시 험 성 적 서
TEST REPORT

성적서 번호 Report No.		ICRT-TR-E220812-0A
신청자 Client	기관명 Name	PITTASOFT CO.,LTD.
	주 소 Address	A4th floor, ABN Tower, 331, Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
시험대상품목 Sample description		Car Dashcam
모델명 Type designation		BlackVue 7 LTE
정 격 Ratings		DC 12.0 V / DC 24.0 V
시험장소 Place of test		■ 고정시험(Inside test) □ 현장시험(Field test) 주소지(Address): 112, 113 Hwanggeum 3-ro 7beon-gil, Hagun-ri, Yangchon-eup, Gimpo-si, Gyeonggi-do, Korea
시험기간 Date of test		01.Mar. 2022 ~ 29. Mar. 2022
시험방법/항목 Test Method/Item		FCC Part 15 Subpart C §15.247
시험결과 Test Results		Refer to 3. Test Summary
확 인 Affirmation	작성자 Tested by 성 명 (서 명) Name Yeong-Hwan, Hong (Signature)	기술책임자 Technical Manager 성 명 (서 명) Name Min-Gi, Son (Signature)

□ 위 성적서는 고객이 제공한 시료에 대한 시험결과 입니다.
The above test report is certified that the above mentioned products have been tested for the sample.

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The above test report is not related to accreditation by KS Q ISO/IEC 17025 and Korea Laboratory Accreditation scheme.

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2022. 04. 06

주식회사 아이씨알 대표이사

The head of INTERNATIONAL CERTIFICATION REGISTRAR

Contents

Revision History

Issued Report No.	Issued Date	Revisions	Effect Section
ICRT-TR-E220812-0A	06-Apr-2022	Initial Issue	All

1. Applicant & Manufacturer & Test Laboratory Information

1.1 Applicant information

Applicant	PITTASOFT CO.,LTD.
Address	A4th floor, ABN Tower, 331, Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
Contact Person	MINHO SHIN
Telephone No.	+82-31-8039-7789
Fax No.	+82-31-8039-5260
E-mail	shinmh@pittasoft.com

1.2 Manufacturer Information

Manufacturer	PITTASOFT CO.,LTD.
Address	A4th floor, ABN Tower, 331, Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea

1.3 Test Laboratory Information

Conducted tests were performed at	
Laboratory	ICR Co., Ltd.
Address	112, Hwanggeum 3-ro 7beon-gil, Hagun-ri, Yangchon-eup, Gimpo-si, Gyeonggi-do, Korea
Telephone No.	+82-2-6351-9002
Fax No.	+82-2-6351-9007
RRA No.	KR0165
KOLAS No.	KT652
Test Firm Registration Number	490614

2. Equipment under Test(EUT) Information

2.1 General Information

Product Name	Car Dashcam
Brand Name	-
Model Name	BlackVue 7 LTE
Additional Model Name	BlackVue 7-1CH LTE, BlackVue 7-2CH LTE, BlackVue 7-2CH IR LTE, BlackVue 7-2CH DMS LTE , BlackVue 7-2CH Truck LTE, BlackVue 7-2CH ELD LTE
FCC ID	YCK-BV7LTE
Power Supply	DC 12.0 V / DC 24.0 V

2.2 Additional Information

Equipment Class	DTS-Digital Transmission System	
Device Type	Stand-alone	
Operating Frequency	802.11b/g/n(HT20)	2 412 ㎒ ~ 2 462 ㎒
	802.11n(HT40)	2 422 ㎒ ~ 2 452 ㎒
	Bluetooth LE	2 402 ㎒ ~ 2 480
RF Output Power	802.11b	12.68 ㏈m
	802.11g	9.94 ㏈m
	802.11n(HT20)	9.86 ㏈m
	802.11n(HT40)	9.78 ㏈m
	Bluetooth LE	-2.81 ㏈m
Number of Channel	802.11b/g/n(HT20)	11
	802.11n(HT40)	7
	Bluetooth LE	40
Modulation Type	CCK / OFDM / GFSK	
Antenna Type	Chip Antenna	
Antenna Gain	1.88 ㏈i	
Antenna Operating Mode	Single Antenna Equipment with only one antenna	

2.3 Mode of operation during the test

- The EUT is continuous transmission mode during the test with set to each of the Low Channel, Middle Channel, and High Channel at the worst case data rate. The worst case data rate for each modulation is determined 1 Mbps for IEEE 802.11b, 6 Mbps for IEEE 802.11g, 6.5 Mbps for HT20, 65 Mbps for HT40.

2.4 Modifications of EUT

- None

2.5 Reason of Additional Model Name

- The basic model, electrical specifications, structure, and circuit are the same, but simple wave life is added due to the seller.

3. Test Summary

3.1 Test standards and results

FCC Part 15 Subpart C			
Clause	Test items	Applied	Results
§15.247 (a) (2)	6 dB Bandwidth	☒	PASS
§15.247 (b) (3)	Maximum Conducted (Average) Output Power	☒	PASS
§15.247 (e)	Power Spectral Density	☒	PASS
§15.247 (d)	Conducted Spurious Emission	☒	PASS
§15.247 (d) & §15.209 & §15.205	Radiated Spurious Emission	☒	PASS
§15.207	Power Line Conducted Emission	☒	PASS
§15.203	Antenna Requirement	☒	PASS

3.2 Purpose of the test

- To determine whether the equipment under test fulfills the requirements of the standards stated in FCC Part 15 Subpart C Section 15.247.

3.3 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10: 2013.

Radiated testing was performed at a distance of 3 m from EUT to the antenna.

3.4 Configuration of Test System

3.4.1 Radiated emission test

Preliminary radiated emissions test were conducted using the procedure in ANSI C63.10: 2013 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 m Semi Anechoic Chamber. The turntable was rotated through 360 degrees and the EUT was tested by positioned three orthogonal planes to obtain the highest reading on the field strength meter. Once maximum reading was determined, the search antenna was raised and lowered in both vertical and horizontal polarization.

3.4.2 AC power line conducted emission test

The EUT was connected to LISN. All supporting equipment were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.10: 2013 to determine the worse operating conditions.

3.5 Antenna requirement

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

3.5.1 Result: Pass

The transmitter has a ***Chip Antenna.*** The directional gain of the antenna is ***1.88 dBi.***

4. Used equipment on test

	Description	Model Name	Serial Number	Manufacturer	Next Cal. (cycle)
☒	Spectrum analyzer	FSV40	101455	R&S	2023. 03. 02 (1Y)
☒	Signal Generator	SMB100A	180607	R&S	2023. 03. 03 (1Y)
☒	Wideband Power Sensor	NRP-Z81	102999	R&S	2023. 03. 03 (1Y)
☒	DC Power Supply	XDL 35-5P	J00385373	Sorensen	2023. 03. 03 (1Y)
☒	Loop Antenna	HFH2-Z2	100506	Rohde & Schwarz	2023. 07. 05 (2Y)
☒	TRILOG BROADBAND ANTENNA	VULB9162	120	SCHWARZBECK	2022. 12. 15 (2Y)
☒	RF Pre Amplifier	SCU08	100747	Rohde & Schwarz	2022. 04. 14 (1Y)
☒	DOUBLE-RIDGE WAVEGUIDE HORN ANTENNA	HF907	102556	Rohde & Schwarz	2022. 08. 18 (1Y)
☒	RF Pre Amplifier	SCU18	102342	Rohde & Schwarz	2022. 04. 14 (1Y)
☒	Horn Antenna	LB-42-10-C-KF	J202024625	AINFO Inc.	2023. 03. 10 (1Y)
☒	RF Pre Amplifier	AMF-4F-18265-35-8P-1	771846	MITEQ	2023 .03. 07 (1Y)
☒	Horn Antenna	LB-28-10-C-KF	J202024627	AINFO Inc.	2023. 03. 10 (1Y)
☒	RF Pre Amplifier	AMF-4D-260400-45-6P	779919	MITEQ	2023 .03. 07 (1Y)
☒	EMI Test Receiver	ESR26	101461	Rohde & Schwarz	2022. 04. 14 (1Y)
☒	EMI Test Receiver	ESR26	101462	Rohde & Schwarz	2022. 04. 14 (1Y)
☒	LISN	ENV216	102194	Rohde & Schwarz	2022. 04. 15 (1Y)
☒	EMI Test Receiver	ESR3	102119	Rohde & Schwarz	2022. 04. 14 (1Y)

※ All test equipment used is calibration on a regular basis.

5. 6 dB Bandwidth

5.1 Operating environment

Temperature : 25 ℃

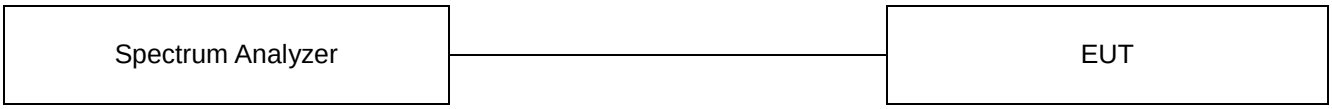
Relative humidity : 46 %

5.2 Measurement method

Standard : §15.247 (a) (2)

5.3 Test setup

The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 100 ㎑, and peak detection was used. The 6 dB bandwidth is defined as the total spectrum over which the power is higher than the peak power minus 6 dB.



5.4 Test data

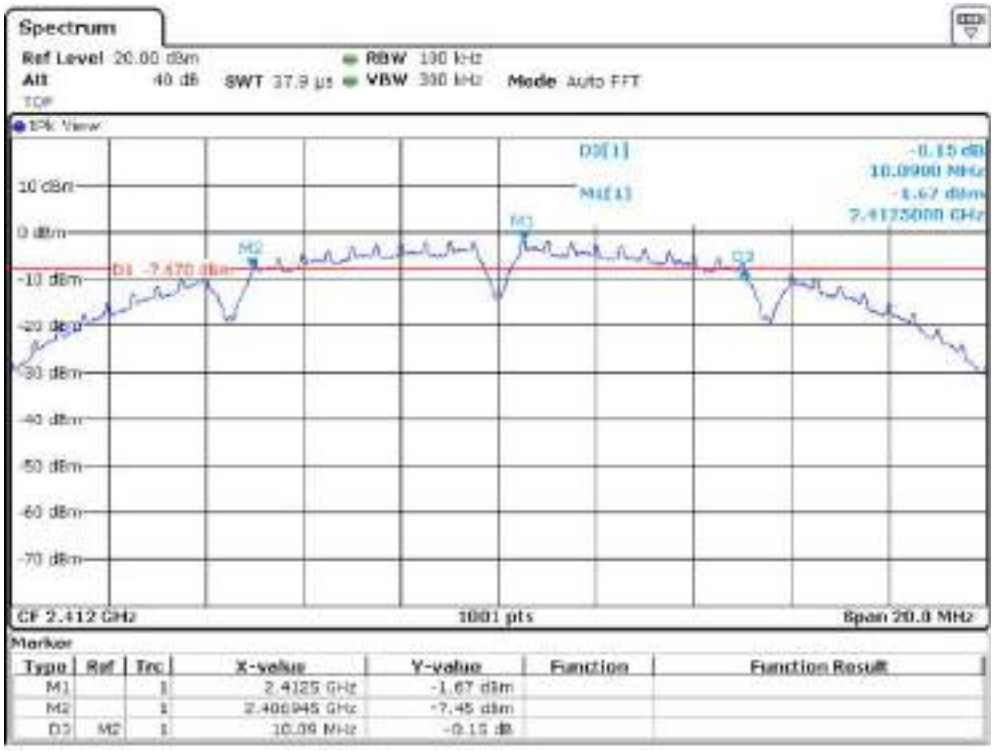
Operating mode : Transmit mode

Test Result : Pass

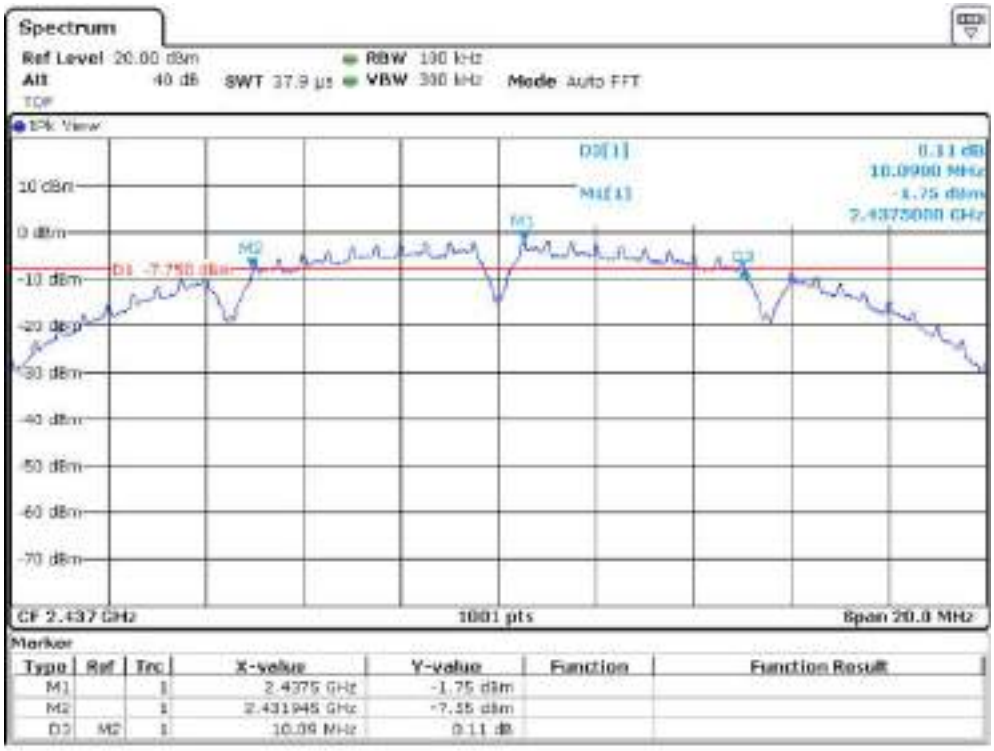
5.4.1 Measured Results for DC 12 V

Modulation Type	Channel (Frequency)	Measured Value (㎒)	Limit (㎑)
802.11b	0 (2 412 ㎒)	10.090	at least 500
	6 (2 437 ㎒)	10.090	
	11 (2 462 ㎒)	10.090	
802.11g	0 (2 412 ㎒)	16.543	
	6 (2 437 ㎒)	16.508	
	11 (2 462 ㎒)	16.464	
802.11n(HT20)	0 (2 412 ㎒)	17.802	
	6 (2 437 ㎒)	17.842	
	11 (2 462 ㎒)	17.822	
802.11n(HT40)	3 (2 422 ㎒)	36.384	
	6 (2 437 ㎒)	36.359	
	9 (2 452 ㎒)	36.423	
Bluetooth LE	0 (2 402 ㎒)	0.73	
	19 (2 440 ㎒)	0.72	
	39 (2 480 ㎒)	0.73	

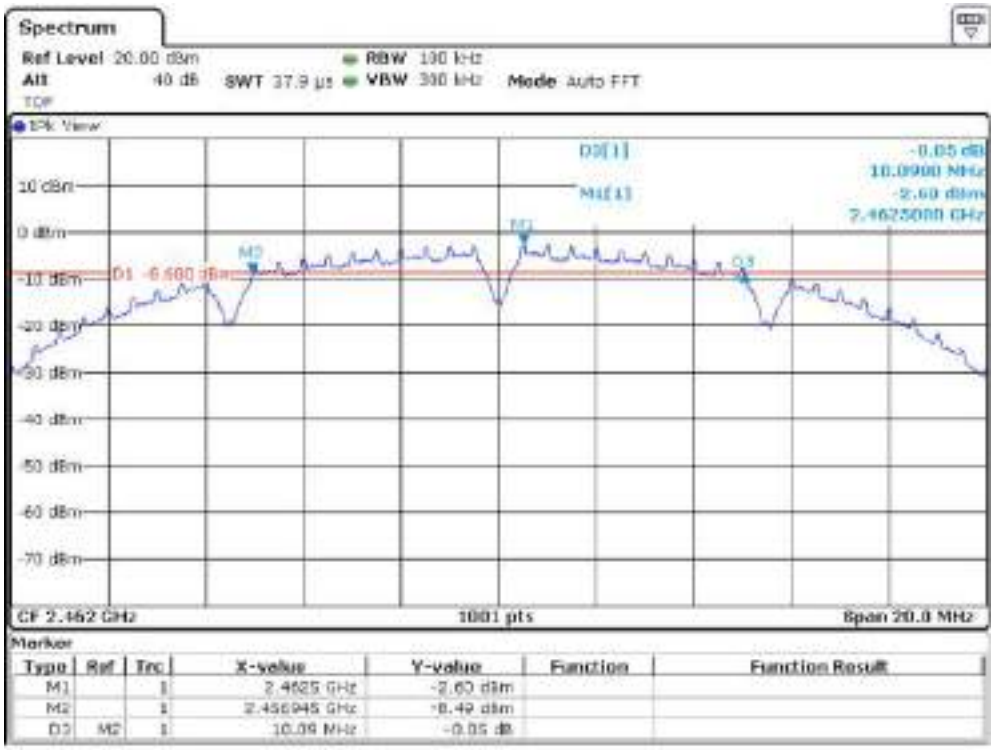
5.4.1.1 Measured Graph for 802.11b_DC 12V



Low CH

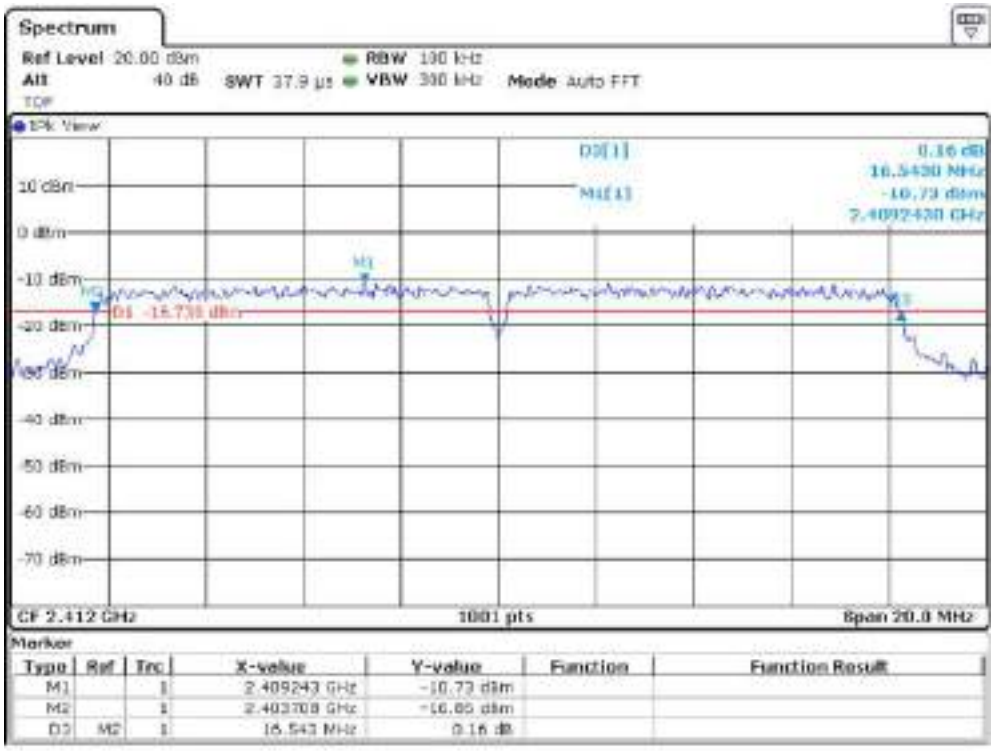


Mid CH


Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 40 dB
SWT 37.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk View
D3[1] -0.05 dB
10.0900 MHz
M1[1] -2.60 dBm
2.4625000 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -6.600 dBm
M1
M2
D3
CF 2.462 GHz
1001 pts
Span 20.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.4625 GHz -2.60 dBm
M2 1 2.456945 GHz -8.49 dBm
D3 M2 1 10.09 MHz -0.05 dB

High CH

5.4.1.2 Measured Graph for 802.11g_DC 12 V



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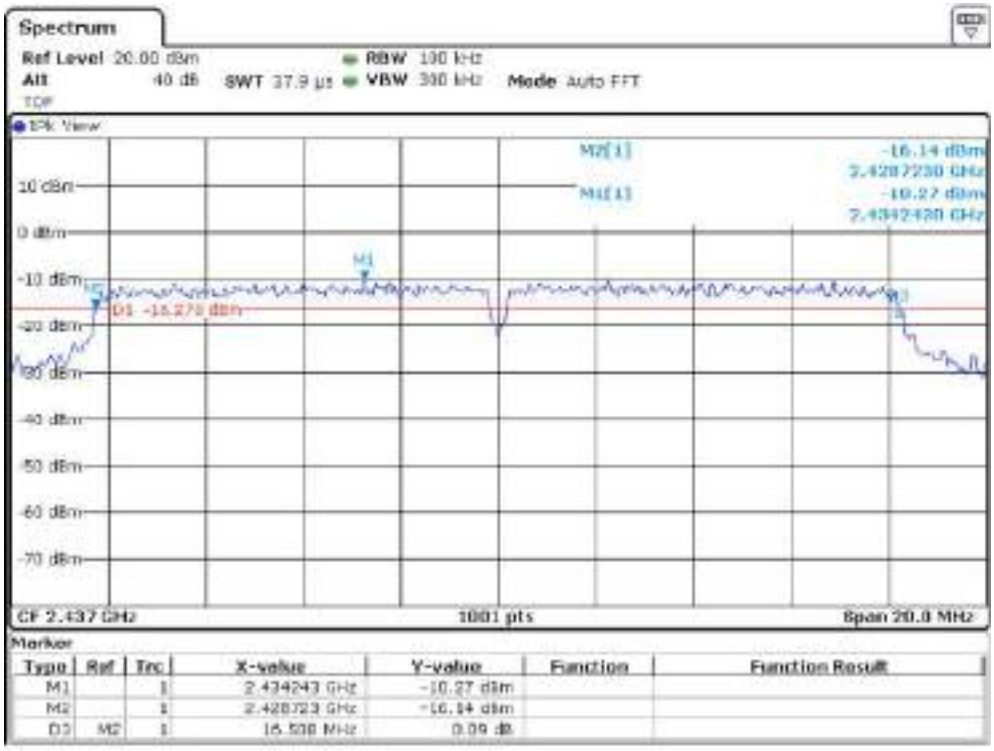
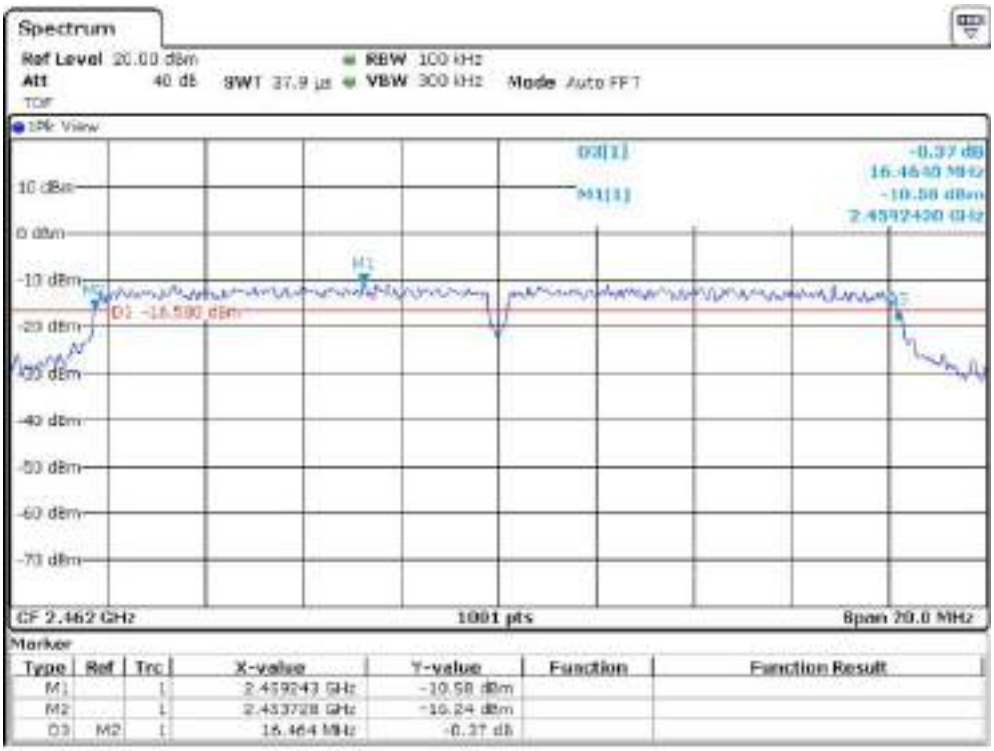
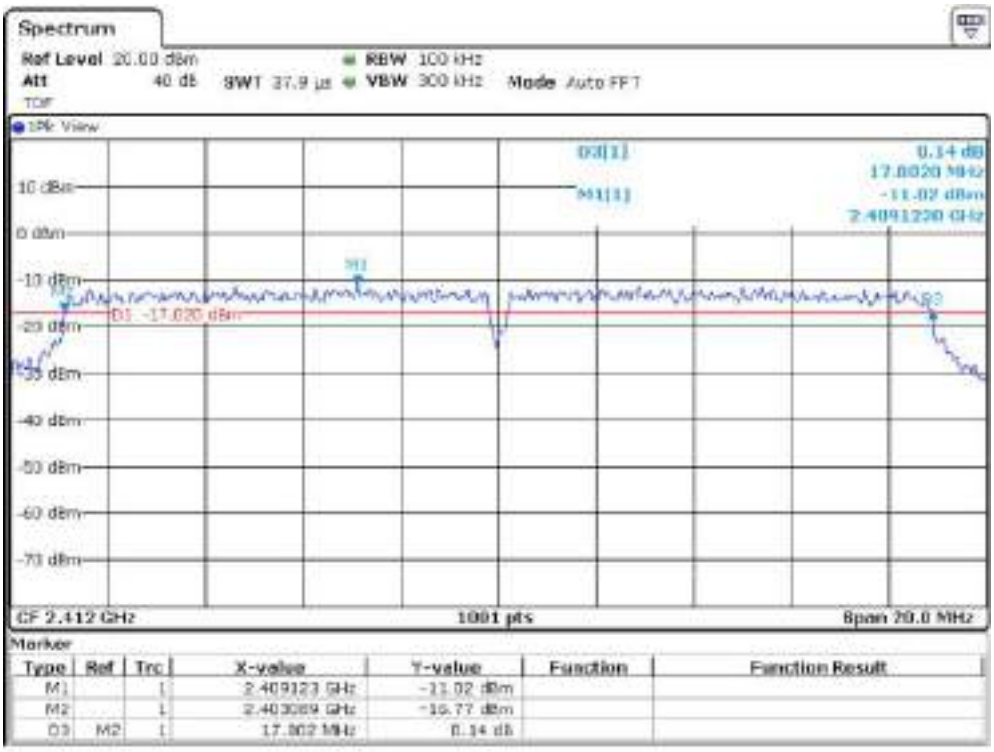


Mid CH

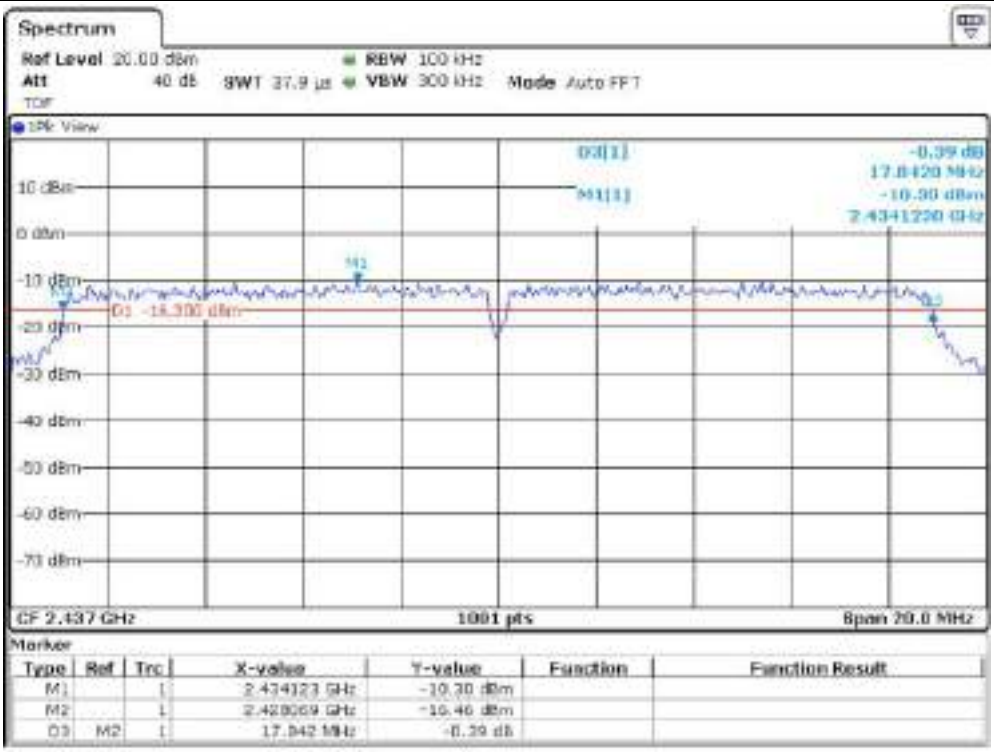

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 40 dB
SWT 37.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk View
D3[1] -0.37 dB
16.4640 MHz
M1[1] -10.58 dBm
2.4592420 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
M2
D2 -16.580 dBm
CF 2.462 GHz
1001 pts
Span 20.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.459243 GHz -10.58 dBm
M2 1 2.453728 GHz -10.24 dBm
D3 M2 1 16.464 MHz -0.37 dB

High CH

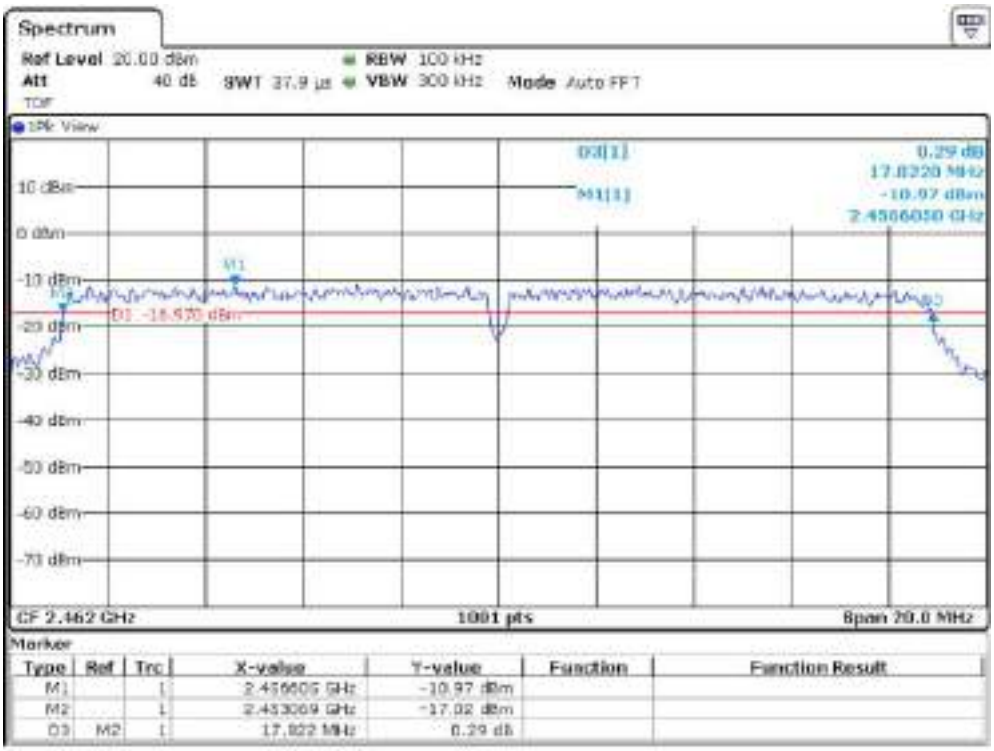
5.4.1.3 Measured Graph for 802.11n(HT20)_DC 12 V



Low CH

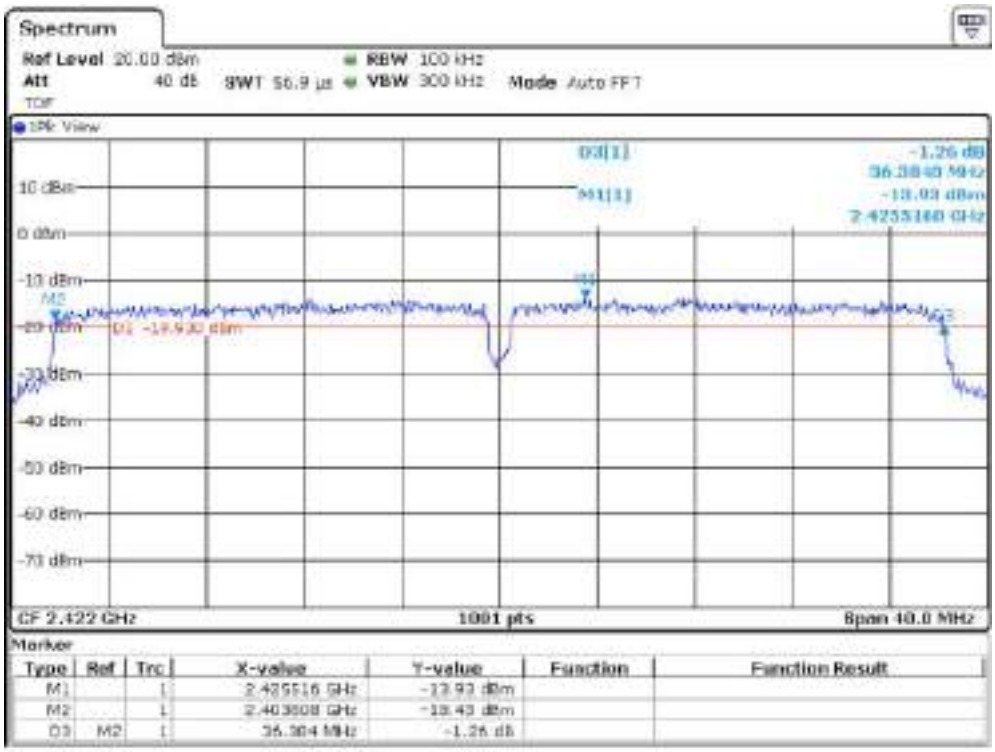


Mid CH

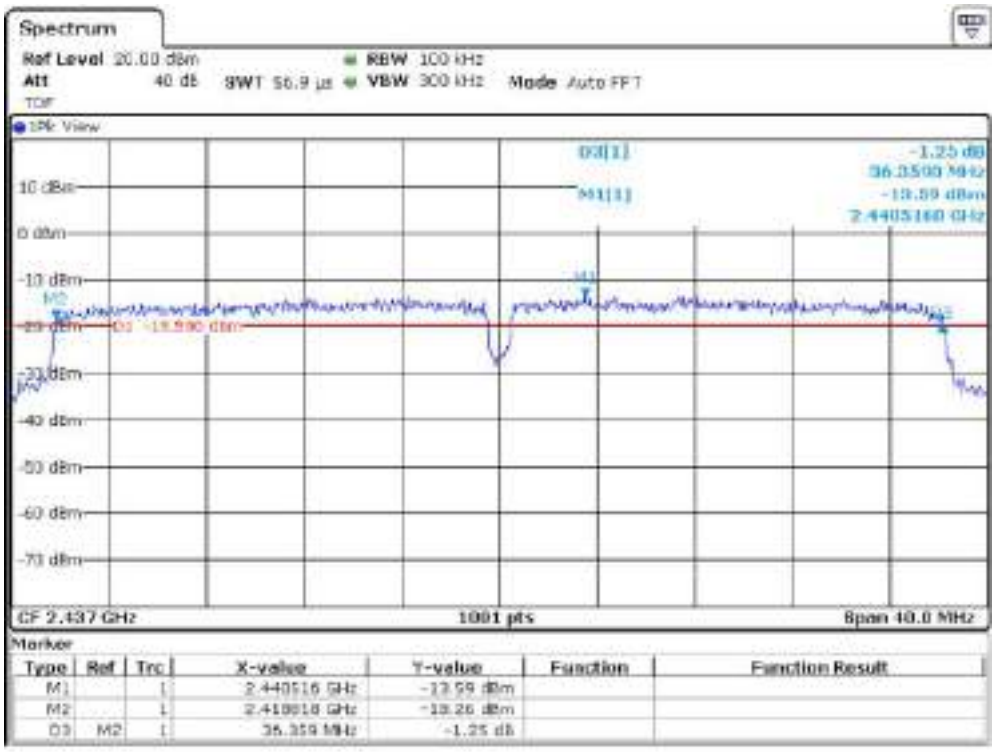

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 40 dB
SWT 37.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk View
D3[1] 0.29 dB
17.8220 MHz
M1[1] -10.97 dBm
2.4566050 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -16.970 dBm
CF 2.462 GHz
1001 pts
Span 20.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.456605 GHz -10.97 dBm
M2 1 2.433069 GHz -17.02 dBm
D3 M2 1 17.822 MHz 0.29 dB

High CH

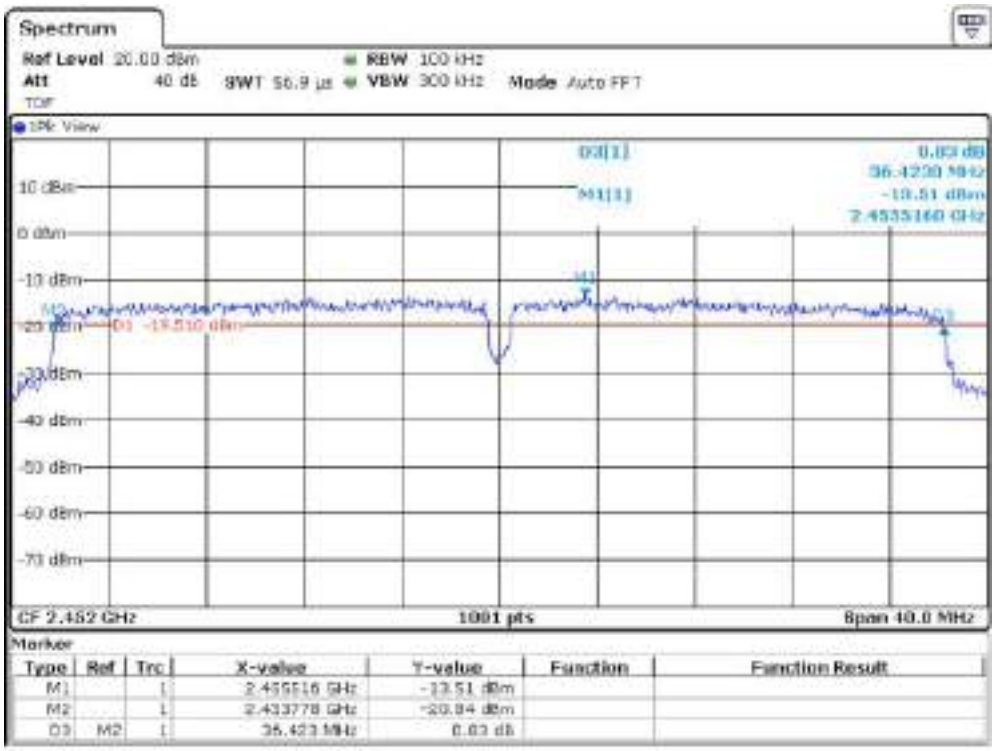
5.4.1.4 Measured Graph for 802.11n(HT40)_DC 12 V



Low CH

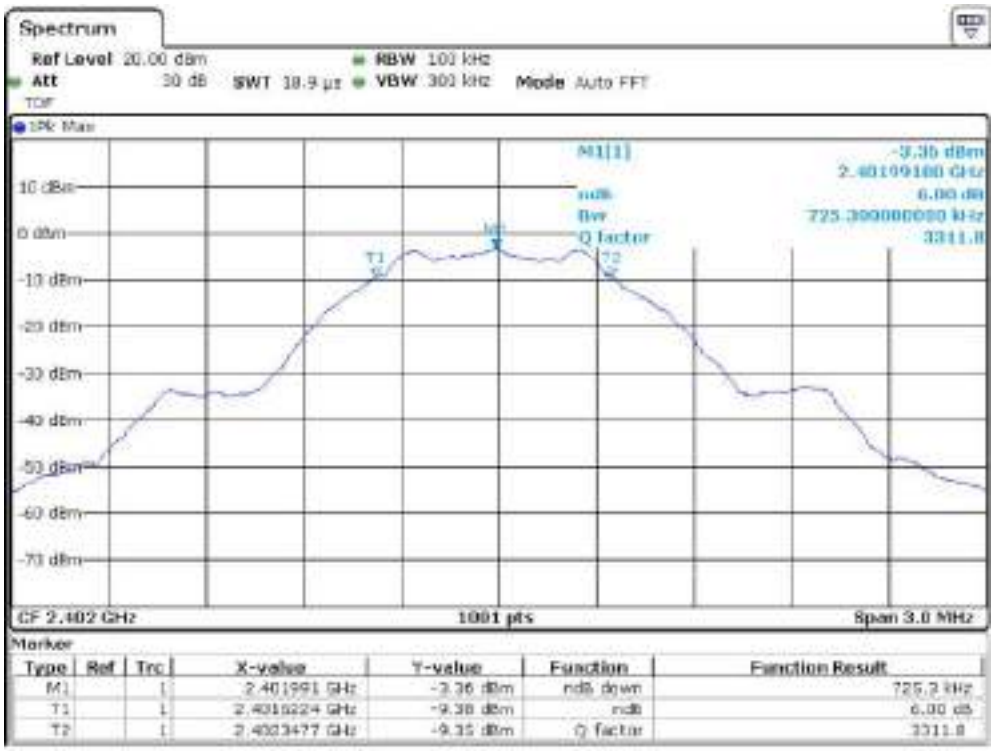


Mid CH

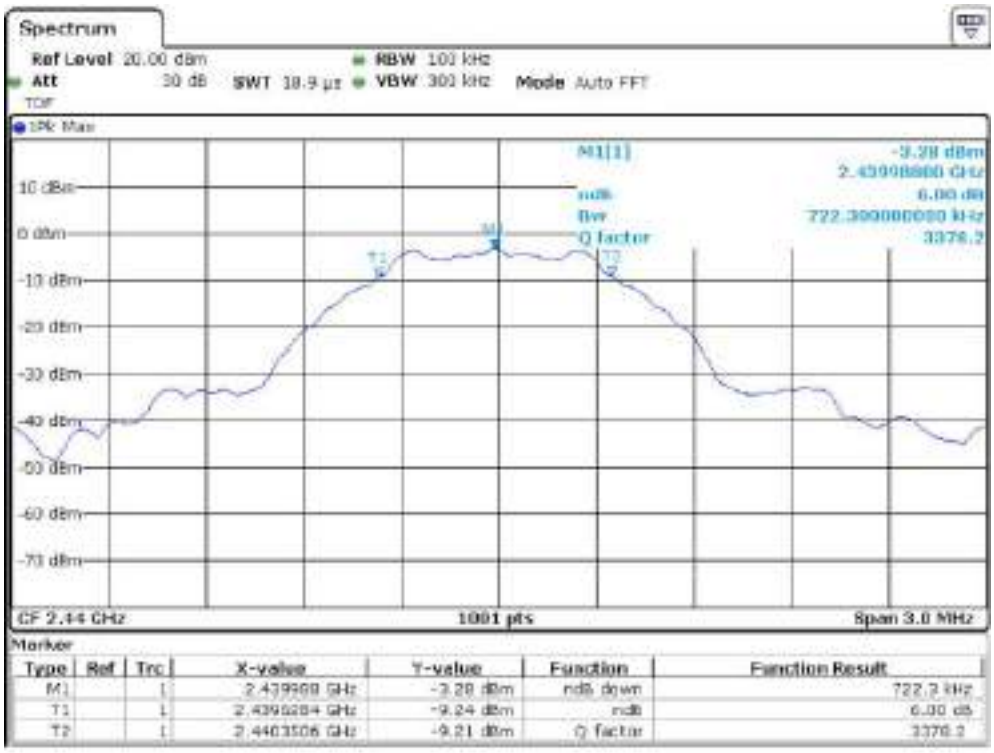

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 40 dB
SWT 56.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk View
D3[1] 0.03 dB
36.4230 MHz
M1[1] -13.51 dBm
2.4535160 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.452 GHz
1001 pts
Span 40.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.455516 GHz -13.51 dBm
M2 1 2.433778 GHz -20.84 dBm
D3 M2 1 36.423 MHz 0.03 dB

High CH

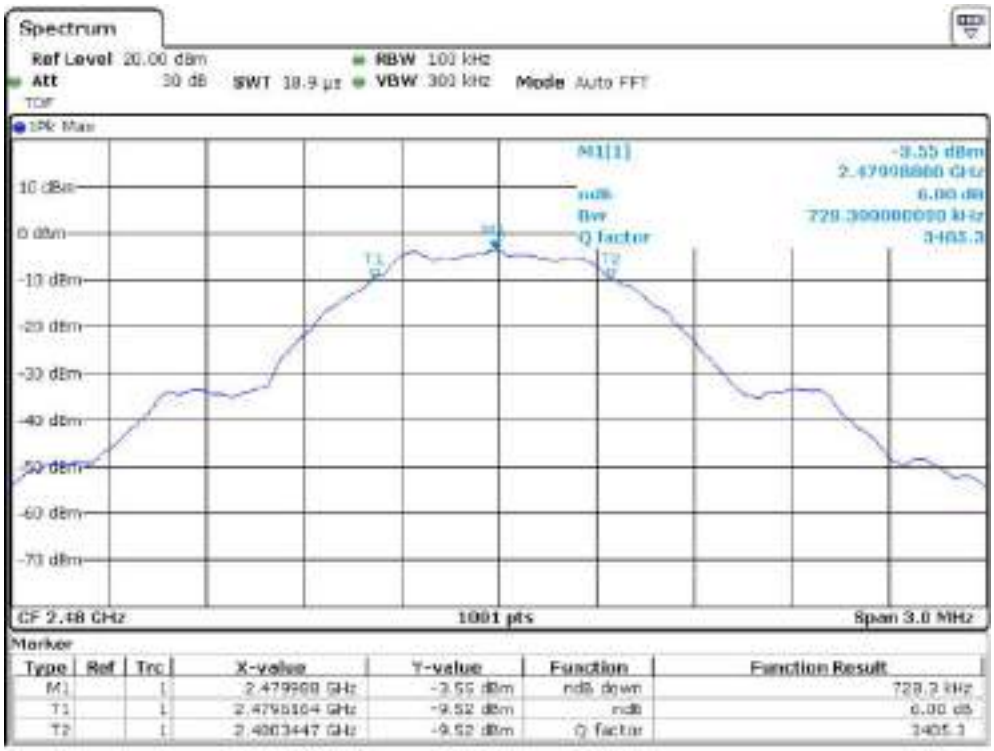
5.4.1.5 Measured Graph for Bluetooth LE_DC 12 V



Low CH



Mid CH

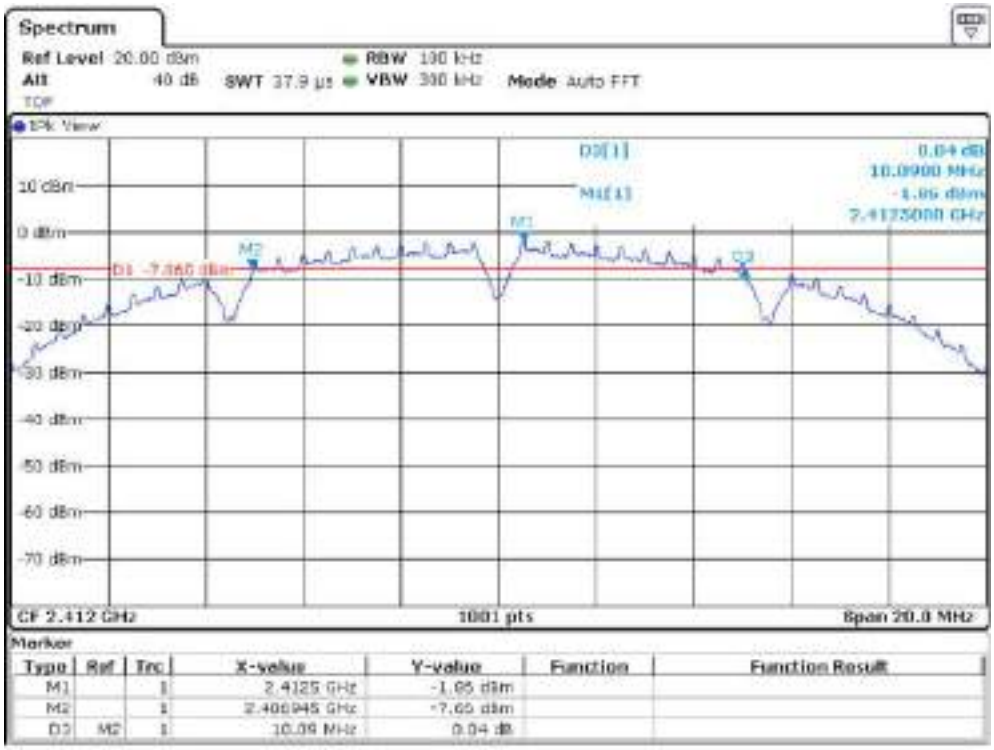

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
M1[1] -3.55 dBm
2.47900800 GHz
ndB 6.00 dB
Bw 728.399080080 kHz
Q factor 3405.3
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.48 GHz
1001 pts
Span 3.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.479900 GHz -3.55 dBm ndB down 728.2 kHz
T1 1 2.4796104 GHz -9.52 dBm ndB 6.00 dB
T2 1 2.4803447 GHz -9.52 dBm Q factor 3405.3

High CH

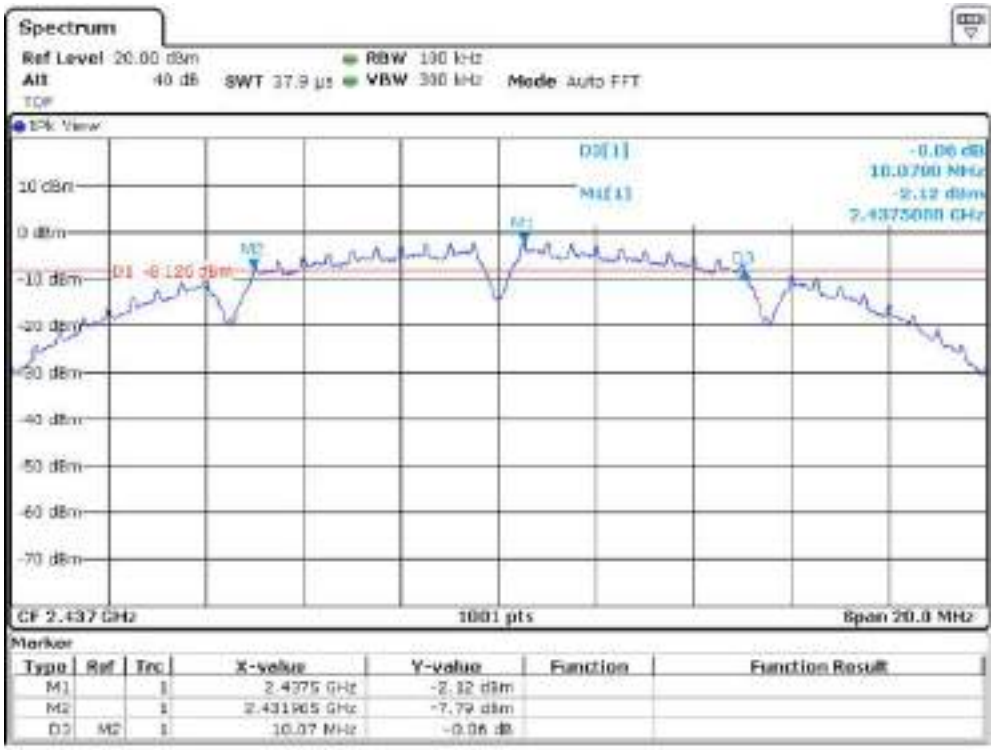
5.4.2 Measured Results for DC 24 V

Modulation Type	Channel (Frequency)	Measured Value (㎒)	Limit (㎑)
802.11b	0 (2 412 ㎒)	10.090	at least 500
	6 (2 437 ㎒)	10.070	
	11 (2 462 ㎒)	10.090	
802.11g	0 (2 412 ㎒)	16.543	
	6 (2 437 ㎒)	16.528	
	11 (2 462 ㎒)	16.484	
802.11n(HT20)	0 (2 412 ㎒)	17.802	
	6 (2 437 ㎒)	17.822	
	11 (2 462 ㎒)	17.822	
802.11n(HT40)	3 (2 422 ㎒)	36.384	
	6 (2 437 ㎒)	36.399	
	9 (2 452 ㎒)	36.423	
Bluetooth LE	0 (2 402 ㎒)	0.72	
	19 (2 440 ㎒)	0.72	
	39 (2 480 ㎒)	0.73	

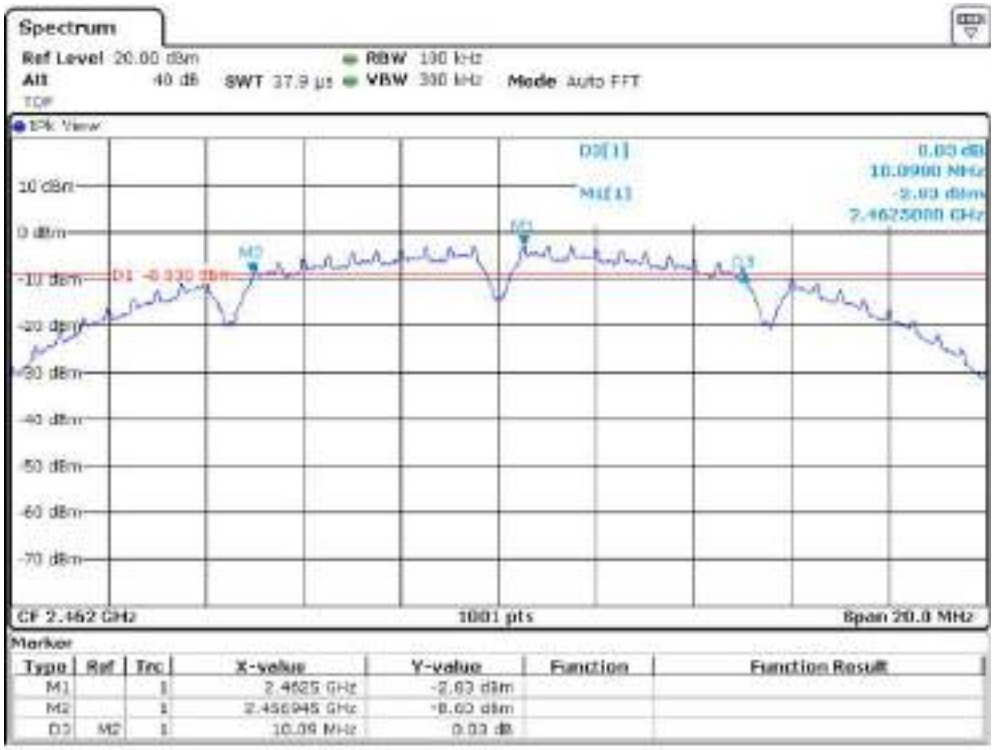
5.4.2.1 Measured Graph for 802.11b_DC 24V



Low CH

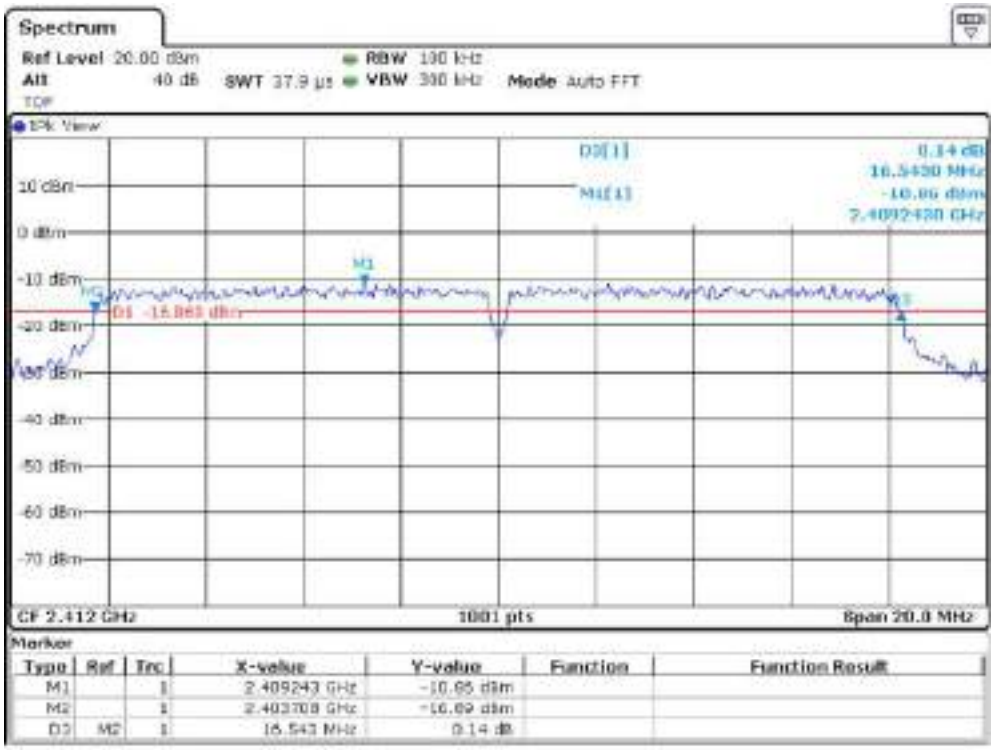


Mid CH

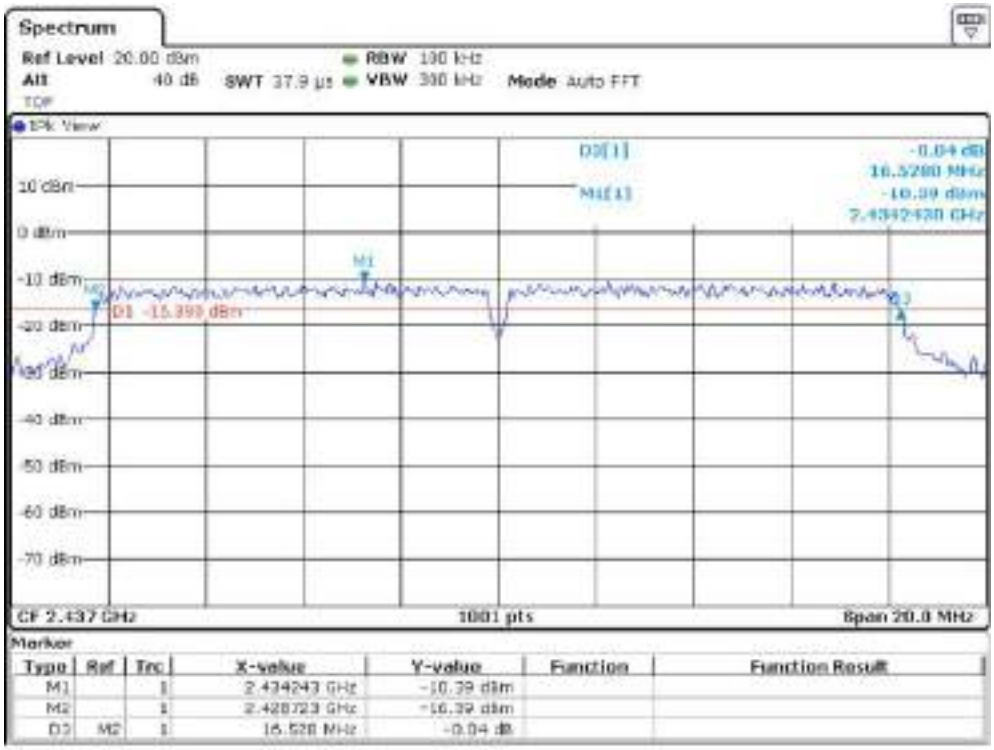

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 40 dB
SWT 37.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk View
D2[1] 0.03 dB
10.0900 MHz
M1[1] -2.03 dBm
2.4625000 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M2
D1 -8.030 dBm
M1
D2
CF 2.462 GHz
1001 pts
Span 20.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.4625 GHz -2.03 dBm
M2 1 2.456945 GHz -8.60 dBm
D2 M2 1 10.09 MHz 0.03 dB

High CH

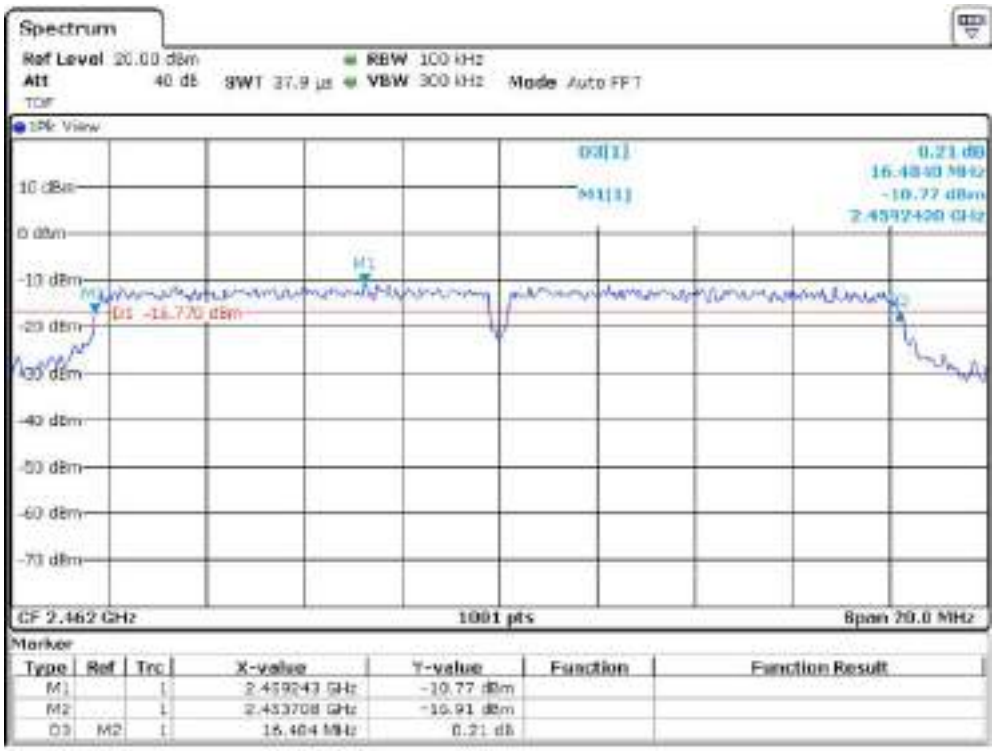
5.4.2.2 Measured Graph for 802.11g_DC 24 V



Low CH

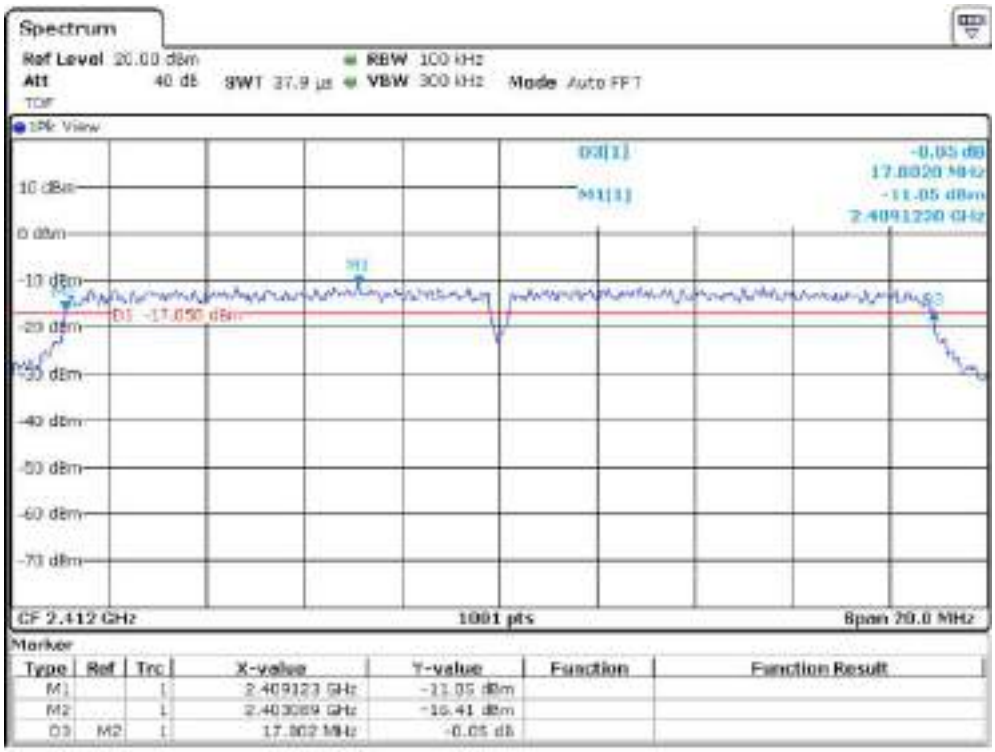


Mid CH

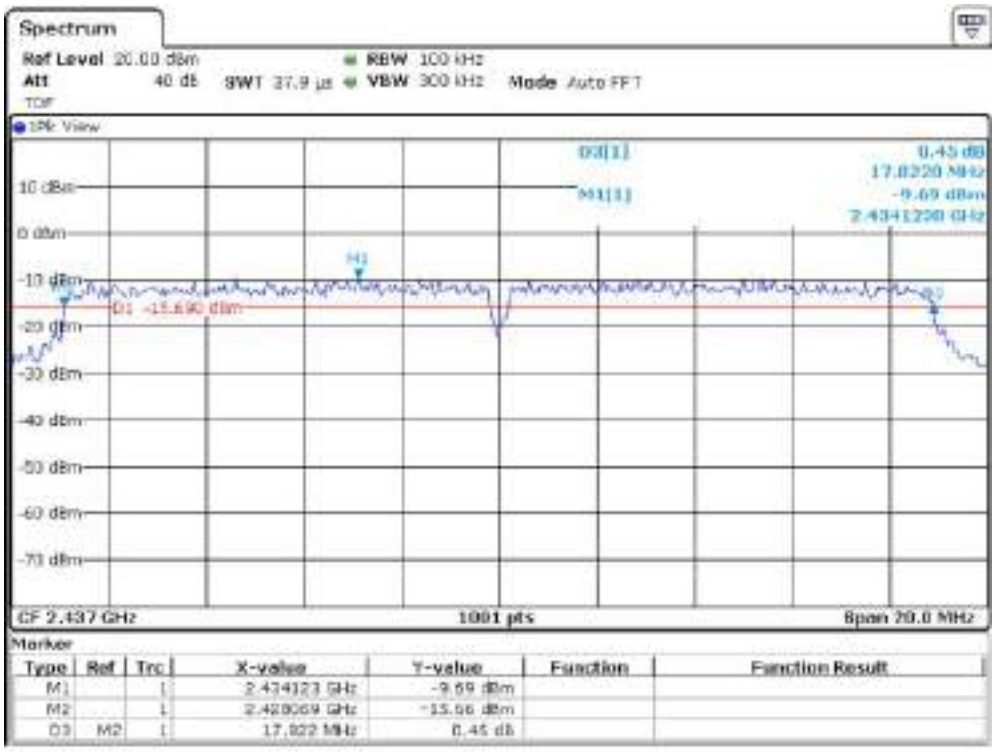

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 40 dB
SWT 37.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk View
D3[1] 0.21 dB
16.4840 MHz
M1[1] -10.77 dBm
2.4592420 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
D1 -16.770 dBm
CF 2.462 GHz
1001 pts
Span 20.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.459243 GHz -10.77 dBm
M2 1 2.433708 GHz -16.91 dBm
D3 M2 1 16.484 MHz 0.21 dB

High CH

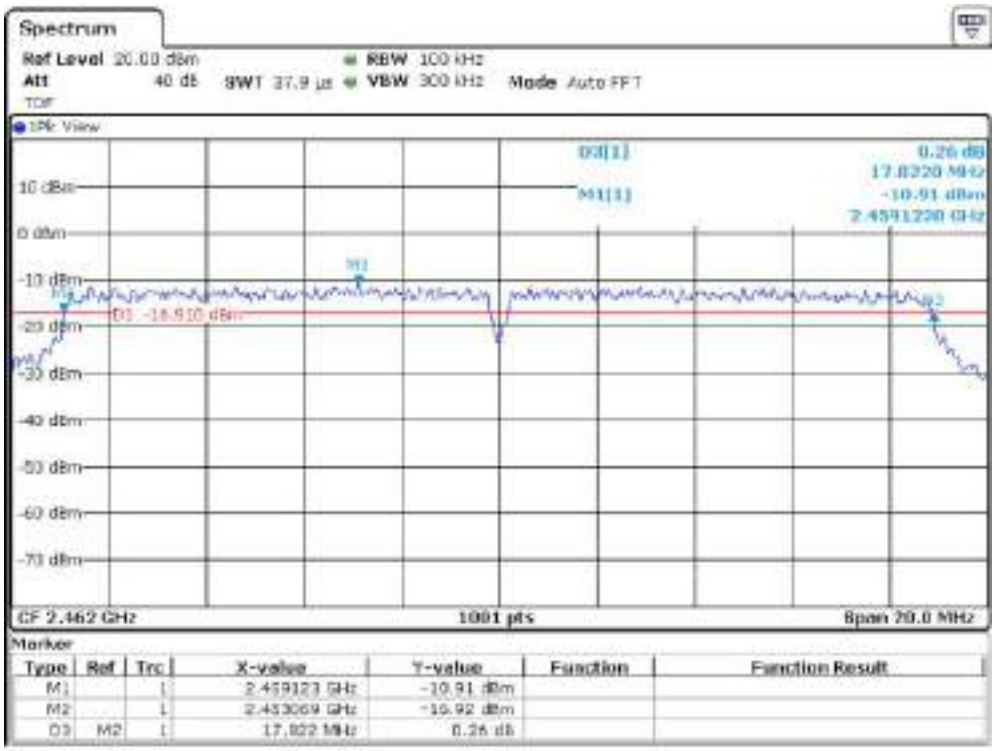
5.4.2.3 Measured Graph for 802.11n(HT20)_DC 24 V



Low CH

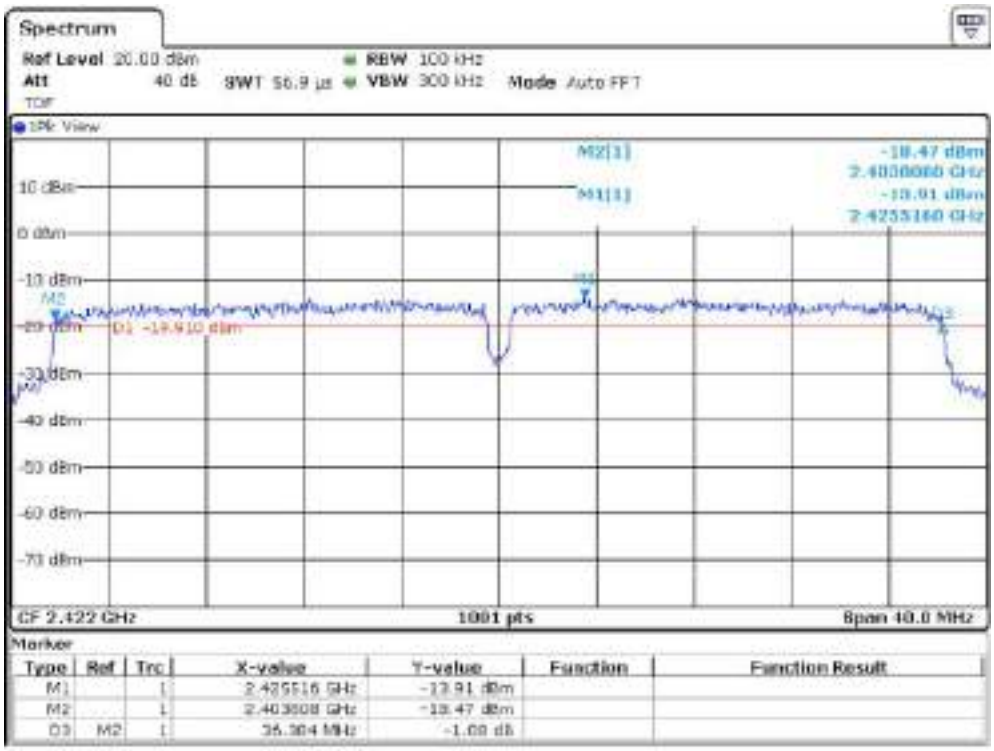


Mid CH

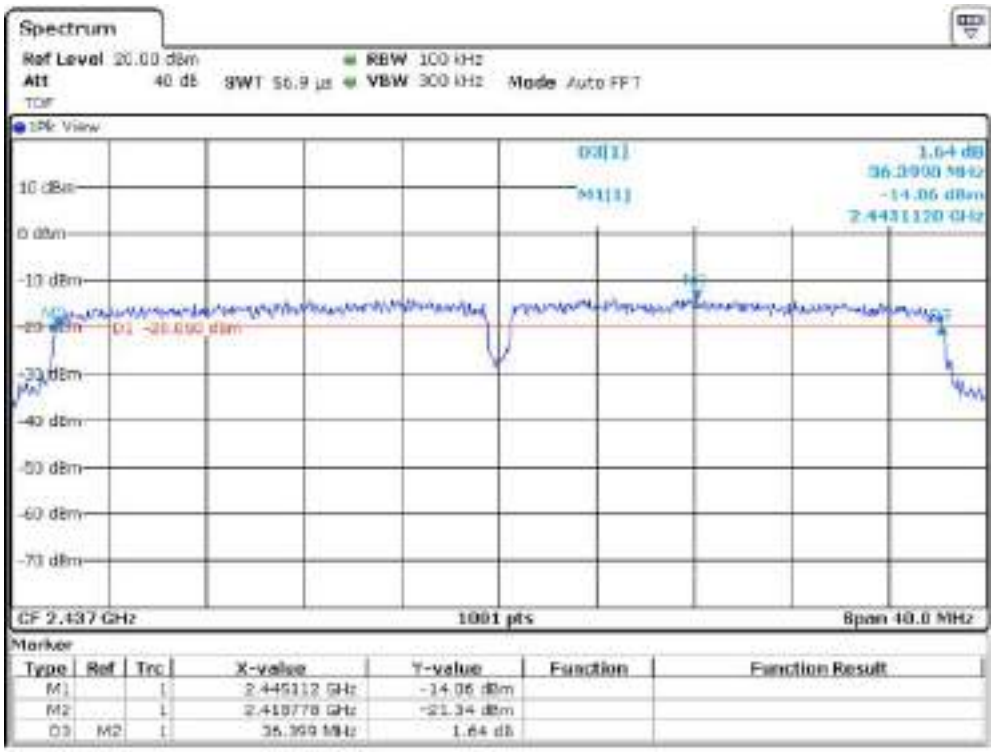

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 40 dB
SWT 37.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk View
D3[1] 0.26 dB
17.8220 MHz
M1[1] -10.91 dBm
2.4591220 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -16.910 dBm
CF 2.462 GHz
1001 pts
Span 20.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.459123 GHz -10.91 dBm
M2 1 2.433069 GHz -10.92 dBm
D3 M2 1 17.822 MHz 0.26 dB

High CH

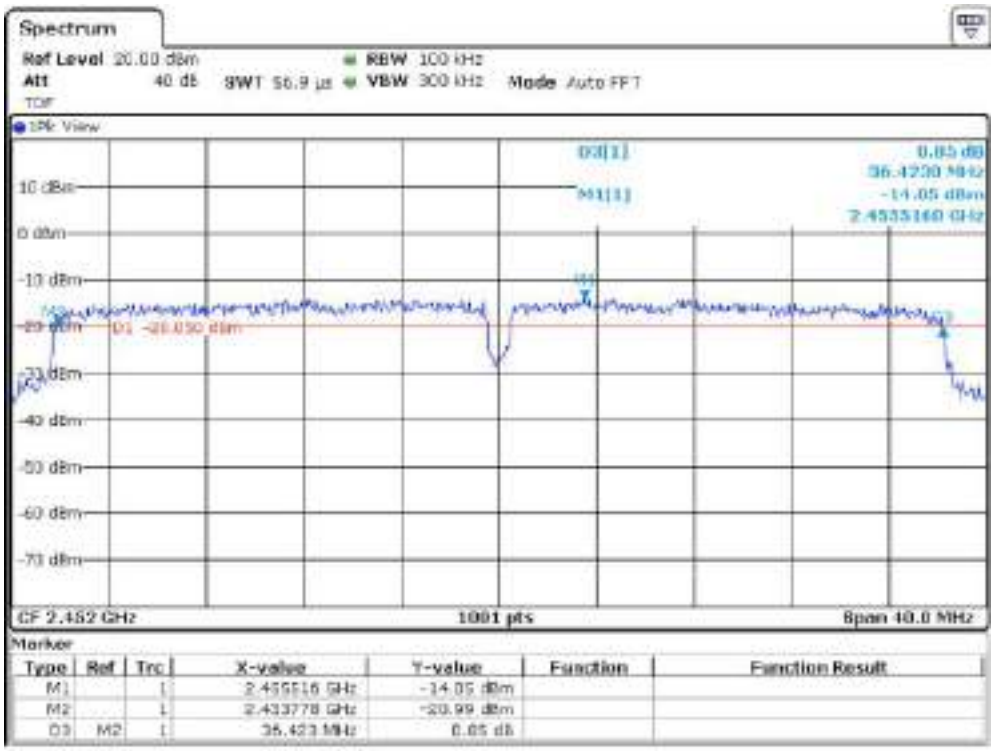
5.4.2.4 Measured Graph for 802.11n(HT40)_DC 24 V



Low CH

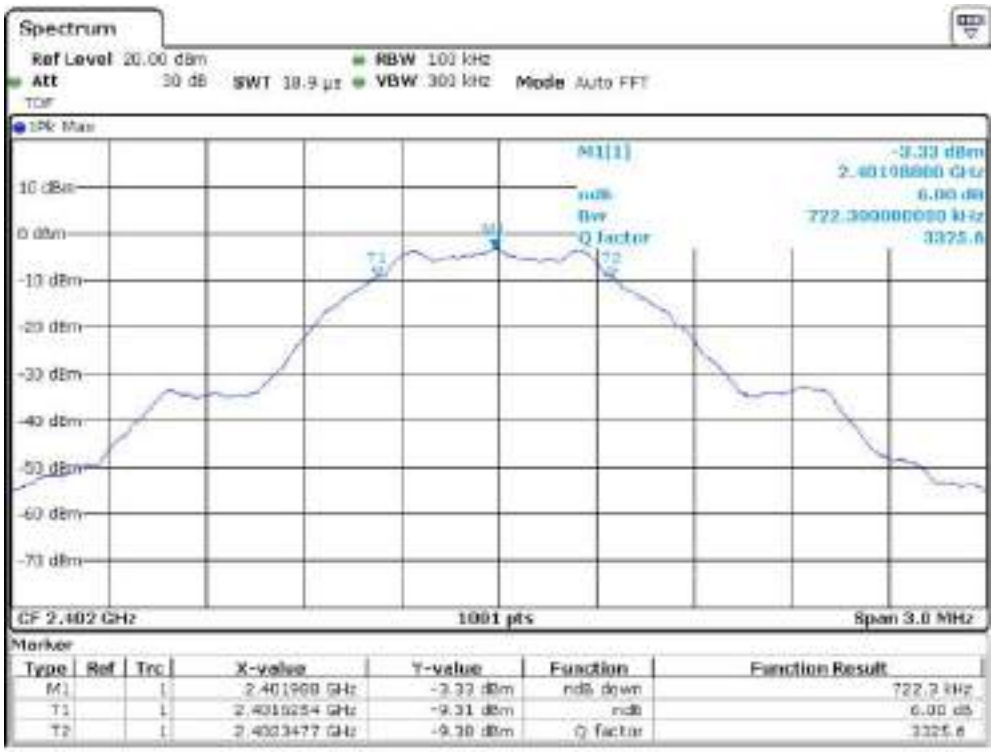


Mid CH

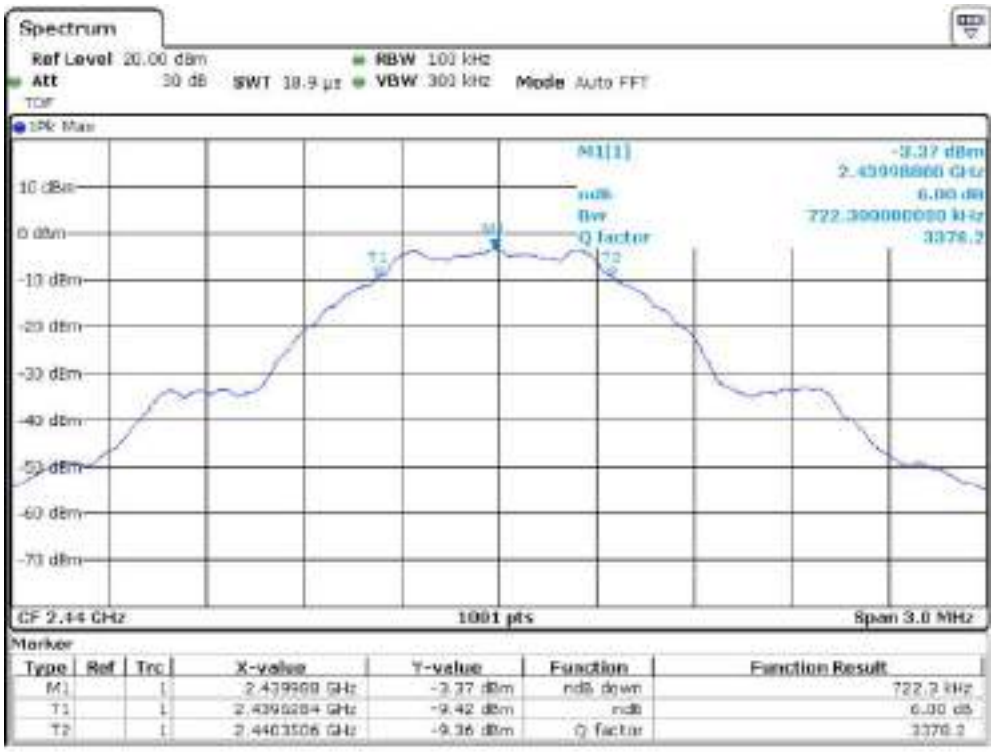

Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 40 dB
SWT 56.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk View
D3[1] 0.85 dB 36.4230 MHz
M1[1] -14.05 dBm 2.4555160 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
D1 -20.00 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.452 GHz
1001 pts
Span 40.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.455516 GHz -14.05 dBm
M2 1 2.433778 GHz -20.99 dBm
D3 M2 1 36.423 MHz 0.85 dB

High CH

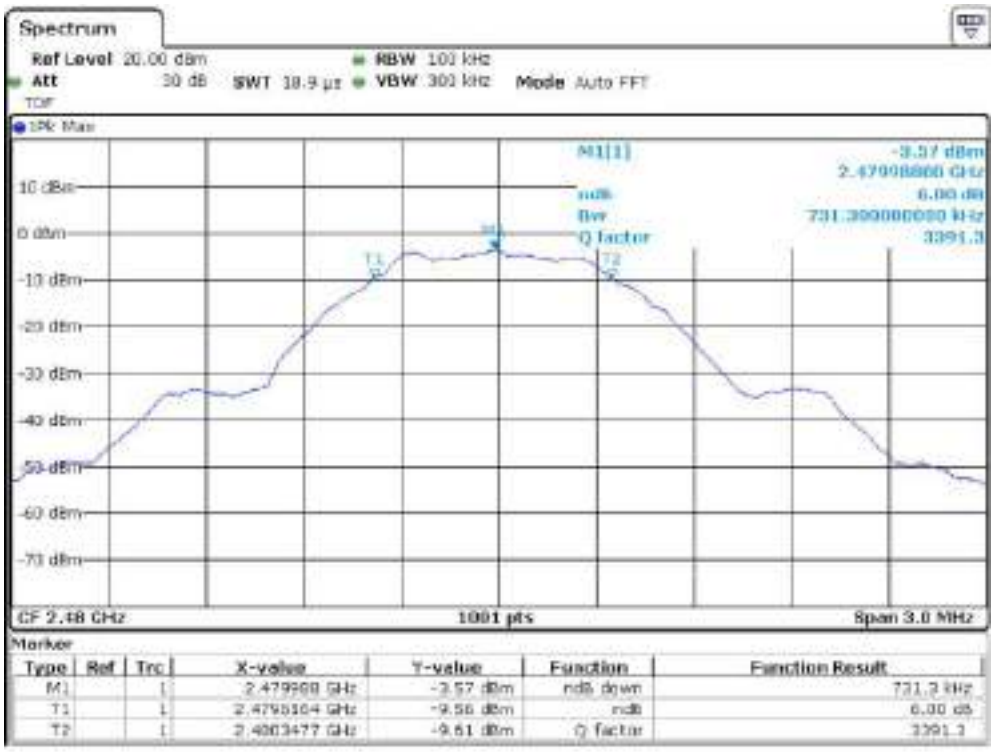
5.4.2.5 Measured Graph for Bluetooth LE_DC 24 V



Low CH



Mid CH


Spectrum
Ref Level 20.00 dBm
RBW 100 kHz
Att 30 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
M1[1]
-3.57 dBm
2.47998800 GHz
ndB
6.00 dB
Bw
731.399080000 kHz
Q factor
3391.3
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.48 GHz
1001 pts
Span 3.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.479988 GHz -3.57 dBm ndB down 731.3 kHz
T1 1 2.4796104 GHz -9.56 dBm ndB 6.00 dB
T2 1 2.4803477 GHz -9.61 dBm Q factor 3391.3

High CH

6. Maximum Conducted (Average) Output Power

6.1 Operating environment

Temperature : 25 ℃

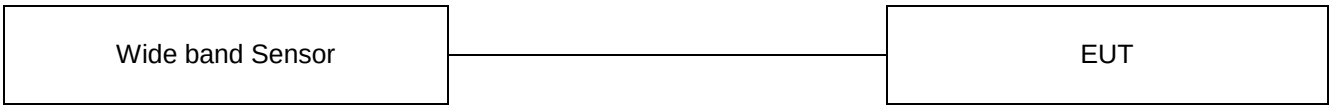
Relative humidity : 46 %

6.2 Measurement method

Standard : §15.247 (b) (3)

6.3 Test setup

The maximum peak output power was measured with the wide band sensor connected to the antenna output power of the EUT. The Wide Band Sensor is measured when the EUT is transmitting at the appropriate center frequency its maximum power control level as described in Section 8.3(558074 D01 15.247 Meas Guidance v05r02).
Since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required.



6.4 Test data

Operating mode : Transmit mode

Test Result : Pass

6.4.1 Measured Results for DC 12 V

Modulation Type	Channel (Frequency)	Measured Value (dBm)	Limit (dBm)
802.11b	1 (2 412 ㎒)	11.90	30 (1 Watt)
	6 (2 437 ㎒)	12.22	
	11 (2 462 ㎒)	***12.68***	
802.11g	1 (2 412 ㎒)	9.37	
	6 (2 437 ㎒)	9.69	
	11 (2 462 ㎒)	***9.87***	
802.11n(HT20)	1 (2 412 ㎒)	9.13	
	6 (2 437 ㎒)	9.57	
	11 (2 462 ㎒)	***9.84***	
802.11n(HT40)	3 (2 422 ㎒)	9.28	
	6 (2 437 ㎒)	9.46	
	9 (2 452 ㎒)	***9.58***	
Bluetooth LE	0 (2 402 ㎒)	-2.87	
	19 (2 440 ㎒)	-2.81	
	39 (2 480 ㎒)	-2.96	

6.4.2 Measured Results for DC 24 V

Modulation Type	Channel (Frequency)	Measured Value (dBm)	Limit (dBm)
802.11b	1 (2 412 ㎒)	11.91	30 (1 Watt)
	6 (2 437 ㎒)	12.39	
	11 (2 462 ㎒)	***12.55***	
802.11g	1 (2 412 ㎒)	9.13	
	6 (2 437 ㎒)	9.64	
	11 (2 462 ㎒)	***9.94***	
802.11n(HT20)	1 (2 412 ㎒)	8.98	
	6 (2 437 ㎒)	9.50	
	11 (2 462 ㎒)	***9.86***	
802.11n(HT40)	3 (2 422 ㎒)	9.13	
	6 (2 437 ㎒)	9.48	
	9 (2 452 ㎒)	***9.78***	
Bluetooth LE	0 (2 402 ㎒)	-2.85	
	19 (2 440 ㎒)	***-2.81***	
	39 (2 480 ㎒)	-2.97	

7. Power Spectral Density

7.1 Operating environment

Temperature : 25 ℃

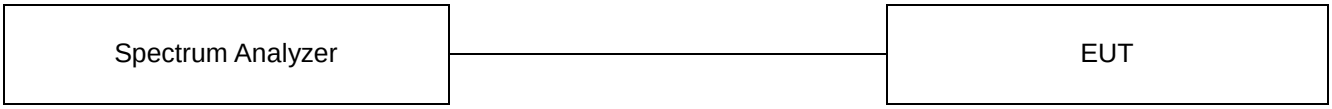
Relative humidity : 46 %

7.2 Measurement method

Standard : §15.247 (e)

7.3 Test setup

The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 3 ㎑, the video bandwidth is set to 3 times the resolution bandwidth.



7.4 Test data

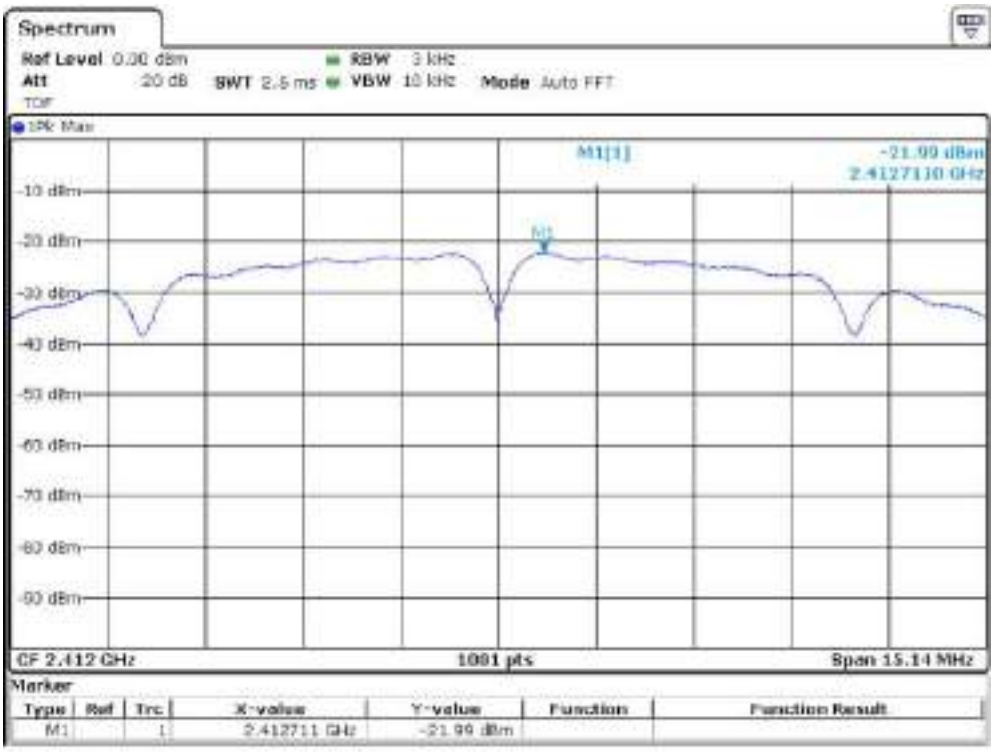
Operating mode : Transmit mode

Test Result : Pass

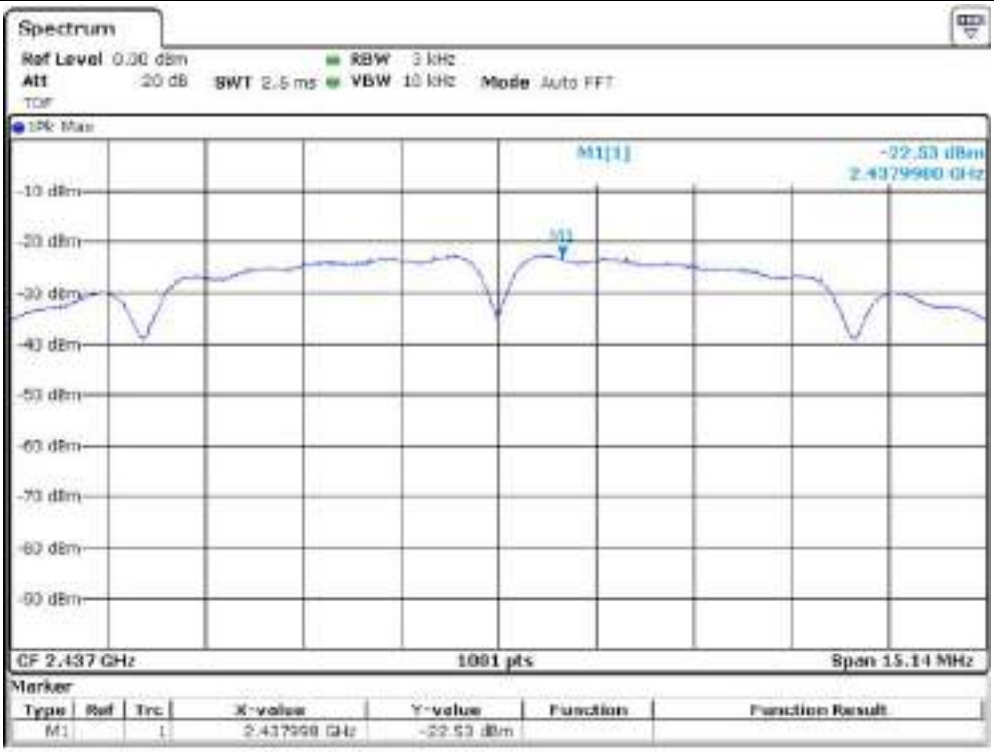
7.4.1 Measured Results for DC 12 V

Modulation Type	Channel (Frequency)	Highest signal level (dBm)	Limit (dBm/3㎑)
802.11b	1 (2 412 ㎒)	-21.99	8
	6 (2 437 ㎒)	-22.53	
	11 (2 462 ㎒)	-23.24	
802.11g	1 (2 412 ㎒)	-25.14	
	6 (2 437 ㎒)	-25.05	
	11 (2 462 ㎒)	-25.51	
802.11n(HT20)	1 (2 412 ㎒)	-24.77	
	6 (2 437 ㎒)	-24.56	
	11 (2 462 ㎒)	-25.14	
802.11n(HT40)	3 (2 422 ㎒)	-24.73	
	6 (2 437 ㎒)	-24.81	
	9 (2 452 ㎒)	-25.11	
Bluetooth LE	0 (2 402 ㎒)	-19.20	
	19 (2 440 ㎒)	-18.09	
	39 (2 480 ㎒)	-17.90	

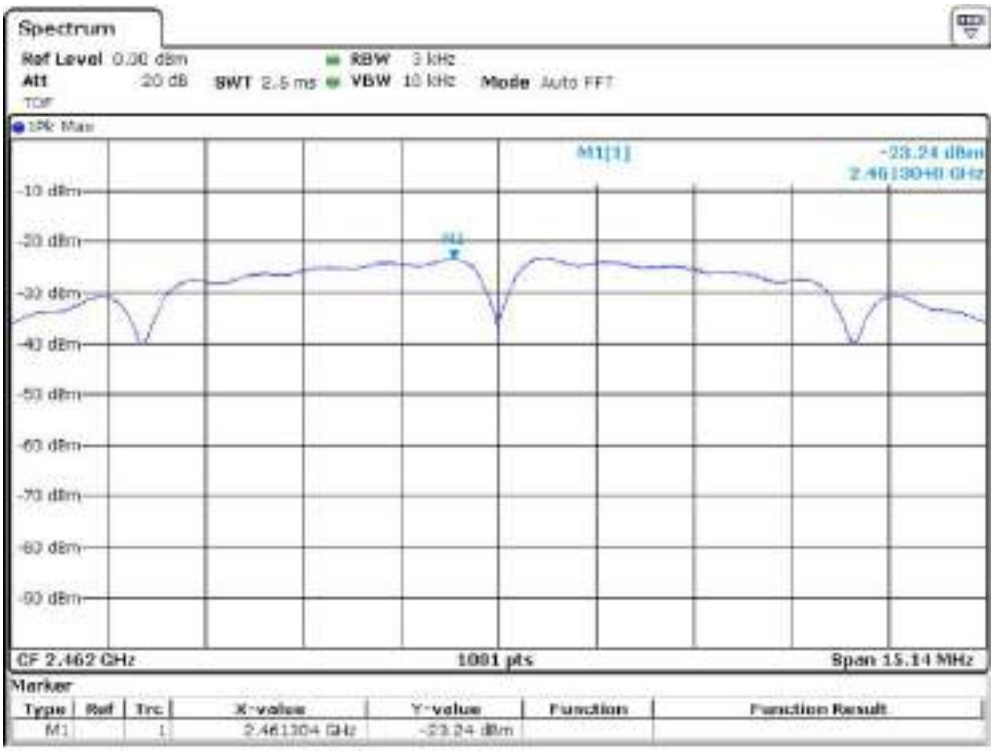
7.4.1.1 Measured Graph for 802.11b_DC 12 V



Low CH

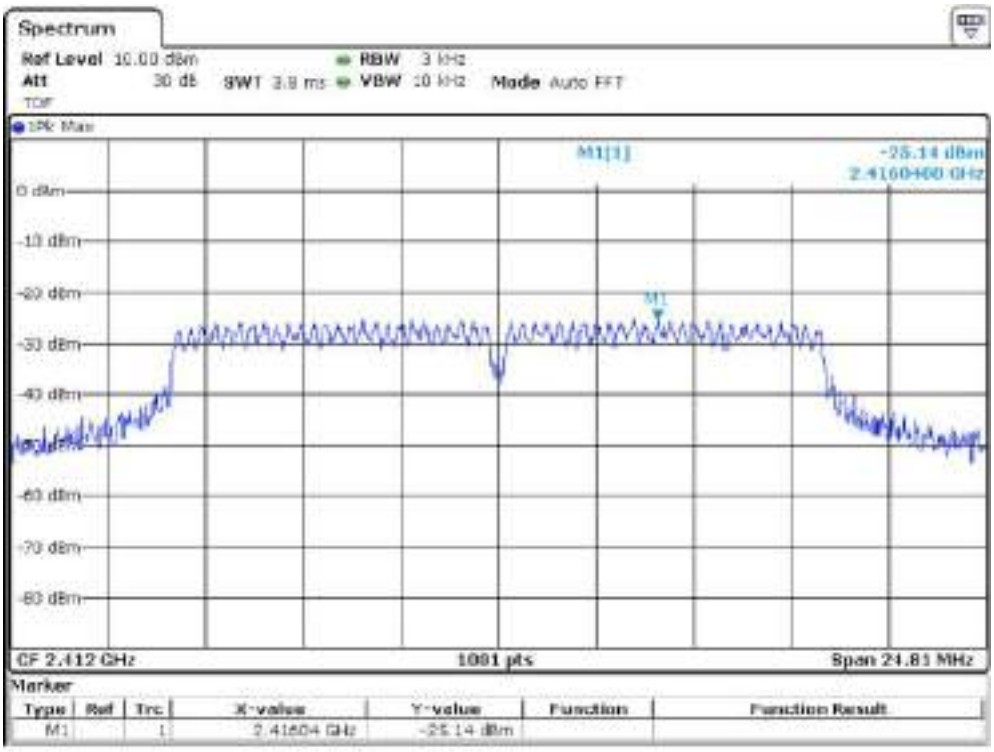


Mid CH

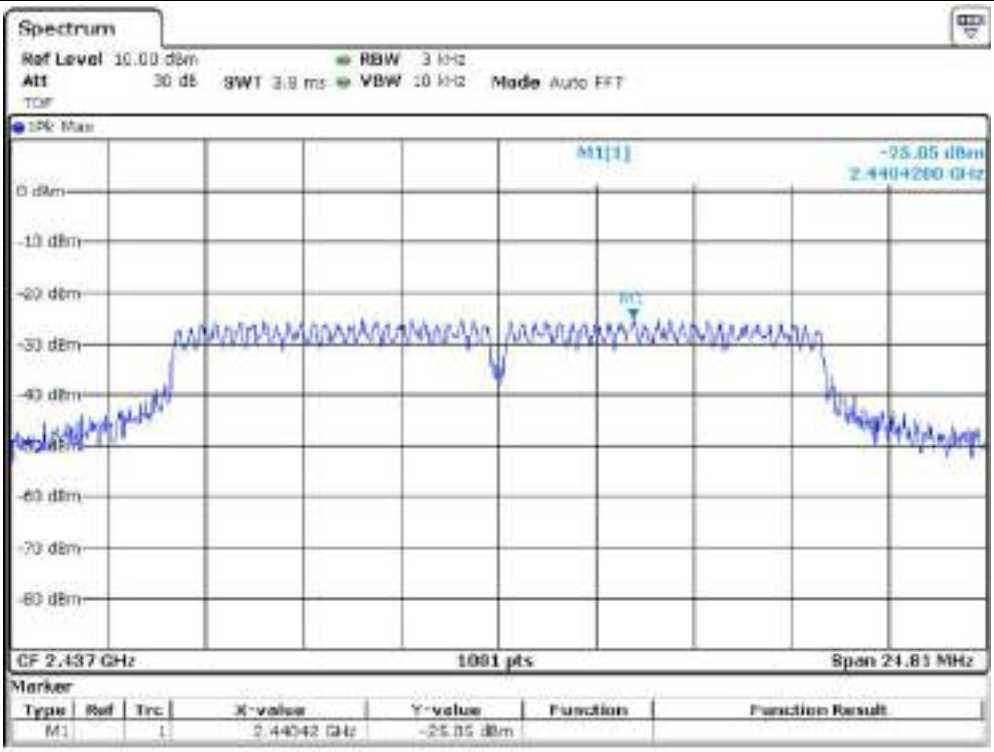

Spectrum
Ref Level 0.00 dBm
RBW 3 kHz
Att 20 dB
SWT 2.5 ms
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1]
-23.24 dBm
2.461304 GHz
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 2.462 GHz
1001 pts
Span 15.14 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.461304 GHz -23.24 dBm

High CH

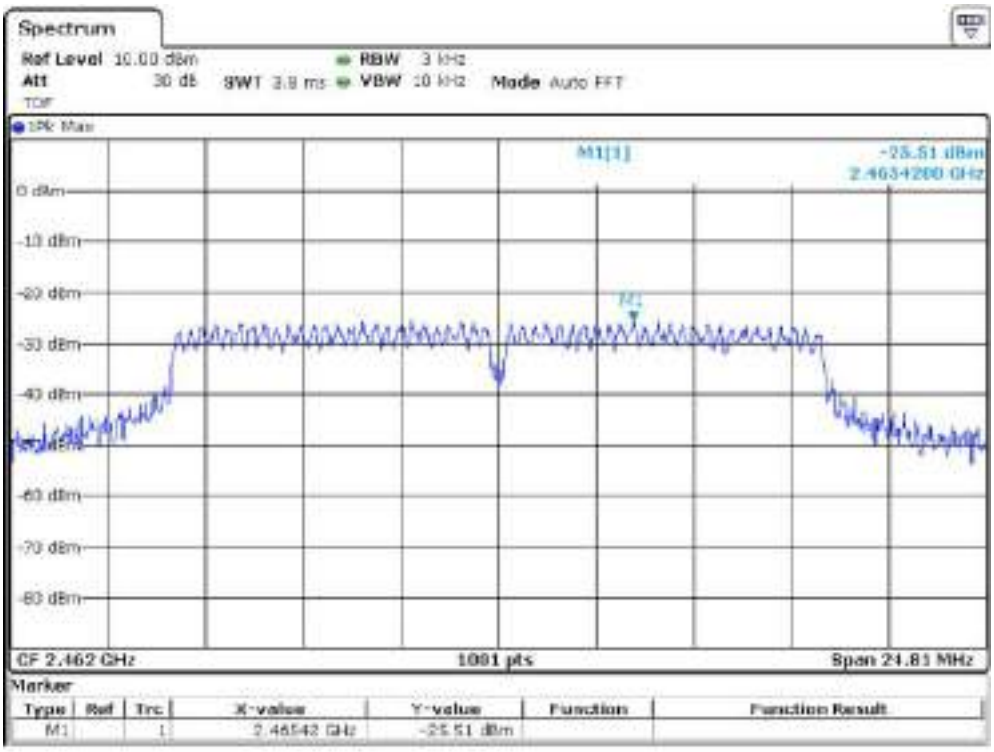
7.4.1.2 Measured Graph for 802.11g_DC 12 V



Low CH

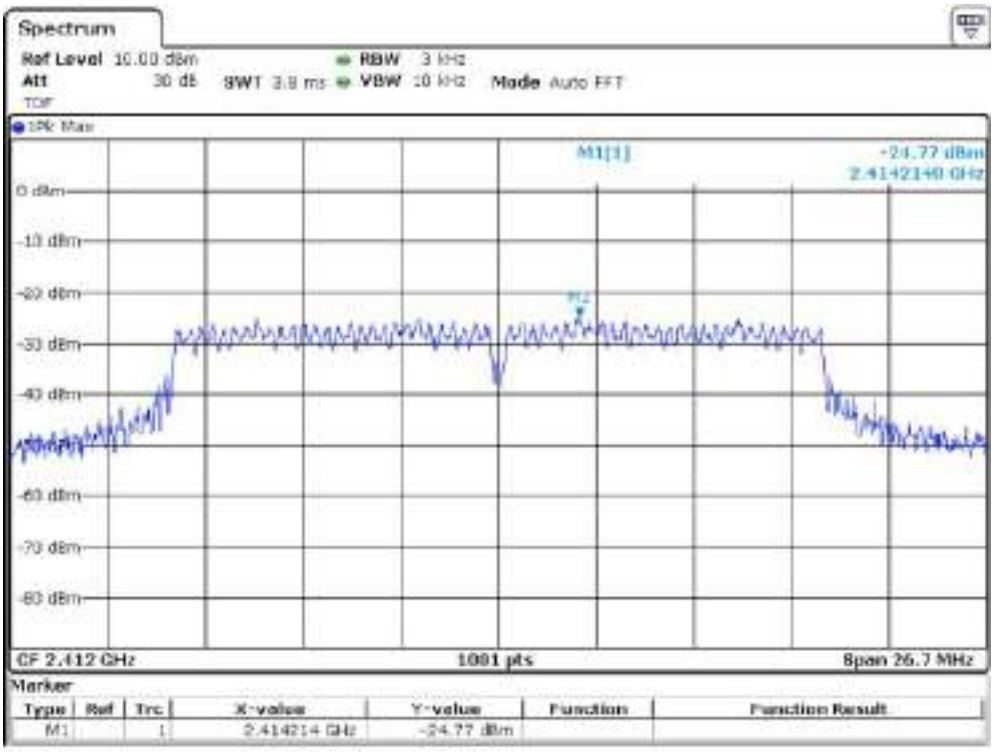


Mid CH

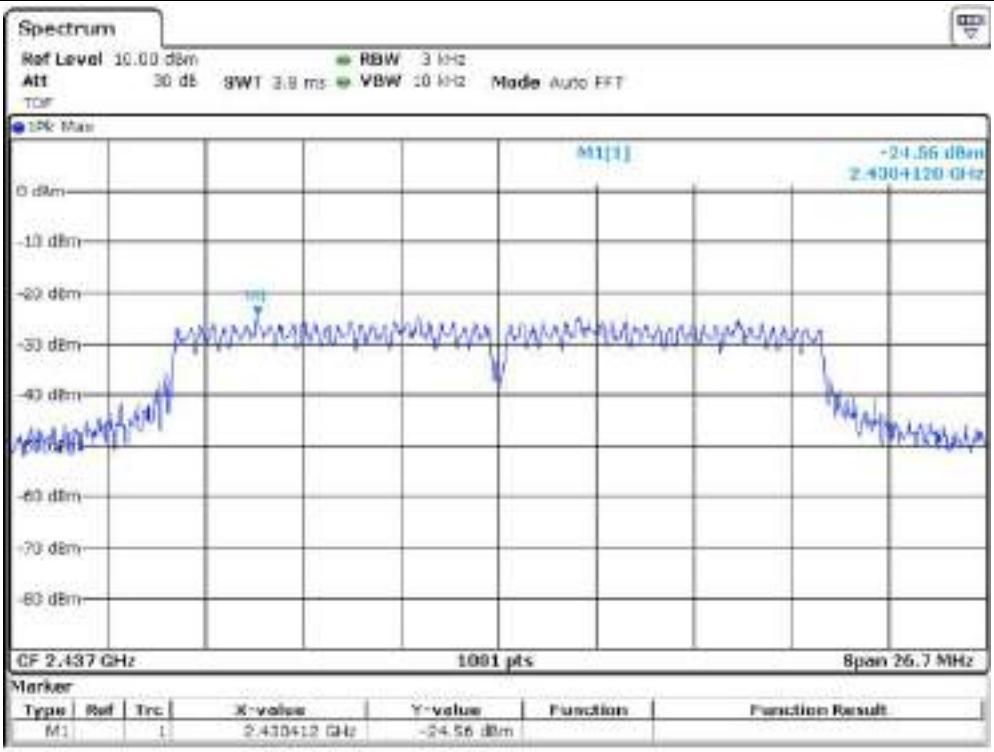

Spectrum
Ref Level 10.00 dBm
RBW 3 kHz
Att 30 dB
SWT 3.8 ms
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1] -25.51 dBm
2.4634200 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.462 GHz
1001 pts
Span 24.81 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.46542 GHz -25.51 dBm

High CH

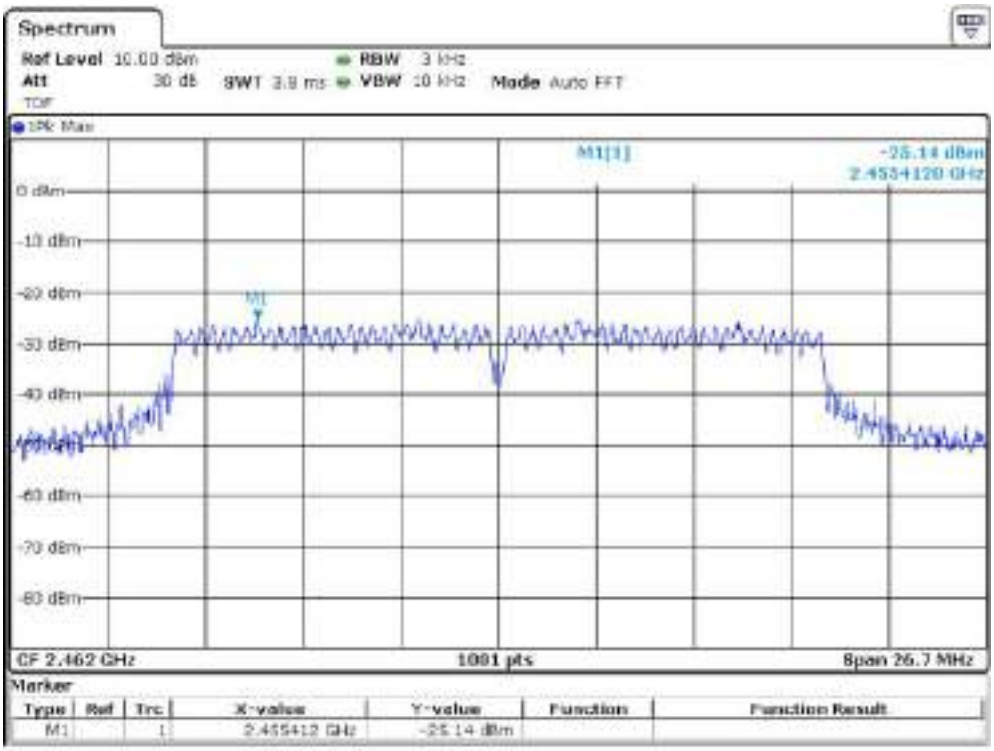
7.4.1.3 Measured Graph for 802.11n(HT20)_DC 12 V



Low CH

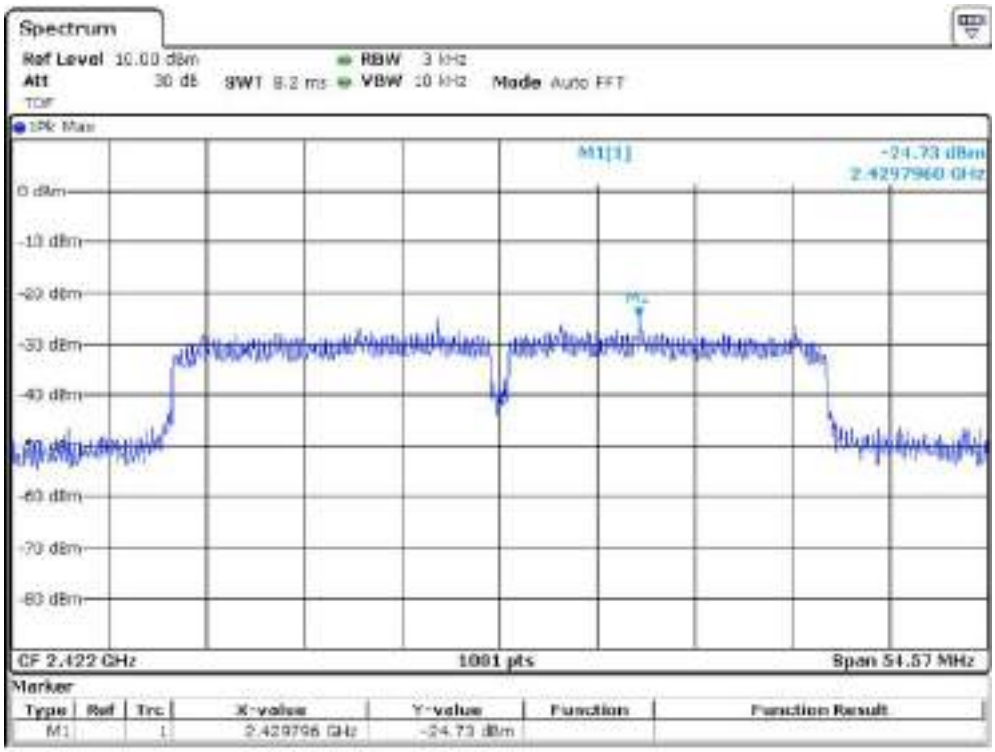


Mid CH

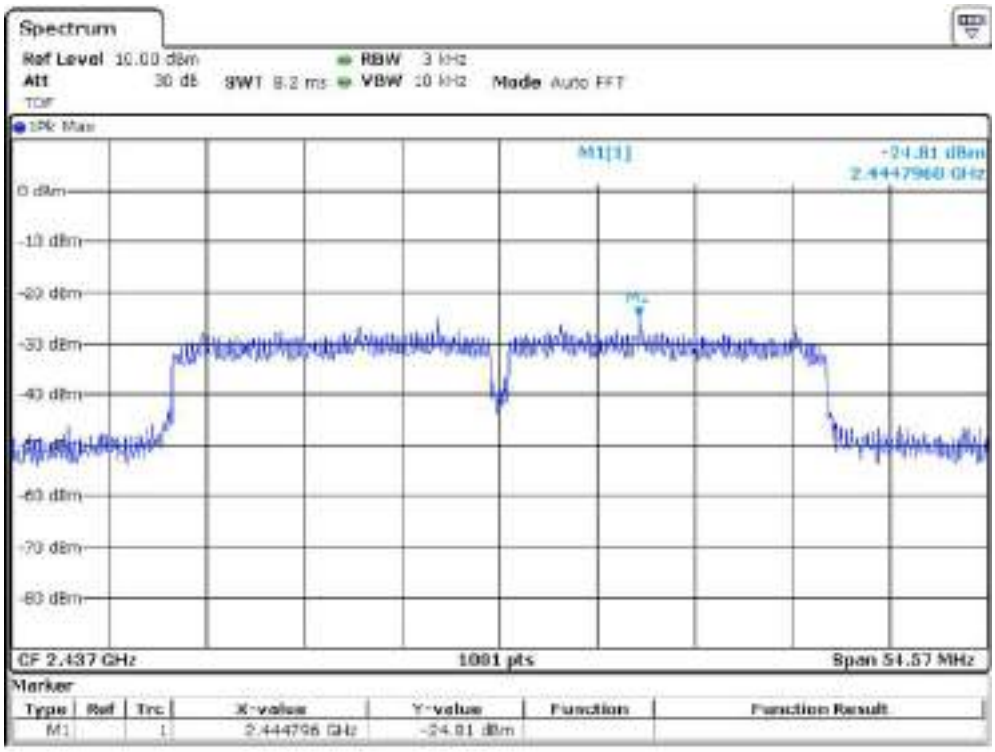

Spectrum
Ref Level 10.00 dBm
RBW 3 kHz
Att 30 dB
SWT 3.8 ms
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1] -25.14 dBm
2.4534120 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-70 dBm
-80 dBm
CF 2.462 GHz
1001 pts
Span 26.7 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.455412 GHz -25.14 dBm

High CH

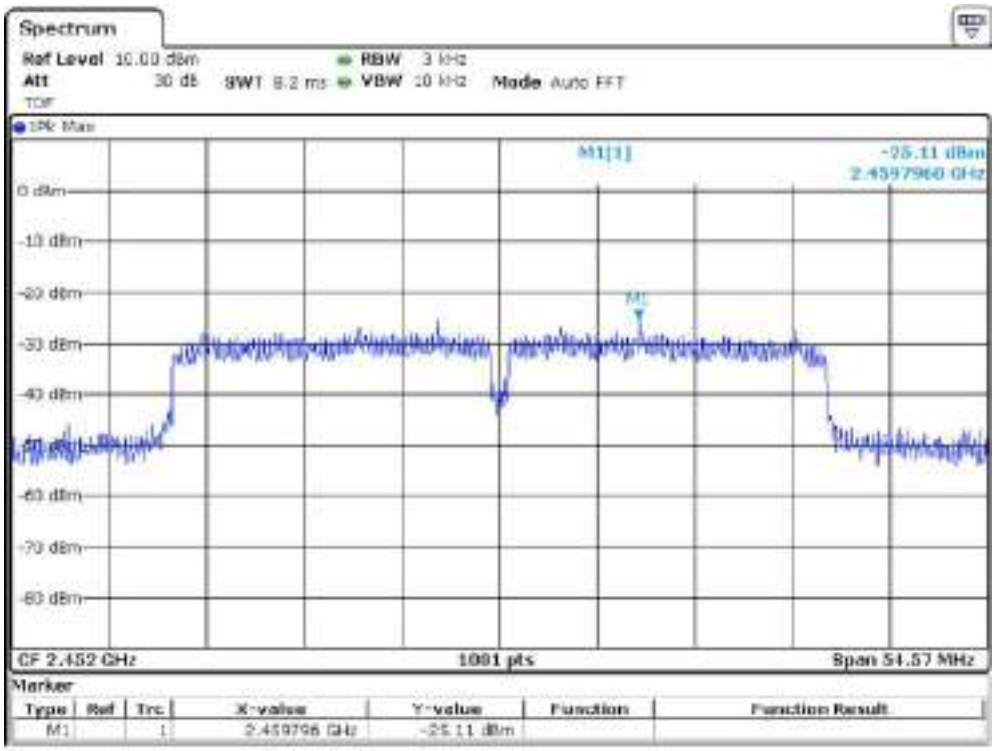
7.4.1.4 Measured Graph for 802.11n(HT40)_DC 12 V



Low CH

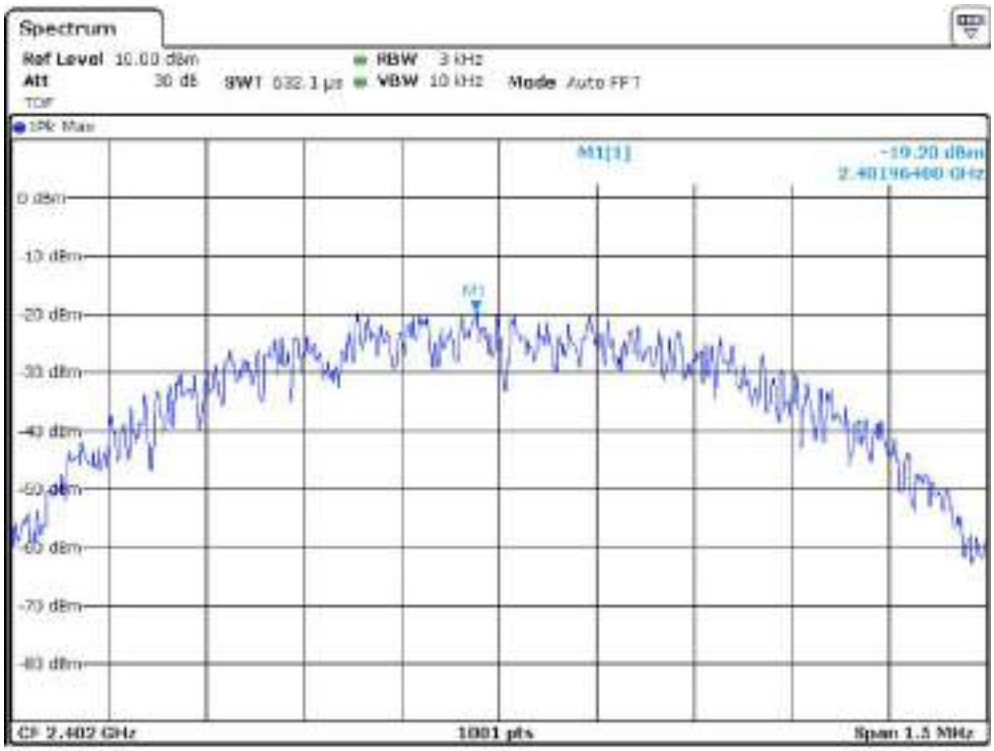


Mid CH

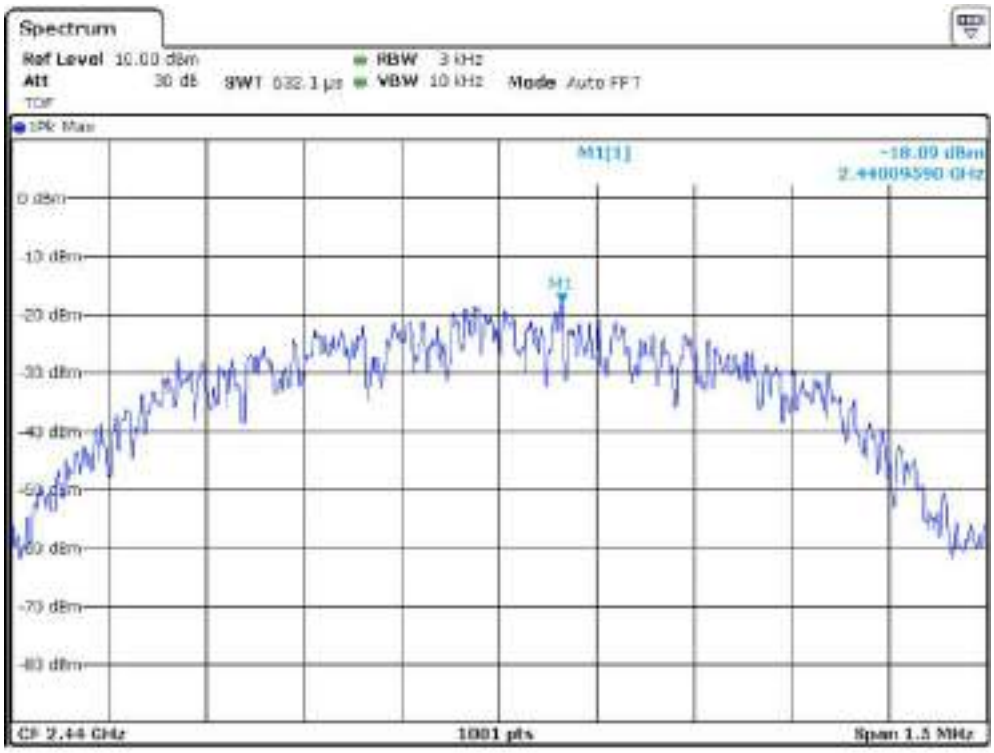

Spectrum
Ref Level 10.00 dBm
RBW 3 kHz
Att 30 dB
SWT 8.2 ms
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1]
-25.11 dBm
2.4597960 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.452 GHz
1001 pts
Span 54.57 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.459796 GHz -25.11 dBm

High CH

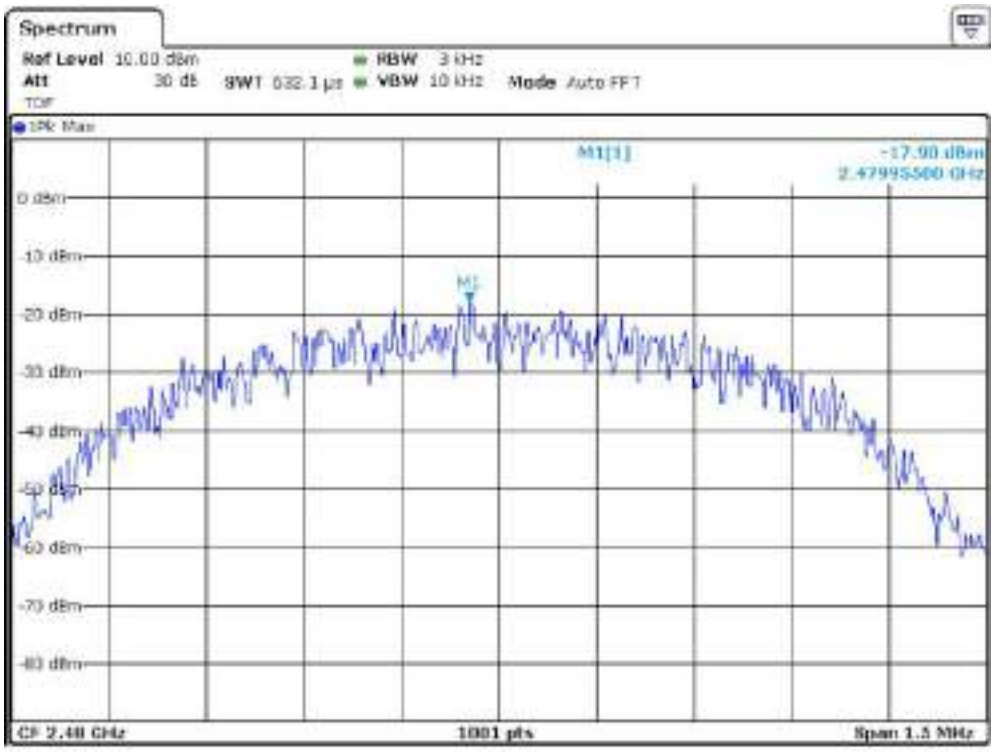
7.4.1.5 Measured Graph for Bluetooth LE_DC 12 V



Low CH



Mid CH

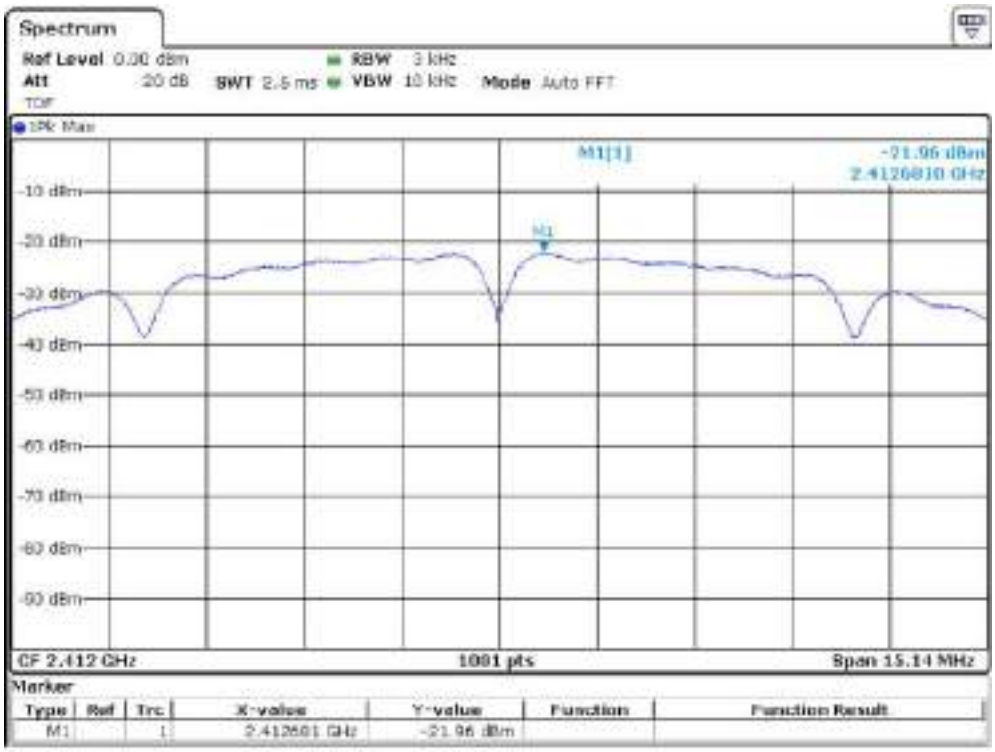

Spectrum
Ref Level 10.00 dBm
RBW 3 kHz
Att 30 dB
SWT 632.1 µs
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1]
-17.90 dBm
2.47995500 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.48 GHz
1001 pts
Span 1.5 MHz

High CH

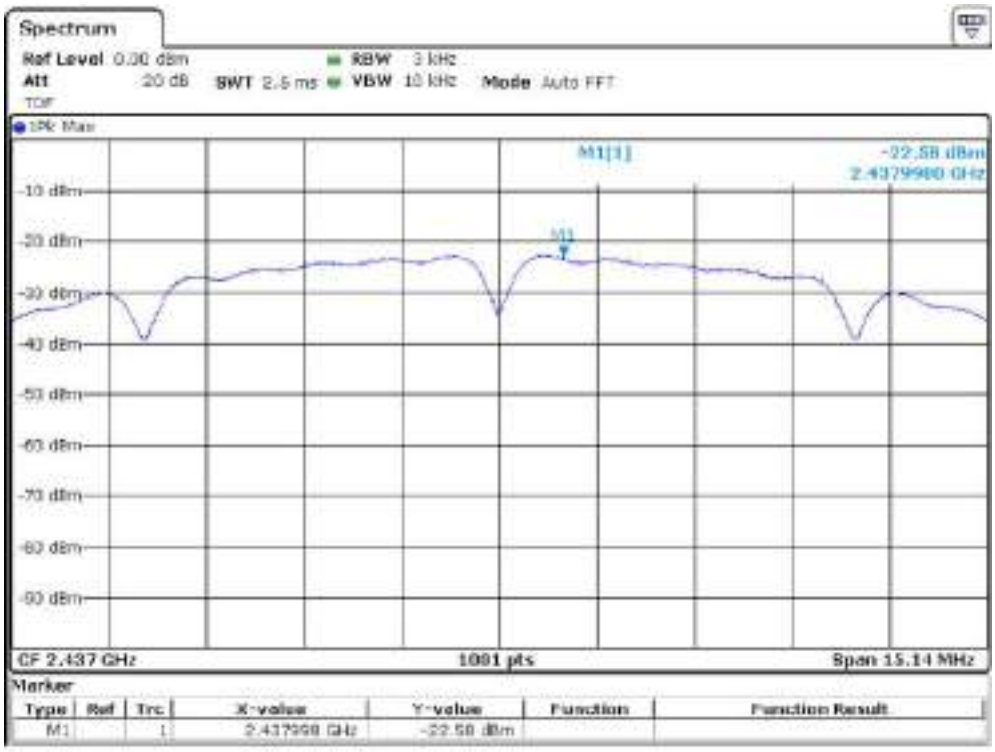
7.4.2 Measured Results for DC 24 V

Modulation Type	Channel (Frequency)	Highest signal level (dBm)	Limit (dBm/3㎑)
802.11b	1 (2 412 ㎒)	-21.96	8
	6 (2 437 ㎒)	-22.58	
	11 (2 462 ㎒)	-23.11	
802.11g	1 (2 412 ㎒)	-25.14	
	6 (2 437 ㎒)	-25.22	
	11 (2 462 ㎒)	-25.65	
802.11n(HT20)	1 (2 412 ㎒)	-24.84	
	6 (2 437 ㎒)	-24.78	
	11 (2 462 ㎒)	-25.22	
802.11n(HT40)	3 (2 422 ㎒)	-25.04	
	6 (2 437 ㎒)	-24.97	
	9 (2 452 ㎒)	-25.72	
Bluetooth LE	0 (2 402 ㎒)	-19.22	
	19 (2 440 ㎒)	-18.13	
	39 (2 480 ㎒)	-17.94	

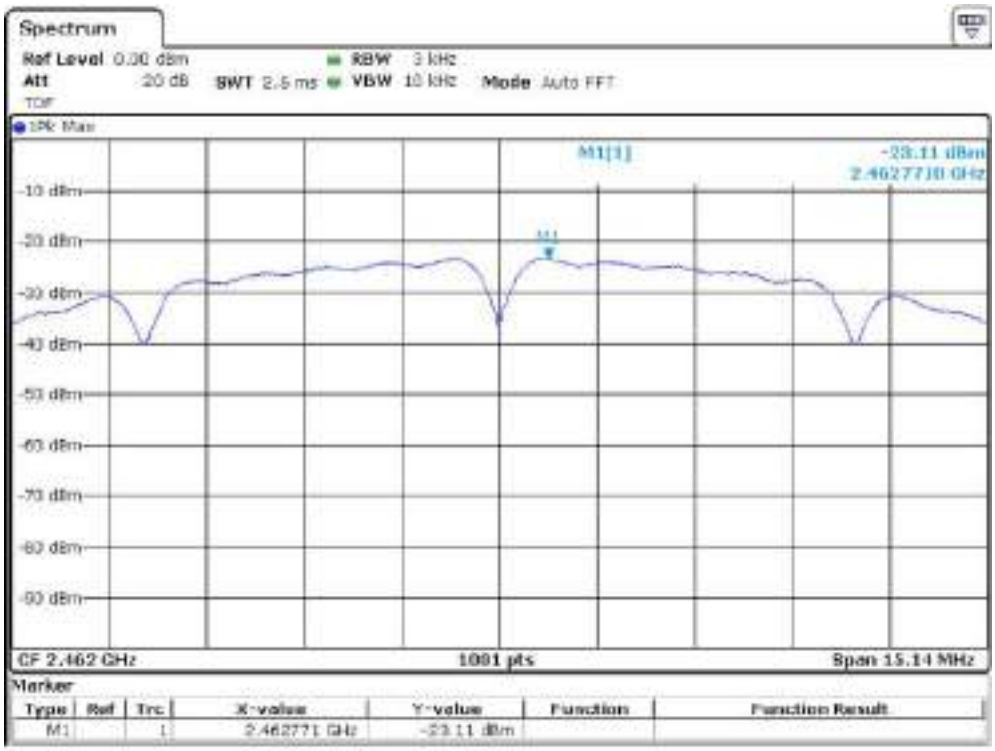
7.4.2.1 Measured Graph for 802.11b_DC 24 V



Low CH

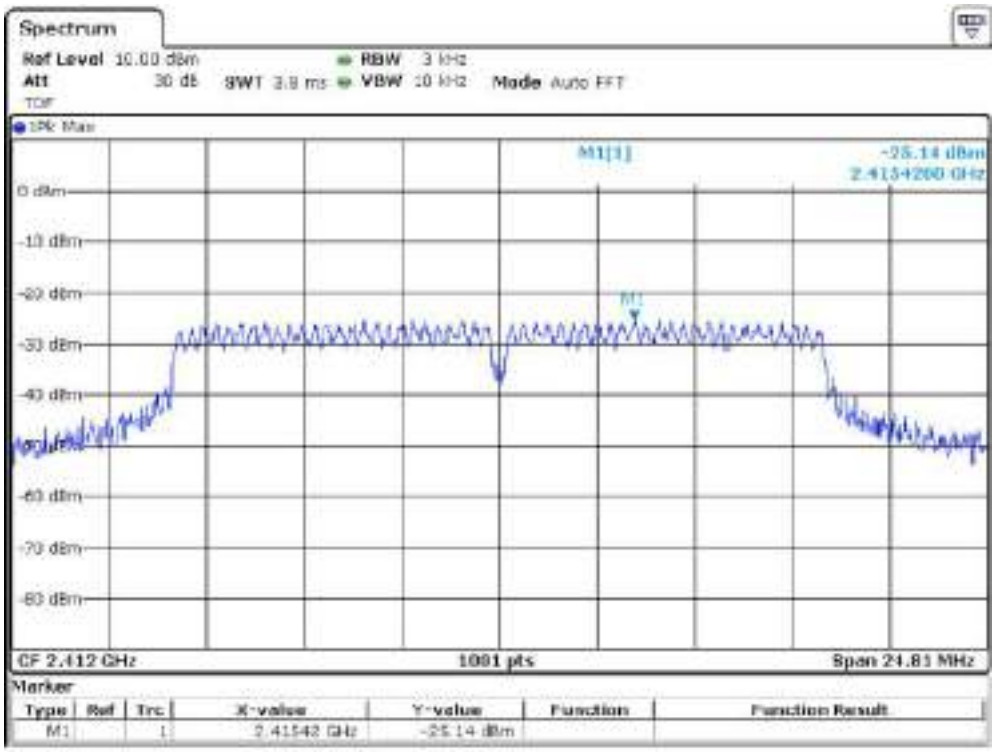


Mid CH

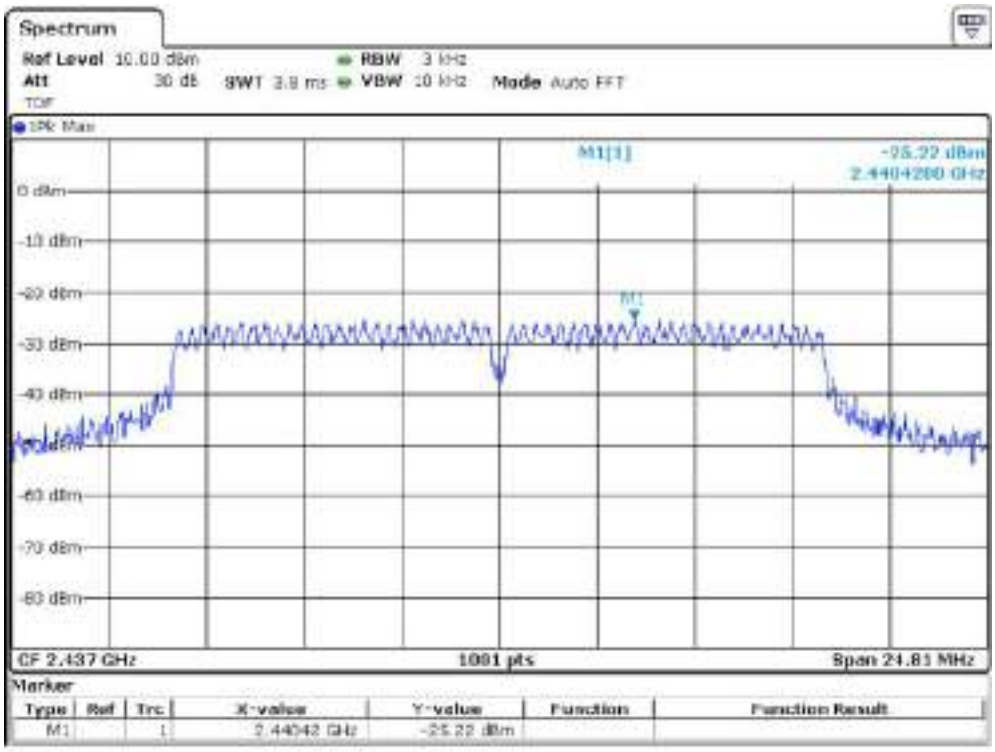

Spectrum
Ref Level 0.00 dBm
RBW 3 kHz
Att 20 dB
SWT 2.5 ms
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1]
-23.11 dBm
2.462771 GHz
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 2.462 GHz
1001 pts
Span 15.14 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.462771 GHz -23.11 dBm

High CH

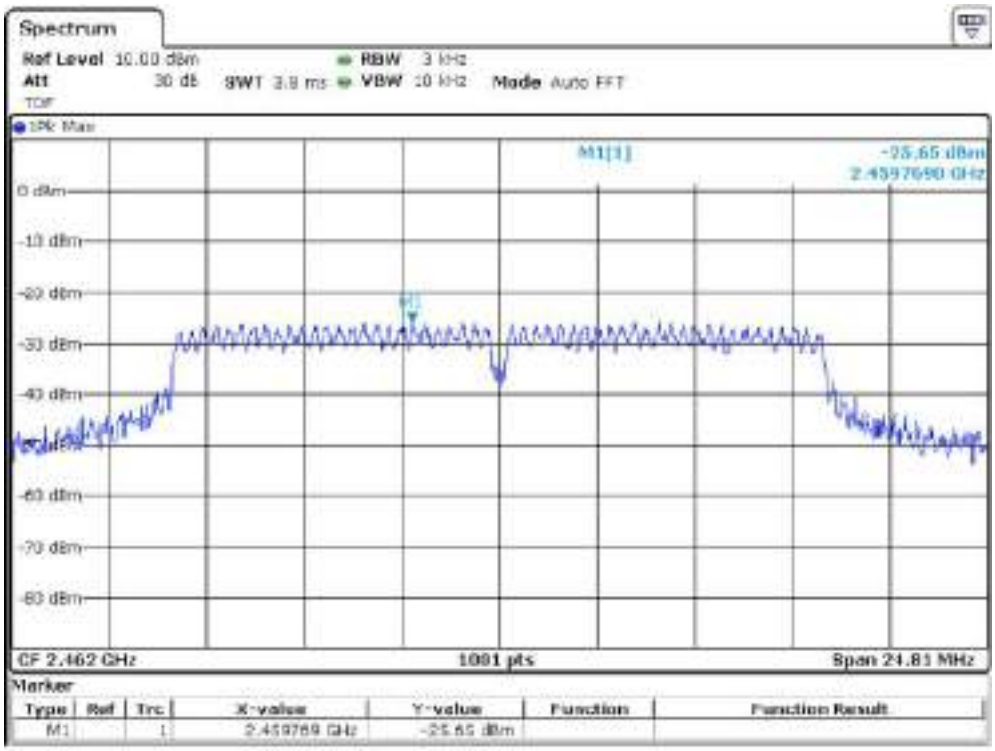
7.4.2.2 Measured Graph for 802.11g_DC 24 V



Low CH

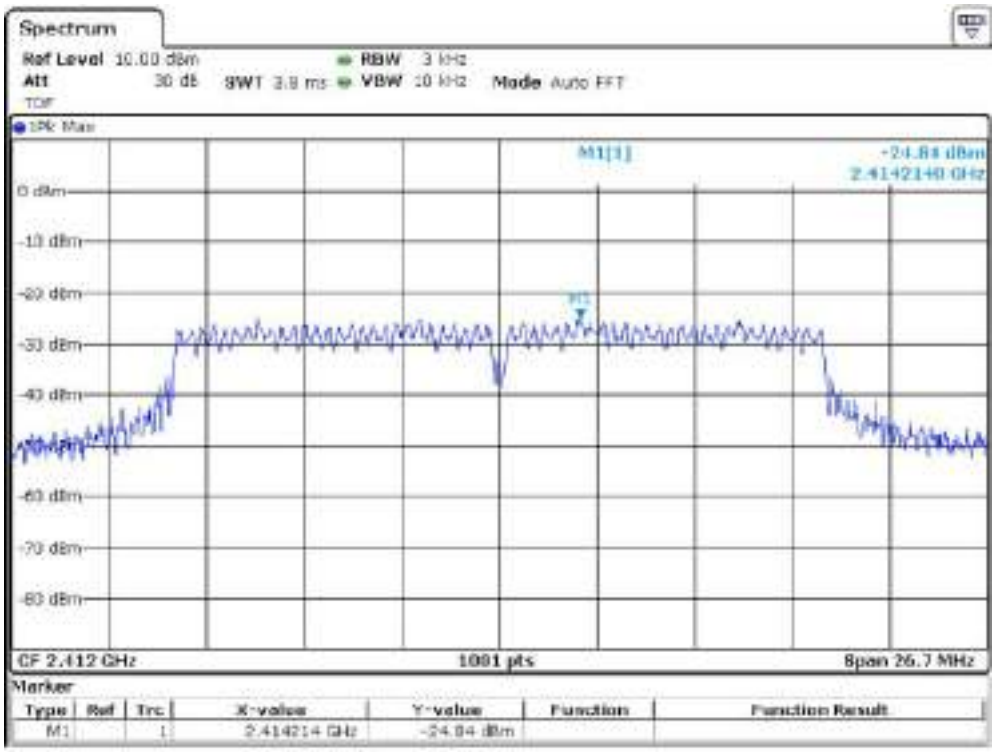


Mid CH

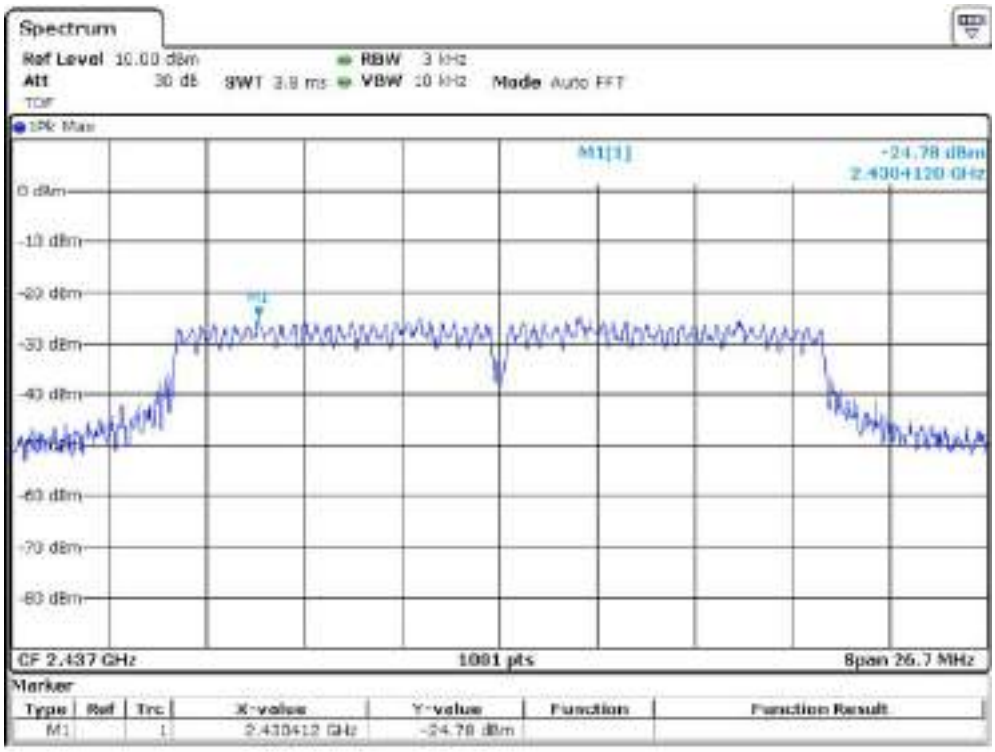

Spectrum
Ref Level 10.00 dBm
RBW 3 kHz
Att 30 dB
SWT 3.8 ms
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1] -25.65 dBm
2.4597690 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.462 GHz
1001 pts
Span 24.81 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.459769 GHz -25.65 dBm

High CH

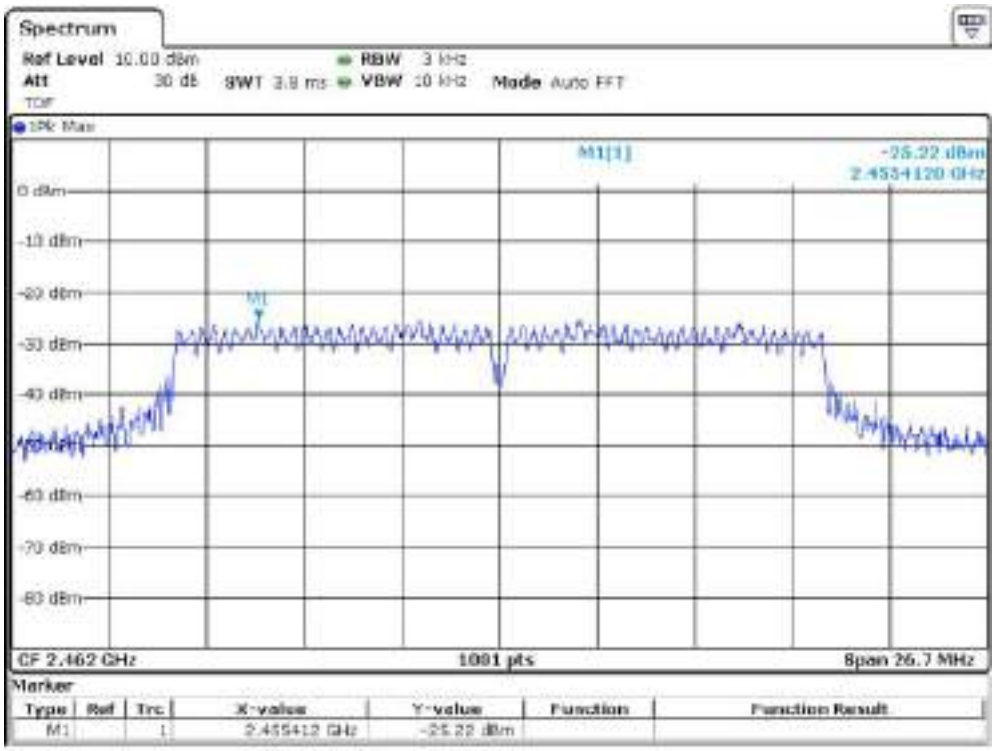
7.4.2.3 Measured Graph for 802.11n(HT20)_DC 24 V



Low CH

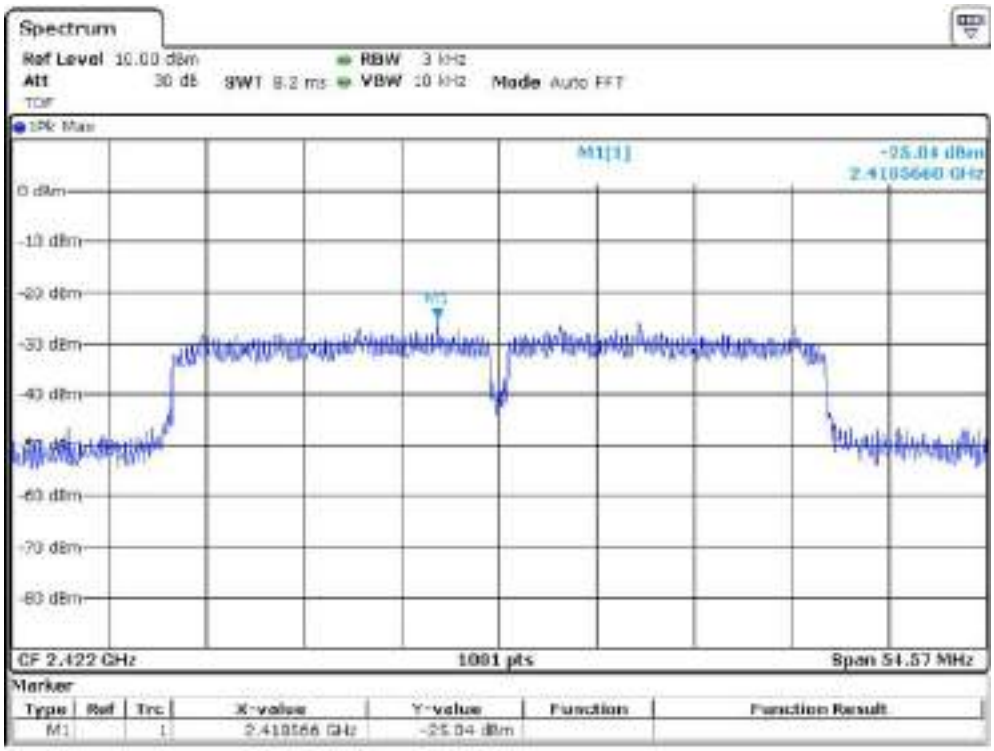


Mid CH

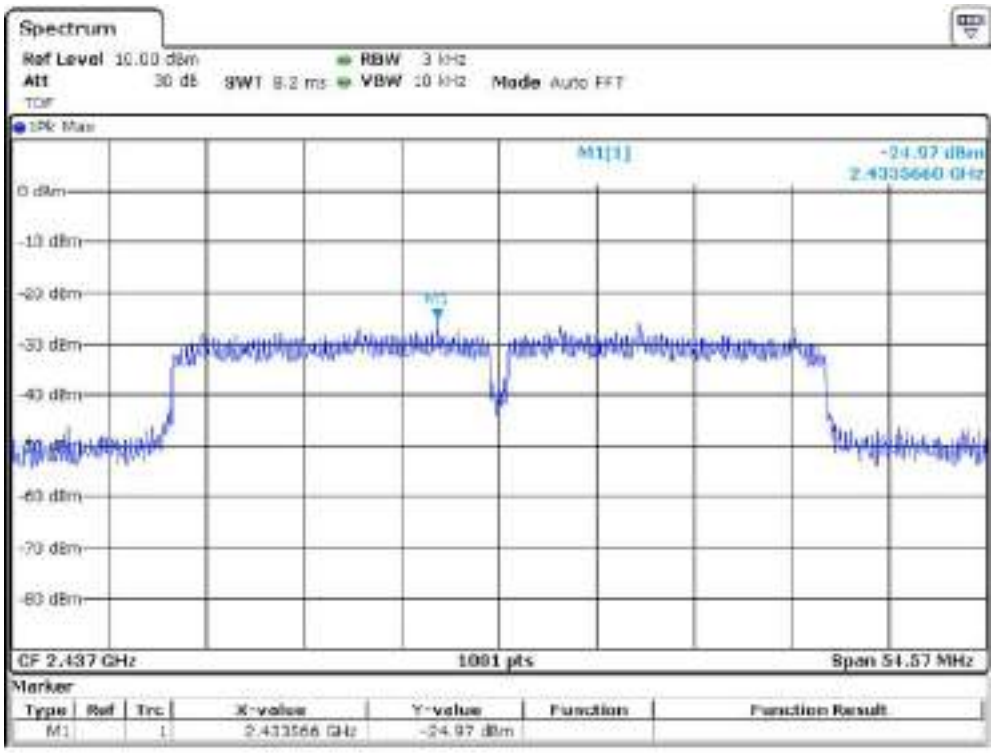

Spectrum
Ref Level 10.00 dBm
RBW 3 kHz
Att 30 dB
SWT 3.8 ms
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1]
-25.22 dBm
2.4534120 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.462 GHz
1001 pts
Span 26.7 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.453412 GHz -25.22 dBm

High CH

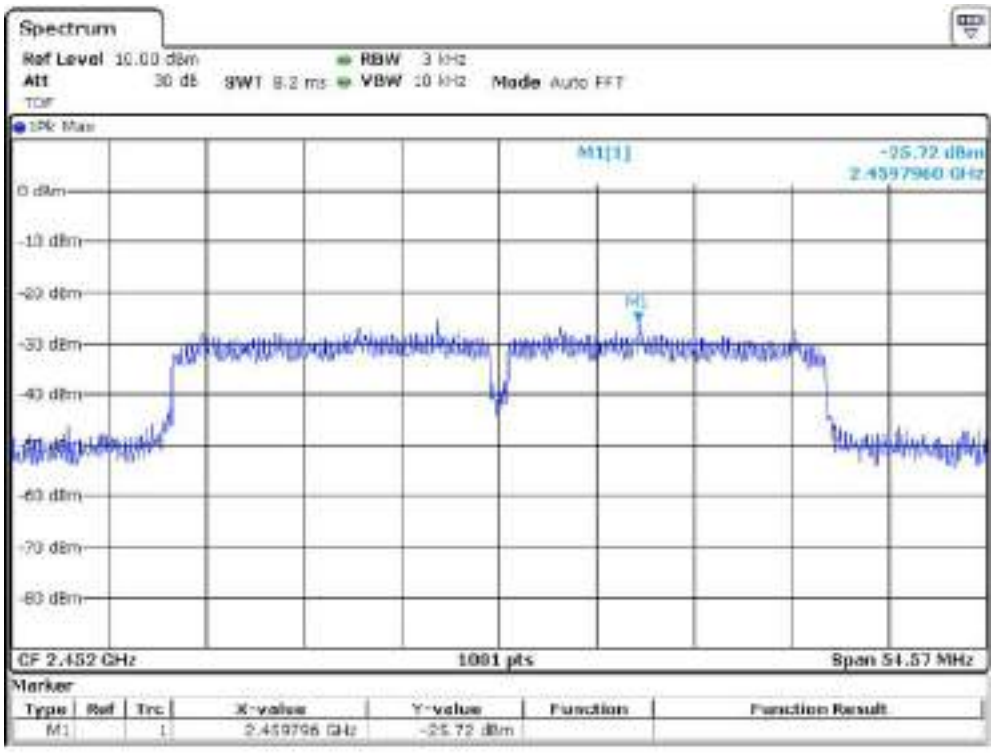
7.4.2.4 Measured Graph for 802.11n(HT40)_DC 24 V



Low CH

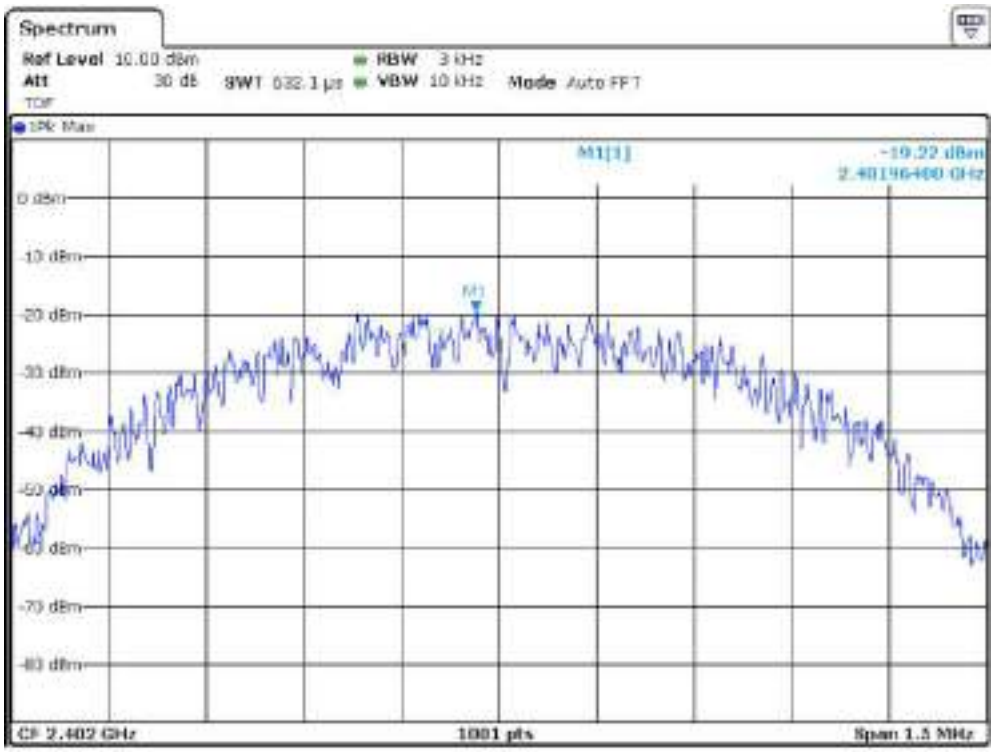


Mid CH

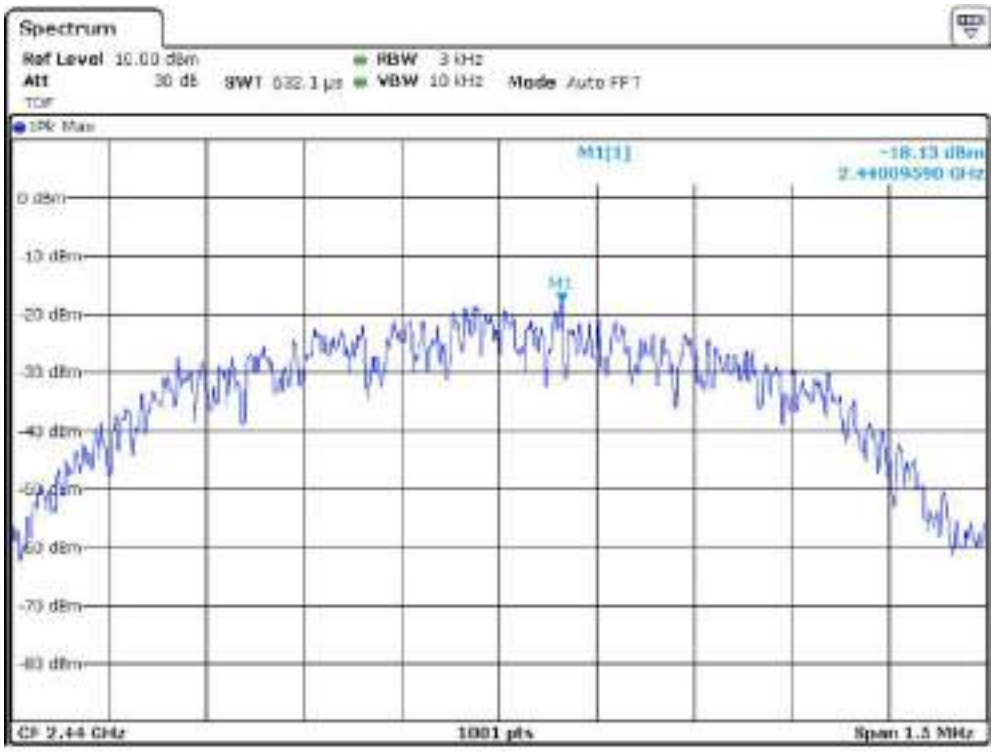

Spectrum
Ref Level 10.00 dBm
RBW 3 kHz
Att 30 dB
SWT 8.2 ms
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1]
-25.72 dBm
2.4597960 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.452 GHz
1001 pts
Span 54.57 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.459796 GHz -25.72 dBm

High CH

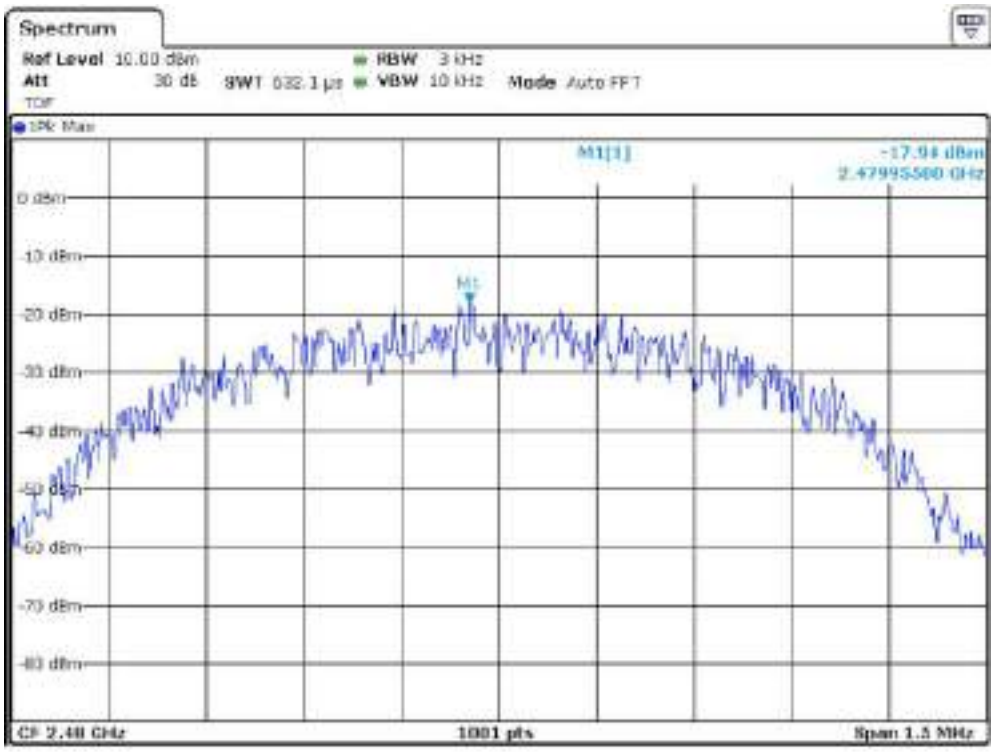
7.4.2.5 Measured Graph for Bluetooth LE_DC 24 V



Low CH



Mid CH


Spectrum
Ref Level 10.00 dBm
RBW 3 kHz
Att 30 dB
SWT 622.1 µs
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1]
-17.94 dBm
2.47995500 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
M1
Center 2.48 GHz
1001 pts
Span 1.5 MHz

High CH

8. Conducted Spurious Emission

8.1 Operating environment

Temperature : 25 ℃

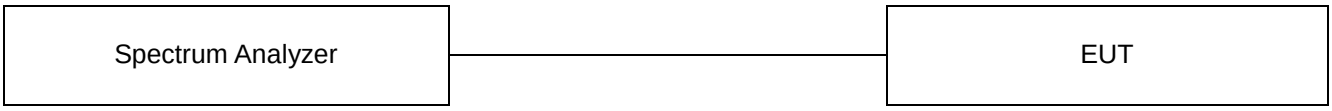
Relative humidity : 46 %

8.2 Measurement method

Standard : §15.247 (d)

8.3 Test setup

The antenna output of the EUT was connected to the spectrum analyzer. The resolution and video bandwidth is set to 100 ㎑, and peak detection was used.



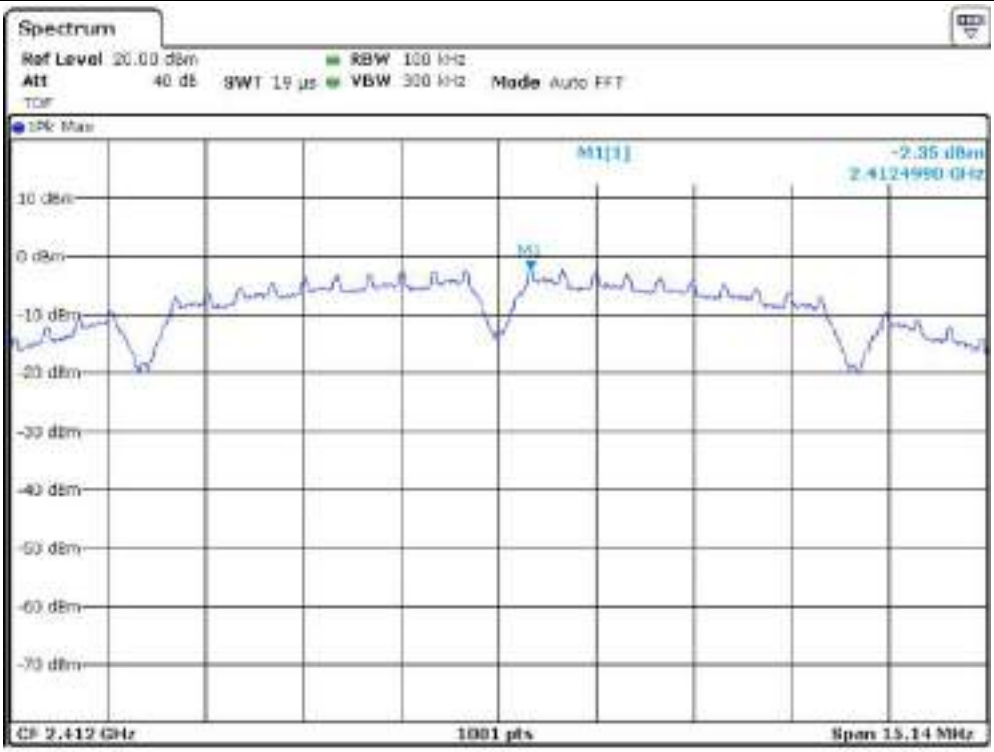
8.4 Test data

Operating mode : Transmit mode

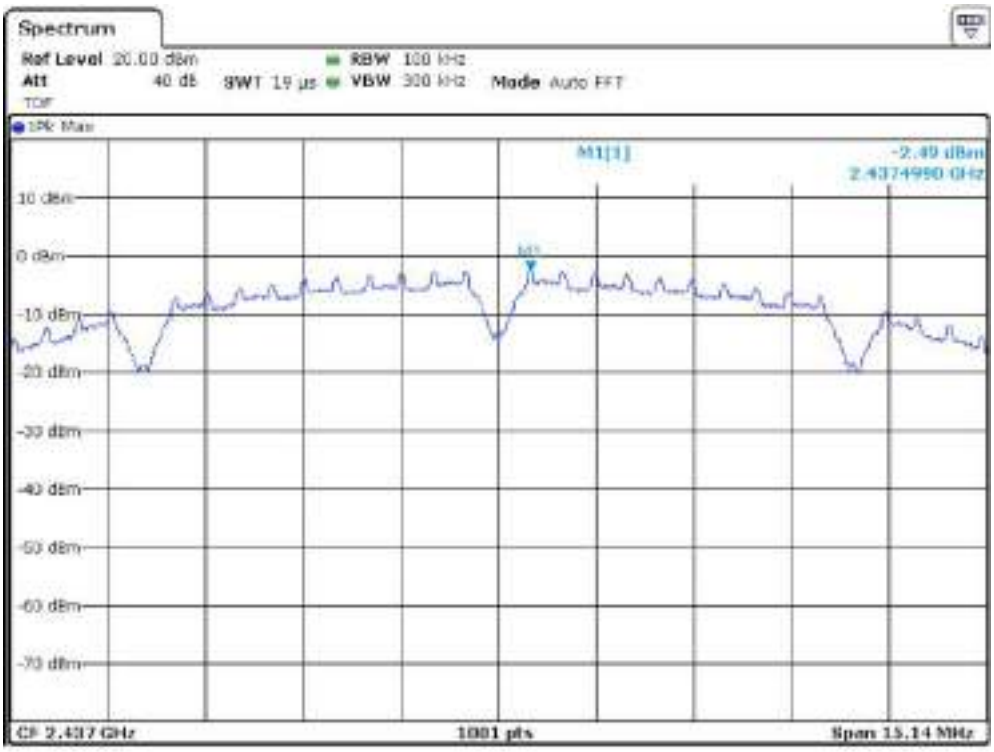
Test Result : Pass

8.4.1 Measured Results for DC 12 V

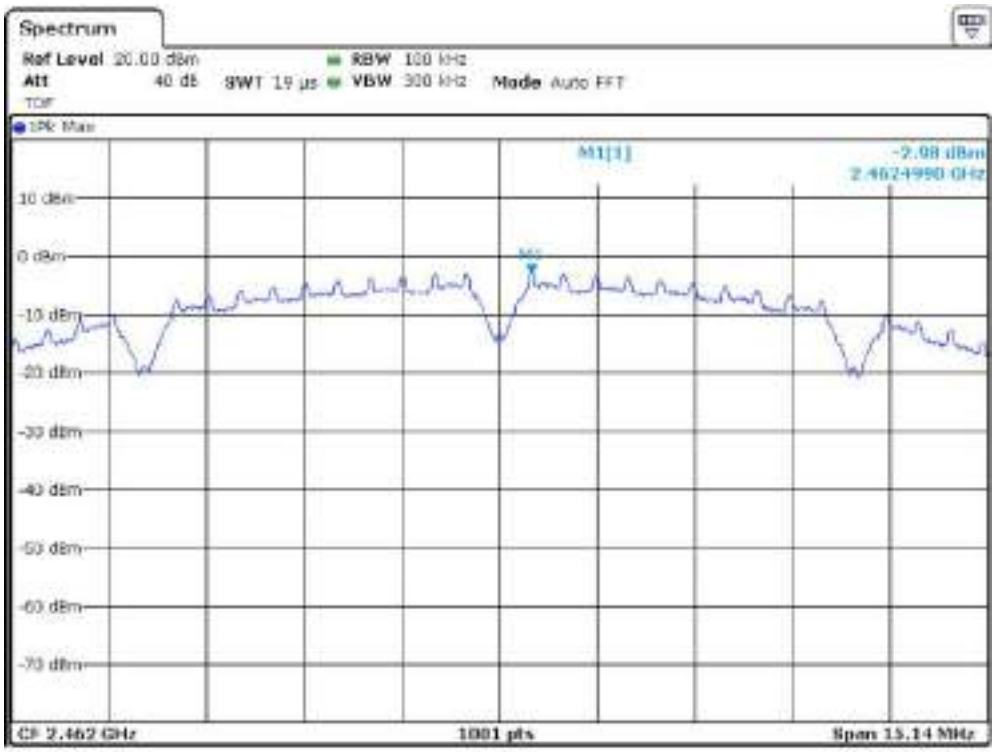
8.4.1.1 Signal level (dB m) for 802.11b_DC 12 V



Low CH

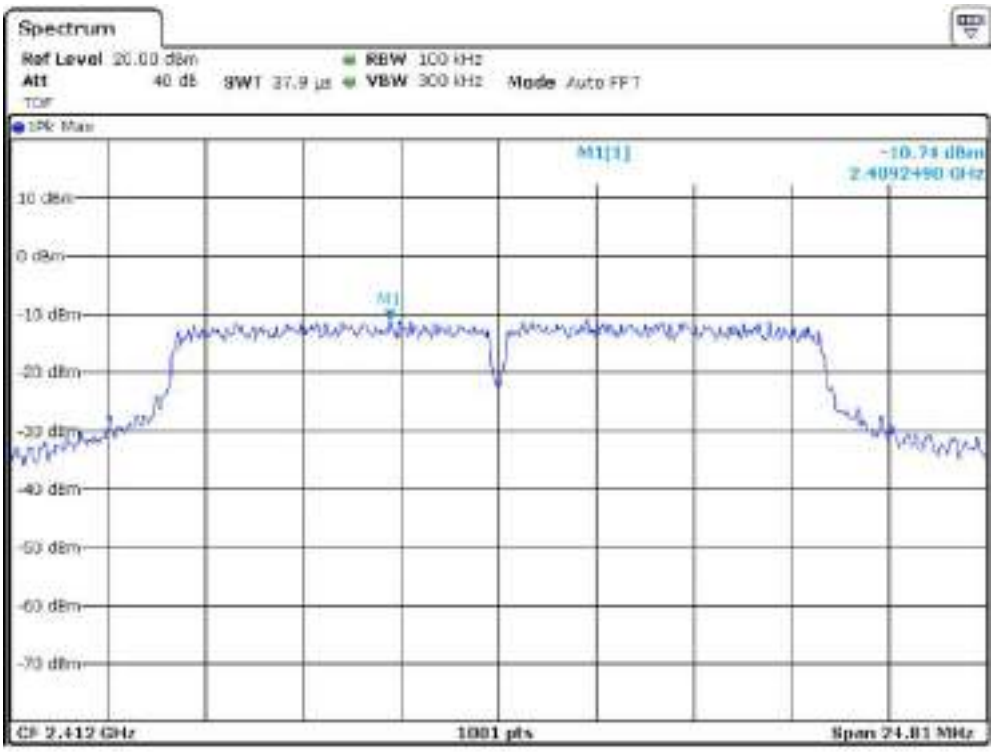


Mid CH

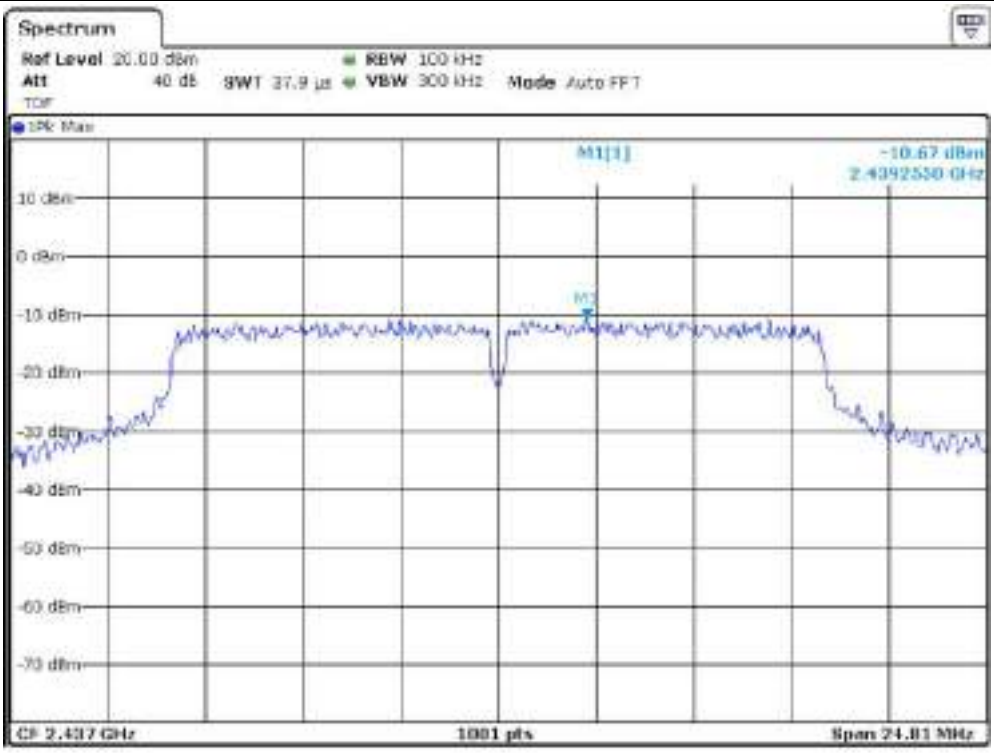


High CH

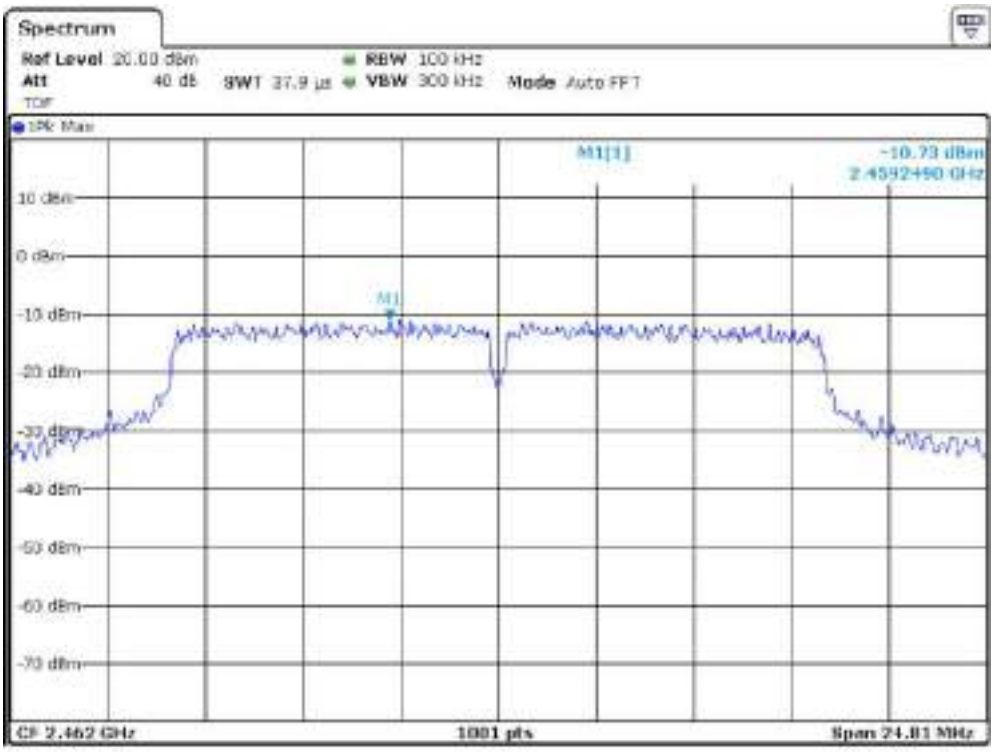
8.4.1.2 Signal level (dB m) for 802.11g_DC 12 V



Low CH

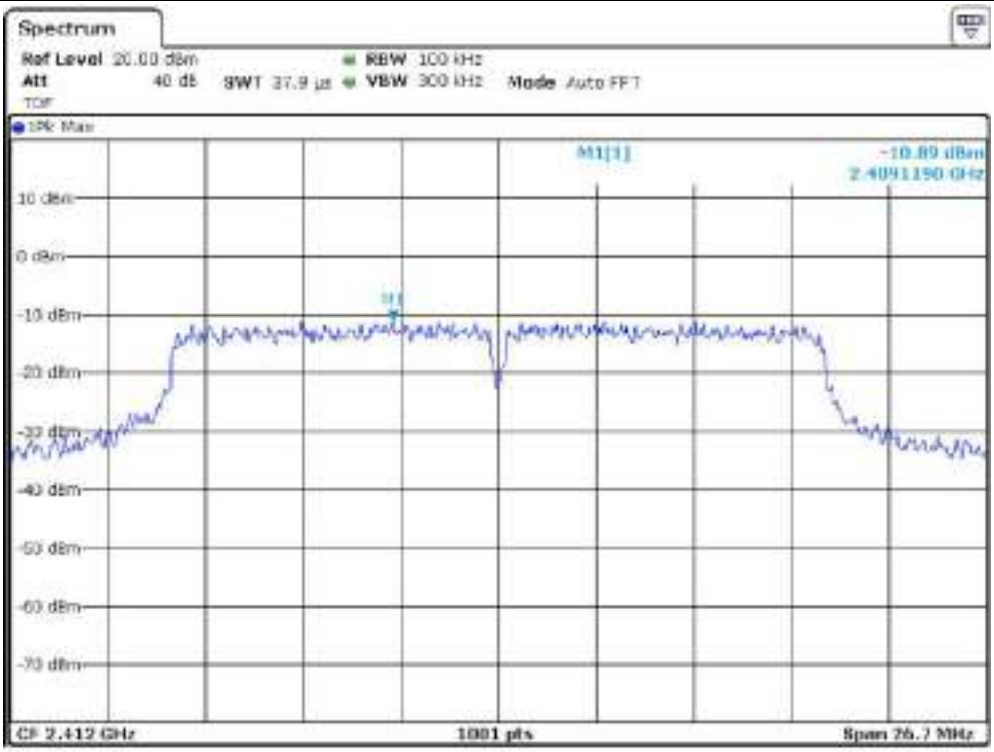


Mid CH

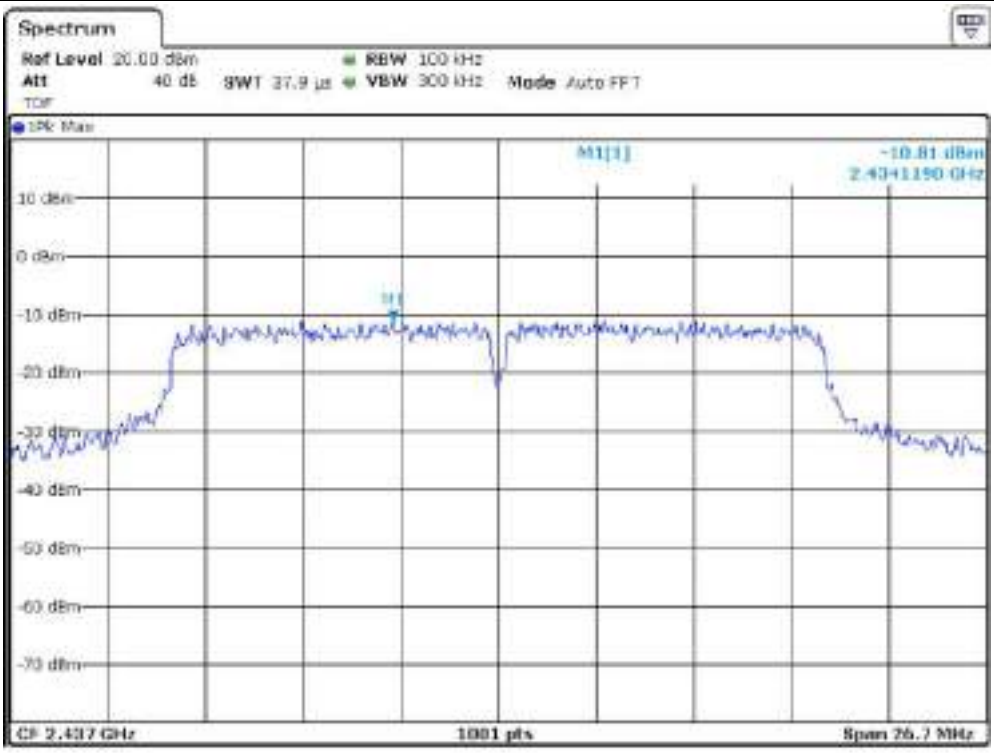


High CH

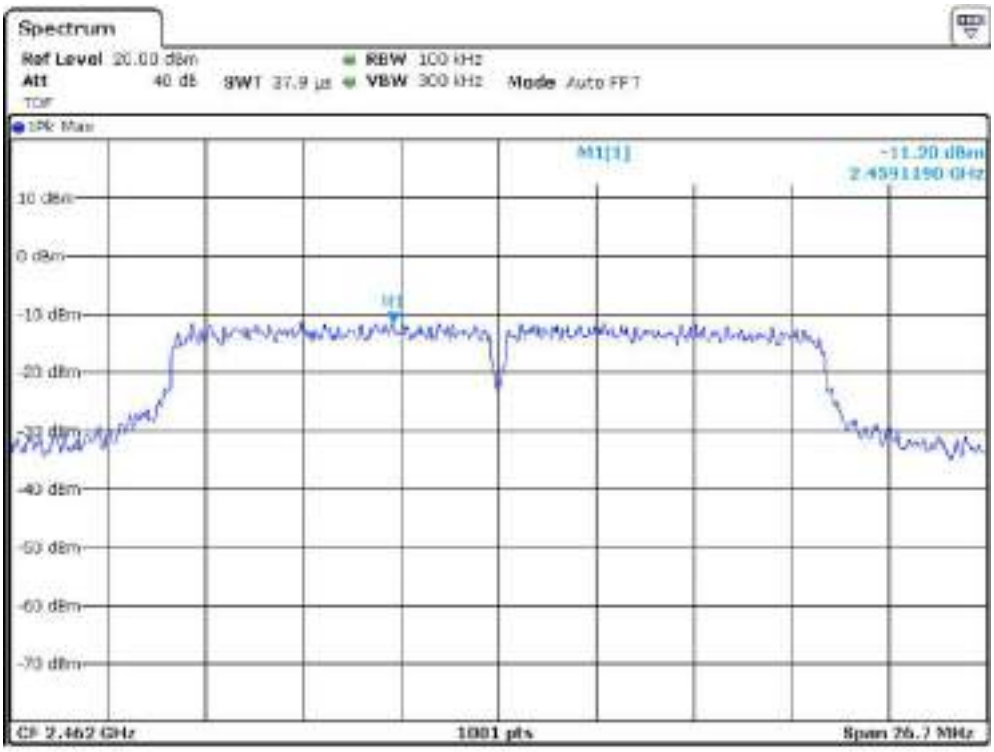
8.4.1.3 Signal level (dB m) for 802.11n(HT20)_DC 12 V



Low CH

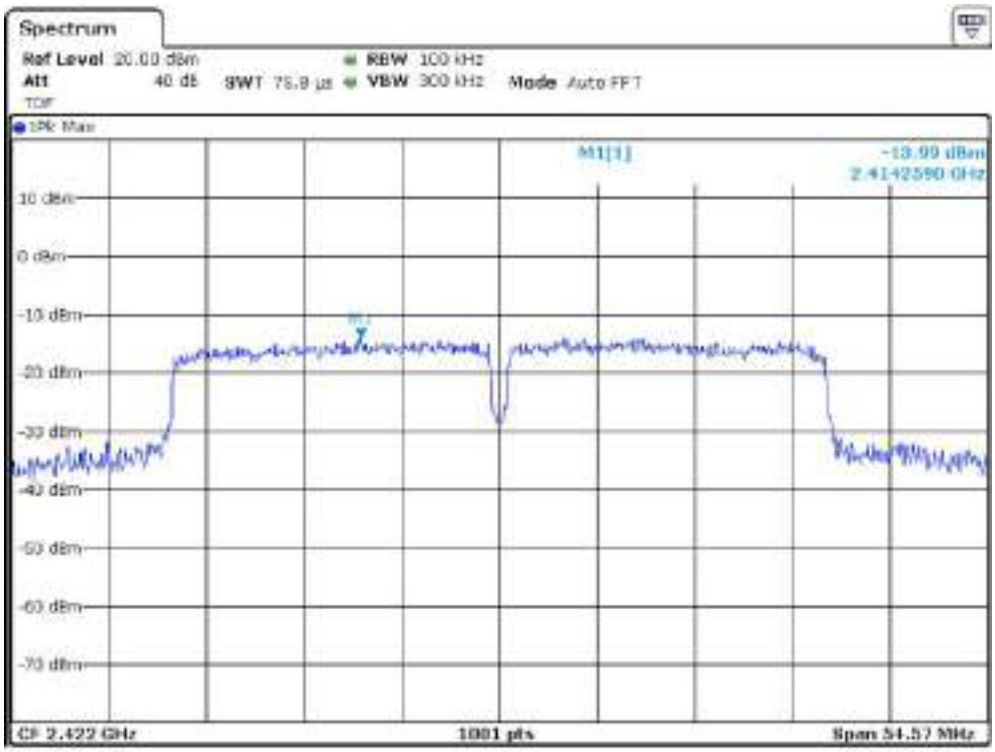


Mid CH

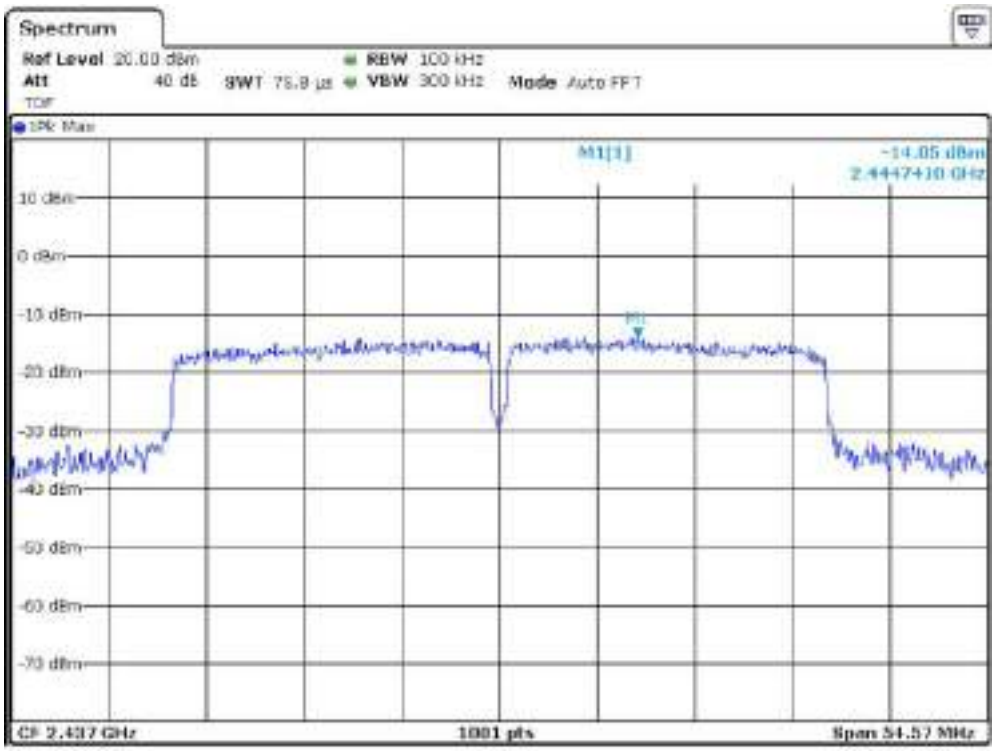


High CH

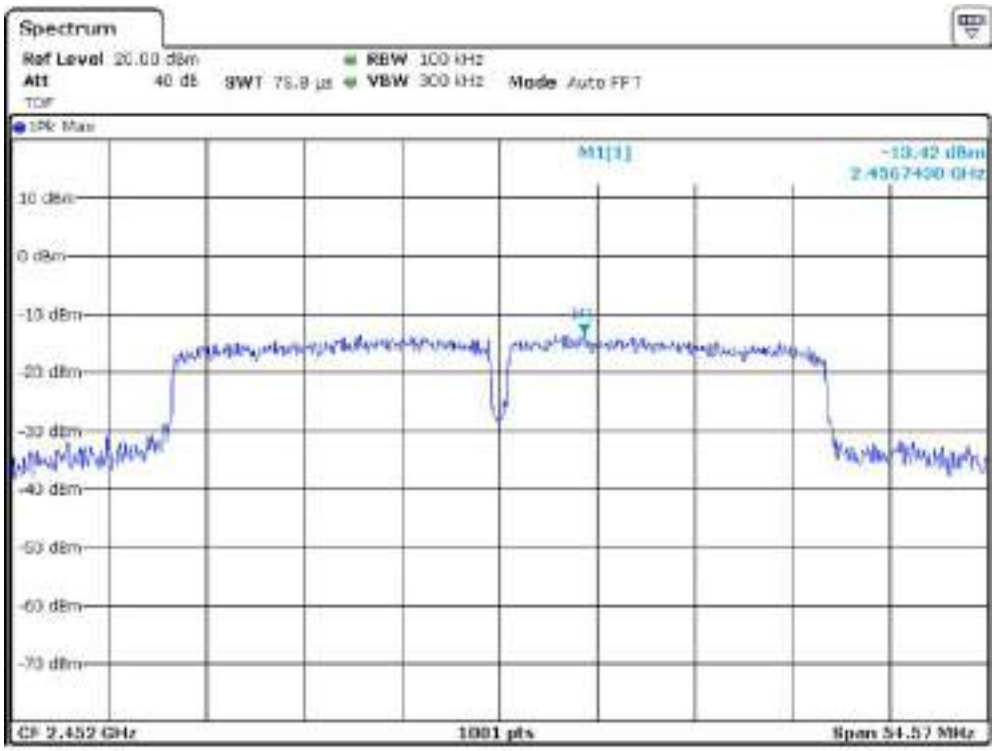
8.4.1.4 Signal level (dB m) for 802.11n(HT40)_DC 12 V



Low CH

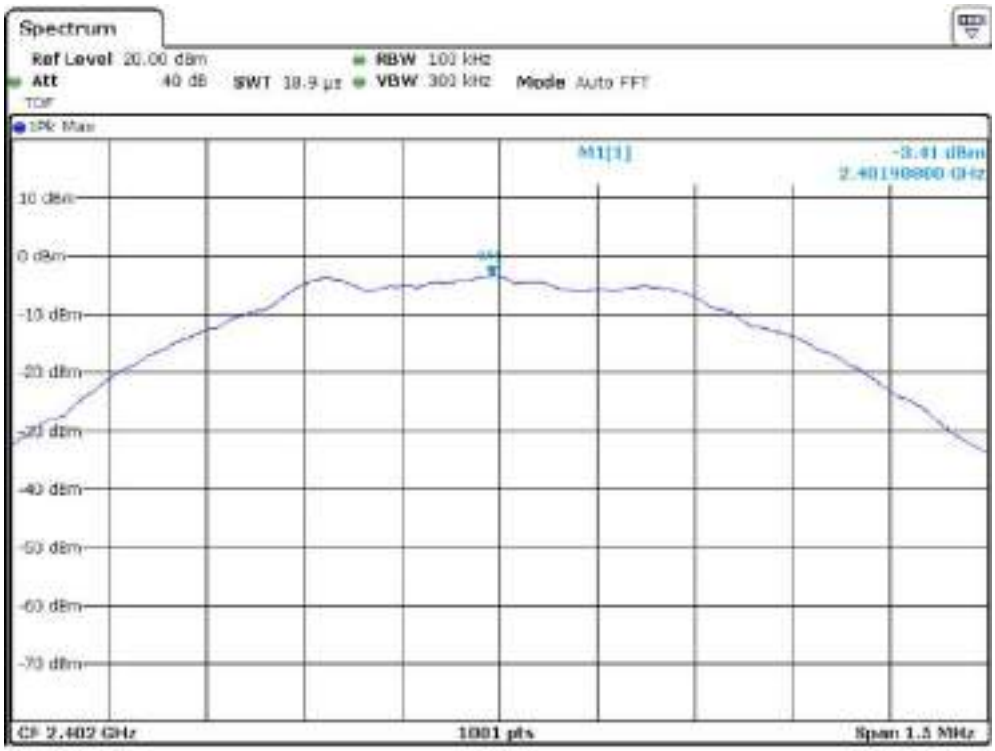


Mid CH

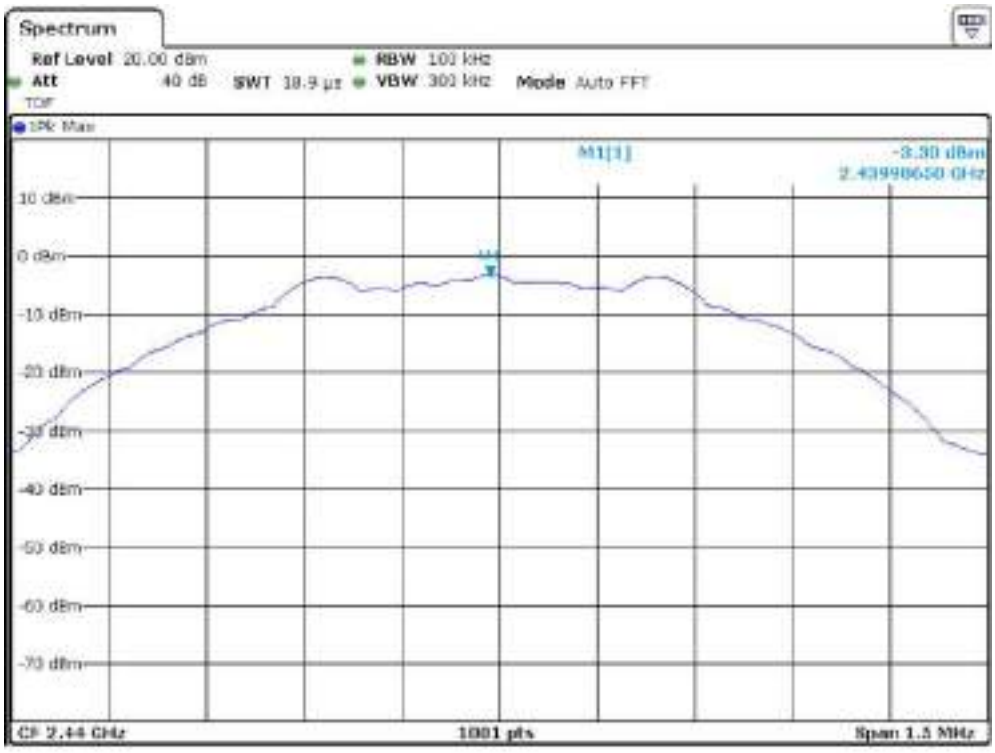


High CH

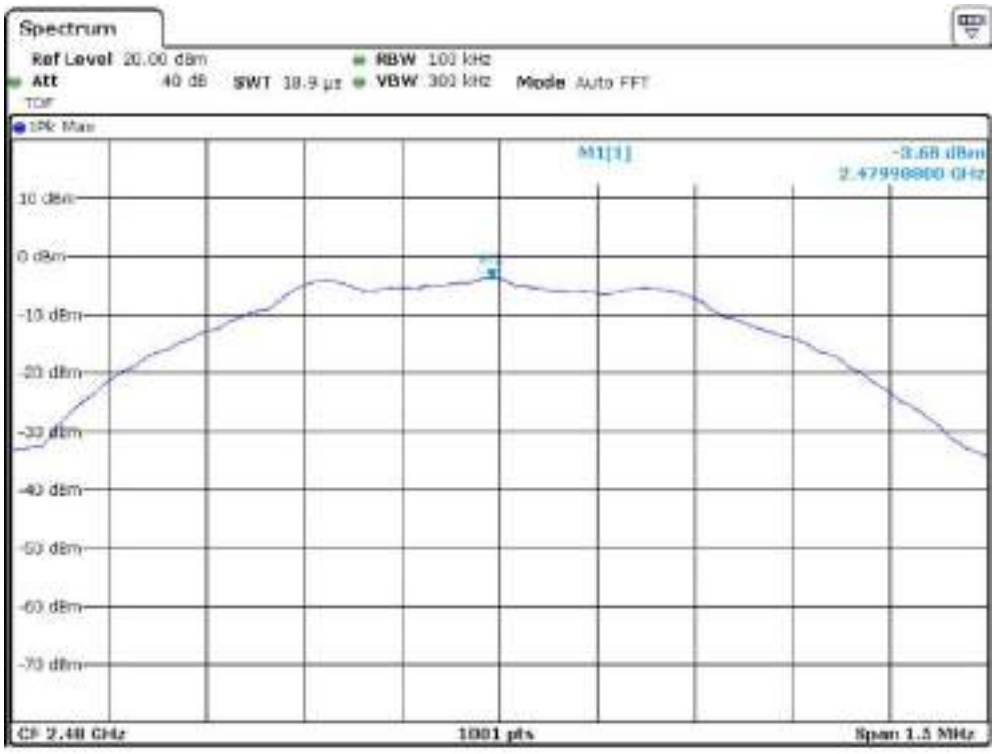
8.4.1.5 Signal level (dB m) for Bluetooth LE_DC 12 V



Low CH

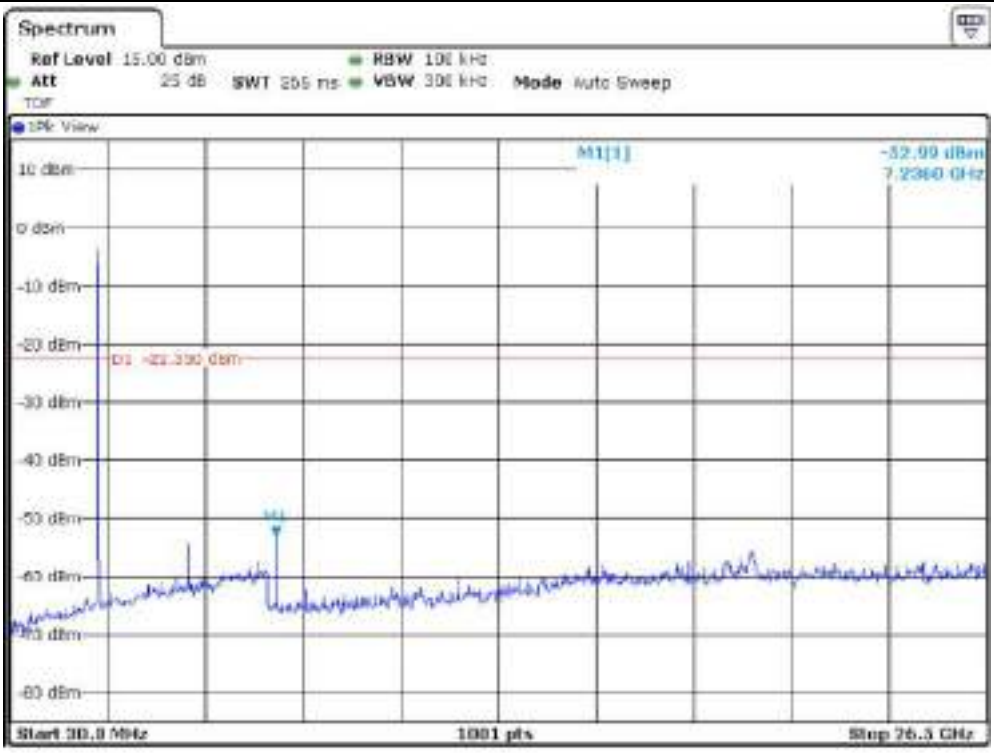


Mid CH

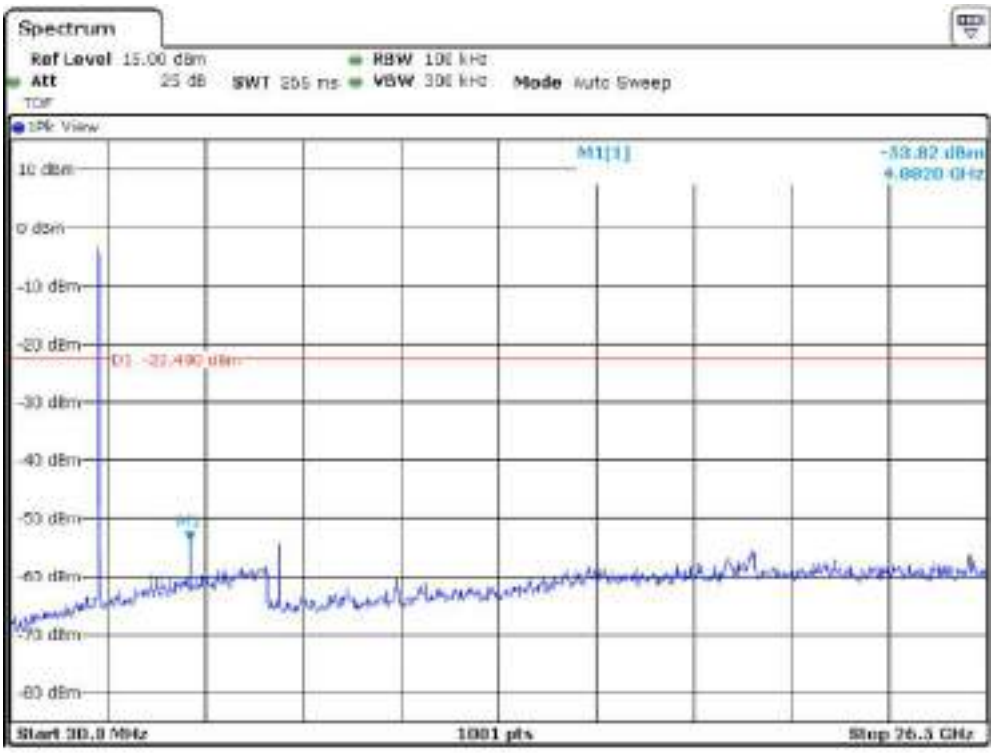


High CH

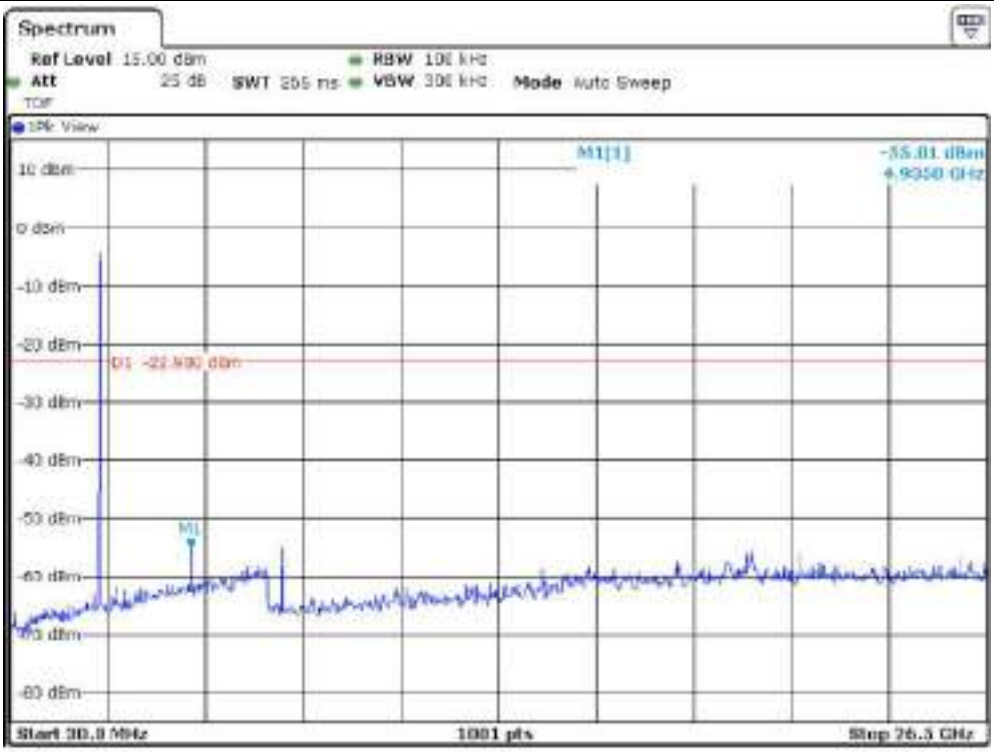
8.4.1.6 Unwanted Emissions In Non-Restricted Frequency Bands for 802.11b_DC 12 V



Low CH

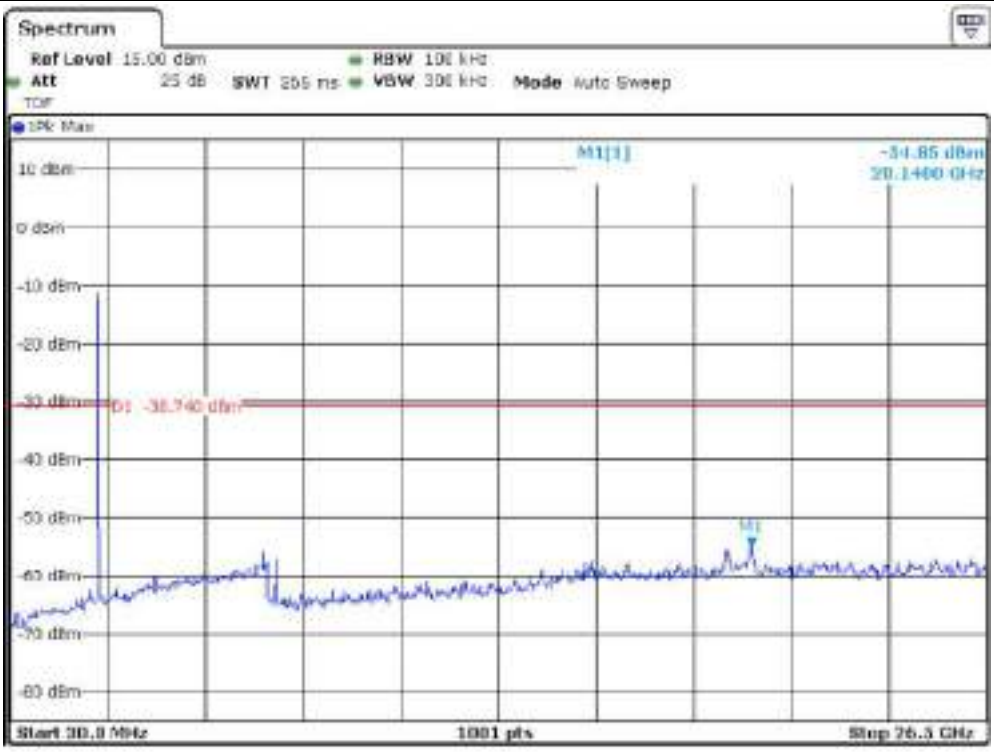


Mid CH

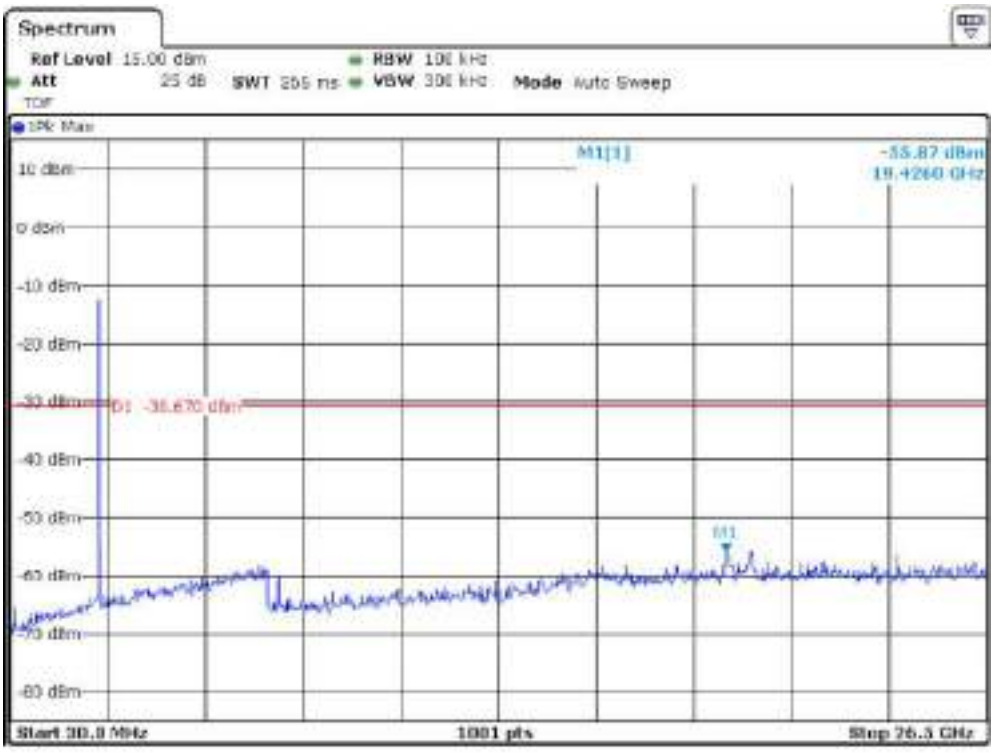


High CH

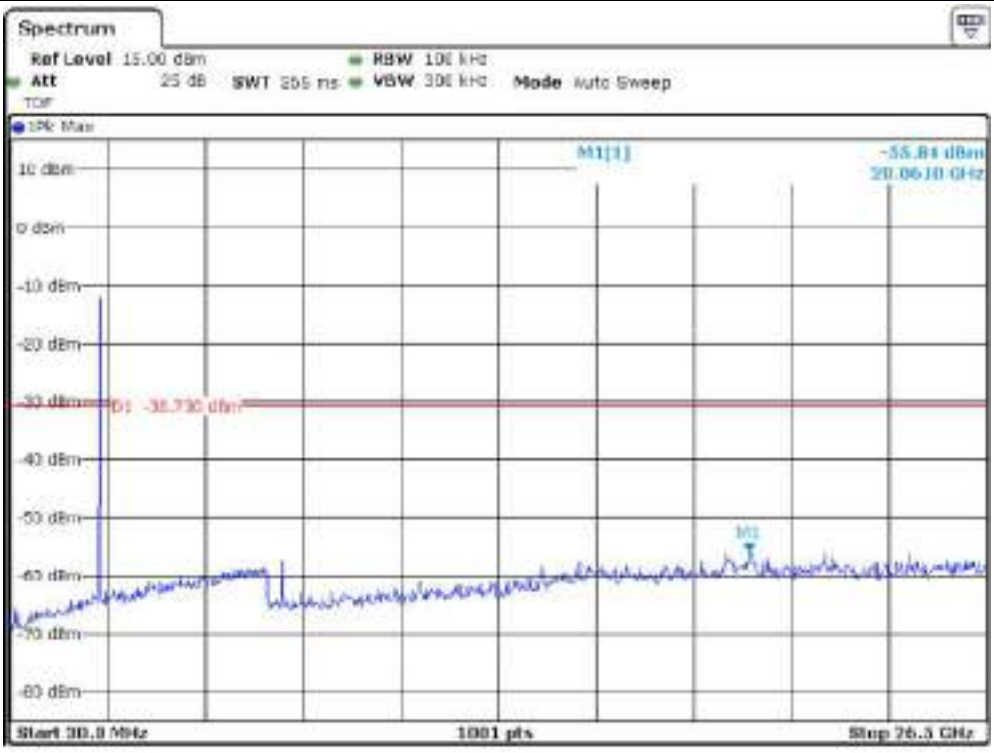
8.4.1.7 Unwanted Emissions In Non-Restricted Frequency Bands for 802.11g_DC 12 V



Low CH

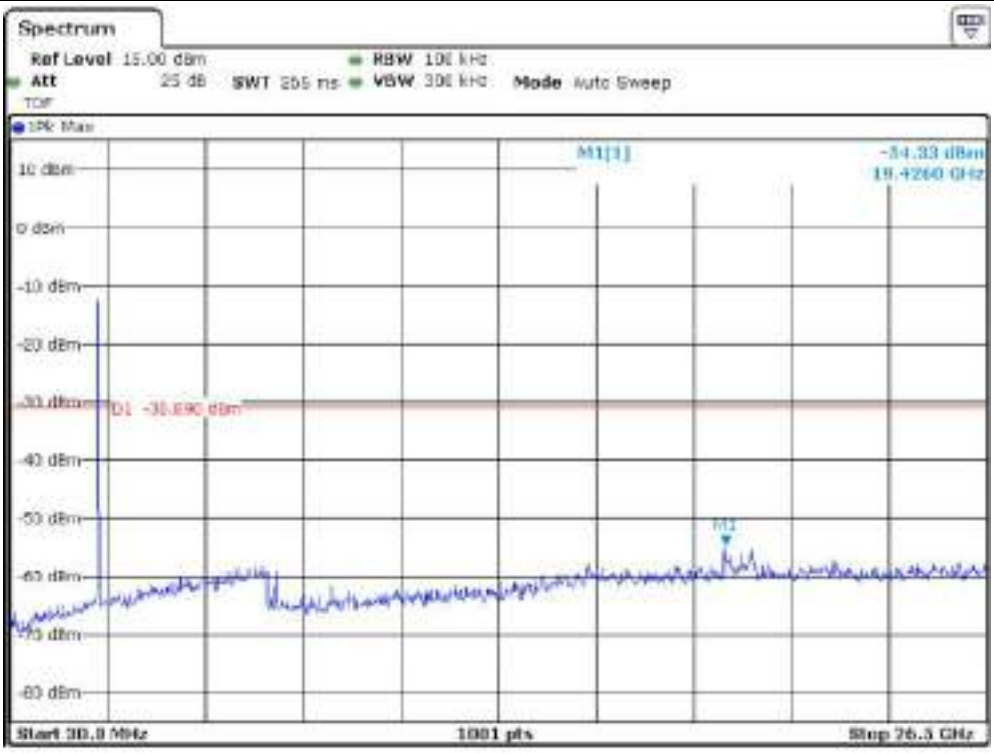


Mid CH

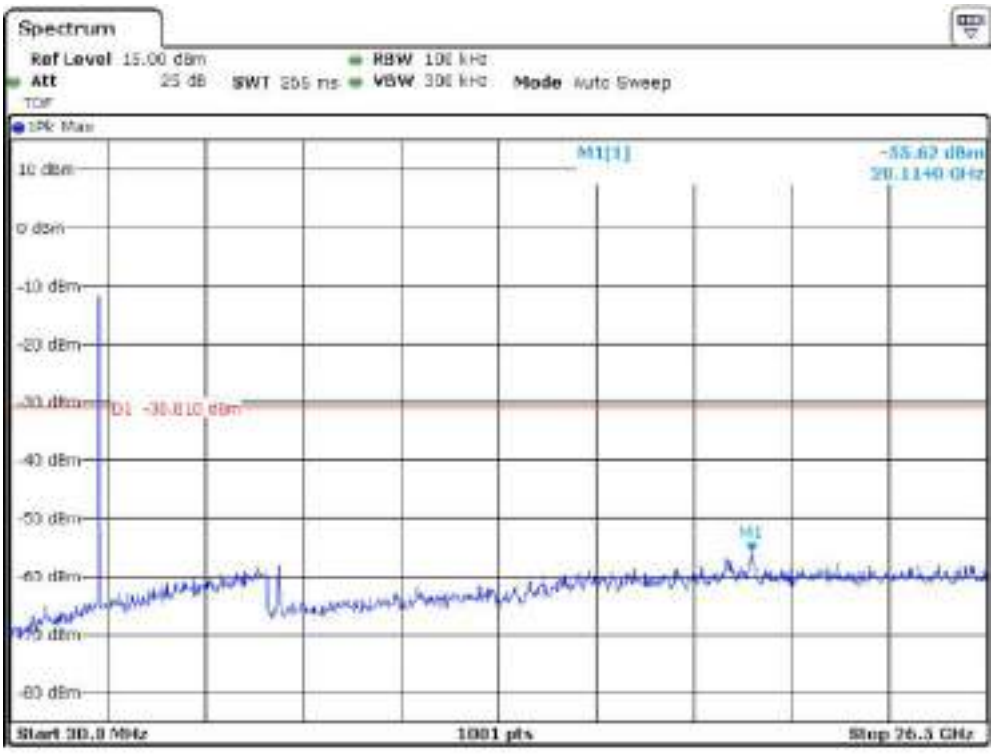


High CH

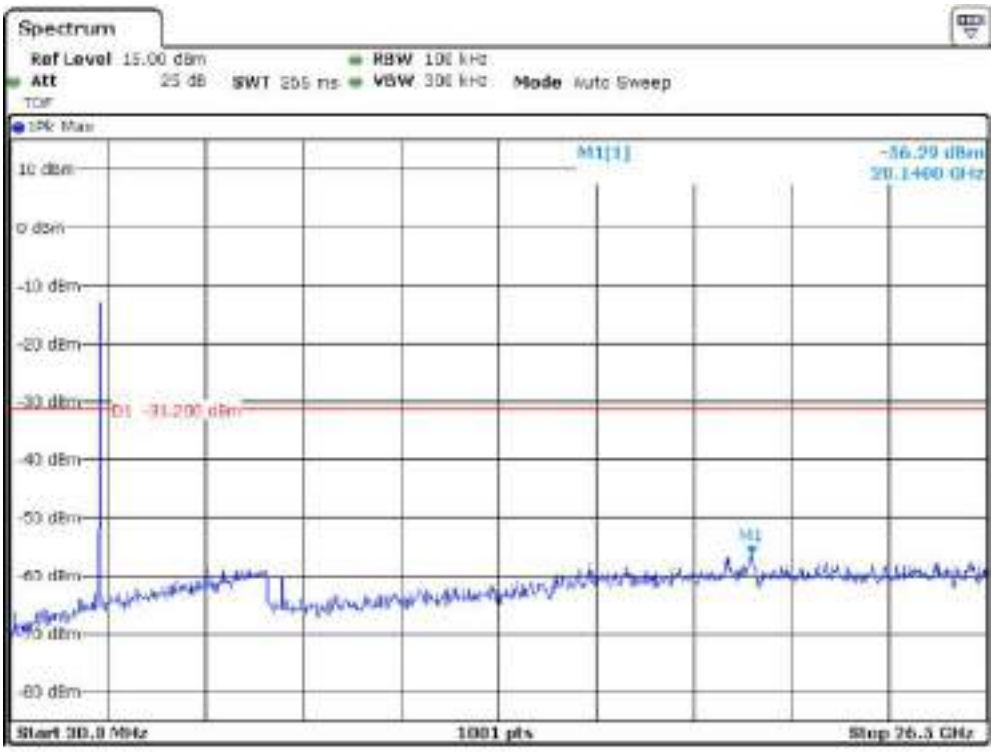
8.4.1.8 Unwanted Emissions In Non-Restricted Frequency Bands for 802.11n(HT20)_DC 12 V



Low CH

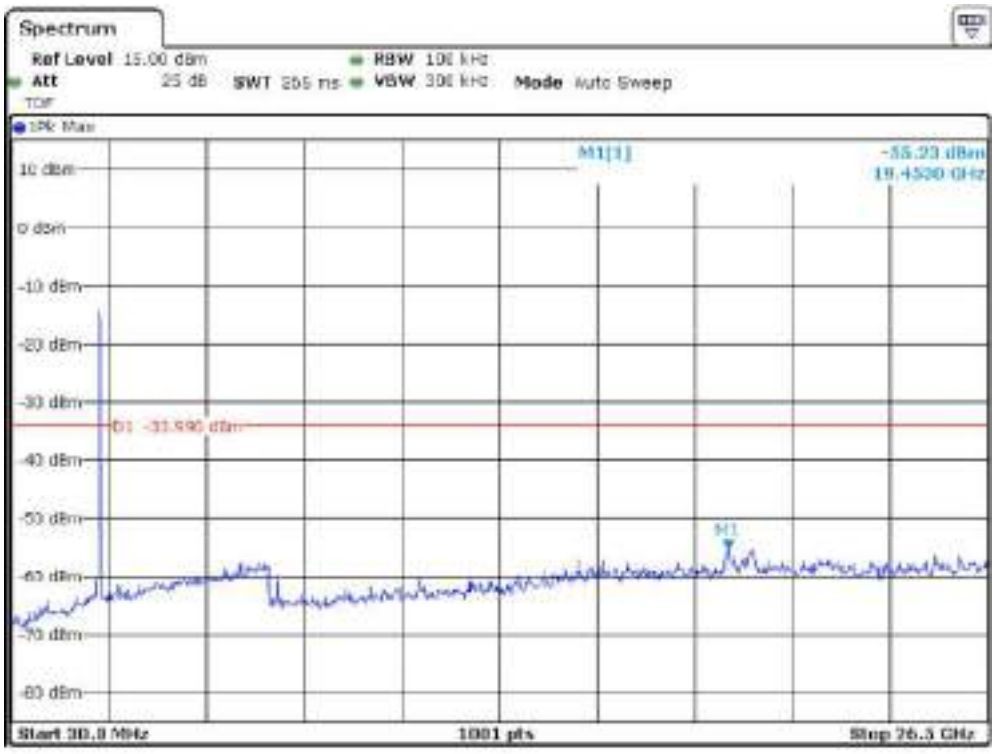


Mid CH

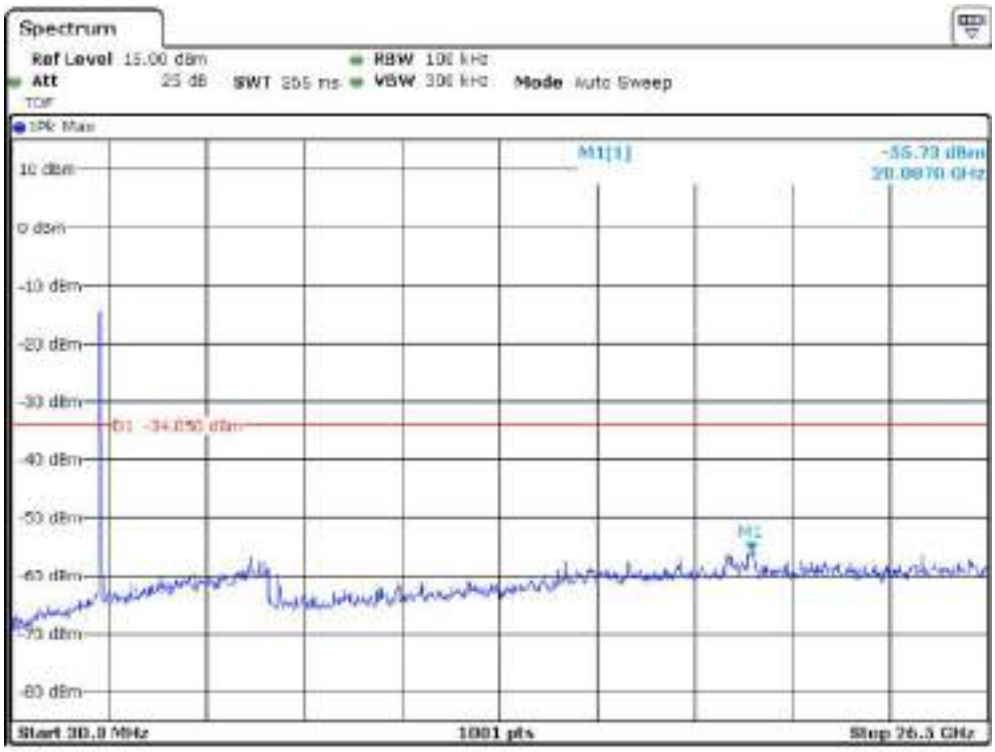

Spectrum
Ref Level 15.00 dBm
RBW 100 kHz
Att 25 dB
SWT 255 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-36.29 dBm
20.1480 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
D1 -31.200 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
M1
Start 30.0 MHz
1001 pts
Stop 26.5 GHz

High CH

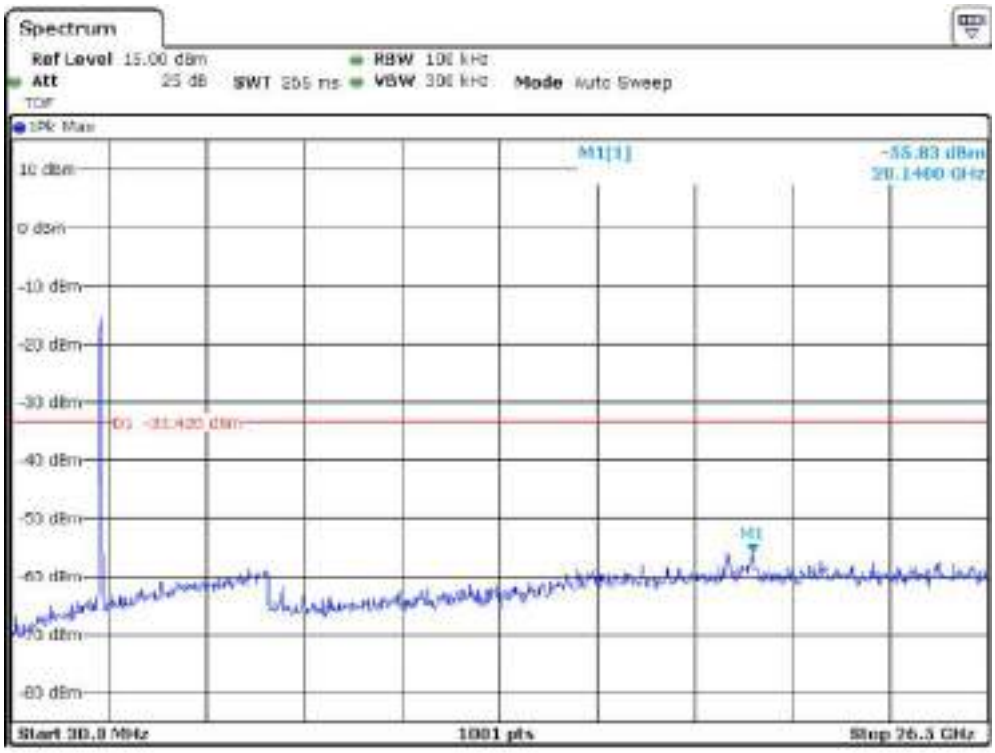
8.4.1.9 Unwanted Emissions In Non-Restricted Frequency Bands for 802.11n(HT40)_DC 12 V



Low CH

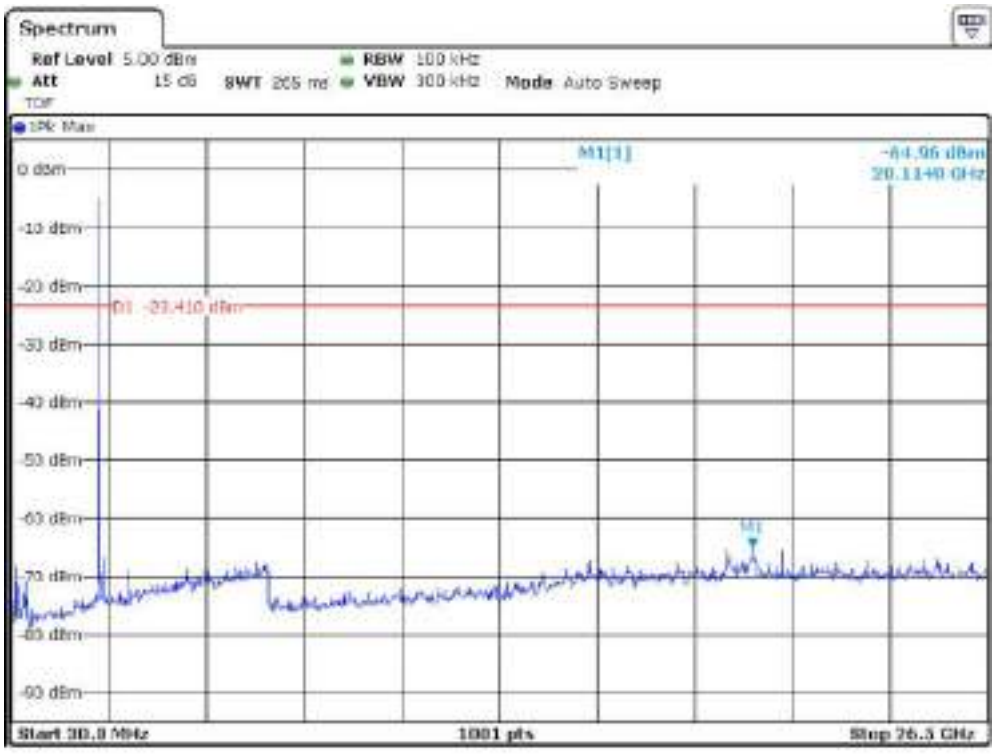


Mid CH

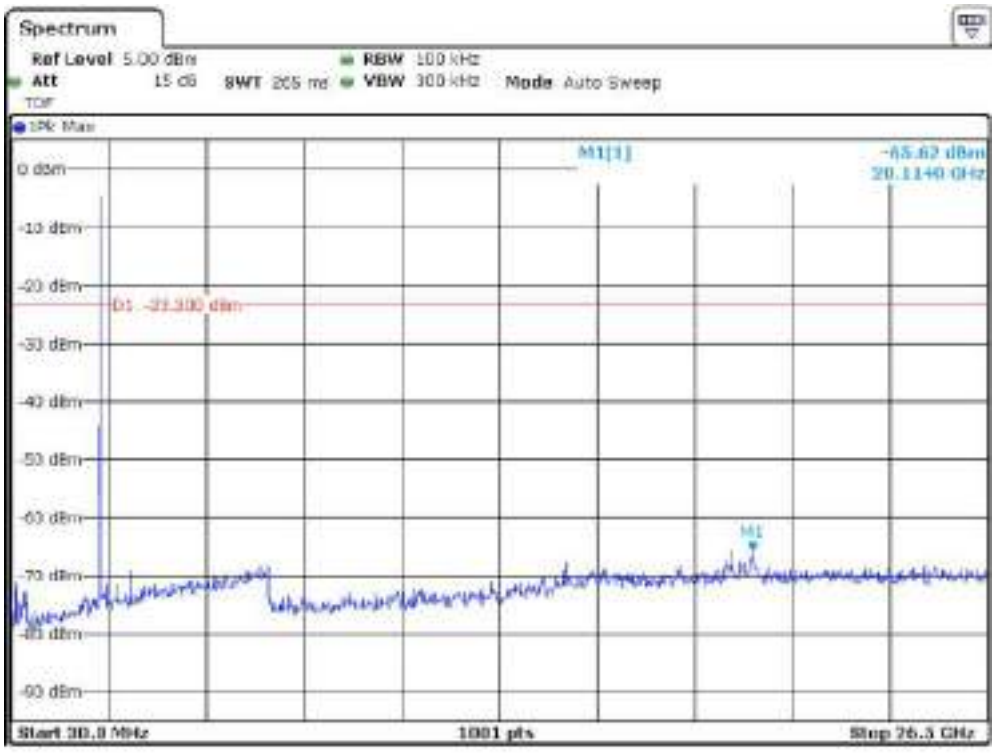

Spectrum
Ref Level 15.00 dBm
RBW 100 kHz
Att 25 dB
SWT 265 ms
VBW 300 kHz
Mode Auto Sweep
1Pk Max
M1[1]
-55.83 dBm
20.1460 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
M1
Start 30.0 MHz
1001 pts
Stop 26.5 GHz

High CH

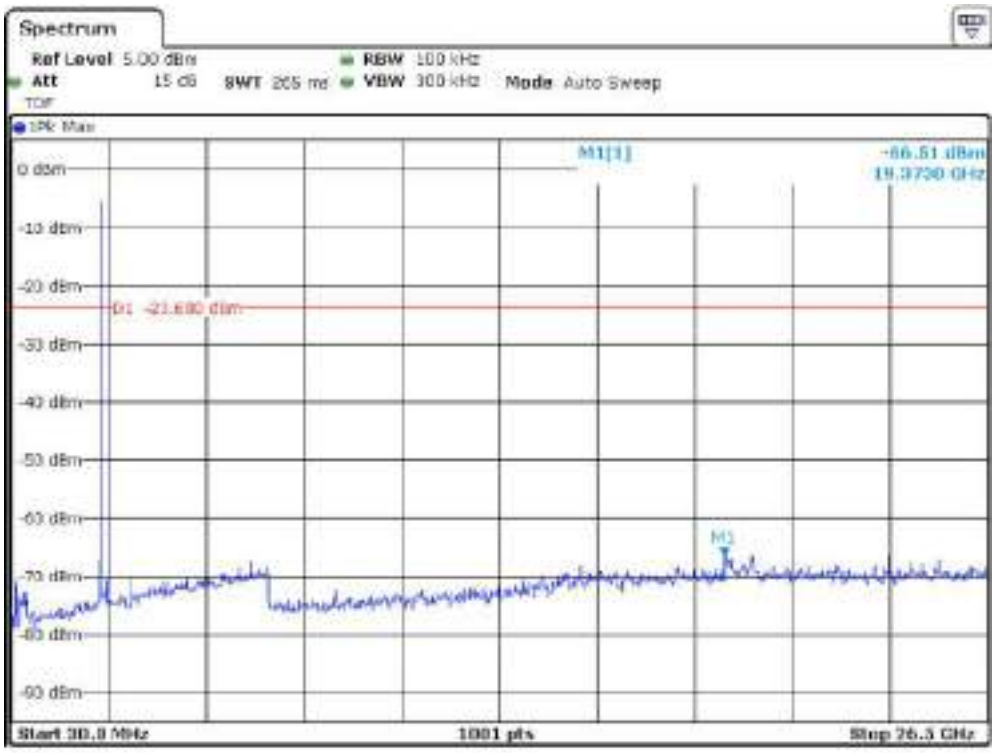
8.4.1.10 Unwanted Emissions In Non-Restricted Frequency Bands for Bluetooth LE_DC 12 V



Low CH

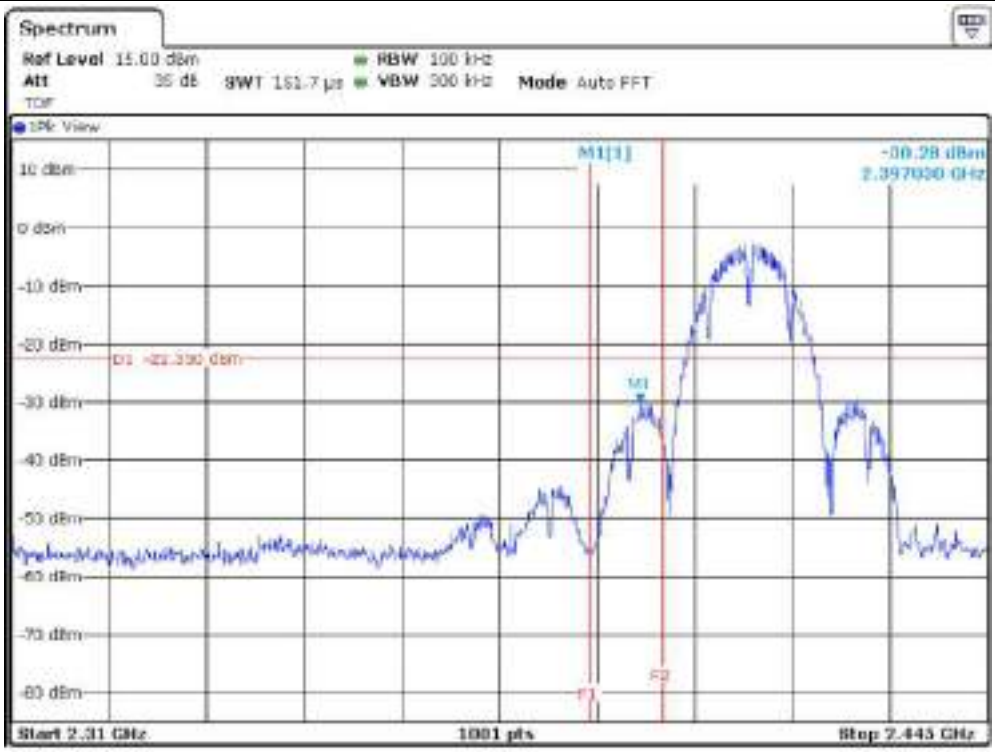


Mid CH

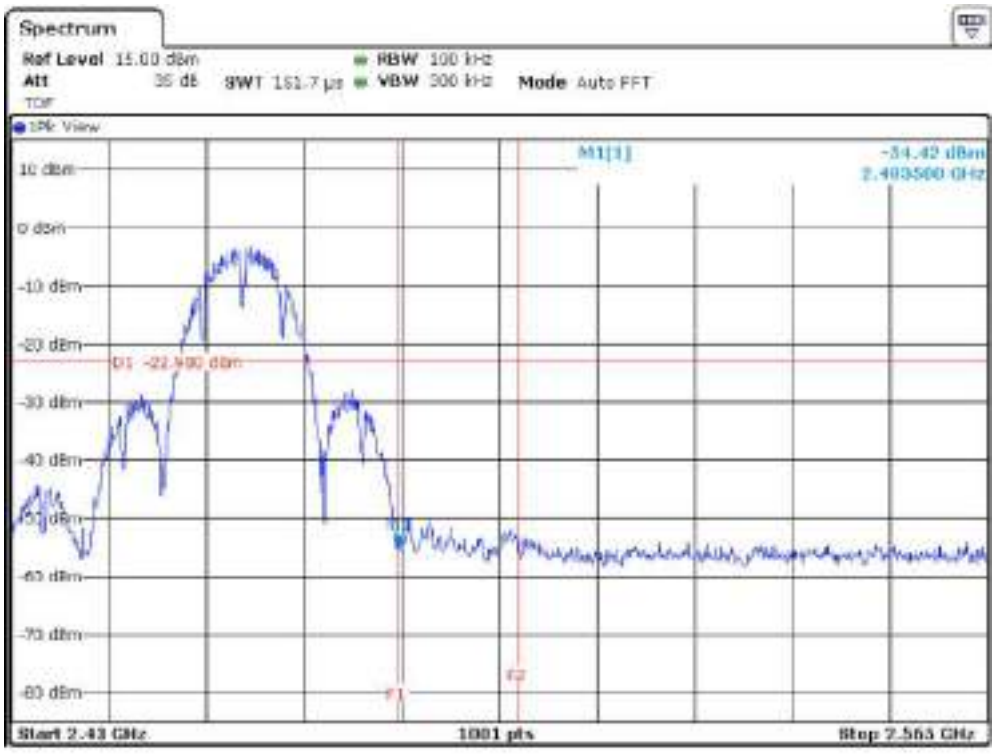

Spectrum
Ref Level 5.00 dBm
RBW 100 kHz
Att 15 dB
SWT 265 ms
VBW 300 kHz
Mode Auto Sweep
TDF
1Pk Max
M1[1]
-66.51 dBm
18.3730 GHz
0 dBm
-10 dBm
-20 dBm
D1 -21.690 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
M1
Start 30.0 MHz
1001 pts
Stop 26.5 GHz

High CH

8.4.1.11 Band Edge for 802.11b_DC 12 V

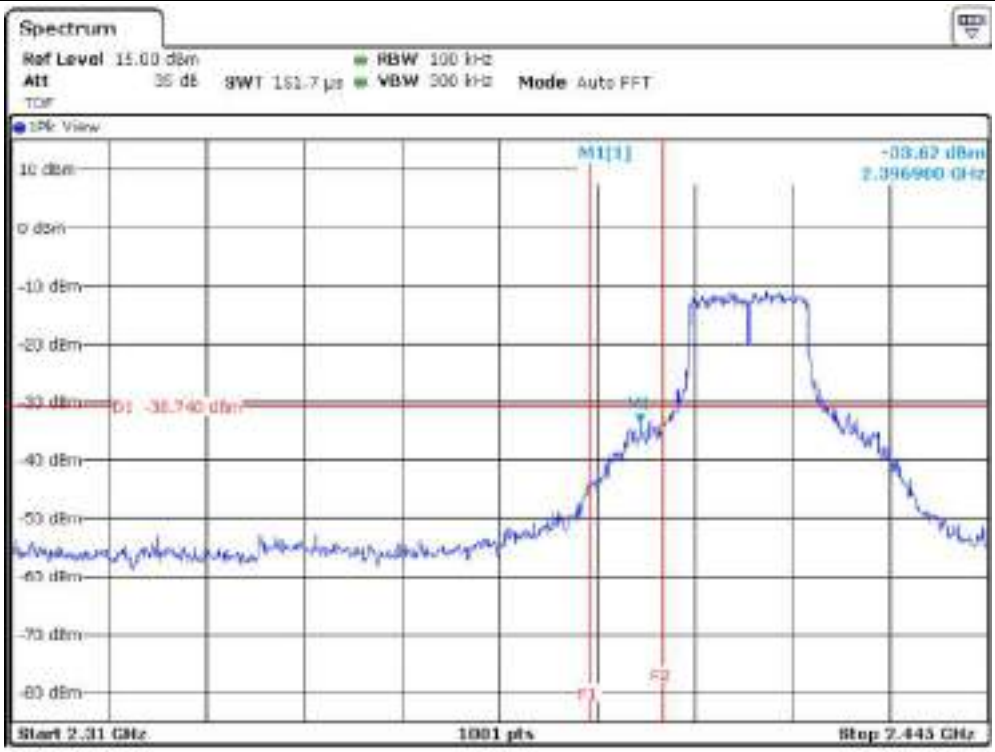


Low CH

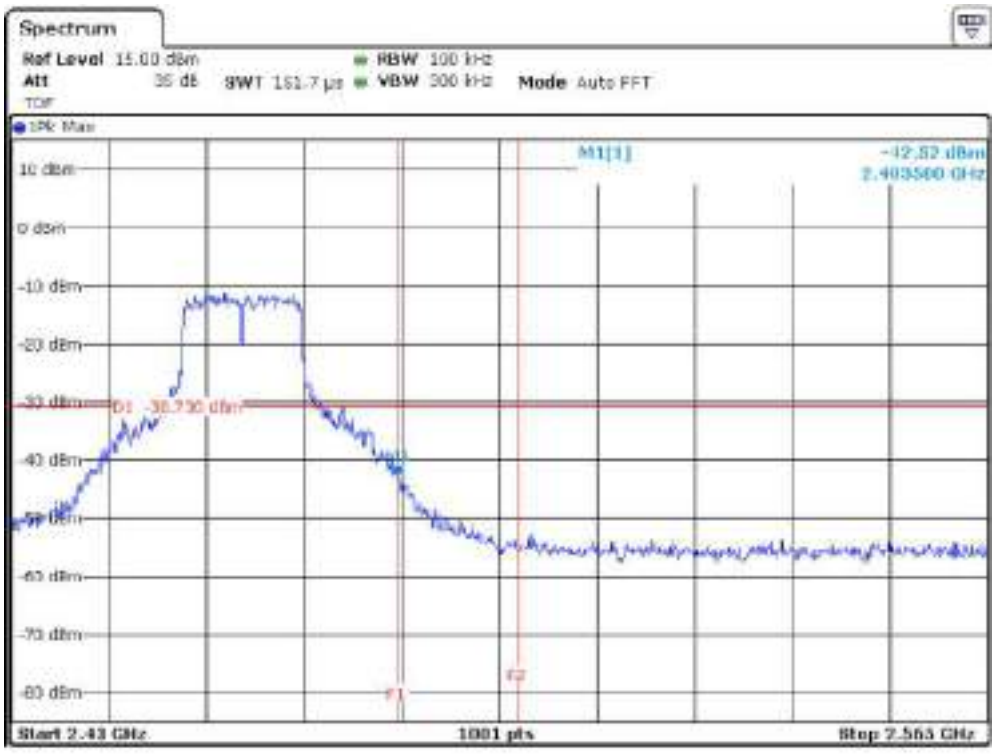


High CH

8.4.1.12 Band Edge for 802.11g_DC 12 V

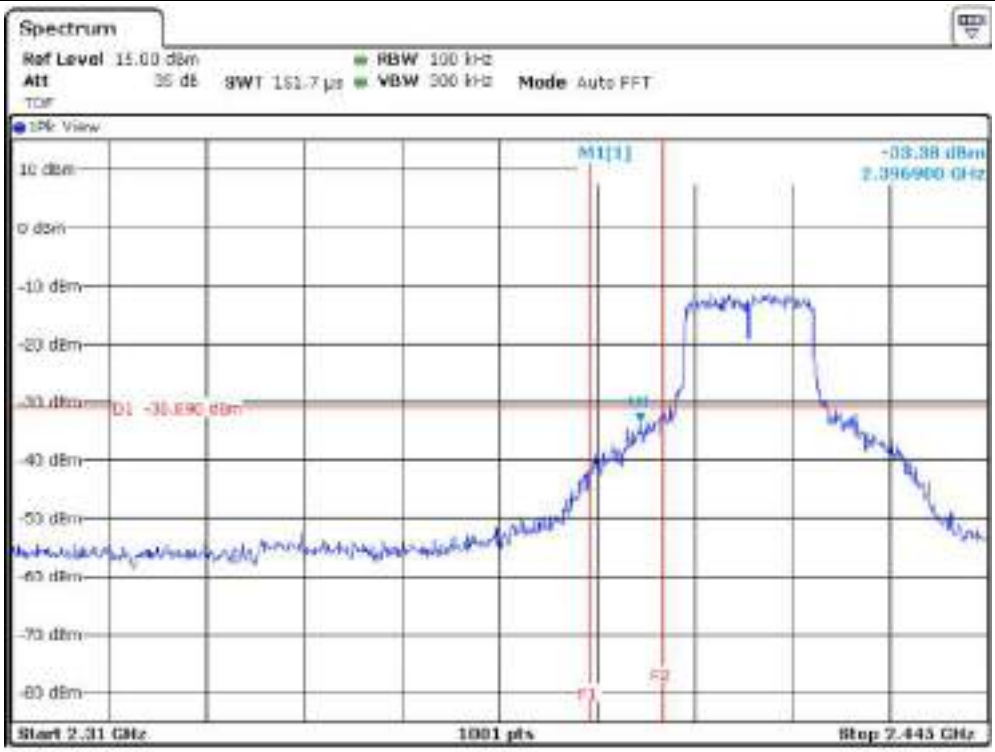


Low CH

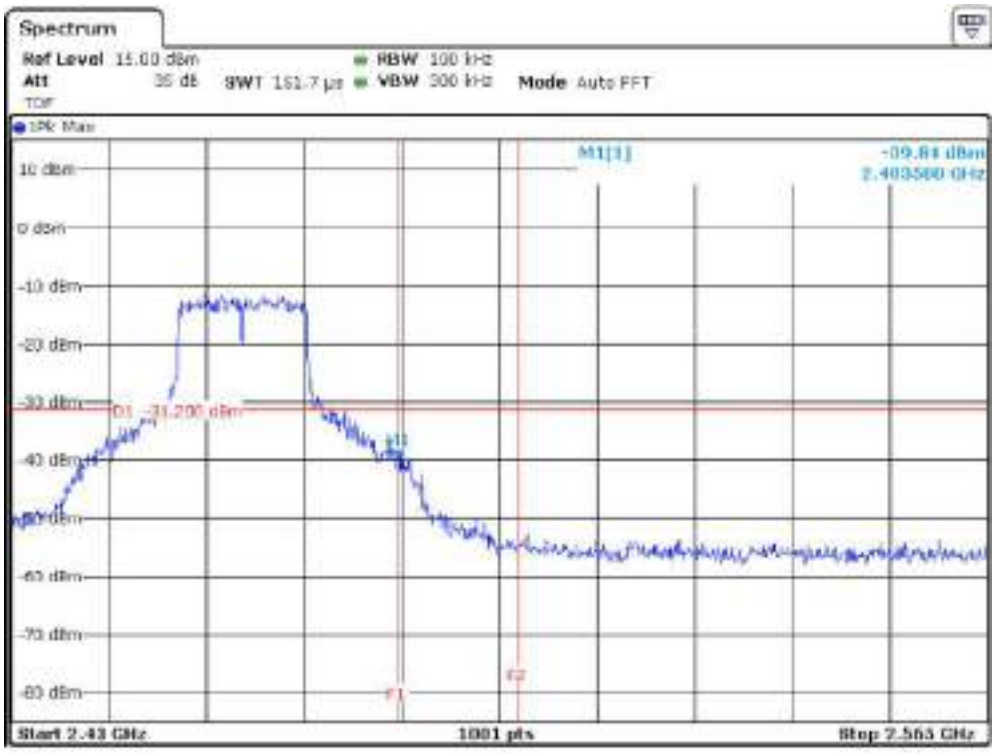


High CH

8.4.1.13 Band Edge for 802.11n(HT20)_DC 12 V

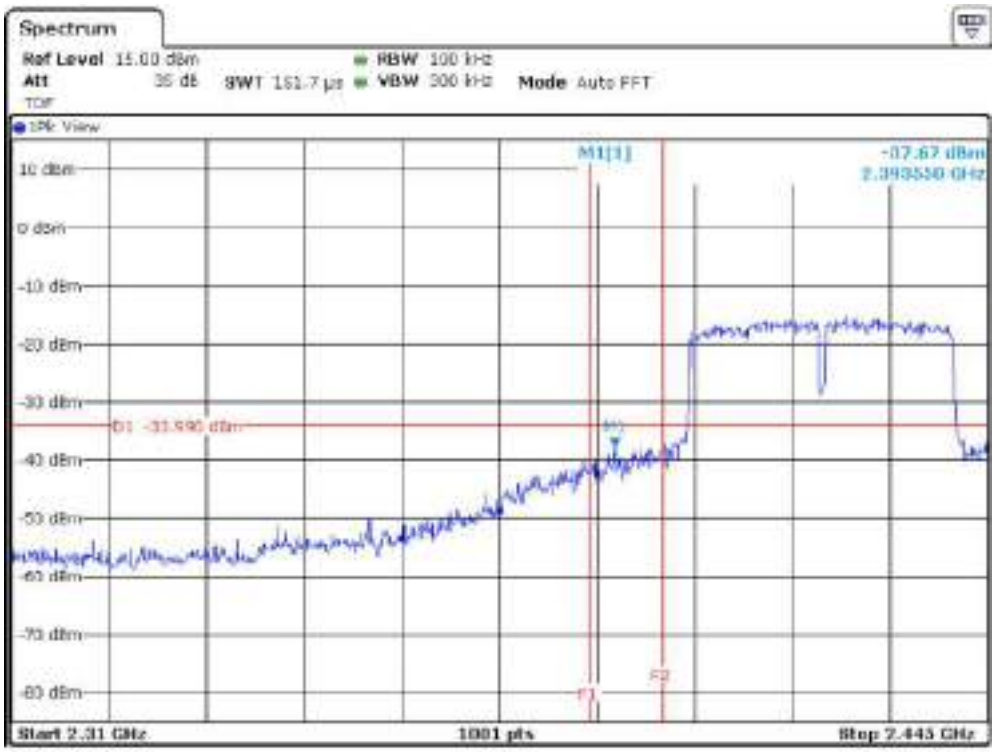


Low CH

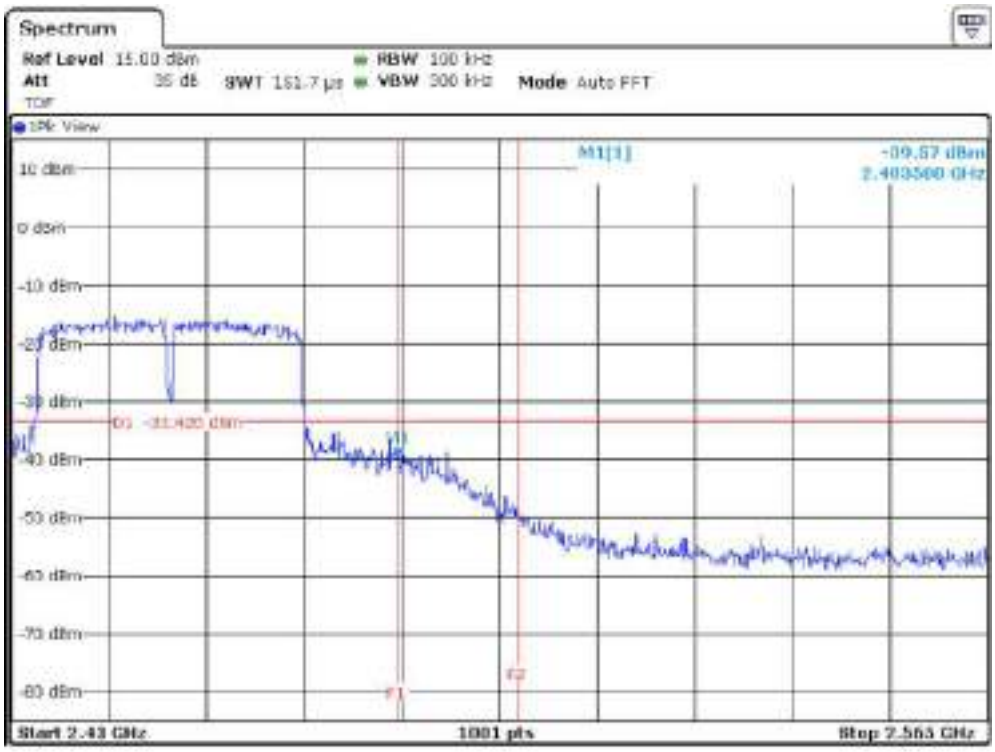


High CH

8.4.1.14 Band Edge for 802.11n(HT40)_DC 12 V

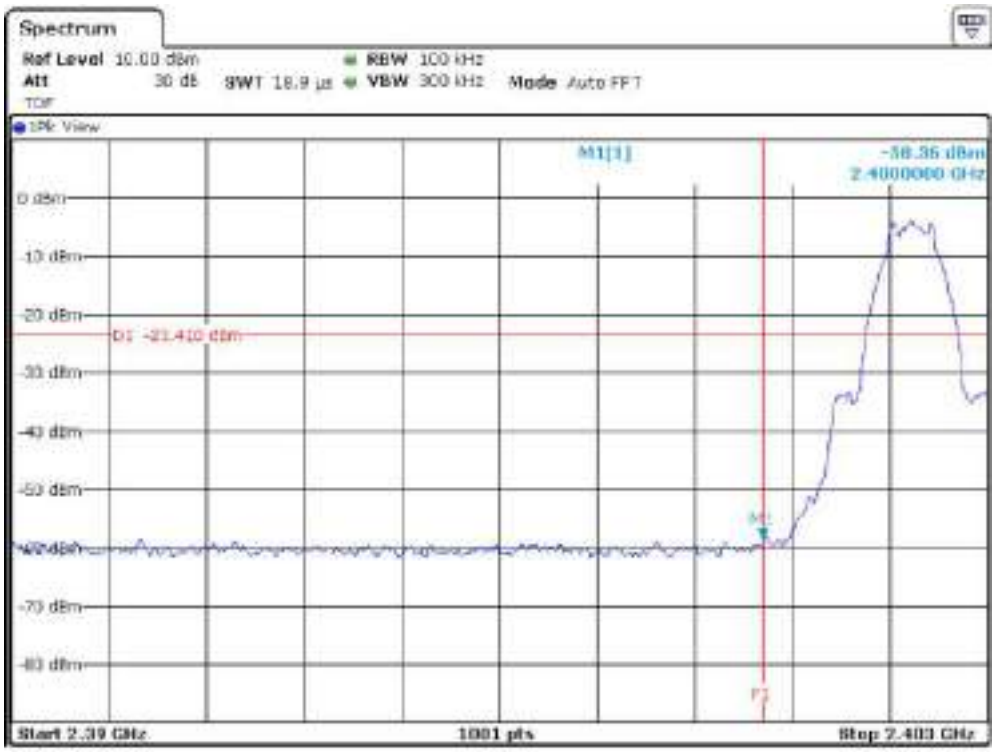


Low CH

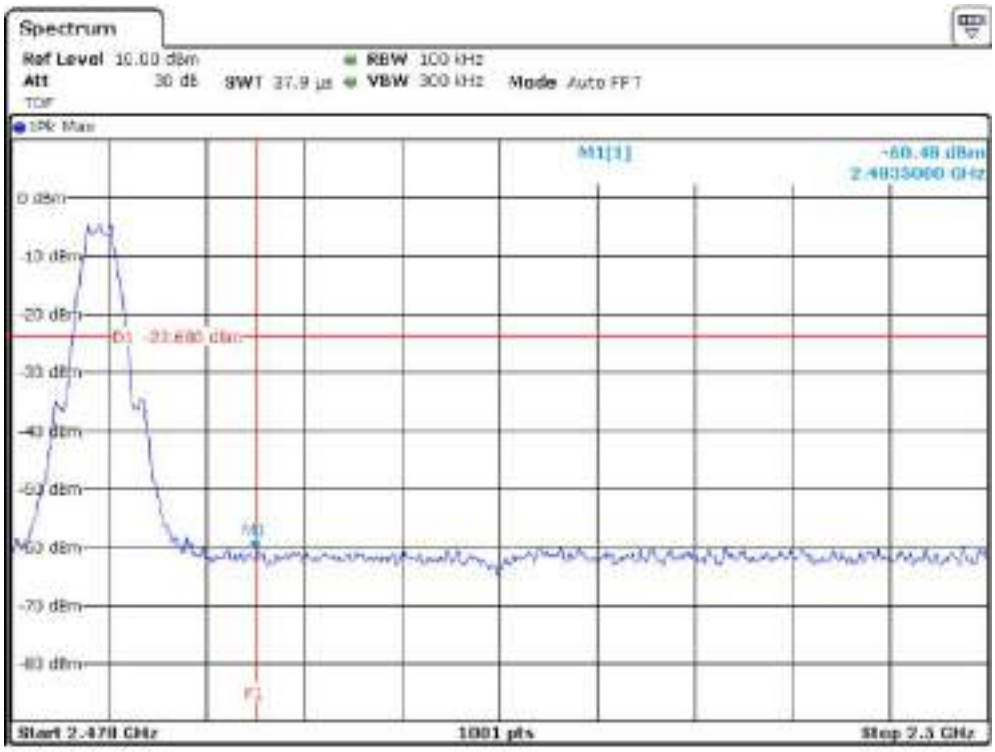


High CH

8.4.1.15 Band Edge for Bluetooth LE_DC 12 V



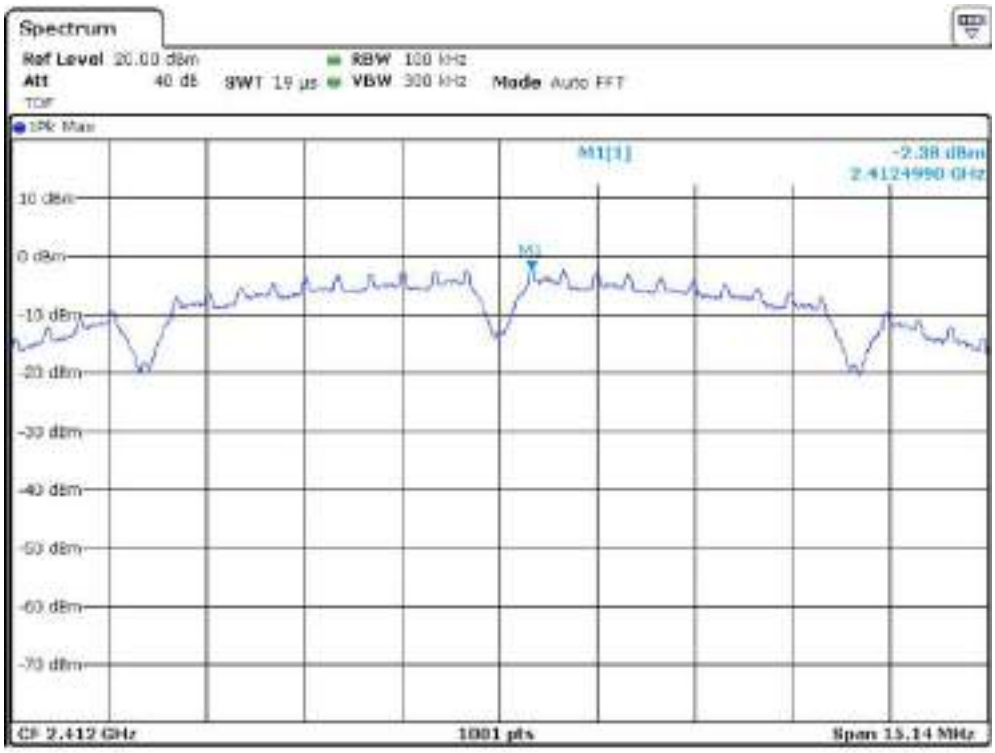
Low CH



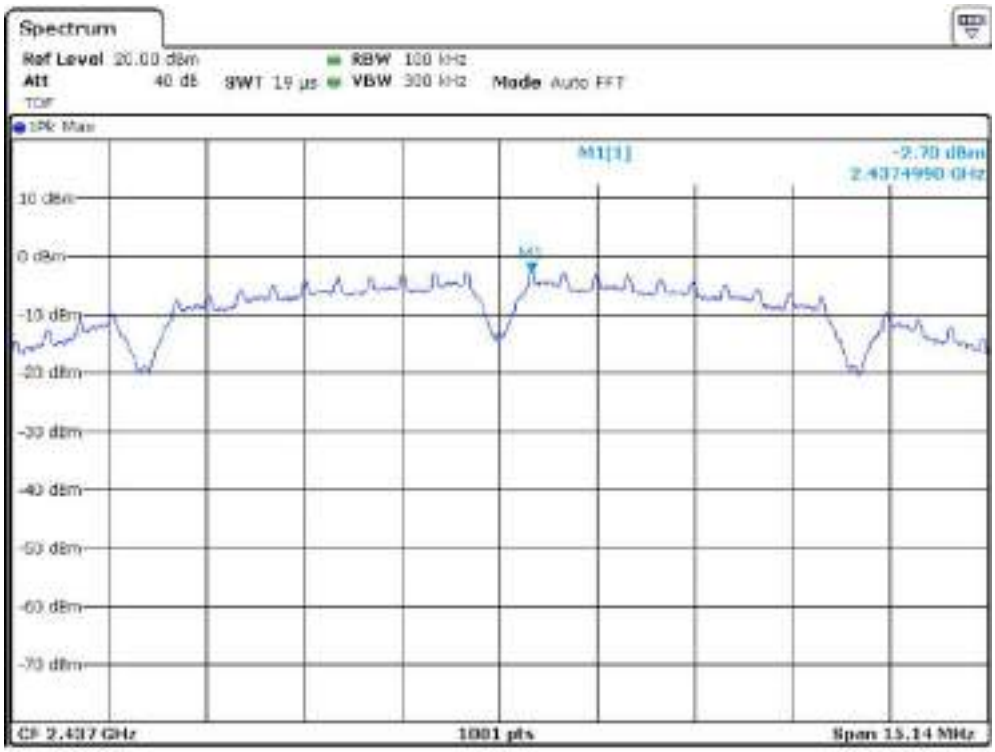
High CH

8.4.2 Measured Results for DC 24 V

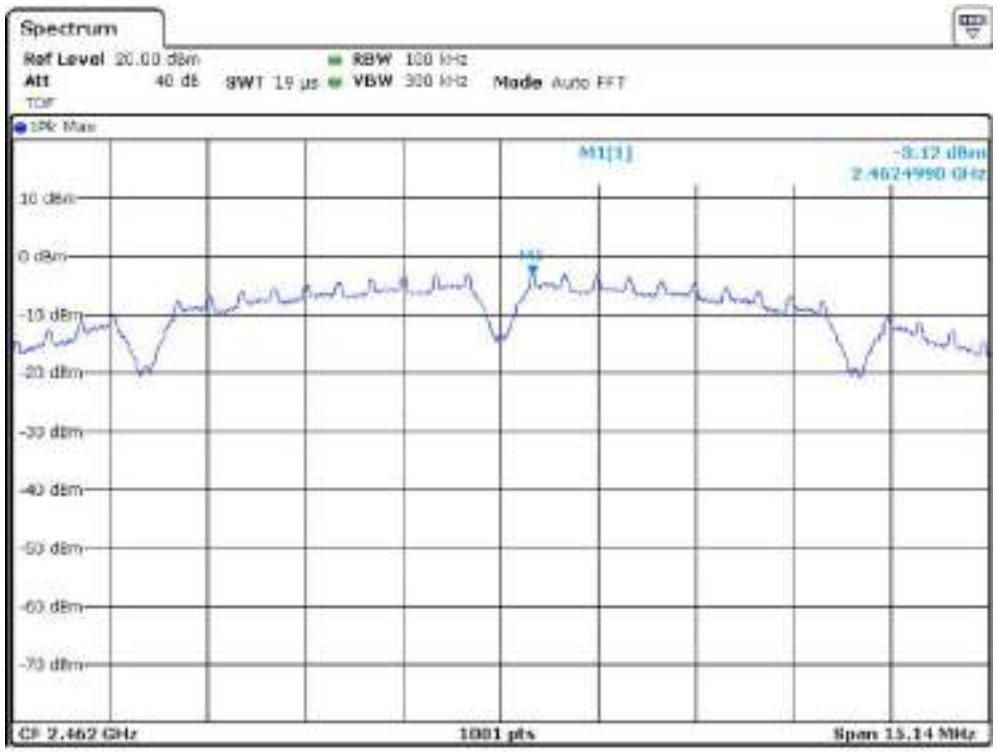
8.4.2.1 Signal level (dB m) for 802.11b_DC 24 V



Low CH

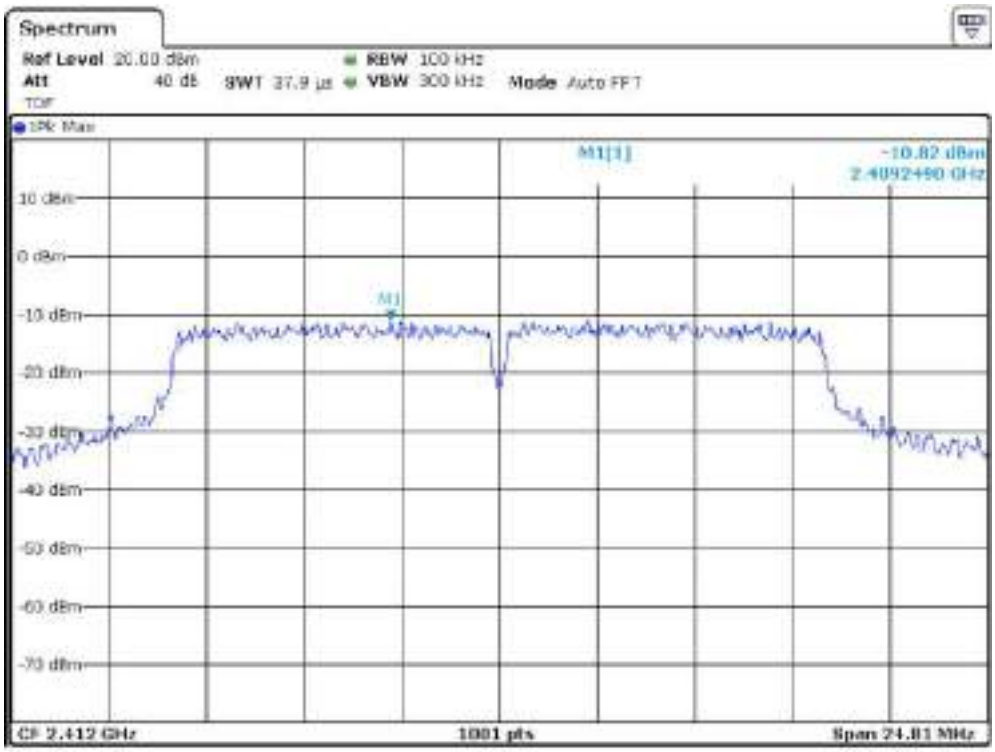


Mid CH

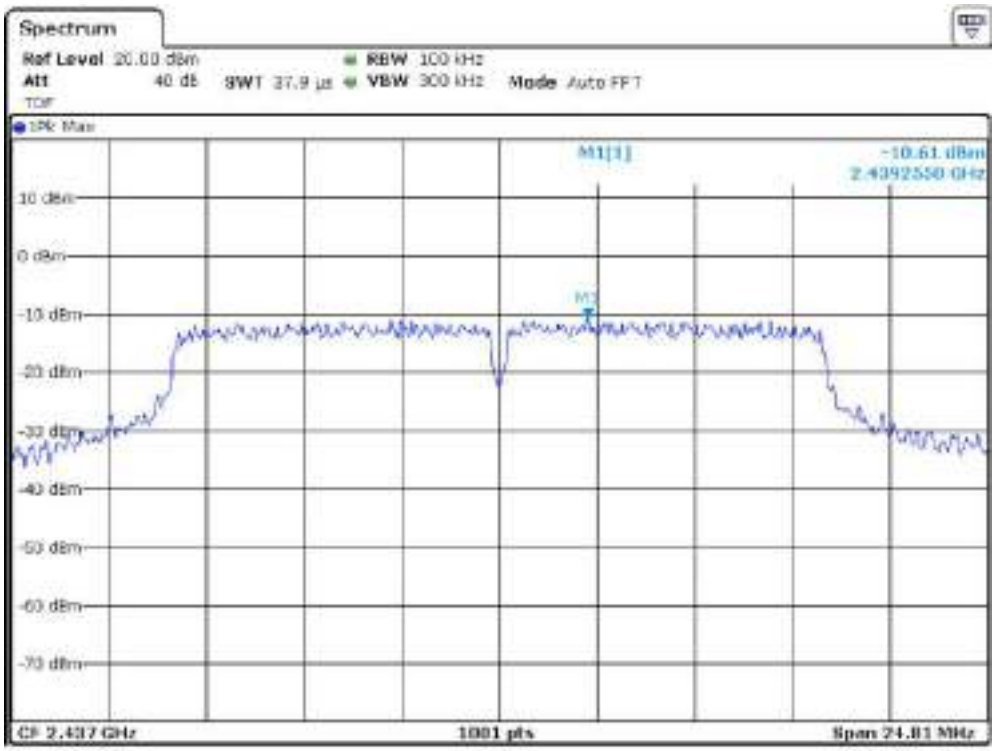


High CH

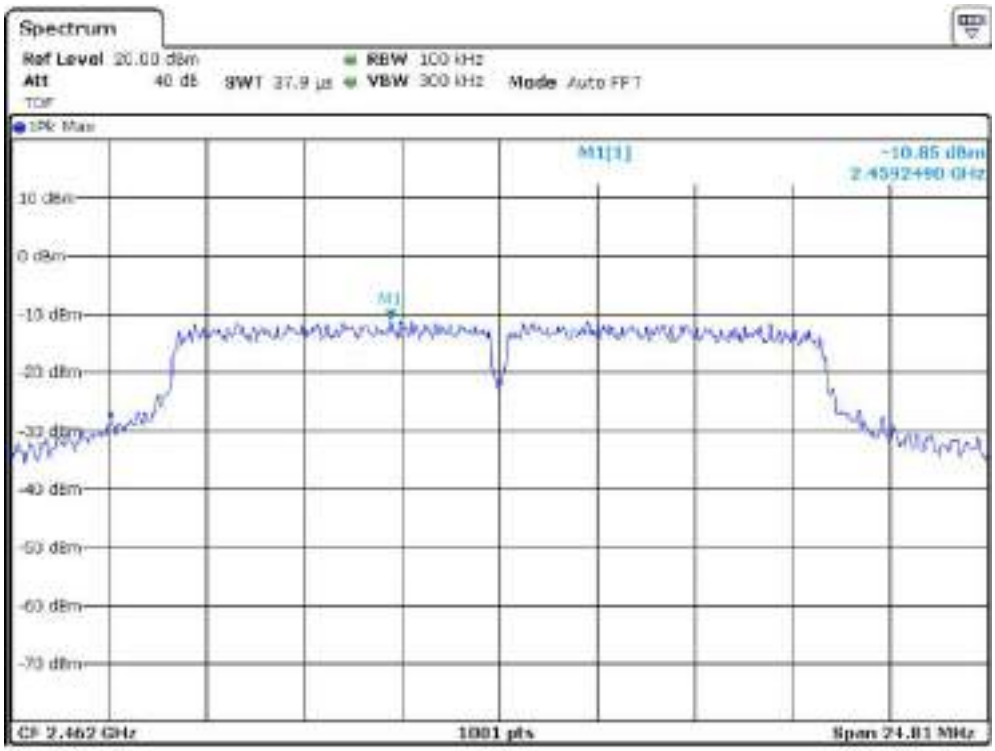
8.4.2.2 Signal level (dB m) for 802.11g_DC 24 V



Low CH

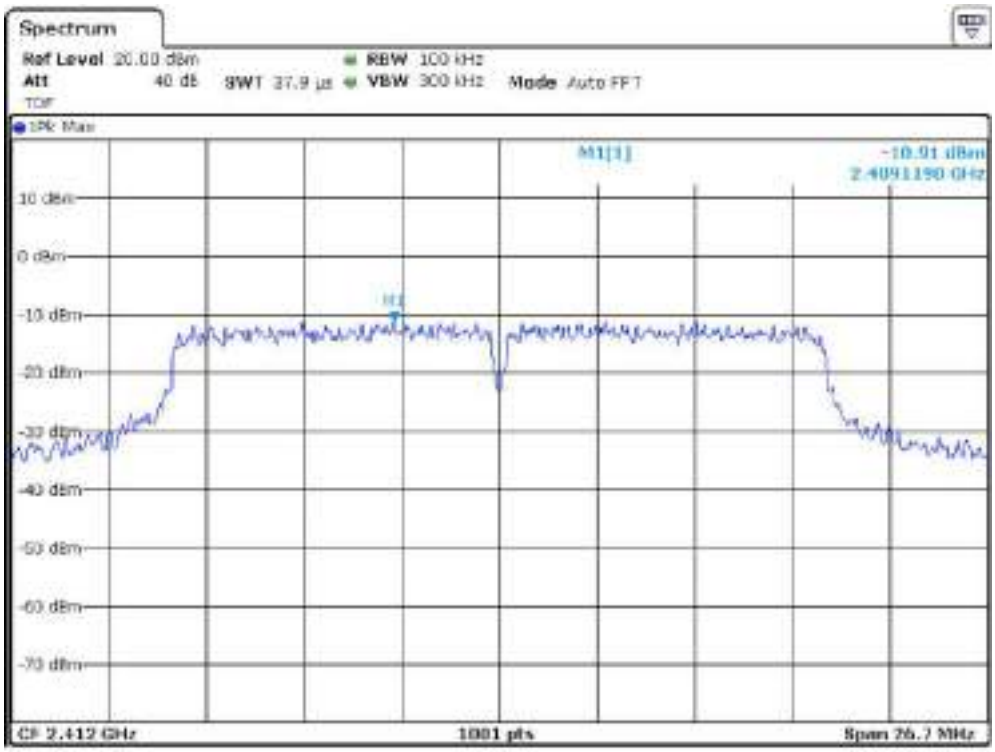


Mid CH

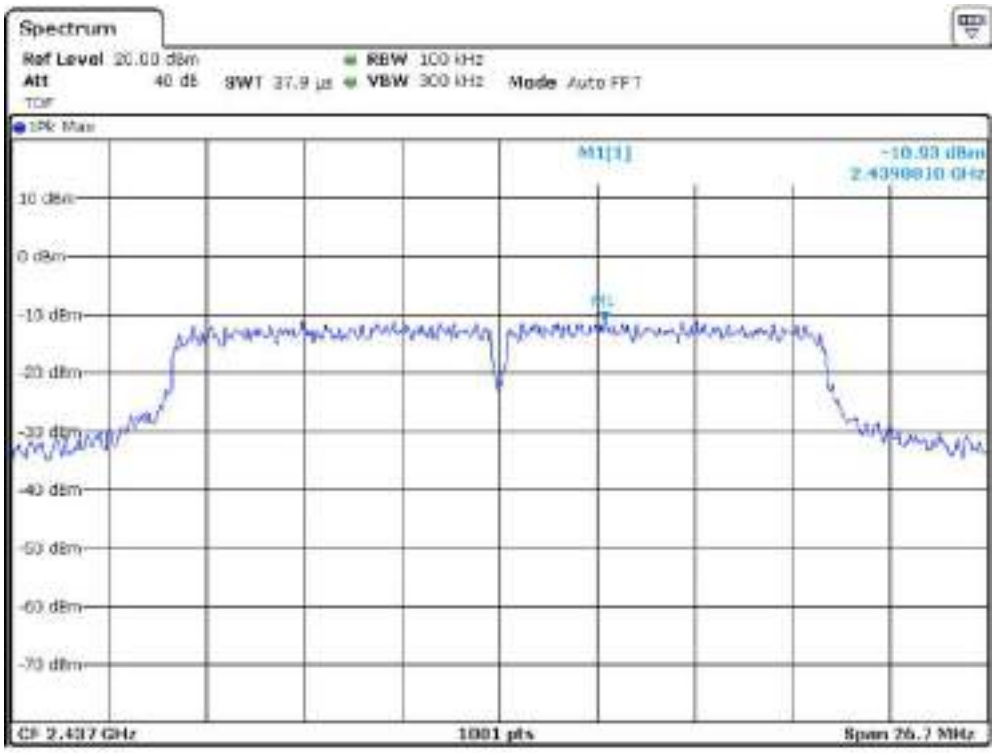


High CH

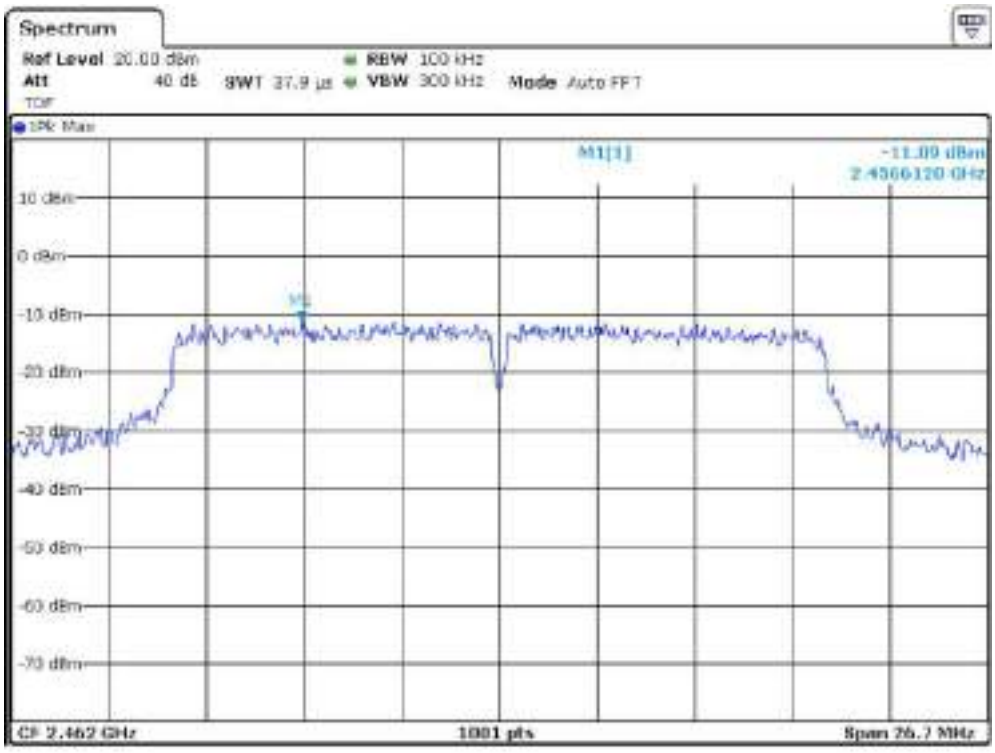
8.4.2.3 Signal level (dB m) for 802.11n(HT20)_DC 24 V



Low CH

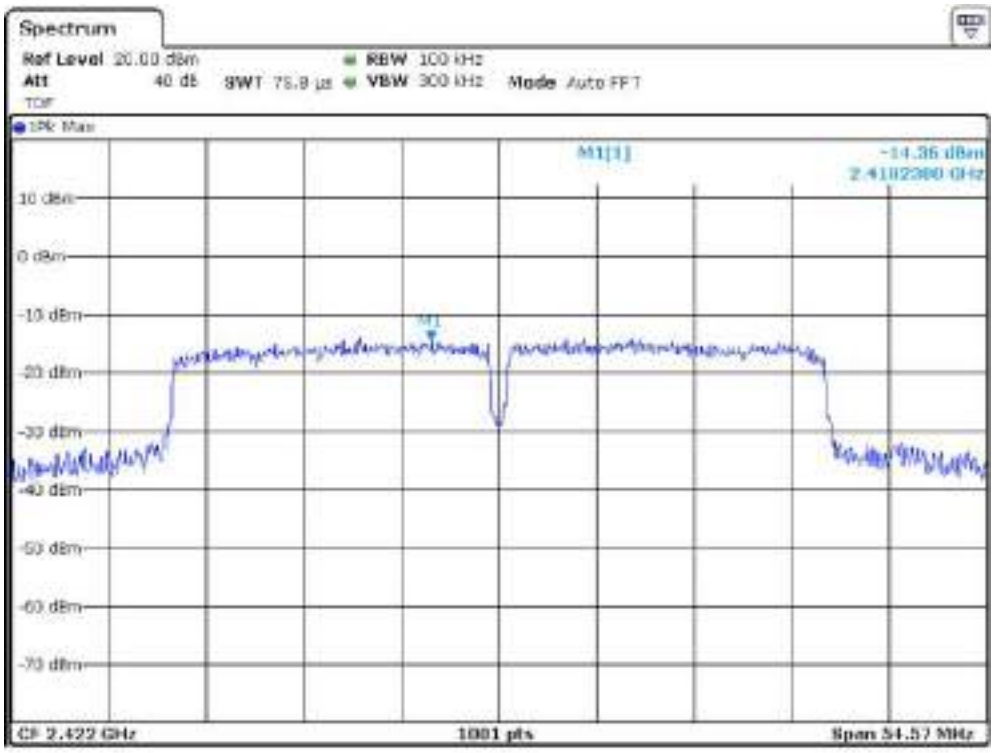


Mid CH

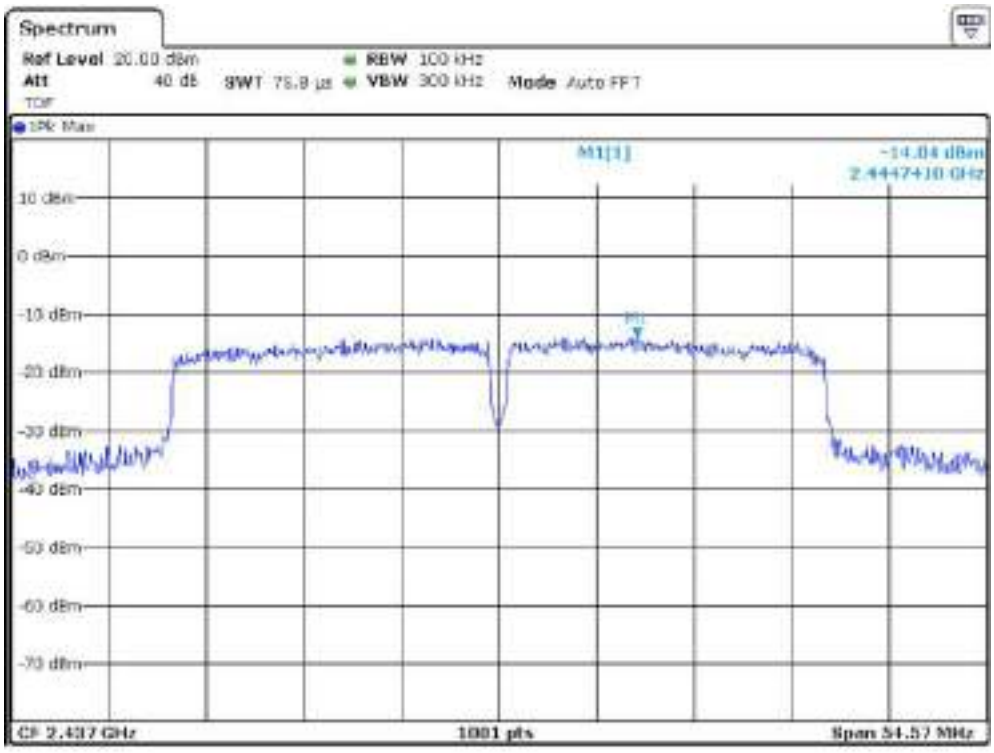


High CH

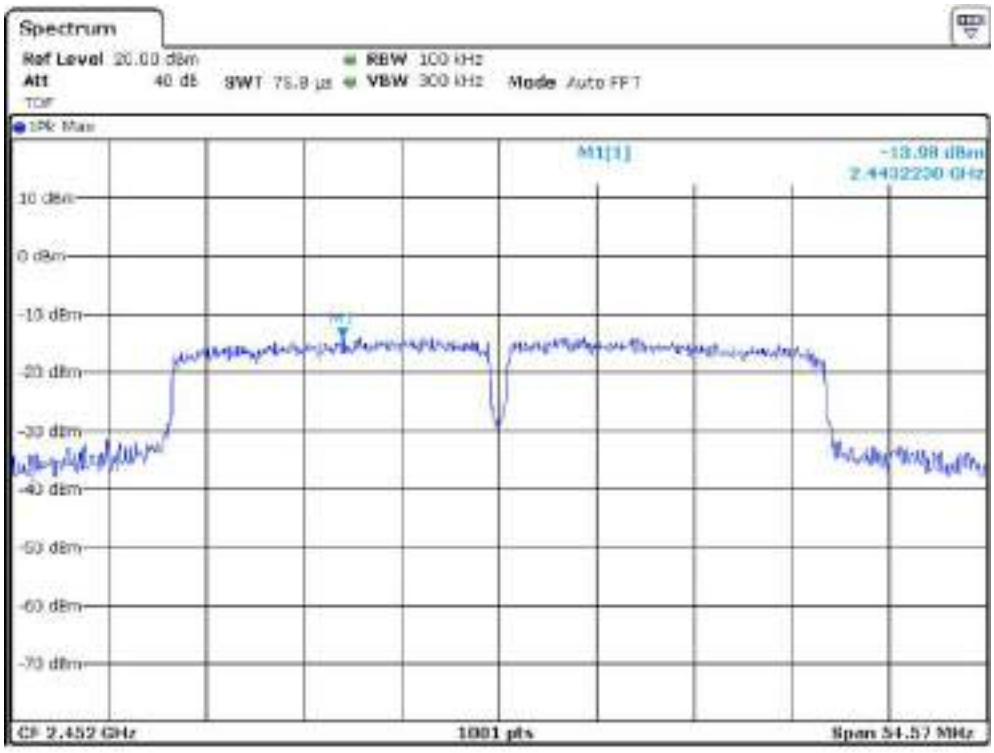
8.4.2.4 Signal level (dB m) for 802.11n(HT40)_DC 24 V



Low CH

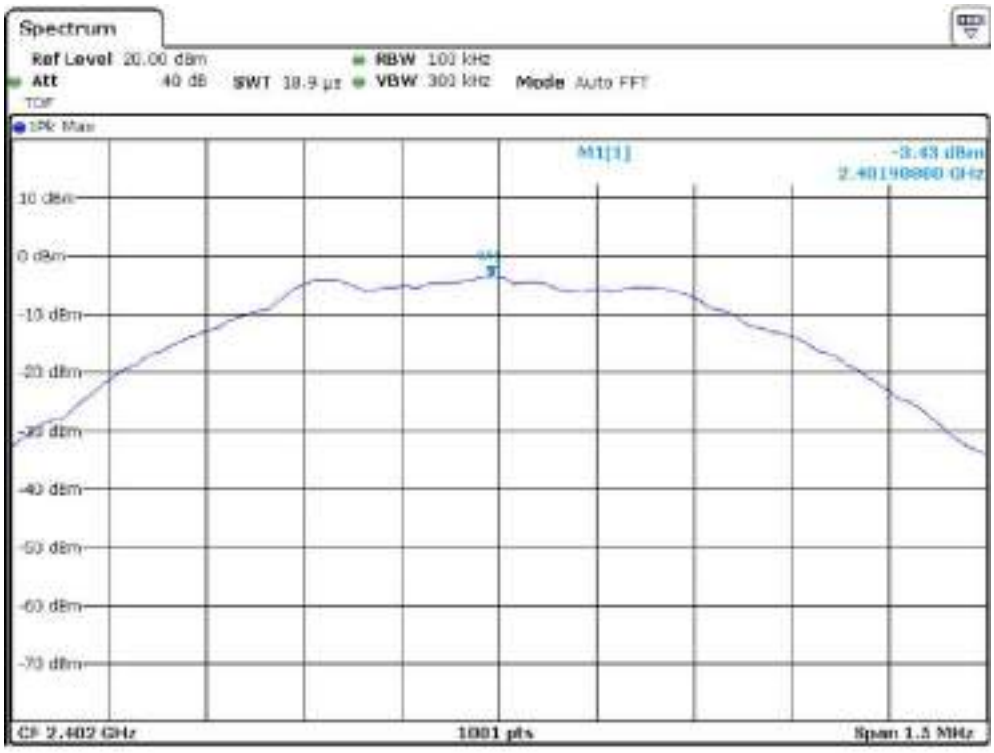


Mid CH

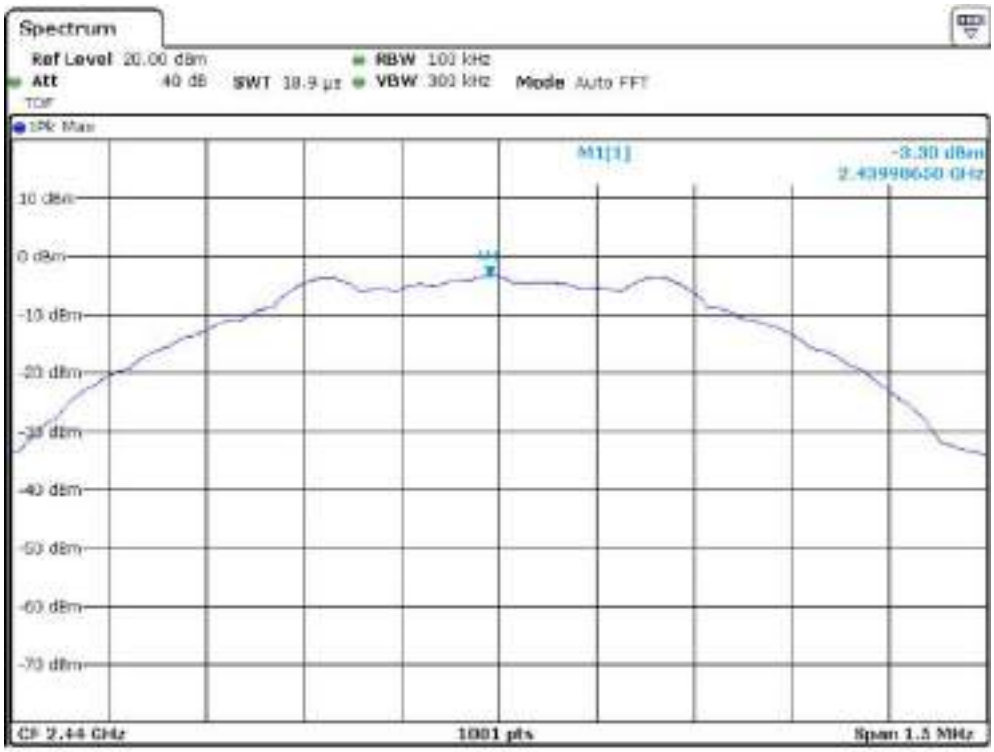


High CH

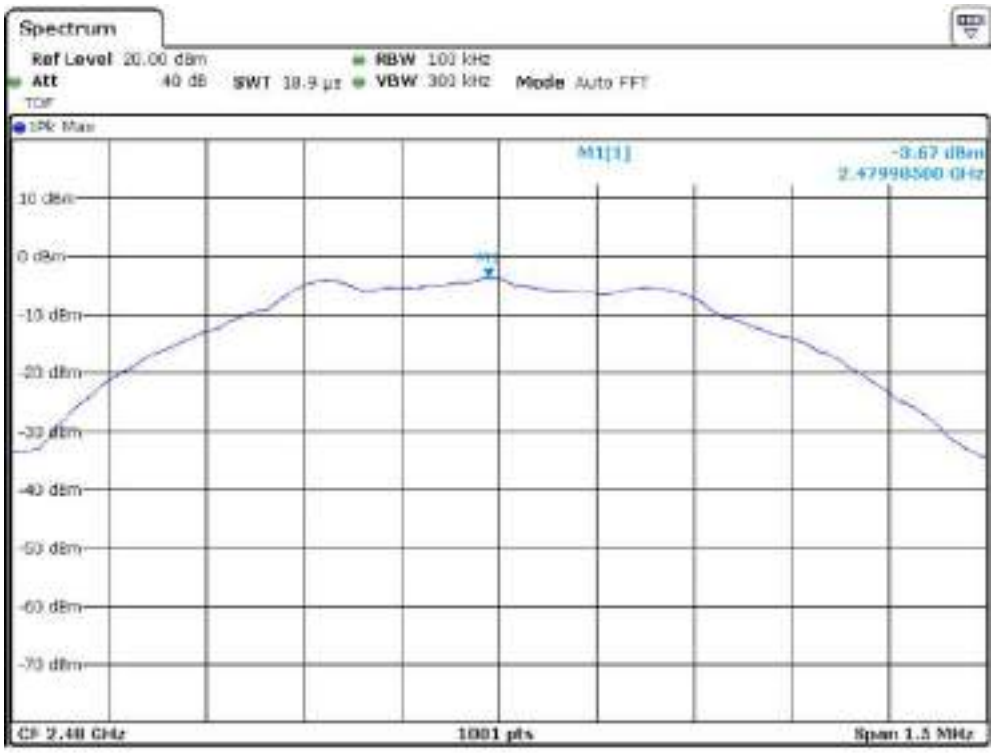
8.4.2.5 Signal level (dB m) for Bluetooth LE_DC 24 V



Low CH

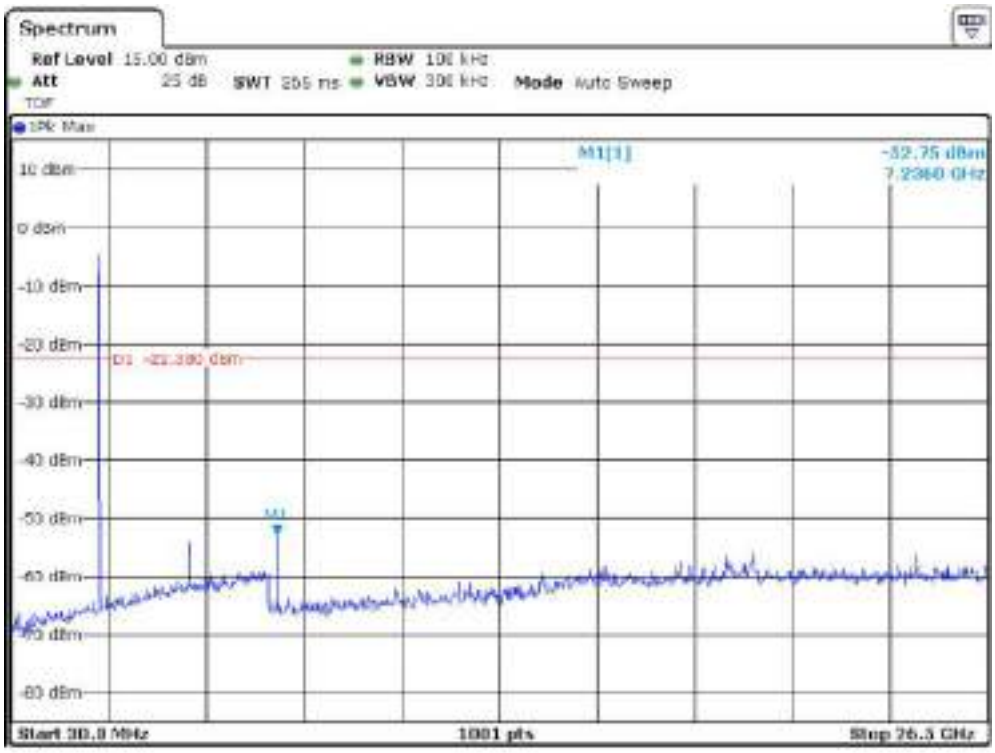


Mid CH

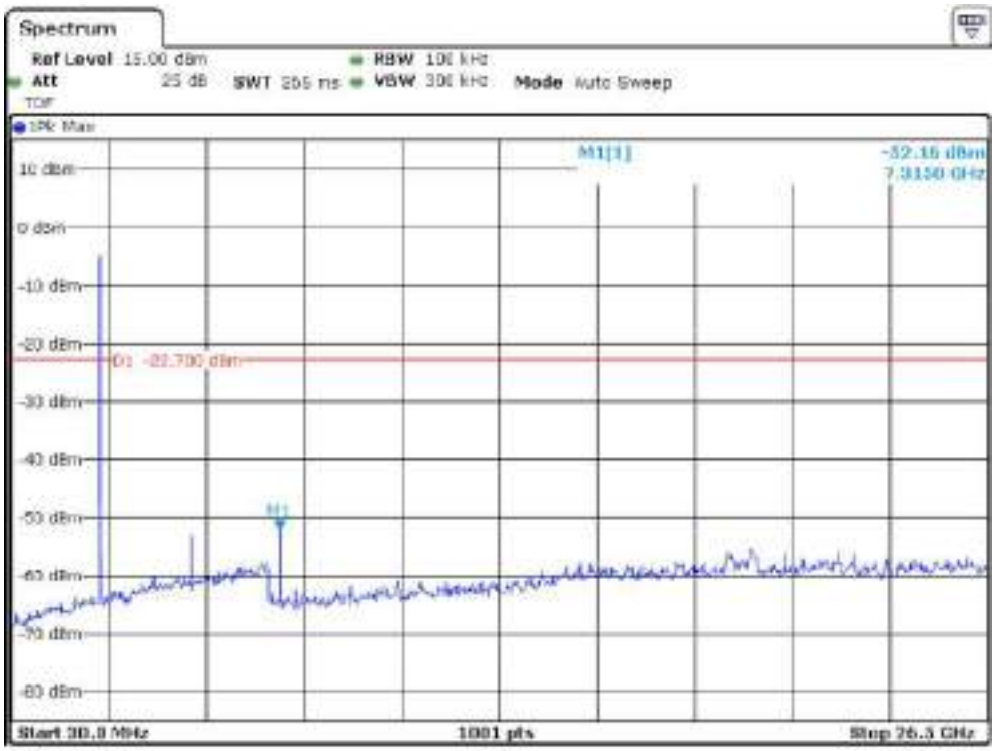


High CH

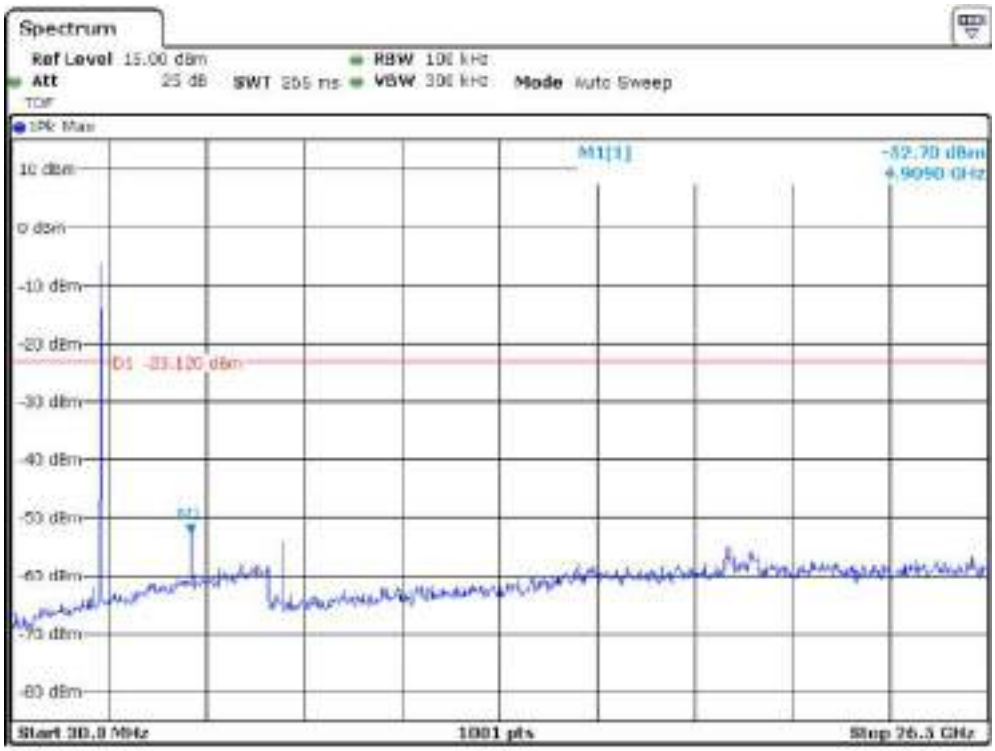
8.4.2.6 Unwanted Emissions In Non-Restricted Frequency Bands for 802.11b_DC 24 V



Low CH

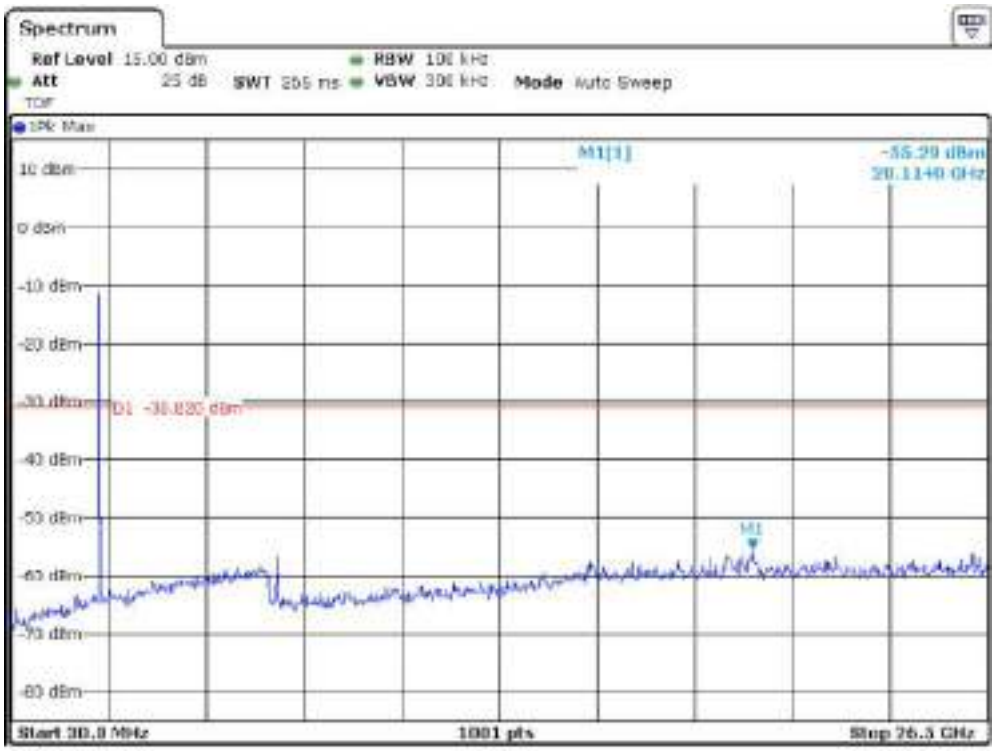


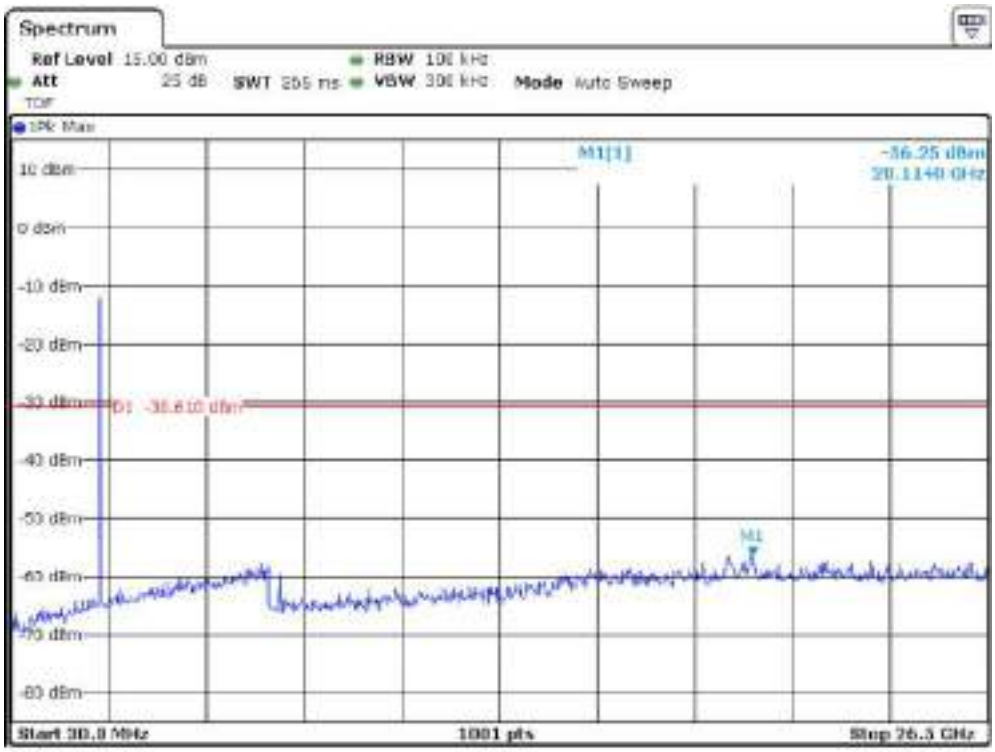
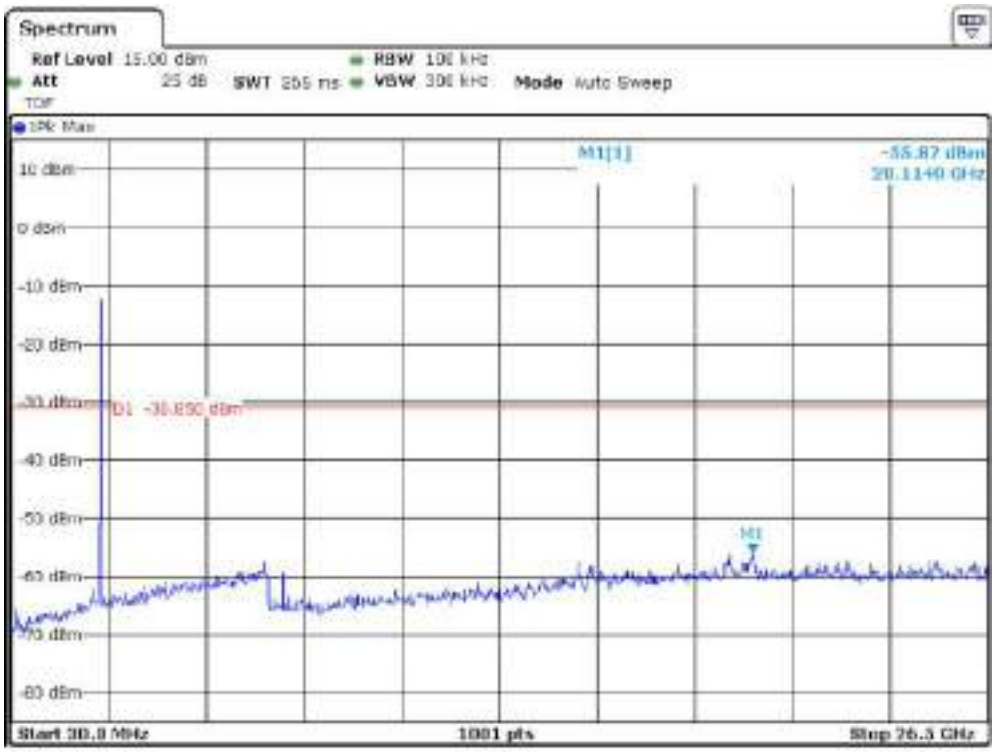
Mid CH



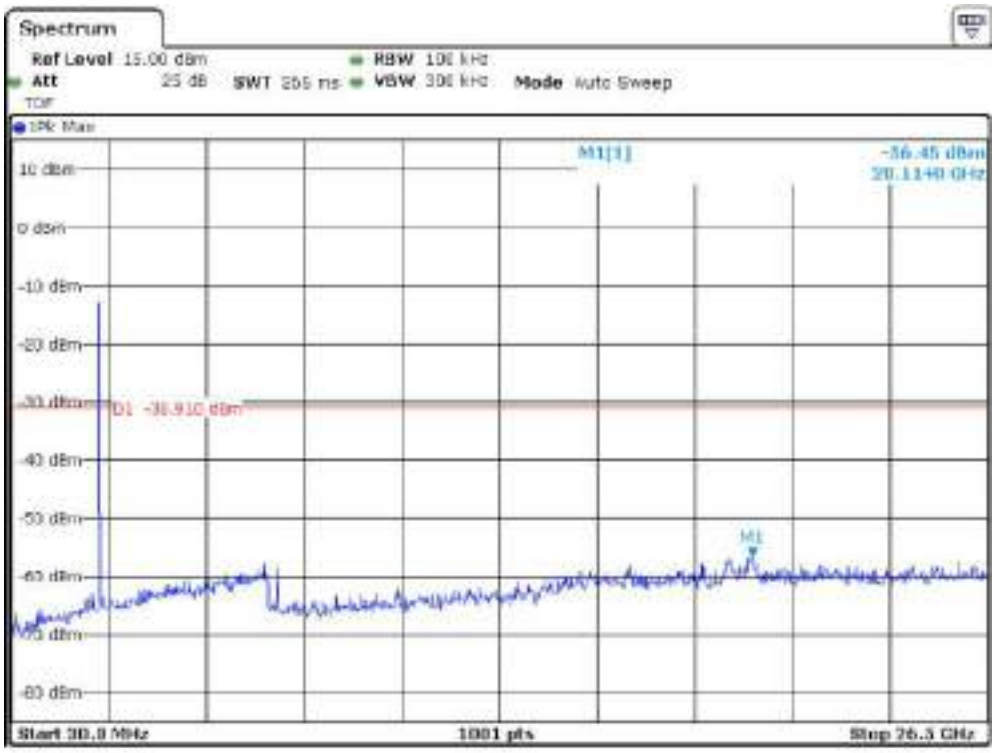
High CH

8.4.2.7 Unwanted Emissions In Non-Restricted Frequency Bands for 802.11g_DC 24 V

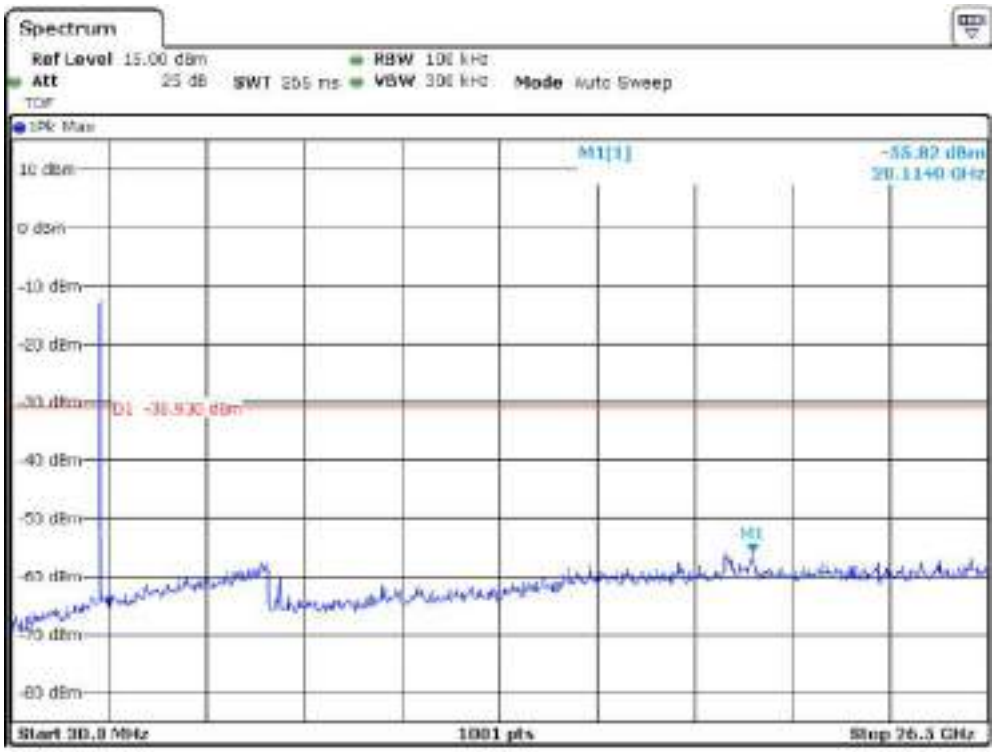


Low CH

Mid CH

High CH

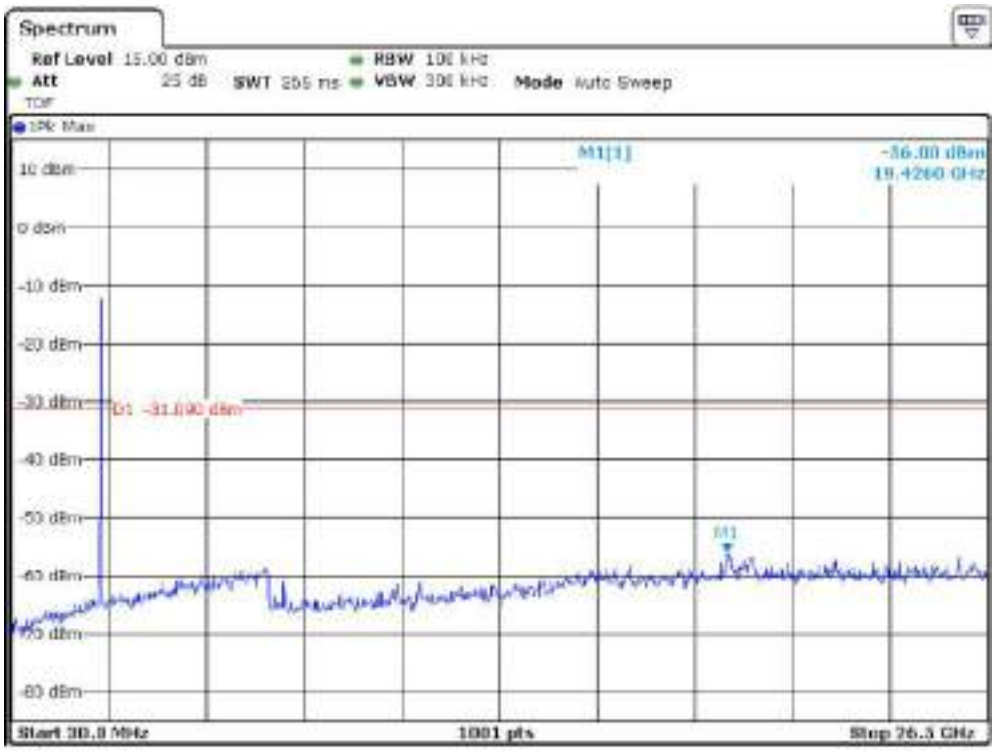
8.4.2.8 Unwanted Emissions In Non-Restricted Frequency Bands for 802.11n(HT20)_DC 24 V



Low CH

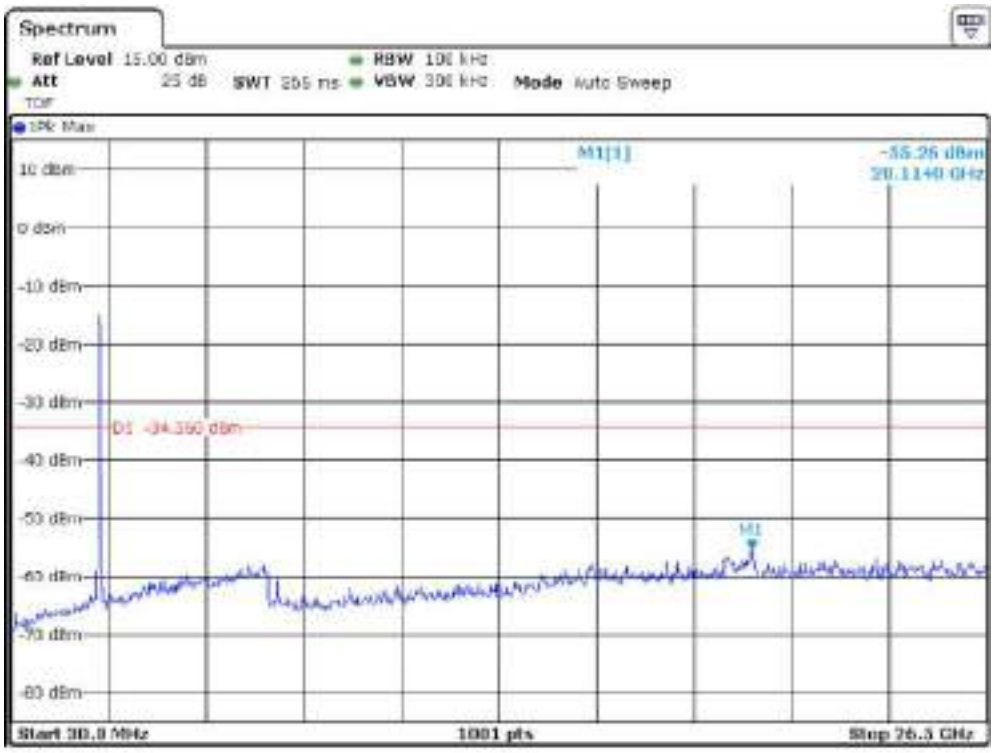


Mid CH

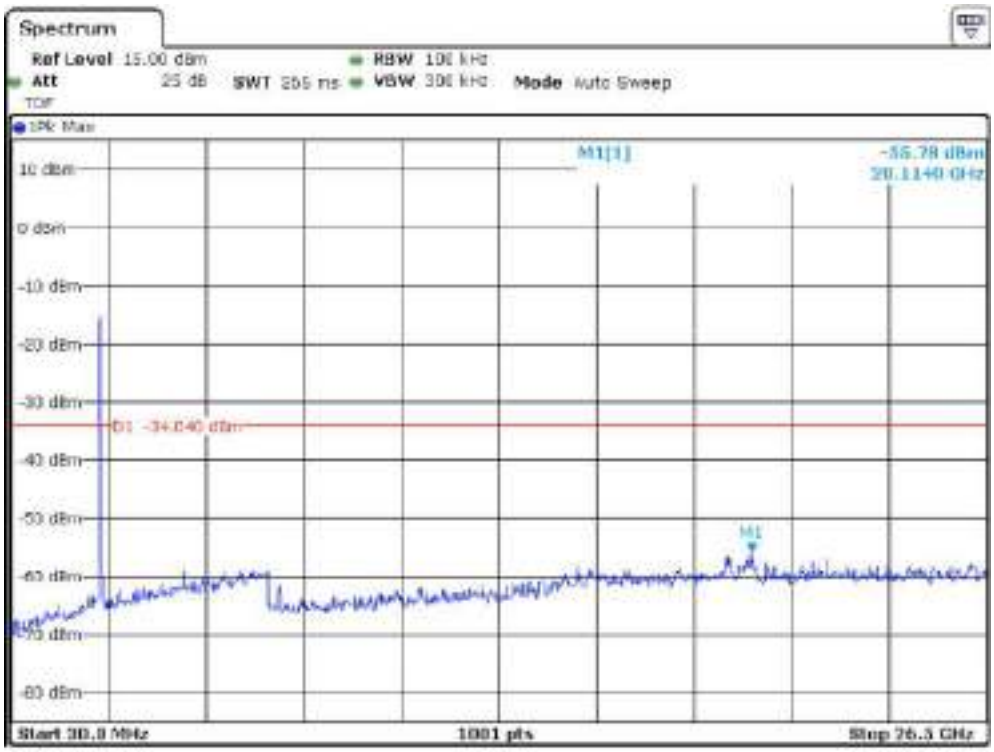


High CH

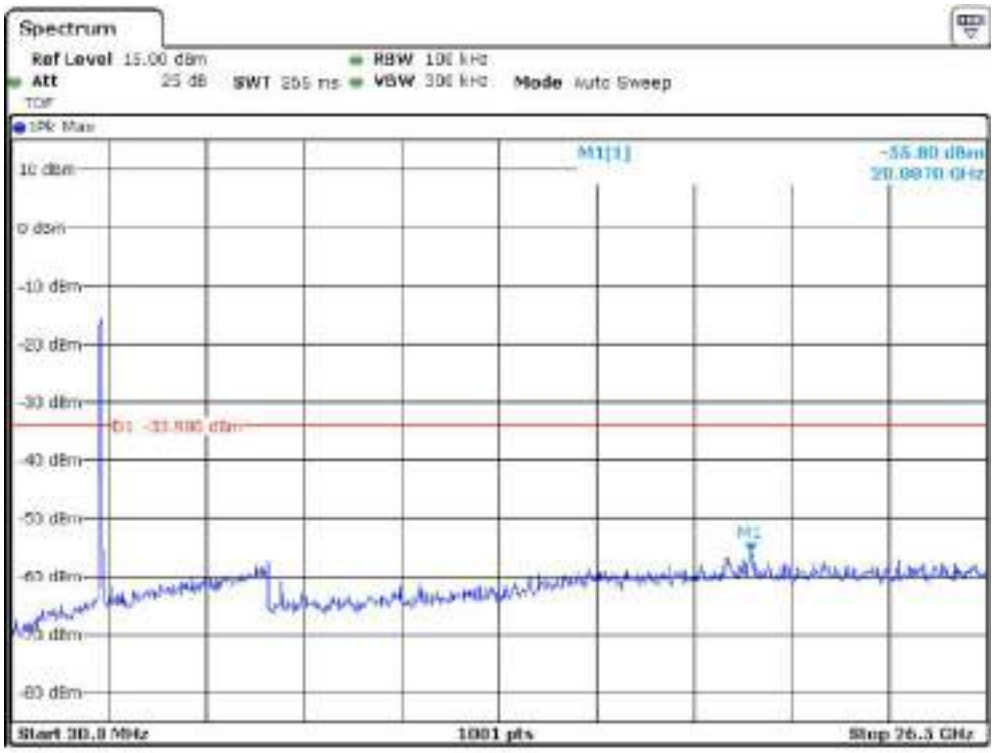
8.4.2.9 Unwanted Emissions In Non-Restricted Frequency Bands for 802.11n(HT40)_DC 24 V



Low CH

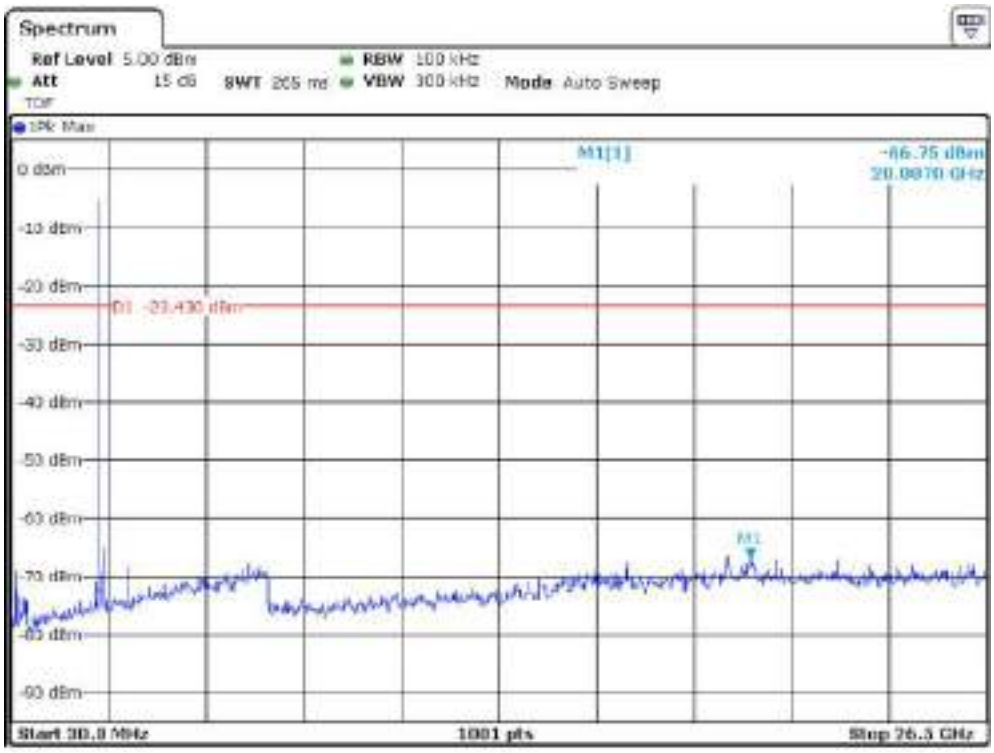


Mid CH

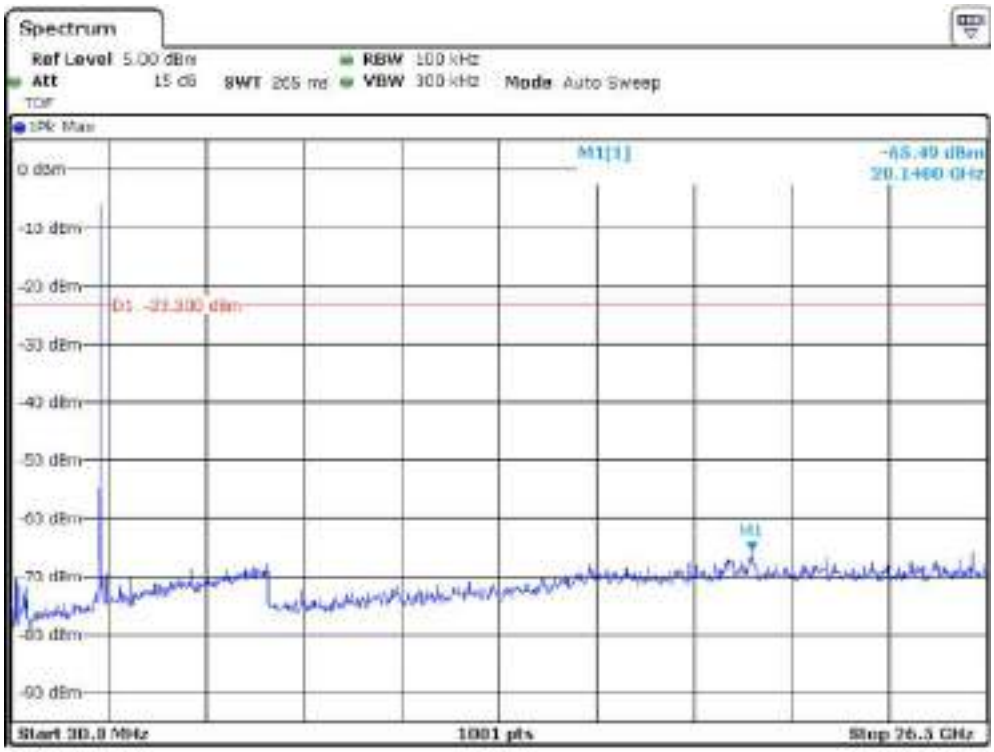


High CH

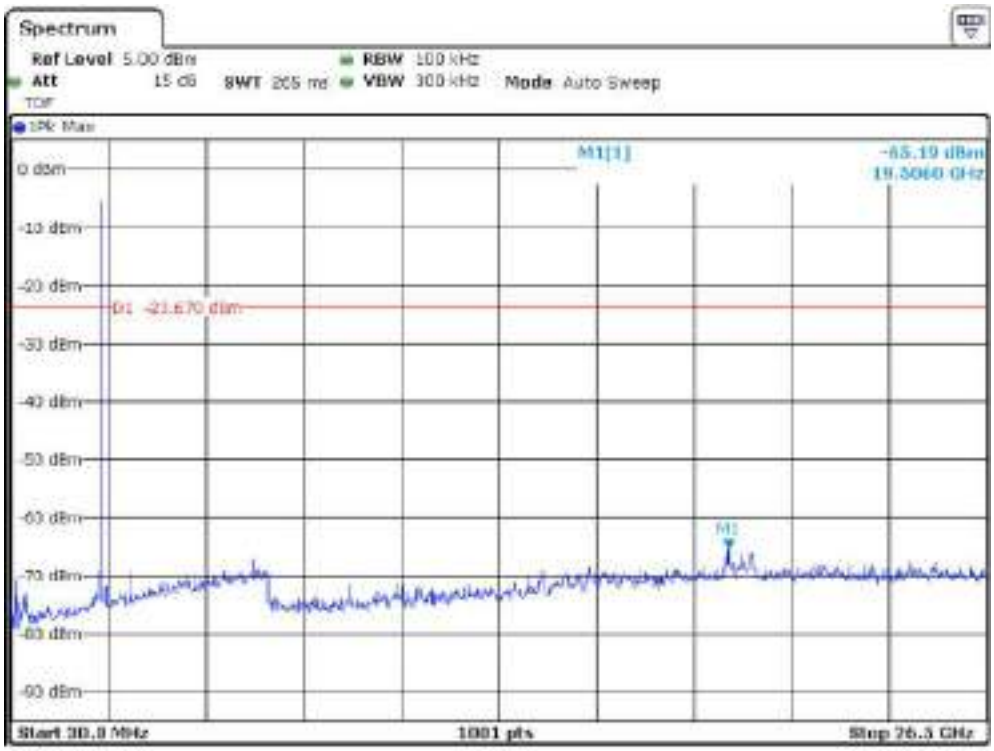
8.4.2.10 Unwanted Emissions In Non-Restricted Frequency Bands for Bluetooth LE_DC 12 V



Low CH

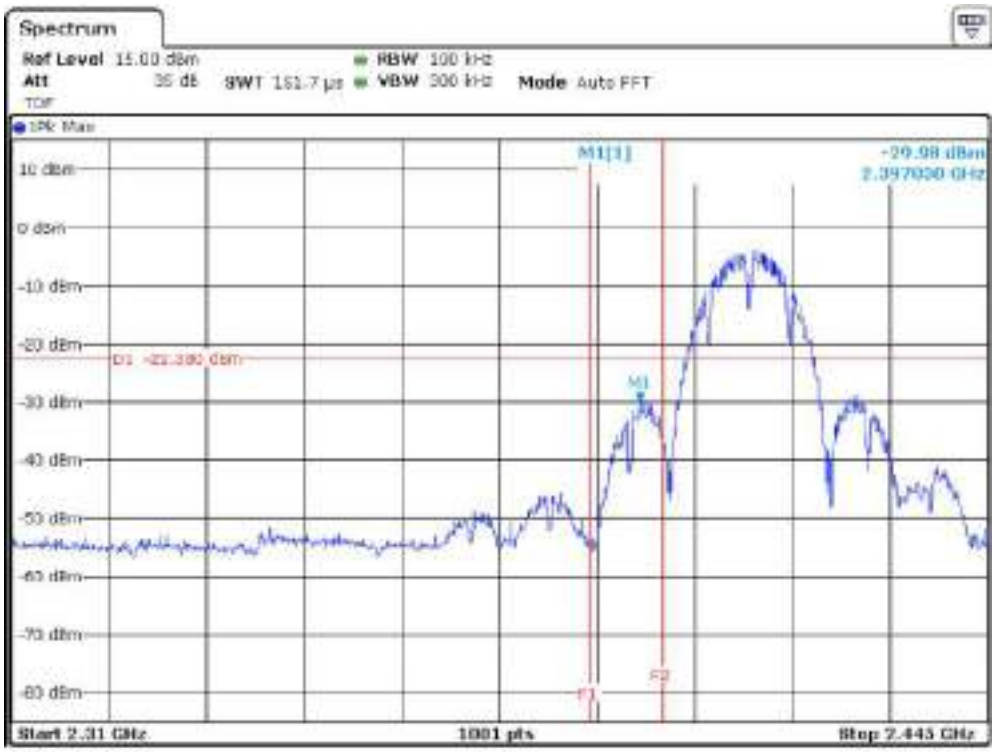


Mid CH

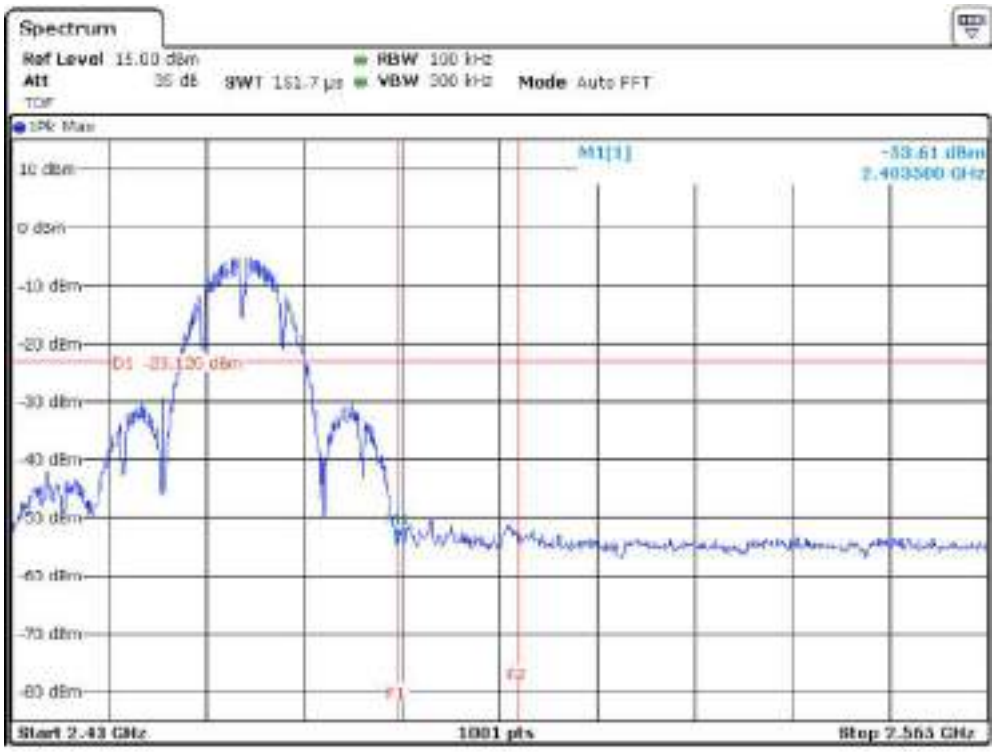

Spectrum
Ref Level 5.00 dBm
RBW 100 kHz
Att 15 dB
SWT 205 ms
VBW 300 kHz
Mode Auto Sweep
TDF
1Pk Max
M1[1] -65.19 dBm
19.5060 GHz
D1 -21.670 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
Start 30.0 MHz
1001 pts
Stop 26.5 GHz

High CH

8.4.2.11 Band Edge for 802.11b_DC 24 V

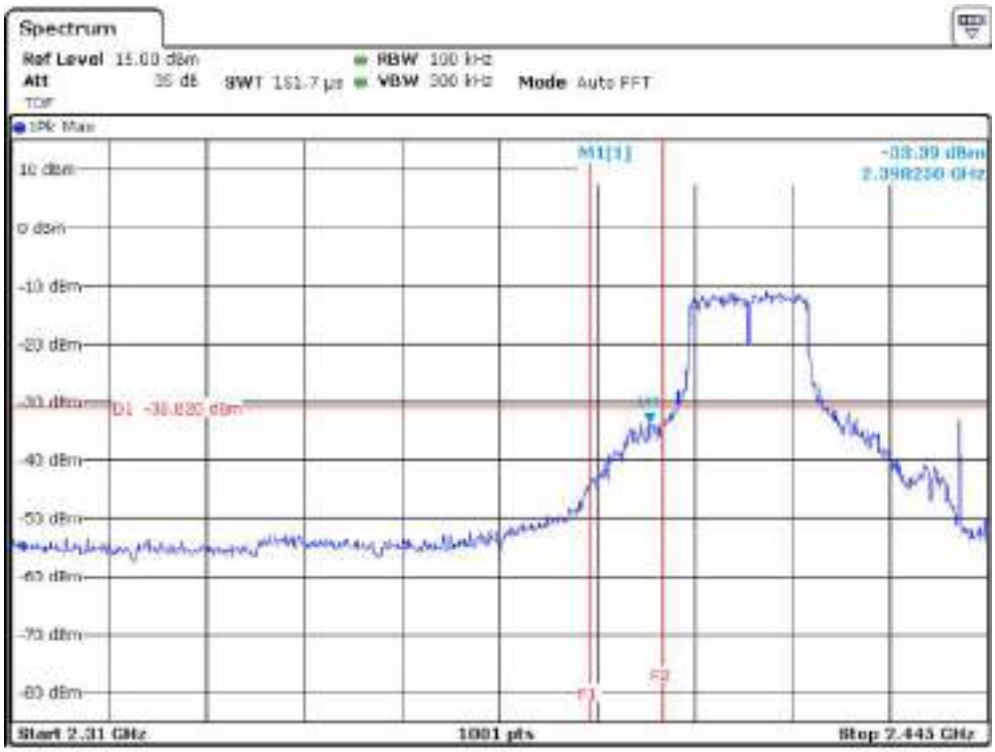


Low CH

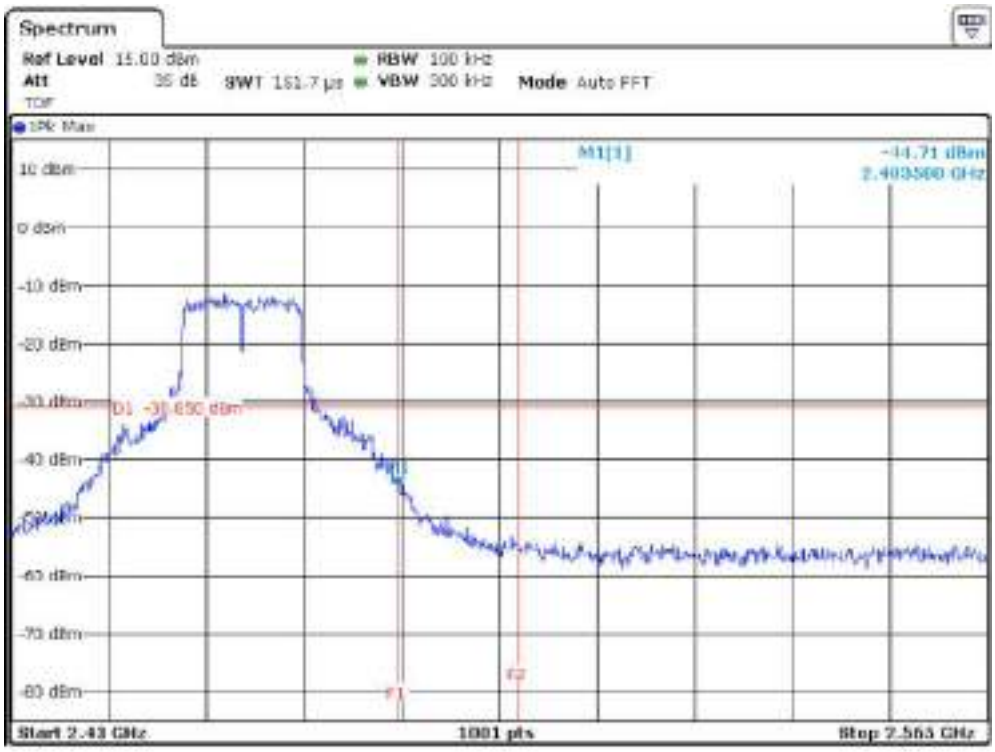


High CH

8.4.2.12 Band Edge for 802.11g_DC 24 V

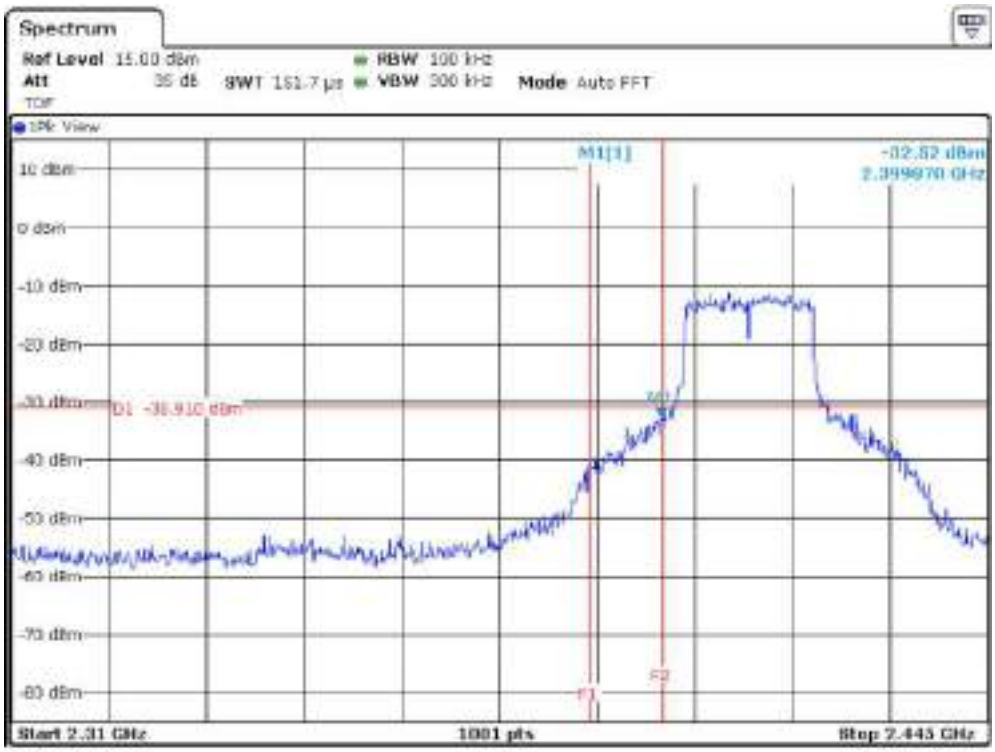


Low CH

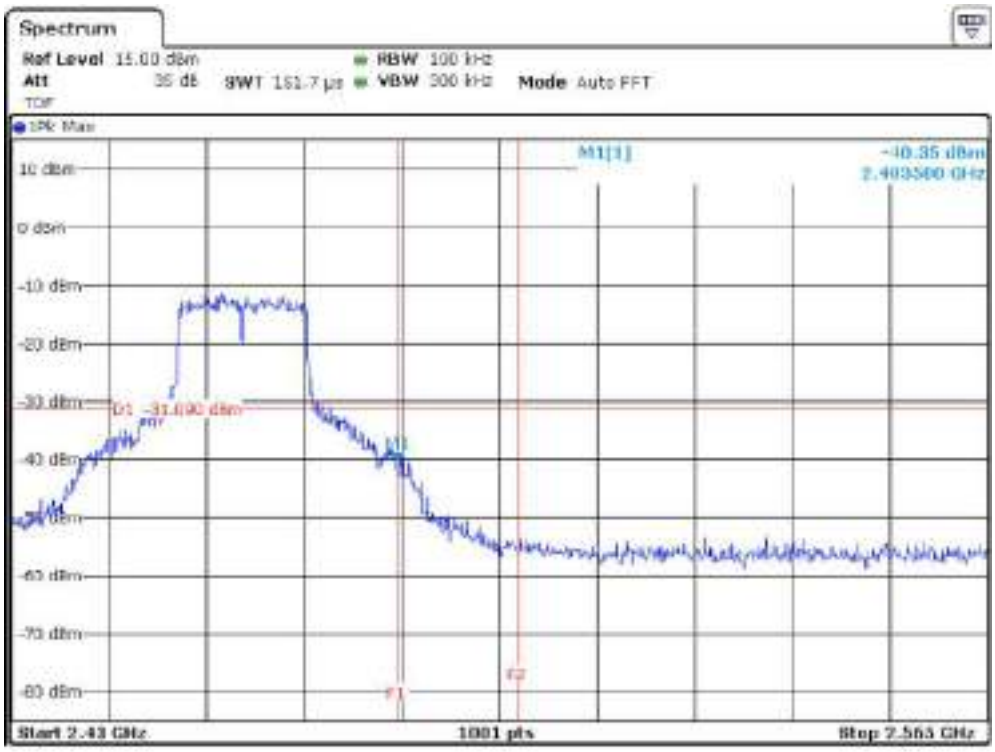


High CH

8.4.2.13 Band Edge for 802.11n(HT20)_DC 24 V

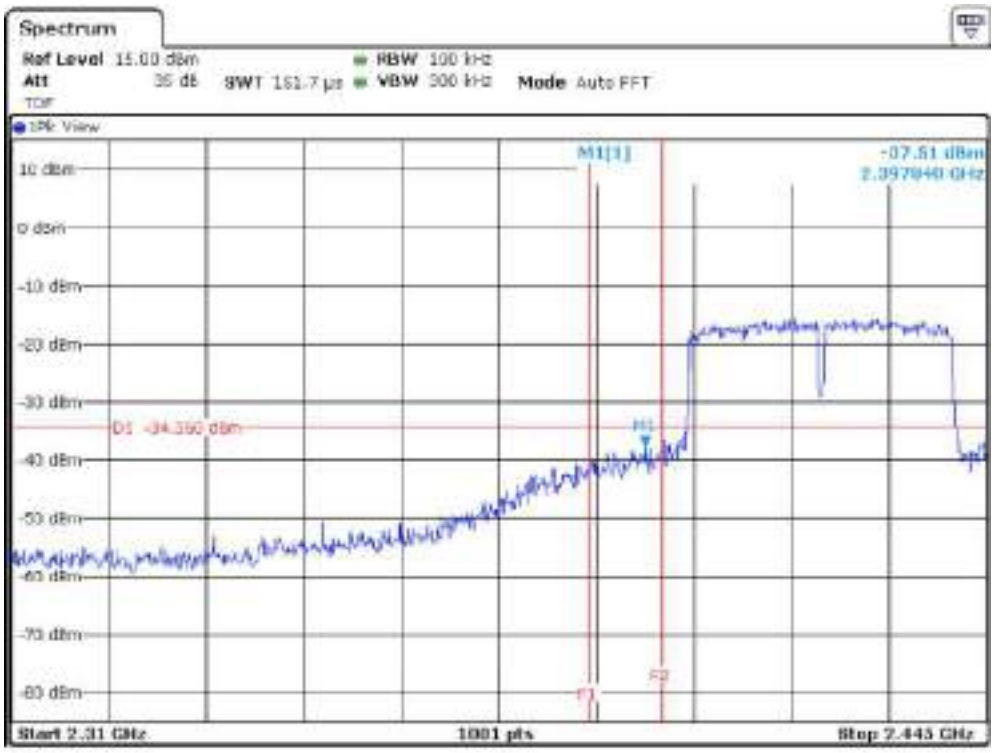


Low CH

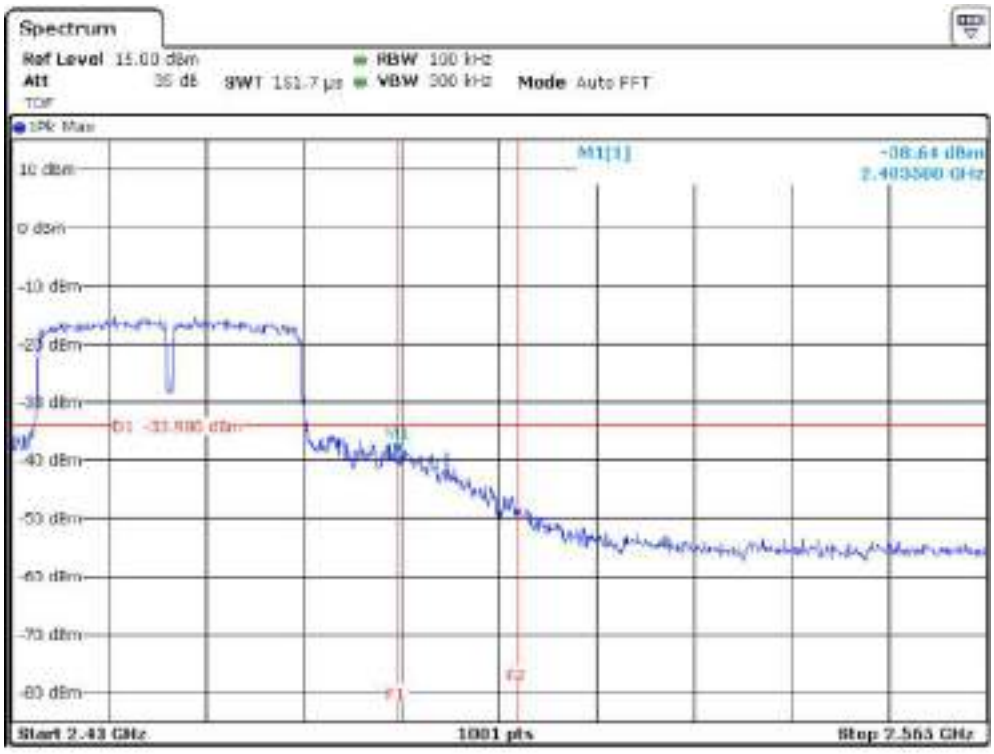


High CH

8.4.2.14 Band Edge for 802.11n(HT40)_DC 24 V

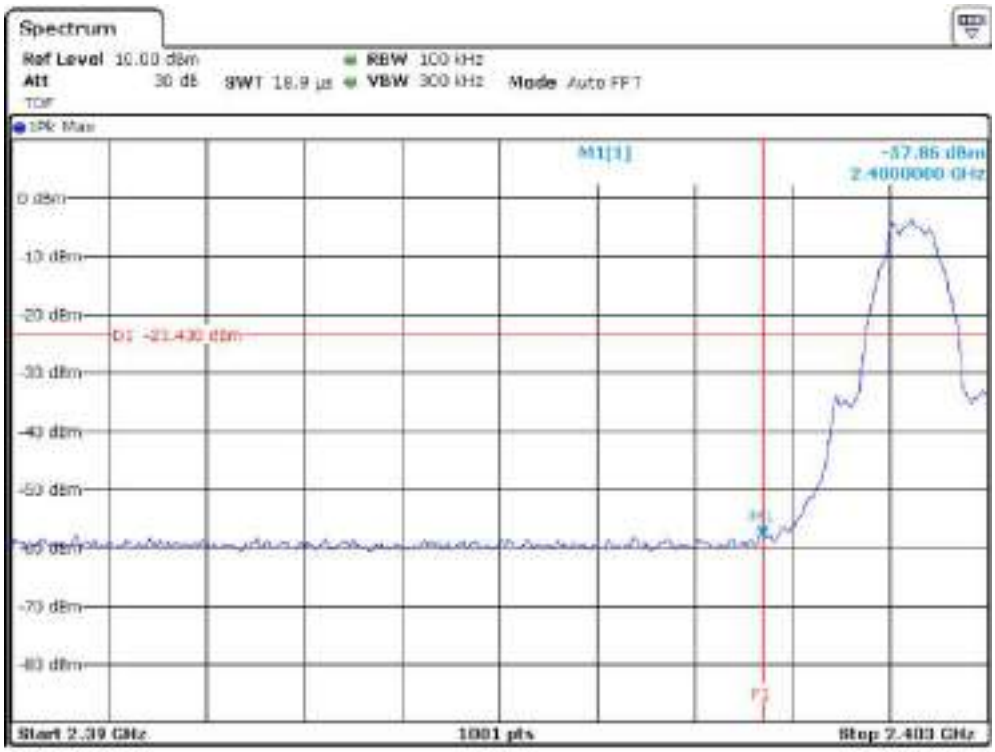


Low CH

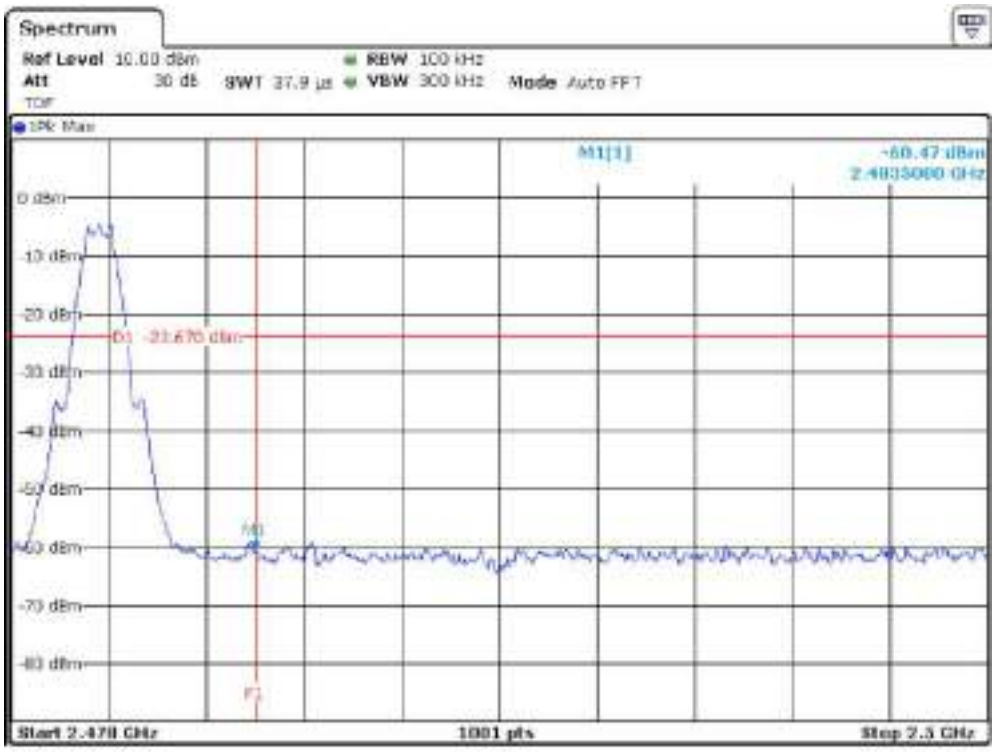


High CH

8.4.2.15 Band Edge for Bluetooth LE_DC 24 V



Low CH



High CH

9. Radiated Spurious Emission

9.1 Operating environment

Temperature : 24 ℃

Relative humidity : 45 %

9.2 Measurement method

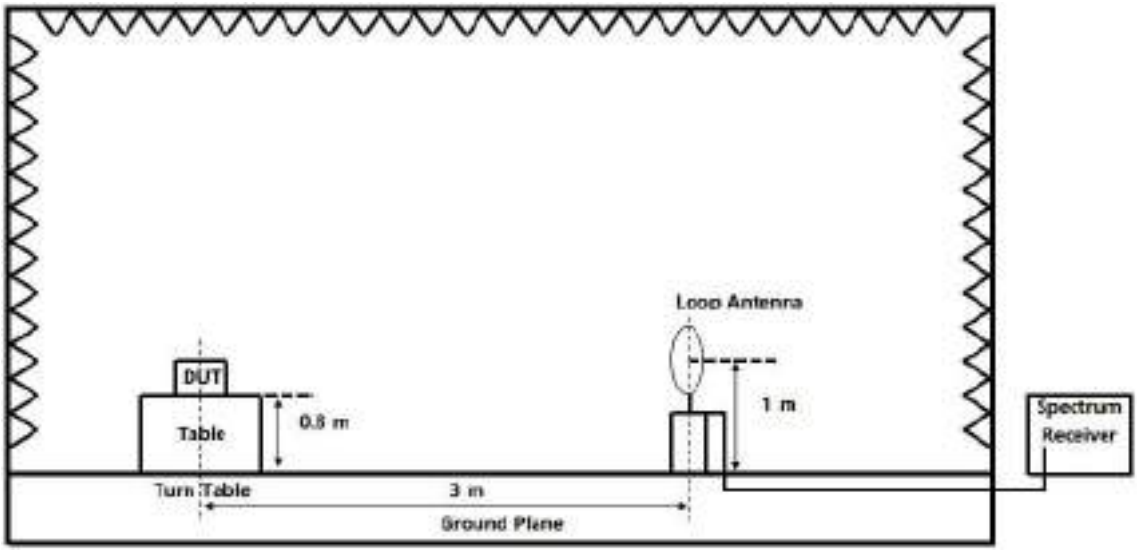
Standard : §15.247 (d), §15.209, §15.205

9.3 Test setup

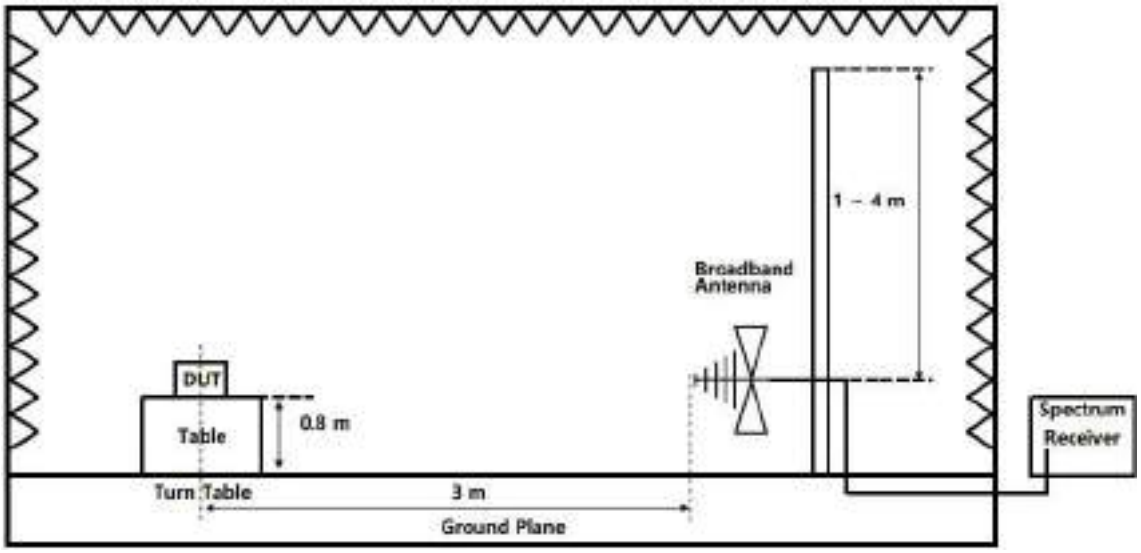
The radiated emissions measurements were performed on the 3 m, Semi-Anechoic Camber. The EUT was placed on a non-conductive turntable above the ground plane.

The frequency spectrum from 9 ㎑ to 26.5 ㎓ was scanned and maximum emission levels at each frequency recorded. The system was rotated 360°, and the antenna was varied in the height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for horizontal and vertical polarization of the receiving antenna.

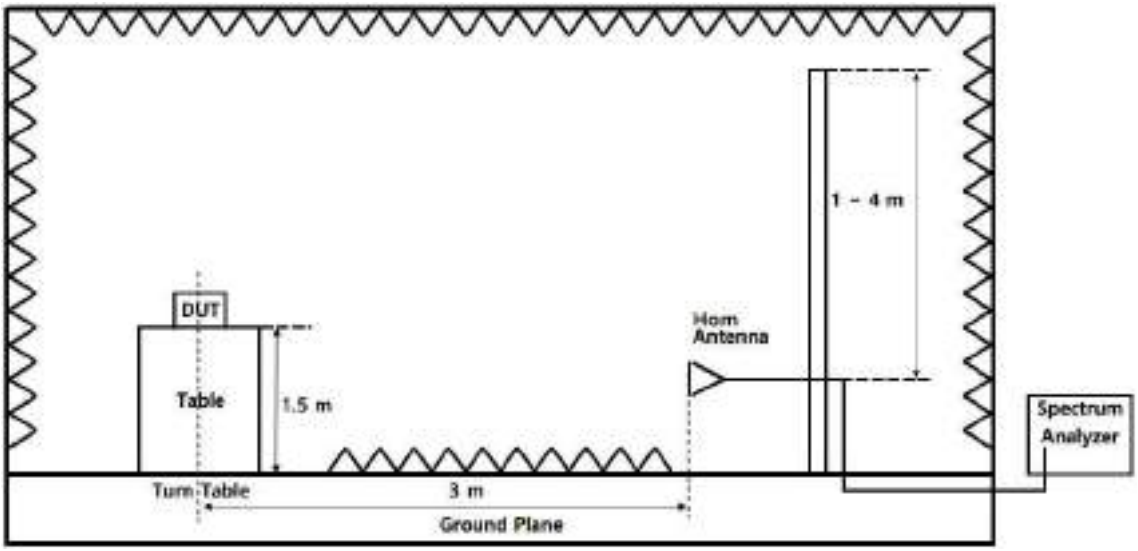
9.3.1 Below 30 ㎒



9.3.2 30 MHz to 1 GHz



9.3.3 Above 1 GHz



9.4 Test data

Operating mode : Transmit mode

Test Result : Pass

9.4.1 Test data for Restricted band for DC 12 V

9.4.1.1 802.11b_DC12 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
2 388.86	30.99	Peak	H	-13.10	44.09	73.98	29.89
	20.67	Average	H		33.77	53.98	20.21
High CH							
2 484.57	30.89	Peak	H	-12.80	43.69	73.98	30.29
	20.49	Average	H		33.29	53.98	20.69

9.4.1.2 802.11g_DC 12 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
2 389.99	57.10	Peak	H	-13.10	70.20	73.98	3.78
	38.90	Average	H		52.00	53.98	1.98
High CH							
2 484.44	55.95	Peak	H	-12.80	68.75	73.98	5.23
	37.22	Average	H		50.02	53.98	3.96

9.4.1.3 802.11n(HT20)_DC 12 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
2 389.84	57.84	Peak	H	-13.10	70.94	73.98	3.04
	37.37	Average	H		50.47	53.98	3.51
High CH							
2 484.12	56.43	Peak	H	-12.80	69.23	73.98	4.75
	37.00	Average	H		49.80	53.98	4.18

9.4.1.4 802.11n(HT40)_DC 12 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
2 388.43	55.13	Peak	V	-13.10	68.23	73.98	5.75
	37.08	Average	V		50.18	53.98	3.80
High CH							
2 485.48	52.35	Peak	H	-12.70	65.05	73.98	8.93
	40.23	Average	H		52.93	53.98	1.05

9.4.1.5 Bluetooth LE_DC 12 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
2 387.86	53.03	Peak	H	-13.10	39.93	73.98	34.05
	36.81	Average	H		23.71	53.98	30.27
High CH							
2 499.55	55.61	Peak	H	-12.70	42.91	73.98	31.07
	35.09	Average	H		22.39	53.98	31.59

※ Ant. Pol. : Antenna Polarization
※ Corr. Factor. : Antenna Factor + Cable Loss - Amplifier Gain
※ Result = Reading + Corr. Factor
※ Margin = Limit – Result

9.4.2 Test data for Restricted band for DC 24 V

9.4.2.1 802.11b_DC 24 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
2 371.57	30.54	Peak	H	-13.10	43.64	73.98	30.34
	17.30	Average	H		30.40	53.98	23.58
2 386.42	29.58	Peak	V	-13.10	42.68	73.98	31.30
	17.90	Average	V		31.00	53.98	22.98
High CH							
2 484.39	31.44	Peak	H	-12.80	44.24	73.98	29.74
	20.58	Average	H		33.38	53.98	20.60
2 487.30	31.57	Peak	H	-12.70	44.27	73.98	29.71
	21.99	Average	H		34.69	53.98	19.29

9.4.2.2 802.11g_DC 24 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
2 389.92	50.24	Peak	V	-13.10	63.34	73.98	10.64
	33.64	Average	V		46.74	53.98	7.24
High CH							
2 484.58	58.92	Peak	H	-12.80	71.72	73.98	2.26
	38.36	Average	H		51.16	53.98	2.82

9.4.2.3 802.11n(HT20)_DC 24 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
2 389.62	48.73	Peak	V	-13.10	61.83	73.98	12.15
	31.10	Average	V		44.20	53.98	9.78
High CH							
2 484.4	52.18	Peak	H	-12.80	64.98	73.98	9.00
	40.15	Average	H		52.95	53.98	1.03

9.4.2.4 802.11n(HT40)_DC 24 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
2 389.04	48.89	Peak	V	-13.10	61.99	73.98	11.99
	34.93	Average	V		48.03	53.98	5.95
High CH							
2 484.4	52.18	Peak	H	-12.80	64.98	73.98	9.00
	40.15	Average	H		52.95	53.98	1.03

9.4.2.5 Bluetooth LE_DC 24 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
2 383.32	54.30	Peak	H	-13.10	41.20	73.98	32.78
	40.55	Average	H		27.45	53.98	26.53
High CH							
2 492.99	52.72	Peak	H	-12.70	40.02	73.98	33.96
	34.60	Average	H		21.9	53.98	32.08

※ Ant. Pol. : Antenna Polarization
※ Corr. Factor. : Antenna Factor + Cable Loss - Amplifier Gain
※ Result = Reading + Corr. Factor
※ Margin = Limit – Result

9.4.3 Test data for Spurious & Harmonic

9.4.3.1 Measurement Results for below 30 ㎒ for DC 12 V

9.4.3.1.1 802.11b_DC 12 V

Frequency (㎒)	Reading (dB㎶)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Low CH							
It was not found any emissions peaks found from the EUT.							
Mid CH							
It was not found any emissions peaks found from the EUT.							
High CH							
It was not found any emissions peaks found from the EUT.							

9.4.3.1.2 802.11g_DC 12 V

Frequency (㎒)	Reading (dB㎶)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Low CH							
It was not found any emissions peaks found from the EUT.							
Mid CH							
It was not found any emissions peaks found from the EUT.							
High CH							
It was not found any emissions peaks found from the EUT.							

9.4.3.1.3 802.11n(HT20)_DC 12 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
It was not found any emissions peaks found from the EUT.							
Mid CH							
It was not found any emissions peaks found from the EUT.							
High CH							
It was not found any emissions peaks found from the EUT.							

9.4.3.1.4 802.11n(HT40)_DC 12 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
It was not found any emissions peaks found from the EUT.							
Mid CH							
It was not found any emissions peaks found from the EUT.							
High CH							
It was not found any emissions peaks found from the EUT.							

9.4.3.1.5 Bluetooth LE_DC 12 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
It was not found any emissions peaks found from the EUT.							
Mid CH							
It was not found any emissions peaks found from the EUT.							
High CH							
It was not found any emissions peaks found from the EUT.							

※ Ant. Pol. : Antenna Polarization
※ Corr. Factor. : Antenna Factor + Cable Loss - Amplifier Gain
※ Result = Reading + Corr. Factor
※ Margin = Limit – Result

9.4.3.2 Measurement Results for below 30 ㎒ for DC 24 V

9.4.3.2.1 802.11b_DC 24 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
It was not found any emissions peaks found from the EUT.							
Mid CH							
It was not found any emissions peaks found from the EUT.							
High CH							
It was not found any emissions peaks found from the EUT.							

9.4.3.2.2 802.11g_DC 24 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
It was not found any emissions peaks found from the EUT.							
Mid CH							
It was not found any emissions peaks found from the EUT.							
High CH							
It was not found any emissions peaks found from the EUT.							

9.4.3.2.3 802.11n(HT20)_DC 24 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
It was not found any emissions peaks found from the EUT.							
Mid CH							
It was not found any emissions peaks found from the EUT.							
High CH							
It was not found any emissions peaks found from the EUT.							

9.4.3.2.4 802.11n(HT40)_DC 24 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
It was not found any emissions peaks found from the EUT.							
Mid CH							
It was not found any emissions peaks found from the EUT.							
High CH							
It was not found any emissions peaks found from the EUT.							

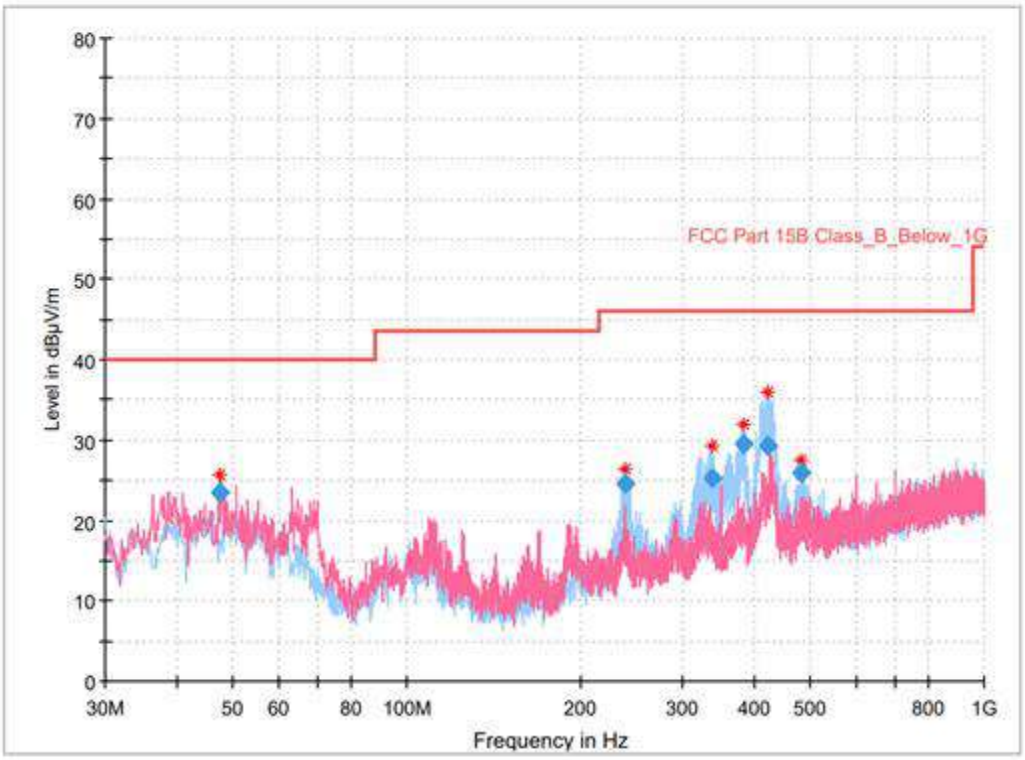
9.4.3.2.5 Bluetooth LE_DC 24 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
It was not found any emissions peaks found from the EUT.							
Mid CH							
It was not found any emissions peaks found from the EUT.							
High CH							
It was not found any emissions peaks found from the EUT.							

※ Ant. Pol. : Antenna Polarization
※ Corr. Factor. : Antenna Factor + Cable Loss - Amplifier Gain
※ Result = Reading + Corr. Factor
※ Margin = Limit – Result

9.4.3.3 Measurement Results for below 1 ㎓ for DC 12 V

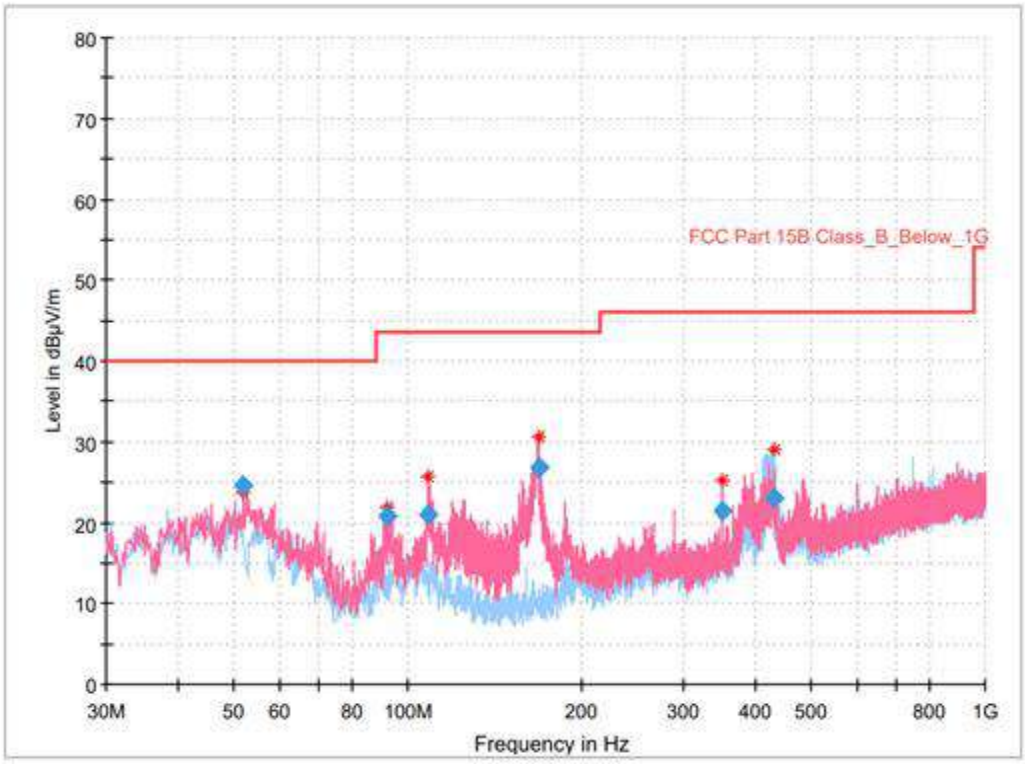
9.4.3.3.1 802.11b_DC 12 V



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
47.266000	23.40	40.00	16.60	1000.0	120.000	100.1	V	113.0	-19.0
238.162000	24.48	46.00	21.52	1000.0	120.000	100.1	H	184.0	-19.9
337.878000	25.19	46.00	20.81	1000.0	120.000	100.1	H	22.0	-16.7
382.207000	29.46	46.00	16.54	1000.0	120.000	100.1	H	116.0	-15.6
420.813000	29.26	46.00	16.74	1000.0	120.000	100.1	H	198.0	-15.2
479.983000	26.00	46.00	20.00	1000.0	120.000	100.1	H	184.0	-13.9

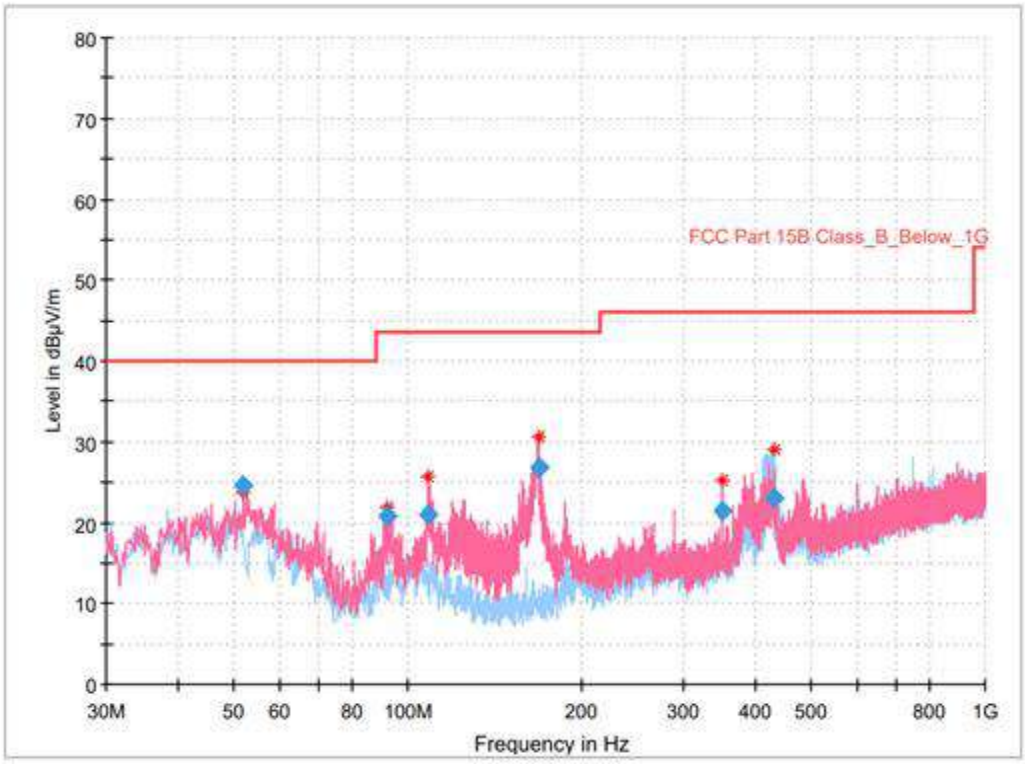
Low CH



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
51.922000	24.69	40.00	25.31	1000.0	120.000	99.9	V	72.0	-18.9
91.983000	20.74	43.50	34.76	1000.0	120.000	99.9	V	295.0	-22.1
108.667000	20.92	43.50	34.58	1000.0	120.000	99.9	V	156.0	-20.9
168.225000	26.72	43.50	36.78	1000.0	120.000	99.9	V	357.0	-23.3
350.003000	21.39	46.00	19.61	1000.0	120.000	99.9	V	239.0	-16.3
430.416000	23.07	46.00	32.93	1000.0	120.000	99.9	H	289.0	-14.9

Mid CH

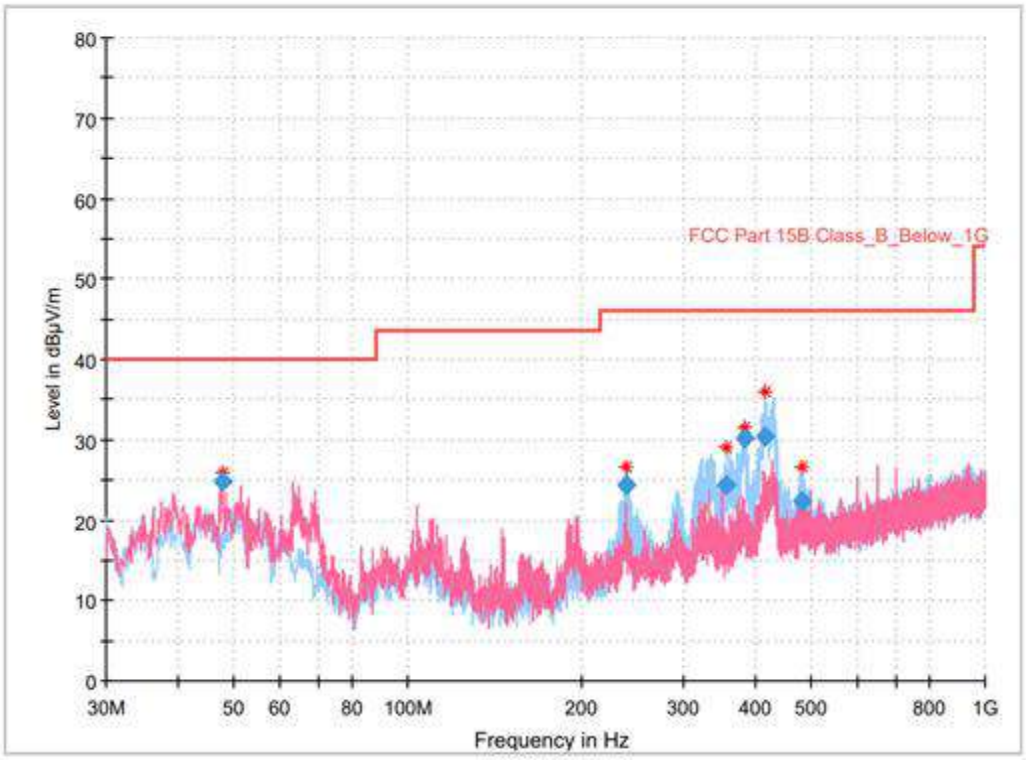


Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
51.922000	24.69	40.00	25.31	1000.0	120.000	99.9	V	72.0	-18.9
91.983000	20.74	43.50	34.76	1000.0	120.000	99.9	V	295.0	-22.1
108.667000	20.92	43.50	34.58	1000.0	120.000	99.9	V	156.0	-20.9
168.225000	26.72	43.50	36.78	1000.0	120.000	99.9	V	357.0	-23.3
350.003000	21.39	46.00	19.61	1000.0	120.000	99.9	V	239.0	-16.3
430.416000	23.07	46.00	32.93	1000.0	120.000	99.9	H	289.0	-14.9

High CH

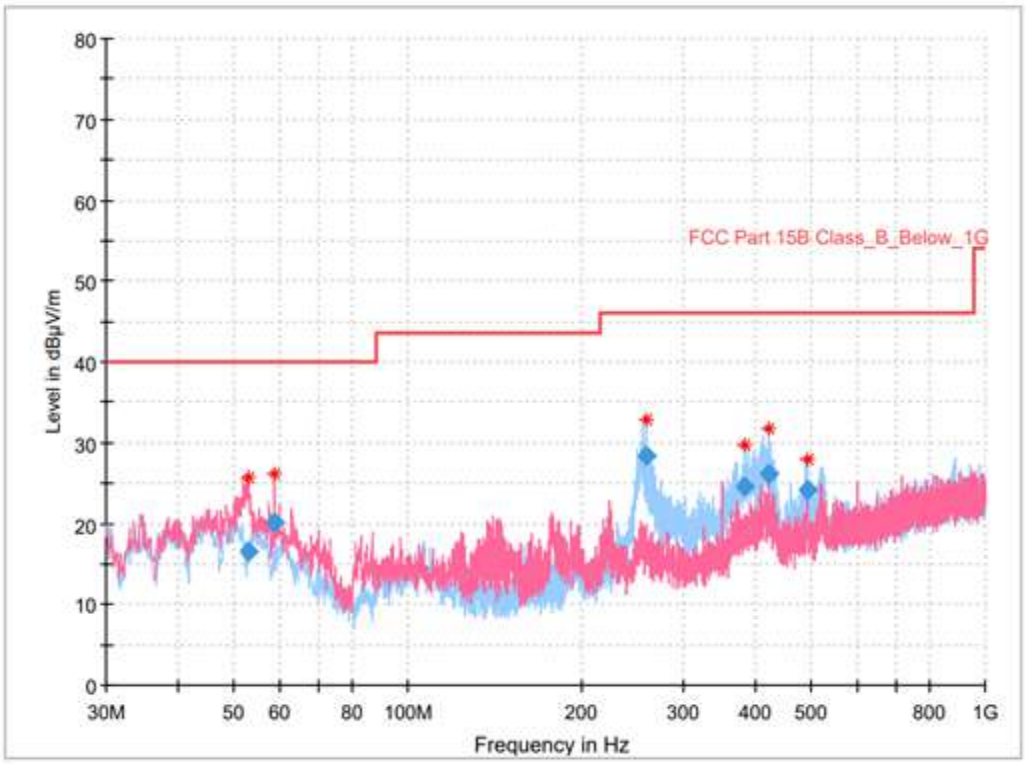
9.4.3.3.2 802.11g_DC 12 V



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
47.654000	24.81	40.00	15.19	1000.0	120.000	100.1	V	359.0	-19.0
238.162000	24.31	46.00	21.69	1000.0	120.000	100.1	H	0.0	-19.9
356.599000	24.31	46.00	21.69	1000.0	120.000	100.1	H	68.0	-16.8
382.207000	30.21	46.00	15.79	1000.0	120.000	100.1	H	108.0	-15.6
415.963000	30.48	46.00	15.52	1000.0	120.000	100.1	H	196.0	-15.2
480.662000	22.36	46.00	23.64	1000.0	120.000	100.1	H	169.0	-13.9

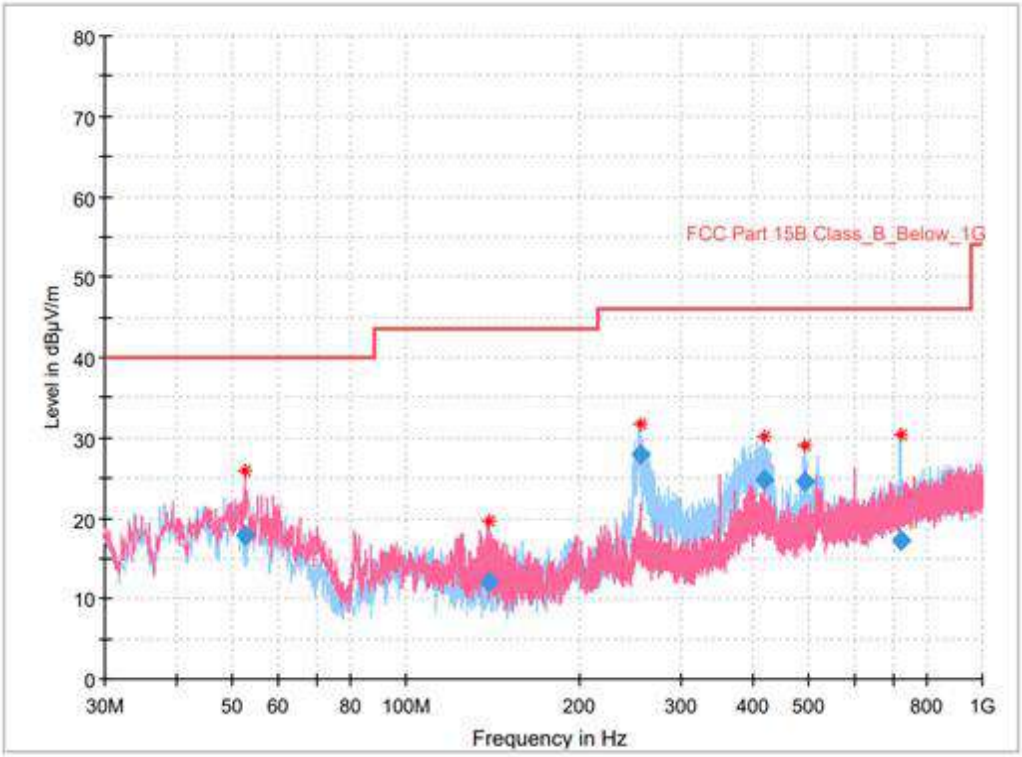
Low CH



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
52.795000	16.62	40.00	23.38	1000.0	120.000	99.9	V	194.0	-19.1
58.809000	20.20	40.00	19.80	1000.0	120.000	99.9	V	167.0	-20.2
258.435000	28.32	46.00	17.68	1000.0	120.000	99.9	H	0.0	-18.5
382.110000	24.62	46.00	21.38	1000.0	120.000	99.9	H	284.0	-15.6
420.425000	26.25	46.00	19.75	1000.0	120.000	99.9	H	211.0	-15.2
491.429000	24.05	46.00	21.95	1000.0	120.000	99.9	H	231.0	-13.7

Mid CH

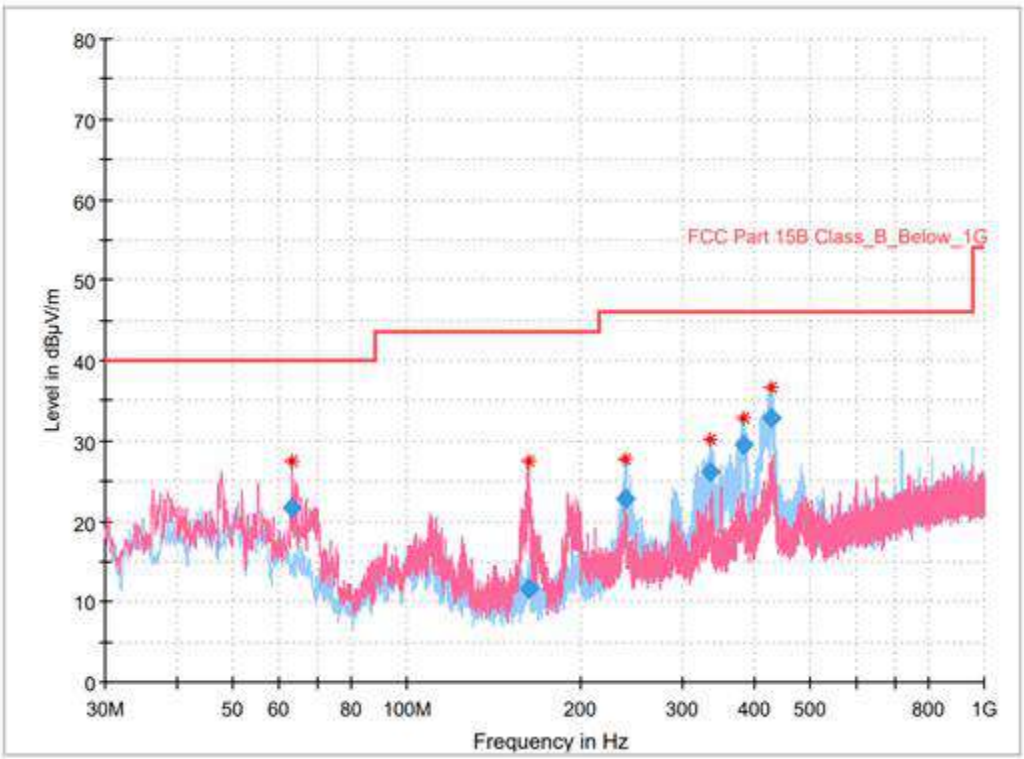


Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
52.504000	17.90	40.00	22.10	1000.0	120.000	99.9	V	255.0	-19.0
138.834000	12.11	43.50	31.39	1000.0	120.000	99.9	V	201.0	-24.4
254.943000	27.89	46.00	18.11	1000.0	120.000	99.9	H	338.0	-18.6
418.970000	24.82	46.00	21.18	1000.0	120.000	99.9	H	203.0	-15.2
492.981000	24.59	46.00	21.41	1000.0	120.000	99.9	H	230.0	-13.7
720.058000	17.27	46.00	28.73	1000.0	120.000	99.9	H	244.0	-9.8

High CH

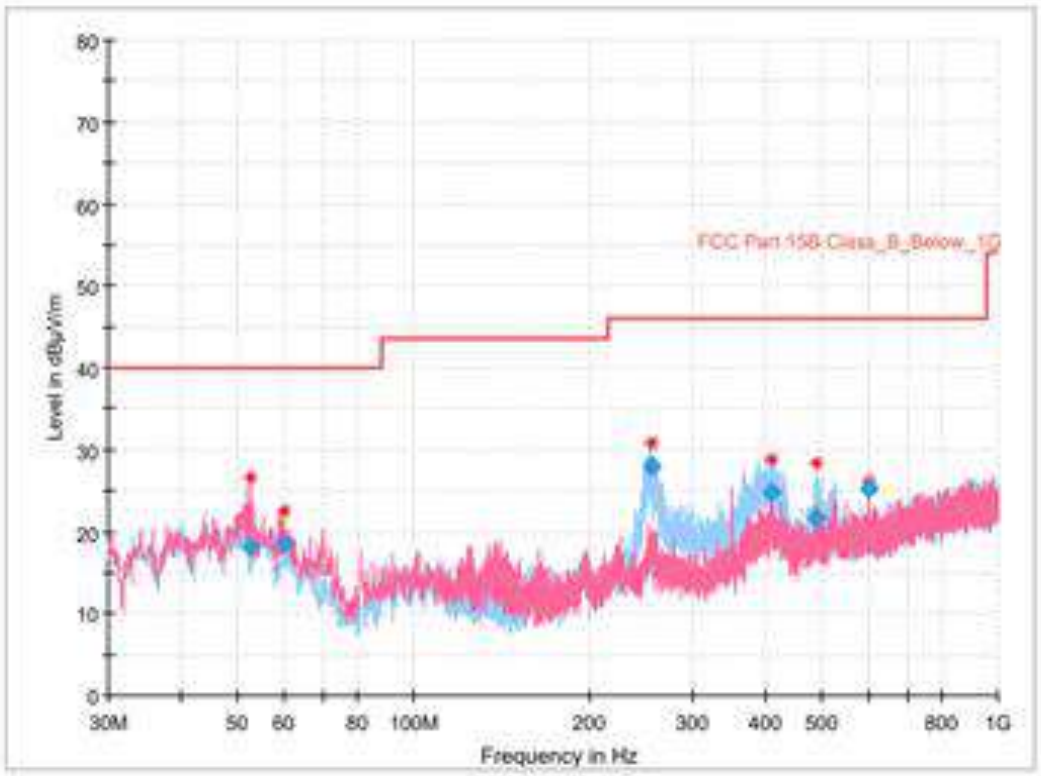
9.4.3.3.3 802.11n(HT20)_DC 12 V



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
63.465000	21.68	40.00	18.32	1000.0	120.000	100.1	V	42.0	-21.0
162.114000	11.69	43.50	31.81	1000.0	120.000	100.1	V	305.0	-23.6
238.550000	22.79	46.00	23.21	1000.0	120.000	100.1	H	312.0	-19.9
334.386000	26.21	46.00	19.79	1000.0	120.000	100.1	H	80.0	-17.0
384.341000	29.54	46.00	16.46	1000.0	120.000	100.1	H	105.0	-15.5
428.379000	32.91	46.00	13.09	1000.0	120.000	100.1	H	340.0	-15.0

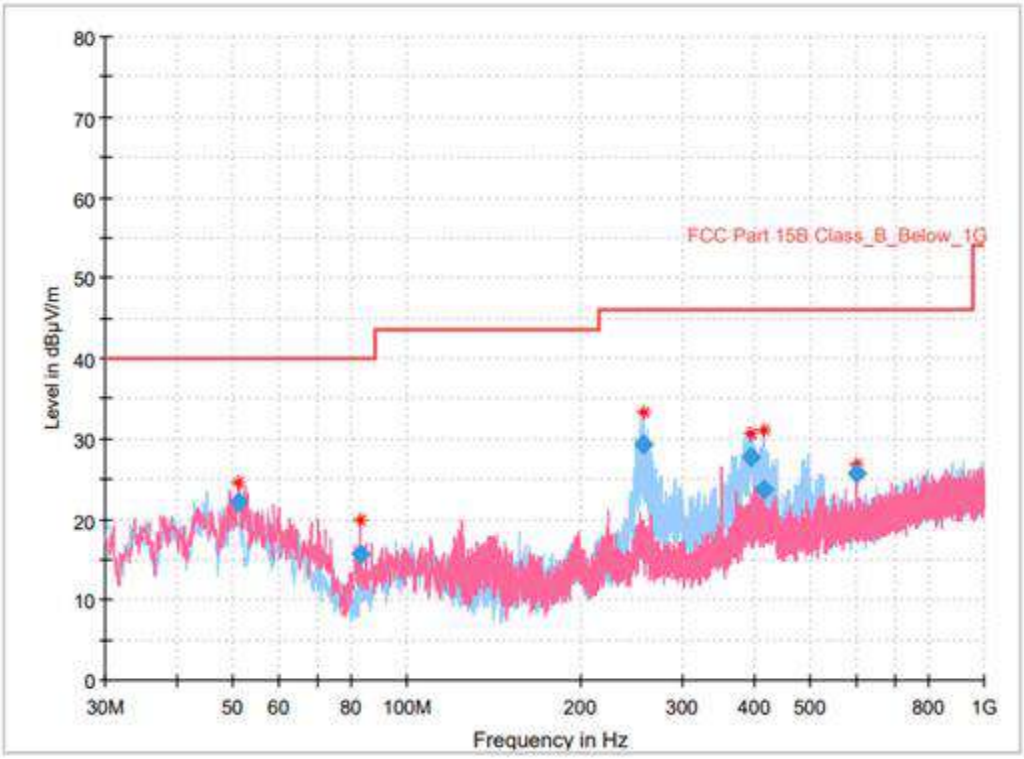
Low CH



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
52.504000	18.09	40.00	21.91	1000.0	120.000	99.9	V	86.0	-19.0
59.973000	18.57	40.00	21.43	1000.0	120.000	99.9	V	191.0	-20.5
255.040000	27.95	46.00	18.05	1000.0	120.000	99.9	H	0.0	-18.6
408.106000	24.85	46.00	21.15	1000.0	120.000	99.9	H	202.0	-15.2
487.161000	21.73	46.00	24.27	1000.0	120.000	99.9	H	216.0	-13.7
599.972000	25.36	46.00	20.64	1000.0	120.000	99.9	V	206.0	-11.5

Mid CH

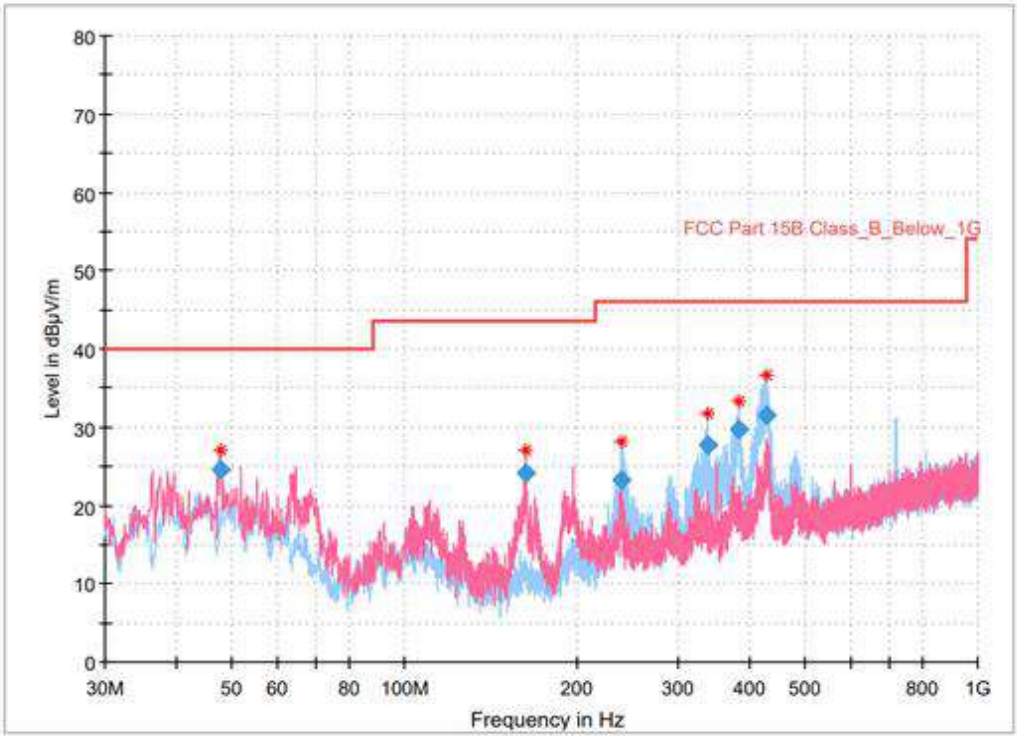


Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
51.146000	22.07	40.00	17.93	1000.0	120.000	99.9	V	283.0	-18.7
83.059000	15.70	40.00	24.30	1000.0	120.000	99.9	V	269.0	-25.0
256.883000	29.20	46.00	16.80	1000.0	120.000	99.9	H	0.0	-18.6
393.750000	27.61	46.00	18.39	1000.0	120.000	99.9	H	290.0	-15.3
414.411000	23.66	46.00	22.34	1000.0	120.000	99.9	H	290.0	-15.2
599.972000	25.70	46.00	20.30	1000.0	120.000	99.9	V	191.0	-11.5

High CH

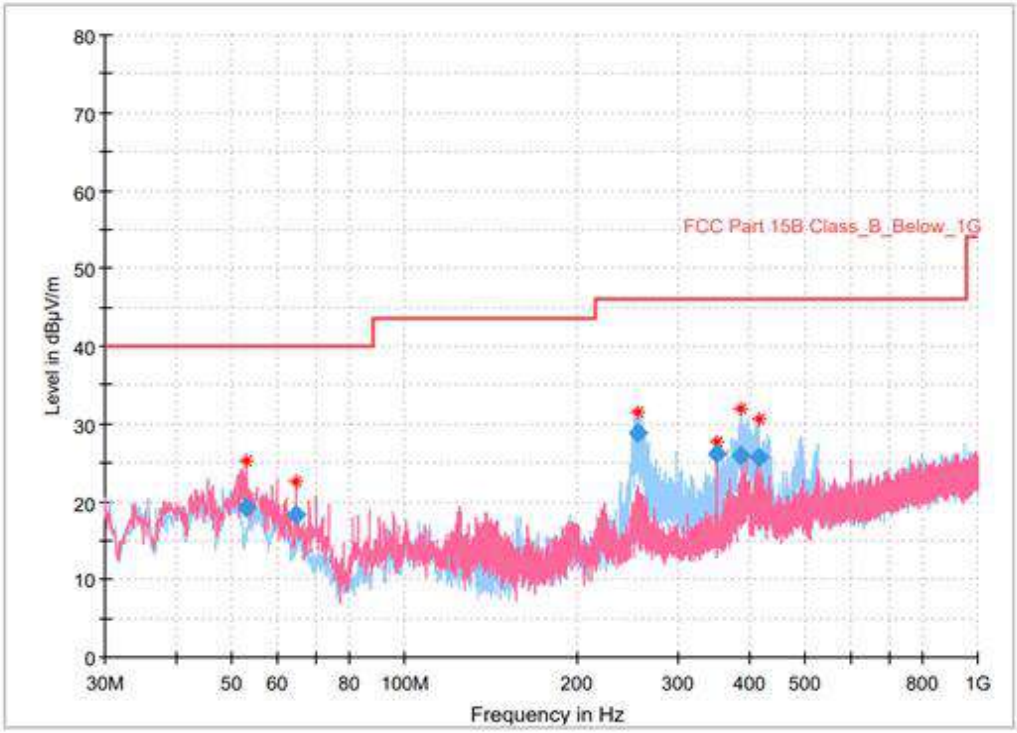
9.4.3.3.4 802.11n(HT40)_DC 12 V



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
47.654000	24.56	40.00	15.44	1000.0	120.000	100.1	V	16.0	-19.0
162.696000	24.14	43.50	19.36	1000.0	120.000	100.1	V	108.0	-23.6
238.550000	23.14	46.00	22.86	1000.0	120.000	100.1	H	143.0	-19.9
338.072000	27.79	46.00	18.21	1000.0	120.000	100.1	H	45.0	-16.7
384.147000	29.62	46.00	16.38	1000.0	120.000	100.1	H	89.0	-15.6
428.476000	31.48	46.00	14.52	1000.0	120.000	100.1	H	143.0	-15.0

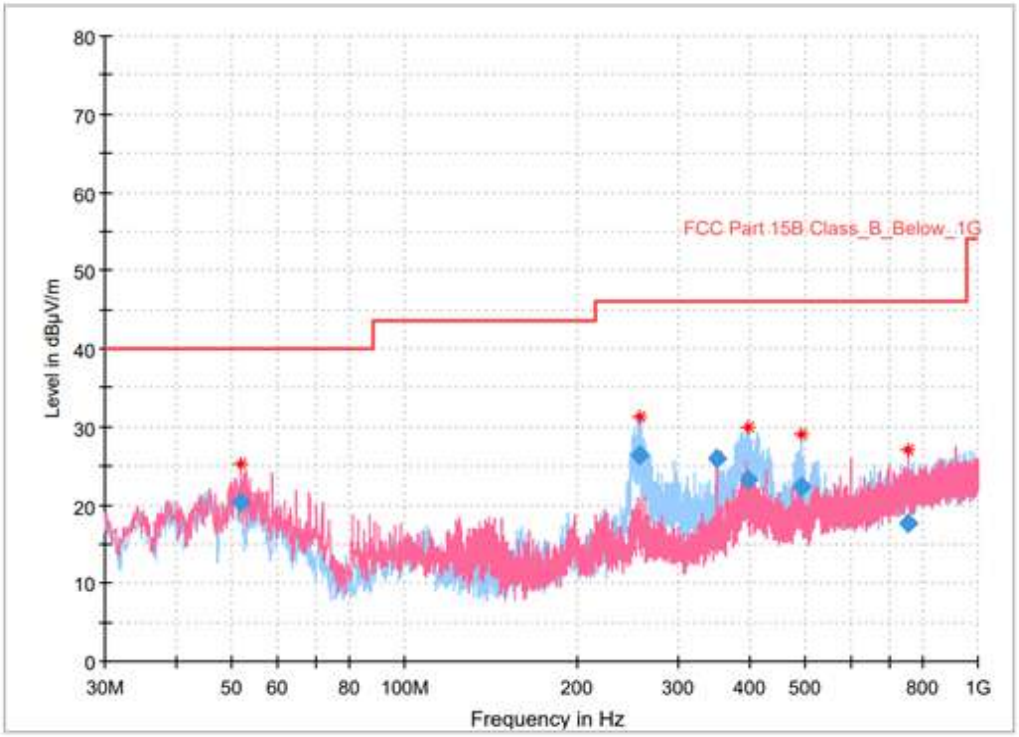
Low CH



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
53.086000	19.13	40.00	20.87	1000.0	120.000	99.9	V	203.0	-19.2
64.532000	18.35	40.00	21.65	1000.0	120.000	99.9	V	111.0	-21.2
254.652000	28.74	46.00	17.26	1000.0	120.000	99.9	H	342.0	-18.7
350.003000	26.23	46.00	19.77	1000.0	120.000	99.9	V	216.0	-16.3
387.154000	25.84	46.00	20.16	1000.0	120.000	99.9	H	196.0	-15.4
414.702000	25.74	46.00	20.26	1000.0	120.000	99.9	H	209.0	-15.2

Mid CH

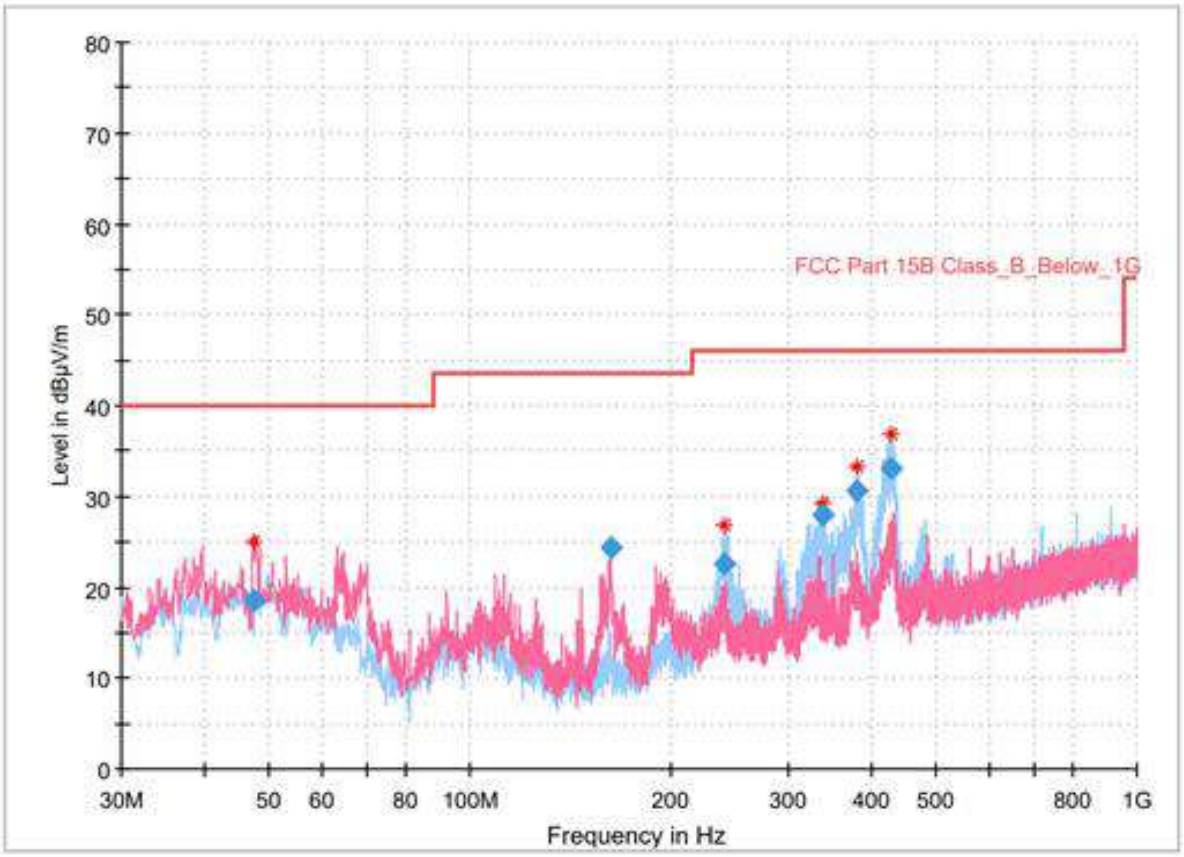


Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
51.728000	20.28	40.00	19.72	1000.0	120.000	99.9	V	335.0	-18.8
256.301000	26.41	46.00	19.59	1000.0	120.000	99.9	H	174.0	-18.6
350.003000	25.96	46.00	20.04	1000.0	120.000	99.9	V	240.0	-16.3
397.921000	23.32	46.00	22.68	1000.0	120.000	99.9	H	280.0	-15.2
492.593000	22.37	46.00	23.63	1000.0	120.000	99.9	H	214.0	-13.7
752.747000	17.61	46.00	28.39	1000.0	120.000	99.9	V	161.0	-8.9

High CH

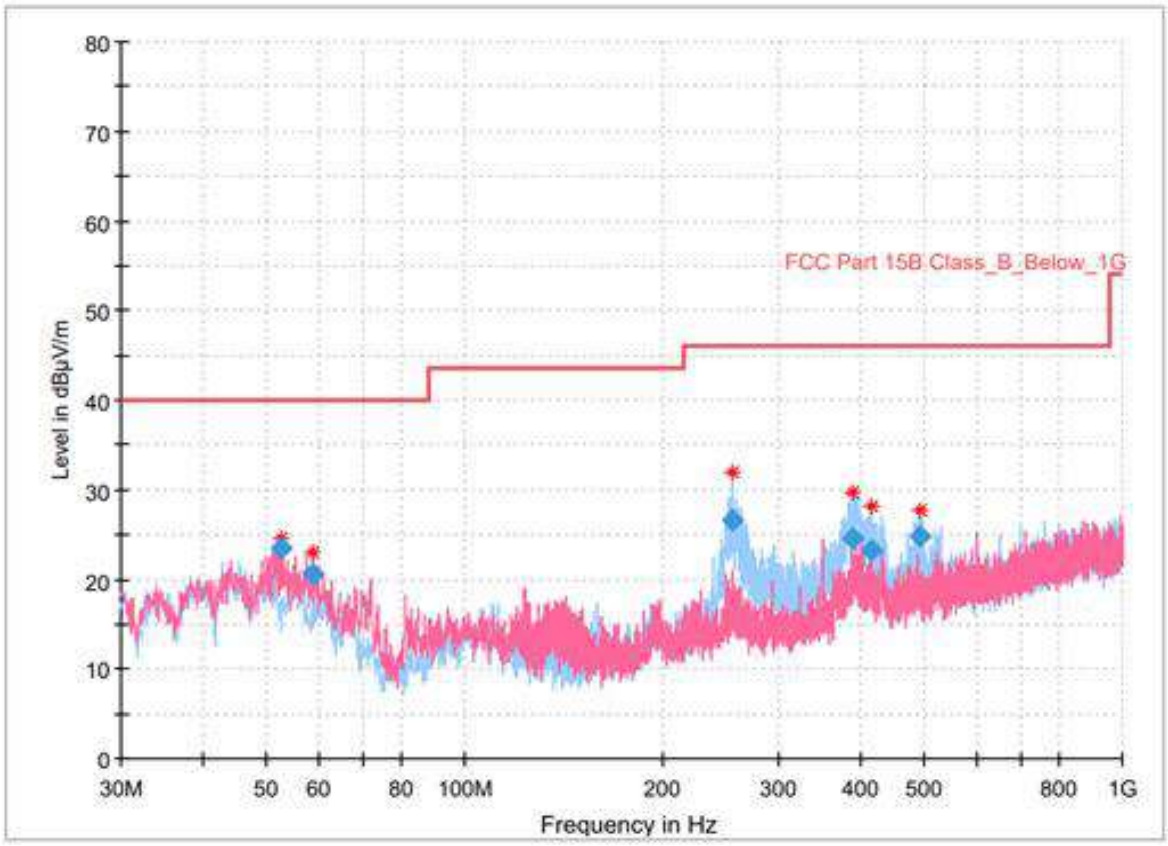
9.4.3.3.5 Bluetooth LE_DC 12 V



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
47.363000	18.46	40.00	21.54	1000.0	120.000	100.1	V	49.0	-19.0
162.599000	24.44	43.50	19.06	1000.0	120.000	100.1	V	106.0	-23.6
240.393000	22.55	46.00	23.45	1000.0	120.000	100.1	H	0.0	-19.8
338.169000	28.04	46.00	17.96	1000.0	120.000	100.1	H	51.0	-16.7
380.752000	30.63	46.00	15.37	1000.0	120.000	100.1	H	119.0	-15.7
428.379000	33.11	46.00	12.89	1000.0	120.000	100.1	H	174.0	-15.0

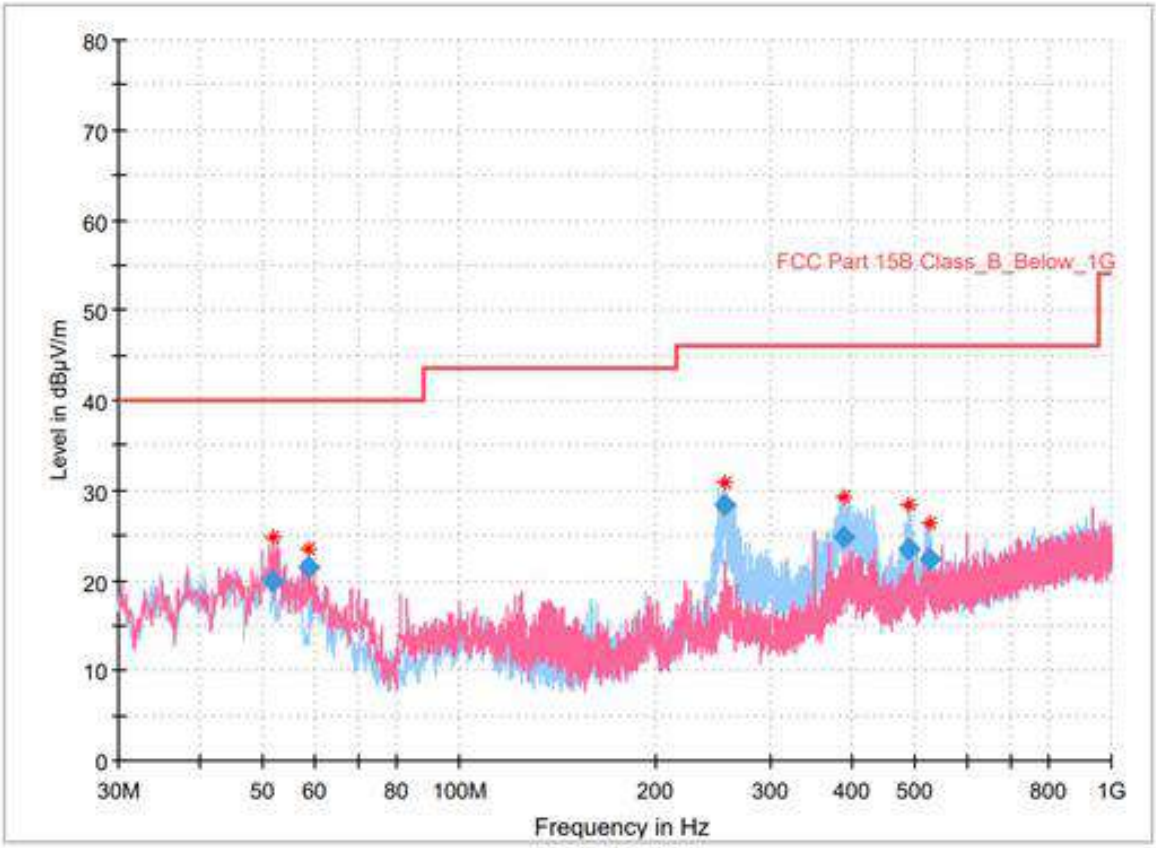
Low CH



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
52.407000	23.41	40.00	16.59	1000.0	120.000	99.9	V	215.0	-19.0
58.809000	20.47	40.00	19.53	1000.0	120.000	99.9	V	108.0	-20.2
254.555000	26.57	46.00	19.43	1000.0	120.000	99.9	H	0.0	-18.7
387.348000	24.53	46.00	21.47	1000.0	120.000	99.9	H	191.0	-15.4
414.702000	23.17	46.00	22.83	1000.0	120.000	99.9	H	297.0	-15.2
491.041000	24.84	46.00	21.16	1000.0	120.000	99.9	H	231.0	-13.7

Mid CH



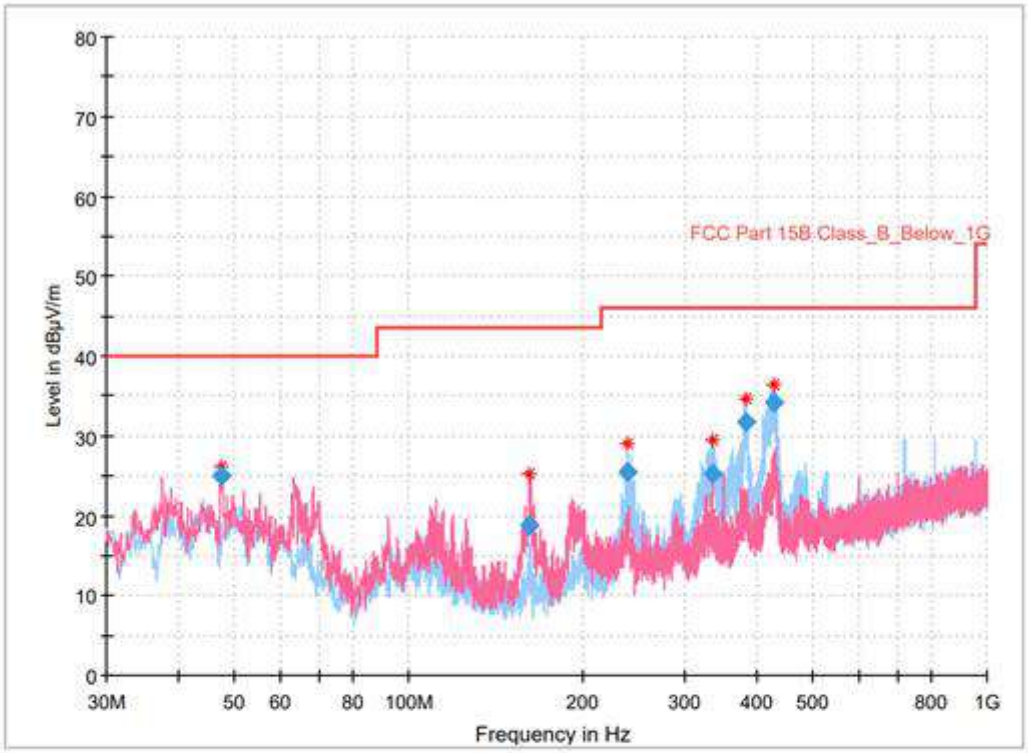
Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
51.825000	19.80	40.00	20.20	1000.0	120.000	99.9	V	120.0	-18.8
58.809000	21.36	40.00	18.64	1000.0	120.000	99.9	V	328.0	-20.2
254.652000	28.49	46.00	17.51	1000.0	120.000	99.9	H	0.0	-18.7
388.124000	24.90	46.00	21.10	1000.0	120.000	99.9	H	293.0	-15.4
487.355000	23.48	46.00	22.52	1000.0	120.000	99.9	H	226.0	-13.7
525.864000	22.35	46.00	23.65	1000.0	120.000	99.9	H	240.0	-13.3

High CH

9.4.3.4 Measurement Results for below 1 ㎓ for DC 24 V

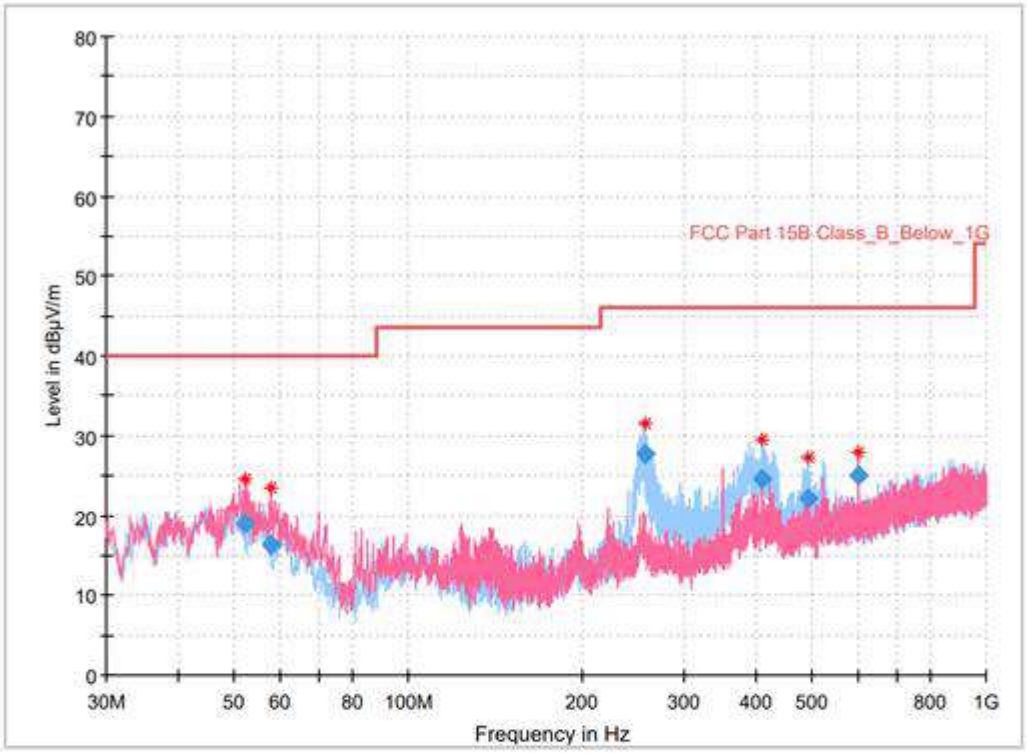
9.4.3.4.1 802.11b_DC 24 V



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
47.266000	25.08	40.00	14.92	1000.0	120.000	100.1	V	0.0	-19.0
162.017000	18.86	43.50	24.64	1000.0	120.000	100.1	V	274.0	-23.6
238.356000	25.43	46.00	20.57	1000.0	120.000	100.1	H	176.0	-19.9
336.423000	25.21	46.00	20.79	1000.0	120.000	100.1	H	272.0	-16.8
382.401000	31.71	46.00	14.29	1000.0	120.000	100.1	H	96.0	-15.6
426.924000	34.27	46.00	11.73	1000.0	120.000	100.1	H	176.0	-15.0

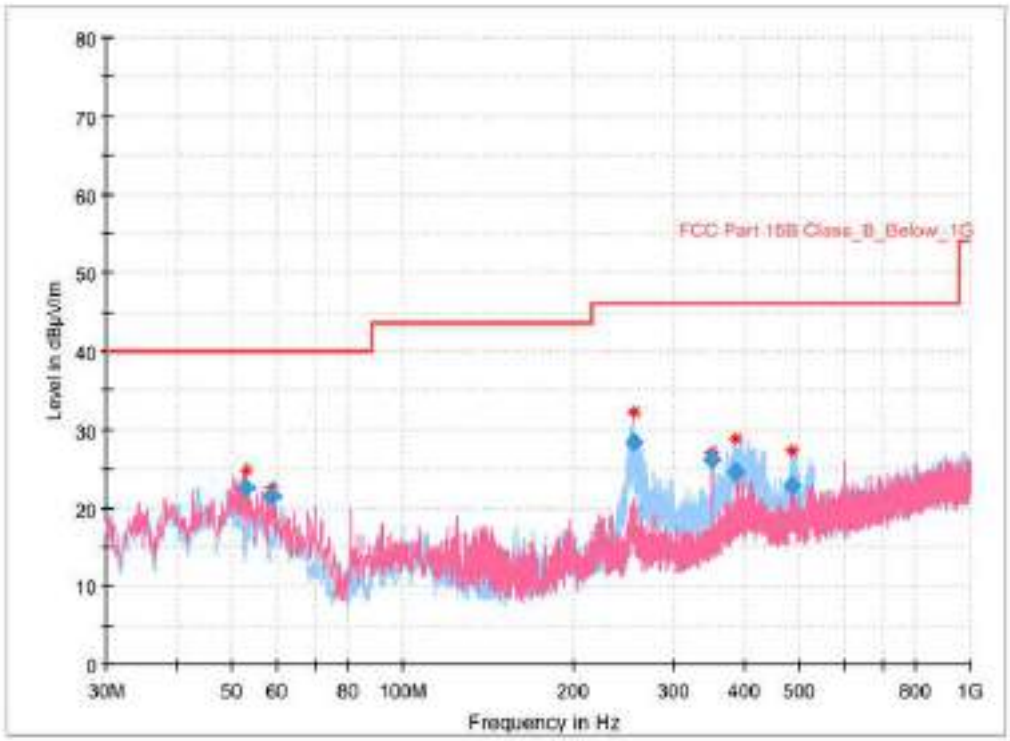
Low CH



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
52.310000	19.04	40.00	20.96	1000.0	120.000	99.9	V	177.0	-19.0
57.936000	16.35	40.00	23.65	1000.0	120.000	99.9	V	5.0	-19.9
256.786000	27.63	46.00	18.37	1000.0	120.000	99.9	H	0.0	-18.6
408.591000	24.63	46.00	21.37	1000.0	120.000	99.9	H	219.0	-15.2
490.750000	22.02	46.00	23.98	1000.0	120.000	99.9	H	219.0	-13.7
599.972000	25.13	46.00	20.87	1000.0	120.000	99.9	V	188.0	-11.5

Mid CH

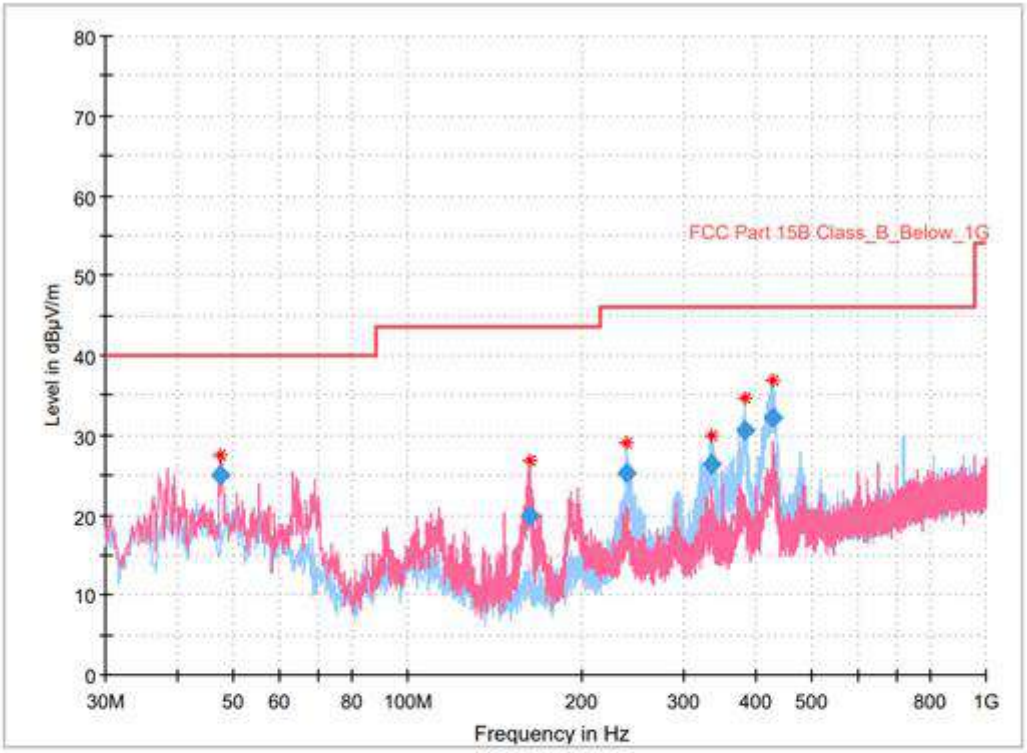


Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
52.989000	22.65	40.00	17.35	1000.0	120.000	99.9	V	332.0	-19.2
58.809000	21.50	40.00	18.50	1000.0	120.000	99.9	V	10.0	-20.2
254.846000	28.32	46.00	17.68	1000.0	120.000	99.9	H	189.0	-18.7
350.003000	26.07	46.00	19.93	1000.0	120.000	99.9	V	229.0	-16.3
385.699000	24.50	46.00	21.50	1000.0	120.000	99.9	H	202.0	-15.5
485.027000	22.70	46.00	23.30	1000.0	120.000	99.9	H	242.0	-13.7

High CH

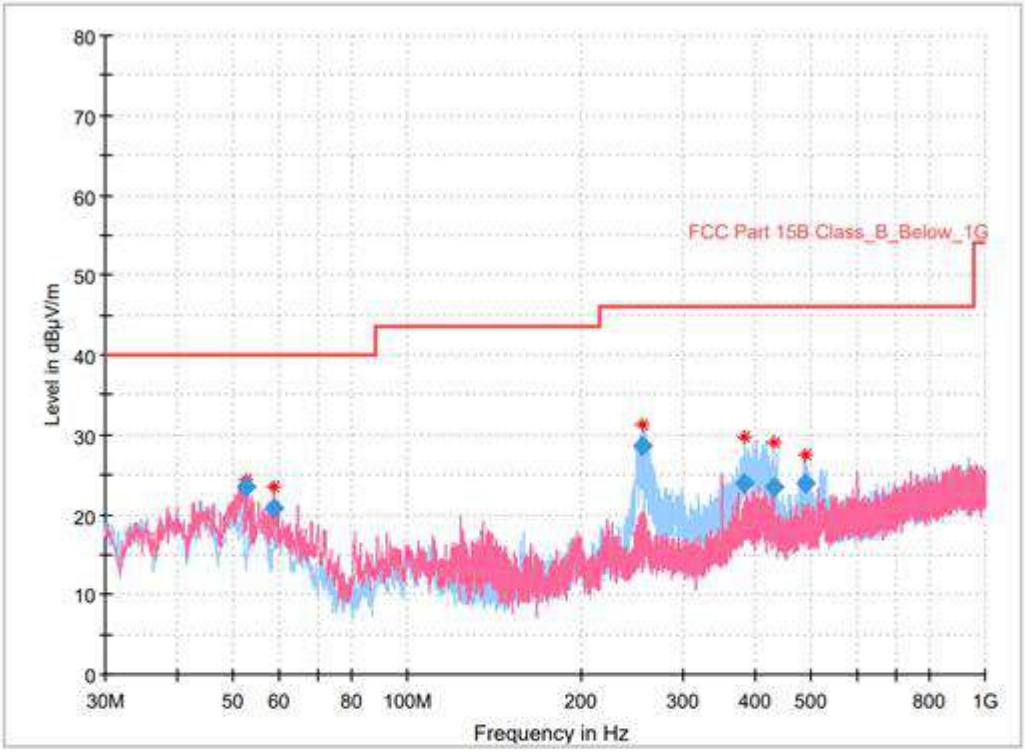
9.4.3.4.2 802.11g_DC 24 V



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
47.266000	25.10	40.00	14.90	1000.0	120.000	100.1	V	0.0	-19.0
162.599000	19.91	43.50	23.59	1000.0	120.000	100.1	V	80.0	-23.6
238.356000	25.14	46.00	20.86	1000.0	120.000	100.1	H	168.0	-19.9
334.483000	26.31	46.00	19.69	1000.0	120.000	100.1	H	221.0	-16.9
382.789000	30.61	46.00	15.39	1000.0	120.000	100.1	H	99.0	-15.6
426.633000	32.16	46.00	13.84	1000.0	120.000	100.1	H	0.0	-15.0

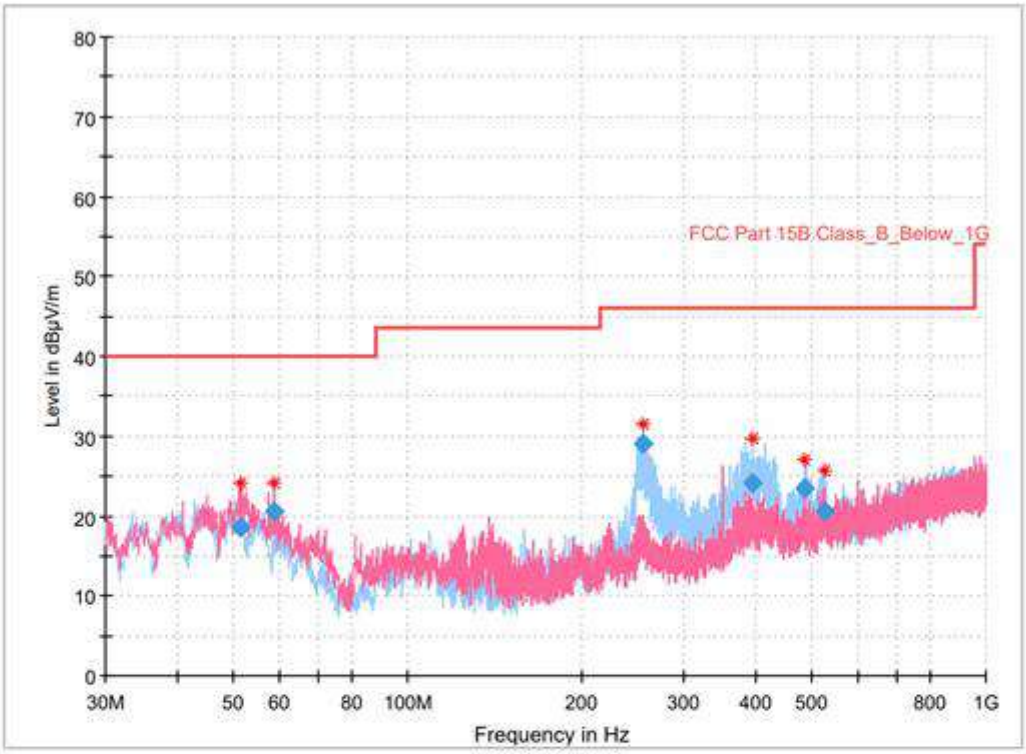
Low CH



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
52.407000	23.57	40.00	16.43	1000.0	120.000	99.9	V	211.0	-19.0
58.809000	20.88	40.00	19.12	1000.0	120.000	99.9	V	262.0	-20.2
254.749000	28.56	46.00	17.44	1000.0	120.000	99.9	H	353.0	-18.7
383.759000	23.86	46.00	22.14	1000.0	120.000	99.9	H	191.0	-15.6
431.774000	23.46	46.00	22.54	1000.0	120.000	99.9	H	204.0	-14.9
487.549000	24.01	46.00	21.99	1000.0	120.000	99.9	H	231.0	-13.7

Mid CH

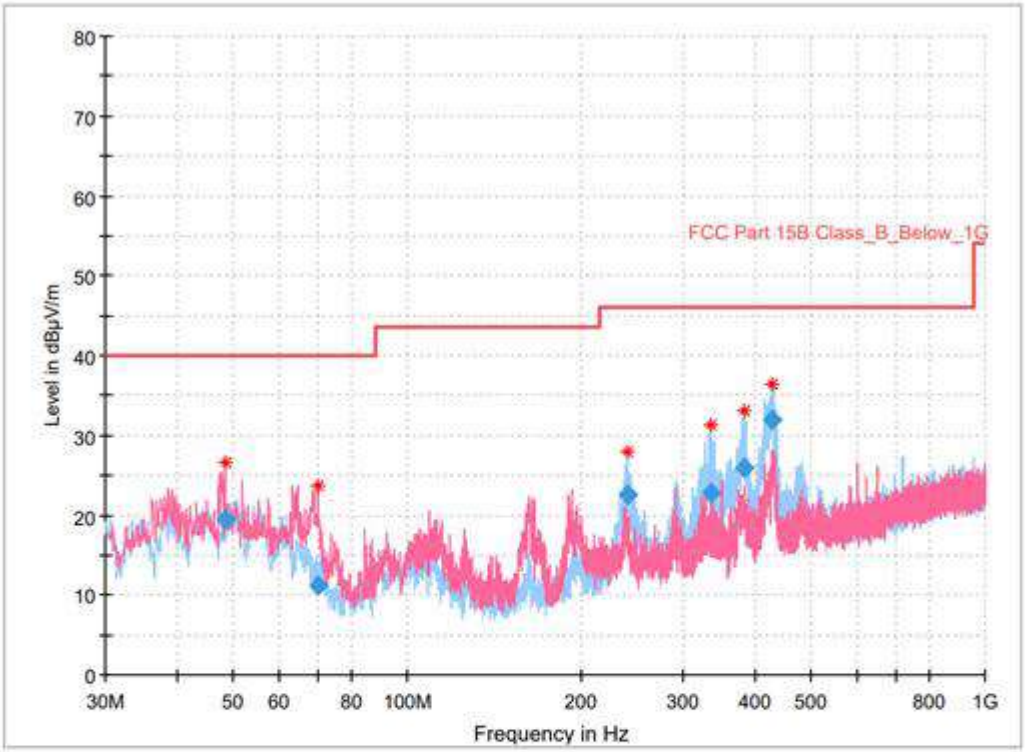


Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
51.243000	18.66	40.00	21.34	1000.0	120.000	99.9	V	0.0	-18.7
58.809000	20.58	40.00	19.42	1000.0	120.000	99.9	V	113.0	-20.2
254.846000	28.97	46.00	17.03	1000.0	120.000	99.9	H	0.0	-18.7
393.556000	24.10	46.00	21.90	1000.0	120.000	99.9	H	107.0	-15.3
483.863000	23.55	46.00	22.45	1000.0	120.000	99.9	H	241.0	-13.8
525.767000	20.64	46.00	25.36	1000.0	120.000	99.9	H	228.0	-13.3

High CH

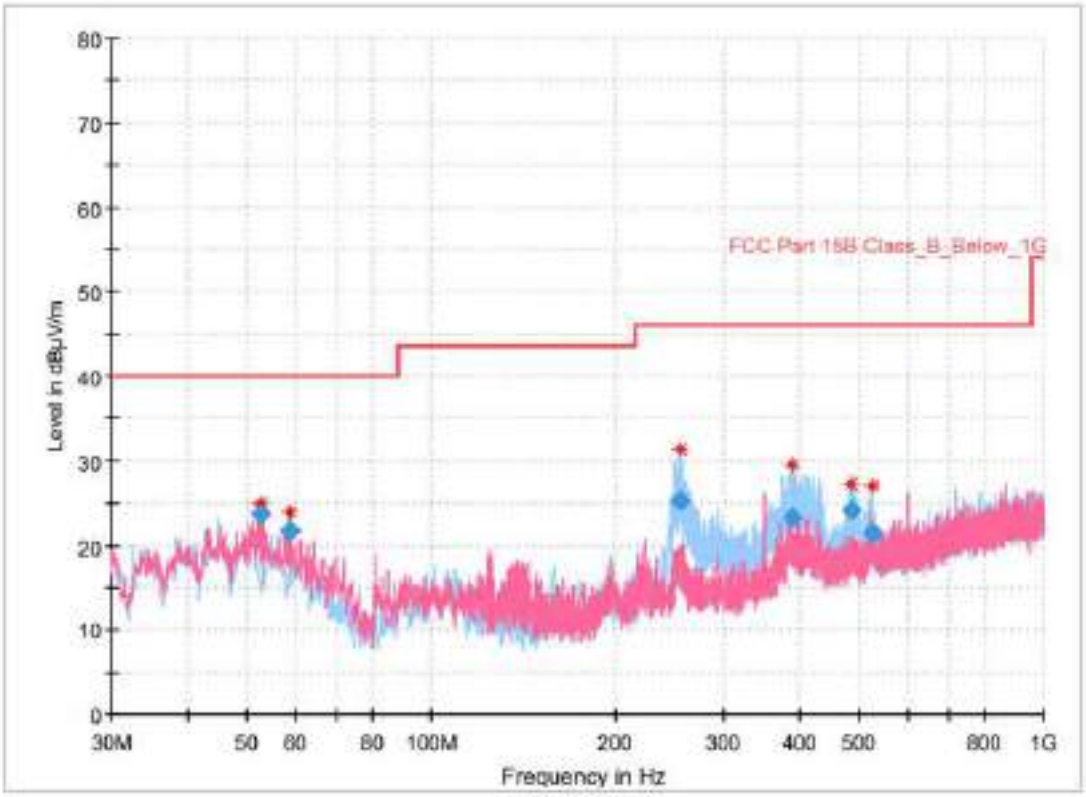
9.4.3.4.3 802.11n(HT20)_DC 24 V



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
48.430000	19.34	40.00	20.66	1000.0	120.000	100.1	V	224.0	-19.1
70.255000	11.14	40.00	28.86	1000.0	120.000	100.1	V	308.0	-23.5
240.102000	22.62	46.00	23.38	1000.0	120.000	100.1	H	166.0	-19.8
336.132000	22.70	46.00	23.30	1000.0	120.000	100.1	H	56.0	-16.8
382.401000	25.94	46.00	20.06	1000.0	120.000	100.1	H	113.0	-15.6
426.924000	31.85	46.00	14.15	1000.0	120.000	100.1	H	166.0	-15.0

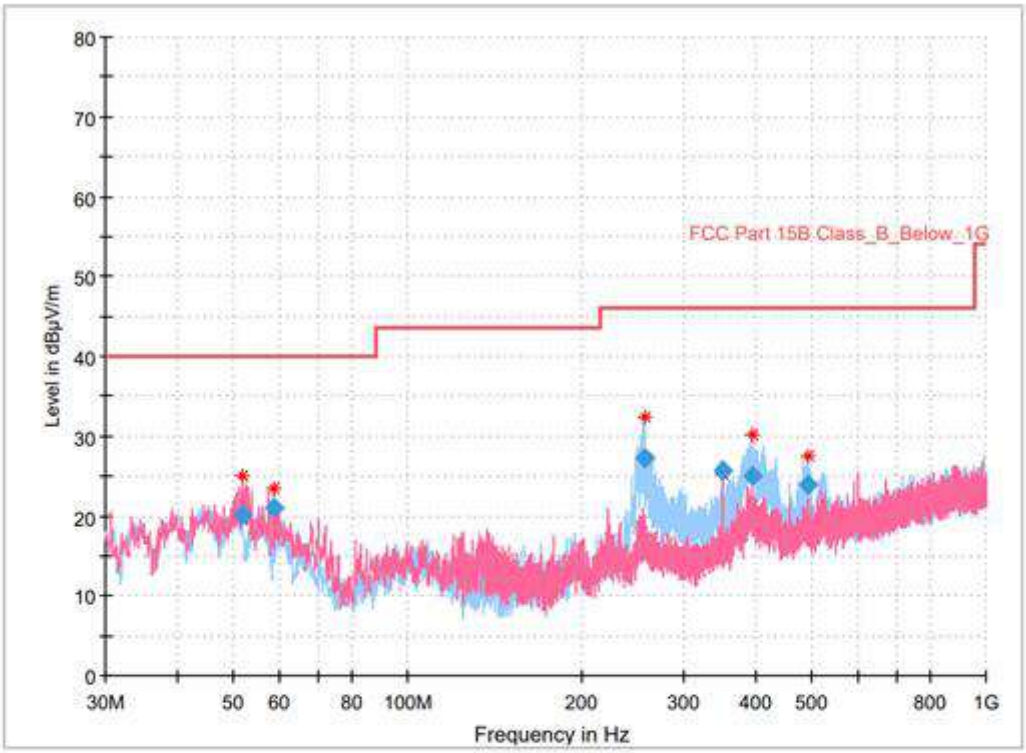
Low CH



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
52.497000	23.72	40.00	16.28	1000.0	120.000	99.9	V	242.0	-19.0
58.809000	21.62	40.00	18.38	1000.0	120.000	99.9	V	339.0	-20.2
255.428000	25.20	46.00	20.80	1000.0	120.000	99.9	H	0.0	-18.6
389.773000	23.28	46.00	22.72	1000.0	120.000	99.9	H	318.0	-15.3
485.221000	24.21	46.00	21.79	1000.0	120.000	99.9	H	239.0	-13.7
525.864000	21.43	46.00	24.57	1000.0	120.000	99.9	H	156.0	-13.3

Mid CH

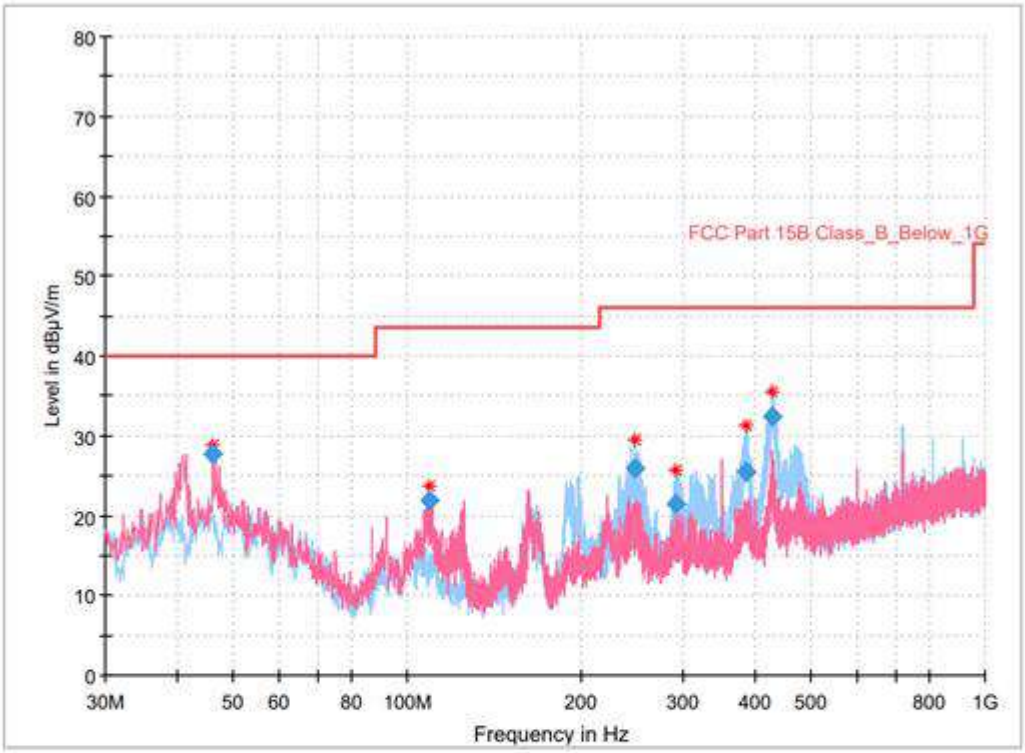


Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
51.825000	20.13	40.00	19.87	1000.0	120.000	99.9	V	72.0	-18.8
58.809000	20.93	40.00	19.07	1000.0	120.000	99.9	V	235.0	-20.2
256.786000	27.21	46.00	18.79	1000.0	120.000	99.9	H	0.0	-18.6
350.003000	25.70	46.00	20.30	1000.0	120.000	99.9	V	235.0	-16.3
393.362000	24.97	46.00	21.03	1000.0	120.000	99.9	H	276.0	-15.3
492.496000	23.91	46.00	22.09	1000.0	120.000	99.9	H	224.0	-13.7

High CH

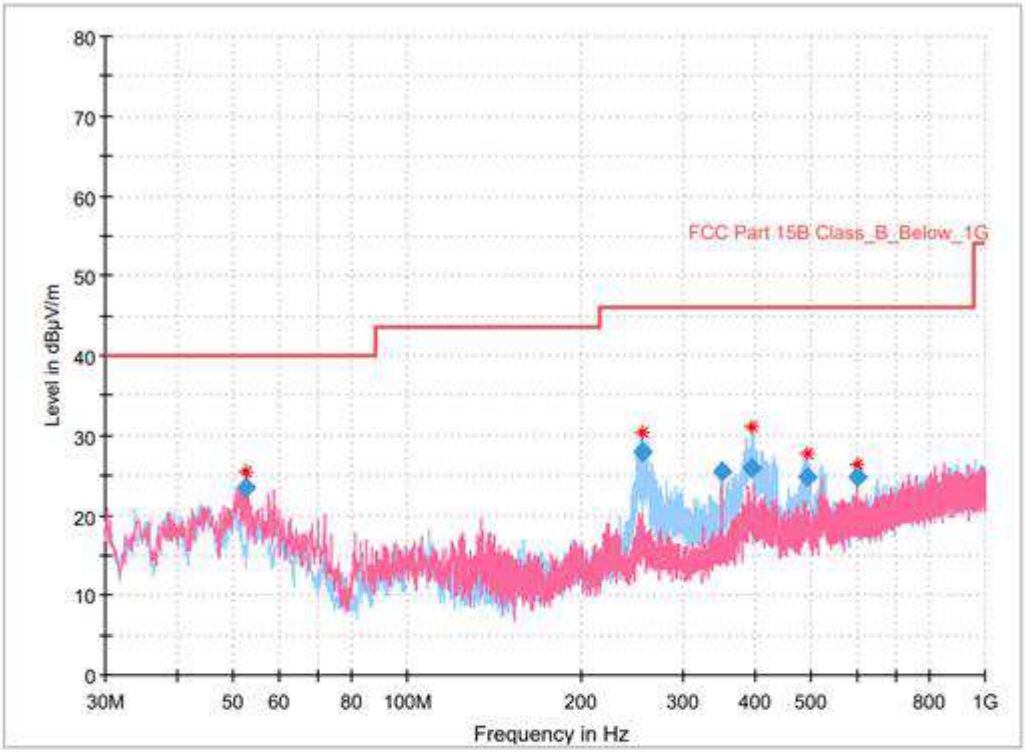
9.4.3.4.4 802.11n(HT40)_DC 24 V



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
46.102000	27.61	40.00	12.39	1000.0	120.000	100.1	V	0.0	-19.0
109.055000	22.01	43.50	21.49	1000.0	120.000	100.1	V	279.0	-21.0
247.571000	25.97	46.00	20.03	1000.0	120.000	100.1	H	190.0	-19.3
292.288000	21.48	46.00	24.52	1000.0	120.000	100.1	H	230.0	-18.0
385.602000	25.56	46.00	20.44	1000.0	120.000	100.1	H	284.0	-15.5
427.118000	32.32	46.00	13.68	1000.0	120.000	100.1	H	336.0	-15.0

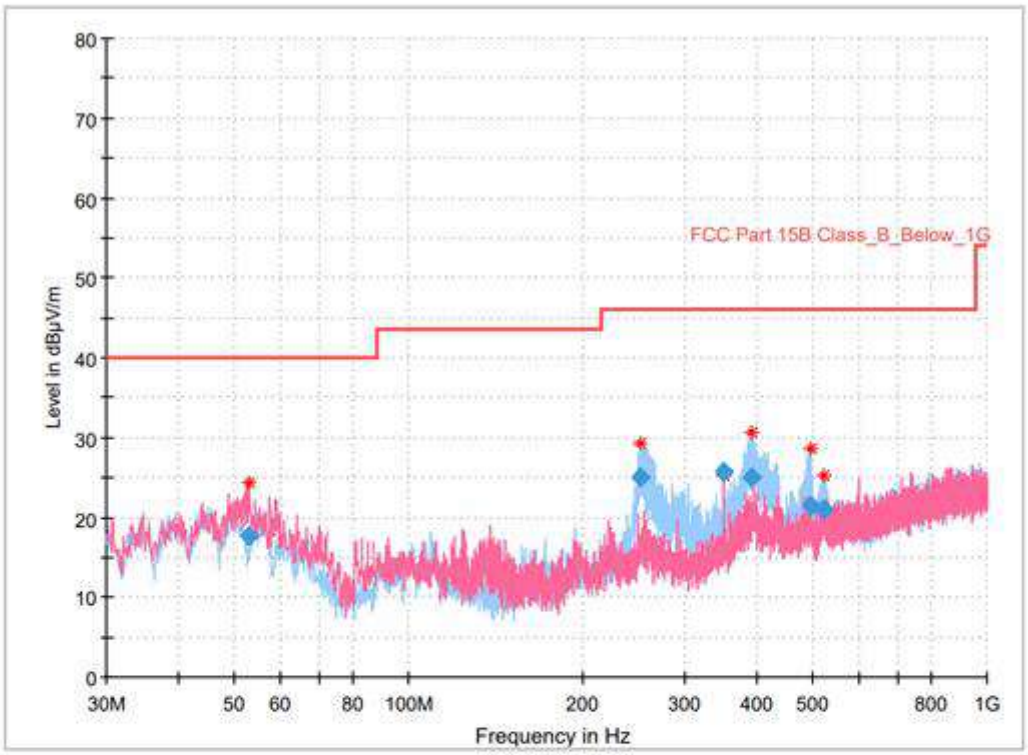
Low CH



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
52.407000	23.49	40.00	16.51	1000.0	120.000	99.9	V	209.0	-19.0
254.943000	28.02	46.00	17.98	1000.0	120.000	99.9	H	184.0	-18.6
350.003000	25.56	46.00	20.44	1000.0	120.000	99.9	V	236.0	-16.3
395.108000	25.91	46.00	20.09	1000.0	120.000	99.9	H	91.0	-15.2
493.078000	24.88	46.00	21.12	1000.0	120.000	99.9	H	243.0	-13.7
599.972000	24.84	46.00	21.16	1000.0	120.000	99.9	V	209.0	-11.5

Mid CH

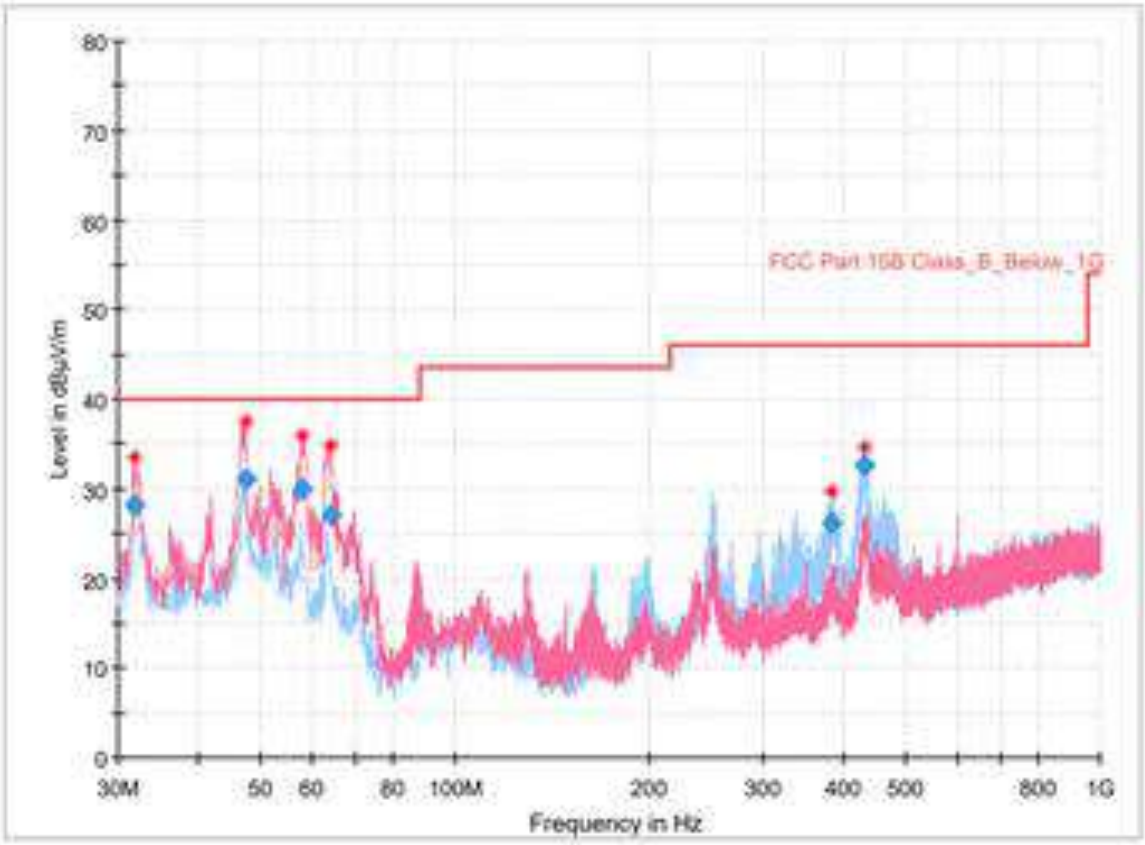


Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
53.086000	17.64	40.00	22.36	1000.0	120.000	99.9	V	126.0	-19.2
251.451000	25.03	46.00	20.97	1000.0	120.000	99.9	H	0.0	-19.0
350.003000	25.73	46.00	20.27	1000.0	120.000	99.9	V	213.0	-16.3
391.131000	24.99	46.00	21.01	1000.0	120.000	99.9	H	196.0	-15.3
495.697000	21.41	46.00	24.59	1000.0	120.000	99.9	H	222.0	-13.6
522.178000	21.09	46.00	24.91	1000.0	120.000	99.9	H	235.0	-13.4

High CH

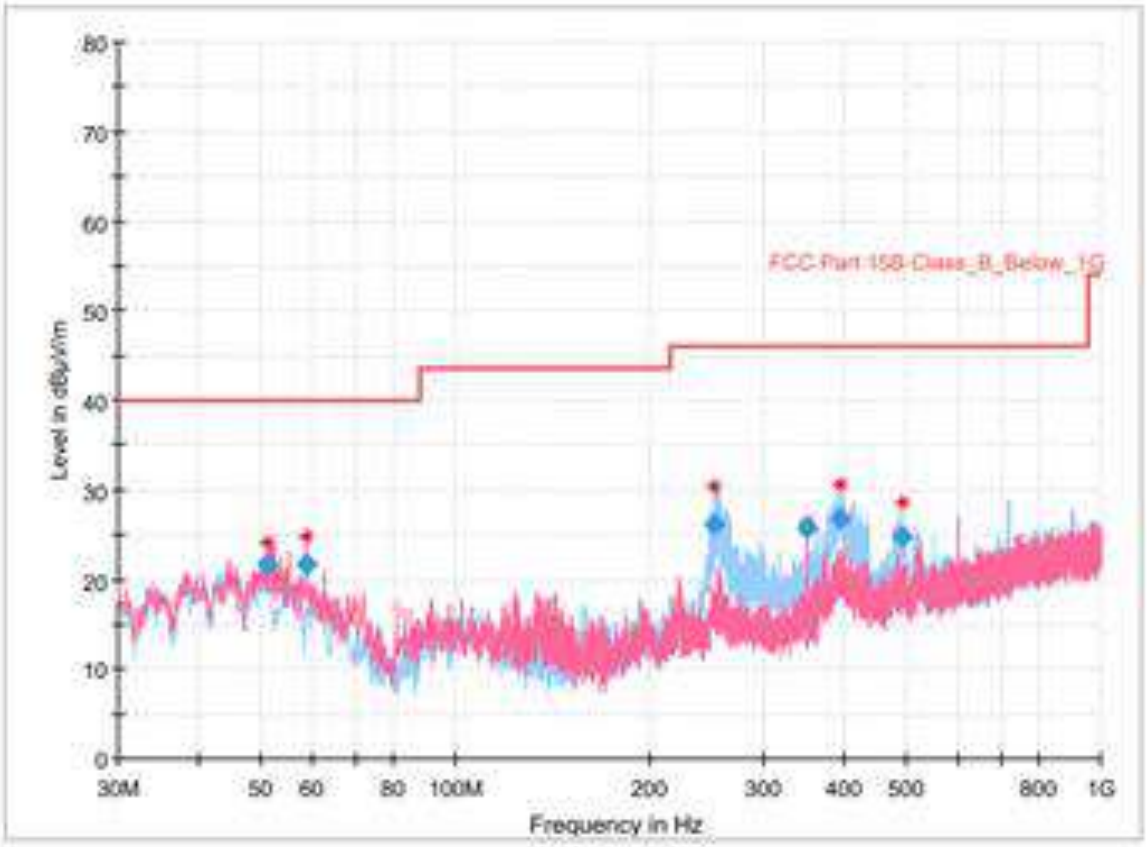
9.4.3.4.5 Bluetooth LE_DC 24 V



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
31.843000	28.21	40.00	11.79	1000.0	120.000	100.0	V	212.0	-23.2
47.266000	31.08	40.00	8.92	1000.0	120.000	100.0	V	359.0	-19.0
57.839000	29.99	40.00	10.01	1000.0	120.000	100.0	V	212.0	-19.8
64.338000	26.98	40.00	13.02	1000.0	120.000	100.0	V	0.0	-21.2
382.401000	26.14	46.00	19.86	1000.0	120.000	100.0	H	34.0	-15.6
430.416000	32.53	46.00	13.47	1000.0	120.000	100.0	H	189.0	-14.9

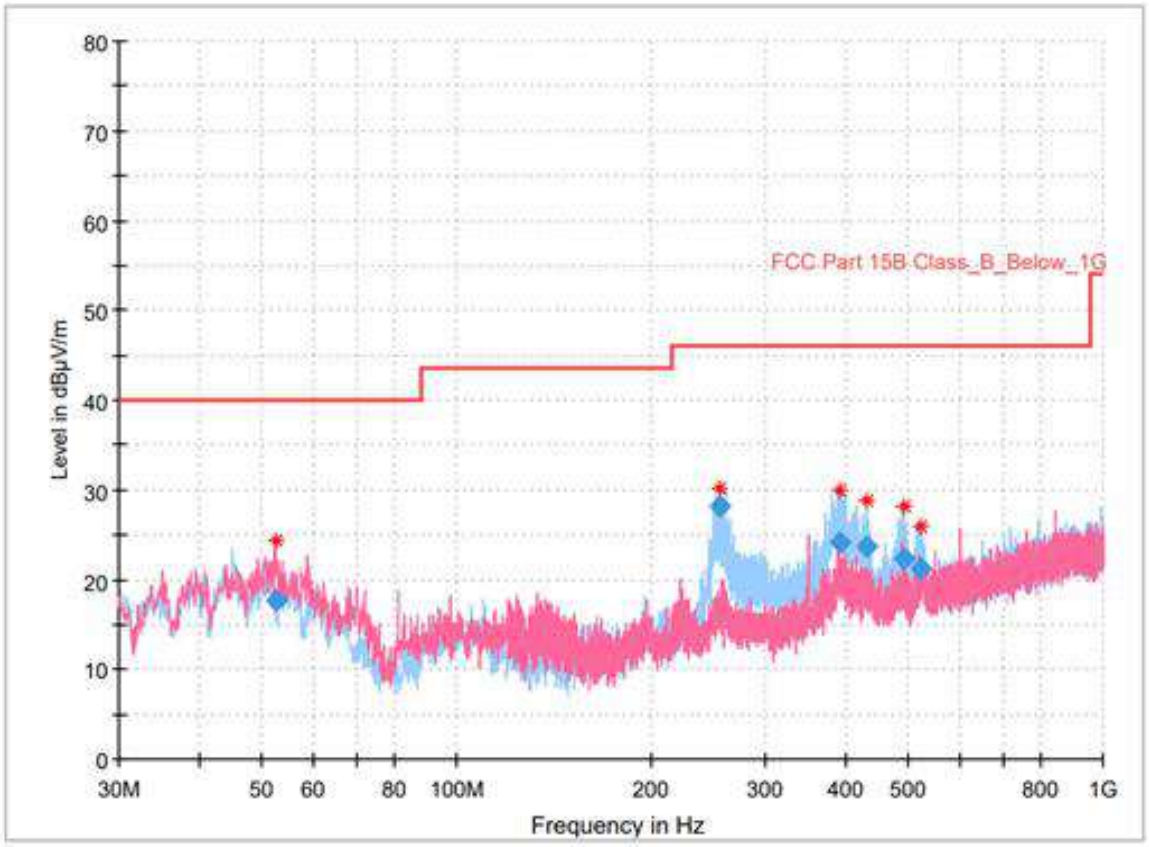
Low CH



Final Result

Frequency (MHz)	Quasi-Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
51.146000	21.76	40.00	18.24	1000.0	120.000	99.9	V	0.0	-18.7
58.809000	21.78	40.00	18.22	1000.0	120.000	99.9	V	2.0	-20.2
251.063000	26.09	46.00	19.91	1000.0	120.000	99.9	H	0.0	-19.0
350.003000	25.65	46.00	20.35	1000.0	120.000	99.9	V	210.0	-16.3
393.265000	26.80	46.00	19.20	1000.0	120.000	99.9	H	206.0	-15.3
491.332000	24.79	46.00	21.21	1000.0	120.000	99.9	H	232.0	-13.7

Mid CH



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
52.504000	17.66	40.00	22.34	1000.0	120.000	99.9	V	279.0	-19.0
254.749000	28.24	46.00	17.76	1000.0	120.000	99.9	H	0.0	-18.7
392.489000	24.16	46.00	21.84	1000.0	120.000	99.9	H	298.0	-15.3
432.065000	23.58	46.00	22.42	1000.0	120.000	99.9	H	203.0	-14.9
492.593000	22.46	46.00	23.54	1000.0	120.000	99.9	H	216.0	-13.7
521.111000	21.25	46.00	24.75	1000.0	120.000	99.9	H	117.0	-13.4

High CH

9.4.3.5 Measurement Results for Above 1 ㎓ for DC 12 V

9.4.3.5.1 802.11b_DC 12 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
4 823.30	37.08	Peak	V	-4.80	41.88	73.98	32.10
	26.43	Average	V		31.23	53.98	22.75
7 237.30	48.87	Peak	H	-1.90	50.77	73.98	23.21
	42.69	Average	H		44.59	53.98	9.39
Mid CH							
4 882.80	34.86	Peak	V	-4.60	39.46	73.98	34.52
	22.48	Average	V		27.08	53.98	26.90
7 325.70	53.04	Peak	H	-1.60	54.64	73.98	19.34
	44.14	Average	H		45.74	53.98	8.24
High CH							
4 944.0	40.20	Peak	V	-4.50	44.70	73.98	29.28
	33.89	Average	V		38.39	53.98	15.59
7 417.50	53.72	Peak	H	-1.50	55.22	73.98	18.76
	48.10	Average	H		49.60	53.98	4.38

9.4.3.5.2 802.11g_DC 12 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
7 230.50	53.46	Peak	V	-1.90	55.36	73.98	18.62
	39.73	Average	V		41.63	53.98	12.35
Mid CH							
7 325.70	56.70	Peak	H	-1.60	58.30	73.98	15.68
	43.15	Average	H		44.75	53.98	9.23
High CH							
7 420.90	53.93	Peak	H	-1.50	55.43	73.98	18.55
	40.37	Average	H		41.87	53.98	12.11

9.4.3.5.3 802.11n(HT20)_DC 12 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
4 816.50	43.42	Peak	V	-4.90	48.32	73.98	25.66
	28.84	Average	V		33.74	53.98	20.24
7 240.70	58.58	Peak	V	-1.90	60.48	73.98	13.50
	46.23	Average	V		48.13	53.98	5.85
Mid CH							
7 334.20	59.22	Peak	V	-1.60	60.82	73.98	13.16
	44.91	Average	V		46.51	53.98	7.47
High CH							
7 415.80	59.15	Peak	V	-1.50	60.65	73.98	13.33
	46.21	Average	V		47.71	53.98	6.27

9.4.3.5.4 802.11n(HT40)_DC 12 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
7 407.30	56.41	Peak	H	-1.50	57.91	73.98	16.07
	44.58	Average	H		46.08	53.98	7.90
Mid CH							
7 346.10	55.83	Peak	V	-1.60	57.43	73.98	16.55
	41.95	Average	V		43.55	53.98	10.43
High CH							
7 363.10	59.76	Peak	V	-1.60	61.36	73.98	12.62
	46.83	Average	V		48.43	53.98	5.55

9.4.3.5.5 Bluetooth LE_DC 12 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
4 802.90	46.24	Peak	V	-5.00	41.24	73.98	32.74
	29.47	Average	V		24.47	53.98	29.51
Mid CH							
4 879.40	46.28	Peak	V	-4.60	41.68	73.98	32.30
	33.34	Average	V		28.74	53.98	25.24
High CH							
4 960.50	43.63	Peak	V	-4.50	39.13	73.98	34.85
	30.47	Average	V		25.97	53.98	28.01

※ Ant. Pol. : Antenna Polarization
※ Corr. Factor. : Antenna Factor + Cable Loss - Amplifier Gain
※ Result = Reading + Corr. Factor
※ Margin = Limit – Result

9.4.3.6 Measurement Results for Above 1 ㎓ for DC 24 V

9.4.3.6.1 802.11b_DC 24 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
4 823.30	39.43	Peak	V	-4.80	44.23	73.98	29.75
	30.50	Average	V		35.30	53.98	18.68
7 235.60	60.64	Peak	V	-1.90	62.54	73.98	11.44
	48.57	Average	V		50.47	53.98	3.51
Mid CH							
4 882.80	36.64	Peak	V	-4.60	41.24	73.98	32.74
	24.96	Average	V		29.56	53.98	24.42
7 327.40	61.01	Peak	V	-1.60	62.61	73.98	11.37
	48.51	Average	V		50.11	53.98	3.87
High CH							
4 944.0	42.06	Peak	V	-4.50	46.56	73.98	27.42
	37.26	Average	V		41.76	53.98	12.22
7 417.50	56.91	Peak	H	-1.50	58.41	73.98	15.57
	49.31	Average	H		50.81	53.98	3.17

9.4.3.6.2 802.11g_DC 24 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
4 884.50	34.51	Peak	V	-4.60	39.11	73.98	34.87
	20.89	Average	V		25.49	53.98	28.49
7 232.20	53.38	Peak	V	-1.90	55.28	73.98	18.70
	39.03	Average	V		40.93	53.98	13.05
Mid CH							
4 881.10	37.94	Peak	V	-4.60	42.54	73.98	31.44
	24.25	Average	V		28.85	53.98	25.13
7 324.00	59.89	Peak	V	-1.70	61.59	73.98	12.39
	48.76	Average	V		50.46	53.98	3.52
High CH							
4 945.70	36.79	Peak	H	-4.50	41.29	73.98	32.69
	23.25	Average	H		27.75	53.98	26.23
7 412.40	58.70	Peak	V	-1.50	60.20	73.98	13.78
	45.66	Average	V		47.16	53.98	6.82

9.4.3.6.3 802.11n(HT20)_DC 24 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
4 816.50	42.98	Peak	V	-4.90	47.88	73.98	26.10
	28.22	Average	V		33.12	53.98	20.86
7 230.50	58.52	Peak	V	-1.90	60.42	73.98	13.56
	45.58	Average	V		47.48	53.98	6.50
Mid CH							
4 887.90	37.44	Peak	V	-4.60	42.04	73.98	31.94
	24.06	Average	V		28.66	53.98	25.32
7 329.10	61.66	Peak	V	-1.60	63.26	73.98	10.72
	49.06	Average	V		50.66	53.98	3.32
High CH							
4 949.10	36.17	Peak	H	-4.50	40.67	73.98	33.31
	22.50	Average	H		27.00	53.98	26.98
7 412.40	57.77	Peak	H	-1.50	59.27	73.98	14.71
	44.66	Average	H		46.16	53.98	7.82

9.4.3.6.4 802.11n(HT40)_DC 24 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
4 828.40	38.85	Peak	H	-4.80	43.65	73.98	30.33
	24.98	Average	H		29.78	53.98	24.20
7 271.30	54.35	Peak	H	-1.80	56.15	73.98	17.83
	42.58	Average	H		44.38	53.98	9.60
Mid CH							
4 884.50	39.45	Peak	H	-4.60	44.05	73.98	29.93
	25.98	Average	H		30.58	53.98	23.40
7 339.30	55.72	Peak	H	-1.60	57.32	73.98	16.66
	42.64	Average	H		44.24	53.98	9.74
High CH							
4 933.80	35.67	Peak	H	-4.50	40.17	73.98	33.81
	22.34	Average	H		26.84	53.98	27.14
7 368.20	57.08	Peak	H	-1.60	58.68	73.98	15.30
	44.78	Average	H		46.38	53.98	7.60

9.4.3.6.5 Bluetooth LE_DC 24 V

Frequency (㎒)	Reading (dBμV)	Detector	Ant. Pol. (H/V)	Corr. Factor (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low CH							
4 255.50	54.26	Peak	V	-5.80	48.46	73.98	25.52
	32.76	Average	V		26.96	53.98	27.02
5 979.90	45.93	Peak	V	-5.00	40.93	73.98	33.05
	31.79	Average	V		26.79	53.98	27.19
Mid CH							
4 879.40	46.58	Peak	V	-4.60	41.98	73.98	32.00
	32.83	Average	V		28.23	53.98	25.75
High CH							
4 959.30	44.67	Peak	H	-4.50	40.17	73.98	33.81
	31.14	Average	H		26.64	53.98	27.34
6 392.40	44.20	Peak	H	-2.80	41.40	73.98	32.58
	30.14	Average	H		27.34	53.98	26.64

※ Ant. Pol. : Antenna Polarization
※ Corr. Factor. : Antenna Factor + Cable Loss - Amplifier Gain
※ Result = Reading + Corr. Factor
※ Margin = Limit – Result

10. Power Line Conducted Emission

10.1 Operating environment

Temperature : 24 ℃

Relative humidity : 44 %

10.2 Measurement method

Standard : §15.207

10.3 Test setup

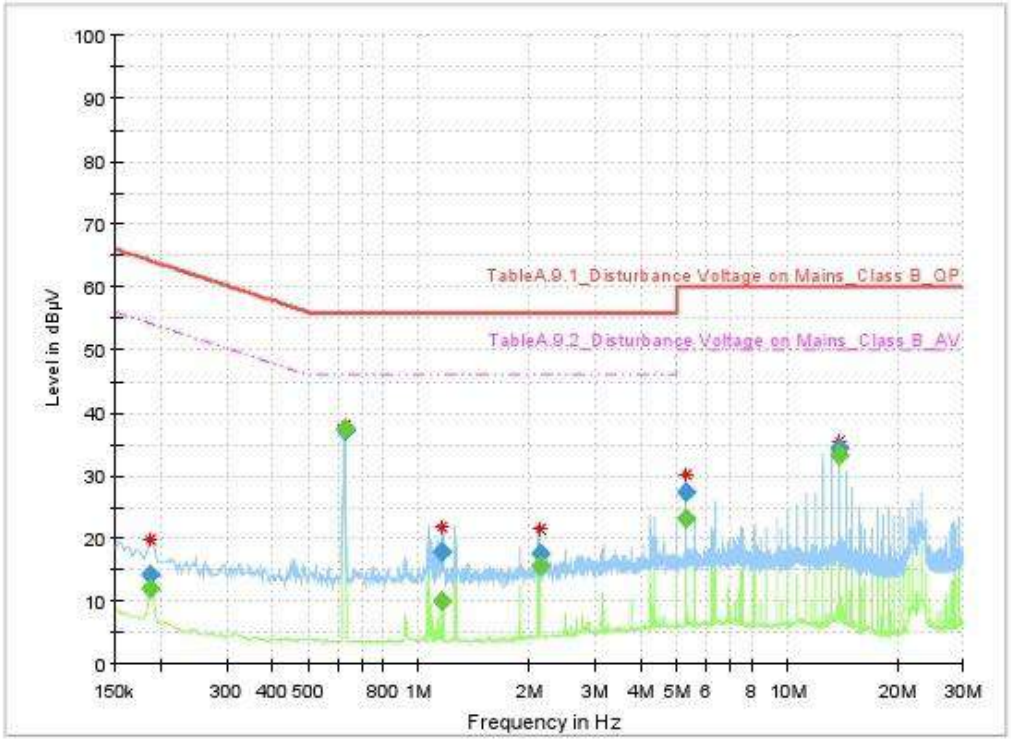
The EUT was placed on a wooden table, 0.8 m height above the floor. Power was fed to the EUT through a 50 Ω / 50 μH + 5 Ω Artificial Mains Network (AMN). The ground plane was electrically bonded to the reference ground system and all power lines were filtered from ambient.

10.4 Test data

Operating mode : Transmit mode

Test Result : Pass

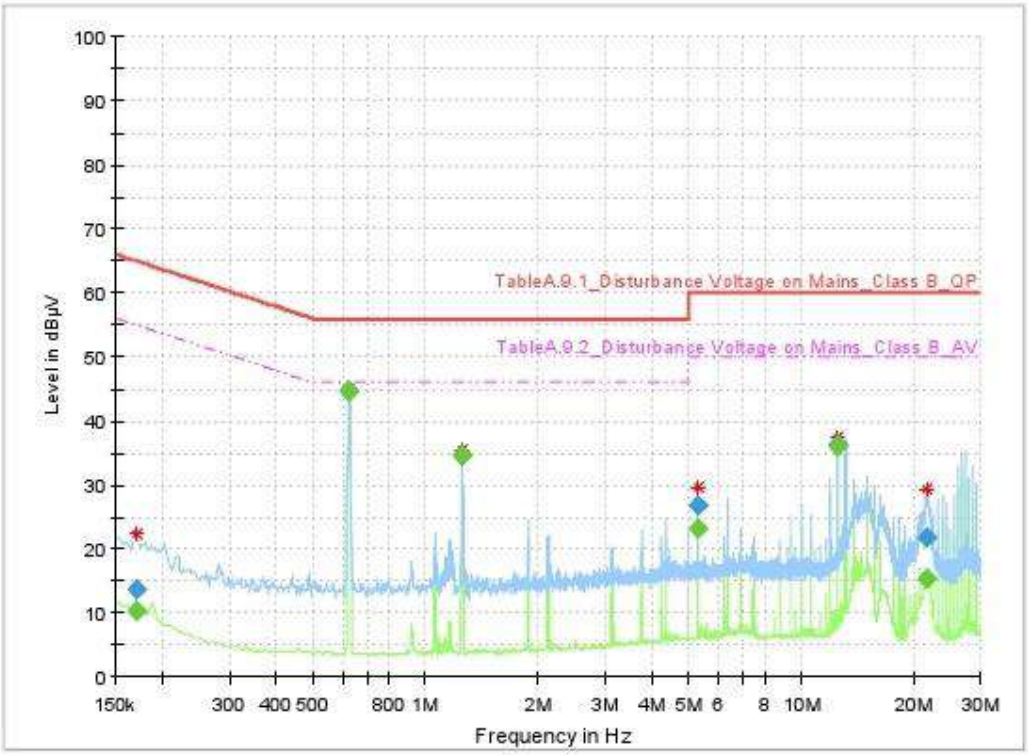
10.4.1 Measured Results & Graph



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	PE	Corr. (dB)
0.186	---	12.11	54.21	42.11	1000.0	9.000	N	FLO	10.51
0.186	14.19	---	64.21	50.03	1000.0	9.000	N	FLO	10.51
0.627	---	37.32	46.00	8.68	1000.0	9.000	N	FLO	10.39
0.627	37.23	---	56.00	18.77	1000.0	9.000	N	FLO	10.39
1.158	---	9.99	46.00	36.01	1000.0	9.000	N	FLO	10.38
1.158	17.75	---	56.00	38.25	1000.0	9.000	N	FLO	10.38
2.123	---	15.76	46.00	30.24	1000.0	9.000	N	FLO	10.37
2.123	17.67	---	56.00	38.33	1000.0	9.000	N	FLO	10.37
5.307	---	23.31	50.00	26.69	1000.0	9.000	N	FLO	10.42
5.307	27.24	---	60.00	32.76	1000.0	9.000	N	FLO	10.42
13.776	---	33.35	50.00	16.65	1000.0	9.000	N	FLO	10.47
13.776	34.34	---	60.00	25.66	1000.0	9.000	N	FLO	10.47

Live line



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	PE	Corr. (dB)
0.170	---	10.41	54.95	44.54	1000.0	9.000	N	FLO	10.54
0.170	13.79	---	64.95	51.16	1000.0	9.000	N	FLO	10.54
0.625	---	44.69	46.00	1.31	1000.0	9.000	N	FLO	10.39
0.625	44.62	---	56.00	11.38	1000.0	9.000	N	FLO	10.39
1.253	---	34.54	46.00	11.46	1000.0	9.000	N	FLO	10.38
1.253	34.53	---	56.00	21.47	1000.0	9.000	N	FLO	10.38
5.307	---	23.14	50.00	26.86	1000.0	9.000	N	FLO	10.42
5.307	26.92	---	60.00	33.08	1000.0	9.000	N	FLO	10.42
12.514	---	35.90	50.00	14.10	1000.0	9.000	N	FLO	10.50
12.514	36.34	---	60.00	23.66	1000.0	9.000	N	FLO	10.50
21.437	---	15.46	50.00	34.54	1000.0	9.000	N	FLO	10.66
21.437	21.92	---	60.00	38.08	1000.0	9.000	N	FLO	10.66

Neutral line

- END OF REPORT.