Regulatory Test Report

Prepared for Harman International Industries, Inc.

This report presents detailed information on

INFO3.8 CSM

Prepared by

Aravind Buddana

Engineer II

Approved by

Jason Kanakry

General Manager

Issue date: 08/07/2023

Report No: AH22120901-HAR-054-TR1 v2

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The test is traceable to national standard or related international standard

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1. Test Request Information

Test Request #:	7700182070
Test Requested By:	Mark Bowman Harman International Industries, Inc. 30001 Cabot Drive, Novi, MI 48377
Test item Description:	INFO3.8 CSM
Part Number:	8709305
DUT Sample Number:	AH22120901-HAR-054#1, AH22120901-HAR-054#2
Hardware Version of DUT:	PV
Software Version of DUT:	17.80.200.219
Component Category of DUT:	N/A
FCC ID:	2AHPN-BE2867
ISED ID:	6434C-BE2867
Type of Test:	FCC/ISED Certification
Test Method:	CFR Title 47 FCC Part 15.247, ISED Canada RSS-247 Issue 2, ISED Canada RSS-GEN Issue 5, FCC KDB 558074 D01 15.247 Measurement Guidance v05r02 and ANSI C63.10-2013
Deviations from standard:	None
Approved Test Plan Number:	N/A
Test Plan Revision:	N/A
Date test sample received:	10-07-2022
Date test started:	12-12-2022
Date test finished:	03-13-2023

2. Test Laboratory Information

Location of Test Lab:	The radiated and conducted emissions test sites are located at Bureau Veritas 815 N. Opdyke Rd #100, Auburn Hills, MI 48326, Phone: +1-248-836-4700
Key Contact:	Jason Kanakry (General Manager) Jason.Kanakry@BureauVeritas.com Phone: +1-248-836-4747
Laboratory Accreditations:	BUREAU VERITAS CONSUMER PRODUCTS SERVICES, INC is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories.
ISO/IEC 17025:2017:	5678.01
FCC Test Site Number:	US1278 (242530)
IC Test Site Number:	US0229 (26240)

3. Statement of Conformity

RSS-GEN	RSS 247	Part 15	Comments
6.4		15.15(b)	There are no controls accessible to the user that varies the output power to operate in violation of the regulatory requirements.
		15.19	The label is shown in the label exhibit.
		15.21	Information to the user is shown in the instruction manual exhibit.
		15.27	No special accessories are required for compliance.
3.2		15.31	The EUT was tested in accordance with the measurement standards in this section.
6.13.2		15.33	Frequency range was investigated according to this section, unless noted in specific rule section under which the equipment operates.
6.13.1		15.35	The EUT emissions were measured using the measurement detector and bandwidth specified in this section, unless noted in specific rule section under which the equipment operates.
6.8		15.203	EUT employs integrated PCB antenna with 2.57dBi gain.
8.10		15.205 15.209	The fundamental is not in a Restricted band and the spurious and harmonic emissions in the Restricted bands comply with the general emission limits of 15.209 or RSS-Gen as applicable
8.8		15.207	N/A. EUT is vehicle battery powered only.

4. Conducted Testing

4.1 Test Summary

This test report supports an application for certification of a transmitter operating pursuant to: **CFR Title 47 FCC Part 15.247, ISED Canada RSS-247 Issue 2.** The product is **INFO3.8 CSM** a direct sequence spread spectrum transmitter that operates in the 2412-2462MHz frequency range.

Details	Description
Frequency Range (MHz)	2412 – 2462
Tested Modes	802.11b, 802.11g, 802.11n (HT20)
Number of Channels	11
Tested Channels	1, 6 ,11
DUT Antenna Type	Integrated PCB antenna
Number of transmit Chains	1
Equipment Type	Equipment with wideband modulation other than frequency hopping
DUT Antenna Gain	2.57dBi ☒ Provided by Customer with Gain Report ☐ Not Provided by Customer

Channels and Frequency

Channel	Freq. (MHz)	Channel	Freq. (MHz)
1	**2412**	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	**11**	**2462**
5	2432		
6	**2437**		
7	2442		

Notes:

1. Channels marked bold were tested.
2. Output power measurements performed at the lowest and highest data rate of each supported 802.11 mode.

Power Settings

802.11b		802.11g	
Channel	**Power Setting**	**Channel**	**Power Setting**
1	15	**1**	12
6	15	**6**	12
11	15	**11**	12
802.11n (HT20)			
Channel	**Power Setting**		
1	11		
6	11		
11	11		

Test Results Summary

Test	Frequency (MHz)	802.11b	802.11g	802.11n (HT20)
RF Output Power	**2412/2437/2462**	PASS	PASS	PASS
Power Spectral Density	**2412/2437/2462**	PASS	PASS	PASS
DTS Bandwidth (6dB)	**2412/2437/2462**	PASS	PASS	PASS
Occupied Channel Bandwidth 99%	**2412/2437/2462**	PASS	PASS	PASS
Band Edges Low	**2412**	PASS	PASS	PASS
Band Edges High	**2462**	PASS	PASS	PASS
Conducted Spurious Emissions	**2412/2437/2462**	PASS	PASS	PASS

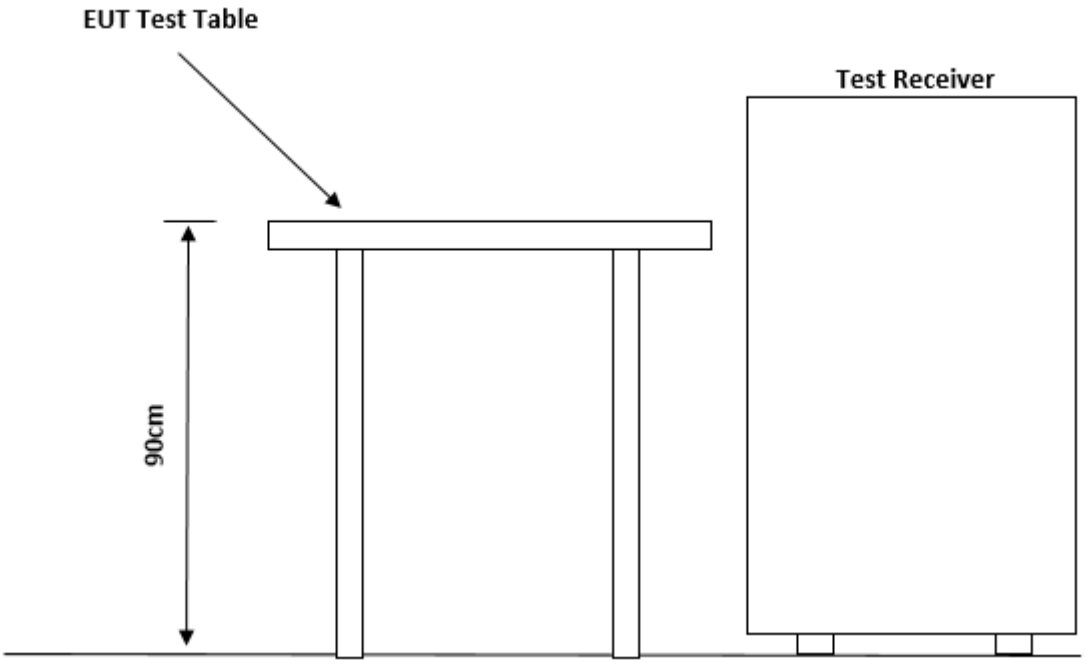
We found that the product met the requirements. Test samples received in good condition and remains good and functional post testing.

Test Item	Sample #	Result
FCC 15.247 2.4G WLAN	AH22120901-HAR-054#1	Meets Requirements

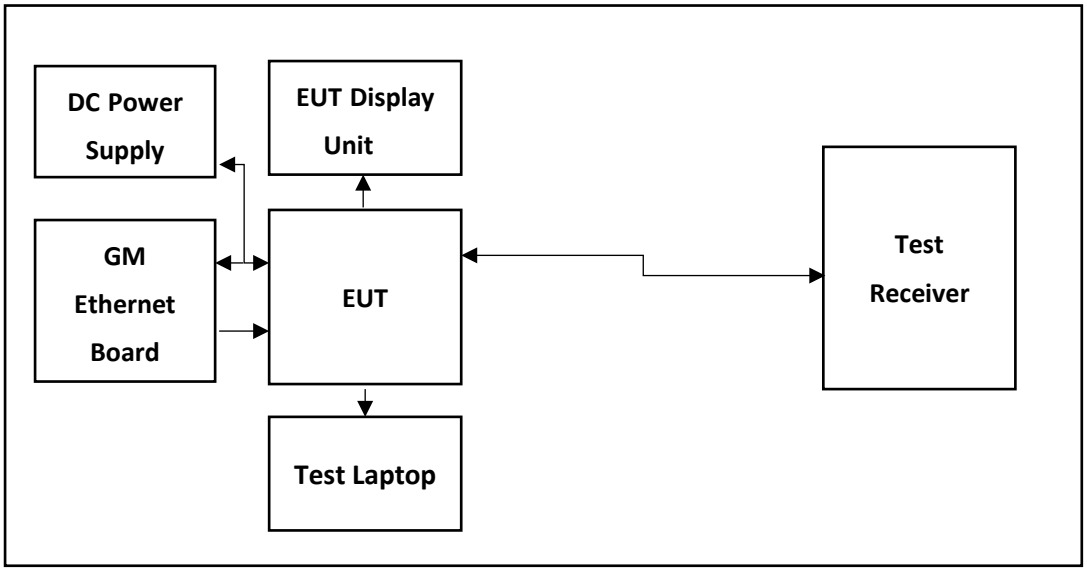
4.2 Test Setup

Conducted Test Site Description

The site is accommodated to test tabletop and floor standing test equipment.



TEST SETUP DIAGRAM



4.3 Test Equipment Used

ID #	Equipment	Manufacturer	Model #	Serial #	Cal Due
BVD0226	Spectrum Analyzer 10Hz-44GHz	Rohde & Schwarz	FSV3044	101018	4/20/2024
BVD0227	8 port switch unit for Wireless Test system	Rohde & Schwarz	OSP150	101100	11/24/2025
BVD0228	8 port switch unit for Wireless Test system	Rohde & Schwarz	OSP220	101632	11/14/2025
BVD0224	Signal Generator 100kHz-40GHz	Rohde & Schwarz	SMB100A	181741	4/20/2024
BVD0225	Signal Generator 100k-6GHz with GPS simulator	Rohde & Schwarz	SMW200A	107664	4/20/2023
BVD0250	Wireless Connectivity Tester 70M-6GHz	Rohde & Schwarz	CMW270	102113	4/20/2024
BVD0302	DC power supply 1-15VDC 60A 110/220 11.5A max input	BK Precision	1693	257F17180	N/A
BVD0321	Fixeds Attenuator 2W 20dB -40GHz	Mini-Circuits	BW-K20-2W44+	2103	3/21/2023
BVD0430	Multimeter	Fluke	117	49710262SV	11/11/2023
BVD0229	Temp and Humidity Meter	Fluke	971	12001009	5/1/2023
N/A	Test-PC	Lenovo ThinkPad	E560	PF0L0N9R	N/A

Notes:- DC power supply verified before use with calibrated Multimeter.

Customer Supplied Equipment

ID #	Equipment	Manufacturer	Model	Serial #	Version No.
N/A	Harness	Harman	N/A	N/A	N/A
N/A	Display Unit	Innolux Corp	INFOMM-15524	0024	N/A
N/A	Ethernet Board	GM	N/A	N/A	CSMate rev.4
N/A	GM BT WLAN Test Tool NXP Chips S/W	Harman	N/A	N/A	2.4

Equipment List (Software)

ID #	Equipment	Manufacturer	Model	Version No	
N/A	EMC Test Software	Rodhe & Schwarz	EMC32	11.20.00	N/A

4.4 Test Data

4.4.1 RF Output Power

Test according to FCC title 47 part 15 §15.247(b), KDB 558074 D01 DTS Meas Guidance v05r02 and ANSI C63.10-2013 11.9.2.3.2, RSS-247 5.4 (d)

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.

Expanded Combined Uncertainty of absolute Level Measurement (K=2) < 1 dB

802.11b

Data Rate	Gated RMS (dBm) 2412 MHz	Gated RMS (dBm) 2437 MHz	Gated RMS (dBm) 2462 MHz	Limit (dBm)	Duty Cycle (%)	Power Setting
1 Mbps	9.375	10.197	10.667	30	99.889	15

802.11g

Data Rate	Gated RMS (dBm) 2412 MHz	Gated RMS (dBm) 2437 MHz	Gated RMS (dBm) 2462 MHz	Limit (dBm)	Duty Cycle (%)	Power Setting
6 Mbps	6.872	7.611	8.318	30	98.846	12

802.11n (HT20)

Data Rate	Gated RMS (dBm) 2412 MHz	Gated RMS (dBm) 2437 MHz	Gated RMS (dBm) 2462 MHz	Limit (dBm)	Duty Cycle (%)	Power Setting
MCS0	6.016	6.761	7.411	30	98.775	11

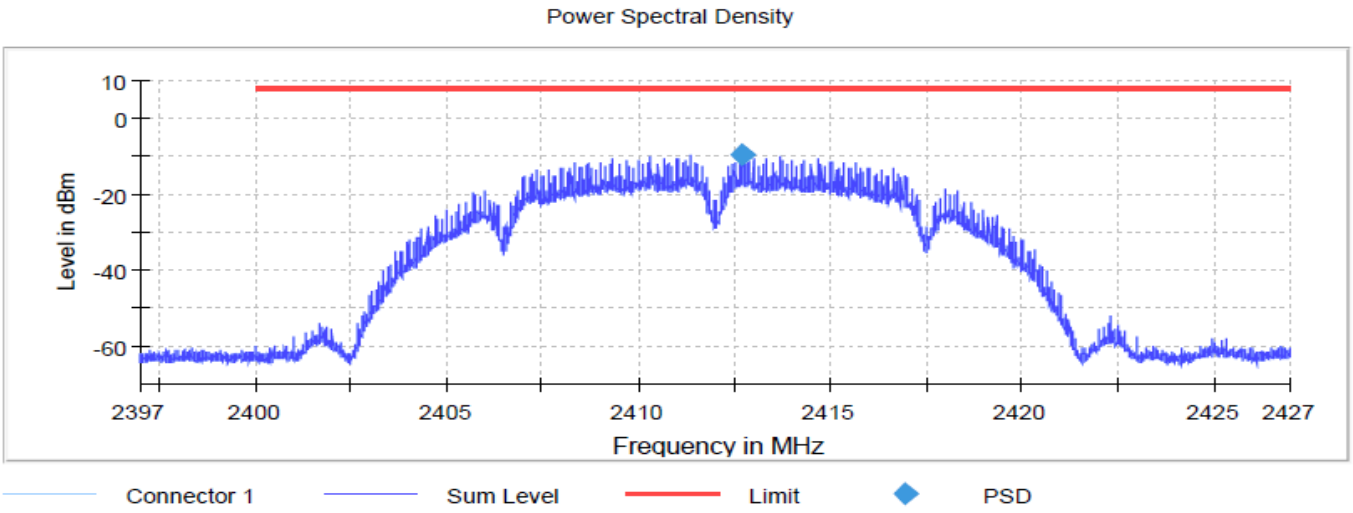
4.4.2 Power Spectral Density

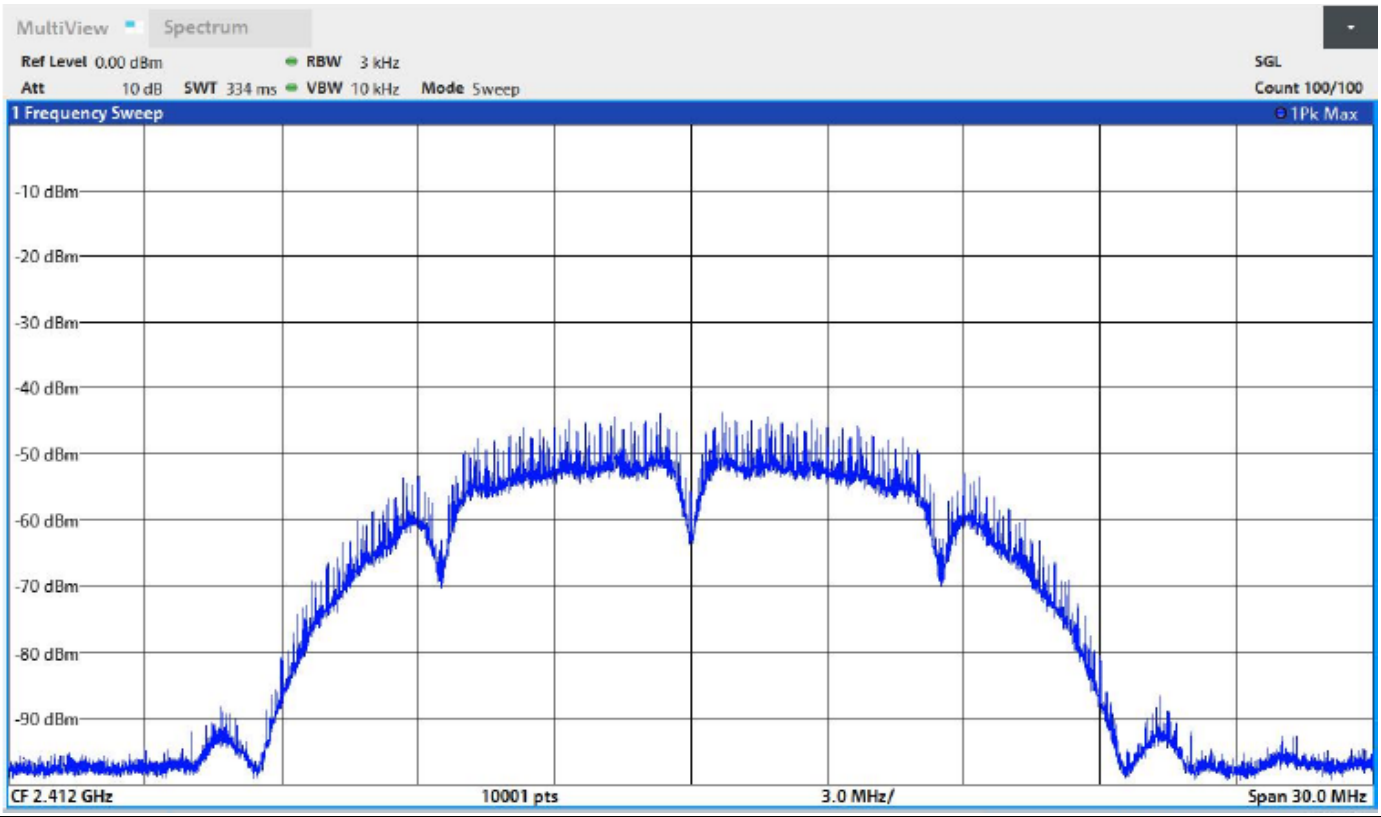
Test according to FCC title 47 part 15 §15.247(e), KDB 558074 D01 DTS Meas Guidance v05r02 F and ANSI C63.10-2013 Section 11.10.2, RSS-247 5.2 (b)

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Uncertainty (K=2) < 1.3 dB

Mode	Data Rate	PSD (dBm) 2412 MHz	PSD (dBm) 2437 MHz	PSD (dBm) 2462 MHz	Limit (dBm)
802.11b	**1 Mbps**	-9.293	-8.894	-8.013	8.0

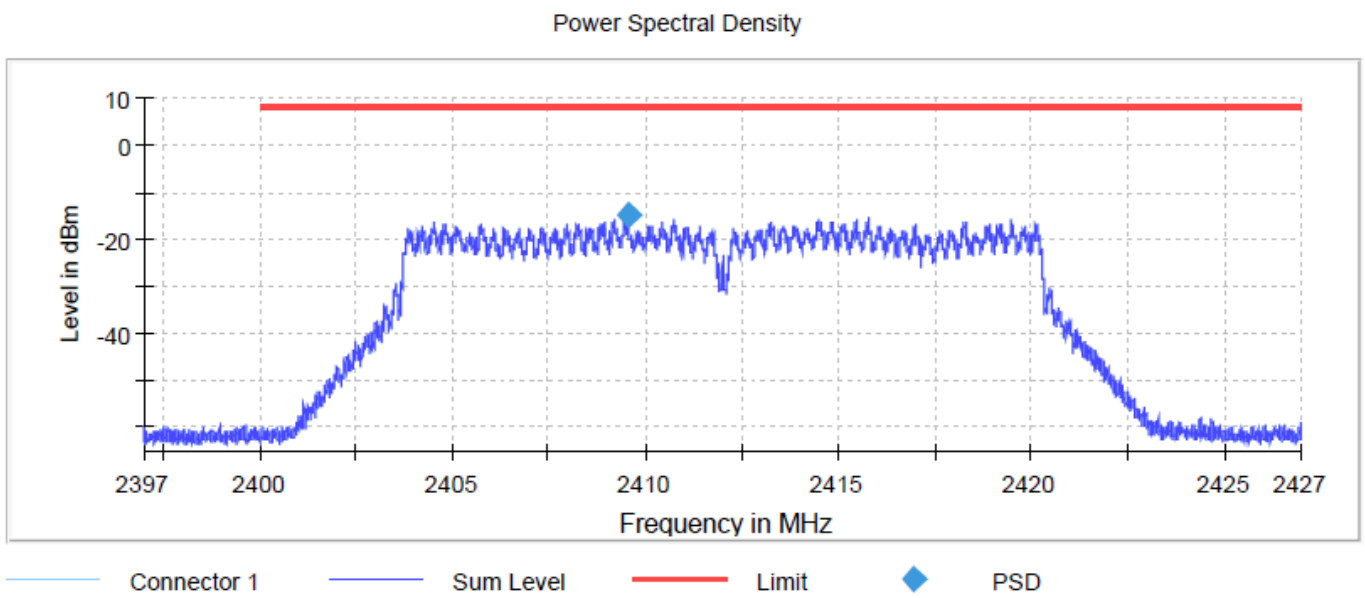
802.11b 2412MHz 1Mbps

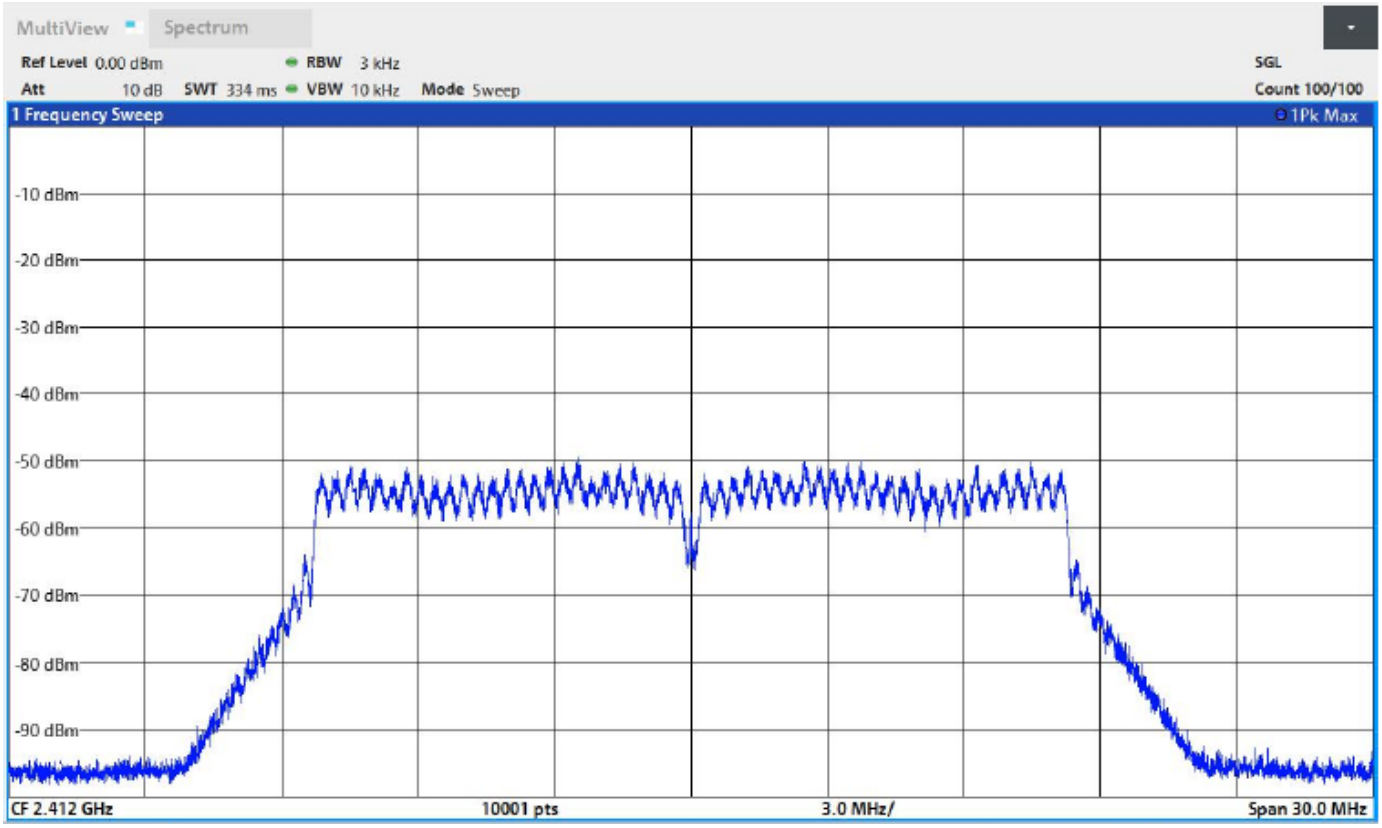




Mode	Data Rate	PSD (dBm) 2412 MHz	PSD (dBm) 2437 MHz	PSD (dBm) 2462 MHz	Limit (dBm)
802.11g	6 Mbps	-15.077	-13.904	-14.033	8.0

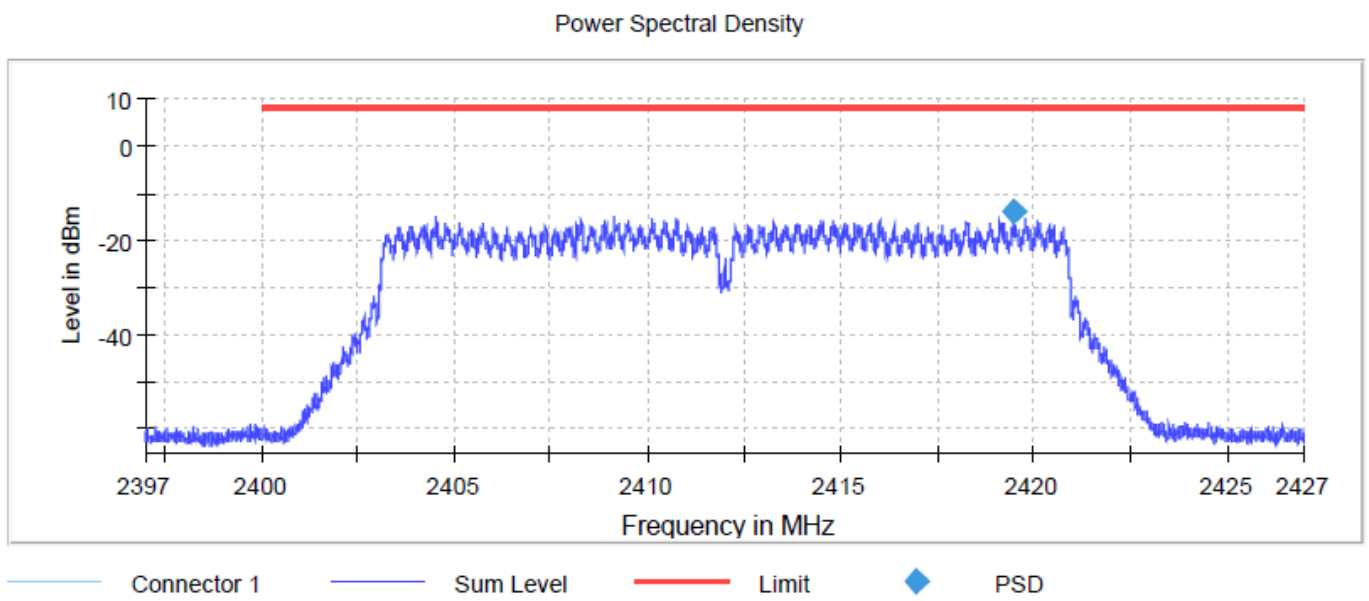
802.11g 2412MHz 6Mbps

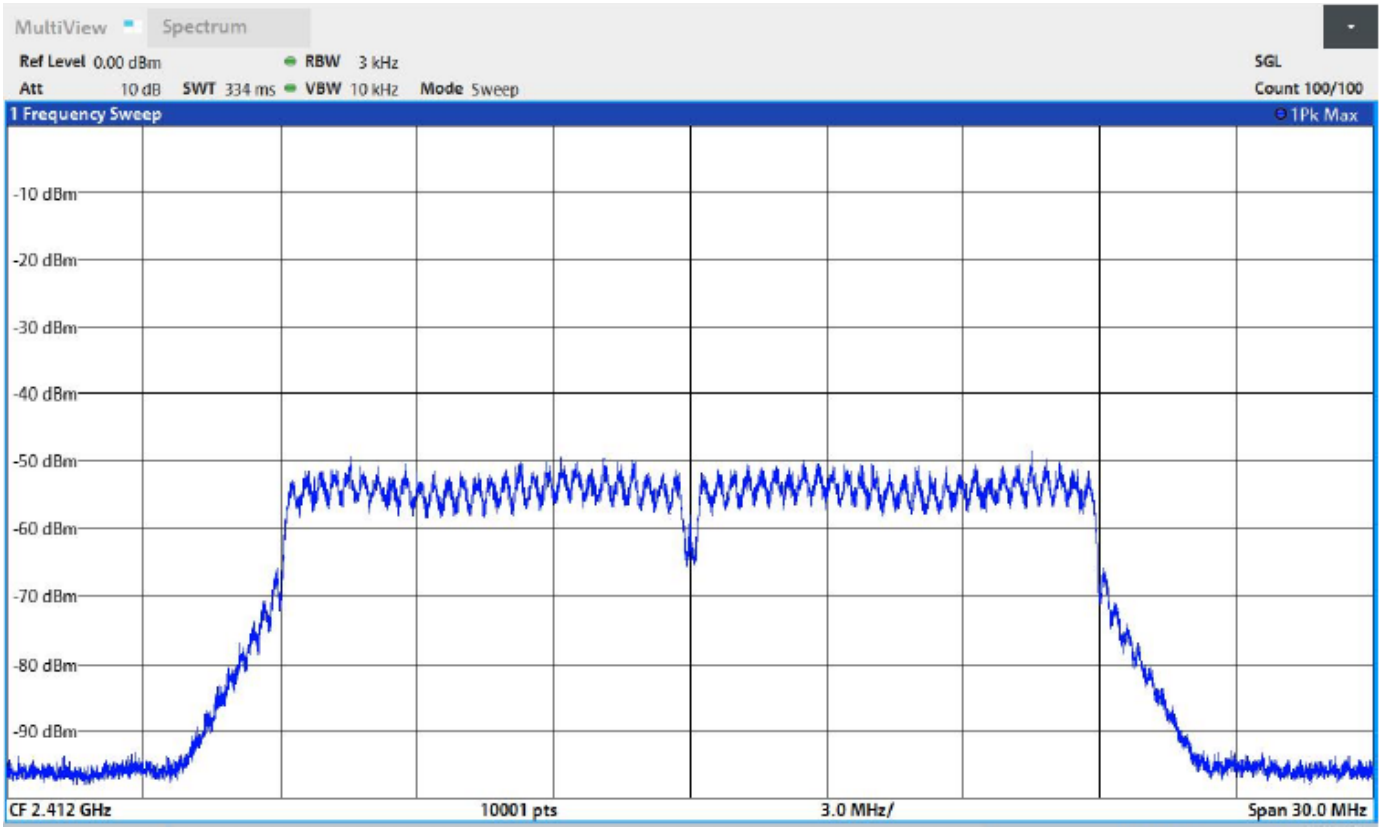




Mode	Data Rate	PSD (dBm) 2412 MHz	PSD (dBm) 2437 MHz	PSD (dBm) 2462 MHz	Limit (dBm)
802.11n	**MCS0**	-14.123	-12.996	-13.375	8.0

802.11n (HT20) 2412MHz MCS0





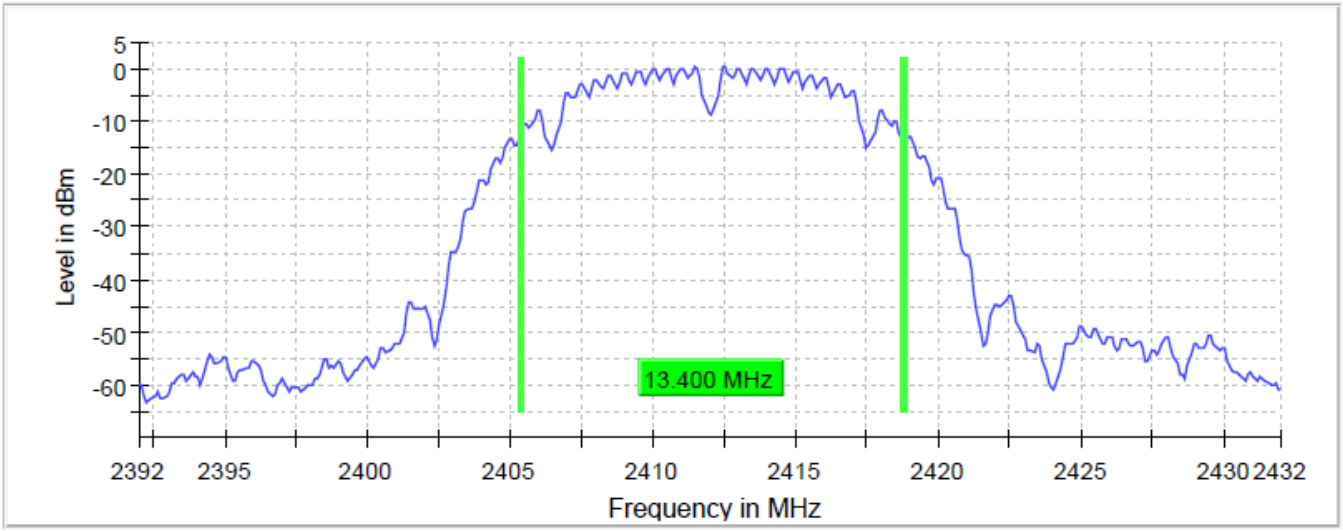
4.4.3 Occupied Channel Bandwidth

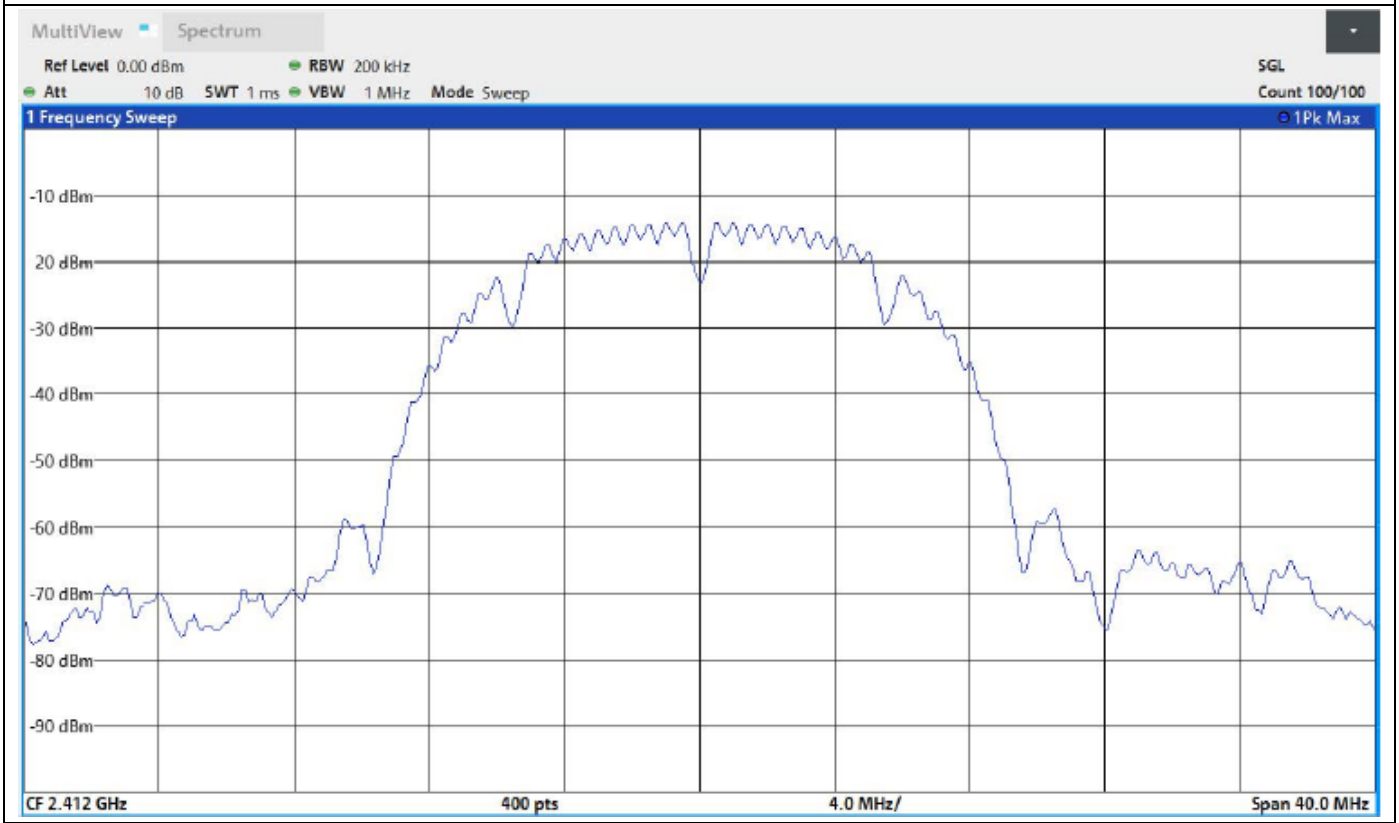
Test according to RSS-GEN Section 6.7, KDB 558074 D01 DTS Meas Guidance v05r02 and ANSI C63.10-2013,

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Uncertainty (K=2) < 2%

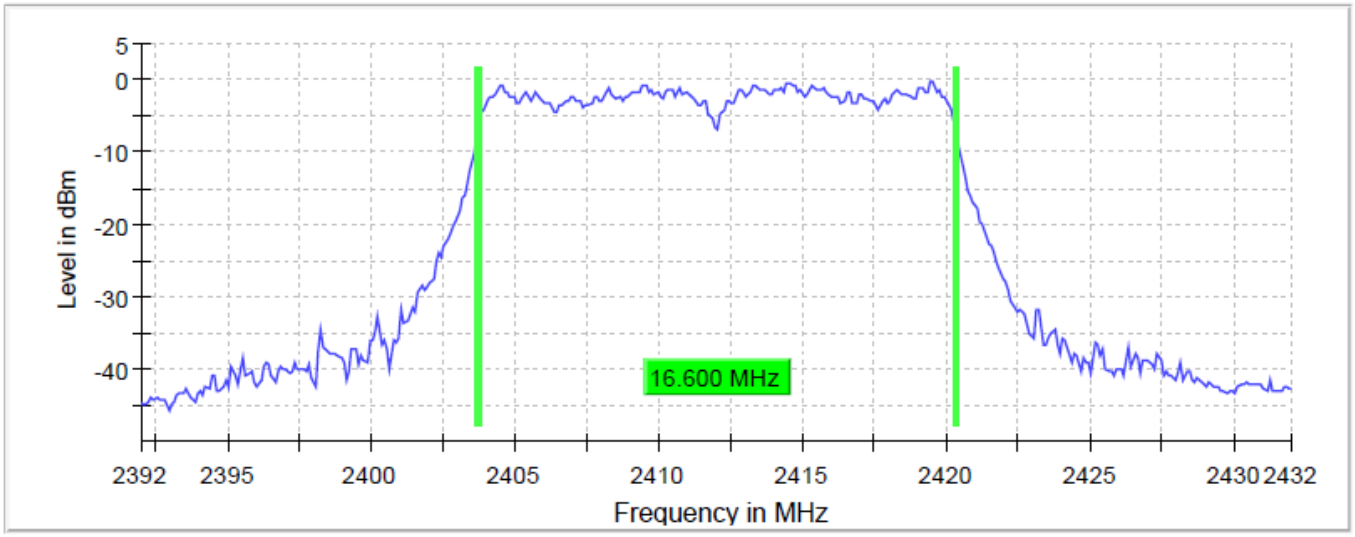
Data Rate	DUT Frequency (MHz)	Bandwidth (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
802.11b 1Mbps	2412.000000	13.400000	2405.350000	2418.750000
802.11g 6Mbps	2412.000000	16.600000	2403.750000	2420.350000
802.11n (HT20) MCS0	2412.000000	17.700000	2403.150000	2420.850000
802.11b 1Mbps	2437.000000	13.300000	2430.350000	2443.650000
802.11g 6Mbps	2437.000000	16.500000	2428.750000	2445.250000
802.11n (HT20) MCS0	2437.000000	17.700000	2428.150000	2445.850000
802.11b 1Mbps	2462.000000	13.400000	2455.350000	2468.750000
802.11g 6Mbps	2462.000000	16.600000	2453.750000	2470.350000
802.11n (HT20) MCS0	2462.000000	17.700000	2453.150000	2470.850000

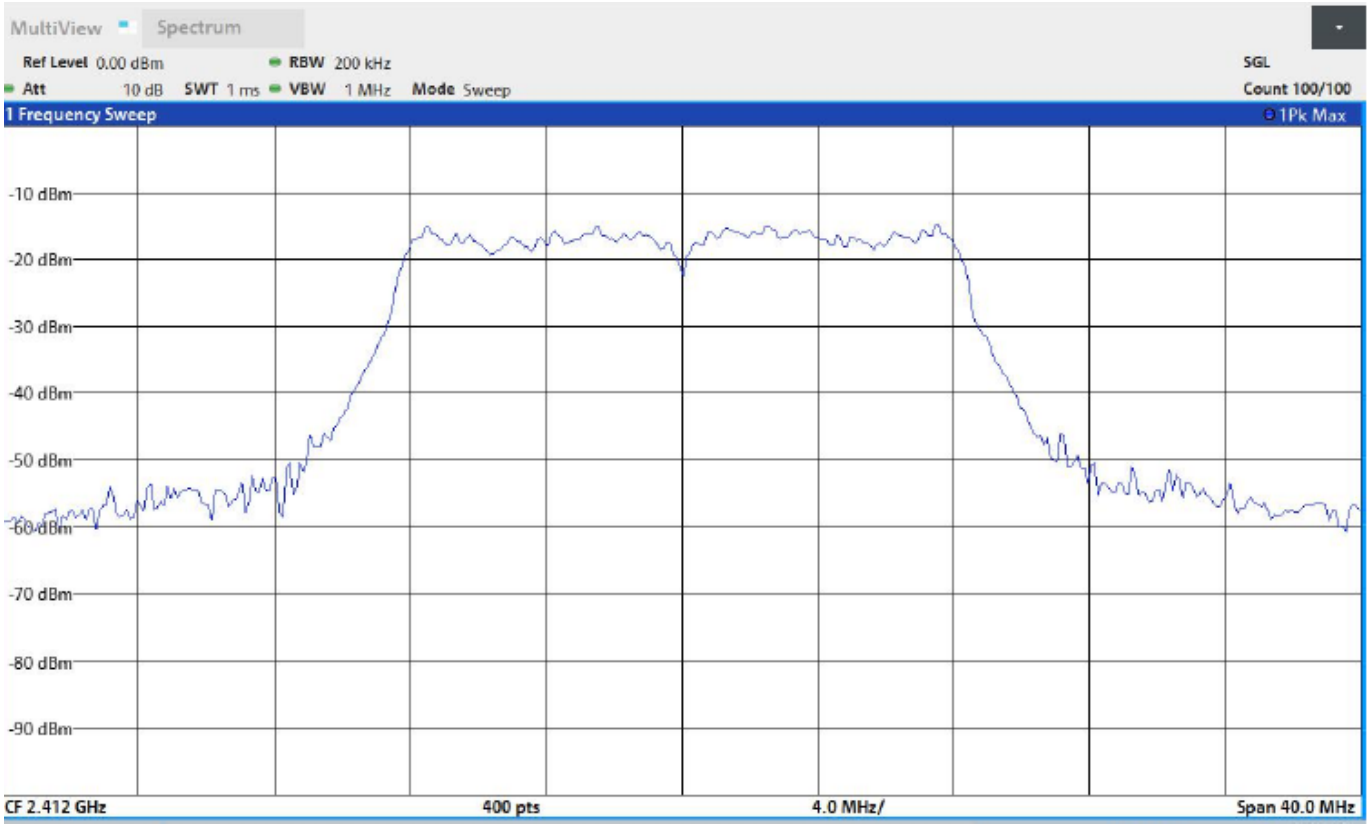
802.11b 1Mbps 2412MHz



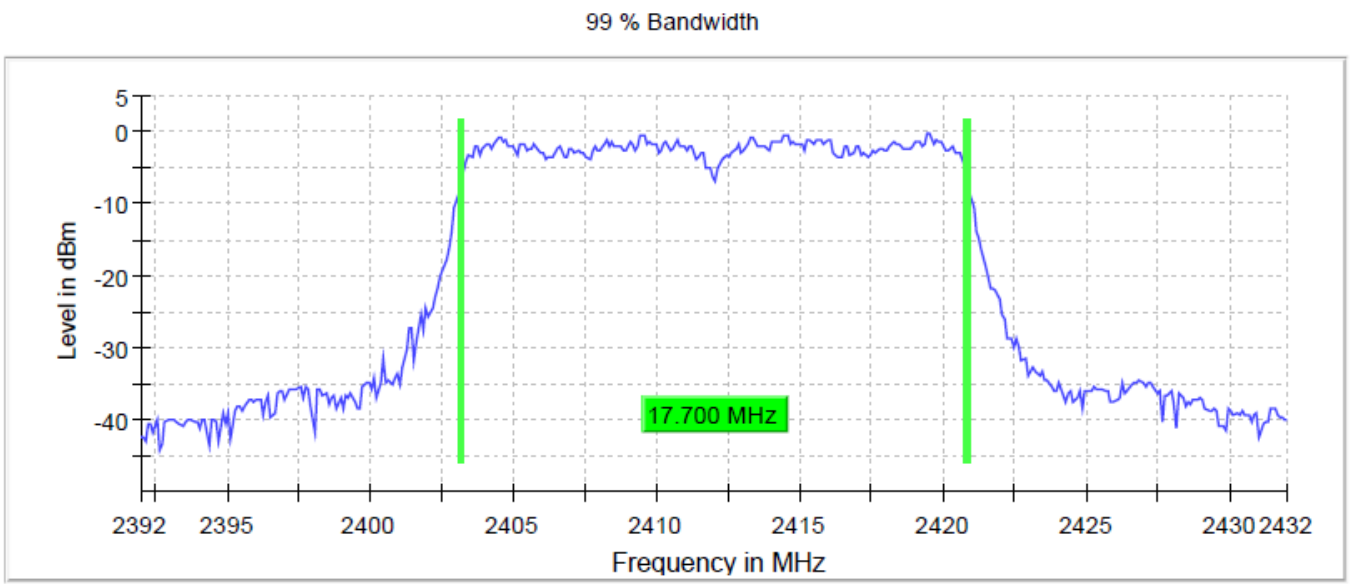


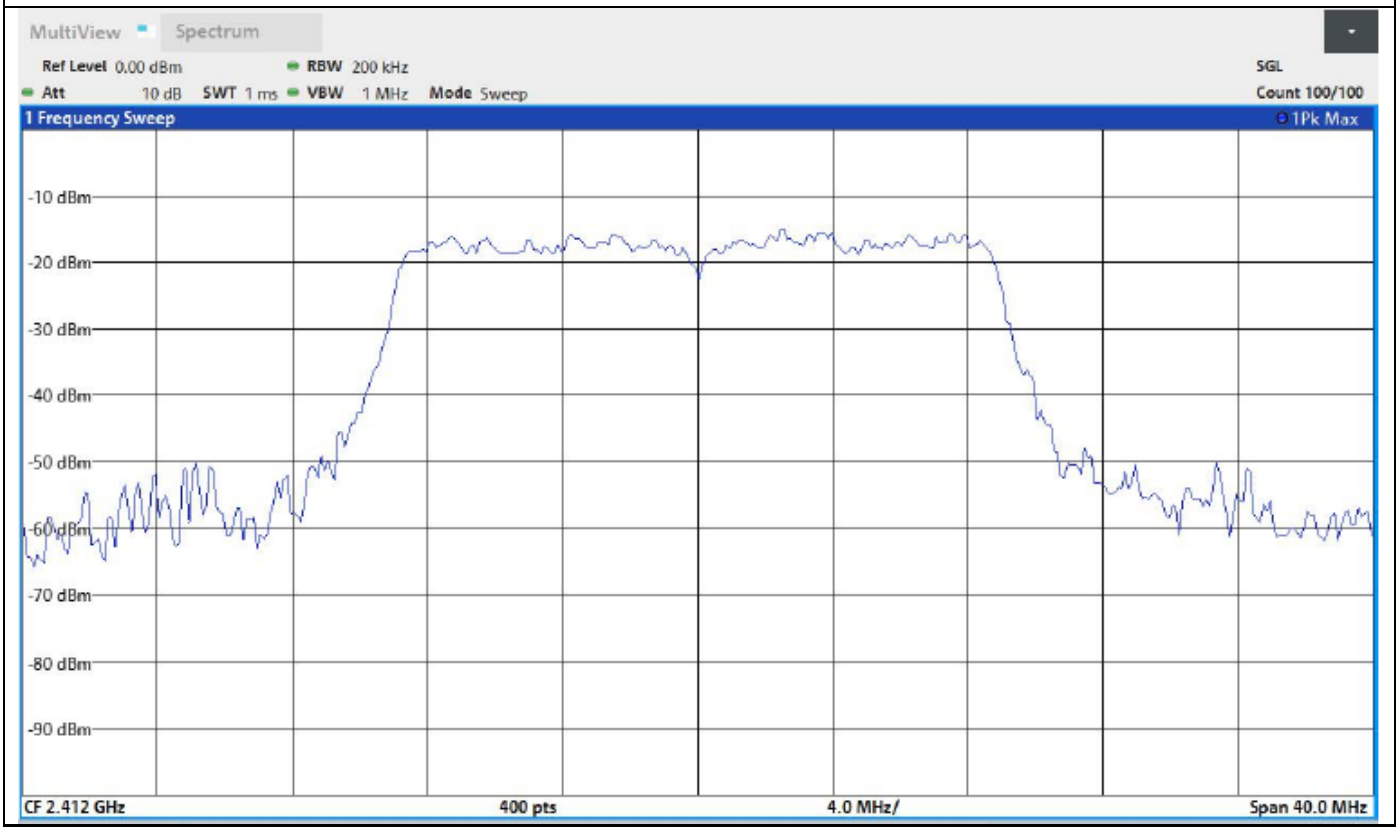
802.11g 6Mbps 2412MHz





802.11n MCS0 2412MHz





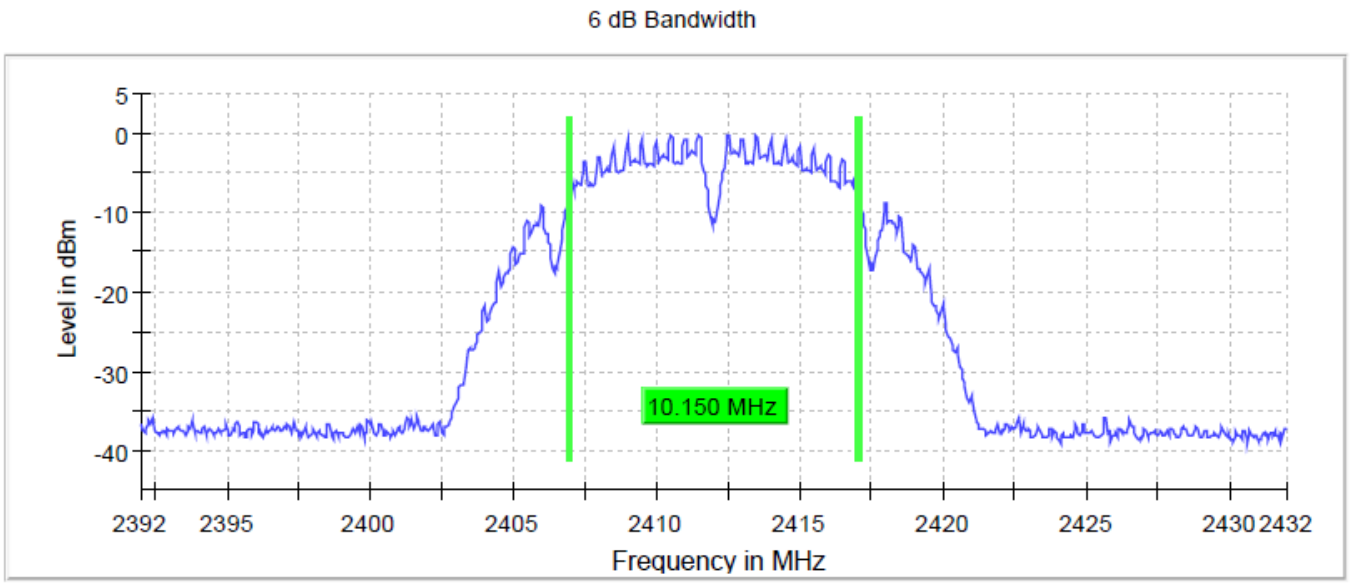
4.4.4 DTS Bandwidth (6dB)

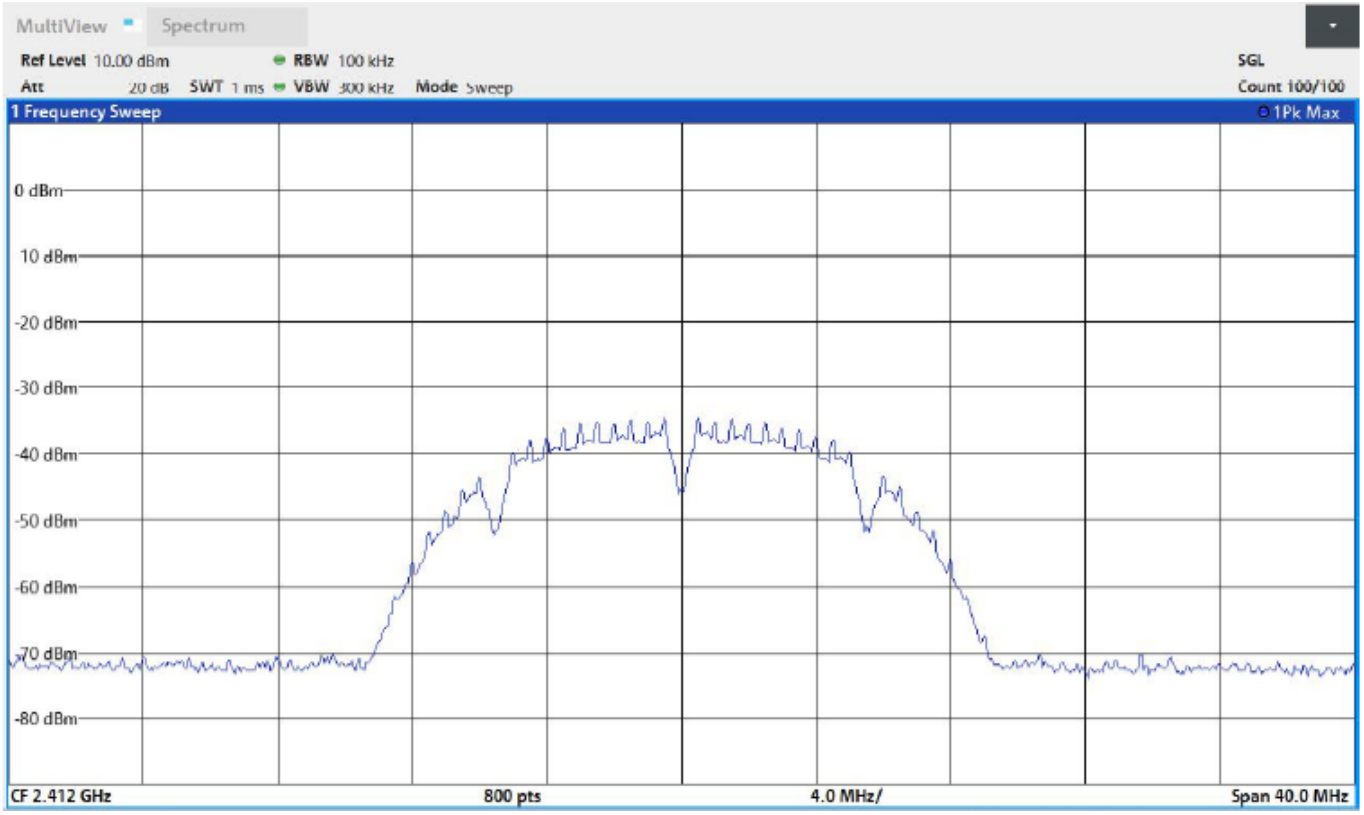
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v05r02 and ANSI C63.10-2013 11.8.1, RSS-247 5.2(a)

Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Uncertainty (K=2) < 2%

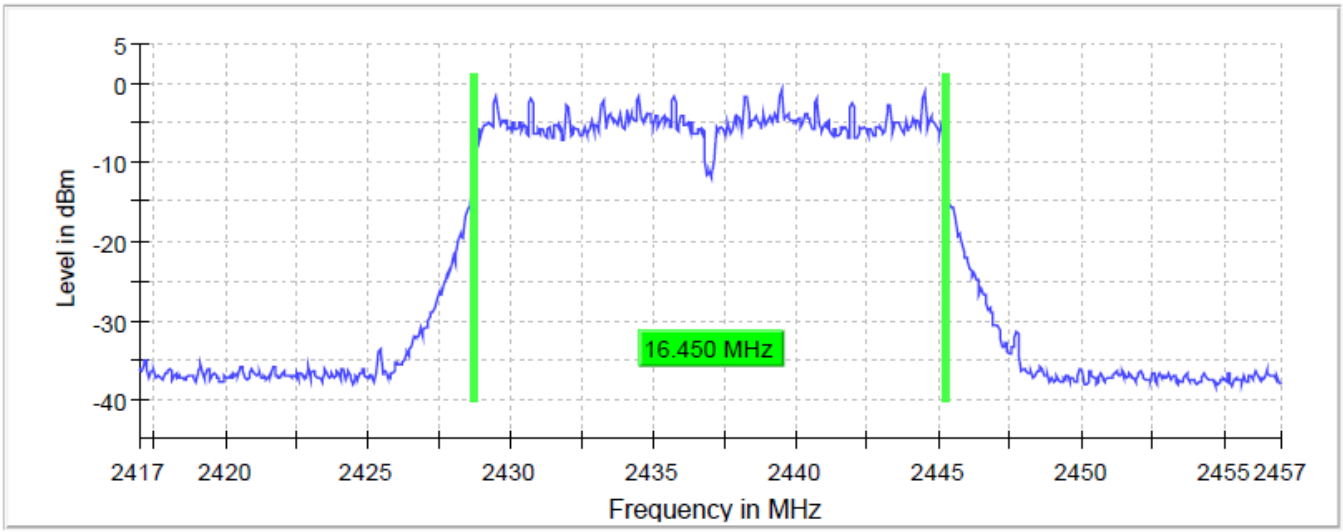
Data Rate	DUT Frequency (MHz)	Bandwidth (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Minimum Limit (MHz)
802.11b 1Mbps	2412.000000	10.150000	2406.925000	2417.075000	0.500000
802.11g 6Mbps	2412.000000	16.450000	2403.775000	2420.225000	0.500000
802.11n (HT20) MCS0	2412.000000	17.650000	2403.175000	2420.825000	0.500000
802.11b 1Mbps	2437.000000	10.200000	2431.875000	2442.075000	0.500000
802.11g 6Mbps	2437.000000	16.450000	2428.775000	2445.225000	0.500000
802.11n (HT20) MCS0	2437.000000	17.650000	2428.175000	2445.825000	0.500000
802.11b 1Mbps	2462.000000	10.150000	2456.925000	2467.075000	0.500000
802.11g 6Mbps	2462.000000	16.450000	2453.775000	2470.225000	0.500000
802.11n (HT20) MCS0	2462.000000	17.600000	2453.175000	2470.775000	0.500000

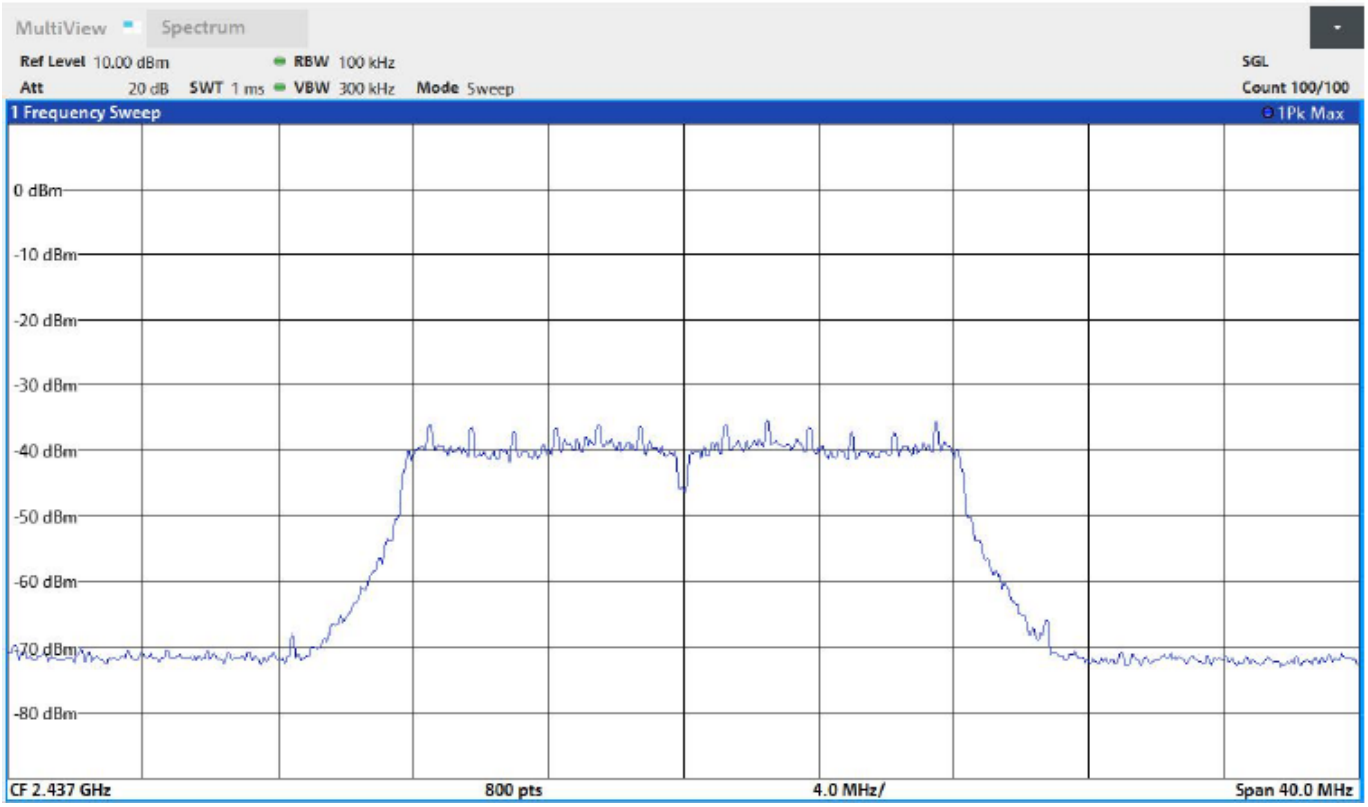
802.11b 2412MHz 1Mbps



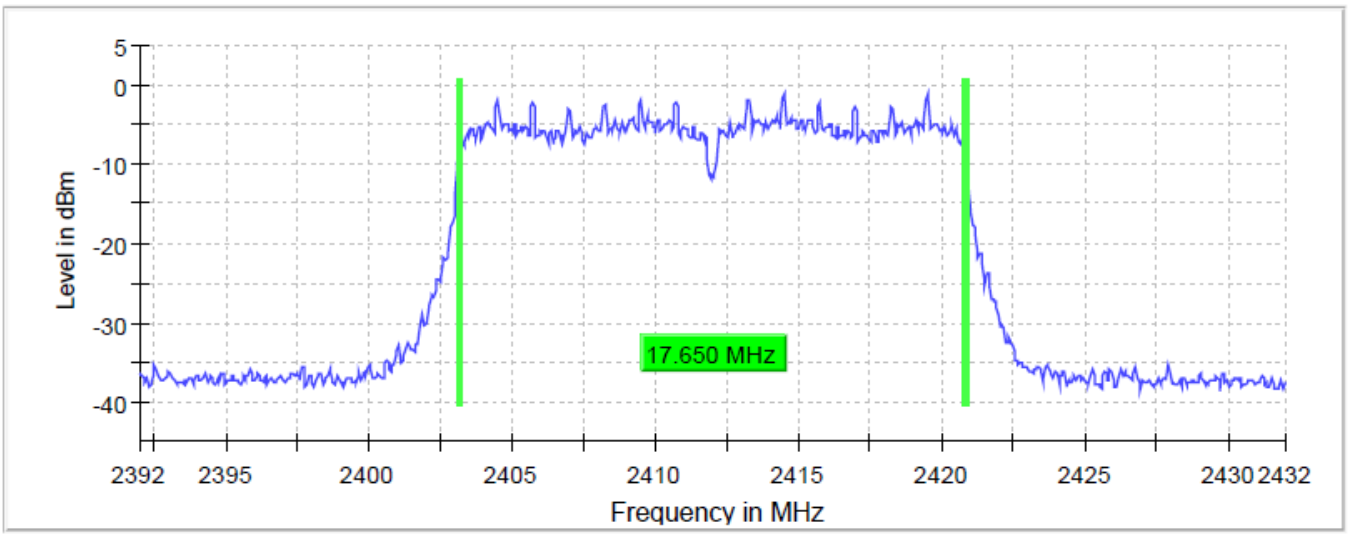


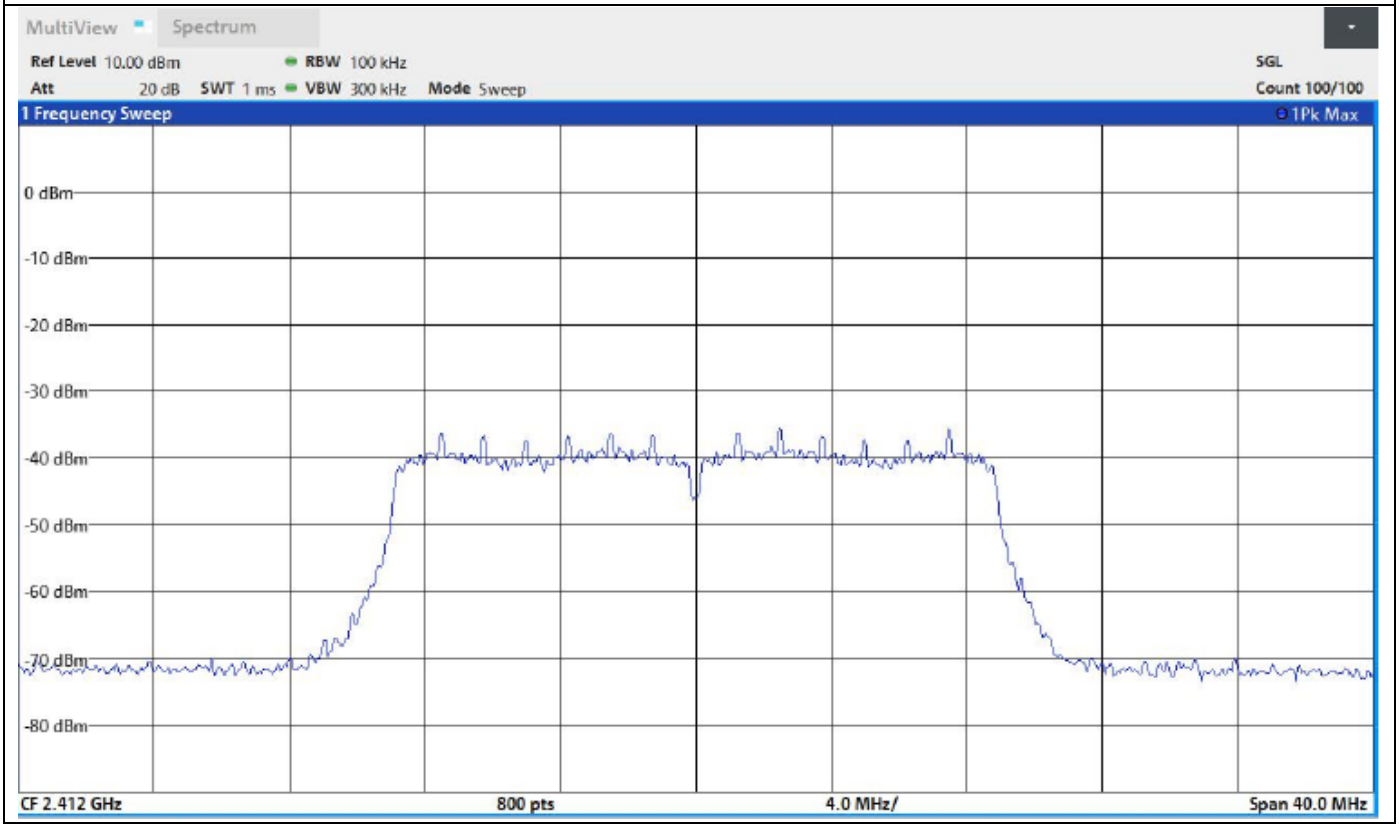
802.11g 2412MHz 6Mbps





802.11n 2412MHz MCS0





4.4.5 Conducted Band Edge

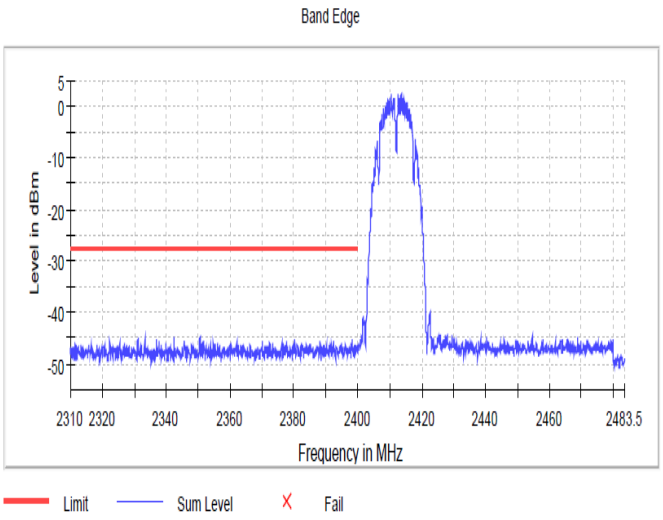
Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v05r02 Section 8.7 andANSI C63.10-2013 Section 11.11.13, RSS-247 5.5

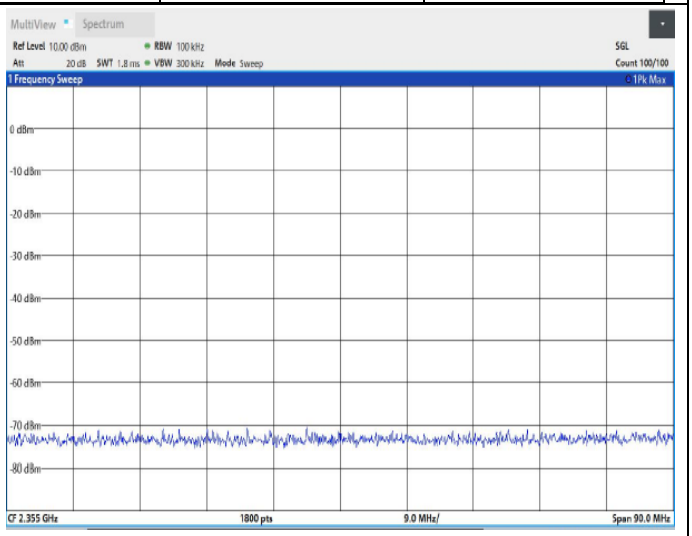
Measurement uncertainty calculated in accordance with ETSI TR 100 028-1.Expanded Uncertainty (K=2) < 0.8 dB

Band Edge Low (802.11b 1Mbps 2412MHz)

Frequency (MHz)	Level (dBm)
2412.525000	2.4

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2350.525000	-44.8	17.2	-27.6	PASS
2342.425000	-45.0	17.4	-27.6	PASS
2342.475000	-45.1	17.5	-27.6	PASS
2350.475000	-45.2	17.6	-27.6	PASS
2331.075000	-45.3	17.7	-27.6	PASS
2337.025000	-45.4	17.8	-27.6	PASS
2398.075000	-45.4	17.8	-27.6	PASS
2380.275000	-45.4	17.8	-27.6	PASS
2333.225000	-45.4	17.8	-27.6	PASS
2333.275000	-45.4	17.8	-27.6	PASS
2377.725000	-45.4	17.9	-27.6	PASS
2380.325000	-45.5	17.9	-27.6	PASS
2388.225000	-45.5	17.9	-27.6	PASS
2377.775000	-45.5	17.9	-27.6	PASS
2337.075000	-45.6	18.0	-27.6	PASS

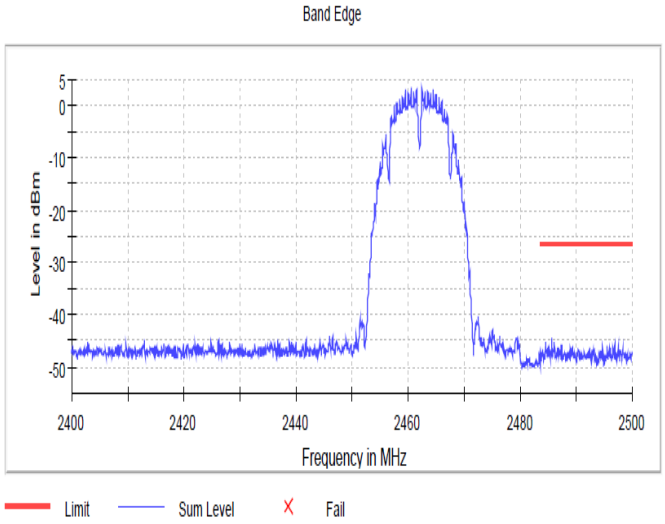


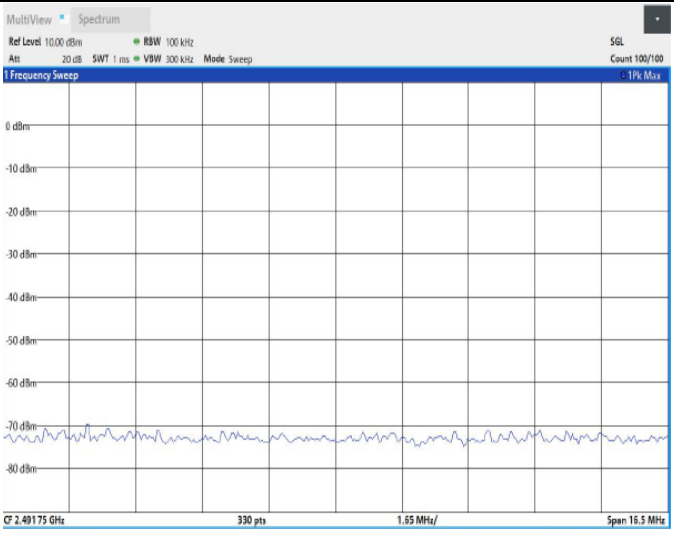


Band Edge High (802.11b 1Mbps 2462MHz)

Frequency (MHz)	Level (dBm)
2462.525000	3.4

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2485.575000	-44.5	17.9	-26.6	PASS
2485.625000	-44.6	18.0	-26.6	PASS
2486.075000	-45.4	18.8	-26.6	PASS
2484.575000	-45.4	18.8	-26.6	PASS
2486.125000	-45.5	18.9	-26.6	PASS
2484.525000	-45.6	19.0	-26.6	PASS
2496.825000	-45.8	19.2	-26.6	PASS
2485.025000	-45.9	19.3	-26.6	PASS
2484.975000	-45.9	19.3	-26.6	PASS
2495.525000	-45.9	19.3	-26.6	PASS
2487.325000	-46.0	19.4	-26.6	PASS
2487.375000	-46.0	19.4	-26.6	PASS
2497.475000	-46.1	19.5	-26.6	PASS
2486.825000	-46.2	19.6	-26.6	PASS
2494.725000	-46.2	19.6	-26.6	PASS

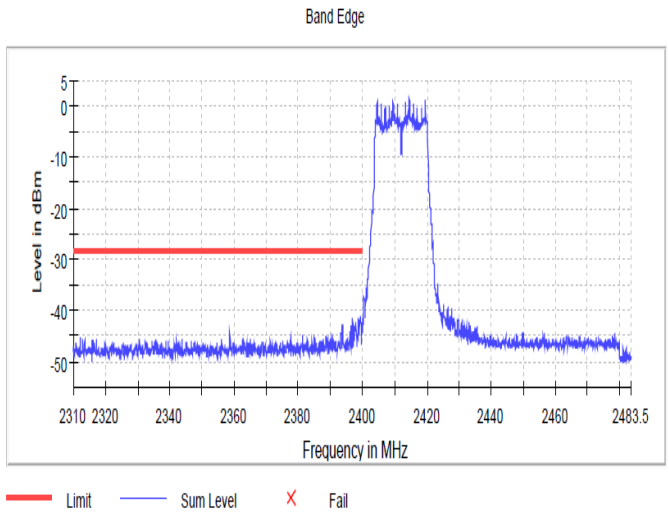


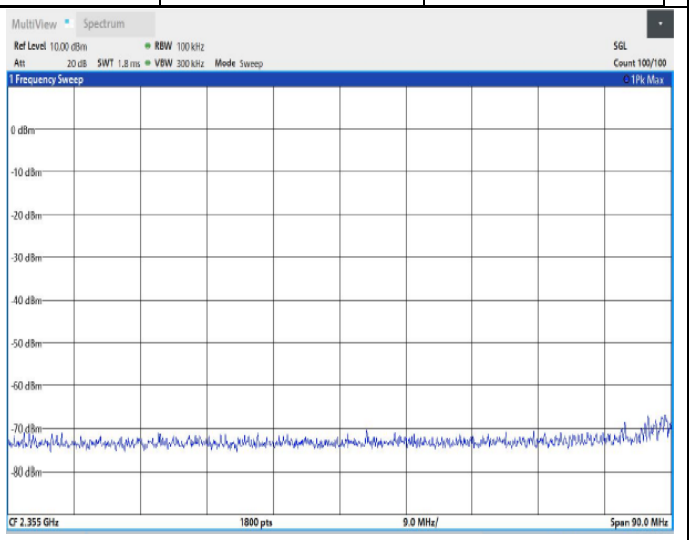


Band Edge Low (802.11g 6Mbps 2412MHz)

Frequency (MHz)	Level (dBm)
2414.525000	1.5

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.175000	-41.2	12.8	-28.5	PASS
2396.875000	-41.5	13.0	-28.5	PASS
2399.225000	-41.5	13.0	-28.5	PASS
2399.125000	-41.6	13.1	-28.5	PASS
2398.675000	-41.6	13.2	-28.5	PASS
2396.825000	-41.6	13.2	-28.5	PASS
2398.725000	-41.7	13.2	-28.5	PASS
2396.925000	-41.8	13.3	-28.5	PASS
2398.825000	-42.0	13.5	-28.5	PASS
2398.775000	-42.1	13.7	-28.5	PASS
2399.425000	-42.2	13.7	-28.5	PASS
2397.925000	-42.3	13.8	-28.5	PASS
2399.275000	-42.3	13.9	-28.5	PASS
2398.875000	-42.4	13.9	-28.5	PASS
2398.625000	-42.6	14.1	-28.5	PASS

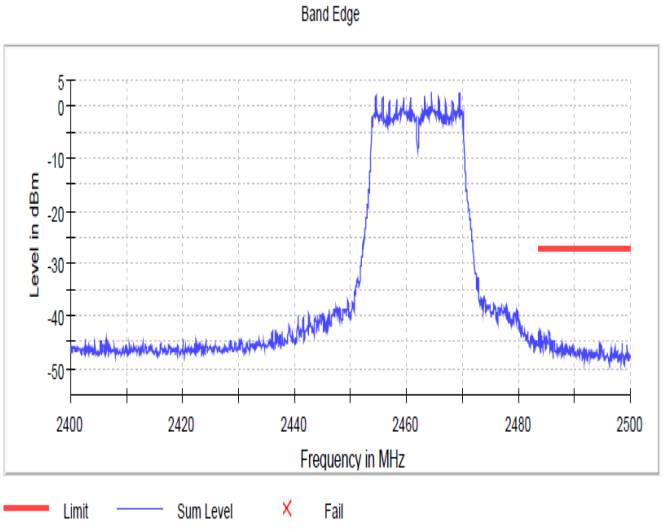


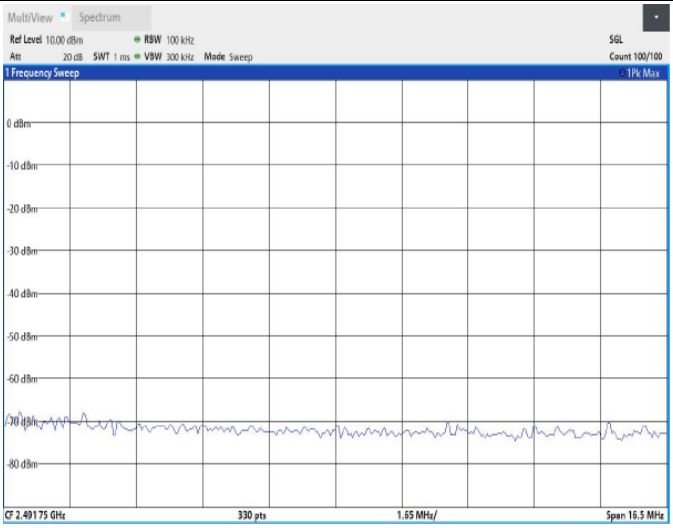


Band Edge High (802.11g 6Mbps 2462MHz)

Frequency (MHz)	Level (dBm)
2464.525000	2.7

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.875000	-42.6	15.2	-27.3	PASS
2483.925000	-42.8	15.5	-27.3	PASS
2485.475000	-42.9	15.5	-27.3	PASS
2483.625000	-43.1	15.7	-27.3	PASS
2485.525000	-43.2	15.9	-27.3	PASS
2484.225000	-43.6	16.3	-27.3	PASS
2485.025000	-43.8	16.5	-27.3	PASS
2483.675000	-43.8	16.5	-27.3	PASS
2483.575000	-43.8	16.5	-27.3	PASS
2483.775000	-43.9	16.6	-27.3	PASS
2484.875000	-44.0	16.6	-27.3	PASS
2485.075000	-44.0	16.7	-27.3	PASS
2484.675000	-44.1	16.8	-27.3	PASS
2485.875000	-44.6	17.3	-27.3	PASS
2484.825000	-44.6	17.3	-27.3	PASS

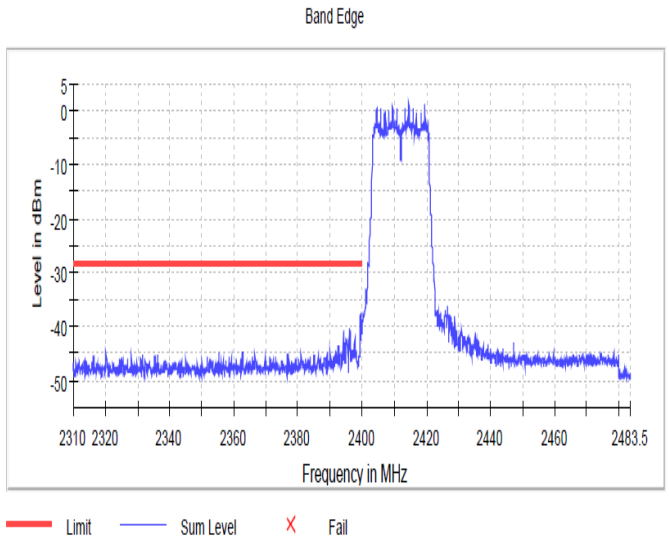


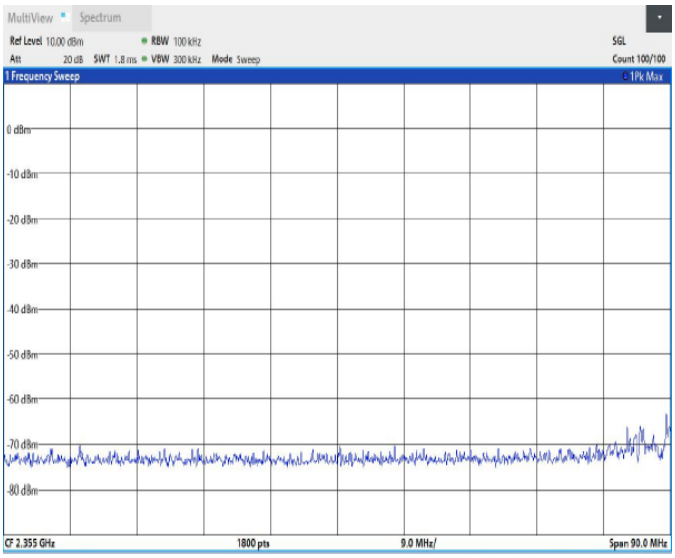


Band Edge Low (802.11n (HT20) MCS0 2412MHz)

Frequency (MHz)	Level (dBm)
2414.525000	1.5

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.475000	-37.7	9.2	-28.5	PASS
2399.425000	-38.0	9.5	-28.5	PASS
2399.525000	-38.1	9.6	-28.5	PASS
2399.575000	-40.4	11.9	-28.5	PASS
2395.925000	-40.4	11.9	-28.5	PASS
2399.875000	-40.4	12.0	-28.5	PASS
2395.975000	-40.5	12.0	-28.5	PASS
2399.925000	-40.5	12.0	-28.5	PASS
2394.125000	-40.7	12.2	-28.5	PASS
2399.825000	-40.7	12.3	-28.5	PASS
2399.775000	-40.8	12.4	-28.5	PASS
2394.175000	-40.8	12.4	-28.5	PASS
2399.725000	-40.9	12.4	-28.5	PASS
2399.375000	-40.9	12.4	-28.5	PASS
2396.325000	-40.9	12.5	-28.5	PASS

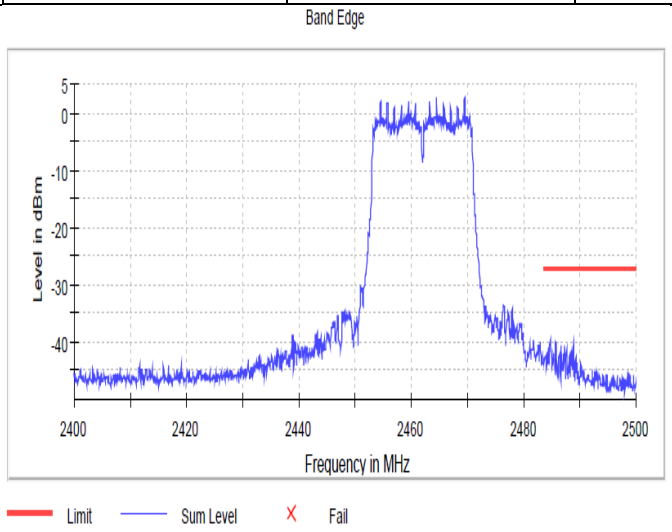


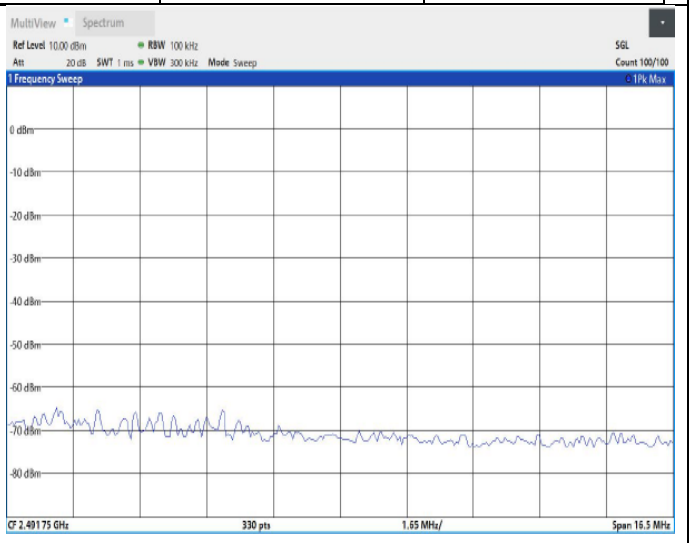


Band Edge High (802.11n (HT20) MCS0 2462MHz)

Frequency (MHz)	Level (dBm)
2464.525000	2.7

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2484.725000	-39.6	12.3	-27.3	PASS
2485.725000	-40.2	12.8	-27.3	PASS
2488.825000	-40.2	12.9	-27.3	PASS
2484.825000	-40.3	12.9	-27.3	PASS
2485.775000	-40.4	13.0	-27.3	PASS
2488.875000	-40.4	13.1	-27.3	PASS
2486.675000	-40.6	13.3	-27.3	PASS
2487.275000	-40.6	13.3	-27.3	PASS
2484.675000	-40.7	13.4	-27.3	PASS
2484.875000	-40.7	13.4	-27.3	PASS
2487.325000	-40.9	13.5	-27.3	PASS
2484.425000	-41.0	13.7	-27.3	PASS
2484.375000	-41.3	13.9	-27.3	PASS
2486.625000	-41.4	14.1	-27.3	PASS
2487.625000	-41.5	14.2	-27.3	PASS





4.4.6 Tx Spurious Emissions

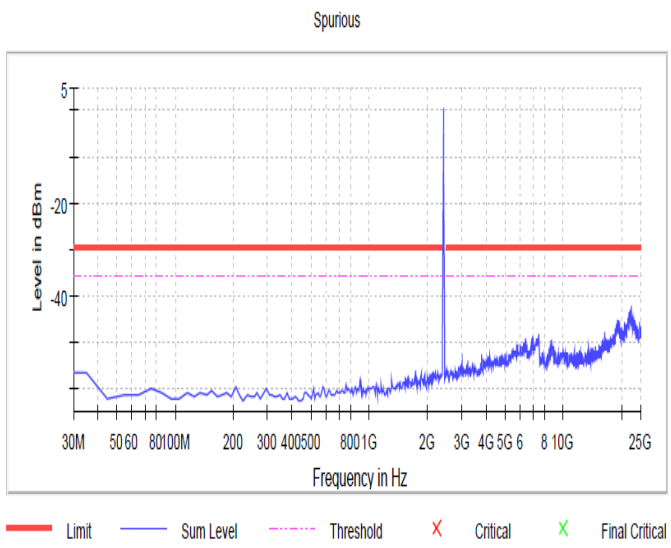
Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v05r02 8.5 and ANSI C63.10-2013 11.11.2 & 11.11.3, RSS-247 5.5

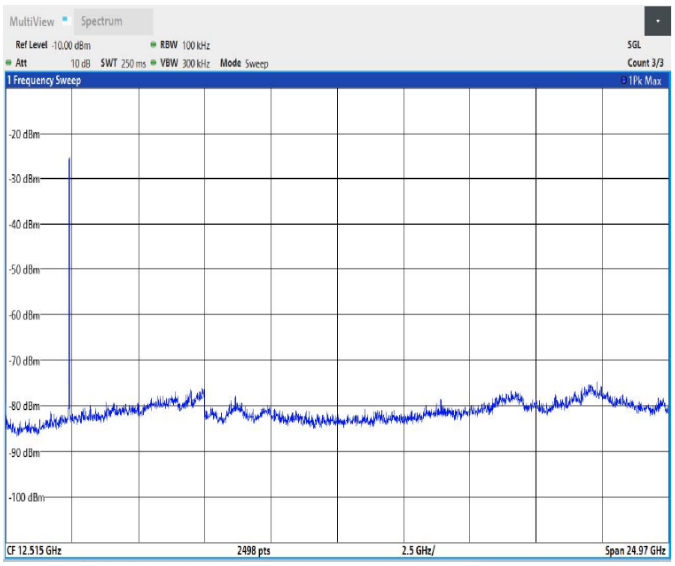
Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Uncertainty (K=2) < 1.8 dB

802.11b 1Mbps 2412MHz

Pre Measurement

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
22296.082866	-42.1	12.5	-29.6
22096.162930	-42.9	13.3	-29.6
22046.182946	-42.9	13.4	-29.6
22456.018815	-43.1	13.5	-29.6
21996.202962	-43.2	13.6	-29.6
21976.210969	-43.2	13.6	-29.6
22086.166934	-43.3	13.7	-29.6
22136.146918	-43.4	13.9	-29.6
22066.174940	-43.5	13.9	-29.6
22056.178943	-43.5	13.9	-29.6
22466.014812	-43.5	14.0	-29.6
21826.271017	-43.6	14.0	-29.6
21716.315052	-43.6	14.0	-29.6
22446.022818	-43.7	14.1	-29.6
22226.110889	-43.7	14.2	-29.6

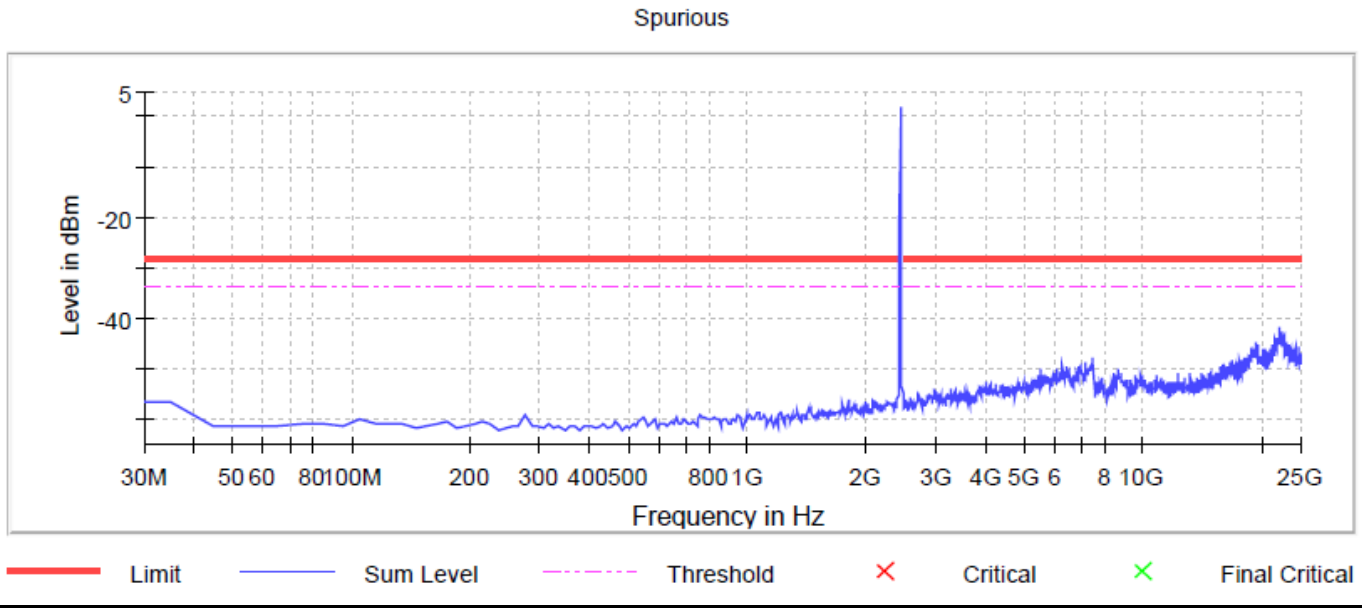




802.11b 1Mbps 2437MHz

Pre Measurement

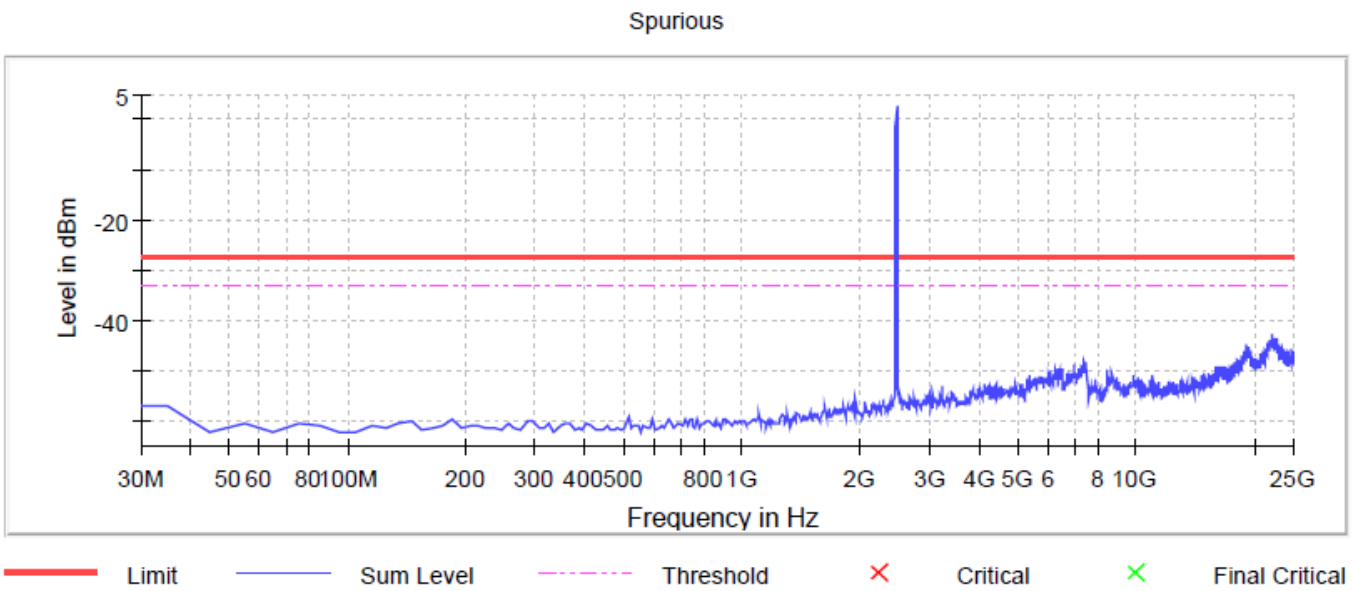
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
22066.174940	-41.9	13.9	-28.1
22076.170937	-42.2	14.1	-28.1
22426.030825	-42.6	14.6	-28.1
22096.162930	-42.7	14.7	-28.1
22056.178943	-43.1	15.1	-28.1
22476.010809	-43.2	15.1	-28.1
22555.978783	-43.4	15.3	-28.1
22036.186950	-43.4	15.4	-28.1
22086.166934	-43.6	15.5	-28.1
22166.134908	-43.6	15.6	-28.1
22006.198959	-43.7	15.6	-28.1
22106.158927	-43.7	15.7	-28.1
22176.130905	-43.7	15.7	-28.1
22136.146918	-43.8	15.7	-28.1
22016.194956	-43.8	15.7	-28.1



802.11b 1Mbps 2462MHz

Pre Measurement

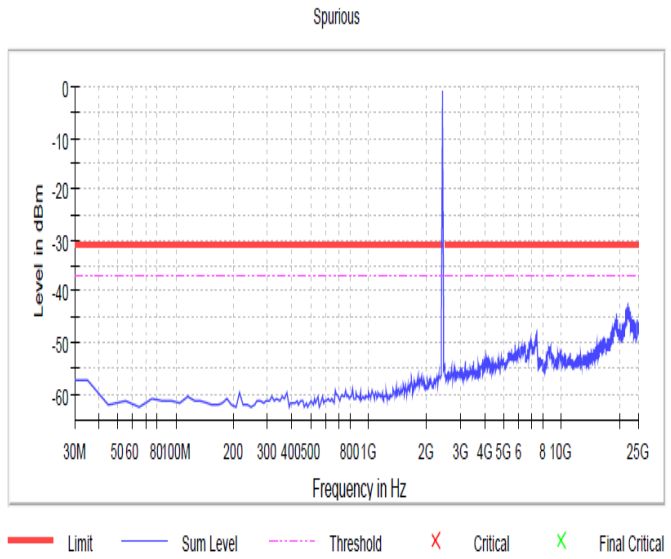
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
22036.186950	-42.5	15.3	-27.2
22016.194956	-42.6	15.4	-27.2
22006.198959	-42.7	15.5	-27.2
21976.210969	-42.9	15.8	-27.2
22136.146918	-43.1	15.9	-27.2
22056.178943	-43.3	16.1	-27.2
22166.134908	-43.4	16.3	-27.2
22206.118895	-43.4	16.3	-27.2
22046.182946	-43.7	16.5	-27.2
22256.098879	-43.7	16.5	-27.2
22066.174940	-43.7	16.6	-27.2
22735.906725	-43.8	16.6	-27.2
21826.271017	-43.9	16.7	-27.2
22366.054844	-43.9	16.7	-27.2
22376.050841	-43.9	16.8	-27.2

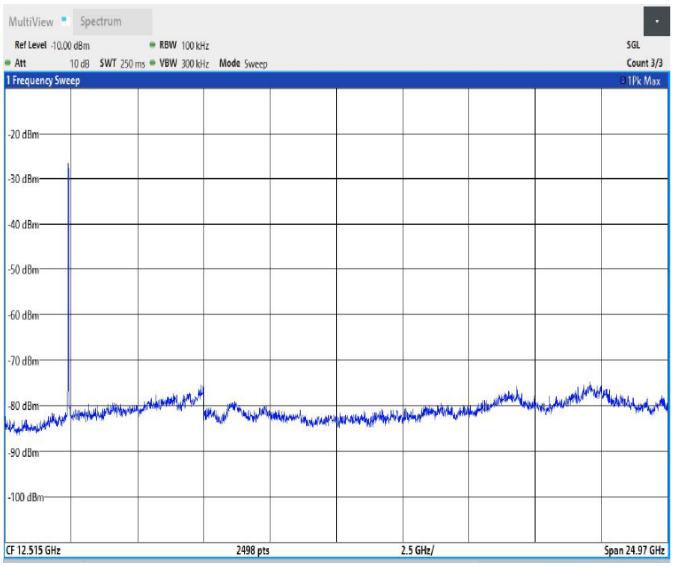


802.11g 6Mbps 2412MHz

Pre Measurement

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
22056.178943	-42.3	11.4	-31.0
22066.174940	-42.9	11.9	-31.0
22106.158927	-42.9	12.0	-31.0
22486.006805	-43.0	12.0	-31.0
21836.267014	-43.1	12.1	-31.0
22476.010809	-43.2	12.2	-31.0
22356.058847	-43.2	12.3	-31.0
21616.355084	-43.3	12.3	-31.0
22046.182946	-43.4	12.5	-31.0
22456.018815	-43.6	12.6	-31.0
22236.106886	-43.6	12.7	-31.0
21986.206966	-43.6	12.7	-31.0
22126.150921	-43.6	12.7	-31.0
22086.166934	-43.7	12.7	-31.0
22346.062850	-43.7	12.7	-31.0



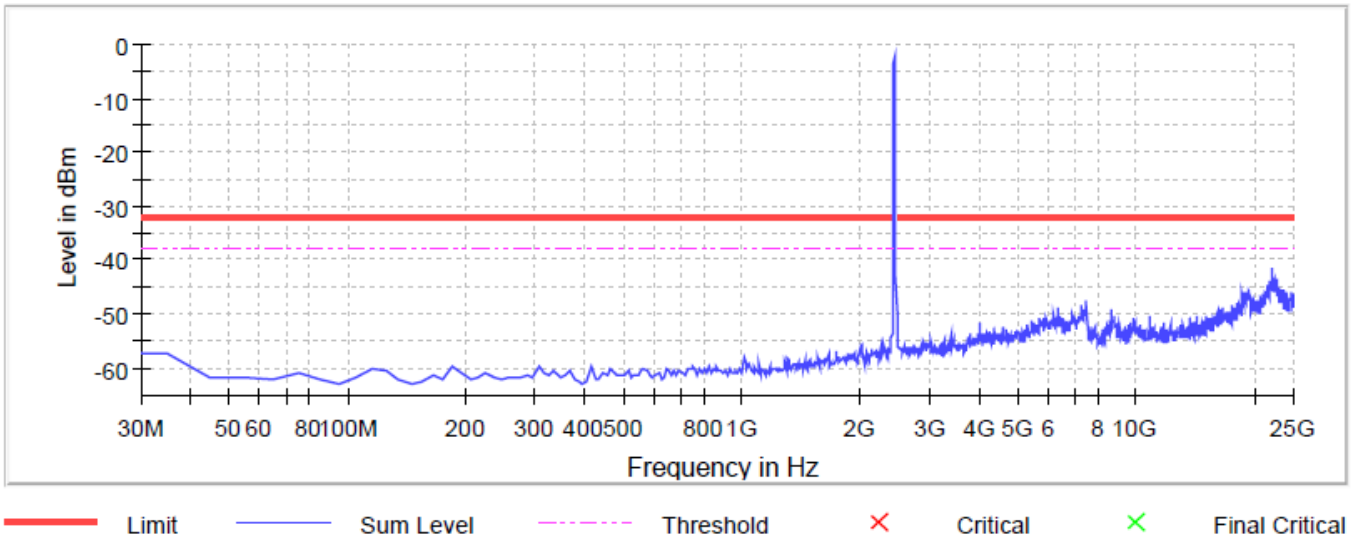


802.11g 6Mbps 2437MHz

Pre Measurement

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
22106.158927	-41.6	9.7	-31.9
22076.170937	-43.0	11.1	-31.9
22086.166934	-43.3	11.4	-31.9
22565.974780	-43.4	11.5	-31.9
22096.162930	-43.4	11.5	-31.9
22266.094876	-43.4	11.5	-31.9
22246.102882	-43.5	11.6	-31.9
22016.194956	-43.6	11.7	-31.9
22675.930745	-43.6	11.7	-31.9
21996.202962	-43.8	11.9	-31.9
22326.070857	-43.8	11.9	-31.9
21876.251001	-43.8	11.9	-31.9
22116.154924	-43.8	11.9	-31.9
21986.206966	-43.8	11.9	-31.9
22046.182946	-43.9	12.0	-31.9

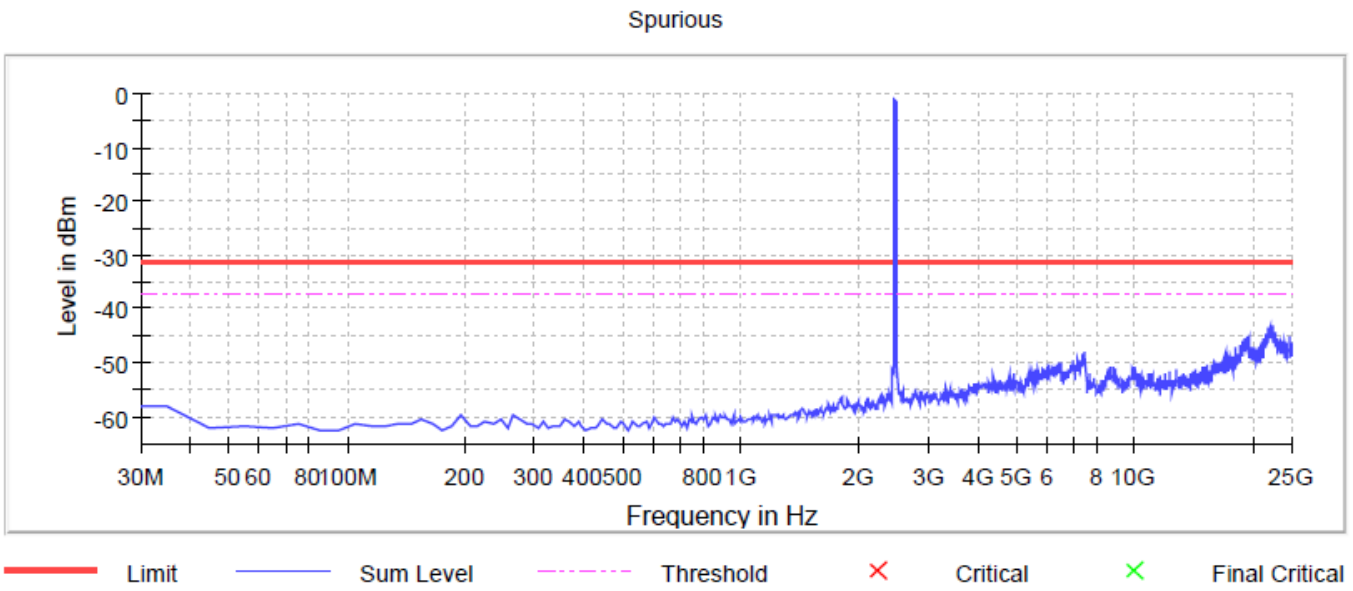
Spurious



802.11g 6Mbps 2462MHz

Pre Measurement

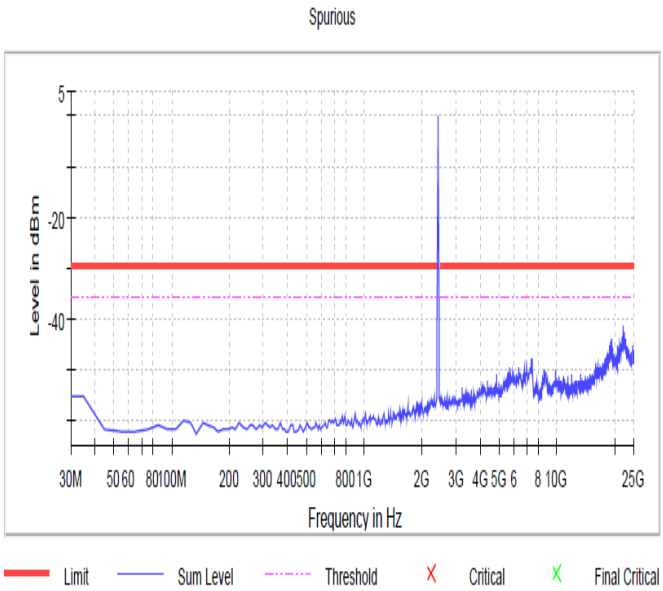
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
22446.022818	-42.9	11.7	-31.2
22136.146918	-43.1	11.9	-31.2
22066.174940	-43.1	11.9	-31.2
21896.242994	-43.3	12.1	-31.2
22366.054844	-43.3	12.1	-31.2
22056.178943	-43.3	12.1	-31.2
22266.094876	-43.4	12.2	-31.2
22096.162930	-43.4	12.2	-31.2
22026.190953	-43.5	12.3	-31.2
21946.222978	-43.5	12.4	-31.2
22016.194956	-43.6	12.4	-31.2
22116.154924	-43.7	12.5	-31.2
22106.158927	-43.7	12.5	-31.2
22126.150921	-43.7	12.6	-31.2
22176.130905	-43.8	12.6	-31.2

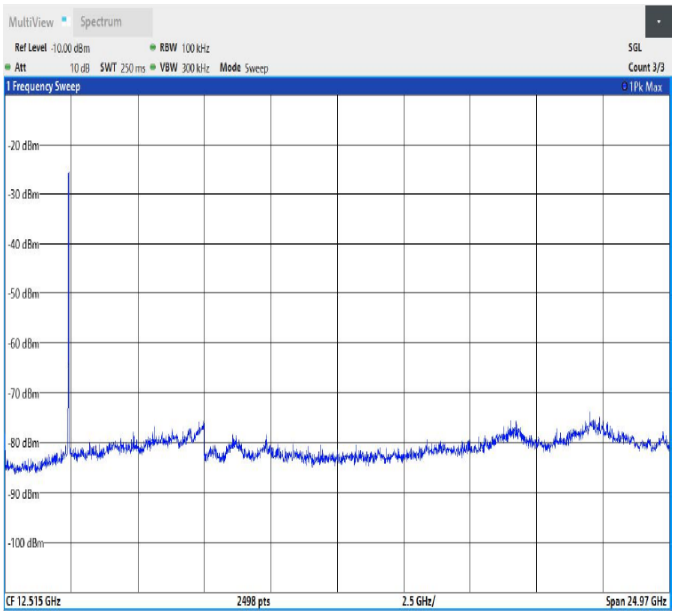


802.11n (HT20) MCS0 2412MHz

Pre Measurement

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
22016.194956	-41.6	11.8	-29.7
22366.054844	-42.5	12.8	-29.7
22186.126902	-43.0	13.2	-29.7
22136.146918	-43.0	13.3	-29.7
22086.166934	-43.2	13.4	-29.7
22486.006805	-43.2	13.4	-29.7
22096.162930	-43.2	13.5	-29.7
22076.170937	-43.2	13.5	-29.7
21836.267014	-43.5	13.7	-29.7
22206.118895	-43.5	13.7	-29.7
22336.066853	-43.5	13.8	-29.7
22276.090873	-43.6	13.9	-29.7
22046.182946	-43.7	14.0	-29.7
22675.930745	-43.8	14.1	-29.7
21746.303042	-43.9	14.2	-29.7

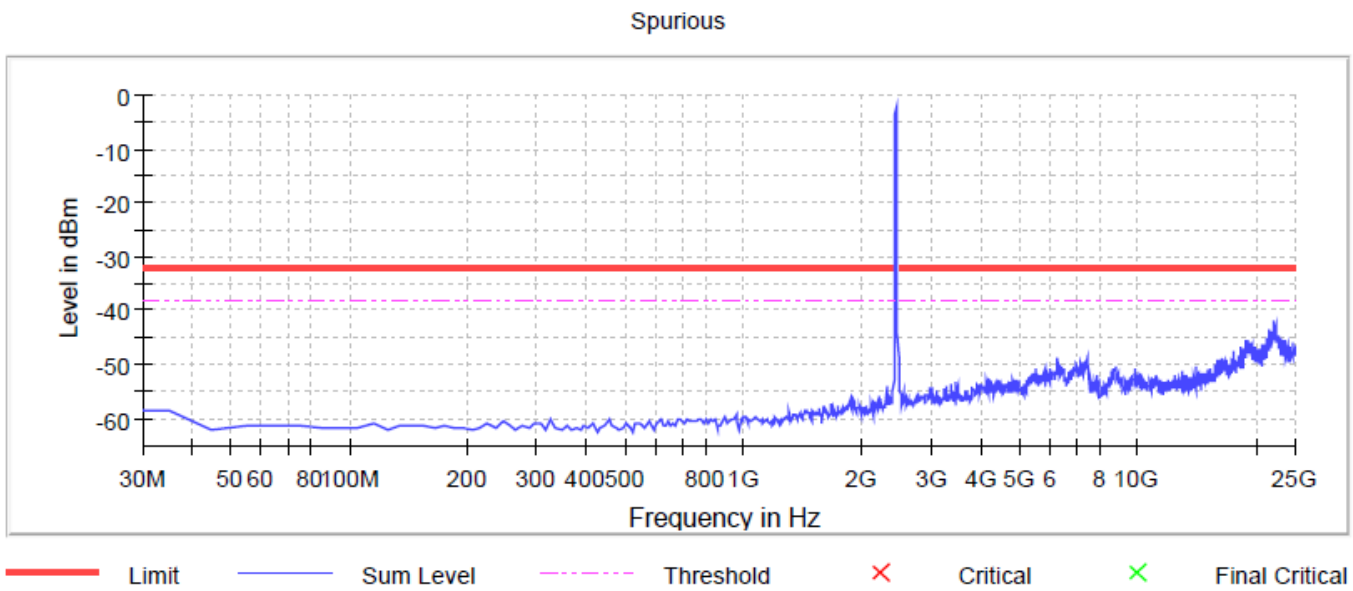




802.11n (HT20) MCS0 2437MHz

Pre Measurement

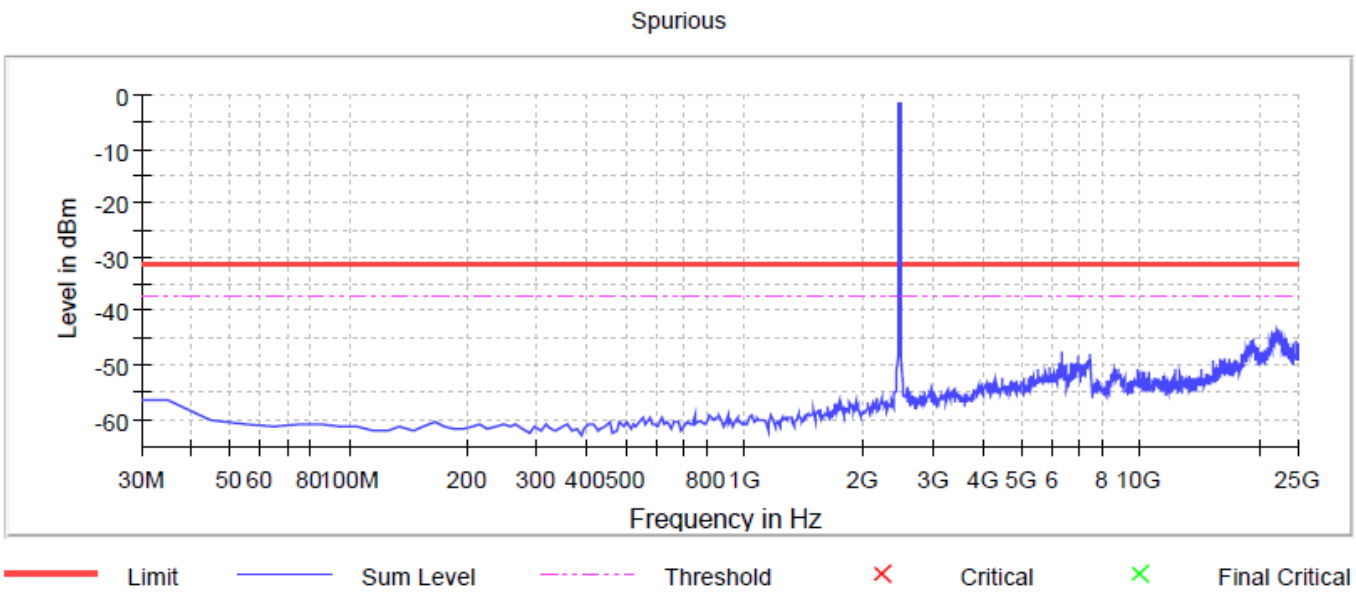
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
22006.198959	-41.8	9.8	-32.0
22356.058847	-42.5	10.5	-32.0
22186.126902	-42.8	10.8	-32.0
22246.102882	-42.8	10.8	-32.0
22086.166934	-42.9	10.9	-32.0
22106.158927	-43.1	11.1	-32.0
22276.090873	-43.2	11.2	-32.0
22016.194956	-43.2	11.2	-32.0
22046.182946	-43.2	11.2	-32.0
22466.014812	-43.3	11.3	-32.0
21476.411129	-43.4	11.4	-32.0
22196.122898	-43.4	11.4	-32.0
22056.178943	-43.5	11.5	-32.0
22066.174940	-43.6	11.6	-32.0
22116.154924	-43.6	11.7	-32.0



802.11n (HT20) MCS0 2462MHz

Pre Measurement

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2484.017214	-40.6	9.2	-31.5
22046.182946	-43.4	12.0	-31.5
22096.162930	-43.5	12.0	-31.5
22236.106886	-43.6	12.1	-31.5
22406.038831	-43.6	12.1	-31.5
22436.026821	-43.6	12.1	-31.5
22196.122898	-43.8	12.3	-31.5
22266.094876	-43.8	12.3	-31.5
22066.174940	-43.8	12.3	-31.5
22106.158927	-43.8	12.3	-31.5
22126.150921	-43.9	12.4	-31.5
22056.178943	-43.9	12.4	-31.5
22456.018815	-44.0	12.5	-31.5
21986.206966	-44.0	12.5	-31.5
22016.194956	-44.0	12.5	-31.5



5. Radiated Testing

5.1 Test Summary

Start: 12/14/2022	End: 03/13/2023	Temperature: 23.2°C Humidity: 23.3 %R.H	Initials: AB

DUT S/N	AH22120901-HAR-054#2		DUT Operating Mode	2.4GHz WLAN
Comment	802.11b 1Mbps 802.11g 6Mbps 802.11n MCS0			
Antenna	Frequency Range	Polarization	Result Over/Under Limit	Notes
Loop	9kHz-30MHz	Parallel	☐Over ☒Under	√
		Perpendicular	☐Over ☒Under	√
		Ground-Parallel	☐Over ☒Under	√
Log Periodic	30MHz-1GHz	Horizontal	☐Over ☒Under	√
		Vertical	☐Over ☒Under	√
Horn	1GHz-18GHz	Horizontal	☐Over ☒Under	√
		Vertical	☐Over ☒Under	√
Horn	18GHz-27.5GHz	Horizontal	☐Over ☒Under	√
		Vertical	☐Over ☒Under	√

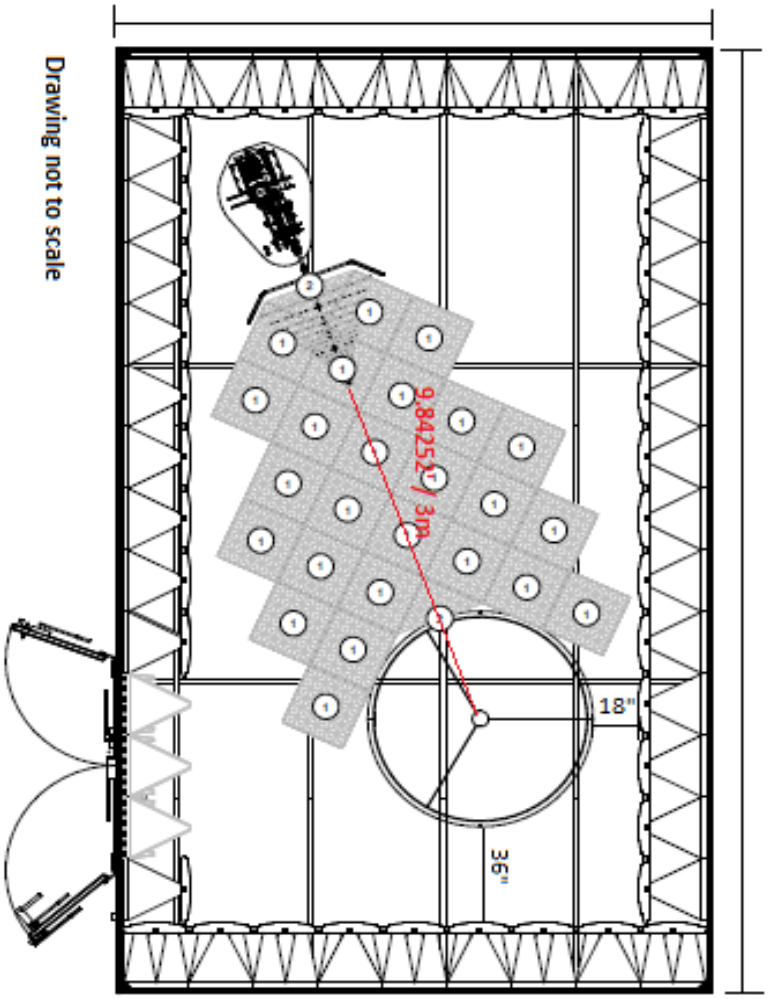
Notes: √ meets the requirements of the acceptance criteria.

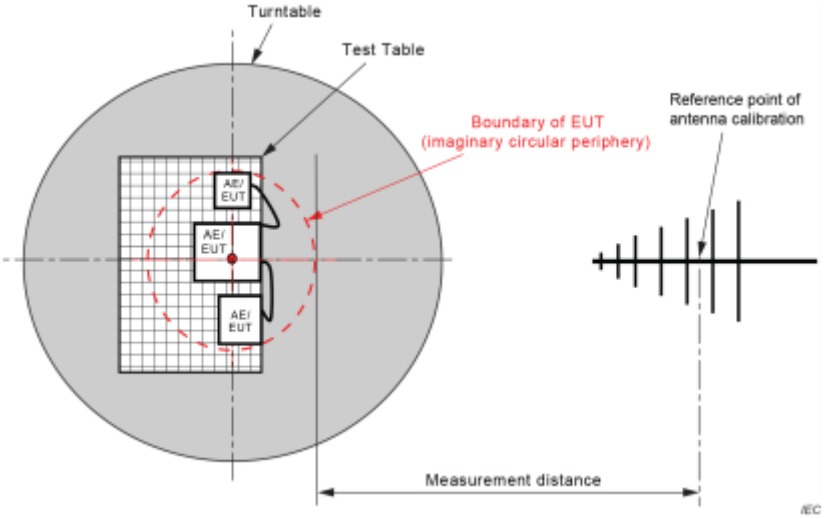
5.2 Test Setup

Semi-Anechoic Chamber Test Site-3 meter

Chamber Location	815 N Opdyke Rd Auburn Hills, Michigan 48326
Chamber Manufacturer:	ETS-Lindgren
Chamber Type	Semi-Anechoic
Model	FACT™ 3-2.0 Plus
Chamber Dimensions (L x W x H)	18'x18'x30'
Quiet Zone Diameter	2.0 meters
Quiet Zone Test Heights	1 & 2 meters (front only)
Test Distance	3.0 meters
Test Frequency Range	1-40 GHz
Measured Performance	4.87 dB Site *s*VSWR

Chamber Dimensions




Turntable
Test Table
Boundary of EUT
(imaginary circular periphery)
Reference point of
antenna calibration
AE/
EUT
AE/
EUT
AE/
EUT
Measurement distance
IEC

5.3 Test Equipment Used

ID #	Equipment	Manufacturer	Model #	Serial #	Cal Due
BVD0217	Receiver 2Hz-44GHz	Rohde & Schwarz	ESW44	101871	4/20/2023
BVD0118	Antenna Mast Position Controller	ETS	7006-001	00214778/00214648	N/A
BVD0111	3 Meter Anechoic Chamber	ETS	N/A	N/A	N/A
BVD0247	Turn Table	ETS	920250	N/A	N/A
BVD0323	Foam Test Table For 3 Meter Chamber	ETS-Lindgren	LDT-1.5	N/A	N/A
BVD0069	Bore Sight Tower	ETS	2171B	226732	N/A
BVD0259	Optima 12V Blue top Marine battery	Optima	D34M	N/A	N/A
BVD0184	Preamplifier 29dB 1-18GHz	Rohde & Schwarz	TS-PR18	101646	5/6/2023
BVD0185	Preamplifier 45dB 18-40GHz	Rohde & Schwarz	TS-PR1840	100064	4/6/2023
BVD0267	Double Ridge Waveguide 800MHz-18GHz	Rohde & Schwarz	HF907	102832	5/5/2023
BVD0021	UltraLog Antenna 30-6000 MHz	Rohde & Schwarz	HL562E	101113	7/21/2023
BVD0320	18-40GHz Horn Antenna	L3 Narda ATM	PNR 180-442-KF	136164-01	4/4/2023
BVD0011	Loop Antenna 9kHz-30MHz	Rohde & Schwarz	FMZB1519B	145	5/4/2023
BVD0045	Field Probe Mast	Rohde & Schwarz	TS-FPMA	N/A	N/A
BVD0480	Band Reject Filter 50dB from 2400 to 2500MHz	Micro-Tronics	BRM50702	G482	4/11/2023
BVD0394	Double Shielded N-Type Cable 6.9 Meter	Rohde & Schwarz	N-Type	N/A	3/11/2023
BVD0398	Double Shielded N-Type Cable 2 Meter	Rohde & Schwarz	N-Type	N/A	12/29/2024
BVD0486	Sucoflex K-Type Coaxial Cable 5 Meter	Huber+Suhner, inc	K-Type Coaxial	474343	8/30/2023
BVD0407	Double Shielded N-Type Cable 410mm (For PreAmp)	Rohde & Schwarz	N-Type	N/A	8/31/2023
BVD0495	SMA Shielded Cable approx 100mm (for Pre-Amp)	Rohde & Schwarz	SMA-Type	N/A	4/6/2023
BVD0552	Double Shielded N-Type Cable 440mm (For PreAmp)	Electronic Assemblies	N-Type	N/A	5/7/2023
BVD0229	Temp and Humidity Meter	Fluke	971	12001009	5/1/2023

Equipment List (Software)

ID #	Equipment	Manufacturer	Model	Version No.	
N/A	EMC Test Software	Rodhe & Schwarz	EMC32	11.20.00	N/A

Customer Supplied Equipment

ID #	Equipment	Manufacturer	Model	Serial #	Version No.
N/A	Harness	Harman	N/A	N/A	N/A
N/A	Display Unit	Innolux Corp	INFOMM-15524	0024	N/A
N/A	Ethernet Board	GM	N/A	N/A	CSMate rev.4
N/A	GM BT WLAN Test Tool NXP Chips S/W	Harman	N/A	N/A	2.4

5.4 Test Limits and Procedures

Radiated emissions that fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a). Other emissions shall be at least 20dB below the highest level of the desired power.

Frequencies (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Measurement distance (meters)
0.009 ~ 0.490	2400/F(kHz)	48.5 - 13.8	300
0.490 ~ 1.705	24000/F(kHz)	33.8 - 23	30
1.705 ~ 30.0	30	29.54	30
30 ~ 88	100	40.0	3
88 ~ 216	150	43.5	3
216 ~ 960	200	46.0	3
Above 960	500	54.0	3

Note:

a) The lower limit shall apply at the transition frequencies.

b) As per 15.35(b), for frequencies above 1000MHz, the field strength limits based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

c) For performing measurements at a specified distance of 3m, the values are extrapolated using extrapolation factor.
Frequencies below 30MHz are extrapolated using 40dB/decade.
Frequencies above 30MHz are extrapolated using 20dB/decade.

Frequencies (MHz)	Formula for Limits derivation for below 30MHz	Limits for frequencies below 30MHz (dBuV/m)
0.009 ~ 0.490	2400/F(kHz) + 40 Log (300m/3m)	128.5 ~ 93.8
0.490 ~ 1.705	24000/F(kHz) + 40 Log (30m/3m)	73.8 ~ 62.96
1.705 ~ 30.0	29.54 + 40 Log (30m/3m)	69.54

Radiated emissions that fall in restricted bands, as defined in RSS-GEN Section 8.10 must also comply with radiated emissions limits specified in RSS-GEN Section 8.9

The limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377Ω.
For example, the measurement frequency 2185KHz resulted in a level of 29.09 dBuV/m, which is equivalent to
29.09 - 51.48 = -22.39 dBuA/m, which has the same margin, -40.45 dB, to the corresponding RSS-GEN Table 6 limit as it has to the 15.209(a) limit.

The measurement procedures are as per ANSI C63.10-2013 Sections 6.3, Section 6.4, Section 6.5, and Section 6.6

1. The table height for emissions measurements
   i) Below 1 GHz, the table height is 80 cm above the reference ground plane.
   ii) Above 1 GHz, the table height is 1.5 m
2. Radiated emission tests are performed in the frequency range
   i) 9 kHz to 30 MHz, using a calibrated loop antenna
   ii) 30 MHz to 1GHz, using a calibrated log antenna
   iii) Above 1 GHz using a calibrated horn antenna
3. Measurements performed with the EUT rotated from 0° to 360°, the antenna height scanned between 1m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

5.5 Test Data

Uncertainty

Radiated Emissions (30MHz to 40GHz)

Test Engineer Initials: AB

The test is to measure the radiated emissions of the EUT. Some error sources that can contribute to the total uncertainty:

- Uncertainty of the receiver
- Uncertainty of the antenna
- Uncertainty of cables
- Uncertainty due to the mismatches
- NSA Calibration
- Etc., details see the below table

30MHz to 1GHZ

Source of Uncertainty	Value (dB)	ProbabilityDistribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Receiver Reading	0.12	Rectangular	1.732	1	0.069284
Cable Insertion Loss	0.21	Normal	2	1	0.105
Filter Insertion Loss	0.25	Normal	2	1	0.125
Antenna Factor	0.65	Normal	2	1	0.325
Receiver CW accuracy	0.5	Rectangular	1.732	1	0.2886836
Pulse Amplitude Response	1.5	Rectangular	1.732	1	0.86605081
PRF Response	1.5	Rectangular	1.732	1	0.86605081
Mismatch Filter – Receiver	0.25	U-Shape	2.449	1	0.1768033
NSA Calibration	4.0	Triangular	1.414	1	1.633332
ETS Foam Table (LDT-1.5)	1.8	Rectangular	1.732	1	1.039261
Combined Standard Uncertainty (square root of the sum of the squares)					2.113781
Expanded Uncertainty (K=2)					**4.227562**

The total derived measurement uncertainty is +/- 4.228 dB

1GHz to 40GHz

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Receiver Reading	0.12	Rectangular	1.732	1	0.069284
Cable Insertion Loss	0.21	Normal	2	1	0.105000
Filter Insertion Loss	0.25	Normal	2	1	0.125000
Antenna Factor	0.65	Normal	2	1	0.325000
Receiver CW accuracy	0.5	Rectangular	1.732	1	0.2886836
Pulse Amplitude Response	1.5	Rectangular	1.732	1	0.866051
PRF Response	1.5	Rectangular	1.732	1	0.866051
Mismatch Filter – Receiver	0.25	U-Shape	1.414	1	0.176803
VSWR Calibration	2.0	Triangular	2.449	1	0.816659
ETS Foam Table (LDT-1.5)	1.8	Rectangular	1.732	1	1.039261
Combined Standard Uncertainty (square root of the sum of the squares)					1.869213
Expanded Uncertainty (K=2)					**3.738426**

The total derived measurement uncertainty is +/- 3.738 dB.

Remarks:

1. Level Q-Peak Reading (dBµV/m) = Raw Q-Peak Level + Correction Factor
2. Correction Factor (dB) = Antenna Factor + Cable Loss – Preamplifier Gain
3. Margin = Level Q-Peak Reading – Limit

Remarks:

1. Level Peak Reading (dBµV/m) = Raw Peak Level + Correction Factor
2. Correction Factor (dB) = Antenna Factor + Cable Loss – Preamplifier Gain
3. Margin = Level Peak Reading – Limit

Remarks:

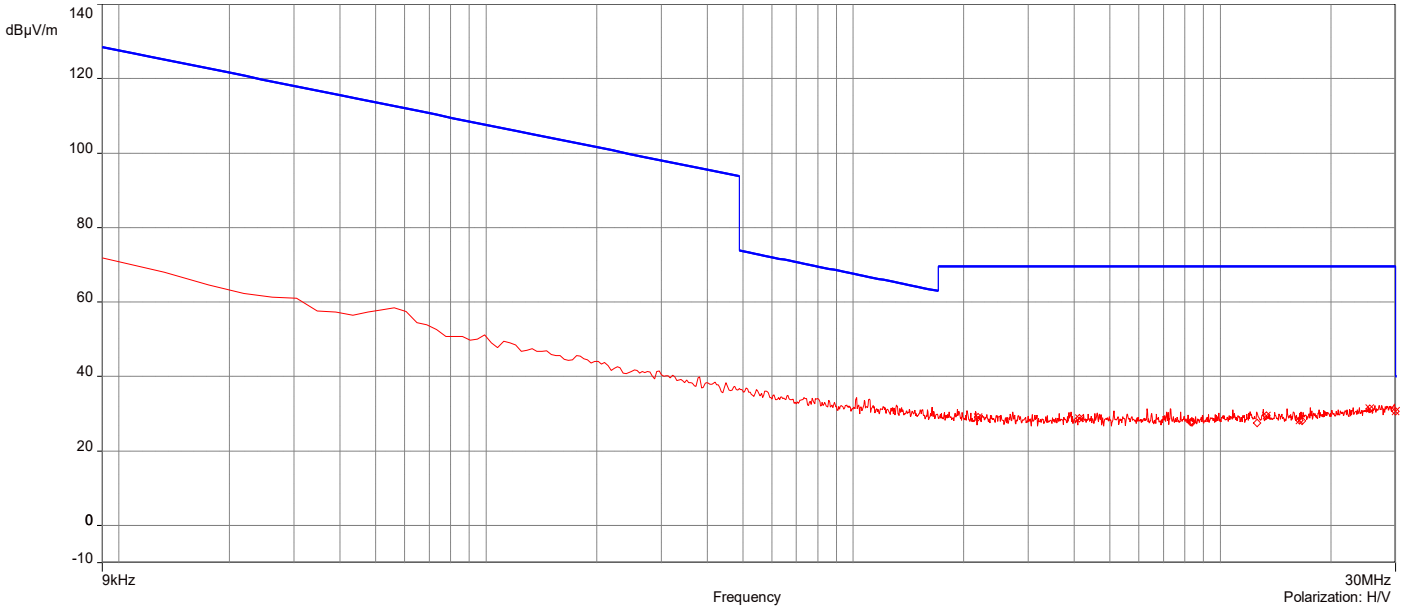
1. Level Average Reading (dBµV/m) = Raw Average Level + Correction Factor
2. Correction Factor (dB) = Antenna Factor + Cable Loss – Preamplifier Gain
3. Margin = Level Average Reading – Limit

AH22120901-HAR-054#2_2.4G 802.11g_Ch 6_9kHz-30MHz_Ground-Parallel

12/28/2022 4:22:59 PM

No	Frequency (MHz)	Level Q-Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.185801MHz	29.09	19.49	69.54	-40.45	1.00	267.10	H/V	Passed
2.	4.126924MHz	28.78	19.69	69.54	-40.76	1.00	26.40	H/V	Passed
3.	13.365472MHz	29.55	19.85	69.54	-39.99	1.00	103.50	H/V	Passed
4.	16.420706MHz	28.26	19.89	69.54	-41.28	1.00	55.90	H/V	Passed
5.	25.530703MHz	31.30	20.98	69.54	-38.24	1.00	358.10	H/V	Passed
6.	30MHz	30.68	21.85	40.00	-9.32	1.00	152.90	H/V	Passed

Overall Graphs:

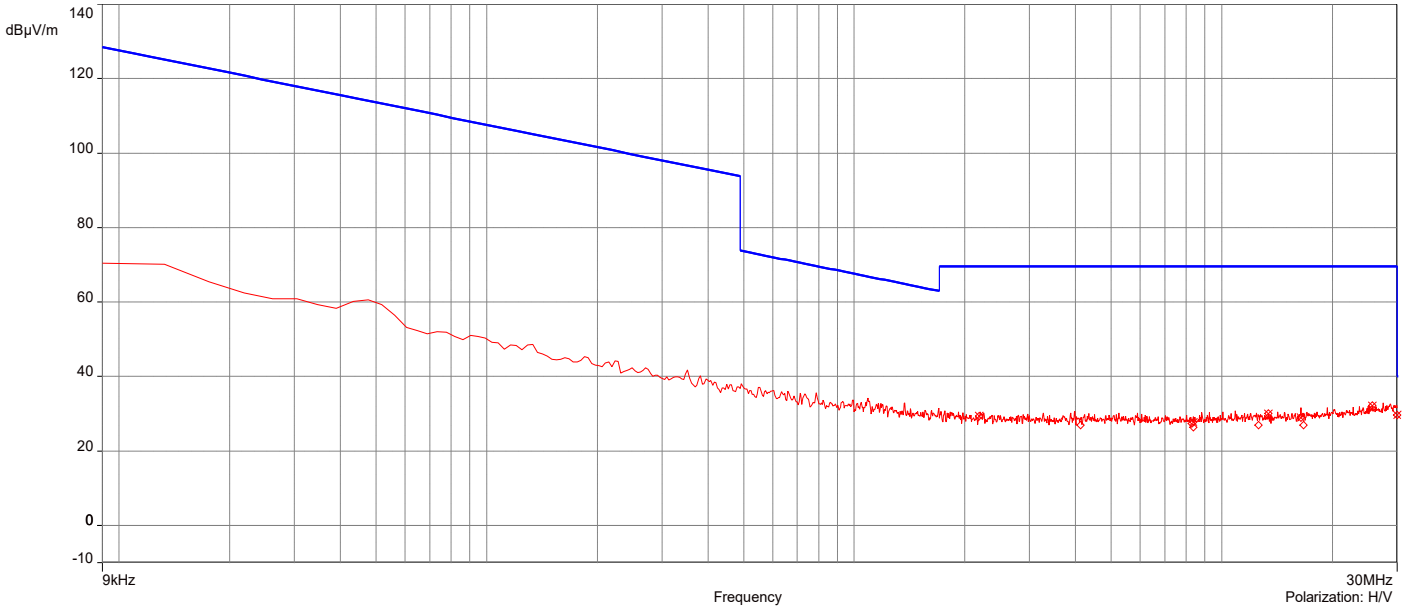


AH22120901-HAR-054#2_2.4G 802.11g_Ch 6_9kHz-30MHz_Parallel

12/28/2022 4:16:25 PM

No	Frequency (MHz)	Level Q-Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.190086MHz	29.33	19.49	69.54	-40.21	1.00	264.70	H/V	Passed
2.	8.38197MHz	27.76	19.45	69.54	-41.78	1.00	358.90	H/V	Passed
3.	13.382612MHz	30.04	19.85	69.54	-39.50	1.00	356.60	H/V	Passed
4.	16.420706MHz	28.97	19.89	69.54	-40.57	1.00	12.30	H/V	Passed
5.	25.659254MHz	32.25	20.99	69.54	-37.29	1.00	303.50	H/V	Passed
6.	30MHz	29.66	21.85	40.00	-10.34	1.00	26.30	H/V	Passed

Overall Graphs:

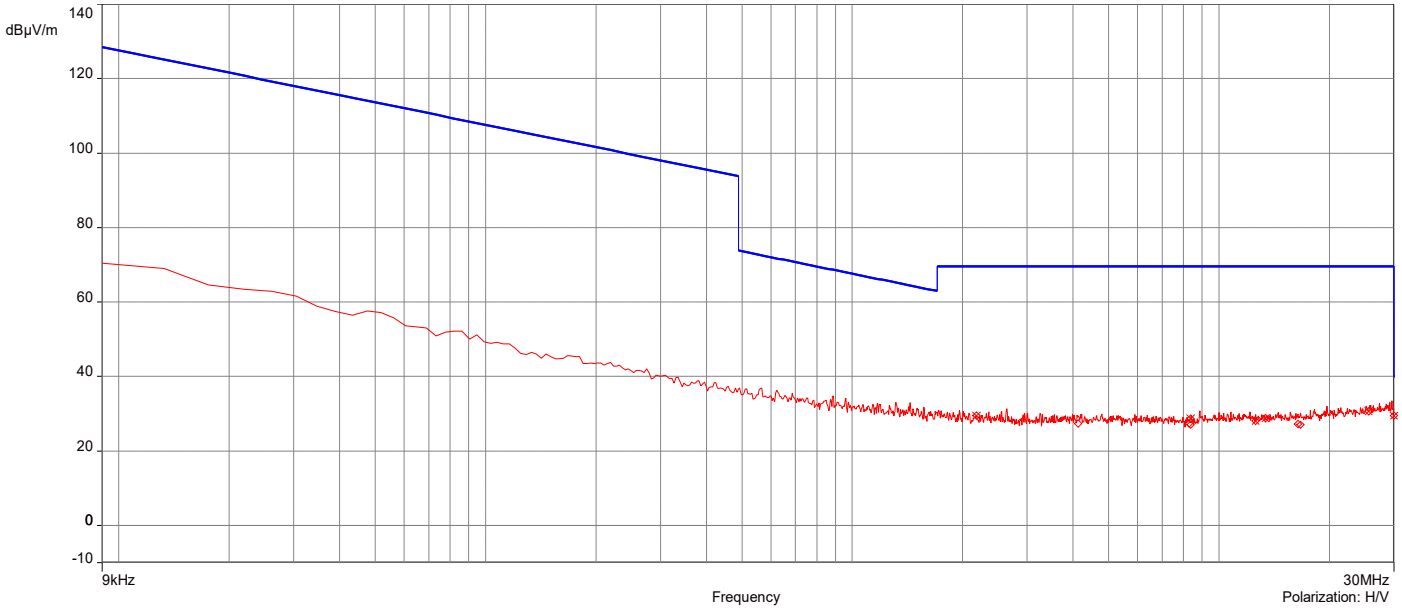


AH22120901-HAR-054#2_2.4G 802.11g_Ch 6_9kHz-30MHz_Perpendicular

12/28/2022 4:20:44 PM

No	Frequency (MHz)	Level Q-Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.177231MHz	29.57	19.49	69.54	-39.97	1.00	358.90	H/V	Passed
2.	8.38197MHz	28.62	19.45	69.54	-40.92	1.00	131.10	H/V	Passed
3.	12.577024MHz	28.03	19.83	69.54	-41.51	1.00	179.40	H/V	Passed
4.	13.374042MHz	28.83	19.85	69.54	-40.71	1.00	240.30	H/V	Passed
5.	25.633544MHz	30.65	20.99	69.54	-38.89	1.00	84.10	H/V	Passed
6.	30MHz	29.54	21.85	40.00	-10.46	1.00	297.40	H/V	Passed

Overall Graphs:

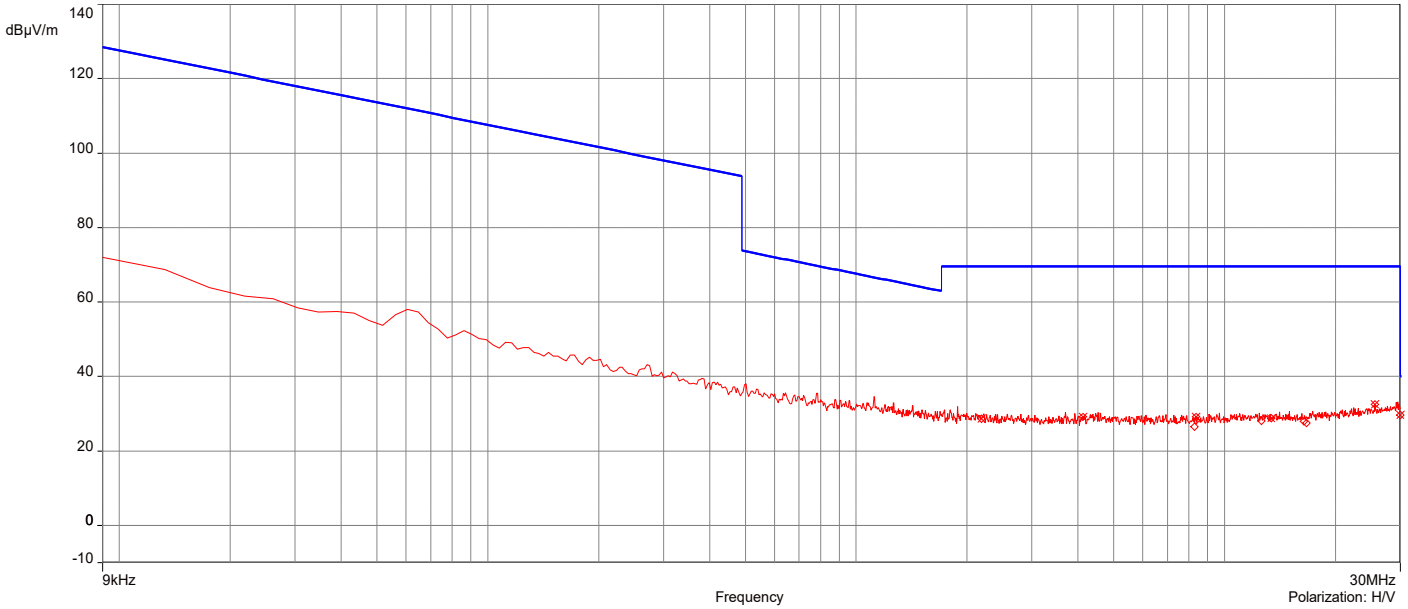


AH22120901-HAR-054#2_2.4G 802.11n_Ch 6_9kHz-30MHz_Ground-Parallel

12/28/2022 4:29:46 PM

No	Frequency (MHz)	Level Q-Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.190086MHz	28.65	19.49	69.54	-40.89	1.00	341.40	H/V	Passed
2.	4.126924MHz	29.16	19.69	69.54	-40.38	1.00	107.50	H/V	Passed
3.	8.38197MHz	29.28	19.45	69.54	-40.26	1.00	113.70	H/V	Passed
4.	13.386897MHz	28.83	19.85	69.54	-40.71	1.00	7.50	H/V	Passed
5.	25.629258MHz	32.56	20.99	69.54	-36.98	1.00	39.20	H/V	Passed
6.	30MHz	29.60	21.85	40.00	-10.40	1.00	0.10	H/V	Passed

Overall Graphs:

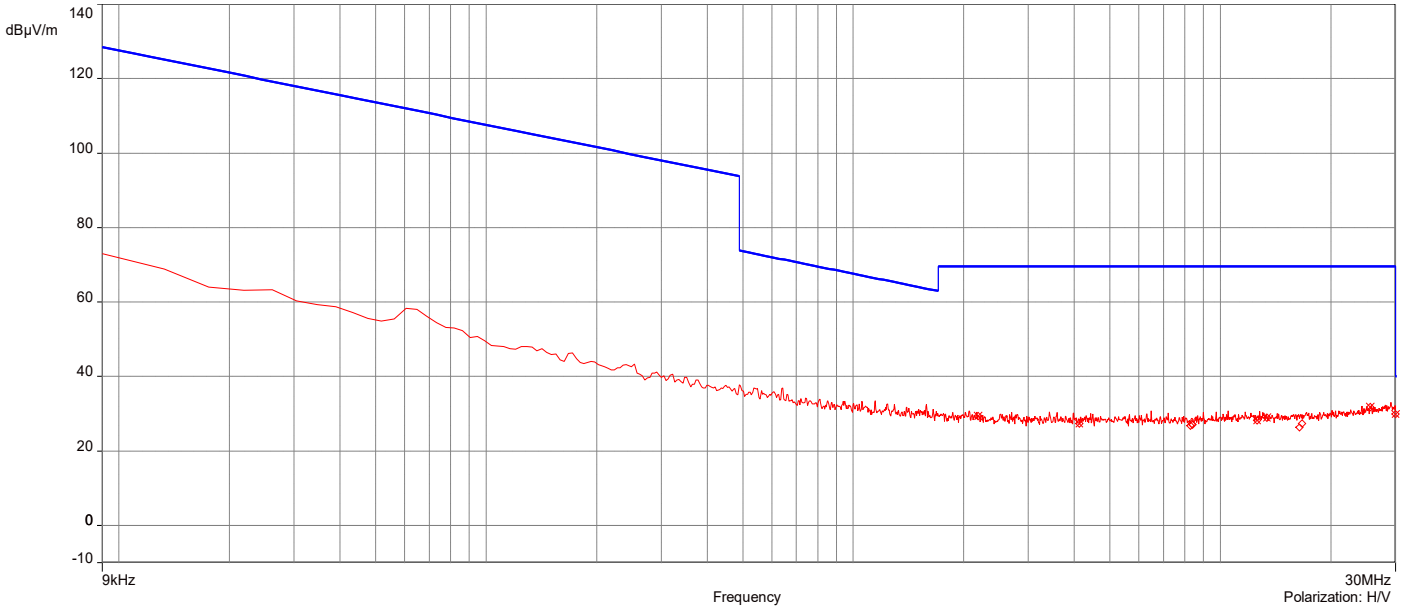


AH22120901-HAR-054#2_2.4G 802.11n_Ch 6_9kHz-30MHz_Parallel

12/28/2022 4:34:13 PM

No	Frequency (MHz)	Level Q-Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.190086MHz	29.34	19.49	69.54	-40.20	1.00	350.70	H/V	Passed
2.	4.126924MHz	27.39	19.69	69.54	-42.15	1.00	344.40	H/V	Passed
3.	12.577024MHz	28.22	19.83	69.54	-41.32	1.00	310.30	H/V	Passed
4.	13.382612MHz	28.88	19.85	69.54	-40.66	1.00	142.00	H/V	Passed
5.	25.586408MHz	31.74	20.99	69.54	-37.80	1.00	55.20	H/V	Passed
6.	30MHz	29.90	21.85	40.00	-10.10	1.00	291.20	H/V	Passed

Overall Graphs:

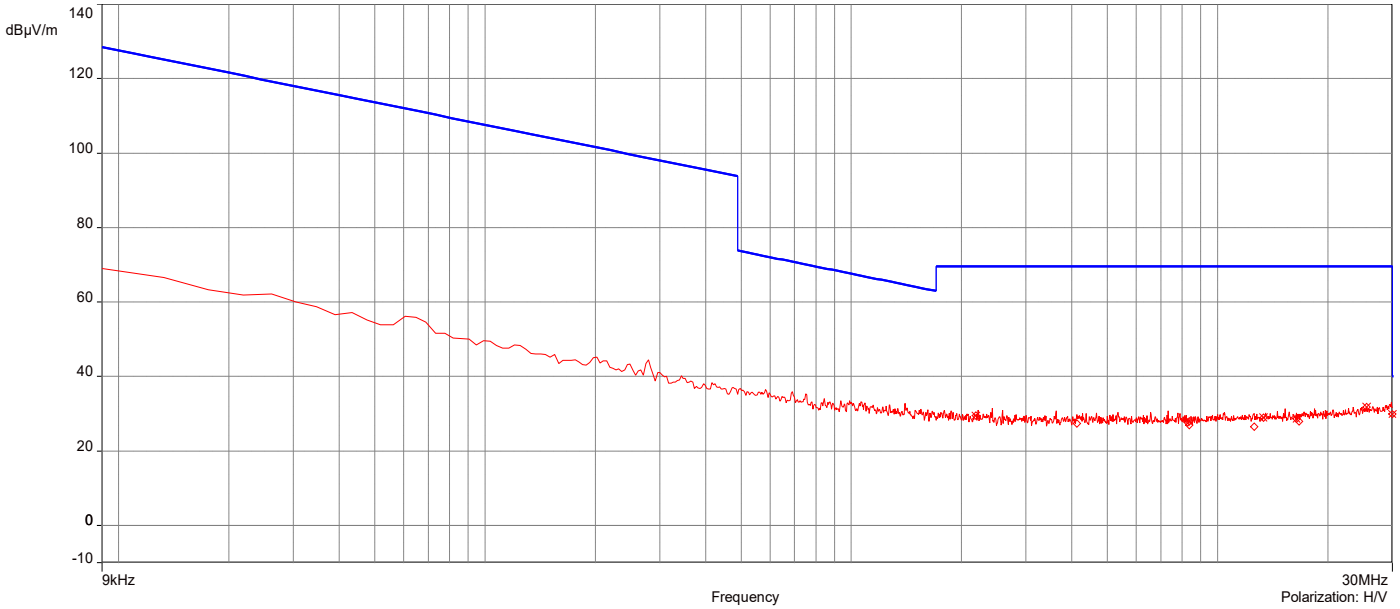


AH22120901-HAR-054#2_2.4G 802.11n_Ch 6_9kHz-30MHz_Perpendicular

12/28/2022 4:32:00 PM

No	Frequency (MHz)	Level Q-Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.190086MHz	29.48	19.49	69.54	-40.06	1.00	215.50	H/V	Passed
2.	8.38197MHz	27.96	19.45	69.54	-41.58	1.00	104.90	H/V	Passed
3.	13.365472MHz	28.91	19.85	69.54	-40.63	1.00	241.60	H/V	Passed
4.	16.420706MHz	28.70	19.89	69.54	-40.84	1.00	338.20	H/V	Passed
5.	25.509277MHz	31.85	20.98	69.54	-37.69	1.00	179.40	H/V	Passed
6.	30MHz	29.90	21.85	40.00	-10.10	1.00	76.40	H/V	Passed

Overall Graphs:

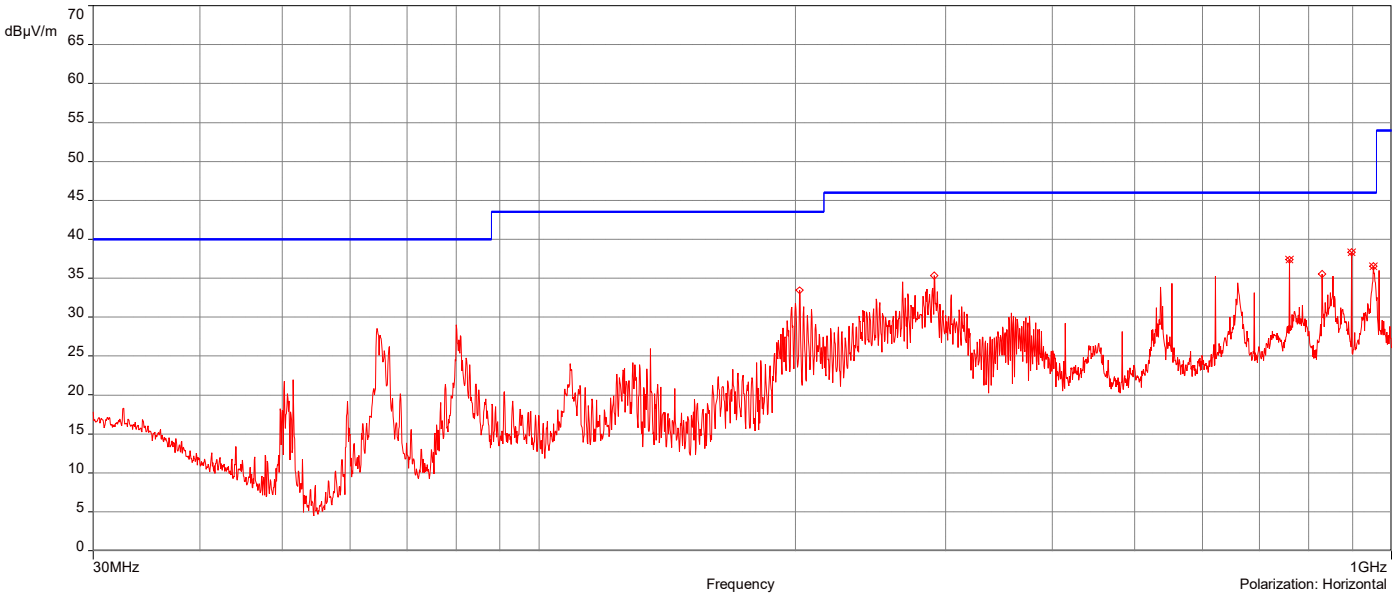


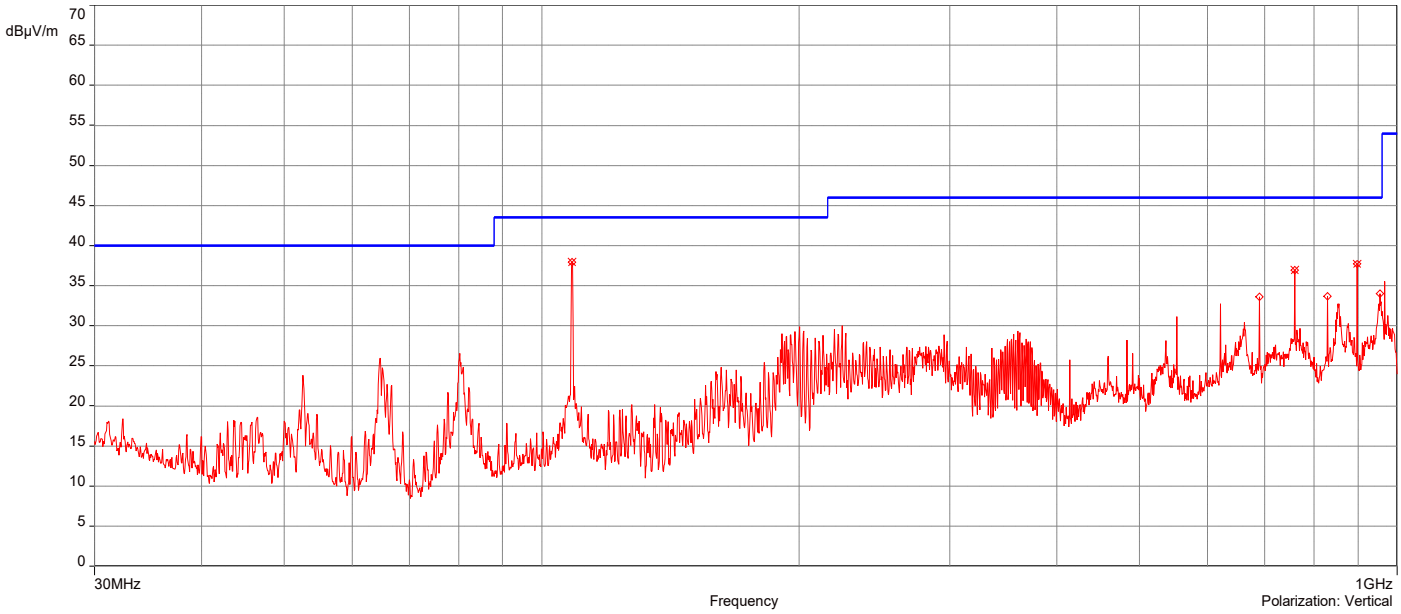
AH22120901-HAR-054#2_2.4G 802.11g_Ch 6_30MHz-1GHz

12/23/2022 1:33:29 PM

No	Frequency (MHz)	Level Q-Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	108.51756MHz	37.92	-12.14	43.50	-5.58	3.50	29.30	Vertical	Passed
2.	759.59704MHz	36.95	-3.28	46.00	-9.05	1.00	91.00	Vertical	Passed
3.	897.68751MHz	37.74	-1.68	46.00	-8.26	1.00	140.70	Vertical	Passed
4.	759.59704MHz	37.42	-2.18	46.00	-8.58	1.00	62.70	Horizontal	Passed
5.	897.68751MHz	38.34	-0.38	46.00	-7.66	1.00	140.00	Horizontal	Passed
6.	951.66833MHz	36.52	0.03	46.00	-9.48	1.00	235.00	Horizontal	Passed

Overall Graphs:



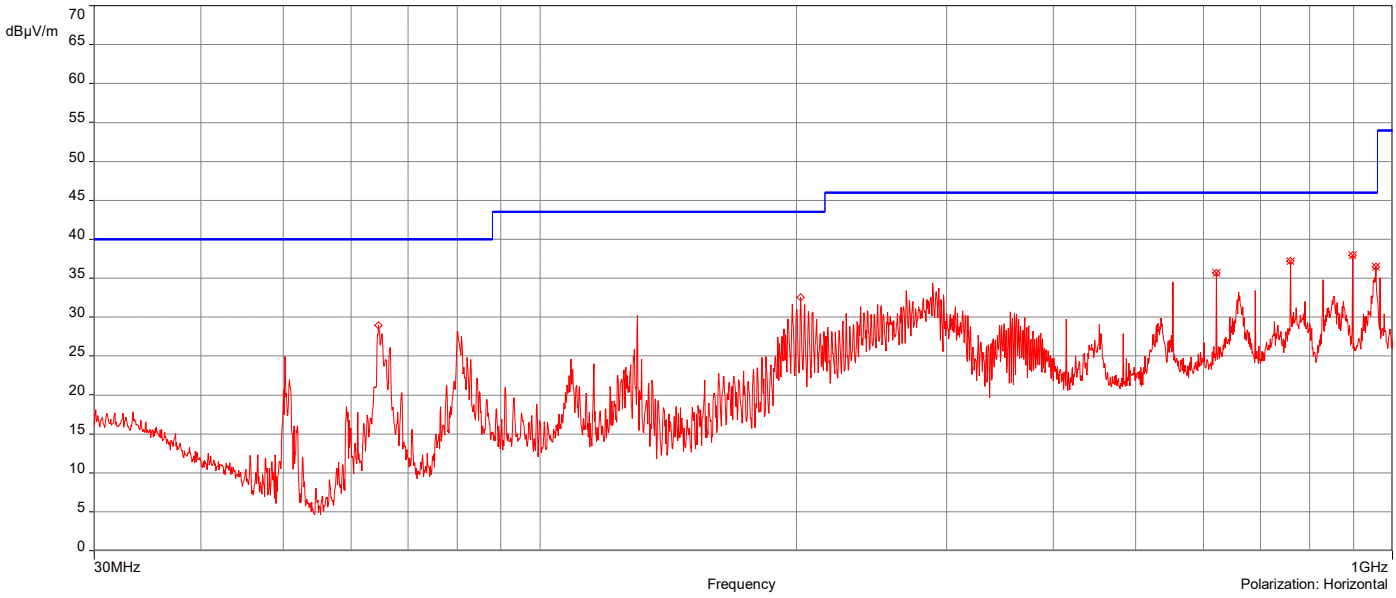

dBµV/m
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
30MHz
Frequency
1GHz
Polarization: Vertical

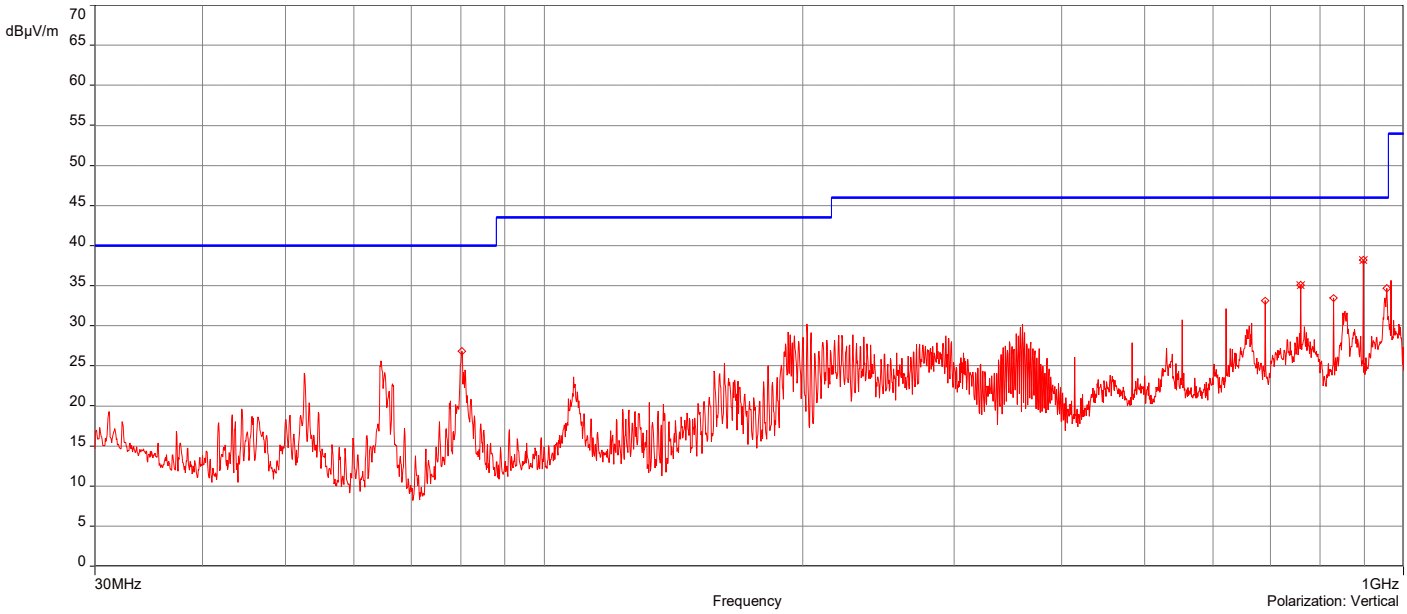
AH22120901-HAR-054#2_2.4G 802.11n_Ch 6_30MHz-1GHz

12/23/2022 1:46:51 PM

No	Frequency (MHz)	Level Q-Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	759.59704MHz	35.10	-3.28	46.00	-10.90	1.00	95.90	Vertical	Passed
2.	897.68751MHz	38.22	-1.68	46.00	-7.78	1.00	137.30	Vertical	Passed
3.	621.4495MHz	35.69	-4.13	46.00	-10.31	1.00	224.90	Horizontal	Passed
4.	759.59704MHz	37.22	-2.18	46.00	-8.78	1.00	63.90	Horizontal	Passed
5.	897.68751MHz	37.96	-0.38	46.00	-8.04	1.00	138.20	Horizontal	Passed
6.	955.77681MHz	36.46	0.17	46.00	-9.54	1.00	341.00	Horizontal	Passed

Overall Graphs:




dBµV/m
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
30MHz
Frequency
1GHz
Polarization: Vertical

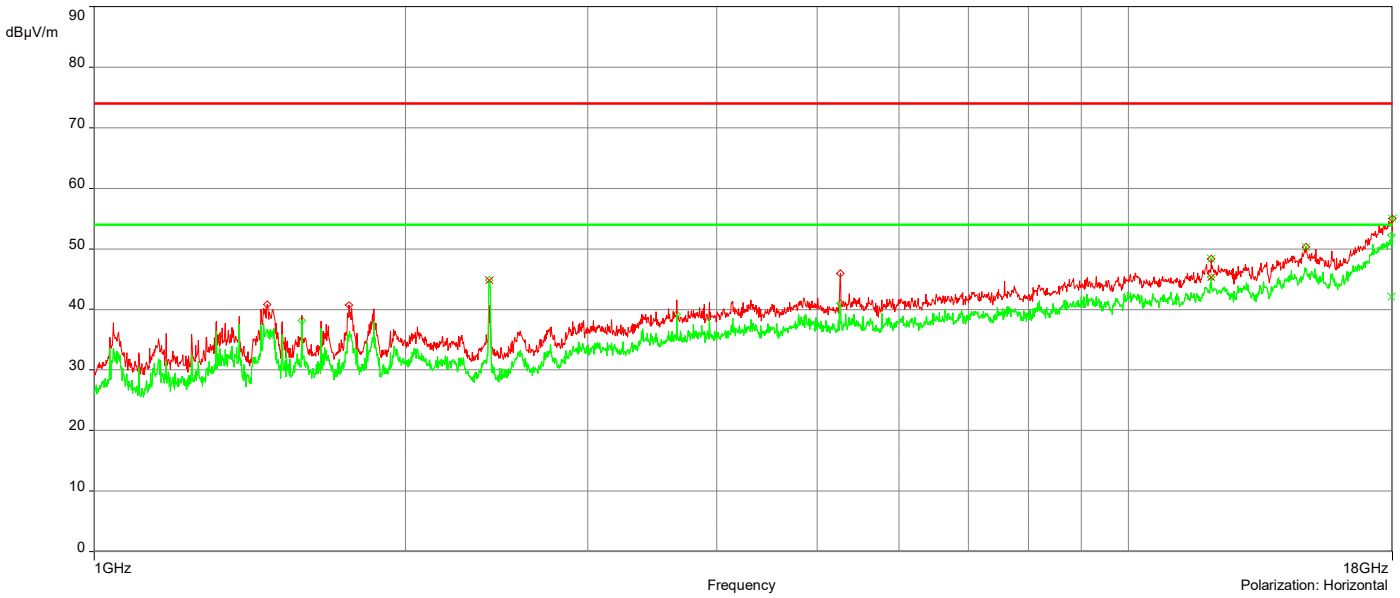
AH22120901-HAR-054#2_2.4G 802.11b_Ch 1_1-18GHz

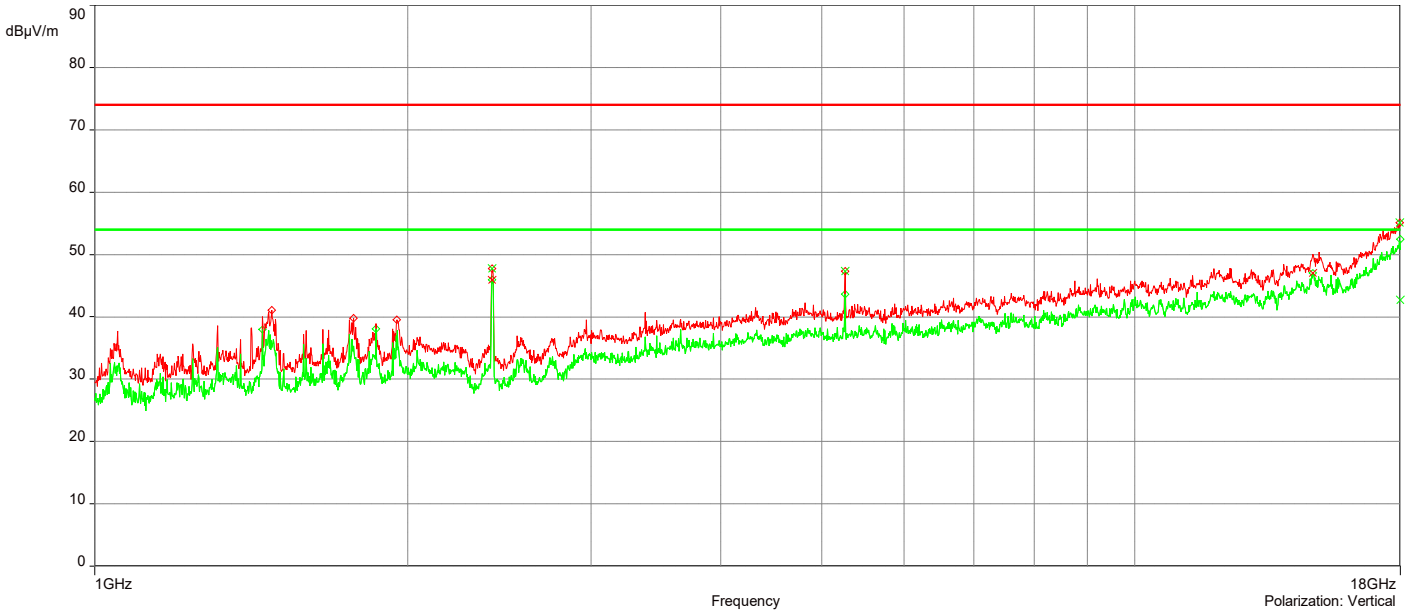
12/20/2022 11:00:22 AM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.4100415GHz	47.76	-1.99	74.00	-26.24	1.00	165.10	Vertical	Passed
2.	5.2646254GHz	47.34	4.41	74.00	-26.66	3.00	26.60	Vertical	Passed
3.	17.988GHz	55.10	21.47	74.00	-18.90	4.00	285.20	Vertical	Passed
4.	12.026324GHz	48.37	11.51	74.00	-25.63	1.00	45.70	Horizontal	Passed
5.	14.852407GHz	50.30	15.39	74.00	-23.70	1.50	184.30	Horizontal	Passed
6.	17.991GHz	55.04	21.52	74.00	-18.96	1.00	262.70	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	2.4100415GHz	45.97	-1.99	54.00	-8.03	1.00	165.10	Vertical	Passed
2.	14.837407GHz	47.05	15.54	54.00	-6.95	2.50	0.10	Vertical	Passed
3.	17.999GHz	42.74	21.76	54.00	-11.26	2.50	0.10	Vertical	Passed
4.	2.4105415GHz	44.86	-2.04	54.00	-9.14	4.00	359.90	Horizontal	Passed
5.	12.026324GHz	45.32	11.51	54.00	-8.68	1.00	45.70	Horizontal	Passed
6.	17.952499GHz	42.10	20.92	54.00	-11.90	4.00	359.90	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
1GHz
Frequency
18GHz
Polarization: Vertical

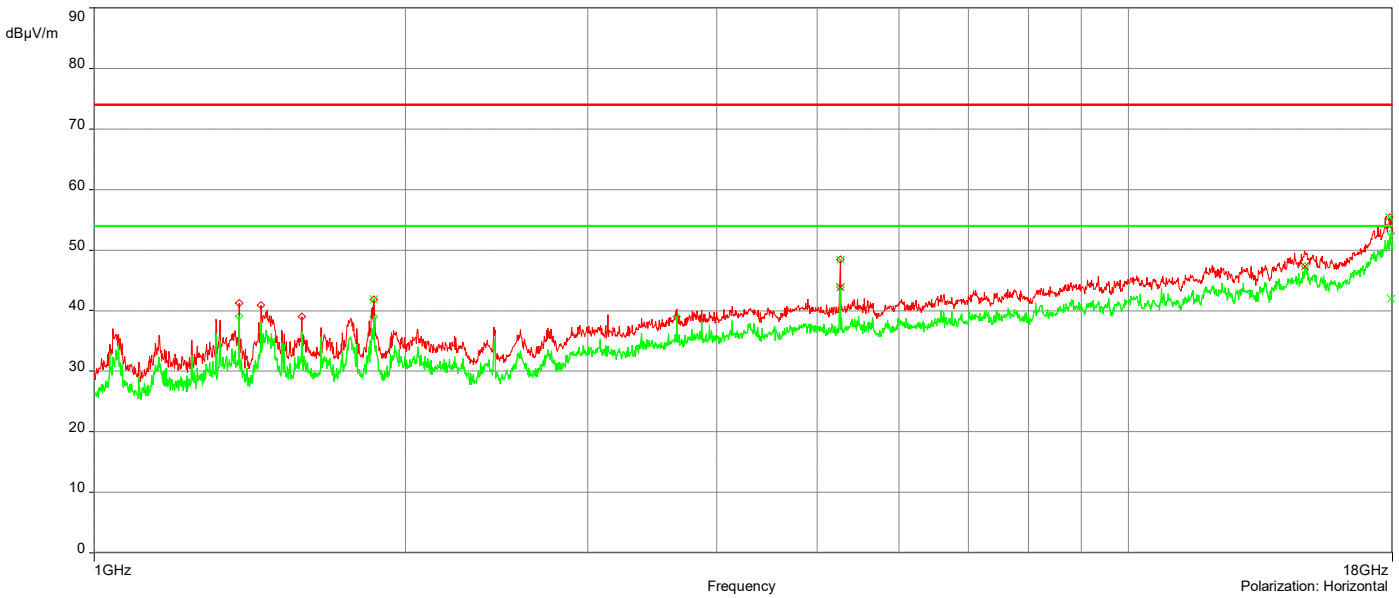
AH22120901-HAR-054#2_2.4G 802.11b_Ch 6_1-18GHz

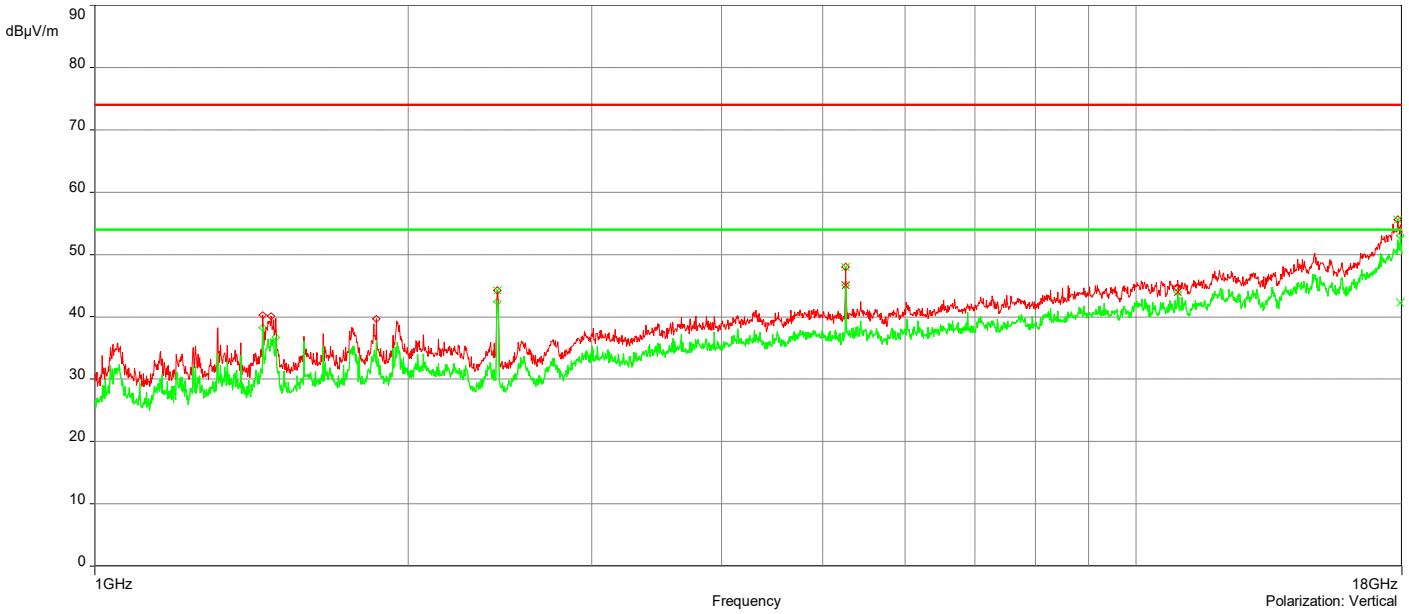
12/20/2022 11:18:52 AM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.4360422GHz	44.26	-2.04	74.00	-29.74	1.50	158.00	Vertical	Passed
2.	5.2611253GHz	47.99	4.40	74.00	-26.01	2.00	24.70	Vertical	Passed
3.	17.841495GHz	55.62	20.26	74.00	-18.38	2.50	228.20	Vertical	Passed
4.	1.8640254GHz	41.80	-4.24	74.00	-32.20	1.50	132.80	Horizontal	Passed
5.	5.2651254GHz	48.47	4.43	74.00	-25.53	4.00	50.10	Horizontal	Passed
6.	17.880496GHz	55.43	20.39	74.00	-18.57	1.50	34.10	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	5.2606253GHz	45.12	4.40	54.00	-8.88	2.00	30.30	Vertical	Passed
2.	10.958293GHz	43.95	9.82	54.00	-10.05	4.00	359.90	Vertical	Passed
3.	17.934498GHz	42.25	20.81	54.00	-11.75	4.00	56.10	Vertical	Passed
4.	5.2651254GHz	43.93	4.43	54.00	-10.07	4.00	50.10	Horizontal	Passed
5.	14.809906GHz	47.31	15.50	54.00	-6.69	1.00	129.70	Horizontal	Passed
6.	17.933498GHz	42.01	20.74	54.00	-11.99	2.00	325.90	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
1GHz
Frequency
18GHz
Polarization: Vertical

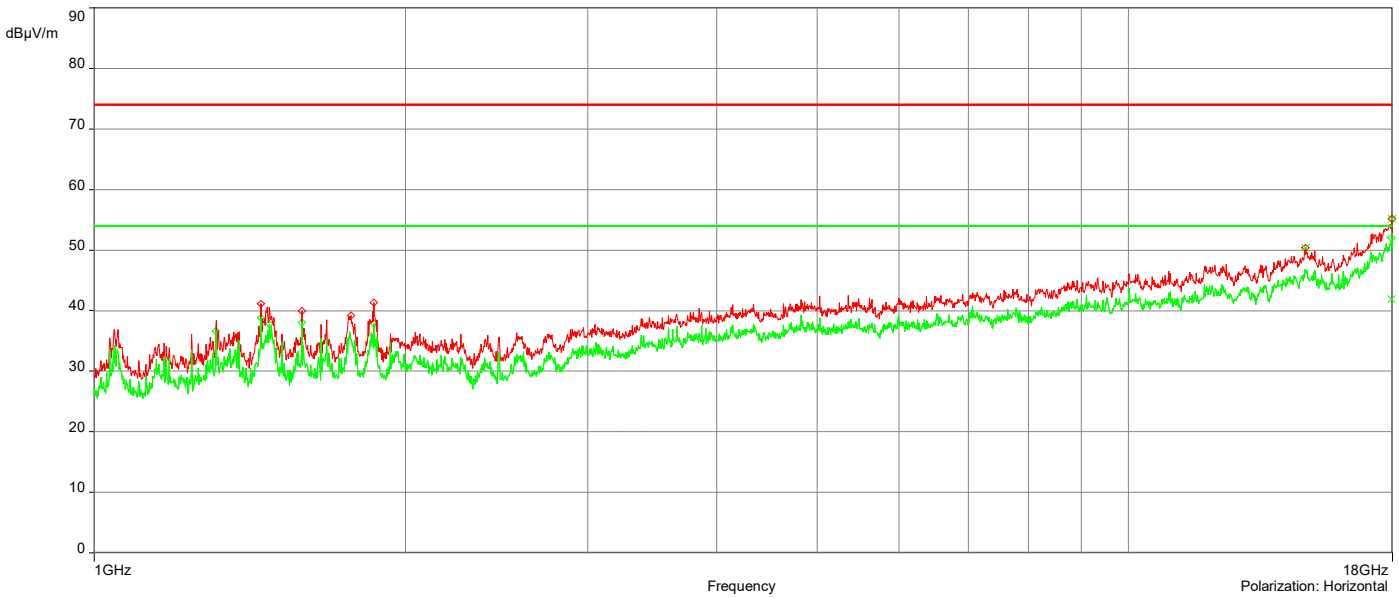
AH22120901-HAR-054#2_2.4G 802.11b_Ch 11_1-18GHz

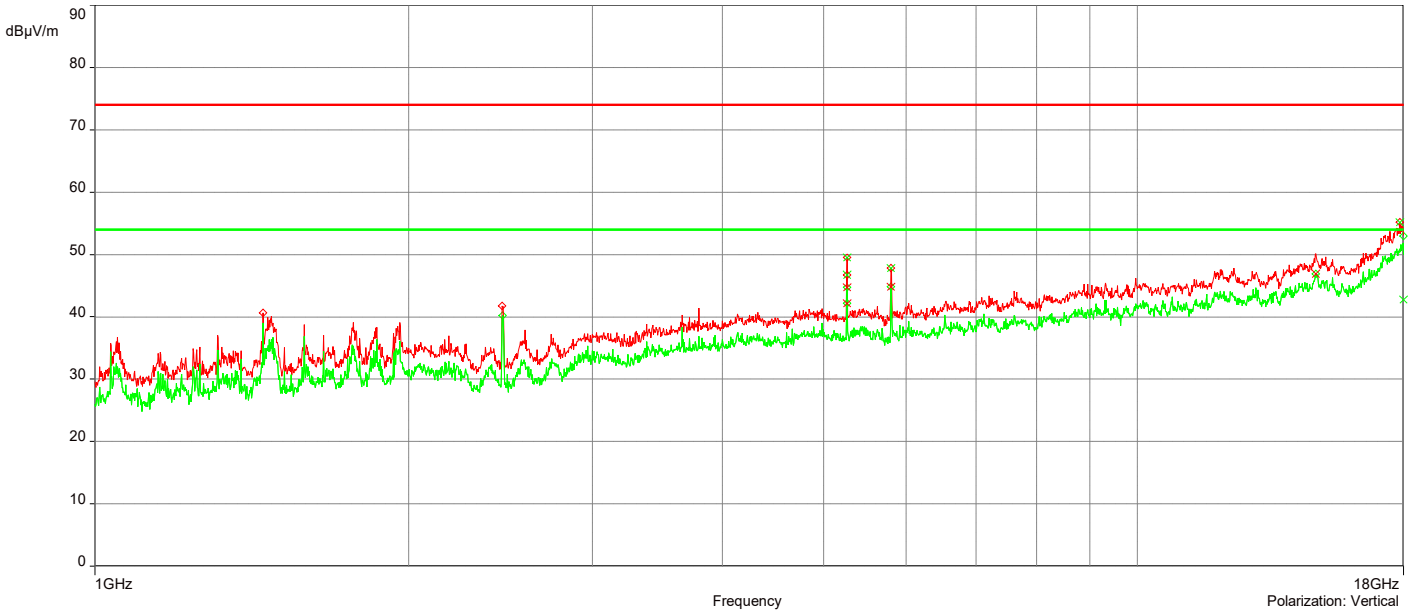
12/20/2022 11:36:33 AM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	5.2636254GHz	46.72	4.41	74.00	-27.28	1.00	261.00	Vertical	Passed
2.	5.2656255GHz	49.56	4.42	74.00	-24.44	1.00	261.00	Vertical	Passed
3.	5.8036413GHz	47.79	4.67	74.00	-26.21	1.00	280.30	Vertical	Passed
4.	17.857996GHz	55.16	20.34	74.00	-18.84	3.50	59.90	Vertical	Passed
5.	14.831407GHz	50.37	15.70	74.00	-23.63	1.50	71.90	Horizontal	Passed
6.	17.9875GHz	55.16	21.43	74.00	-18.84	1.00	359.90	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	5.2636254GHz	42.14	4.41	54.00	-11.86	1.00	261.00	Vertical	Passed
2.	5.2656255GHz	44.72	4.42	54.00	-9.28	1.00	261.00	Vertical	Passed
3.	5.8051413GHz	44.80	4.69	54.00	-9.20	1.00	280.30	Vertical	Passed
4.	14.825907GHz	46.87	15.63	54.00	-7.13	3.00	70.30	Vertical	Passed
5.	17.9915GHz	42.77	21.56	54.00	-11.23	4.00	131.10	Vertical	Passed
6.	17.951999GHz	41.92	20.91	54.00	-12.08	1.00	136.90	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
1GHz
Frequency
18GHz
Polarization: Vertical

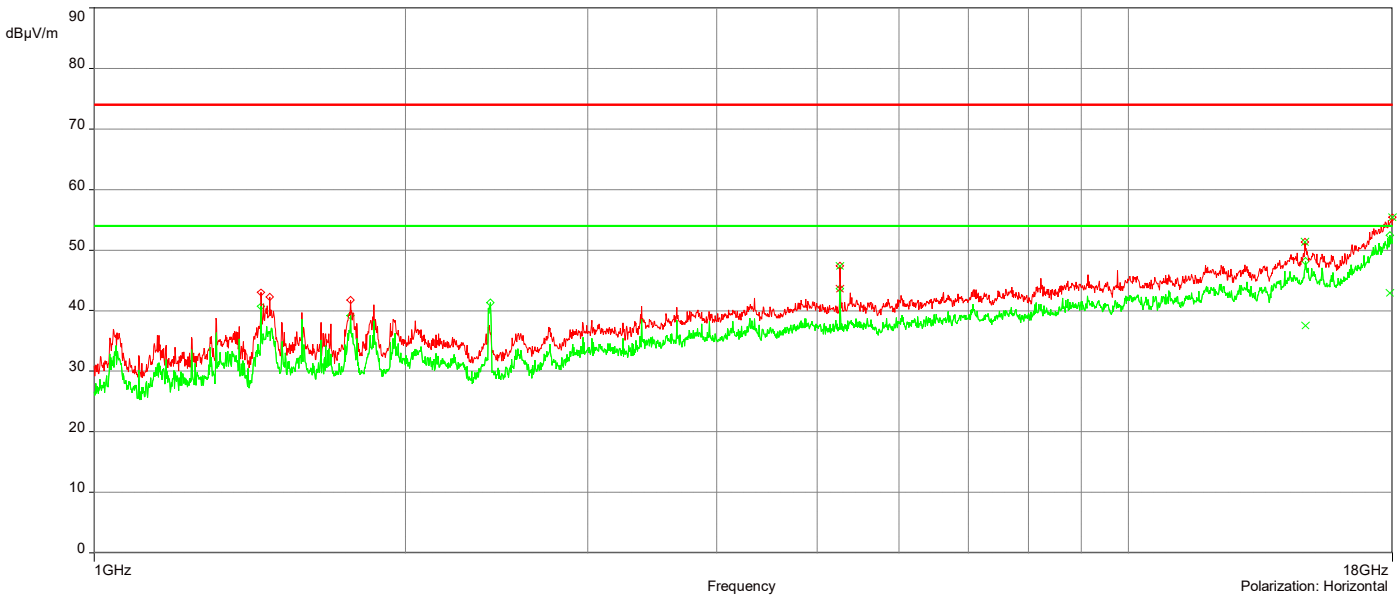
AH22120901-HAR-054#2_2.4G 802.11g_Ch 1_1-18GHz

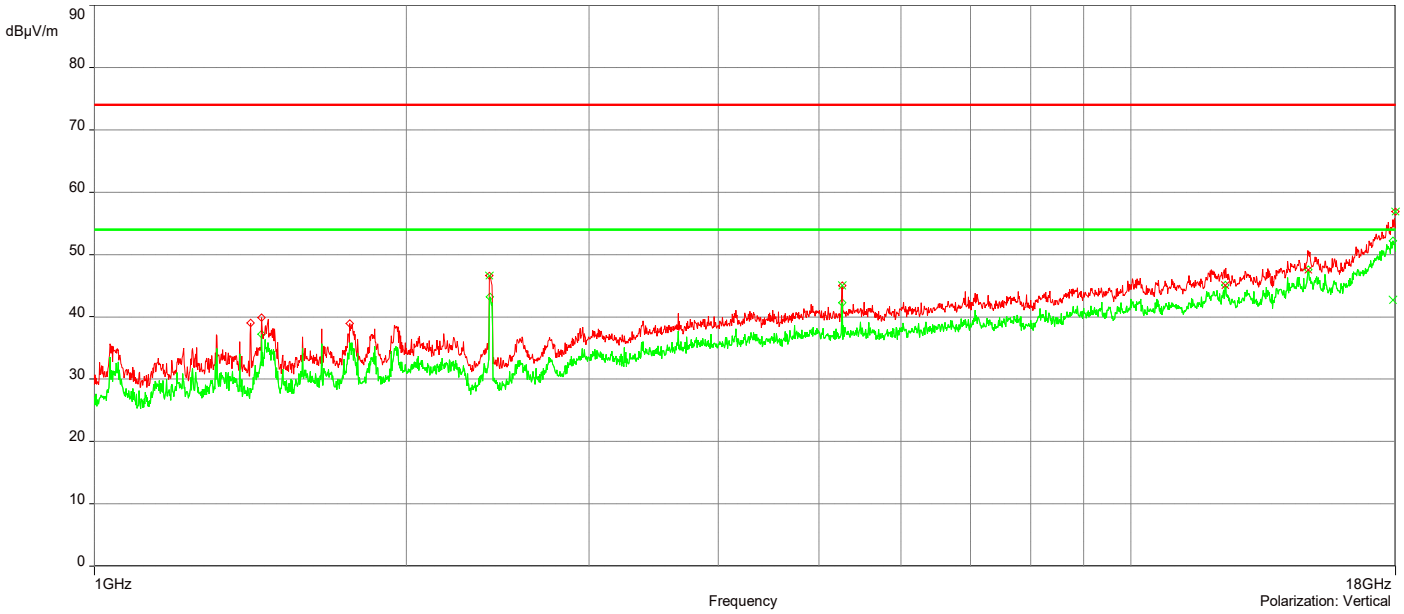
12/21/2022 11:36:08 AM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.4045413GHz	46.66	-1.99	74.00	-27.34	1.00	163.20	Vertical	Passed
2.	5.2636254GHz	44.98	4.41	74.00	-29.02	1.00	268.10	Vertical	Passed
3.	17.997GHz	56.89	21.71	74.00	-17.11	4.00	134.50	Vertical	Passed
4.	5.2611253GHz	47.44	4.42	74.00	-26.56	3.50	237.00	Horizontal	Passed
5.	14.822407GHz	51.30	15.67	74.00	-22.70	1.00	164.60	Horizontal	Passed
6.	17.995GHz	55.46	21.63	74.00	-18.54	3.50	326.50	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	12.329833GHz	45.12	11.87	54.00	-8.88	2.50	306.80	Vertical	Passed
2.	14.834907GHz	47.54	15.57	54.00	-6.46	3.50	91.10	Vertical	Passed
3.	17.897497GHz	42.73	20.55	54.00	-11.27	3.00	218.10	Vertical	Passed
4.	5.2611253GHz	43.62	4.42	54.00	-10.38	3.50	237.00	Horizontal	Passed
5.	14.824907GHz	37.55	15.70	54.00	-16.45	1.00	237.90	Horizontal	Passed
6.	17.900997GHz	42.91	20.49	54.00	-11.09	2.00	282.90	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
1GHz
Frequency
18GHz
Polarization: Vertical

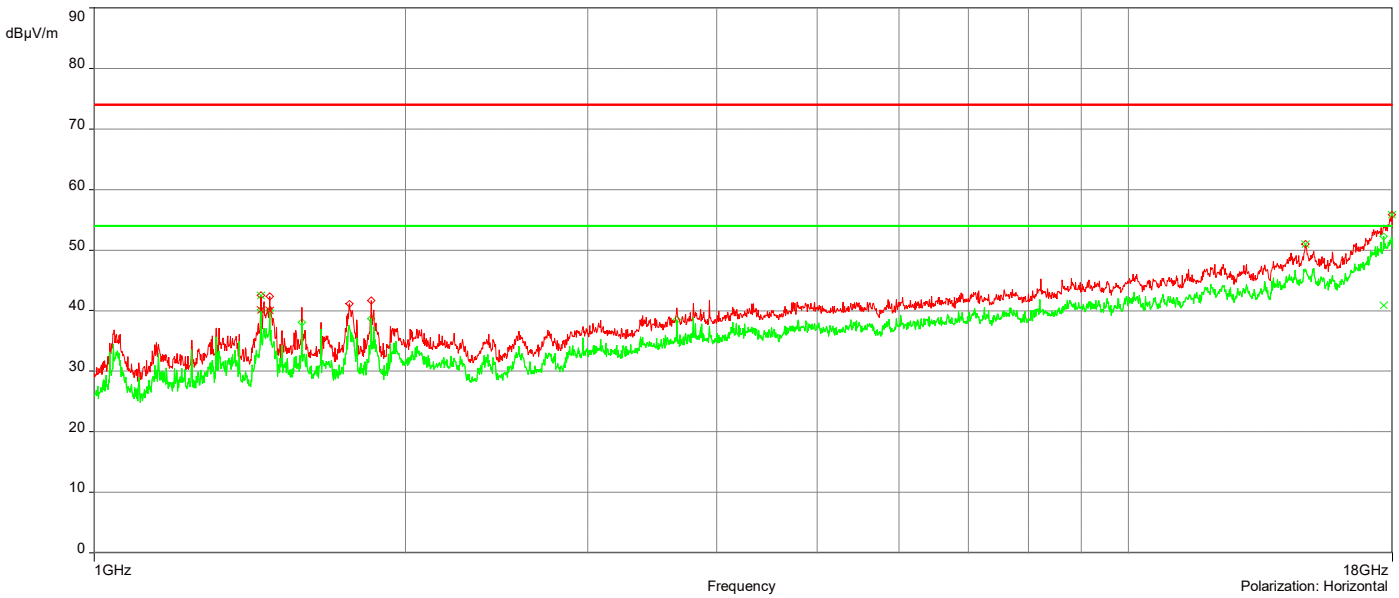
AH22120901-HAR-054#2_2.4G 802.11g_Ch 6_1-18GHz

12/21/2022 12:26:58 PM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.429042GHz	42.98	-2.07	74.00	-31.02	1.50	159.50	Vertical	Passed
2.	5.3146269GHz	43.91	4.78	74.00	-30.09	3.50	156.60	Vertical	Passed
3.	17.9955GHz	56.12	21.67	74.00	-17.88	3.50	99.80	Vertical	Passed
4.	1.4500132GHz	42.56	-7.03	74.00	-31.44	1.00	196.70	Horizontal	Passed
5.	14.826907GHz	51.00	15.73	74.00	-23.00	4.00	139.90	Horizontal	Passed
6.	17.971999GHz	55.86	21.14	74.00	-18.14	4.00	129.30	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	12.360834GHz	44.93	11.98	54.00	-9.07	1.00	13.60	Vertical	Passed
2.	14.868408GHz	47.44	15.09	54.00	-6.56	2.00	178.70	Vertical	Passed
3.	17.961999GHz	42.81	21.08	54.00	-11.19	2.50	249.10	Vertical	Passed
4.	1.4500132GHz	40.12	-7.03	54.00	-13.88	1.00	196.70	Horizontal	Passed
5.	1.477514GHz	40.03	-6.46	54.00	-13.97	1.00	196.70	Horizontal	Passed
6.	17.64649GHz	40.91	19.48	54.00	-13.09	1.00	162.10	Horizontal	Passed

Overall Graphs:



dBµV/m
90
80
70
60
50
40
30
20
10
0
1GHz
Frequency
18GHz
Polarization: Vertical

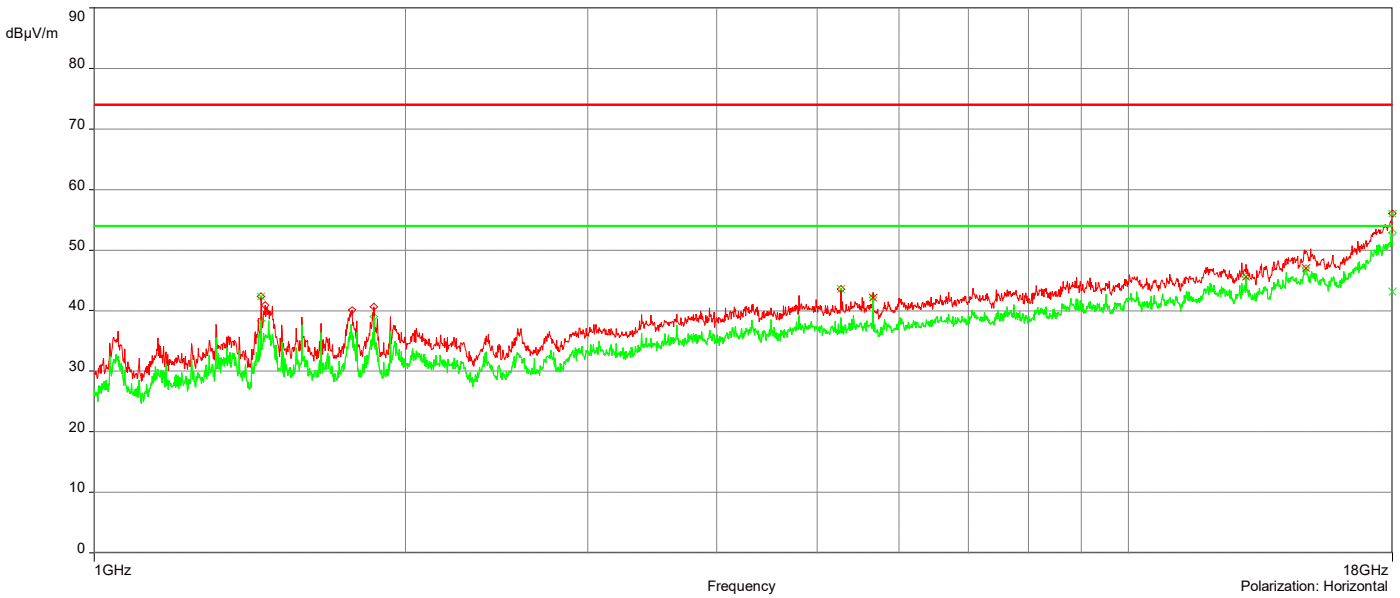
AH22120901-HAR-054#2_2.4G 802.11g_Ch 11_1-18GHz

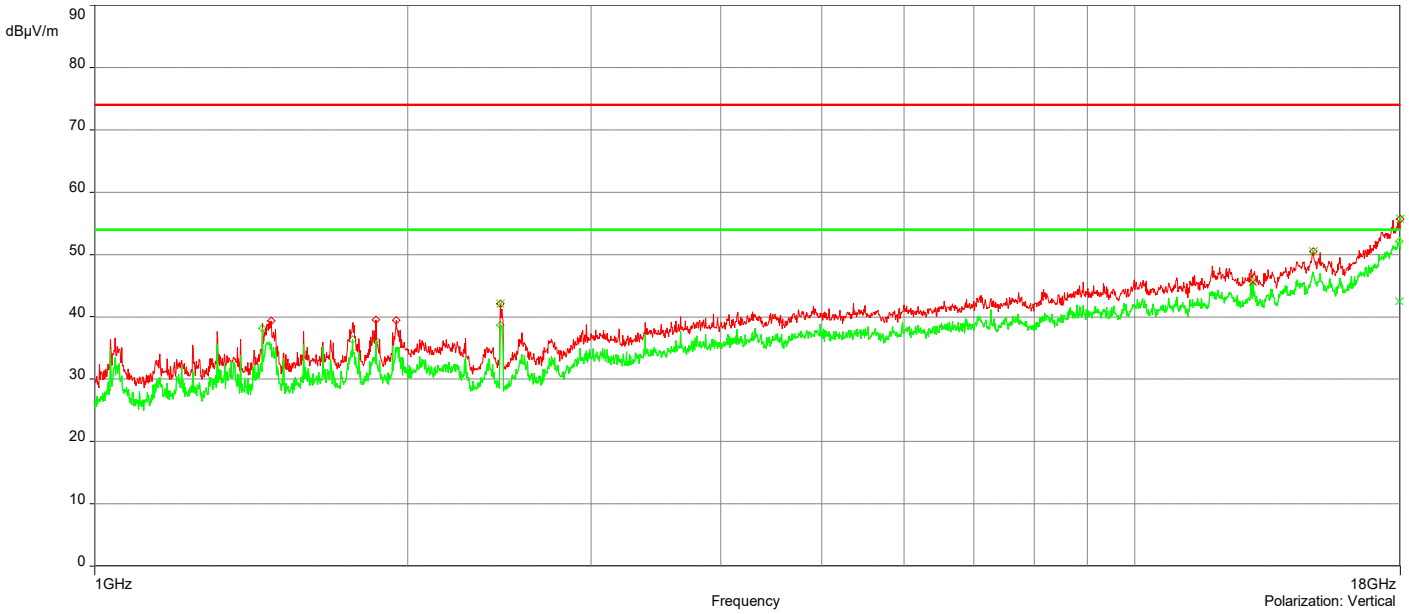
12/21/2022 12:45:07 PM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.4545428GHz	42.07	-1.93	74.00	-31.93	1.50	150.90	Vertical	Passed
2.	14.845907GHz	50.51	15.42	74.00	-23.49	3.00	113.60	Vertical	Passed
3.	17.9935GHz	55.68	21.62	74.00	-18.32	4.00	140.80	Vertical	Passed
4.	1.4495132GHz	42.32	-7.04	74.00	-31.68	1.00	188.60	Horizontal	Passed
5.	5.2726257GHz	43.54	4.47	74.00	-30.46	1.50	353.60	Horizontal	Passed
6.	17.994GHz	56.07	21.60	74.00	-17.93	3.00	258.20	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	12.988853GHz	45.58	12.24	54.00	-8.42	2.50	359.90	Vertical	Passed
2.	17.964499GHz	42.54	21.11	54.00	-11.46	2.00	188.10	Vertical	Passed
3.	5.6611371GHz	42.20	5.08	54.00	-11.80	4.00	76.90	Horizontal	Passed
4.	12.988853GHz	45.57	12.23	54.00	-8.43	2.50	213.60	Horizontal	Passed
5.	14.845407GHz	47.05	15.50	54.00	-6.95	3.50	235.40	Horizontal	Passed
6.	17.9965GHz	43.09	21.67	54.00	-10.91	1.00	358.90	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
1GHz
Frequency
18GHz
Polarization: Vertical

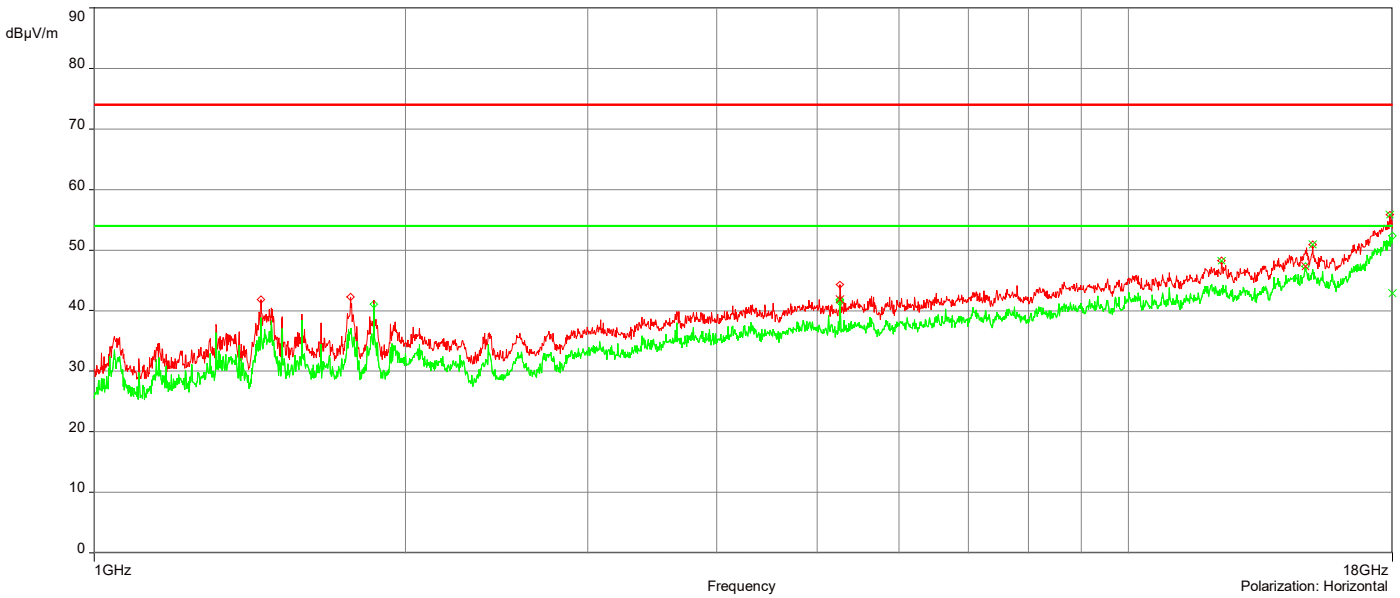
AH22120901-HAR-054#2_2.4G 802.11n_Ch 1_1-18GHz

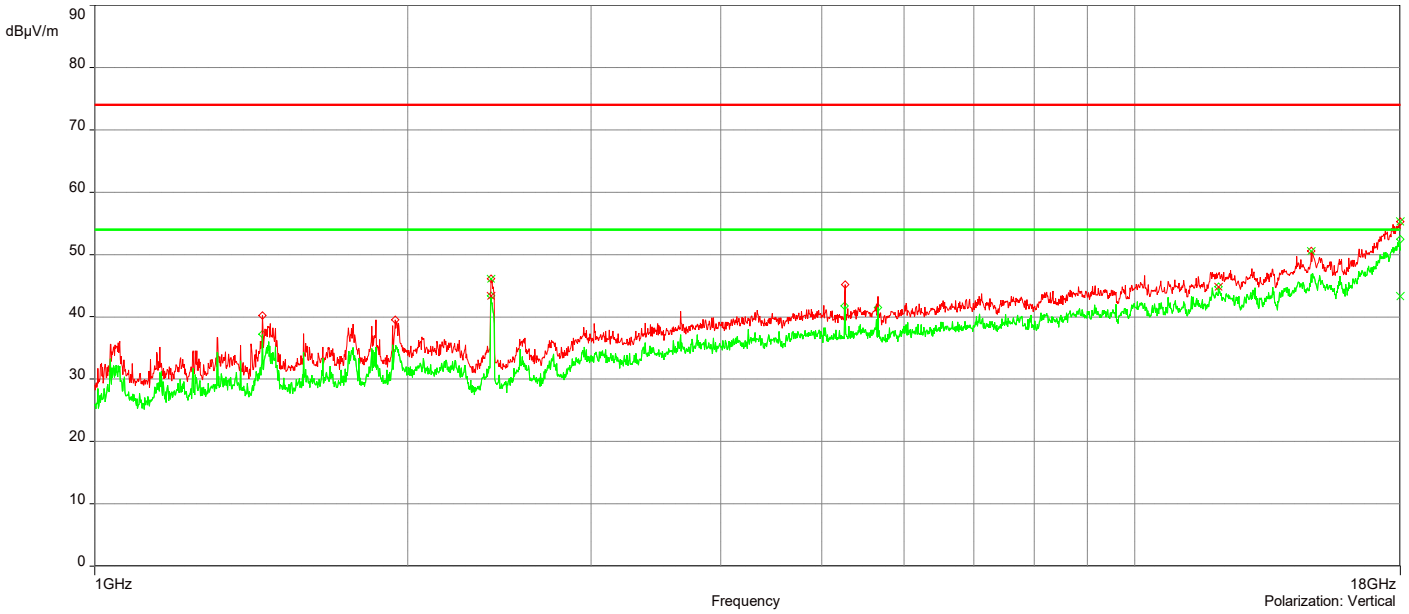
12/21/2022 1:05:47 PM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.4040413GHz	46.08	-1.99	74.00	-27.92	1.50	168.40	Vertical	Passed
2.	14.786405GHz	50.58	15.08	74.00	-23.42	2.50	179.50	Vertical	Passed
3.	17.993GHz	55.31	21.60	74.00	-18.69	2.50	90.90	Vertical	Passed
4.	12.299832GHz	48.23	11.65	74.00	-25.77	1.50	0.10	Horizontal	Passed
5.	15.070914GHz	50.89	14.48	74.00	-23.11	2.50	46.10	Horizontal	Passed
6.	17.900497GHz	55.84	20.49	74.00	-18.16	3.50	233.80	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	2.4045413GHz	43.35	-1.99	54.00	-10.65	1.00	147.30	Vertical	Passed
2.	12.033825GHz	44.87	11.54	54.00	-9.13	1.50	89.20	Vertical	Passed
3.	17.9945GHz	43.32	21.64	54.00	-10.68	4.00	195.10	Vertical	Passed
4.	5.2591253GHz	41.83	4.42	54.00	-12.17	2.50	16.70	Horizontal	Passed
5.	14.827907GHz	47.35	15.74	54.00	-6.65	1.50	219.40	Horizontal	Passed
6.	17.994GHz	42.84	21.60	54.00	-11.16	1.50	3.10	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
1GHz
Frequency
18GHz
Polarization: Vertical

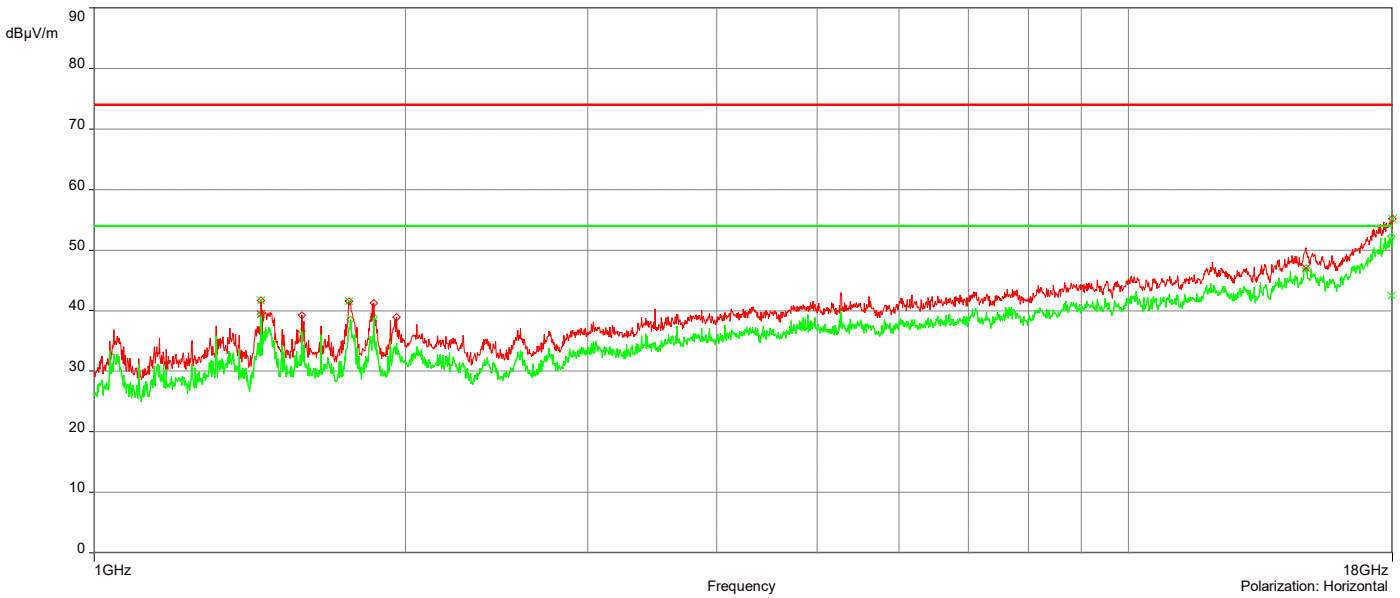
AH22120901-HAR-054#2_2.4G 802.11n_Ch 6_1-18GHz

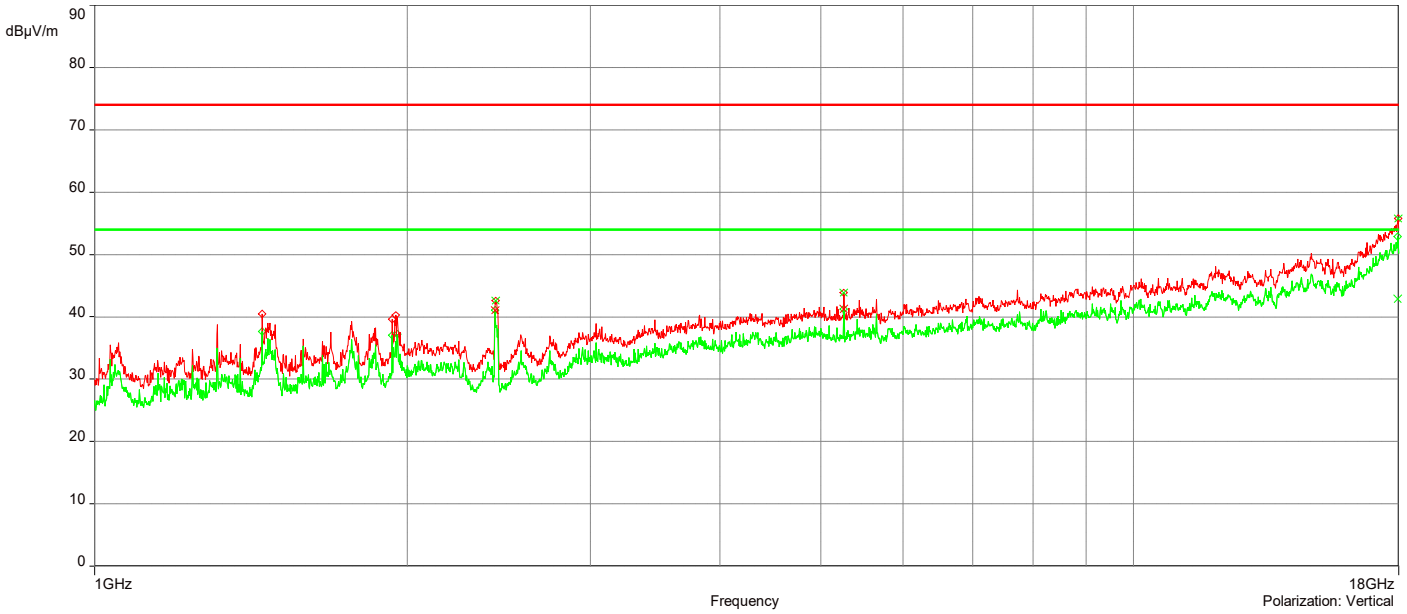
12/21/2022 1:23:43 PM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.4335422GHz	42.59	-2.05	74.00	-31.41	3.00	163.60	Vertical	Passed
2.	5.2626254GHz	43.86	4.41	74.00	-30.14	4.00	81.30	Vertical	Passed
3.	17.9865GHz	55.80	21.44	74.00	-18.20	3.50	231.30	Vertical	Passed
4.	1.4495132GHz	41.71	-7.04	74.00	-32.29	1.00	185.70	Horizontal	Passed
5.	1.7640225GHz	41.56	-4.81	74.00	-32.44	2.00	143.60	Horizontal	Passed
6.	17.996GHz	55.23	21.66	74.00	-18.77	2.50	89.90	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	2.429542GHz	41.03	-2.07	54.00	-12.97	3.00	163.60	Vertical	Passed
2.	5.2626254GHz	41.25	4.41	54.00	-12.75	4.00	81.30	Vertical	Passed
3.	17.963499GHz	42.83	21.10	54.00	-11.17	3.50	352.90	Vertical	Passed
4.	1.4500132GHz	39.43	-7.03	54.00	-14.57	2.00	113.50	Horizontal	Passed
5.	14.843407GHz	47.09	15.52	54.00	-6.91	4.00	213.80	Horizontal	Passed
6.	17.959999GHz	42.55	21.00	54.00	-11.45	1.50	335.10	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
1GHz
Frequency
18GHz
Polarization: Vertical

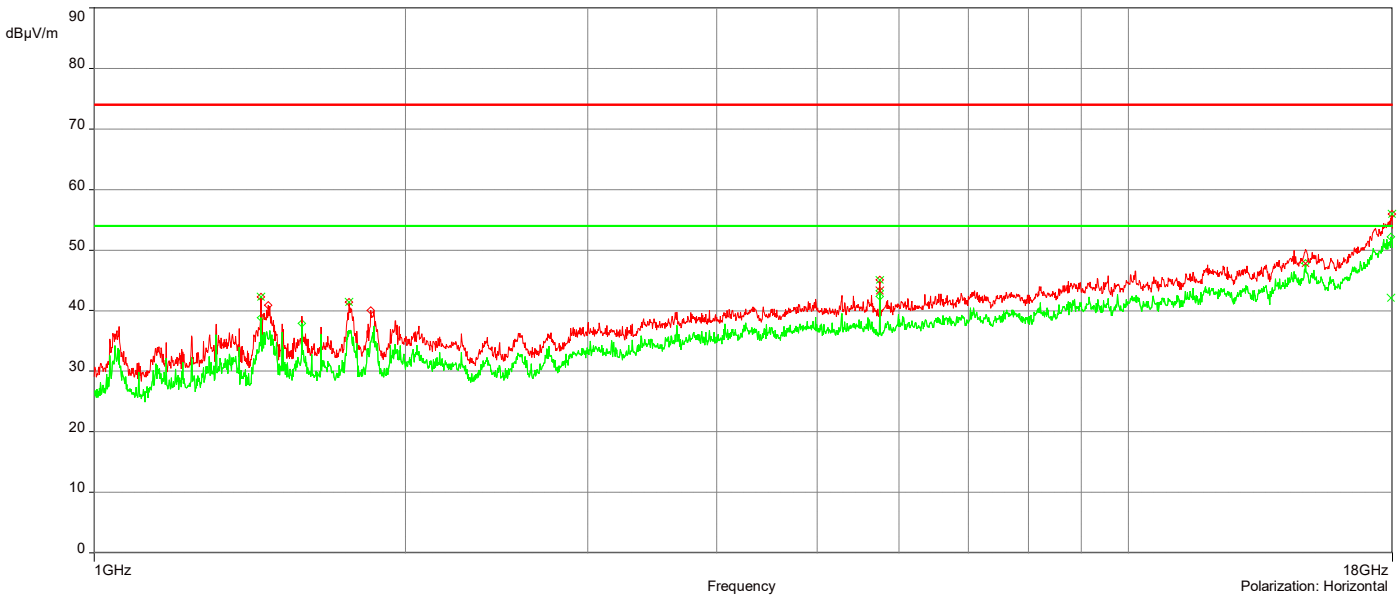
AH22120901-HAR-054#2_2.4G 802.11n_Ch 11_1-18GHz

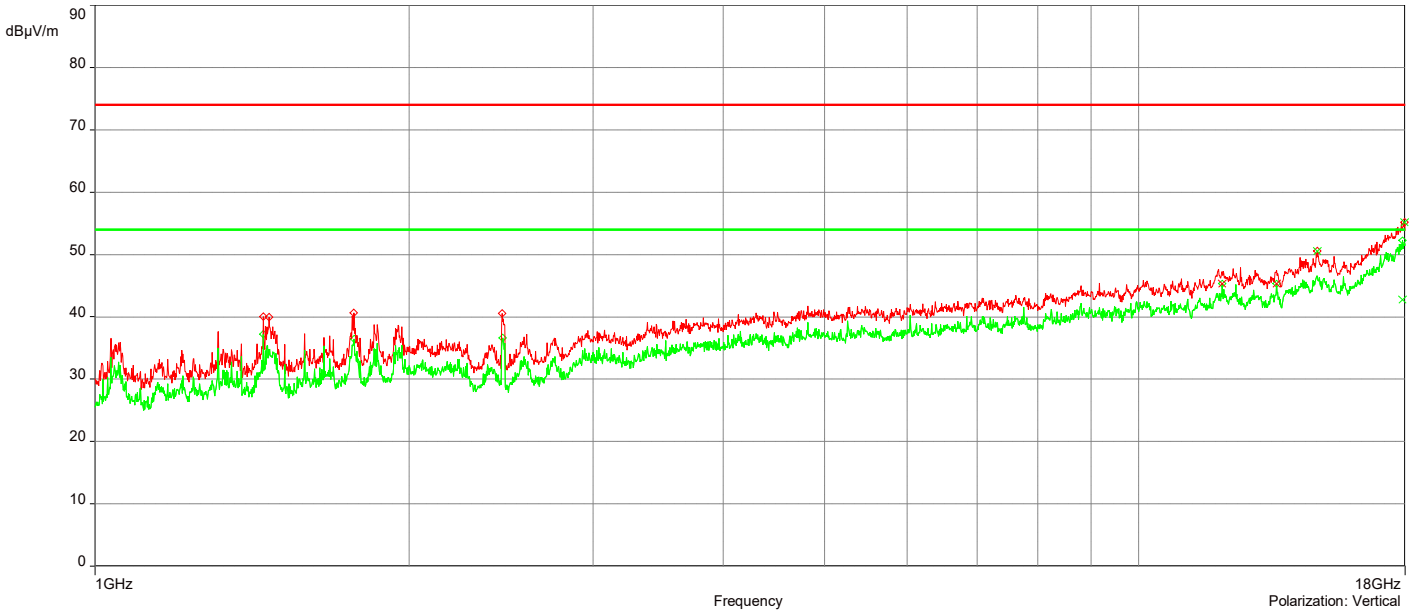
12/21/2022 1:41:42 PM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	14.831907GHz	50.53	15.61	74.00	-23.47	1.50	359.90	Vertical	Passed
2.	17.974499GHz	55.19	21.21	74.00	-18.81	3.50	218.30	Vertical	Passed
3.	1.4500132GHz	42.29	-7.03	74.00	-31.71	2.00	123.50	Horizontal	Passed
4.	1.7640225GHz	41.37	-4.81	74.00	-32.63	2.00	129.10	Horizontal	Passed
5.	5.7481397GHz	45.12	4.68	74.00	-28.88	2.00	251.40	Horizontal	Passed
6.	17.978499GHz	55.98	21.21	74.00	-18.02	3.00	220.90	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	12.021324GHz	45.34	11.57	54.00	-8.66	1.00	9.30	Vertical	Passed
2.	13.547869GHz	45.35	11.19	54.00	-8.65	4.00	0.10	Vertical	Passed
3.	17.894997GHz	42.78	20.54	54.00	-11.22	3.50	26.10	Vertical	Passed
4.	5.7461396GHz	43.30	4.70	54.00	-10.70	2.00	251.40	Horizontal	Passed
5.	14.827907GHz	47.85	15.74	54.00	-6.15	1.50	259.70	Horizontal	Passed
6.	17.948998GHz	42.10	20.88	54.00	-11.90	1.50	63.90	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
1GHz
Frequency
18GHz
Polarization: Vertical

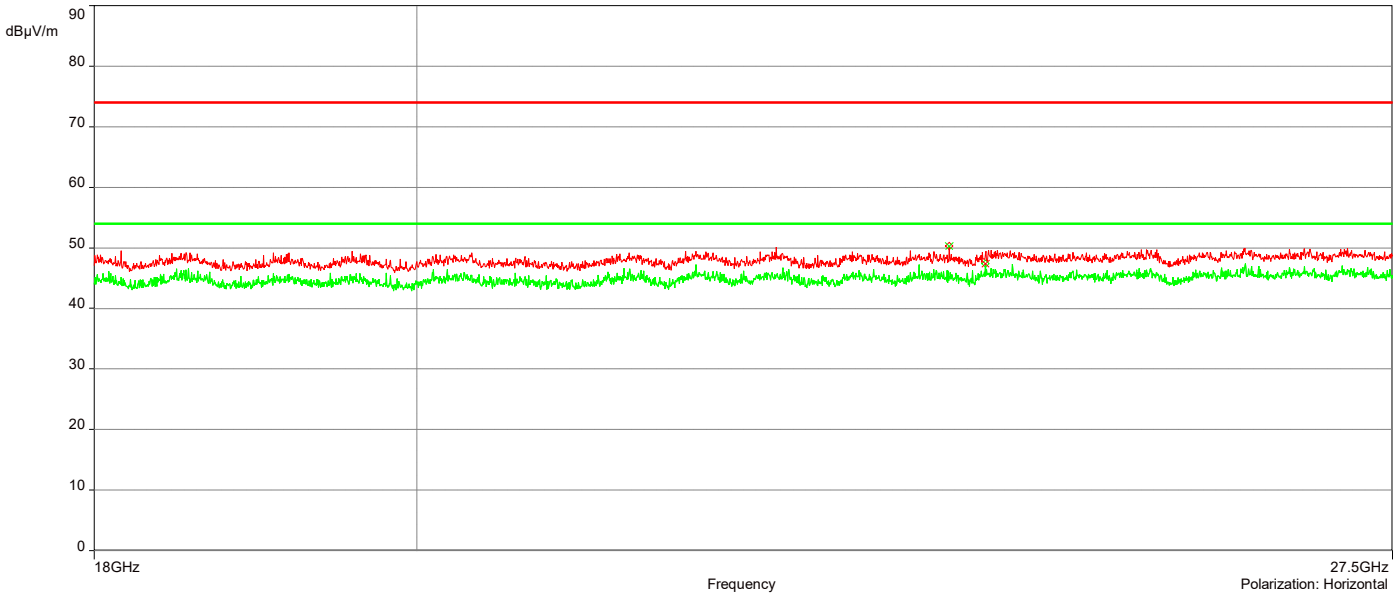
AH22120901-HAR-054#2_2.4G 802.11b_Ch 1_18-27.5GHz

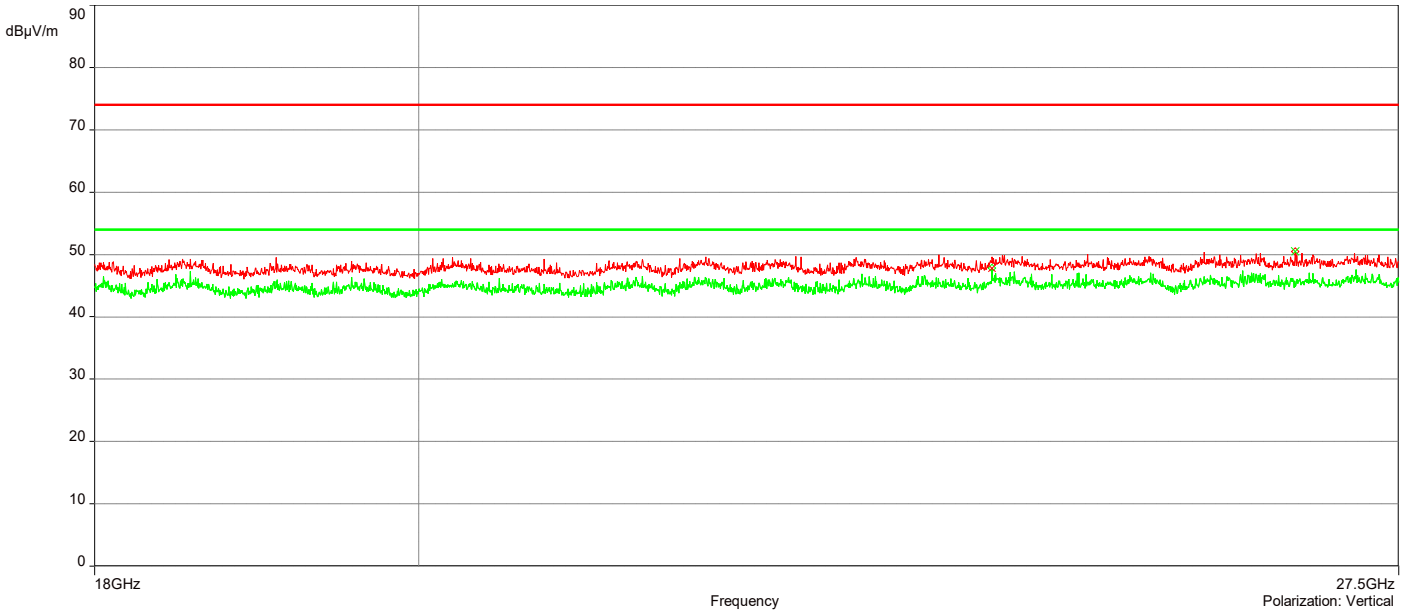
3/13/2023 5:43:53 PM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	26.590805GHz	50.48	4.11	74.00	-23.52	2.27	292.40	Vertical	Passed
2.	23.79719GHz	50.35	2.43	74.00	-23.65	2.09	112.40	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	24.096455GHz	47.82	2.46	54.00	-6.18	3.79	179.90	Vertical	Passed
2.	24.079354GHz	47.43	2.49	54.00	-6.57	2.05	224.90	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
18GHz
Frequency
27.5GHz
Polarization: Vertical

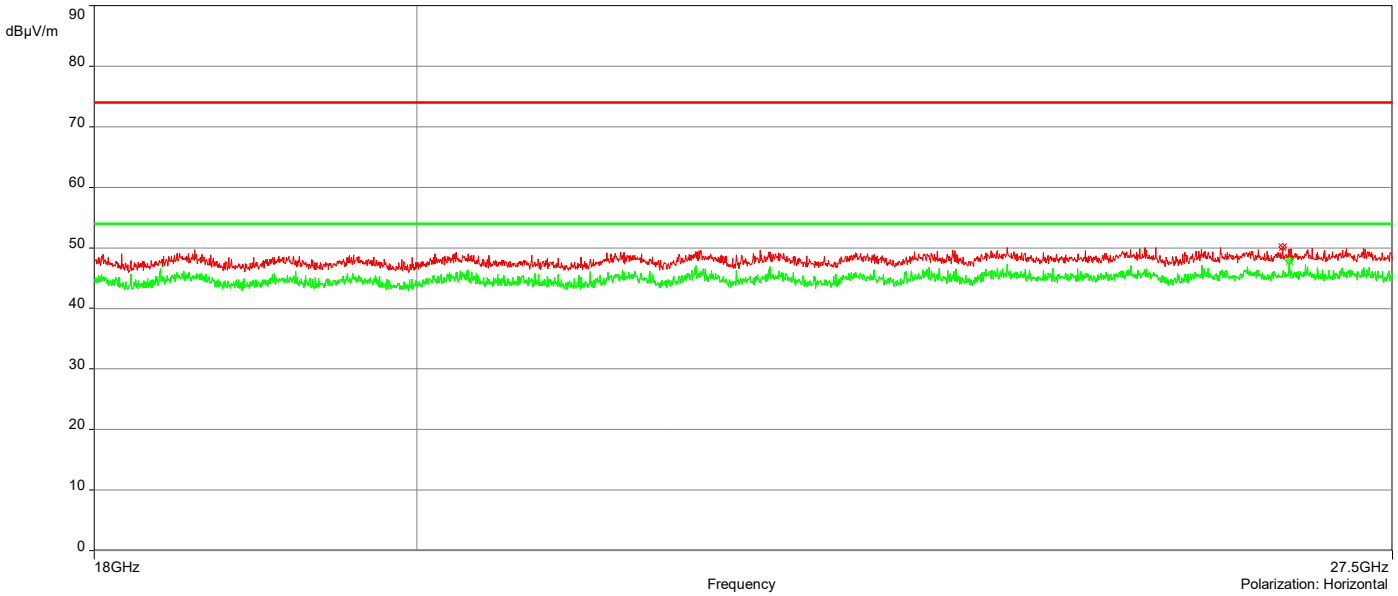
AH22120901-HAR-054#2_2.4G 802.11b_Ch 6_18-27.5GHz

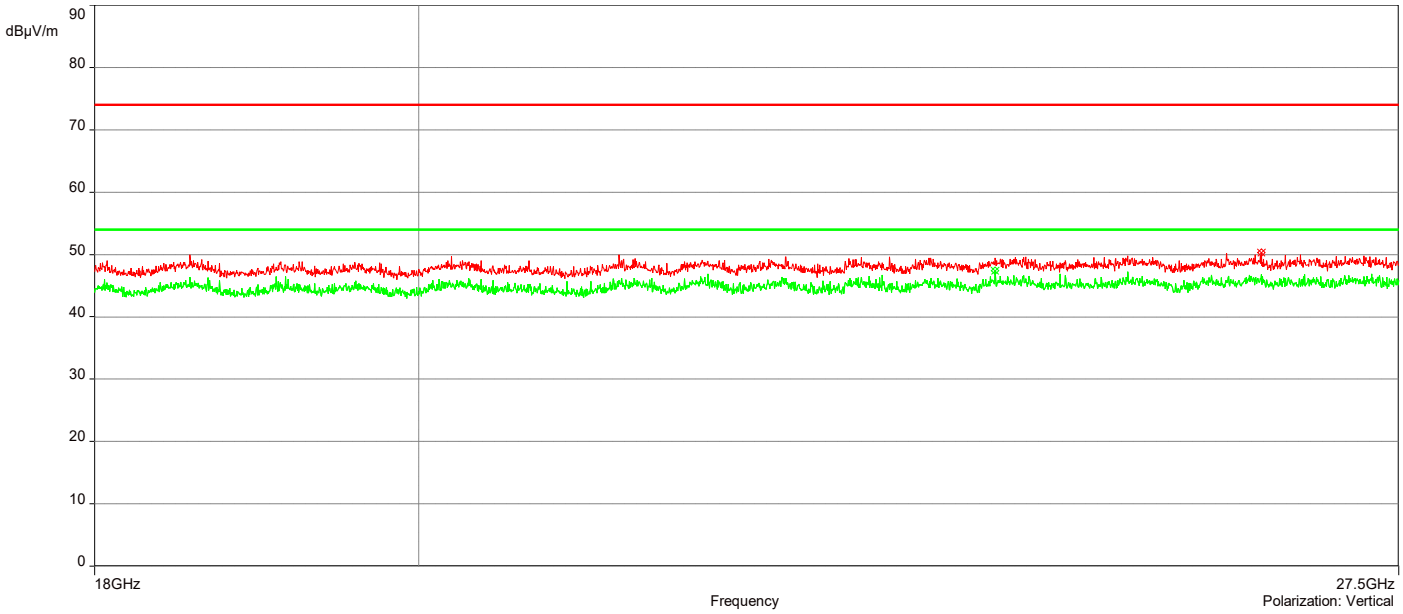
3/13/2023 6:37:06 PM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	26.301515GHz	50.27	3.88	74.00	-23.73	3.80	44.90	Vertical	Passed
2.	26.532377GHz	50.18	4.27	74.00	-23.82	2.55	202.40	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	24.117356GHz	47.37	2.40	54.00	-6.63	3.00	292.40	Vertical	Passed
2.	26.588429GHz	47.85	4.12	54.00	-6.15	3.43	89.90	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
18GHz
Frequency
27.5GHz
Polarization: Vertical

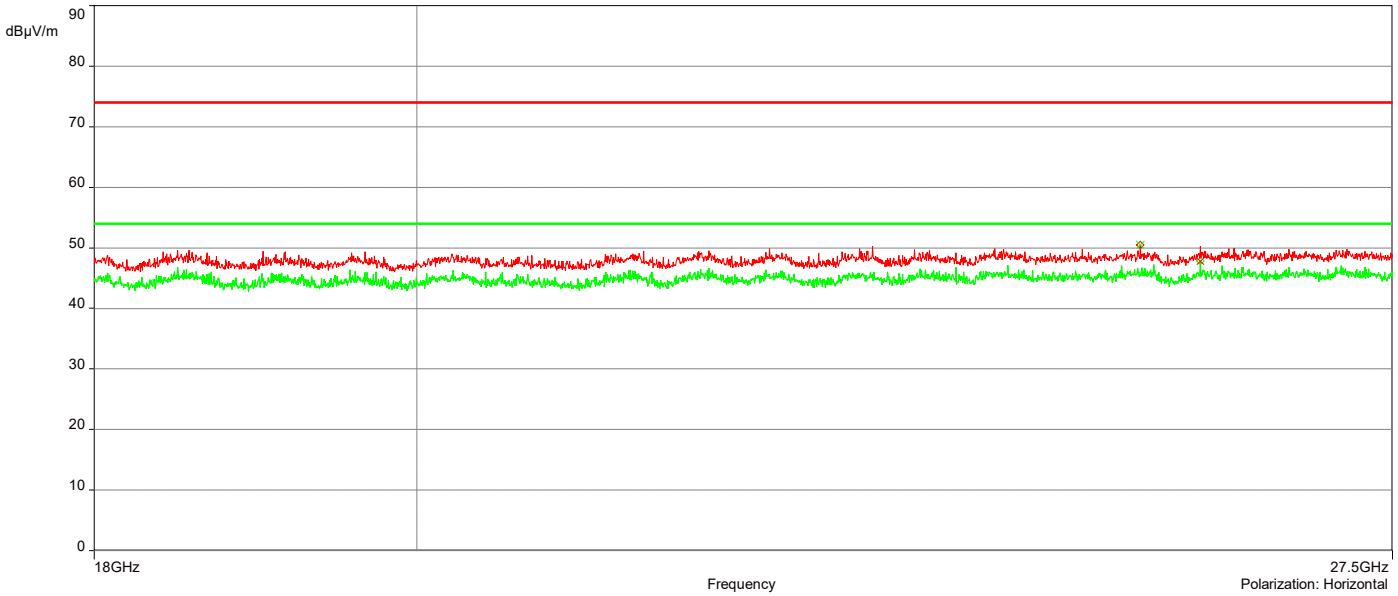
AH22120901-HAR-054#2_2.4G 802.11b_Ch 11_18-27.5GHz

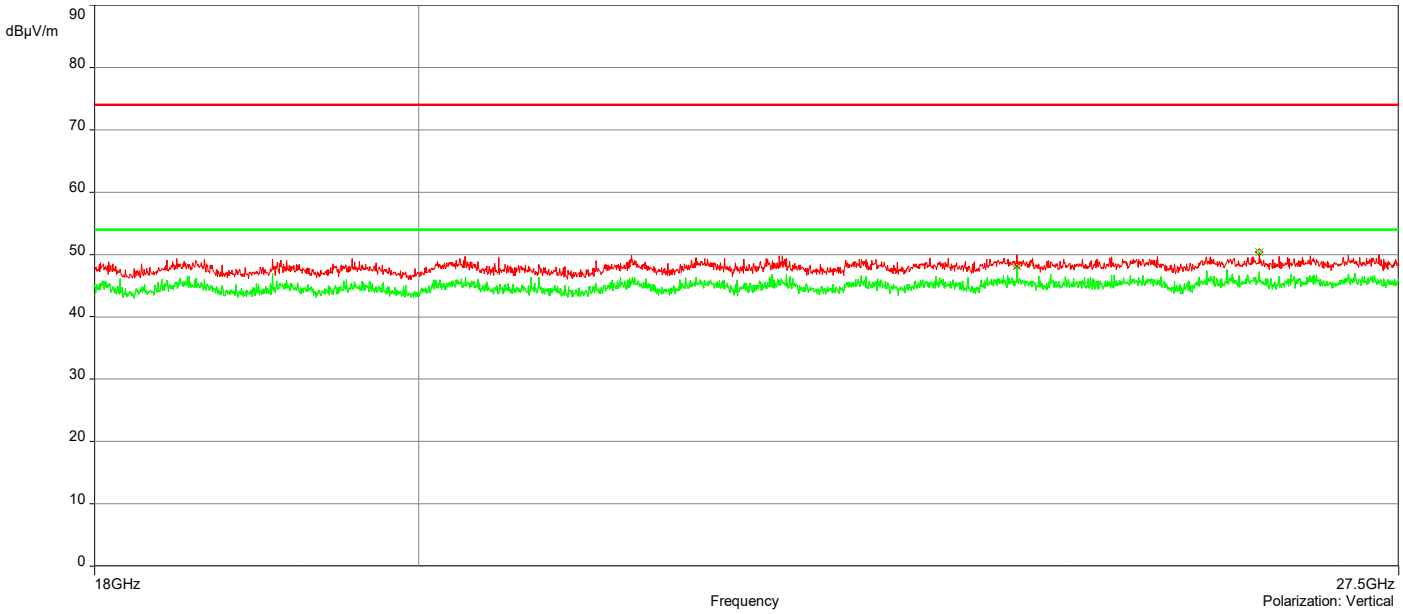
3/13/2023 6:15:44 PM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	26.283464GHz	50.38	3.91	74.00	-23.62	2.13	270.10	Vertical	Passed
2.	25.325816GHz	50.48	2.96	74.00	-23.52	2.32	337.40	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	24.292165GHz	48.21	2.55	54.00	-5.79	3.48	292.60	Vertical	Passed
2.	25.829816GHz	47.86	3.60	54.00	-6.14	1.35	45.20	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
18GHz
Frequency
27.5GHz
Polarization: Vertical

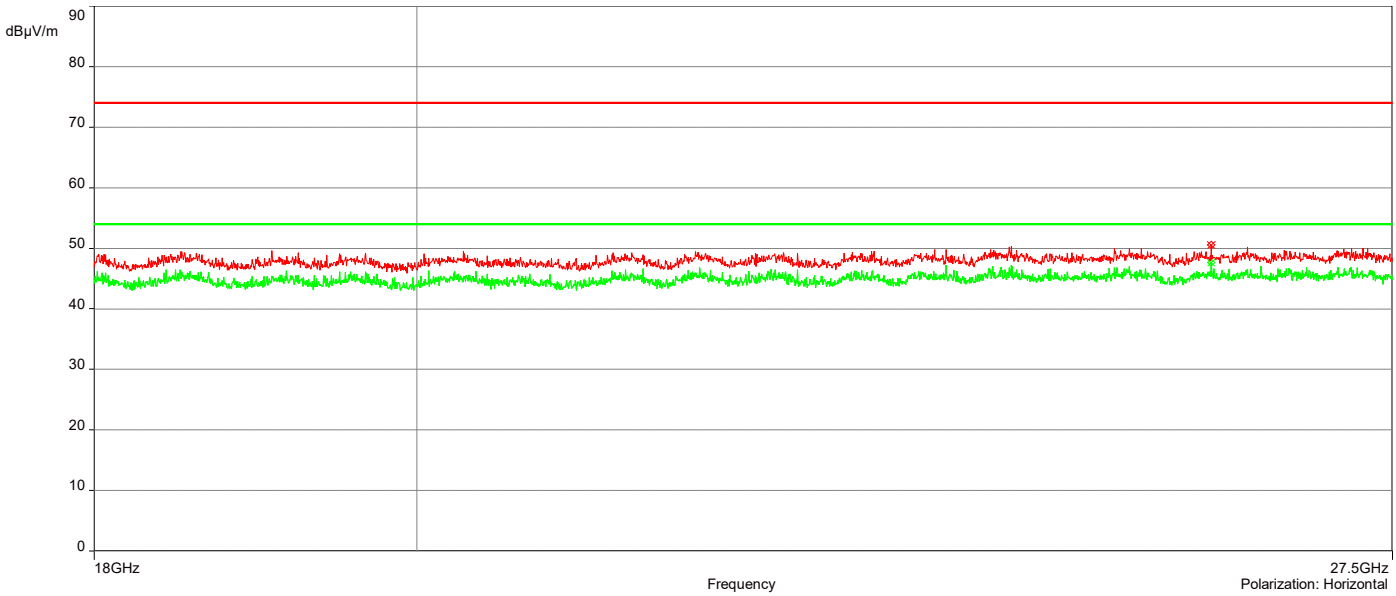
AH22120901-HAR-054#2_2.4G 802.11g_Ch 1_18-27.5GHz

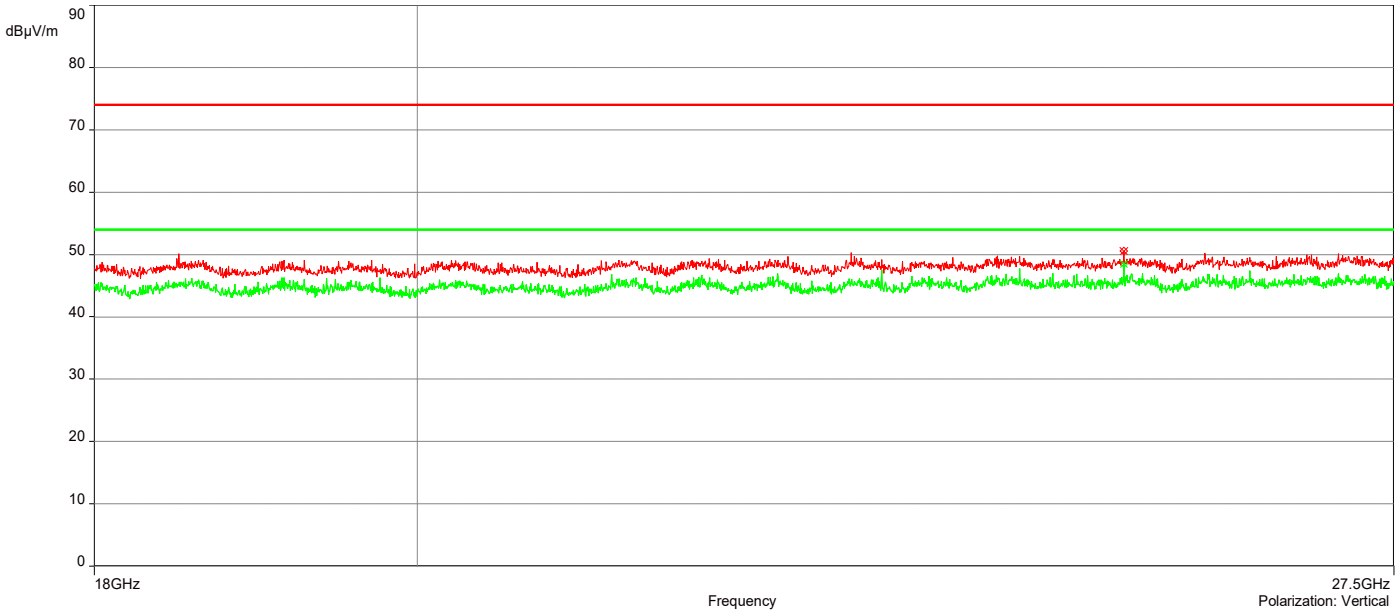
12/14/2022 12:53:58 PM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	25.181884GHz	50.59	2.91	74.00	-23.41	2.24	67.40	Vertical	Passed
2.	25.919596GHz	50.53	3.75	74.00	-23.47	2.71	67.40	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	25.181884GHz	48.54	2.91	54.00	-5.46	2.24	67.40	Vertical	Passed
2.	25.919596GHz	47.69	3.75	54.00	-6.31	2.71	67.40	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
18GHz
Frequency
27.5GHz
Polarization: Vertical

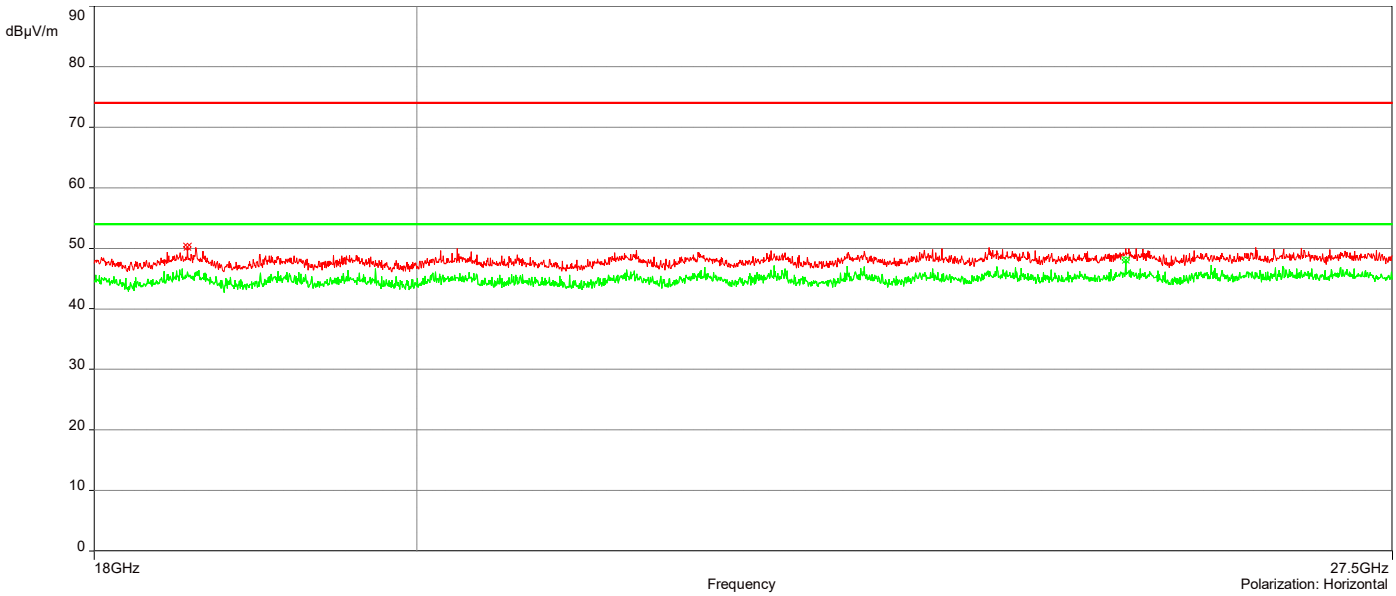
AH22120901-HAR-054#2_2.4G 802.11g_Ch 6_18-27.5GHz

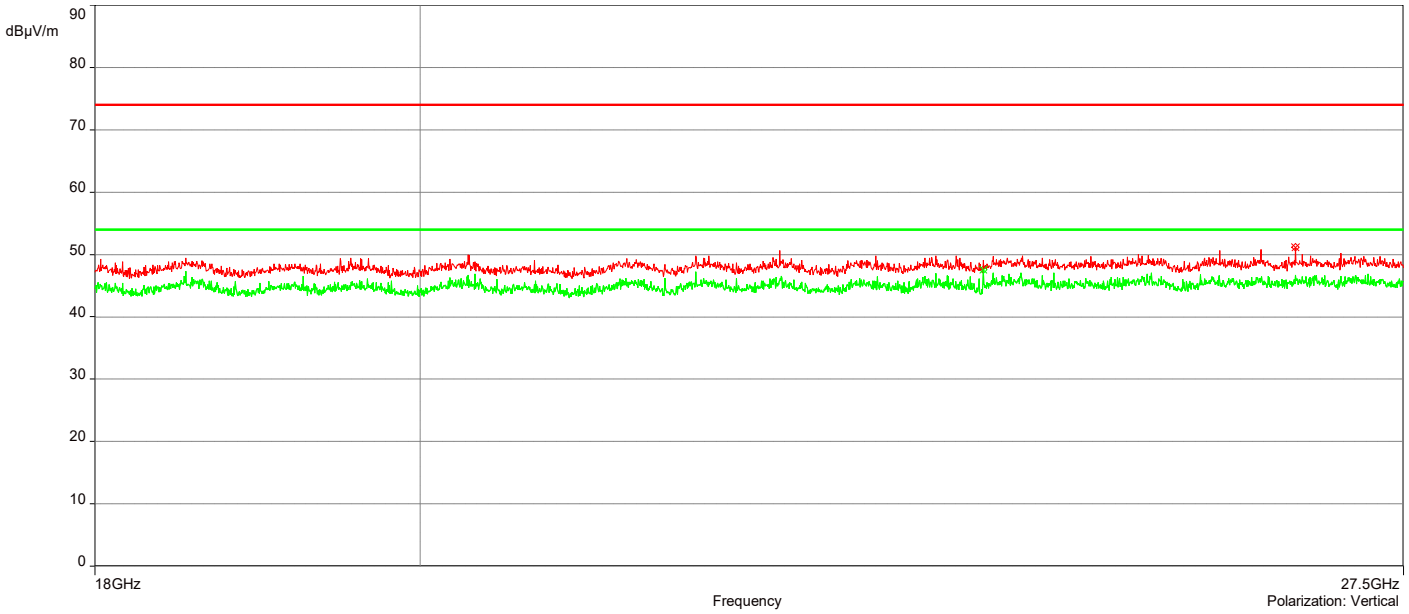
12/14/2022 1:17:58 PM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	26.555178GHz	51.15	4.22	74.00	-22.85	1.76	225.10	Vertical	Passed
2.	18.557203GHz	50.26	-0.22	74.00	-23.74	1.13	22.60	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	24.001925GHz	47.55	2.17	54.00	-6.45	3.71	67.50	Vertical	Passed
2.	25.20611GHz	48.11	2.95	54.00	-5.89	4.00	180.00	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
18GHz
Frequency
27.5GHz
Polarization: Vertical

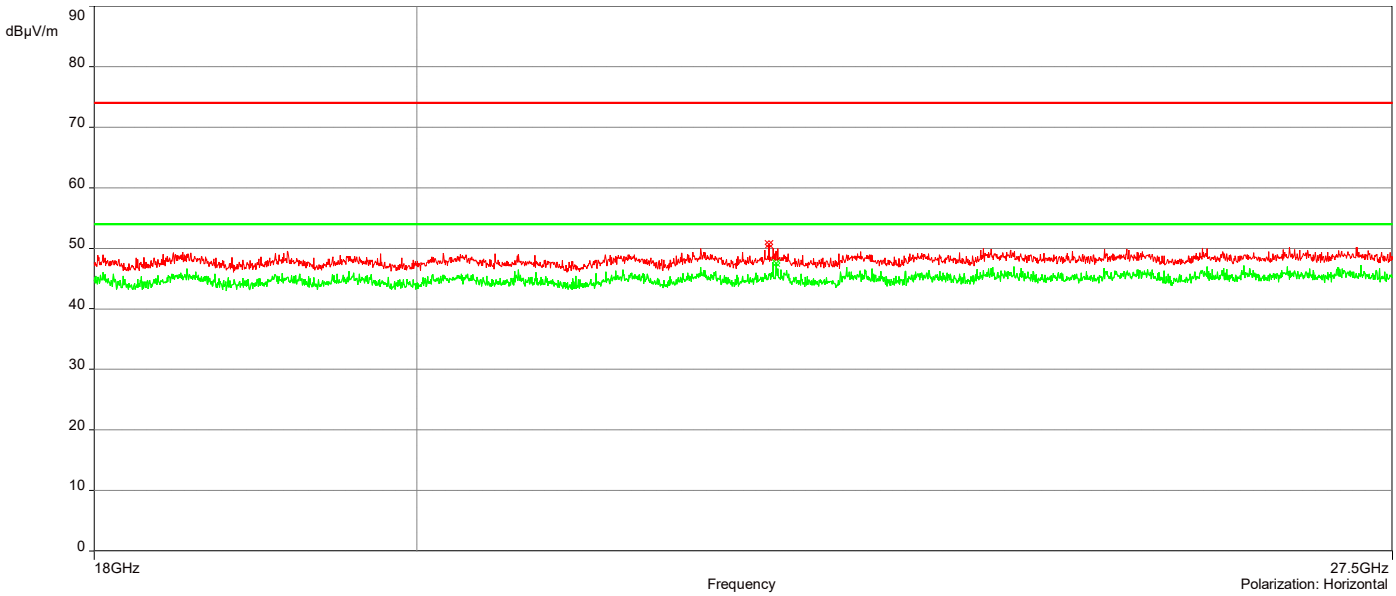
AH22120901-HAR-054#2_2.4G 802.11g_Ch 11_18-27.5GHz

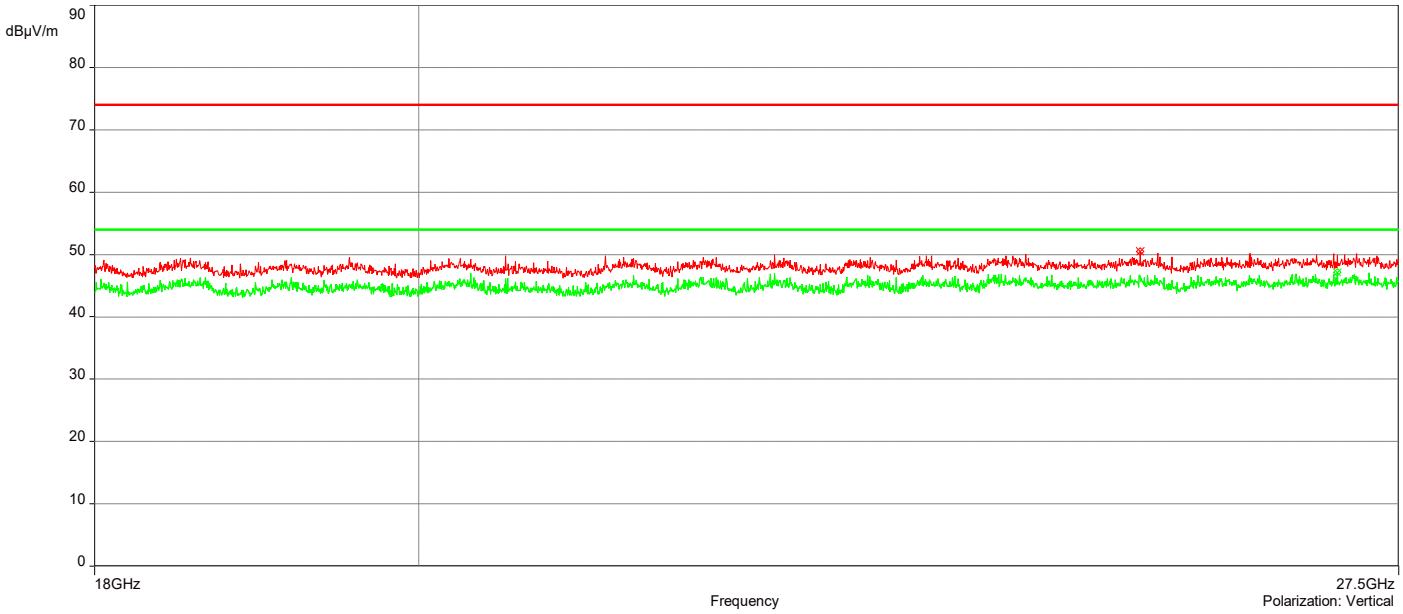
12/14/2022 1:40:25 PM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	25.284489GHz	50.47	2.98	74.00	-23.53	3.63	67.40	Vertical	Passed
2.	22.437672GHz	50.61	1.41	74.00	-23.39	1.57	157.40	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	26.957523GHz	47.13	5.04	54.00	-6.87	3.97	112.40	Vertical	Passed
2.	22.488974GHz	47.56	1.46	54.00	-6.44	1.27	89.90	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
18GHz
Frequency
27.5GHz
Polarization: Vertical

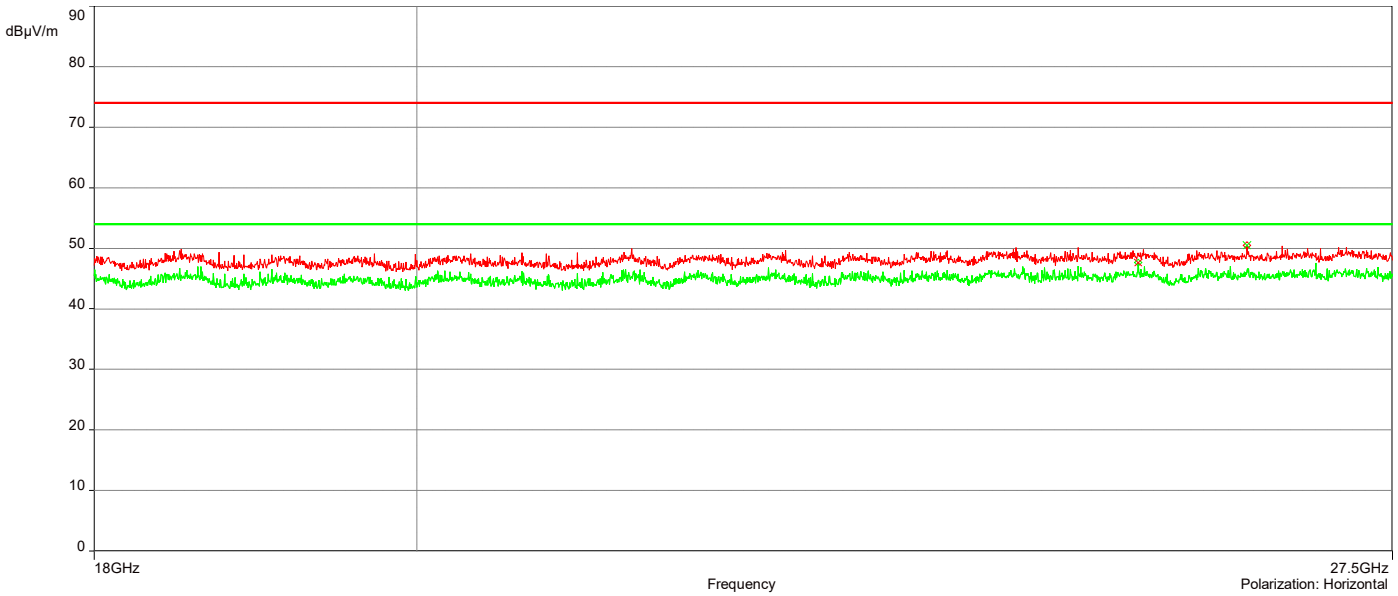
AH22120901-HAR-054#2_2.4G 802.11n_Ch 1_18-27.5GHz

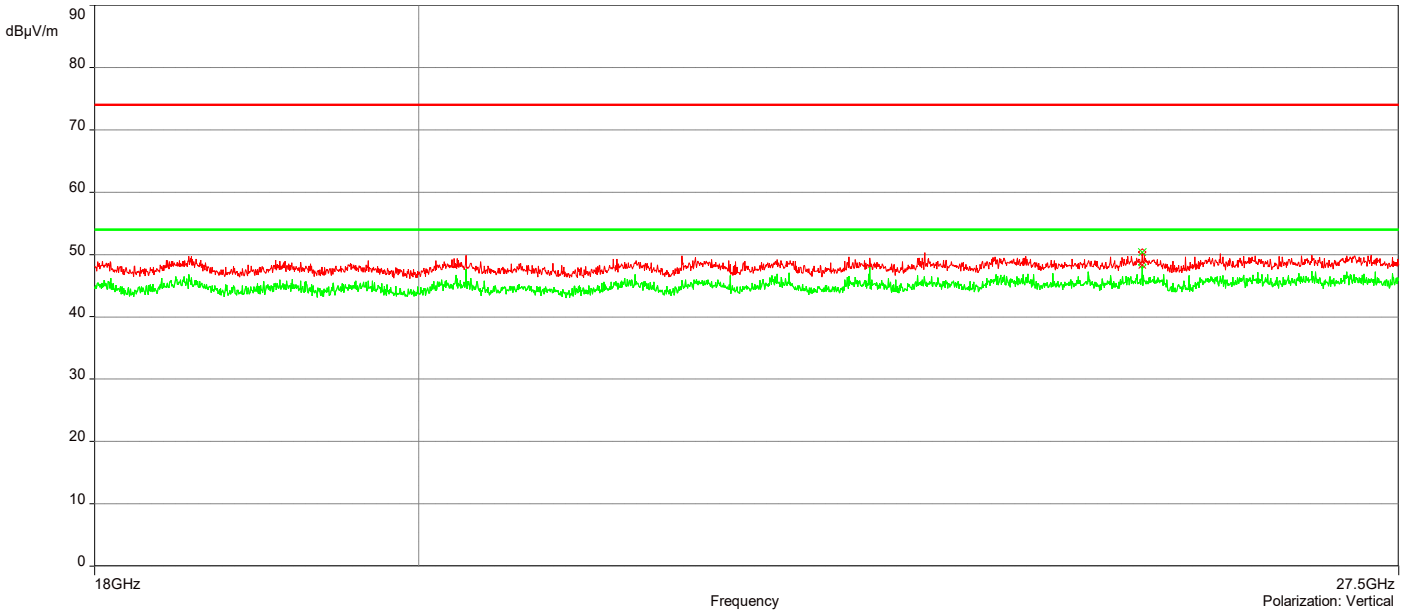
12/14/2022 11:26:02 AM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	25.300165GHz	50.43	2.96	74.00	-23.57	2.77	135.10	Vertical	Passed
2.	26.223136GHz	50.45	4.00	74.00	-23.55	3.00	112.60	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	25.300165GHz	48.38	2.96	54.00	-5.62	2.77	135.10	Vertical	Passed
2.	25.30824GHz	47.66	2.94	54.00	-6.34	1.13	0.10	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
18GHz
Frequency
27.5GHz
Polarization: Vertical

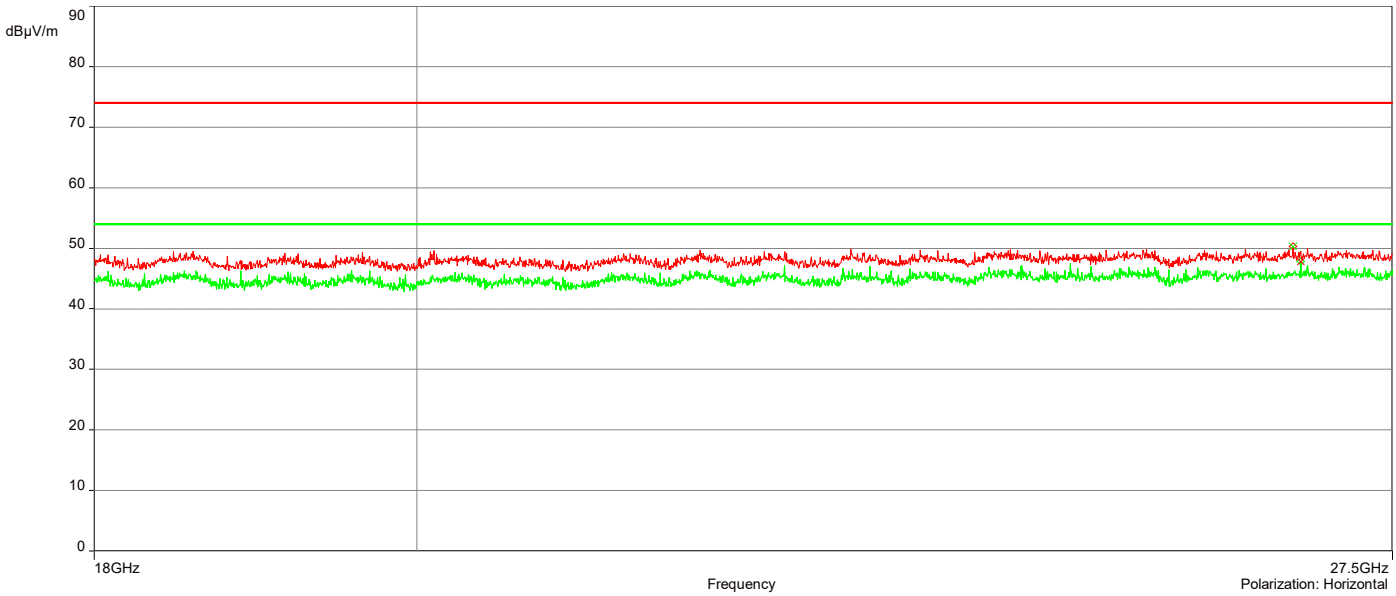
AH22120901-HAR-054#2_2.4G 802.11n_Ch 6_18-27.5GHz

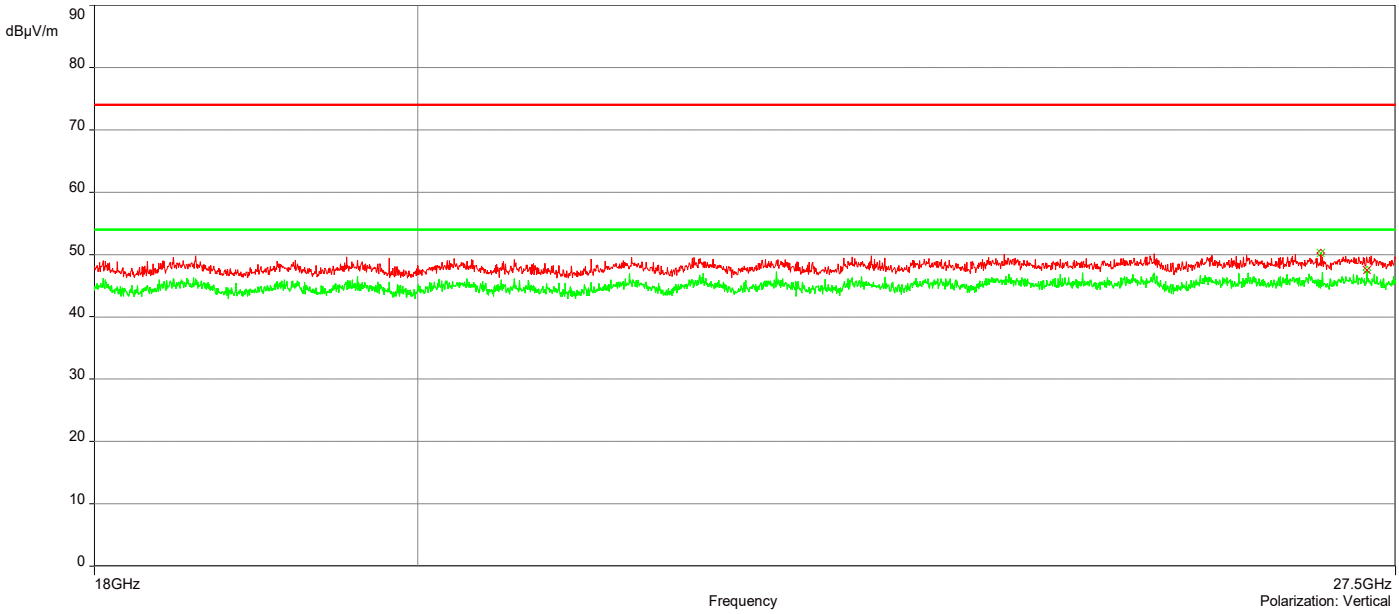
12/14/2022 11:50:17 AM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	26.840192GHz	50.22	4.72	74.00	-23.78	3.19	0.10	Vertical	Passed
2.	26.623106GHz	50.31	4.11	74.00	-23.69	2.30	67.40	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	27.247287GHz	47.47	5.43	54.00	-6.53	3.54	112.40	Vertical	Passed
2.	26.688184GHz	47.85	4.34	54.00	-6.15	1.00	269.90	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
18GHz
Frequency
27.5GHz
Polarization: Vertical

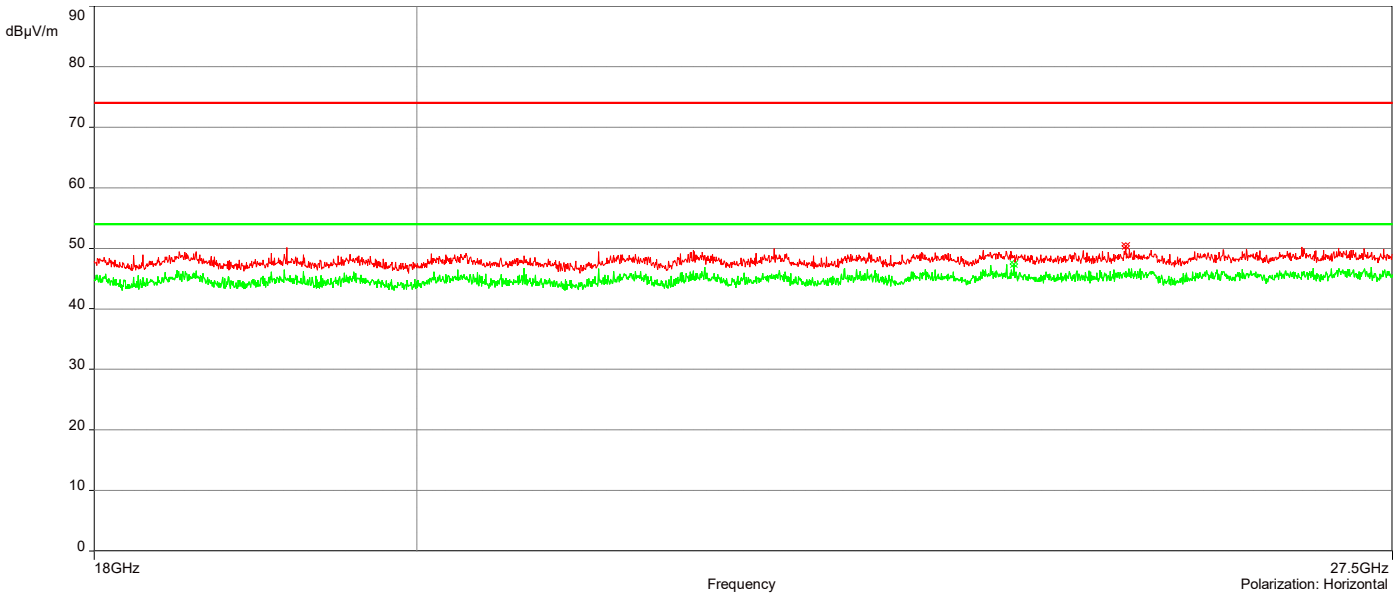
AH22120901-HAR-054#2_2.4G 802.11n_Ch 11_18-27.5GHz

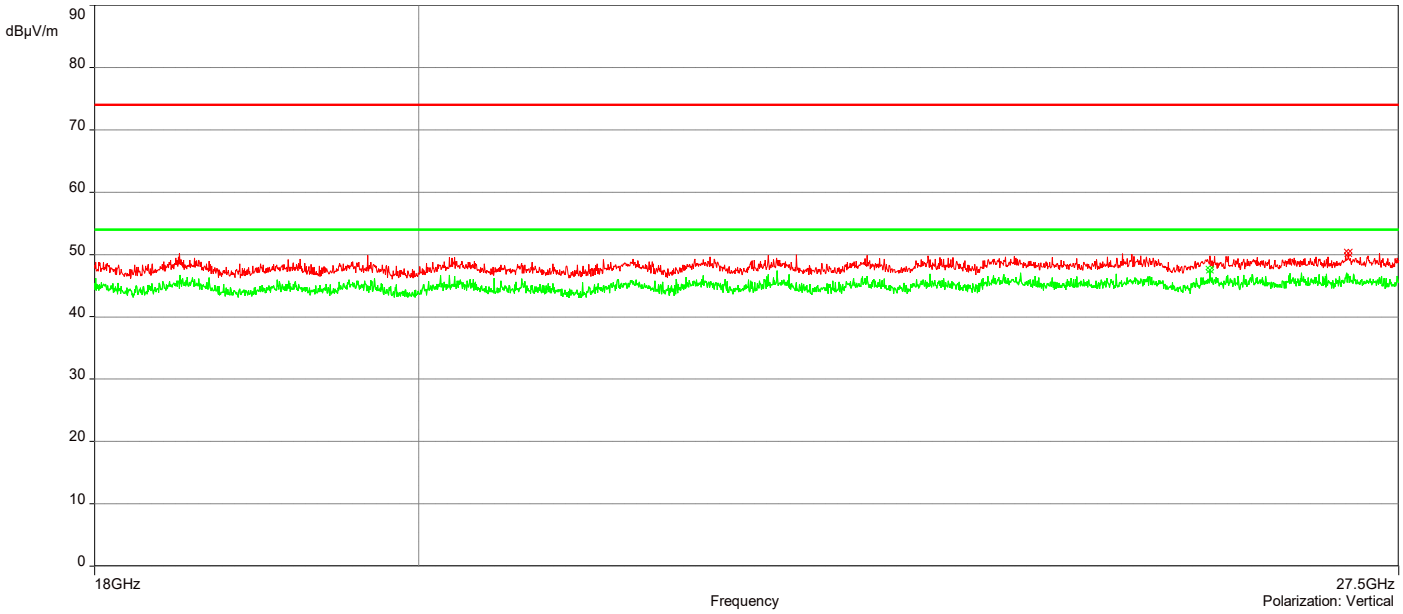
12/14/2022 12:19:21 PM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	27.054903GHz	50.25	5.31	74.00	-23.75	1.03	22.60	Vertical	Passed
2.	25.20611GHz	50.39	2.95	74.00	-23.61	2.24	22.60	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	25.861643GHz	47.55	3.74	54.00	-6.45	1.34	247.60	Vertical	Passed
2.	24.302615GHz	47.37	2.48	54.00	-6.63	1.26	67.50	Horizontal	Passed

Overall Graphs:




dBµV/m
90
80
70
60
50
40
30
20
10
0
18GHz
Frequency
27.5GHz
Polarization: Vertical

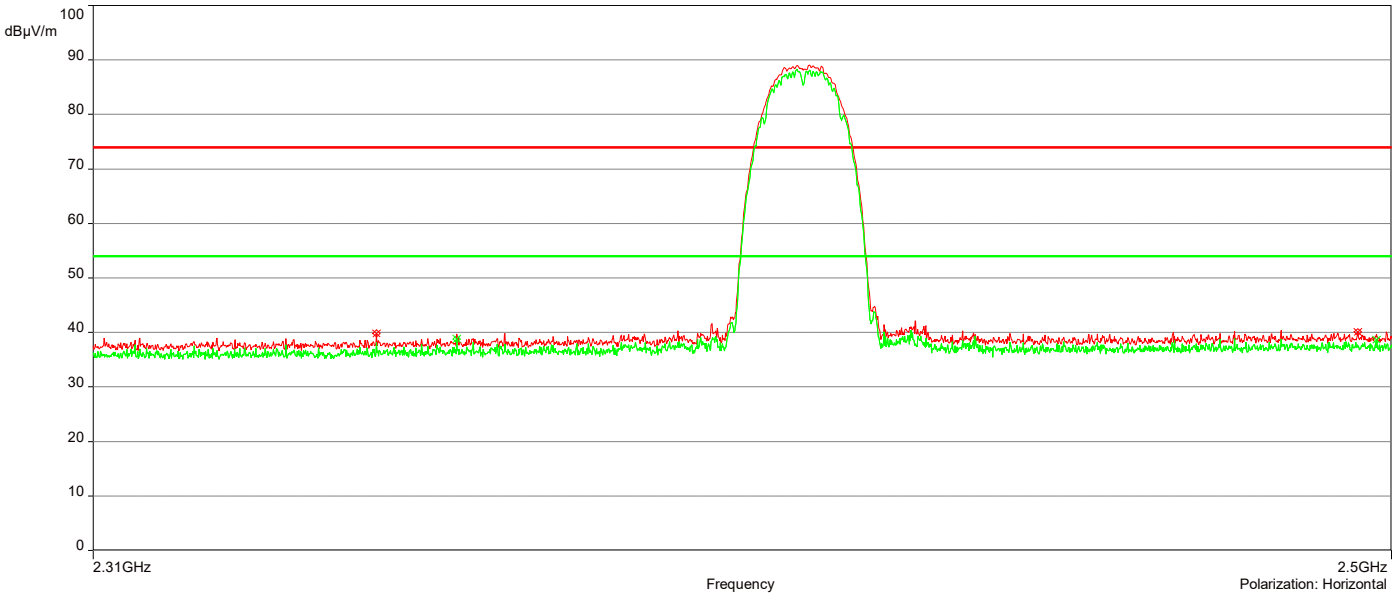
AH22120901-HAR-054#2_Restricted Bandedge_2.4G 802.11b_Ch 1

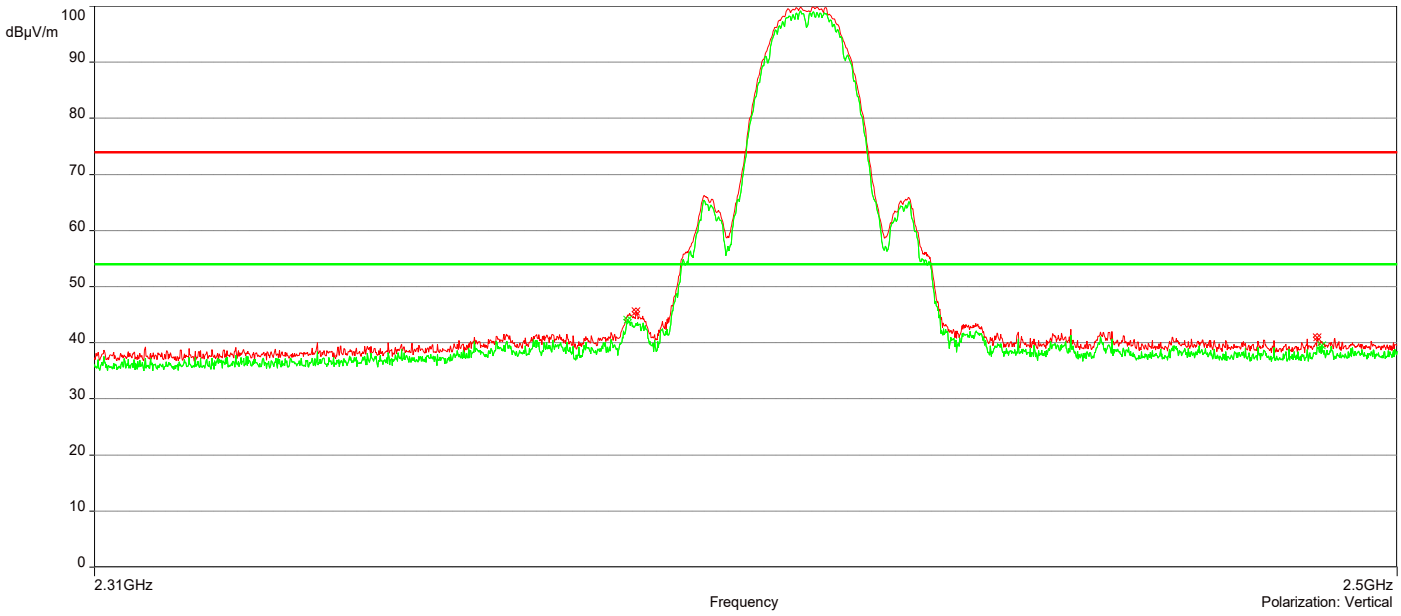
12/19/2022 1:02:03 PM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.3871786GHz	45.55	-3.06	74.00	-28.45	1.00	162.60	Vertical	Passed
2.	2.487929GHz	41.02	-2.64	74.00	-32.98	2.00	150.10	Vertical	Passed
3.	2.3502051GHz	39.87	-3.23	74.00	-34.13	1.00	253.60	Horizontal	Passed
4.	2.4948674GHz	40.15	-2.40	74.00	-33.85	3.00	171.20	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	2.385943GHz	44.12	-3.06	54.00	-9.88	1.00	160.30	Vertical	Passed
2.	2.4885943GHz	39.56	-2.64	54.00	-14.44	3.00	168.40	Vertical	Passed
3.	2.3617059GHz	38.74	-3.10	54.00	-15.26	1.50	90.50	Horizontal	Passed
4.	2.4977189GHz	38.66	-2.38	54.00	-15.34	3.00	179.90	Horizontal	Passed

Overall Graphs:




dBµV/m
100
90
80
70
60
50
40
30
20
10
0
2.31GHz
Frequency
2.5GHz
Polarization: Vertical

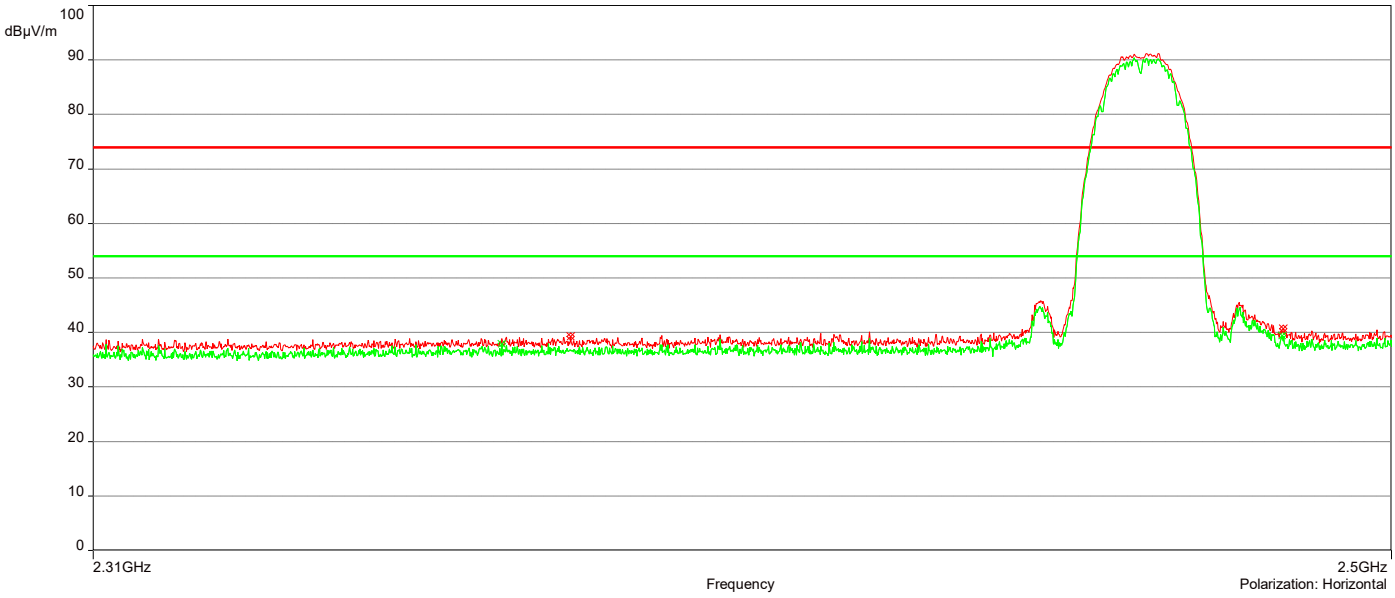
AH22120901-HAR-054#2_Restricted Bandedge_2.4G 802.11b_Ch 11

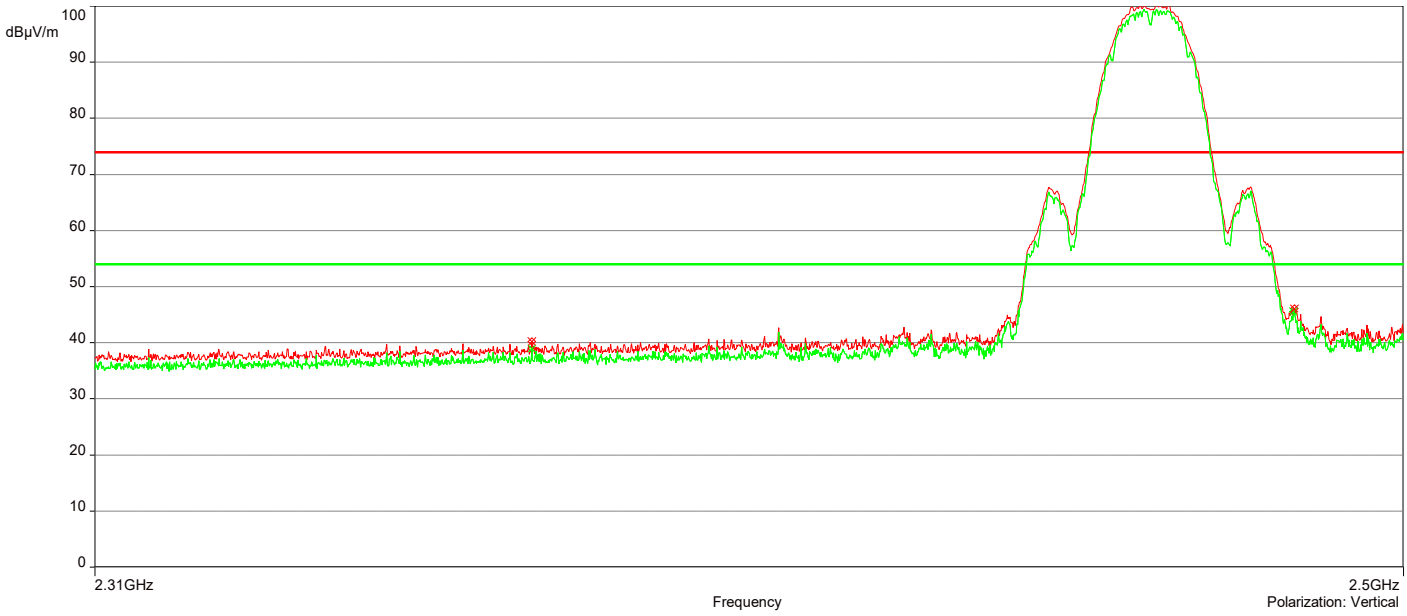
12/19/2022 1:16:27 PM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.3717809GHz	40.19	-2.97	74.00	-33.81	2.00	150.30	Vertical	Passed
2.	2.4835568GHz	46.14	-2.67	74.00	-27.86	1.50	149.50	Vertical	Passed
3.	2.3781491GHz	39.24	-3.10	74.00	-34.76	1.00	27.30	Horizontal	Passed
4.	2.4835568GHz	40.67	-2.48	74.00	-33.33	3.50	72.80	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	2.3717809GHz	38.95	-2.97	54.00	-15.05	2.00	150.30	Vertical	Passed
2.	2.4834617GHz	45.56	-2.68	54.00	-8.44	1.50	162.60	Vertical	Passed
3.	2.3681691GHz	37.93	-3.13	54.00	-16.07	4.00	266.80	Horizontal	Passed
4.	2.4834617GHz	39.42	-2.48	54.00	-14.58	3.50	79.50	Horizontal	Passed

Overall Graphs:




dBµV/m
100
90
80
70
60
50
40
30
20
10
0
2.31GHz
Frequency
2.5GHz
Polarization: Vertical

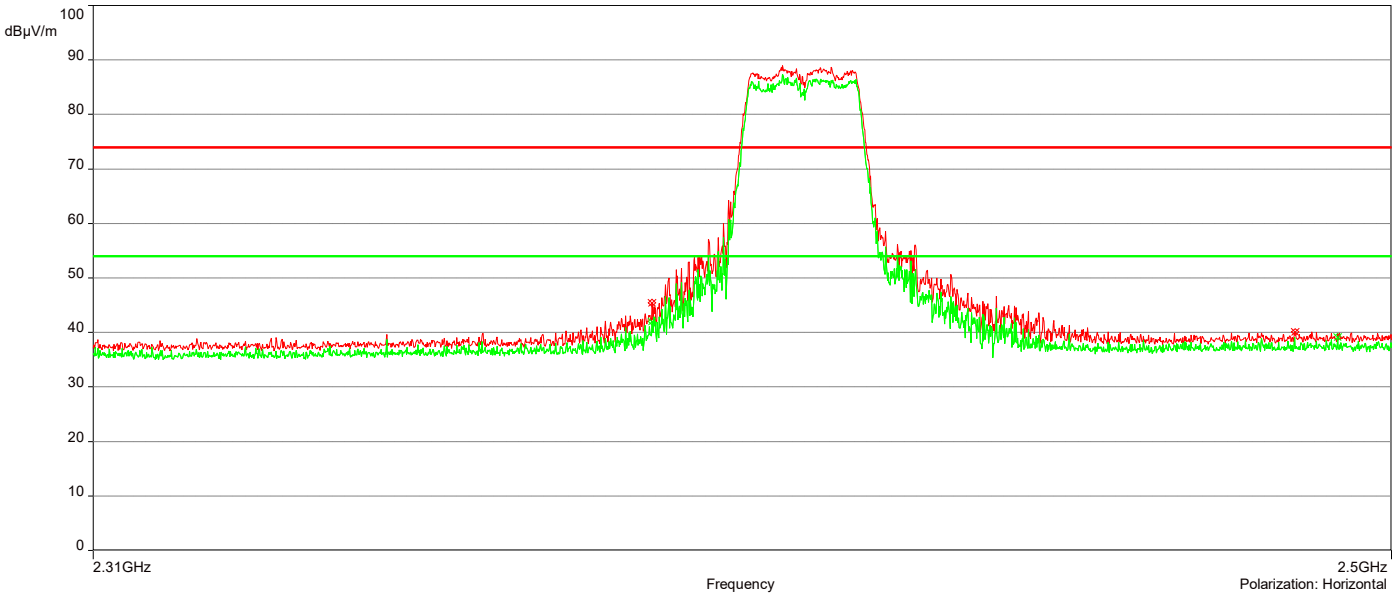
AH22120901-HAR-054#2_Restricted Bandedge_2.4G 802.11g_Ch 1

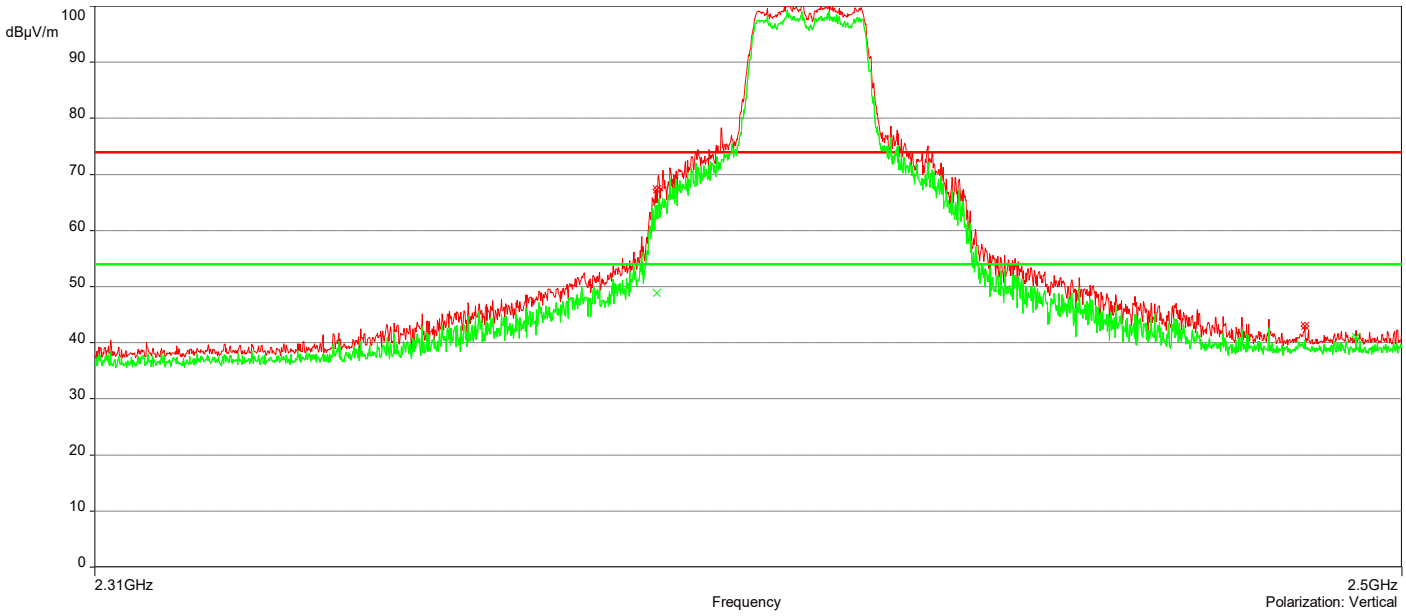
12/19/2022 3:07:06 PM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.3898399GHz	67.27	-3.05	74.00	-6.73	1.00	164.20	Vertical	Passed
2.	2.4853627GHz	42.95	-2.66	74.00	-31.05	2.00	160.90	Vertical	Passed
3.	2.389935GHz	45.44	-3.08	74.00	-28.56	1.00	89.30	Horizontal	Passed
4.	2.4853627GHz	40.13	-2.46	74.00	-33.87	3.50	71.30	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	2.3898399GHz	48.88	-3.05	54.00	-5.12	1.00	164.20	Vertical	Passed
2.	2.4930615GHz	41.06	-2.61	54.00	-12.94	1.50	169.70	Vertical	Passed
3.	2.389935GHz	42.01	-3.08	54.00	-11.99	1.00	89.30	Horizontal	Passed
4.	2.4918259GHz	39.21	-2.42	54.00	-14.79	3.50	187.30	Horizontal	Passed

Overall Graphs:




dBµV/m
100
90
80
70
60
50
40
30
20
10
0
2.31GHz
Frequency
2.5GHz
Polarization: Vertical

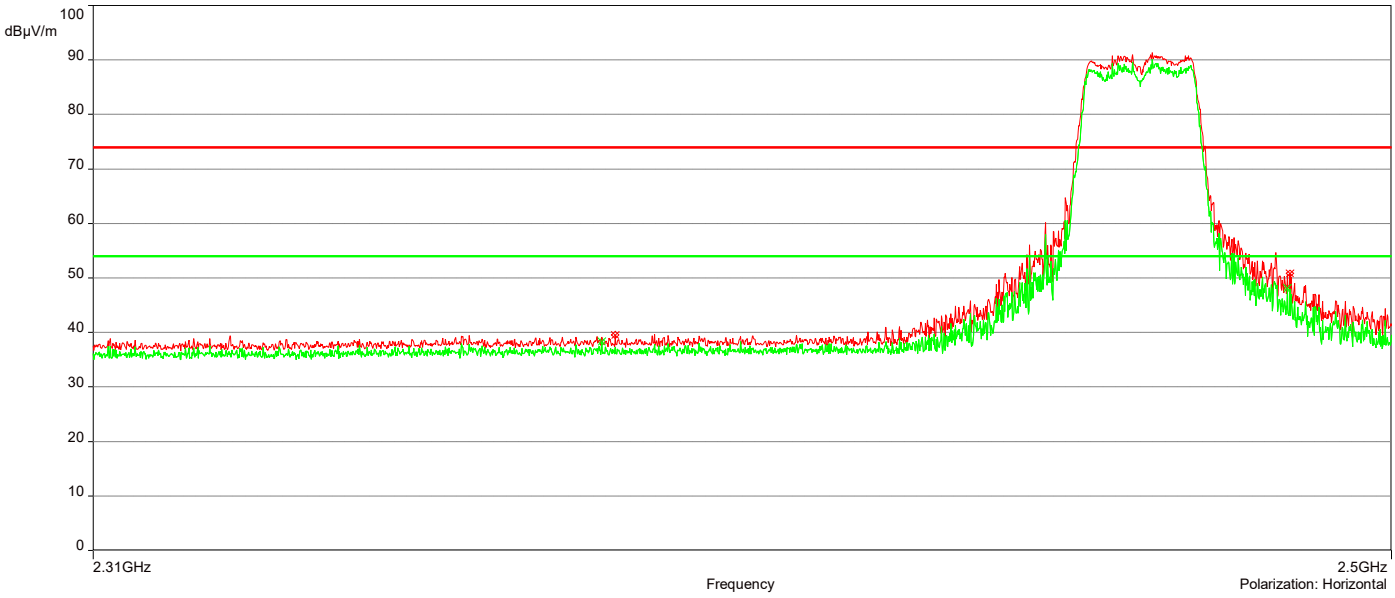
AH22120901-HAR-054#2_Restricted Bandedge_2.4G 802.11g_Ch 11

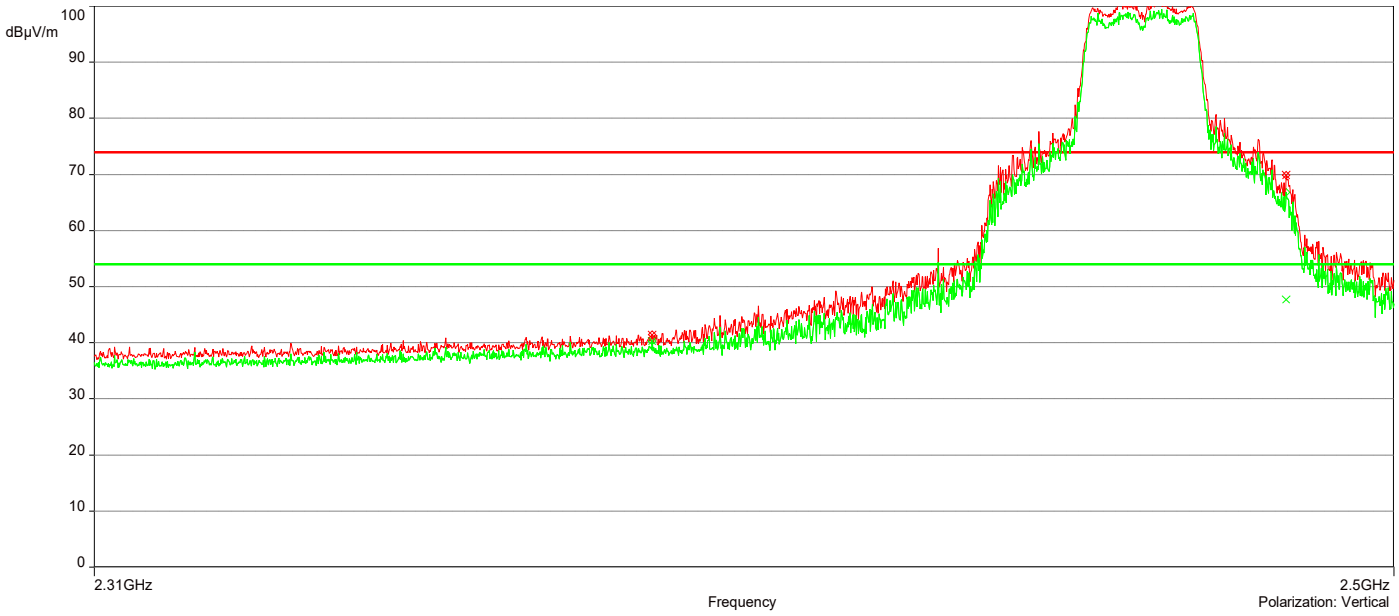
12/19/2022 2:46:19 PM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.3897449GHz	41.41	-3.05	74.00	-32.59	4.00	352.80	Vertical	Passed
2.	2.4836518GHz	69.85	-2.67	74.00	-4.15	2.00	165.90	Vertical	Passed
3.	2.3846123GHz	39.51	-3.11	74.00	-34.49	2.00	271.10	Horizontal	Passed
4.	2.4846023GHz	50.90	-2.47	74.00	-23.10	3.50	79.40	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	2.3897449GHz	40.30	-3.05	54.00	-13.70	4.00	352.80	Vertical	Passed
2.	2.4836518GHz	47.77	-2.67	54.0074.00	-6.23	2.00	165.90	Vertical	Passed
3.	2.3826163GHz	38.36	-3.10	54.00	-15.64	1.00	150.20	Horizontal	Passed
4.	2.4842221GHz	48.13	-2.47	54.00	-5.87	3.00	83.00	Horizontal	Passed

Overall Graphs:




dBµV/m
100
90
80
70
60
50
40
30
20
10
0
2.31GHz
Frequency
2.5GHz
Polarization: Vertical

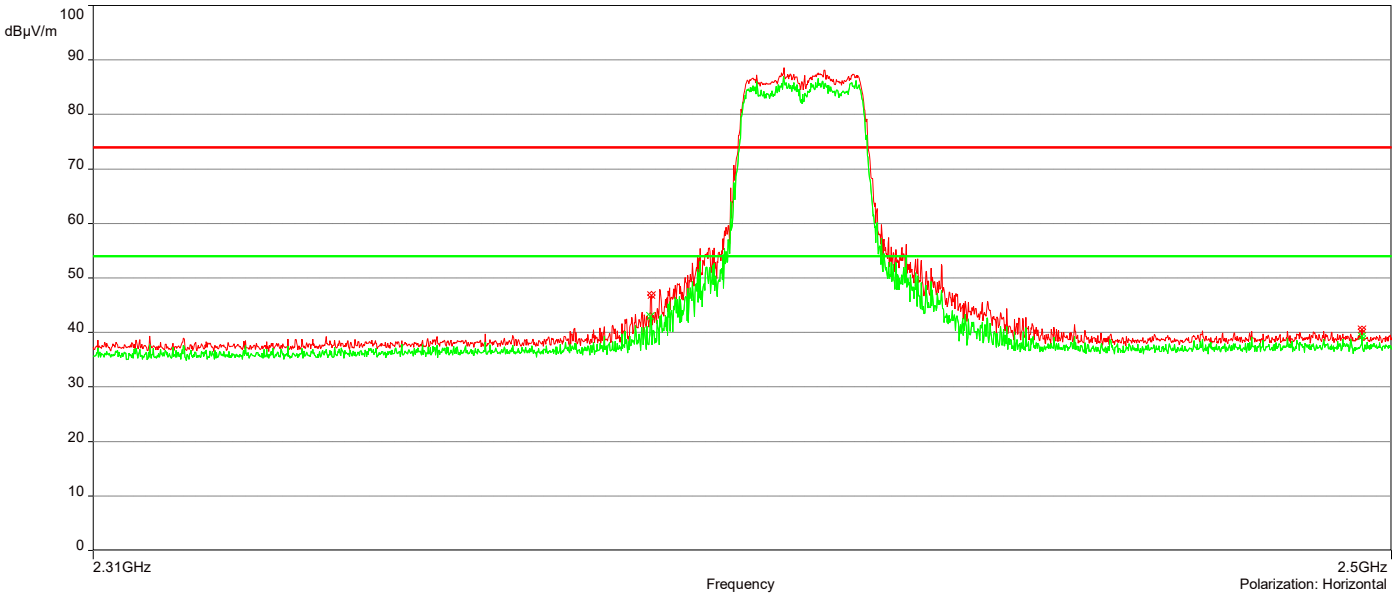
AH22120901-HAR-054#2_Restricted Bandedge_2.4G 802.11n_Ch 1

12/19/2022 4:10:09 PM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.3894597GHz	66.10	-3.05	74.00	-7.90	1.00	164.80	Vertical	Passed
2.	2.4902101GHz	42.60	-2.63	74.00	-31.40	1.50	152.40	Vertical	Passed
3.	2.3898399GHz	46.92	-3.08	74.00	-27.08	2.50	88.30	Horizontal	Passed
4.	2.4955328GHz	40.58	-2.40	74.00	-33.42	1.50	358.90	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	2.3893647GHz	47.45	-3.05	54.00	-6.55	1.50	155.90	Vertical	Passed
2.	2.4898299GHz	41.16	-2.63	54.00	-12.84	2.00	151.20	Vertical	Passed
3.	2.3897449GHz	42.93	-3.08	54.00	-11.07	2.00	80.50	Horizontal	Passed
4.	2.4955328GHz	39.38	-2.40	54.00	-14.62	1.50	358.90	Horizontal	Passed

Overall Graphs:



dBµV/m
100
90
80
70
60
50
40
30
20
10
0
2.31GHz
Frequency
2.5GHz
Polarization: Vertical

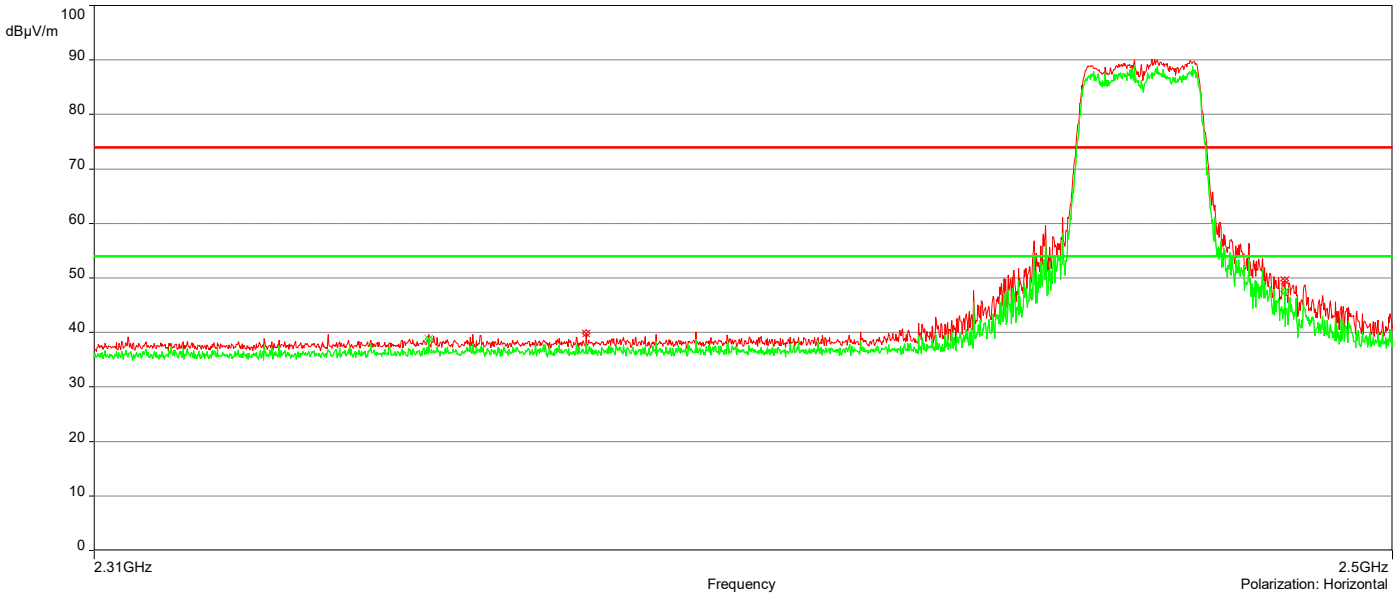
AH22120901-HAR-054#2_Restricted Bandedge_2.4G 802.11n_Ch 11

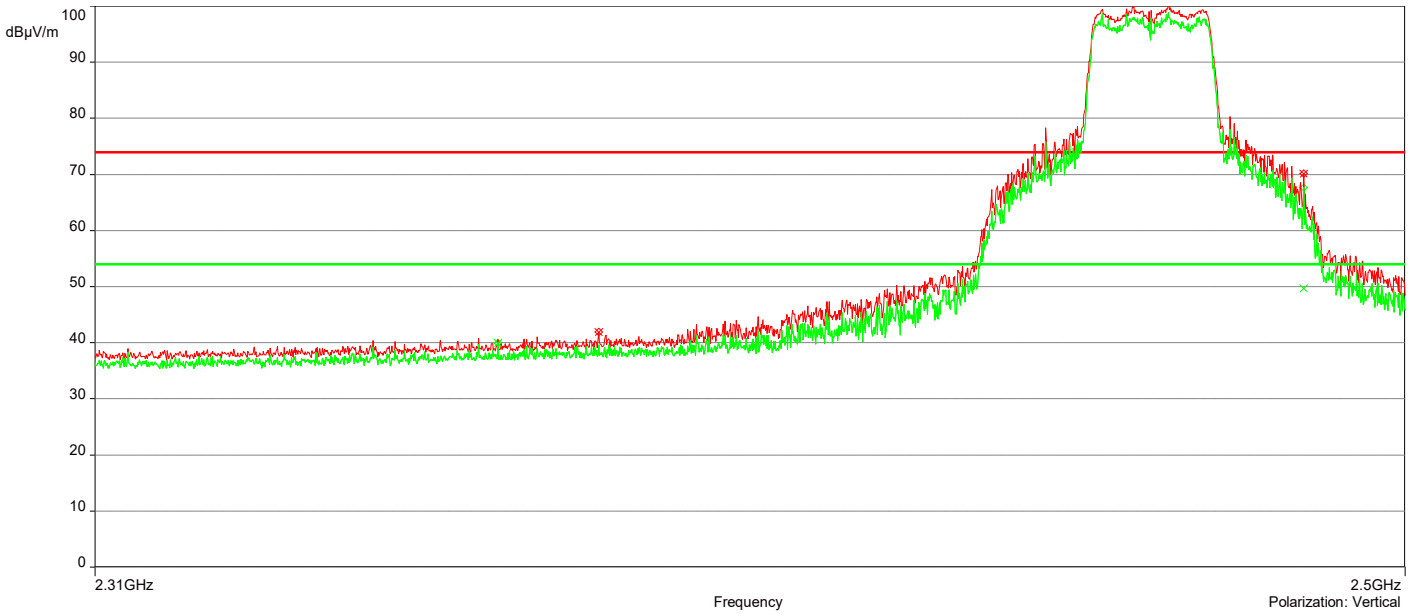
12/19/2022 3:53:17 PM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.3812856GHz	41.93	-3.02	74.00	-32.07	2.00	175.60	Vertical	Passed
2.	2.4847924GHz	70.14	-2.67	74.00	-3.86	2.00	157.90	Vertical	Passed
3.	2.3802401GHz	39.80	-3.10	74.00	-34.20	1.00	34.80	Horizontal	Passed
4.	2.4836518GHz	49.49	-2.48	74.00	-24.51	3.50	82.10	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	2.3668384GHz	39.95	-2.97	54.00	-14.05	2.00	151.20	Vertical	Passed
2.	2.4847924GHz	49.75	-2.67	54.00	-4.25	2.00	157.90	Vertical	Passed
3.	2.3575238GHz	38.81	-3.16	54.00	-15.19	2.00	311.00	Horizontal	Passed
4.	2.4836518GHz	47.54	-2.48	54.00	-6.46	3.50	82.10	Horizontal	Passed

Overall Graphs:




dBµV/m
100
90
80
70
60
50
40
30
20
10
0
2.31GHz
Frequency
2.5GHz
Polarization: Vertical

Document Revisions

Version	Date	Modifier	Changes
1.0	03/14/2023	Aravind Buddana	• Initial Release
2.0	08/07/2023	Aravind Buddana	• Updated the Power Spectral density test procedure description. • Updated occupied channel bandwidth measurement reference. • Updated Band Edge measure procedure and spectrum analyzer plots. • Updated Radiated Emissions Procedure and Limits and sample calculation that demonstrate the equivalence of magnetic field strength and electric field strength

End of Report