

FCC/ISED
RF
TEST REPORT

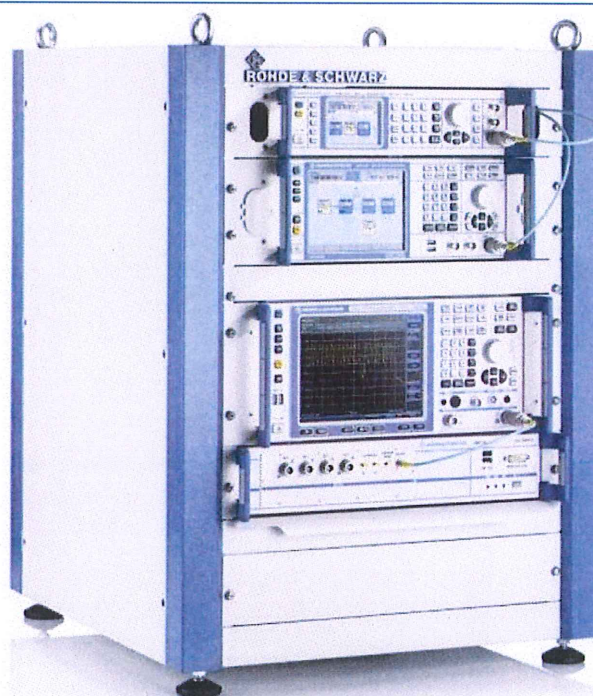
ISSUED BY
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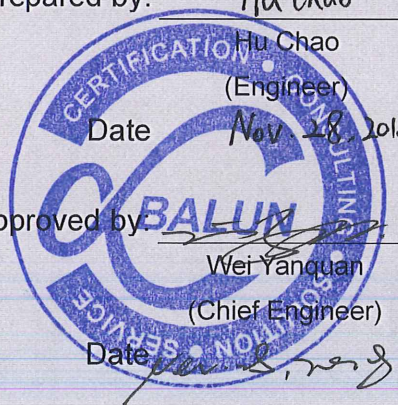
FOR
Rugged Smart Phone

ISSUED TO
Shenzhen UniStrong Science & Technology Co., Ltd.

B, 4-4Factory, Zhengcheng Road, FuyongBaoan District, Shenzhen,
China



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Date: Nov 28, 2018



Report No.: BL-EC18B0146-604
EUT Name: Rugged Smart Phone
Model Name: UT12
Brand Name: UniStrong
Test Standard: 47 CFR Part 15 Subpart E
RSS-Gen (Issue 5, April 2018)
RSS-247 (Issue 2, February 2017)
FCC ID: 2AOPD-UT10
ISED Number: 11546A-UT10
Test Conclusion: Pass
Test Date: Oct. 12, 2018 ~ Nov. 14, 2018
Date of Issue: Nov. 28, 2018

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Revision History

Version	Issue Date	Revisions Content
<u>Rev. 01</u>	<u>Nov. 20, 2018</u>	<u>Initial Issue</u>
<u>Rev. 02</u>	<u>Nov. 28, 2018</u>	<u>Update the version of 47 CFR Part 15, subpart E.</u>

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1 ADMINISTRATIVE DATA (GENERAL INFORMATION)

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A-1. The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196. The laboratory is a testing organization accredited by American Association for Laboratory Accreditation(A2LA) according to ISO/IEC 17025.The accreditation certificate is 4344.01. The laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6791.
Description	All measurement facilities used to collect the measurement data are located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China 518055

1.3 Laboratory Condition

Ambient Temperature	20°C to 25°C
Ambient Relative Humidity	45% to 55%
Ambient Pressure	100 kPa to 102 kPa

1.4 Announce

- (1) The test report reference to the report template version v4.3.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
- (5) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.
- (6) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

2 PRODUCT INFORMATION

2.1 Applicant

Applicant	Shenzhen UniStrong Science & Technology Co., Ltd.
Address	B, 4-4Factory, Zhengcheng Road, FuyongBaoan District, Shenzhen, China

2.2 Manufacturer

Manufacturer	Shenzhen UniStrong Science & Technology Co., Ltd.
Address	B, 4-4Factory, Zhengcheng Road, FuyongBaoan District, Shenzhen, China

2.3 Factory

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Name	Rugged Smart Phone
Model Name Under Test	UT12
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	N/A
Software Version	N/A
Dimensions (Approx.)	N/A

2.5 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	SJYEnergy
	Model No.	BA7800
	Serial No.	N/A
	Capacity	8000 mAh
	Rated Voltage	3.8 V
	Limit Charge Voltage	4.35 V
Ancillary Equipment 2	Adapter	
	Brand Name	N/A
	Model No.	ASUC71W
	Serial No.	N/A
	Rated Input	100-240 V~, 0.7 A, 50/60 Hz
	Rated Output	5 V= 3 A
Ancillary Equipment 3	USB Data Cable	
	Model No.	N/A
	Length (Approx.)	0.8 m

2.6 Technical Information

Network and Wireless connectivity	2G Network GSM/GPRS/EGPRS 850/900/1800/1900 MHz; 3G Network WCDMA/HSDPA/HSUPA Band 1/2/5/8; CDMA Band Class 0; EVDO Rel. 0/Rev. A Band Class 0; 4G Network LTE FDD Band 1/2/3/4/5/7/8/17/20/28; LTE TDD Band 38/40/41; Bluetooth 4.0 (BR+EDR+BLE) WIFI 802.11a, 802.11b, 802.11g, 802.11n(HT20) and 802.11ac GPS, GLONASS, NFC, BDS, 5.8G SRD
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The requirement for the following technical information of the EUT was tested in this report:

Frequency Range	Band I: 5150 MHz to 5250 MHz, Band IV: 5725 MHz to 5850 MHz
Product Type	☐ Mobile ☒ Portable ☐ Fix Location
Modulation technology	OFDM
Modulation Type	256QAM, 64QAM, 16QAM, BPSK, QPSK
Product Type	Indoor for IC standard Mobile and portable for FCC standard
Transfer Rate (Mbps) (Single RF path)	802.11ac: up to VHT-MCS9
Channel Bandwidth	802.11ac: 20 MHz, 40 MHz, 80 MHz
Maximum Output Power	Band I: 11.79 dBm Band IV: 13.93 dBm
Antenna System (eg., MIMO, Smart Antenna)	N/A
Categorization as Correlated or Completely Uncorrelated	N/A
Antenna Type	PCB Antenna
Antenna Gain	Band I: 5150 MHz to 5250 MHz: 1.97 dBi Band IV: 5725 MHz to 5850 MHz: 1.63 dBi
About the Product	The equipment is Rugged Smart Phone, intended for used with information technology equipment.

2.7 Channel List

20 MHz		40 MHz		80 MHz	
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
36	5180	38	5190	42	5210
40	5200	46	5230	58	5290
44	5220	54	5270	106	5530
48	5240	62	5310	155	5775
52	5260	102	5510		
56	5280	110	5550		
60	5300	134	5670		
64	5320	151	5755		
100	5500	159	5795		
104	5520				
108	5540				
112	5560				
116	5580				
132	5660				
136	5680				
140	5700				
149	5745				
153	5765				
157	5785				
161	5805				
165	5825				

Note: Until further notice, devices subject to this section shall not be capable of transmitting in the band 5600-5650 MHz. This restriction is for the protection of weather radars operating in this band.

The Lowest frequency, the middle frequency and the highest frequency of channel were selected to perform the test, and the selected channel see below:

For 802.11ac (HT20)

Band I (5150 - 5250 MHz)			Band IV (5725 - 5850 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
36	Low	5180	149	Low	5745
44	Mid	5220	157	Mid	5785
48	High	5240	165	High	5825

For 802.11ac (HT40)

Band I (5150 - 5250 MHz)			Band IV (5725 - 5850 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
38	Low	5190	151	Low	5755
46	High	5230	159	High	5795

For 802.11ac (HT80)

Band I (5150 - 5250 MHz)			Band IV (5725 - 5850 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
42	Low	5210	155	Low	5775

Note: Preliminary tests were performed in different data rate in above table to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Modulation Type	Band I	Band IV
				Channel	Channel
Radiated Spurious Emissions	11ac(20 MHz)	6.5	BPSK	48/44/36	165/157/149
	11ac(40 MHz)	13.5		46/38	159/151
	11ac(80 MHz)	MCS0		42	155
Band Edge (Restricted-band)	11ac(20 MHz)	6.5	BPSK	48/36	165/149
	11ac(40 MHz)	13.5		46/38	159/151
	11ac(80 MHz)	MCS0		42	155

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15 Subpart E (October. 1 2017)	Unlicensed National Information Infrastructure Devices
2	KDB Publication 789033 D02v01r04	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E
3	RSS-Gen (Issue 5, Apr. 2018)	General Requirements for Compliance of Radio Apparatus
4	RSS-247 (Issue 2, February 2017)	Digital Transmission Systems (DTSS), Frequency Hopping Systems(FHSs) and Licence-Exemp Local Area Network (LE-LAN) Devices
5	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

3.2 Verdict

No.	Description	FCC Part No.	RSS Part No.	Test Result	Verdict
1	Antenna Requirement	15.203	RSS-247, 6.2	--	Pass ^{Note1}
2	RF Output Power	15.407(a)	RSS-247, 6.2	ANNEX A.1	Pass
3	Emission Bandwidth & 99% Occupied Bandwidth	15.407(a)	RSS-247, 6.2	ANNEX A.2	Pass
4	6 dB bandwidth	15.407(e)	RSS-247, 6.2	ANNEX A.3	Pass
5	Power Spectral Density	15.407(a)	RSS-247, 6.2	ANNEX A.4	Pass
6	Conducted Emission	15.207	RSS-GEN, 8.8	ANNEX A.5	Pass
7	Conducted Spurious Emission and Band Edge (Authorized-band)	15.407(b) 15.209	RSS-247, 6.2	ANNEX A.6	Pass
8	Radiated Spurious Emissions and Band Edge (Restricted-band)	15.407(b)	RSS-247, 6.2	ANNEX A.7	Pass
9	Frequency Stability	15.407(g)	--	ANNEX A.8	Pass
10	Receiver Spurious Emissions	--	RSS-Gen, 7.1.2	--	N/A ^{Note2}

Note ¹: The EUT has a permanently and irreplaceable attached antenna, which complies with the requirement FCC 15.203.

Note ²: Only radio communication receivers operating in stand-alone mode within the band 30-960 MHz, as well as scanner receivers, are subject to Industry Canada requirements, so this test is not applicable.

Note ³: The only difference between the EUT (test samples in this report) and test sample in report BL-EC17C0360-604, which was issued by Shenzhen BALUN Technology Co., Ltd. on Apr. 02, 2018, is product information. Just changed the information as below:

1. Difference WIFI and 4G antenna;
2. Difference size of shell and appearance;
3. Difference camera;
4. Difference LCD screen;

And others hardware circuit and software were all the same. So just Radiated Spurious Emissions and Band Edge (Restricted-band) were retested in this report, Other test items please refer to the BL-EC17C0360-604, which was issued by Shenzhen BALUN Technology Co., Ltd. on Apr. 02, 2018.

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

During the measurement, the normal environmental conditions were within the listed ranges:

Relative Humidity	45% to 55%	
Atmospheric Pressure	100 kPa to 102 kPa	
Temperature	NT (Normal Temperature)	+22°C to +25°C
	LT (Low Temperature)	-20°C
	HT (High Temperature)	+45°C
Working Voltage of the EUT	NV (Normal Voltage)	3.8 V
	LV (Low Voltage)	3.7 V
	HV (High Voltage)	4.35 V

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	ROHDE&SCHWARZ	FSV-30	103118	2018.06.15	2019.06.14
Switch Unit with OSP-B157	ROHDE&SCHWARZ	OSP120	101270	2018.06.15	2019.06.14
EMI Receiver	KEYSIGHT	N9038A	MY53220118	2018.11.07	2019.11.06
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2018.06.13	2019.06.12
LISN	SCHWARZBECK	NSLK 8127	8127-687	2018.06.13	2019.06.12
Bluetooth Tester	ROHDE&SCHWARZ	CBT	101005	2018.06.15	2019.06.14
Power Splitter	KMW	DCPD-LDC	1305003215	--	--
Power Sensor	ROHDE&SCHWARZ	NRP-Z21	103971	2018.06.15	2019.06.14
Attenuator (20 dB)	KMW	ZA-S1-201	110617091	--	--
Attenuator (6 dB)	KMW	ZA-S1-61	1305003189	--	--
DC Power Supply	ROHDE&SCHWARZ	HMP2020	018141664	2018.06.14	2019.06.13
Temperature Chamber	ANGELANTIONI SCIENCE	NTH64-40A	1310	2018.06.26	2019.06.25
Test Antenna- Loop(9 kHz-30 MHz)	SCHWARZBECK	FMZB 1519	1519-037	2017.11.09	2019.11.08
Test Antenna- Bi-Log(30 MHz-3 GHz)	SCHWARZBECK	VULB 9163	9163-624	2017.07.22	2019.07.21
Test Antenna- Horn(1-18 GHz)	SCHWARZBECK	BBHA 9120D	9120D-1148	2018.07.11	2020.07.10
Test Antenna- Horn(15-26.5 GHz)	SCHWARZBECK	BBHA 9170	9170-305	2018.06.21	2019.06.20
Test Antenna- Horn (18-40 GHz)	A-INFO	LB- 180400KF	J211060273	2017.01.06	2019.01.05
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2017.02.21	2019.02.20
Anechoic Chamber	EMC Electronic Co., Ltd	20.10*11.60 *7.35m	N/A	2017.08.08	2019.08.07
Shielded Enclosure	ChangNing	CN-130701	130703	--	--
Signal Generator	ROHDE&SCHWARZ	SMB100A	177746	2018.06.15	2019.06.14
Power Amplifier	OPHIR RF	5225F	1037	2018.02.16	2019.02.15

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Power Amplifier	OPHIR RF	5273F	1016	2018.02.16	2019.02.15
Directional Coupler	Werlantone	C5982-10	109275	N/A	N/A
Directional Coupler	Werlantone	CHP-273E	S00801z-01	N/A	N/A
Feld Strength Meter	Narda	EP601	511WX51129	2018.05.21	2019.05.20
Mouth Simulator	B&K	4227	2423931	2018.11.15	2019.11.14
Sound Calibrator	B&K	4231	2430337	2018.11.15	2019.11.14
Sound Level Meter	B&K	NL-20	00844023	2018.11.15	2019.11.14
Ear Simulator	B&K	4185	2409449	2018.11.15	2019.11.14
Ear Simulator	B&K	4195	2418189	2018.11.15	2019.11.14
Audio analyzer	B&K	UPL 16	100129	2018.11.15	2019.11.14
Amplifier	COM-MW	KL_LNA_18 -40G-01	N/A	2018.06.26	2019.06.25
RF Cable 1	ROHDE&SCHWARZ	JUNFLON	APR0914004	2018.07.10	2019.10.09
RF Cable 2	Huber&suhner	RG_400_/U	N/A	2018.07.10	2019.10.09
RF Cable 3	Huber&suhner	RG_400_/U	N/A	2018.07.10	2019.10.09
RF Cable 4	Huber&suhner	SX_04172_ B-60	N/A	2018.07.10	2019.10.09
RF Cable 5	COM-MW	RFJA360- 2.92mm- J/J3M	N/A	2018.07.10	2019.10.09

Note: The calibration period on the Cable is three month.

4.3 Measurement Uncertainty

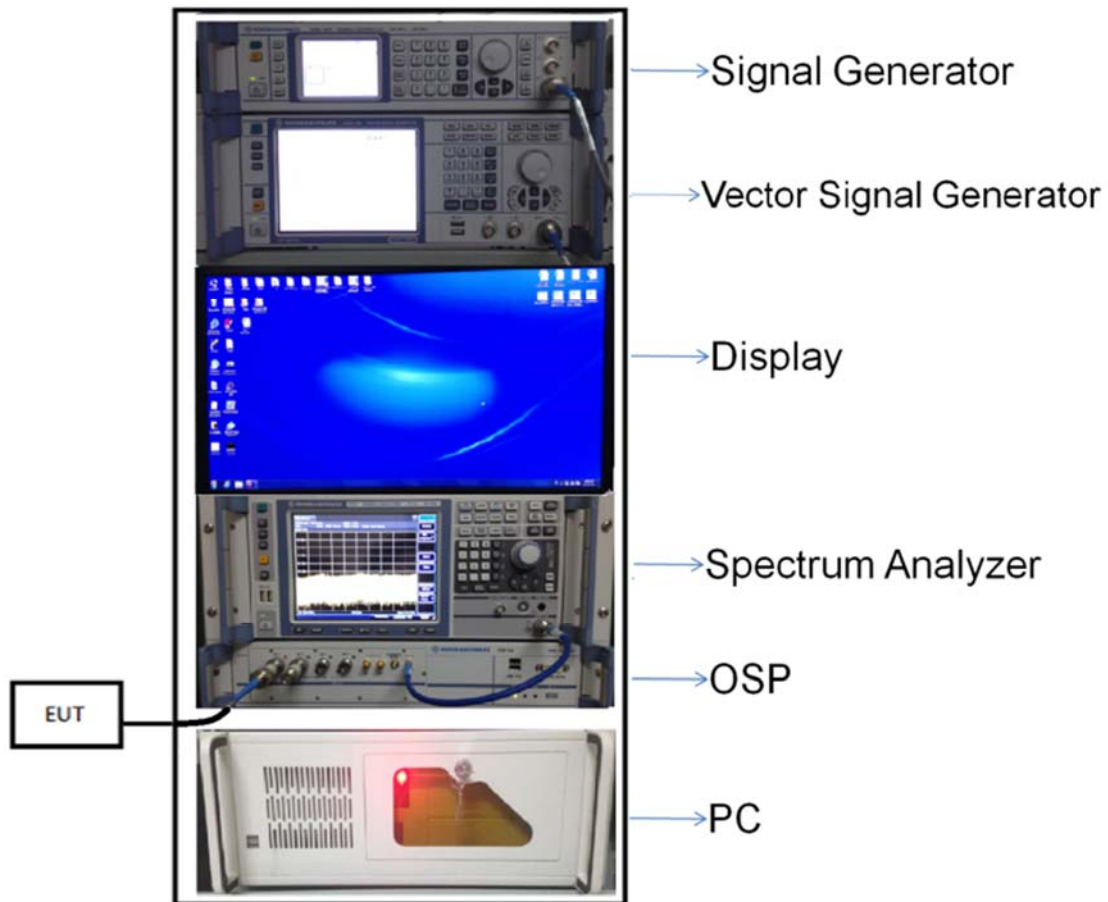
The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Value
Occupied Channel Bandwidth	±4%
RF output power, conducted	±1.4 dB
Power Spectral Density, conducted	±2.5 dB
Unwanted Emissions, conducted	±2.8 dB
All emissions, radiated	±5.4 dB
Temperature	±1°C
Humidity	±4%

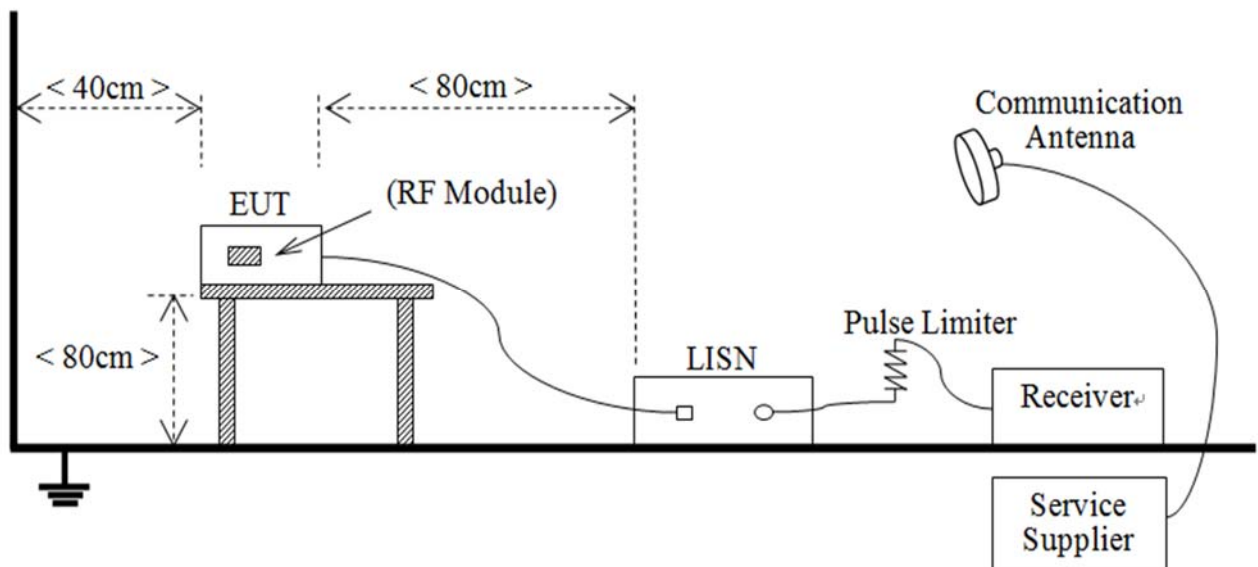
4.4 Description of Test Setup

4.4.1 For Antenna Port Test



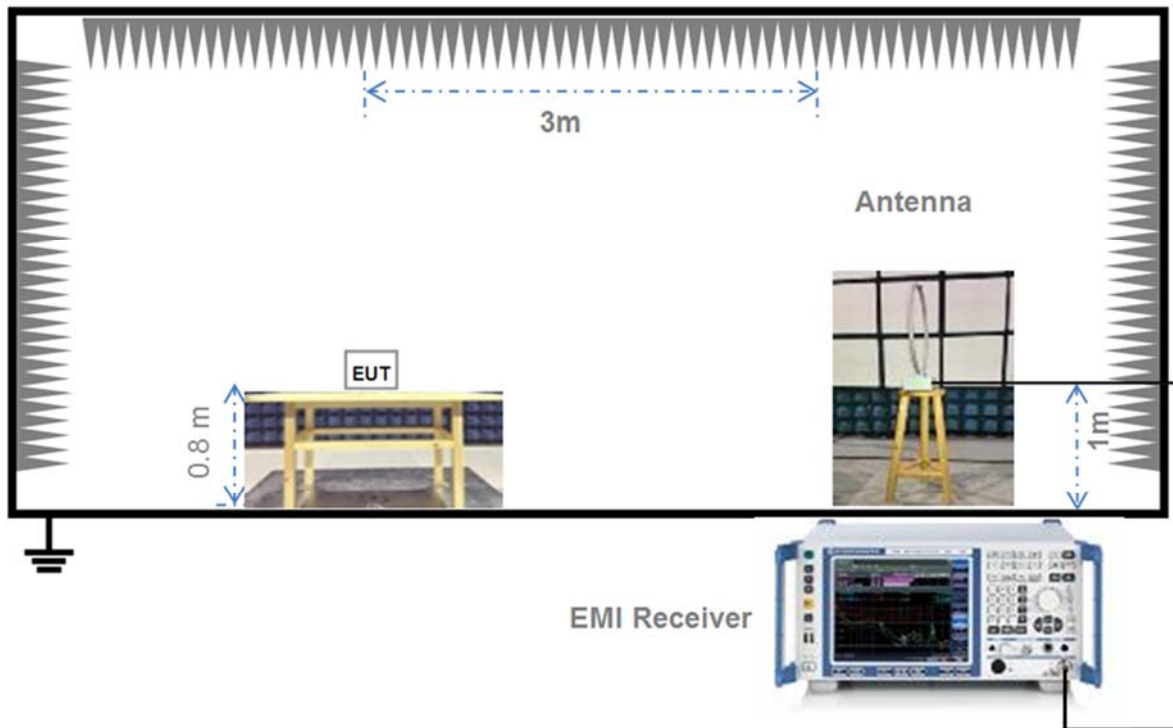
(Diagram 1)

4.4.2 For AC Power Supply Port Test



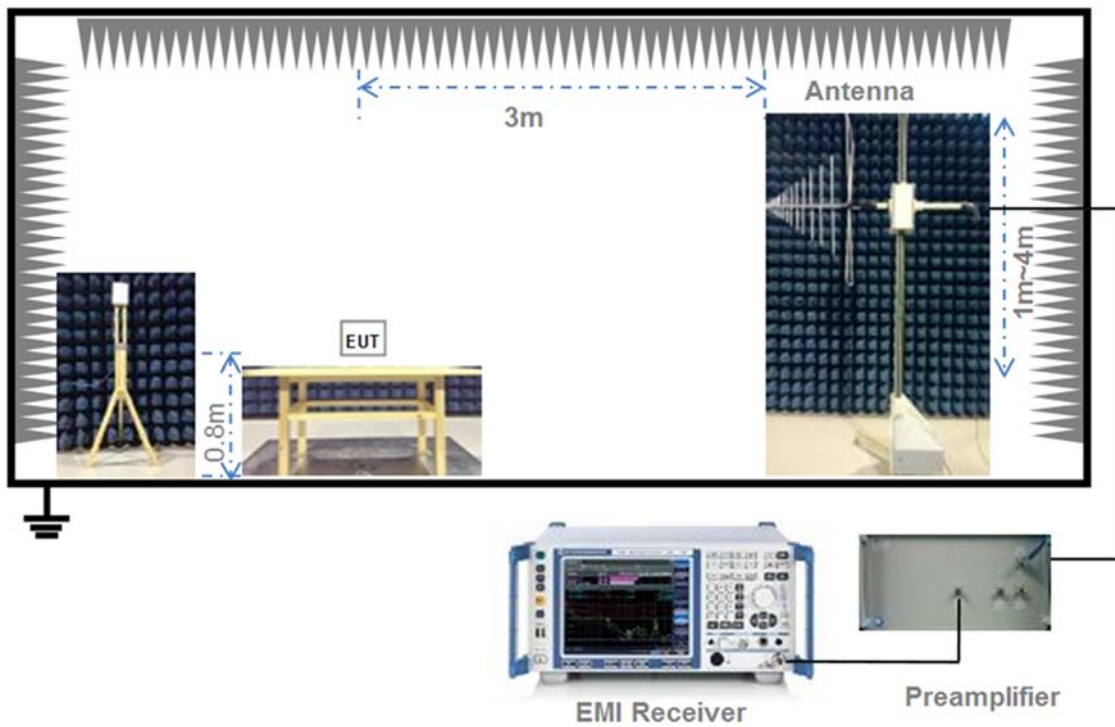
(Diagram 2)

4.4.3 For Radiated Test (Below 30 MHz)



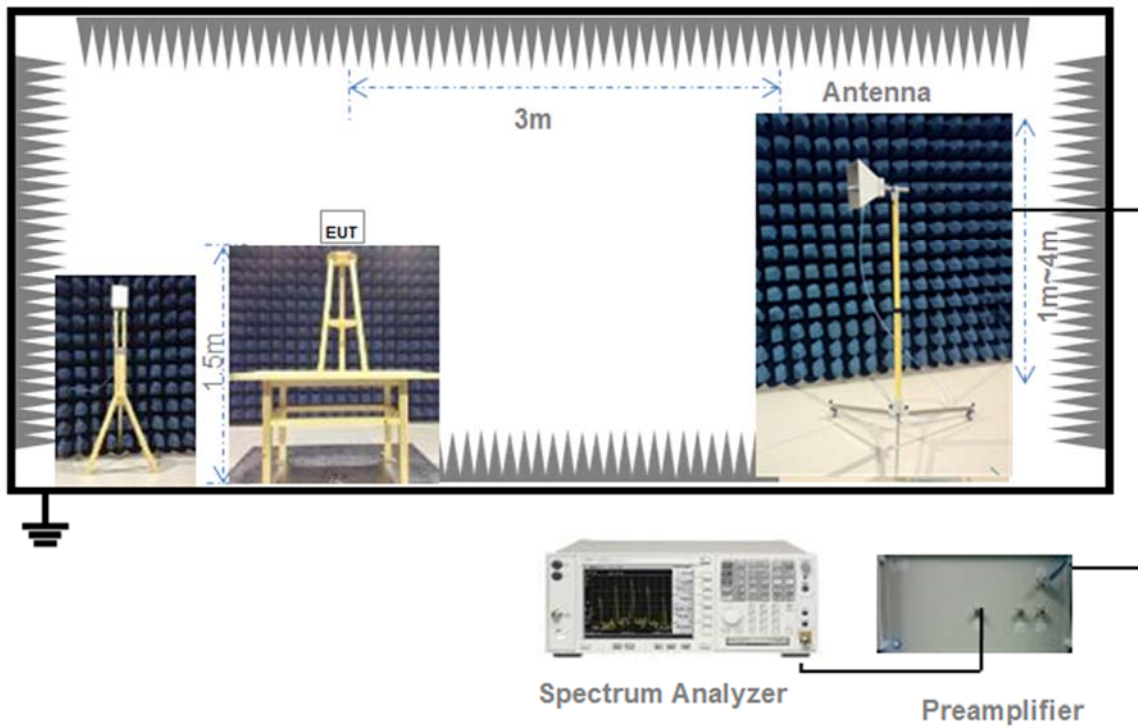
(Diagram 3)

4.4.4 For Radiated Test (30 MHz-1 GHz)



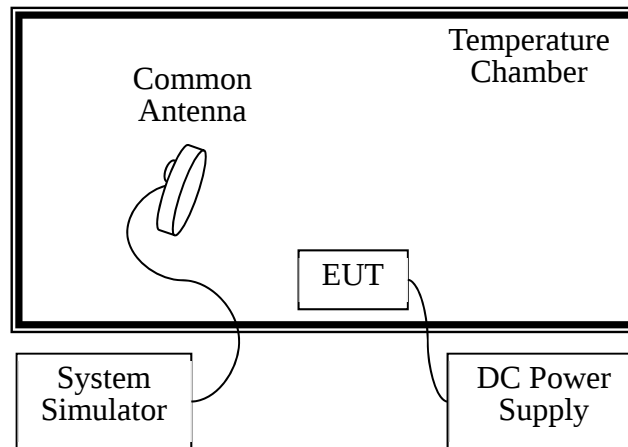
(Diagram 4)

4.4.5 For Radiated Test (Above 1 GHz)



(Diagram 5)

4.4.6 For Frequency Stability Test



(Diagram 6)

5 TEST ITEMS

5.1 RF Output Power

5.1.1 Test Limit

FCC §15.407(a)

The maximum conducted output power should not exceed:

Frequency Band (MHz)	Limit
5150-5250	250 mW
5250-5350	250 mW or 11 dBm + 10log B, whichever is less.
5470-5725	250 mW or 11 dBm + 10log B, whichever is less.
5725-5850	1 W
Note: Where "B" is the 26 dB emissions bandwidth in MHz.	

RSS-247, 6.2

The maximum conducted output power shall not exceed:

Frequency Band (MHz)	Limit
5150-5250	N/A
5250-5350	250 mW or 11 dBm + 10log B, whichever is less.
5470-5725	250 mW or 11 dBm + 10log B, whichever is less.
5725-5850	1 W
Note: Where "B" is the 99% emissions bandwidth in MHz.	

The maximum e.i.r.p. shall not exceed:

Frequency Band (MHz)	Limit
5150-5250	200 mW or 10 dBm + 10log B, whichever is less.
5250-5350	1W or 17 dBm + 10log B, whichever is less.
5470-5725	1W or 17 dBm + 10log B, whichever is less.
5725-5850	N/A
Note: Where "B" is the 99% emissions bandwidth in MHz.	

5.1.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.1.3 Test Procedure

The maximum peak conducted output power may be measured using a broadband Average RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the emission bandwidth and utilize a fast-responding diode detector.

The E.I.R.P used radiated test method. At a test site that has been validated using the procedures of ANSI C63.4 or the latest CISPR 16-1-4 for measurements above 1 GHz, so as to simulate a near free-space environment.

5.1.4 Test Result

Please refer to ANNEX A.1.

5.2 Emission Bandwidth and 6 dB Bandwidth

5.2.1 Limit

FCC §15.407(a), RSS-247, 6.2

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

5.2.2 Test Setup

The test setup photo please refer to 4.4.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.2.3 Test Procedure

Emission bandwidth

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set VBW $\geq 3 \times$ RBW,
3. Detector = Peak.
4. Trace mode = Max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission.

Occupied Bandwidth

1. Set Span = 1.5 times to 5.0 times the OBW
2. Set RBW = 1% to 5% of the OBW.
3. Set VBW $\geq 3 \times$ RBW, Detector = Peak.
4. Trace mode = Max hold.
5. Use the 99% power bandwidth function of the instrument.

6 dB bandwidth

1. Set RBW = 100 kHz, VBW = 300 kHz.
2. Detector = Peak. Trace mode = Max hold.
3. Allow the trace to stabilize.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

5.2.4 Test Result

Please refer to ANNEX A.2 and ANNEX A.3.

5.3 Power Spectral density (PSD)

5.3.1 Limit

FCC §15.407(a)

The maximum power spectral density should not exceed:

Frequency Band (MHz)	Limit
5150-5250	11 dBm/MHz
5250-5350	11 dBm/MHz
5470-5725	11 dBm/MHz
5725-5850	30 dBm/500kHz

RSS-247, 6.2

The maximum power spectral density should not exceed:

Frequency Band (MHz)	Limit
5150-5250	N/A
5250-5350	11 dBm/MHz
5470-5725	11 dBm/MHz
5725-5850	30 dBm/500kHz

The e.i.r.p. spectral density should not exceed:

Frequency Band (MHz)	Limit
5150-5250	10 dBm/MHz
5250-5350	N/A
5470-5725	N/A
5725-5850	N/A

5.3.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.3.3 Test Procedure

Set the spectrum analyzer or EMI receiver span to view the entire emission bandwidth.

1. Set RBW = 510 kHz/1 MHz, VBW $\geq 3 \times$ RBW, Sweep time = Auto, Detector = RMS.
2. Allow the sweeps to continue until the trace stabilizes.
3. Use the peak marker function to determine the maximum amplitude level.
4. The E.I.R.P spectral density used radiated test method. At a test site that has been validated using the procedures of ANSI C63.4 or the latest CISPR 16-1-4 for measurements above 1 GHz, so as to simulate a near free-space environment.

5.3.4 Test Result

Please refer to ANNEX A.4.

5.4 Conducted Emission

5.4.1 Limit

FCC §15.207, RSS-GEN, 8.8

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
0.50 - 30	60	50

5.4.2 Test Setup

The section 4.4.2 (Diagram 2) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.4.3 Test Procedure

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.

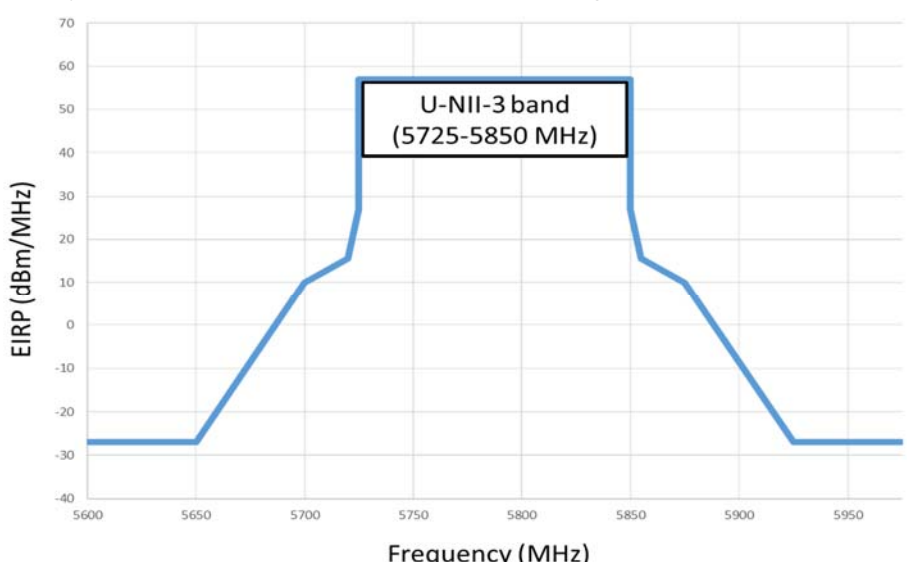
5.4.4 Test Result

Please refer to ANNEX A.5.

5.5 Conducted Spurious Emission and Band Edge (Authorized-band)

5.5.1 Limit

FCC §15.407(b)

Un-restricted band emissions	
Frequency Band (MHz)	Limit
5150 - 5250	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm
5250 - 5350	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm
5470 - 5725	Outside of the 5.47-5.725 GHz band: e.i.r.p. -27 dBm
5725 - 5850	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. 

RSS-247, 6.2

Un-restricted band emissions	
Frequency Band (MHz)	Limit
5150 - 5250	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm, However, any unwanted emissions that fall into the band 5250-5350 MHz must be 26 dBc, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth, above 5.25 GHz.
5250 - 5350	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm. And any emissions within the band 5150-5250 MHz shall meet the power spectral density limits of 10 dBm/MHz, The device shall be labelled "for indoor use only."
5470 - 5725	Outside of the 5.47-5.725 GHz band: e.i.r.p. -27 dBm
5725 - 5850	5715 -5725 MHz: e.i.r.p. -17 dBm 5850 -5860 MHz: e.i.r.p. -17 dBm Other un-restricted band: e.i.r.p. -27 dBm

5.5.2 Test Setup

See section 4.4.2 (Diagram 2) for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.5.3 Test Procedure

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize

5.5.4 Test Result

Please refer to ANNEX A.6.

5.6 Radiated Spurious Emissions and Band Edge (Restricted-band)

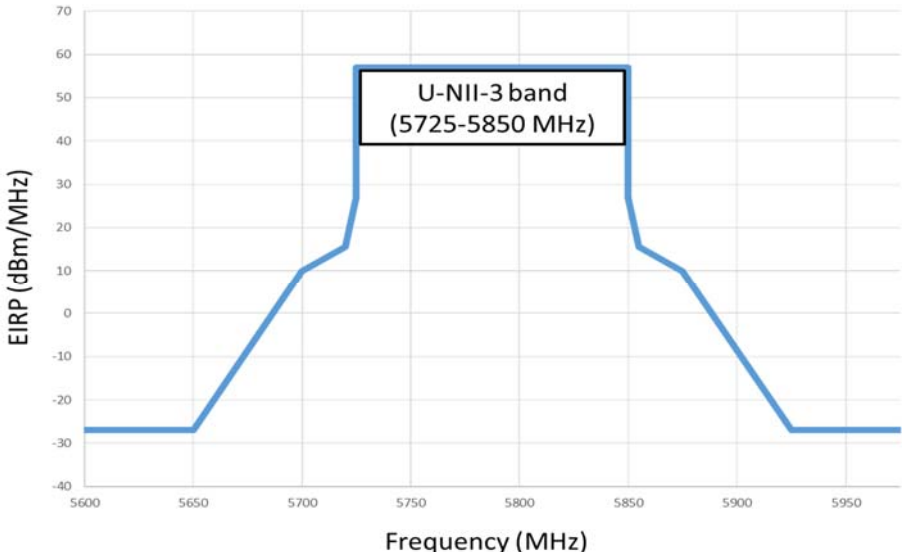
5.6.1 Limit

FCC §15.209 & 15.407(b), RSS-247, 6.2

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

Note¹: The Limit for radiated test was performed according to FCC Part 15C

Note²: The tighter limit applies at the band edge.

Un-restricted band emissions	
Out Operating Band (MHz)	Limit
5150 - 5250	e.i.r.p. -27 dBm (68.2 dBuV/m@3m)
5250 - 5350	e.i.r.p. -27 dBm (68.2 dBuV/m@3m)
5470 - 5725	e.i.r.p. -27 dBm (68.2 dBuV/m@3m)
5725 - 5850	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. 

Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength.

5.6.2 Test Setup

The section 4.4.3-4.4.5 (Diagram 3 - Diagram 5) test setup description was used for this test. The photo of test

setup please refer to ANNEX B.

5.6.3 Test Procedure

Since the emission limits are specified in terms of radiated field strength levels, measurements performed to demonstrate compliance have traditionally relied on a radiated test configuration. Radiated measurements remain the principal method for demonstrating compliance to the specified limits; however antenna-port conducted measurements are also now acceptable to demonstrate compliance (see below for details). When radiated measurements are utilized, test site requirements and procedures for maximizing and measuring radiated emissions that are described in ANSI C63.10 shall be followed.

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.

General Procedure for conducted measurements in restricted bands

- a) Measure the conducted output power (in dBm) using the detector specified (see guidance regarding measurement procedures 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 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:

$$E = \text{EIRP} - 20 \log D + 104.8$$

where:

E = electric field strength in dB μ V/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.

Quasi-Peak measurement procedure

The specifications for measurements using the CISPR quasi-peak detector can be found in Publication 16 of the International Special Committee on Radio Frequency Interference (CISPR) of the International Electrotechnical Commission.

As an alternative to CISPR quasi-peak measurement, compliance can be demonstrated to the applicable emission limits using a peak detector.

Peak power measurement procedure

Peak emission levels are measured by setting the instrument as follows:

- a) RBW = as specified in Table 1.
- b) VBW $\geq 3 \times$ RBW.
- c) Detector = Peak.
- d) Sweep time = auto.
- e) Trace mode = max hold.
- f) Allow sweeps to continue until the trace stabilizes. (Note that the required measurement time may be longer for low duty cycle applications).

Table 1—RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

Trace averaging across on and off times of the EUT transmissions followed by duty cycle correction

If continuous transmission of the EUT (i.e., duty cycle ≥ 98 percent) cannot be achieved and the duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent), then the following procedure shall be used:

- a) The EUT shall be configured to operate at the maximum achievable duty cycle.
- b) Measure the duty cycle, x , of the transmitter output signal as described in section 6.0.
- c) RBW = 1 MHz (unless otherwise specified).
- d) VBW $\geq 3 \times$ RBW.
- e) Detector = RMS, if $\text{span}/(\# \text{ of points in sweep}) \leq (\text{RBW}/2)$. Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.
- f) Averaging type = power (i.e., RMS).
 - 1) As an alternative, the detector and averaging type may be set for linear voltage averaging.
 - 2) Some instruments require linear display mode in order to use linear voltage averaging. Log or dB averaging shall not be used.
- g) Sweep time = auto.
- h) Perform a trace average of at least 100 traces.
- i) A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:
 - 1) If power averaging (RMS) mode was used in step f), then the applicable correction factor is $10 \log(1/x)$, where x is the duty cycle.
 - 2) If linear voltage averaging mode was used in step f), then the applicable correction factor is $20 \log(1/x)$, where

x is the duty cycle.

3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

NOTE: Reduction of the measured emission amplitude levels to account for operational duty factor is not permitted. Compliance is based on emission levels occurring during transmission - not on an average across on and off times of the transmitter.

Determining the applicable transmit antenna gain

A conducted power measurement will determine the maximum output power associated with a restricted band emission; however, in order to determine the associated EIRP level, the gain of the transmitting antenna (in dBi) must be added to the measured output power (in dBm).

Since the out-of-band characteristics of the EUT transmit antenna will often be unknown, the use of a conservative antenna gain value is necessary. Thus, when determining the EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. However, for devices that operate in multiple frequency bands while using the same transmit antenna, the highest gain of the antenna within the operating band nearest in frequency to the restricted band emission being measured may be used in lieu of the overall highest gain when the emission is at a frequency that is within 20 percent of the nearest band edge frequency, but in no case shall a value less than 2 dBi be used.

See KDB 662911 for guidance on calculating the additional array gain term when determining the effective antenna gain for a EUT with multiple outputs occupying the same or overlapping frequency ranges in the same band.

Radiated spurious emission test

An additional consideration when performing conducted measurements of restricted band emissions is that unwanted emissions radiating from the EUT cabinet, control circuits, power leads, or intermediate circuit elements will likely go undetected in a conducted measurement configuration. To address this concern, a radiated test shall be performed to ensure that emissions emanating from the EUT cabinet (rather than the antenna port) also comply with the applicable limits.

For these cabinet radiated spurious emission measurements the EUT transmit antenna may be replaced with a termination matching the nominal impedance of the antenna. Procedures for performing radiated measurements are specified in ANSI C63.10. All detected emissions shall comply with the applicable limits.

The measurement frequency range is from 30 MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360° , and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

5.6.4 Test Result

Please refer to ANNEX A.7 and Please refer to ANNEX A.9

5.7 Frequency Stability

5.7.1 Limit

FCC §15.407(g)

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

5.7.2 Test Setup

The section 4.4.6 (Diagram 6) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.7.3 Test Procedure

The EUT is installed in an environment test chamber with external power source.

Set the chamber to operate at 50 centigrade and external power source to output at nominal voltage of EUT.

A sufficient stabilization period at each temperatures is used prior to each frequency measurement.

When temperature is stabled, measure the frequency stability.

The test shall be performed under -30 to 50 centigrade and 85 to 115 percent of the nominal voltage.

Change setting of chamber and external power source to complete all conditions.

5.7.4 Test Result

Please refer to ANNEX A.8.

ANNEX A TEST RESULT

A.1 RF Output Power

Note: RF Output Power result reference from original test report: BL-EC17C0360-604 (issued by Shenzhen BALUN Technology Co., Ltd. On Apr. 02, 2018) A.1 RF Output Power.

A.2 Emission Bandwidth & 99% Bandwidth

Note: Emission Bandwidth & 99% Bandwidth result reference from original test report: BL-EC17C0360-604 (issued by Shenzhen BALUN Technology Co., Ltd. On Apr. 02, 2018) A.2 Emission Bandwidth & 99% Bandwidth.

A.3 6 dB Bandwidth

Note: 6 dB Bandwidth result reference from original test report: BL-EC17C0360-604 (issued by Shenzhen BALUN Technology Co., Ltd. On Apr. 02, 2018) A.3 6 dB Bandwidth

A.4 Power Spectral Density

Note: Power Spectral Density result reference from original test report: BL-EC17C0360-604 (issued by Shenzhen BALUN Technology Co., Ltd. On Apr. 02, 2018) A.4 Power Spectral Density.

A.5 Conducted Emissions

Note: Conducted Emissions result reference from original test report: BL-EC17C0360-604 (issued by Shenzhen BALUN Technology Co., Ltd. On Apr. 02, 2018) A.5 Conducted Emissions.

A.6 Conducted Spurious Emission and Band Edge (Authorized-band)

Note: Conducted Spurious Emission and Band Edge (Authorized-band) result reference from original test report: BL-EC17C0360-604 (issued by Shenzhen BALUN Technology Co., Ltd. On Apr. 02, 2018) A.6 Conducted Spurious Emission and Band Edge (Authorized-band).

A.7 Radiated Spurious Emissions and Band Edge (Restricted-band)

Test Data

Note 1: The symbol of “--” in the table which means not application.

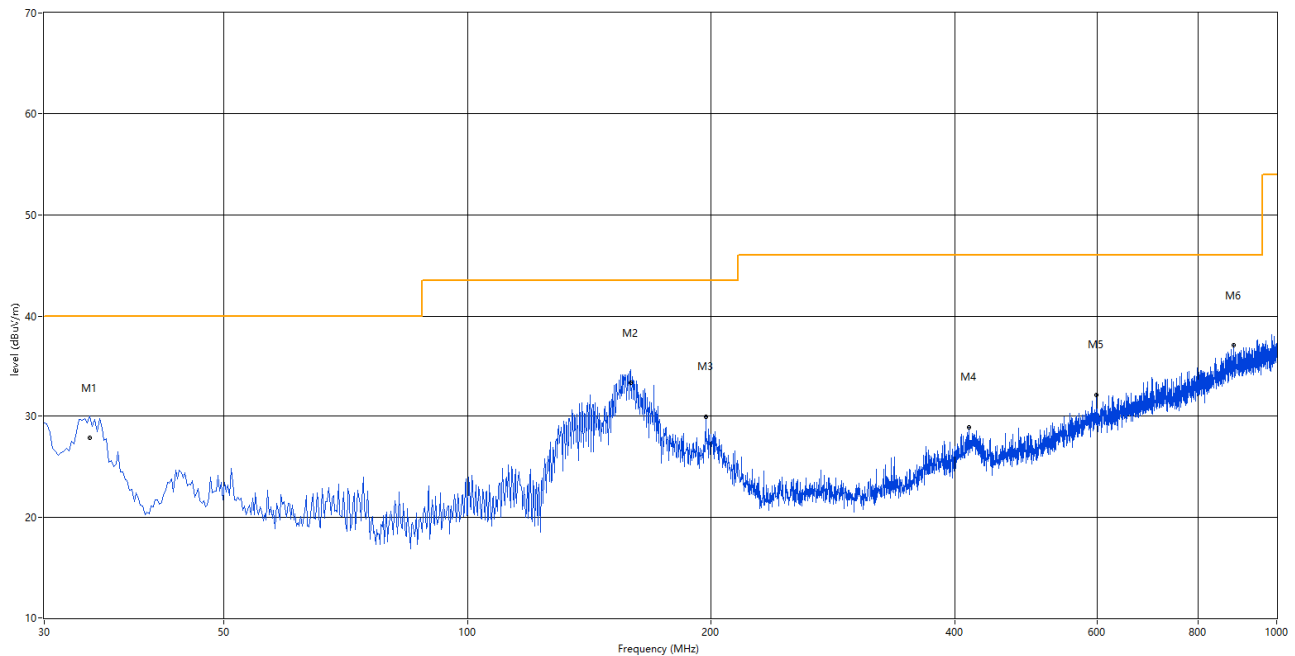
Note 2: For the test data above 1 GHz, According the ANSI C63.4, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note 3: The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

Note 4: The EUT is working in the Normal link mode below 1 GHz.

30 MHz to 1 GHz, ANT V

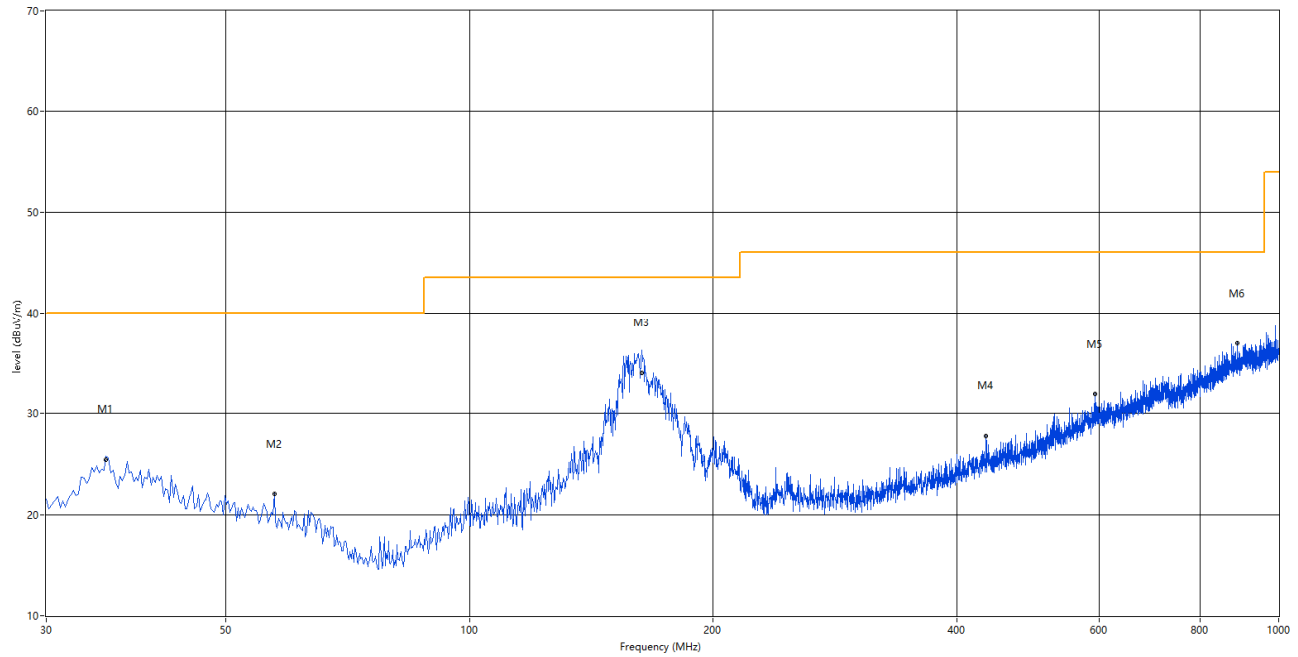
REmission Test case_FCC_Part 15C_FCC 15.247(2.4G)_30MHz-1GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
34.121	30.02	27.86	--	-28.53	--	40.0	--	12.14	54.30	150	Vertical	Pass
158.978	34.60	33.29	--	-31.58	--	43.5	--	10.21	100.00	150	Vertical	Pass
197.041	29.96	--	--	-28.90	--	43.5	--	13.54	51.80	150	Vertical	Pass
416.933	28.85	--	--	-23.54	--	46.0	--	17.15	356.50	150	Vertical	Pass
599.005	32.10	--	--	-18.99	--	46.0	--	13.90	308.30	150	Vertical	Pass
883.872	37.05	--	--	-13.78	--	46.0	--	8.95	359.20	150	Vertical	Pass

30 MHz to 1 GHz, ANT H

REmission Test case_FCC_Part 15C_FCC 15.247(2.4G)_30MHz-1GHz

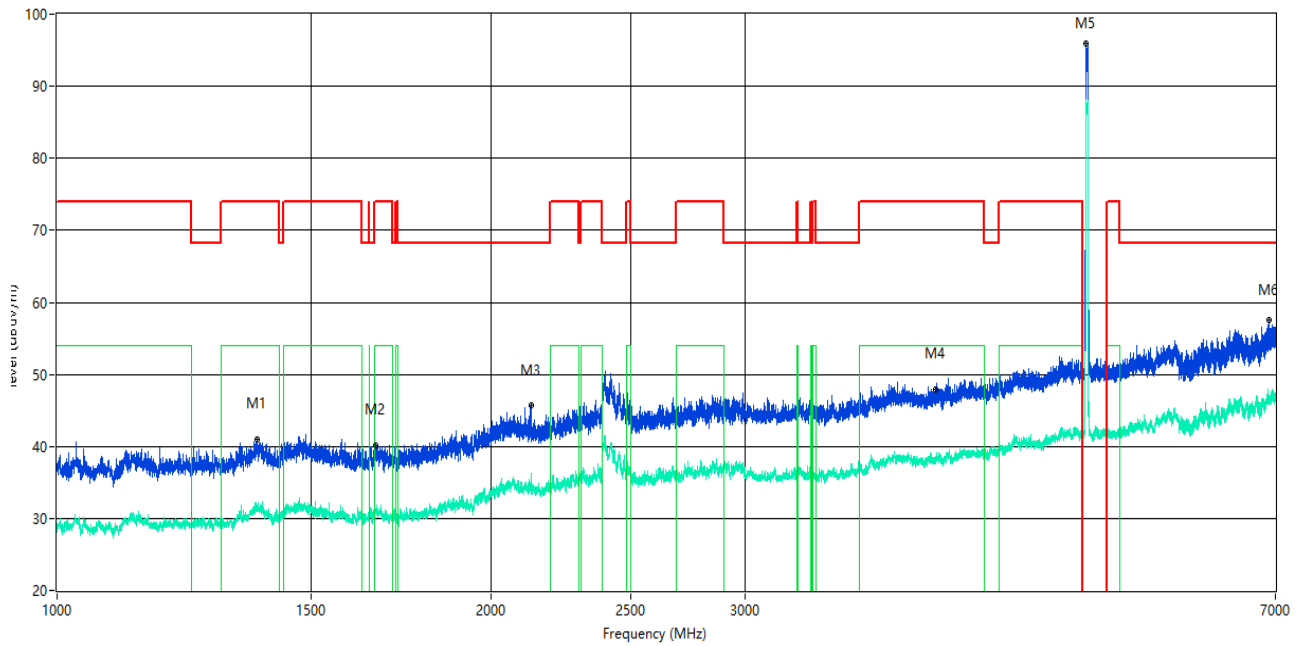


Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
35.576	25.74	25.41	--	-28.26	--	40.0	--	14.59	359.60	150	Horizontal	Pass
57.396	22.01	--	--	-27.86	--	40.0	--	17.99	11.40	150	Horizontal	Pass
163.342	36.21	33.94	--	-31.40	--	43.5	--	9.56	25.20	150	Horizontal	Pass
434.874	27.73	--	--	-23.25	--	46.0	--	18.27	197.90	150	Horizontal	Pass
592.459	31.89	--	--	-19.23	--	46.0	--	14.11	344.00	150	Horizontal	Pass
889.205	36.94	--	--	-13.64	--	46.0	--	9.06	251.80	150	Horizontal	Pass

Note: The spurious above 18G is noise only, do not show on the report.

Band I, 1 GHz to 7 GHz, 11ac20 Low channel, ANT V

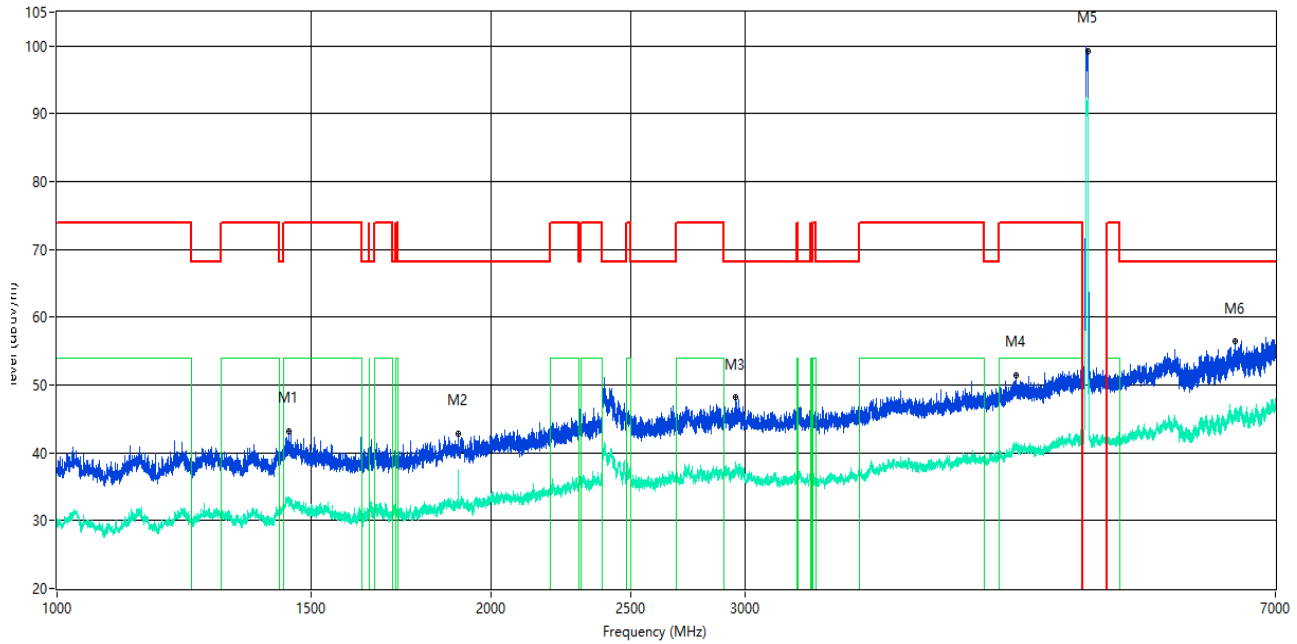
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1375.453	40.98	--	31.1	-12.12	74.0	--	54.0	22.90	6.00	150	Vertical	Pass
1664.417	40.17	--	30.9	-11.43	74.0	--	54.0	23.10	5.00	150	Vertical	Pass
2131.359	45.68	--	36.2	-7.49	68.2	--	--	22.52	7.00	150	Vertical	Pass
4071.241	47.96	--	38.2	-2.81	74.0	--	54.0	15.80	277.30	150	Vertical	Pass
5174.353	95.96	--	88.1	0.42	--	--	--	--	182.20	150	Vertical	Pass
6930.634	57.56	--	46.0	8.76	68.2	--	--	10.64	8.00	150	Vertical	Pass

Band I, 1 GHz to 7 GHz, 11ac20 Low channel, ANT H

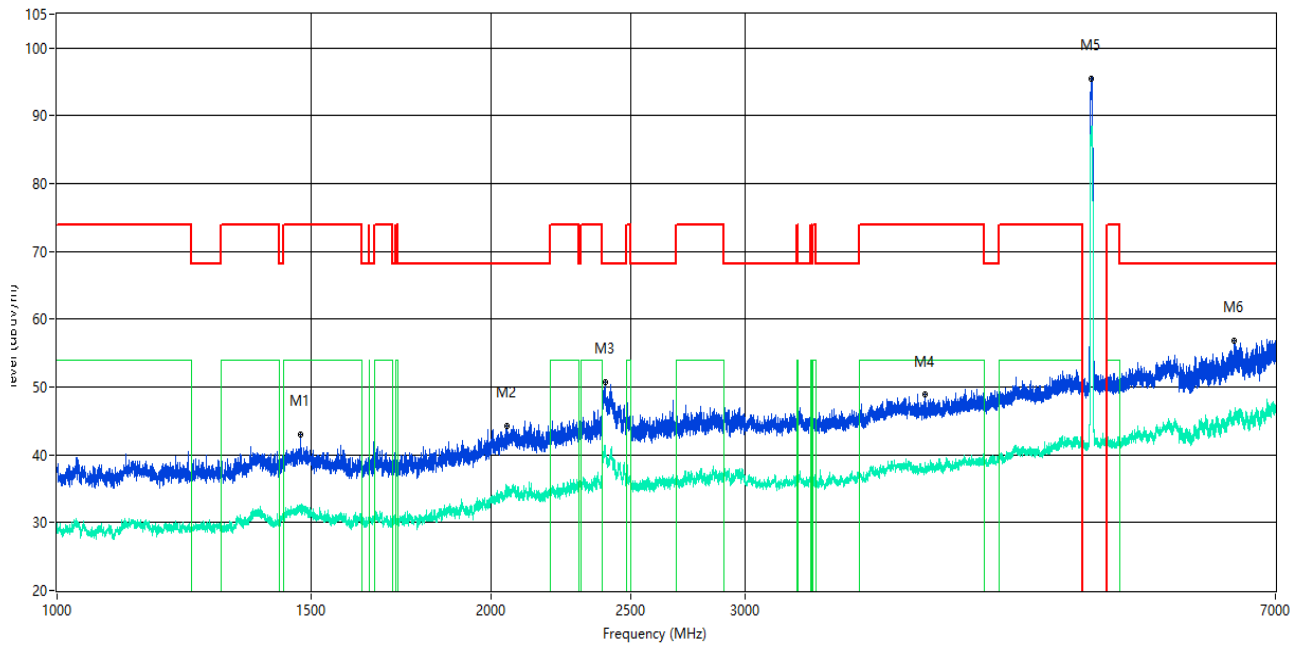
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1449.194	43.13	--	32.4	-11.75	74.0	--	54.0	21.60	305.00	150	Horizontal	Pass
1896.638	42.85	--	37.2	-9.85	68.2	--	--	25.35	264.00	150	Horizontal	Pass
2956.755	48.19	--	38.8	-3.36	68.2	--	--	20.01	68.00	150	Horizontal	Pass
4623.922	51.41	--	41.3	0.23	74.0	--	54.0	12.70	152.00	150	Horizontal	Pass
5186.352	99.32	--	92.1	0.32	--	--	--	--	156.00	150	Horizontal	Pass
6559.680	56.56	--	45.5	8.10	68.2	--	--	11.64	253.00	150	Horizontal	Pass

Band I, 1 GHz to 7 GHz, 11ac20 Middle channel, ANT V

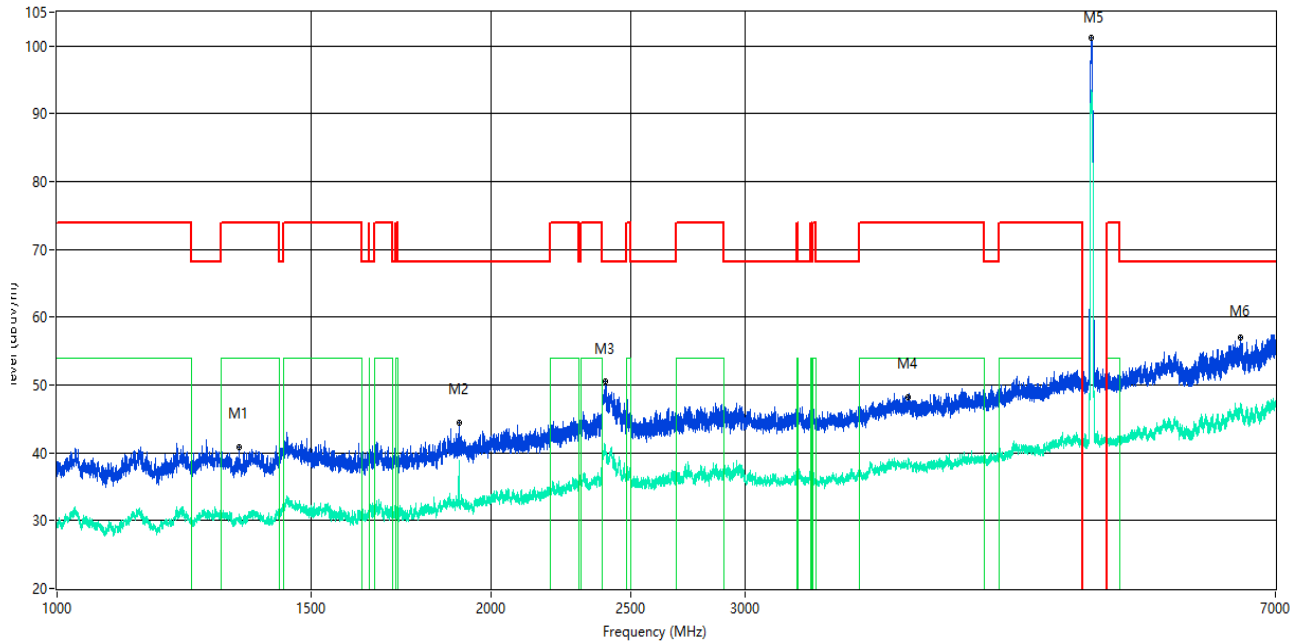
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1475.691	42.97	--	32.3	-11.55	74.0	--	54.0	21.70	1.00	150	Vertical	Pass
2050.869	44.35	--	34.6	-8.03	68.2	--	--	23.85	0.00	150	Vertical	Pass
2398.825	50.76	--	41.1	-0.05	68.2	--	--	17.44	14.00	150	Vertical	Pass
4001.875	48.85	--	38.4	-2.95	74.0	--	54.0	15.60	24.50	150	Vertical	Pass
5213.723	95.56	--	88.5	0.71	--	--	--	--	179.70	150	Vertical	Pass
6551.681	56.80	--	45.9	7.07	68.2	--	--	11.40	13.00	150	Vertical	Pass

Band I, 1 GHz to 7 GHz, 11ac20 Middle channel, ANT H

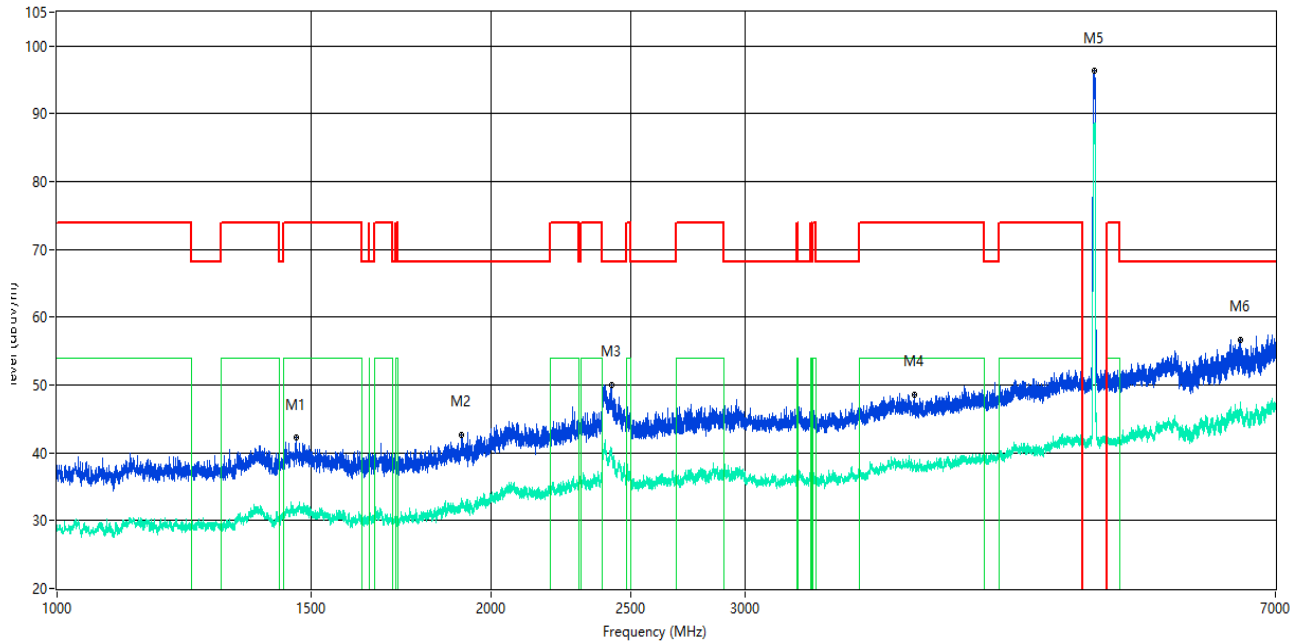
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1336.958	40.89	--	30.3	-11.74	74.0	--	54.0	23.70	6.00	150	Horizontal	Pass
1900.887	44.37	--	38.9	-10.01	68.2	--	--	23.83	47.00	150	Horizontal	Pass
2399.325	50.52	--	41.2	-0.07	68.2	--	--	17.68	35.00	150	Horizontal	Pass
3894.638	48.13	--	38.8	-2.73	74.0	--	54.0	15.20	157.00	150	Horizontal	Pass
5214.473	101.15	--	93.1	0.65	--	--	--	--	97.00	150	Horizontal	Pass
6617.048	56.99	--	46.6	7.95	68.2	--	--	11.21	97.00	150	Horizontal	Pass

Band I, 1 GHz to 7 GHz, 11ac20 High channel, ANT V

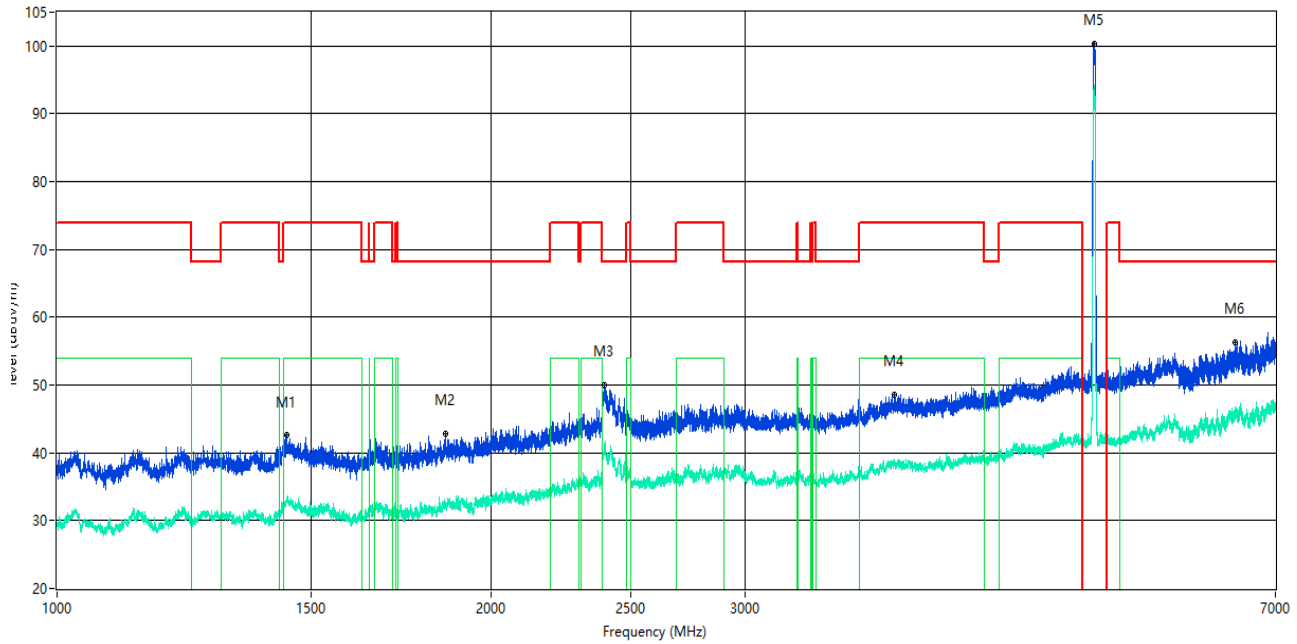
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1465.442	42.21	--	30.8	-11.68	74.0	--	54.0	23.20	4.00	150	Vertical	Pass
1908.386	42.56	--	33.4	-8.78	68.2	--	--	25.64	12.00	150	Vertical	Pass
2424.322	49.98	--	40.7	-0.92	68.2	--	--	18.22	7.00	150	Vertical	Pass
3935.508	48.57	--	38.8	-3.01	74.0	--	54.0	15.20	201.80	150	Vertical	Pass
5245.219	96.30	--	87.9	0.99	--	--	--	--	239.10	150	Vertical	Pass
6617.548	56.63	--	46.8	7.99	68.2	--	--	11.57	3.00	150	Vertical	Pass

Band I, 1 GHz to 7 GHz, 11ac20 High channel, ANT H

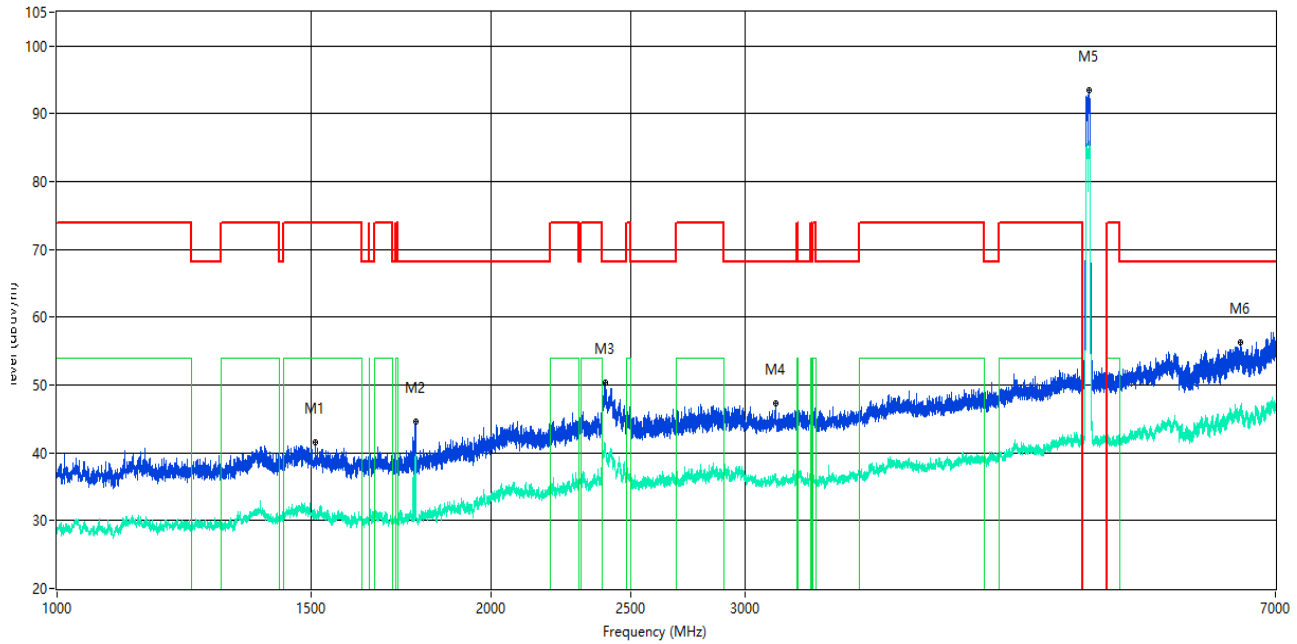
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1442.695	42.63	--	33.4	-11.46	74.0	--	54.0	20.60	56.00	150	Horizontal	Pass
1858.643	42.77	--	32.5	-10.02	68.2	--	--	25.43	4.00	150	Horizontal	Pass
2397.075	49.98	--	40.5	0.01	68.2	--	--	18.22	291.00	150	Horizontal	Pass
3808.399	48.52	--	38.4	-2.58	74.0	--	54.0	15.60	107.00	150	Horizontal	Pass
5244.844	100.32	--	92.6	0.99	--	--	--	--	235.00	150	Horizontal	Pass
6562.555	56.29	--	46.4	8.39	68.2	--	--	11.91	351.00	150	Horizontal	Pass

Band I, 1 GHz to 7 GHz, 11ac40 Low channel, ANT V

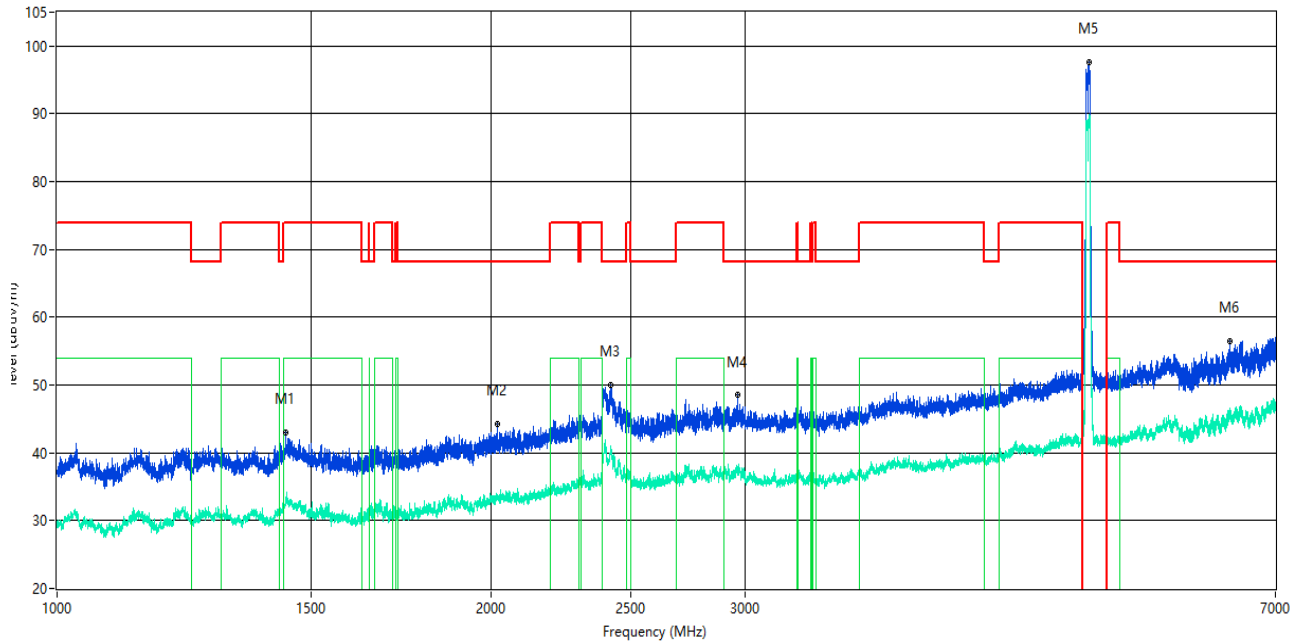
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1510.186	41.63	--	30.8	-11.76	74.0	--	54.0	23.20	15.00	150	Vertical	Pass
1772.403	44.68	--	39.8	-10.75	68.2	--	--	23.52	14.00	150	Vertical	Pass
2402.575	50.31	--	40.8	-0.14	68.2	--	--	17.89	6.00	150	Vertical	Pass
3149.231	47.30	--	37.0	-4.81	68.2	--	--	20.90	297.80	150	Vertical	Pass
5202.475	93.54	--	86.0	0.74	--	--	--	--	181.90	150	Vertical	Pass
6615.423	56.34	--	46.6	7.85	68.2	--	--	11.86	2.00	150	Vertical	Pass

Band I, 1 GHz to 7 GHz, 11ac40 Low channel, ANT H

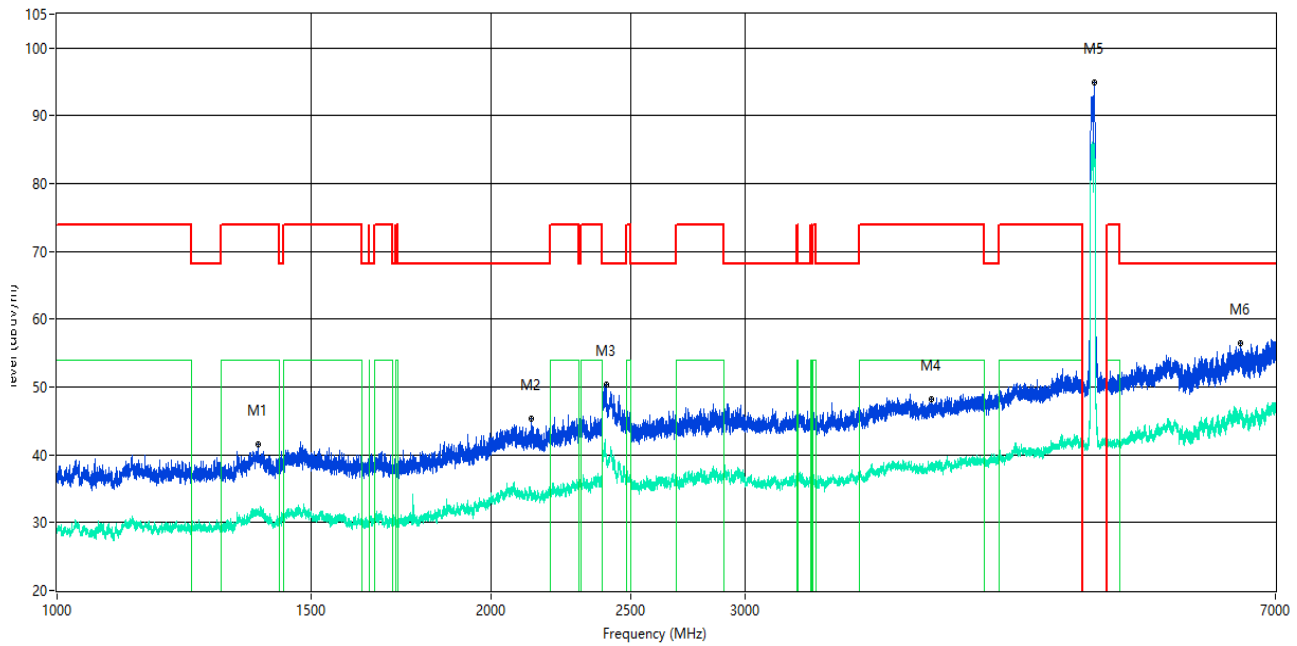
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1439.945	42.94	--	33.5	-11.67	74.0	--	54.0	20.50	331.00	150	Horizontal	Pass
2020.122	44.21	--	33.1	-8.25	68.2	--	--	23.99	59.00	150	Horizontal	Pass
2423.072	49.96	--	41.1	-0.86	68.2	--	--	18.24	3.00	150	Horizontal	Pass
2966.754	48.57	--	37.2	-3.30	68.2	--	--	19.63	198.00	150	Horizontal	Pass
5202.100	97.71	--	88.8	0.73	--	--	--	--	75.00	150	Horizontal	Pass
6511.436	56.39	--	45.6	8.12	68.2	--	--	11.81	353.00	150	Horizontal	Pass

Band I, 1 GHz to 7 GHz, 11ac40 High channel, ANT V

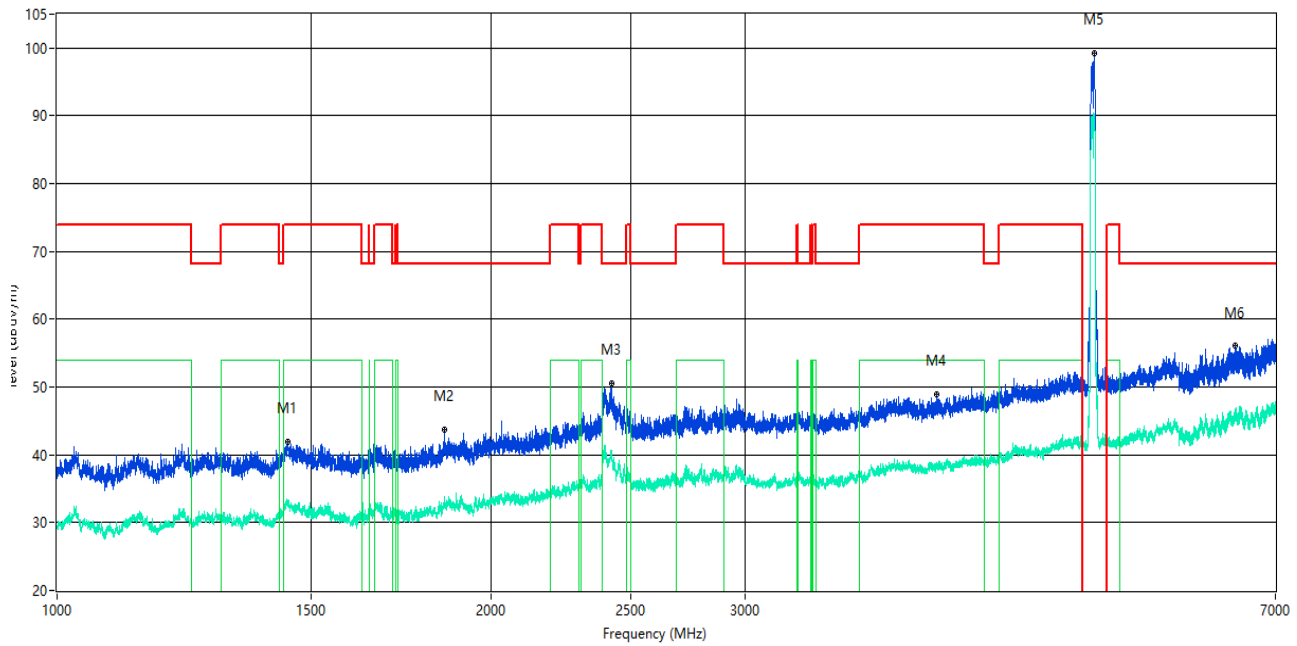
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1378.203	41.53	--	32.1	-12.10	74.0	--	54.0	21.90	3.00	150	Vertical	Pass
2131.859	45.32	--	34.0	-7.51	68.2	--	--	22.88	6.00	150	Vertical	Pass
2403.575	50.29	--	40.0	-0.17	68.2	--	--	17.91	0.00	150	Vertical	Pass
4041.245	48.13	--	37.8	-2.96	74.0	--	54.0	16.20	327.10	150	Vertical	Pass
5241.845	94.86	--	86.0	0.76	--	--	--	--	239.80	150	Vertical	Pass
6618.298	56.39	--	46.7	8.03	68.2	--	--	11.81	58.90	150	Vertical	Pass

Band I, 1 GHz to 7 GHz, 11ac40 High channel, ANT H

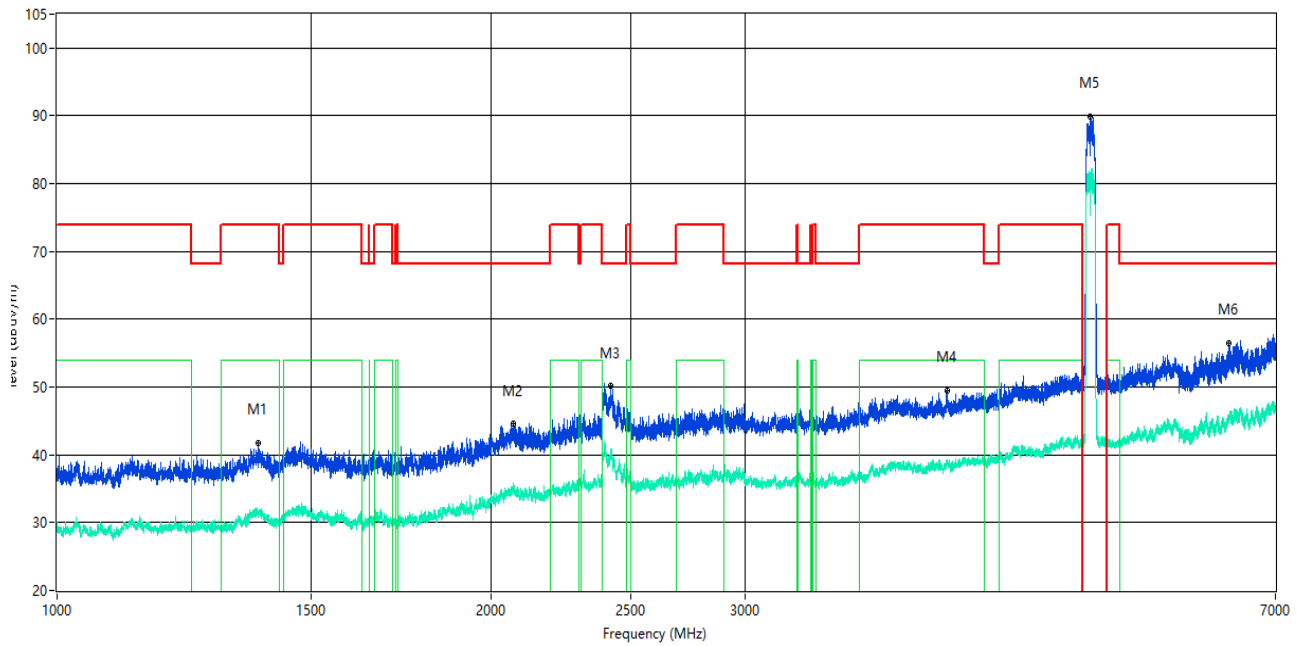
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1446.194	41.94	--	32.4	-11.59	74.0	--	54.0	21.60	241.00	150	Horizontal	Pass
1858.143	43.74	--	33.5	-9.96	68.2	--	--	24.46	3.00	150	Horizontal	Pass
2423.322	50.56	--	40.6	-0.88	68.2	--	--	17.64	4.00	150	Horizontal	Pass
4073.491	48.91	--	38.2	-2.59	74.0	--	54.0	15.80	344.00	150	Horizontal	Pass
5241.845	98.43	--	89.3	0.76	--	--	--	--	42.00	150	Horizontal	Pass
6563.305	56.04	--	46.0	8.46	68.2	--	--	12.16	283.00	150	Horizontal	Pass

Band I, 1 GHz to 7 GHz, 11ac80 Middle channel, ANT V

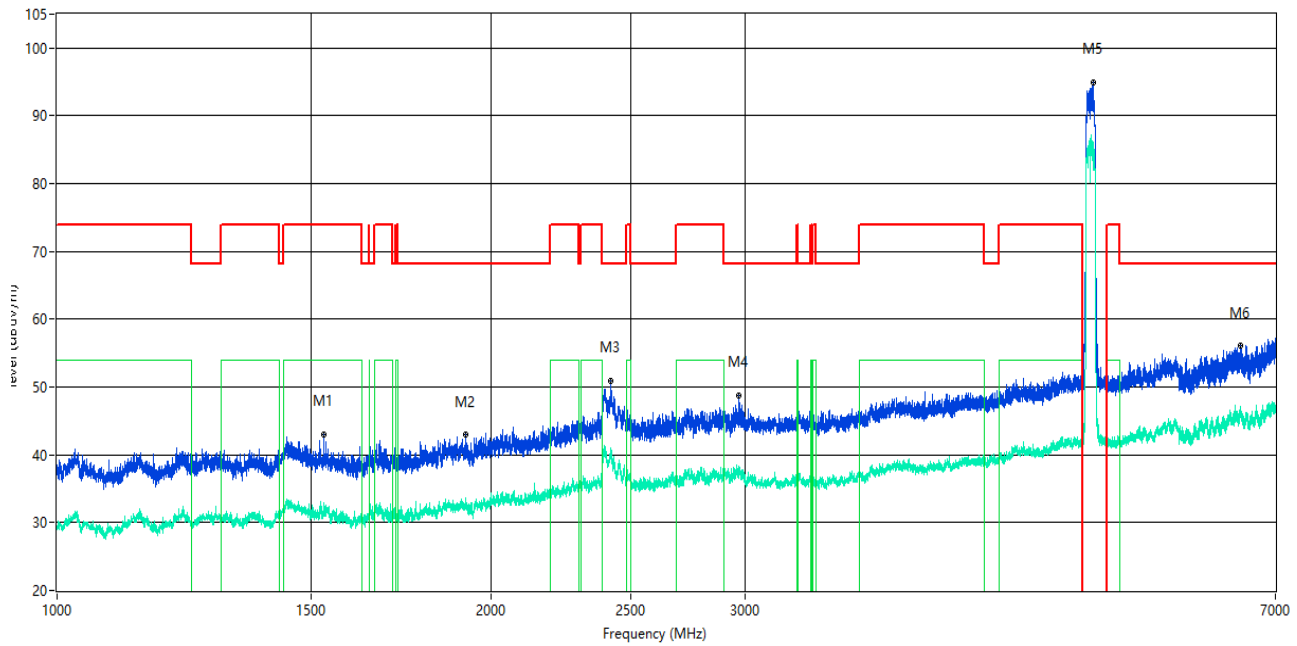
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1379.953	41.71	--	31.7	-12.09	74.0	--	54.0	22.30	3.00	150	Vertical	Pass
2072.116	44.56	--	35.6	-7.55	68.2	--	--	23.64	10.00	150	Vertical	Pass
2422.822	50.11	--	40.5	-0.85	68.2	--	--	18.09	0.00	150	Vertical	Pass
4142.482	49.53	--	39.1	-2.05	74.0	--	54.0	14.90	326.60	150	Vertical	Pass
5205.849	89.90	--	81.5	0.82	--	--	--	--	243.30	150	Vertical	Pass
6495.688	56.48	--	45.4	6.96	68.2	--	--	11.72	44.60	150	Vertical	Pass

Band I, 1 GHz to 7 GHz, 11ac80 Middle channel, ANT H

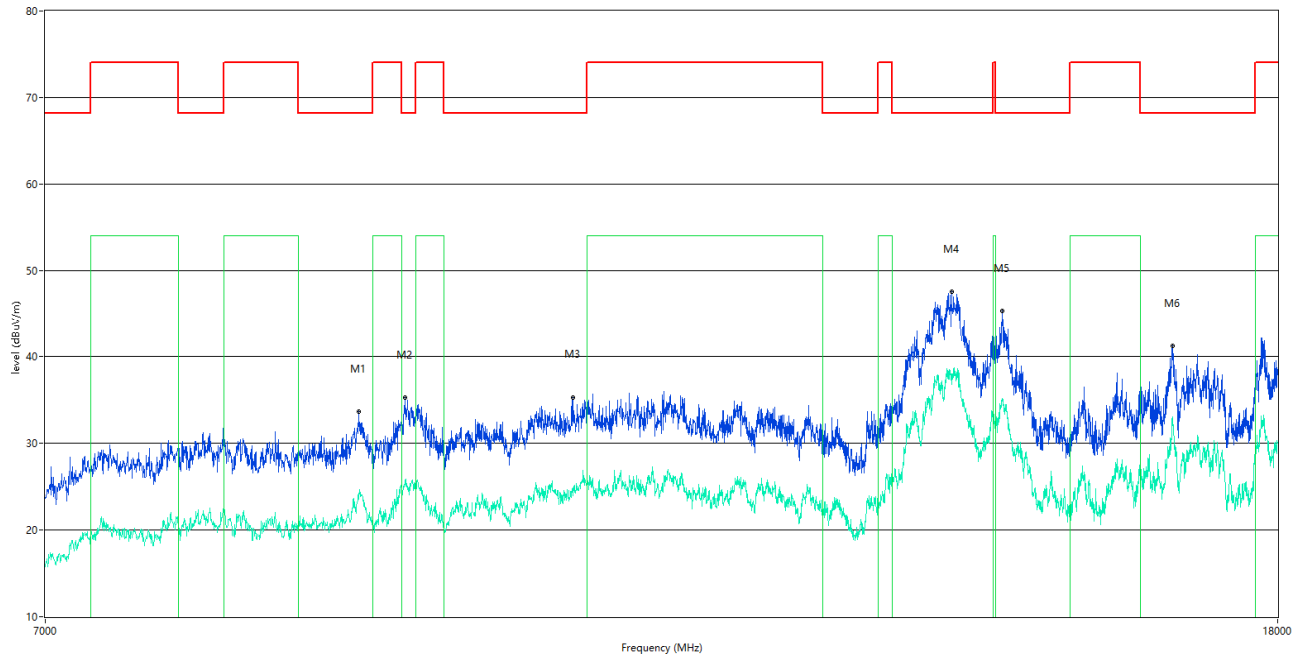
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1530.434	43.05	--	32.9	-12.09	74.0	--	54.0	21.10	2.00	150	Horizontal	Pass
1918.885	42.92	--	33.7	-9.78	68.2	--	--	25.28	2.00	150	Horizontal	Pass
2422.572	50.91	--	40.3	-0.84	68.2	--	--	17.29	9.00	150	Horizontal	Pass
2973.003	48.68	--	38.3	-3.11	68.2	--	--	19.52	6.00	150	Horizontal	Pass
5232.471	94.91	--	86.1	0.49	--	--	--	--	1.40	150	Horizontal	Pass
6617.673	56.10	--	46.1	7.99	68.2	--	--	12.10	12.00	150	Horizontal	Pass

Band I, 7 GHz to 18 GHz, 11ac20 Low channel, ANT V

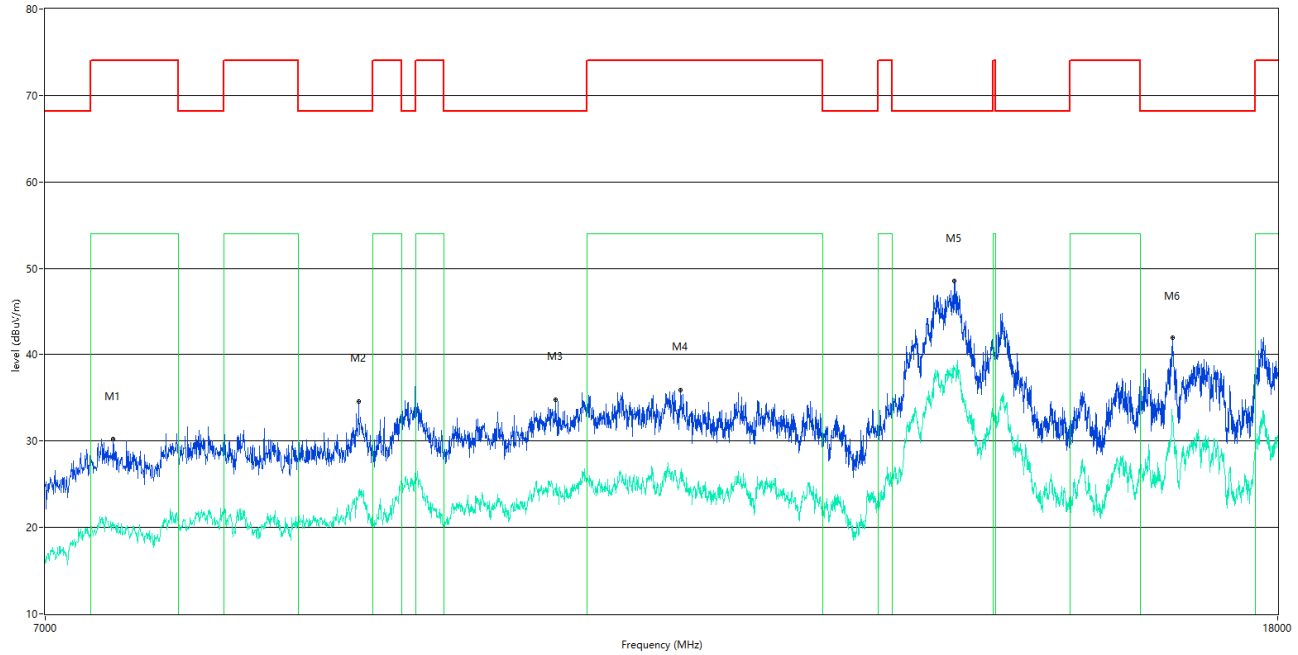
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz_B1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
8899.775	33.63	--	24.2	-32.30	68.2	--	--	34.57	70.00	150	Vertical	Pass
9221.445	35.23	--	25.4	-32.09	68.2	--	--	32.97	102.00	150	Vertical	Pass
10486.128	35.23	--	24.0	-27.15	68.2	--	--	32.97	66.00	150	Vertical	Pass
14021.745	47.61	--	38.0	-6.79	68.2	--	--	20.59	328.00	150	Vertical	Pass
14571.607	45.32	--	34.9	-11.13	68.2	--	--	22.88	162.00	150	Vertical	Pass
16606.098	41.19	--	32.7	-10.28	68.2	--	--	27.01	13.00	150	Vertical	Pass

Band I, 7 GHz to 18 GHz, 11ac20 Low channel, ANT H

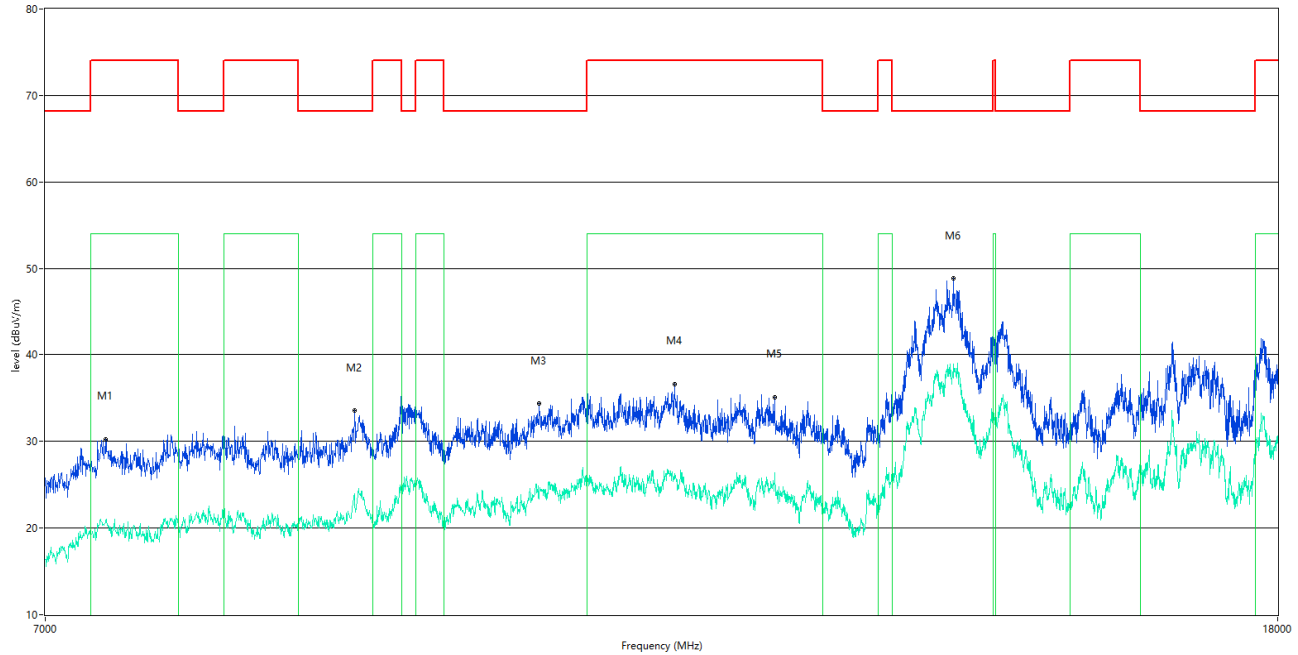
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz_B1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7373.907	30.25	--	20.0	-36.87	74.0	--	54.0	34.00	247.00	150	Horizontal	Pass
8899.775	34.56	--	23.6	-32.30	68.2	--	--	33.64	58.00	150	Horizontal	Pass
10348.663	34.80	--	24.6	-28.14	68.2	--	--	33.40	323.00	150	Horizontal	Pass
11390.652	35.90	--	25.9	-24.64	74.0	--	54.0	28.10	136.00	150	Horizontal	Pass
14046.488	48.54	--	38.5	-6.60	68.2	--	--	19.66	87.00	150	Horizontal	Pass
16606.098	41.96	--	32.6	-10.28	68.2	--	--	26.24	11.00	150	Horizontal	Pass

Band I, 7 GHz to 18 GHz, 11ac20 Middle channel, ANT V

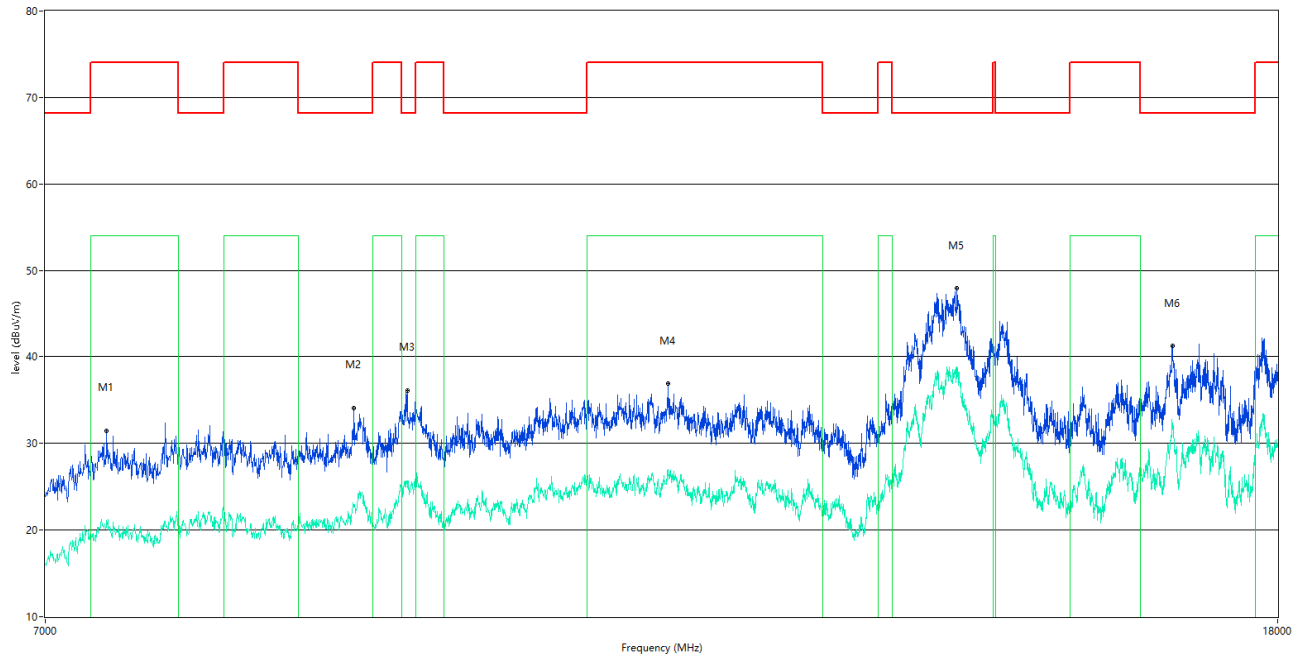
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz_B1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7329.918	30.22	--	20.6	-37.12	74.0	--	54.0	33.40	57.00	150	Vertical	Pass
8875.031	33.57	--	22.7	-32.86	68.2	--	--	34.63	298.00	150	Vertical	Pass
10219.445	34.37	--	23.6	-28.25	68.2	--	--	33.83	44.00	150	Vertical	Pass
11338.415	36.59	--	26.3	-24.54	74.0	--	54.0	27.70	182.00	150	Vertical	Pass
12240.190	35.10	--	25.3	-24.34	74.0	--	54.0	28.70	42.00	150	Vertical	Pass
14035.491	48.89	--	38.3	-6.75	68.2	--	--	19.31	153.00	150	Vertical	Pass

Band I, 7 GHz to 18 GHz, 11ac20 Middle channel, ANT H

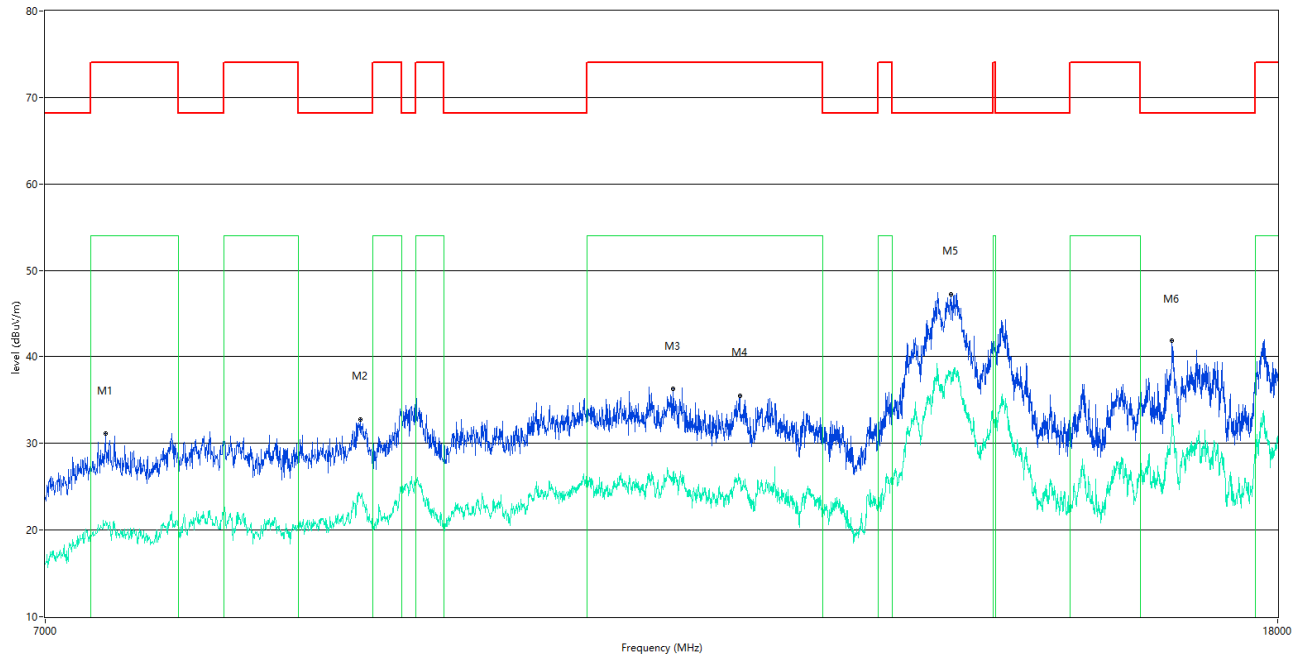
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz_B1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7338.165	31.39	--	21.1	-37.11	74.0	--	54.0	32.90	166.00	150	Horizontal	Pass
8869.533	33.99	--	22.7	-32.95	68.2	--	--	34.21	343.00	150	Horizontal	Pass
9237.941	36.11	--	25.7	-31.84	68.2	--	--	32.09	316.00	150	Horizontal	Pass
11283.429	36.87	--	27.0	-24.88	74.0	--	54.0	27.00	228.00	150	Horizontal	Pass
14076.731	47.93	--	38.8	-6.48	68.2	--	--	20.27	264.00	150	Horizontal	Pass
16603.349	41.17	--	32.3	-10.25	68.2	--	--	27.03	11.00	150	Horizontal	Pass

Band I, 7 GHz to 18 GHz, 11ac20 High channel, ANT V

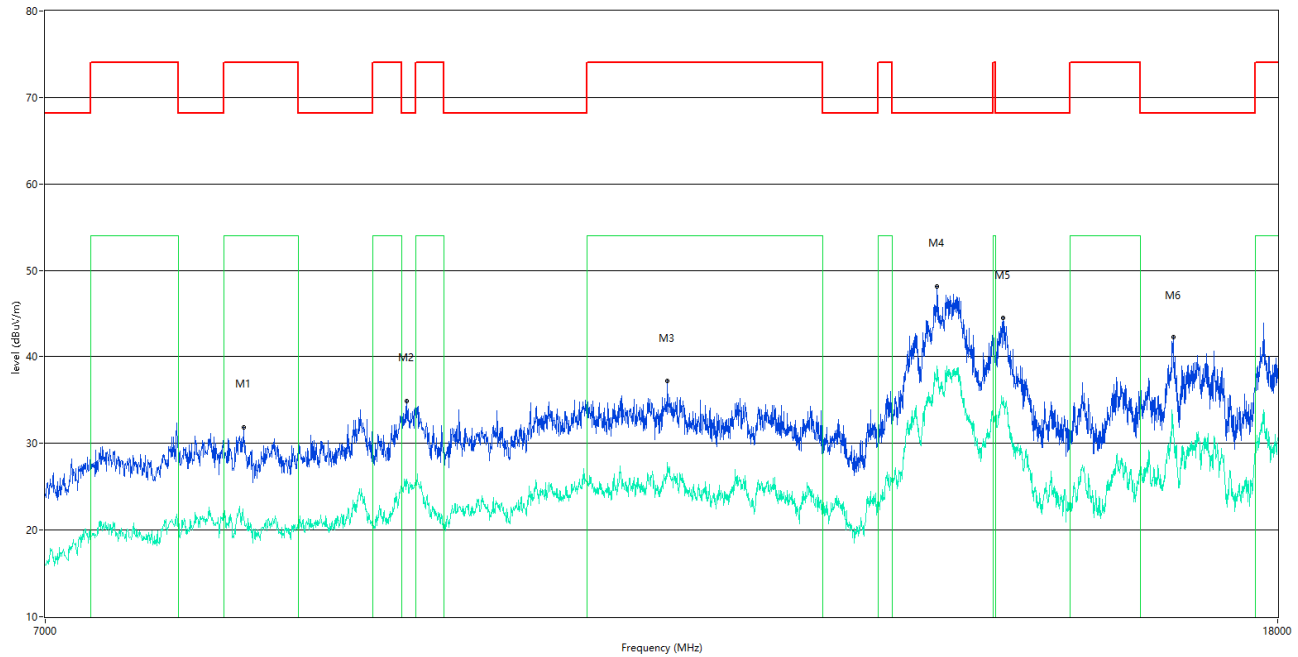
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz_B1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7329.918	31.12	--	21.0	-37.12	74.0	--	54.0	33.00	240.00	150	Vertical	Pass
8910.772	32.74	--	23.8	-32.41	68.2	--	--	35.46	180.00	150	Vertical	Pass
11324.669	36.28	--	26.6	-24.66	74.0	--	54.0	27.40	226.00	150	Vertical	Pass
11918.520	35.48	--	25.5	-24.30	74.0	--	54.0	28.50	107.00	150	Vertical	Pass
14010.747	47.32	--	38.2	-7.03	68.2	--	--	20.88	103.00	150	Vertical	Pass
16600.600	41.80	--	32.8	-10.26	68.2	--	--	26.40	357.00	150	Vertical	Pass

Band I, 7 GHz to 18 GHz, 11ac20 High channel, ANT H

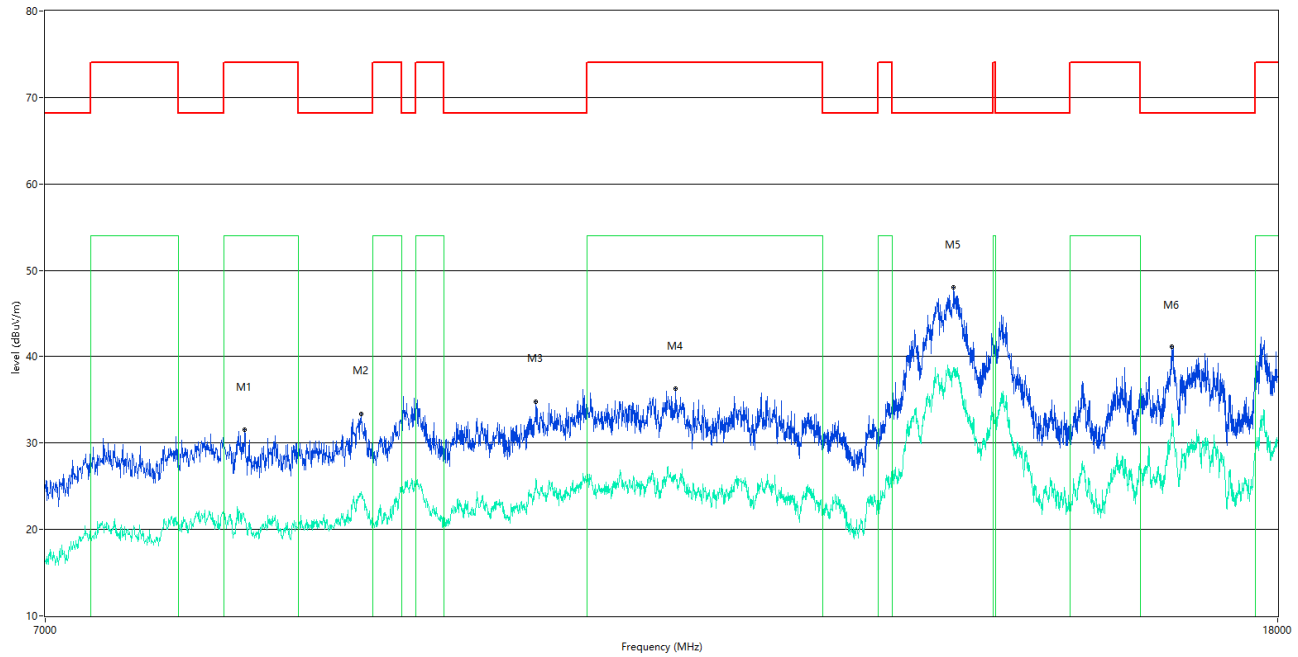
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz_B1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
8151.962	31.79	--	21.2	-35.98	74.0	--	54.0	32.80	330.00	150	Horizontal	Pass
9235.191	34.87	--	25.8	-31.74	68.2	--	--	33.33	71.00	150	Horizontal	Pass
11277.931	37.18	--	27.8	-24.69	74.0	--	54.0	26.20	221.00	150	Horizontal	Pass
13865.034	48.20	--	38.9	-9.62	68.2	--	--	20.00	77.00	150	Horizontal	Pass
14585.354	44.50	--	34.3	-10.86	68.2	--	--	23.70	156.00	150	Horizontal	Pass
16614.346	42.20	--	32.1	-10.26	68.2	--	--	26.00	340.00	150	Horizontal	Pass

Band I, 7 GHz to 18 GHz, 11ac40 Low channel, ANT V

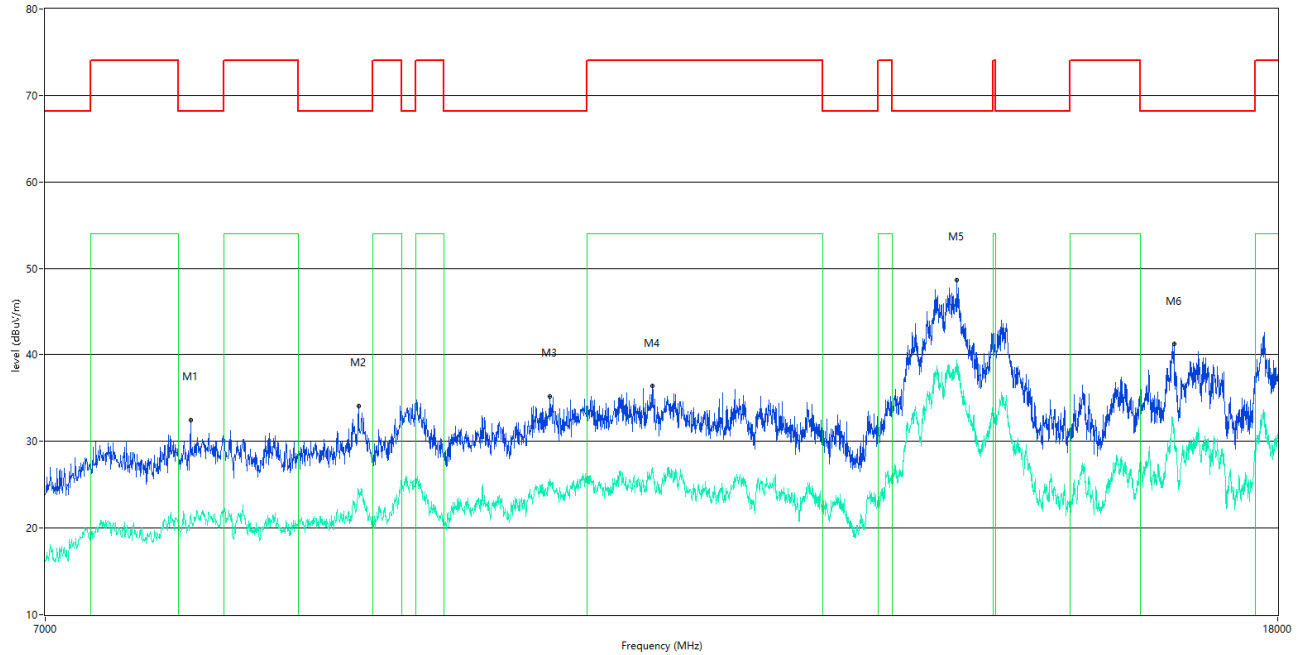
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz_B1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
8157.461	31.49	--	21.2	-36.11	74.0	--	54.0	32.80	269.00	150	Vertical	Pass
8916.271	33.37	--	24.2	-32.29	68.2	--	--	34.83	268.00	150	Vertical	Pass
10194.701	34.77	--	25.8	-27.87	68.2	--	--	33.43	29.00	150	Vertical	Pass
11343.914	36.25	--	26.3	-24.24	74.0	--	54.0	27.70	102.00	150	Vertical	Pass
14043.739	48.03	--	38.7	-6.67	68.2	--	--	20.17	210.00	150	Vertical	Pass
16597.851	41.12	--	33.3	-10.41	68.2	--	--	27.08	271.00	150	Vertical	Pass

Band I, 7 GHz to 18 GHz, 11ac40 Low channel, ANT H

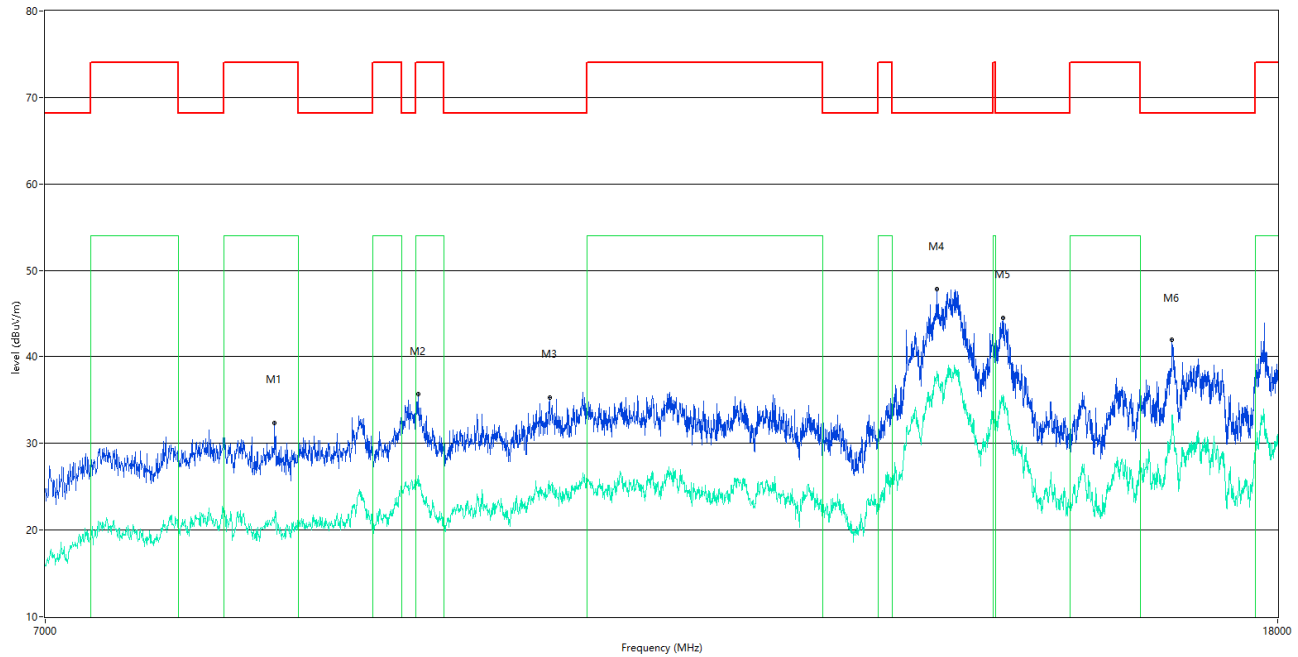
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz_B1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7824.794	32.42	--	21.6	-36.84	68.2	--	--	35.78	94.00	150	Horizontal	Pass
8899.775	34.05	--	24.2	-32.30	68.2	--	--	34.15	304.00	150	Horizontal	Pass
10307.423	35.18	--	25.2	-27.93	68.2	--	--	33.02	314.00	150	Horizontal	Pass
11148.713	36.38	--	26.9	-25.23	74.0	--	54.0	27.10	172.00	150	Horizontal	Pass
14079.480	48.72	--	39.4	-6.58	68.2	--	--	19.48	104.00	150	Horizontal	Pass
16625.344	41.26	--	31.6	-10.52	68.2	--	--	26.94	190.00	150	Horizontal	Pass

Band I, 7 GHz to 18 GHz, 11ac40 High channel, ANT V

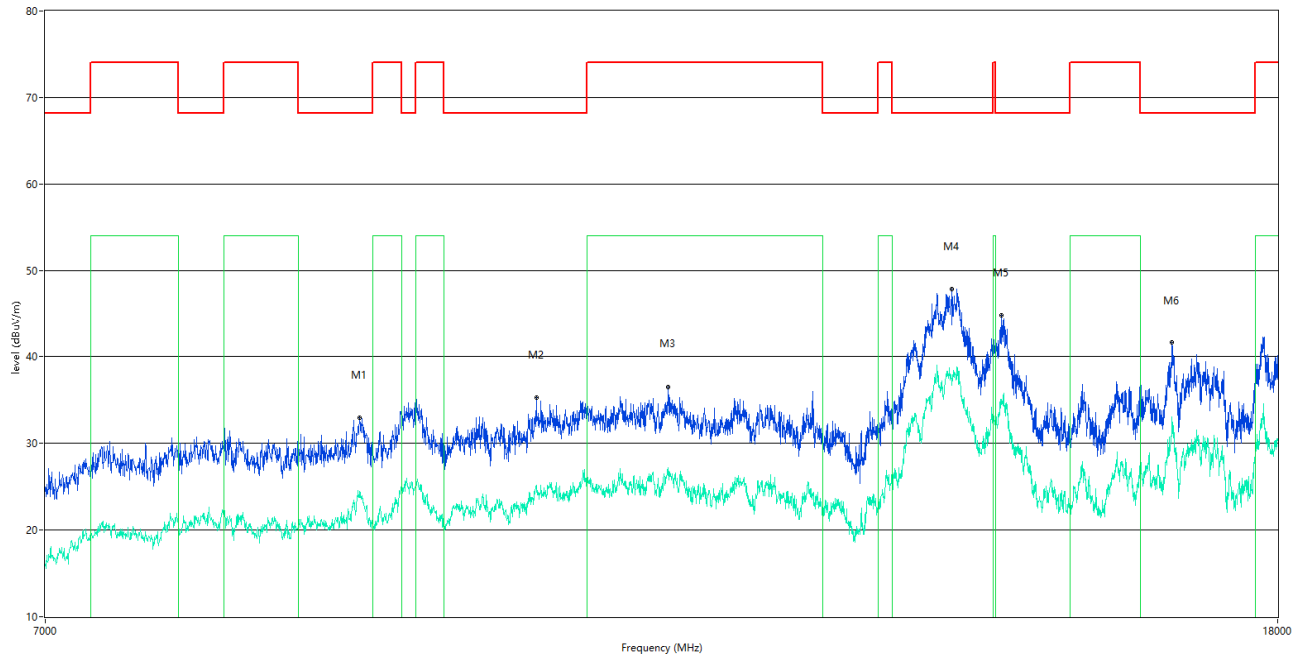
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz_B1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
8344.414	32.34	--	20.9	-35.69	74.0	--	54.0	33.10	172.00	150	Vertical	Pass
9317.671	35.69	--	26.2	-31.53	74.0	--	54.0	27.80	241.00	150	Vertical	Pass
10301.925	35.28	--	24.8	-27.65	68.2	--	--	32.92	331.00	150	Vertical	Pass
13865.034	47.87	--	38.3	-9.62	68.2	--	--	20.33	278.00	150	Vertical	Pass
14588.103	44.53	--	35.6	-10.79	68.2	--	--	23.67	3.00	150	Vertical	Pass
16600.600	41.89	--	33.2	-10.26	68.2	--	--	26.31	101.00	150	Vertical	Pass

Band I, 7 GHz to 18 GHz, 11ac40 High channel, ANT H

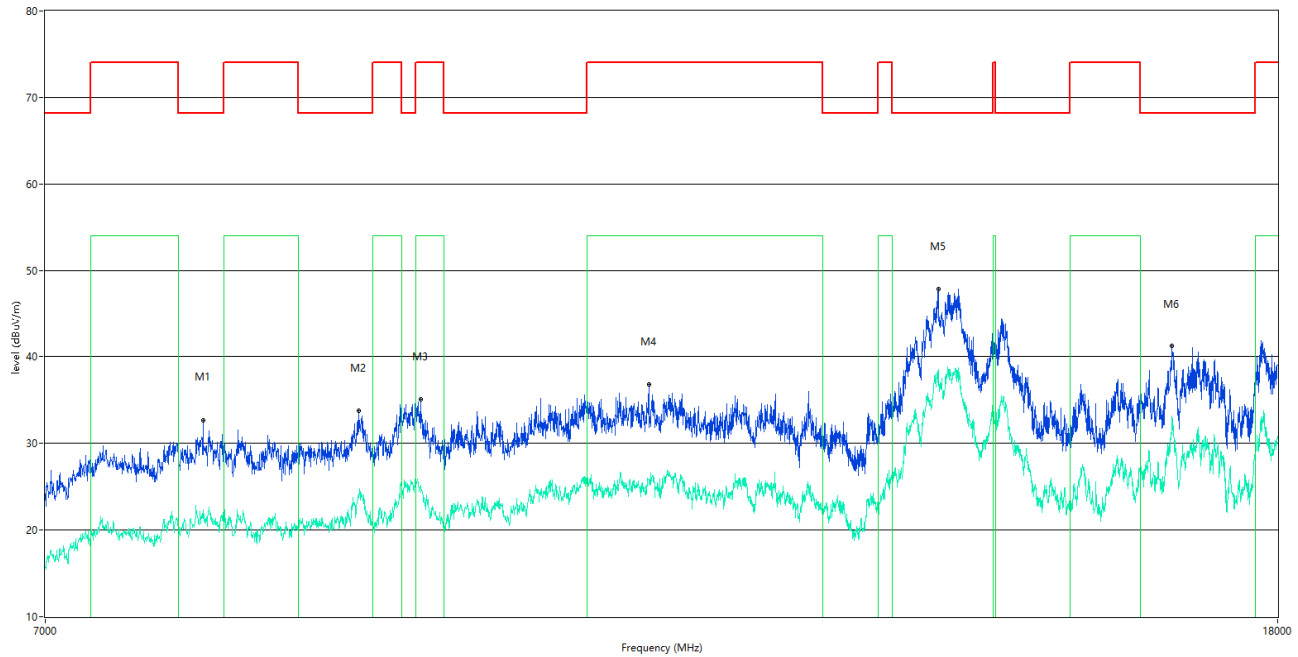
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz_B1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
8908.023	32.89	--	24.5	-32.42	68.2	--	--	35.31	137.00	150	Horizontal	Pass
10197.451	35.23	--	25.1	-27.97	68.2	--	--	32.97	17.00	150	Horizontal	Pass
11283.429	36.50	--	26.3	-24.88	74.0	--	54.0	27.70	210.00	150	Horizontal	Pass
14021.745	47.88	--	37.2	-6.79	68.2	--	--	20.32	247.00	150	Horizontal	Pass
14568.858	44.83	--	34.6	-11.12	68.2	--	--	23.37	344.00	150	Horizontal	Pass
16597.851	41.66	--	33.0	-10.41	68.2	--	--	26.54	217.00	150	Horizontal	Pass

Band I, 7 GHz to 18 GHz, 11ac80 Middle channel, ANT V

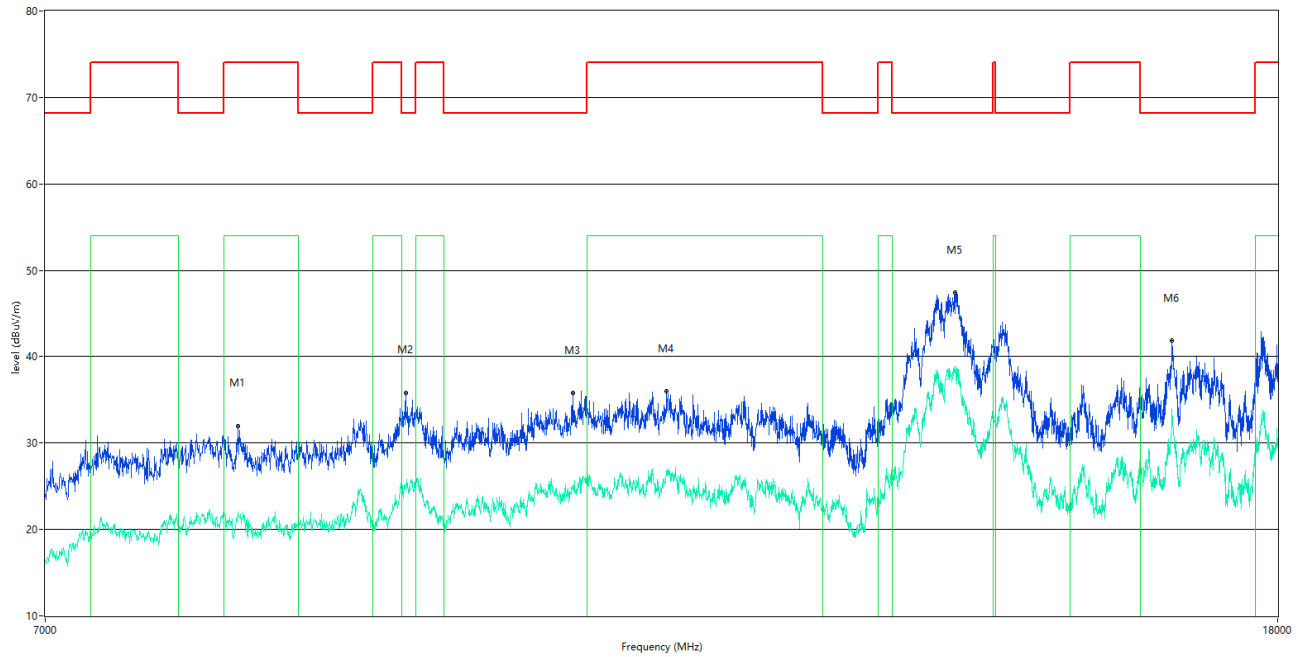
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz_B1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7899.025	32.64	--	22.3	-36.87	68.2	--	--	35.56	237.00	150	Vertical	Pass
8899.775	33.73	--	23.7	-32.30	68.2	--	--	34.47	306.00	150	Vertical	Pass
9331.417	35.01	--	25.2	-31.85	74.0	--	54.0	28.80	239.00	150	Vertical	Pass
11115.721	36.73	--	25.8	-25.22	74.0	--	54.0	28.20	321.00	150	Vertical	Pass
13878.780	47.85	--	38.4	-9.64	68.2	--	--	20.35	178.00	150	Vertical	Pass
16597.851	41.25	--	33.0	-10.41	68.2	--	--	26.95	340.00	150	Vertical	Pass

Band I, 7 GHz to 18 GHz, 11ac80 Middle channel, ANT H

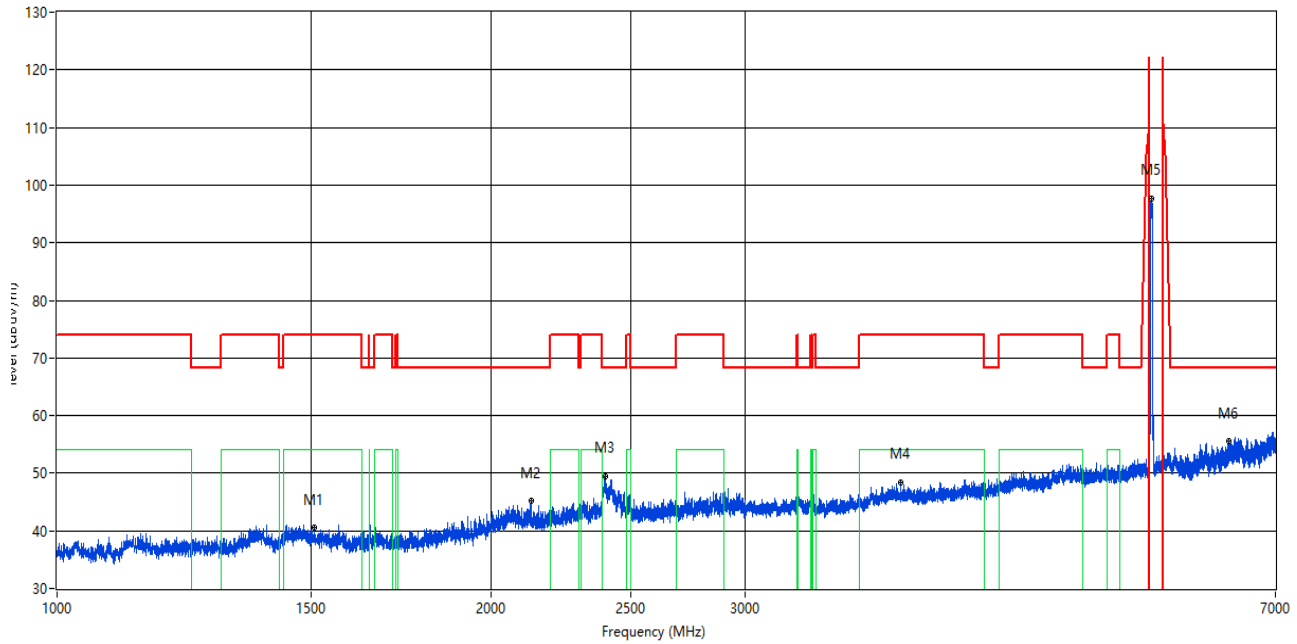
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz_B1



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
8113.472	31.93	--	21.9	-35.22	74.0	--	54.0	32.10	199.00	150	Horizontal	Pass
9226.943	35.73	--	25.1	-32.00	68.2	--	--	32.47	43.00	150	Horizontal	Pass
10486.128	35.76	--	25.0	-27.15	68.2	--	--	32.44	231.00	150	Horizontal	Pass
11266.933	35.95	--	26.8	-25.09	74.0	--	54.0	27.20	248.00	150	Horizontal	Pass
14060.235	47.51	--	38.1	-6.35	68.2	--	--	20.69	69.00	150	Horizontal	Pass
16597.851	41.78	--	34.0	-10.41	68.2	--	--	26.42	222.00	150	Horizontal	Pass

Band IV, 1 GHz to 7 GHz, 11ac20 Low channel, ANT V

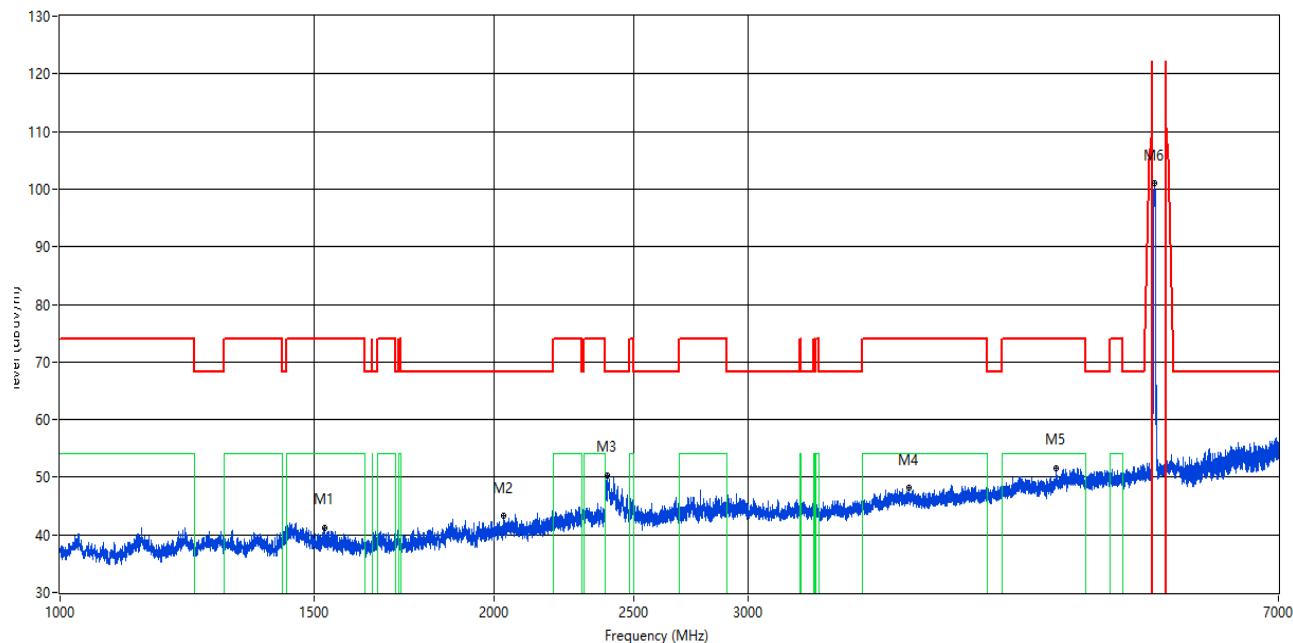
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band4



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1507.437	40.61	--	--	-11.73	74.0	--	54.0	13.39	253.00	150	Vertical	Pass
2132.608	45.30	--	--	-7.55	68.2	--	--	22.90	111.00	150	Vertical	Pass
2399.575	49.45	--	--	-0.07	68.2	--	--	18.75	24.00	150	Vertical	Pass
3846.644	48.31	--	--	-2.93	74.0	--	54.0	5.69	80.00	150	Vertical	Pass
5739.408	97.01	--	--	2.19	--	--	--	--	53.00	150	Vertical	Pass
6497.813	55.51	--	--	6.87	68.2	--	--	12.69	191.00	150	Vertical	Pass

Band IV, 1 GHz to 7 GHz, 11ac20 Low channel, ANT H

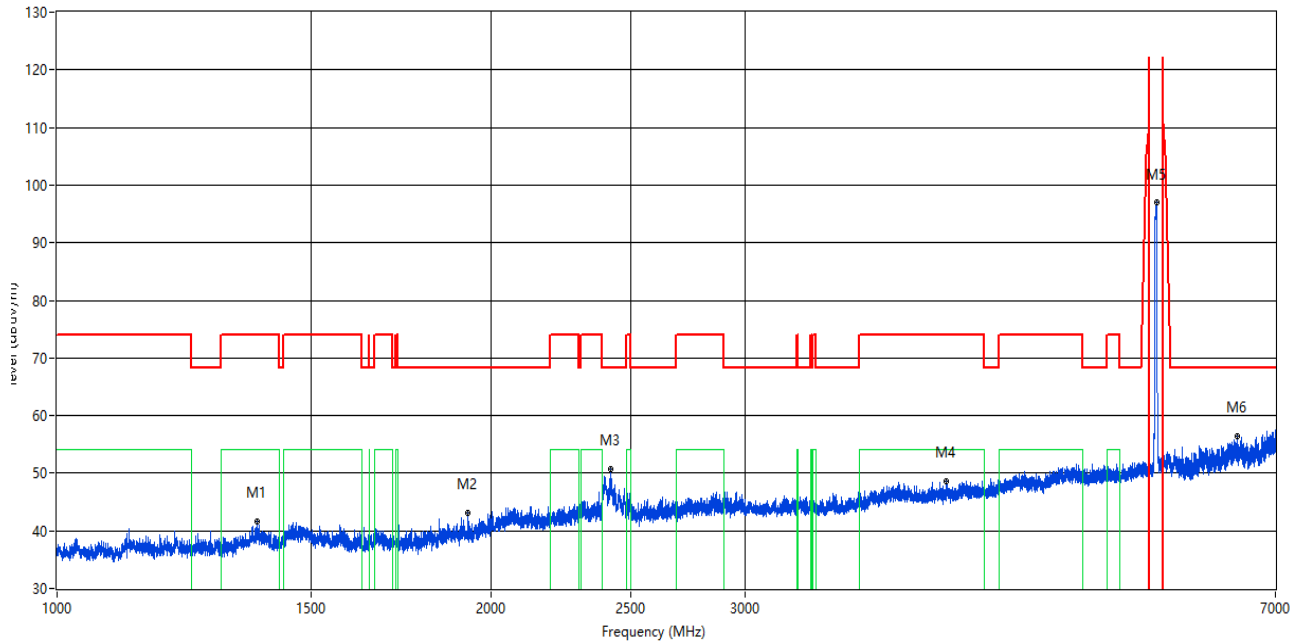
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band4



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1525.184	41.30	--	--	-11.77	74.0	--	54.0	12.70	2.00	150	Horizontal	Pass
2031.871	43.28	--	--	-7.85	68.2	--	--	24.92	108.00	150	Horizontal	Pass
2397.325	50.37	--	--	-0.01	68.2	--	--	17.83	224.00	150	Horizontal	Pass
3879.640	48.13	--	--	-2.95	74.0	--	54.0	5.87	212.00	150	Horizontal	Pass
4910.386	51.63	--	--	0.51	74.0	--	54.0	2.37	328.00	150	Horizontal	Pass
5739.408	100.95	--	--	2.19	--	--	--	--	5.00	150	Horizontal	Pass

Band IV, 1 GHz to 7 GHz, 11ac20 Middle channel, ANT V

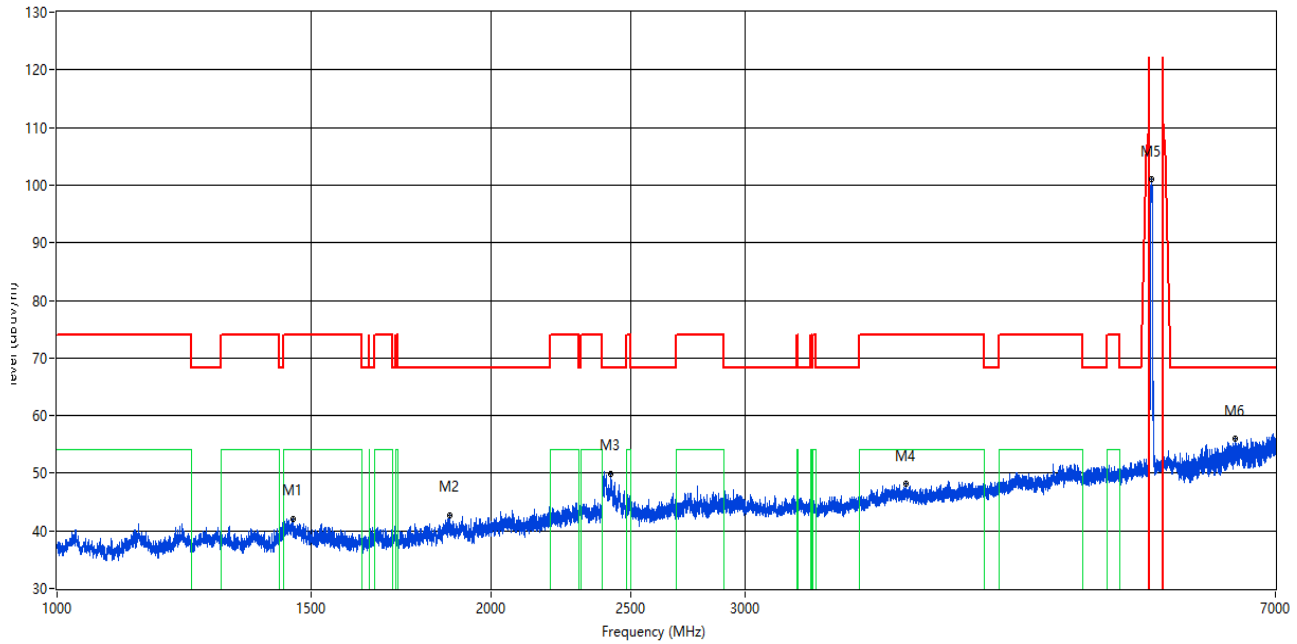
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band4



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1375.453	41.65	--	--	-12.12	74.0	--	54.0	12.35	1.00	150	Vertical	Pass
1925.884	43.12	--	--	-9.79	68.2	--	--	25.08	165.00	150	Vertical	Pass
2423.072	50.69	--	--	-0.86	68.2	--	--	17.51	4.00	150	Vertical	Pass
4139.858	48.66	--	--	-2.20	74.0	--	54.0	5.34	166.00	150	Vertical	Pass
5790.026	97.02	--	--	2.93	--	--	--	--	166.00	150	Vertical	Pass
6592.176	56.33	--	--	7.46	68.2	--	--	11.87	211.00	150	Vertical	Pass

Band IV, 1 GHz to 7 GHz, 11ac20 Middle channel, ANT H

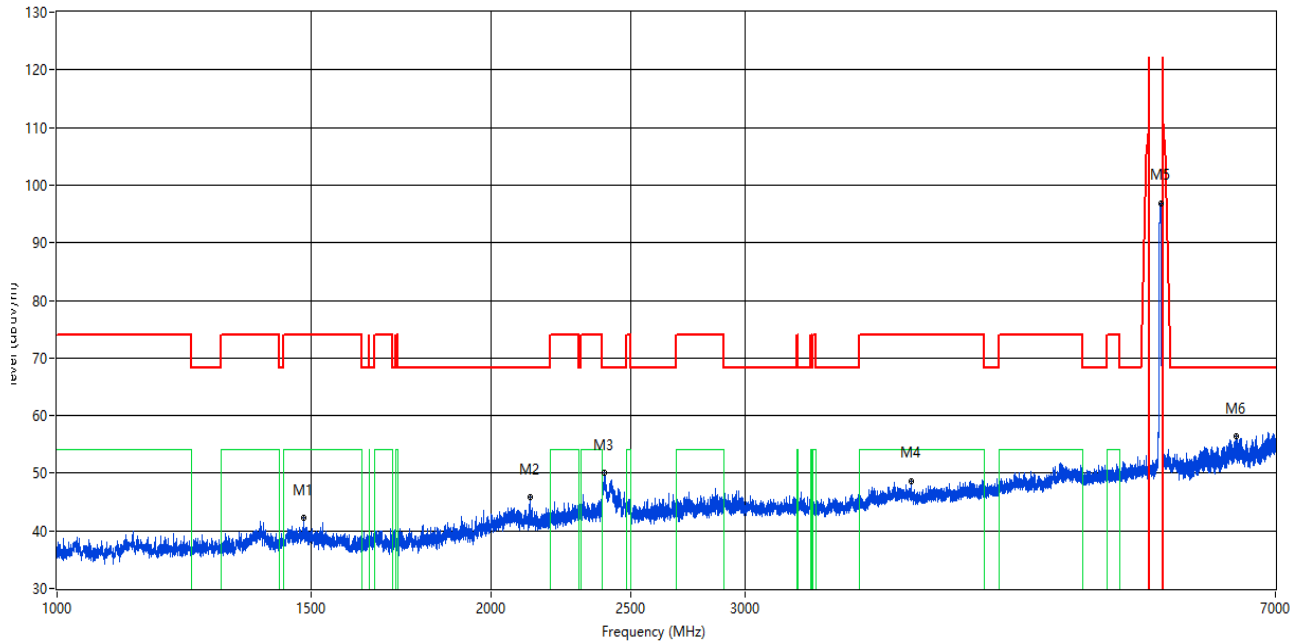
R Emission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band4



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1458.193	42.13	--	--	-11.90	74.0	--	54.0	11.87	3.00	150	Horizontal	Pass
1870.891	42.64	--	--	-10.17	68.2	--	--	25.56	165.00	150	Horizontal	Pass
2421.572	49.95	--	--	-0.81	68.2	--	--	18.25	188.00	150	Horizontal	Pass
3879.640	48.13	--	--	-2.95	74.0	--	54.0	5.87	4.00	150	Horizontal	Pass
5739.408	100.95	--	--	2.19	--	--	--	--	2.00	150	Horizontal	Pass
6562.805	55.95	--	--	8.41	68.2	--	--	12.25	260.00	150	Horizontal	Pass

Band IV, 1 GHz to 7 GHz, 11ac20 High channel, ANT V

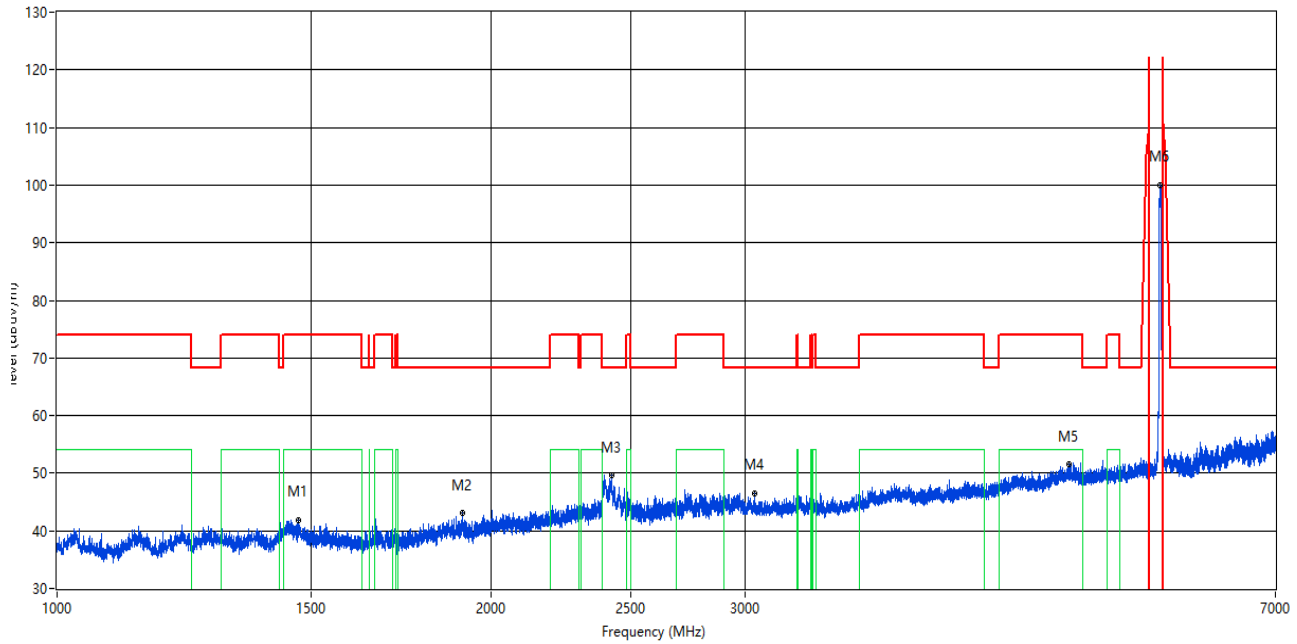
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band4



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1482.190	42.32	--	--	-11.57	74.0	--	54.0	11.68	337.00	150	Vertical	Pass
2130.109	45.79	--	--	-7.42	68.2	--	--	22.41	206.00	150	Vertical	Pass
2396.825	50.01	--	--	0.02	68.2	--	--	18.19	3.00	150	Vertical	Pass
3912.261	48.60	--	--	-2.88	74.0	--	54.0	5.40	10.00	150	Vertical	Pass
5830.146	96.79	--	--	2.99	--	--	--	--	263.00	150	Vertical	Pass
6573.803	56.37	--	--	7.84	68.2	--	--	11.83	271.00	150	Vertical	Pass

Band IV, 1 GHz to 7 GHz, 11ac20 High channel, ANT H

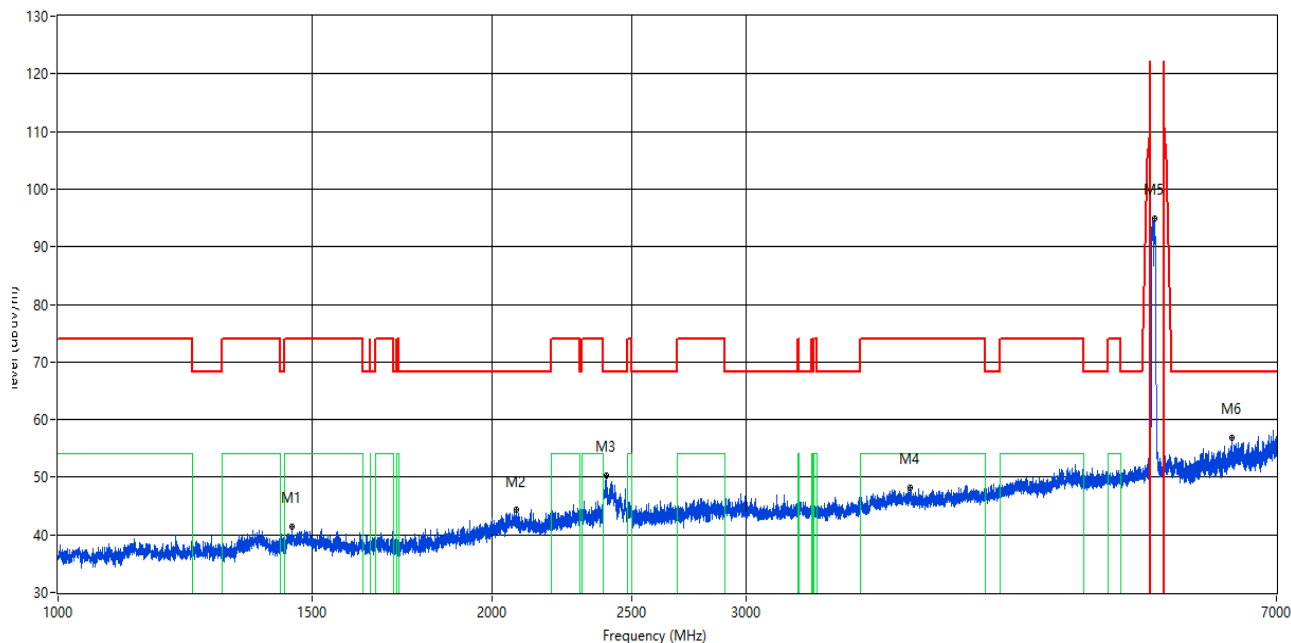
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band4



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1471.441	41.91	--	--	-11.42	74.0	--	54.0	12.09	50.00	150	Horizontal	Pass
1911.386	43.04	--	--	-9.14	68.2	--	--	25.16	353.00	150	Horizontal	Pass
2423.572	49.62	--	--	-0.89	68.2	--	--	18.58	212.00	150	Horizontal	Pass
3044.994	46.54	--	--	-5.00	68.2	--	--	21.66	146.00	150	Horizontal	Pass
5031.871	51.46	--	--	0.90	74.0	--	54.0	2.54	67.00	150	Horizontal	Pass
5820.772	100.07	--	--	3.20	--	--	--	--	142.00	150	Horizontal	Pass

Band IV, 1 GHz to 7 GHz, 11ac40 Low channel, ANT V

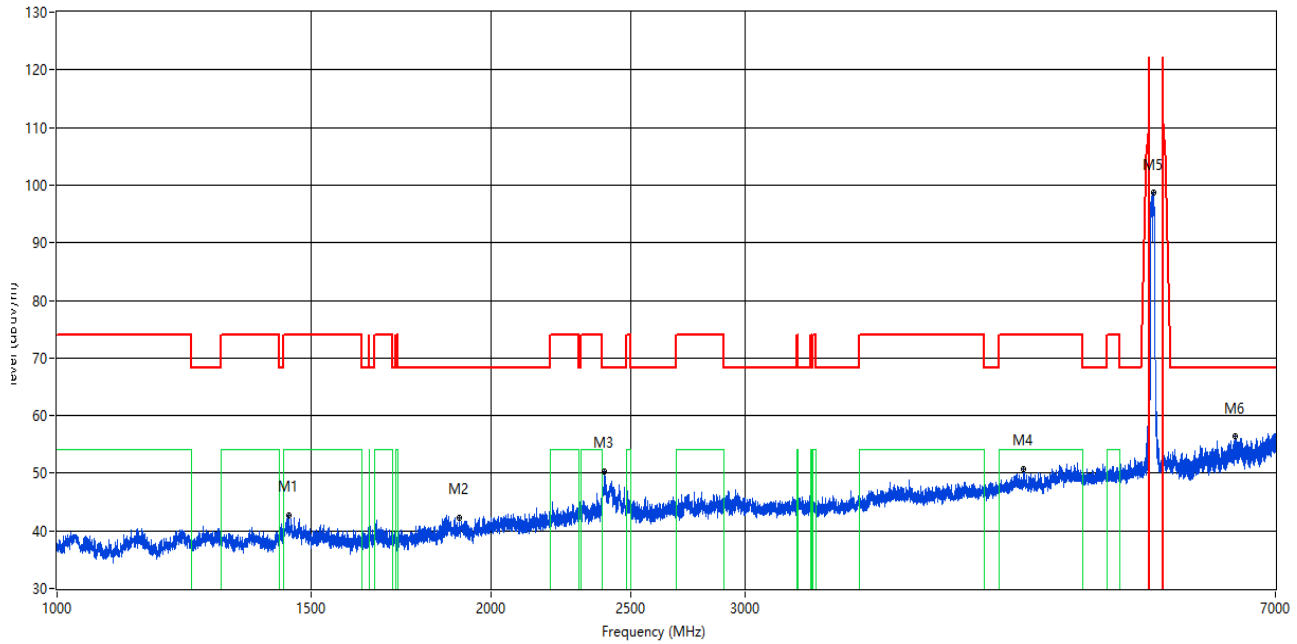
R Emission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band4



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1453.443	41.36	--	--	-11.74	74.0	--	54.0	12.64	41.00	150	Vertical	Pass
2078.365	44.30	--	--	-8.21	68.2	--	--	23.90	61.00	150	Vertical	Pass
2398.825	50.32	--	--	-0.05	68.2	--	--	17.88	267.00	150	Vertical	Pass
3900.262	48.10	--	--	-2.35	74.0	--	54.0	5.90	347.00	150	Vertical	Pass
5767.154	94.91	--	--	2.13	--	--	--	--	208.00	150	Vertical	Pass
6517.560	56.90	--	--	7.81	68.2	--	--	11.30	167.00	150	Vertical	Pass

Band IV, 1 GHz to 7 GHz, 11ac40 Low channel, ANT H

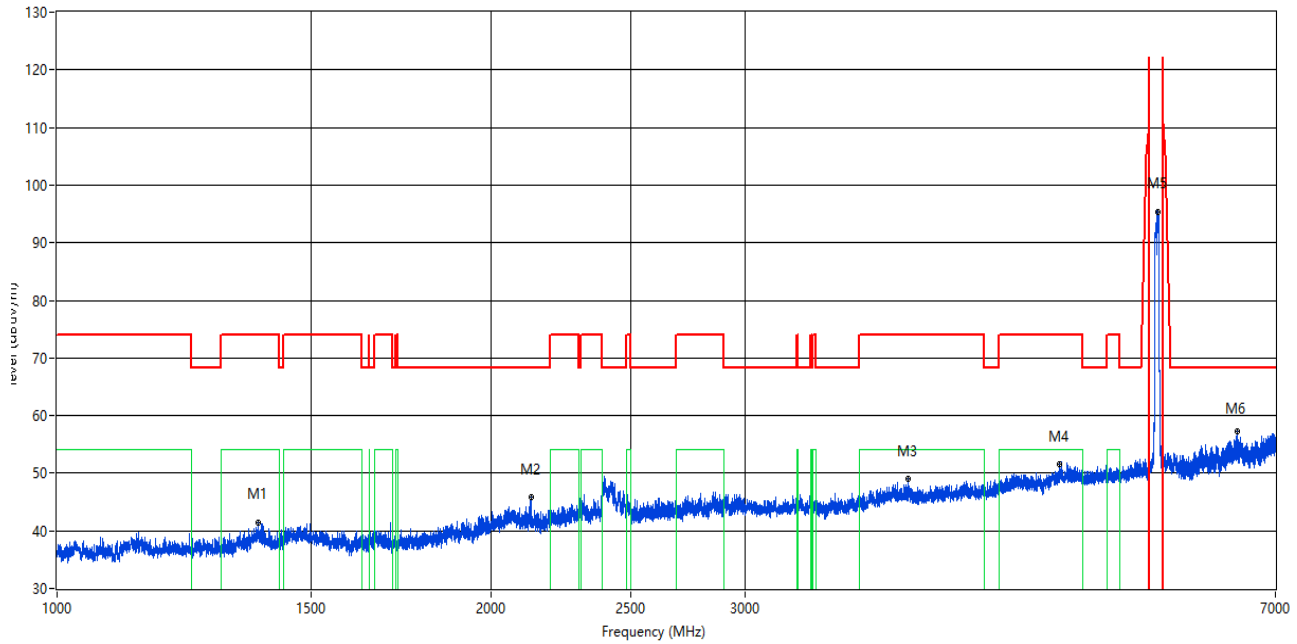
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band4



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1447.944	42.66	--	--	-11.71	74.0	--	54.0	11.34	32.00	150	Horizontal	Pass
1899.888	42.34	--	--	-10.01	68.2	--	--	25.86	35.00	150	Horizontal	Pass
2396.575	50.30	--	--	0.03	68.2	--	--	17.90	165.00	150	Horizontal	Pass
4682.790	50.80	--	--	-0.13	74.0	--	54.0	3.20	94.00	150	Horizontal	Pass
5766.779	98.63	--	--	2.11	--	--	--	--	201.00	150	Horizontal	Pass
6567.304	56.33	--	--	7.91	68.2	--	--	11.87	64.00	150	Horizontal	Pass

Band IV, 1 GHz to 7 GHz, 11ac40 High channel, ANT V

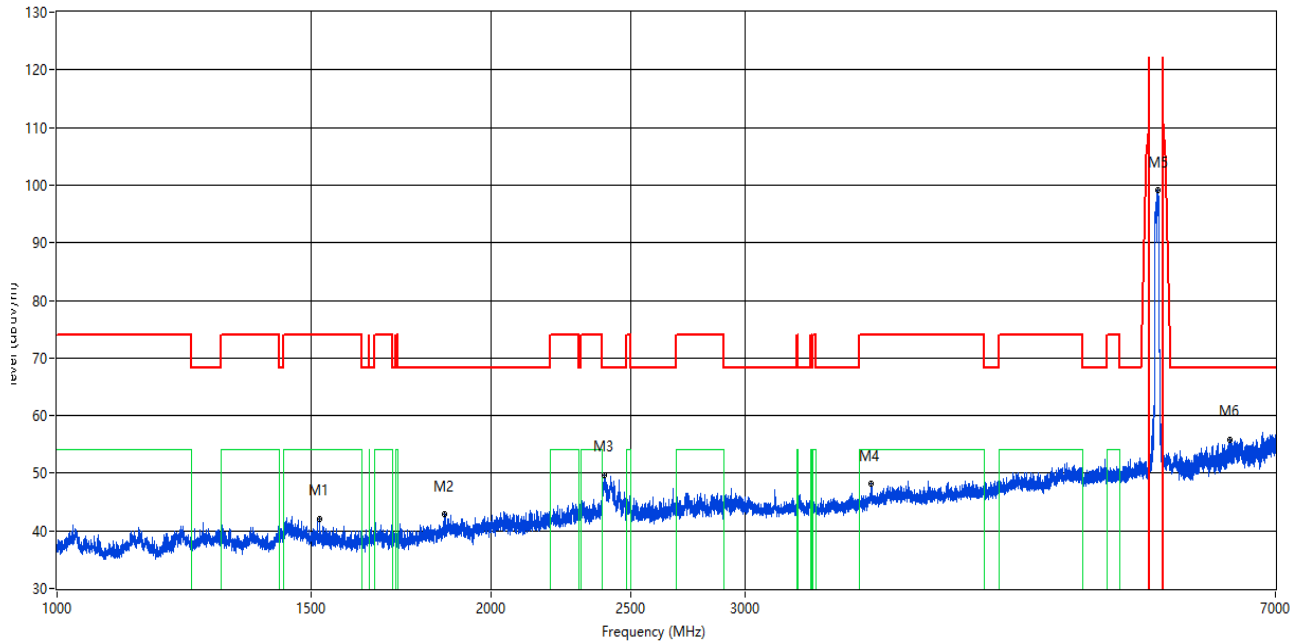
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band4



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1378.953	41.42	--	--	-12.09	74.0	--	54.0	12.58	177.00	150	Vertical	Pass
2132.608	45.95	--	--	-7.55	68.2	--	--	22.25	90.00	150	Vertical	Pass
3895.763	49.01	--	--	-2.58	74.0	--	54.0	4.99	201.00	150	Vertical	Pass
4962.130	51.52	--	--	1.25	74.0	--	54.0	2.48	341.00	150	Vertical	Pass
5806.899	94.87	--	--	3.01	--	--	--	--	196.00	150	Vertical	Pass
6588.301	57.33	--	--	7.53	68.2	--	--	10.87	230.00	150	Vertical	Pass

Band IV, 1 GHz to 7 GHz, 11ac40 High channel, ANT H

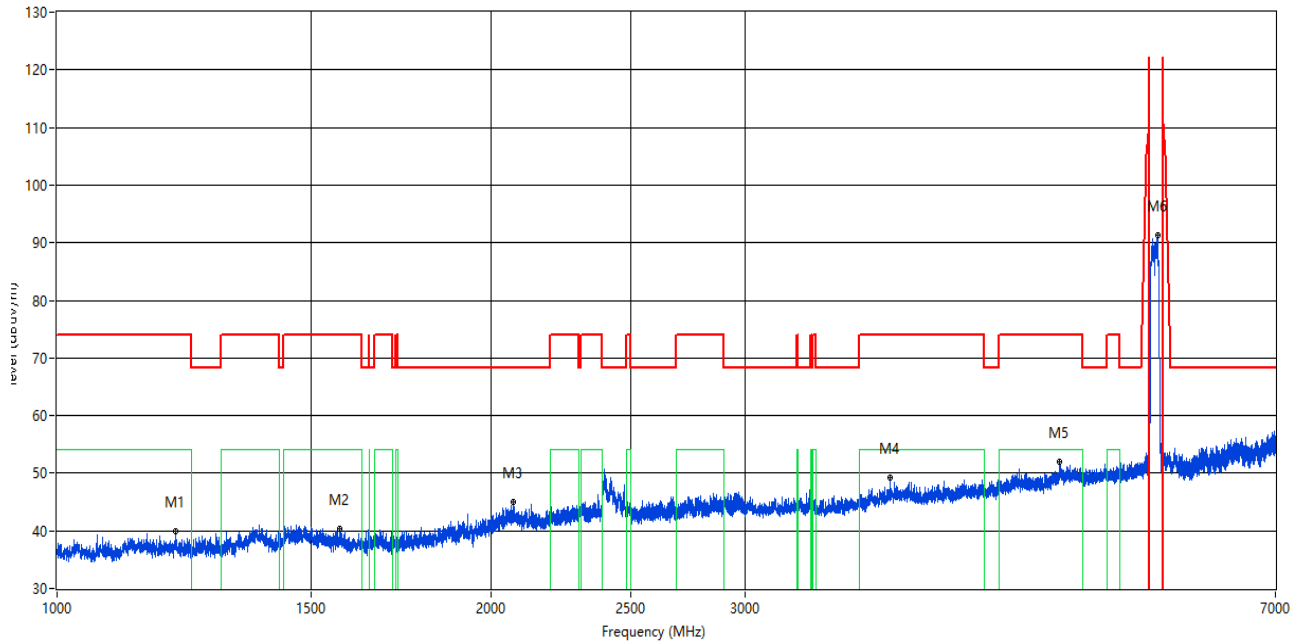
R Emission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band4



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1521.435	42.03	--	--	-11.74	74.0	--	54.0	11.97	122.00	150	Horizontal	Pass
1856.643	42.85	--	--	-9.96	68.2	--	--	25.35	71.00	150	Horizontal	Pass
2397.825	49.71	--	--	-0.03	68.2	--	--	18.49	105.00	150	Horizontal	Pass
3669.666	48.13	--	--	-3.17	74.0	--	54.0	5.87	29.00	150	Horizontal	Pass
5806.899	99.03	--	--	3.01	--	--	--	--	331.00	150	Horizontal	Pass
6510.936	55.71	--	--	8.12	68.2	--	--	12.49	1.00	150	Horizontal	Pass

Band IV, 1 GHz to 7 GHz, 11ac80 Middle channel, ANT V

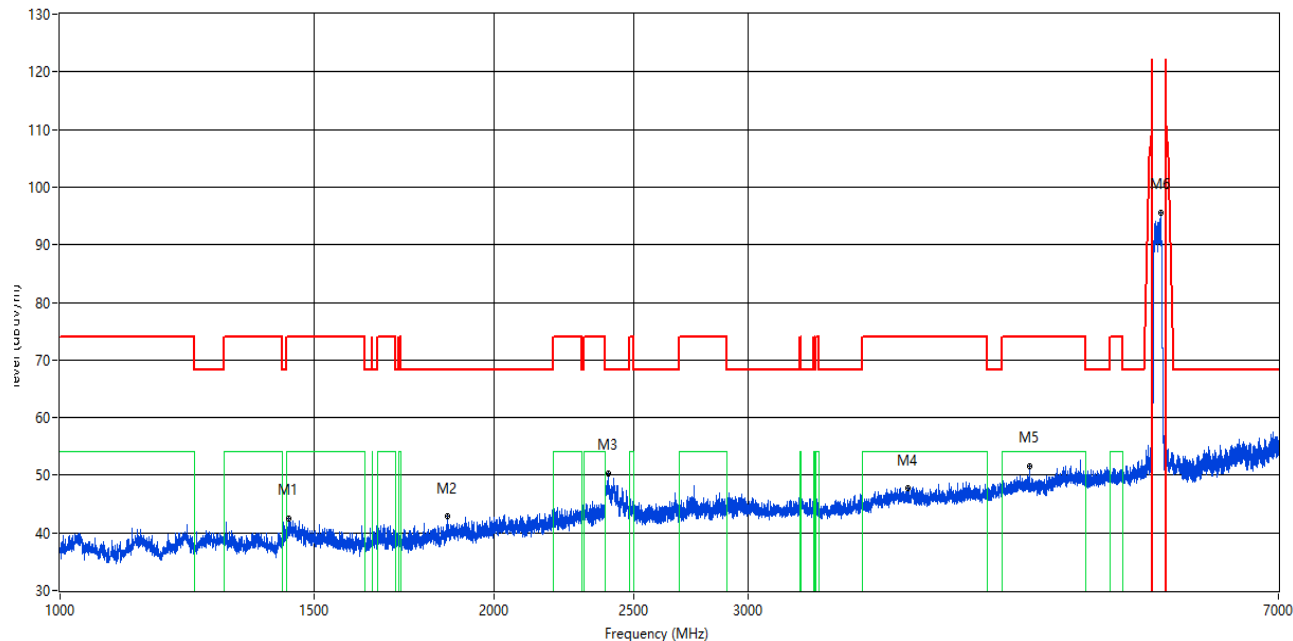
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band4



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1208.474	39.93	--	--	-11.96	74.0	--	54.0	14.07	358.00	150	Vertical	Pass
1570.179	40.26	--	--	-11.84	74.0	--	54.0	13.74	85.00	150	Vertical	Pass
2071.866	45.08	--	--	-7.59	68.2	--	--	23.12	100.00	150	Vertical	Pass
3783.277	49.16	--	--	-2.90	74.0	--	54.0	4.84	309.00	150	Vertical	Pass
4962.130	51.95	--	--	1.25	74.0	--	54.0	2.05	332.00	150	Vertical	Pass
5797.525	91.31	--	--	2.91	--	--	--	--	133.00	150	Vertical	Pass

Band IV, 1 GHz to 7 GHz, 11ac80 Middle channel, ANT H

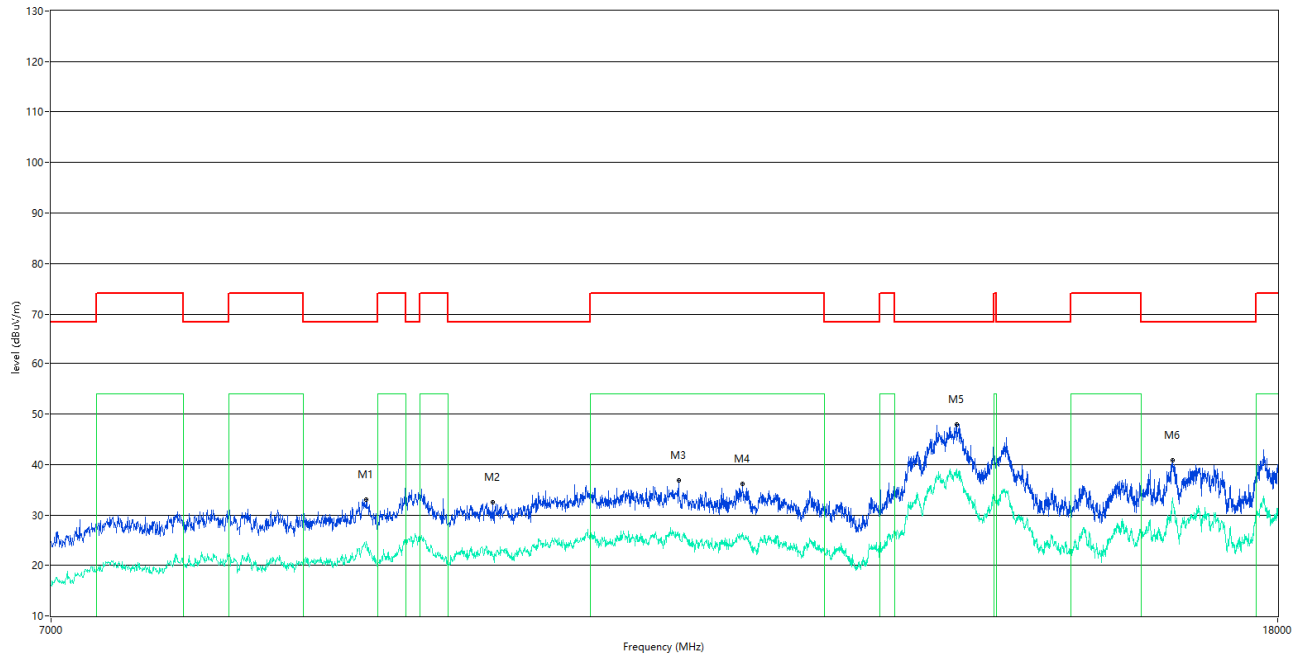
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_1GHz-7GHz 5G_Band4



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1441.195	42.45	--	--	-11.57	74.0	--	54.0	11.55	161.00	150	Horizontal	Pass
1856.643	42.86	--	--	-9.96	68.2	--	--	25.34	3.00	150	Horizontal	Pass
2399.075	50.32	--	--	-0.06	68.2	--	--	17.88	2.00	150	Horizontal	Pass
3872.516	47.85	--	--	-3.02	74.0	--	54.0	6.15	327.00	150	Horizontal	Pass
4704.162	51.53	--	--	-0.36	74.0	--	54.0	2.47	86.00	150	Horizontal	Pass
5797.525	95.56	--	--	2.91	--	--	--	--	35.00	150	Horizontal	Pass

Band IV, 7 GHz to 18 GHz, 11ac20 Low channel, ANT V

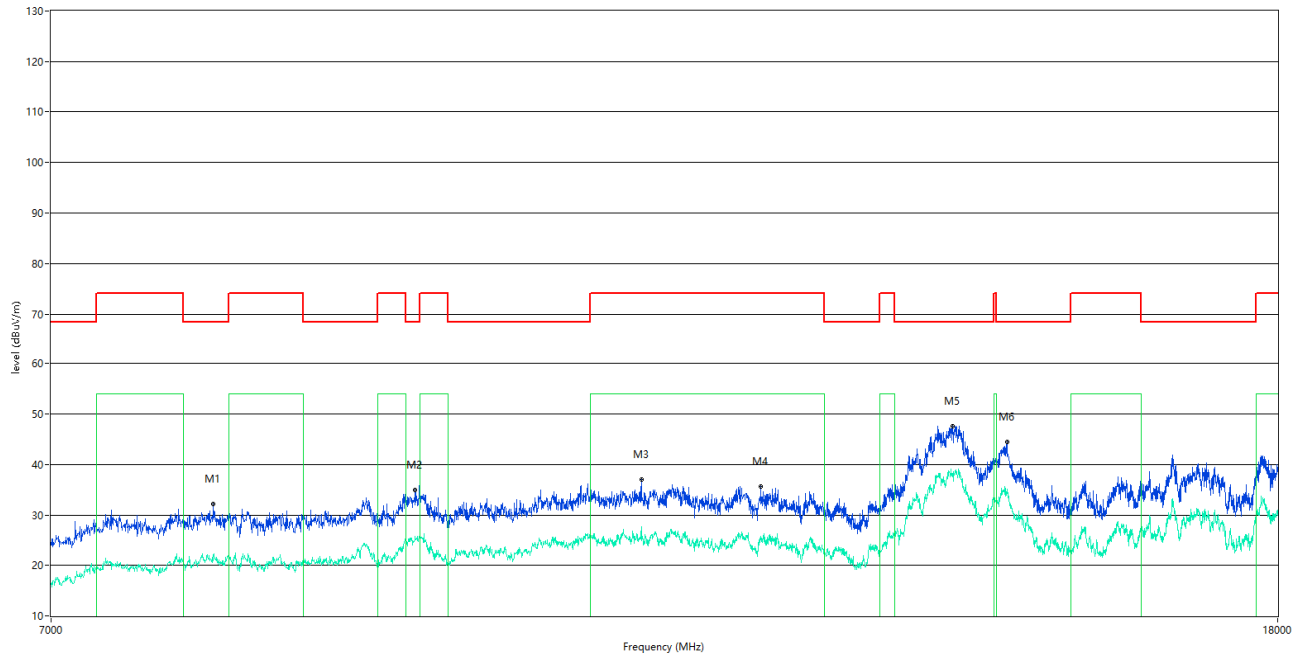
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
8924.519	33.02	--	24.2	-32.53	68.2	--	--	35.18	248.00	150	Vertical	Pass
9837.291	32.48	--	22.2	-32.60	68.2	--	--	35.72	304.00	150	Vertical	Pass
11349.413	36.76	--	26.1	-24.59	74.0	--	54.0	27.90	277.00	150	Vertical	Pass
11924.019	36.23	--	26.1	-24.19	74.0	--	54.0	27.90	14.00	150	Vertical	Pass
14054.736	47.88	--	39.0	-6.74	68.2	--	--	20.32	116.00	150	Vertical	Pass
16600.600	40.90	--	32.3	-10.26	68.2	--	--	27.30	264.00	150	Vertical	Pass

Band IV, 7 GHz to 18 GHz, 11ac20 Low channel, ANT H

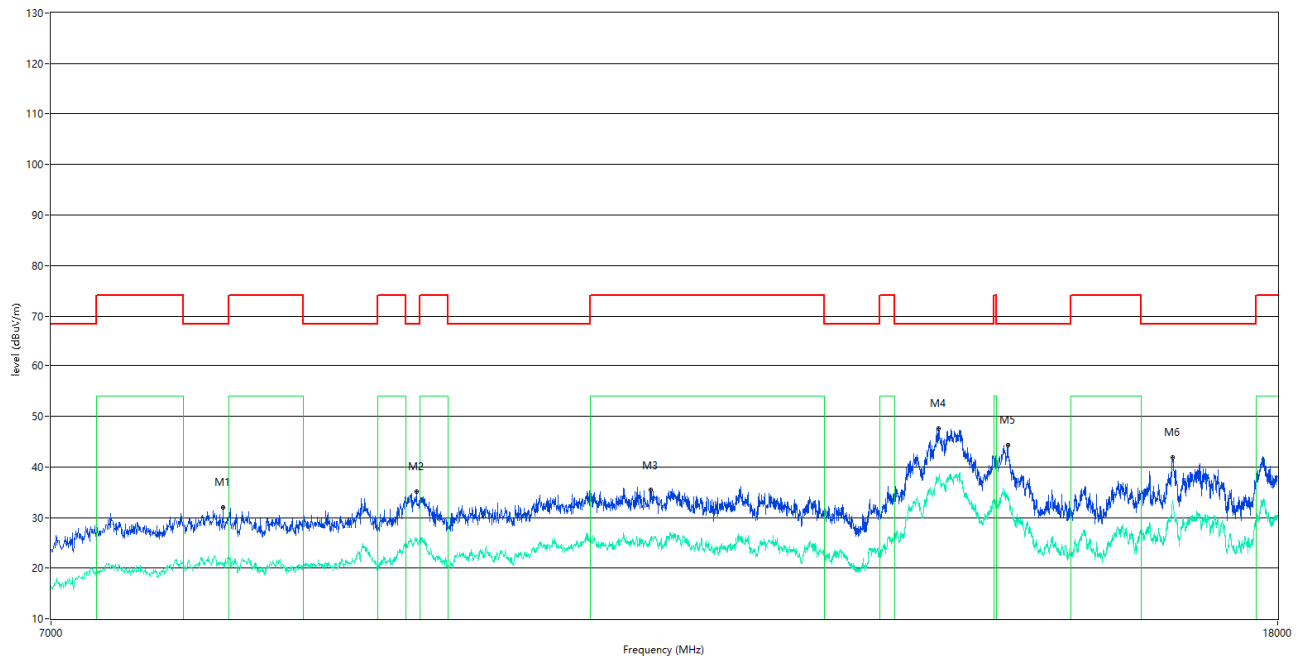
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7932.017	32.25	--	22.1	-36.85	68.2	--	--	35.95	75.00	150	Horizontal	Pass
9265.434	34.97	--	25.7	-31.42	68.2	--	--	33.23	354.00	150	Horizontal	Pass
11027.743	37.08	--	27.6	-25.07	74.0	--	54.0	26.40	295.00	150	Horizontal	Pass
12088.978	35.59	--	25.8	-25.18	74.0	--	54.0	28.20	1.00	150	Horizontal	Pass
14010.747	47.64	--	37.5	-7.03	68.2	--	--	20.56	92.00	150	Horizontal	Pass
14612.847	44.50	--	34.4	-11.14	68.2	--	--	23.70	24.00	150	Horizontal	Pass

Band IV, 7 GHz to 18 GHz, 11ac20 Middle channel, ANT V

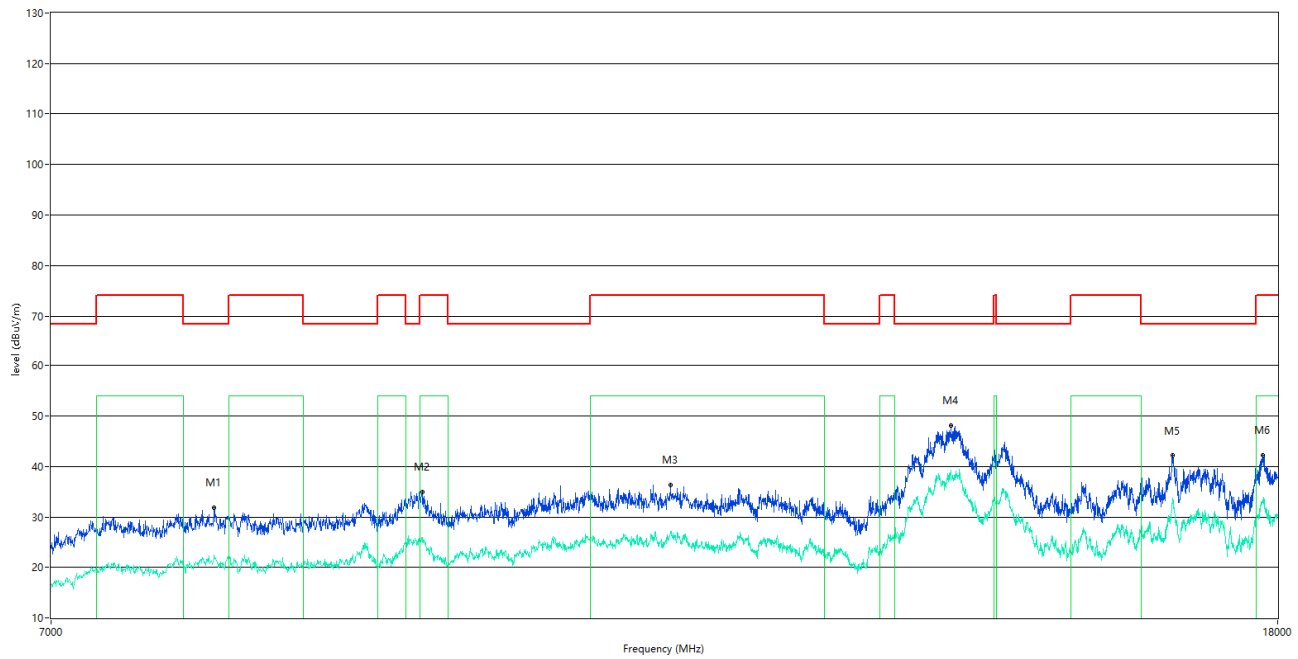
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7989.753	31.99	--	21.0	-37.29	68.2	--	--	36.21	341.00	150	Vertical	Pass
9273.682	35.10	--	25.4	-31.21	68.2	--	--	33.10	242.00	150	Vertical	Pass
11104.724	35.53	--	25.5	-25.34	74.0	--	54.0	28.50	211.00	150	Vertical	Pass
13865.034	47.50	--	37.9	-9.62	68.2	--	--	20.70	166.00	150	Vertical	Pass
14621.095	44.24	--	34.1	-11.26	68.2	--	--	23.96	72.00	150	Vertical	Pass
16600.600	41.79	--	33.4	-10.26	68.2	--	--	26.41	66.00	150	Vertical	Pass

Band IV, 7 GHz to 18 GHz, 11ac20 Middle channel, ANT H

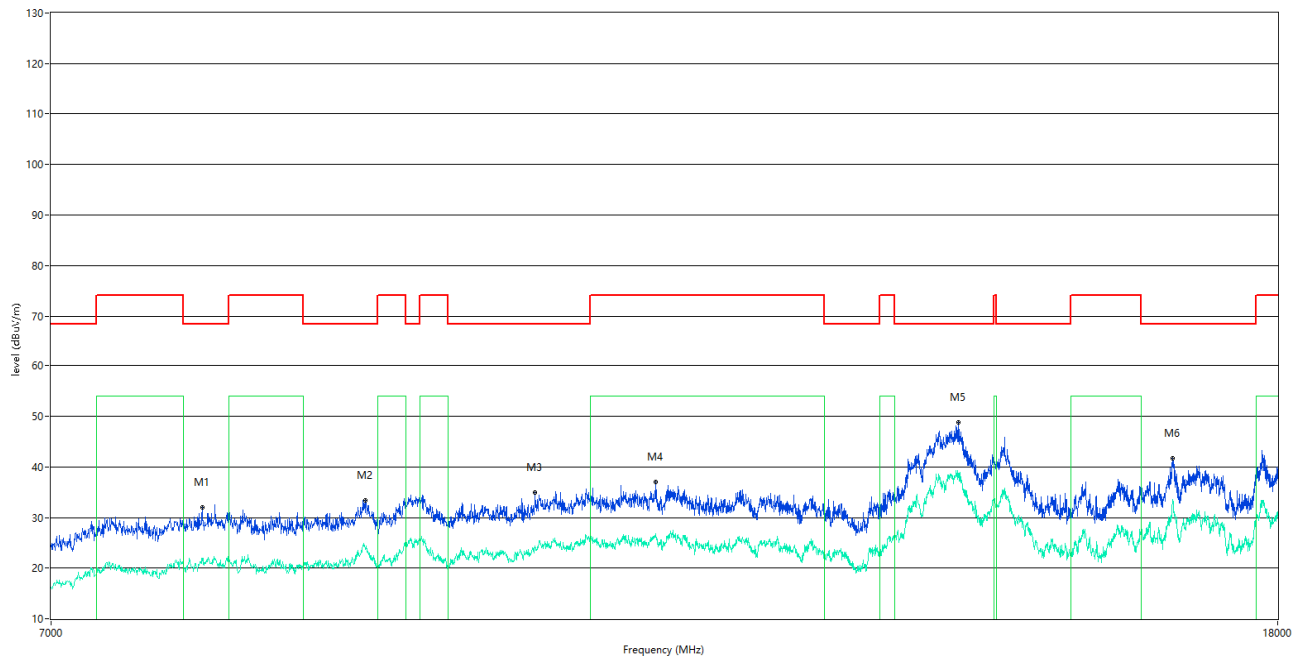
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7934.766	31.88	--	22.0	-36.79	68.2	--	--	36.32	0.00	150	Horizontal	Pass
9314.921	34.94	--	25.9	-31.34	74.0	--	54.0	28.10	1.00	150	Horizontal	Pass
11275.181	36.24	--	26.7	-24.98	74.0	--	54.0	27.30	128.00	150	Horizontal	Pass
13997.001	48.14	--	39.2	-6.64	68.2	--	--	20.06	130.00	150	Horizontal	Pass
16600.600	42.17	--	33.7	-10.26	68.2	--	--	26.03	28.00	150	Horizontal	Pass
17796.551	42.16	--	33.1	-7.84	74.0	--	54.0	20.90	188.00	150	Horizontal	Pass

Band IV, 7 GHz to 18 GHz, 11ac20 High channel, ANT V

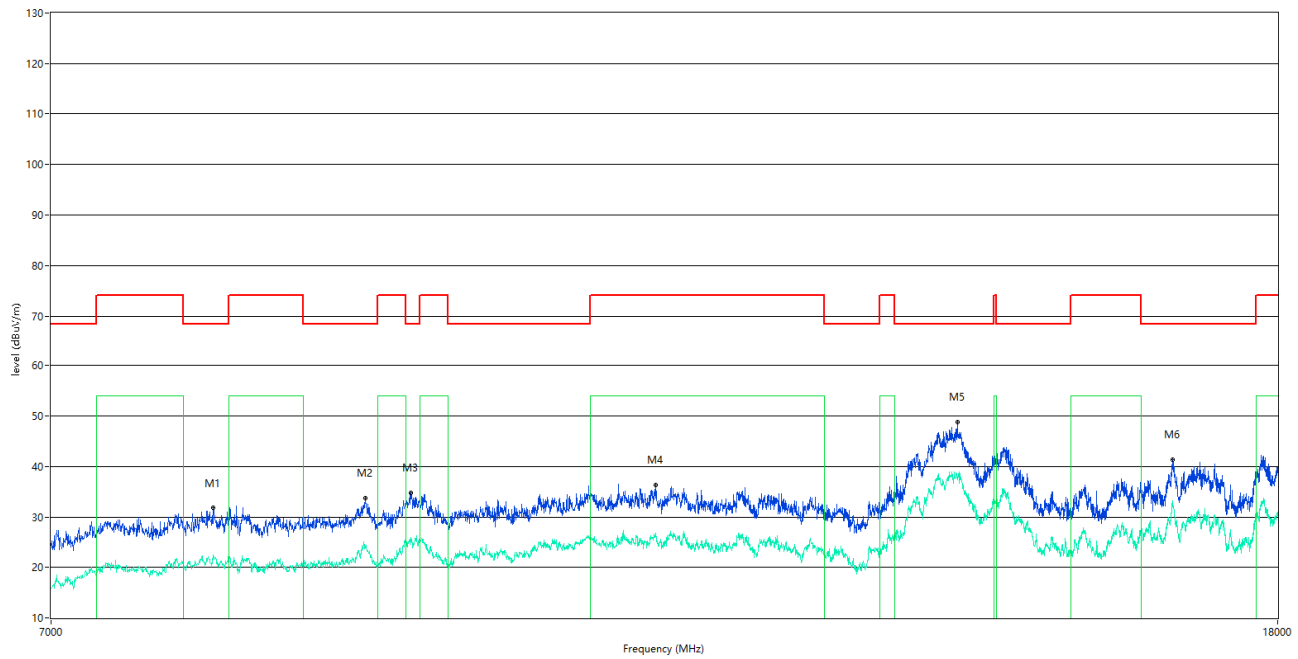
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7863.284	31.91	--	21.6	-36.99	68.2	--	--	36.29	47.00	150	Vertical	Pass
8919.020	33.33	--	23.6	-32.29	68.2	--	--	34.87	120.00	150	Vertical	Pass
10161.710	34.88	--	24.3	-28.93	68.2	--	--	33.32	165.00	150	Vertical	Pass
11148.713	37.07	--	26.8	-25.23	74.0	--	54.0	27.20	50.00	150	Vertical	Pass
14076.731	48.72	--	38.2	-6.48	68.2	--	--	19.48	1.00	150	Vertical	Pass
16597.851	41.74	--	33.1	-10.41	68.2	--	--	26.46	56.00	150	Vertical	Pass

Band IV, 7 GHz to 18 GHz, 11ac20 High channel, ANT H

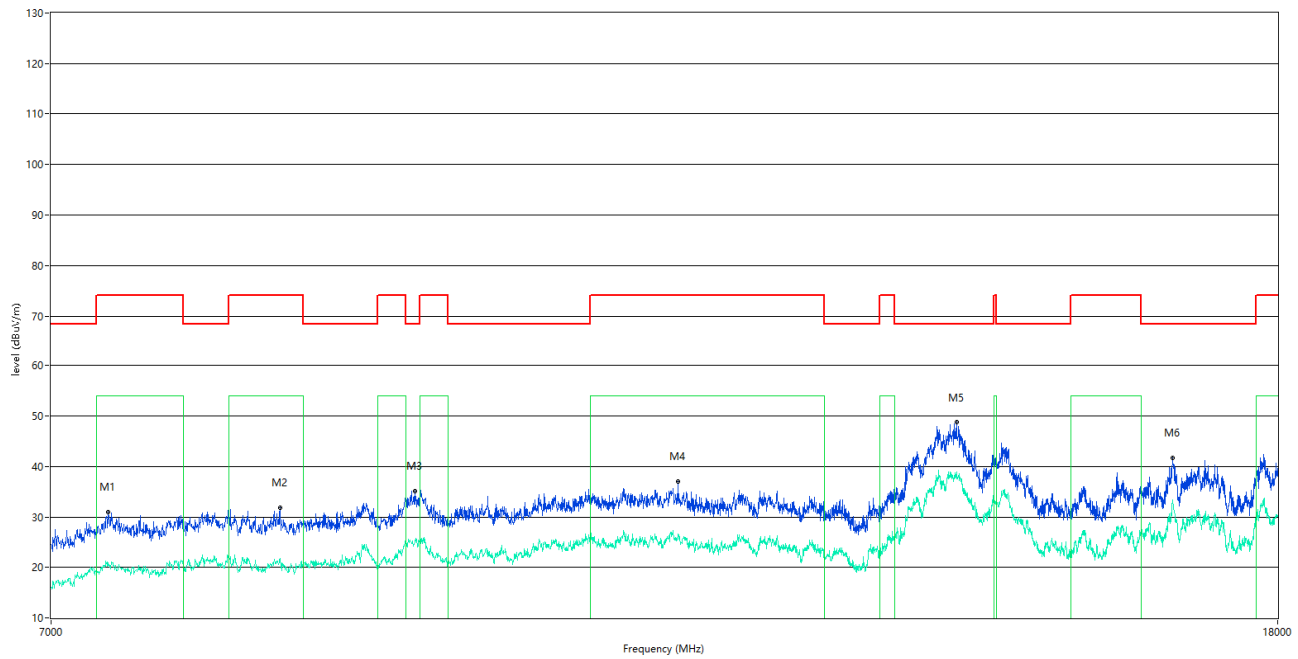
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7932.017	31.81	--	22.4	-36.85	68.2	--	--	36.39	177.00	150	Horizontal	Pass
8916.271	33.70	--	23.9	-32.29	68.2	--	--	34.50	144.00	150	Horizontal	Pass
9235.191	34.80	--	26.0	-31.74	68.2	--	--	33.40	245.00	150	Horizontal	Pass
11148.713	36.27	--	26.8	-25.23	74.0	--	54.0	27.20	204.00	150	Horizontal	Pass
14065.734	48.79	--	38.1	-6.61	68.2	--	--	19.41	201.00	150	Horizontal	Pass
16597.851	41.39	--	33.2	-10.41	68.2	--	--	26.81	135.00	150	Horizontal	Pass

Band IV, 7 GHz to 18 GHz, 11ac40 Low channel, ANT V

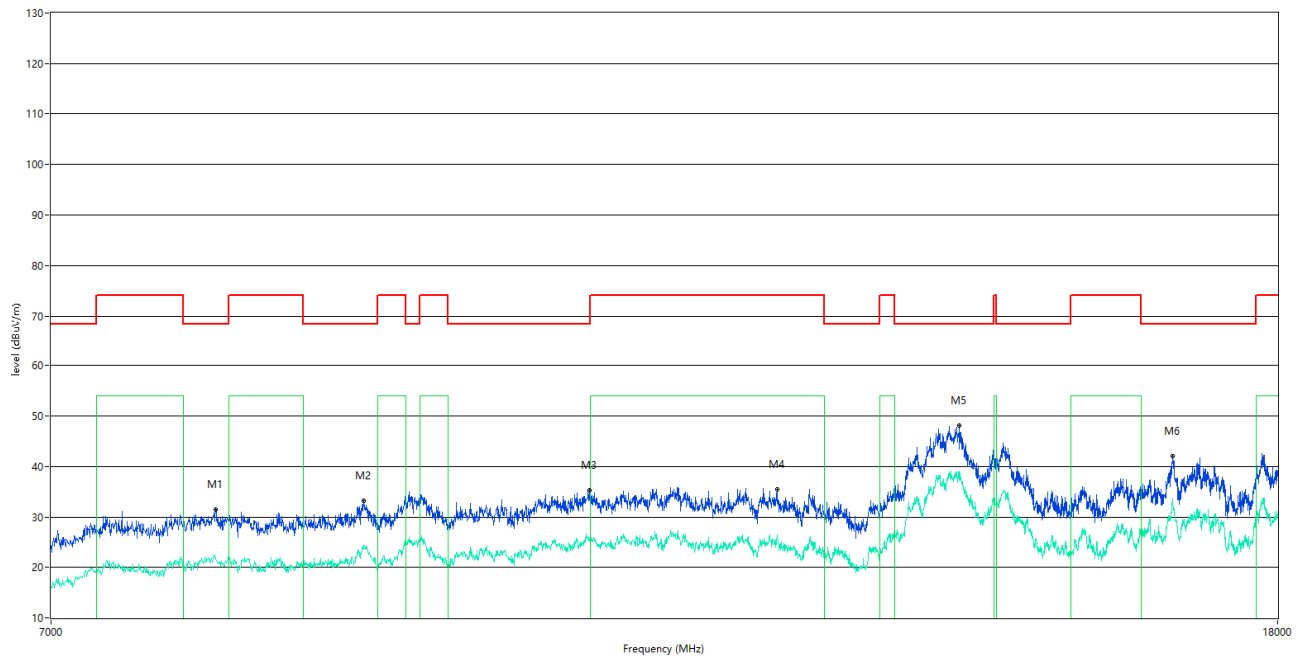
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7316.171	30.93	--	20.9	-37.23	74.0	--	54.0	33.10	350.00	150	Vertical	Pass
8349.913	31.82	--	21.8	-35.47	74.0	--	54.0	32.20	1.00	150	Vertical	Pass
9265.434	35.09	--	25.4	-31.42	68.2	--	--	33.11	213.00	150	Vertical	Pass
11343.914	37.05	--	26.3	-24.24	74.0	--	54.0	27.70	337.00	150	Vertical	Pass
14054.736	48.79	--	38.5	-6.74	68.2	--	--	19.41	18.00	150	Vertical	Pass
16600.600	41.66	--	33.3	-10.26	68.2	--	--	26.54	16.00	150	Vertical	Pass

Band IV, 7 GHz to 18 GHz, 11ac40 Low channel, ANT H

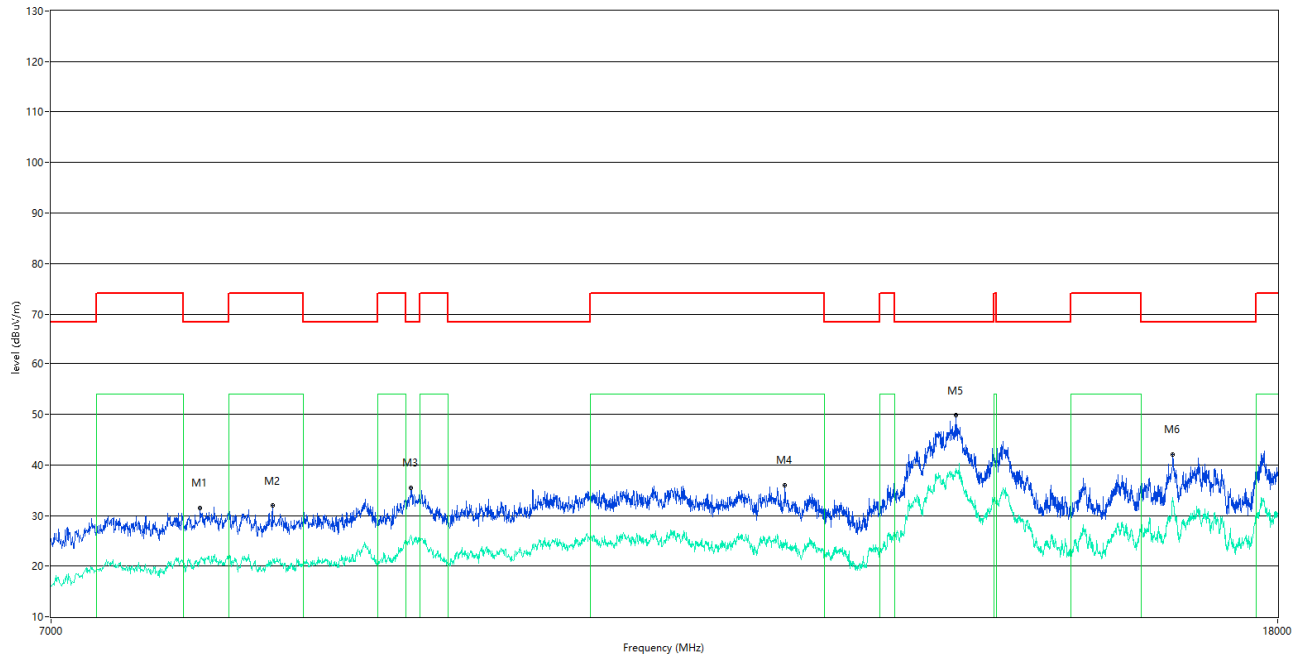
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7945.764	31.54	--	21.9	-36.96	68.2	--	--	36.66	175.00	150	Horizontal	Pass
8902.524	33.26	--	23.7	-32.46	68.2	--	--	34.94	286.00	150	Horizontal	Pass
10598.850	35.34	--	25.5	-26.24	68.2	--	--	32.86	262.00	150	Horizontal	Pass
12242.939	35.44	--	26.4	-24.29	74.0	--	54.0	27.60	168.00	150	Horizontal	Pass
14084.979	48.04	--	38.6	-6.61	68.2	--	--	20.16	172.00	150	Horizontal	Pass
16600.600	41.99	--	33.2	-10.26	68.2	--	--	26.21	167.00	150	Horizontal	Pass

Band IV, 7 GHz to 18 GHz, 11ac40 High channel, ANT V

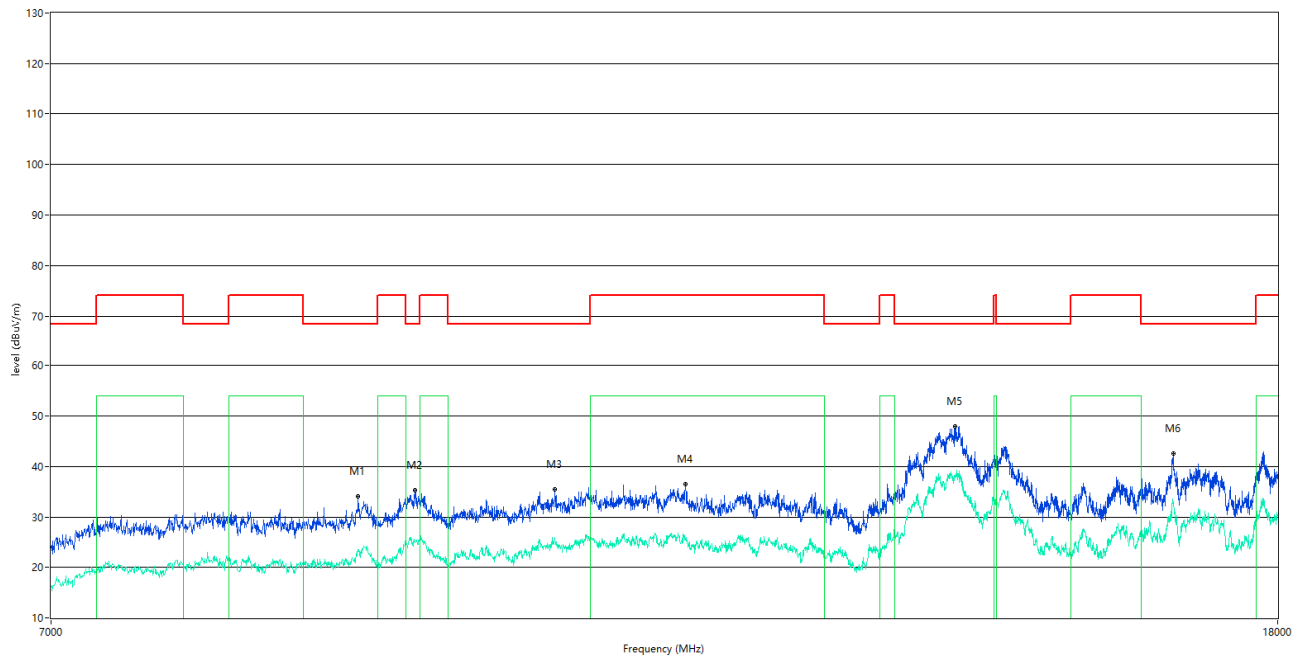
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7852.287	31.41	--	21.0	-36.97	68.2	--	--	36.79	3.00	150	Vertical	Pass
8300.425	31.93	--	21.4	-35.41	74.0	--	54.0	32.60	68.00	150	Vertical	Pass
9235.191	35.46	--	26.0	-31.74	68.2	--	--	32.74	126.00	150	Vertical	Pass
12314.421	35.95	--	24.3	-24.55	74.0	--	54.0	29.70	58.00	150	Vertical	Pass
14046.488	49.75	--	39.3	-6.60	68.2	--	--	18.45	171.00	150	Vertical	Pass
16600.600	42.03	--	33.4	-10.26	68.2	--	--	26.17	261.00	150	Vertical	Pass

Band IV, 7 GHz to 18 GHz, 11ac40 High channel, ANT H

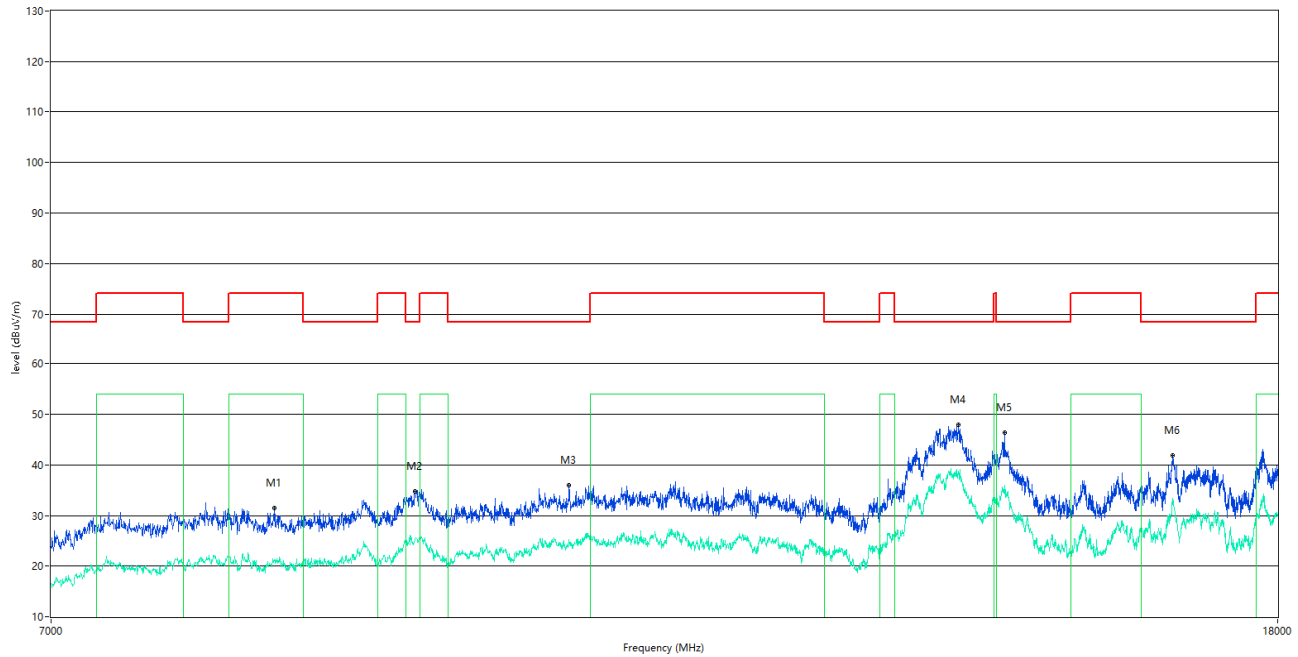
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
8866.783	34.11	--	23.2	-33.00	68.2	--	--	34.09	296.00	150	Horizontal	Pass
9262.684	35.36	--	24.9	-31.48	68.2	--	--	32.84	214.00	150	Horizontal	Pass
10318.420	35.53	--	25.9	-27.67	68.2	--	--	32.67	205.00	150	Horizontal	Pass
11407.148	36.45	--	25.6	-24.56	74.0	--	54.0	28.40	278.00	150	Horizontal	Pass
14038.240	47.84	--	38.2	-6.75	68.2	--	--	20.36	117.00	150	Horizontal	Pass
16608.848	42.62	--	32.8	-10.31	68.2	--	--	25.58	110.00	150	Horizontal	Pass

Band IV, 7 GHz to 18 GHz, 11ac80 Middle channel, ANT V

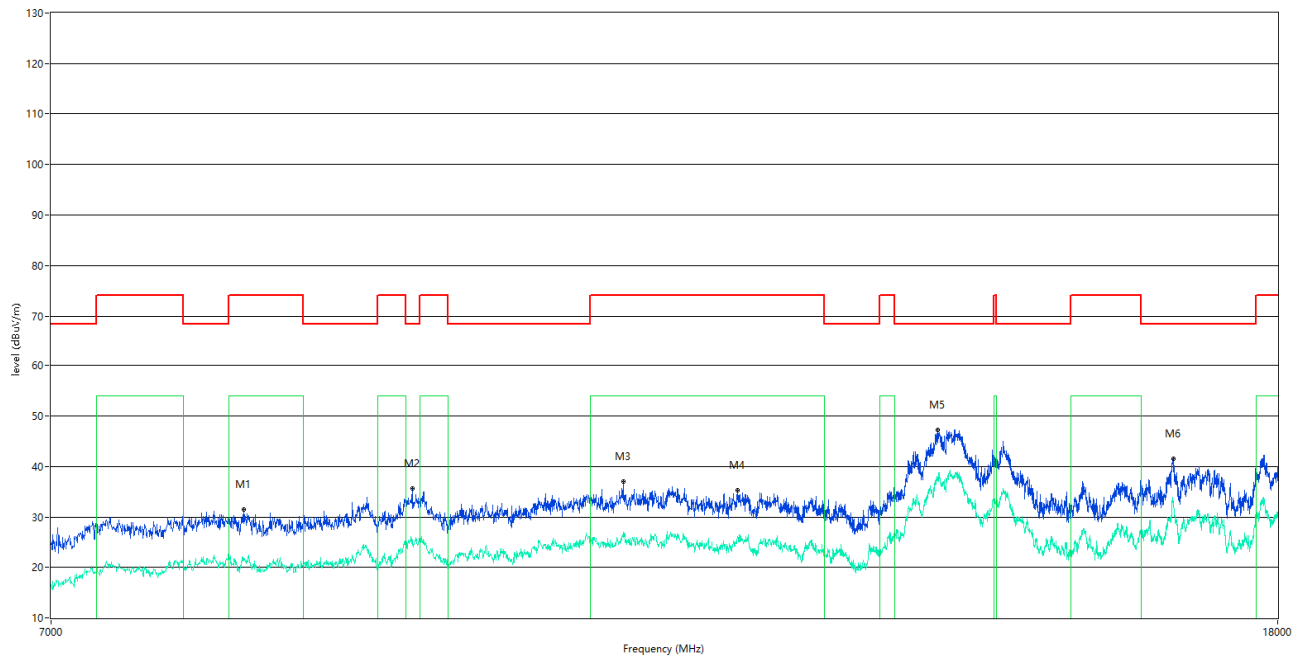
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
8311.422	31.46	--	21.2	-35.39	74.0	--	54.0	32.80	320.00	150	Vertical	Pass
9262.684	34.78	--	25.3	-31.48	68.2	--	--	33.42	204.00	150	Vertical	Pass
10431.142	36.04	--	25.3	-27.86	68.2	--	--	32.16	107.00	150	Vertical	Pass
14079.480	47.86	--	38.6	-6.58	68.2	--	--	20.34	116.00	150	Vertical	Pass
14588.103	46.33	--	36.0	-10.79	68.2	--	--	21.87	9.00	150	Vertical	Pass
16603.349	41.85	--	32.9	-10.25	68.2	--	--	26.35	180.00	150	Vertical	Pass

Band IV, 7 GHz to 18 GHz, 11ac80 Middle channel, ANT H

REmission Test case_FCC_Part 15E_FCC 15.407(5G)_7GHz-18GHz



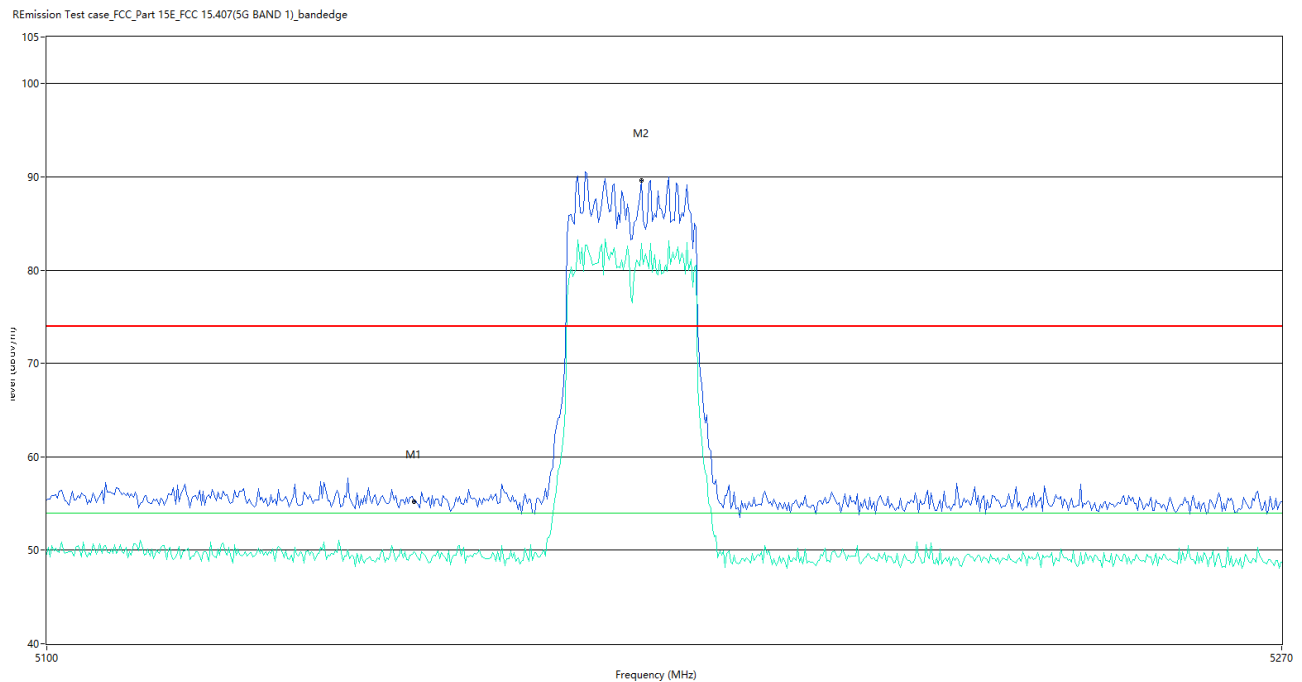
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
8121.720	31.53	--	21.4	-35.72	74.0	--	54.0	32.60	188.00	150	Horizontal	Pass
9243.439	35.68	--	25.4	-31.96	68.2	--	--	32.52	323.00	150	Horizontal	Pass
10873.782	37.07	--	27.0	-25.35	74.0	--	54.0	27.00	105.00	150	Horizontal	Pass
11877.281	35.26	--	26.1	-24.49	74.0	--	54.0	27.90	124.00	150	Horizontal	Pass
13851.287	47.31	--	37.5	-9.90	68.2	--	--	20.89	64.00	150	Horizontal	Pass
16614.346	41.57	--	32.2	-10.26	68.2	--	--	26.63	186.00	150	Horizontal	Pass

A.7.2 Band Edge (Restricted-band)

Test Band	Mode	Channel	Verdict
Band I	802.11ac(VHT20)	Low	Pass
		High	Pass
	802.11ac(VHT40)	Low	Pass
		High	Pass
	802.11ac(VHT80)	Low	Pass
	802.11ac(VHT20)	Low	Pass
		High	Pass
	802.11ac(VHT40)	Low	Pass
		High	Pass
	802.11ac(VHT80)	Low	Pass

Test Plots

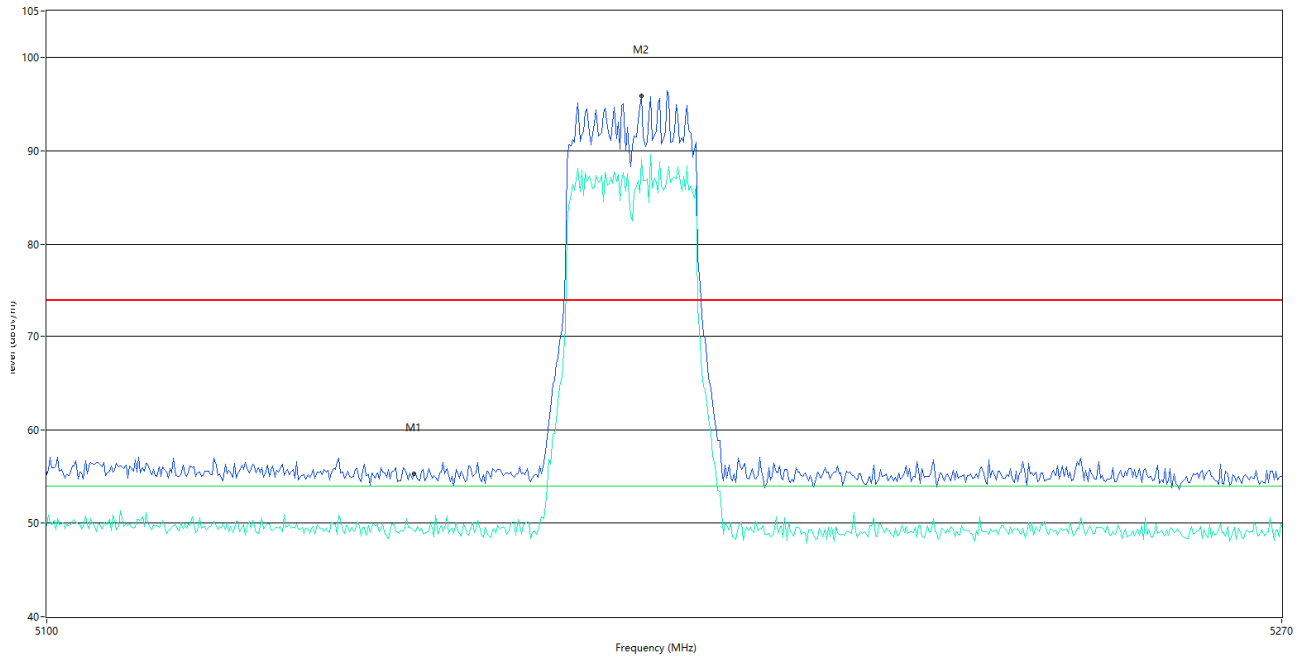
Band I, 11ac20 Low channel, ANT V



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5150.000	55.23	--	49.8	44.02	74.0	--	54.0	4.20	99.33	150	Vertical	Pass
5181.205	89.62	--	82.8	43.83	74.0	--	54.0	-28.80	105.00	150	Vertical	N.A

Band I, 11ac20 Low channel, ANT H

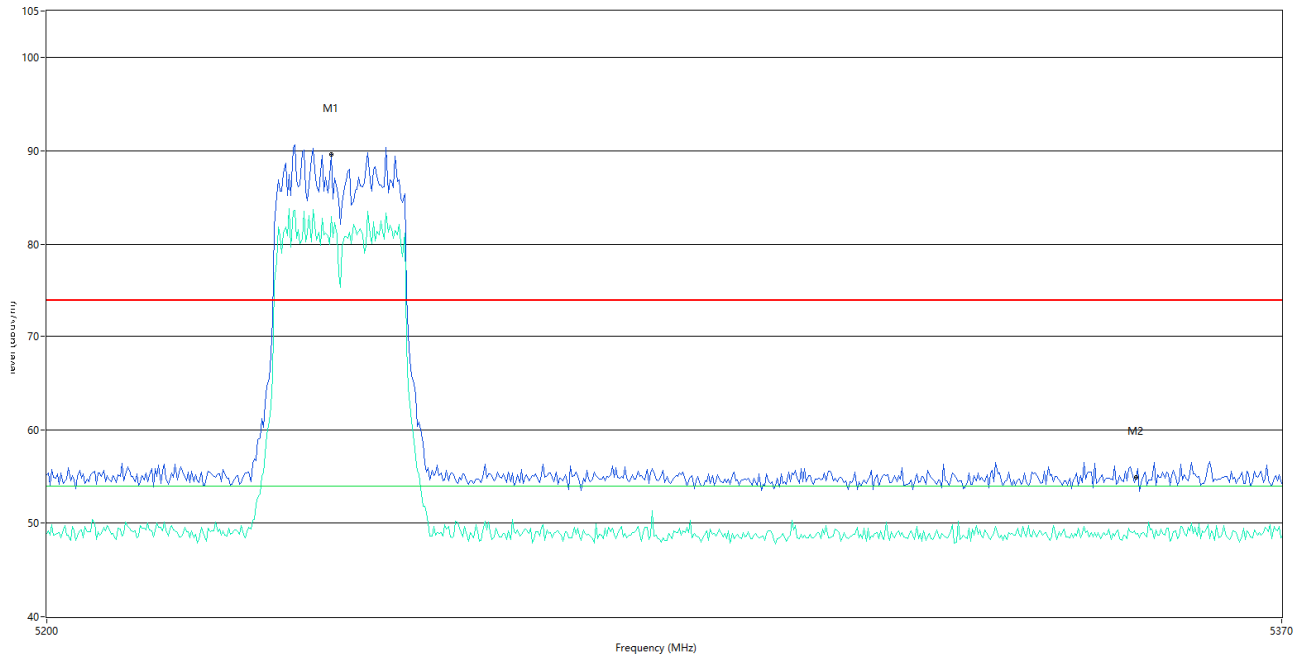
REmission Test case_FCC_Part 15E_FCC 15.407(5G BAND 1)_bandedge



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5150.000	55.29	—	49.1	44.02	74.0	—	54.0	4.90	121.81	150	Horizontal	Pass
5181.205	95.91	—	89.0	43.83	74.0	—	54.0	-35.00	0.50	150	Horizontal	N.A

Band I, 11ac20 High channel, ANT V

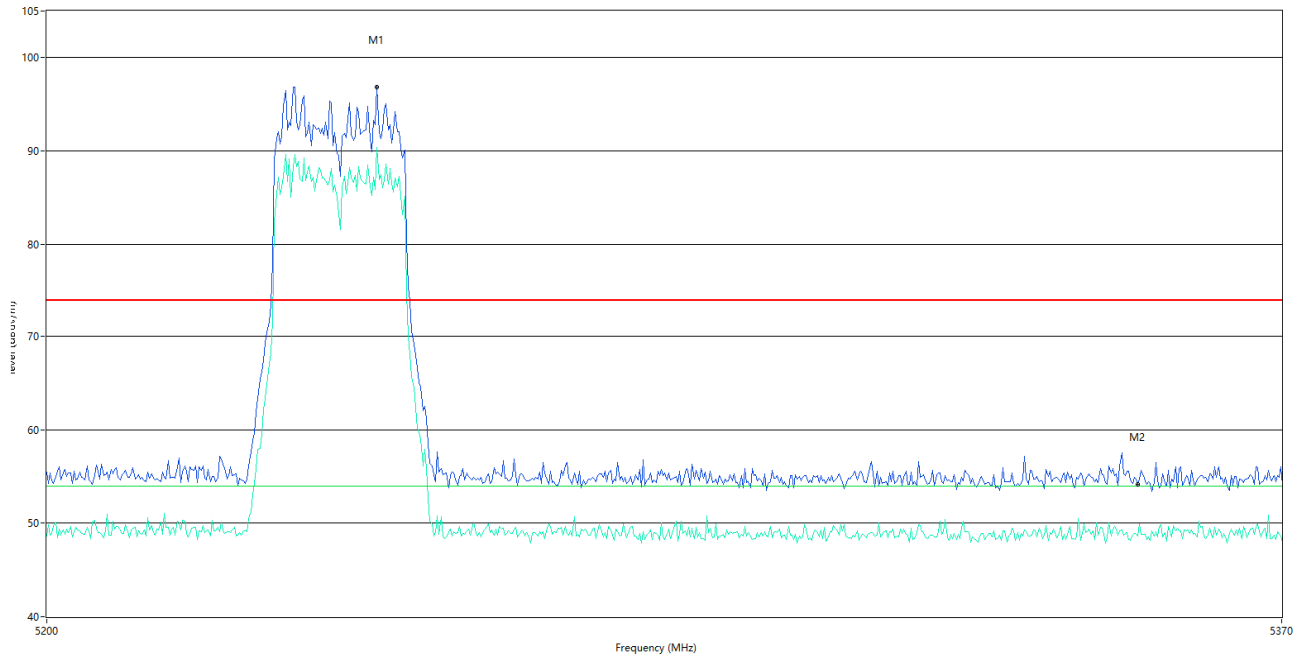
REmission Test case_FCC_Part 15E_FCC 15.407(5G BAND 1)_bandedge



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5238.690	89.59	--	82.9	43.83	74.0	--	54.0	-28.90	96.30	150	Vertical	N.A
5350.000	54.97	--	48.8	43.88	74.0	--	54.0	5.20	66.11	150	Vertical	Pass

Band I, 11ac20 High channel, ANT H

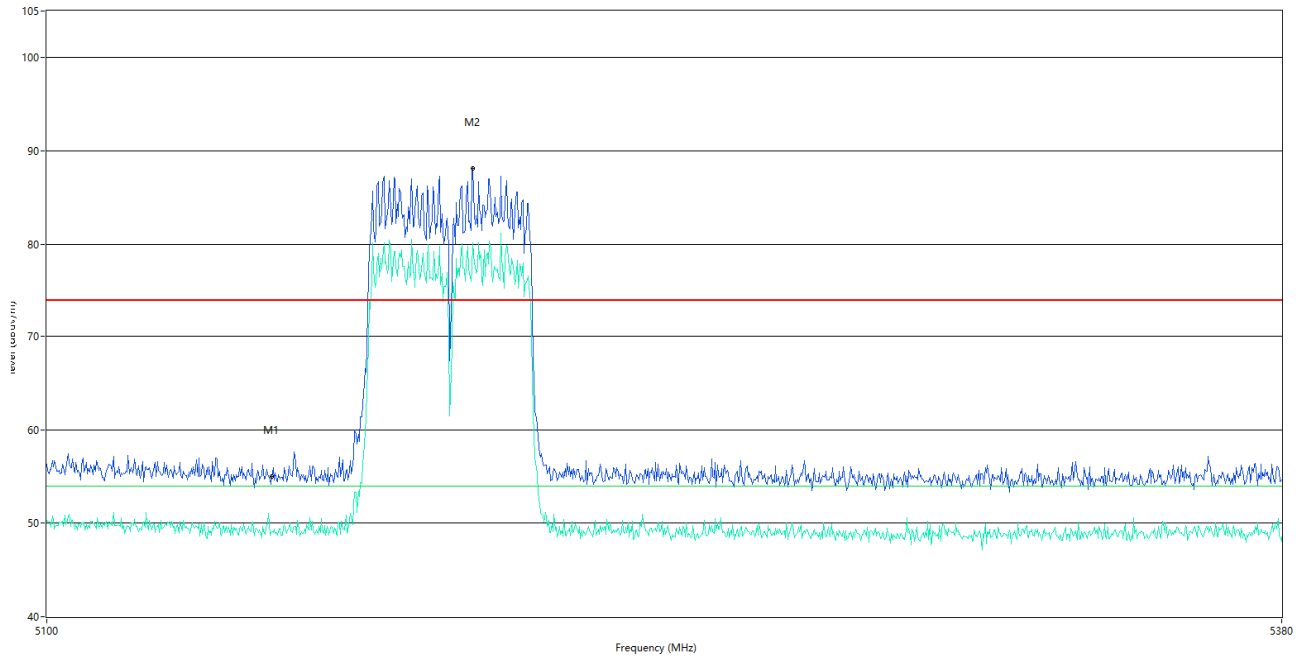
REmission Test case_FCC_Part 15E_FCC 15.407(5G BAND 1)_bandedge



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5244.939	96.89	--	90.4	43.78	74.0	--	54.0	-36.40	342.00	150	Horizontal	N.A
5350.000	54.38	--	49.1	43.88	74.0	--	54.0	4.90	124.31	150	Horizontal	Pass

Band I, 11ac40 Low channel, ANT V

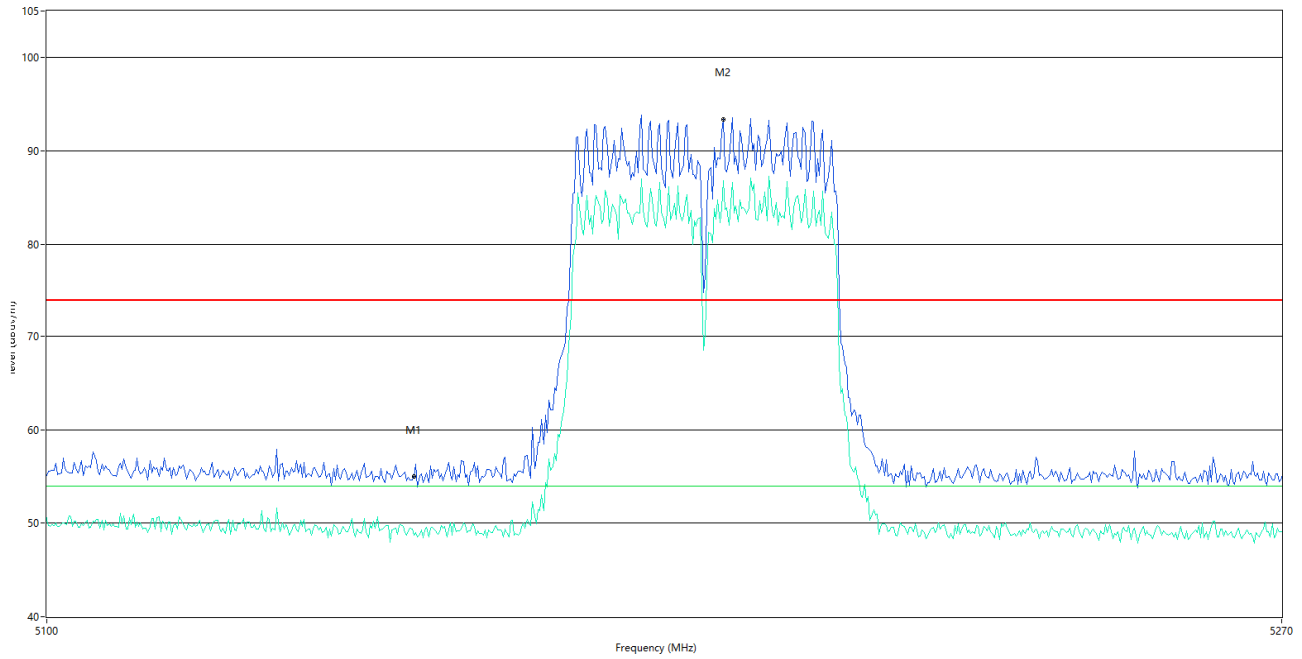
REmission Test case_FCC_Part 15E_FCC 15.407(5G BAND 1)_bandedge



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5150.000	55.16	--	49.1	44.02	74.0	--	54.0	4.90	97.17	100	Vertical	Pass
5194.951	88.08	--	80.2	43.76	74.0	--	54.0	-26.20	87.20	100	Vertical	N/A

Band I, 11ac40 Low channel, ANT H

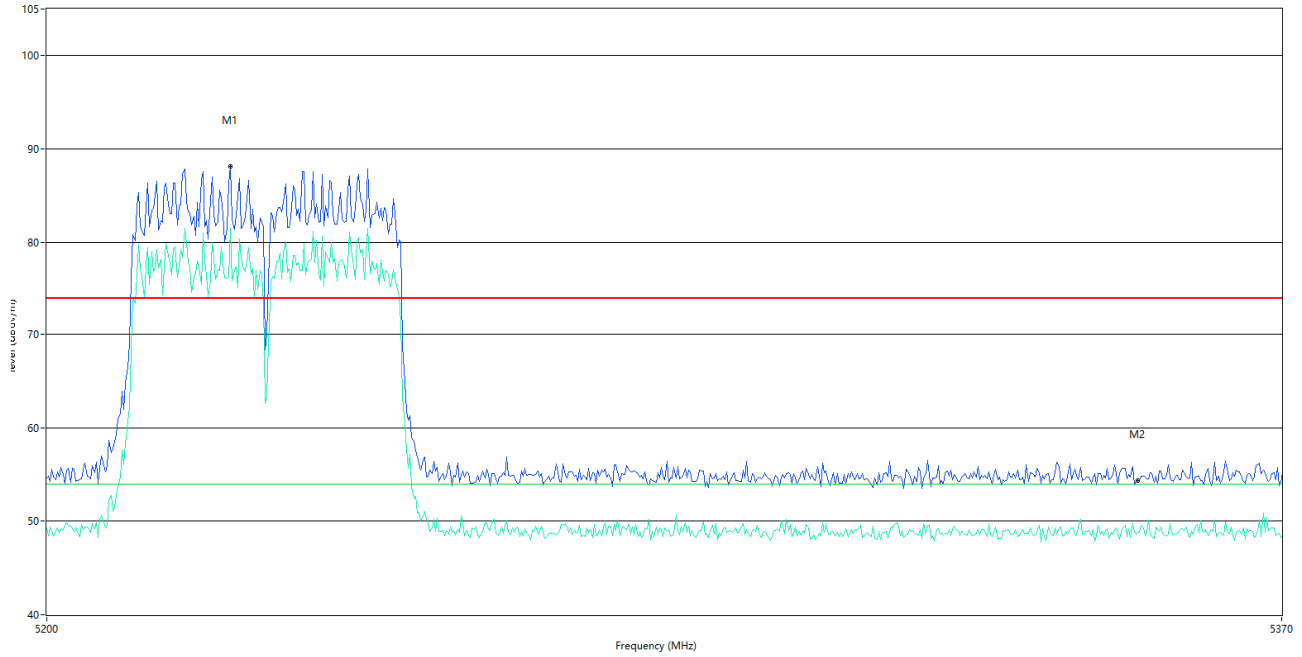
REmission Test case_FCC_Part 15E_FCC 15.407(5G BAND 1)_bandedge



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5150.000	55.20	—	48.7	44.02	74.0	—	54.0	5.30	299.29	150	Horizontal	Pass
5192.452	93.32	—	86.8	43.77	74.0	—	54.0	-32.80	0.80	150	Horizontal	N.A

Band I, 11ac40 High channel, ANT V

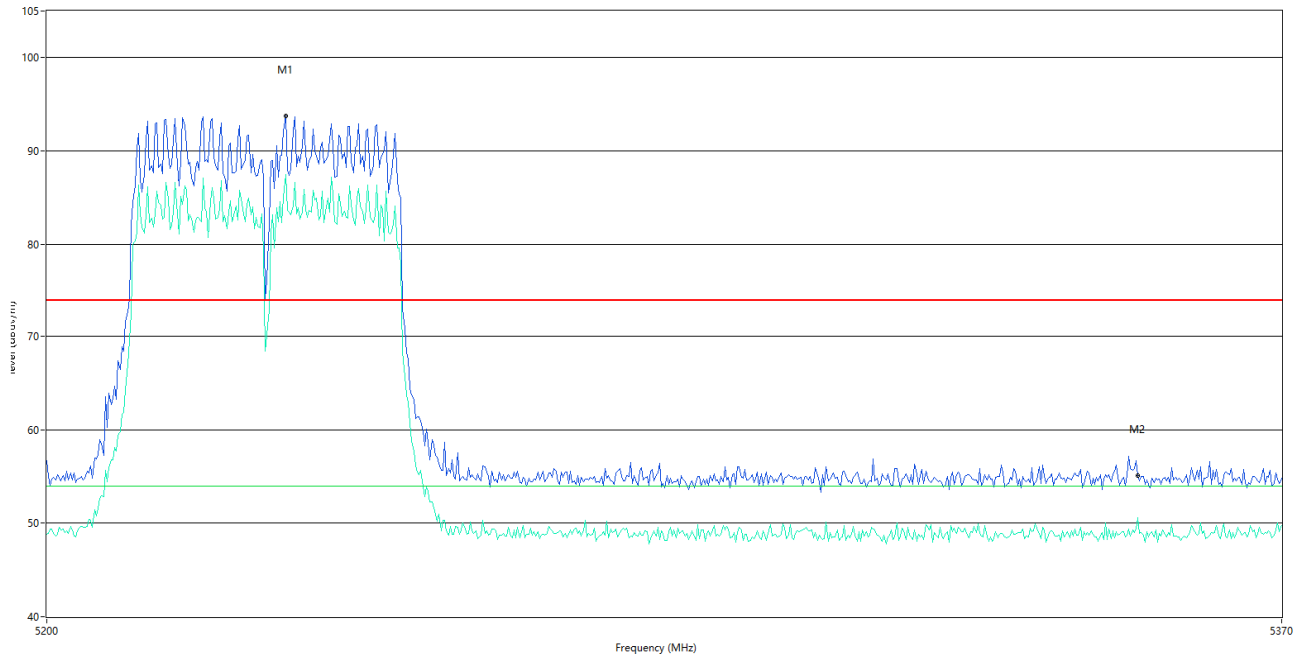
REmission Test case_FCC_Part 15E_FCC 15.407(5G BAND 1)_bandedge



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5224.944	88.12	--	81.5	43.86	74.0	--	54.0	-27.50	104.10	150	Vertical	N.A
5350.000	54.34	--	48.7	43.88	74.0	--	54.0	5.30	224.70	150	Vertical	Pass

Band I, 11ac40 High channel, ANT H

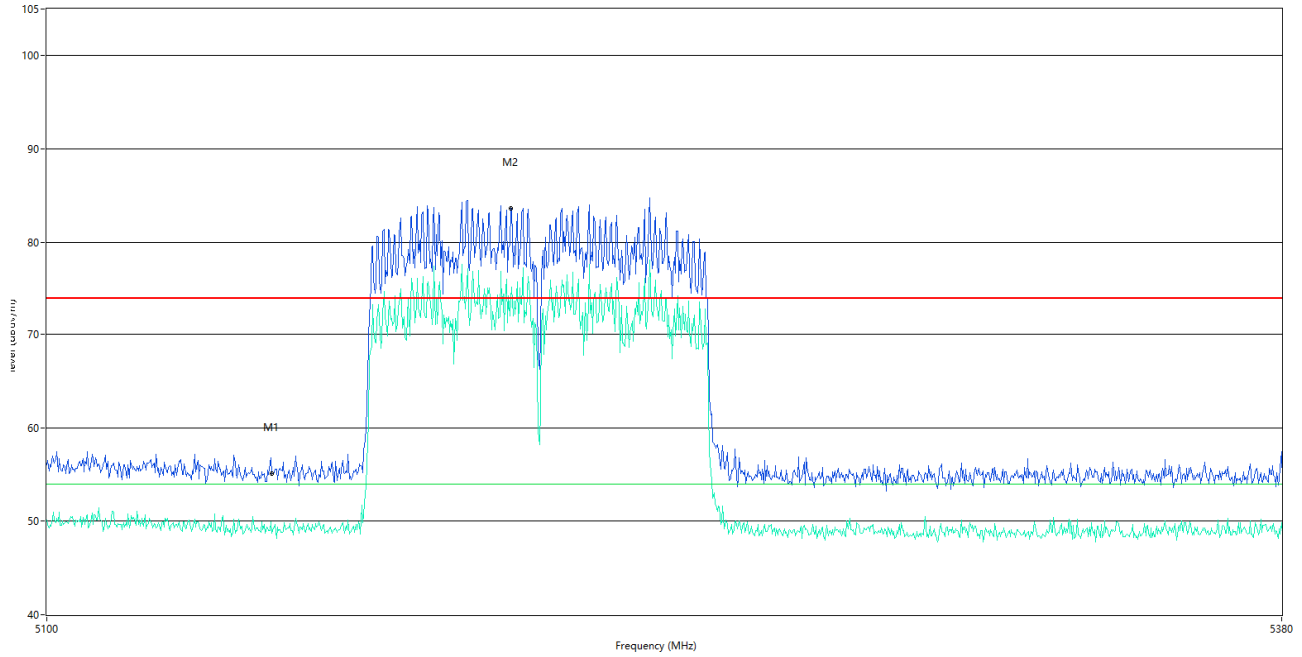
REmission Test case_FCC_Part 15E_FCC 15.407(5G BAND 1)_bandedge



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5232.442	93.75	--	87.5	43.88	74.0	--	54.0	-33.50	359.70	150	Horizontal	N.A
5350.000	54.91	--	50.0	43.88	74.0	--	54.0	4.00	117.12	150	Horizontal	Pass

Band I, 11ac80 Middle channel, ANT V

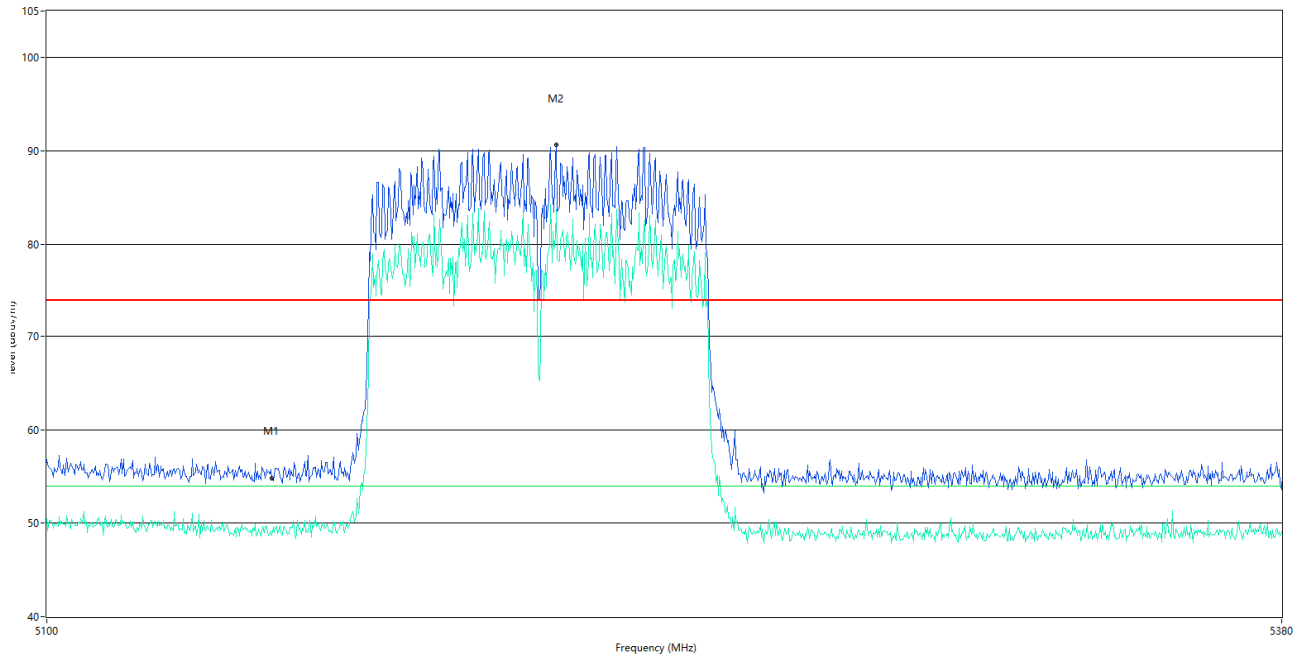
REmission Test case_FCC_Part 15E_FCC 15.407(5G BAND 1)_bandedge



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5150.000	55.10	—	48.8	44.02	74.0	—	54.0	5.20	266.32	150	Vertical	Pass
5203.449	83.59	—	73.8	43.80	74.0	—	54.0	-19.80	114.70	150	Vertical	N.A

Band I, 11ac80 Middle channel, ANT H

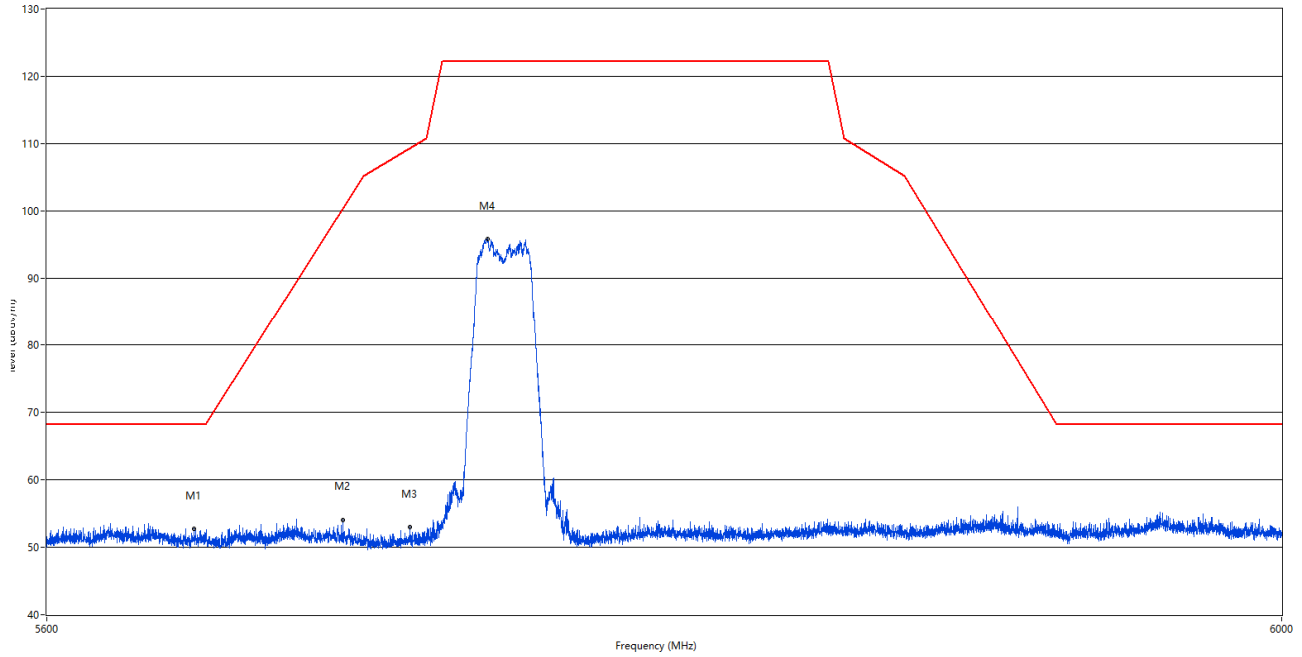
REmission Test case_FCC_Part 15E_FCC 15.407(5G BAND 1)_bandedge



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5150.000	54.76	--	48.9	44.02	74.0	--	54.0	5.10	75.73	150	Horizontal	Pass
5213.697	90.64	--	83.7	43.91	74.0	--	54.0	-29.70	360.00	150	Horizontal	N.A

Band IV, 11ac20 Low channel, ANT V

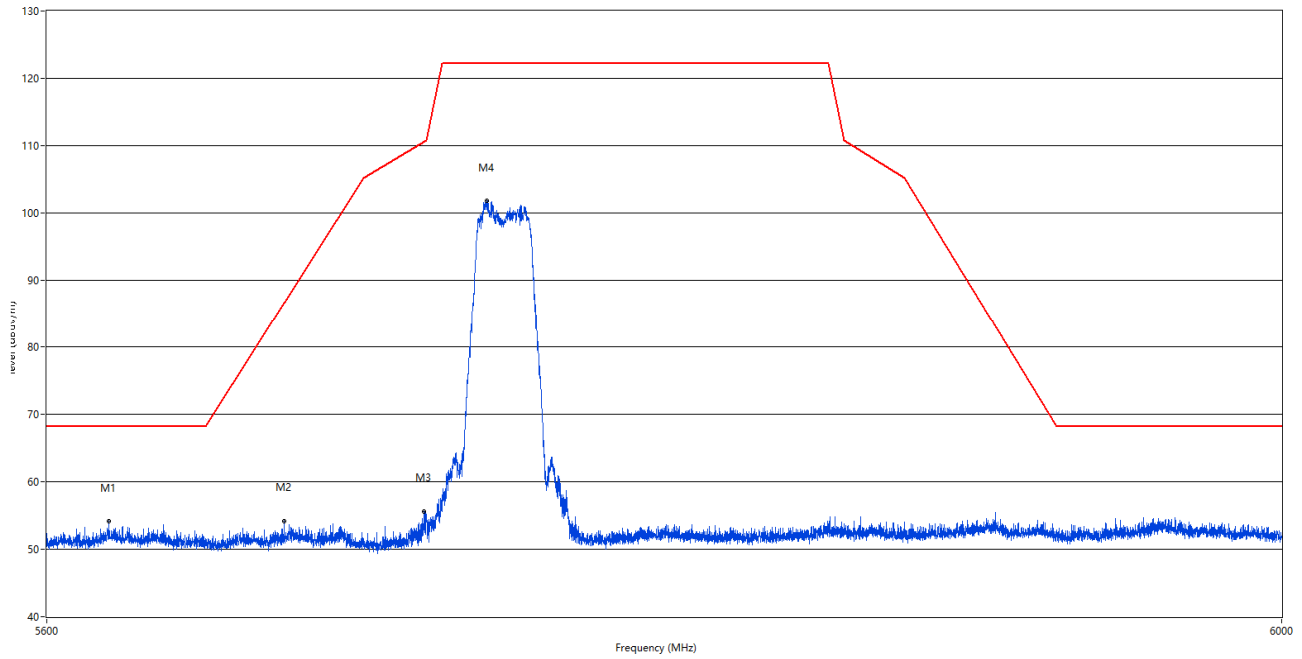
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_5G_Band4_Bandedge



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5646.194	52.72	--	--	2.24	68.2	--	--	15.48	201.80	150	Vertical	Pass
5693.438	54.09	--	--	2.38	100.4	--	--	46.31	290.30	150	Vertical	Pass
5714.686	53.02	--	--	1.89	109.3	--	--	56.28	176.10	150	Vertical	Pass
5739.533	95.79	--	--	2.19	122.2	--	--	26.41	359.60	150	Vertical	Pass

Band IV, 11ac20 Low channel, ANT H

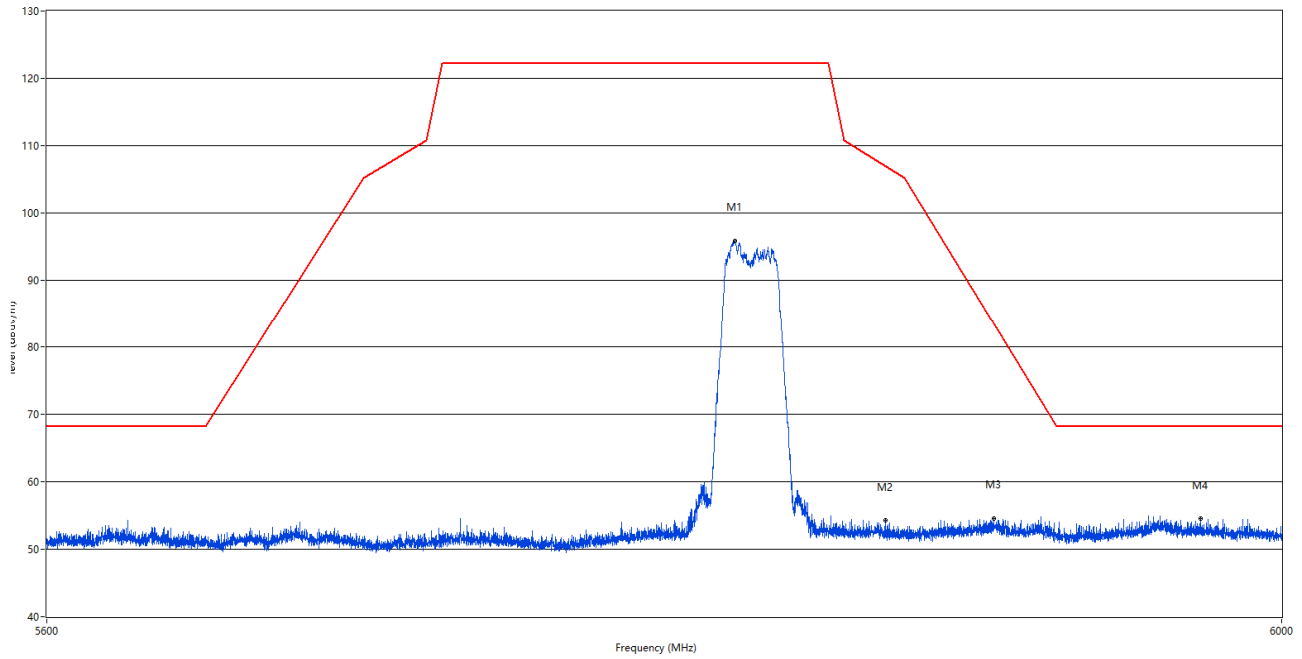
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_5G_Band4_Bandedge



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5619.398	54.11	--	--	3.29	68.2	--	--	14.09	1.30	150	Horizontal	Pass
5674.791	54.18	--	--	2.81	86.6	--	--	32.42	231.80	150	Horizontal	Pass
5719.185	55.53	--	--	1.63	110.6	--	--	55.07	342.50	150	Horizontal	Pass
5739.483	101.81	--	--	2.19	122.2	--	--	20.39	342.50	150	Horizontal	Pass

Band IV, 11ac20 High channel, ANT V

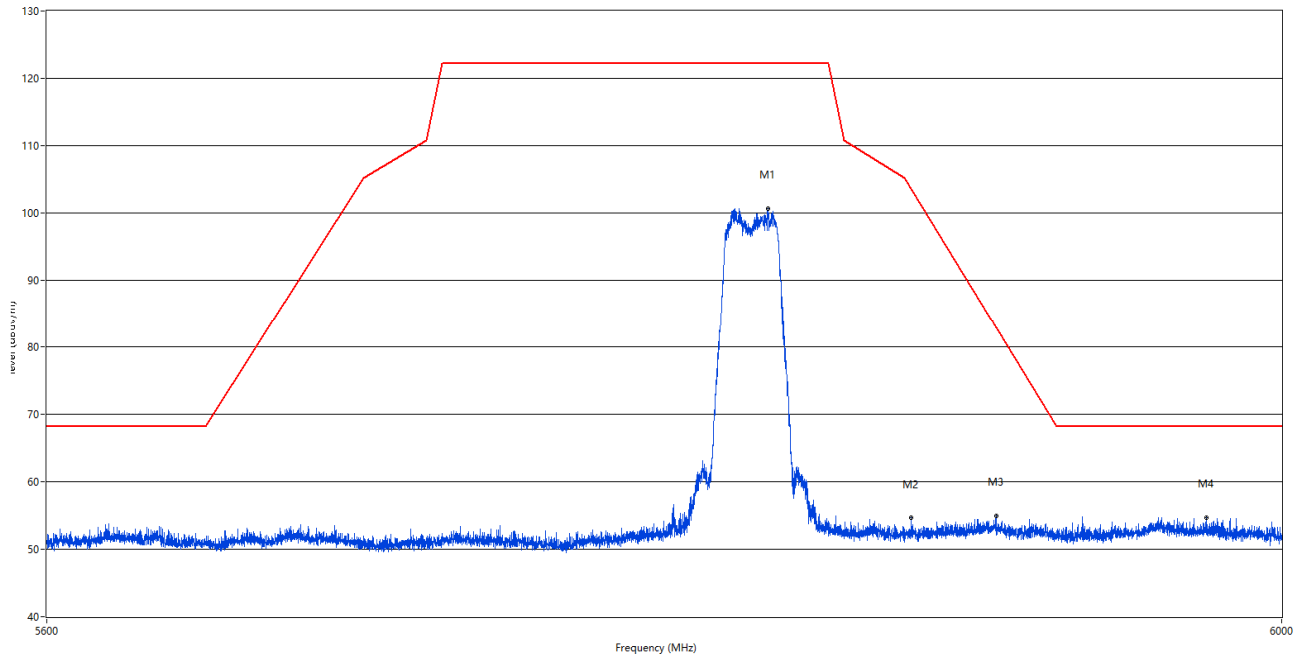
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_5G_Band4_Bandedge



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5819.523	95.87	--	--	3.28	122.2	--	--	26.33	356.70	150	Vertical	Pass
5868.716	54.33	--	--	3.29	107.0	--	--	52.67	319.80	150	Vertical	Pass
5904.312	54.56	--	--	4.44	83.5	--	--	28.94	308.40	150	Vertical	Pass
5972.803	54.48	--	--	4.51	68.2	--	--	13.72	308.40	150	Vertical	Pass

Band IV, 11ac20 High channel, ANT H

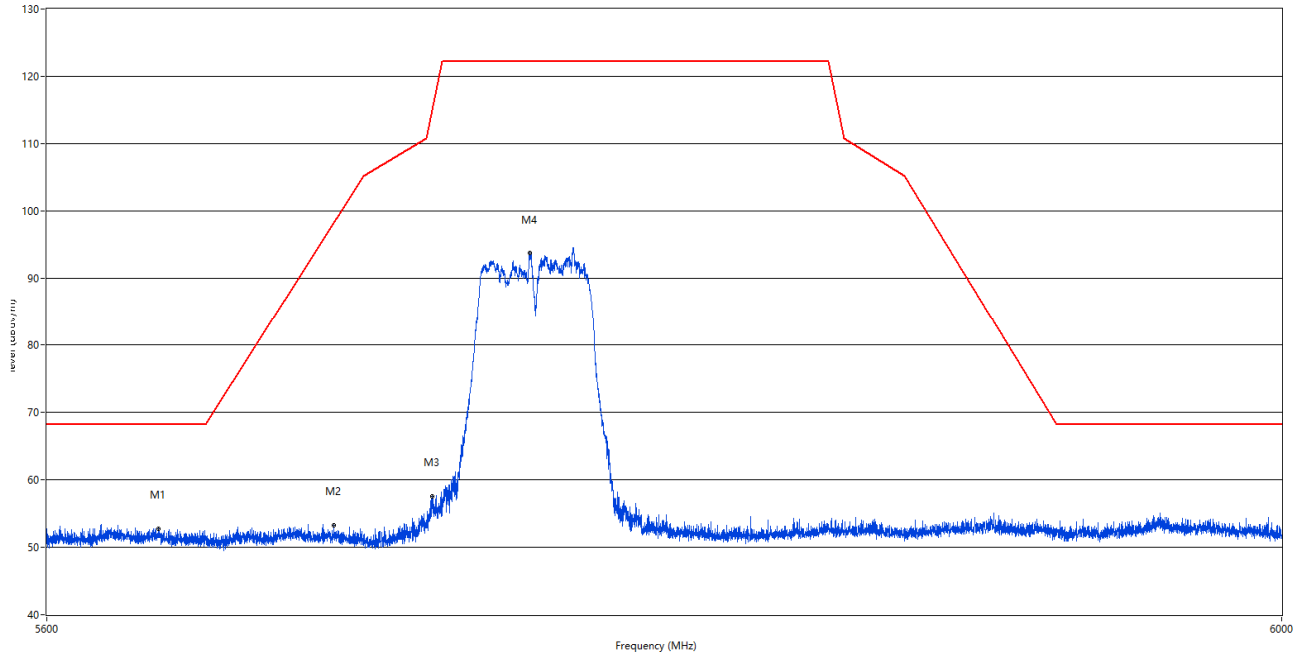
REmission Test case_FCC_Part 15E_FCC 15.407(5G)5G_Band4_Bandedge



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5830.171	100.69	--	--	2.99	122.2	--	--	21.51	346.70	150	Horizontal	Pass
5877.165	54.62	--	--	2.88	103.6	--	--	48.98	359.80	150	Horizontal	Pass
5905.162	54.91	--	--	4.35	82.8	--	--	27.89	212.20	150	Horizontal	Pass
5974.803	54.69	--	--	4.58	68.2	--	--	13.51	25.40	150	Horizontal	Pass

Band IV, 11ac40 Low channel, ANT V

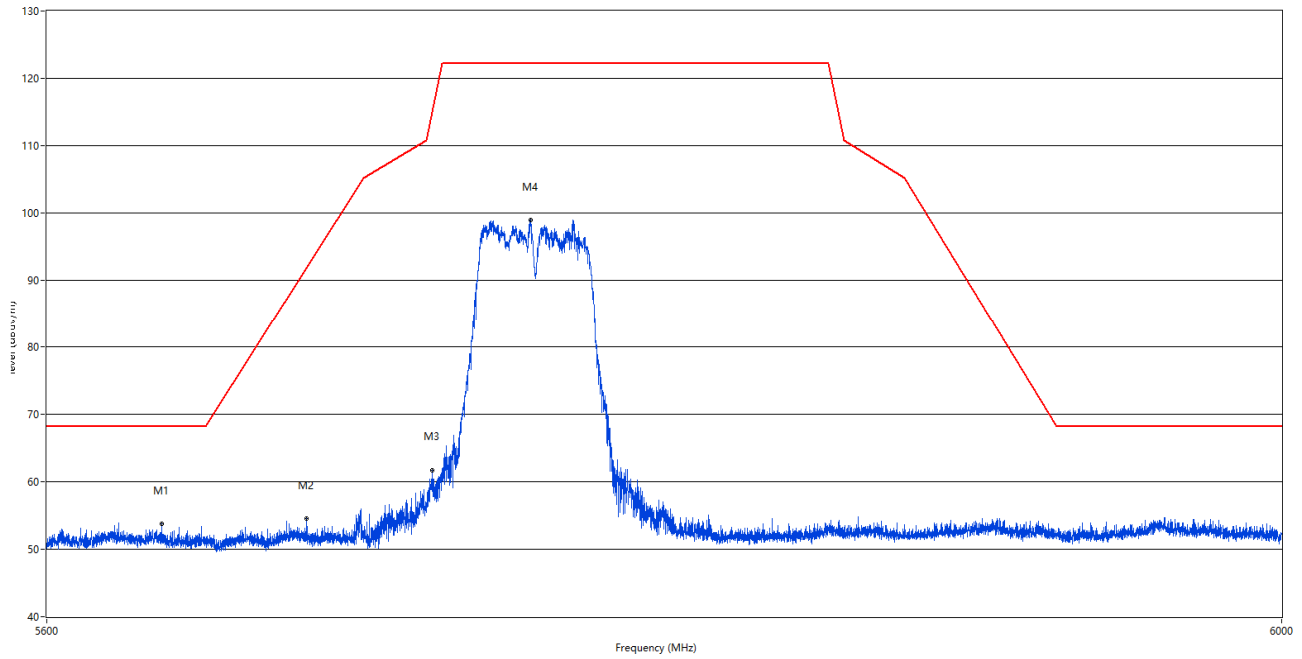
REmission Test case_FCC_Part 15E_FCC 15.407(5G)5G_Band4_Bandedge



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5635.146	52.79	--	--	2.88	68.2	--	--	15.41	234.40	150	Vertical	Pass
5690.639	53.26	--	--	2.51	98.3	--	--	45.04	22.40	150	Vertical	Pass
5721.885	57.51	--	--	1.80	115.1	--	--	57.59	359.70	150	Vertical	Pass
5753.081	93.73	--	--	2.14	122.2	--	--	28.47	358.90	150	Vertical	Pass

Band IV, 11ac40 Low channel, ANT H

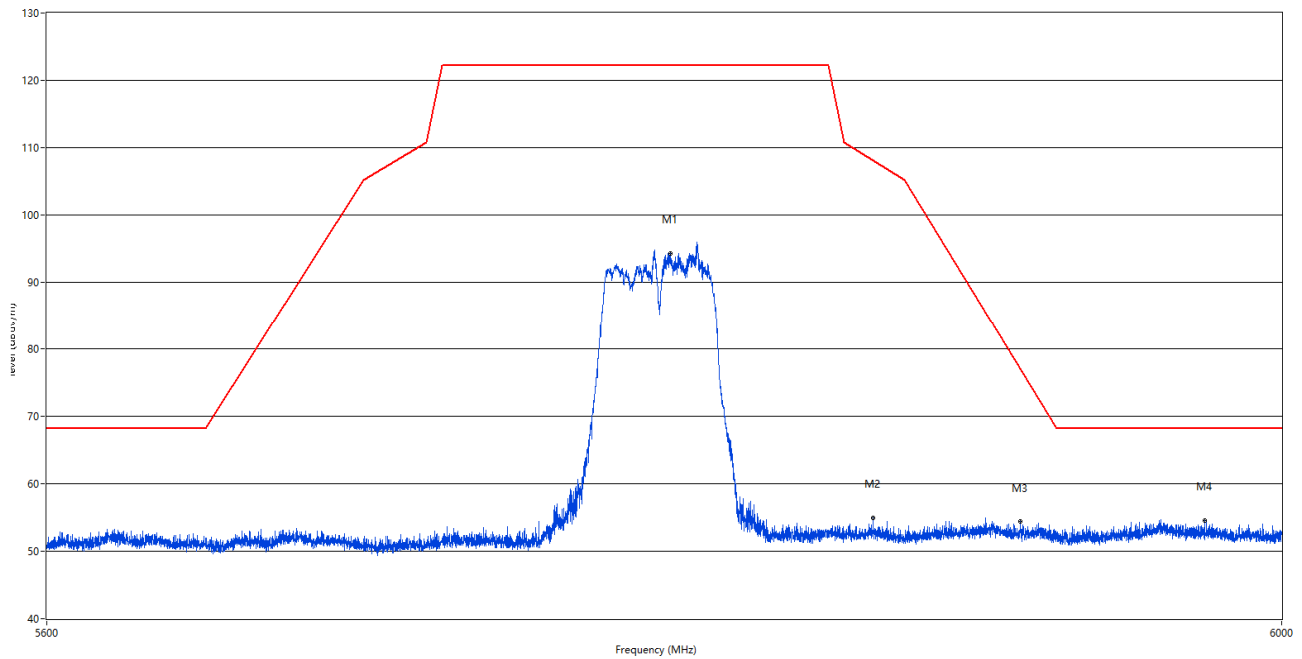
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_5G_Band4_Bandedge



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5635.996	53.72	--	--	2.75	68.2	--	--	14.48	358.30	150	Horizontal	Pass
5681.940	54.50	--	--	2.54	91.9	--	--	37.40	216.20	150	Horizontal	Pass
5721.985	61.64	--	--	1.80	115.3	--	--	53.66	342.00	150	Horizontal	Pass
5753.331	98.92	--	--	2.14	122.2	--	--	23.28	345.70	150	Horizontal	Pass

Band IV, 11ac40 High channel, ANT V

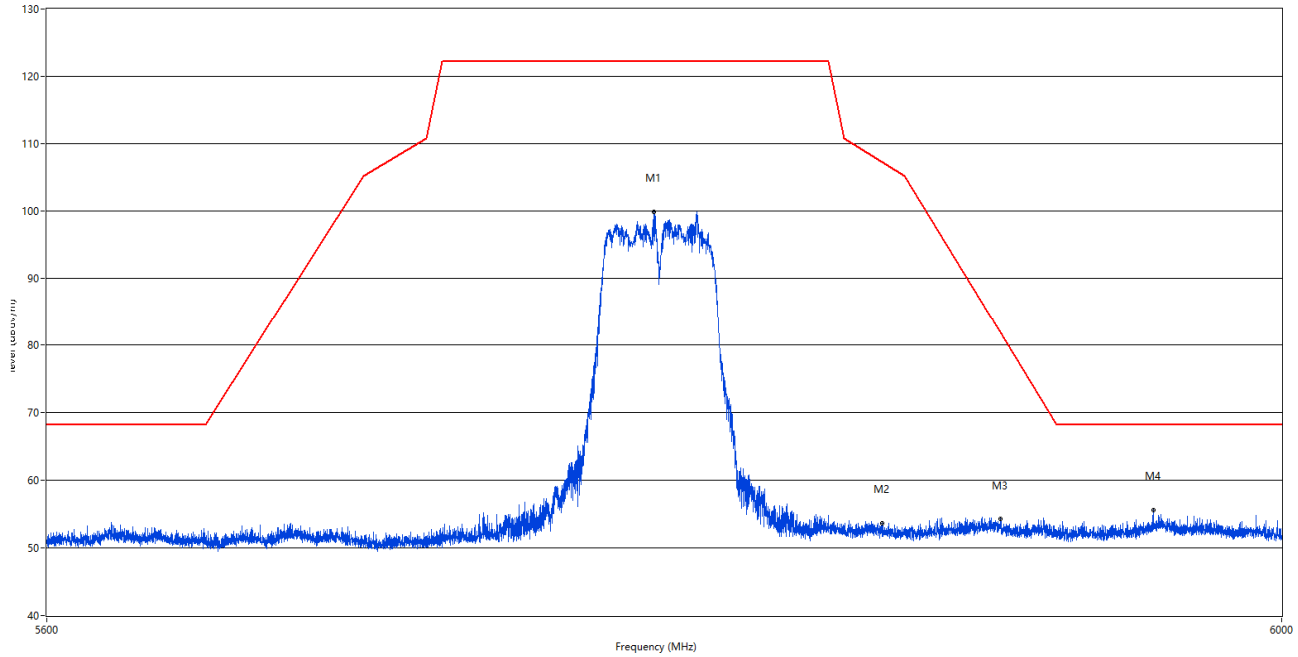
REmission Test case_FCC_Part 15E_FCC 15.407(5G)5G_Band4_Bandedge



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5798.625	94.31	--	--	2.86	122.2	--	--	27.89	356.90	150	Vertical	Pass
5864.517	54.98	--	--	3.67	108.1	--	--	53.12	39.60	150	Vertical	Pass
5913.111	54.38	--	--	3.92	77.0	--	--	22.62	358.60	150	Vertical	Pass
5974.253	54.52	--	--	4.60	68.2	--	--	13.68	98.60	150	Vertical	Pass

Band IV, 11ac40 High channel, ANT H

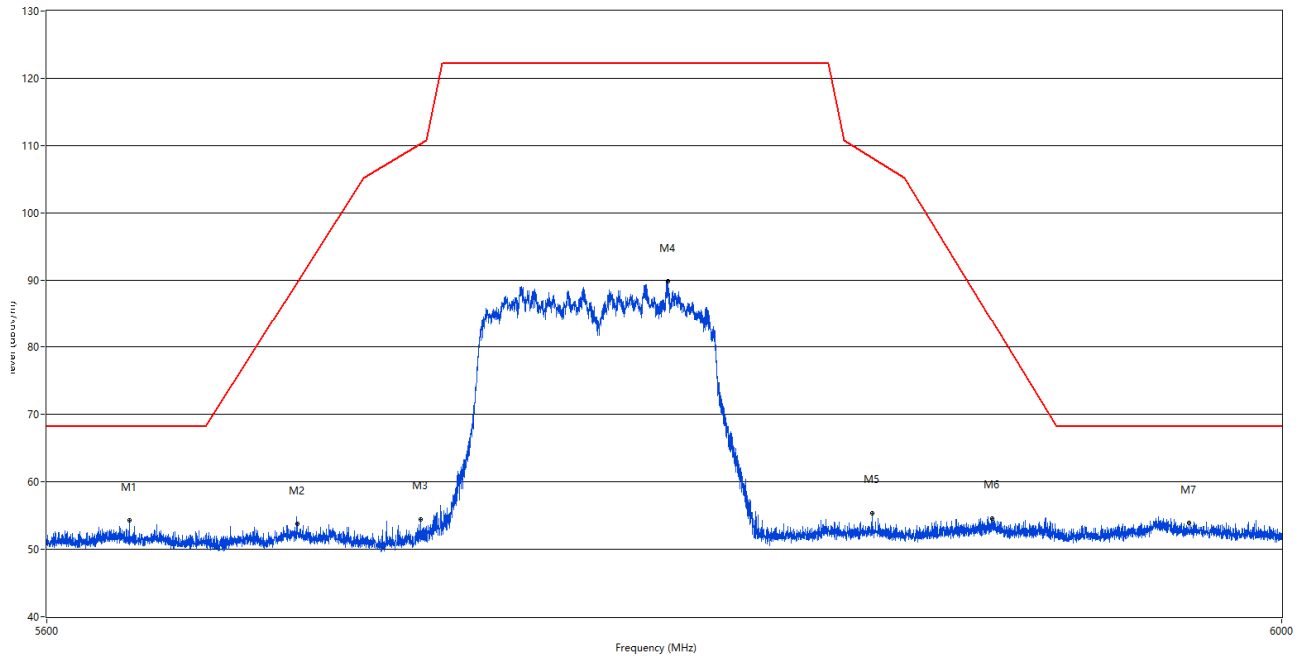
REmission Test case_FCC_Part 15E_FCC 15.407(5G)_5G_Band4_Bandedge



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5793.176	99.88	--	--	3.02	122.2	--	--	22.32	341.70	150	Horizontal	Pass
5867.517	53.62	--	--	3.40	107.3	--	--	53.68	304.90	150	Horizontal	Pass
5906.412	54.23	--	--	4.22	81.9	--	--	27.67	278.90	150	Horizontal	Pass
5957.055	55.52	--	--	4.37	68.2	--	--	12.68	179.30	150	Horizontal	Pass

Band IV, 11ac80 Middle channel, ANT V

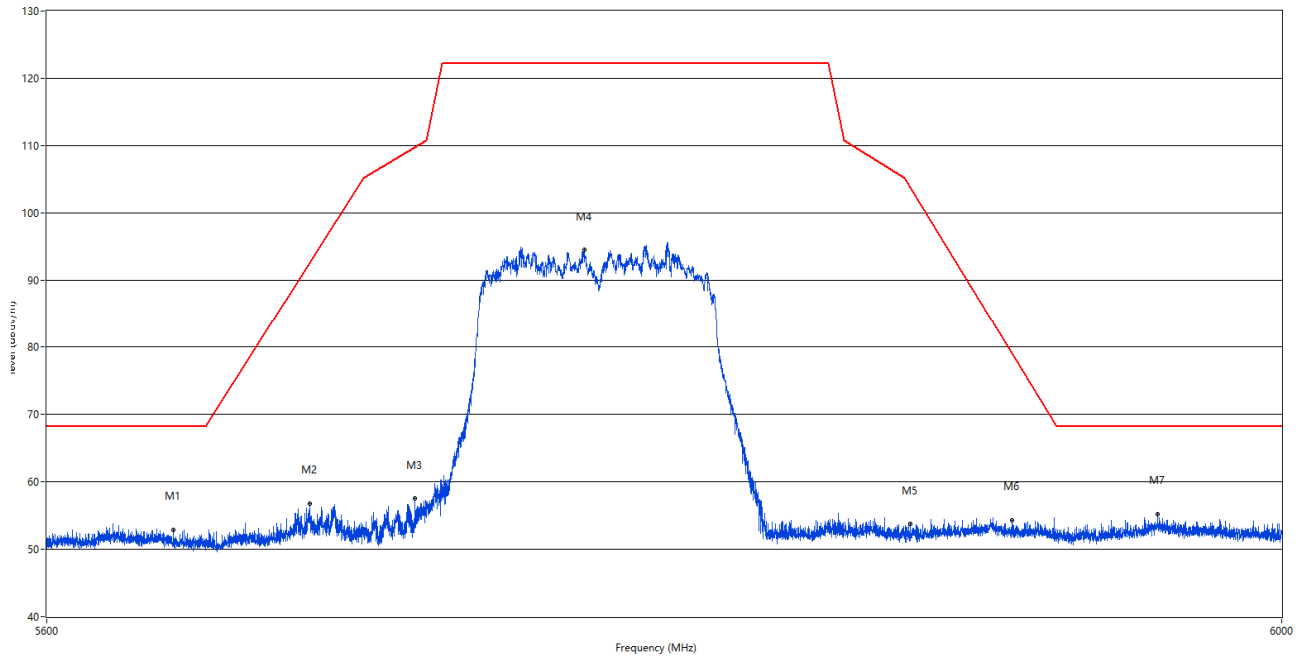
REmission Test case_FCC_Part 15E_FCC 15.407(5G)5G_Band4_Bandedge



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5625.847	54.28	--	--	2.81	68.2	--	--	13.92	209.70	150	Vertical	Pass
5678.890	53.70	--	--	2.93	89.6	--	--	35.90	120.50	150	Vertical	Pass
5718.185	54.44	--	--	1.69	110.3	--	--	55.86	109.70	150	Vertical	Pass
5797.625	89.88	--	--	2.91	122.2	--	--	32.32	106.00	150	Vertical	Pass
5864.217	55.37	--	--	3.70	108.2	--	--	52.83	39.50	150	Vertical	Pass
5903.712	54.52	--	--	4.41	83.9	--	--	29.38	91.10	150	Vertical	Pass
5969.054	53.87	--	--	4.23	68.2	--	--	14.33	154.10	150	Vertical	Pass

Band IV, 11ac80 Middle channel, ANT H

REmission Test case_FCC_Part 15E_FCC 15.407(5G)5G_Band4_Bandedge



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
5639.795	52.88	--	--	2.25	68.2	--	--	15.32	320.00	150	Horizontal	Pass
5682.790	56.78	--	--	2.42	92.5	--	--	35.72	349.40	150	Horizontal	Pass
5716.385	57.53	--	--	1.79	109.8	--	--	52.27	334.80	150	Horizontal	Pass
5770.679	94.49	--	--	2.25	122.2	--	--	27.71	346.00	150	Horizontal	Pass
5876.765	53.72	--	--	2.89	103.9	--	--	50.18	0.20	150	Horizontal	Pass
5910.161	54.29	--	--	3.94	79.1	--	--	24.81	3.00	150	Horizontal	Pass
5958.555	55.18	--	--	4.67	68.2	--	--	13.02	338.50	150	Horizontal	Pass

A.8 Frequency Stability

Note: Frequency Stability result reference from original test report: BL-EC17C0360-604 (issued by Shenzhen BALUN Technology Co., Ltd. On Apr. 02, 2018) A.8 Frequency Stability.

ANNEX B TEST SETUP PHOTOS

Please refer the document "BL-EC18B0146-AR.PDF".

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document "BL-EC18B0146-AW.PDF".

ANNEX D EUT INTERNAL PHOTOS

Please refer the document "BL-EC18B0146-AI.PDF".

--END OF REPORT--