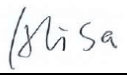
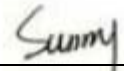
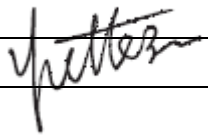
TEST REPORT

FCC Part 95

Report Reference No. .....:	**MTWC21100743-R**	
FCC ID. .....:	**2A349-HP6500**	
Compiled by (position+printed name+signature) .....:	File administrators Alisa Luo	
Supervised by (position+printed name+signature) .....:	Test Engineer Sunny Deng	
Approved by (position+printed name+signature) .....:	Manager Yvette Zhou	
Date of issue .....:	2022.01.13	
Testing Laboratory Name .....:	**Shenzhen Most Technology Service Co., Ltd.**	
Address .....:	No.5, 2nd Langshan Road, North District, Hi-tech Industrial Park, Nanshan, Shenzhen, Guangdong, China.	
Applicant's name .....:	**ONLINESHOP SRL**	
Address .....:	Olteniei 26A, Piatra Neamt Neamt, 610206, Romania	
Test specification .....:		
Standard .....:	**FCC Part 95**	

Test item description.....:	**CB radio**
Trade Mark .....:	PNI
Manufacturer .....:	**ONLINESHOP SRL**
Model/Type reference .....:	PNI Escort HP 6500
Listed Models .....:	HP7120, CB583, HP6500
Ratings .....:	DC 13.8V
Modulation .....:	FM/AM
Hardware version.....:	V 1.3
Software version .....:	V 1.3
Frequency	26.965-27.405 for AM, 26.965-27.405 for FM
Result .....:	**PASS**

TEST REPORT

Equipment under Test	:	CB radio
Model /Type	:	PNI Escort HP 6500
Listed Models	:	HP7120, CB583, HP6500
Remark:		Only with differnt model names.
Applicant	:	ONLINESHOP SRL
Address	:	Olteniei 26A, Piatra Neamt Neamt, 610206, Romania
Manufacturer	:	ONLINESHOP SRL
Address	:	Olteniei 26A, Piatra Neamt Neamt, 610206, Romania

Test result	**Pass ***

* In the configuration tested, the EUT complied with the standards specified page 4.

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

TABLE OF CONTENTS

1. Revision History

Revision	Issue Date	Revisions	Revised By
00	2022.01.13	Initial Issue	Alisa Luo

2. TEST STANDARDS

The tests were performed according to following standards:

FCC Part 95: Personal Radio Service
Subpart D: Citizens Band Radio Service (CBRS)

ANSI/TIA-382-A: Minimum Standards - Citizens Band Radio Service Amplitude Modulated (AM) Transceivers Operating in the 27 MHz Band(Revision of EIA-382)

ANSI/TIA-603-E: Land Mobile FM or PM Communications Equipment Measurement and Performance Standards (Revision of TIA-603-D)

TIA/EIA 603-D-2010: Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

47 CFR FCC Part 15 Subpart B - Unintentional Radiators
FCC Part 2: FREQUENCY ALLOCA-TIONS AND RADIO TREATY MAT-TERS; GENERAL RULES AND REG-ULATIONS

2. SUMMARY

2.1 General Remarks

Data of receipt of test sample	:	2021.12.28
Testing commenced on	:	2021.12.28
Testing concluded on	:	2022.01.11

2.2 Equipment Under Test

Power supply system utilised

Power supply voltage	:	○	230V / 50 Hz	○	120V / 60Hz
		○	12 V DC	○	24 V DC
		●	Other (specified in blank below)		

DC 13.8V

2.3 Short description of the Equipment under Test (EUT)

This is a CB radio
For more details, refer to the user's manual of the EUT.

2.4 Short description of the Equipment under Test (EUT)

The FM Transceiver Model: PNI Escort HP 6500 or the “EUT” as referred to in this report; more general information as follows, for more details, refer to the user’s manual of the EUT.

Name of EUT	CB radio
Model Number	PNI Escort HP 6500
Maximum Transmitter Power	35.996dBm
Power Supply	DC 13.8V
Modulation Type	AM/FM
Channel Separation	10 KHz
Antenna Type	External antenna
Antenna Gain	2.1dBi
Frequency Range	From 26.965-27.405MHz
Output power Modification	4W (It was fixed by the manufacturer, any individual can’t arbitrarily change it.)

Test frequency list

Frequency Range (MHz)	Modulation Type	Channel Separation (KHz)	Test frequency (MHz)
26.965-27.405MHz	AM	10KHz	26.965 MHz
			27.205 MHz
			27.405 MHz
26.965-27.405MHz	FM:		26.965 MHz
			27.205 MHz
			27.405 MHz

2.5 EUT operation mode

RF test modes:
The EUT (CB Transceiver) has been tested under normal operating condition. (The top channel, the middle channel and the bottom channel) are chosen for testing at each modulation type.

Note:
1.Only the result of the worst case was recorded in the report, if no other cases.
2.For Radiated Emission, 3axis were chosen for testing for each applicable mode(The antenna used is a temporary antenna provided by the laboratory).
3.For Conducted Test method, a temporary antenna connector is provided by the manufacture.
4.Manufacturers use computer PC programming software to switch and operate frequency points, refer to the instructions for details.

2.6 Test Item (Equipment Under Test) Description*

Short designation	EUT Name	EUT Description	Serial number	Hardware status	Software status
EUT A					
EUT B					

*: declared by the applicant. According to customers information EUTs A and B are the same devices.

2.7 Auxiliary Equipment (AE) Description

AE short designation	EUT Name (if available)	EUT Description	Serial number (if available)	Software (if used)
AE 1	Car Antenna	Antenna gain: 2.1dBi	---	---
AE 2				

2.8 Antenna Information*

Short designation	Antenna Name	Antenna Type	Frequency Range	Serial number	Antenna Peak Gain
Antenna 1	---	---	---	---	---
Antenna 2					

*: declared by the applicant.

2.9 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for the device filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

2.10 Modifications

No modifications were implemented to meet testing criteria.

2.11 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: 2A349-HP6500 filing to comply with the FCC Part 95 Rules.

3. TEST ENVIRONMENT

3. 1 TEST FACILITY

Shenzhen Most Technology Service Co., Ltd.
No.5, 2nd Langshan Road, North District, Hi-tech Industrial Park, Nanshan, Shenzhen, Guangdong, China.
The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.4:2014 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

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

FCC-Designation No.: CN1315
Shenzhen Most Technology Service 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.

A2LA-Lab Cert. No.: 6343.01
Shenzhen Most Technology Service 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.

3.2 Environmental conditions

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

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

3.4 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 EMCMeasurements“ and is documented in the Shenzhen Most Technology Service 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 Most Technology Service Co., Ltd. is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	3.15 dB	(1)
Radiated Emission	1~18GHz	4.32 dB	(1)
Radiated Emission	18-40GHz	5.54 dB	(1)
Conducted Disturbance	0.15~30MHz	1.25 dB	(1)
Spurious RF Conducted Emission	9KHz~40GHz	1.22 dB	(1)
Band Edge Compliance of RF Emission	9KHz~40GHz	1.22 dB	(1)
Occupied Bandwidth	9KHz~40GHz	-	(1)

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

3.5. Equipments Used during the Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N.	R&S	ENV216	100093	2021/04/19	1 Year
2	Three-phase artificial power network	Schwarzback Mess	NNLK8129	8129178	2021/04/19	1 Year
3.	Receiver	R&S	ESCI	100492	2021/04/7	1 Year
4	Receiver	R&S	ESPI	101202	2021/04/7	1 Year
5	Spectrum analyzer	Agilent	9020A	MT-E306	2021/04/7	1 Year
6	Bilong Antenna	Sunol Sciences	JB3	A121206	2021/03/14	1 Year
7	Horn antenna	HF Antenna	HF Antenna	MT-E158	2021/04/7	1 Year
8	Loop antenna	Beijing Daze	ZN30900B	/	2021/04/16	1 Year
9	Horn antenna	R&S	OBH100400	26999002	2021/04/16	1 Year
10	Wireless Communication Test Set	R&S	CMW500	/	2021/04/15	1 Year
11	Spectrum analyzer	R&S	FSP	100019	2021/04/15	1 Year
12	High gain antenna	Schwarzbeck	LB-180400KF	MT-E389	2021/03/14	1 Year
13	Preamplifier	Schwarzbeck	BBV 9743	MT-E390	2021/03/14	1 Year
14	Pre-amplifier	EMCI	EMC051845SE	MT-E391	2021/03/14	1 Year
15	Pre-amplifier	Agilent	83051A	MT-E392	2021/03/14	1 Year
16	High pass filter unit	Tonscend	JS0806-F	MT-E393	2021/03/14	1 Year
17	RF Cable(below1GHz)	Times	9kHz-1GHz	MT-E394	2021/03/14	1 Year
18	RF Cable(above 1GHz)	Times	1-40G	MT-E395	2021/03/14	1 Year
19	RF Cable (9KHz-40GHz)	Tonscend	170660	N/A	2021/03/14	1 Year
20	RF COMMUNICATION TEST SET	HP	8920A	3813A10206	2021/04/16	1 Year
21	Storage Oscilloscope	Tektronix	TDS3054B	B033917	2021/04/07	1 Year

3.6. General Technical Requirements and Summary of Test Results

FCC Rules	Description of Test	Test Result
§ 95.967& 2.1046(a)	Maximum Transmitter Power	Complies
§ 95.975& 2.1047(a) (b)	Modulation Limit	Complies
§ 95.973& 2.1049	Occupied Bandwidth	Complies
95.979& 2.1049	Emission Mask	Complies
§ 95.965& 2.1055(a) (1)	Frequency Stability	Complies
§ 95.975& 2.1047(a)	Audio Frequency Response	Complies
§ 95.979& 2.1051	Spurious Emission on Antenna Port	Complies
§ 95.979& 2.1053	Ratiated Spurious Emission	Complies

3.10 Environmental conditions

Radiated Emission:

Temperature:	25 ° C
Humidity:	48 %
Atmospheric pressure:	950-1050mbar

AC Main Conducted testing：

Temperature:	26 ° C
Humidity:	45 %
Atmospheric pressure:	950-1050mbar

Conducted testing：

Temperature:	26 ° C
Humidity:	45 %
Atmospheric pressure:	950-1050mbar

4. TEST CONDITIONS AND RESULTS

4.1 Occupied Bandwidth and Emission Mask

PROVISIONS APPLICABLE

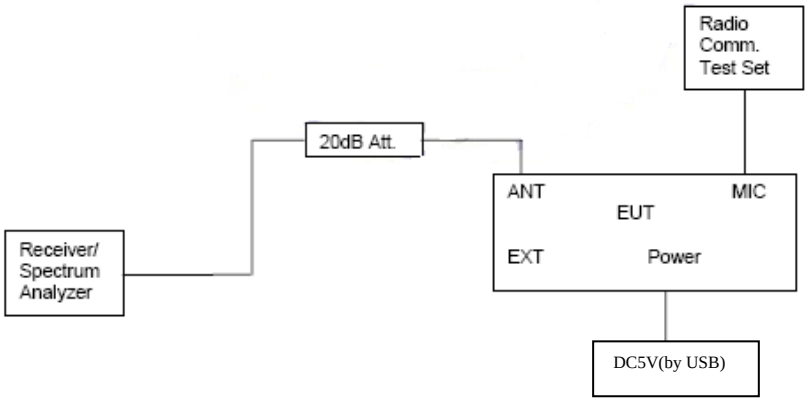
FCC Part 95.973, FCC Part 2.1049

Each CBRS transmitter type must be designed such that the occupied bandwidth does not exceed the authorized bandwidth for the emission type under test.

(a) AM. The authorized bandwidth for emission type A3E is 8 kHz.

(b) SSB. The authorized bandwidth for emission types J3E, R3E, and H3E is 4 kHz.

TEST CONFIGURATION



TEST PROCEDURE

1: Connect the equipment as illustrated
2: 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).
3: Spectrum set as follow:
Centre frequency = the nominal EUT channel center frequency,
The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (typically a span of 1.5 × OBW is sufficient)
RBW = 1% to 5% of the anticipated OBW, VBW ≥ 3 × RBW, Sweep = auto, Detector function = peak, Trace = max hold
4: Set 99% Occupied Bandwidth and 26dB Bandwidth
5: Measure and record the results in the test report.

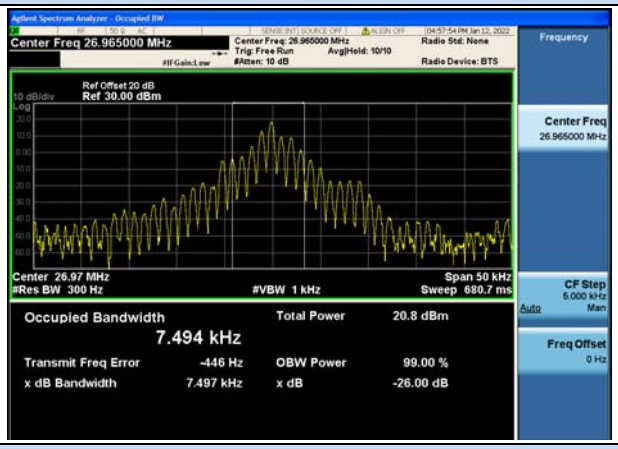
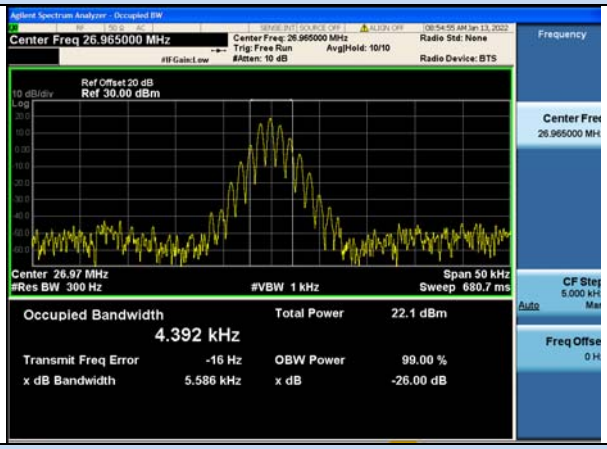
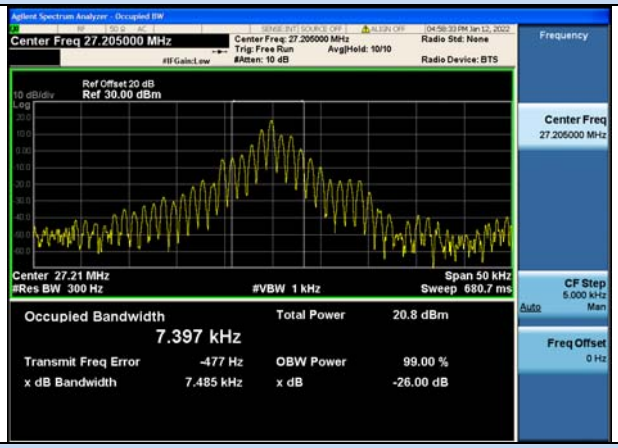
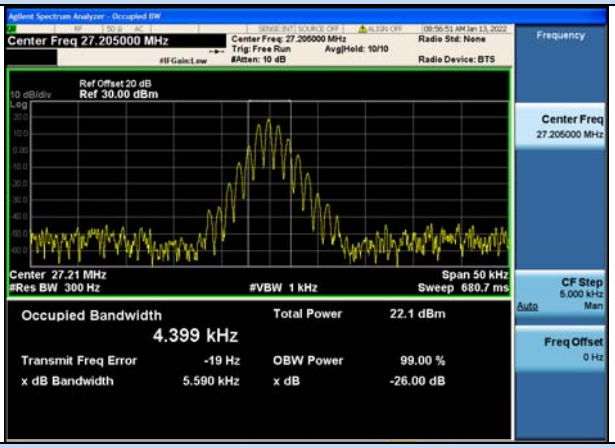
TEST RESULTS:

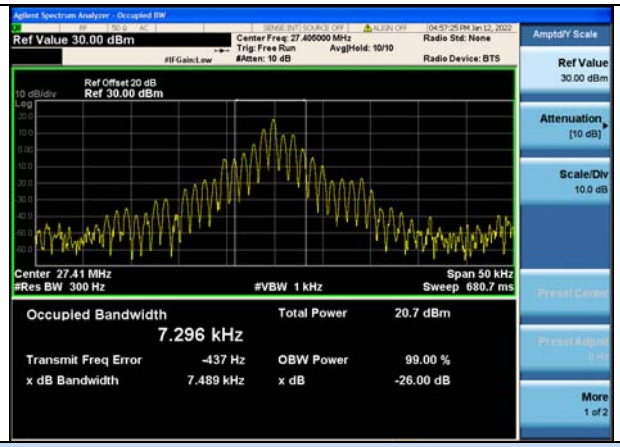
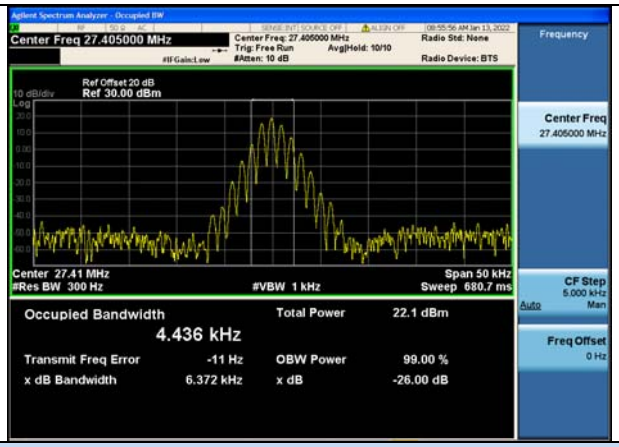
Occupied Bandwidth

High power:

Modulation Type	Channel Separation	Test Channel	Test Frequency	99% Occupied Bandwidth (KHz)	26dB Occupied Band width (KHz)
AM	10KHz	Low	26.965 MHz	7.494	7.497
		Middle	27.205 MHz	7.397	7.485
		High	27.405 MHz	7.296	7.489
FM		Low	26.965 MHz	4.392	5.586
		Middle	27.205 MHz	4.399	5.590
		High	27.405 MHz	4.436	6.372
Limit		8KHz			
Test Results		Compliance			

Occupied Bandwidth and 26dB Bandwidth

AM	***FM***
	
26.965 MHz	26.965 MHz
	
27.205 MHz	27.205 MHz

	
27.405 MHz	27.405 MHz

Emission Mask

The detailed procedure employed for Emission Mask measurements are specified as following: -Connect the equipment as illustrated.

-Spectrum set as follow:

1: Centre frequency = fundamental frequency, Span=50kHz for 10kHz , RBW=300Hz, VBW=1000Hz ;

2: 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.

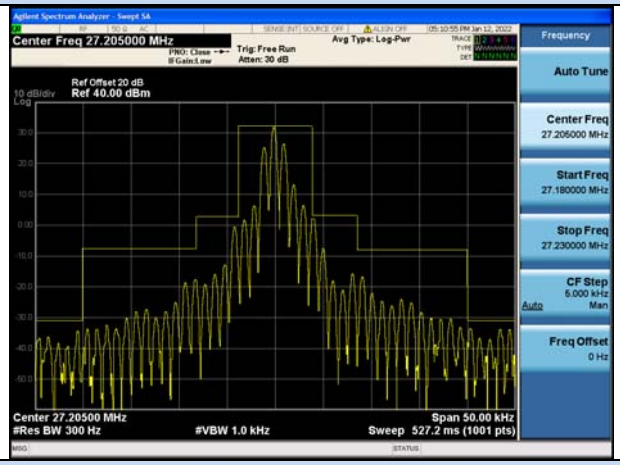
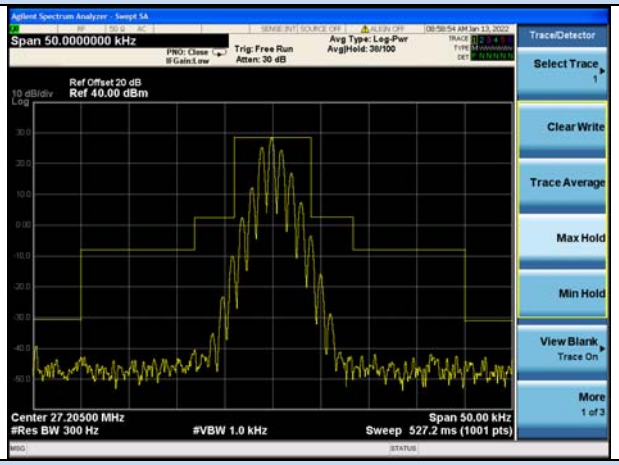
4: Modulate the transmitter with a 2500 Hz sine wave at an input level 16 dB greater than that necessary to produce 50% of rated system deviation

The input level shall be established at the frequency of maximum response of the audio modulating circuit.

5: Transmitters employing digital modulation techniques that bypass the limiter and the audio low-pass filter shall be modulated as specified by the manufacturer.

6: Measure and record the results in the test report.

TEST RESULTS:

Emission Mask	
AM	***FM***
	
27.205 MHz	27.205 MHz

4.2. RATIATED SPURIOUS EMISSION

TEST APPLICABLE

FCC Part 95.979(a), FCC Part 2.1049

Each CBRS transmitter type must be designed to comply with the applicable unwanted emissions limits in this section.The power of unwanted emissions must be attenuated below the transmitter output power in Watts (P) as specified in the applicable paragraphs listed in the following table:

Emission type	Paragraph
A3E	(1), (3), (5), (6)
H3E, J3E, R3E	(2), (4), (5), (6)

(1) 25 dB (decibels) in the frequency band 4 kHz to 8 kHz removed from the channel center frequency;

(2) 25 dB in the frequency band 2 kHz to 6 kHz removed from the channel center frequency;

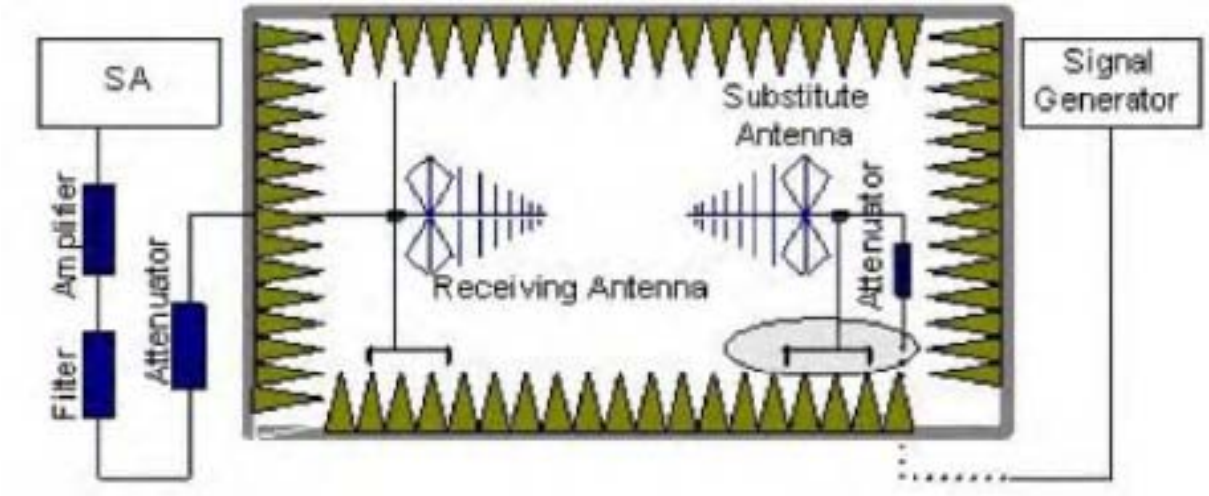
(3) 35 dB in the frequency band 8 kHz to 20 kHz removed from the channel center frequency;

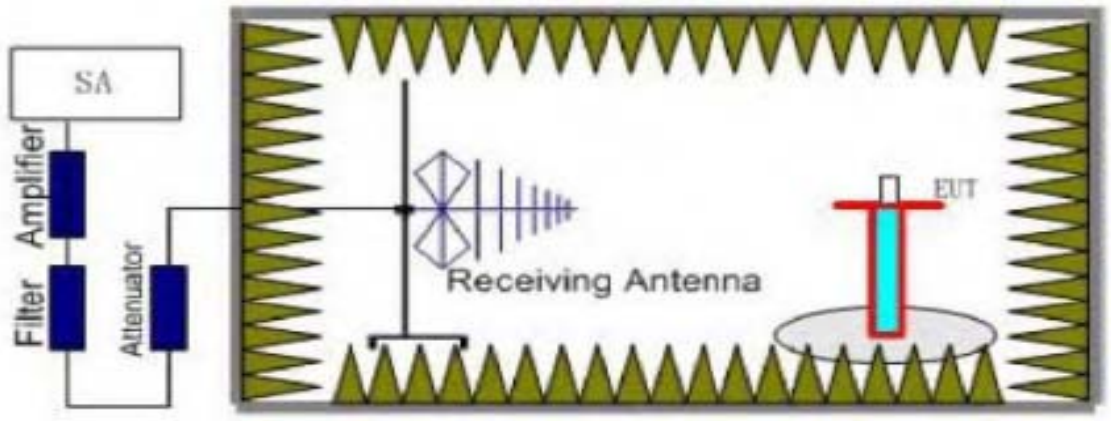
(4) 35 dB in the frequency band 6 kHz to 10 kHz removed from the channel center frequency;

(5) 53 + 10 log (P) dB in any frequency band removed from the channel center frequency by more than 250% of the authorized bandwidth.

(6) 60 dB in any frequency band centered on a harmonic (i.e., an integer multiple of two or more times) of the carrier frequency.

TEST CONFIGURATION





TEST PROCEDURE

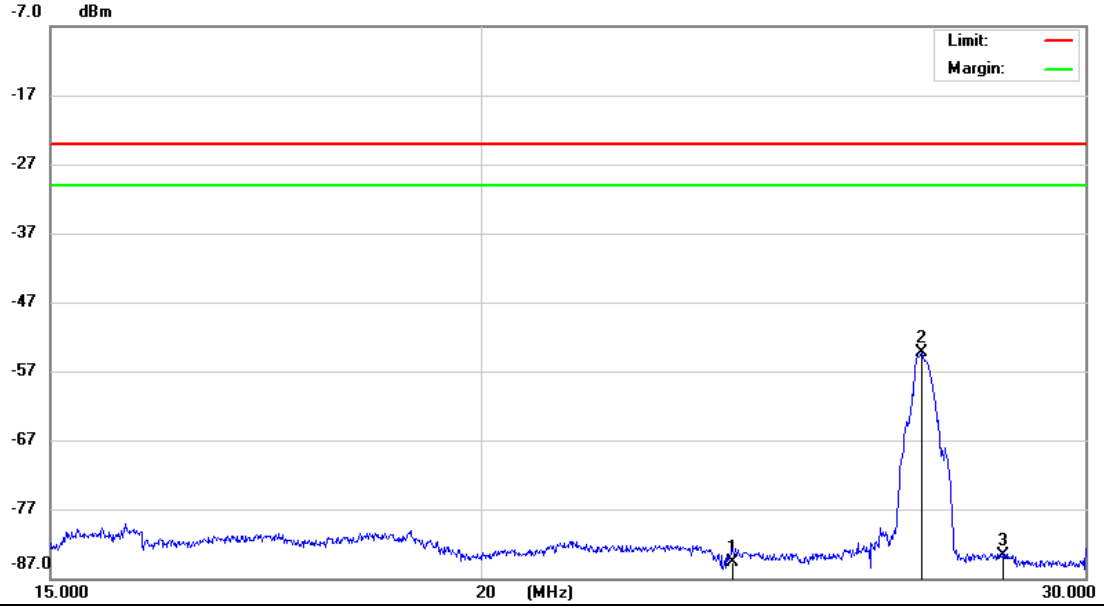
1: EUT was placed on a 0.8 or 1.5meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made. The radiated emission measurements of all transmit frequencies in all channels were measured with peak detector.
2: 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.
3: 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).
4: 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.
5: 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
6: The measurement results are obtained as described below: Power(EIRP)=PMea- PAg - Pcl - Ga 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.
9: Test the EUT in the lowest channel, the middle channel the Highest channe

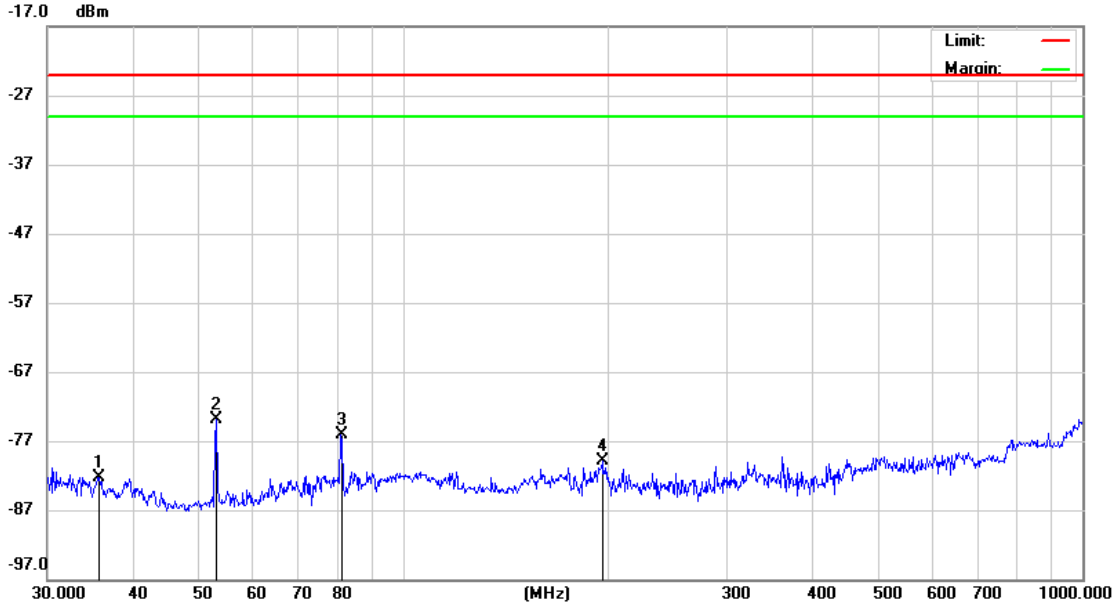
TEST RESULTS

Preliminary calculation	Final Result
P(dBm)=30+10log【P(W)】=36.02dBm	Limit= Preliminary calculation-60dB=-24dBm

1: Factor=Antenna Factor + Cable loss. (Below 1GHz)
2: Factor=Antenna Factor+ Cable loss -Pre-amplifier. (Above 1 GHz)
3: Margin=Limit- Level
4: the unwanted emission should be attenuated below TP by at least 60 dB.
5:In the frequency range of 9KHz-15MHz, the radiated spurious emission level is much less than 60dB of the carrier power, so it is ignored
6: :In the frequency range of above 1 GHz, the radiated spurious emission level is much less than 60dB of the carrier power, so it is ignored

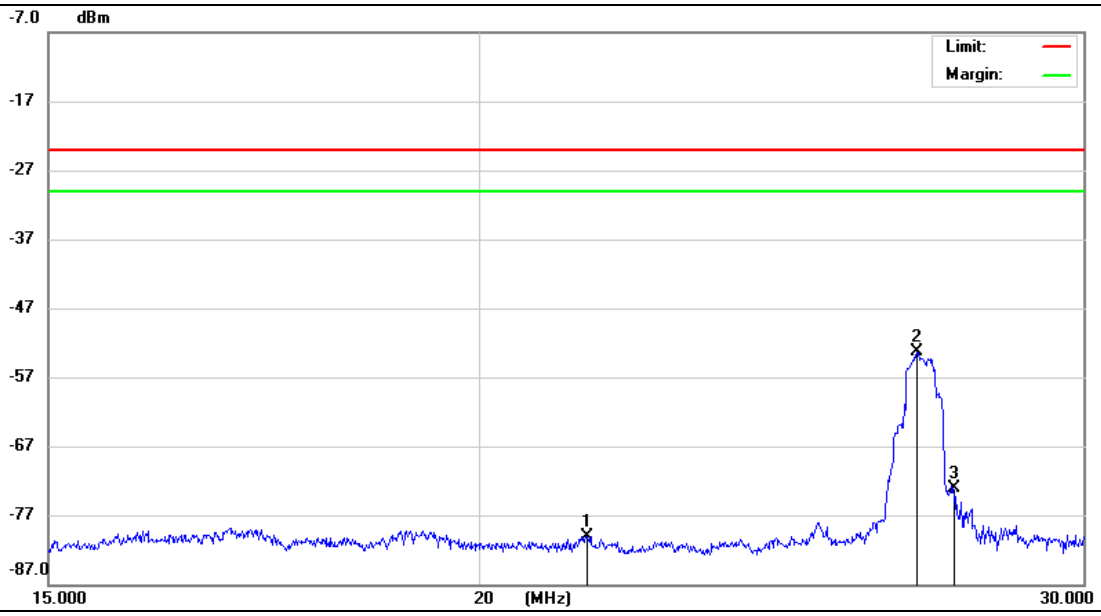
AM- Low Channel-H

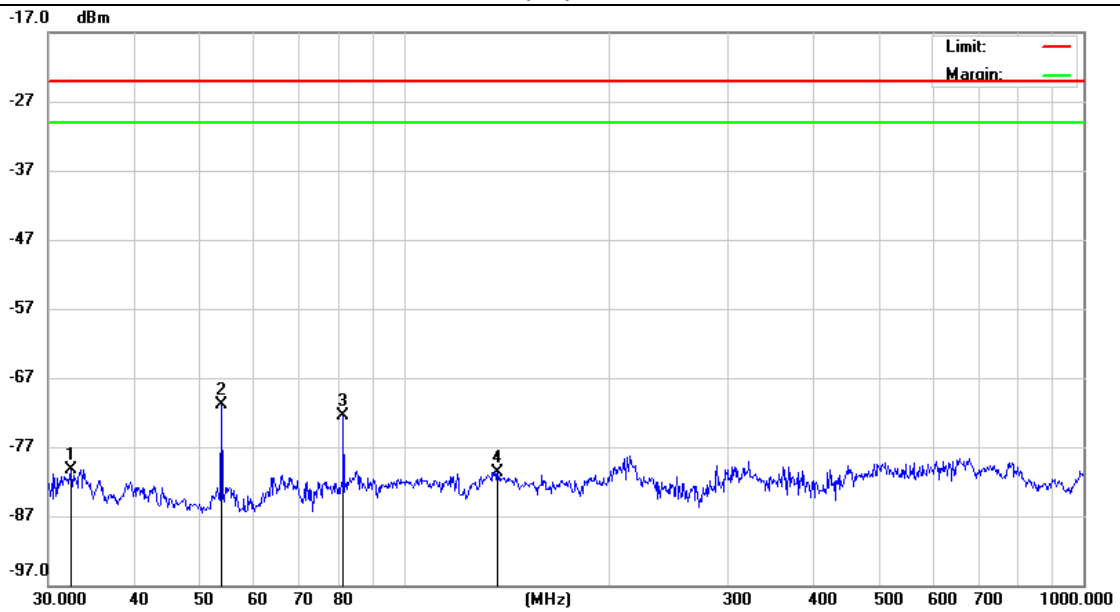




Frequency (MHz)	EMI Detector (Peak/QP)	Antenna Polarization	Antenna Height (cm)	Table Angle (Degree)	ERP measured by Substitution Method(dBm)	Limit (dBm)	Margin (dB)
23.6748	Peak	H	100	240	-84.66	-24	60.66
26.8880	Peak	H	100	240	-54.30	-24	30.3
28.4014	Peak	H	120	152	-83.63	-24	59.63
35.7490	Peak	H	120	47	-82.32	-24	58.32
53.1313	Peak	H	120	152	-73.94	-24	49.94
80.9275	Peak	H	120	47	-76.14	-24	52.14
196.5098	Peak	H	120	47	-79.93	-24	55.93

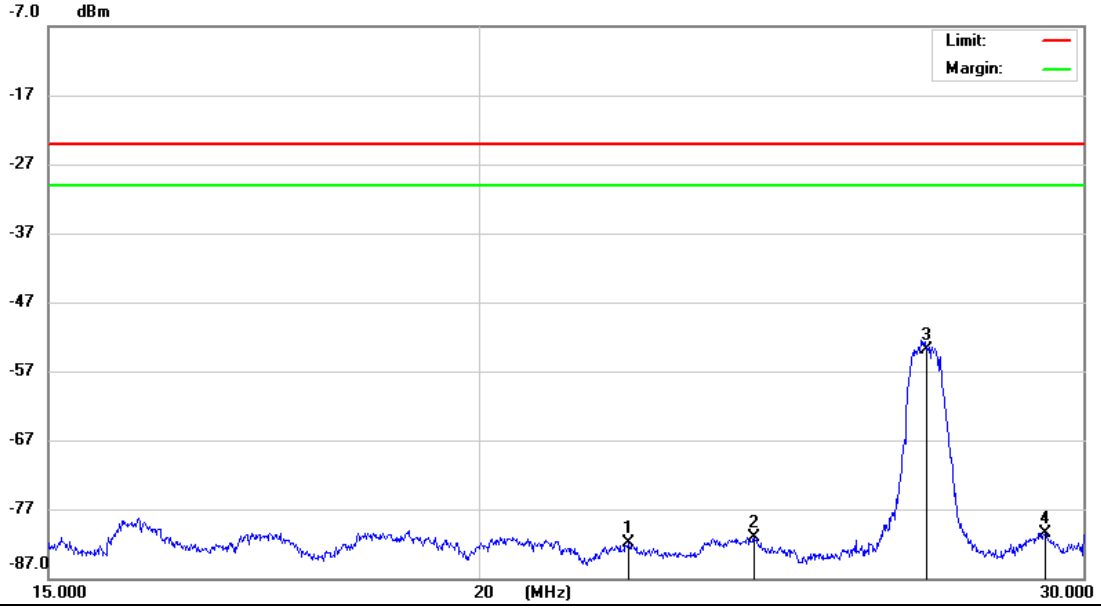
AM- Low Channel-V

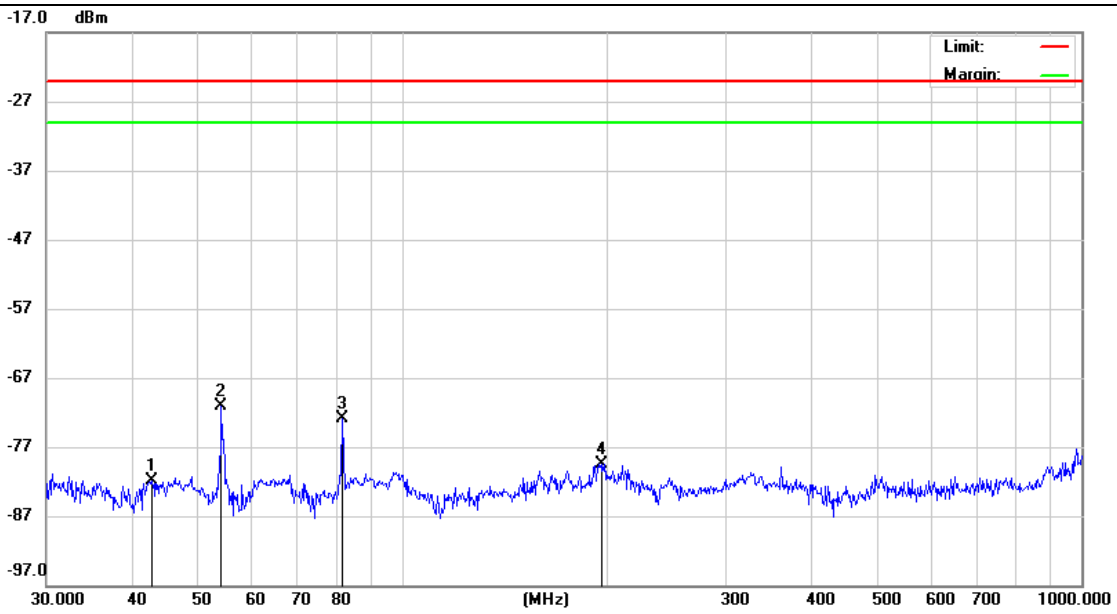




Frequency (MHz)	EMI Detector (Peak/QP)	Antenna Polarization	Antenna Height (cm)	Table Angle (Degree)	ERP measured by Substitution Method(dBm)	Limit (dBm)	Margin (dB)
21.5092	Peak	V	100	360	-80.08	-24	56.08
26.8321	Peak	V	100	360	-53.38	-24	29.38
27.4911	Peak	V	130	94	-73.09	-24	49.09
32.4059	Peak	V	100	360	-80.31	-24	56.31
53.8847	Peak	V	100	360	-70.88	-24	46.88
81.4969	Peak	V	130	94	-72.42	-24	48.42
137.4201	Peak	V	120	123	-80.68	-24	56.68

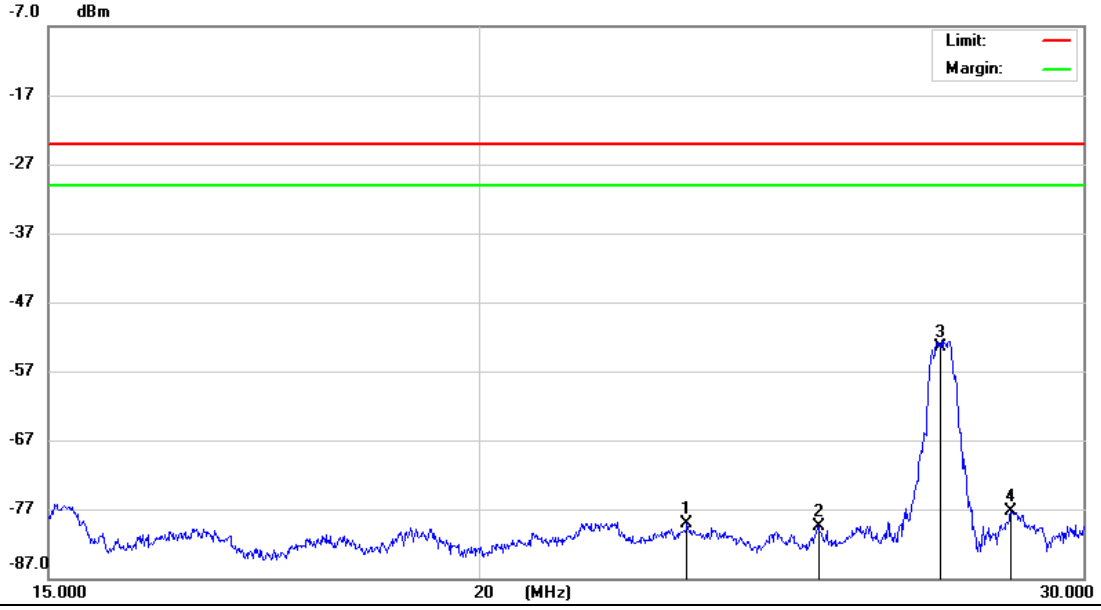
AM- Middle Channel -H

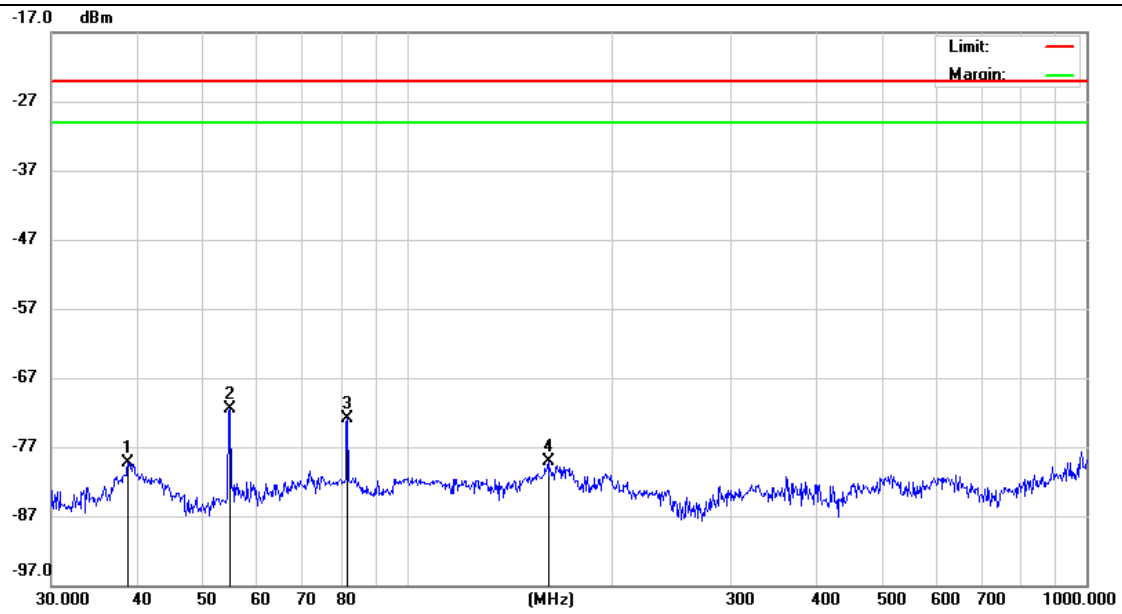




Frequency (MHz)	EMI Detector (Peak/QP)	Antenna Polarization	Antenna Height (cm)	Table Angle (Degree)	ERP measured by Substitution Method(dBm)	Limit (dBm)	Margin (dB)
22.1293	Peak	H	100	240	-81.82	-24	57.82
24.064	Peak	H	100	240	-81.03	-24	57.03
26.9980	Peak	H	120	152	-53.86	-24	29.86
29.2403	Peak	H	120	47	-56.43	-24	32.43
42.8997	Peak	H	100	240	-81.90	-24	57.9
51.2608	Peak	V	100	360	-71.02	-24	47.02
81.7832	Peak	V	100	360	-72.97	-24	48.97
196.5098	Peak	V	130	94	-79.43	-24	55.43

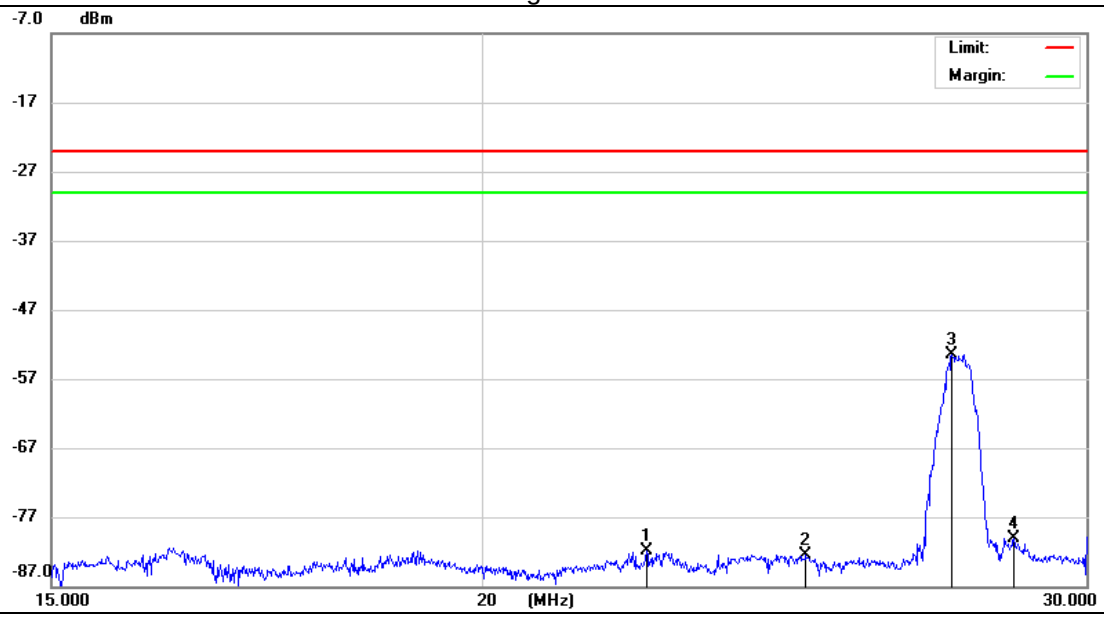
AM- Middle Channel -V

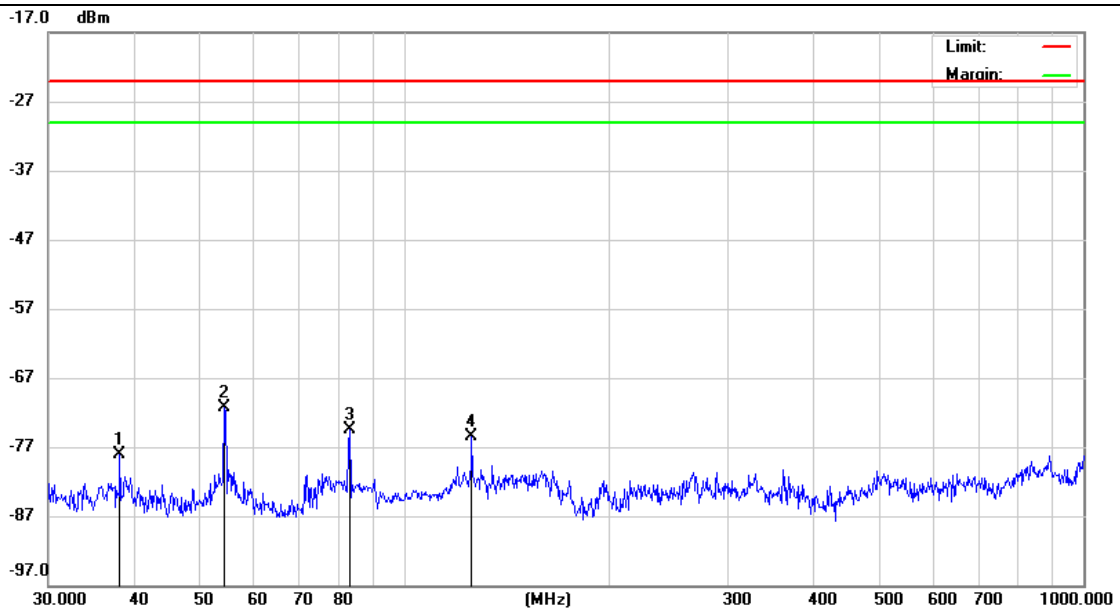




Frequency (MHz)	EMI Detector (Peak/QP)	Antenna Polarization	Antenna Height (cm)	Table Angle (Degree)	ERP measured by Substitution Method(dBm)	Limit (dBm)	Margin (dB)
23.0052	Peak	H	100	240	-79.15	-24	55.15
25.1219	Peak	H	100	240	-79.56	-24	55.56
27.2550	Peak	H	120	152	-53.47	-24	29.47
28.5791	Peak	H	120	47	-77.25	-24	53.25
38.8877	Peak	H	120	55	-79.28	-24	55.28
55.0274	Peak	V	100	360	-71.43	-24	47.43
81.7832	Peak	V	100	360	-72.97	-24	48.97
161.4740	Peak	V	130	94	-79.14	-24	55.14

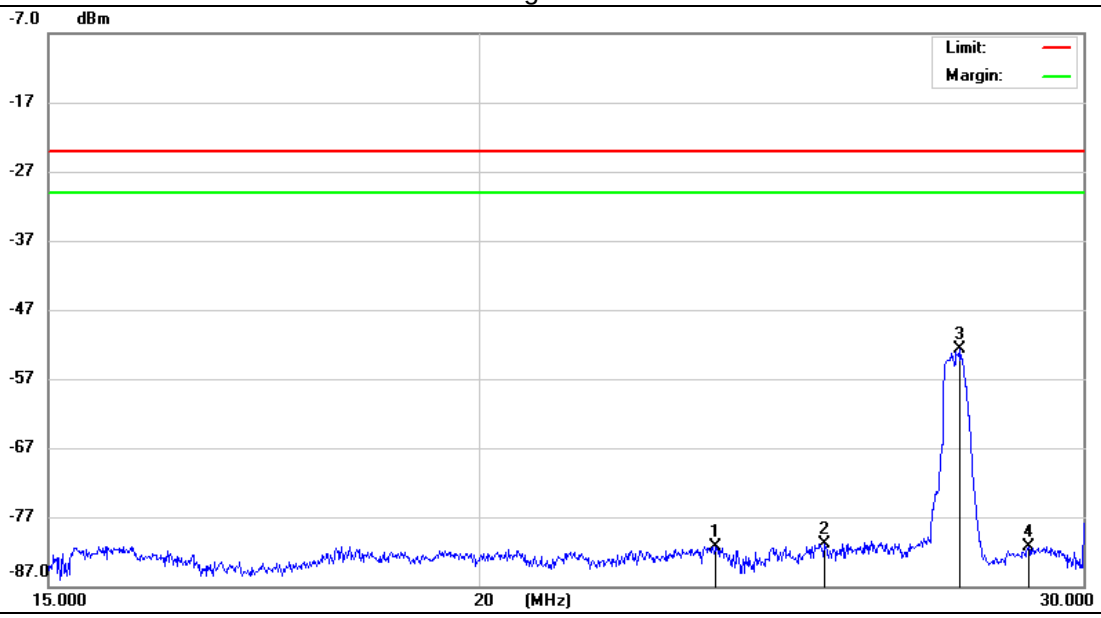
AM- High Channel -H

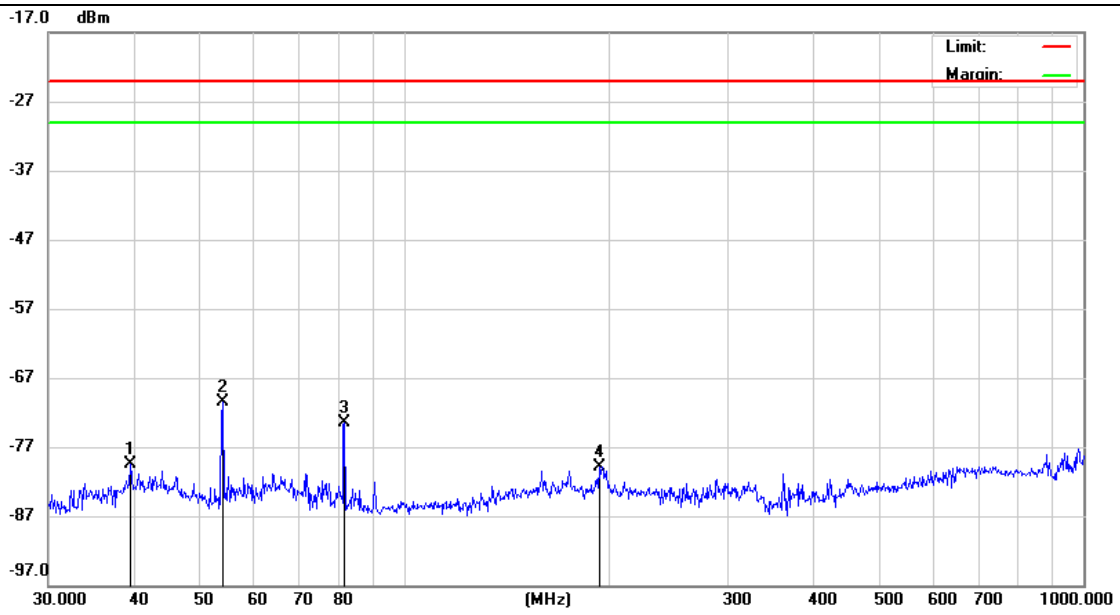




Frequency (MHz)	EMI Detector (Peak/QP)	Antenna Polarization	Antenna Height (cm)	Table Angle (Degree)	ERP measured by Substitution Method(dBm)	Limit (dBm)	Margin (dB)
22.3451	Peak	H	100	240	-81.96	-24	57.96
24.8623	Peak	H	100	240	-82.59	-24	58.59
27.4149	Peak	H	120	152	-53.48	-24	29.48
28.5791	Peak	H	120	47	-80.19	-24	56.19
38.2120	Peak	H	120	47	-78.08	-24	54.08
54.4515	Peak	V	100	360	-71.38	-24	47.38
83.2297	Peak	V	100	360	-74.51	-24	50.51
125.8863	Peak	V	130	94	-75.60	-24	51.6

AM- High Channel -V





Frequency (MHz)	EMI Detector (Peak/QP)	Antenna Polarization	Antenna Height (cm)	Table Angle (Degree)	ERP measured by Substitution Method(dBm)	Limit (dBm)	Margin (dB)
23.4556	Peak	H	100	240	-81.31	-24	57.31
25.2268	Peak	H	100	240	-80.92	-24	56.92
27.6247	Peak	H	120	152	-52.62	-24	28.62
28.9176	Peak	H	120	47	-81.25	-24	57.25
39.5757	Peak	H	120	47	-79.59	-24	55.59
54.2608	Peak	V	100	360	-70.52	-24	46.52
81.7832	Peak	V	100	360	-73.47	-24	49.47
193.7727	Peak	V	130	94	-79.90	-24	55.9

4.3. Spurious Emission On Antenna Port

TEST APPLICABLE

Please refer to FCC 47 CFR 2.1051, 2.1057 & 95.979 for specification details. Emissions shall be attenuated below the mean output power of the transmitter as follows:

FCC Rules	Attenuation Limit (dBc)
95.979	At least 53 + 10 log (P) dB
95.979	60 dB in any frequency band centered on a harmonic (i.e., an integer multiple of two or more times) of the carrier frequency.

53 + 10 log (Pwatts)

Calculation: Limit (dBm) =EL-53-10log10 (TP)

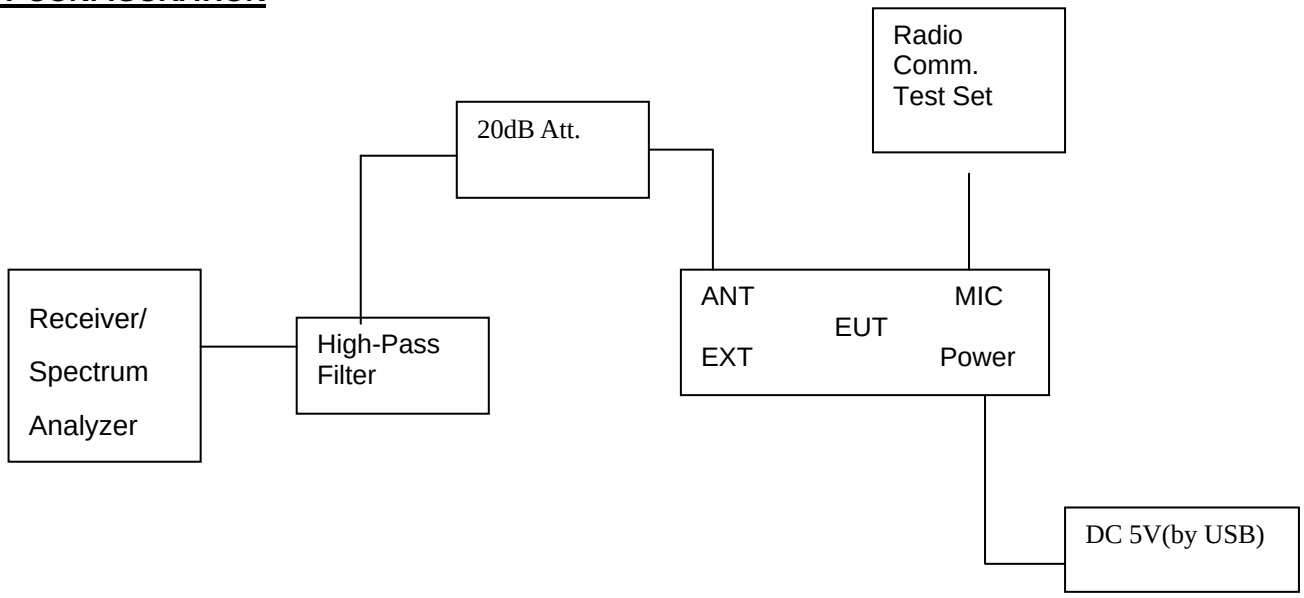
Notes: EL is the emission level of the Output Power expressed in dBm, In this application, the EL is P(dBm).

Limit (dBm) = P(dBm)-53-10 log (Pwatts) = -23 dBm

TEST PROCEDURE

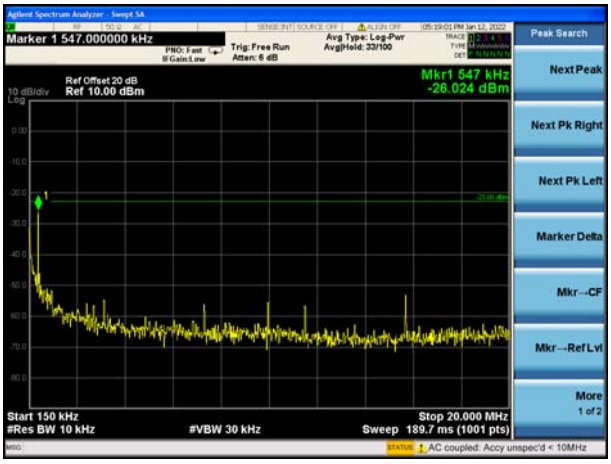
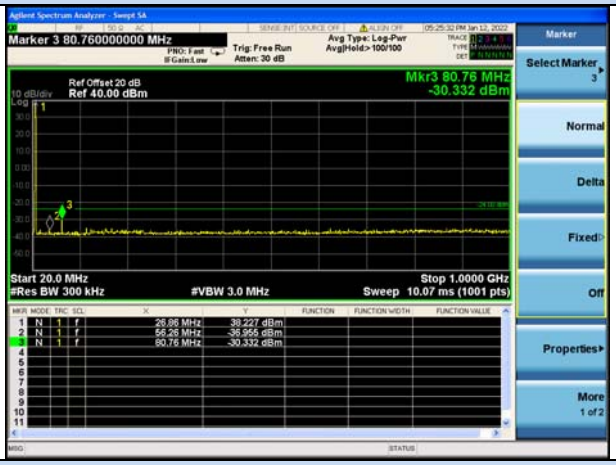
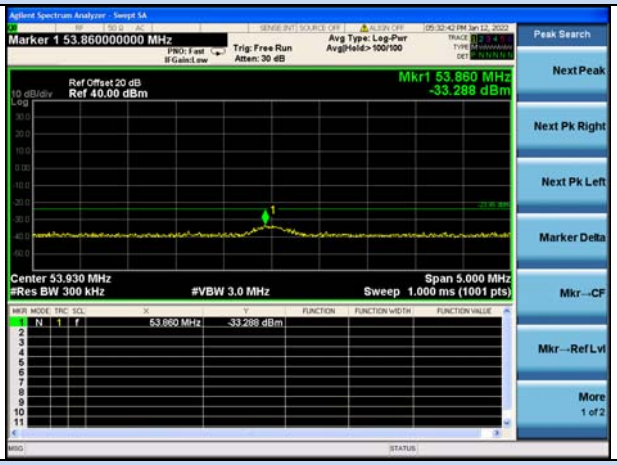
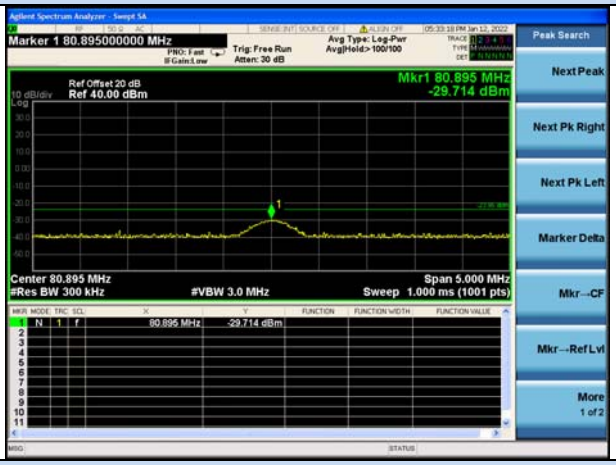
1: The RF output of the EUT was connected to a spectrum analyzer through appropriate attenuation.
2: The resolution bandwidth of the spectrum analyzer was set to 100 kHz. Sufficient scans were taken to
3: show any out of band emission up to 10th . Harmonic for the lower and the highest frequency range.
4: Set RBW 1 kHz, VBW 3 kHz in the frequency band 9KHz to 150KHz; Set RBW 10 kHz, VBW 30 kHz in the frequency band 150KHz to 20MHz; Set RBW 100 kHz, VBW 300 kHz in the frequency band 20MHz to 1GHz; While set RBW=1MHz.VBW=3MHz from the 1GHz to 10th Harmonic.
5: The audio input was set the unmodulated carrier, the resulting picture is print out for each channel separation.

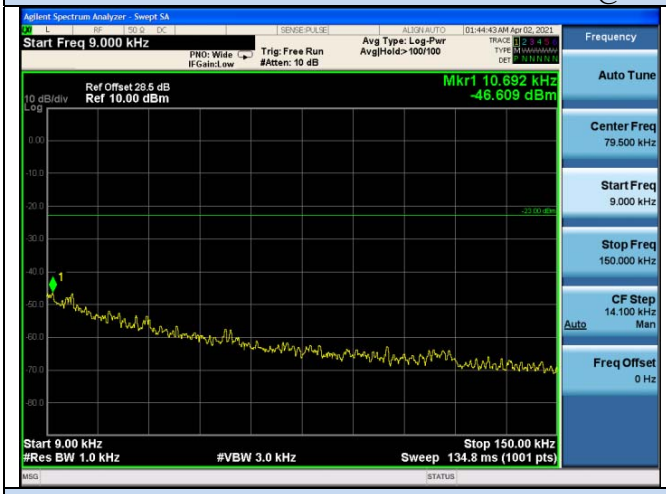
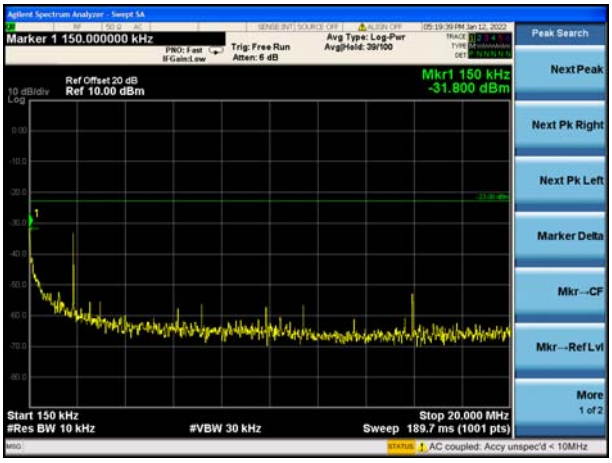
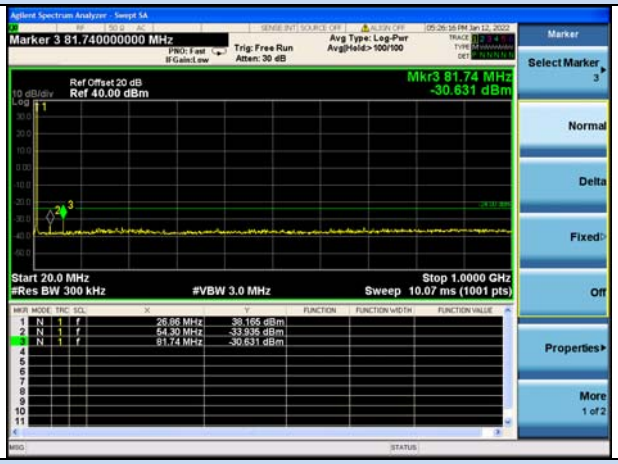
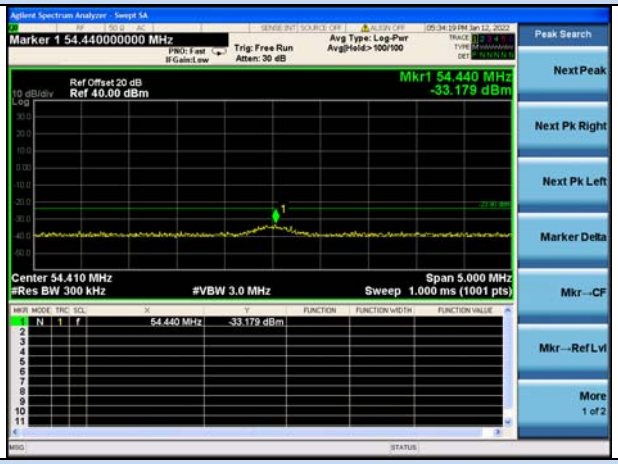
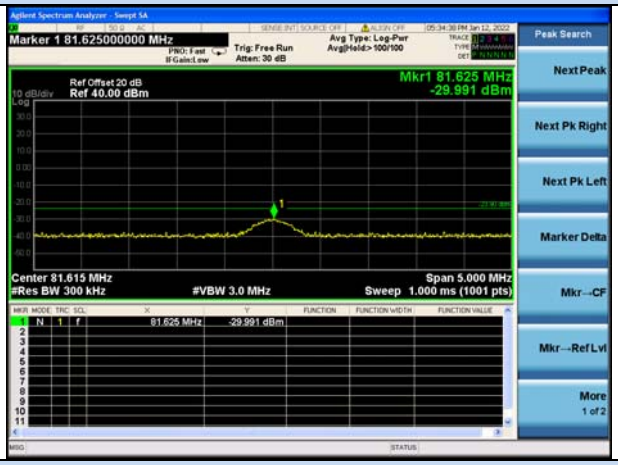
TEST CONFIGURATION

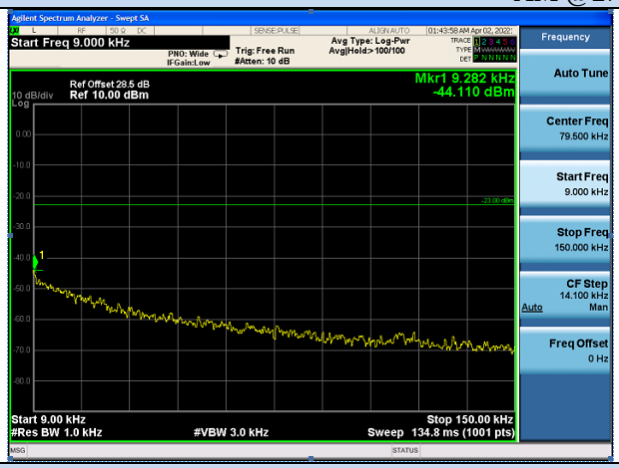
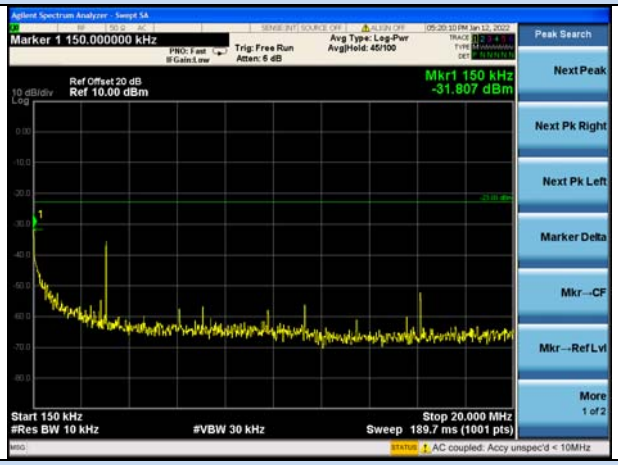
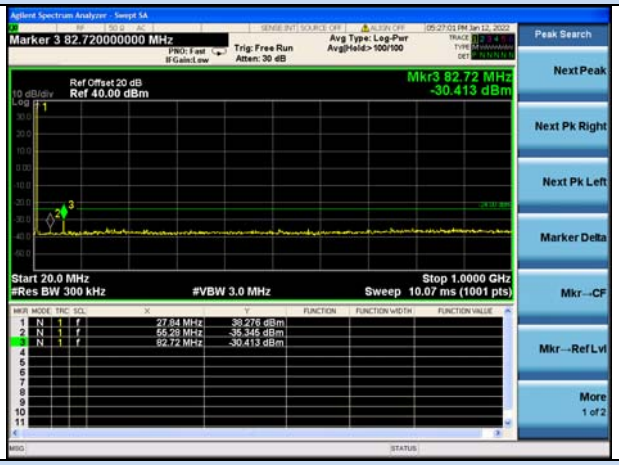
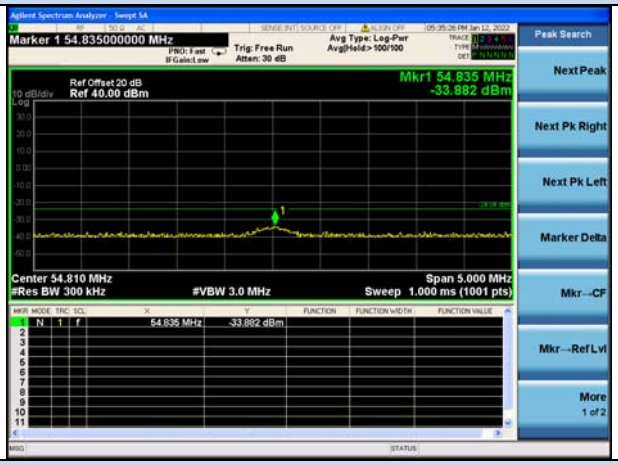


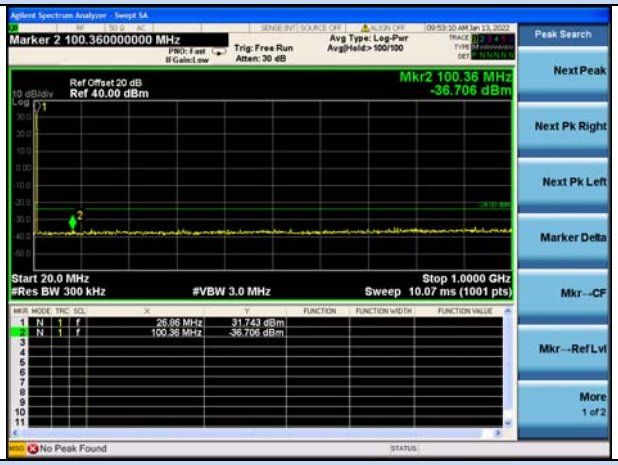
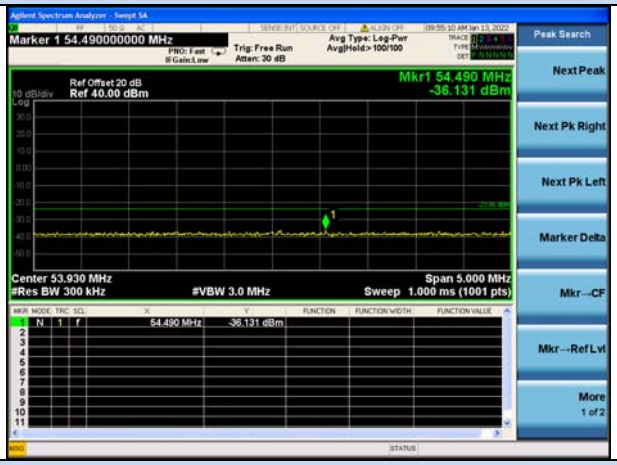
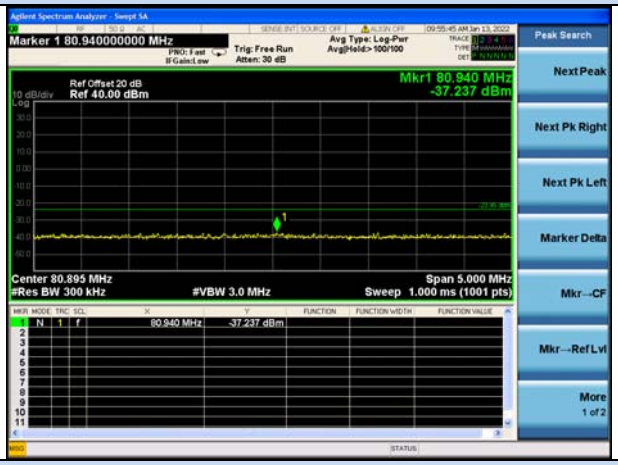
TEST RESULTS:

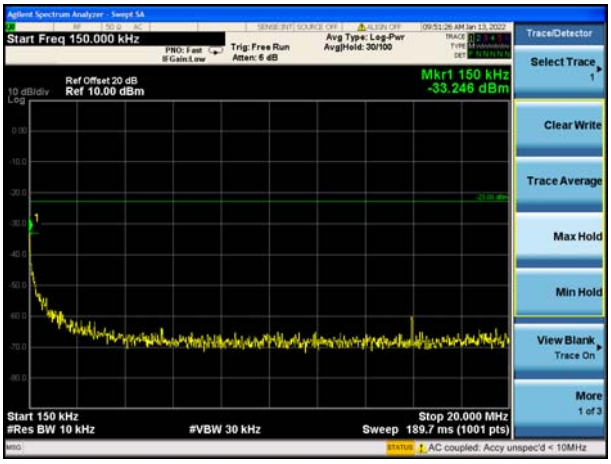
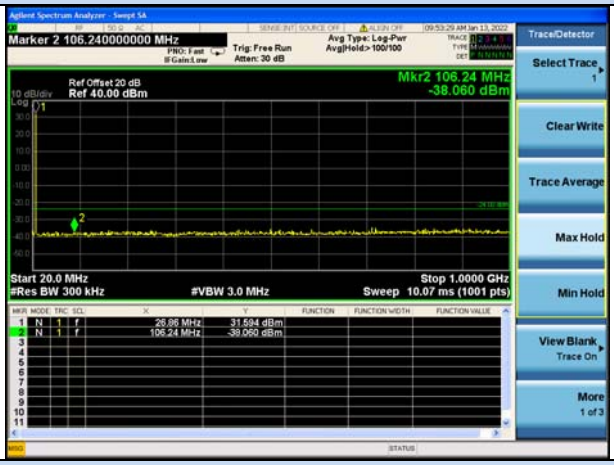
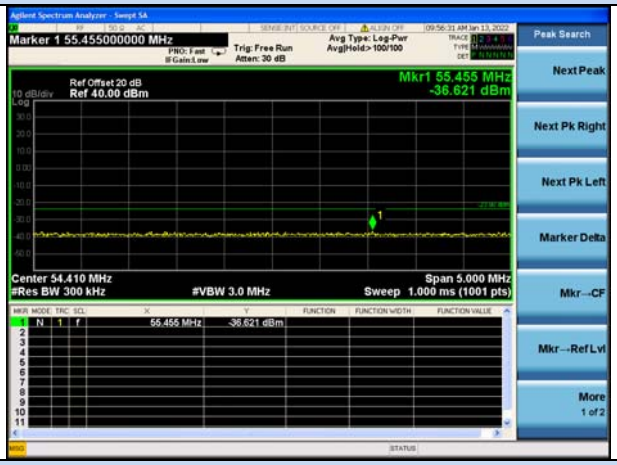
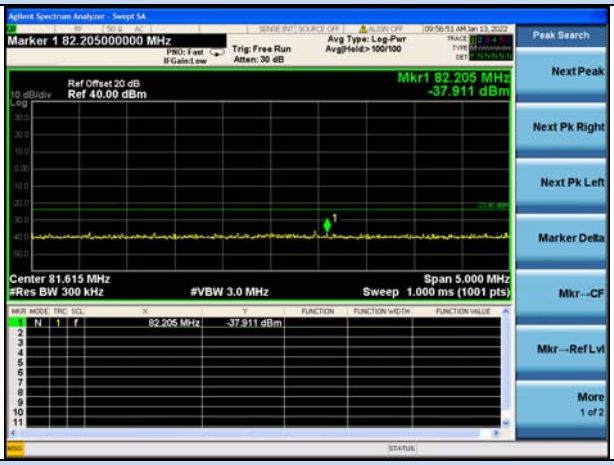
Plots of Spurious Emission on Antenna Port Measurement

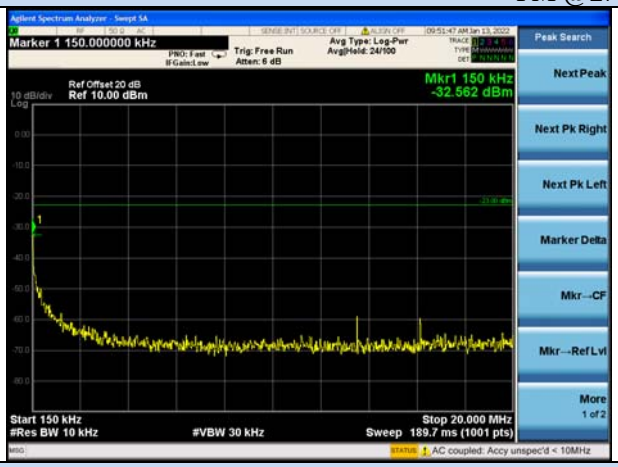
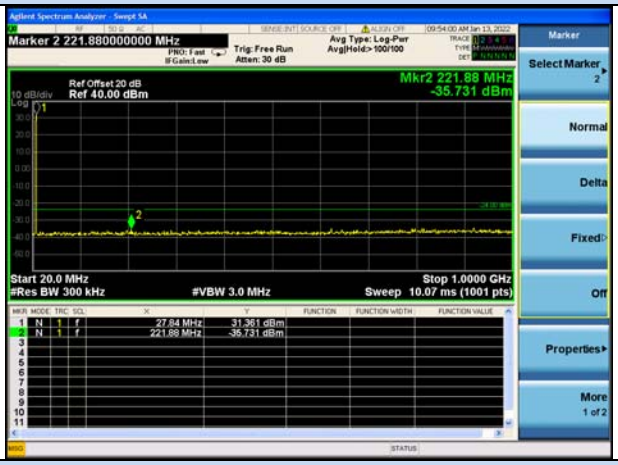
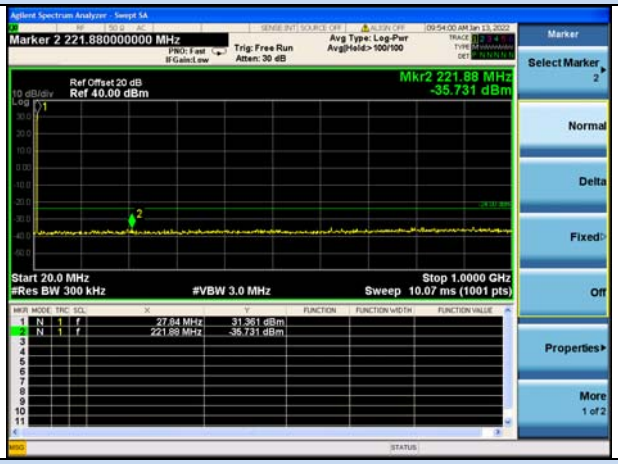
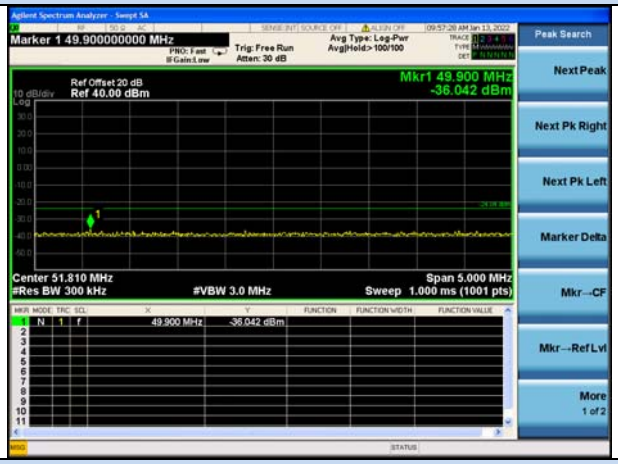
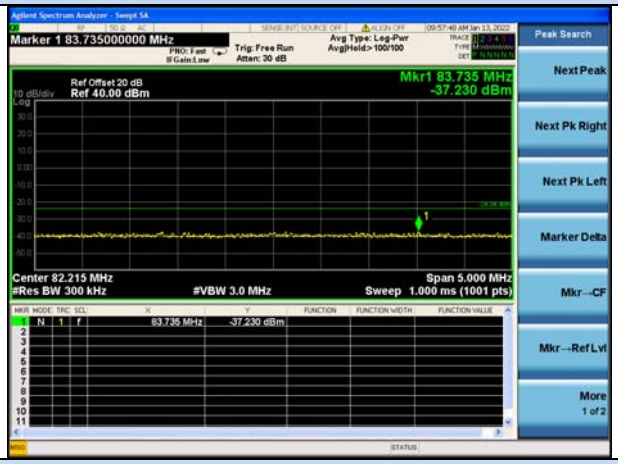
Spurious Emissions at Antenna Port	
AM @26.965MHz-4W	
	
9KHz-150KHz	*150KHz-20MHz*
	
20MHz-1GHz	*2th Harmonic*
	
3th Harmonic	

Spurious Emissions at Antenna Port	
AM @27.205MHz-4W	
	
9KHz-150KHz	*150KHz-20MHz*
	
20MHz-1GHz	*2th Harmonic*
	
3th Harmonic	

Spurious Emissions at Antenna Port	
AM @27.405MHz-4W	
	
9KHz-150KHz	*150KHz-20MHz*
	
20MHz-1GHz	*2th Harmonic*
	
3th Harmonic	

Spurious Emissions at Antenna Port	
FM @26.965MHz-4W	
	
9KHz-150KHz	*150KHz-20MHz*
	
20MHz-1GHz	*2th Harmonic*
	
3th Harmonic	

Spurious Emissions at Antenna Port	
FM @27.205MHz-4W	
	
9KHz-150KHz	*150KHz-20MHz*
	
20MHz-1GHz	*2th Harmonic*
	
3th Harmonic	

Spurious Emissions at Antenna Port	
FM @27.405MHz-4W	
	
9KHz-150KHz	*150KHz-20MHz*
	
20MHz-1GHz	*2th Harmonic*
	
3th Harmonic	

4.4. Modulation Characteristics

TEST APPLICABLE

FCC Part 95.975, FCC Part 2.1047(b)

Each CBRS transmitter type must be designed such that the modulation characteristics are in compliance with the rules in this section.

When emission type A3E is transmitted with voice modulation, the modulation percentage must be at least 85%, but not more than 100%.

When emission type A3E is transmitted by a CBRS transmitter having a transmitter output power of more than 2.5 W, the transmitter must contain a circuit that automatically prevents the modulation percentage from exceeding 100%.

TEST PROCEDURE

(A) Audio frequency response

Connect the equipment as illustrated.

Adjust to deliver 50% modulation at the audio frequency that produces the maximum modulation level Record the modulation input level (mV) and use this level as 0dB for plotting modulation limiting.

Vary the modulating frequency from 100Hz to 10000Hz and record the input levels necessary to maintain a constant 50% modulation.

Graph the audio level in dB relative to the 0dB reference level as a function of the modulating frequency. Record audio frequency where it is impossible to perform the measurement.

(B) Modulation limiting

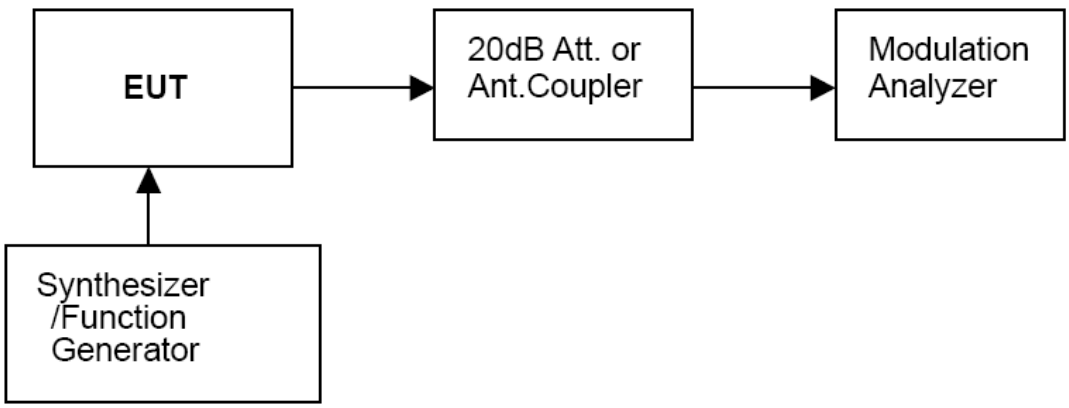
Connect the equipment as illustrated.

Adjust to deliver 50% modulation at the audio frequency that produces the maximum modulation level Record the modulation input level (mV) and use this level as 0dB for plotting modulation limiting.

Increment the audio signal level to 40dB above the reference level. Record the modulation level (%).

Repeat the measurements using a 400Hz and a 2500Hz sinusoidal audio signal, record the modulation level (%), perform for both positive and negative modulation.

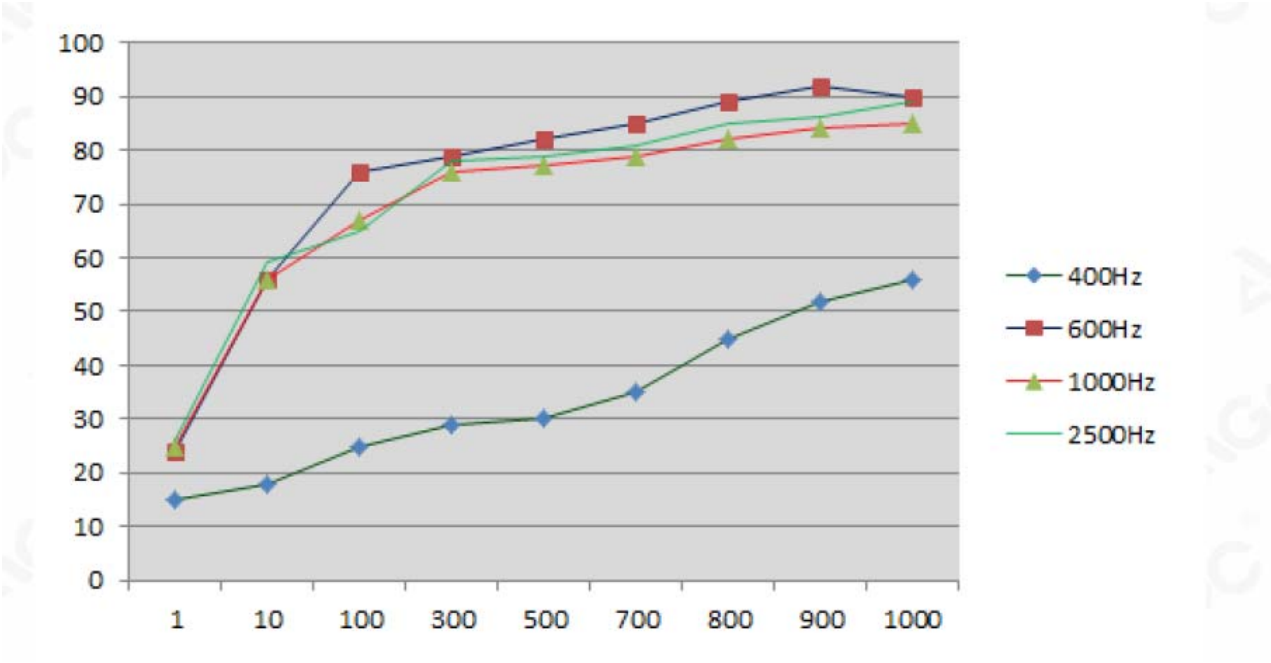
TEST CONFIGURATION



TEST RESULTS

10kHz, AM modulation, Assigned Frequency:27.405MHz-4W

Modulation Level (mV)	Peak Freq. Deviation At 400 Hz(%)	Peak Freq. Deviation At 600 Hz(%)	Peak Freq. Deviation At 1000 Hz(%)	Peak Freq. Deviation At 2500 Hz(%)
1	15	24	25	26
10	17	55	55	59
100	24	75	67	65
300	29	79	76	79
500	30	81	77	79
700	34	85	79	81
800	45	89	82	85
900	53	91	84	86
1000	56	90	85	89



Note:

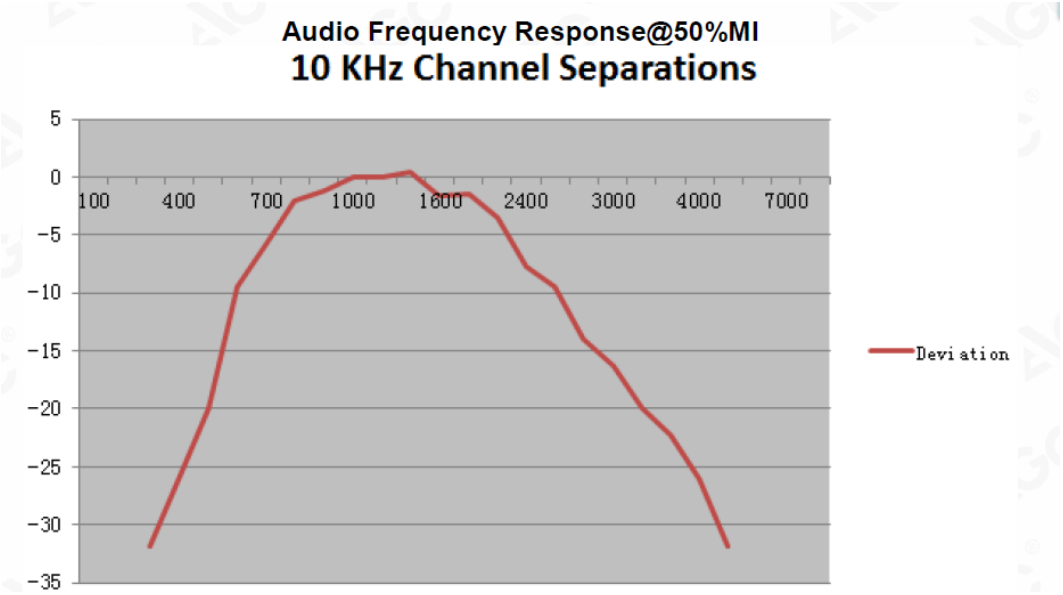
1: All the modes had been tested, but only the worst data recorded in the report

2: The equipment circuit comes with circuit control that automatically prevents the modulation limit from exceed ing 100%.

(B). AUDIO FREQUENCY RESPONSE:

10kHz, AM modulation, Assigned Frequency:27.405MHz-4W

Audio Frequency (Hz)	modulation level (mV)	Deviation (kHz)	Audio Frequency
300	14.1	0.01	-31.85
400	8.4	0.02	-25.80
500	7.4	0.08	-20
600	6.22	0.13	-9.55
700	5.76	0.41	-5.82
800	5.4	0.31	-1.99
900	5.3	0.35	-1.19
1000	5.2	0.38	0
1200	5.1	0.38	0
1400	5.4	0.40	0.44
1600	5.73	0.65	-1.68
1800	6.8	0.62	-1.45
2000	7.2	0.25	-3.55
2400	7.5	0.34	-7.68
2500	7.9	0.12	-9.55
2800	8.5	0.15	-13.98
3000	8.66	0.06	-16.23
3200	8.82	0.08	-20
3600	9.12	0.03	-22.26
4000	9.75	0.04	-26.05
6000	11.25	0.01	-31.76



Note:

1.All the modes had been tested, but only the worst data recorded in the report.

2: 50% MI Could not be achieved above 7500 Hz.

4.5. Frequency Stability Measurement

TEST APPLICABLE

Each CBRS transmitter type must be designed such that the transmit carrier frequency (or in the case of SSB transmissions, the reference frequency) remains within 50 parts-per- million of the channel center frequencies specified in §95.963 under all normal operating conditions.

TEST PROCEDURE

Frequency stability versus environmental temperature

1: Setup the configuration per figure 1 for frequencies measurement inside an environment chamber, Install new battery in the EUT.

2: Turn on EUT and set SA center frequency to the EUT radiated frequency. Set SA Resolution Bandwidth to 1kHz and Video Resolution Bandwidth to 1kHz and Frequency Span to 50kHz.Record this frequency as reference frequency.

3: Set the temperature of chamber to 50℃. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. While maintaining a constant temperature inside the chamber, turn the EUT on and measure the EUT operating frequency.

4: Repeat step 2 with a 10℃ decreased per stage until the lowest temperature -30℃ is measured, record all measured frequencies on each temperature step.

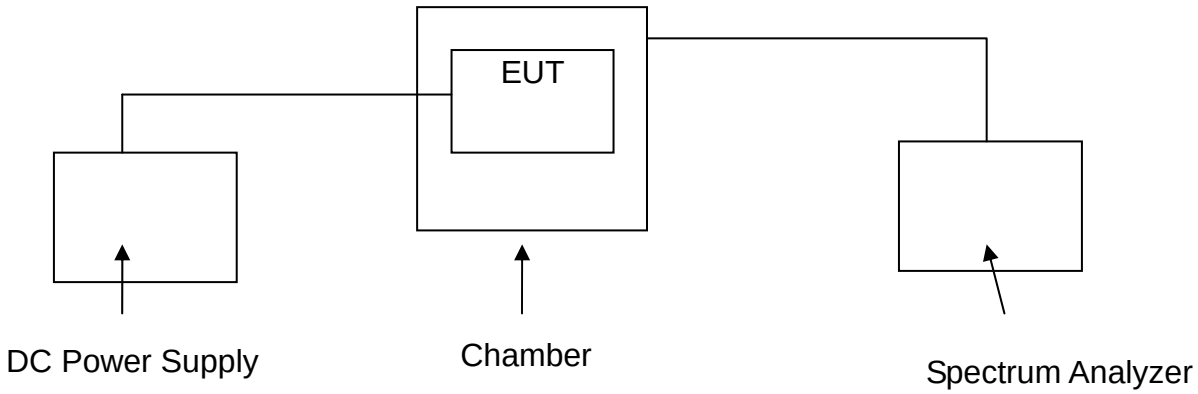
Frequency stability versus input voltage

1: Setup the configuration per figure 1 for frequencies measured at temperature if it is within 15℃ to 25℃. Otherwise, an environment chamber set for a temperature of 20℃ shall be used. The EUT shall be powered by DC 12V.

2: Set SA center frequency to the EUT radiated frequency. Set SA Resolution Bandwidth to 1 kHz and Video Resolution Bandwidth to 1kHz. Record this frequency as reference frequency.

3: Supply the EUT primary voltage at the operating end point which is specified by manufacturer and record the frequency.

TEST SETUP BLOCK DIAGRAM



10 kHz Channel Separation, AM modulation, Assigned Frequency For CBRS

Environment Temperature(℃)	Power Supply (v)	Reference Frequency			Limit: ppm
		26.965MHz	27.205 MHz	27.405 MHz	
50	DC13.8V	0.870	0.766	0.821	50
40		0.762	0.688	0.764	
30		0.675	0.752	0.843	
20		0.865	0.842	0.625	
10		0.763	0.756	0.625	
0		0.668	0.841	0.678	
-10		0.754	0.745	0.642	
-20		0.842	0.648	0.705	
-30		0.802	0.842	0.741	
Result	PASS				

10 kHz Channel Separation, FM modulation, Assigned Frequency For CBRS

Environment Temperature(℃)	Power Supply (v)	Reference Frequency			Limit: ppm
		26.965MHz	27.205 MHz	27.405 MHz	
50	DC13.8V	0.850	0.743	0.811	50
40		0.752	0.672	0.702	
30		0.643	0.766	0.854	
20		0.842	0.854	0.628	
10		0.755	0.772	0.626	
0		0.674	0.834	0.675	
-10		0.762	0.765	0.632	
-20		0.851	0.655	0.715	
-30		0.813	0.843	0.741	
Result	PASS				

4.6. Conducted Output Power

TEST APPLICABLE

FCC Part 95.967, FCC Part2.1046(a)

Each CBRS transmitter type must be designed such that the transmitter power can not exceed the following limits:

(a)When transmitting amplitude modulated (AM) voice signals, the mean carrier power must not exceed 4 Watts.

(b)When transmitting single sideband (SSB) voice signals, the peak envelope power must not exceed 12 Watts..

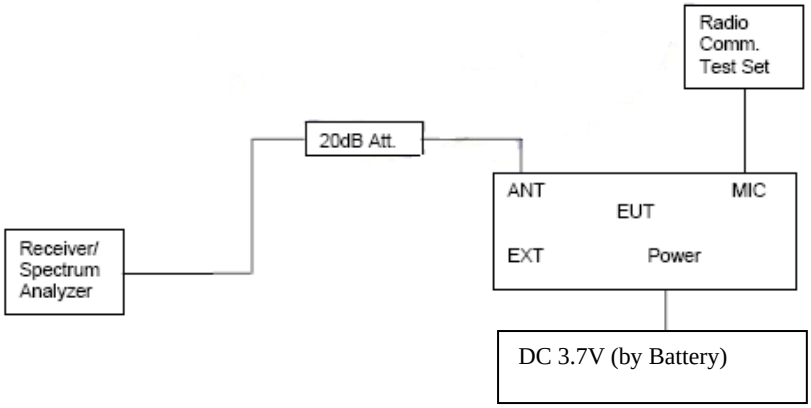
TEST PROCEDURE

Conducted RF Output Power:

1:The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.
2: The DUT was connected to a Spectrum Analyzer (SA) via a 30dB attenuator connected to the DUT's antenna port. The SA was configured as above using the Automatic 6dB Cursor Bandwidth measurement. The output power of the DUT was set to the manufacturer's highest output power setting at the Low, Mid and High frequency channels as permitted by the device. The DUT was set to transmit at its maximum Duty Cycle.

3: Spectrum set as follow:
Centre frequency = fundamental frequency, Span=150kHz , RBW=30KHz, VBW=30KHz ; Sweep = auto, Detector function = peak, Trace = max hold

TEST CONFIGURATION
Conducted Output Power:



TEST RESULTS

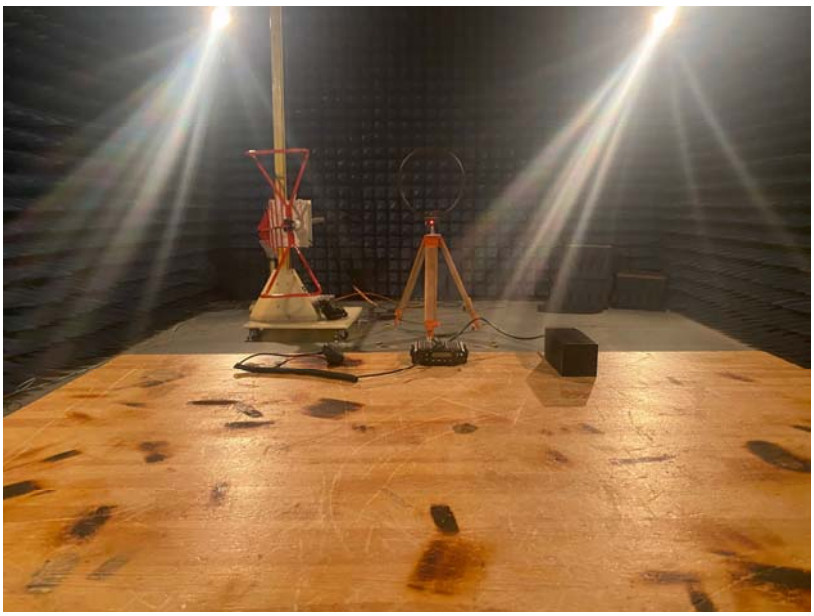
Conducted Power Measurement Results

Modulation Type	Channel Separation	Operation Mode	Test Channel	Test Results (dBm)
AM	10KHz	TX	Low	35.996
			Middle	35.872
			High	35.401
FM			Low	35.876
			Middle	35.799
			High	35.875

AM	FM
	
Low	Low
	
Middle	Middle

 Agilent Spectrum Analyzer - Swept SA Marker 1 27.403350000 MHz PNO: Wide IFGain:Low Trig: Free Run Atten: 30 dB Avg Type: Log-Pwr Avg|Hold:>100/100 Ref Offset 20 dB 10 dB/div Ref 40.00 dBm Log Mkr1 27.403 35 MHz 35.401 dBm Center 27.40500 MHz #Res BW 30 kHz #VBW 30 kHz Span 150.0 kHz Sweep 1.000 ms (1001 pts) Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF Mkr→Ref Lvl More 1 of 2	 Agilent Spectrum Analyzer - Swept SA Marker 1 27.403800000 MHz PNO: Wide IFGain:Low Trig: Free Run Atten: 30 dB Avg Type: Log-Pwr Avg|Hold:>100/100 Ref Offset 20 dB 10 dB/div Ref 40.00 dBm Log Mkr1 27.403 80 MHz 35.875 dBm Center 27.40500 MHz #Res BW 30 kHz #VBW 30 kHz Span 150.0 kHz Sweep 1.000 ms (1001 pts) Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF Mkr→Ref Lvl More 1 of 2
High	High

5 Test Setup Photos of the EUT



6. Photos of the EUT

See related photo report.