



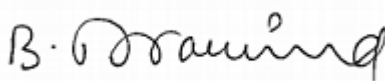
Regulatory Test Report

Prepared for Harman International

This report presents detailed information on

INFO3.8 CSM

Simultaneous Transmission

Prepared by 
Aravind Buddana

Engineer II

Approved by 
Jason Kanakry

General Manager

Issue date: 08/07/2023

Report No: AH22120901-HAR-054-TR6

Simultaneous Transmission v2

This test result relates only to the described test object.
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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 #:	7700166417
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#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 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 v05 and ANSI C63.10-2013 CFR Title 47 FCC Part 15.407, FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 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:	03-01-2023
Date test finished:	03-06-2023

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 Bluetooth at 5.98dBi WLAN 2.4G at 2.57dBi gain. WLAN 5G UNII-1 at 4.39dBi and UNII-3 at 5.05dBi
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. Radiated Testing

4.1 Test Summary

This test report supports an application for **INFO3.8 CSM** Testing pursuant to

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 v05 and ANSI C63.10-2013.

CFR Title 47 FCC Part 15.407, FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 and ANSI C63.10-2013

Bluetooth Classic					
Details		Description			
Frequency Range (MHz)		2402 – 2483.5			
Modulations Supported		GFSK, $\pi/4$ DQPSK, 8DPSK			
Number of Channels		79			
DUT S/N		AH22120901-HAR-054#2			
DUT Model		INFO3.8 CSM			
DUT Operating Mode		Bluetooth Test Mode			
DUT Operating Voltage		12V			
Tested Modulation		3-DH5			
Tested Channels		39,78			
Start Date		03-01-2023			
End Date		03-03-2023			
Tested By		Aravind Buddana			
Temperature/Humidity		Temperature:22.8C Humidity:25.9%			
Antenna	Frequency Range	Polarization	Result Over/Under Limit		Notes
Log Periodic	30MHz-1GHz	Horizontal	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	Emission close to 6dB Limit around 959MHz
		Vertical	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	
Horn	1GHz-18GHz	Horizontal	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	√
		Vertical	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	√

Notes: √ meets the requirements of the acceptance criteria.

Bluetooth Low Energy					
Details		Description			
Frequency Range (MHz)		2402 – 2483.5			
Data Rate Supported		1MHz			
Number of Channels		40			
DUT S/N		AH22120901-HAR-054#2			
DUT Model		INFO3.8 CSM			
DUT Operating Mode		Bluetooth Test Mode			
DUT Operating Voltage		12V			
Tested Data Rate		1MHz			
Tested Channels		0,19			
Start Date		03-01-2023			
End Date		03-03-2023			
Tested By		Aravind Buddana			
Temperature/Humidity		Temperature:22.8C Humidity:25.9%			
Antenna	Frequency Range	Polarization	Result Over/Under Limit		Notes
Log Periodic	30MHz-1GHz	Horizontal	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	Emission close to 6dB Limit around 959MHz
		Vertical	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	
Horn	1GHz-18GHz	Horizontal	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	√
		Vertical	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	√
		Vertical	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	√

WLAN 2.4GHz					
Details		Description			
Frequency Range (MHz)		2400 – 2483.5			
WLAN Modes Supported		802.11b, 802.11g, 802.11n			
Number of Channels		11			
DUT S/N		AH22120901-HAR-054#2			
DUT Model		INFO3.8 CSM			
DUT Operating Mode		WLAN Test Mode			
DUT Operating Voltage		12V			
Tested Modes		802.11n			
Tested Channels		6,11			
Comment		Meets Requirements			
Start Date		03-01-2023			
End Date		03-03-2023			
Tested By		Aravind Buddana			
Temperature/Humidity		Temperature:22.8C Humidity:25.9%			
Antenna	Frequency Range	Polarization	Result Over/Under Limit		Notes
Log Periodic	30MHz-1GHz	Horizontal	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	Emission close to 6dB Limit around 959MHz
		Vertical	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	
Horn	1GHz-18GHz	Horizontal	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	√
		Vertical	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	√
		Vertical	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	√

Notes: √ meets the requirements of the acceptance criteria.

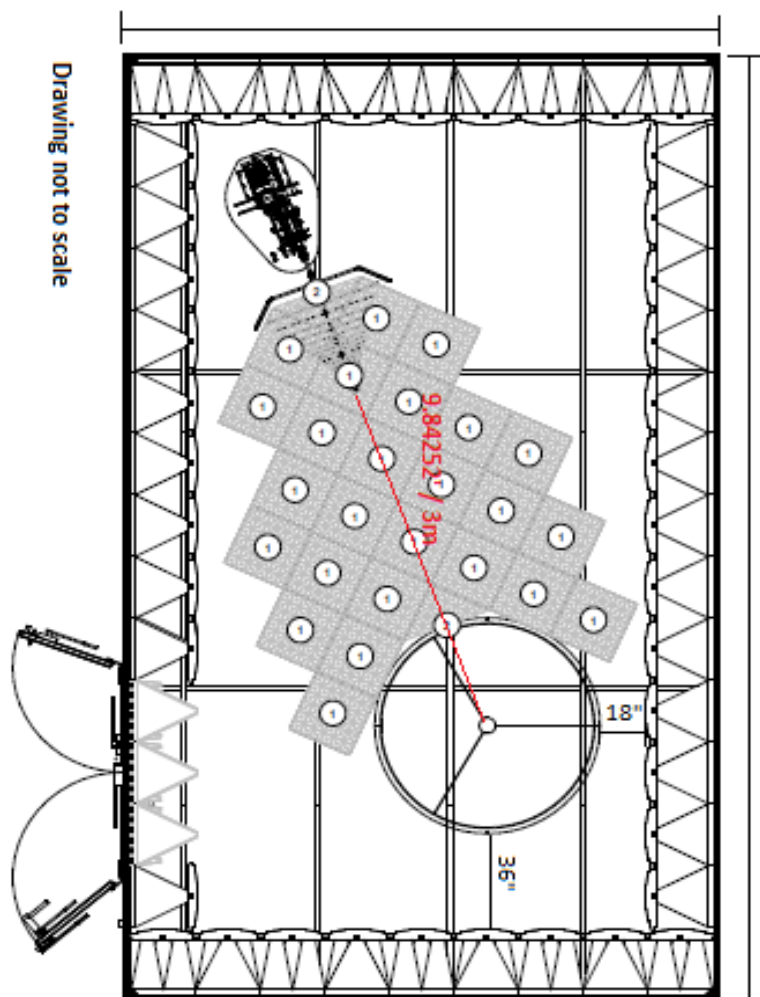
WLAN 5GHz UNII-1					
Details		Description			
Frequency Range (MHz)		5180 – 5240			
WLAN Modes Supported		802.11a, 802.11n, 802.11ac			
Number of Channels		6			
DUT S/N		AH22120901-HAR-054#2			
DUT Model		INFO3.8 CSM			
DUT Operating Mode		WLAN Test Mode			
DUT Operating Voltage		12V			
Tested Modes		802.11a			
Tested Channels		40,48			
Start Date		03-01-2023			
End Date		03-03-2023			
Tested By		Aravind Buddana			
Temperature/Humidity		Temperature:22.8C Humidity:25.9%			
Antenna	Frequency Range	Polarization	Result Over/Under Limit		Notes
Log Periodic	30MHz-1GHz	Horizontal	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	Emission close to 6dB Limit around 959MHz
		Vertical	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	
Horn	1GHz-18GHz	Horizontal	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	√
		Vertical	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	√
Horn	18GHz-40GHz	Horizontal	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	√
		Vertical	<input type="checkbox"/> Over	<input checked="" type="checkbox"/> Under	√

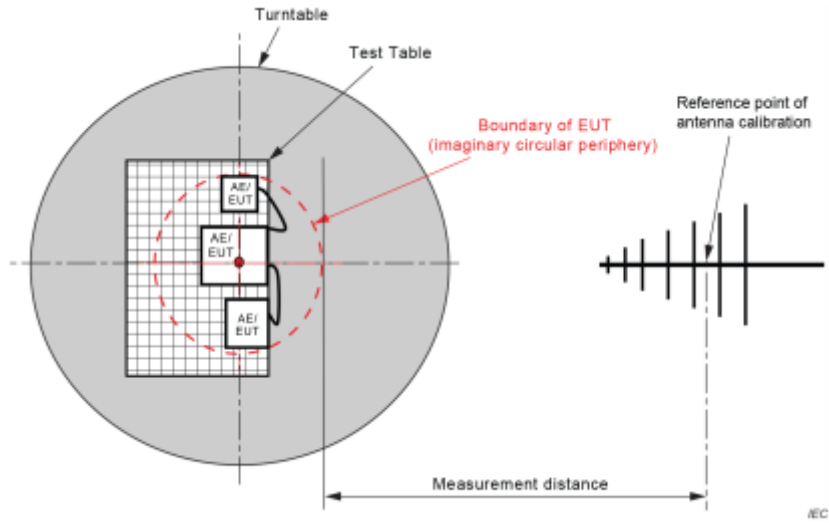
4.2 Test Setup

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





4.3 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	00214778/00 214648	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
BVD0481	Band Reject Filter 40dB from 5150 to 5880MHz	Micro-Tronics	BRM50716	G336	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

4.4 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 ($\mu\text{V}/\text{m}$)	Field strength ($\text{dB}\mu\text{V}/\text{m}$)	Measurement distance (meters)
0.009 ~ 0.490	$2400/F(\text{kHz})$	48.5 - 13.8	300
0.490 ~ 1.705	$24000/F(\text{kHz})$	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 ($\text{dB}\mu\text{V}/\text{m}$)
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

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 $\text{dB}\mu\text{V}/\text{m}$, which is equivalent to $29.09 - 51.48 = -22.39 \text{ dB}\mu\text{A}/\text{m}$, 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 789033 D02 General UNII Test Procedures New Rules v02r01, ISED RSS-247 6.2
The Limits for Unwanted emissions out of the Restricted Bands are as follows.

Procedure	Limits	
	Peak (dBµV/m)	Average (dBµV/m)
KDB 789033 D02 General UNII Test Procedures New Rules v02r01	74	54

§ 15.407

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) For transmitters operating in the 5.15–5.25 GHz band: All emissions outside of the 5.15–5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25–5.35 GHz band: All emissions outside of the 5.15–5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (3) For transmitters operating in the 5.47–5.725 GHz band: All emissions outside of the 5.47–5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (4) For transmitters operating in the 5.725–5.85 GHz band:
 - (i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Procedure	Peak Limit (dBµV/m)
15.407(b)(1)	68.2
15.407(b)(2)	
15.407(b)(3)	
15.407(b)(4)	As stated above

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

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.

4.5 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

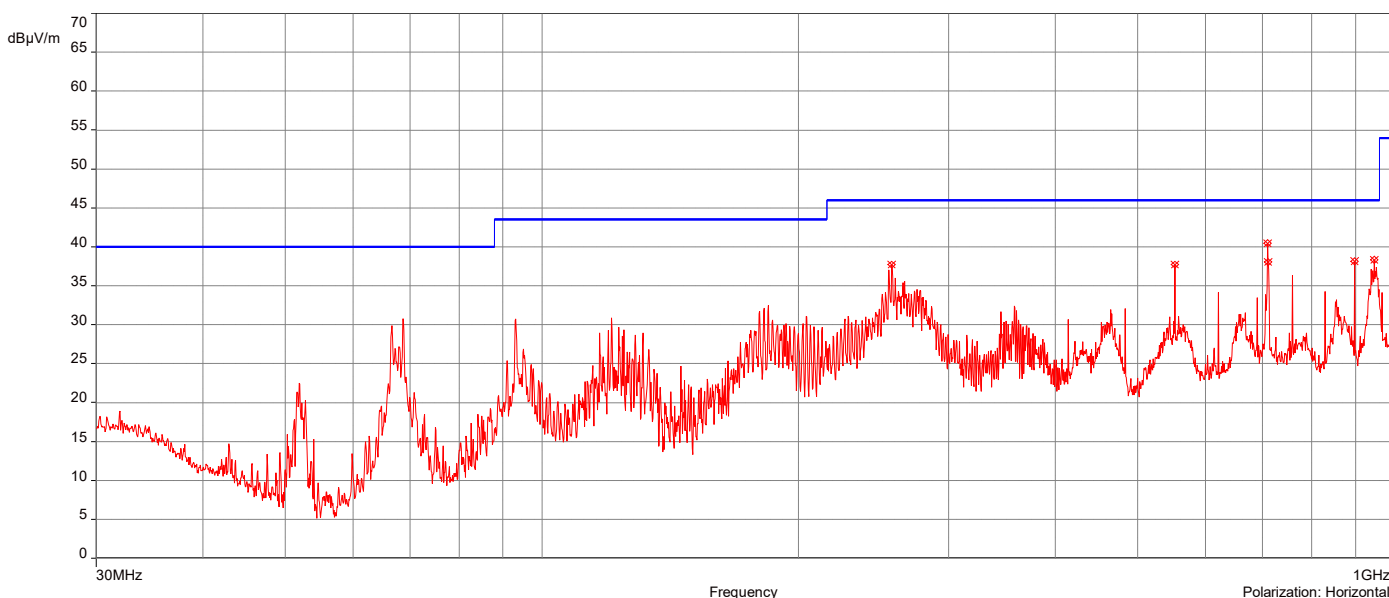
4.5.1 Bluetooth Low Energy + WLAN 2.4G + WLAN 5G

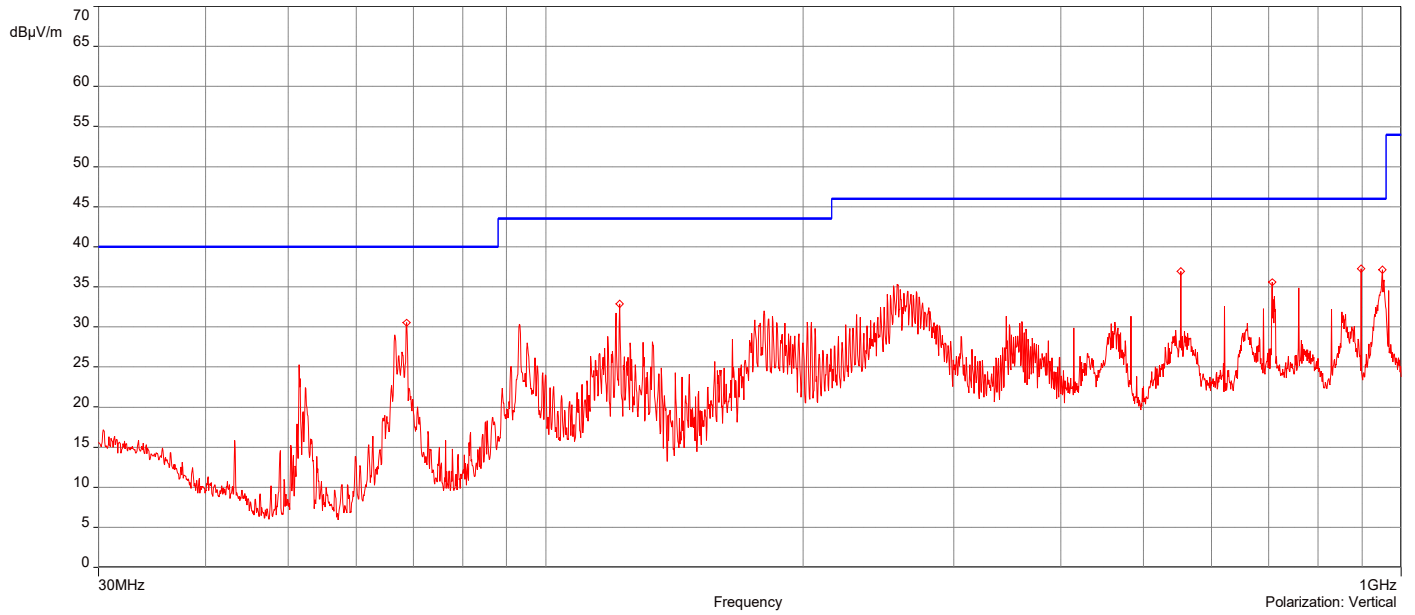
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No	Frequency (MHz)	Level Q-Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	257.2216MHz	37.73	-12.57	46.00	-8.27	1.25	321.10	Horizontal	Passed
2.	552.40426MHz	37.73	-5.66	46.00	-8.27	1.50	111.50	Horizontal	Passed
3.	710.23825MHz	40.47	-2.66	46.00	-5.53	2.00	251.50	Horizontal	Passed
4.	710.98006MHz	38.06	-2.66	46.00	-7.94	2.75	149.90	Horizontal	Passed
5.	897.68751MHz	38.13	-0.39	46.00	-7.87	1.00	140.40	Horizontal	Passed
6.	947.33161MHz	38.36	-0.01	46.00	-7.64	1.00	340.80	Horizontal	Passed

Overall Graphs:





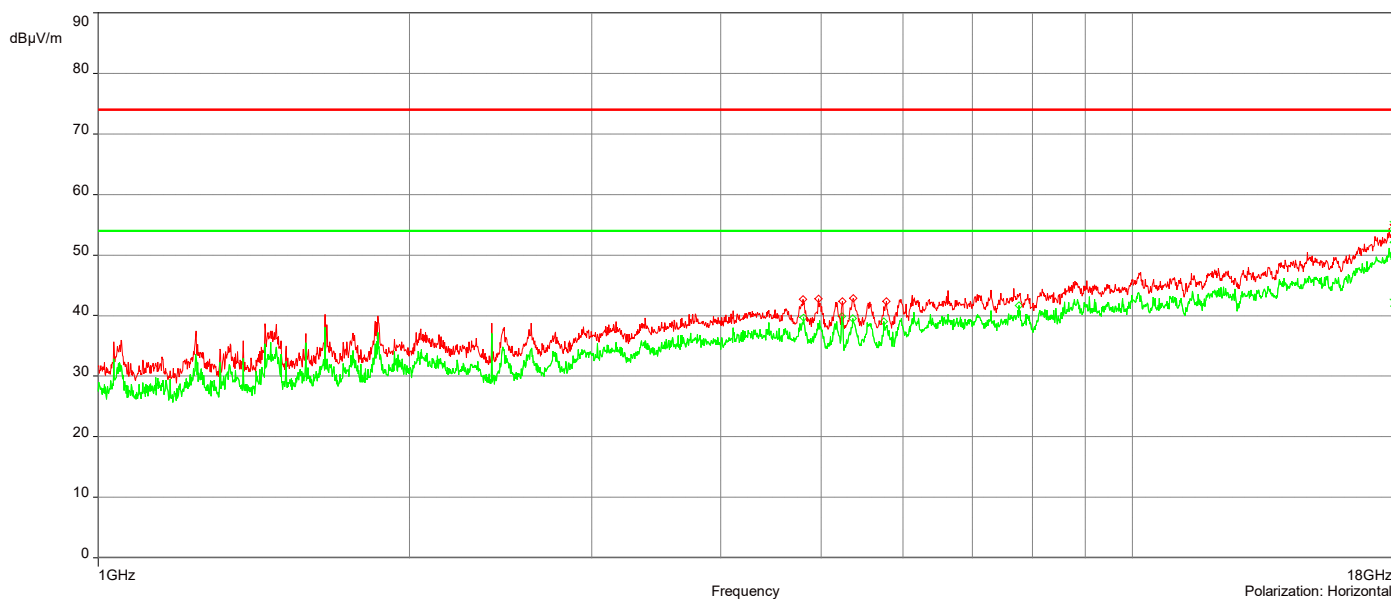
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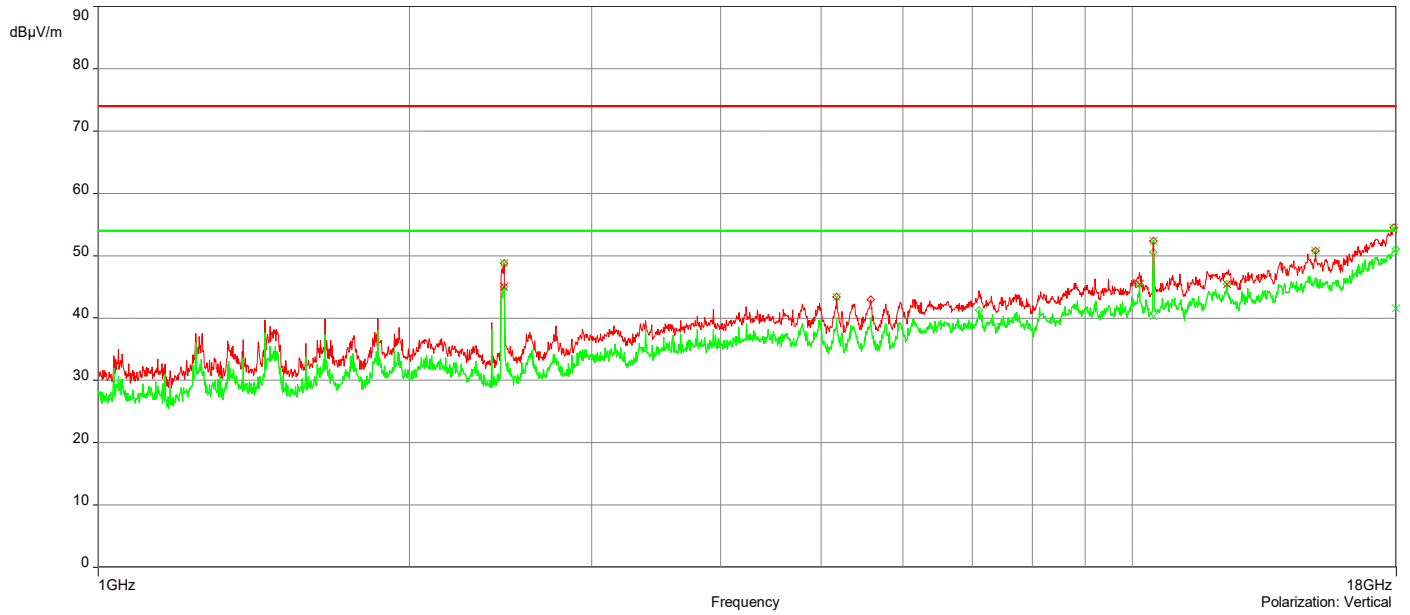
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No	Frequency (MHz)	Level Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.4695432GHz	48.79	-1.35	74.00	-25.21	2.00	157.00	Vertical	Passed
2.	5.1766228GHz	43.37	5.21	74.00	-30.63	3.00	231.20	Vertical	Passed
3.	10.481779GHz	52.39	9.88	74.00	-21.61	4.00	74.70	Vertical	Passed
4.	15.044413GHz	50.83	14.14	74.00	-23.17	2.00	261.30	Vertical	Passed
5.	17.898497GHz	54.49	19.81	74.00	-19.51	4.00	352.40	Vertical	Passed
6.	17.899997GHz	55.00	19.74	74.00	-19.00	4.00	10.80	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	2.4695432GHz	44.99	-1.35	54.00	-9.01	2.00	157.00	Vertical	Passed
2.	10.157769GHz	45.42	10.47	54.00	-8.58	2.50	59.50	Vertical	Passed
3.	10.487279GHz	40.31	9.88	54.00	-13.69	3.50	85.10	Vertical	Passed
4.	12.350334GHz	45.47	12.27	54.00	-8.53	1.00	2.50	Vertical	Passed
5.	17.972999GHz	41.56	20.22	54.00	-12.44	2.00	266.90	Vertical	Passed
6.	17.897997GHz	42.11	19.73	54.00	-11.89	1.00	0.10	Horizontal	Passed

Overall Graphs:





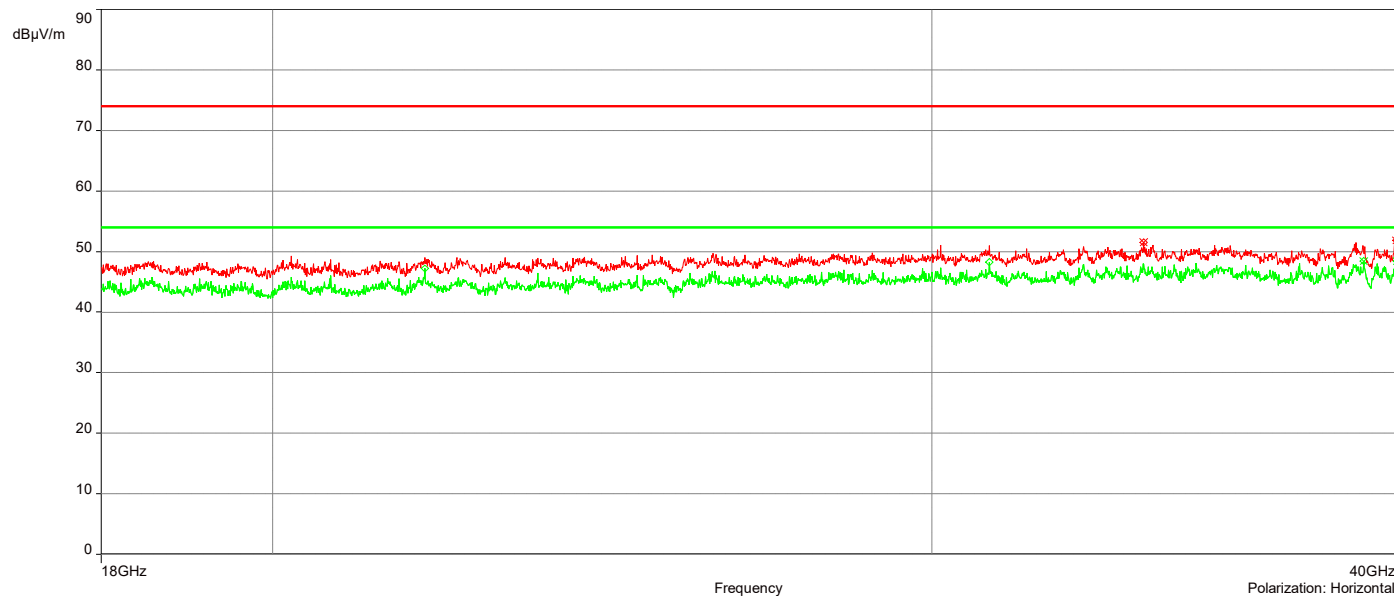
AH22120901-HAR-054#2_BLE-1MHz-CHO_2.4G-802.11n-CH11_5G-802.11a-CH48 18-40GHz

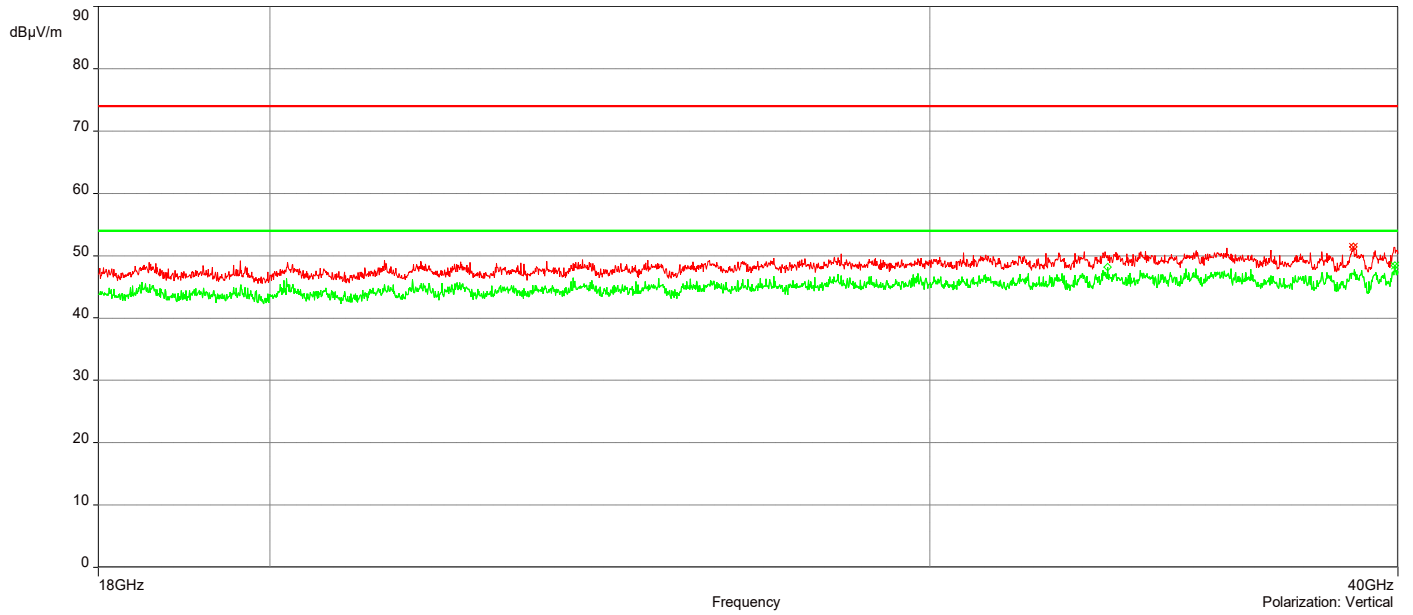
3/1/2023 12:41:35 PM

No	Frequency (MHz)	Level Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	38.916975GHz	51.40	6.29	74.00	-22.60	2.61	157.40	Vertical	Passed
2.	34.175868GHz	51.54	5.42	74.00	-22.46	2.21	67.40	Horizontal	Passed
3.	39.927498GHz	51.85	6.35	74.00	-22.15	2.86	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.	39.919998GHz	48.41	6.18	54.00	-5.59	2.35	89.90	Vertical	Passed
2.	39.12448GHz	48.44	6.01	54.00	-5.56	1.00	89.90	Horizontal	Passed
3.	39.930498GHz	48.42	6.35	54.00	-5.58	3.13	157.40	Horizontal	Passed

Overall Graphs:





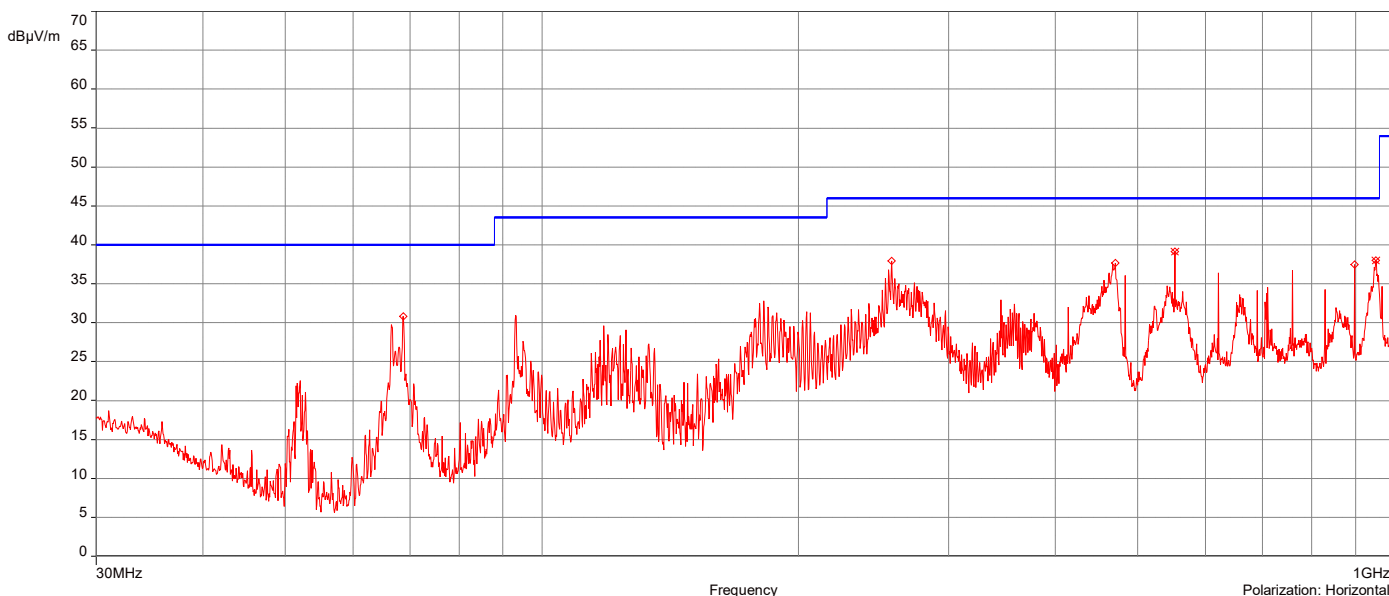
4.5.2 Bluetooth Classic + WLAN 2.4G + WLAN 5G

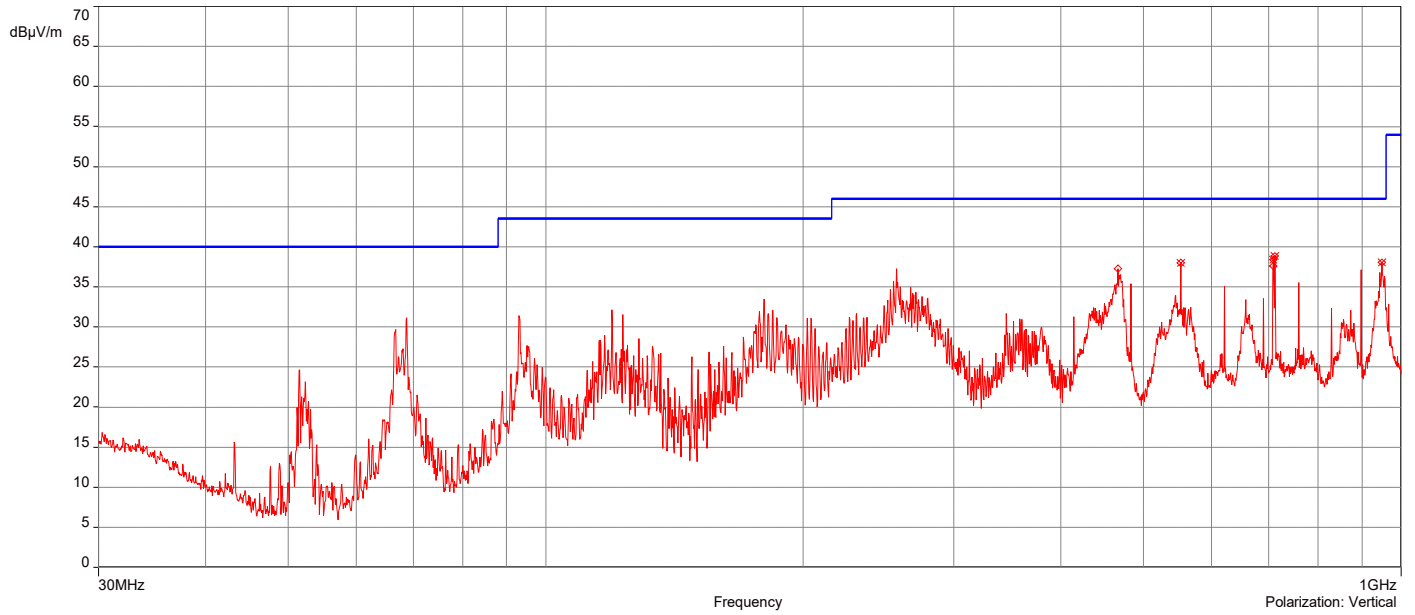
AH22120901-HAR-054#2_BT-3DH5-CH39_2.4G-802.11n-CH6_5G-802.11a-CH40_30MHz-1GHz

3/6/2023 11:55:57 AM

No	Frequency (MHz)	Level Q-Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	552.40426MHz	38.00	-6.60	46.00	-8.00	1.50	111.20	Vertical	Passed
2.	708.46932MHz	38.43	-3.87	46.00	-7.57	1.00	246.60	Vertical	Passed
3.	711.83599MHz	38.88	-3.75	46.00	-7.12	1.00	233.80	Vertical	Passed
4.	950.29884MHz	38.09	-1.16	46.00	-7.91	1.50	185.80	Vertical	Passed
5.	552.40426MHz	39.14	-5.66	46.00	-6.86	1.50	106.00	Horizontal	Passed
6.	951.21184MHz	37.99	0.02	46.00	-8.01	1.50	194.10	Horizontal	Passed

Overall Graphs:





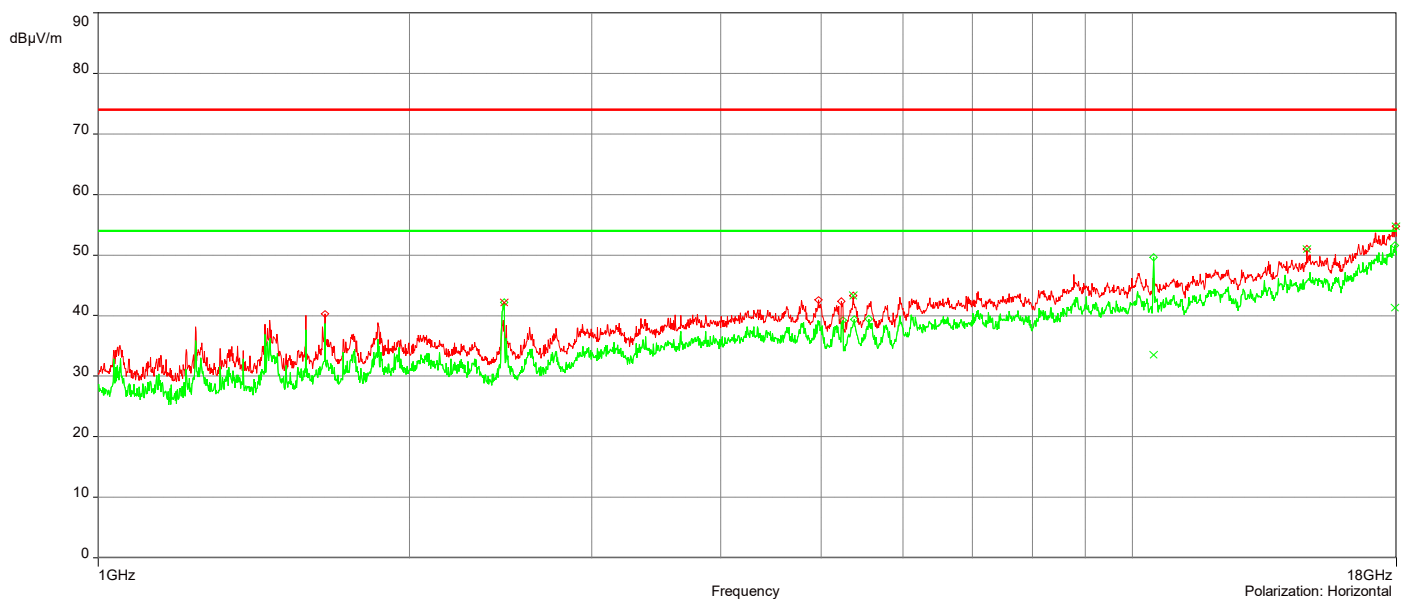
AH22120901-HAR-054#2_BT-3DH5-CH78_2.4G-802.11n-CH11_5G-802.11a-CH48 1-18GHz

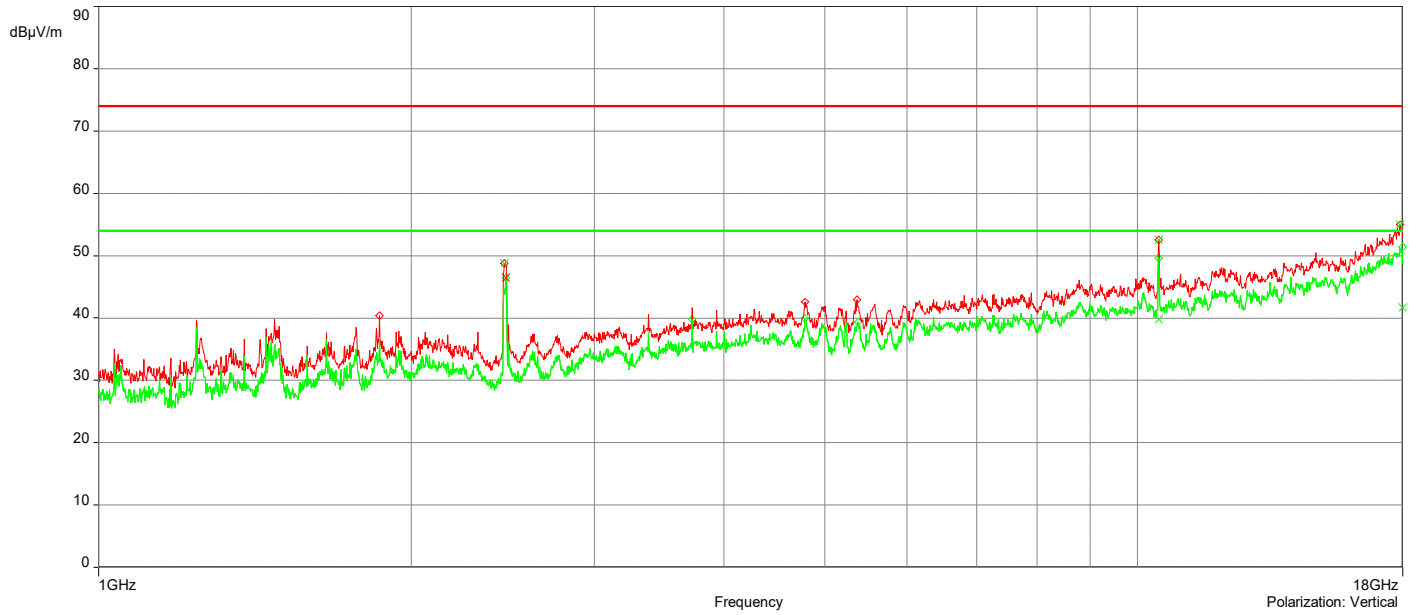
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No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.4585429GHz	48.78	-1.37	74.00	-25.22	2.00	161.50	Vertical	Passed
2.	10.479779GHz	52.53	9.88	74.00	-21.47	4.00	105.70	Vertical	Passed
3.	17.893497GHz	55.03	19.78	74.00	-18.97	1.50	235.40	Vertical	Passed
4.	5.3706285GHz	43.26	5.90	74.00	-30.74	3.00	182.00	Horizontal	Passed
5.	14.747404GHz	50.96	14.76	74.00	-23.04	1.00	253.60	Horizontal	Passed
6.	17.9885GHz	54.72	20.42	74.00	-19.28	1.50	63.90	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	2.4655431GHz	46.47	-1.35	54.00	-7.53	2.00	161.50	Vertical	Passed
2.	10.484779GHz	39.81	9.88	54.00	-14.19	4.00	75.10	Vertical	Passed
3.	17.9975GHz	41.68	20.64	54.00	-12.32	1.00	235.10	Vertical	Passed
4.	2.4695432GHz	42.18	-1.18	54.00	-11.82	4.00	359.90	Horizontal	Passed
5.	10.484779GHz	33.55	9.86	54.00	-20.45	4.00	359.90	Horizontal	Passed
6.	17.937498GHz	41.32	19.93	54.00	-12.68	3.00	301.90	Horizontal	Passed

Overall Graphs:





AH22120901-HAR-054#2_BT-3DH5-CH78_2.4G-802.11n-CH11_5G-802.11a-CH48 18-40GHz

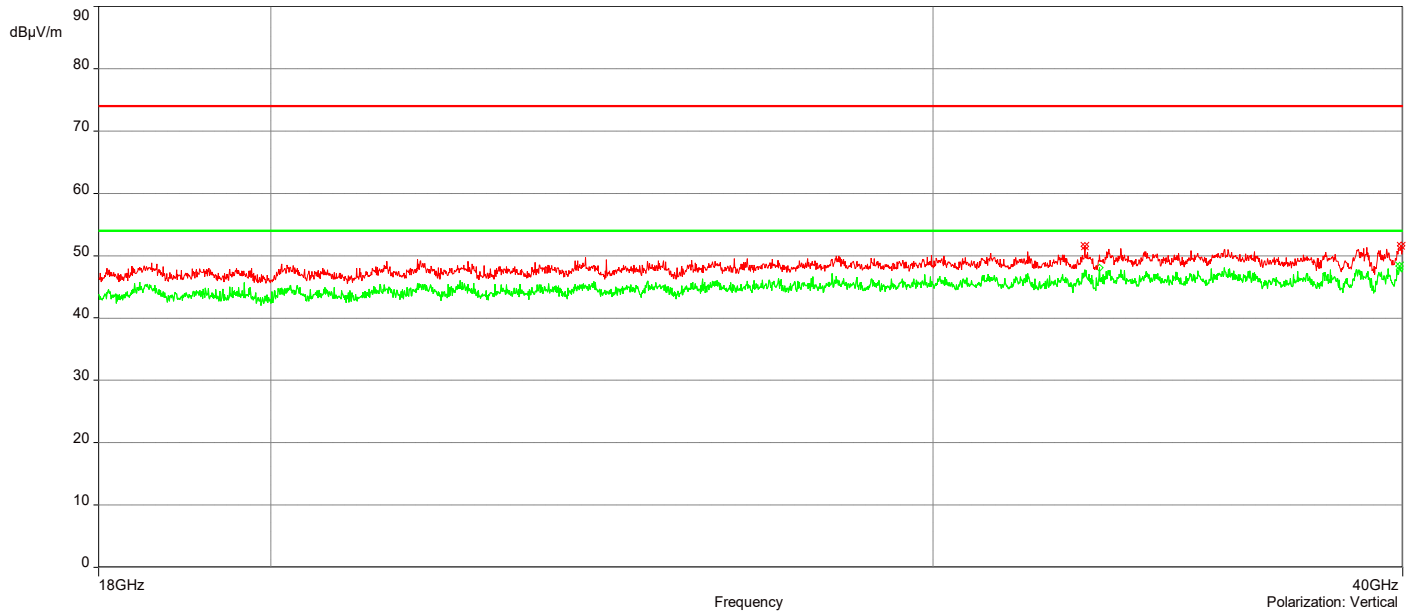
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No	Frequency (MHz)	Level Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	32.922339GHz	51.51	6.01	74.00	-22.49	3.97	90.00	Vertical	Passed
2.	39.959499GHz	51.60	6.22	74.00	-22.40	4.00	112.60	Vertical	Passed
3.	39.985GHz	51.34	6.42	74.00	-22.66	3.58	292.60	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	39.926498GHz	48.30	6.20	54.00	-5.70	2.71	292.60	Vertical	Passed
2.	38.911475GHz	48.21	6.30	54.00	-5.79	2.66	292.60	Horizontal	Passed
3.	39.981GHz	48.50	6.41	54.00	-5.50	1.03	270.10	Horizontal	Passed

Overall Graphs:





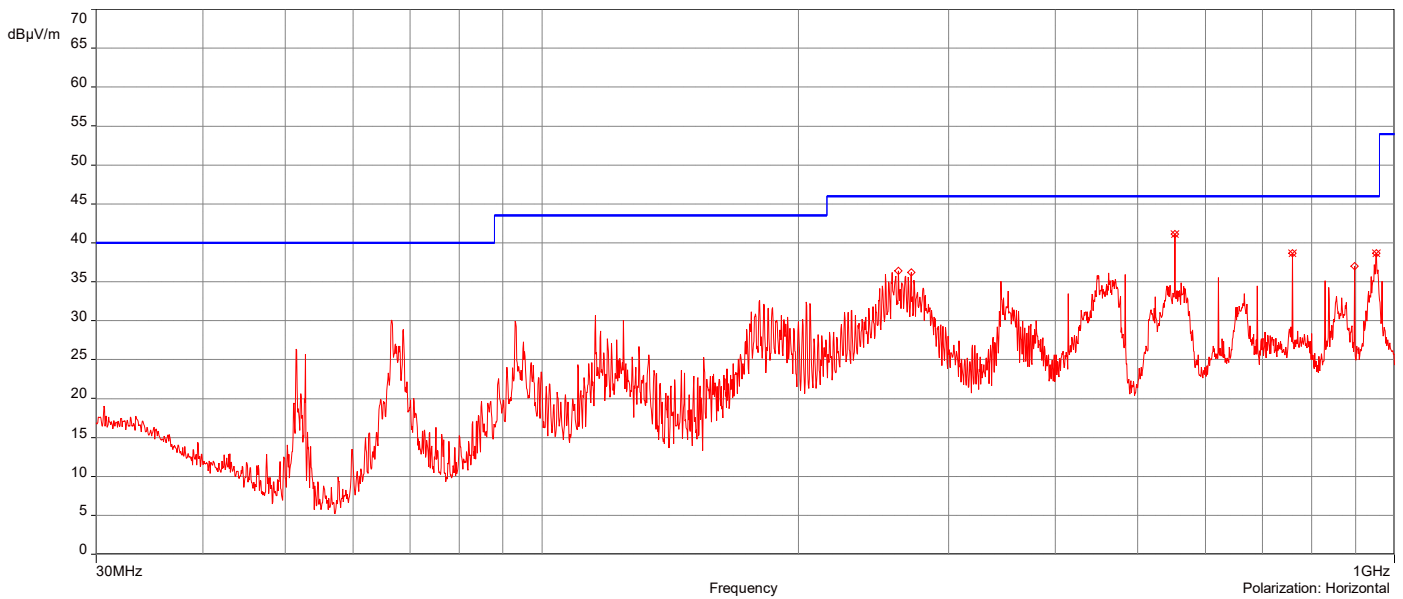
4.5.3 WLAN 2.4G + WLAN 5G

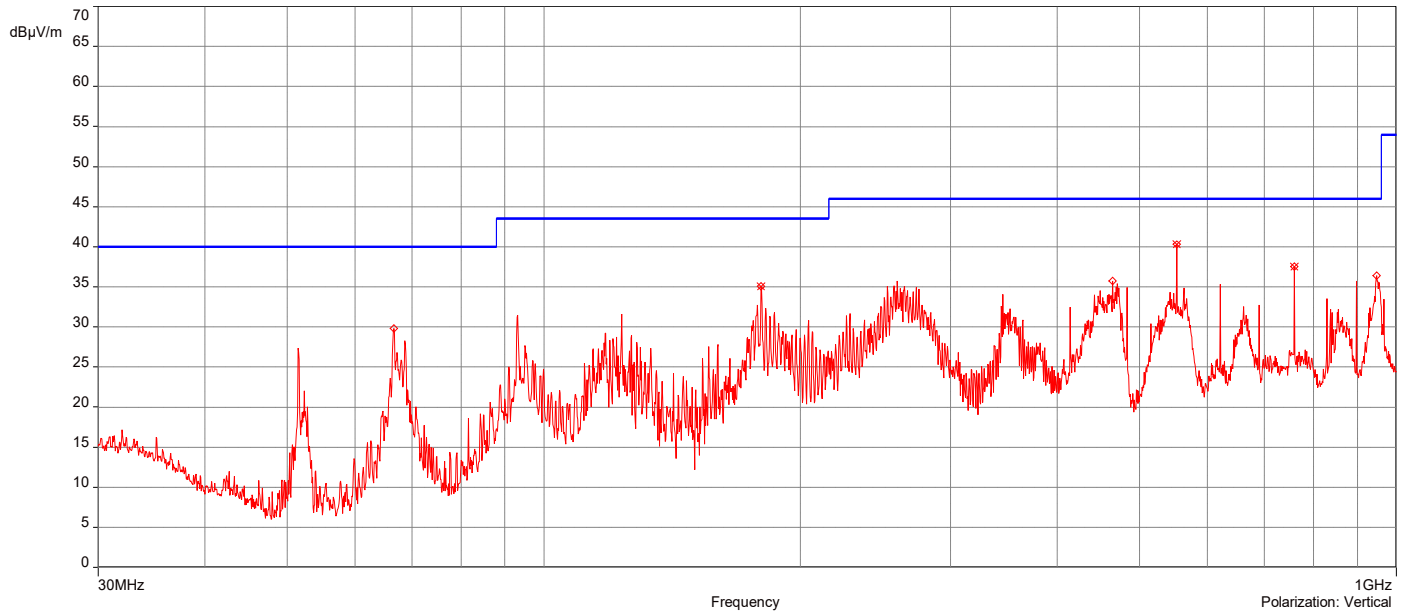
AH22120901-HAR-054#2_2.4G-802.11n-CH6_5G-802.11a-CH40_30MHz-1GHz

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No	Frequency (MHz)	Level Q-Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	179.84528MHz	35.10	-13.53	43.50	-8.40	2.50	331.60	Vertical	Passed
2.	552.40426MHz	40.30	-6.60	46.00	-5.70	1.00	188.40	Vertical	Passed
3.	759.59704MHz	37.51	-3.29	46.00	-8.49	1.25	63.80	Vertical	Passed
4.	552.40426MHz	41.10	-5.66	46.00	-4.90	1.00	177.10	Horizontal	Passed
5.	759.59704MHz	38.70	-2.19	46.00	-7.30	1.25	63.60	Horizontal	Passed
6.	951.66833MHz	38.68	0.02	46.00	-7.32	1.00	341.00	Horizontal	Passed

Overall Graphs:





AH22120901-HAR-054#2_2.4G-802.11n-CH11_5G-802.11a-CH48 1-18GHz

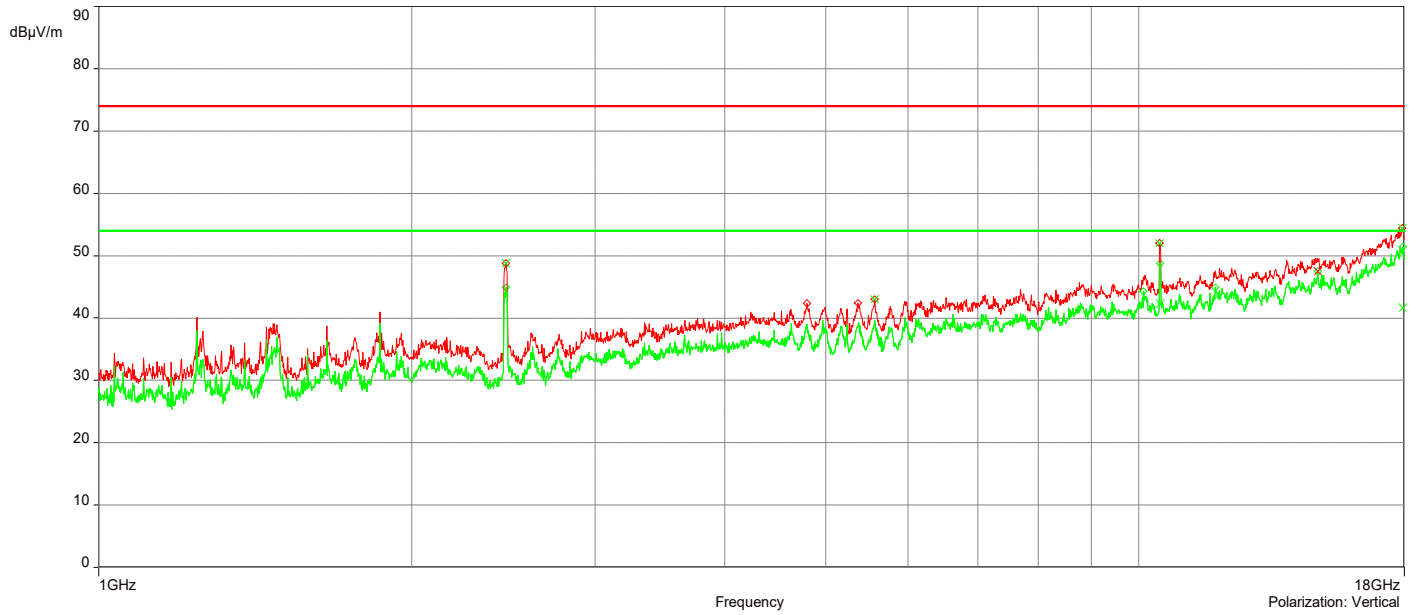
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No	Frequency (MHz)	Level Peak Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	2.4650431GHz	48.77	-1.35	74.00	-25.23	2.00	150.30	Vertical	Passed
2.	5.5746345GHz	43.06	6.08	74.00	-30.94	2.50	59.50	Vertical	Passed
3.	10.470279GHz	52.01	9.89	74.00	-21.99	4.00	74.50	Vertical	Passed
4.	17.917498GHz	54.43	19.90	74.00	-19.57	3.50	192.10	Vertical	Passed
5.	11.956822GHz	48.30	11.84	74.00	-25.70	1.50	176.20	Horizontal	Passed
6.	17.897997GHz	54.58	19.73	74.00	-19.42	2.50	63.00	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBµV/m)	Correction Factor (dB)	Limit dBµV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	10.479779GHz	42.23	9.88	54.00	-11.77	3.00	85.10	Vertical	Passed
2.	14.870408GHz	47.49	14.54	54.00	-6.51	1.50	338.10	Vertical	Passed
3.	17.935498GHz	41.66	19.99	54.00	-12.34	1.00	323.10	Vertical	Passed
4.	12.277332GHz	45.67	12.01	54.00	-8.33	2.50	4.20	Horizontal	Passed
5.	14.830407GHz	47.73	15.02	54.00	-6.27	2.50	158.40	Horizontal	Passed
6.	17.904997GHz	41.75	19.77	54.00	-12.25	2.00	180.10	Horizontal	Passed

Overall Graphs:





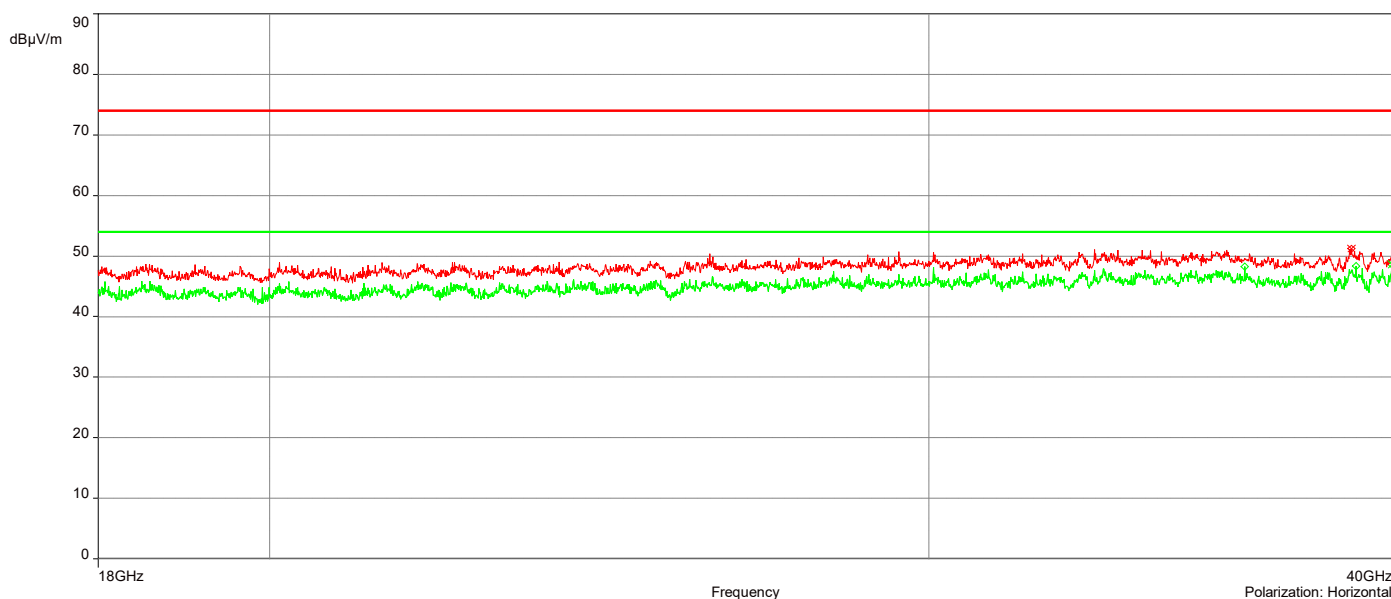
AH22120901-HAR-054#2_2.4G-802.11n-CH11_5G-802.11a-CH48 18-40GHz

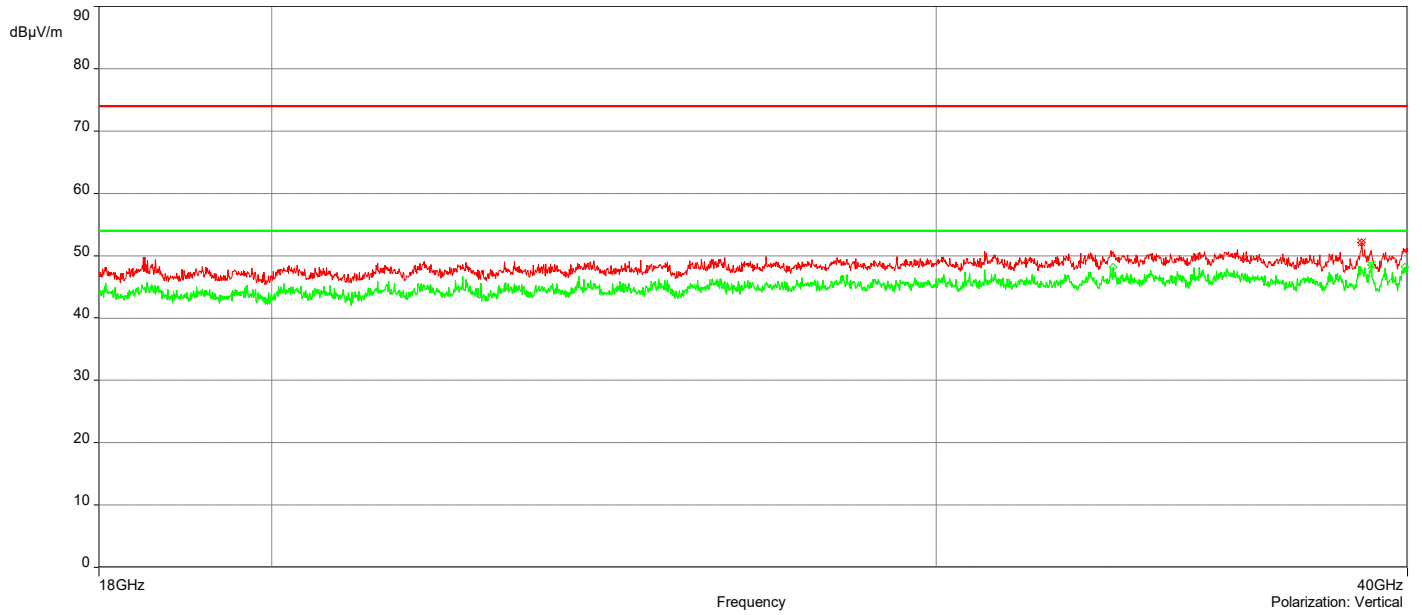
3/1/2023 1:05:25 PM

No	Frequency (MHz)	Level Peak Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgement
1.	38.897975GHz	52.10	6.37	74.00	-21.90	4.00	337.40	Vertical	Passed
2.	38.912975GHz	51.22	6.29	74.00	-22.78	3.30	247.60	Horizontal	Passed

No	Frequency (MHz)	Level Average Reading (dBμV/m)	Correction Factor (dB)	Limit dBμV/m	Margin (dB)	Height (m)	Angle (°)	Polarization	Judgment
1.	39.12848GHz	48.49	6.01	54.00	-5.51	2.24	292.60	Vertical	Passed
2.	39.889997GHz	48.64	6.18	54.00	-5.36	1.03	315.10	Horizontal	Passed

Overall Graphs:





Document Revisions

Version	Date	Modifier	Changes
1.0	03-14-2023	Aravind Buddana	<ul style="list-style-type: none">Initial Draft
2.0	08-07-2023	Aravind Buddana	<ul style="list-style-type: none">Updated Radiated Emissions measurement procedures.

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