



FCC / ISED Test Report

FOR:

Aversan Inc.

Model Name:

1205

Product Description:

Cell and Wi-Fi carrier with integrated RF switching.

FCC ID: 2AWBR002250

IC ID: 26073002250

Applied Rules and Standards:

47 CFR Part 15.407 (NII) & 5 GHz (UNII)

RSS-247 Issue 2 (DTSS) & (LE-LAN), and RSS-Gen Issue 5

REPORT #: EMC_AVERS_006_20001_FCC_ISED_15.407

DATE: 6/26/2020



A2LA Accredited

IC recognized #

3462B-1

3462B-2

CETECOM Inc.

411 Dixon Landing Road • Milpitas, CA 95035 • U.S.A.

Phone: + 1 (408) 586 6200 • Fax: + 1 (408) 586 6299 • E-mail: info@cetecom.com • <http://www.cetecom.com>

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1 **Assessment**

The following device was evaluated against the applicable criteria specified in FCC rules Parts 15.407 of Title 47 of the Code of Federal Regulations and the relevant ISED Canada standard RSS-247.

No deviations were ascertained.

According to section5 of this report, the overall result is Pass.

Company	Description	Model #
Aversan Inc.	Cell and Wi-Fi carrier with integrated RF switching.	1205

Responsible for Testing Laboratory:

6/26/2020	Compliance	Li, Cindy (EMC Lab Manager)	
Date	Section	Name	Signature

Responsible for the Report:

6/26/2020	Compliance	Ghanma, Issa (EMC Engineer)	
Date	Section	Name	Signature

The test results of this test report relate exclusively to the test item specified in Section3.
CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
Street Address:	411 Dixon Landing Road
City/Zip Code	Milpitas, CA 95035
Country	USA
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
EMC Lab Manager:	Li, Cindy
Responsible Project Leader:	Saman, Rami

2.2 Identification of the Client

Client's Name:	Aversan Inc.
Street Address:	30 Eglinton Avenue West, Suite 500
City/Zip Code	Mississauga, ON L5R 3E7
Country	Canada

2.3 Identification of the Manufacturer

Manufacturer's Name:	Same as Client /-----
Manufacturers Address:	-----
City/Zip Code	-----
Country	-----

3 Equipment Under Test (EUT)

3.1 EUT Specifications

Model No:	Aversan Inc.	
HW Version :	05	
SW Version :	- Cell: SWI9X50C_01.07.02.00 - Internal Wi-Fi: 5.4.24.1 - External Wi-Fi: 5.6.23.4	
FCC-ID :	2AWBR002250	
IC-ID:	26073002250	
HVIN:	1205	
PMN:	RF Board	
Product Description:	Cell and Wi-Fi carrier with integrated RF switching.	
Frequency Range / number of channels:	Frequency Range (MHz)	Channel Number
	5150-5250	36-48 [4]
	5250-5350	52-64[4]
	5470-5725	100-144 [12]
Modes of Operation / Channel Bandwidths:	IEEE Std. 802.11(xxxx)	Data Rate / MCS
	a	6-54 Mbps
	n: HT20 & HT40	MCS 0-7; MCS 8-15
	ac: VHT20; VHT40; VHT80	MCS 0-9
Radio Information:	❖ WLAN (Wi-Fi) , Bluetooth , BLE Module: - FCC / IC ID: SQG-60SIPT / 3147A-602230C - Name / Number: 60-2230C / 60-2230C-PU - Wi-Fi 2.4 and 5 GHz: 802.11 a/b/g/n/h/ac - Bluetooth 4.2 - Name / Number: 60-2230C / 60-2230C-U Wi-Fi 2.4 and 5 GHz: 802.11 a/b/g/n/h/ac	
Max. declared antenna gain:	5.14 dBi	
Max. Output Power from module report:	5150.0 - 5250.0	0.145 / 21.60 dBm
	5250.0 - 5350.0	0.078 / 18.92 dBm
	5470.0 - 5725.0	0.126 / 21.01 dBm

Power Supply/ Rated Operating Voltage Range:	Low 18 VDC, Nominal 28 VDC, High 33 VDC
Operating Temperature Range	Low -15° C, Nominal 25° C, High 55° C
Other Radios included in the device:	❖ Cellular Module: • Name / Number: AirPrime / EM7565 • FCC / IC ID: N7NEM75 / 2417C-EM75 ▪ 4G LTE (CAT 12): LTE FDD Bands 2, 4, 5, 7, 12, 13, 26, 41, 66 ▪ 3G WCDMA (HSPA+): UMTS FDD Bands II, IV, V
Sample Revision:	☐ Prototype Unit; ☐ Production Unit; ☒ Pre-Production

3.2 EUT Sample details

EUT #	Serial Number	HW Version	SW Version	Notes/Comments
1	ADG-RL3-0029	05	• Cell: SWI9X50C_01.07.02.00 • Internal Wi-Fi: 5.4.24.1 • External Wi-Fi: 5.6.23.4	Radiated

3.3 Accessory Equipment (AE) details

AE #	Type	Model	Manufacturer	Serial Number
1	-----	-----	-----	N/A

3.4 Test Sample Configuration

EUT Set-up #	Combination of AE used for test set up	Comments
1	EUT#1	-

3.5 Mode of Operation details

Mode of Operation	Description of Operating modes	Additional Information
Op. 1	Wi-Fi 5 GHz	❖ LRU/LMU tools provided by module supplier through client, used to configure <u>Wi-Fi 5 GHz</u> radio to: • Transmit continuously • Fixed channel Tx • MCS0 • HT20 • Power: 18 dBm
Op. 2	Wi-Fi 5 GHz Co-TX	❖ LRU/LMU tools provided by module supplier through client, used to configure <u>Wi-Fi 5 GHz</u> radio to: • Transmit continuously • Fixed channel Tx • MCS0 • HT20 • Power: 18 dBm ❖ Cellular was configured using AT commands, through TeraTerm terminal. <u>LTE Band 66</u> was connected.

3.6 Justification for Worst Case Mode of Operation

During the testing process, the EUT was tested with transmitter sets on low and high channels, of each UNII band, at the maximum output power and duty cycle.

For radiated measurements, all data in this report shows the worst case between horizontal and vertical antenna polarizations and for all orientations of the EUT.

4 Subject of Investigation

The objective of the measurements done by CETECOM Inc. was to assess the performance of the EUT according to the relevant requirements specified in FCC rules Part 15.407 of Title 47 of the Code of Federal Regulations and Radio Standard Specification RSS-247 of ISED Canada.

The host device contains two identical Wi-Fi modules:

1. Name/Number: 60-2230C / 60-2230C-PU; Tested, as it represents worst case, by transmitting using the higher antennae gains
 - a. supports BT and BLE
2. Name/Number: 60-2230C / 60-2230C-U
 - a. BT and BLE not used

This test report is to support a request for new equipment authorization under the FCC ID: 2AWBR002250 IC ID: 26073002250

5 Measurement Results Summary

Test Specification	Test Case	Temperature and Voltage Conditions	Mode	Pass	NA	NP	Result
§15.407(e) RSS-247 6.2.4.1	Emission Bandwidth	Nominal	-	☐	☐	☒	Complies
§15.407(a) RSS-247 6	Power Spectral Density	Nominal	-	☐	☐	☒	Complies
§15.407(a) RSS-247 6	Maximum Output Power	Nominal	-	☐	☐	☒	Complies
§15.407; 15.205 RSS-247 6; RSS-Gen 8.10	Band Edge Compliance	Nominal	-	☐	☐	☒	Complies
§15.407(b); §15.209; 15.205 RSS-247 6; RSS-Gen 8.9; 8.10	Radiated TX Spurious Emissions	Nominal	802.11 ac VHT20	☒	☐	☐	Complies
§15.207(a) RSS Gen 8.8	AC Conducted Emissions	Nominal	-	☐	☒	☐	Complies

Note1: NA= Not Applicable; NP= Not Performed.

Note2: Leveraged from module certification report, FCC / IC ID: SQG-60SIPT / 3147A-602230C

Note3: This device is powered by 28 V DC; hence this test is not applicable.

6 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus, with 95% confidence interval (in dB delta to result), based on a coverage factor $k=1$.

Radiated measurement

9 kHz to 30 MHz	± 2.5 dB (Magnetic Loop Antenna)
30 MHz to 1000 MHz	± 2.0 dB (Biconilog Antenna)
1 GHz to 40 GHz	± 2.3 dB (Horn Antenna)

Conducted measurement

150 kHz to 30 MHz	± 0.7 dB (LISN)
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RF conducted measurement	± 0.5 dB
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According to TR 102 273 a multiplicative propagation of error is assumed for RF measurement systems. For this reason the RMS method is applied to dB values and not to linear values as appropriate for additive propagation of error. Also used: <http://physics.nist.gov/cuu/Uncertainty/typeb.html>. The above calculated uncertainties apply to direct application of the Substitution method. The Substitution method is always used when the EUT comes closer than 3 dB to the limit.

6.1 Environmental Conditions During Testing:

The following environmental conditions were maintained during the course of testing:

- Ambient Temperature: 20-25° C
- Relative humidity: 40-60%

6.2 Dates of Testing:

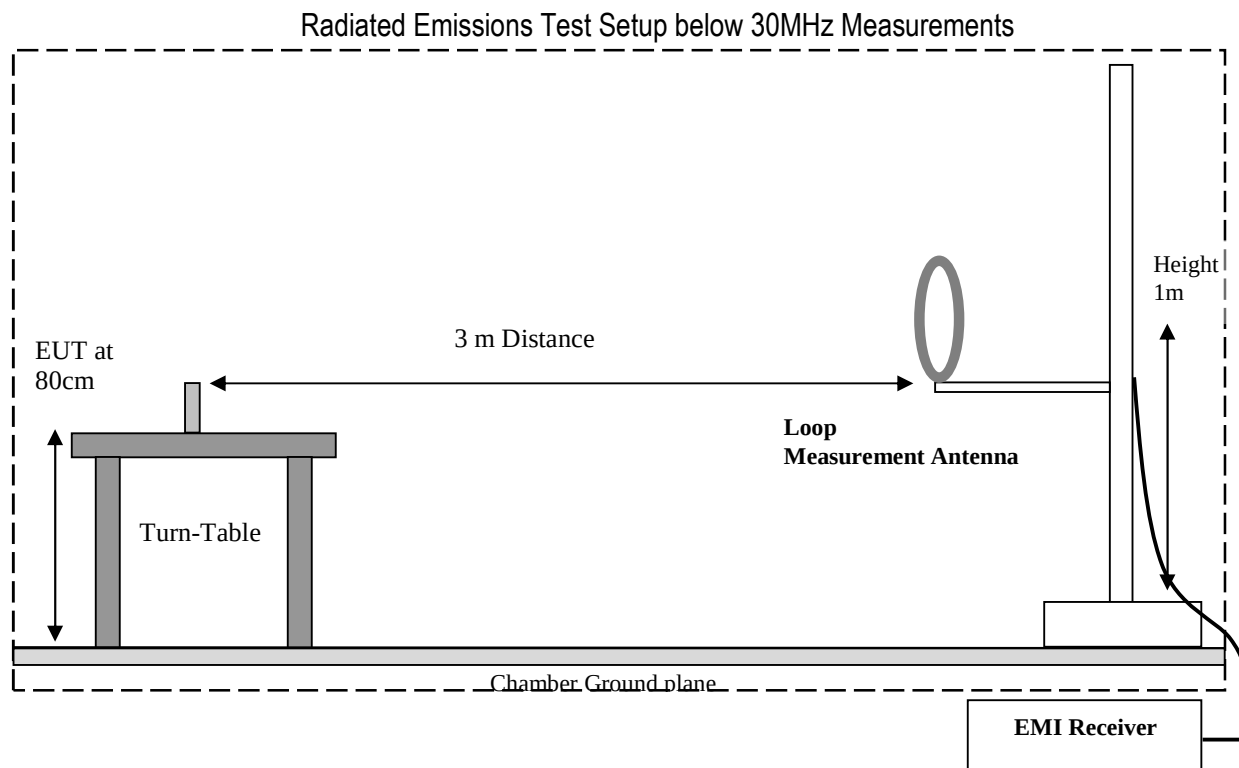
4/10/2020 – 5/22/2020

7 Measurement Procedures

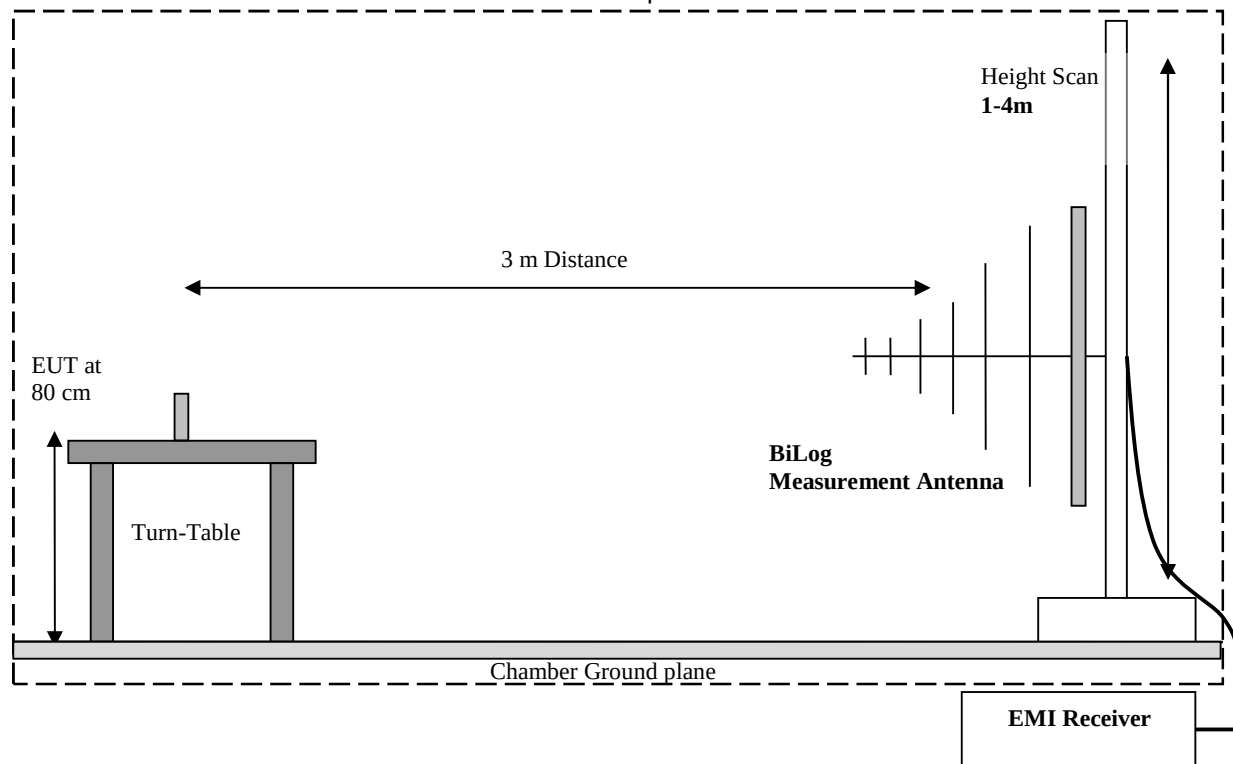
7.1 Radiated Measurement

The radiated measurement is performed according to ANSI C63.10 (2013)

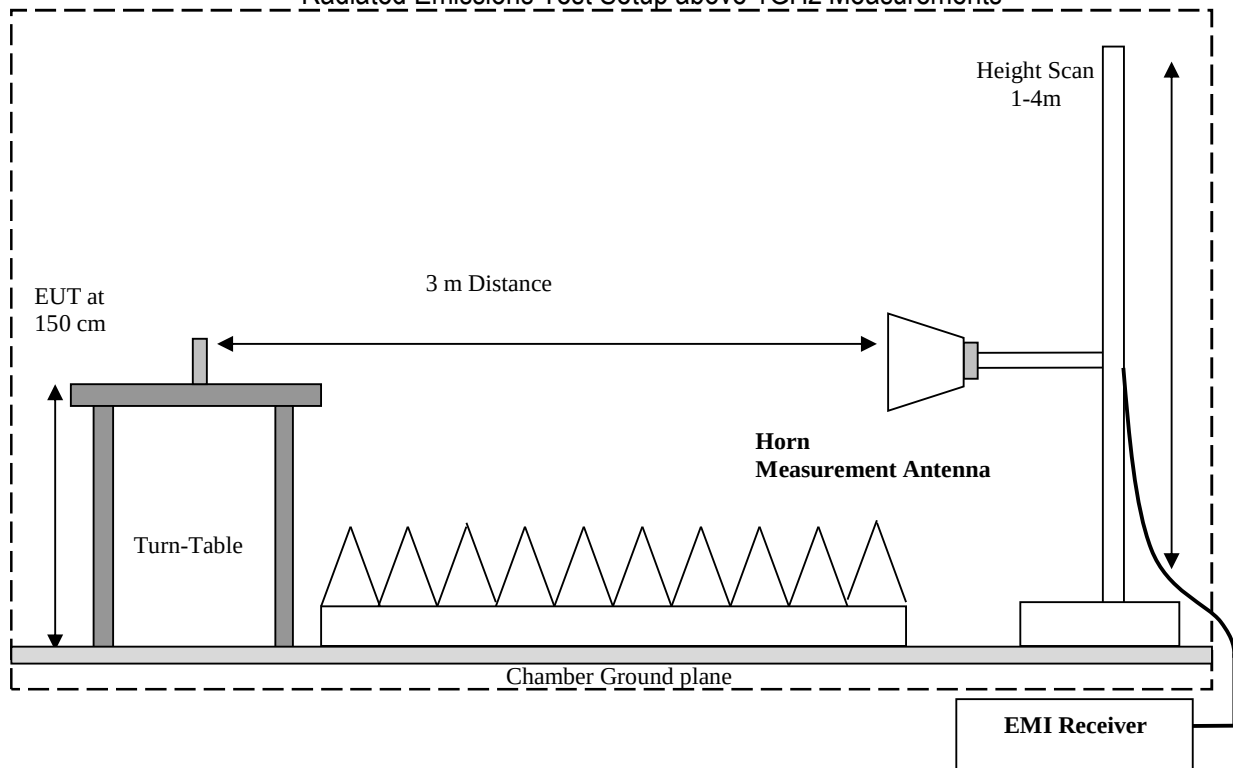
- The exploratory measurement is accomplished by running a matrix of 16 sweeps over the required frequency range with R&S Test-SW EMC32 for 4 positions of the turntable, two orthogonal positions of the EUT and both antenna polarizations. This procedure exceeds the requirement of the above standards to cover the 3 orthogonal axis of the EUT. A max peak detector is utilized during the exploratory measurement. The Test-SW creates an overall maximum trace for all 12 sweeps and saves the settings for each point of this trace. The maximum trace is part of the test report.
- The 10 highest emissions are selected with an automatic algorithm of EMC32 searching for peaks in the noise floor and ensuring that broadband signals are not selected multiple times.
- The maxima are then put through the final measurement and again maximized in a 90deg range of the turntable, fine search in frequency domain and height scan between 1m and 4m.
- The above procedure is repeated for all possible ways of power supply to EUT and for all supported modulations.
- In case there are no emissions above noise floor level only the maximum trace is reported as described above.
- The results are split up into up to 4 frequency ranges due to antenna bandwidth restrictions. A magnetic loop is used from 9 kHz to 30 MHz, a Biconilog antenna is used from 30 MHz to 1 GHz, and two different horn antennas are used to cover frequencies up to 40 GHz.



Radiated Emissions Test Setup 30MHz-1GHz Measurements



Radiated Emissions Test Setup above 1GHz Measurements



7.1.1 Sample Calculations for Field Strength Measurements

Field Strength is calculated from the Spectrum Analyzer/ Receiver readings, taking into account the following parameters:

1. Measured reading in dB μ V
2. Cable Loss between the receiving antenna and SA in dB and
3. Antenna Factor in dB/m

All radiated measurement plots in this report are taken from a test SW that calculates the Field Strength based on the following equation:

$$FS \text{ (dB}\mu\text{V/m)} = \text{Measured Value on SA (dB}\mu\text{V)} + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$$

Example:

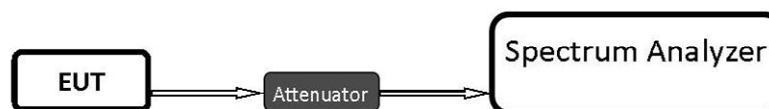
Frequency (MHz)	Measured SA (dB μ V)	Cable Loss (dB)	Antenna Factor Correction (dB)	Field Strength Result (dB μ V/m)
1000	80.5	3.5	14	98.0

7.2 Power Line Conducted Measurement Procedure

AC Power Line conducted emissions measurements performed according to: ANSI C63.4 (2014)

7.3 RF Conducted Measurement Procedure

Testing procedures are based on 558074 D01 15.247 Meas Guidance v05r02 – “GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES” - April 2, 2019, by the Federal Communications Commission, Office of Engineering and Technology, Laboratory Division.



- Connect the equipment as shown in the above diagram.
- Adjust the settings of the SA (Rohde-Schwarz Spectrum Analyzer) to connect the EUT at the required mode of test.
- Measurements are to be performed with the EUT set to the low, middle and high channels and for worst case modulation schemes.

8 **Test Result Data**

8.1 **Radiated Transmitter Spurious Emissions**

8.1.1 **Measurement according to ANSI C63.10 (2013)**

Spectrum Analyzer Settings:

- Frequency = 9 KHz – 30 MHz
- RBW = 9 KHz
- Detector: Peak

- Frequency = 30 MHz – 1 GHz
- Detector = Peak / Quasi-Peak
- RBW= 120 KHz (<1GHz)

- Frequency > 1 GHz
- Detector = Peak / Average
- RBW = 1 MHz

- Radiated spurious emissions shall be measured for the transmit frequencies, transmit power, and data rate for the lowest, middle and highest channel in each frequency band of operation and for the highest gain antenna for each antenna type, and using the appropriate parameters and test requirements.
- The highest (or worst-case) data rate shall be recorded for each measurement.
- For testing frequencies below 30 MHz at distance other than the specified in the standard, the limit conversion is calculated by using the FCC materials for the ANSI 63 committee issued on January, 27 1991.

8.1.2 **Limits:**

FCC §15.407

- Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.
- The provisions of §15.205 apply to intentional radiators operating under this section.

FCC §15.209 & RSS-Gen 8.9

- Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency of emission (MHz)	Field strength (μV/m)	Measurement Distance (m)	Field strength @ 3m (dBμV/m)
0.009–0.490	2400/F(kHz) / -----	300	-
0.490–1.705	24000/F(kHz) / -----	30	-
1.705–30.0	30 / (29.5)	30	-
30–88	100	3	40 dBμV/m
88–216	150	3	43.5 dBμV/m
216–960	200	3	46 dBμV/m
Above 960	500	3	54 dBμV/m

FCC §15.205 & RSS-Gen 8.10

- Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

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

*PEAK LIMIT= 74 dBμV/m

*AVG. LIMIT= 54 dBμV/m

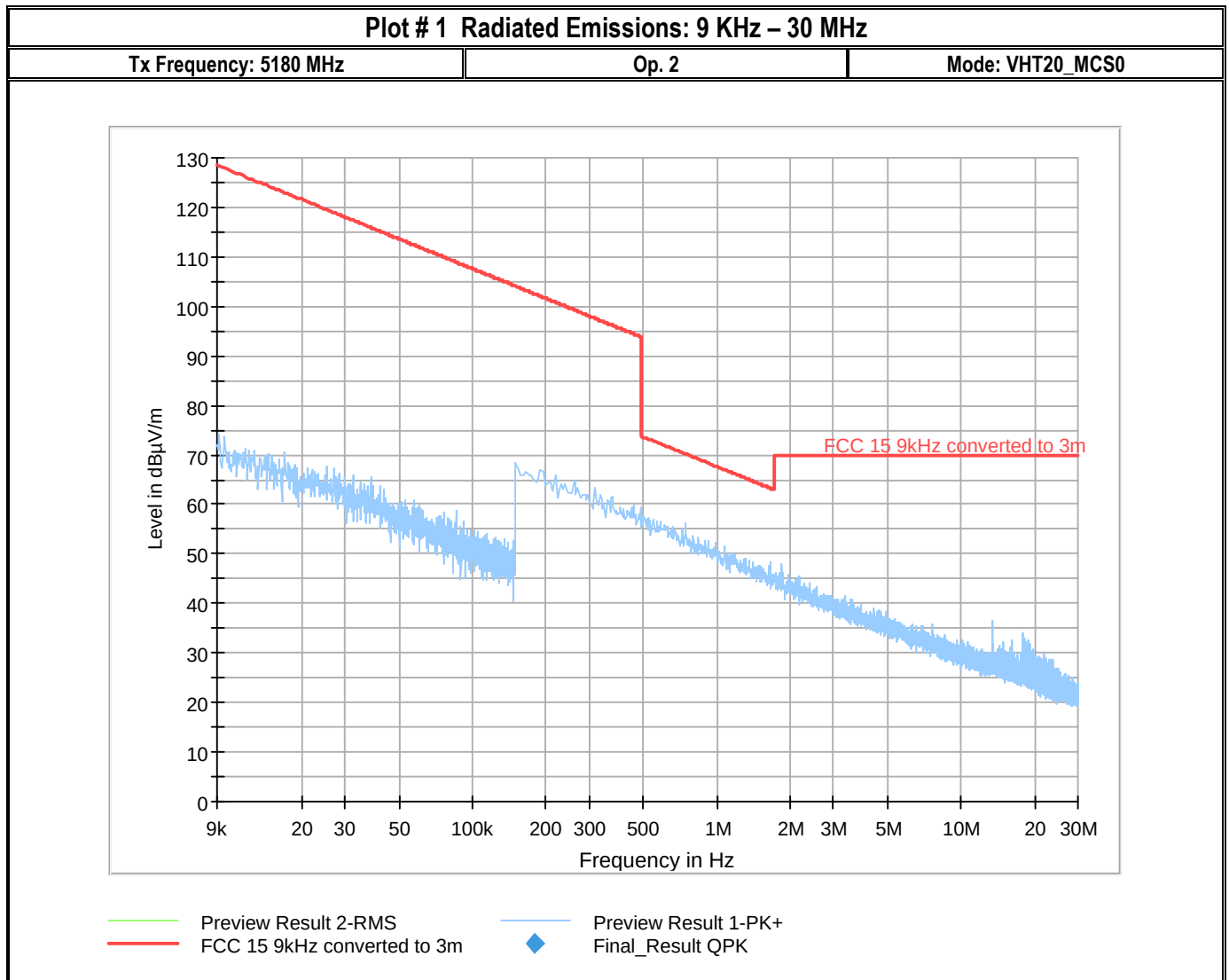
8.1.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	Power Input
22° C	1	28 VDC

8.1.4 Measurement result:

Plot #	Channel #	Scan Frequency	Limit	Result
1 – 5	36	9 kHz – 18 GHz	See section 8.1.2	Pass
6 – 11	48	30 MHz – 40 GHz	See section 8.1.2	Pass
12 – 17	52	30 MHz – 40 GHz	See section 8.1.2	Pass
18 – 22	64	9 kHz – 18 GHz	See section 8.1.2	Pass
23 – 27	116	9 kHz – 18 GHz	See section 8.1.2	Pass
28 – 33	140	30 MHz – 40 GHz	See section 8.1.2	Pass

8.1.5 Measurement Plots:



Plot # 2 Radiated Emissions: 30 MHz – 1 GHz

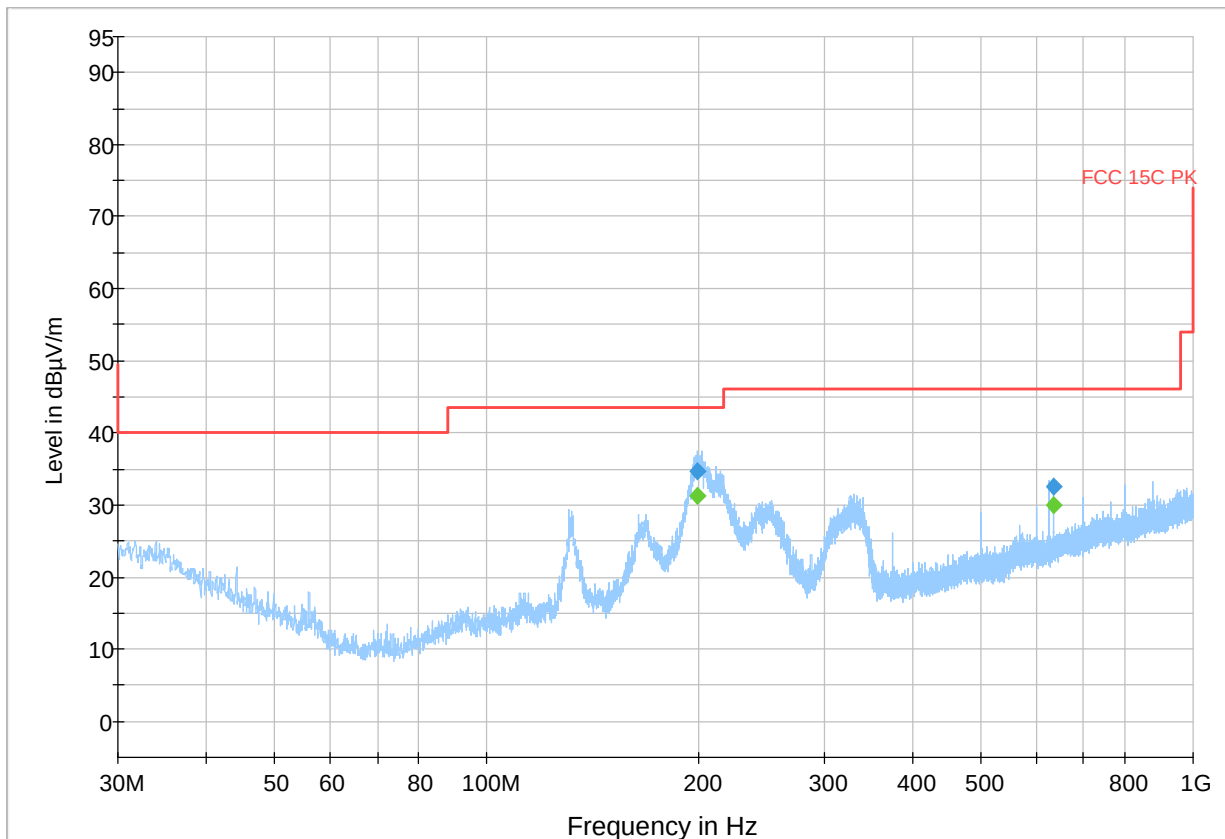
Tx Frequency: 5180 MHz

Op. 2

Mode: VHT20_MCS0

Final_Result

Frequency (MHz)	QuasiPeak (dBμV/m)	RMS (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
198.562825	34.74	---	43.50	8.76	500.0	120.000	100.0	V	182.0	-20.6
198.562825	---	31.30	---	---	500.0	120.000	100.0	V	182.0	-20.6
633.329108	32.54	---	46.00	13.46	500.0	120.000	100.0	V	53.0	-9.6
633.329108	---	29.90	---	---	500.0	120.000	100.0	V	53.0	-9.6



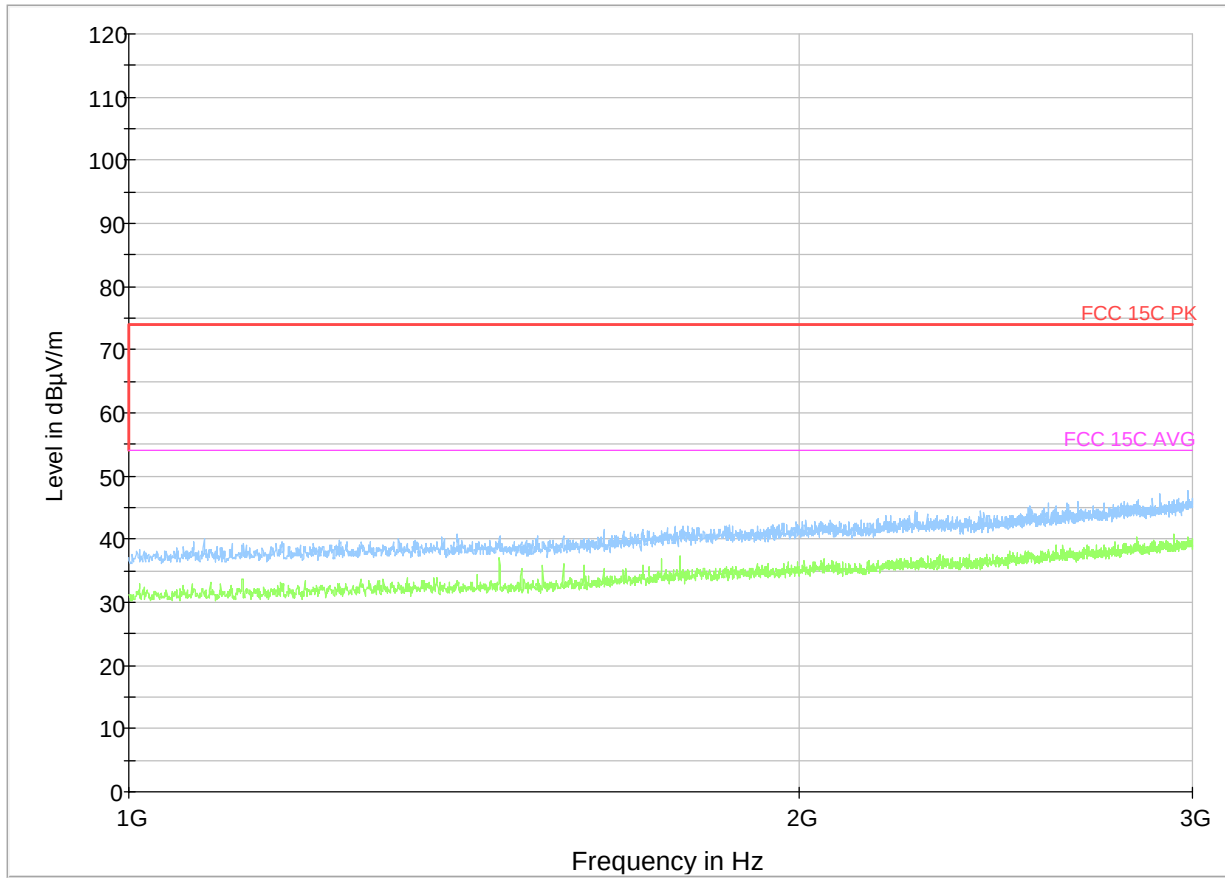
Preview Result 1-PK+ FCC 15C PK Final_Result QPK Final_Result RMS

Plot # 3 Radiated Emissions: 1 – 3 GHz

Tx Frequency: 5180 MHz

Op. 1

Mode: VHT20_MCS0

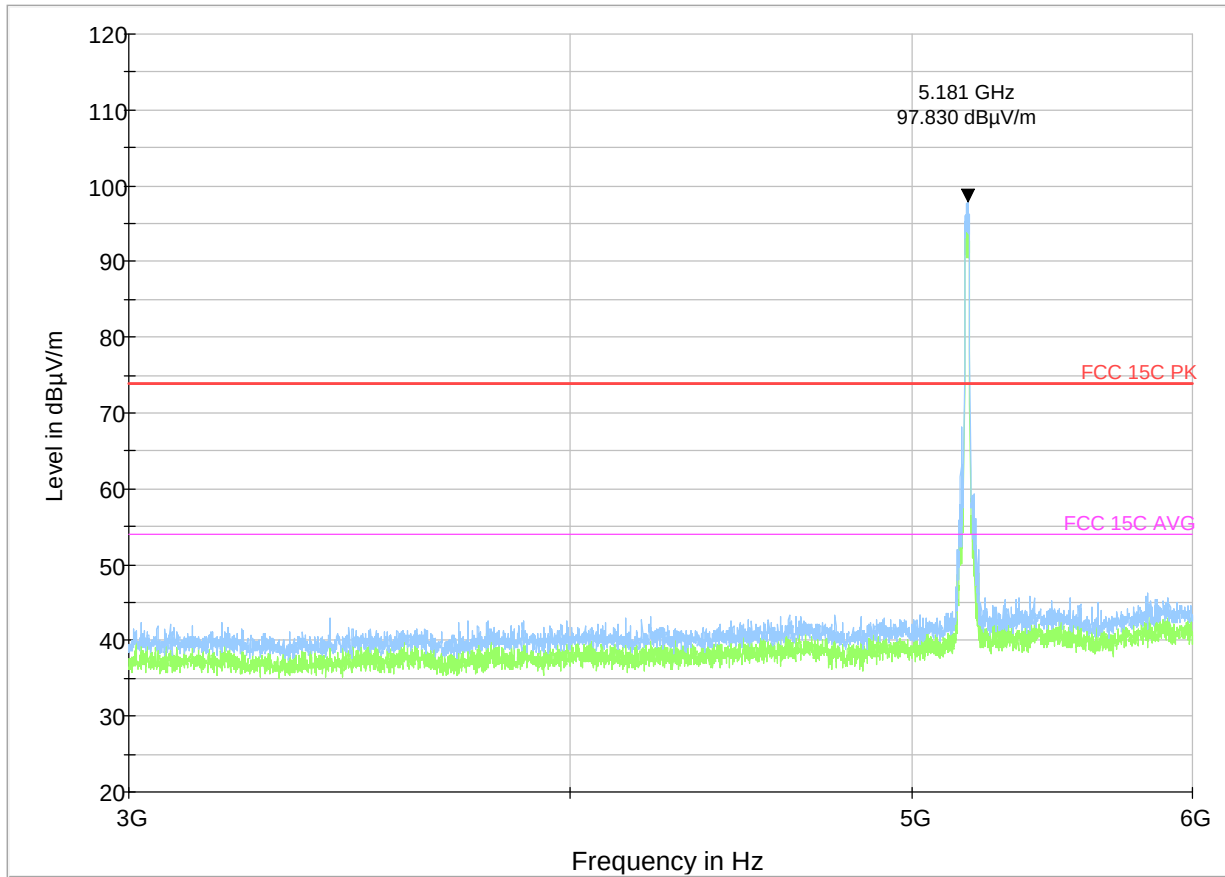


Plot # 4 Radiated Emissions: 3 – 6 GHz

Tx Frequency: 5180 MHz

Op. 2

Mode: VHT20_MCS0

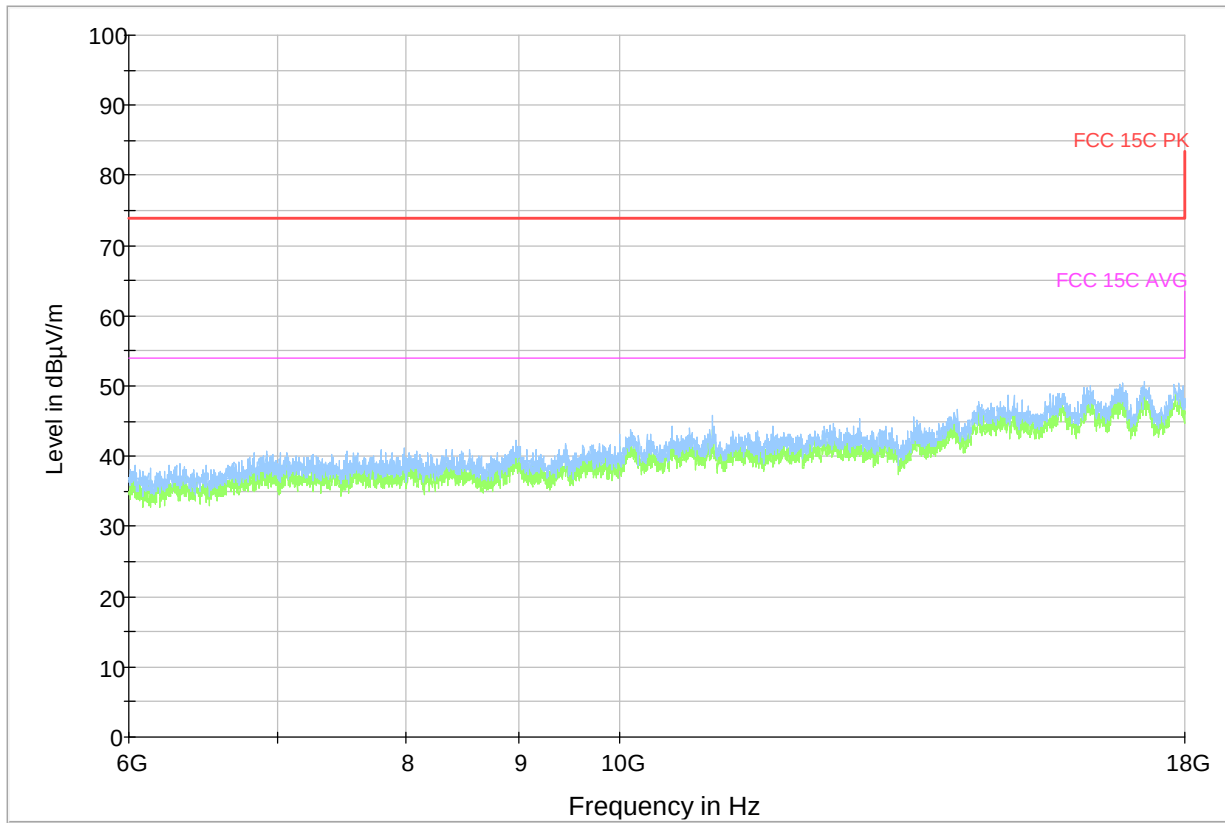


Plot # 5 Radiated Emissions: 6 – 18 GHz

Tx Frequency: 5180 MHz

Op. 2

Mode: VHT20_MCS0



— RMS_MAXH
— FCC 15C PK

— PK+_MAXH
— FCC 15C AVG

* Critical_Freqs RMS
◆ Final_Result PK+

* Critical_Freqs PK+
◆ Final_Result RMS

Plot # 6 Radiated Emissions: 30 MHz – 1 GHz

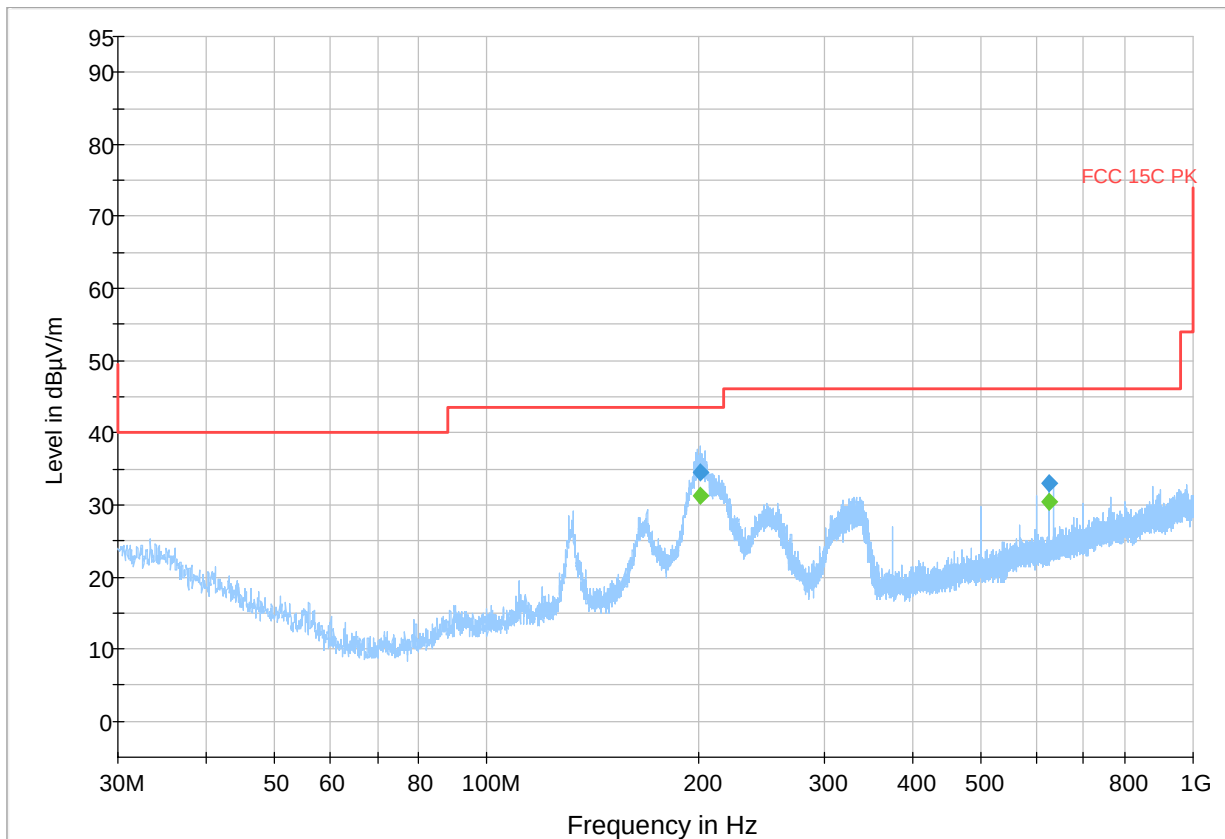
Tx Frequency: 5240 MHz

Op. 2

Mode: VHT20_MCS0

Final_Result

Frequency (MHz)	QuasiPeak (dBμV/m)	RMS (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
200.9221	34.47	---	43.50	9.03	500.0	120.000	100.0	V	182.0	-20.4
200.9221	---	31.29	---	---	500.0	120.000	100.0	V	182.0	-20.4
625.0242	33.03	---	46.00	12.97	500.0	120.000	107.0	V	58.0	-10.1
625.0242	---	30.40	---	---	500.0	120.000	107.0	V	58.0	-10.1



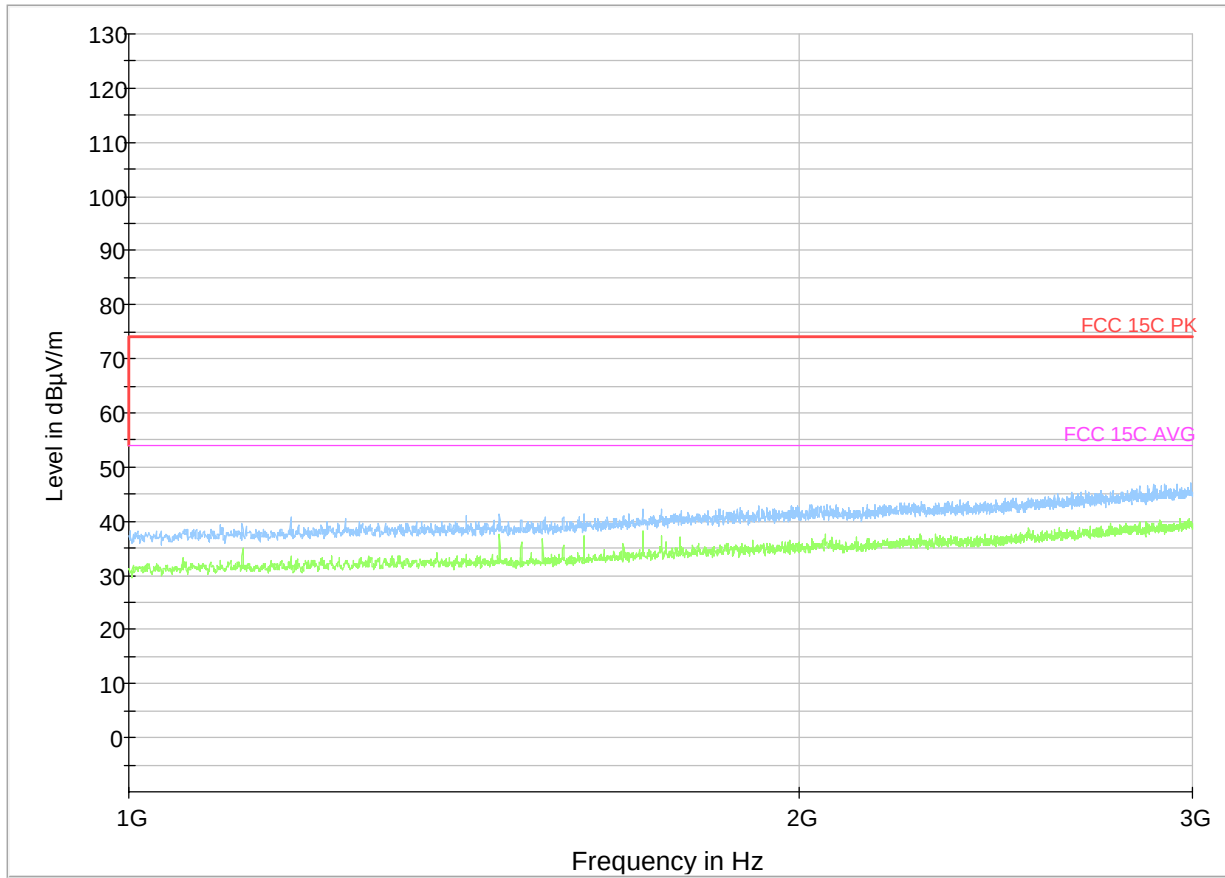
— Preview Result 1-PK+ — FCC 15C PK ◆ Final_Result QPK ◆ Final_Result RMS

Plot # 7 Radiated Emissions: 1 – 3 GHz

Tx Frequency: 5240 MHz

Op. 1

Mode: VHT20_MCS0

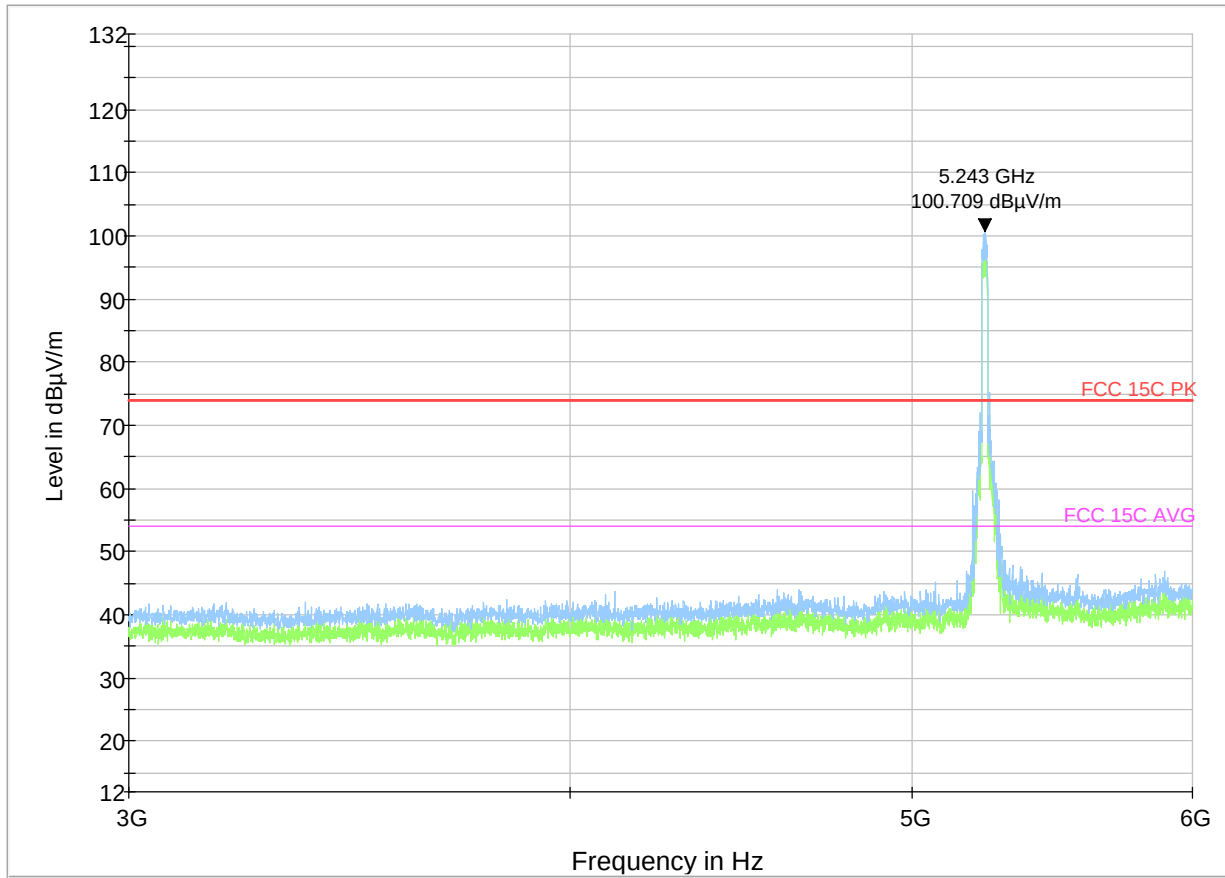


Plot # 8 Radiated Emissions: 3 – 6GHz

Tx Frequency: 5240 MHz

Op. 2

Mode: VHT20_MCS0

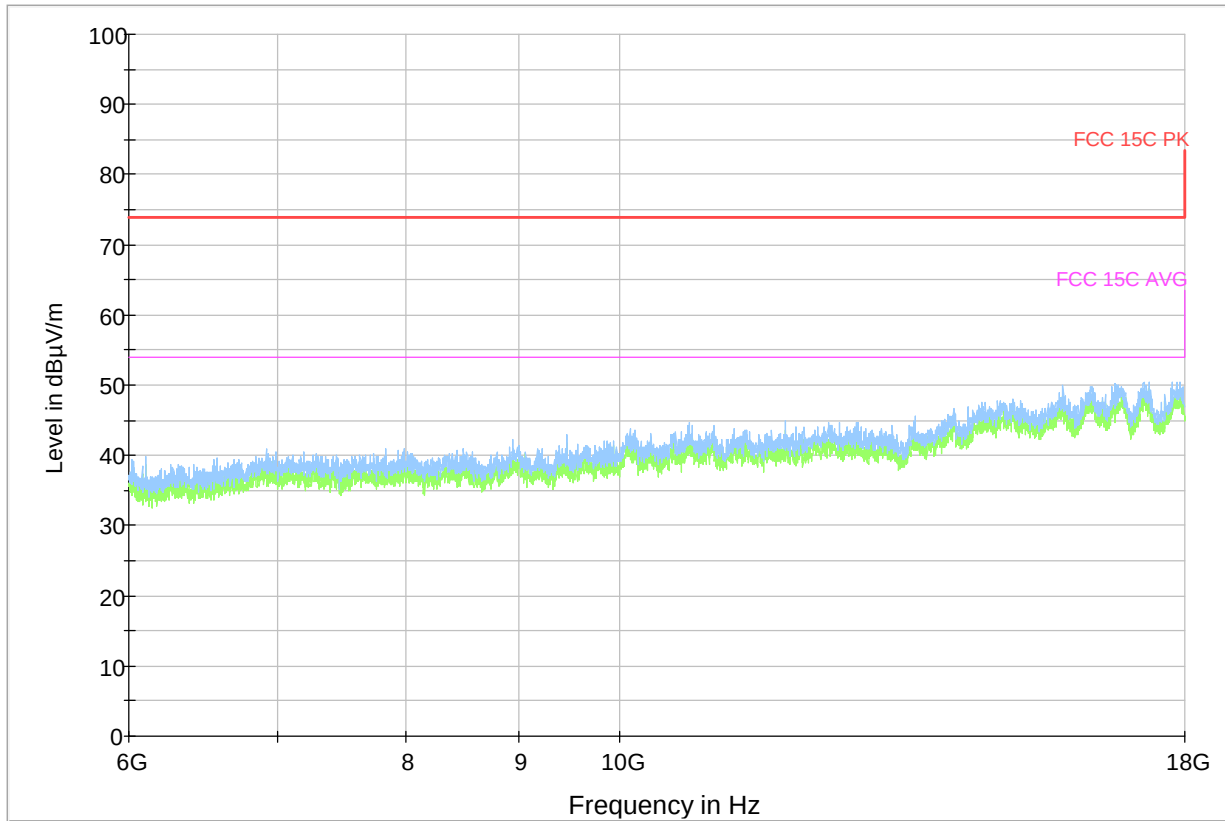


Plot # 9 Radiated Emissions: 6 – 18 GHz

Tx Frequency: 5240 MHz

Op. 2

Mode: VHT20_MCS0



— RMS_MAXH
— FCC 15C PK

— PK+_MAXH
— FCC 15C AVG

* Critical_Freqs RMS
◆ Final_Result PK+

* Critical_Freqs PK+
◆ Final_Result RMS

Plot # 10 Radiated Emissions: 18 – 26 GHz

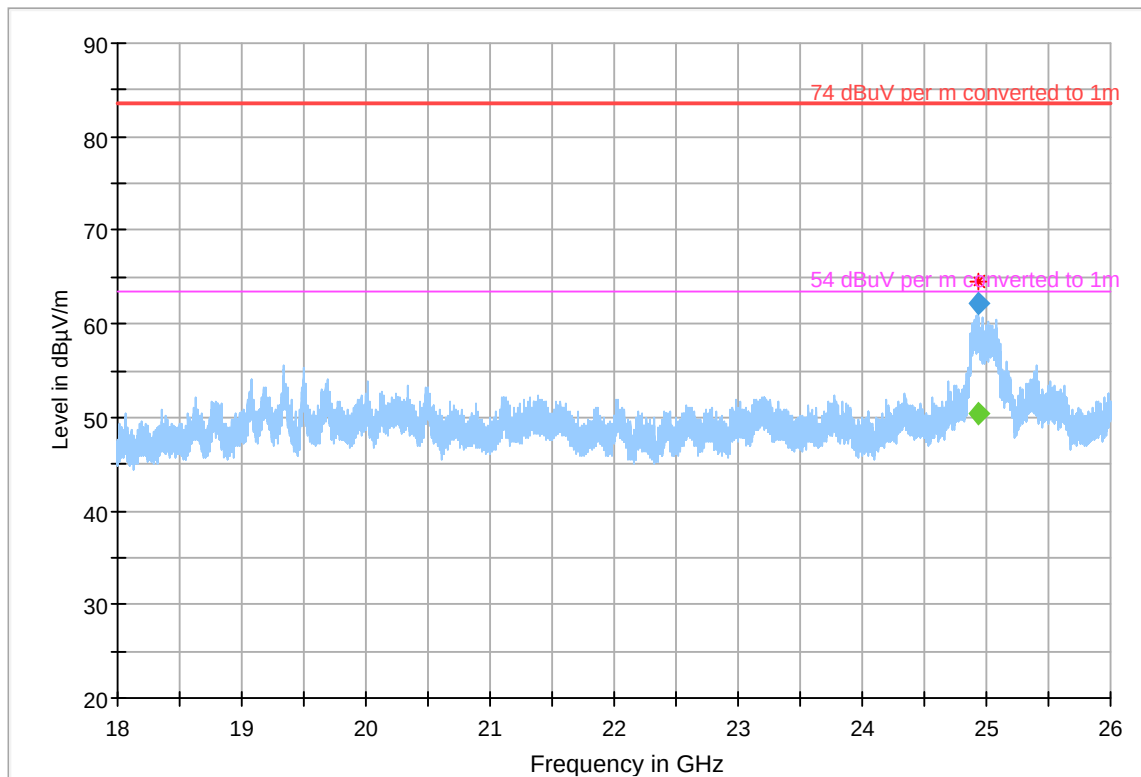
Tx Frequency: 5240 MHz

Op. 2

Mode: VHT20_MCS0

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Corr. (dB/m)	Comment
24937.212	---	50.48	63.50	13.02	100.0	1000.000	150.0	H	30.0	12:24:37 PM - 4/21/2020
24937.212	62.20	---	83.50	21.30	100.0	1000.000	150.0	H	30.0	12:24:37 PM - 4/21/2020



— Preview Result 1-PK+
— 74 dBμV per m converted to 1m
◆ Final_Result PK+

* Critical_Freqs PK+
— 54 dBμV per m converted to 1m
◆ Final_Result AVG

Plot # 11 Radiated Emissions: 26 – 40 GHz

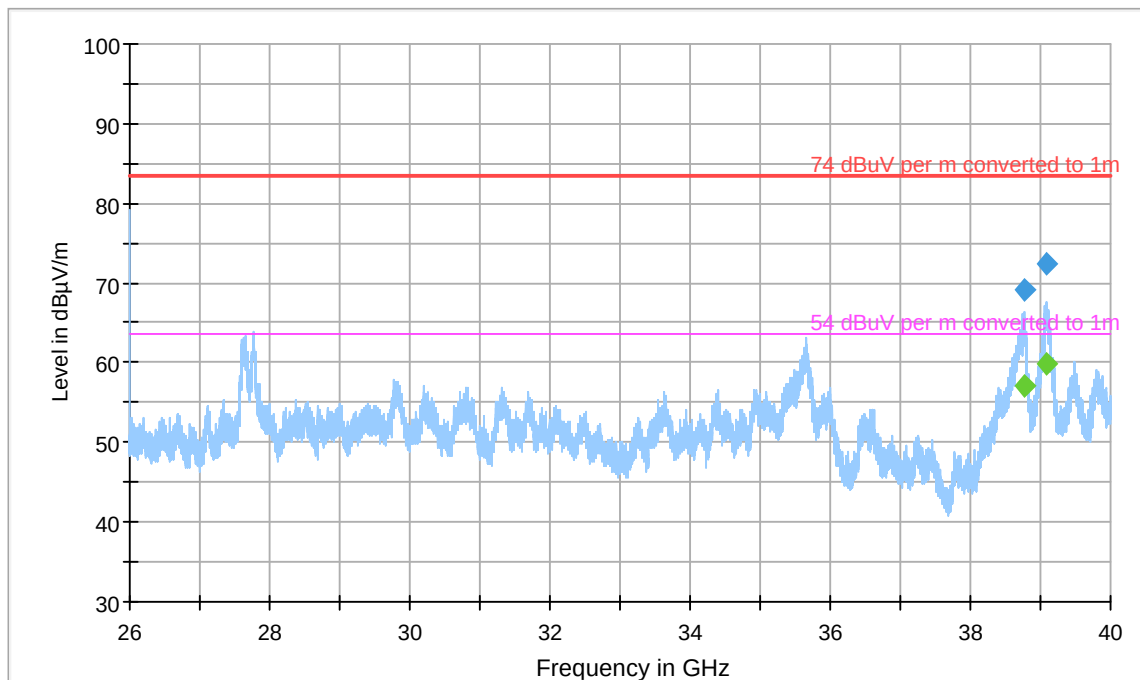
Tx Frequency: 5240 MHz

Op. 2

Mode: VHT20_MCS0

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Corr. (dB/m)
38759.439	69.21	---	83.50	14.29	100.0	1000.000	150.0	V	14.8
38759.439	---	57.04	63.50	6.46	100.0	1000.000	150.0	V	14.8
39084.181	72.43	---	83.50	11.07	100.0	1000.000	150.0	V	17.7
39084.181	---	59.79	63.50	3.71	100.0	1000.000	150.0	V	17.7



— Preview Result 1-PK+ — 74 dBuV per m converted to 1m
— 54 dBuV per m converted to 1m ◆ Final_Result PK+
◆ Final_Result AVG

Plot # 12 Radiated Emissions: 30 MHz – 1 GHz

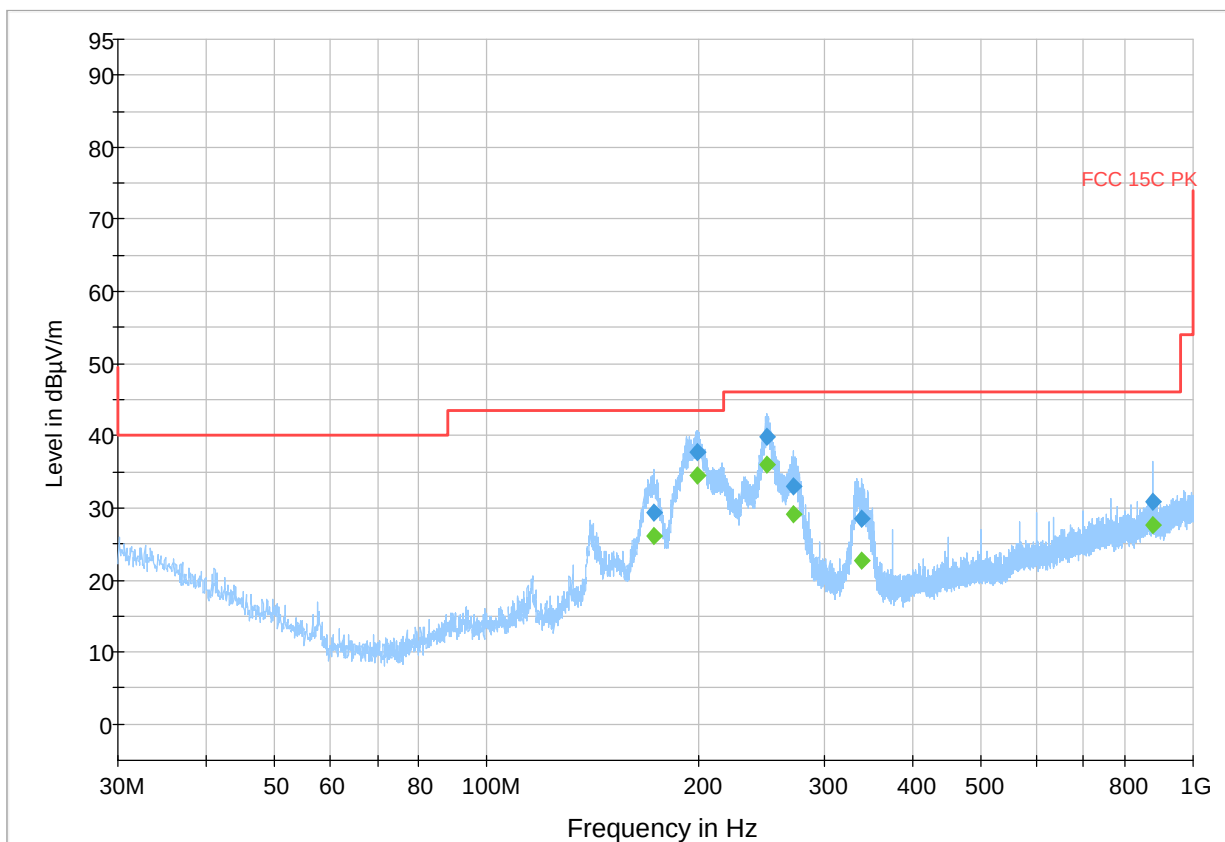
Tx Frequency: 5260 MHz

Op. 2

Mode: VHT20_MCS0

Final_Result

Frequency (MHz)	QuasiPeak (dBμV/m)	RMS (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
172.571633	29.23	---	43.50	14.27	500.0	120.000	100.0	V	133.0	-20.3
172.571633	---	26.04	---	---	500.0	120.000	100.0	V	133.0	-20.3
198.235242	37.64	---	43.50	5.86	500.0	120.000	194.0	H	229.0	-19.8
198.235242	---	34.43	---	---	500.0	120.000	194.0	H	229.0	-19.8
249.486911	---	36.06	---	---	500.0	120.000	124.0	H	175.0	-18.1
249.486911	39.95	---	46.00	6.05	500.0	120.000	124.0	H	175.0	-18.1
272.090756	---	29.16	---	---	500.0	120.000	107.0	H	291.0	-17.7
272.090756	33.05	---	46.00	12.95	500.0	120.000	107.0	H	291.0	-17.7
339.421300	28.41	---	46.00	17.59	500.0	120.000	100.0	H	244.0	-16.2
339.421300	---	22.65	---	---	500.0	120.000	100.0	H	244.0	-16.2
875.042298	30.92	---	46.00	15.08	500.0	120.000	100.0	H	312.0	-5.5
875.042298	---	27.71	---	---	500.0	120.000	100.0	H	312.0	-5.5



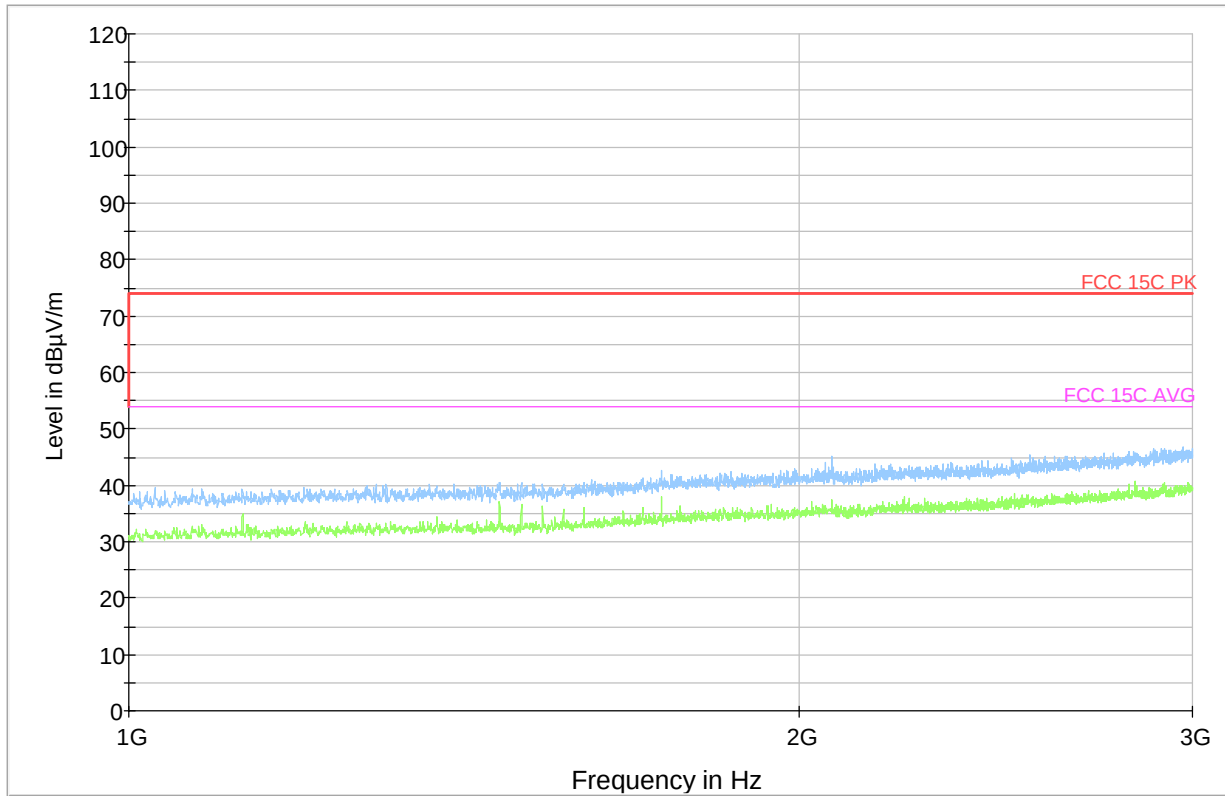
Preview Result 1-PK+ FCC 15C PK Final_Result QPK Final_Result RMS

Plot # 13 Radiated Emissions: 1 – 3 GHz

Tx Frequency: 5260 MHz

Op. 1

Mode: VHT20_MCS0



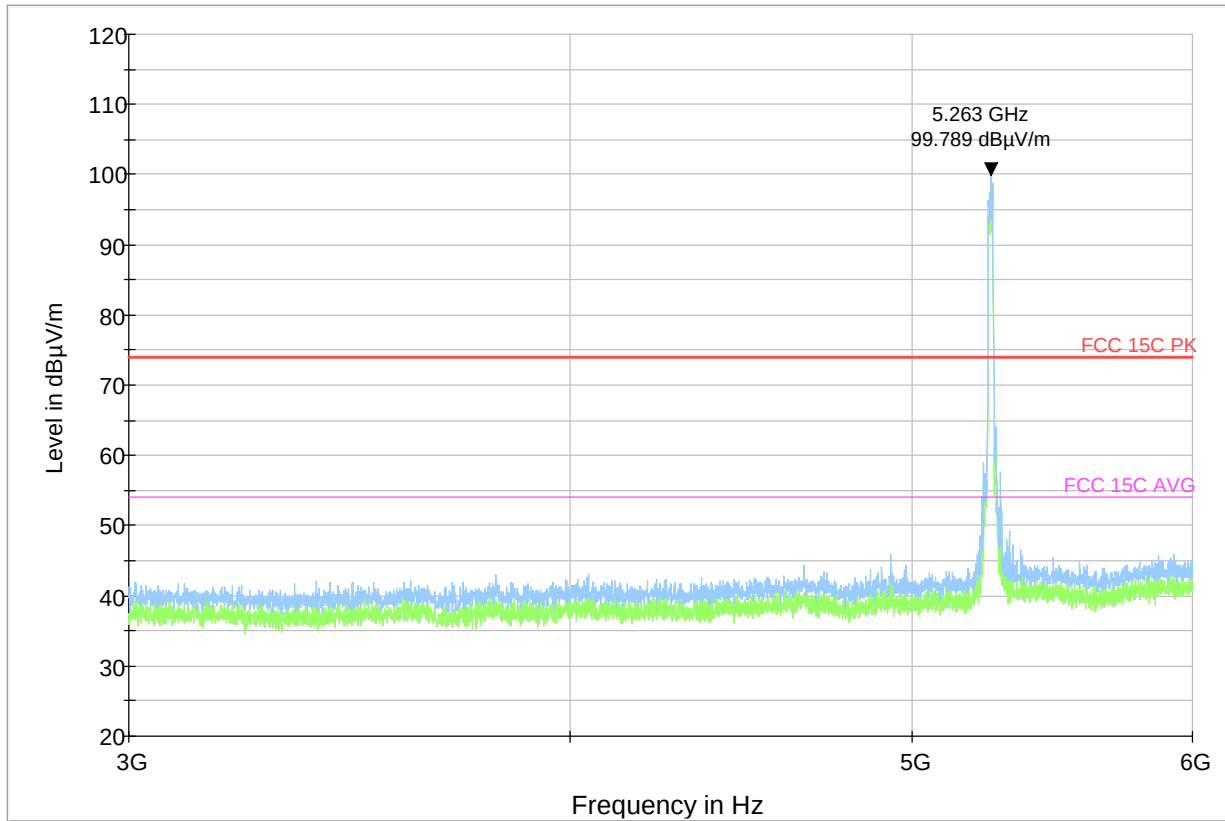
Preview Result 2-RMS	Preview Result 1-PK+	* Critical_Freqs RMS
* Critical_Freqs PK+	FCC 15C PK	FCC 15C AVG
Final_Result PK+	Final_Result RMS	

Plot # 14 Radiated Emissions: 3 – 6GHz

Tx Frequency: 5260 MHz

Op. 2

Mode: VHT20_MCS0



— RMS_MAXH
— FCC 15C PK

— PK+_MAXH
— FCC 15C AVG

* Critical_Freqs RMS
◆ Final_Result PK+

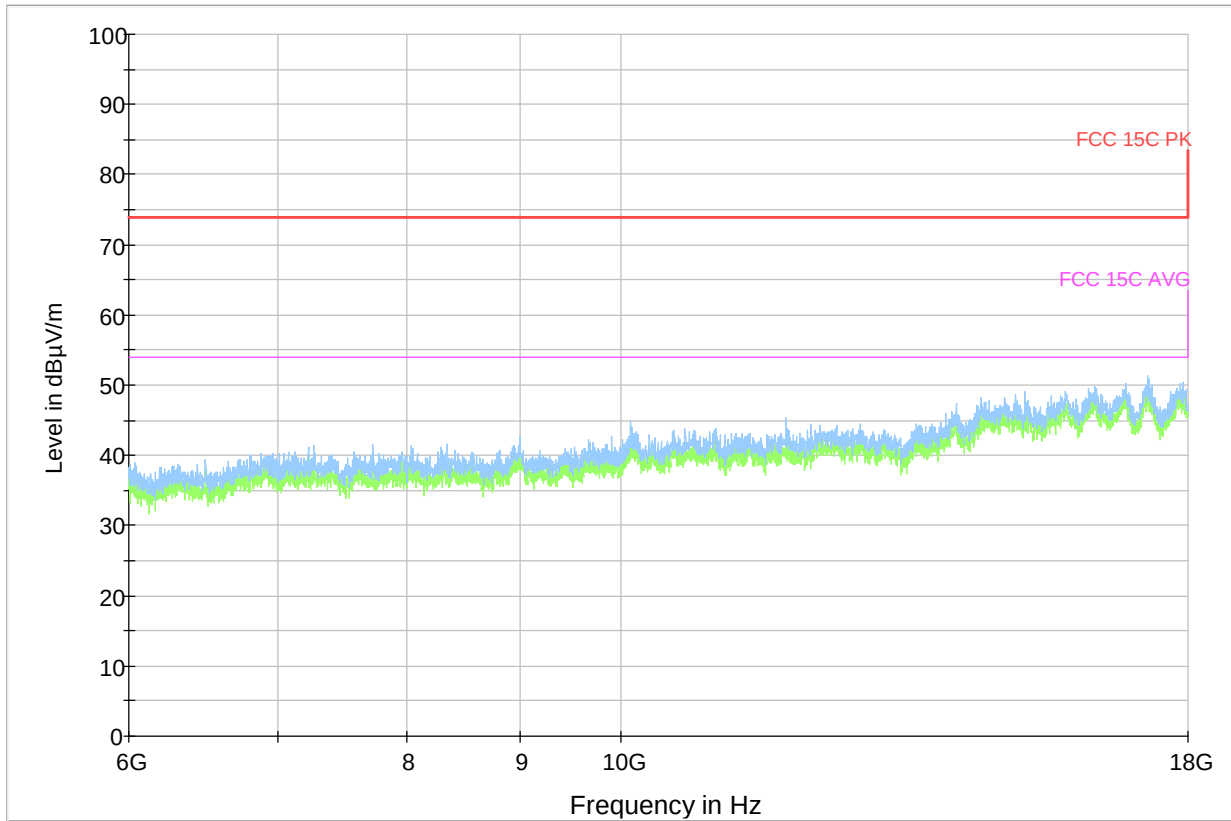
* Critical_Freqs PK+
◆ Final_Result RMS

Plot # 15 Radiated Emissions: 6 – 18 GHz

Tx Frequency: 5260 MHz

Op. 2

Mode: VHT20_MCS0



— RMS_MAXH
— FCC 15C PK

— PK+_MAXH
— FCC 15C AVG

* Critical_Freqs RMS
◆ Final_Result PK+

* Critical_Freqs PK+
◆ Final_Result RMS

Plot # 16 Radiated Emissions: 18 – 26 GHz

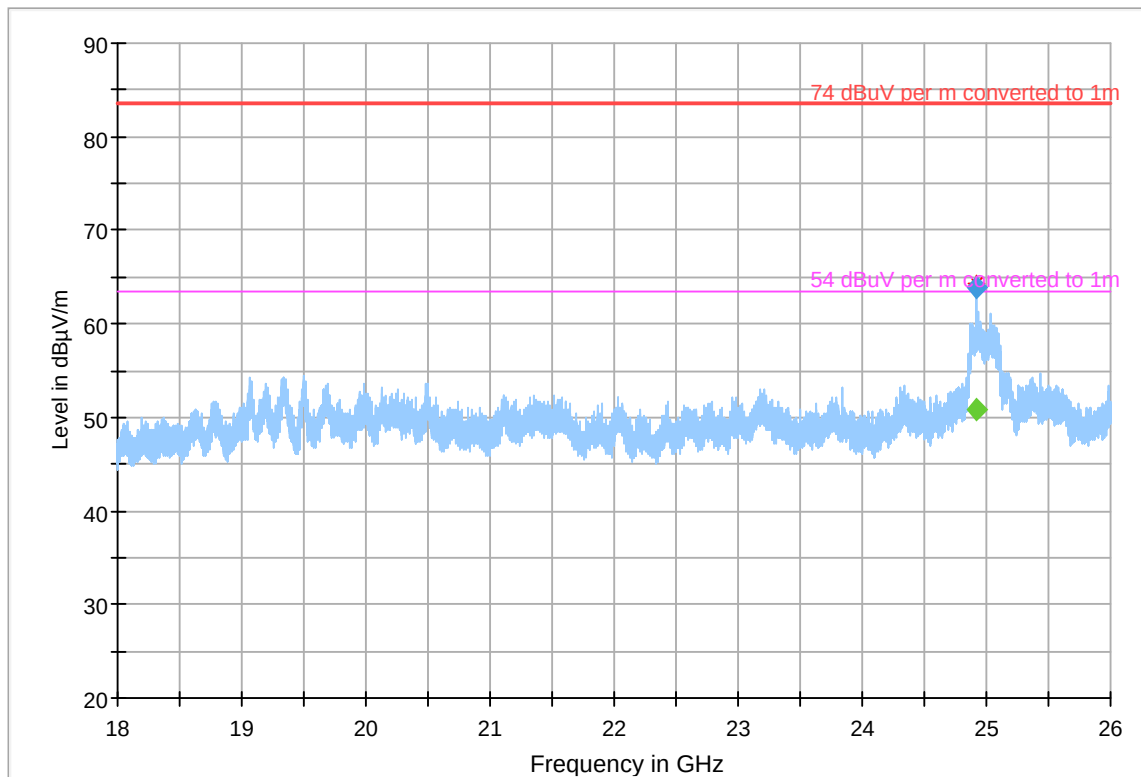
Tx Frequency: 5260 MHz

Op. 2

Mode: VHT20_MCS0

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Corr. (dB/m)	Comment
24920.011	---	50.82	63.50	12.68	100.0	1000.000	150.0	H	30.2	12:39:14 PM - 4/21/2020
24920.011	63.78	---	83.50	19.72	100.0	1000.000	150.0	H	30.2	12:39:14 PM - 4/21/2020



— Preview Result 1-PK+
— 74 dBμV per m converted to 1m
◆ Final_Result PK+

* Critical_Freqs PK+
— 54 dBμV per m converted to 1m
◆ Final_Result AVG

Plot # 17 Radiated Emissions: 26 – 40 GHz

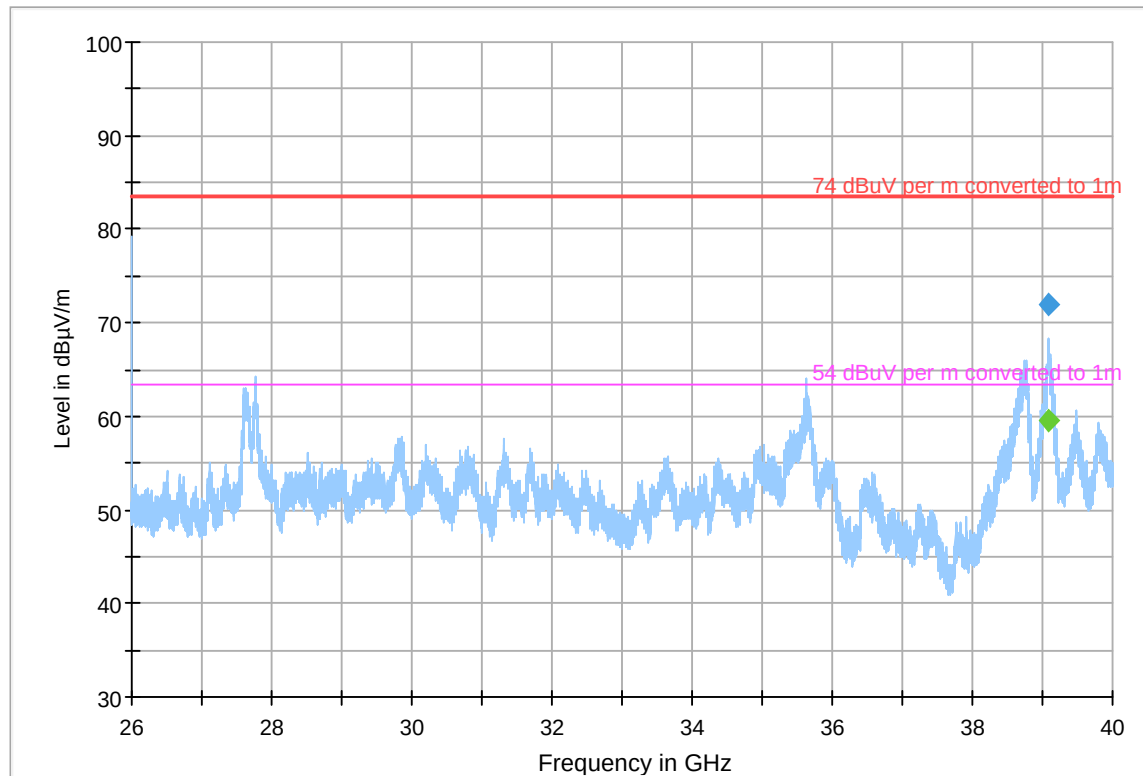
Tx Frequency: 5260 MHz

Op. 2

Mode: VHT20_MCS0

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Corr. (dB/m)
39088.444	---	59.52	63.50	3.98	100.0	1000.000	150.0	H	17.3
39088.444	71.92	---	83.50	11.58	100.0	1000.000	150.0	H	17.3



Preview Result 1-PK+
54 dBμV per m converted to 1m
Final_Result AVG

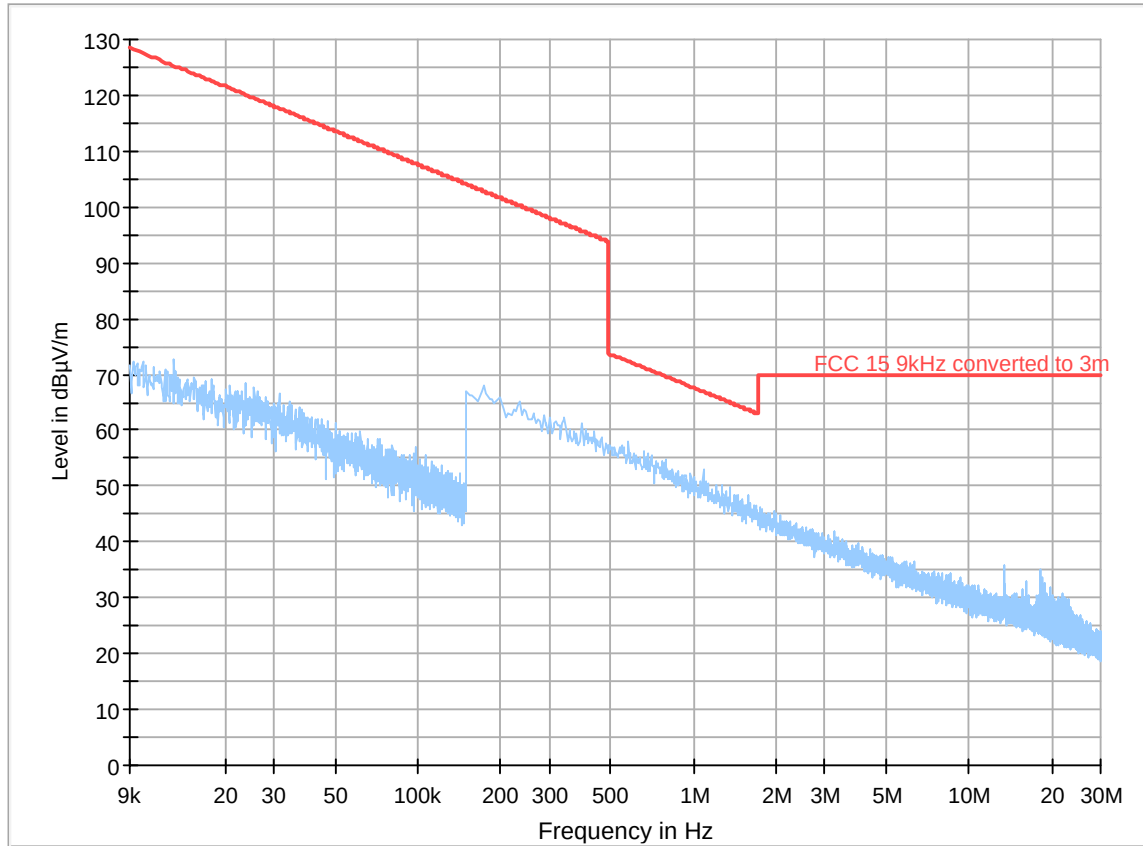
74 dBμV per m converted to 1m
Final_Result PK+

Plot # 18 Radiated Emissions: 9 KHz – 30 MHz

Tx Frequency: 5320 MHz

Op. 2

Mode: VHT20_MCS0



Preview Result 2-RMS
FCC 15 9kHz converted to 3m
Preview Result 1-PK+
Final_Result QPK

Plot # 19 Radiated Emissions: 30 MHz – 1 GHz

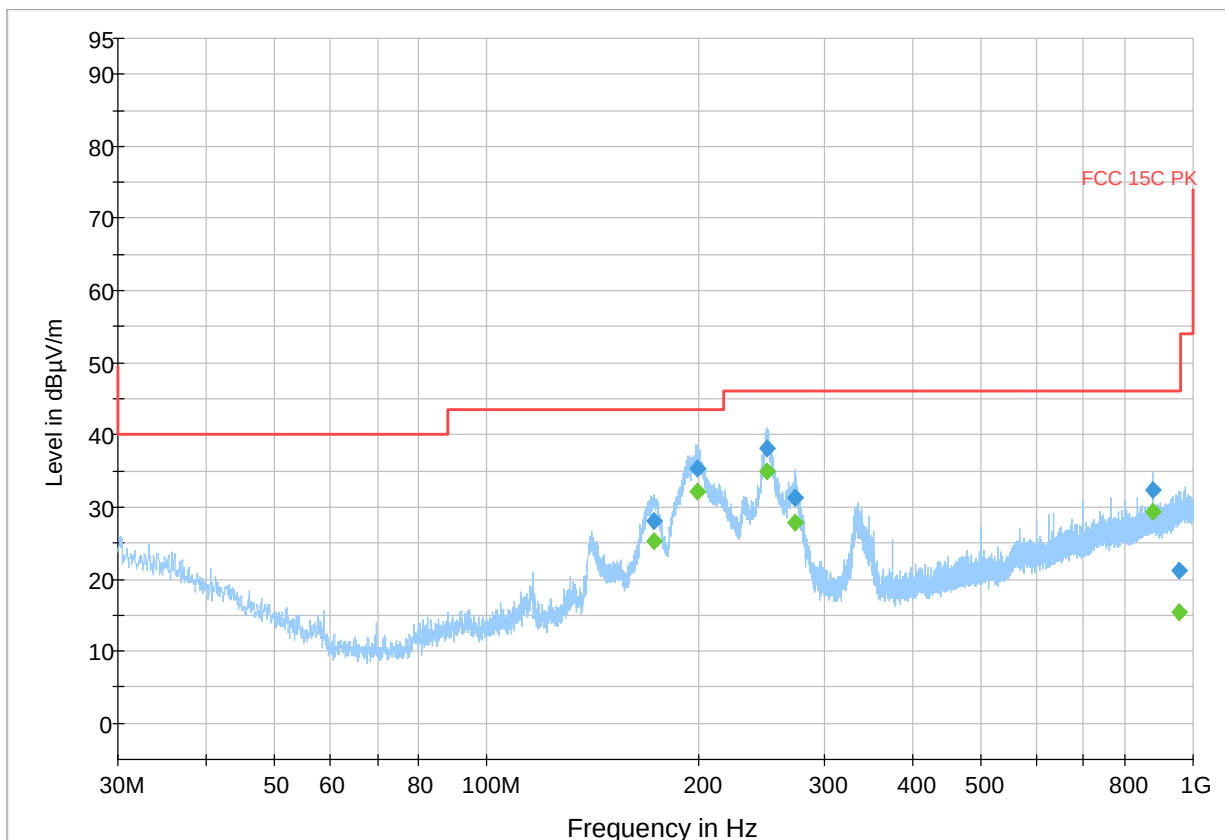
Tx Frequency: 5320 MHz

Op. 2

Mode: VHT20_MCS0

Final_Result

Frequency (MHz)	QuasiPeak (dBμV/m)	RMS (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
172.166159	---	25.24	---	---	500.0	120.000	100.0	V	152.0	-20.3
172.166159	28.15	---	43.50	15.35	500.0	120.000	100.0	V	152.0	-20.3
198.432623	35.37	---	43.50	8.13	500.0	120.000	181.0	V	170.0	-20.6
198.432623	---	32.19	---	---	500.0	120.000	181.0	V	170.0	-20.6
249.658064	38.15	---	46.00	7.85	500.0	120.000	140.0	H	182.0	-18.0
249.658064	---	35.02	---	---	500.0	120.000	140.0	H	182.0	-18.0
272.527980	31.31	---	46.00	14.69	500.0	120.000	129.0	H	289.0	-17.8
272.527980	---	27.76	---	---	500.0	120.000	129.0	H	289.0	-17.8
875.040844	32.35	---	46.00	13.65	500.0	120.000	100.0	V	90.0	-5.8
875.040844	---	29.28	---	---	500.0	120.000	100.0	V	90.0	-5.8
957.780659	---	15.48	---	---	500.0	120.000	119.0	H	336.0	-4.7
957.780659	21.09	---	46.00	24.91	500.0	120.000	119.0	H	336.0	-4.7



Preview Result 1-PK+ FCC 15C PK Final_Result QPK Final_Result RMS

Plot # 20 Radiated Emissions: 1 – 3 GHz

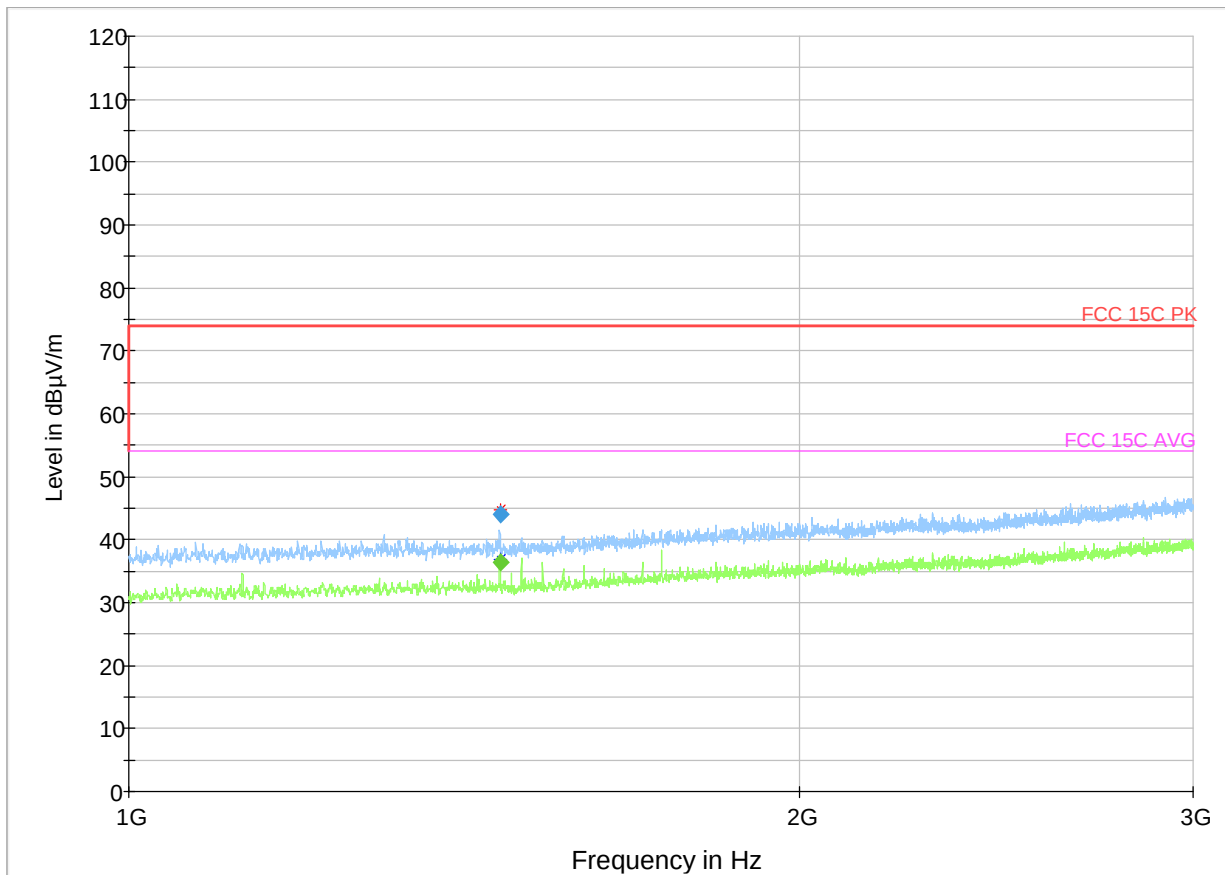
Tx Frequency: 5320 MHz

Op. 1

Mode: VHT20_MCS0

Final Result

Frequency (MHz)	MaxPeak (dB μ V/m)	RMS (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Corr. (dB/)	Comment
1466.715000	---	36.28	53.98	17.70	100.0	1000.000	168.0	H	2.1	2:00:57 PM -
1466.740000	44.07	---	74.00	29.92	100.0	1000.000	173.0	H	2.1	1:57:49 PM -

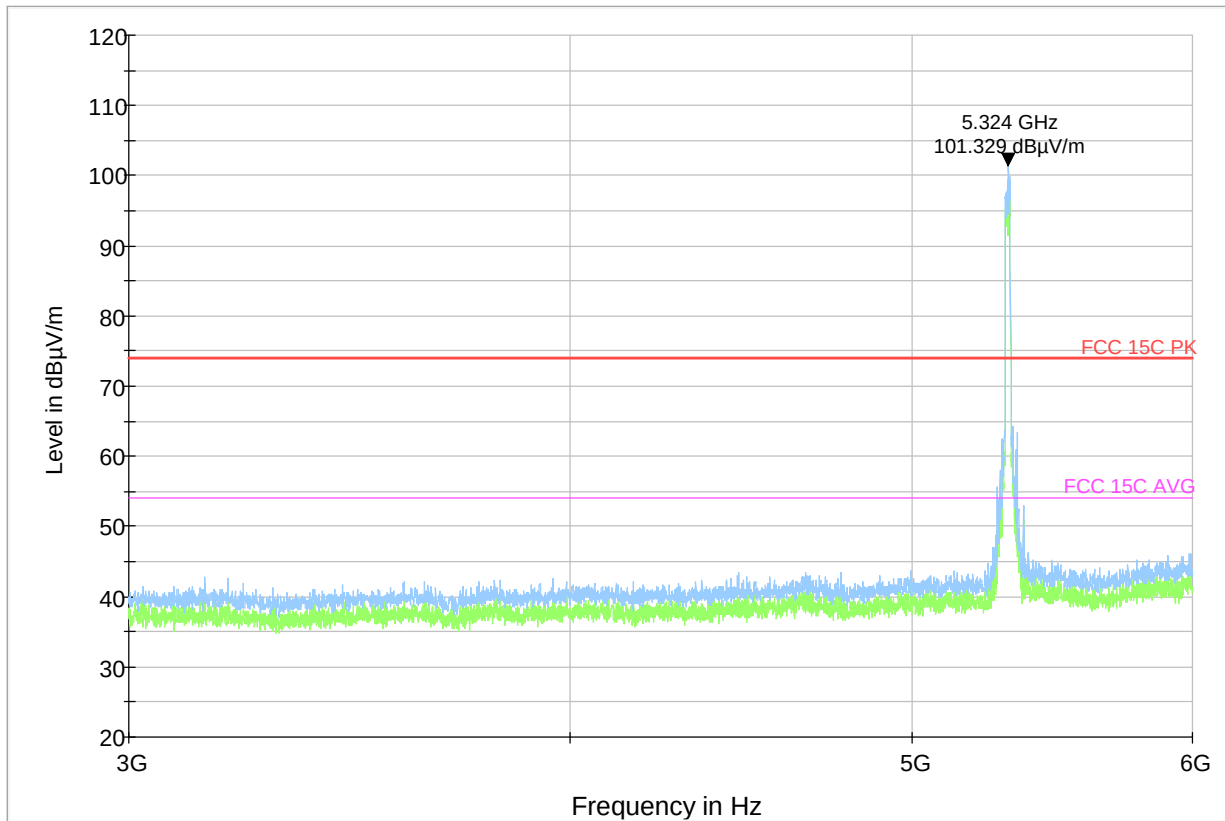


Plot # 21 Radiated Emissions: 3 – 6 GHz

Tx Frequency: 5320 MHz

Op. 2

Mode: VHT20_MCS0



— RMS_MAXH
— FCC 15C PK

— PK+_MAXH
— FCC 15C AVG

* Critical_Freqs RMS
◆ Final_Result PK+

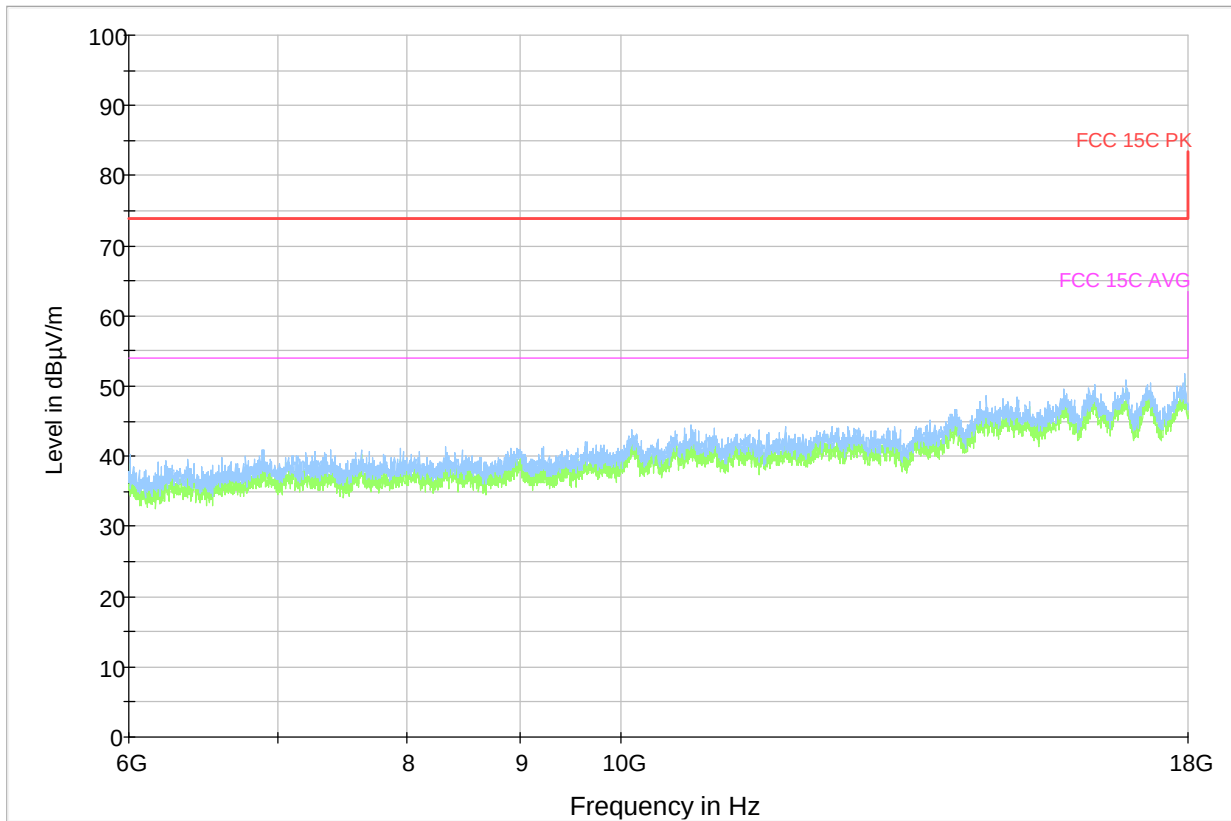
* Critical_Freqs PK+
◆ Final_Result RMS

Plot # 22 Radiated Emissions: 6 – 18 GHz

Tx Frequency: 5320 MHz

Op. 2

Mode: VHT20_MCS0



— RMS_MAXH
— FCC 15C PK

— PK+_MAXH
— FCC 15C AVG

* Critical_Freqs RMS
◆ Final_Result PK+

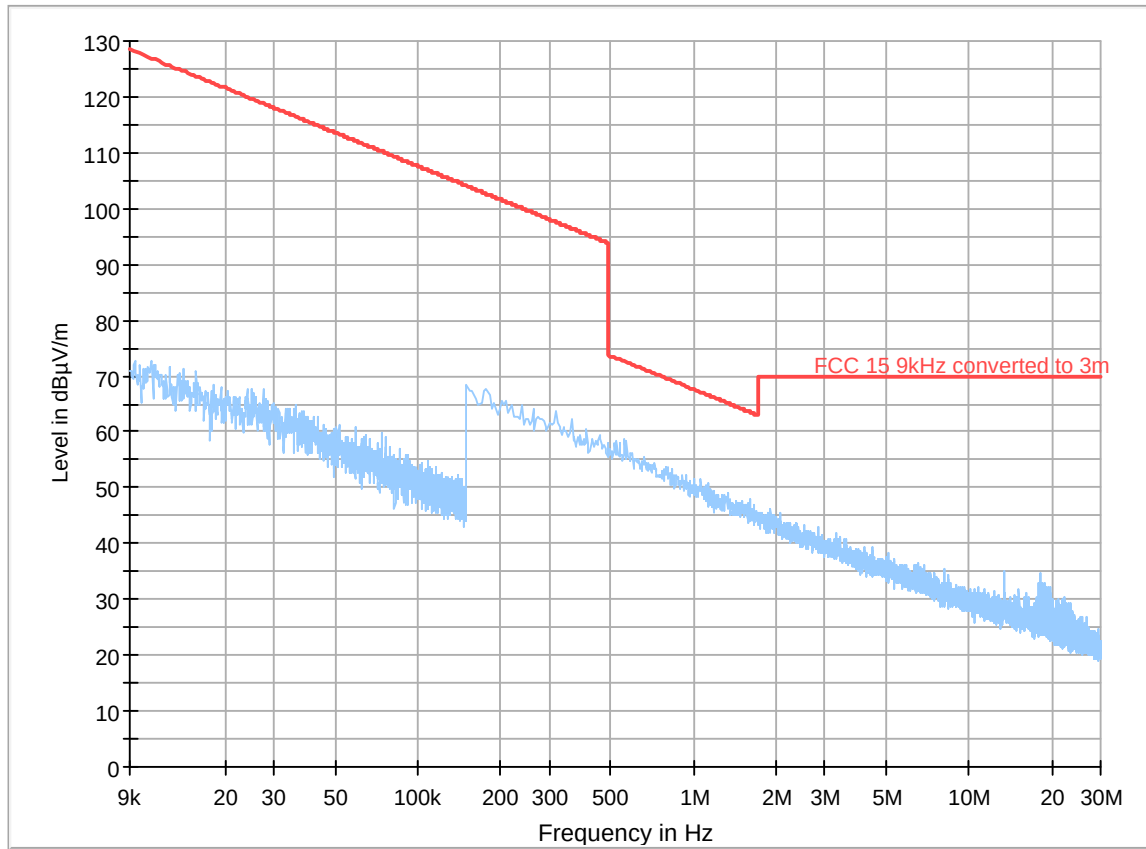
* Critical_Freqs PK+
◆ Final_Result RMS

Plot # 23 Radiated Emissions: 9 KHz – 30 MHz

Tx Frequency: 5580 MHz

Op. 2

Mode: VHT20_MCS0



Plot # 24 Radiated Emissions: 30 MHz – 1 GHz

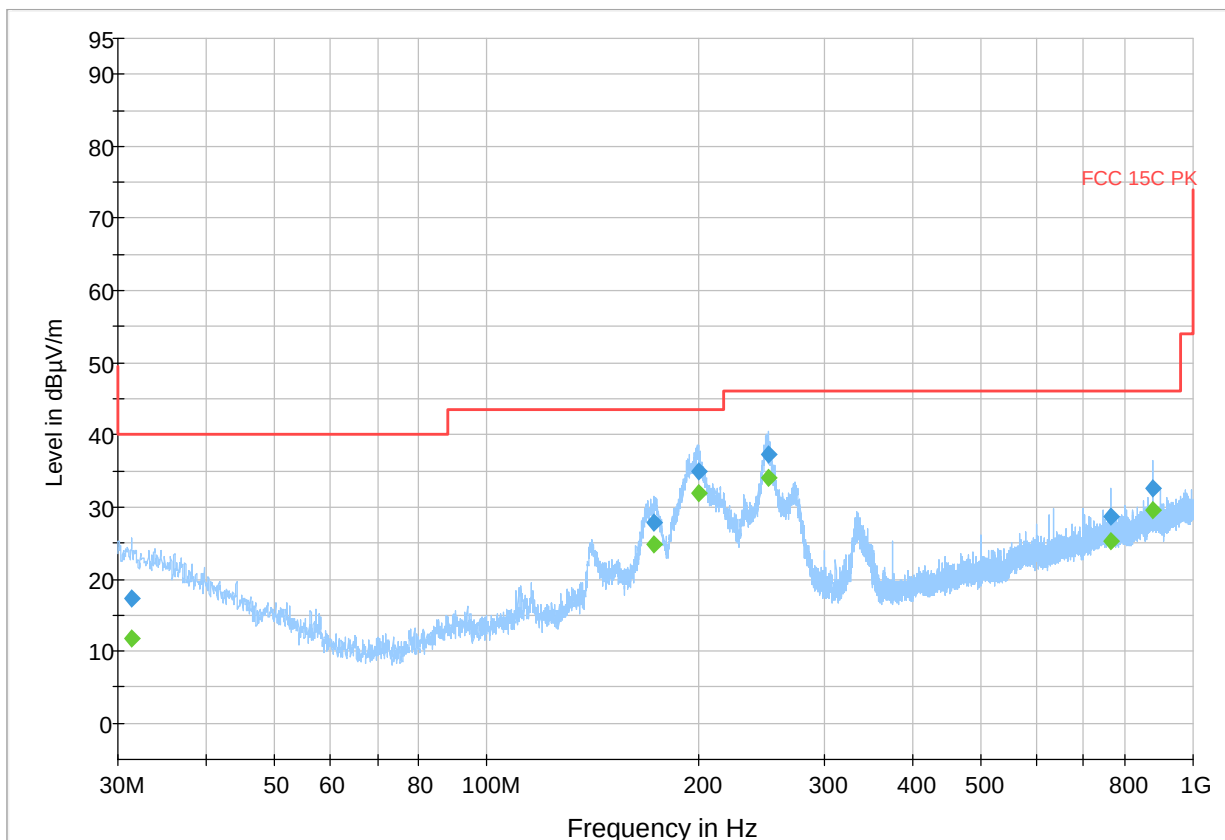
Tx Frequency: 5580 MHz

Op. 2

Mode: VHT20_MCS0

Final_Result

Frequency (MHz)	QuasiPeak (dBμV/m)	RMS (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
31.422016	17.30	---	40.00	22.70	500.0	120.000	250.0	H	148.0	-9.1
31.422016	---	11.72	---	---	500.0	120.000	250.0	H	148.0	-9.1
172.488847	27.91	---	43.50	15.59	500.0	120.000	100.0	V	141.0	-20.3
172.488847	---	24.79	---	---	500.0	120.000	100.0	V	141.0	-20.3
199.273817	---	31.93	---	---	500.0	120.000	124.0	V	176.0	-20.6
199.273817	34.88	---	43.50	8.62	500.0	120.000	124.0	V	176.0	-20.6
250.659633	---	34.12	---	---	500.0	120.000	124.0	H	181.0	-18.0
250.659633	37.36	---	46.00	8.64	500.0	120.000	124.0	H	181.0	-18.0
766.697213	28.69	---	46.00	17.31	500.0	120.000	100.0	H	212.0	-7.2
766.697213	---	25.27	---	---	500.0	120.000	100.0	H	212.0	-7.2
875.041984	32.58	---	46.00	13.42	500.0	120.000	100.0	V	93.0	-5.8
875.041984	---	29.54	---	---	500.0	120.000	100.0	V	93.0	-5.8



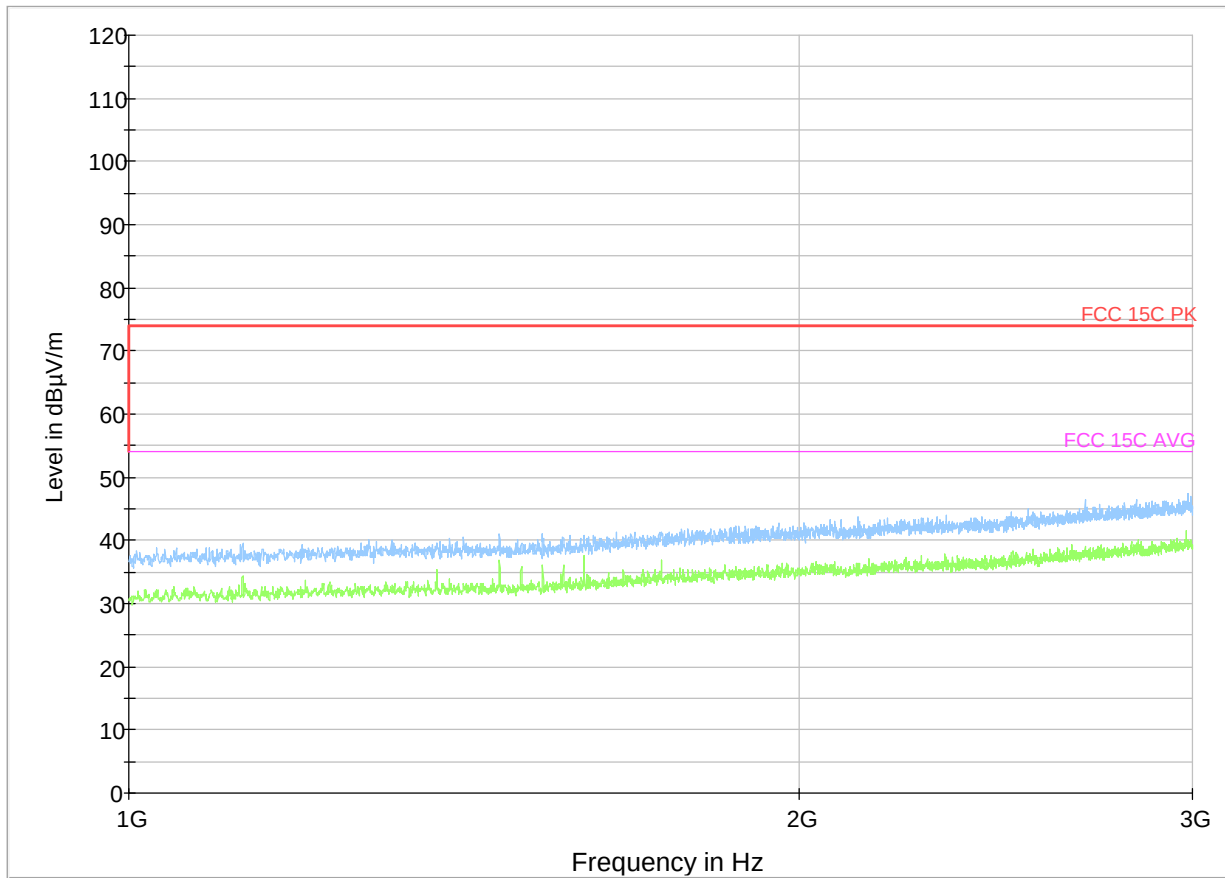
Preview Result 1-PK+ FCC 15C PK Final_Result QPK Final_Result RMS

Plot # 25 Radiated Emissions: 1 – 3 GHz

Tx Frequency: 5580 MHz

Op. 1

Mode: VHT20_MCS0



Plot # 26 Radiated Emissions: 3 – 6 GHz

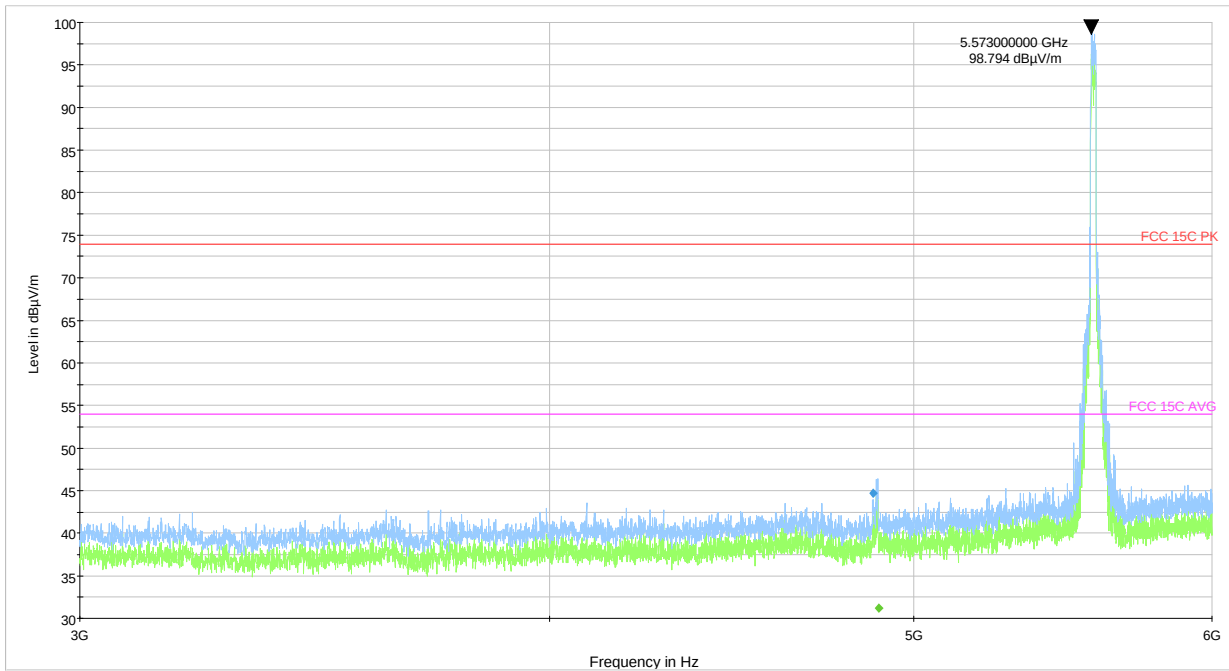
Tx Frequency: 5580 MHz

Op. 2

Mode: VHT20_MCS0

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	RMS (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Corr. (dB/)	Com ment
4876.570000	44.74	---	73.99	29.25	100.0	1000.000	195.0	H	-5.7	3:21:
4893.620000	---	31.20	53.98	22.78	100.0	1000.000	208.0	H	-5.6	3:24:

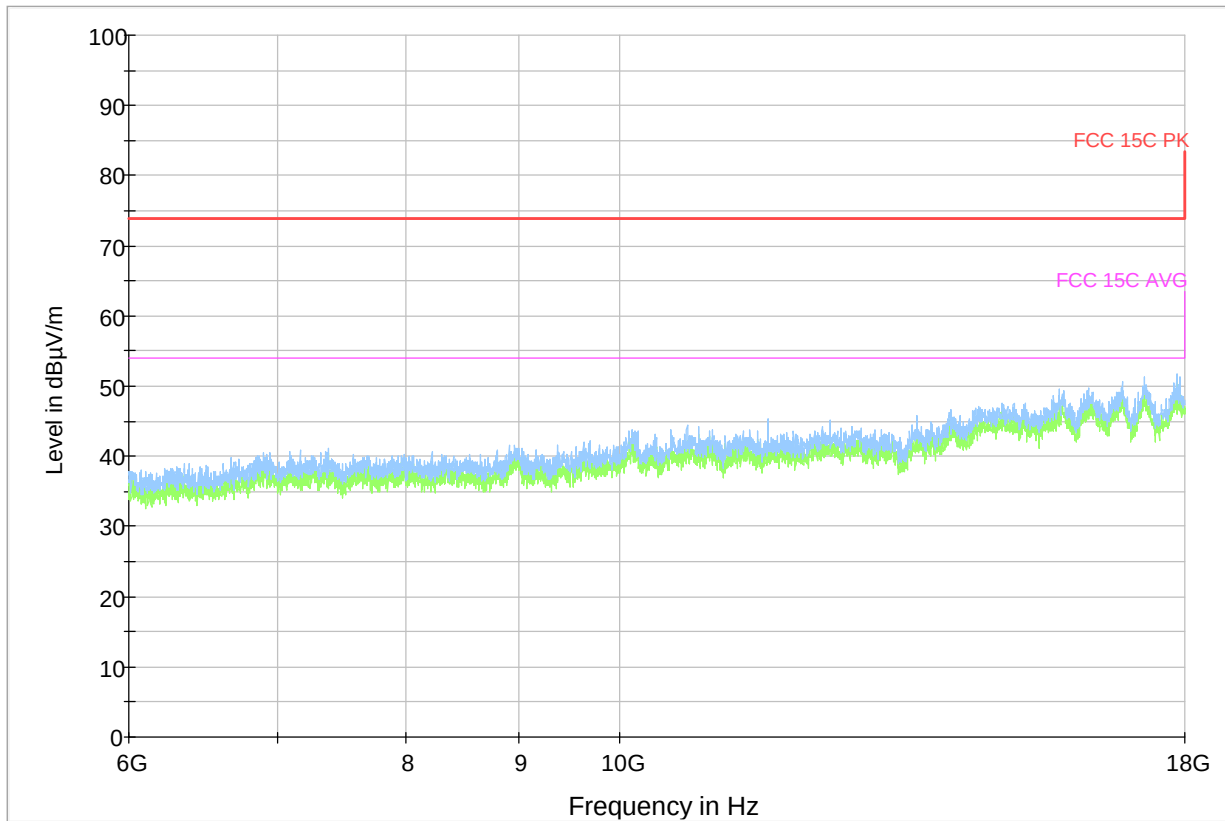


Plot # 27 Radiated Emissions: 6 – 18 GHz

Tx Frequency: 5580 MHz

Op. 2

Mode: VHT20_MCS0



— RMS_MAXH
— FCC 15C PK

— PK+_MAXH
— FCC 15C AVG

* Critical_Freqs RMS
◆ Final_Result PK+

* Critical_Freqs PK+
◆ Final_Result RMS

Plot # 28 Radiated Emissions: 30 MHz – 1 GHz

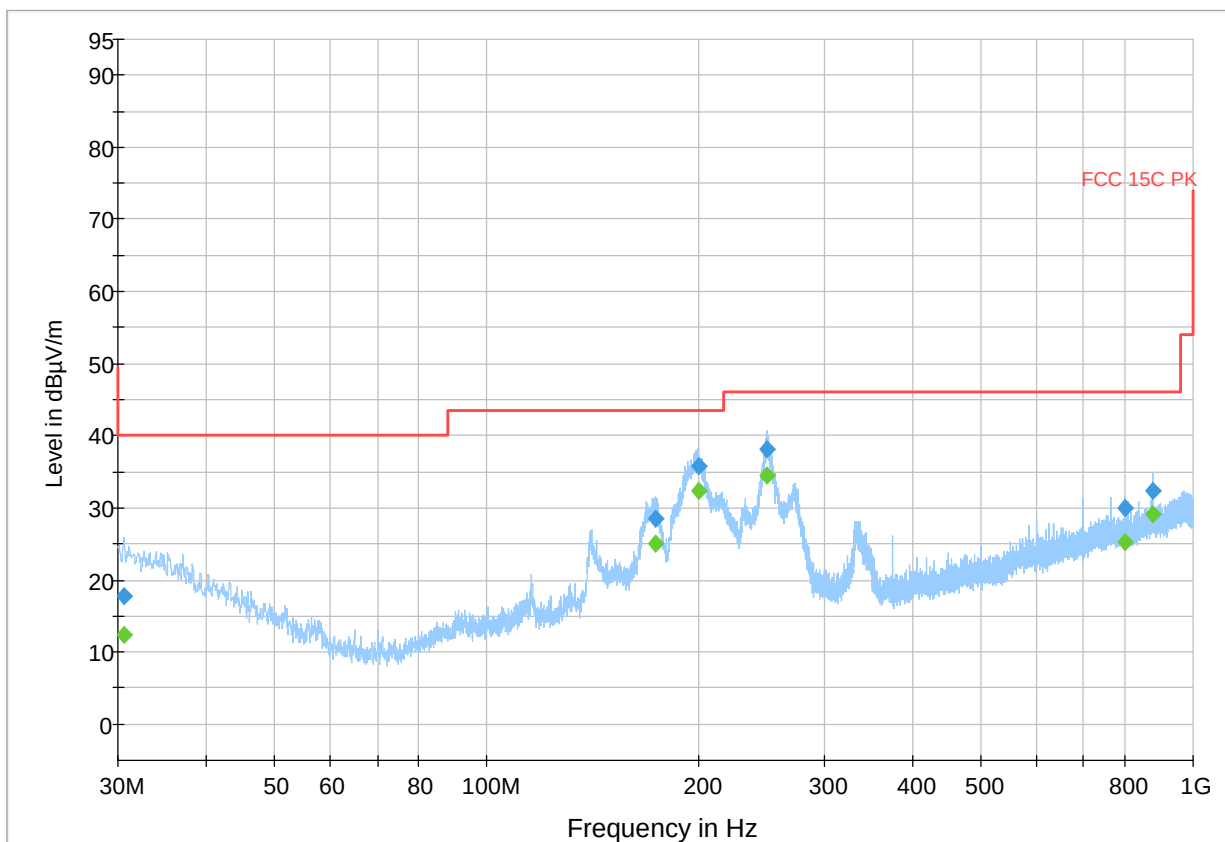
Tx Frequency: 5700 MHz

Op. 2

Mode: VHT20_MCS0

Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	RMS (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.622242	17.76	---	40.00	22.24	500.0	120.000	288.0	H	137.0	-8.7
30.622242	---	12.28	---	---	500.0	120.000	288.0	H	137.0	-8.7
173.062761	---	25.09	---	---	500.0	120.000	107.0	V	133.0	-20.4
173.062761	28.48	---	43.50	15.02	500.0	120.000	107.0	V	133.0	-20.4
199.070873	35.73	---	43.50	7.77	500.0	120.000	124.0	V	164.0	-20.6
199.070873	---	32.26	---	---	500.0	120.000	124.0	V	164.0	-20.6
249.689025	---	34.50	---	---	500.0	120.000	119.0	H	185.0	-18.0
249.689025	38.19	---	46.00	7.81	500.0	120.000	119.0	H	185.0	-18.0
800.016156	29.97	---	46.00	16.03	500.0	120.000	100.0	V	82.0	-7.0
800.016156	---	25.33	---	---	500.0	120.000	100.0	V	82.0	-7.0
875.039013	32.29	---	46.00	13.71	500.0	120.000	100.0	V	96.0	-5.8
875.039013	---	29.22	---	---	500.0	120.000	100.0	V	96.0	-5.8



Preview Result 1-PK+ FCC 15C PK Final_Result QPK Final_Result RMS

Plot # 29 Radiated Emissions: 1 – 3 GHz

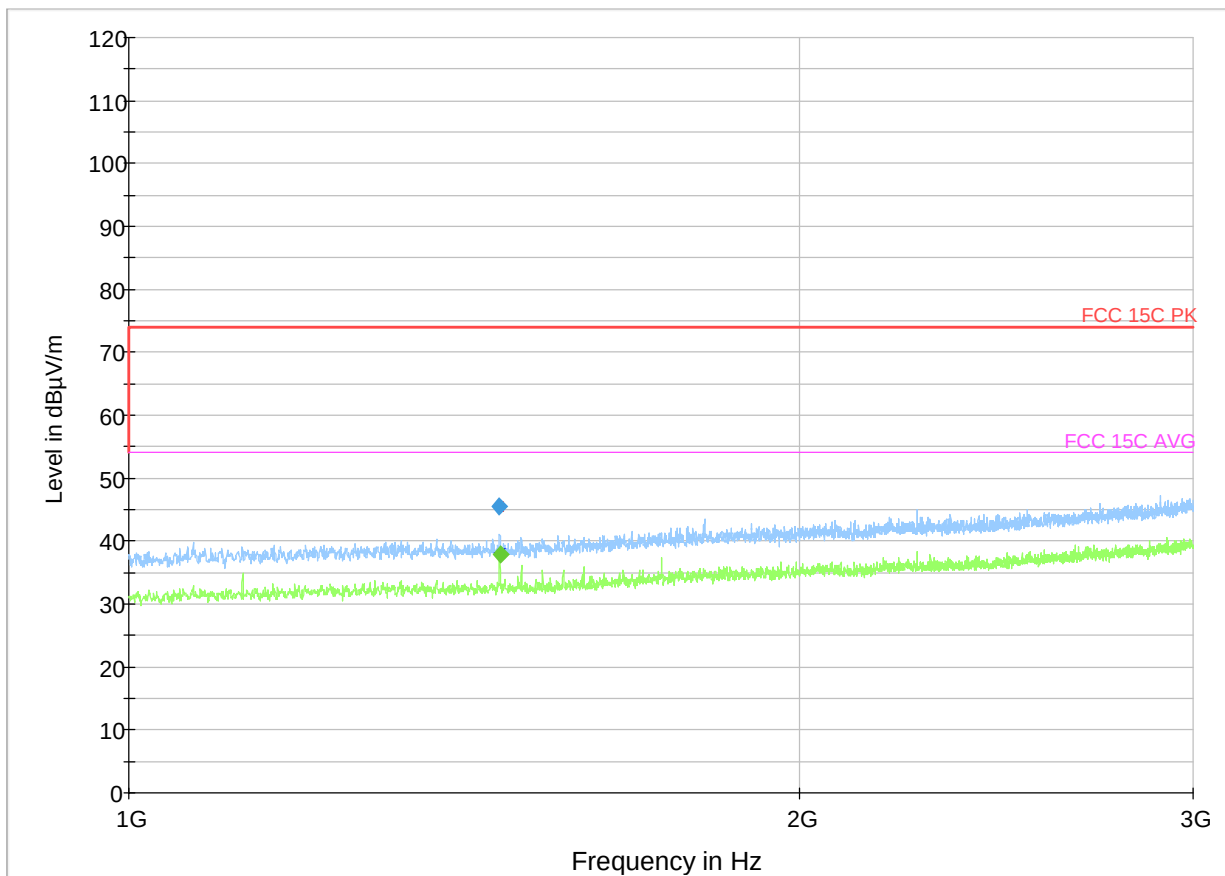
Tx Frequency: 5700 MHz

Op. 1

Mode: VHT20_MCS0

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	RMS (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Corr. (dB/m)	Comment
1466.595000	45.45	---	74.00	28.55	100.0	1000.000	274.0	H	2.1	2:17:46 PM - 4/17/2020
1466.690000	---	37.98	53.98	16.00	100.0	1000.000	286.0	H	2.1	2:22:02 PM - 4/17/2020



Plot # 30 Radiated Emissions: 3 – 6GHz

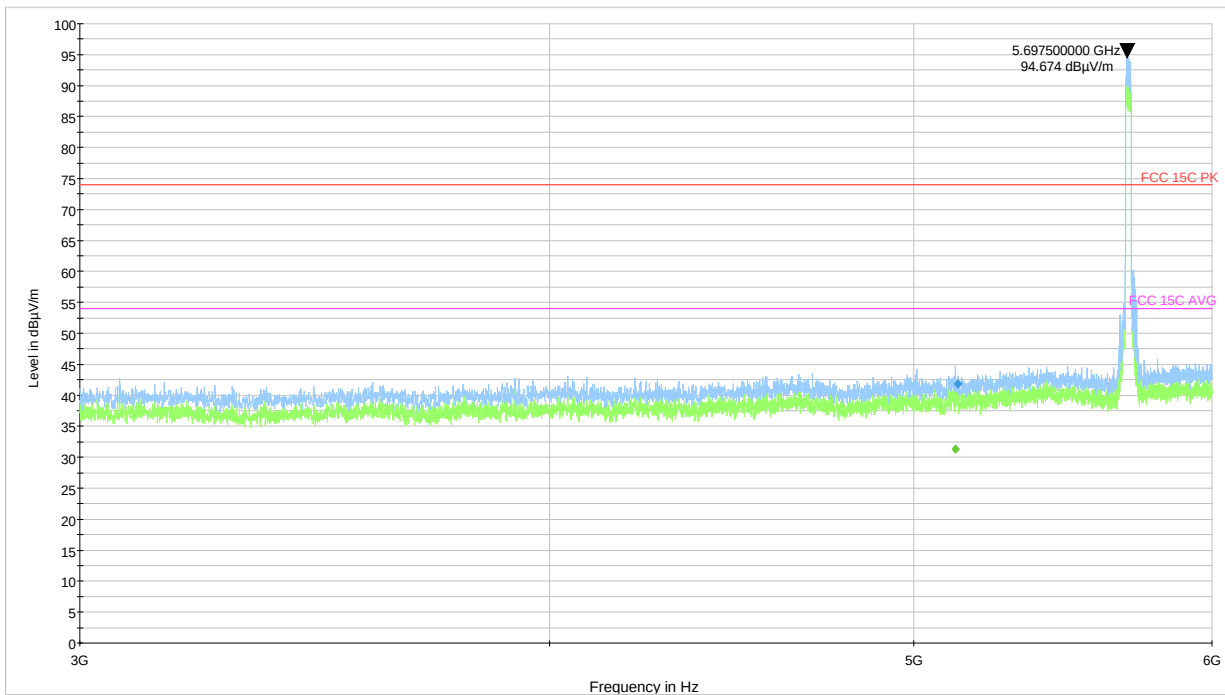
Tx Frequency: 5700 MHz

Op. 2

Mode: VHT20_MCS0

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	RMS (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Corr. (dB/m)	Comment
5127.596	---	31.35	53.98	22.63	100.0	1000.000	144.0	V	-5.3	3:39:42 PM - 4/17/2020
5135.630	41.86	---	73.99	32.13	100.0	1000.000	296.0	V	-5.4	3:36:09 PM - 4/17/2020

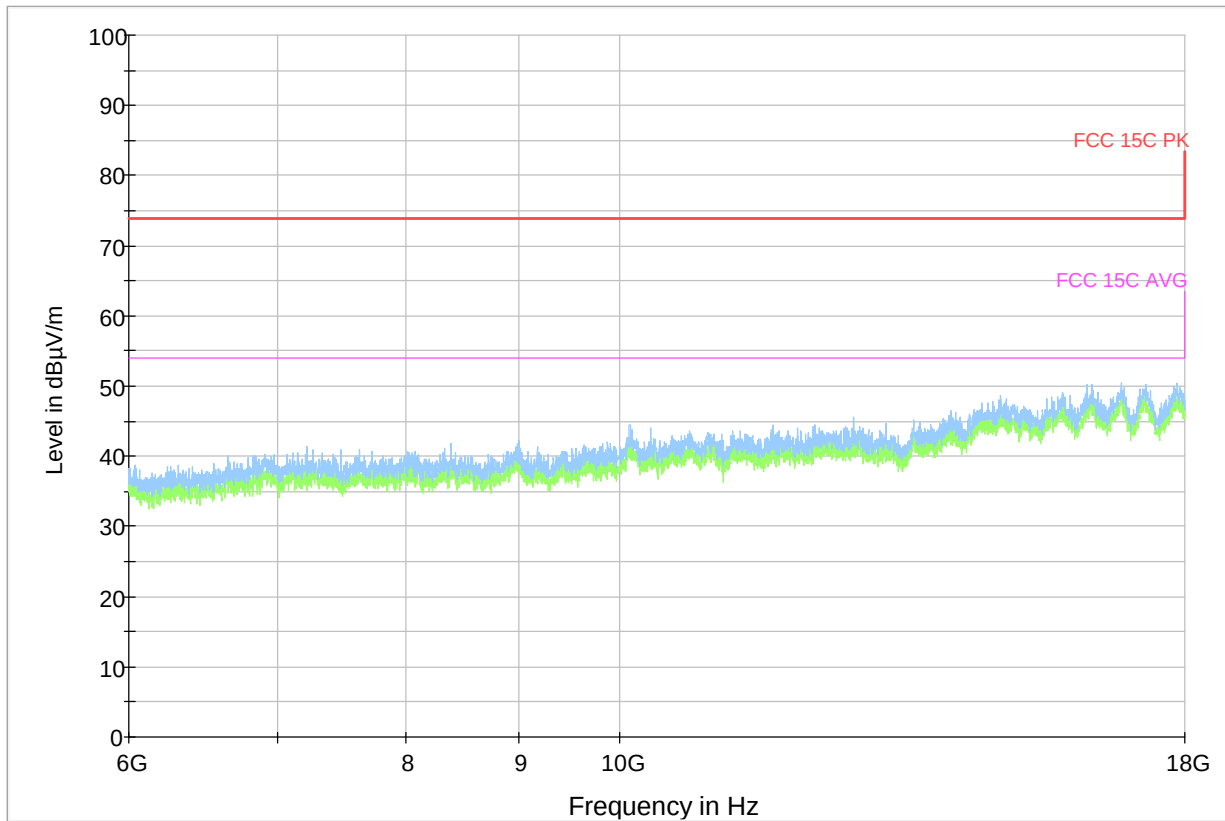


Plot # 31 Radiated Emissions: 6 – 18 GHz

Tx Frequency: 5700 MHz

Op. 2

Mode: VHT20_MCS0



— RMS_MAXH
— FCC 15C PK

— PK+_MAXH
— FCC 15C AVG

* Critical_Freqs RMS
◆ Final_Result PK+

* Critical_Freqs PK+
◆ Final_Result RMS

Plot # 32 Radiated Emissions: 18 – 26 GHz

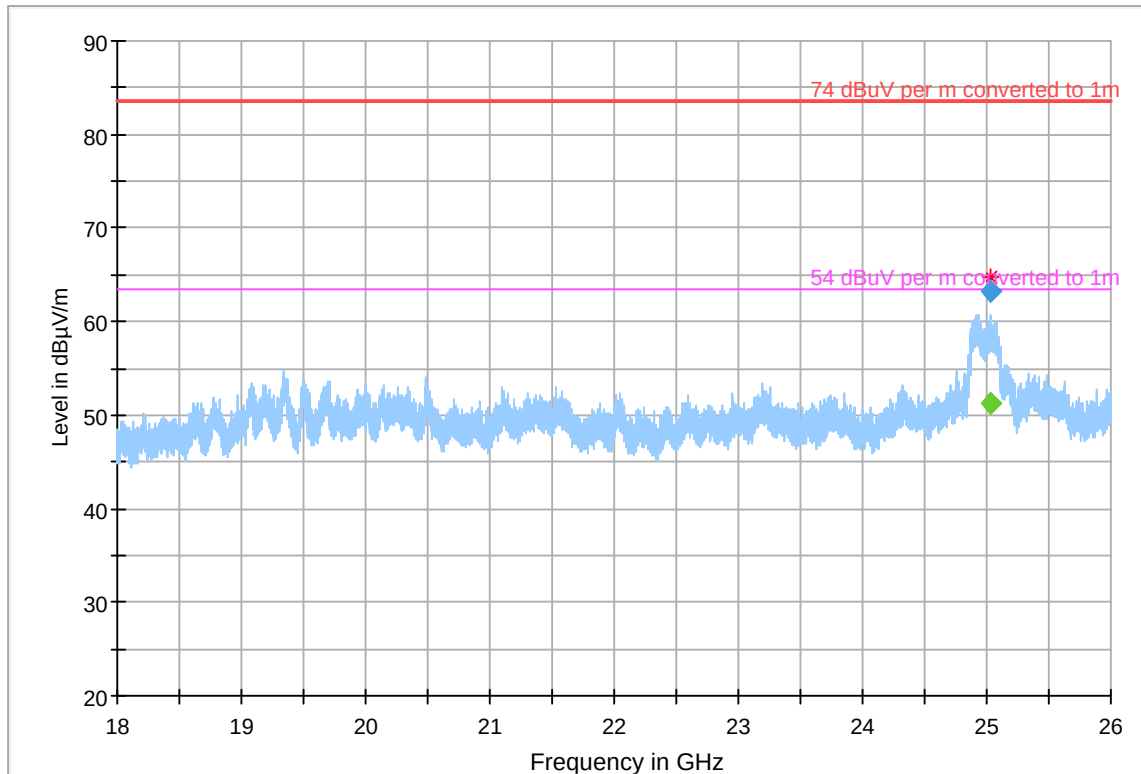
Tx Frequency: 5700 MHz

Op. 2

Mode: VHT20_MCS0

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Corr. (dB/m)	Comment
25034.412	---	51.20	63.50	12.30	100.0	1000.000	150.0	H	30.5	12:47:32 PM - 4/21/2020
25034.412	63.17	---	83.50	20.33	100.0	1000.000	150.0	H	30.5	12:47:32 PM - 4/21/2020



Preview Result 1-PK+
Final_Result PK+

Critical_Freqs PK+
Final_Result AVG

Plot # 33 Radiated Emissions: 26 – 40 GHz

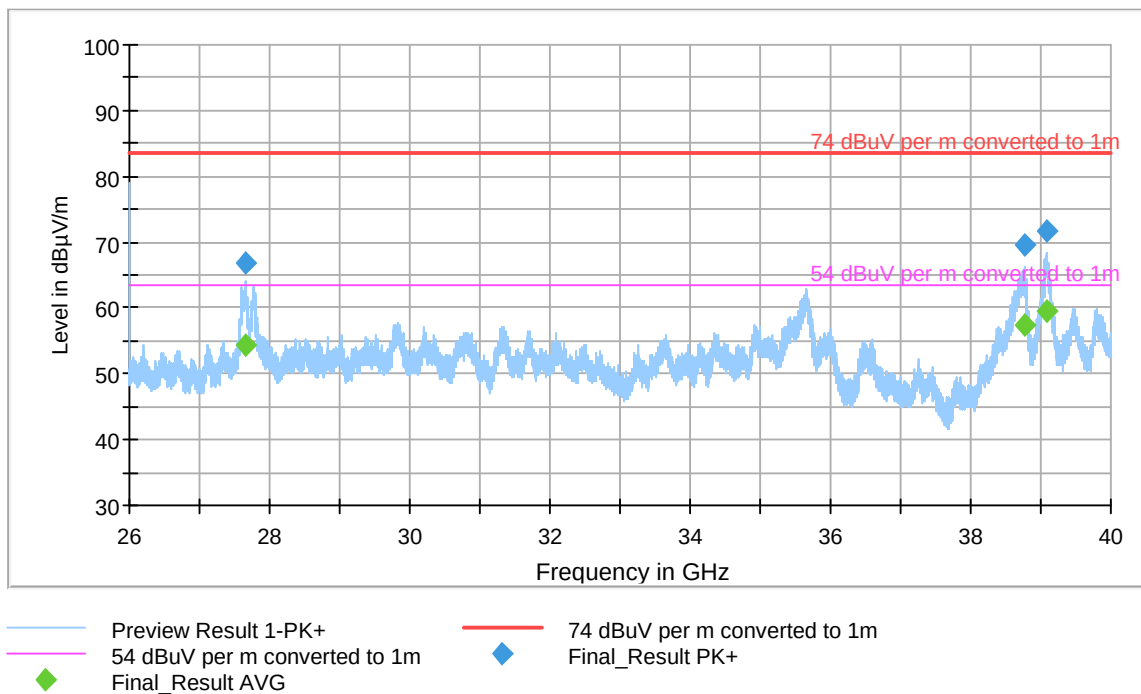
Tx Frequency: 5700 MHz

Op. 2

Mode: VHT20_MCS0

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Corr. (dB/m)
27646.713	---	54.41	63.50	9.09	100.0	1000.000	150.0	H	3.5
27646.713	66.70	---	83.50	16.80	100.0	1000.000	150.0	H	3.5
38770.029	---	57.25	63.50	6.25	100.0	1000.000	150.0	V	14.9
38770.029	69.44	---	83.50	14.06	100.0	1000.000	150.0	V	14.9
39079.820	---	59.46	63.50	4.04	100.0	1000.000	150.0	H	17.5
39079.820	71.71	---	83.50	11.79	100.0	1000.000	150.0	H	17.5



9 Test setup photos

Setup photos are included in supporting file name: "EMC_AVERS-006-20001_Setup_Photos.pdf"

10 Test Equipment And Ancillaries Used For Testing

Equipment Type	Manufacturer	Model	Serial #	Calibration Cycle	Last Calibration Date
ACTIVE LOOP ANTENNA	ETS LINDGREN	6507	00161344	3 YEARS	10/26/2017
PASSIVE LOOP ANTENNA	ETS LINKDGREN	6512	49838	3 YEARS	7/28/2017
BILOG ANTENNA	TESEO	CBL 6141B	41106	3 YEARS	11/1/2017
HORN ANTENNA	EMCO	3115	00035111	3 YEARS	4/17/2019
HORN ANTENNA	ETS LINDGREN	3117	00169547	3 YEARS	8/8/2017
HORN ANTENNA	ETS LINDGREN	3116C	00169535	3 YEARS	9/24/2017
SIGNAL ANALYZER	R&S	FSV 40	101022	3 YEARS	7/16/2019
DIGITAL THERMOMETER	CONTROL COMPANY	36934-164	191871994	2 YEARS	10/1/2019

Note: Equipment used meets the measurement uncertainty requirements as required per applicable standards for 95% confidence levels. Calibration due dates, unless defined specifically, falls on the last day of the month. Items indicated "N/A" for cal status either do not specifically require calibration or is internally characterized before use.



11 History

Date	Template Revision	Changes to report	Prepared by	Approved by
6/26/2020	EMC_AVERS_006_20001_FCC_ISSED_15.407	Initial Version	Issa Ghanma	Cindy Li

<<< The End >>>