TEST REPORT

Application No.:	KSCR2410002038HS
FCC ID:	2BH6I-18188
IC:	32880-18188
Applicant:	Kalerm Technology (Suzhou) Co., Ltd
Address of Applicant:	1908 Diamond Road, Weitang Town, Xiangcheng District, 215134 Suzhou, China
Manufacturer:	Kalerm Technology (Suzhou) Co., Ltd
Address of Manufacturer:	1908 Diamond Road, Weitang Town, Xiangcheng District, 215134 Suzhou, China
Factory:	CHINA DRAGON TECHNOLOGY LIMITED
Address of Factory:	B4 Building, Haosan NO.1 Industrial Zone, Nanpu Road ,Xinqiao Street, Baoan District, Shenzhen
Equipment Under Test (EUT):	
EUT Name:	2.4 GHz LAN module
Model No.:	CDW-B18188F-4A
Standard(s) :	47 CFR Part 15, Subpart C 15.247
	RSS-247 Issue 3, August 2023
	RSS-Gen Issue 5 Amendment 2 (February 2021)
Date of Receipt:	2024-08-01
Date of Test:	2024-08-09 to 2024-08-15
Date of Issue:	2024-08-28
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.
Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Member of the SGS Group (SGS SA)

Revision Record			
Version	**Description**	**Date**	**Remark**
00	Original	2024-08-28	/

Authorized for issue by:				
Tested By		Damon zhou **Damon_Zhou/Project Engineer**		
Approved By		Terry Hou **Terry Hou /Reviewer**		

2 Test Summary

Radio Spectrum Technical Requirement				
Item	**FCC Requirement**	**IC Requirement**	**Method**	**Result**
Antenna Requirement	47 CFR Part 15, Subpart C 15.203 & 15.247(c)	RSS-Gen Clause 6.8	N/A	Customer Declaration

N/A: Not applicable

Radio Spectrum Matter Part				
Item	**FCC Requirement**	**IC Requirement**	**Method**	**Result**
Minimum 6dB Bandwidth	47 CFR Part 15, Subpart C 15.247a(2)	RSS-247 Clause 5.2(a)	ANSI C63.10 (2013) Section 11.8.1	Pass
Conducted Average Output Power	47 CFR Part 15, Subpart C 15.247(b)(3)	RSS-247 Clause 5.4(d)	ANSI C63.10 (2013) Section 11.9.2	Pass
Power Spectrum Density	47 CFR Part 15, Subpart C 15.247(e)	RSS-247 Clause 5.2(b)	ANSI C63.10 (2013) Section 11.10.3	Pass
Conducted Band Edges Measurement	47 CFR Part 15, Subpart C 15.247(d)	RSS-247 Clause 5.5	ANSI C63.10 (2013) Section 11.13.3.2	Pass
Conducted Spurious Emissions	47 CFR Part 15, Subpart C 15.247(d)	RSS-247 Clause 5.5	ANSI C63.10 (2013) Section 11.11	Pass
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	RSS-247 Section 3.3 & RSS-Gen Section 8.9	ANSI C63.10 (2013) Section 6.10.5	Pass
Radiated Spurious Emissions	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	RSS-247 Section 3.3 & RSS-Gen Section 8.9	ANSI C63.10 (2013) Section 6.4,6.5,6.6	Pass
99% Bandwidth	-	RSS-Gen Section 6.7	ANSI C63.10 Section 6.9.3	Pass

3 Contents

Page

1 COVER PAGE 1

2 Test Summary 3

3 Contents 4

4 General Information 6

4.1 Details of E.U.T. 6
4.2 Description of Support Units 6
4.3 Power level setting using in test 6

Power level setting using in test: 6

4.4 Measurement Uncertainty 7
4.5 Test Location 8
4.6 Test Facility 8
4.7 Deviation from Standards 8
4.8 Abnormalities from Standard Conditions 8

5 Equipment List 9

6 Radio Spectrum Technical Requirement 10

6.1 Antenna Requirement 10
6.1.1 Test Requirement: 10
6.1.2 Conclusion 10

7 Radio Spectrum Matter Test Results 11

7.1 Radiated Emissions which fall in the restricted bands 11
7.1.1 E.U.T. Operation 11
7.1.2 Test Mode Description 11
7.1.3 Test Setup Diagram 12
7.1.4 Measurement Procedure and Data 12
7.2 Radiated Spurious Emissions Below 1GHz 43
7.2.1 E.U.T. Operation 43
7.2.2 Test Mode Description 43
7.2.3 Test Setup Diagram 43
7.2.4 Measurement Procedure and Data 44
7.3 Radiated Spurious Emissions Above 1GHz 47
7.3.1 E.U.T. Operation 47
7.3.2 Test Mode Description 47
7.3.3 Test Setup Diagram 47
7.3.4 Measurement Procedure and Data 48
7.4 Conducted Average Output Power 73
7.4.1 E.U.T. Operation 73
7.4.2 Test Mode Description 73
7.4.3 Test Setup Diagram 73
7.4.4 Measurement Procedure and Data 74
7.5 Minimum 6dB Bandwidth 75
7.5.1 E.U.T. Operation 75
7.5.2 Test Mode Description 75
7.5.3 Test Setup Diagram 75
7.5.4 Measurement Procedure and Data 75

7.6 Power Spectrum Density 76
7.6.1 E.U.T. Operation 76
7.6.2 Test Mode Description 76
7.6.3 Test Setup Diagram 76
7.6.4 Measurement Procedure and Data 76
7.7 Conducted Band Edges Measurement 77
7.7.1 E.U.T. Operation 77
7.7.2 Test Mode Description 77
7.7.3 Test Setup Diagram 77
7.7.4 Measurement Procedure and Data 78
7.8 Conducted Spurious Emissions 79
7.8.1 E.U.T. Operation 79
7.8.2 Test Mode Description 79
7.8.3 Test Setup Diagram 79
7.8.4 Measurement Procedure and Data 80
7.9 99% Bandwidth 80
7.9.1 E.U.T. Operation 80
7.9.2 Test Mode Description 80
7.9.3 Test Setup Diagram 80
7.9.4 Measurement Procedure and Data 80

8 Test Setup Photo 81

9 EUT Constructional Details (EUT Photos) 81

10 Appendix 81

10.1 Appendix A: DTS Bandwidth 81
10.1.1 Result 81
10.1.2 Test Graphs 82
10.2 Appendix B: Occupied Channel Bandwidth 88
10.2.1 Test Result 88
10.2.2 Test Graphs 89
10.3 Appendix C: Maximum conducted output power 95
10.3.1 Test Result 95
10.4 Test Graphs 96
10.5 Appendix D: Maximum power spectral density 102
10.5.1 Test Result 102
10.6 Test Graphs 103
10.7 Appendix E: Band edge measurements 109
10.7.1 Test Result 109
10.8 Test Graphs 110
10.9 Appendix F: Conducted Spurious Emission 114
10.9.1 Test Result 114
10.10 Test Graphs 115

11 Appendix G: Duty Cycle 133

11.1 Test Result 133
11.2 Test Graphs 134

4 General Information

4.1 Details of E.U.T.

Power supply:	DC 3.3V
Test Voltage:	DC 3.3V
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz;802.11n(HT40): 2422MHz to 2452MHz
Modulation Type:	802.11b: DSSS (CCK, DQPSK, DBPSK);802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channels:	802.11b/g/n(HT20):11;802.11n(HT40):7
Channel Spacing:	5MHz
Antenna Type:	PCB Antenna
Antenna Gain:	3.96dBi (Provided by manufacturer)
S/N:	0016EAAE3C40
Firmware Version:	g1a2e952f9

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Laptop	LENOVO	L460	-

4.3 Power level setting using in test

Power level setting using in test:

Channel	802.11b	802.11g	802.11n(HT20)
1	30	36	28
6	30	36	28
11	30	36	28

Channel	802.11n(HT40)
3	24
6	24
9	24

4.4 Measurement Uncertainty

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

4.5 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

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

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

No tests were sub-contracted.

Note:

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

4.6 Test Facility

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

- **A2LA**

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

- **FCC**

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

- **ISED**

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

- **VCCI**

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

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

None

5 Equipment List

Item	Equipment	Manufacturer	Model	Inventory No	Cal Date	Cal. Due Date
RF Conducted Test						
1	Spectrum Analyzer	Keysight	N9020A	KUS1911E004-2	08/01/2024	07/31/2025
2	Spectrum Analyzer	Keysight	N9020A	KUS2001M001-2	08/01/2024	07/31/2025
3	Spectrum Analyzer	Keysight	N9030B	KSEM021-1	01/15/2024	01/14/2025
4	Signal Generator	R&S	SMBV100B	KSEM032	03/19/2024	03/18/2025
5	Signal Generator	R&S	SMW200A	KSEM020-1	08/02/2024	08/01/2025
6	Signal Generator	Agilent	N5182A	KUS2001M001-1	08/01/2024	07/31/2025
7	Signal Generator	Agilent	E8257C	KS301066	08/06/2024	08/05/2025
8	Radio Communication Test Station	Anritsu	MT8000A	KSEM001-1	08/01/2024	07/31/2025
9	Radio Communication Analyzer	Anritsu	MT8821C	KSEM002-1	03/19/2024	03/18/2025
10	Universal Radio Communication Tester	R&S	CMW500	KUS1911E004-1	08/12/2024	08/11/2025
11	Switcher	TST	FY562	KUS2001M001-4	01/15/2024	01/14/2025
12	Conducted Test Cable	Thermax	RF01-RF04	CZ301111-CZ301120	01/15/2024	01/14/2025
13	Temp. / Humidity Chamber	TERCHY	MHK-120AK	KS301190	08/26/2024	08/25/2025
14	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-5	03/19/2024	03/18/2025
15	Software	BST	TST-PASS	/	NCR	NCR
RF Radiated Test						
1	Spectrum Analyzer	R&S	FSV40	KUS1806E003	08/06/2024	08/05/2025
2	Universal Radio Communication Tester	R&S	CMW500	KSEM009-1	03/19/2024	03/18/2025
4	Loop Antenna	COM-POWER	AL-130R	KUS1806E001	03/18/2023	03/17/2025
5	Bilog Antenna	TESEQ	CBL 6112D	KUS1806E005	06/29/2023	06/28/2025
6	Bilog Antenna	TESEQ	CBL 6112D	KUS1806E006	03/19/2024	03/18/2025
7	Horn-antenna(1-18GHz)	Schwarzbeck	BBHA9120D	KS301079	03/23/2024	08/22/2026
8	Horn-antenna(1-18GHz)	ETS-LINDGREN	3117	KS301186	04/07/2023	04/06/2025
9	Horn Antenna(18-40GHz)	Schwarzbeck	BBHA9170	CZ301058	01/07/2024	01/06/2026
10	Amplifier(30MHz~18GHz)	PANSHAN TECHNOLOGY	LNA:1~18G	KSEM010-1	01/15/2024	01/14/2025
11	Amplifier(18~40GHz)	PANSHAN TECHNOLOGY	LNA180400G40	KSEM038	08/12/2024	08/11/2025
12	RE Test Cable	REBES MICROWAVE	/	CZ301097	08/12/2024	08/11/2025
13	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-4	03/21/2024	03/20/2025
14	Software	Faratronic	EZ_EMC-v 3A1	/	NCR	NCR
15	Software	ESE	E3_V 6.111221a	/	NCR	NCR

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

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

6.1.2 Conclusion

Standard Requirement:

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

15.247(b) (4) requirement:

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

EUT Antenna:

The antenna is PCB antenna and no consideration of replacement. The best case gain of the antenna is 3.96dBi.

Antenna location: Refer to internal photo.

7 Radio Spectrum Matter Test Results

7.1 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209
Test Method: ANSI C63.10 (2013) Section 6.10.5

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3
Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.		

7.1.1 E.U.T. Operation

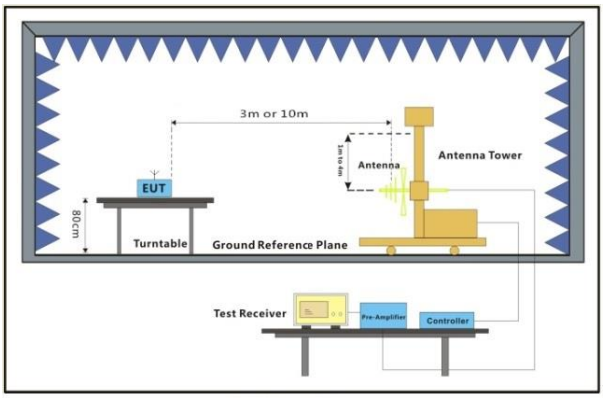
Operating Environment:

Temperature: 25.2 °C Humidity: 53.0 % RH Atmospheric Pressure: 1010 mbar

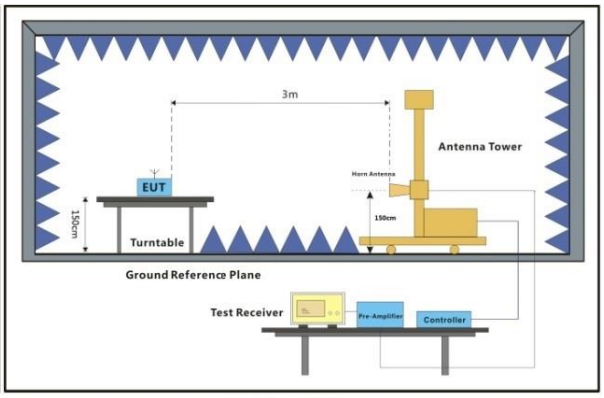
7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.1.3 Test Setup Diagram



30MHz-1GHz



Above 1GHz

7.1.4 Measurement Procedure and Data

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

h. Test the EUT in the lowest channel, the middle channel, the Highest channel.

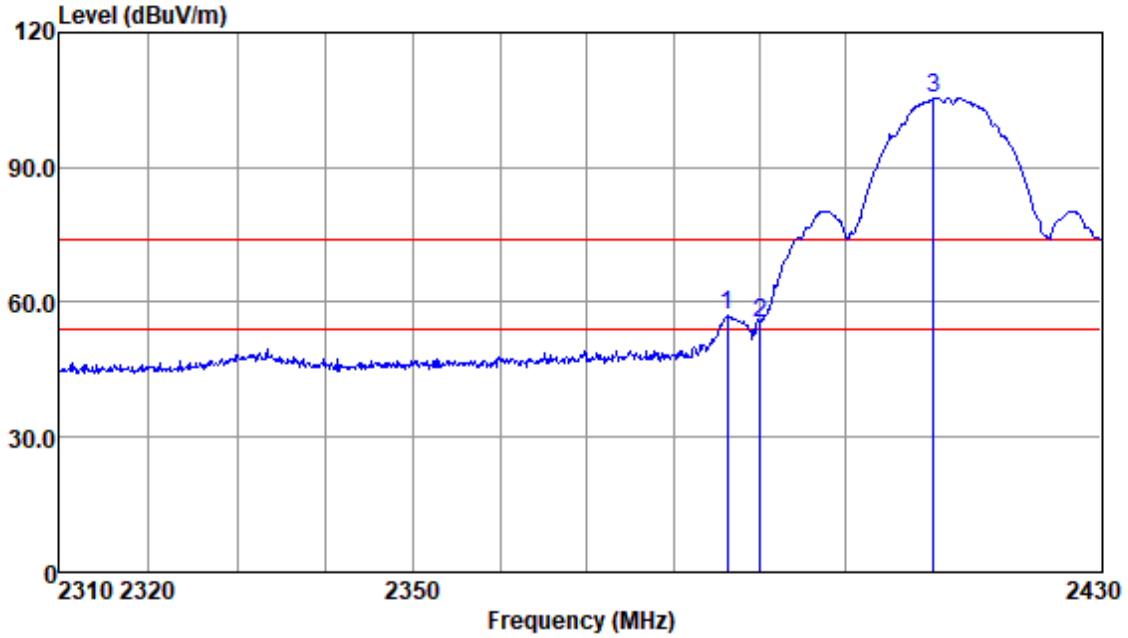
i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

j. Repeat above procedures until all frequencies measured was complete.

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

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

Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low

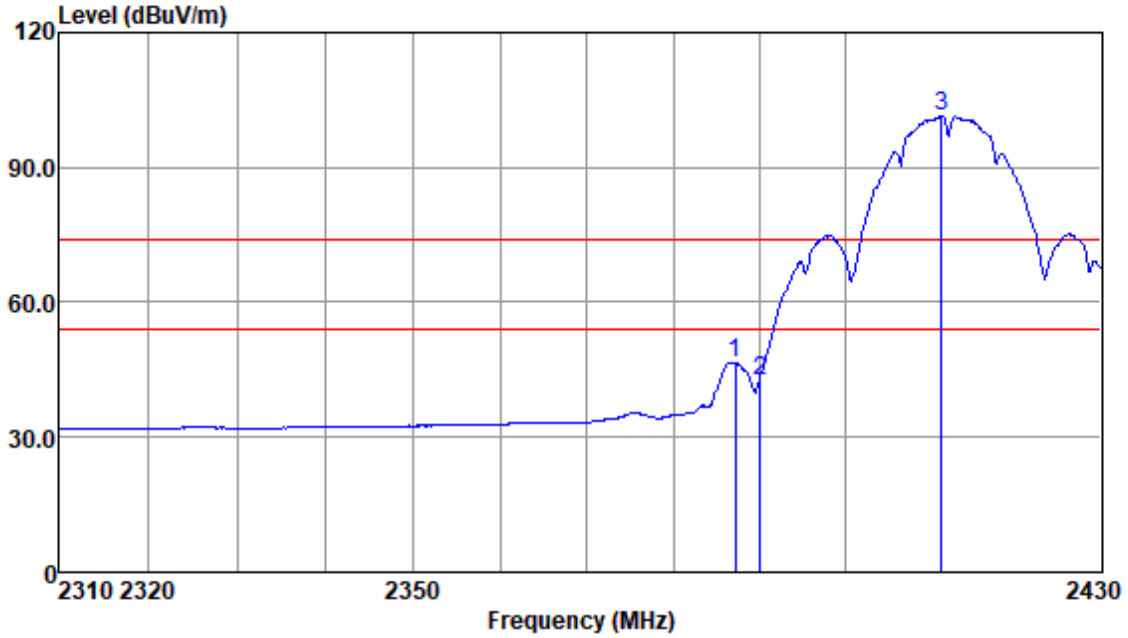


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2386.22	59.96	28.80	3.34	35.18	56.92	74.00	-17.08	Peak
2390.00	58.31	28.80	3.34	35.18	55.27	74.00	-18.73	Peak
2410.27	108.48	28.89	3.33	35.20	105.50	74.00	31.50	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low

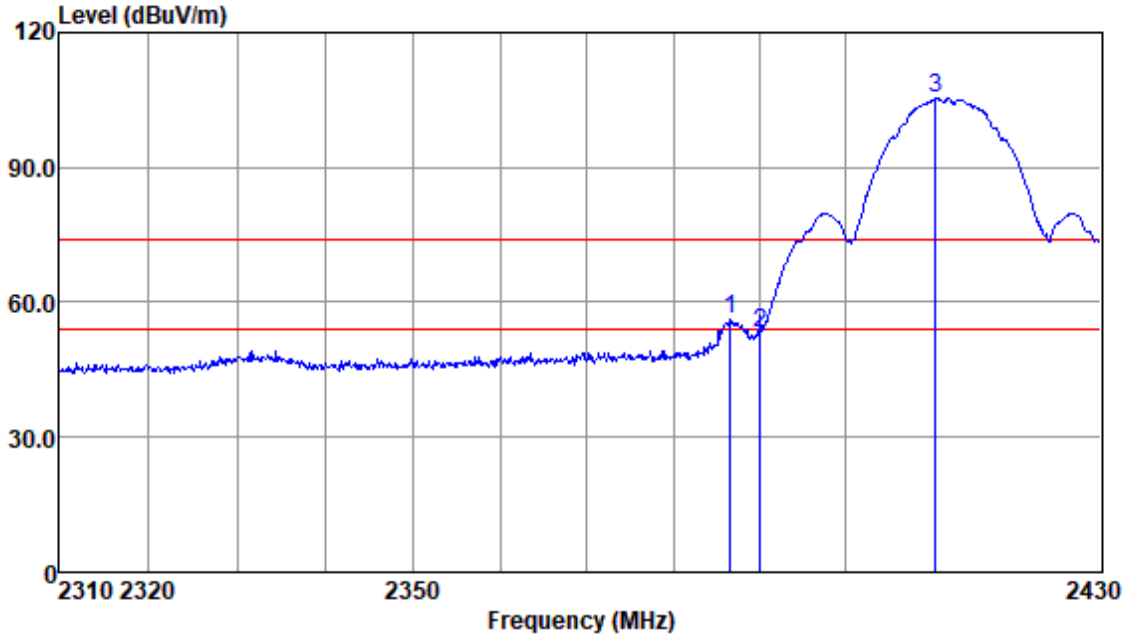


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2387.19	49.61	28.80	3.34	35.18	46.57	54.00	-7.43	Average
2390.00	45.63	28.80	3.34	35.18	42.59	54.00	-11.41	Average
2411.24	104.54	28.90	3.33	35.20	101.57	54.00	47.57	Average

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low

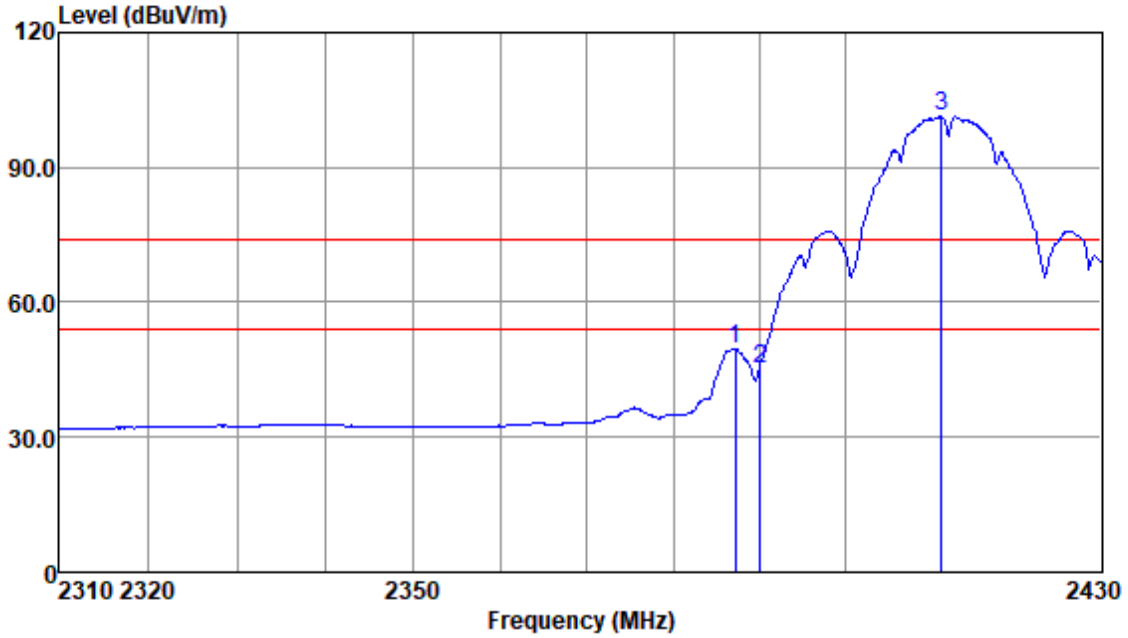


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2386.58	59.09	28.80	3.34	35.18	56.05	74.00	-17.95	Peak
2390.00	56.27	28.80	3.34	35.18	53.23	74.00	-20.77	Peak
2410.51	108.56	28.89	3.33	35.20	105.58	74.00	31.58	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low

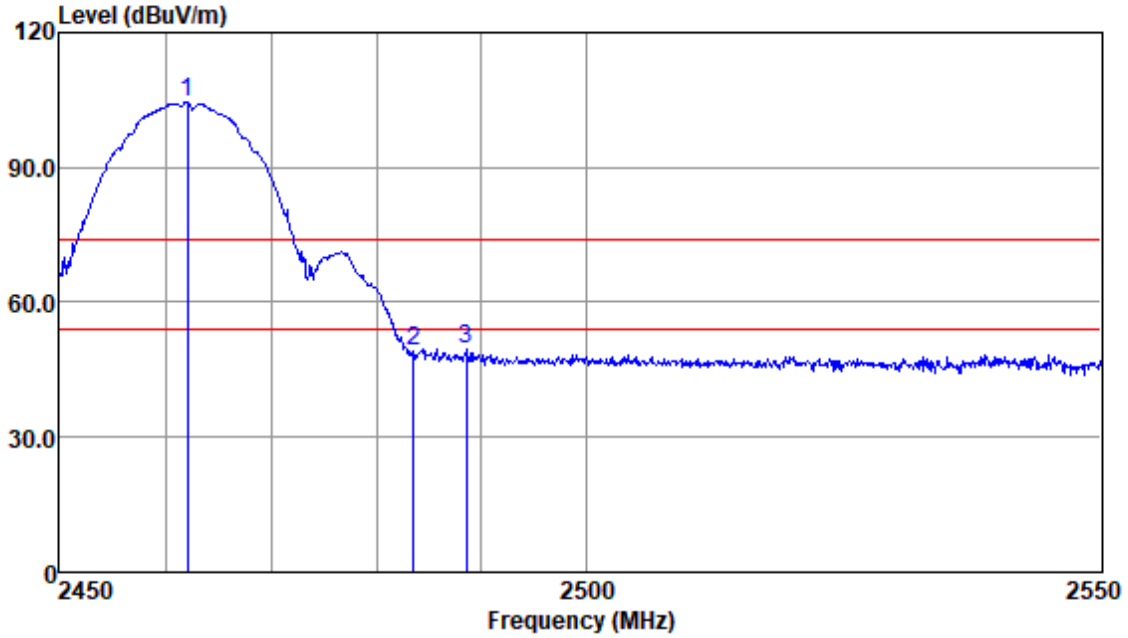


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2387.19	52.61	28.80	3.34	35.18	49.57	54.00	-4.43	Average
2390.00	48.11	28.80	3.34	35.18	45.07	54.00	-8.93	Average
2411.24	104.43	28.90	3.33	35.20	101.46	54.00	47.46	Average

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High

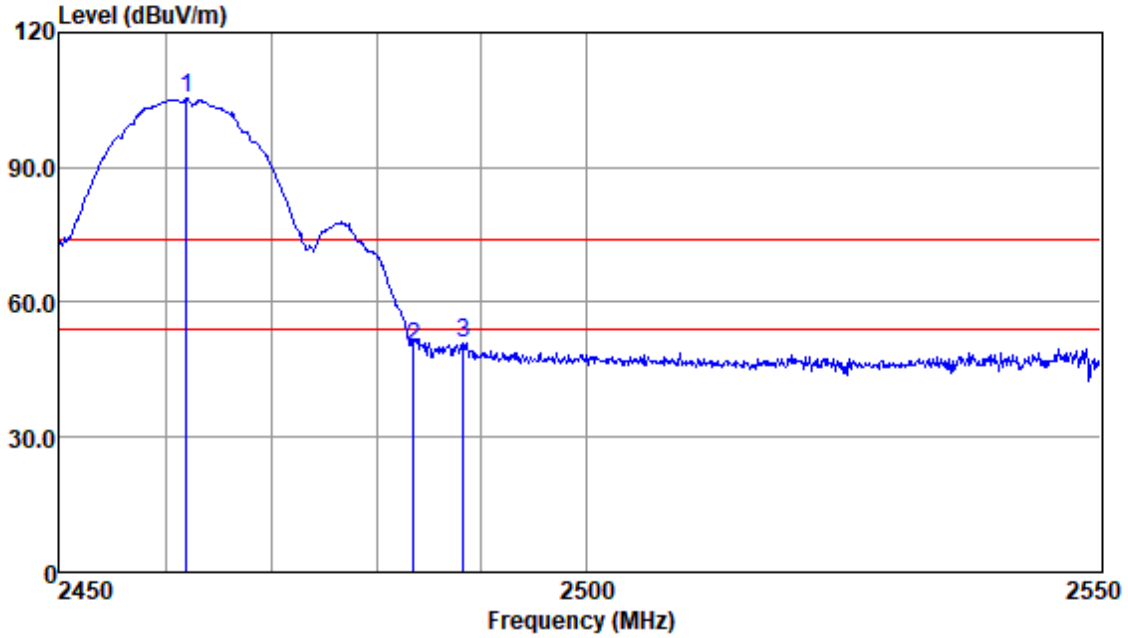


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2462.09	107.23	29.05	3.43	35.24	104.47	74.00	30.47	Peak
2483.50	51.88	29.09	3.36	35.26	49.07	74.00	-24.93	Peak
2488.63	52.53	29.09	3.36	35.26	49.72	74.00	-24.28	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High

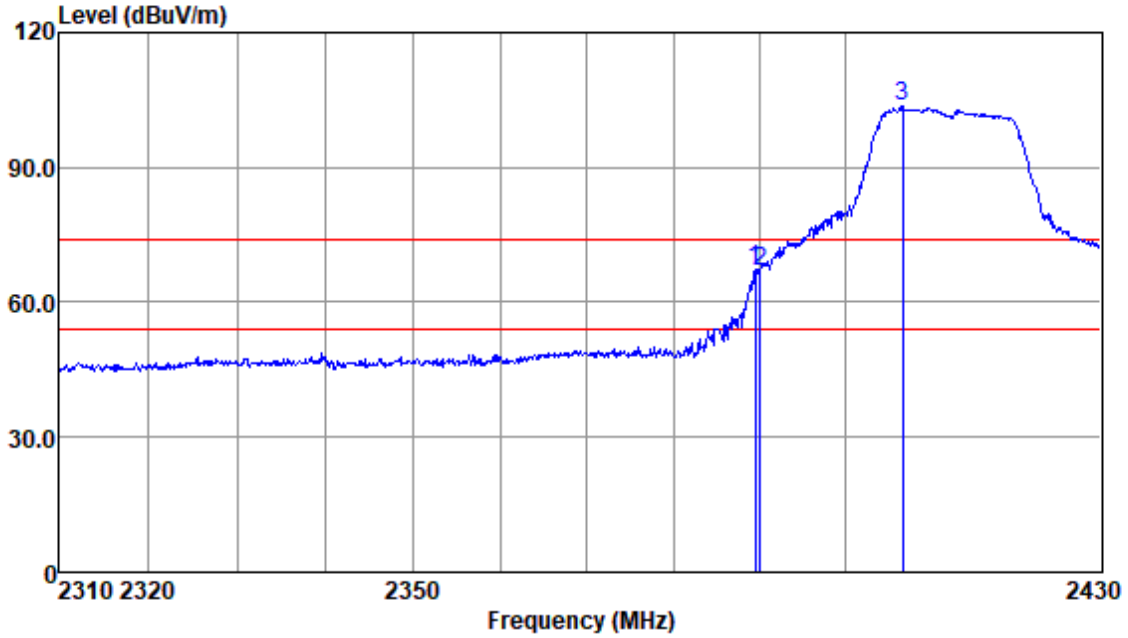


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2461.99	108.11	29.05	3.43	35.24	105.35	74.00	31.35	Peak
2483.50	53.05	29.09	3.36	35.26	50.24	74.00	-23.76	Peak
2488.33	53.95	29.09	3.36	35.26	51.14	74.00	-22.86	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:Low

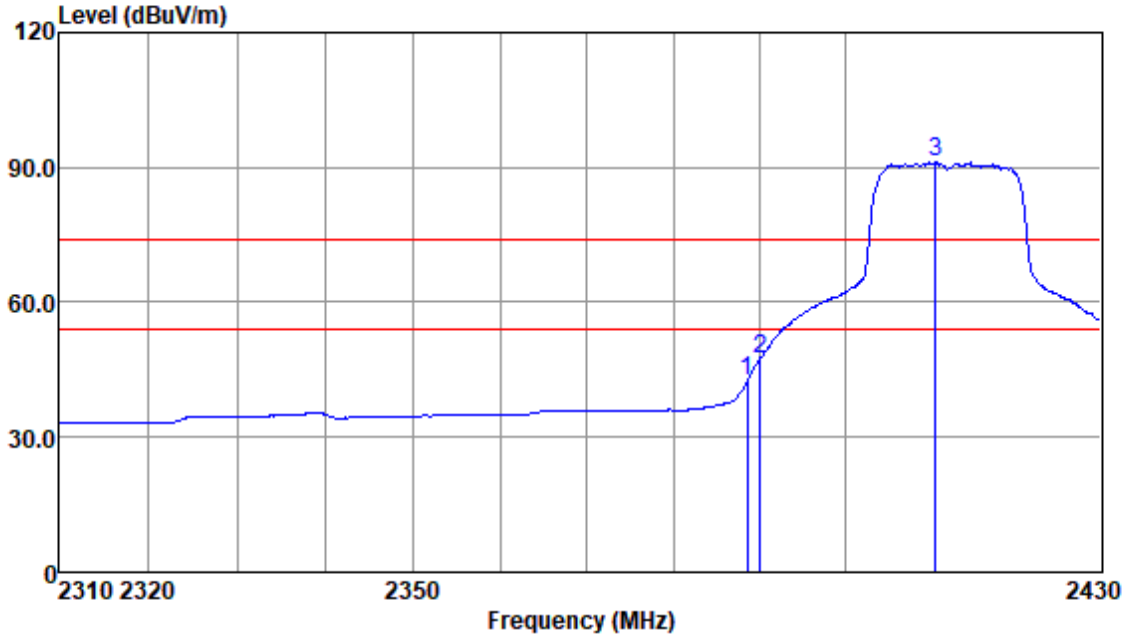


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2389.48	70.40	28.80	3.34	35.18	67.36	74.00	-6.64	Peak
2390.00	69.73	28.80	3.34	35.18	66.69	74.00	-7.31	Peak
2406.61	106.54	28.89	3.33	35.20	103.56	74.00	29.56	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:Low

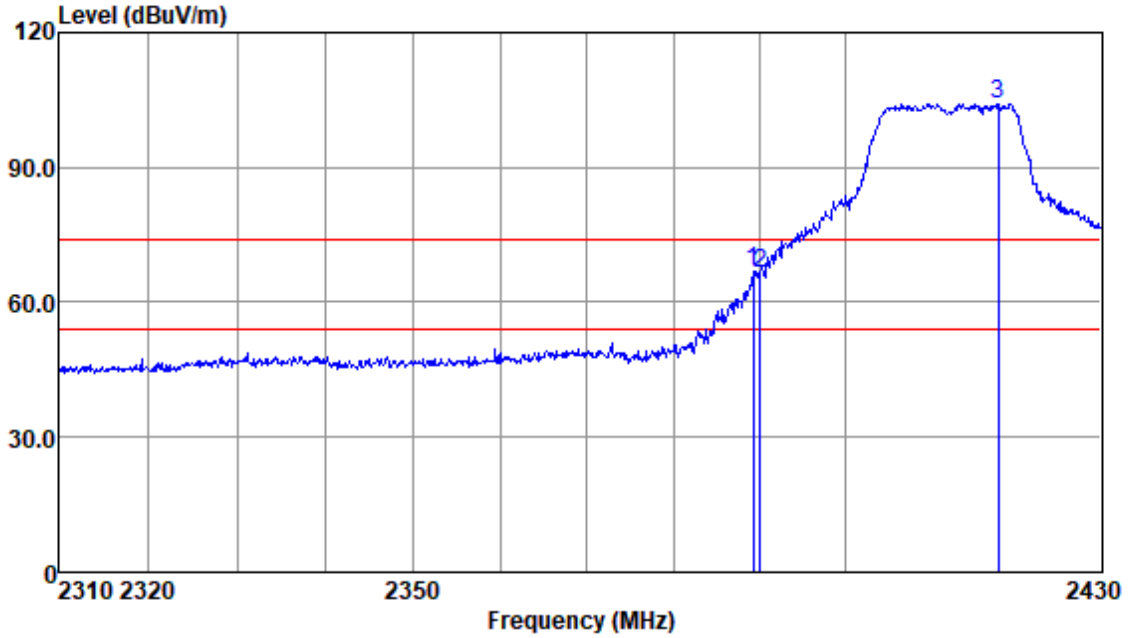


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2388.52	45.67	28.80	3.34	35.18	42.63	54.00	-11.37	Average
2390.00	50.44	28.80	3.34	35.18	47.40	54.00	-6.60	Average
2410.51	94.05	28.89	3.33	35.20	91.07	54.00	37.07	Average

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:Low

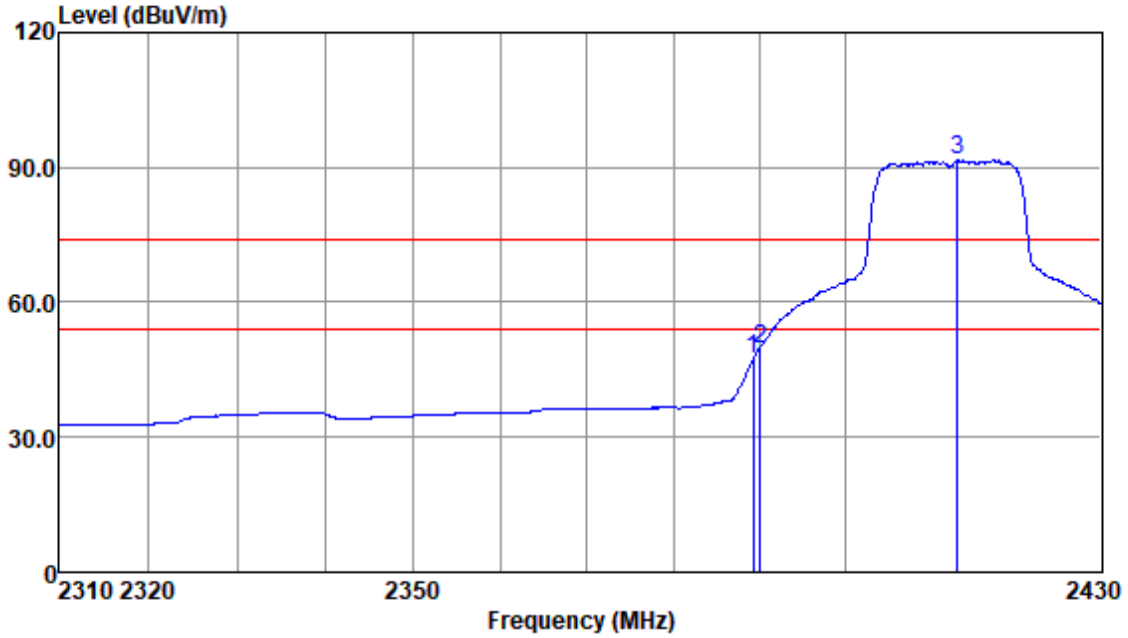


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2389.24	69.74	28.80	3.34	35.18	66.70	74.00	-7.30	Peak
2390.00	69.41	28.80	3.34	35.18	66.37	74.00	-7.63	Peak
2417.85	107.19	28.90	3.33	35.20	104.22	74.00	30.22	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:Low

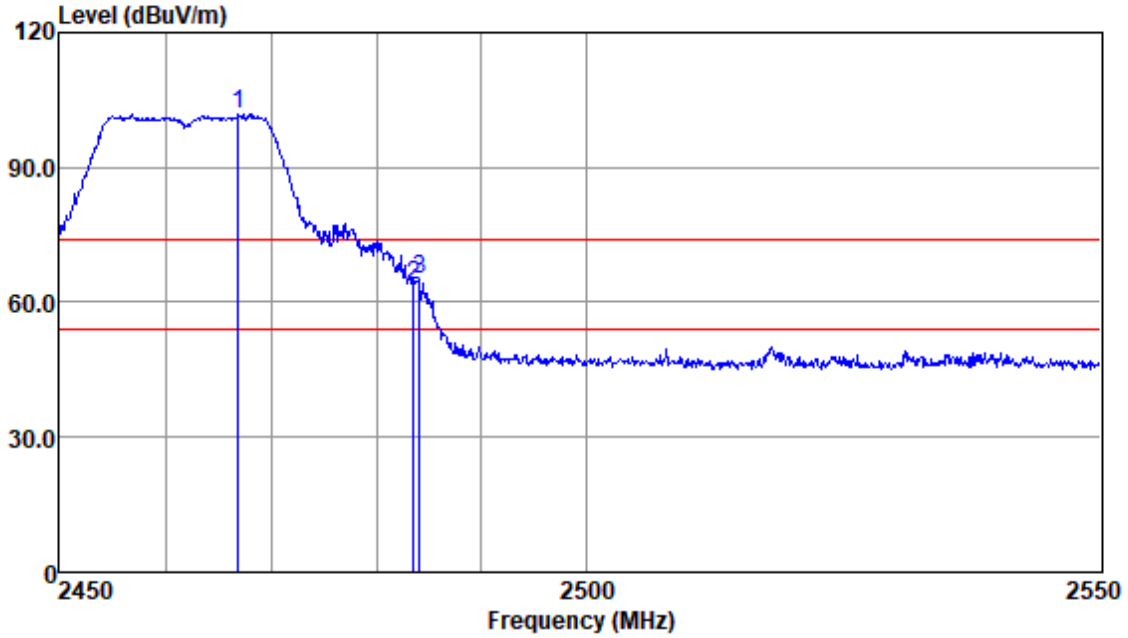


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2389.24	50.53	28.80	3.34	35.18	47.49	54.00	-6.51	Average
2390.00	52.82	28.80	3.34	35.18	49.78	54.00	-4.22	Average
2413.08	94.80	28.90	3.33	35.20	91.83	54.00	37.83	Average

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:High

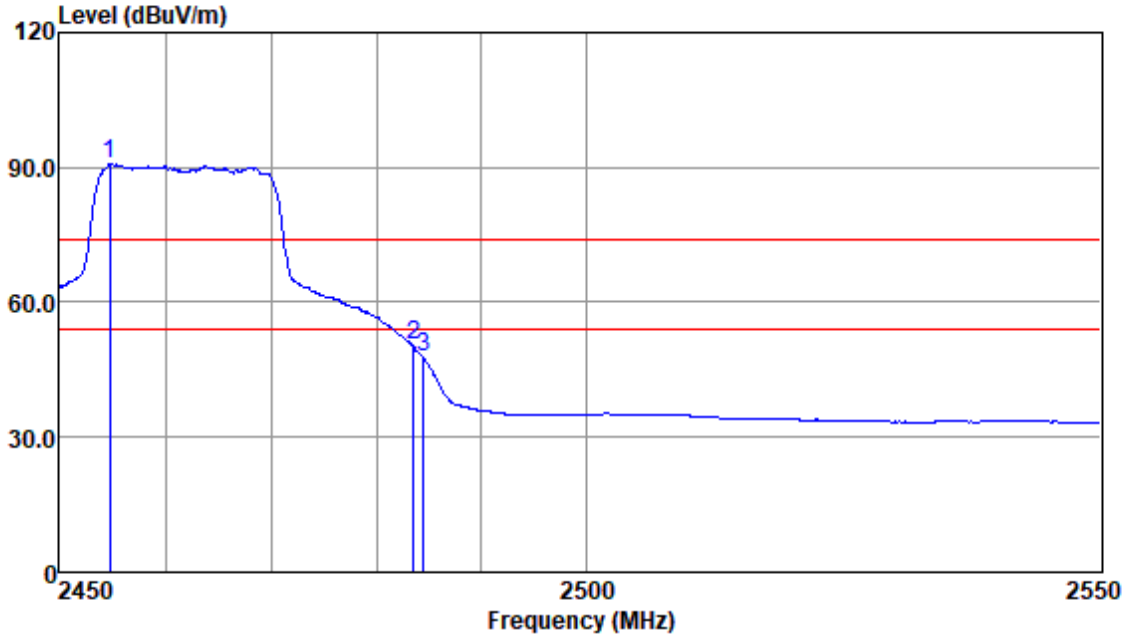


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2466.92	104.66	29.05	3.43	35.24	101.90	74.00	27.90	Peak
2483.50	66.73	29.09	3.36	35.26	63.92	74.00	-10.08	Peak
2484.15	67.91	29.09	3.36	35.26	65.10	74.00	-8.90	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:High

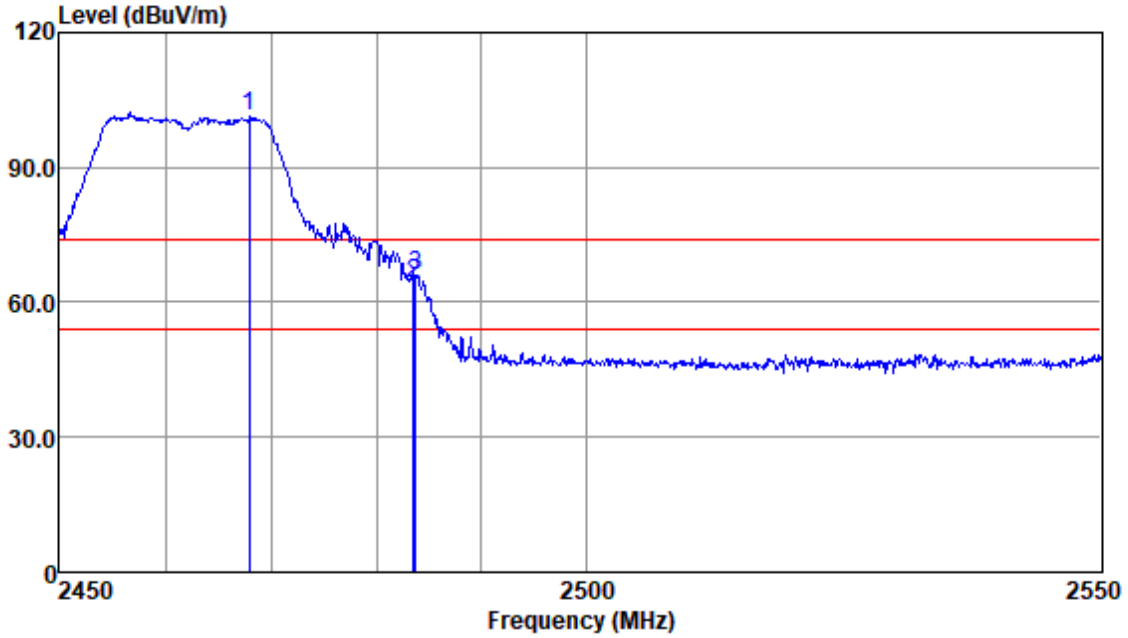


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2454.71	93.59	29.04	3.39	35.24	90.78	54.00	36.78	Average
2483.50	53.13	29.09	3.36	35.26	50.32	54.00	-3.68	Average
2484.45	50.43	29.09	3.36	35.26	47.62	54.00	-6.38	Average

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:High

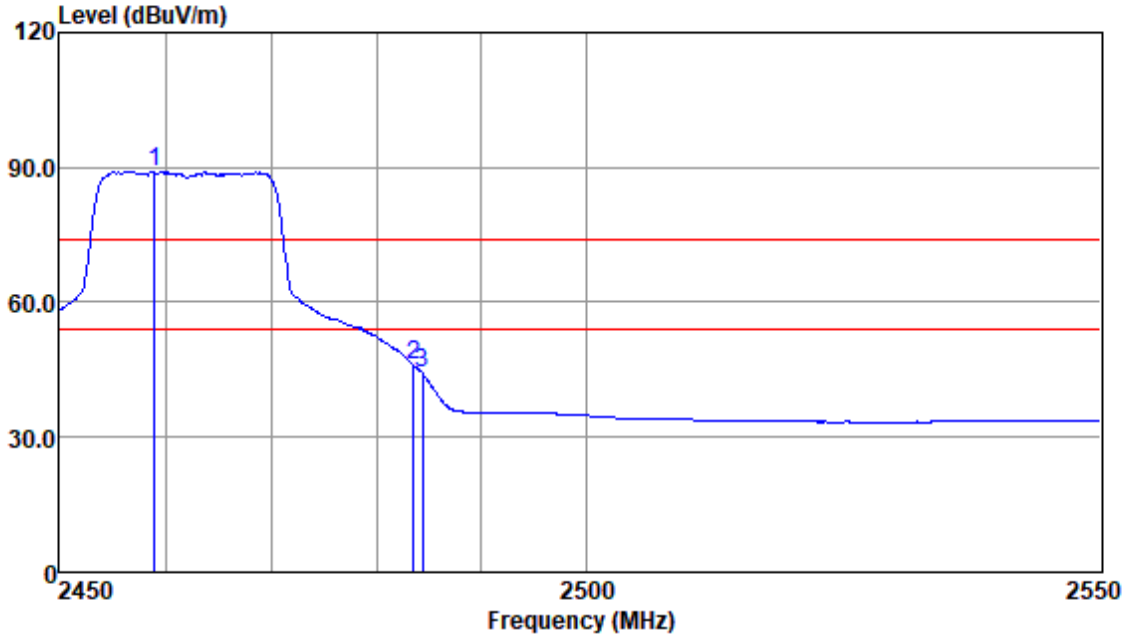


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2467.90	103.99	29.06	3.41	35.25	101.21	74.00	27.21	Peak
2483.50	67.15	29.09	3.36	35.26	64.34	74.00	-9.66	Peak
2483.75	68.87	29.09	3.36	35.26	66.06	74.00	-7.94	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:High

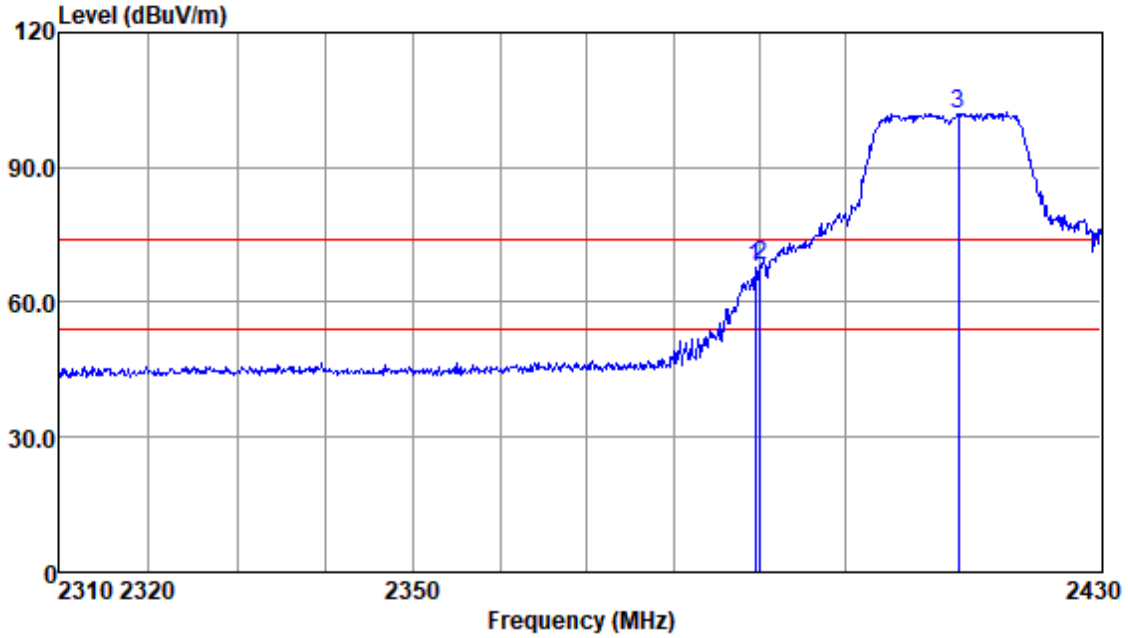


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2458.94	92.02	29.04	3.39	35.24	89.21	54.00	35.21	Average
2483.50	49.08	29.09	3.36	35.26	46.27	54.00	-7.73	Average
2484.35	47.00	29.09	3.36	35.26	44.19	54.00	-9.81	Average

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low

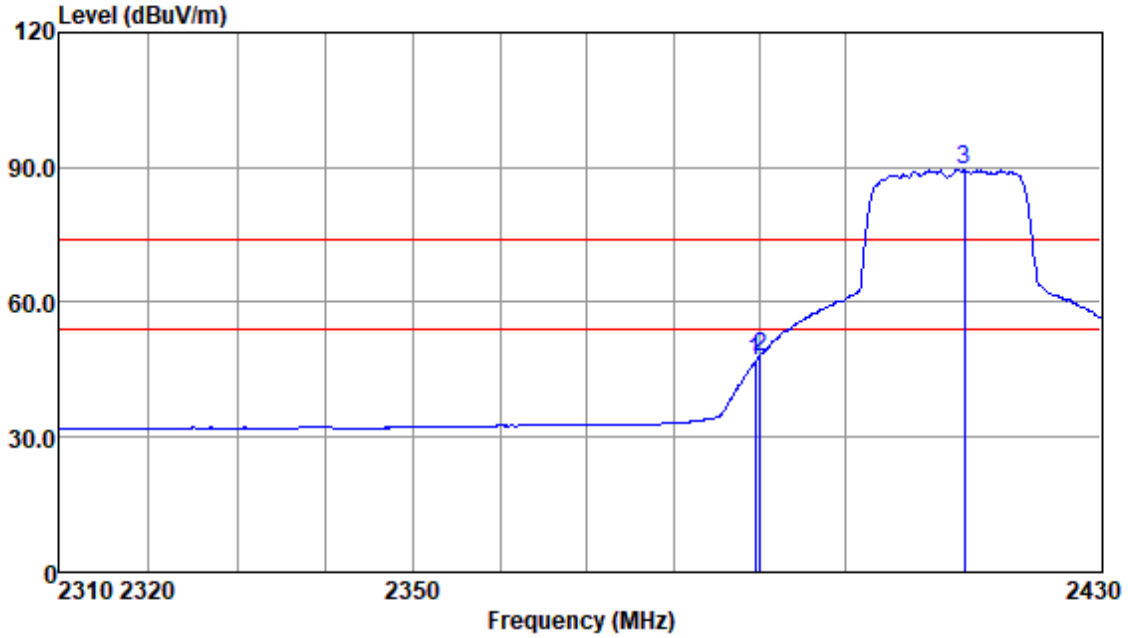


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2389.48	70.61	28.80	3.34	35.18	67.57	74.00	-6.43	Peak
2390.00	71.17	28.80	3.34	35.18	68.13	74.00	-5.87	Peak
2413.20	104.95	28.90	3.33	35.20	101.98	74.00	27.98	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low

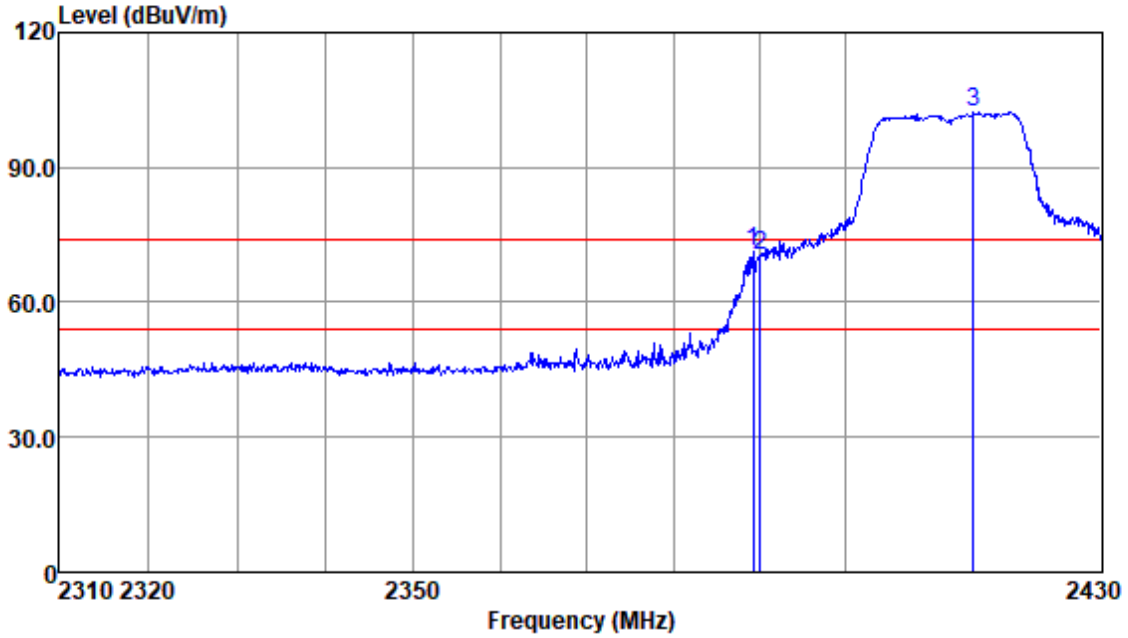


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2389.48	49.83	28.80	3.34	35.18	46.79	54.00	-7.21	Average
2390.00	51.08	28.80	3.34	35.18	48.04	54.00	-5.96	Average
2413.93	92.47	28.90	3.33	35.20	89.50	54.00	35.50	Average

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low

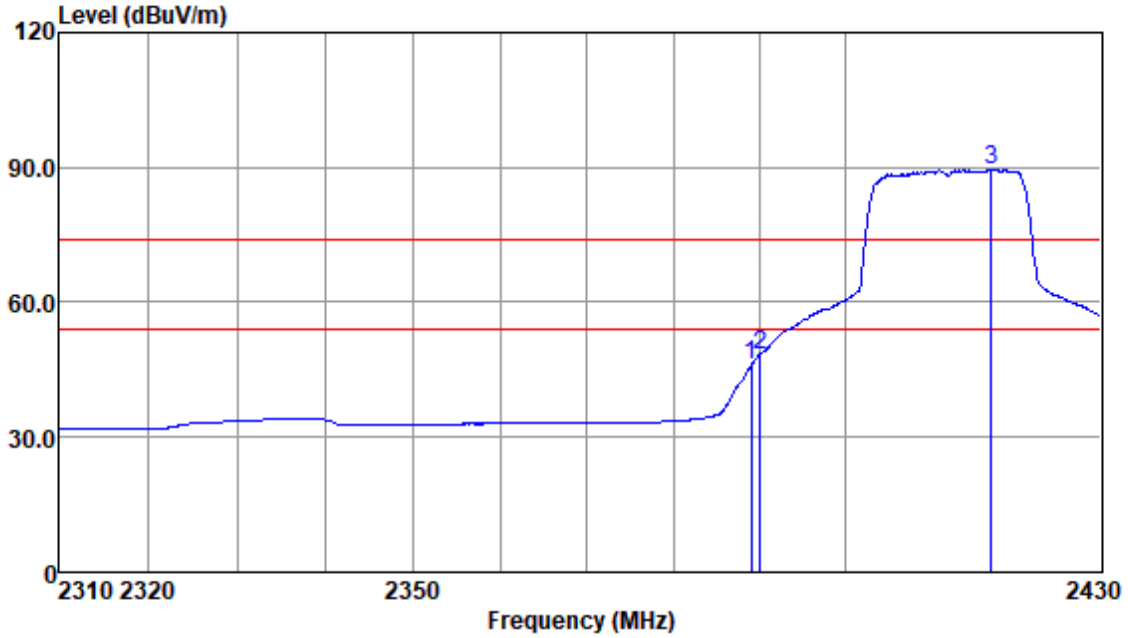


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2389.24	74.48	28.80	3.34	35.18	71.44	74.00	-2.56	Peak
2390.00	73.31	28.80	3.34	35.18	70.27	74.00	-3.73	Peak
2414.91	105.08	28.90	3.33	35.20	102.11	74.00	28.11	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low

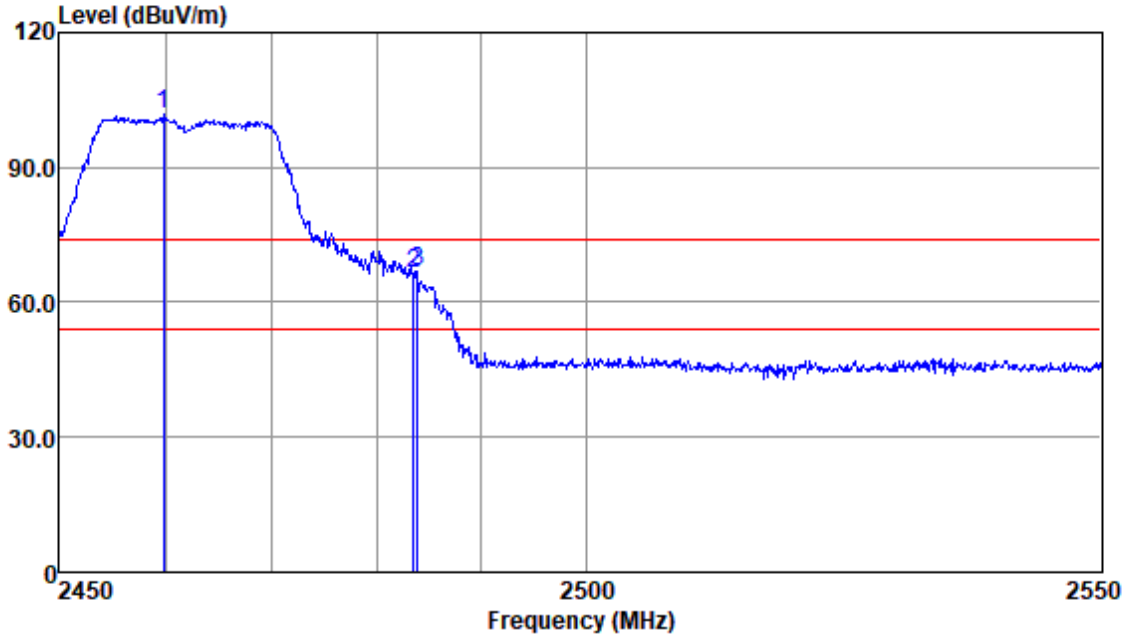


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2389.00	49.01	28.80	3.34	35.18	45.97	54.00	-8.03	Average
2390.00	51.47	28.80	3.34	35.18	48.43	54.00	-5.57	Average
2416.99	92.60	28.90	3.33	35.20	89.63	54.00	35.63	Average

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High

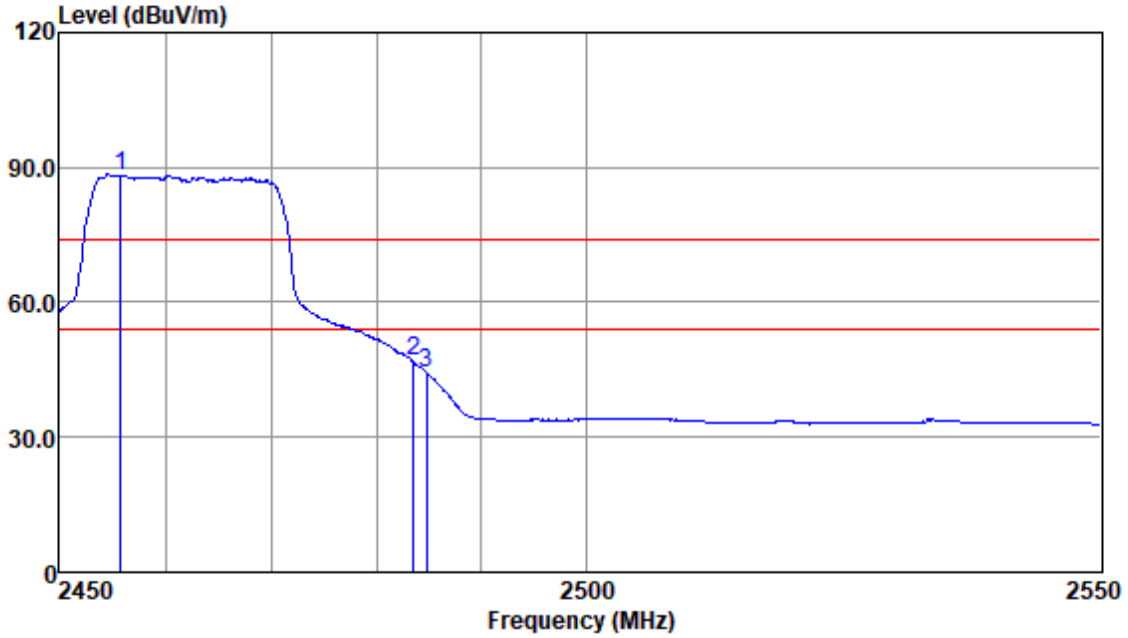


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2459.82	104.77	29.04	3.39	35.24	101.96	74.00	27.96	Peak
2483.50	69.23	29.09	3.36	35.26	66.42	74.00	-7.58	Peak
2483.95	69.64	29.09	3.36	35.26	66.83	74.00	-7.17	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High

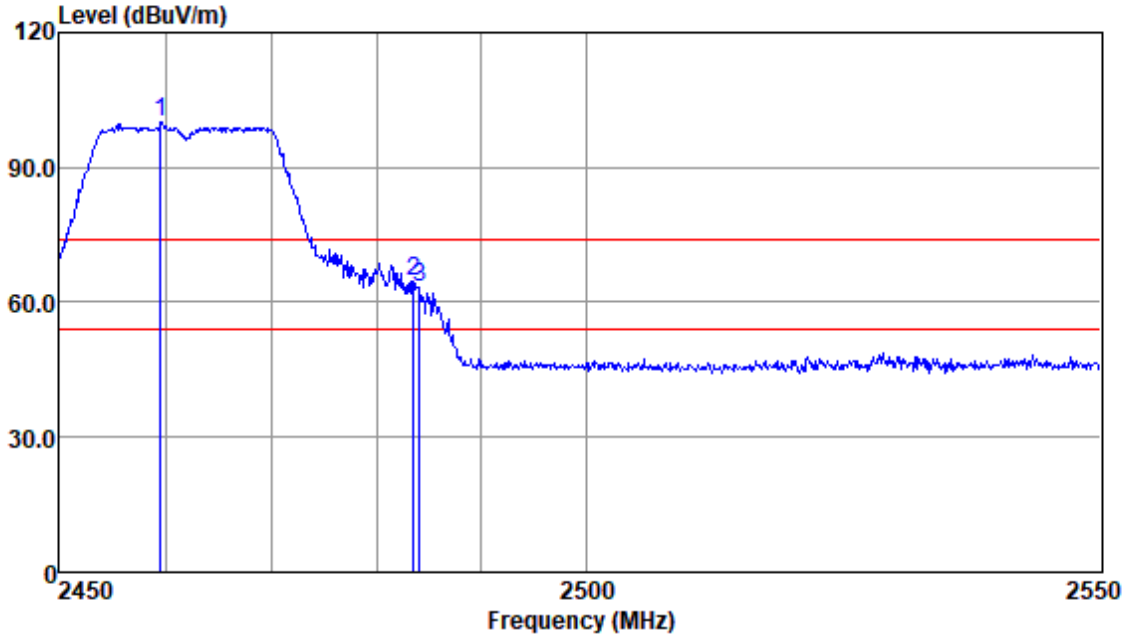


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2455.79	91.13	29.04	3.39	35.24	88.32	54.00	34.32	Average
2483.50	49.69	29.09	3.36	35.26	46.88	54.00	-7.12	Average
2484.75	47.24	29.09	3.36	35.26	44.43	54.00	-9.57	Average

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High

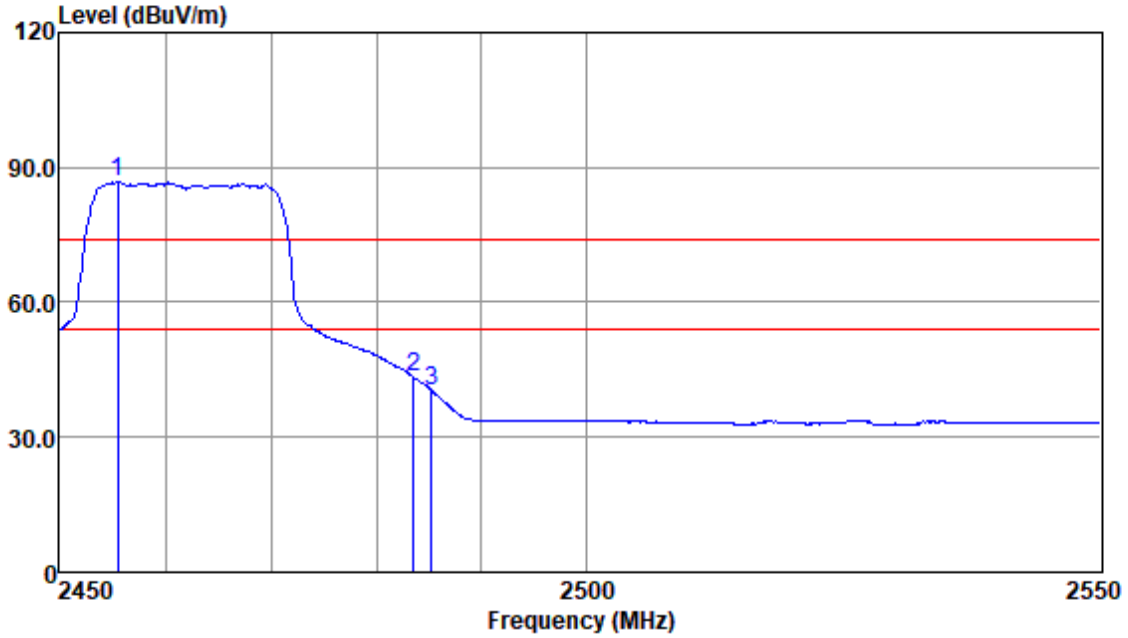


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2459.53	103.03	29.04	3.39	35.24	100.22	74.00	26.22	Peak
2483.50	67.28	29.09	3.36	35.26	64.47	74.00	-9.53	Peak
2484.15	66.22	29.09	3.36	35.26	63.41	74.00	-10.59	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High

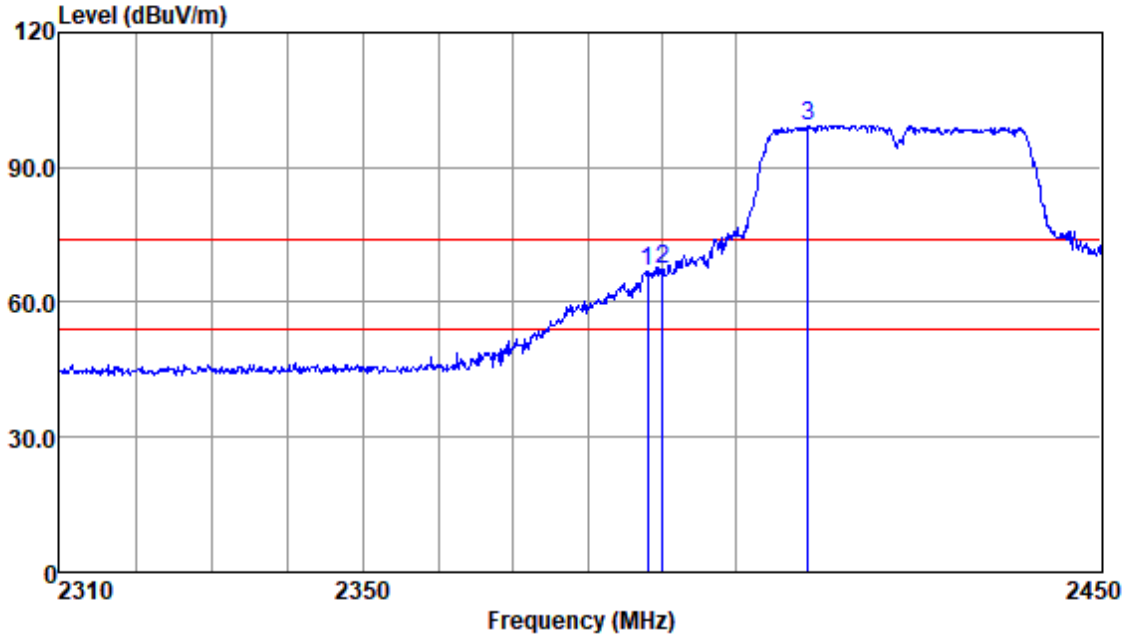


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2455.50	89.71	29.04	3.39	35.24	86.90	54.00	32.90	Average
2483.50	46.27	29.09	3.36	35.26	43.46	54.00	-10.54	Average
2485.24	43.22	29.09	3.36	35.26	40.41	54.00	-13.59	Average

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low

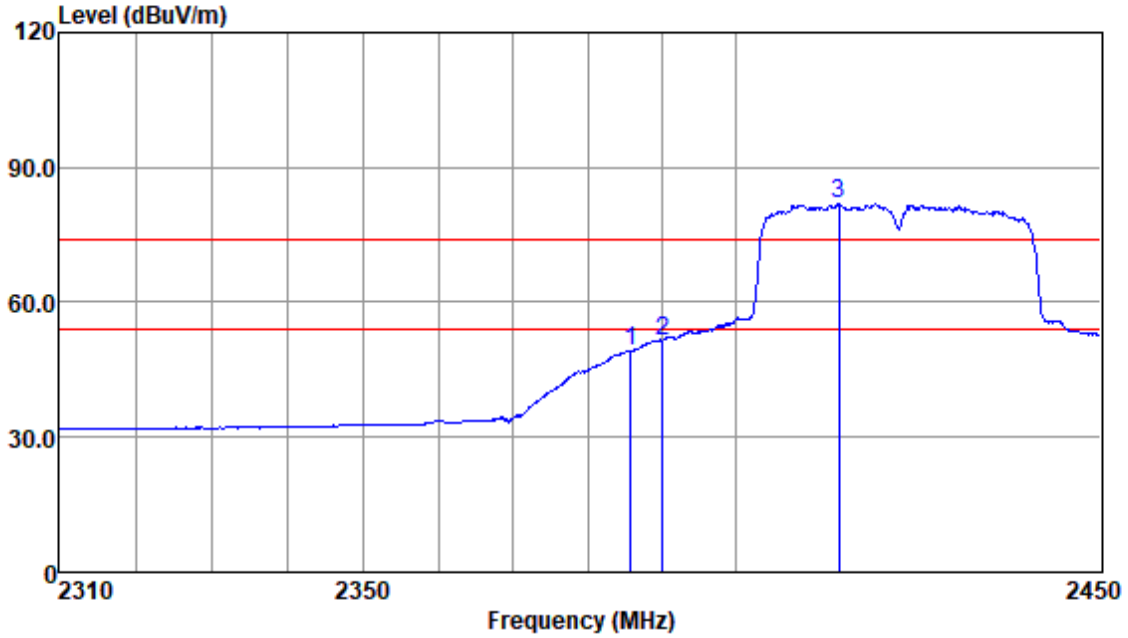


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2388.09	70.11	28.80	3.34	35.18	67.07	74.00	-6.93	Peak
2390.00	70.17	28.80	3.34	35.18	67.13	74.00	-6.87	Peak
2409.68	102.26	28.89	3.33	35.20	99.28	74.00	25.28	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low

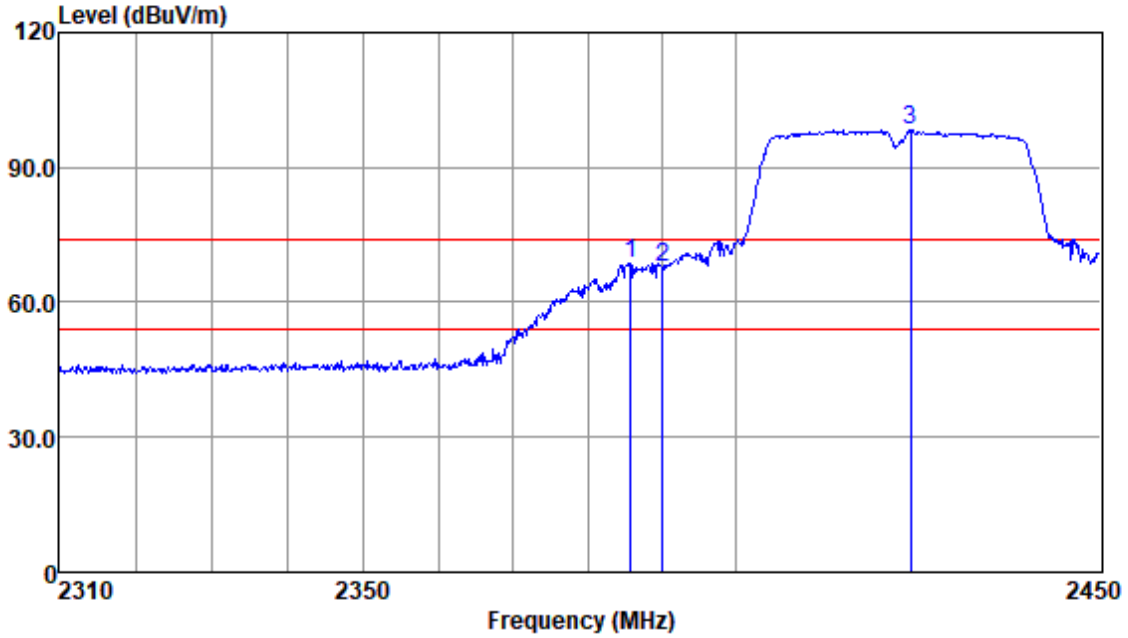


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2385.70	52.37	28.80	3.34	35.18	49.33	54.00	-4.67	Average
2390.00	54.48	28.80	3.34	35.18	51.44	54.00	-2.56	Average
2413.94	84.95	28.90	3.33	35.20	81.98	54.00	27.98	Average

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low

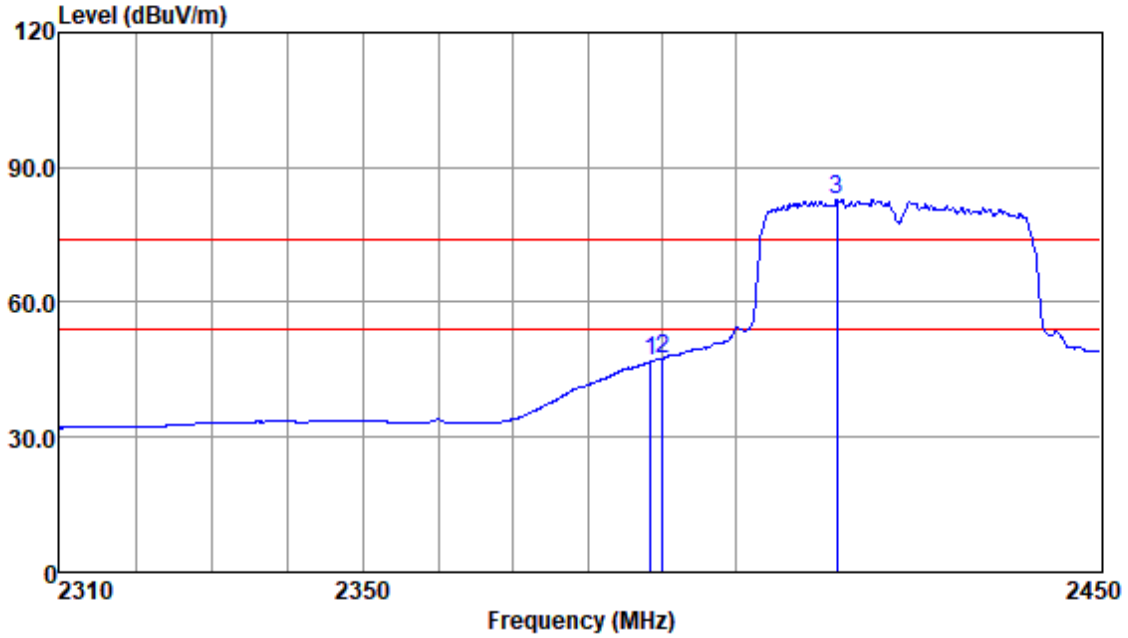


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2385.70	71.76	28.80	3.34	35.18	68.72	74.00	-5.28	Peak
2390.00	70.78	28.80	3.34	35.18	67.74	74.00	-6.26	Peak
2423.76	101.15	28.92	3.33	35.21	98.19	74.00	24.19	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low

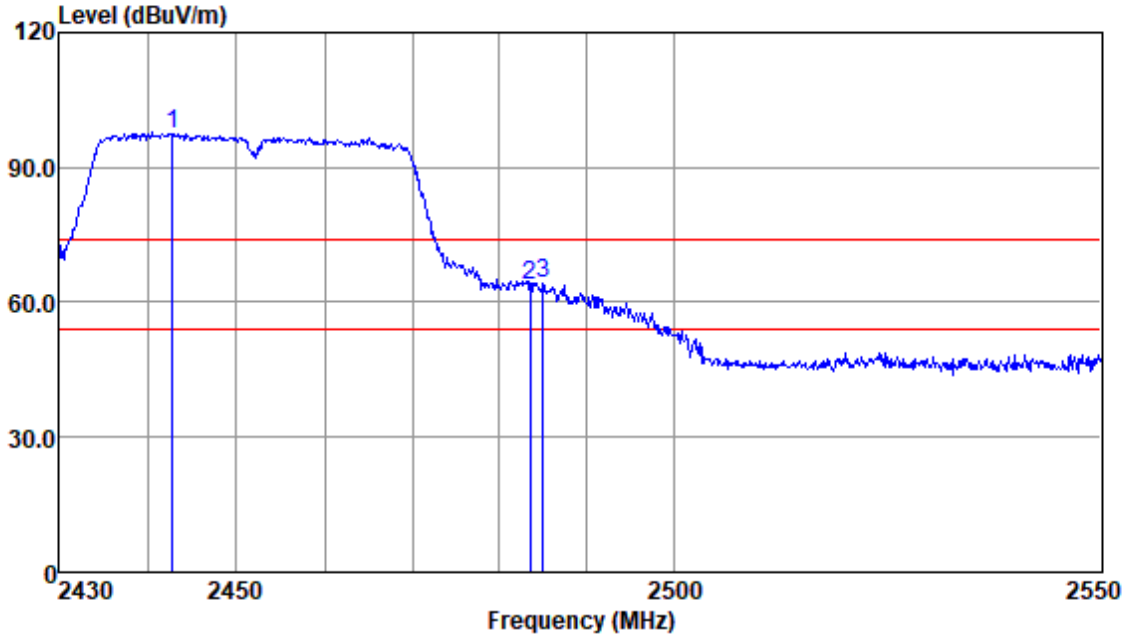


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2388.37	49.94	28.80	3.34	35.18	46.90	54.00	-7.10	Average
2390.00	50.55	28.80	3.34	35.18	47.51	54.00	-6.49	Average
2413.66	85.75	28.90	3.33	35.20	82.78	54.00	28.78	Average

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High

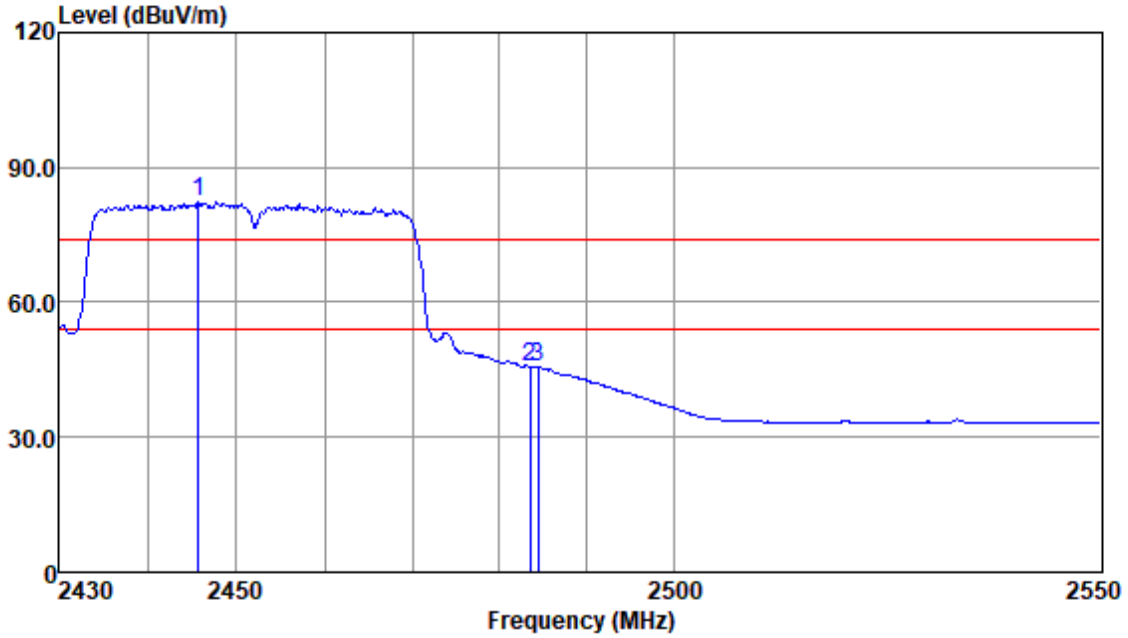


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2442.68	100.48	28.99	3.32	35.22	97.57	74.00	23.57	Peak
2483.50	66.70	29.09	3.36	35.26	63.89	74.00	-10.11	Peak
2484.96	66.99	29.09	3.36	35.26	64.18	74.00	-9.82	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High

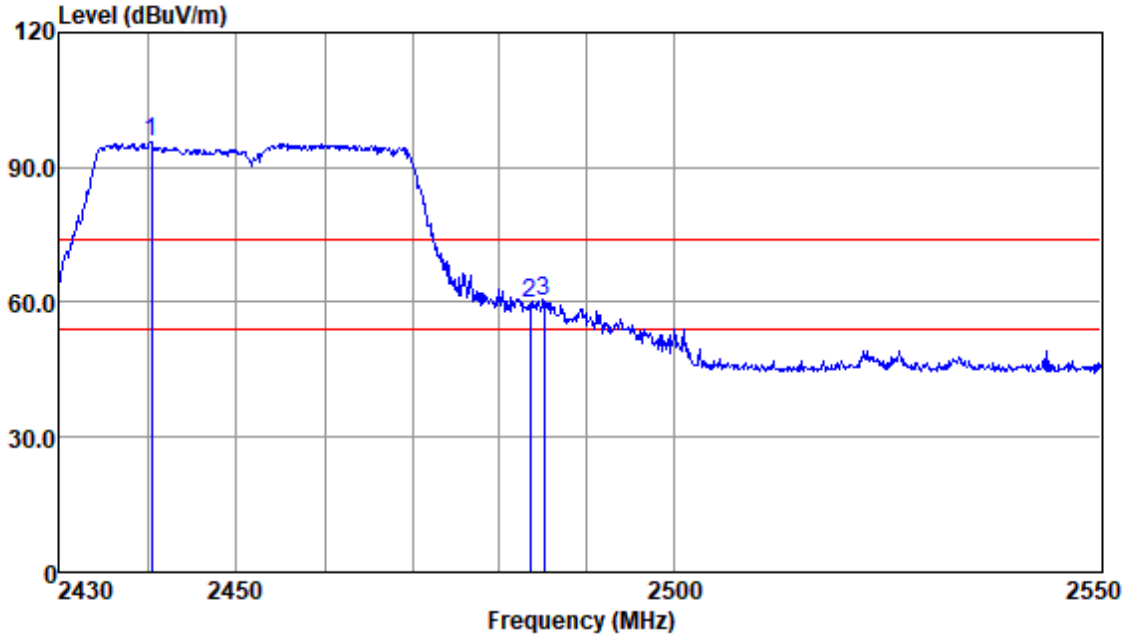


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2445.63	85.25	28.99	3.32	35.22	82.34	54.00	28.34	Average
2483.50	48.56	29.09	3.36	35.26	45.75	54.00	-8.25	Average
2484.36	48.30	29.09	3.36	35.26	45.49	54.00	-8.51	Average

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High

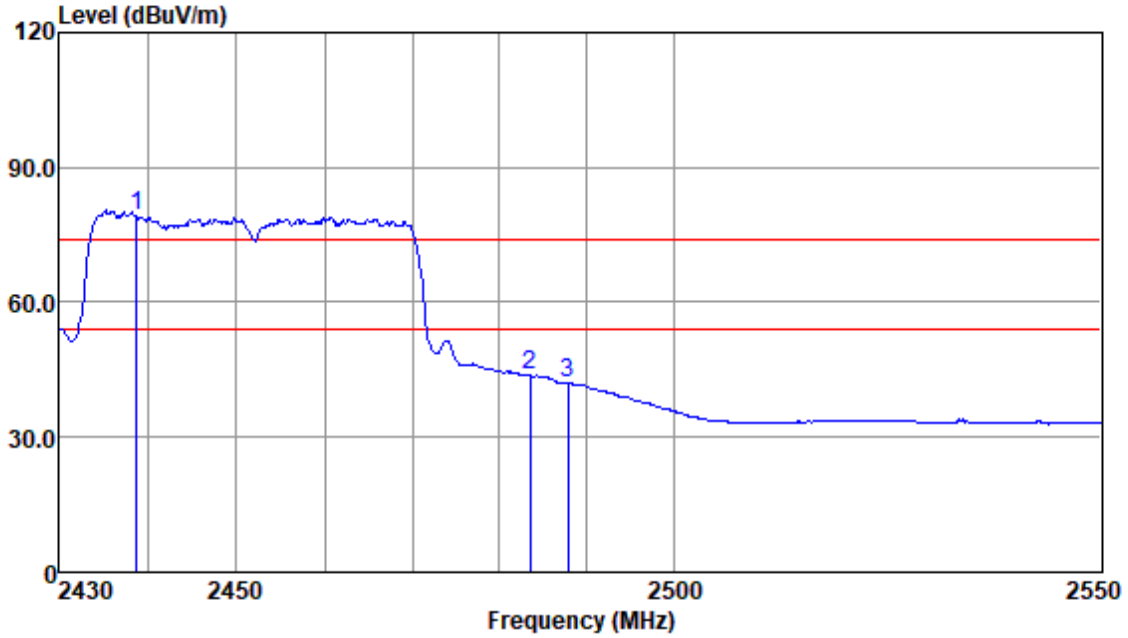


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2440.33	98.65	28.99	3.32	35.22	95.74	74.00	21.74	Peak
2483.50	62.38	29.09	3.36	35.26	59.57	74.00	-14.43	Peak
2485.08	63.09	29.09	3.36	35.26	60.28	74.00	-13.72	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
2438.68	82.01	28.97	3.33	35.22	79.09	54.00	25.09	Average
2483.50	46.43	29.09	3.36	35.26	43.62	54.00	-10.38	Average
2487.84	45.07	29.09	3.36	35.26	42.26	54.00	-11.74	Average

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

7.2 Radiated Spurious Emissions Below 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209
Test Method: ANSI C63.10 (2013) Section 6.4,6.5

Limit:

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

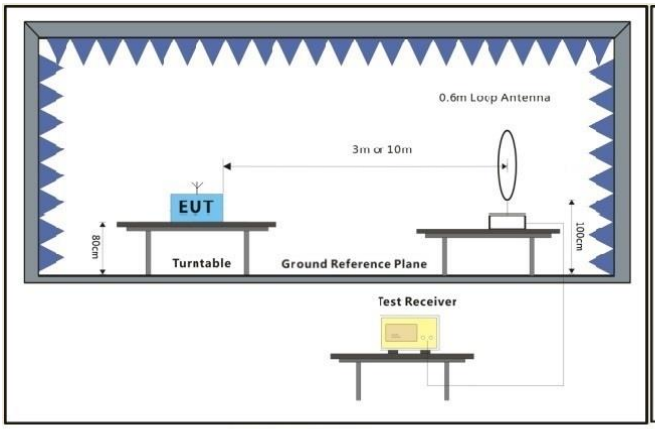
7.2.1 E.U.T. Operation

Operating Environment:
Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

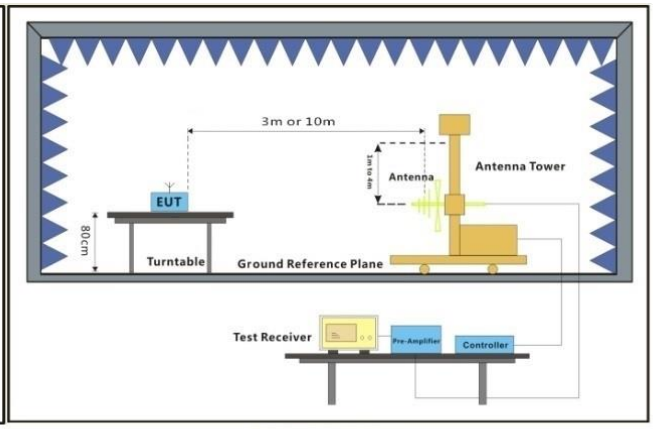
7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.2.3 Test Setup Diagram



Below 30MHz



30MHz-1GHz

7.2.4 Measurement Procedure and Data

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet.

g. Test the EUT in the lowest channel, the middle channel, the Highest channel.

h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

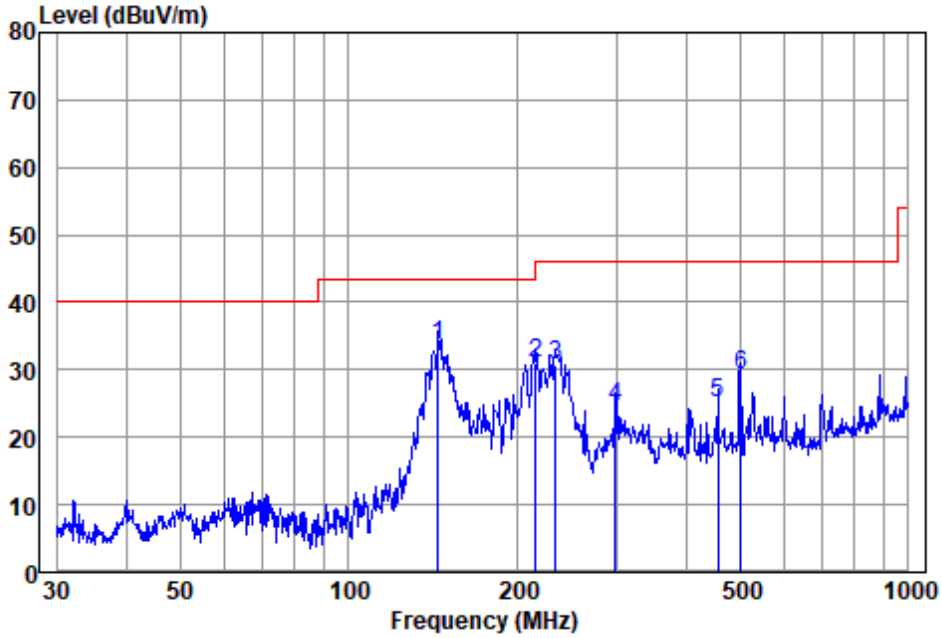
i. Repeat above procedures until all frequencies measured was complete.

Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

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

Test Mode: 00; Polarity: Horizontal

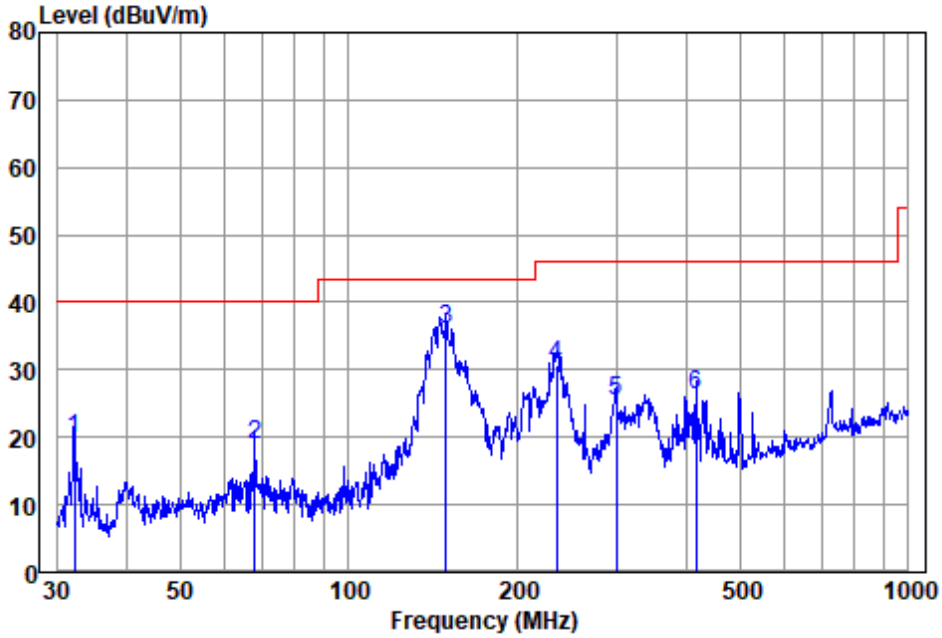


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS
Test mode :00

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	144.335	50.51	13.50	2.74	33.02	33.73	43.50	-9.77	QP
2	216.024	50.91	9.86	3.08	32.93	30.92	46.00	-15.08	QP
3	234.168	49.89	10.48	3.26	32.86	30.77	46.00	-15.23	QP
4	299.316	40.00	13.37	3.89	32.80	24.46	46.00	-21.54	QP
5	455.906	35.79	17.31	4.69	32.70	25.09	46.00	-20.91	QP
6	501.179	38.87	18.02	4.93	32.70	29.12	46.00	-16.88	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical



Antenna Polarity :VERTICAL
EUT/Project :1510HS
Test mode :00

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	32.293	39.47	12.23	1.17	33.20	19.67	40.00	-20.33	QP
2	67.913	38.71	11.80	1.67	33.20	18.98	40.00	-21.02	QP
3	148.963	52.68	13.60	2.65	33.00	35.93	43.50	-7.57	QP
4	234.991	49.68	10.55	3.28	32.85	30.66	46.00	-15.34	QP
5	300.367	40.90	13.40	3.86	32.80	25.36	46.00	-20.64	QP
6	417.641	38.32	16.11	4.52	32.76	26.19	46.00	-19.81	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

7.3 Radiated Spurious Emissions Above 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209
Test Method: ANSI C63.10 (2013) Section 6.6

Limit:

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

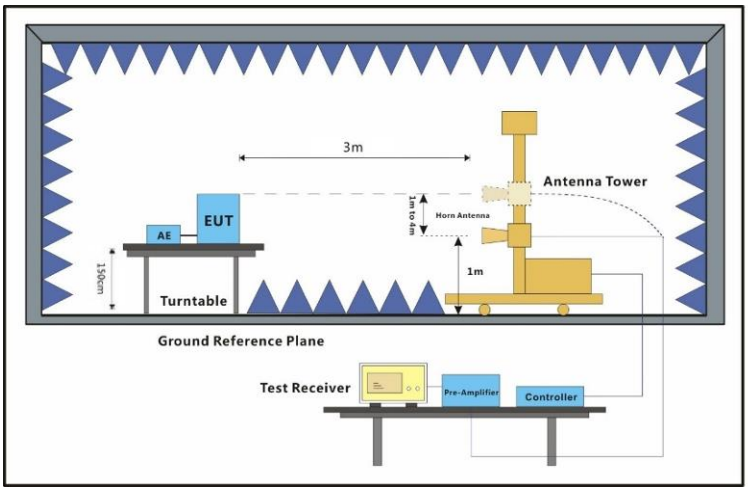
7.3.1 E.U.T. Operation

Operating Environment:
Temperature: 25.2 °C Humidity: 53.0 % RH Atmospheric Pressure: 1010 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

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

c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.

g. Test the EUT in the lowest channel, the middle channel, the Highest channel.

h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

i. Repeat above procedures until all frequencies measured was complete.

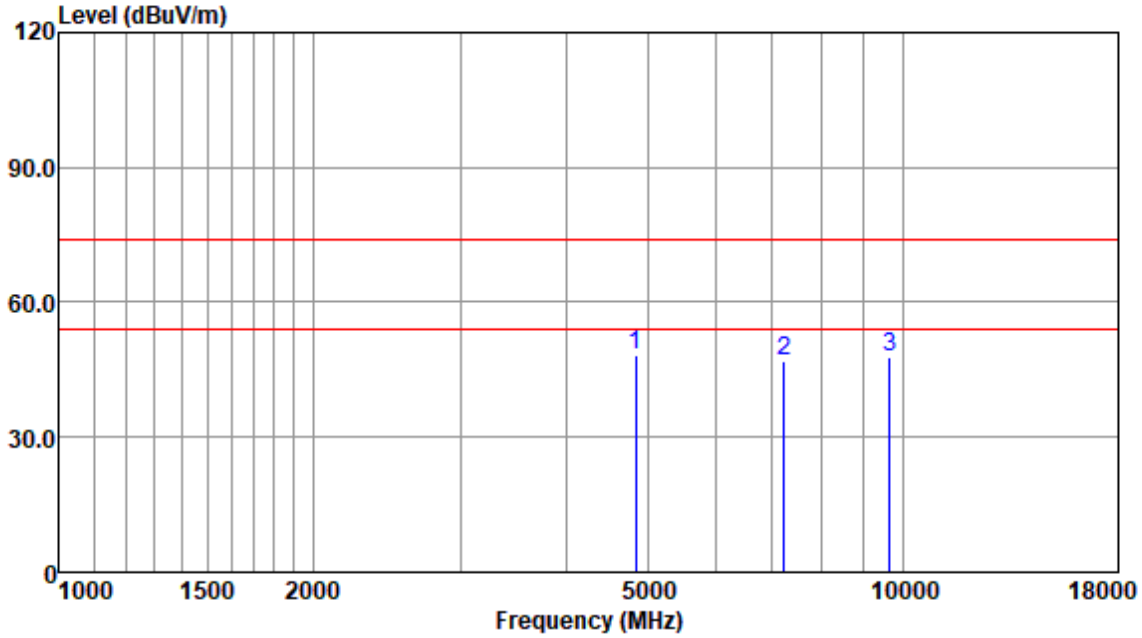
Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

2. Scan from 1GHz to 25GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

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

Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low

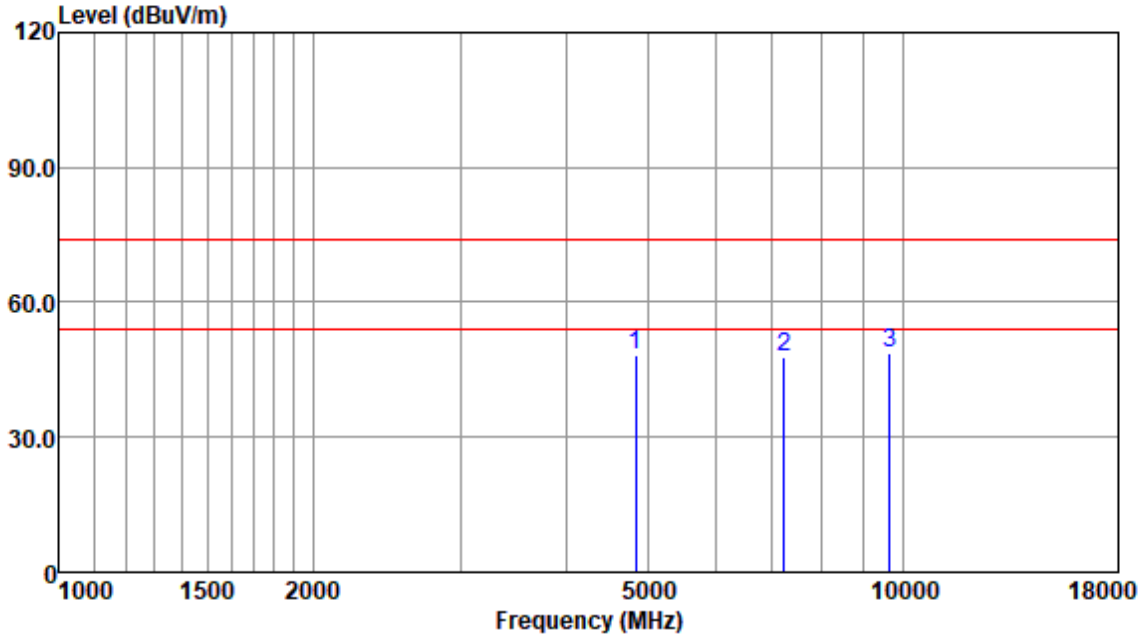


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4824.02	45.88	33.60	5.41	36.79	48.10	74.00	-25.90	Peak
7236.05	39.08	36.29	7.18	35.50	47.05	74.00	-26.95	Peak
9648.26	34.93	37.71	8.64	33.56	47.72	74.00	-26.28	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low

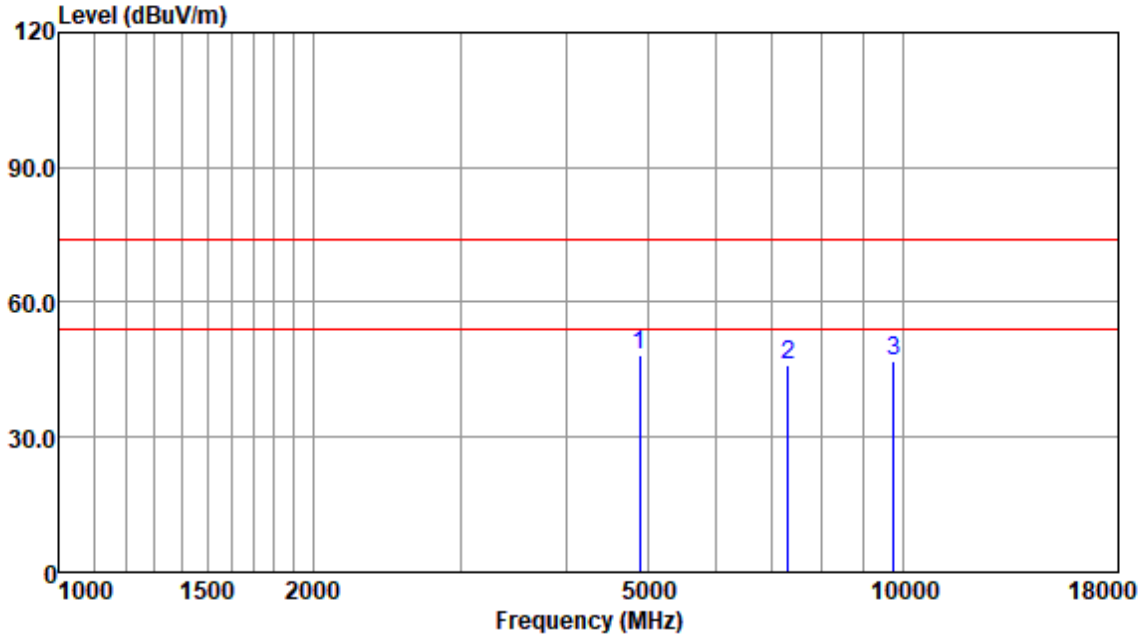


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4824.02	46.17	33.60	5.41	36.79	48.39	74.00	-25.61	Peak
7236.05	39.71	36.29	7.18	35.50	47.68	74.00	-26.32	Peak
9648.26	35.73	37.71	8.64	33.56	48.52	74.00	-25.48	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:middle

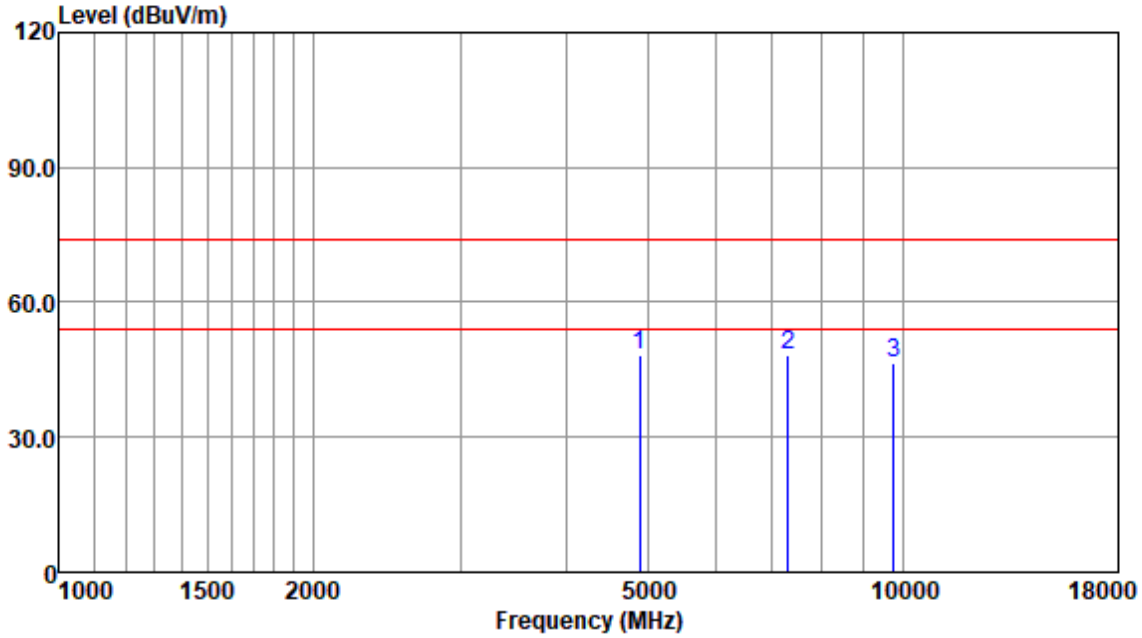


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4874.04	46.15	33.66	5.28	36.81	48.28	74.00	-25.72	Peak
7311.12	37.91	36.32	7.34	35.44	46.13	74.00	-27.87	Peak
9748.37	33.84	37.54	8.84	33.50	46.72	74.00	-27.28	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:middle

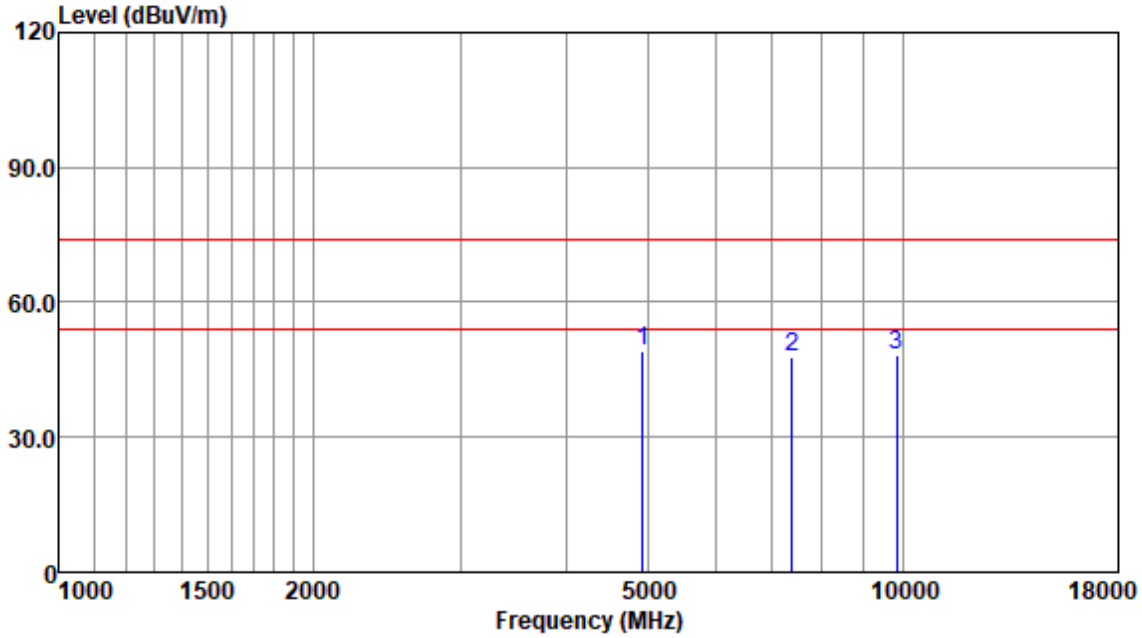


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4874.04	45.93	33.66	5.28	36.81	48.06	74.00	-25.94	Peak
7311.12	39.88	36.32	7.34	35.44	48.10	74.00	-25.90	Peak
9748.37	33.48	37.54	8.84	33.50	46.36	74.00	-27.64	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High

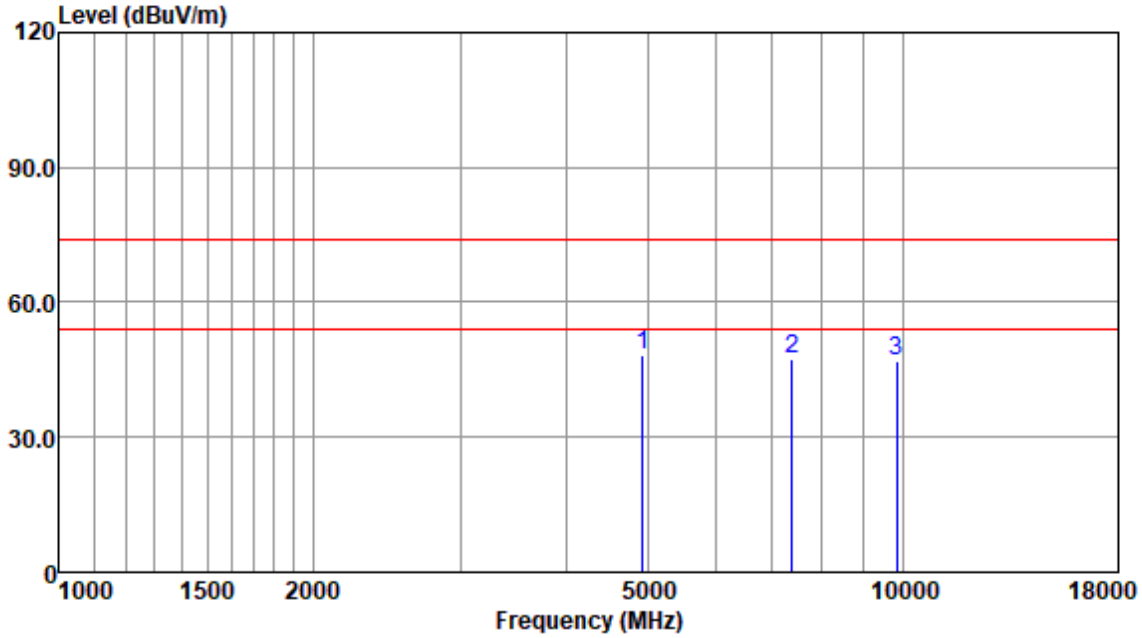


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4924.72	47.06	33.64	5.37	36.82	49.25	74.00	-24.75	Peak
7386.07	39.68	36.36	7.29	35.37	47.96	74.00	-26.04	Peak
9848.31	35.26	37.60	8.82	33.45	48.23	74.00	-25.77	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High

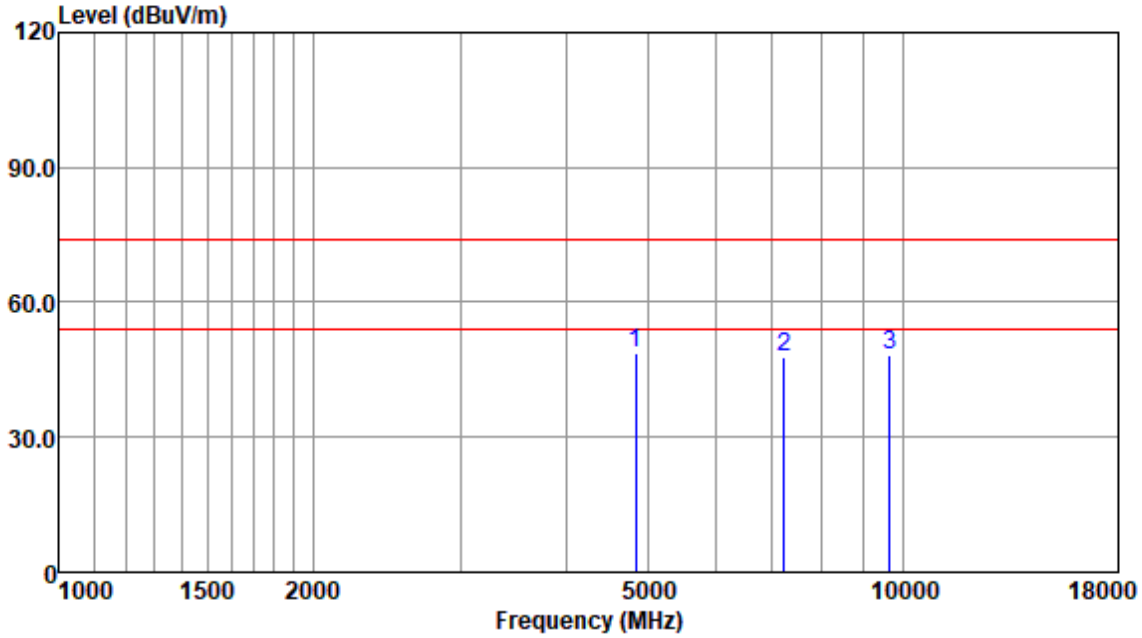


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4924.72	46.03	33.64	5.37	36.82	48.22	74.00	-25.78	Peak
7386.07	38.97	36.36	7.29	35.37	47.25	74.00	-26.75	Peak
9848.31	34.02	37.60	8.82	33.45	46.99	74.00	-27.01	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:Low

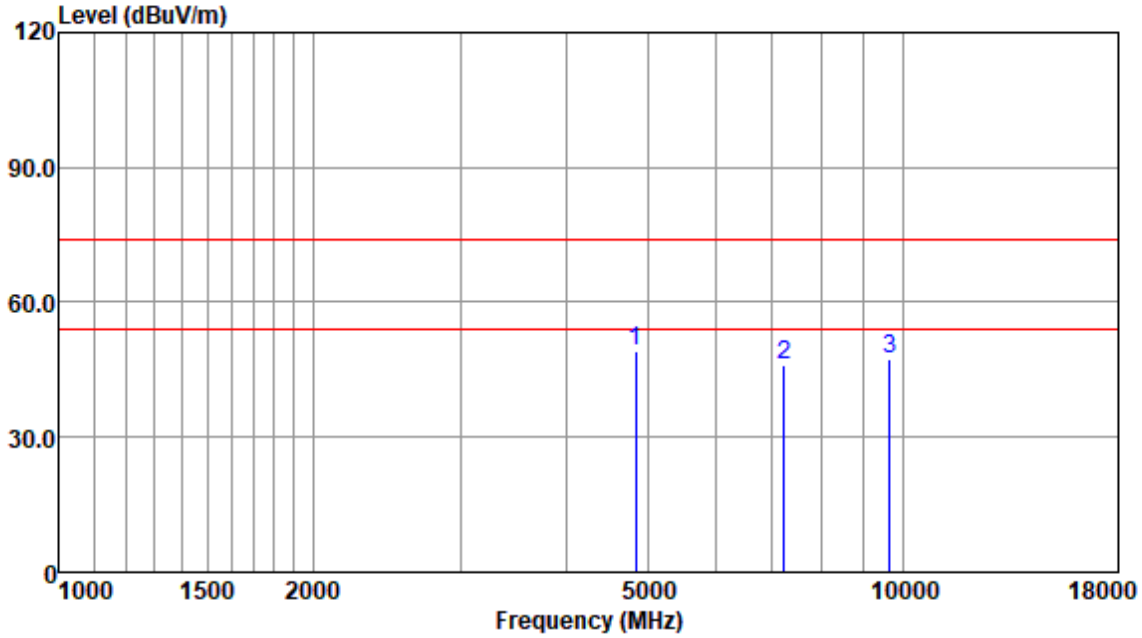


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4824.02	46.59	33.60	5.41	36.79	48.81	74.00	-25.19	Peak
7236.05	39.81	36.29	7.18	35.50	47.78	74.00	-26.22	Peak
9648.26	35.59	37.71	8.64	33.56	48.38	74.00	-25.62	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:Low

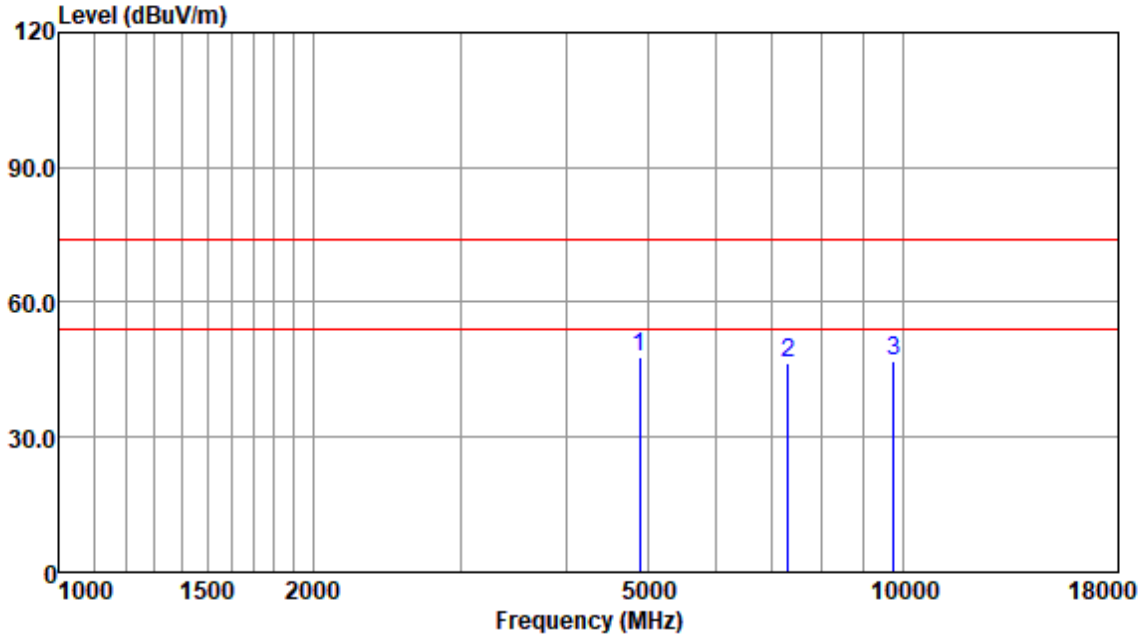


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4824.02	46.80	33.60	5.41	36.79	49.02	74.00	-24.98	Peak
7236.05	38.08	36.29	7.18	35.50	46.05	74.00	-27.95	Peak
9648.26	34.47	37.71	8.64	33.56	47.26	74.00	-26.74	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:middle

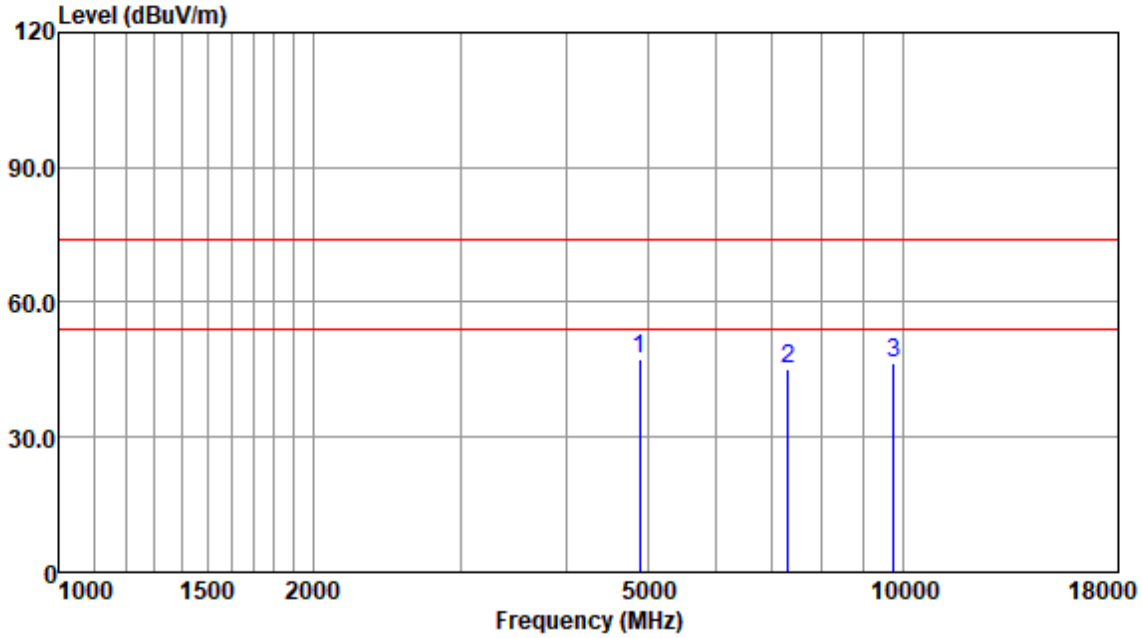


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4874.04	45.79	33.66	5.28	36.81	47.92	74.00	-26.08	Peak
7311.12	38.40	36.32	7.34	35.44	46.62	74.00	-27.38	Peak
9748.37	34.05	37.54	8.84	33.50	46.93	74.00	-27.07	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:middle

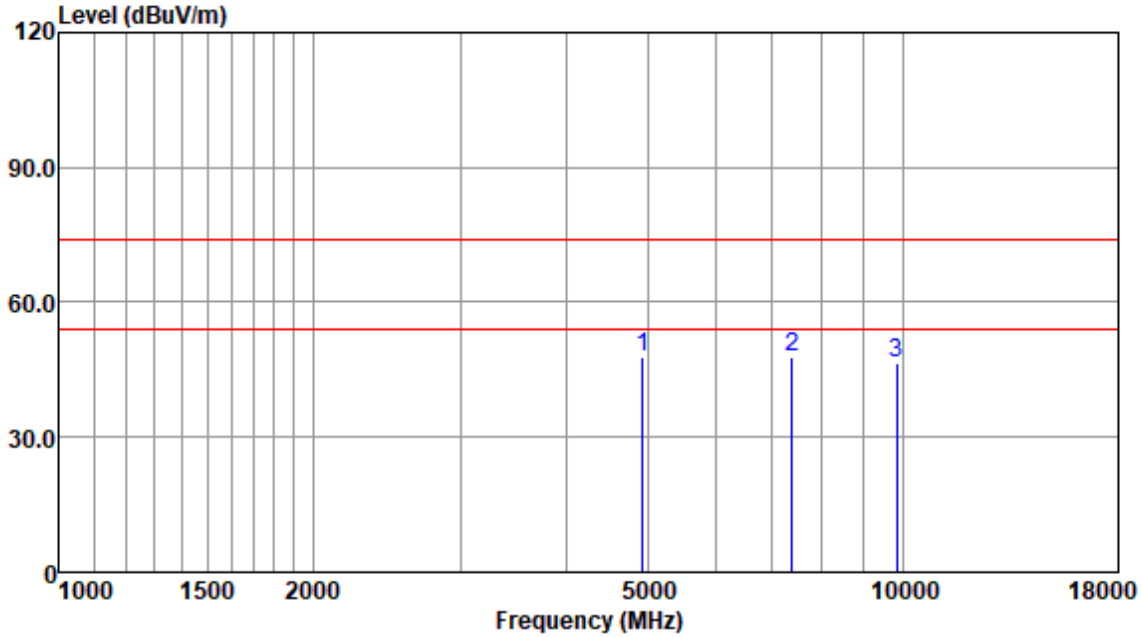


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4874.04	45.44	33.66	5.28	36.81	47.57	74.00	-26.43	Peak
7311.12	37.03	36.32	7.34	35.44	45.25	74.00	-28.75	Peak
9748.37	33.77	37.54	8.84	33.50	46.65	74.00	-27.35	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:High

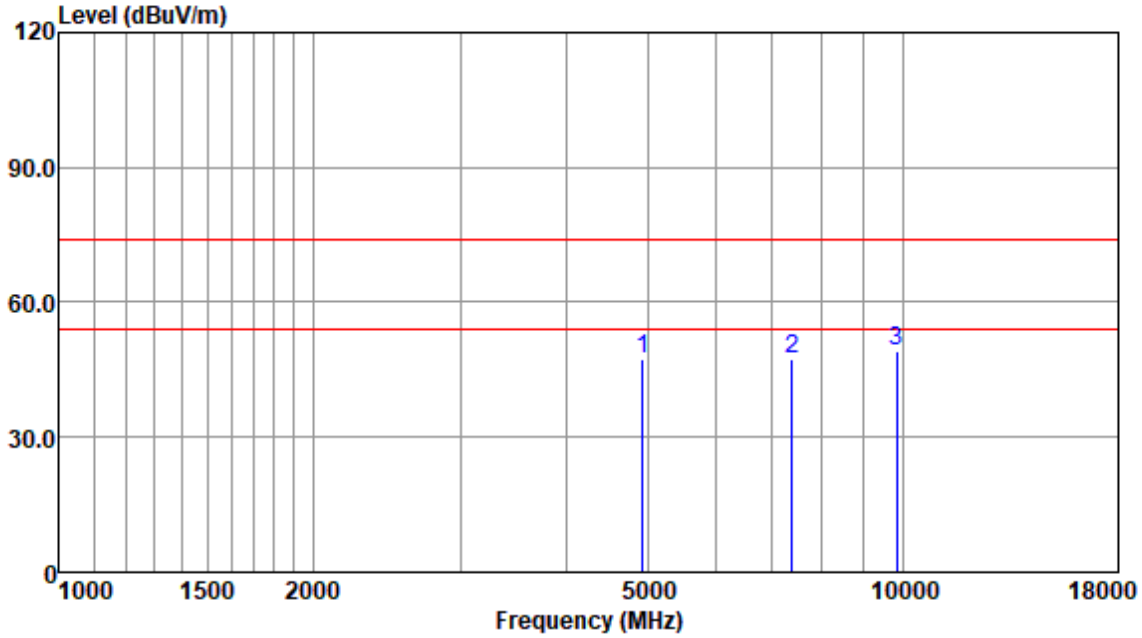


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4924.72	45.85	33.64	5.37	36.82	48.04	74.00	-25.96	Peak
7386.07	39.56	36.36	7.29	35.37	47.84	74.00	-26.16	Peak
9848.31	33.45	37.60	8.82	33.45	46.42	74.00	-27.58	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:High

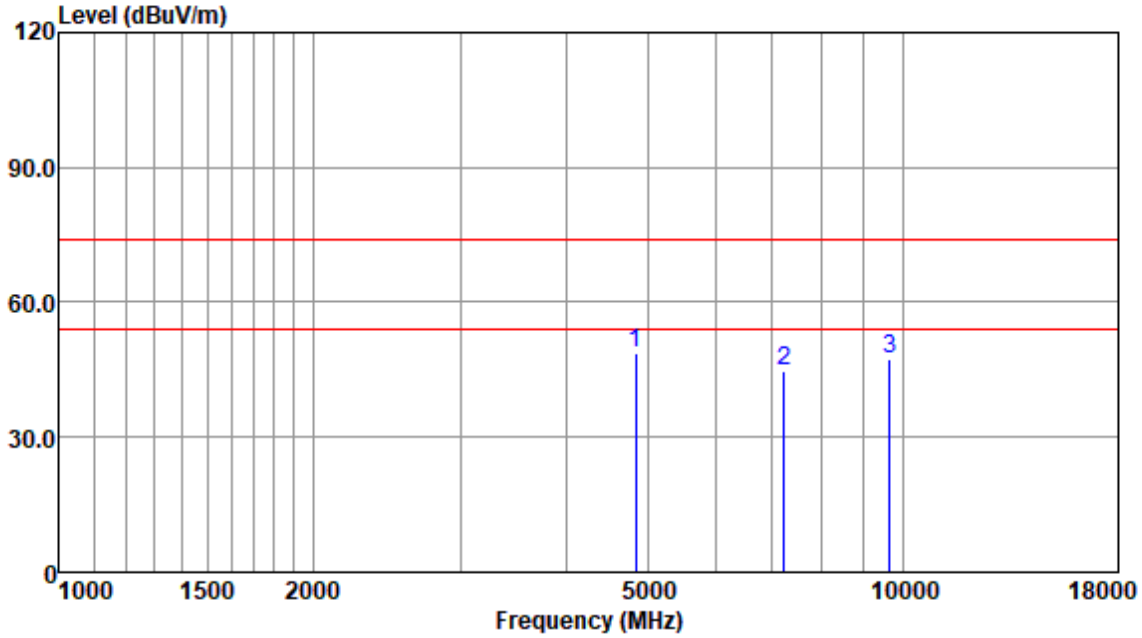


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4924.72	45.18	33.64	5.37	36.82	47.37	74.00	-26.63	Peak
7386.07	39.28	36.36	7.29	35.37	47.56	74.00	-26.44	Peak
9848.31	36.05	37.60	8.82	33.45	49.02	74.00	-24.98	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low

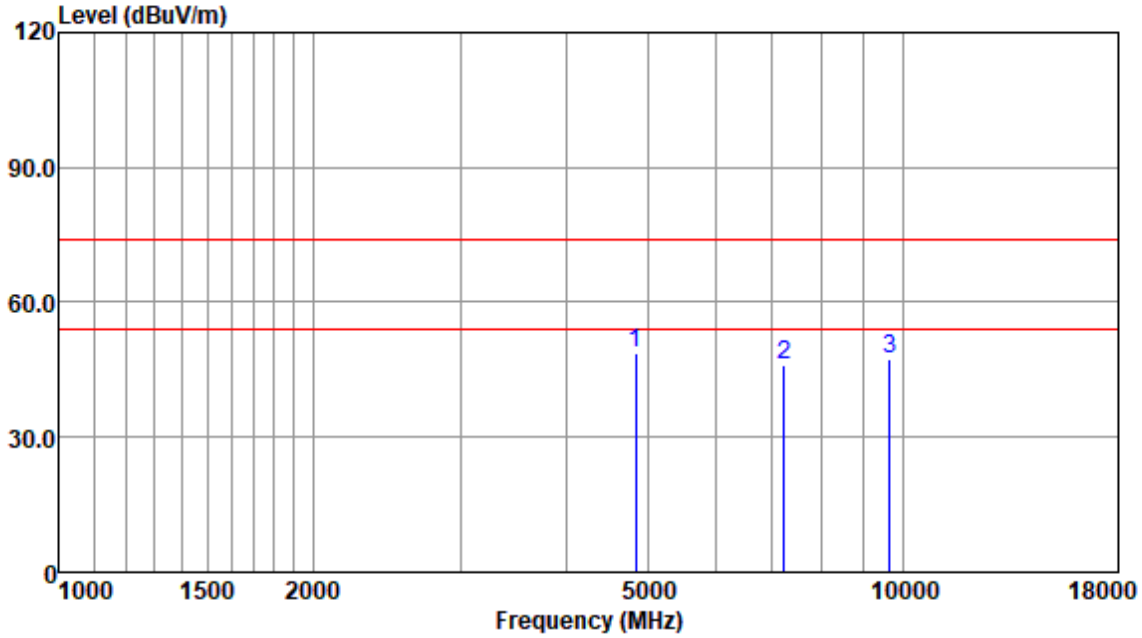


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4824.02	46.62	33.60	5.41	36.79	48.84	74.00	-25.16	Peak
7236.05	36.73	36.29	7.18	35.50	44.70	74.00	-29.30	Peak
9648.26	34.42	37.71	8.64	33.56	47.21	74.00	-26.79	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low

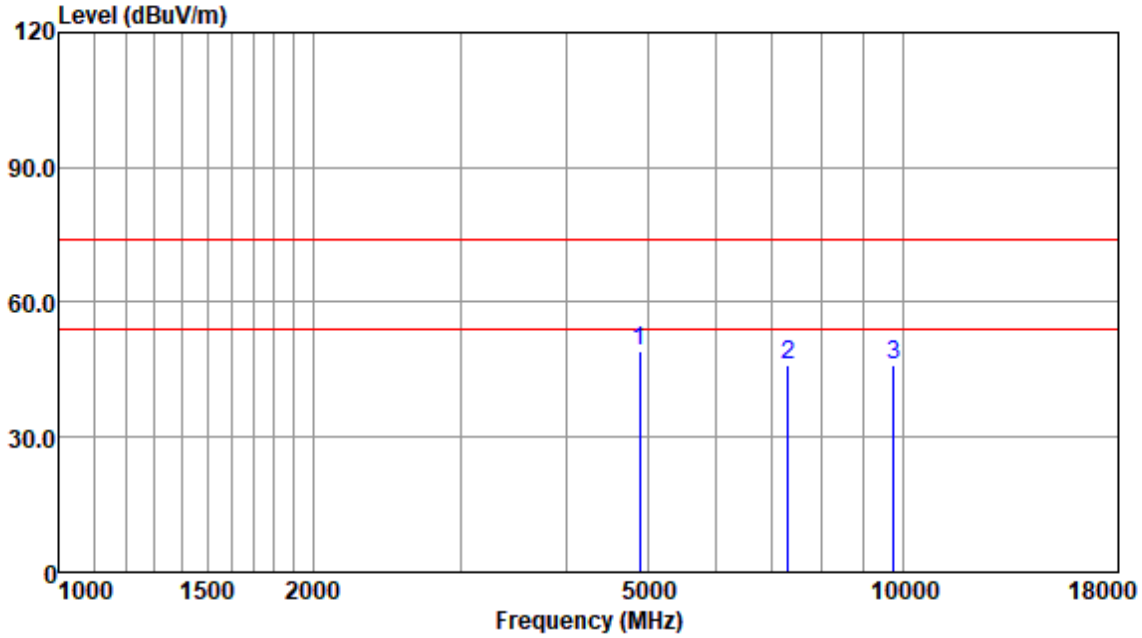


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4824.02	46.66	33.60	5.41	36.79	48.88	74.00	-25.12	Peak
7236.05	38.14	36.29	7.18	35.50	46.11	74.00	-27.89	Peak
9648.26	34.73	37.71	8.64	33.56	47.52	74.00	-26.48	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:middle

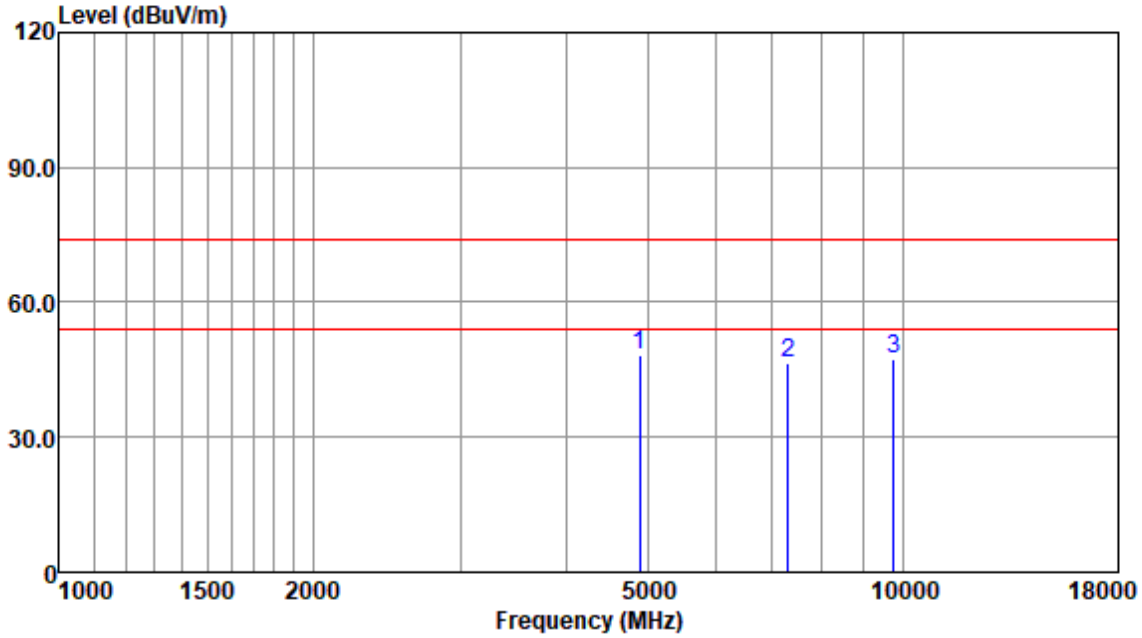


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4874.04	46.94	33.66	5.28	36.81	49.07	74.00	-24.93	Peak
7311.12	38.02	36.32	7.34	35.44	46.24	74.00	-27.76	Peak
9748.37	33.27	37.54	8.84	33.50	46.15	74.00	-27.85	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:middle

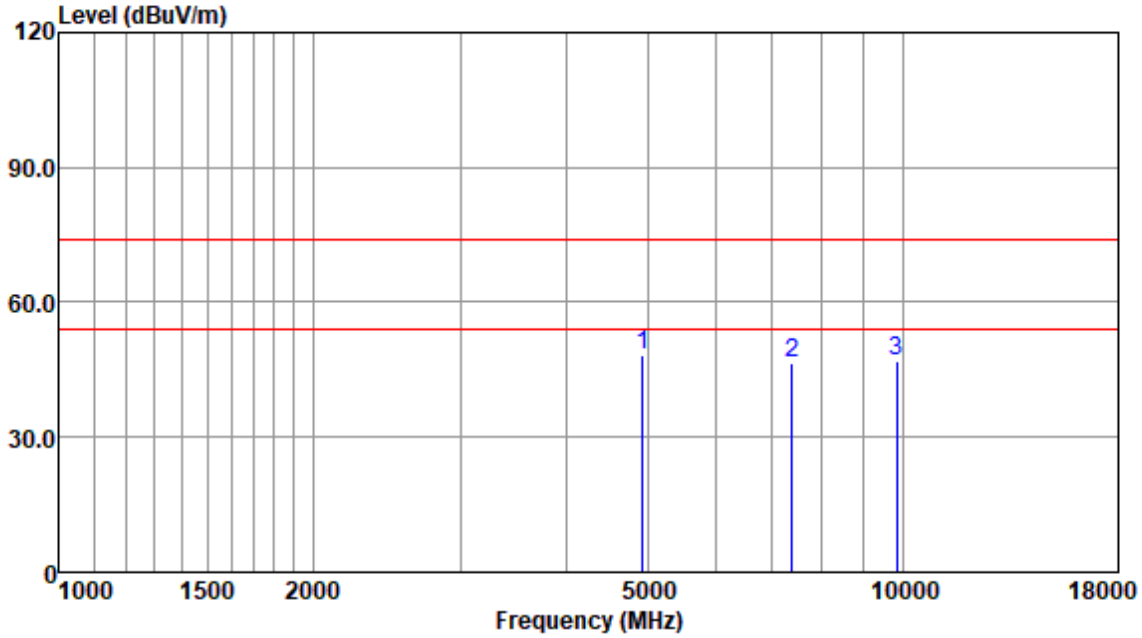


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4874.04	46.02	33.66	5.28	36.81	48.15	74.00	-25.85	Peak
7311.12	38.17	36.32	7.34	35.44	46.39	74.00	-27.61	Peak
9748.37	34.59	37.54	8.84	33.50	47.47	74.00	-26.53	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High

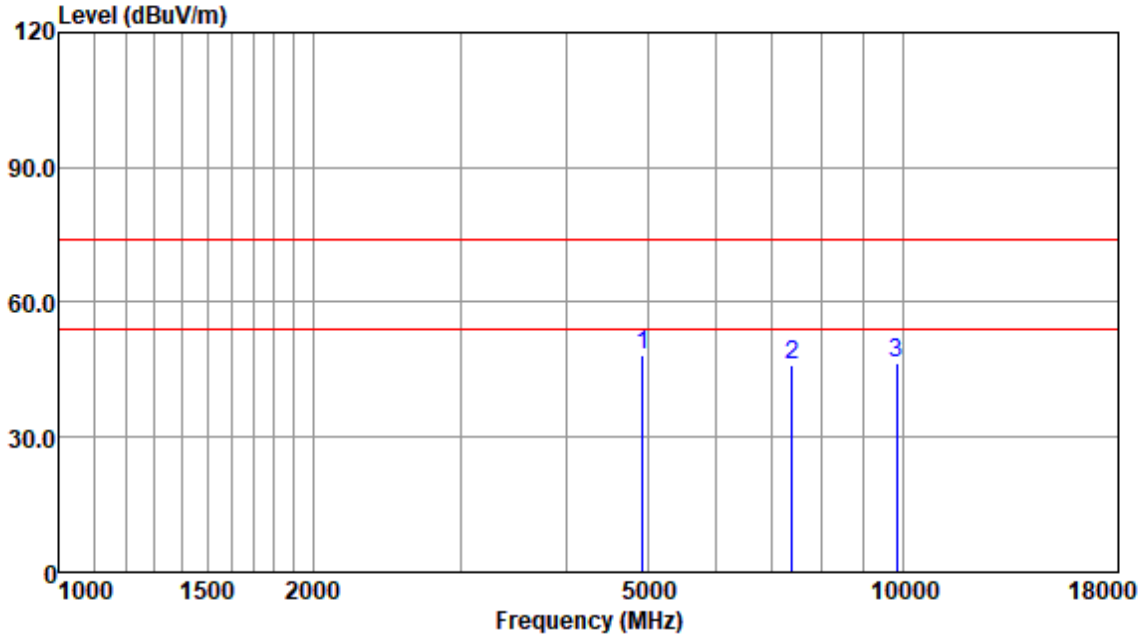


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4924.72	46.23	33.64	5.37	36.82	48.42	74.00	-25.58	Peak
7386.07	38.31	36.36	7.29	35.37	46.59	74.00	-27.41	Peak
9848.31	33.88	37.60	8.82	33.45	46.85	74.00	-27.15	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High

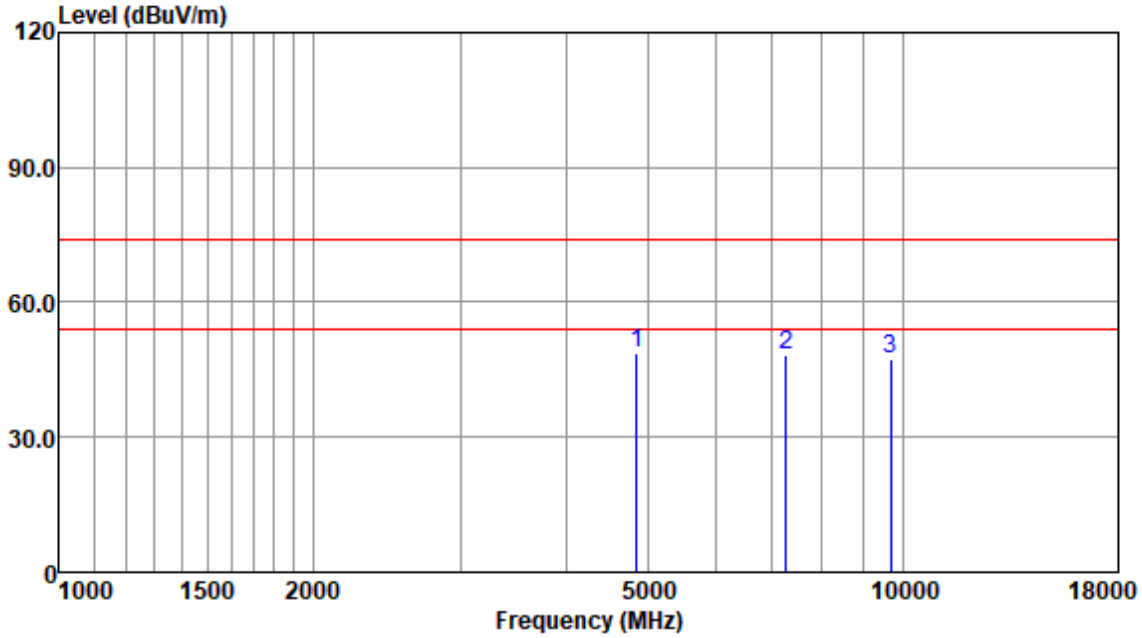


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4924.72	45.87	33.64	5.37	36.82	48.06	74.00	-25.94	Peak
7386.07	37.84	36.36	7.29	35.37	46.12	74.00	-27.88	Peak
9848.31	33.68	37.60	8.82	33.45	46.65	74.00	-27.35	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low

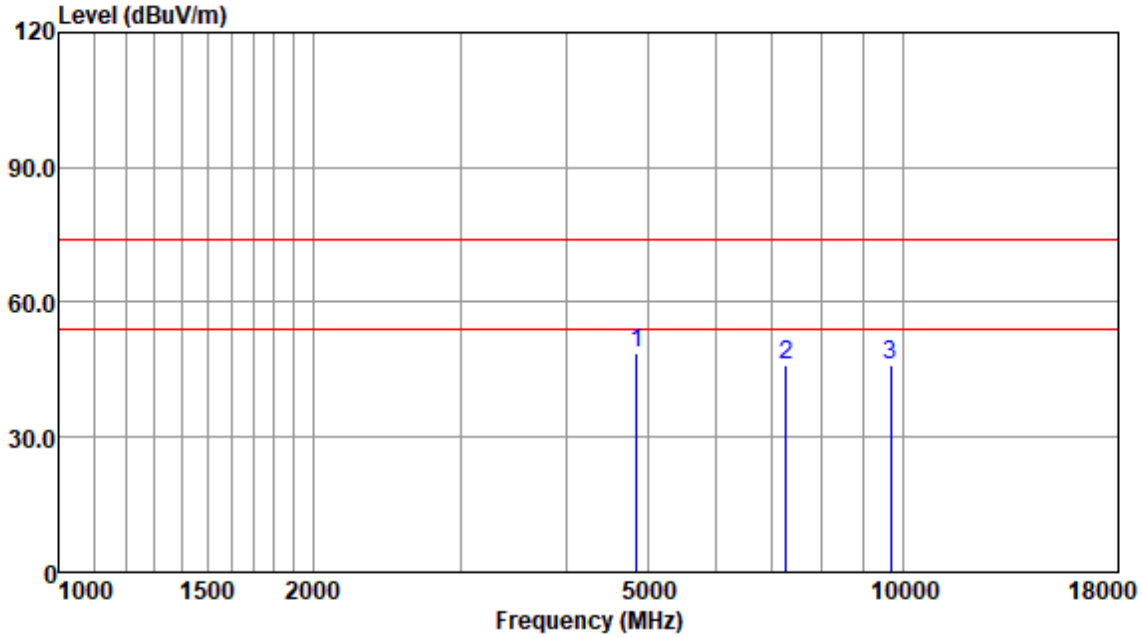


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4844.95	46.34	33.66	5.43	36.80	48.63	74.00	-25.37	Peak
7266.02	40.11	36.30	7.28	35.48	48.21	74.00	-25.79	Peak
9688.15	34.78	37.62	8.60	33.53	47.47	74.00	-26.53	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low

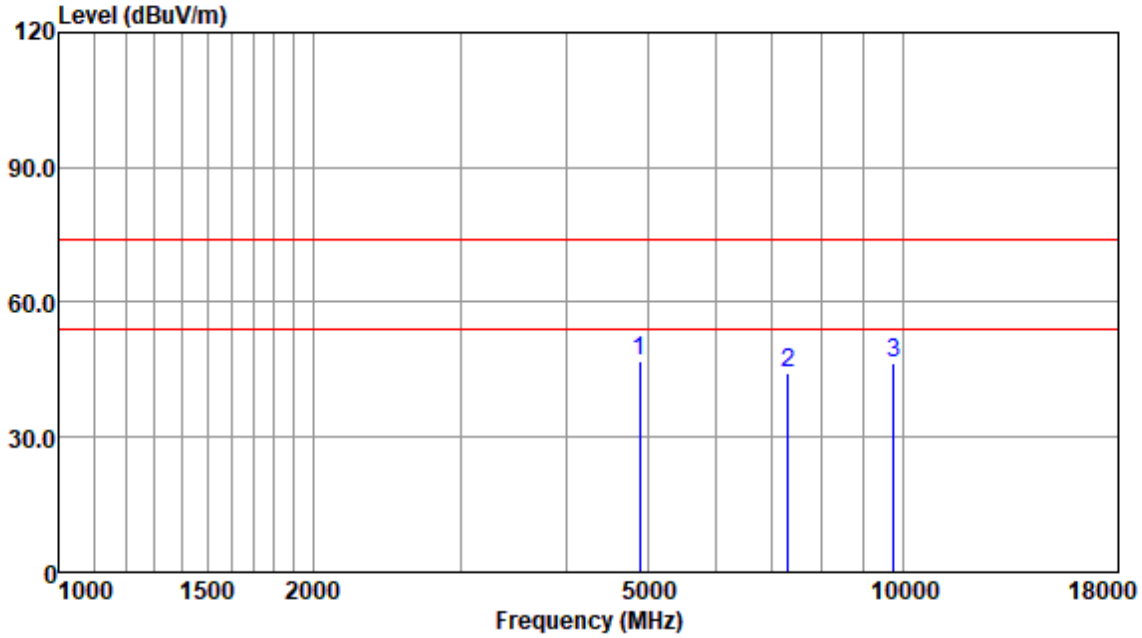


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4844.95	46.21	33.66	5.43	36.80	48.50	74.00	-25.50	Peak
7266.02	38.08	36.30	7.28	35.48	46.18	74.00	-27.82	Peak
9688.15	33.35	37.62	8.60	33.53	46.04	74.00	-27.96	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:middle

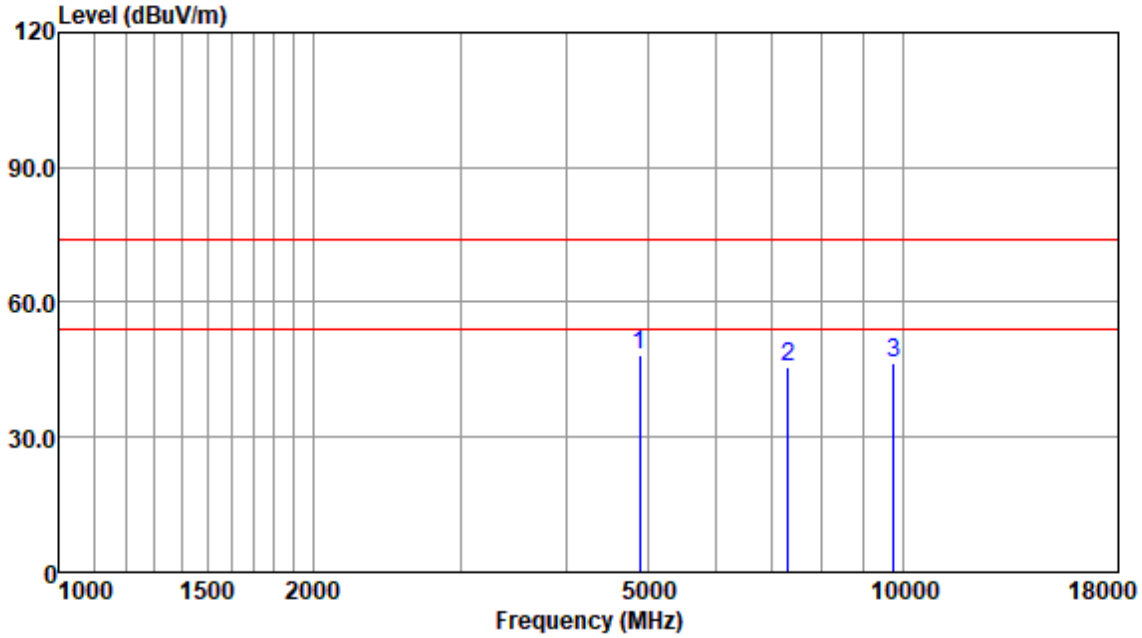


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4874.04	45.02	33.66	5.28	36.81	47.15	74.00	-26.85	Peak
7311.12	35.85	36.32	7.34	35.44	44.07	74.00	-29.93	Peak
9748.37	33.53	37.54	8.84	33.50	46.41	74.00	-27.59	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:middle

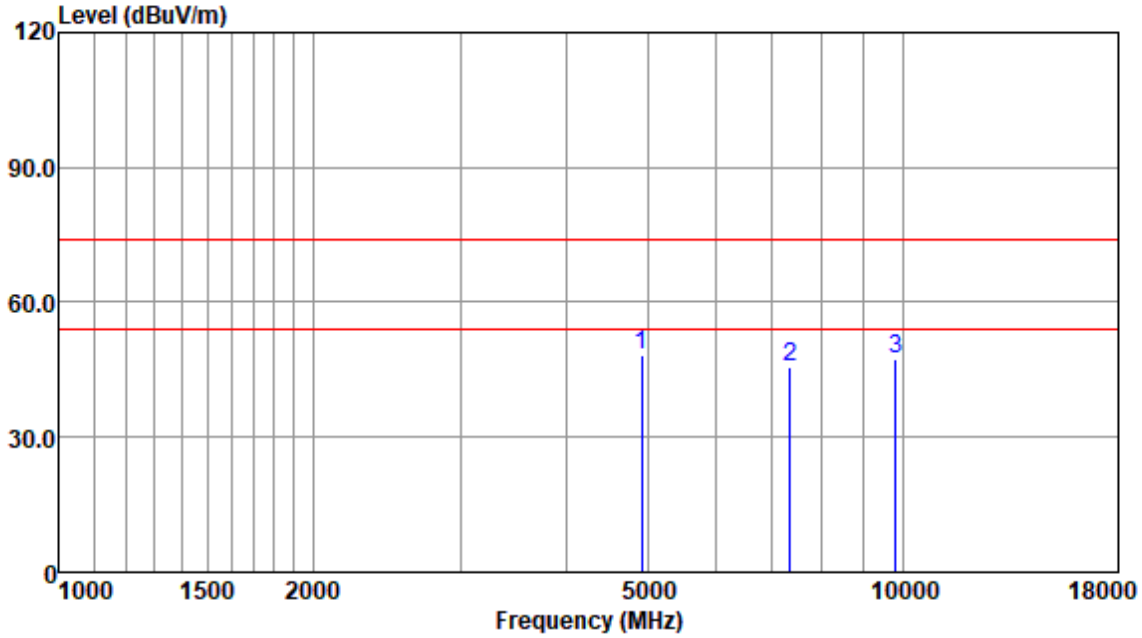


Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4874.04	46.15	33.66	5.28	36.81	48.28	74.00	-25.72	Peak
7311.12	37.19	36.32	7.34	35.44	45.41	74.00	-28.59	Peak
9748.37	33.81	37.54	8.84	33.50	46.69	74.00	-27.31	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High

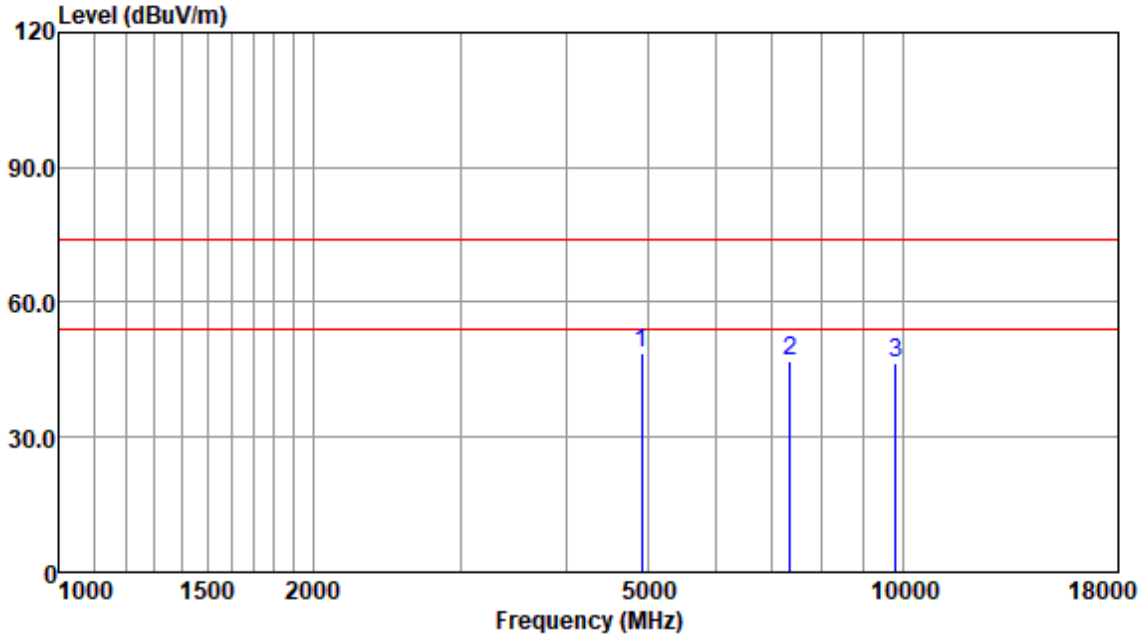


Antenna Polarity :HORIZONTAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4904.30	46.26	33.66	5.36	36.81	48.47	74.00	-25.53	Peak
7356.47	37.32	36.35	7.31	35.41	45.57	74.00	-28.43	Peak
9808.92	34.35	37.57	8.76	33.47	47.21	74.00	-26.79	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Antenna Polarity :VERTICAL
EUT/Project :1510HS

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
4904.30	46.38	33.66	5.36	36.81	48.59	74.00	-25.41	Peak
7356.47	38.50	36.35	7.31	35.41	46.75	74.00	-27.25	Peak
9808.92	33.76	37.57	8.76	33.47	46.62	74.00	-27.38	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

7.4 Conducted Average Output Power

Test Requirement 47 CFR Part 15, Subpart C 15.247(b)(3)
Test Method: ANSI C63.10 (2013) Section 11.9.2

Limit:

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

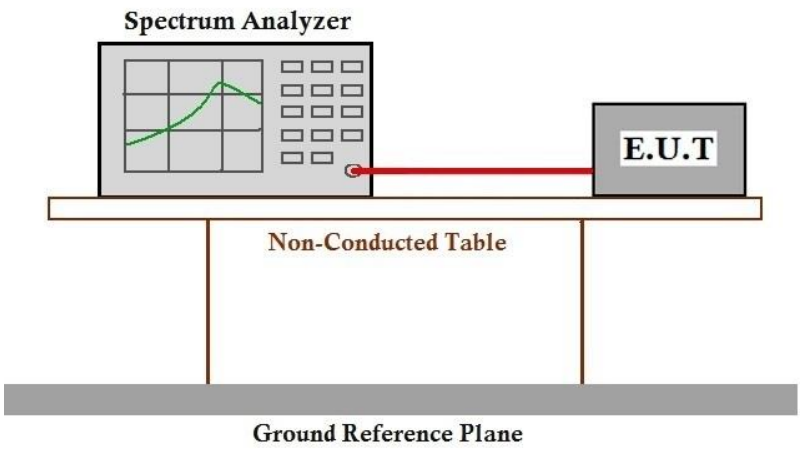
7.4.1 E.U.T. Operation

Operating Environment:
Temperature: 25.2 °C Humidity: 53.0 % RH Atmospheric Pressure: 1010 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

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

Please Refer to Appendix for Details

7.5 Minimum 6dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.247a(2)
Test Method: ANSI C63.10 (2013) Section 11.8.1

Limit:
≥500 kHz

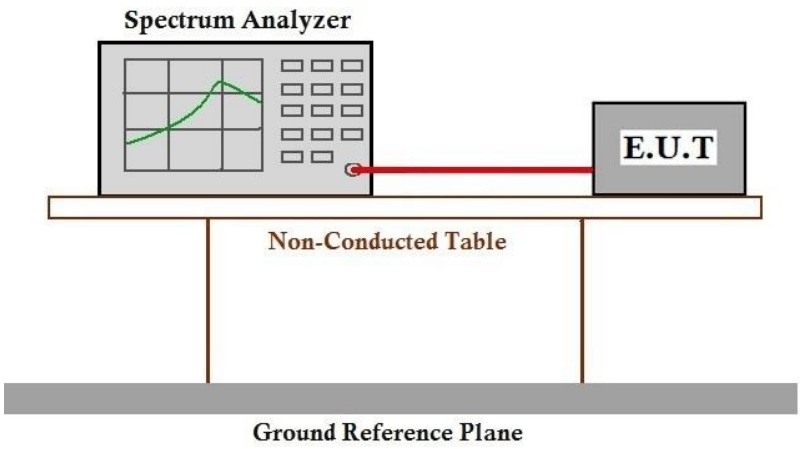
7.5.1 E.U.T. Operation

Operating Environment:
Temperature: 25.2 °C Humidity: 53.0 % RH Atmospheric Pressure: 1010 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.6 Power Spectrum Density

Test Requirement 47 CFR Part 15, Subpart C 15.247(e)
Test Method: ANSI C63.10 (2013) Section 11.10.3

Limit:
≤8dBm in any 3 kHz band during any time interval of continuous transmission

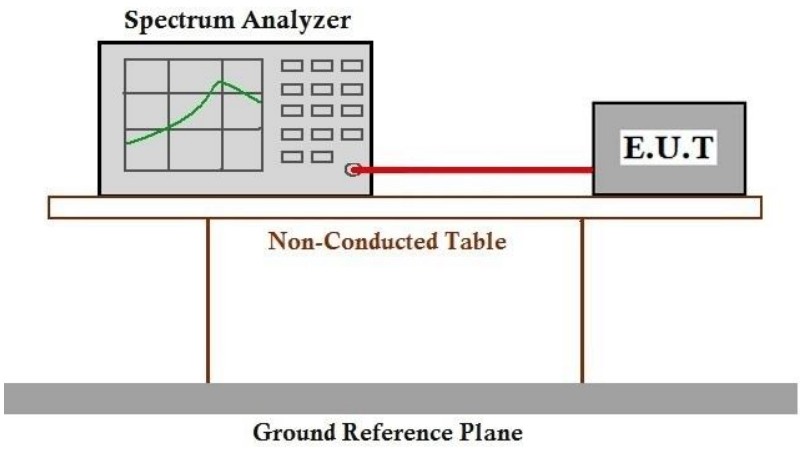
7.6.1 E.U.T. Operation

Operating Environment:
Temperature: 25.2 °C Humidity: 52.9 % RH Atmospheric Pressure: 1010 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.6.3 Test Setup Diagram



7.6.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.7 Conducted Band Edges Measurement

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

Test Method: ANSI C63.10 (2013) Section 11.13.3.2

Limit:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c).

7.7.1 E.U.T. Operation

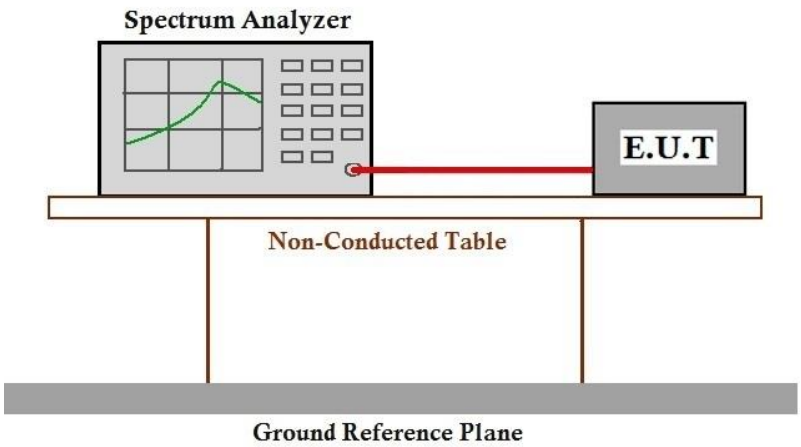
Operating Environment:

Temperature: 25.2 °C Humidity: 52.9 % RH Atmospheric Pressure: 1010 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.7.3 Test Setup Diagram



7.7.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.8 Conducted Spurious Emissions

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

Test Method: ANSI C63.10 (2013) Section 11.11

Limit:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c).

7.8.1 E.U.T. Operation

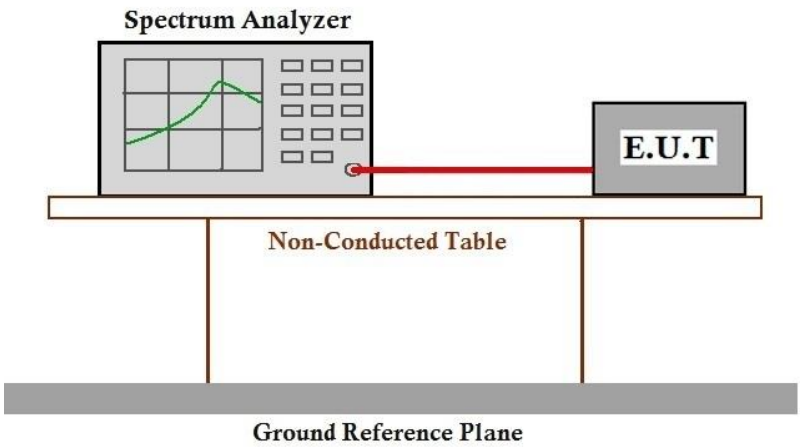
Operating Environment:

Temperature: 25.2 °C Humidity: 52.9 % RH Atmospheric Pressure: 1010 mbar

7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.8.3 Test Setup Diagram



7.8.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.9 99% Bandwidth

Test Requirement RSS-Gen Section 6.7
Test Method: ANSI C63.10 (2013) Section 6.9.3

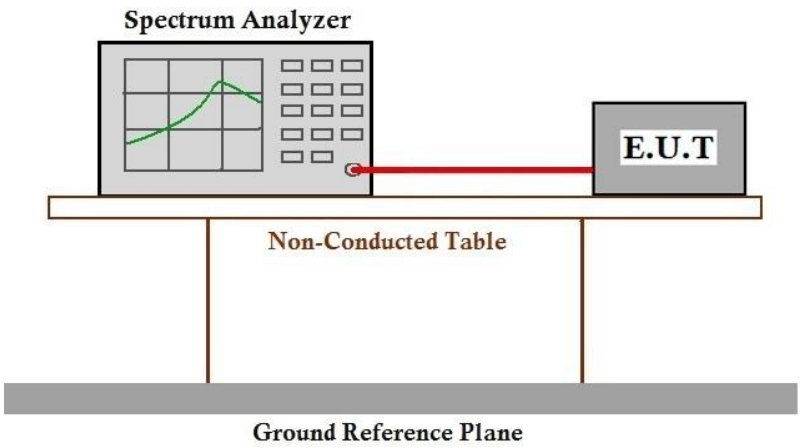
7.9.1 E.U.T. Operation

Operating Environment:
Temperature: 25.2 °C Humidity: 52.9 % RH Atmospheric Pressure: 1010 mbar

7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report.

7.9.3 Test Setup Diagram



7.9.4 Measurement Procedure and Data

Please Refer to Appendix for Details

8 Test Setup Photo

Refer to Appendix - Test Setup Photo for KSCR2410002038HS

9 EUT Constructional Details (EUT Photos)

Refer to Appendix - Photographs of EUT Constructional Details for KSCR2410002038HS

10 Appendix

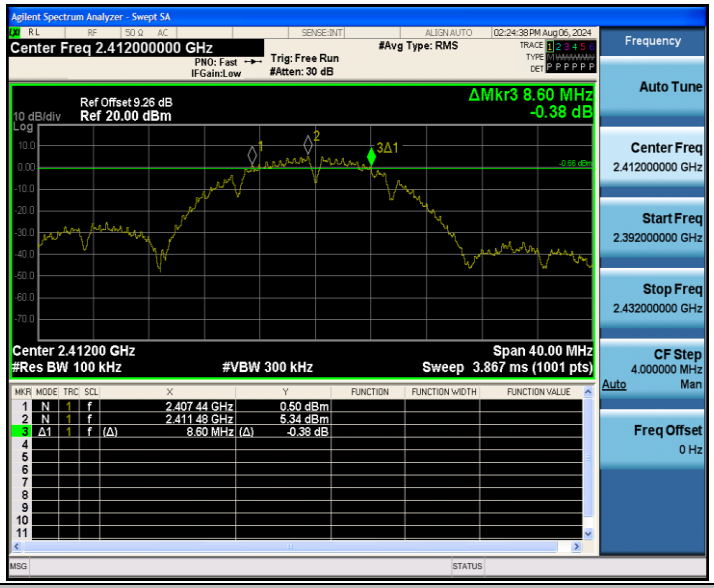
10.1 Appendix A: DTS Bandwidth

10.1.1 Result

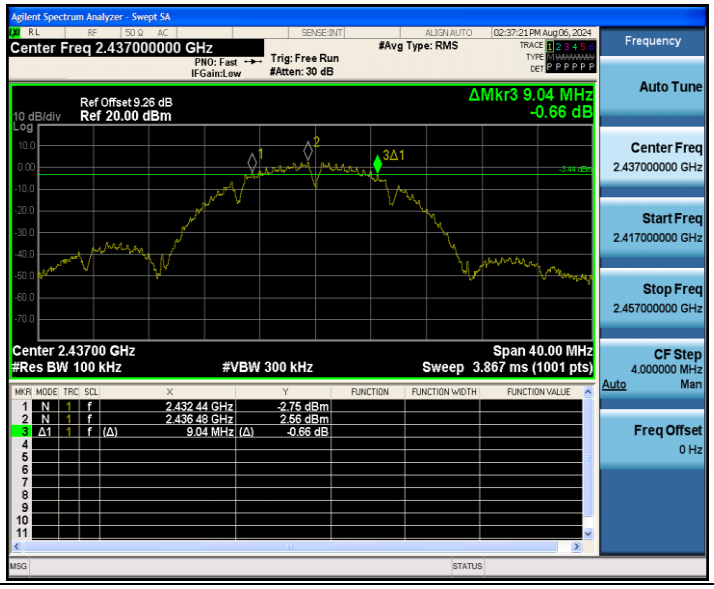
Test Mode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	8.600	2407.440	2416.040	≥0.5	PASS
		2437	9.040	2432.440	2441.480	≥0.5	PASS
		2462	9.040	2457.440	2466.480	≥0.5	PASS
11G	Ant1	2412	16.480	2403.720	2420.200	≥0.5	PASS
		2437	16.520	2428.680	2445.200	≥0.5	PASS
		2462	16.480	2453.720	2470.200	≥0.5	PASS
11N20SISO	Ant1	2412	16.440	2403.720	2420.160	≥0.5	PASS
		2437	16.520	2428.720	2445.240	≥0.5	PASS
		2462	16.520	2453.720	2470.240	≥0.5	PASS
11N40SISO	Ant1	2422	36.480	2403.760	2440.240	≥0.5	PASS
		2437	36.400	2418.760	2455.160	≥0.5	PASS
		2452	36.400	2433.760	2470.160	≥0.5	PASS

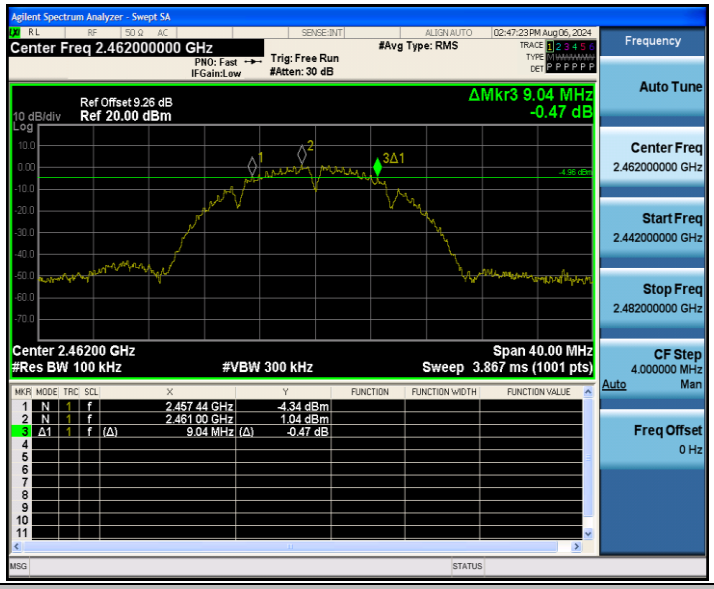
10.1.2 Test Graphs

11B_Ant1_2412



11B_Ant1_2437



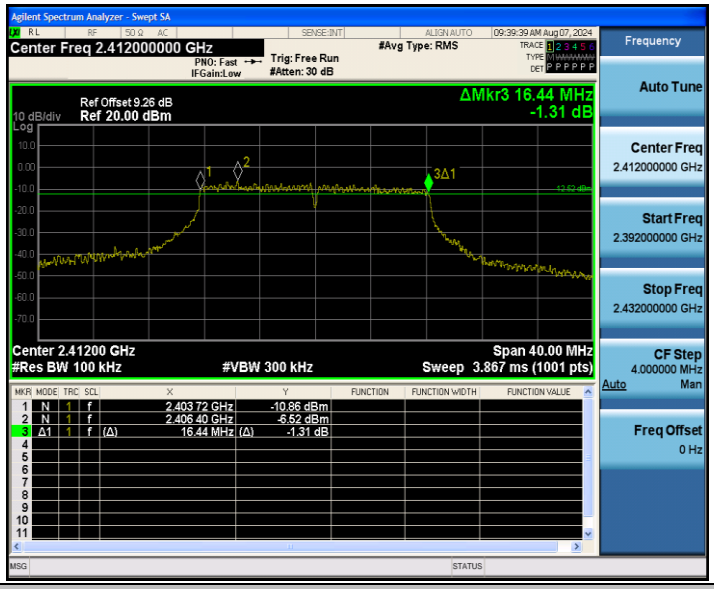
11B_Ant1_2462


11G_Ant1_2412

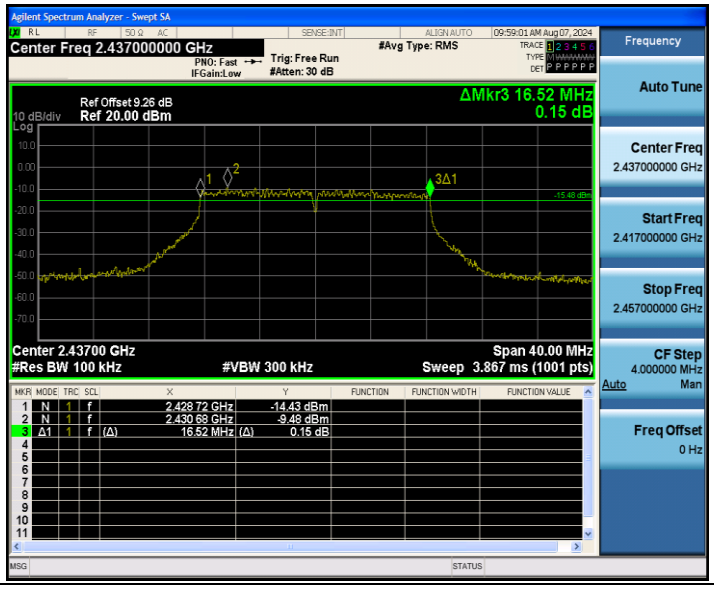
11G_Ant1_2437

11G_Ant1_2462

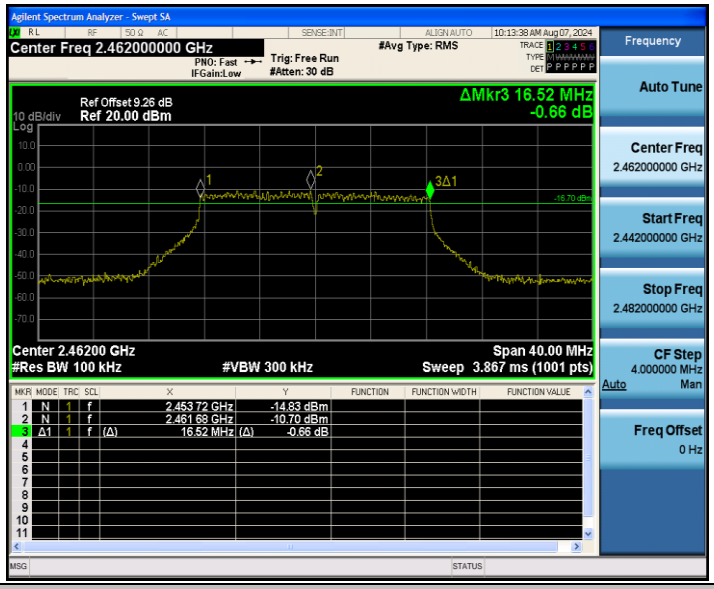
11N20SISO_Ant1_2412



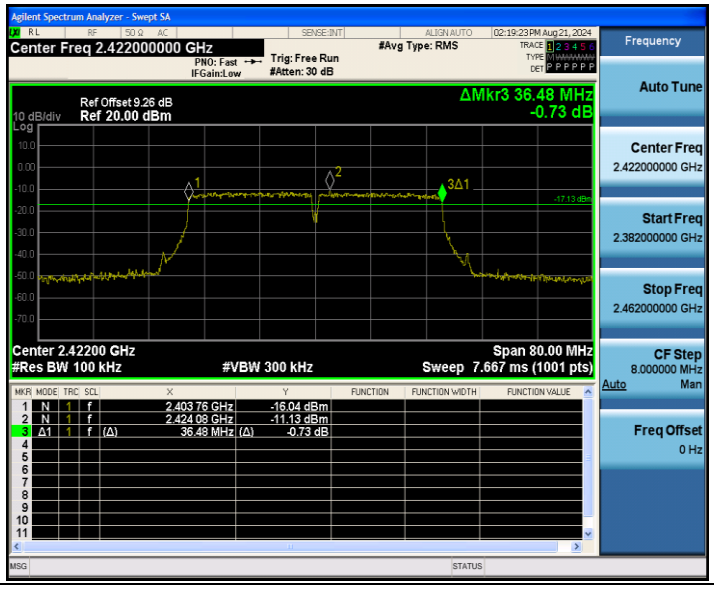
11N20SISO_Ant1_2437



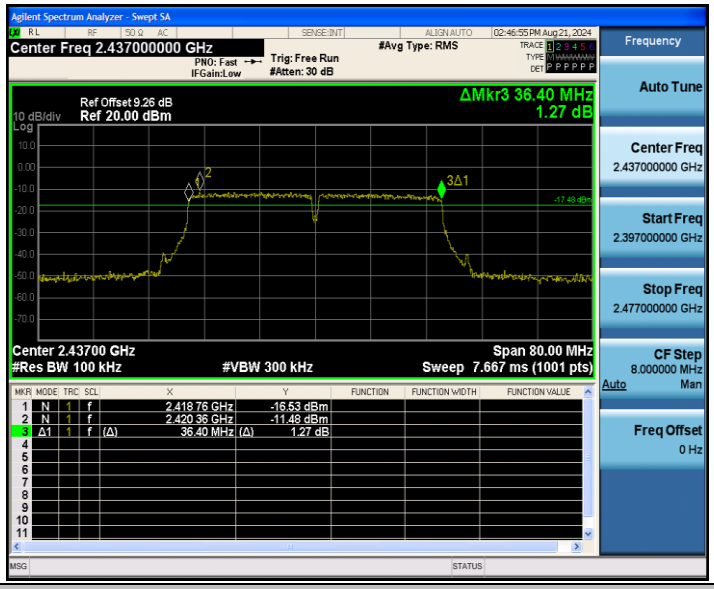
11N20SISO_Ant1_2462



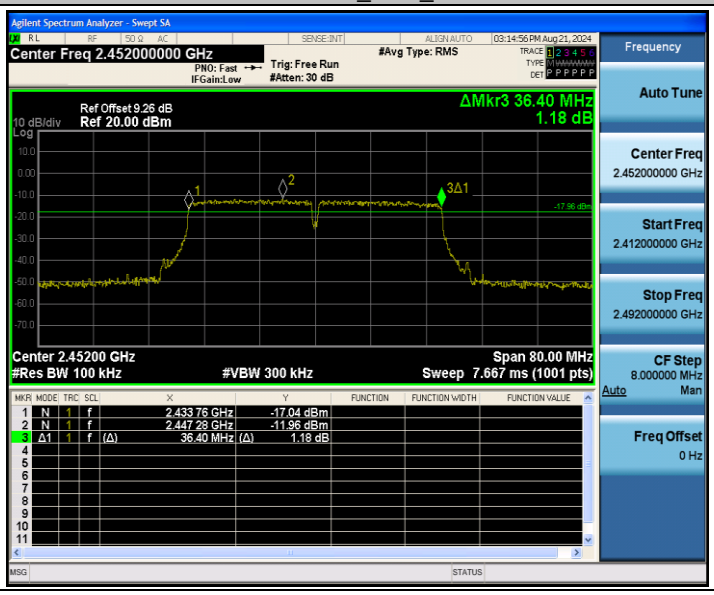
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



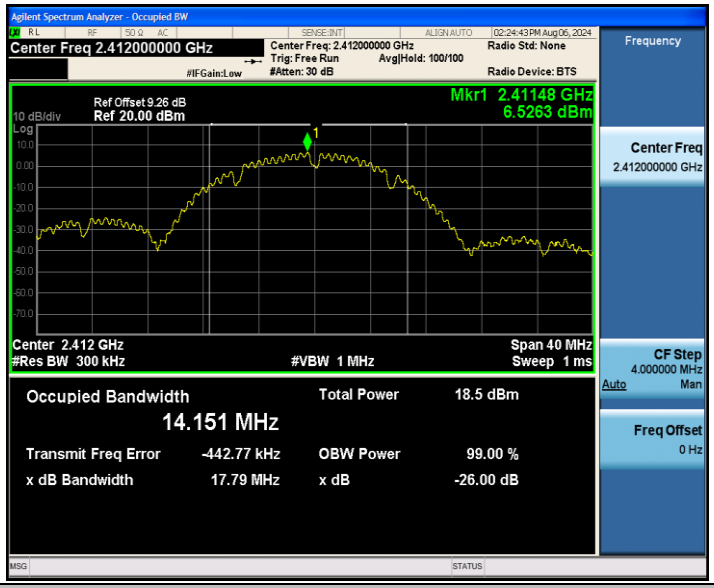
10.2 Appendix B: Occupied Channel Bandwidth

10.2.1 Test Result

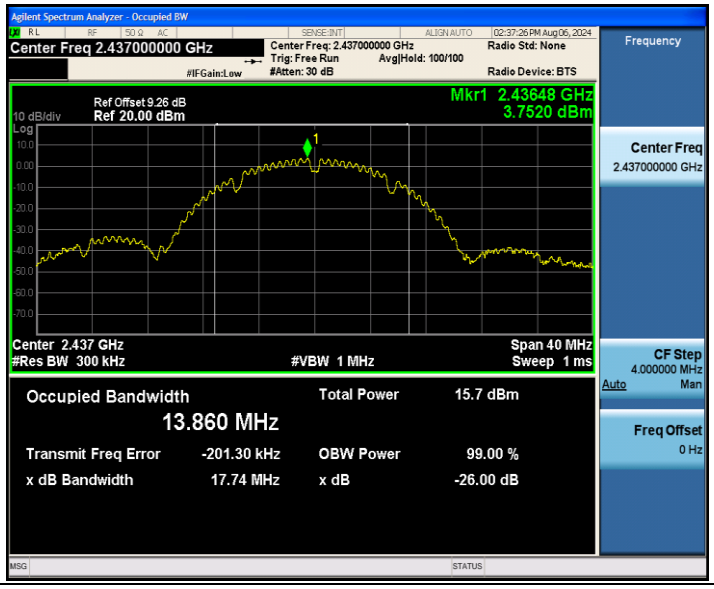
Test Mode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	14.151	2404.4817	2418.6327	---	---
		2437	13.860	2429.8687	2443.7287	---	---
		2462	13.593	2455.0326	2468.6256	---	---
11G	Ant1	2412	17.025	2403.2741	2420.2991	---	---
		2437	16.934	2428.3736	2445.3076	---	---
		2462	16.712	2453.5342	2470.2462	---	---
11N20SISO	Ant1	2412	16.733	2403.5047	2420.2377	---	---
		2437	16.719	2428.5750	2445.2940	---	---
		2462	16.733	2453.5517	2470.2847	---	---
11N40SISO	Ant1	2422	36.631	2403.7492	2440.3802	---	---
		2437	36.582	2418.6863	2455.2683	---	---
		2452	36.656	2433.6476	2470.3036	---	---

10.2.2 Test Graphs

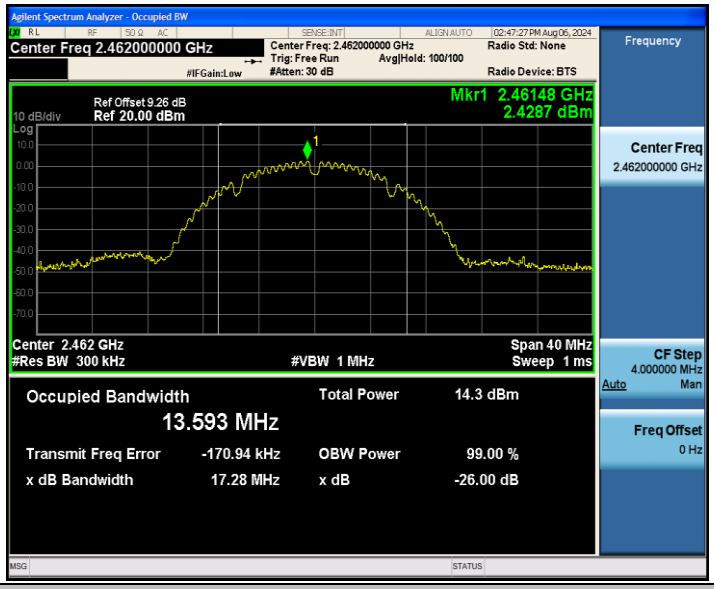
11B_Ant1_2412



11B_Ant1_2437

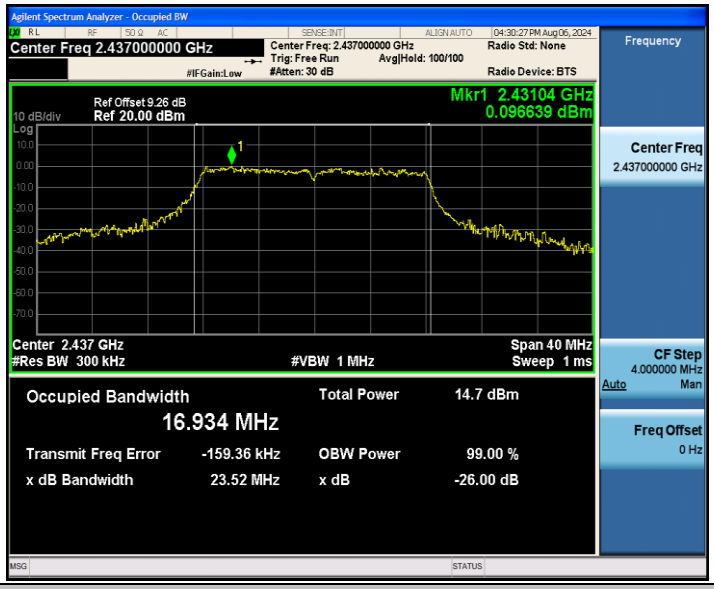


11B_Ant1_2462



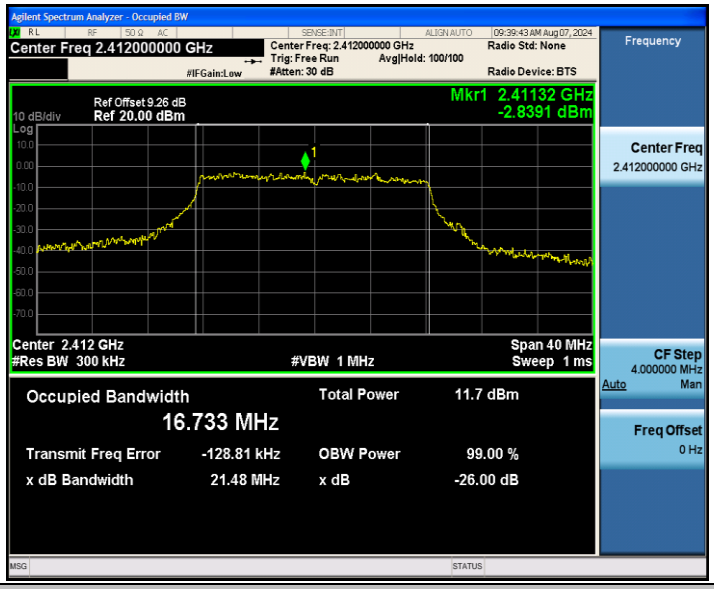
11G_Ant1_2412

11G_Ant1_2437



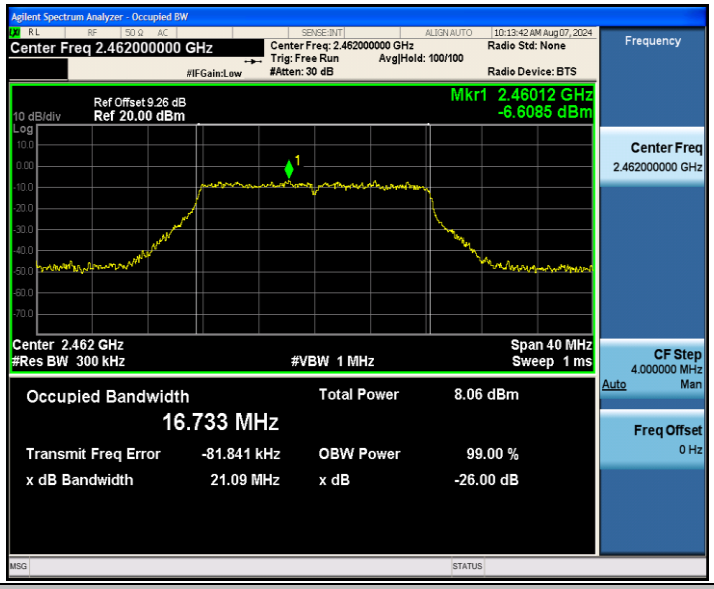
11G_Ant1_2462

11N20SISO_Ant1_2412



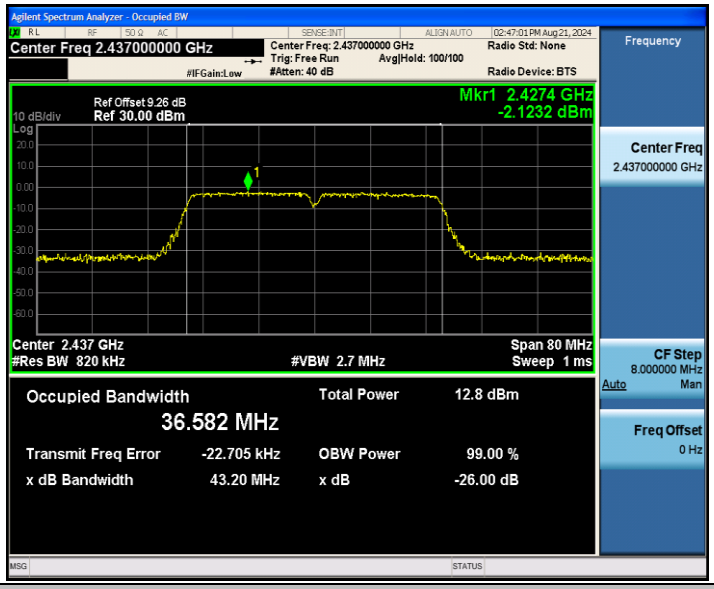
11N20SISO_Ant1_2437

11N20SISO_Ant1_2462



11N40SISO_Ant1_2422

11N40SISO_Ant1_2437



11N40SISO_Ant1_2452

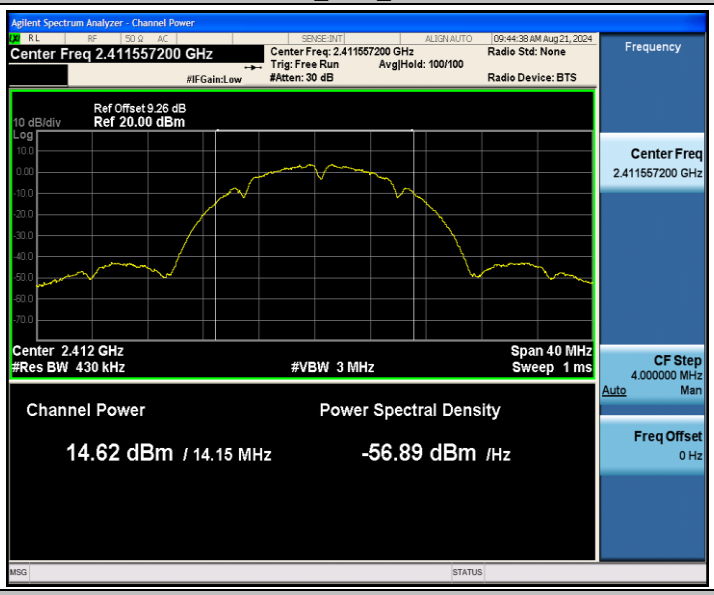
10.3 Appendix C: Maximum conducted output power

10.3.1 Test Result

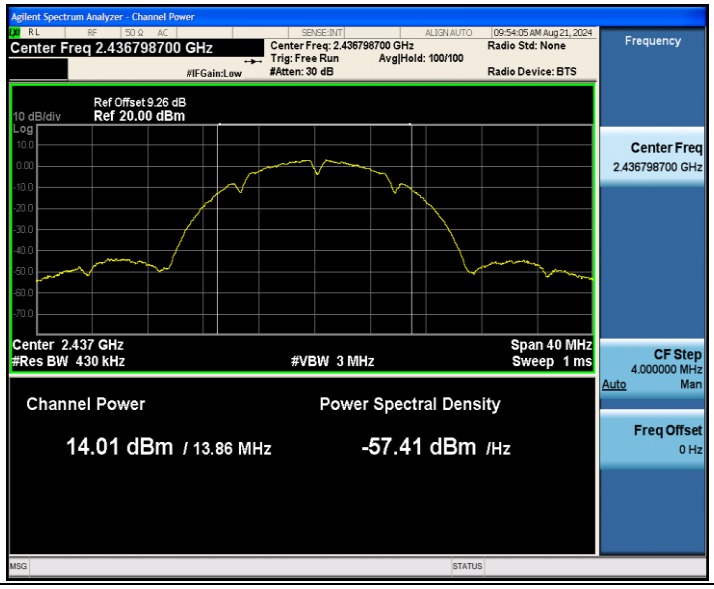
Test Mode	Antenna	Channel	Level [dBm]	10Log(1/X) Factor [dB]	Power [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	14.62	0.00	14.62	≤30.00	PASS
		2437	14.01	0.00	14.01	≤30.00	PASS
		2462	13.35	0.00	13.35	≤30.00	PASS
11G	Ant1	2412	12.60	0.00	12.60	≤30.00	PASS
		2437	11.00	0.00	11.00	≤30.00	PASS
		2462	9.57	0.00	9.57	≤30.00	PASS
11N20SISO	Ant1	2412	9.59	0.00	9.59	≤30.00	PASS
		2437	7.51	0.00	7.51	≤30.00	PASS
		2462	6.72	0.00	6.72	≤30.00	PASS
11N40SISO	Ant1	2422	6.30	0.00	6.30	≤30.00	PASS
		2437	5.92	0.00	5.92	≤30.00	PASS
		2452	5.56	0.00	5.56	≤30.00	PASS

10.4 Test Graphs

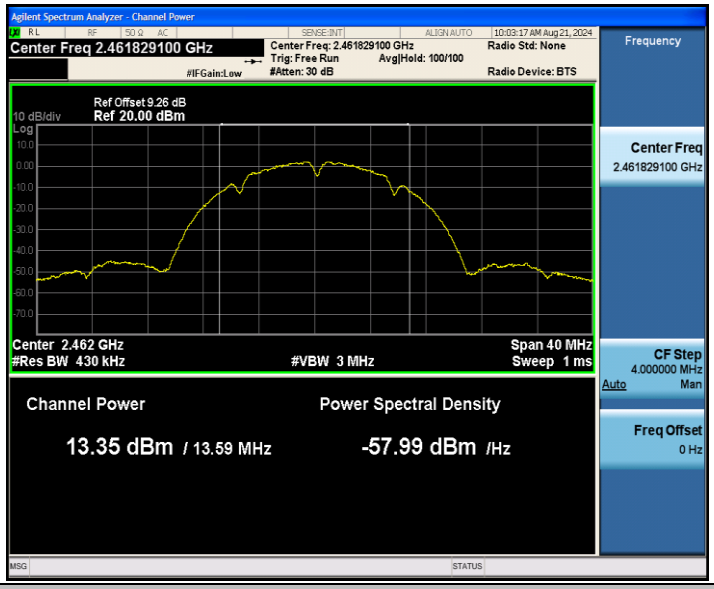
11B_Ant1_2412



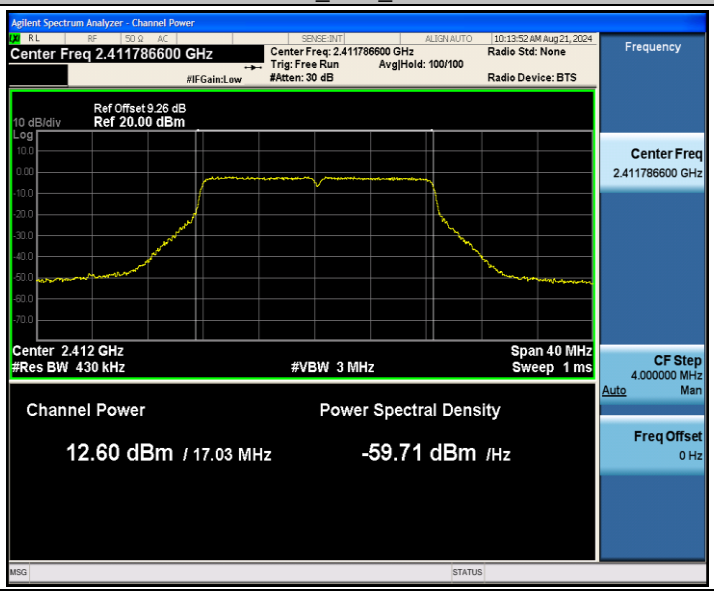
11B_Ant1_2437

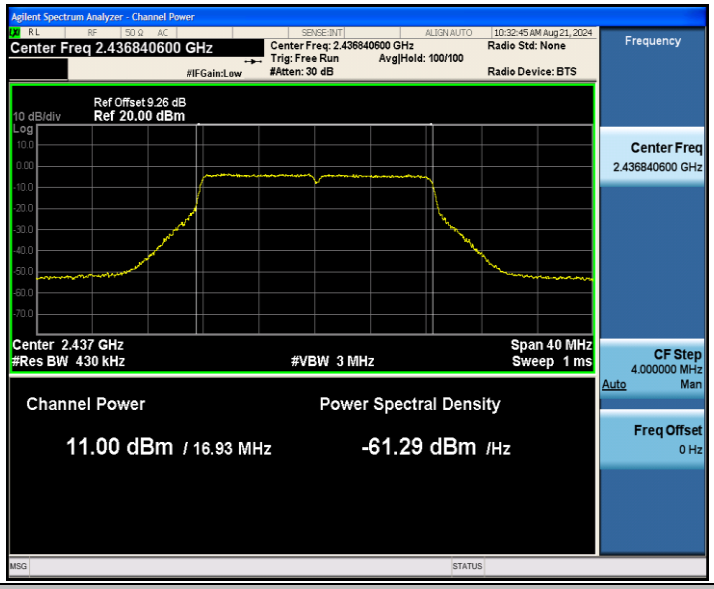


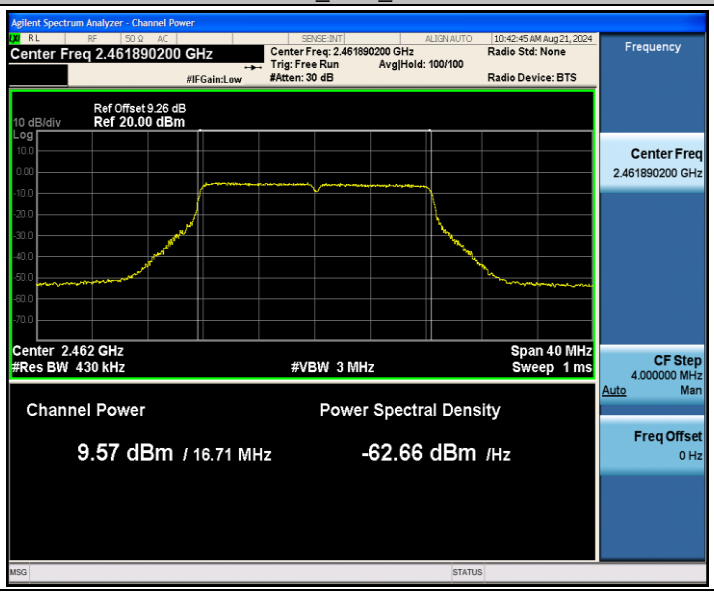
11B_Ant1_2462



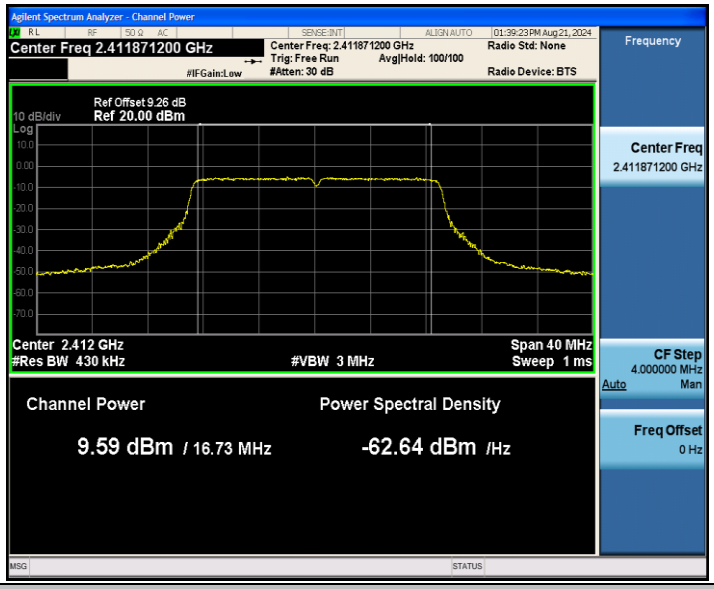
11G_Ant1_2412



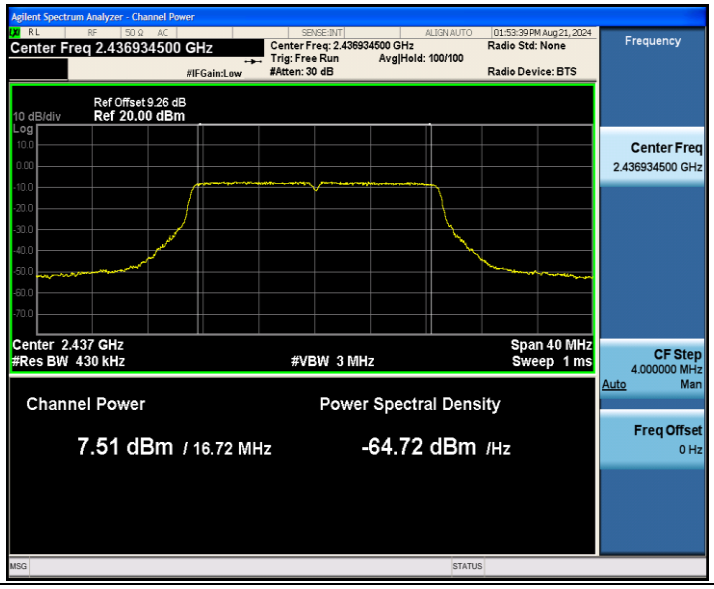
11G_Ant1_2437


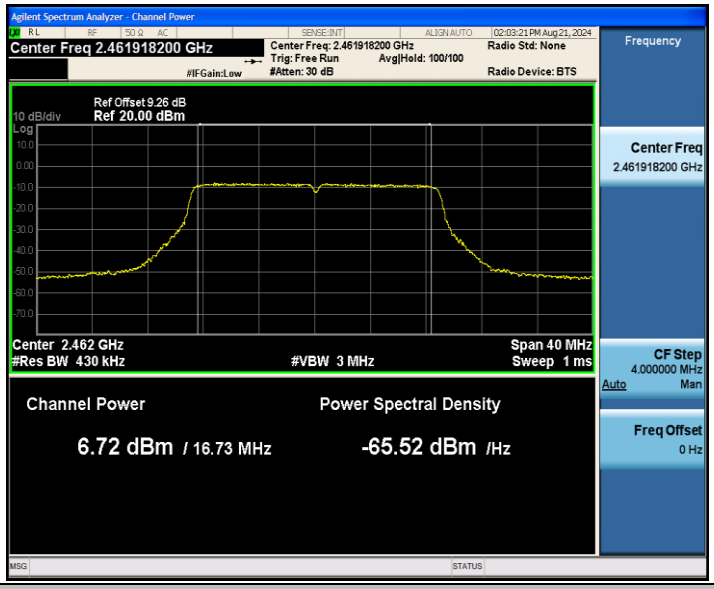
11G_Ant1_2462


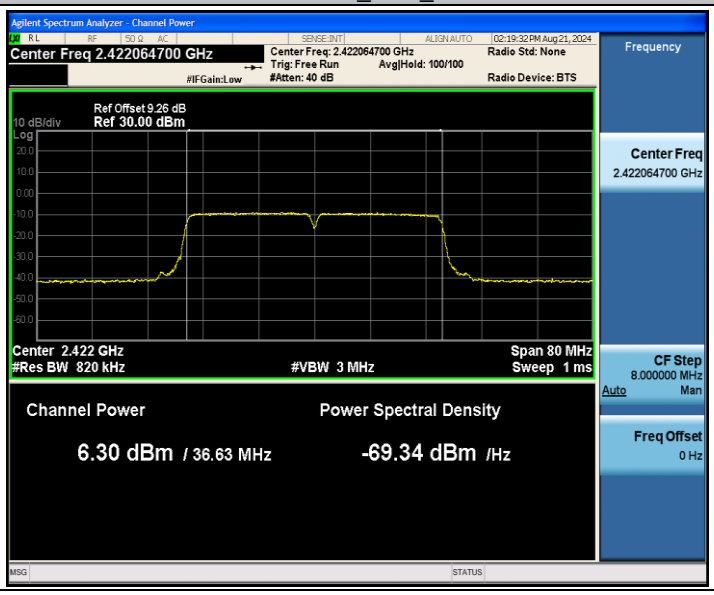
11N20SISO_Ant1_2412

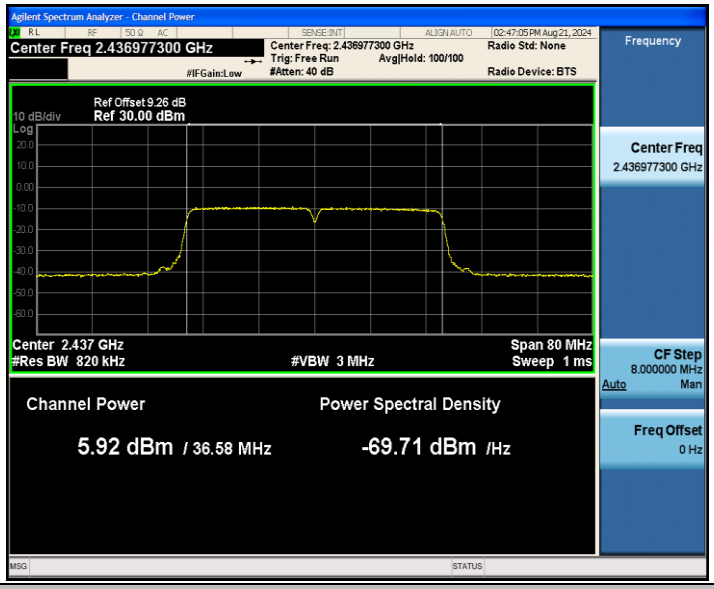


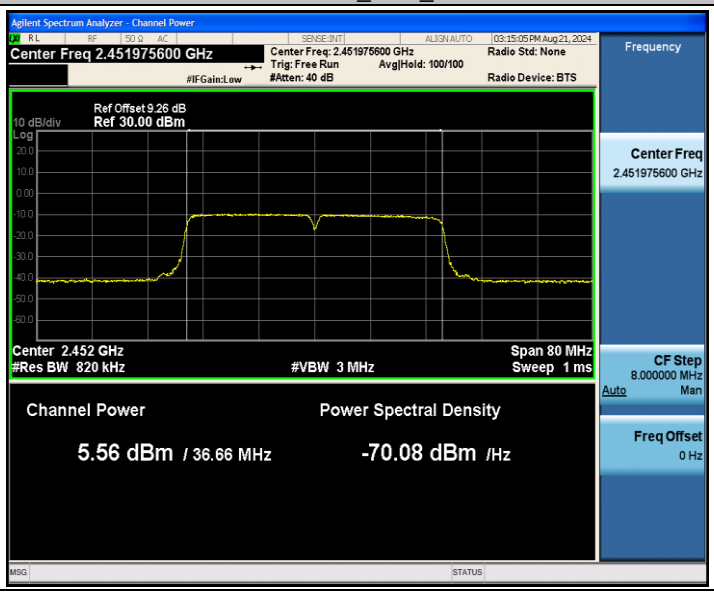
11N20SISO_Ant1_2437



11N20SISO_Ant1_2462


11N40SISO_Ant1_2422


11N40SISO_Ant1_2437


11N40SISO_Ant1_2452


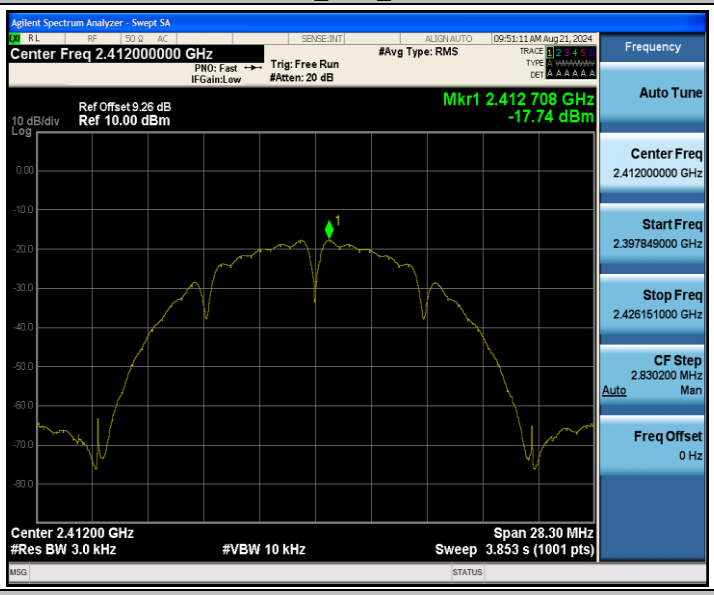
10.5 Appendix D: Maximum power spectral density

10.5.1 Test Result

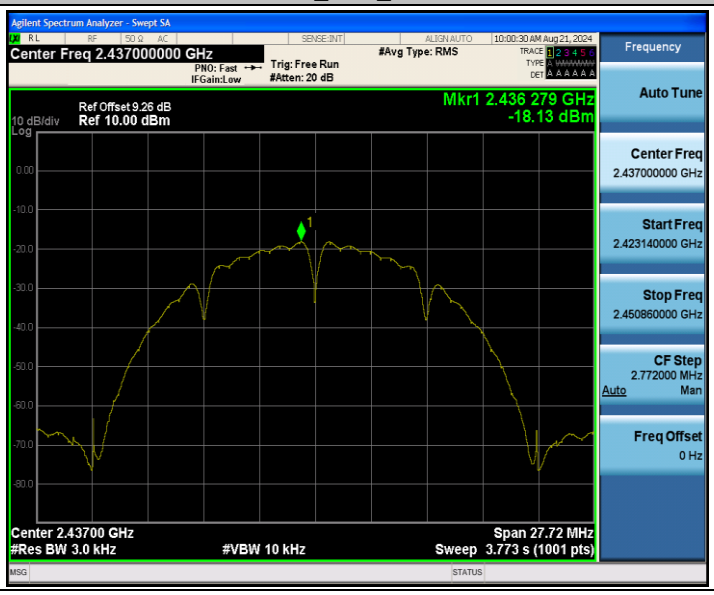
Test Mode	Antenna	Channel	Level [dBm/3-100kHz]	10Log(1/X) Factor [dB]	PSD [dBm/3-100kHz]	Limit [dBm/3kHz]	Verdict
11B	Ant1	2412	-17.74	0.00	-17.74	≤8.00	PASS
		2437	-18.13	0.00	-18.13	≤8.00	PASS
		2462	-18.84	0.00	-18.84	≤8.00	PASS
11G	Ant1	2412	-22.66	0.00	-22.66	≤8.00	PASS
		2437	-23.75	0.00	-23.75	≤8.00	PASS
		2462	-24.98	0.00	-24.98	≤8.00	PASS
11N20SISO	Ant1	2412	-26.89	0.00	-26.89	≤8.00	PASS
		2437	-27.65	0.00	-27.65	≤8.00	PASS
		2462	-28.26	0.00	-28.26	≤8.00	PASS
11N40SISO	Ant1	2422	-32.32	0.00	-32.32	≤8.00	PASS
		2437	-32.55	0.00	-32.55	≤8.00	PASS
		2452	-32.94	0.00	-32.94	≤8.00	PASS

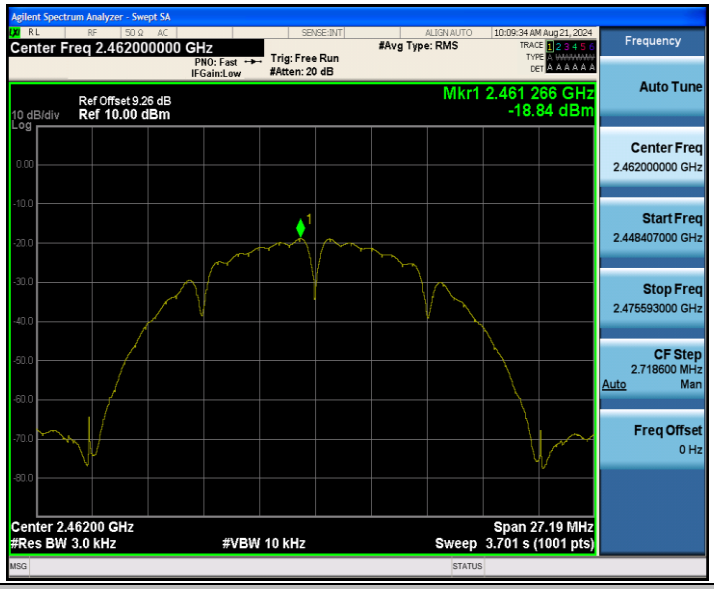
10.6 Test Graphs

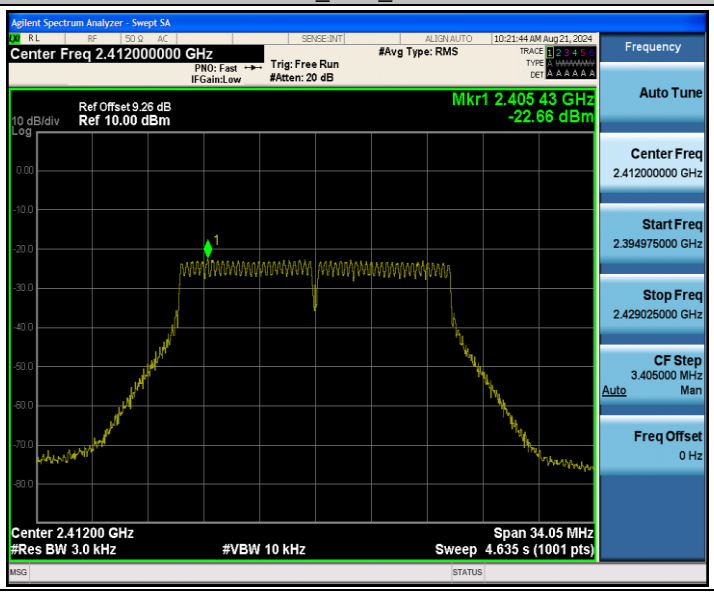
11B_Ant1_2412



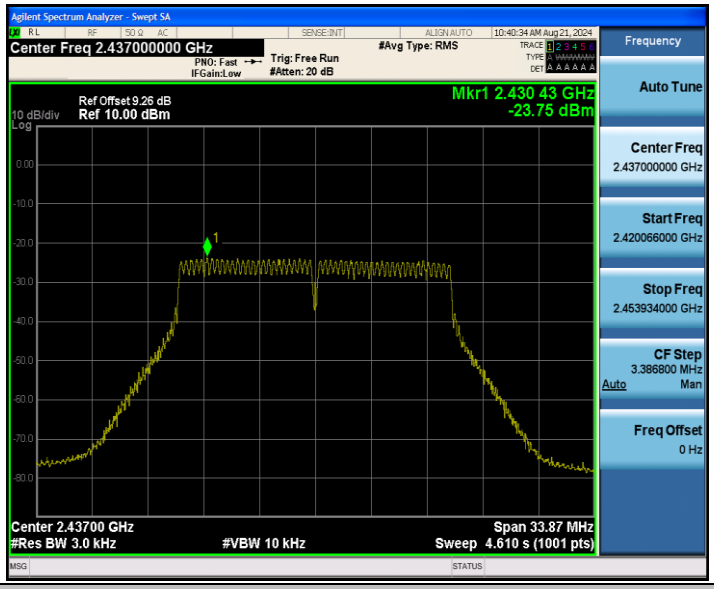
11B_Ant1_2437



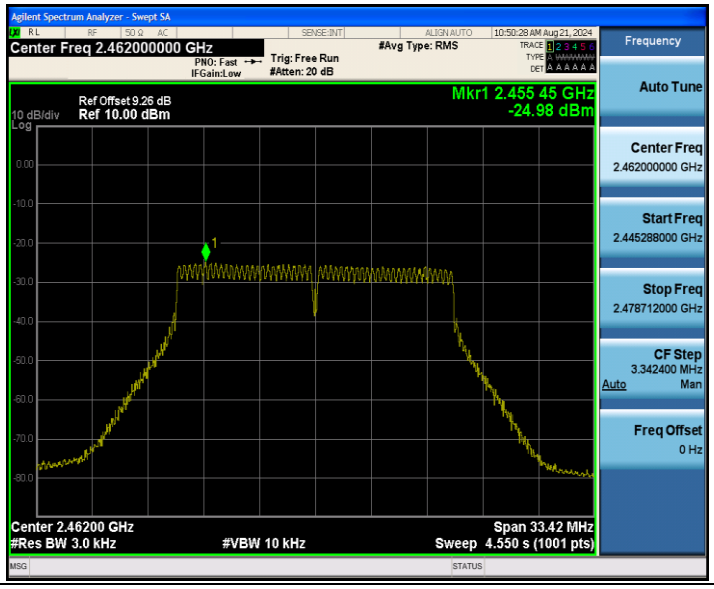
11B_Ant1_2462


11G_Ant1_2412


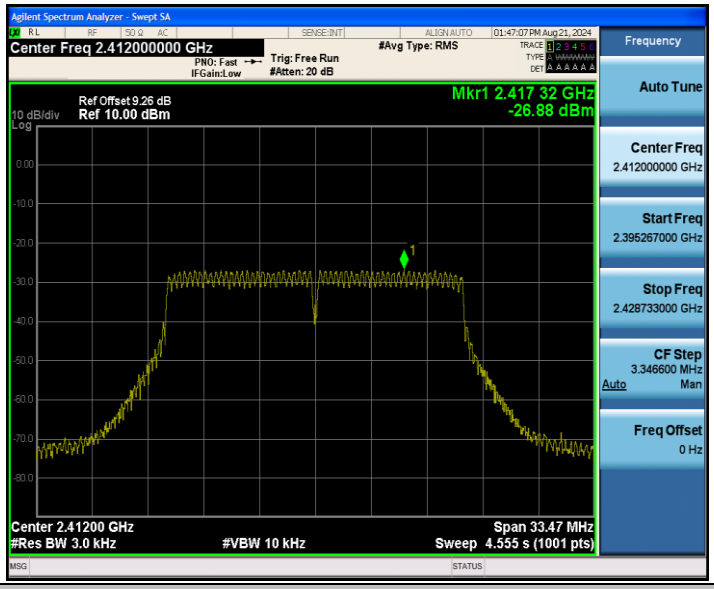
11G_Ant1_2437



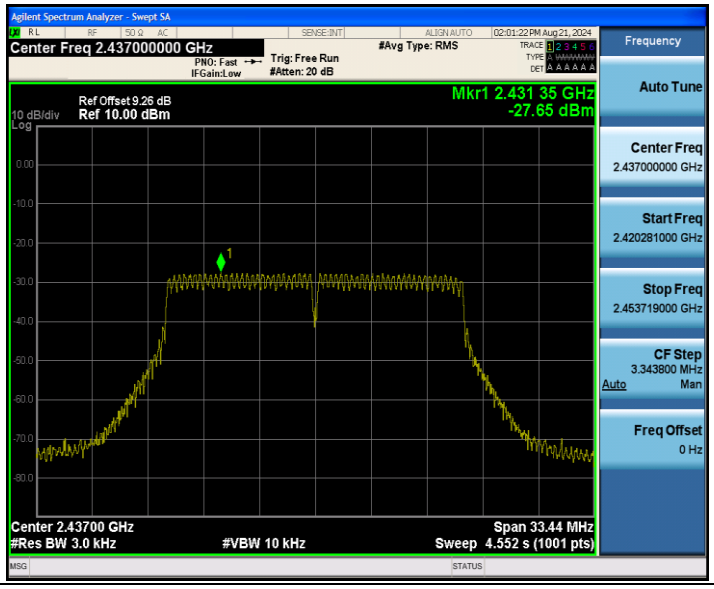
11G_Ant1_2462



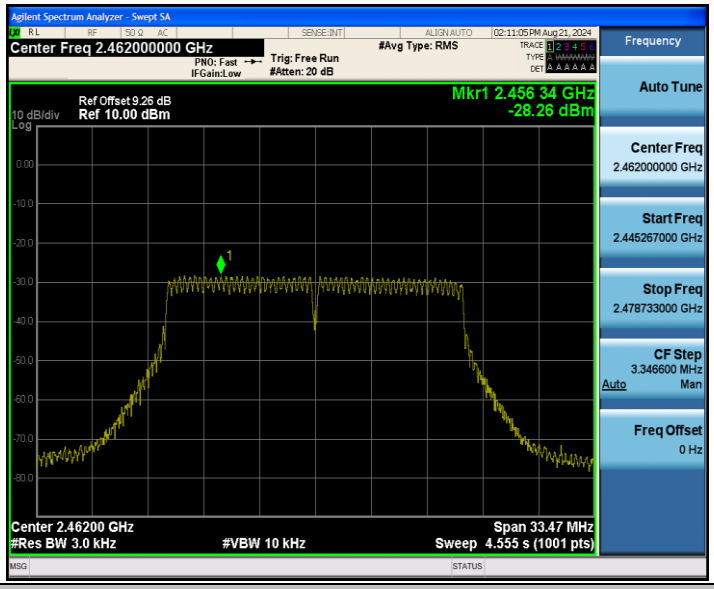
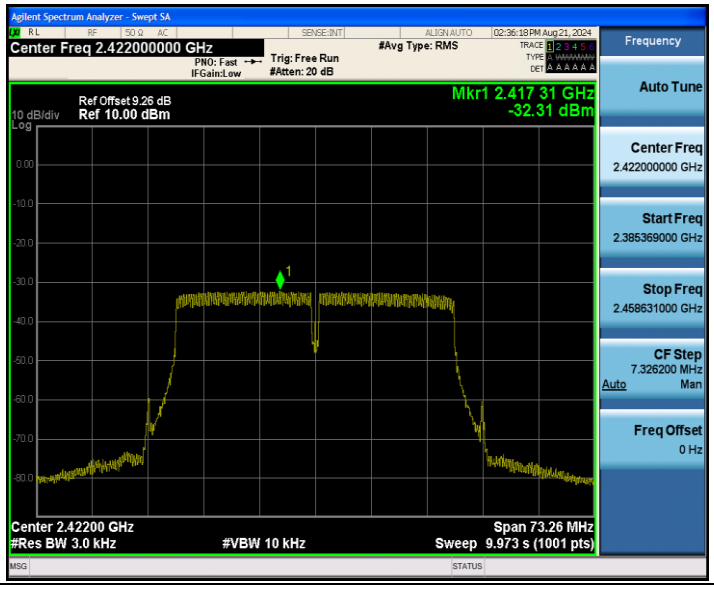
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437



11N20SISO_Ant1_2462



11N40SISO_Ant1_2422