



Regulatory Test Report

Prepared for Harman International Industries, Inc.

This report presents detailed information on

R1 EXT NA 2B HW4

Prepared by

Aravind Buddana

Engineer II

Approved by

Jason Kanakry

General Manager

Issue date: 01/25/2025

Report No: J23133-R1 EXT NA 2B HW4-TR3 v2

This test result relates only to the described test object.

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Customer must not use this test report as the product certification of each accreditation body or each national organization.

The test is traceable to national standard or related international standard

Contents

1. Test Request Information.....3

2. Test Laboratory Information.....4

3. Statement of Conformity.....5

4. Conducted Testing6

5. Radiated Testing62

1. Test Request Information

Test Request #:	7700206789
Test Requested By:	Pranav Patel Harman International Industries, Inc. 30001 Cabot Drive, Novi, MI 48377
Test item Description:	R1 EXT NA 2B HW4
Part Number:	P68583503ZZ
DUT Sample Number:	J23133#3 NA 2B
FVIN :	FCA-MY24.MNL-OD.3426
Hardware Version of DUT:	N/A
Software Version of DUT:	N/A
Component Category of DUT:	N/A
FCC ID:	2AHPN-BE2879
ISED ID:	6434C-BE2879
Type of Test:	FCC/ISED Certification
Test Method:	CFR Title 47 FCC Part 15.247, ISED Canada RSS-247 Issue 3, ISED Canada RSS-Gen Issue 5 and ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02
Deviations from standard:	None
Approved Test Plan Number:	N/A
Test Plan Revision:	N/A
Date test Sample Received:	06-26-2024
Date Test Started:	07-11-2024
Date Test Finished:	10-10-2024

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 shown in the label exhibit.
		15.21	Information to the user shown in the instruction manual exhibit.
		15.27	No special accessories are required for compliance.
3.2		15.31	The EUT tested in accordance with the measurement standards in this section.
6.13.2		15.33	Frequency range investigated according to this section, unless noted in specific rule section under which the equipment operates.
6.13.1		15.35	The EUT emissions are 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 1.43dBi 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, ISSED Canada RSS-247 Issue 3

The product is **R1 EXT NA 2B HW4** frequency hopping spread spectrum transmitter that operates in the 2402 – 2480 MHz frequency range.

Details	Description
Frequency Range (MHz)	2402 – 2480
Supported Modulation	GFSK, $\pi/4$ DQPSK, 8DPSK
Tested Modulation	GFSK (DH1), 8DPSK (3-DH1) - Highest Emissions
Number of Channels	79
Tested Channels	0,39,78
DUT Antenna Type	Integrated PCB antenna
Number of transmit chains	1
Equipment type	Frequency Hopping Spread Spectrum
Dwell Time	350ms
DUT Antenna Gain	1.43dBi ☒ Provided by Customer with Gain Report ☐ Not Provided by Customer
DUT Power Class/Power Settings	Power Class: 1 (MRVL_Class1)
DUT Software Tool/Settings	MFGBridge_Tool/Dut labtool is used to configure device Bluetooth modes and data rates.

79 channels are provided for BT mode:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461		

Notes: The channels 0, 39 and 78 were selected as representative test channels.

Full testing is performed on worst case modulation 3-DH1 from EDR and on DH1 from BDR Family.

Test Results Summary

Test	Frequency (MHz)	DH1 Result	DH3 Result	DH5 Result	2-DH1 Result	2-DH3 Result	2-DH5 Result	3-DH1 Result	3-DH3 Result	3-DH5 Result
Hopping Frequencies	--- (hopping)	Pass	--	--	--	--	--	Pass	--	--
Band Edge High	--- (hopping)	Pass	--	--	--	--	--	Pass	--	--
Carrier Frequency Separation	2402.000 (hopping)	Pass	--	--	--	--	--	Pass	--	--
Carrier Frequency Separation	2480.000 (hopping)	Pass	--	--	--	--	--	Pass	--	--
Time of Channel Occupancy	2402.000 (hopping)	Pass	--	--	--	--	--	Pass	--	--
Time of Channel Occupancy	2441.000 (hopping)	Pass	--	--	--	--	--	Pass	--	--
Time of Channel Occupancy	2480.000 (hopping)	Pass	--	--	--	--	--	Pass	--	--
Emissions Bandwidth 20dB	2402.000 (single)	Pass	--	--	--	--	--	Pass	--	--
Occupied Channel Bandwidth 99%	2402.000 (single)	Pass	--	--	--	--	--	Pass	--	--
Band Edge Low	2402.000 (single)	Pass	--	--	--	--	--	Pass	--	--
Peak Output Power	2402.000 (single)	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Tx Spurious	2402.000 (single)	Pass	--	--	--	--	--	Pass	--	--
Emissions Bandwidth 20dB	2441.000 (single)	Pass	--	--	--	--	--	Pass	--	--
Occupied Channel Bandwidth 99%	2441.000 (single)	Pass	--	--	--	--	--	Pass	--	--
Peak Output Power	2441.000 (single)	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Tx Spurious	2441.000 (single)	Pass	--	--	--	--	--	Pass	--	--
Emissions Bandwidth 20dB	2480.000 (single)	Pass	--	--	--	--	--	Pass	--	--
Occupied Channel Bandwidth 99%	2480.000 (single)	Pass	--	--	--	--	--	Pass	--	--
Band Edge High	2480.000 (single)	Pass	--	--	--	--	--	Pass	--	--
Peak Output Power	2480.000 (single)	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Tx Spurious	2480.000 (single)	Pass	--	--	--	--	--	Pass	--	--

Test Item	Sample #	Result
FCC 15.247 Bluetooth Classic	J23133#3 NA 2B	Meets Requirement

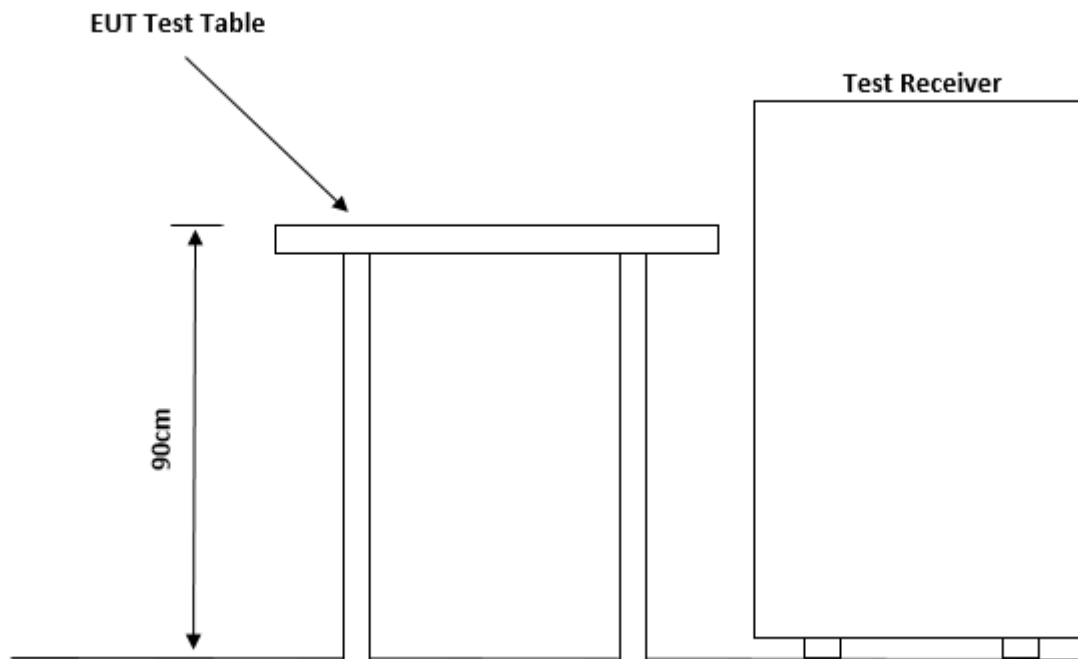
We found that the product met the above requirements without modification.

Test samples received in good condition.

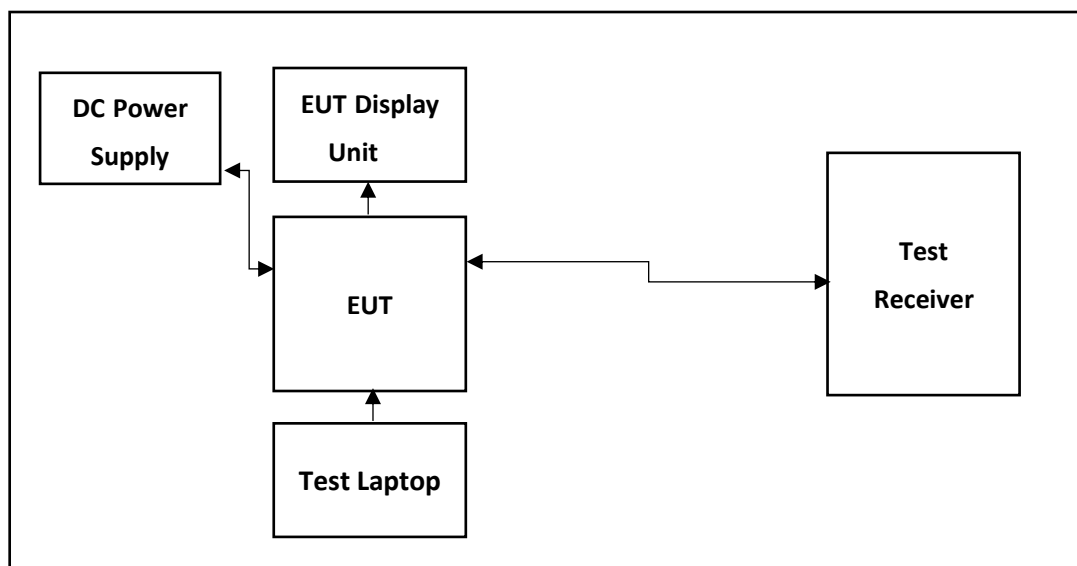
4.2 Test Setup

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	4/20/2025
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	4/20/2025
BVD0225	Signal Generator 100k-6GHz with GPS simulator	Rohde & Schwarz	SMW200A	107664	4/20/2025
BVD0250	Wireless Connectivity Tester 70M-6GHz	Rohde & Schwarz	CMW270	102113	4/20/2025
BVD0302	DC power supply 1-15VDC 60A 110/220 11.5A max input	BK Precision	1693	257F17180	N/A
BVD0321	Fixed Attenuator 2W 20dB -40GHz	Mini-Circuits	BW-K20-2W44+	2103	12/11/2024
BVD0430	Multimeter	Fluke	117	49710262SV	11/17/2024
BVD0229	Temp and Humidity Meter	Fluke	971	12001009	5/23/2025
N/A	Test-PC	Lenovo ThinkPad	E480	SL10Q37355	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	MOBIS	BMM6100000	231107 01	N/A
N/A	Shark Fin Antenna	Alfa Romeo	B901	719147	N/A
N/A	Antenna	Aptiv	APN35409682	N/A	N/A
N/A	Camera	N/A	23295906C	N/A	N/A
N/A	MFGBridge_Tool/Dut labtool	N/A	N/A	N/A	2.0.0.89

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 Number of Hopping Frequencies

Test according to FCC title 47 part 15 §15.247(a),(g), KDB 558074 D01 DTS Meas Guidance v05r02 and ANSI C63.10-2013 7.8.3, RSS-247 Section 5.1(d)

Spectrum Analyzer Settings

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	200.000 kHz	<= 200.000 kHz
VBW	200.000 kHz	>= 200.000 kHz
SweepPoints	418	~ 418
Sweptime	200.000 ms	200.000 ms
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	FFT
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	10 / max. 10	max. 10
Stable	1 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

4.4.1.1 DH1

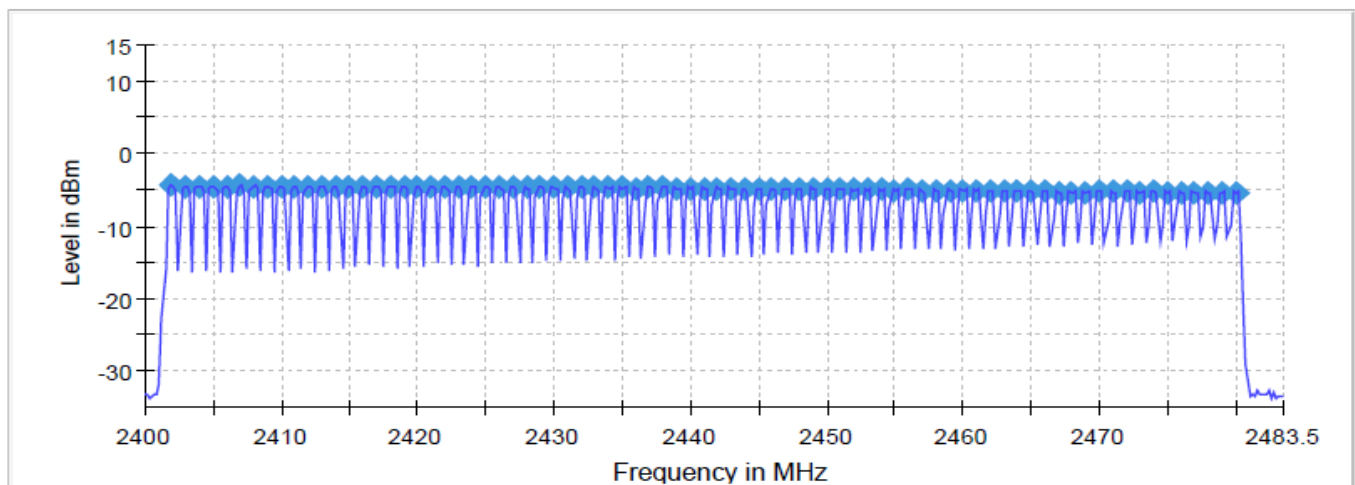
Channels:

Channels	Limit Min	Result
79	15	PASS

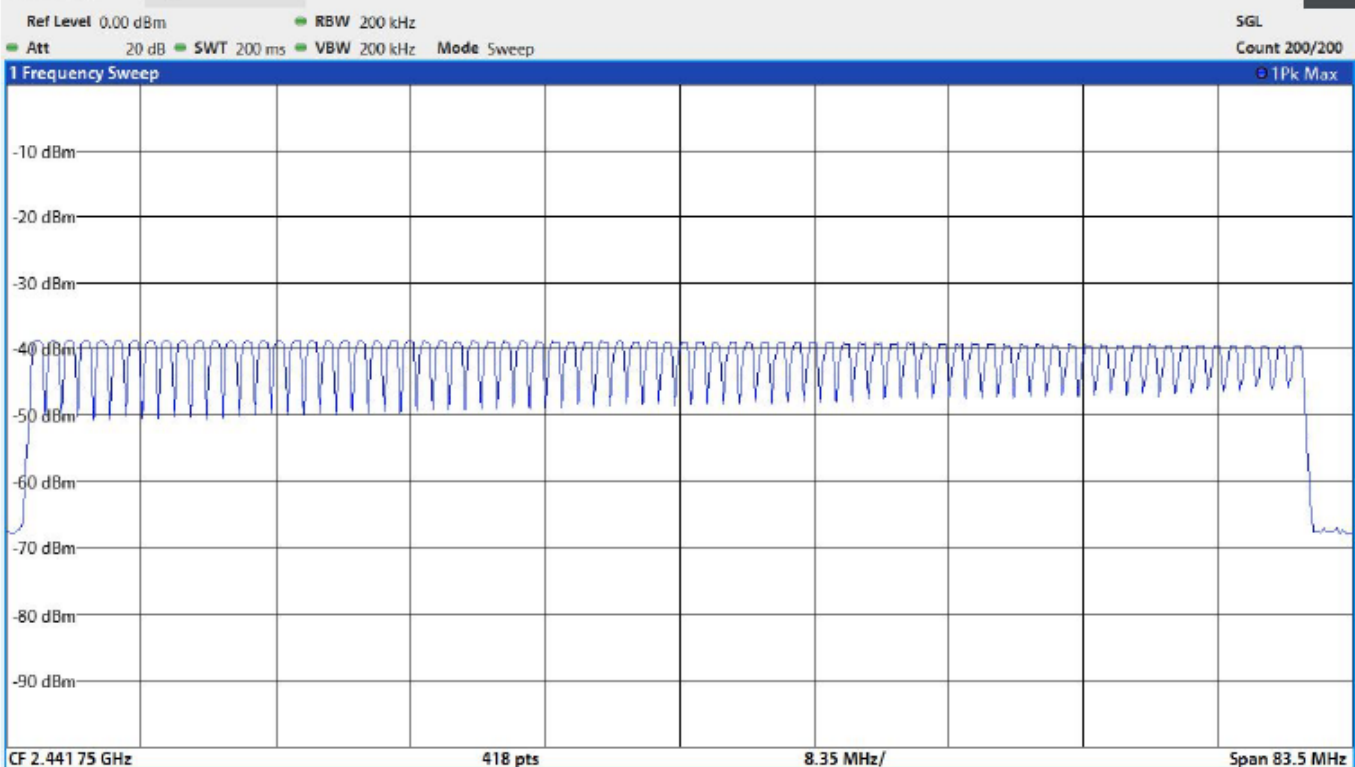
Plots:

Hopping Frequencies

Sequence



MultiView Spectrum



4.4.1.1 3-DH1

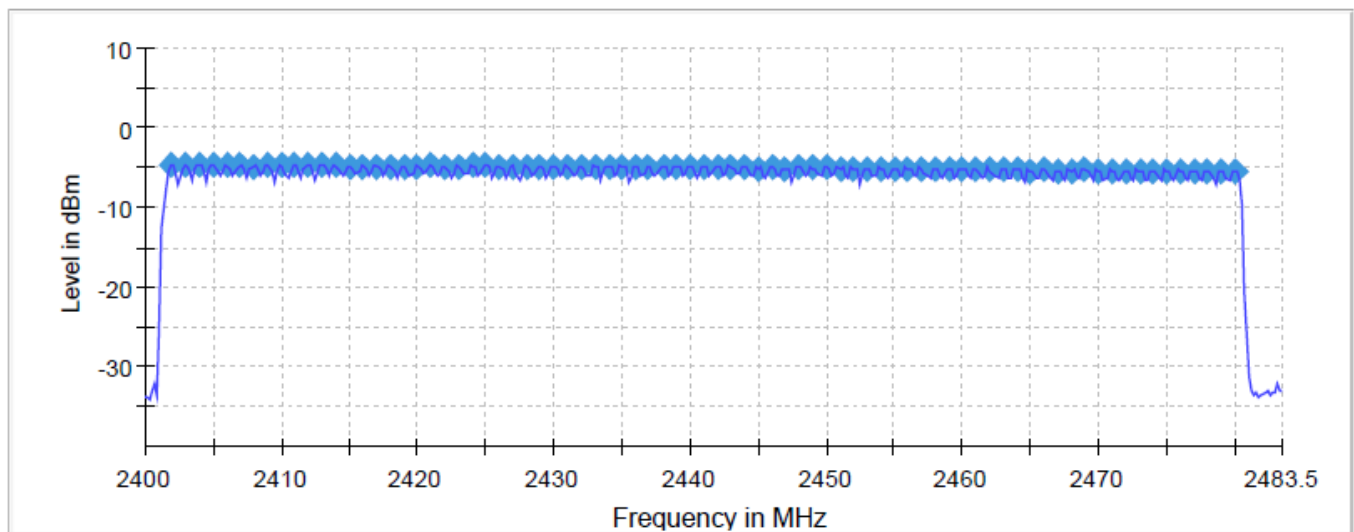
Channels:

Channels	Limit Min	Result
79	15	PASS

Plots:

Hopping Frequencies

Sequence



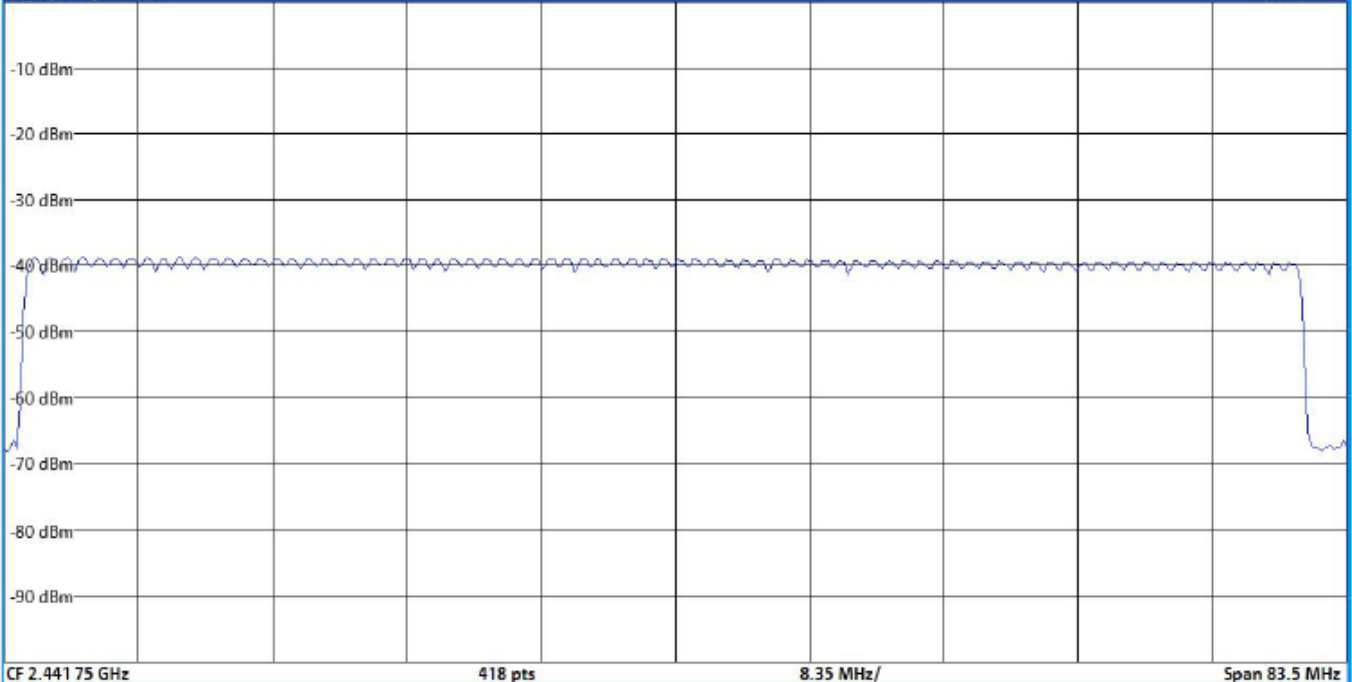
MultiView Spectrum

Ref Level 0.00 dBm RBW 200 kHz
Att 20 dB SWT 200 ms VBW 200 kHz Mode Sweep

SGL
Count 200/200

1 Frequency Sweep

1Pk Max



4.4.2 Band Edge (Hopping)

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v05r02 and ANSI C63.10-2013 7.8.6, RSS-247 Section 5.5

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

Data Rate	Frequency (MHz)	Level (dBm)
DH1	2401.825000	-4.9
3-DH1	2419.825000	-4.8

Spectrum Analyzer Settings

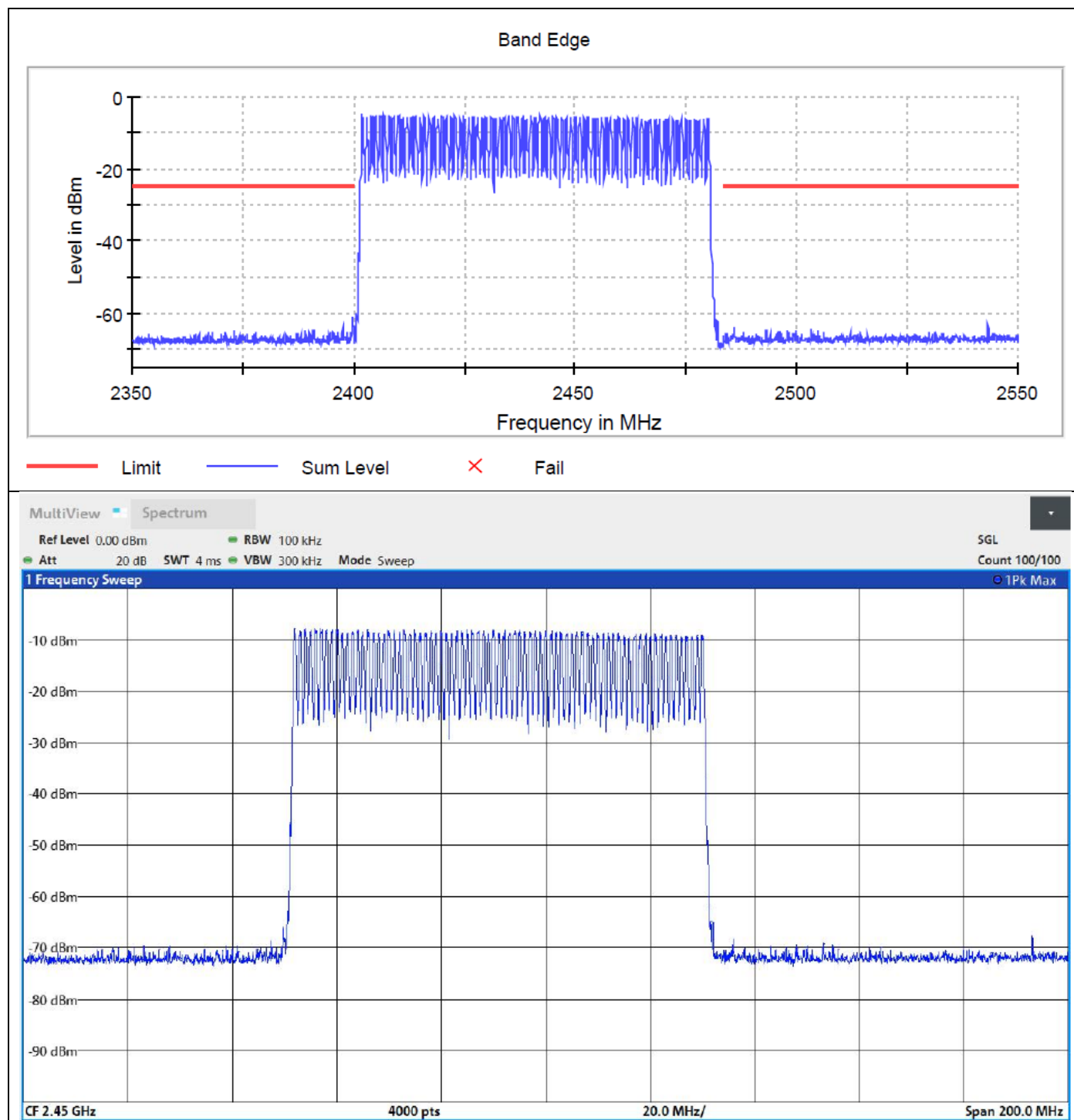
Setting	Instrument Value	Target Value
Start Frequency	2.35000 GHz	2.35000 GHz
Stop Frequency	2.55000 GHz	2.55000 GHz
Span	200.000 MHz	200.000 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	4000	~ 4000
Sweeptime	4.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	50 / max. 50	max. 50
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

4.4.2.1 DH1

Measurements:

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.725000	-61.1	36.2	-24.9	PASS
2399.775000	-61.1	36.2	-24.9	PASS
2399.675000	-61.9	37.0	-24.9	PASS
2543.175000	-62.8	37.9	-24.9	PASS
2543.125000	-62.8	37.9	-24.9	PASS
2399.625000	-63.3	38.3	-24.9	PASS
2399.825000	-63.5	38.5	-24.9	PASS
2399.875000	-63.5	38.6	-24.9	PASS
2485.875000	-63.5	38.6	-24.9	PASS
2485.825000	-63.7	38.7	-24.9	PASS
2399.925000	-63.7	38.8	-24.9	PASS
2397.475000	-63.8	38.9	-24.9	PASS
2397.525000	-63.8	38.9	-24.9	PASS
2399.975000	-64.0	39.0	-24.9	PASS
2503.125000	-64.2	39.3	-24.9	PASS

Plots:

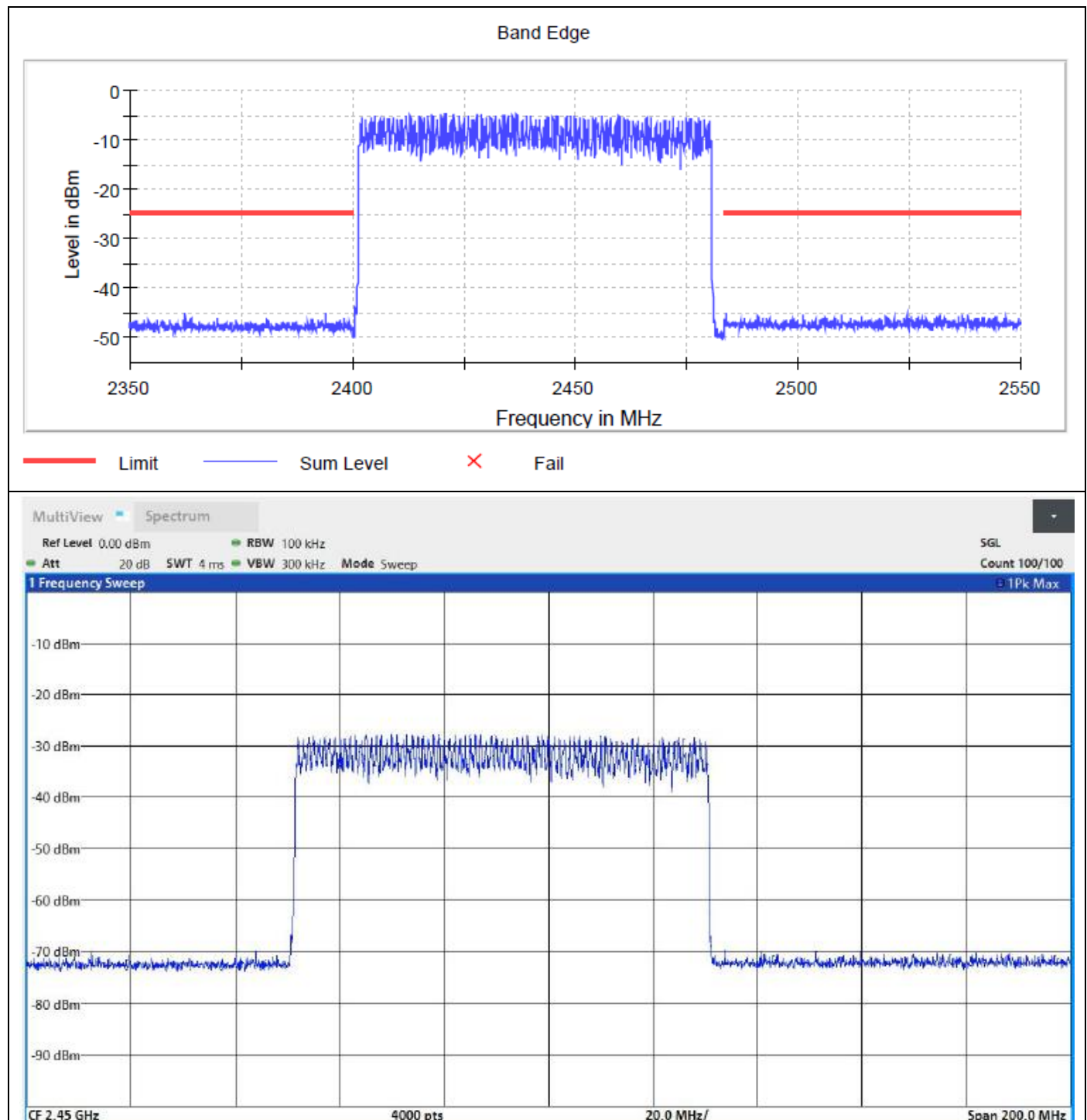


4.4.2.2 3-DH1

Measurements:

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.825000	-45.0	20.1	-24.8	PASS
2483.875000	-45.0	20.1	-24.8	PASS
2393.925000	-45.1	20.3	-24.8	PASS
2362.475000	-45.2	20.3	-24.8	PASS
2362.525000	-45.2	20.3	-24.8	PASS
2509.775000	-45.2	20.4	-24.8	PASS
2509.825000	-45.2	20.4	-24.8	PASS
2501.125000	-45.3	20.4	-24.8	PASS
2501.175000	-45.3	20.4	-24.8	PASS
2490.775000	-45.3	20.5	-24.8	PASS
2393.875000	-45.3	20.5	-24.8	PASS
2531.825000	-45.4	20.5	-24.8	PASS
2524.375000	-45.5	20.6	-24.8	PASS
2524.425000	-45.5	20.7	-24.8	PASS
2538.225000	-45.5	20.7	-24.8	PASS

Plots:



4.4.3 Carrier Frequency Separation

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v05r02 and ANSI C63.10-2013 7.8.2, RSS-247 Section 5.1(b)

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

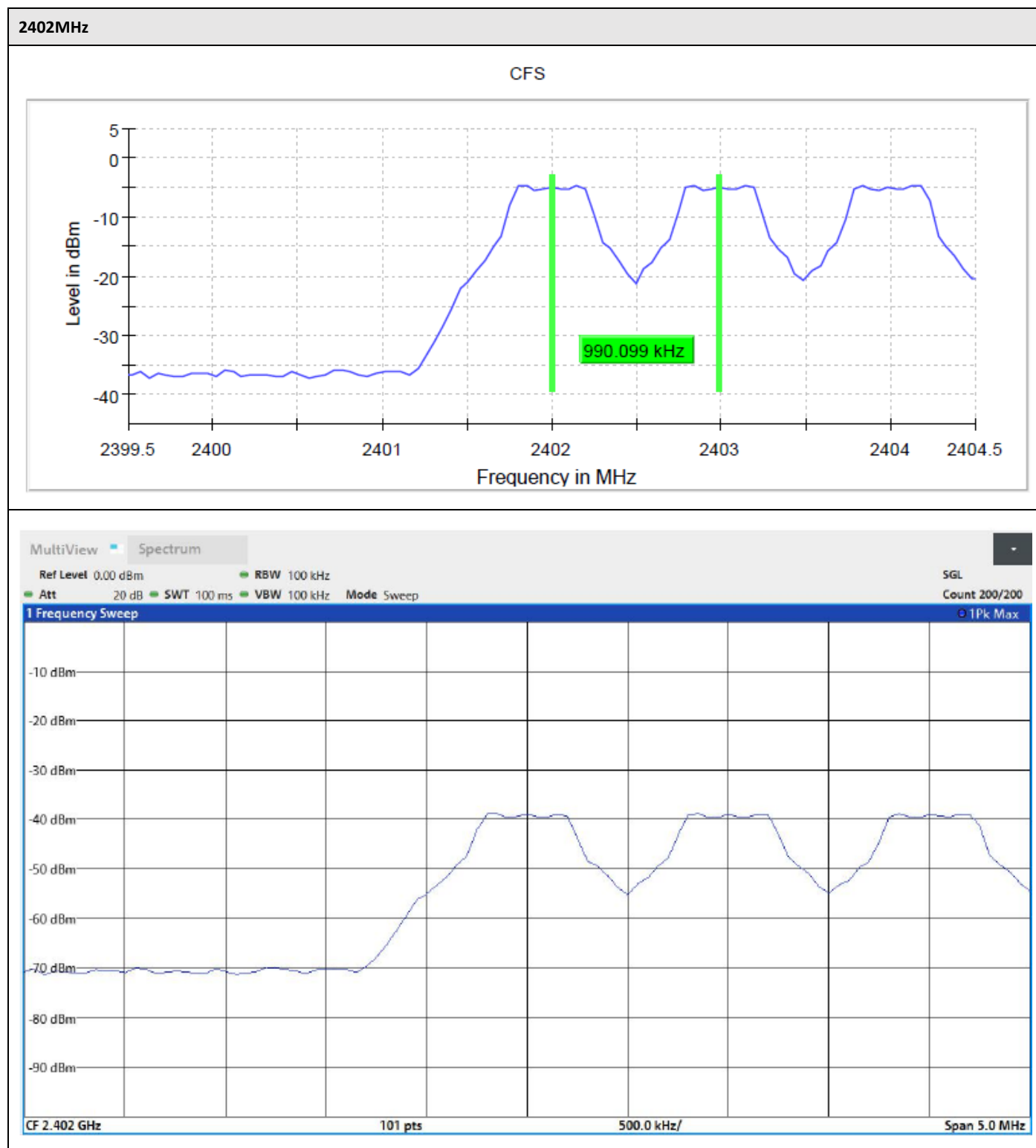
Hopping Mode				
Packet Type	2402MHz		2480MHz	
	Frequency Separation (MHz)	Minimum Limit (MHz)	Frequency Separation (MHz)	Minimum Limit (MHz)
DH1	0.990099	0.666667	0.990099	0.666667
3-DH1	0.990099	0.871287	0.990099	0.871287

Spectrum Analyzer Settings:

Setting	Instrument Value	Target Value
Start Frequency	2.39950 GHz	2.39950 GHz
Stop Frequency	2.40450 GHz	2.40450 GHz
Span	5.000 MHz	5.000 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	100.000 kHz	>= 100.000 kHz
SweepPoints	101	~ 50
SweepTime	100.000 ms	100.000 ms
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	FFT
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	13 / max. 50	max. 50
Stable	10 / 10	10
Max Stable Difference	0.16 dB	0.50 dB

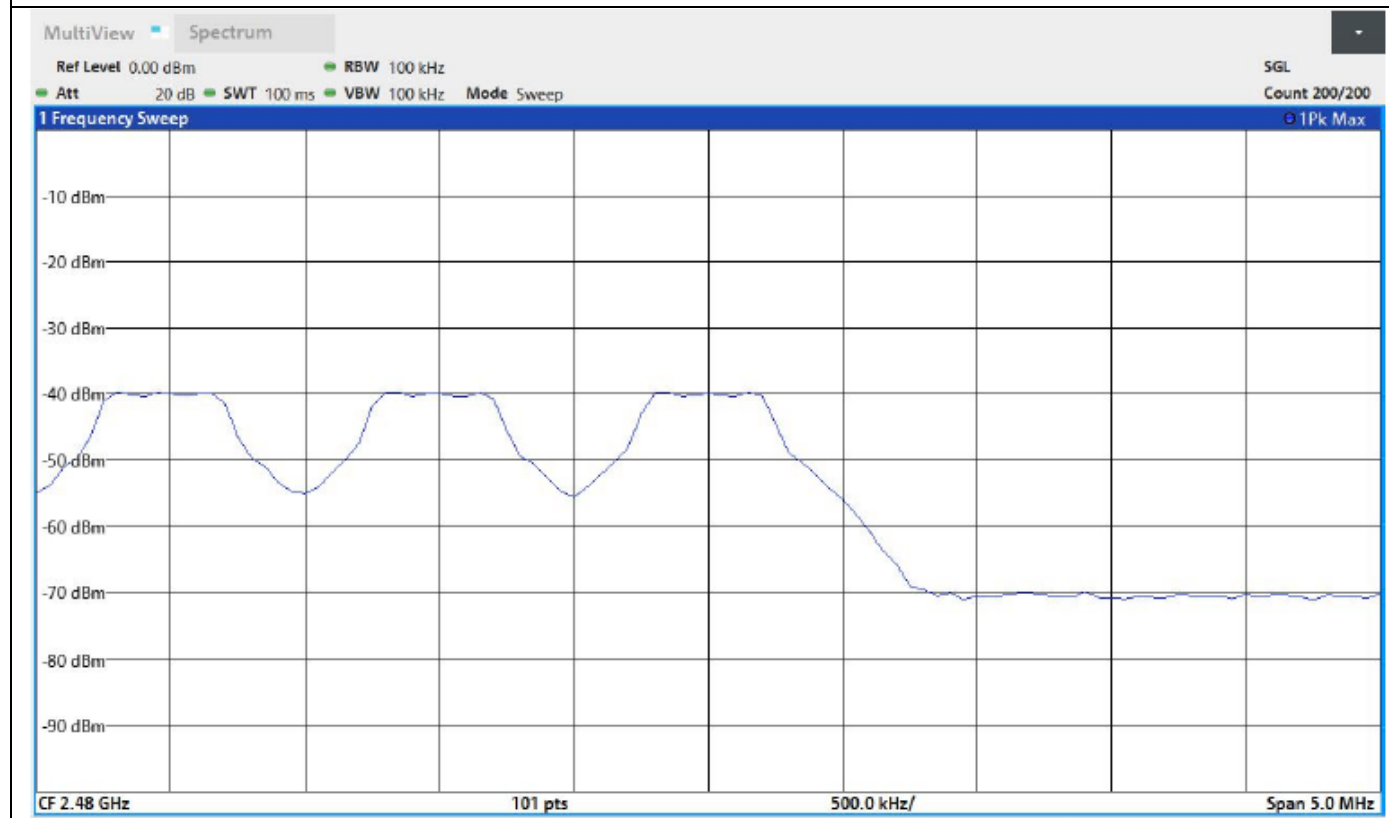
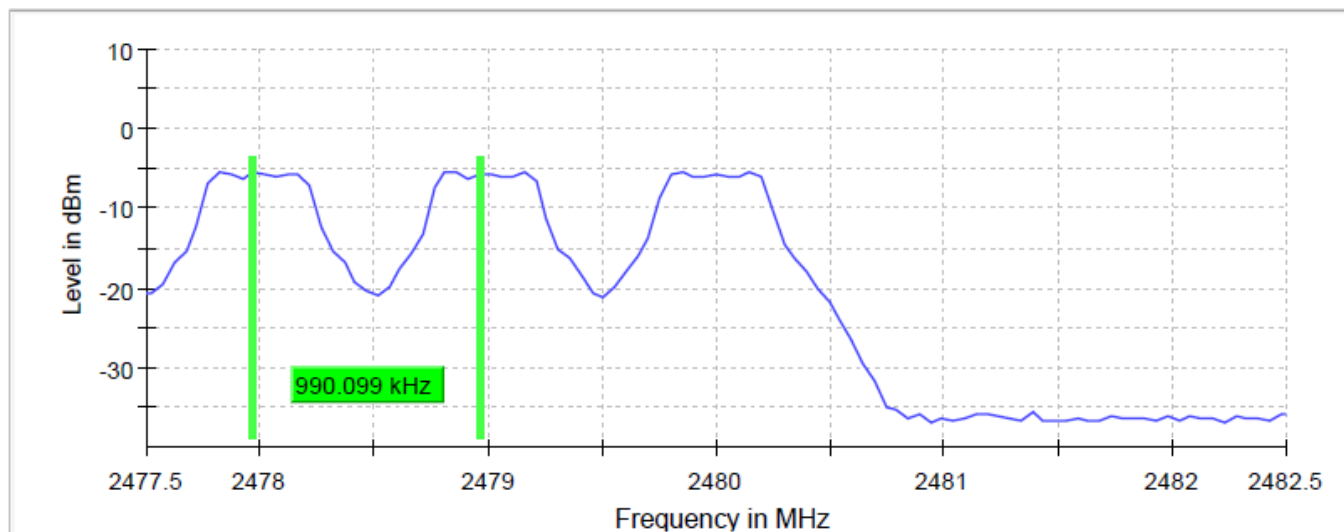
4.4.3.1 DH1

Plots:



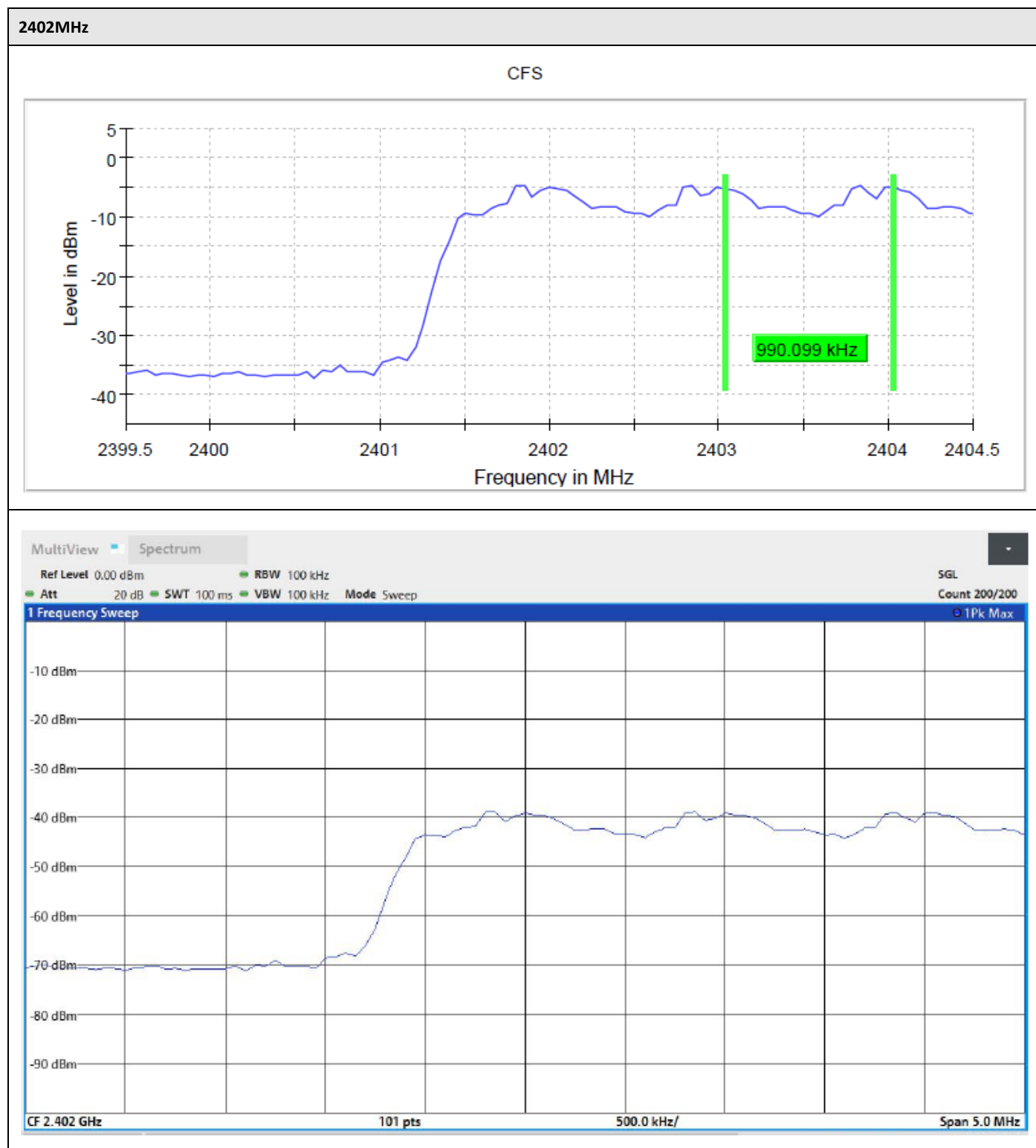
2480MHz

CFS



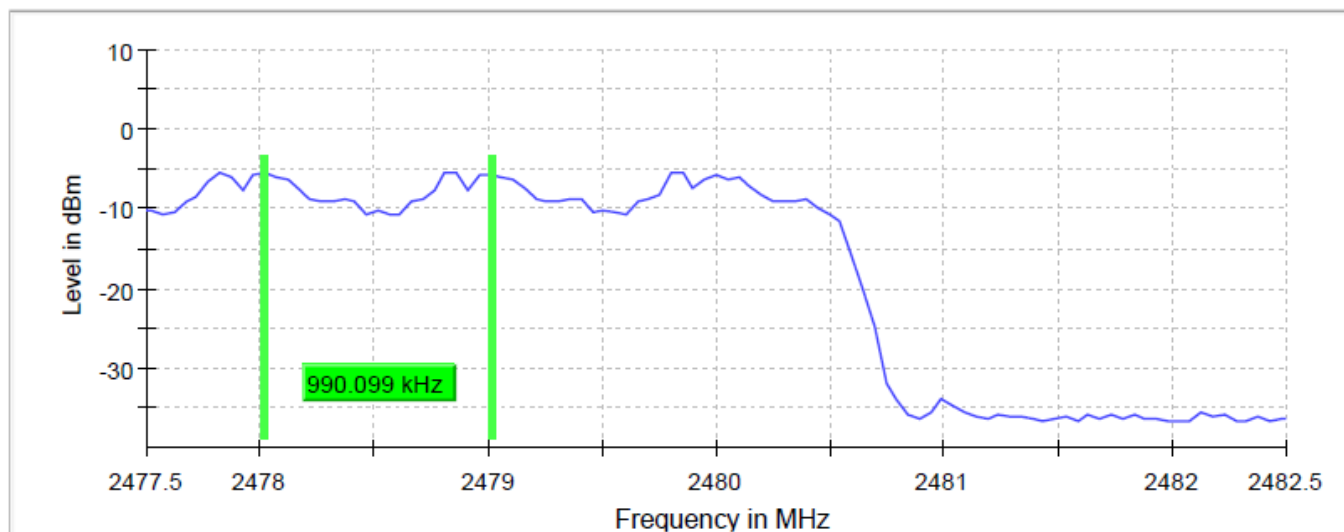
4.4.3.2 3-DH1

Plots:



2480MHz

CFS



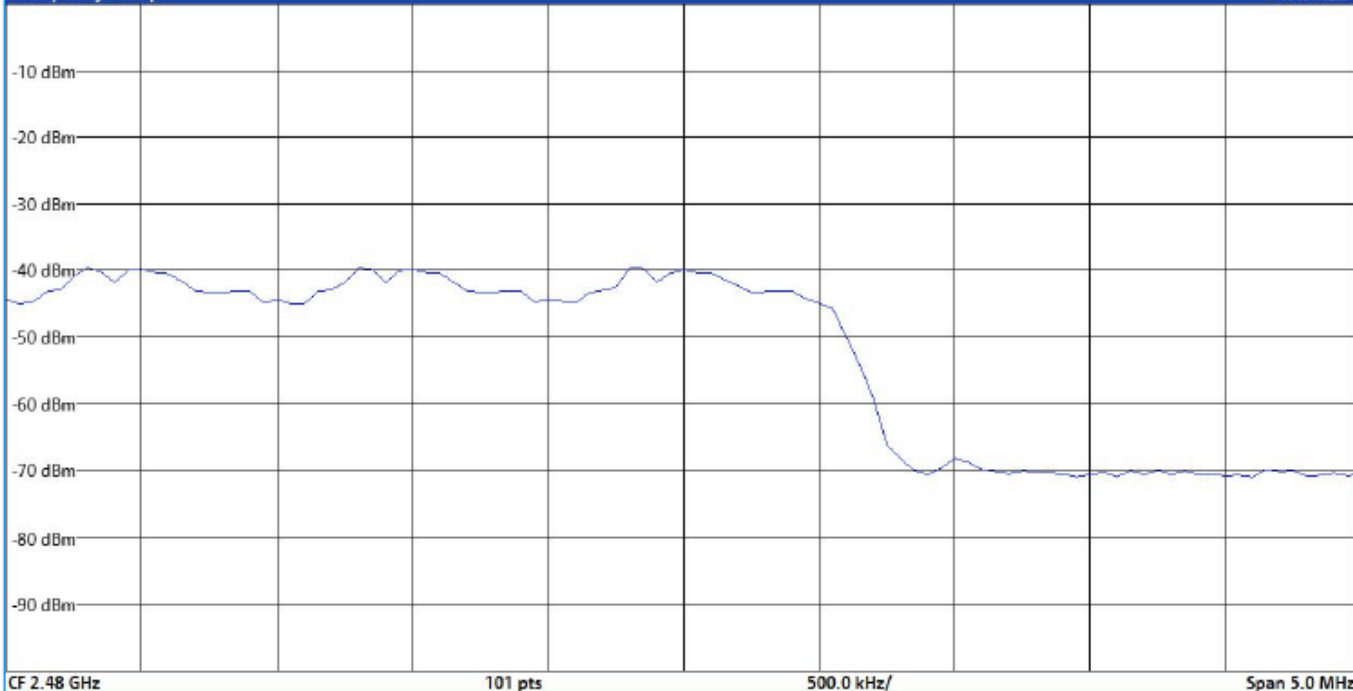
MultiView Spectrum

Ref Level 0.00 dBm RBW 100 kHz
Att 20 dB SWT 100 ms VBW 100 kHz Mode Sweep

SGL
Count 200/200

1 Frequency Sweep

1Pk Max



CF 2.48 GHz

101 pts

500.0 kHz/

Span 5.0 MHz

4.4.4 Time of Channel Occupancy

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v05r02 and ANSI C63.10-2013 7.8.4, RSS-247 Section 5.1(d)

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

The transmit time per hop was measured by summing the sweep points above a threshold at least 10dB from the maximum level on the spectrum analyzer display.

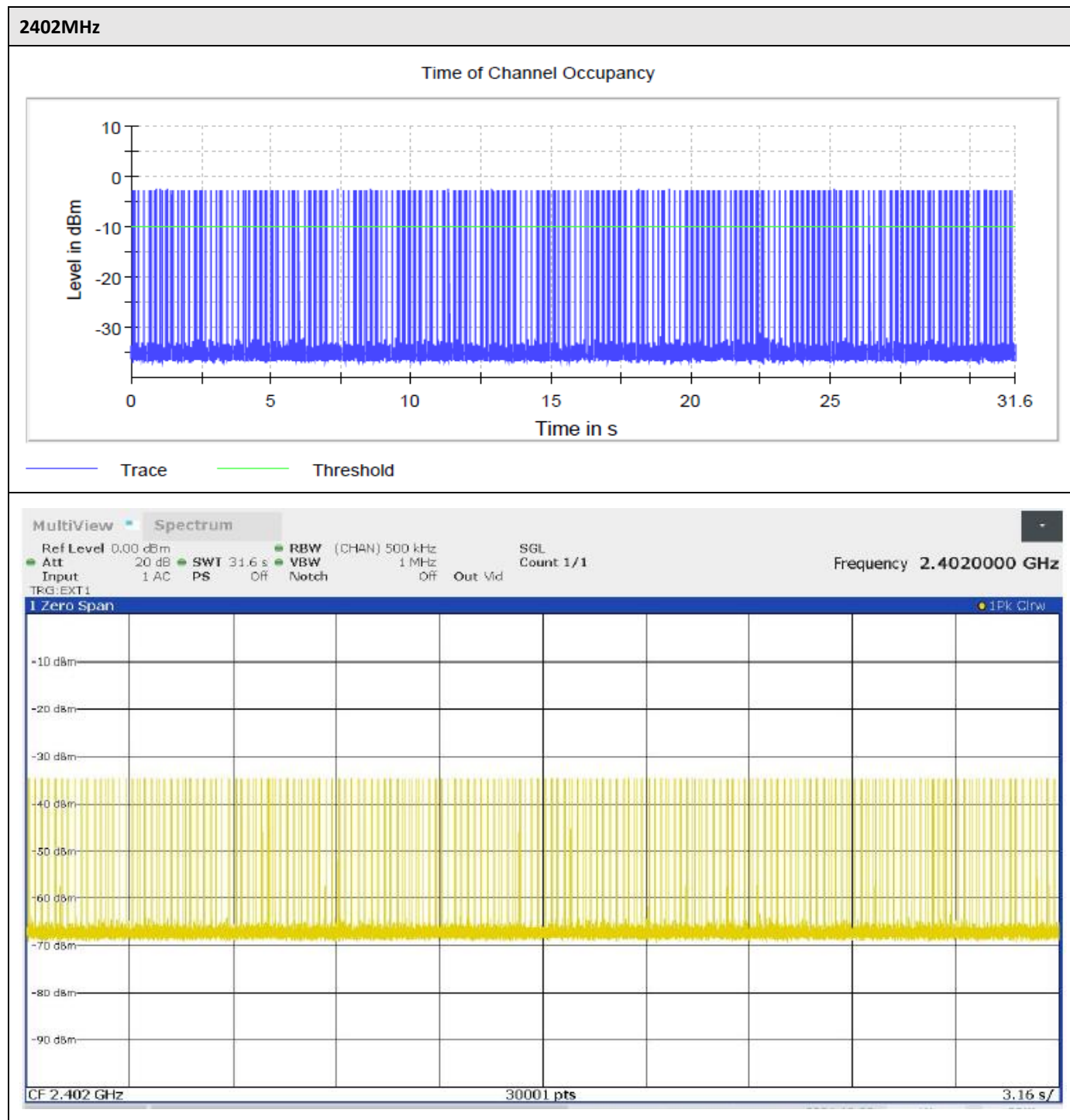
Frequency	Data Rate	Mean Transmit Time per Hop (ms)	Number of Hops	Time (ms)	Limit Max (ms)	Result
2402	DH1	0.397	316	125.940	400.000	PASS
2402	3-DH1	0.345	319	110.460	400.000	PASS
2441	DH1	0.396	317	125.840	400.000	PASS
2441	3-DH1	0.344	318	109.800	400.000	PASS
2480	DH1	0.393	319	125.760	400.000	PASS
2480	3-DH1	0.331	317	105.370	400.000	PASS

Spectrum Analyzer Settings:

Setting	Instrument Value	Target Value
Center Frequency	2.40200 GHz	2.40200 GHz
Span	ZeroSpan	ZeroSpan
RBW	500.000 kHz	~ 500.000 kHz
VBW	1.000 MHz	~ 1.500 MHz
SweepPoints	30001	~ 30001
SweepTime	31.600 s	31.600 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	1	1
Filter	Channel	Channel
Trace Mode	Clear Write	Clear Write
Sweeptype	Sweep	AUTO
Preamplifier	off	off
Trigger	External	External
Trigger Offset	0.000 s	0.000 s

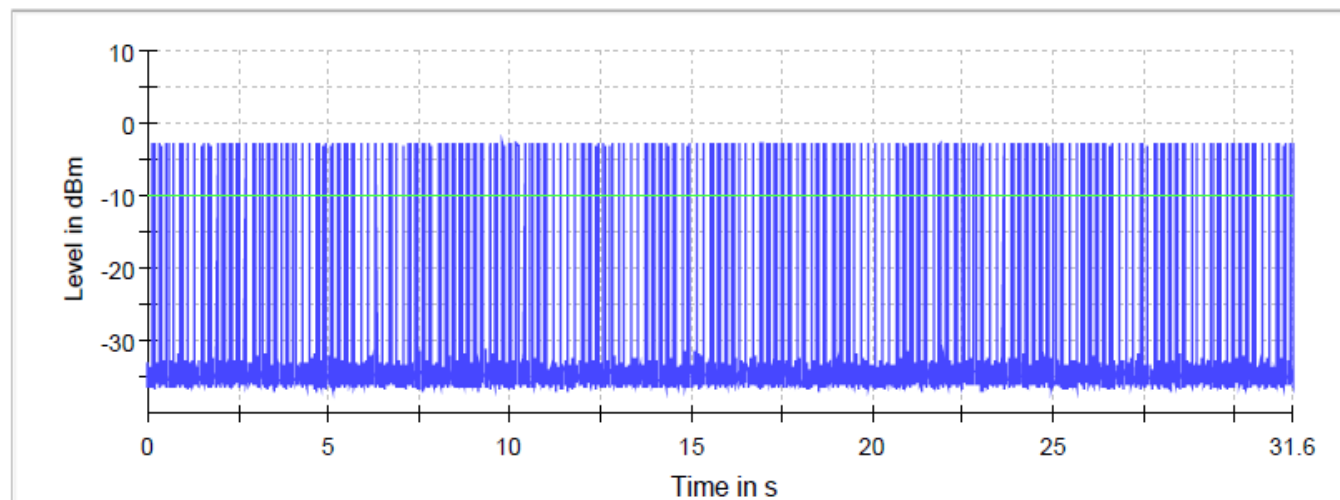
4.4.4.1 DH1

Plots:



2441MHz

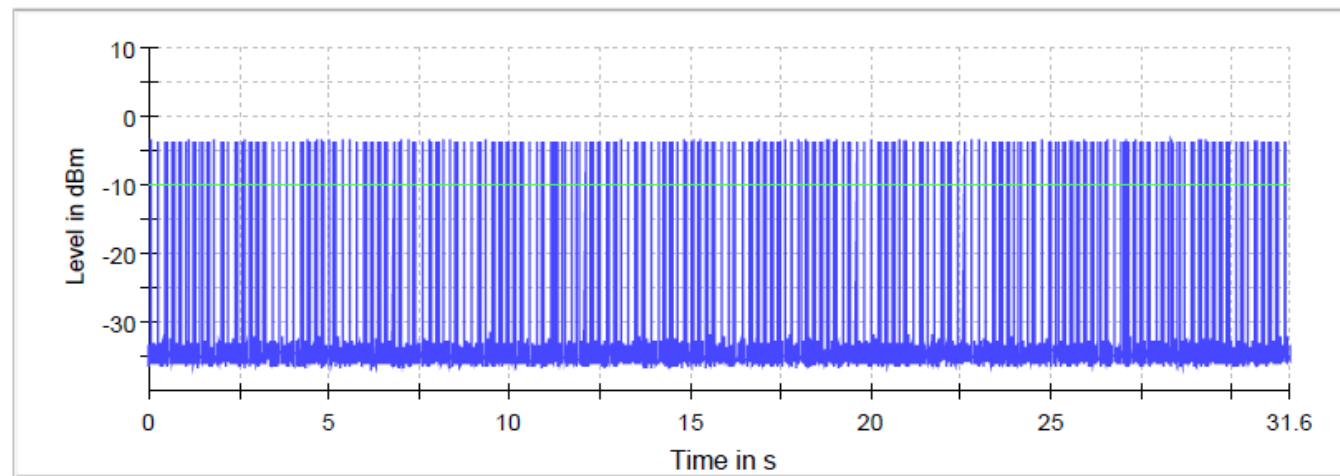
Time of Channel Occupancy



Trace Threshold

2480MHz

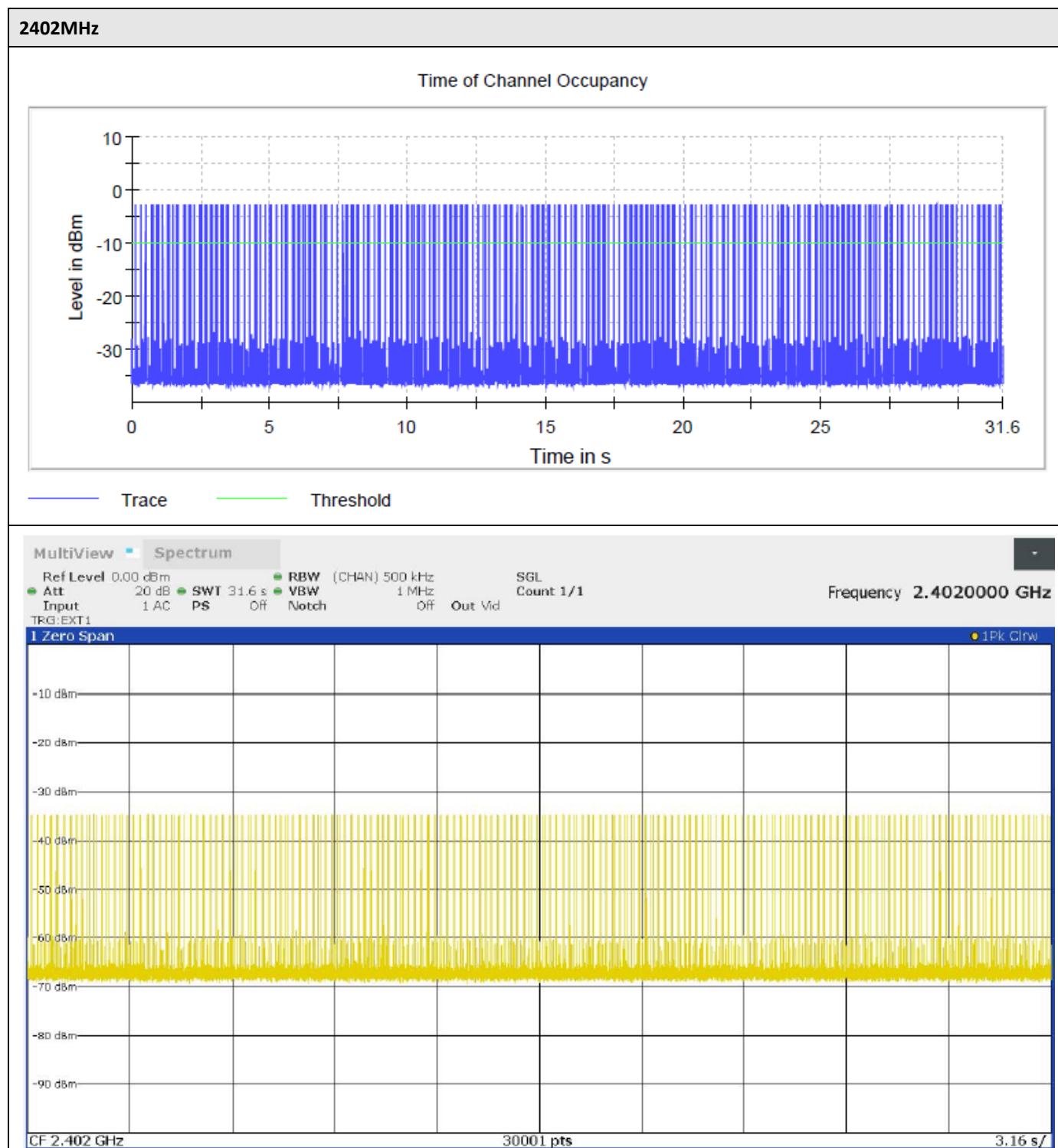
Time of Channel Occupancy



Trace Threshold

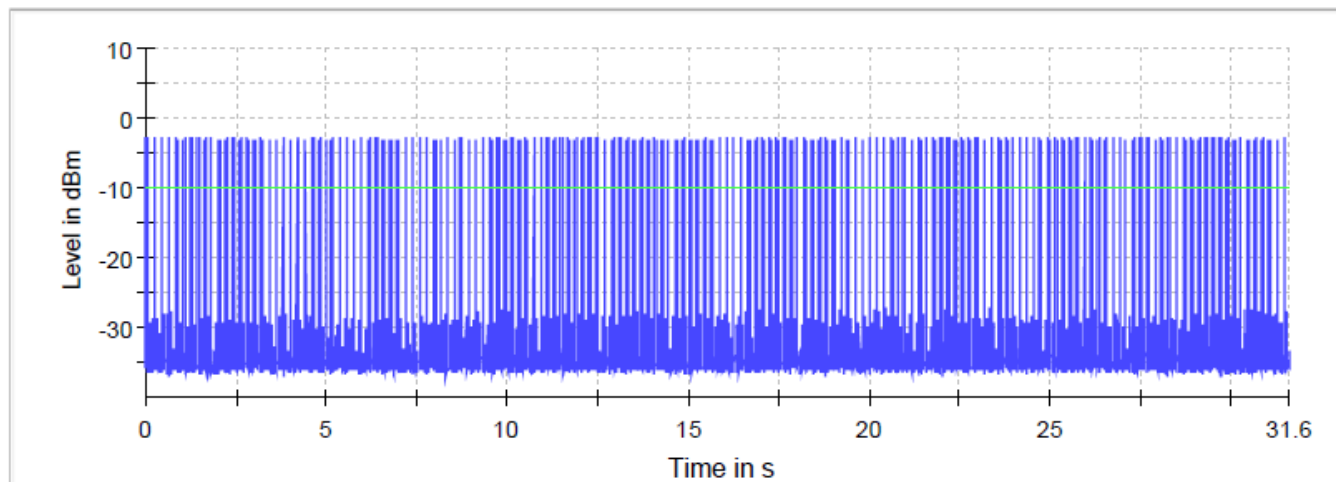
4.4.4.2 3-DH1

Plots:



2441MHz

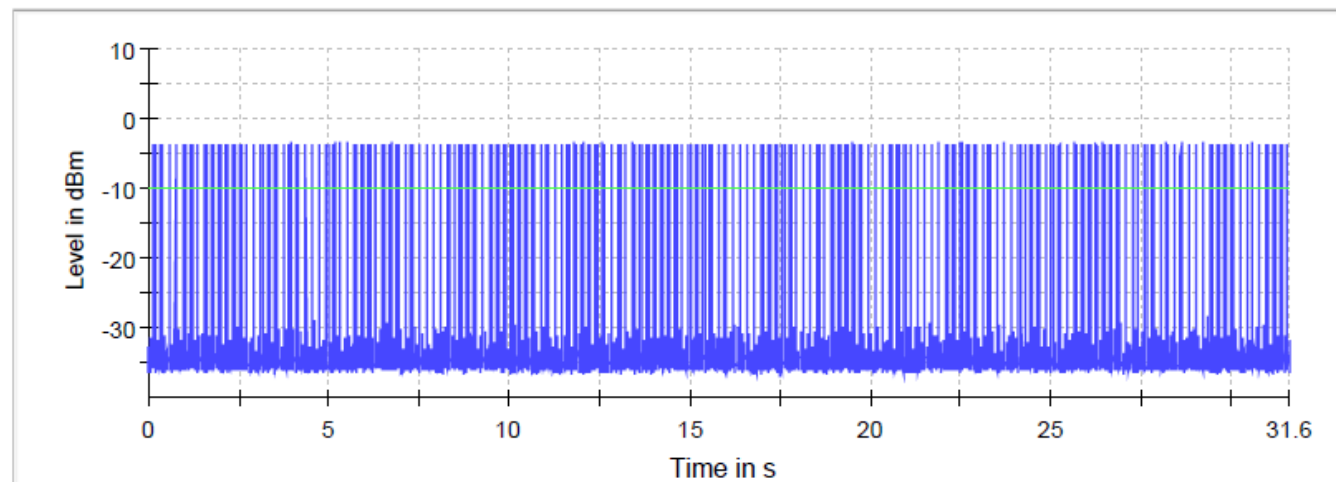
Time of Channel Occupancy



Trace Threshold

2480MHz

Time of Channel Occupancy



Trace Threshold

4.4.5 Peak 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 7.8.5, RSS-247 Section 5.4 (b)

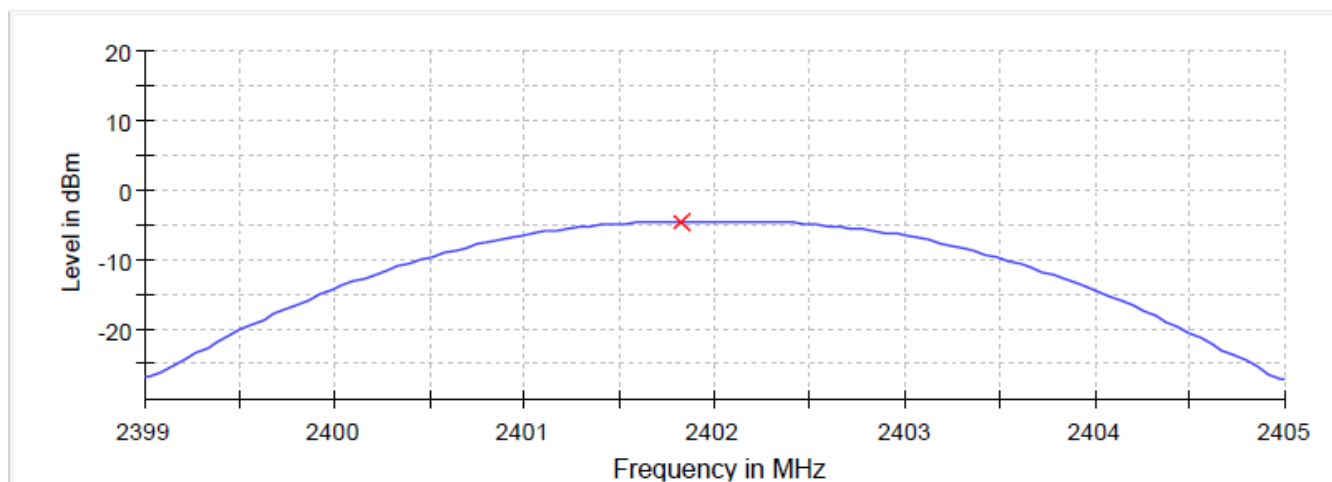
Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Combined Uncertainty of absolute Level Measurement (K=2) < 1 dB

Data Rate	2402 MHz	2441 MHz	2480 MHz	Limit dBm
DH1	-4.516	-4.762	-5.380	21.0
DH3	-4.639	-4.864	-5.530	21.0
DH5	-4.667	-4.895	-5.550	21.0
2-DH1	-2.509	-2.820	-3.569	21.0
2-DH3	-2.530	-2.841	-3.573	21.0
2-DH5	-2.516	-2.801	-3.543	21.0
3-DH1	-2.181	-2.497	-3.253	21.0
3-DH3	-2.191	-2.480	-3.238	21.0
3-DH5	-2.183	-2.495	-3.221	21.0

4.4.5.1 DH1

2402MHz

Peak Power



Connector 1 X Peak Connector 1

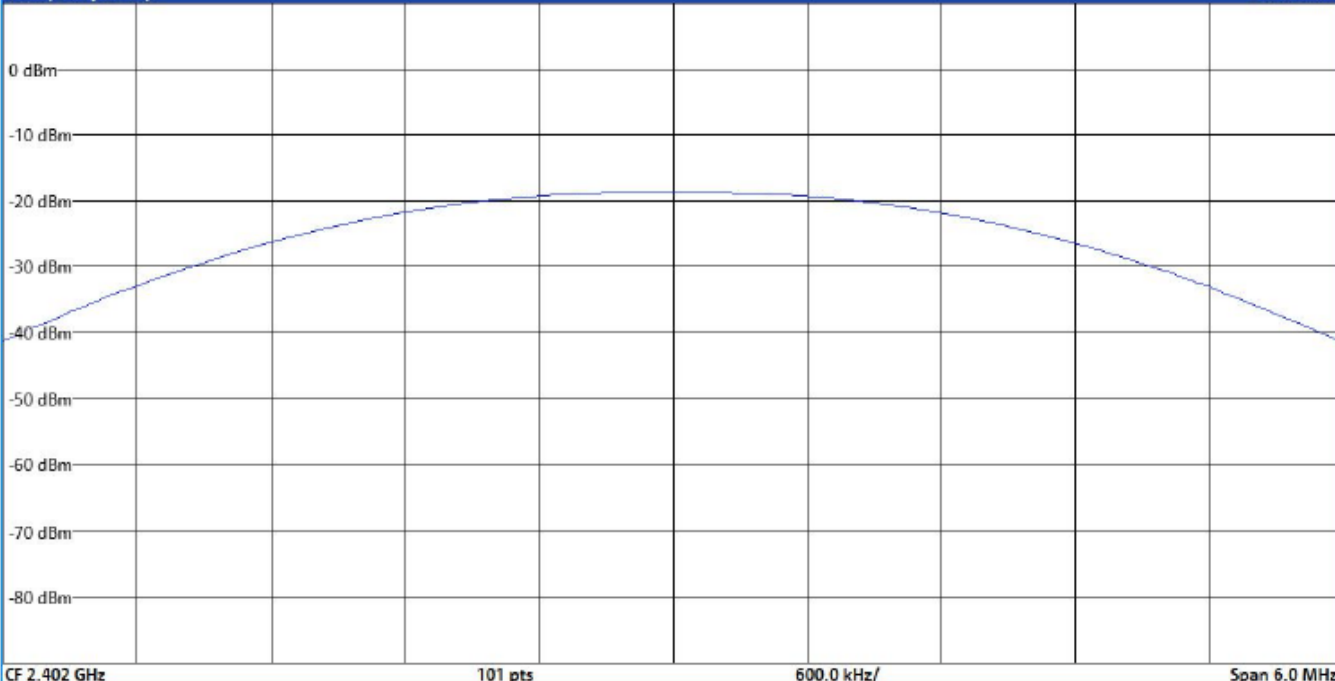
MultiView Spectrum

Ref Level 10.00 dBm RBW 2 MHz
Att 20 dB SWT 1 ms VBW 10 MHz Mode Sweep

SGL
Count 100/100

1 Frequency Sweep

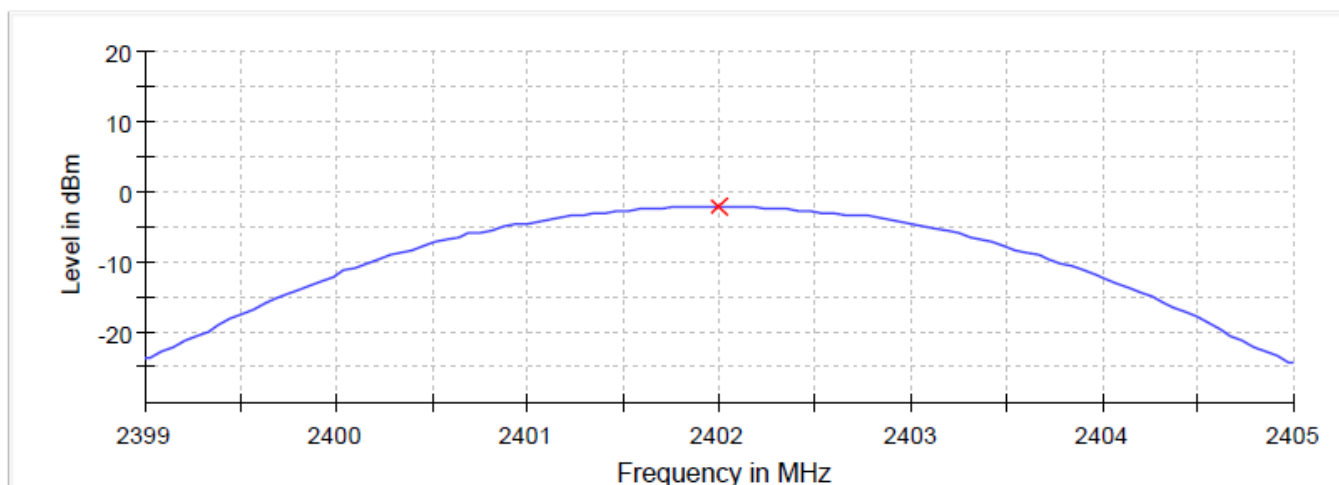
1Pk Max



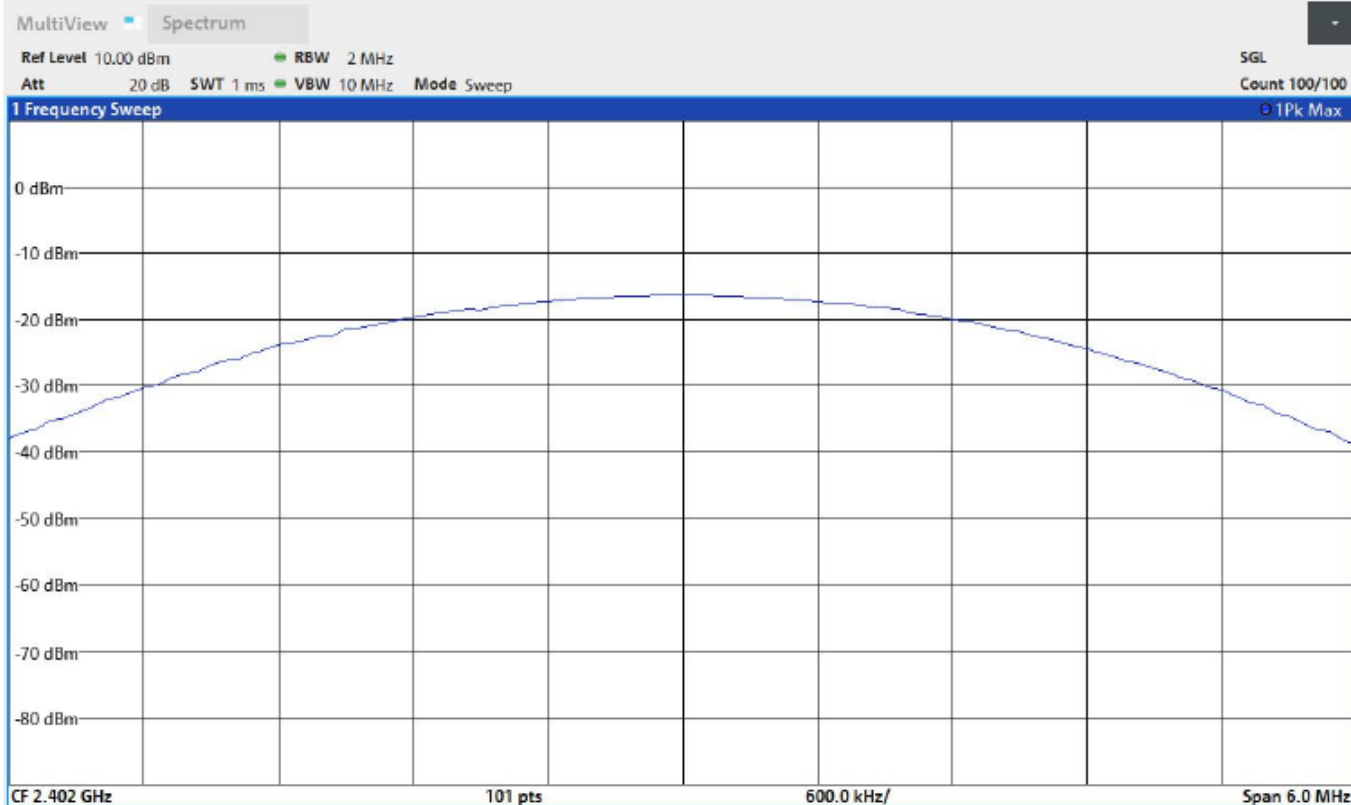
4.4.5.2 3-DH1

2402MHz

Peak Power



— Connector 1 × Peak Connector 1



4.4.6 Emission Bandwidth 20dB

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v05r02 and ANSI C63.10-2013 7.8.7, RSS-247 Section 5.1(a)

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

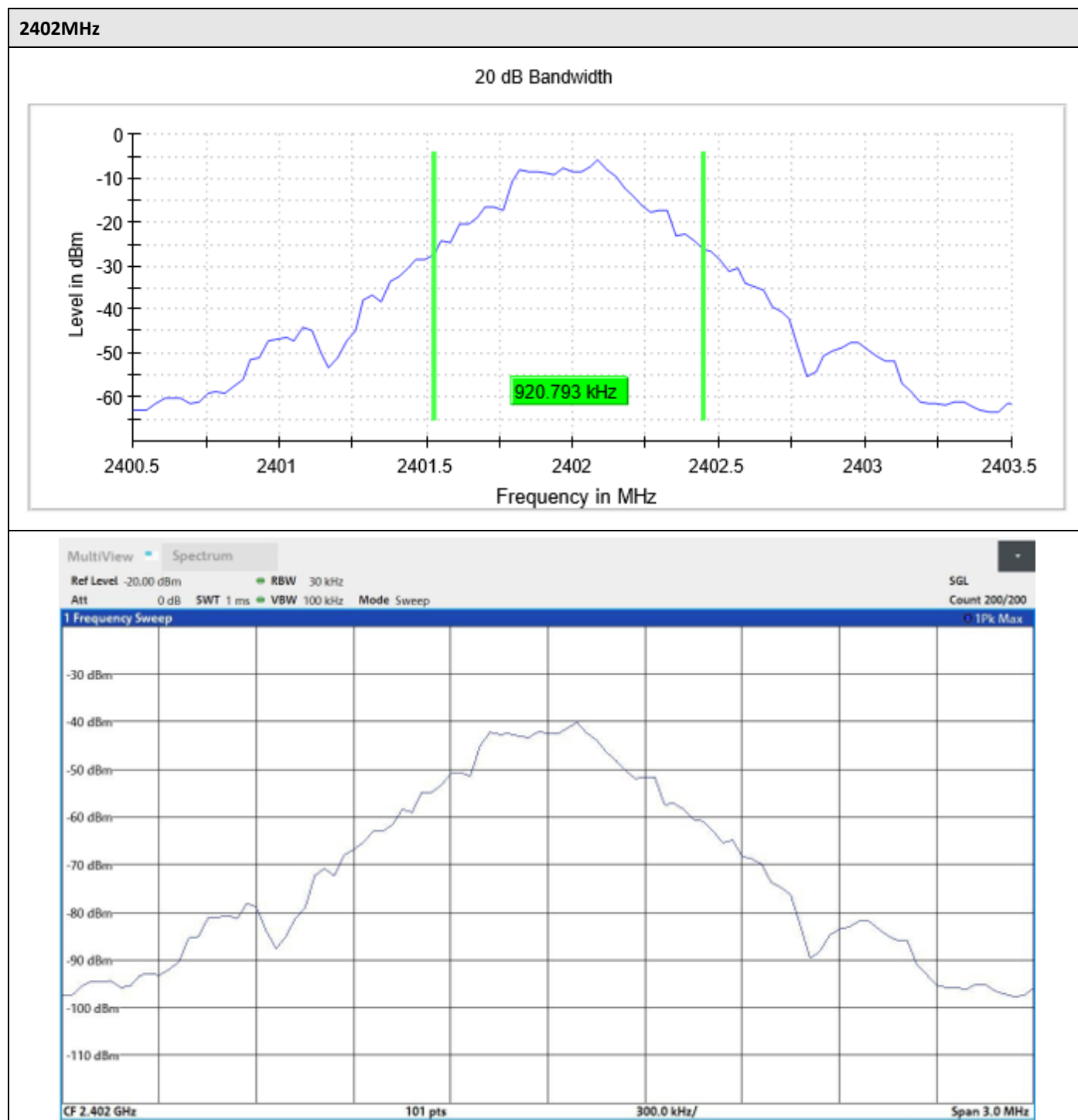
Channel / Frequency (MHz)	Packet Type	Bandwidth (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Result
0 / 2402	DH1	0.920793	2401.524752	2402.445545	PASS
	3-DH1	1.306930	2401.346535	2402.653465	PASS
39 / 2441	DH1	0.920793	2440.524752	2441.445545	PASS
	3-DH1	1.277227	2440.376238	2441.653465	PASS
78 / 2480	DH1	0.920793	2479.524752	2480.445545	PASS
	3-DH1	1.306930	2479.346535	2480.653465	PASS

Spectrum Analyzer Settings:

Setting	Instrument Value	Target Value
Start Frequency	2.40050 GHz	2.40050 GHz
Stop Frequency	2.40350 GHz	2.40350 GHz
Span	3.000 MHz	3.000 MHz
RBW	30.000 kHz	>= 30.000 kHz
VBW	100.000 kHz	>= 90.000 kHz
SweepPoints	101	~ 101
Sweeptime	1.000 ms	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	7 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.03 dB	0.50 dB

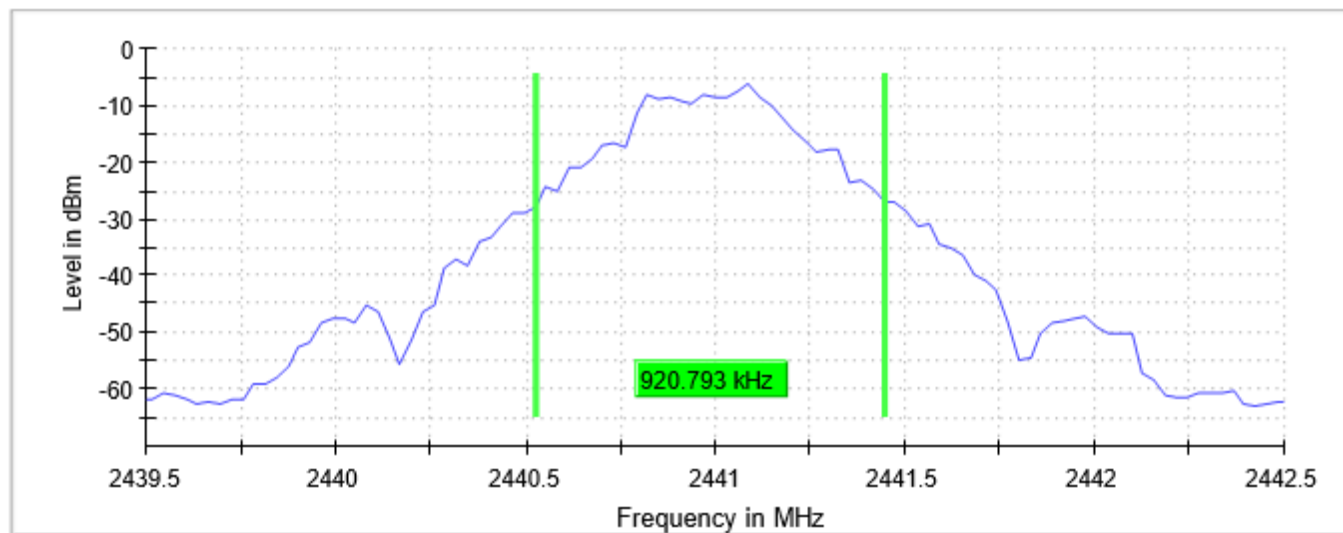
4.4.6.1 DH1

Plots:



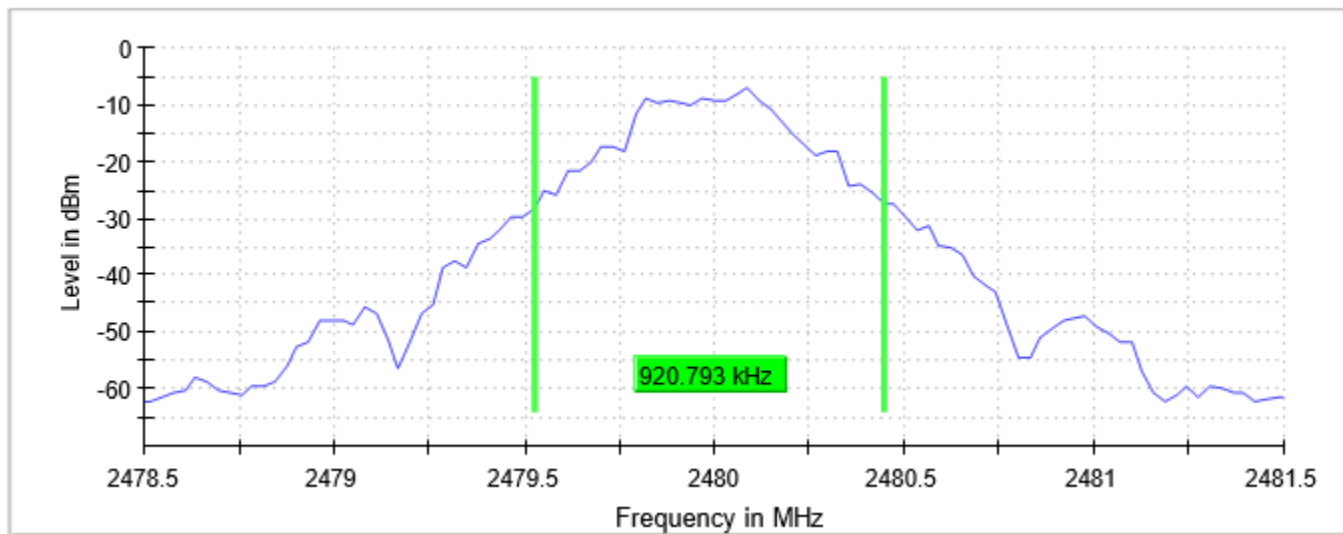
2441MHz

20 dB Bandwidth



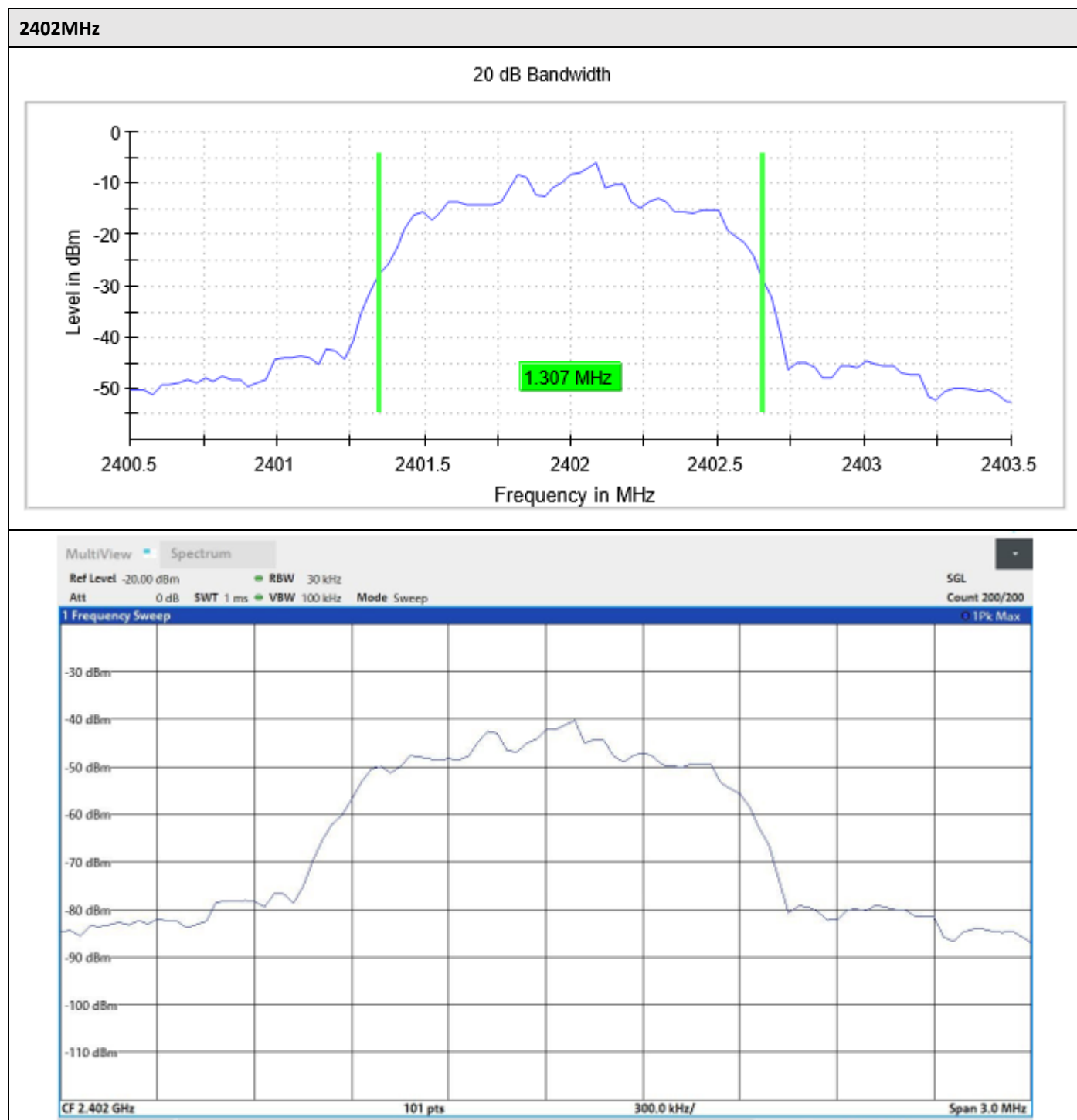
2480MHz

20 dB Bandwidth



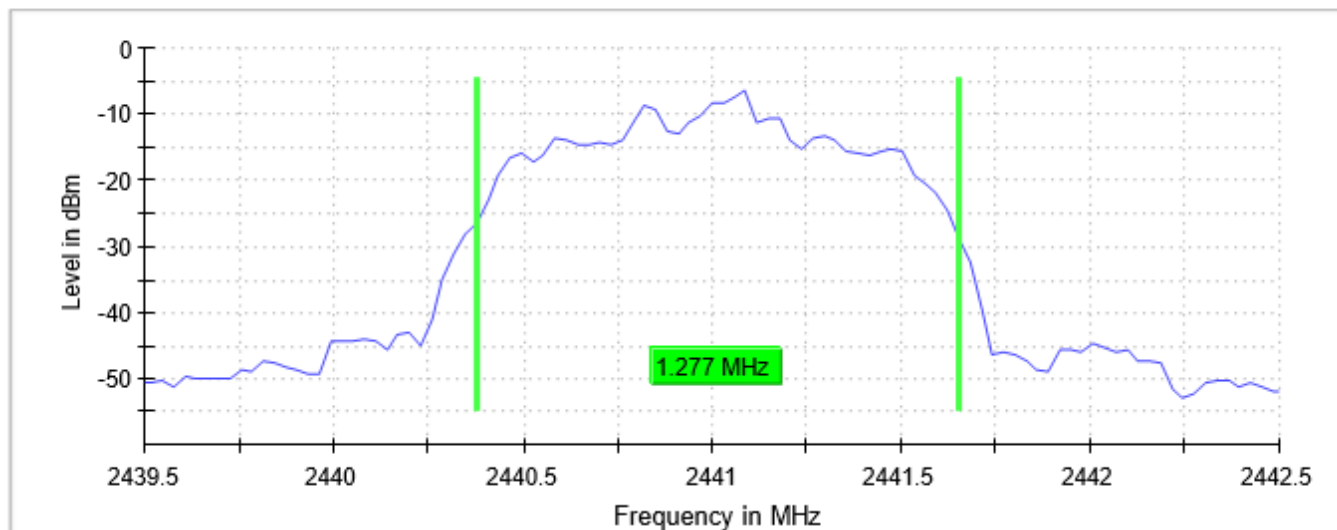
4.4.6.2 3-DH1

Plots:



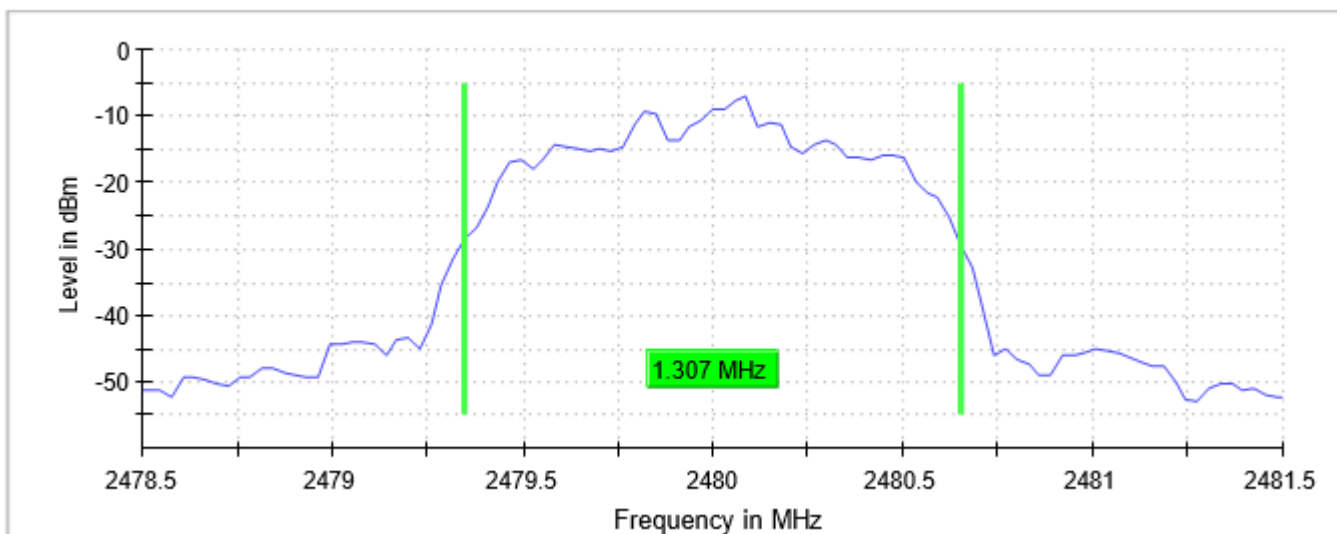
2441MHz

20 dB Bandwidth



2480MHz

20 dB Bandwidth



4.4.7 Occupied Channel Bandwidth 99%

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%

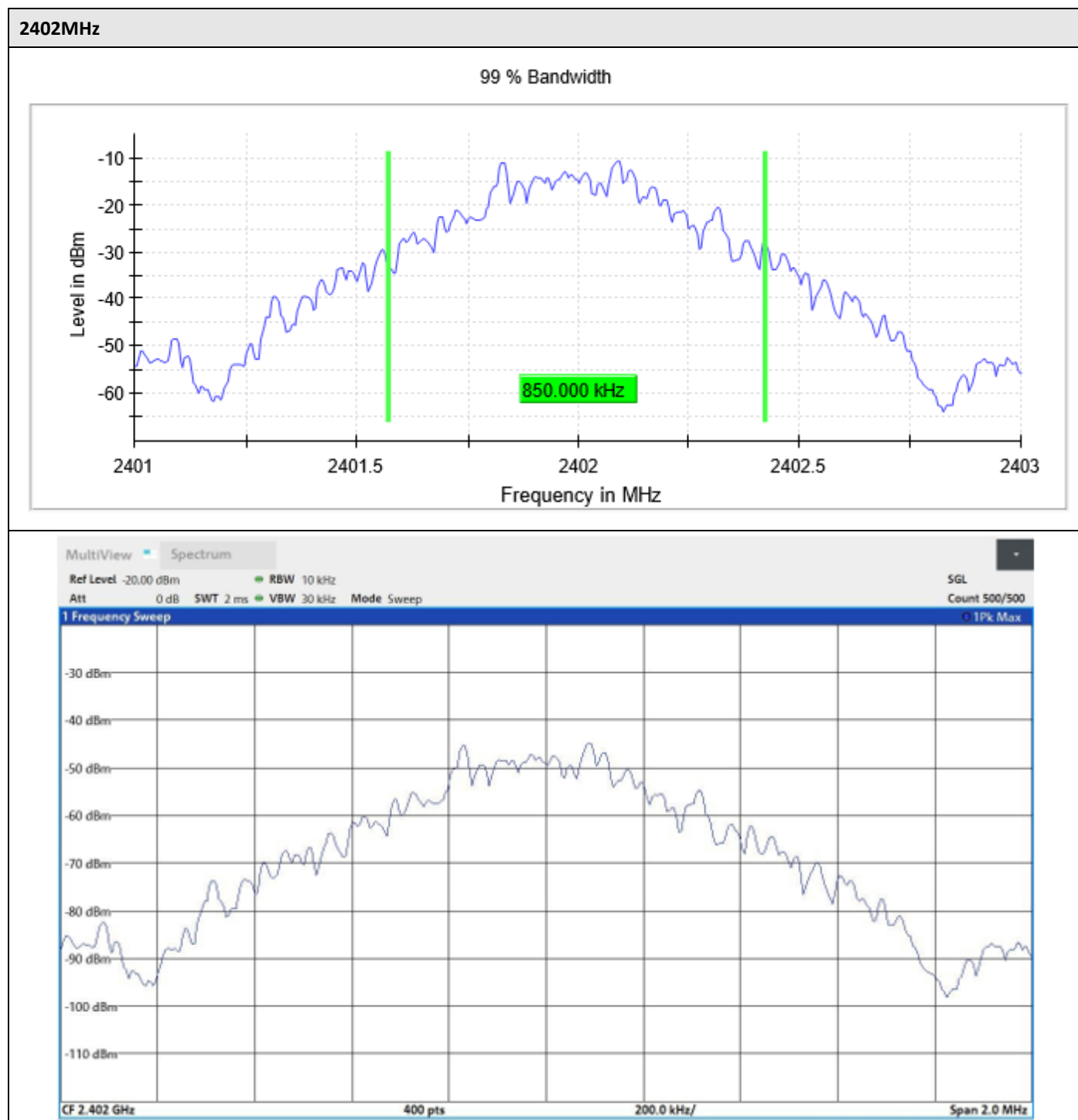
Channel / Frequency (MHz)	Packet Type	Bandwidth (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Result
0 / 2402	DH1	0.850000	2401.572500	2402.422500	PASS
	3-DH1	1.155000	2401.427500	2402.582500	PASS
39 / 2441	DH1	0.850000	2440.572500	2441.422500	PASS
	3-DH1	1.155000	2440.427500	2441.582500	PASS
78 / 2480	DH1	0.850000	2479.572500	2480.422500	PASS
	3-DH1	1.155000	2479.427500	2480.582500	PASS

Spectrum Analyzer Settings:

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
SweepTime	2.000 ms	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	500	500
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.04 dB	0.30 dB

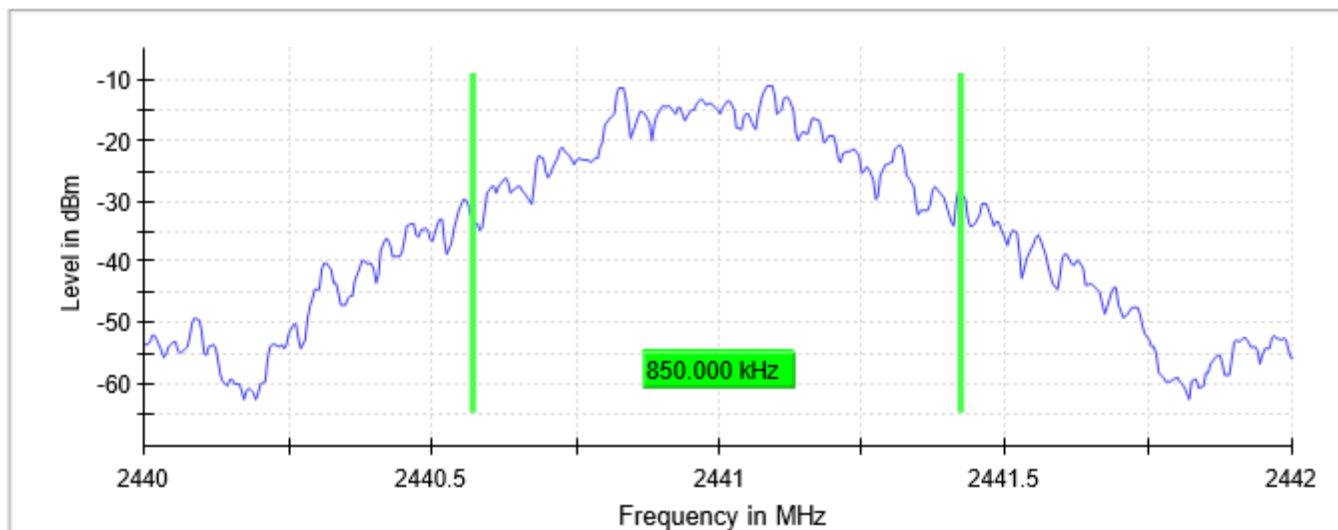
4.4.7.1 DH1

Plots:



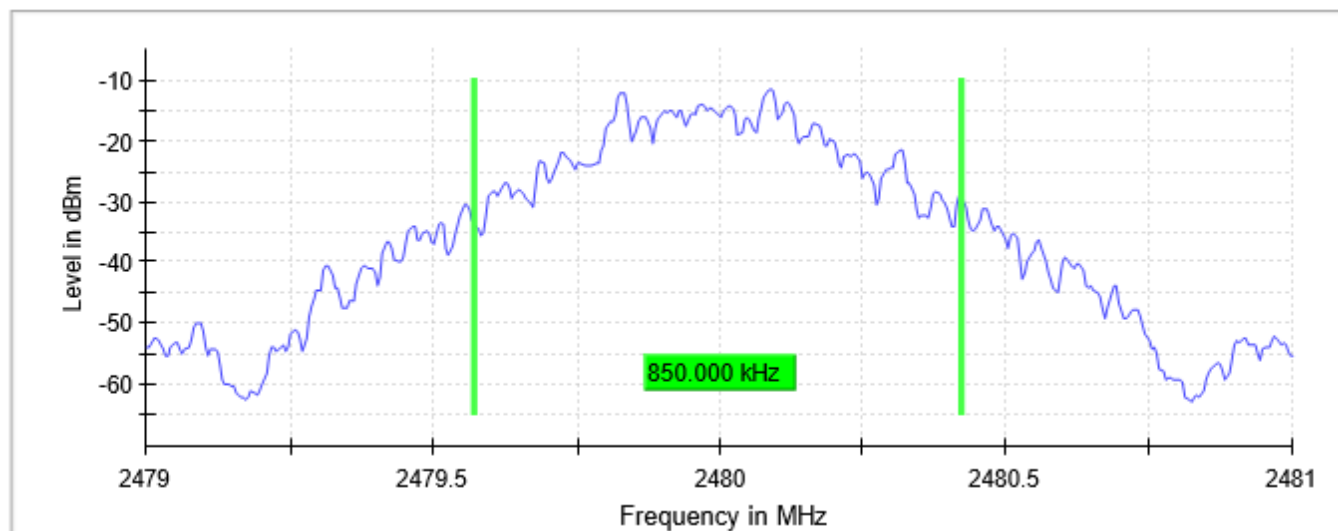
2441MHz

99 % Bandwidth



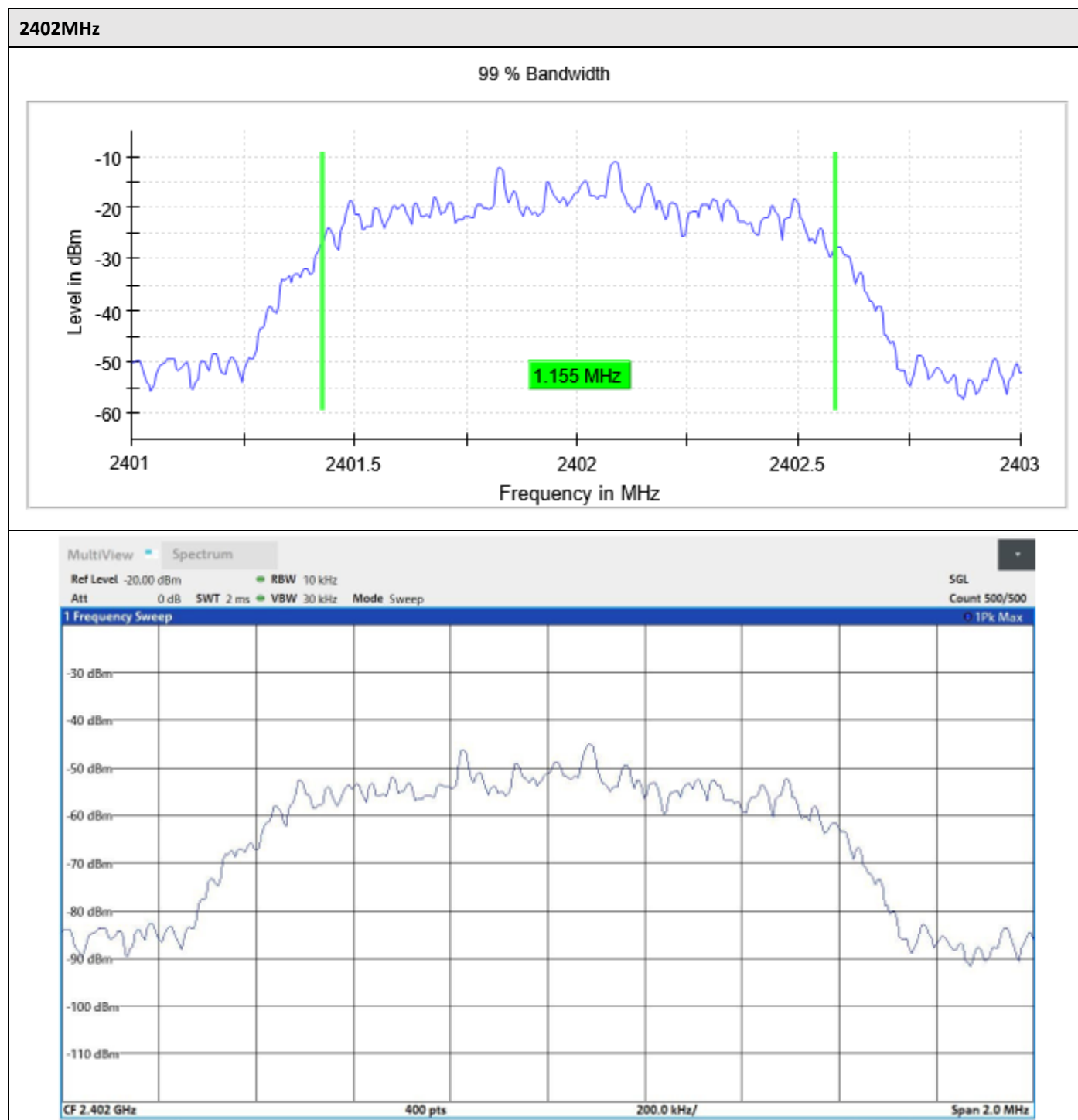
2480MHz

99 % Bandwidth

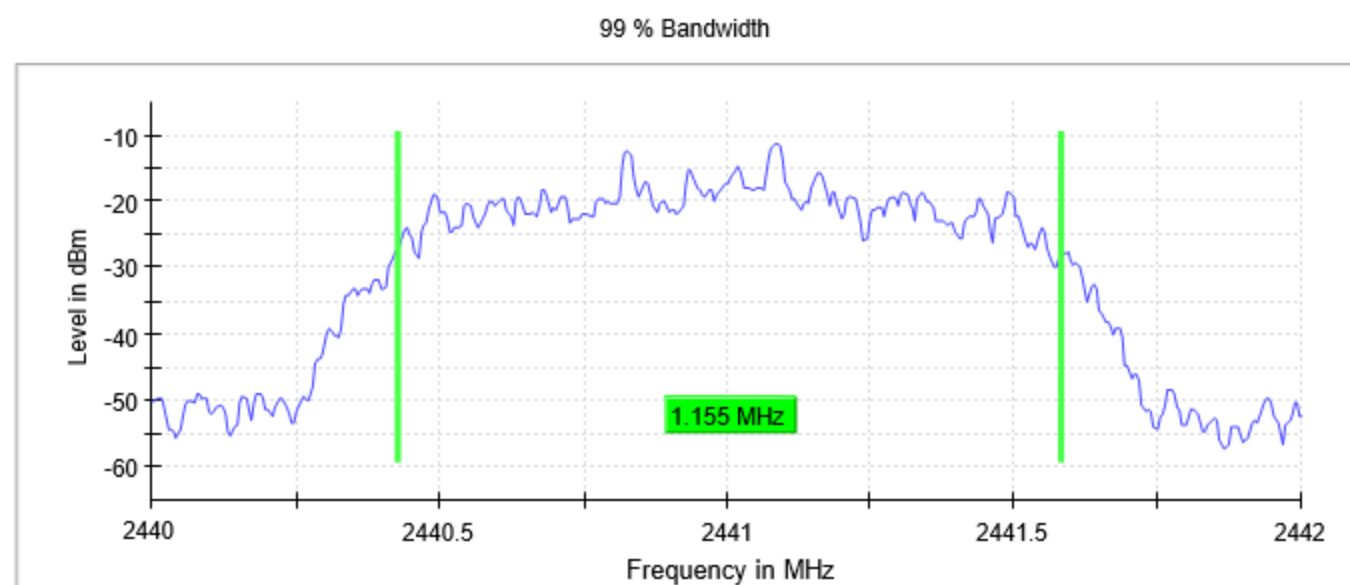


4.4.7.2 3-DH1

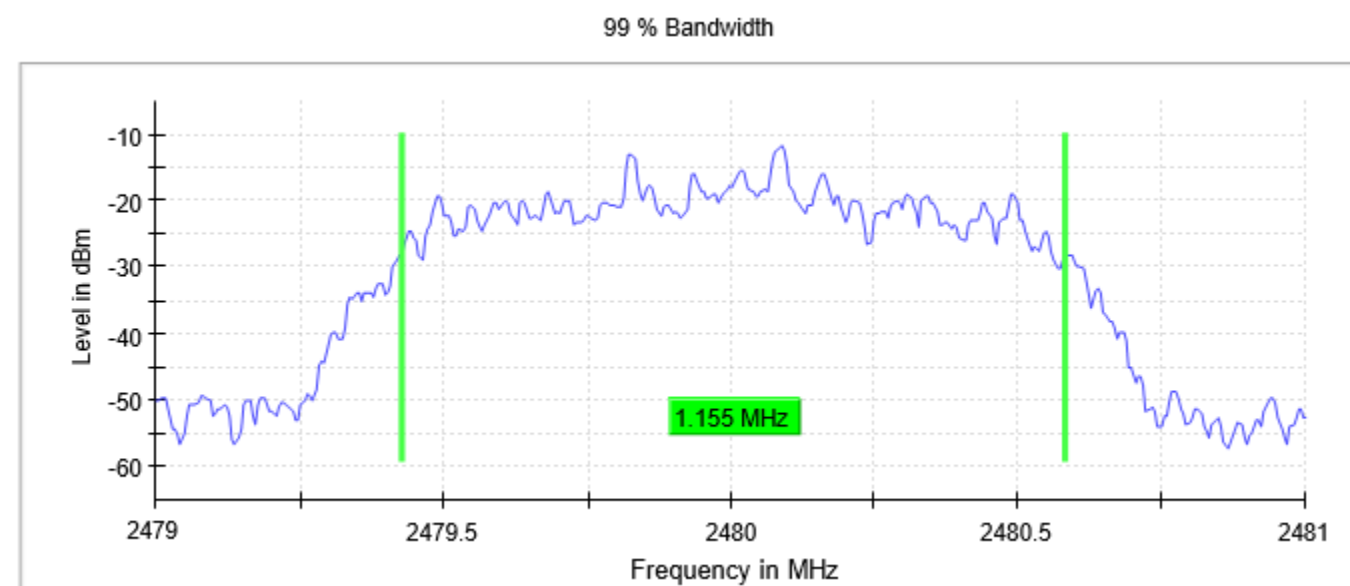
Plots:



2441MHz



2480MHz



4.4.8 Band Edge Low (2402 MHz)

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v05r02 and ANSI C63.10-2013 7.8.6, RSS-247 Section 5.5

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

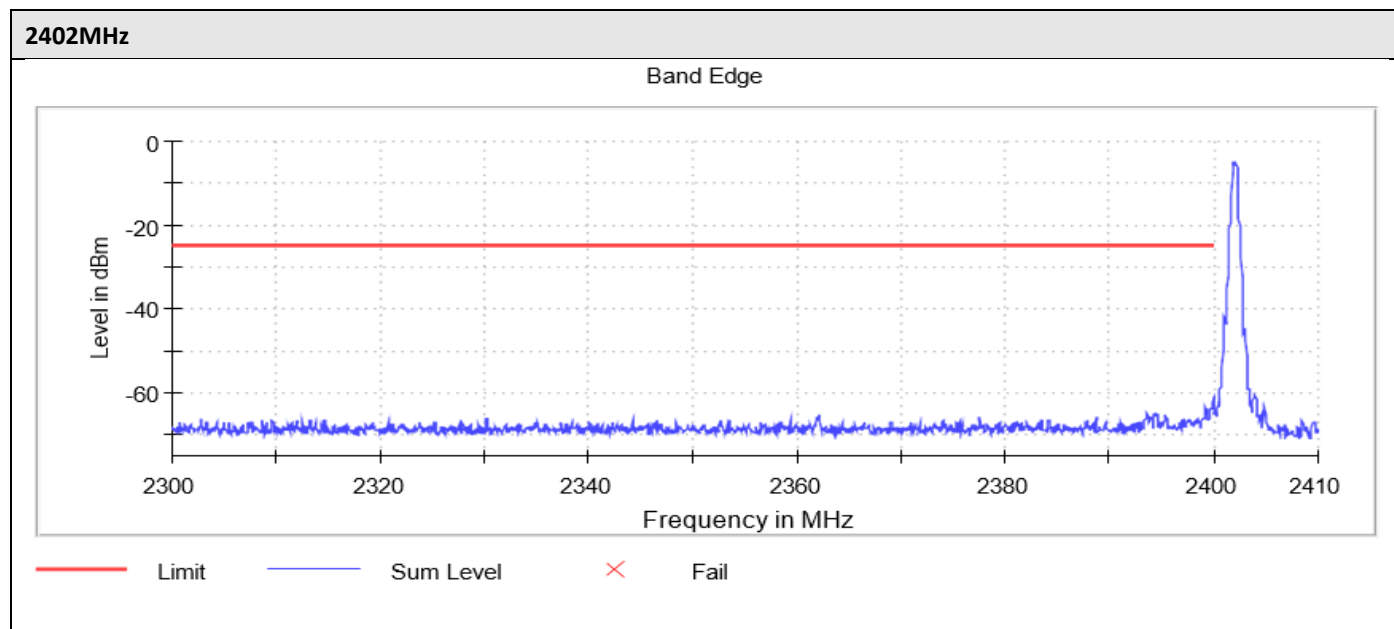
Data Rate	Frequency (MHz)	Level(dBm)
DH1	2401.825000	-4.9
3-DH1	2401.825000	-4.6

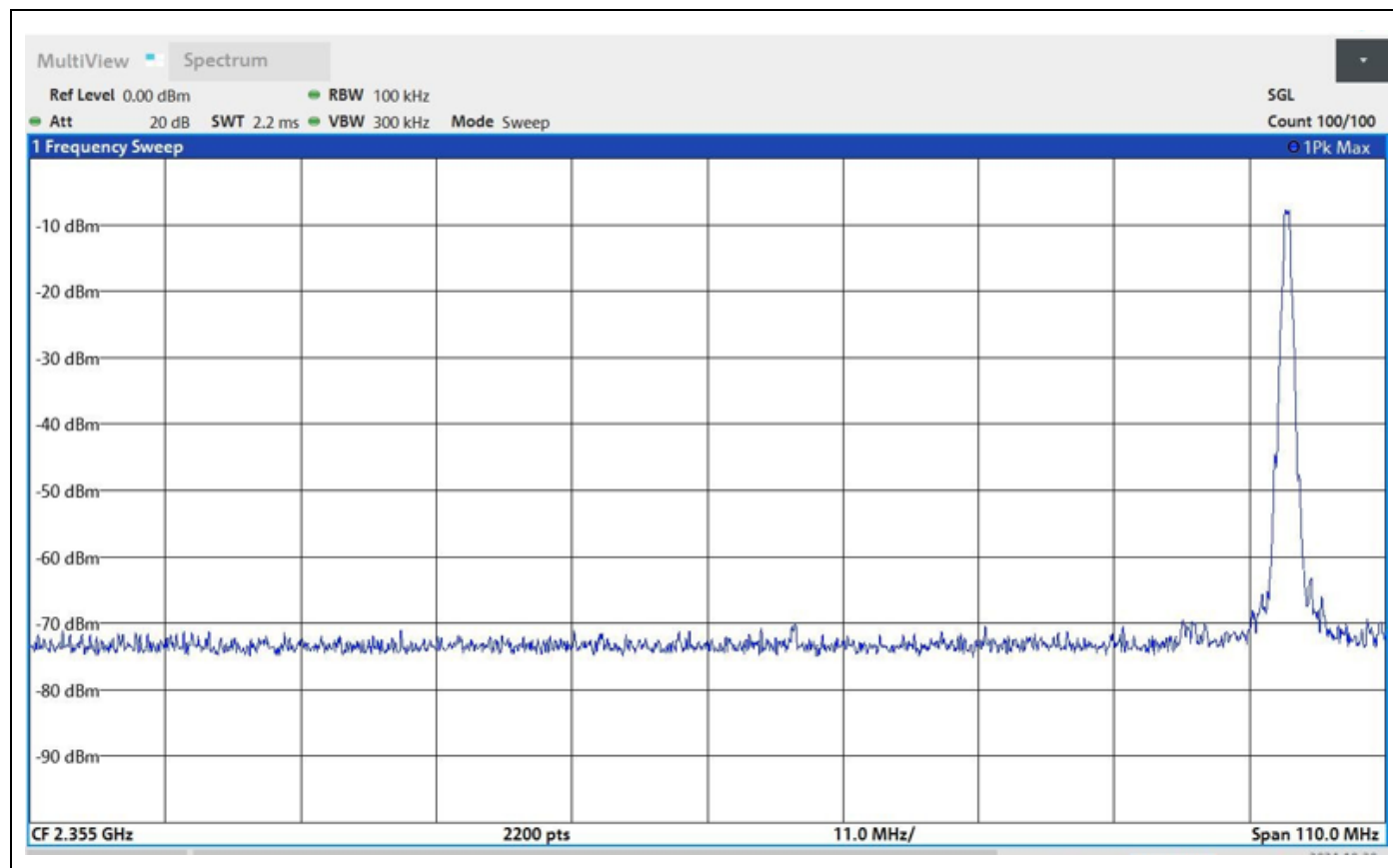
4.4.8.1 DH1

Measurements:

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.975000	-60.7	35.8	-24.9	PASS
2399.925000	-62.3	37.4	-24.9	PASS
2399.875000	-62.3	37.4	-24.9	PASS
2399.825000	-62.7	37.8	-24.9	PASS
2399.775000	-62.8	37.9	-24.9	PASS
2399.175000	-63.3	38.4	-24.9	PASS
2399.225000	-63.3	38.4	-24.9	PASS
2399.625000	-63.6	38.7	-24.9	PASS
2399.325000	-63.7	38.8	-24.9	PASS
2399.375000	-63.7	38.8	-24.9	PASS
2399.675000	-63.8	38.9	-24.9	PASS
2399.725000	-63.8	38.9	-24.9	PASS
2399.575000	-64.0	39.1	-24.9	PASS
2399.125000	-64.3	39.4	-24.9	PASS
2399.275000	-64.5	39.6	-24.9	PASS

Plots:



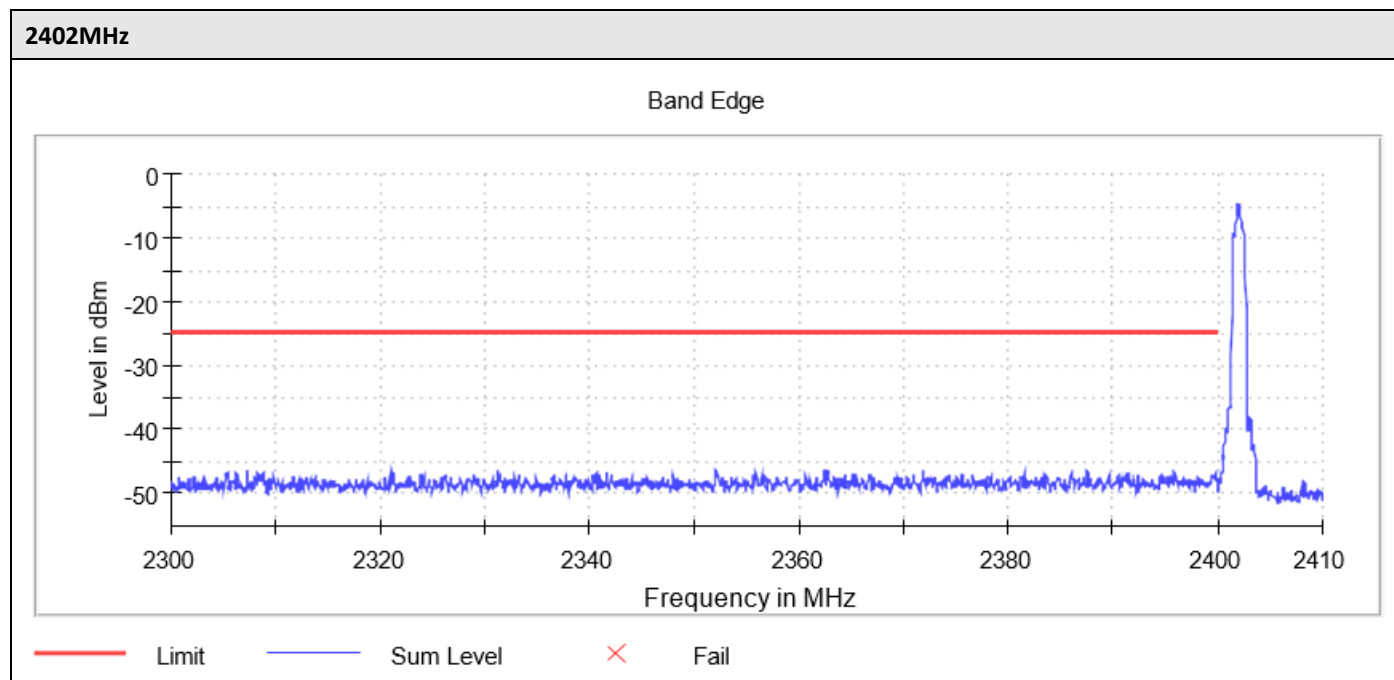


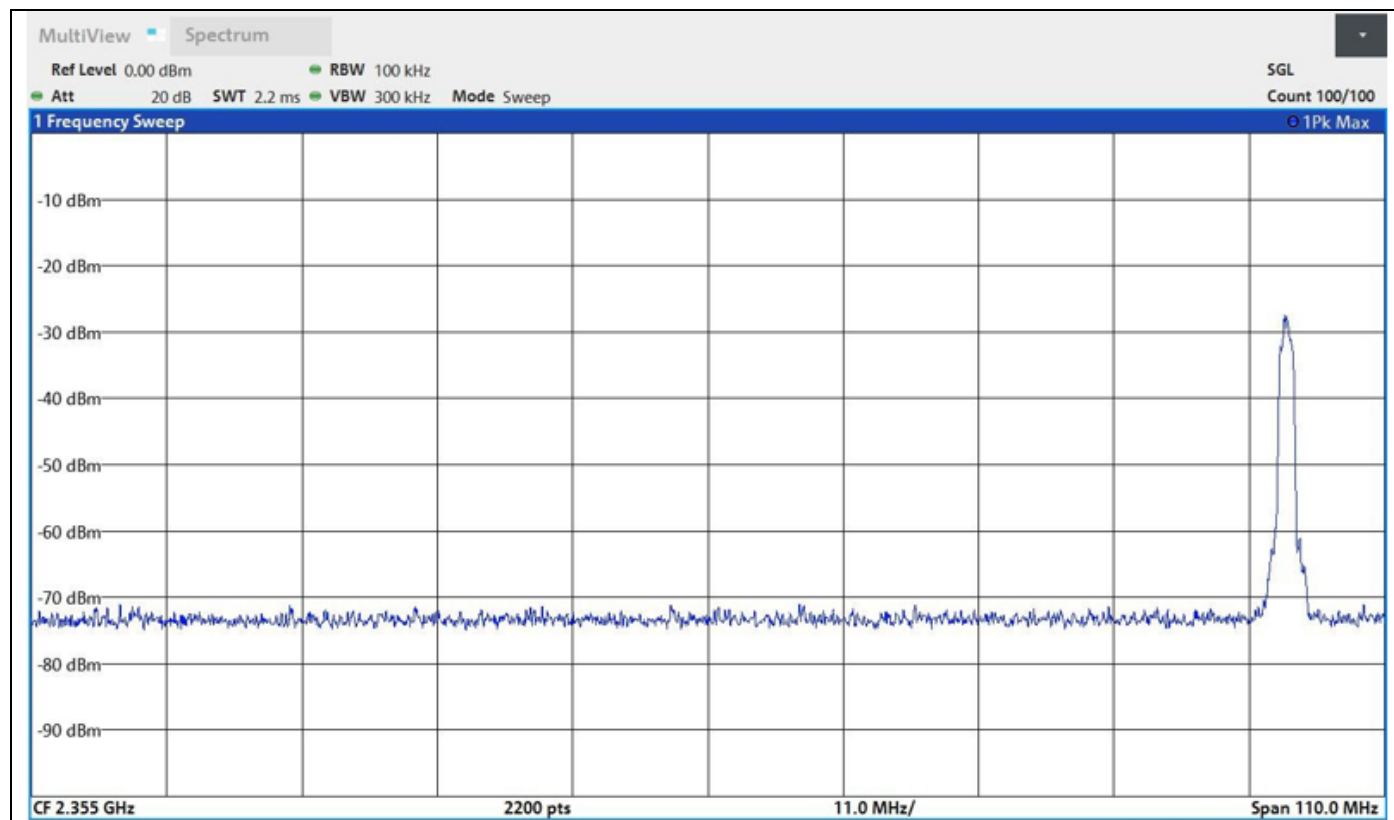
4.4.7.2 3-DH1

Measurements:

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2307.225000	-46.2	21.6	-24.6	PASS
2362.475000	-46.3	21.7	-24.6	PASS
2362.425000	-46.3	21.7	-24.6	PASS
2371.825000	-46.4	21.7	-24.6	PASS
2371.775000	-46.4	21.7	-24.6	PASS
2351.975000	-46.4	21.8	-24.6	PASS
2362.775000	-46.4	21.8	-24.6	PASS
2321.025000	-46.4	21.8	-24.6	PASS
2352.025000	-46.4	21.8	-24.6	PASS
2321.075000	-46.4	21.8	-24.6	PASS
2387.525000	-46.6	21.9	-24.6	PASS
2331.175000	-46.6	21.9	-24.6	PASS
2308.725000	-46.6	22.0	-24.6	PASS
2399.725000	-46.6	22.0	-24.6	PASS
2307.275000	-46.6	22.0	-24.6	PASS

Plots:





4.4.9 Band Edge High (2480 MHz)

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v05r02 and ANSI C63.10-2013 7.8.6, RSS-247 Section 5.5

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

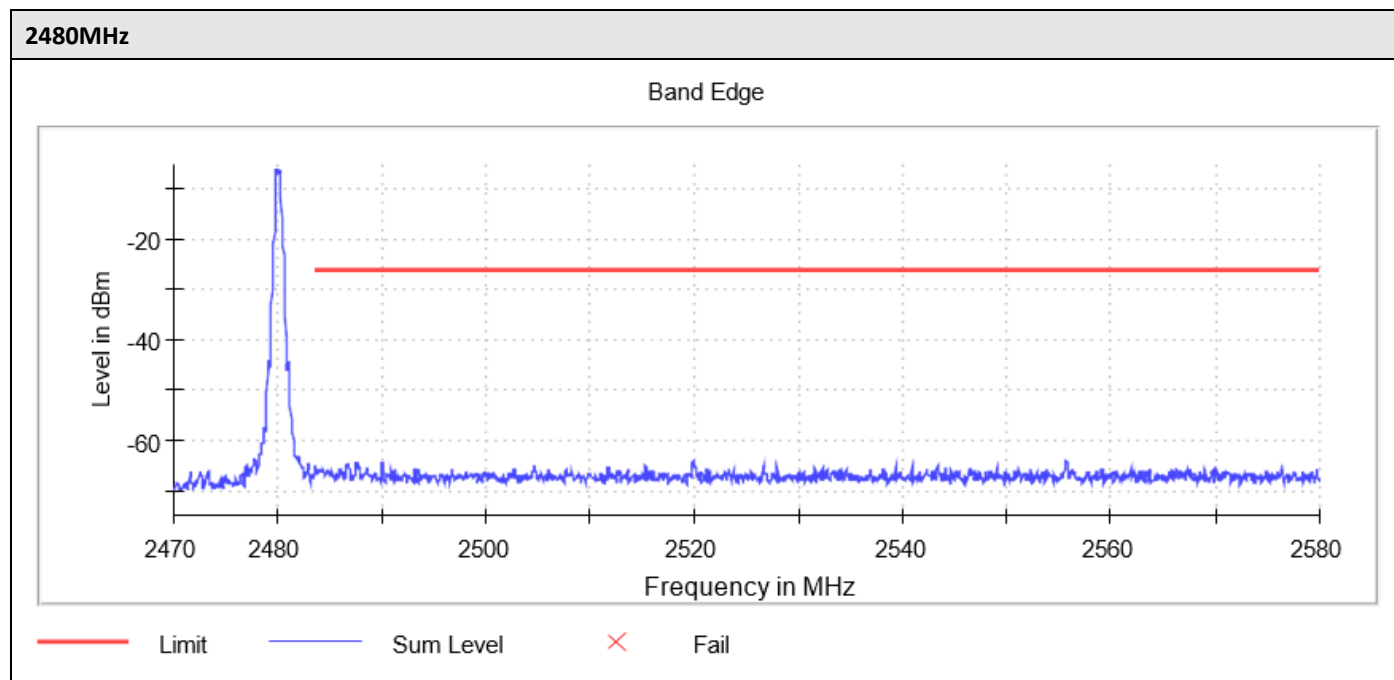
Data Rate	Frequency (MHz)	Level(dBm)
DH1	2479.825000	-5.9
3-DH1	2479.825000	-5.4

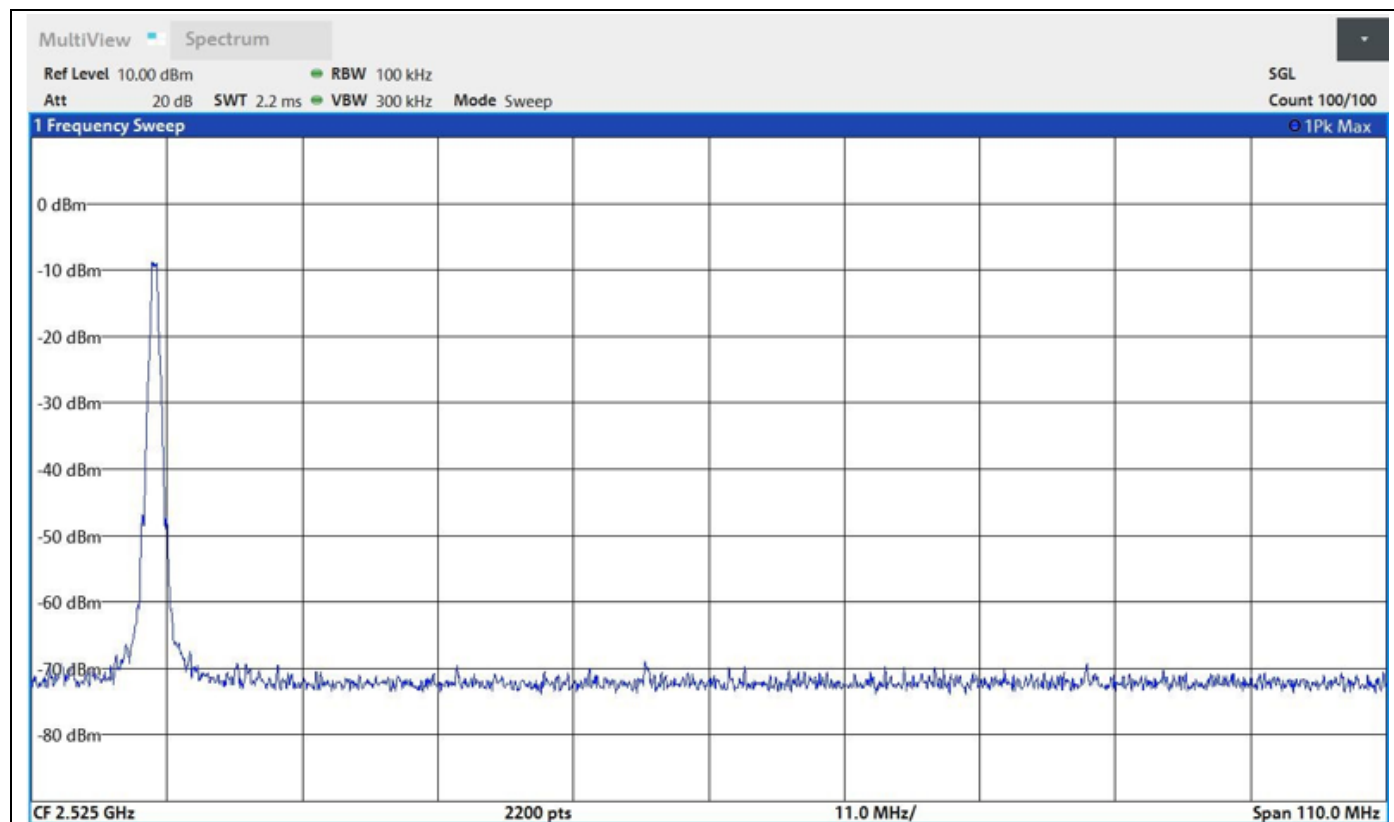
4.4.9.1 DH1

Measurements:

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2519.825000	-64.2	38.3	-25.9	PASS
2555.675000	-64.3	38.4	-25.9	PASS
2486.725000	-64.3	38.4	-25.9	PASS
2519.775000	-64.3	38.4	-25.9	PASS
2487.525000	-64.4	38.5	-25.9	PASS
2487.475000	-64.4	38.5	-25.9	PASS
2487.425000	-64.4	38.5	-25.9	PASS
2555.725000	-64.5	38.5	-25.9	PASS
2486.775000	-64.5	38.6	-25.9	PASS
2489.975000	-64.6	38.7	-25.9	PASS
2490.025000	-64.6	38.7	-25.9	PASS
2519.875000	-64.7	38.8	-25.9	PASS
2483.525000	-64.7	38.8	-25.9	PASS
2504.575000	-64.7	38.8	-25.9	PASS
2519.925000	-64.8	38.9	-25.9	PASS

Plots:



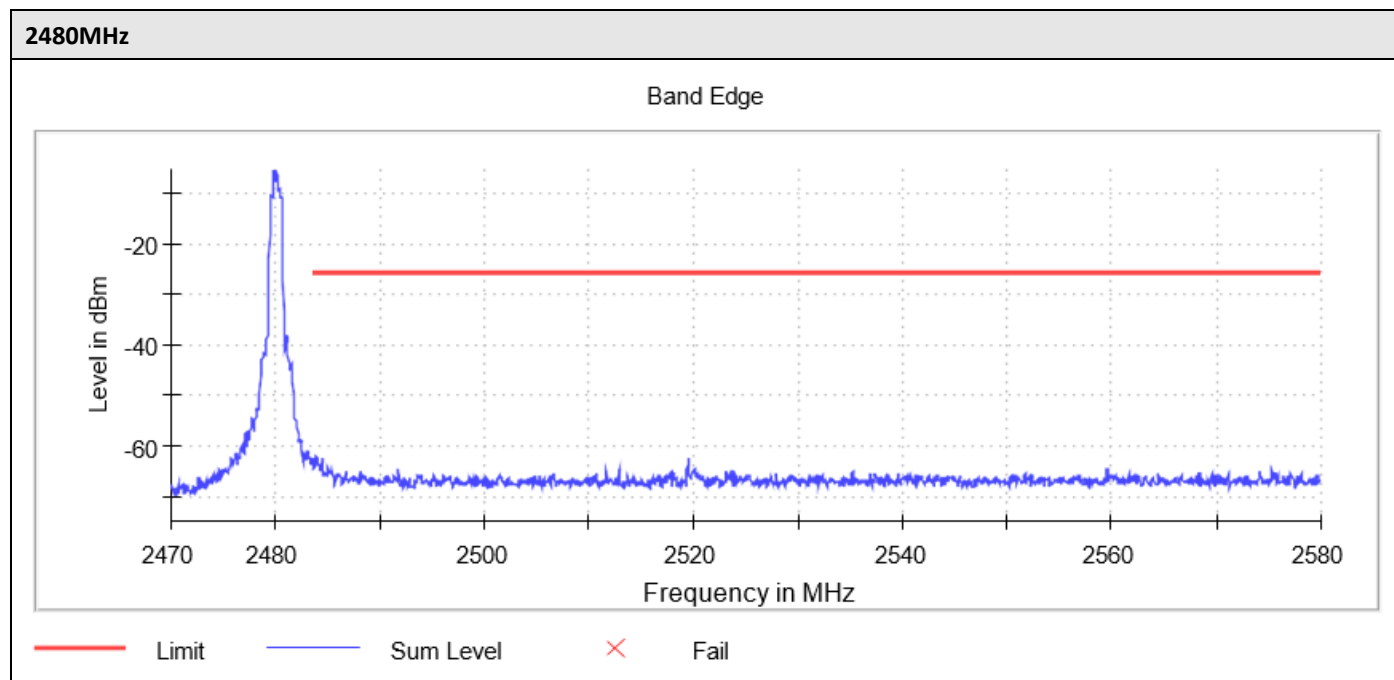


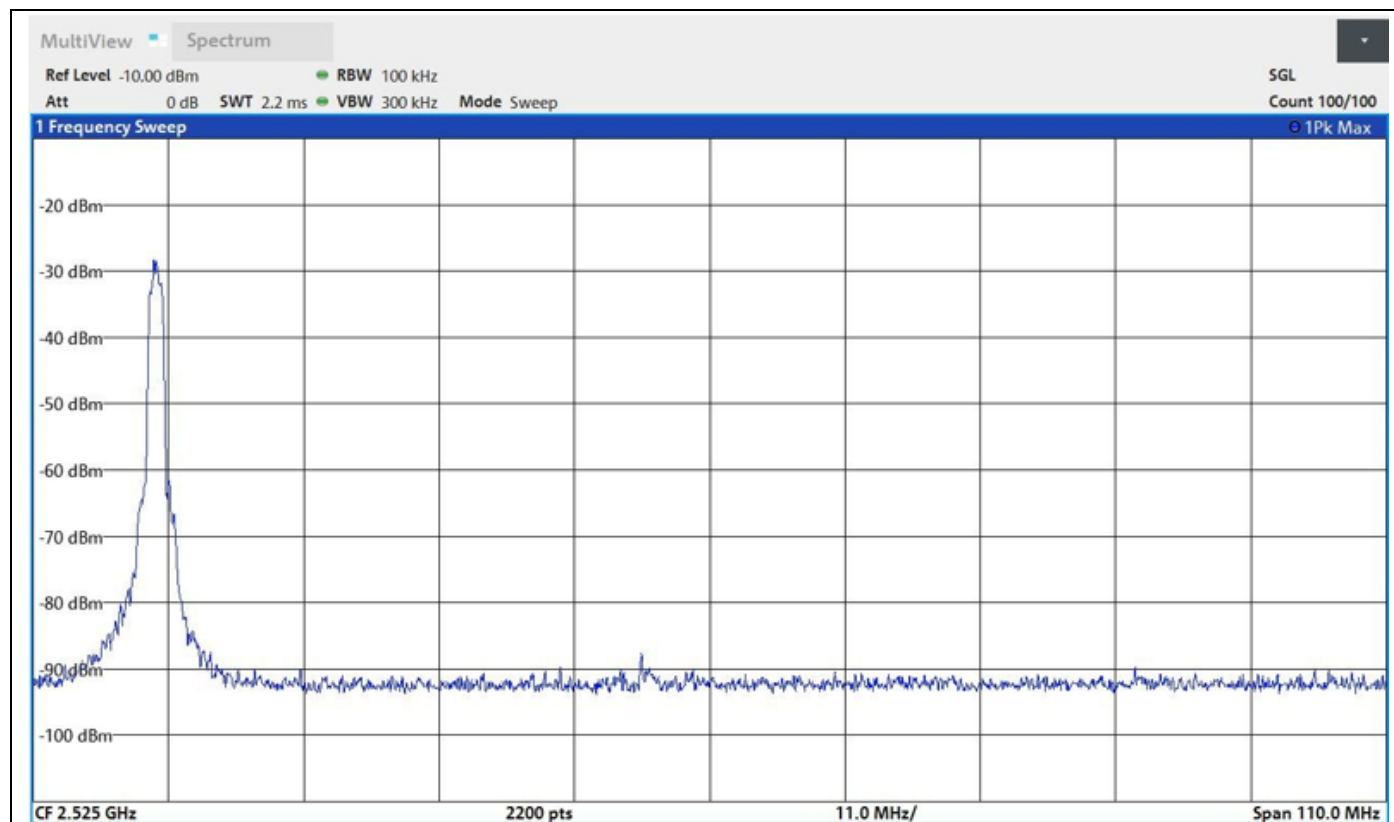
4.4.9.2 3-DH1

Measurements:

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.875000	-62.4	37.0	-25.4	PASS
2483.825000	-62.5	37.1	-25.4	PASS
2484.425000	-62.6	37.2	-25.4	PASS
2483.775000	-62.6	37.2	-25.4	PASS
2483.725000	-62.6	37.2	-25.4	PASS
2483.525000	-62.7	37.2	-25.4	PASS
2484.475000	-62.9	37.4	-25.4	PASS
2483.925000	-62.9	37.5	-25.4	PASS
2519.475000	-62.9	37.5	-25.4	PASS
2484.025000	-63.4	38.0	-25.4	PASS
2483.975000	-63.5	38.1	-25.4	PASS
2484.375000	-63.5	38.1	-25.4	PASS
2519.425000	-63.7	38.3	-25.4	PASS
2519.525000	-63.8	38.4	-25.4	PASS
2519.375000	-63.9	38.5	-25.4	PASS

Plots:





4.4.10 Tx Spurious Emission

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v05r02 and ANSI C63.10-2013 Section 7.8.8, RSS-247 Section 5.5. Measurement uncertainty calculated in accordance with ETSI TR 100 028-1. Expanded Uncertainty (K=2) < 1.8 dB

Spectrum Analyzer Pre-Measurement Settings:

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	238	~ 238
Sweeptime	23.700 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	3	3
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	7 / max. 40	max. 40
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

Spectrum Analyzer Final-Measurement Settings:

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	401	~ 401
Sweeptime	1.000 ms	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Average Linear	Average Linear

Sweeptype	Sweep	AUTO
Preamp	off	off

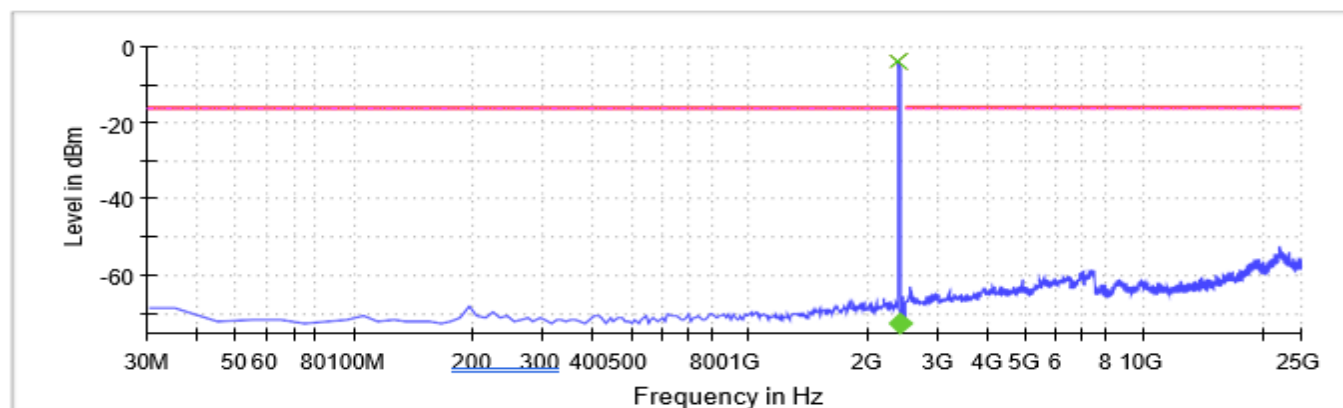
4.4.10.1 DH1

2402MHz				
Final Measurement				
Frequency (MHz)	Level Pre-Measurement (dBm)	Level (dBm)	Margin (dB)	Limit (dBm)
2399.759163	-5.9	-72.7	56.7	-16.0
Pre-Measurement				
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	
2395.021008	-4.0	-12.0	-16.0	
22096.740679	-52.4	36.4	-16.0	
22026.782623	-53.2	37.2	-16.0	
22166.698735	-53.3	37.2	-16.0	
22006.794607	-53.3	37.3	-16.0	
22046.770639	-53.4	37.4	-16.0	
22136.716711	-53.4	37.4	-16.0	
22116.728695	-53.5	37.5	-16.0	
22056.764647	-53.5	37.5	-16.0	
22106.734687	-53.6	37.6	-16.0	
22036.776631	-53.6	37.6	-16.0	
22176.692743	-53.7	37.7	-16.0	
22326.602863	-53.8	37.8	-16.0	
21946.830559	-53.8	37.8	-16.0	
22086.746671	-53.9	37.9	-16.0	

Plots:

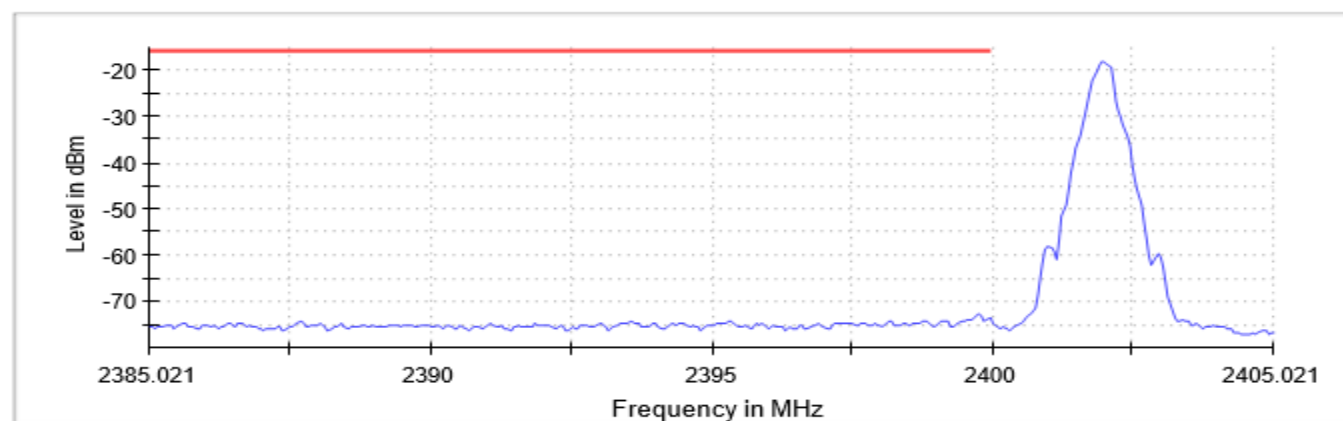
2402MHz

Spurious

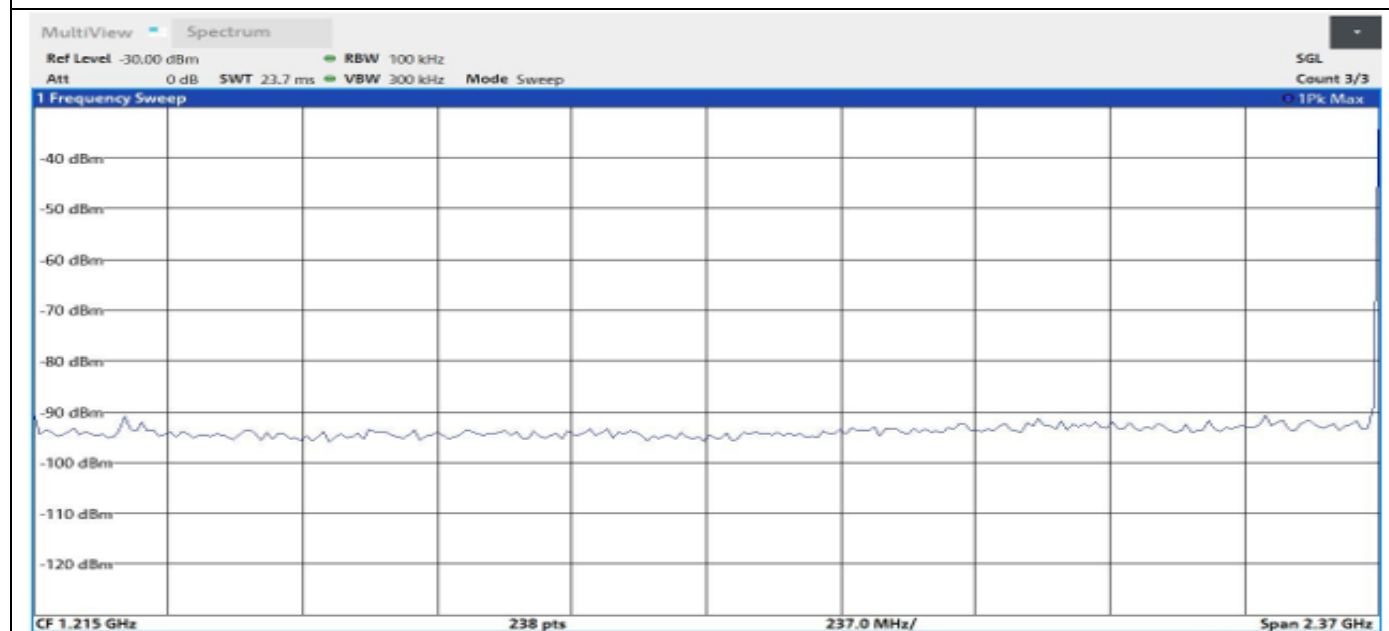


X Limit Final Critical
 ◆ Sum Level Fail
 ◆ Threshold Pass
 X Critical

FinalMeas_2395021008Hz



— Sum Level
 — Limit

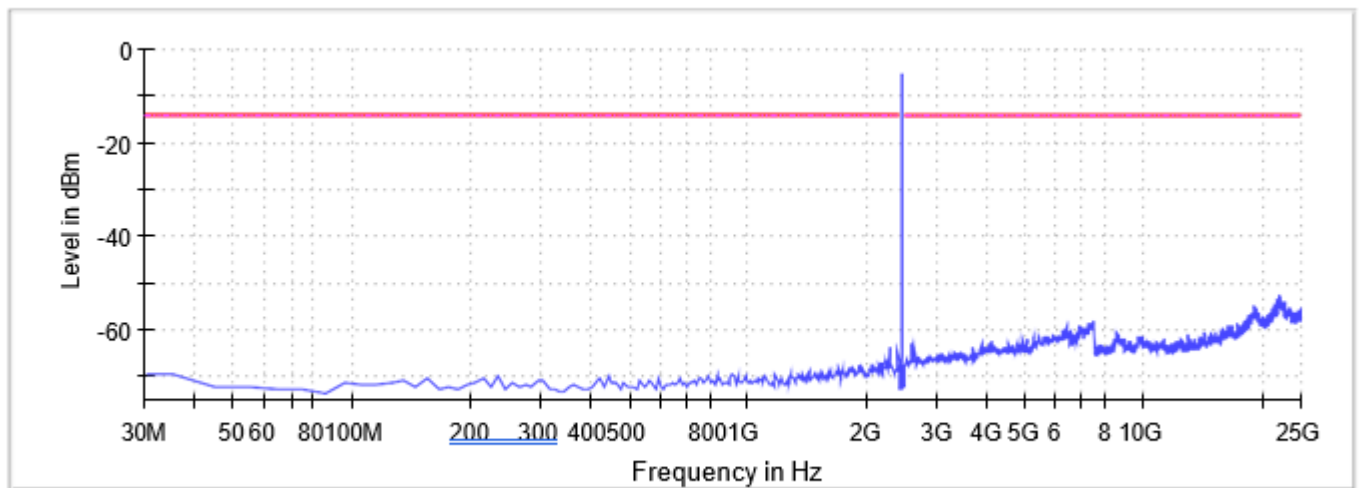


2441MHz

Pre-Measurement

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
21986.806591	-52.3	38.3	-14.1
22036.776631	-52.8	38.7	-14.1
22106.734687	-53.0	38.9	-14.1
22046.770639	-53.0	38.9	-14.1
22056.764647	-53.2	39.1	-14.1
22116.728695	-53.3	39.2	-14.1
21906.854527	-53.5	39.4	-14.1
21956.824567	-53.5	39.4	-14.1
22016.788615	-53.6	39.5	-14.1
22086.746671	-53.6	39.6	-14.1
22096.740679	-53.7	39.6	-14.1
22606.435087	-53.7	39.6	-14.1
22026.782623	-53.7	39.7	-14.1
22586.447071	-53.8	39.7	-14.1
22146.710719	-53.8	39.7	-14.1

Spurious

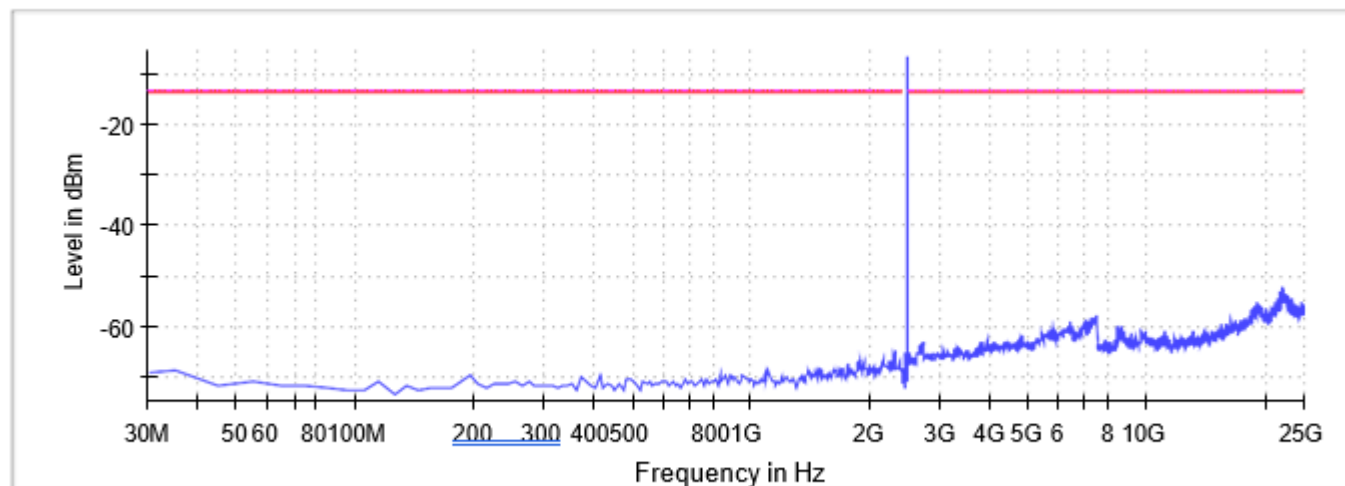


2480MHz

Pre-Measurement

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
21986.806591	-52.5	39.0	-13.5
22076.752663	-52.7	39.2	-13.5
22116.728695	-52.8	39.3	-13.5
22096.740679	-52.8	39.3	-13.5
22066.758655	-53.0	39.5	-13.5
22056.764647	-53.1	39.6	-13.5
21896.860519	-53.1	39.6	-13.5
22086.746671	-53.1	39.6	-13.5
22016.788615	-53.2	39.7	-13.5
22026.782623	-53.3	39.8	-13.5
22106.734687	-53.4	39.9	-13.5
21996.800599	-53.4	39.9	-13.5
22166.698735	-53.7	40.2	-13.5
22326.602863	-53.7	40.2	-13.5
21836.896471	-53.8	40.3	-13.5

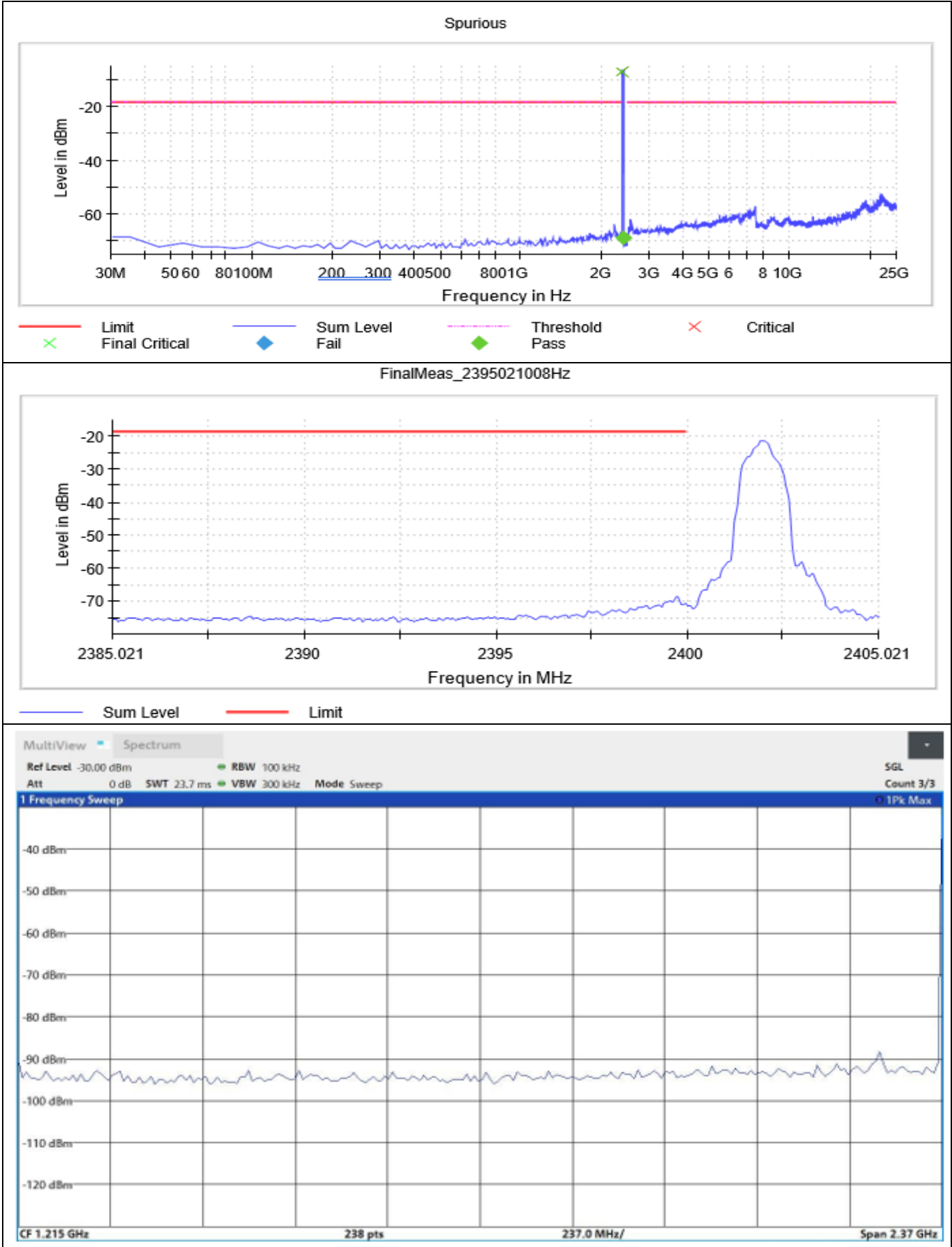
Spurious



4.4.10.2 3-DH1

2402MHz				
Final Measurement				
Frequency (MHz)	Level Pre-Measurement (dBm)	Level (dBm)	Margin (dB)	Limit (dBm)
2399.709287	-9.0	-68.8	50.0	-18.8
Pre-Measurement				
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	
2395.021008	-7.2	-11.6	-18.8	
22036.776631	-52.3	33.5	-18.8	
22076.752663	-52.7	34.0	-18.8	
22056.764647	-52.9	34.2	-18.8	
22116.728695	-52.9	34.2	-18.8	
22066.758655	-53.1	34.4	-18.8	
22096.740679	-53.2	34.4	-18.8	
21936.836551	-53.4	34.6	-18.8	
22126.722703	-53.4	34.6	-18.8	
22136.716711	-53.4	34.6	-18.8	
22146.710719	-53.4	34.7	-18.8	
22246.650799	-53.7	34.9	-18.8	
22086.746671	-53.7	35.0	-18.8	
22386.566911	-53.8	35.0	-18.8	
22106.734687	-53.8	35.0	-18.8	

Plots:

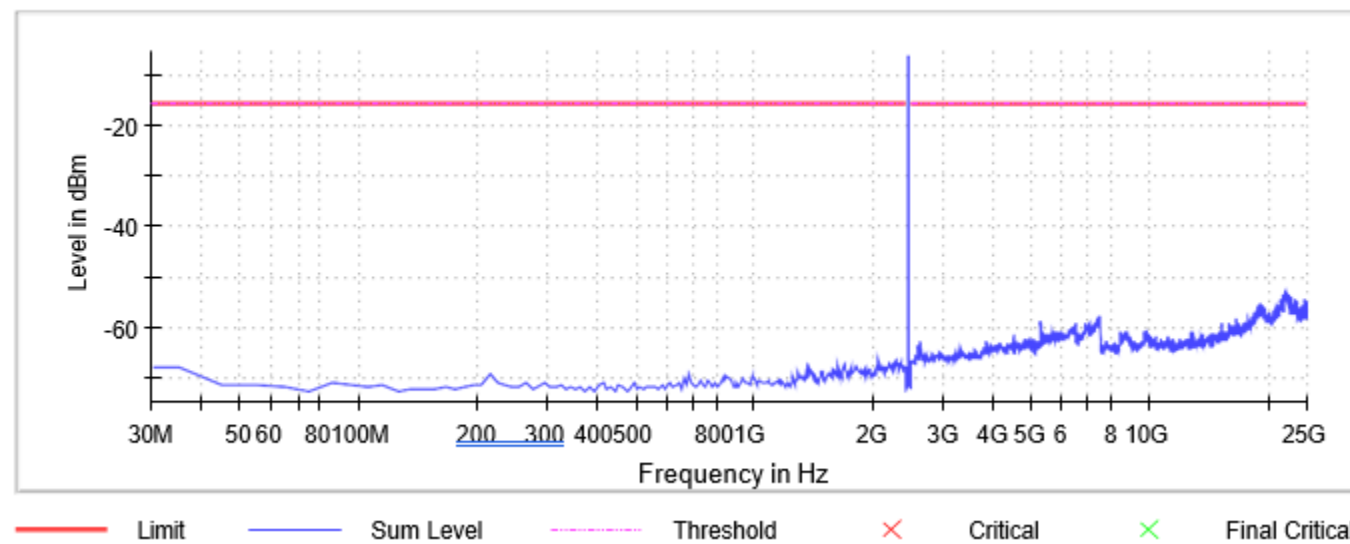


2441MHz

Pre-Measurement

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
21946.830559	-53.0	37.3	-15.6
22026.782623	-53.0	37.4	-15.6
22046.770639	-53.1	37.5	-15.6
22096.740679	-53.3	37.6	-15.6
22116.728695	-53.4	37.7	-15.6
22006.794607	-53.4	37.7	-15.6
22076.752663	-53.4	37.8	-15.6
22056.764647	-53.4	37.8	-15.6
22316.608855	-53.4	37.8	-15.6
22016.788615	-53.5	37.8	-15.6
22086.746671	-53.6	38.0	-15.6
22136.716711	-53.7	38.0	-15.6
21826.902463	-53.7	38.1	-15.6
22516.489015	-53.7	38.1	-15.6
22506.495007	-53.7	38.1	-15.6

Spurious

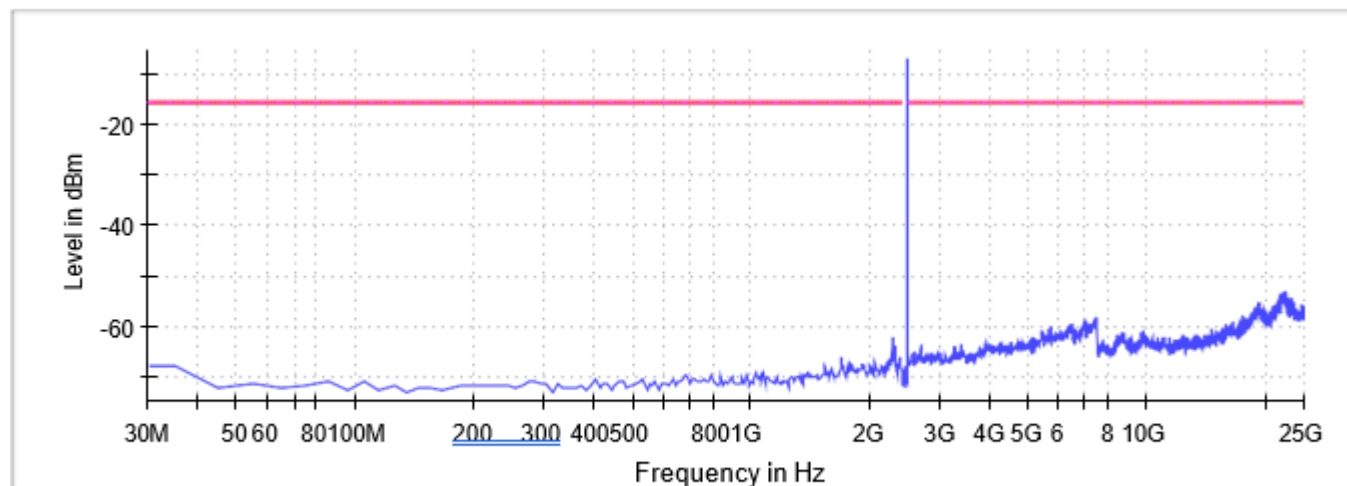


2480MHz

Pre-Measurement

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
22386.566911	-53.3	37.9	-15.5
22136.716711	-53.4	37.9	-15.5
22086.746671	-53.6	38.2	-15.5
22076.752663	-53.8	38.4	-15.5
22456.524967	-53.8	38.4	-15.5
22066.758655	-53.8	38.4	-15.5
22056.764647	-53.9	38.4	-15.5
22406.554927	-54.0	38.6	-15.5
22046.770639	-54.1	38.6	-15.5
22216.668775	-54.1	38.6	-15.5
22006.794607	-54.1	38.6	-15.5
22346.590879	-54.1	38.7	-15.5
21956.824567	-54.1	38.7	-15.5
22156.704727	-54.1	38.7	-15.5
21936.836551	-54.2	38.7	-15.5

Spurious



— Limit — Sum Level — Threshold × Critical × Final Critical

5. Radiated Testing

5.1 Test Summary

Start: 07/23/2024	End: 08/02/2024	Temperature: 22.7°C	Initials: AP/AB
		Humidity: 48.2%R.H	

DUT S/N	J23133#3 NA 2B	DUT Operating Mode		BT Classic
Comment	Worst case modulation 3-DH1 from EDR and on DH1 from BDR Family are tested.			
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	√

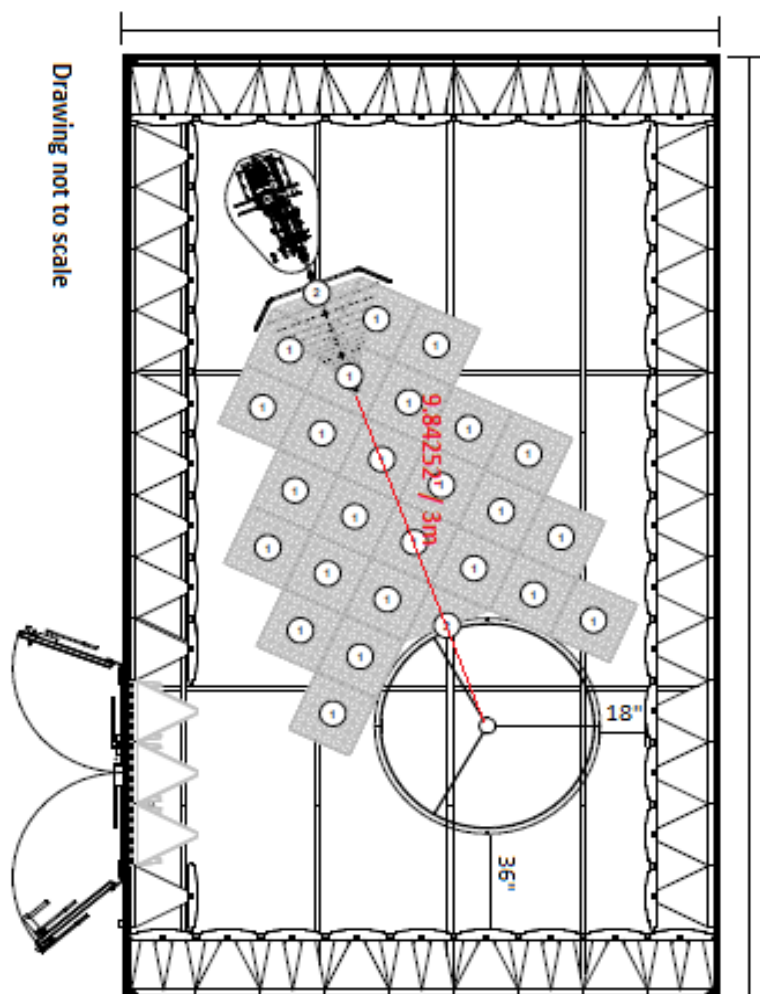
Notes: √ meets the requirements of the acceptance criteria.

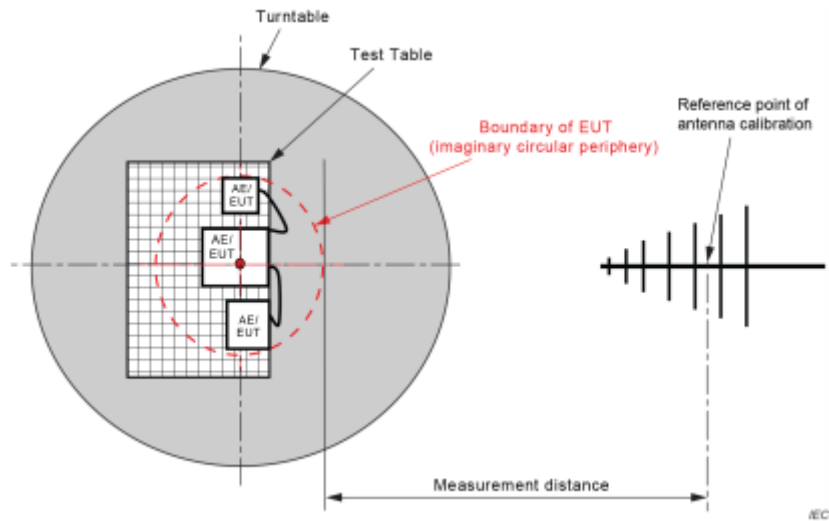
5.2 Test Setup

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 sVSWR

Chamber Dimensions





5.3 Test Equipment Used

ID #	Equipment	Manufacturer	Model #	Serial #	Cal Due
BVD0217	Receiver 2Hz-44GHz	Rohde & Schwarz	ESW44	101871	4/21/2025
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
BVD0312	Optima 12V Blue top Marine battery	Optima	D34M	N/A	N/A
BVD0187	Preamplifier 25dB cal to 100kHz-1GHz	Rohde & Schwarz	TS-PR1	102080	1/23/2025
BVD0184	Preamplifier 29dB 1-18GHz	Rohde & Schwarz	TS-PR18	101646	6/20/2025
BVD0185	Preamplifier 45dB 18-40GHz	Rohde & Schwarz	TS-PR1840	100064	6/20/2025
BVD0011	Loop Antenna 9kHz-30MHz	Rohde & Schwarz	FMZB1519B	145	6/10/2025
BVD0021	UltraLog Antenna 30-6000MHz	Rohde & Schwarz	HL562E	101113	6/26/2025
BVD0267	Double Ridge Waveguide 800MHz-18GHz	Rohde & Schwarz	HF907	102832	6/27/2025
BVD0320	18-40GHz Horn Antenna	L3 Narda ATM	PNR 180-442-KF	136164-01	7/15/2025
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	6/17/2025
BVD0394	Double Shielded N-Type Cable 6.9 Meter	Rohde & Schwarz	N-Type	N/A	4/8/2025
BVD0398	Double Shielded N-Type Cable 2 Meter	Rohde & Schwarz	N-Type	N/A	4/8/2025
BVD0563	RF Cable Assembly	Huber+Suhner, inc	SUCOFLEX 102A	502215/2A	10/17/2024
BVD0407	Double Shielded N-Type Cable 410mm (For PreAmp)	Rohde & Schwarz	N-Type	N/A	10/15/2025
BVD0495	SMA Shielded Cable approx 100mm (for Pre-Amp)	Rohde & Schwarz	SMA-Type	N/A	7/15/2025
BVD0587	Double Shielded N-Type Cable 440mm (For PreAmp)	Winchester Interconnect	250-251-660157 REV A	N/A	1/9/2025
BVD0229	Temp and Humidity Meter	Fluke	971	12001009	5/23/2025

Equipment List (Software)

ID #	Equipment	Manufacturer	Model	Version No.	
N/A	EMC Test Software	Rodhe & Schwarz	EMC32	2024.0.8.0	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	MOBIS	BMM6100000	231107 01	N/A
N/A	Shark Fin Antenna	Alfa Romeo	B901	719147	N/A
N/A	Antenna	Aptiv	APN35409682	N/A	N/A
N/A	Camera	N/A	23295906C	N/A	N/A
N/A	MFGBridge_Tool/Dut labtool	N/A	N/A	N/A	2.0.0.89

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 ($\mu\text{V/m}$)	Field strength (dB $\mu\text{V/m}$)	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:

- The lower limit shall apply at the transition frequencies.
- 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.
- 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 (dB $\mu\text{V/m}$)
0.009 ~ 0.490	$2400/F(\text{kHz}) + 40 \text{ Log } (300\text{m}/3\text{m})$	128.5 ~ 93.8
0.490 ~ 1.705	$24000/F(\text{kHz}) + 40 \text{ Log } (30\text{m}/3\text{m})$	73.8 ~ 62.96
1.705 ~ 30.0	$29.54 + 40 \text{ Log } (30\text{m}/3\text{m})$	69.54

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 .

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 EMI Test Receiver/Spectrum Analyzer Settings

Below 1GHz

Frequency	RBW	Detector
9KHz to 30MHz	9KHz	Peak

Frequency	RBW	Detector
30MHz to 1GHz	120KHz	Peak/Quasi Peak

Above 1GHz

Frequency	RBW	Detector
1GHz to 40GHz	1 MHz	Peak/ Power Averaging (RMS)

Note: Trace average is 100 traces for continuous transmission else the traces shall be increased by a factor of $1/x$, where x is the duty cycle. Duty cycle $> 98\%$ no correction factor needed and for Duty cycle $< 98\%$ the correction factor $10 \log (1/x)$, where x is the duty cycle.

5.6 Test Plots

Uncertainty

Radiated Emissions (30MHz to 40GHz)

Test Engineer Initials: AP/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:

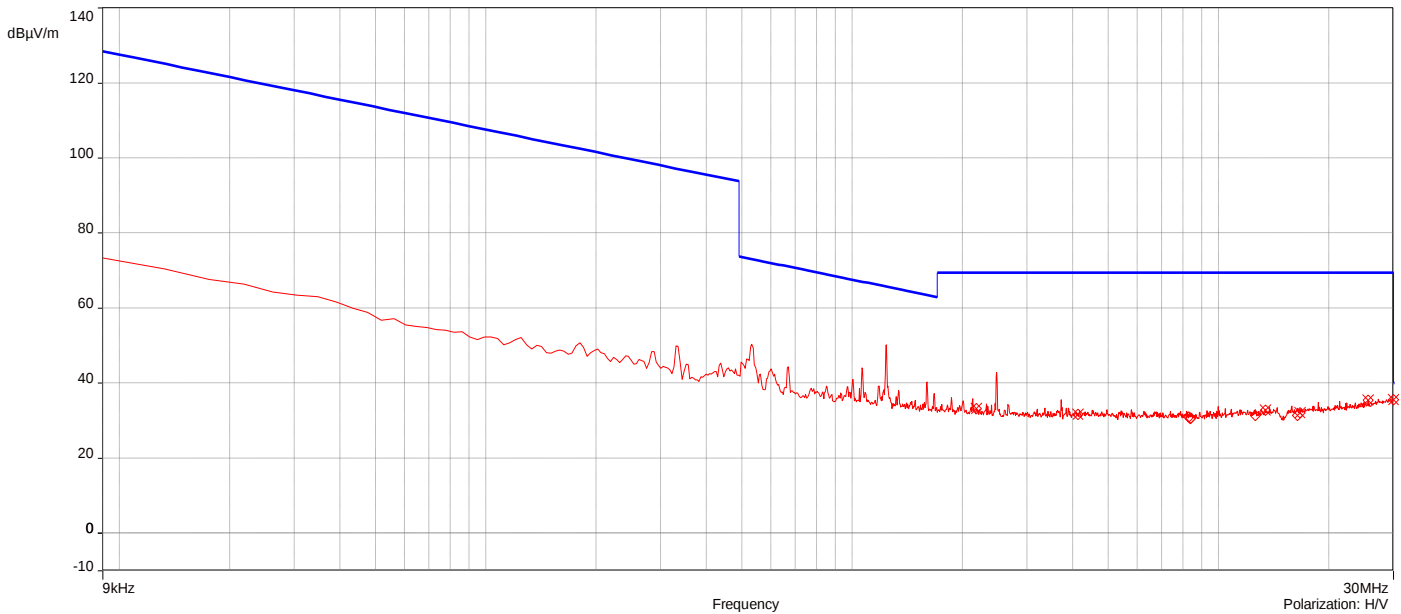
1. Level Average Reading (dBμV/m) = Raw Average Level + Correction Factor
2. Correction Factor (dB) = Antenna Factor + Cable Loss – Preamplifier Gain
3. Margin = Level Average Reading – Limit

J23133_BT_DH1_Ch 39_9kHz-30MHz_Ground-Parallel

8/2/2024 11:10:23 AM

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	33.20	19.59	69.54	-36.34	1.00	106.30	H/V	Passed
2.	4.126924MHz	31.63	19.74	69.54	-37.91	1.00	24.40	H/V	Passed
3.	13.404037MHz	32.80	19.90	69.54	-36.74	1.00	262.80	H/V	Passed
4.	16.694949MHz	32.18	20.11	69.54	-37.36	1.00	71.90	H/V	Passed
5.	25.586408MHz	35.39	21.15	69.54	-34.15	1.00	271.70	H/V	Passed
6.	30MHz	35.64	22.04	40.00	-4.36	1.00	239.50	H/V	Passed

Overall Graphs:

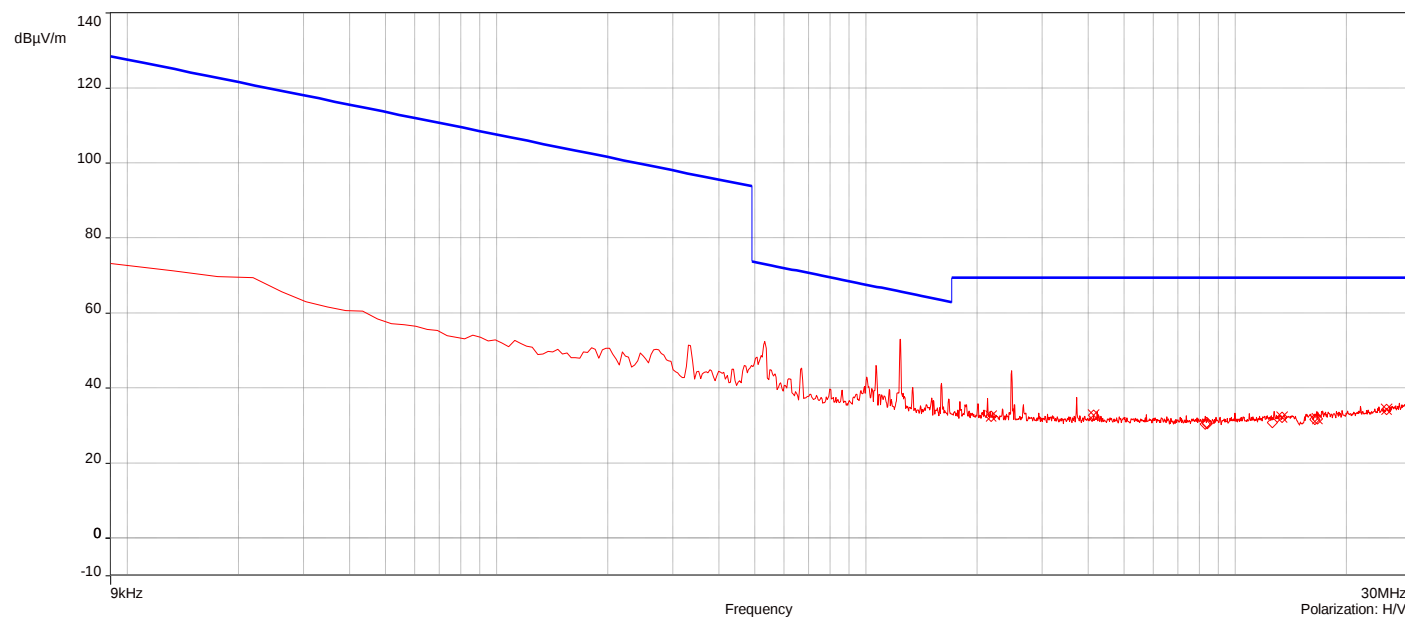


J23133_BT_DH1_Ch 39_9kHz-30MHz_Parallel

8/2/2024 10:47:17 AM

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	32.59	19.59	69.54	-36.95	1.00	76.40	H/V	Passed
2.	4.126924MHz	32.86	19.74	69.54	-36.68	1.00	85.00	H/V	Passed
3.	13.365472MHz	32.24	19.90	69.54	-37.30	1.00	230.50	H/V	Passed
4.	16.694949MHz	31.78	20.11	69.54	-37.76	1.00	123.80	H/V	Passed
5.	25.663539MHz	34.34	21.15	69.54	-35.20	1.00	344.10	H/V	Passed
6.	30MHz	34.85	22.04	40.00	-5.15	1.00	9.80	H/V	Passed

Overall Graphs:

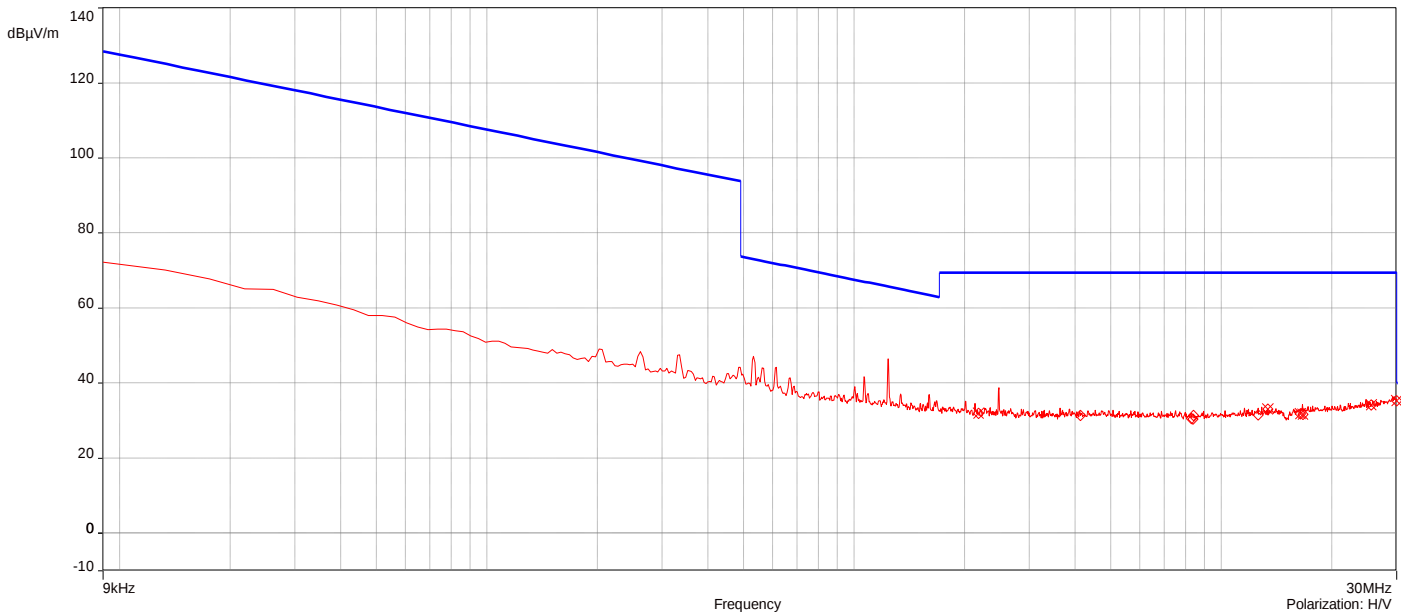


J23133_BT_DH1_Ch 39_9kHz-30MHz_Perpendicular

8/2/2024 11:06:53 AM

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	31.92	19.59	69.54	-37.62	1.00	301.70	H/V	Passed
2.	13.365472MHz	33.06	19.90	69.54	-36.48	1.00	135.10	H/V	Passed
3.	16.420706MHz	31.90	20.07	69.54	-37.64	1.00	299.40	H/V	Passed
4.	16.694949MHz	31.70	20.11	69.54	-37.84	1.00	3.50	H/V	Passed
5.	25.543558MHz	34.22	21.14	69.54	-35.32	1.00	123.70	H/V	Passed
6.	30MHz	35.38	22.04	40.00	-4.62	1.00	189.00	H/V	Passed

Overall Graphs:

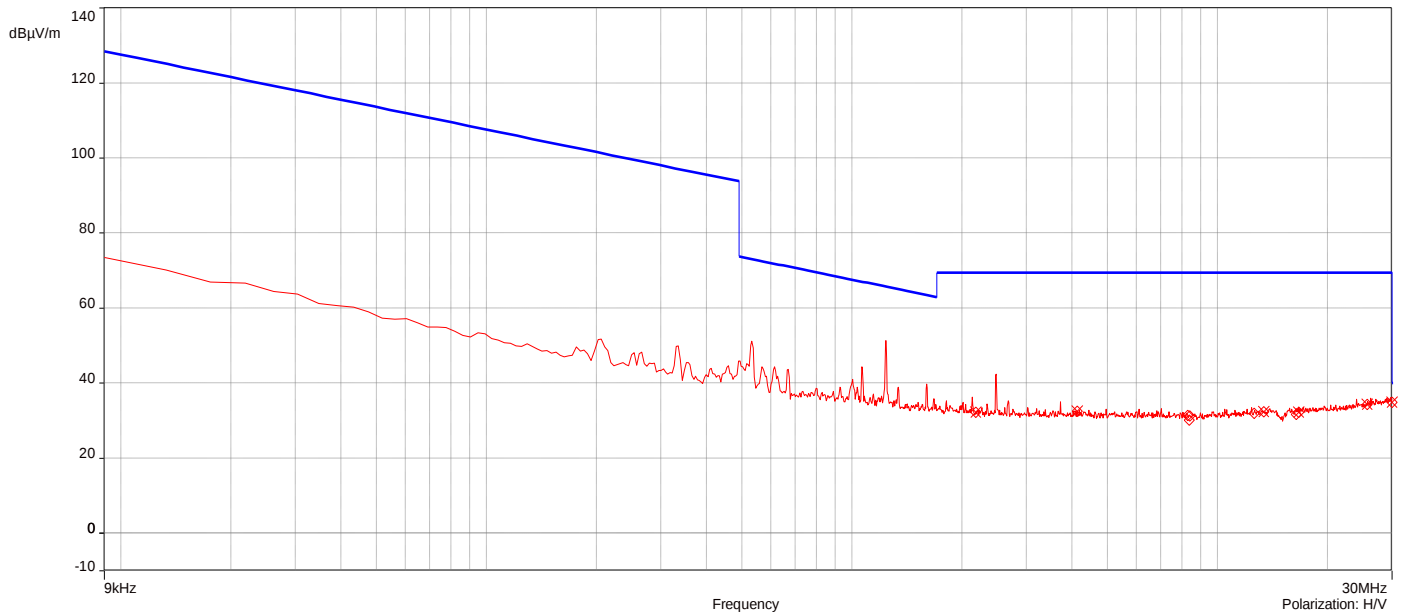


J23133_BT_3-DH1_Ch 0_9kHz-30MHz_Ground-Parallel

8/2/2024 11:13:55 AM

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	32.19	19.59	69.54	-37.35	1.00	356.70	H/V	Passed
2.	4.126924MHz	32.59	19.74	69.54	-36.95	1.00	266.70	H/V	Passed
3.	13.382612MHz	32.43	19.90	69.54	-37.11	1.00	352.30	H/V	Passed
4.	16.694949MHz	32.32	20.11	69.54	-37.22	1.00	37.10	H/V	Passed
5.	25.650684MHz	34.33	21.15	69.54	-35.21	1.00	99.30	H/V	Passed
6.	30MHz	34.96	22.04	40.00	-5.04	1.00	212.90	H/V	Passed

Overall Graphs:

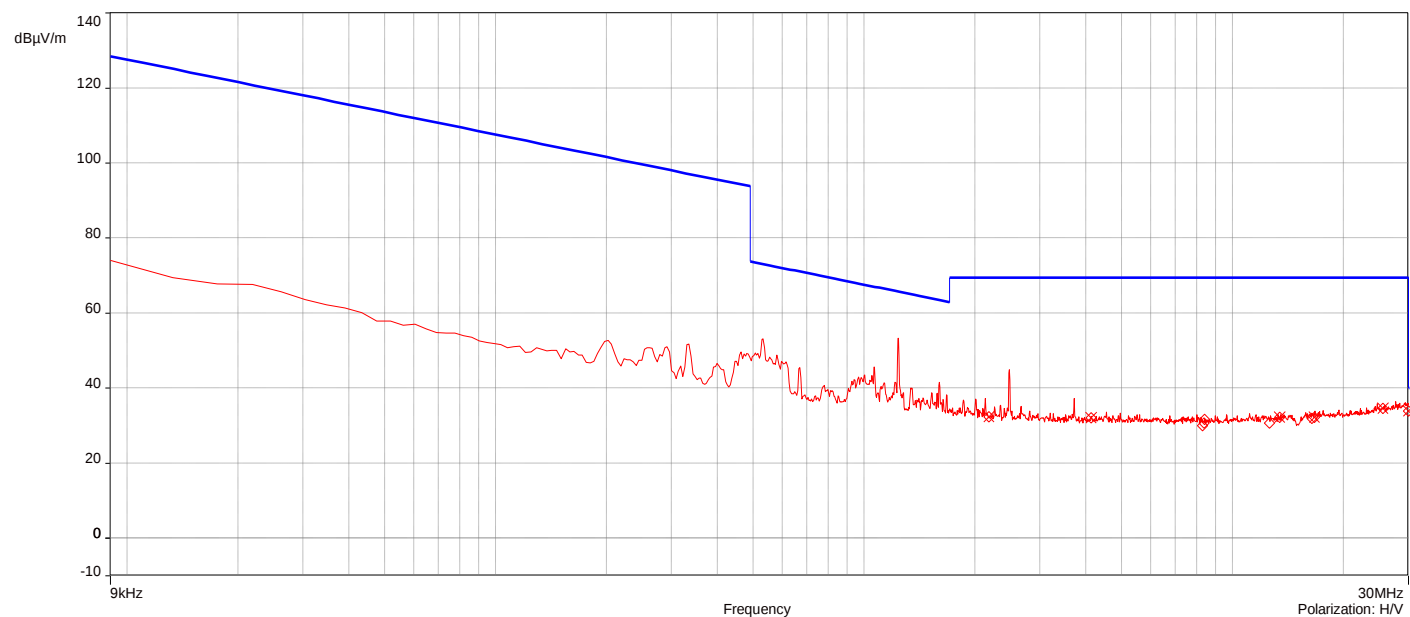


J23133_BT_3-DH1_Ch 0_9kHz-30MHz_Parallel

8/2/2024 10:51:20 AM

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	32.41	19.59	69.54	-37.13	1.00	106.90	H/V	Passed
2.	4.126924MHz	32.04	19.74	69.54	-37.50	1.00	150.00	H/V	Passed
3.	13.399752MHz	32.20	19.90	69.54	-37.34	1.00	308.00	H/V	Passed
4.	16.694949MHz	32.23	20.11	69.54	-37.31	1.00	150.00	H/V	Passed
5.	25.577838MHz	34.64	21.15	69.54	-34.90	1.00	292.40	H/V	Passed
6.	30MHz	33.95	22.04	40.00	-6.05	1.00	333.70	H/V	Passed

Overall Graphs:

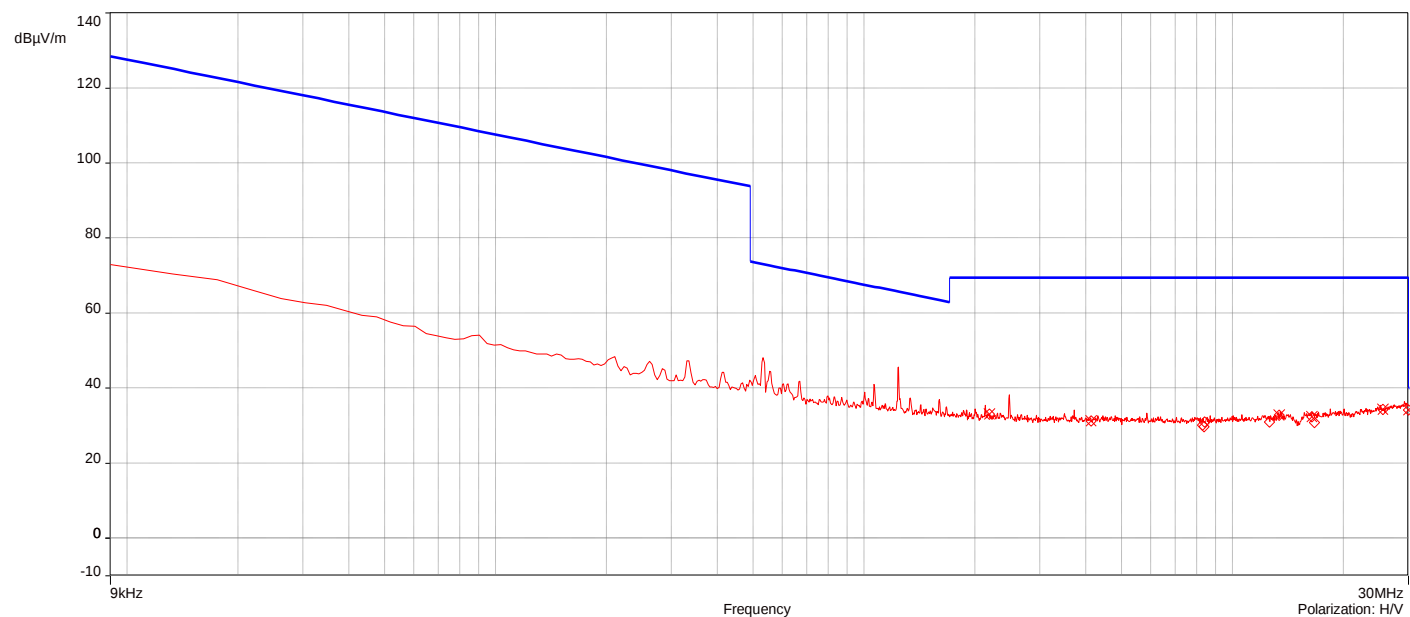


J23133_BT_3-DH1_Ch 0_9kHz-30MHz_Perpendicular

8/2/2024 11:03:05 AM

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	33.15	19.59	69.54	-36.39	1.00	289.50	H/V	Passed
2.	4.126924MHz	31.22	19.74	69.54	-38.32	1.00	32.70	H/V	Passed
3.	13.369757MHz	32.76	19.90	69.54	-36.78	1.00	218.60	H/V	Passed
4.	16.420706MHz	32.40	20.07	69.54	-37.14	1.00	324.10	H/V	Passed
5.	25.616403MHz	34.29	21.15	69.54	-35.25	1.00	214.20	H/V	Passed
6.	30MHz	34.18	22.04	40.00	-5.82	1.00	358.90	H/V	Passed

Overall Graphs:

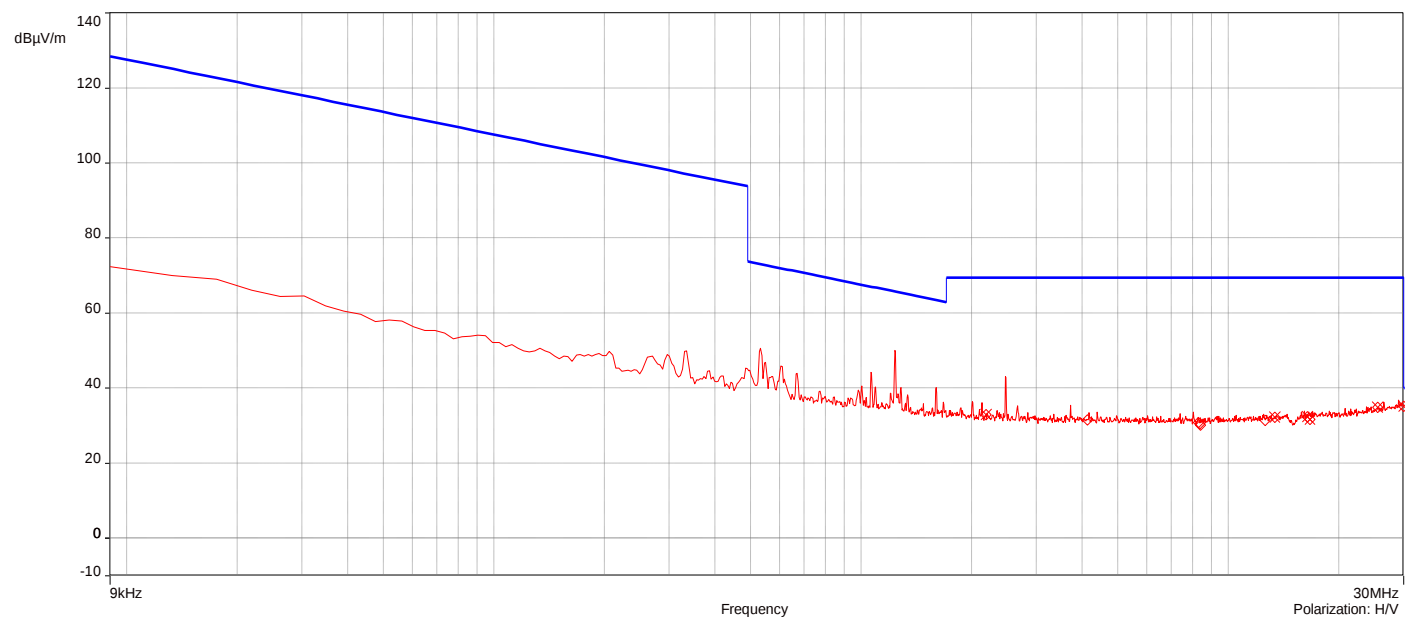


J23133_BT_3-DH1_Ch 39_9kHz-30MHz_Ground-Parallel

8/2/2024 11:17:48 AM

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	33.00	19.59	69.54	-36.54	1.00	28.30	H/V	Passed
2.	13.361187MHz	32.23	19.90	69.54	-37.31	1.00	199.10	H/V	Passed
3.	16.420706MHz	32.46	20.07	69.54	-37.08	1.00	201.10	H/V	Passed
4.	16.694949MHz	31.72	20.11	69.54	-37.82	1.00	358.90	H/V	Passed
5.	25.504992MHz	34.90	21.14	69.54	-34.64	1.00	297.80	H/V	Passed
6.	30MHz	35.19	22.04	40.00	-4.81	1.00	332.10	H/V	Passed

Overall Graphs:

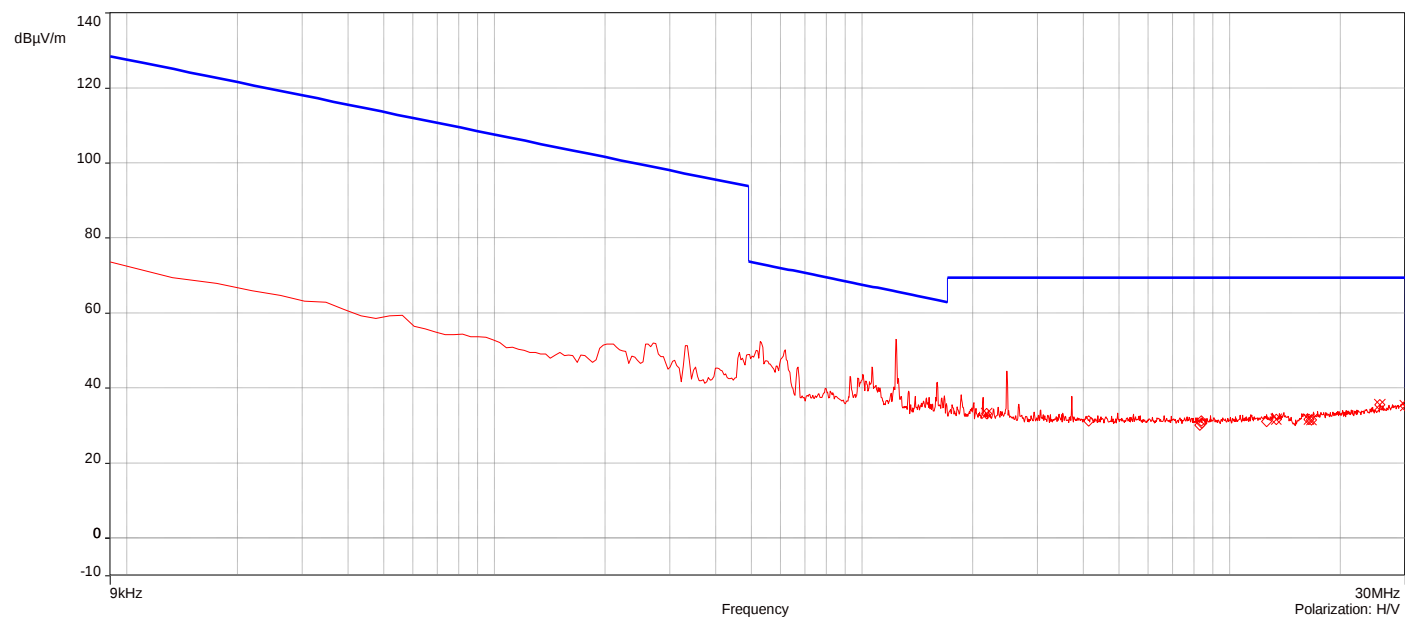


J23133_BT_3-DH1_Ch 39_9kHz-30MHz_Parallel

8/2/2024 10:54:53 AM

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	33.18	19.59	69.54	-36.36	1.00	117.20	H/V	Passed
2.	13.378327MHz	31.73	19.90	69.54	-37.81	1.00	59.00	H/V	Passed
3.	16.420706MHz	31.75	20.07	69.54	-37.79	1.00	358.90	H/V	Passed
4.	16.694949MHz	31.57	20.11	69.54	-37.97	1.00	280.90	H/V	Passed
5.	25.586408MHz	35.59	21.15	69.54	-33.95	1.00	296.60	H/V	Passed
6.	30MHz	35.33	22.04	40.00	-4.67	1.00	328.60	H/V	Passed

Overall Graphs:

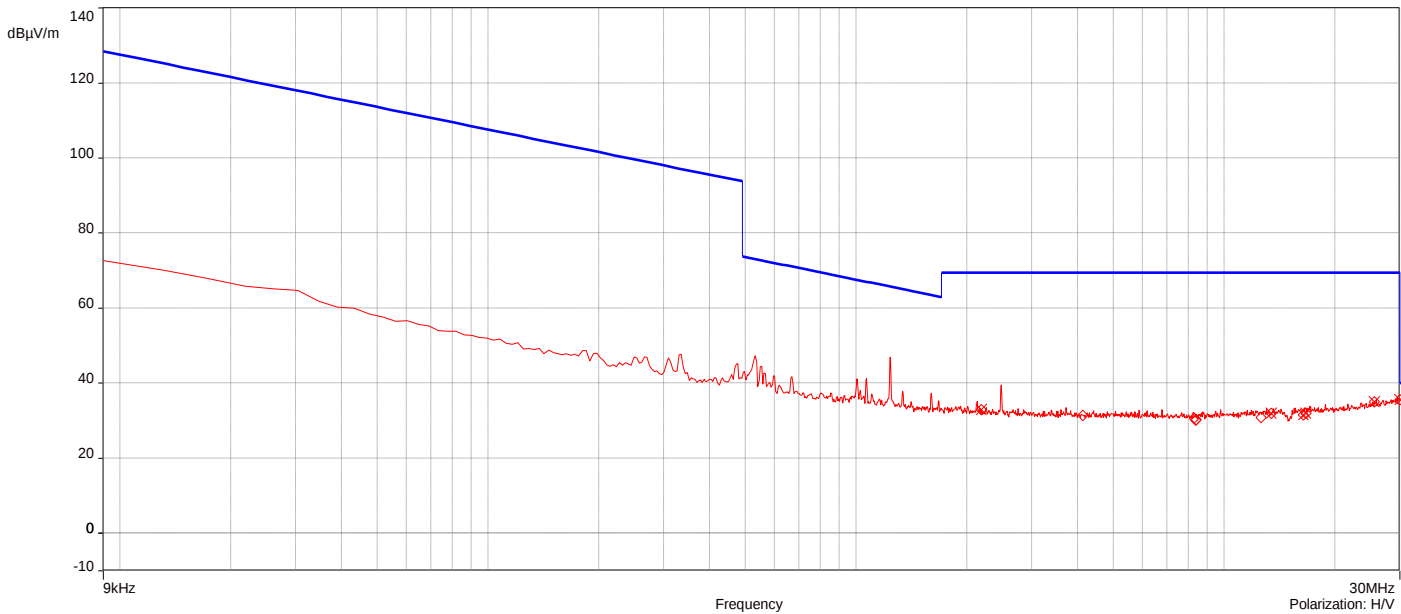


J23133_BT_3-DH1_Ch 39_9kHz-30MHz_Perpendicular

8/2/2024 10:58:31 AM

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	33.00	19.59	69.54	-36.54	1.00	141.70	H/V	Passed
2.	13.395467MHz	31.94	19.90	69.54	-37.60	1.00	98.70	H/V	Passed
3.	16.420706MHz	31.60	20.07	69.54	-37.94	1.00	322.10	H/V	Passed
4.	16.694949MHz	31.95	20.11	69.54	-37.59	1.00	12.60	H/V	Passed
5.	25.616403MHz	35.06	21.15	69.54	-34.48	1.00	150.40	H/V	Passed
6.	30MHz	35.59	22.04	40.00	-4.41	1.00	358.40	H/V	Passed

Overall Graphs:

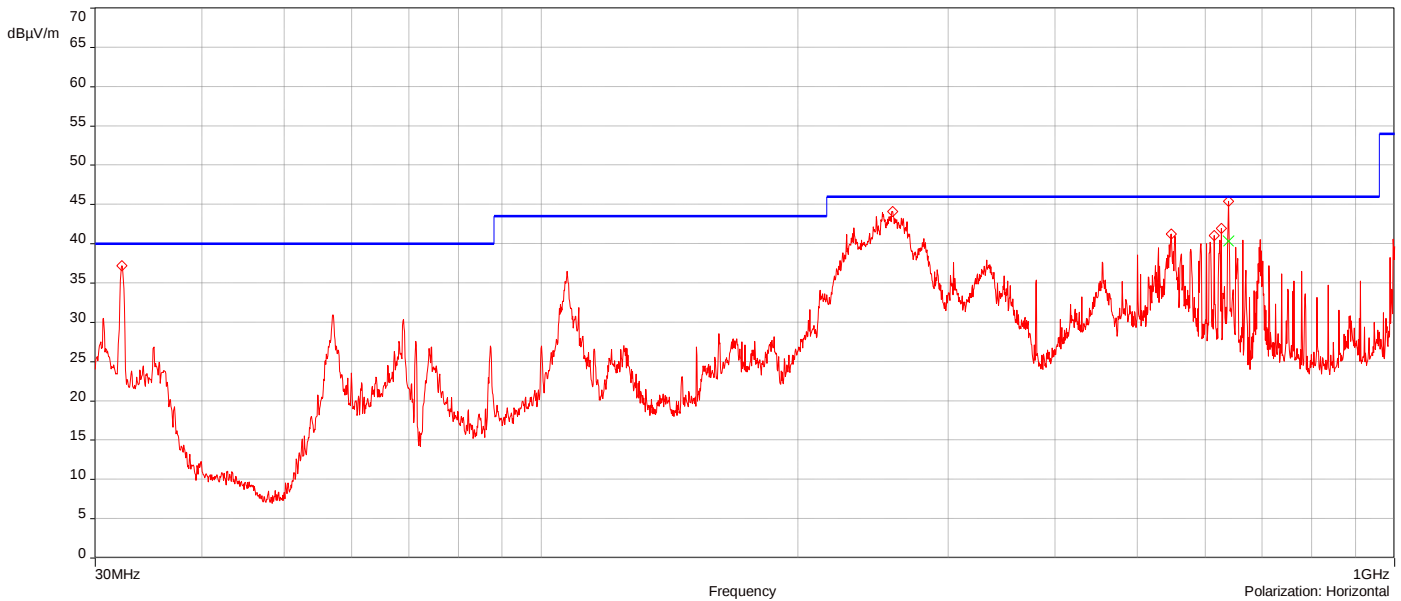


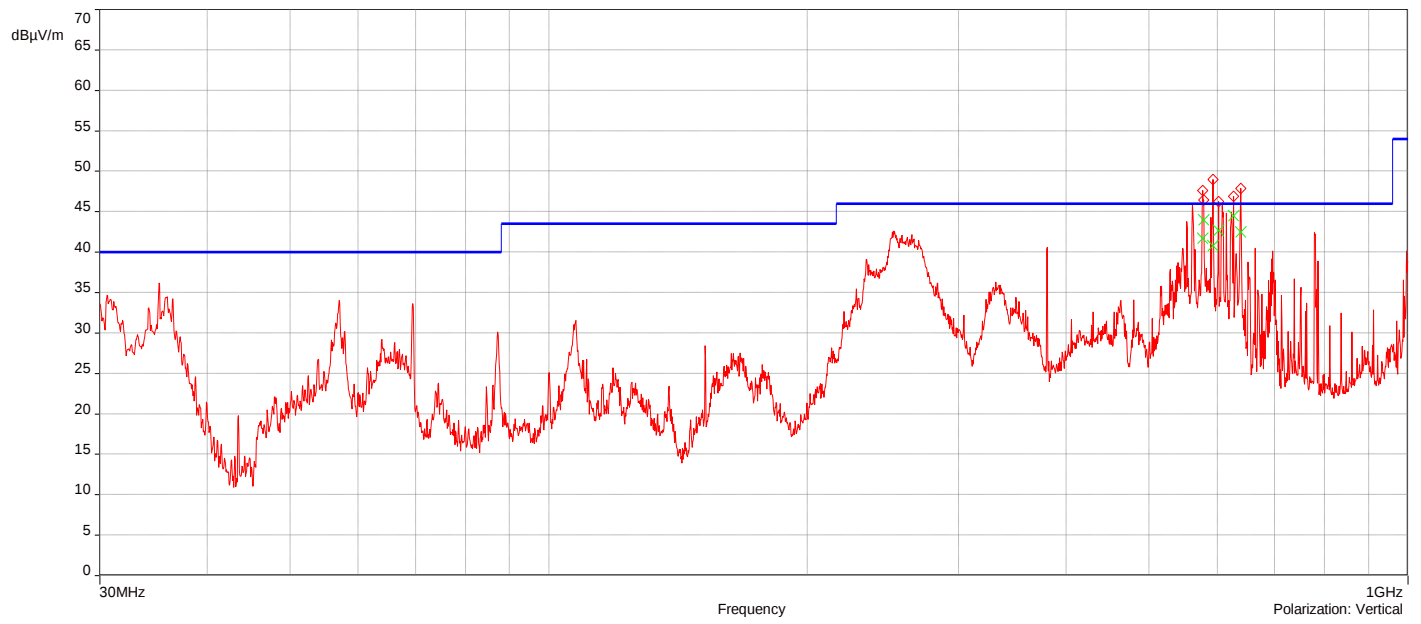
J23133_BT_DH1_Ch 0_30MHz-1GHz

7/31/2024 5:33:47 PM

No	Frequency (MHz)	Level Q-Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	576.42744MHz	41.69	-5.85	46.00	-4.31	1.00	349.90	Vertical	Passed
2.	578.42461MHz	43.98	-5.75	46.00	-2.02	1.00	353.90	Vertical	Passed
3.	592.69016MHz	40.81	-5.39	46.00	-5.19	1.00	354.10	Vertical	Passed
4.	602.16248MHz	42.66	-5.30	46.00	-3.34	1.00	348.10	Vertical	Passed
5.	626.69922MHz	44.51	-5.14	46.00	-1.49	1.00	345.10	Vertical	Passed
6.	639.02465MHz	42.48	-4.91	46.00	-3.52	1.00	0.10	Vertical	Passed
7.	639.02465MHz	40.34	-3.71	46.00	-5.66	1.50	276.10	Horizontal	Passed

Overall Graphs:



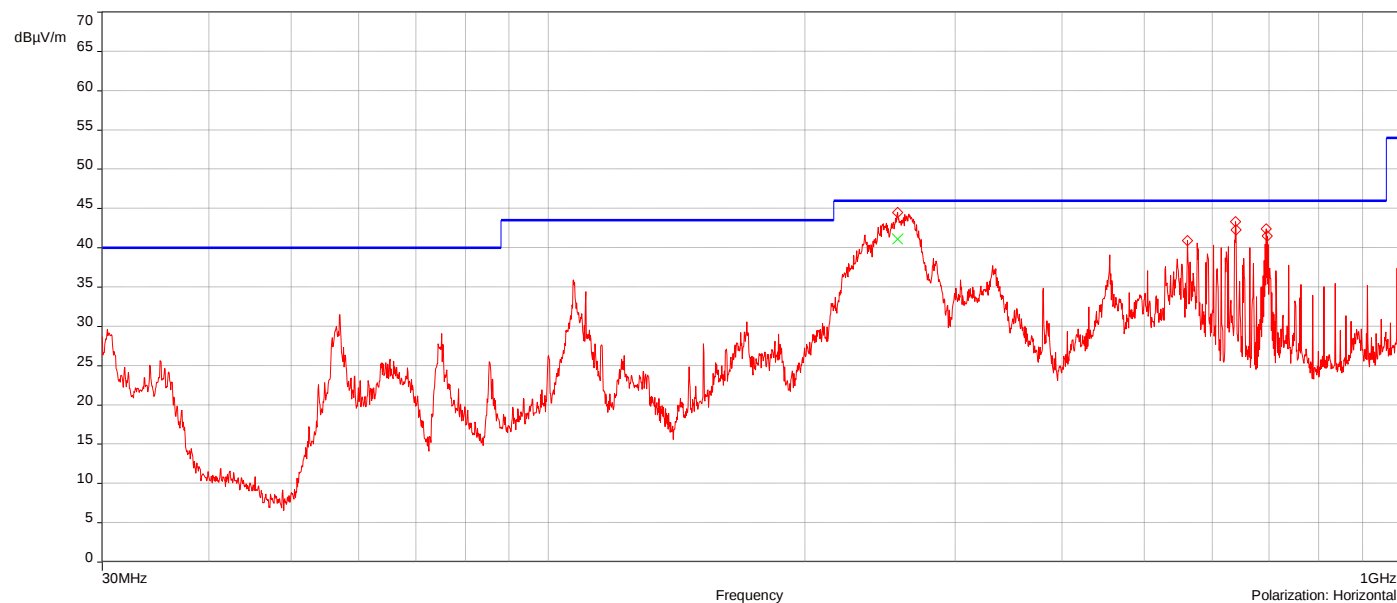


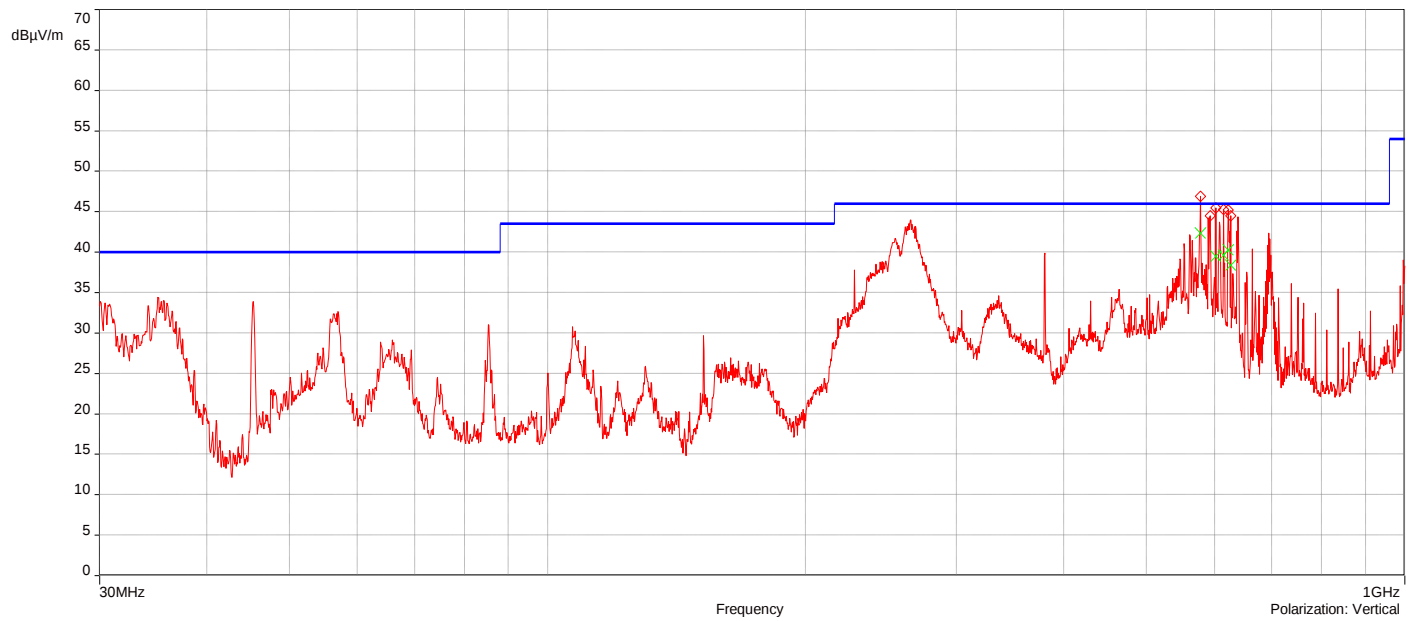
J23133_BT_DH1_Ch 39_30MHz-1GHz

7/31/2024 6:27:52 PM

No	Frequency (MHz)	Level Q-Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	577.51162MHz	42.37	-5.79	46.00	-3.63	1.00	358.90	Vertical	Passed
2.	602.16248MHz	39.47	-5.30	46.00	-6.53	1.00	338.10	Vertical	Passed
3.	614.43085MHz	39.63	-5.24	46.00	-6.37	1.00	329.10	Vertical	Passed
4.	622.19131MHz	40.29	-5.17	46.00	-5.71	1.00	353.90	Vertical	Passed
5.	626.69922MHz	38.40	-5.14	46.00	-7.60	1.00	345.10	Vertical	Passed
6.	256.82217MHz	41.15	-12.62	46.00	-4.85	1.25	313.10	Horizontal	Passed

Overall Graphs:



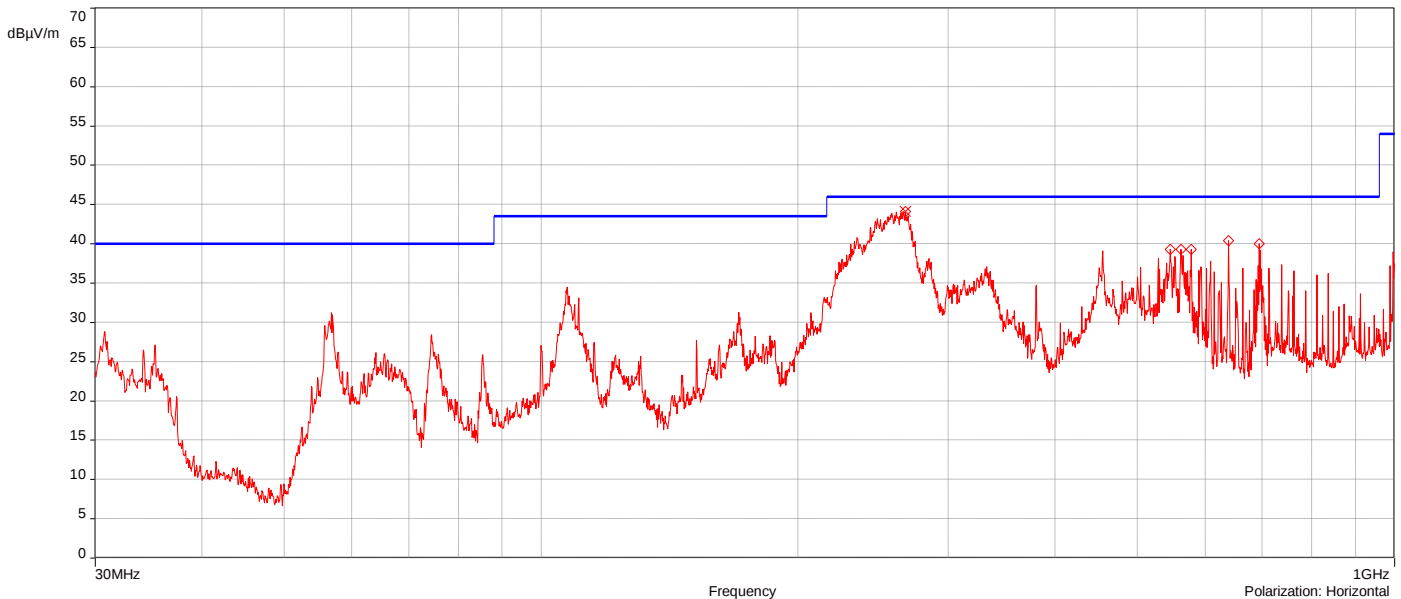


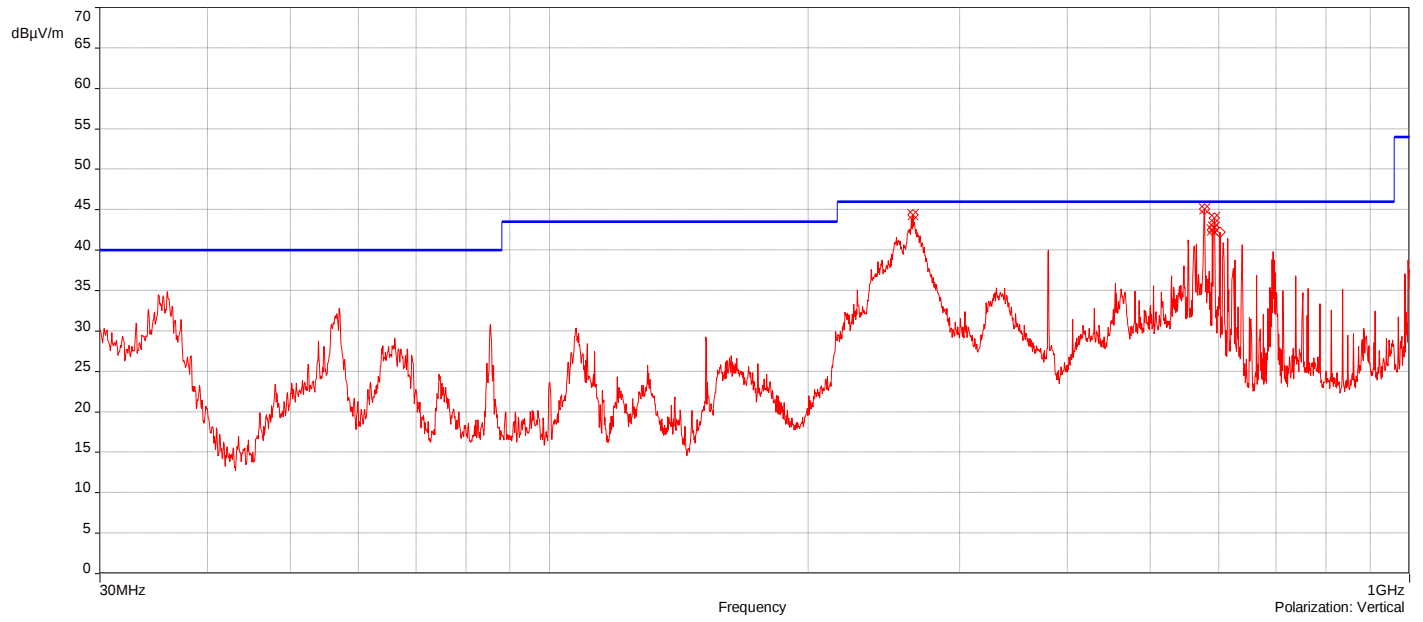
J23133_BT_3-DH1_Ch 0_30MHz-1GHz

7/31/2024 6:53:15 PM

No	Frequency (MHz)	Level Q- Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	264.4685MHz	44.39	-12.80	46.00	-1.61	1.00	216.80	Vertical	Passed
2.	577.56868MHz	45.07	-5.79	46.00	-0.93	1.00	345.40	Vertical	Passed
3.	589.83705MHz	42.47	-5.43	46.00	-3.53	1.00	345.40	Vertical	Passed
4.	592.11954MHz	42.81	-5.34	46.00	-3.19	1.00	357.00	Vertical	Passed
5.	593.14666MHz	43.98	-5.42	46.00	-2.02	1.00	355.70	Vertical	Passed
6.	266.97923MHz	44.11	-12.10	46.00	-1.89	1.50	302.50	Horizontal	Passed

Overall Graphs:





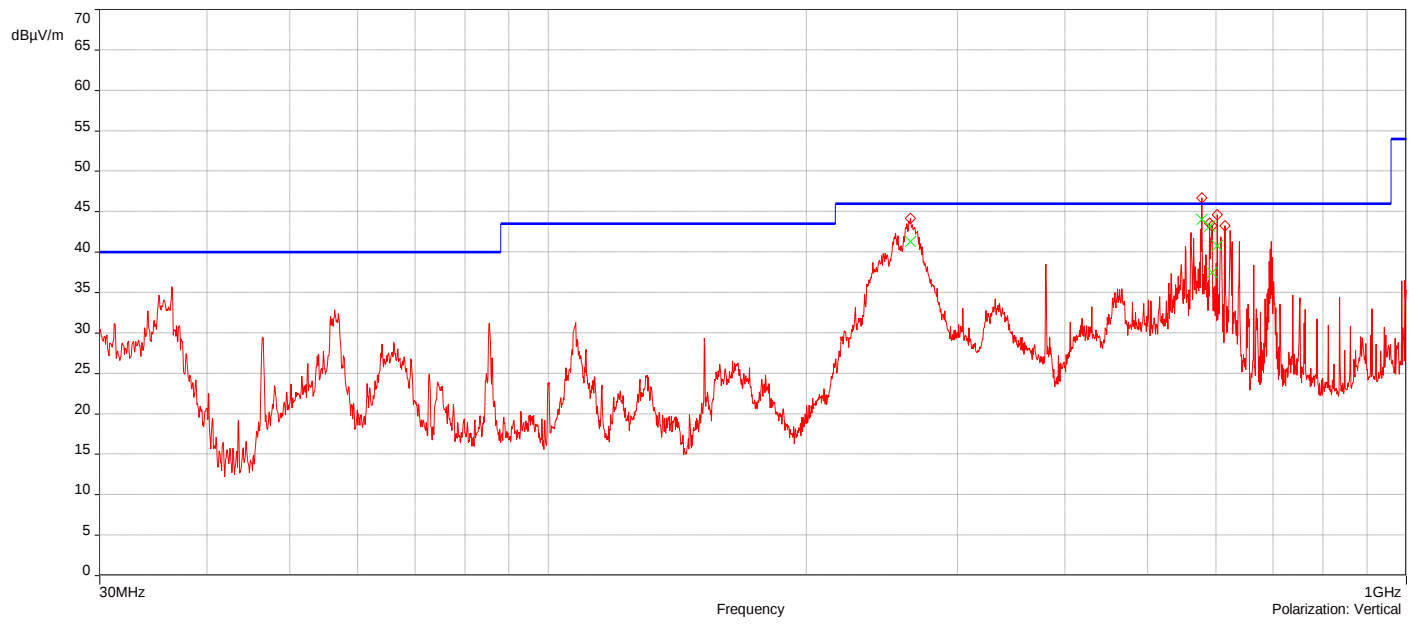
J23133_BT_3-DH1_Ch 39_30MHz-1GHz

7/31/2024 7:18:30 PM

No	Frequency (MHz)	Level Q-Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	264.18319MHz	41.30	-12.80	46.00	-4.70	1.00	225.10	Vertical	Passed
2.	577.56868MHz	44.05	-5.79	46.00	-1.95	1.00	330.10	Vertical	Passed
3.	589.83705MHz	43.23	-5.43	46.00	-2.77	1.00	349.90	Vertical	Passed
4.	593.31784MHz	37.46	-5.42	46.00	-8.54	1.00	336.10	Vertical	Passed
5.	602.16248MHz	40.80	-5.30	46.00	-5.20	1.00	341.90	Vertical	Passed
6.	260.53121MHz	41.28	-12.41	46.00	-4.72	1.00	34.10	Horizontal	Passed

Overall Graphs:





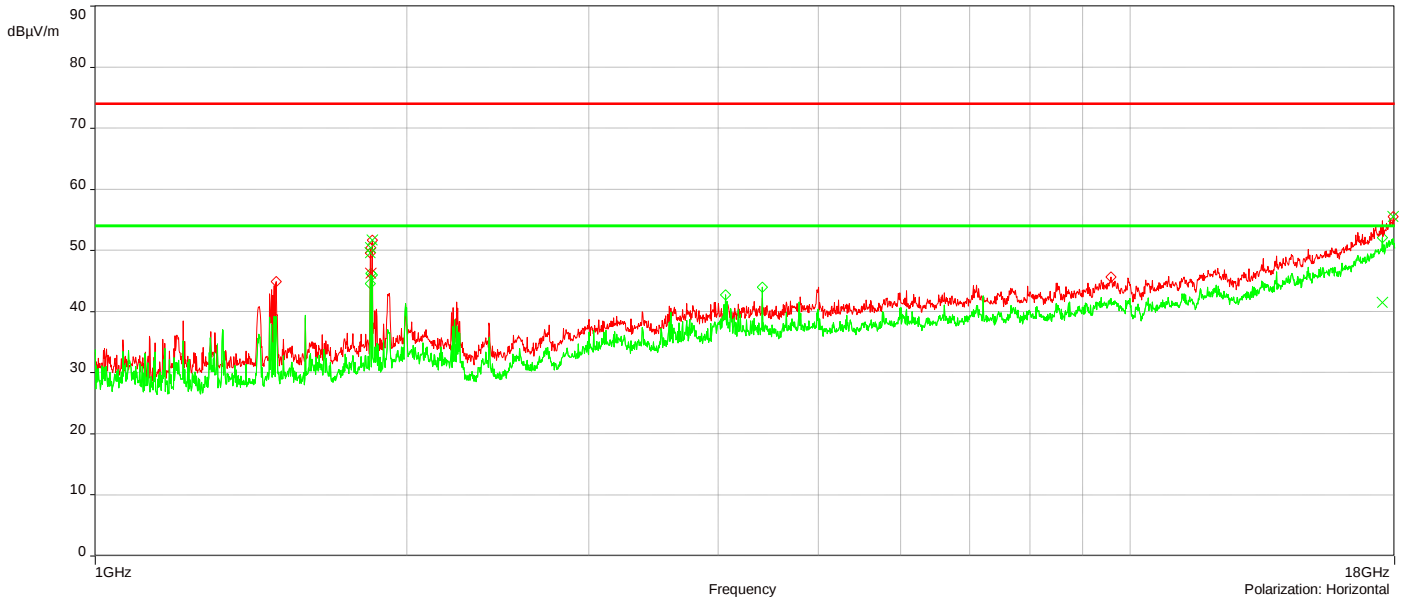
J23133_BT_DH1_Ch 0_1-18GHz

7/23/2024 9:25:49 PM

No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	4.7851113GHz	47.98	4.79	74.00	-26.02	2.00	354.10	Vertical	Passed
2.	17.849996GHz	55.21	21.21	74.00	-18.79	2.50	141.10	Vertical	Passed
3.	1.8445248GHz	49.58	-3.84	74.00	-24.42	2.50	64.00	Horizontal	Passed
4.	1.8460249GHz	50.48	-3.84	74.00	-23.52	2.50	64.00	Horizontal	Passed
5.	1.8520251GHz	51.73	-3.84	74.00	-22.27	2.50	64.00	Horizontal	Passed
6.	17.943498GHz	55.55	21.07	74.00	-18.45	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.	1.7960234GHz	46.36	-4.52	54.00	-7.64	1.00	359.90	Vertical	Passed
2.	1.8460249GHz	46.11	-4.03	54.00	-7.89	2.50	0.0	Vertical	Passed
3.	14.287891GHz	47.87	15.33	54.00	-6.13	1.00	359.90	Vertical	Passed
4.	17.9985GHz	43.06	22.06	54.00	-10.94	1.00	360.00	Vertical	Passed
5.	1.8460249GHz	46.30	-3.84	54.00	-7.70	2.50	64.00	Horizontal	Passed
6.	17.510986GHz	41.49	20.15	54.00	-12.51	3.00	292.00	Horizontal	Passed

Overall Graphs:





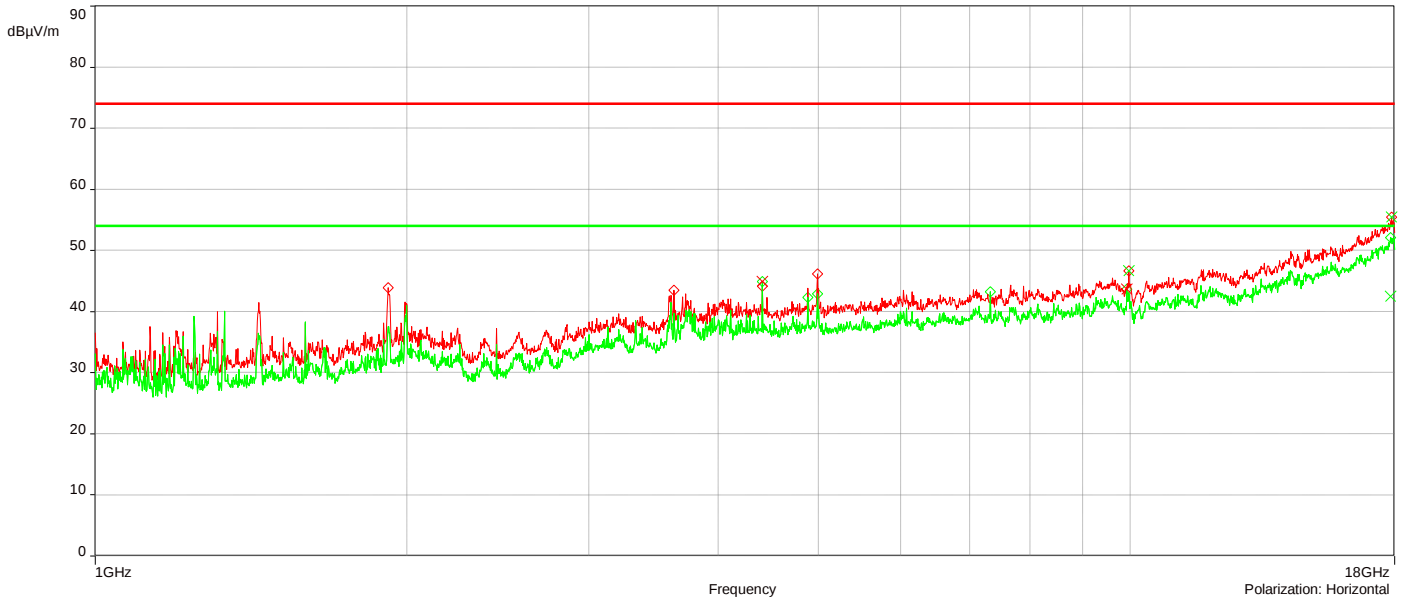
J23133_BT_DH1_Ch 39_1-18GHz

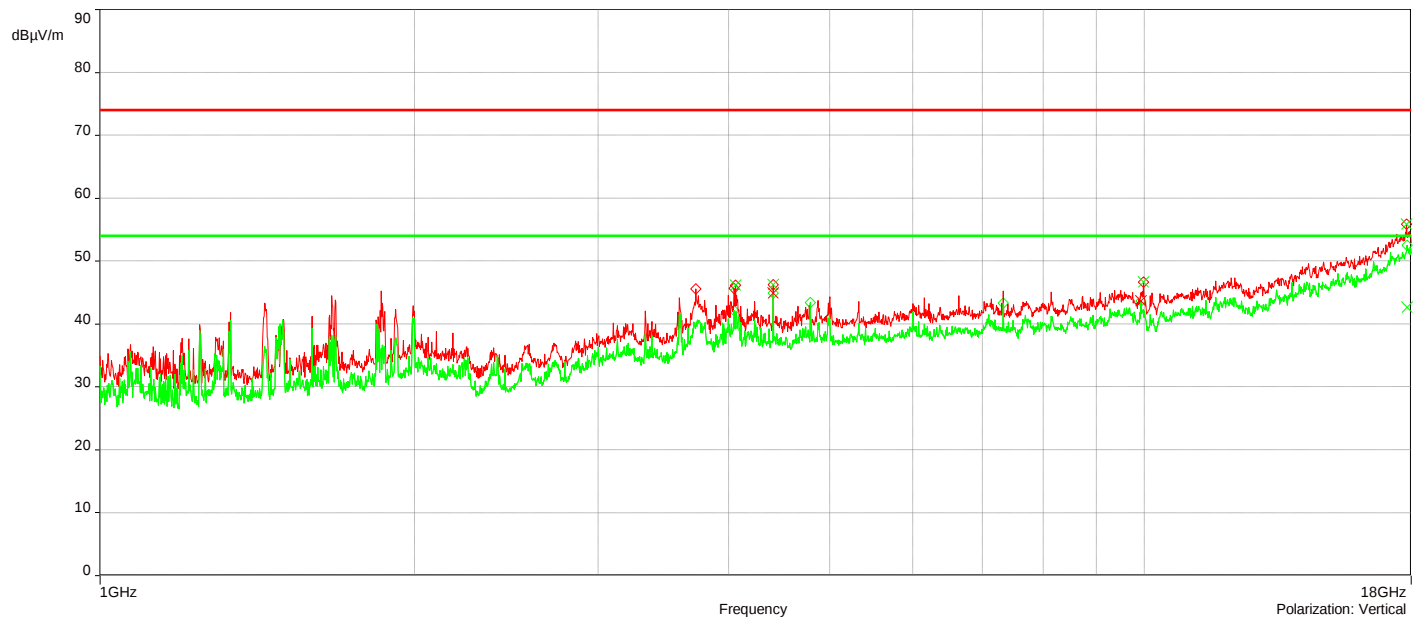
7/23/2024 9:54:15 PM

No	Frequency (MHz)	Level Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	4.06059GHz	46.20	3.27	74.00	-27.80	3.50	126.10	Vertical	Passed
2.	4.4096003GHz	46.29	4.42	74.00	-27.71	4.00	2.70	Vertical	Passed
3.	9.9722639GHz	46.66	10.63	74.00	-27.34	3.00	290.10	Vertical	Passed
4.	17.820995GHz	55.88	21.04	74.00	-18.12	2.00	281.60	Vertical	Passed
5.	9.9612636GHz	46.71	10.82	74.00	-27.29	3.00	155.00	Horizontal	Passed
6.	17.885997GHz	55.46	21.16	74.00	-18.54	1.00	176.50	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	4.4096003GHz	44.89	4.42	54.00	-9.11	4.00	2.70	Vertical	Passed
2.	9.9177623GHz	43.68	10.43	54.00	-10.32	3.00	90.60	Vertical	Passed
3.	17.830495GHz	42.70	21.09	54.00	-11.30	1.00	359.90	Vertical	Passed
4.	4.4096003GHz	44.90	4.43	54.00	-9.10	4.00	0.10	Horizontal	Passed
5.	9.9177623GHz	43.68	10.44	54.00	-10.32	3.00	0.10	Horizontal	Passed
6.	17.836995GHz	42.50	21.01	54.00	-11.50	1.50	328.20	Horizontal	Passed

Overall Graphs:





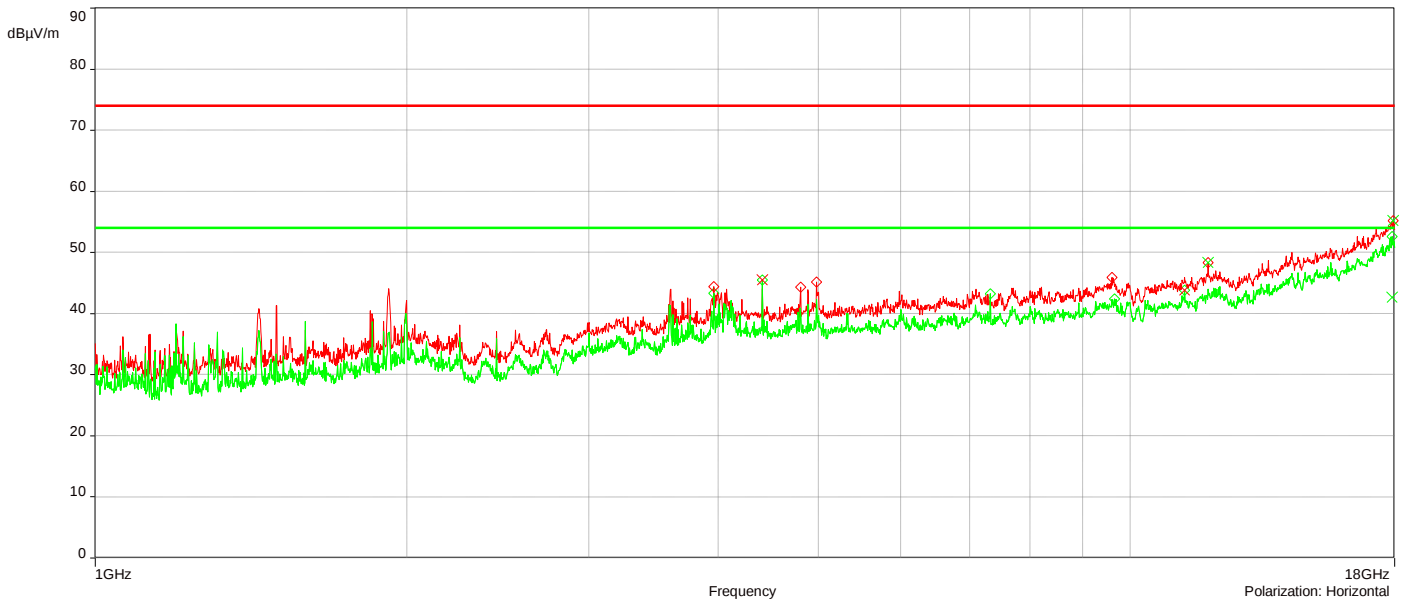
J23133_BT_DH1_Ch 78_1-18GHz

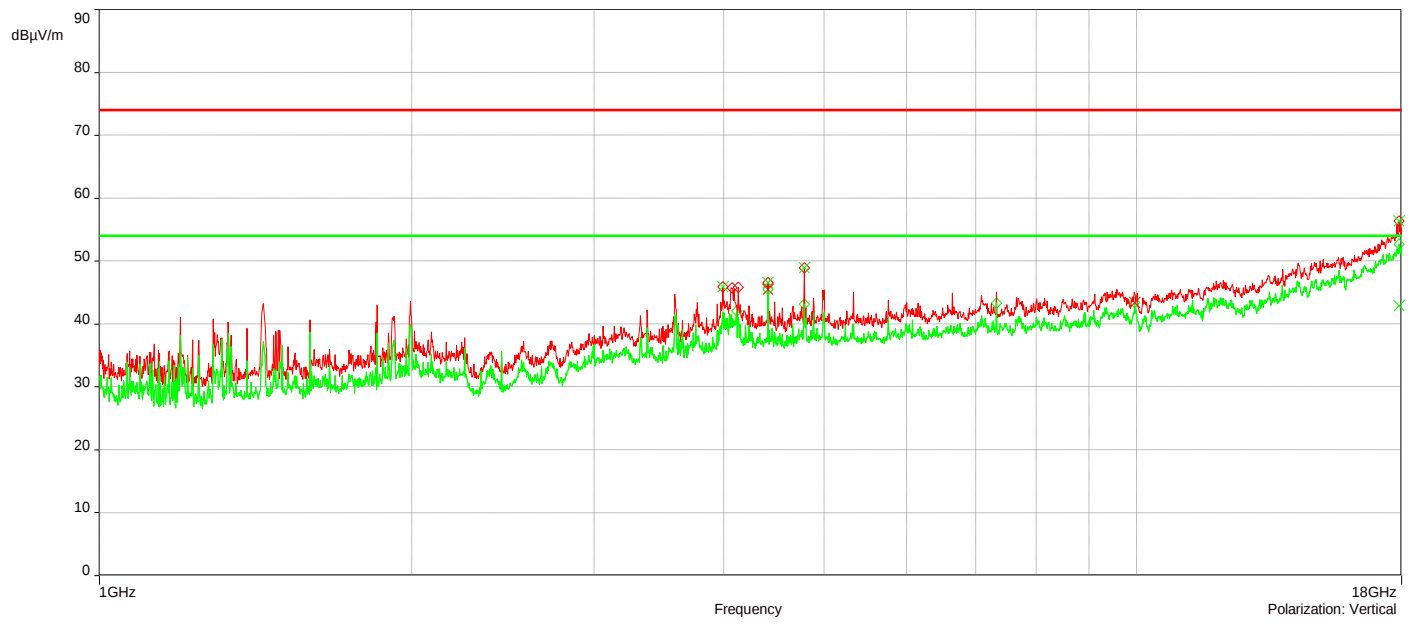
7/23/2024 10:15:11 PM

No	Frequency (MHz)	Level Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	3.990588GHz	45.92	3.36	74.00	-28.08	3.50	123.70	Vertical	Passed
2.	4.4096003GHz	46.63	4.42	74.00	-27.37	4.00	0.10	Vertical	Passed
3.	4.7831113GHz	48.93	4.79	74.00	-25.07	3.00	0.0	Vertical	Passed
4.	17.900497GHz	56.37	21.27	74.00	-17.63	1.00	53.10	Vertical	Passed
5.	11.88182GHz	48.33	11.95	74.00	-25.67	2.50	20.80	Horizontal	Passed
6.	17.947498GHz	55.24	21.06	74.00	-18.76	3.50	0.10	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	4.4096003GHz	45.48	4.42	54.00	-8.52	4.00	0.10	Vertical	Passed
2.	9.9512633GHz	43.43	10.79	54.00	-10.57	1.00	359.90	Vertical	Passed
3.	17.900497GHz	42.89	21.27	54.00	-11.11	1.00	53.10	Vertical	Passed
4.	4.4096003GHz	45.48	4.43	54.00	-8.52	4.00	0.10	Horizontal	Passed
5.	11.286303GHz	43.88	11.71	54.00	-10.12	3.50	359.90	Horizontal	Passed
6.	17.900497GHz	42.66	21.19	54.00	-11.34	1.00	0.10	Horizontal	Passed

Overall Graphs:





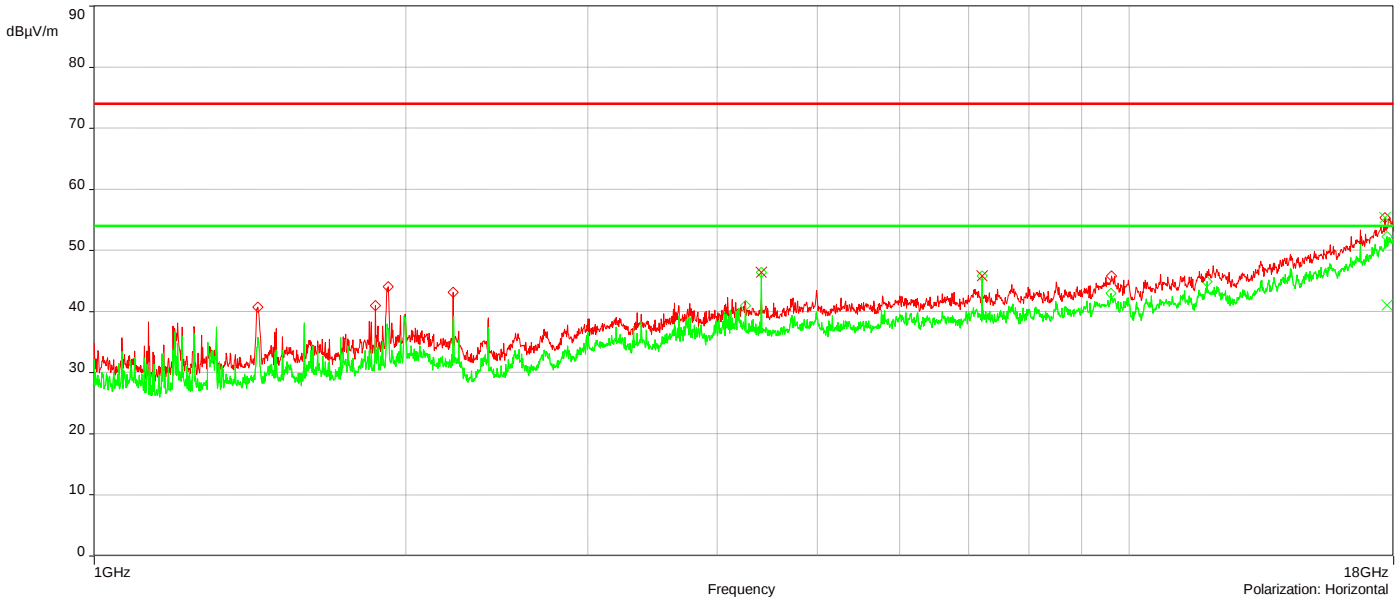
J23133_BT_3-DH1_Ch 0_1-18GHz

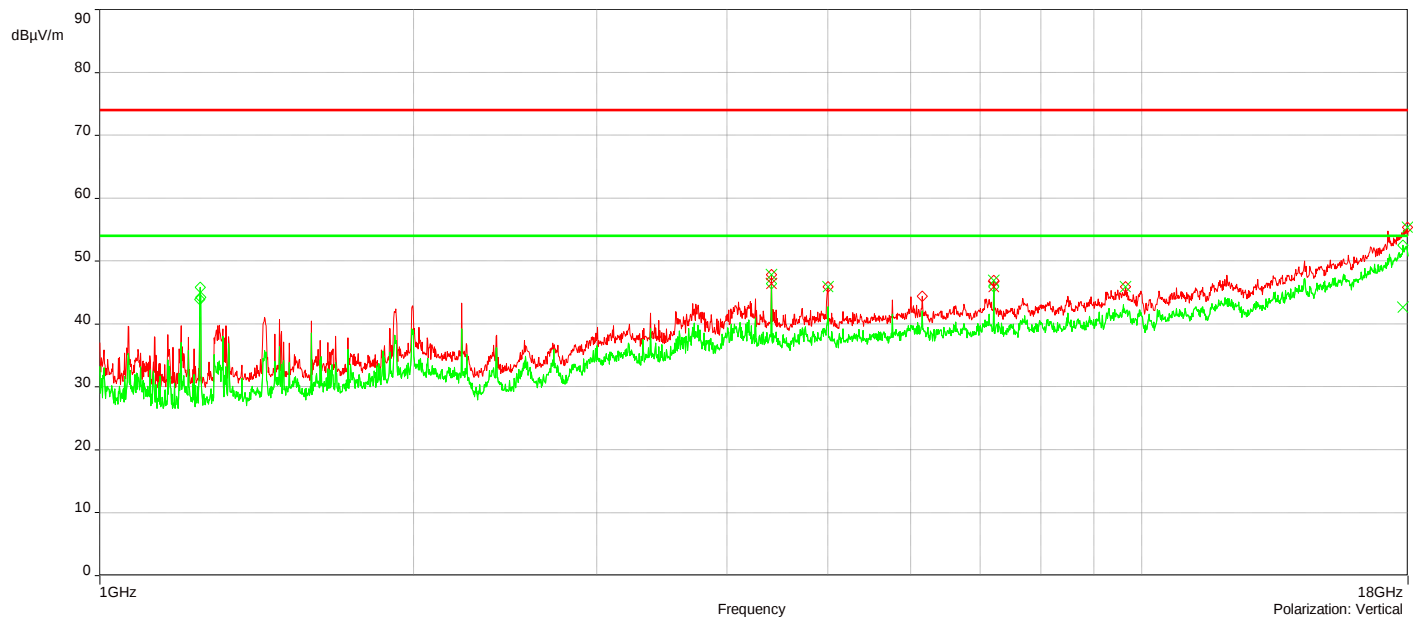
7/24/2024 10:34:53 AM

No	Frequency (MHz)	Level Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	4.4096003GHz	47.84	4.42	74.00	-26.16	4.00	359.90	Vertical	Passed
2.	4.9986176GHz	45.93	5.65	74.00	-28.07	1.50	63.70	Vertical	Passed
3.	7.2056825GHz	46.95	7.88	74.00	-27.05	1.00	97.40	Vertical	Passed
4.	9.6387541GHz	45.93	10.53	74.00	-28.07	3.50	244.80	Vertical	Passed
5.	17.9885GHz	55.40	21.83	74.00	-18.60	3.00	0.0	Vertical	Passed
6.	17.65099GHz	55.38	20.50	74.00	-18.62	4.00	13.60	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	4.4096003GHz	46.42	4.42	54.00	-7.58	4.00	359.90	Vertical	Passed
2.	7.2056825GHz	45.91	7.88	54.00	-8.09	1.00	97.40	Vertical	Passed
3.	17.796994GHz	42.65	20.89	54.00	-11.35	1.00	0.10	Vertical	Passed
4.	4.4096003GHz	46.43	4.43	54.00	-7.57	4.00	359.90	Horizontal	Passed
5.	7.2056825GHz	45.87	7.83	54.00	-8.13	1.00	359.90	Horizontal	Passed
6.	17.736492GHz	41.09	20.50	54.00	-12.91	3.50	0.10	Horizontal	Passed

Overall Graphs:





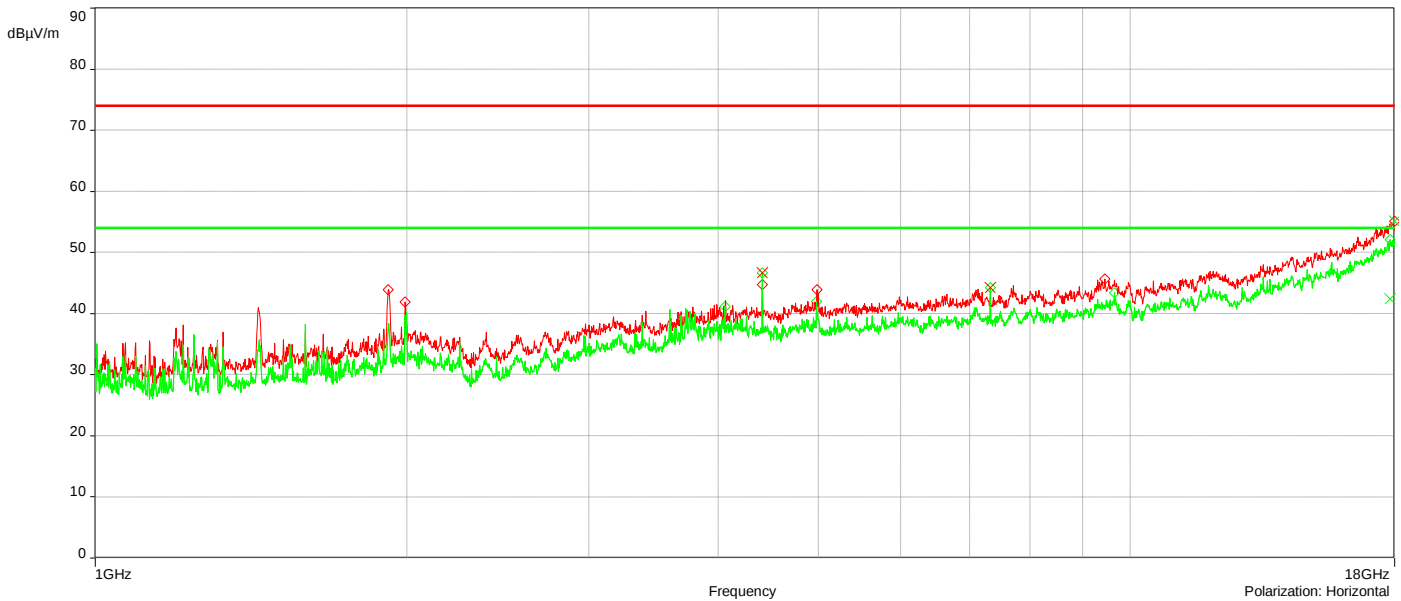
J23133_BT_3-DH1_Ch 39_1-18GHz

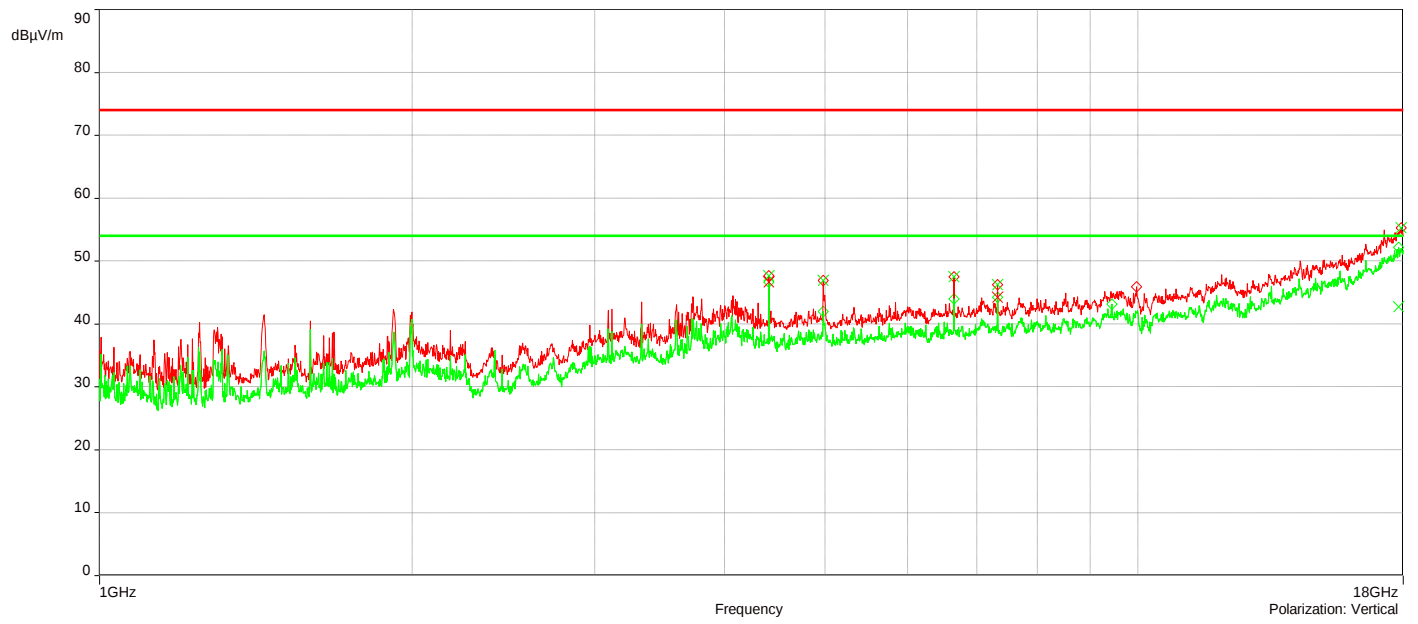
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No	Frequency (MHz)	Level Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	4.4096003GHz	47.67	4.42	74.00	-26.33	4.00	0.10	Vertical	Passed
2.	4.976617GHz	46.97	5.72	74.00	-27.03	2.00	77.30	Vertical	Passed
3.	6.6506662GHz	47.51	7.05	74.00	-26.49	2.50	79.30	Vertical	Passed
4.	7.323186GHz	46.28	7.50	74.00	-27.72	1.00	95.80	Vertical	Passed
5.	17.923998GHz	55.28	21.21	74.00	-18.72	2.00	324.00	Vertical	Passed
6.	17.9965GHz	55.15	21.96	74.00	-18.85	2.00	281.60	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	4.4096003GHz	46.66	4.42	54.00	-7.34	4.00	0.10	Vertical	Passed
2.	7.323186GHz	44.25	7.50	54.00	-9.75	1.00	95.80	Vertical	Passed
3.	17.824495GHz	42.74	21.06	54.00	-11.26	1.00	359.90	Vertical	Passed
4.	4.4096003GHz	46.67	4.43	54.00	-7.33	4.00	359.90	Horizontal	Passed
5.	7.323186GHz	44.22	7.46	54.00	-9.78	1.00	359.90	Horizontal	Passed
6.	17.824495GHz	42.42	20.94	54.00	-11.58	1.00	359.90	Horizontal	Passed

Overall Graphs:





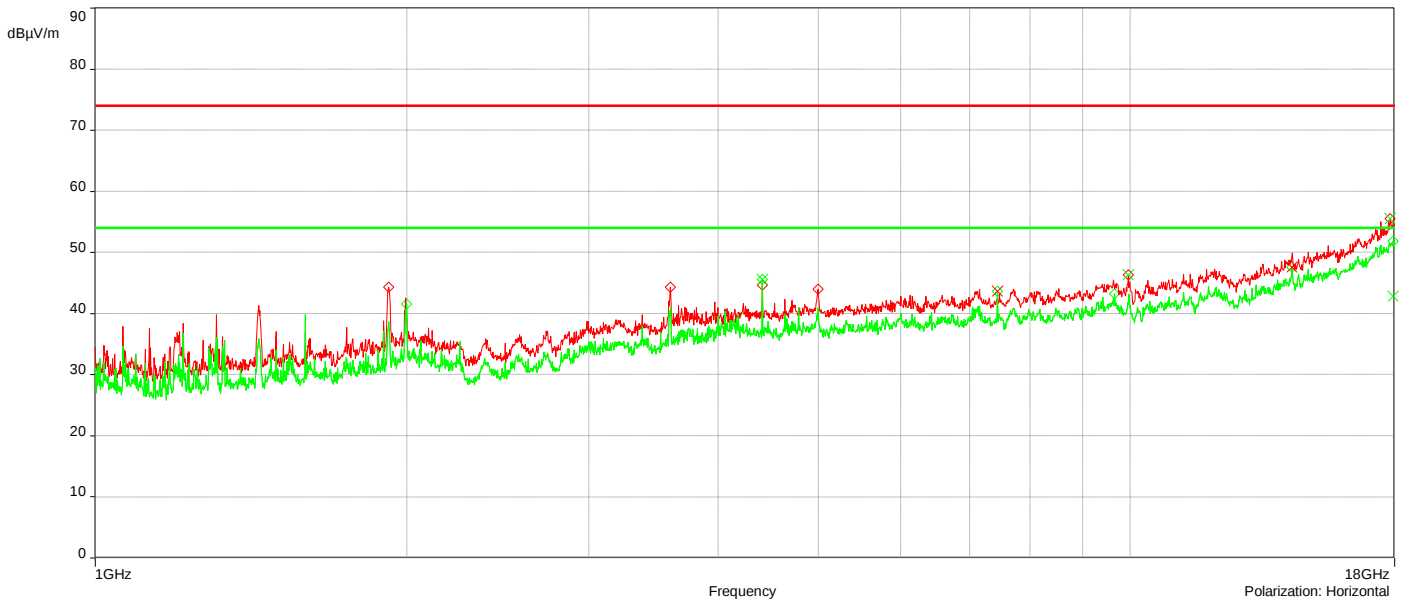
J23133_BT_3-DH1_Ch 78_1-18GHz

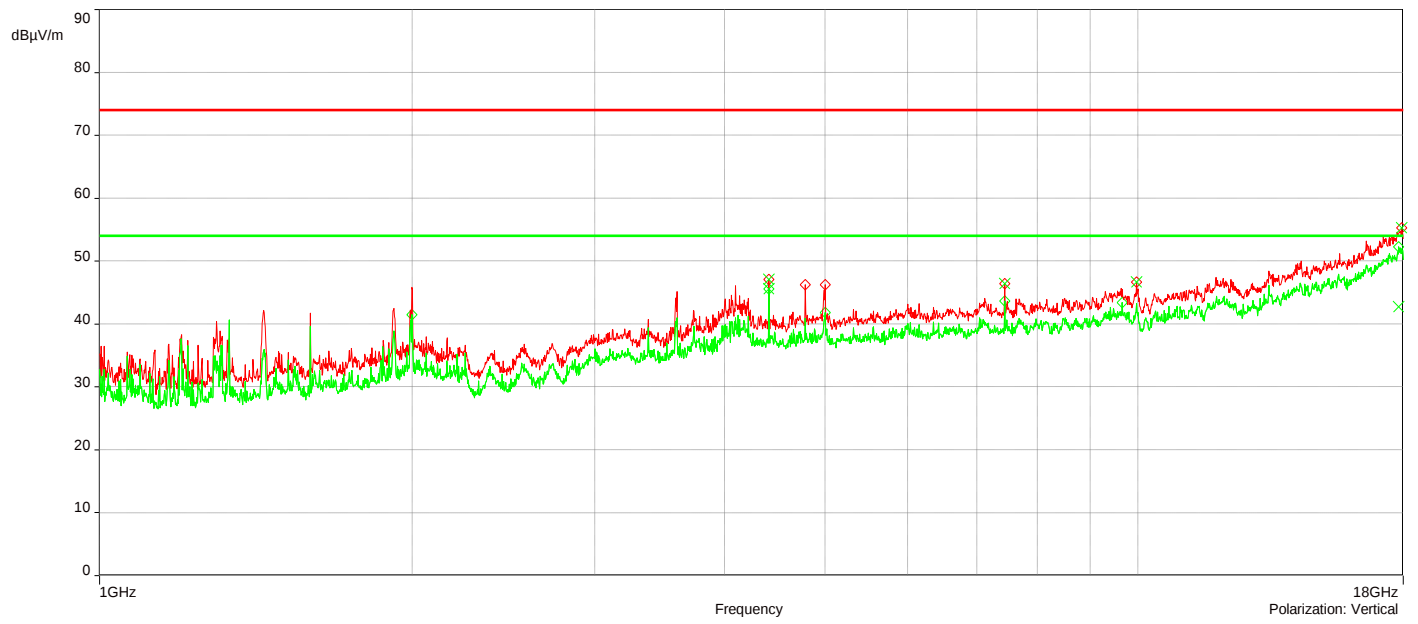
7/24/2024 11:11:33 AM

No	Frequency (MHz)	Level Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	4.4096003GHz	47.12	4.42	74.00	-26.88	4.00	0.0	Vertical	Passed
2.	7.4396894GHz	46.39	7.82	74.00	-27.61	1.00	89.40	Vertical	Passed
3.	9.9642637GHz	46.67	10.78	74.00	-27.33	4.00	358.30	Vertical	Passed
4.	17.934498GHz	55.29	21.18	74.00	-18.71	1.50	321.20	Vertical	Passed
5.	9.9587635GHz	46.33	10.85	74.00	-27.67	3.00	192.70	Horizontal	Passed
6.	17.822495GHz	55.53	20.93	74.00	-18.47	1.00	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.	4.4096003GHz	45.60	4.42	54.00	-8.40	4.00	0.0	Vertical	Passed
2.	17.826495GHz	42.78	21.07	54.00	-11.22	1.50	0.10	Vertical	Passed
3.	4.4096003GHz	45.61	4.43	54.00	-8.39	4.00	0.0	Horizontal	Passed
4.	7.4396894GHz	43.66	7.84	54.00	-10.34	1.00	0.10	Horizontal	Passed
5.	14.329892GHz	47.56	15.26	54.00	-6.44	2.00	324.90	Horizontal	Passed
6.	17.937498GHz	42.82	21.09	54.00	-11.18	2.50	80.90	Horizontal	Passed

Overall Graphs:





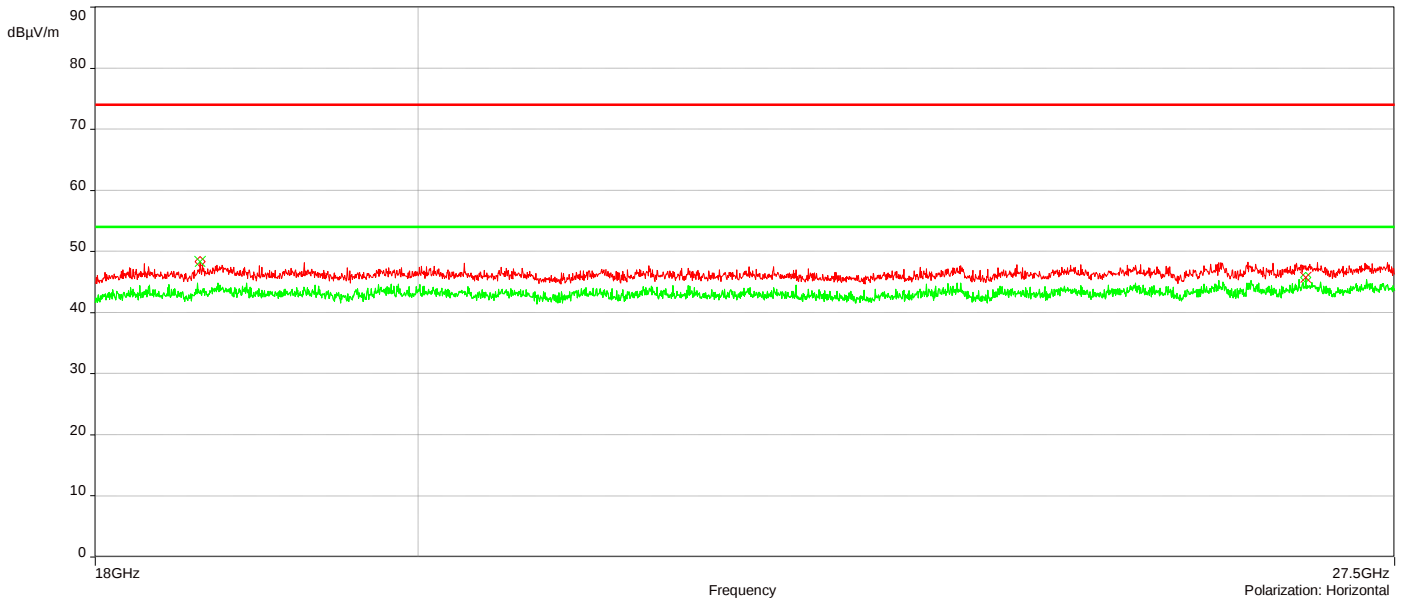
J23133_BT_DH1_Ch 0_18-27.5GHz

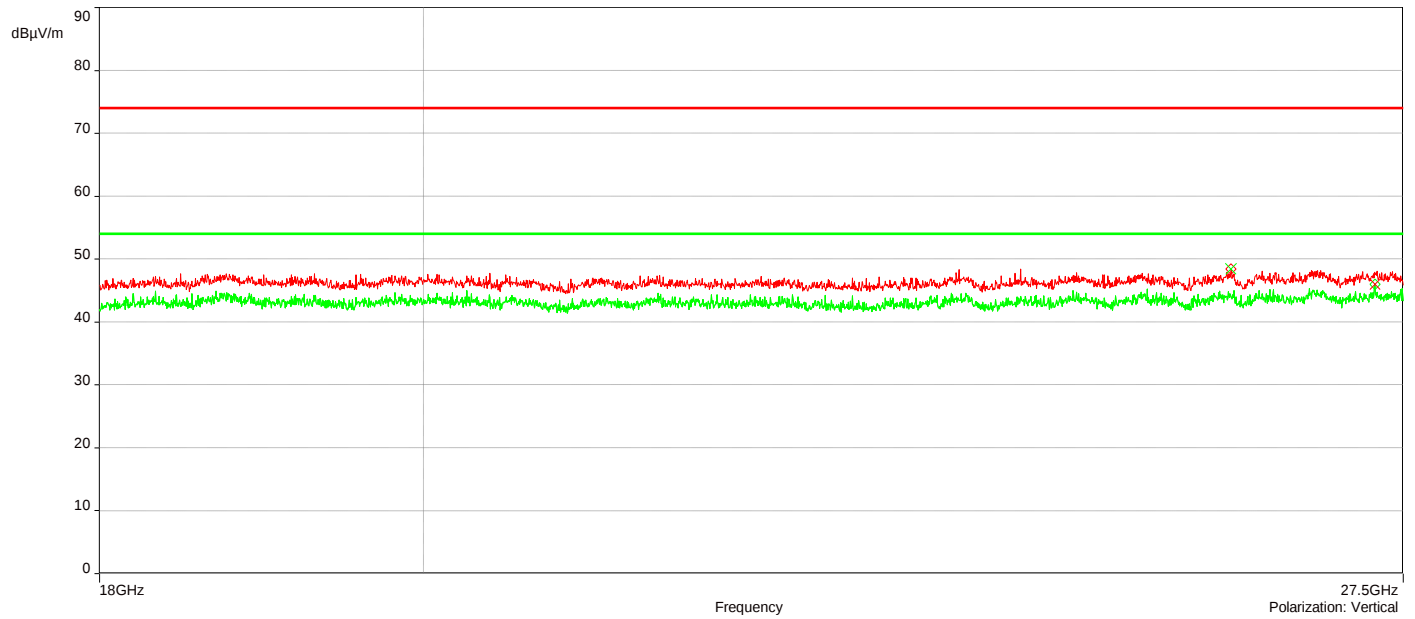
7/30/2024 5:41:58 PM

No	Frequency (MHz)	Level Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	26.003675GHz	48.47	1.45	74.00	-25.53	2.21	157.40	Vertical	Passed
2.	18.625131GHz	48.32	-0.45	74.00	-25.68	2.05	247.40	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	45.99	1.40	54.00	-8.01	3.18	292.40	Vertical	Passed
2.	26.711936GHz	45.74	1.38	54.00	-8.26	2.47	89.90	Horizontal	Passed

Overall Graphs:





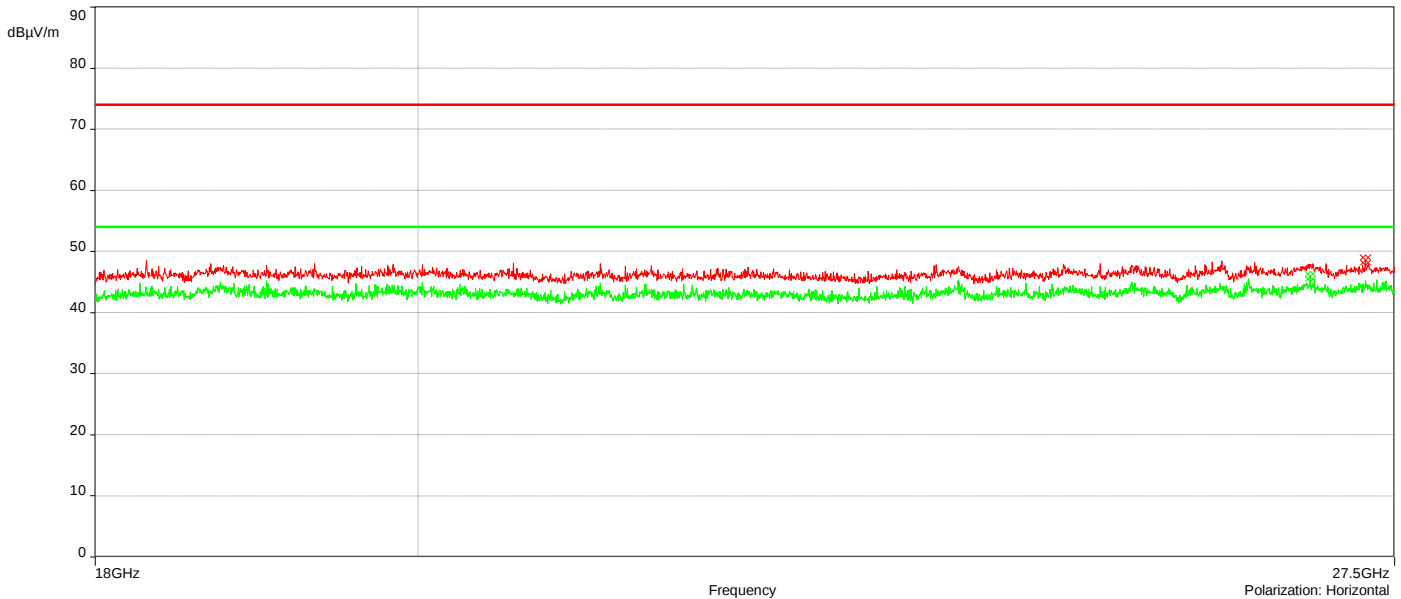
J23133_BT_3-DH1_Ch 0_18-27.5GHz

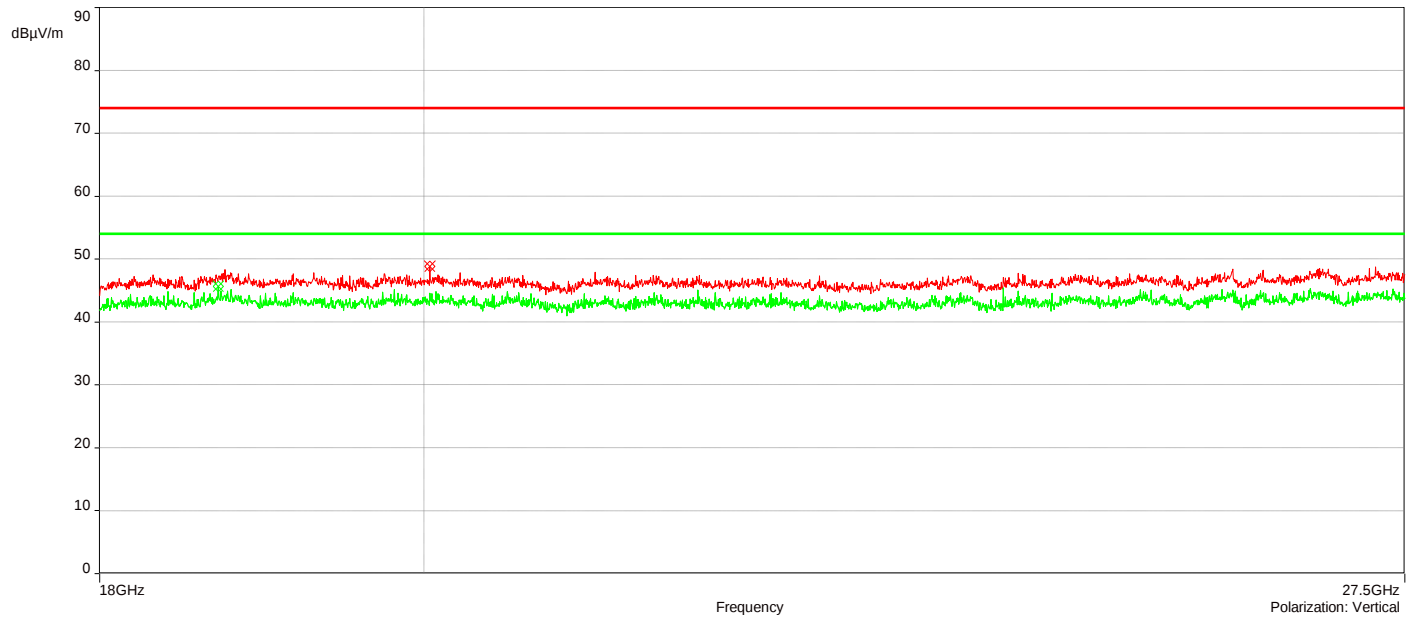
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No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	20.035477GHz	48.87	-1.67	74.00	-25.13	1.41	22.60	Vertical	Passed
2.	27.239212GHz	48.57	1.30	74.00	-25.43	1.78	45.20	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	18.705885GHz	45.66	-1.14	54.00	-8.34	1.79	157.60	Vertical	Passed
2.	26.751838GHz	45.93	1.47	54.00	-8.07	1.54	90.10	Horizontal	Passed

Overall Graphs:





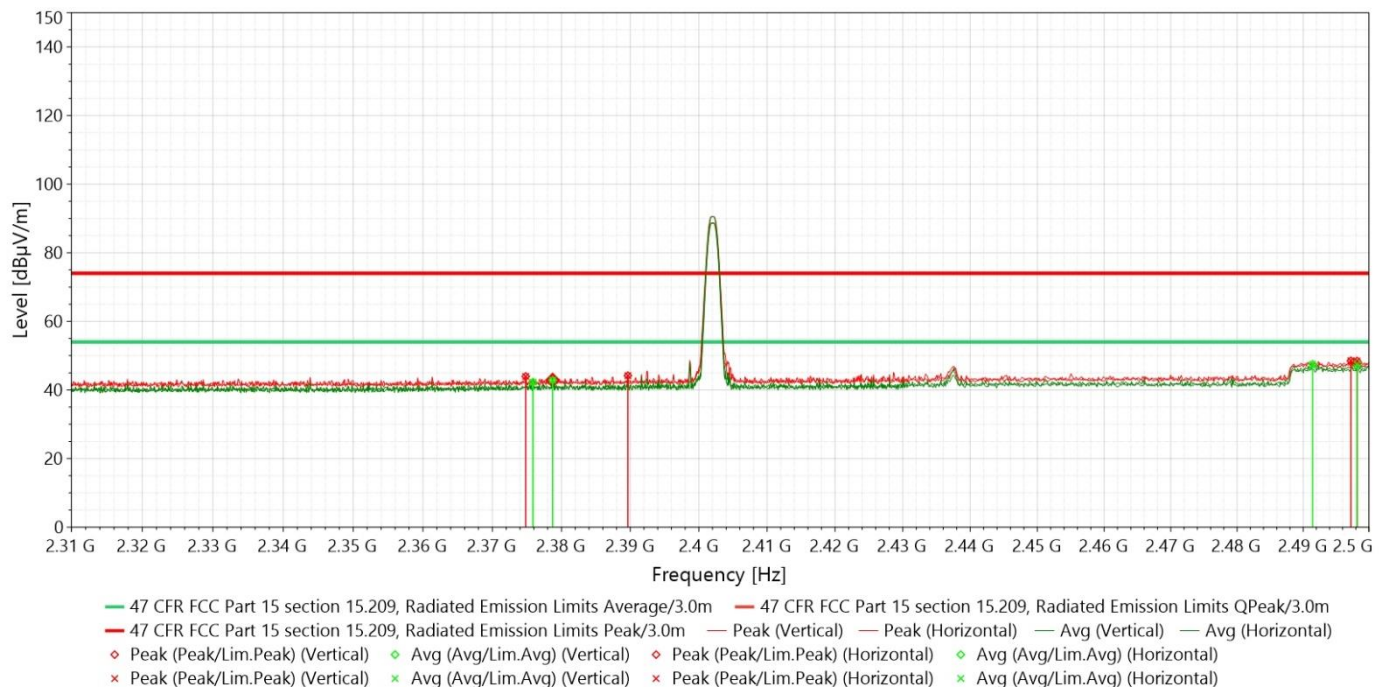
J23133_Restricted Bandedge_BT Classic_DH1_Ch 0

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No	Frequency (MHz)	Level Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.3896498GHz	44.18	-2.31	74.00	-29.82	1.48	179.90	Vertical	Passed
2.	2.4972436GHz	48.50	-1.85	74.00	-25.50	2.29	89.90	Vertical	Passed
3.	2.3748224GHz	43.96	-2.54	74.00	-30.04	1.56	22.40	Horizontal	Passed
4.	2.4981941GHz	48.45	-1.82	74.00	-25.55	1.39	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.	2.3787194GHz	42.85	-2.33	54.00	-11.15	2.68	292.40	Vertical	Passed
2.	2.4914457GHz	47.48	-1.83	54.00	-6.52	3.01	89.90	Vertical	Passed
3.	2.3758679GHz	42.29	-2.52	54.00	-11.71	2.03	89.90	Horizontal	Passed
4.	2.4981941GHz	47.50	-1.82	54.00	-6.50	1.39	67.40	Horizontal	Passed

Overall Graphs:



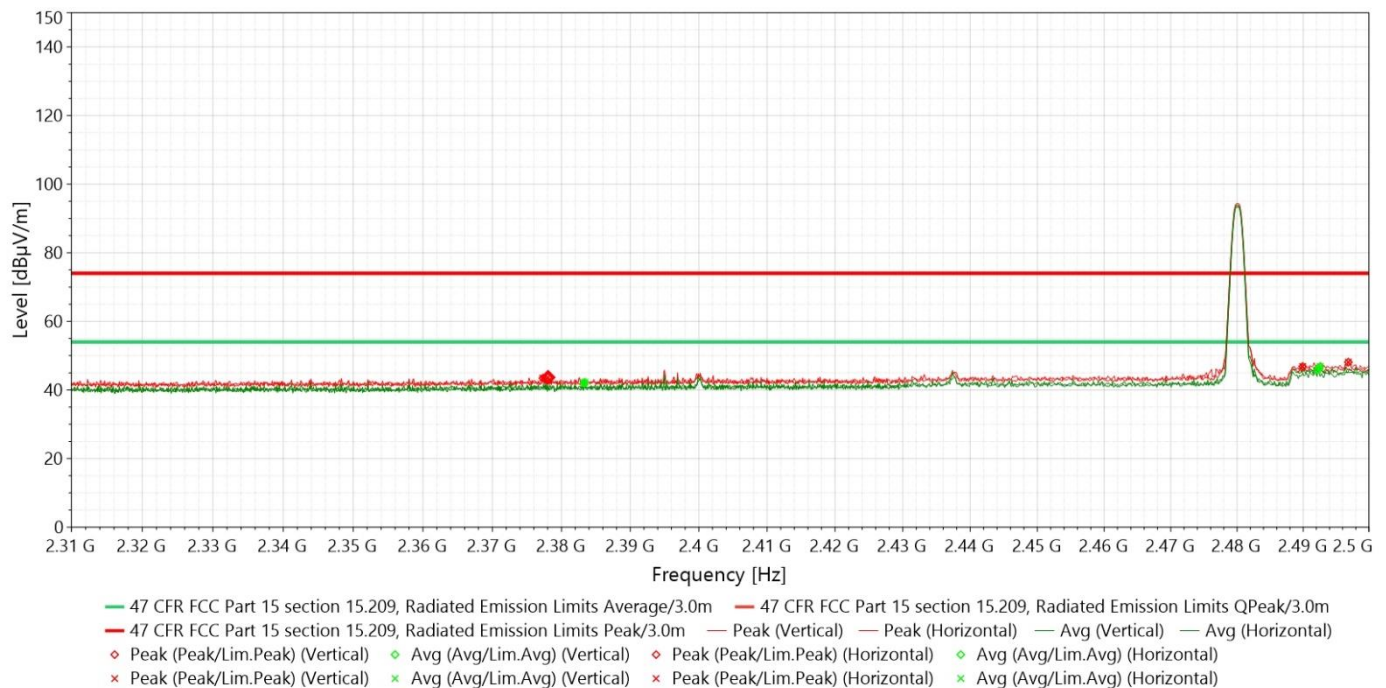
J23133_Restricted Bandedge_BT Classic_DH1_Ch 78

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No	Frequency (MHz)	Level Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.378054GHz	43.66	-2.33	74.00	-30.34	3.57	269.10	Vertical	Passed
2.	2.489925GHz	46.85	-1.83	74.00	-27.15	2.38	89.20	Vertical	Passed
3.	2.3772936GHz	43.47	-2.50	74.00	-30.53	1.03	201.60	Horizontal	Passed
4.	2.4968634GHz	48.10	-1.82	74.00	-25.90	1.48	66.60	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	2.3833767GHz	42.27	-2.32	54.00	-11.73	4.00	179.20	Vertical	Passed
2.	2.4922061GHz	45.86	-1.84	54.00	-8.14	2.67	111.50	Vertical	Passed
3.	2.3832816GHz	42.01	-2.44	54.00	-11.99	2.20	111.50	Horizontal	Passed
4.	2.4925863GHz	46.85	-1.81	54.00	-7.15	1.48	66.60	Horizontal	Passed

Overall Graphs:



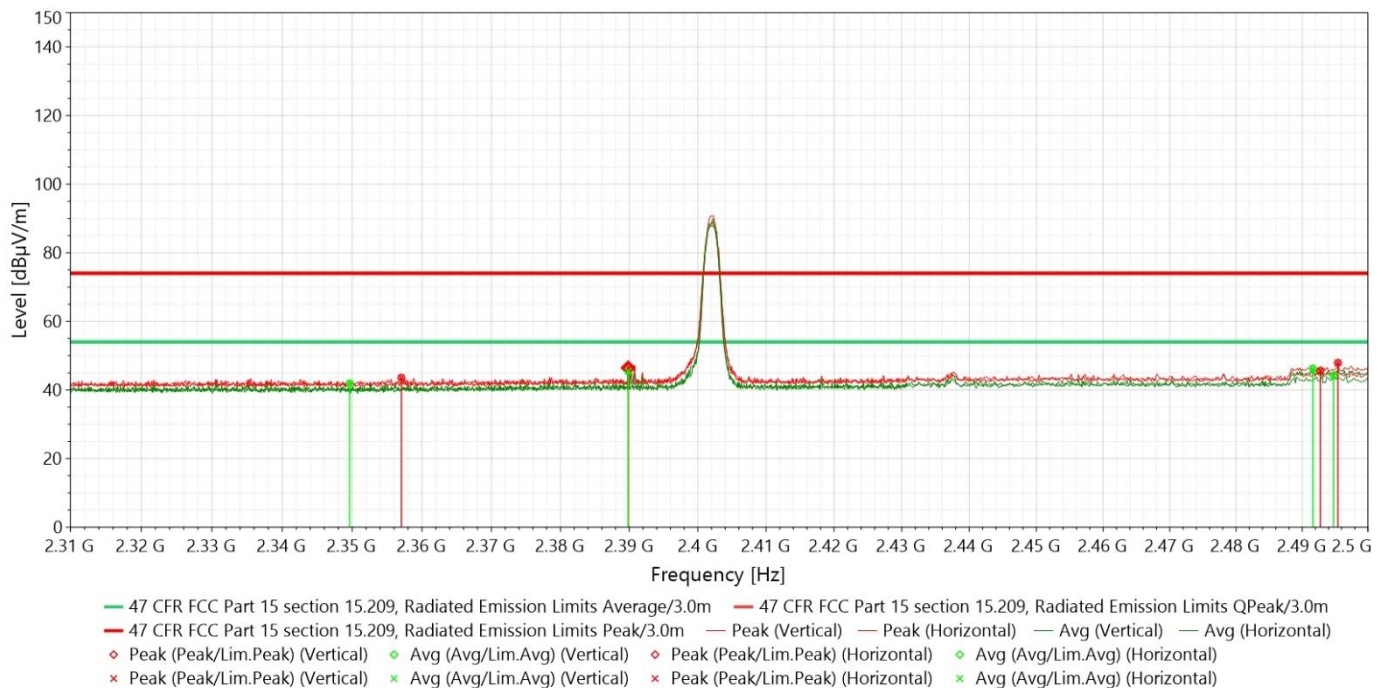
J23133_Restricted Bandedge_BT Classic_3-DH1_Ch 0

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No	Frequency (MHz)	Level Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.3898399GHz	46.44	-2.31	74.00	-27.56	1.93	22.40	Vertical	Passed
2.	2.4954377GHz	47.94	-1.85	74.00	-26.06	2.76	67.40	Vertical	Passed
3.	2.3570485GHz	43.59	-2.81	74.00	-30.41	1.02	112.40	Horizontal	Passed
4.	2.4927764GHz	45.63	-1.81	74.00	-28.37	1.02	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.	2.3898399GHz	45.47	-2.31	54.00	-8.53	1.93	22.40	Vertical	Passed
2.	2.4916358GHz	46.27	-1.83	54.00	-7.73	3.32	157.40	Vertical	Passed
3.	2.3496348GHz	41.96	-2.86	54.00	-12.04	3.78	269.90	Horizontal	Passed
4.	2.4947724GHz	44.26	-1.82	54.00	-9.74	1.00	44.90	Horizontal	Passed

Overall Graphs:



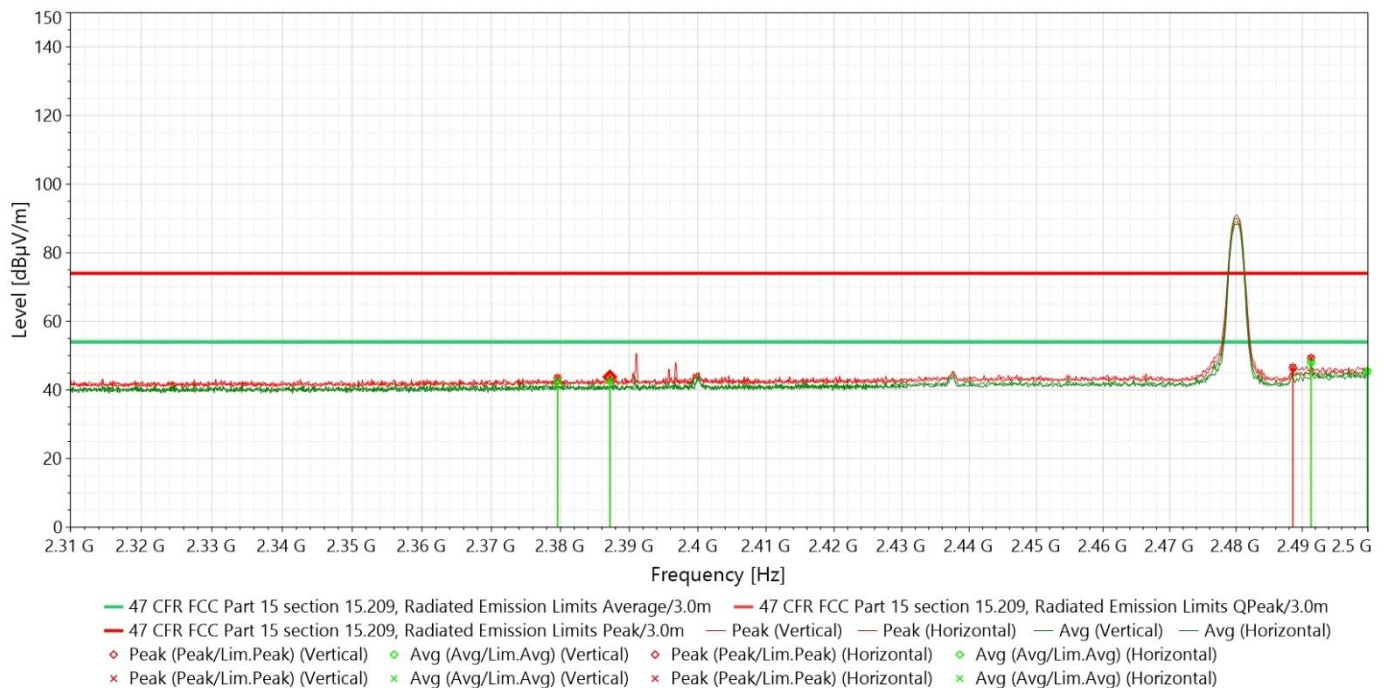
J23133_Restricted Bandedge_BT Classic_3-DH1_Ch 78

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No	Frequency (MHz)	Level Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.3871786GHz	43.79	-2.32	74.00	-30.21	1.75	224.90	Vertical	Passed
2.	2.4913507GHz	49.30	-1.83	74.00	-24.70	1.74	157.40	Vertical	Passed
3.	2.3795748GHz	43.50	-2.48	74.00	-30.50	3.97	44.90	Horizontal	Passed
4.	2.4885943GHz	46.57	-1.80	74.00	-27.43	3.97	44.90	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	2.3871786GHz	42.82	-2.32	54.00	-11.18	1.75	224.90	Vertical	Passed
2.	2.4913507GHz	48.06	-1.83	54.00	-5.94	1.74	157.40	Vertical	Passed
3.	2.3795748GHz	42.64	-2.48	54.00	-11.36	3.97	44.90	Horizontal	Passed
4.	2.499905GHz	45.44	-1.81	54.00	-8.56	1.29	67.40	Horizontal	Passed

Overall Graphs:



Document Revisions

Version	Date	Modifier	Changes
1.0	10/30/2024	Aravind Buddana	Initial Release
2.0	01/25/2025	Aravind Buddana	- Updated Section 1 and Section 4.1 with RSS-247 Issue version. - Updated Section 1 with EUT FVIN Information - Updated Section 4.4.3 Limits of 3-DH1 of carrier frequency separation.

End of Report