Shenzhen Huatongwei International Inspection Co., Ltd.
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TEST REPORT

Report Reference No. ..... :	**TRE1711016603**	R/C…….: 43547
FCC ID ..... :	**YAMMD62XVHF**	
Applicant's name ..... :	**Hytera Communications Corporation Limited**	
Address.....:	Hytera Tower, Hi-Tech Industrial Park North,9108# Beihuan Road, Nanshan District, Shenzhen, China	
Manufacturer.....:	Hytera Communications Corporation Limited	
Address.....:	Hytera Tower, Hi-Tech Industrial Park North,9108# Beihuan Road, Nanshan District, Shenzhen, China	
Test item description ..... :	**Digital Mobile Radio**	
Trade Mark .....:	Hytera	
Model/Type reference.....:	MD625 VHF	
Listed Model(s) .....:	MD622 VHF,MD626 VHF,MD628 VHF	
Standard ..... :	**FCC Part 22/FCC Part 80/ FCC Part 90**	
Date of receipt of test sample……...:	Nov. 24, 2017	
Date of testing……..……:	Nov. 27, 2017 – Jan. 29, 2018	
Date of issue……..…….....:	Jan. 29, 2018	
**Result.....……..…..: **	**PASS**	
Compiled by (position+printed name+signature)..:	File administrators Shayne Zhu	Shayne Zhu
Supervised by (position+printed name+signature)..:	Project Engineer Cary Luo	Cary Luo
Approved by (position+printed name+signature)..:	RF Manager Hans Hu	Hans Hu
Testing Laboratory Name ..... :	**Shenzhen Huatongwei International Inspection Co., Ltd.**	
Address.....:	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China	

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Contents

1. TEST STANDARDS AND REPORT VERSION

1.1. Test Standards

The tests were performed according to following standards:
FCC Part 22: PUBLIC MOBILE SERVICES
FCC Part 80: STATIONS IN THE MARITIME SERVICES
FCC Part 90: PRIVATE LAND MOBILE RADIO SERVICES
FCC Part 15 Subpart B: Unintentional Radiators
FCC Part 2: Frequency allocations and radio treaty matters, general rules and regulations.
TIA/EIA 603 D: June 2010: Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.
KDB579009 D03 v01: Applications Part 90 Refarming Bands.
KDB971168 D01 v02r02: MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS

1.2. Report version information

Revision No.	Date of issue	Description
N/A	2018-01-29	Original

2. Test Description

Transmitter Requirement			
Test item	Standards requirement FCC Section(s)	Result	
		Pass	N/A
Maximum Transmitter Power	2.1046, 22.565,80.215 & 90.205	☒	
Modulation Limiting	2.1047(b),80.213& 90.210	☒	
Audio Frequency Response	2.1047(a), 80.213(e) &90.242(b)(8)	☒	
Occupied Bandwidth	2.1049, 80.211(f),90.209	☒	
Emission Mask	2.1049,80.211(f), 90.210	☒	
Frequency Stability	2.1055, 22.355,80.209 & 90.213	☒	
Transmitter Frequency Behavior	90.214	☒	
Transmitter Radiated Spurious Emission	2.1053, 2.1057, 22.359, 80.211(f)(3), & 90.210	☒	
Spurious Emission On Antenna Port	2.1051, 2.1057,80.211(f)(3), & 90.210	☒	
Receiver Requirement			
Test item	Standards requirement FCC Section(s)	Result	
		Pass	N/A
Conducted Emission	15.107		☒
Radiated Emission	15.109	☒	

3. SUMMARY

3.1. Client Information

Applicant:	Hytera Communications Corporation Limited
Address:	Hytera Tower, Hi-Tech Industrial Park North,9108# Beihuan Road, Nanshan District, Shenzhen, China
Manufacturer:	Hytera Communications Corporation Limited
Address:	Hytera Tower, Hi-Tech Industrial Park North,9108# Beihuan Road, Nanshan District, Shenzhen, China

3.2. Product Description

Name of EUT:	Digital Mobile Radio	
Trade Mark:	Hytera	
Model No.:	MD625 VHF	
Listed Model(s):	MD622 VHF,MD626 VHF,MD628 VHF	
Power supply:	DC 13.6V	
Adapter information:	-	
Hardware version:	A	
Software version:	V1.01.13.001	
Operation Frequency Range:	From 136MHz to 174MHz	
Rated Output Power:	High Power: 50W (46.99dBm)/Low Power: 5W (36.99dBm)	
Modulation Type:	Analog Voice:	FM
	Digital Voice/Digital Data:	4FSK
Digital Type:	DMR	
Channel Separation:	Analog Voice:	☒ 12.5kHz ☒ 25kHz
	Digital Voice/Digital Data:	☒ 12.5kHz ☐ 6.25kHz
Emission Designator:	Analog Voice:	☒12.5kHz Channel Separation: 5K25F3E ☒25kHz Channel Separation: 10K49F3E
	Digital Voice& Data:	☒12.5kHz Channel Separation: 7K29FXW ☐6.25kHz Channel Separation: ---
	Digital Data:	☒12.5kHz Channel Separation: 7K29FXD ☐6.25kHz Channel Separation: ---
Support data rate:	9.6kbps	
Antenna Type:	External	
Maximum Transmitter Power:	Digital	52.48W for 12.5kHz Channel Separation
	Analog	49.55W for 12.5kHz Channel Separation
		49.43W for 25kHz Channel Separation

Note:

1)The product has the same digital working characters when operating in both two digitized voice/data mode. So only one set of test results for digital modulation modes are provided in this test report.

2)This equipment is capable of supporting a minimum data rate of 4800 bits per second per 6.25 kHz of channel bandwidth. DMR interphone's bandwidth is 12.5 kHz, and it has a double time slot, one is the speech time slot, one is the data time slot, just language sequence is satisfied with 4800 bps/6.25 kHz BW.

3.3. Test frequency list

FCC Part 90					
Mode	Modulation	Channel Separation (kHz)	Operation Frequency Range (MHz)	Test Channel	Test Frequency (MHz)
Analog	FM	12.5	136~174	CH_{L1}	136.0125
				CH_{M1}	155.0125
				CH_{H1}	173.9875
Digital	4FSK	12.5	136~174	CH_{L1}	136.0125
				CH_{M1}	155.0125
				CH_{H1}	173.9875

FCC Part 80					
Mode	Modulation	Channel Separation (kHz)	Operation Frequency Range (MHz)	Test Channel	Test Frequency (MHz)
Analog	FM	25	154~162.0375	CH_{L2}	156.050
				CH_{H2}	157.425

FCC Part 22					
Mode	Modulation	Channel Separation (kHz)	Operation Frequency Range (MHz)	Test Channel	Test Frequency (MHz)
Analog	FM	12.5	150.800~152.885	CH_{L3}	150.825
			157.450~161.775	CH_{H3}	161.750
		25	150.800~152.885	CH_{L3}	150.825
			157.450~161.775	CH_{H3}	161.750
Digital	4FSK	12.5	150.800~152.885	CH_{L3}	150.825
			157.450~161.775	CH_{H3}	161.750

Note:

In section KDB 634817 D01 Sections II)f)1) and 2):

(1) Test only on the allowed frequencies.

(2) Test at least one frequency in each band for each rule part applied under and ensure the device is capable of operating on the frequency under each rule part. This requirement may result in testing on multiple frequencies. Testing on one frequency may be acceptable if multiple listed bands for a rule part with a continuous frequency range are split to remove a conflict with other rules and the technical requirements in the split bands are the same. Additional requirements for RF exposure may apply.

3.4. EUT operation mode

Test mode	Transmitting	Receiving	Power level		Digital	Analog		GPS	BT
			High	Low	12.5kHz	12.5kHz	25kHz		
TX1	√		√		√				
TX2	√			√	√				
TX3	√		√			√			
TX4	√			√		√			
TX5	√		√				√		
TX6	√			√			√		
RX1		√			√				
RX2		√				√			
RX3		√					√		
RX4		√						√	
RX5		√							√

√: is operation mode.

3.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

●	Power Cable	Length (m) :	/
		Shield :	Unshielded
		Detachable :	Undetachable
○	Multimeter	Manufacturer :	/
		Model No. :	/

4. TEST ENVIRONMENT

4.1. Address of the test laboratory

Laboratory: Shenzhen Huatongwei International Inspection Co., Ltd.
Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China
Phone: 86-755-26748019 Fax: 86-755-26748089

4.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 3902.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 762235

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files with Registration 762235.

IC-Registration No.: 5377B-1

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377B-1.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

4.3. Environmental conditions

Normal Conditon	
Relative humidity:	20 % to 75 %.
Air Pressure:	950~1050mba
Voltage:	DC 13.6V

4.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Frequency stability	25 Hz	(1)
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Conducted spurious emission 9KHz-40 GHz	1.60 dB	(1)
Conducted Emission 9KHz-30MHz	3.39 dB	(1)
Radiated Emission 30~1000MHz	4.65 dB	(1)
Radiated Emission 1~18GHz	5.16 dB	(1)
Radiated Emission 18-40GHz	5.54 dB	(1)
Occupied Bandwidth	35 Hz	(1)
FM deviation	25 Hz	(1)
Audio level	0.62 dB	(1)
Low Pass Filter Response	0.76 dB	(1)
Modulation Limiting	0.42 %	(1)
Transient Frequency Behavior	6.8 %	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

4.5. Equipments Used during the Test

All conducted test items					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. (mm/dd/yy)
1	RF Communication Test Set	HP	8920A	3813A10206	11/11/2017
2	Digital intercom COMM.TESRER	Aeroflex	3920B	1001682041	11/11/2017
3	Signal Generator	R&S	SML02	100507	11/11/2017
4	Signal Generator	IFR	2032	203002\100	11/11/2017
5	RF Control Unit	Tonscend	JS0806-2	N/A	11/11/2017
6	Spectrum Analyzer	R&S	FSW26	103440	11/11/2017
7	Climate Chamber	ESPEC	GPL-2	----	11/10/2017
8	Attenuator	Chengdu E-Microwave	EMCAXX-10RNZ-3	----	11/11/2017
9	High-Pass Filter	OCEN	OSP-HPF26300P20-LC	----	N/A
10	High-Pass Filter	OCEN	OSP-HPF60300P20-LC	----	N/A
11	Variable DC Power Supply	GWINSTEK	SPS-2415	----	N/A
12	Storage Oscilloscope	Tektronix	TDS3054B	B033027	11/11/2017

Radiated Spurious Emissions					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. (mm/dd/yy)
1	Horn Antenna	SCHWARZBECK	9120D	1011	3/27/2017
2	Spectrum Analyzer	R&S	FSP40	100597	11/11/2017
3	Broadband Preamplifer	SCHWARZBECK	BBV 9718	9718-248	10/18/2017
4	Turntable	Maturo Germany	TT2.0-1T	N/A	N/A
5	Antenna Mast	Maturo Germany	CAM-4.0-P-12	N/A	N/A
6	Test Software	R&S	E3	N/A	N/A
7	Ultra-Broadband Antenna	SCHWARZBECK	VULB9163	538	4/5/2017
8	Pre-amplifer	SCHWARZBECK	BBV 9743	9743-0022	10/18/2017
9	RF Connection Cable	HUBER+SUHNER	3m 18GHz S Serisa	N/A	11/21/2017
10	RF Connection Cable	HUBER+SUHNER	3m 3GHz S Serisa	N/A	11/21/2017
11	RF Connection Cable	HUBER+SUHNER	3m 3GHz RG Serisa	N/A	11/21/2017
12	RF Connection Cable	HUBER+SUHNER	6m 18GHz S Serisa	N/A	11/21/2017
13	RF Connection Cable	HUBER+SUHNER	6m 18GHz S Serisa	N/A	N/A
14	RF Connection Cable	HUBER+SUHNER	3m 18GHz S Serisa	N/A	N/A
15	High-Pass Filter	Anritsu	MP526D	6220878392	11/11/2017
16	High-Pass Filter	OCEN	OSP-HPF26300P20-LC	----	N/A

17	High-Pass Filter	OCEN	OSP-HPF60300P20-LC	----	N/A
18	RF Connection Cable	HUBER+SUHNER	MULTIFLEX 141	N/A	11/21/2017

Conducted Disturbance					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. (mm/dd/yy)
1	EMI Test Receiver	R&S	ESCI	101247	11/11/2017
2	Artificial Mains	SCHWARZBECK	NNLK 8121	573	11/11/2017
3	Pulse Limiter	R&S	ESH3-Z2	101488	11/11/2017
4	Test Software	R&S	ES-K1	N/A	N/A
5	RF Connection Cable	HUBER+SUHNER	EF400	N/A	11/21/2017
6	2-Line V-Network	R&S	ESH3-Z5	100049	11/11/2017

The Cal. Interval was one year.

5. TEST CONDITIONS AND RESULTS

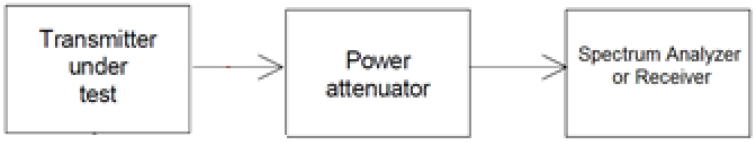
5.1. Maximum Transmitter Power

Applicants for licenses must request and use no more power than the actual power necessary for satisfactory operation.

LIMIT

Please refer to FCC 47 CFR 90.205,80.215 & 22.565 for specification details.

TEST CONFIGURATION



TEST PROCEDURE

Measurements shall be made to establish the radio frequency power delivered by the transmitter the standard output termination. The power output shall be monitored and recorded and no adjustment shall be made to the transmitter after the test has begun, except as noted bellow:
If the power output is adjustable, measurements shall be made for the highest and lowest power levels.
Connect the equipment as illustrated.

TEST MODE:

Please reference to the section 3.4

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Please refer to the below test data:

FCC Part 90				
Operation Mode	Test Channel	Measured power (dBm)	Measured power (W)	Limit (W)
TX1	CH_{L1}	47.2	52.48	40~60
	CH_{M1}	47.1	51.29	
	CH_{H1}	47.1	51.29	
TX2	CH_{L1}	36.9	4.90	4~6
	CH_{M1}	36.8	4.79	
	CH_{H1}	36.8	4.79	
TX3	CH_{L1}	46.98	49.89	40~60
	CH_{M1}	46.98	49.89	
	CH_{H1}	46.92	49.20	
TX4	CH_{L1}	36.68	4.66	4~6
	CH_{M1}	36.71	4.69	
	CH_{H1}	36.57	4.54	

FCC Part 80				
Operation Mode	Test Channel	Measured power (dBm)	Measured power (W)	Limit (W)
TX5	CH_{L2}	46.93	49.32	-
	CH_{H2}	46.92	49.20	
TX6	CH_{L2}	36.58	4.55	-
	CH_{H2}	36.59	4.56	

FCC Part 22				
Operation Mode	Test Channel	Measured power (dBm)	Measured power (W)	Limit (W)
TX1	CH_{L3}	47.1	51.29	-
	CH_{H3}	47.1	51.29	
TX2	CH_{L3}	36.8	4.79	-
	CH_{H3}	36.7	4.68	
TX3	CH_{L3}	46.93	49.32	-
	CH_{H3}	46.94	49.43	
TX4	CH_{L3}	36.62	4.59	-
	CH_{H3}	36.54	4.51	
TX5	CH_{L3}	46.93	49.32	-
	CH_{H3}	46.93	49.32	
TX6	CH_{L3}	36.63	4.60	-
	CH_{H3}	36.54	4.51	

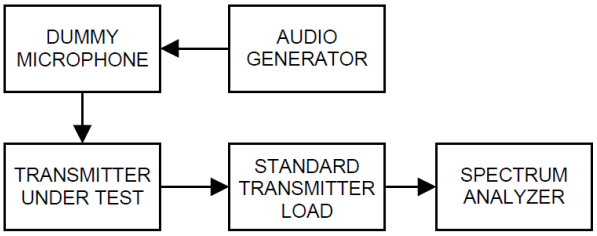
5.2. Occupied Bandwidth

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits.

LIMIT

Please refer to FCC 47 CFR 2.1049, 80.211(f),90.209 for specification details.

TEST CONFIGURATION



TEST PROCEDURE

1 The EUT was modulated by 2.5kHz sine wave audio signal; the level of the audio signal employed is 16dB greater than that necessary to produce 50% of rated system deviation.
Rated system deviation is 2.5 kHz for 12.5kHz channel spacing).
2 Spectrum set as follow:
Centre frequency = fundamental frequency, span=50kHz for 12.5kHz channel spacing,
RBW=100Hz, VBW=300Hz, Sweep = auto,
Detector function = peak, Trace = max hold
3 Set 99% Occupied Bandwidth and 26dB Occupied Bandwidth
4 Measure and record the results in the test report.

TEST MODE:

Please reference to the section 3.4

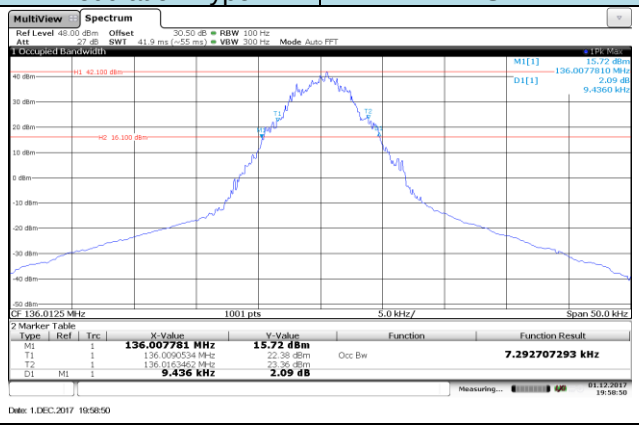
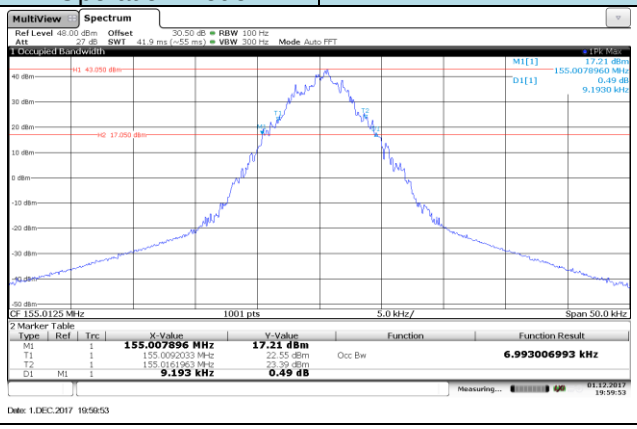
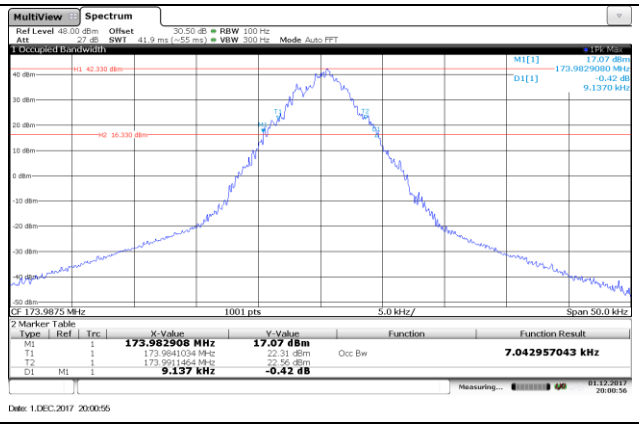
TEST RESULTS

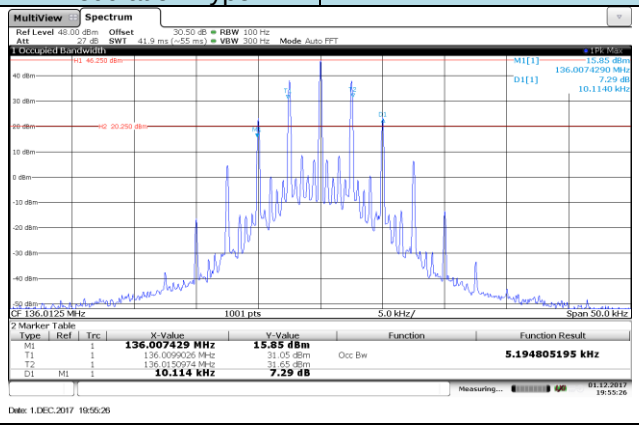
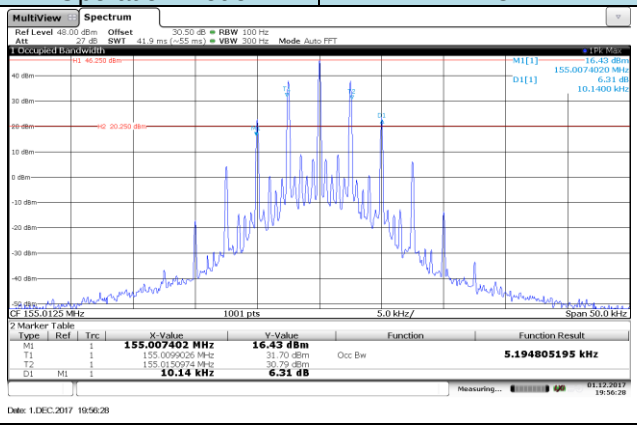
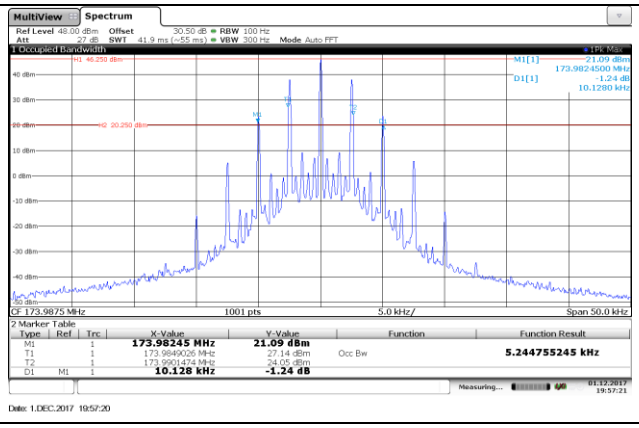
☒ **Passed** ☐ **Not Applicable**

Note: Have pre-tested TX1 to TX6 mode, record the worst case mode TX1, TX3 and TX5 on the report.

FCC Part 90					
Operation Mode	Test Channel	Occupied Bandwidth (kHz)		Limit(kHz)	Result
		99%	26dB		
TX1	CH_{L1}	7.293	9.436	≤11.25	Pass
	CH_{M1}	6.993	9.193		
	CH_{H1}	7.043	9.137		
TX3	CH_{L1}	5.195	10.114	≤11.25	Pass
	CH_{M1}	5.195	10.140		
	CH_{H1}	5.245	10.128		

Test plot as follows:

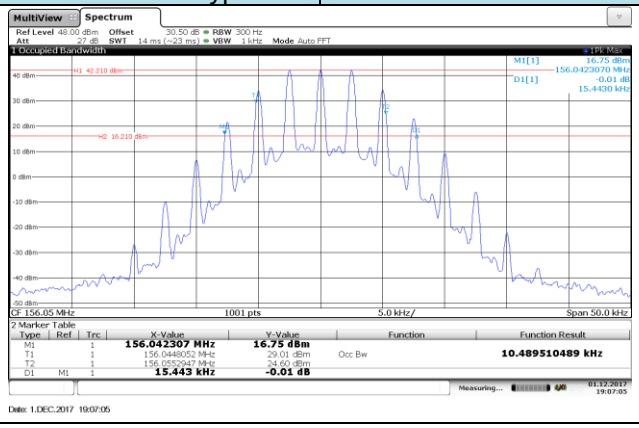
Modulation Type	4FSK	Operation Mode	TX1
			
CH_{L1}		CH_{M1}	
		Not plot	
CH_{H1}		-	

Modulation Type	FM	Operation Mode	TX3
			
CH_{L1}		CH_{M1}	
		Not plot	
CH_{H1}		-	

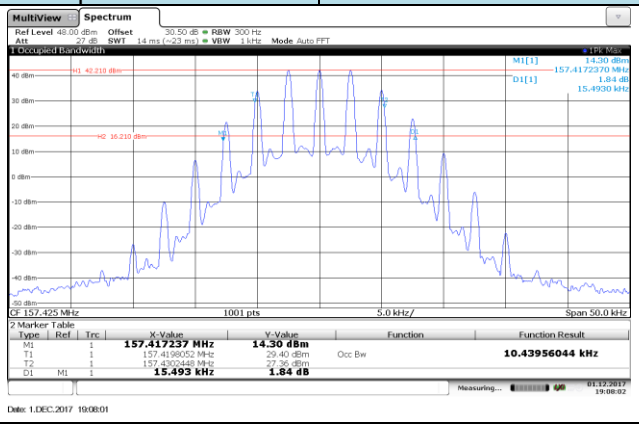
FCC Part 80					
Operation Mode	Test Channel	Occupied Bandwidth (kHz)		Limit(kHz)	Result
		99%	26dB		
TX5	CH_{L2}	10.49	15.443	⩽20	Pass
	CH_{H2}	10.44	15.493		

Test plot as follows:

Modulation Type	FM	Operation Mode	TX5



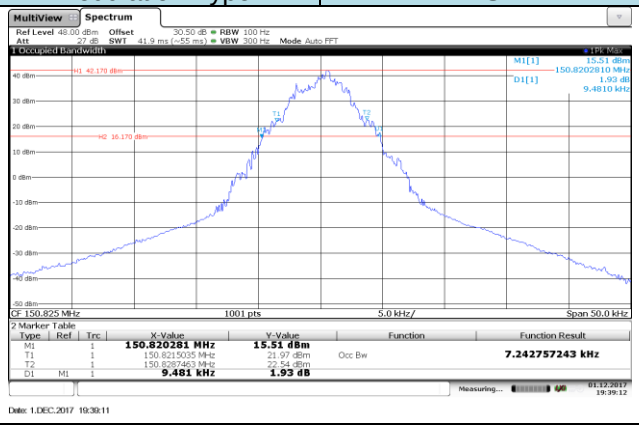
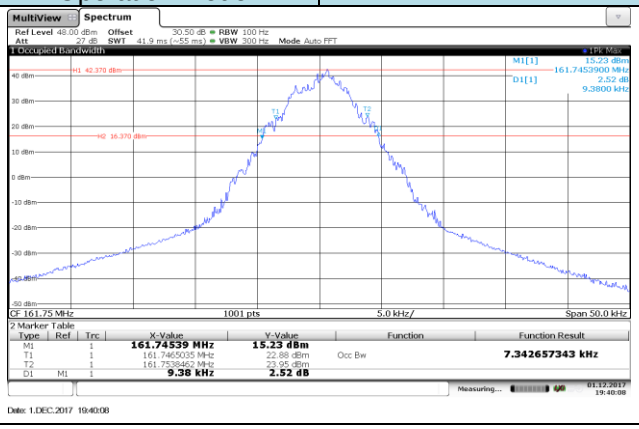
CH_{L2}

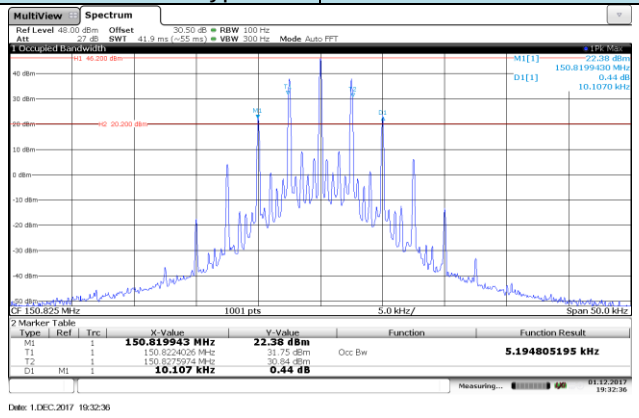
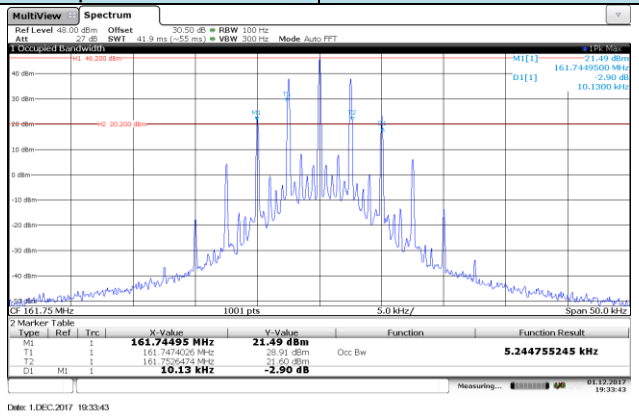


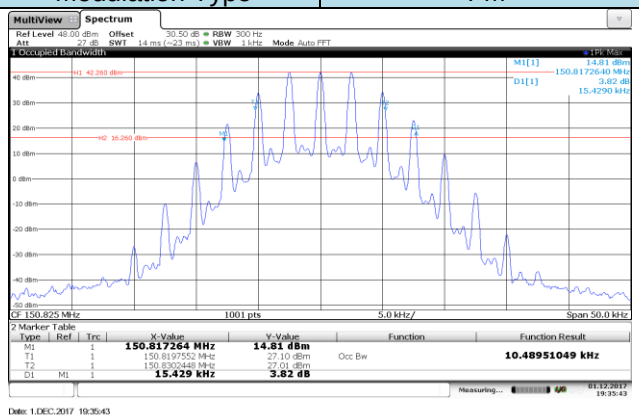
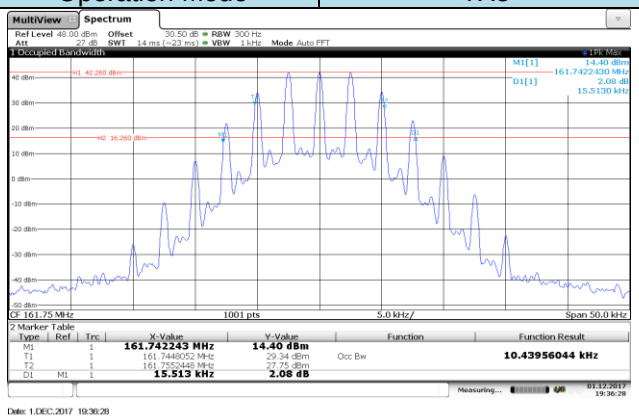
CH_{H2}

FCC Part 22					
Operation Mode	Test Channel	Occupied Bandwidth (kHz)		Limit(kHz)	Result
		99%	26dB		
TX1	CH_{L3}	7.243	9.481	≤11.25	Pass
	CH_{H3}	7.343	9.380		
TX3	CH_{L3}	5.195	10.107	≤11.25	Pass
	CH_{H3}	5.245	10.130		
TX5	CH_{L3}	10.490	15.429	≤20	
	CH_{H3}	10.440	15.513		

Test plot as follows:

Modulation Type	4FSK	Operation Mode	TX1
			
CH_{L3}		CH_{H3}	

Modulation Type	FM	Operation Mode	TX3
			
CH_{L3}		CH_{H3}	

Modulation Type	FM	Operation Mode	TX5
			
CH_{L3}		CH_{H3}	

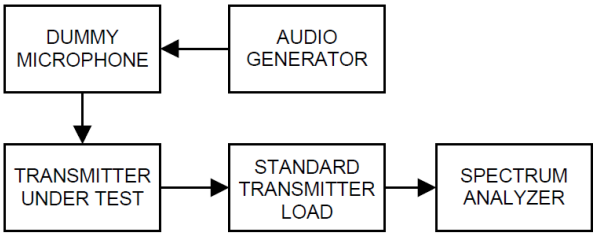
5.3. Emission Mask

Transmitters used in the radio services governed by this part must comply with the emission masks outlined in this section.

LIMIT

Please refer to FCC 47 CFR 2.1049,80.211(f), 90.210 for specification details.

TEST CONFIGURATION



TEST PROCEDURE

1 Connect the equipment as illustrated.
2 Spectrum set as follow:
Centre frequency = fundamental frequency, span=120kHz for 12.5kHz and 25kHz channel spacing, RBW=100Hz, VBW=1000Hz for 12.5kHz, RBW=300Hz, VBW=1000Hz for 25kHz,Sweep = auto, Detector function = peak, Trace = max hold
3 Key the transmitter, and set the level of the unmodulated carrier to a full scale reference line. This is the 0dB reference for the measurement.
4 Modulate the transmitter with a 2500 Hz sine wave at an input level 16 dB greater than that necessary to produce 50% of rated system deviation(Rated system deviation is 2.5 kHz for 12.5kHz channel spacing). The input level shall be established at the frequency of maximum response of the audio modulating circuit. Transmitters employing digital modulation techniques that bypass the limiter and the audio low-pass filter shall be modulated as specified by the manufacturer
5 Measure and record the results in the test report.

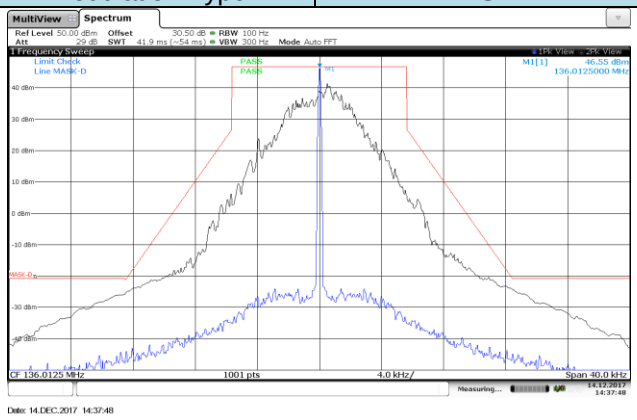
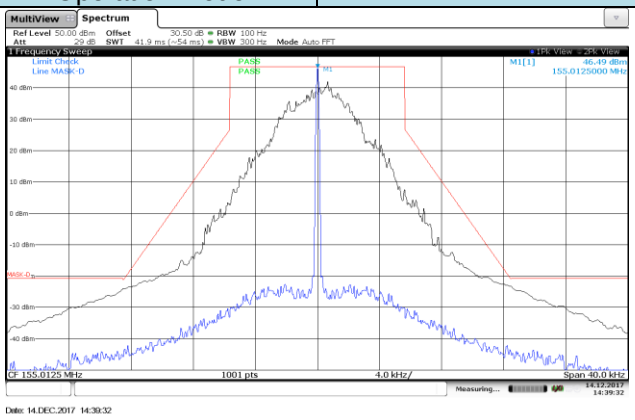
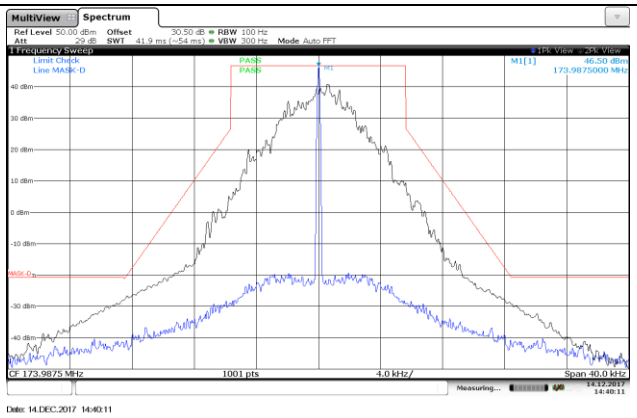
TEST MODE:

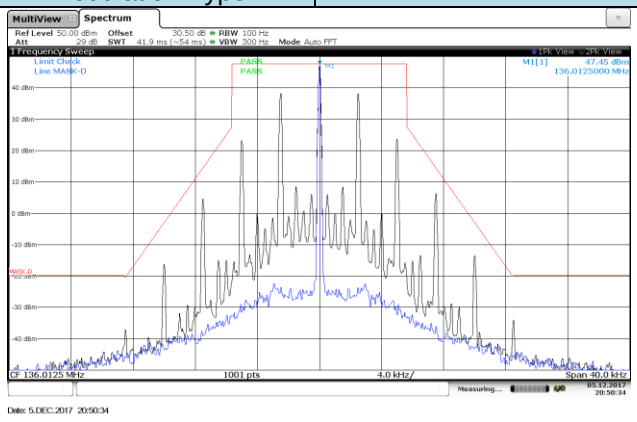
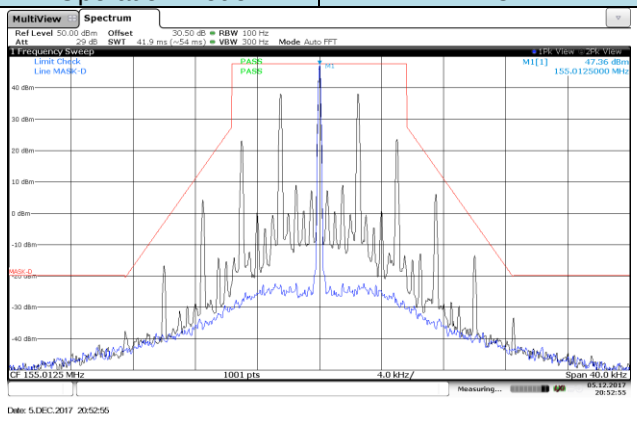
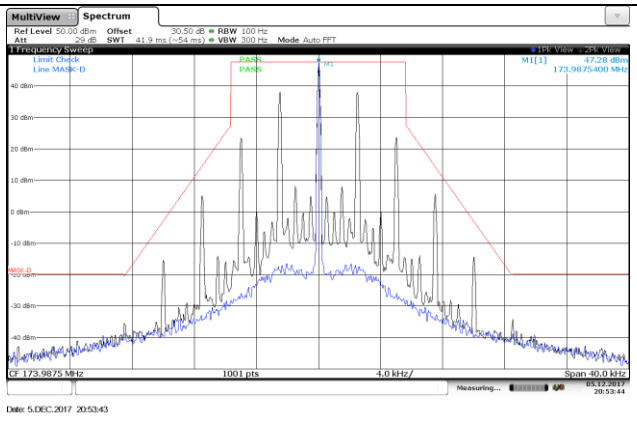
Please reference to the section 3.4

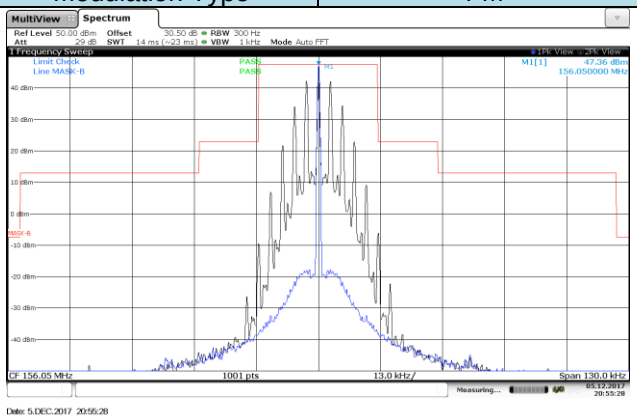
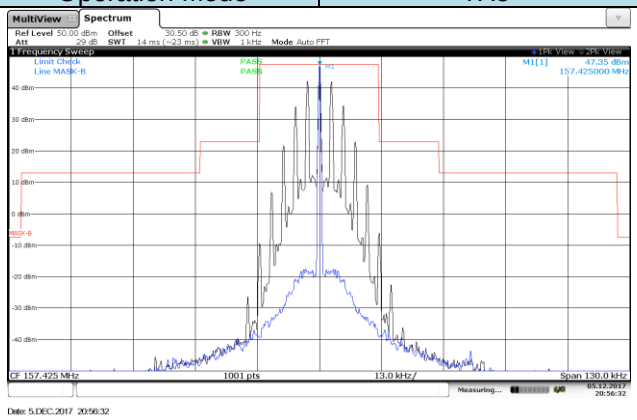
TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Note: have pre-tested TX1 to TX6 mode, record the worst case mode TX1,TX3 and TX5 on the report.

<table>
<tr><th colspan="4">FCC part 90</th></tr>
<tr><td>Modulation Type</td><td>4FSK</td><td>Operation Mode</td><td>TX1</td></tr>
<tr><td colspan="2"> 
</td><td colspan="2"> 
</td></tr>
<tr><td colspan="2">CH_{L1}</td><td colspan="2">CH_{M1}</td></tr>
<tr><td colspan="2"> 
</td><td colspan="2">Not plot</td></tr>
<tr><td colspan="2">CH_{H1}</td><td colspan="2">-</td></tr>
</table>

FCC part 90			
Modulation Type	FM	Operation Mode	TX3
			
CH_{L1}		CH_{M1}	
		Not plot	
CH_{H1}		-	

FCC part 80			
Modulation Type	FM	Operation Mode	TX5
			
CH_{L2}		CH_{H2}	

5.4. Modulation Limit

Modulation limiting is the transmitter circuit's ability to limit the transmitter from producing deviations in excess of a rated system deviation.

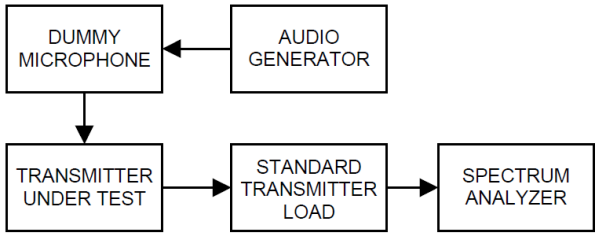
LIMIT

Please refer to FCC 47 CFR 2.1047 (b),80.213 & 90.210 for specification details.

2.5kHz for 12.5 KHz Channel Spacing System

5kHz for 25 KHz Channel Spacing System

TEST CONFIGURATION



TEST PROCEDURE

1) Connect the equipment as illustrated.
2) Adjust the transmitter per the manufacturer's procedure for full rated system deviation.
3) Set the test receiver to measure peak positive deviation. Set the audio bandwidth for ⩽0.25 Hz to ⩾15,000 Hz. Turn the de-emphasis function off.
4) Apply a 1000 Hz modulating signal to the transmitter from the audio frequency generator, and adjust the level to obtain 60% of full rated system deviation, this level is as a reference (0dB) and vary the input level from –20 to +20dB.
5) Measure both the instantaneous and steady-state deviation at and after the time of increasing the audio input level
6) Repeat step 4-5 with input frequency changing to 300Hz, 1004Hz, 1500Hz and 2500Hz in sequence.

TEST MODE:

Please reference to the section 3.4

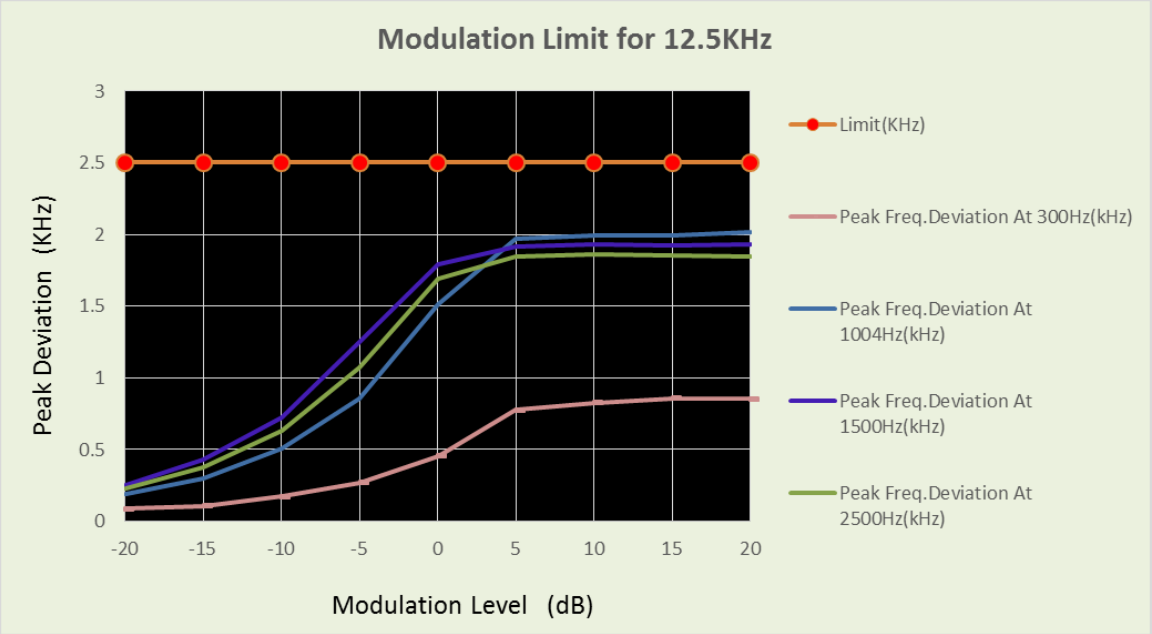
TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Note: Have pre-tested TX3 to TX6 mode, record the worst case mode TX3 and TX5 on the report.

FCC Part 90						
TX3: CH_{H1}						
Modulation Level (dB)	Peak frequency deviation (kHz)				Limit (kHz)	Result
	300Hz	1004Hz	1500Hz	2500 Hz		
-20	0.085	0.189	0.253	0.226	2.5	Pass
-15	0.105	0.295	0.428	0.371		
-10	0.17	0.506	0.721	0.627		
-5	0.267	0.856	1.253	1.07		
0	0.456	1.51	1.795	1.687		
5	0.775	1.971	1.913	1.846		
10	0.826	1.993	1.928	1.858		
15	0.857	1.996	1.925	1.854		
20	0.853	2.013	1.934	1.846		

Test plot as follows:



FCC Part 80						
TX5: CH_{H2}						
Modulation Level (dB)	Peak frequency deviation (kHz)				Limit (kHz)	Result
	300Hz	1004Hz	1500Hz	2500 Hz		
-20	0.123	0.339	0.472	0.419	5	Pass
-15	0.188	0.55	0.786	0.697		
-10	0.305	0.982	1.418	1.223		
-5	0.514	1.686	2.498	2.131		
0	0.881	3.023	3.597	3.358		
5	1.528	3.952	3.824	3.646		
10	1.682	4.028	3.83	3.649		
15	1.75	4.058	3.833	3.652		
20	1.717	4.049	3.849	3.653		

Test plot as follows:

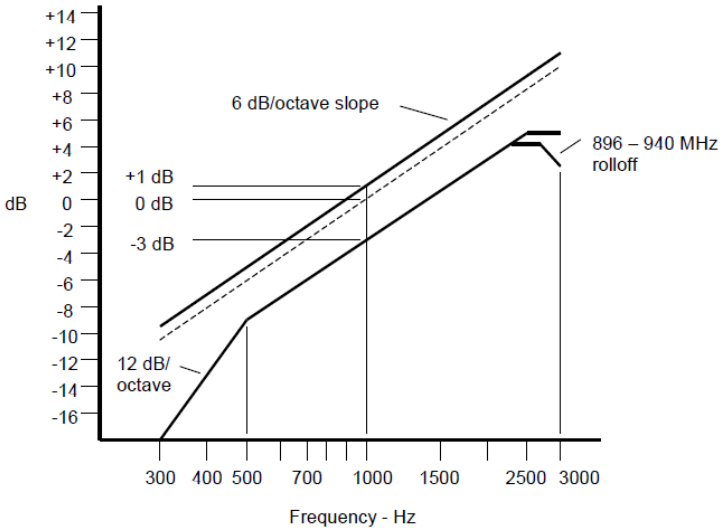
5.5. Audio Frequency Response

The audio frequency response is the degree of closeness to which the frequency deviation of the transmitter follows a prescribed characteristic.

LIMIT

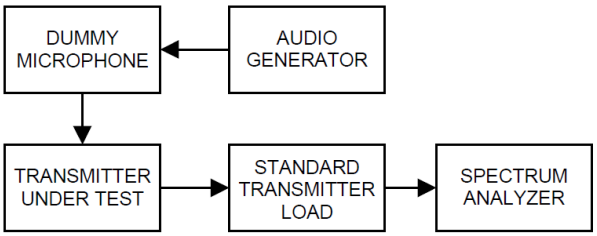
Please refer to FCC 47 CFR 2.1047(a), 80.213(e) & 90.242(b)(8) for specification details.

2.1047(a): Voice modulated communication equipment. A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz shall be submitted. For equipment required to have an audio low-pass filter, a curve showing the frequency response of the filter or of all circuitry installed between the modulation limiter and the modulated stage shall be submitted.



An additional 6 dB per octave attenuation is allowed from 2500 Hz to 3000 Hz in equipment operating in the 25 MHz to 869 MHz range.

TEST CONFIGURATION



TEST PROCEDURE

1) Configure the EUT as shown in figure .
2) Adjust the audio input for 20% of rated system deviation at 1kHz using this level as a reference.
3) Vary the Audio frequency from 300Hz to 3 kHz and record the frequency deviation.
4) Audio Frequency Response =$20\log_{10}$ (V_{FREQ}/V_{REF}).

TEST MODE:

Please reference to the section 3.4

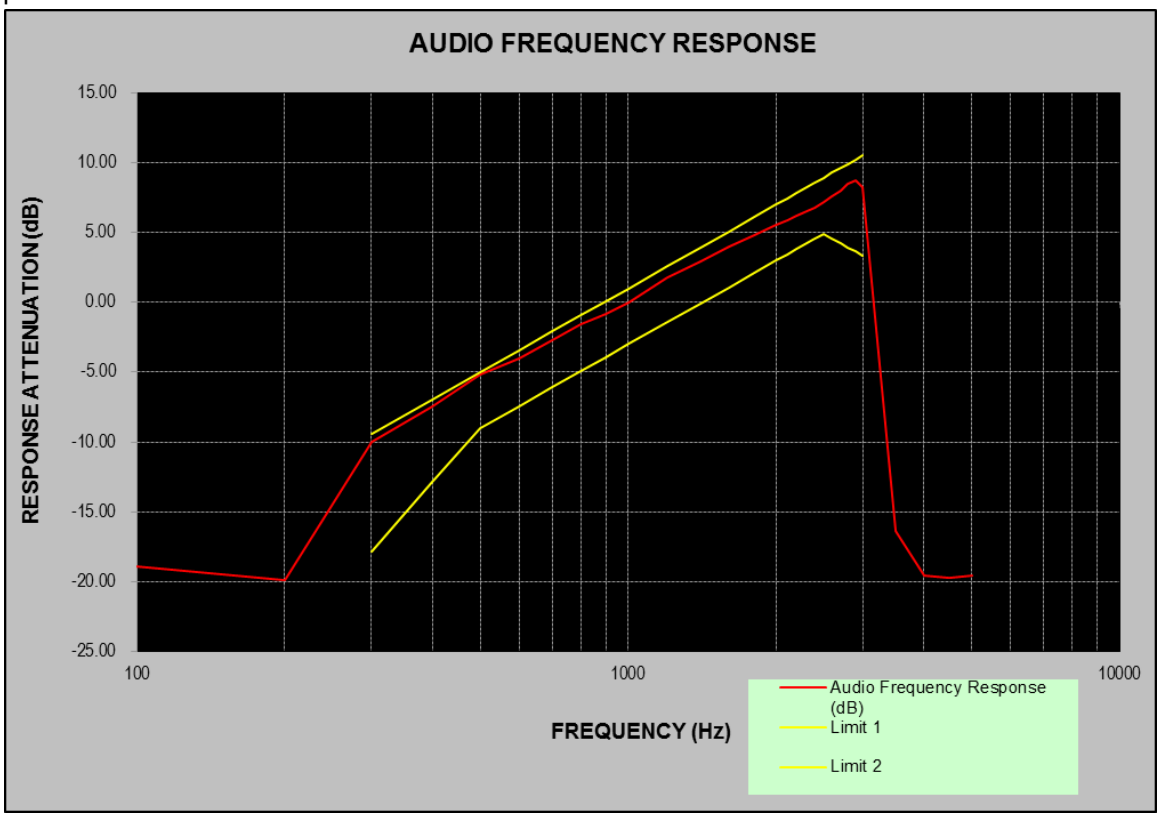
TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Note: Have pre-tested TX3 to TX6 mode, record the worst case mode TX3 and TX5 on the report.

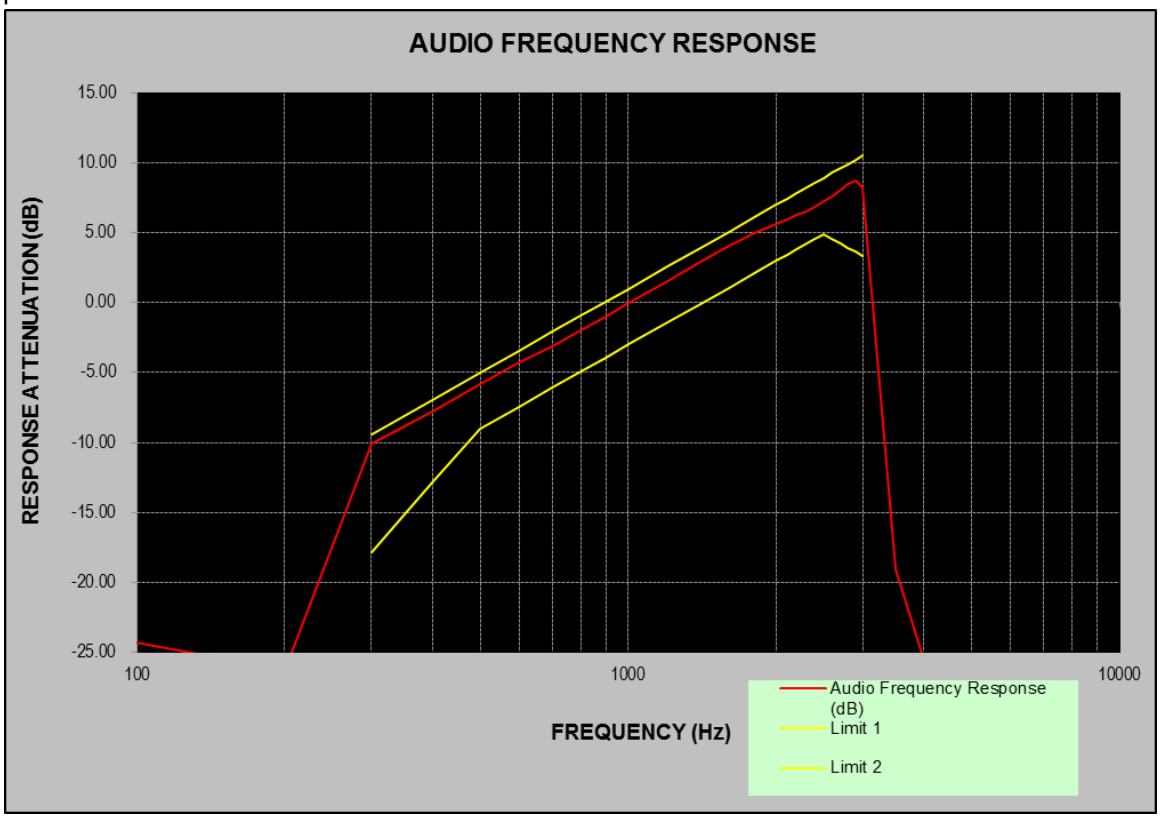
FCC Part 90			
TX3: CH_{H1}			
Frequency (Hz)	Audio Frequency Response (dB)	Frequency (Hz)	Audio Frequency Response (dB)
100	-18.95	2100	5.88
200	-19.91	2200	6.21
300	-10.01	2300	6.56
400	-7.50	2400	6.81
500	-5.21	2500	7.22
600	-4.06	2600	7.61
700	-2.69	2700	8.04
800	-1.55	2800	8.51
900	-0.83	2900	8.74
1000	0.00	3000	8.27
1200	1.81	3500	-16.38
1400	2.92	4000	-19.54
1600	3.98	4500	-19.71
1800	4.85	5000	-19.58
2000	5.52	-	-

Test plot as follows:



FCC Part 80			
TX5: CH_{H2}			
Frequency (Hz)	Audio Frequency Response (dB)	Frequency (Hz)	Audio Frequency Response (dB)
100	-24.30	2100	5.98
200	-26.29	2200	6.26
300	-10.05	2300	6.52
400	-7.80	2400	6.88
500	-5.79	2500	7.27
600	-4.30	2600	7.62
700	-3.13	2700	8.12
800	-2.01	2800	8.52
900	-1.03	2900	8.76
1000	0.00	3000	8.23
1200	1.51	3500	-19.05
1400	2.96	4000	-25.63
1600	4.06	4500	-25.33
1800	4.95	5000	-25.91
2000	5.66	-	-

Test plot as follows:



5.6. Frequency Stability Test

The carrier frequency stability is the ability of the transmitter to maintain an assigned carrier frequency.

LIMIT

Please refer to FCC 47 CFR 2.1055, 22.355, 80.209& 90.213 for specification details.

FCC Part 90.213:

Frequency range (MHz)	Fixed and base stations	Mobile stations	
		Over 2 watts output power	2 watts or less output power
Below 25	1 2 3100	100	200
25-50	20	20	50
72-76	5		50
150-174	5 115	65	4 650
216-220	1.0		1.0
220-22212	0.1	1.5	1.5
421-512	7 11 142.5	85	85
806-809	141.0	1.5	1.5
809-824	141.5	2.5	2.5
851-854	1.0	1.5	1.5
854-869	1.5	2.5	2.5
896-901	140.1	1.5	1.5
902-928	2.5	2.5	2.5
902-92813	2.5	2.5	2.5
929-930	1.5		
935-940	0.1	1.5	1.5
1427-1435	9300	300	300
Above 245010			

[5]In the 150-174 MHz band, fixed and base stations with a 12.5 kHz channel bandwidth must have a frequency stability of 2.5 ppm. Fixed and base stations with a 6.25 kHz channel bandwidth must have a frequency stability of 1.0 ppm.

[6]In the 150-174 MHz band, mobile stations designed to operate with a 12.5 kHz channel bandwidth or designed to operate on a frequency specifically designated for itinerant use or designed for low-power operation of two watts or less, must have a frequency stability of 5.0 ppm. Mobile stations designed to operate with a 6.25 kHz channel bandwidth must have a frequency stability of 2.0 ppm.

[7]In the 421-512 MHz band, fixed and base stations with a 12.5 kHz channel bandwidth must have a frequency stability of 1.5 ppm. Fixed and base stations with a 6.25 kHz channel bandwidth must have a frequency stability of 0.5 ppm.

[11]Paging transmitters operating on paging-only frequencies must operate with frequency stability of 5 ppm in the 150-174 MHz band and 2.5 ppm in the 421-512 MHz band.

[14]Control stations may operate with the frequency tolerance specified for associated mobile frequencies.

FCC Part 80.209

(5) Band 156-162 MHz:	
(i) Coast stations:	
For carriers licensed to operate with a carrier power:	
Below 3 watts	10.
3 to 100 watts	5.[7]
(ii) Ship stations	10.[4]

[4]For transmitters in the radiolocation and associated telecommand service operating on 154.584 MHz, 159.480 MHz, 160.725 MHz and 160.785 MHz the frequency tolerance is 15 parts in 10^6.

[7]For transmitters operated at private coast stations with antenna heights less than 6 meters (20 feet) above ground and output power of 25 watts or less the frequency tolerance is 10 parts in 10^6.

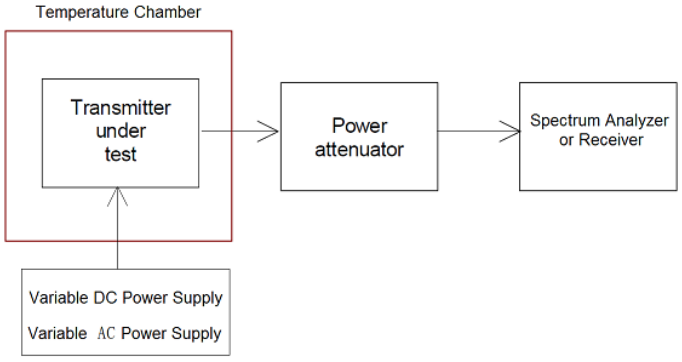
FCC Part 22.355:

Transmitters used must have minimum frequency stability as specified in the following table.

TABLE C-1—FREQUENCY TOLERANCE FOR TRANSMITTERS IN THE PUBLIC MOBILE SERVICES

Frequency range (MHz)	Base, fixed (ppm)	Mobile >3 watts (ppm)	Mobile ≤3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929	5.0	n/a	n/a
929 to 960	1.5	n/a	n/a
2110 to 2220	10.0	n/a	n/a

TEST CONFIGURATION



TEST PROCEDURE

1. According to FCC Part 2 Section 2.1055 (a)(1), the frequency stability shall be measured with variation of ambient temperature from -30℃ to +50℃.
2. According to FCC Part 2 Section 2.1055 (d) (2), for battery powered equipment, the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point, which is specified by the manufacture.
3. Vary primary supply voltage from 85% to 115% of the nominal value.
4. The EUT was set in the climate chamber and connected to an external DC power supply. The RF output was directly connected to Spectrum Analyzer, The coupling loss of the additional cables was recorded and taken in account for all the measurements. After temperature stabilization (approx. 20 min for each stage), the frequency for the lower, the middle and the highest frequency range was recorded. For Frequency stability Vs. Voltage the EUT was connected to a DC power supply and the voltage was adjusted in the required ranges. The result was recorded.

TEST MODE:

Please reference to the section 3.4

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Note: have pre-tested TX1 to TX6 mode, record the worst case mode TX1,TX3 and TX5 on the report.

FCC Part 90						
TX1						
Test conditions		Frequency error (ppm)			Limit (ppm)	Result
Voltage(V)	Temp(℃)	CH_{L1}	CH_{M1}	CH_{H1}		
13.6	-30	0.417	0.416	0.427	±5.0	Pass
	-20	0.423	0.456	0.477		
	-10	0.457	0.415	0.420		
	0	0.452	0.427	0.476		
	10	0.464	0.470	0.464		
	20	0.480	0.432	0.439		
	30	0.459	0.431	0.464		
	40	0.431	0.440	0.466		
	50	0.449	0.473	0.439		
15.64	20	0.447	0.412	0.459		
11.56	20	0.479	0.422	0.445		

FCC Part 90						
TX3						
Test conditions		Frequency error (ppm)			Limit (ppm)	Result
Voltage(V)	Temp(℃)	CH_{L1}	CH_{M1}	CH_{H1}		
13.6	-30	0.462	0.489	0.490	±5.0	Pass
	-20	0.501	0.482	0.478		
	-10	0.482	0.496	0.490		
	0	0.478	0.490	0.495		
	10	0.469	0.475	0.469		
	20	0.485	0.505	0.472		
	30	0.501	0.477	0.503		
	40	0.492	0.477	0.502		
	50	0.473	0.489	0.462		
15.64	20	0.460	0.495	0.482		
11.56	20	0.504	0.461	0.493		

FCC Part 80					
TX5					
Test conditions		Frequency error (ppm)		Limit (ppm)	Result
Voltage(V)	Temp(℃)	CH_{L2}	CH_{H2}		
13.6	-30	0.780	0.709	±5.0	Pass
	-20	0.725	0.725		
	-10	0.705	0.724		
	0	0.764	0.806		
	10	0.696	0.720		
	20	0.694	0.682		
	30	0.698	0.786		
	40	0.742	0.693		
	50	0.716	0.699		
15.64	20	0.680	0.746		
11.56	20	0.704	0.756		

FCC Part 22					
TX1					
Test conditions		Frequency error (ppm)		Limit (ppm)	Result
Voltage(V)	Temp(℃)	CH_{L3}	CH_{H3}		
13.6	-30	0.422	0.437	±5	Pass
	-20	0.446	0.453		
	-10	0.473	0.412		
	0	0.448	0.466		
	10	0.459	0.450		
	20	0.475	0.472		
	30	0.422	0.447		
	40	0.428	0.438		
	50	0.429	0.427		
15.64	20	0.449	0.458		
11.56	20	0.410	0.432		

FCC Part 22					
TX3					
Test conditions		Frequency error (ppm)		Limit (ppm)	Result
Voltage(V)	Temp(℃)	CH_{L3}	CH_{H3}		
13.6	-30	0.462	0.466	±5	Pass
	-20	0.503	0.498		
	-10	0.482	0.475		
	0	0.487	0.493		
	10	0.496	0.504		
	20	0.460	0.483		
	30	0.493	0.473		
	40	0.469	0.482		
	50	0.488	0.469		
15.64	20	0.490	0.474		
11.56	20	0.505	0.466		

FCC Part 22					
TX5					
Test conditions		Frequency error (ppm)		Limit (ppm)	Result
Voltage(V)	Temp(℃)	CH_{L3}	CH_{H3}		
13.6	-30	0.750	0.725	±5	Pass
	-20	0.746	0.739		
	-10	0.749	0.756		
	0	0.737	0.758		
	10	0.747	0.752		
	20	0.730	0.727		
	30	0.744	0.733		
	40	0.749	0.729		
	50	0.724	0.737		
15.64	20	0.727	0.750		
11.56	20	0.727	0.750		

5.7. Transmitter Frequency Behaviour

LIMIT

Please refer to FCC 47 CFR 90.214 for specification details.

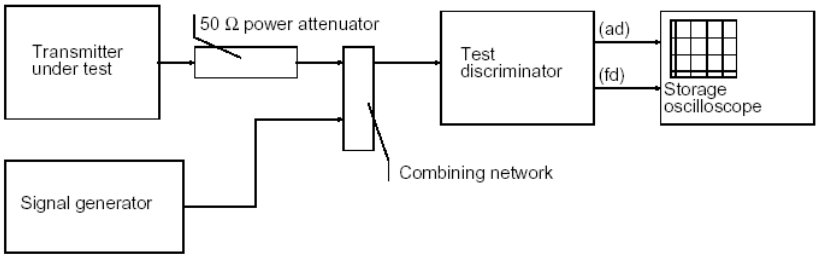
Transmitters designed to operate in the 150-174 MHz and 421-512 MHz frequency bands must maintain transient frequencies within the maximum frequency difference limits during the time intervals indicated:

Time intervals[1 2]	Maximum frequency difference[3]	All equipment	
		150 to 174 MHz	421 to 512 MHz
Transient Frequency Behavior for Equipment Designed to Operate on 25 kHz Channels			
t_1[4]	±25.0 kHz	5.0 ms	10.0 ms
t_2	±12.5 kHz	20.0 ms	25.0 ms
t_3[4]	±25.0 kHz	5.0 ms	10.0 ms
Transient Frequency Behavior for Equipment Designed to Operate on 12.5 kHz Channels			
t_1[4]	±12.5 kHz	5.0 ms	10.0 ms
t_2	±6.25 kHz	20.0 ms	25.0 ms
t_3[4]	±12.5 kHz	5.0 ms	10.0 ms
Transient Frequency Behavior for Equipment Designed to Operate on 6.25 kHz Channels			
t_1[4]	±6.25 kHz	5.0 ms	10.0 ms
t_2	±3.125 kHz	20.0 ms	25.0 ms
t_3[4]	±6.25 kHz	5.0 ms	10.0 ms

Note:

1. On is the instant when a 1 kHz test signal is completely suppressed, including any capture time due to phasing.
   1) t_1 is the time period immediately following ton.
   2) t_2 is the time period immediately following t_1.
   3) t_3 is the time period from the instant when the transmitter is turned off until toff.
   4) t_{off} is the instant when the 1 kHz test signal starts to rise.
2. During the time from the end of t_2 to the beginning of t_3, the frequency difference must not exceed the limits specified in § 90.213.
3. Difference between the actual transmitter frequency and the assigned transmitter frequency.
4. If the transmitter carrier output power rating is 6 watts or less, the frequency difference during this time period may exceed the maximum frequency difference for this time period.

TEST CONFIGURATION



TEST PROCEDURE

According to TIA/EIA-603 2.2.19 requirement, as for the product different from PTT, we use test steps as follows:

1. Connect DUT into Test discriminator and Storage Oscilloscope and keep DUT stats ON;
2. Input 1kHz signal into DUT;
3. Set the modulation domain analyzer to trigger on the rising edge of the waveform in order to capture a single-shot turn-on of the transmitter signals;
4. Keep DUT in OFF state and Key the PTT;
5. Observe the stored oscilloscope of modulation domain analyzer. The signal trace shall be maintained within the allowable limits during the periods t_1 and t_2,and shall also remain within limits following t_2;
6. Adjust the modulation domain analyzer to trigger on the falling edge of the transmitter waveform in order to capture a single-shot turn-off transmitter of the transmitter signal.
7. Keep the digital portable radio in ON state and unkey the PTT;
8. Observe the stored oscilloscope of modulation domain analyzer, The signal trace shall be maintained within the allowable limits during the period t_3.
9. Set the signal generator to the assigned transmitter frequency and modulate it with a 1 kHz tone at ±12.5 kHz deviation and set its output level to -100dBm.
10. Turn on the transmitter.
11. Supply sufficient attenuation via the RF attenuator to provide an input level to the stored oscilloscope
12. that is 40 dB below the maximum allowed input power when the transmitter is operating at its rated power level. Note this power level on the stored oscilloscope as P_0.
13. Turn off the transmitter.
14. Adjust the RF level of the signal generator to provide RF power equal to P_0. This signal generator RF level shall be maintained throughout the rest of the measurement.
15. Remove the attenuation, so the input power to the stored oscilloscope is increased by 30 dB when the transmitter is turned on.
16. Adjust the vertical amplitude control of the stored oscilloscope to display the 1000 Hz at ±4 divisions vertically centered on the display. Set trigger mode of the Spectrum Analyzer to “Video”, and tune the “trigger level” on suitable level. Then set the “tiger offset” to -10ms for turn on and -15ms for turn off.
17. Turn on the transmitter and the transient wave will be captured on the screen of Spectrum Analyzer. Observe the stored display. The instant when the 1 kHz test signal is completely suppressed is considered to be ton. The trace should be maintained within the allowed divisions during the period t_1 and t_2.
18. Then turn off the transmitter, and another transient wave will be captured on the screen of Spectrum
19. Analyzer. The trace should be maintained within the allowed divisions during the period t_3.

TEST MODE:

Please reference to the section 3.4

TEST RESULTS

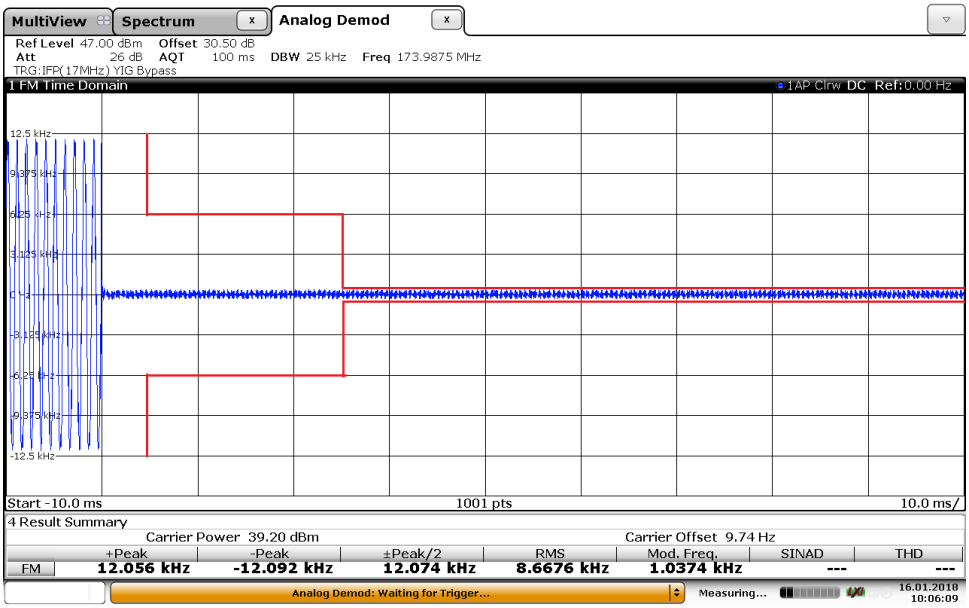
☒ **Passed** ☐ **Not Applicable**

Note: Have pre-tested TX1 to TX6 mode, record the worst case mode TX1,TX3 and TX5 on the report.

FCC Part 90:

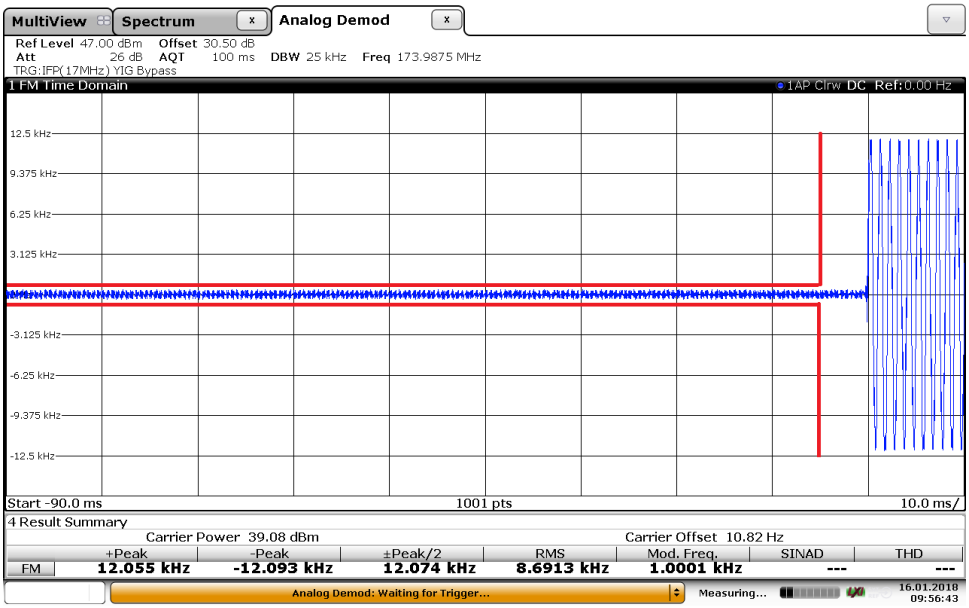
Modulation Type: 4FSK(TX1)

Transmitter Frequency Behaviour @ 12.5kHz Channel Separation------Off – On



Date: 16.JAN.2018 10:06:09

Transmitter Frequency Behaviour @ 12.5kHz Channel Separation------On – Off

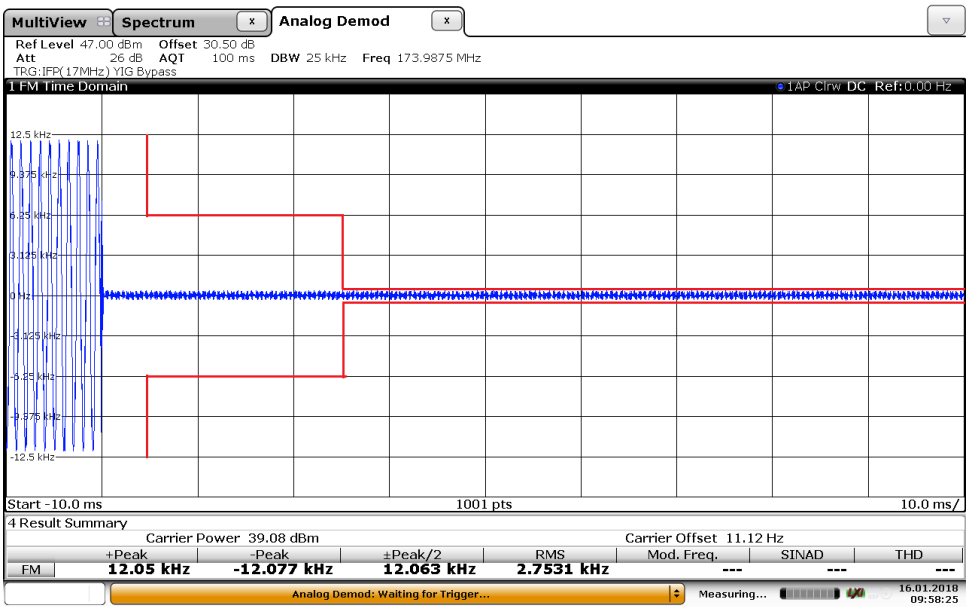


Date: 16.JAN.2018 09:56:44

FCC Part 90:

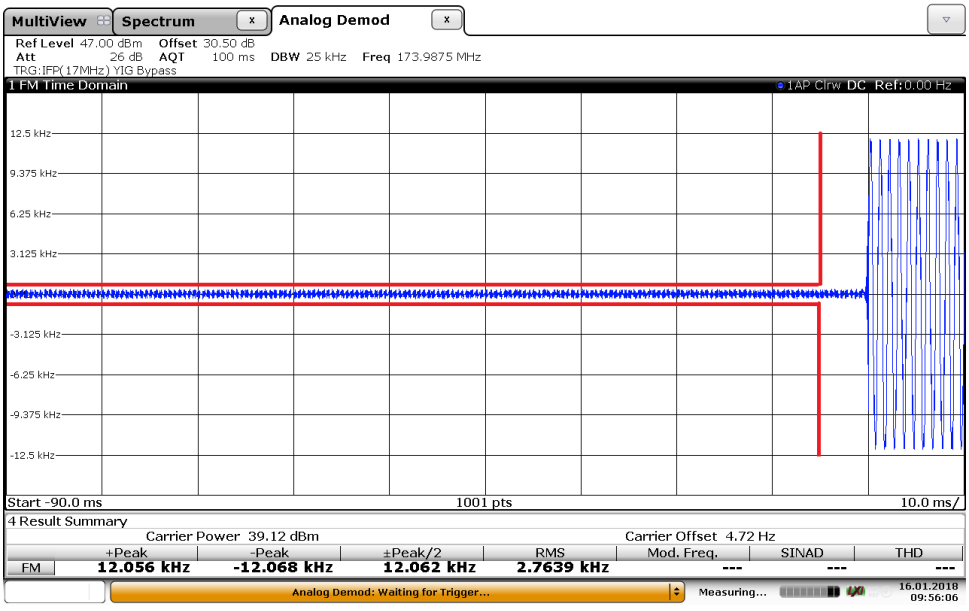
Modulation Type: FM(TX3)

Transmitter Frequency Behaviour @ 12.5kHz Channel Separation------Off – On



Date: 16.JAN.2018 09:58:25

Transmitter Frequency Behaviour @ 12.5kHz Channel Separation------On – Off



Date: 16.JAN.2018 09:56:06

5.8. Spurious Emission on Antenna Port

Conducted spurious emissions are emissions at the antenna terminals on a frequency or frequencies that are outside a band sufficient to ensure transmission of information of required quality for the class of communication desired

LIMIT

Please refer to FCC 47 CFR 2.1051, 2.1057, 22.359,80.211(f)(3) & 90.210 for specification details.

Emissions shall be attenuated below the mean output power of the transmitter as follows:

FCC Rules	Attenuation Limit (dBc)
§ 22.359	At least 43 + 10 log (P) dB
§ 80.211(f)(3)	At least 43 +10log10 (mean power in watts) dB
§ 90.210(d)	At least 50 + 10 log (P) dB

50 +10 log (Pwatts)

Note: In general, the worse case attenuation requirement shown above was applied.

Calculation: Limit (dBm) =EL-50-10log10 (TP)

EL is the emission level of the Output Power expressed in dBm,

In this application, the EL is P(dBm)

Limit (dBm) = P(dBm)-50-10 log (Pwatts) = -20dBm

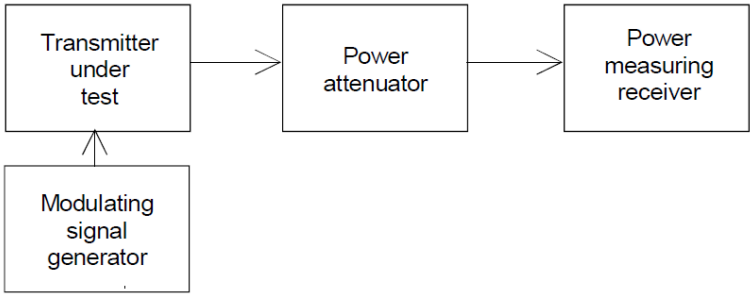
43 + 10 log (Pwatts)

Calculation: Limit (dBm) =EL-43-10log10 (TP)

Notes: EL is the emission level of the Output Power expressed in dBm,
In this application, the EL is P(dBm).

Limit (dBm) = P(dBm)-43-10 log (Pwatts) = -13 dBm

TEST CONFIGURATION



TEST PROCEDURE

1. The RF output of the EUT was connected to a spectrum analyzer through appropriate attenuation.
2. The resolution bandwidth of the spectrum analyzer was set to 100 kHz. Sufficient scans were taken to show any out of band emission up to 10th. Harmonic for the lower and the highest frequency range.
3. Set RBW 100 kHz, VBW 300 kHz in the frequency band 30MHz to 1GHz,while set RBW=1MHz.VBW=3MHz from the 1GHz to 10th Harmonic.
4. The audio input was set the unmodulated carrier, the resulting picture is print out for each channel separation.

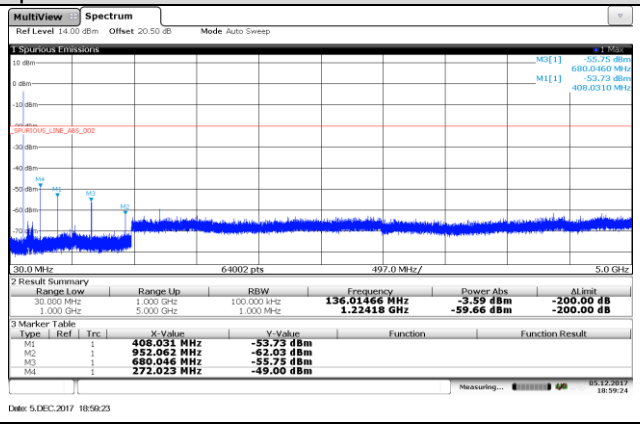
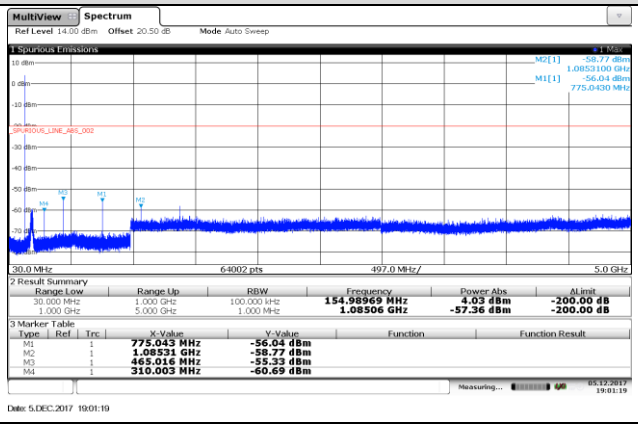
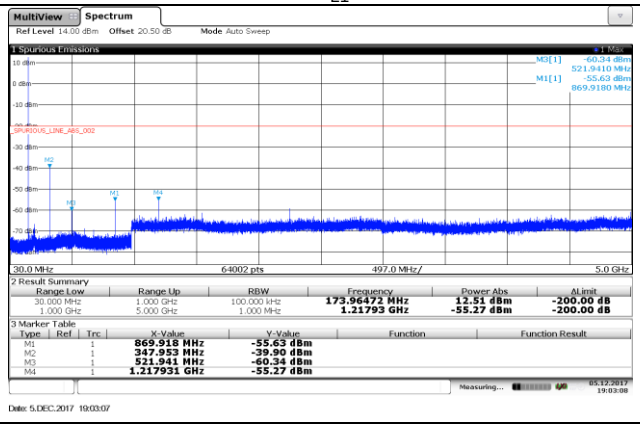
TEST MODE:

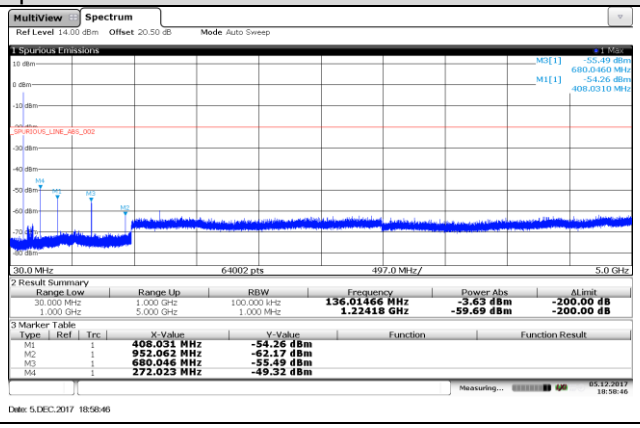
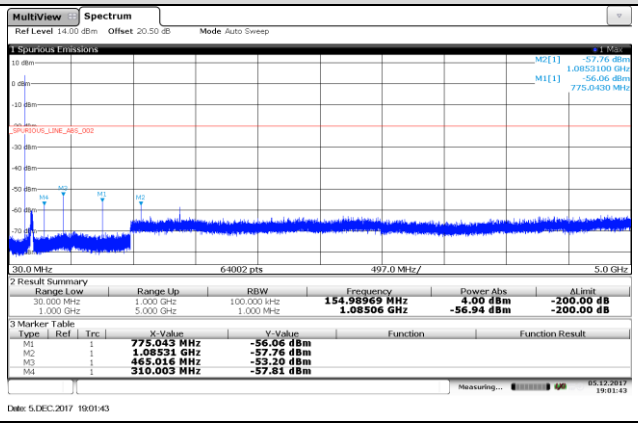
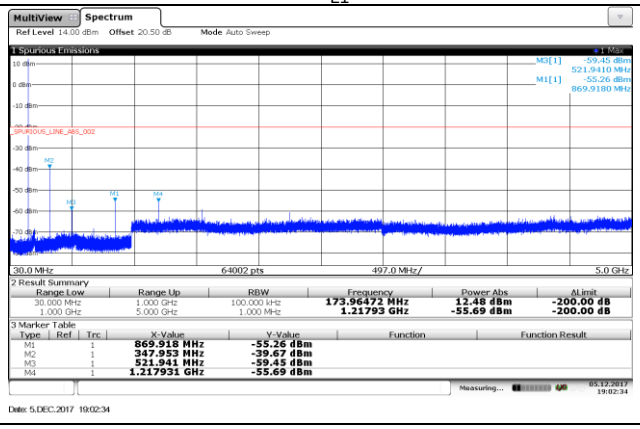
Please reference to the section 3.4

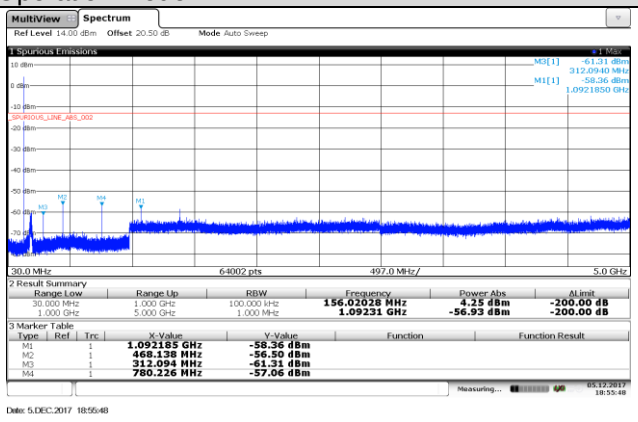
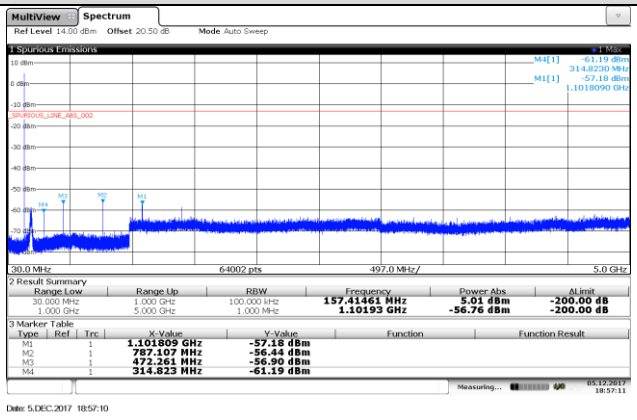
TEST RESULTS

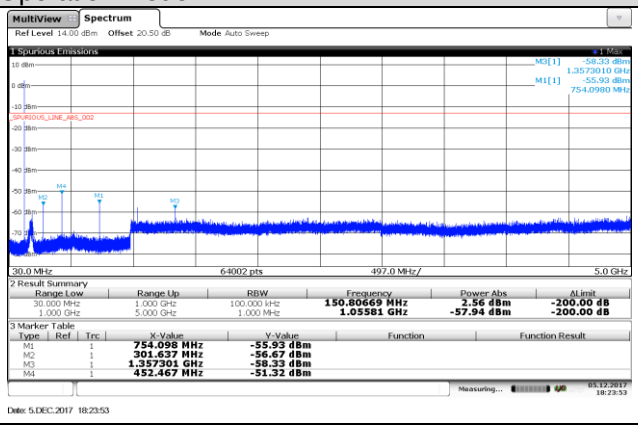
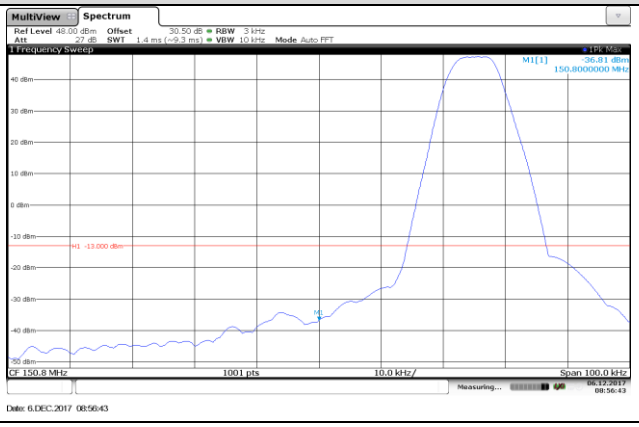
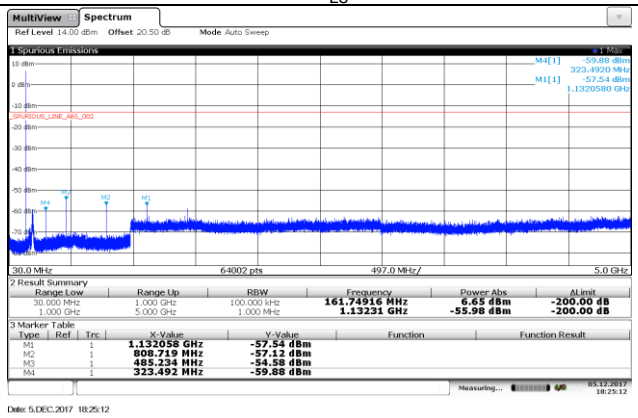
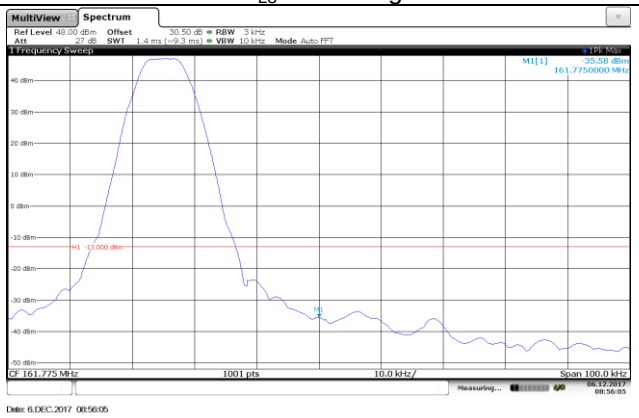
☒ **Passed** ☐ **Not Applicable**

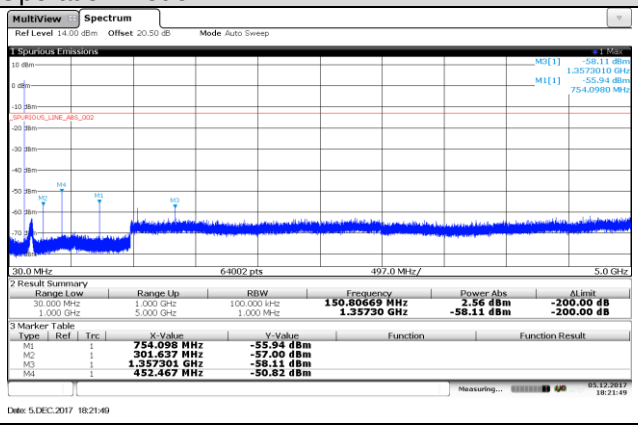
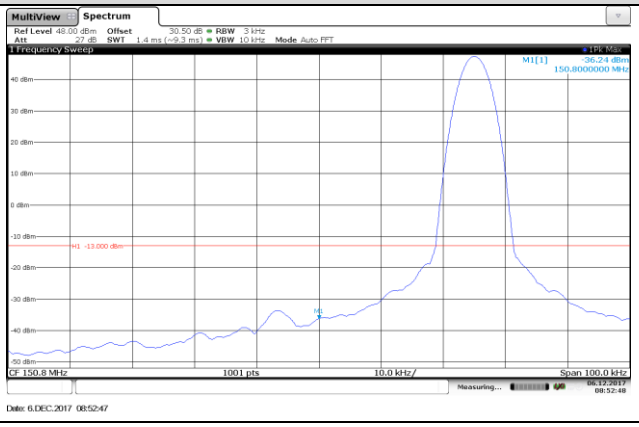
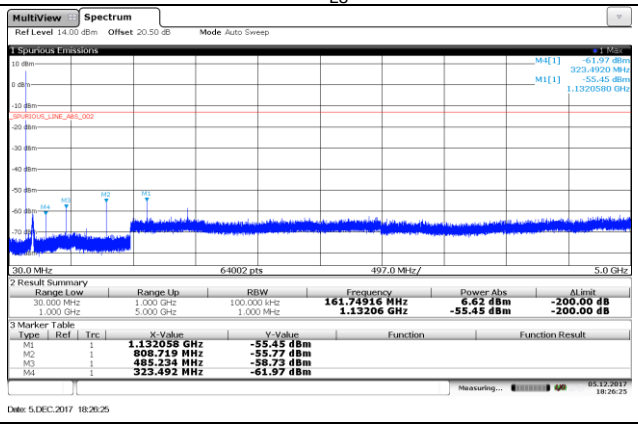
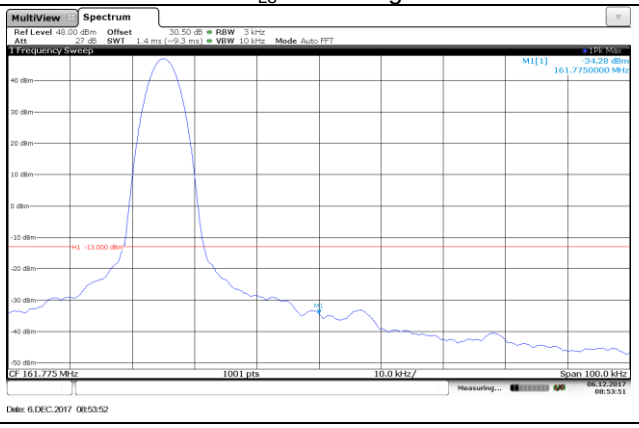
1. The measurement frequency range from 30 MHz to 5 GHz.
2. We tested TX1 to TX6 recorded worst case TX1,TX3 and TX5.

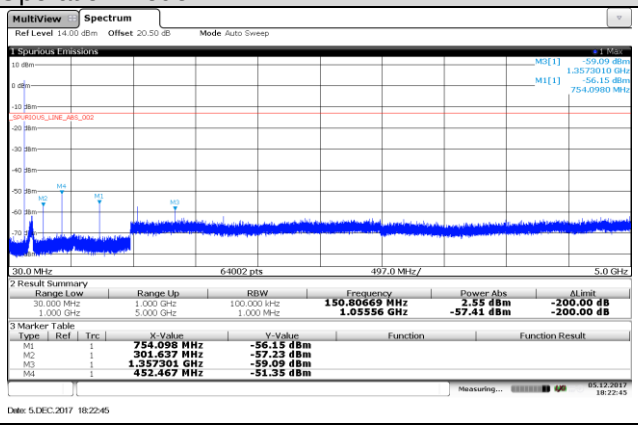
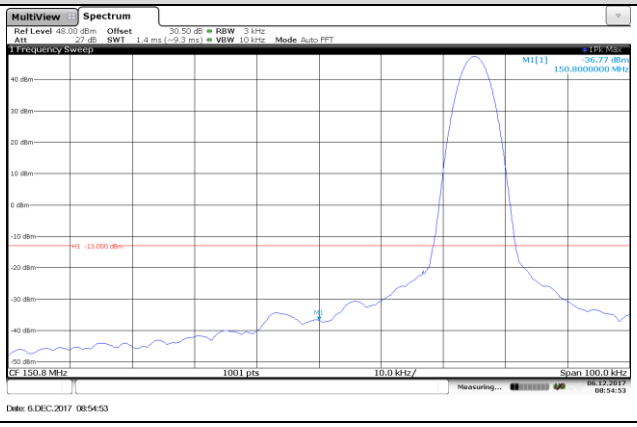
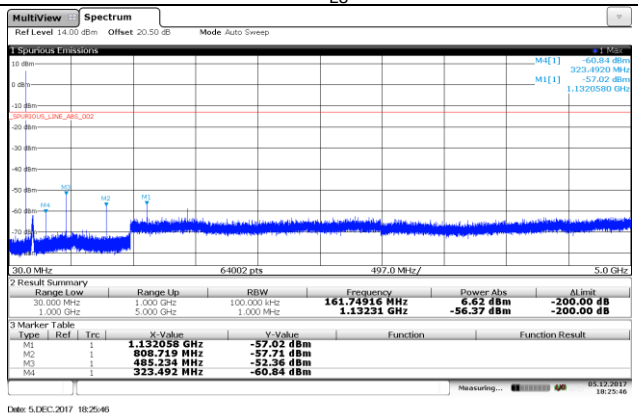
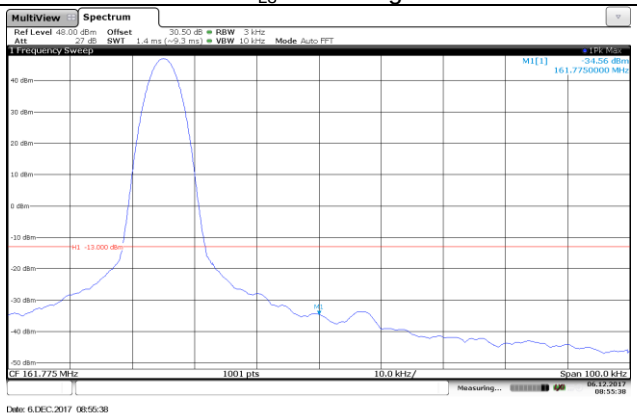
FCC Part 90	
Operation Mode	TX1
	
CH_{L1}	CH_{M1}
	No plot
CH_{H1}	

FCC Part 90	
Operation Mode	TX3
	
CH_{L1}	CH_{M1}
	No plot
CH_{H1}	

FCC Part 80	
Operation Mode	TX5
	
CH_{L2}	CH_{H2}

FCC Part 22	
Operation Mode	TX1
	
CH_{L3}	CH_{L3}-Band Edge
	
CH_{H3}	CH_{H3}-Band Edge

FCC Part 22	
Operation Mode	TX3
	
CH_{L3}	CH_{L3}-Band Edge
	
CH_{H3}	CH_{H3}-Band Edge

FCC Part 22	
Operation Mode	TX5
	
CH_{L3}	CH_{L3}-Band Edge
	
CH_{H3}	CH_{H3}-Band Edge

5.9. Transmitter Radiated Spurious Emission

Radiated spurious emissions are emissions from the equipment when transmitting into a nonradiating load on a frequency or frequencies that are outside an occupied band sufficient to ensure transmission of information of required quality for the class of communications desired.

LIMIT

Please refer to FCC 47 CFR 2.1051, 2.1057, 22.359,80.211(f)(3) & 90.210 for specification details.

Emissions shall be attenuated below the mean output power of the transmitter as follows:

FCC Rules	Attenuation Limit (dBc)
§ 22.359	At least 43 + 10 log (P) dB
§ 80.211(f)(3)	At least 43 +10log10 (mean power in watts) dB
§ 90.210(d)	At least 50 + 10 log (P) dB

50 +10 log (Pwatts)

Note: In general, the worse case attenuation requirement shown above was applied.

Calculation: Limit (dBm) =EL-50-10log10 (TP)

EL is the emission level of the Output Power expressed in dBm,

In this application, the EL is P(dBm)

Limit (dBm) = P(dBm)-50-10 log (Pwatts) = -20dBm

43 + 10 log (Pwatts)

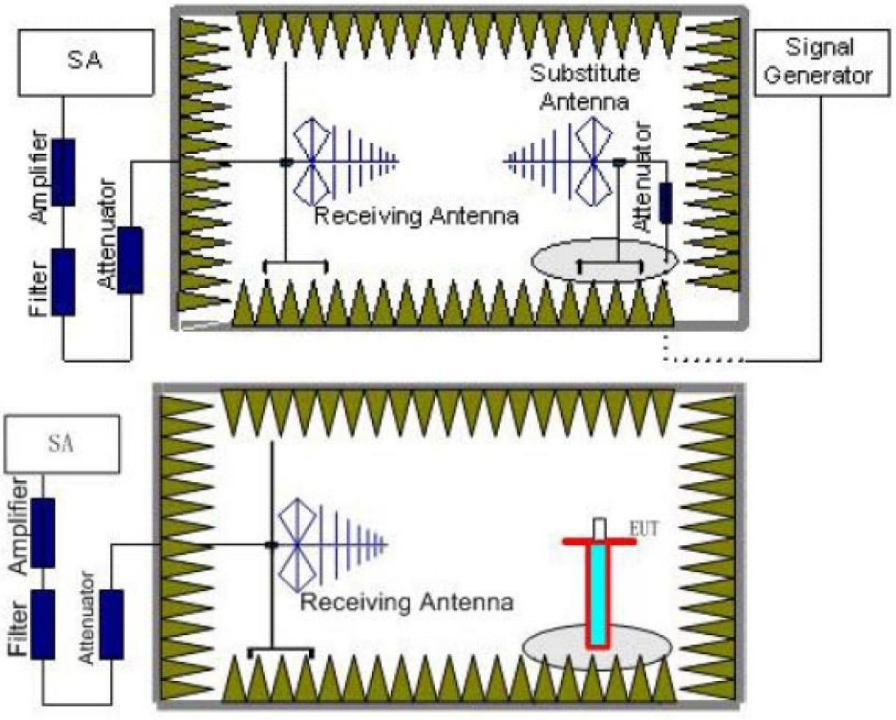
Calculation: Limit (dBm) =EL-43-10log10 (TP)

Notes: EL is the emission level of the Output Power expressed in dBm,
In this application, the EL is P(dBm).

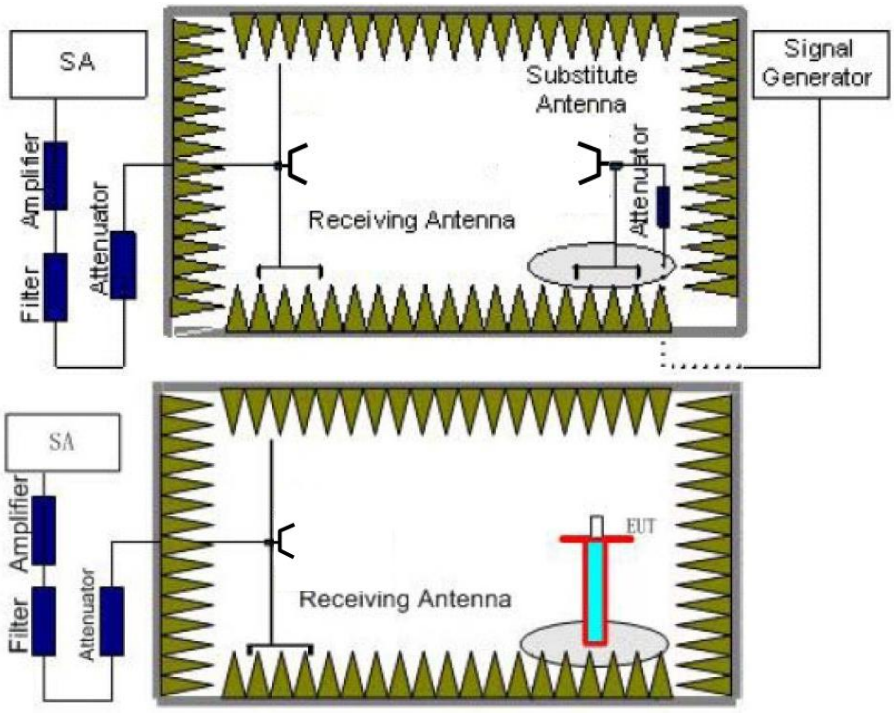
Limit (dBm) = P(dBm)-43-10 log (Pwatts) = -13 dBm

TEST CONFIGURATION

Below 1GHz:



Above 1GHz:



TEST PROCEDURE

1. Standard Transmitter Load with a 50Ω input impedance and an output impedance matched to the test equipment.
2. EUT was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1. 0 m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in six channels were measured with peak detector.
3. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
4. The EUT is then put into continuously transmitting mode at its maximum power level during the test.Set Test Receiver or Spectrum RBW=1MHz,VBW=3MHz for above 1GHz and RBW=100kHz,VBW=300kHz for 30MHz to 1GHz, And the maximum value of the receiver should be recorded as (Pr).
5. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
6. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
   The measurement results are obtained as described below:
   Power(EIRP)=PMea- PAg - Pcl - Ga
   We used SMF100A micowave signal generator which signal level can up to 33dBm,so we not used power Amplifier for substituation test; The measurement results are amend as described below:
   Power(EIRP)=PMea- Pcl - Ga

7. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
8. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.

TEST MODE:

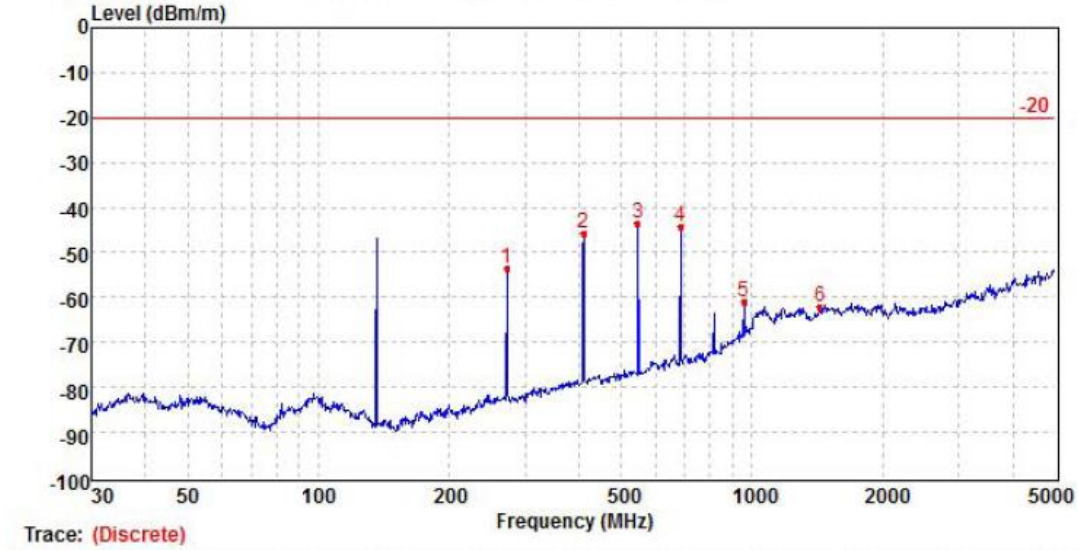
Please reference to the section 3.4

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

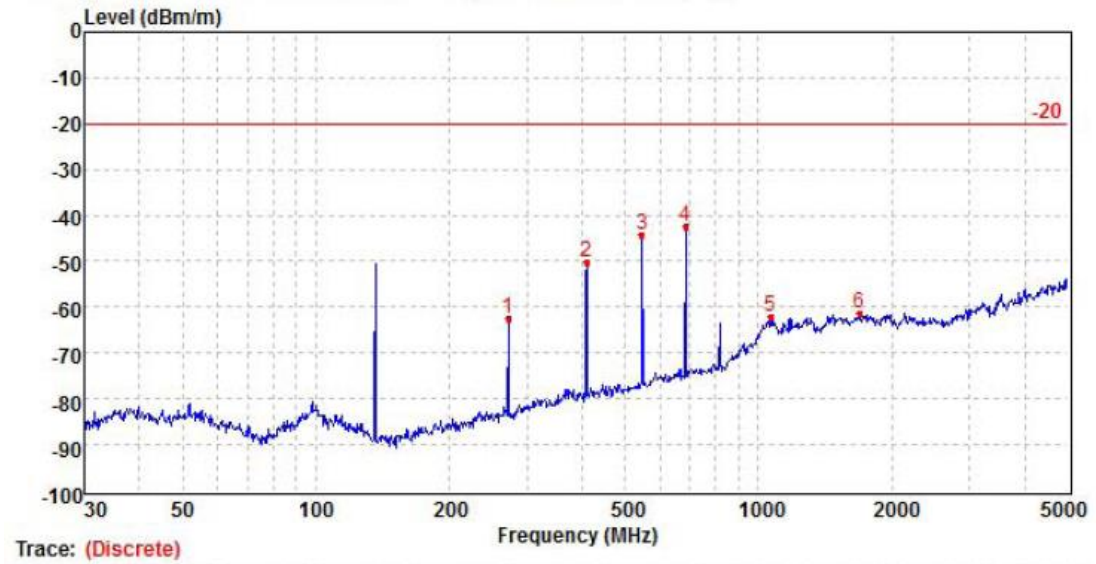
Note:
1. In general, the worse case attenuation requirement shown above was applied.
2. The measurement frequency range from 30 MHz to 5 GHz.
3. We tested TX1 to TX6 recorded worst case TX1,TX3 and TX5.

FCC Part 90			
TX1			
Test Frequency:	CH_{L1}	Polarity:	Horizontal



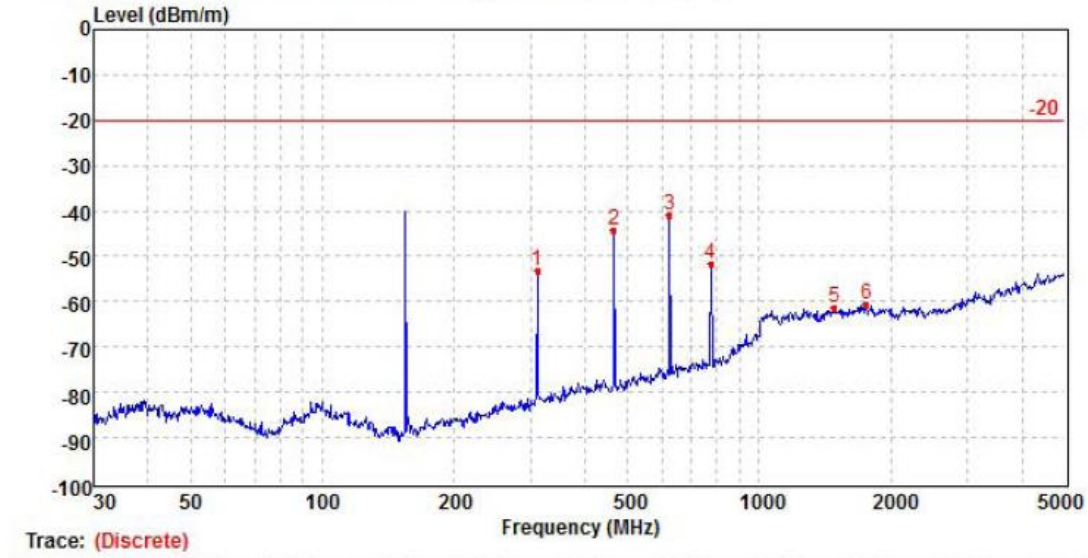
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	272.11	-51.75	25.54	1.91	29.16	-53.46	-20.00	-33.46	Peak
2	409.72	-47.36	28.39	2.37	28.98	-45.58	-20.00	-25.58	Peak
3	545.64	-47.78	30.70	2.74	29.25	-43.59	-20.00	-23.59	Peak
4	683.39	-50.61	31.97	3.14	28.62	-44.12	-20.00	-24.12	Peak
5	957.88	-73.46	37.02	3.81	28.45	-61.08	-20.00	-41.08	Peak
6	1434.96	-78.11	39.87	4.85	28.53	-61.92	-20.00	-41.92	Peak

Test Frequency:	CH_{L1}	Polarity:	Vertical



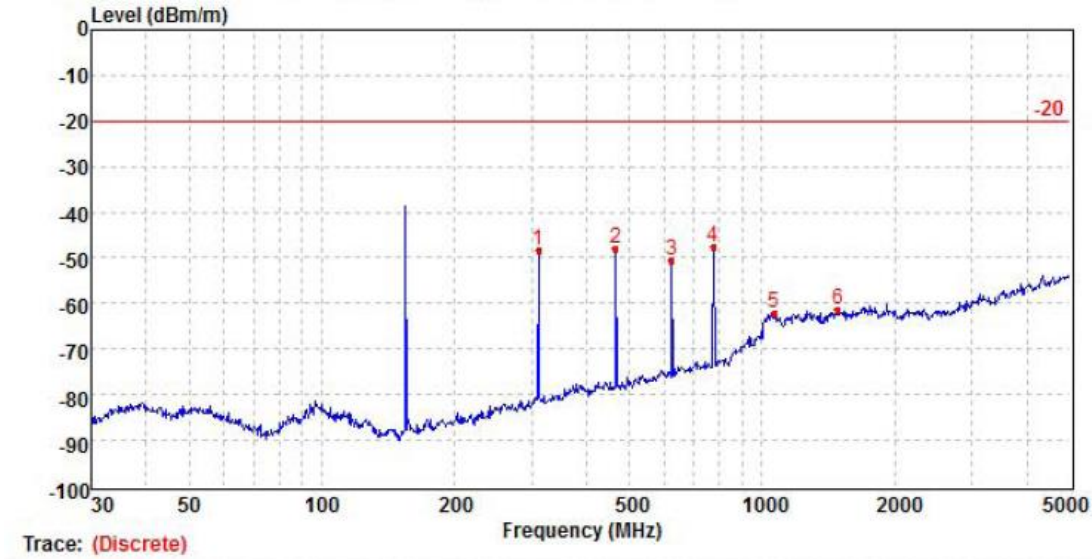
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	272.11	-60.63	25.54	1.91	29.16	-62.34	-20.00	-42.34	Peak
2	409.72	-52.11	28.39	2.37	28.98	-50.33	-20.00	-30.33	Peak
3	545.64	-48.40	30.70	2.74	29.25	-44.21	-20.00	-24.21	Peak
4	683.39	-48.89	31.97	3.14	28.62	-42.40	-20.00	-22.40	Peak
5	1066.53	-75.85	38.59	4.02	28.76	-62.00	-20.00	-42.00	Peak
6	1690.20	-78.99	40.45	5.26	28.21	-61.49	-20.00	-41.49	Peak

FCC Part 90			
TX1			
Test Frequency:	CH_{M1}	Polarity:	Horizontal



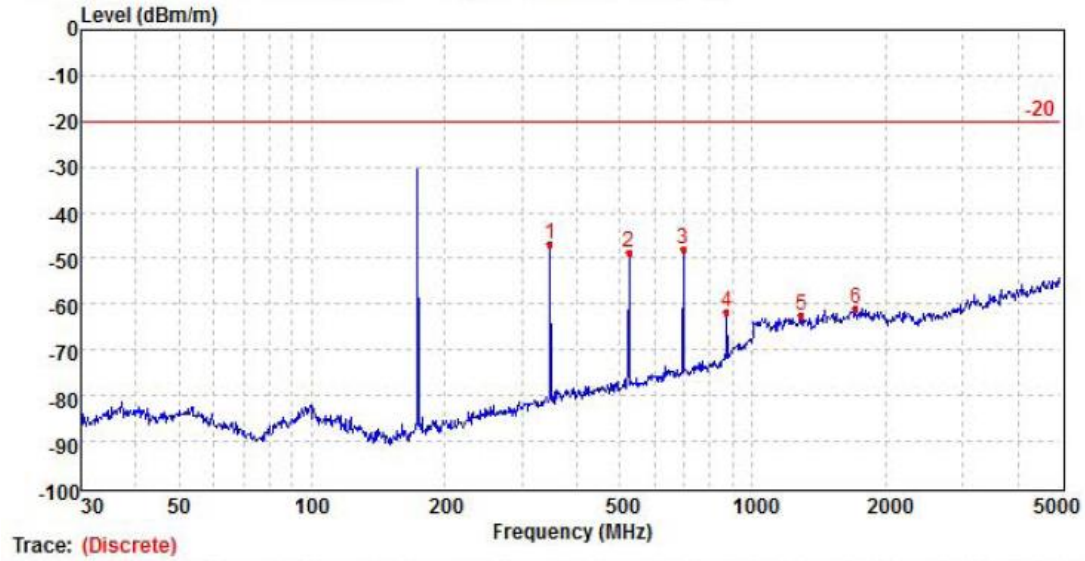
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	310.82	-52.48	26.44	2.02	29.13	-53.15	-20.00	-33.15	Peak
2	465.62	-46.89	29.30	2.53	29.03	-44.09	-20.00	-24.09	Peak
3	623.27	-46.70	31.75	3.00	28.95	-40.90	-20.00	-20.90	Peak
4	776.64	-59.02	32.97	3.40	28.85	-51.50	-20.00	-31.50	Peak
5	1487.28	-77.79	40.01	5.02	28.68	-61.44	-20.00	-41.44	Peak
6	1760.81	-78.65	40.61	5.43	28.15	-60.76	-20.00	-40.76	Peak

Test Frequency:	CH_{M1}	Polarity:	Vertical



Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	310.82	-47.80	26.44	2.02	29.13	-48.47	-20.00	-28.47	Peak
2	465.62	-50.89	29.30	2.53	29.03	-48.09	-20.00	-28.09	Peak
3	623.27	-56.47	31.75	3.00	28.95	-50.67	-20.00	-30.67	Peak
4	776.64	-55.09	32.97	3.40	28.85	-47.57	-20.00	-27.57	Peak
5	1066.53	-75.85	38.59	4.02	28.76	-62.00	-20.00	-42.00	Peak
6	1487.28	-77.79	40.01	5.02	28.68	-61.44	-20.00	-41.44	Peak

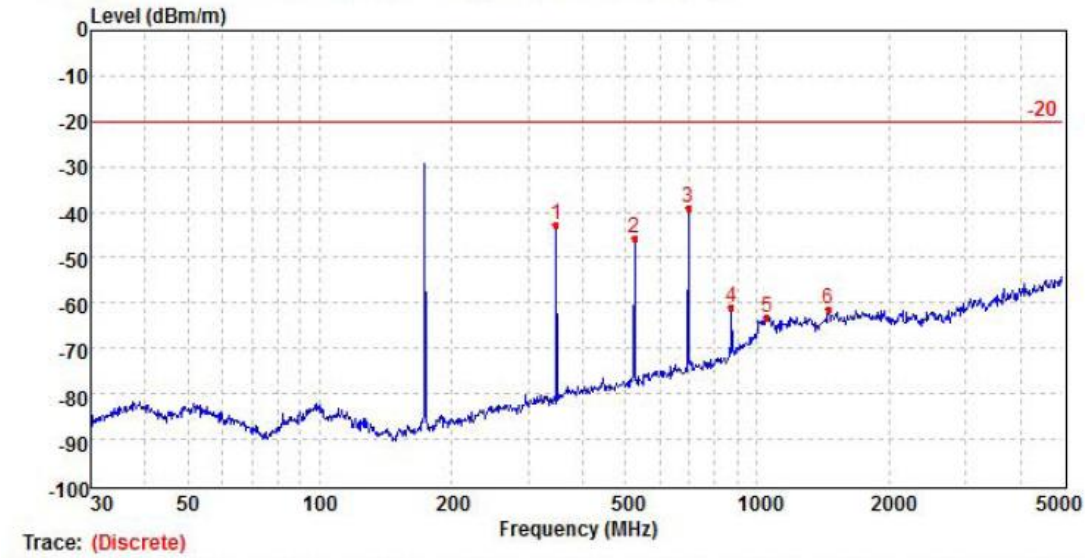
FCC Part 90			
TX1			
Test Frequency:	CH_{H1}	Polarity:	Horizontal



Trace: (Discrete)

Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	347.85	-47.30	27.37	2.14	29.04	-46.83	-20.00	-26.83	Peak
2	523.76	-52.34	30.23	2.68	29.16	-48.59	-20.00	-28.59	Peak
3	697.52	-54.73	32.02	3.16	28.56	-48.11	-20.00	-28.11	Peak
4	873.61	-71.69	34.75	3.67	28.34	-61.61	-20.00	-41.61	Peak
5	1288.78	-77.72	39.40	4.49	28.47	-62.30	-20.00	-42.30	Peak
6	1716.34	-78.67	40.52	5.31	28.15	-60.99	-20.00	-40.99	Peak

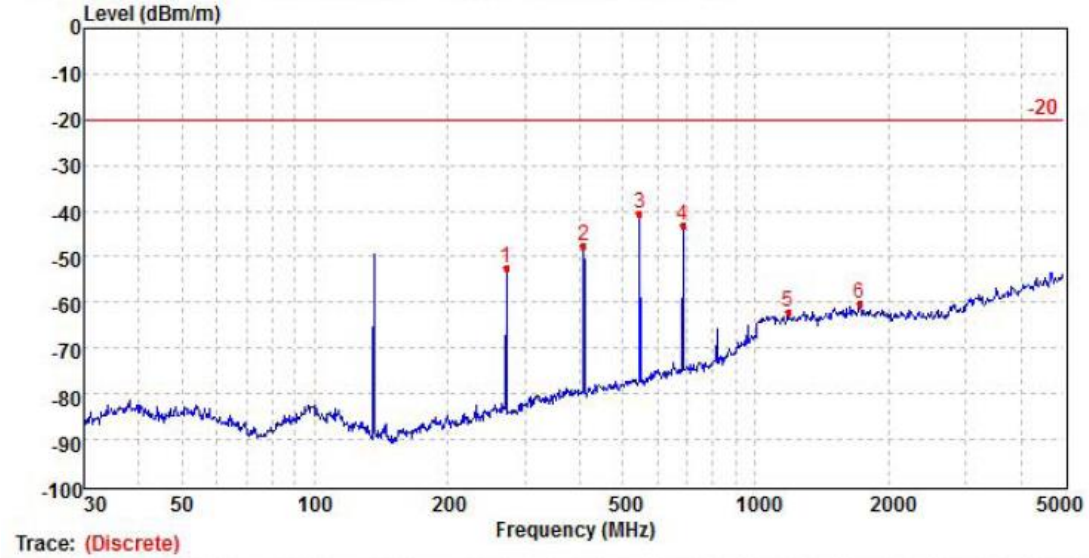
Test Frequency:	CH_{H1}	Polarity:	Vertical



Trace: (Discrete)

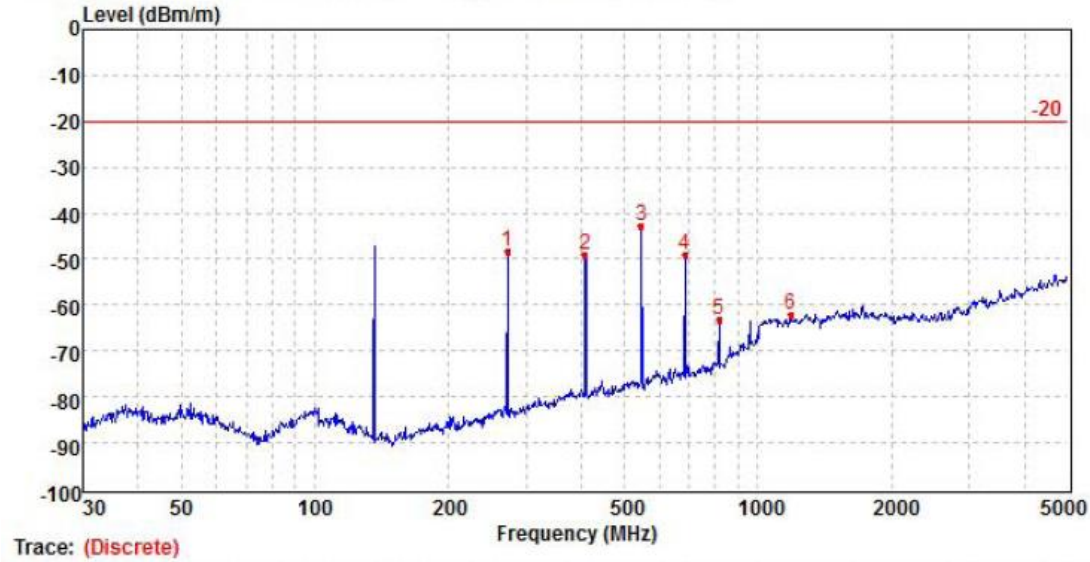
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	347.85	-43.10	27.37	2.14	29.04	-42.63	-20.00	-22.63	Peak
2	523.76	-49.37	30.23	2.68	29.16	-45.62	-20.00	-25.62	Peak
3	697.52	-45.72	32.02	3.16	28.56	-39.10	-20.00	-19.10	Peak
4	873.61	-70.93	34.75	3.67	28.34	-60.85	-20.00	-40.85	Peak
5	1050.28	-76.91	38.54	4.00	28.65	-63.02	-20.00	-43.02	Peak
6	1457.15	-77.64	39.93	4.92	28.59	-61.38	-20.00	-41.38	Peak

FCC Part 90			
TX3			
Test Frequency:	CH_{L1}	Polarity:	Horizontal



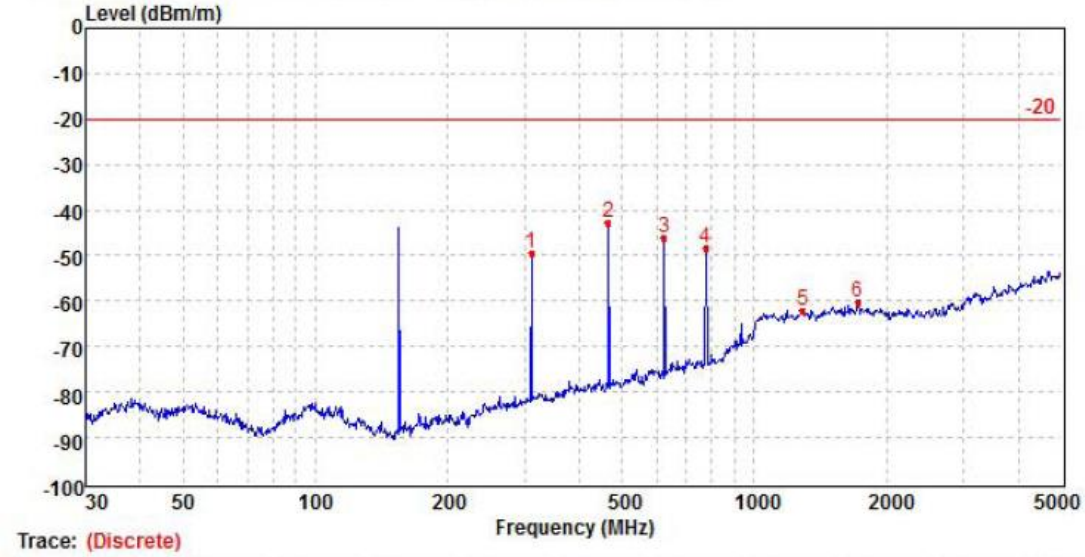
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	272.11	-50.64	25.54	1.91	29.16	-52.35	-20.00	-32.35	Peak
2	407.63	-49.42	28.35	2.36	28.98	-47.69	-20.00	-27.69	Peak
3	545.64	-44.87	30.70	2.74	29.25	-40.68	-20.00	-20.68	Peak
4	683.39	-49.75	31.97	3.14	28.62	-43.26	-20.00	-23.26	Peak
5	1187.49	-76.45	39.06	4.28	28.96	-62.07	-20.00	-42.07	Peak
6	1725.14	-78.08	40.54	5.34	28.15	-60.35	-20.00	-40.35	Peak

Test Frequency:	CH_{L1}	Polarity:	Vertical



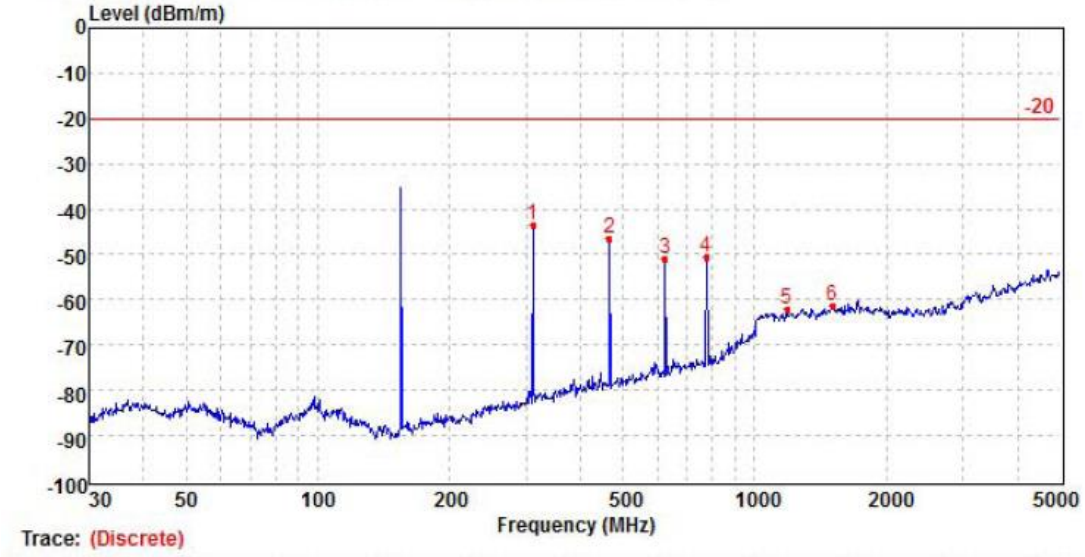
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	272.11	-46.68	25.54	1.91	29.16	-48.39	-20.00	-28.39	Peak
2	407.63	-50.71	28.35	2.36	28.98	-48.98	-20.00	-28.98	Peak
3	545.64	-46.84	30.70	2.74	29.25	-42.65	-20.00	-22.65	Peak
4	683.39	-55.56	31.97	3.14	28.62	-49.07	-20.00	-29.07	Peak
5	817.40	-71.30	33.61	3.53	29.01	-63.17	-20.00	-43.17	Peak
6	1187.49	-76.45	39.06	4.28	28.96	-62.07	-20.00	-42.07	Peak

FCC Part 90			
TX3			
Test Frequency:	CH_{M1}	Polarity:	Horizontal



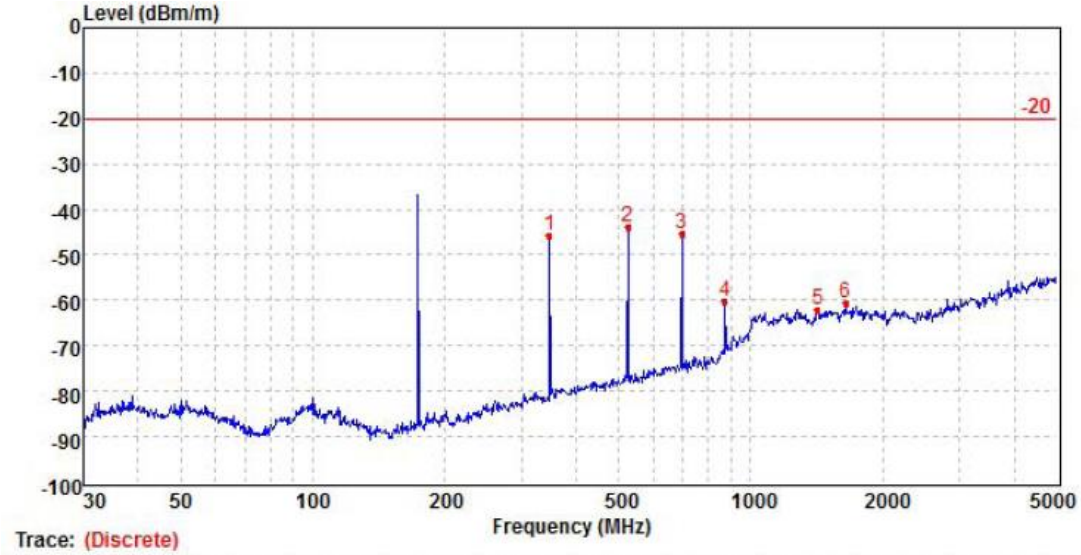
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	310.82	-48.66	26.44	2.02	29.13	-49.33	-20.00	-29.33	Peak
2	465.62	-45.71	29.30	2.53	29.03	-42.91	-20.00	-22.91	Peak
3	623.27	-51.99	31.75	3.00	28.95	-46.19	-20.00	-26.19	Peak
4	776.64	-55.78	32.97	3.40	28.85	-48.26	-20.00	-28.26	Peak
5	1288.78	-77.33	39.40	4.49	28.47	-61.91	-20.00	-41.91	Peak
6	1725.14	-78.08	40.54	5.34	28.15	-60.35	-20.00	-40.35	Peak

Test Frequency:	CH_{M1}	Polarity:	Vertical



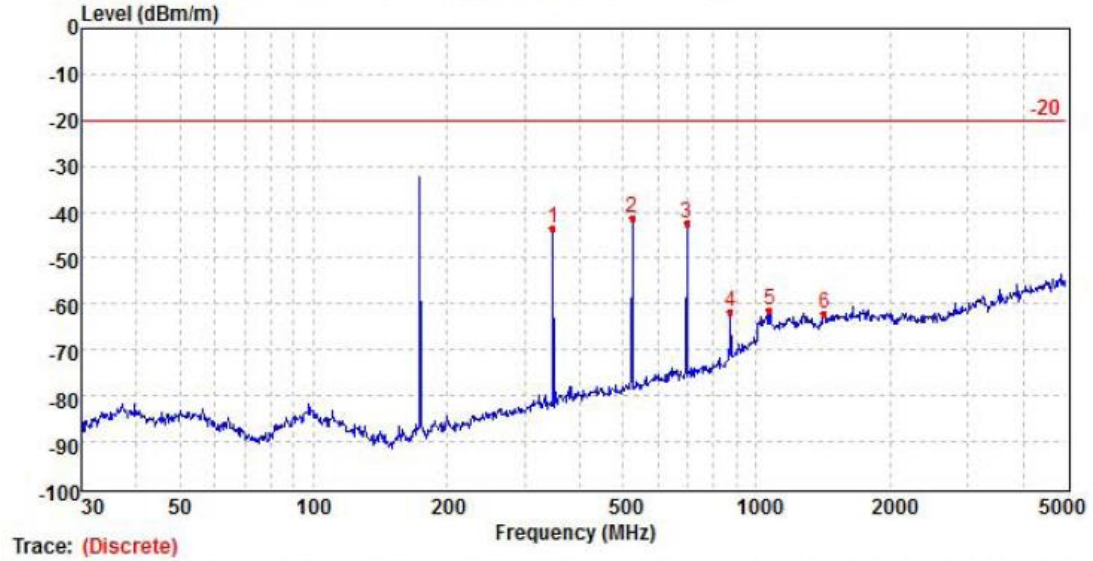
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	310.82	-42.82	26.44	2.02	29.13	-43.49	-20.00	-23.49	Peak
2	465.62	-49.14	29.30	2.53	29.03	-46.34	-20.00	-26.34	Peak
3	623.27	-56.69	31.75	3.00	28.95	-50.89	-20.00	-30.89	Peak
4	776.64	-57.98	32.97	3.40	28.85	-50.46	-20.00	-30.46	Peak
5	1187.49	-76.45	39.06	4.28	28.96	-62.07	-20.00	-42.07	Peak
6	1510.28	-77.82	40.06	5.07	28.72	-61.41	-20.00	-41.41	Peak

FCC Part 90			
TX3			
Test Frequency:	CH_{H1}	Polarity:	Horizontal



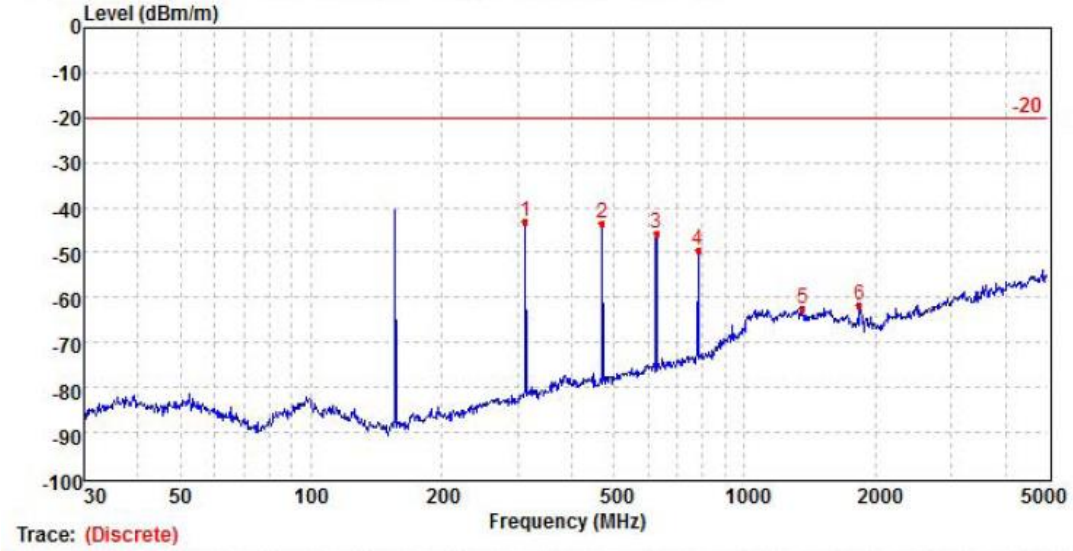
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	347.85	-46.25	27.37	2.14	29.04	-45.78	-20.00	-25.78	Peak
2	523.76	-47.58	30.23	2.68	29.16	-43.83	-20.00	-23.83	Peak
3	697.52	-52.13	32.02	3.16	28.56	-45.51	-20.00	-25.51	Peak
4	873.61	-70.33	34.75	3.67	28.34	-60.25	-20.00	-40.25	Peak
5	1420.35	-78.20	39.82	4.80	28.49	-62.07	-20.00	-42.07	Peak
6	1647.51	-77.89	40.38	5.20	28.47	-60.78	-20.00	-40.78	Peak

Test Frequency:	CH_{H1}	Polarity:	Vertical



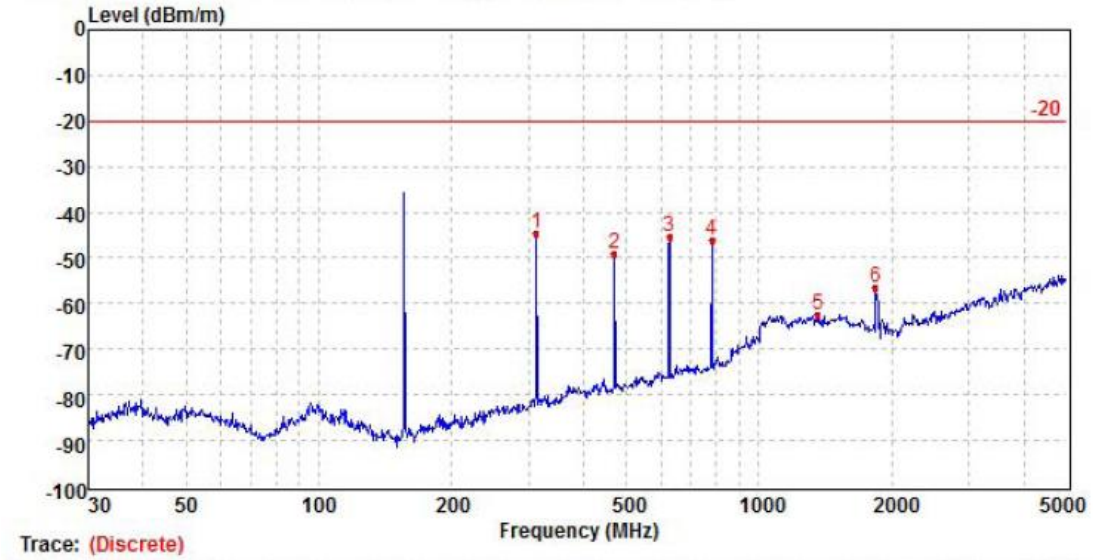
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	347.85	-43.85	27.37	2.14	29.04	-43.38	-20.00	-23.38	Peak
2	523.76	-45.12	30.23	2.68	29.16	-41.37	-20.00	-21.37	Peak
3	697.52	-48.97	32.02	3.16	28.56	-42.35	-20.00	-22.35	Peak
4	873.61	-71.77	34.75	3.67	28.34	-61.69	-20.00	-41.69	Peak
5	1072.00	-75.30	38.62	4.03	28.80	-61.45	-20.00	-41.45	Peak
6	1420.35	-78.20	39.82	4.80	28.49	-62.07	-20.00	-42.07	Peak

FCC Part 80			
TX5			
Test Frequency:	CH_{L2}	Polarity:	Horizontal



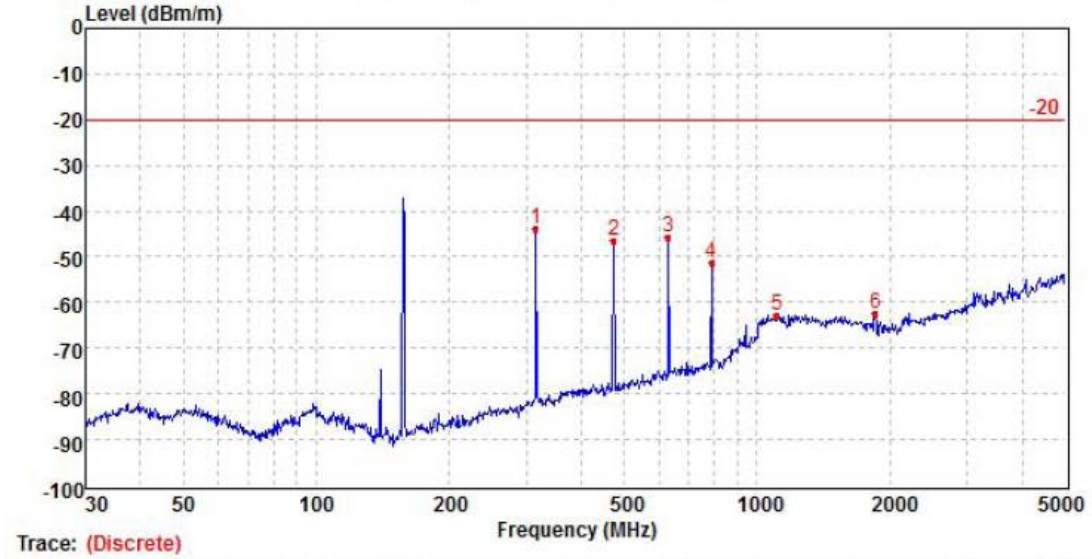
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	312.41	-42.62	26.50	2.02	29.13	-43.23	-20.00	-23.23	Peak
2	470.41	-46.25	29.34	2.54	29.03	-43.40	-20.00	-23.40	Peak
3	626.47	-51.56	31.76	3.01	28.93	-45.72	-20.00	-25.72	Peak
4	780.62	-57.05	33.03	3.41	28.88	-49.49	-20.00	-29.49	Peak
5	1363.39	-78.21	39.65	4.65	28.42	-62.33	-20.00	-42.33	Peak
6	1843.78	-79.61	40.77	5.66	28.36	-61.54	-20.00	-41.54	Peak

Test Frequency:	CH_{L2}	Polarity:	Vertical



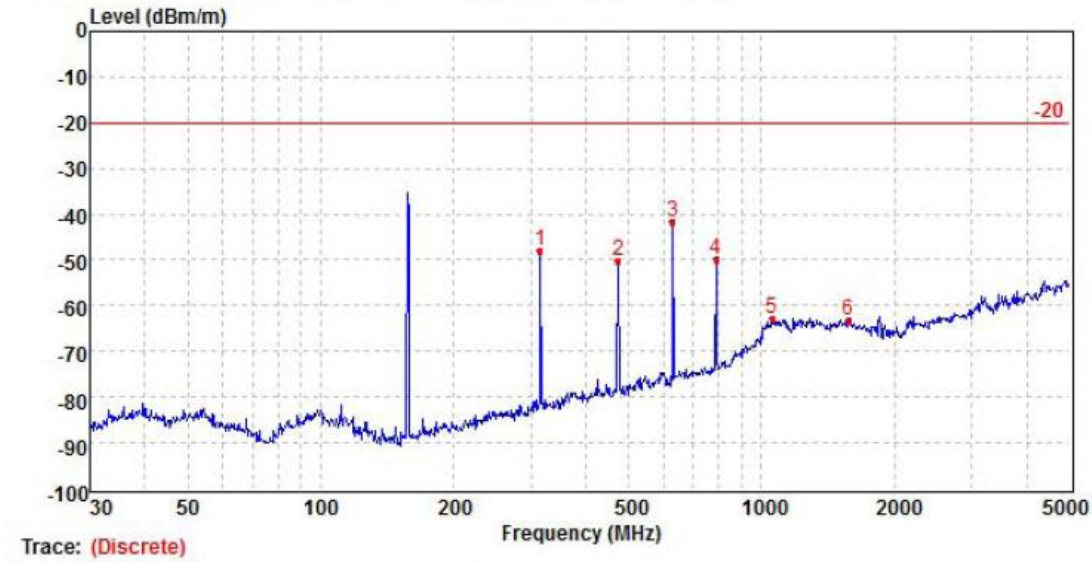
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	312.41	-43.93	26.50	2.02	29.13	-44.54	-20.00	-24.54	Peak
2	470.41	-51.75	29.34	2.54	29.03	-48.90	-20.00	-28.90	Peak
3	626.47	-51.05	31.76	3.01	28.93	-45.21	-20.00	-25.21	Peak
4	780.62	-53.55	33.03	3.41	28.88	-45.99	-20.00	-25.99	Peak
5	1363.39	-78.21	39.65	4.65	28.42	-62.33	-20.00	-42.33	Peak
6	1843.78	-74.45	40.77	5.66	28.36	-56.38	-20.00	-36.38	Peak

FCC Part 80			
TX5			
Test Frequency:	CH_{H2}	Polarity:	Horizontal



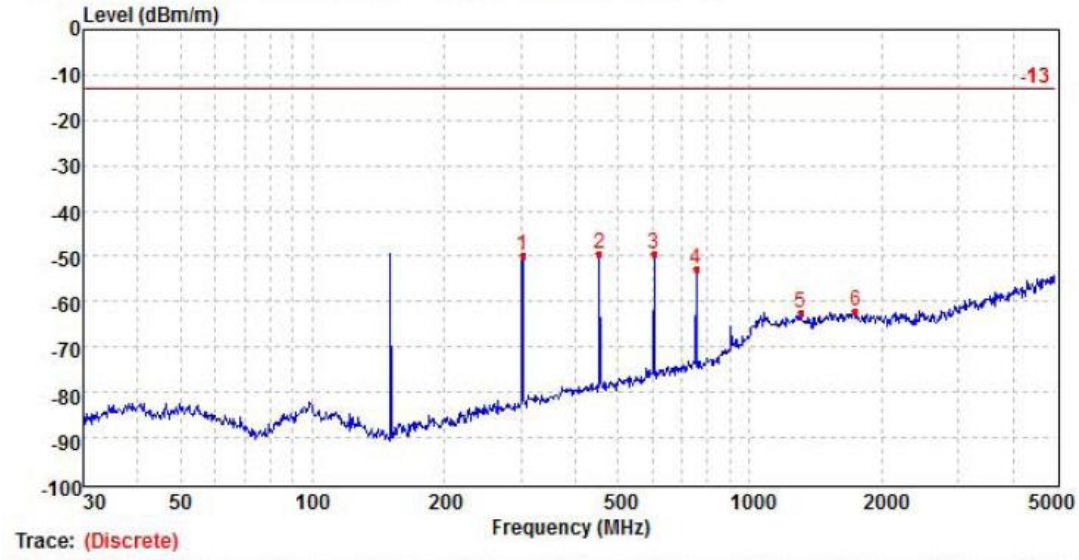
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	315.63	-43.21	26.55	2.03	29.12	-43.75	-20.00	-23.75	Peak
2	472.82	-49.28	29.39	2.55	29.03	-46.37	-20.00	-26.37	Peak
3	629.68	-51.77	31.76	3.02	28.91	-45.90	-20.00	-25.90	Peak
4	788.65	-59.13	33.15	3.45	28.93	-51.46	-20.00	-31.46	Peak
5	1111.08	-76.74	38.79	4.11	28.99	-62.83	-20.00	-42.83	Peak
6	1853.24	-80.46	40.77	5.69	28.40	-62.40	-20.00	-42.40	Peak

Test Frequency:	CH_{H2}	Polarity:	Vertical



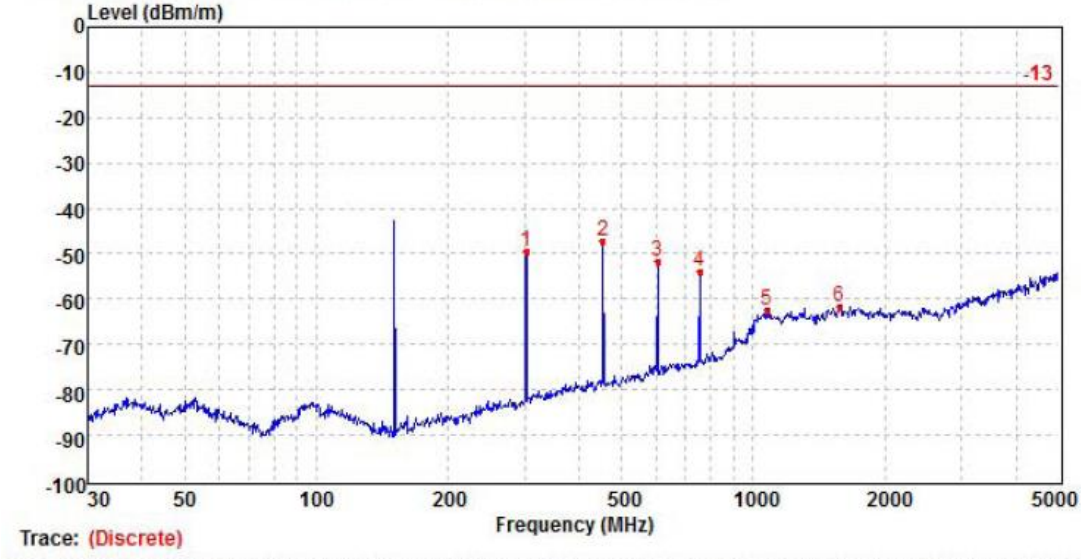
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	315.63	-47.32	26.55	2.03	29.12	-47.86	-20.00	-27.86	Peak
2	472.82	-53.05	29.39	2.55	29.03	-50.14	-20.00	-30.14	Peak
3	629.68	-47.68	31.76	3.02	28.91	-41.81	-20.00	-21.81	Peak
4	788.65	-57.46	33.15	3.45	28.93	-49.79	-20.00	-29.79	Peak
5	1055.67	-76.83	38.56	4.00	28.68	-62.95	-20.00	-42.95	Peak
6	1573.38	-79.73	40.22	5.11	28.75	-63.15	-20.00	-43.15	Peak

FCC Part 22			
TX1			
Test Frequency:	CH_{L3}	Polarity:	Horizontal



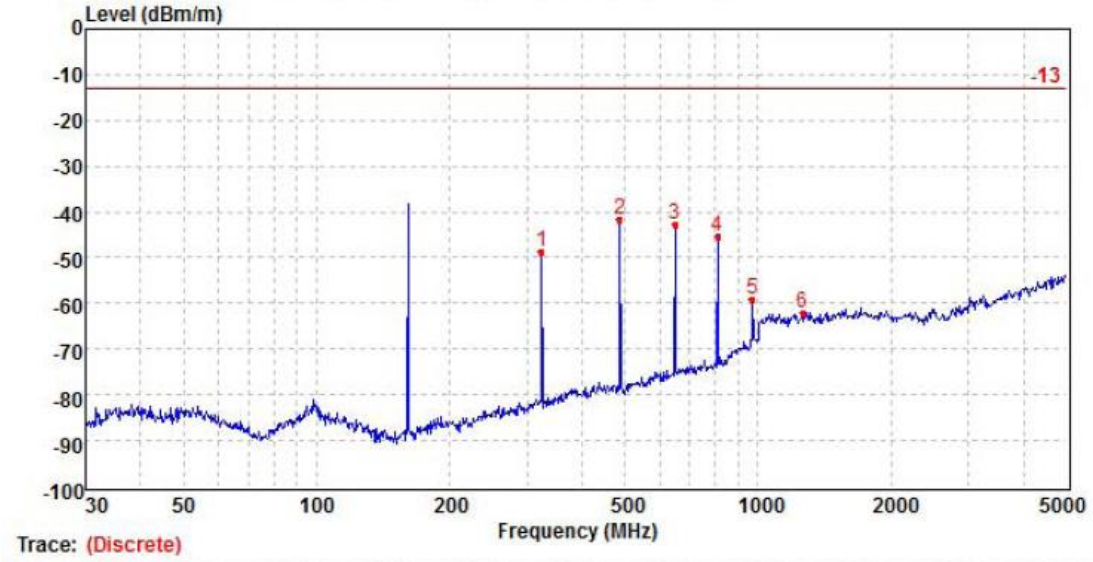
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	302.97	-48.81	26.22	1.99	29.15	-49.75	-13.00	-36.75	Peak
2	453.86	-51.87	29.12	2.50	29.01	-49.26	-13.00	-36.26	Peak
3	604.43	-55.02	31.67	2.92	29.07	-49.50	-13.00	-36.50	Peak
4	753.16	-60.18	32.73	3.29	28.70	-52.86	-13.00	-39.86	Peak
5	1308.72	-77.94	39.48	4.53	28.41	-62.34	-13.00	-49.34	Peak
6	1742.89	-79.89	40.57	5.38	28.15	-62.09	-13.00	-49.09	Peak

Test Frequency:	CH_{L3}	Polarity:	Vertical



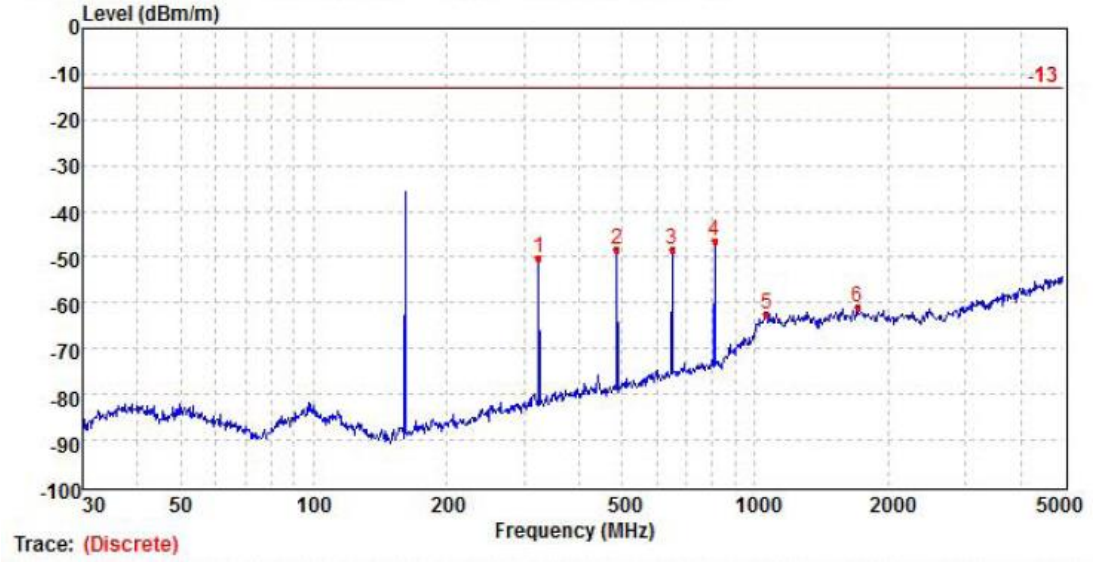
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	302.97	-48.37	26.22	1.99	29.15	-49.31	-13.00	-36.31	Peak
2	453.86	-49.87	29.12	2.50	29.01	-47.26	-13.00	-34.26	Peak
3	604.43	-57.17	31.67	2.92	29.07	-51.65	-13.00	-38.65	Peak
4	753.16	-61.35	32.73	3.29	28.70	-54.03	-13.00	-41.03	Peak
5	1077.50	-76.33	38.65	4.04	28.84	-62.48	-13.00	-49.48	Peak
6	1573.38	-78.23	40.22	5.11	28.75	-61.65	-13.00	-48.65	Peak

FCC Part 22			
TX1			
Test Frequency:	CH_{H3}	Polarity:	Horizontal



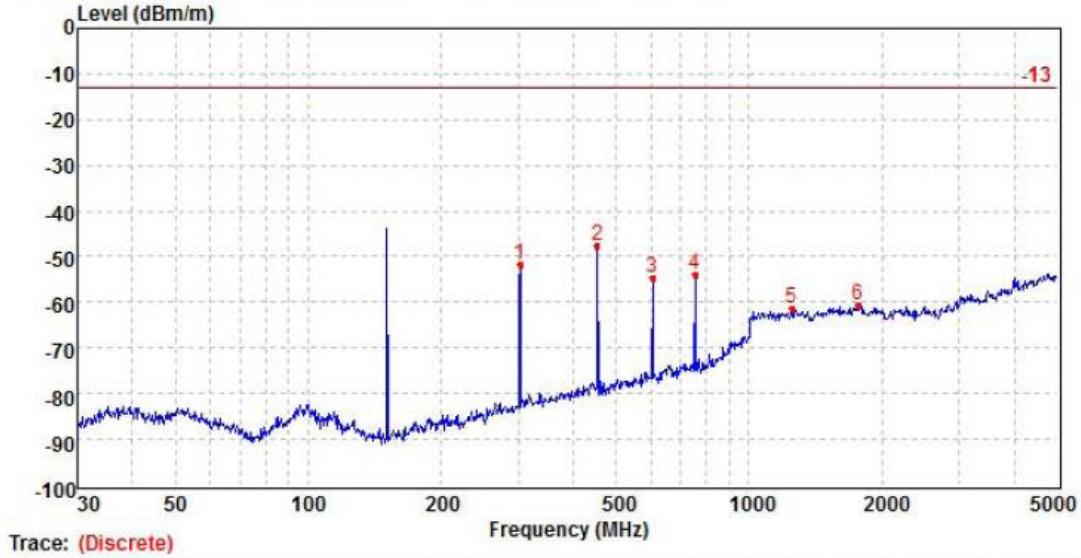
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	323.80	-48.53	26.77	2.06	29.10	-48.80	-13.00	-35.80	Peak
2	487.56	-44.65	29.61	2.59	29.05	-41.50	-13.00	-28.50	Peak
3	649.31	-48.87	31.84	3.11	28.78	-42.70	-13.00	-29.70	Peak
4	809.08	-53.21	33.38	3.52	29.01	-45.32	-13.00	-32.32	Peak
5	972.70	-72.00	37.40	3.84	28.39	-59.15	-13.00	-46.15	Peak
6	1262.68	-77.09	39.32	4.44	28.61	-61.94	-13.00	-48.94	Peak

Test Frequency:	CH_{H3}	Polarity:	Vertical



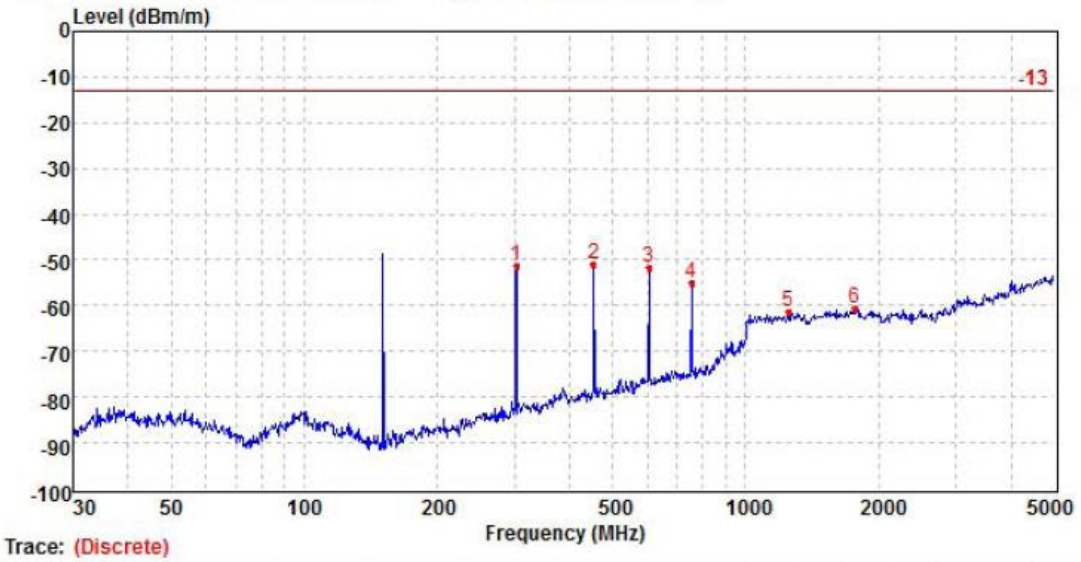
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	323.80	-49.80	26.77	2.06	29.10	-50.07	-13.00	-37.07	Peak
2	487.56	-51.38	29.61	2.59	29.05	-48.23	-13.00	-35.23	Peak
3	649.31	-54.68	31.84	3.11	28.78	-48.51	-13.00	-35.51	Peak
4	809.08	-54.20	33.38	3.52	29.01	-46.31	-13.00	-33.31	Peak
5	1061.08	-76.24	38.59	4.01	28.72	-62.36	-13.00	-49.36	Peak
6	1707.58	-78.73	40.50	5.29	28.15	-61.09	-13.00	-48.09	Peak

FCC Part 22			
TX3			
Test Frequency:	CH_{L3}	Polarity:	Horizontal



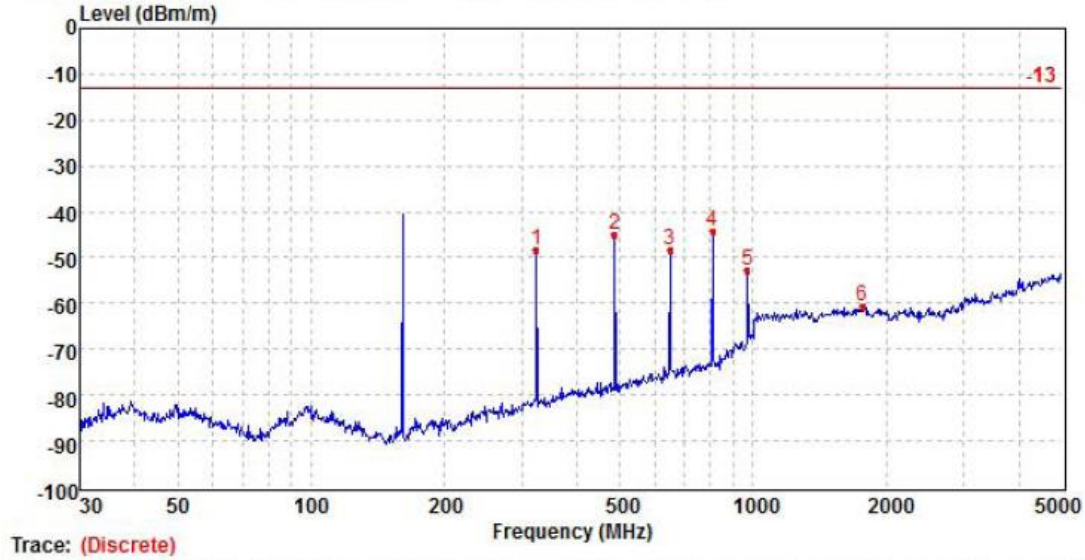
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	302.97	-50.75	26.22	1.99	29.15	-51.69	-13.00	-38.69	Peak
2	453.86	-50.09	29.12	2.50	29.01	-47.48	-13.00	-34.48	Peak
3	604.43	-60.21	31.67	2.92	29.07	-54.69	-13.00	-41.69	Peak
4	753.16	-61.37	32.73	3.29	28.70	-54.05	-13.00	-41.05	Peak
5	1249.82	-76.43	39.29	4.41	28.68	-61.41	-13.00	-48.41	Peak
6	1769.84	-78.41	40.61	5.45	28.15	-60.50	-13.00	-47.50	Peak

Test Frequency:	CH_{L3}	Polarity:	Vertical



Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	302.97	-50.37	26.22	1.99	29.15	-51.31	-13.00	-38.31	Peak
2	453.86	-53.59	29.12	2.50	29.01	-50.98	-13.00	-37.98	Peak
3	604.43	-57.23	31.67	2.92	29.07	-51.71	-13.00	-38.71	Peak
4	753.16	-62.18	32.73	3.29	28.70	-54.86	-13.00	-41.86	Peak
5	1249.82	-76.43	39.29	4.41	28.68	-61.41	-13.00	-48.41	Peak
6	1769.84	-78.41	40.61	5.45	28.15	-60.50	-13.00	-47.50	Peak

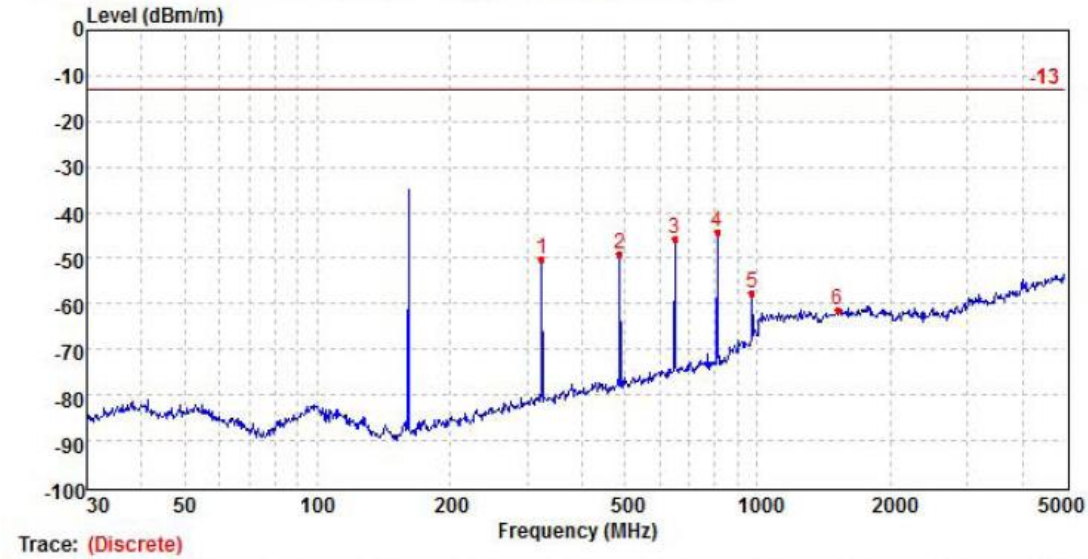
FCC Part 22			
TX3			
Test Frequency:	CH_{H3}	Polarity:	Horizontal



Trace: (Discrete)

Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	323.80	-48.21	26.77	2.06	29.10	-48.48	-13.00	-35.48	Peak
2	487.56	-48.18	29.61	2.59	29.05	-45.03	-13.00	-32.03	Peak
3	649.31	-54.39	31.84	3.11	28.78	-48.22	-13.00	-35.22	Peak
4	809.08	-52.19	33.38	3.52	29.01	-44.30	-13.00	-31.30	Peak
5	972.70	-65.49	37.40	3.84	28.39	-52.64	-13.00	-39.64	Peak
6	1769.84	-78.41	40.61	5.45	28.15	-60.50	-13.00	-47.50	Peak

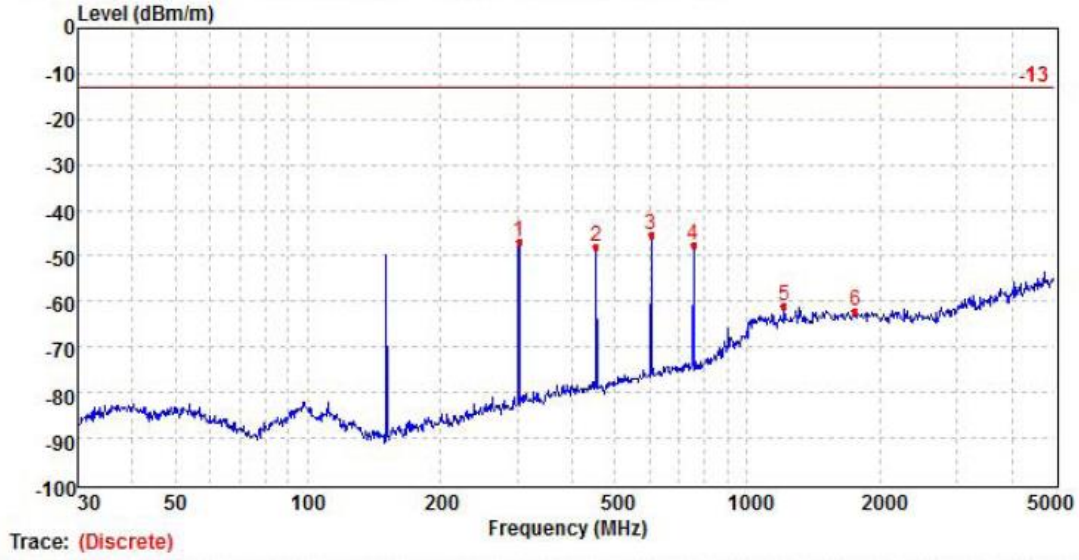
Test Frequency:	CH_{H3}	Polarity:	Vertical



Trace: (Discrete)

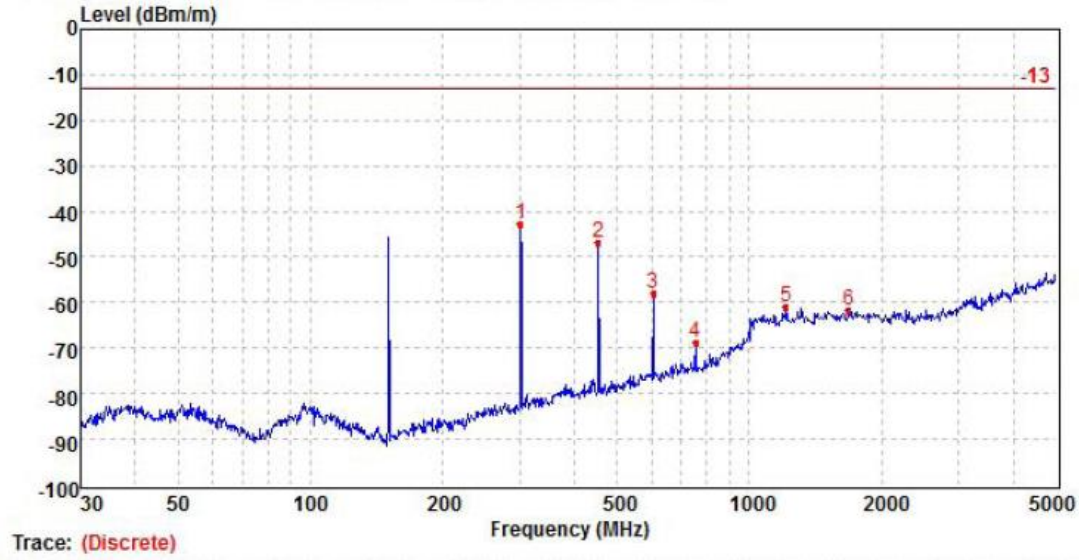
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	323.80	-49.75	26.77	2.06	29.10	-50.02	-13.00	-37.02	Peak
2	487.56	-52.35	29.61	2.59	29.05	-49.20	-13.00	-36.20	Peak
3	649.31	-52.05	31.84	3.11	28.78	-45.88	-13.00	-32.88	Peak
4	809.08	-52.24	33.38	3.52	29.01	-44.35	-13.00	-31.35	Peak
5	972.70	-70.44	37.40	3.84	28.39	-57.59	-13.00	-44.59	Peak
6	1518.03	-77.70	40.09	5.07	28.72	-61.26	-13.00	-48.26	Peak

FCC Part 22			
TX5			
Test Frequency:	CH_{L3}	Polarity:	Horizontal



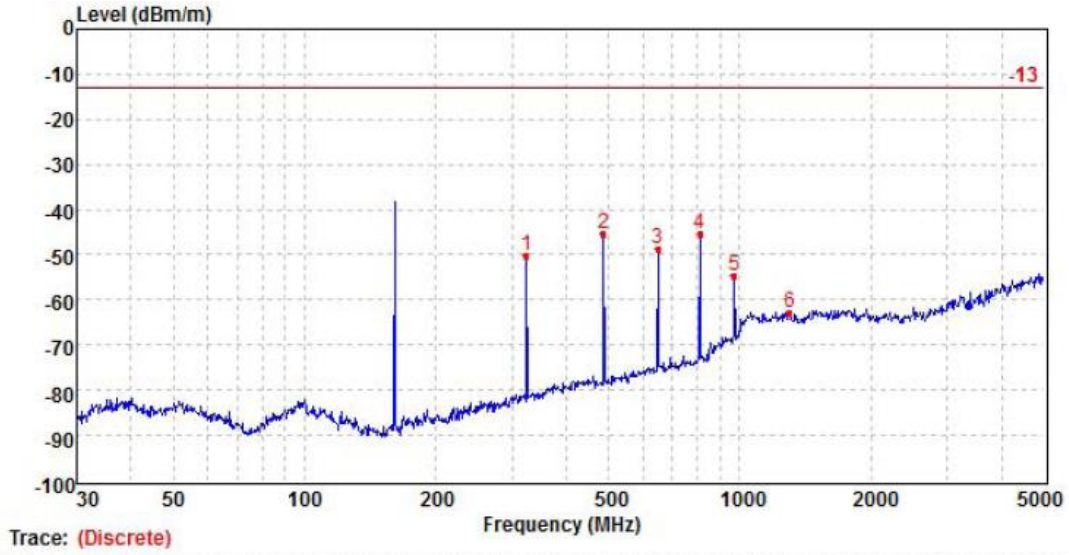
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	302.97	-46.07	26.22	1.99	29.15	-47.01	-13.00	-34.01	Peak
2	453.86	-50.50	29.12	2.50	29.01	-47.89	-13.00	-34.89	Peak
3	604.43	-50.70	31.67	2.92	29.07	-45.18	-13.00	-32.18	Peak
4	753.16	-54.97	32.73	3.29	28.70	-47.65	-13.00	-34.65	Peak
5	1212.04	-75.74	39.15	4.33	28.89	-61.15	-13.00	-48.15	Peak
6	1760.81	-79.89	40.61	5.43	28.15	-62.00	-13.00	-49.00	Peak

Test Frequency:	CH_{L3}	Polarity:	Vertical



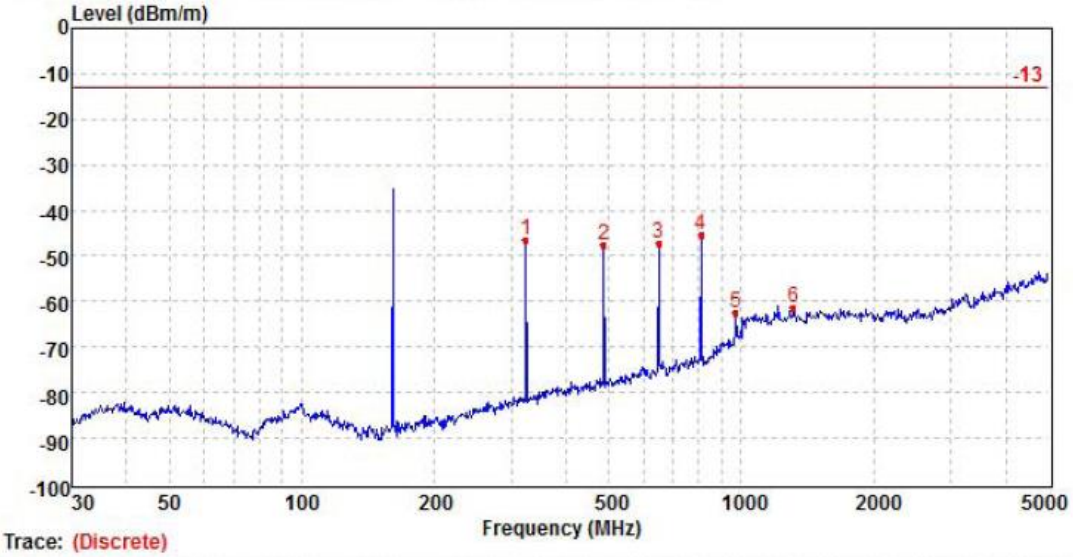
Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	301.42	-41.90	26.17	1.98	29.16	-42.91	-13.00	-29.91	Peak
2	453.86	-49.39	29.12	2.50	29.01	-46.78	-13.00	-33.78	Peak
3	604.43	-63.68	31.67	2.92	29.07	-58.16	-13.00	-45.16	Peak
4	753.16	-76.09	32.73	3.29	28.70	-68.77	-13.00	-55.77	Peak
5	1212.04	-75.74	39.15	4.33	28.89	-61.15	-13.00	-48.15	Peak
6	1681.58	-79.20	40.45	5.24	28.26	-61.77	-13.00	-48.77	Peak

FCC Part 22			
TX5			
Test Frequency:	CH_{H3}	Polarity:	Horizontal



Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	323.80	-50.09	26.77	2.06	29.10	-50.36	-13.00	-37.36	Peak
2	487.56	-48.69	29.61	2.59	29.05	-45.54	-13.00	-32.54	Peak
3	649.31	-54.82	31.84	3.11	28.78	-48.65	-13.00	-35.65	Peak
4	809.08	-53.20	33.38	3.52	29.01	-45.31	-13.00	-32.31	Peak
5	972.70	-67.55	37.40	3.84	28.39	-54.70	-13.00	-41.70	Peak
6	1302.04	-78.27	39.45	4.51	28.41	-62.72	-13.00	-49.72	Peak

Test Frequency:	CH_{H3}	Polarity:	Vertical



Mark	Frequency mhz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	323.80	-46.29	26.77	2.06	29.10	-46.56	-13.00	-33.56	Peak
2	487.56	-50.63	29.61	2.59	29.05	-47.48	-13.00	-34.48	Peak
3	649.31	-53.54	31.84	3.11	28.78	-47.37	-13.00	-34.37	Peak
4	809.08	-53.23	33.38	3.52	29.01	-45.34	-13.00	-32.34	Peak
5	972.70	-75.19	37.40	3.84	28.39	-62.34	-13.00	-49.34	Peak
6	1315.43	-76.98	39.48	4.54	28.41	-61.37	-13.00	-48.37	Peak

5.10. Conducted Emissions

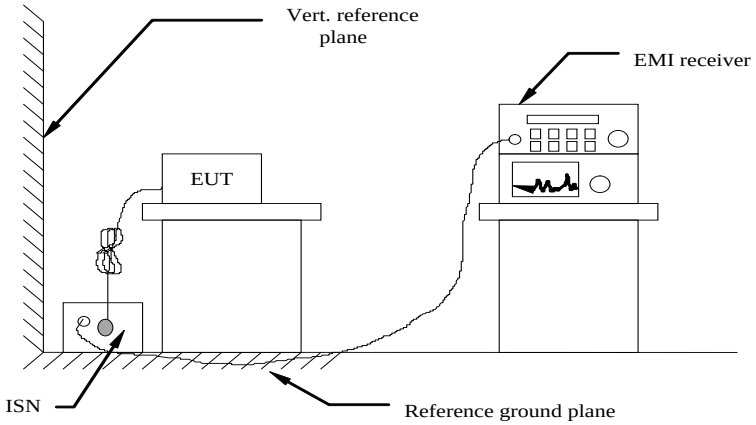
The frequency spectrum from 0.15 MHz to 30 MHz was investigated. The LISN used was 50 ohm / 50 u Henry as specified by section 5.1 of ANSI C63.4-2014. Cables and peripherals were moved to find the maximum emission levels for each frequency.

Limit

FCC part 15.107(a)

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

TEST CONFIGURATION



TEST PROCEDURE

1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4-2014.
2 Support equipment, if needed, was placed as per ANSI C63.4-2014.
3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4-2014.
4 If a EUT received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5 All support equipments received AC power from a second LISN, if any
6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7 Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8 During the above scans, the emissions were maximized by cable manipulation.

TEST MODE:

Please reference to the section 3.4

TEST RESULTS

☐ **Passed** ☒ **Not Applicable**

5.11. Radiated Emission

LIMIT

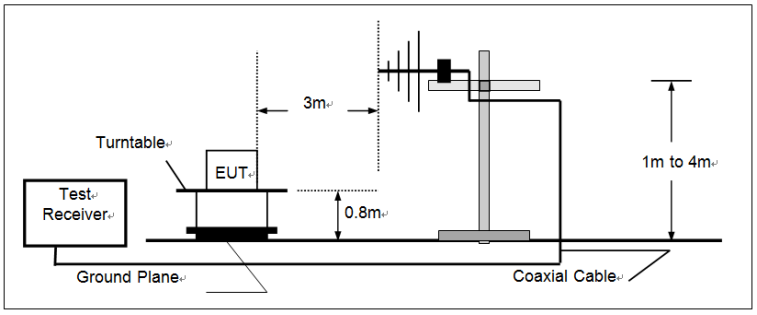
For unintentional device, according to § 15.109(a) except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values：

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

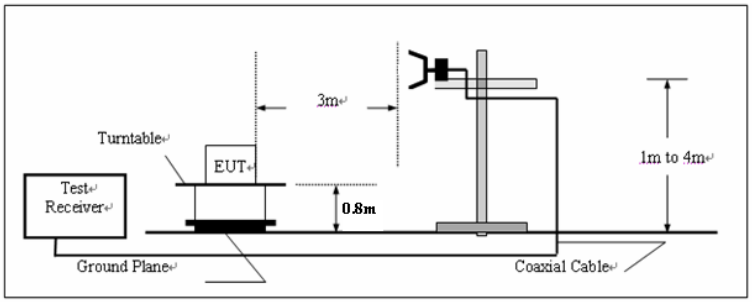
For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

TEST CONFIGURATION

(A) Radiated Emission Test Set-Up, Frequency below 1000MHz



(B) Radiated Emission Test Set-Up, Frequency above 1000MHz



TEST PROCEDURE

1 The EUT was placed on a turn table which is 0.8m above ground plane.
2 Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT
3 And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4 Repeat above procedures until all frequency measurements have been completed.

TEST MODE:

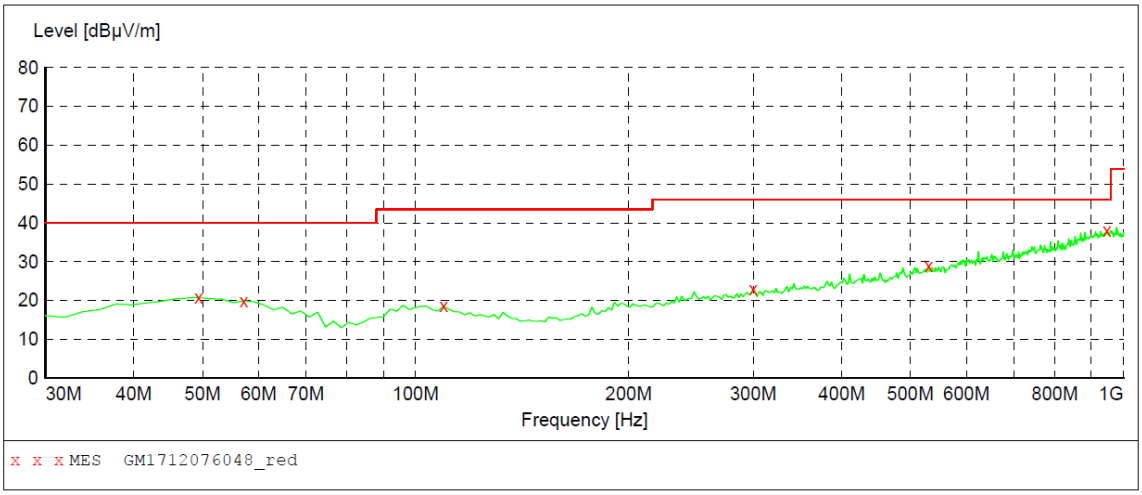
Please reference to the section 3.4

TEST RESULTS

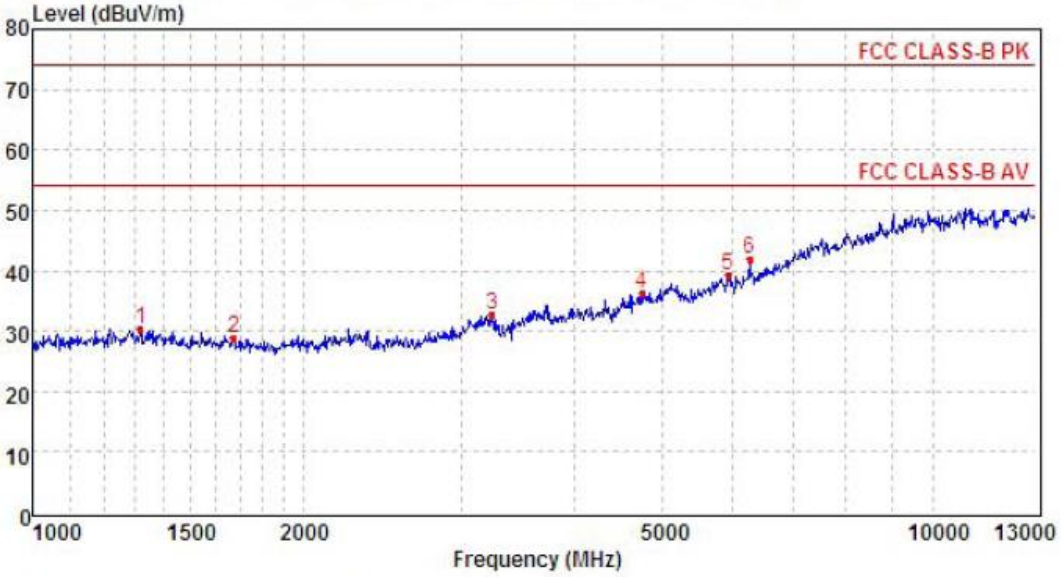
☒ **Passed** ☐ **Not Applicable**

Note:
1. The EUT shall be scanned from 30 MHz to the 5th harmonic of the highest oscillator frequency in the digital devices or 1 GHz whichever is higher.
2. Have pre-tested RX1 to RX5 mode, record the worst case mode RX1 on the report.

Test Mode:	RX1	Polarity:	Horizontal

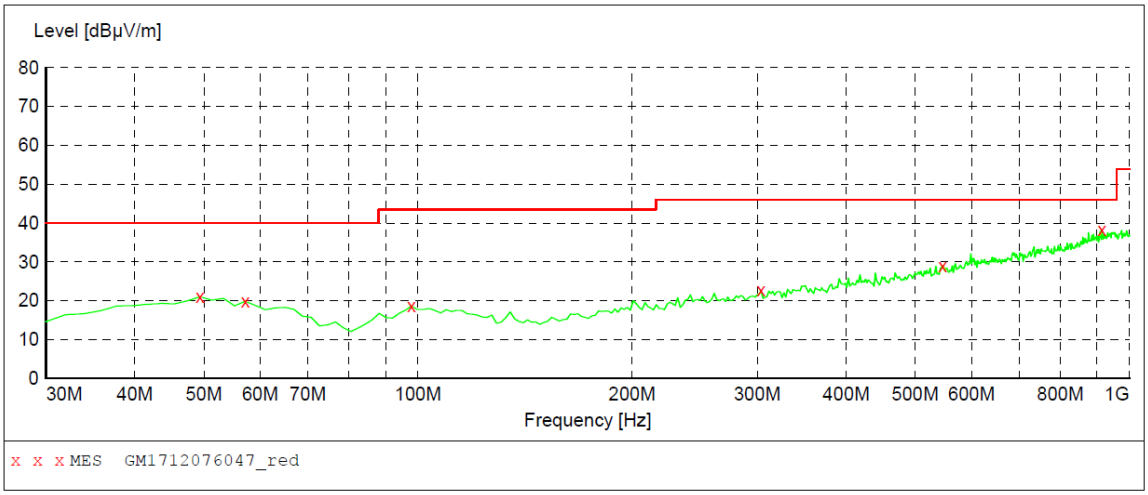


Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
49.400000	20.80	-8.7	40.0	19.2	QP	100.0	48.00	HORIZONTAL
57.160000	19.90	-9.4	40.0	20.1	QP	100.0	0.00	HORIZONTAL
109.540000	18.60	-10.8	43.5	24.9	QP	100.0	189.00	HORIZONTAL
299.660000	23.10	-7.3	46.0	22.9	QP	100.0	0.00	HORIZONTAL
530.520000	28.90	-1.1	46.0	17.1	QP	300.0	324.00	HORIZONTAL
947.620000	38.10	7.2	46.0	7.9	QP	300.0	24.00	HORIZONTAL

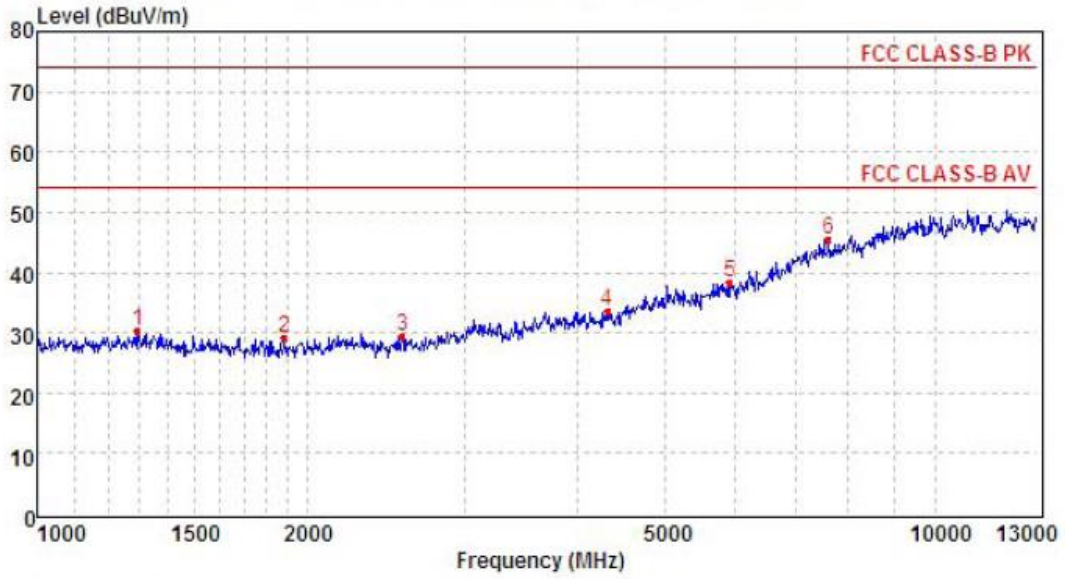


Mark	Frequency MHZ	Reading dbuv/m	Antenna db	Cable db	Preamp db	Level dbuv/m	Limit dbuv/m	Over limit	Remark
1	1319.19	35.9	26.1	4.9	36.5	30.4	74.0	-43.6	Peak
2	1674.57	34.8	25.1	5.7	36.9	28.7	74.0	-45.3	Peak
3	3237.32	34.6	28.6	7.8	38.3	32.7	74.0	-41.3	Peak
4	4756.39	32.4	31.4	9.5	37.0	36.3	74.0	-37.7	Peak
5	5930.30	31.5	32.4	10.6	35.4	39.1	74.0	-34.9	Peak
6	6258.49	33.3	33.0	11.0	35.3	42.0	74.0	-32.0	Peak

Test Mode:	RX1	Polarity:	Vertical



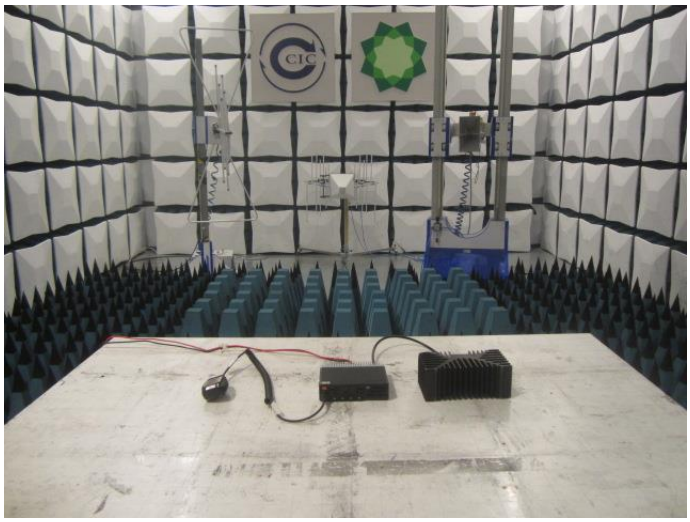
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
49.400000	21.00	-8.7	40.0	19.0	QP	100.0	231.00	VERTICAL
57.160000	19.90	-9.4	40.0	20.1	QP	100.0	297.00	VERTICAL
97.900000	18.60	-10.8	43.5	24.9	QP	100.0	49.00	VERTICAL
303.540000	22.60	-7.2	46.0	23.4	QP	100.0	77.00	VERTICAL
546.040000	29.00	-0.8	46.0	17.0	QP	100.0	242.00	VERTICAL
914.640000	38.30	6.9	46.0	7.7	QP	100.0	272.00	VERTICAL



Mark	Frequency MHZ	Reading dbuv/m	Antenna db	Cable db	Preamp db	Level dbuv/m	Limit dbuv/m	Over limit	Remark
1	1295.71	35.9	26.2	4.8	36.5	30.4	74.0	-43.6	Peak
2	1884.27	35.0	25.3	6.1	37.2	29.2	74.0	-44.8	Peak
3	2550.29	32.9	27.5	6.9	37.9	29.4	74.0	-44.6	Peak
4	4314.67	32.1	30.2	9.0	37.6	33.7	74.0	-40.3	Peak
5	5915.11	30.9	32.3	10.6	35.4	38.4	74.0	-35.6	Peak
6	7605.53	31.6	36.2	12.7	35.0	45.5	74.0	-28.5	Peak

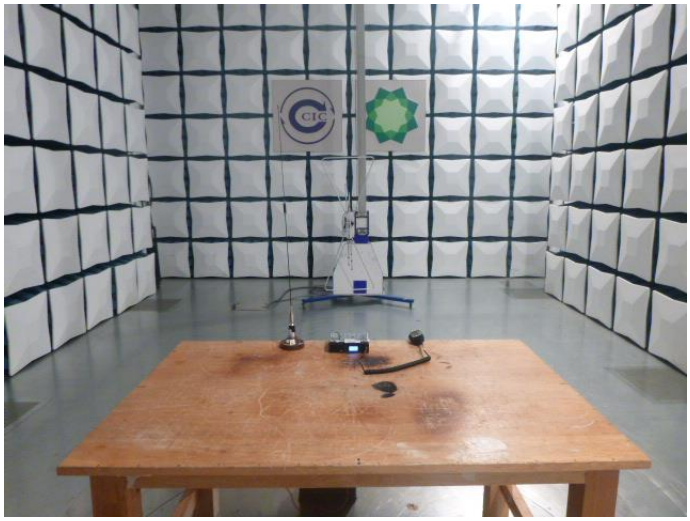
6. Test Setup Photos of the EUT

Transmitter Radiated Spurious Emission:

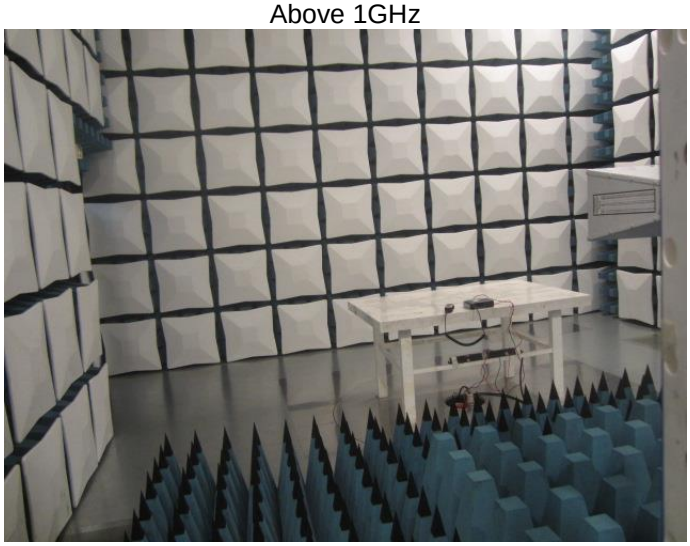


Radiated Emission:

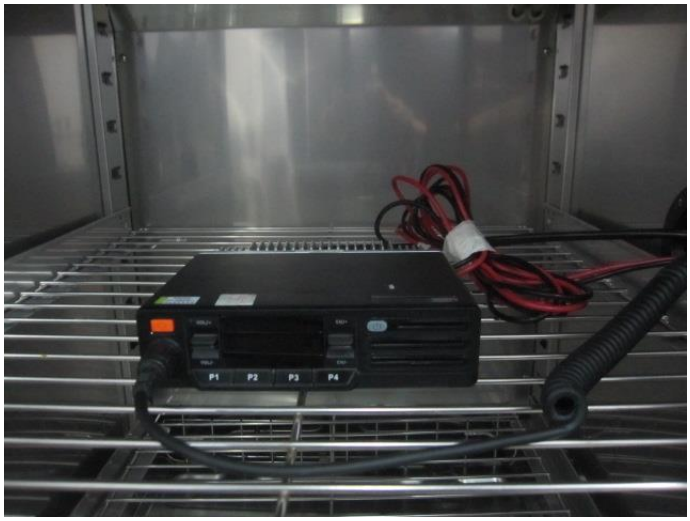
30MHz-1GHz



Above 1GHz



Frequency stability:



7. External and Internal Photos of the EUT

Reference to Test Report No.: TRE1711016601.

----------End of Report----------