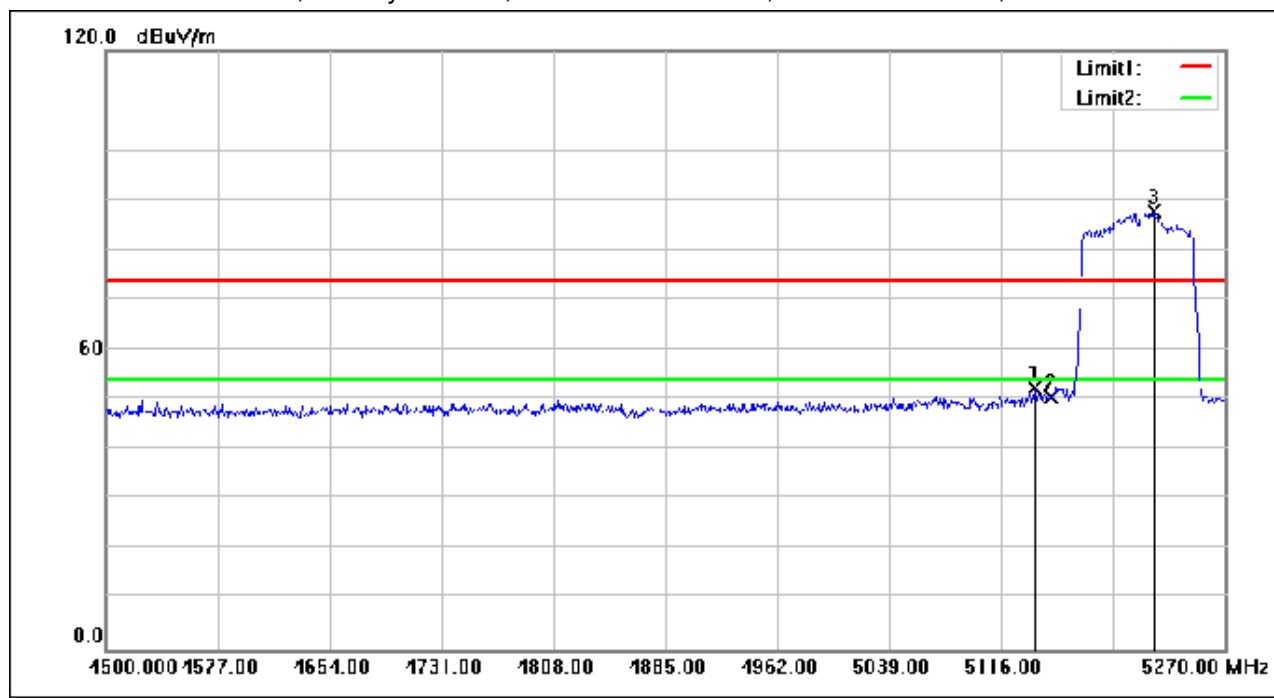
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 01; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5139.100	69.34	-17.09	52.25	74.00	-21.75	peak
2	5150.000	67.68	-17.07	50.61	74.00	-23.39	peak
3	5220.720	104.64	-17.00	87.64	74.00	13.64	peak

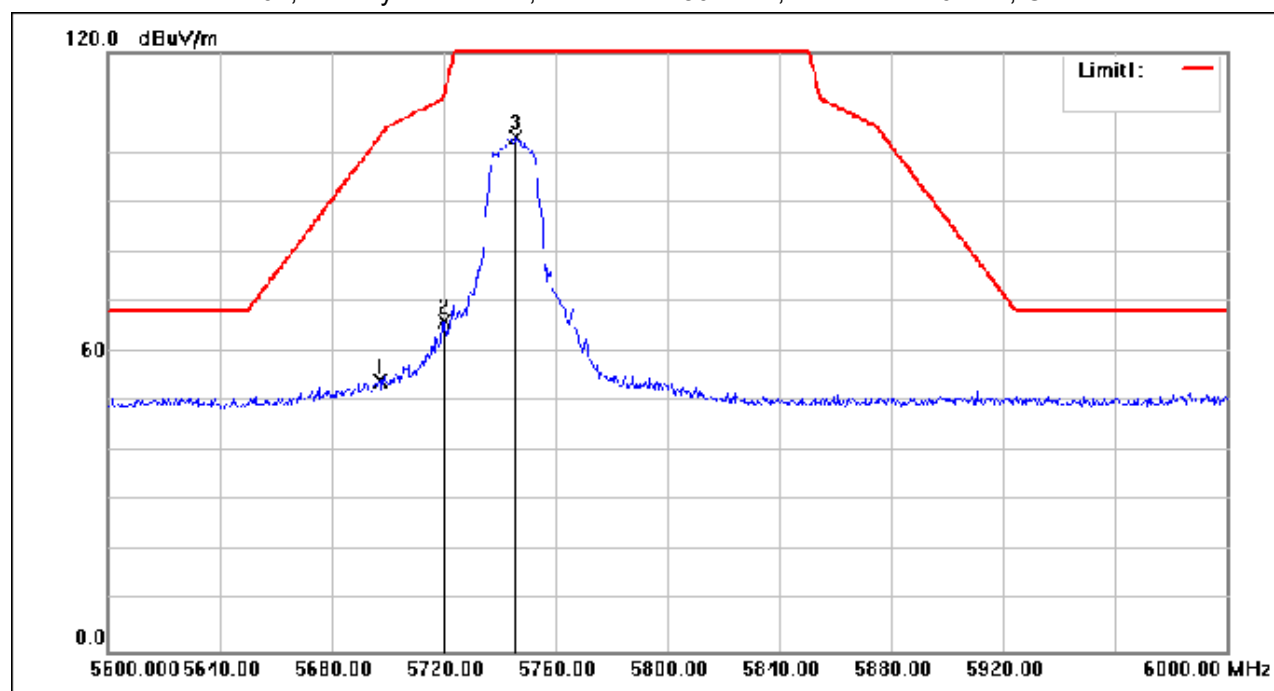
Compliance Certification Services (Kunshan) Inc.

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



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5697.200	70.73	-16.56	54.17	103.13	-48.96	peak
2	5720.200	82.70	-16.53	66.17	111.26	-45.09	peak
3	5745.600	119.40	-16.48	102.92	135.00	-32.08	peak

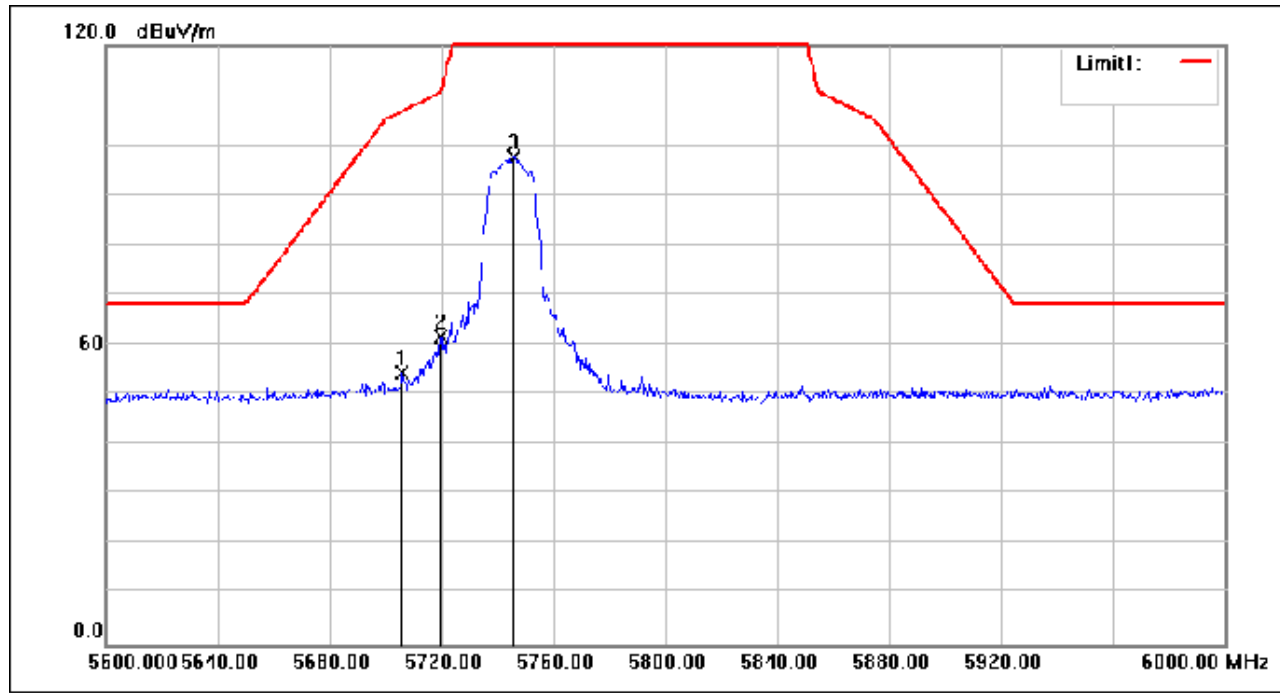
Compliance Certification Services (Kunshan) Inc.

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



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5706.200	70.86	-16.55	54.31	106.94	-52.63	peak
2	5719.800	78.24	-16.53	61.71	110.74	-49.03	peak
3	5745.800	114.15	-16.48	97.67	135.00	-37.33	peak

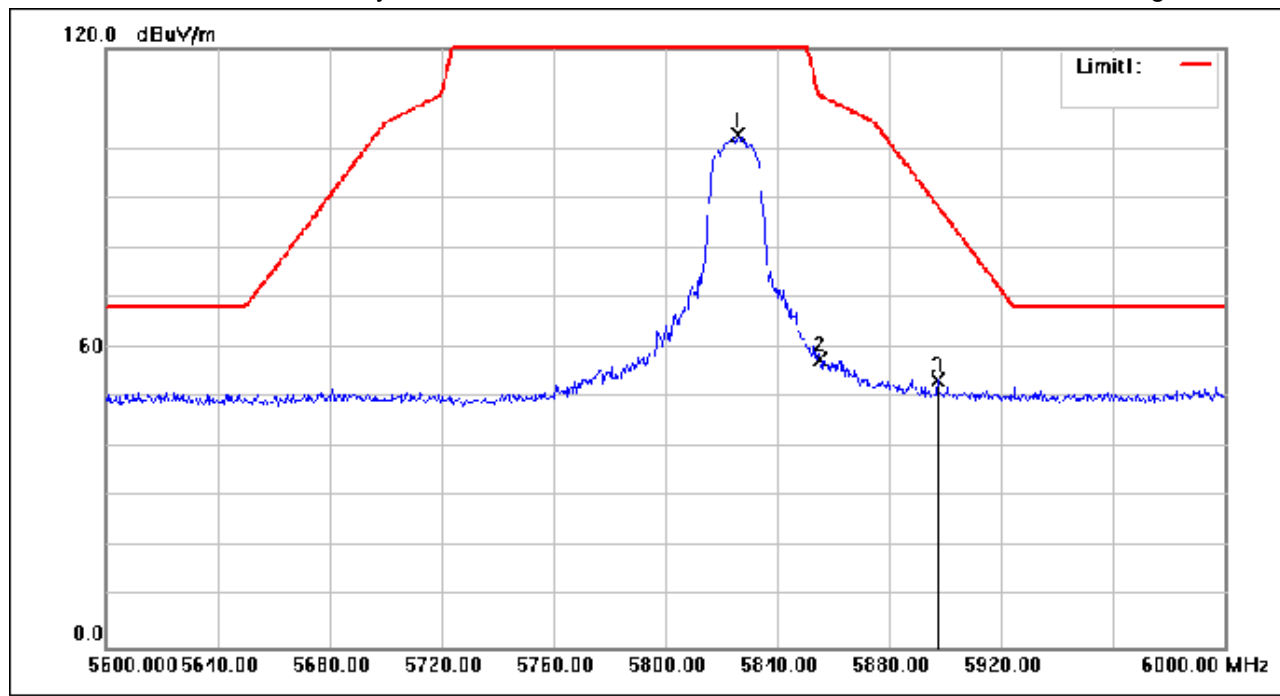
Compliance Certification Services (Kunshan) Inc.

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



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5826.200	119.08	-16.31	102.77	135.00	-32.23	peak
2	5855.200	74.13	-16.24	57.89	110.74	-52.85	peak
3	5897.400	69.66	-16.06	53.60	88.62	-35.02	peak

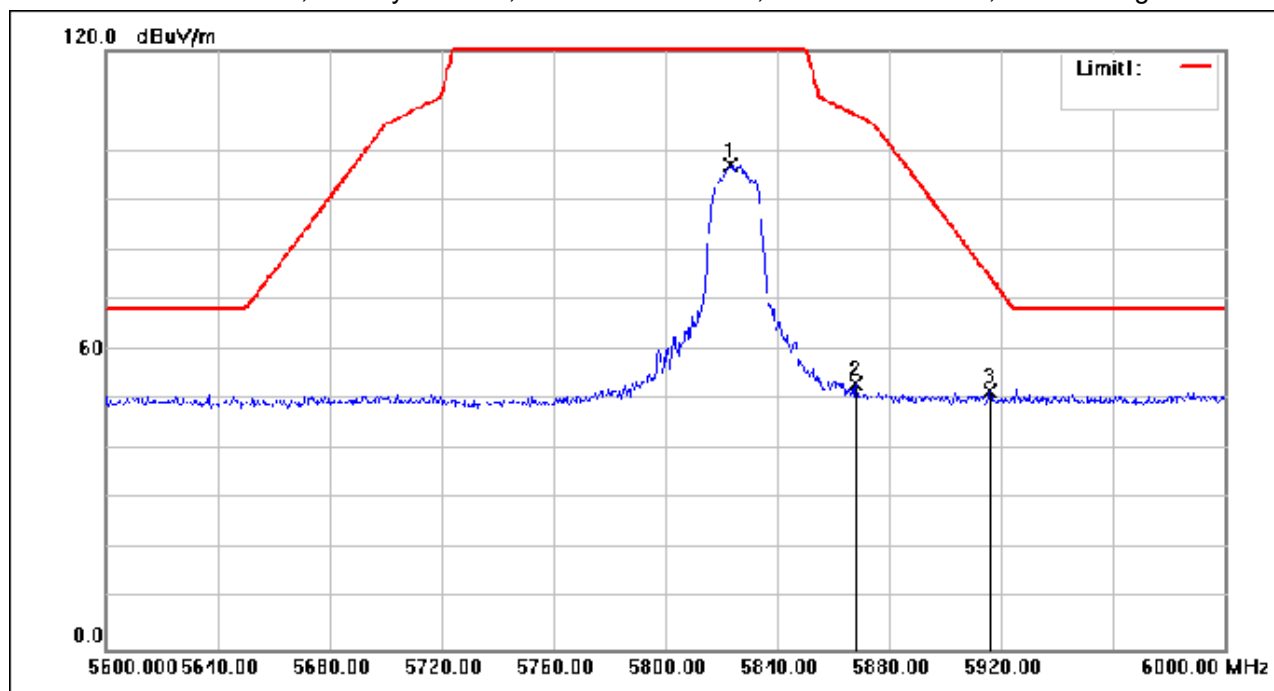
Compliance Certification Services (Kunshan) Inc.

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



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5823.400	113.33	-16.31	97.02	135.00	-37.98	peak
2	5868.000	69.41	-16.18	53.23	107.16	-53.93	peak
3	5916.200	67.62	-15.99	51.63	74.71	-23.08	peak

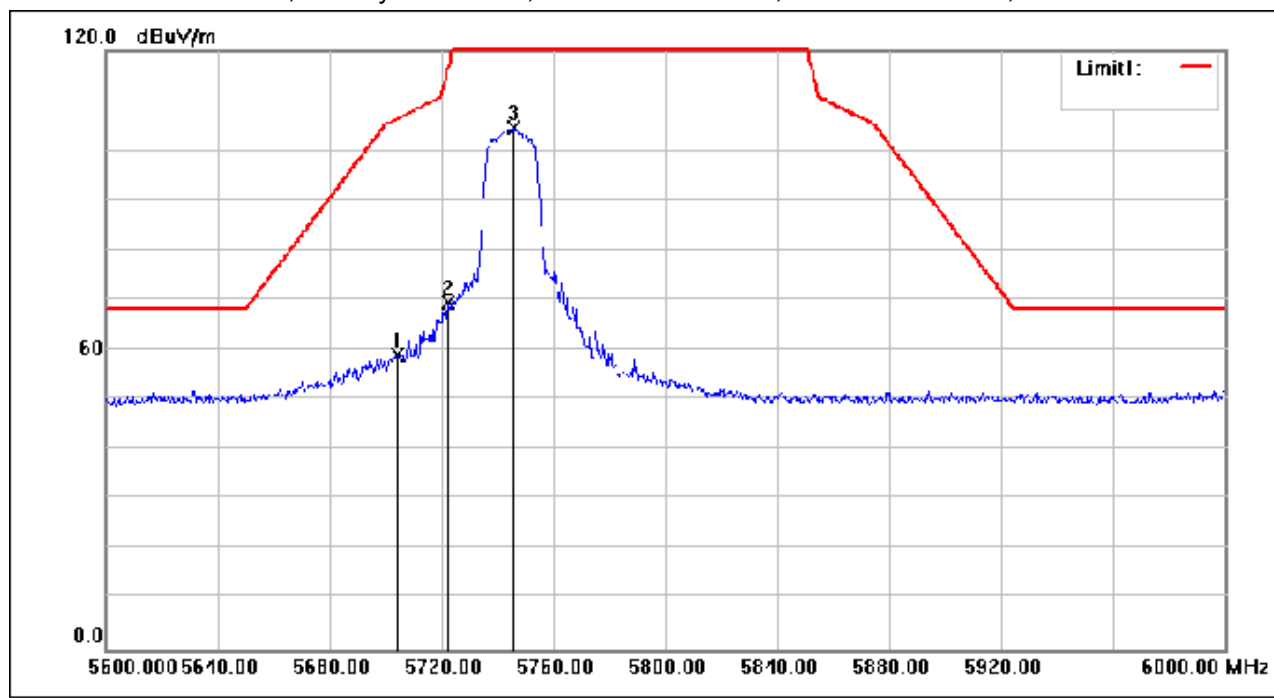
Compliance Certification Services (Kunshan) Inc.

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



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5704.200	75.65	-16.55	59.10	106.38	-47.28	peak
2	5722.400	86.06	-16.53	69.53	116.27	-46.74	peak
3	5746.200	121.07	-16.48	104.59	135.00	-30.41	peak

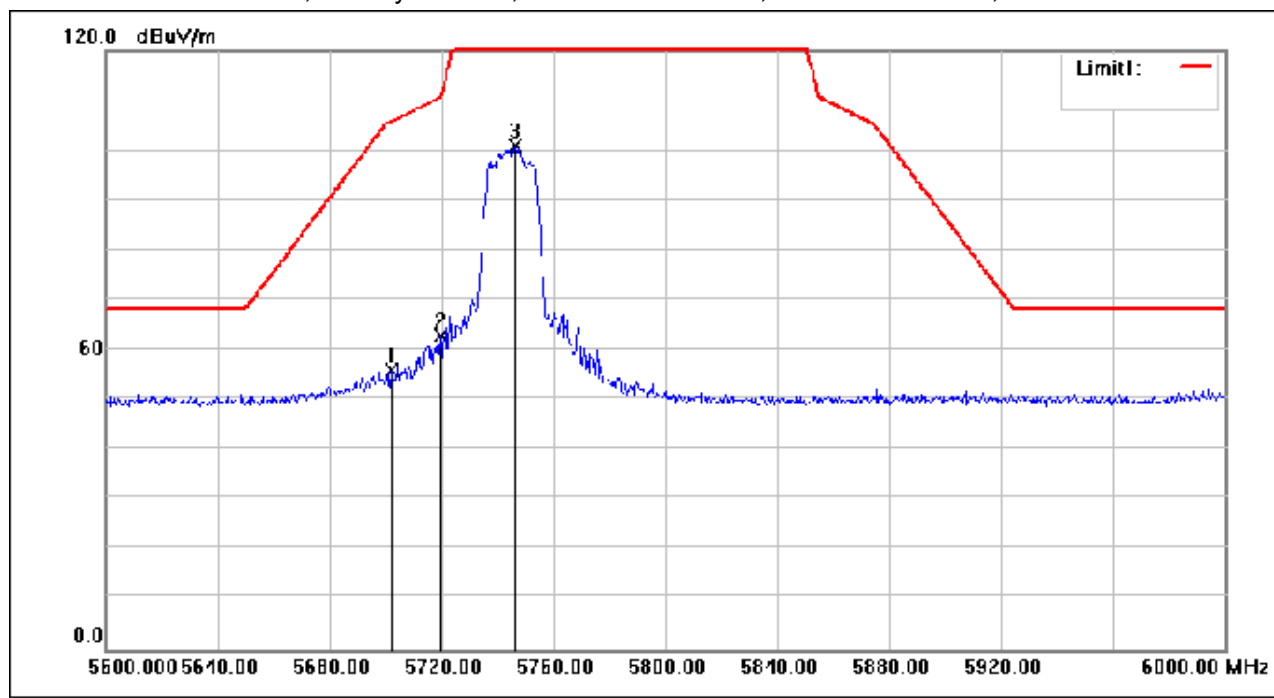
Compliance Certification Services (Kunshan) Inc.

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



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5702.000	72.42	-16.56	55.86	105.76	-49.90	peak
2	5719.600	79.28	-16.53	62.75	110.69	-47.94	peak
3	5746.400	117.39	-16.48	100.91	135.00	-34.09	peak

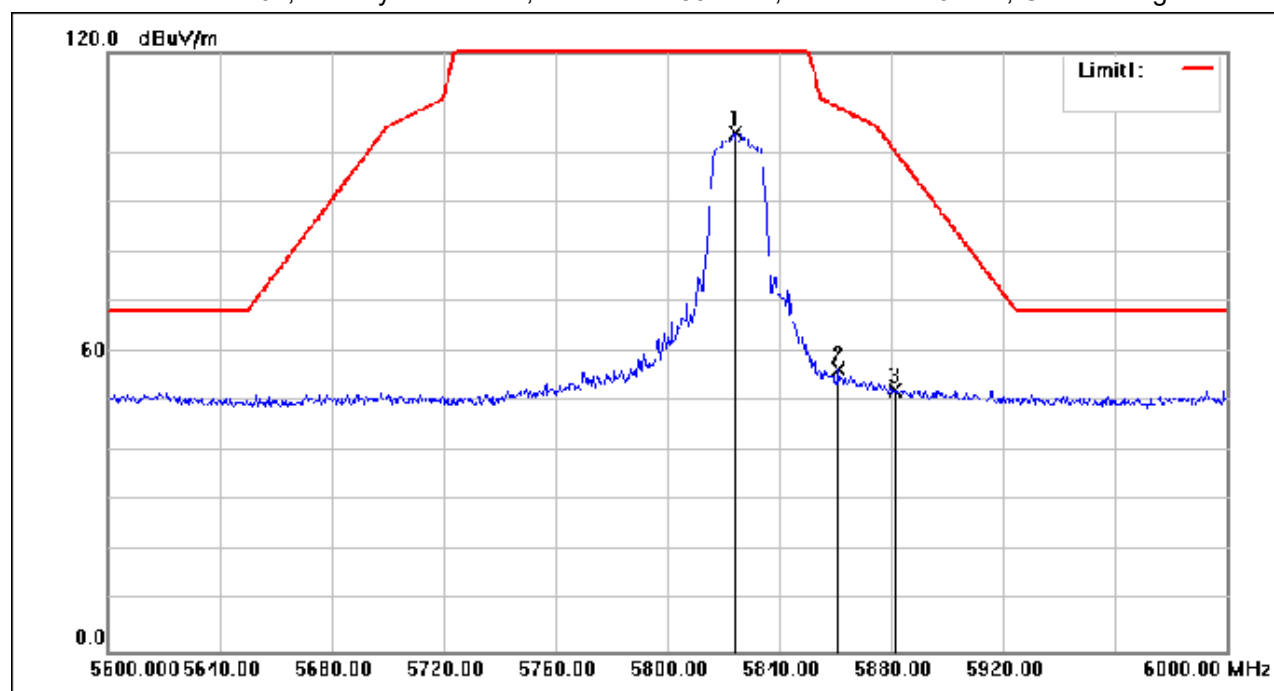
Compliance Certification Services (Kunshan) Inc.

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



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5824.000	120.25	-16.31	103.94	135.00	-31.06	peak
2	5861.400	72.87	-16.21	56.66	109.01	-52.35	peak
3	5881.200	68.57	-16.14	52.43	100.61	-48.18	peak

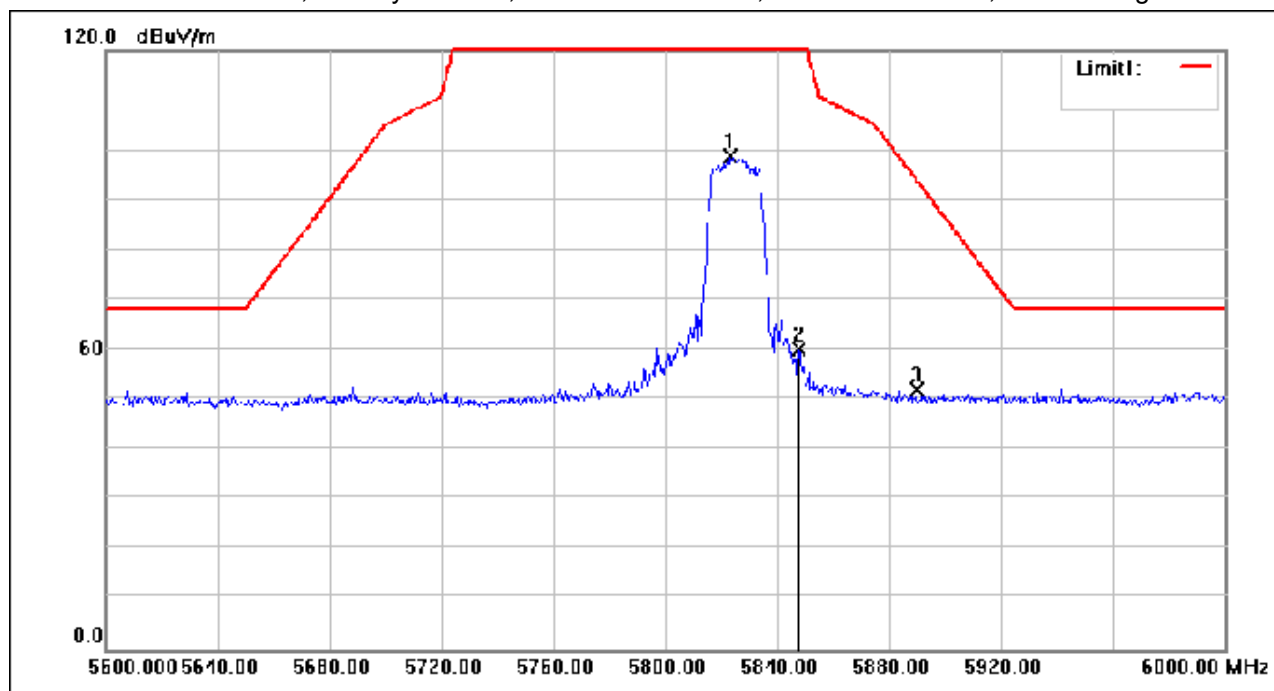
Compliance Certification Services (Kunshan) Inc.

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



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5823.400	115.04	-16.31	98.73	135.00	-36.27	peak
2	5847.800	76.42	-16.26	60.16	135.00	-74.84	peak
3	5889.600	68.12	-16.09	52.03	94.40	-42.37	peak

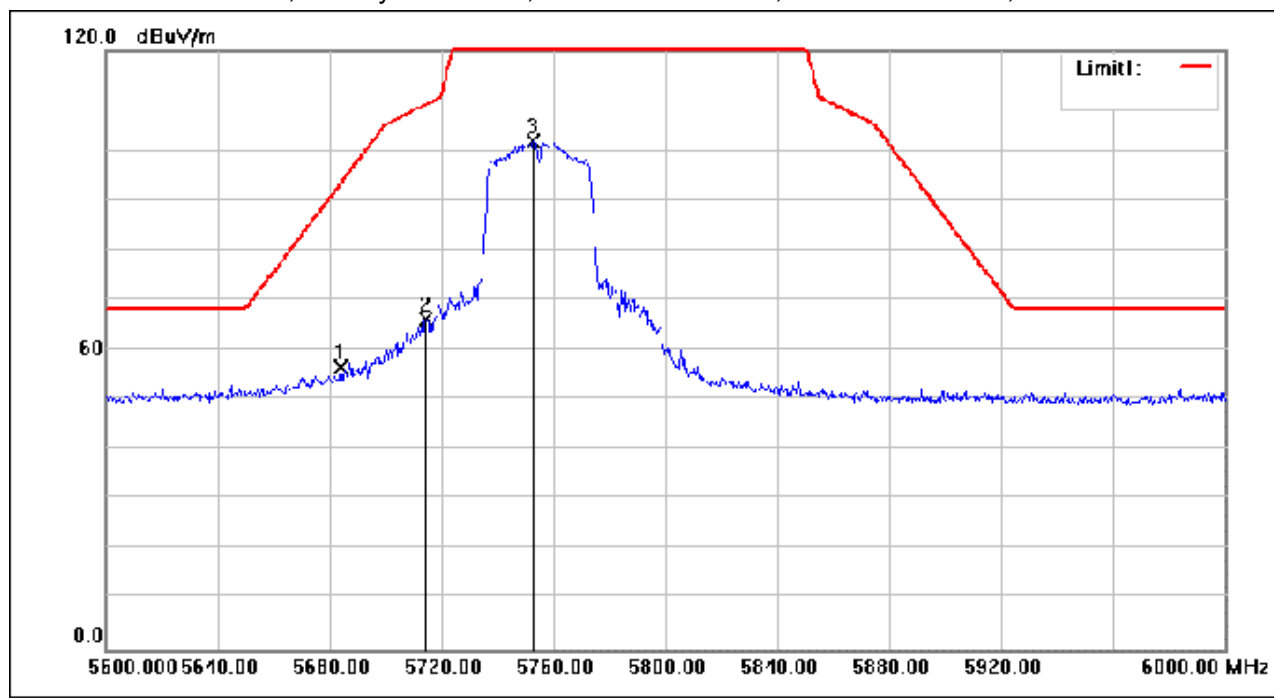
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 02; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5684.200	73.07	-16.58	56.49	93.51	-37.02	peak
2	5714.600	82.65	-16.54	66.11	109.29	-43.18	peak
3	5752.800	118.23	-16.47	101.76	135.00	-33.24	peak

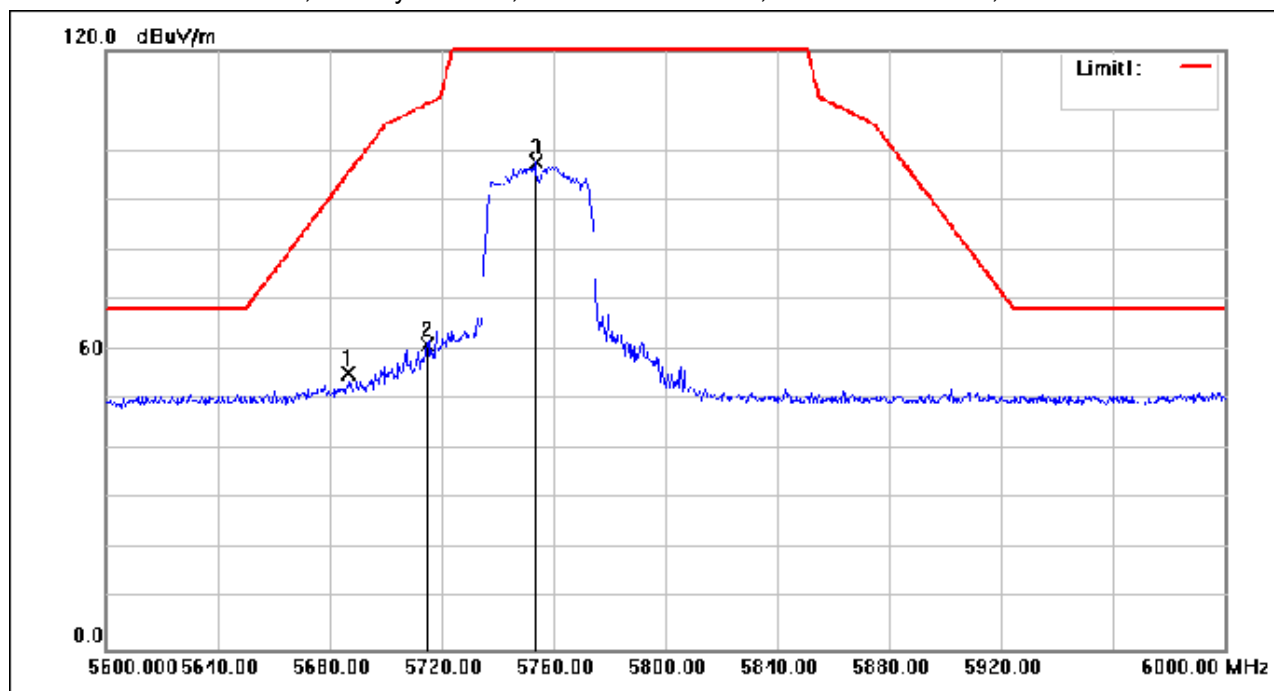
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 02; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5687.000	71.91	-16.58	55.33	95.58	-40.25	peak
2	5715.000	77.50	-16.54	60.96	109.40	-48.44	peak
3	5753.600	114.00	-16.47	97.53	135.00	-37.47	peak

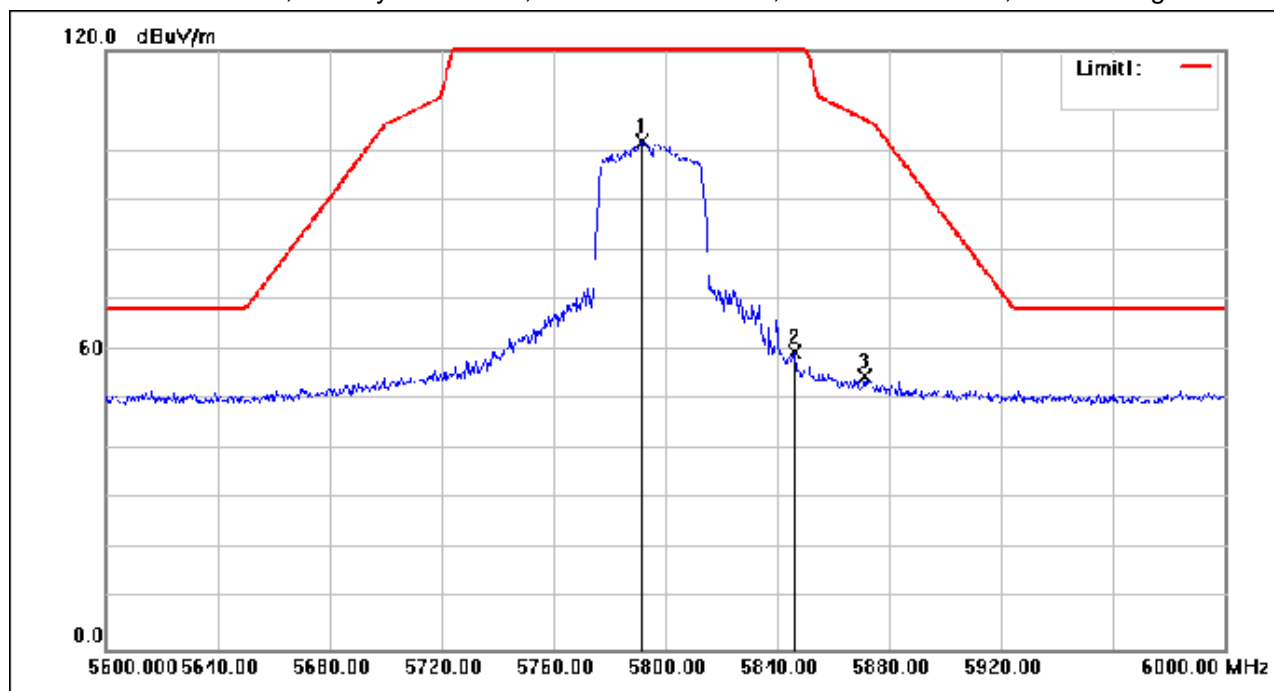
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Test Mode: 02; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5791.600	118.16	-16.39	101.77	135.00	-33.23	peak
2	5846.000	75.95	-16.26	59.69	135.00	-75.31	peak
3	5871.200	70.92	-16.17	54.75	106.26	-51.51	peak

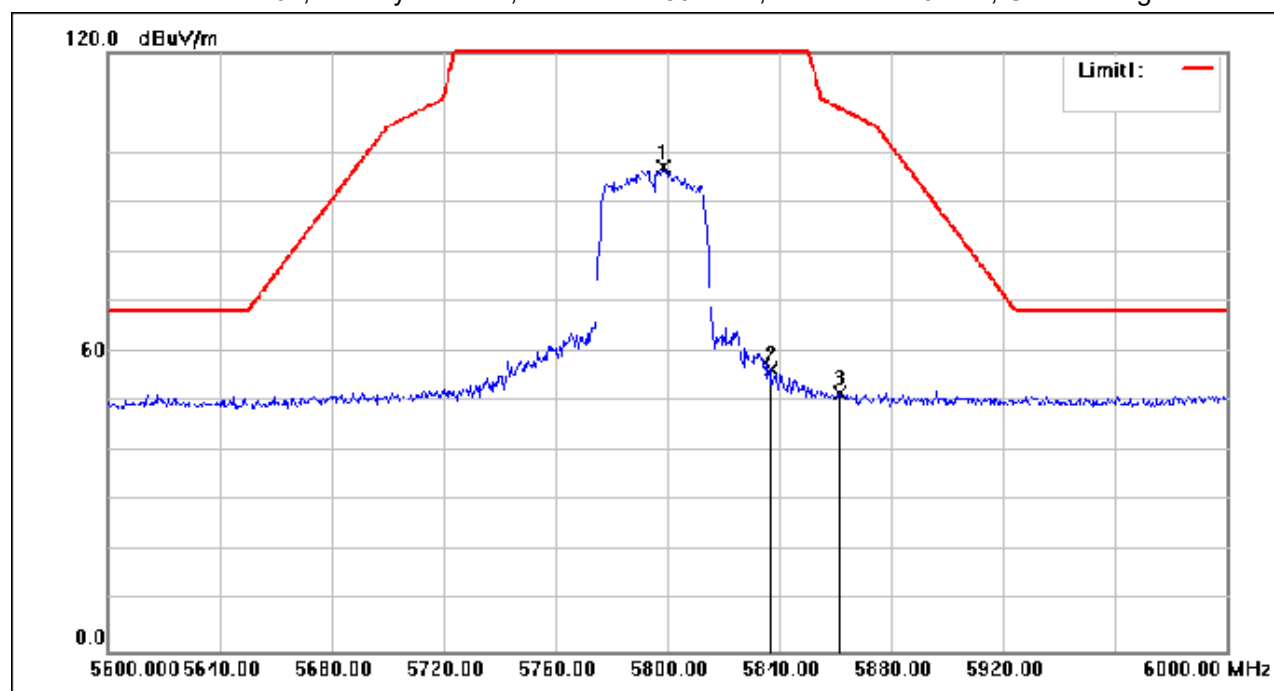
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Test Mode: 02; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5798.400	113.39	-16.37	97.02	135.00	-37.98	peak
2	5836.800	72.73	-16.29	56.44	135.00	-78.56	peak
3	5861.600	68.08	-16.21	51.87	108.95	-57.08	peak

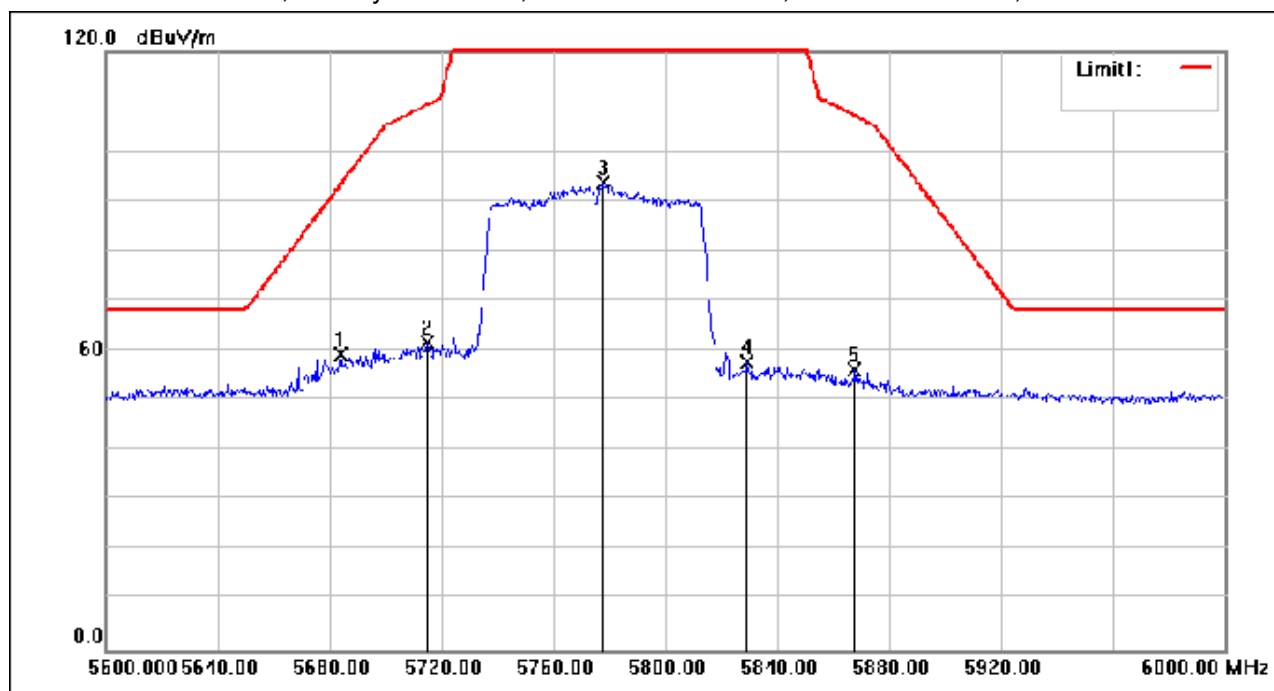
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Test Mode: 02; Polarity: Horizontal; Modulation: 802.11ac; Bandwidth: 80MHz; Channel: Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5684.200	75.81	-16.58	59.23	93.51	-34.28	peak
2	5714.800	78.33	-16.54	61.79	109.34	-47.55	peak
3	5777.800	110.04	-16.41	93.63	135.00	-41.37	peak
4	5829.400	73.99	-16.31	57.68	135.00	-77.32	peak
5	5867.600	72.44	-16.18	56.26	107.27	-51.01	peak

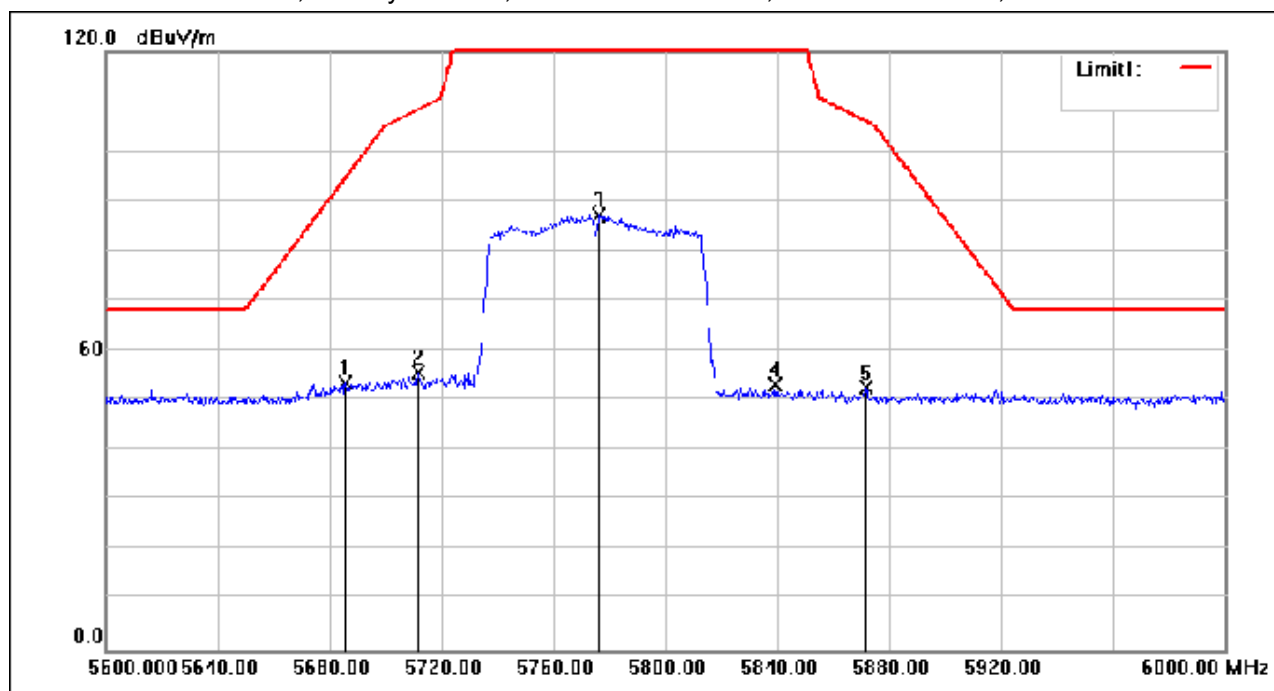
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Test Mode: 02; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5685.600	70.23	-16.58	53.65	94.54	-40.89	peak
2	5711.800	72.05	-16.54	55.51	108.50	-52.99	peak
3	5776.600	103.51	-16.42	87.09	135.00	-47.91	peak
4	5839.400	69.56	-16.28	53.28	135.00	-81.72	peak
5	5871.800	68.86	-16.17	52.69	106.10	-53.41	peak

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7.5 Duty Cycle

Test Requirement KDB 789033 D02 II B 1

Test Method: KDB 789033 II B 1

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C

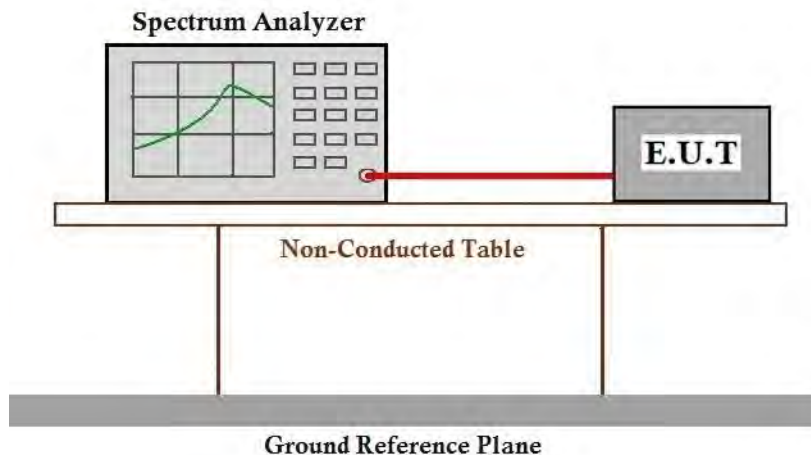
Humidity: 52 % RH

Atmospheric Pressure: 1010 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode (U-NII-1)_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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	02	TX mode (U-NII-3) _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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

Please Refer to Appendix for Details

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7.6 99% Bandwidth

Test Requirement N/A
Test Method: KDB 789033 II D

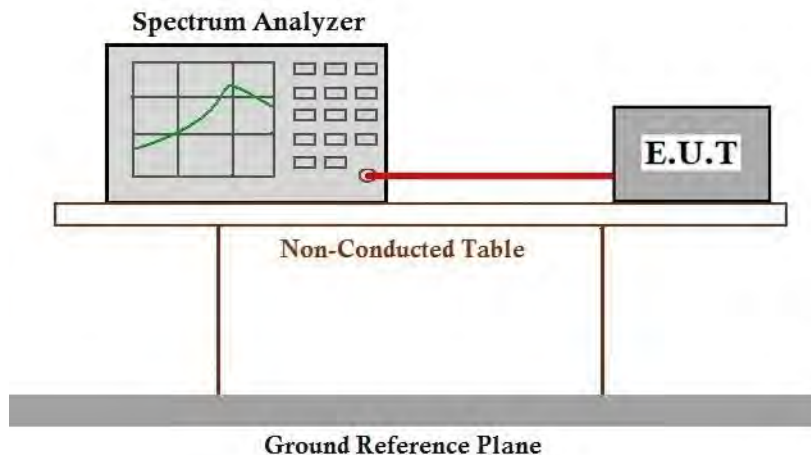
7.6.1 E.U.T. Operation

Operating Environment:
Temperature: 24 °C Humidity: 52 % RH Atmospheric Pressure: 1010 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode (U-NII-1)_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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	02	TX mode (U-NII-3) _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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, 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

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7.7 26dB Emission bandwidth

Test Requirement 47 CFR Part 15, Subpart E 15.407 (a)

Test Method: KDB 789033 D02 II C 1

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C

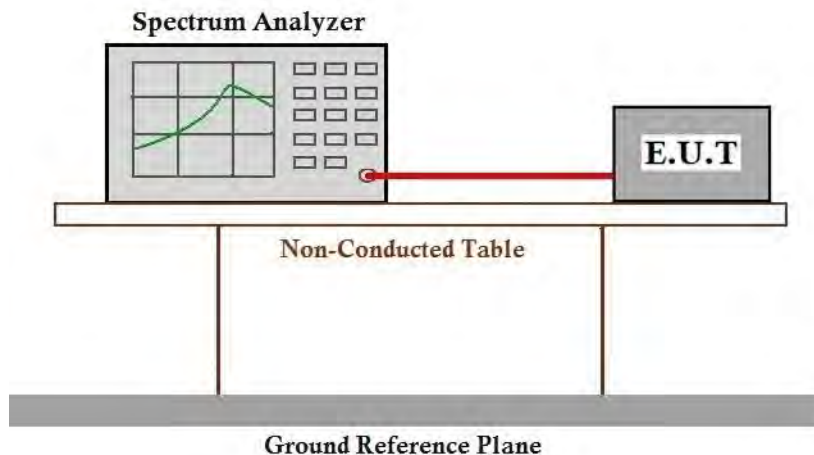
Humidity: 52 % RH

Atmospheric Pressure: 1010 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode (U-NII-1)_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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	02	TX mode (U-NII-3) _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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, 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

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7.8 Minimum 6 dB bandwidth (5.725-5.85 GHz band)

Test Requirement 47 CFR Part 15, Subpart E 15.407 (e)

Test Method: KDB 789033 D02 II C 2

Limit:

Frequency band(MHz)	Limit
5725-5850	≥500 kHz

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C

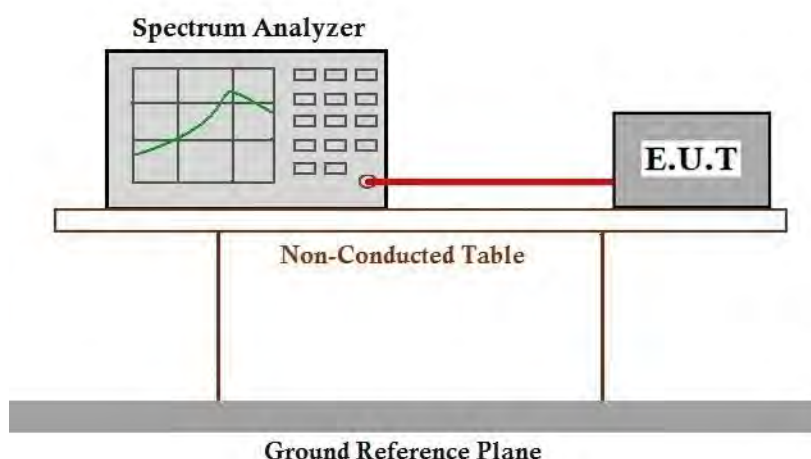
Humidity: 52 % RH

Atmospheric Pressure: 1010 mbar

7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode (U-NII-3) _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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

7.8.3 Test Setup Diagram



7.8.4 Measurement Procedure and Data

Please Refer to Appendix for Details

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7.9 Peak Power spectrum density

Test Requirement 47 CFR Part 15, Subpart E 15.407 (a)

Test Method: KDB 789033 D02 II F

Limit:

Frequency band(MHz)	Limit
5150-5250	≤17dBm in 1MHz for master device
	≤11dBm in 1MHz for client device
5250-5350	≤11dBm in 1MHz for client device
5470-5725	≤11dBm in 1MHz for client device
5725-5850	≤30dBm in 500 kHz
Remark:	The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test.

7.9.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C

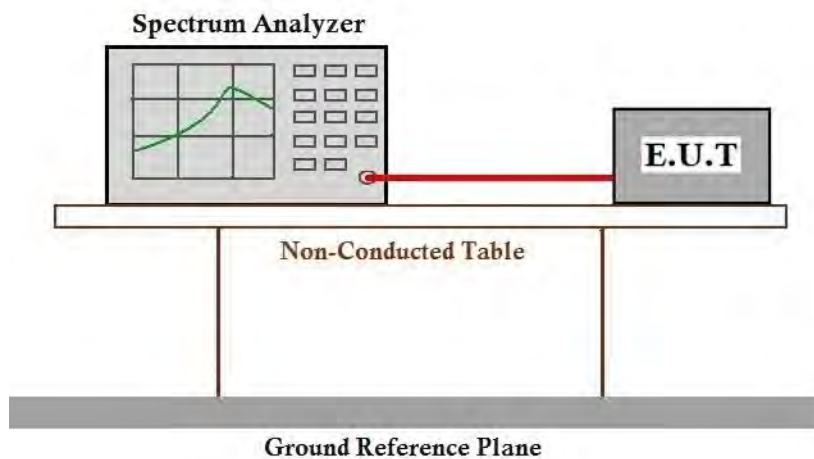
Humidity: 52 % RH

Atmospheric Pressure: 1010 mbar

7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode (U-NII-1)_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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	02	TX mode (U-NII-3) _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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, 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

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7.10 Frequency Stability

Test Requirement 47 CFR Part 15, Subpart E 15.407 (g)

Test Method: ANSI C63.10 (2013) Section 6.8

7.10.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C

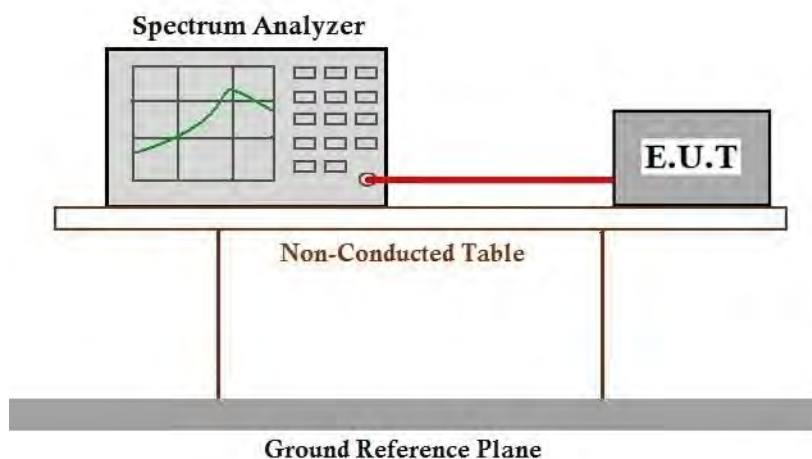
Humidity: 52 % RH

Atmospheric Pressure: 1010 mbar

7.10.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode (U-NII-1)_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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	02	TX mode (U-NII-3) _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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

7.10.3 Test Setup Diagram



7.10.4 Measurement Procedure and Data

Please Refer to Appendix for Details



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8 Test Setup Photo

Refer to Appendix - Test Setup Photo for KSCR2404000738AU

9 EUT Constructional Details (EUT Photos)

Refer to Appendix - Photographs of EUT Constructional Details for KSCR2404000738AU

10 Appendix

1. Duty Cycle

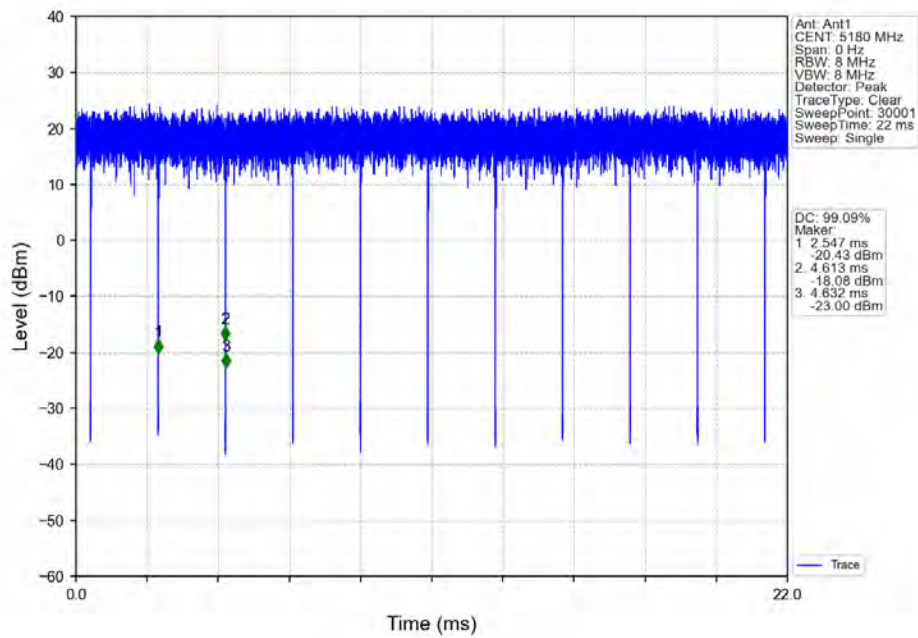
1.1 Ant1

1.1.1 Test Result

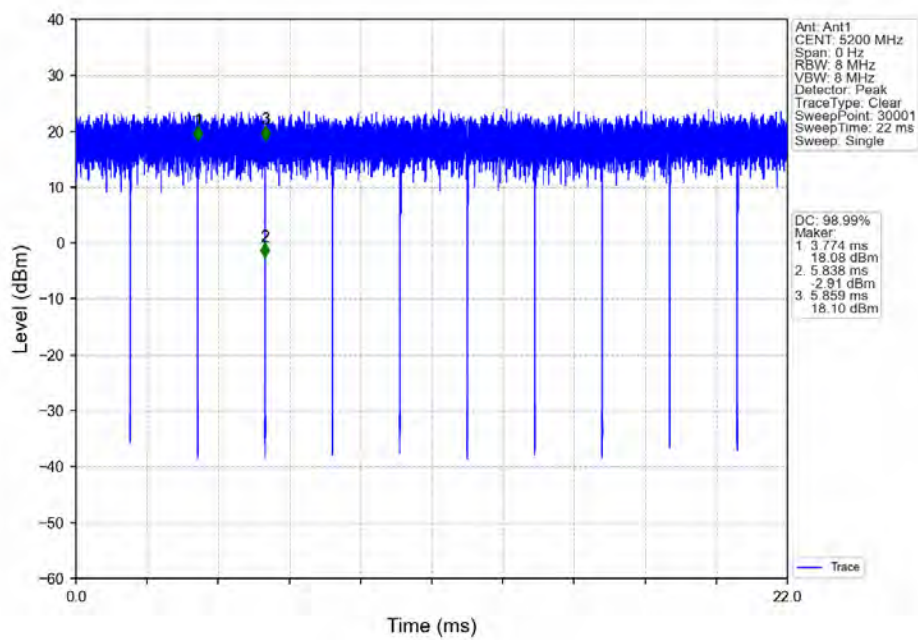
Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11a	SISO	5180	2.066	2.085	99.09	0.04	0.04
		5200	2.064	2.085	98.99	0.04	0.04
		5240	2.064	2.085	98.99	0.04	0.07
		5745	2.065	2.085	99.04	0.04	0.04
		5785	2.065	2.085	99.04	0.04	0.07
		5825	2.064	2.085	98.99	0.04	0.03
802.11n (HT20)	MIMO	5180	0.987	1.005	98.21	0.08	0.03
		5200	0.985	1.005	98.01	0.09	0.00
		5240	0.984	1.005	97.91	0.09	0.07
		5745	0.985	1.005	98.01	0.09	0.00
		5785	0.984	1.005	97.91	0.09	0.03
		5825	0.984	1.004	98.01	0.09	0.03
802.11n (HT40)	MIMO	5190	0.498	0.517	96.32	0.16	0.10
		5230	0.498	0.517	96.32	0.16	0.10
		5755	0.497	0.517	96.13	0.17	0.13
		5795	0.498	0.517	96.32	0.16	0.13
802.11ac (VHT80)	MIMO	5210	0.258	0.277	93.14	0.31	0.20
		5775	0.258	0.276	93.48	0.29	0.21

1.1.2 Test Graph

802.11a_LCH_5180MHz_Ant1_NTNV



802.11a_MCH_5200MHz_Ant1_NTNV



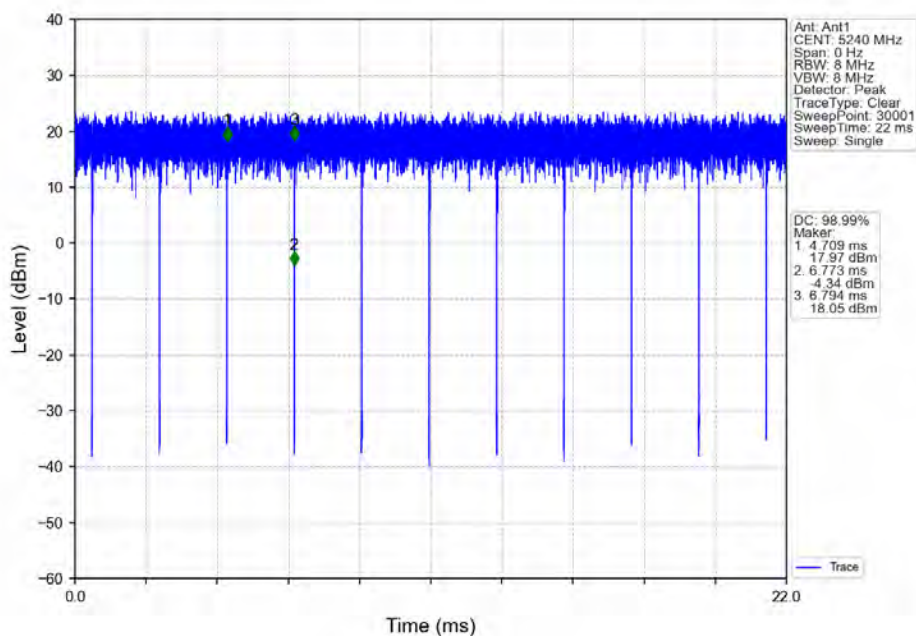
Compliance Certification Services (Kunshan) Inc.

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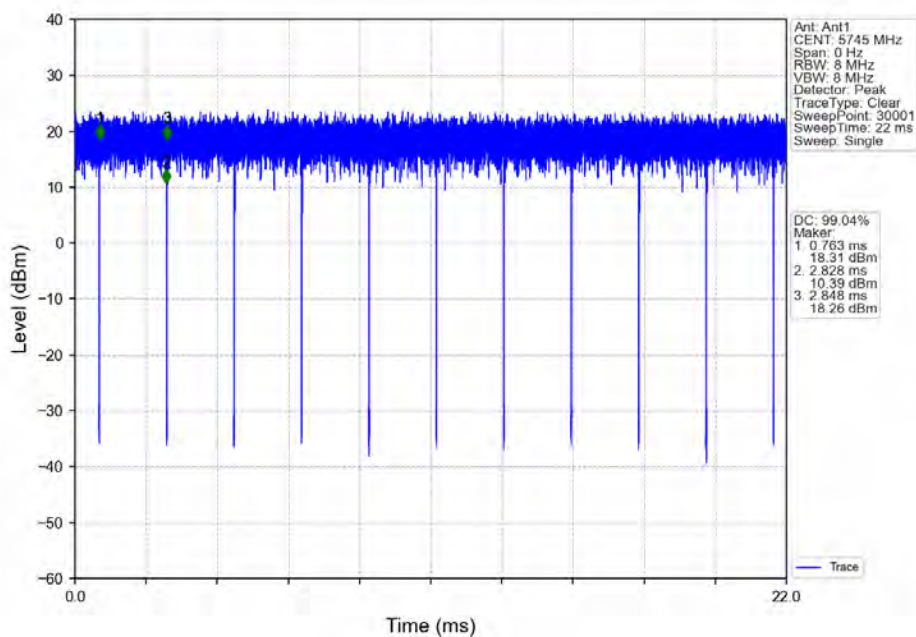
Report No.: KSCR240400073804

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802.11a HCH 5240MHz Ant1 NTN



802.11a_LCH 5745MHz_Ant1_NTNV



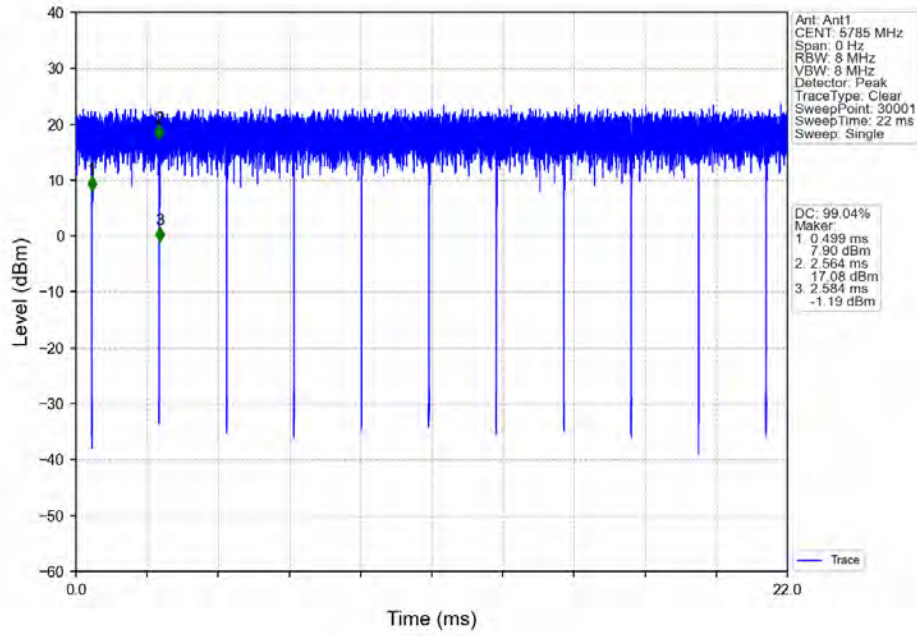
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

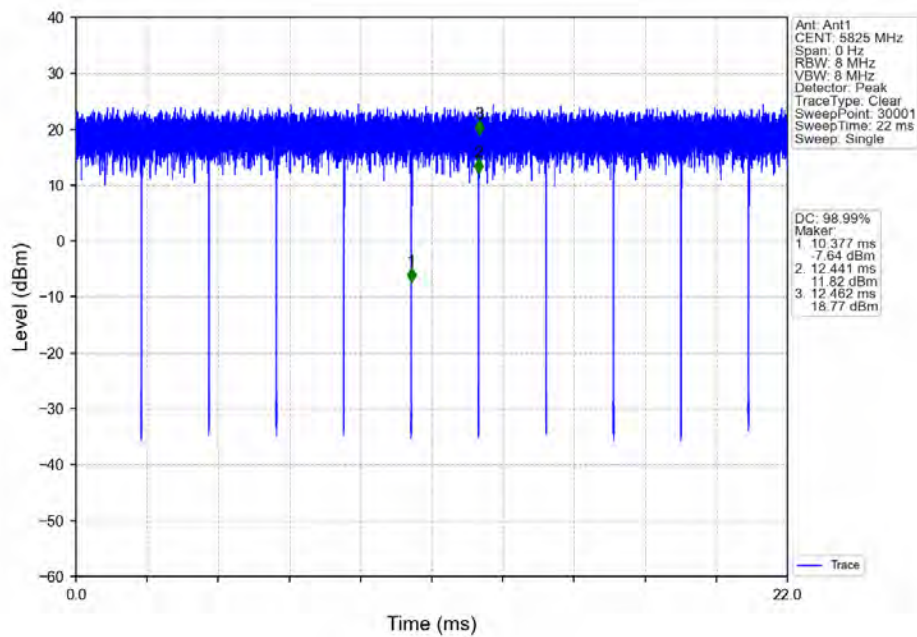
Report No.: KSCR240400073804

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802.11a MCH 5785MHz Ant1 NTN



802.11a HCH 5825MHz Ant1 NTN



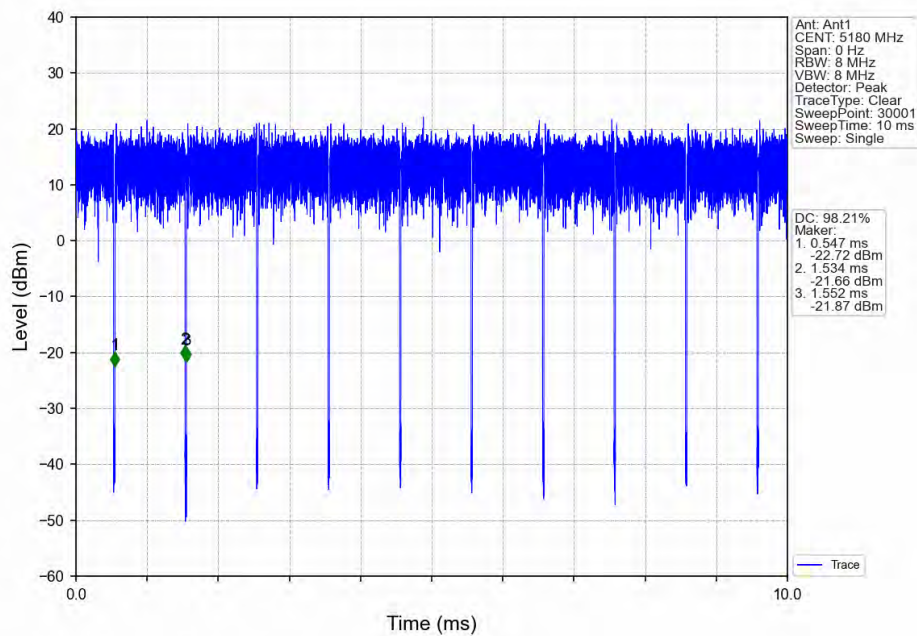
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

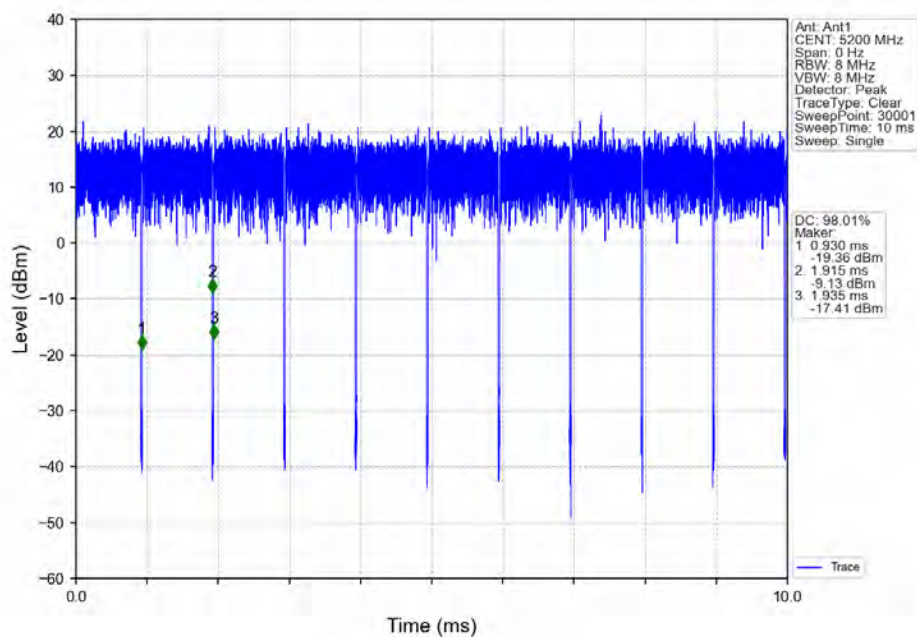
Report No.: KSCR240400073804

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802.11n(HT20) LCH 5180MHz Ant1 NTNV



802.11n(HT20) MCH 5200MHz Ant1 NTNV



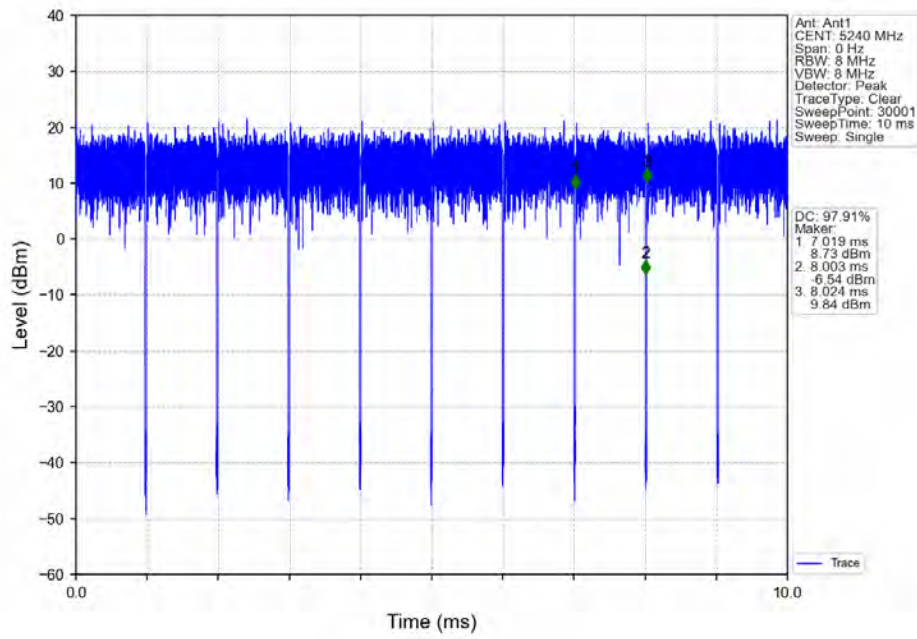
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

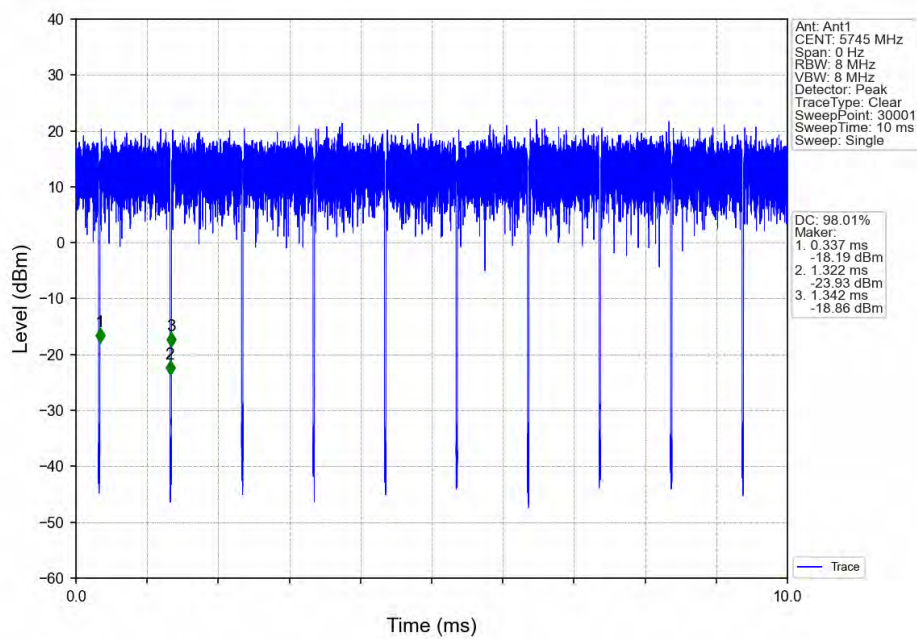
Report No.: KSCR240400073804

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802.11n(HT20) HCH 5240MHz Ant1 NTN



802.11n(HT20) LCH 5745MHz Ant1 NTN



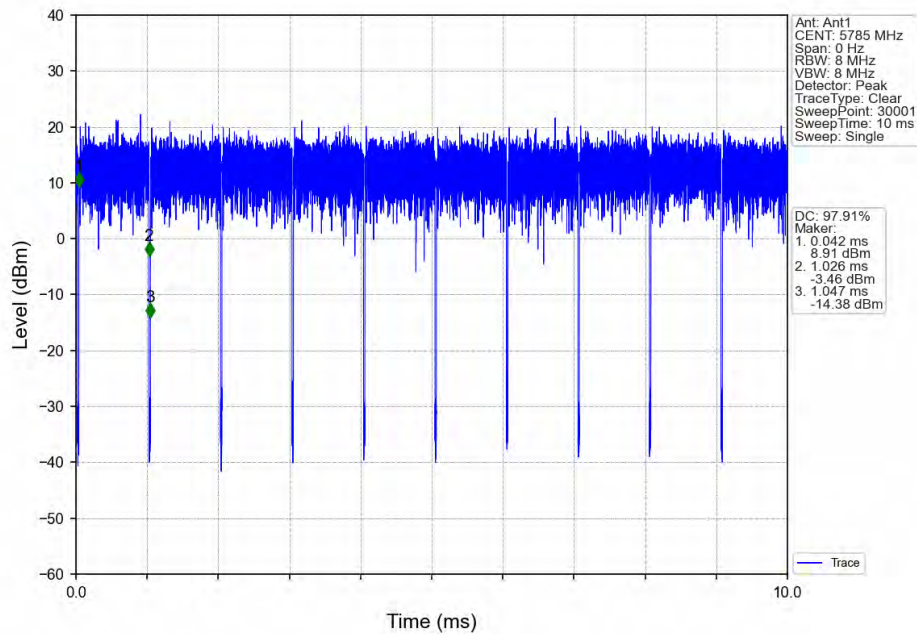
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

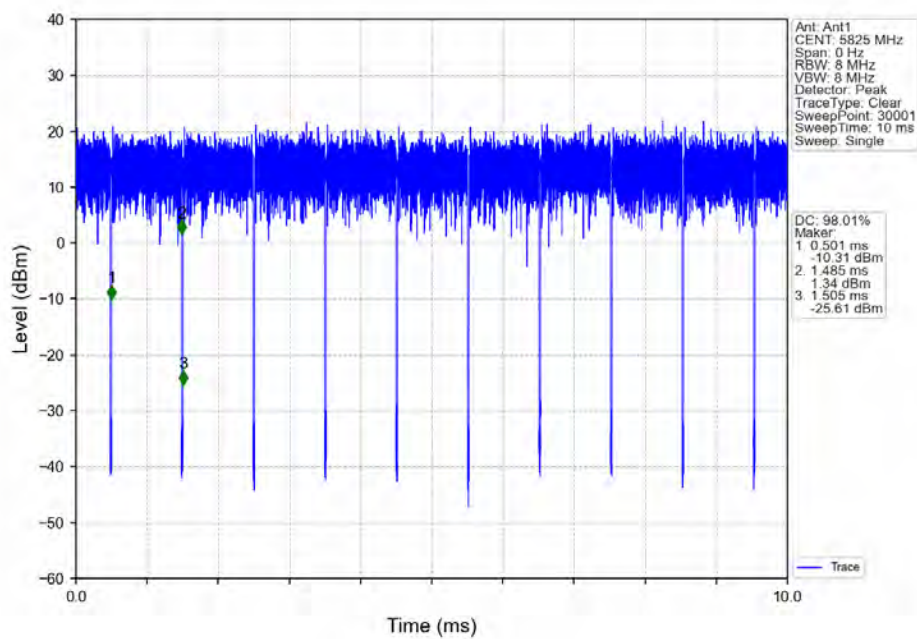
Report No.: KSCR240400073804

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802.11n(HT20) MCH 5785MHz Ant1 NTN



802.11n(HT20) HCH 5825MHz Ant1 NTN



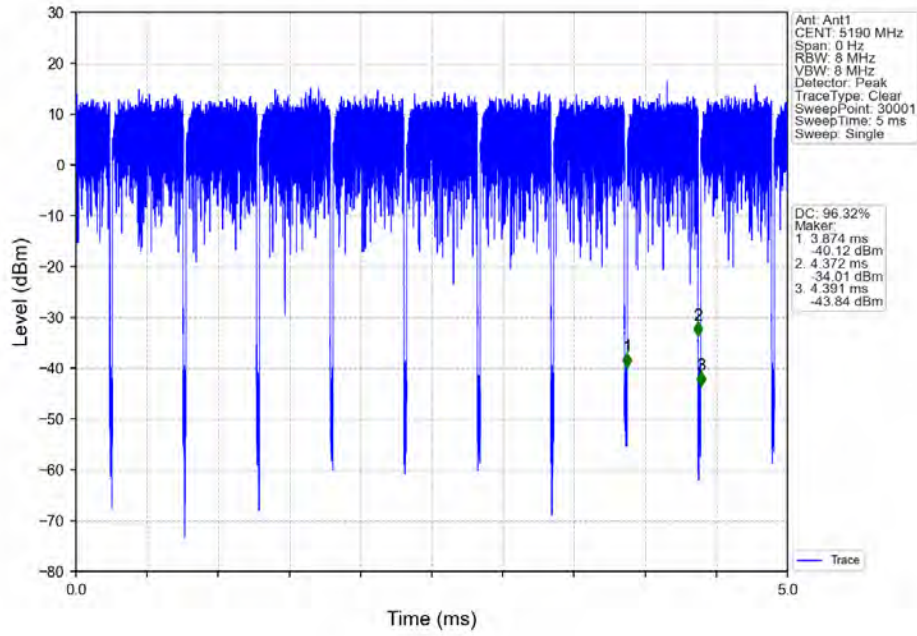
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

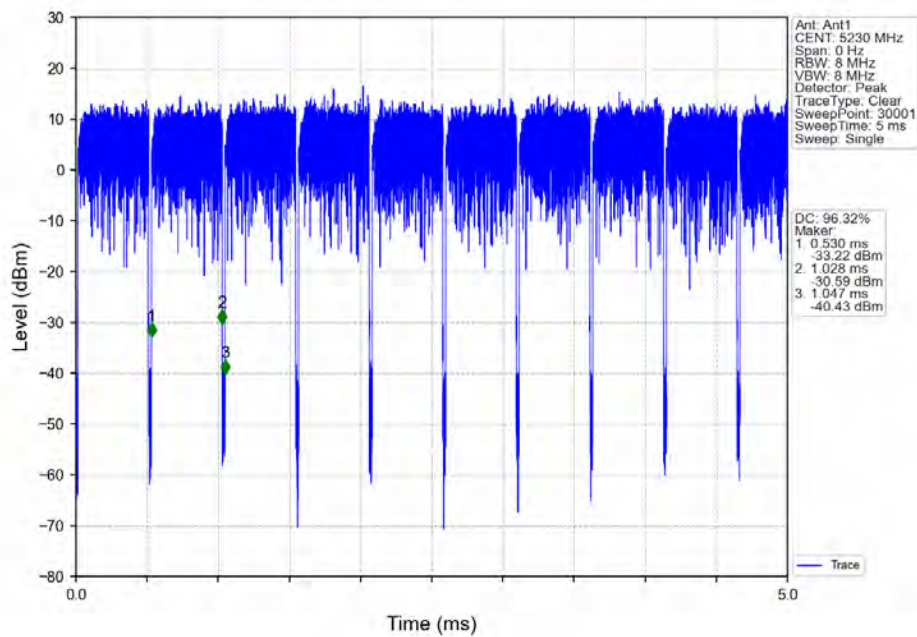
Report No.: KSCR240400073804

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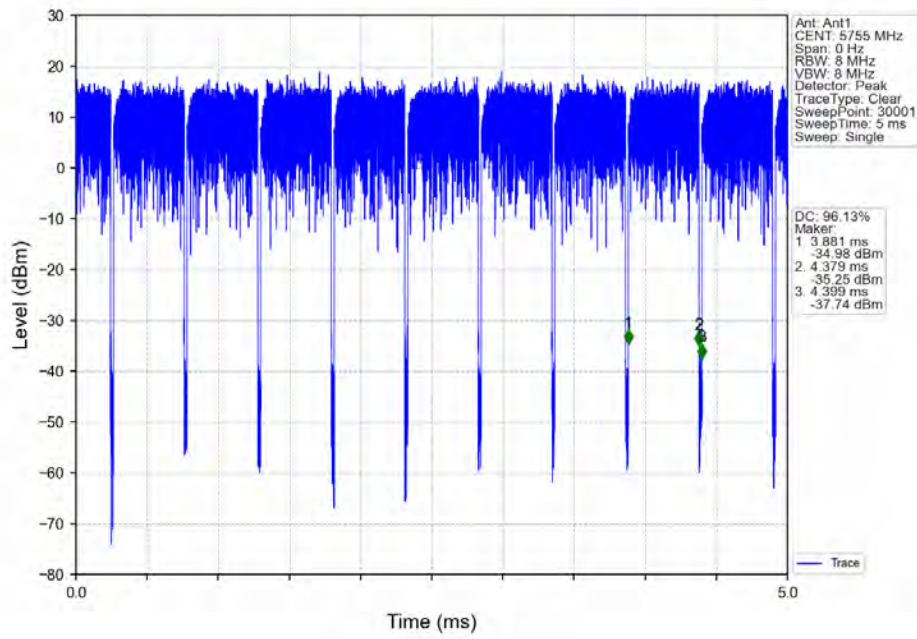
802.11n(HT40) LCH 5190MHz Ant1 NTNV



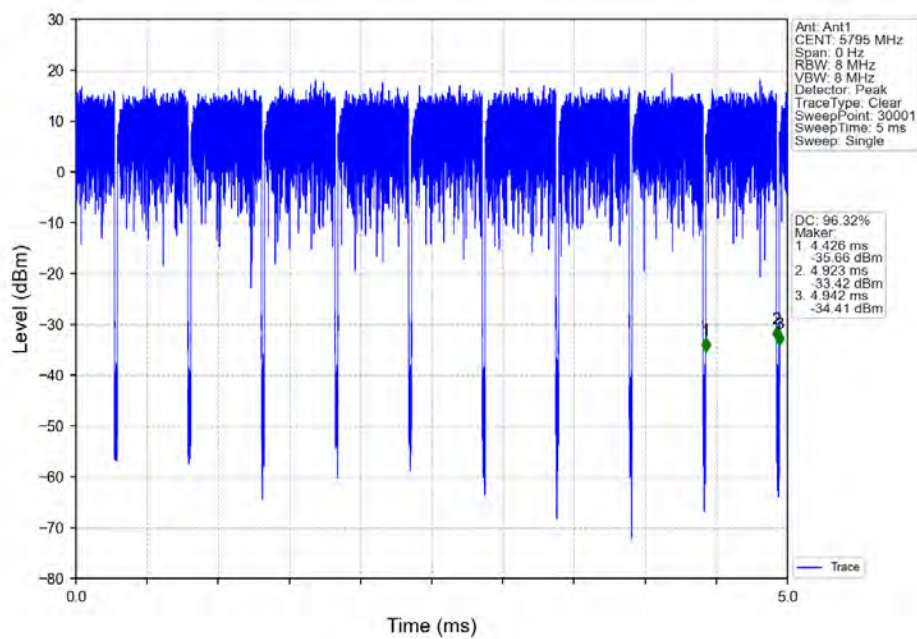
802.11n(HT40) HCH 5230MHz Ant1 NTNV



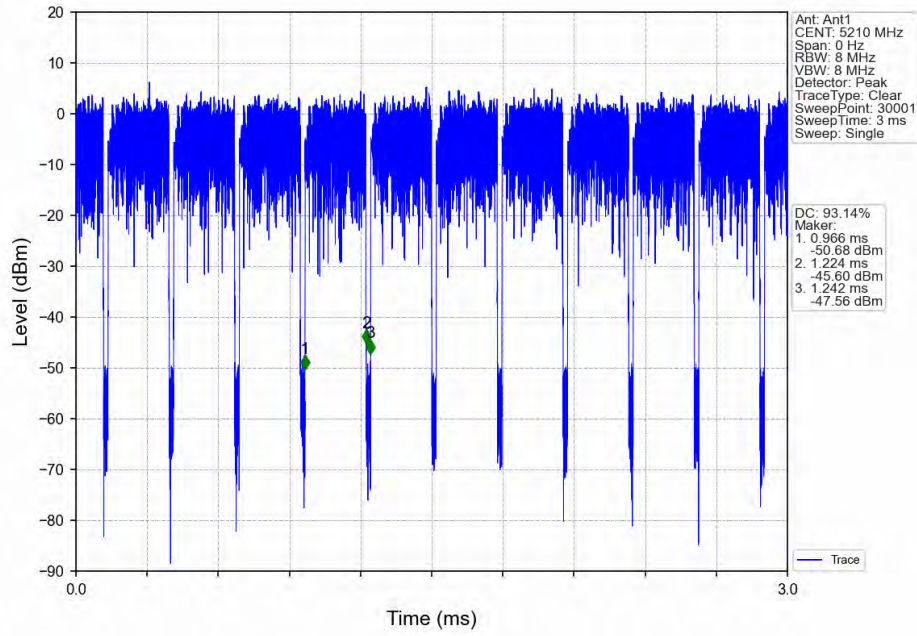
802.11n(HT40) LCH_5755MHz_Ant1_NTNV



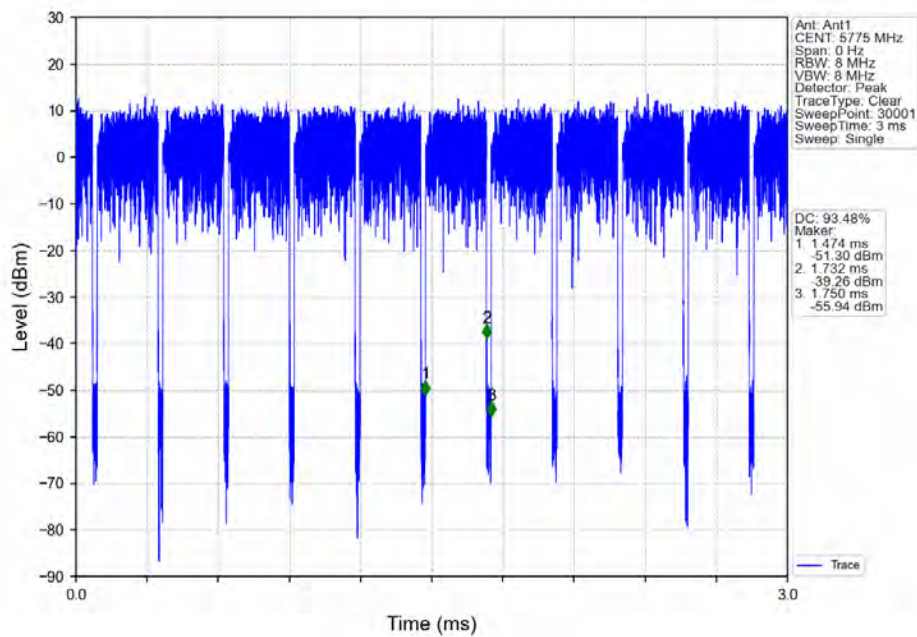
802.11n(HT40) HCH_5795MHz_Ant1_NTNV



802.11ac(VHT80) MCH_5210MHz_Ant1_NTNV



802.11ac(VHT80) MCH_5775MHz_Ant1_NTNV



Compliance Certification Services (Kunshan) Inc.

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2. Bandwidth

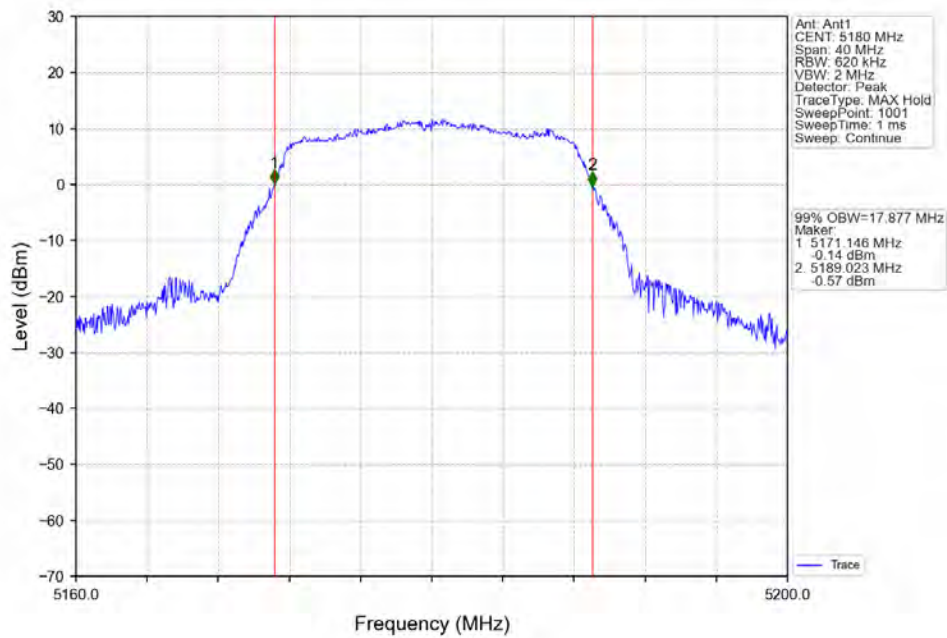
2.1 OBW

2.1.1 Test Result

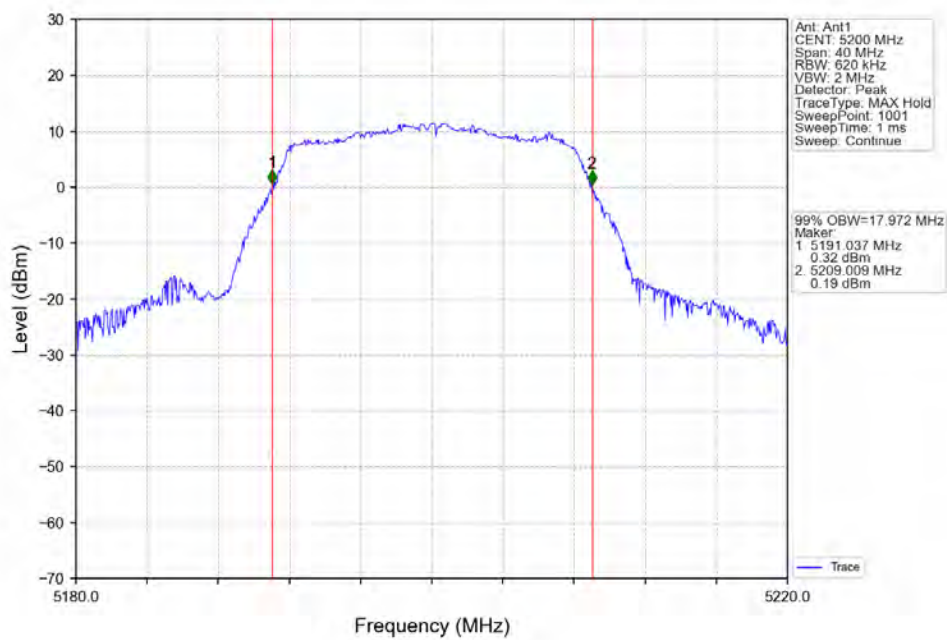
Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
802.11a	SISO	5180	1	17.877	/	Pass
		5200	1	17.972	/	Pass
		5240	1	18.072	/	Pass
		5745	1	18.109	/	Pass
		5785	1	18.078	/	Pass
		5825	1	18.118	/	Pass
802.11n (HT20)	MIMO	5180	1	18.313	/	Pass
		5200	1	18.279	/	Pass
		5240	1	18.294	/	Pass
		5745	1	18.276	/	Pass
		5785	1	18.330	/	Pass
		5825	1	18.278	/	Pass
802.11n (HT40)	MIMO	5190	1	36.321	/	Pass
		5230	1	36.394	/	Pass
		5755	1	36.384	/	Pass
		5795	1	36.556	/	Pass
802.11ac (VHT80)	MIMO	5210	1	75.848	/	Pass
		5775	1	76.096	/	Pass

2.1.2 Test Graph

802.11a_LCH_5180MHz_Ant1_NTNV



802.11a_MCH_5200MHz_Ant1_NTNV



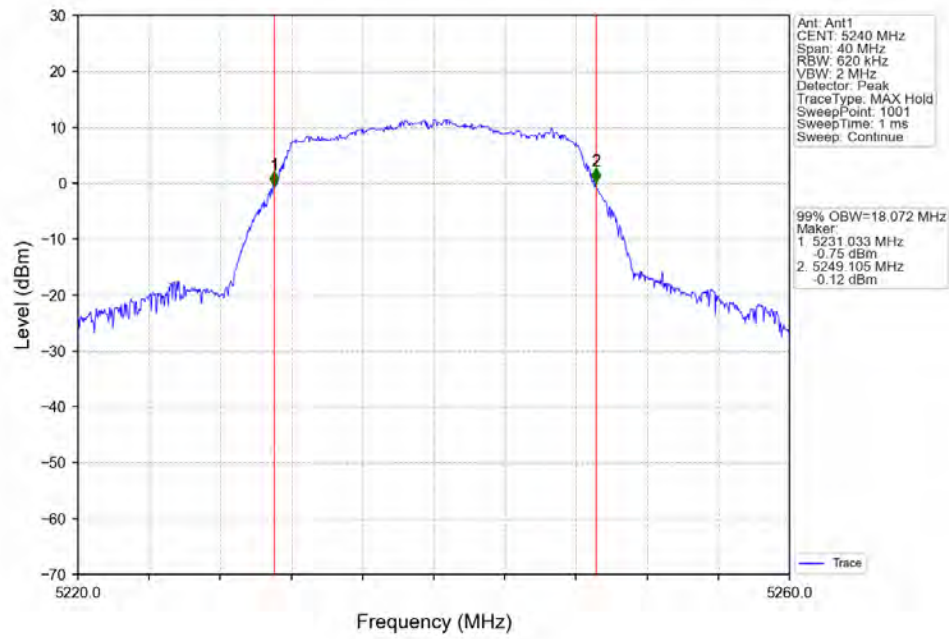
Compliance Certification Services (Kunshan) Inc.

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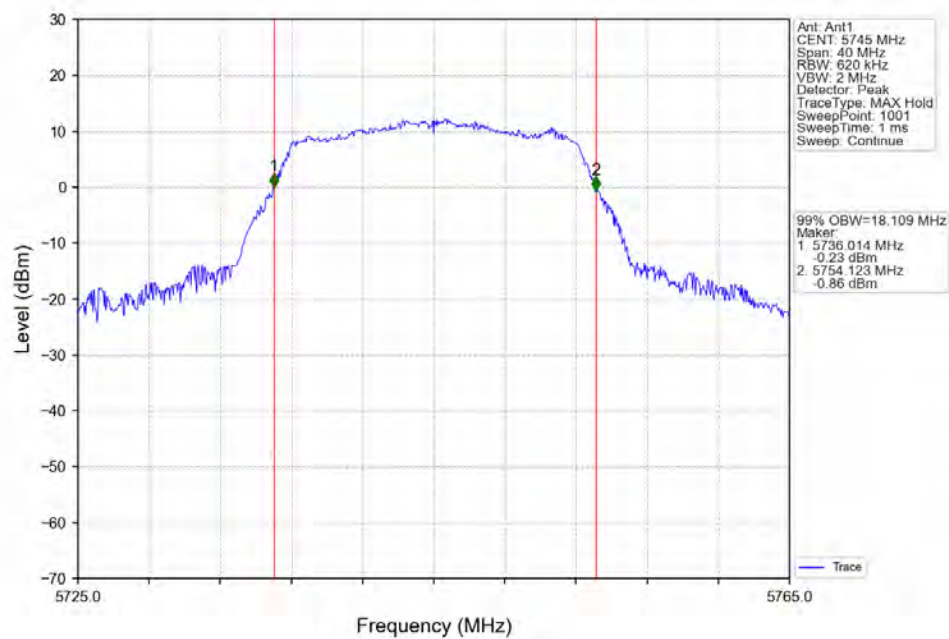
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802.11a HCH 5240MHz Ant1 NTN



802.11a LCH 5745MHz Ant1 NTN



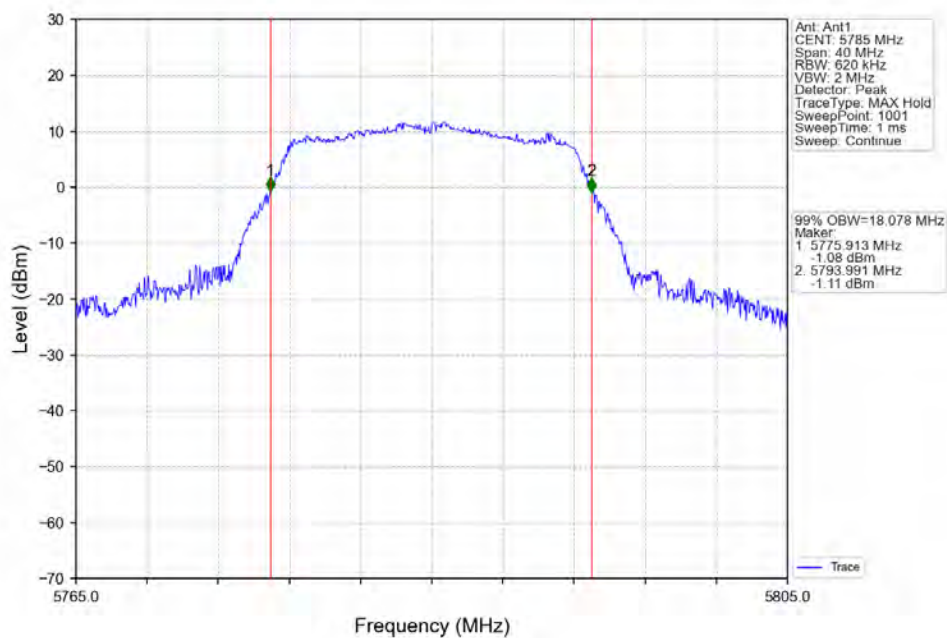
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

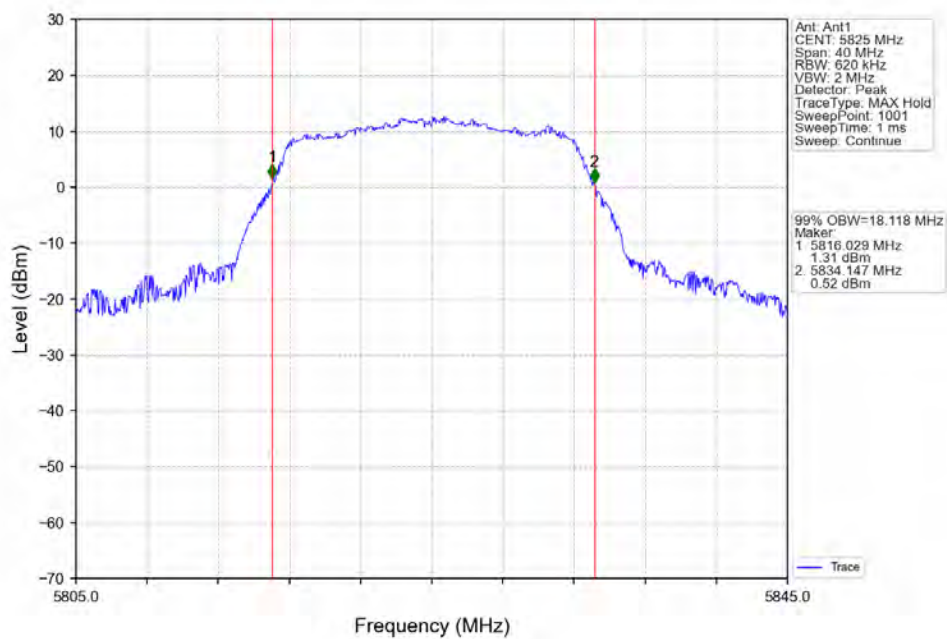
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802.11a MCH 5785MHz Ant1 NTN



802.11a HCH 5825MHz Ant1 NTN



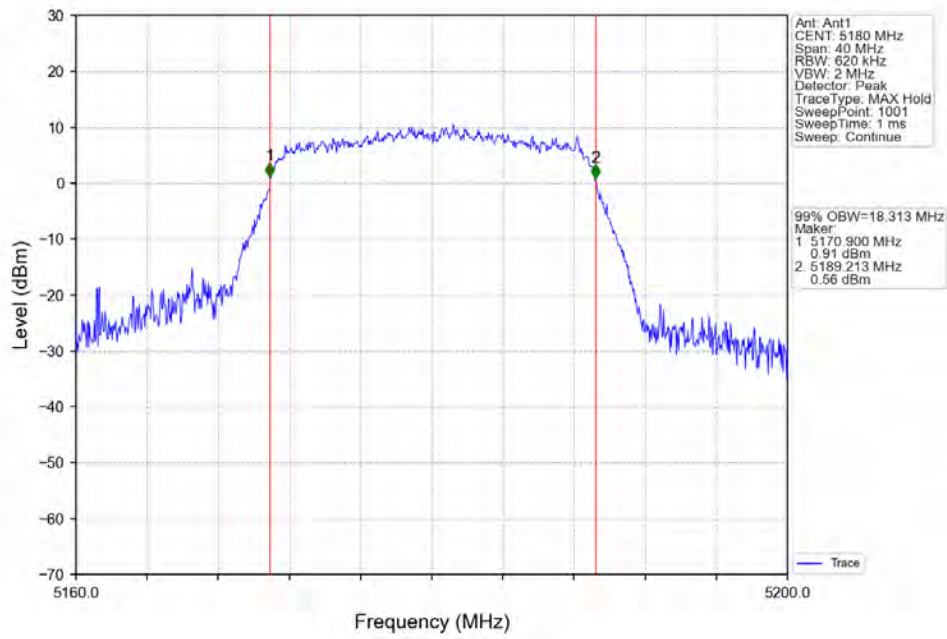
Compliance Certification Services (Kunshan) Inc.

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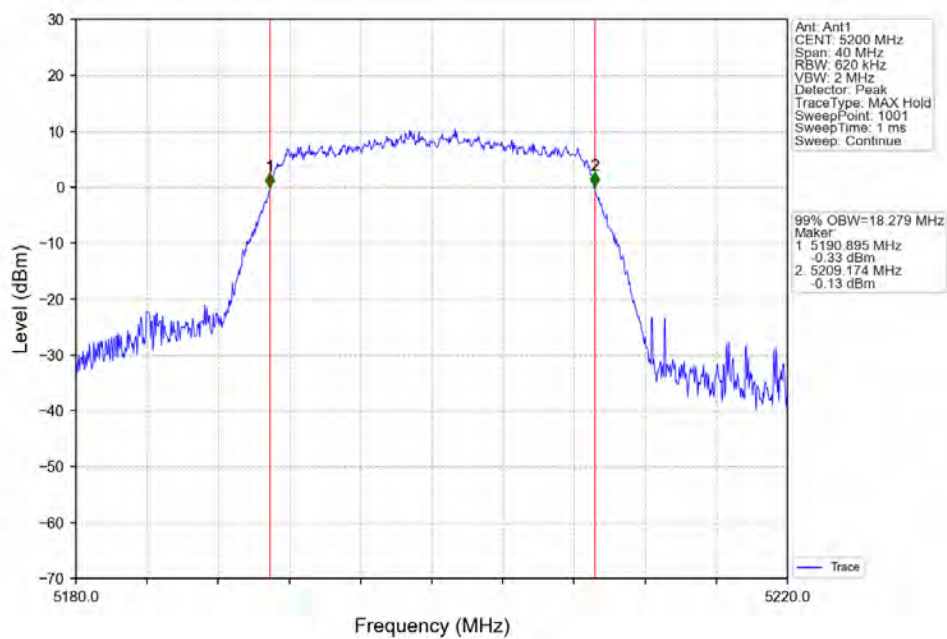
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802.11n(HT20) LCH 5180MHz Ant1 NTN



802.11n(HT20) MCH 5200MHz Ant1 NTN



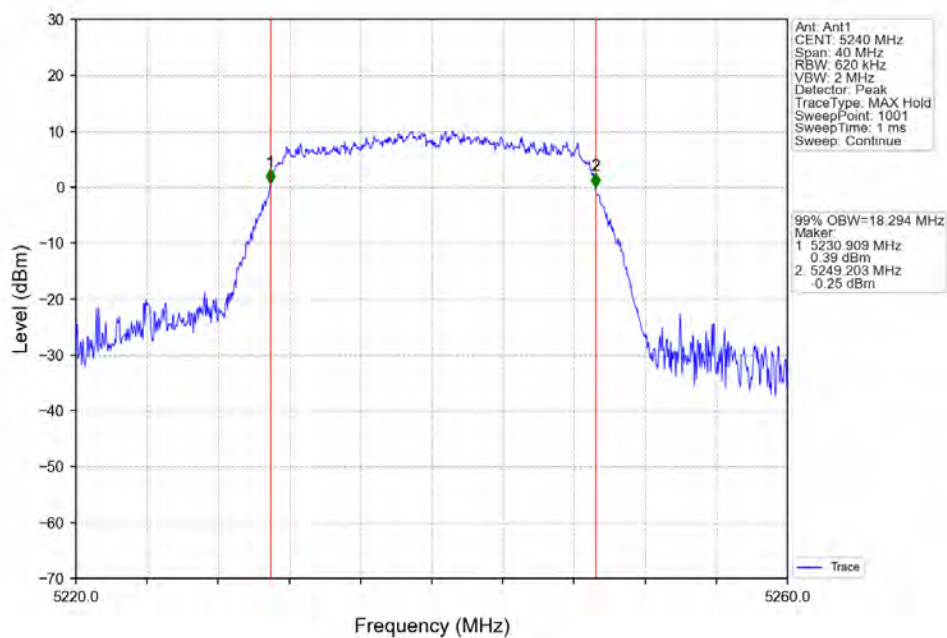
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

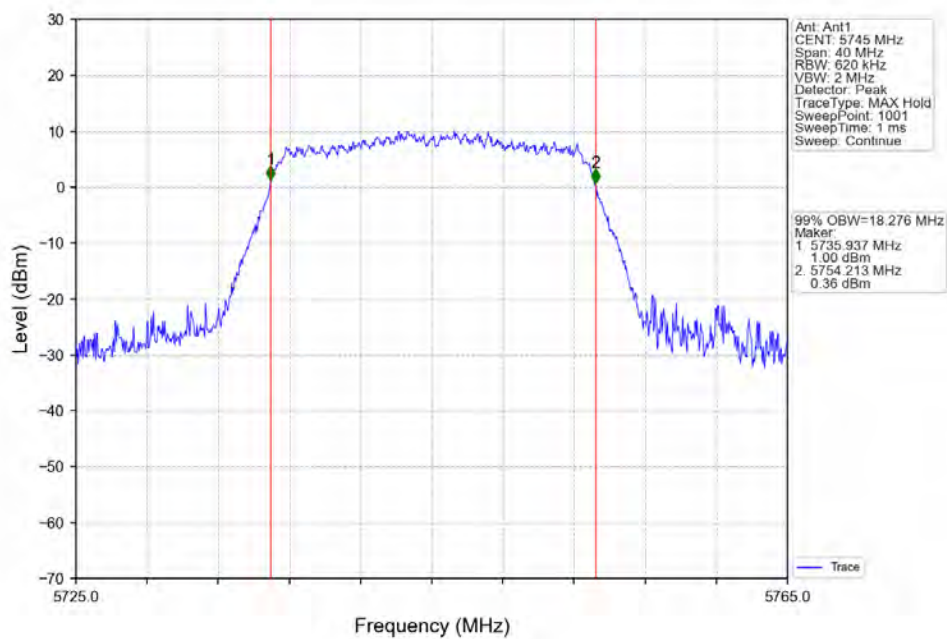
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802.11n(HT20) HCH 5240MHz Ant1 NTN



802.11n(HT20) LCH 5745MHz Ant1 NTN



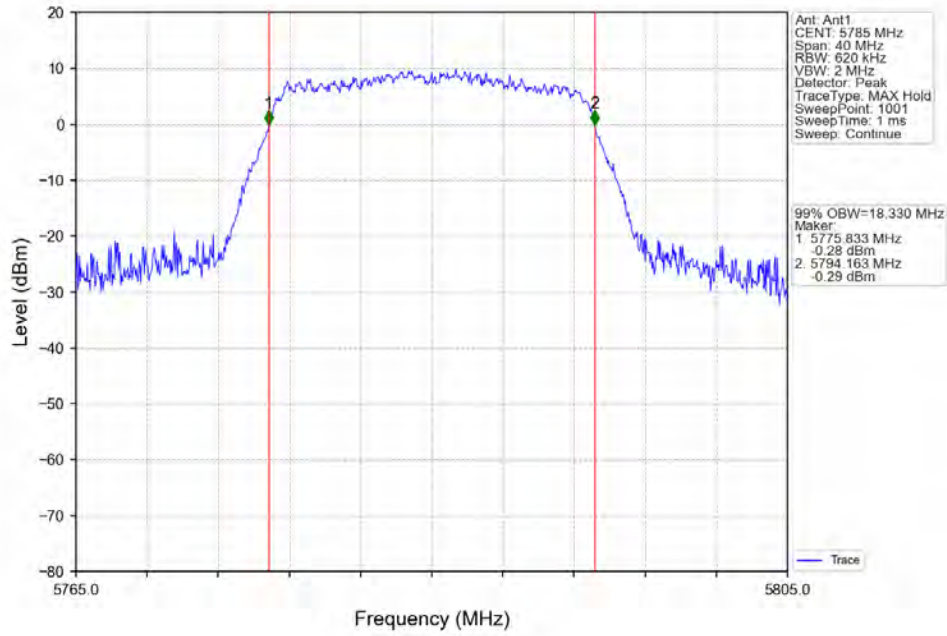
Compliance Certification Services (Kunshan) Inc.

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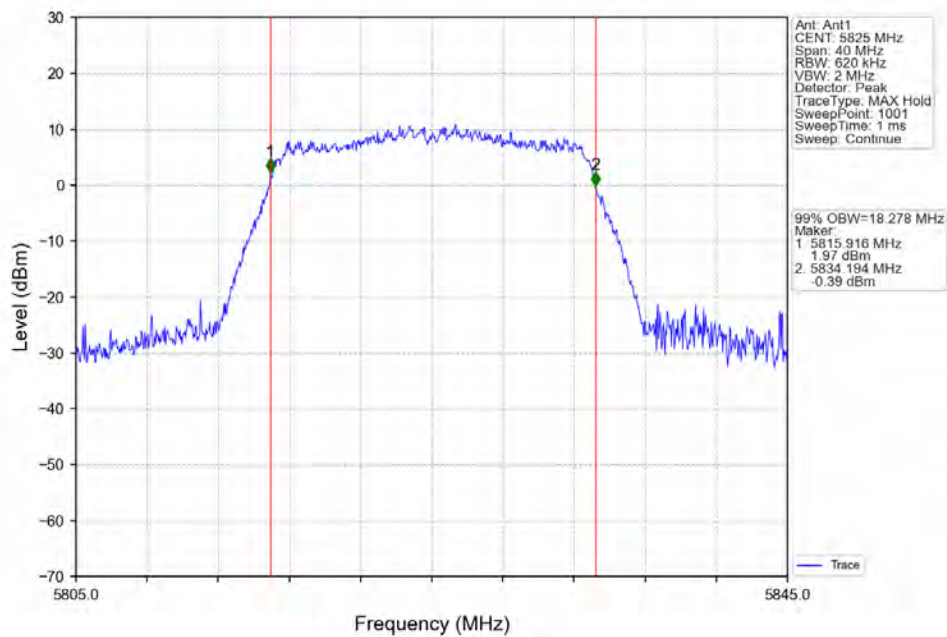
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802.11n(HT20) MCH 5785MHz Ant1 NTV



802.11n(HT20) HCH 5825MHz Ant1 NTV



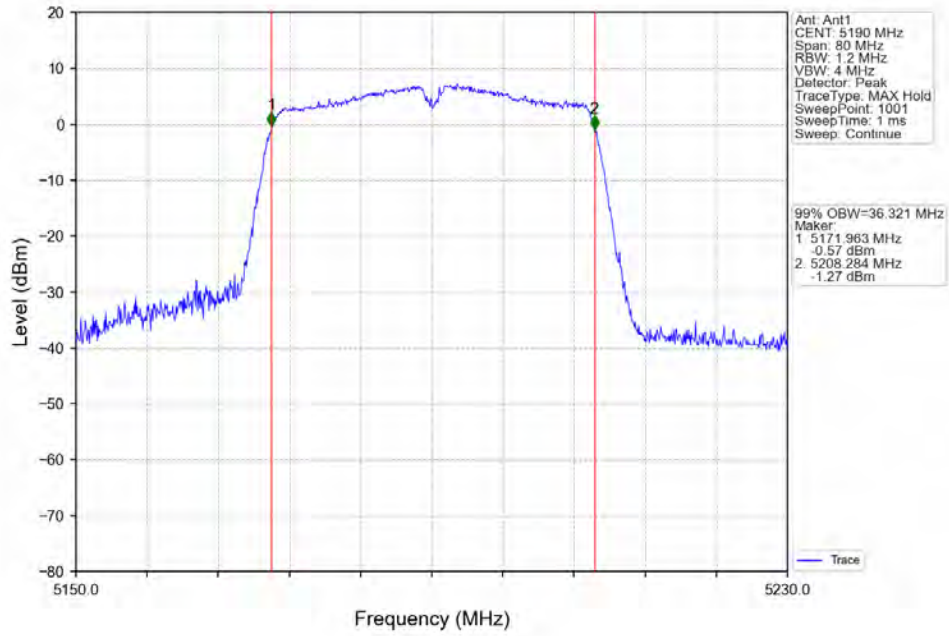
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

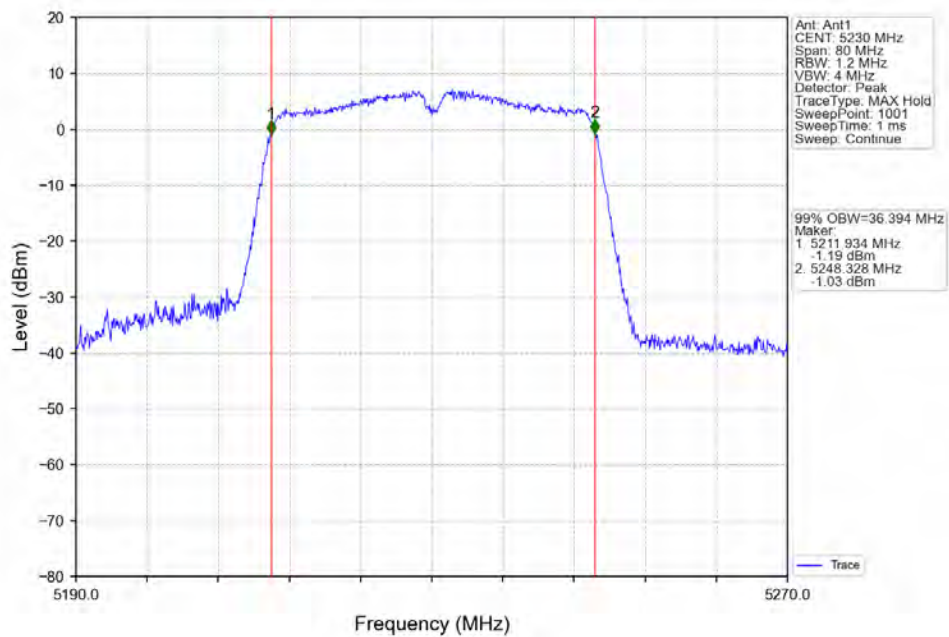
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802.11n(HT40) LCH_5190MHz Ant1 NTVN



802.11n(HT40) HCH_5230MHz Ant1 NTVN



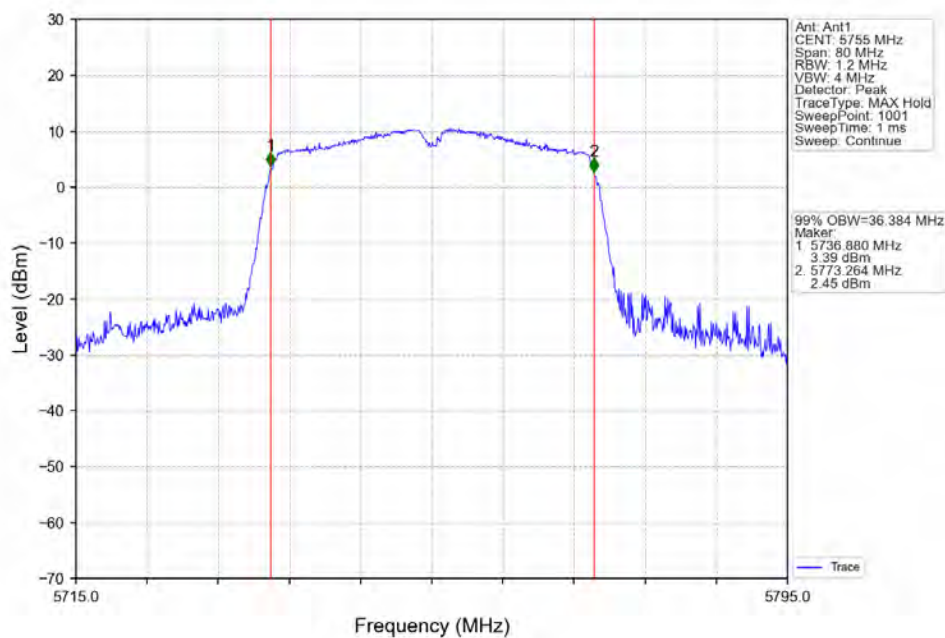
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

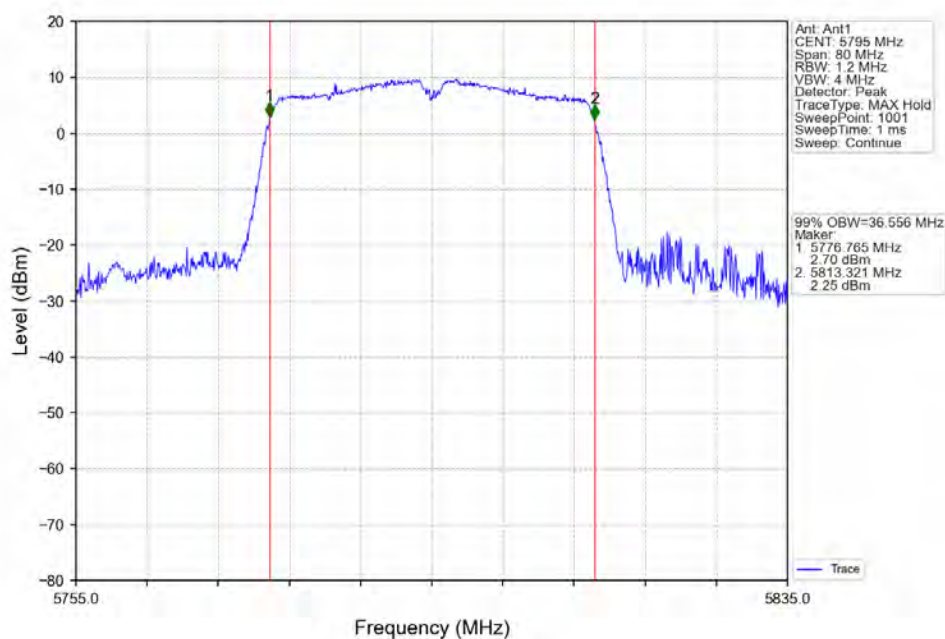
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802.11n(HT40) LCH_5755MHz Ant1 NTN



802.11n(HT40) HCH_5795MHz Ant1 NTN



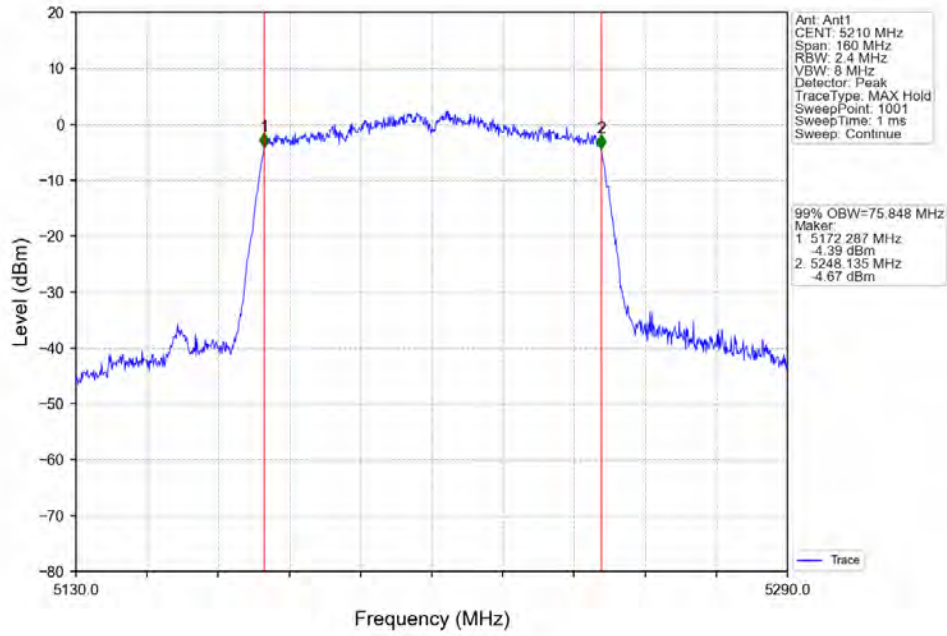
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

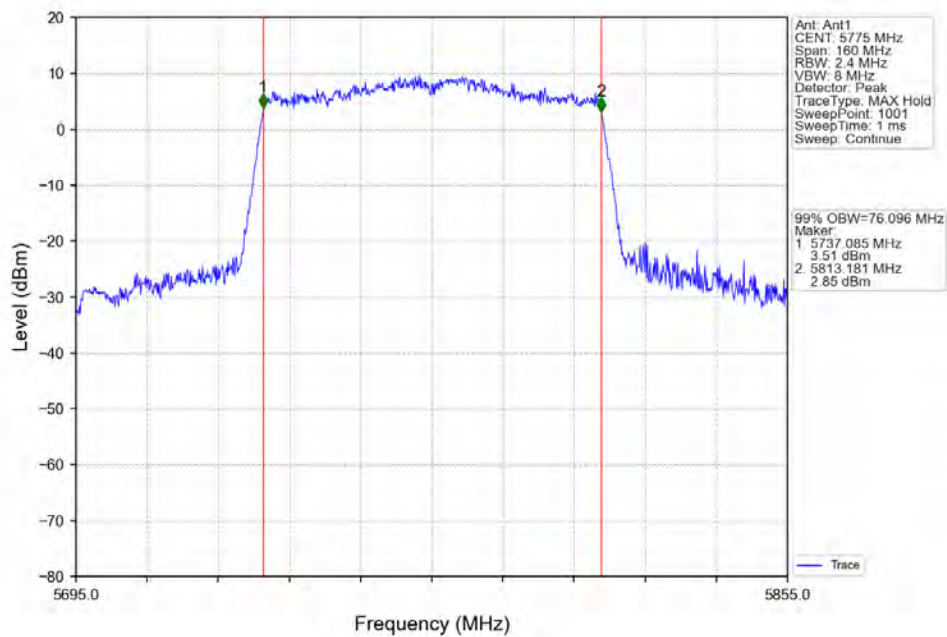
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802.11ac(VHT80) MCH_5210MHz Ant1 NTN



802.11ac(VHT80) MCH_5775MHz Ant1 NTN



Compliance Certification Services (Kunshan) Inc.

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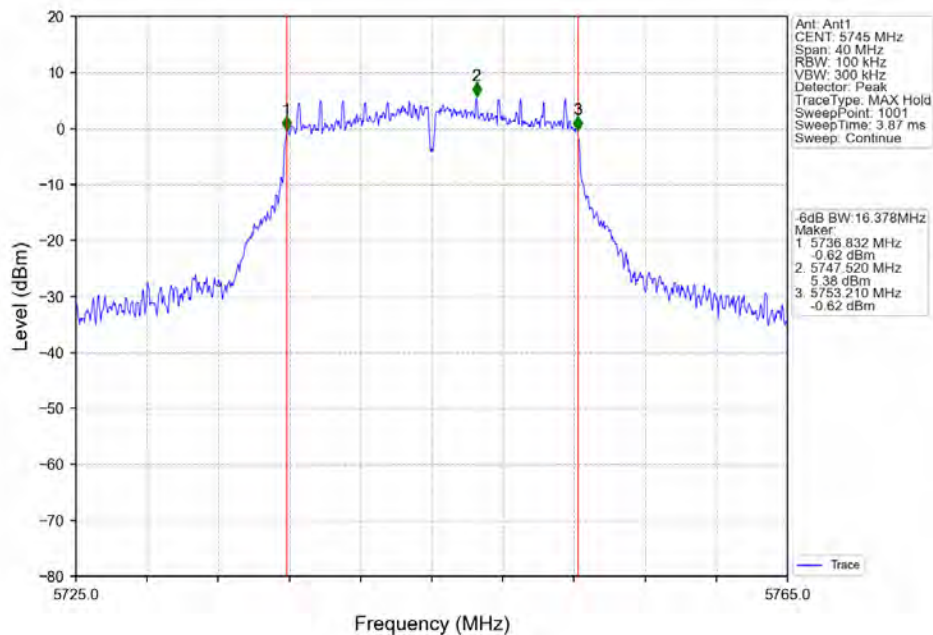
2.2 6dB BW

2.2.1 Test Result

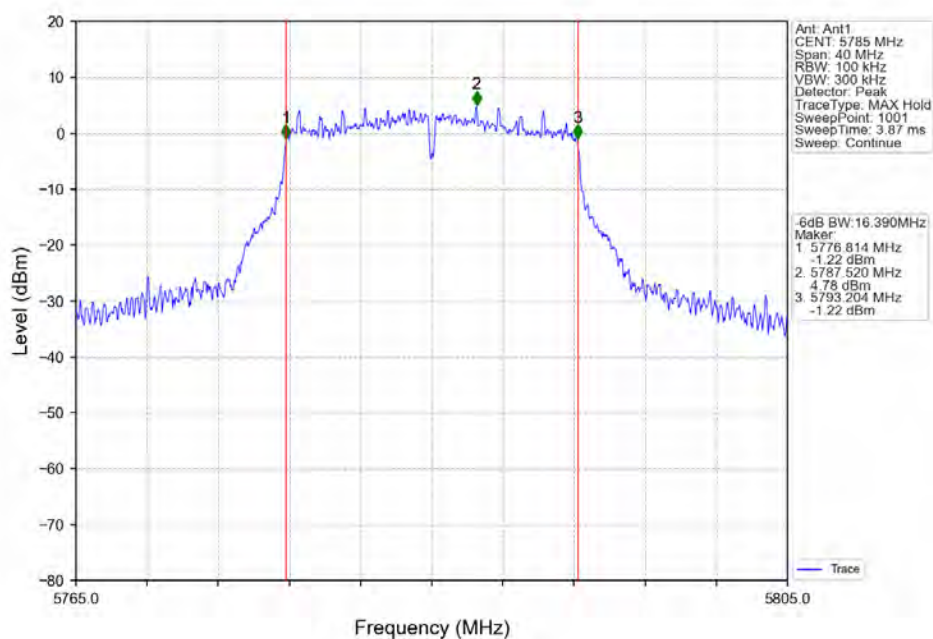
Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11a	SISO	5745	1	16.378	≥ 0.5	Pass
		5785	1	16.390	≥ 0.5	Pass
		5825	1	16.341	≥ 0.5	Pass
802.11n (HT20)	MIMO	5745	1	17.619	≥ 0.5	Pass
		5785	1	17.623	≥ 0.5	Pass
		5825	1	17.622	≥ 0.5	Pass
802.11n (HT40)	MIMO	5755	1	35.229	≥ 0.5	Pass
		5795	1	36.324	≥ 0.5	Pass
802.11ac (VHT80)	MIMO	5775	1	75.899	≥ 0.5	Pass

2.2.2 Test Graph

802.11a_LCH_5745MHz_Ant1_NTNV



802.11a_MCH_5785MHz_Ant1_NTNV



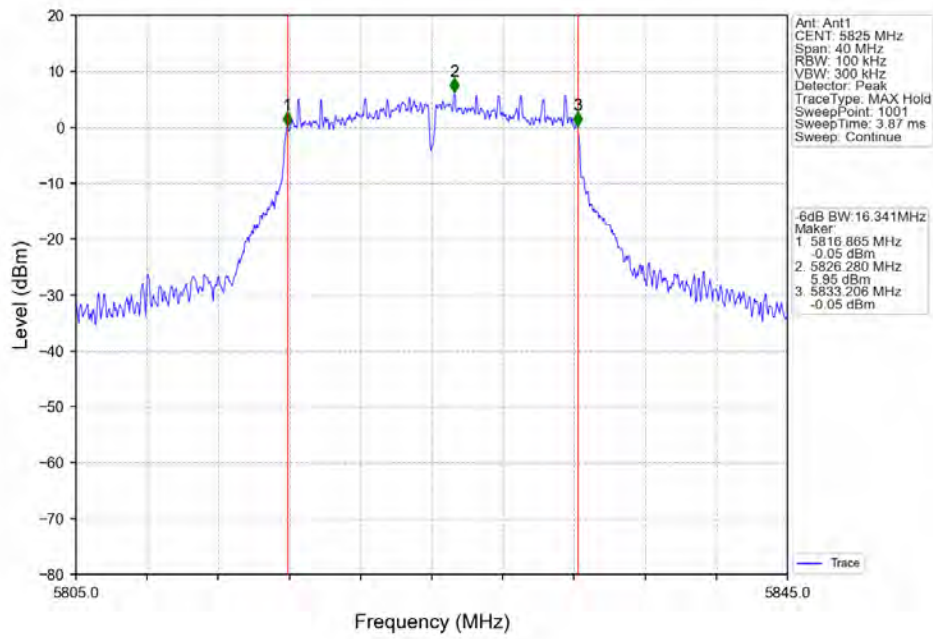
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

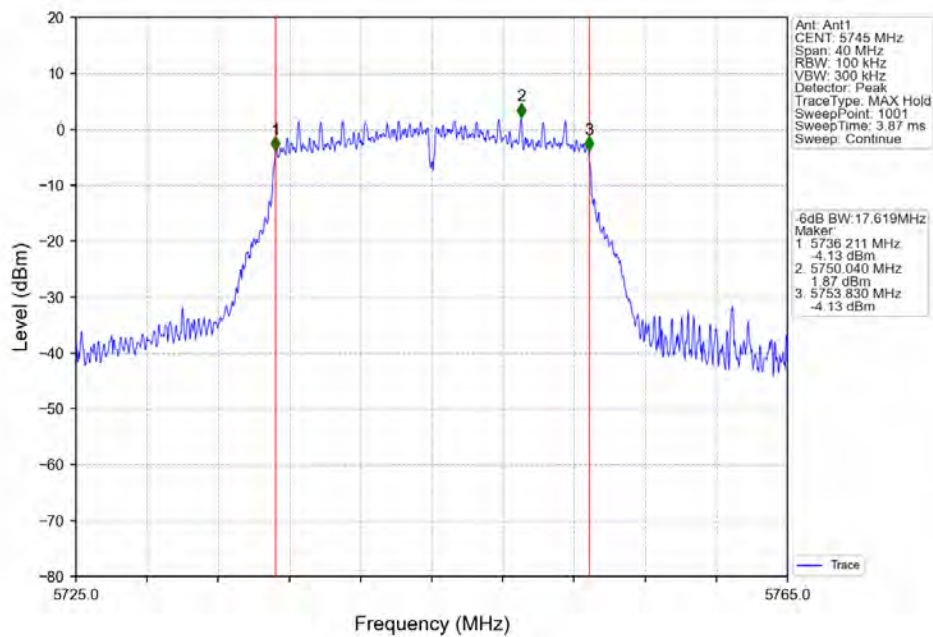
Report No.: KSCR240400073804

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802.11a HCH 5825MHz Ant1 NTN



802.11n(HT20) LCH 5745MHz Ant1 NTN



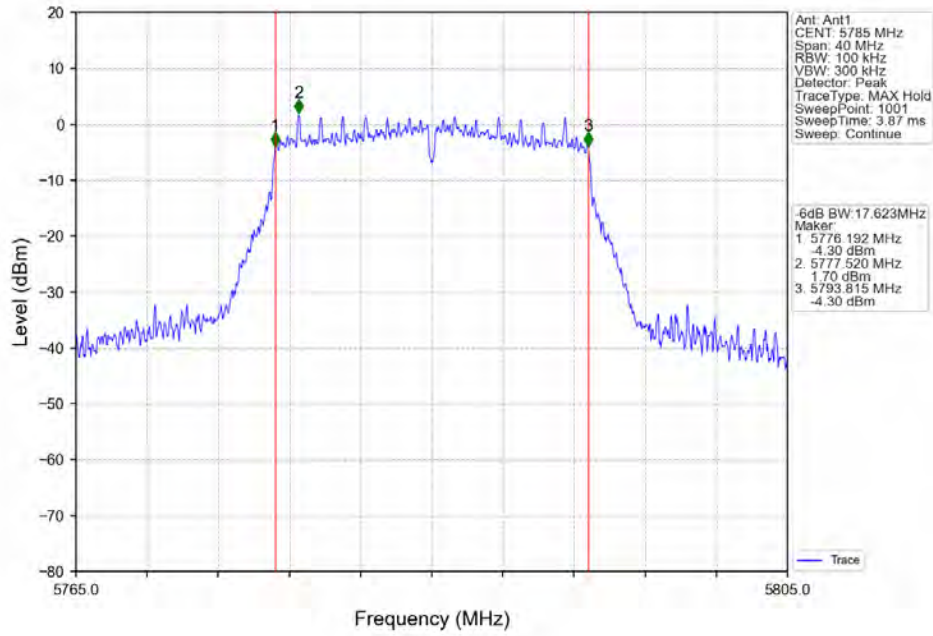
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

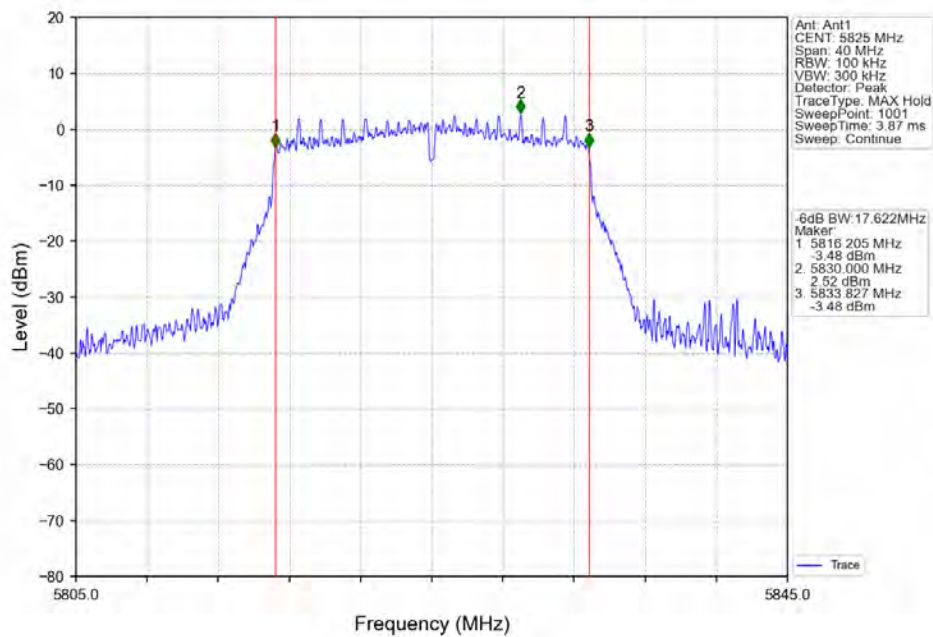
Report No.: KSCR240400073804

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802.11n(HT20) MCH 5785MHz Ant1 NTN



802.11n(HT20) HCH 5825MHz Ant1 NTN



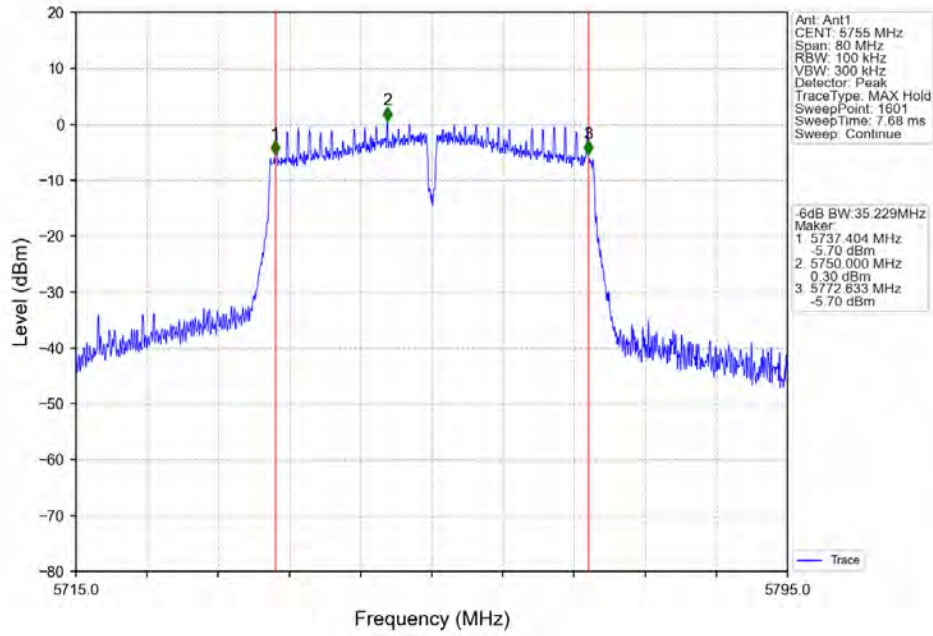
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

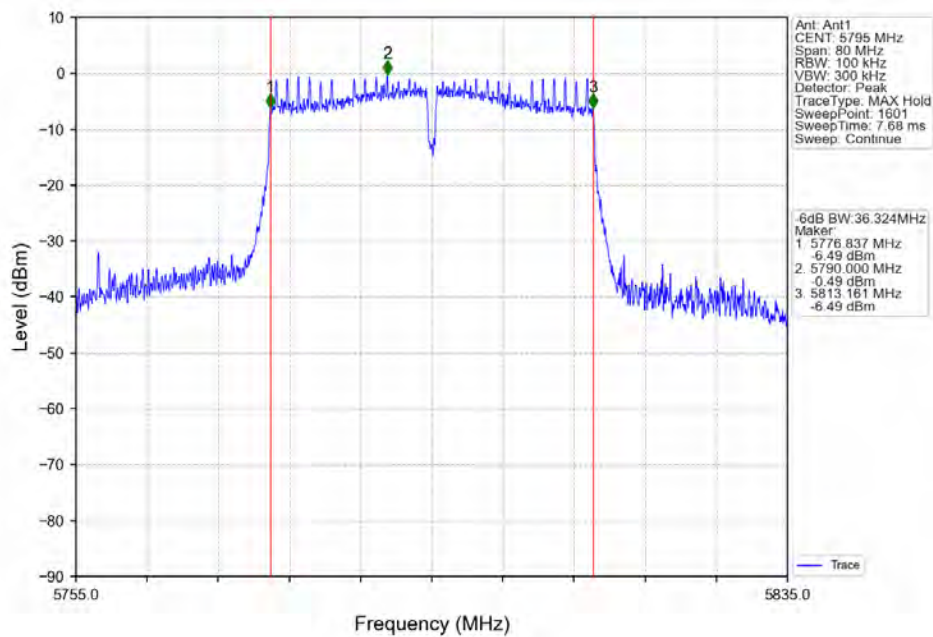
Report No.: KSCR240400073804

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802.11n(HT40) LCH_5755MHz Ant1 NTN



802.11n(HT40) HCH_5795MHz Ant1 NTN



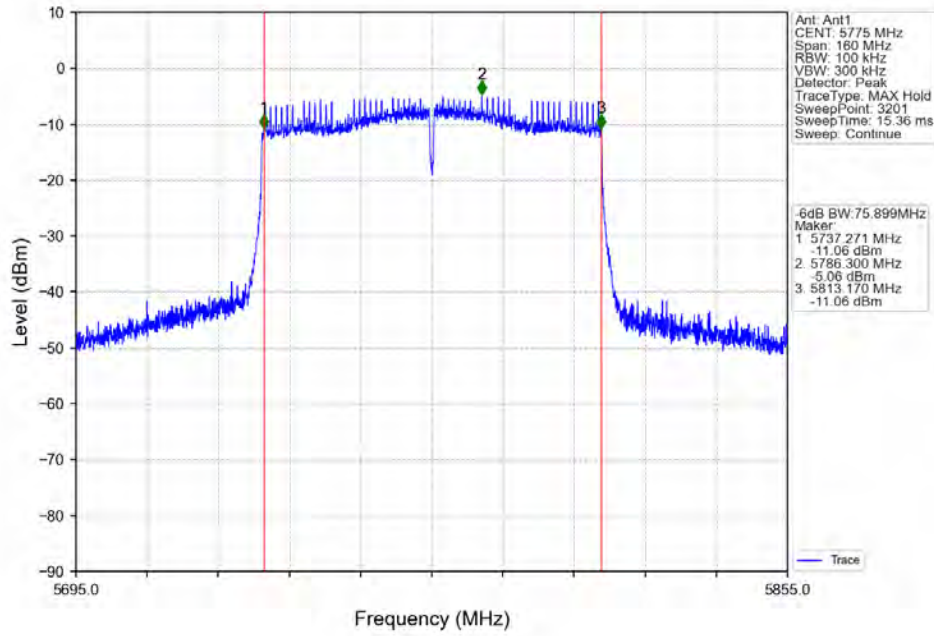
Compliance Certification Services (Kunshan) Inc.

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802.11ac(VHT80) MCH 5775MHz Ant1 NTNV



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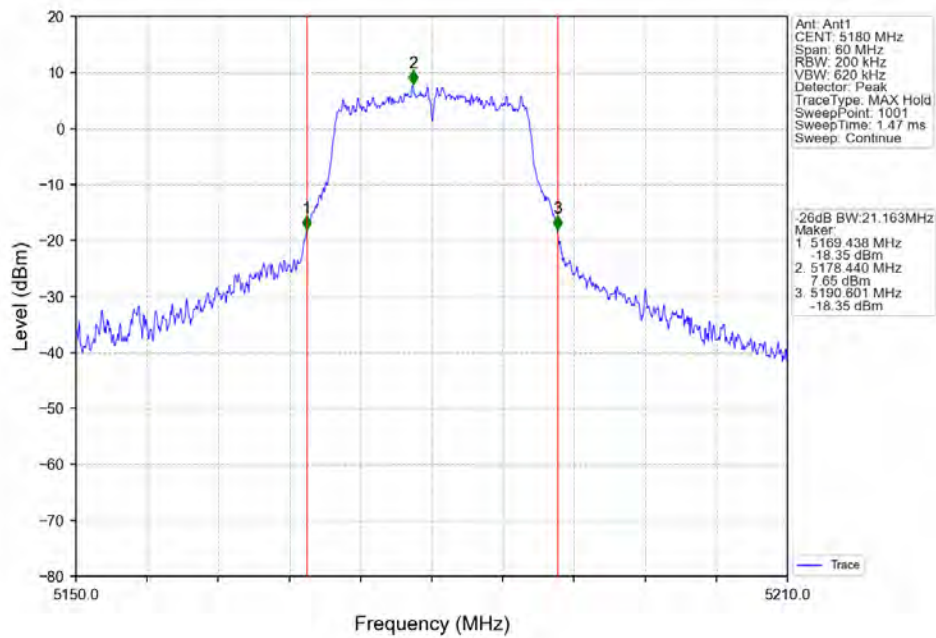
2.3 26dB BW

2.3.1 Test Result

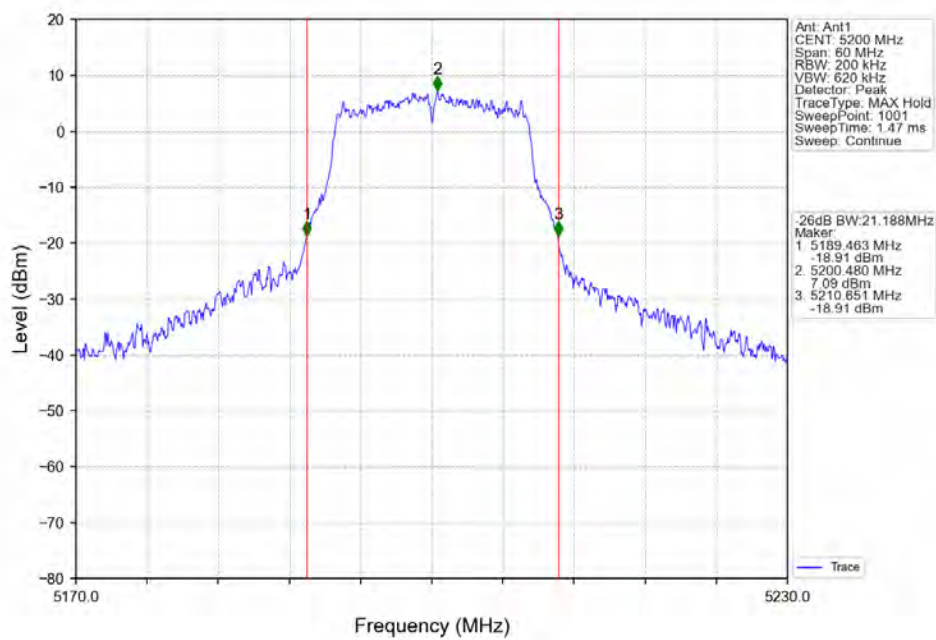
Mode	TX Type	Frequency (MHz)	ANT	26dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11a	SISO	5180	1	21.163	/	Pass
		5200	1	21.188	/	Pass
		5240	1	21.120	/	Pass
802.11n (HT20)	MIMO	5180	1	21.611	/	Pass
		5200	1	21.517	/	Pass
		5240	1	21.550	/	Pass
802.11n (HT40)	MIMO	5190	1	39.145	/	Pass
		5230	1	39.336	/	Pass
802.11ac (VHT80)	MIMO	5210	1	80.620	/	Pass

2.3.2 Test Graph

802.11a_LCH_5180MHz_Ant1_NTNV



802.11a_MCH_5200MHz_Ant1_NTNV



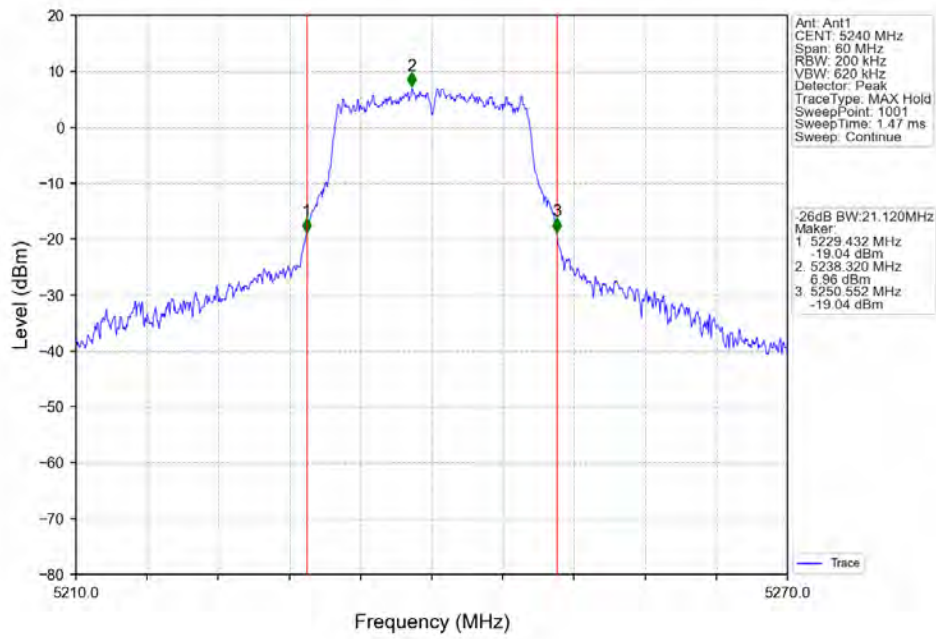
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

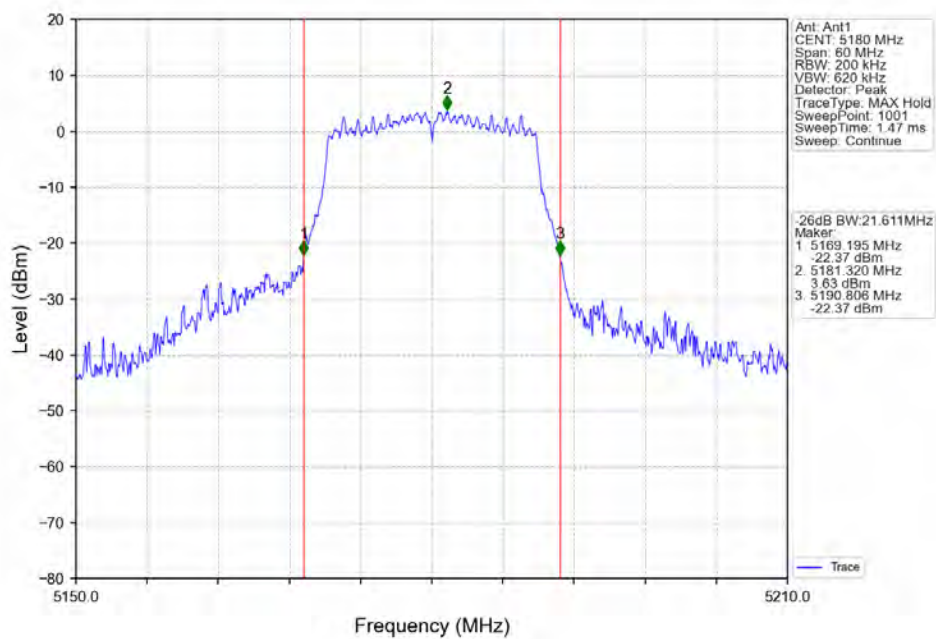
Report No.: KSCR240400073804

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802.11a HCH 5240MHz Ant1 NTN



802.11n(HT20) LCH 5180MHz Ant1 NTN



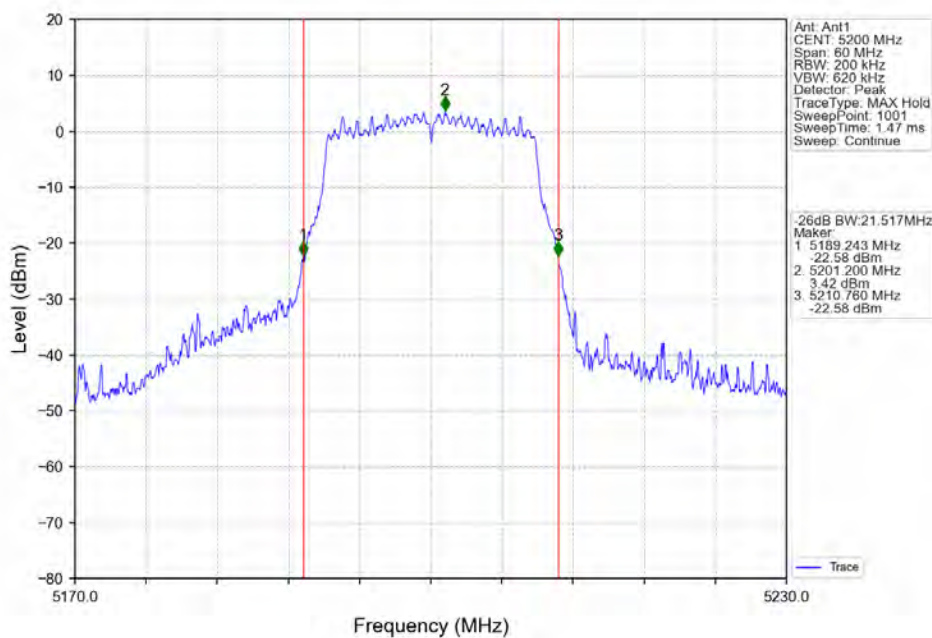
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

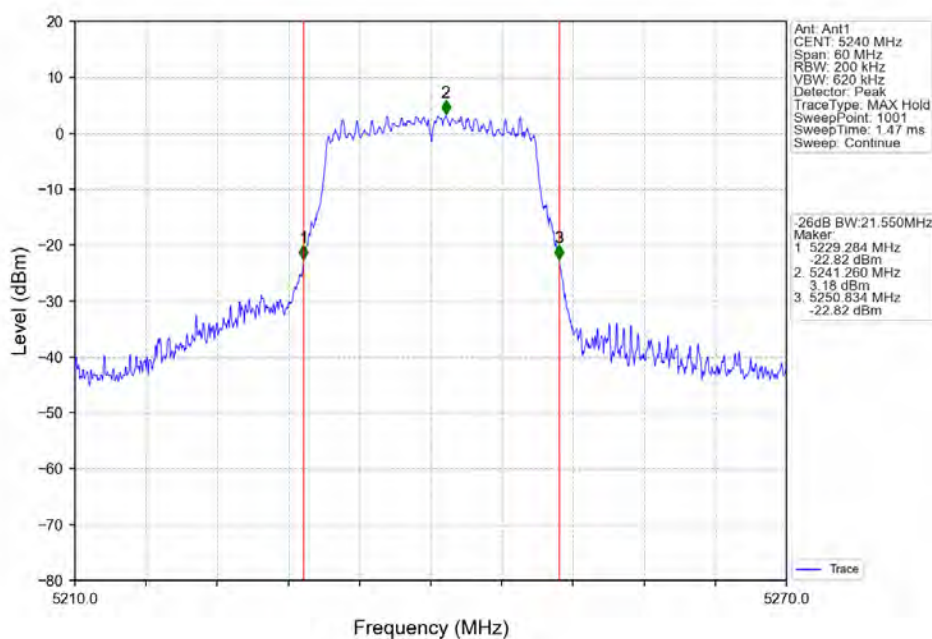
Report No.: KSCR240400073804

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802.11n(HT20) MCH 5200MHz Ant1 NTN



802.11n(HT20) HCH 5240MHz Ant1 NTN



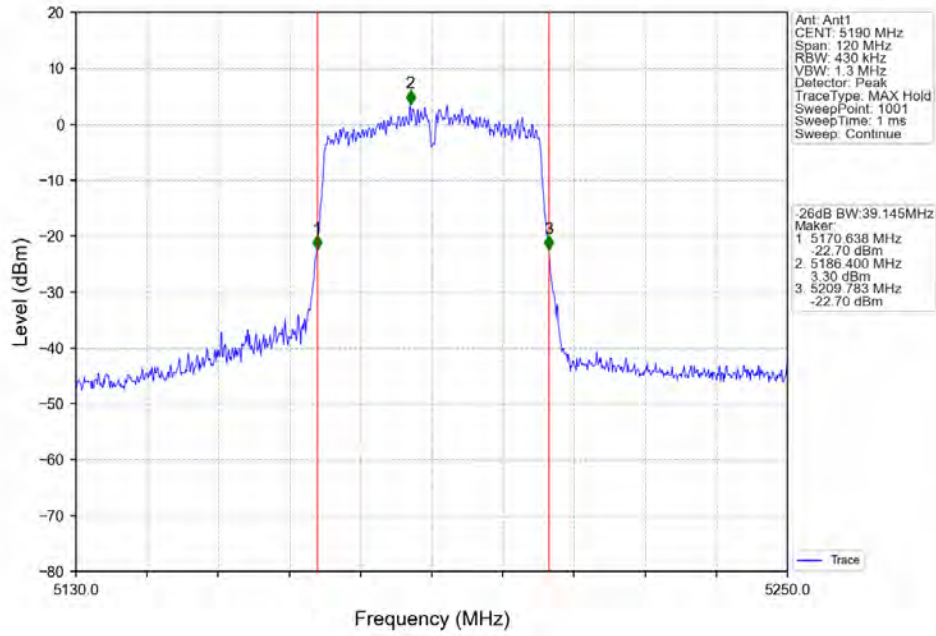
Compliance Certification Services (Kunshan) Inc.

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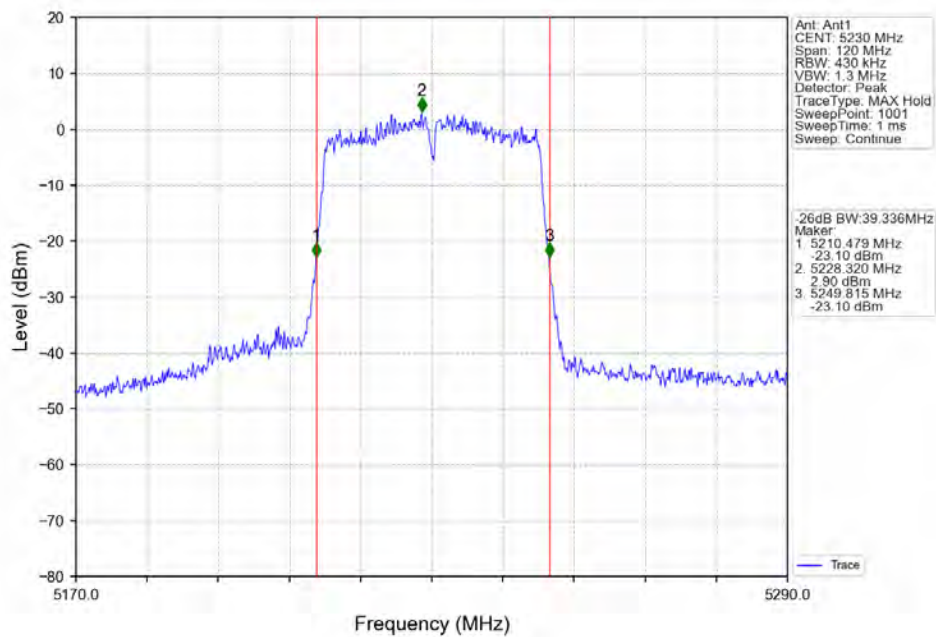
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802.11n(HT40) LCH 5190MHz Ant1 NTVN



802.11n(HT40) HCH 5230MHz Ant1 NTVN



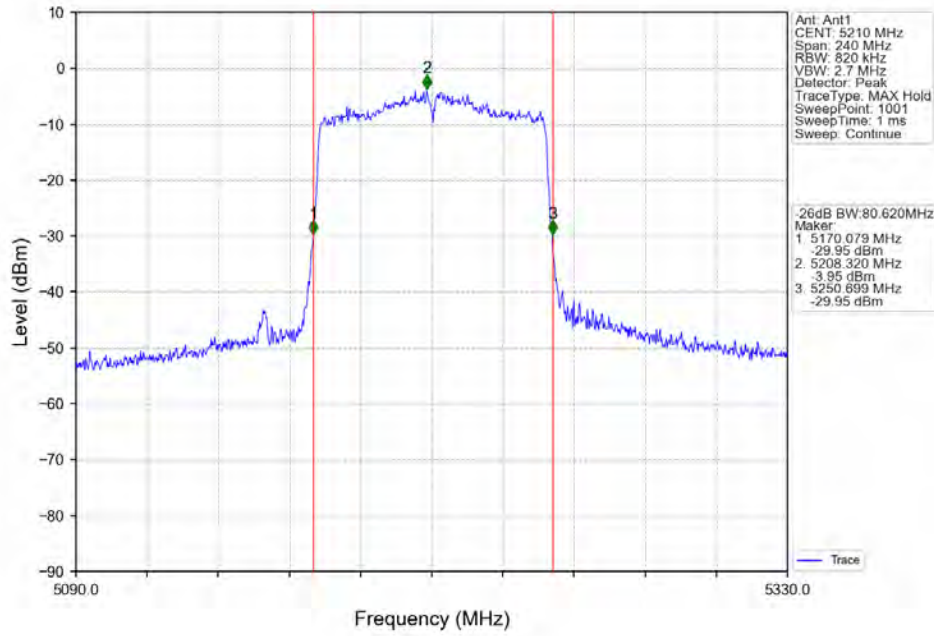
Compliance Certification Services (Kunshan) Inc.

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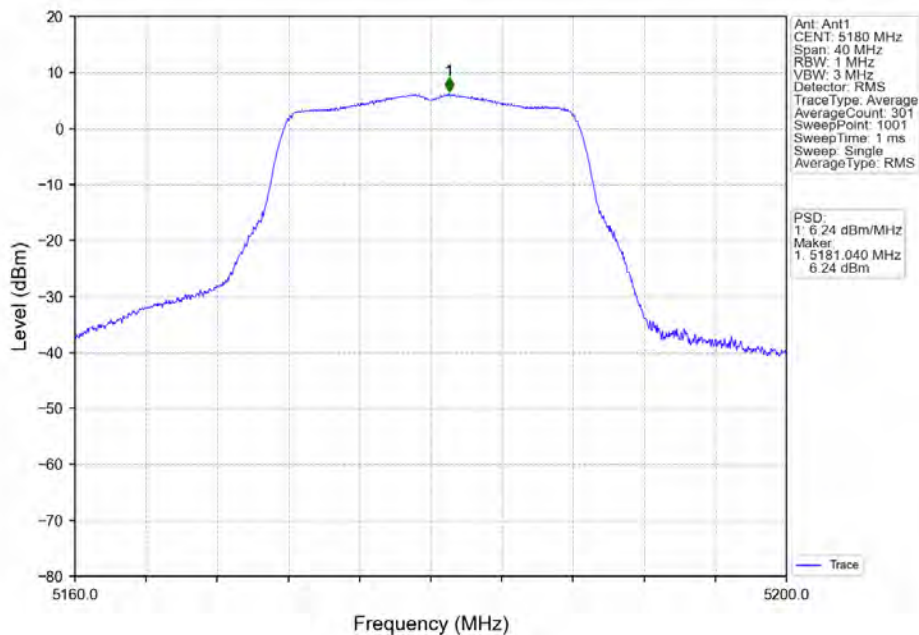
802.11ac(VHT80) MCH 5210MHz Ant1 NTV



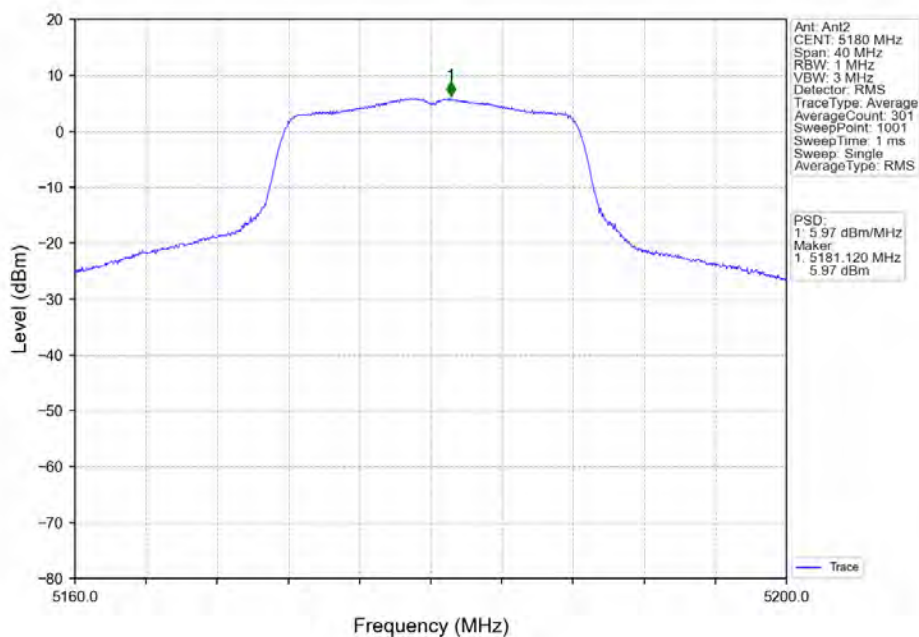
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/MHz)				Verdict
			ANT1	ANT2	MIMO	Limit	
802.11a	SISO	5180	6.24	5.97	/	<=11	Pass
		5200	6.08	6.11	/	<=11	Pass
		5240	6.09	5.85	/	<=11	Pass
802.11n (HT20)	MIMO	5180	2.69	2.43	5.57	<=10.43	Pass
		5200	2.49	2.30	5.39	<=10.43	Pass
		5240	2.47	2.58	5.41	<=10.43	Pass
802.11n (HT40)	MIMO	5190	-2.76	-2.87	0.17	<=10.43	Pass
		5230	-2.85	-2.99	0.03	<=10.43	Pass
802.11ac (VHT80)	MIMO	5210	-12.16	-5.77	-4.91	<=10.43	Pass
Note1: Antenna Gain: Ant1: 3.56dBi: Ant2: 3.56dBi:							

4.1.2 Test Graph

802.11a_LCH_5180MHz_Ant1_NTNV



802.11a_LCH_5180MHz_Ant2_NTNV



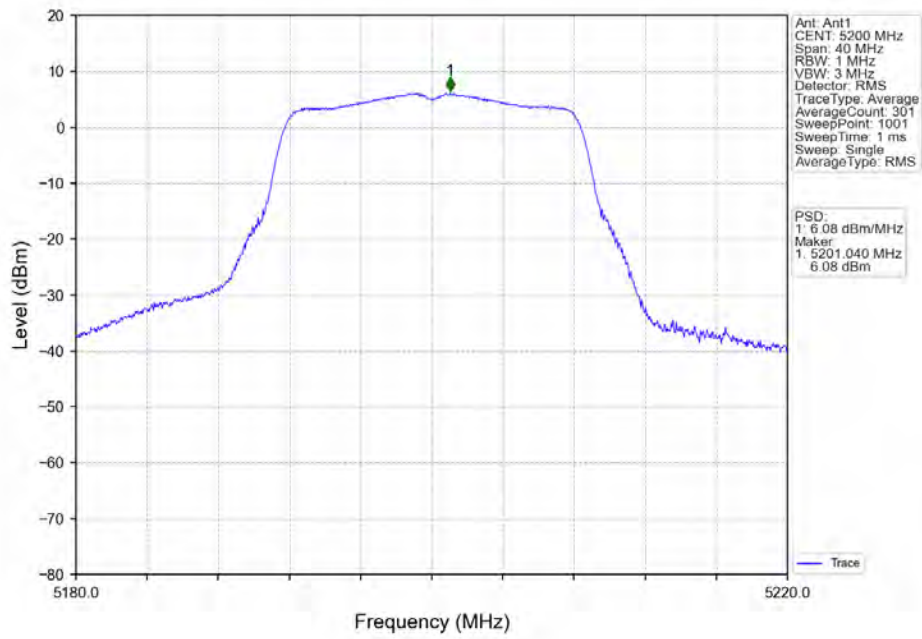
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

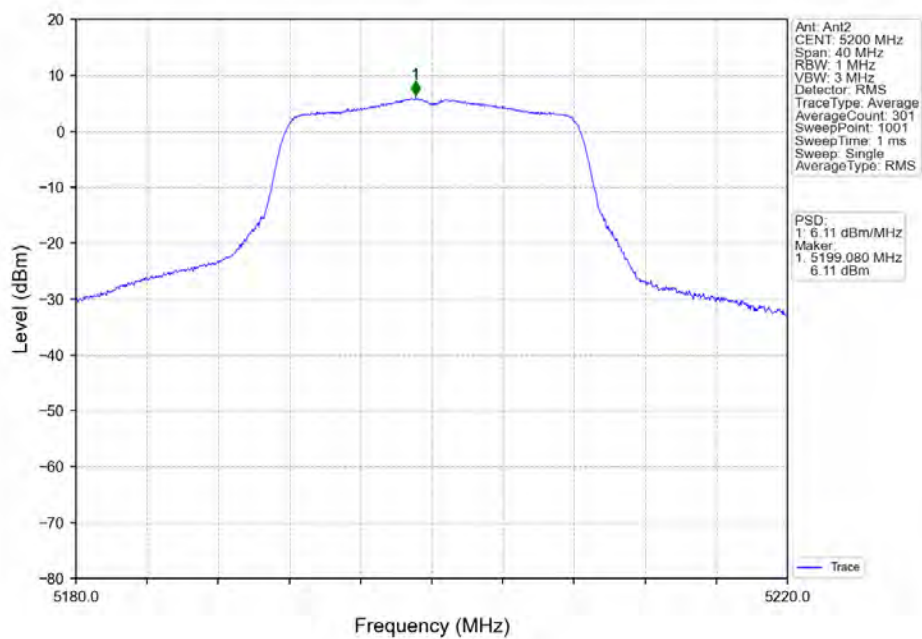
Report No.: KSCR240400073804

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802.11a MCH 5200MHz Ant1 NTN



802.11a MCH 5200MHz Ant2 NTN



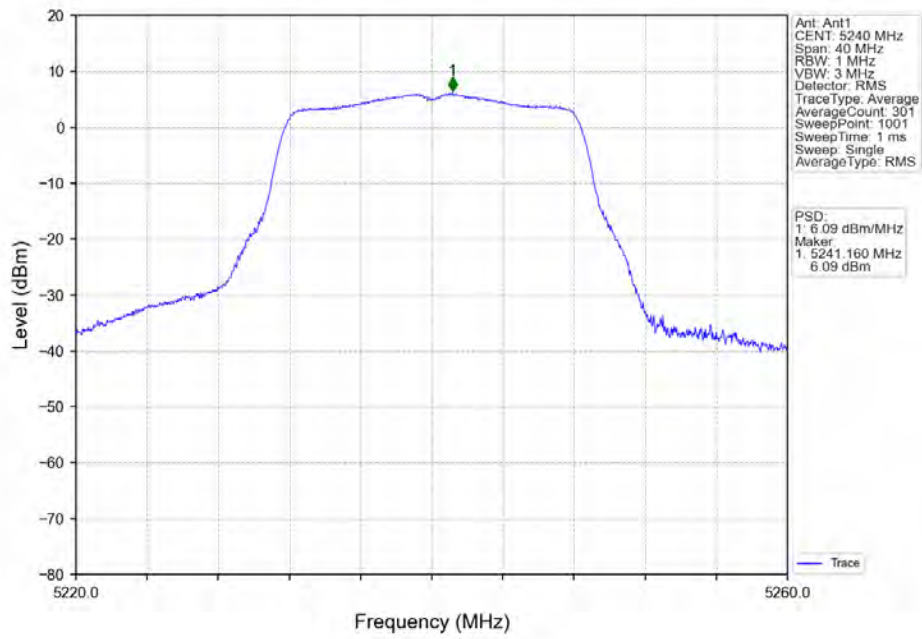
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

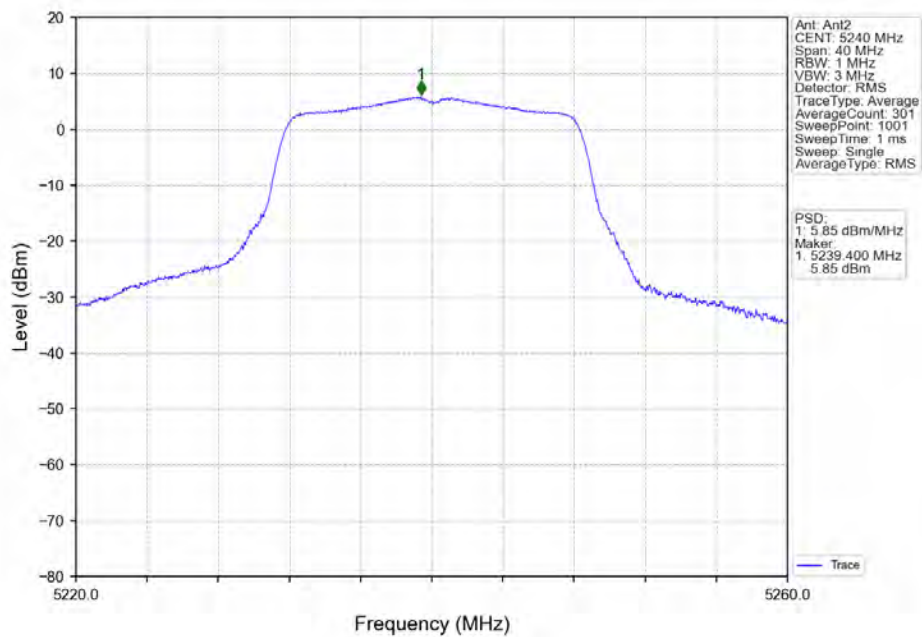
Report No.: KSCR240400073804

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802.11a HCH 5240MHz Ant1 NTN



802.11a HCH 5240MHz Ant2 NTN



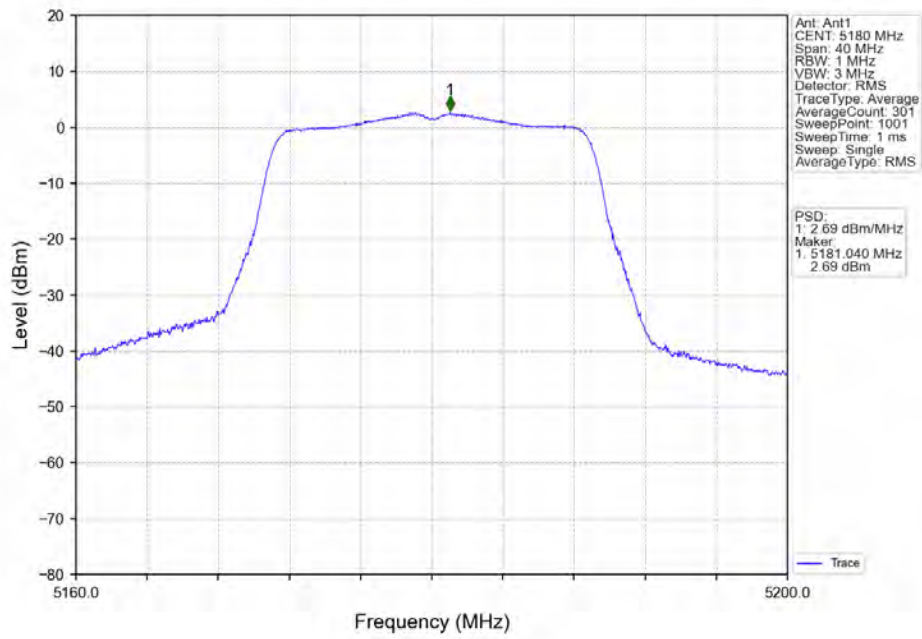
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

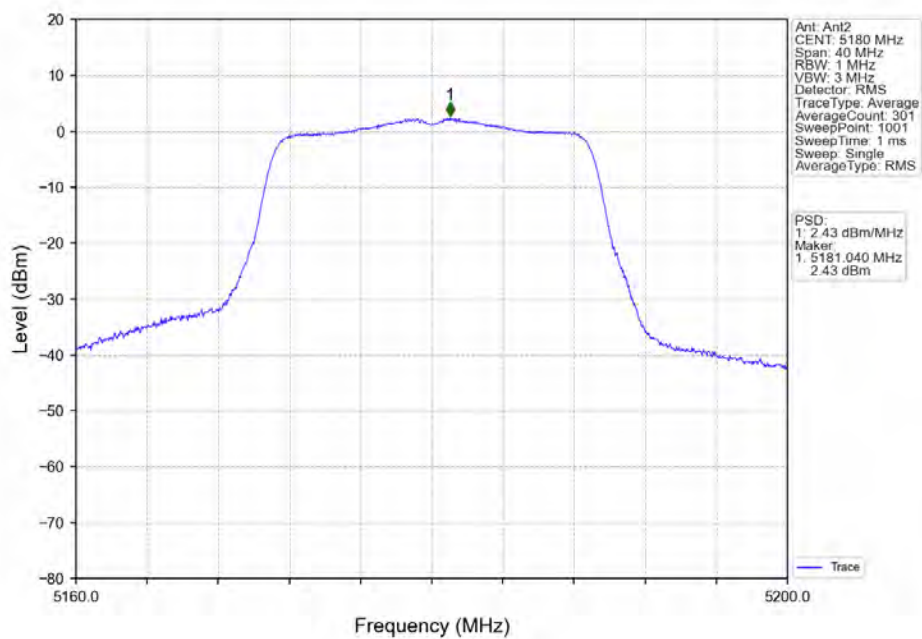
Report No.: KSCR240400073804

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802.11n(HT20) LCH_5180MHz Ant1 NTVN



802.11n(HT20) LCH_5180MHz Ant2 NTVN



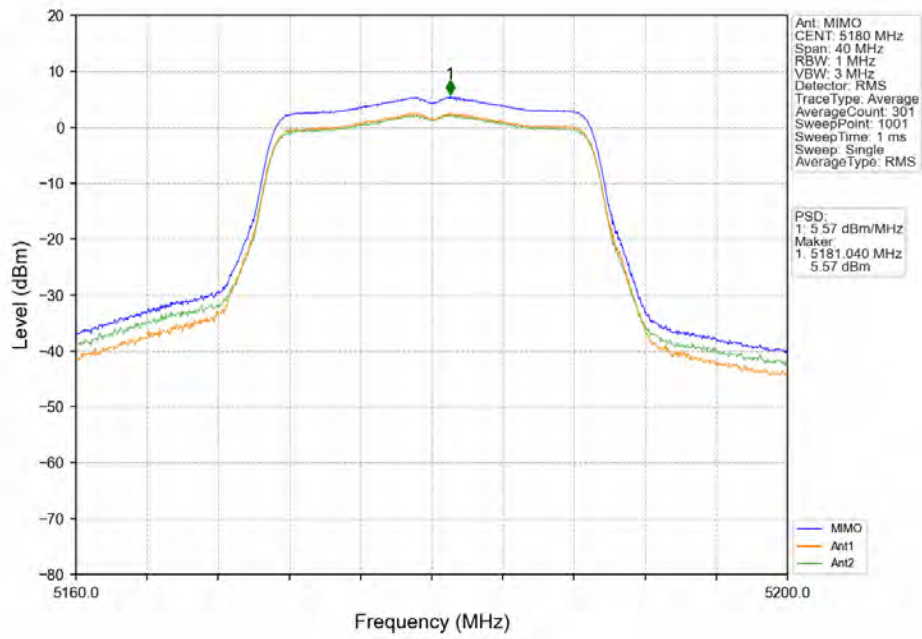
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

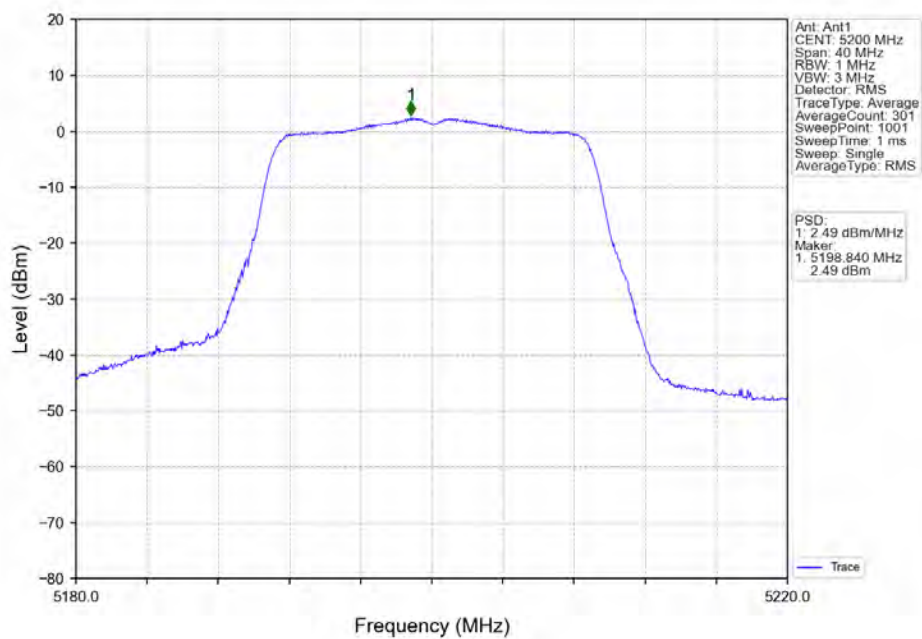
Report No.: KSCR240400073804

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802.11n(HT20) LCH 5180MHz MIMO NTN



802.11n(HT20) MCH 5200MHz Ant1 NTN



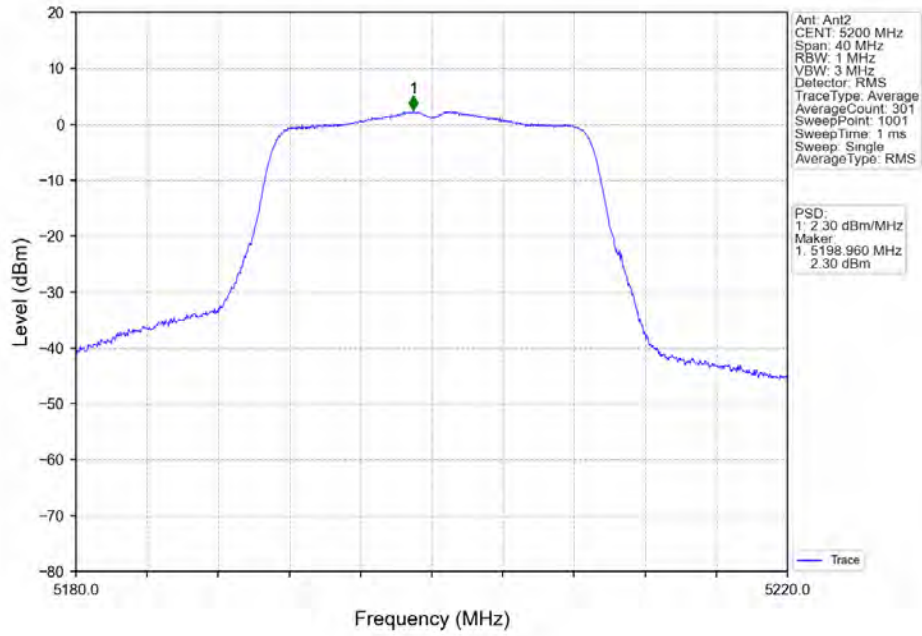
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

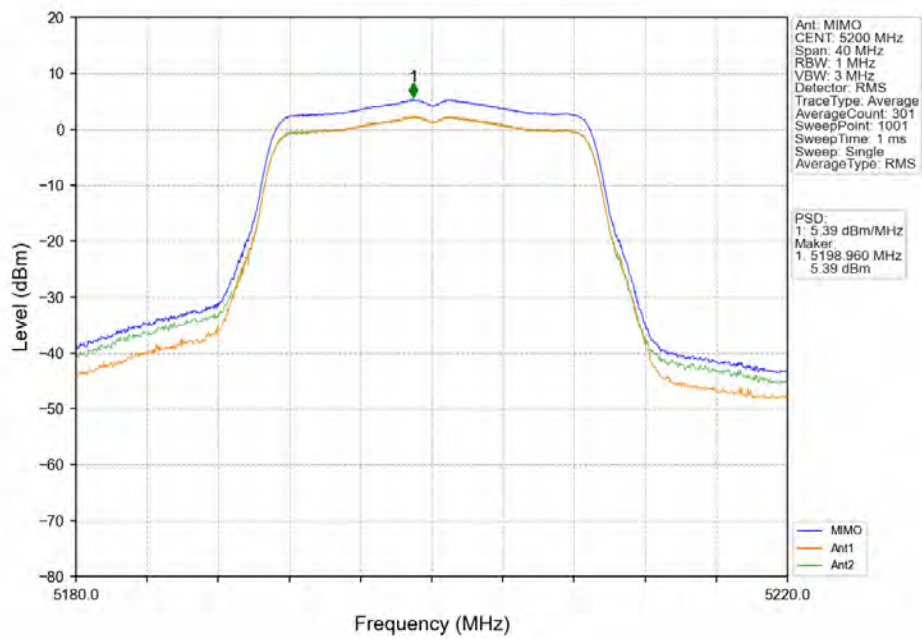
Report No.: KSCR240400073804

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802.11n(HT20) MCH 5200MHz Ant2 NTN



802.11n(HT20) MCH 5200MHz MIMO NTN



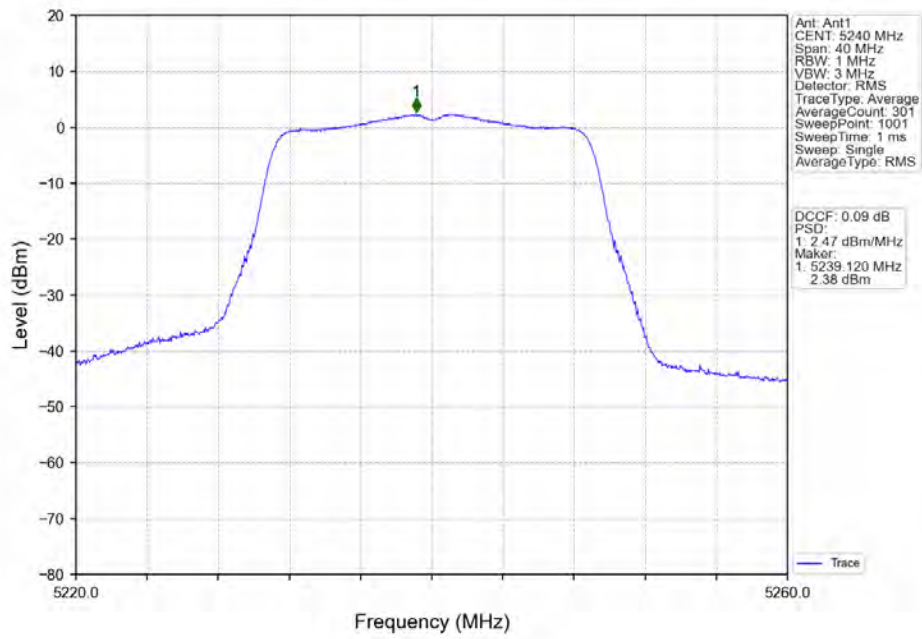
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

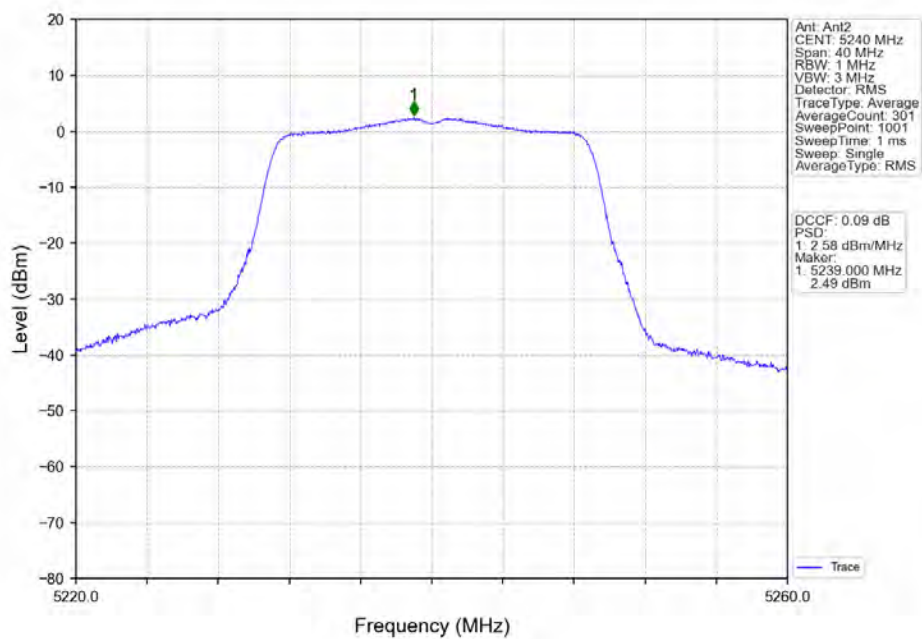
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802.11n(HT20) HCH_5240MHz Ant1 NTN



802.11n(HT20) HCH_5240MHz Ant2 NTN



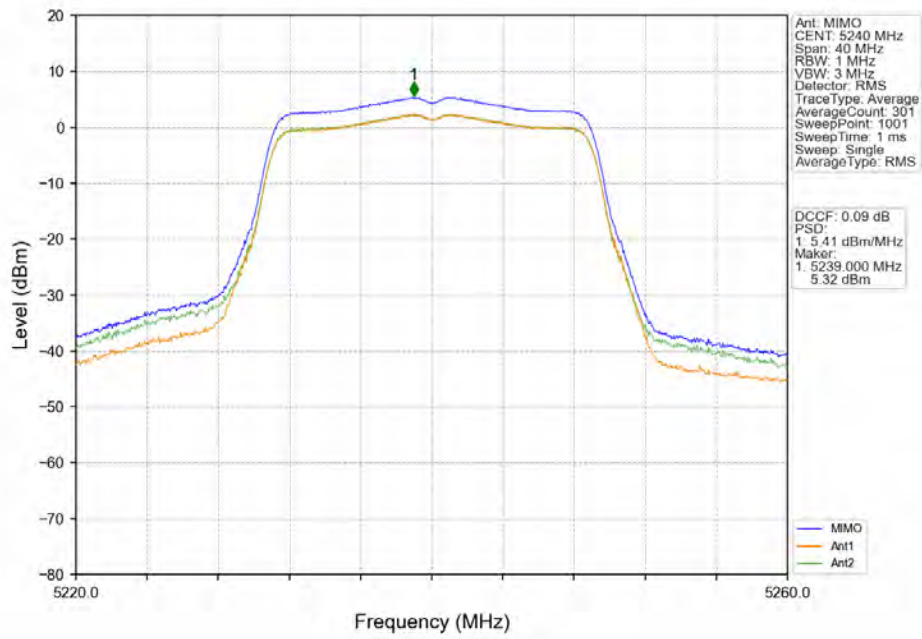
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

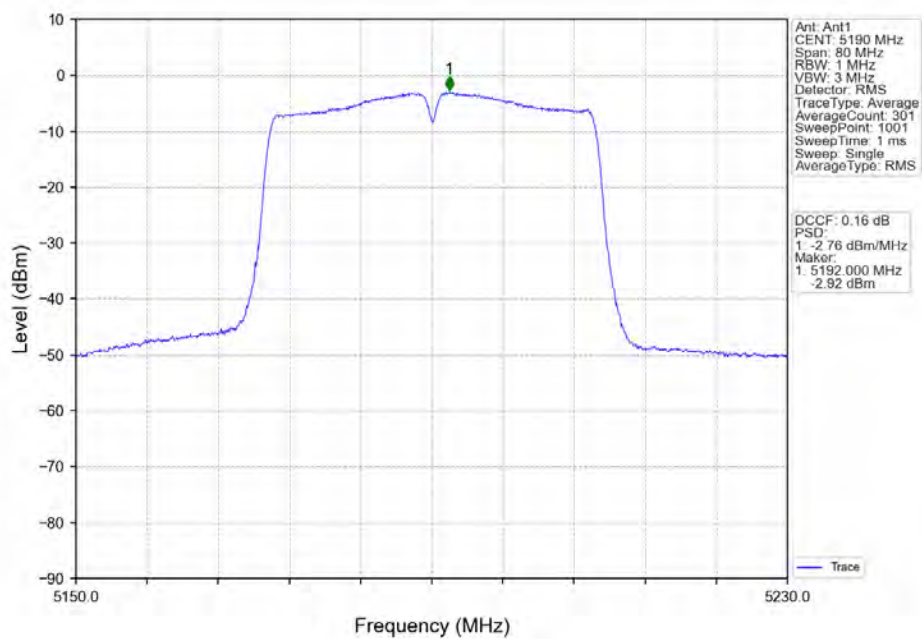
Report No.: KSCR240400073804

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802.11n(HT20) HCH 5240MHz MIMO NTN



802.11n(HT40) LCH 5190MHz Ant1 NTN



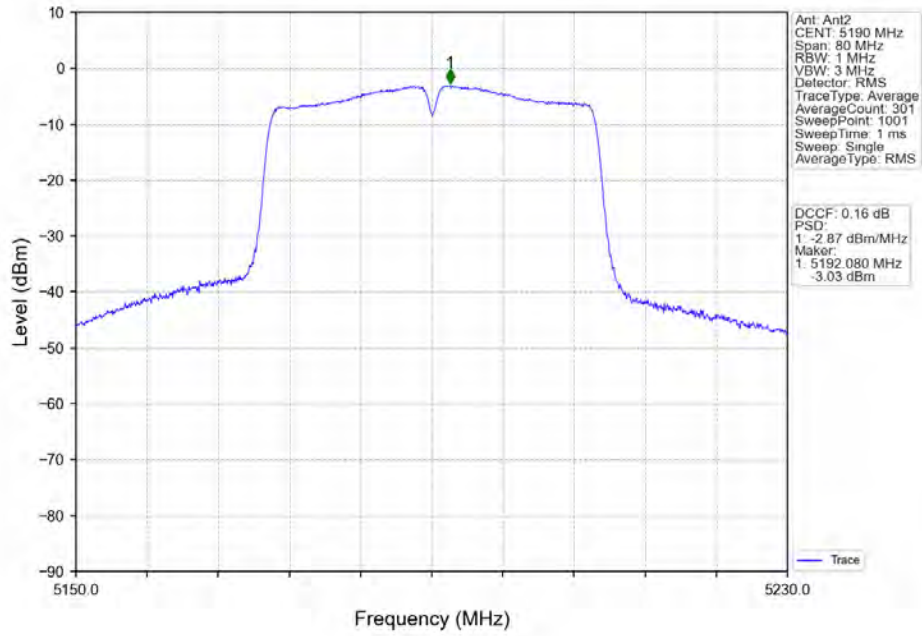
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

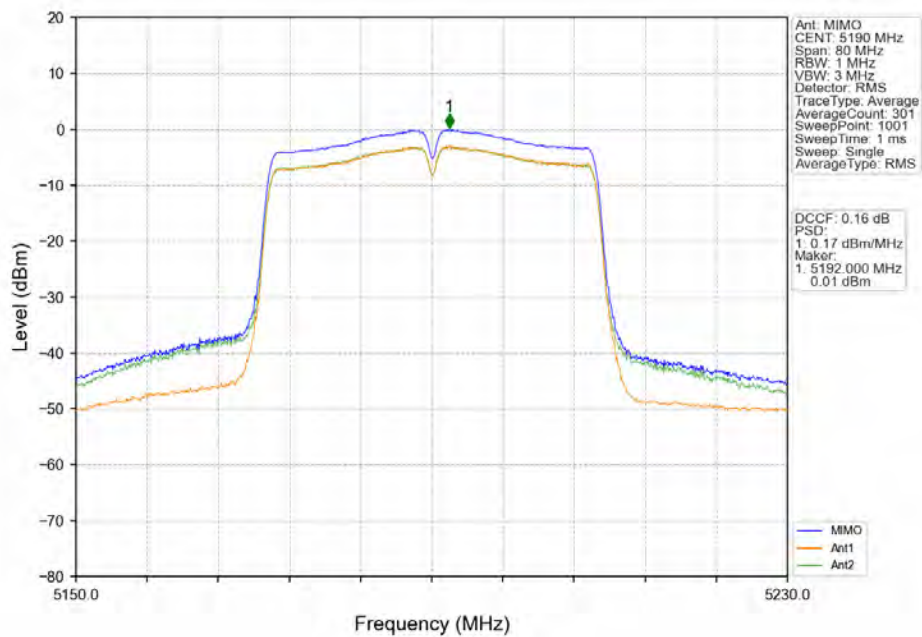
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802.11n(HT40) LCH 5190MHz Ant2 NTVN



802.11n(HT40) LCH 5190MHz MIMO NTVN



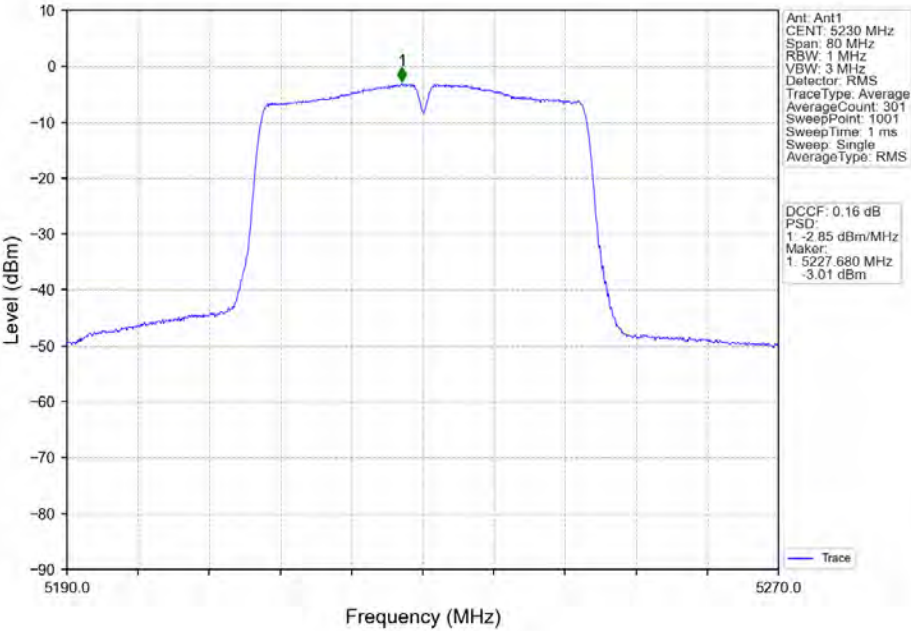
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

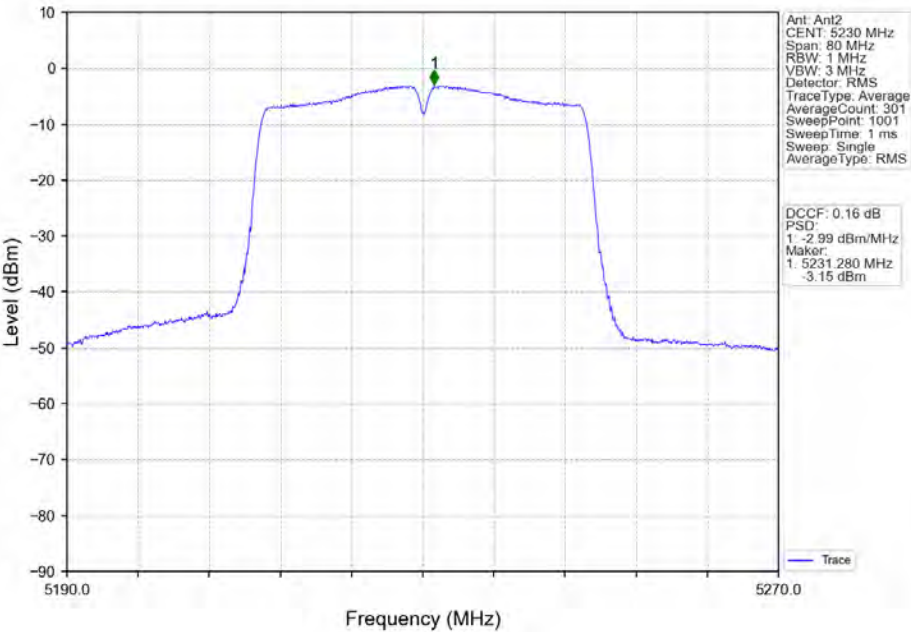
Report No.: KSCR240400073804

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802.11n(HT40) HCH_5230MHz Ant1 NTN



802.11n(HT40) HCH_5230MHz Ant2 NTN



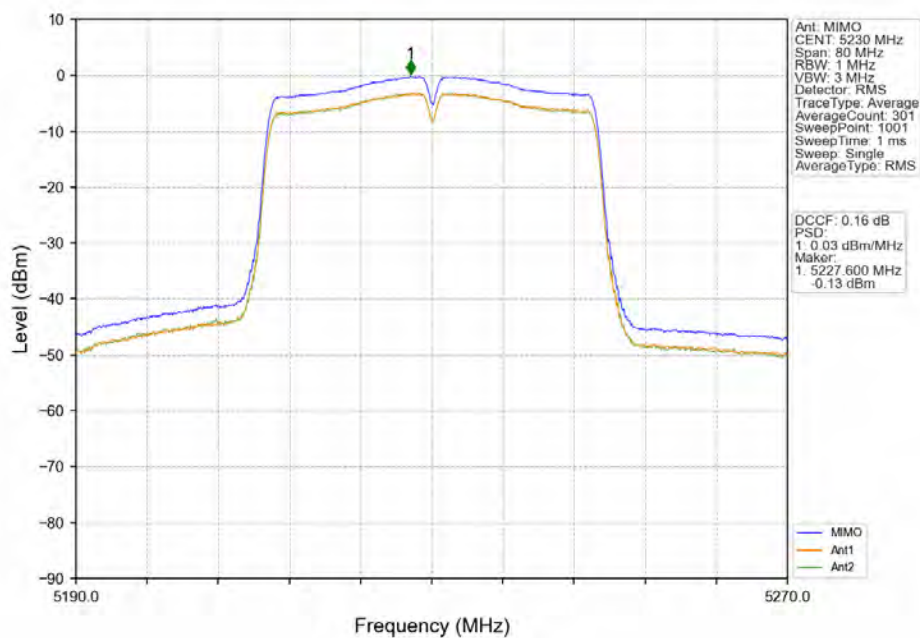
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

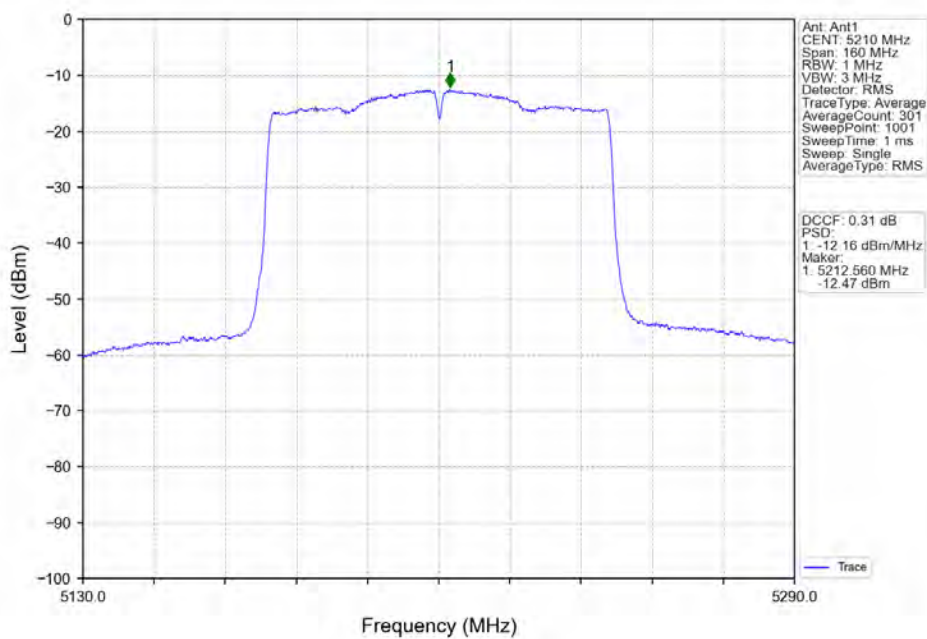
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802.11n(HT40) HCH 5230MHz MIMO NTN



802.11ac(VHT80) MCH 5210MHz Ant1 NTN



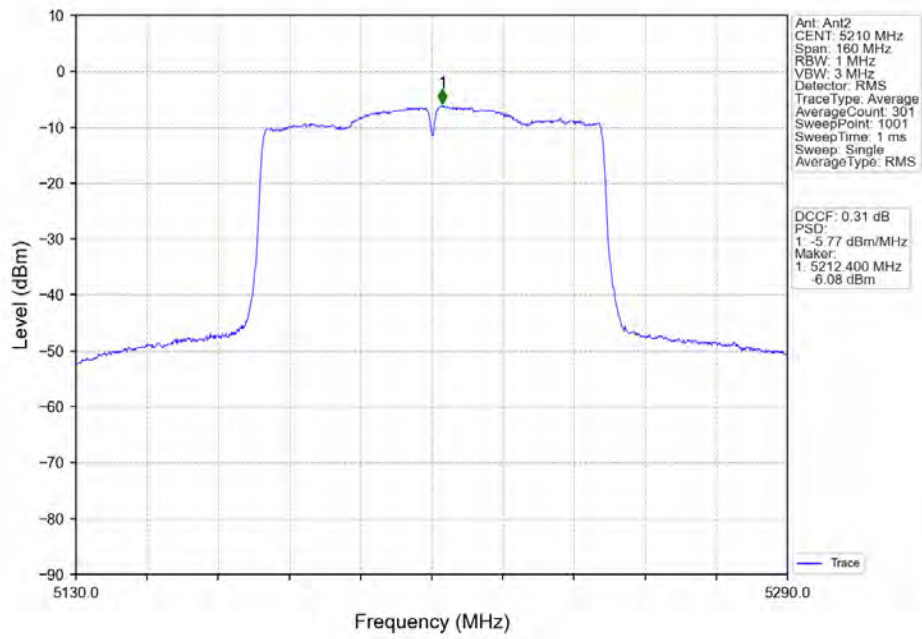
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

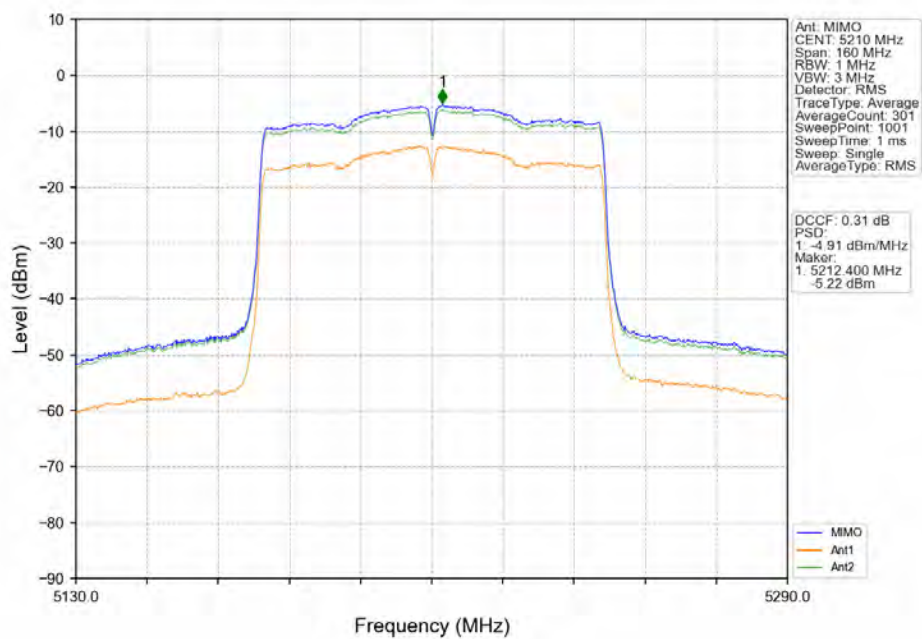
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802.11ac(VHT80) MCH 5210MHz Ant2 NTN



802.11ac(VHT80) MCH 5210MHz MIMO NTN



Compliance Certification Services (Kunshan) Inc.

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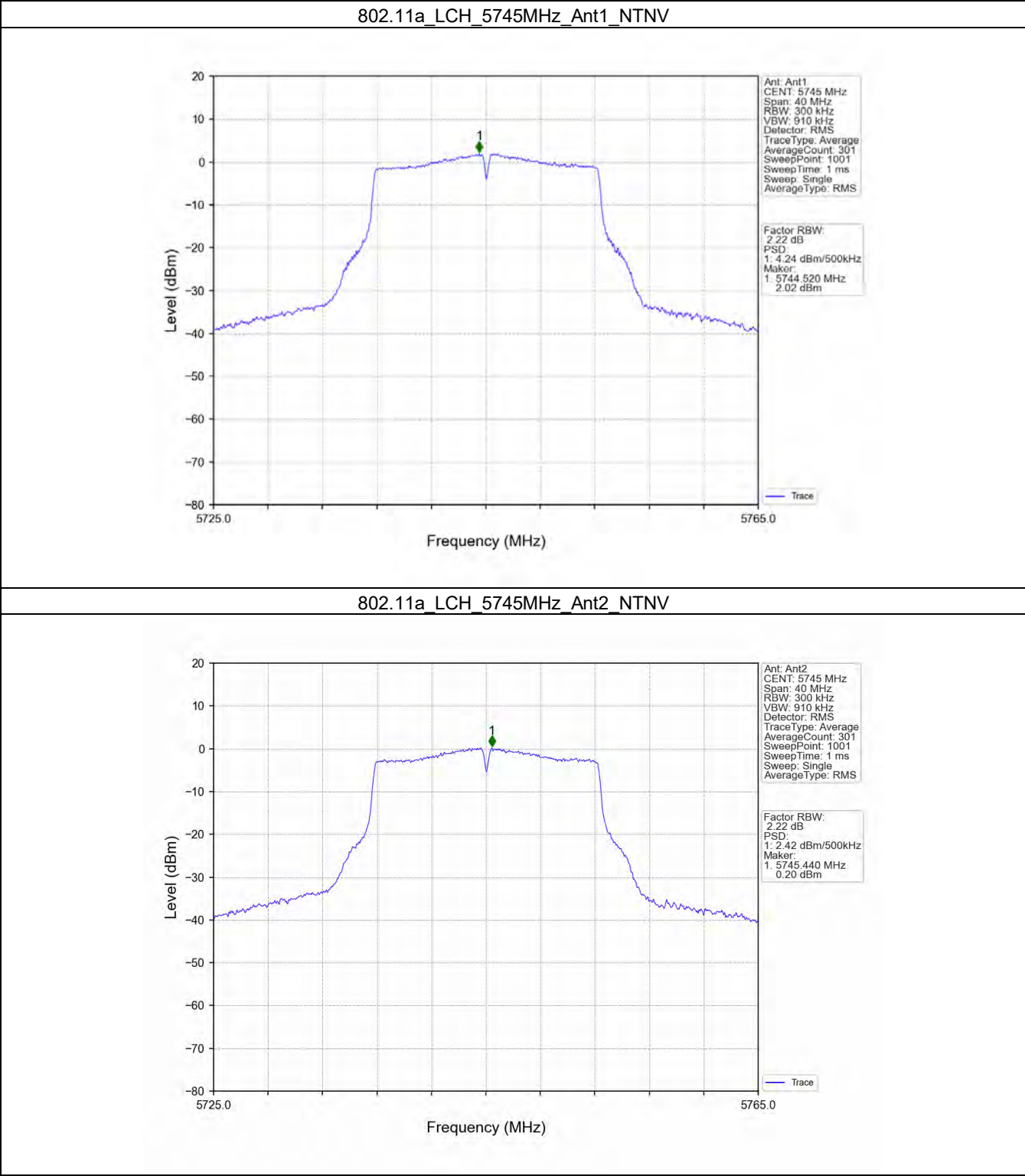
4.2 PSD-Band3

4.2.1 Test Result

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/500kHz)				Verdict
			ANT1	ANT2	MIMO	Limit	
802.11a	SISO	5745	4.24	2.42	/	<=30	Pass
		5785	3.75	2.52	/	<=30	Pass
		5825	4.52	3.11	/	<=30	Pass
802.11n (HT20)	MIMO	5745	-0.10	-0.64	2.61	<=29.43	Pass
		5785	-0.41	-0.99	2.19	<=29.43	Pass
		5825	0.38	-0.05	3.09	<=29.43	Pass
802.11n (HT40)	MIMO	5755	-2.30	-3.54	0.07	<=29.43	Pass
		5795	-3.21	-3.67	-0.55	<=29.43	Pass
802.11ac (VHT80)	MIMO	5775	-7.50	-7.17	-4.43	<=29.43	Pass

Note1: Antenna Gain: Ant1: 3.56dBi; Ant2: 3.56dBi;
Note2: Directional Gain: Band1: 6.57dBi, Band3: 6.57dBi

4.2.2 Test Graph



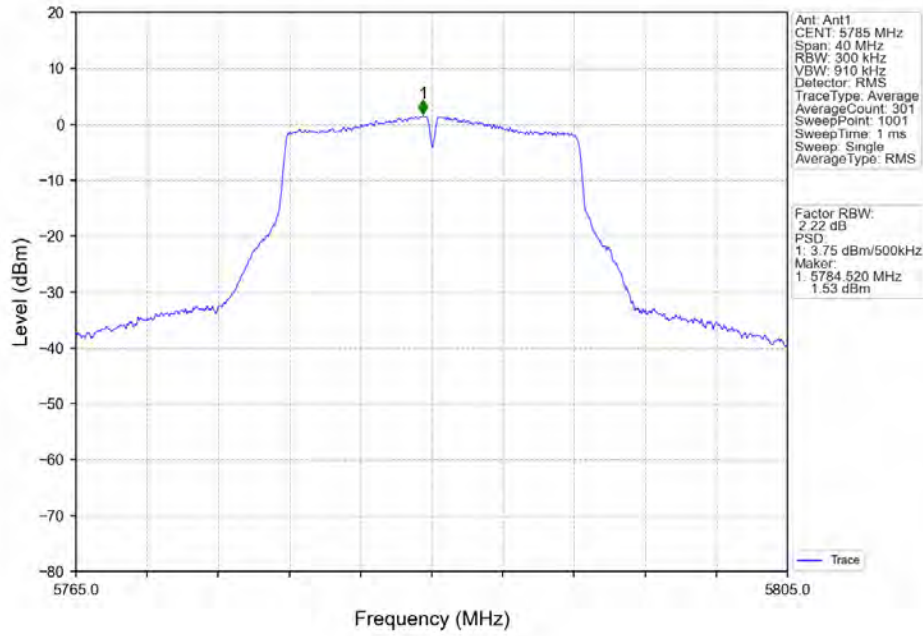
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

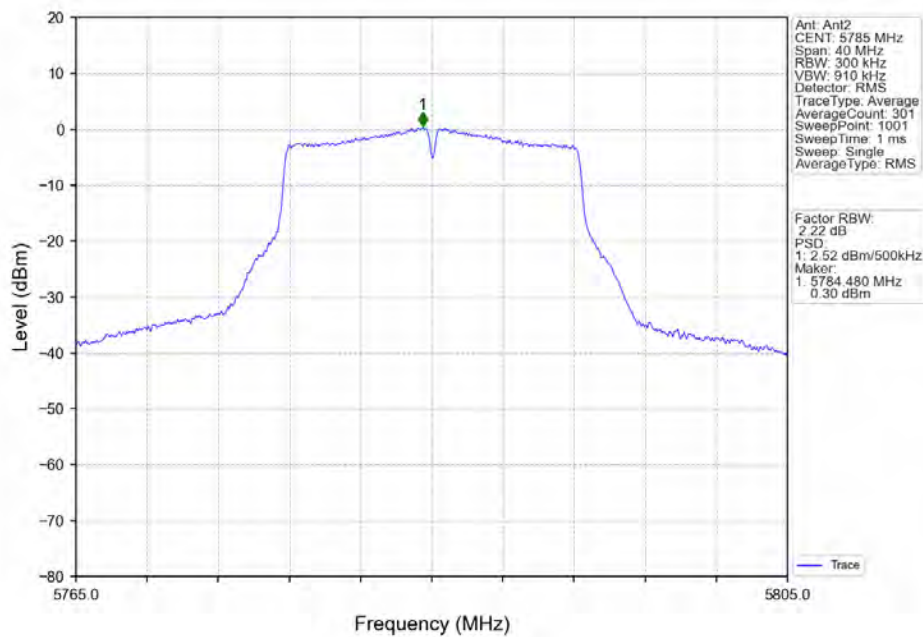
Report No.: KSCR240400073804

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802.11a MCH 5785MHz Ant1 NTN



802.11a MCH 5785MHz Ant2 NTN



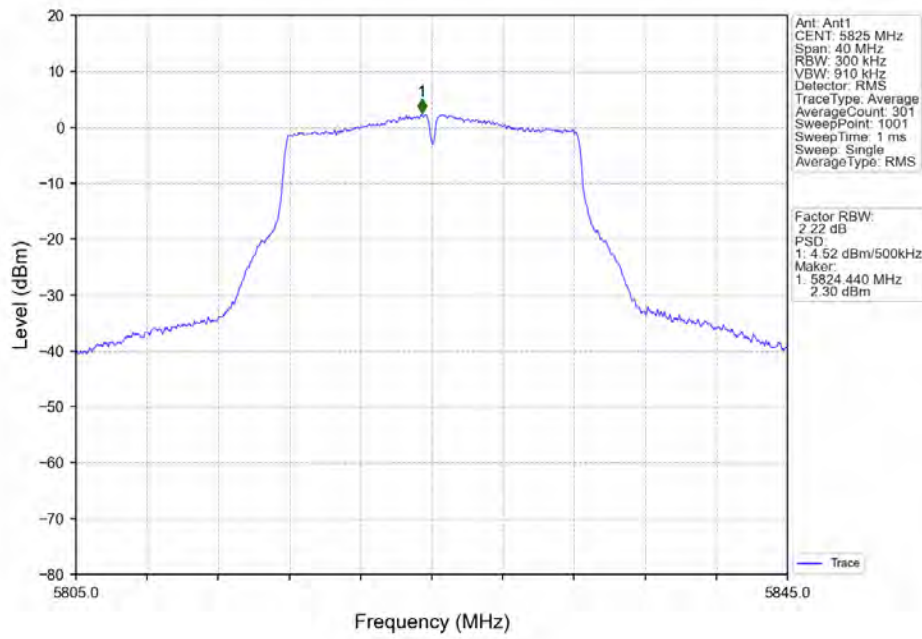
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

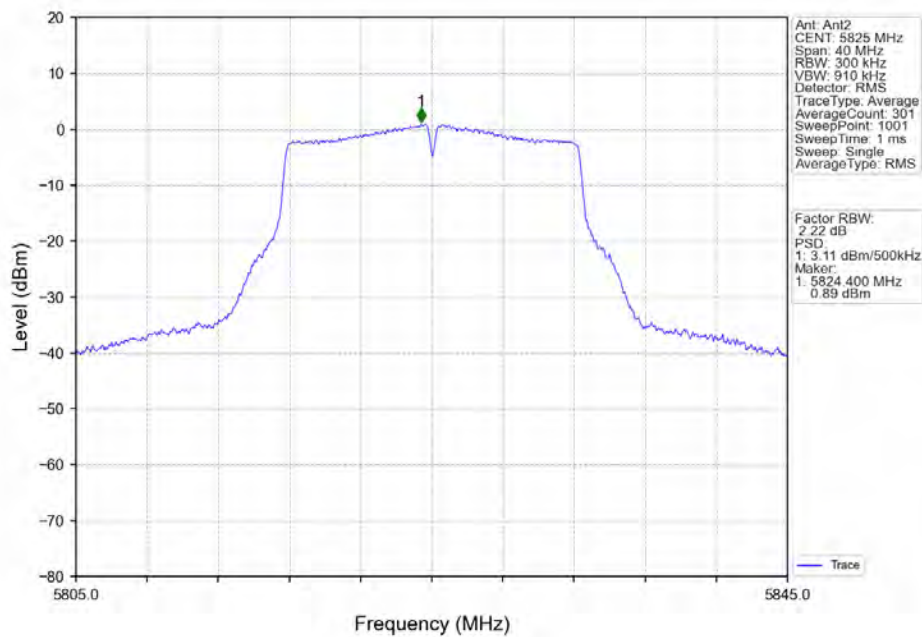
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802.11a HCH 5825MHz Ant1 NTN



802.11a HCH 5825MHz Ant2 NTN



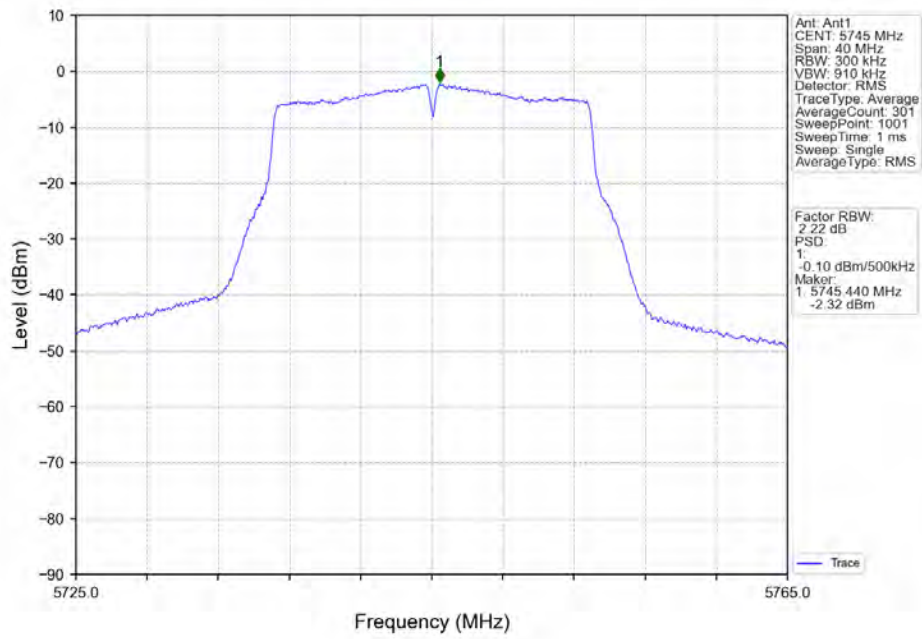
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

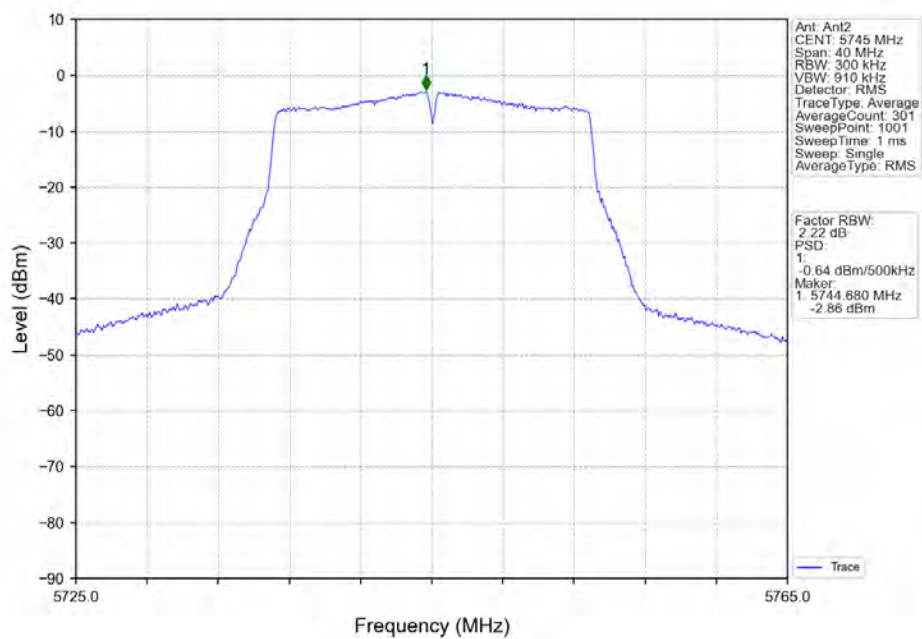
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802.11n(HT20) LCH_5745MHz Ant1 NTVN



802.11n(HT20) LCH_5745MHz Ant2 NTVN



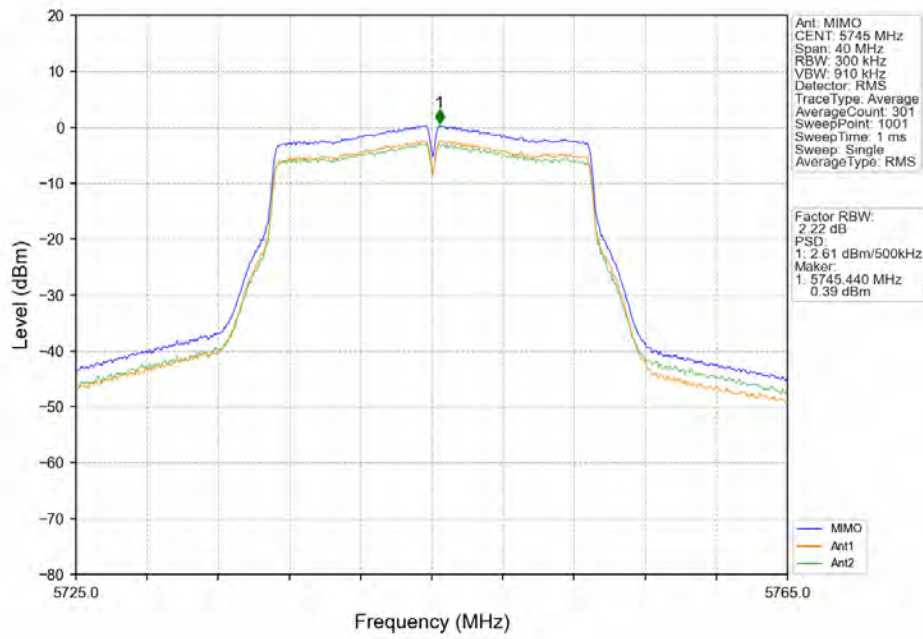
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

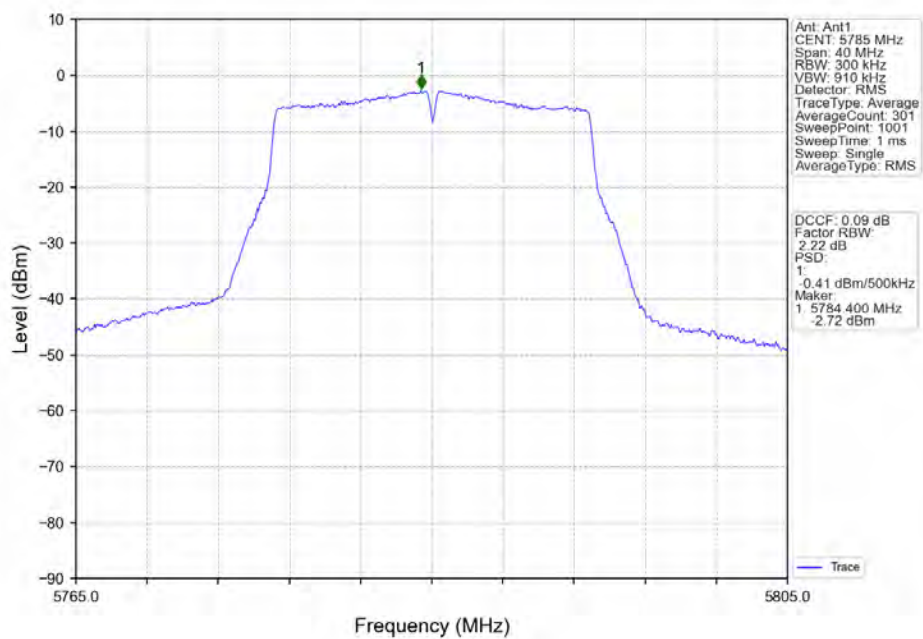
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802.11n(HT20) LCH 5745MHz MIMO NTN



802.11n(HT20) MCH 5785MHz Ant1 NTN



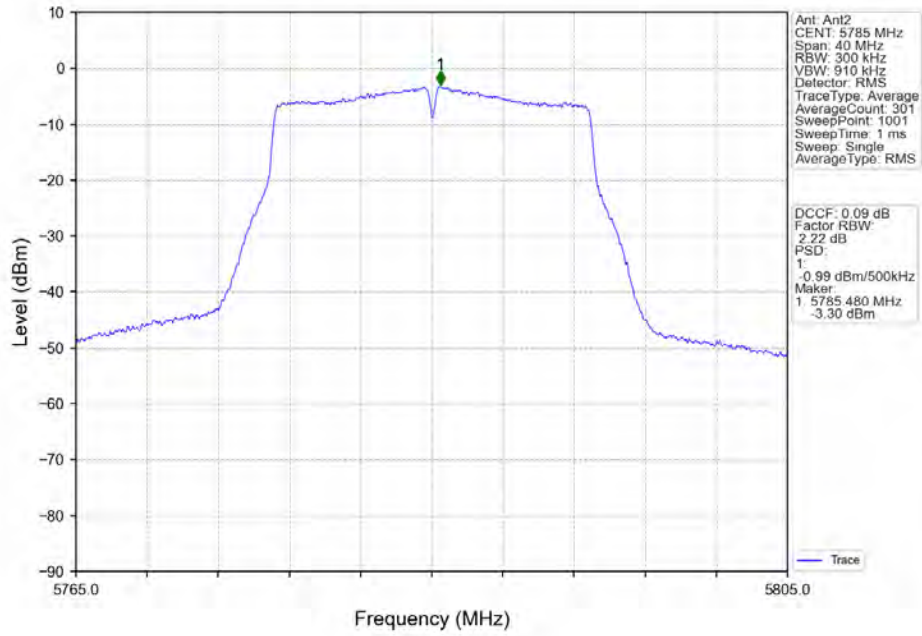
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

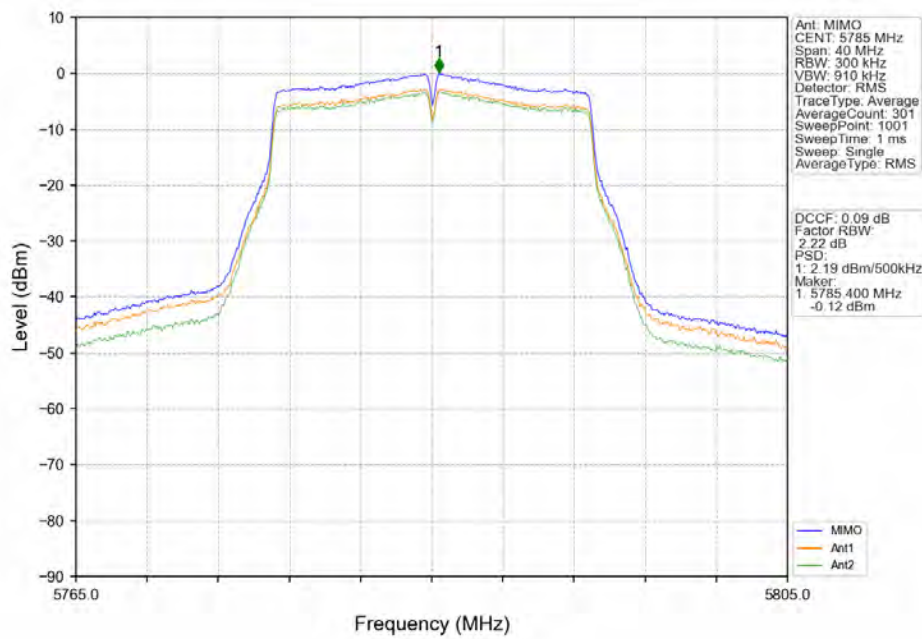
Report No.: KSCR240400073804

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802.11n(HT20) MCH 5785MHz Ant2 NTN



802.11n(HT20) MCH 5785MHz MIMO NTN



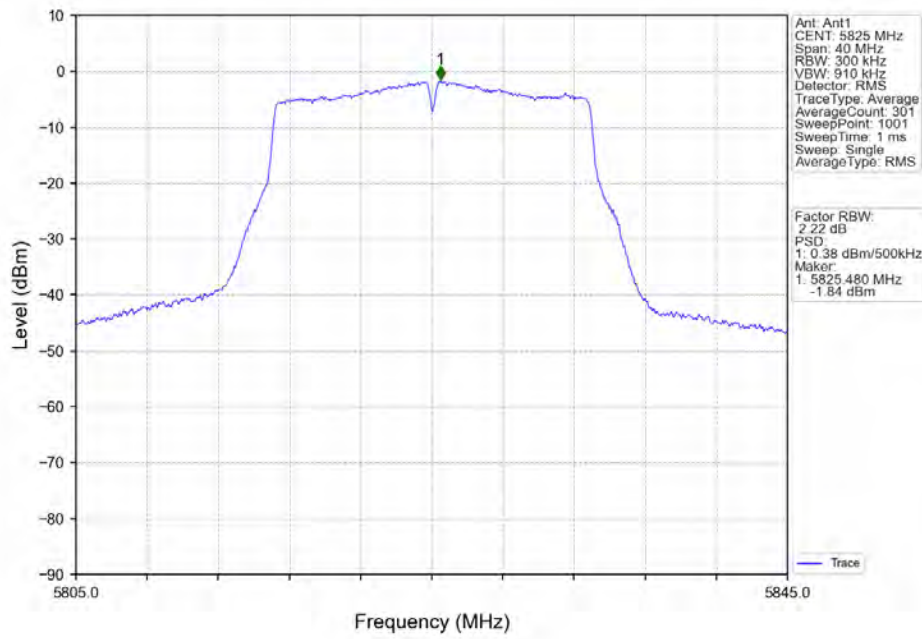
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

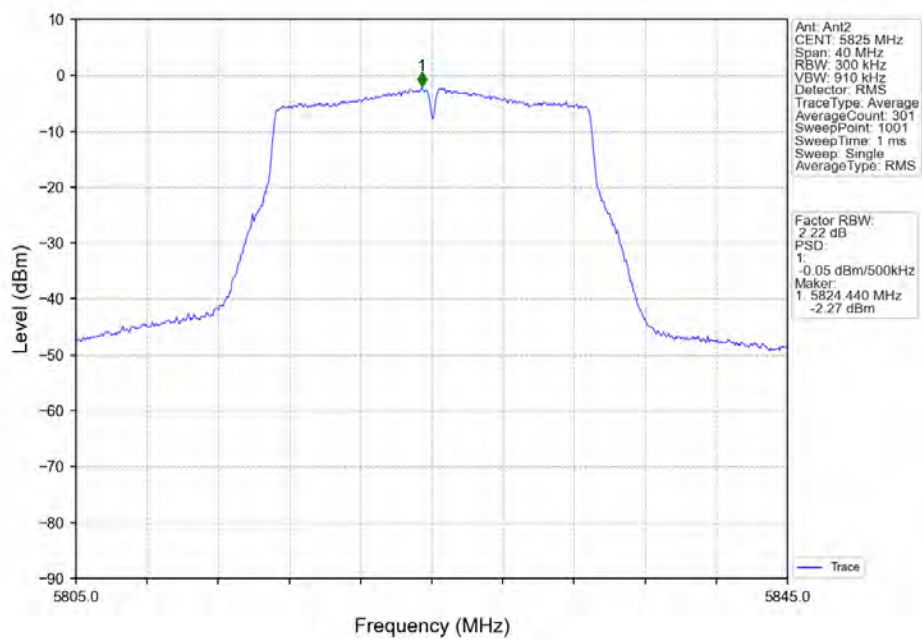
Report No.: KSCR240400073804

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802.11n(HT20) HCH 5825MHz Ant1 NTN



802.11n(HT20) HCH 5825MHz Ant2 NTN



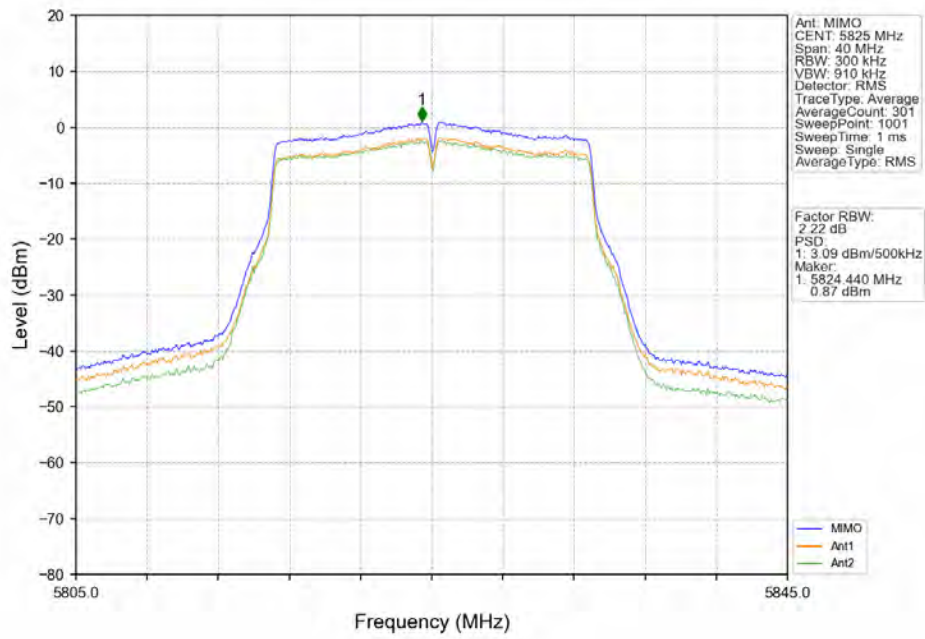
Compliance Certification Services (Kunshan) Inc.

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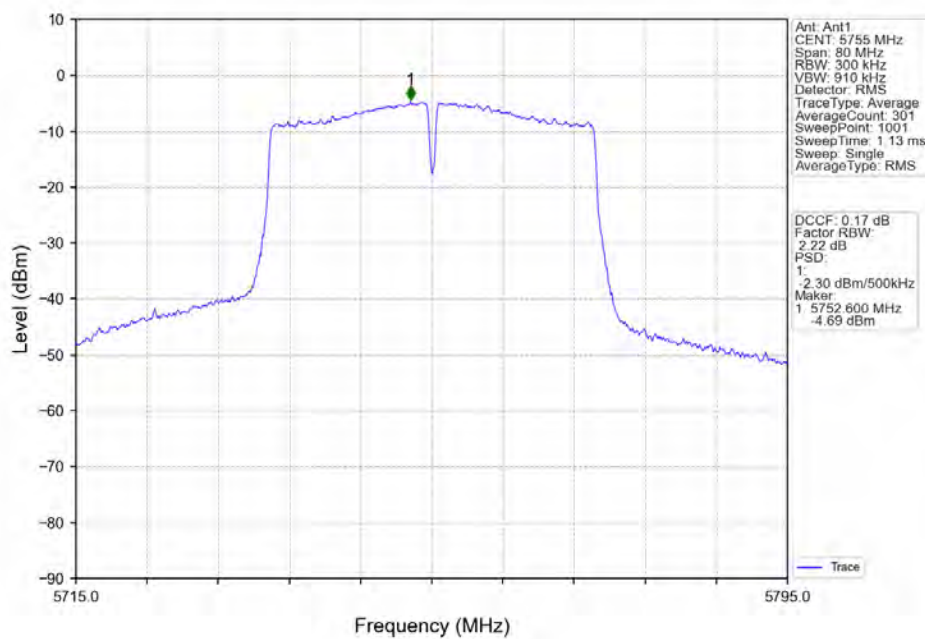
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802.11n(HT20) HCH 5825MHz MIMO NTN



802.11n(HT40) LCH 5755MHz Ant1 NTN



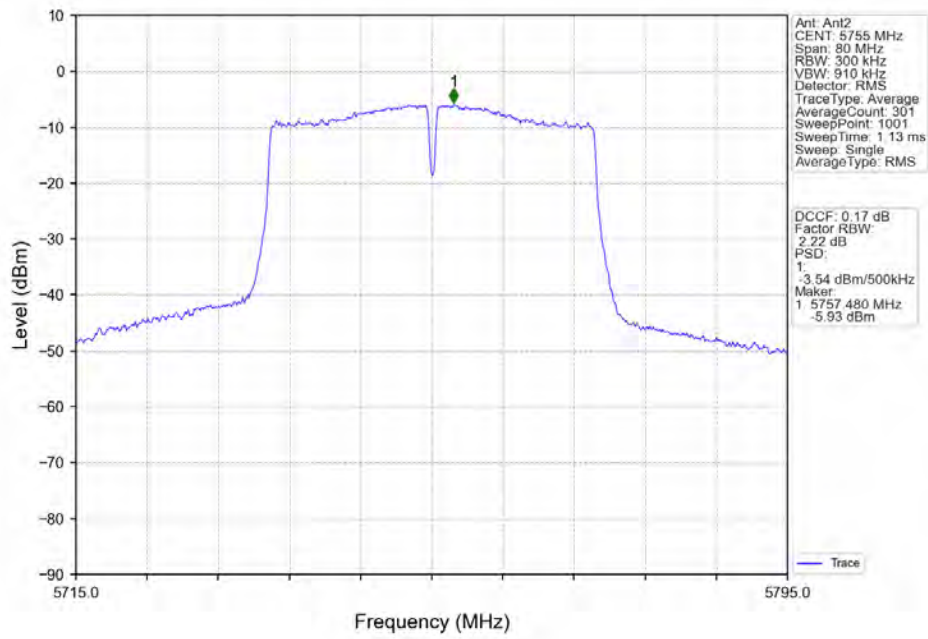
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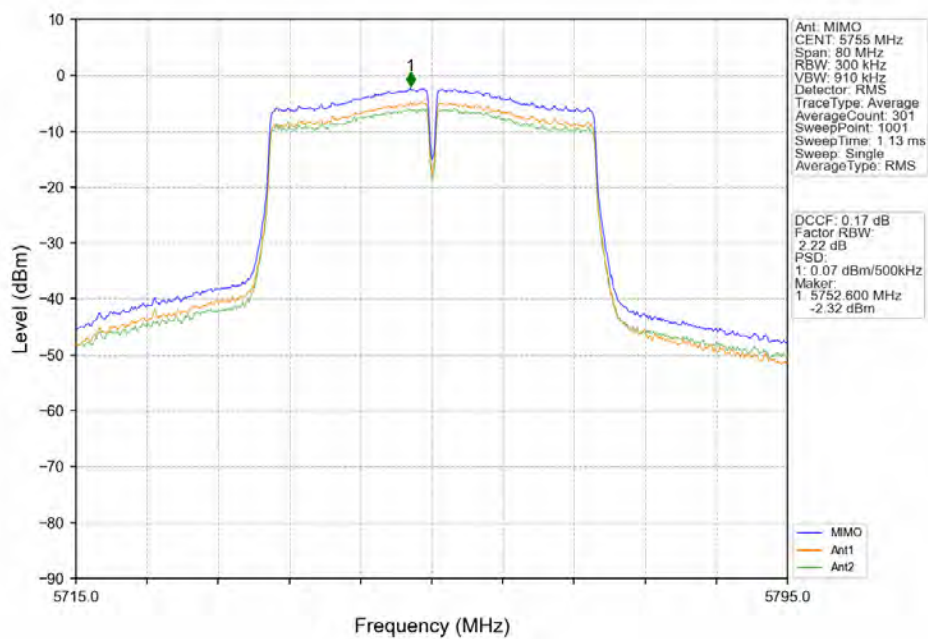
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802.11n(HT40) LCH 5755MHz Ant2 NTN



802.11n(HT40) LCH 5755MHz MIMO NTN



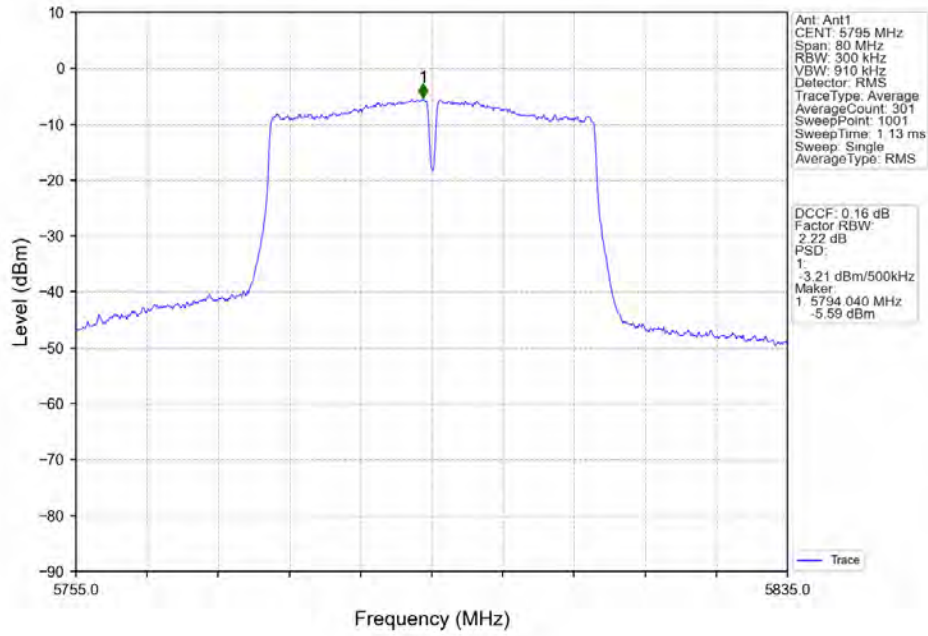
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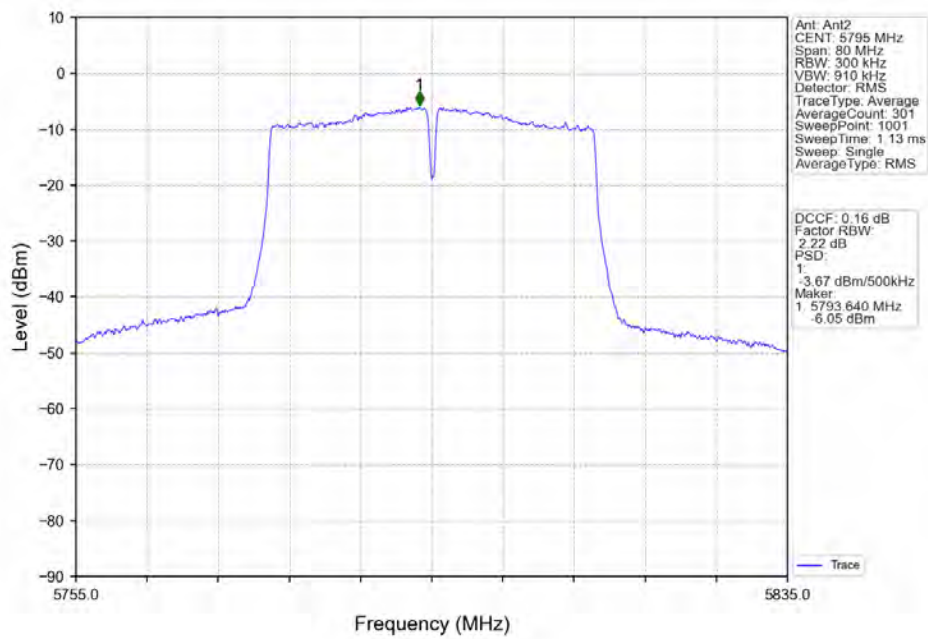
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802.11n(HT40) HCH 5795MHz Ant1 NTN



802.11n(HT40) HCH 5795MHz Ant2 NTN



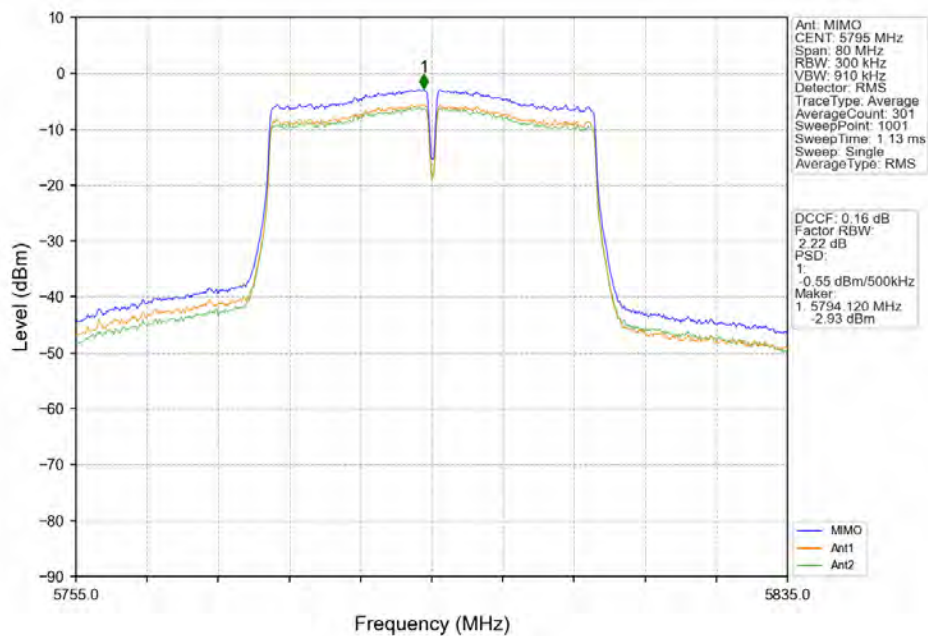
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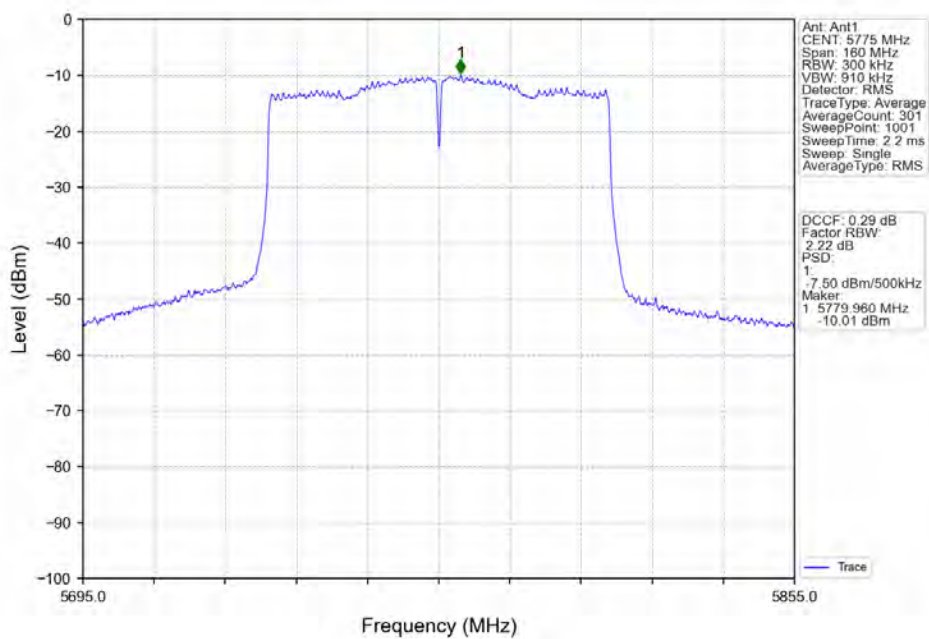
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802.11n(HT40) HCH 5795MHz MIMO NTN



802.11ac(VHT80) MCH 5775MHz Ant1 NTN



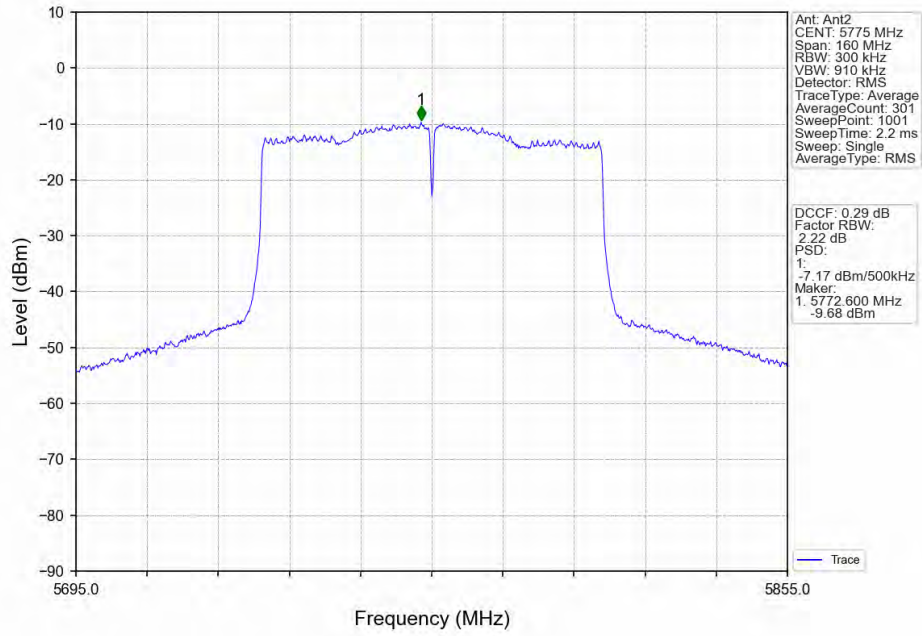
Compliance Certification Services (Kunshan) Inc.

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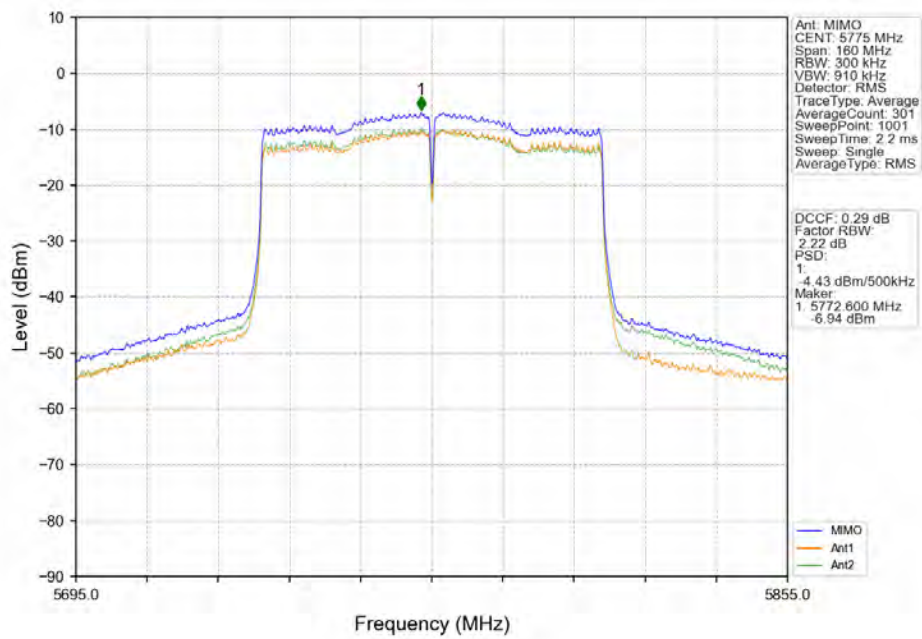
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802.11ac(VHT80) MCH 5775MHz Ant2 NTN



802.11ac(VHT80) MCH 5775MHz MIMO NTN



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5. Frequency Stability

5.1 Ant1

5.1.1 Test Result

Ant1							
Mode	TX Type	Frequency (MHz)	Temperature (°C)	Voltage (VDC)	Measured Frequency (MHz)	Limit (MHz)	Verdict
802.11a	SISO	5180	20	10.8	5180.060	5150 to 5250	Pass
				12	5180.080	5150 to 5250	Pass
				13.2	5180.060	5150 to 5250	Pass
			-30	12	5180.080	5150 to 5250	Pass
			-20	12	5180.020	5150 to 5250	Pass
			-10	12	5180.020	5150 to 5250	Pass
			0	12	5180.060	5150 to 5250	Pass
			10	12	5180.020	5150 to 5250	Pass
			30	12	5180.040	5150 to 5250	Pass
			40	12	5180.020	5150 to 5250	Pass
			50	12	5180.080	5150 to 5250	Pass
		5200	20	10.8	5200.000	5150 to 5250	Pass
				12	5199.980	5150 to 5250	Pass
				13.2	5200.060	5150 to 5250	Pass
			-30	12	5200.020	5150 to 5250	Pass
			-20	12	5200.080	5150 to 5250	Pass
			-10	12	5200.120	5150 to 5250	Pass
			0	12	5199.960	5150 to 5250	Pass
			10	12	5200.100	5150 to 5250	Pass
			30	12	5200.120	5150 to 5250	Pass
			40	12	5200.020	5150 to 5250	Pass
			50	12	5200.060	5150 to 5250	Pass
		5240	20	10.8	5240.020	5150 to 5250	Pass
				12	5240.000	5150 to 5250	Pass
				13.2	5240.040	5150 to 5250	Pass
			-30	12	5240.000	5150 to 5250	Pass
			-20	12	5240.060	5150 to 5250	Pass
			-10	12	5240.040	5150 to 5250	Pass
			0	12	5240.120	5150 to 5250	Pass
			10	12	5240.040	5150 to 5250	Pass
			30	12	5240.040	5150 to 5250	Pass
			40	12	5240.040	5150 to 5250	Pass
			50	12	5240.060	5150 to 5250	Pass
		5745	20	10.8	5745.020	5725 to 5850	Pass
				12	5745.100	5725 to 5850	Pass
				13.2	5745.040	5725 to 5850	Pass
			-30	12	5745.080	5725 to 5850	Pass
			-20	12	5745.080	5725 to 5850	Pass
			-10	12	5745.000	5725 to 5850	Pass
			0	12	5745.040	5725 to 5850	Pass

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			10	12	5745.120	5725 to 5850	Pass
			30	12	5745.080	5725 to 5850	Pass
			40	12	5745.060	5725 to 5850	Pass
			50	12	5745.060	5725 to 5850	Pass
		5785	20	10.8	5785.020	5725 to 5850	Pass
				12	5785.020	5725 to 5850	Pass
				13.2	5785.080	5725 to 5850	Pass
			-30	12	5785.040	5725 to 5850	Pass
			-20	12	5784.960	5725 to 5850	Pass
			-10	12	5785.020	5725 to 5850	Pass
			0	12	5785.040	5725 to 5850	Pass
			10	12	5785.020	5725 to 5850	Pass
			30	12	5784.980	5725 to 5850	Pass
			40	12	5785.000	5725 to 5850	Pass
			50	12	5785.020	5725 to 5850	Pass
		5825	20	10.8	5825.040	5725 to 5850	Pass
				12	5825.120	5725 to 5850	Pass
				13.2	5825.040	5725 to 5850	Pass
			-30	12	5825.080	5725 to 5850	Pass
			-20	12	5825.080	5725 to 5850	Pass
			-10	12	5825.040	5725 to 5850	Pass
			0	12	5825.100	5725 to 5850	Pass
			10	12	5825.040	5725 to 5850	Pass
			30	12	5825.060	5725 to 5850	Pass
			40	12	5825.120	5725 to 5850	Pass
			50	12	5825.060	5725 to 5850	Pass
802.11n (HT20)	MIMO	5180	20	10.8	5180.040	5150 to 5250	Pass
				12	5180.040	5150 to 5250	Pass
				13.2	5180.040	5150 to 5250	Pass
			-30	12	5180.040	5150 to 5250	Pass
			-20	12	5180.080	5150 to 5250	Pass
			-10	12	5180.100	5150 to 5250	Pass
			0	12	5180.040	5150 to 5250	Pass
			10	12	5180.040	5150 to 5250	Pass
			30	12	5180.040	5150 to 5250	Pass
			40	12	5180.040	5150 to 5250	Pass
			50	12	5180.060	5150 to 5250	Pass
		5200	20	10.8	5200.040	5150 to 5250	Pass
				12	5200.060	5150 to 5250	Pass
				13.2	5200.040	5150 to 5250	Pass
			-30	12	5200.080	5150 to 5250	Pass
			-20	12	5200.060	5150 to 5250	Pass
			-10	12	5200.020	5150 to 5250	Pass
			0	12	5200.040	5150 to 5250	Pass
			10	12	5200.020	5150 to 5250	Pass
			30	12	5200.040	5150 to 5250	Pass
			40	12	5200.080	5150 to 5250	Pass
			50	12	5200.040	5150 to 5250	Pass
		5240	20	10.8	5240.080	5150 to 5250	Pass
				12	5240.100	5150 to 5250	Pass
				13.2	5240.020	5150 to 5250	Pass
				-30	5240.060	5150 to 5250	Pass

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			-20	12	5240.080	5150 to 5250	Pass
			-10	12	5240.100	5150 to 5250	Pass
			0	12	5240.040	5150 to 5250	Pass
			10	12	5240.080	5150 to 5250	Pass
			30	12	5240.060	5150 to 5250	Pass
			40	12	5240.060	5150 to 5250	Pass
			50	12	5240.060	5150 to 5250	Pass
		5745	20	10.8	5745.080	5725 to 5850	Pass
				12	5745.040	5725 to 5850	Pass
				13.2	5745.040	5725 to 5850	Pass
			-30	12	5745.040	5725 to 5850	Pass
			-20	12	5745.060	5725 to 5850	Pass
			-10	12	5745.060	5725 to 5850	Pass
			0	12	5745.080	5725 to 5850	Pass
			10	12	5745.040	5725 to 5850	Pass
			30	12	5745.020	5725 to 5850	Pass
			40	12	5745.040	5725 to 5850	Pass
			50	12	5745.100	5725 to 5850	Pass
		5785	20	10.8	5785.020	5725 to 5850	Pass
				12	5785.000	5725 to 5850	Pass
				13.2	5785.040	5725 to 5850	Pass
			-30	12	5785.040	5725 to 5850	Pass
			-20	12	5785.040	5725 to 5850	Pass
			-10	12	5785.000	5725 to 5850	Pass
			0	12	5785.040	5725 to 5850	Pass
			10	12	5785.040	5725 to 5850	Pass
			30	12	5785.040	5725 to 5850	Pass
			40	12	5785.020	5725 to 5850	Pass
			50	12	5785.020	5725 to 5850	Pass
		5825	20	10.8	5825.060	5725 to 5850	Pass
				12	5825.100	5725 to 5850	Pass
				13.2	5825.040	5725 to 5850	Pass
			-30	12	5825.060	5725 to 5850	Pass
			-20	12	5825.060	5725 to 5850	Pass
			-10	12	5825.080	5725 to 5850	Pass
			0	12	5825.040	5725 to 5850	Pass
			10	12	5825.080	5725 to 5850	Pass
			30	12	5825.080	5725 to 5850	Pass
			40	12	5825.060	5725 to 5850	Pass
			50	12	5825.060	5725 to 5850	Pass
802.11n (HT40)	MIMO	5190	20	10.8	5190.120	5150 to 5250	Pass
				12	5190.080	5150 to 5250	Pass
				13.2	5190.080	5150 to 5250	Pass
			-30	12	5190.120	5150 to 5250	Pass
			-20	12	5190.080	5150 to 5250	Pass
			-10	12	5190.120	5150 to 5250	Pass
			0	12	5190.120	5150 to 5250	Pass
			10	12	5190.080	5150 to 5250	Pass
			30	12	5190.080	5150 to 5250	Pass
			40	12	5190.120	5150 to 5250	Pass
			50	12	5190.120	5150 to 5250	Pass
		5230	20	10.8	5230.040	5150 to 5250	Pass

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				12	5230.120	5150 to 5250	Pass
				13.2	5230.080	5150 to 5250	Pass
				-30	5230.080	5150 to 5250	Pass
				-20	5230.080	5150 to 5250	Pass
				-10	5230.080	5150 to 5250	Pass
				0	5230.080	5150 to 5250	Pass
				10	5230.080	5150 to 5250	Pass
				30	5230.080	5150 to 5250	Pass
				40	5230.120	5150 to 5250	Pass
				50	5230.120	5150 to 5250	Pass
		5755	20	10.8	5755.080	5725 to 5850	Pass
				12	5755.080	5725 to 5850	Pass
				13.2	5755.120	5725 to 5850	Pass
			-30	12	5755.120	5725 to 5850	Pass
			-20	12	5755.080	5725 to 5850	Pass
			-10	12	5755.080	5725 to 5850	Pass
			0	12	5755.080	5725 to 5850	Pass
			10	12	5755.080	5725 to 5850	Pass
			30	12	5755.120	5725 to 5850	Pass
			40	12	5755.080	5725 to 5850	Pass
			50	12	5755.080	5725 to 5850	Pass
		5795	20	10.8	5795.080	5725 to 5850	Pass
				12	5795.120	5725 to 5850	Pass
				13.2	5795.120	5725 to 5850	Pass
			-30	12	5795.080	5725 to 5850	Pass
			-20	12	5795.080	5725 to 5850	Pass
			-10	12	5795.080	5725 to 5850	Pass
			0	12	5795.040	5725 to 5850	Pass
			10	12	5795.080	5725 to 5850	Pass
			30	12	5795.120	5725 to 5850	Pass
			40	12	5795.040	5725 to 5850	Pass
			50	12	5795.120	5725 to 5850	Pass
802.11ac (VHT80)	MIMO	5210	20	10.8	5210.150	5150 to 5250	Pass
				12	5210.150	5150 to 5250	Pass
				13.2	5210.075	5150 to 5250	Pass
			-30	12	5210.075	5150 to 5250	Pass
			-20	12	5210.150	5150 to 5250	Pass
			-10	12	5210.150	5150 to 5250	Pass
			0	12	5210.150	5150 to 5250	Pass
			10	12	5210.150	5150 to 5250	Pass
			30	12	5210.150	5150 to 5250	Pass
			40	12	5210.150	5150 to 5250	Pass
			50	12	5210.075	5150 to 5250	Pass
		5775	20	10.8	5775.150	5725 to 5850	Pass
				12	5775.150	5725 to 5850	Pass
				13.2	5775.150	5725 to 5850	Pass
			-30	12	5775.150	5725 to 5850	Pass
			-20	12	5775.150	5725 to 5850	Pass
			-10	12	5775.150	5725 to 5850	Pass
			0	12	5775.150	5725 to 5850	Pass
			10	12	5775.150	5725 to 5850	Pass
			30	12	5775.150	5725 to 5850	Pass



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			40	12	5775.150	5725 to 5850	Pass
			50	12	5775.150	5725 to 5850	Pass

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