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Abbott Laboratories
TEST REPORT

SCOPE OF WORK
EMISSIONS TESTING – Merlin 2 PCS Programmer, Model: MER3700

REPORT NUMBER
105602398MPK-002

ISSUE DATE | **[REVISED DATE]**
December 28, 2023 | January 26, 2024

PAGES
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DOCUMENT CONTROL NUMBER
Non-Specific Radio Report Shell Rev. December 2017

Class II Permissive Change
TEST REPORT

Report Number: 105602398MPK-002
Project Number: G105602398
Issued Date: December 28, 2023
Revised Date: January 26, 2024

Testing performed on the
Merlin 2 PCS Programmer
Model: MER3700

to
FCC Part 15 Subpart E (15.407)
ISED RSS-247, Issue 3

For

Abbott Laboratories

Test Performed by:	**Test Authorized by:**
Intertek	Abbott Laboratories
1365 Adams Court	15900 Valley View Court
Menlo Park, CA 94025 USA	Sylmar, CA 91342 USA

Prepared by: _____ **Date:** January 09, 2024
Gilberto Gallegos Rangel

Reviewed by: _____ **Date:** January 09, 2024
Minh Ly

Report No. 105602398MPK-002	
Equipment Under Test:	Merlin 2 PCS Programmer
Trade Name:	Abbott Laboratories
Model Number:	MER3700
Applicant:	Abbott Laboratories
Contact:	Perry Li
Address:	Abbott Laboratories 15900 Valley View Court Sylmar, CA 91342
Country:	USA
Tel. Number:	(818) 493-3793
Email:	perry.li@abbott.com
Applicable Regulation:	FCC Part 15, Subpart E (15.407) ISED RSS-247, Issue 3
Date of Test:	November 1, 2023 – December 14, 2023

We attest to the accuracy of this report:

Gilberto Gallegos Rangel
Project Engineer

Minh Ly
EMC Team Lead

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1.0 Introduction

1.1 Summary of Tests

Test	Reference FCC	Reference RSS-247	Result
Conducted Output Power	15.407(a)(1)(2)(3)	RSS-247, 6.2	Complies
Undesirable Emissions	15.407(b)(1-8)	RSS-247, 6.2	Complies
Transmitter Radiated Emissions	15.407(b)(1-8) 15.209, 15.205	RSS-247, 6.2	Complies
AC Line Conducted Emission	15.207	RSS-GEN	Complies
Antenna Requirement	15.203	RSS-GEN	Complies. (Internal Antenna)

EUT receive date: October 16, 2023

EUT receive condition: The pre-production version of the EUT was received in good condition with no apparent damage. As declared by the Applicant, it is identical to the production units.

Test start date: November 01, 2023

Test completion date: December 14, 2023

The test results in this report pertain only to the item tested.

2.0 General Description

2.1 Product Description

Abbott Laboratories supplied the following description of the EUT:

Merlin™ 2 PCS Model MER3700 (Hardware) and Model MER3400 (Software) is a portable, dedicated programming system designed to interrogate, program, display data, and test implantable devices and leads. Merlin™ 2 PCS Model MER3700 and Model MER3400 programmer system is defined to be the programmer, all attached accessories, cables, and the telemetry interface to support implantable devices.

The information about the 5GHz radio, installed in the model MER3700, is presented below.

Radio Information	
Applicant	Abbott Laboratories
Model Number	MER3700
Modulation Technique	OFDM
Rated RF Output	21.45 dBm
Frequency Range	U-NII 1: 5150 – 5250 MHz U-NII-2A: 5250-5350 MHz U-NII 2C: 5470-5725 MHz U-NII 3: 5725 – 5850 MHz
Type of modulation	OFDM
Antenna(s) & Gain	Internal Antennas, Gain: 5.32 dBi
Applicant Name & Address	Abbott Laboratories 15900 Valley View Court Sylmar, CA 91342 USA

2.2 Related Submittal(s) Grants

None.

2.3 Test Methodology

Antenna conducted measurements were performed according to the FCC documents “Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E” (789033 D02 General U-NII Test Procedures New Rules v02r01).

Radiated emissions measurements were performed according to the procedures in ANSI C63.10: 2013. Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the **"Data Sheet"** of this Application.

All other measurements were made in accordance with the procedures in part 2 of CFR 47.

2.4 Test Facility

The test site used to collect the radiated data is site 1 (10-m semi-anechoic chamber). This test facility and site measurement data have been fully placed on file with the FCC, IC and A2LA accredited.

2.5 Measurement Uncertainty

Compliance with the limits was based on the results of the measurements and doesn’t take into account the measurement uncertainty.

Estimated Measurement Uncertainty

Measurement	Expanded Uncertainty (k=2)		
	0.15 MHz – 1 GHz	1 GHz – 6 GHz	> 6 GHz
RF Power and Power Density – antenna conducted	1.1 dB	1.5 dB	–
Unwanted emissions - antenna conducted	1.2 dB	1.7 dB	2.0 dB
Bandwidth – antenna conducted	50 Hz	100 Hz	–
Radiated emissions	4.2 dB	5.4 dB	
AC mains conducted emissions	2.4 dB	-	-

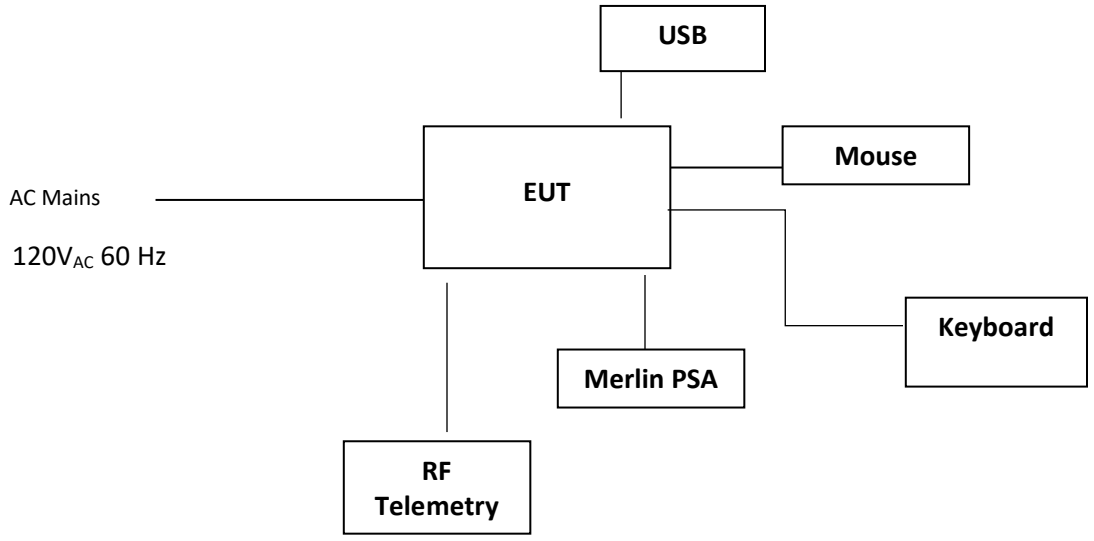
3.0 System Test Configuration

3.1 Support Equipment

Support Equipment		
Description	**Manufacturer**	**Model No./ Serial No.**
RF Telemetry	St. Jude Medical CRMD	3638
Merlin PSA	St. Jude Medical CRMD	EX3100
Mouse	Dell	MS116T
Keyboard	Targus	AKB600
USB Dongle	Samsung	001

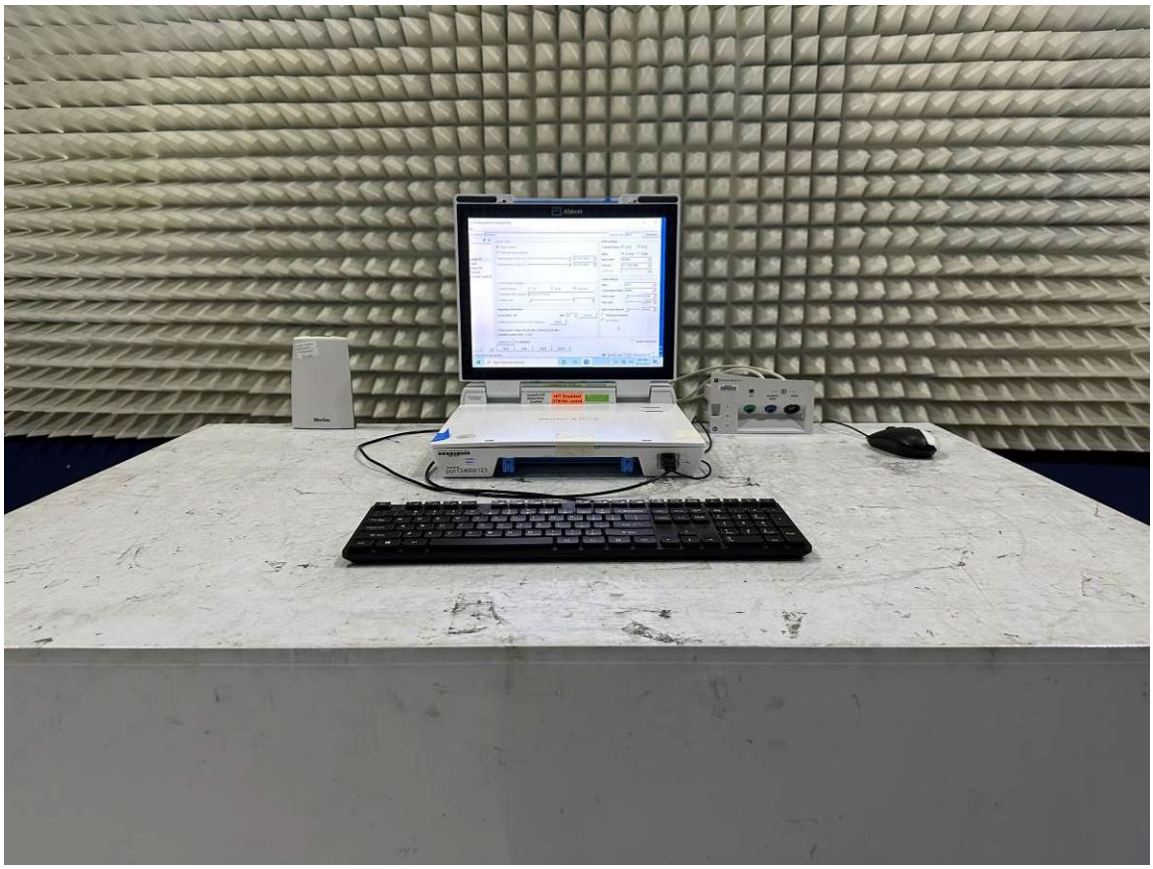
3.2 Block Diagram of Test Setup

Equipment Under Test			
Description	**Manufacturer**	**Model Number**	**Serial Number**
Merlin™ 2 PCS – Conducted Sample	Abbott Laboratories	MER3700	124000123
Merlin™ 2 PCS – Radiated Sample	Abbott Laboratories	MER3700	124000314



S = Shielded **U** = Unshielded	**F** = With Ferrite **M** = Meter

EUT Photos



3.3 Justification

Preliminary testing was performed for all modulation/data rate modes. The worse-case data rate with highest power and widest spectrum were selected for final measurements:

OFDM, MCS0 – for 802.11n

For radiated emission measurements the EUT is placed on a non-conductive table. The EUT was configured to continuously transmit.

According to manufacturer, there's no change to the radio module and only antenna change. Class II permissive change testing was performed based on Radio Module, Model: 9260NGW (FCC ID: PD99260NG).

3.4 Mode of Operation During Test

During transmitter testing, the transmitter was setup to transmit continuously using the maximum RF power setting provided by the manufacturers via test scripts. The corresponding output power in dBm can be found in section 4.2 of this report.

The table below reflects the RF power setting needed to be compliant with radiated restricted band edge requirements of 15.205 & 15.209.

802.11a		
Freq. MHz	Channel	GUI
5180	36	18
5200	40	18
5240	48	18
5260	52	18
5280	56	18
5320	64	18
5500	100	18
5600	120	18
5700	140	18
5745	149	18
5785	157	18
5825	165	18

802.11n20 HT0		
Freq. MHz	Channel	GUI
5180	36	18
5200	40	18
5240	48	18
5260	52	18
5280	56	18
5320	64	18
5500	100	18
5600	120	18
5700	140	18
5745	149	18
5785	157	18
5825	165	18

802.11n20 HT8		
Freq. MHz	Channel	GUI
5180	36	18
5200	40	18
5240	48	18
5260	52	18
5280	56	18
5320	64	18
5500	100	18
5600	120	18
5700	140	18
5745	149	18
5785	157	18
5825	165	18

802.11n40 HT0		
Freq. MHz	Channel	GUI
5190	38F	18
5230	46F	18
5510	102F	18
5270	54F	18
5310	62F	18
5590	118F	18
5670	134F	18
5755	151F	18
5795	159F	18

802.11n40 HT8		
Freq. MHz	Channel	GUI
5190	38F	18
5230	46F	18
5270	54F	18
5310	62F	18
5510	102F	18
5590	118F	18
5670	134F	18
5755	151F	18
5795	159F	18

802.11ac80 VHT0		
Freq. MHz	Channel	GUI
5210	42ac80	18
5290	586ac80	18
5530	106ac80	18
5610	122ac80	18
5775	155ac80	18

802.11ac160 VHT0		
Freq. MHz	Channel	GUI
5250	50ac160	18
5570	114ac160	18

3.5 Modifications required for Compliance

Intertek installed no modifications during compliance testing in order to bring the product into compliance.

3.6 Additions, deviations and exclusions from standards

No additions, deviations or exclusion have been made from standard.

4.0 Measurement Results

4.2 Maximum Conducted Output Power
FCC Rule 15.407(a)(1)(iv)

4.2.1 Requirement

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1-megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

4.2.2 Procedure

The Procedure, described in the FCC Publication 789033 D02 General U-NII Test Procedures New Rules v02r01, was used. Specifically, Section E (3)(a) for Maximum Conducted Output Power

Each antenna port of the EUT was connected to the power meter to measure the Maximum Conducted Transmitter Output Power.

4.2.3 Test Results

Refer to the following plots for the test result:

Mode	Channel	Frequency	Output Power Ant 1	Output Power Ant 2	Output Power MIMO	Antenna Gain	Output Power Limit
		MHz	dBm	dBm	dBm	dB	dBm
802.11a	36	5180	15.27	14.16	SISO Mode	5.32	24
	40	5200	15.00	13.98	SISO Mode	5.32	24
	48	5240	14.89	13.37	SISO Mode	5.32	24
	52	5260	14.91	13.84	SISO Mode	5.32	24
	56	5280	14.64	13.57	SISO Mode	5.32	24
	64	5320	14.24	13.31	SISO Mode	5.32	24
	100	5500	13.85	14.62	SISO Mode	5.32	24
	120	5600	14.05	15.61	SISO Mode	5.32	24
	140	5700	14.70	14.39	SISO Mode	5.32	24
	149	5745	14.38	14.29	SISO Mode	5.32	30
	157	5785	14.32	13.94	SISO Mode	5.32	30
	165	5825	14.78	14.16	SISO Mode	5.32	30
802.11n20 HT0	36	5180	15.45	14.58	SISO Mode	5.32	24
	40	5200	15.19	14.25	SISO Mode	5.32	24
	48	5240	15.12	13.47	SISO Mode	5.32	24
	52	5260	15.07	14.08	SISO Mode	5.32	24
	56	5280	14.87	13.83	SISO Mode	5.32	24
	64	5320	14.55	13.53	SISO Mode	5.32	24
	100	5500	14.13	14.84	SISO Mode	5.32	24
	120	5600	14.26	15.79	SISO Mode	5.32	24
	140	5700	14.89	14.67	SISO Mode	5.32	24
	149	5745	14.55	14.44	SISO Mode	5.32	30
	157	5785	14.54	14.05	SISO Mode	5.32	30
	165	5825	14.99	14.45	SISO Mode	5.32	30
802.11n20 HT8	36	5180	15.14	14.28	17.74	5.32	24
	40	5200	14.86	14.11	17.59	5.32	24
	48	5240	14.81	13.26	17.20	5.32	24
	52	5260	14.82	13.75	17.33	5.32	24
	56	5280	14.54	13.51	17.15	5.32	24
	64	5320	14.59	13.19	17.04	5.32	24
	100	5500	13.65	14.60	17.16	5.32	24
	120	5600	13.99	15.43	17.85	5.32	24
	140	5700	14.59	14.32	17.54	5.32	24
	149	5745	14.24	14.08	17.17	5.32	30
	157	5785	14.20	14.00	17.20	5.32	30
	165	5825	14.70	13.66	17.30	5.32	30

802.11n40 HT0	38F	5190	14.52	13.58	SISO Mode	5.32	24
	46F	5230	13.72	13.55	SISO Mode	5.32	24
	54F	5270	13.98	12.44	SISO Mode	5.32	24
	62F	5310	13.63	12.66	SISO Mode	5.32	24
	102F	5510	13.26	14.14	SISO Mode	5.32	24
	118F	5590	13.24	14.81	SISO Mode	5.32	24
	134F	5670	13.92	13.99	SISO Mode	5.32	24
	151F	5755	13.76	13.38	SISO Mode	5.32	30
	159F	5795	13.86	13.05	SISO Mode	5.32	30
802.11n40 HT8	38F	5190	13.04	12.41	15.75	5.32	24
	46F	5230	13.90	13.21	16.67	5.32	24
	54F	5270	13.66	12.59	16.27	5.32	24
	62F	5310	12.73	11.84	15.32	5.32	24
	102F	5510	12.87	13.75	16.44	5.32	24
	118F	5590	12.96	14.51	16.90	5.32	24
	134F	5670	13.46	13.60	16.54	5.32	24
	151F	5755	13.41	13.05	16.35	5.32	30
	159F	5795	13.54	12.71	16.26	5.32	30
802.11ac80 VHT0	42ac80	5210	13.99	13.41	SISO Mode	5.32	24
	58ac80	5290	13.76	13.27	SISO Mode	5.32	24
	106ac80	5530	13.10	13.69	SISO Mode	5.32	24
	122ac80	5610	13.40	14.51	SISO Mode	5.32	24
	155ac80	5775	13.44	13.31	SISO Mode	5.32	30
	42ac80	5210	13.15	12.15	15.69	5.32	24
	58ac80	5290	12.87	12.21	15.68	5.32	24
	106ac80	5530	12.96	13.87	16.55	5.32	24
	122ac80	5610	13.19	14.49	16.90	5.32	24
	155ac80	5775	13.50	13.34	16.53	5.32	30
802.11ac160 VHT0	50ac160	5250	13.24	10.12	SISO Mode	5.32	24
	114ac160	5570	12.21	13.36	SISO Mode	5.32	24
	50ac160	5250	12.22	6.33	13.22	5.32	30
	114ac160	5570	12.22	13.25	15.89	5.32	24

4.3 Transmitter Radiated Emissions
FCC Rule 15.407(b) (1-8) 15.209, 15.205

4.3.1 Requirement

(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.

(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

(7) The provisions of §15.205 apply to intentional radiators operating under this section.

(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

Emissions which fall in the restricted bands, as defined in §15.205(a), must comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

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 EIRP of –27 dBm/MHz.

4.3.2 Procedure

Radiated emission measurements were performed from 9 kHz to 40 GHz according to the procedure described in ANSI C63.10: 2013. Spectrum Analyzer Resolution Bandwidth is 200Hz or greater for frequencies 9kHz to 30MHz, 100 kHz or greater for frequencies 30 MHz to 1000 MHz, 1 MHz for frequencies above 1000 MHz. Above 1000 MHz Peak and Average measurements were performed.

The EUT is placed on a plastic turntable that is 80 cm in height for below 1000MHz and 1.5m in height for above 1GHz. If the EUT attaches to peripherals, they are connected and operational (as typical as possible). During testing, all cables were manipulated to produce worst-case emissions. The signal is maximized through rotation. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

Radiated emissions are taken at 3 meters for frequencies above 1 GHz and at 10 meters for frequencies below 1 GHz unless noted otherwise.

Measurements made from 1 GHz to 18GHz had a 2.4GHz and 5GHz notch filter in place. A preamp was used from 9kHz to 40GHz.

All measurements were made with a Peak Detector and compared to QP limits for 9 kHz – 1GHz and Average limits for 1GHz – 40 GHz.

Correlation measurements were performed below 30MHz between 10m ALSE and Open Field site according to FCC KDB 414788 D01 Radiated Test Site v01r01 section 2. All readings were within the acceptable tolerance.

Data is included of the worst-case configuration (the configuration which resulted in the highest emission levels).

ANSI C63.10-2013; 5.6.2.2
Determining worst-case mode for Spurious emissions:
For devices with multiple operating modes, measurements on the middle channel can be used to determine the worst-case mode(s). The worst-case modes are as follows:

Measure the mode with the highest output power and the mode with the highest output power spectral density for each modulation family (e.g., OFDM and direct sequence spread spectrum).

The highest output power were found in 802.11ac 20MHz, therefore Spurious emissions were measured using 802.11ac 20MHz bandwidth.

4.3.3 Field Strength Calculation

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF – AG; if measurement is performed at a distance other than specified in the rule, a Distance Correction Factor (DCF) shall be added.

Where FS = Field Strength in dB(μV/m)
RA = Receiver Amplitude (including preamplifier) in dB(μV); AF = Antenna Factor in dB(1/m)
CF = Cable Attenuation Factor in dB; AG = Amplifier Gain in dB

Assume a receiver reading of 52.0 dB(μV) is obtained. The antennas factor of 7.4 dB(1/m) and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving field strength of 32 dB(μV/m). This value in dB(μV/m) was converted to its corresponding level in μV/m.
RA = 52.0 dB(μV)
AF = 7.4 dB(1/m)
CF = 1.6 dB
AG = 29.0 dB
FS = 52.0+7.4+1.6-29.0 = 32 dB(μV/m).
Level in μV/m = Common Antilogarithm [(32 dBμV/m)/20] = 39.8 μV/m.

4.3.4 Antenna-port conducted measurements

Antenna-port conducted measurements may also be used as an alternative to radiated measurements for demonstrating compliance in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case spurious emissions is required.

4.3.5 General Procedure for conducted measurements in restricted bands

a) Measure the conducted output power (in dBm) using the detector specified for determining quasi-peak, peak, and average conducted output power, respectively.

b) Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see 12.2.5 for guidance on determining the applicable antenna gain)

c) Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).

d) For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (*e.g.*, Watts, mW).

e) Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:
E = EIRP – 20log D + 104.8
where:
E = electric field strength in dBµV/m,
EIRP = equivalent isotropic radiated power in dBm
D = specified measurement distance in meters.
f) Compare the resultant electric field strength level to the applicable limit.
g) Perform radiated spurious emission test

4.3.6 Test Results

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

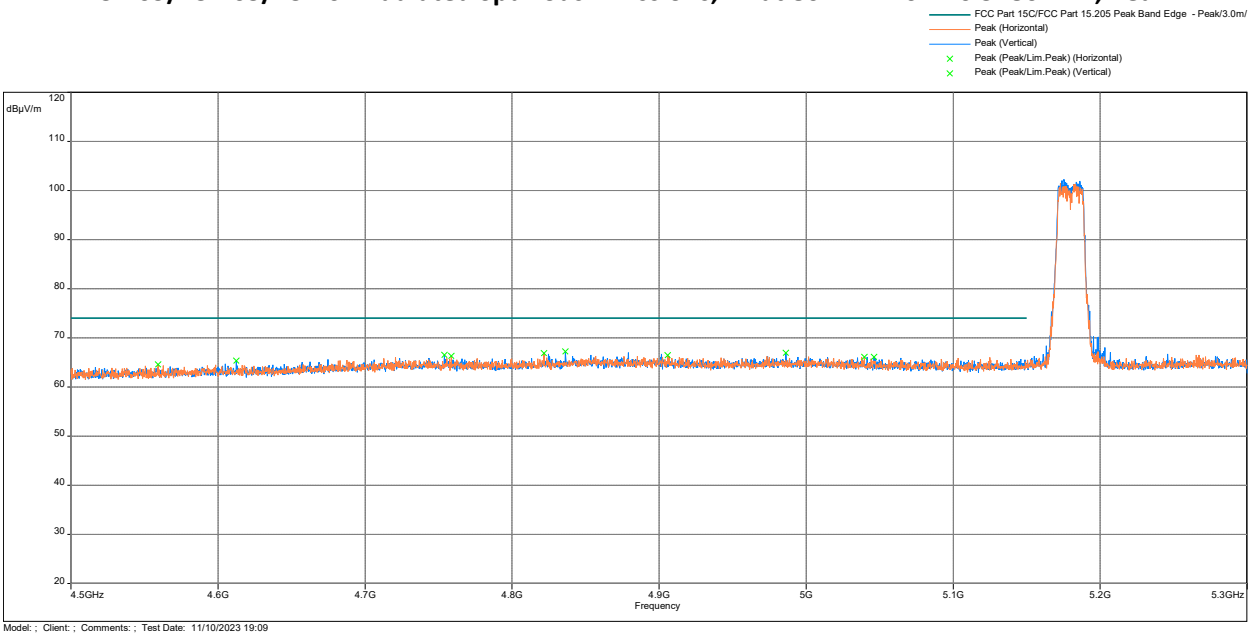
Radiated emission measurements were performed from 9kHz up to 40GHz.

9kHz – 30MHz Data is included of the worst-case configuration (the configuration which resulted in the highest emission levels).

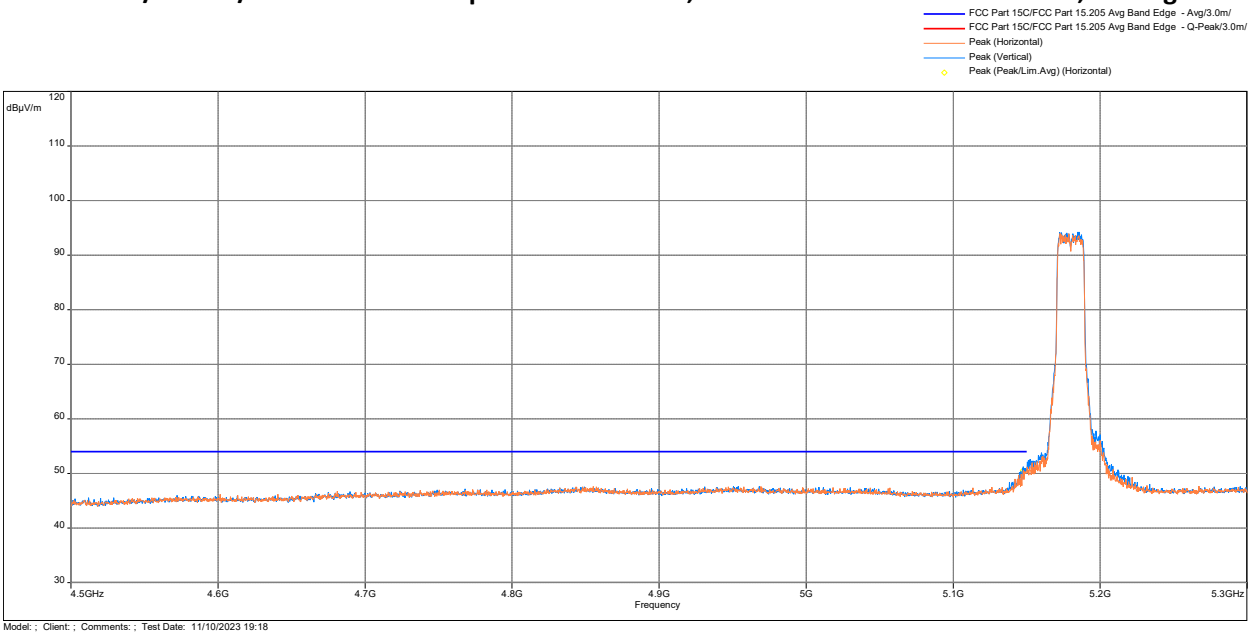
Test Results:

Radiated Out-of-Band Spurious Emissions at the Band Edges/Restricted Bands

15.209/15.205/15.407 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5180MHz, Peak



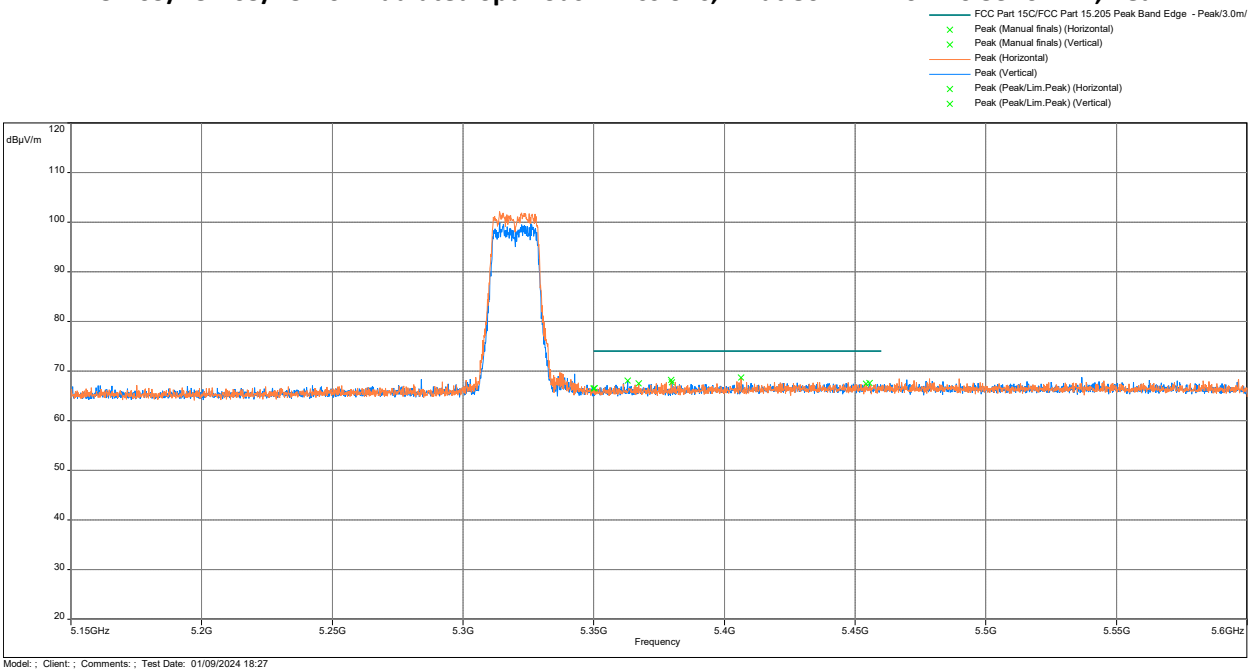
15.209/15.205/15.407 Radiated Spurious Emissions, Tx at 802. 11n20 HT0 5180MHz, Average



Frequency (MHz)	Detector	Amplitude (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass / Fail?
5150	Average	50.32	54.0	-3.68	Pass
5150	Average	49.96	54.0	-4.04	Pass

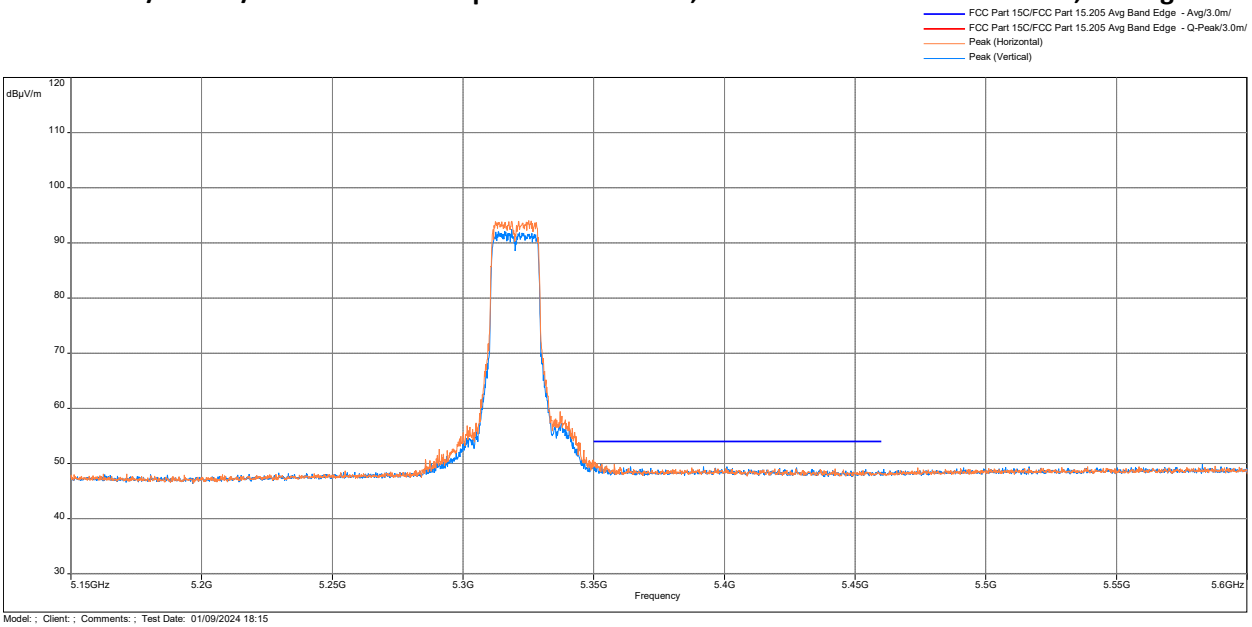
Radiated Out-of-Band Spurious Emissions at the Band Edges/Restricted Bands

15.209/15.205/15.407 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5320MHz, Peak



Radiated Out-of-Band Spurious Emissions at the Band Edges/Restricted Bands

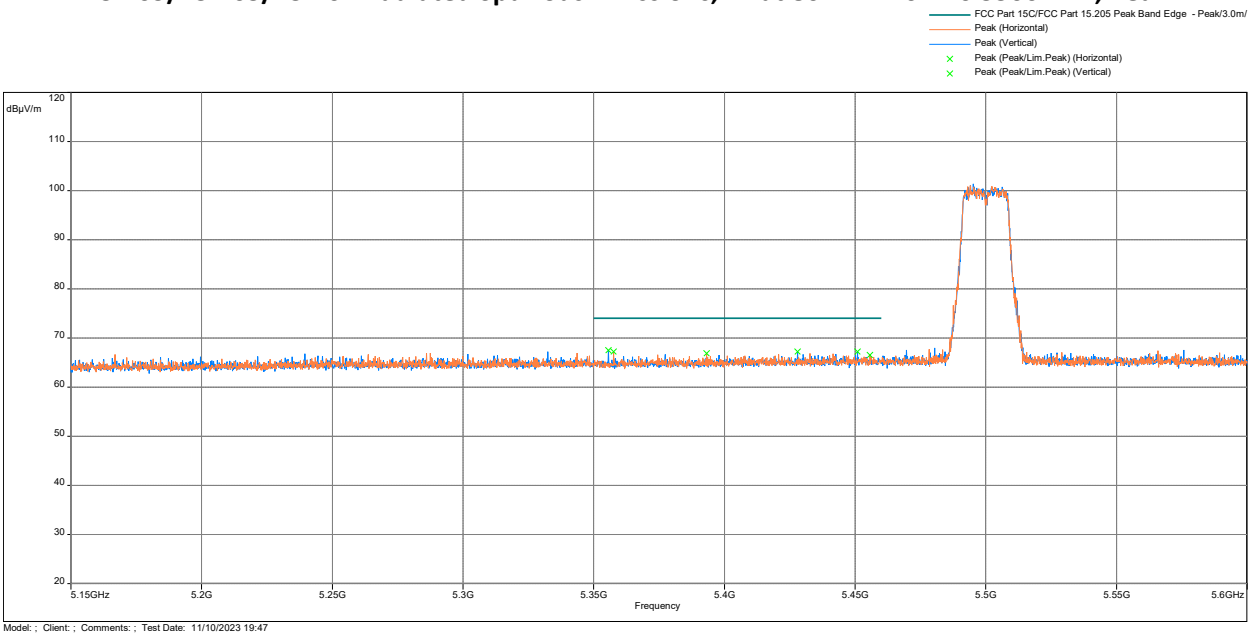
15.209/15.205/15.407 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5320MHz, Average



Frequency (MHz)	Detector	Amplitude (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass / Fail?
5350	Average	48.87	54.0	-5.13	Pass
5350	Average	48.51	54.0	-5.49	Pass

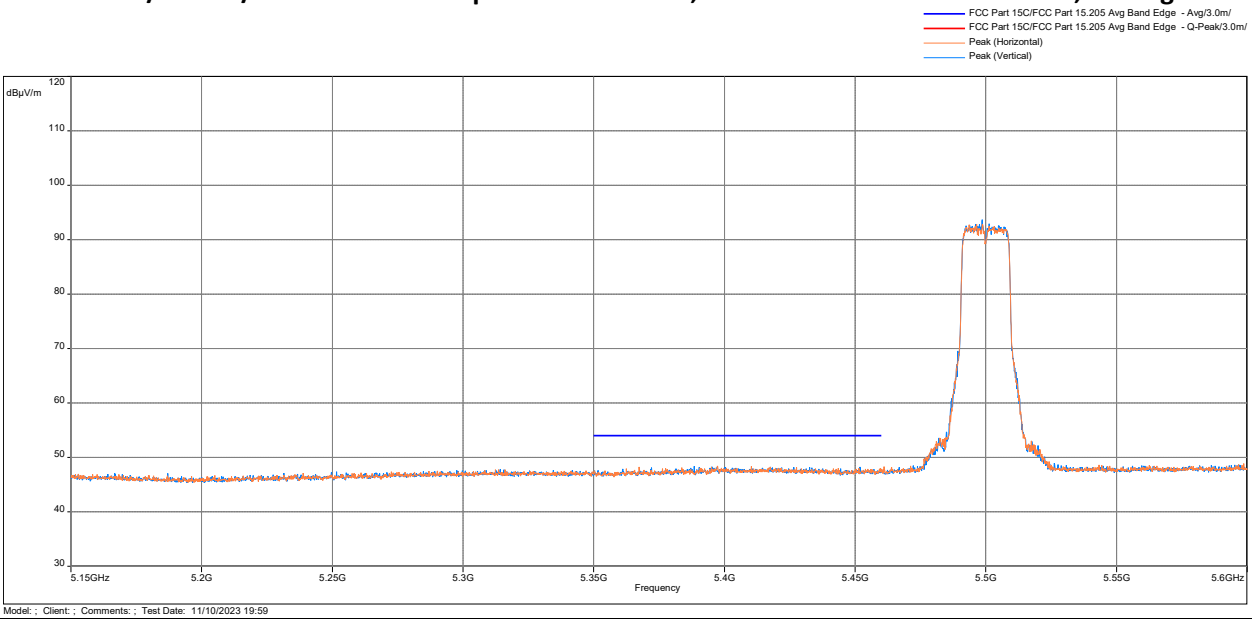
Radiated Out-of-Band Spurious Emissions at the Band Edges/Restricted Bands

15.209/15.205/15.407 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5500MHz, Peak



Radiated Out-of-Band Spurious Emissions at the Band Edges/Restricted Bands

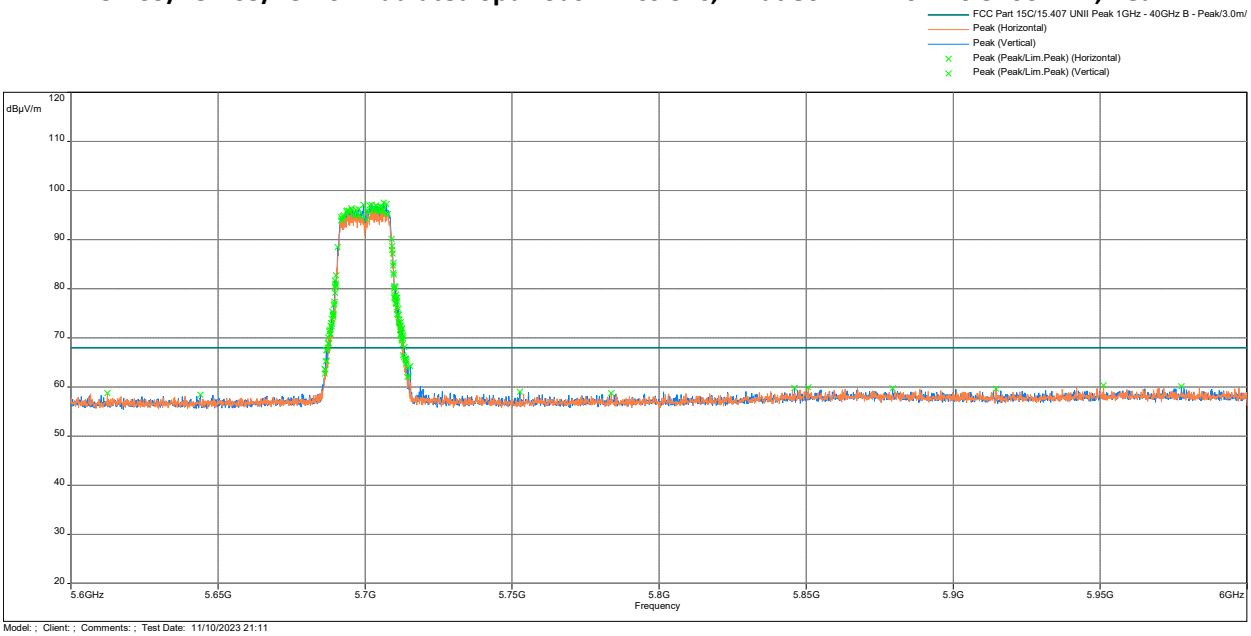
15.209/15.205/15.407 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5500MHz, Average



Frequency (MHz)	Detector	Amplitude (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass / Fail?
5460	Average	47.18	54.0	-6.82	Pass
5460	Average	47.27	54.0	-6.73	Pass

Radiated Out-of-Band Spurious Emissions at the Band Edges/Restricted Bands

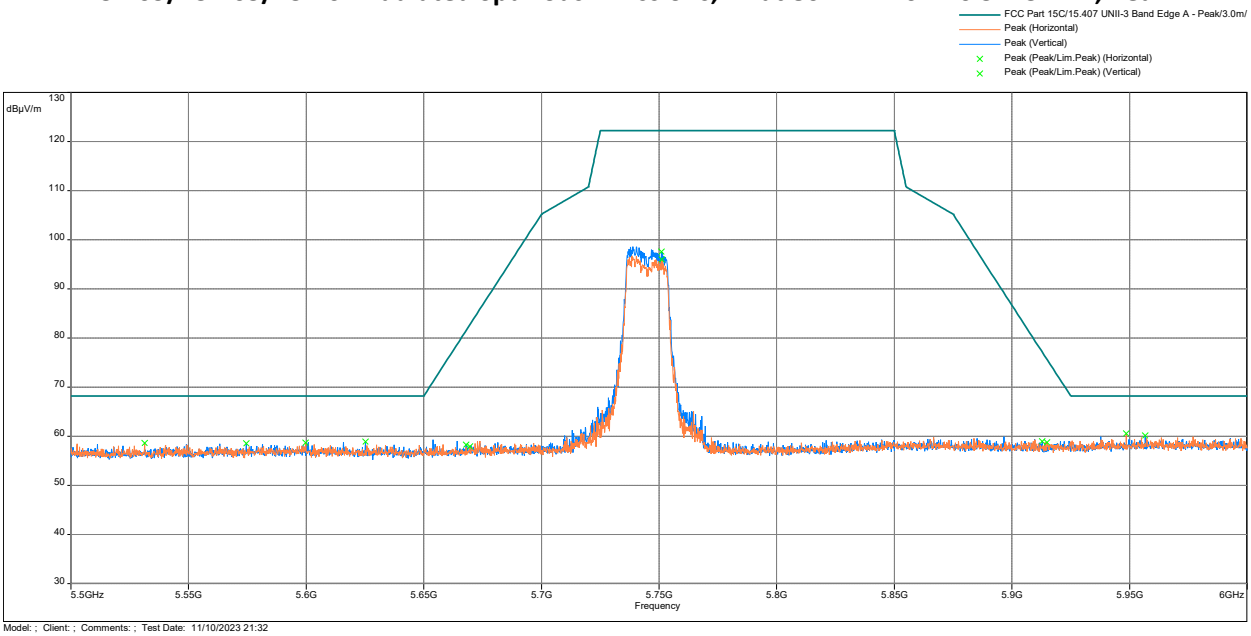
15.209/15.205/15.407 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5700MHz, Peak



Frequency (MHz)	Detector	Amplitude (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass / Fail?
5725	Peak	56.84	68	-11.16	Pass
5725.2	Peak	56.96	68	-11.04	Pass

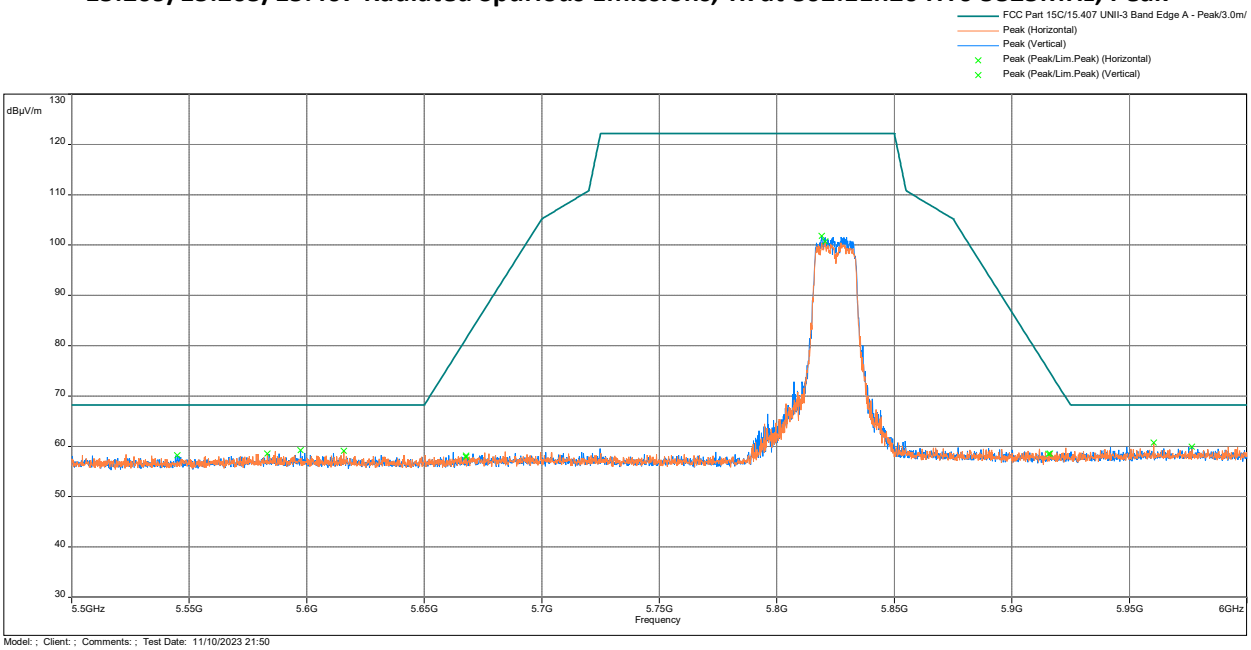
Radiated Out-of-Band Spurious Emissions at the Band Edges/Restricted Bands

15.209/15.205/15.407 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5745MHz, Peak



Model: ; Client: ; Comments: ; Test Date: 11/10/2023 21:32

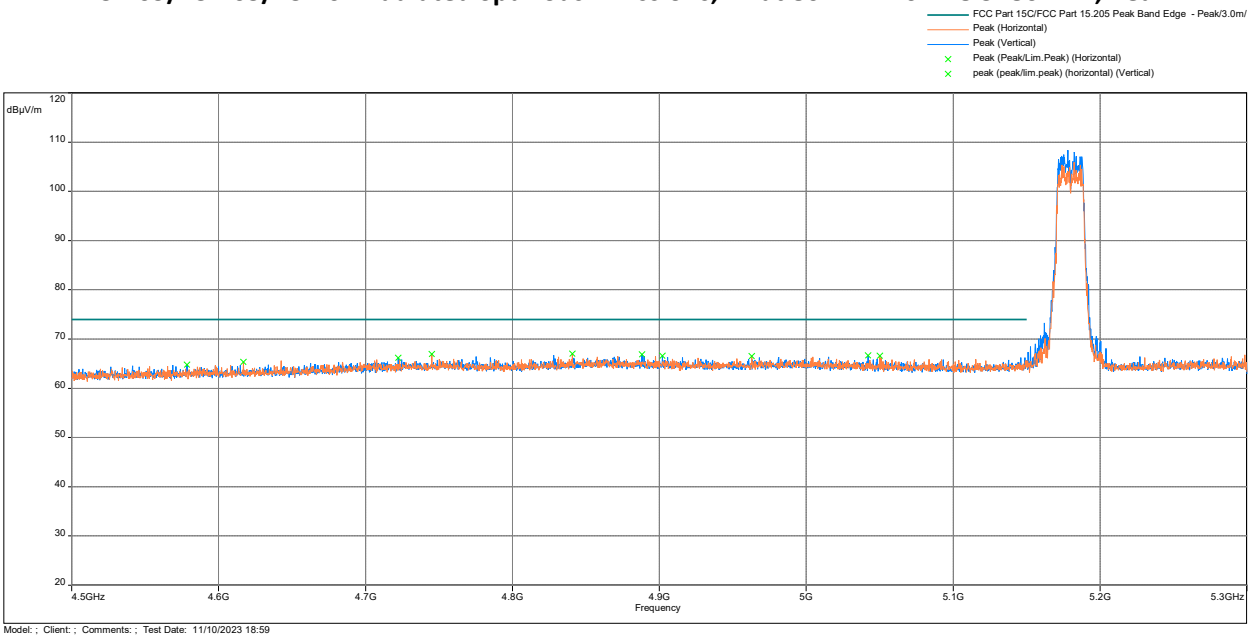
15.209/15.205/15.407 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5825MHz, Peak



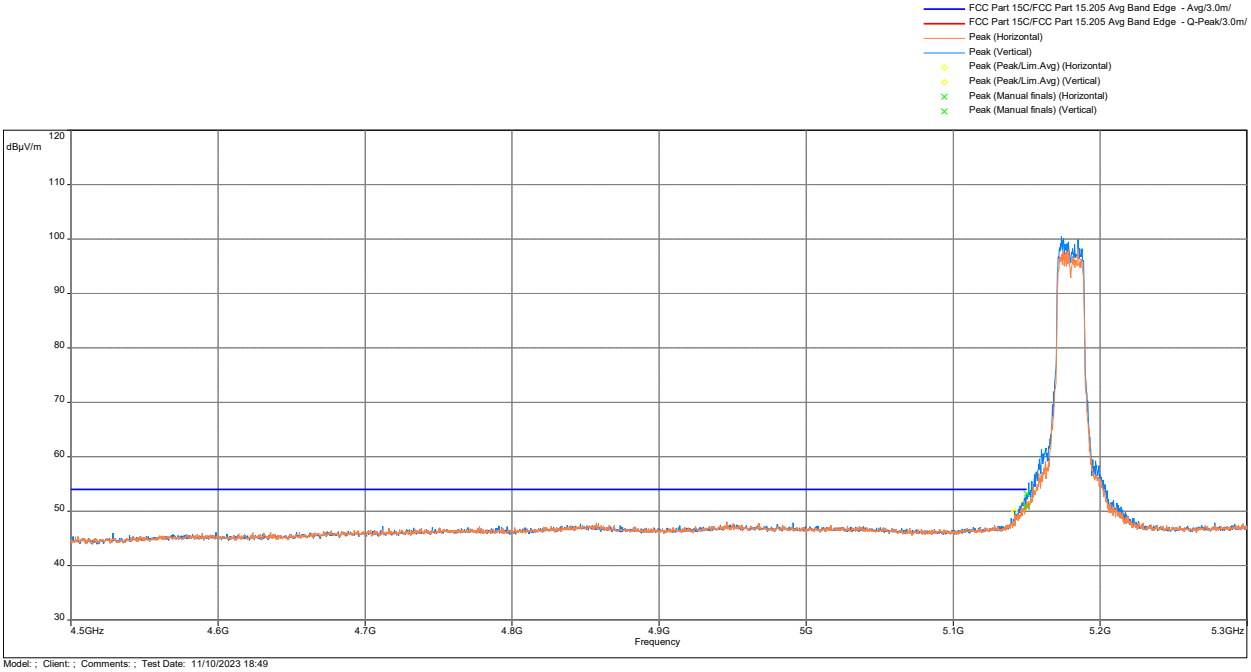
Model: ; Client: ; Comments: ; Test Date: 11/10/2023 21:50

Radiated Out-of-Band Spurious Emissions at the Band Edges/Restricted Bands

15.209/15.205/15.407 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5180MHz, Peak



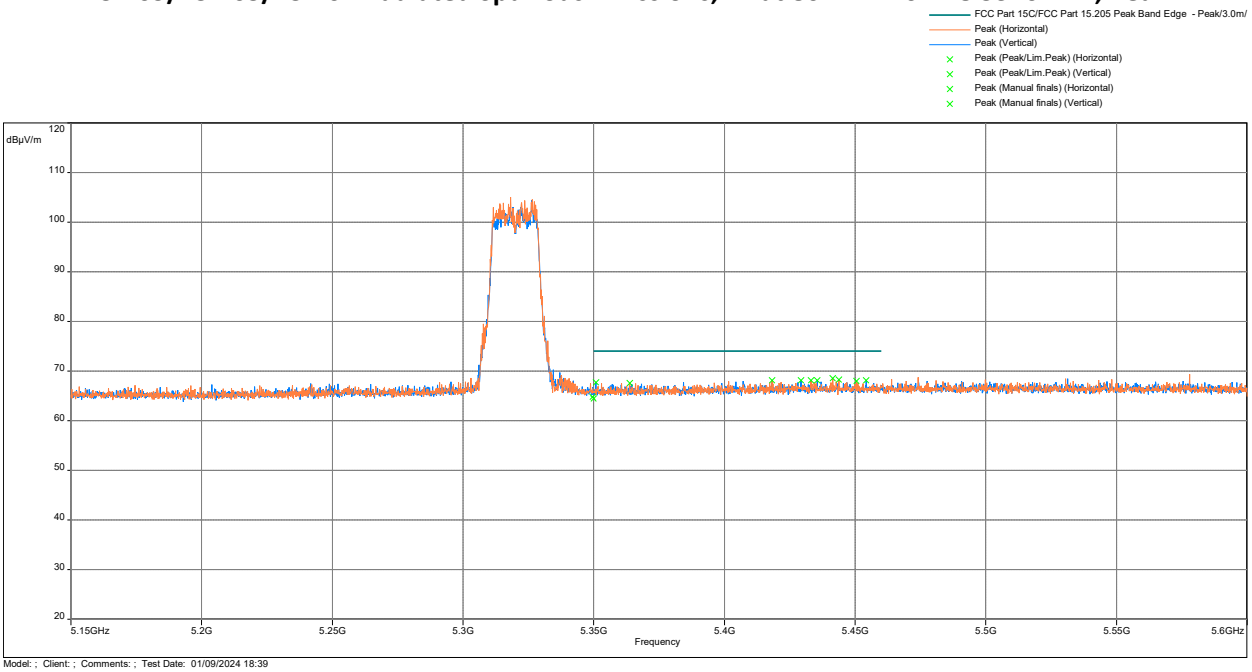
15.209/15.205/15.407 Radiated Spurious Emissions, Tx at 802. 11n20 HT8 5180MHz, Average



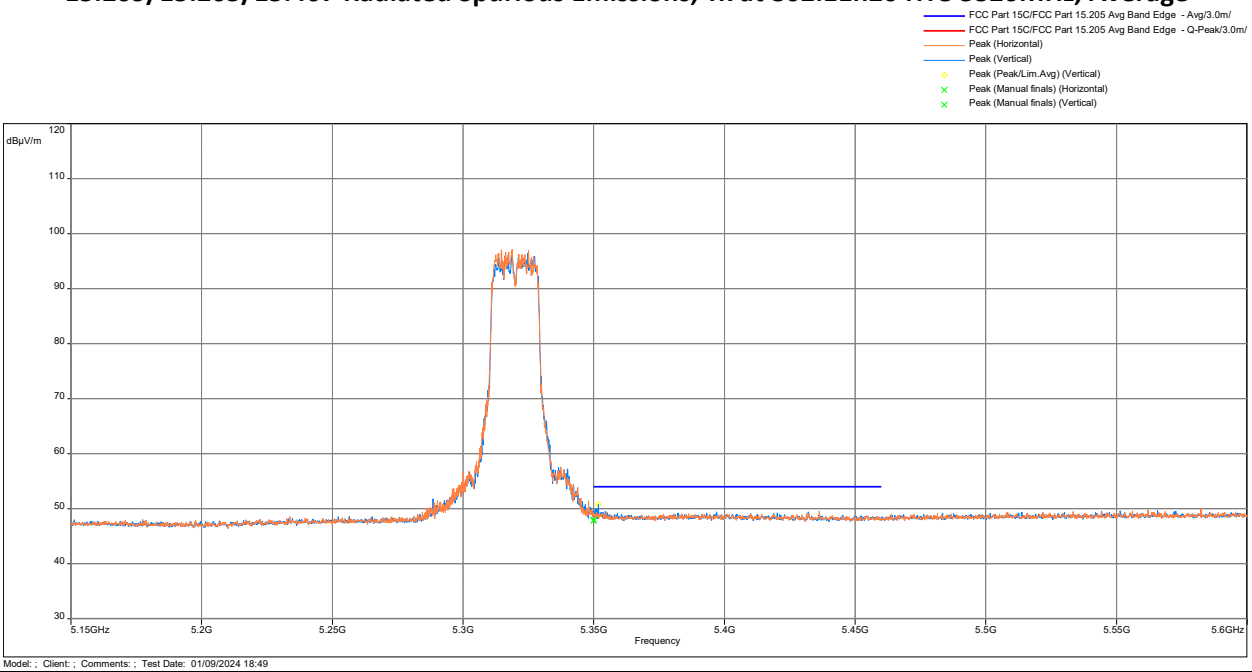
Frequency (MHz)	Detector	Amplitude (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass / Fail?
5150	Average	50.87	54.0	-3.13	Pass
5150	Average	53.22	54.0	-0.78	Pass
5148.48	Average	51.7	54.0	-2.3	Pass

Radiated Out-of-Band Spurious Emissions at the Band Edges/Restricted Bands

15.209/15.205/15.407 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5320MHz, Peak



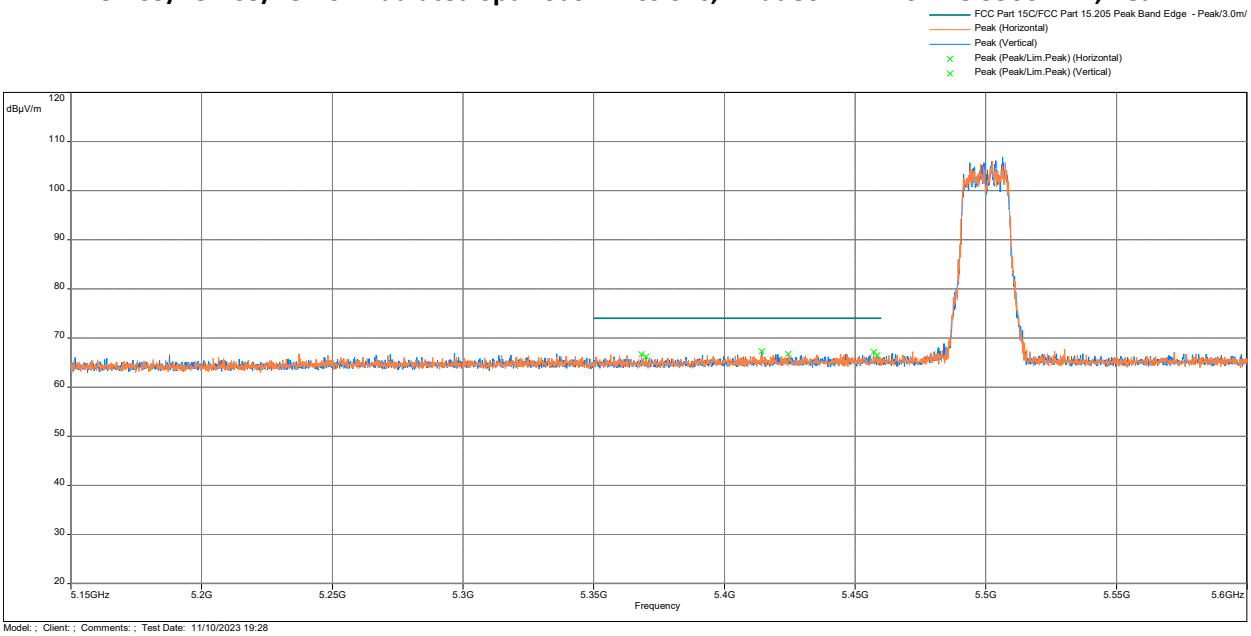
15.209/15.205/15.407 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5320MHz, Average



Frequency (MHz)	Detector	Amplitude (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass / Fail?
5350	Average	47.97	54.0	-6.03	Pass
5350	Average	47.82	54.0	-6.18	Pass

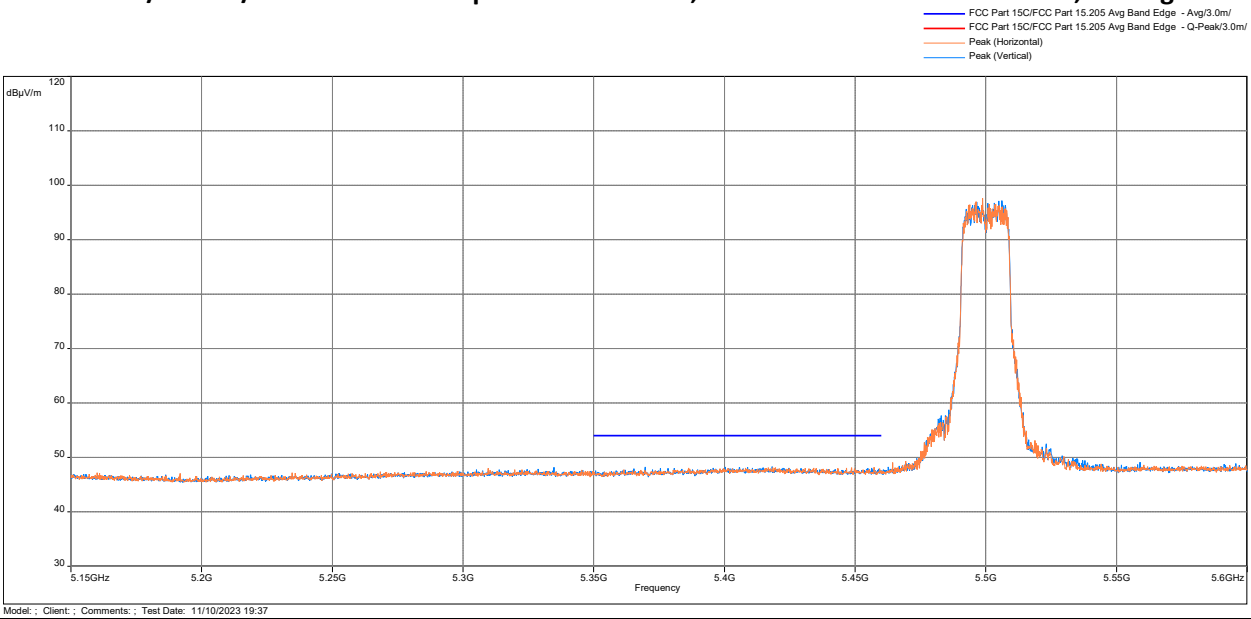
Radiated Out-of-Band Spurious Emissions at the Band Edges/Restricted Bands

15.209/15.205/15.407 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5500MHz, Peak



Radiated Out-of-Band Spurious Emissions at the Band Edges/Restricted Bands

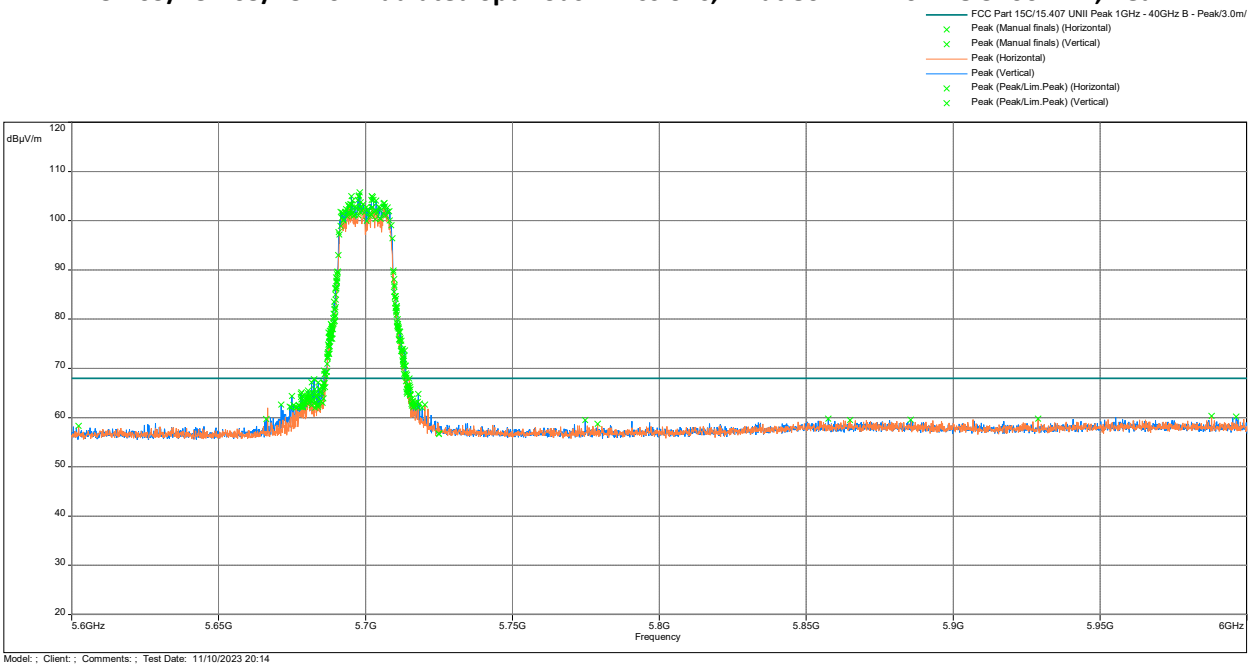
15.209/15.205/15.407 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5500MHz, Average



Frequency (MHz)	Detector	Amplitude (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass / Fail?
5460	Average	46.95	54.0	-7.05	Pass
5460	Average	46.61	54.0	-7.39	Pass

Radiated Out-of-Band Spurious Emissions at the Band Edges/Restricted Bands

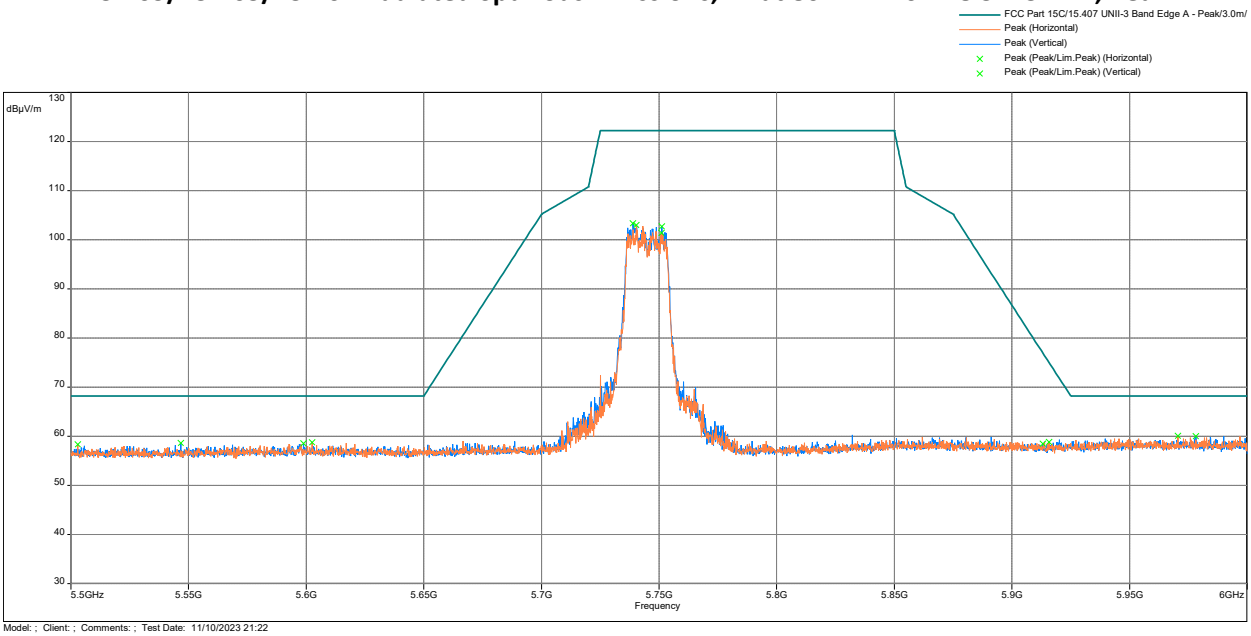
15.209/15.205/15.407 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5700MHz, Peak



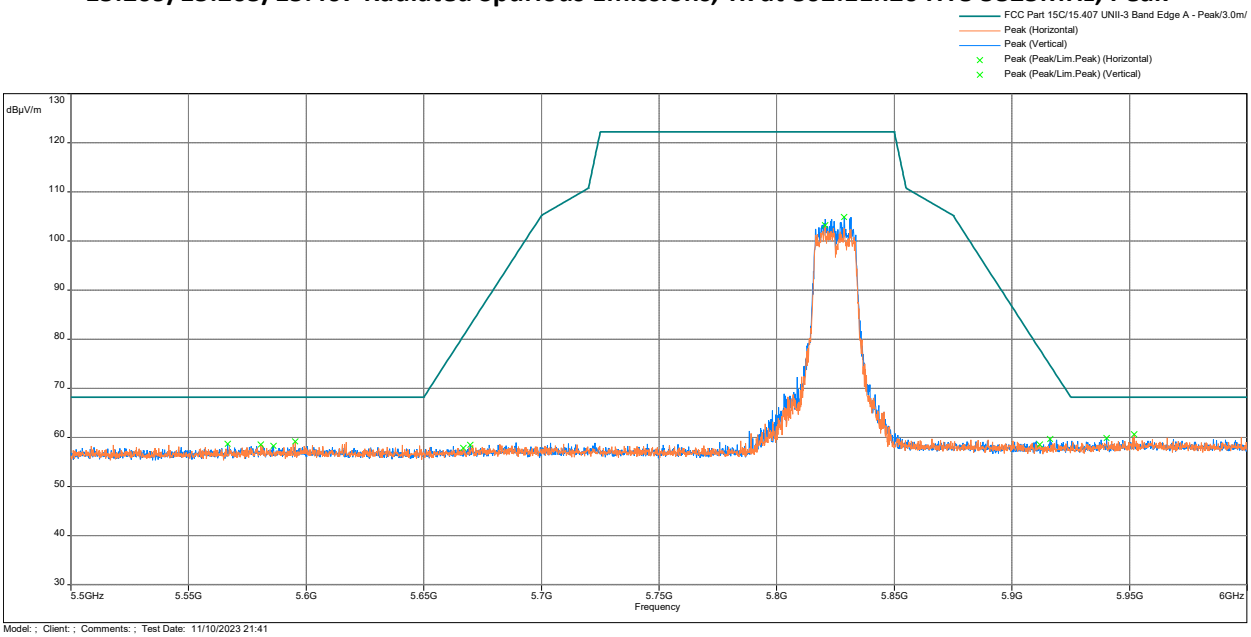
Frequency (MHz)	Detector	Amplitude (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass / Fail?
5724.88	Peak	56.78	68	-11.22	Pass
5725	Peak	56.63	68	-11.37	Pass

Radiated Out-of-Band Spurious Emissions at the Band Edges/Restricted Bands

15.209/15.205/15.407 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5745MHz, Peak



15.209/15.205/15.407 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5825MHz, Peak

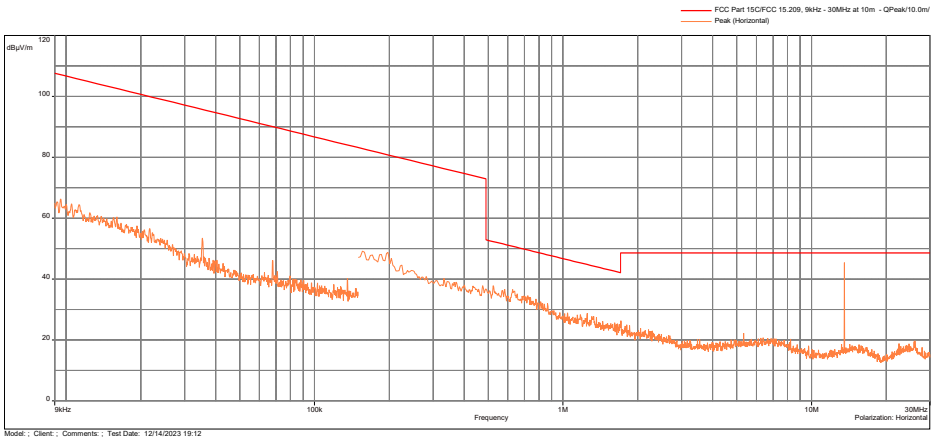


Out-of-Band Radiated Spurious Emissions

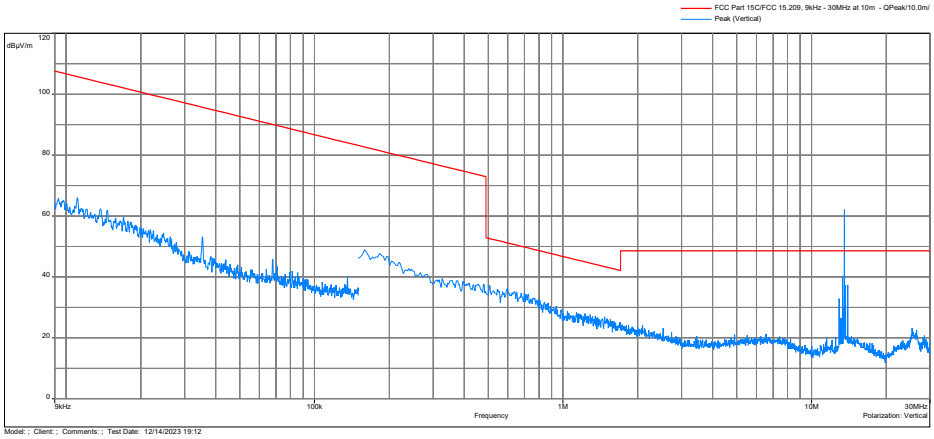
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20

Radiated Spurious Emissions 9 kHz to 30 MHz

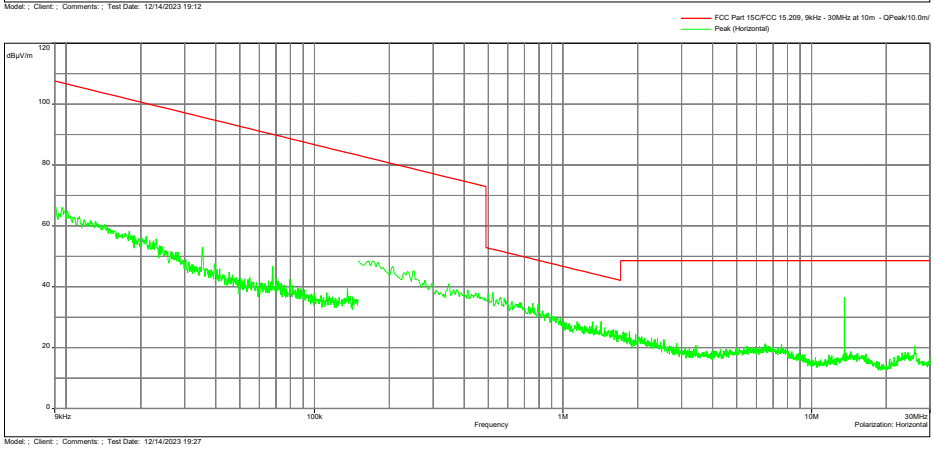
Antenna Position - Coaxial



Antenna Position - Coplanar



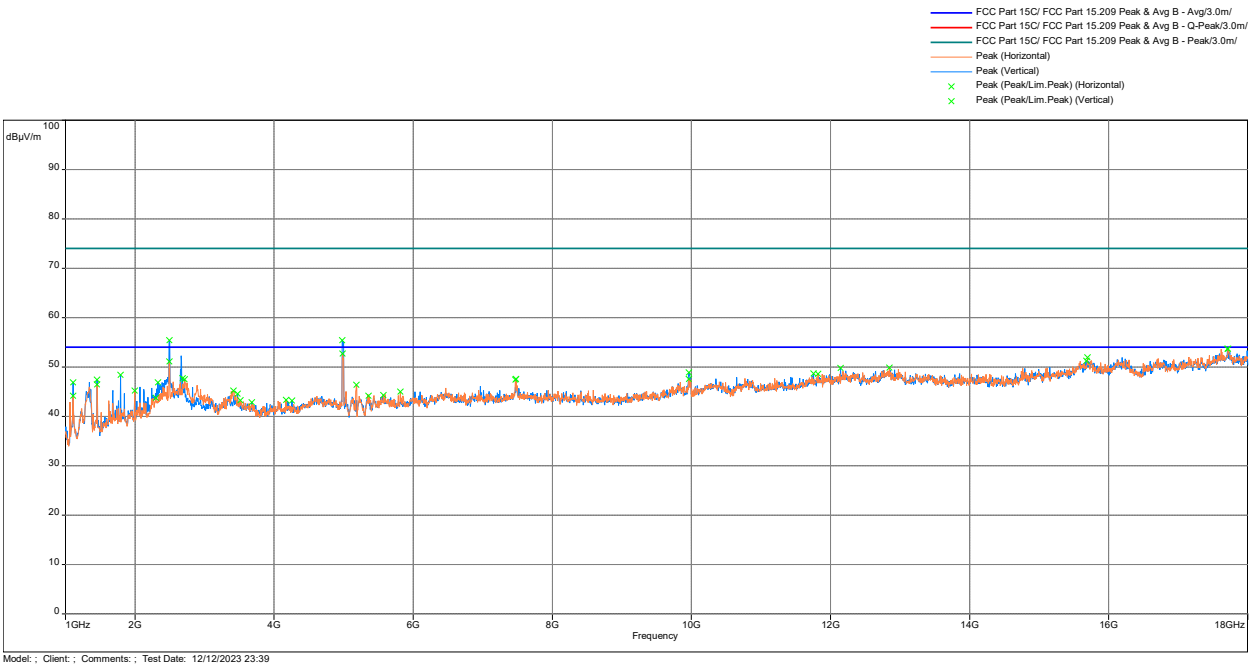
Antenna Position - Horizontal



Note: 13.56 signal is intentional transmitter of the NFC Module.

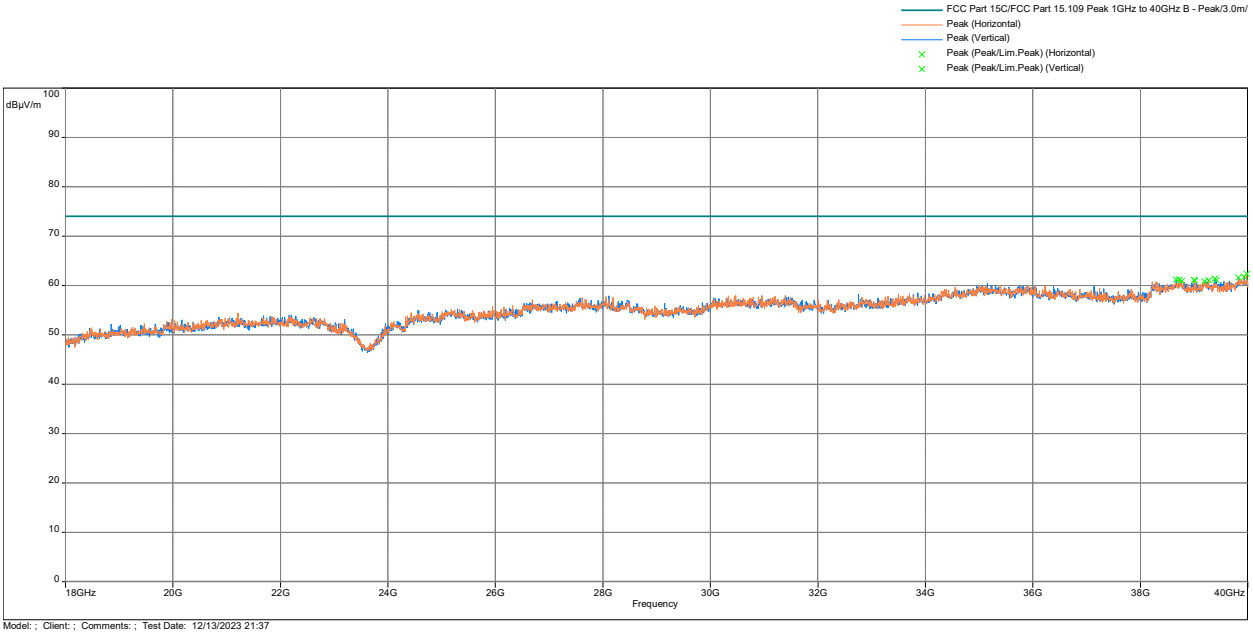
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5180MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak & Avg Limit



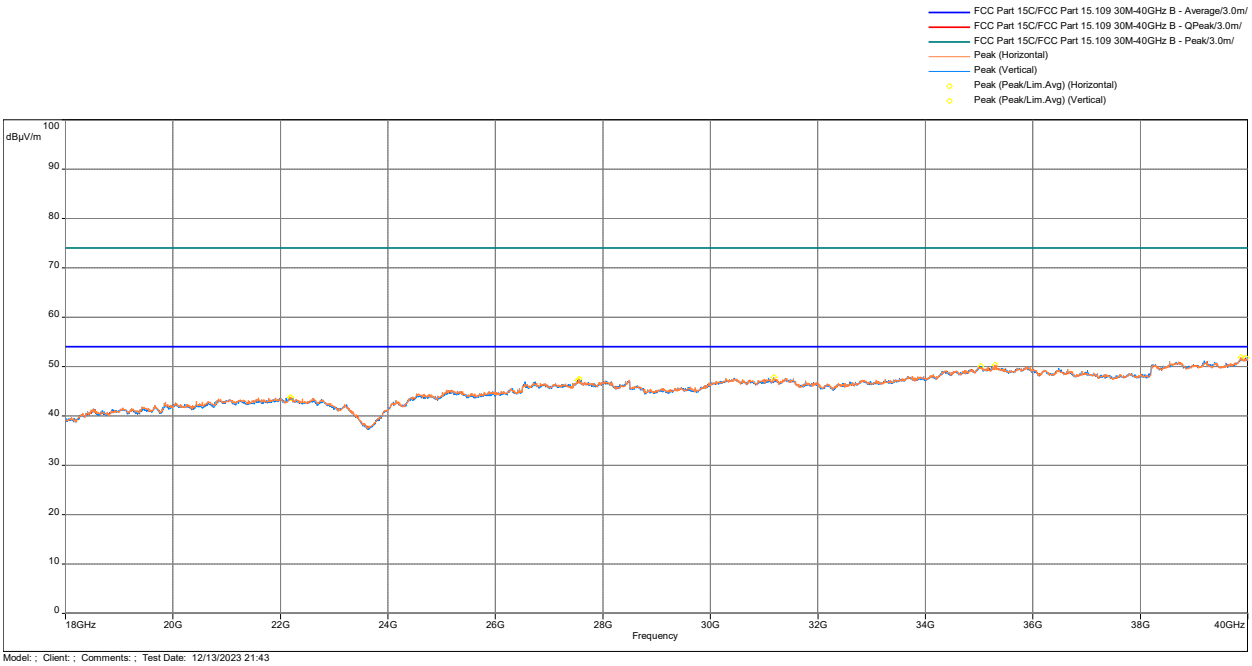
Note: 2494MHz and 4980MHz signal was determined to be digital emissions which meets class A of digital emission.

Radiated Spurious Emissions 18000 to 40000 MHz, Peak vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 12/13/2023 21:37

Radiated Spurious Emissions 18000 to 40000 MHz, Avg vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 12/13/2023 21:43

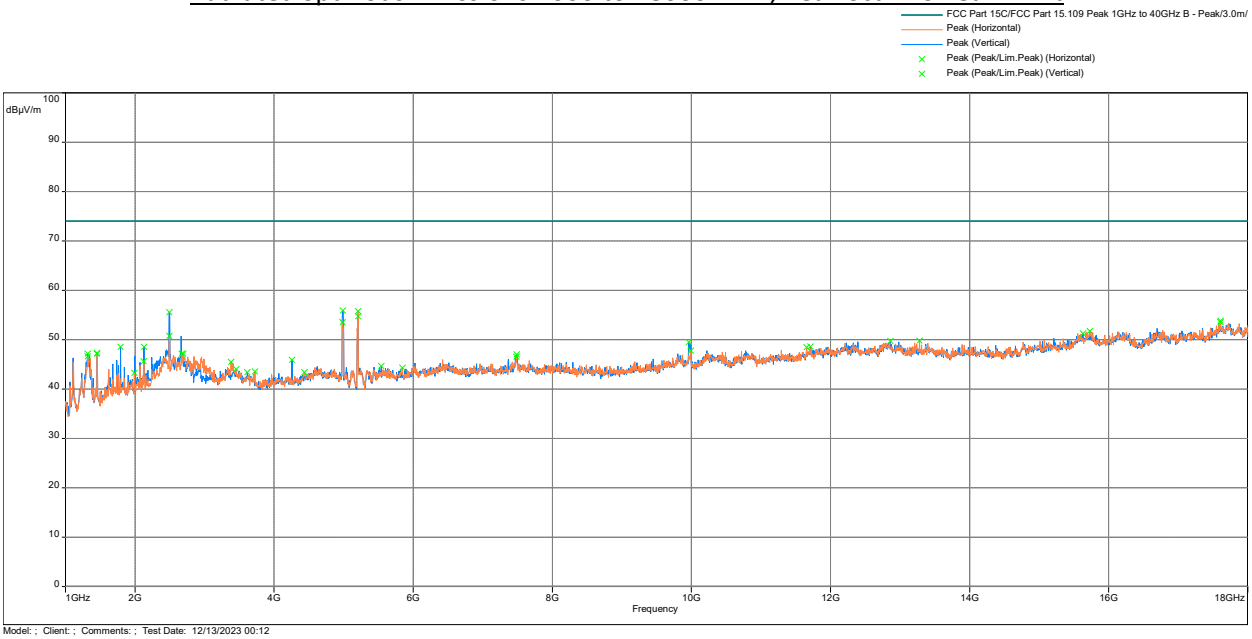
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
279.9978	34.9	35.5	-0.6	3.27	132.75	Horizontal	-11.89
279.9962	17.35	35.5	-18.15	1	92.25	Vertical	-11.89
167.0933	28.07	33	-4.93	3.99	2.25	Horizontal	-13.97
269.202	32.69	35.5	-2.81	3.01	36.25	Horizontal	-12.33
73.39133	26.55	29.5	-2.95	1.99	280.5	Vertical	-18.54
108.667	30.03	33	-2.97	1	4.5	Vertical	-13.82

Frequency	Average	Limit @3m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
17716.1	53.71	54.0	-0.29	1.02	299.25	Horizontal	8.84
2710.767	47.47	54.0	-6.53	1.98	237	Horizontal	-9.74
7468.5	47.43	54.0	-6.57	1.02	194.75	Horizontal	-2.08
1455.6	47.41	54.0	-6.59	1.98	178.75	Vertical	-15.89

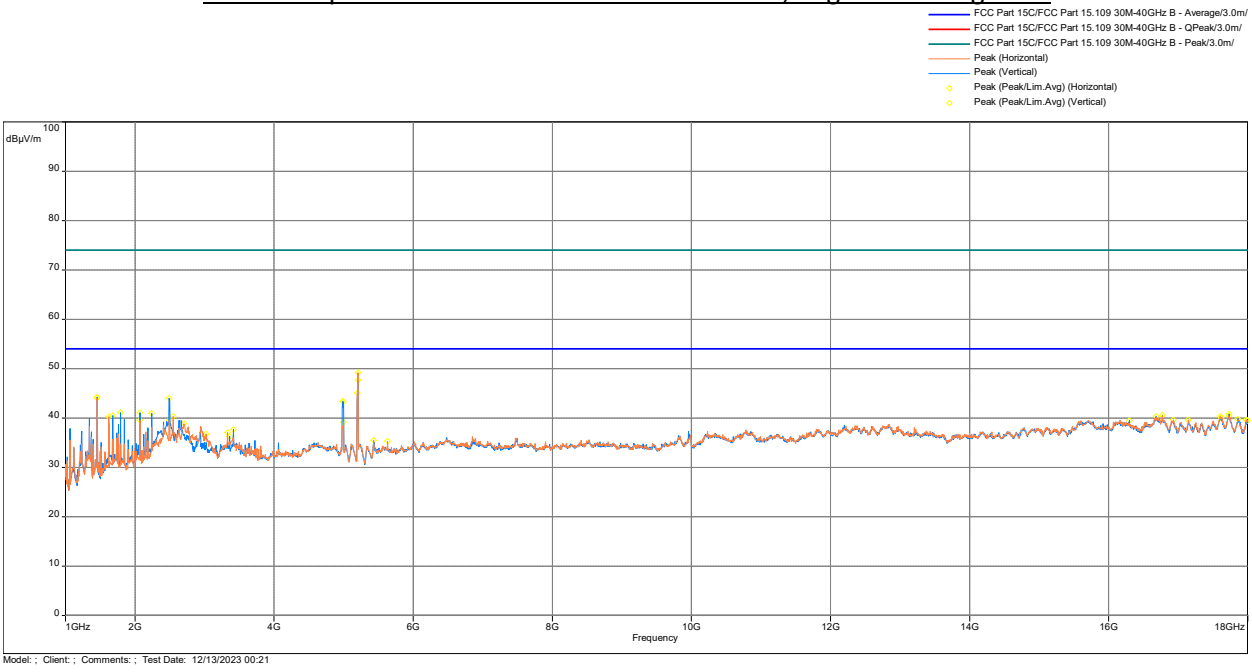
Note: Correction = AF + CF - Preamp

Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5200MHz

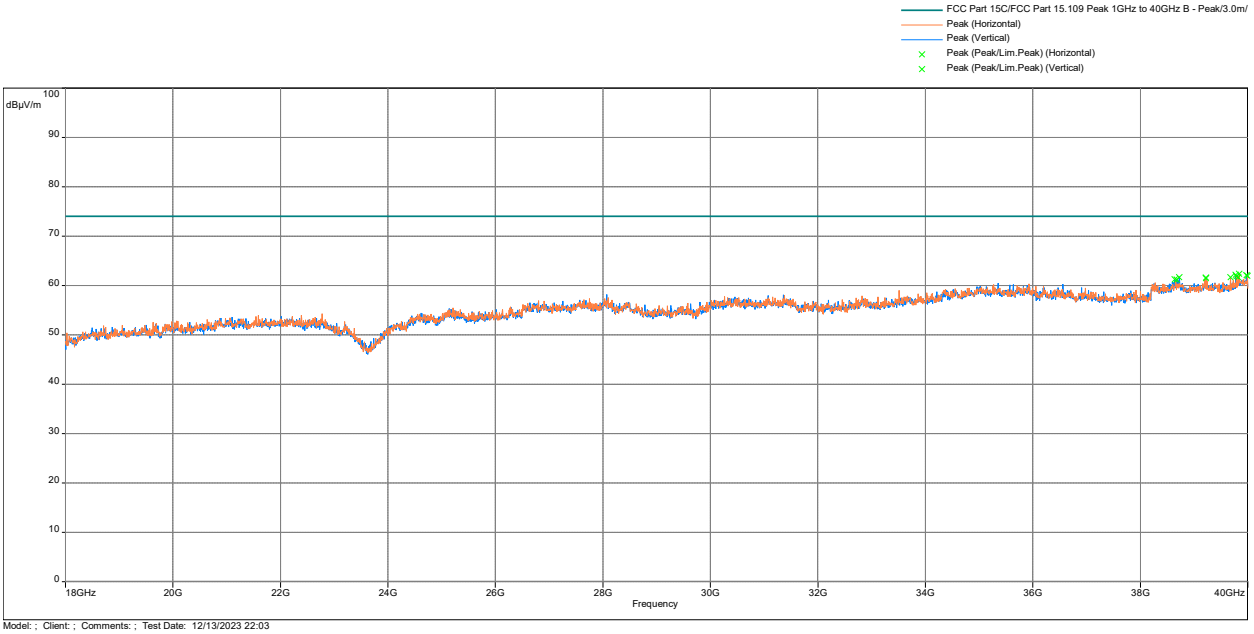
Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit



Radiated Spurious Emissions 1000 to 18000 MHz, Avg Scan vs Avg Limit

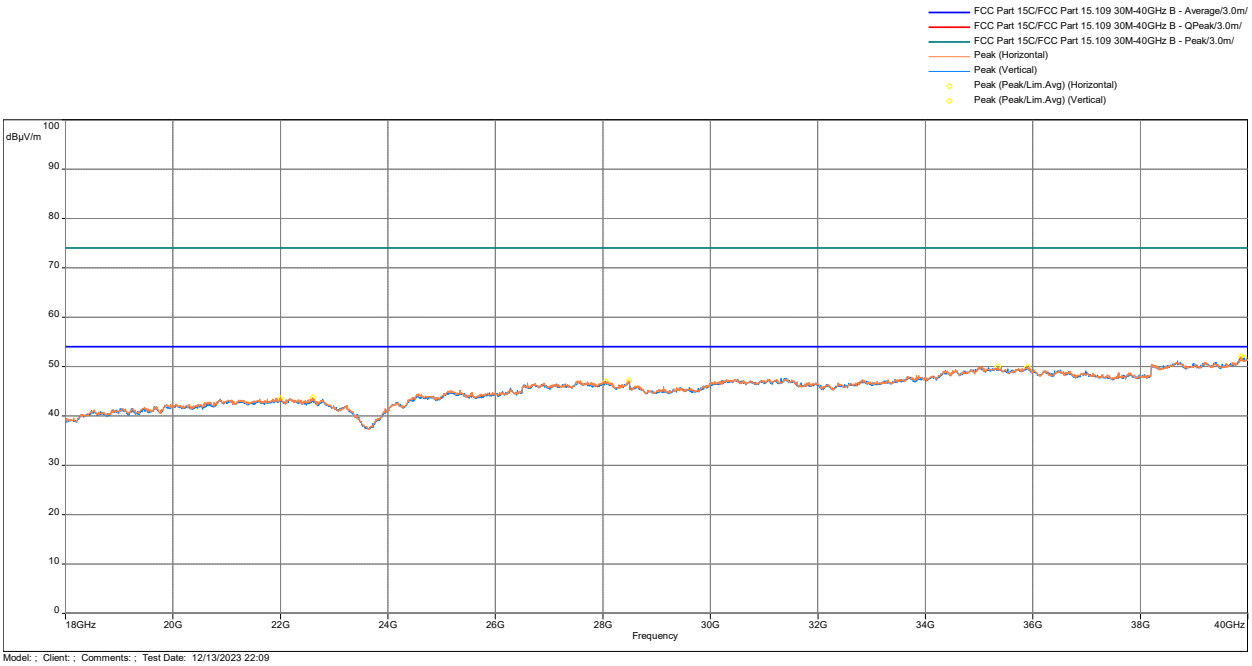


Radiated Spurious Emissions 18000 to 40000 MHz, Peak Scan vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 12/13/2023 22:03

Radiated Spurious Emissions 18000 to 40000 MHz, Avg Scan vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 12/13/2023 22:09

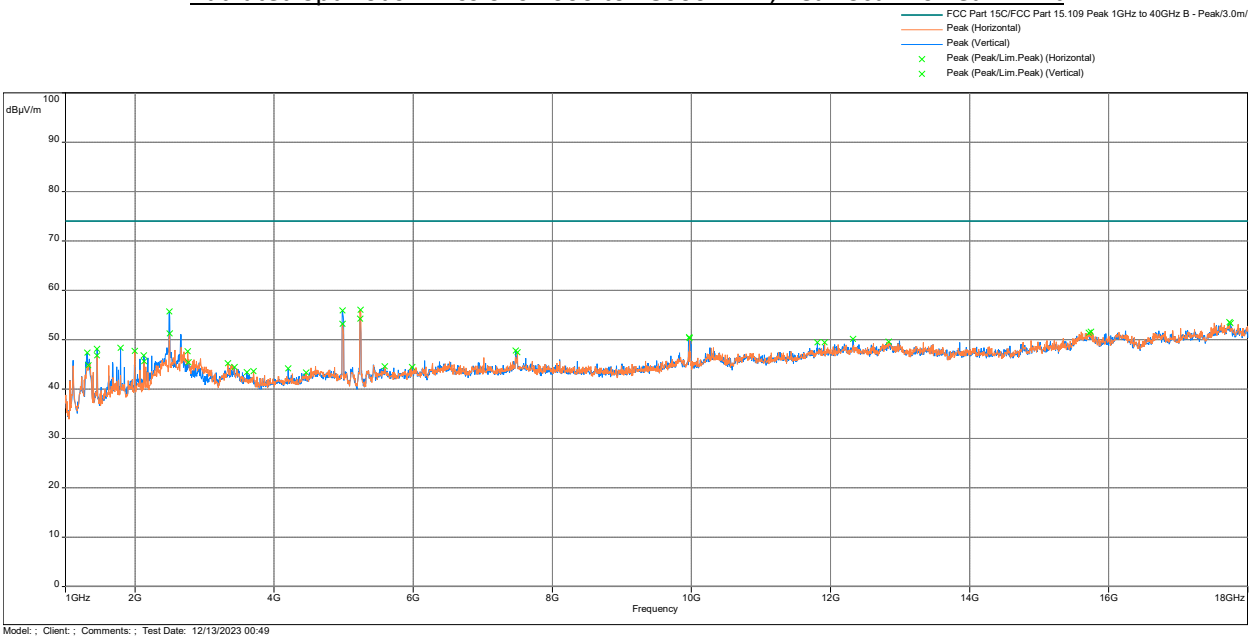
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
280.0013	34.83	35.5	-0.67	1.01	54.75	Vertical	-11.89
280.0013	34.79	35.5	-0.71	2.99	142.75	Horizontal	-11.89
110.025	29.37	33	-3.63	2.01	359.75	Vertical	-13.58
73.456	25.31	29.5	-4.19	2.01	350.5	Vertical	-18.54
259.0817	30.99	35.5	-4.51	1.01	195.75	Vertical	-13.41
165.1533	28.46	33	-4.54	3.99	0.25	Horizontal	-13.88

Frequency	Avg FS	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
5205.8	49.22	54	-4.78	2.98	56.25	Horizontal	-5.97
5205.8	47.73	54	-6.27	2.98	305	Vertical	-5.97
5198.433	45.04	54	-8.96	2.98	305	Vertical	-5.99
1455.6	44.21	54	-9.79	1.98	163	Vertical	-15.89

Note: Correction = AF + CF - Preamp

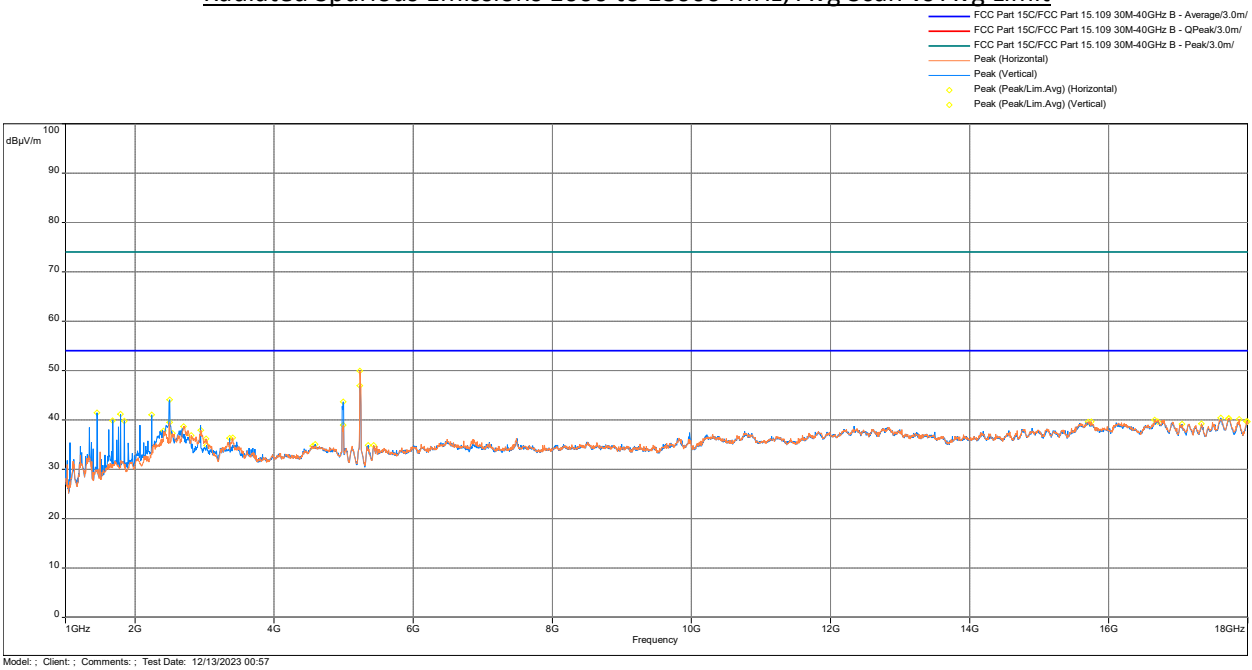
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5240MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit



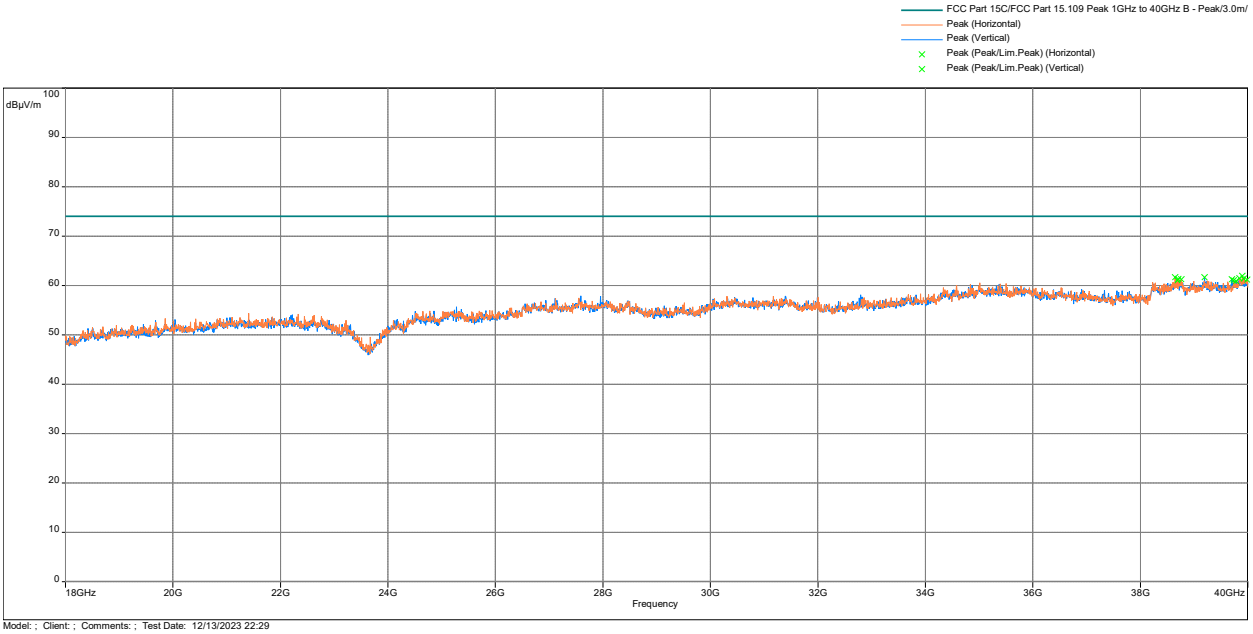
Model: ; Client: ; Comments: ; Test Date: 12/13/2023 00:49

Radiated Spurious Emissions 1000 to 18000 MHz, Avg Scan vs Avg Limit



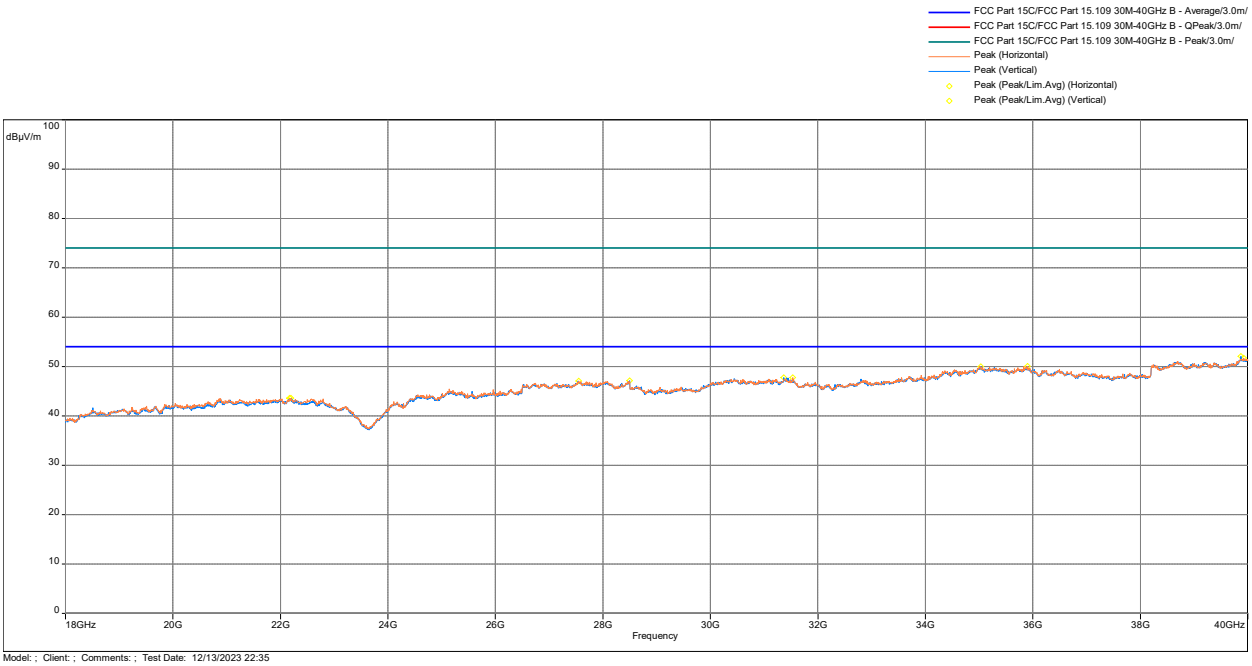
Model: ; Client: ; Comments: ; Test Date: 12/13/2023 00:57

Radiated Spurious Emissions 18000 to 40000 MHz, Peak Scan vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 12/13/2023 22:29

Radiated Spurious Emissions 18000 to 40000 MHz, Avg Scan vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 12/13/2023 22:35

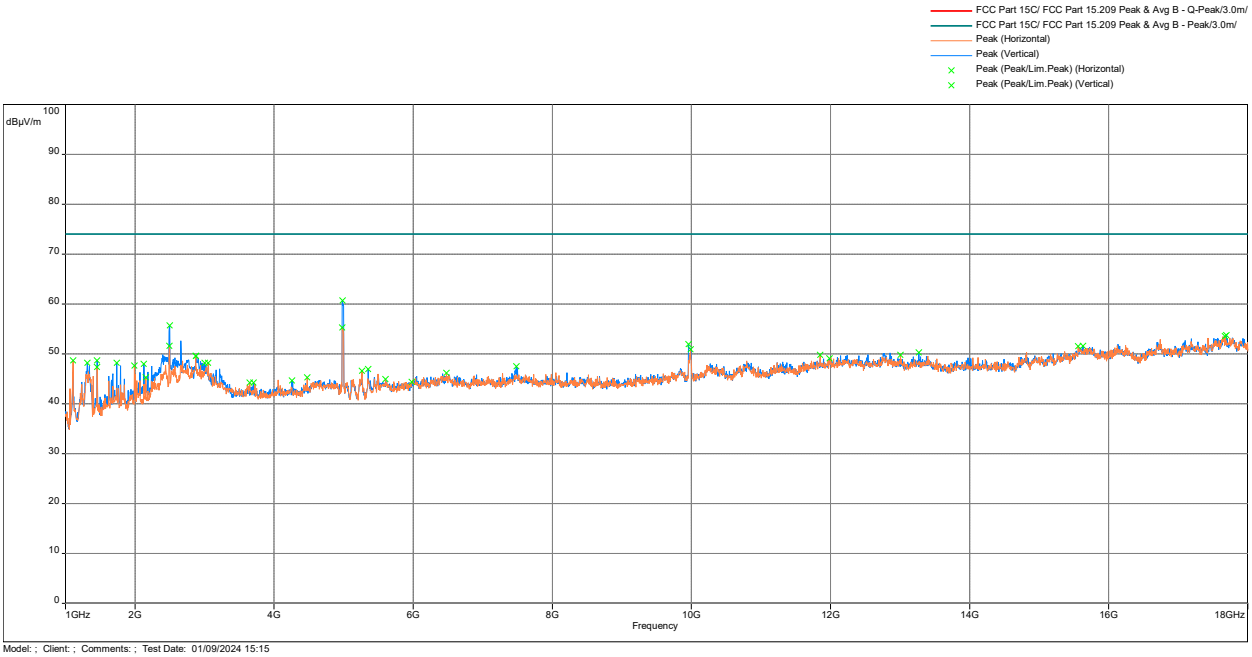
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
279.9965	34.84	35.5	-0.66	3.25	137.75	Vertical	-11.89
279.9965	34.87	35.5	-0.63	1	48.5	Horizontal	-11.89
120.5657	30.33	33	-2.67	1	21	Vertical	-12.19
258.532	32.09	35.5	-3.41	1	192.5	Vertical	-13.47
108.6023	29.49	33	-3.51	1.99	359.75	Vertical	-13.84
73.456	25.96	29.5	-3.54	1.99	328.5	Vertical	-18.54

Frequency	Avg FS	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
5232.433	49.9	54	-4.1	2.02	90	Horizontal	-5.87
5232.433	46.98	54	-7.02	2.98	284.25	Vertical	-5.87
2497.7	44.09	54	-9.91	1.98	98.75	Vertical	-10.32
1455.6	41.47	54	-12.53	1.01	260.5	Vertical	-15.89

Note: Correction = AF + CF – Preamp

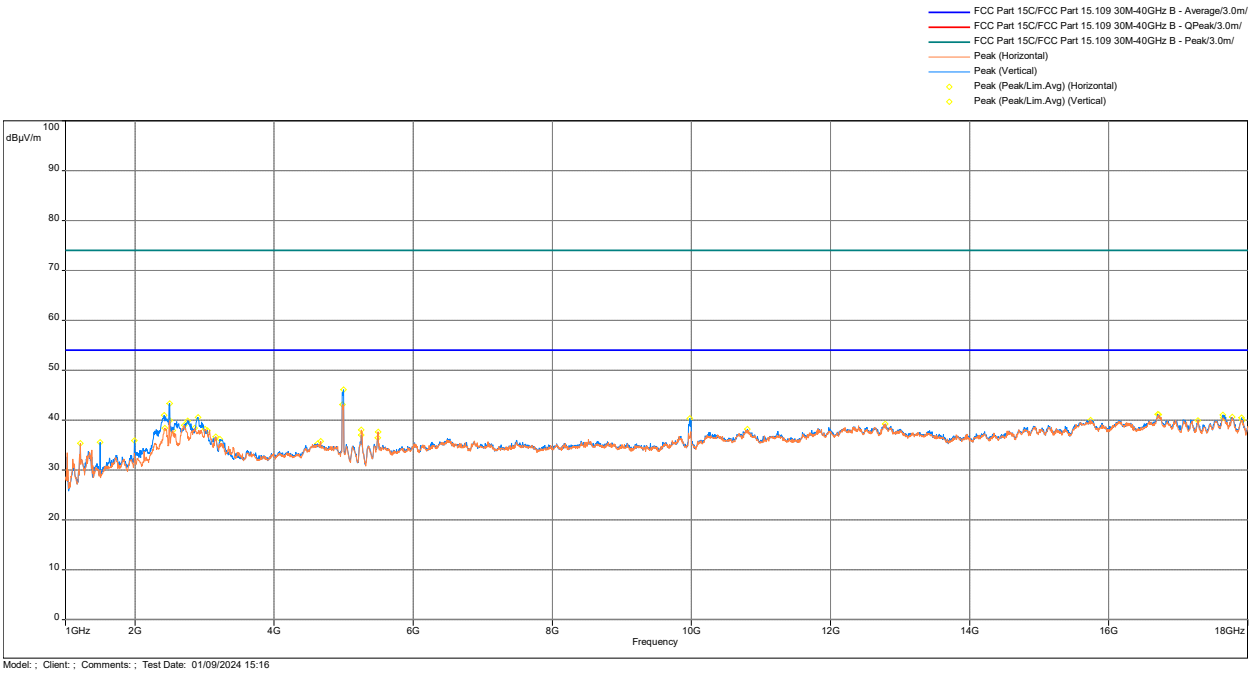
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5260MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit



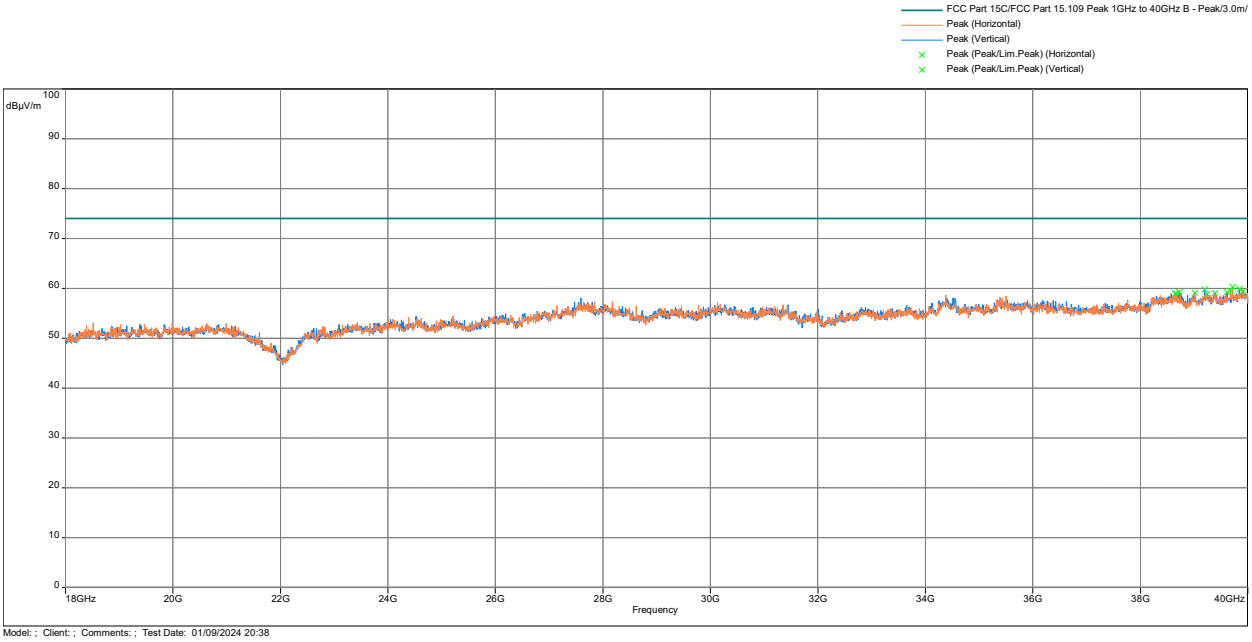
Model: ; Client: ; Comments: ; Test Date: 01/09/2024 15:15

Radiated Spurious Emissions 1000 to 18000 MHz, Avg Scan vs Avg Limit



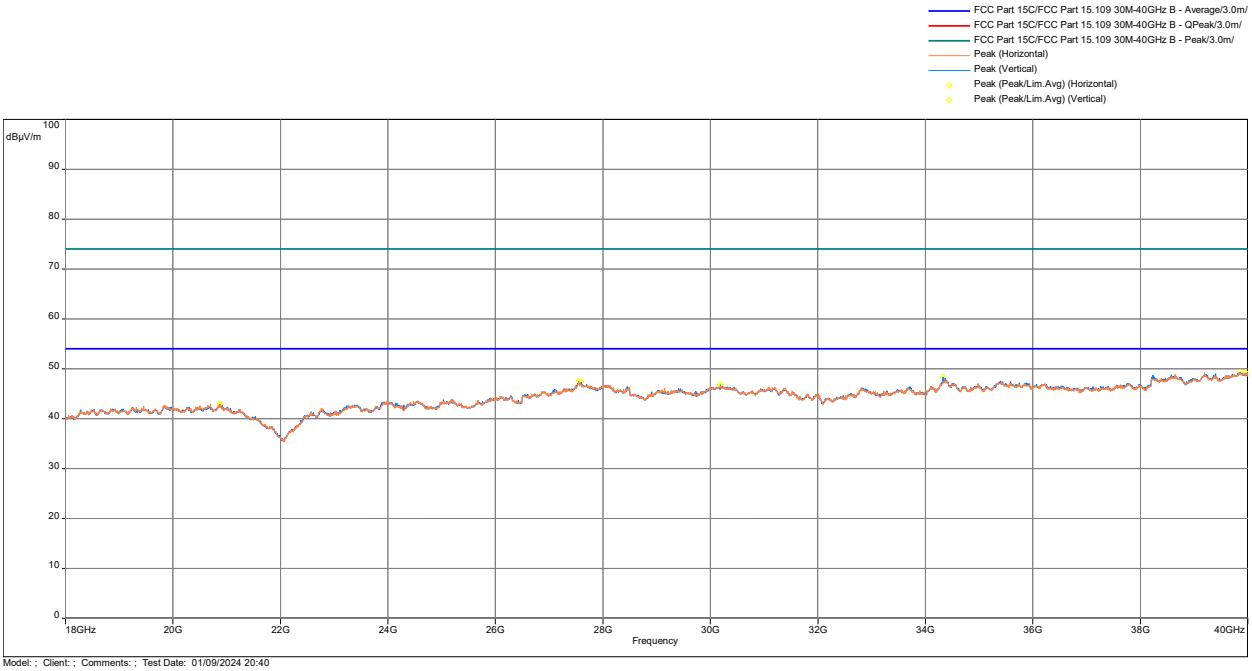
Model: ; Client: ; Comments: ; Test Date: 01/09/2024 15:16

Radiated Spurious Emissions 18000 to 40000 MHz, Peak vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 01/09/2024 20:38

Radiated Spurious Emissions 18000 to 40000 MHz, Avg vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 01/09/2024 20:40

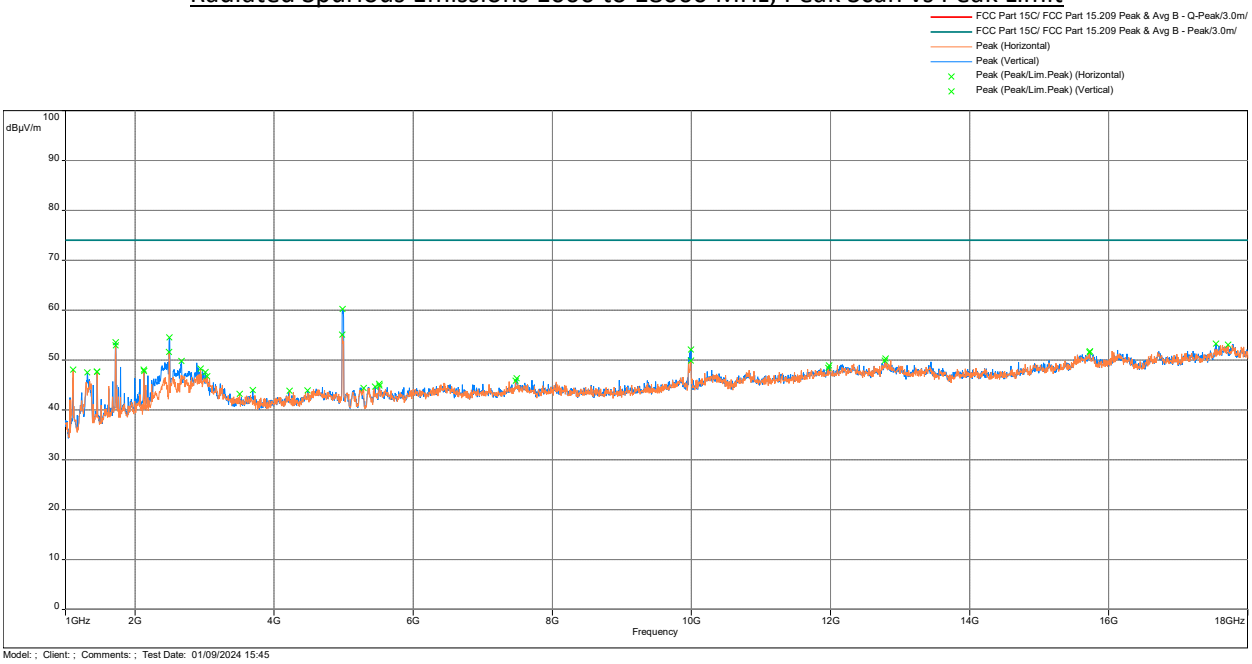
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
279.9892	22.61	35.5	-12.89	3.01	25.5	Horizontal	-11.89
279.415	10.45	35.5	-25.05	1.12	73.5	Vertical	-11.91
111.9973	28.68	33	-4.32	1.01	230.25	Vertical	-13.23
162.793	28.61	33	-4.39	3.99	128.75	Horizontal	-13.93
258.92	30.45	35.5	-5.05	1.01	188.5	Vertical	-13.43
73.77933	20.29	29.5	-9.21	2.99	43.5	Horizontal	-18.54

Frequency	Average	Limit @3m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
4996.133	46.12	54	-7.88	2.49	146.5	Vertical	-5.92
2498.267	43.37	54	-10.63	3.49	103	Vertical	-10.32
4984.8	43.13	54	-10.87	3.49	125	Horizontal	-5.88
16704.6	41.19	54	-12.81	2.49	169.25	Vertical	6.16

Note: Correction = AF + CF - Preamp

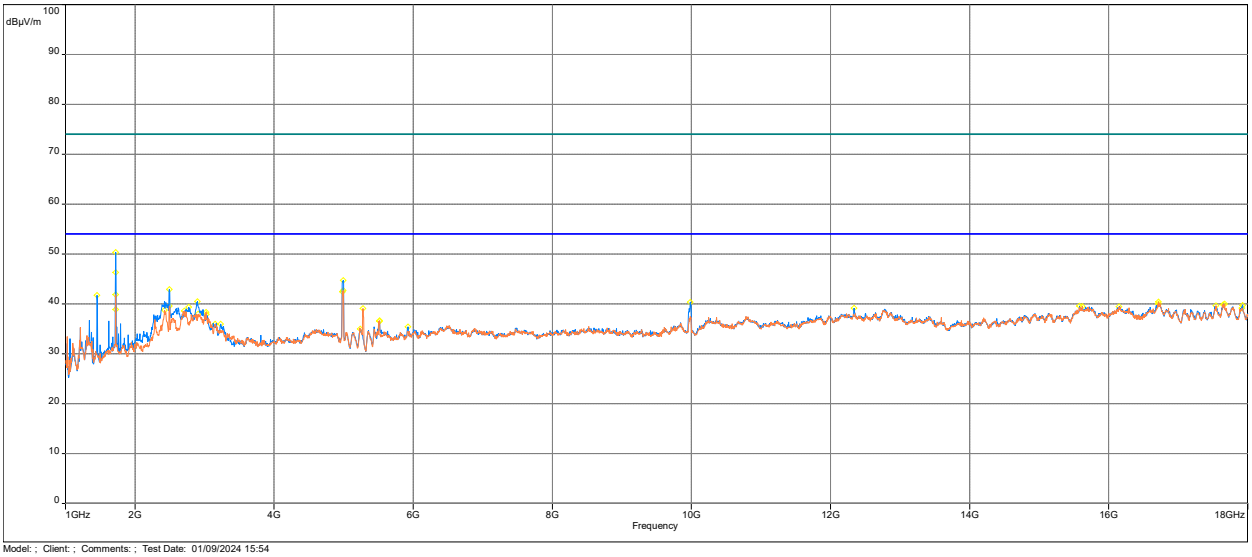
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5280MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit



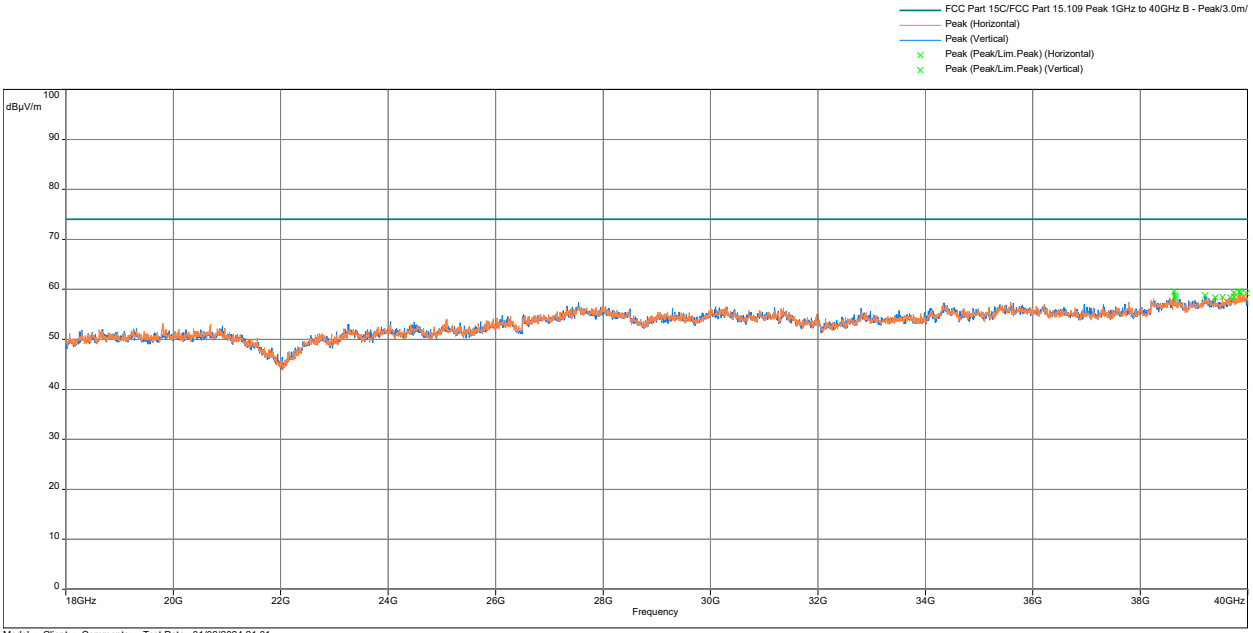
Model: ; Client: ; Comments: ; Test Date: 01/09/2024 15:45

Radiated Spurious Emissions 1000 to 18000 MHz, Avg Scan vs Avg Limit



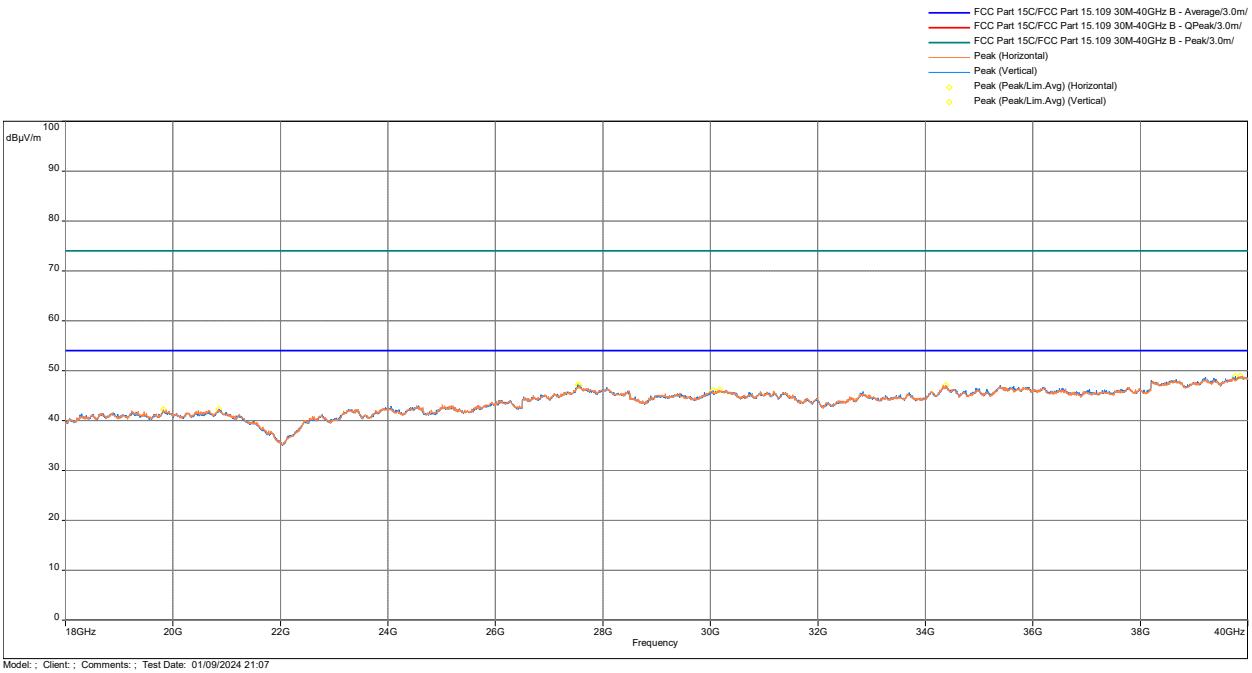
Model: ; Client: ; Comments: ; Test Date: 01/09/2024 15:54

Radiated Spurious Emissions 18000 to 40000 MHz, Peak Scan vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 01/09/2024 21:01

Radiated Spurious Emissions 18000 to 40000 MHz, Avg Scan vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 01/09/2024 21:07

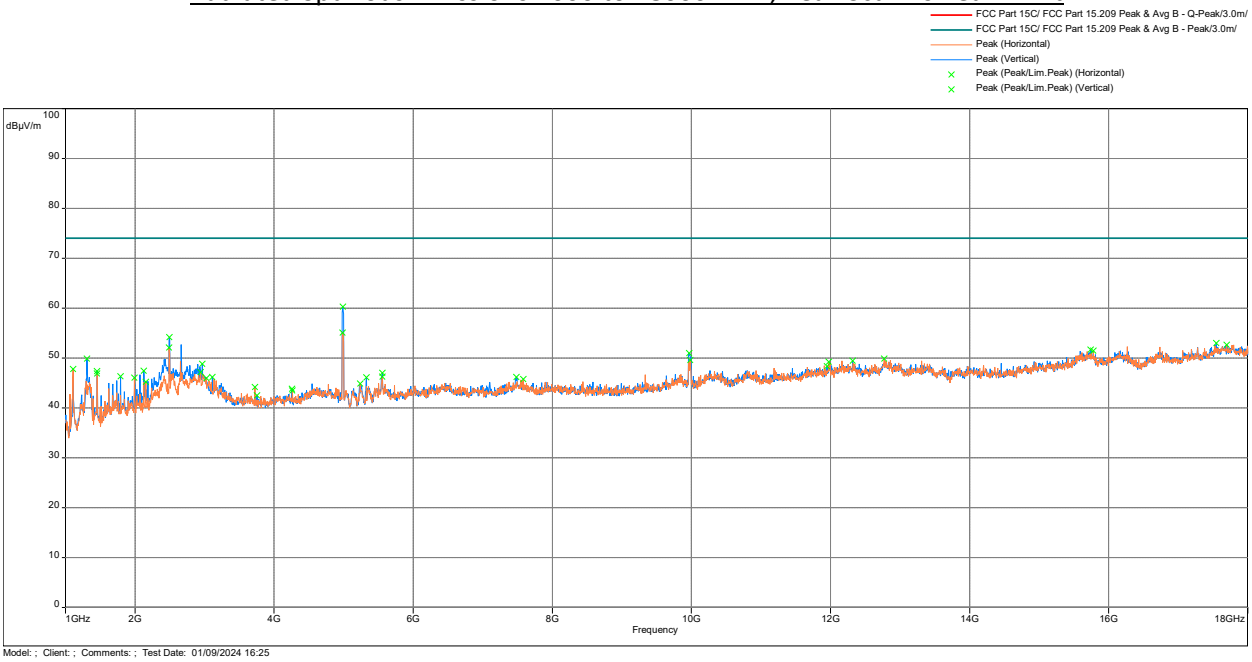
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
279.993	17.23	35.5	-18.27	1	0	Vertical	-11.89
279.9864	33.36	35.5	-2.14	3.57	177.5	Horizontal	-11.89
37.63967	19.46	29.5	-10.04	2.99	267.5	Horizontal	-11.15
254.3287	34.13	35.5	-1.37	1.01	189.75	Vertical	-13.8
125.9977	30.91	33	-2.09	1.01	8.75	Vertical	-11.97
111.965	29.34	33	-3.66	1.01	198	Vertical	-13.23

Frequency	Avg FS	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
1720.8	50.38	54	-3.62	1.51	232.5	Vertical	-14.82
1724.2	46.31	54	-7.69	2.49	168.75	Vertical	-14.78
4993.867	44.75	54	-9.25	2.49	146.25	Vertical	-5.91
2493.167	42.92	54	-11.08	3.49	102.75	Vertical	-10.36

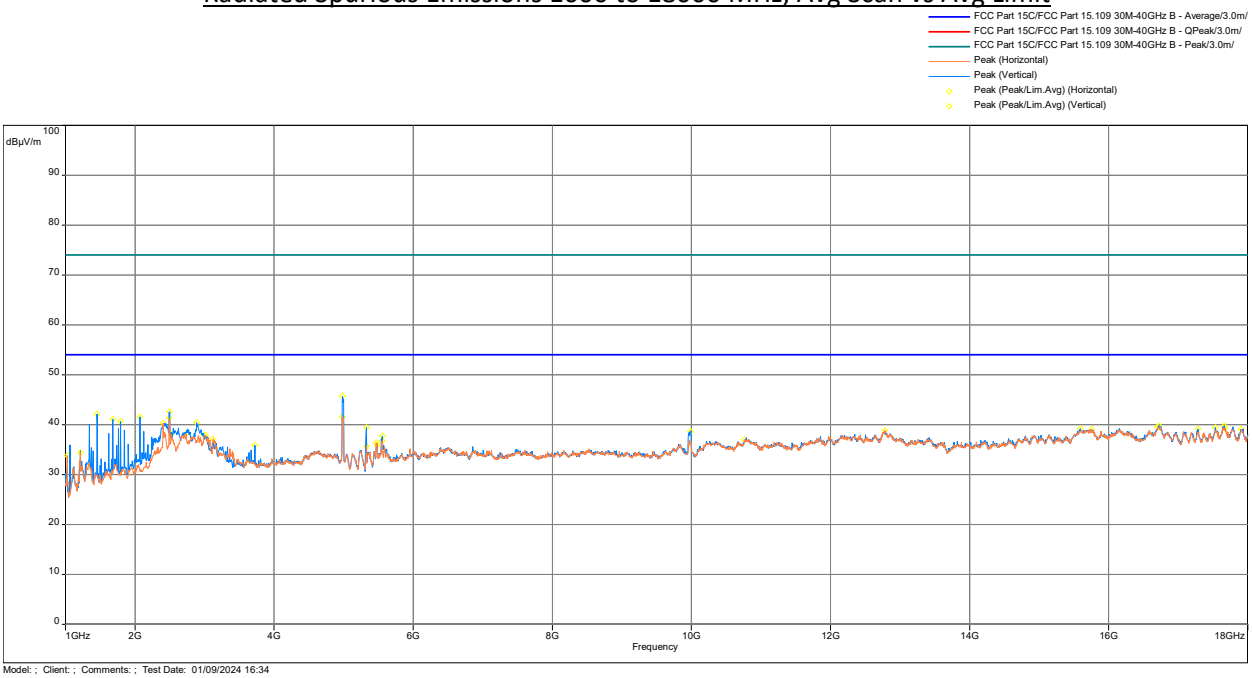
Note: Correction = AF + CF - Preamp

Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5320MHz

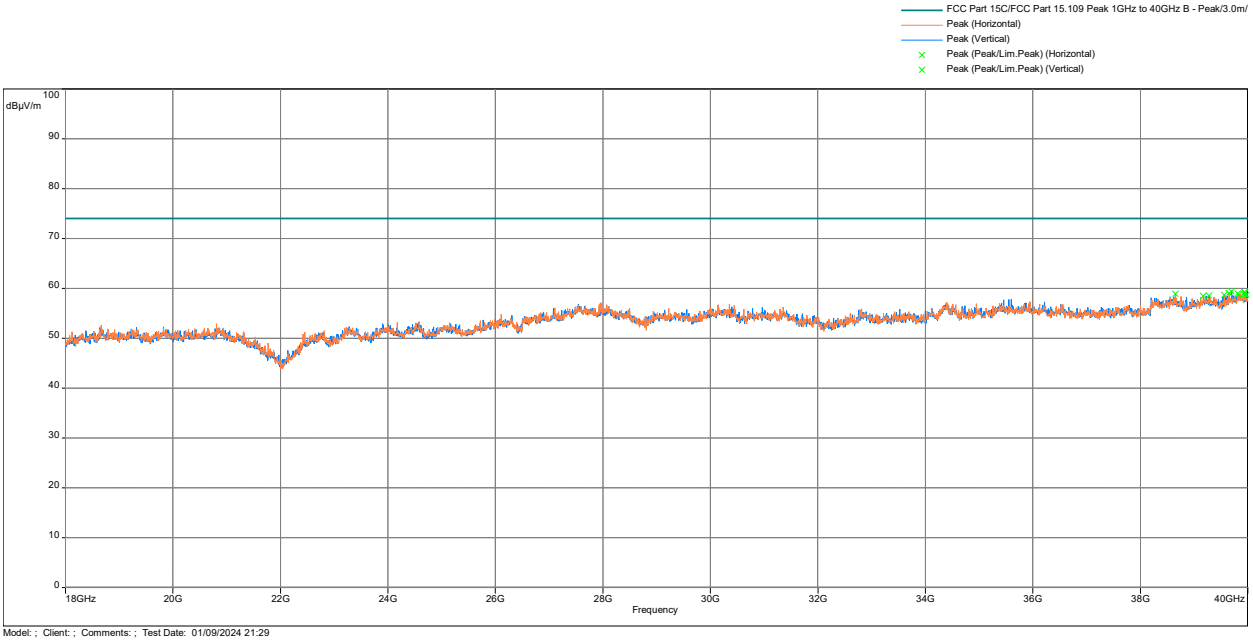
Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit



Radiated Spurious Emissions 1000 to 18000 MHz, Avg Scan vs Avg Limit

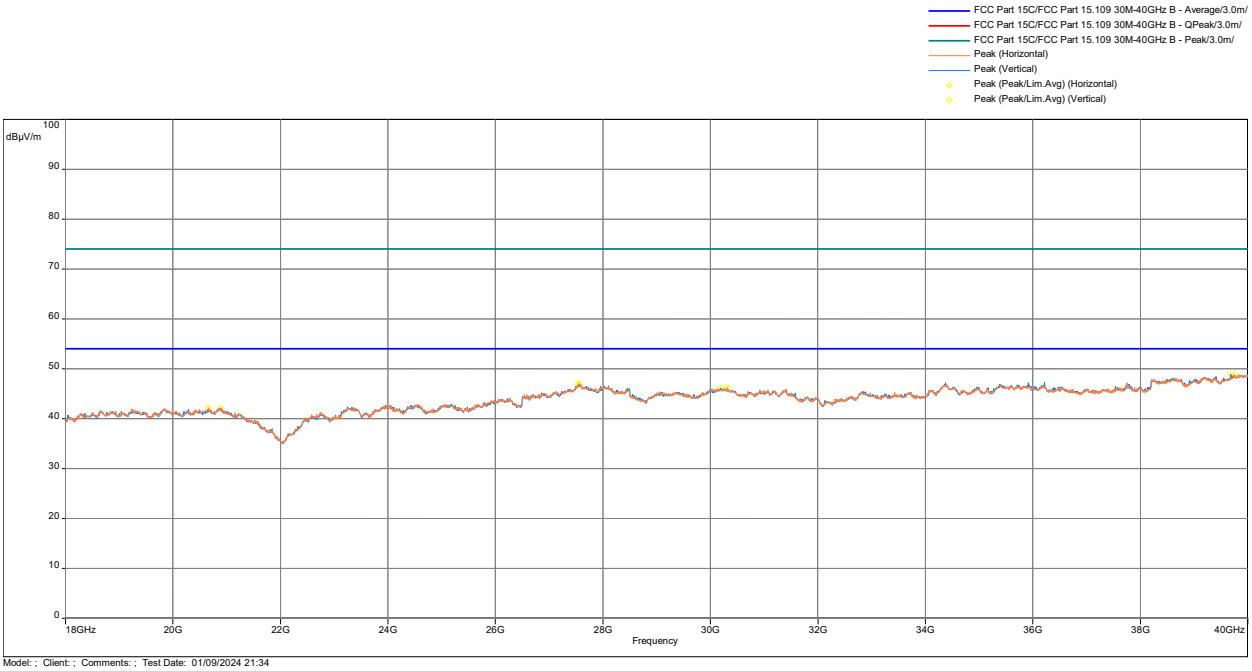


Radiated Spurious Emissions 18000 to 40000 MHz, Peak Scan vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 01/09/2024 21:29

Radiated Spurious Emissions 18000 to 40000 MHz, Avg Scan vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 01/09/2024 21:34

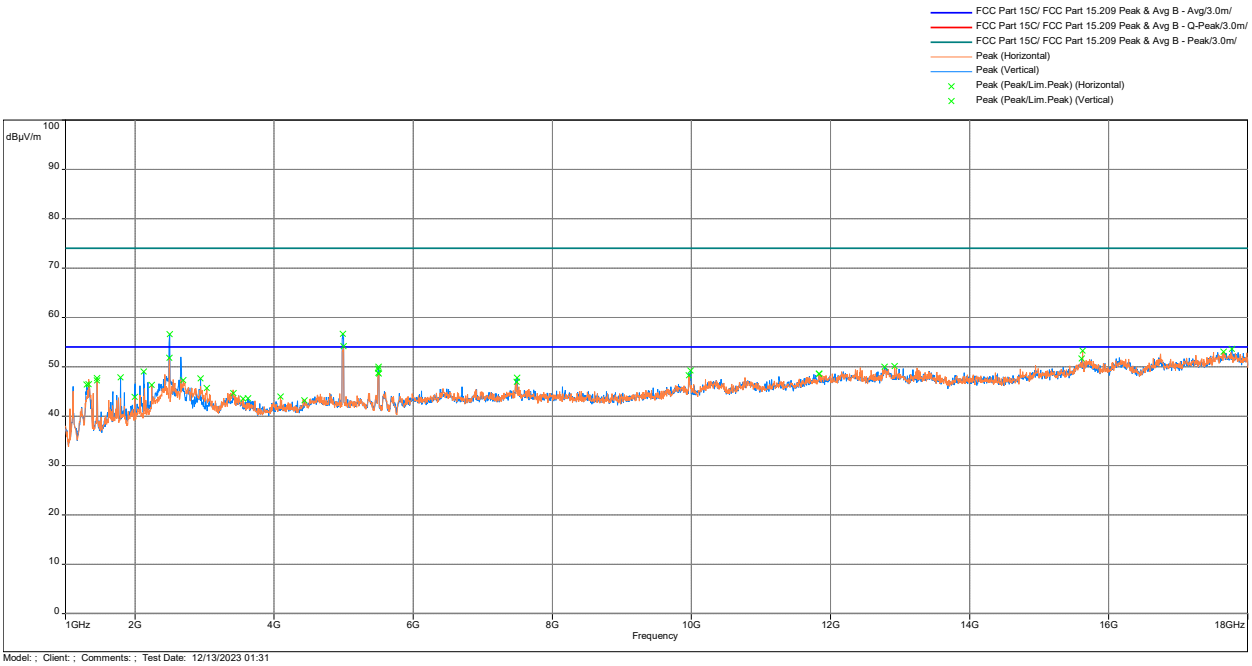
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
280.0126	32.94	35.5	-2.56	3.45	169.5	Horizontal	-11.89
280.0142	16.97	35.5	-18.53	1	1	Vertical	-11.89
37.667	20.03	29.5	-9.47	3.01	306.75	Horizontal	-10.98
111.9973	22.71	33	-10.29	3.99	296.25	Horizontal	-13.23
257.9177	31.17	35.5	-4.33	1.01	180.75	Vertical	-13.54
134.1133	27.46	33	-5.54	3.99	52.25	Horizontal	-12.26

Frequency	Avg FS	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
4984.233	45.78	54	-8.22	2.49	146	Vertical	-5.88
2497.7	42.68	54	-11.32	3.49	103	Vertical	-10.32
1455.6	42.15	54	-11.85	1.51	212.5	Vertical	-15.89
2071.567	41.61	54	-12.39	1.51	148.25	Vertical	-12.22

Note: Correction = AF + CF - Preamp

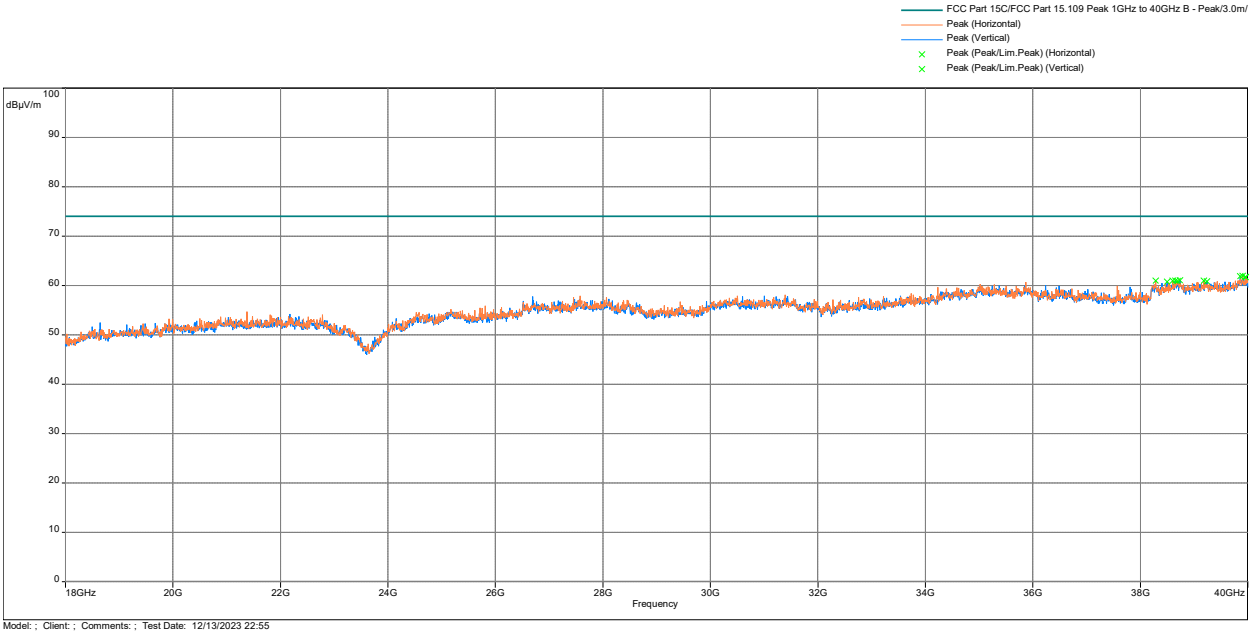
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5500MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak & Avg Limit

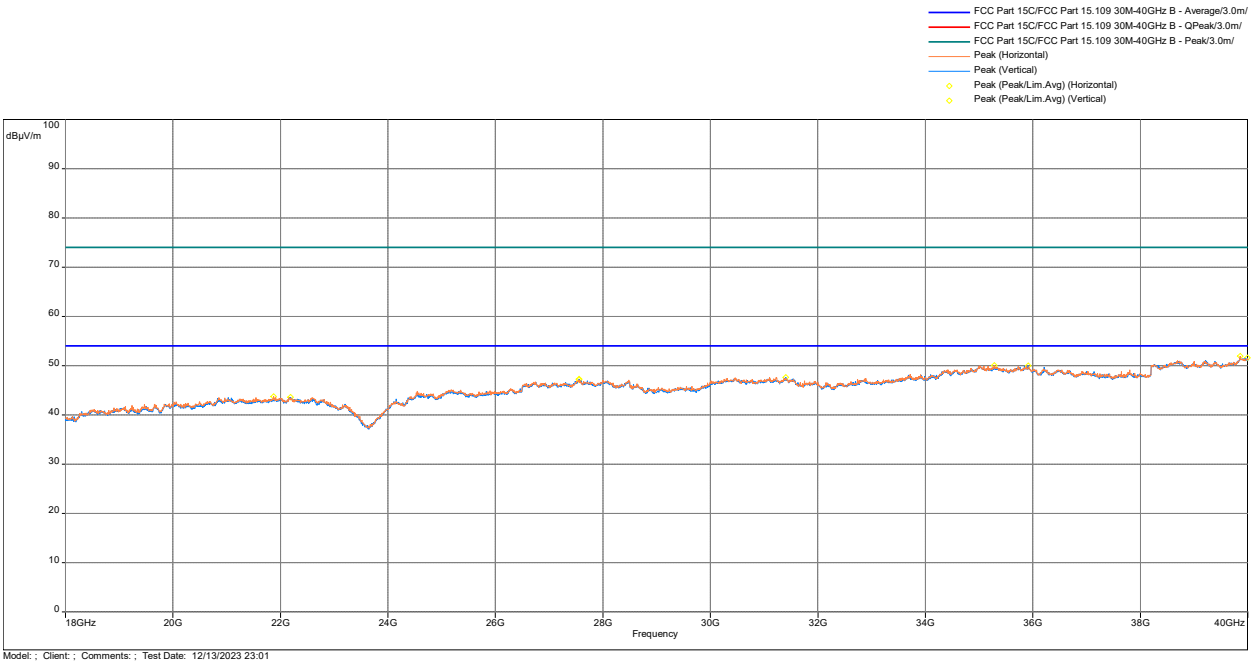


Note: 2494MHz and 4980MHz signal was determined to be digital emissions which meets class A of digital emission.

Radiated Spurious Emissions 18000 to 40000 MHz, Peak vs Peak Limit



Radiated Spurious Emissions 18000 to 40000 MHz, Avg vs Avg Limit



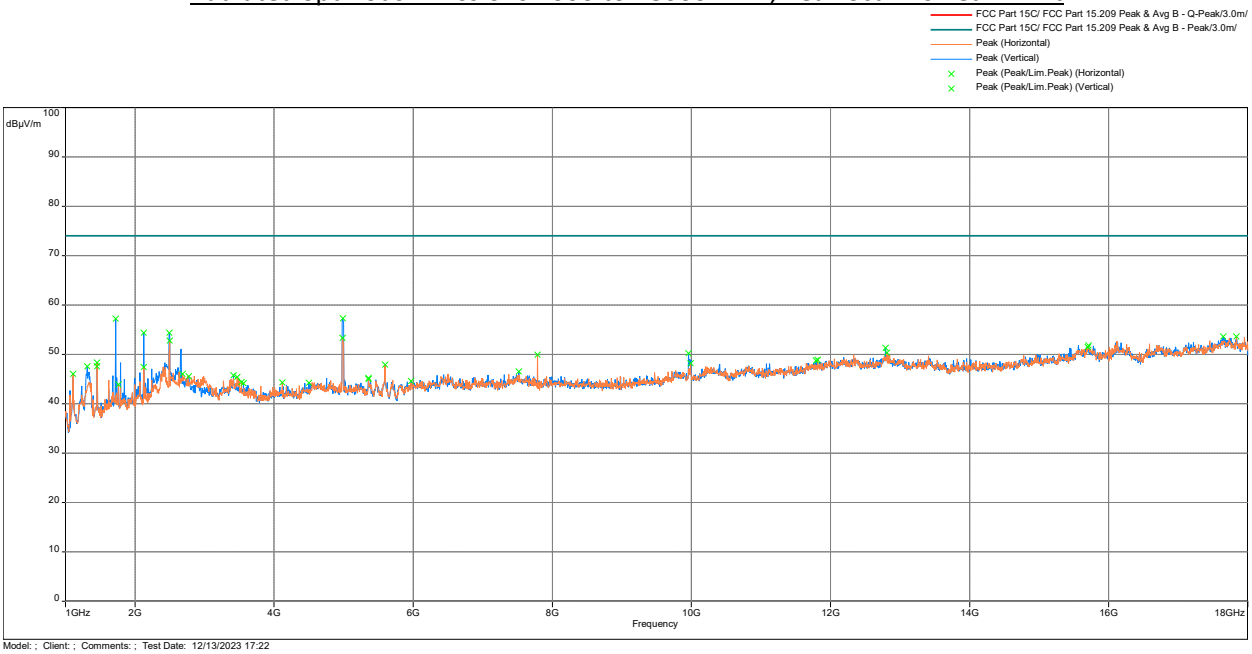
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
279.9962	22.28	35.5	-13.22	2.77	140.5	Horizontal	-11.89
279.9962	17.28	35.5	-18.22	1	98.25	Vertical	-11.89
167.0933	28.07	33	-4.93	3.99	2.25	Horizontal	-13.97
252.3887	31.91	35.5	-3.59	3.99	12.25	Horizontal	-13.88
73.42367	25.9	29.5	-3.6	1.99	310.25	Vertical	-18.54
111.092	28.7	33	-4.3	1.01	341.5	Vertical	-13.39

Frequency	Average	Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
17771.63	53.59	54.0	-0.41	2.98	87.75	Vertical	8.72
15626.8	53.3	54.0	-0.7	1.02	334.75	Horizontal	5.85
1792.2	47.82	54.0	-6.18	1.98	137.5	Vertical	-13.91
7491.167	47.76	54.0	-6.24	2.98	143.75	Vertical	-2.01

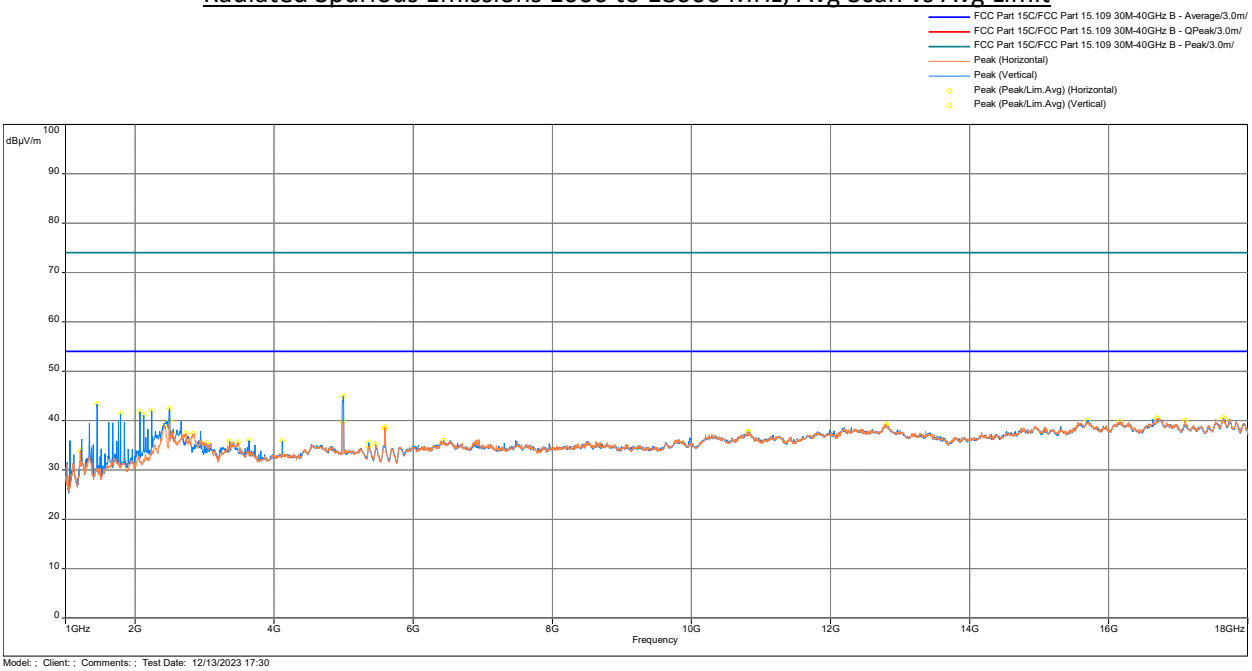
Note: Correction = AF + CF - Preamp

Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5600MHz

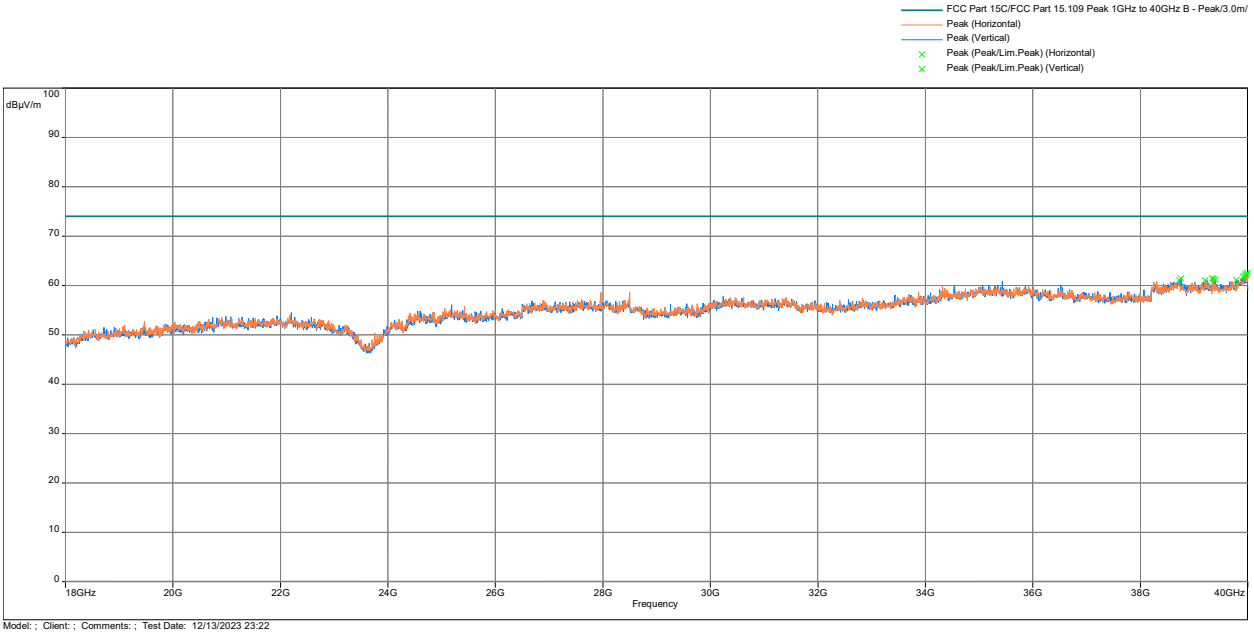
Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit



Radiated Spurious Emissions 1000 to 18000 MHz, Avg Scan vs Avg Limit

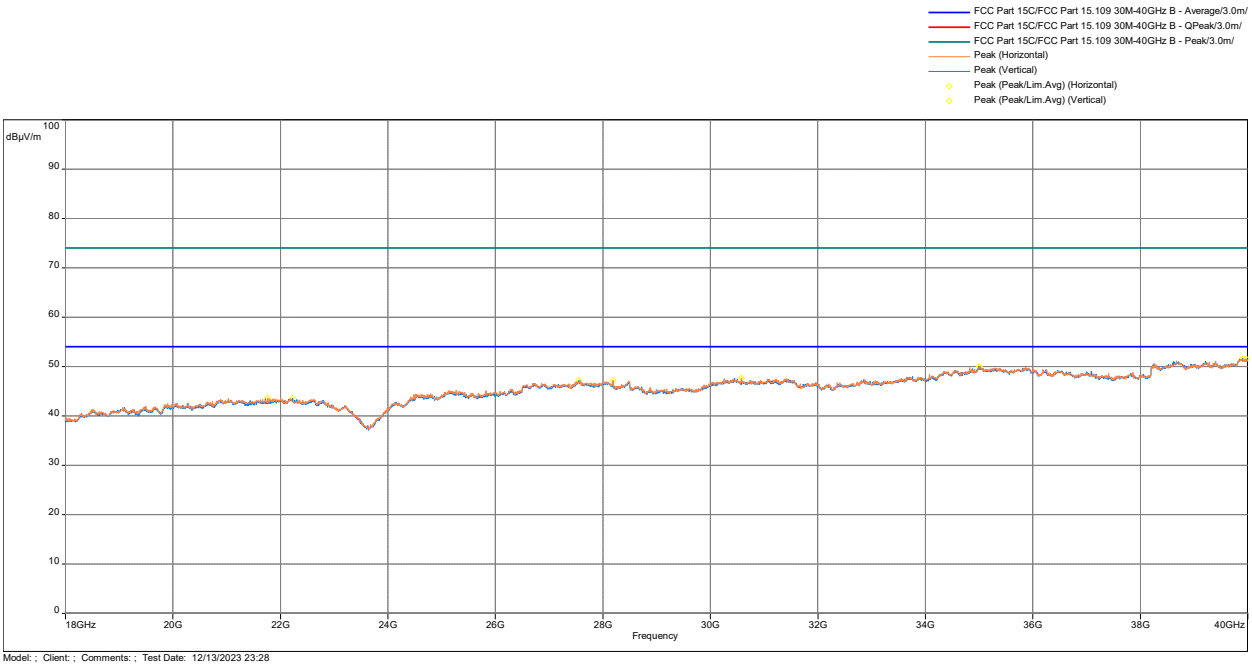


Radiated Spurious Emissions 18000 to 40000 MHz, Peak Scan vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 12/13/2023 23:22

Radiated Spurious Emissions 18000 to 40000 MHz, Avg Scan vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 12/13/2023 23:28

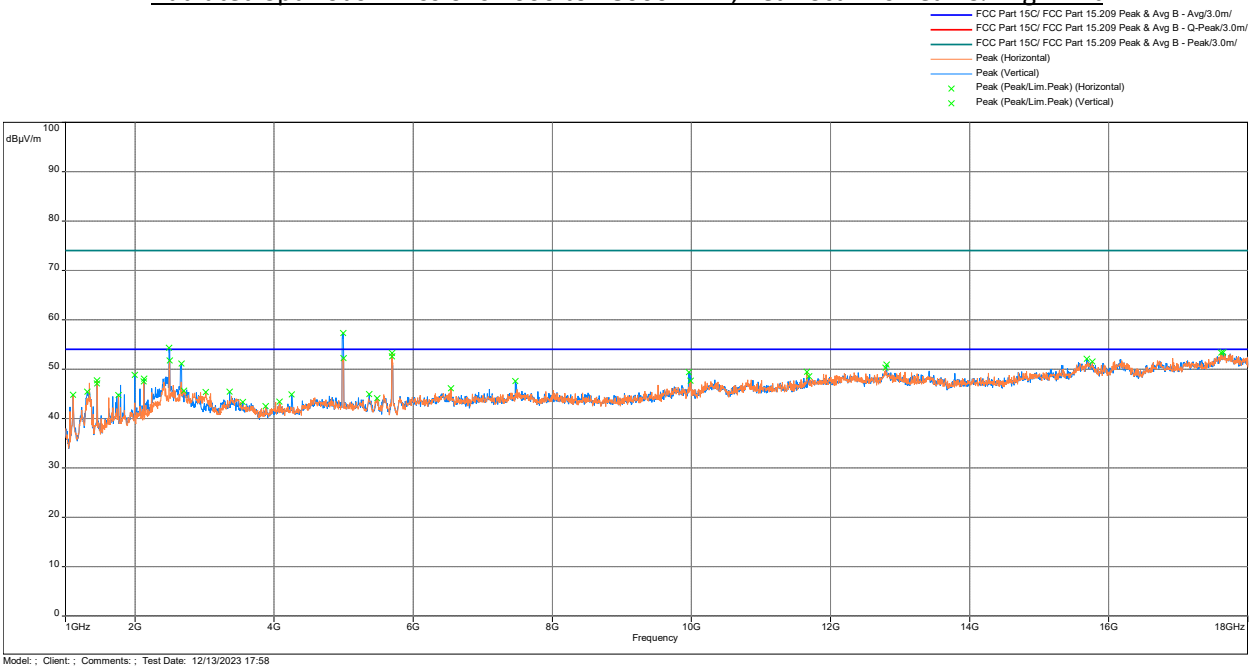
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
131.0951	27.41	33	-5.59	1.25	334	Vertical	-12.08
279.969	34.23	35.5	-1.27	3.01	129	Horizontal	-11.89
279.969	35.03	35.5	-0.47	1.01	50.75	Vertical	-11.89
73.48833	26.9	29.5	-2.6	1.99	213	Vertical	-18.54
257.659	32.67	35.5	-2.83	1.01	183.25	Vertical	-13.56
108.8287	29.08	33	-3.92	1.01	350.75	Vertical	-13.79

Frequency	Average	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
1455.6	43.32	54	-10.68	1.98	197.5	Vertical	-15.89
1791.633	41.42	54	-12.58	1.01	120.5	Vertical	-13.91
2127.667	41.08	54	-12.92	1.98	176.5	Vertical	-12.34
17648.67	40.58	54	-13.42	2.98	24.75	Horizontal	8.7

Note: Correction = AF + CF - Preamp

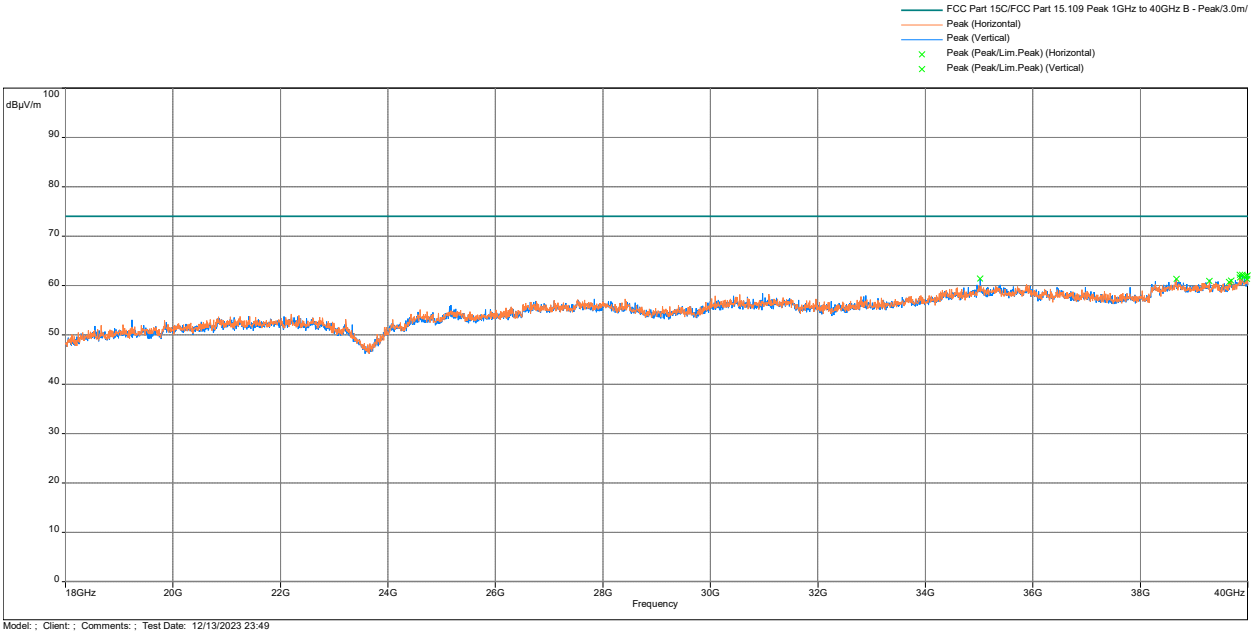
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5700MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak & Avg Limit



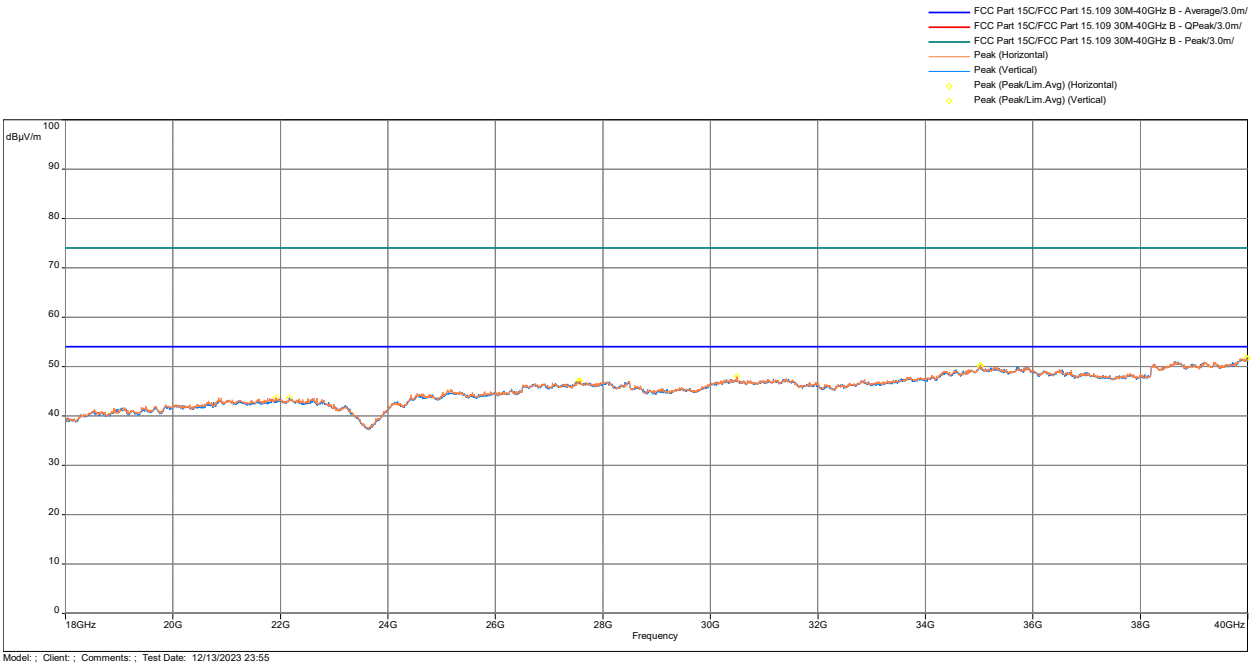
Note: 2494MHz and 4980MHz peaks were determined to be digital emissions

Radiated Spurious Emissions 18000 to 40000 MHz, Peak Scan vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 12/13/2023 23:49

Radiated Spurious Emissions 18000 to 40000 MHz, Avg Scan vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 12/13/2023 23:55

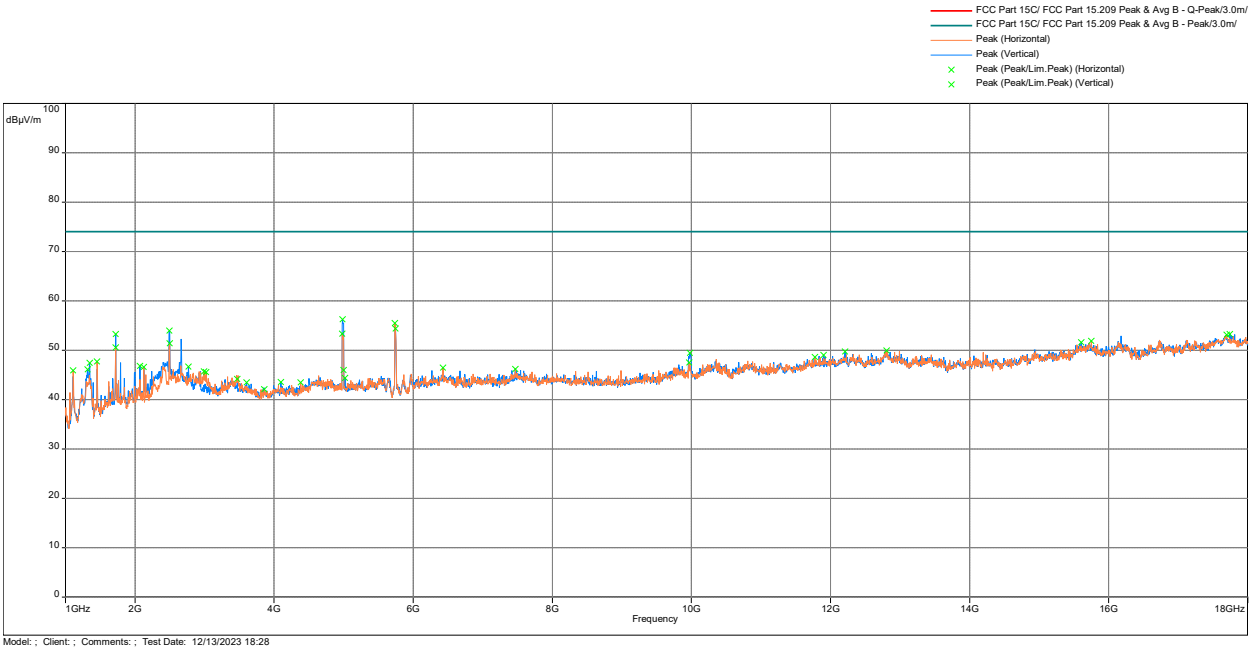
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
279.9981	34.55	35.5	-0.95	2.72	142.75	Vertical	-11.89
130.0041	27.72	33	-5.28	1.04	344	Horizontal	-12.03
280	34.44	35.5	-1.06	1	56.75	Vertical	-11.89
108.376	30.05	33	-2.95	1	292.5	Vertical	-13.88
73.48833	25.76	29.5	-3.74	1.99	10.25	Vertical	-18.54
166.0263	28.06	33	-4.94	3.99	328.25	Horizontal	-13.92

Frequency	Avg	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
17644.13	53.38	54	-0.62	2.98	293	Vertical	8.68
5693.7	53.3	54	-0.7	2.99	117.25	Horizontal	-5.03
2666.567	51.13	54	-2.87	1.98	110.5	Vertical	-9.69
12807.63	50.89	54	-3.11	1.98	153	Vertical	3.67

Note: Correction = AF + CF - Preamp

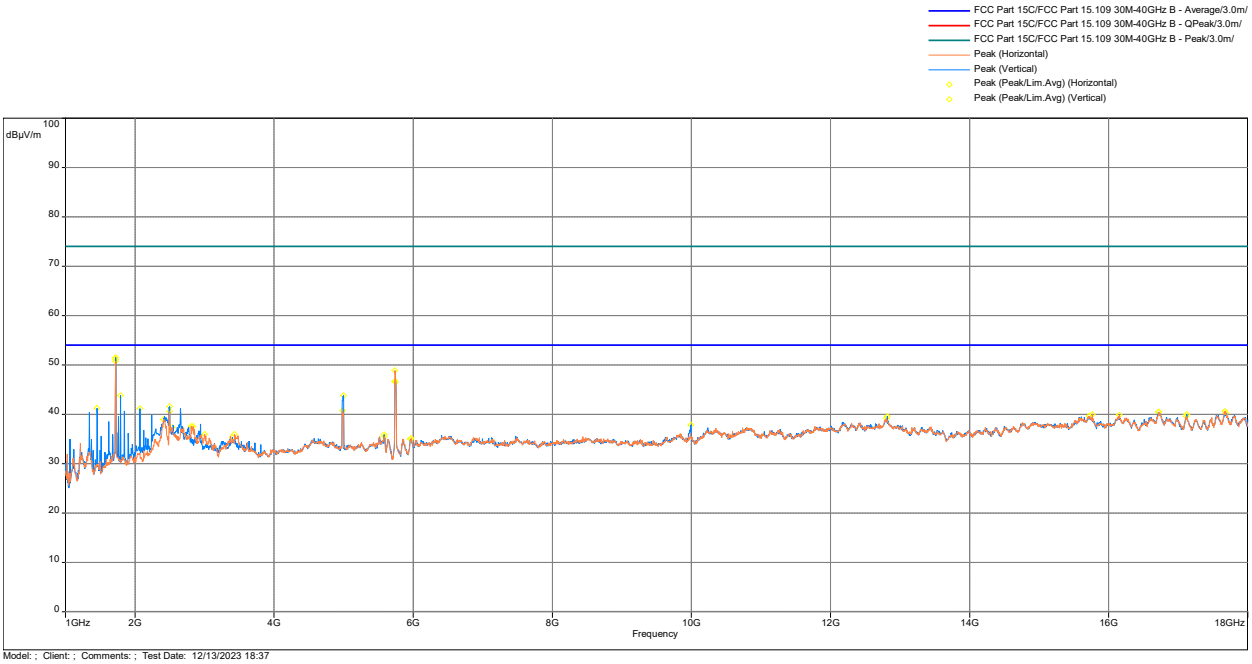
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5745MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit



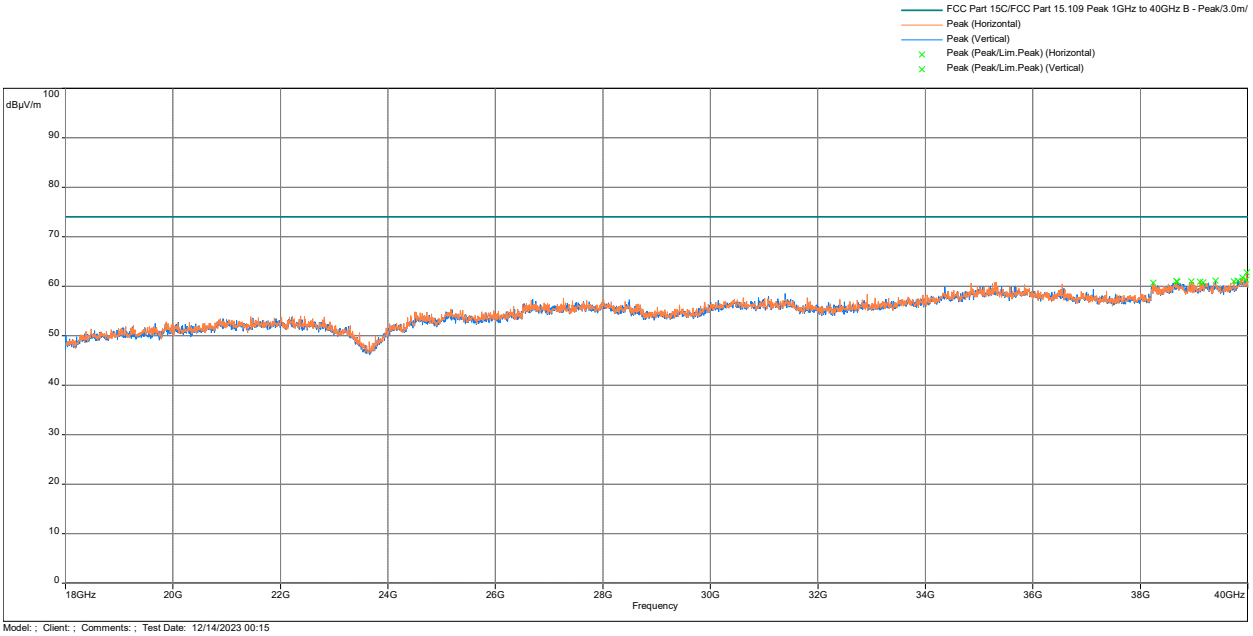
Model: ; Client: ; Comments: ; Test Date: 12/13/2023 18:28

Radiated Spurious Emissions 1000 to 18000 MHz, Avg Scan vs Avg Limit



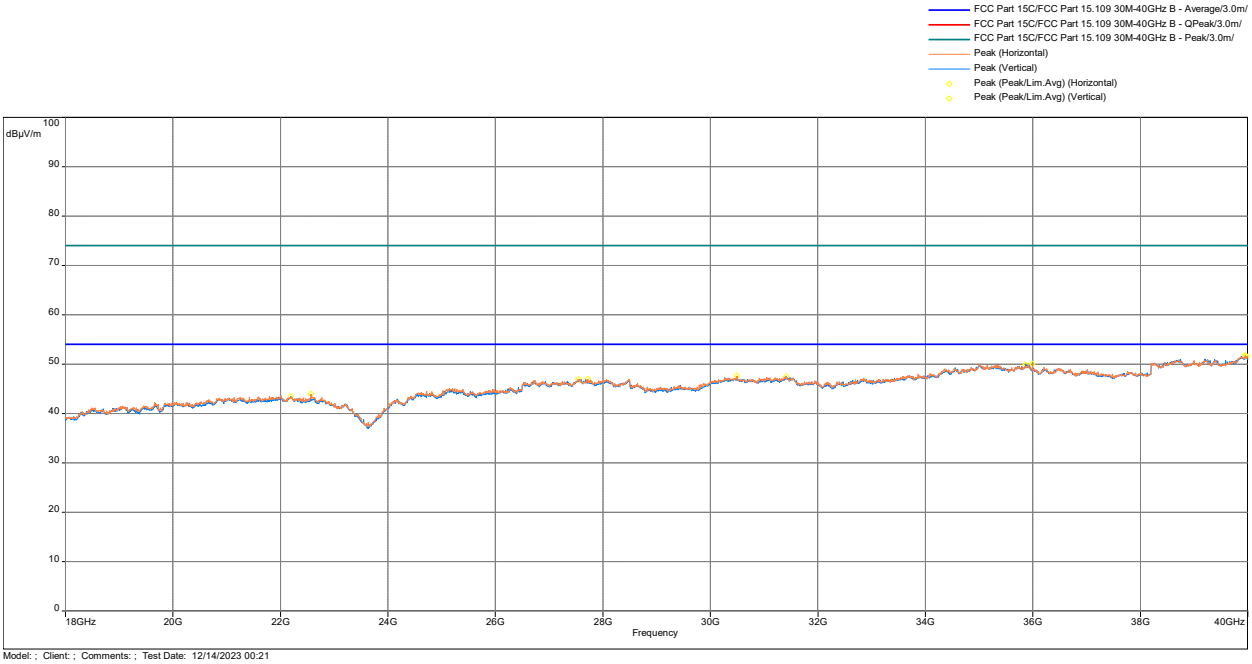
Model: ; Client: ; Comments: ; Test Date: 12/13/2023 18:37

Radiated Spurious Emissions 18000 to 40000 MHz, Peak vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 12/14/2023 00:15

Radiated Spurious Emissions 18000 to 40000 MHz, Avg vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 12/14/2023 00:21

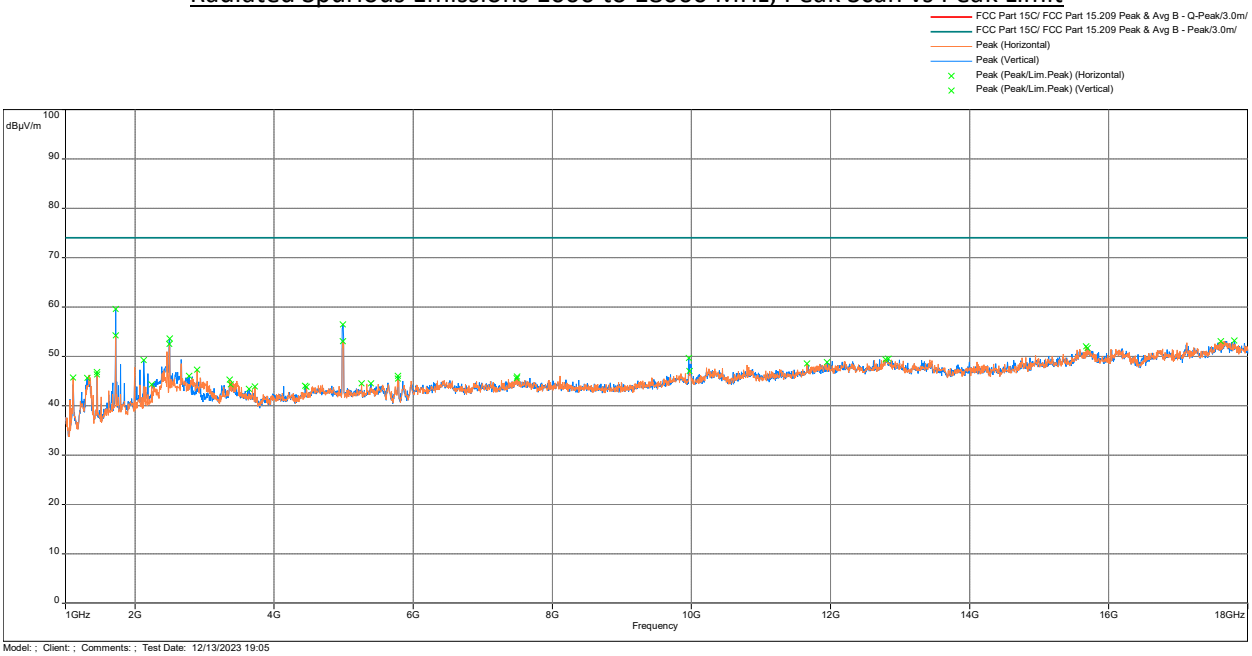
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
280.0013	35.25	35.5	-0.25	1	54	Vertical	-11.89
121.762	29.32	33	-3.68	1.01	319.5	Vertical	-12.12
73.61767	25.5	29.5	-4	1.99	262.25	Vertical	-18.54
257.95	32.46	35.5	-3.04	3.99	315	Vertical	-13.54
111.5123	29.41	33	-3.59	1.01	234.5	Vertical	-13.31
137.6377	29.32	33	-3.68	3.99	345.5	Horizontal	-12.55

Frequency	Avg	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
1723.633	51.54	54.0	-2.46	1.98	91	Vertical	-14.78
1720.8	51.2	54.0	-2.8	1.01	359.75	Vertical	-14.82
1722.5	50.77	54.0	-3.23	2.02	141	Horizontal	-14.8
5737.9	48.92	54	-5.08	2.99	261.75	Horizontal	-5.17

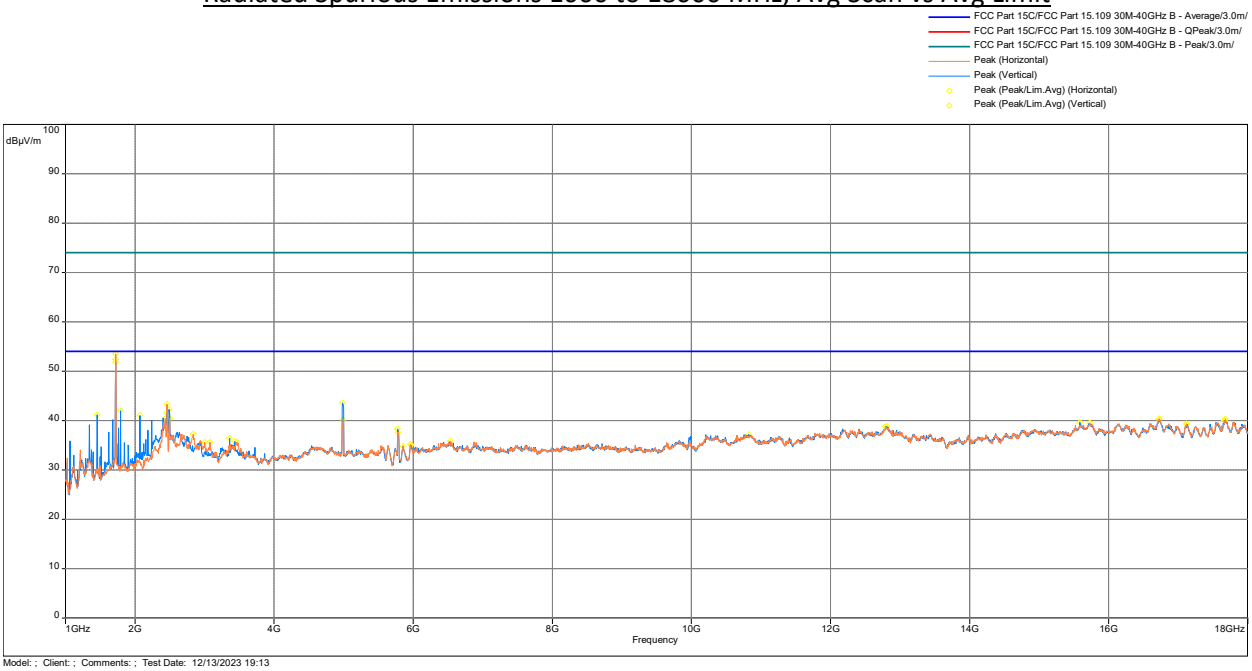
Note: Correction = AF + CF - Preamp

Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5785MHz

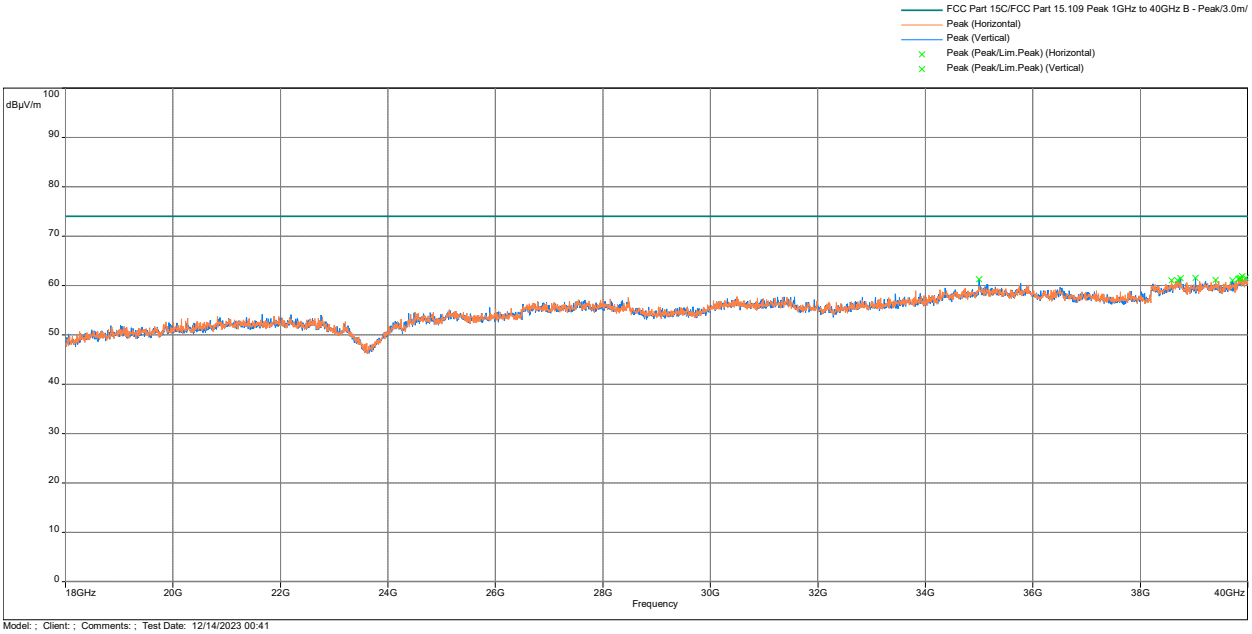
Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit



Radiated Spurious Emissions 1000 to 18000 MHz, Avg Scan vs Avg Limit

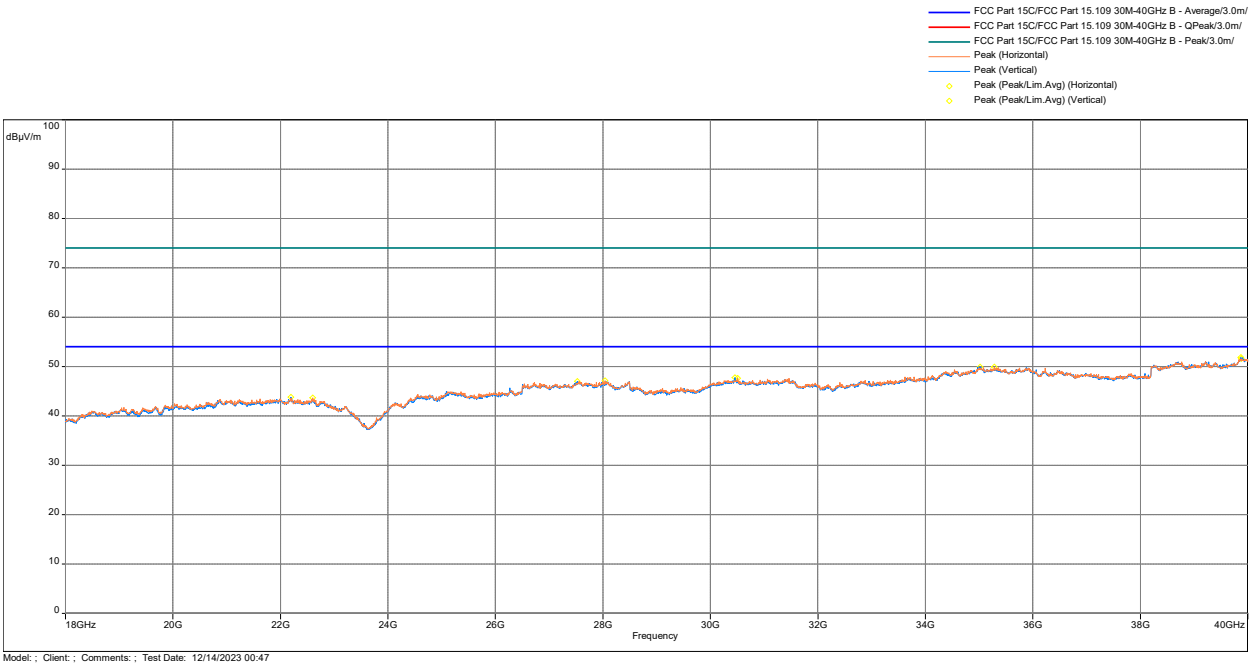


Radiated Spurious Emissions 18000 to 40000 MHz, Peak Scan vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 12/14/2023 00:41

Radiated Spurious Emissions 18000 to 40000 MHz, Avg Scan vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 12/14/2023 00:47

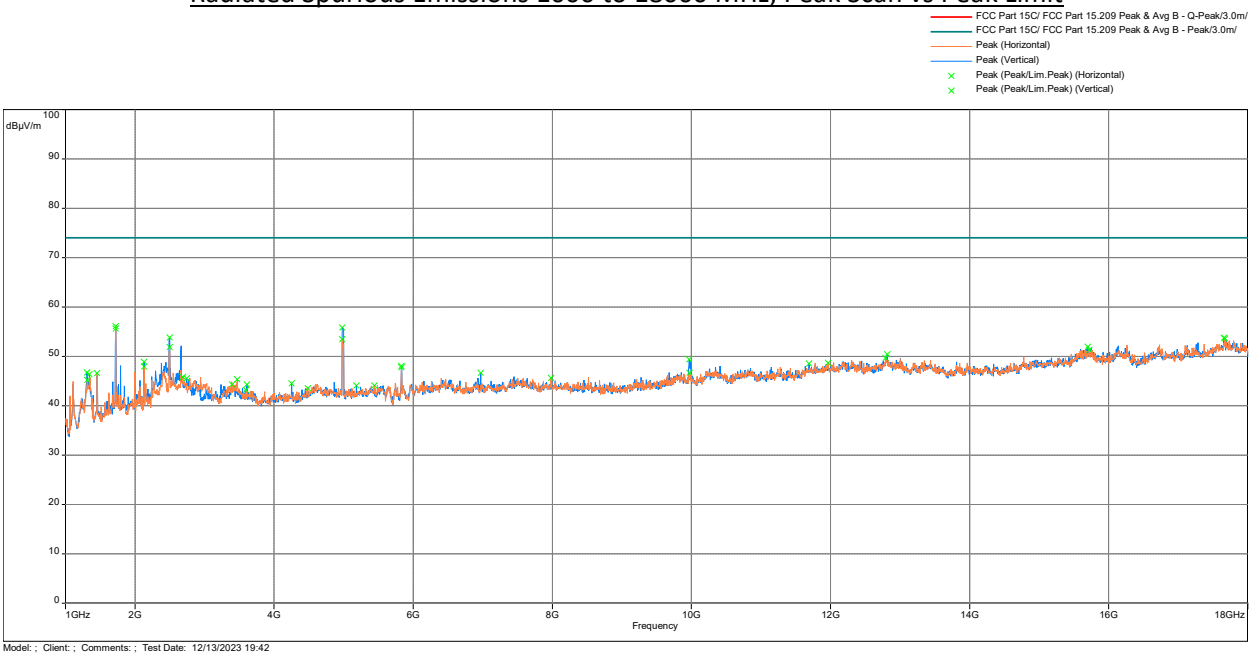
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
279.9962	19.51	35.5	-15.99	3.06	124.75	Horizontal	-11.89
280.163	12.62	35.5	-22.88	1	0	Vertical	-11.89
252.13	31.88	35.5	-3.62	2.99	68.25	Horizontal	-13.89
73.456	25.68	29.5	-3.82	2.01	126	Vertical	-18.54
111.4477	28.14	33	-4.86	1.01	271	Vertical	-13.32
134.5013	28.96	33	-4.04	3.99	27	Horizontal	-12.29

Frequency	Avg	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
1720.8	53.54	54	-0.46	2.02	162.25	Horizontal	-14.82
1724.2	52.44	54	-1.56	2.98	240	Horizontal	-14.78
1721.367	51.88	54	-2.12	1.01	142	Vertical	-14.81
2071.567	41.03	54	-12.97	1.01	142	Vertical	-12.22

Note: Correction = AF + CF - Preamp

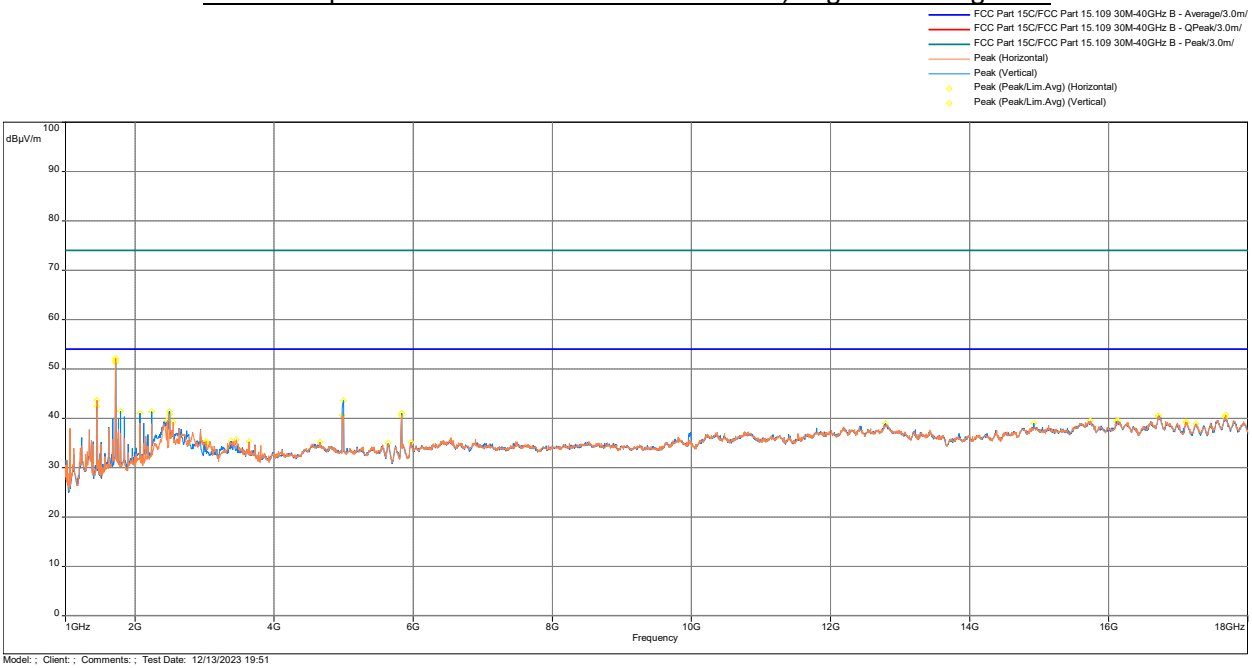
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT0 5825MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit

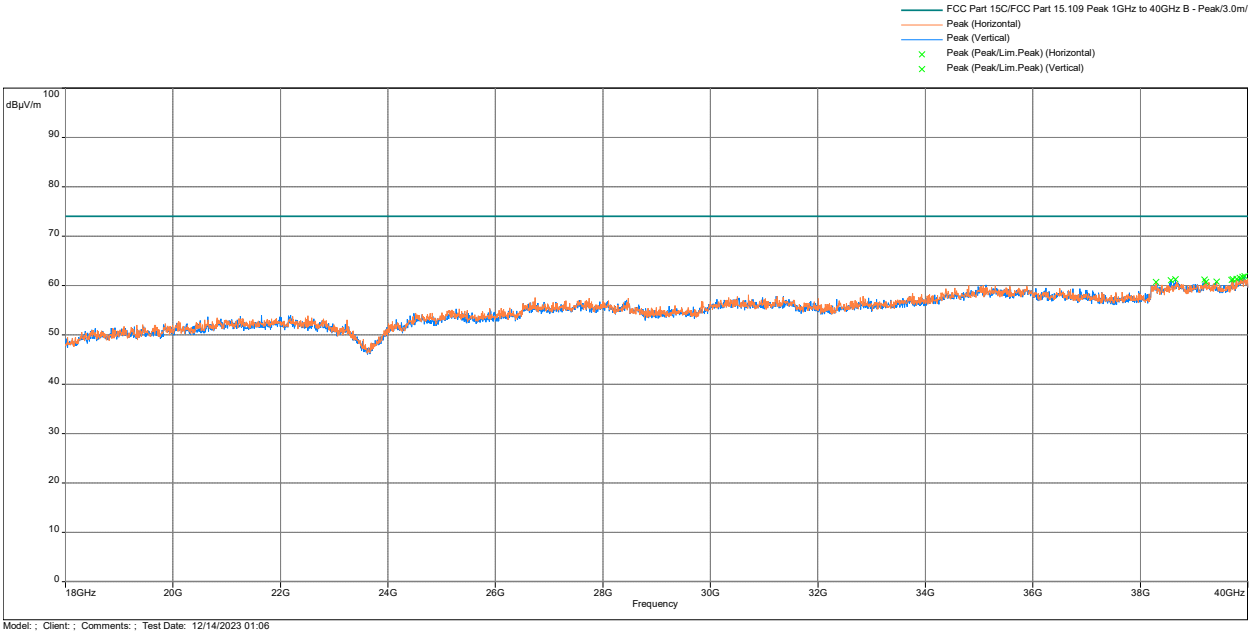


Note: 2494MHz and 4980MHz signal was determined to be digital emissions which meets class A of digital emission.

Radiated Spurious Emissions 1000 to 18000 MHz, Avg Scan vs Avg Limit

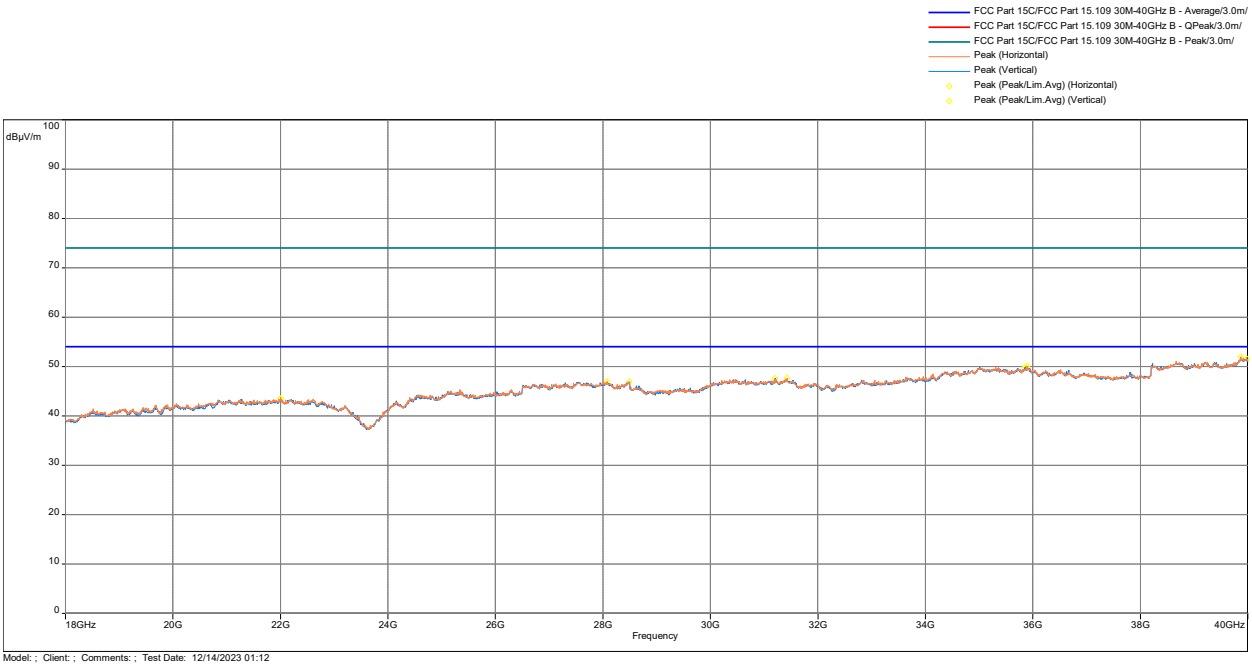


Radiated Spurious Emissions 18000 to 40000 MHz, Peak Scan vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 12/14/2023 01:06

Radiated Spurious Emissions 18000 to 40000 MHz, Avg Scan vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 12/14/2023 01:12

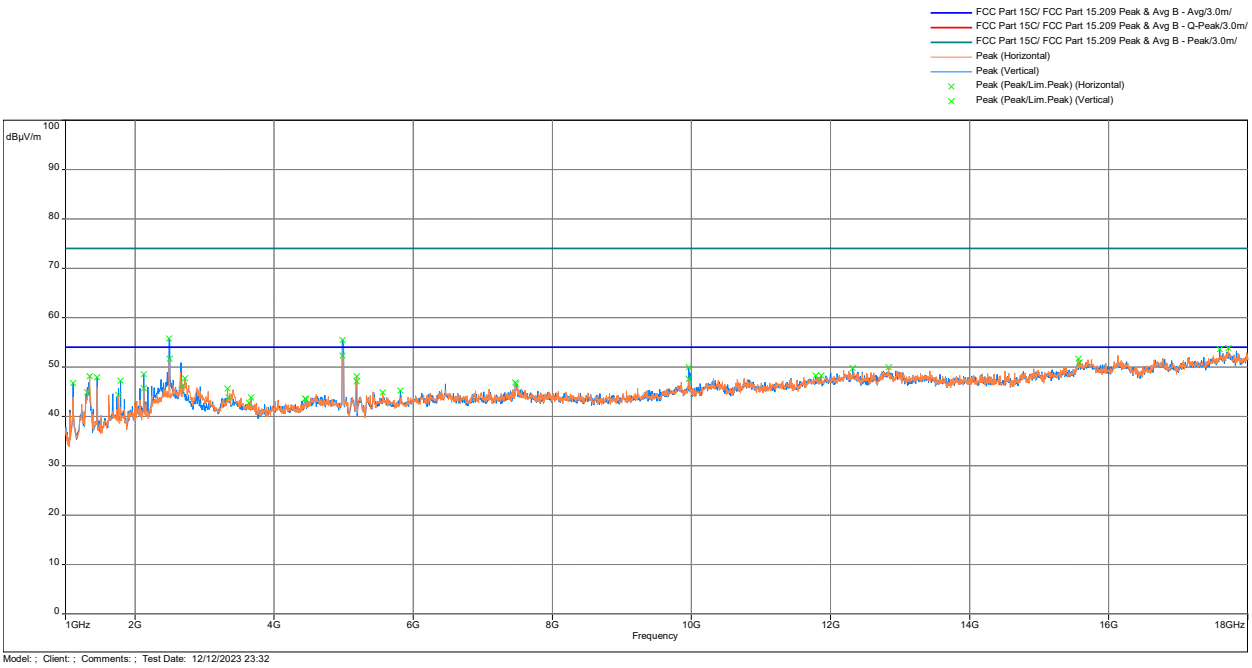
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
279.9949	20.72	35.5	-14.78	3.24	140.25	Horizontal	-11.89
279.9947	12.97	35.5	-22.53	1.04	347.25	Vertical	-11.89
126.1917	31.53	33	-1.47	1.01	0	Vertical	-11.97
167.9663	31.46	33	-1.54	3.01	67.5	Horizontal	-14.02
254.1993	33.07	35.5	-2.43	3.99	319	Vertical	-13.8
119.9837	30.06	33	-2.94	1.01	29	Vertical	-12.24

Frequency	Avg	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
1720.8	52.19	54	-1.81	2.98	154.25	Horizontal	-14.82
1722.5	51.73	54	-2.27	2.98	154.25	Horizontal	-14.8
1722.5	51.35	54	-2.65	1.01	163.5	Vertical	-14.8
1455.6	43.71	54	-10.29	2.98	284	Horizontal	-15.89

Note: Correction = AF + CF - Preamp

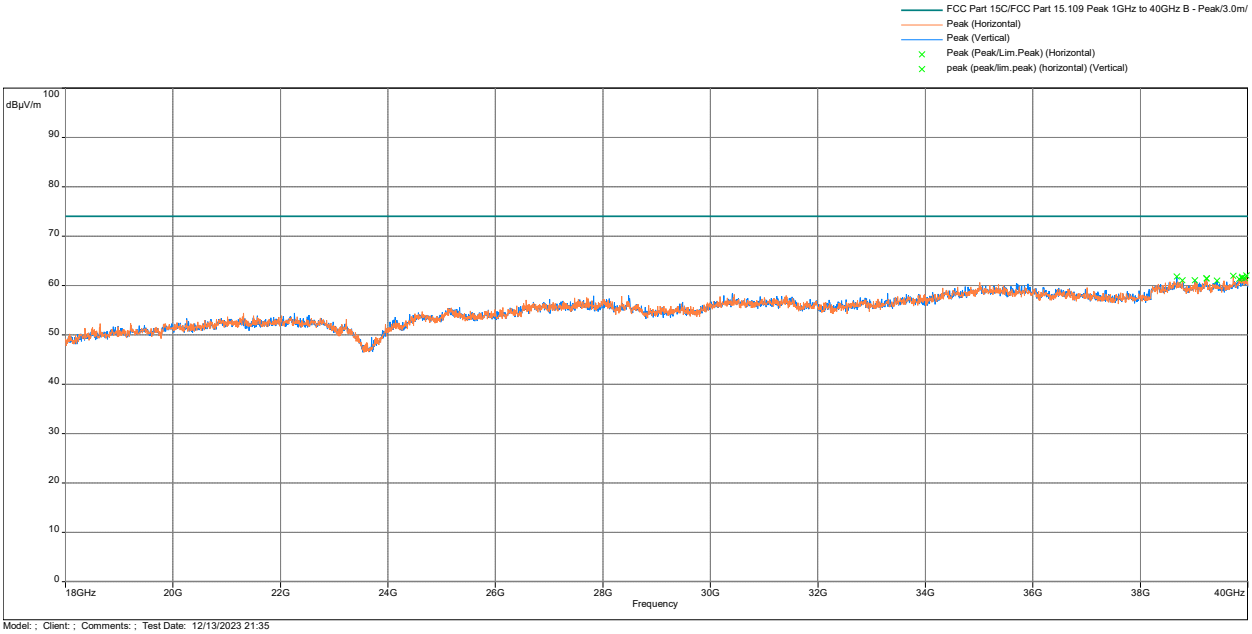
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5180MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak & Avg Limit

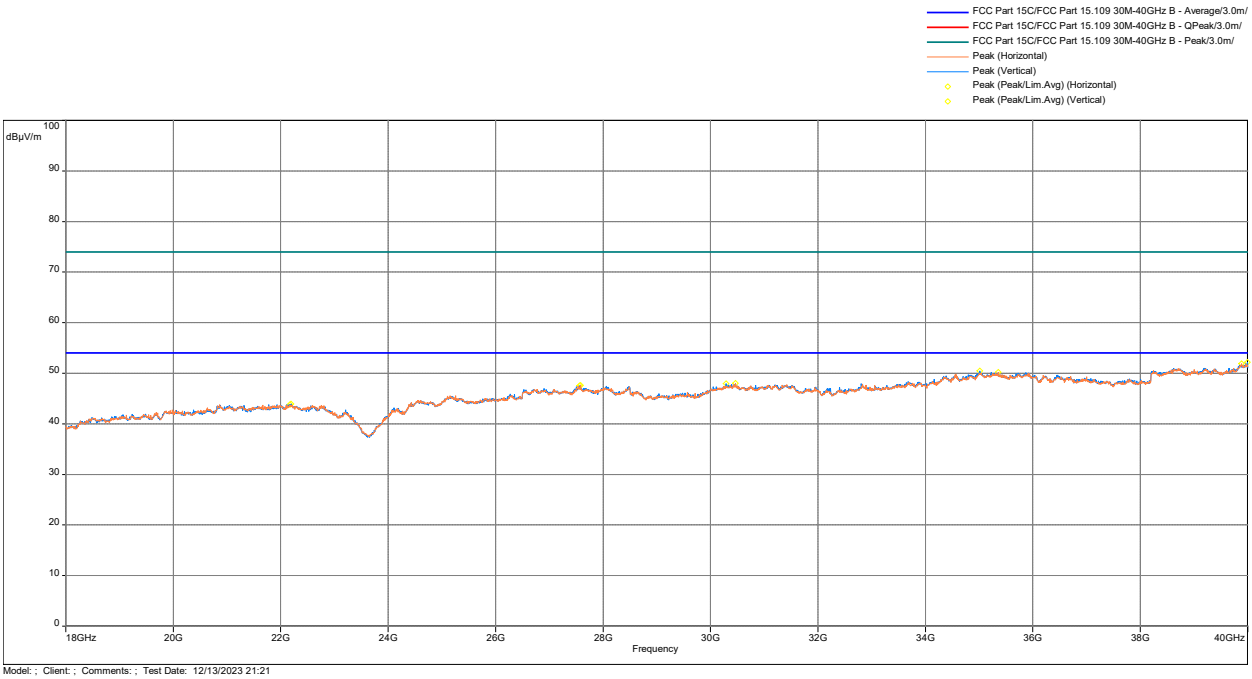


Note: 2494MHz and 4980MHz signal was determined to be digital emissions which meets class A of digital emission.

Radiated Spurious Emissions 18000 to 40000 MHz, Peak vs Peak Limit



Radiated Spurious Emissions 18000 to 40000 MHz, Avg vs Avg Limit



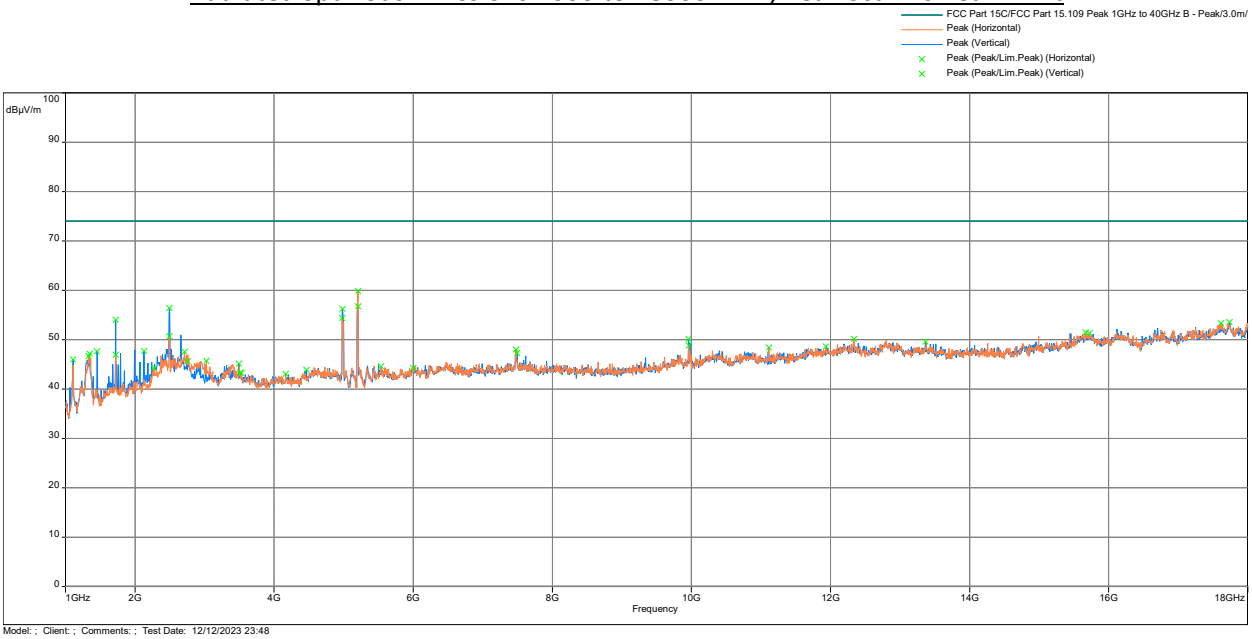
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
279.9981	34.82	35.5	-0.68	3.19	132.5	Horizontal	-11.89
280.0013	34.46	35.5	-1.04	1	57.25	Vertical	-11.89
257.0123	31.96	35.5	-3.54	1.01	160.25	Vertical	-13.62
109.443	29.37	33	-3.63	1.99	357.25	Vertical	-13.68
73.42367	24.82	29.5	-4.68	1.99	22.75	Vertical	-18.54
166.091	28.29	33	-4.71	3.99	358.75	Horizontal	-13.93

Frequency	Avg	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
15582.03	50.9	54	-3.1	1.01	251	Vertical	5.53
9961.833	49.94	54	-4.06	1.01	130.5	Vertical	-0.13
17722.9	50.8	54	-3.2	1.02	102	Horizontal	8.83
17599.37	50.64	54	-3.36	1.98	54	Vertical	8.47

Note: Correction = AF + CF - Preamp

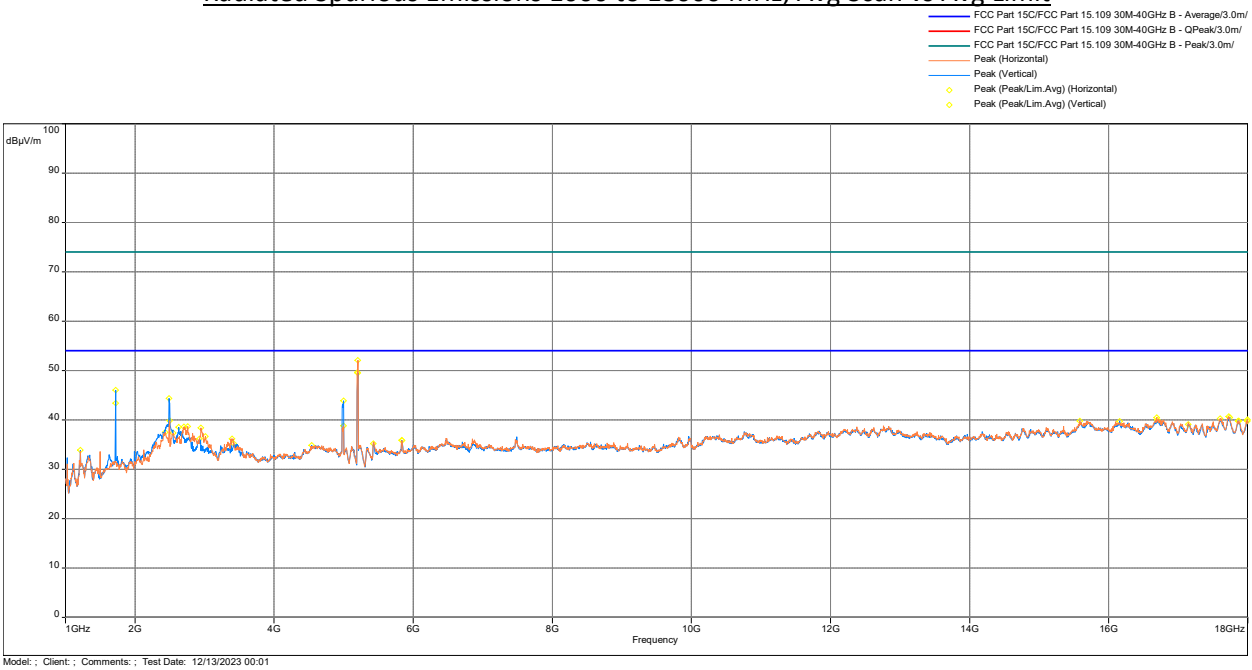
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5200MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit



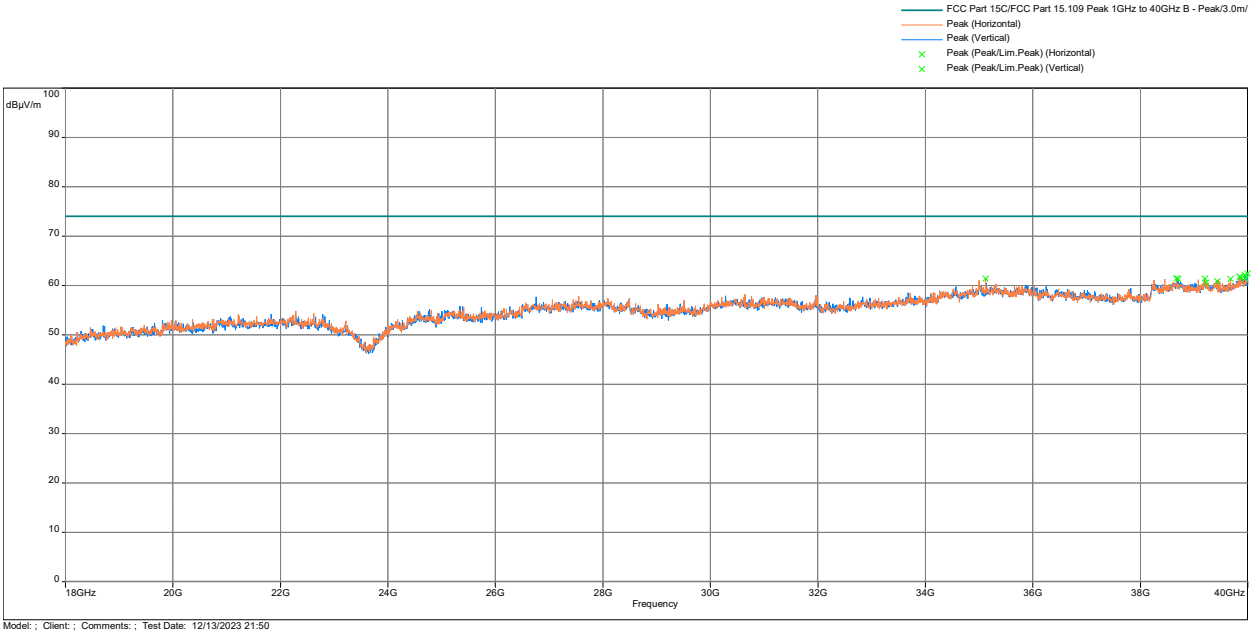
Model: ; Client: ; Comments: ; Test Date: 12/12/2023 23:48

Radiated Spurious Emissions 1000 to 18000 MHz, Avg Scan vs Avg Limit



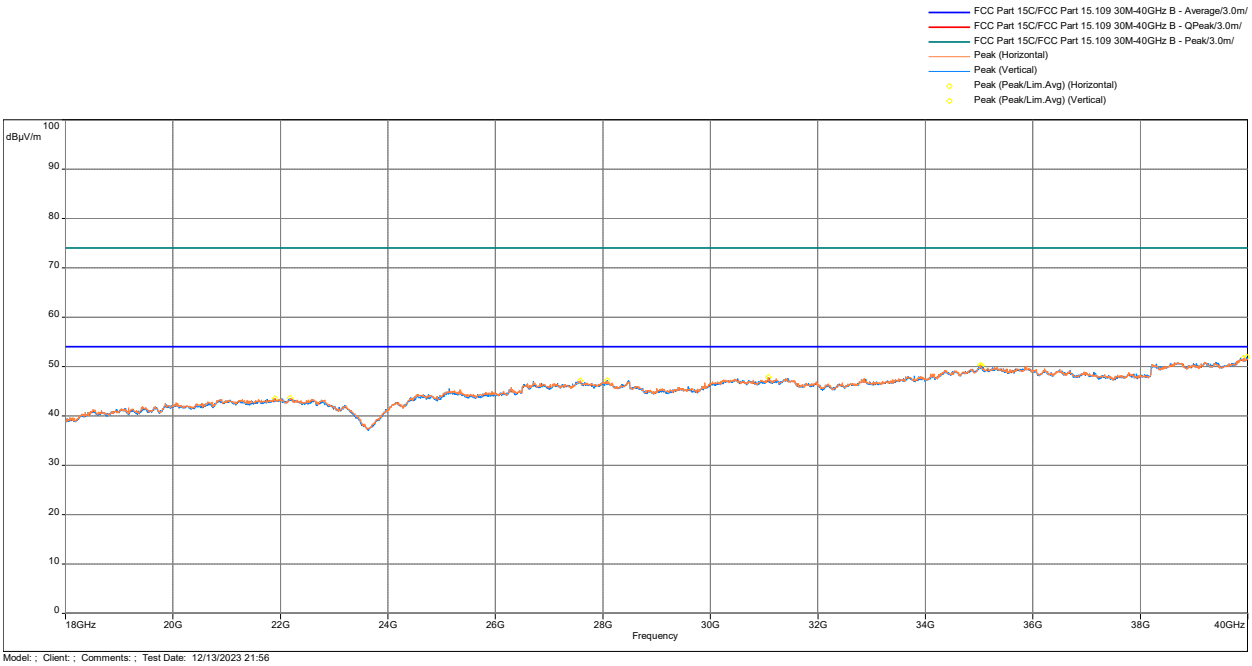
Model: ; Client: ; Comments: ; Test Date: 12/13/2023 00:01

Radiated Spurious Emissions 18000 to 40000 MHz, Peak Scan vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 12/13/2023 21:50

Radiated Spurious Emissions 18000 to 40000 MHz, Avg Scan vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 12/13/2023 21:56

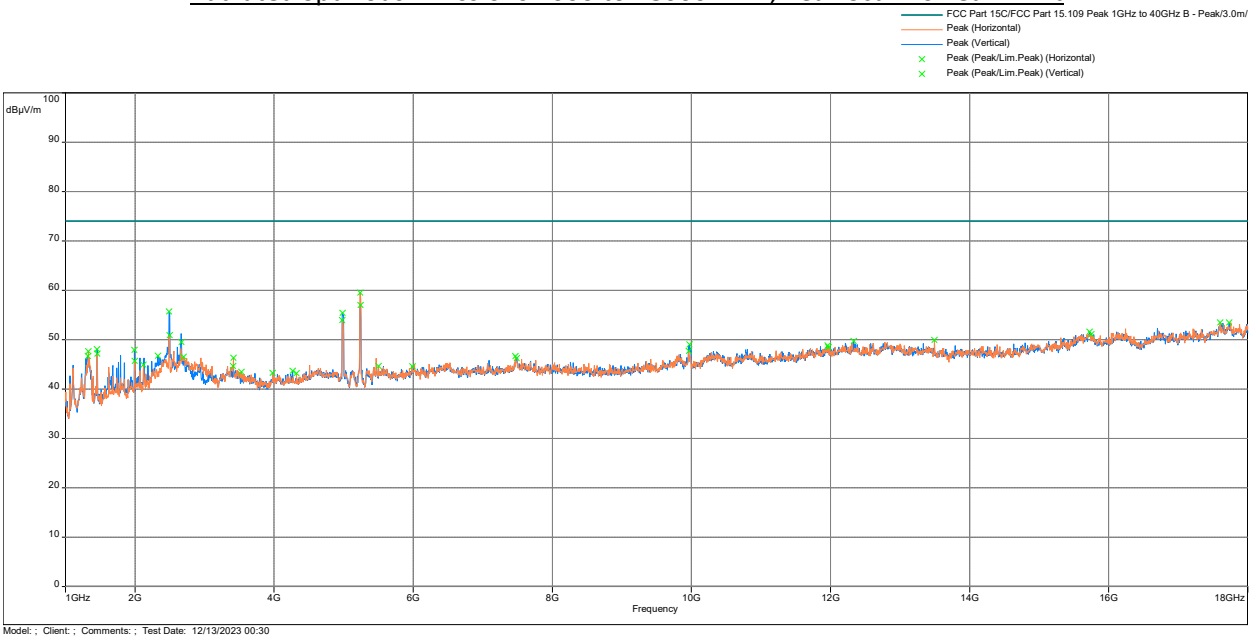
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
279.9962	22.29	35.5	-13.21	2.7	140.25	Horizontal	-11.89
279.9933	17.28	35.5	-18.22	1.78	98.75	Vertical	-11.89
108.9257	30.43	33	-2.57	1.01	0.25	Vertical	-13.78
258.1763	32.91	35.5	-2.59	1.01	191.25	Vertical	-13.51
74.87867	25.45	29.5	-4.05	2.01	349.75	Vertical	-18.58
117.8173	28.98	33	-4.02	1.01	346.25	Vertical	-12.44

Frequency	Avg	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
5204.667	52.11	54	-1.89	2.98	98.75	Horizontal	-5.98
5199	49.69	54	-4.31	2.98	98.75	Horizontal	-5.99
1720.233	43.42	54	-10.58	1.98	141.25	Vertical	-14.83
17725.17	40.7	54	-13.3	2.02	109.75	Horizontal	8.83

Note: Correction = AF + CF - Preamp

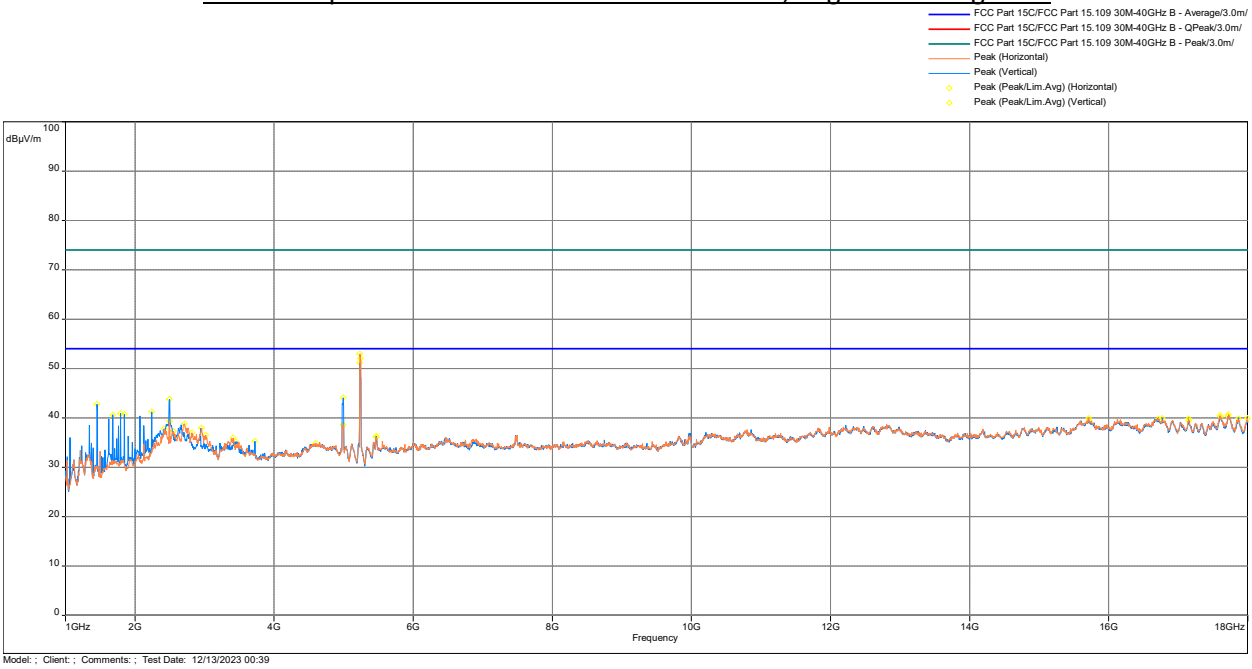
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5240MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit



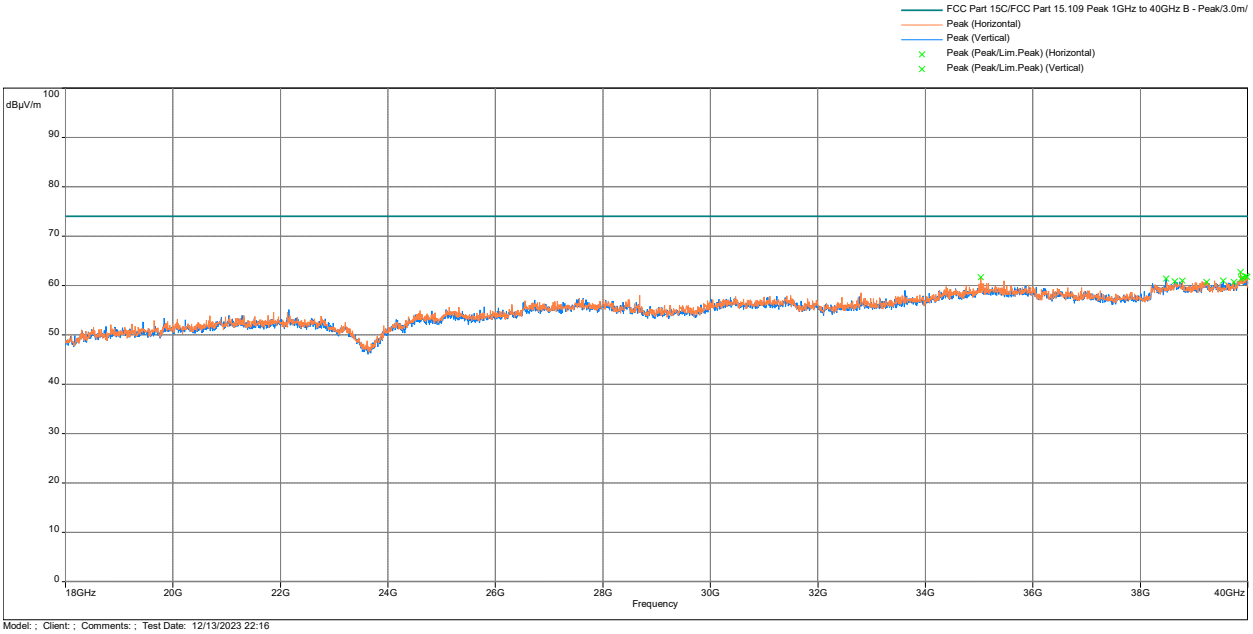
Model: ; Client: ; Comments: ; Test Date: 12/13/2023 00:30

Radiated Spurious Emissions 1000 to 18000 MHz, Avg Scan vs Avg Limit



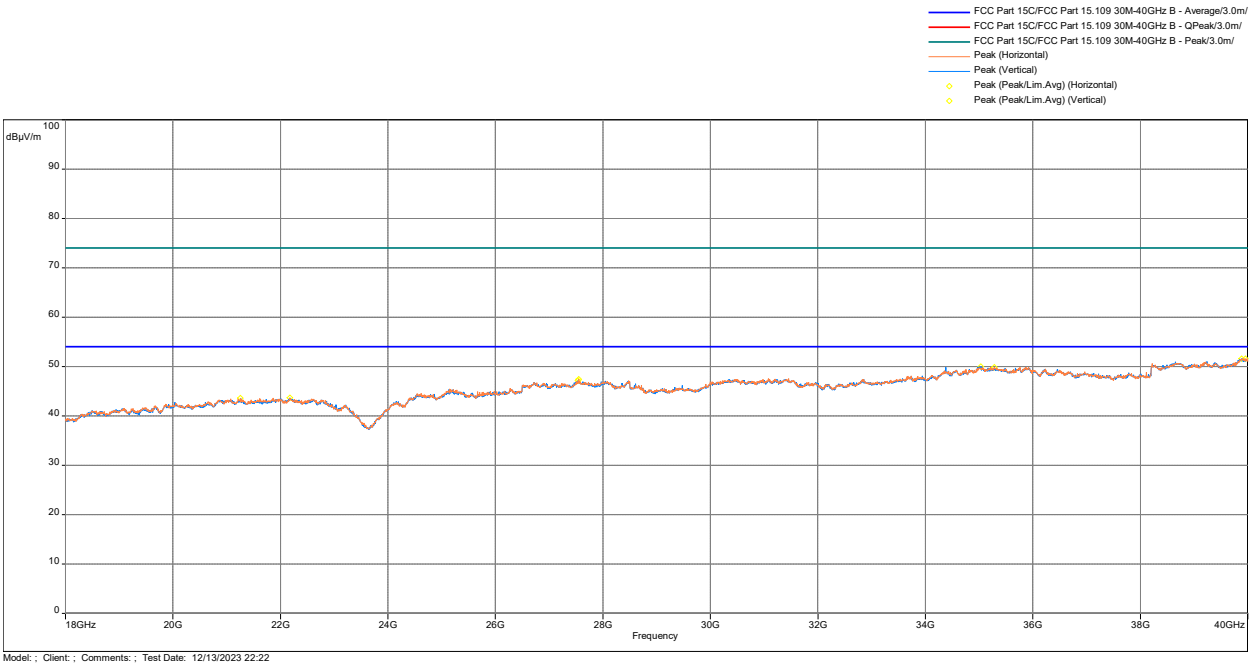
Model: ; Client: ; Comments: ; Test Date: 12/13/2023 00:39

Radiated Spurious Emissions 18000 to 40000 MHz, Peak Scan vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 12/13/2023 22:16

Radiated Spurious Emissions 18000 to 40000 MHz, Avg Scan vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 12/13/2023 22:22

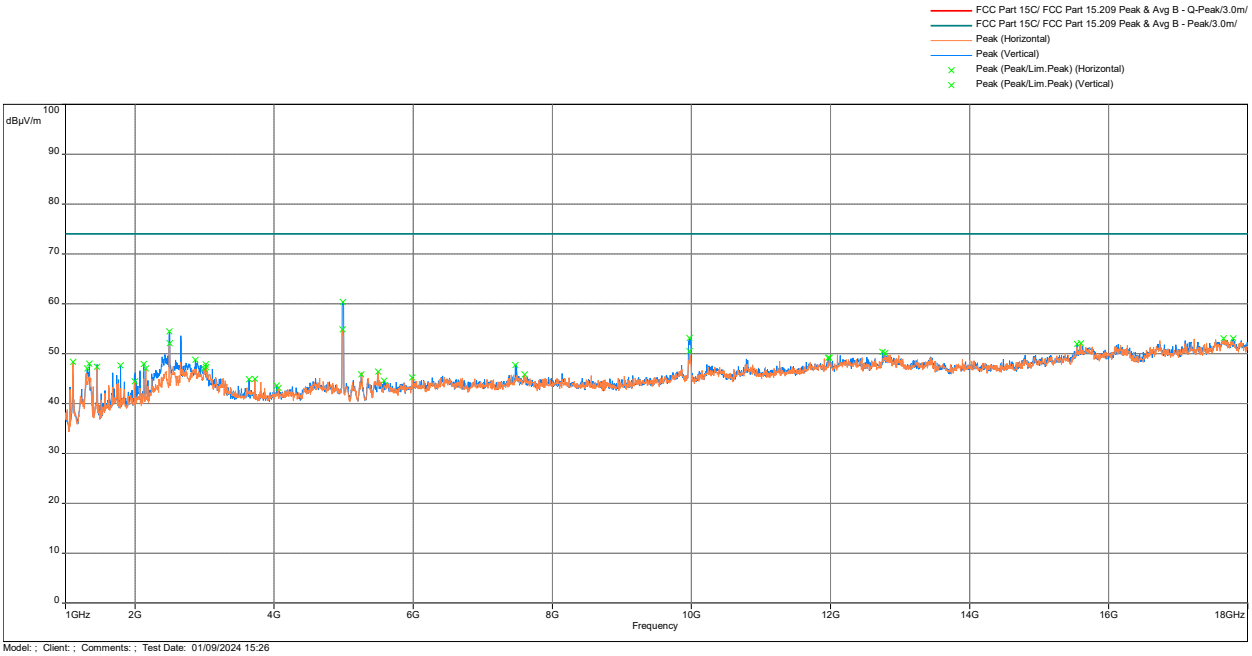
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
279.9962	34.58	35.5	-0.92	2.73	126.5	Horizontal	-11.89
279.9962	14.49	35.5	-21.01	1.44	7	Vertical	-11.89
121.568	30.89	33	-2.11	1.01	354.25	Vertical	-12.13
254.361	33.36	35.5	-2.14	3.99	301.75	Vertical	-13.8
73.42367	25.92	29.5	-3.58	2.01	151.5	Vertical	-18.54
109.0227	29.13	33	-3.87	1.01	45.5	Vertical	-13.76

Frequency	Avg	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
5231.867	53	54	-1	2.02	90	Horizontal	-5.88
5242.067	52.11	54	-1.89	2.02	90	Horizontal	-5.84
1455.6	42.8	54	-11.2	1.01	240.25	Vertical	-15.89
2239.867	41.22	54	-12.78	1.01	176	Vertical	-12.34

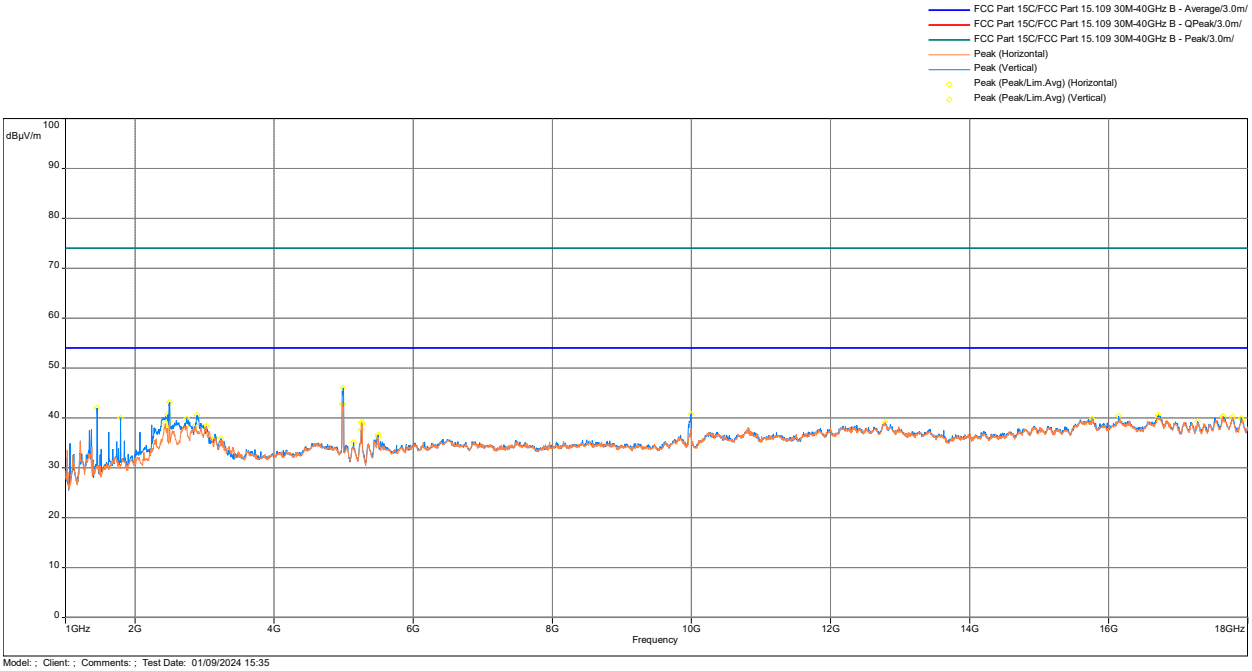
Note: Correction = AF + CF - Preamp

Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5260MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit

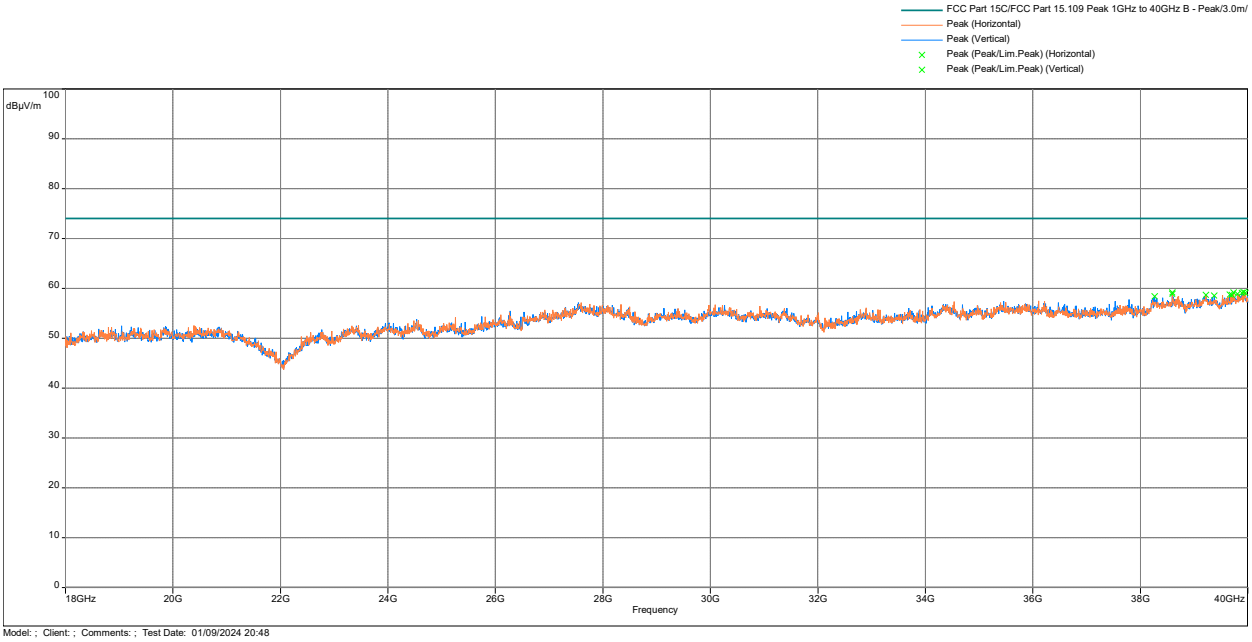


Radiated Spurious Emissions 1000 to 18000 MHz, Avg Scan vs Avg Limit



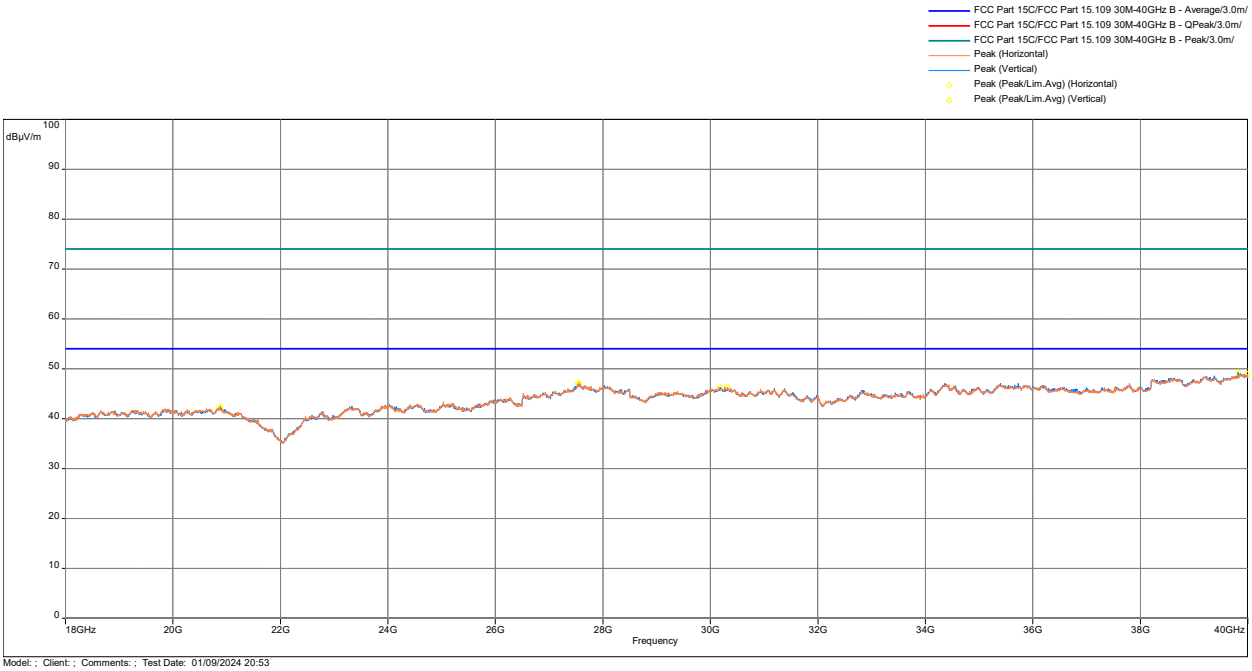
Note: 2494MHz and 4980MHz signal was determined to be digital emissions which meets class A of digital emission.

Radiated Spurious Emissions 18000 to 40000 MHz, Peak vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 01/09/2024 20:48

Radiated Spurious Emissions 18000 to 40000 MHz, Avg vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 01/09/2024 20:53

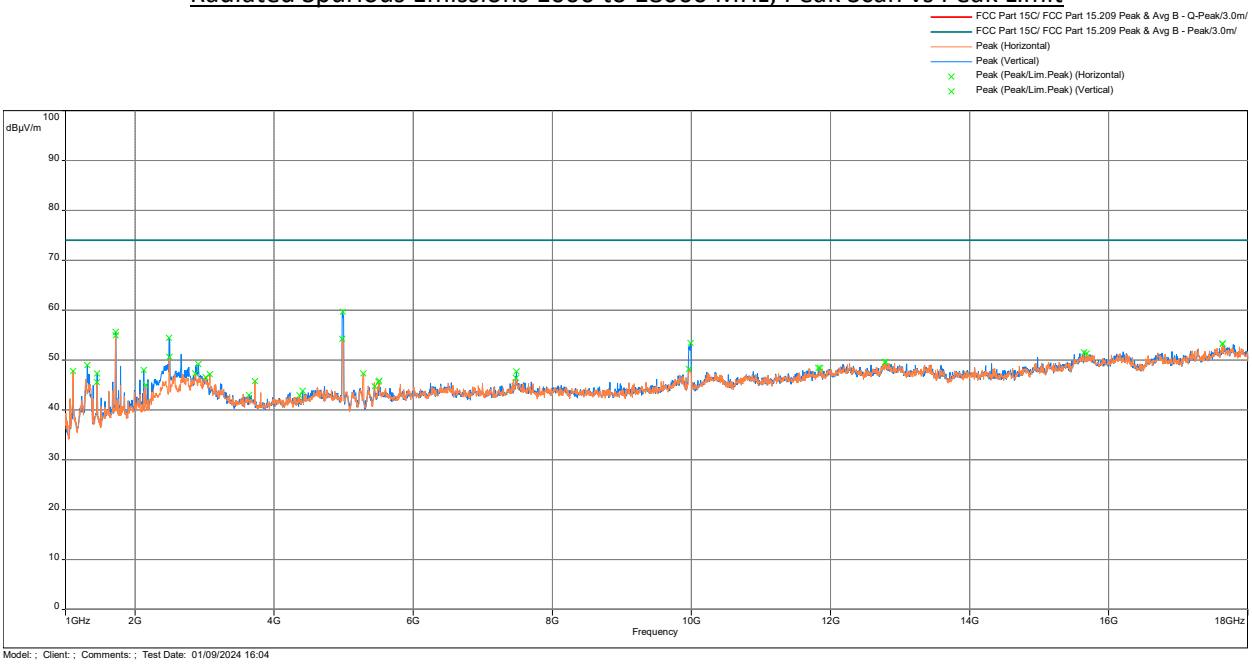
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
279.9934	22.94	35.5	-12.56	3.06	23.25	Horizontal	-11.89
279.5272	9.79	35.5	-25.71	1.04	79	Vertical	-11.91
124.6073	30.72	33	-2.28	1.01	201.75	Vertical	-12
111.965	28.76	33	-4.24	1.01	154.75	Vertical	-13.23
266.874	31	35.5	-4.5	2.99	42	Horizontal	-12.52
37.60133	19.88	29.5	-9.62	1.99	282.75	Horizontal	-11.27

Frequency	Average	Limit @3m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
4993.867	46.06	54	-7.94	2.49	125	Vertical	-5.91
2496.567	43.22	54	-10.78	3.49	103	Vertical	-10.33
4985.933	42.75	54	-11.25	3.49	125	Horizontal	-5.89
1455.6	42.05	54	-11.95	1.51	103.5	Vertical	-15.89

Note: Correction = AF + CF - Preamp

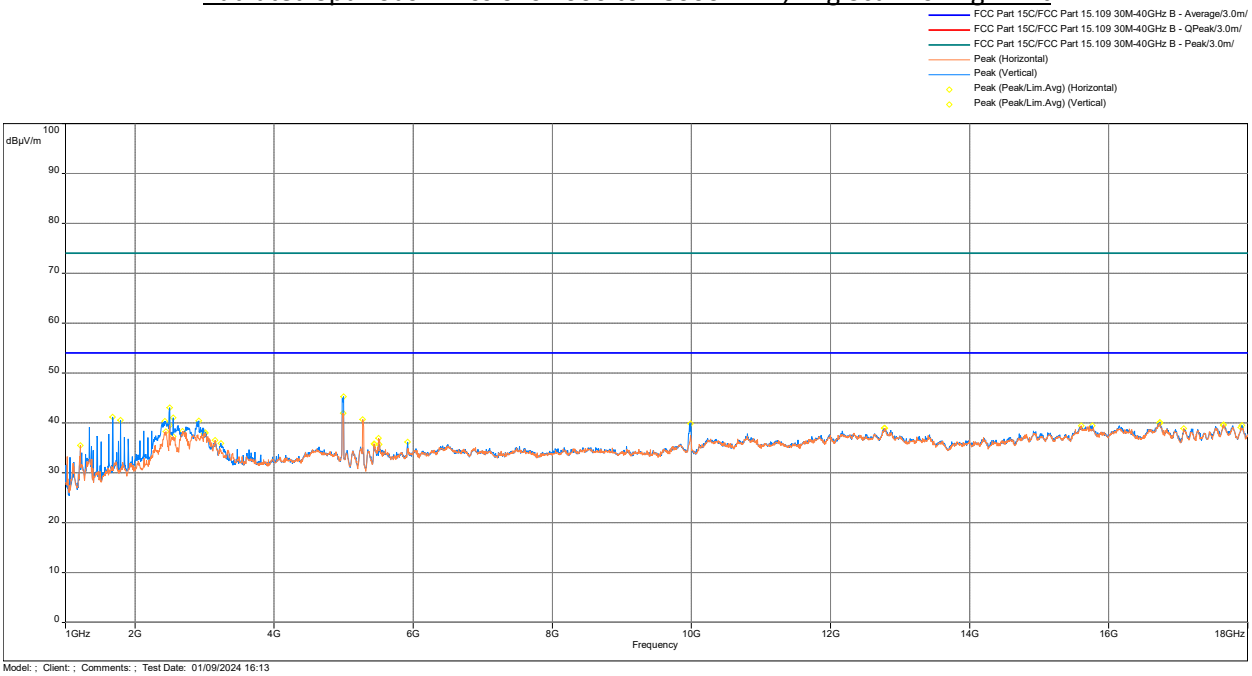
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5280MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit



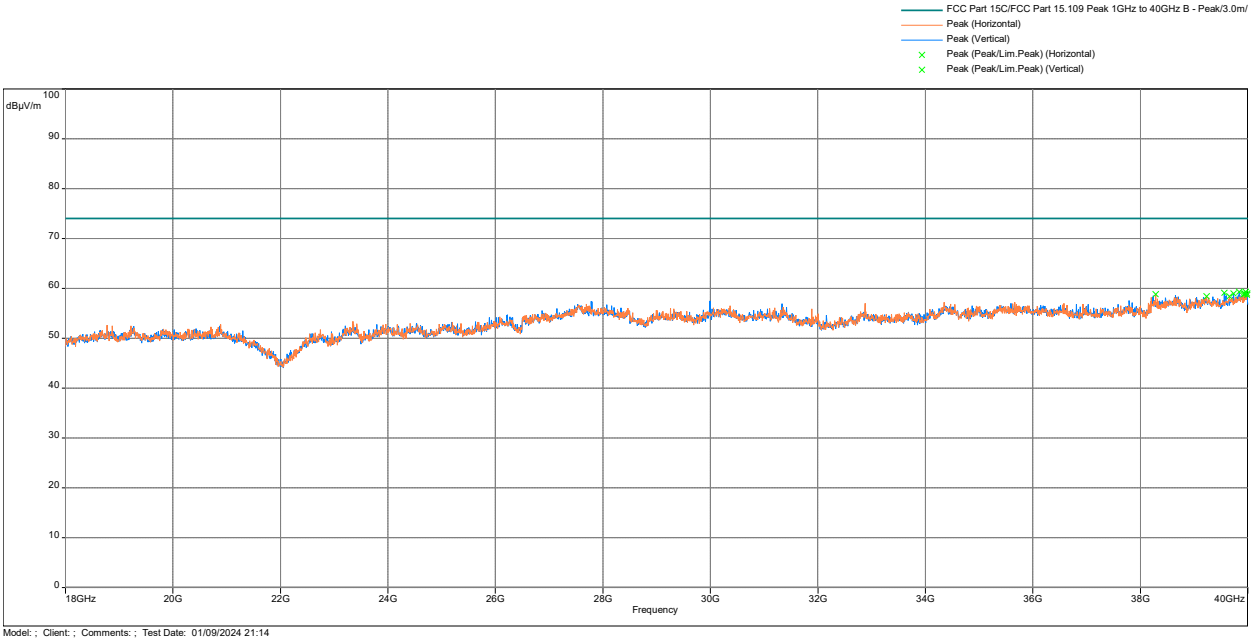
Model: ; Client: ; Comments: ; Test Date: 01/09/2024 16:04

Radiated Spurious Emissions 1000 to 18000 MHz, Avg Scan vs Avg Limit



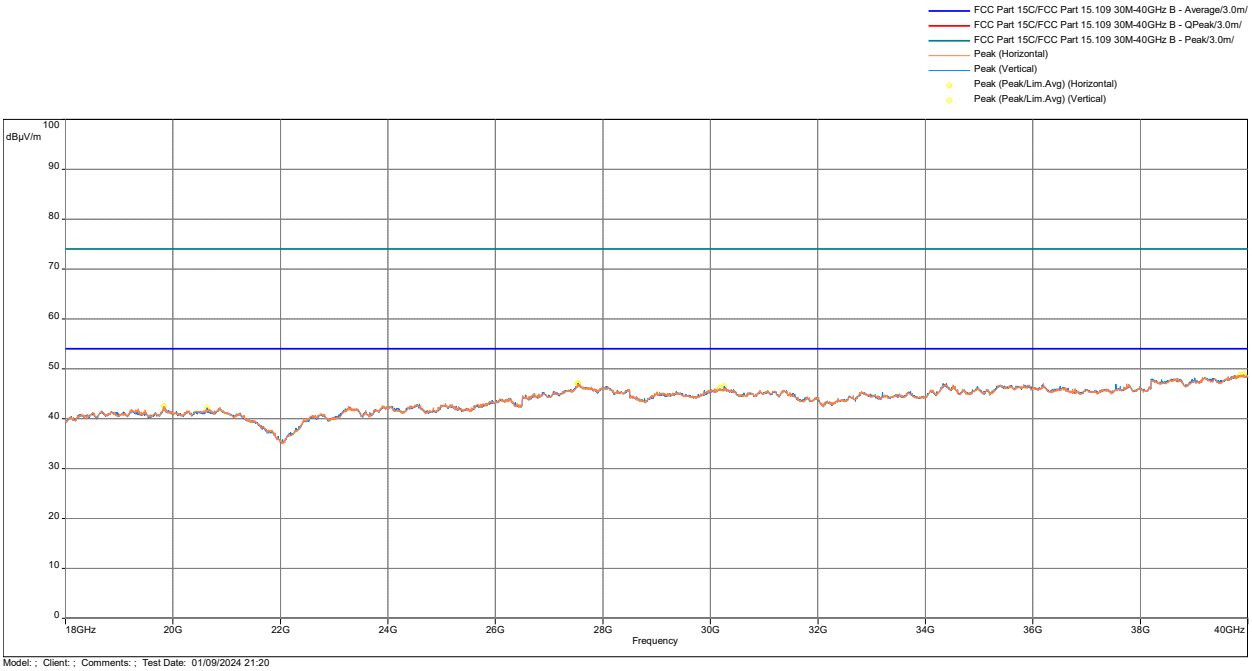
Model: ; Client: ; Comments: ; Test Date: 01/09/2024 16:13

Radiated Spurious Emissions 18000 to 40000 MHz, Peak Scan vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 01/09/2024 21:14

Radiated Spurious Emissions 18000 to 40000 MHz, Avg Scan vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 01/09/2024 21:20

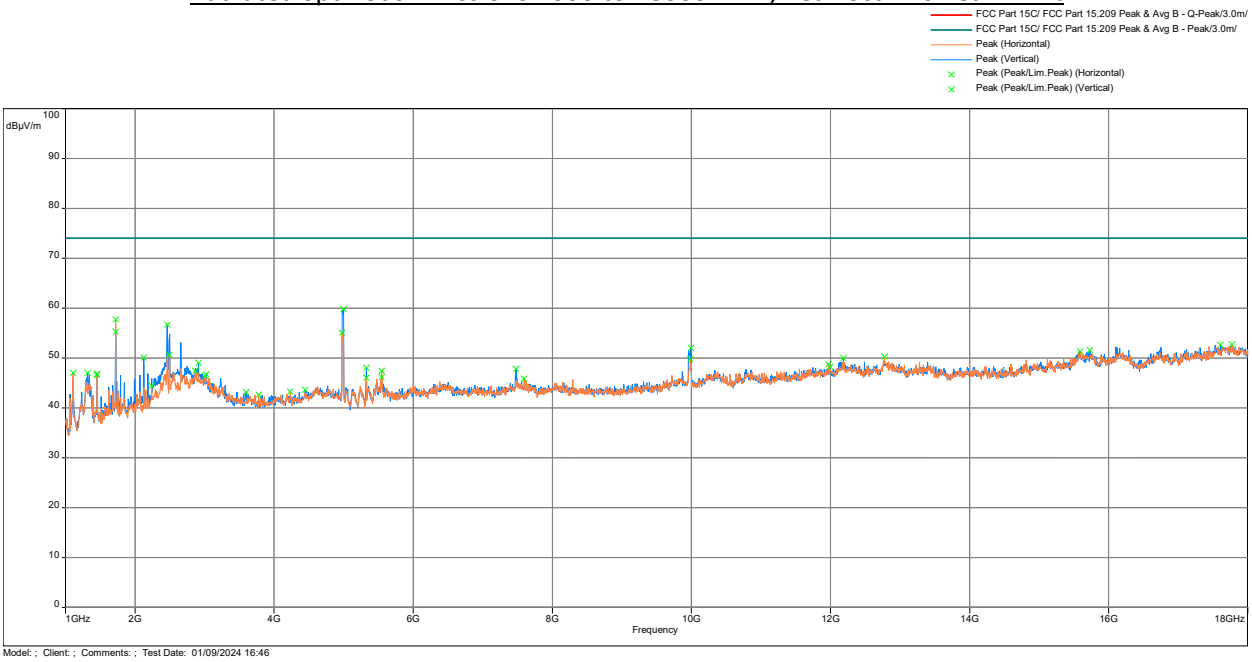
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
280.0134	17.22	35.5	-18.28	1.01	0	Vertical	-11.89
37.678	19.74	29.5	-9.76	1.99	353.75	Horizontal	-11.02
132.6907	25.67	33	-7.33	2.99	79.25	Horizontal	-12.17
259.9223	28.34	35.5	-7.16	1.01	185	Vertical	-13.31
137.6377	31.9	33	-1.1	2.01	315	Vertical	-12.55
280.0013	34.3	35.5	-1.2	2.99	111	Horizontal	-11.89

Frequency	Avg FS	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
4996.133	45.27	54	-8.73	1.51	83.5	Vertical	-5.92
2496.567	43.07	54	-10.93	3.49	147.75	Vertical	-10.33
4995	41.95	54	-12.05	3.49	124.25	Horizontal	-5.91
1679.433	41.16	54	-12.84	1.51	124.75	Vertical	-15.28

Note: Correction = AF + CF - Preamp

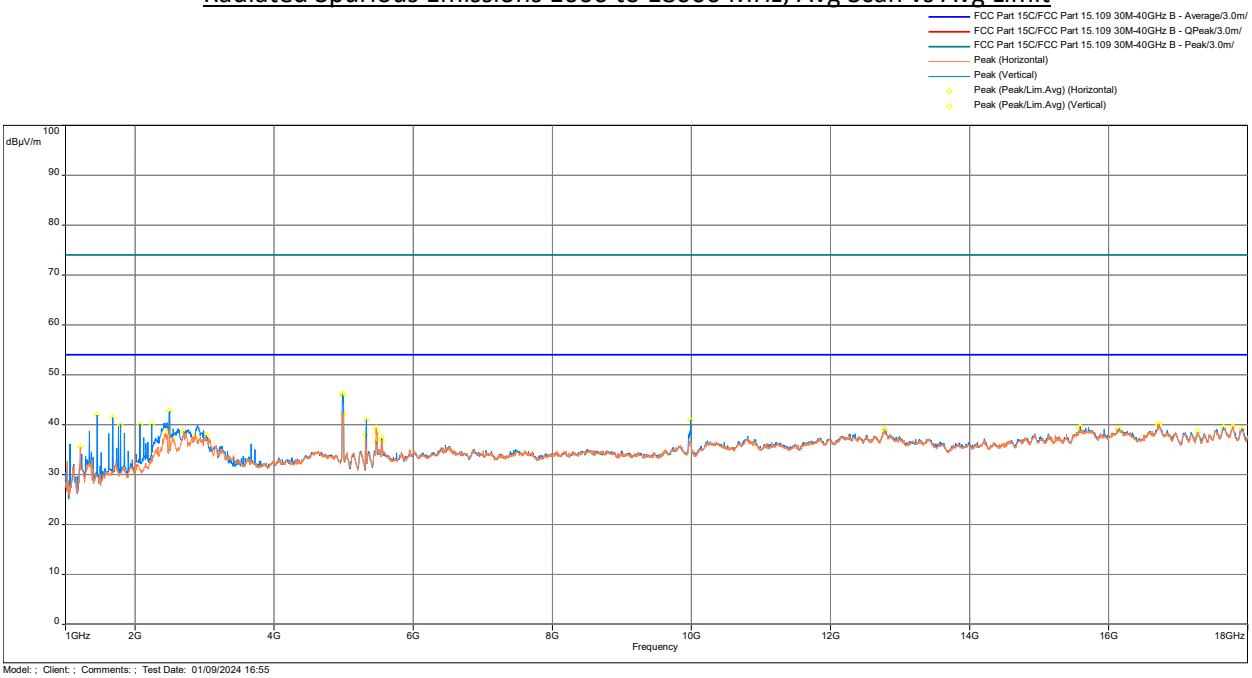
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5320MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit



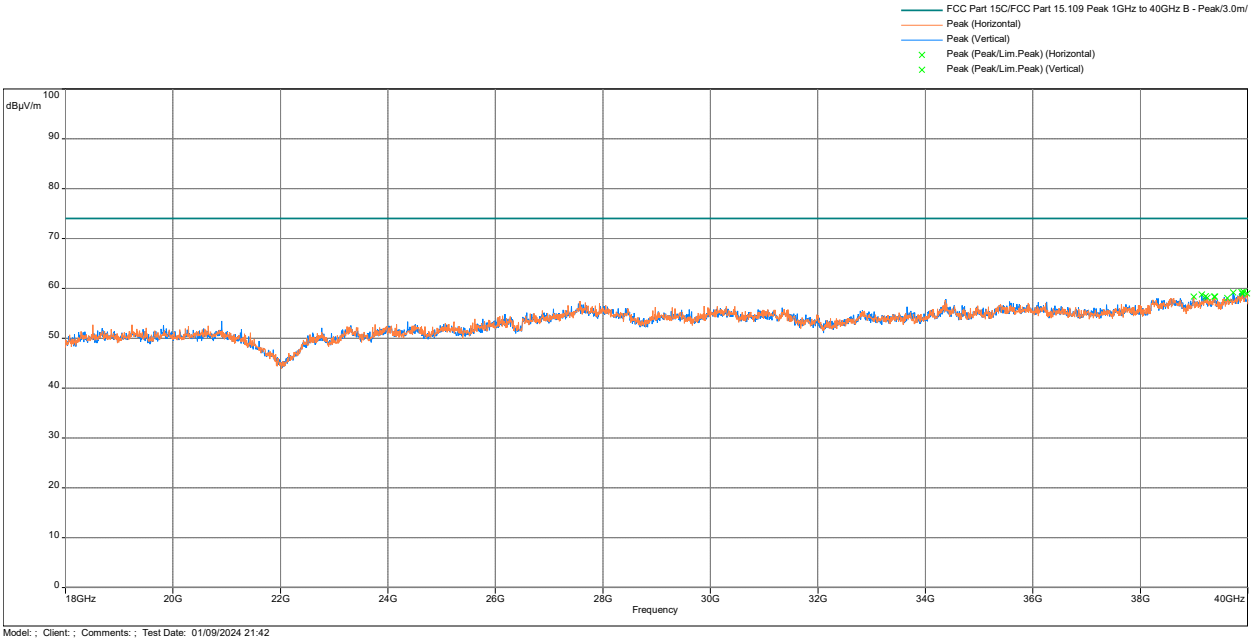
Model: ; Client: ; Comments: ; Test Date: 01/09/2024 16:46

Radiated Spurious Emissions 1000 to 18000 MHz, Avg Scan vs Avg Limit



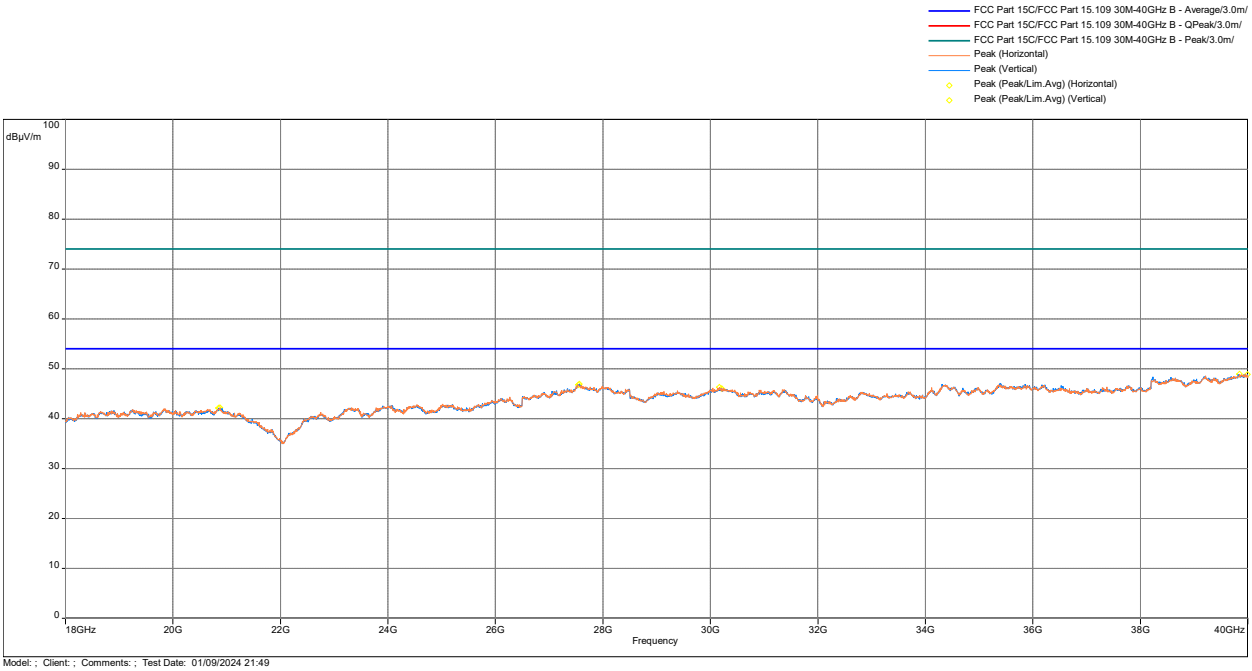
Model: ; Client: ; Comments: ; Test Date: 01/09/2024 16:55

Radiated Spurious Emissions 18000 to 40000 MHz, Peak Scan vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 01/09/2024 21:42

Radiated Spurious Emissions 18000 to 40000 MHz, Avg Scan vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 01/09/2024 21:49

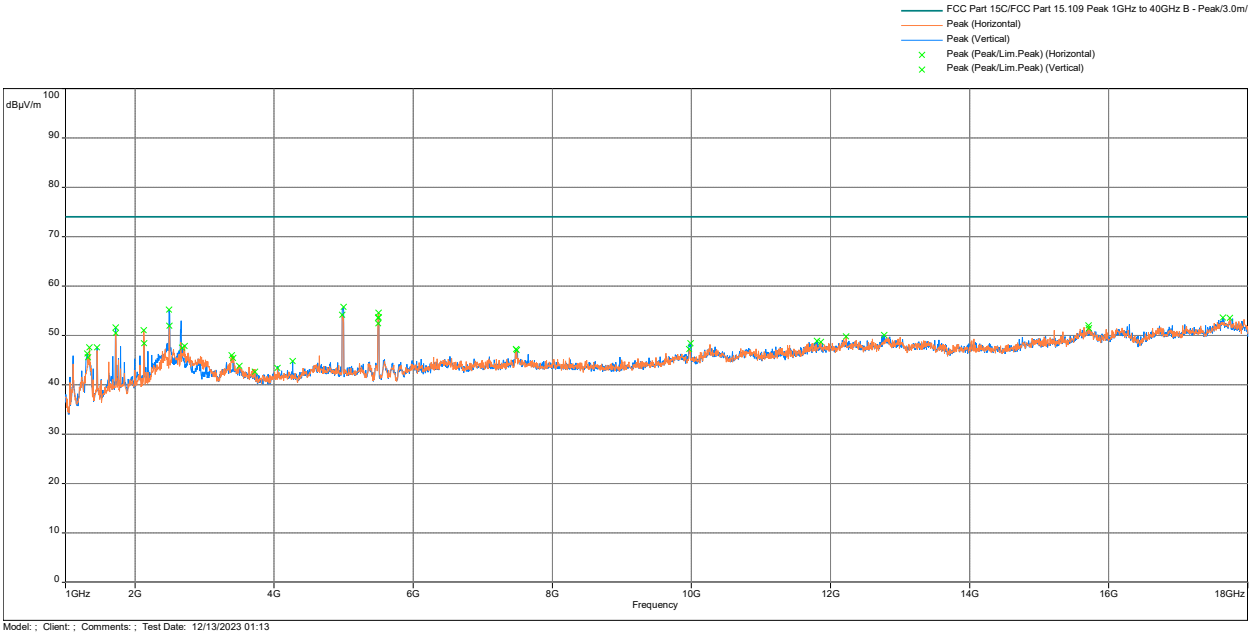
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
279.9898	17.31	35.5	-18.19	1	0	Vertical	-11.89
280.0013	34.61	35.5	-0.89	2.01	22.75	Horizontal	-11.89
74.87867	28.08	29.5	-1.42	1.99	10.5	Vertical	-18.58
125.739	31.05	33	-1.95	1	180	Vertical	-11.98
255.5897	32.84	35.5	-2.66	3.99	296.75	Vertical	-13.73
37.72767	21.94	29.5	-7.56	3.01	299.5	Horizontal	-11.45

Frequency	Avg FS	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
4981.4	46.16	54	-7.84	2.49	146.25	Vertical	-5.87
4993.867	45.77	54	-8.23	2.49	125	Vertical	-5.91
2497.7	42.82	54	-11.18	3.49	103.25	Vertical	-10.32
4992.733	42.23	54	-11.77	3.49	124.25	Horizontal	-5.91

Note: Correction = AF + CF - Preamp

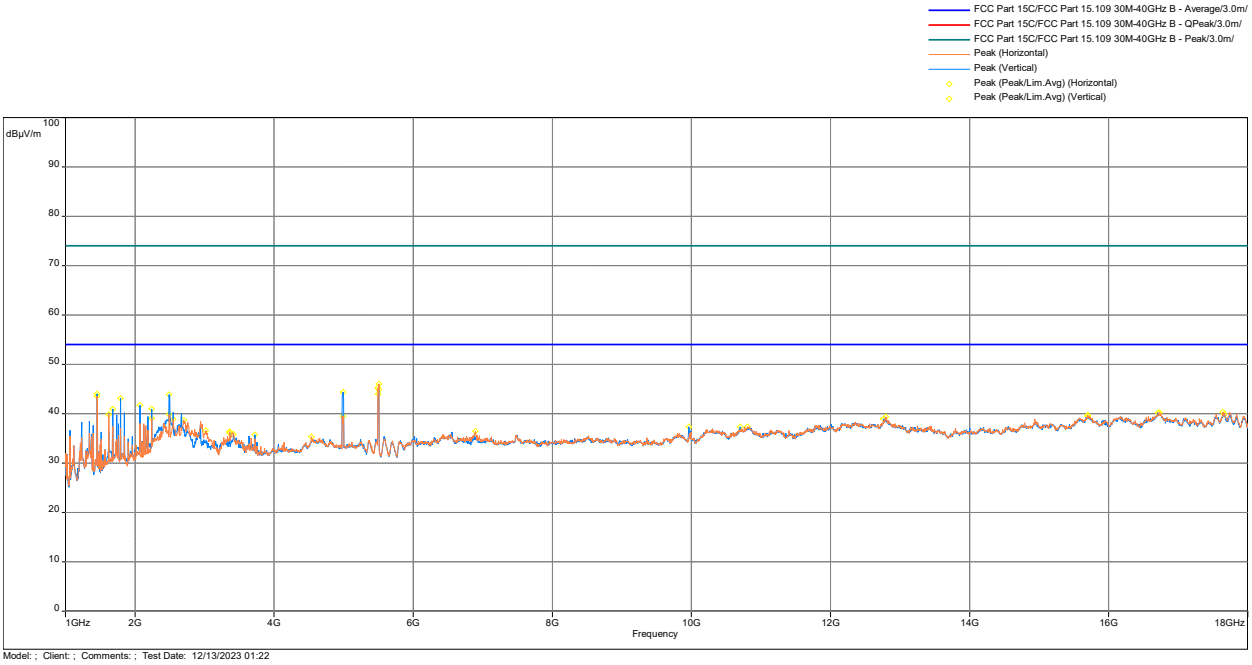
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5500MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit

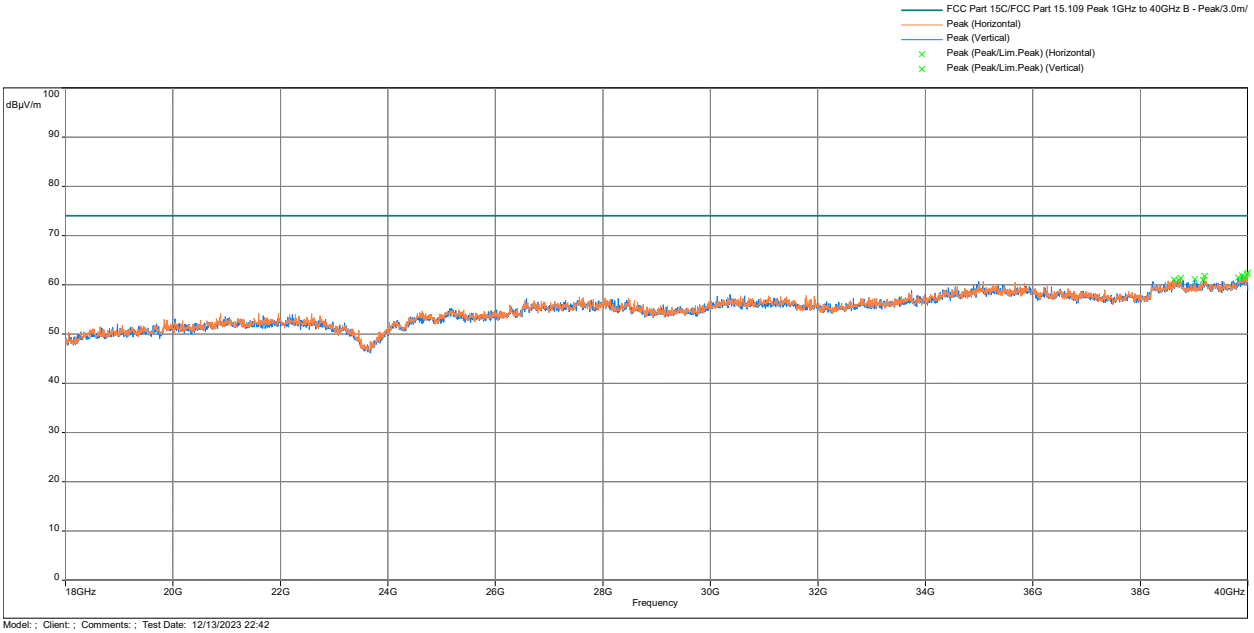


Note: 2494MHz and 4980MHz signal was determined to be digital emissions which meets class A of digital emission.

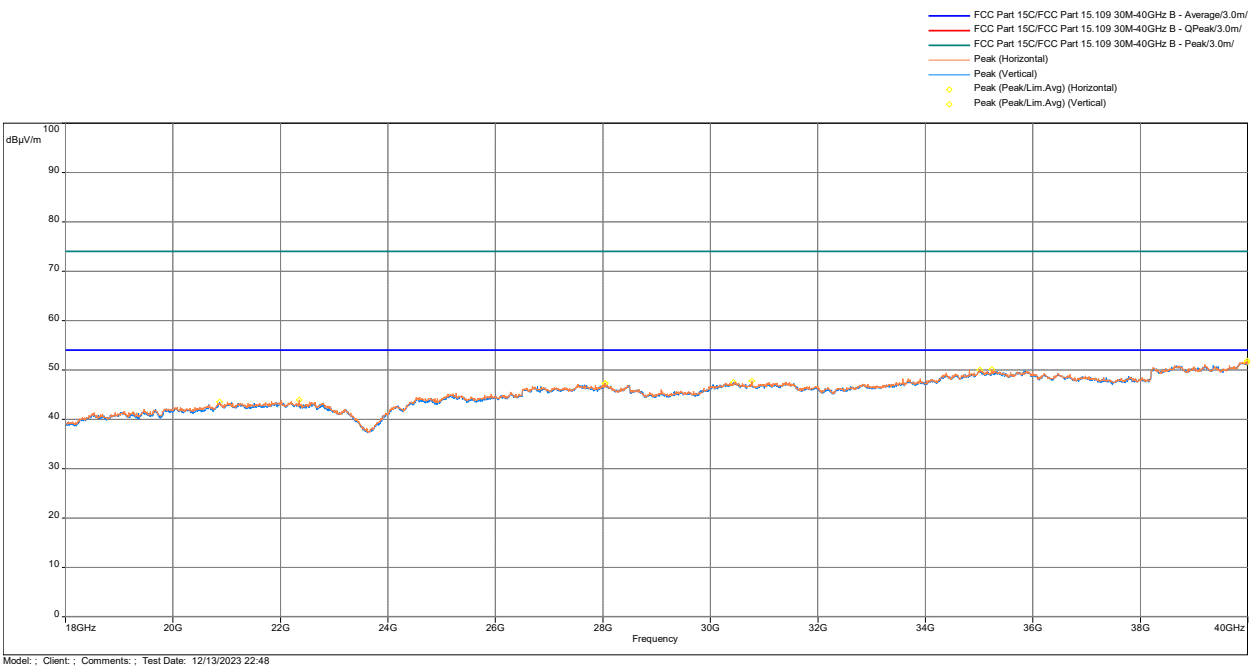
Radiated Spurious Emissions 1000 to 18000 MHz, Avg Scan vs Avg Limit



Radiated Spurious Emissions 18000 to 40000 MHz, Peak vs Peak Limit



Radiated Spurious Emissions 18000 to 40000 MHz, Avg vs Avg Limit



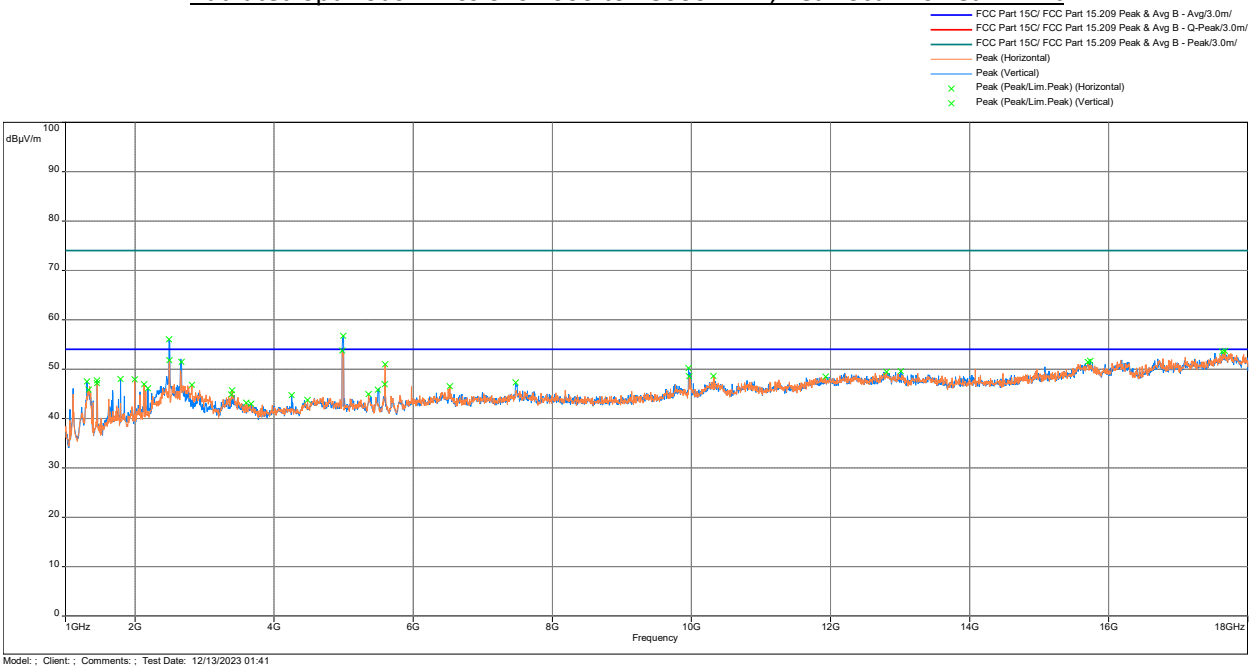
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
279.9965	34.9	35.5	-0.6	1	47.5	Vertical	-11.89
126.5473	31.37	33	-1.63	1.01	62.75	Vertical	-11.97
256.301	33.81	35.5	-1.69	1.01	173.75	Vertical	-13.68
109.3137	28.94	33	-4.06	1.01	0.25	Vertical	-13.71
73.32667	25.4	29.5	-4.1	2.01	71.75	Vertical	-18.53
149.9567	27.53	33	-5.47	2.99	20.5	Horizontal	-13.52

Frequency	Avg	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
5507.267	46.05	54.0	-7.95	2.02	111	Horizontal	-4.64
1455.6	43.52	54	-10.48	2.98	249.75	Horizontal	-15.89
1791.633	43.13	54	-10.87	1.98	141.75	Vertical	-13.91
2071.567	41.77	54	-12.23	1.01	176.25	Vertical	-12.22

Note: Correction = AF + CF - Preamp

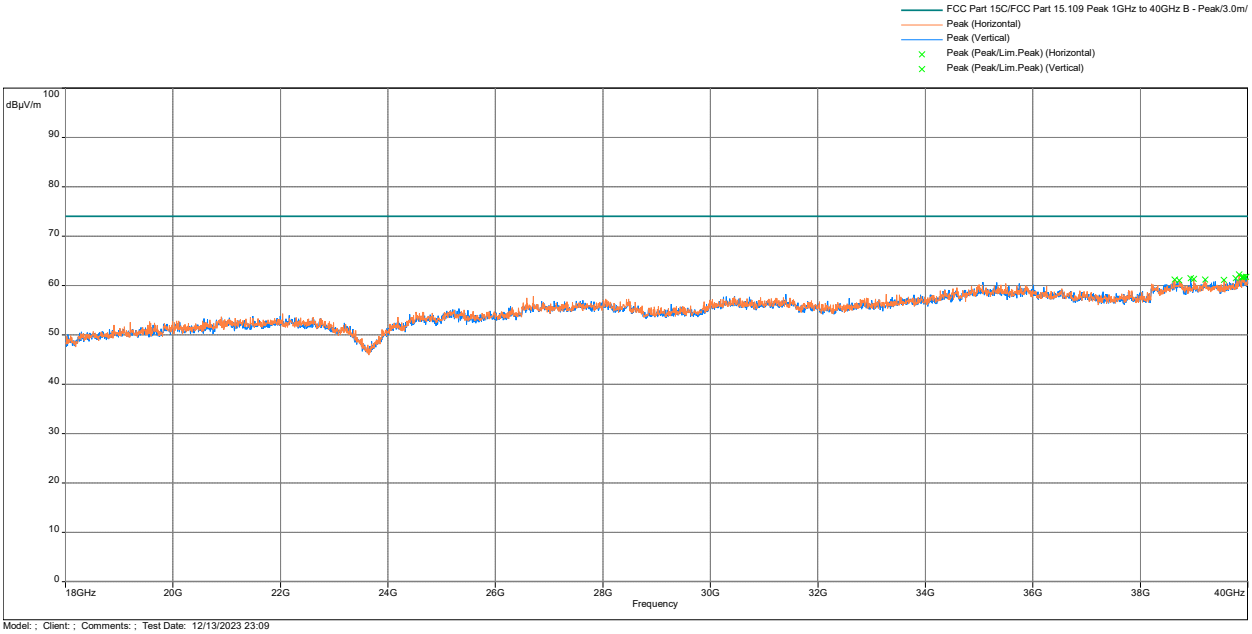
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5600MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit



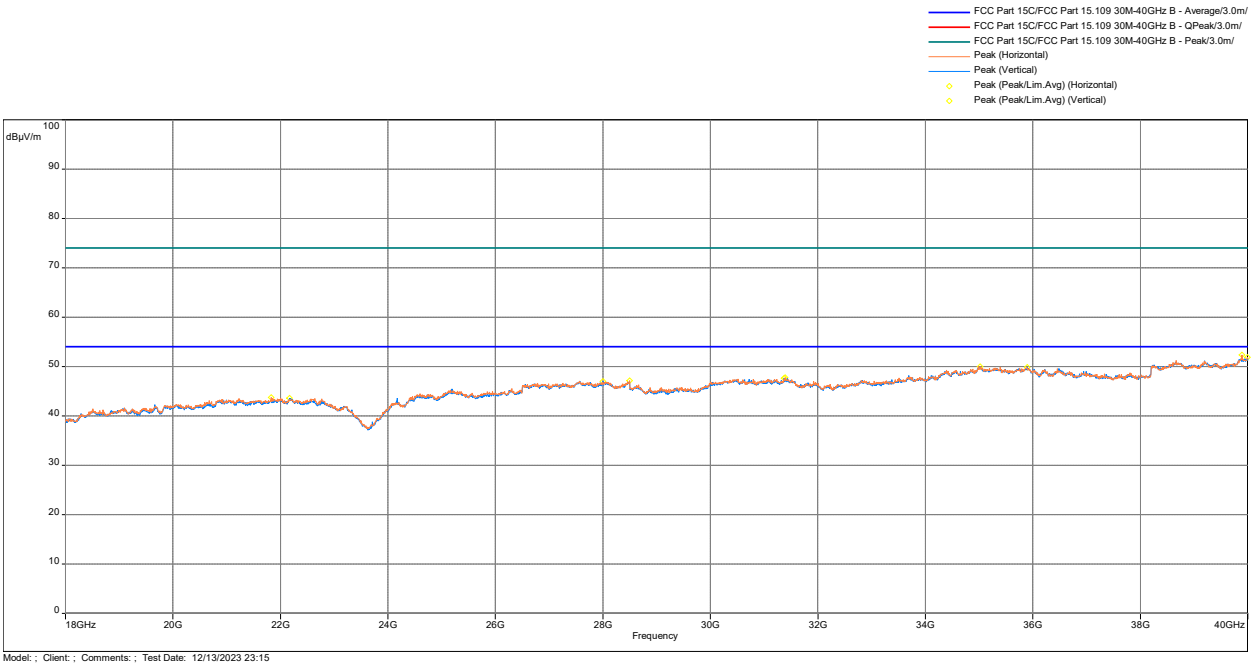
Note: 2494MHz and 4980MHz signal was determined to be digital emissions which meets class A of digital emission.

Radiated Spurious Emissions 18000 to 40000 MHz, Peak Scan vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 12/13/2023 23:09

Radiated Spurious Emissions 18000 to 40000 MHz, Avg Scan vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 12/13/2023 23:15

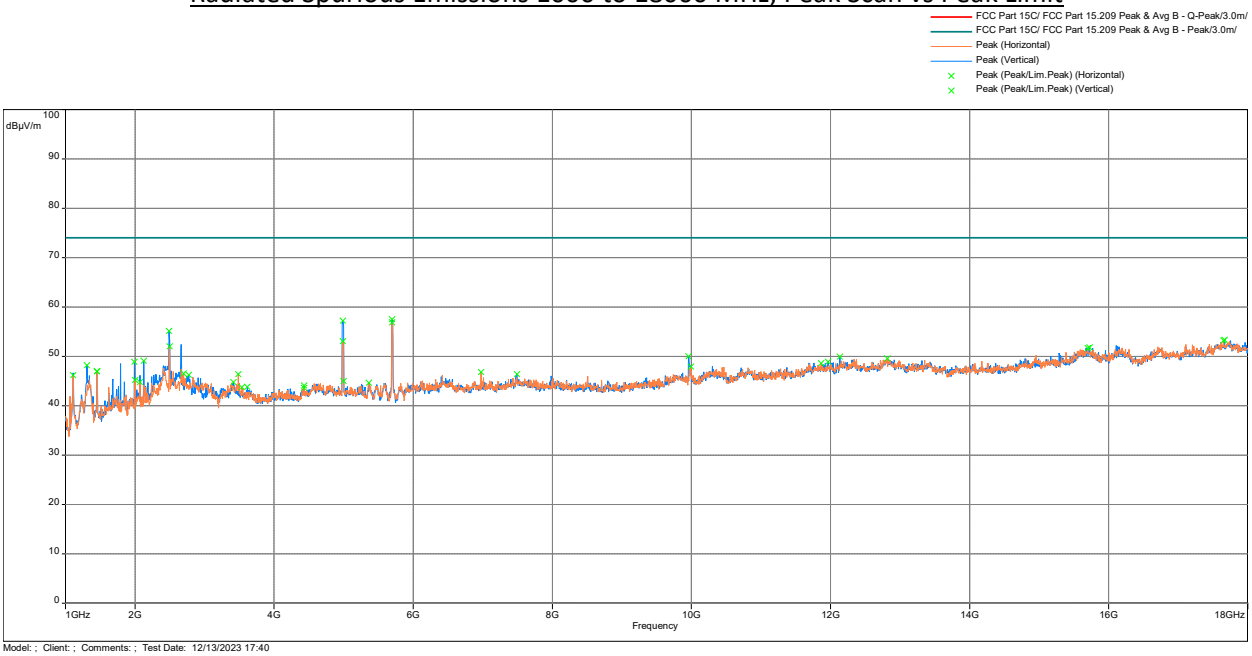
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
280.0013	34.88	35.5	-0.62	3.01	138	Horizontal	-11.89
280.0013	34.77	35.5	-0.73	1	51.5	Vertical	-11.89
123.993	30.87	33	-2.13	1	0.25	Vertical	-12.01
256.301	33.3	35.5	-2.2	1	178	Vertical	-13.68
109.7017	28.74	33	-4.26	1	345.75	Vertical	-13.64
74.84633	25.17	29.5	-4.33	1.99	231.25	Vertical	-18.58

Frequency	Avg	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
17670.77	53.65	54	-0.35	2.98	125.25	Horizontal	8.77
17633.37	53.55	54	-0.45	2.98	202	Vertical	8.63
2666.567	51.44	54	-2.56	1.98	131	Vertical	-9.69
5593.967	51.01	54	-2.99	2.98	189.5	Horizontal	-4.66

Note: Correction = AF + CF - Preamp

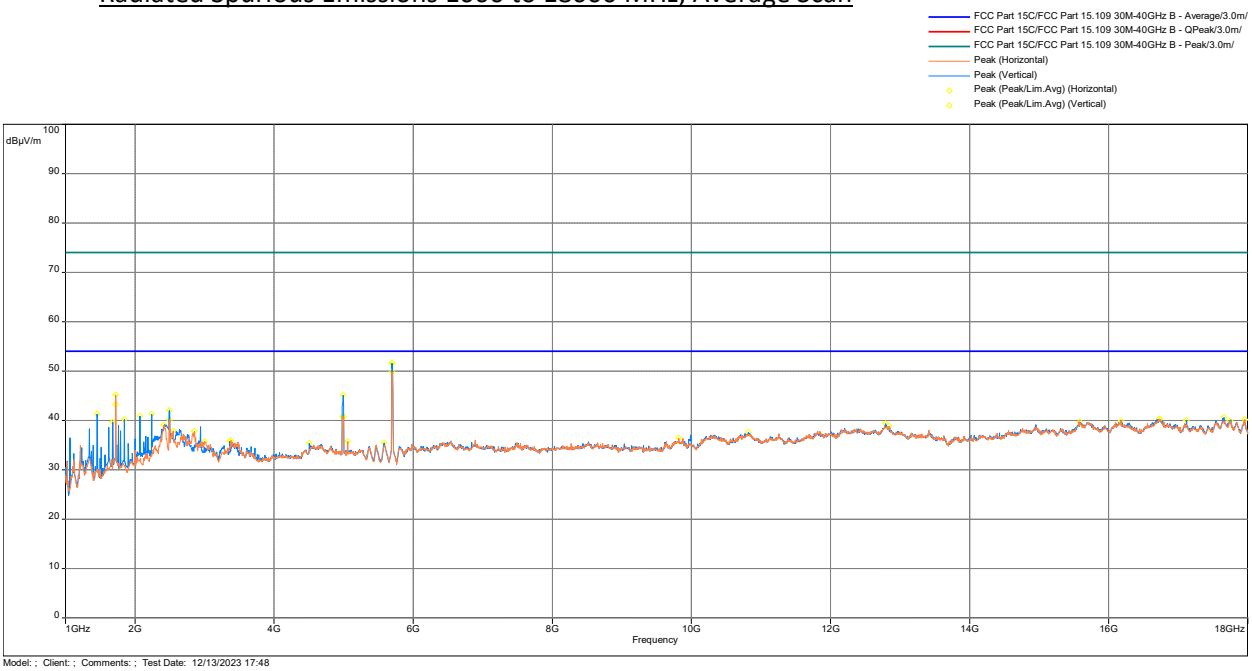
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5700MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit

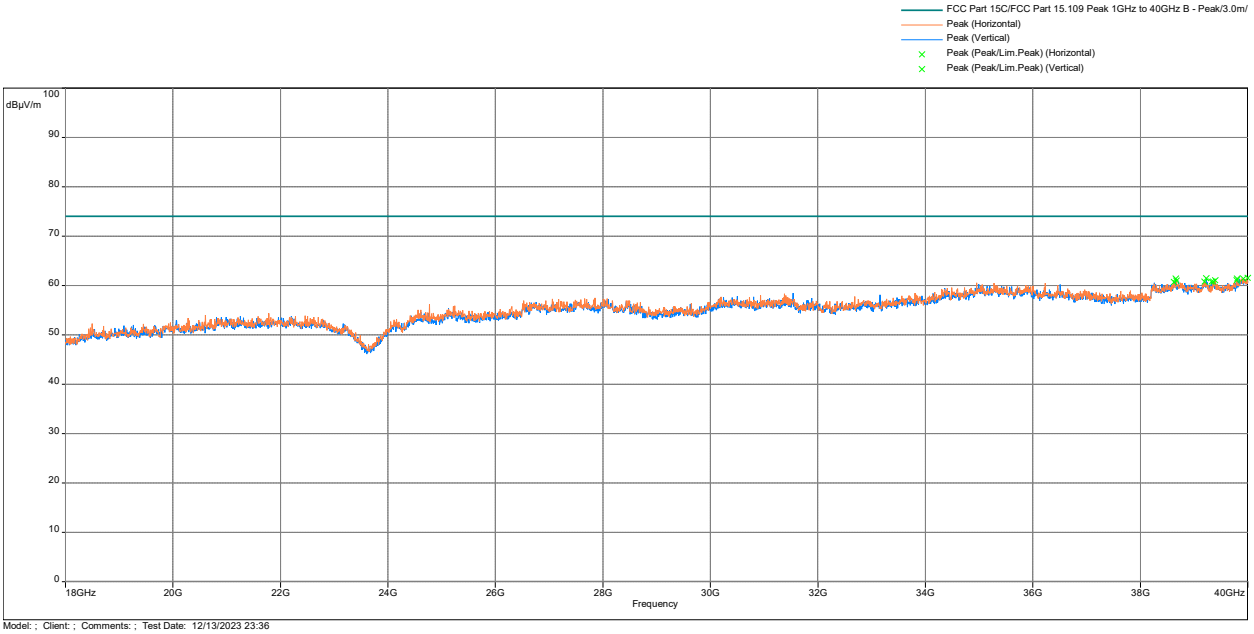


Note: 2494MHz and 4980MHz peaks were determined to be digital emissions

Radiated Spurious Emissions 1000 to 18000 MHz, Average Scan

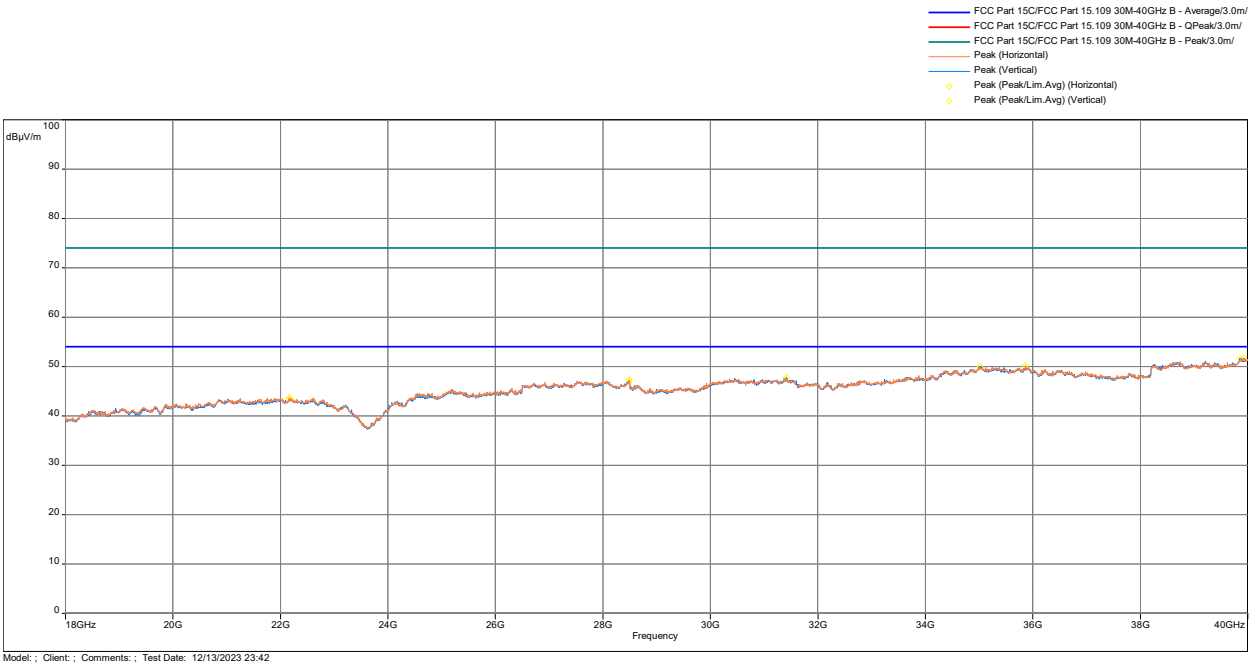


Radiated Spurious Emissions 18000 to 40000 MHz, Peak Scan vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 12/13/2023 23:36

Radiated Spurious Emissions 18000 to 40000 MHz, Avg Scan vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 12/13/2023 23:42

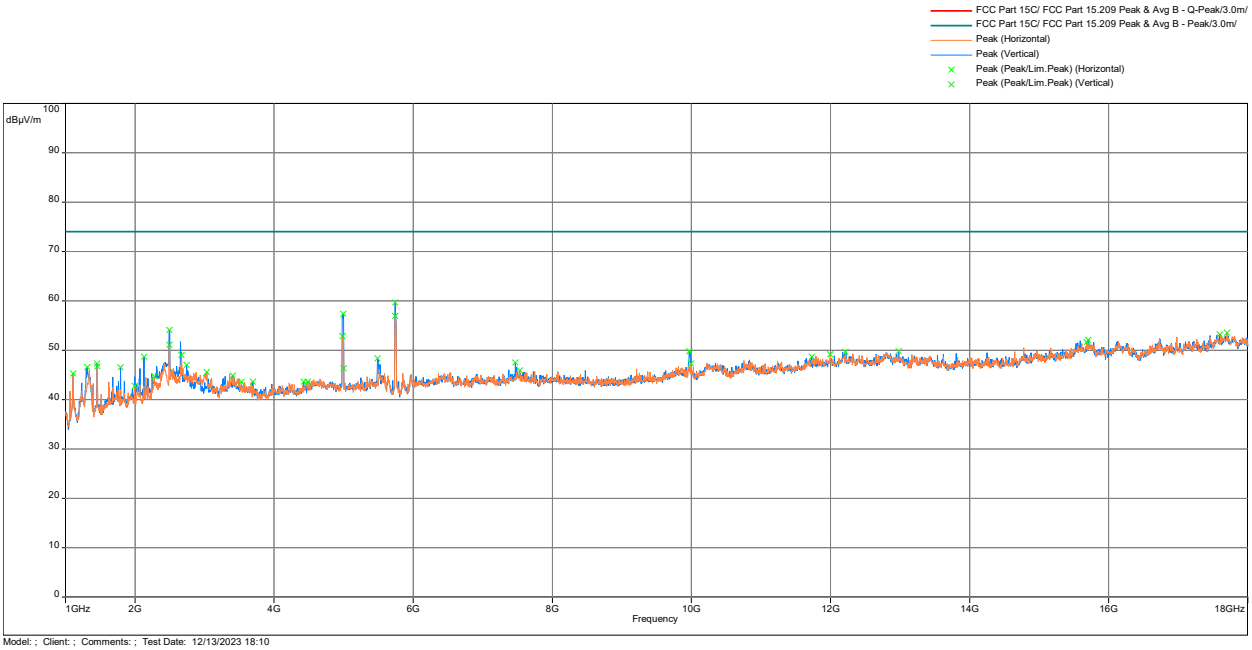
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
279.9949	34.75	35.5	-0.75	3.2	140.75	Horizontal	-11.89
279.9965	17.22	35.5	-18.28	1	90.75	Vertical	-11.89
124.4457	31.24	33	-1.76	1.01	191	Vertical	-12
258.4997	33.73	35.5	-1.77	1.01	182.5	Vertical	-13.48
73.42367	25.67	29.5	-3.83	2.99	0.25	Vertical	-18.54
166.2527	28.35	33	-4.65	3.99	322.5	Horizontal	-13.93

Frequency	Avg	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
5692.567	51.61	54	-2.39	1.98	47	Vertical	-5.02
5698.8	51.55	54	-2.45	1.98	47	Vertical	-5.05
1720.8	45.22	54	-8.78	1.02	132.75	Horizontal	-14.82
2239.867	41.36	54	-12.64	1.01	163.5	Vertical	-12.34

Note: Correction = AF + CF - Preamp

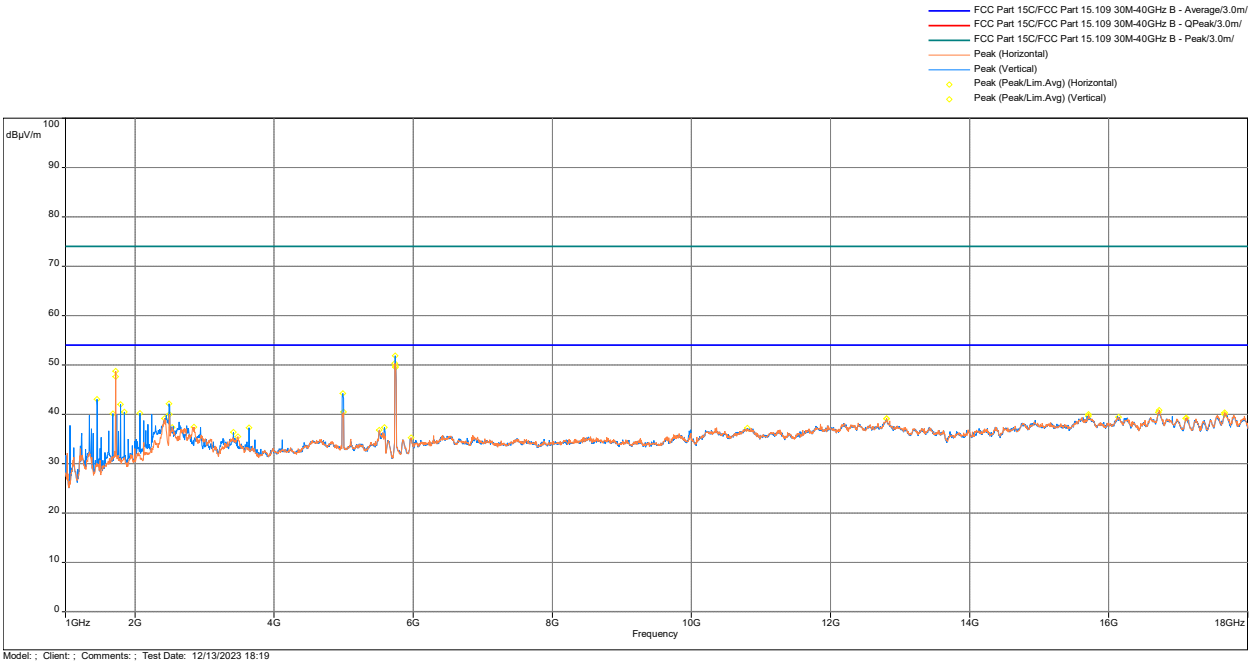
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5745MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit



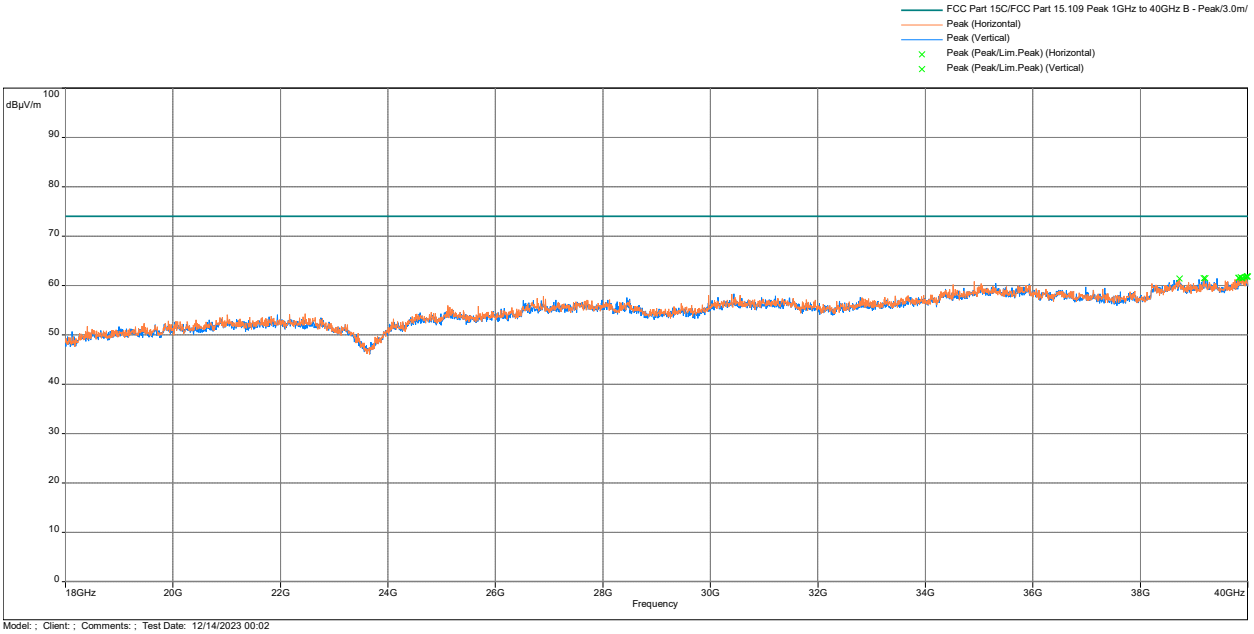
Model: ; Client: ; Comments: ; Test Date: 12/13/2023 18:10

Radiated Spurious Emissions 1000 to 18000 MHz, Avg Scan vs Avg Limit



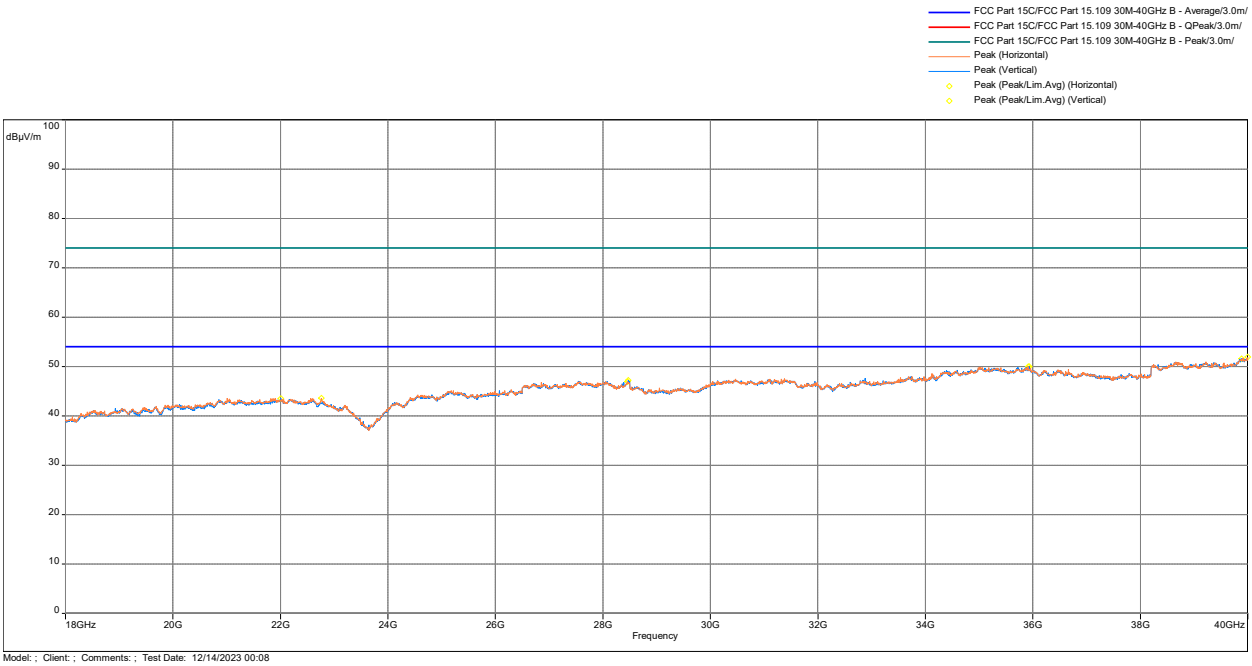
Model: ; Client: ; Comments: ; Test Date: 12/13/2023 18:19

Radiated Spurious Emissions 18000 to 40000 MHz, Peak vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 12/14/2023 00:02

Radiated Spurious Emissions 18000 to 40000 MHz, Avg vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 12/14/2023 00:08

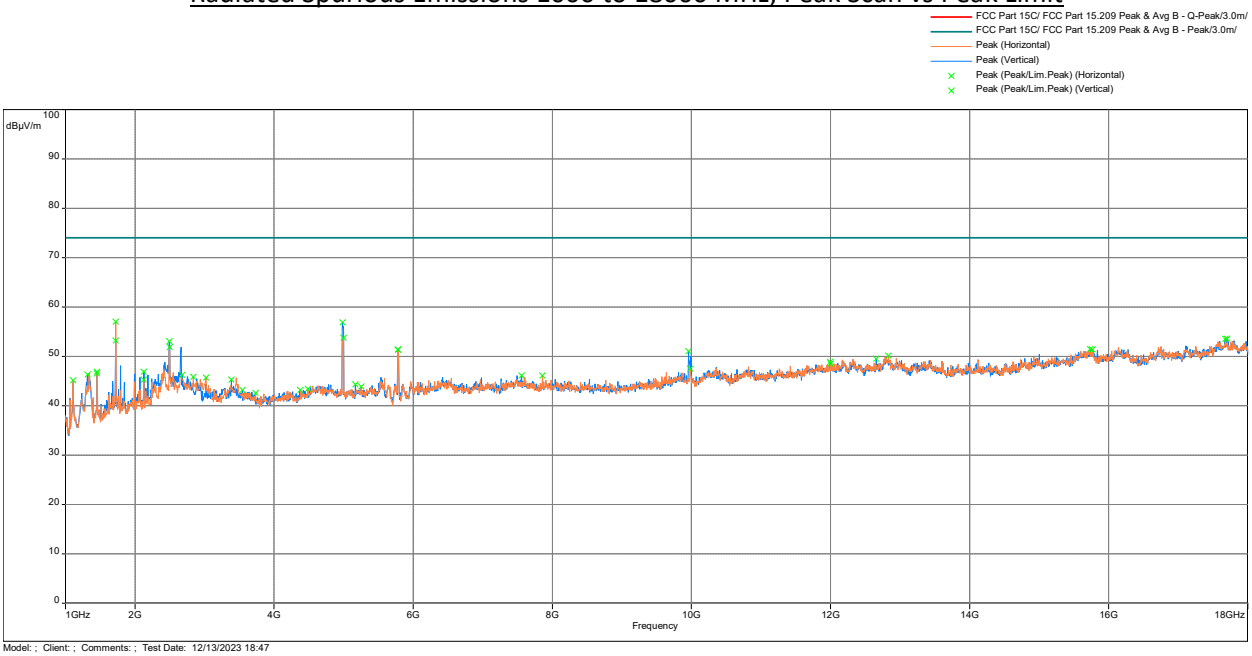
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
279.9965	35.4	35.5	-0.1	1	31.25	Vertical	-11.89
37.98633	26.96	29.5	-2.54	1	107.75	Vertical	-11.65
121.6973	30.34	33	-2.66	1	231	Vertical	-12.12
256.98	32.6	35.5	-2.9	3.99	306.25	Vertical	-13.62
73.747	25.45	29.5	-4.05	1.99	359.75	Vertical	-18.54
114.6163	28.85	33	-4.15	1	275.75	Vertical	-12.81

Frequency	Ave	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
5740.733	51.88	54.0	-2.12	1.98	47.25	Vertical	-5.17
5737.333	50.32	54.0	-3.68	2.98	240.75	Horizontal	-5.16
1791.633	42	54.0	-12	1.98	155	Vertical	-13.91
16723.87	40.83	54.0	-13.17	2.98	326.5	Horizontal	6.18

Note: Correction = AF + CF - Preamp

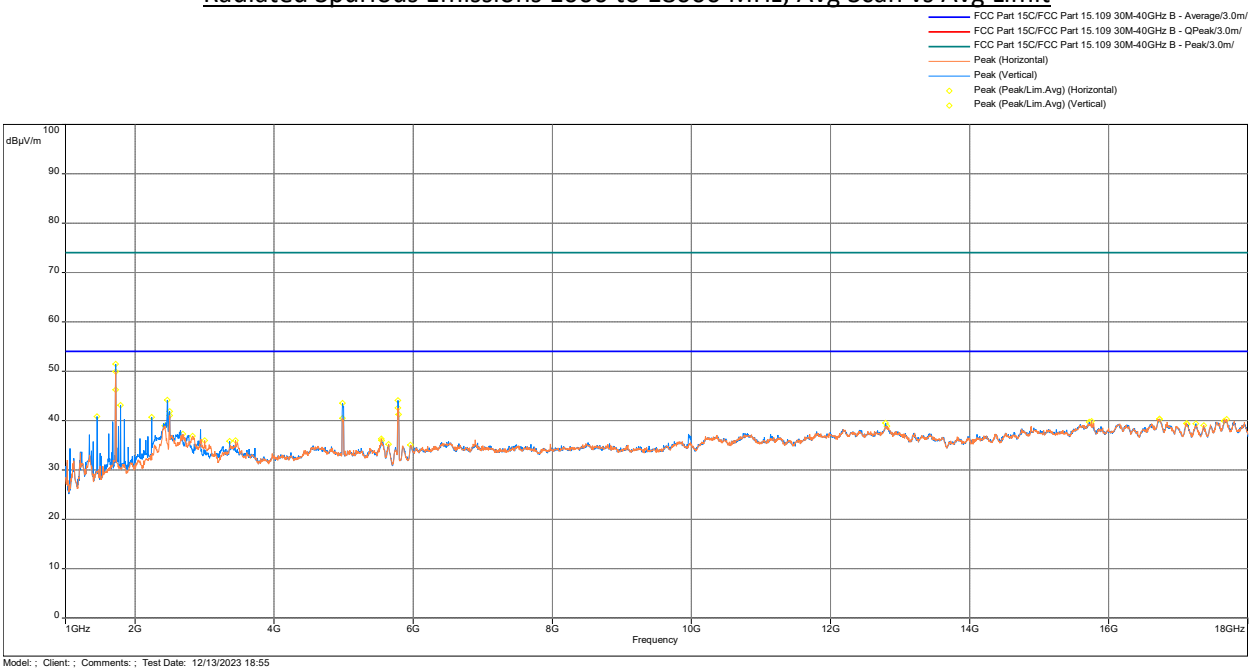
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5785MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit



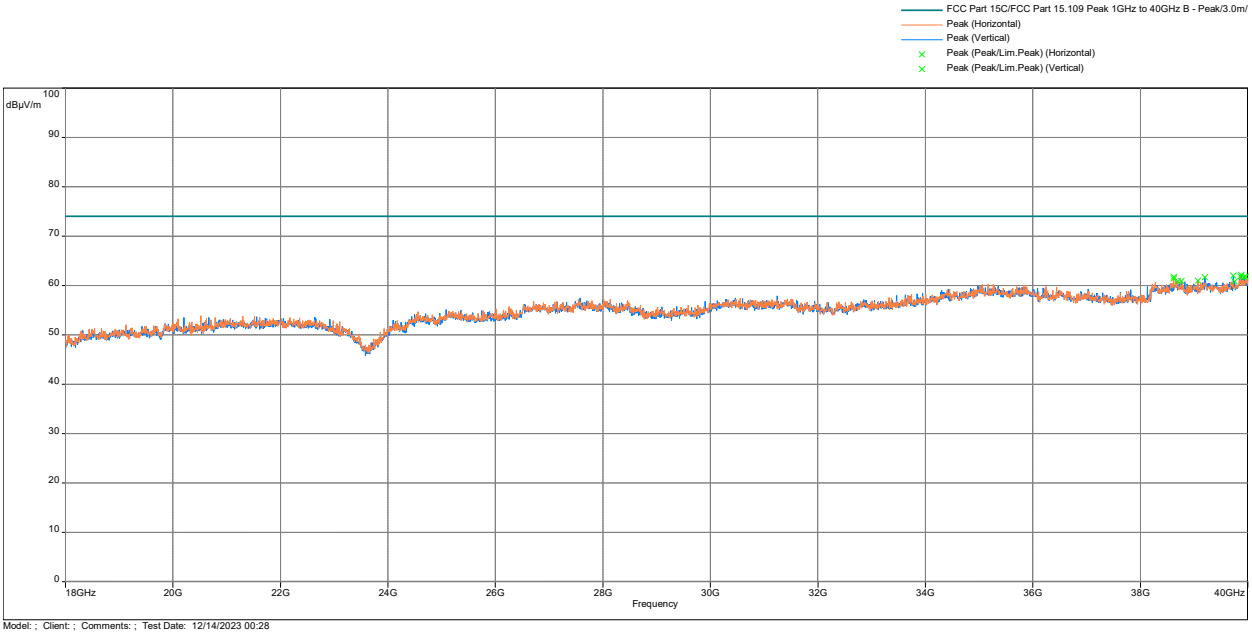
Model: ; Client: ; Comments: ; Test Date: 12/13/2023 18:47

Radiated Spurious Emissions 1000 to 18000 MHz, Avg Scan vs Avg Limit

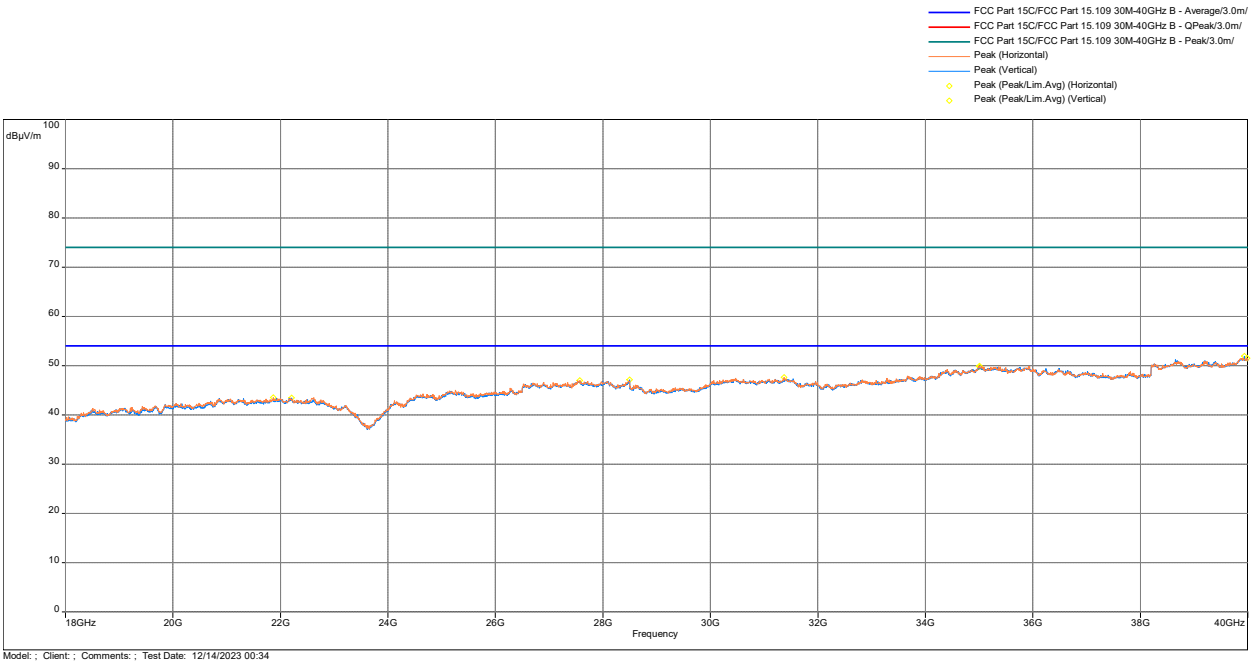


Model: ; Client: ; Comments: ; Test Date: 12/13/2023 18:55

Radiated Spurious Emissions 18000 to 40000 MHz, Peak Scan vs Peak Limit



Radiated Spurious Emissions 18000 to 40000 MHz, Avg Scan vs Avg Limit



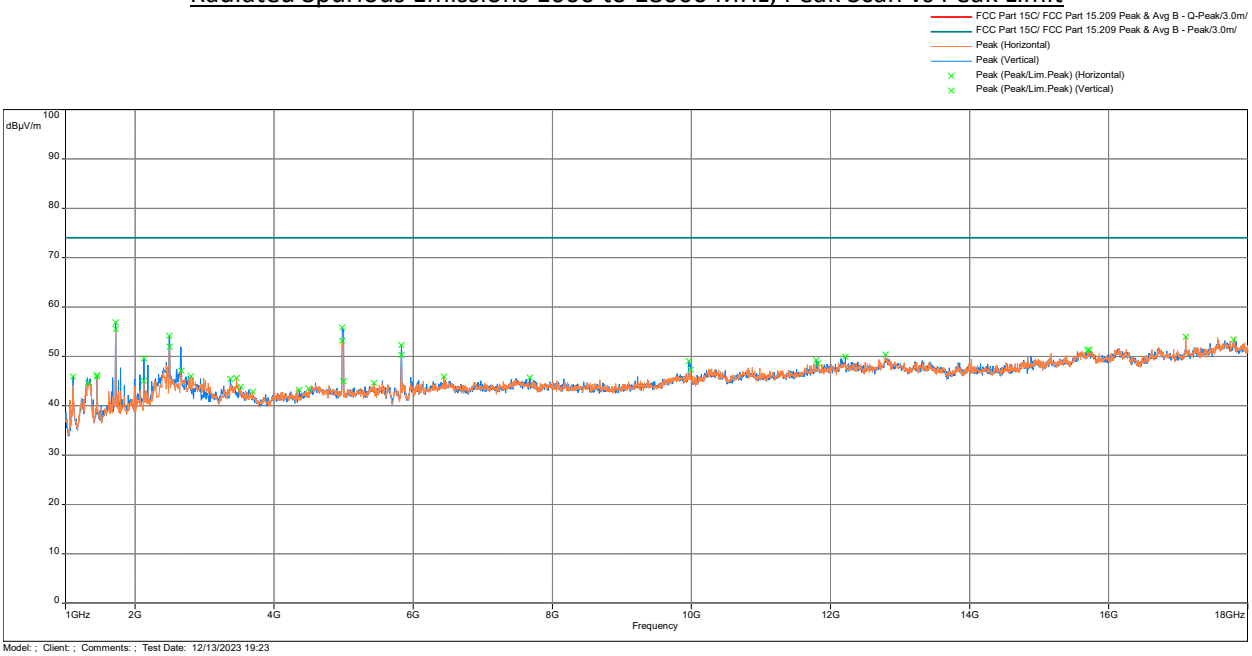
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
279.9917	35.38	35.5	-0.12	2.74	31.75	Verticall	-11.89
128.2933	30.97	33	-2.03	1.01	345.75	Vertical	-11.98
263.9317	33.25	35.5	-2.25	3.01	45.75	Horizontal	-12.84
74.84633	24.5	29.5	-5	1.99	173.75	Vertical	-18.58
259.0493	30.09	35.5	-5.41	3.99	289.25	Vertical	-13.41
108.7963	27.5	33	-5.5	1.01	254.25	Vertical	-13.8

Frequency	Avg	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
1722.5	51.47	54	-2.53	1.98	90.25	Vertical	-14.8
1720.8	49.94	54	-4.06	1.02	219.5	Horizontal	-14.82
1724.2	46.26	54	-7.74	1.02	305.25	Horizontal	-14.78
5780.967	44.07	54	-9.93	1.98	47	Vertical	-5.22

Note: Correction = AF + CF - Preamp

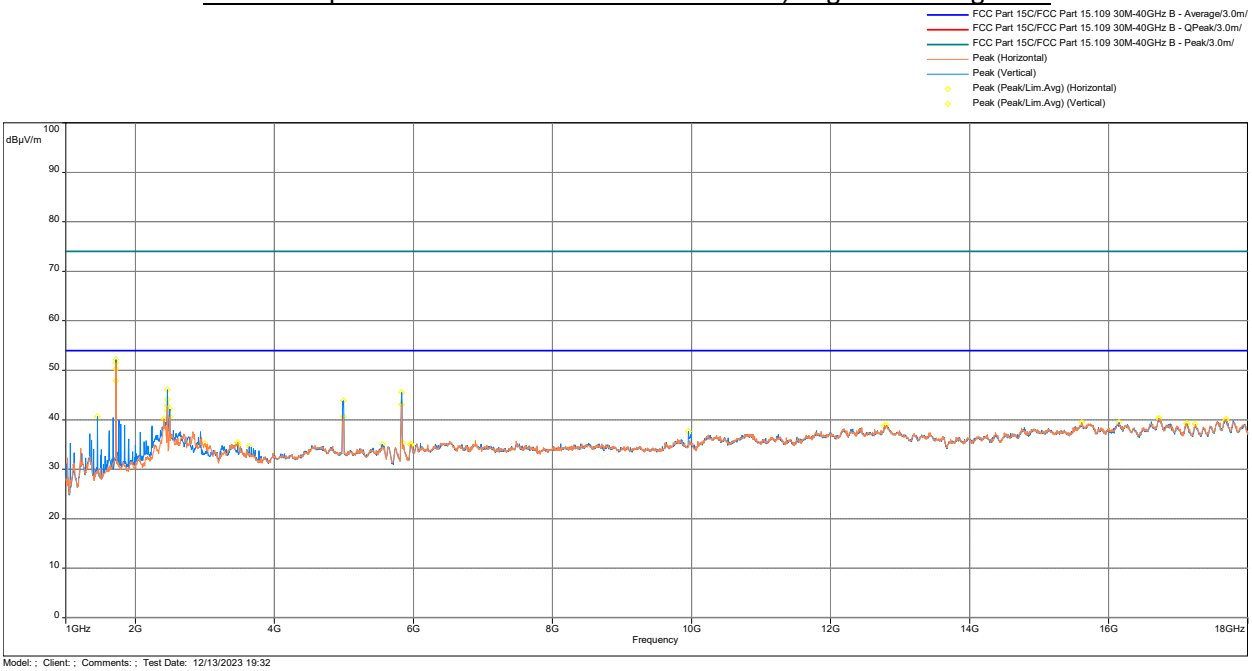
Test Results: 15.209 Radiated Spurious Emissions, Tx at 802.11n20 HT8 5825MHz

Radiated Spurious Emissions 1000 to 18000 MHz, Peak Scan vs Peak Limit

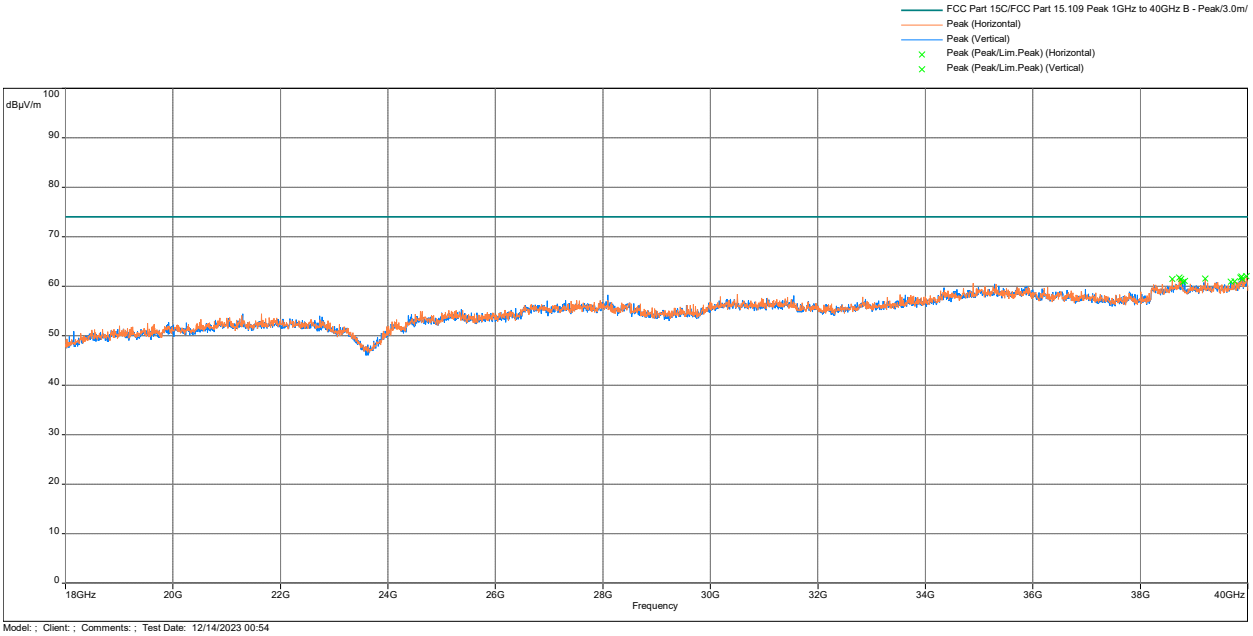


Note: 2494MHz and 4980MHz signal was determined to be digital emissions which meets class A of digital emission.

Radiated Spurious Emissions 1000 to 18000 MHz, Avg Scan vs Avg Limit

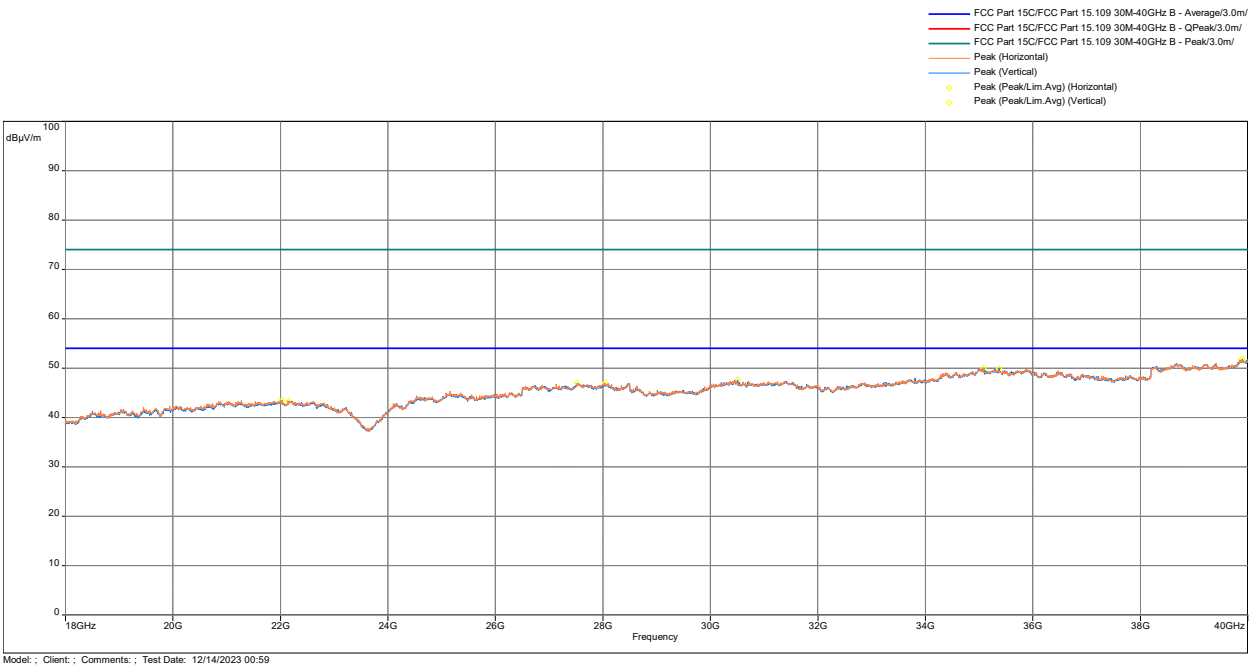


Radiated Spurious Emissions 18000 to 40000 MHz, Peak Scan vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 12/14/2023 00:54

Radiated Spurious Emissions 18000 to 40000 MHz, Avg Scan vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 12/14/2023 00:59

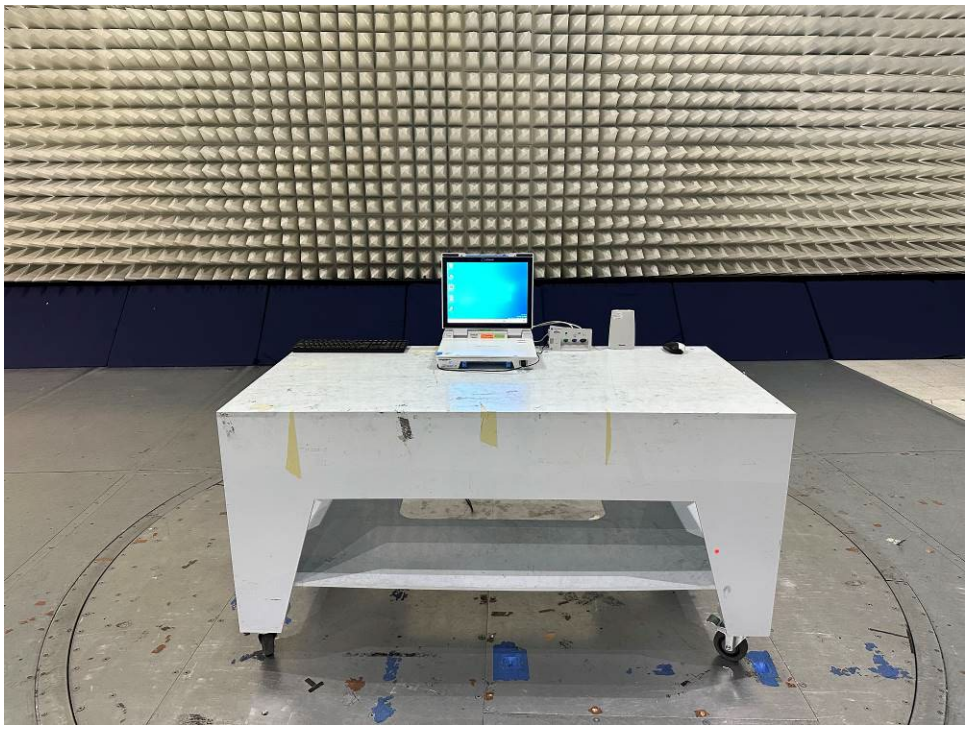
Frequency	FS@10m	Limit@ 10m	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
279.9949	35.35	35.5	-0.15	1.16	53	Vertical	-11.89
254.6197	33.61	35.5	-1.89	3.99	288.5	Vertical	-13.78
128.552	31.06	33	-1.94	1	226.25	Vertical	-11.98
73.39133	25.51	29.5	-3.99	1.99	358.75	Vertical	-18.54
167.934	28.82	33	-4.18	3.99	66.75	Horizontal	-14.01
134.6307	28.65	33	-4.35	3.99	0.25	Horizontal	-12.3

Frequency	Avg	Avg Limit	Margin	Height	Azimuth	Polarity	Correction
MHz	dBuV/m	dBuV/m	(dB)	(m)	(deg)		dB
1722.5	52.18	54	-1.82	2.98	313.25	Vertical	-14.8
1722.5	51.52	54	-2.48	2.02	291.75	Horizontal	-14.8
5832.533	43.1	54	-10.9	2.98	110.5	Horizontal	-5.12
1455.6	40.67	54	-13.33	1.01	227.5	Vertical	-15.89

Note: Correction = AF + CF - Preamp

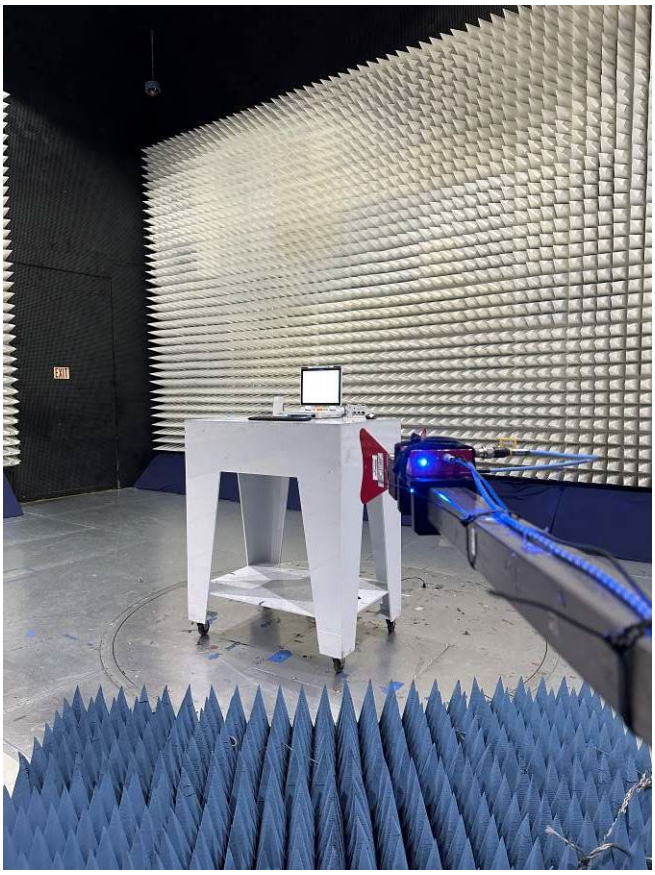
4.3.7 Test setup

The following photographs show the testing configurations used.

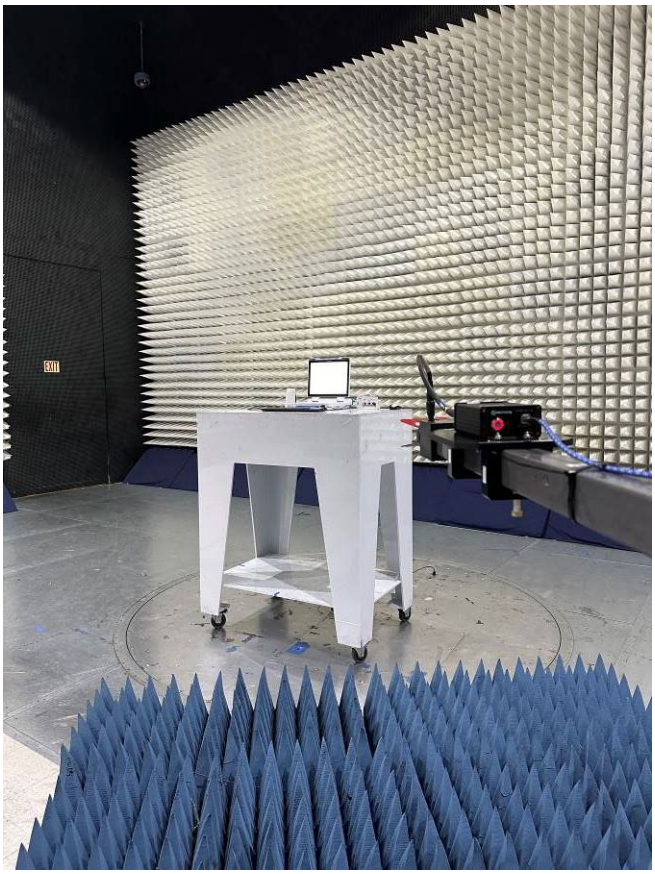


4.3.7 Test Setup Configuration (Continued)

4.3.7 Test Setup Configuration (Continued)



4.3.7 Test Setup Configuration (Continued)



4.4 AC Line Conducted Emission
FCC: 15.207; RSS-GEN

4.4.1 Requirement

Frequency Band MHz	FCC Part 15.207 Limits	
	Quasi-Peak	Average
0.15-0.50	66 to 56 *	56 to 46 *
0.50-5.00	56	46
5.00-30.00	60	50

*Note: *Decreases linearly with the logarithm of the frequency*
At the transition frequency the lower limit applies.

4.4.2 Procedure

Measurements are carried out using quasi-peak and average detector receivers in accordance with CISPR 16. An AMN is required to provide a defined impedance at high frequencies across the power feed at the point of measurement of terminal voltage and also to provide isolation of the circuit under test from the ambient noise on the power lines. An AMN as defined in CISPR 16 shall be used.

The EUT is located so that the distance between the boundary of the EUT and the closest surface of the AMN is 0.8m.

Where a flexible mains cord is provided by the manufacturer, this shall be 1m long or if in excess of 1m, the excess cable is folded back and forth as far as possible so as to form a bundle not exceeding 0.4m in length.

The EUT is arranged and connected with cables terminated in accordance with the product specification.

Conducted disturbance is measured between the phase lead and the reference ground, and between the neutral lead and the reference ground. Both measured values are reported.

The EUT, where intended for tabletop use, is placed on a table whose top is 0.8m above the ground plane. A vertical, metal reference plane is placed 0.4m from the EUT. The vertical metal reference-plane is at least 2m by 2m. The EUT shall be kept at least 0.8m from any other metal surface or other ground plane not being part of the EUT. The table is constructed of non-conductive materials. Its dimensions are 1m by 1.5m, but may be extended for larger EUT.

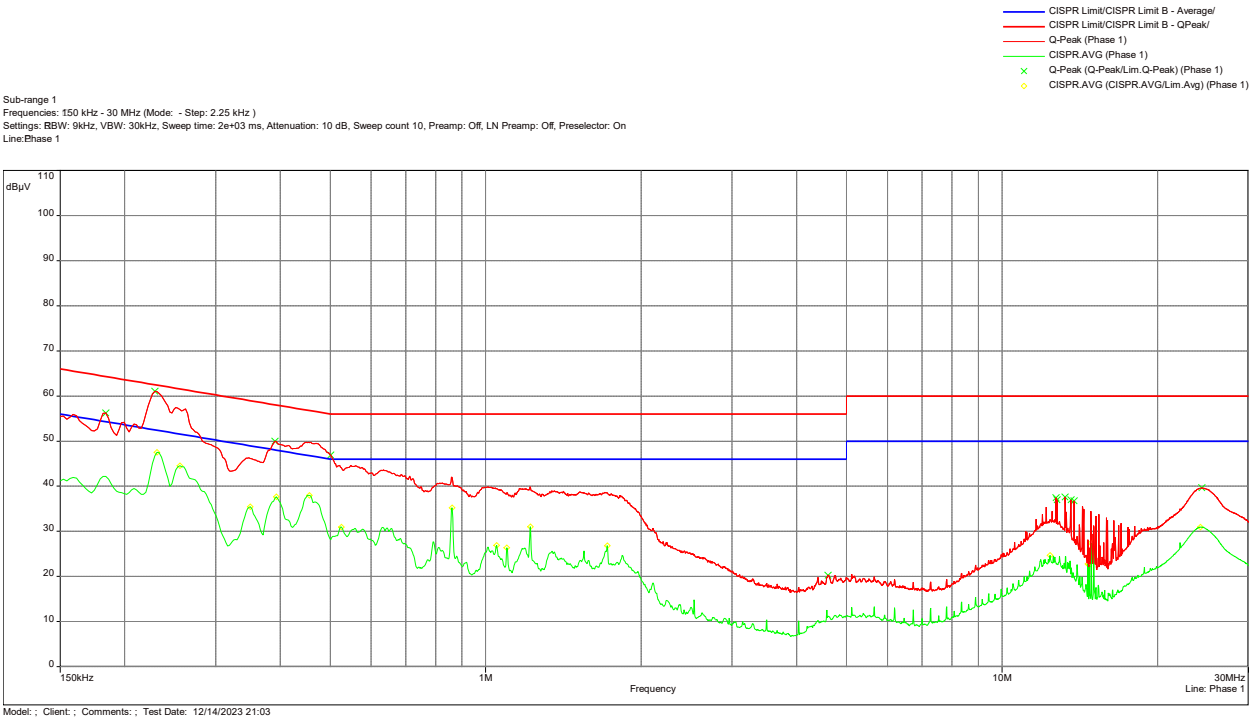
Floor standing EUT are placed on a horizontal metal ground plane and isolated from the ground plane by resting on an insulating material. The metal ground plane extends at least 0.5m beyond the boundaries of the EUT and has minimum dimensions of 2m by 2m.

Equipment setup for conducted disturbance tests followed the guidelines of ANSI C63.10:2013.

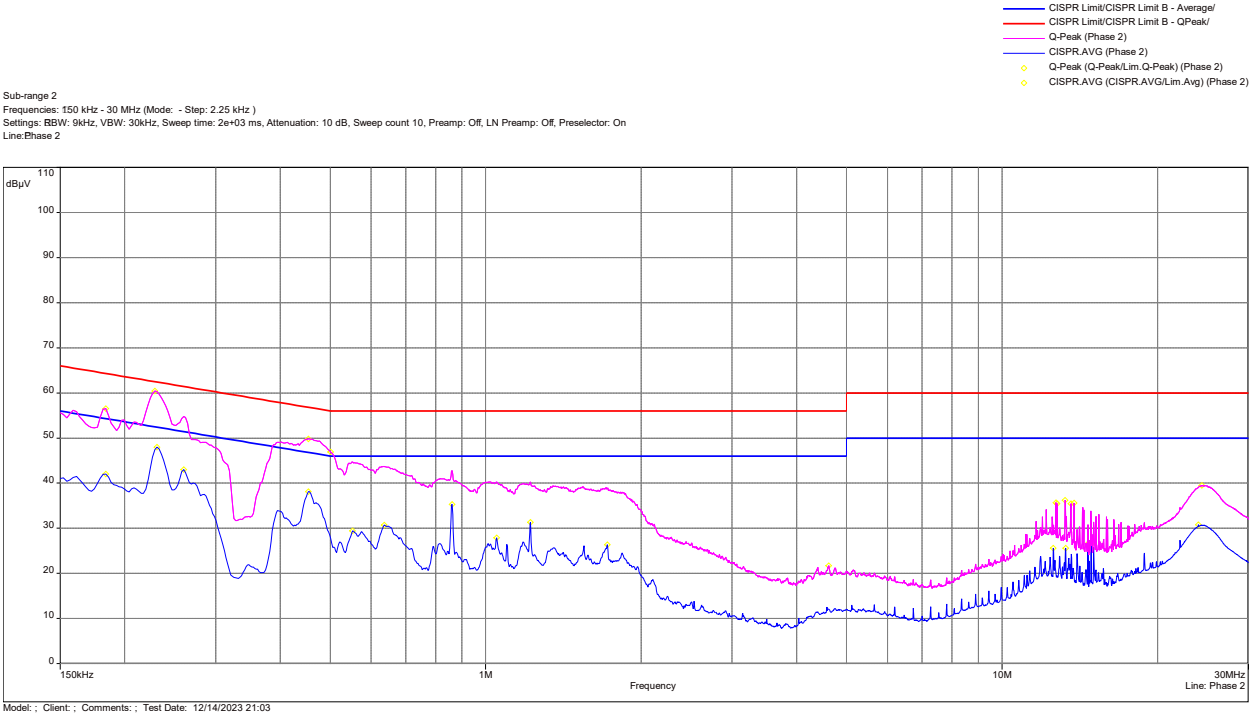
4.4.3 Test Results

15.207: Conducted Emissions 120VAC 60Hz

Phase 1



Phase 2



4.4.3 Test Results (Continued)

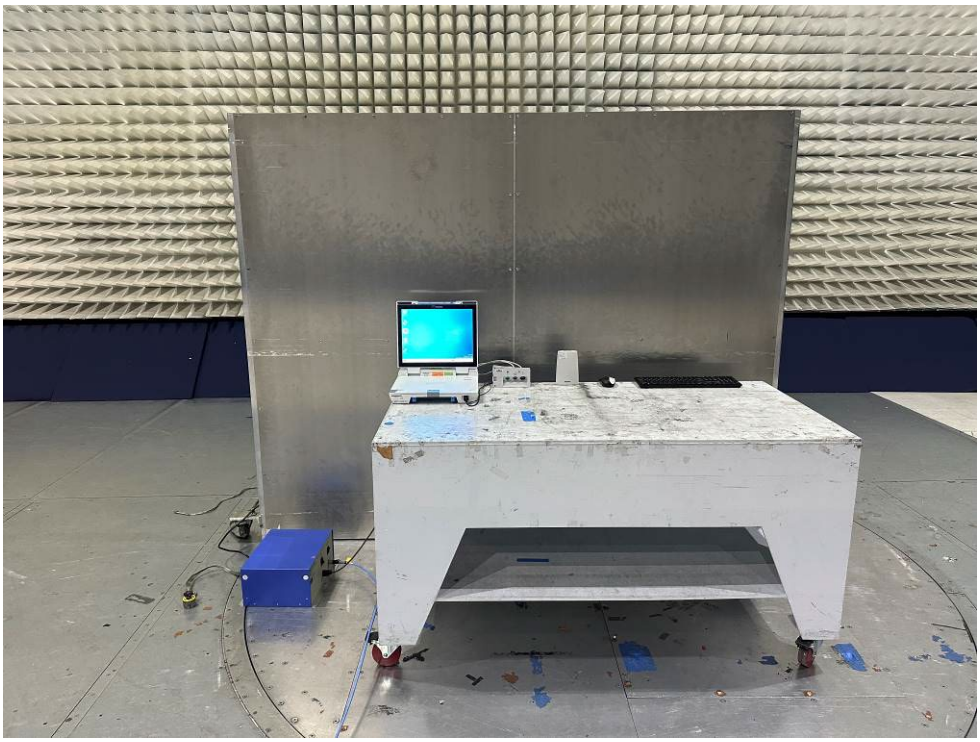
Frequency (MHz)	Q-Peak (dBµV)	Limit Q-Peak (dBµV)	Margin Q-Peak (dB)	Line	Correction (dB)
0.22875	61.04	62.49	-1.46	Phase 1	10.55
0.22875	60.45	62.49	-2.04	Phase 2	10.55
0.45375	49.82	56.81	-6.99	Phase 2	10.57
0.18375	56.51	64.31	-7.8	Phase 2	10.54
0.18375	56.23	64.31	-8.09	Phase 1	10.54
0.39075	49.96	58.05	-8.09	Phase 1	10.56
0.501	46.94	56	-9.06	Phase 2	10.57
0.501	46.91	56	-9.09	Phase 1	10.57
24.36	39.64	60	-20.36	Phase 1	11.05

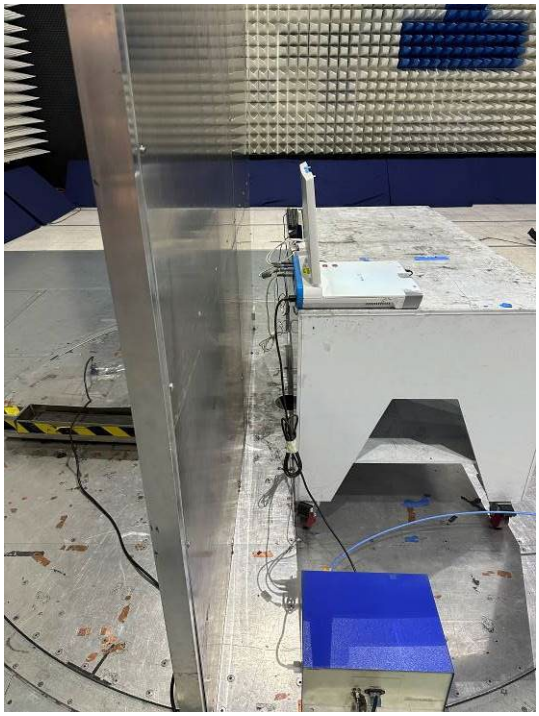
Frequency (MHz)	CISPR AVG (dBµV)	Limit Avg (dBµV)	Margin Avg (dB)	Line	Correction (dB)
0.231	47.94	52.41	-4.47	Phase 2	10.55
0.231	47.54	52.41	-4.88	Phase 1	10.55
0.25575	44.51	51.57	-7.06	Phase 1	10.55
0.26025	43	51.42	-8.43	Phase 2	10.55
0.45375	38.14	46.81	-8.67	Phase 2	10.57
0.456	37.99	46.77	-8.78	Phase 1	10.57
0.393	37.66	48	-10.34	Phase 1	10.56
0.861	35.29	46	-10.71	Phase 2	10.58
0.861	35.2	46	-10.8	Phase 1	10.58

Results: **Complies** by 4.47 dB

4.4.4 Test Setup Photographs

The following photographs show the testing configurations used.





5.0 List of Test Equipment

Measurement equipment used for emission compliance testing utilized the equipment on the following list:

Equipment	Manufacturer	Model/Type	Asset #	Cal Int	Cal Due
EMI Test Receiver 40GHz	Rohde & Schwarz	ESU40	ITS 00961	12	03/14/2024
EMI Test Receiver	Rohde & Schwarz	ESR7	ITS 01607	12	10/18/2024
150kHz to 30MHz LISN	COM-POWER	LIN-115A	ITS 01288	12	07/31/2024
30MHz-2GHz Bi-Log Antenna	SunAR RF Motion	JB1	ITS 01577	12	02/20/2024
9kHz-1GHzPre-Amplifier	Sonoma Instruments	310N	ITS 00415	12	05/17/2024
1-18GHz Small Horn Antenna with Preamp	ETS Lindgren	3117-PA	ITS 01365	12	05/20/2024
1-40GHz Passive Horn Antenna	ETS Lindgren	3116C	ITS 01776	12	11/22/2024
18-40GHz Pre Amplifier	MITEQ	TTA1840-35-S-M	ITS 01542	12	06/14/2024
Double-Ridged Waveguide Horn 1-18GHz (small horn)	ETS Lindgren	3115	ITS 00982	12	05/22/2024
50MHz-18GHz USB Wideband Power Sensor OPT 100	Keysight Technologie	U2021XA	ITS 01578	12	05/16/2024

6.0 Document History

Revision/ Job Number	Writer Initials	Reviewer Initials	Date	Change
1.0 / G105602398	GGR	ML	December 28, 2023	Original document
2.0 / G105602398	GGR	ML	Jan 09, 2024	Added reference to RSS-247 and data for band U-NII-2A.
3.0 / G105602398	GGR	ML	Jan 26, 2024	Fixed typo on customer contact phone number and applicant name.

END OF REPORT