

CFR 47 FCC PART 15 SUBPART C

TEST REPORT

For

Hover Hawk Motion Controlled Helicopter

MODEL NUMBER: 2362383, ASC-6585

REPORT NUMBER: 4791308945-RF-1

ISSUE DATE: May 15, 2024

FCC ID: 2ASK3ASC-6585R

Prepared for

**AMAX INDUSTRIAL GROUP CHINA CO.,LTD
OFFICE NO.3 10/F WITTY COMMERCIAL BUILDING 1A-1L TUNG CHOI STREET
MONGKOK KOWLOON HONG KONG**

Prepared by

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	May 15, 2024	Initial Issue	

Summary of Test Results

Test Item	Clause	Limit/Requirement	Result
Antenna Requirement	/	FCC Part 15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	ANSI C63.10-2013, Clause 6.2	FCC Part 15.207	N/A (Note 2)
Conducted Output Power	ANSI C63.10-2013, Clause 11.9.2.3.1	FCC Part 15.247 (b)(3)	Pass
6dB Bandwidth and 99% Occupied Bandwidth	ANSI C63.10-2013, Clause 11.8.1	FCC Part 15.247 (a)(2)	Pass
Power Spectral Density	ANSI C63.10-2013, Clause 11.10.5	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

Note:

1. N/A: In this whole report not applicable.
2. The EUT was power by battery but can't be charged during operating.

*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 <Simple Acceptance> decision rule is applied.

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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: AMAX INDUSTRIAL GROUP CHINA CO.,LTD
Address: OFFICE NO.3 10/F WITTY COMMERCIAL BUILDING 1A-1L
TUNG CHOI STREET MONGKOK KOWLOON HONG KONG

Manufacturer Information

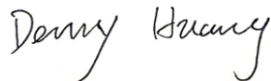
Company Name: AMAX INDUSTRIAL GROUP CHINA CO.,LTD
Address: OFFICE NO.3 10/F WITTY COMMERCIAL BUILDING 1A-1L
TUNG CHOI STREET MONGKOK KOWLOON HONG KONG

EUT Information

EUT Name: Hover Hawk Motion Controlled Helicopter
Model: 2362383, ASC-6585
Model Difference: All the same except for the model name.
Sample Received Date: April 29, 2024
Sample Status: Normal
Sample ID: 7186360
Date of Tested: May 7, 2024 to May 13, 2024


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

Prepared By:



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Stephen Guo
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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, ISED RSS-247 Issue 3, CFR 47 FCC Part 2 and ANSI C63.10-2013.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	<p>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.</p> <p>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</p> <p>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.</p> <p>VCCI (Registration No.: G-20192, C-20153, T-20155 and R-20202) 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-20192 and R-20202 Shielding Room B, the VCCI registration No. is C-20153 and T-20155</p>
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Note 1:

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.

Note 2:

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.

Note 3:

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.

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.	

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

EUT Name	Hover Hawk Motion Controlled Helicopter
Model	2362383, ASC-6585
Model Difference	All the same except for the model name.

Frequency Range:	2412 MHz to 2462 MHz
Support Standards:	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n HT20
Type of Modulation:	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK) IEEE 802.11be HE20: OFDMA (256QAM, 64-QAM, 16-QAM, QPSK, BPSK)
Normal Test Voltage:	DC 3.8 V

5.2. CHANNEL LIST

Channel List For Bandwidth=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	/	/

5.3. MAXIMUM POWER

IEEE Std. 802.11	Frequency (MHz)	Channel Number	Maximum Conducted AVG Output Power (dBm)
b	2412 ~ 2462	1-11[11]	16.98
g	2412 ~ 2462	1-11[11]	12.28
n HT20	2412 ~ 2462	1-11[11]	14.92

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

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	1	Default	Default	Default	/		
802.11g	1	Default	Default	Default			
802.11n HT20	1	Default	Default	Default			

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

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

5.7. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna	Frequency (MHz)	Antenna Type	Maximum Antenna Gain (dBi)
1	2412-2462	Copper Tube Antenna	2.56

Test Mode	Transmit and Receive Mode	Description
IEEE 802.11b	<input checked="" type="checkbox"/> 1TX, 1RX	ANT 1 can be used as transmitting/receiving antenna.
IEEE 802.11g	<input checked="" type="checkbox"/> 1TX, 1RX	ANT 1 can be used as transmitting/receiving antenna.
IEEE 802.11n HT20	<input checked="" type="checkbox"/> 1TX, 1RX	ANT 1 can be used as transmitting/receiving antenna.
Note: 2.4GHz SRD & 2.4GHz WiFi can't transmit simultaneously. (declared by client)		

5.8. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	Remarks
1	Laptop	ThinkPad	X230i	/
2	UART	/	/	/

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	/	/	/	/	/

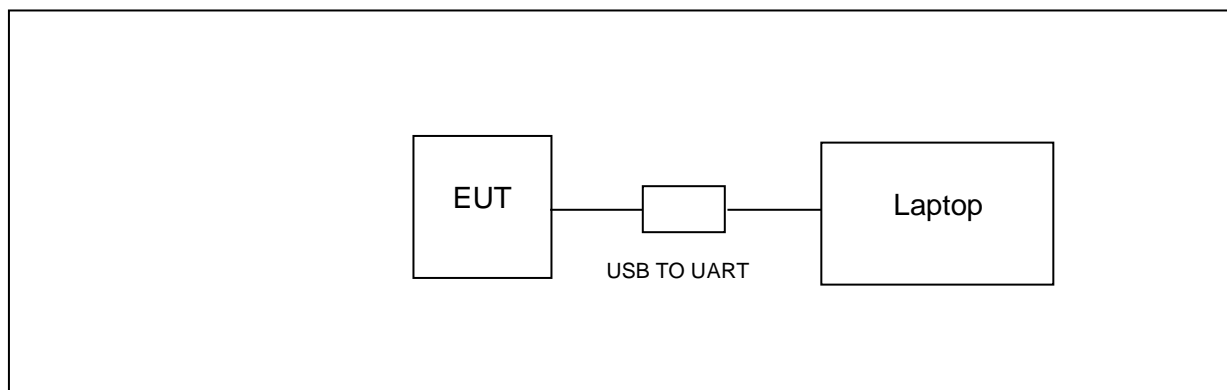
ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
/	/	/	/	/

TEST SETUP

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

SETUP DIAGRAM FOR TESTS



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.25,2024	Mar.24,2025
Vector Signal Generator	R&S	SMBV100A	261637	Oct.12, 2023	Oct.11, 2024
Signal Generator	R&S	SMB100A	178553	Oct.12, 2023	Oct.11, 2024
Signal Analyzer	R&S	FSV40	101118	Oct.12, 2023	Oct.11, 2024
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.12, 2023	Oct.11, 2024
Wireless Connectivity Tester	R&S	CMW270	1201.0002N75-102	Sep.25, 2023	Sep.24, 2024
PXA Signal Analyzer	Keysight	N9030A	MY55410512	Oct.12, 2023	Oct.11, 2024
MXG Vector Signal Generator	Keysight	N5182B	MY56200284	Oct.12, 2023	Oct.11, 2024
MXG Vector Signal Generator	Keysight	N5172B	MY56200301	Oct.12, 2023	Oct.11, 2024
DC power supply	Keysight	E3642A	MY55159130	Oct.12, 2023	Oct.11, 2024
Temperature & Humidity Chamber	SANMOOD	SG-80-CC-2	2088	Oct.12, 2023	Oct.11, 2024
Attenuator	Aglient	8495B	2814a12853	Oct.12, 2023	Oct.11, 2024
RF Control Unit	Tonscend	JS0806-2	23B80620666	Mar.25,2024	Mar.24,2025
Software					
Description	Manufacturer	Name		Version	
Tonsend SRD Test System	Tonsend	JS1120-3 RF Test System		V3.2.22	

Radiated Emissions					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Oct.12, 2023	Oct.11, 2024
Hybrid Log Periodic Antenna	TDK	HLP-3003C	130959	Aug.02, 2021	Aug.01, 2024
Preamplifier	HP	8447D	2944A09099	Oct.12, 2023	Oct.11, 2024
EMI Measurement Receiver	R&S	ESR26	101377	Oct.12, 2023	Oct.11, 2024
Horn Antenna	TDK	HRN-0118	130940	July 20, 2021	July 19, 2024
Preamplifier	TDK	PA-02-0118	TRS-305-00067	Oct.12, 2023	Oct.11, 2024
Horn Antenna	Schwarzbeck	BBHA9170	697	July 20, 2021	July 19, 2024
Preamplifier	TDK	PA-02-2	TRS-307-00003	Oct.12, 2023	Oct.11, 2024
Preamplifier	TDK	PA-02-3	TRS-308-00002	Oct.12, 2023	Oct.11, 2024
Loop antenna	Schwarzbeck	1519B	00008	Dec.14, 2021	Dec.13, 2024
Preamplifier	TDK	PA-02-001-3000	TRS-302-00050	Oct.12, 2023	Oct.11, 2024
High Pass Filter	Wi	WHKX10-2700-3000-18000-40SS	23	Oct.12, 2023	Oct.11, 2024
Band Reject Filter	Wainwright	WRCJV8-2350-2400-2483.5-2533.5-40SS	4	Oct.12, 2023	Oct.11, 2024
Software					
Description		Manufacturer	Name	Version	
Test Software for Radiated Emissions		Farad	EZ-EMC	Ver. UL-3A1	

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

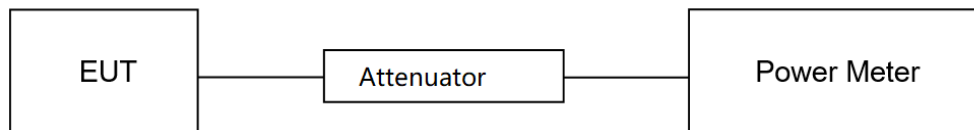
Refer to ANSI C63.10-2013 clause 11.9.2.3.1.

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	26.1 °C	Relative Humidity	54.1%
Atmosphere Pressure	101 kPa	Test Voltage	DC 3.8 V

TEST RESULTS

Please refer to section "Test Data" - Appendix C

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

TEST PROCEDURE

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

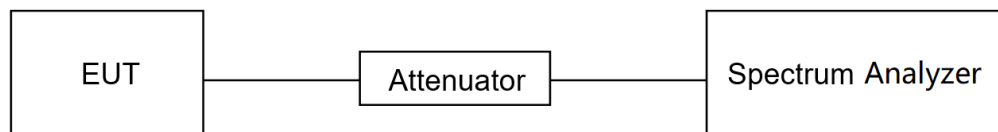
Connect the EUT to the spectrum analyzer and use the following settings:

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.

TEST SETUP



TEST ENVIRONMENT

Temperature	26.1 °C	Relative Humidity	54.1%
Atmosphere Pressure	101 kPa	Test Voltage	DC 3.8 V

TEST RESULTS

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

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)	Power Spectral Density	8 dBm in any 3 kHz band	2400-2483.5

TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 11.10.2.

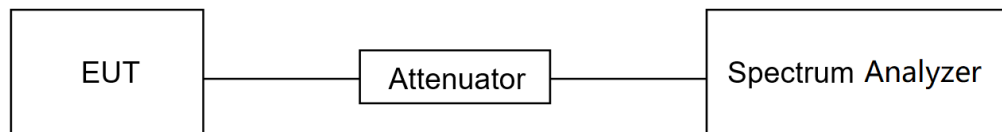
Connect the EUT to the spectrum analyzer and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	power averaging (rms)
RBW	$3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
VBW	$\geq 3 \times \text{RBW}$
Span	1.5 x OBW bandwidth
Trace	Employ trace averaging(rms)mode over a minimum of 100 traces
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	26.1 °C	Relative Humidity	54.1%
Atmosphere Pressure	101 kPa	Test Voltage	DC 3.8 V

TEST RESULTS

Please refer to section "Test Data" - Appendix D

7.4. CONDUCTED BAND EDGE AND SPURIOUS EMISSION

LIMITS

CFR 47 FCC Part15 (15.247) Subpart C		
Section	Test Item	Limit
CFR 47 FCC §15.247 (d)	Conducted Bandedge and Spurious Emissions	at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

TEST PROCEDURE

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

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

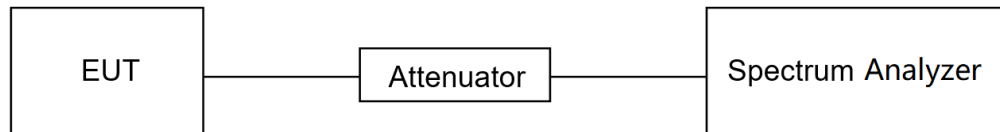
Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	100 kHz
VBW	$\geq 3 \times \text{RBW}$
Span	$1.5 \times \text{DTS bandwidth}$
Trace	Max hold
Sweep time	Auto couple.

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	$\geq 3 \times \text{RBW}$
measurement points	$\geq \text{span}/\text{RBW}$
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	26.1 °C	Relative Humidity	54.1%
Atmosphere Pressure	101 kPa	Test Voltage	DC 3.8 V

TEST RESULTS

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

7.5. DUTY CYCLE

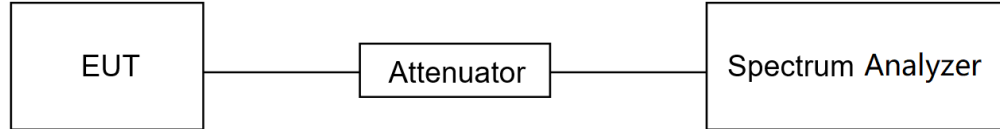
LIMITS

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	24.5 °C	Relative Humidity	45.9%
Atmosphere Pressure	101 kPa	Test Voltage	DC 3.8 V

TEST RESULTS

Please refer to section "Test Data" - Appendix G

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

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: ¹Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

²Above 38.6c

TEST PROCEDURE

Below 30 MHz

The setting of the spectrum analyzer

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 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 analyzer

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.

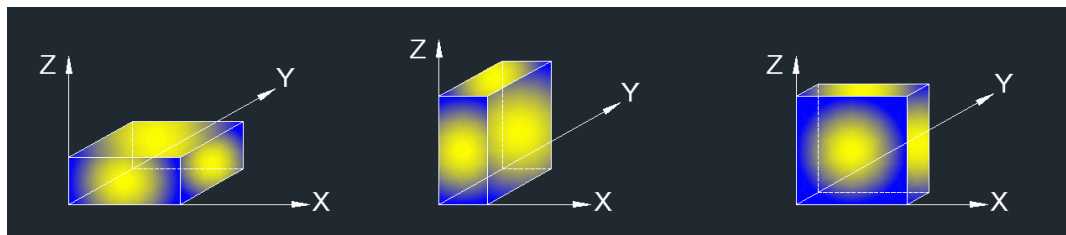
Above 1 GHz

The setting of the spectrum analyzer

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.
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.

X axis, Y axis, Z axis positions:



Note: 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.

For Restricted Bandedge:

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. PK=Peak: Peak detector.
4. AV=Average: 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. Both horizontal and vertical have been tested, only the worst data was recorded in the report.
8. All modes have been tested, but only the worst data was recorded in the report.

For Radiate Spurious emission (9 kHz ~ 30 MHz):

Note:

1. Measurement = Reading 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. 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 have been tested, but only the worst data was recorded in the report.
5. $\text{dBuA/m} = \text{dBuV/m} - 20\text{Log}_{10}[120\pi] = \text{dBuV/m} - 51.5$

For Radiate Spurious Emission (30 MHz ~ 1 GHz):

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

For Radiate Spurious Emission (1 GHz ~ 3 GHz):

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 have been tested, but only the worst data was recorded in the report.

For Radiate Spurious Emission (3 GHz ~ 18 GHz):

Note:

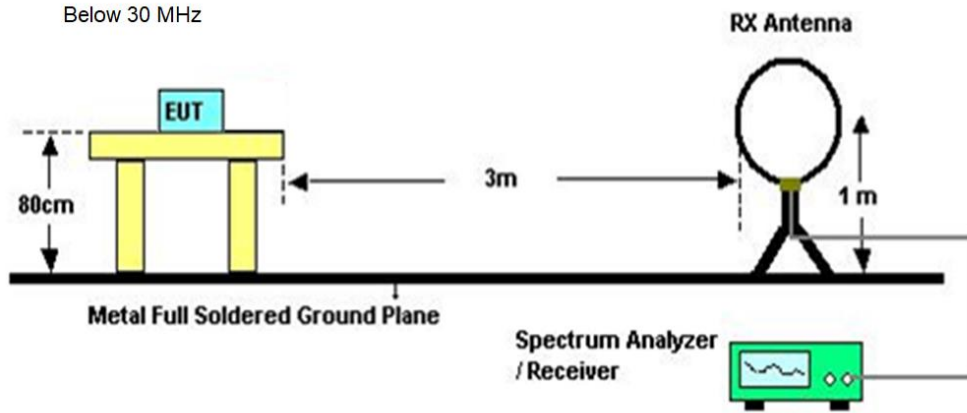
1. Peak Result = Reading Level + Correct Factor.
2. If the peak values are less than the average limit of 54 dBuV/m, the average result is deemed to comply with average limit.
3. Peak: Peak detector.
4. AVG: $VBW=1/Ton$, where: Ton is the transmitting duration.
5. For the transmitting duration, please 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 have been tested, but only the worst data was recorded in the report.

For Radiate Spurious emission (18 GHz ~ 26 GHz):

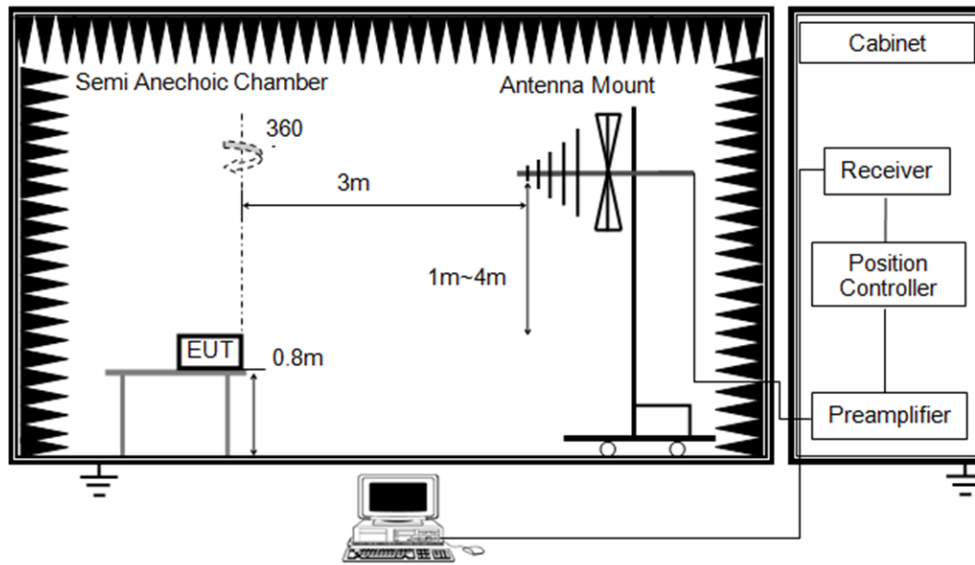
Note:

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 have been tested, but only the worst data was recorded in the report.

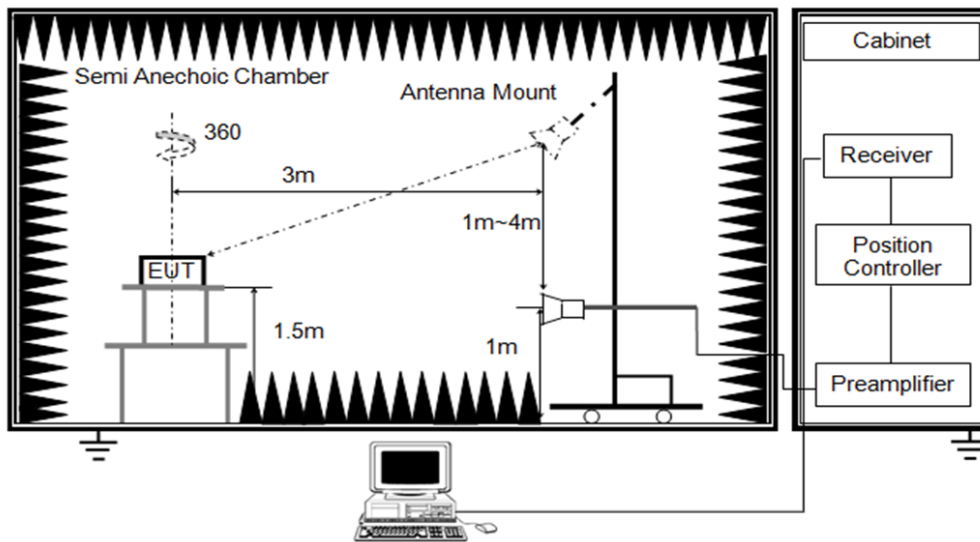
TEST SETUP



Below 1 GHz and above 30 MHz



Above 1 GHz



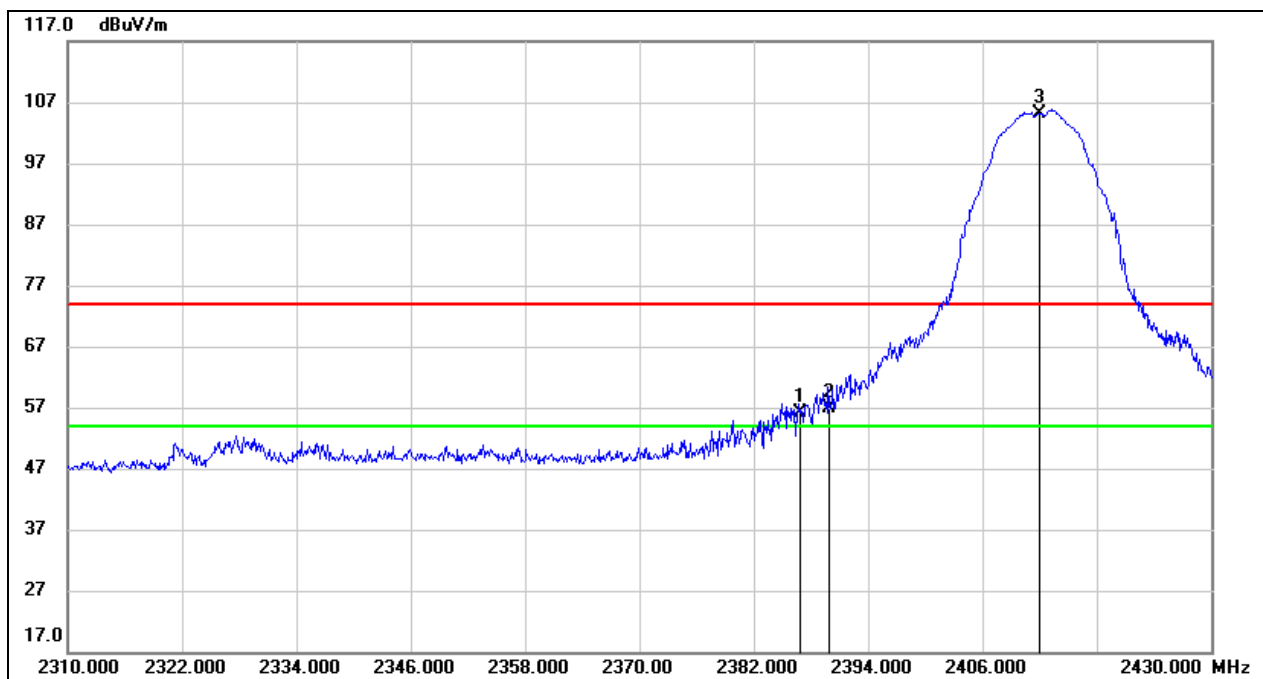
TEST ENVIRONMENT

Temperature	24.8 °C	Relative Humidity	62.4%
Atmosphere Pressure	101 kPa	Test Voltage	DC 3.8 V

TEST RESULTS

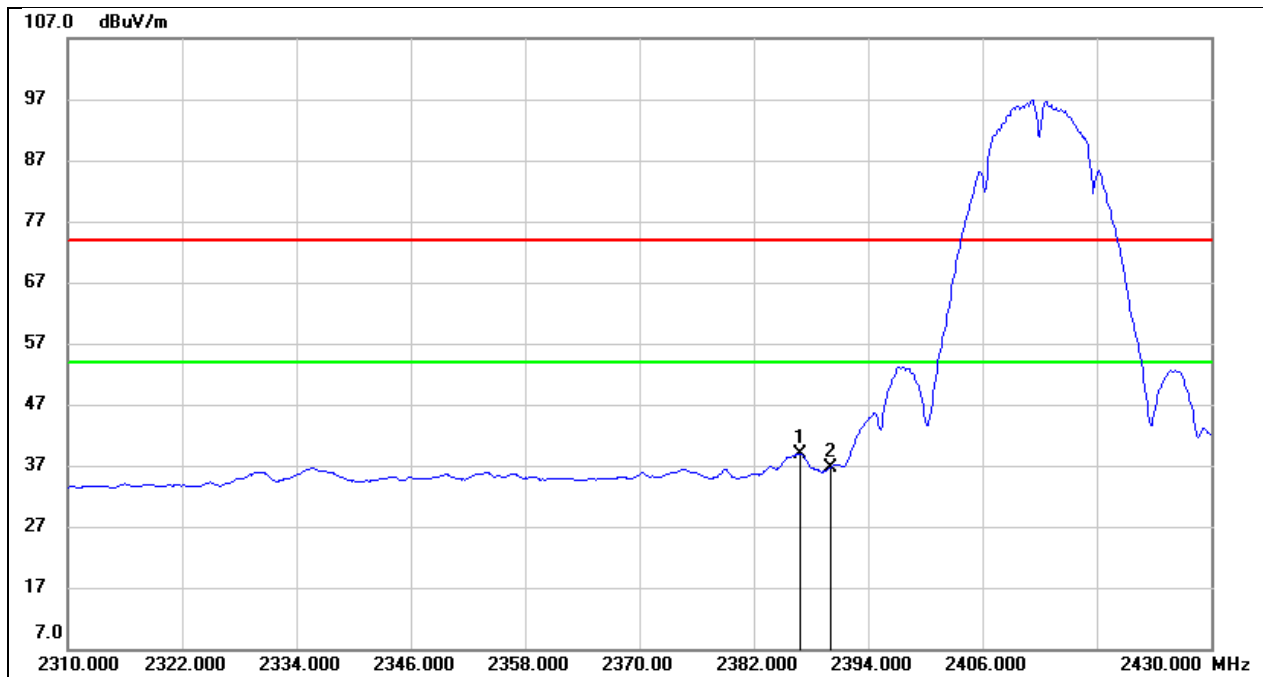
8.1. RESTRICTED BANDEDGE

Test Mode:	802.11b PK	Frequency(MHz):	2412
Polarity:	Vertical	Test Voltage:	DC 3.8 V



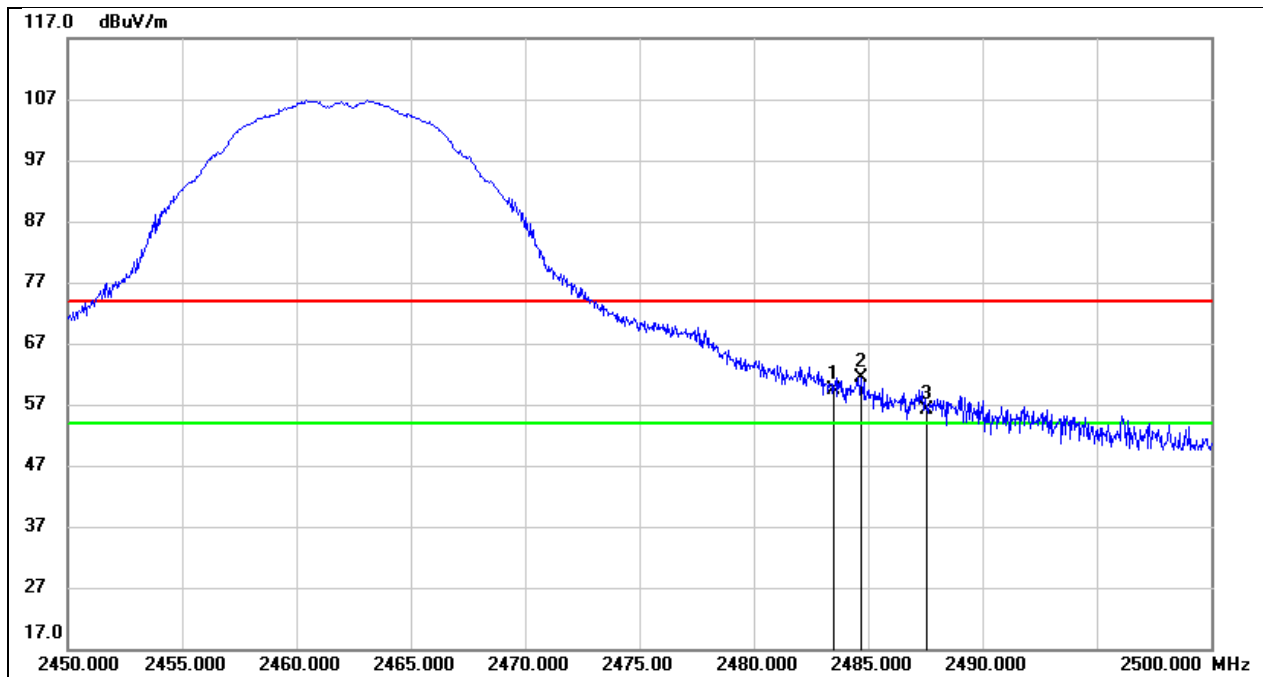
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2386.800	23.30	32.91	56.21	74.00	-17.79	peak
2	2390.000	23.86	32.92	56.78	74.00	-17.22	peak

Test Mode:	802.11b AV	Frequency(MHz):	2412
Polarity:	Vertical	Test Voltage:	DC 3.8 V



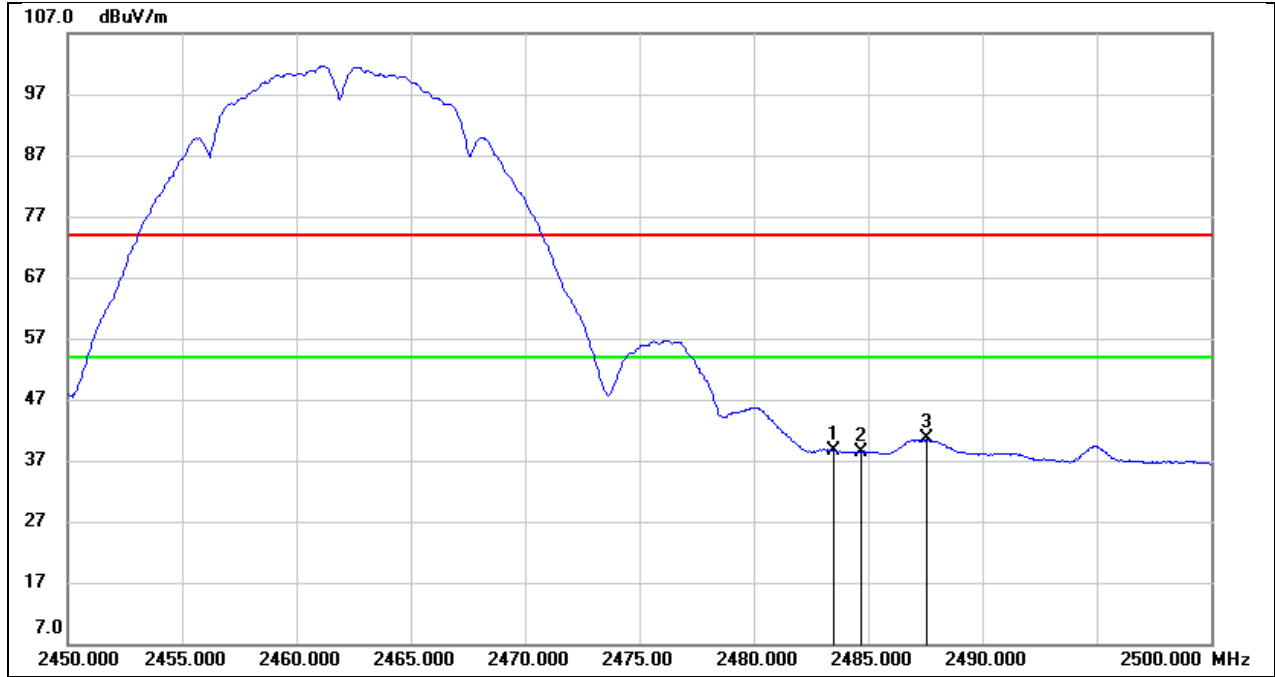
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2386.800	6.08	32.91	38.99	54.00	-15.01	AVG
2	2390.000	3.81	32.92	36.73	54.00	-17.27	AVG

Test Mode:	802.11b PK	Frequency(MHz):	2462
Polarity:	Vertical	Test Voltage:	DC 3.8 V



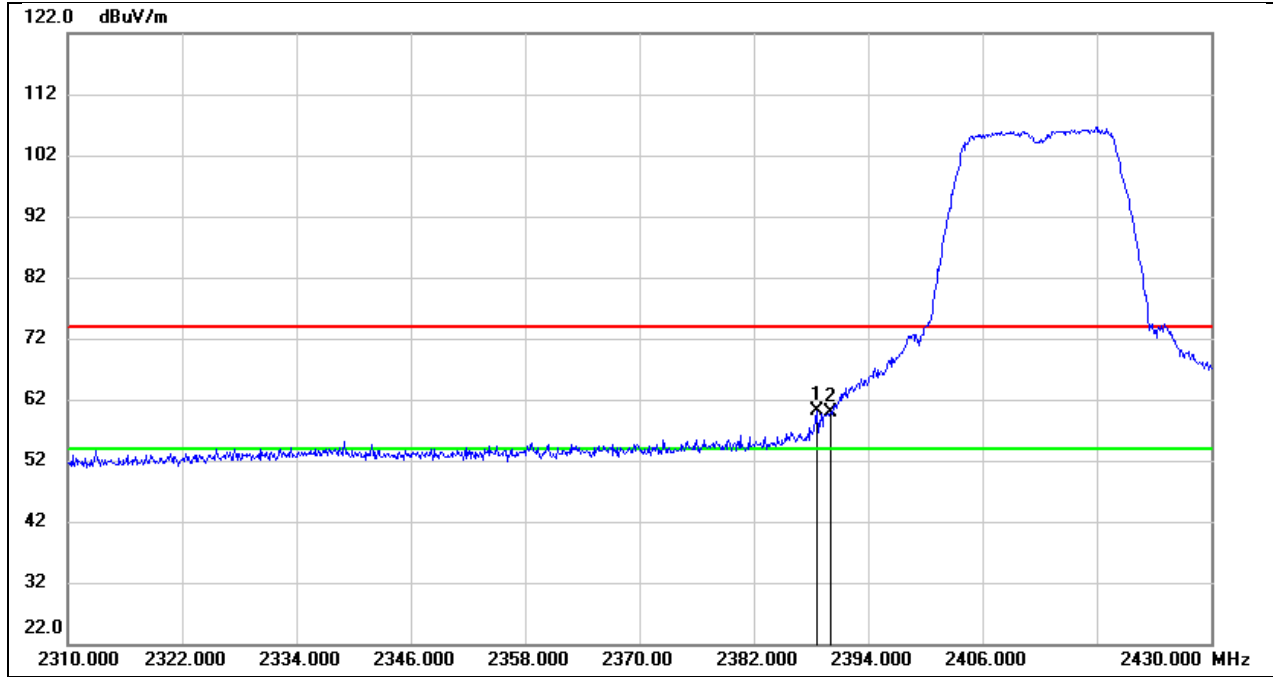
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	26.32	32.94	59.26	74.00	-14.74	peak
2	2484.700	28.42	32.94	61.36	74.00	-12.64	peak
3	2487.550	23.09	32.94	56.03	74.00	-17.97	peak

Test Mode:	802.11b AV	Frequency(MHz):	2462
Polarity:	Vertical	Test Voltage:	DC 3.8 V



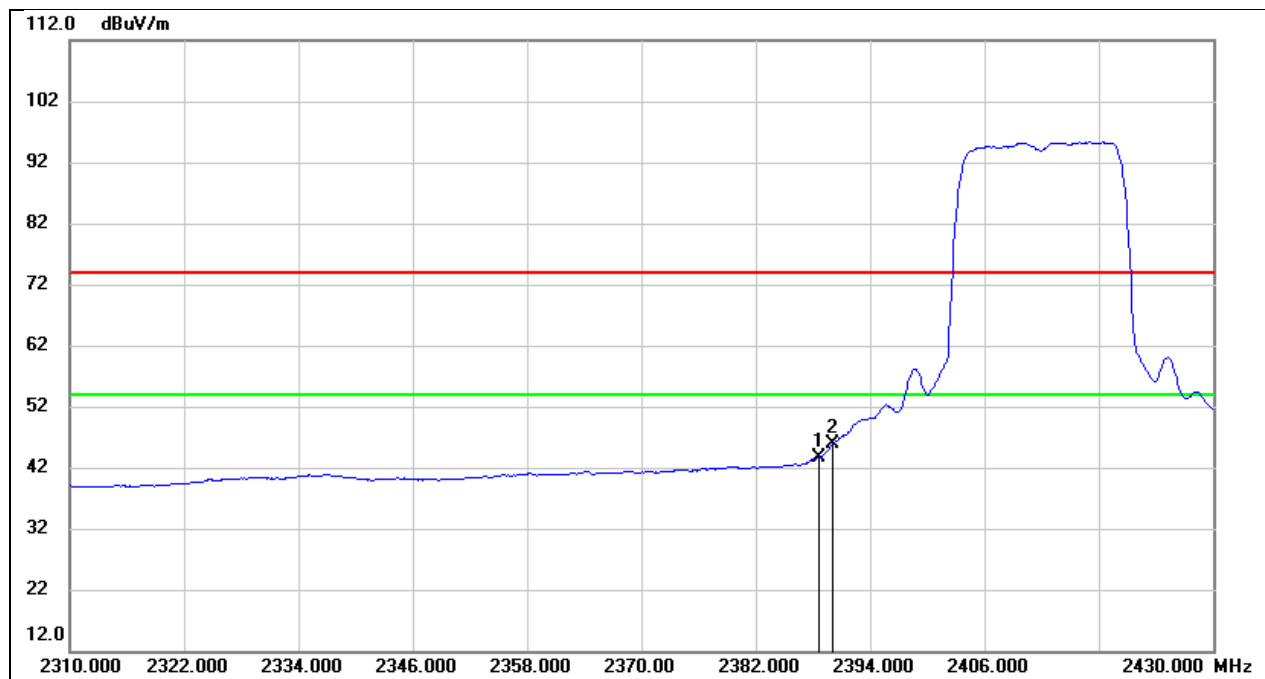
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	5.67	32.94	38.61	54.00	-15.39	AVG
2	2484.700	5.43	32.94	38.37	54.00	-15.63	AVG
3	2487.550	7.68	32.94	40.62	54.00	-13.38	AVG

Test Mode:	802.11g PK	Frequency(MHz):	2412
Polarity:	Vertical	Test Voltage:	DC 3.8 V



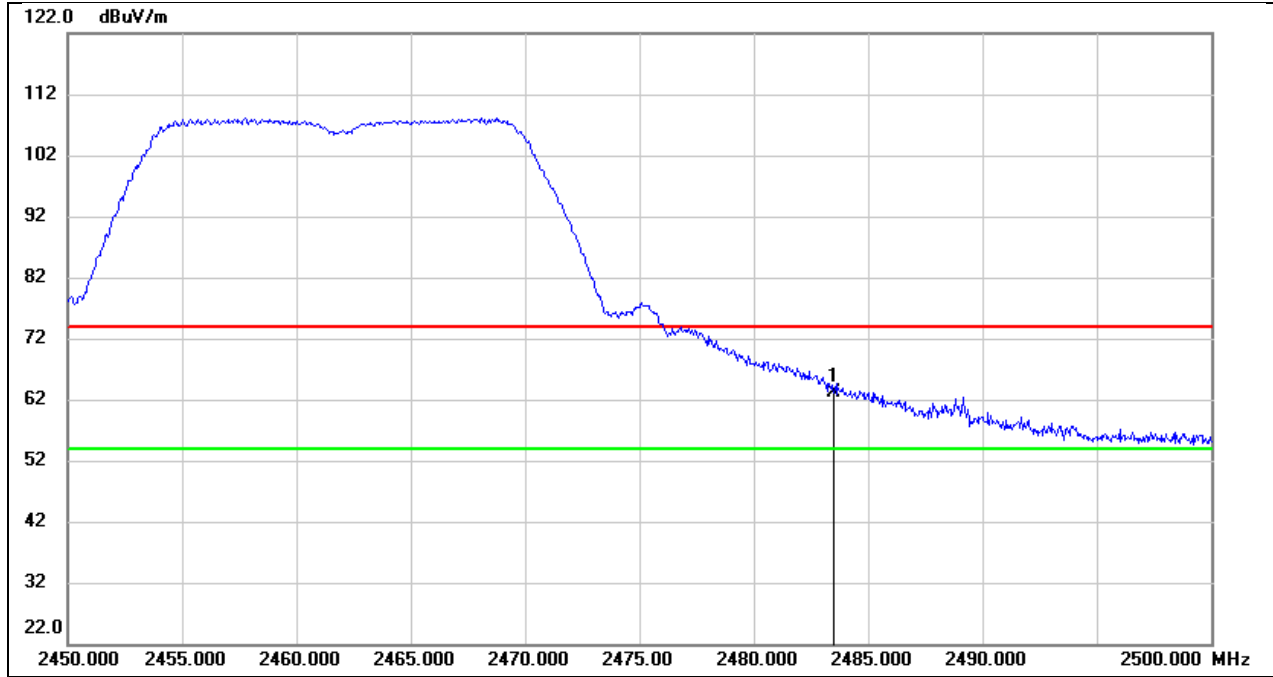
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2388.600	27.26	32.92	60.18	74.00	-13.82	peak
2	2390.000	26.90	32.92	59.82	74.00	-14.18	peak

Test Mode:	802.11g AV	Frequency(MHz):	2412
Polarity:	Vertical	Test Voltage:	DC 3.8 V



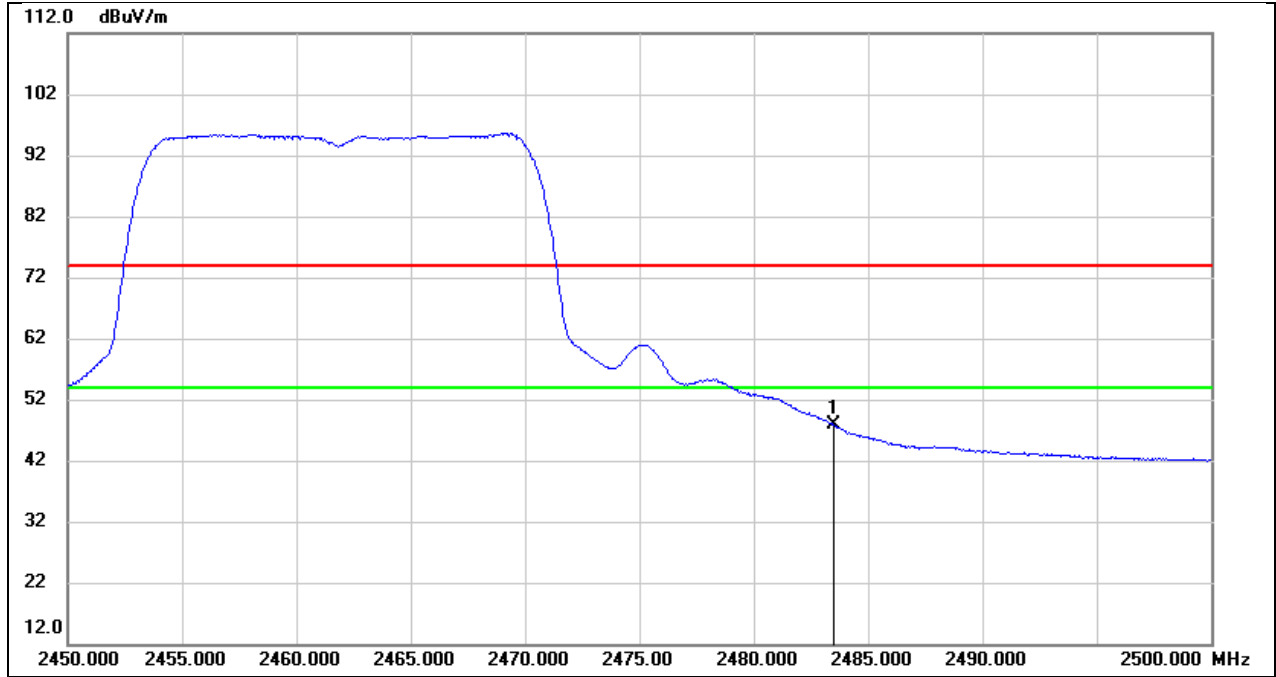
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2388.600	10.73	32.92	43.65	54.00	-10.35	AVG
2	2390.000	12.94	32.92	45.86	54.00	-8.14	AVG

Test Mode:	802.11g PK	Frequency(MHz):	2462
Polarity:	Vertical	Test Voltage:	DC 3.8 V



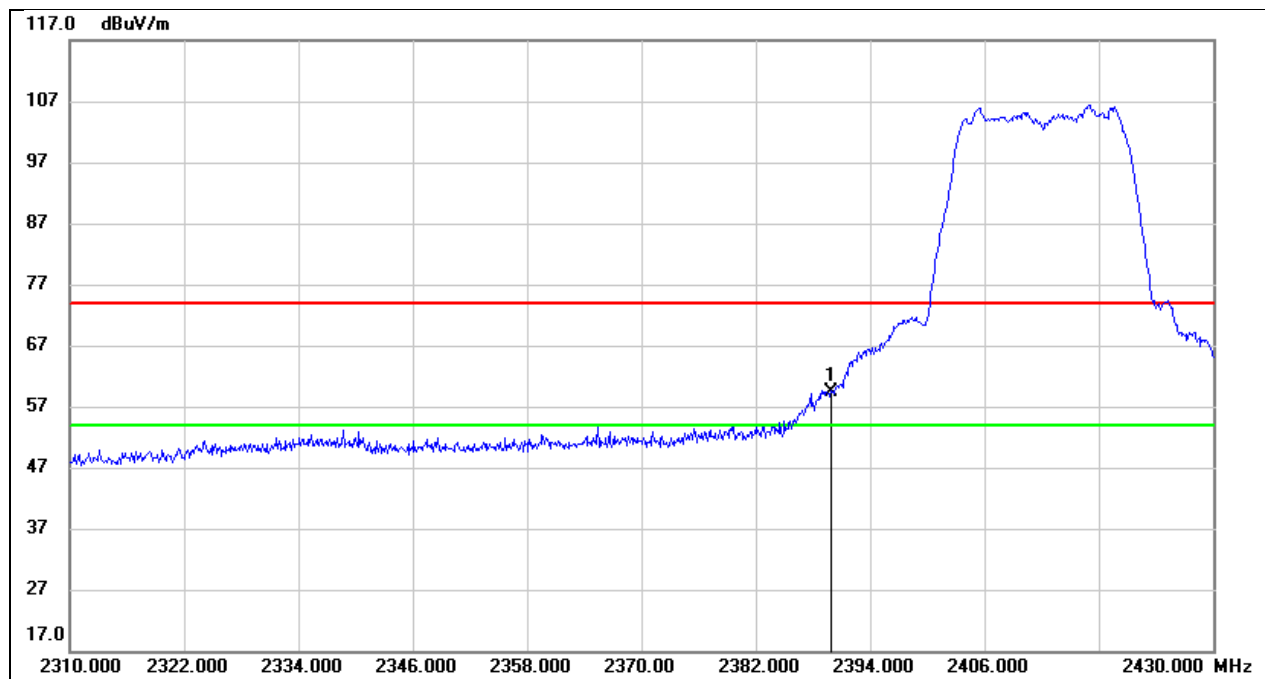
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	30.22	32.94	63.16	74.00	-10.84	peak

Test Mode:	802.11g AV	Frequency(MHz):	2462
Polarity:	Vertical	Test Voltage:	DC 3.8 V



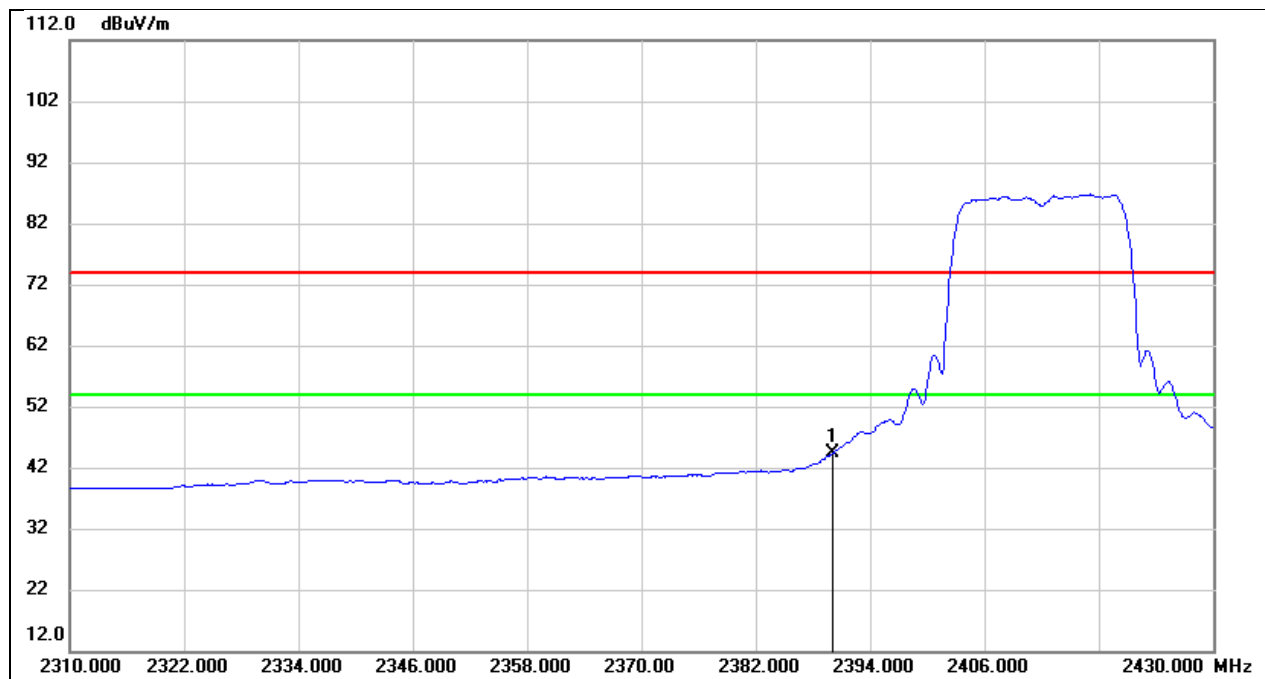
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	14.95	32.94	47.89	54.00	-6.11	AVG

Test Mode:	802.11n HT20 PK	Frequency(MHz):	2412
Polarity:	Vertical	Test Voltage:	DC 3.8 V



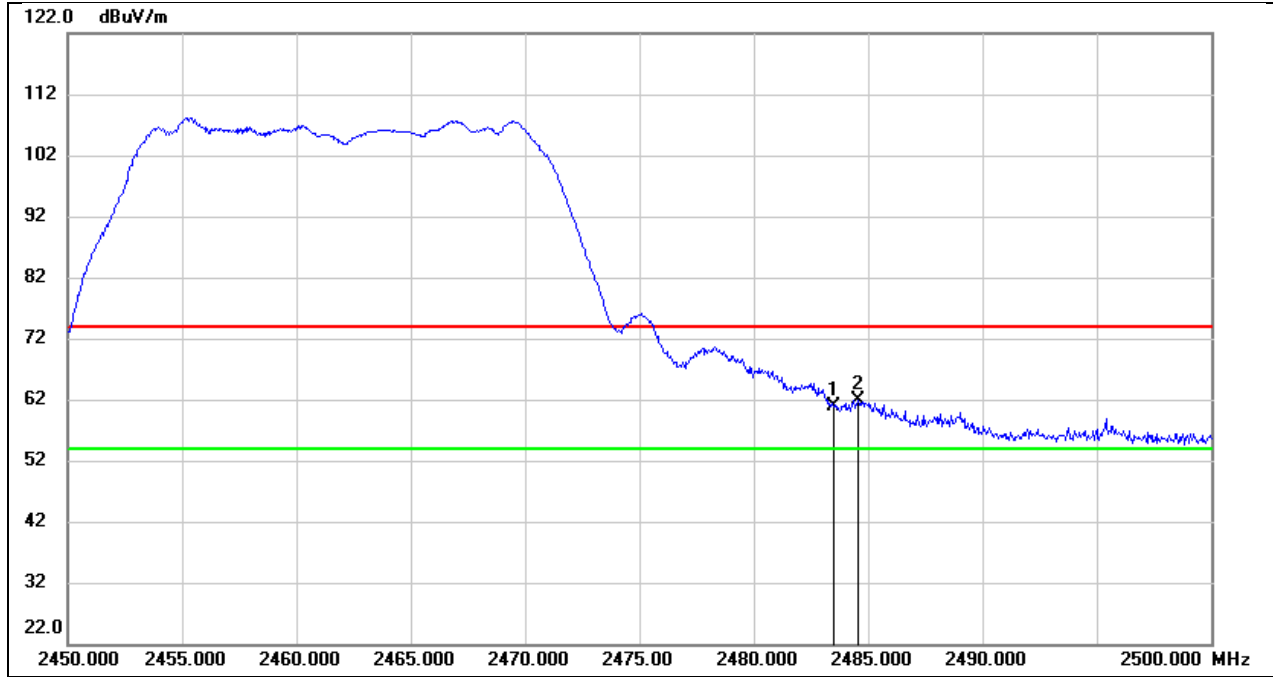
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	26.56	32.92	59.48	74.00	-14.52	peak

Test Mode:	802.11n HT20 AV	Frequency(MHz):	2412
Polarity:	Vertical	Test Voltage:	DC 3.8 V



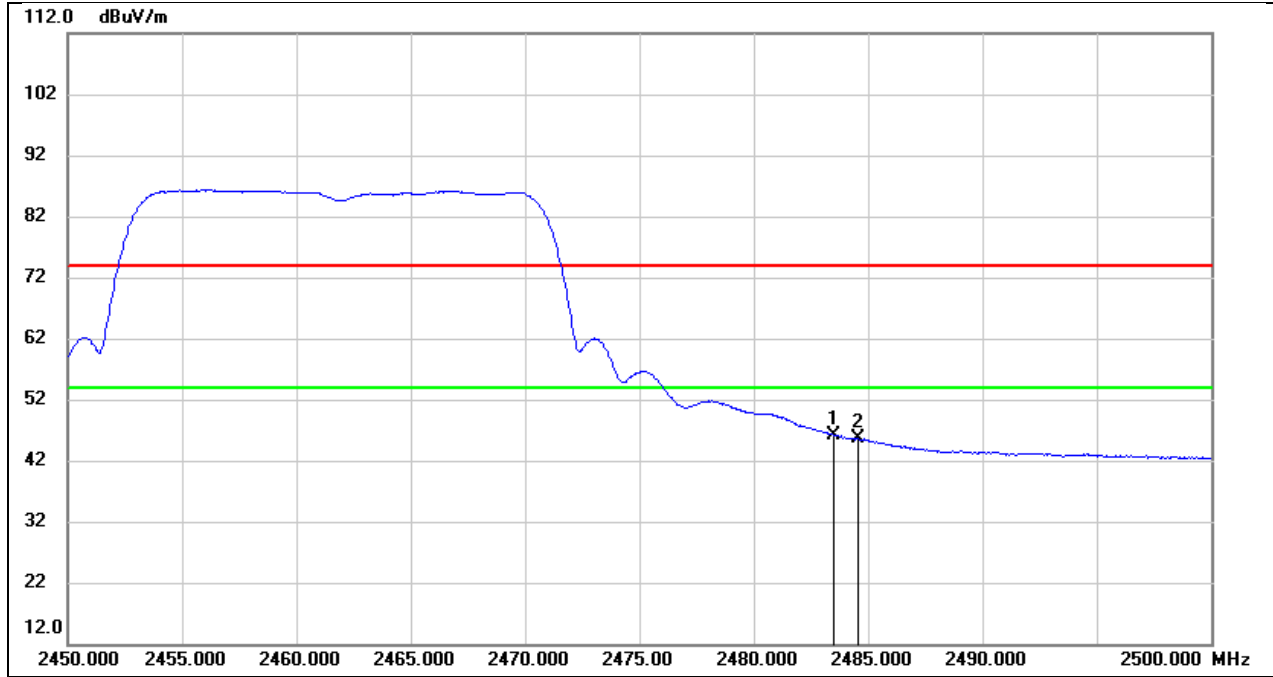
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	11.38	32.92	44.30	54.00	-9.70	AVG

Test Mode:	802.11n HT20 PK	Frequency(MHz):	2462
Polarity:	Vertical	Test Voltage:	DC 3.8 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	28.05	32.94	60.99	74.00	-13.01	peak
2	2484.550	29.01	32.94	61.95	74.00	-12.05	peak

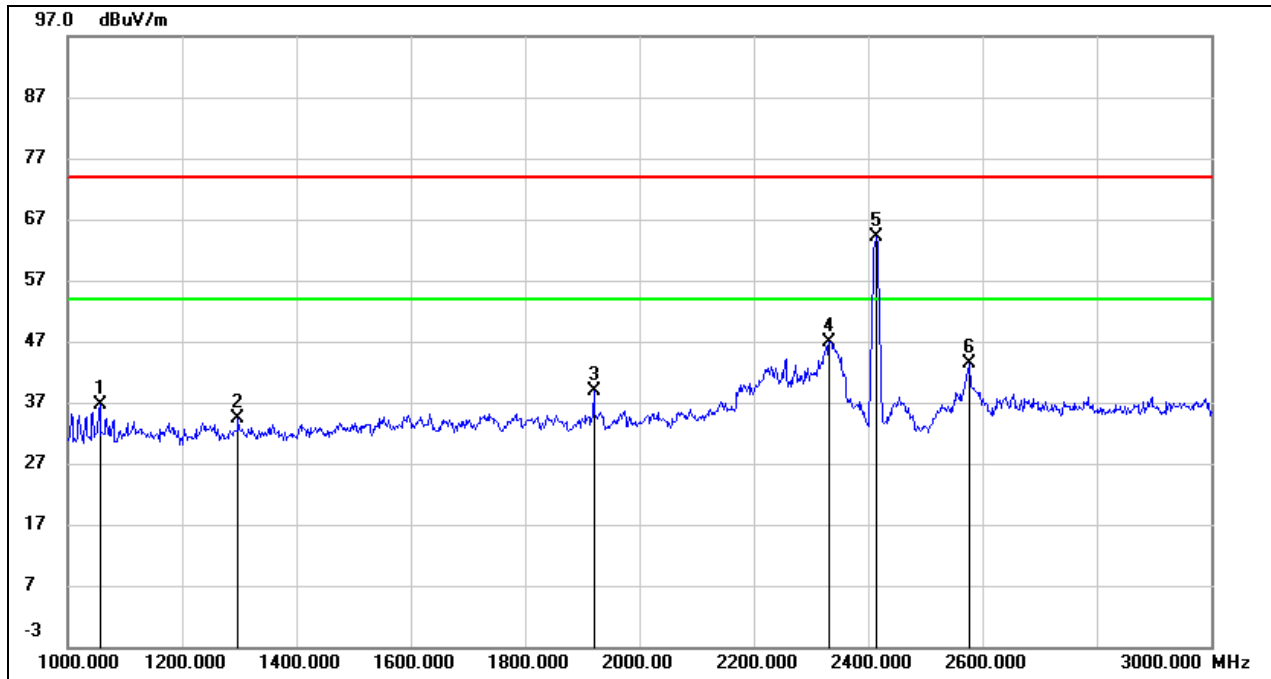
Test Mode:	802.11n HT20 AV	Frequency(MHz):	2462
Polarity:	Vertical	Test Voltage:	DC 3.8 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	13.30	32.94	46.24	54.00	-7.76	AVG
2	2484.550	12.61	32.94	45.55	54.00	-8.45	AVG

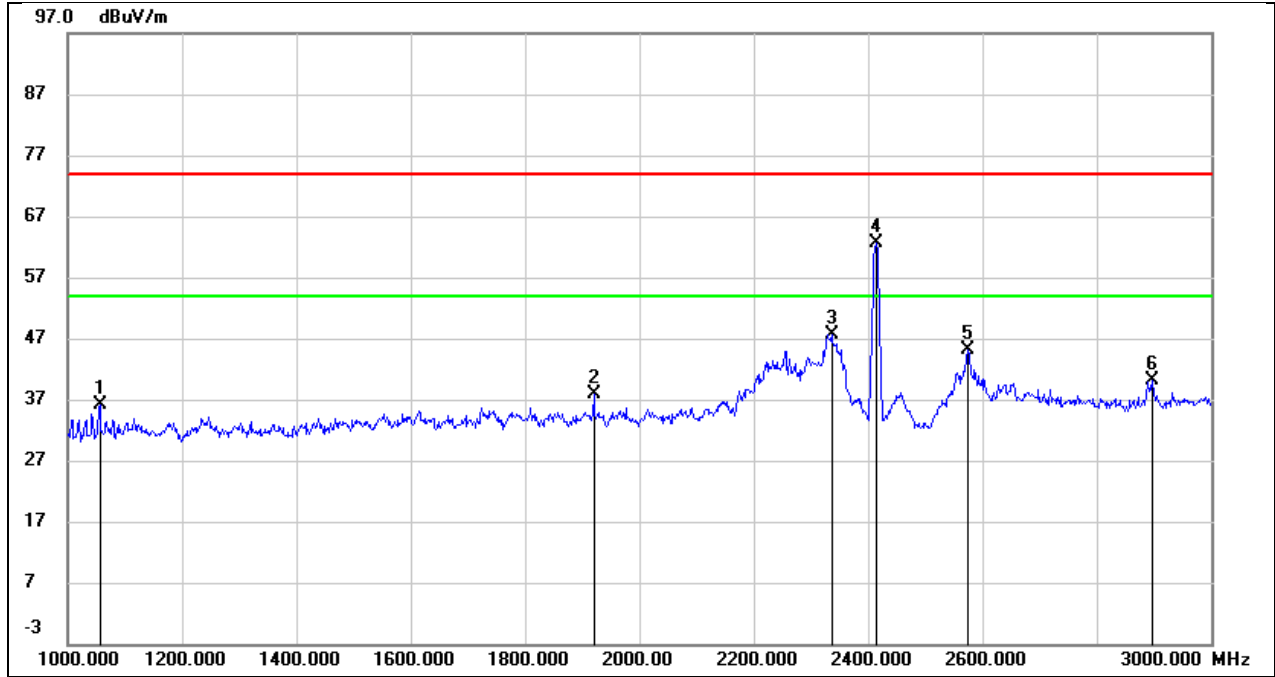
8.2. SPURIOUS EMISSIONS (1 GHZ ~ 3 GHZ)

Test Mode:	802.11b	Frequency(MHz):	2412
Polarity:	Horizontal	Test Voltage:	DC 3.8 V



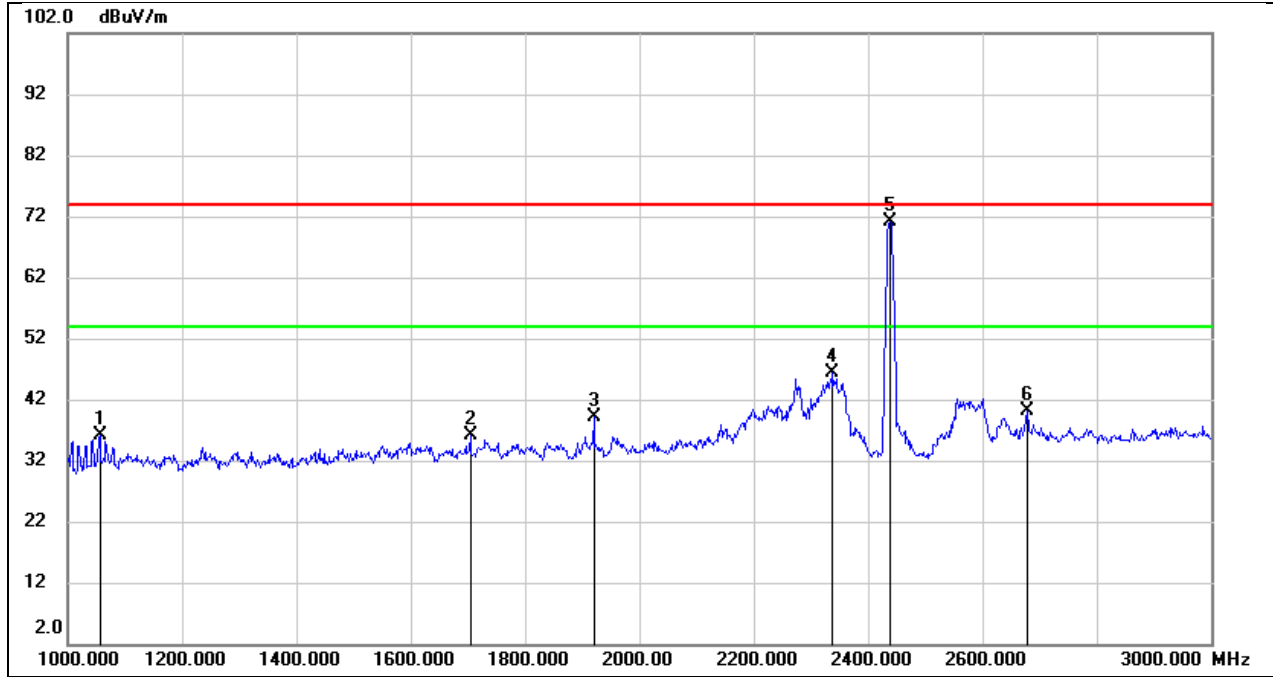
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1056.000	50.53	-13.91	36.62	74.00	-37.38	peak
2	1298.000	46.86	-12.53	34.33	74.00	-39.67	peak
3	1920.000	49.10	-10.16	38.94	74.00	-35.06	peak
4	2332.000	54.87	-7.91	46.96	74.00	-27.04	peak
5	2412.000	71.53	-7.41	64.12	/	/	Fundamental
6	2578.000	51.07	-7.65	43.42	74.00	-30.58	peak

Test Mode:	802.11b	Frequency(MHz):	2412
Polarity:	Vertical	Test Voltage:	DC 3.8 V



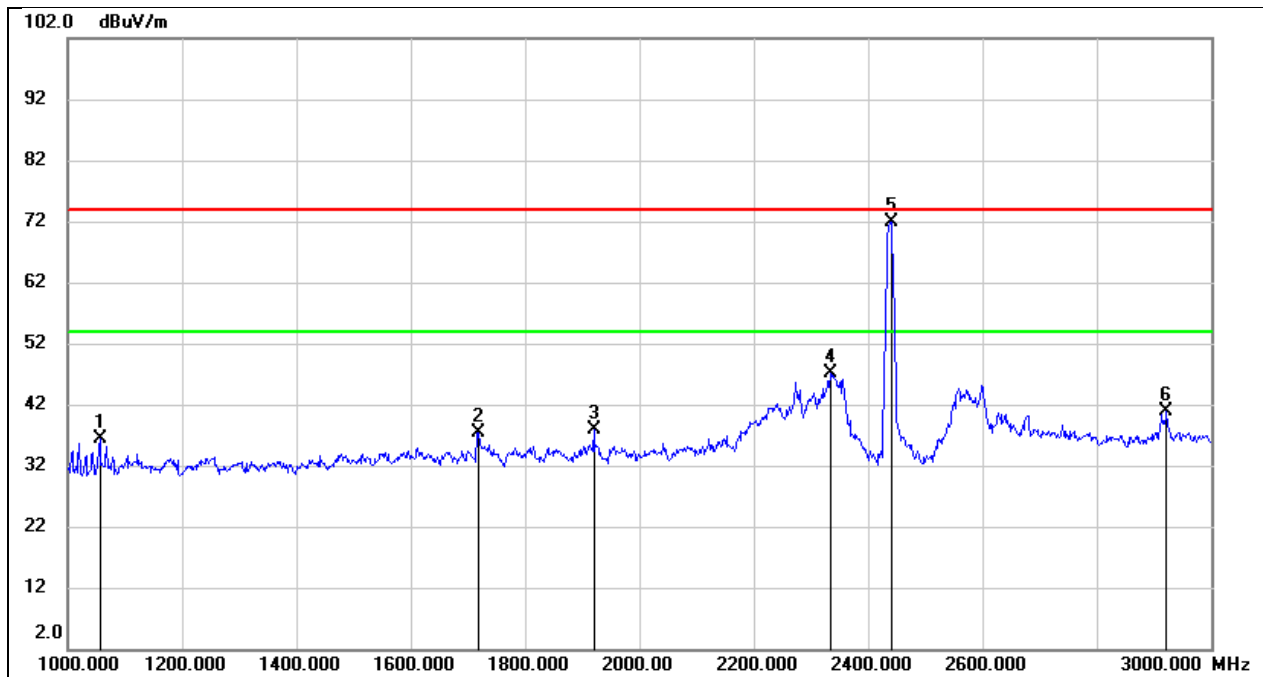
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1056.000	50.13	-13.91	36.22	74.00	-37.78	peak
2	1920.000	48.02	-10.16	37.86	74.00	-36.14	peak
3	2336.000	55.58	-7.87	47.71	74.00	-26.29	peak
4	2412.000	70.14	-7.41	62.73	/	/	Fundamental
5	2574.000	52.66	-7.64	45.02	74.00	-28.98	peak
6	2896.000	46.49	-6.36	40.13	74.00	-33.87	peak

Test Mode:	802.11b	Frequency(MHz):	2437
Polarity:	Horizontal	Test Voltage:	DC 3.8 V



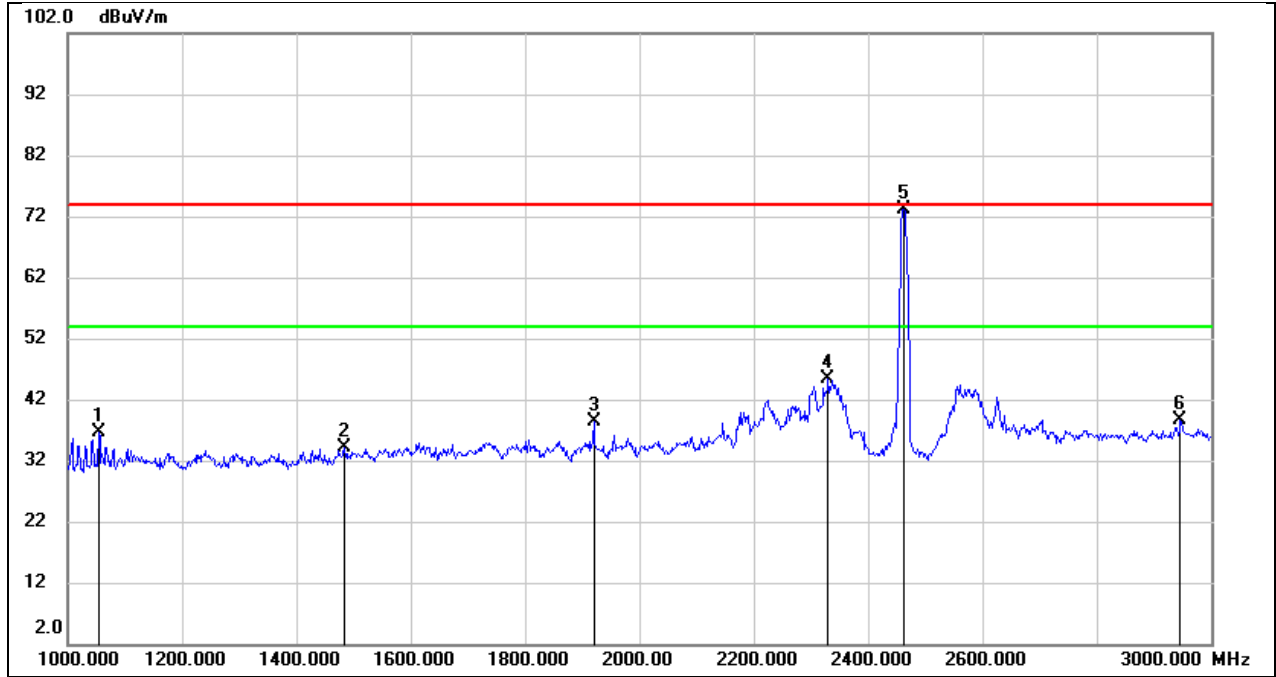
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1056.000	50.16	-13.91	36.25	74.00	-37.75	peak
2	1704.000	46.74	-10.69	36.05	74.00	-37.95	peak
3	1920.000	49.39	-10.16	39.23	74.00	-34.77	peak
4	2338.000	54.15	-7.85	46.30	74.00	-27.70	peak
5	2437.000	78.60	-7.43	71.17	/	/	Fundamental
6	2678.000	47.42	-7.34	40.08	74.00	-33.92	peak

Test Mode:	802.11b	Frequency(MHz):	2437
Polarity:	Vertical	Test Voltage:	DC 3.8 V



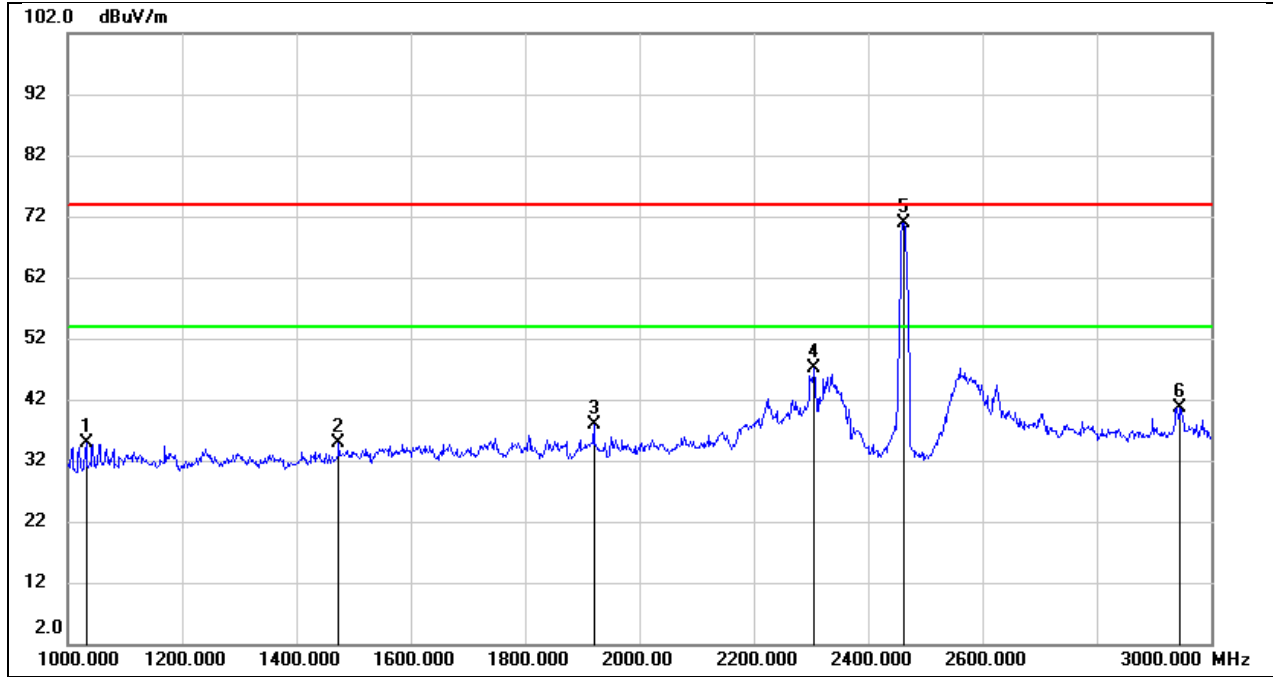
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1056.000	50.34	-13.91	36.43	74.00	-37.57	peak
2	1718.000	48.09	-10.62	37.47	74.00	-36.53	peak
3	1920.000	48.06	-10.16	37.90	74.00	-36.10	peak
4	2334.000	54.92	-7.89	47.03	74.00	-26.97	peak
5	2437.000	79.42	-7.44	71.98	/	/	Fundamental
6	2922.000	47.06	-6.24	40.82	74.00	-33.18	peak

Test Mode:	802.11b	Frequency(MHz):	2462
Polarity:	Horizontal	Test Voltage:	DC 3.8 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1054.000	50.54	-13.94	36.60	74.00	-37.40	peak
2	1484.000	45.93	-11.84	34.09	74.00	-39.91	peak
3	1920.000	48.52	-10.16	38.36	74.00	-35.64	peak
4	2330.000	53.36	-7.92	45.44	74.00	-28.56	peak
5	2462.000	80.70	-7.47	73.23	/	/	Fundamental
6	2946.000	44.66	-6.14	38.52	74.00	-35.48	peak

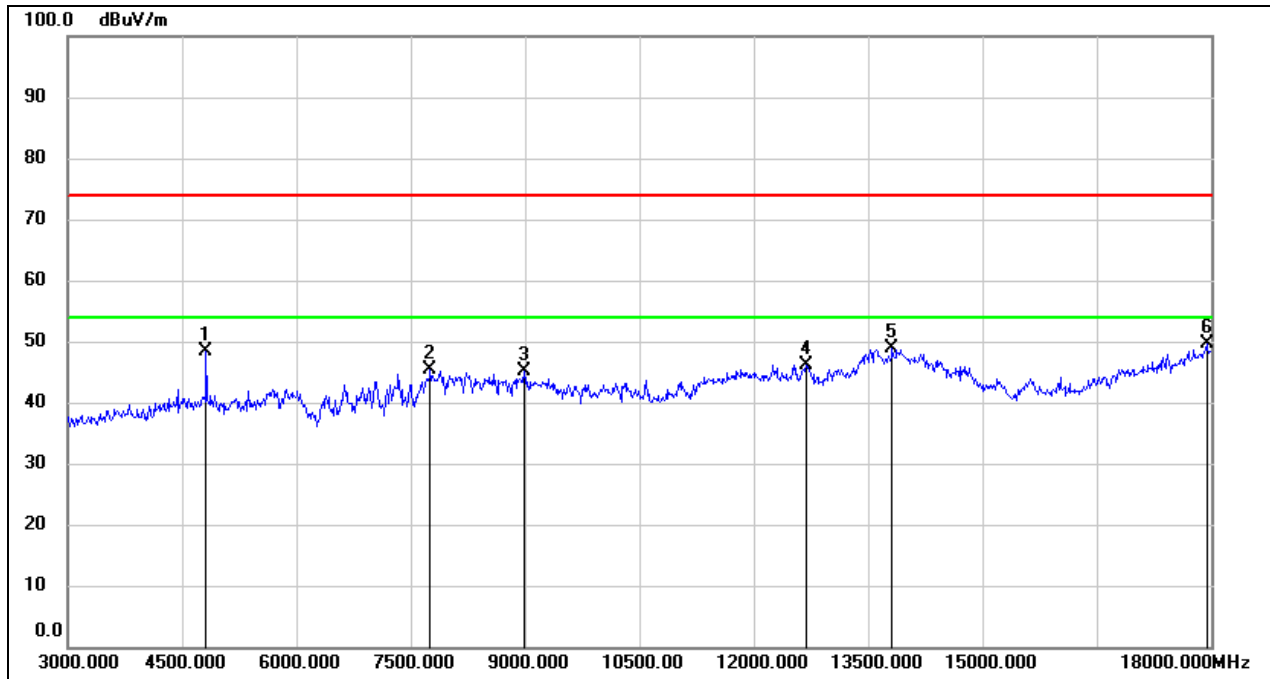
Test Mode:	802.11b	Frequency(MHz):	2462
Polarity:	Vertical	Test Voltage:	DC 3.8 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1032.000	48.90	-14.13	34.77	74.00	-39.23	peak
2	1474.000	46.79	-11.92	34.87	74.00	-39.13	peak
3	1920.000	47.94	-10.16	37.78	74.00	-36.22	peak
4	2306.000	55.31	-8.10	47.21	74.00	-26.79	peak
5	2462.000	78.41	-7.47	70.94	/	/	Fundamental
6	2946.000	46.89	-6.14	40.75	74.00	-33.25	peak

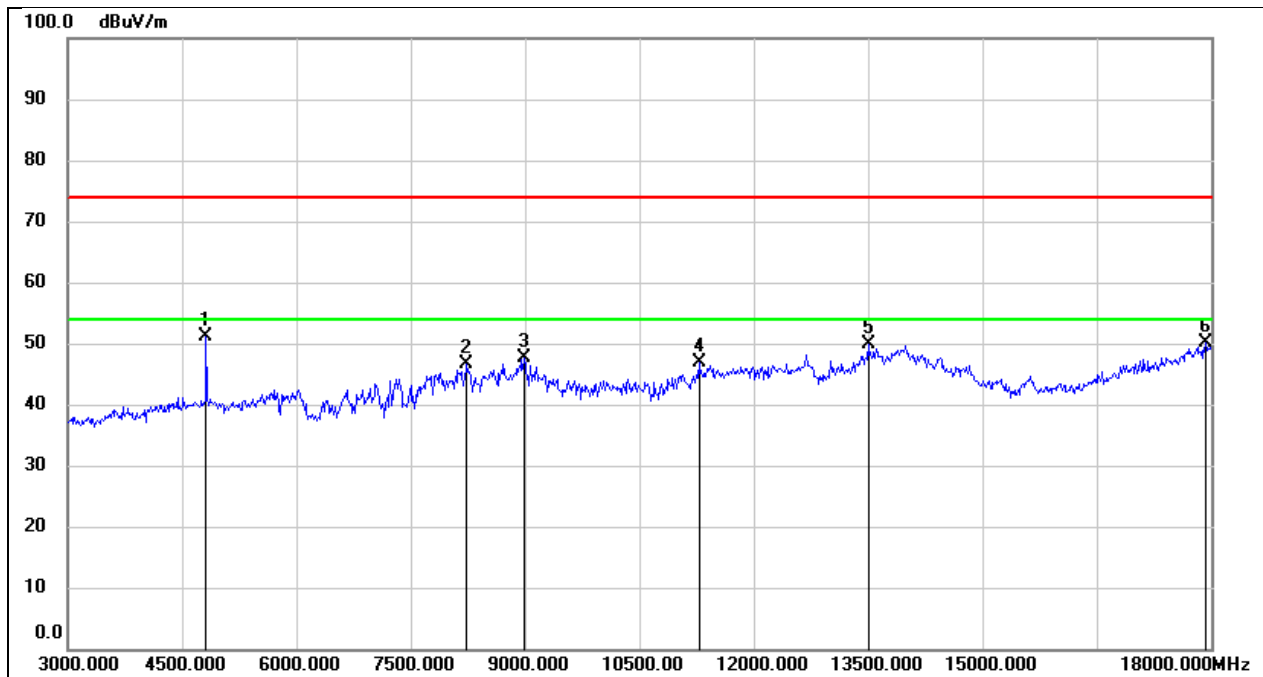
8.3. SPURIOUS EMISSIONS (3 GH Z~ 18 GHZ)

Test Mode:	802.11b	Frequency(MHz):	2412
Polarity:	Horizontal	Test Voltage:	DC 3.8 V



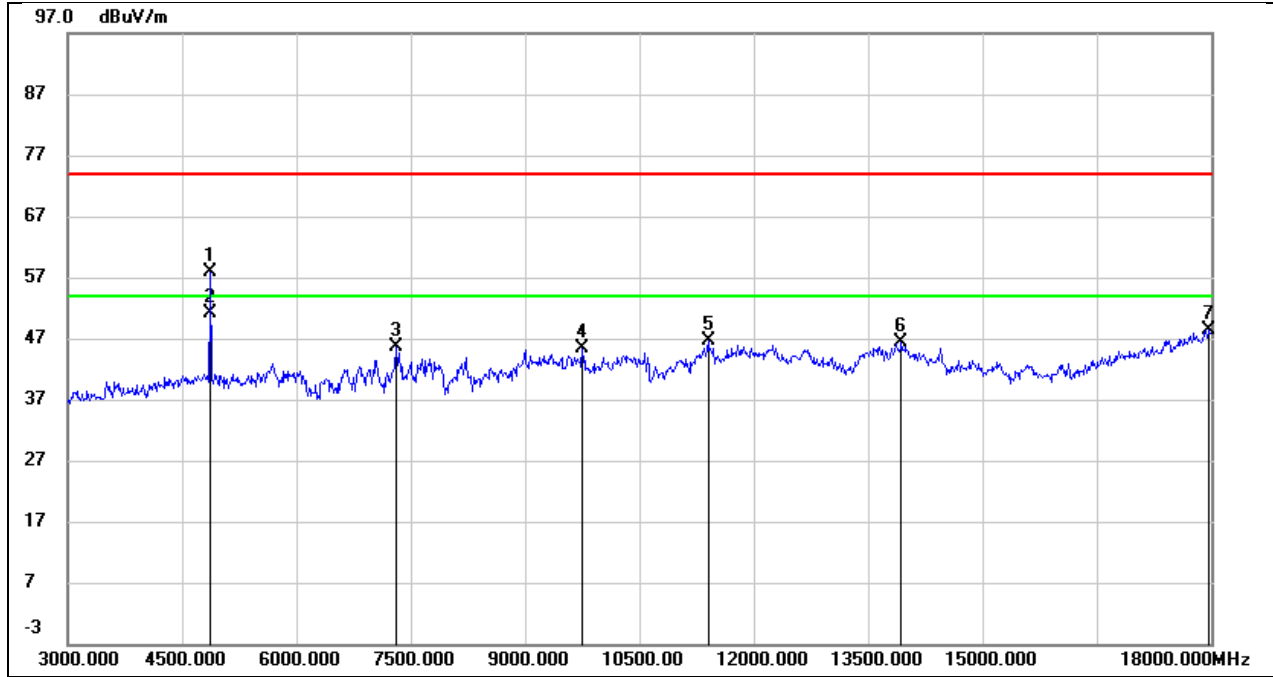
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4815.000	47.99	0.49	48.48	74.00	-25.52	peak
2	7755.000	38.00	7.38	45.38	74.00	-28.62	peak
3	8985.000	34.18	10.97	45.15	74.00	-28.85	peak
4	12690.000	27.64	18.60	46.24	74.00	-27.76	peak
5	13815.000	26.26	22.65	48.91	74.00	-25.09	peak
6	17940.000	22.95	26.61	49.56	74.00	-24.44	peak

Test Mode:	802.11b	Frequency(MHz):	2412
Polarity:	Vertical	Test Voltage:	DC 3.8 V



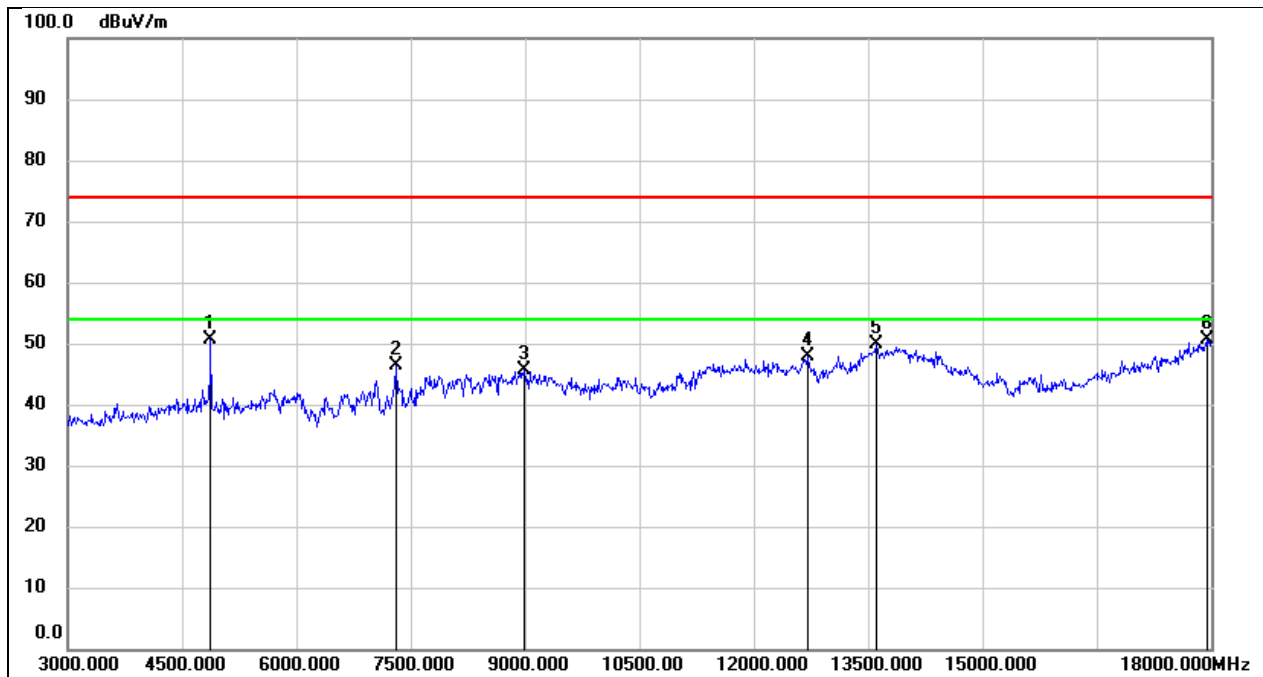
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4815.000	50.68	0.49	51.17	74.00	-22.83	peak
2	8235.000	37.83	8.70	46.53	74.00	-27.47	peak
3	8985.000	36.76	10.97	47.73	74.00	-26.27	peak
4	11280.000	30.95	15.84	46.79	74.00	-27.21	peak
5	13500.000	28.16	21.69	49.85	74.00	-24.15	peak
6	17925.000	23.46	26.55	50.01	74.00	-23.99	peak

Test Mode:	802.11b	Frequency(MHz):	2437
Polarity:	Horizontal	Test Voltage:	DC 3.8 V



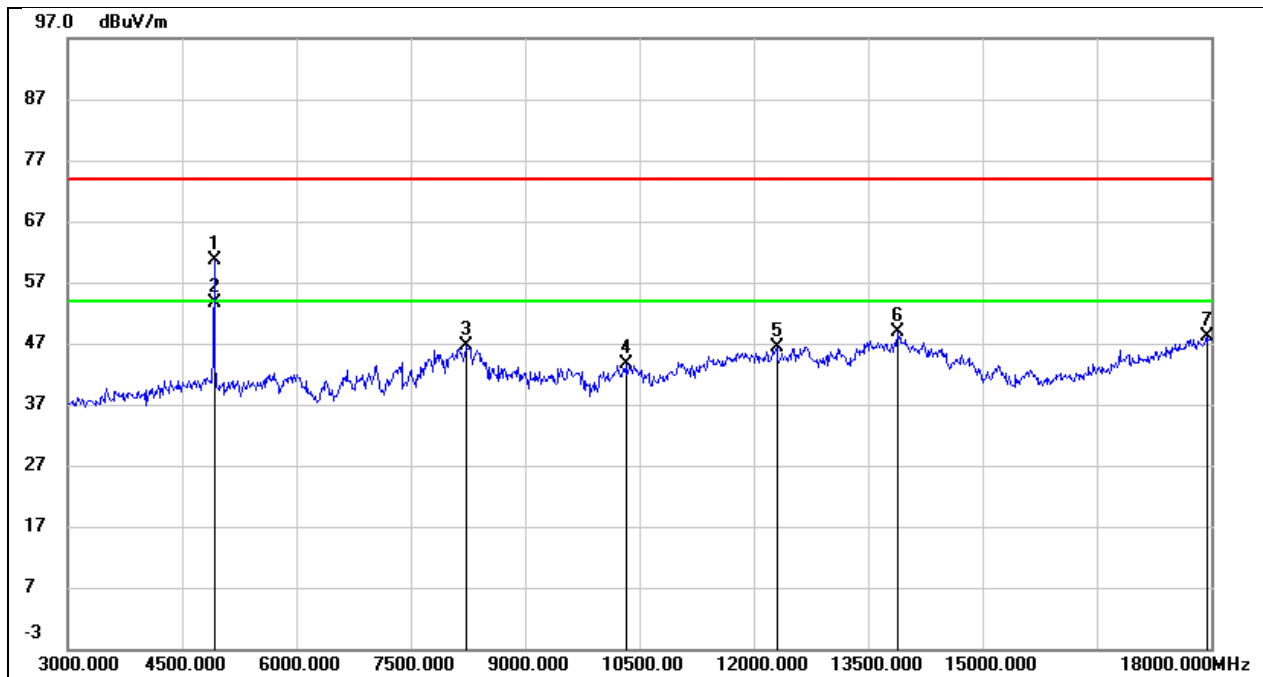
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4875.000	57.32	0.61	57.93	74.00	-16.07	peak
2	4875.000	50.59	0.61	51.20	54.00	-2.80	AVG
3	7305.000	38.74	6.89	45.63	74.00	-28.37	peak
4	9750.000	33.90	11.40	45.30	74.00	-28.70	peak
5	11400.000	30.12	16.54	46.66	74.00	-27.34	peak
6	13935.000	23.54	22.72	46.26	74.00	-27.74	peak
7	17970.000	21.77	26.72	48.49	74.00	-25.51	peak

Test Mode:	802.11b	Frequency(MHz):	2437
Polarity:	Vertical	Test Voltage:	DC 3.8 V



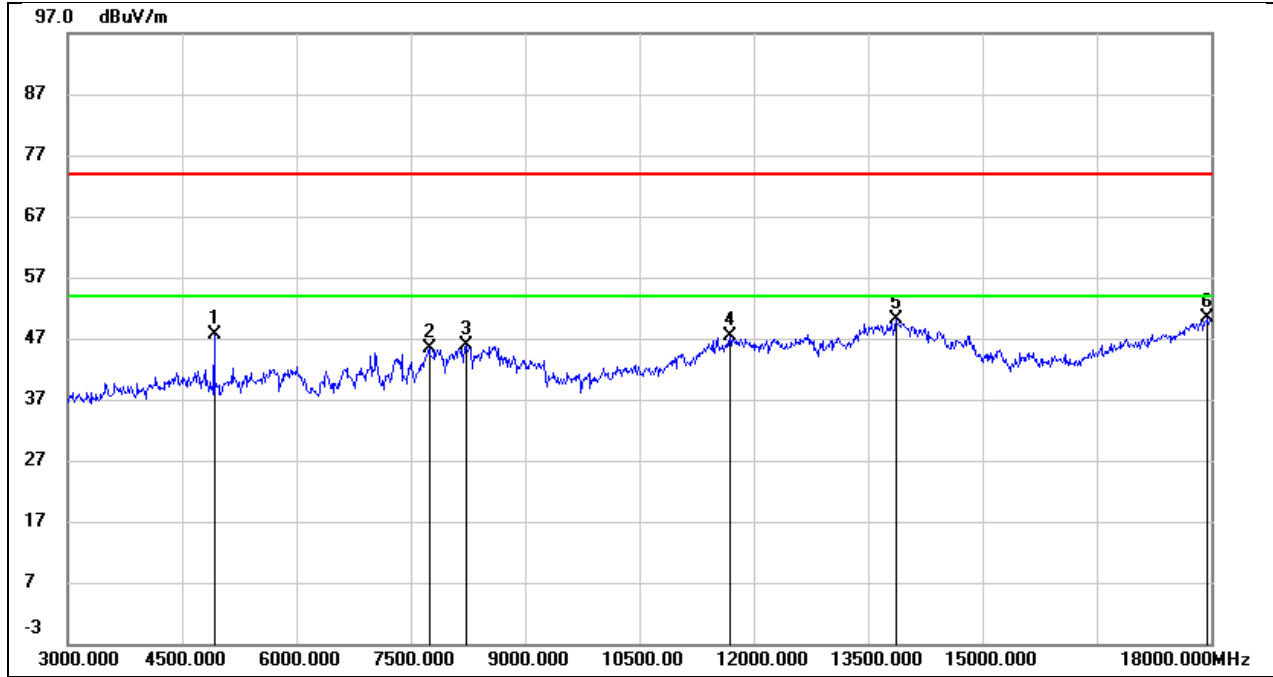
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4875.000	50.08	0.61	50.69	74.00	-23.31	peak
2	7305.000	39.52	6.89	46.41	74.00	-27.59	peak
3	8985.000	34.76	10.97	45.73	74.00	-28.27	peak
4	12705.000	29.31	18.66	47.97	74.00	-26.03	peak
5	13605.000	28.23	21.68	49.91	74.00	-24.09	peak
6	17940.000	23.97	26.61	50.58	74.00	-23.42	peak

Test Mode:	802.11b	Frequency(MHz):	2462
Polarity:	Horizontal	Test Voltage:	DC 3.8 V



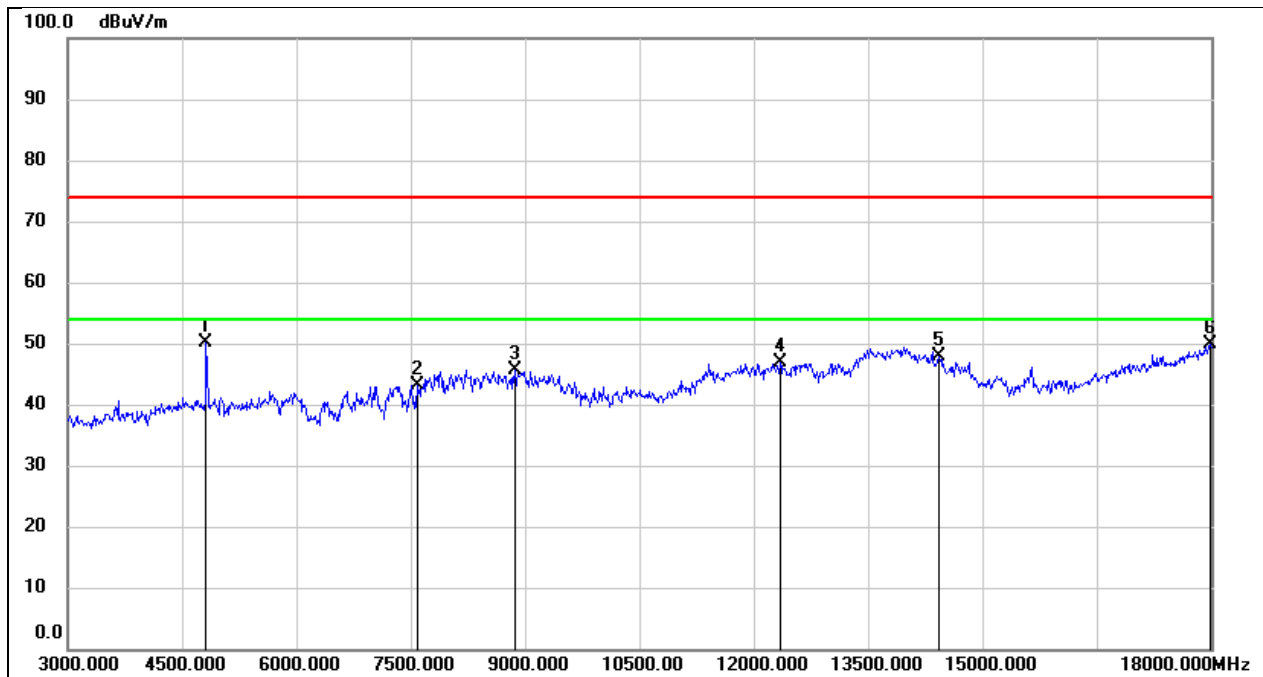
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4920.000	59.95	0.69	60.64	74.00	-13.36	peak
2	4920.000	52.91	0.69	53.60	54.00	-0.40	AVG
3	8235.000	38.05	8.70	46.75	74.00	-27.25	peak
4	10335.000	30.45	13.14	43.59	74.00	-30.41	peak
5	12300.000	27.70	18.65	46.35	74.00	-27.65	peak
6	13890.000	26.07	22.69	48.76	74.00	-25.24	peak
7	17940.000	21.55	26.61	48.16	74.00	-25.84	peak

Test Mode:	802.11b	Frequency(MHz):	2462
Polarity:	Vertical	Test Voltage:	DC 3.8 V



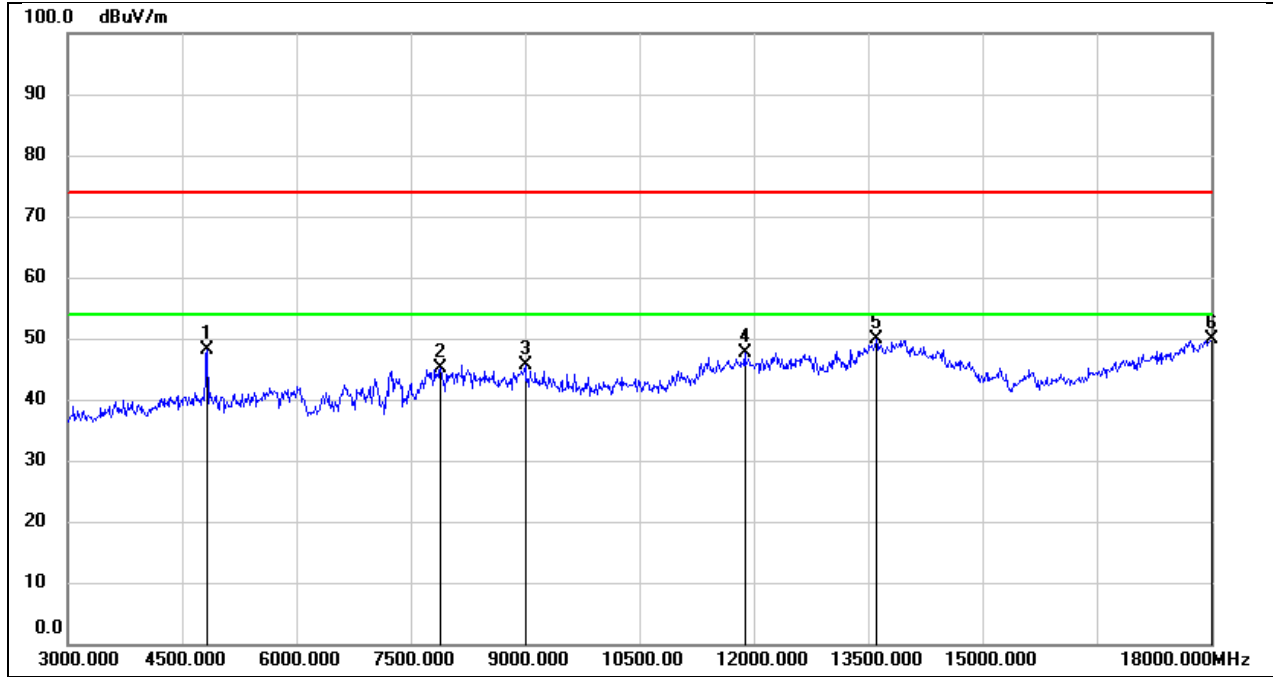
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4920.000	46.89	0.69	47.58	74.00	-26.42	peak
2	7740.000	37.97	7.33	45.30	74.00	-28.70	peak
3	8220.000	37.14	8.76	45.90	74.00	-28.10	peak
4	11685.000	29.98	17.28	47.26	74.00	-26.74	peak
5	13860.000	27.42	22.68	50.10	74.00	-23.90	peak
6	17955.000	23.84	26.66	50.50	74.00	-23.50	peak

Test Mode:	802.11g	Frequency(MHz):	2412
Polarity:	Horizontal	Test Voltage:	DC 3.8 V



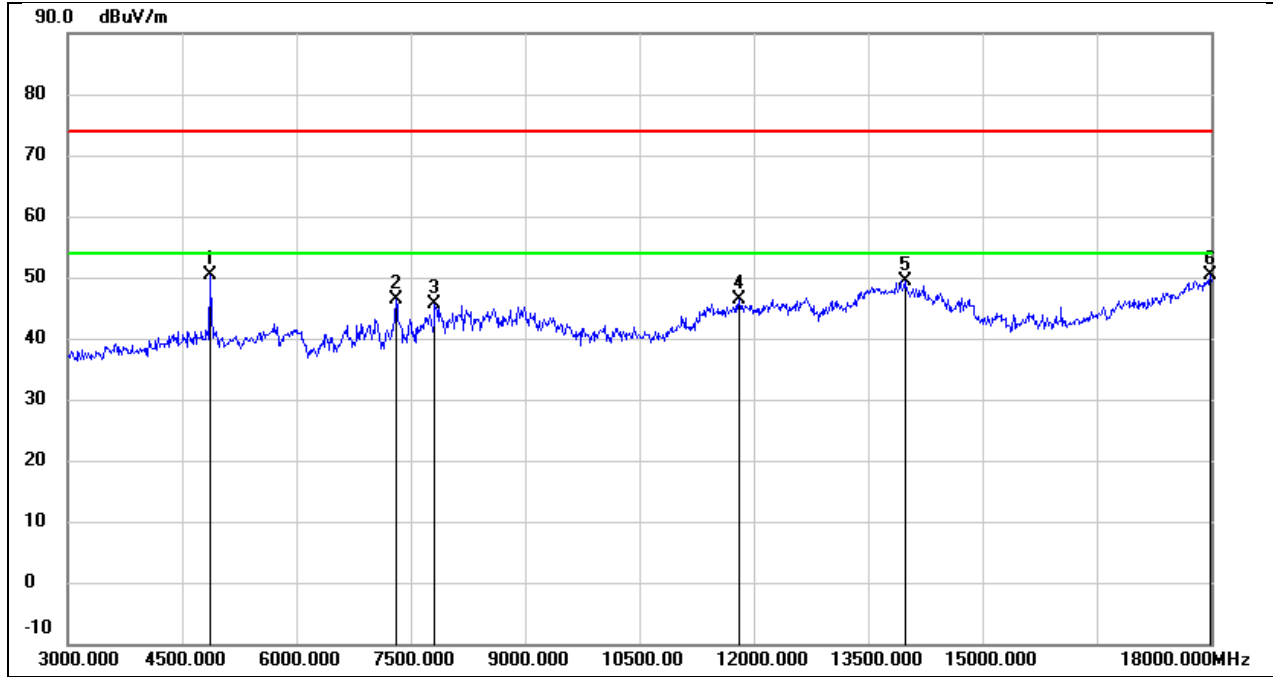
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4815.000	49.69	0.49	50.18	74.00	-23.82	peak
2	7590.000	36.35	6.88	43.23	74.00	-30.77	peak
3	8865.000	36.27	9.32	45.59	74.00	-28.41	peak
4	12345.000	28.04	18.81	46.85	74.00	-27.15	peak
5	14430.000	27.10	20.86	47.96	74.00	-26.04	peak
6	17985.000	23.08	26.77	49.85	74.00	-24.15	peak

Test Mode:	802.11g	Frequency(MHz):	2412
Polarity:	Vertical	Test Voltage:	DC 3.8 V



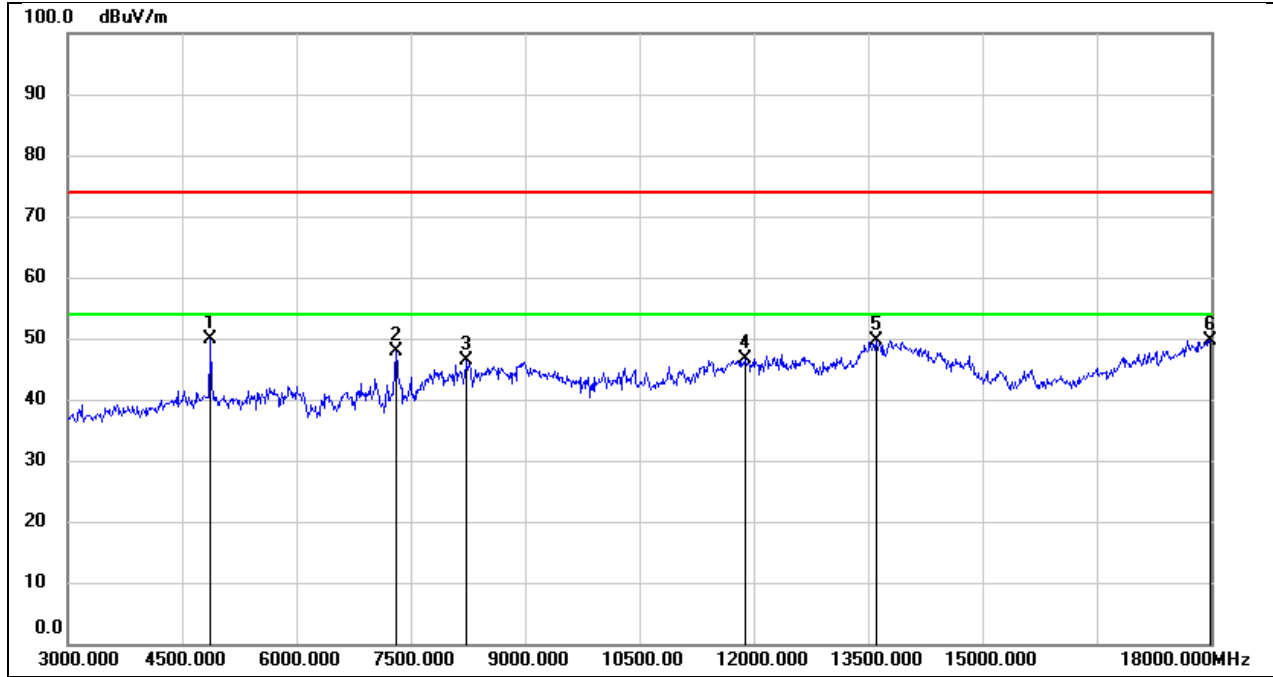
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4830.000	47.62	0.51	48.13	74.00	-25.87	peak
2	7890.000	37.81	7.29	45.10	74.00	-28.90	peak
3	9000.000	34.37	11.17	45.54	74.00	-28.46	peak
4	11880.000	29.55	17.97	47.52	74.00	-26.48	peak
5	13605.000	28.09	21.68	49.77	74.00	-24.23	peak
6	18000.000	23.06	26.83	49.89	74.00	-24.11	peak

Test Mode:	802.11g	Frequency(MHz):	2437
Polarity:	Horizontal	Test Voltage:	DC 3.8 V



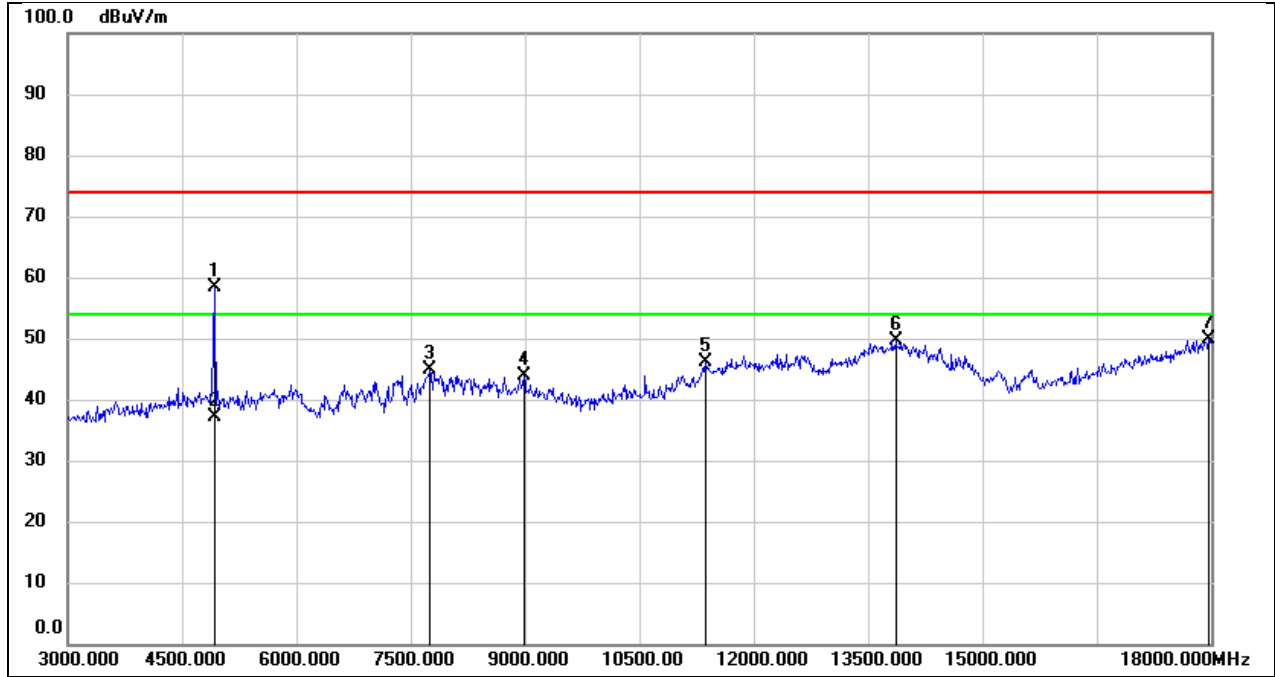
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4860.000	49.77	0.57	50.34	74.00	-23.66	peak
2	7305.000	39.53	6.89	46.42	74.00	-27.58	peak
3	7815.000	38.06	7.50	45.56	74.00	-28.44	peak
4	11805.000	28.81	17.65	46.46	74.00	-27.54	peak
5	13980.000	26.60	22.75	49.35	74.00	-24.65	peak
6	17985.000	23.63	26.77	50.40	74.00	-23.60	peak

Test Mode:	802.11g	Frequency(MHz):	2437
Polarity:	Vertical	Test Voltage:	DC 3.8 V



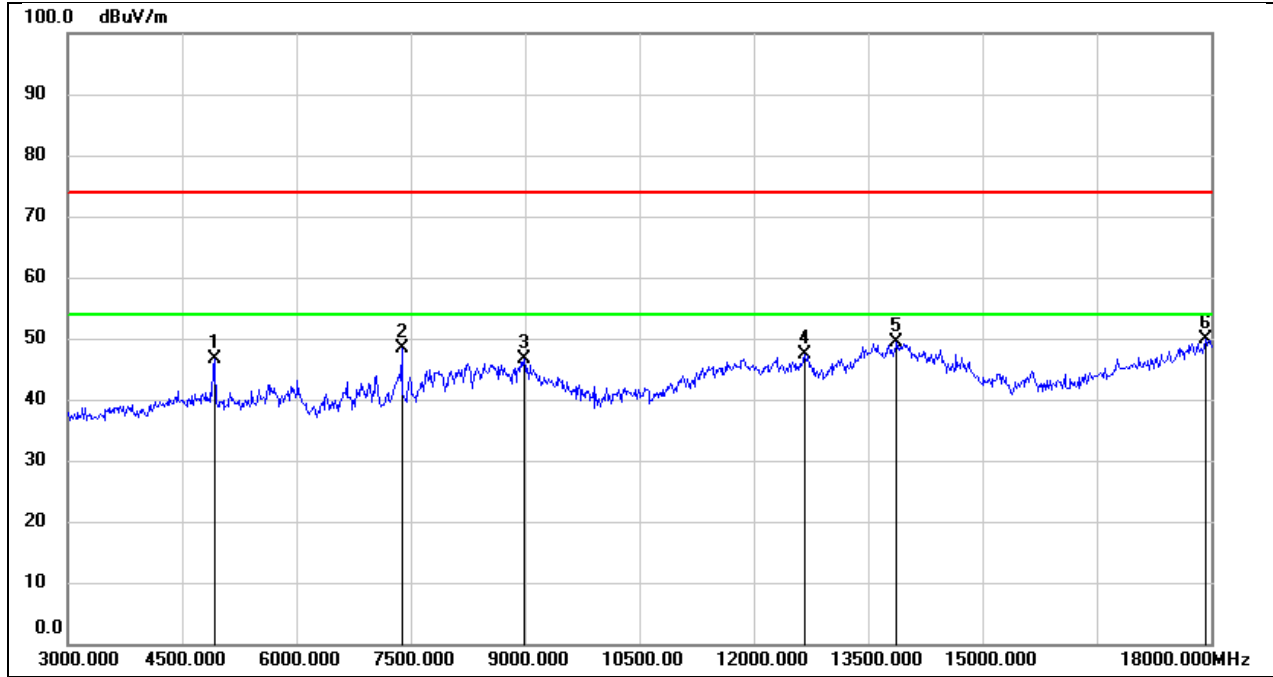
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4875.000	49.23	0.61	49.84	74.00	-24.16	peak
2	7305.000	41.02	6.89	47.91	74.00	-26.09	peak
3	8235.000	37.68	8.70	46.38	74.00	-27.62	peak
4	11880.000	28.68	17.97	46.65	74.00	-27.35	peak
5	13605.000	28.02	21.68	49.70	74.00	-24.30	peak
6	17985.000	22.92	26.77	49.69	74.00	-24.31	peak

Test Mode:	802.11g	Frequency(MHz):	2462
Polarity:	Horizontal	Test Voltage:	DC 3.8 V



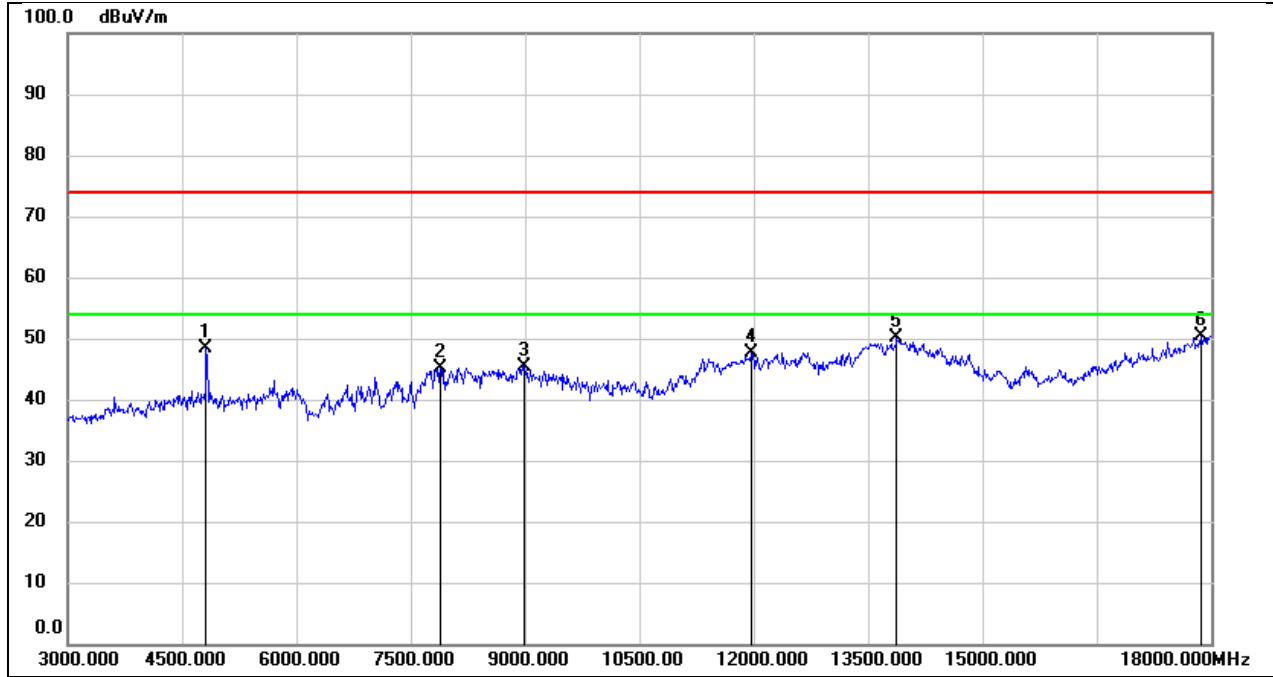
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4920.000	57.70	0.69	58.39	74.00	-15.61	peak
2	4920.000	36.51	0.69	37.20	54.00	-16.80	AVG
3	7755.000	37.41	7.38	44.79	74.00	-29.21	peak
4	8985.000	32.88	10.97	43.85	74.00	-30.15	peak
5	11370.000	29.81	16.36	46.17	74.00	-27.83	peak
6	13860.000	27.00	22.68	49.68	74.00	-24.32	peak
7	17970.000	23.13	26.72	49.85	74.00	-24.15	peak

Test Mode:	802.11g	Frequency(MHz):	2462
Polarity:	Vertical	Test Voltage:	DC 3.8 V



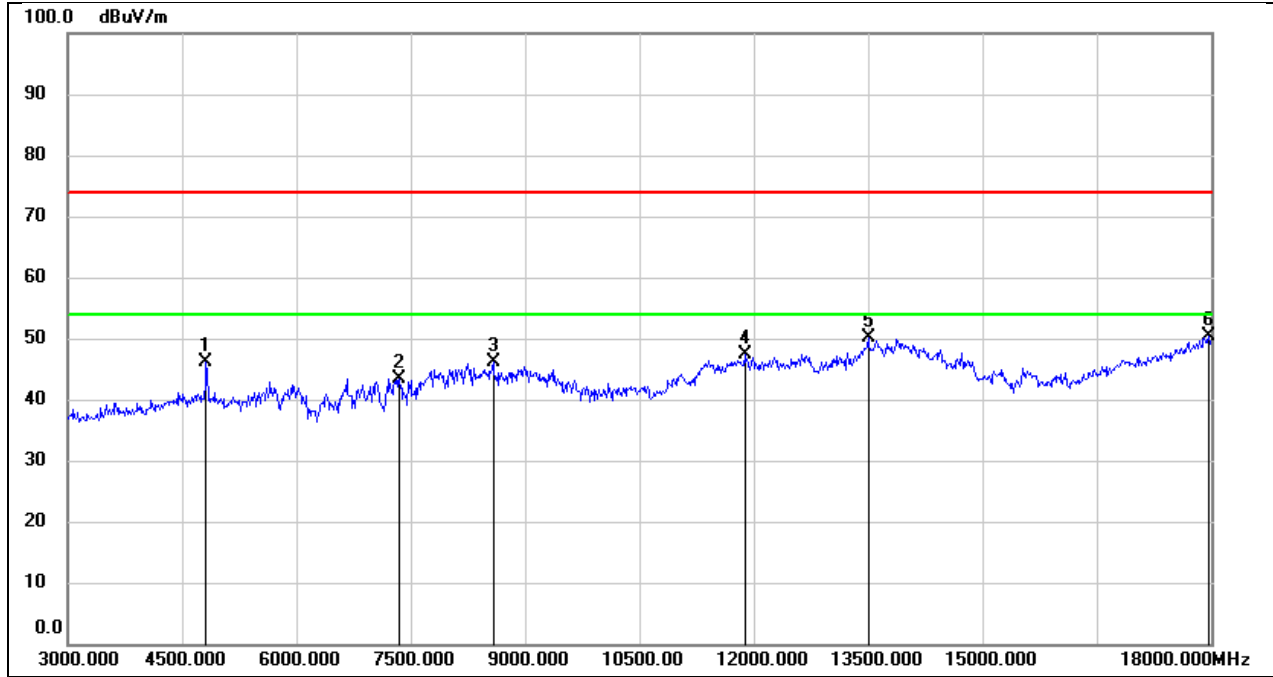
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4920.000	45.88	0.69	46.57	74.00	-27.43	peak
2	7380.000	40.96	7.34	48.30	74.00	-25.70	peak
3	8985.000	35.60	10.97	46.57	74.00	-27.43	peak
4	12675.000	28.88	18.54	47.42	74.00	-26.58	peak
5	13875.000	26.61	22.68	49.29	74.00	-24.71	peak
6	17925.000	23.25	26.55	49.80	74.00	-24.20	peak

Test Mode:	802.11n HT20	Frequency(MHz):	2412
Polarity:	Horizontal	Test Voltage:	DC 3.8 V



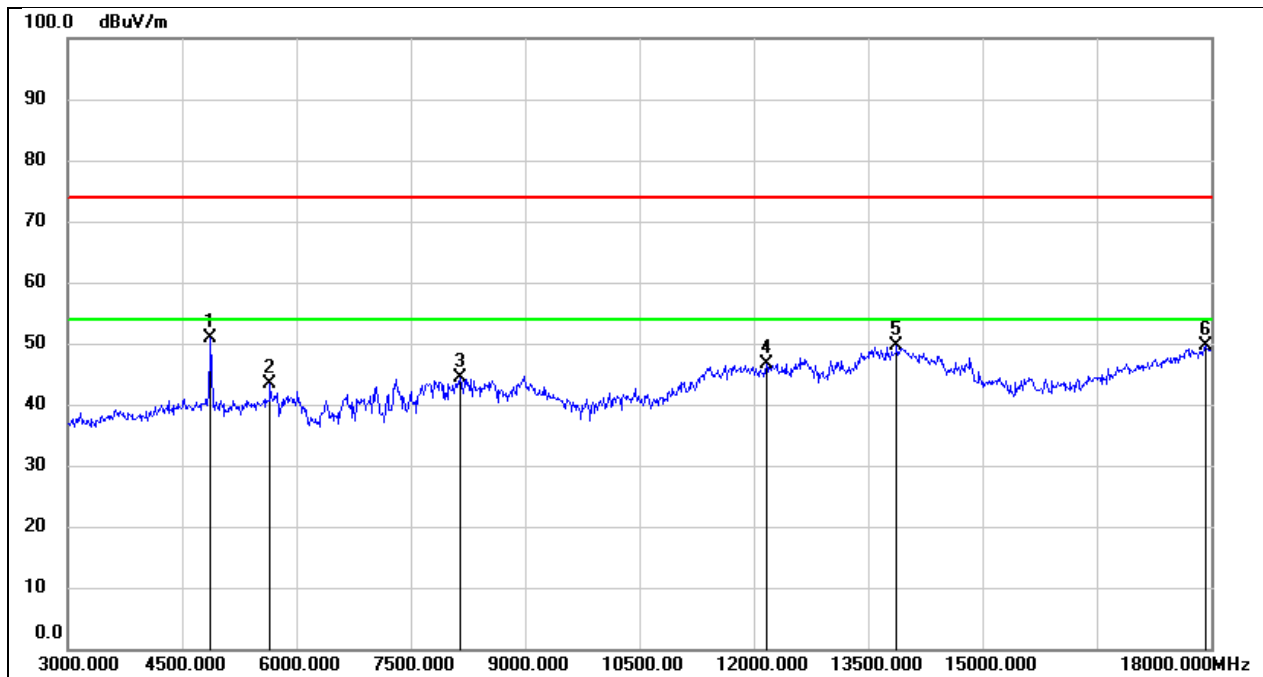
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4815.000	47.95	0.49	48.44	74.00	-25.56	peak
2	7890.000	37.78	7.29	45.07	74.00	-28.93	peak
3	8985.000	34.50	10.97	45.47	74.00	-28.53	peak
4	11970.000	29.38	18.37	47.75	74.00	-26.25	peak
5	13875.000	27.47	22.68	50.15	74.00	-23.85	peak
6	17865.000	24.13	26.33	50.46	74.00	-23.54	peak

Test Mode:	802.11n HT20	Frequency(MHz):	2412
Polarity:	Vertical	Test Voltage:	DC 3.8 V



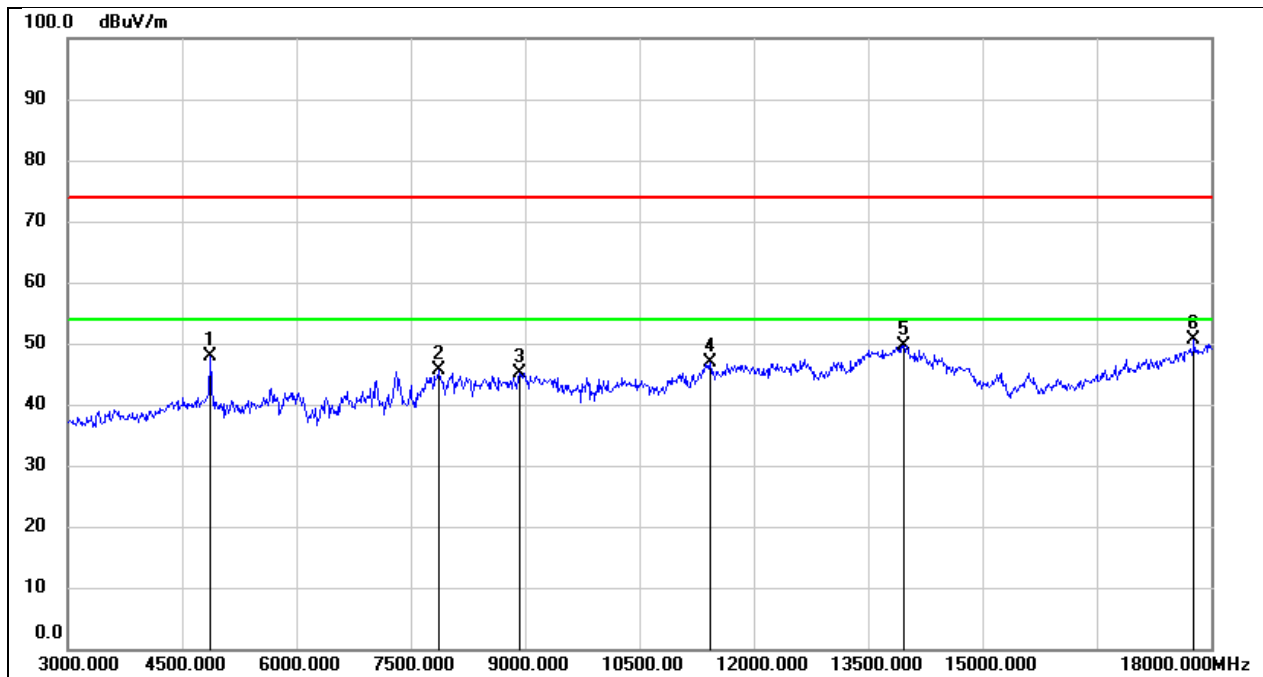
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4815.000	45.72	0.49	46.21	74.00	-27.79	peak
2	7350.000	36.23	7.17	43.40	74.00	-30.60	peak
3	8580.000	37.52	8.63	46.15	74.00	-27.85	peak
4	11880.000	29.48	17.97	47.45	74.00	-26.55	peak
5	13500.000	28.32	21.69	50.01	74.00	-23.99	peak
6	17970.000	23.69	26.72	50.41	74.00	-23.59	peak

Test Mode:	802.11n HT20	Frequency(MHz):	2437
Polarity:	Horizontal	Test Voltage:	DC 3.8 V



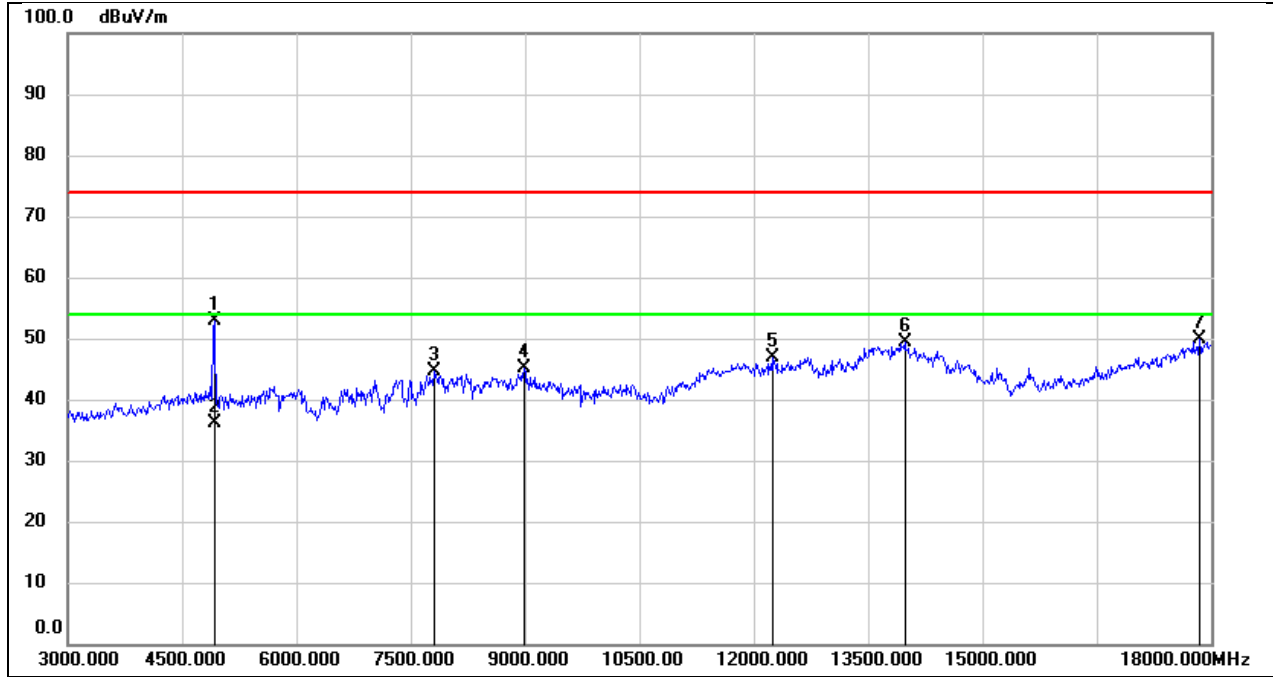
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4875.000	50.25	0.61	50.86	74.00	-23.14	peak
2	5655.000	40.69	2.67	43.36	74.00	-30.64	peak
3	8145.000	35.92	8.36	44.28	74.00	-29.72	peak
4	12165.000	28.18	18.35	46.53	74.00	-27.47	peak
5	13875.000	26.88	22.68	49.56	74.00	-24.44	peak
6	17925.000	23.02	26.55	49.57	74.00	-24.43	peak

Test Mode:	802.11n HT20	Frequency(MHz):	2437
Polarity:	Vertical	Test Voltage:	DC 3.8 V



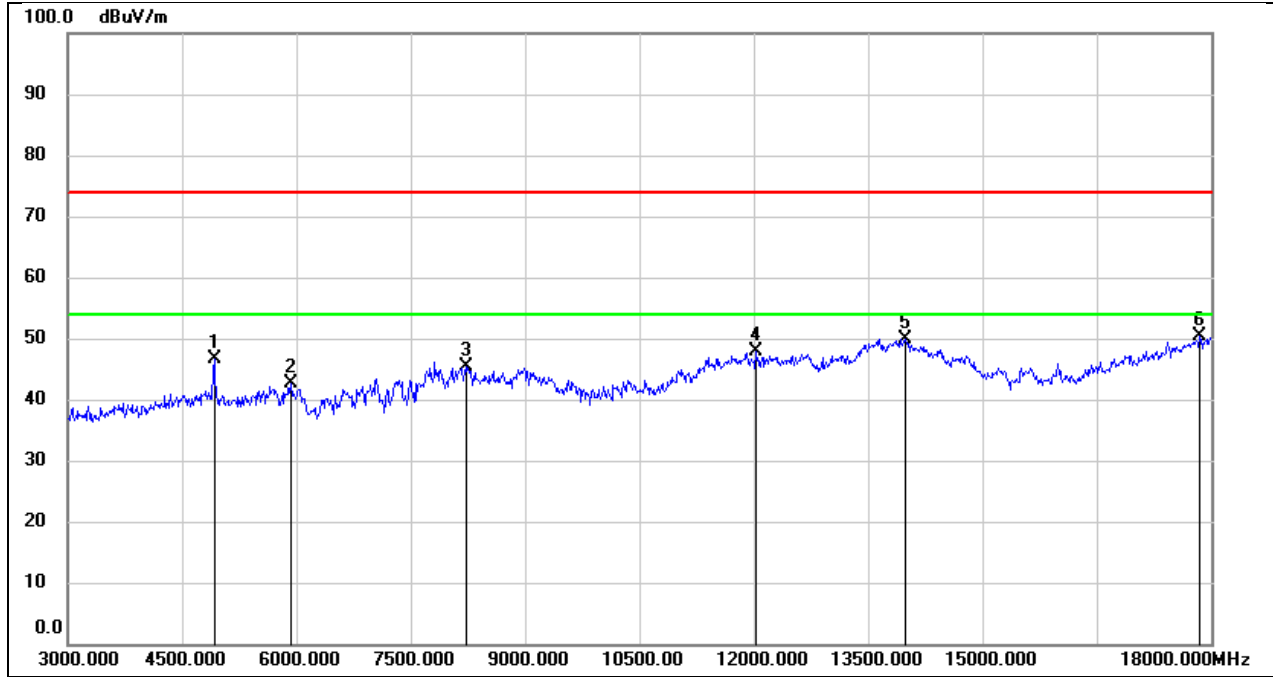
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4875.000	47.20	0.61	47.81	74.00	-26.19	peak
2	7860.000	38.30	7.37	45.67	74.00	-28.33	peak
3	8925.000	35.05	10.14	45.19	74.00	-28.81	peak
4	11430.000	30.14	16.64	46.78	74.00	-27.22	peak
5	13965.000	26.97	22.74	49.71	74.00	-24.29	peak
6	17775.000	24.74	25.86	50.60	74.00	-23.40	peak

Test Mode:	802.11n HT20	Frequency(MHz):	2462
Polarity:	Horizontal	Test Voltage:	DC 3.8 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4920.000	52.16	0.69	52.85	74.00	-21.15	peak
2	4920.000	35.51	0.69	36.20	54.00	-17.80	AVG
3	7800.000	37.05	7.54	44.59	74.00	-29.41	peak
4	8985.000	34.22	10.97	45.19	74.00	-28.81	peak
5	12240.000	28.49	18.46	46.95	74.00	-27.05	peak
6	13980.000	26.55	22.75	49.30	74.00	-24.70	peak
7	17850.000	23.64	26.28	49.92	74.00	-24.08	peak

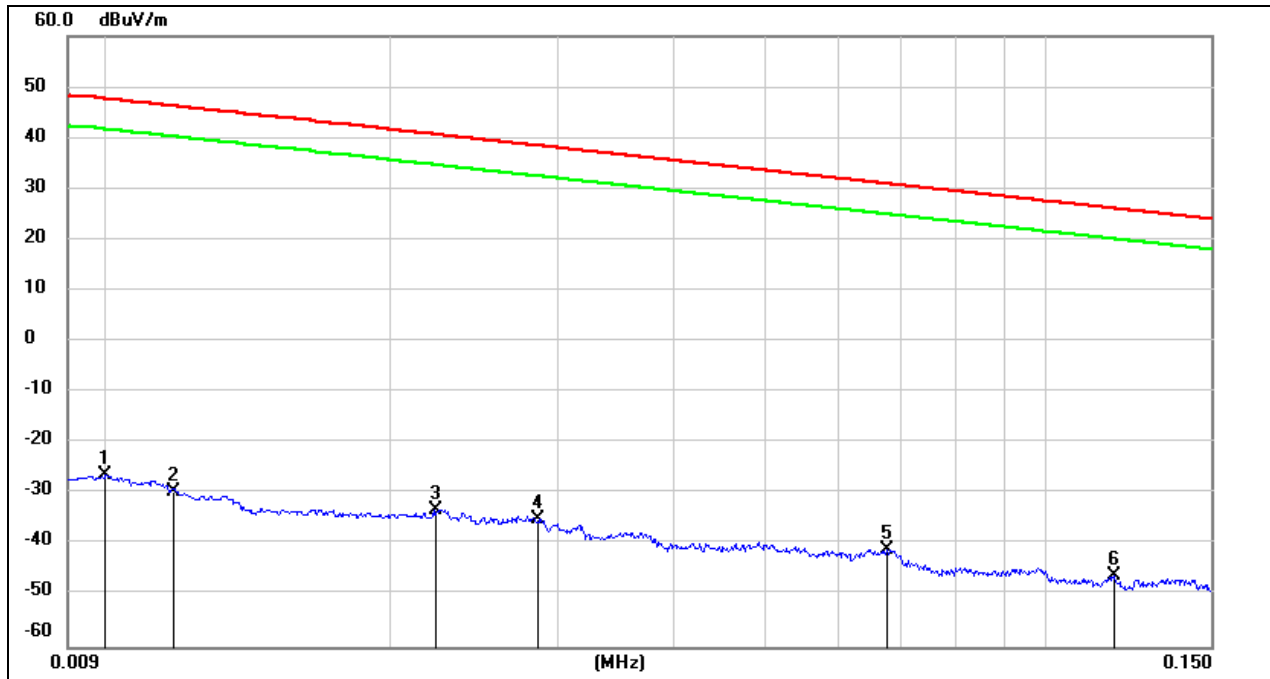
Test Mode:	802.11n HT20	Frequency(MHz):	2462
Polarity:	Vertical	Test Voltage:	DC 3.8 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4920.000	45.89	0.69	46.58	74.00	-27.42	peak
2	5925.000	39.73	2.80	42.53	74.00	-31.47	peak
3	8220.000	36.51	8.76	45.27	74.00	-28.73	peak
4	12030.000	29.33	18.47	47.80	74.00	-26.20	peak
5	13995.000	27.20	22.76	49.96	74.00	-24.04	peak
6	17850.000	24.13	26.28	50.41	74.00	-23.59	peak

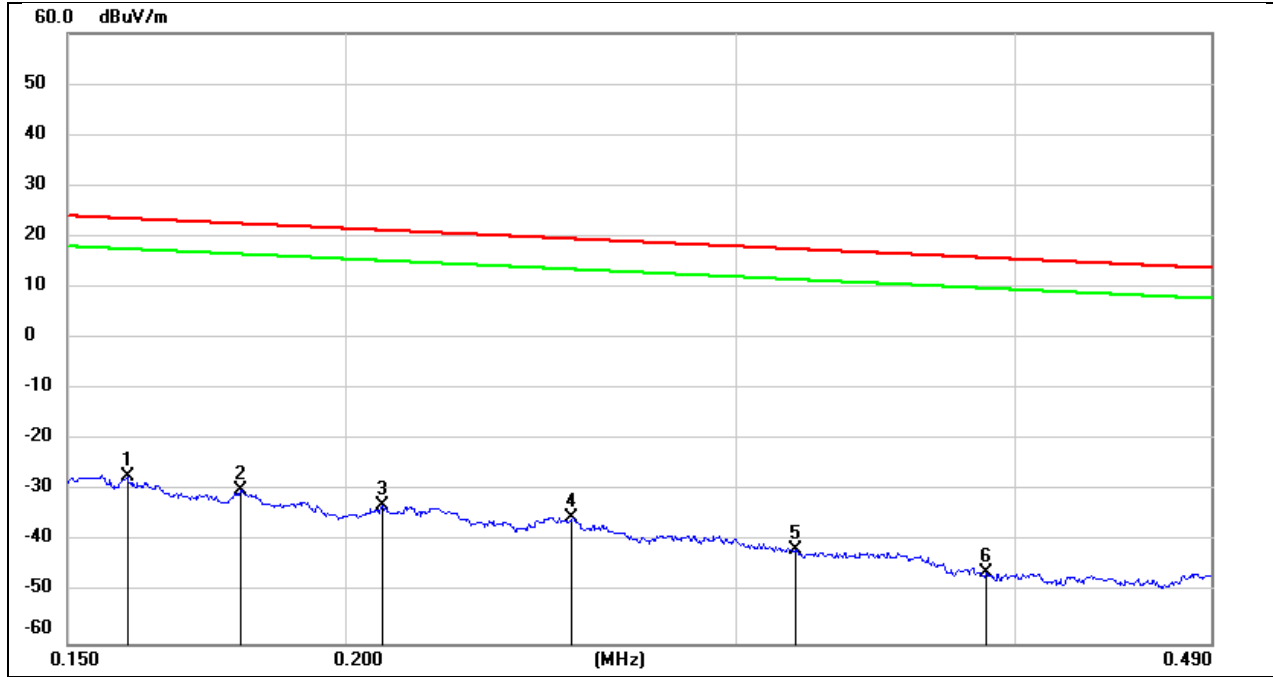
8.4. SPURIOUS EMISSIONS (9 KHZ ~ 30 MHZ)

Test Mode:	802.11b	Frequency(MHz):	2412
Polarity:	Loop Antenna Face On To The EUT	Test Voltage:	DC 3.8 V



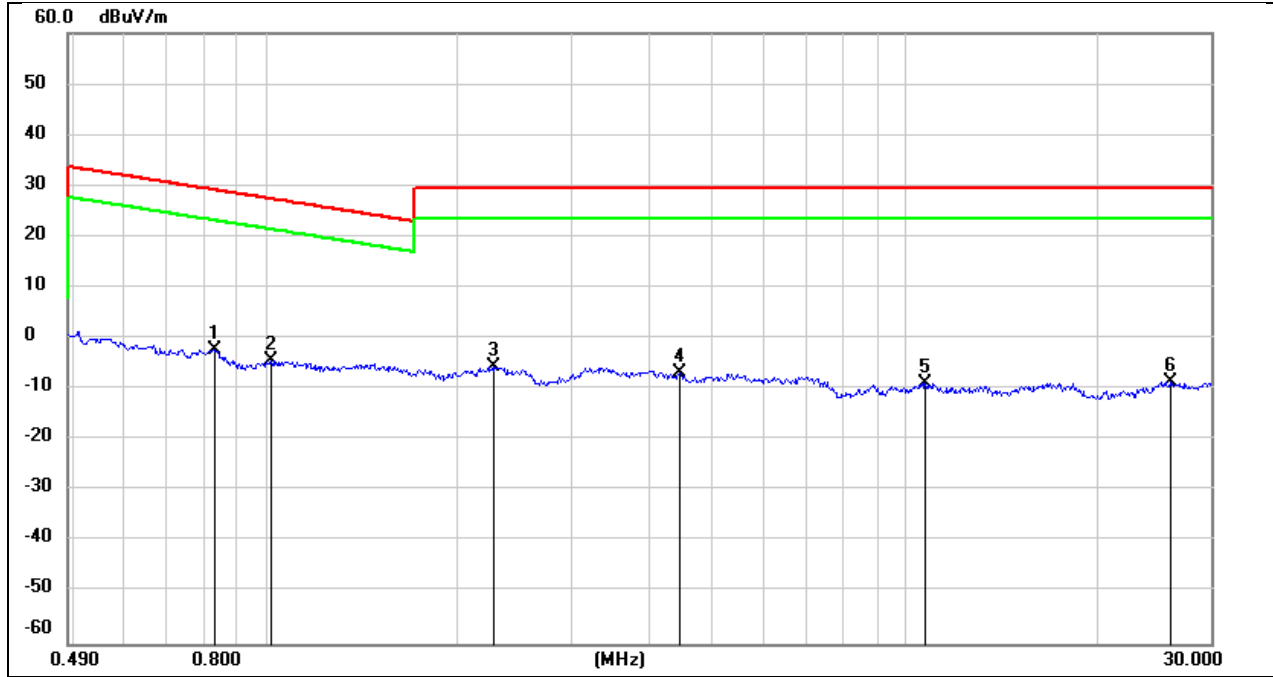
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result (dBuA/m)	Limit (dBuV/m)	Limit (dBuA/m)	Margin (dB)	Remark
1	0.01	75.22	-101.4	-26.18	-77.68	47.6	-3.9	-73.78	peak
2	0.0117	71.98	-101.39	-29.41	-80.91	46.24	-5.26	-75.65	peak
3	0.0223	68.29	-101.35	-33.06	-84.56	40.63	-10.87	-73.69	peak
4	0.0286	66.46	-101.38	-34.92	-86.42	38.47	-13.03	-73.39	peak
5	0.0675	60.64	-101.56	-40.92	-92.42	31.02	-20.48	-71.94	peak
6	0.1183	55.68	-101.74	-46.06	-97.56	26.14	-25.36	-72.20	peak

Test Mode:	802.11b	Frequency(MHz):	2412
Polarity:	Loop Antenna Face On To The EUT	Test Voltage:	DC 3.8 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result (dBuA/m)	Limit (dBuV/m)	Limit (dBuA/m)	Margin (dB)	Remark
1	0.1595	74.36	-101.65	-27.29	-78.79	23.55	-27.95	-50.84	peak
2	0.1794	71.77	-101.68	-29.91	-81.41	22.53	-28.97	-52.44	peak
3	0.2078	68.74	-101.73	-32.99	-84.49	21.25	-30.25	-54.24	peak
4	0.253	66.64	-101.8	-35.16	-86.66	19.54	-31.96	-54.70	peak
5	0.319	60.39	-101.88	-41.49	-92.99	17.53	-33.97	-59.02	peak
6	0.3881	55.9	-101.95	-46.05	-97.55	15.82	-35.68	-61.87	peak

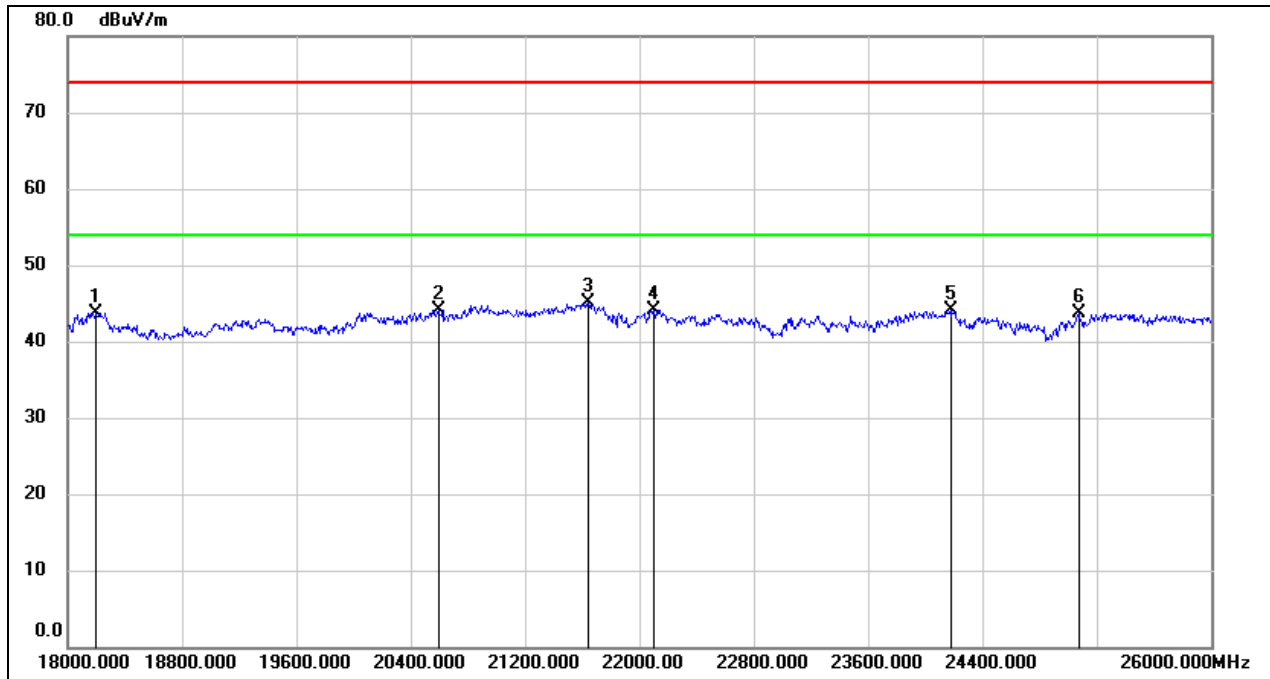
Test Mode:	802.11b	Frequency(MHz):	2412
Polarity:	Loop Antenna Face On To The EUT	Test Voltage:	DC 3.8 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Result (dBuA/m)	Limit (dBuV/m)	Limit (dBuA/m)	Margin (dB)	Remark
1	0.8296	59.94	-62.17	-2.23	-53.73	29.23	-22.27	-31.46	peak
2	1.0212	57.99	-62.25	-4.26	-55.76	27.42	-24.08	-31.68	peak
3	2.2736	56.19	-61.75	-5.56	-57.06	29.54	-21.96	-35.10	peak
4	4.4443	54.79	-61.4	-6.61	-58.11	29.54	-21.96	-36.15	peak
5	10.7299	51.98	-60.83	-8.85	-60.35	29.54	-21.96	-38.39	peak
6	25.8978	51.76	-60.36	-8.6	-60.10	29.54	-21.96	-38.14	peak

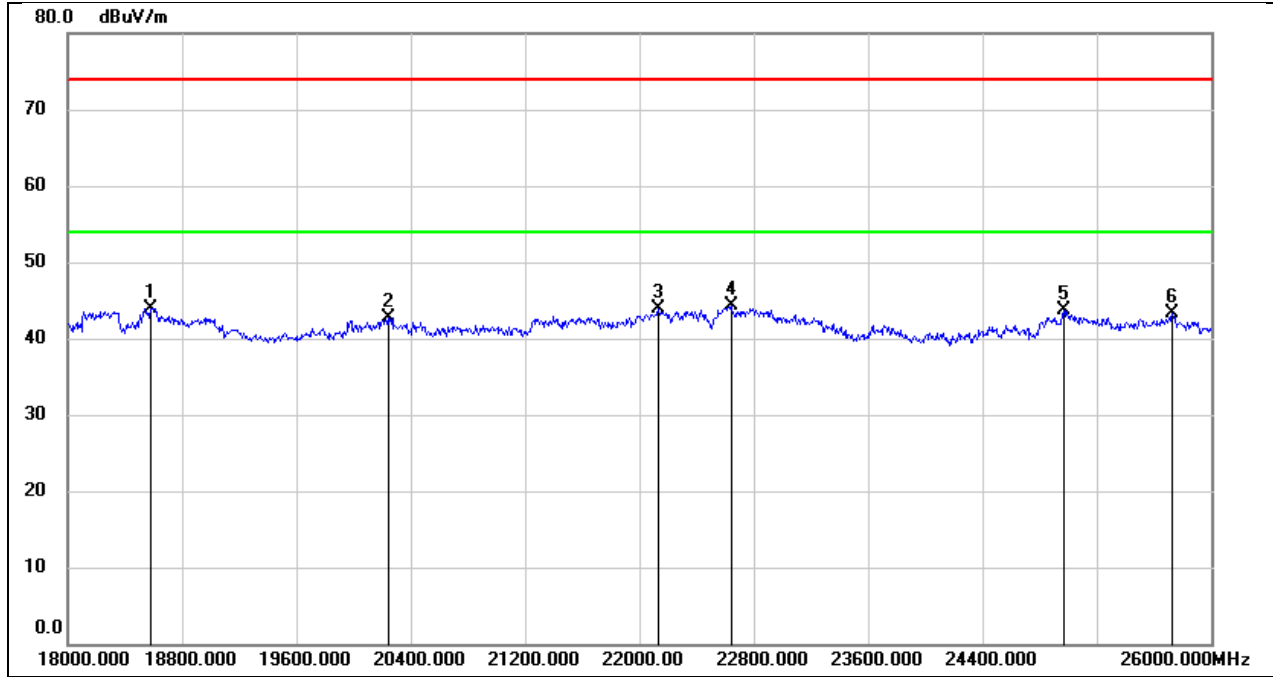
8.5. SPURIOUS EMISSIONS (18 GHZ ~ 26 GHZ)

Test Mode:	802.11b	Frequency(MHz):	2412
Polarity:	Horizontal	Test Voltage:	DC 3.8 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18200.000	49.29	-5.52	43.77	74.00	-30.23	peak
2	20592.000	49.44	-5.26	44.18	74.00	-29.82	peak
3	21640.000	49.57	-4.49	45.08	74.00	-28.92	peak
4	22096.000	48.54	-4.38	44.16	74.00	-29.84	peak
5	24184.000	46.93	-2.80	44.13	74.00	-29.87	peak
6	25072.000	45.67	-1.97	43.70	74.00	-30.30	peak

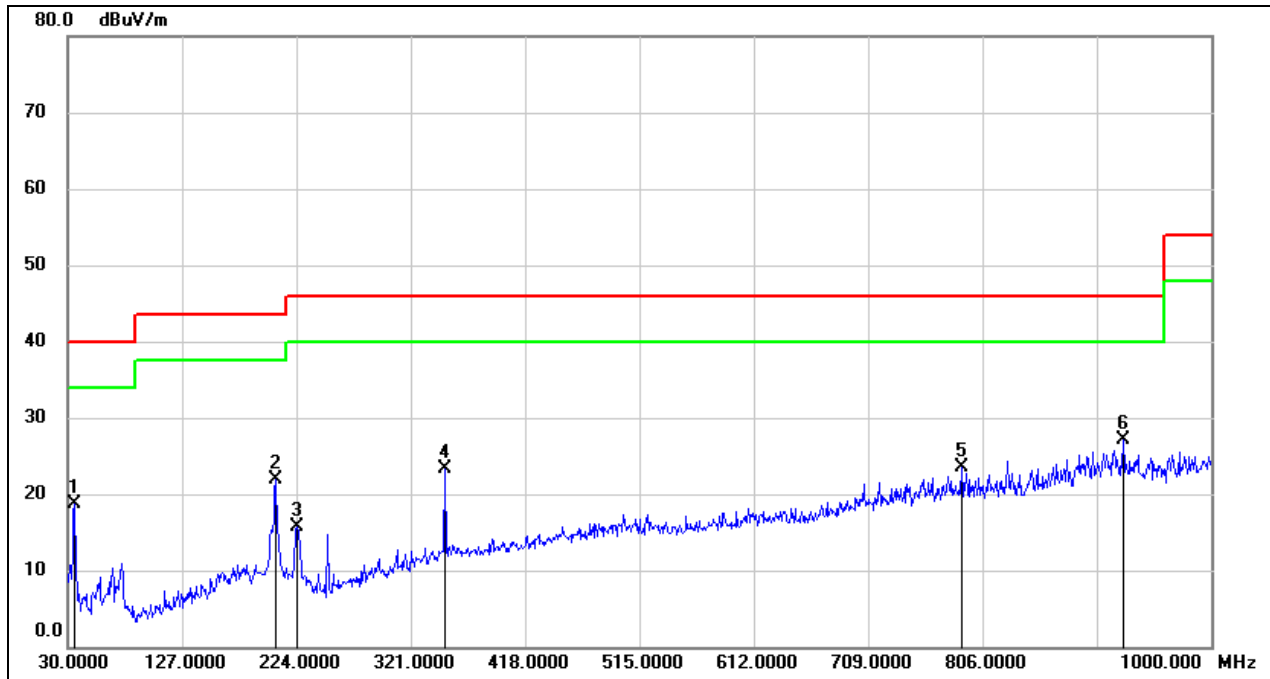
Test Mode:	802.11b	Frequency(MHz):	2412
Polarity:	Vertical	Test Voltage:	DC 3.8 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18576.000	49.29	-5.30	43.99	74.00	-30.01	peak
2	20240.000	48.32	-5.61	42.71	74.00	-31.29	peak
3	22128.000	48.18	-4.34	43.84	74.00	-30.16	peak
4	22640.000	48.04	-3.77	44.27	74.00	-29.73	peak
5	24968.000	45.76	-2.14	43.62	74.00	-30.38	peak
6	25728.000	44.11	-0.72	43.39	74.00	-30.61	peak

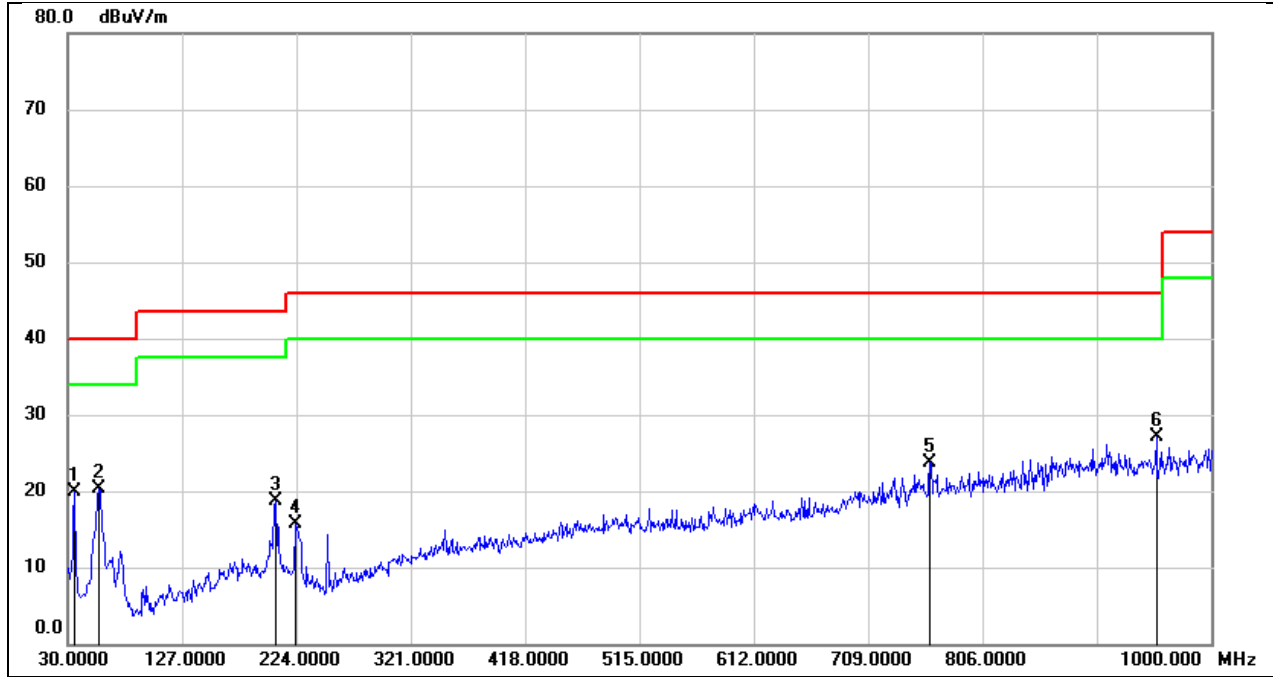
8.6. SPURIOUS EMISSIONS (30 MHZ ~ 1 GHZ)

Test Mode:	802.11b	Frequency(MHz):	2412
Polarity:	Horizontal	Test Voltage:	DC 3.8 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	35.8200	33.01	-14.30	18.71	40.00	-21.29	QP
2	206.5399	34.37	-12.41	21.96	43.50	-21.54	QP
3	224.0000	28.92	-13.26	15.66	46.00	-30.34	QP
4	350.1000	32.97	-9.58	23.39	46.00	-22.61	QP
5	788.5400	26.61	-3.06	23.55	46.00	-22.45	QP
6	925.3100	28.68	-1.56	27.12	46.00	-18.88	QP

Test Mode:	802.11b	Frequency(MHz):	2412
Polarity:	Vertical	Test Voltage:	DC 3.8 V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	35.8200	34.21	-14.30	19.91	40.00	-20.09	QP
2	56.1900	35.71	-15.38	20.33	40.00	-19.67	QP
3	206.5399	31.09	-12.41	18.68	43.50	-24.82	QP
4	223.0300	28.84	-13.23	15.61	46.00	-30.39	QP
5	761.3800	26.98	-3.26	23.72	46.00	-22.28	QP
6	953.4400	28.88	-1.77	27.11	46.00	-18.89	QP

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

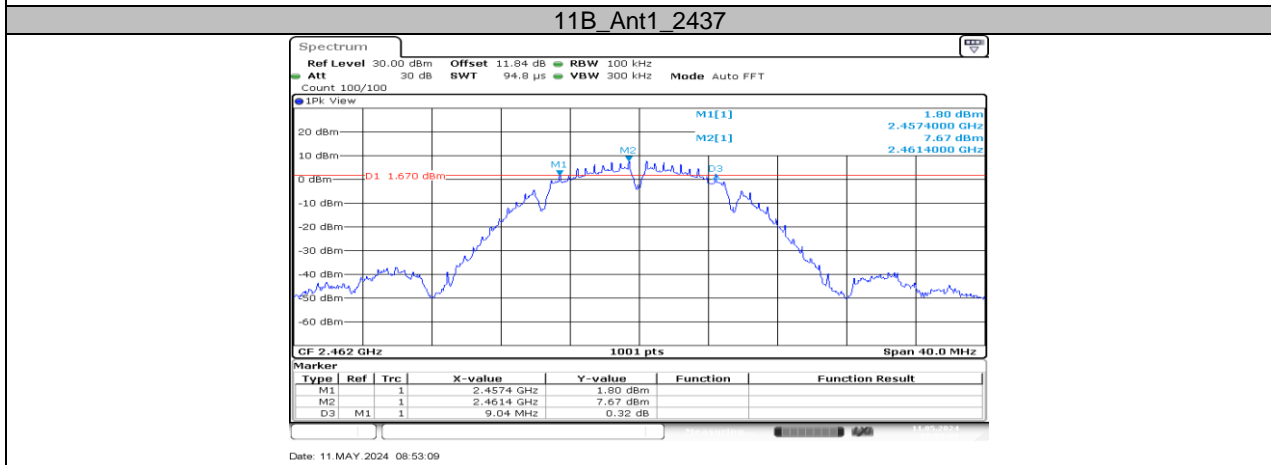
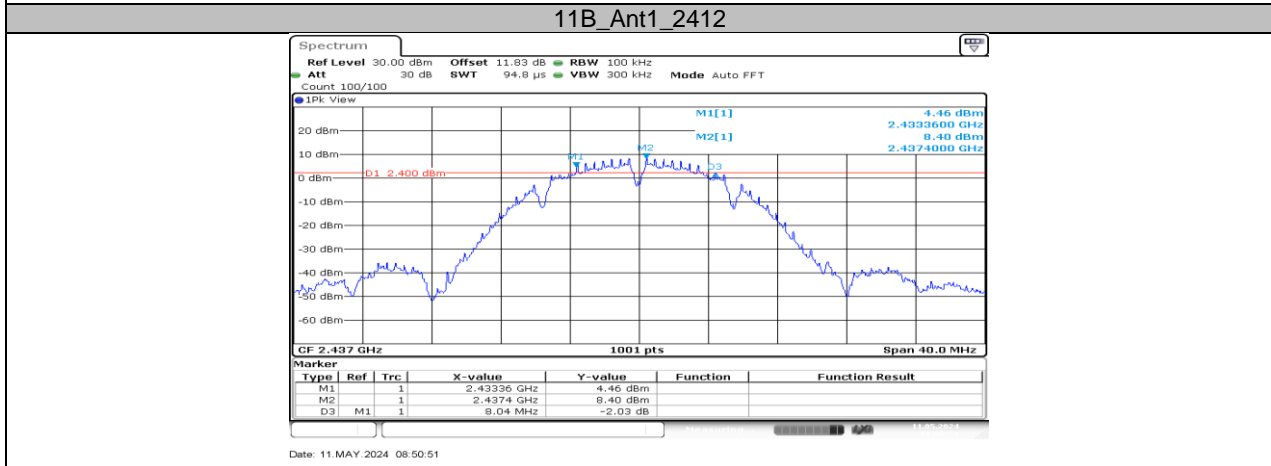
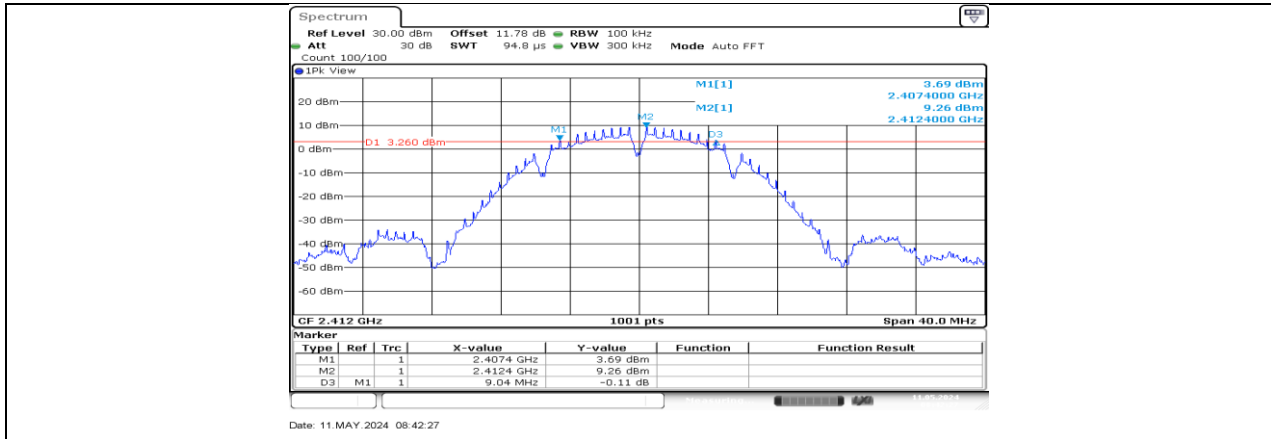
10. TEST DATA

10.1. APPENDIX A: DTS BANDWIDTH

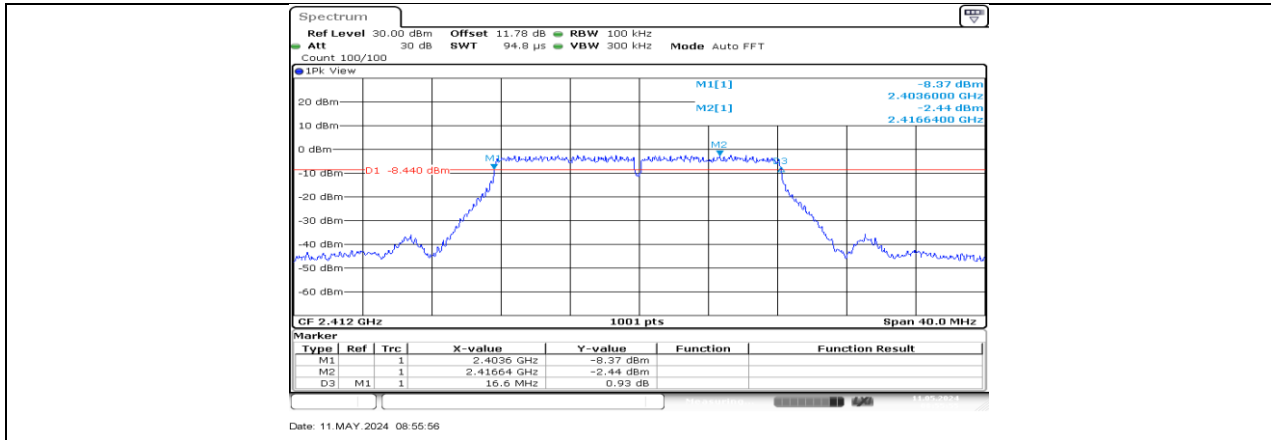
10.1.1. Test Result

Test Mode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.04	2407.40	2416.44	≥0.5	PASS
		2437	8.04	2433.36	2441.40	≥0.5	PASS
		2462	9.04	2457.40	2466.44	≥0.5	PASS
11G	Ant1	2412	16.60	2403.60	2420.20	≥0.5	PASS
		2437	16.56	2428.64	2445.20	≥0.5	PASS
		2462	16.36	2453.72	2470.08	≥0.5	PASS
11N20SISO	Ant1	2412	17.64	2403.08	2420.72	≥0.5	PASS
		2437	17.56	2428.12	2445.68	≥0.5	PASS
		2462	17.60	2453.08	2470.68	≥0.5	PASS

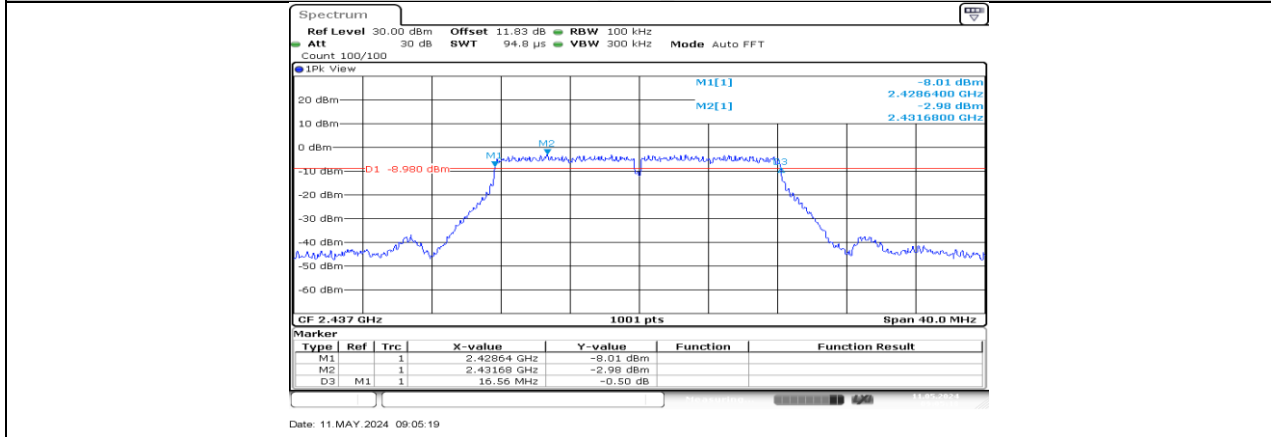
10.1.2. Test Graphs



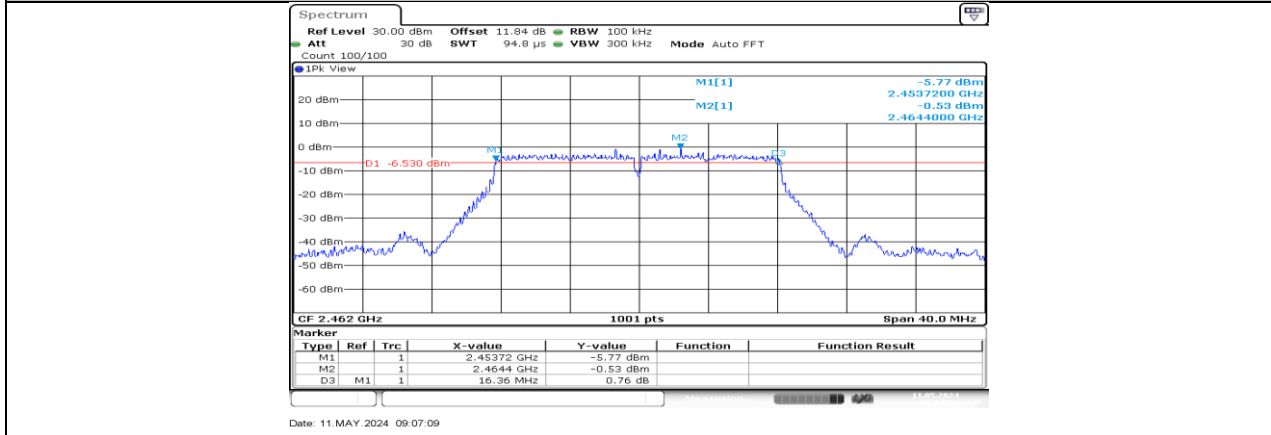
11B_Ant1_2462



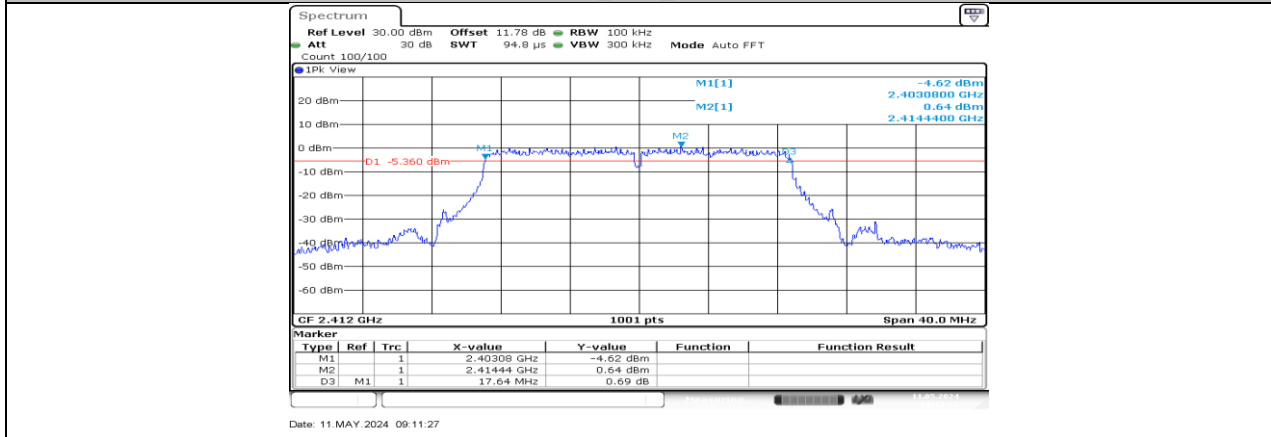
11G_Ant1_2412

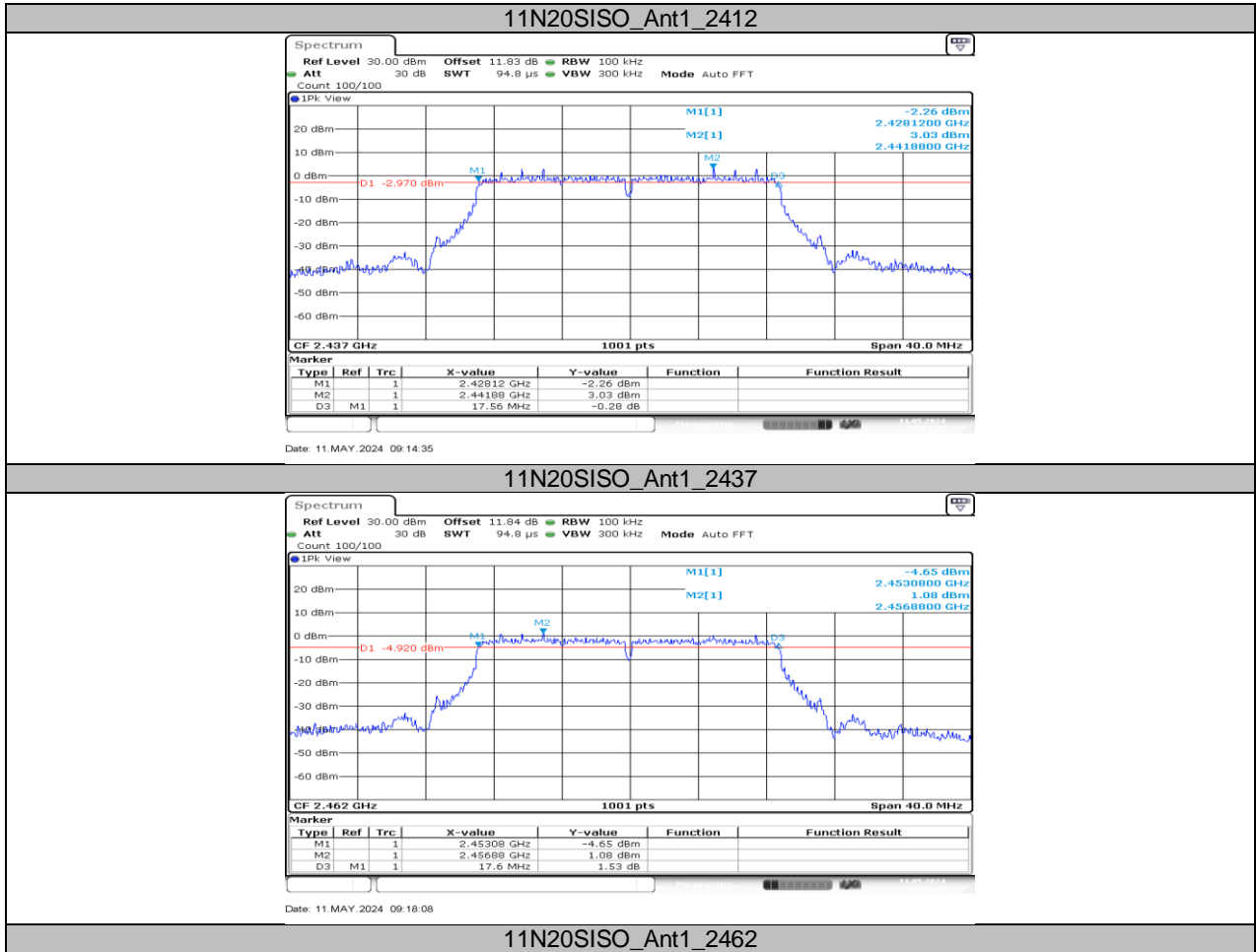


11G_Ant1_2437



11G_Ant1_2462



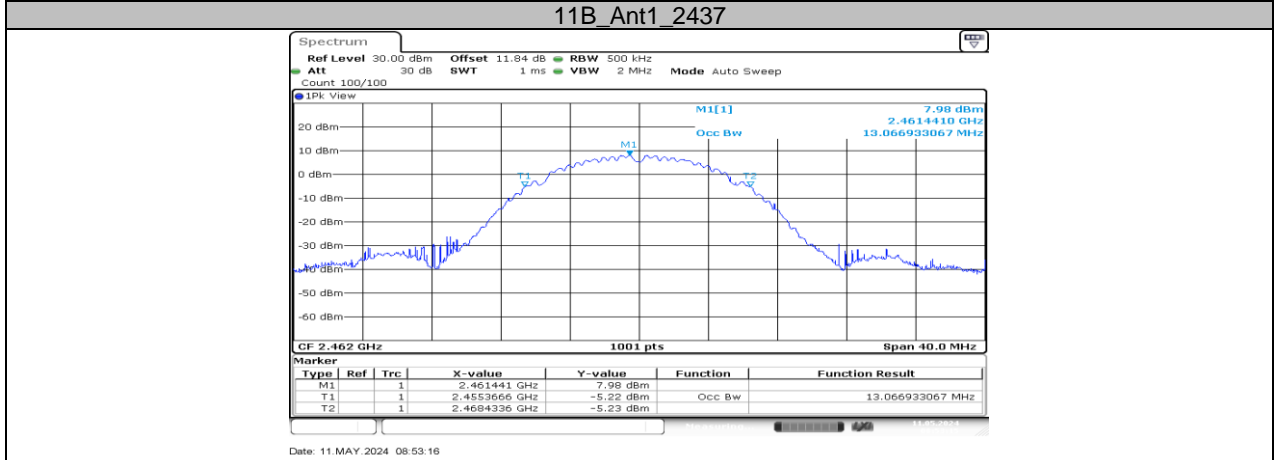
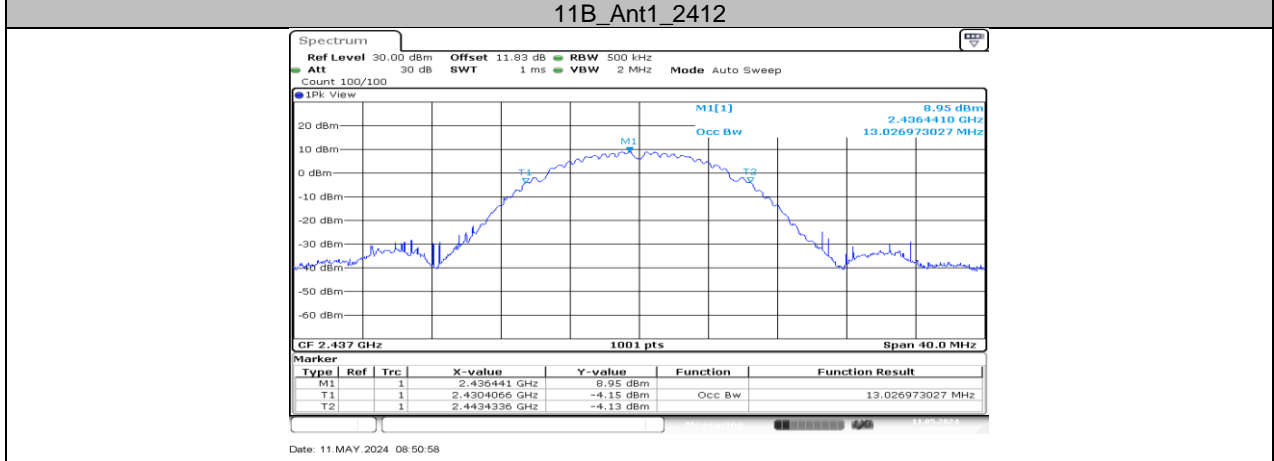
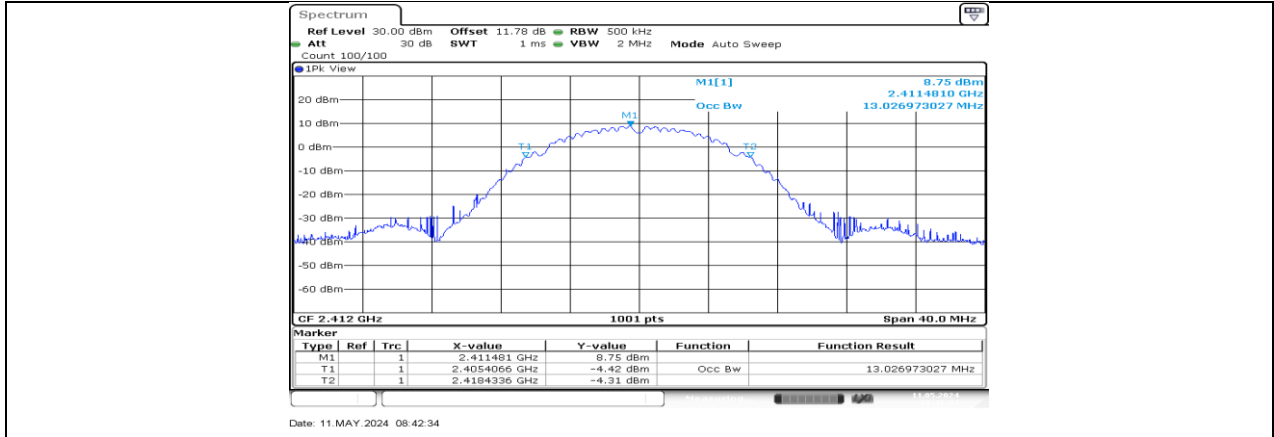


10.2. APPENDIX B: OCCUPIED CHANNEL BANDWIDTH

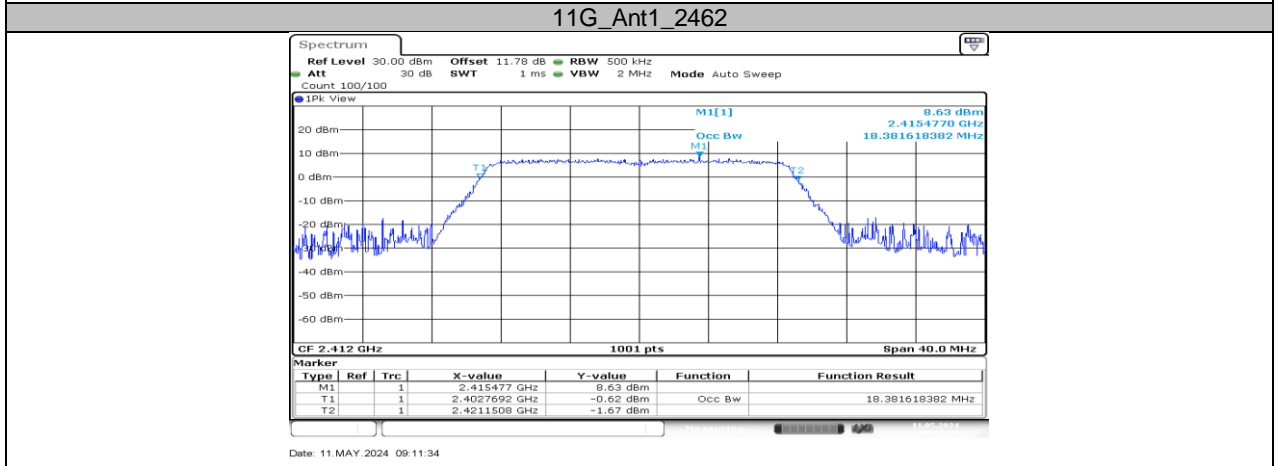
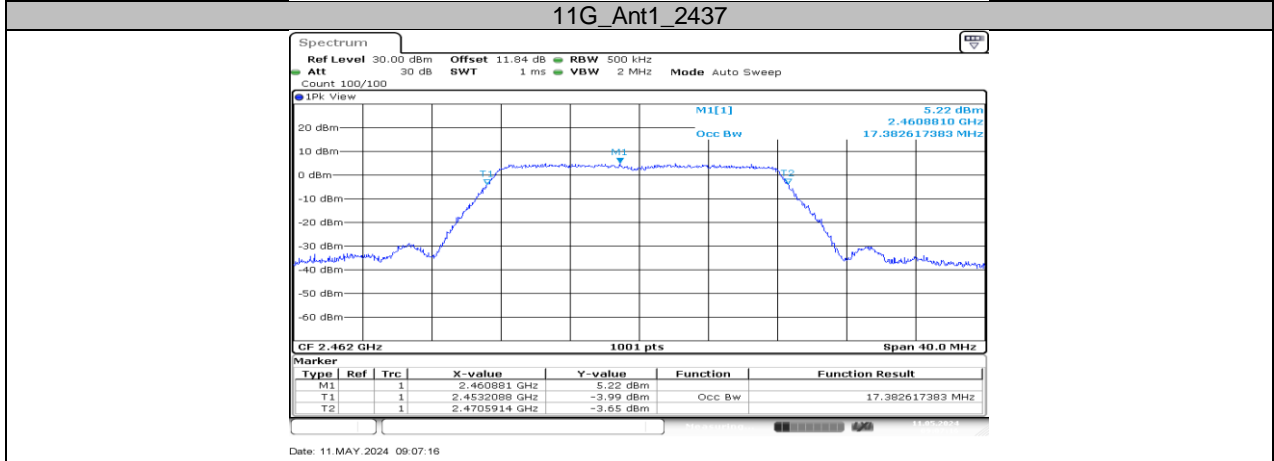
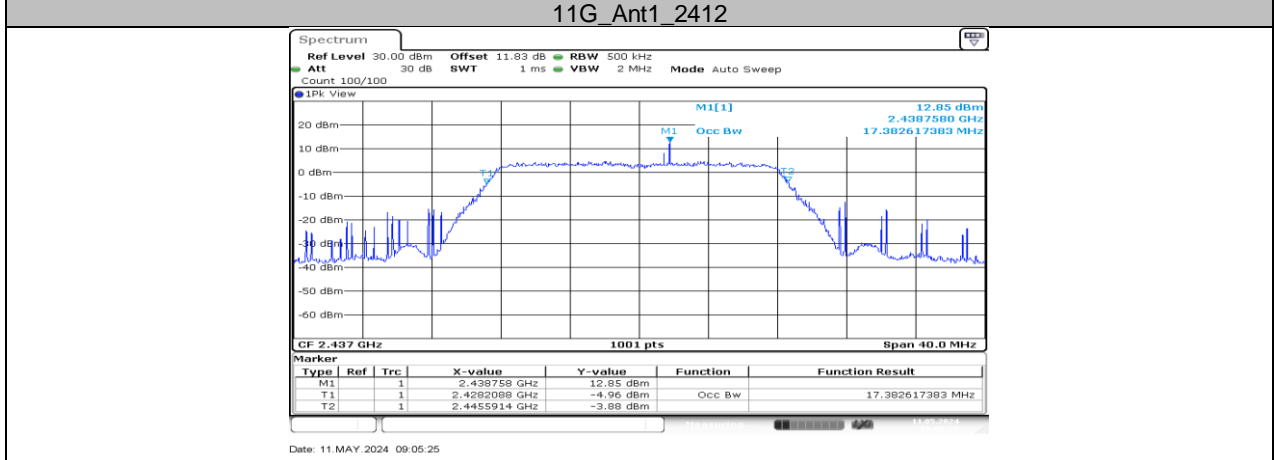
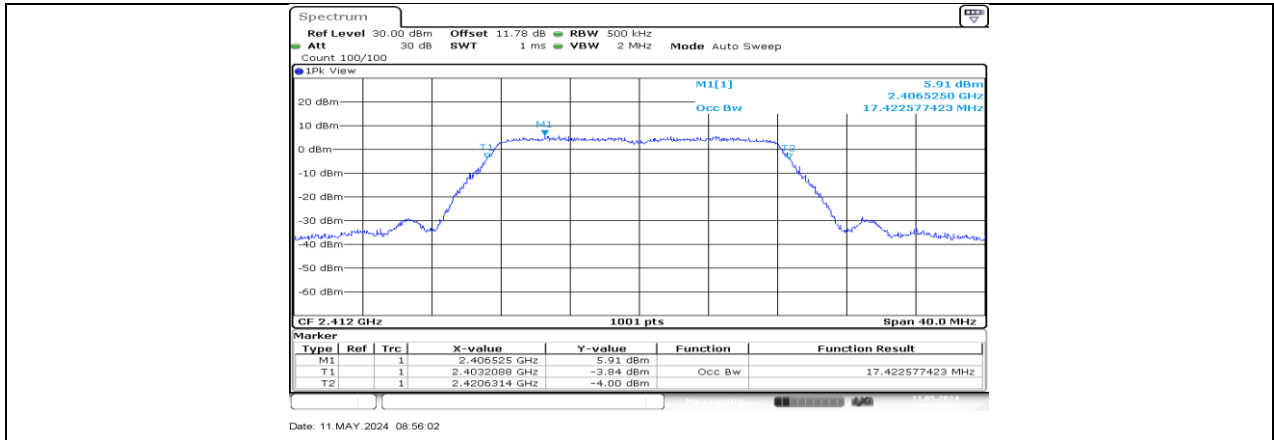
10.2.1. Test Result

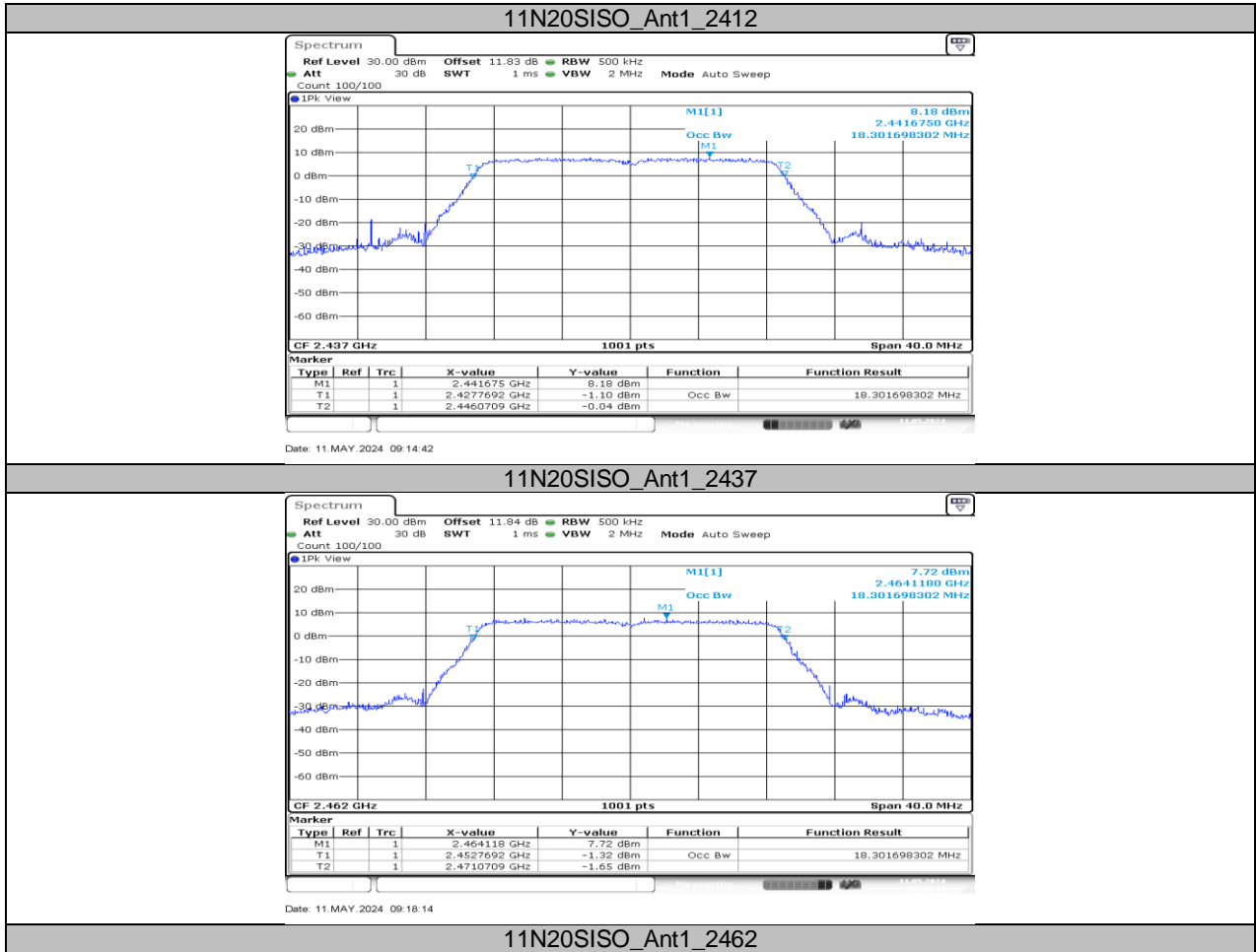
Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Verdict
11B	Ant1	2412	13.027	2405.4066	2418.4336	PASS
		2437	13.027	2430.4066	2443.4336	PASS
		2462	13.067	2455.3666	2468.4336	PASS
11G	Ant1	2412	17.423	2403.2088	2420.6314	PASS
		2437	17.383	2428.2088	2445.5914	PASS
		2462	17.383	2453.2088	2470.5914	PASS
11N20SISO	Ant1	2412	18.382	2402.7692	2421.1508	PASS
		2437	18.302	2427.7692	2446.0709	PASS
		2462	18.302	2452.7692	2471.0709	PASS

10.2.2. Test Graphs



11B_Ant1_2462





11N20SISO_Ant1_2462

10.3. APPENDIX C: MAXIMUM AVERAGE CONDUCTED OUTPUT POWER

10.3.1. Test Result

Test Mode	Antenna	Frequency[MHz]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	16.98	≤30.00	PASS
		2437	16.73	≤30.00	PASS
		2462	16.22	≤30.00	PASS
11G	Ant1	2412	12.28	≤30.00	PASS
		2437	11.14	≤30.00	PASS
		2462	11.82	≤30.00	PASS
11N20SISO	Ant1	2412	14.92	≤30.00	PASS
		2437	14.87	≤30.00	PASS
		2462	14.33	≤30.00	PASS

Note: 1. Conducted Power=Meas. Level+ Correction Factor

2. The Duty Cycle Factor (refer to section 7.5) had already compensated to the test data.

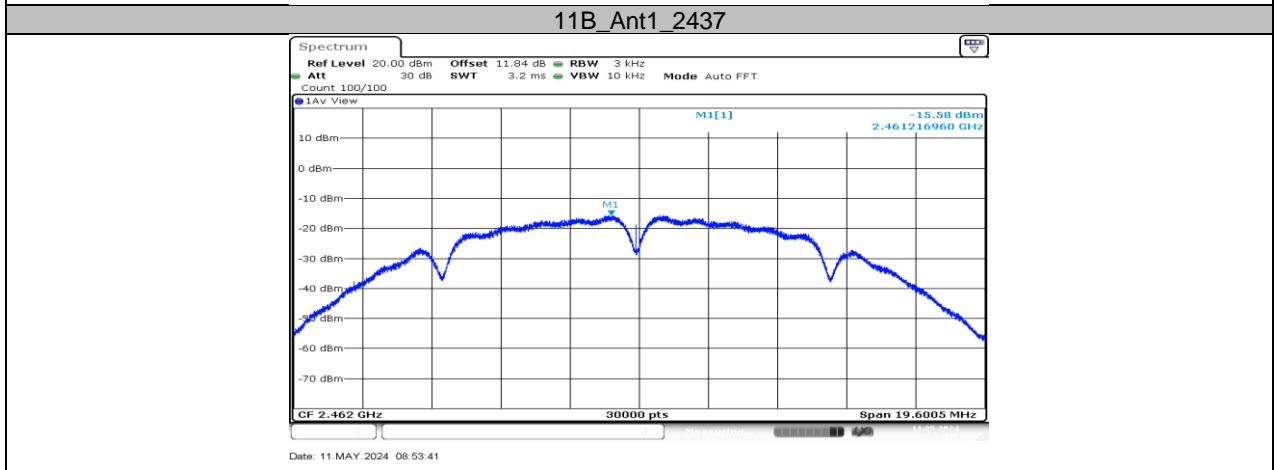
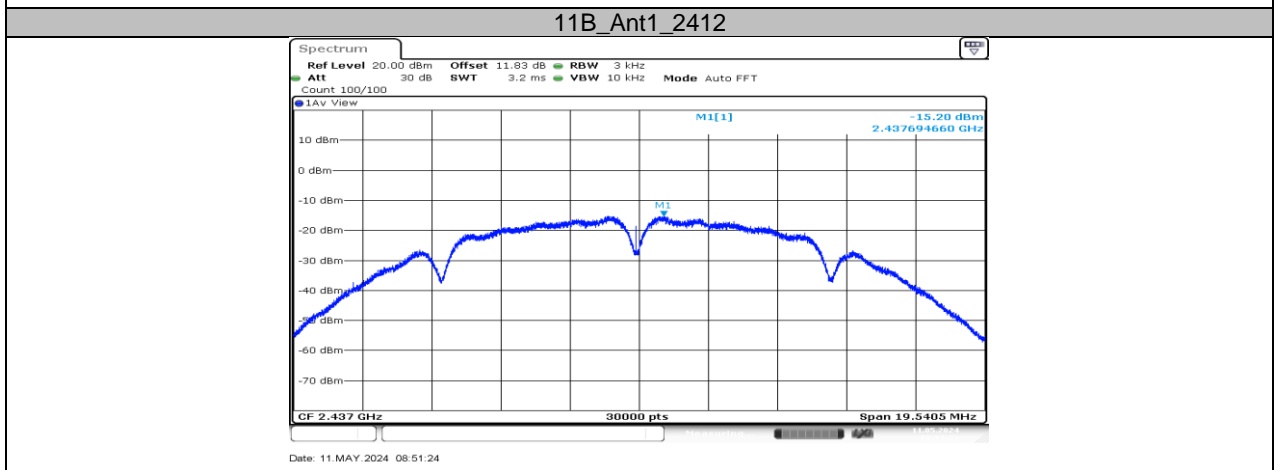
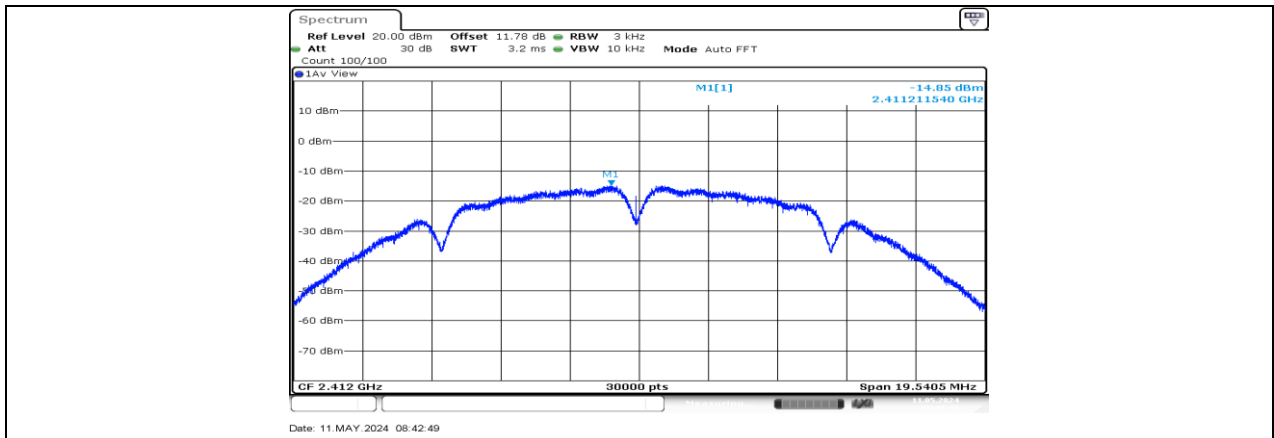
10.4. APPENDIX D: MAXIMUM POWER SPECTRAL DENSITY

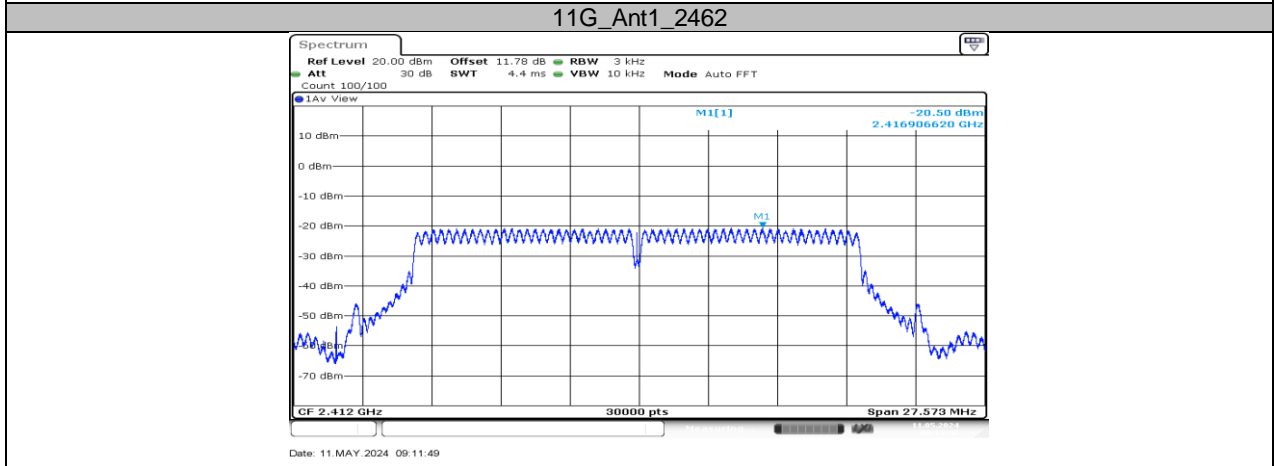
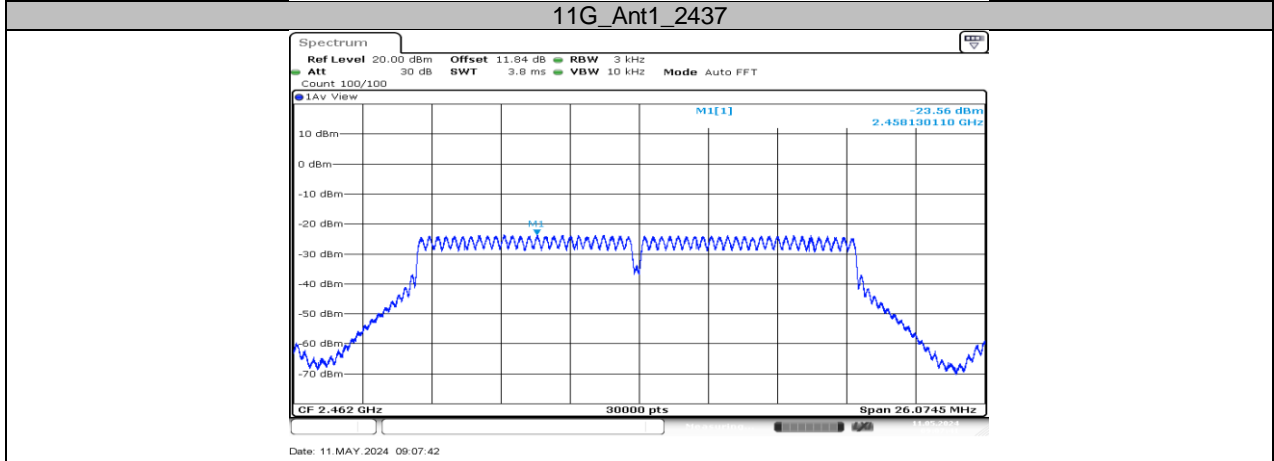
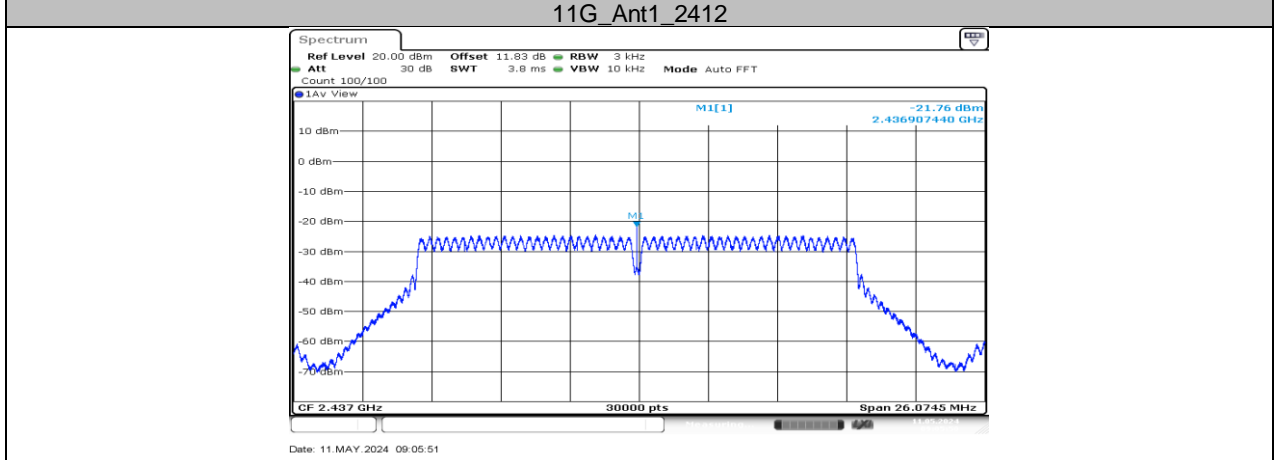
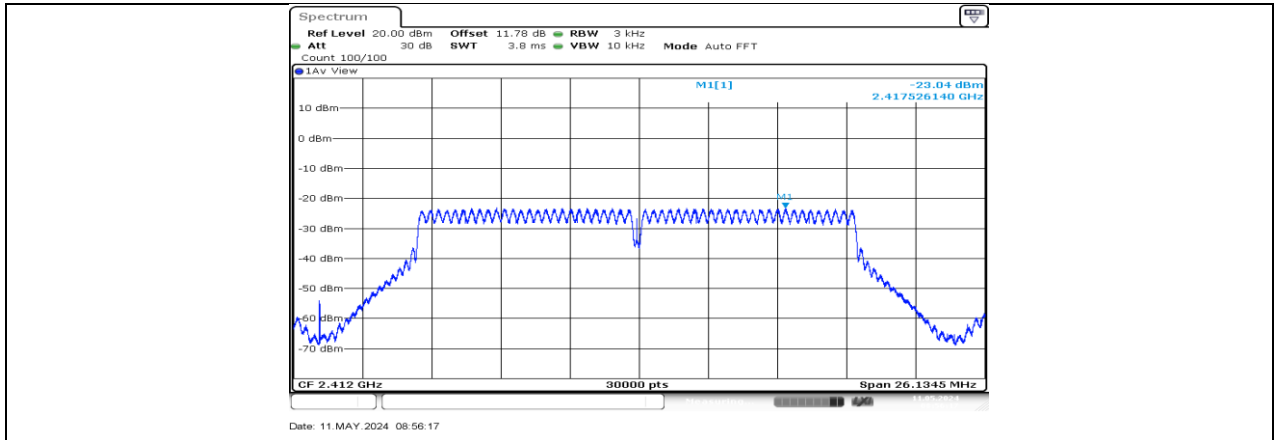
10.4.1. Test Result

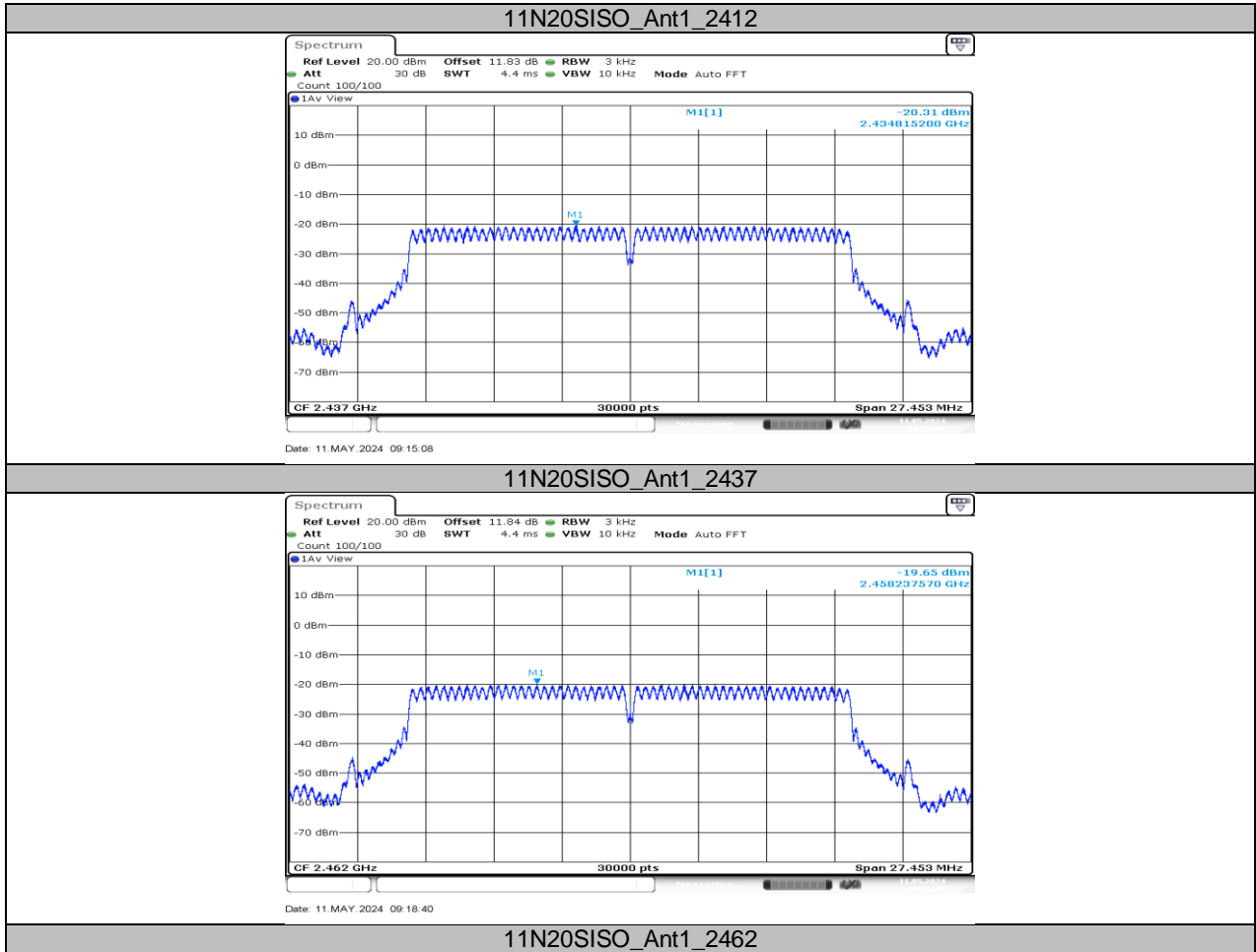
Test Mode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-14.85	≤8.00	PASS
		2437	-15.20	≤8.00	PASS
		2462	-15.58	≤8.00	PASS
11G	Ant1	2412	-23.04	≤8.00	PASS
		2437	-21.76	≤8.00	PASS
		2462	-23.56	≤8.00	PASS
11N20SISO	Ant1	2412	-20.50	≤8.00	PASS
		2437	-20.31	≤8.00	PASS
		2462	-19.65	≤8.00	PASS

Note: The Duty Cycle Factor (refer to section 7.5) had already compensated to the test data.

10.4.2. Test Graphs





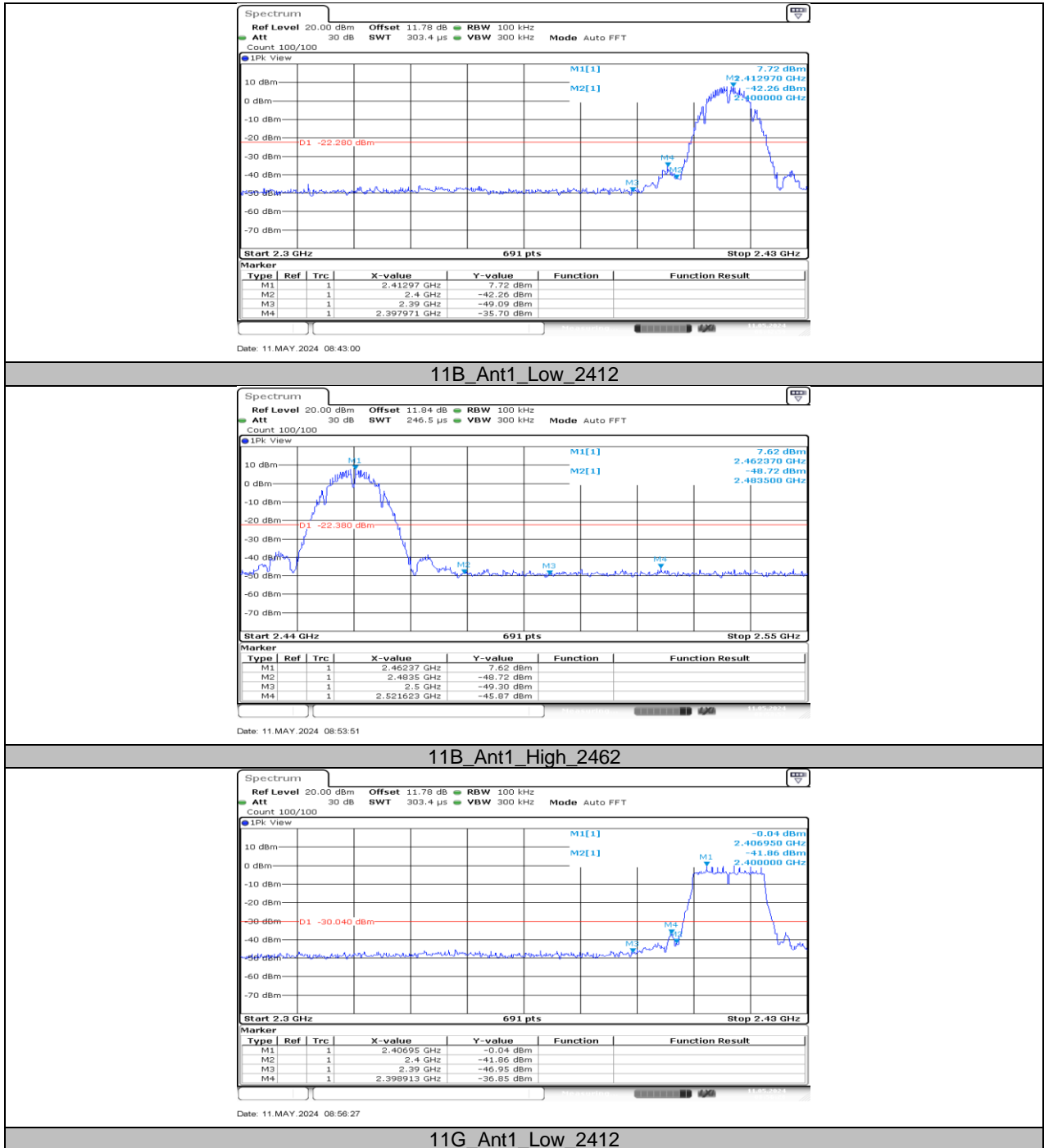


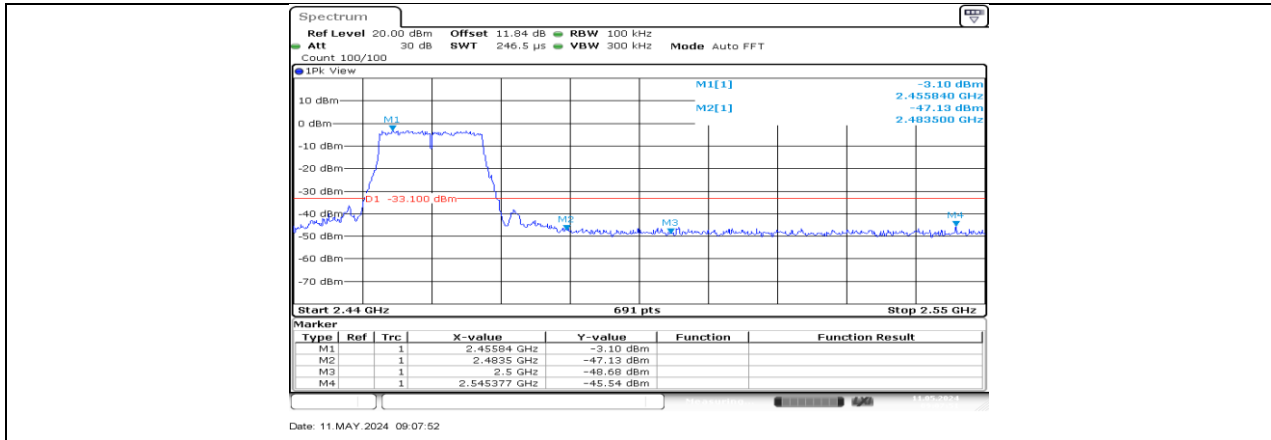
10.5. APPENDIX E: BAND EDGE MEASUREMENTS

10.5.1. Test Result

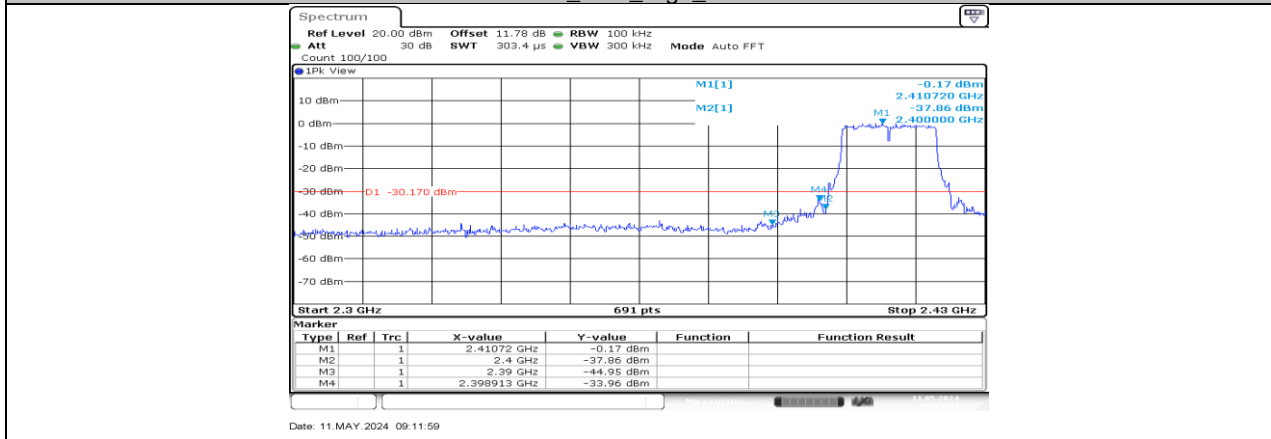
Test Mode	Antenna	ChName	Frequency [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	7.72	-35.7	≤-22.28	PASS
		High	2462	7.62	-45.87	≤-22.38	PASS
11G	Ant1	Low	2412	-0.04	-36.85	≤-30.04	PASS
		High	2462	-3.10	-45.54	≤-33.1	PASS
11N20SISO	Ant1	Low	2412	-0.17	-33.96	≤-30.17	PASS
		High	2462	0.54	-39.77	≤-29.46	PASS

10.5.2. Test Graphs

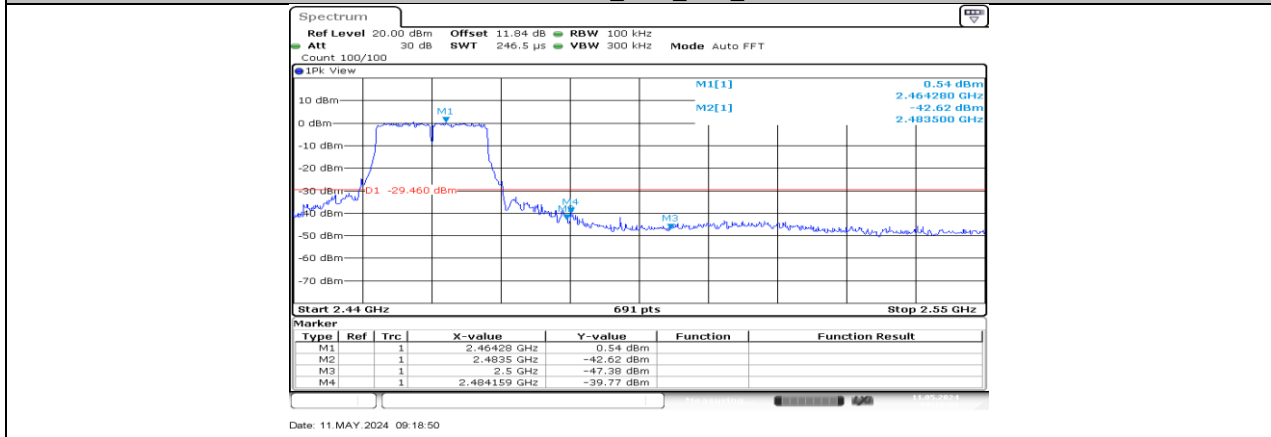




11G_Ant1_High_2462



11N20SISO_Ant1_Low_2412



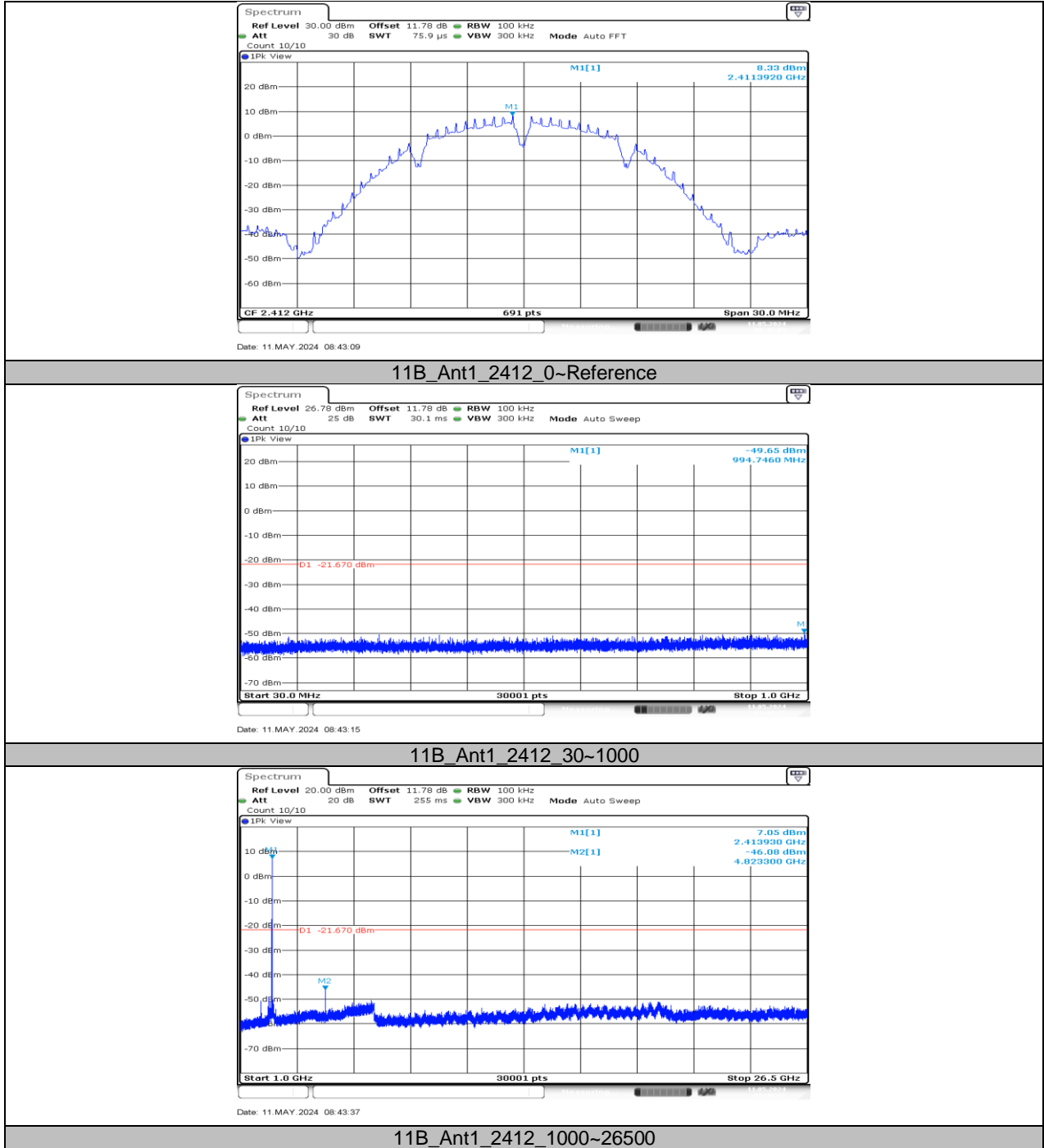
11N20SISO_Ant1_High_2462

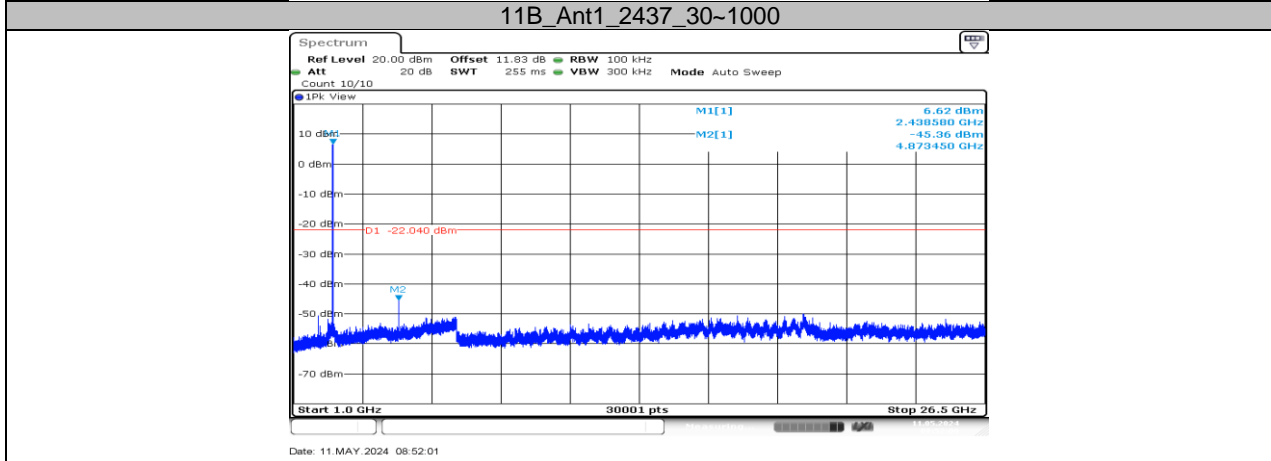
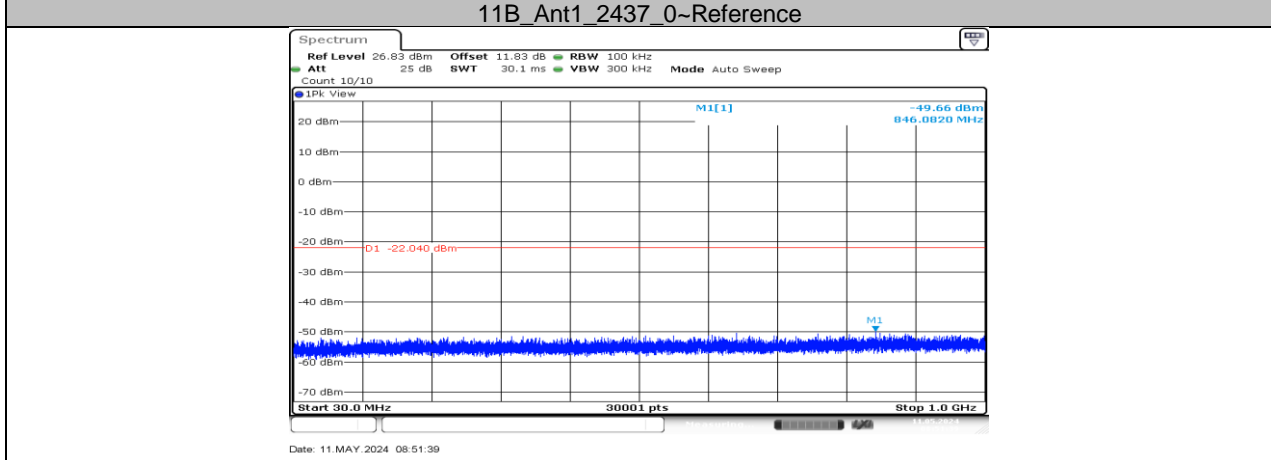
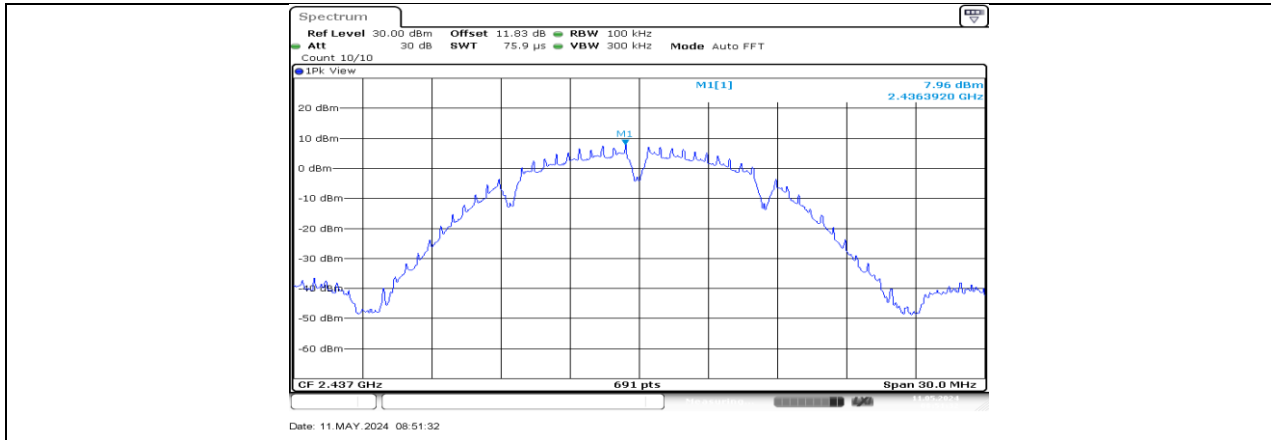
10.6. APPENDIX F: CONDUCTED SPURIOUS EMISSION

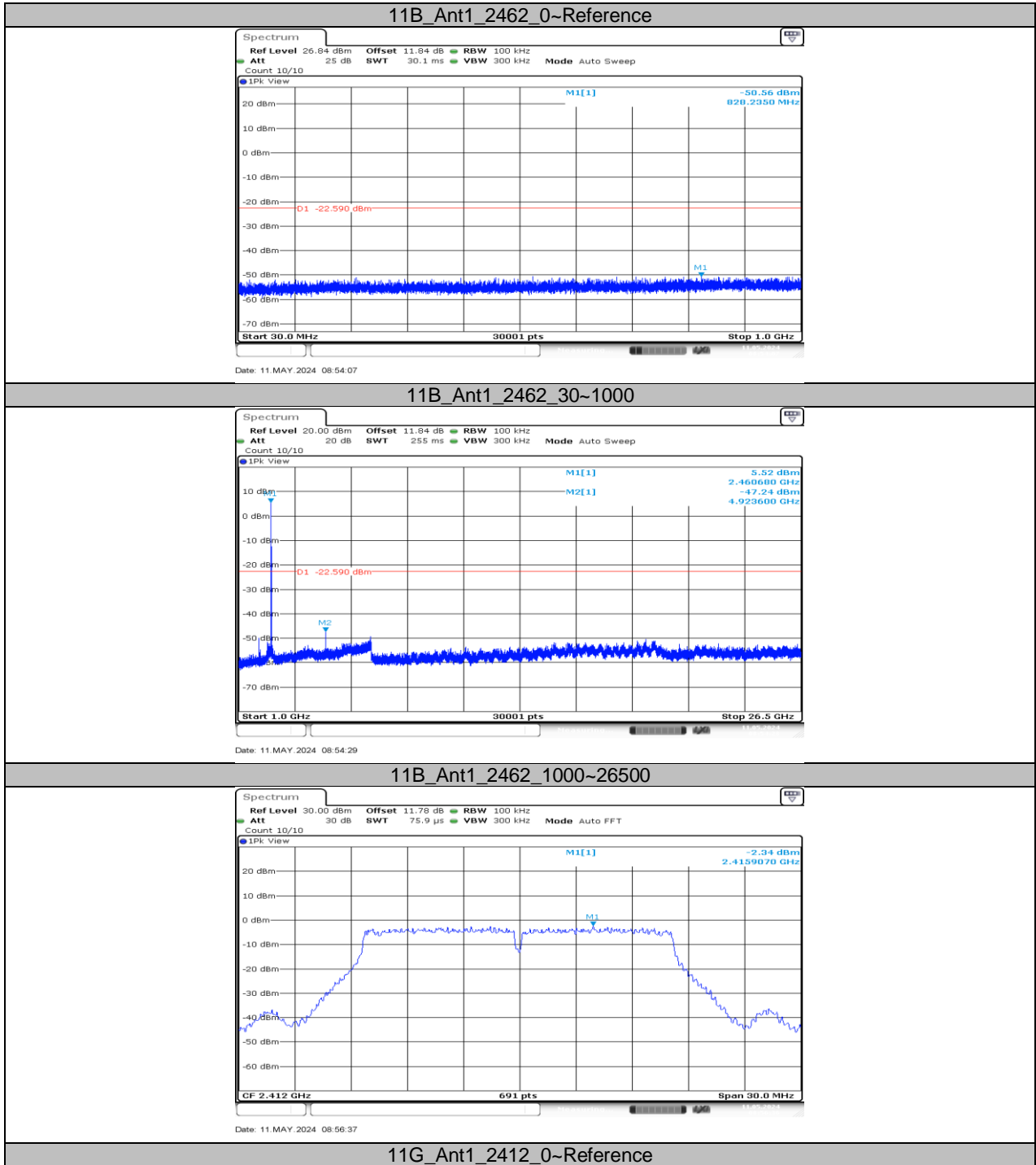
10.6.1. Test Result

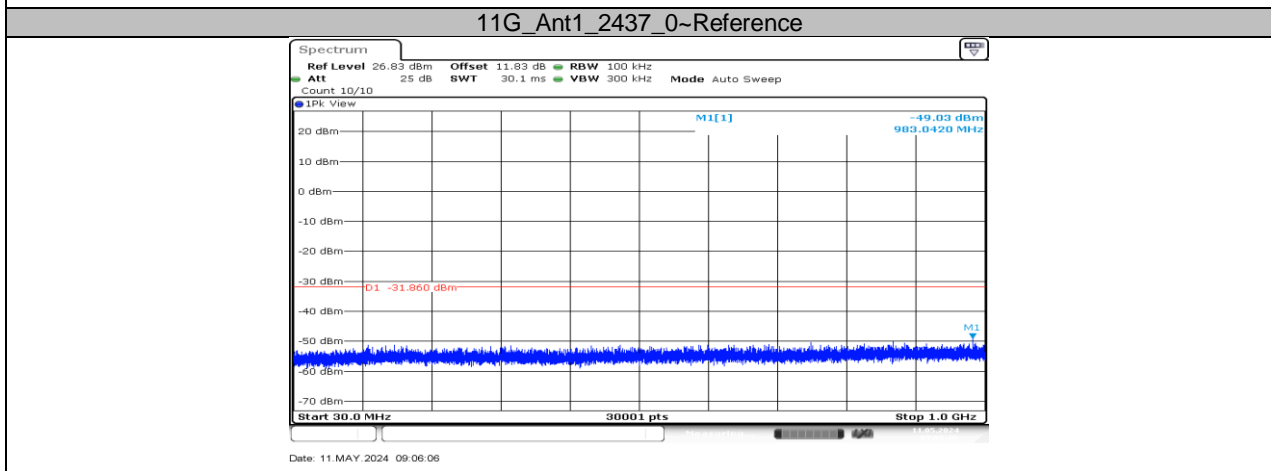
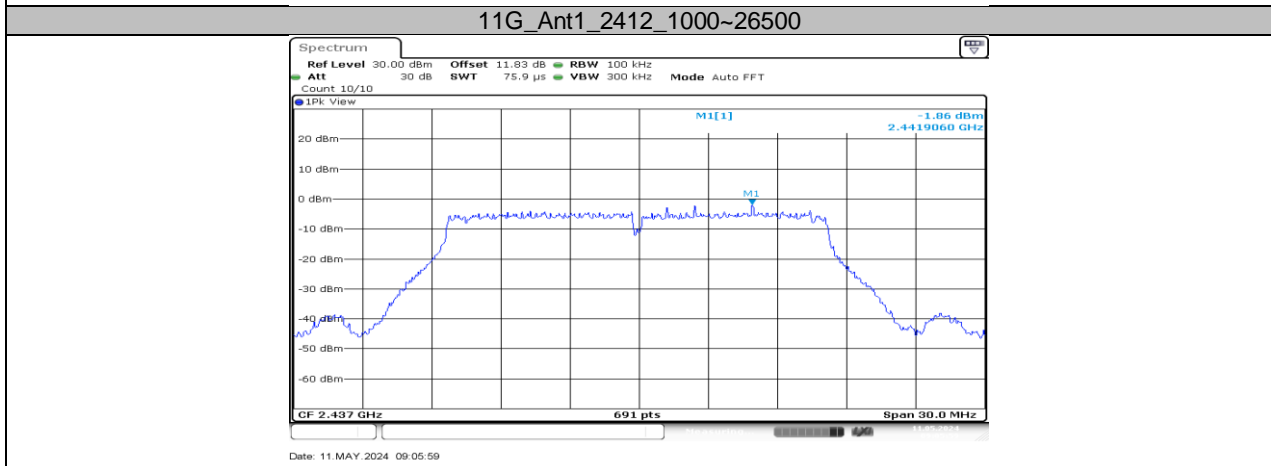
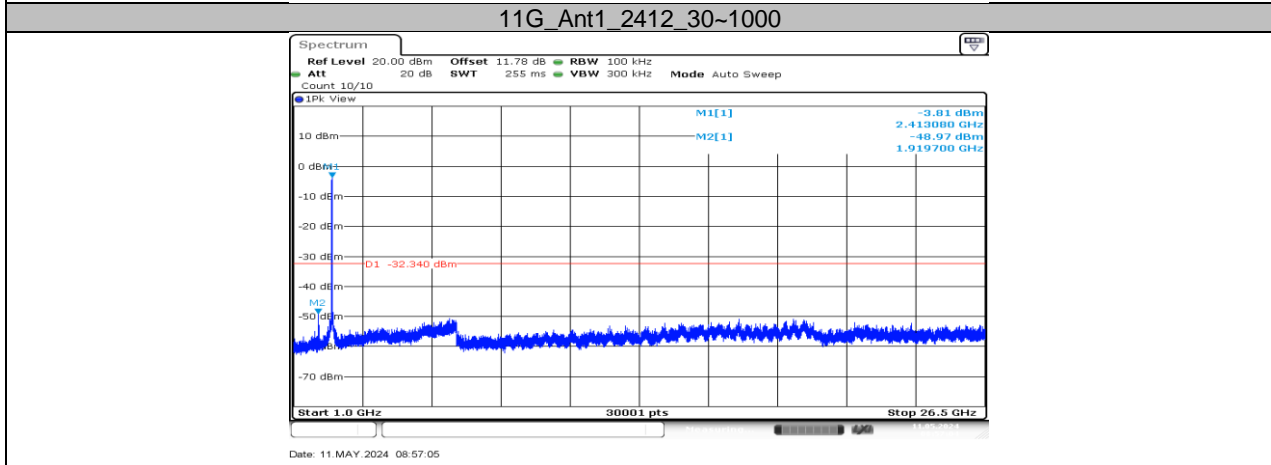
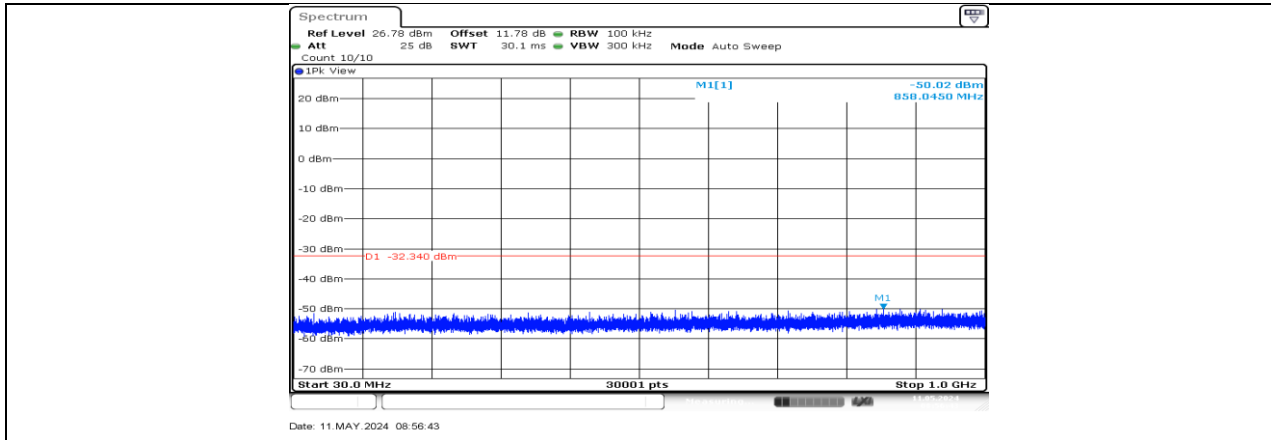
Test Mode	Antenna	Frequency [MHz]	FreqRange [Mhz]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	8.33	---	PASS
			30~1000	-49.65	≤-21.67	PASS
			1000~26500	-46.08	≤-21.67	PASS
		2437	Reference	7.96	---	PASS
			30~1000	-49.66	≤-22.04	PASS
			1000~26500	-45.36	≤-22.04	PASS
		2462	Reference	7.41	---	PASS
			30~1000	-50.56	≤-22.59	PASS
			1000~26500	-47.24	≤-22.59	PASS
11G	Ant1	2412	Reference	-2.34	---	PASS
			30~1000	-50.02	≤-32.34	PASS
			1000~26500	-48.97	≤-32.34	PASS
		2437	Reference	-1.86	---	PASS
			30~1000	-49.03	≤-31.86	PASS
			1000~26500	-49.25	≤-31.86	PASS
		2462	Reference	-1.05	---	PASS
			30~1000	-49.69	≤-31.05	PASS
			1000~26500	-47.67	≤-31.05	PASS
11N20SISO	Ant1	2412	Reference	2.61	---	PASS
			30~1000	-50.14	≤-27.39	PASS
			1000~26500	-48.59	≤-27.39	PASS
		2437	Reference	-0.03	---	PASS
			30~1000	-49.74	≤-30.03	PASS
			1000~26500	-48.93	≤-30.03	PASS
		2462	Reference	3.49	---	PASS
			30~1000	-49.85	≤-26.51	PASS
			1000~26500	-48.84	≤-26.51	PASS

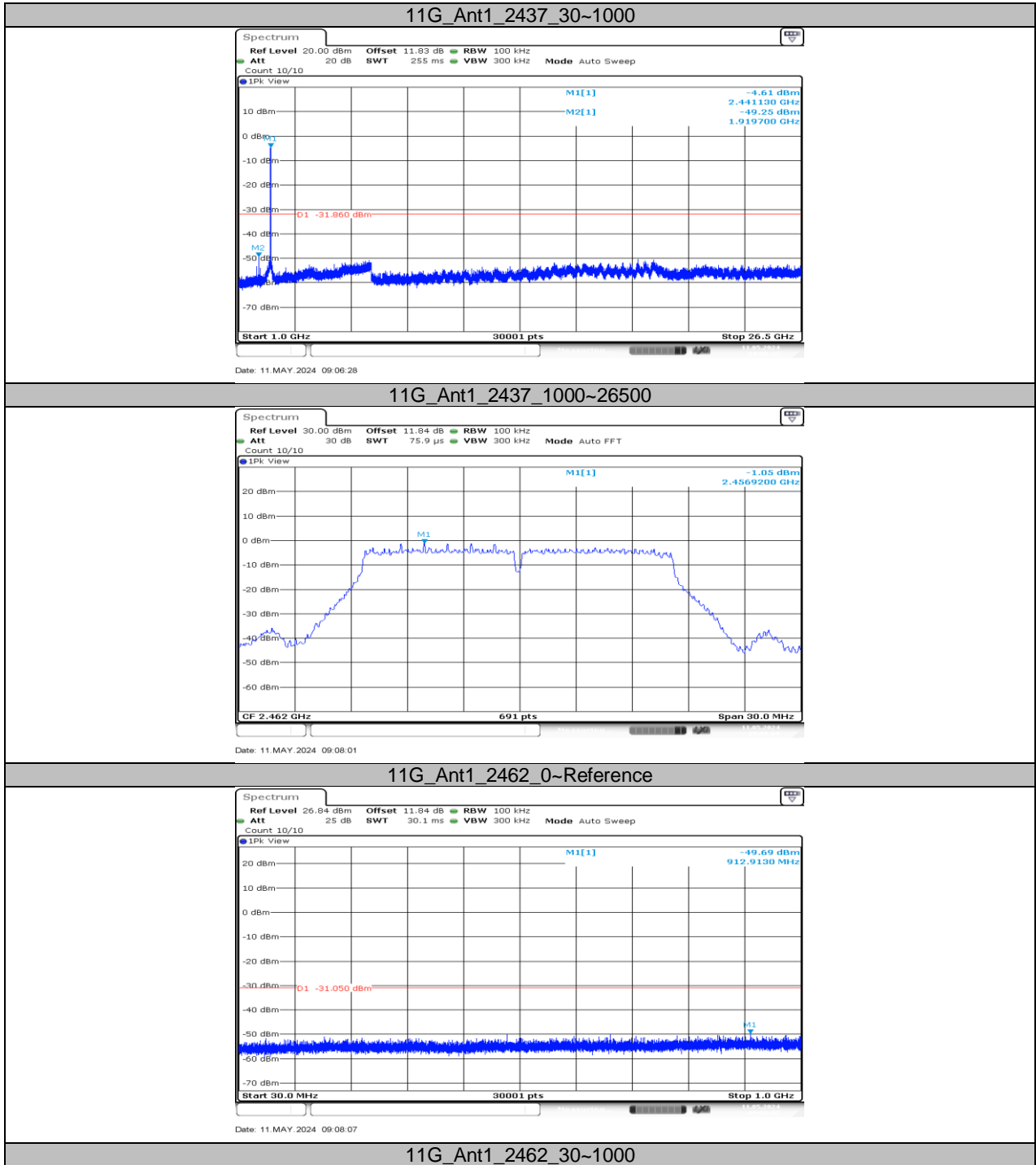
10.6.2. Test Graphs

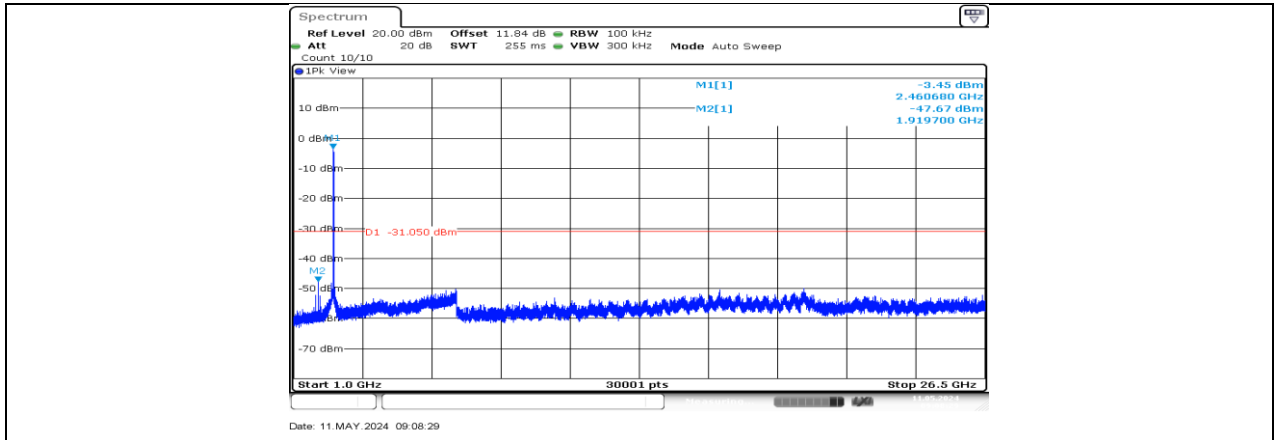




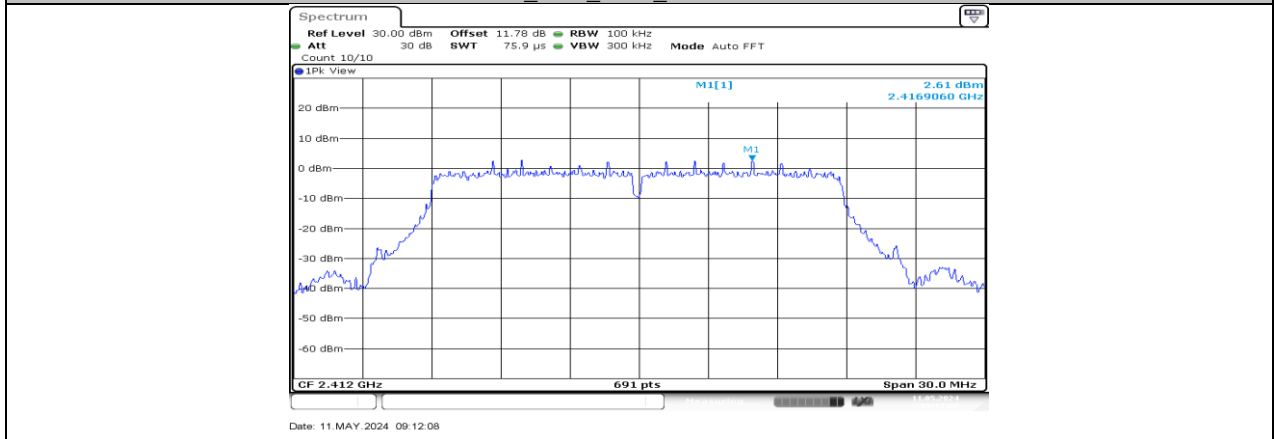




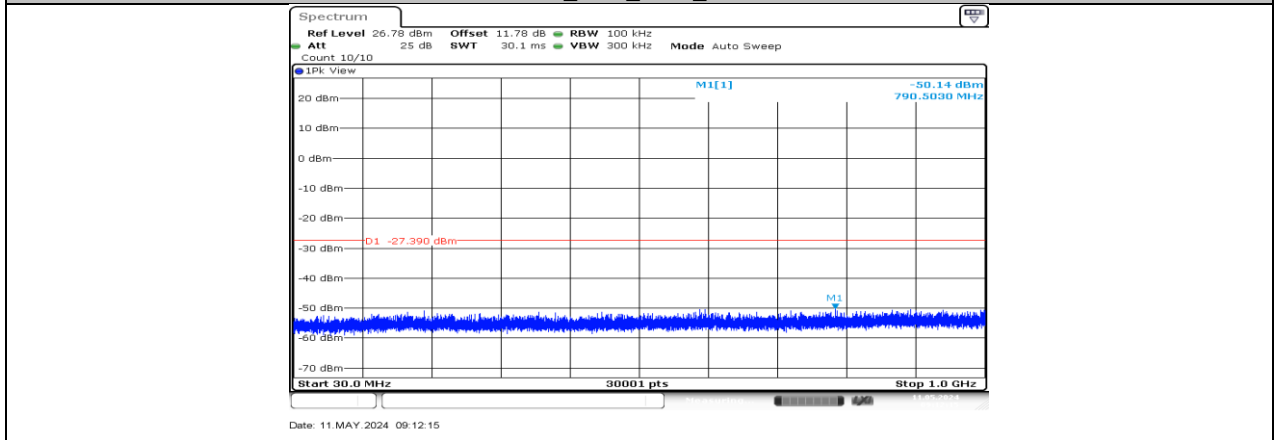




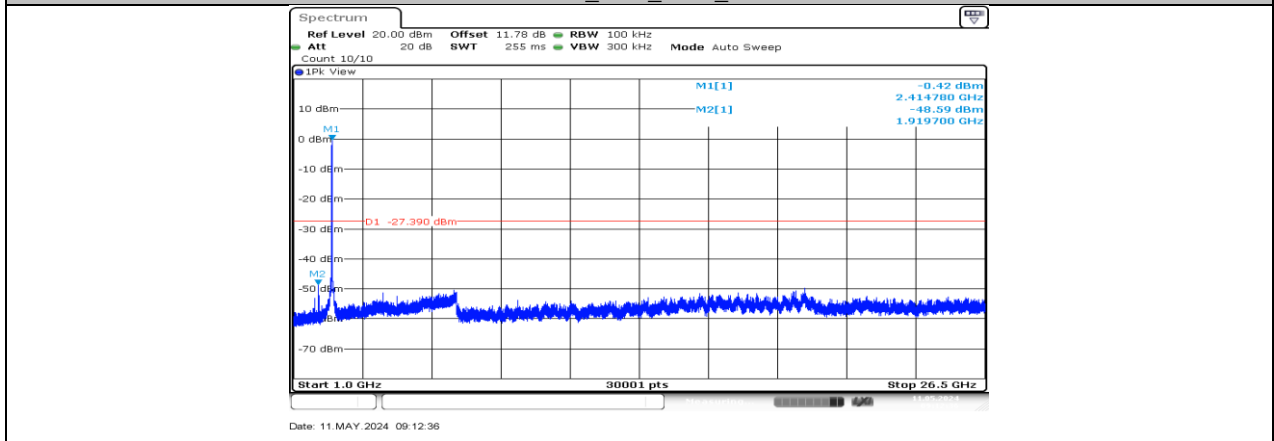
11G_Ant1_2462_1000~26500

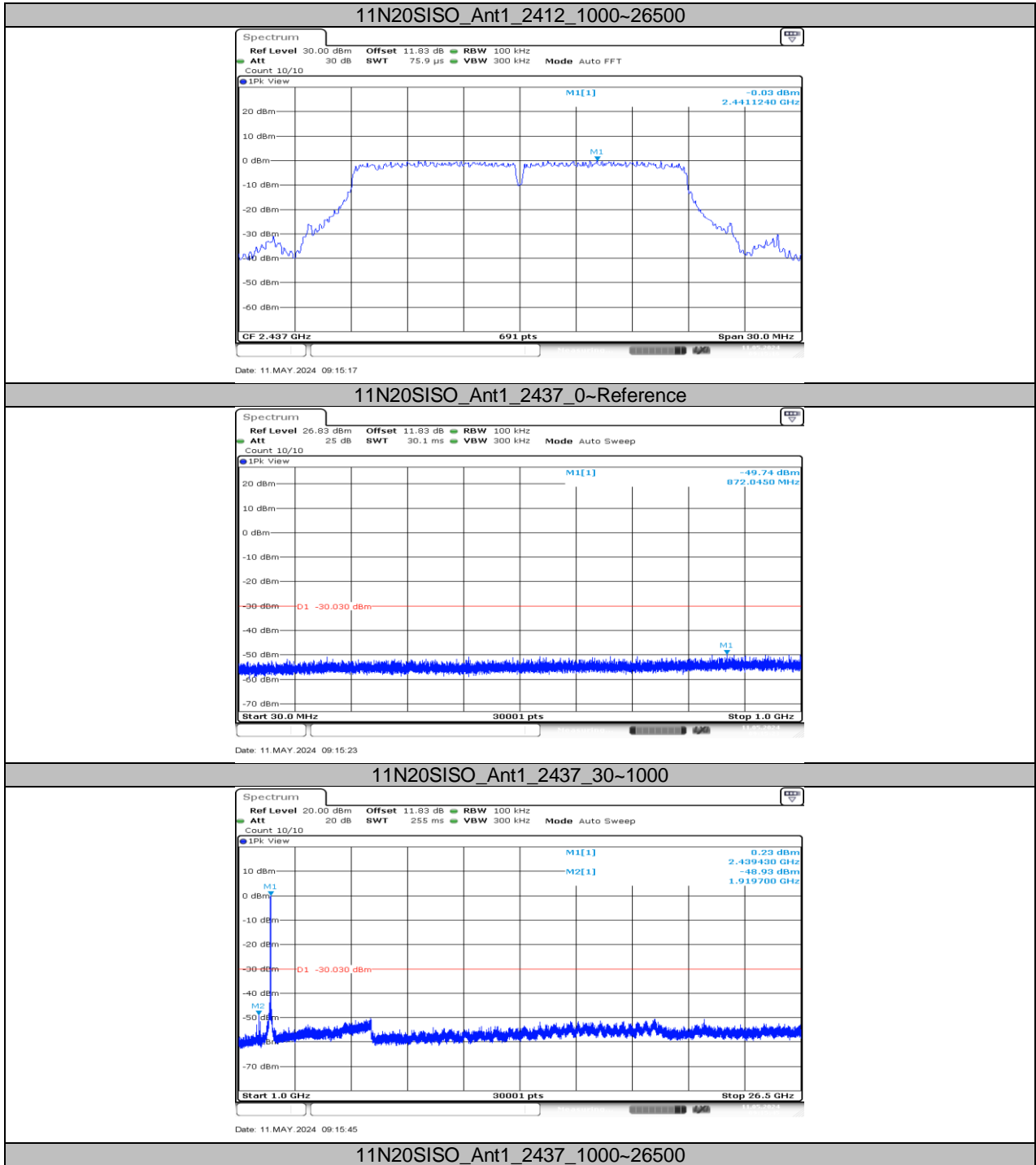


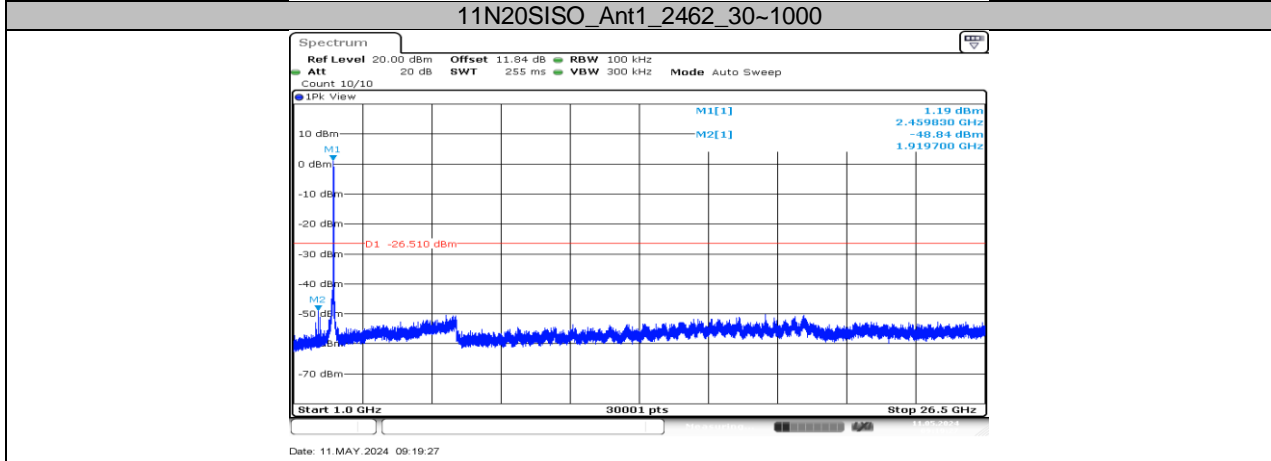
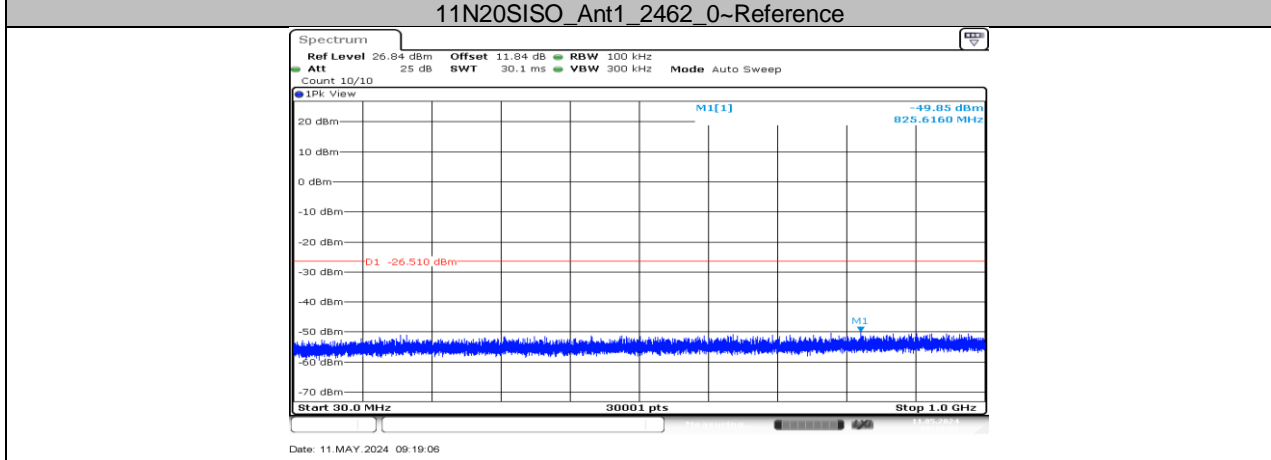
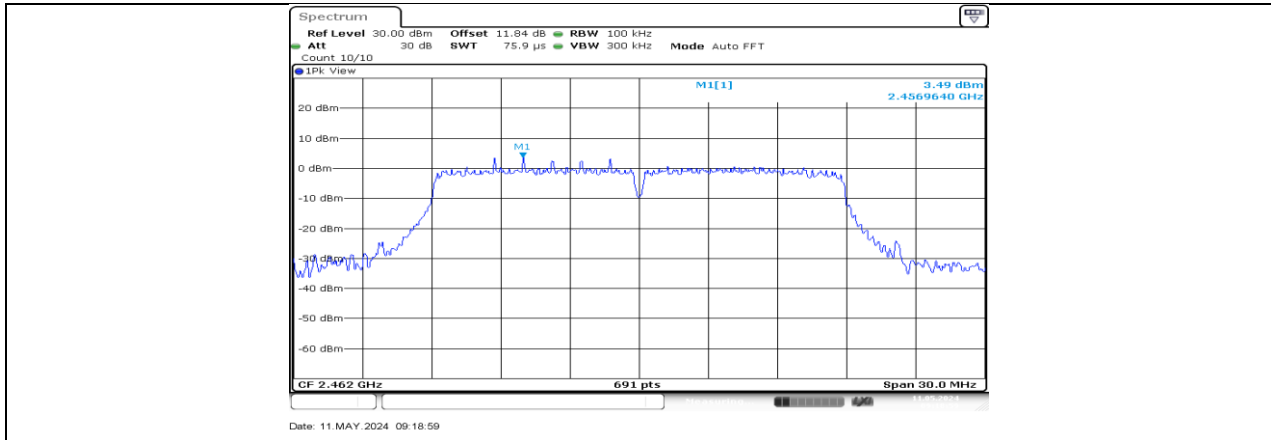
11N20SISO_Ant1_2412_0~Reference



11N20SISO_Ant1_2412_30~1000







10.7. APPENDIX G: DUTY CYCLE

10.7.1. Test Result

Test Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
11B	150.00	150.00	1.0000	100.00	0.00	0.01	0.01
11G	50.00	50.00	1.0000	100.00	0.00	0.02	0.01
11N20SISO	50.00	50.00	1.0000	100.00	0.00	0.02	0.01

Note:

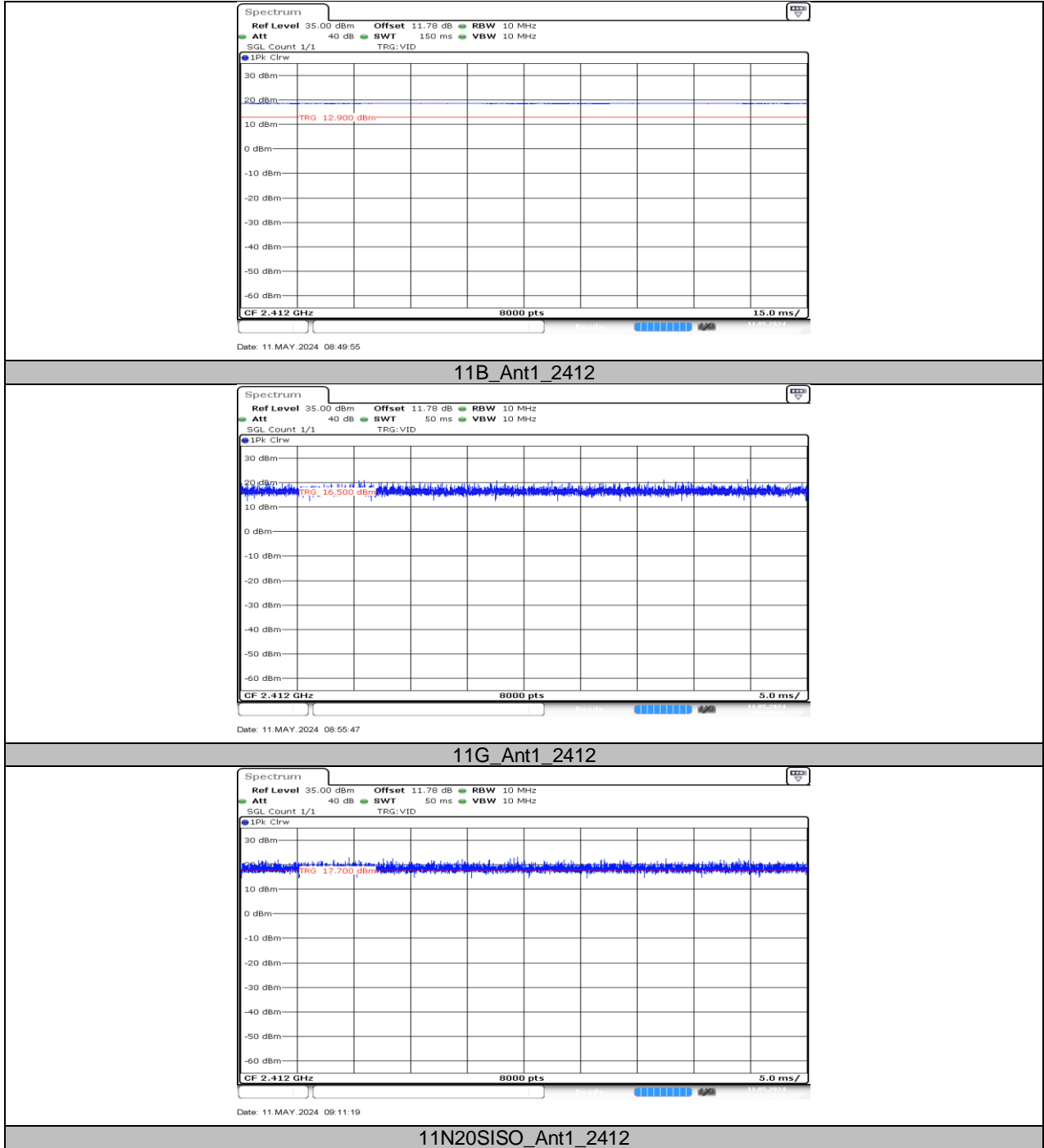
Duty Cycle Correction Factor=10log (1/x).

Where: x is Duty Cycle (Linear)

Where: T is On Time

If that calculated VBW is not available on the analyzer then the next higher value should be used.

10.7.2. Test Graphs



END OF REPORT