CFR 47 FCC PART 15 SUBPART C

TEST REPORT

For

Dual Band Mesh Router, AX3000 Dual Band Mesh Router

MODEL NUMBER: NM3098B, NM3098

REPORT NUMBER: 4790899498.2-RF-1

ISSUE DATE: August 10, 2023

FCC ID: 2AW68-NM3098

Prepared for

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The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing period only and are not to be used to indicate applicability to other similar products.

Revision History

Rev.	Issue Date	Revisions	Revised By
V0	August 10, 2023	Initial Issue	

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Summary of Test Results

Test Item	Clause	Limit/Requirement	Result
Antenna Requirement	N/A	FCC Part 15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	ANSI C63.10-2013, Clause 6.2	FCC Part 15.207	Pass
Conducted Output Power	ANSI C63.10-2013, Clause 11.9.1.3	FCC Part 15.247 (b)(3)	Pass
6dB Bandwidth	ANSI C63.10-2013, Clause 11.8.1	FCC Part 15.247 (a)(2)	Pass
Power Spectral Density	ANSI C63.10-2013, Clause 11.10.2	FCC Part 15.247 (e)	Pass
Conducted Band edge and spurious emission	ANSI C63.10-2013, Clause 11.11	FCC Part 15.247(d)	Pass
Radiated Band edge and Spurious Emission	ANSI C63.10-2013, Clause 11.12 & Clause 11.13	FCC Part 15.247 (d) FCC Part 15.205/15.209	Pass
Duty Cycle	ANSI C63.10-2013, Clause 11.6	None; for reporting purposes only.	Pass

*This test report is only published to and used by the applicant, and it is not for evidence purpose in China.
*The measurement result for the sample received is <Pass> according to <CFR 47 FCC PART 15 SUBPART C > when <Accuracy Method> decision rule is applied.

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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name:	Shenzhen SDMC Technology Co.,Ltd.
Address:	Room 1022, Floor 10, Building A, Customs Building, No. 2, Xin'an 3rd Road, Dalang Community, Xin'an Street, Bao'an District, Shenzhen, 518000 China

Manufacturer Information

Company Name:	Shenzhen SDMC Technology Co.,Ltd.
Address:	Room 1022, Floor 10, Building A, Customs Building, No. 2, Xin'an 3rd Road, Dalang Community, Xin'an Street, Bao'an District, Shenzhen, 518000 China

EUT Information

EUT Name:	Dual Band Mesh Router, AX3000 Dual Band Mesh Router
Model:	NM3098B
Serial Model:	NM3098
Brand:	SDMC
Sample Received Date:	June 26, 2023
Sample Status:	Normal
Sample ID:	6220436
Date of Tested:	July 1, 2023 to August 10, 2023

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 FCC PART 15 SUBPART C	**Pass**

Prepared By:

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2. TEST METHODOLOGY

All tests were performed in accordance with the standard CFR 47 FCC PART 15 SUBPART C , KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, KDB 662911 D01 Multiple Transmitter Output v02r01, CFR 47 FCC Part 2 and ANSI C63.10-2013.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	**A2LA (Certificate No.: 4102.01)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA. **FCC (FCC Designation No.: CN1187)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules **ISED (Company No.: 21320)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046. **VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20019 and R-20004 Shielding Room B , the VCCI registration No. is C-20012 and T-20011

Note1:
All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, No. 1, Li Bin Road, Song Shan Lake Hi-Tech Development Zone Dongguan, 523808, People's Republic of China.

Note2:
The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd.
Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

Note3:
For below 30 MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30 MHz had been correlated to measurements performed on an OFS.

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4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty
Conduction emission	3.62 dB
Radiated Emission (Included Fundamental Emission) (9 kHz ~ 30 MHz)	2.2 dB
Radiated Emission (Included Fundamental Emission) (30 MHz ~ 1 GHz)	4.00 dB
Radiated Emission (Included Fundamental Emission) (1 GHz to 26 GHz)	5.78 dB (1 GHz ~ 18 GHz)
	5.23 dB (18 GHz ~ 26 GHz)
Duty Cycle	±0.028%
DTS and 99% Occupied Bandwidth	±0.0196%
Maximum Conducted Output Power	±0.686 dB
Maximum Power Spectral Density Level	±0.743 dB
Conducted Band-edge Compliance	±1.328 dB
Conducted Unwanted Emissions In Non-restricted Frequency Bands	±0.746 dB (9 kHz ~ 1 GHz)
	±1.328dB (1 GHz ~ 26 GHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

EUT Name:	Dual Band Mesh Router, AX3000 Dual Band Mesh Router
Model:	NM3098B
Serial Model:	NM3098
Model Difference:	NM3098B, NM3098 have the same technical construction including circuit diagram, PCB Layout, components and component layout, all electrical construction, and mechanical construction. The difference lies only the model number and NM3098B has three Gigabit Ethernet ports, NM3098 has only two Gigabit Ethernet ports and the network transformer in position T3 is removed. All these changes do not degrade the unwanted emissions of the certified product.
Remark:	NM3098B and NM3098 both models have been considered and only the worst case model NM3098B data is recorded.

Frequency Range:	2412 MHz to 2462 MHz
Support Standards:	CFR 47 FCC PART 15 SUBPART C,ISED RSS-247 ISSUE 2
Type of Modulation:	IEEE 802.11b: DSSS(CCK, DQPSK, DBPSK) IEEE 802.11g/n: OFDM(64-QAM, 16-QAM, QPSK, BPSK) IEEE 802.11ax: OFDMA(1024-QAM, 256-QAM, 64-QAM, 16-QAM, QPSK, BPSK)
Normal Test Voltage:	AC 120 V, 60 Hz

5.2. CHANNEL LIST

Channel List for 802.11b/g/n/ax (20 MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	4	2427	7	2442	10	2457
2	2417	5	2432	8	2447	11	2462
3	2422	6	2437	9	2452	/	/

Channel List for 802.11n/ax (40 MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	2422	5	2432	7	2442	9	2452
4	2427	6	2437	8	2447	/	/

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5.3. MAXIMUM POWER

IEEE Std. 802.11	Frequency (MHz)	Channel Number	Maximum Conducted AVG Output Power (dBm)
b	2412 ~ 2462	1-11[11]	18.53
g	2412 ~ 2462	1-11[11]	16.49
n HT20	2412 ~ 2462	1-11[11]	18.00
n HT40	2422 ~ 2452	3-9[7]	17.94
ax HE20	2412 ~ 2462	1-11[11]	18.33
ax HE40	2422 ~ 2452	3-9[7]	18.22

5.4. TEST CHANNEL CONFIGURATION

IEEE Std. 802.11	Test Channel Number	Frequency
b	CH 1(Low Channel), CH 6(MID Channel), CH 11(High Channel)	2412 MHz, 2437 MHz, 2462 MHz
g	CH 1(Low Channel), CH 6(MID Channel), CH 11(High Channel)	2412 MHz, 2437 MHz, 2462 MHz
n HT20	CH 1(Low Channel), CH 6(MID Channel), CH 11(High Channel)	2412 MHz, 2437 MHz, 2462 MHz
n HT40	CH 3(Low Channel), CH 6(MID Channel), CH 9(High Channel)	2422 MHz, 2437 MHz, 2452 MHz
ax HE20	CH 1(Low Channel), CH 6(MID Channel), CH 11(High Channel)	2412 MHz, 2437 MHz, 2462 MHz
ax HE40	CH 3(Low Channel), CH 6(MID Channel), CH 9(High Channel)	2422 MHz, 2437 MHz, 2452 MHz

5.5. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band							
Test Software		MP Tool					
Modulation Mode	Transmit Antenna Number	Test Channel					
		NCB: 20MHz			NCB: 40MHz		
		CH 1	CH 6	CH 11	CH 3	CH 6	CH 9
802.11b	0	15	16	15.5	/		
	1	16	16	16			
802.11g	0	16	16	16			
	1	16	16	16			
802.11n HT20	0	16	16	16			
	1	16	16	16			
802.11n HT40	0	/			16	16	16
	1	/			16	16	16
802.11ax HE20	0	16	16	16	/		
	1	16	16	16			
802.11ax HE40	0	/			16	16	15
	1	/			16	16	15

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5.6. WORST-CASE CONFIGURATIONS

The EUT was tested in the following configuration(s):

Controlled in test mode using a software application on the EUT supplied by customer. The application was used to enable a continuous transmission and to select the mode, test channels, bandwidth, data rates as required.

Test channels referring to section 5.4.

Maximum power setting referring to section 5.5.

Worst-case data rates as provided by the client were:

802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11n HT20 mode: MCS0
802.11n HT40 mode: MCS0
802.11ax HE20 mode: MCS0
802.11ax HE40 mode: MCS0

802.11b/g only support SISO mode.
802.11n HT20/HT40/ax HE20/HE40 support SISO and MIMO mode.

802.11b/g SISO mode, Antenna 0 and Antenna 1 has the same power setting, so only Antenna 1 worst case test data were recorded in the report.

The EUT has three antenna, ANT 0 and ANT 1 can be used as transmitting/receiving antenna for both 2.4G and 5G band, ANT 2 only can used as receiving antenna for 5G band.

The measured additional path loss was included in any path loss calculations for all RF cable used during tested.

Conducted bandedge and spurious emissions tests were performed with SISO mode, as this port was found to have the worst case in terms of power settings amongst all supported possible SISO & MIMO port combinations.

Radiated emissions tests were performed with the MIMO modes. These were found to be the worst modulation scheme with regards to emissions after preliminary investigations and, as this mode emits the highest conducted output power level, it was deemed to be the worst case.

The EUT support Cyclic Shift Diversity (CDD) and TX Beamforming. The conducted power of CDD mode is higher than TX Beamforming mode, so we only chose the worst-case mode CDD for final testing.

The EUT not support partial Rus and channel puncturing mode.

The EUT Simultaneous Transmission combination as below:

NO	Combination
1	5G Wi-Fi + 2.4GHz Wi-Fi

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found. Only the worst-case data record in this report.

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5.7. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna	Frequency (MHz)	Antenna Type	MAX Antenna Gain (dBi)
0	2412-2462	PCB	3.15
1	2412-2462	PCB	3.20

The EUT support Cyclic Shift Diversity(CDD) mode.

MIMO output power port and MIMO PSD port summing were performed in accordance with KDB 662911 D01. For the CDD results the Directional Gain was calculated in accordance with the following mothed.

For output power measurements:
Directional gain= G_{ANT} + Array Gain = 3.20 dBi
G_{ANT} : equal to the gain of the antenna having the highest gain
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$

For power spectral density (PSD) measurements:
Directional gain= G_{ANT} + Array Gain = 6.21 dBi
Array Gain = 10 log(N_{ANT}/N_{SS}) dB.
N_{ANT} : number of transmit antennas
N_{SS} : number of spatial streams, The worst case directional gain will occur when N_{SS} = 1

The EUT also support TX Beamforming mode.
Directional gain = G_{ANT} + 10 log(N_{ANT}/N_{SS})=6.21 dBi

Test Mode	Transmit and Receive Mode	Description
IEEE 802.11b	☒2TX, 2RX	ANT 0 and ANT 1 can be used as transmitting/receiving antenna.
IEEE 802.11g	☒2TX, 2RX	
IEEE 802.11n HT20	☒2TX, 2RX	
IEEE 802.11n HT40	☒2TX, 2RX	
IEEE 802.11ax HE20	☒2TX, 2RX	
IEEE 802.11ax HE40	☒2TX, 2RX	

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5.8. SUPPORT UNITS FOR SYSTEM TEST

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	Remarks
1	Laptop	ThinkPad	X230i	/
2	RJ45 Dummy Load	/	/	/
3	RJ45 Dummy Load	/	/	/

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	LAN1	RJ45	Unshielded	1.0 m	/
2	LAN2	RJ45	Unshielded	0.1 m	/
3	LAN3	RJ45	Unshielded	0.1 m	/

ACCESSORIESu

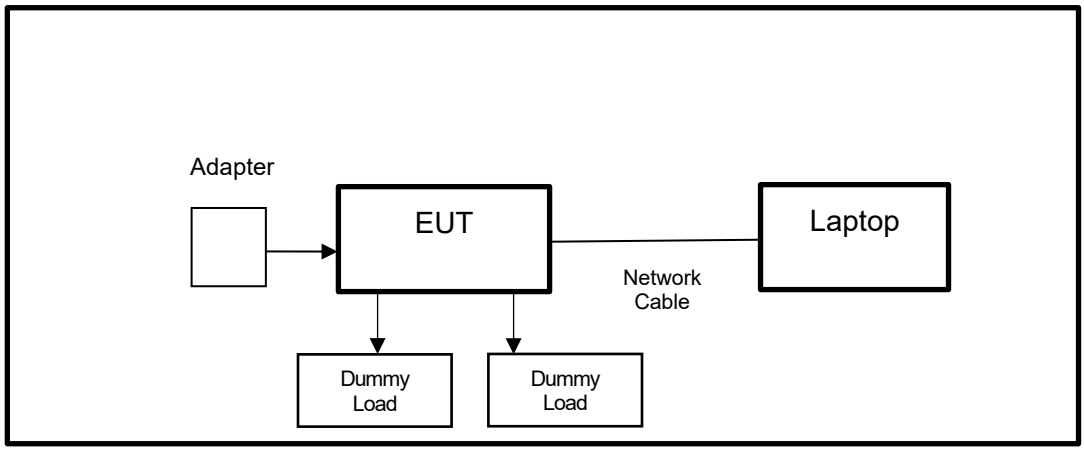
Item	Accessory	Brand Name	Model Name	Description
1	Adapter	SUNUN	SA12BV-120100U	Input: AC 100-240 V, 50 / 60 Hz, 0.4 A Output: DC 12.0 V, 1 A
2	Adapter	FRECOM	F12L33-120100SPAU	Input: AC 100-240Vac, 50/60Hz, 0.3A. Output: 12.0Vdc, 1.0A

Note: Both adapters have been considered and only the worst model (SA12BV-120100U) was recorded.

TEST SETUP

The EUT can work in engineering mode with a software through a laptop.

SETUP DIAGRAM FOR TESTS



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6. MEASURING EQUIPMENT AND SOFTWARE USED

R&S TS 8997 Test System					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
Power sensor, Power Meter	R&S	OSP120	100921	Mar.31,2023	Mar.30,2024
Vector Signal Generator	R&S	SMBV100A	261637	Oct.17, 2022	Oct.16, 2023
Signal Generator	R&S	SMB100A	178553	Oct.17, 2022	Oct.16, 2023
Signal Analyzer	R&S	FSV40	101118	Oct.17, 2022	Oct.16, 2023

Software			
Description	Manufacturer	Name	Version
For R&S TS 8997 Test System	Rohde & Schwarz	EMC 32	10.60.10

Tonsend RF Test System					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
Wideband Radio Communication Tester	R&S	CMW500	155523	Oct.17, 2022	Oct.16, 2023
Wireless Connectivity Tester	R&S	CMW270	1201.0002N75-102	Sep.28, 2022	Sep.27, 2023
PXA Signal Analyzer	Keysight	N9030A	MY55410512	Oct.17, 2022	Oct.16, 2023
MXG Vector Signal Generator	Keysight	N5182B	MY56200284	Oct.17, 2022	Oct.16, 2023
MXG Vector Signal Generator	Keysight	N5172B	MY56200301	Oct.17, 2022	Oct.16, 2023
DC power supply	Keysight	E3642A	MY55159130	Oct.17, 2022	Oct.16, 2023
Temperature & Humidity Chamber	SANMOOD	SG-80-CC-2	2088	Oct.17, 2022	Oct.16, 2023
Attenuator	Aglient	8495B	2814a12853	Oct.18, 2022	Oct.17, 2023
RF Control Unit	Tonscend	JS0806-2	23B80620666	April 18,2023	April 17,2024

Software			
Description	Manufacturer	Name	Version
Tonsend SRD Test System	Tonsend	JS1120-3 RF Test System	V3.2.22

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Conducted Emissions					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
EMI Test Receiver	R&S	ESR3	101961	Oct.17, 2022	Oct.16, 2023
Two-Line V-Network	R&S	ENV216	101983	Oct.17, 2022	Oct.16, 2023
Artificial Mains Networks	Schwarzbeck	NSLK 8126	8126465	Oct.17, 2022	Oct.16, 2023
Software					
Description			Manufacturer	Name	Version
Test Software for Conducted Emissions			Farad	EZ-EMC	Ver. UL-3A1

Radiated Emissions					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Oct.17, 2022	Oct.16, 2023
Hybrid Log Periodic Antenna	TDK	HLP-3003C	130959	Aug.02, 2021	Aug.01, 2024
Preamplifier	HP	8447D	2944A09099	Oct.17, 2022	Oct.16, 2023
EMI Measurement Receiver	R&S	ESR26	101377	Oct.17, 2022	Oct.16, 2023
Horn Antenna	TDK	HRN-0118	130940	July 20, 2021	July 19, 2024
Preamplifier	TDK	PA-02-0118	TRS-305-00067	Oct.17, 2022	Oct.16, 2023
Horn Antenna	Schwarzbeck	BBHA9170	697	July 20, 2021	July 19, 2024
Preamplifier	TDK	PA-02-2	TRS-307-00003	Oct.17, 2022	Oct.16, 2023
Preamplifier	TDK	PA-02-3	TRS-308-00002	Oct.17, 2022	Oct.16, 2023
Loop antenna	Schwarzbeck	1519B	00008	Dec.14, 2021	Dec.13, 2024
Preamplifier	TDK	PA-02-001-3000	TRS-302-00050	Oct.17, 2022	Oct.16, 2023
Preamplifier	Mini-Circuits	ZX60-83LN-S+	SUP01202035	Oct.17, 2022	Oct.16, 2023
High Pass Filter	Wi	WHKX10-2700-3000-18000-40SS	23	Dec.01,2022	Nov.30,2023
Highpass Filter	Wainwright	WHKX10-5850-6500-1800-40SS	4	Dec.01,2022	Nov.30,2023
Band Reject Filter	Wainwright	WRCJV12-5695-5725-5850-5880-40SS	4	Dec.01,2022	Nov.30,2023
Band Reject Filter	Wainwright	WRCJV20-5120-5150-	2	Dec.01,2022	Nov.30,2023

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		5350-5380-60SS			
Band Reject Filter	Wainwright	WRCJV20-5440-5470-5725-5755-60SS	1	Dec.01,2022	Nov.30,2023
Band Reject Filter	Wainwright	WRCJV8-2350-2400-2483.5-2533.5-40SS	4	Dec.01,2022	Nov.30,2023
Band Reject Filter	Wainwright	WRCD5-1879-1879.85-1880.15-1881-40SS	1	Dec.01,2022	Nov.30,2023
Notch Filter	Wainwright	WHJ10-882-980-7000-40SS	1	Dec.01,2022	Nov.30,2023

Software			
Description	Manufacturer	Name	Version
Test Software for Radiated Emissions	Farad	EZ-EMC	Ver. UL-3A1

Other Instrument					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
Temperature humidity probe	OMEGA	ITHX-SD-5	18470007	Oct.22, 2022	Oct.21, 2023
Barometer	Yiyi	Baro	N/A	Oct.24, 2022	Oct.23, 2023
Attenuator	Agilent	8495B	2814a12853	Oct.18, 2022	Oct.17, 2023

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7. ANTENNA PORT TEST RESULTS

7.1. CONDUCTED OUTPUT POWER

LIMITS

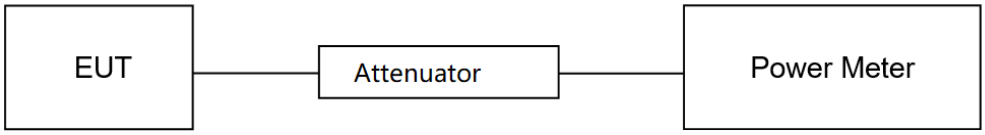
CFR 47 FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247(b)(3)	AVG Output Power	1 watt or 30 dBm	2400-2483.5

TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 11.9.2.3.1.

Connect the EUT to a low loss RF cable from the antenna port to the power sensor (video bandwidth is greater than the occupied bandwidth).
Measure peak emission level, the indicated level is the average output power, after any corrections for external attenuators and cables.
The test result in dBm by adding [10 log (1 / D)], where D is the duty cycle.

TEST SETUP



TEST ENVIRONMENT

Temperature	26.4℃	Relative Humidity	51.7%
Atmosphere Pressure	101kPa	Test Voltage	AC 120 V 60 Hz

TEST DATE / ENGINEER

Test Date	July 12, 2023	Test By	Johnson Liu

TEST RESULTS

Please refer to section "Test Data" - Appendix C

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7.2. 6DB BANDWIDTH AND 99% OCCUPIED BANDWIDTH

LIMITS

CFR 47 FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247(a)(2) ISED RSS-247 5.2 (a)	6 dB Bandwidth	≥ 500 kHz	2400-2483.5
ISED RSS-Gen Clause 6.7	99 % Occupied Bandwidth	For reporting purposes only.	2400-2483.5

TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 11.8 for DTS bandwidth and clause 6.9 for Occupied Bandwidth.

Connect the EUT to the spectrum analyser and use the following settings:

Center Frequency	The center frequency of the channel under test
Frequency Span	For 6 dB Bandwidth: Enough to capture all products of the modulation carrier emission For 99 % Occupied Bandwidth: Between 1.5 times and 5.0 times the OBW
Detector	Peak
RBW	For 6 dB Bandwidth: 100 kHz For 99 % Occupied Bandwidth: 1 % to 5 % of the occupied bandwidth
VBW	For 6 dB Bandwidth: ≥3 × RBW For 99 % Occupied Bandwidth: ≥3 × RBW
Trace	Max hold
Sweep	Auto couple

a) Use the 99 % power bandwidth function of the instrument, allow the trace to stabilize and report the measured bandwidth.

b) Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

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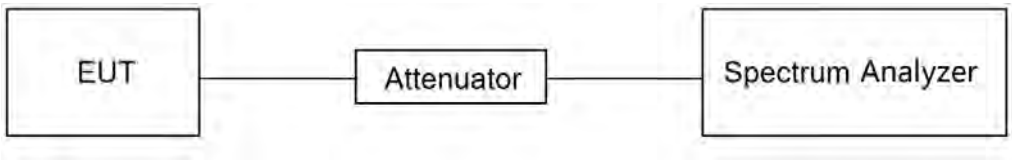
TEST SETUP



TEST ENVIRONMENT

Temperature	26.4℃	Relative Humidity	51.7%
Atmosphere Pressure	101kPa	Test Voltage	AC 120 V 60 Hz

TEST DATE / ENGINEER

Test Date	July 12, 2023	Test By	Johnson Liu

TEST RESULTS

Please refer to section "Test Data" - Appendix A&B

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7.3. POWER SPECTRAL DENSITY

LIMITS

CFR 47 FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC §15.247 (e) ISED RSS-247 5.2 (b)	Power Spectral Density	8 dBm in any 3 kHz band	2400-2483.5

TEST PROCEDURE

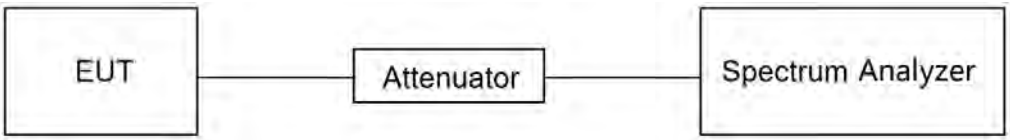
Refer to ANSI C63.10-2013 clause 11.10.5.

Connect the EUT to the spectrum analyser and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	power averaging (rms)
RBW	3 kHz ≤ RBW ≤ 100 kHz
VBW	≥3 × RBW
Span	1.5 x OBW bandwidth
Trace	Average
Sweep time	Auto couple

Allow trace to fully stabilize and use the peak marker function to determine the maximum amplitude level within the RBW.
If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

TEST SETUP



TEST ENVIRONMENT

Temperature	26.4℃	Relative Humidity	51.7%
Atmosphere Pressure	101kPa	Test Voltage	AC 120 V 60 Hz

TEST DATE / ENGINEER

Test Date	July 12, 2023 August 3, 2023	Test By	Johnson Liu

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TEST RESULTS

Please refer to section "Test Data" - Appendix D

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7.4. CONDUCTED BAND EDGE AND SPURIOUS EMISSION

TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 11.11 and 11.13.

Connect the EUT to the spectrum analyser and use the following settings for reference level measurement:

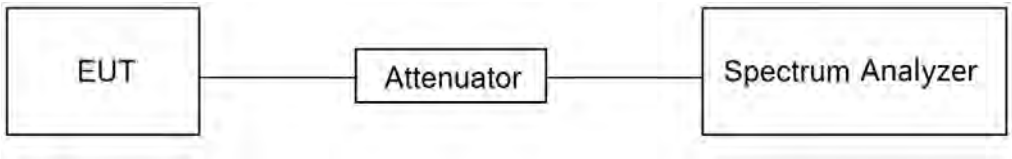
Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	100 kHz
VBW	≥3 × RBW
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

Allow trace to fully stabilize and use the peak marker function to determine the maximum PSD level.
Change the settings for emission level measurement:

Span	Set the center frequency and span to encompass frequency range to be measured
Detector	Peak
RBW	100 kHz
VBW	≥3 × RBW
measurement points	≥span/RBW
Trace	Max hold
Sweep time	Auto couple.

Allow trace to fully stabilize and use the peak marker function to determine the maximum PSD level. Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11.

TEST SETUP



TEST ENVIRONMENT

Temperature	26.4℃	Relative Humidity	51.7%
Atmosphere Pressure	101kPa	Test Voltage	AC 120 V 60 Hz

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TEST DATE / ENGINEER

Test Date	July 12, 2023	Test By	Johnson Liu

TEST RESULTS

Please refer to section "Test Data" - Appendix E&F

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7.5. DUTY CYCLE

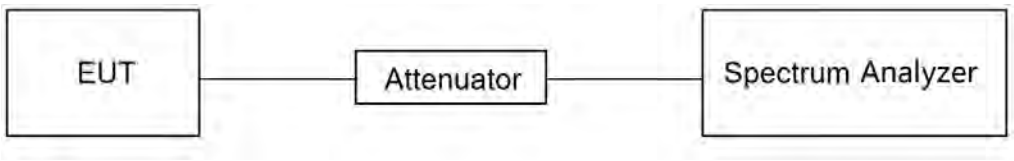
LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 11.6 Zero – Span Spectrum Analyzer method.

TEST SETUP



TEST ENVIRONMENT

Temperature	26.4℃	Relative Humidity	51.7%
Atmosphere Pressure	101kPa	Test Voltage	AC 120 V 60 Hz

TEST DATE / ENGINEER

Test Date	July 12, 2023	Test By	Johnson Liu

TEST RESULTS

Please refer to section "Test Data" - Appendix G

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8. RADIATED TEST RESULTS

LIMITS

Please refer to CFR 47 FCC §15.205 and §15.209.

Radiation Disturbance Test Limit for FCC (Class B) (9 kHz ~ 1 GHz)

Emissions radiated outside of the specified frequency bands above 30 MHz			
Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m	
		Quasi-Peak	
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
Above 960	500	54	
Above 1000	500	Peak	Average
		74	54

FCC Emissions radiated outside of the specified frequency bands below 30 MHz		
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

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FCC Restricted bands of operation refer to FCC §15.205 (a):

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

Note: [1]Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2]Above 38.6c

TEST PROCEDURE

Below 30 MHz

The setting of the spectrum analyser

RBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
VBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
Sweep	Auto

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.4.

2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 80 cm above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1 m height antenna tower.

5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.

6. For measurement below 1 GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak and average detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak and average detector and reported.

7. Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30m open field site. Therefore sufficient tests were made

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to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field site based on KDB 414788.

8. The limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377Ω. For example, the measurement frequency X KHz resulted in a level of Y dBuV/m, which is equivalent to Y-51.5 = Z dBuA/m, which has the same margin, W dB, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.

Below 1 GHz and above 30 MHz

The setting of the spectrum analyser

RBW	120 kHz
VBW	300 kHz
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.5.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 80 cm above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement below 1 GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

Above 1G

The setting of the spectrum analyser

RBW	1 MHz
VBW	PEAK: 3 MHz AVG: see note 6
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.6.

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2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 1.5 m above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement above 1 GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.

6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 7.5.ON TIME AND DUTY CYCLE.

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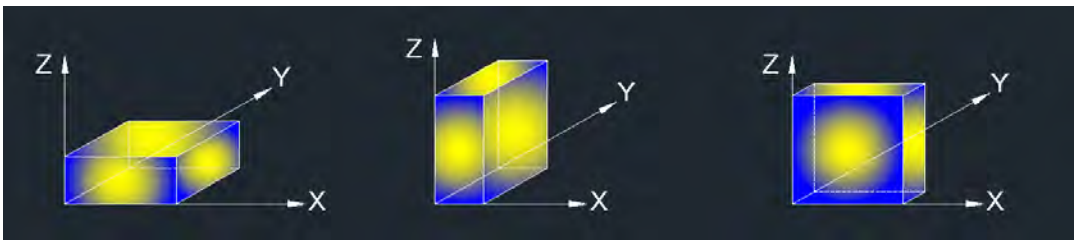
X axis, Y axis, Z axis positions:



Note 1: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

Note 2: The EUT was fully exercised with external accessories during the test. In the case of multiple accessory external ports, an external accessory shall be connected to one of each type of port.

For Band edge:
Note:
1. Measurement = Reading Level + Correct Factor.
2. If the peak values are less than the average limit of 54 dBuV/m, the average result is deemed to comply with average limit.
3. Peak: Peak detector.
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.
5. For the transmitting duration, please refer to clause 7.5.
6. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
7. Horizontal and Vertical have been tested, only the worst data was recorded in the report.
8. All modes, channels and antennas have been tested, only the worst data was recorded in the report.

For Radiate Spurious emission 1GHz-3GHz:
Note:
1. Measurement = Reading Level + Correct Factor.
2. If the Peak values are less than the Average limit of 54 dBuV/m, the Average result is deemed to comply with Average limit.
3. Peak: Peak detector.
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.
5. For the transmitting duration, please refer to clause 7.5.
6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.
7. Proper operation of the transmitter prior to adding the filter to the measurement chain.
8. All modes, channels and antennas have been tested, only the worst data was recorded in the report.

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For Radiate Spurious emission 3GHz-18GHz:
Note:
1. Peak Result = Reading Level + Correct Factor.
2. If the Peak values are less than the Average limit of 54 dBuV/m, the Average result is deemed to comply with Average limit.
3. Peak: Peak detector.
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.
5. For the transmitting duration, please refer to clause 7.5.
6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
7. Proper operation of the transmitter prior to adding the filter to the measurement chain.
8. All modes, channels and antennas have been tested, only the worst data was recorded in the report.

For Radiate Spurious emission 9kHz-30MHz:
Note:
1.Measurement = Reading Level + Correct Factor.
(dBuA/m= dBuV/m- 20Log10[120π] = dBuV/m- 51.5).
2. If the Peak values are less than the QP limit, the QP result is deemed to comply with QP limit.
3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.
4. All modes, channels and antennas have been tested, only the worst data was recorded in the report.

For Radiate Spurious emission 18GHz-26GHz:
Note:
1. Measurement = Reading Level + Correct Factor.
2. If the Peak values are less than the Average limit of 54 dBuV/m, the Average result is deemed to comply with Average limit.
3. Peak: Peak detector.
4. All modes, channels and antennas have been tested, only the worst data was recorded in the report.

For Radiate Spurious emission 30MHz-1GHz:
Note:
1. Result Level = Read Level + Correct Factor.
2. If the Peak values are less than the QP limit, the QP result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.
4. All modes, channels and antennas have been tested, only the worst data was recorded in the report.

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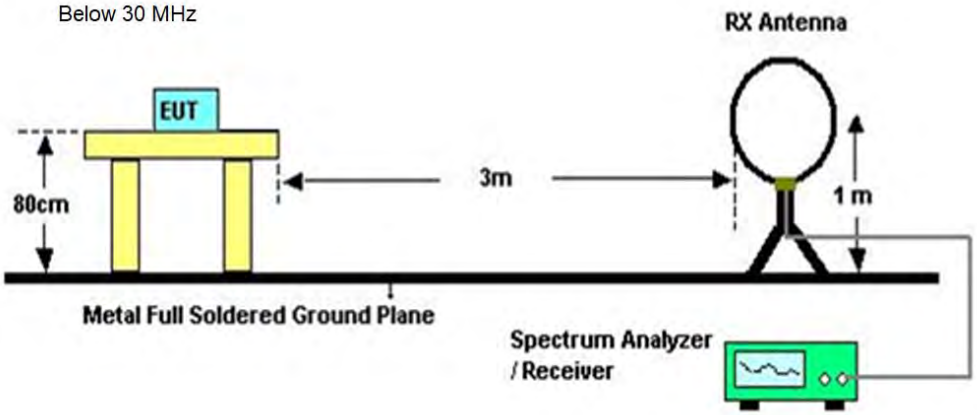
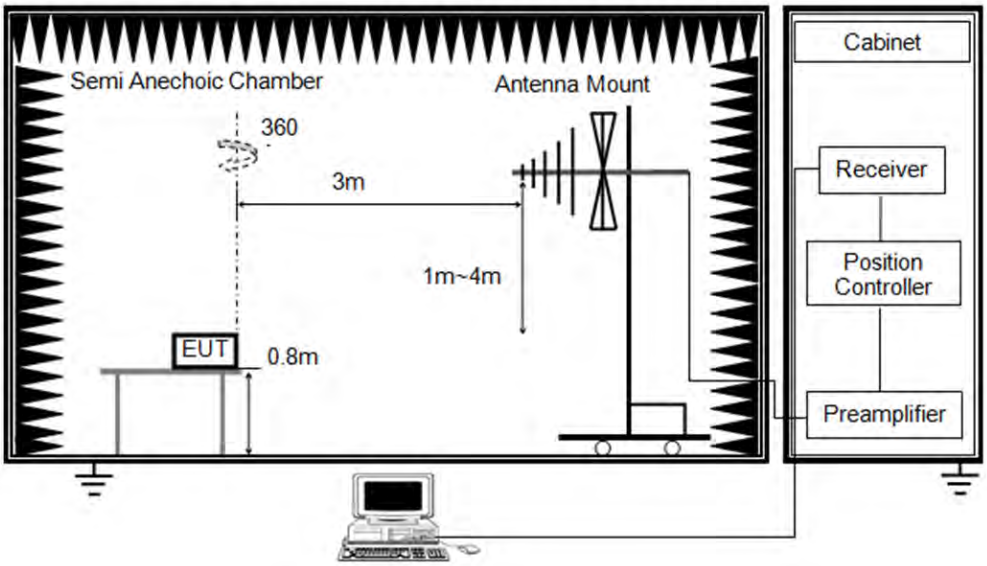
TEST SETUP

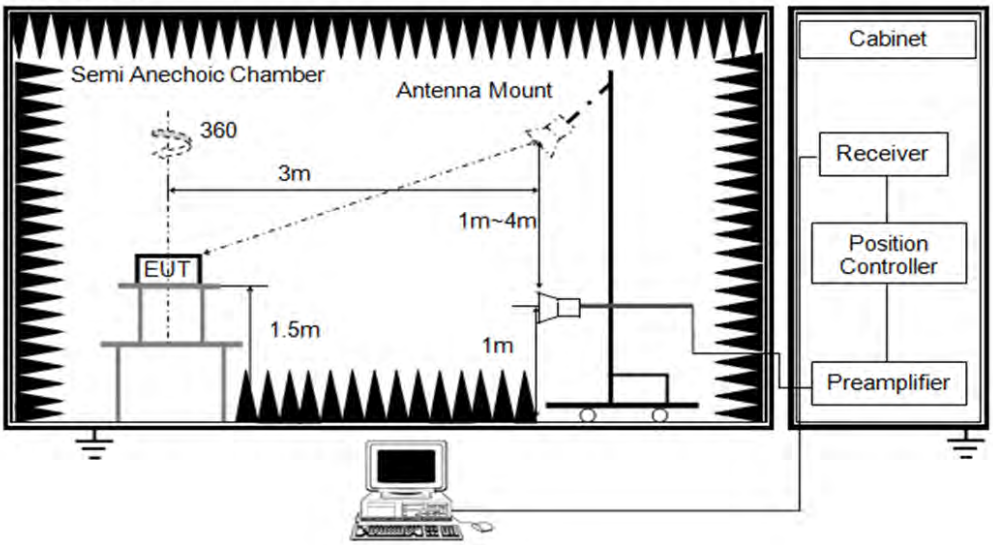
Below 30 MHz



Below 1 GHz and above 30 MHz



Above 1 GHz



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TEST ENVIRONMENT

Temperature	25.6℃	Relative Humidity	65%
Atmosphere Pressure	101kPa	Test Voltage	AC 120 V 60 Hz

TEST DATE / ENGINEER

Test Date	August 4, 2023	Test By	Rex Huang

TEST RESULTS

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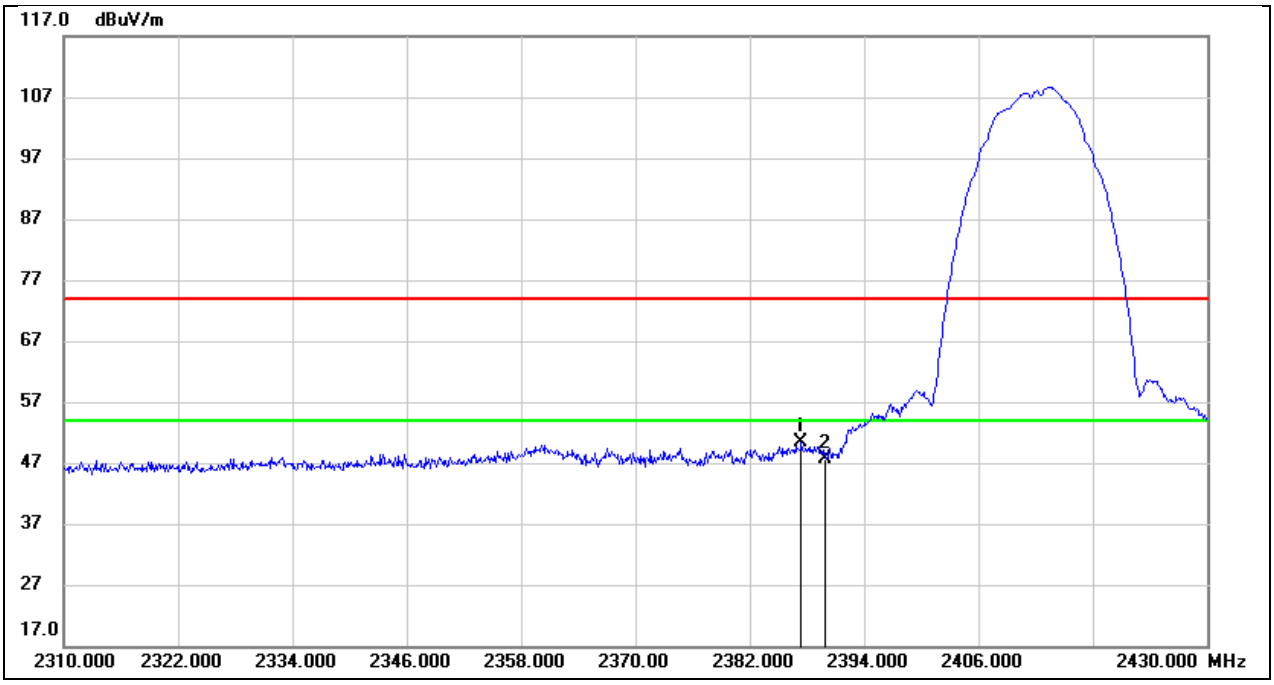
8.1. RESTRICTED BANDEDGE

Test Mode:	802.11b PK	Channel:	2412
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2387.400	18.32	32.15	50.47	74.00	-23.53	peak
2	2390.000	15.52	32.16	47.68	74.00	-26.32	peak

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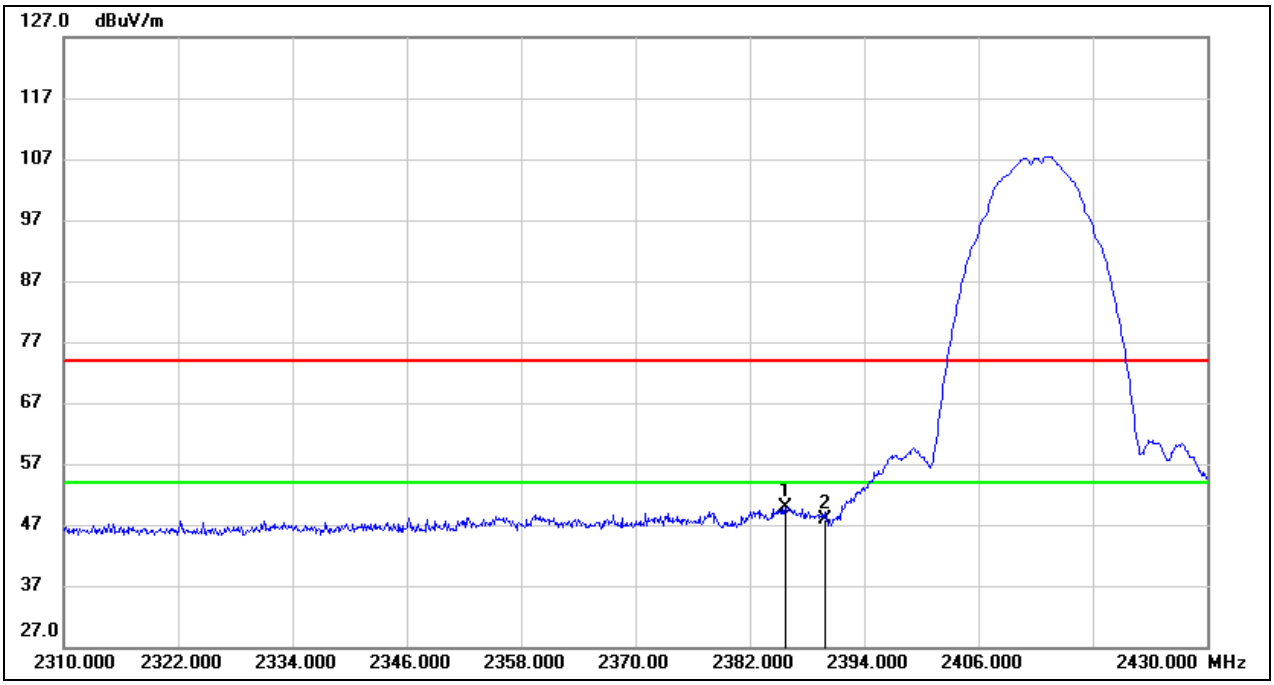
Test Mode:	802.11b PK	Channel:	2412
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2385.720	17.74	32.14	49.88	74.00	-24.12	peak
2	2390.000	15.82	32.16	47.98	74.00	-26.02	peak

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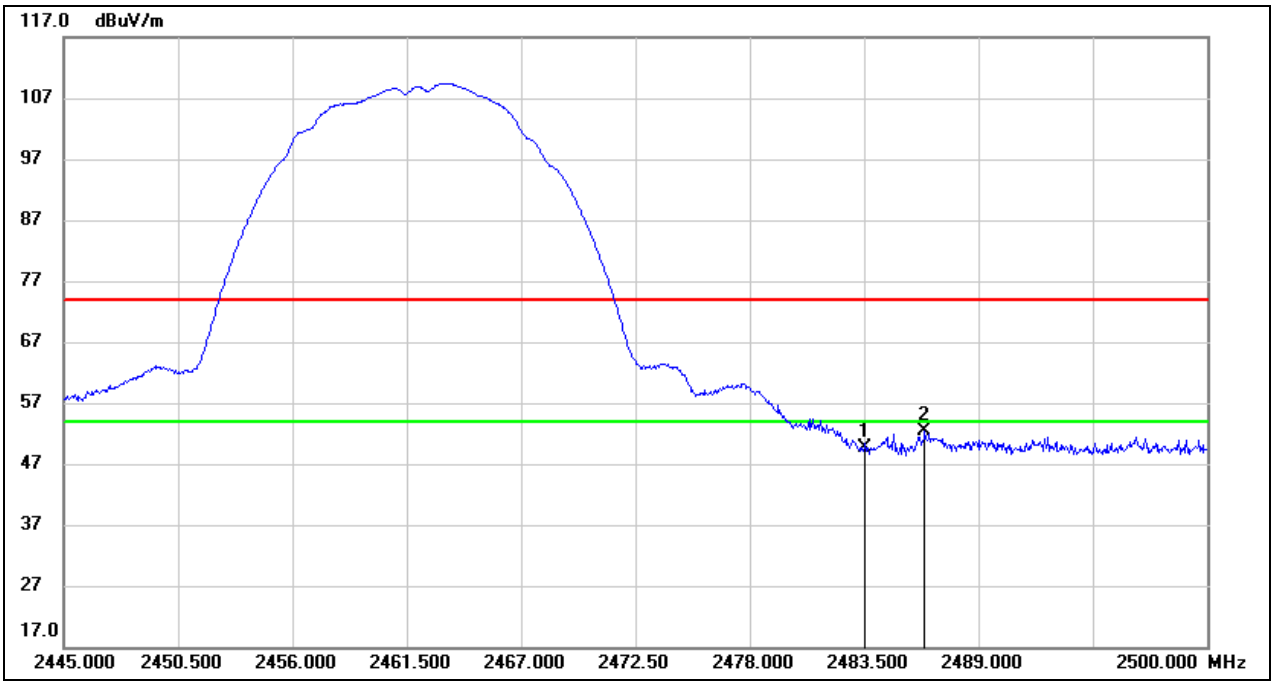
Test Mode:	802.11b PK	Channel:	2462
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	17.10	32.44	49.54	74.00	-24.46	peak
2	2486.415	19.94	32.44	52.38	74.00	-21.62	peak

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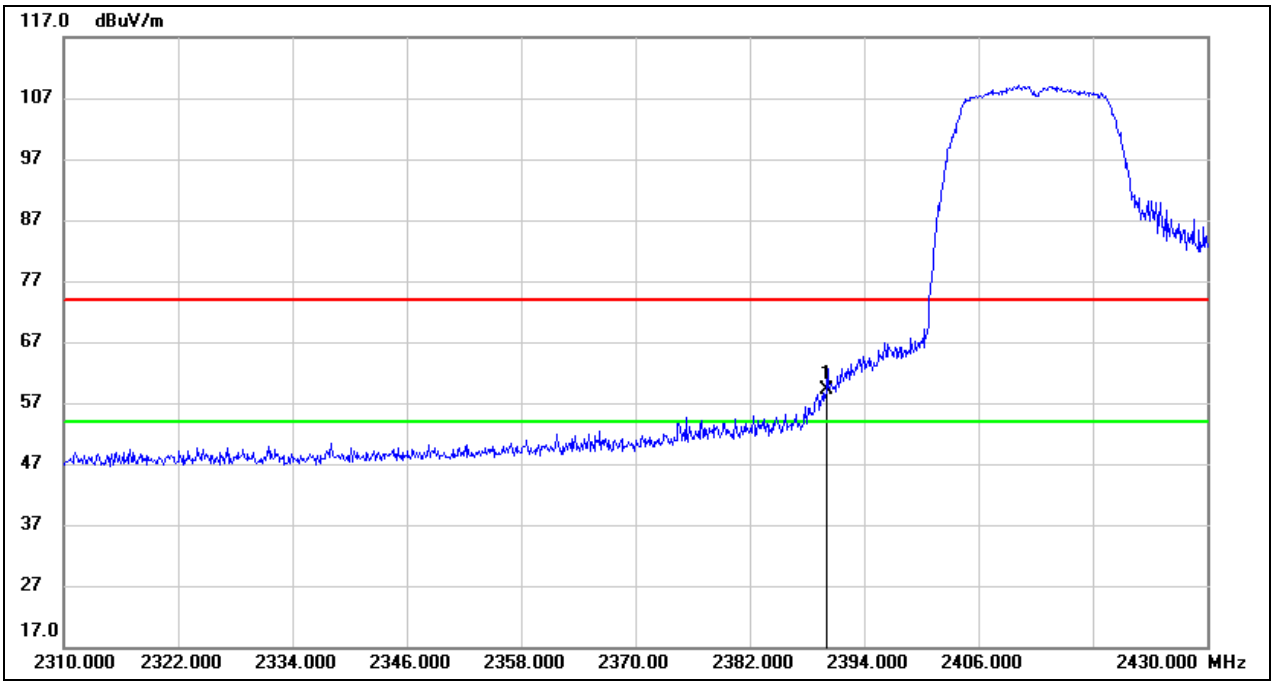
Test Mode:	802.11g PK	Channel:	2412
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	26.90	32.16	59.06	74.00	-14.94	peak

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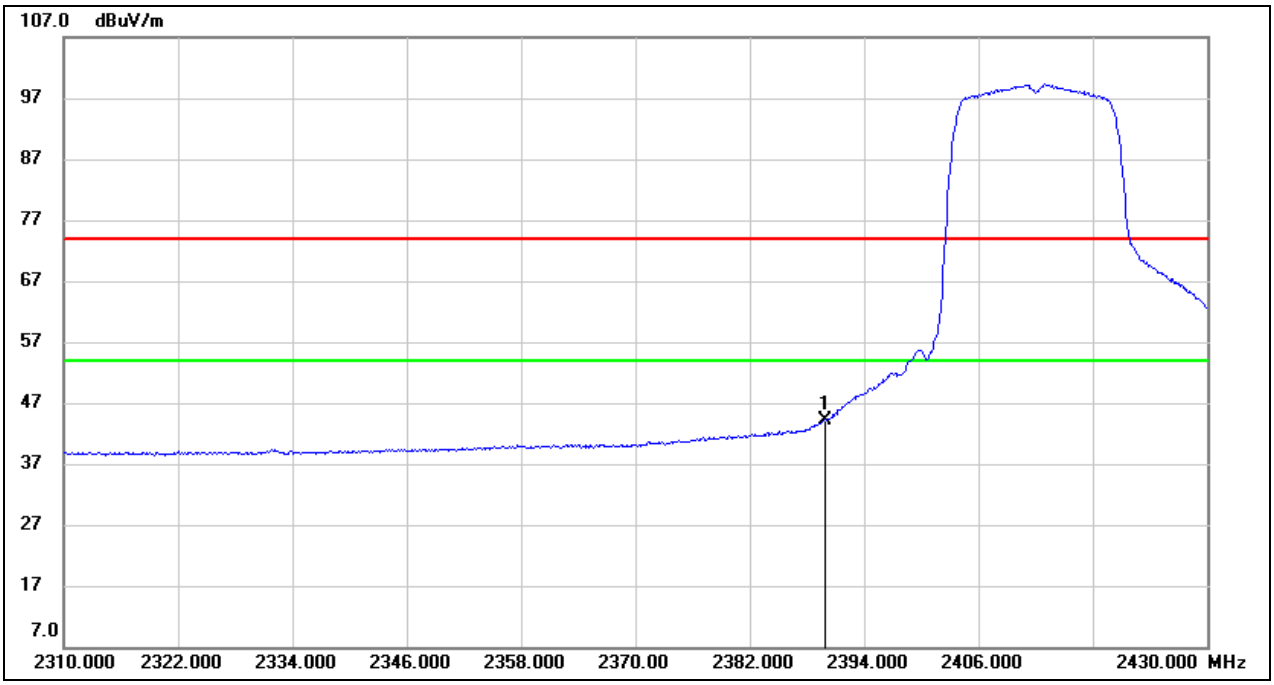
Test Mode:	802.11g AV	Channel:	2412
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	12.04	32.16	44.20	54.00	-9.80	AVG

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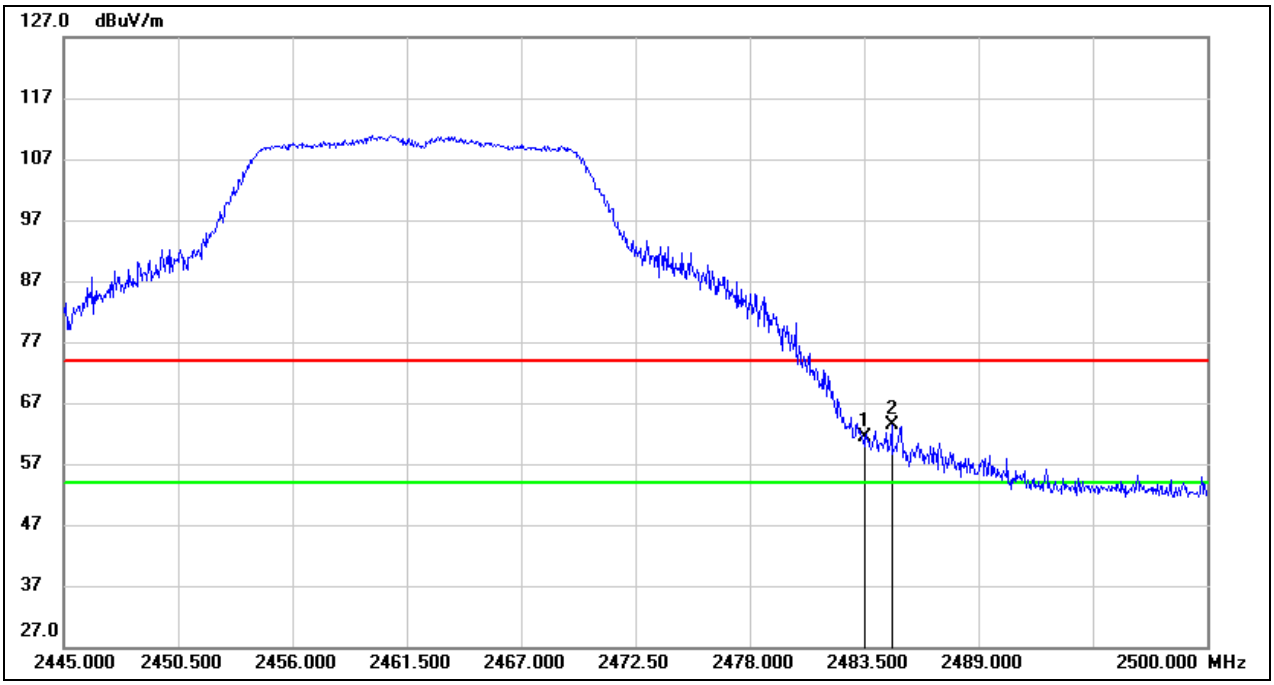
Test Mode:	802.11g PK	Channel:	2462
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	28.82	32.44	61.26	74.00	-12.74	peak
2	2484.820	30.84	32.44	63.28	74.00	-10.72	peak

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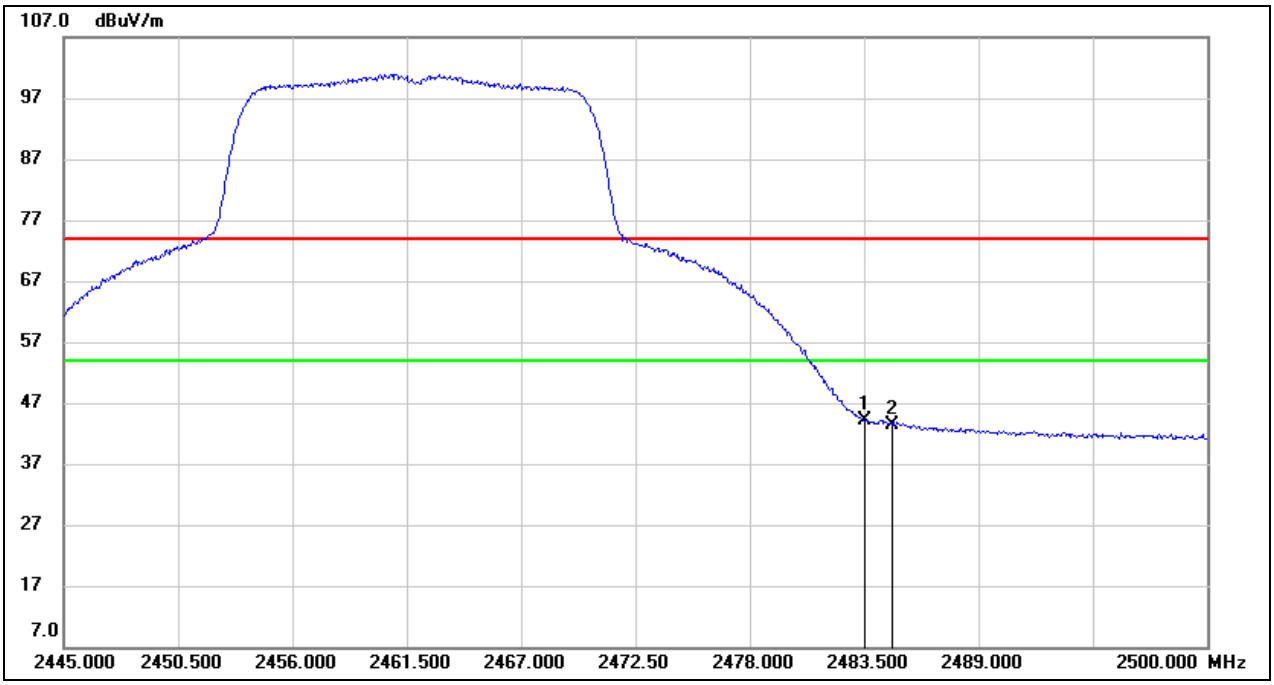
Test Mode:	802.11g AV	Channel:	2462
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	11.69	32.44	44.13	54.00	-9.87	AVG
2	2484.820	11.05	32.44	43.49	54.00	-10.51	AVG

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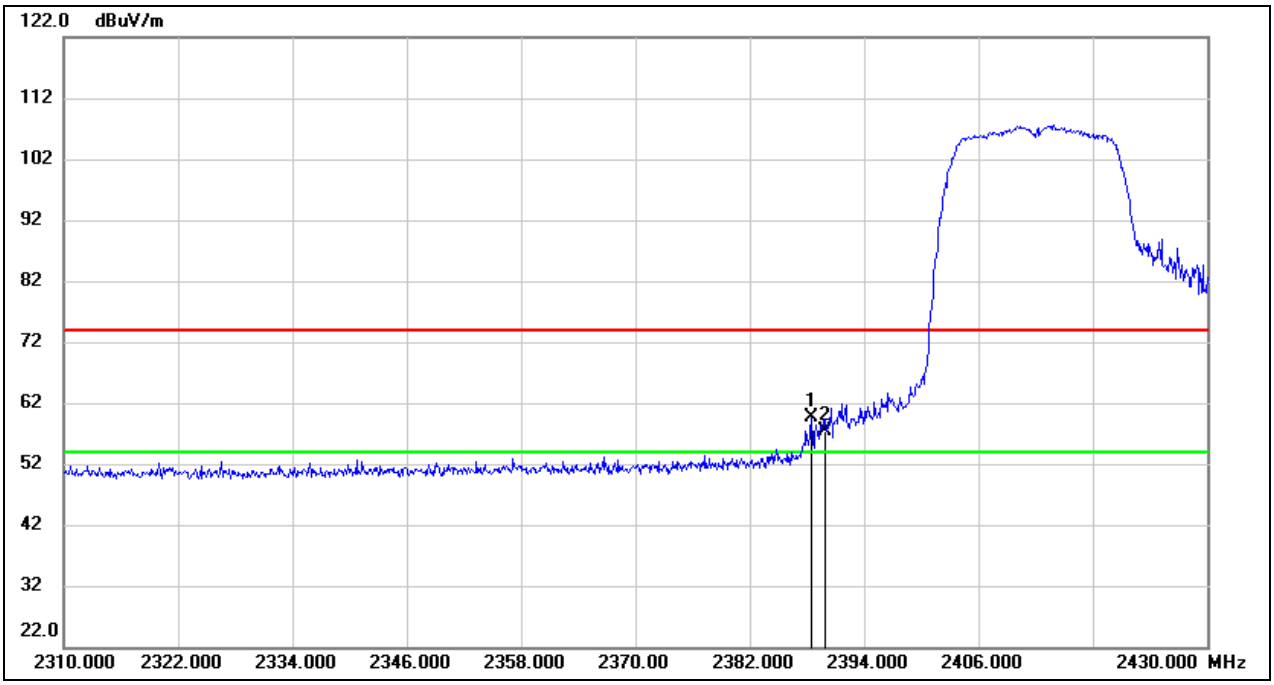
Test Mode:	802.11n HT20 PK	Channel:	2412
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2388.480	27.52	32.16	59.68	74.00	-14.32	peak
2	2390.000	25.26	32.16	57.42	74.00	-16.58	peak

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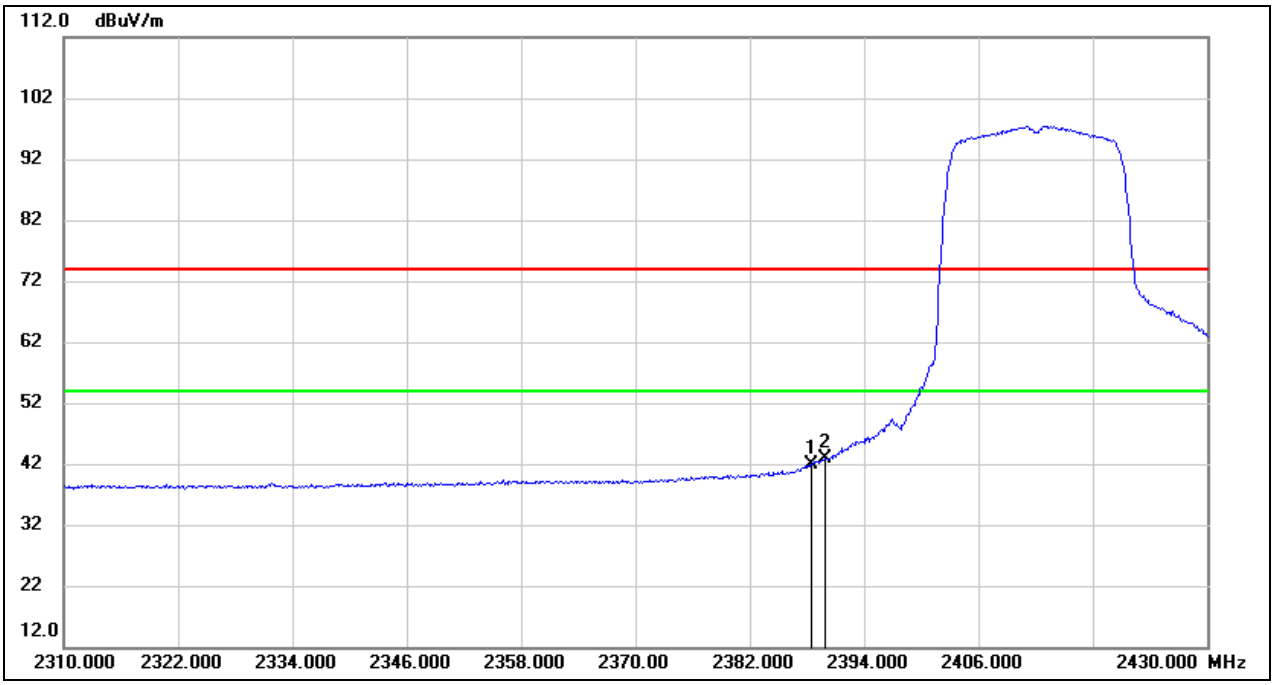
Test Mode:	802.11n HT20 AV	Channel:	2412
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2388.480	9.63	32.16	41.79	54.00	-12.21	AVG
2	2390.000	10.62	32.16	42.78	54.00	-11.22	AVG

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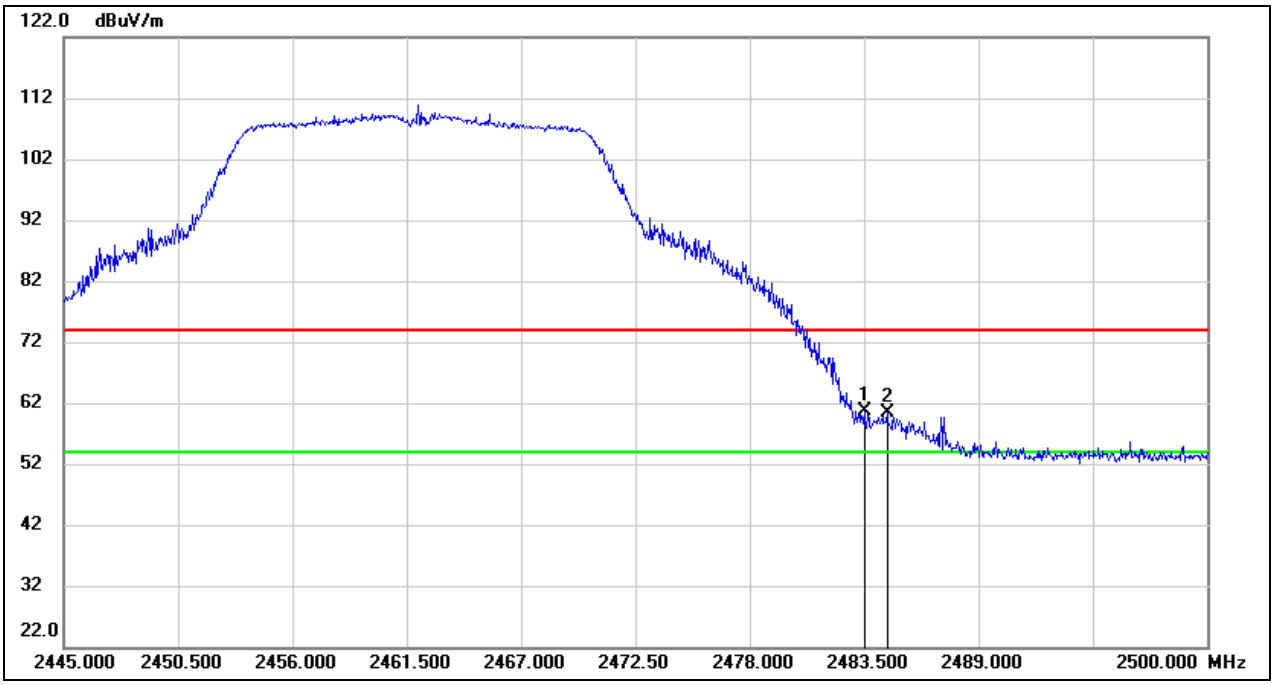
Test Mode:	802.11n HT20 PK	Channel:	2462
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	28.21	32.44	60.65	74.00	-13.35	peak
2	2484.600	27.85	32.44	60.29	74.00	-13.71	peak

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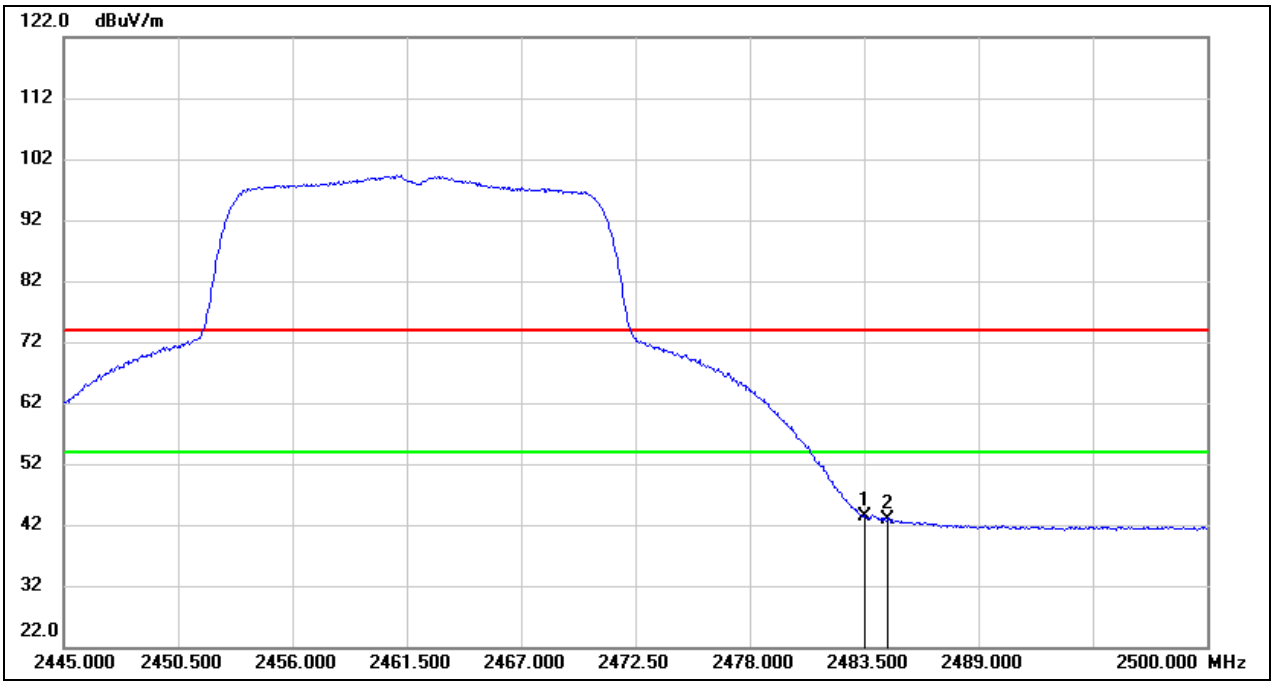
Test Mode:	802.11n HT20 AV	Channel:	2462
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	11.06	32.44	43.50	54.00	-10.50	AVG
2	2484.600	10.43	32.44	42.87	54.00	-11.13	AVG

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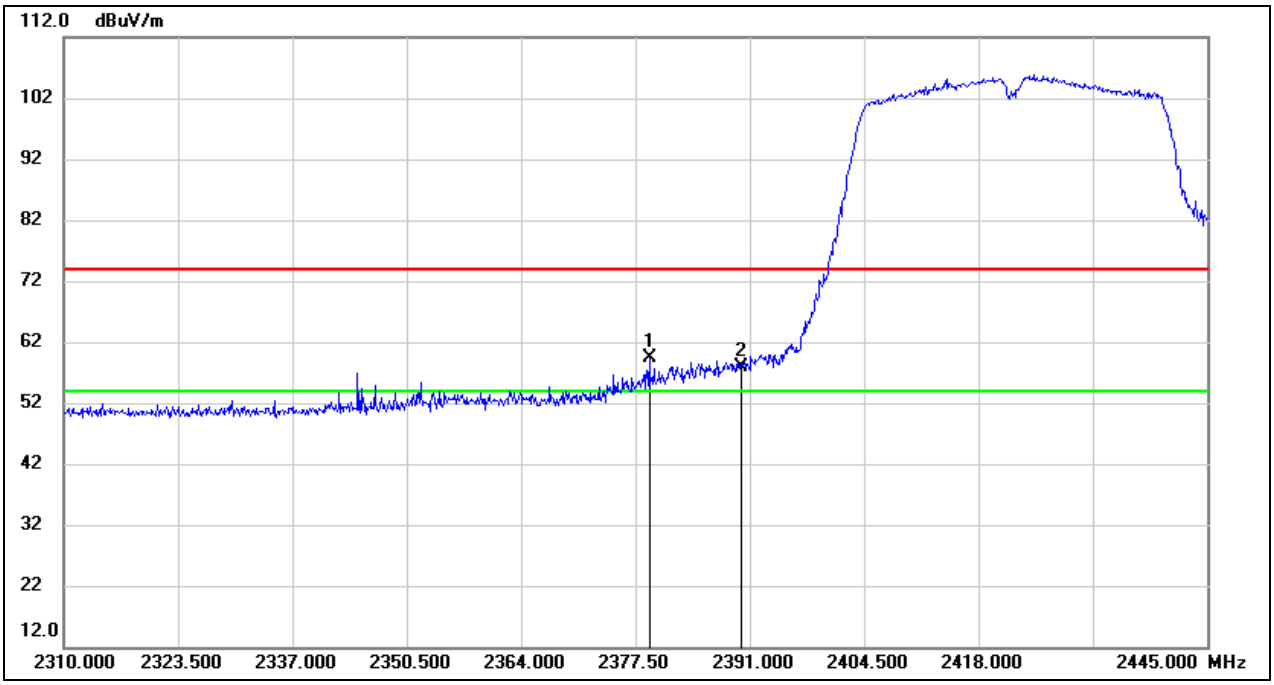
Test Mode:	802.11n HT40 PK	Channel:	2422
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2379.120	27.26	32.13	59.39	74.00	-14.61	peak
2	2390.000	25.75	32.16	57.91	74.00	-16.09	peak

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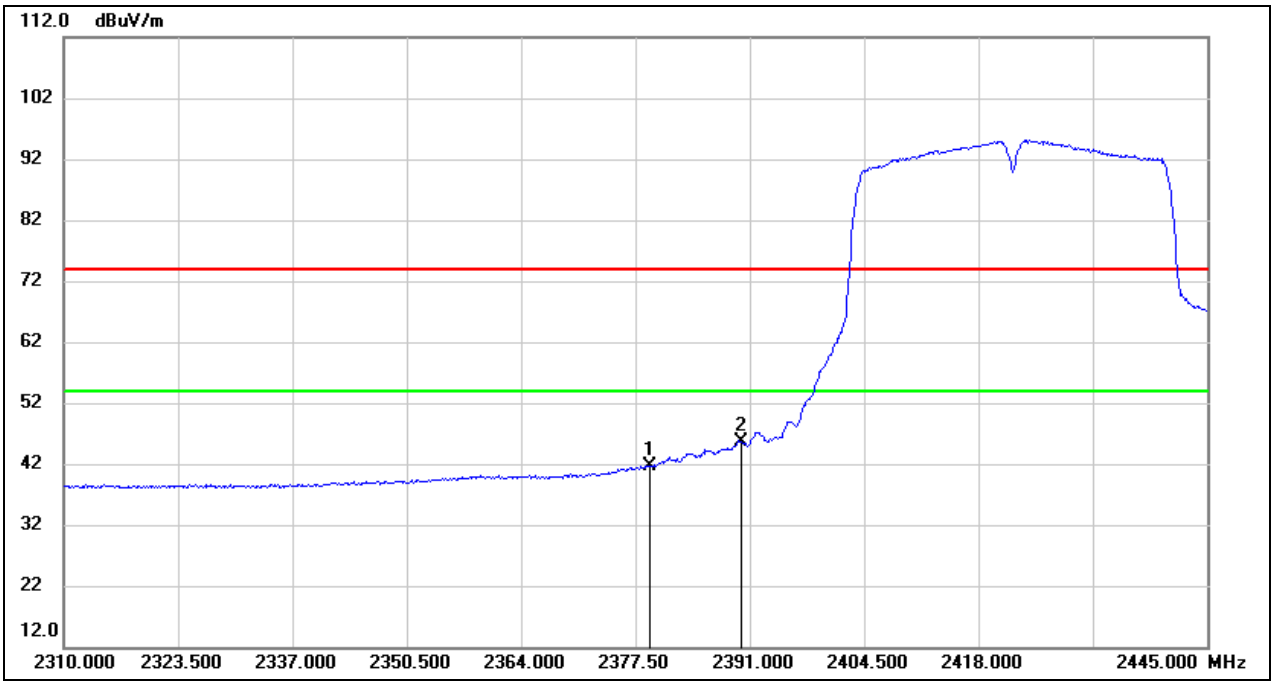
Test Mode:	802.11n HT40 AV	Channel:	2422
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2379.120	9.44	32.13	41.57	54.00	-12.43	AVG
2	2390.000	13.41	32.16	45.57	54.00	-8.43	AVG

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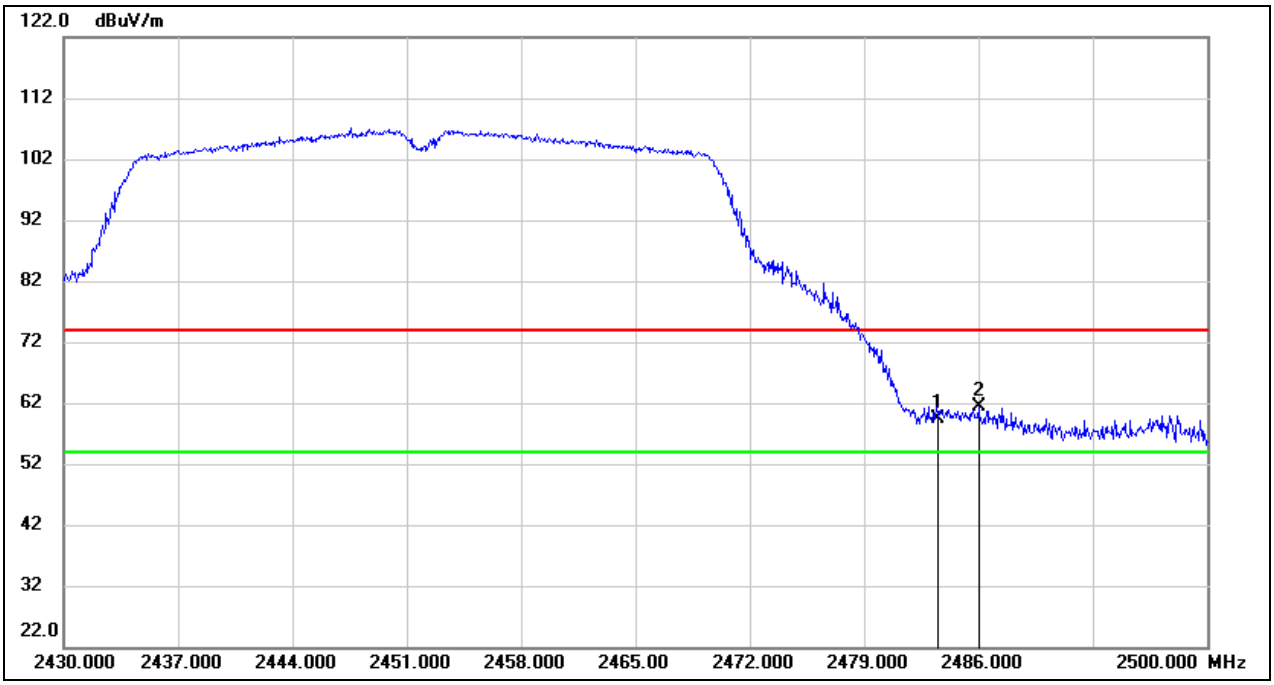
Test Mode:	802.11n HT40 PK	Channel:	2452
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	26.96	32.44	59.40	74.00	-14.60	peak
2	2486.000	28.82	32.44	61.26	74.00	-12.74	peak

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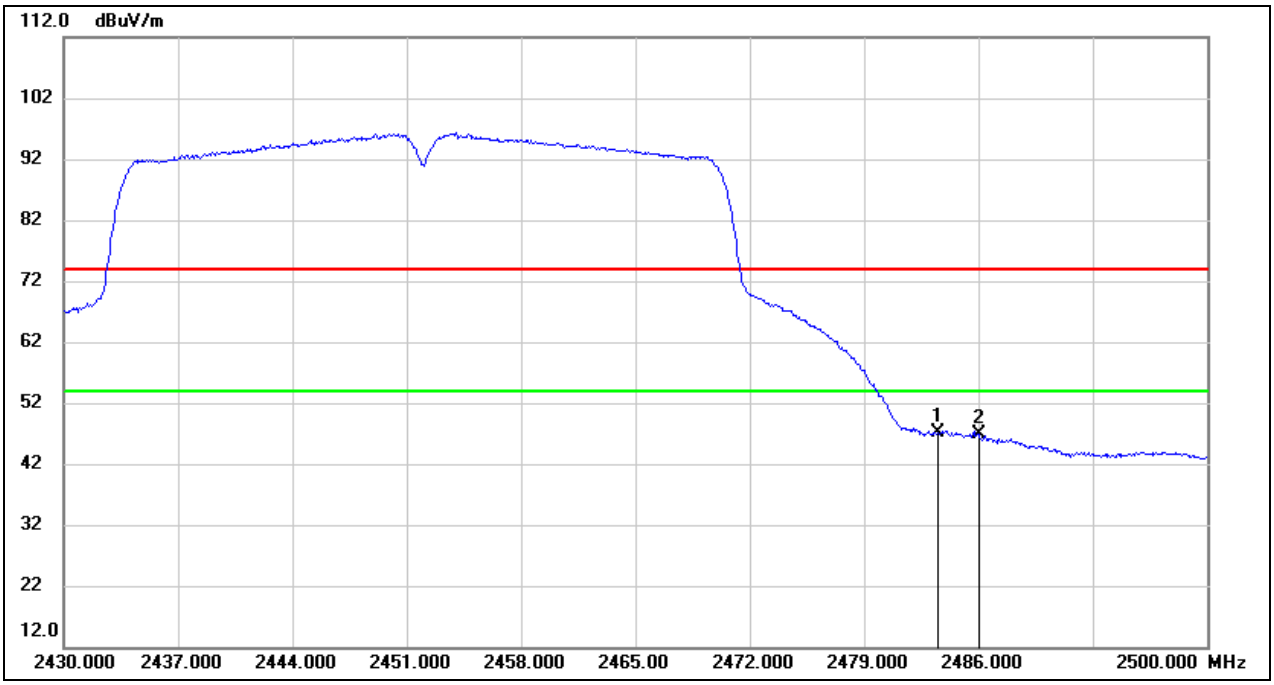
Test Mode:	802.11n HT40 AV	Channel:	2452
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	14.71	32.44	47.15	54.00	-6.85	AVG
2	2486.000	14.37	32.44	46.81	54.00	-7.19	AVG

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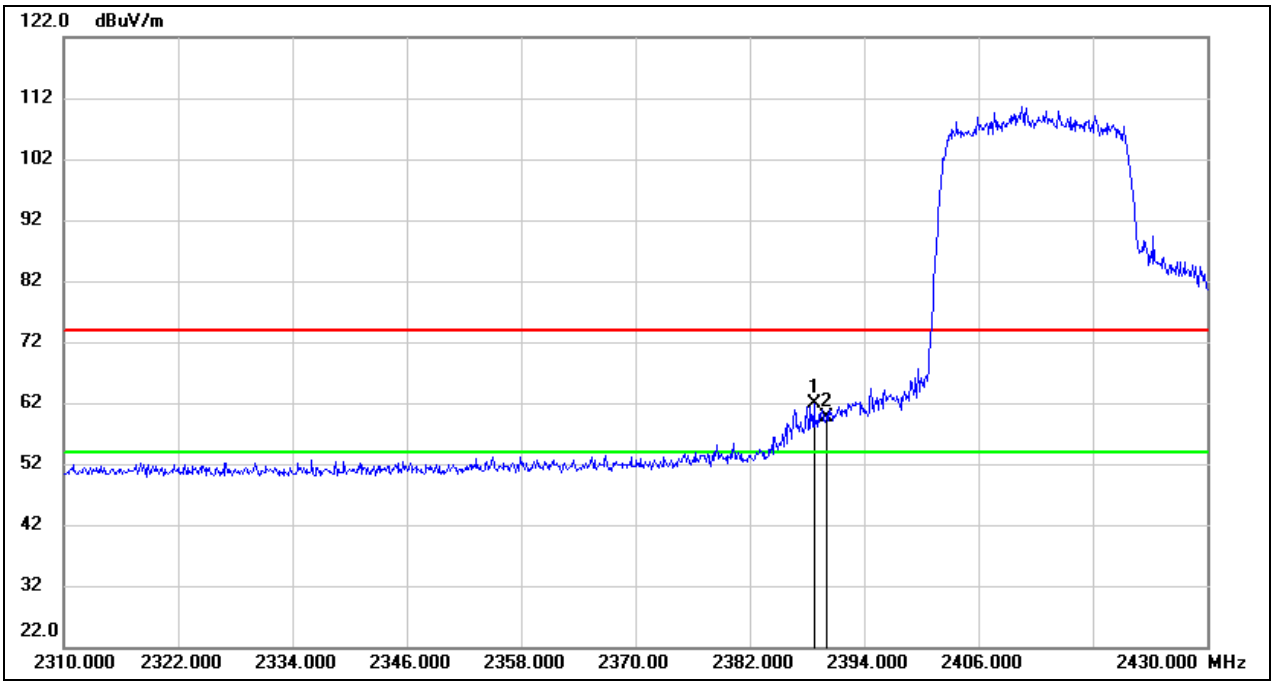
Test Mode:	802.11ax HE20 PK	Channel:	2412
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2388.720	29.64	32.16	61.80	74.00	-12.20	peak
2	2390.000	27.36	32.16	59.52	74.00	-14.48	peak

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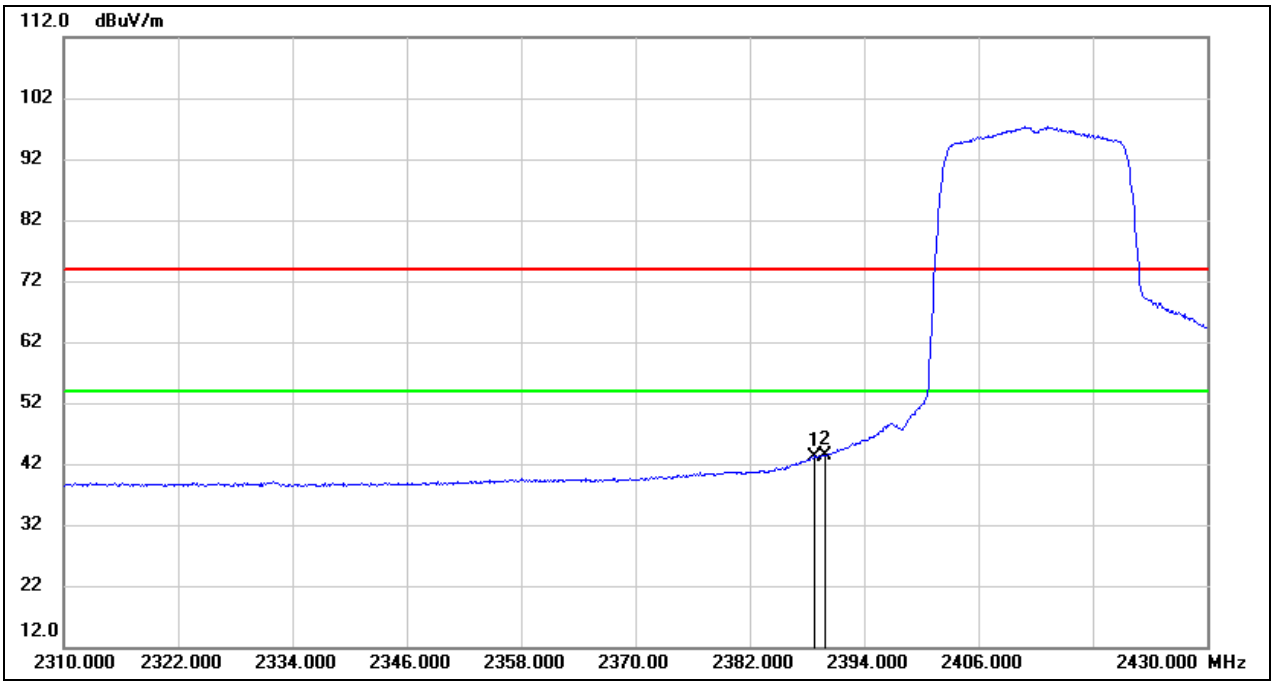
Test Mode:	802.11ax HE20 AV	Channel:	2412
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2388.720	10.85	32.16	43.01	54.00	-10.99	AVG
2	2390.000	11.19	32.16	43.35	54.00	-10.65	AVG

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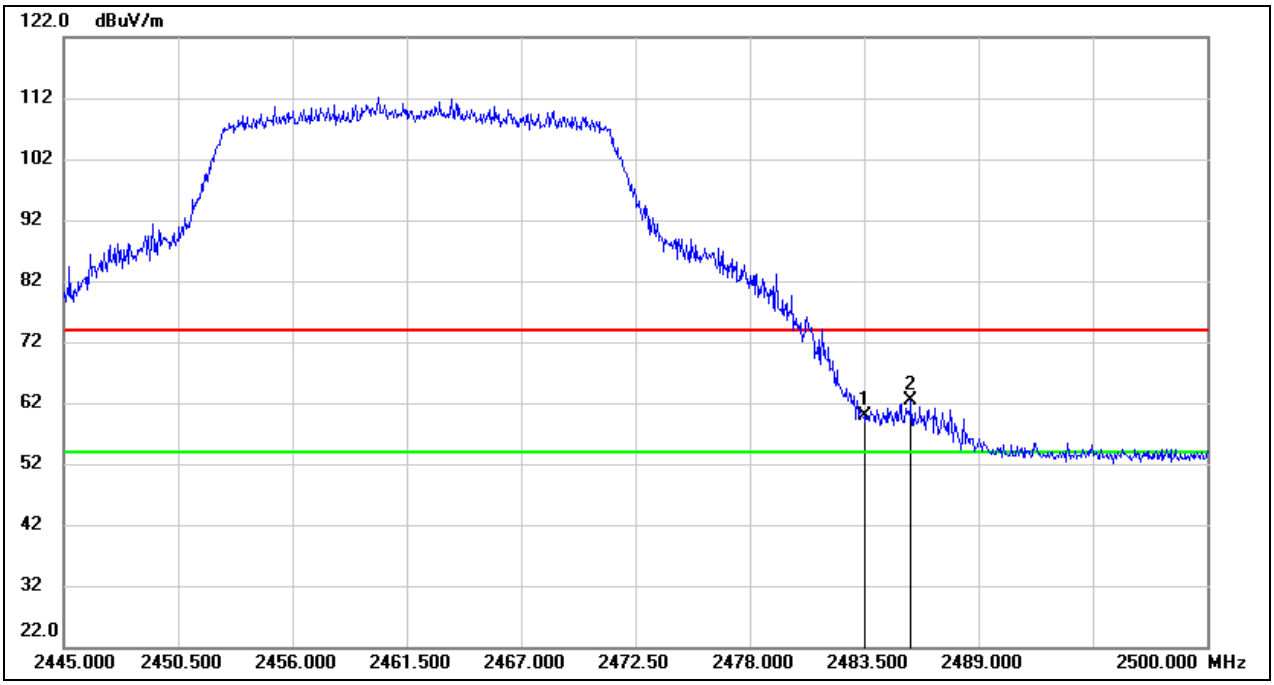
Test Mode:	802.11ax HE20 PK	Channel:	2462
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	27.39	32.44	59.83	74.00	-14.17	peak
2	2485.755	29.85	32.44	62.29	74.00	-11.71	peak

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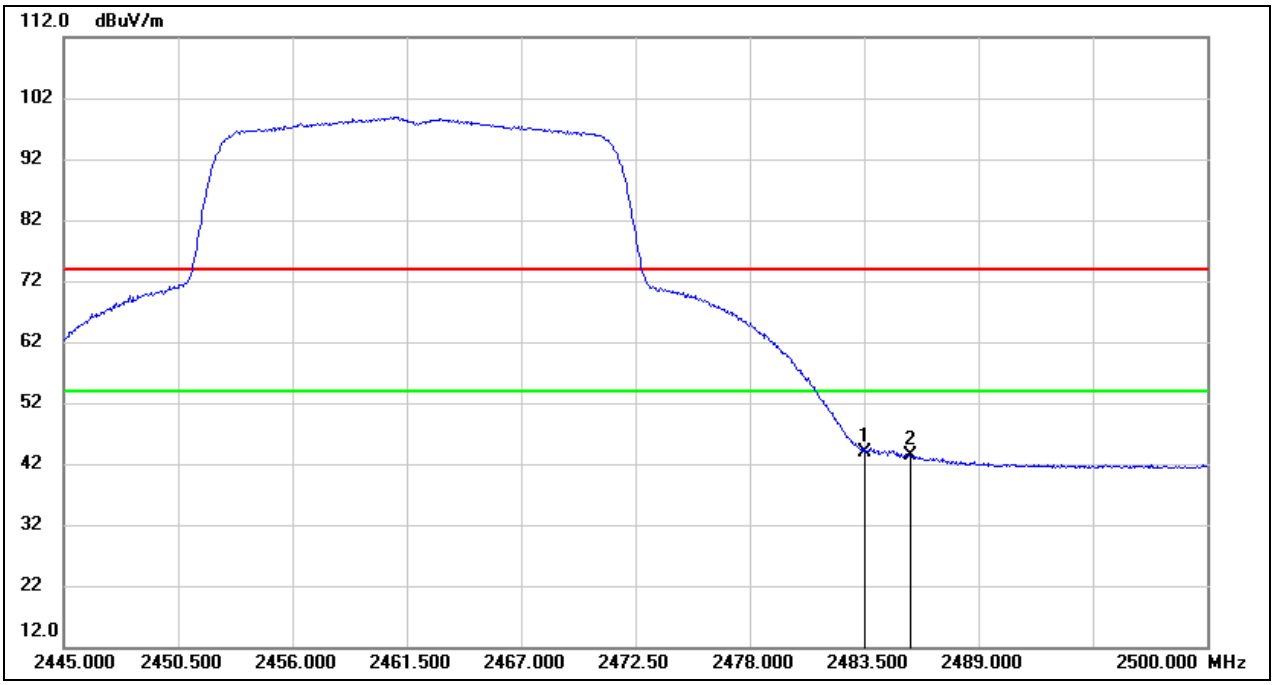
Test Mode:	802.11ax HE20 AV	Channel:	2462
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	11.51	32.44	43.95	54.00	-10.05	AVG
2	2485.755	10.86	32.44	43.30	54.00	-10.70	AVG

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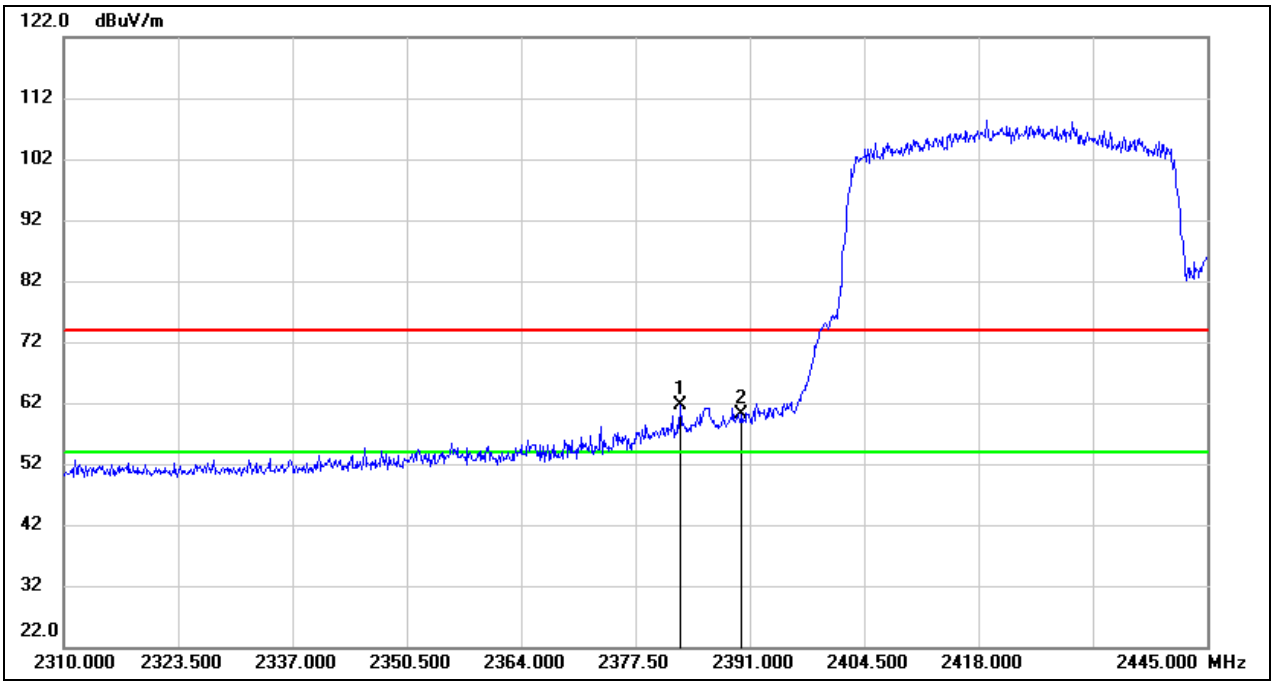
Test Mode:	802.11ax HE40 PK	Channel:	2422
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2382.765	29.52	32.14	61.66	74.00	-12.34	peak
2	2390.000	28.04	32.16	60.20	74.00	-13.80	peak

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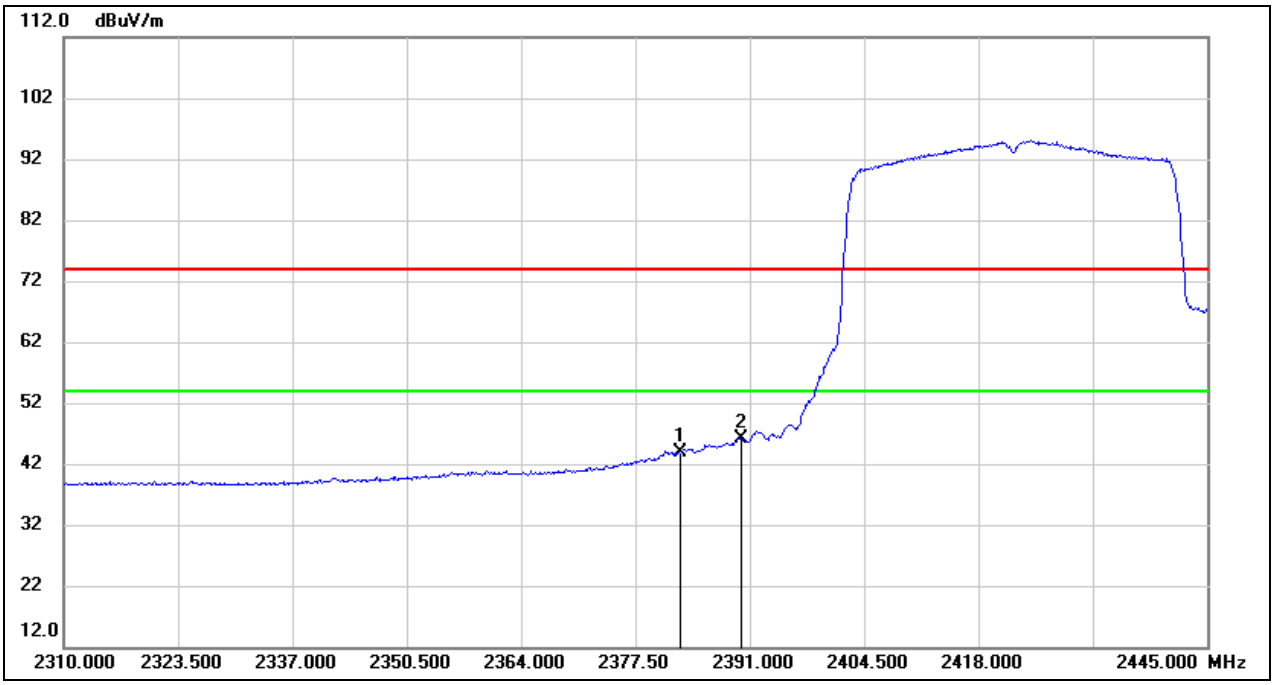
Test Mode:	802.11ax HE40 AV	Channel:	2422
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2382.765	11.63	32.14	43.77	54.00	-10.23	AVG
2	2390.000	13.98	32.16	46.14	54.00	-7.86	AVG

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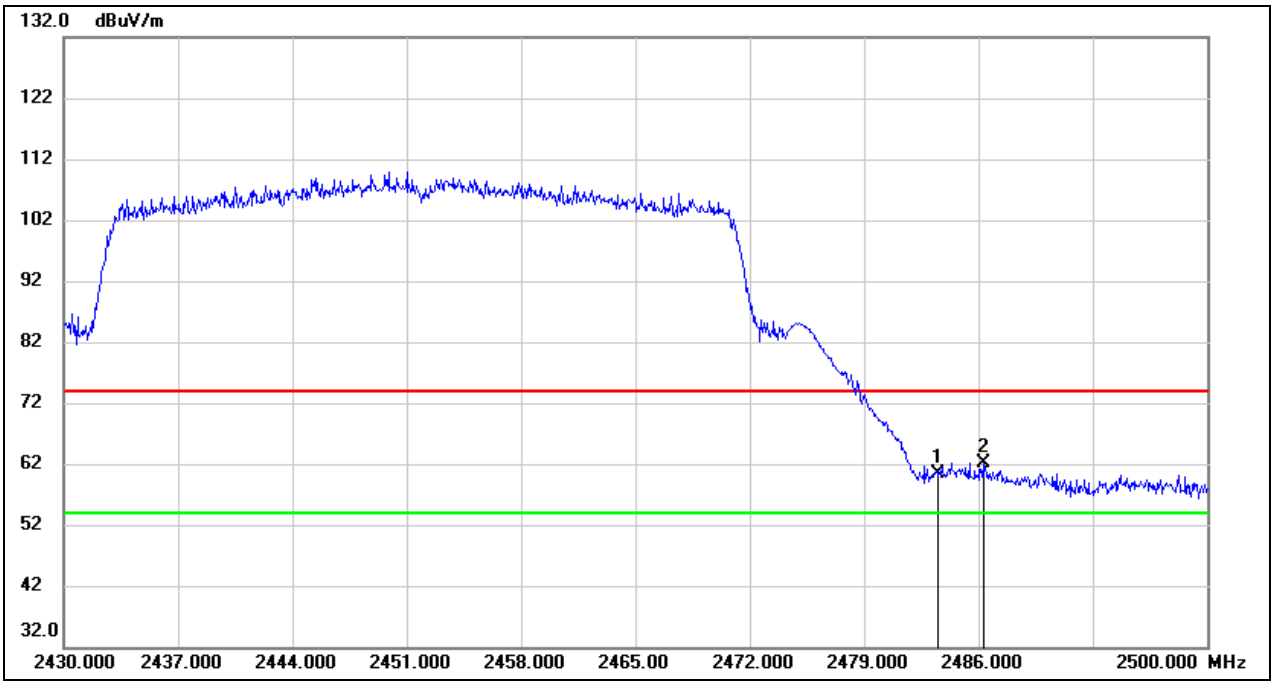
Test Mode:	802.11ax HE40 PK	Channel:	2452
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	27.90	32.44	60.34	74.00	-13.66	peak
2	2486.280	29.78	32.44	62.22	74.00	-11.78	peak

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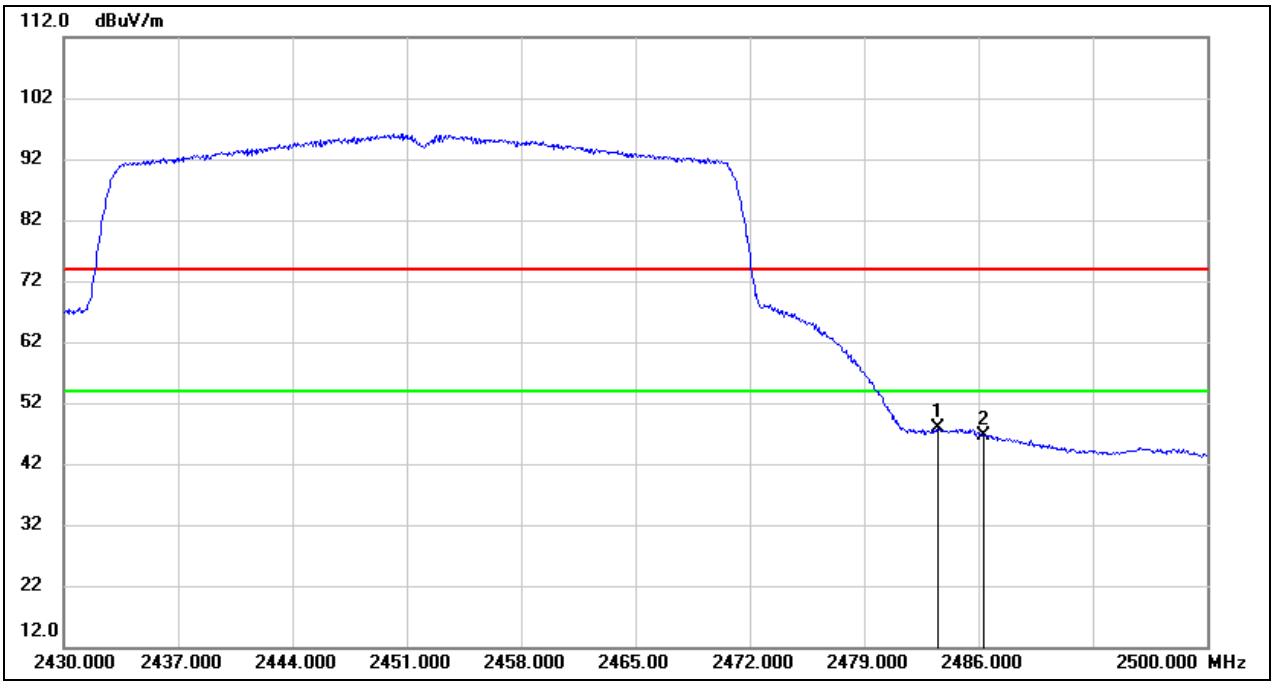
Test Mode:	802.11ax HE40 AV	Channel:	2452
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	15.52	32.44	47.96	54.00	-6.04	AVG
2	2486.280	14.28	32.44	46.72	54.00	-7.28	AVG

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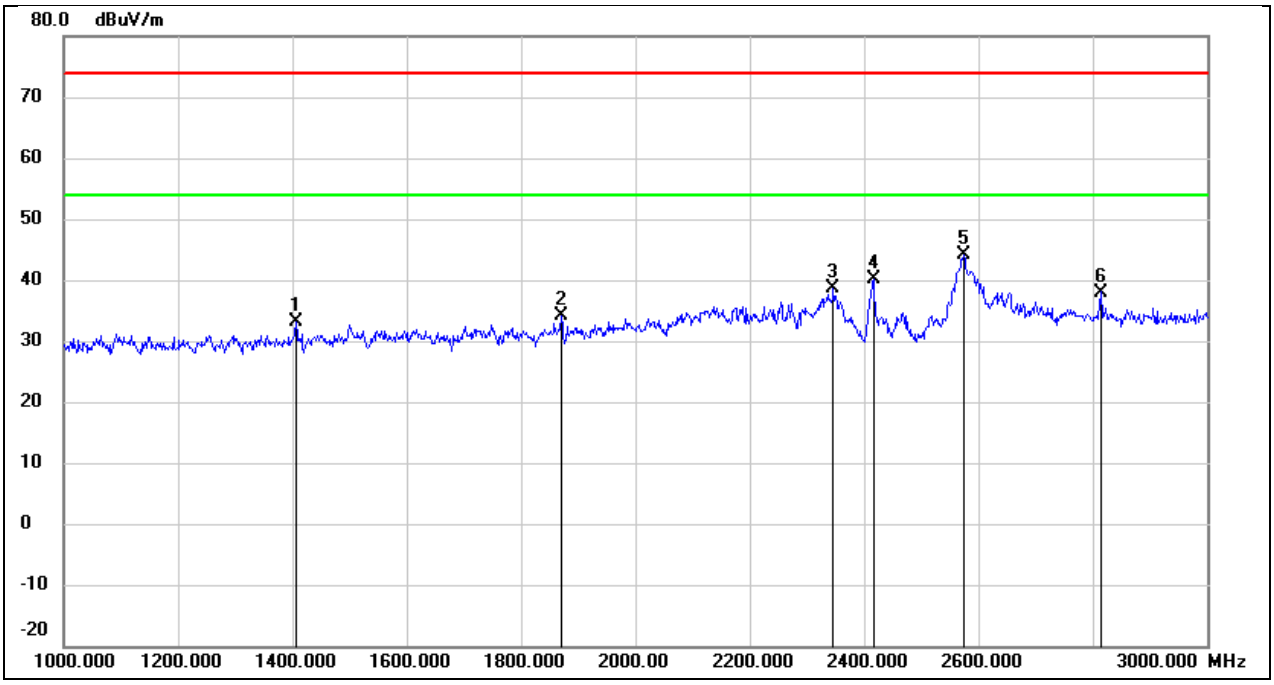
8.2. SPURIOUS EMISSIONS(1 GHZ~3 GHZ)

Test Mode:	802.11b	Channel:	2412
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1406.000	46.24	-13.15	33.09	74.00	-40.91	peak
2	1870.000	45.60	-11.49	34.11	74.00	-39.89	peak
3	2346.000	47.99	-9.28	38.71	74.00	-35.29	peak
4	2412.000	49.17	-8.92	40.25	74.00	-33.75	fundamental
5	2574.000	52.30	-8.27	44.03	74.00	-29.97	peak
6	2814.000	45.54	-7.54	38.00	74.00	-36.00	peak

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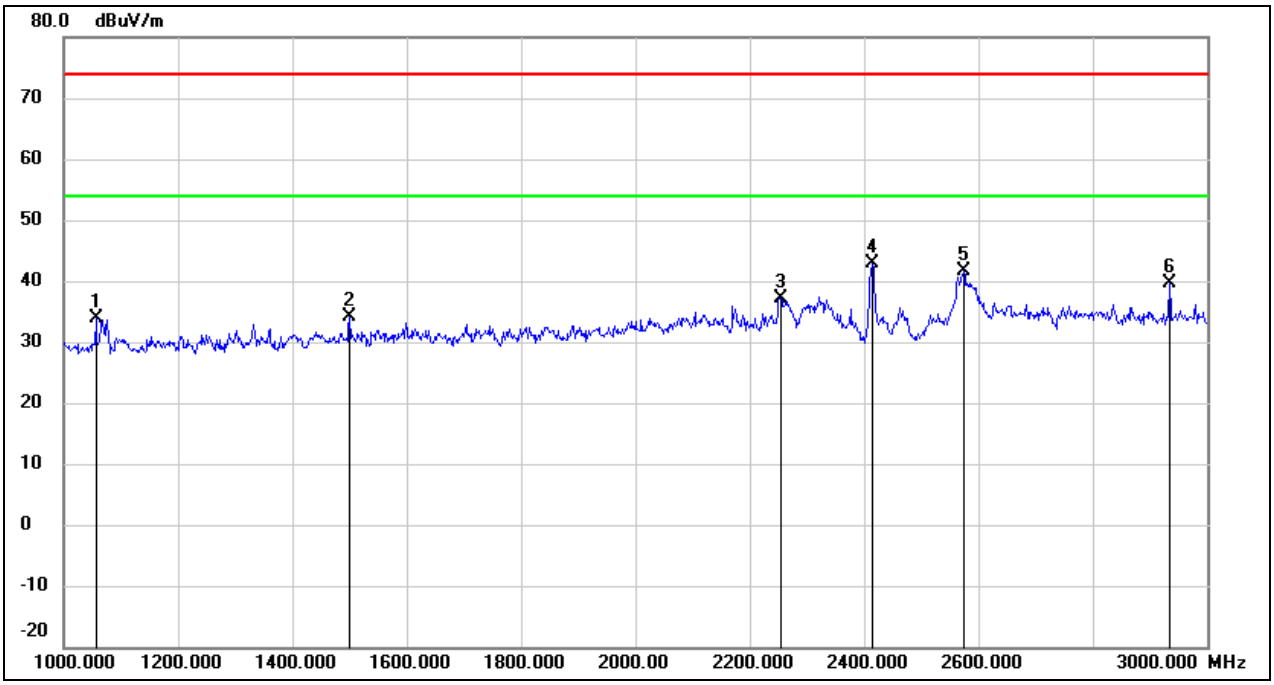
Test Mode:	802.11b	Channel:	2412
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1056.000	48.71	-14.77	33.94	74.00	-40.06	peak
2	1500.000	46.81	-12.71	34.10	74.00	-39.90	peak
3	2254.000	46.93	-9.75	37.18	74.00	-36.82	peak
4	2412.000	51.85	-8.93	42.92	74.00	-31.08	fundamental
5	2574.000	49.95	-8.27	41.68	74.00	-32.32	peak
6	2934.000	46.87	-7.18	39.69	74.00	-34.31	peak

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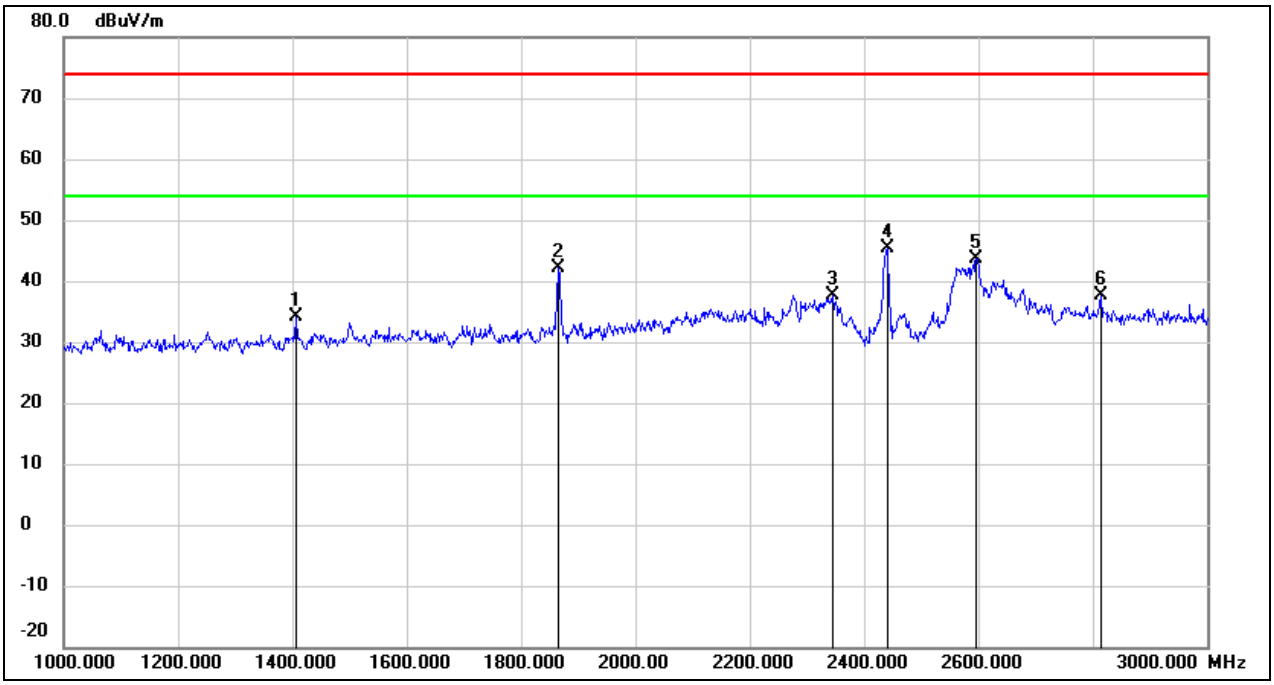
Test Mode:	802.11b	Channel:	2437
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1406.000	47.22	-13.15	34.07	74.00	-39.93	peak
2	1866.000	53.73	-11.50	42.23	74.00	-31.77	peak
3	2344.000	46.88	-9.30	37.58	74.00	-36.42	peak
4	2437.000	54.17	-8.80	45.37	74.00	-28.63	fundamental
5	2596.000	51.87	-8.20	43.67	74.00	-30.33	peak
6	2814.000	45.17	-7.54	37.63	74.00	-36.37	peak

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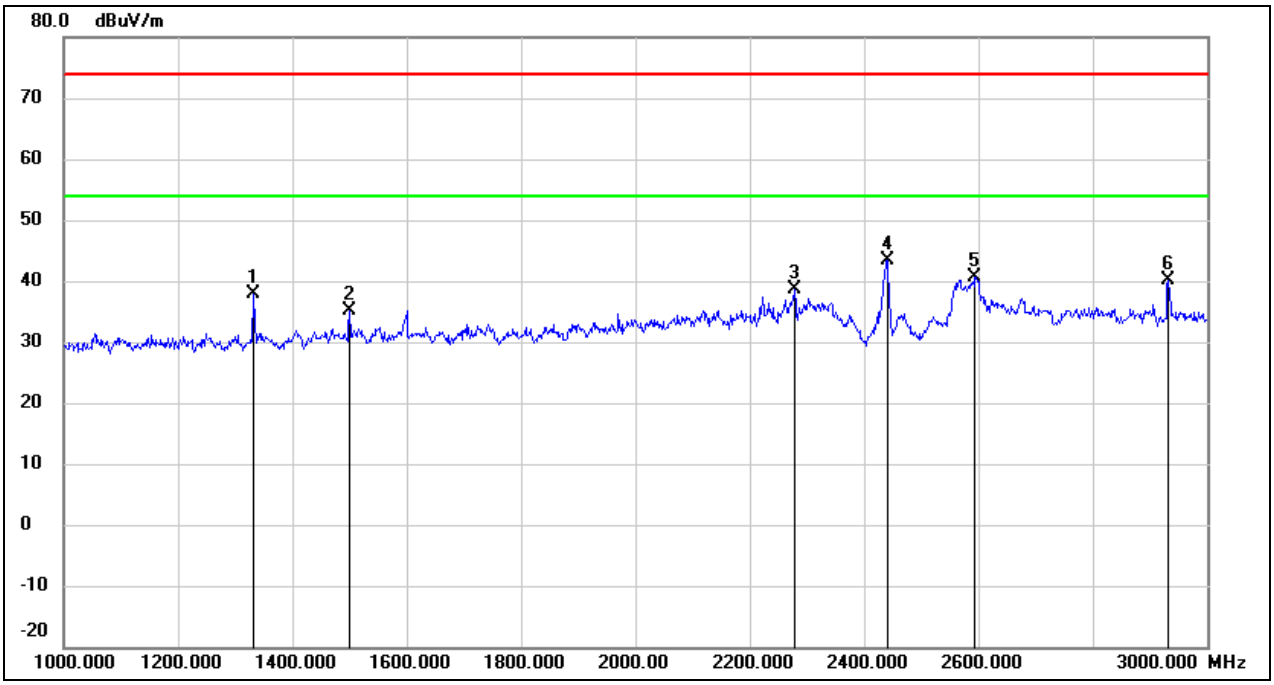
Test Mode:	802.11b	Channel:	2437
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1332.000	51.35	-13.49	37.86	74.00	-36.14	peak
2	1500.000	47.83	-12.71	35.12	74.00	-38.88	peak
3	2278.000	48.18	-9.64	38.54	74.00	-35.46	peak
4	2437.000	52.21	-8.80	43.41	74.00	-30.59	fundamental
5	2594.000	48.88	-8.20	40.68	74.00	-33.32	peak
6	2932.000	47.39	-7.19	40.20	74.00	-33.80	peak

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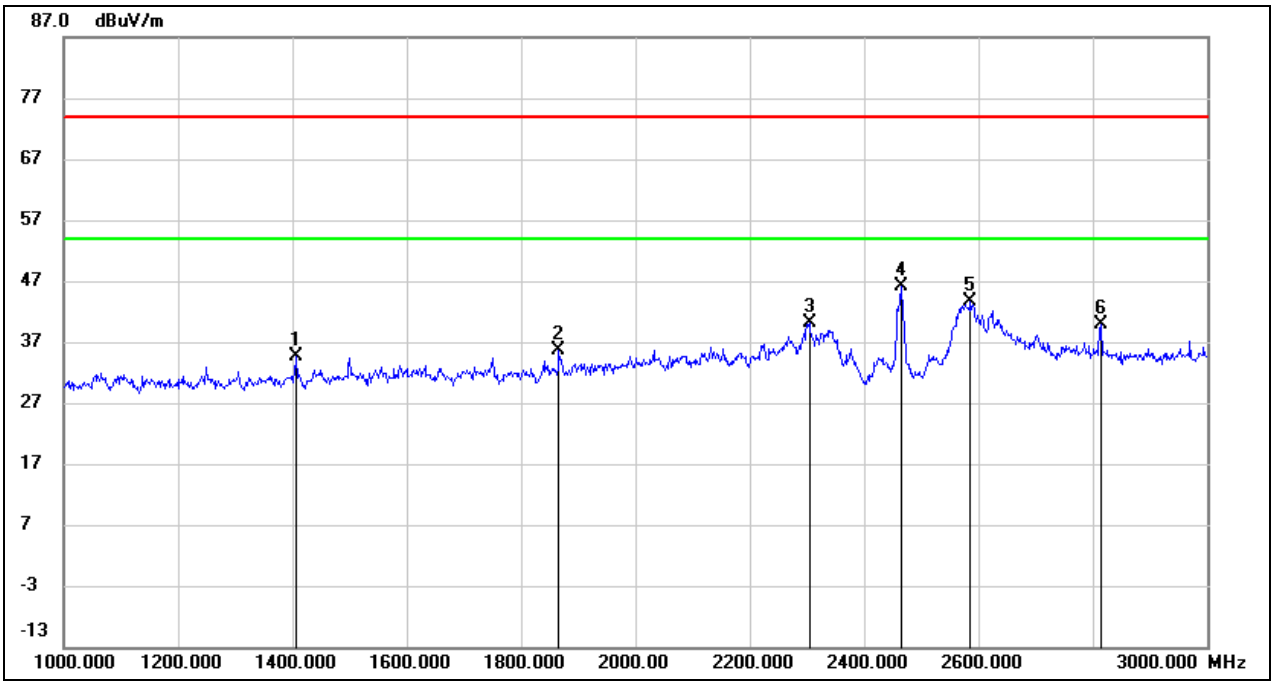
Test Mode:	802.11b	Channel:	2462
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1406.000	47.82	-13.15	34.67	74.00	-39.33	peak
2	1866.000	47.15	-11.50	35.65	74.00	-38.35	peak
3	2304.000	49.67	-9.50	40.17	74.00	-33.83	peak
4	2462.000	54.71	-8.68	46.03	74.00	-27.97	fundamental
5	2586.000	51.75	-8.24	43.51	74.00	-30.49	peak
6	2814.000	47.47	-7.54	39.93	74.00	-34.07	peak

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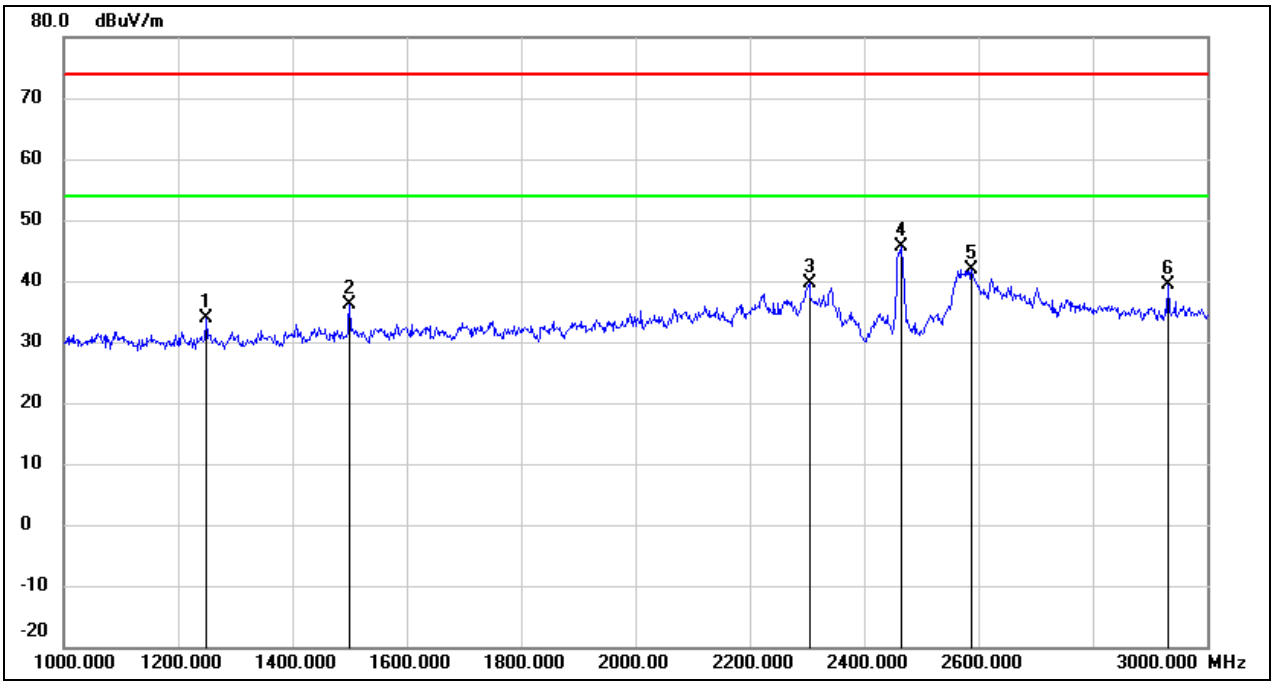
Test Mode:	802.11b	Channel:	2462
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1250.000	47.67	-13.87	33.80	74.00	-40.20	peak
2	1500.000	48.81	-12.71	36.10	74.00	-37.90	peak
3	2304.000	49.16	-9.50	39.66	74.00	-34.34	peak
4	2462.000	54.37	-8.68	45.69	74.00	-28.31	fundamental
5	2588.000	50.13	-8.22	41.91	74.00	-32.09	peak
6	2932.000	46.59	-7.19	39.40	74.00	-34.60	peak

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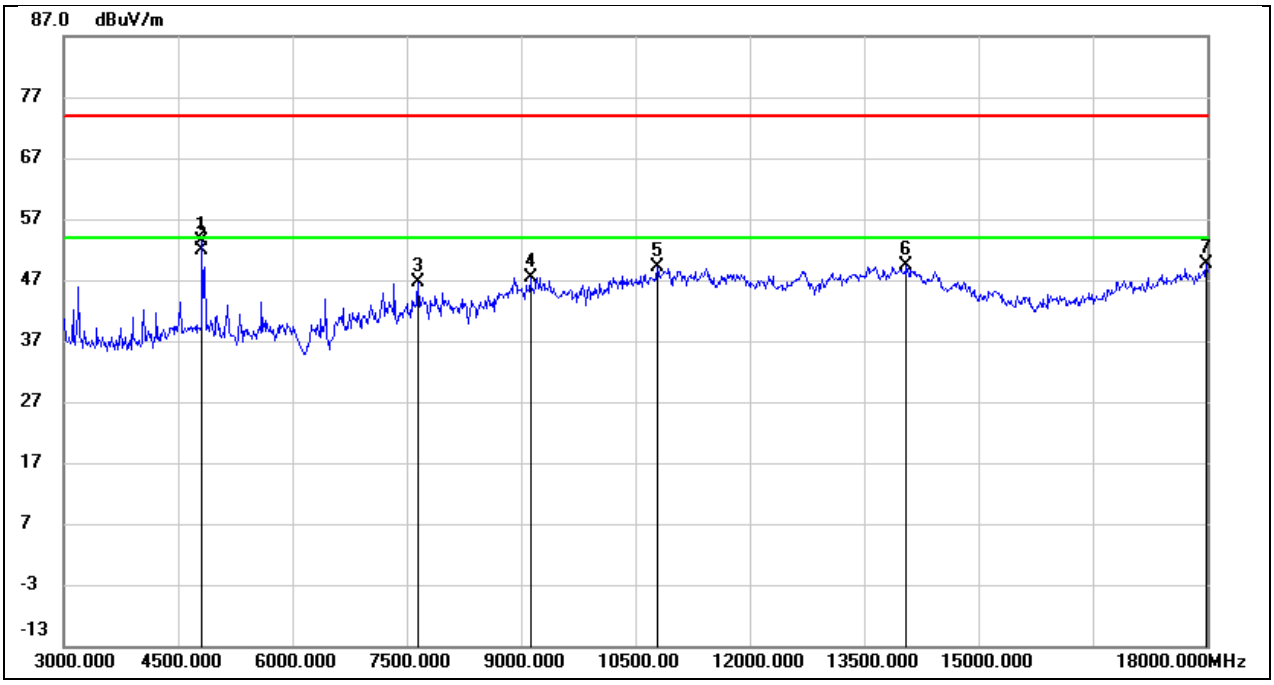
8.3. SPURIOUS EMISSIONS(3 GHZ~18 GHZ)

Test Mode:	802.11b	Channel:	2412
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4815.000	53.60	-0.26	53.34	74.00	-20.66	peak
2	4815.000	52.08	-0.26	51.82	54.00	-2.18	AVG
3	7650.000	40.28	6.33	46.61	74.00	-27.39	peak
4	9120.000	36.94	10.53	47.47	74.00	-26.53	peak
5	10785.000	35.14	14.01	49.15	74.00	-24.85	peak
6	14055.000	27.64	21.73	49.37	74.00	-24.63	peak
7	17985.000	23.97	25.60	49.57	74.00	-24.43	peak

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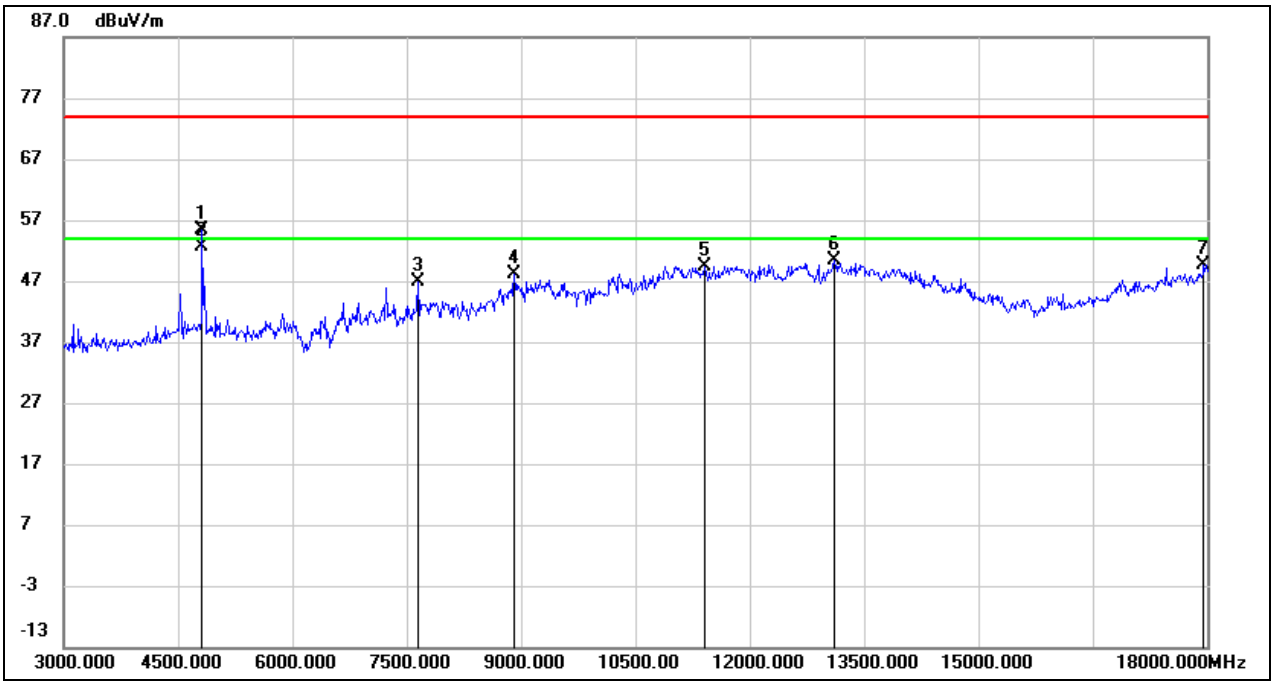
Test Mode:	802.11b	Channel:	2412
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4815.000	55.71	-0.26	55.45	74.00	-18.55	peak
2	4815.000	52.90	-0.26	52.64	54.00	-1.36	AVG
3	7650.000	40.61	6.33	46.94	74.00	-27.06	peak
4	8910.000	38.38	9.82	48.20	74.00	-25.80	peak
5	11400.000	33.21	16.23	49.44	74.00	-24.56	peak
6	13110.000	31.07	19.20	50.27	74.00	-23.73	peak
7	17955.000	24.26	25.42	49.68	74.00	-24.32	peak

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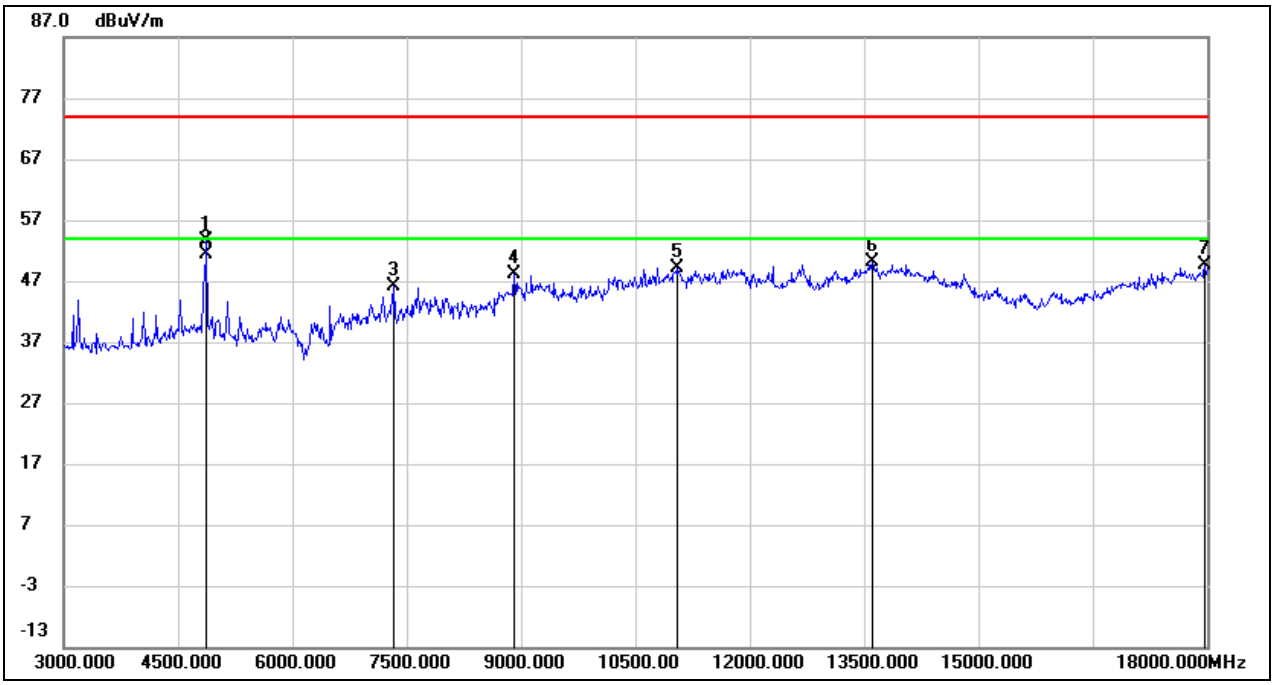
Test Mode:	802.11b	Channel:	2437
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4875.000	53.57	-0.03	53.54	74.00	-20.46	peak
2	4875.000	51.43	-0.03	51.40	54.00	-2.60	AVG
3	7335.000	39.72	6.45	46.17	74.00	-27.83	peak
4	8910.000	38.41	9.82	48.23	74.00	-25.77	peak
5	11055.000	34.21	14.96	49.17	74.00	-24.83	peak
6	13605.000	28.92	21.12	50.04	74.00	-23.96	peak
7	17970.000	24.15	25.51	49.66	74.00	-24.34	peak

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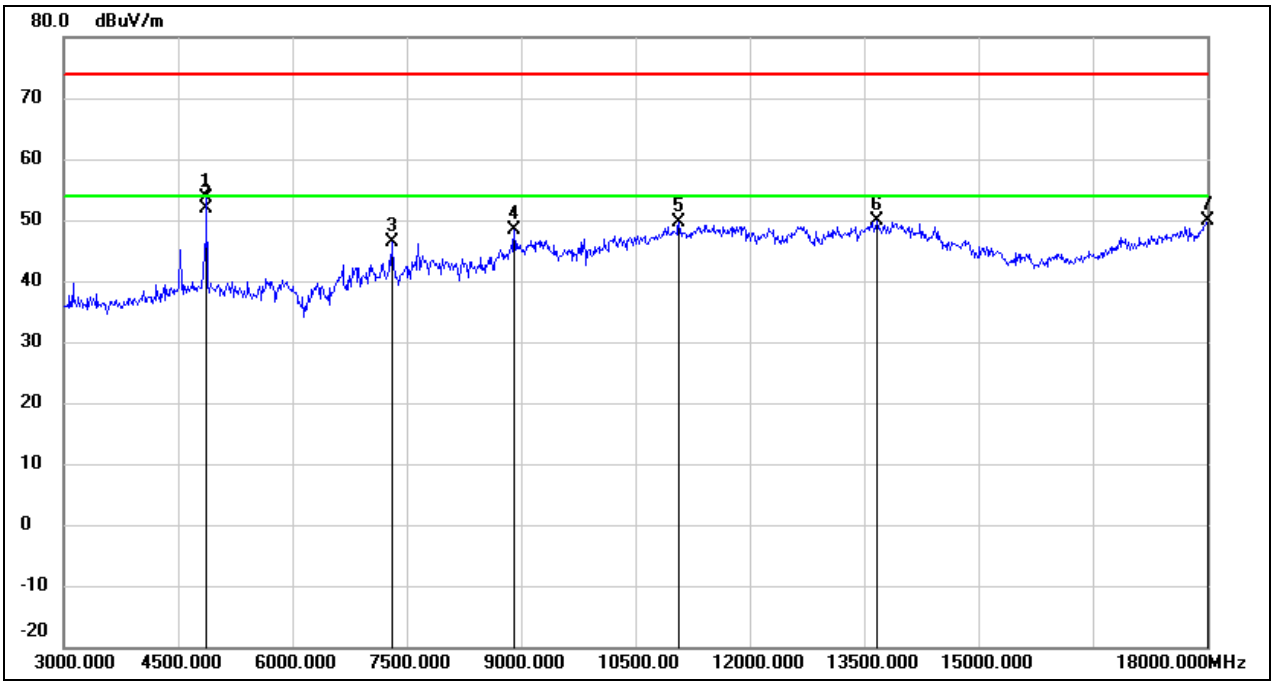
Test Mode:	802.11b	Channel:	2437
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4875.000	53.64	-0.03	53.61	74.00	-20.39	peak
2	4875.000	51.85	-0.03	51.82	54.00	-2.18	AVG
3	7305.000	39.96	6.47	46.43	74.00	-27.57	peak
4	8910.000	38.63	9.82	48.45	74.00	-25.55	peak
5	11070.000	34.69	15.03	49.72	74.00	-24.28	peak
6	13665.000	28.56	21.25	49.81	74.00	-24.19	peak
7	18000.000	24.20	25.69	49.89	74.00	-24.11	peak

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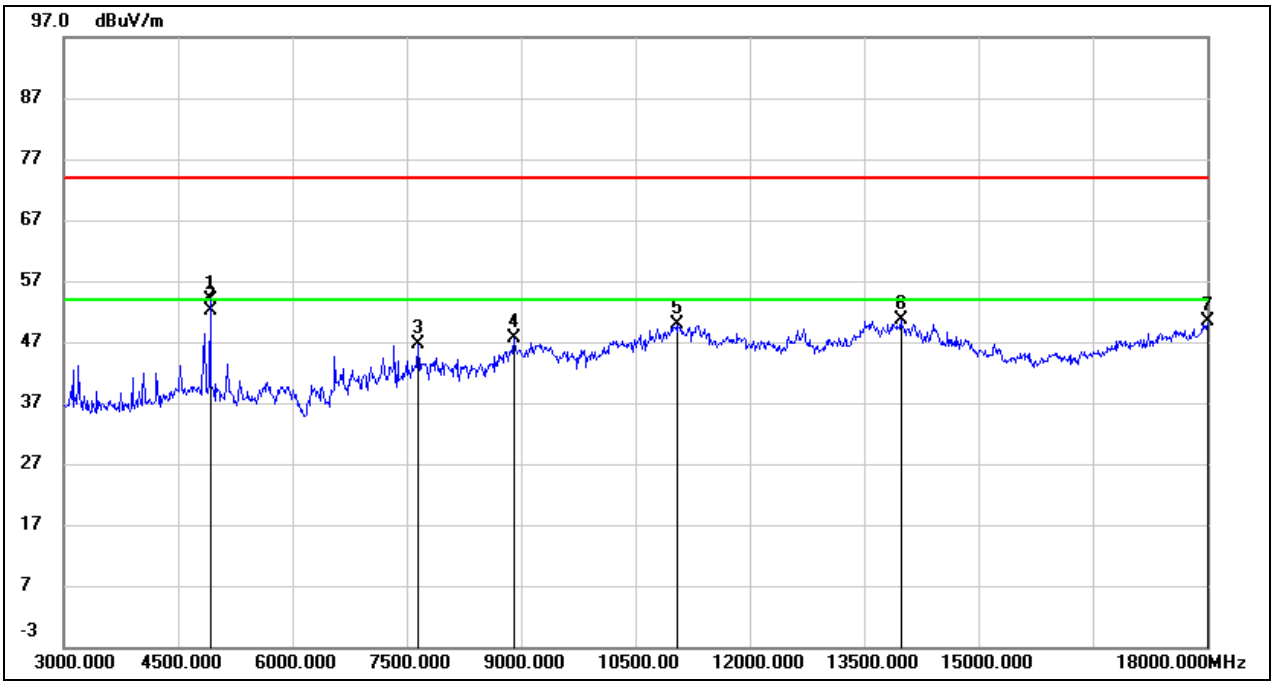
Test Mode:	802.11b	Channel:	2462
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4920.000	53.69	0.14	53.83	74.00	-20.17	peak
2	4920.000	51.89	0.14	52.03	54.00	-1.97	AVG
3	7650.000	40.36	6.33	46.69	74.00	-27.31	peak
4	8910.000	37.86	9.82	47.68	74.00	-26.32	peak
5	11055.000	34.87	14.96	49.83	74.00	-24.17	peak
6	13980.000	28.67	21.92	50.59	74.00	-23.41	peak
7	18000.000	24.79	25.69	50.48	74.00	-23.52	peak

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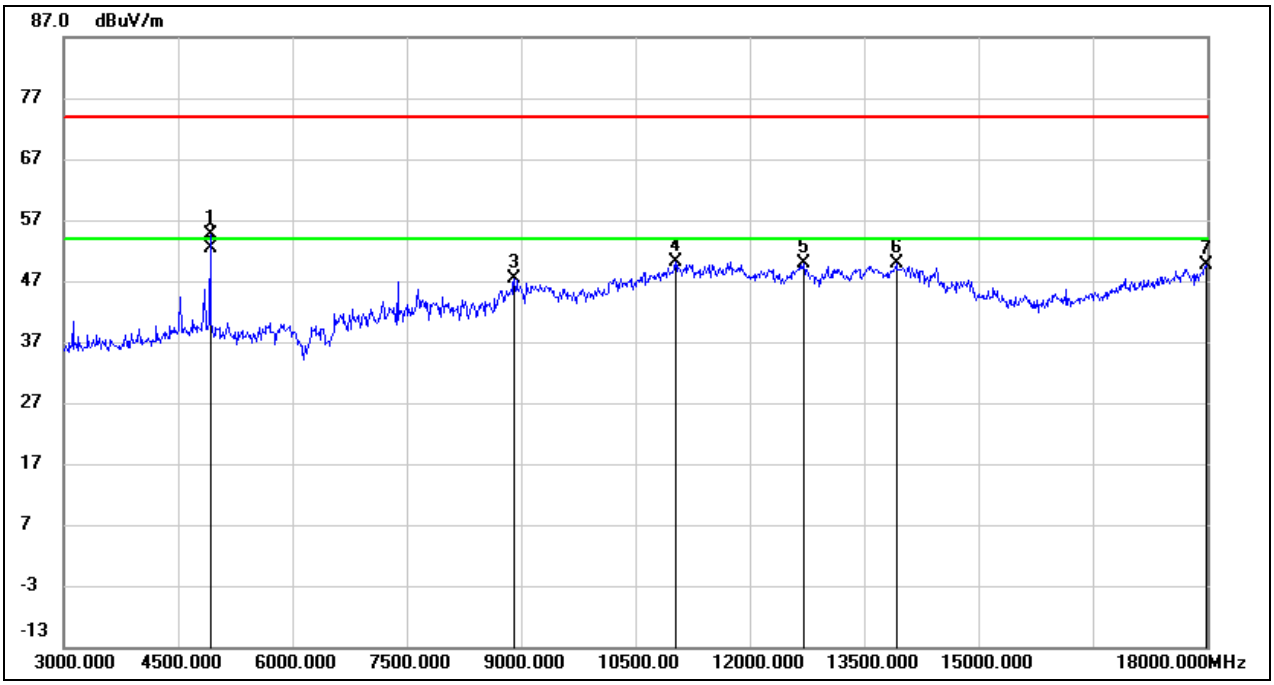
Test Mode:	802.11b	Channel:	2462
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4920.000	54.45	0.14	54.59	74.00	-19.41	peak
2	4920.000	52.16	0.14	52.30	54.00	-1.70	AVG
3	8910.000	37.52	9.82	47.34	74.00	-26.66	peak
4	11025.000	35.37	14.85	50.22	74.00	-23.78	peak
5	12705.000	31.76	18.06	49.82	74.00	-24.18	peak
6	13920.000	28.09	21.79	49.88	74.00	-24.12	peak
7	17985.000	23.99	25.60	49.59	74.00	-24.41	peak

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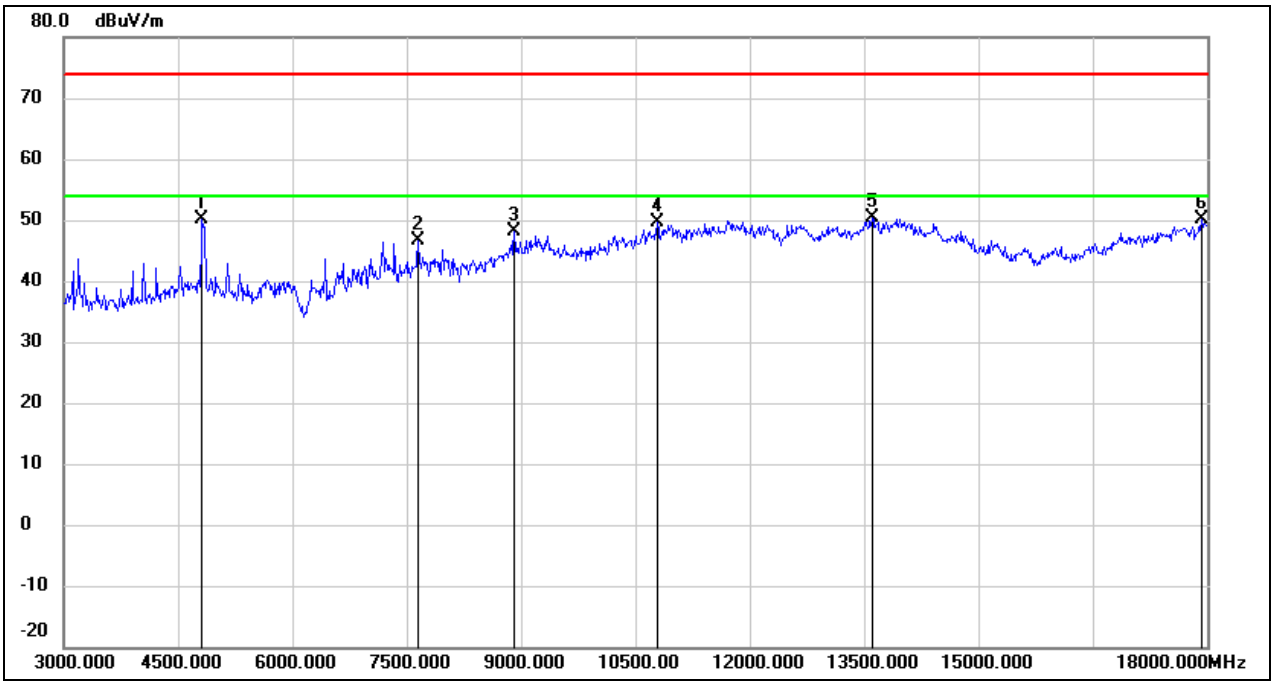
Test Mode:	802.11g	Channel:	2412
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4815.000	50.46	-0.26	50.20	74.00	-23.80	peak
2	7650.000	40.20	6.33	46.53	74.00	-27.47	peak
3	8910.000	38.35	9.82	48.17	74.00	-25.83	peak
4	10785.000	35.58	14.01	49.59	74.00	-24.41	peak
5	13605.000	29.27	21.12	50.39	74.00	-23.61	peak
6	17925.000	24.79	25.25	50.04	74.00	-23.96	peak

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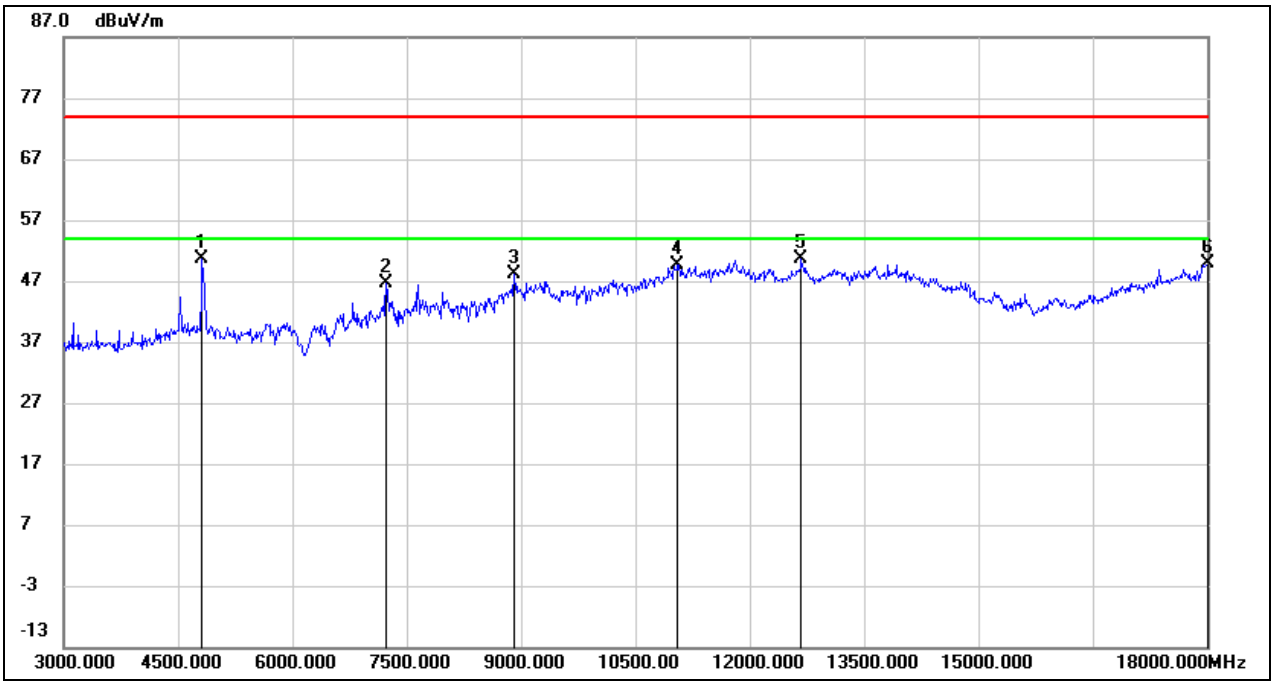
Test Mode:	802.11g	Channel:	2412
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4815.000	50.95	-0.26	50.69	74.00	-23.31	peak
2	7230.000	40.15	6.53	46.68	74.00	-27.32	peak
3	8910.000	38.21	9.82	48.03	74.00	-25.97	peak
4	11055.000	34.67	14.96	49.63	74.00	-24.37	peak
5	12675.000	32.62	17.99	50.61	74.00	-23.39	peak
6	18000.000	24.24	25.69	49.93	74.00	-24.07	peak

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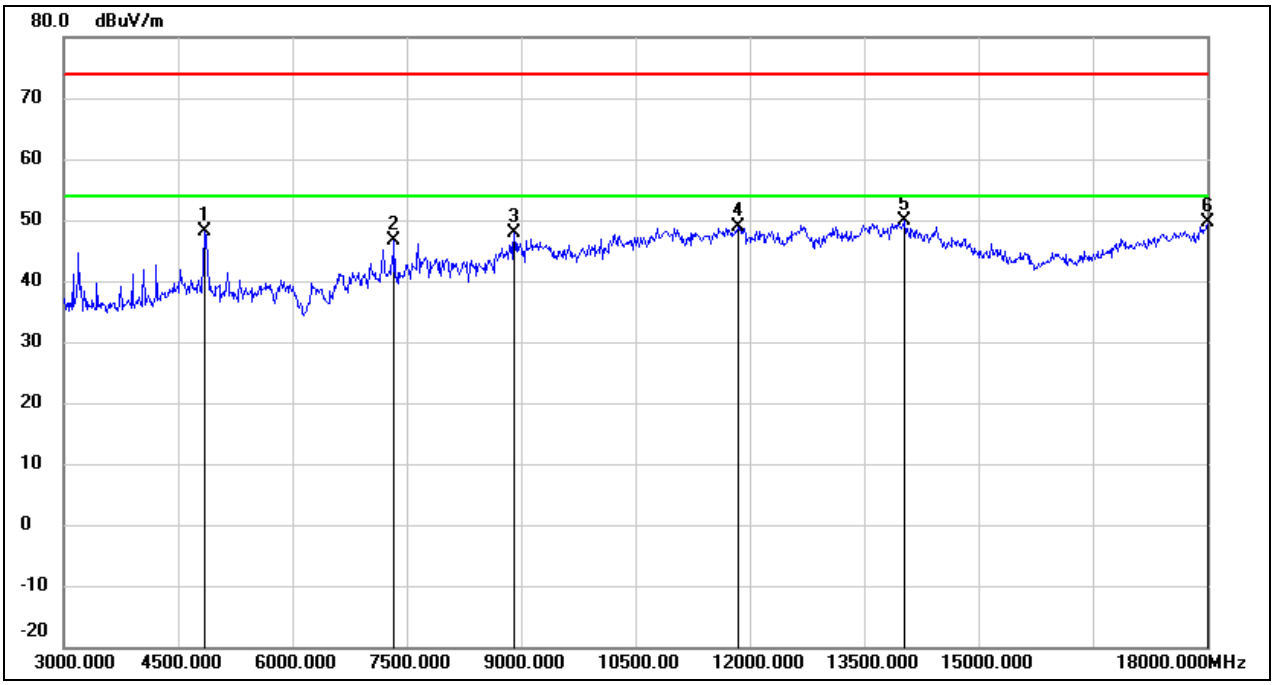
Test Mode:	802.11g	Channel:	2437
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4845.000	48.29	-0.15	48.14	74.00	-25.86	peak
2	7335.000	40.15	6.45	46.60	74.00	-27.40	peak
3	8910.000	38.00	9.82	47.82	74.00	-26.18	peak
4	11850.000	31.20	17.56	48.76	74.00	-25.24	peak
5	14025.000	27.94	21.86	49.80	74.00	-24.20	peak
6	18000.000	23.93	25.69	49.62	74.00	-24.38	peak

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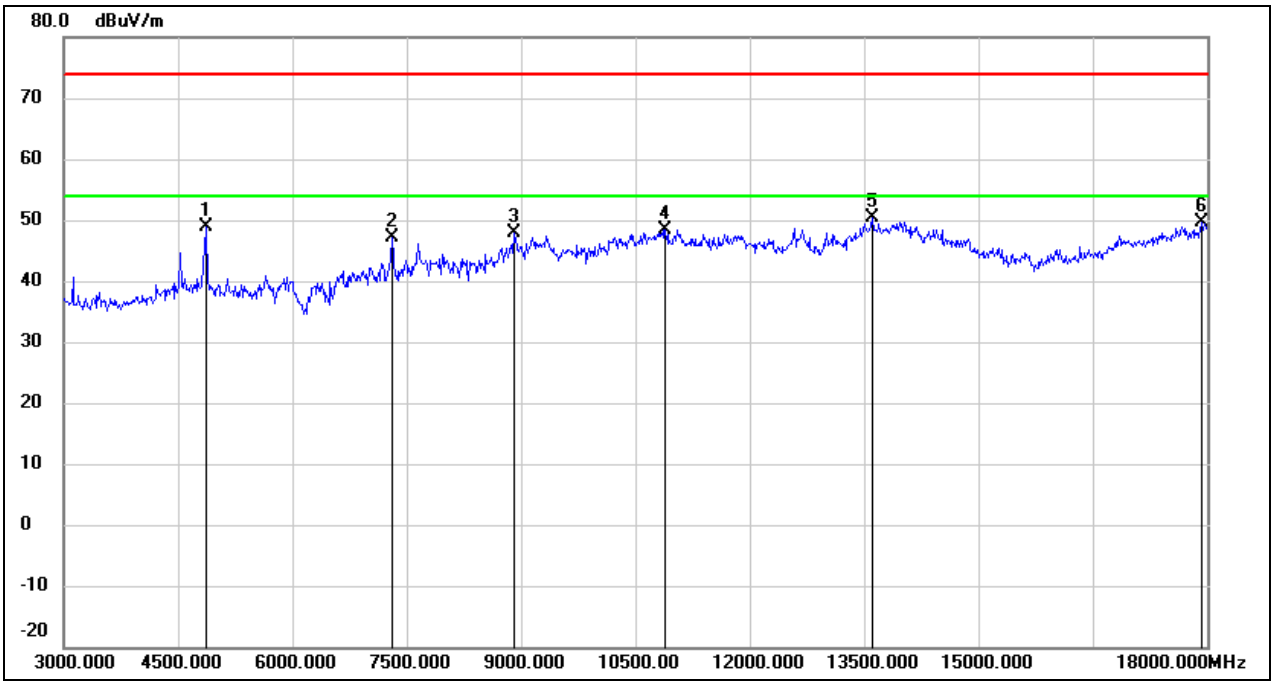
Test Mode:	802.11g	Channel:	2437
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4875.000	48.90	-0.03	48.87	74.00	-25.13	peak
2	7305.000	40.64	6.47	47.11	74.00	-26.89	peak
3	8910.000	38.15	9.82	47.97	74.00	-26.03	peak
4	10890.000	33.97	14.39	48.36	74.00	-25.64	peak
5	13605.000	29.16	21.12	50.28	74.00	-23.72	peak
6	17925.000	24.39	25.25	49.64	74.00	-24.36	peak

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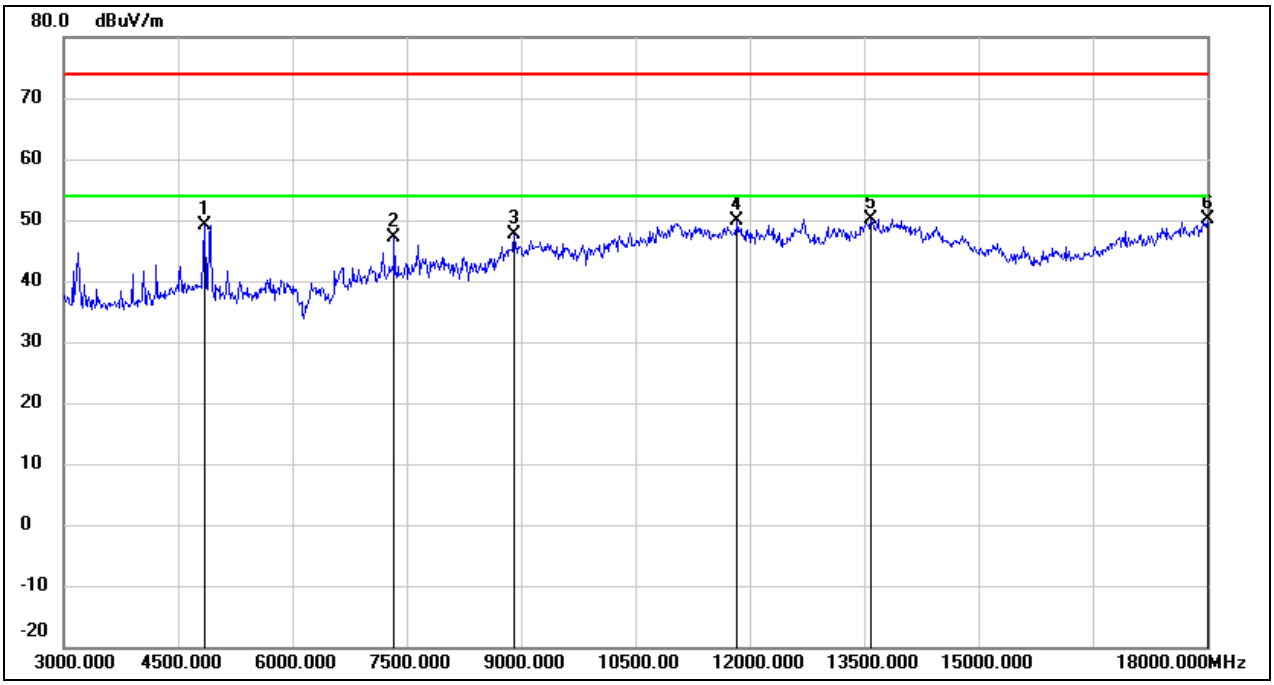
Test Mode:	802.11g	Channel:	2462
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4845.000	49.29	-0.15	49.14	74.00	-24.86	peak
2	7335.000	40.73	6.45	47.18	74.00	-26.82	peak
3	8910.000	37.77	9.82	47.59	74.00	-26.41	peak
4	11835.000	32.42	17.51	49.93	74.00	-24.07	peak
5	13590.000	29.12	21.09	50.21	74.00	-23.79	peak
6	18000.000	24.32	25.69	50.01	74.00	-23.99	peak

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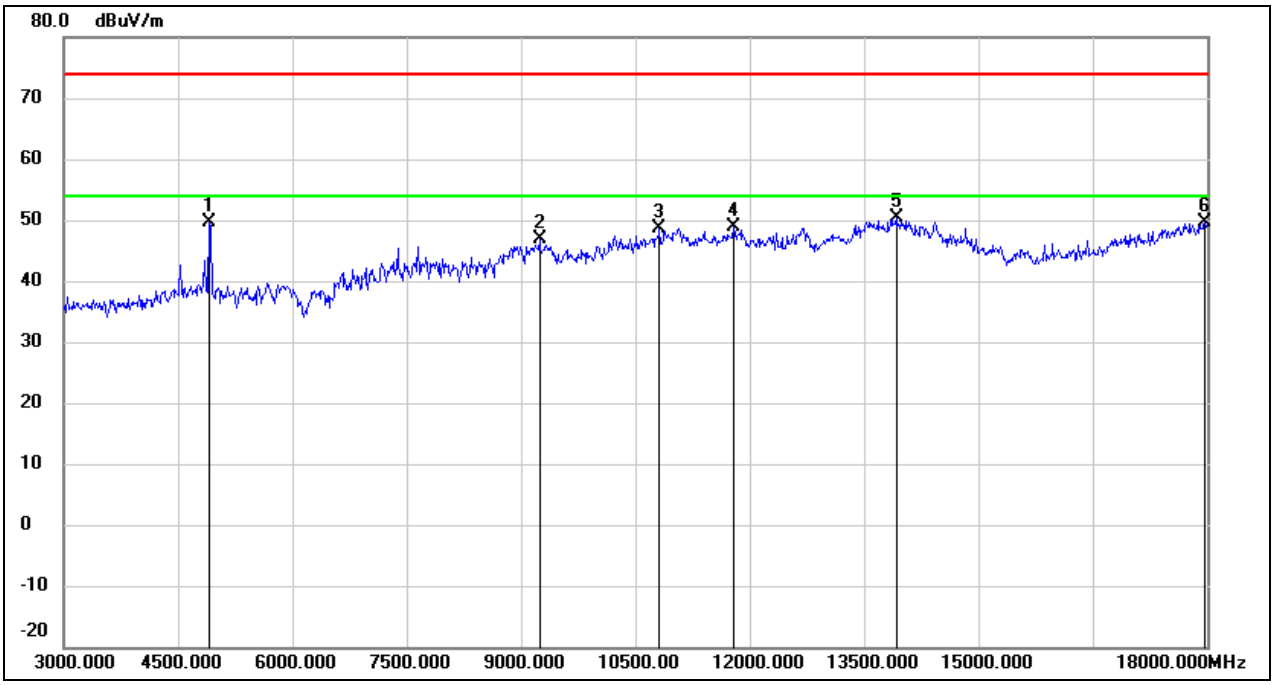
Test Mode:	802.11g	Channel:	2462
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4905.000	49.47	0.09	49.56	74.00	-24.44	peak
2	9240.000	36.37	10.58	46.95	74.00	-27.05	peak
3	10815.000	34.58	14.11	48.69	74.00	-25.31	peak
4	11790.000	31.47	17.38	48.85	74.00	-25.15	peak
5	13920.000	28.53	21.79	50.32	74.00	-23.68	peak
6	17970.000	24.19	25.51	49.70	74.00	-24.30	peak

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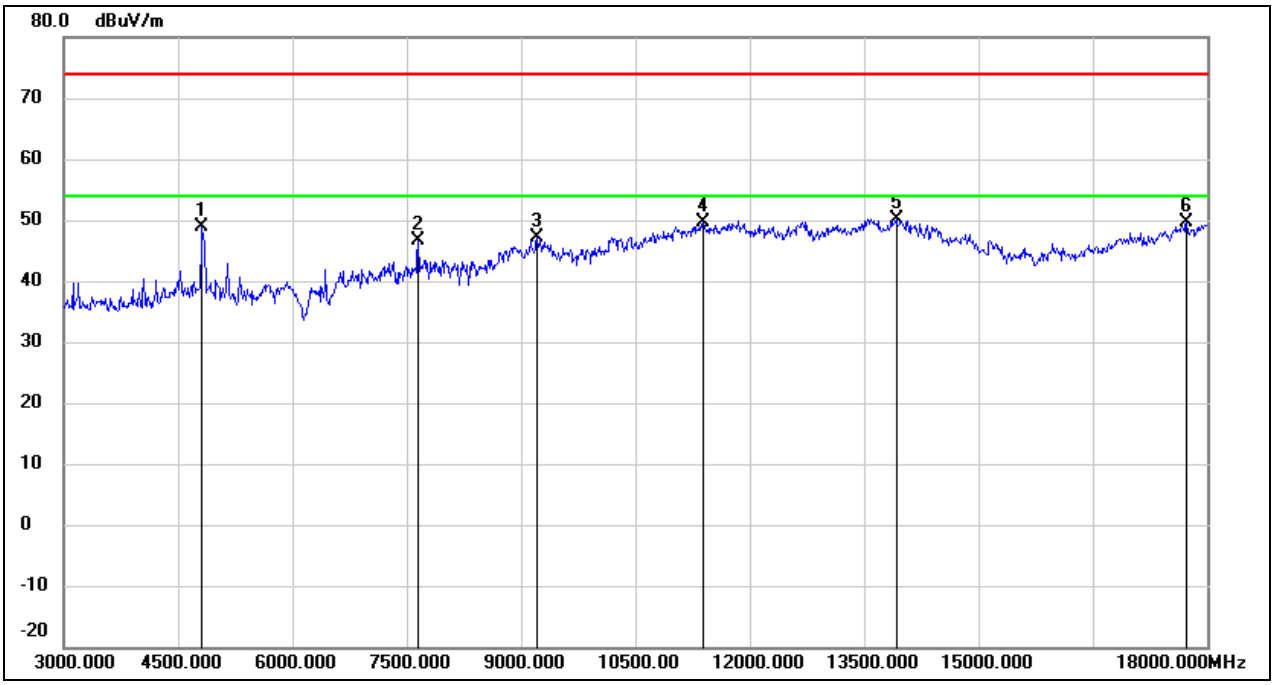
Test Mode:	802.11n HT20	Channel:	2412
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4815.000	49.14	-0.26	48.88	74.00	-25.12	peak
2	7650.000	40.40	6.33	46.73	74.00	-27.27	peak
3	9210.000	36.46	10.57	47.03	74.00	-26.97	peak
4	11385.000	33.38	16.17	49.55	74.00	-24.45	peak
5	13920.000	28.41	21.79	50.20	74.00	-23.80	peak
6	17730.000	25.54	24.09	49.63	74.00	-24.37	peak

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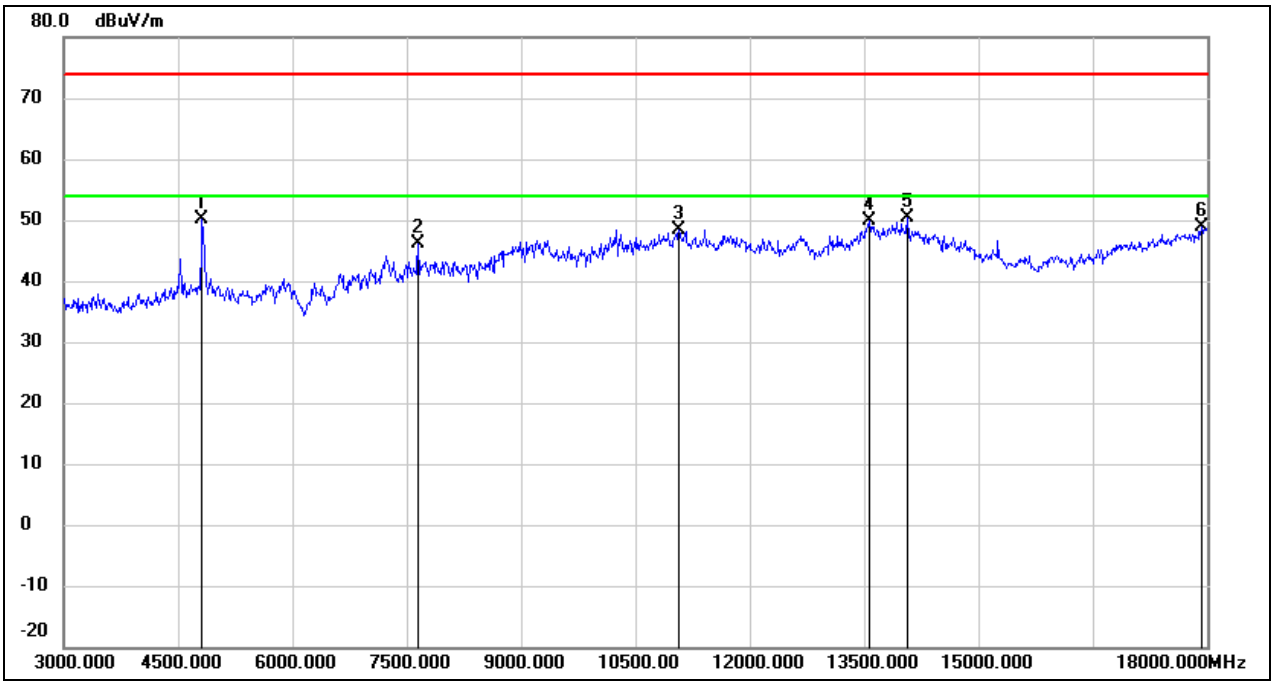
Test Mode:	802.11n HT20	Channel:	2412
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4815.000	50.40	-0.26	50.14	74.00	-23.86	peak
2	7650.000	39.68	6.33	46.01	74.00	-27.99	peak
3	11070.000	33.42	15.03	48.45	74.00	-25.55	peak
4	13575.000	28.82	21.06	49.88	74.00	-24.12	peak
5	14070.000	28.59	21.67	50.26	74.00	-23.74	peak
6	17925.000	23.56	25.25	48.81	74.00	-25.19	peak

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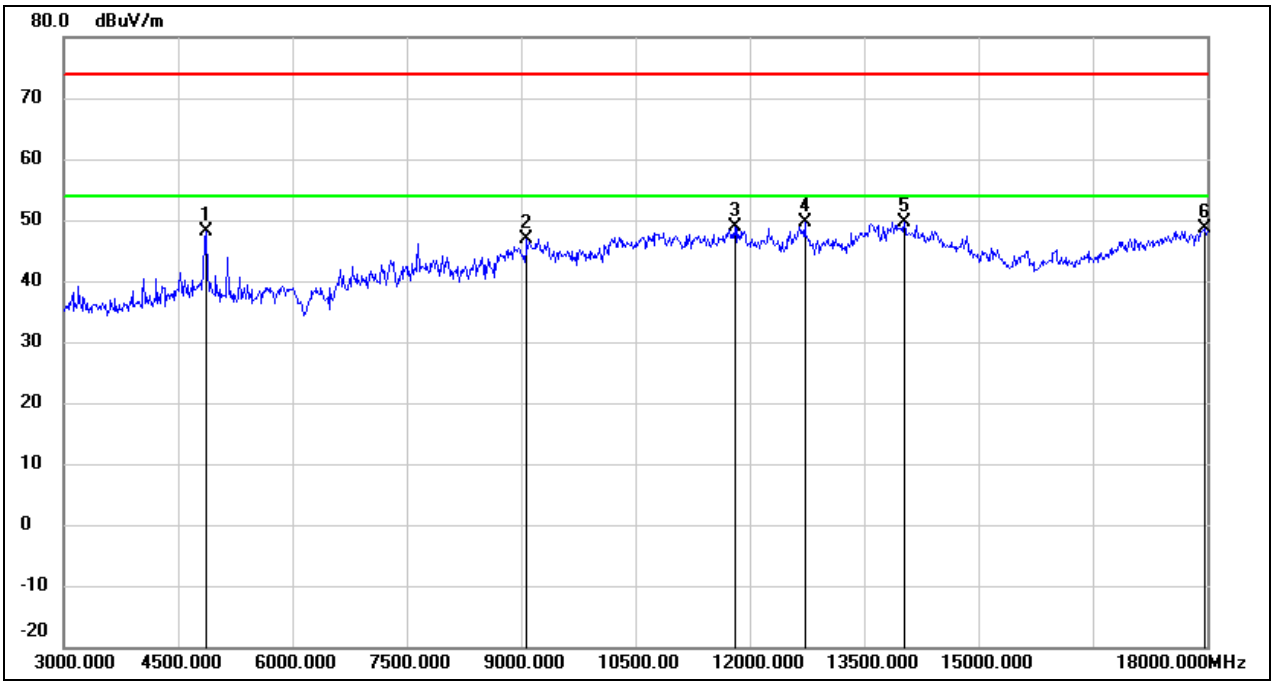
Test Mode:	802.11n HT20	Channel:	2437
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4860.000	48.31	-0.09	48.22	74.00	-25.78	peak
2	9075.000	36.25	10.52	46.77	74.00	-27.23	peak
3	11805.000	31.35	17.43	48.78	74.00	-25.22	peak
4	12720.000	31.51	18.08	49.59	74.00	-24.41	peak
5	14025.000	27.70	21.86	49.56	74.00	-24.44	peak
6	17970.000	23.08	25.51	48.59	74.00	-25.41	peak

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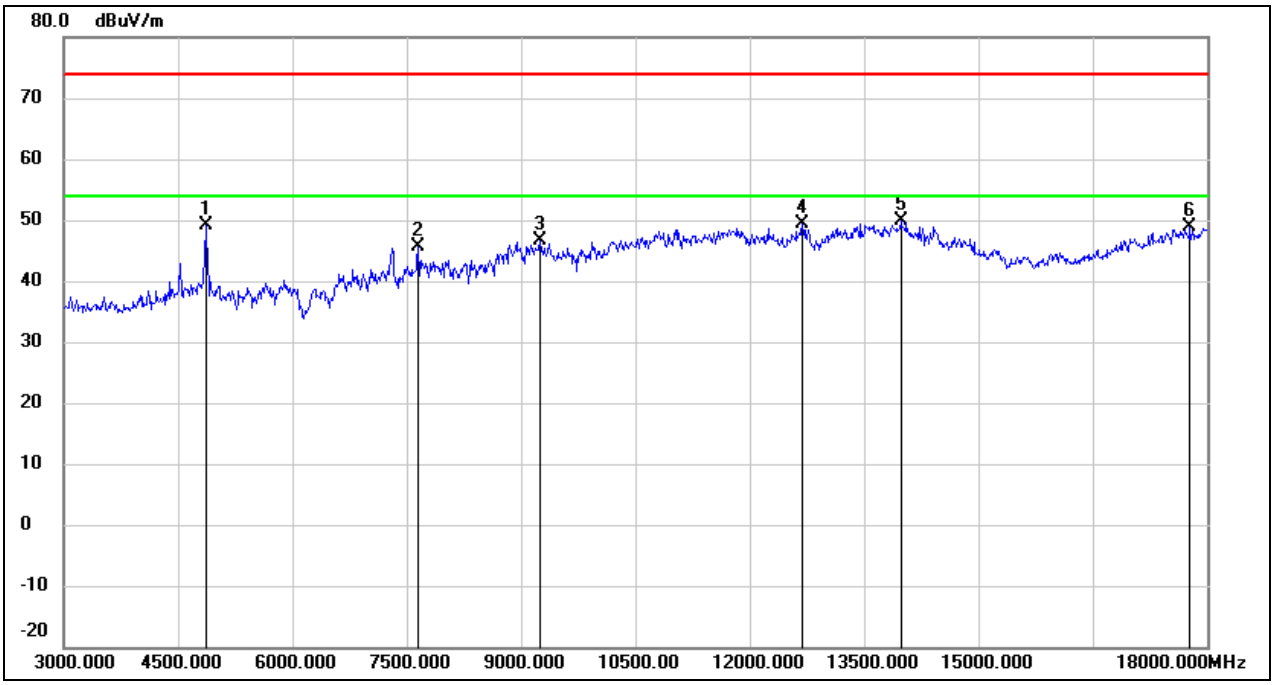
Test Mode:	802.11n HT20	Channel:	2437
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4860.000	49.24	-0.09	49.15	74.00	-24.85	peak
2	7650.000	39.21	6.33	45.54	74.00	-28.46	peak
3	9240.000	35.94	10.58	46.52	74.00	-27.48	peak
4	12690.000	31.32	18.02	49.34	74.00	-24.66	peak
5	13980.000	27.94	21.92	49.86	74.00	-24.14	peak
6	17775.000	24.63	24.36	48.99	74.00	-25.01	peak

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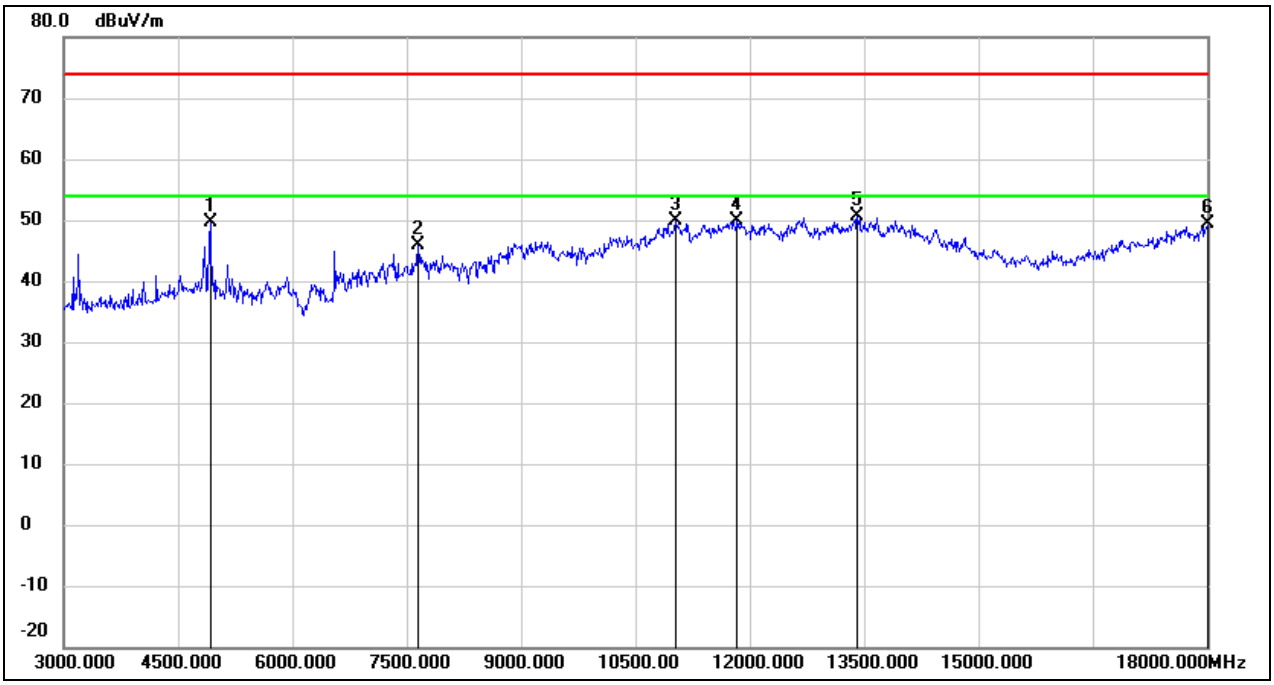
Test Mode:	802.11n HT20	Channel:	2462
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4920.000	49.48	0.14	49.62	74.00	-24.38	peak
2	7650.000	39.59	6.33	45.92	74.00	-28.08	peak
3	11025.000	34.94	14.85	49.79	74.00	-24.21	peak
4	11835.000	32.45	17.51	49.96	74.00	-24.04	peak
5	13410.000	30.10	20.50	50.60	74.00	-23.40	peak
6	18000.000	23.80	25.69	49.49	74.00	-24.51	peak

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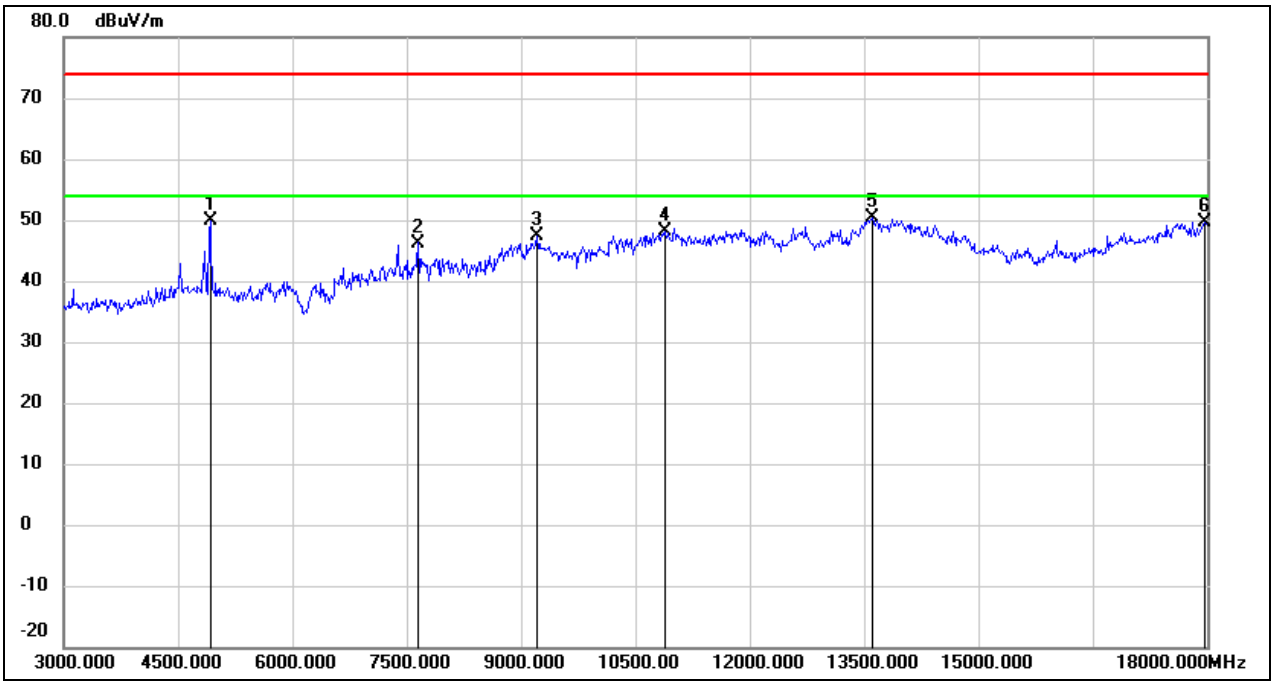
Test Mode:	802.11n HT20	Channel:	2462
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4920.000	49.63	0.14	49.77	74.00	-24.23	peak
2	7650.000	39.92	6.33	46.25	74.00	-27.75	peak
3	9210.000	36.87	10.57	47.44	74.00	-26.56	peak
4	10890.000	33.66	14.39	48.05	74.00	-25.95	peak
5	13605.000	29.20	21.12	50.32	74.00	-23.68	peak
6	17970.000	24.15	25.51	49.66	74.00	-24.34	peak

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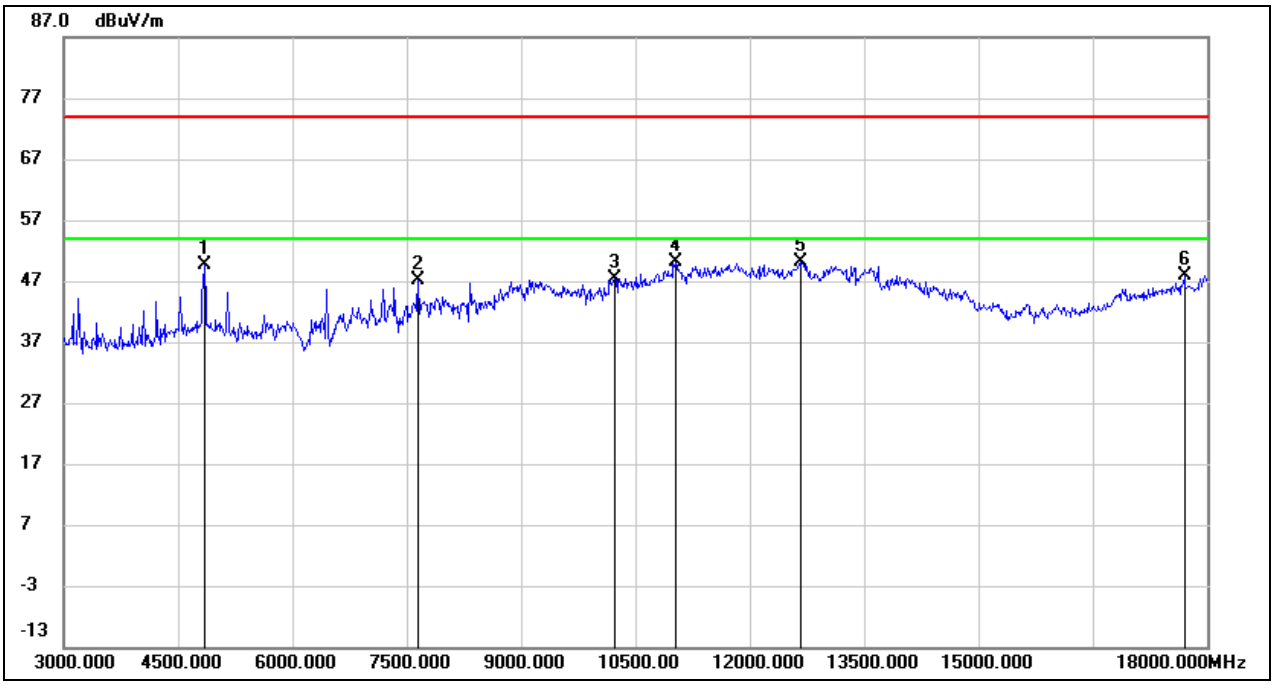
Test Mode:	802.11n HT40	Channel:	2422
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4845.000	49.87	-0.15	49.72	74.00	-24.28	peak
2	7650.000	40.83	6.33	47.16	74.00	-26.84	peak
3	10230.000	34.93	12.46	47.39	74.00	-26.61	peak
4	11025.000	35.18	14.85	50.03	74.00	-23.97	peak
5	12675.000	32.15	17.99	50.14	74.00	-23.86	peak
6	17700.000	24.01	23.91	47.92	74.00	-26.08	peak

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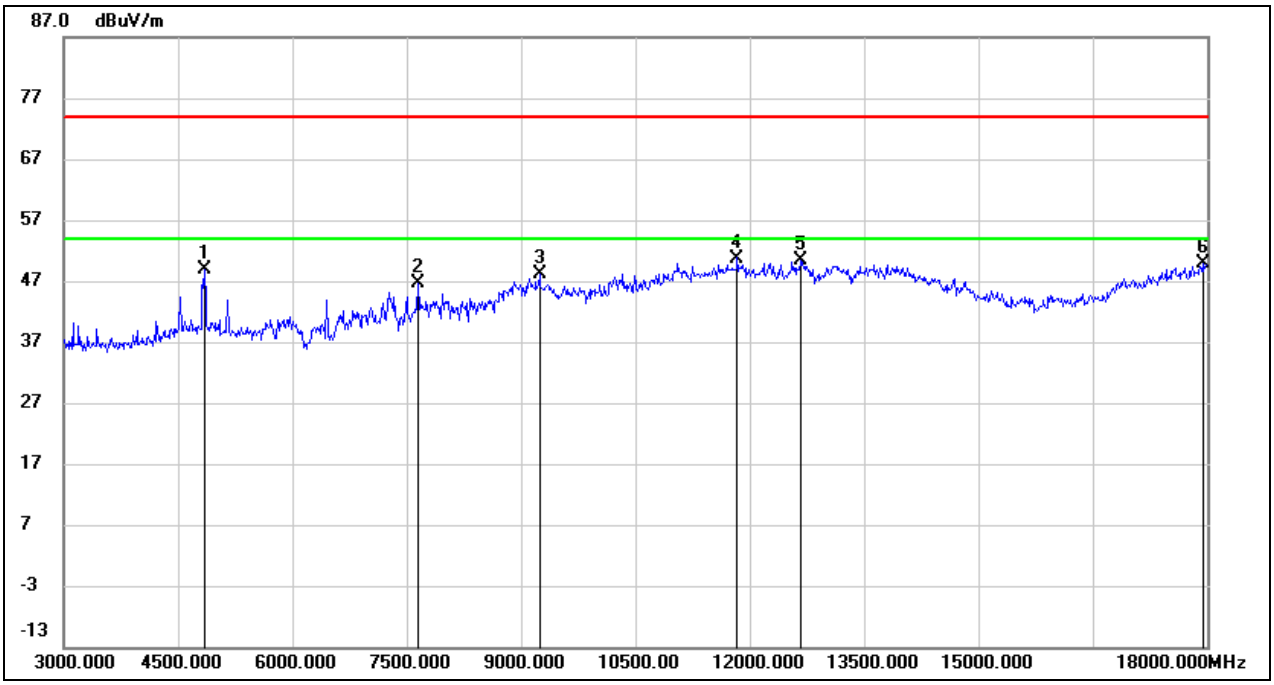
Test Mode:	802.11n HT40	Channel:	2422
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4845.000	49.10	-0.15	48.95	74.00	-25.05	peak
2	7650.000	40.36	6.33	46.69	74.00	-27.31	peak
3	9240.000	37.62	10.58	48.20	74.00	-25.80	peak
4	11835.000	33.24	17.51	50.75	74.00	-23.25	peak
5	12675.000	32.35	17.99	50.34	74.00	-23.66	peak
6	17940.000	24.61	25.34	49.95	74.00	-24.05	peak

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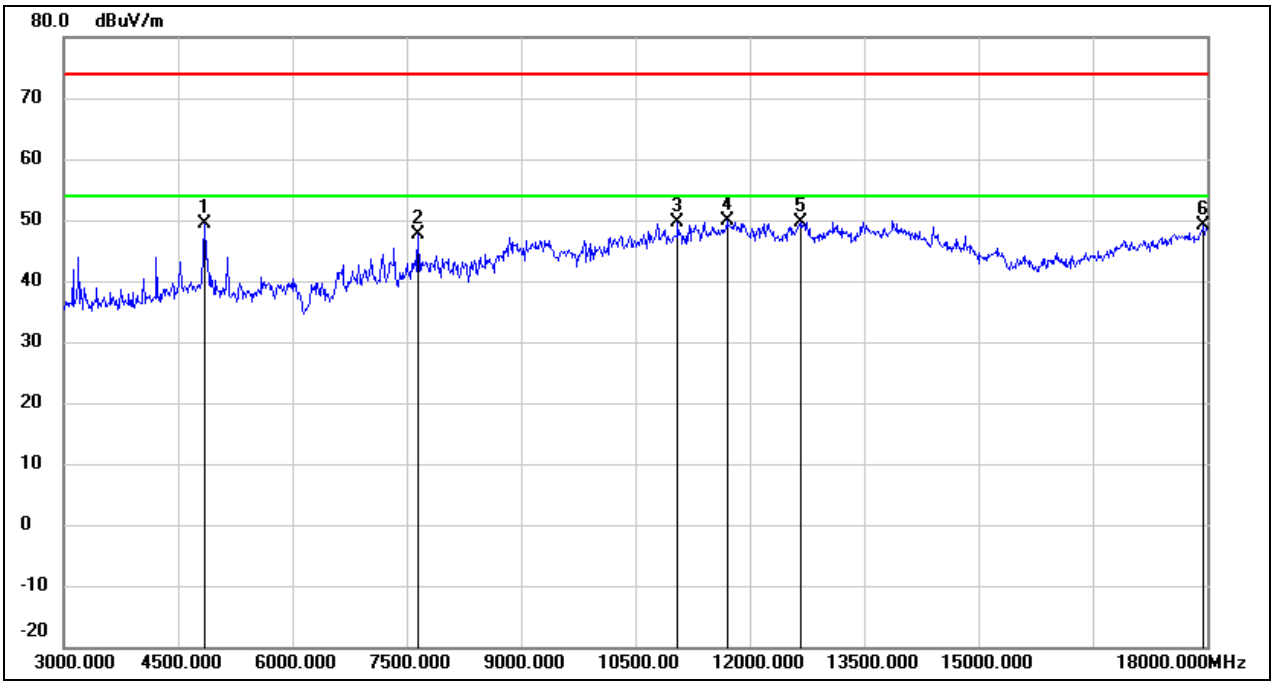
Test Mode:	802.11n HT40	Channel:	2437
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4845.000	49.53	-0.15	49.38	74.00	-24.62	peak
2	7650.000	41.41	6.33	47.74	74.00	-26.26	peak
3	11055.000	34.78	14.96	49.74	74.00	-24.26	peak
4	11700.000	32.63	17.14	49.77	74.00	-24.23	peak
5	12675.000	31.70	17.99	49.69	74.00	-24.31	peak
6	17955.000	23.71	25.42	49.13	74.00	-24.87	peak

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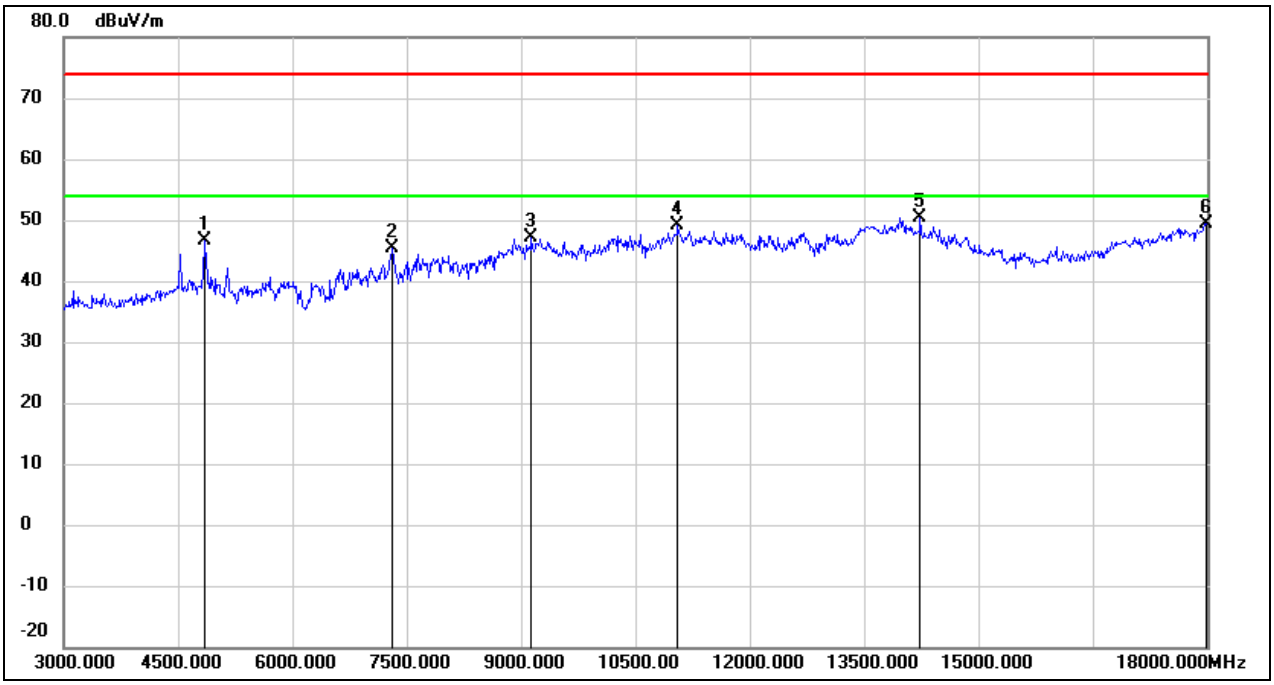
Test Mode:	802.11n HT40	Channel:	2437
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4845.000	46.76	-0.15	46.61	74.00	-27.39	peak
2	7305.000	38.97	6.47	45.44	74.00	-28.56	peak
3	9135.000	36.59	10.55	47.14	74.00	-26.86	peak
4	11055.000	34.13	14.96	49.09	74.00	-24.91	peak
5	14235.000	29.39	20.99	50.38	74.00	-23.62	peak
6	17985.000	23.82	25.60	49.42	74.00	-24.58	peak

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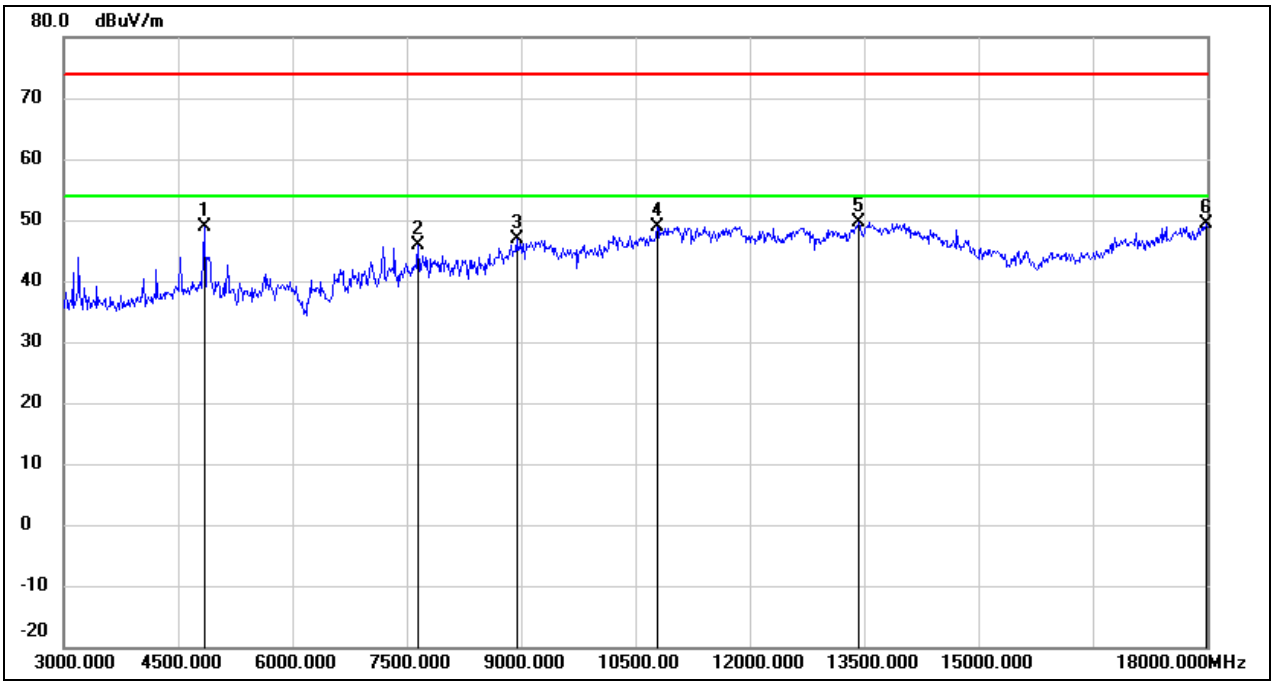
Test Mode:	802.11n HT40	Channel:	2452
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4845.000	48.99	-0.15	48.84	74.00	-25.16	peak
2	7650.000	39.50	6.33	45.83	74.00	-28.17	peak
3	8940.000	36.78	10.04	46.82	74.00	-27.18	peak
4	10785.000	34.94	14.01	48.95	74.00	-25.05	peak
5	13425.000	29.13	20.58	49.71	74.00	-24.29	peak
6	17985.000	23.67	25.60	49.27	74.00	-24.73	peak

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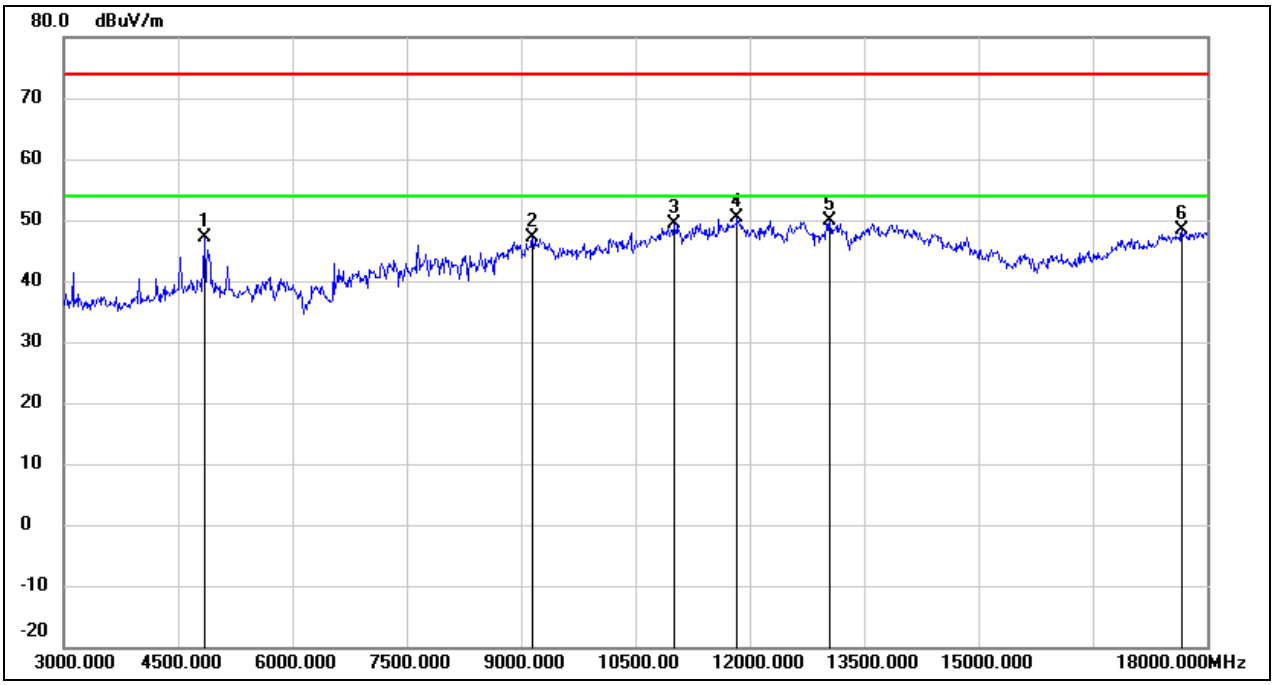
Test Mode:	802.11n HT40	Channel:	2452
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4845.000	47.32	-0.15	47.17	74.00	-26.83	peak
2	9150.000	36.47	10.54	47.01	74.00	-26.99	peak
3	11010.000	34.66	14.81	49.47	74.00	-24.53	peak
4	11835.000	32.80	17.51	50.31	74.00	-23.69	peak
5	13050.000	30.98	18.93	49.91	74.00	-24.09	peak
6	17670.000	24.54	23.73	48.27	74.00	-25.73	peak

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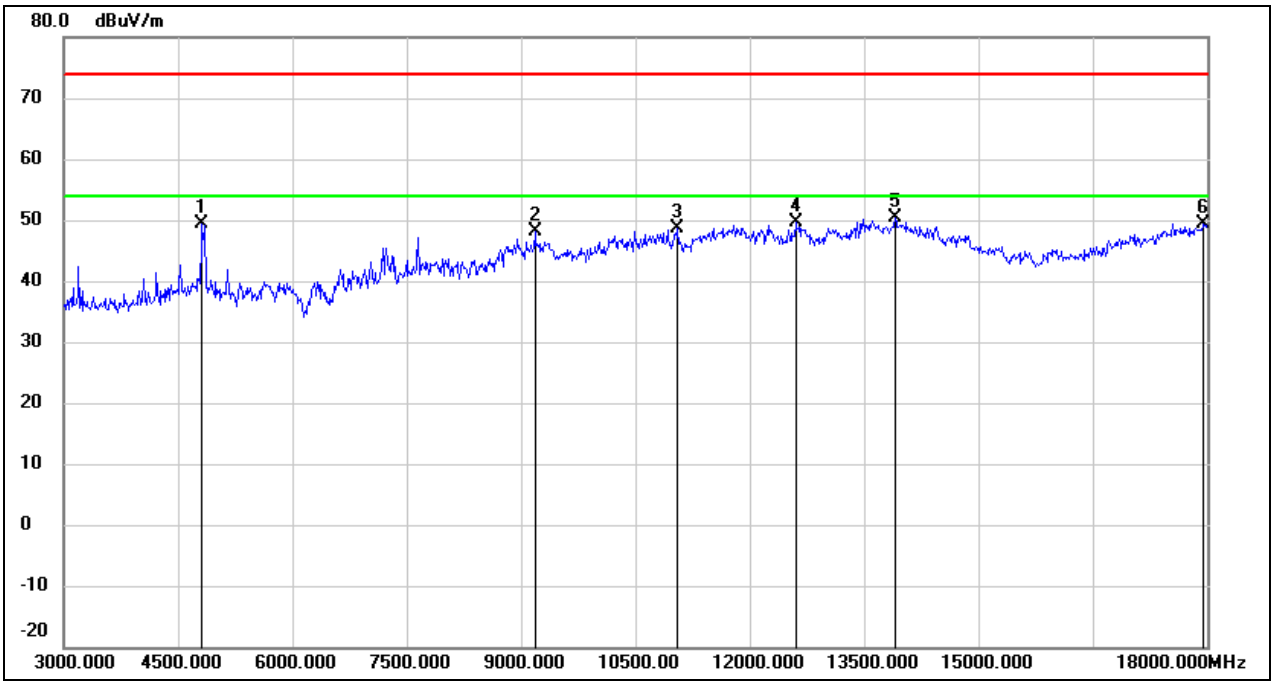
Test Mode:	802.11ax HE20	Channel:	2412
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4815.000	49.67	-0.26	49.41	74.00	-24.59	peak
2	9180.000	37.57	10.56	48.13	74.00	-25.87	peak
3	11055.000	33.60	14.96	48.56	74.00	-25.44	peak
4	12600.000	31.77	17.82	49.59	74.00	-24.41	peak
5	13905.000	28.72	21.76	50.48	74.00	-23.52	peak
6	17955.000	24.00	25.42	49.42	74.00	-24.58	peak

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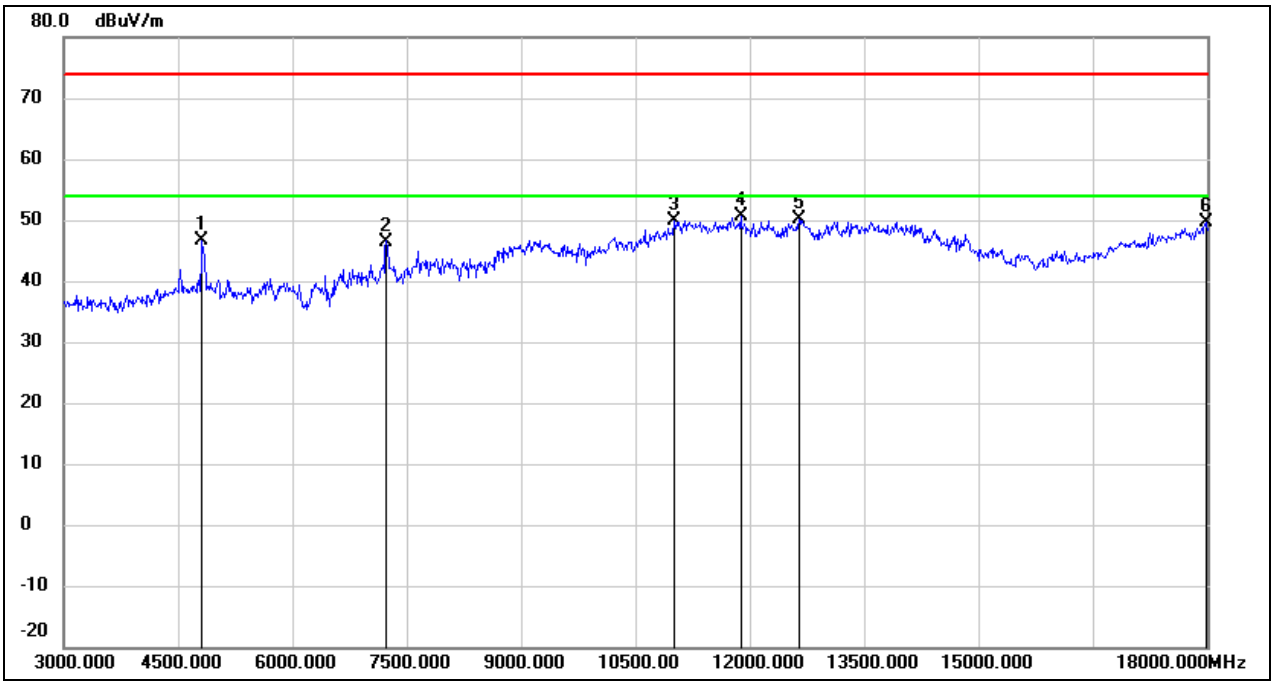
Test Mode:	802.11ax HE20	Channel:	2412
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4815.000	46.96	-0.26	46.70	74.00	-27.30	peak
2	7230.000	39.97	6.53	46.50	74.00	-27.50	peak
3	11010.000	35.09	14.81	49.90	74.00	-24.10	peak
4	11880.000	32.89	17.63	50.52	74.00	-23.48	peak
5	12645.000	32.27	17.92	50.19	74.00	-23.81	peak
6	17985.000	23.98	25.60	49.58	74.00	-24.42	peak

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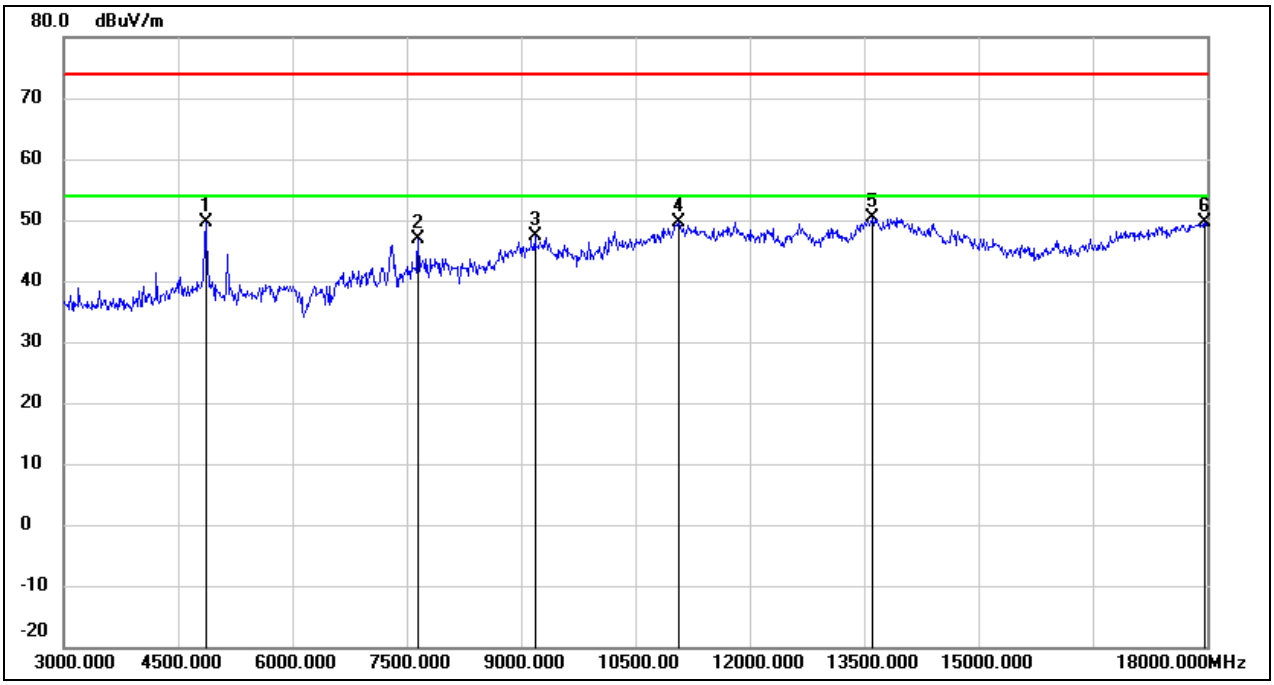
Test Mode:	802.11ax HE20	Channel:	2437
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4860.000	49.71	-0.09	49.62	74.00	-24.38	peak
2	7650.000	40.49	6.33	46.82	74.00	-27.18	peak
3	9180.000	36.78	10.56	47.34	74.00	-26.66	peak
4	11070.000	34.60	15.03	49.63	74.00	-24.37	peak
5	13605.000	29.30	21.12	50.42	74.00	-23.58	peak
6	17970.000	24.19	25.51	49.70	74.00	-24.30	peak

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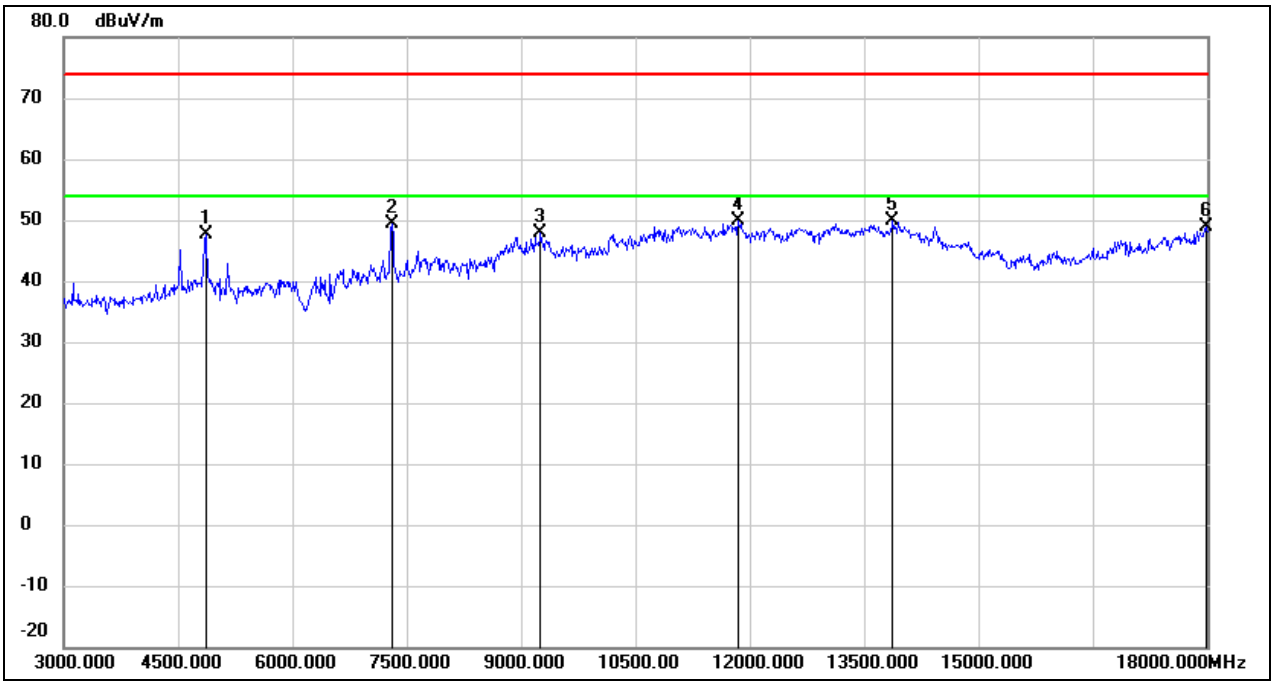
Test Mode:	802.11ax HE20	Channel:	2437
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4860.000	47.76	-0.09	47.67	74.00	-26.33	peak
2	7305.000	42.88	6.47	49.35	74.00	-24.65	peak
3	9255.000	37.18	10.59	47.77	74.00	-26.23	peak
4	11850.000	32.22	17.56	49.78	74.00	-24.22	peak
5	13875.000	28.06	21.70	49.76	74.00	-24.24	peak
6	17985.000	23.22	25.60	48.82	74.00	-25.18	peak

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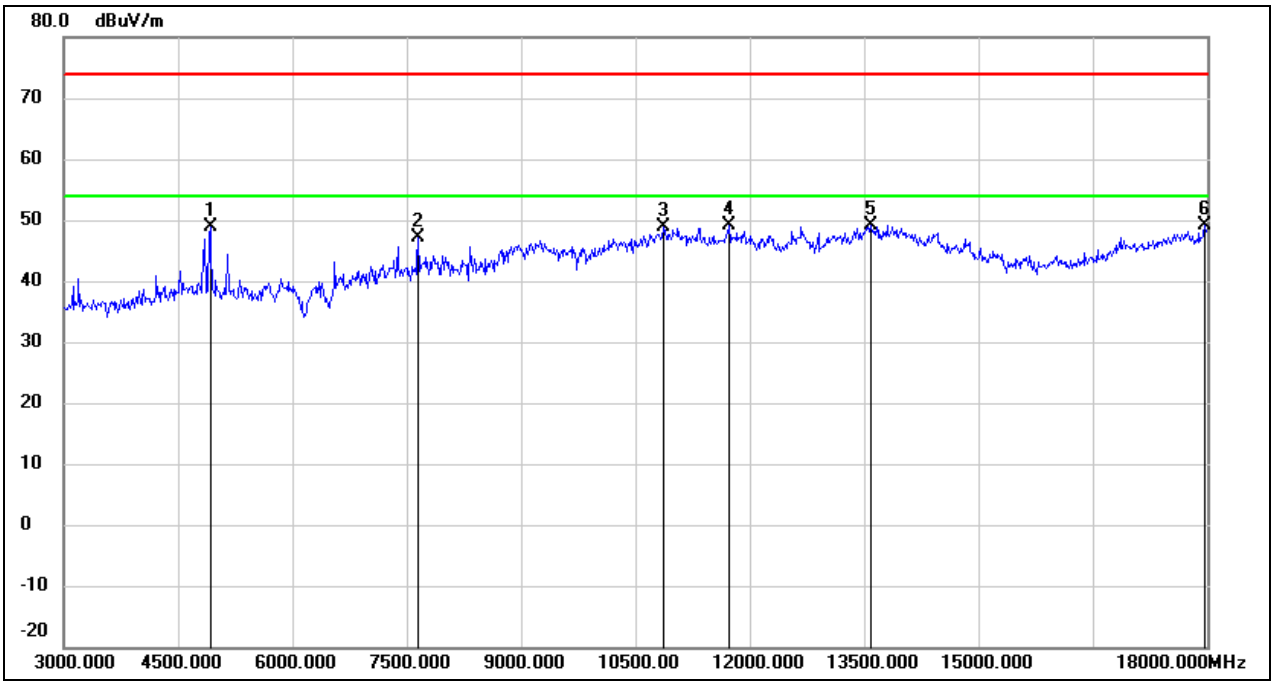
Test Mode:	802.11ax HE20	Channel:	2462
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4920.000	48.81	0.14	48.95	74.00	-25.05	peak
2	7650.000	40.87	6.33	47.20	74.00	-26.80	peak
3	10860.000	34.51	14.27	48.78	74.00	-25.22	peak
4	11730.000	31.84	17.22	49.06	74.00	-24.94	peak
5	13590.000	28.13	21.09	49.22	74.00	-24.78	peak
6	17970.000	23.70	25.51	49.21	74.00	-24.79	peak

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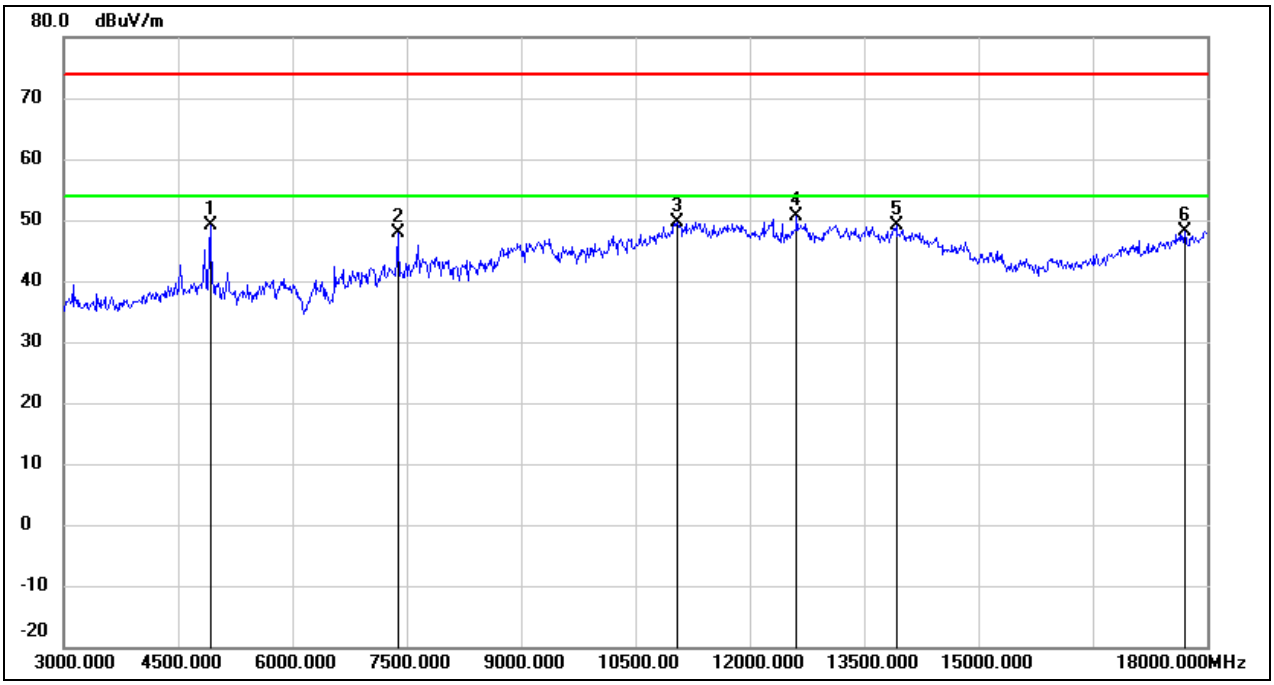
Test Mode:	802.11ax HE20	Channel:	2462
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4920.000	48.96	0.14	49.10	74.00	-24.90	peak
2	7380.000	41.45	6.42	47.87	74.00	-26.13	peak
3	11040.000	34.69	14.91	49.60	74.00	-24.40	peak
4	12615.000	32.77	17.86	50.63	74.00	-23.37	peak
5	13920.000	27.25	21.79	49.04	74.00	-24.96	peak
6	17715.000	24.22	24.00	48.22	74.00	-25.78	peak

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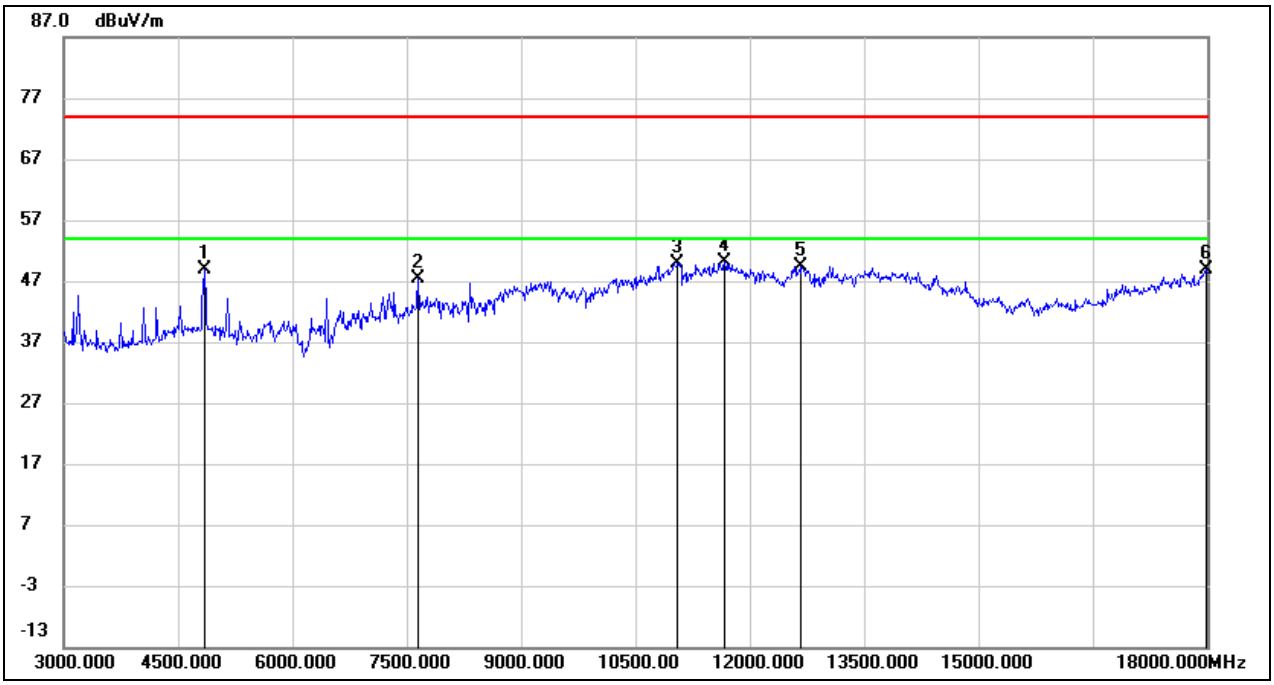
Test Mode:	802.11ax HE40	Channel:	2422
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4845.000	49.01	-0.15	48.86	74.00	-25.14	peak
2	7650.000	41.03	6.33	47.36	74.00	-26.64	peak
3	11055.000	35.02	14.96	49.98	74.00	-24.02	peak
4	11670.000	33.04	17.07	50.11	74.00	-23.89	peak
5	12675.000	31.50	17.99	49.49	74.00	-24.51	peak
6	17985.000	23.34	25.60	48.94	74.00	-25.06	peak

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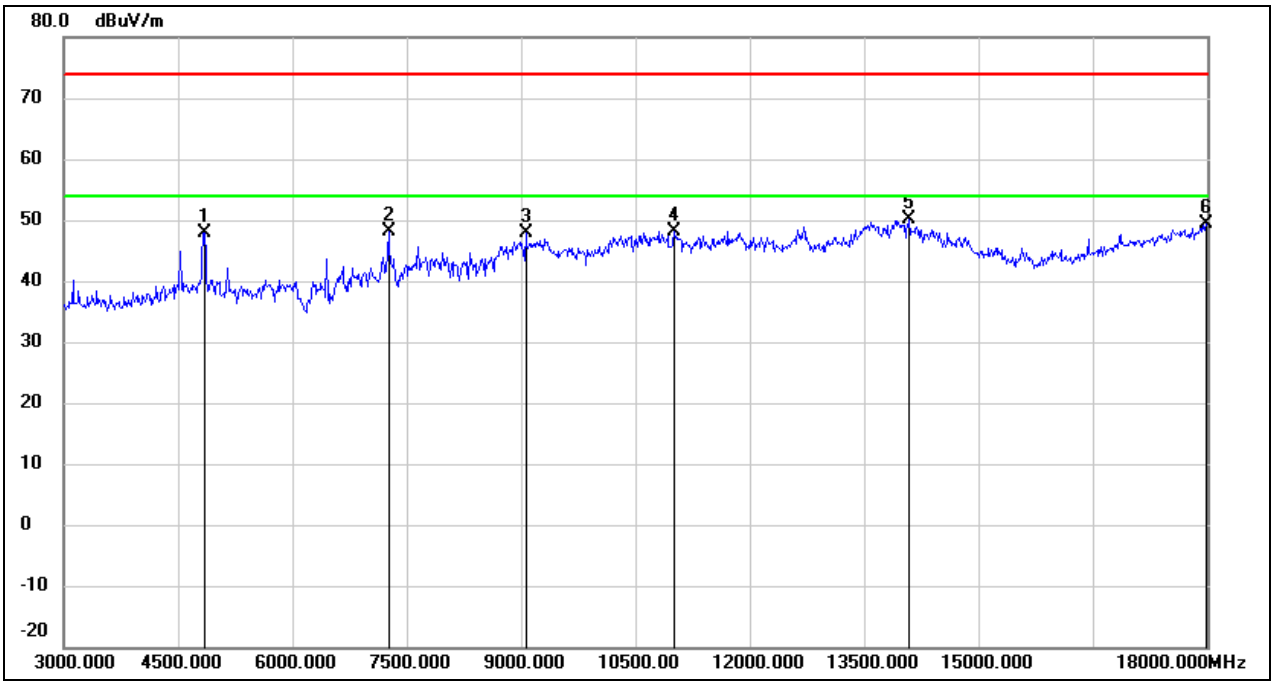
Test Mode:	802.11ax HE40	Channel:	2422
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4845.000	48.07	-0.15	47.92	74.00	-26.08	peak
2	7260.000	41.53	6.50	48.03	74.00	-25.97	peak
3	9060.000	37.38	10.51	47.89	74.00	-26.11	peak
4	11010.000	33.42	14.81	48.23	74.00	-25.77	peak
5	14085.000	28.56	21.61	50.17	74.00	-23.83	peak
6	17985.000	23.81	25.60	49.41	74.00	-24.59	peak

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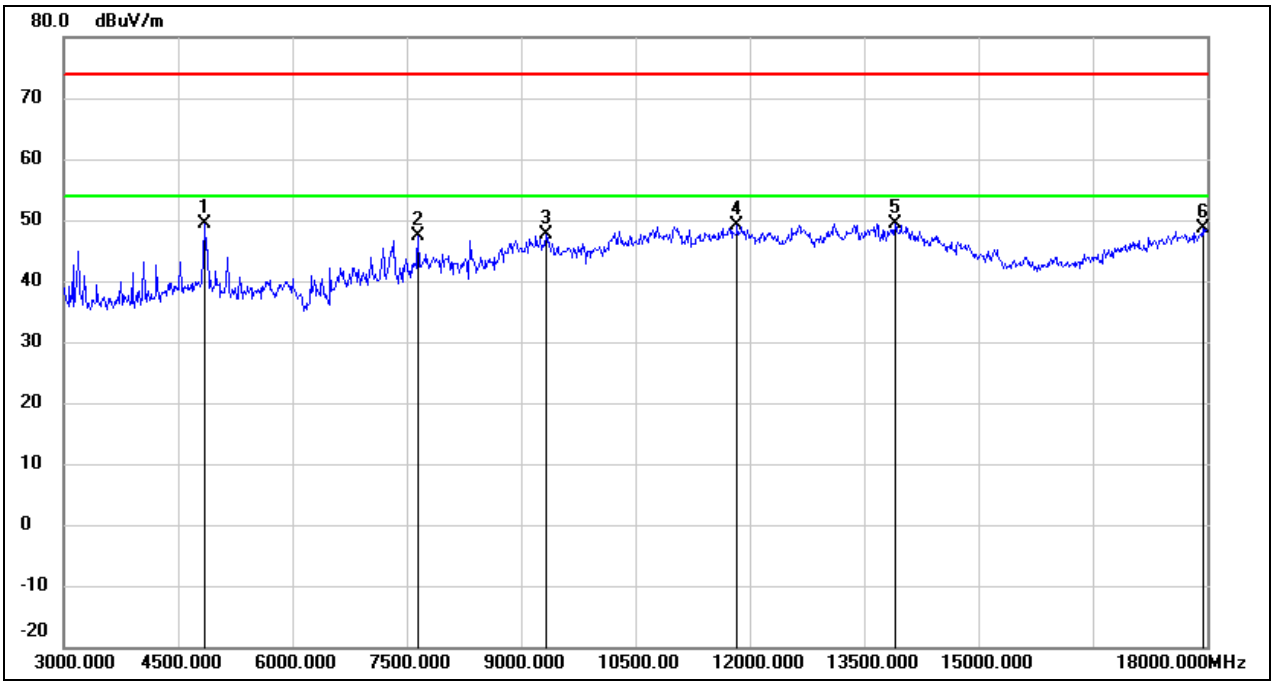
Test Mode:	802.11ax HE40	Channel:	2437
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4845.000	49.44	-0.15	49.29	74.00	-24.71	peak
2	7650.000	41.16	6.33	47.49	74.00	-26.51	peak
3	9330.000	36.99	10.62	47.61	74.00	-26.39	peak
4	11835.000	31.66	17.51	49.17	74.00	-24.83	peak
5	13905.000	27.59	21.76	49.35	74.00	-24.65	peak
6	17940.000	23.39	25.34	48.73	74.00	-25.27	peak

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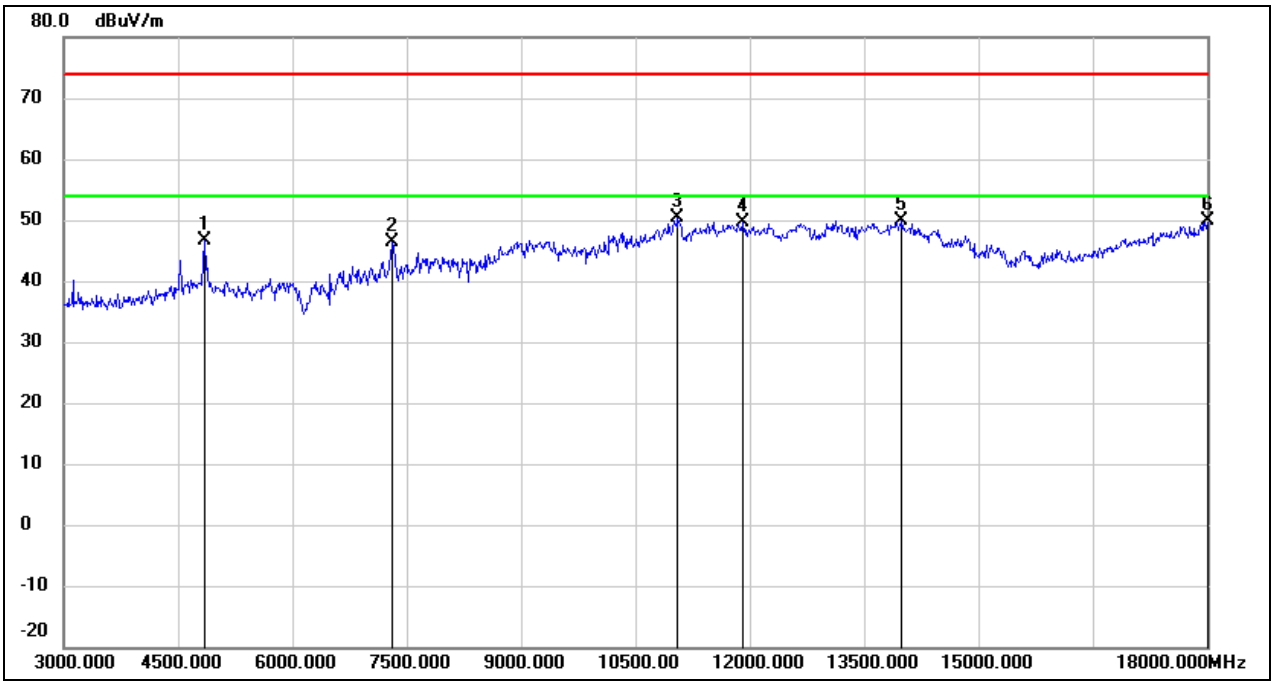
Test Mode:	802.11ax HE40	Channel:	2437
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4845.000	46.66	-0.15	46.51	74.00	-27.49	peak
2	7305.000	39.82	6.47	46.29	74.00	-27.71	peak
3	11055.000	35.48	14.96	50.44	74.00	-23.56	peak
4	11910.000	32.01	17.72	49.73	74.00	-24.27	peak
5	13995.000	27.98	21.95	49.93	74.00	-24.07	peak
6	18000.000	24.10	25.69	49.79	74.00	-24.21	peak

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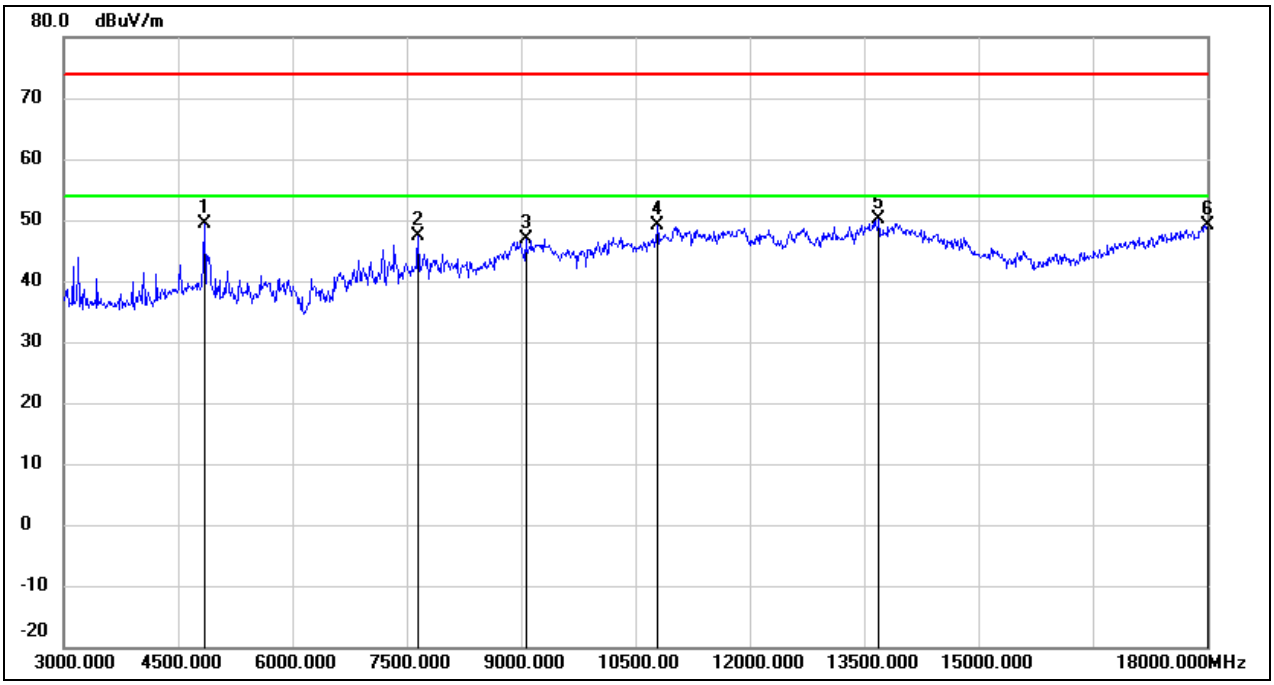
Test Mode:	802.11ax HE40	Channel:	2452
Polarity:	Horizontal	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4845.000	49.43	-0.15	49.28	74.00	-24.72	peak
2	7650.000	41.08	6.33	47.41	74.00	-26.59	peak
3	9060.000	36.33	10.51	46.84	74.00	-27.16	peak
4	10785.000	35.24	14.01	49.25	74.00	-24.75	peak
5	13695.000	28.82	21.31	50.13	74.00	-23.87	peak
6	18000.000	23.39	25.69	49.08	74.00	-24.92	peak

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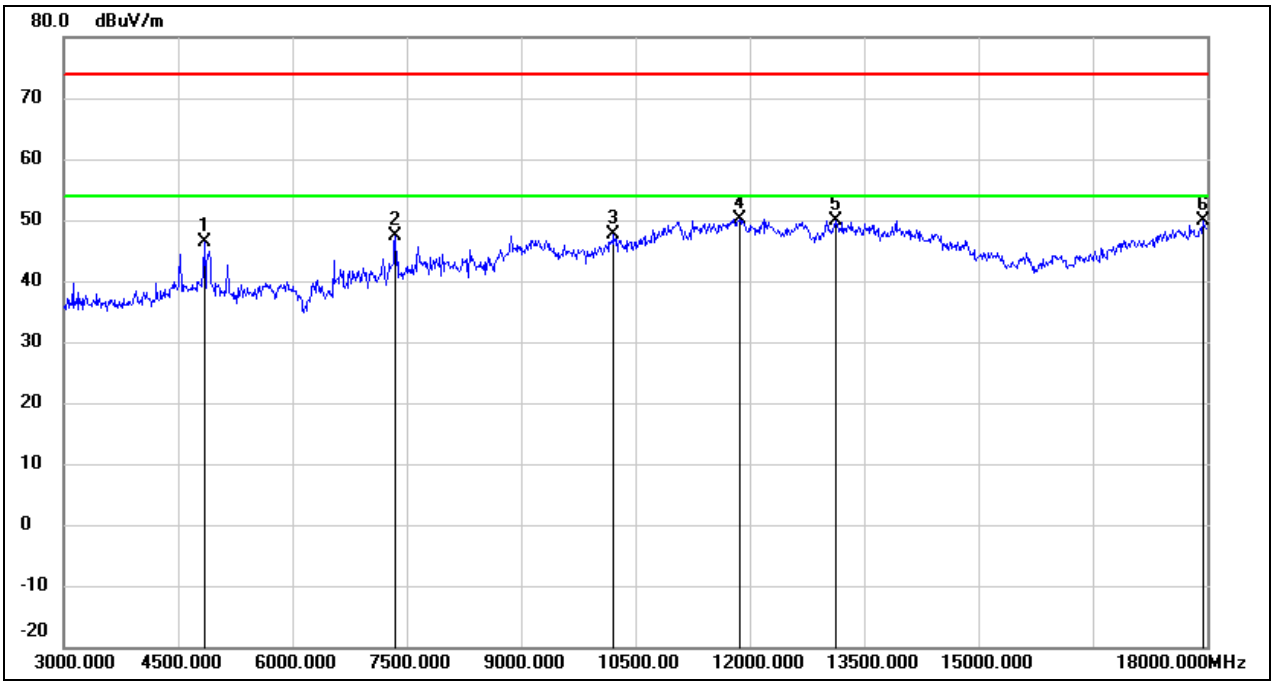
Test Mode:	802.11ax HE40	Channel:	2452
Polarity:	Vertical	Test Voltage:	AC 120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4845.000	46.56	-0.15	46.41	74.00	-27.59	peak
2	7350.000	41.03	6.44	47.47	74.00	-26.53	peak
3	10215.000	35.13	12.43	47.56	74.00	-26.44	peak
4	11865.000	32.45	17.59	50.04	74.00	-23.96	peak
5	13125.000	30.63	19.26	49.89	74.00	-24.11	peak
6	17940.000	24.48	25.34	49.82	74.00	-24.18	peak

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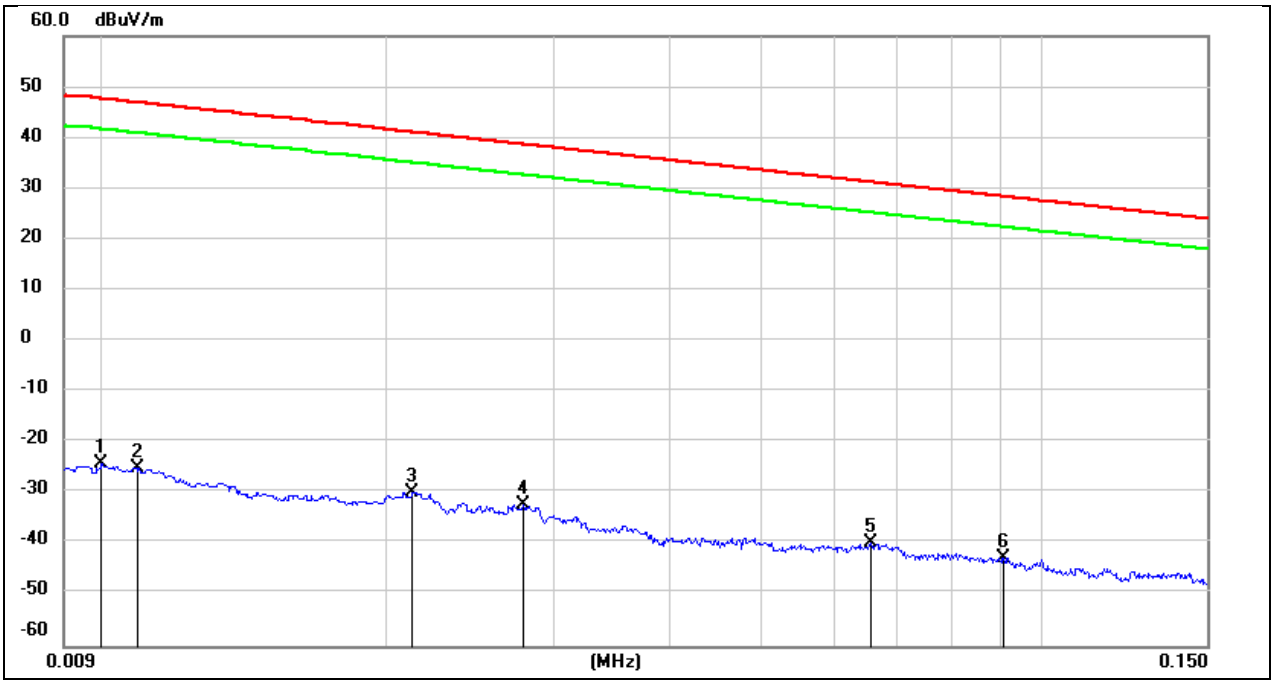
8.4. SPURIOUS EMISSIONS(9 KHZ~30 MHZ)

Test Mode:	802.11b	Channel:	2412
Polarity:	Horizontal	Test Voltage:	AC 120, 60 Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0100	77.22	-101.40	-24.18	47.60	-71.78	peak
2	0.0108	76.28	-101.39	-25.11	46.93	-72.04	peak
3	0.0212	71.54	-101.35	-29.81	41.07	-70.88	peak
4	0.0279	69.17	-101.38	-32.21	38.69	-70.90	peak
5	0.0656	61.86	-101.55	-39.69	31.26	-70.95	peak
6	0.0911	59.11	-101.72	-42.61	28.41	-71.02	peak

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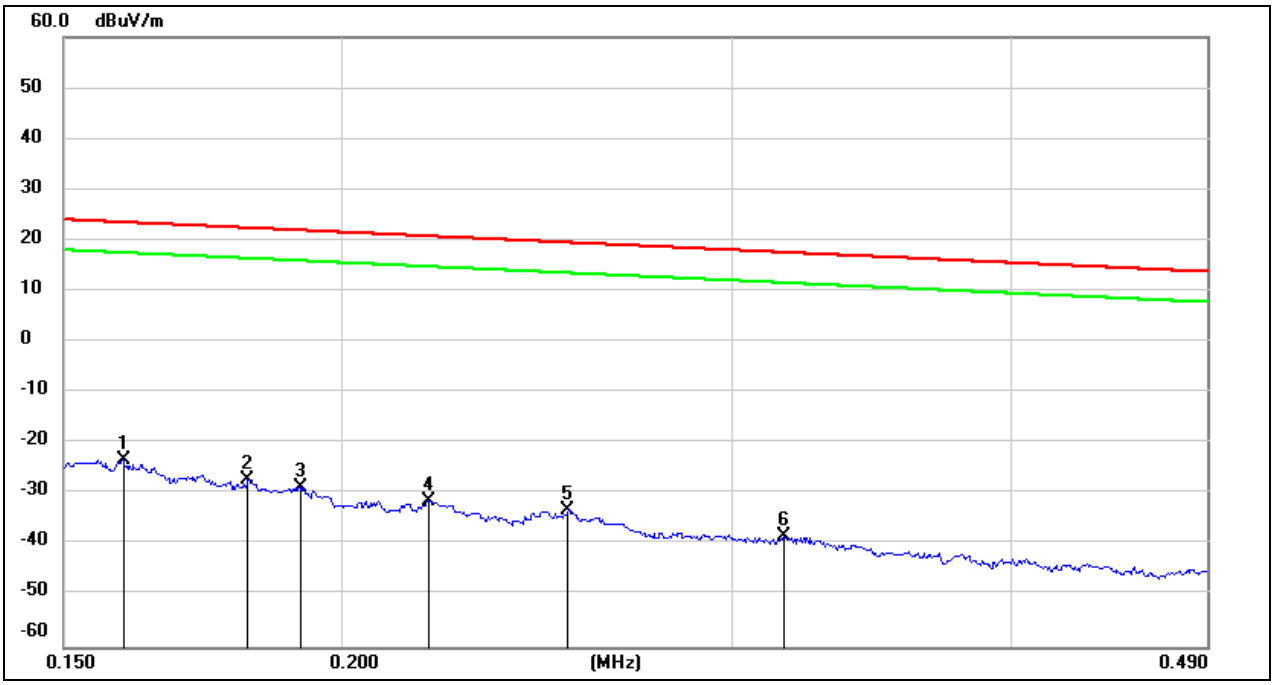
Test Mode:	802.11b	Channel:	2412
Polarity:	Horizontal	Test Voltage:	AC 120, 60 Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.1595	78.36	-101.65	-23.29	23.55	-46.84	peak
2	0.1816	74.54	-101.68	-27.14	22.42	-49.56	peak
3	0.1917	73.04	-101.70	-28.66	21.95	-50.61	peak
4	0.2190	70.27	-101.75	-31.48	20.79	-52.27	peak
5	0.2530	68.64	-101.80	-33.16	19.54	-52.70	peak
6	0.3163	63.70	-101.87	-38.17	17.60	-55.77	peak

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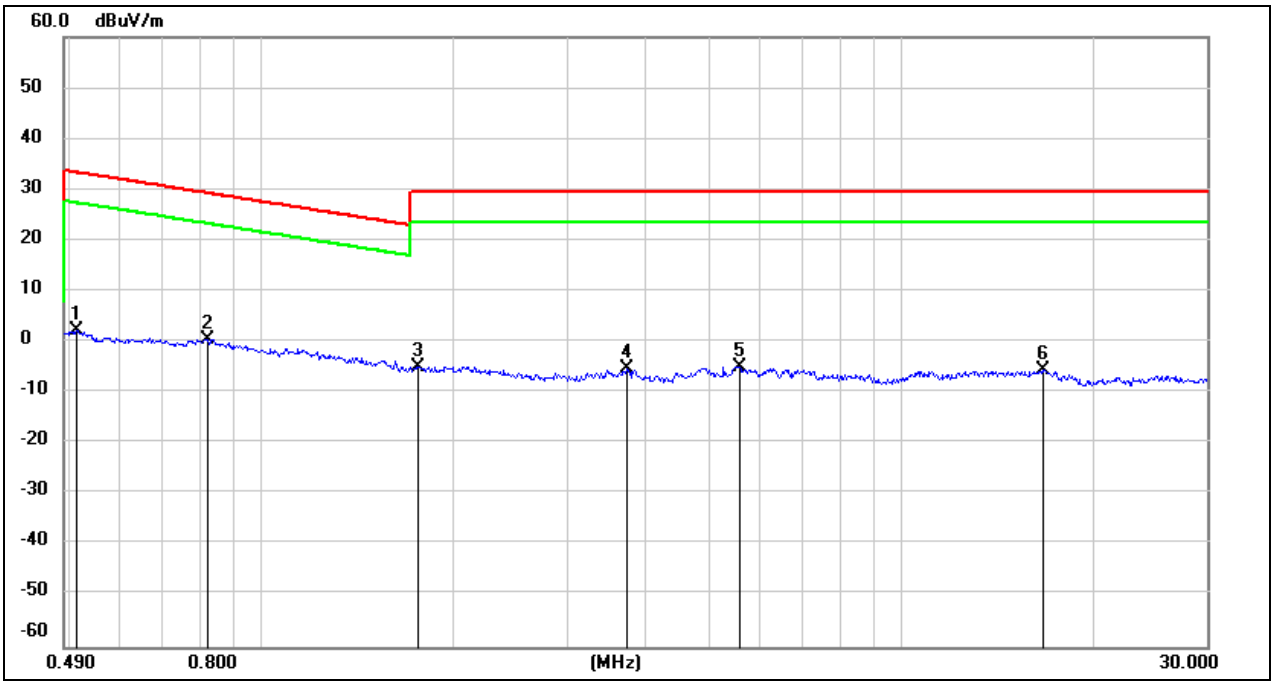
Test Mode:	802.11b	Channel:	2412
Polarity:	Horizontal	Test Voltage:	AC 120, 60 Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.5127	64.27	-62.08	2.19	33.41	-31.22	peak
2	0.8225	62.75	-62.16	0.59	29.30	-28.71	peak
3	1.7580	57.08	-61.93	-4.85	29.54	-34.39	peak
4	3.7100	56.20	-61.41	-5.21	29.54	-34.75	peak
5	5.5952	56.55	-61.41	-4.86	29.54	-34.40	peak
6	16.6021	55.52	-60.96	-5.44	29.54	-34.98	peak

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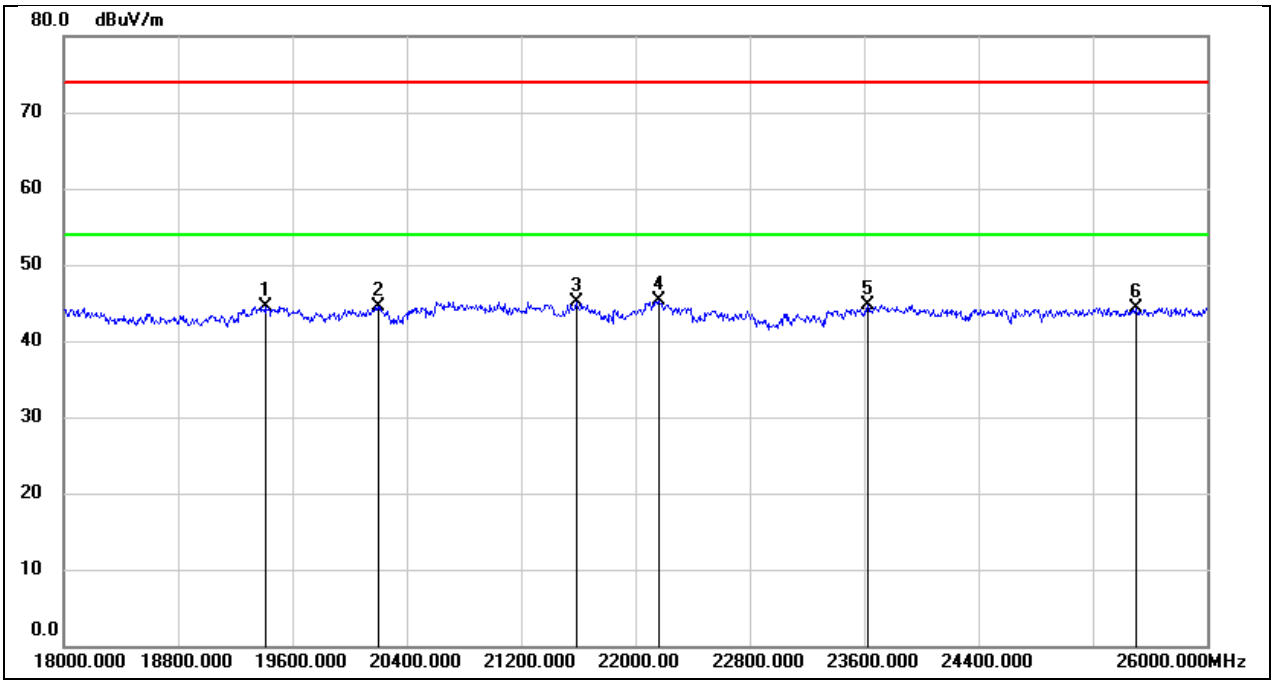
8.5. SPURIOUS EMISSIONS(18 GHZ~26 GHZ)

Test Mode:	802.11b	Channel:	2412
Polarity:	Horizontal	Test Voltage:	AC 120, 60 Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	19416.000	50.03	-5.55	44.48	74.00	-29.52	peak
2	20200.000	50.04	-5.58	44.46	74.00	-29.54	peak
3	21584.000	49.69	-4.56	45.13	74.00	-28.87	peak
4	22160.000	49.58	-4.31	45.27	74.00	-28.73	peak
5	23624.000	47.85	-3.16	44.69	74.00	-29.31	peak
6	25504.000	46.07	-1.77	44.30	74.00	-29.70	peak

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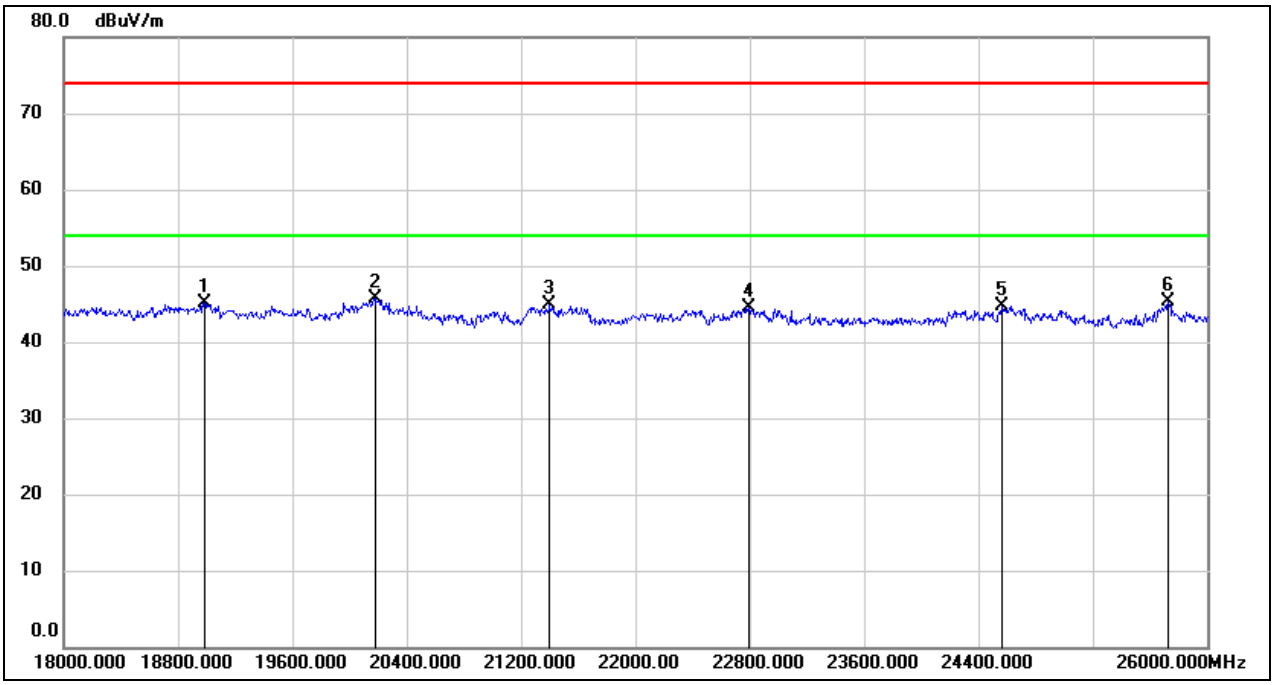
Test Mode:	802.11b	Channel:	2412
Polarity:	Vertical	Test Voltage:	AC 120, 60 Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18984.000	50.29	-5.23	45.06	74.00	-28.94	peak
2	20176.000	51.21	-5.56	45.65	74.00	-28.35	peak
3	21400.000	49.54	-4.72	44.82	74.00	-29.18	peak
4	22792.000	48.11	-3.65	44.46	74.00	-29.54	peak
5	24568.000	47.10	-2.33	44.77	74.00	-29.23	peak
6	25728.000	46.11	-0.72	45.39	74.00	-28.61	peak

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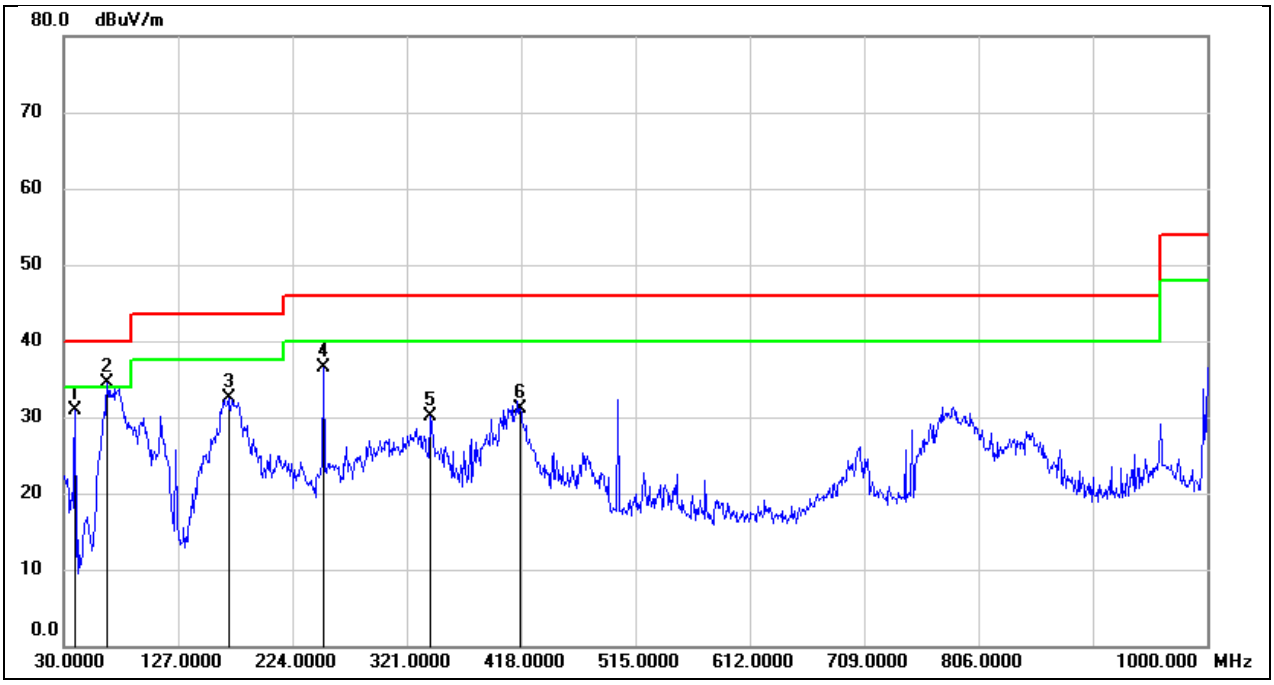
8.6. SPURIOUS EMISSIONS(30 MHZ~1 GHZ)

Test Mode:	802.11b	Channel:	2412
Polarity:	Horizontal	Test Voltage:	AC120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	39.7000	50.78	-19.84	30.94	40.00	-9.06	QP
2	66.8600	55.10	-20.63	34.47	40.00	-5.53	QP
3	169.6799	49.50	-16.94	32.56	43.50	-10.94	QP
4	250.1900	55.44	-18.95	36.49	46.00	-9.51	QP
5	340.4000	43.43	-13.34	30.09	46.00	-15.91	QP
6	417.0300	43.67	-12.55	31.12	46.00	-14.88	QP

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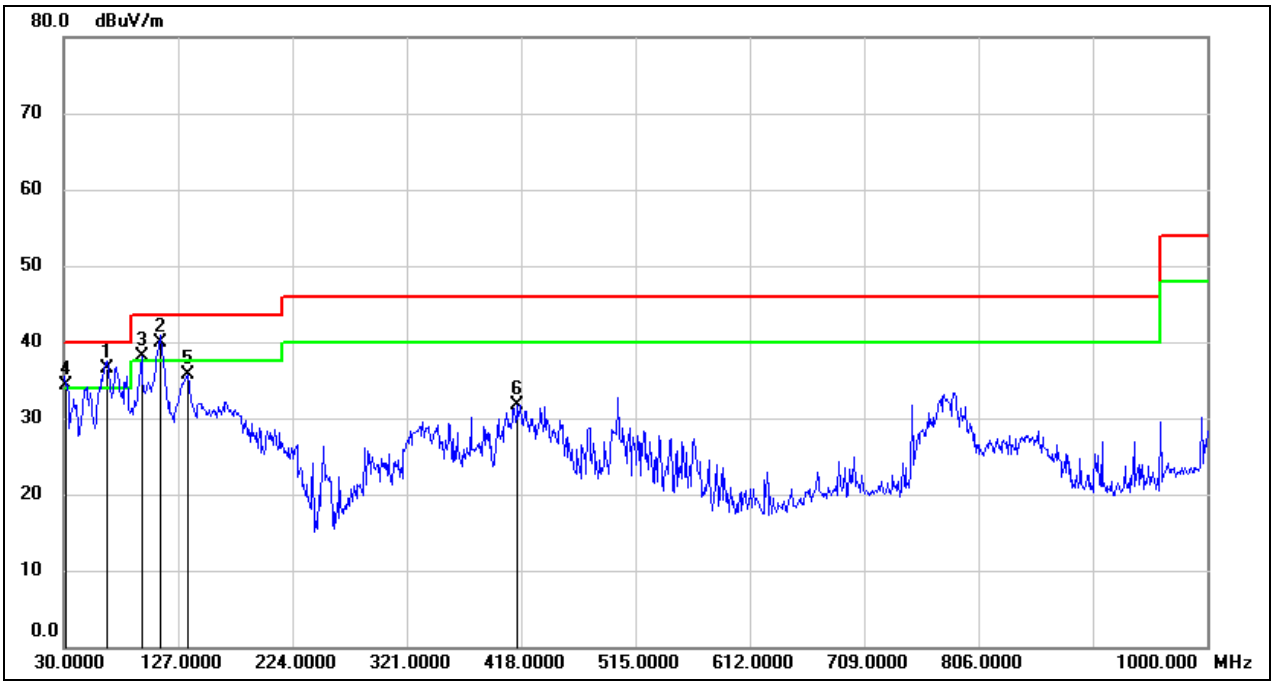
Test Mode:	802.11b	Channel:	2412
Polarity:	Vertical	Test Voltage:	AC120V_60Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	66.8600	57.14	-20.63	36.51	40.00	-3.49	QP
2	111.4800	60.13	-20.24	39.89	43.50	-3.61	QP
3	95.9600	59.81	-21.64	38.17	43.50	-5.33	QP
4	31.9400	52.92	-18.55	34.37	40.00	-5.63	QP
5	135.7300	54.77	-19.04	35.73	43.50	-7.77	QP
6	415.0900	44.30	-12.59	31.71	46.00	-14.29	QP

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9. ANTENNA REQUIREMENT

REQUIREMENT

Please refer to FCC part 15.203
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Please refer to FCC part 15.247(b)(4)
The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DESCRIPTION

Pass

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10. AC POWER LINE CONDUCTED EMISSION

LIMITS

Please refer to CFR 47 FCC §15.207 (a).

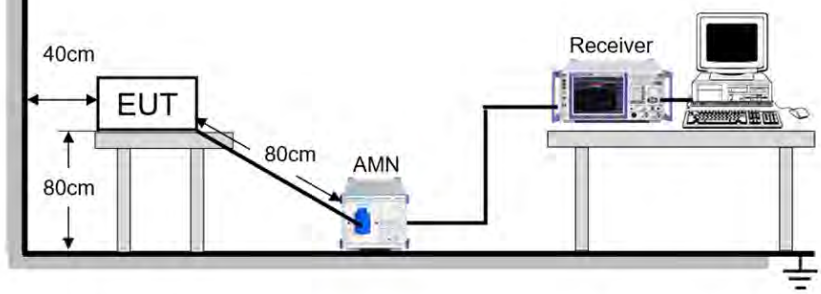
FREQUENCY (MHz)	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

TEST PROCEDURE

The EUT is put on a table of non-conducting material that is 80 cm high. The vertical conducting wall of shielding is located 40 cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI Measurement Receiver (R&S Test Receiver ESR3) is used to test the emissions from both sides of AC line. According to the requirements in Section 6.2 of ANSI C63.10-2013.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode. The bandwidth of EMI test receiver is set at 9 kHz.

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.

TEST SETUP



TEST ENVIRONMENT

Temperature	21.7℃	Relative Humidity	59.2%
Atmosphere Pressure	101kPa	Test Voltage:	AC 120V_60Hz

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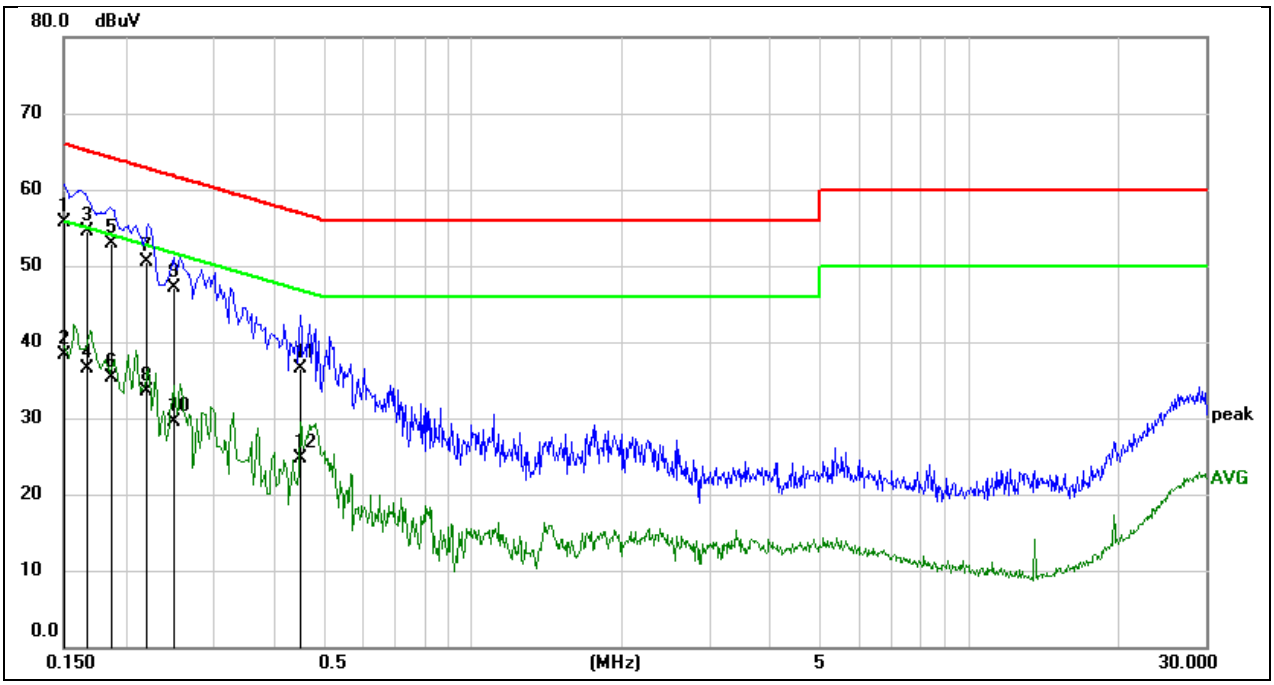
TEST DATE / ENGINEER

Test Date	August 4, 2023	Test By	Karl Wu

TEST RESULTS

Test Mode:	M01	Line:	Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1500	46.02	9.59	55.61	66.00	-10.39	QP
2	0.1500	28.67	9.59	38.26	56.00	-17.74	AVG
3	0.1668	44.93	9.59	54.52	65.12	-10.60	QP
4	0.1668	27.01	9.59	36.60	55.12	-18.52	AVG
5	0.1874	43.31	9.59	52.90	64.15	-11.25	QP
6	0.1874	25.77	9.59	35.36	54.15	-18.79	AVG
7	0.2193	40.85	9.59	50.44	62.85	-12.41	QP
8	0.2193	23.93	9.59	33.52	52.85	-19.33	AVG
9	0.2486	37.52	9.59	47.11	61.80	-14.69	QP
10	0.2486	19.99	9.59	29.58	51.80	-22.22	AVG
11	0.4510	26.93	9.60	36.53	56.86	-20.33	QP
12	0.4510	15.08	9.60	24.68	46.86	-22.18	AVG

Note:
1. Result = Reading + Correct Factor.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz ~ 150 kHz), 9 kHz (150 kHz ~ 30 MHz).
4. Step size: 80 Hz (0.009 MHz ~ 0.15 MHz), 4 kHz (0.15 MHz ~ 30 MHz), Scan time: auto.

Note: All the modes have been tested, only the worst data was recorded in the report.

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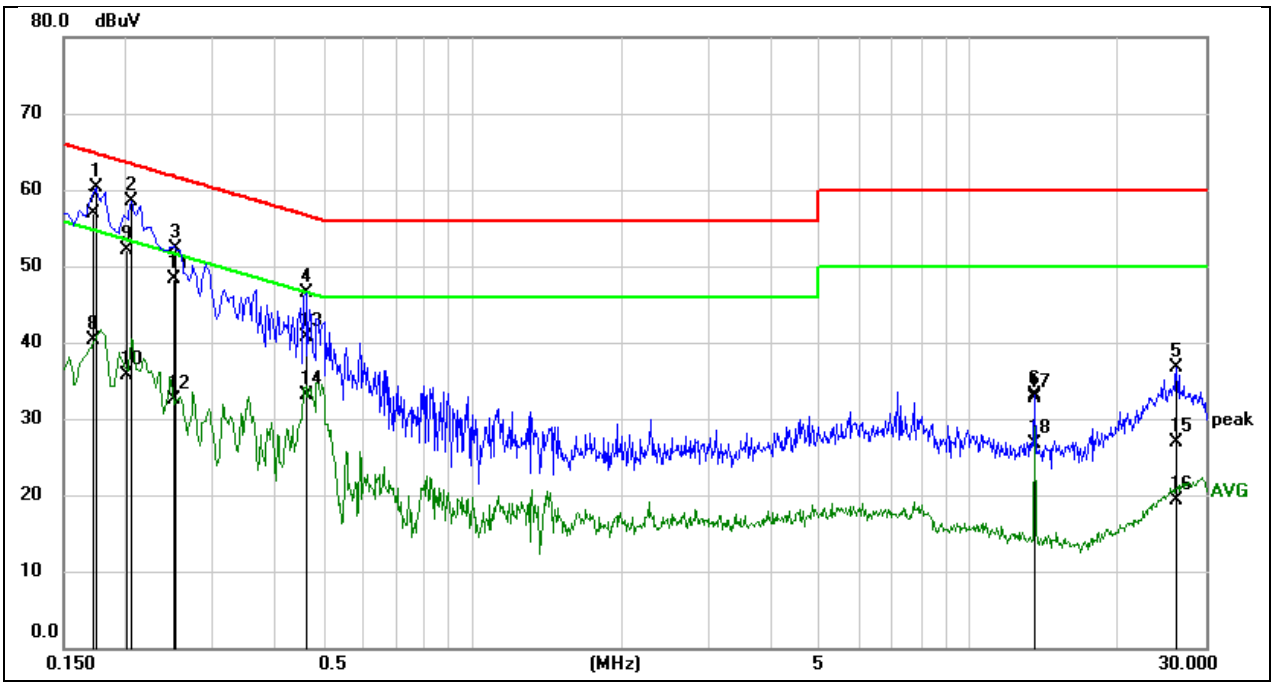
Test Mode:	M01	Line:	Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1740	50.67	9.54	60.21	64.77	-4.56	peak
2	0.2060	48.85	9.59	58.44	63.37	-4.93	peak
3	0.2521	42.72	9.57	52.29	61.69	-9.40	peak
4	0.4620	36.90	9.51	46.41	56.66	-10.25	peak
5	26.2340	27.03	9.69	36.72	60.00	-23.28	peak
6	13.5580	23.44	9.66	33.10	60.00	-26.90	peak
7	0.1713	47.41	9.53	56.94	64.90	-7.96	QP
8	0.1713	30.85	9.53	40.38	54.90	-14.52	AVG
9	0.2019	42.54	9.59	52.13	63.53	-11.40	QP
10	0.2019	26.11	9.59	35.70	53.53	-17.83	AVG
11	0.2493	38.83	9.57	48.40	61.78	-13.38	QP
12	0.2493	22.98	9.57	32.55	51.78	-19.23	AVG
13	0.4629	31.26	9.51	40.77	56.64	-15.87	QP
14	0.4629	23.59	9.51	33.10	46.64	-13.54	AVG
15	26.1383	17.24	9.69	26.93	60.00	-33.07	QP
16	26.1383	9.67	9.69	19.36	50.00	-30.64	AVG
17	13.5596	23.07	9.66	32.73	60.00	-27.27	QP
18	13.5596	17.10	9.66	26.76	50.00	-23.24	AVG

Note:
1. Result = Reading + Correct Factor.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz ~ 150 kHz), 9 kHz (150 kHz ~ 30 MHz).
4. Step size: 80 Hz (0.009 MHz ~ 0.15 MHz), 4 kHz (0.15 MHz ~ 30 MHz), Scan time: auto.

Note: All the modes have been tested, only the worst data was recorded in the report.

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11. TEST DATA

11.1. APPENDIX A: DTS BANDWIDTH

11.1.1. Test Result

Test Mode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant0	2412	6.56	2408.96	2415.52	0.5	PASS
	Ant1	2412	8.08	2407.96	2416.04	0.5	PASS
	Ant0	2437	8.04	2432.96	2441.00	0.5	PASS
	Ant1	2437	8.08	2432.96	2441.04	0.5	PASS
	Ant0	2462	7.60	2457.96	2465.56	0.5	PASS
	Ant1	2462	8.08	2457.96	2466.04	0.5	PASS
11G	Ant0	2412	16.36	2403.80	2420.16	0.5	PASS
	Ant1	2412	15.72	2403.84	2419.56	0.5	PASS
	Ant0	2437	16.04	2428.84	2444.88	0.5	PASS
	Ant1	2437	16.32	2428.84	2445.16	0.5	PASS
	Ant0	2462	16.32	2453.84	2470.16	0.5	PASS
	Ant1	2462	16.04	2453.84	2469.88	0.5	PASS
11N20MIMO	Ant0	2412	17.28	2403.20	2420.48	0.5	PASS
	Ant1	2412	16.36	2403.20	2419.56	0.5	PASS
	Ant0	2437	15.72	2428.84	2444.56	0.5	PASS
	Ant1	2437	17.16	2428.60	2445.76	0.5	PASS
	Ant0	2462	17.56	2453.20	2470.76	0.5	PASS
	Ant1	2462	16.96	2453.80	2470.76	0.5	PASS
11N40MIMO	Ant0	2422	35.12	2404.48	2439.60	0.5	PASS
	Ant1	2422	33.84	2405.76	2439.60	0.5	PASS
	Ant0	2437	35.12	2419.48	2454.60	0.5	PASS
	Ant1	2437	35.12	2419.48	2454.60	0.5	PASS
	Ant0	2452	35.12	2434.48	2469.60	0.5	PASS
	Ant1	2452	35.12	2434.48	2469.60	0.5	PASS
11AX20MIMO	Ant0	2412	17.40	2402.68	2420.08	0.5	PASS
	Ant1	2412	17.60	2402.52	2420.12	0.5	PASS
	Ant0	2437	17.28	2428.48	2445.76	0.5	PASS
	Ant1	2437	17.92	2427.68	2445.60	0.5	PASS
	Ant0	2462	17.08	2453.28	2470.36	0.5	PASS
	Ant1	2462	17.84	2453.44	2471.28	0.5	PASS
11AX40MIMO	Ant0	2422	35.12	2404.48	2439.60	0.5	PASS
	Ant1	2422	35.04	2404.56	2439.60	0.5	PASS
	Ant0	2437	33.92	2420.68	2454.60	0.5	PASS
	Ant1	2437	35.12	2419.48	2454.60	0.5	PASS
	Ant0	2452	35.12	2434.48	2469.60	0.5	PASS
	Ant1	2452	35.12	2434.48	2469.60	0.5	PASS

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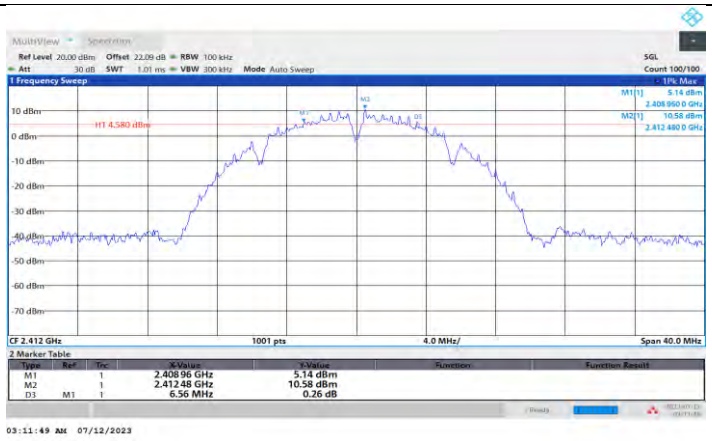
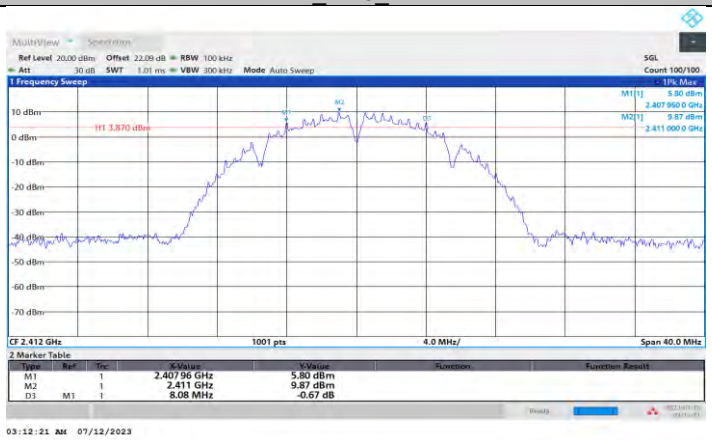
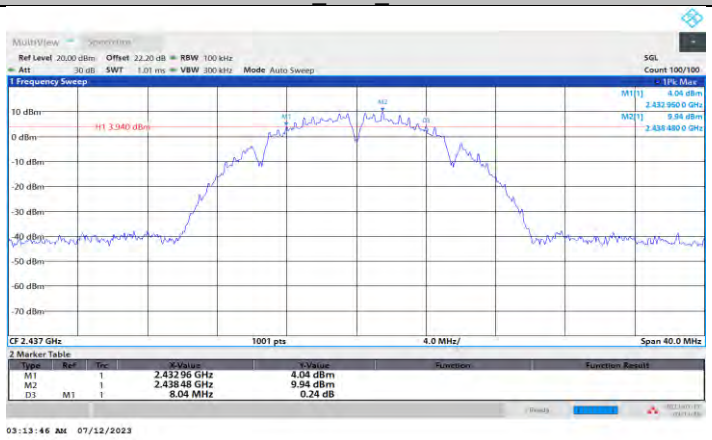
11.1.2. Test Graphs



11B_Ant0_2412



11B_Ant1_2412



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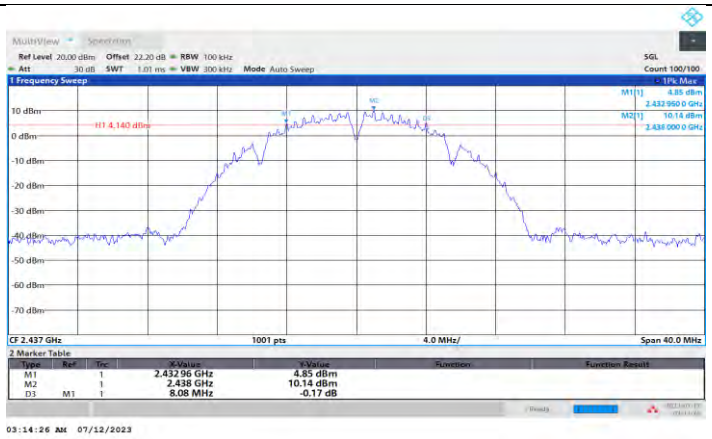

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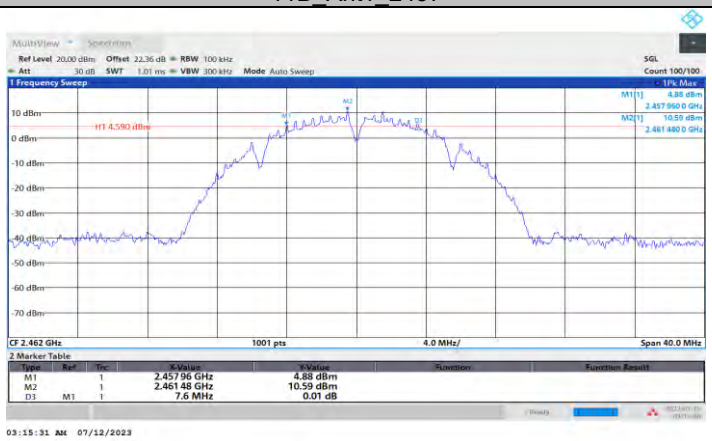

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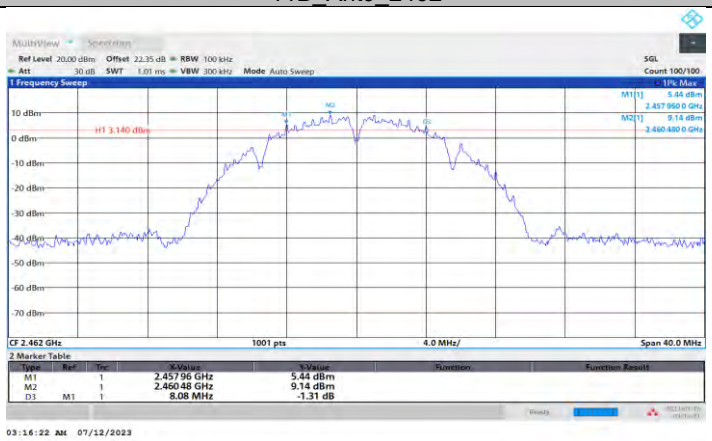

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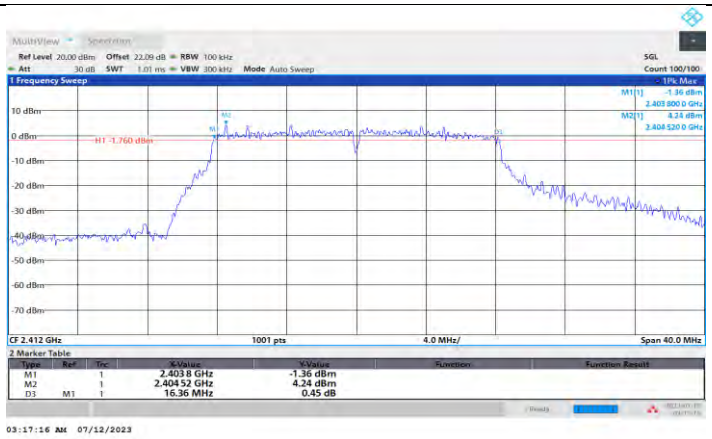

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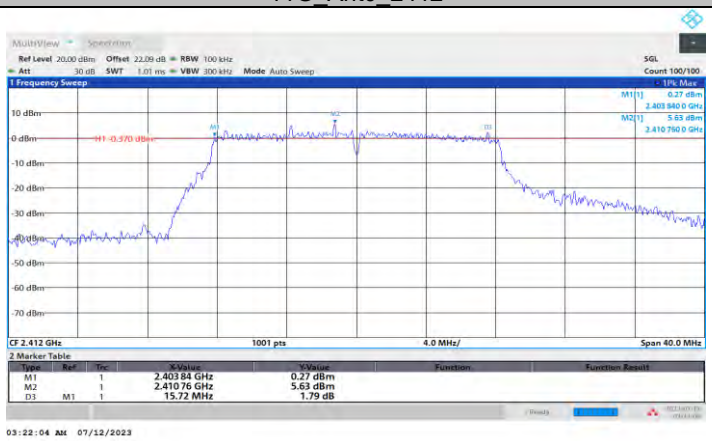

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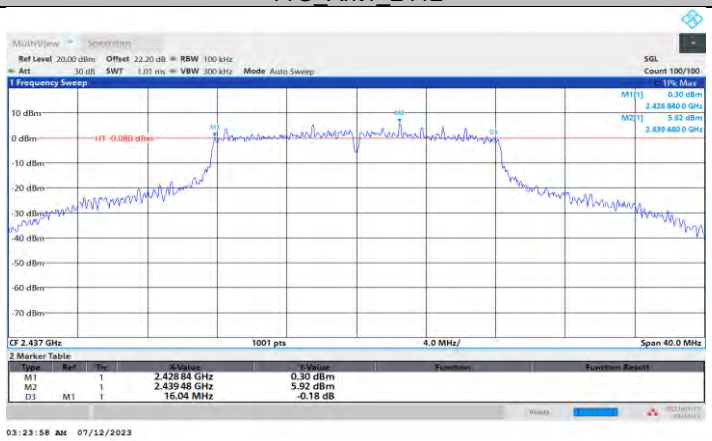

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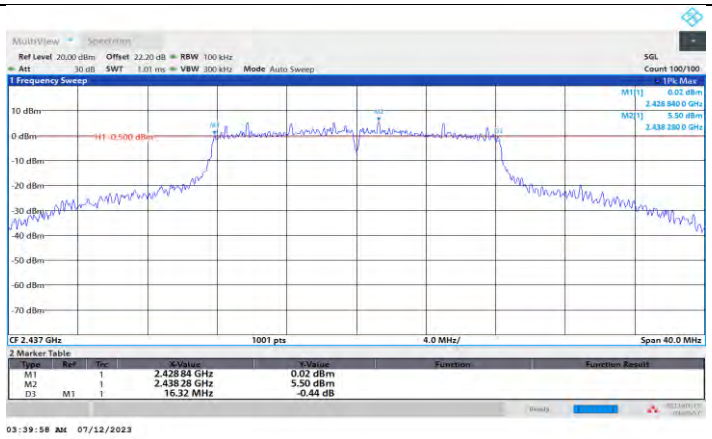

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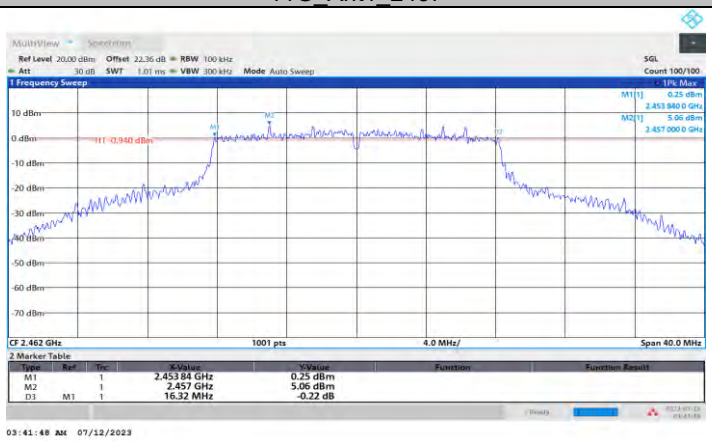

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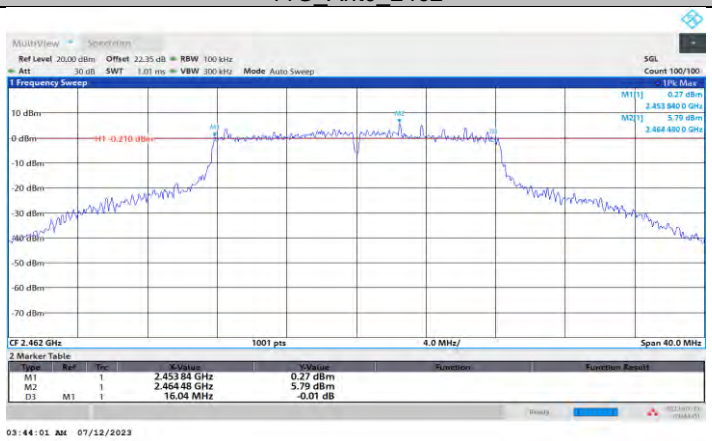

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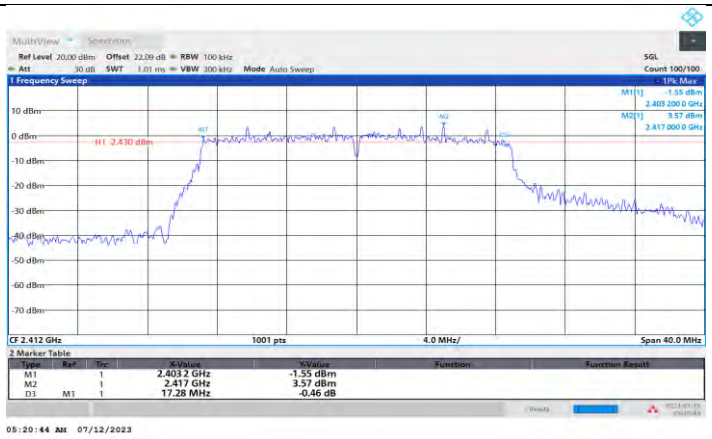

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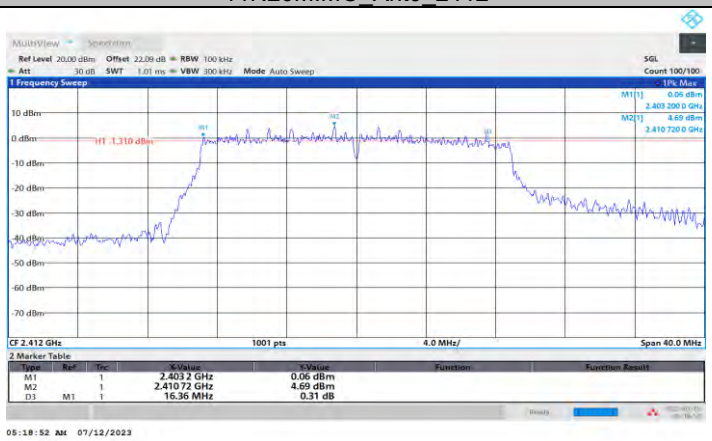

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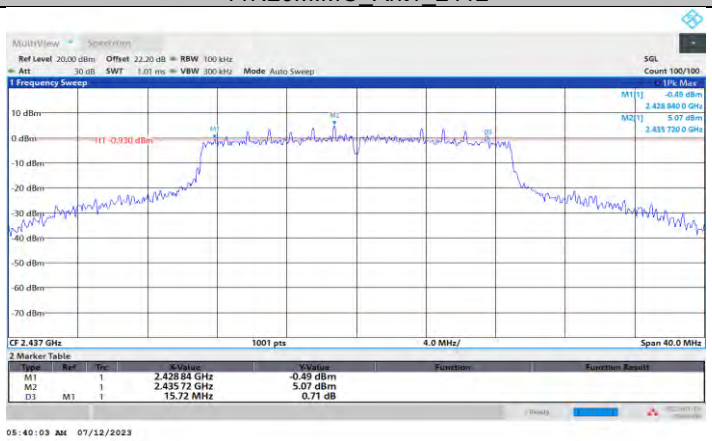

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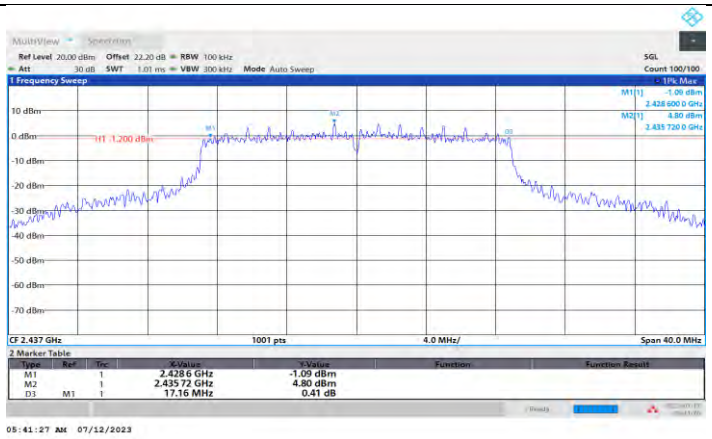

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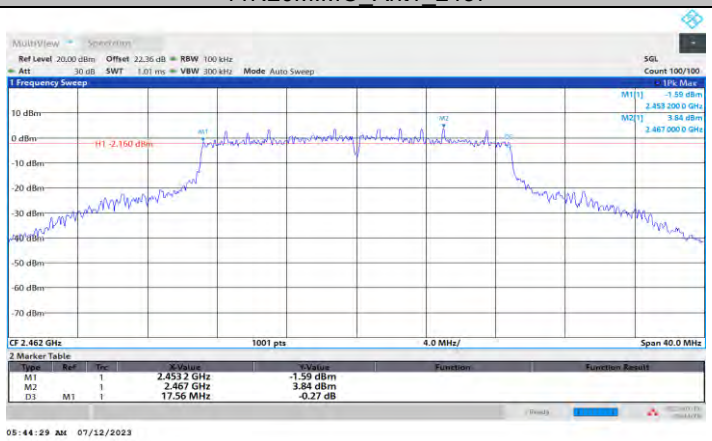

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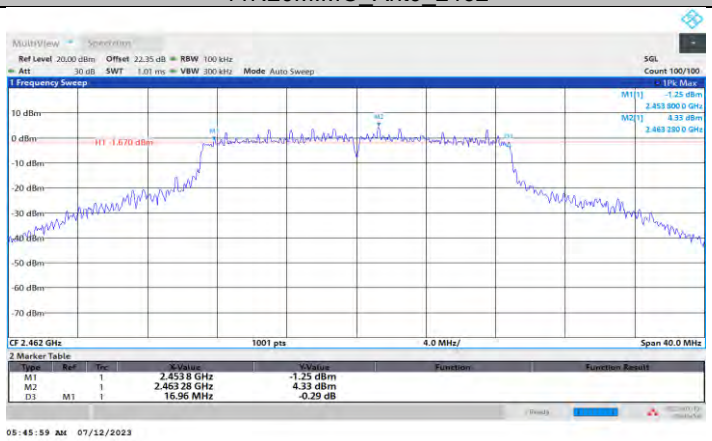

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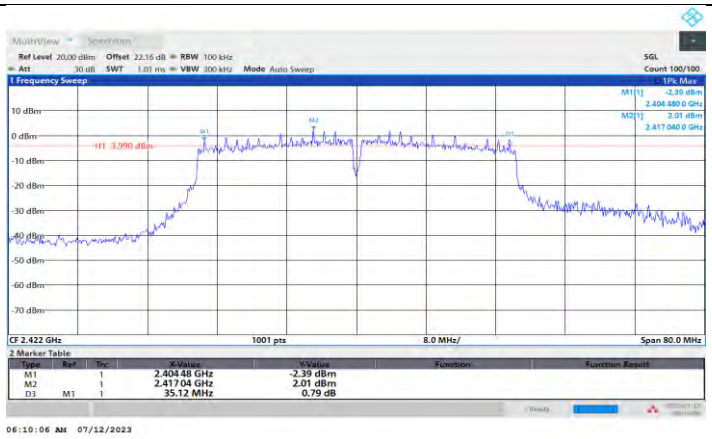

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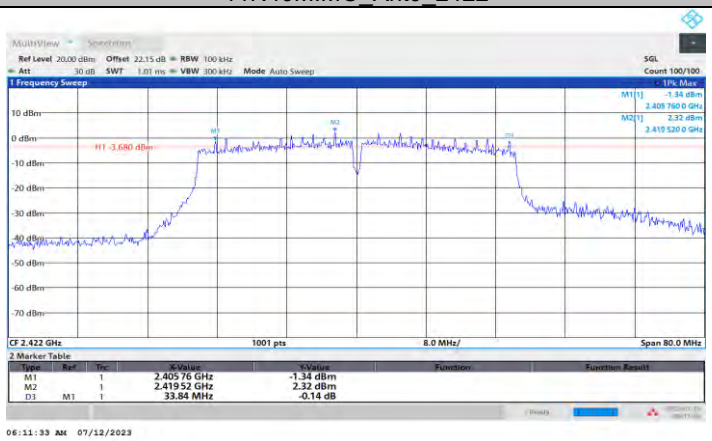

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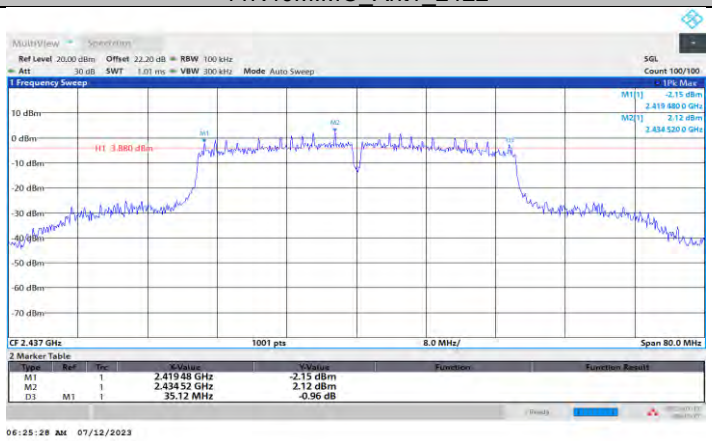

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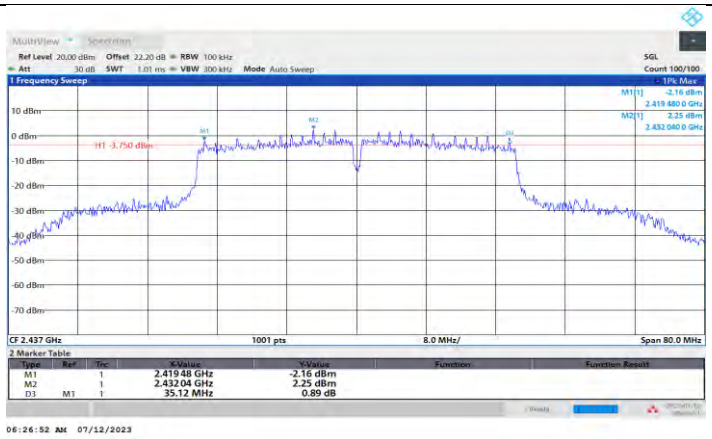

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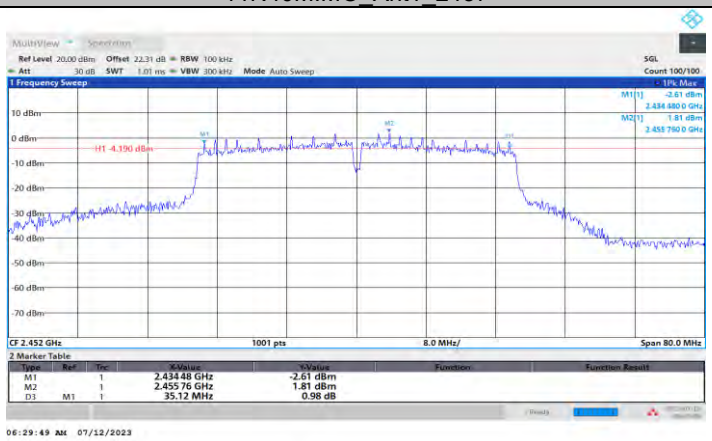

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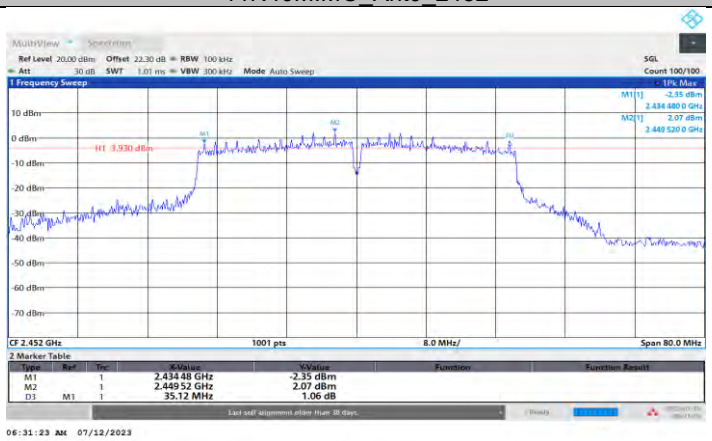

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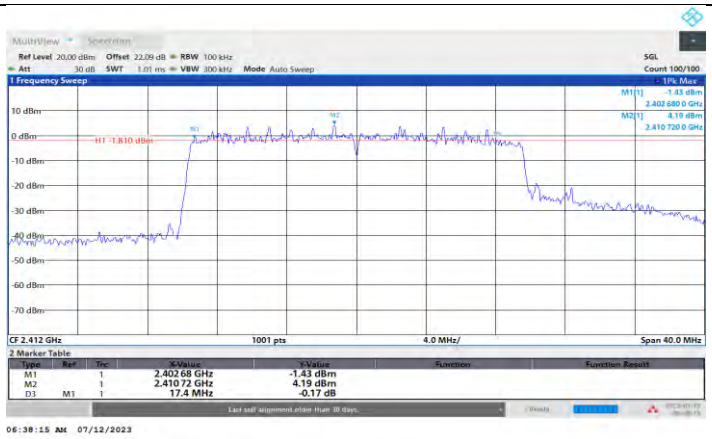

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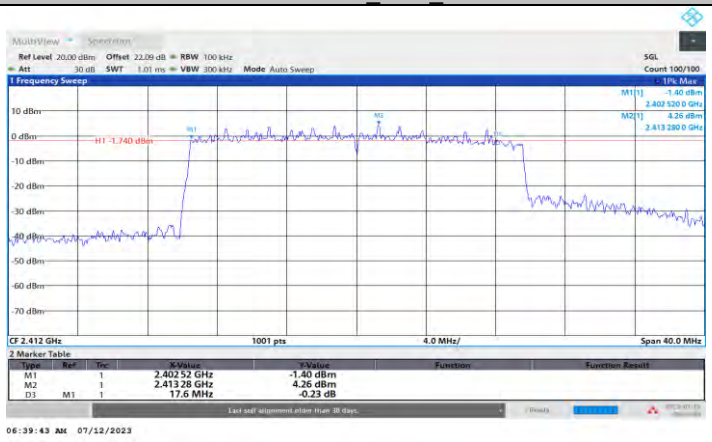

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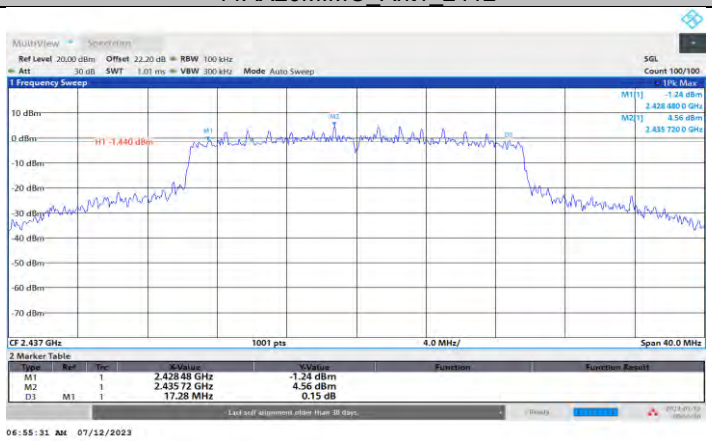

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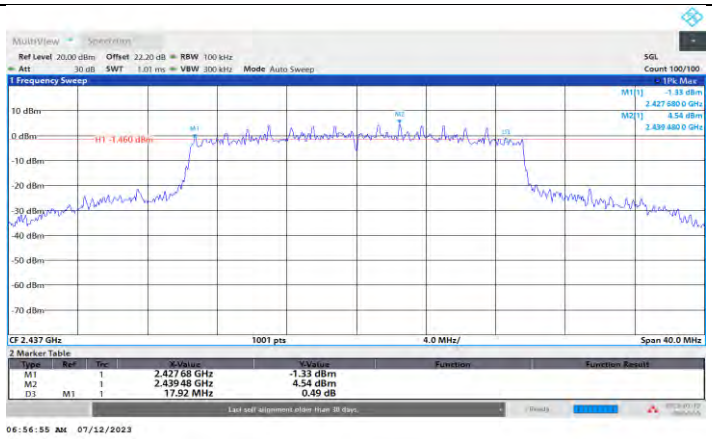

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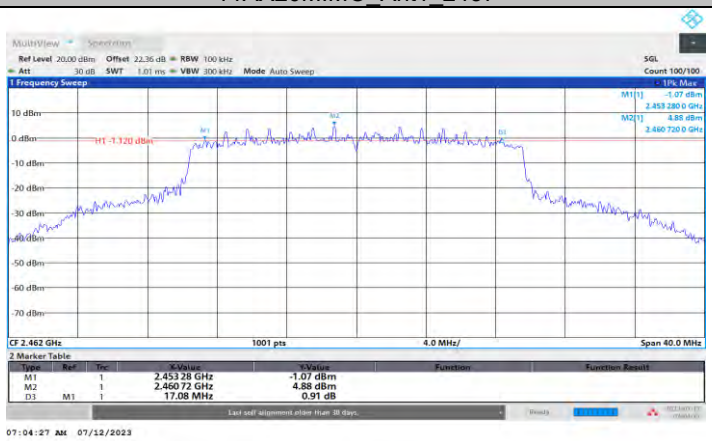

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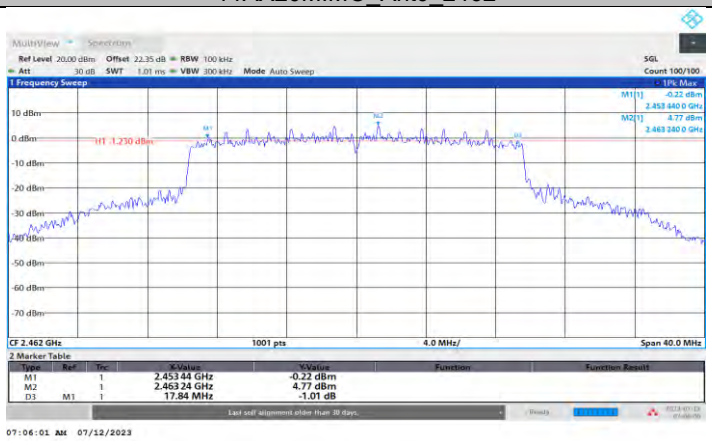

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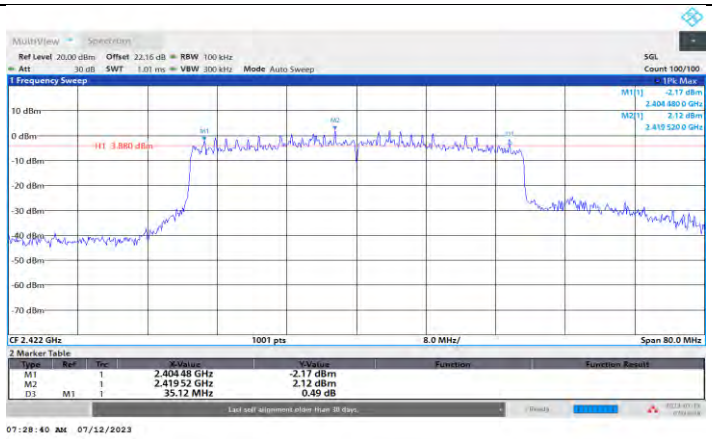

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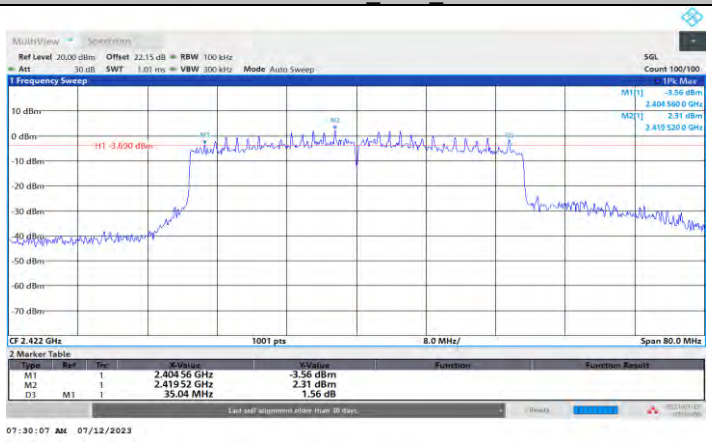

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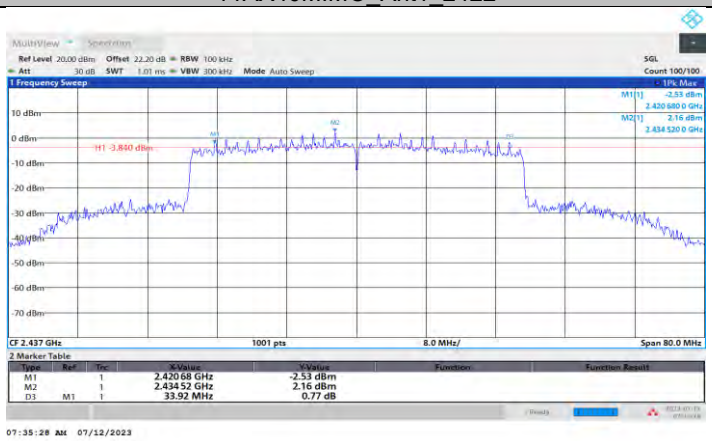

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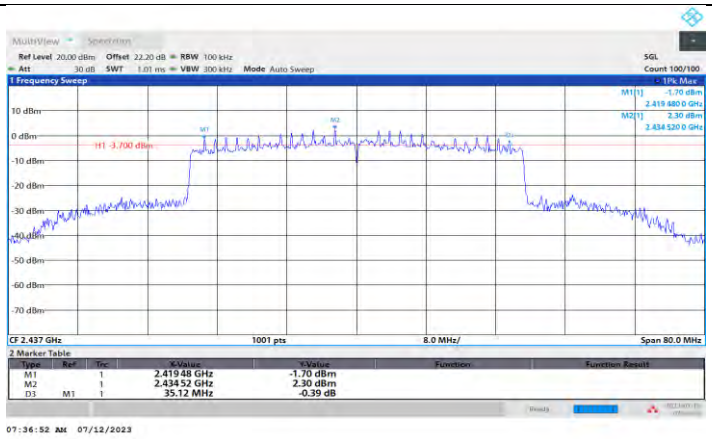

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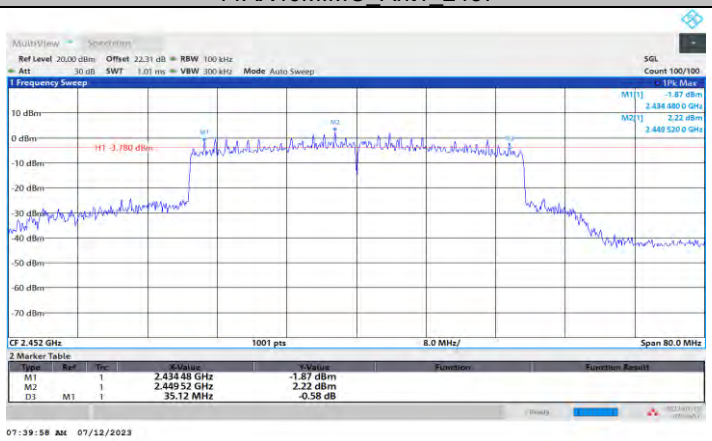

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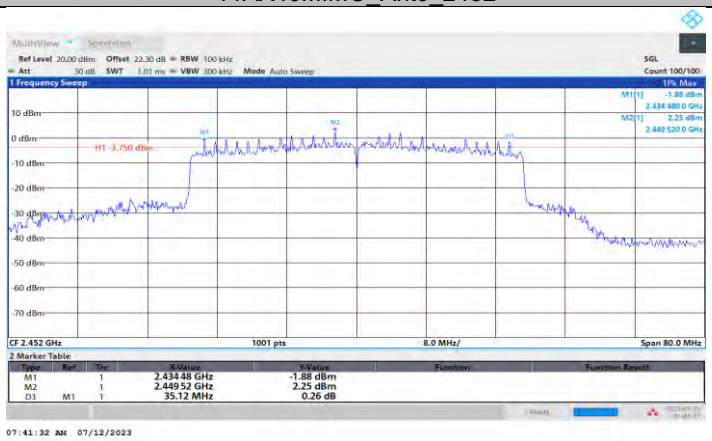

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11.2. APPENDIX B: OCCUPIED CHANNEL BANDWIDTH

11.2.1. Test Result

Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant0	2412	12.777	2405.6408	2418.4180	---	---
	Ant1	2412	12.743	2405.6528	2418.3955	---	---
	Ant0	2437	12.747	2430.6352	2443.3824	---	---
	Ant1	2437	12.714	2430.6562	2443.3698	---	---
	Ant0	2462	12.755	2455.6457	2468.4008	---	---
	Ant1	2462	12.721	2455.6522	2468.3737	---	---
11G	Ant0	2412	17.256	2403.4254	2420.6812	---	---
	Ant1	2412	17.408	2403.3110	2420.7186	---	---
	Ant0	2437	17.398	2428.2912	2445.6889	---	---
	Ant1	2437	17.34	2428.3350	2445.6746	---	---
	Ant0	2462	17.405	2453.3199	2470.7250	---	---
	Ant1	2462	17.289	2453.3442	2470.6335	---	---
11N20MIMO	Ant0	2412	18.321	2402.8845	2421.2056	---	---
	Ant1	2412	18.024	2402.9907	2421.0143	---	---
	Ant0	2437	18.42	2427.8037	2446.2234	---	---
	Ant1	2437	18.224	2427.9143	2446.1384	---	---
	Ant0	2462	18.391	2452.8308	2471.2214	---	---
	Ant1	2462	18.046	2453.0319	2471.0781	---	---
11N40MIMO	Ant0	2422	36.549	2403.8321	2440.3806	---	---
	Ant1	2422	36.498	2403.8328	2440.3304	---	---
	Ant0	2437	36.667	2418.7079	2455.3752	---	---
	Ant1	2437	36.7	2418.6997	2455.4001	---	---
	Ant0	2452	36.534	2433.6683	2470.2025	---	---
	Ant1	2452	36.507	2433.7135	2470.2208	---	---
11AX20MIMO	Ant0	2412	19.011	2402.5376	2421.5486	---	---
	Ant1	2412	18.956	2402.5338	2421.4894	---	---
	Ant0	2437	19.277	2427.3926	2446.6700	---	---
	Ant1	2437	19.223	2427.4123	2446.6349	---	---
	Ant0	2462	19.188	2452.3811	2471.5690	---	---
	Ant1	2462	19.103	2452.4736	2471.5763	---	---
11AX40MIMO	Ant0	2422	37.926	2403.1359	2441.0616	---	---
	Ant1	2422	37.807	2403.1638	2440.9710	---	---
	Ant0	2437	37.927	2418.0560	2455.9826	---	---
	Ant1	2437	38.154	2417.9307	2456.0843	---	---
	Ant0	2452	38.006	2432.9664	2470.9724	---	---
	Ant1	2452	37.947	2433.0304	2470.9773	---	---

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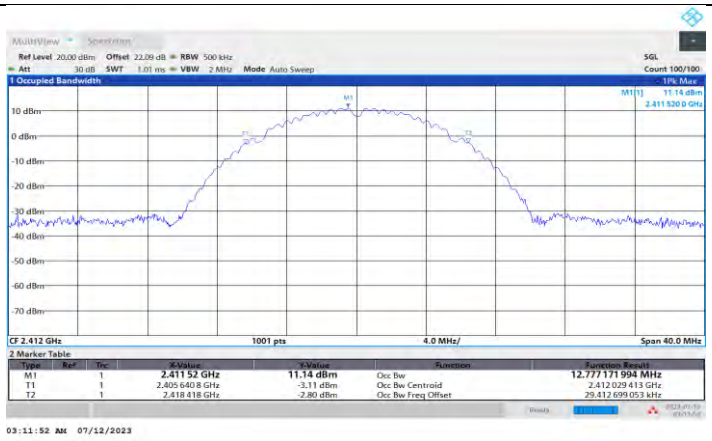
11.2.2. Test Graphs



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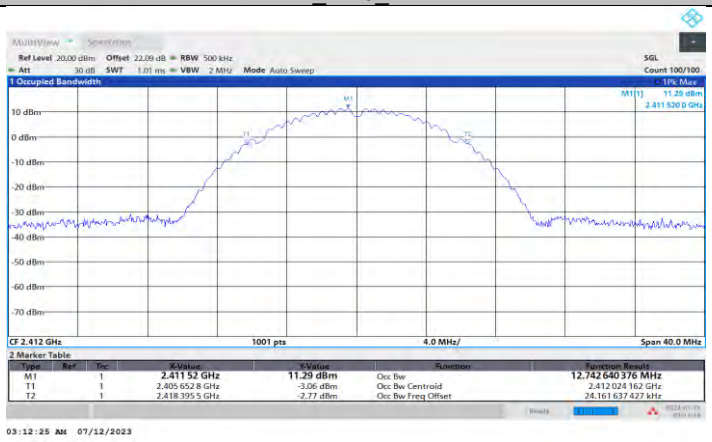

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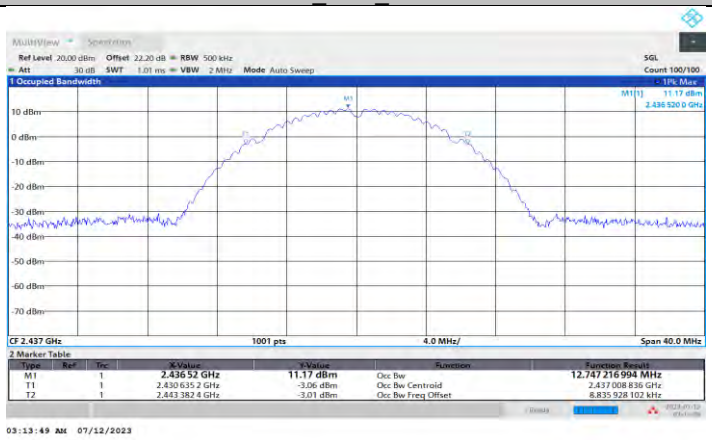

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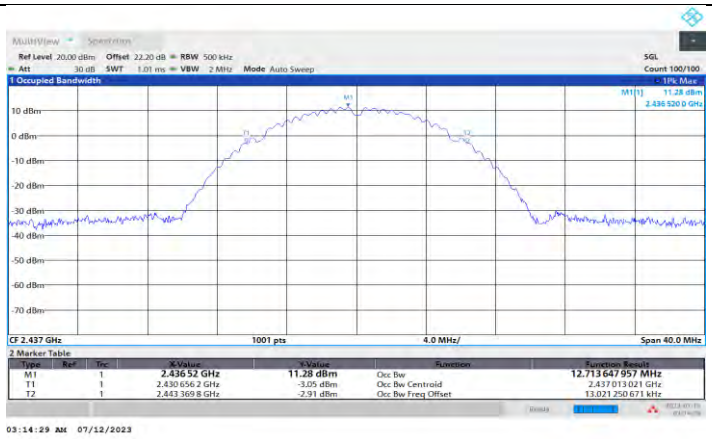

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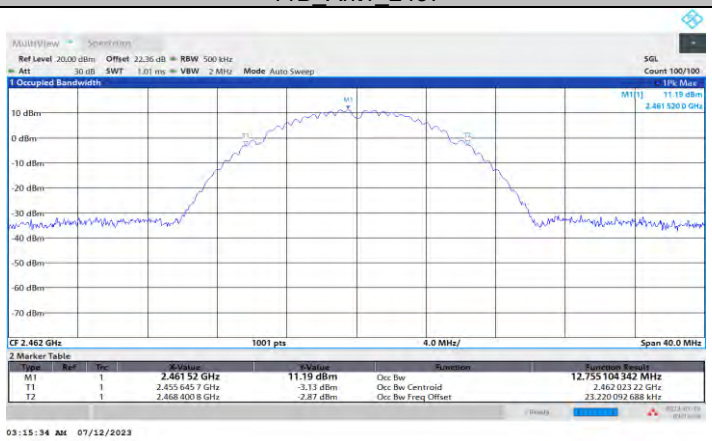

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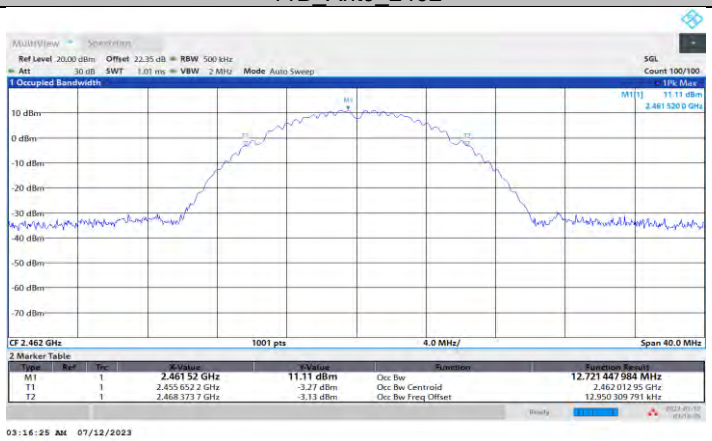

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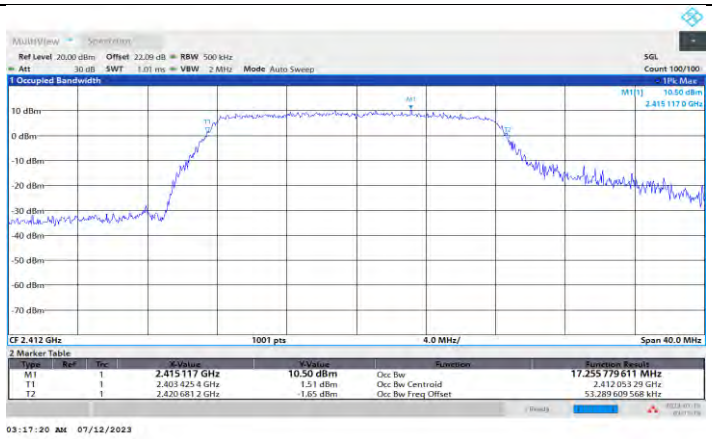

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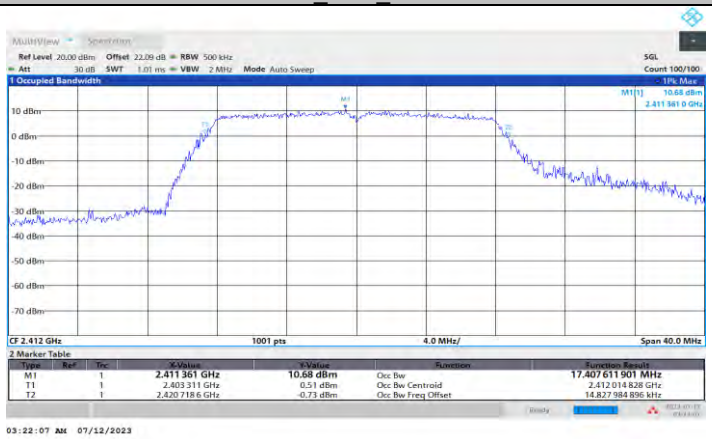

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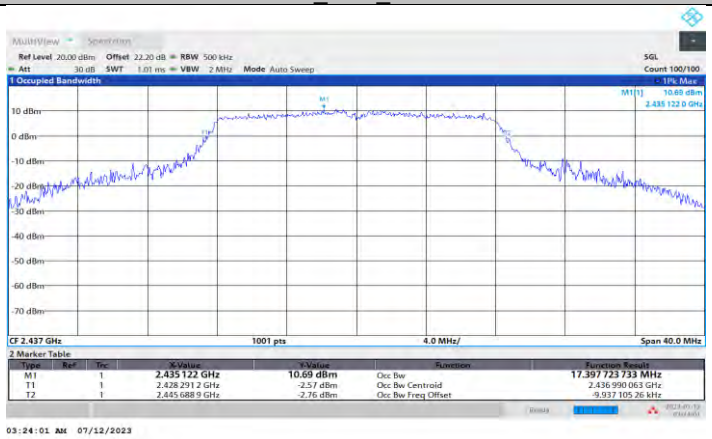

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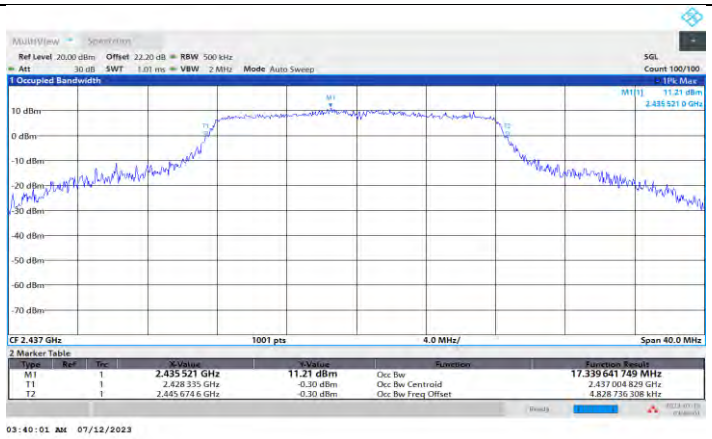

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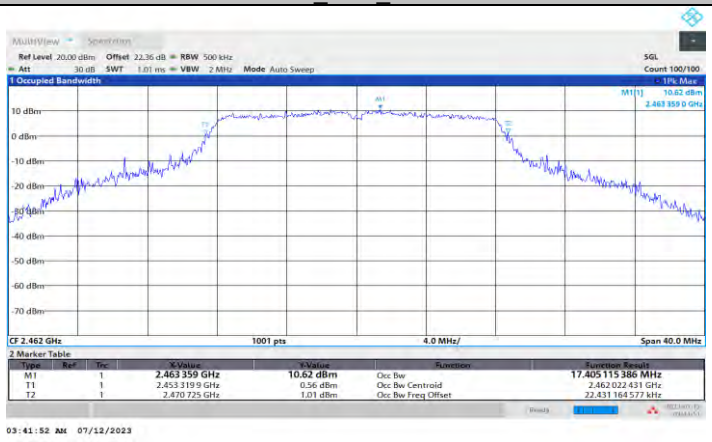

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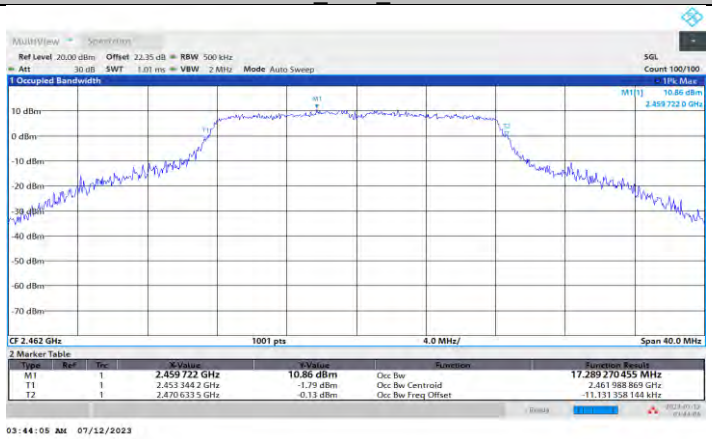

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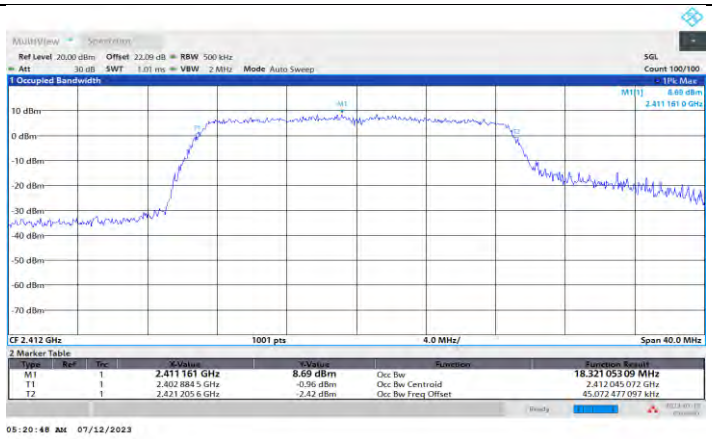

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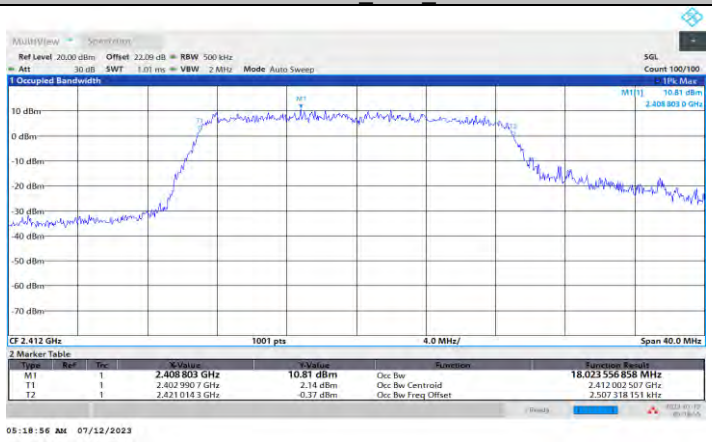

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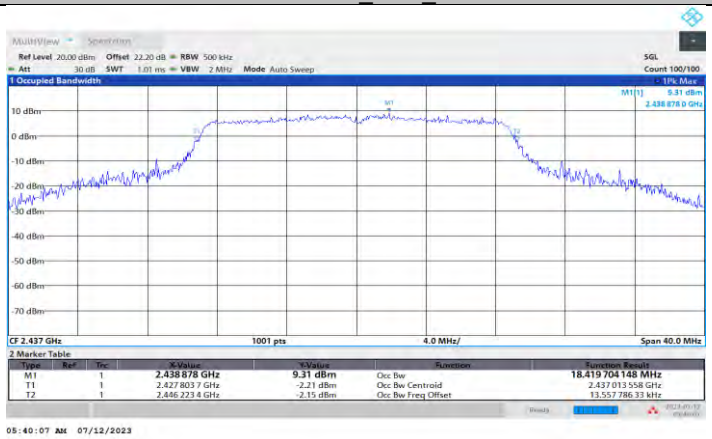

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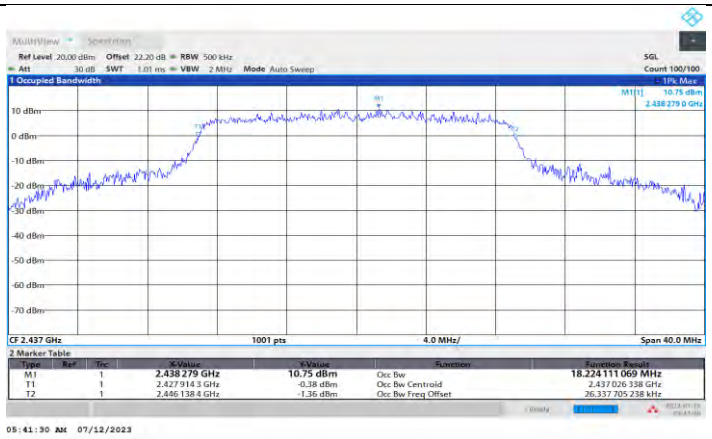

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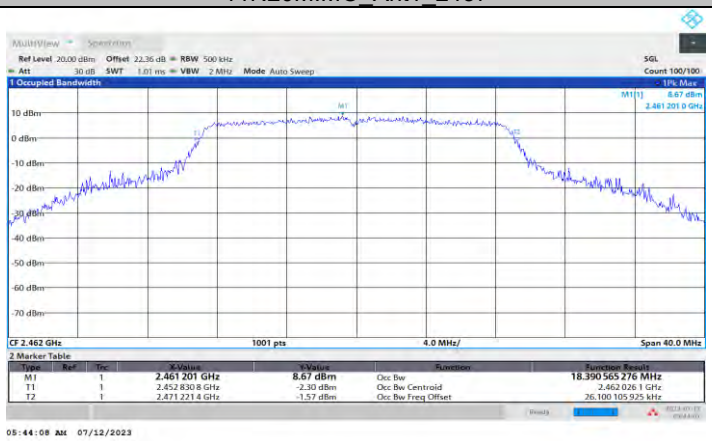

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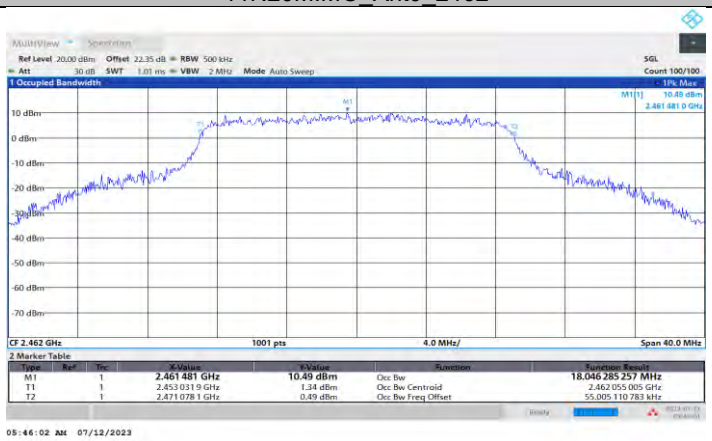

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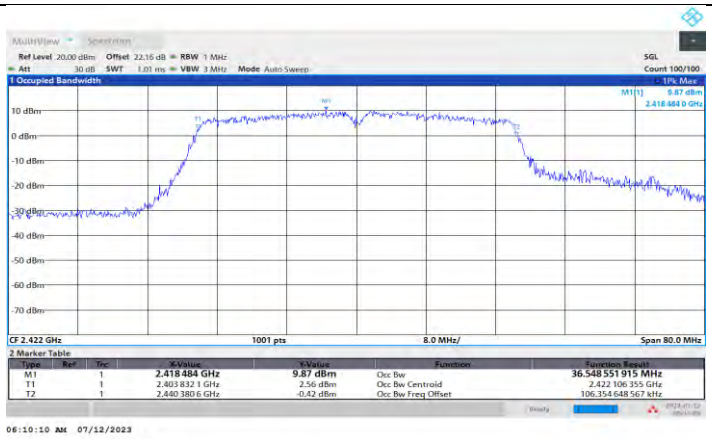

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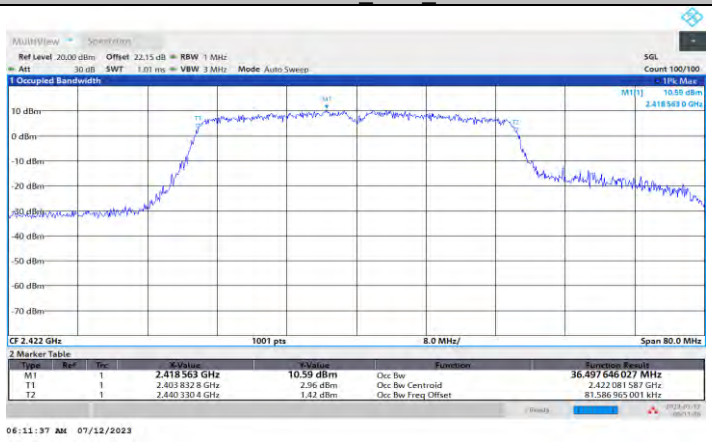

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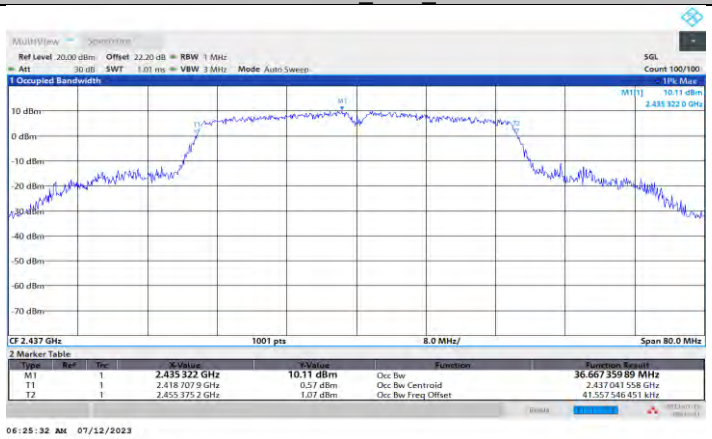

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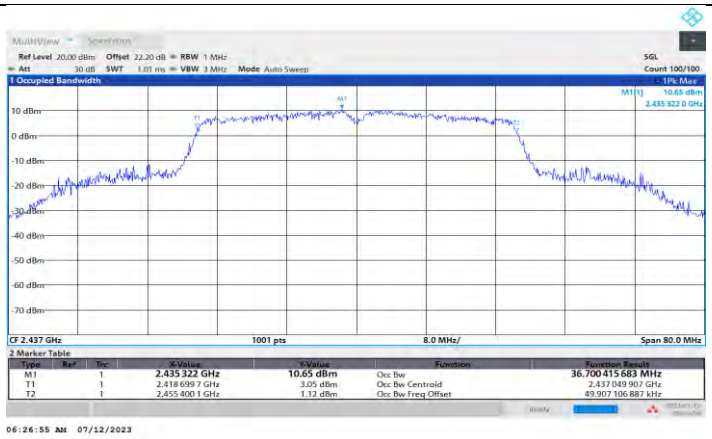

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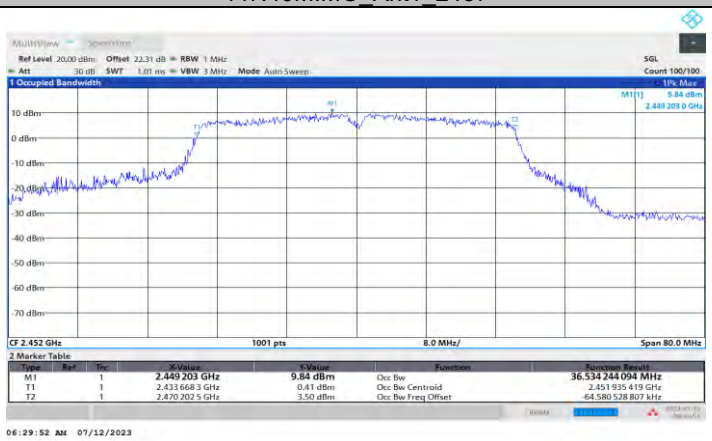

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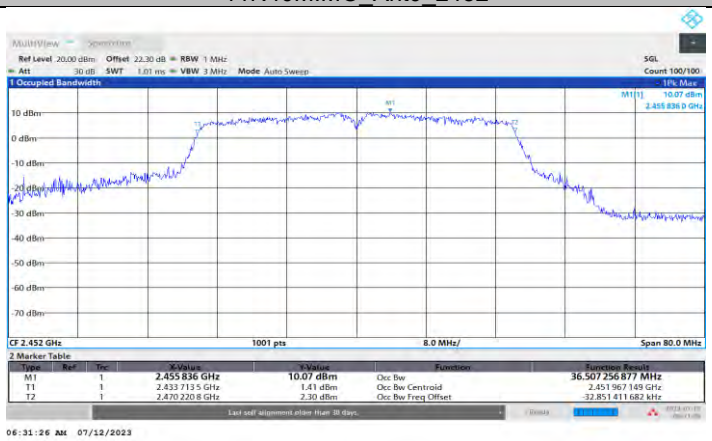

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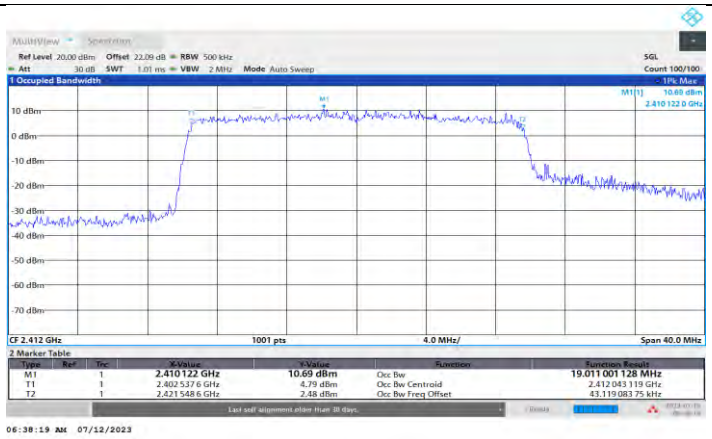

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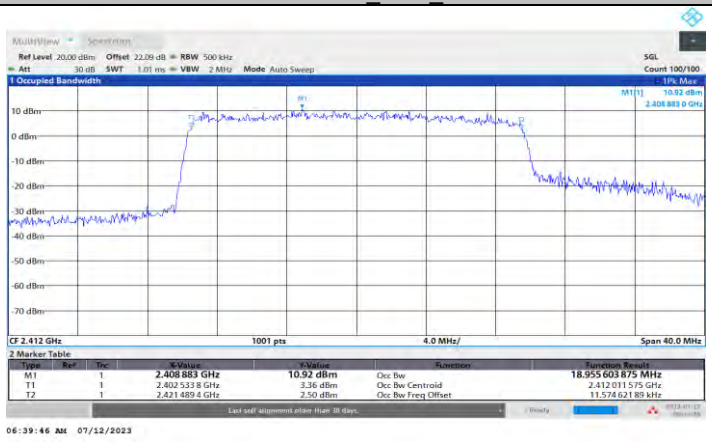

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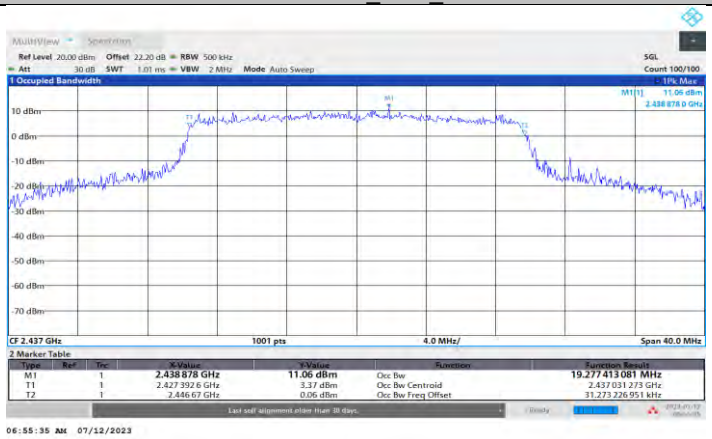

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