RADIO TEST REPORT

Report No: STS2107207W01

Issued for

BTECH (BaoFeng Tech)

702 N Industrial Ave Arlington South Dakota United States 57212

Product Name:	GMRS two way radio
Brand Name:	BTECH
Model Name:	GMRS-V2
Series Model:	N/A
FCC ID:	2AGND-GMRS-V2
Test Standard:	FCC Part 95

Shenzhen STS Test Services Co., Ltd.
A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ,
Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China
TEL: +86-755 3688 6288 FAX: +86-755 3688 6277 E-mail:sts@stsapp.com

TEST REPORT CERTIFICATION

Applicant's Name	:	BTECH (BaoFeng Tech)
Address	:	702 N Industrial Ave Arlington South Dakota United States 57212
Manufacturer's Name	:	BTECH (BaoFeng Tech)
Address	:	702 N Industrial Ave Arlington South Dakota United States 57212
Product Description		
Product Name	:	GMRS two way radio
Brand Name	:	BTECH
Model Name	:	GMRS-V2
Series Model	:	N/A
Test Standards	:	FCC Part 95
Test Procedure	:	TIA 603-E

This device described above has been tested by STS, the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.
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Date of Test	:	
Date of receipt of test item	:	29 July 2021
Date of performance of tests	:	29 July 2021 ~ 18 Sept. 2021
Date of Issue	:	18 Sept. 2021
Test Result	:	**Pass**

Testing Engineer : Chris chen
(Chris chen)

Technical Manager : Sean She
(Sean she)

Authorized Signatory : Vita Li
(Vita Li)

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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	18 Sept. 2021	STS2107207W01	ALL	Initial Issue

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part 95			
Standard Section	Test Item	Judgment	Remark
FCC Part 95.1767	Transmitter Output Power and Effective Radiated Power (e.r.p)	PASS	--
FCC Part 95.1773	Authorized Bandwidth	PASS	--
FCC Part 95.1779	Emission Mask	PASS	--
FCC Part 95.1779	Transmitter Radiated Spurious Emission	PASS	--
FCC Part 95.1779	Spurious Emission On Antenna Port	PASS	--
FCC Part 95.1765	Frequency Stability	PASS	--
FCC Part 95.1775	AUDIO LOW PASS FILTER RESPONSE	PASS	--
FCC Part 95.1775	Audio Frequency Response	PASS	--
FCC Part 95.1775	Modulation Requirements	PASS	--
FCC Part 15.207	AC power-line Conducted Emission	PASS	--

NOTE: (1) “N/A” denotes test is not applicable in this Test Report.

(2) All tests are according to TIA 603-E.

1.1 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD
Add. : A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China
FCC test Firm Registration Number: 625569
IC test Firm Registration Number: 12108A
A2LA Certificate No.: 4338.01

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **U**, where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**, providing a level of confidence of approximately **95** %.

No.	Item	Uncertainty
1	RF output power, conducted	±0.68dB
2	Unwanted Emissions, conducted	±2.988dB
3	All emissions, radiated 9K-30MHz	±2.84dB
4	All emissions, radiated 30M-1GHz	±4.39dB
5	All emissions, radiated 1G-6GHz	±5.10dB
6	All emissions, radiated>6G	±5.48dB
7	Conducted Emission (9KHz-150KHz)	±2.79dB
8	Conducted Emission (150KHz-30MHz)	±2.80dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	GMRS two way radio	
Brand Name	BTECH	
Model Name	GMRS-V2	
Series Model	N/A	
Model Difference	N/A	
Operation Frequency Range:	462MHz-467MHz Please refer to the note 3	
Channel Separation	25KHz	
Modulation Type	GMRS	F3E
Emission types	GMRS	15K1F3E
Adapter	Interphone: Input: AC 100-240V 50/60Hz 0.3A Output: DC 8.4V 600mA Dock charger: Input: DC 10V 0.5A Output: DC 8.4V 0.5A	
Battery	Rated Voltage:7.4V Charge Limit Voltage:8.4V Capacity: 1800mAh	
Hardware version number	V0823	
Software version number	V15.12.30	
Connecting I/O Port(s)	Please refer to the note 1	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User Manual.
2. Table for filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	BTECH	GMRS-V2	Dipole antenna	N/A	1.8	Antenna

3. Channel List

Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)
1	462.5625(5W)	11	467.6375(0.5W)	21	462.7000(5W)
2	462.5875(5W)	12	467.6625(0.5W)	22	462.7250(5W)
3	462.6125(5W)	13	467.6875(0.5W)	23	467.5500(5W)
4	462.6375(5W)	14	467.7125(0.5W)	24	467.5750(5W)
5	462.6625(5W)	15	462.5500(5W)	25	467.6000(5W)
6	462.6875(5W)	16	462.5750(5W)	26	467.6250(5W)
7	462.7125(5W)	17	462.6000(5W)	27	467.6500(5W)
8	467.5625(0.5W)	18	462.6250(5W)	28	467.6750(5W)
9	467.5875(0.5W)	19	462.6500(5W)	29	467.7000(5W)
10	467.6125(0.5W)	20	462.6750(5W)	30	467.7250(5W)

Test channel:

Channel	Frequency(MHz)	Low Power	High Power
4	462.6375	1W	5W
11	467.6375	0.5W	/
19	462.6500	1W	5W
27	467.6500	1W	5W

2.2 DESCRIPTION OF THE TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

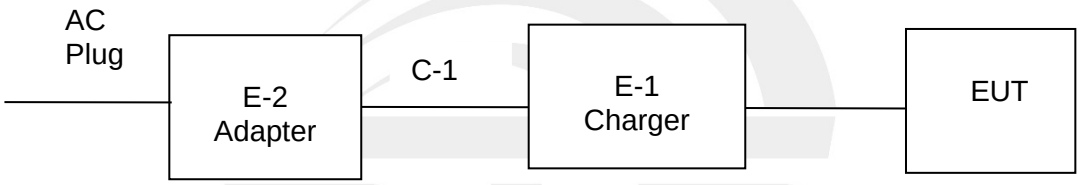
Pretest Mode	Description
Mode 1	GMRS CH4 Low Power TX Mode
Mode 2	GMRS CH4 High Power TX Mode
Mode 3	GMRS CH11 Low Power TX Mode
Mode 4	GMRS CH19 Low Power TX Mode
Mode 5	GMRS CH19 High Power TX Mode
Mode 6	GMRS CH27 Low Power TX Mode
Mode 7	GMRS CH27 High Power TX Mode

For Radiated Emission/Conducted Emission	
Final Test Mode	Description
Mode 1	GMRS CH4 Low Power TX Mode
Mode 2	GMRS CH4 High Power TX Mode
Mode 3	GMRS CH11 Low Power TX Mode
Mode 4	GMRS CH19 Low Power TX Mode
Mode 5	GMRS CH19 High Power TX Mode
Mode 6	GMRS CH27 Low Power TX Mode
Mode 7	GMRS CH27 High Power TX Mode

2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission Test

Conducted Emission Test



2.4 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Necessary accessories

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note
E-1	Charger	BTECH	CH-8	N/A	N/A
E-2	Adapter	BTECH	XS-0840600H	N/A	N/A
C-1	DC Cable	N/A	N/A	90cm	NO

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note

Note:

(1) For detachable type I/O cable should be specified the length in cm in『Length』column.

2.5 EQUIPMENTS LIST

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Bilog Antenna	TESEQ	CBL6111D	34678	2020.10.12	2021.10.11
Horn Antenna	SCHWARZBECK	BBHA 9120D	02014	2019.10.15	2021.10.14
Pre-Amplifier (0.1M-3GHz)	EM	EM330	060665	2020.10.12	2021.10.11
Pre-Amplifier (1G-18GHz)	SKET	LNPA-01018G-45	SK2018080901	2020.10.12	2021.10.11
Signal Analyzer	R&S	FSV 40-N	101823	2020.10.10	2021.10.09
Temperature & Humidity	HH660	Mieo	N/A	2020.10.13	2021.10.12
Turn table	EM	SC100_1	60531	N/A	N/A
Antenna mast	EM	SC100	N/A	N/A	N/A
AC Power Source	APC	KDF-11010G	F214050035	N.C.R	N.C.R
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 RE)			

RF Connected Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Signal Generator	Agilent	N5182A	MY46240556	2020.10.10	2021.10.09
Signal Analyzer	Agilent	N9020A	MY51110105	2021.03.04	2022.03.03
Universal Radio communication tester	R&S	CMU200	119907	2020.10.12	2021.10.11
Audio analyzer	R&S	UPL	N/A	2021.03.04	2022.03.03
Intercom comprehensive tester	HP	8920A	348A05658	2021.03.04	2022.03.03
Temperature & Humidity	HH660	Mieo	N/A	2020.10.13	2021.10.12
Temperature& Humidity test chamber	Safety test	AG80L	171200018	2021.03.04	2022.03.03
Programmable power supply	Agilent	E3642A	MY40002025	2020.10.12	2021.10.11
Attenuator	HP	8494B	DC-18G	2021.04.28	2022.04.27
AC Power Source	APC	KDF-11010G	F214050035	N.C.R	N.C.R
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 RE)			

3. FIELD STRENGTHS AND RADIATED SPURIOUS EMISSION

3.1 RADIATED EMISSION LIMITS

In case the emission fall within the restricted band specified on 15.205 limit in the followed

In measuring unwanted emissions, the spectrum shall be investigated from 30 MHz or the lowest radio frequency signal generated in the equipment, whichever is lower, without going below 9 kHz, up to at least the frequency given below:
(a) If the equipment operates below 10 GHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
(b) If the equipment operates at or above 10 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.
Particular attention should be paid to harmonics and sub-harmonics of the carrier frequency, as well as to those frequencies removed from the carrier by multiples of the oscillator frequency.
Radiation at the frequencies of multiplier stages should also be checked.
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value need not be reported.
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

LIMITS OF RESTRICTED FREQUENCY BANDS

FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (GHz)
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

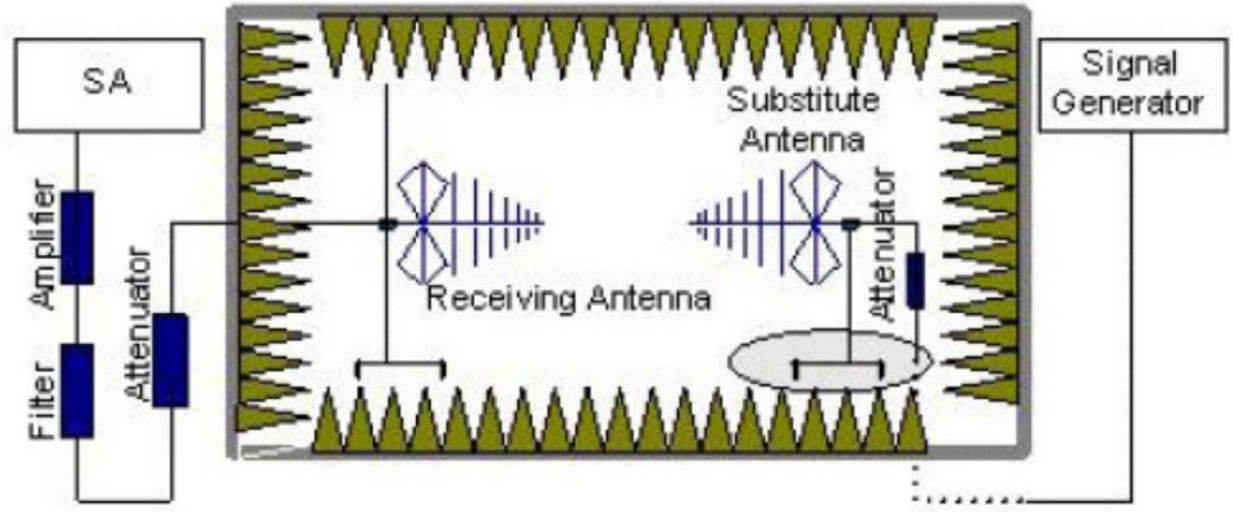
Spectrum Parameter	Setting
Detector	Peak
Attenuation	Auto
Start Frequency	30 MHz
Stop Frequency	10th carrier harmonic

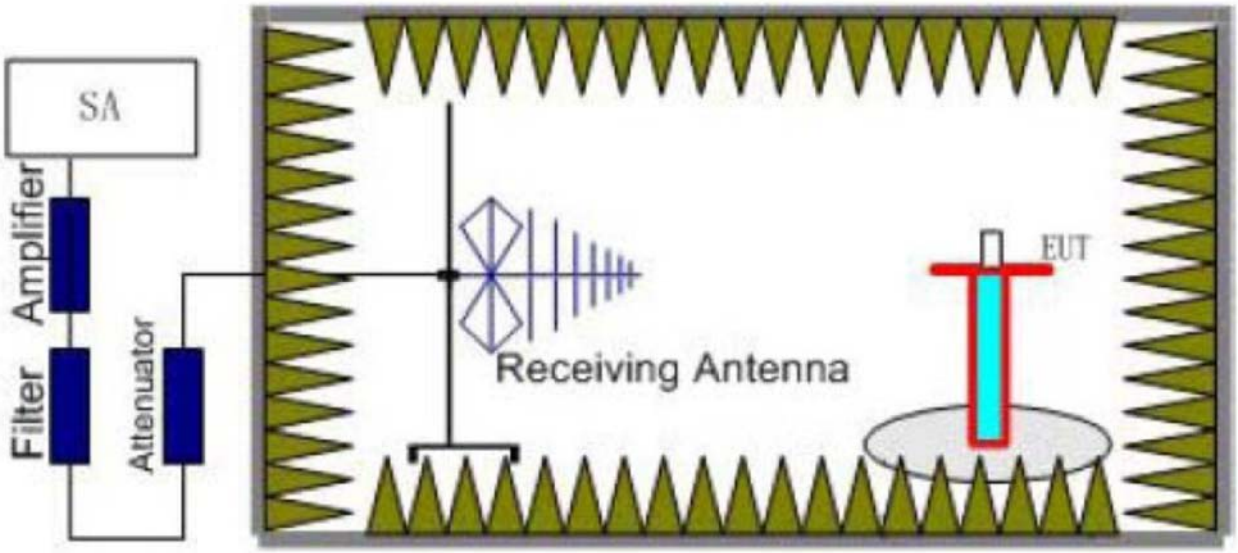
3.2 TEST PROCEDURE

1. EUT was placed on a 1.5 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 three 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 BW=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 (P_{Mea}) is applied to the input of thesubstitution 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 (P_{Mea}) 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. The measurement results are obtained as described below:
   Power(EIRP)=P_{Mea}- P_{Ag} - P_{cl} + G_a
   We used 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)=P_{Mea}- P_{cl} +G_a
6. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power
7. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi

3.3 TEST SETUP



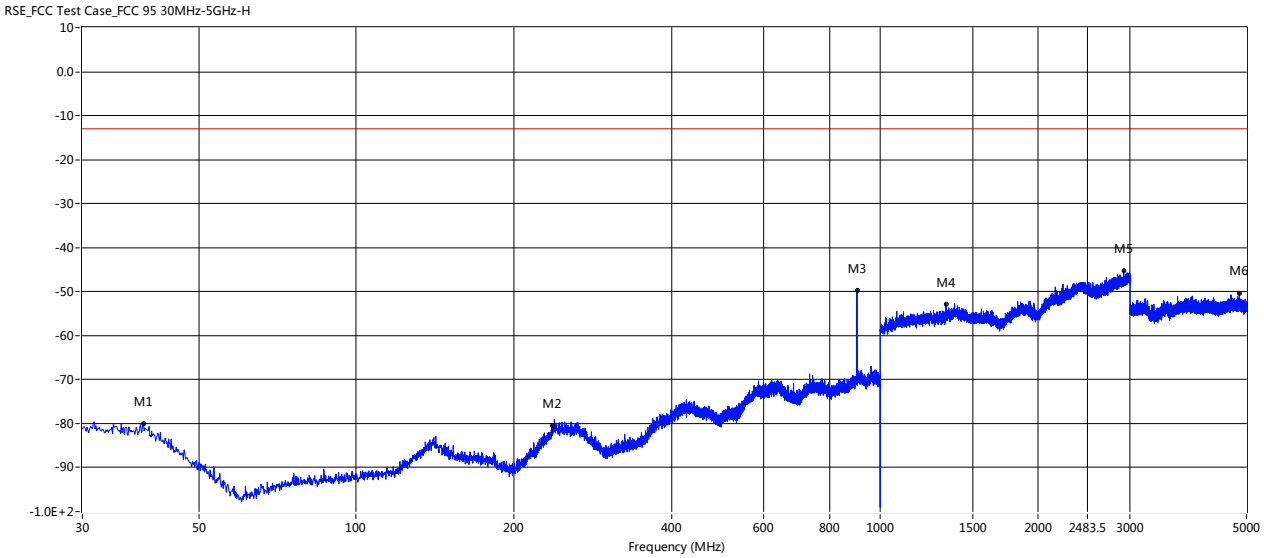


3.4 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

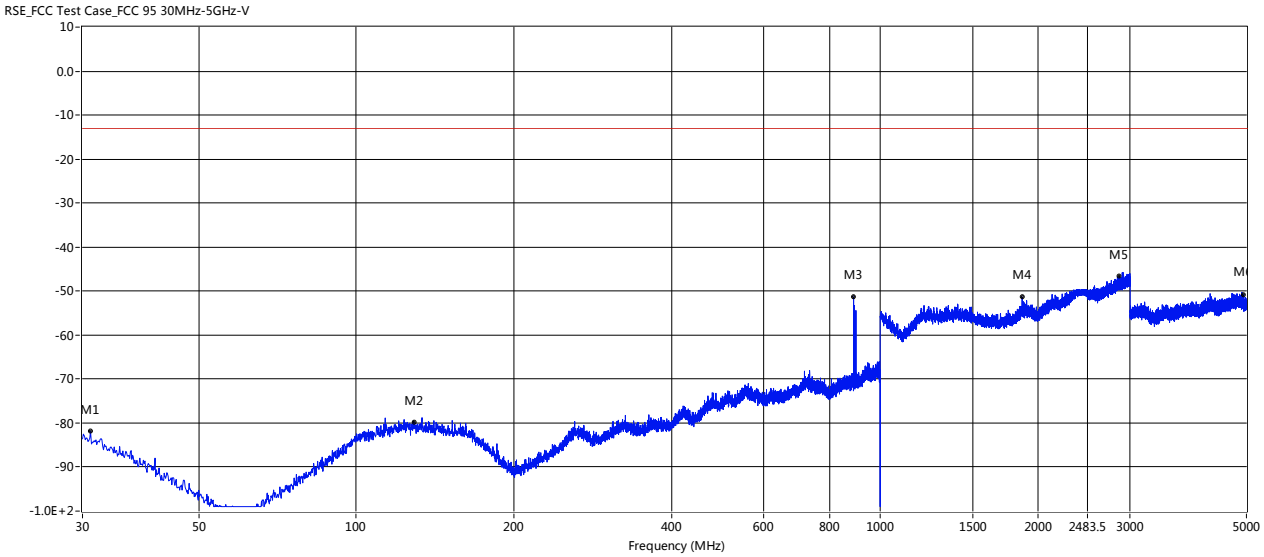
3.5 TEST RESULT

Temperature:	23.4 ℃	Relative Humidity:	60%
Test Mode:	Mode 1	Phase :	Horizontal



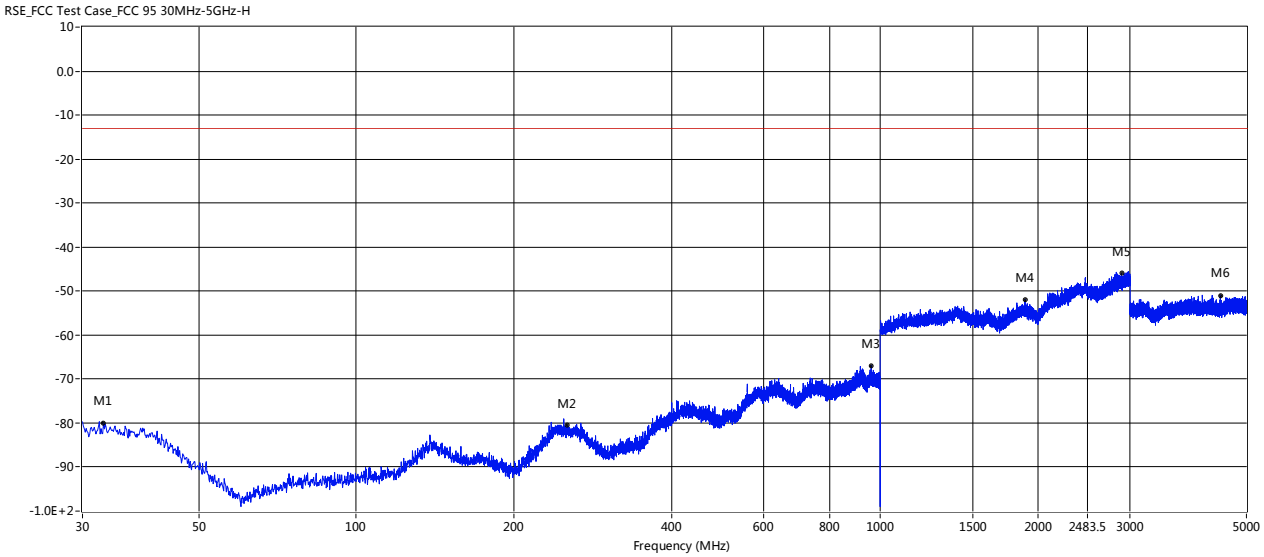
Frequency (MHz)	Result (dBm)	Factor (dB)	PK Limit (dBm)	Over Limit (dB)	Table (o)	ANT	EUT	Verdict
39.215	-80.11	-1.85	-13.0	-67.11	358.00	Horizontal	Vertical	Pass
236.974	-80.42	-1.76	-13.0	-67.42	359.70	Horizontal	Vertical	Pass
902.879	-49.76	8.93	-13.0	-36.76	250.70	Horizontal	Vertical	Pass
1334.750	-52.91	13.28	-13.0	-39.91	144.60	Horizontal	Vertical	Pass
2917.250	-45.32	20.77	-13.0	-32.32	338.90	Horizontal	Vertical	Pass
4850.000	-50.48	4.77	-13.0	-37.48	94.80	Horizontal	Vertical	Pass

Temperature:	23.4 ℃	Relative Humidity:	60%
Test Mode:	Mode 1	Phase:	Vertical



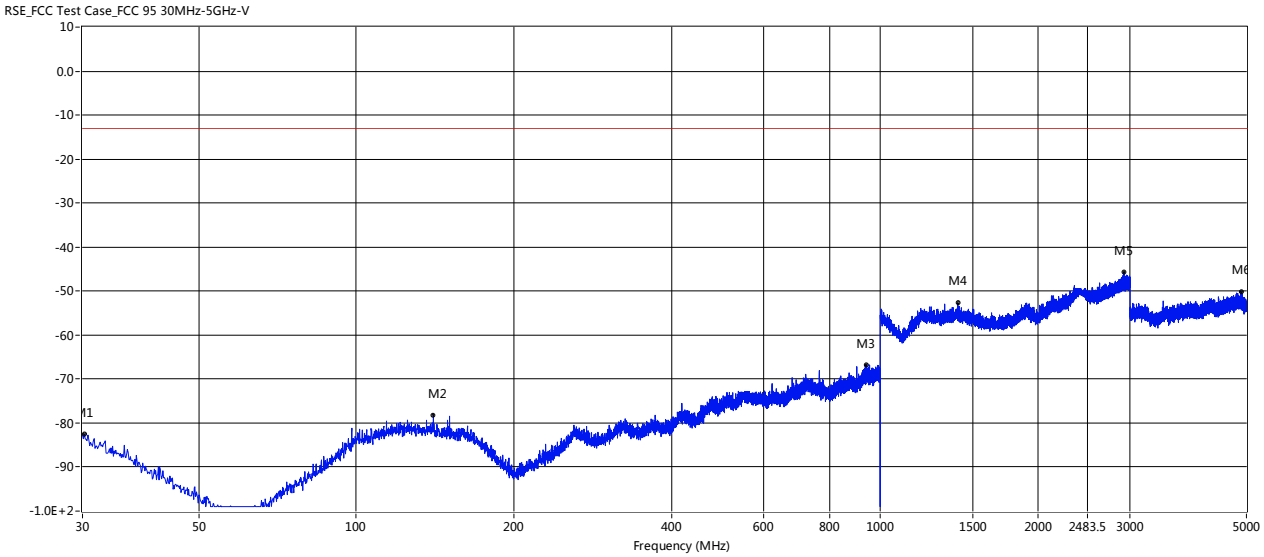
Frequency (MHz)	Result (dBm)	Factor (dB)	PK Limit (dBm)	Over Limit (dB)	Table (o)	ANT	EUT	Verdict
31.091	-81.85	-4.38	-13.0	-68.85	330.90	Vertical	Vertical	Pass
128.940	-79.86	-1.56	-13.0	-66.86	188.20	Vertical	Vertical	Pass
889.662	-51.32	8.22	-13.0	-38.32	336.70	Vertical	Vertical	Pass
1866.000	-51.35	13.87	-13.0	-38.35	343.10	Vertical	Vertical	Pass
2860.500	-46.62	20.07	-13.0	-33.62	306.80	Vertical	Vertical	Pass
4932.250	-50.73	5.49	-13.0	-37.73	235.40	Vertical	Vertical	Pass

Temperature:	23.4 ℃	Relative Humidity:	60%
Test Mode:	Mode 2	Phase :	Horizontal



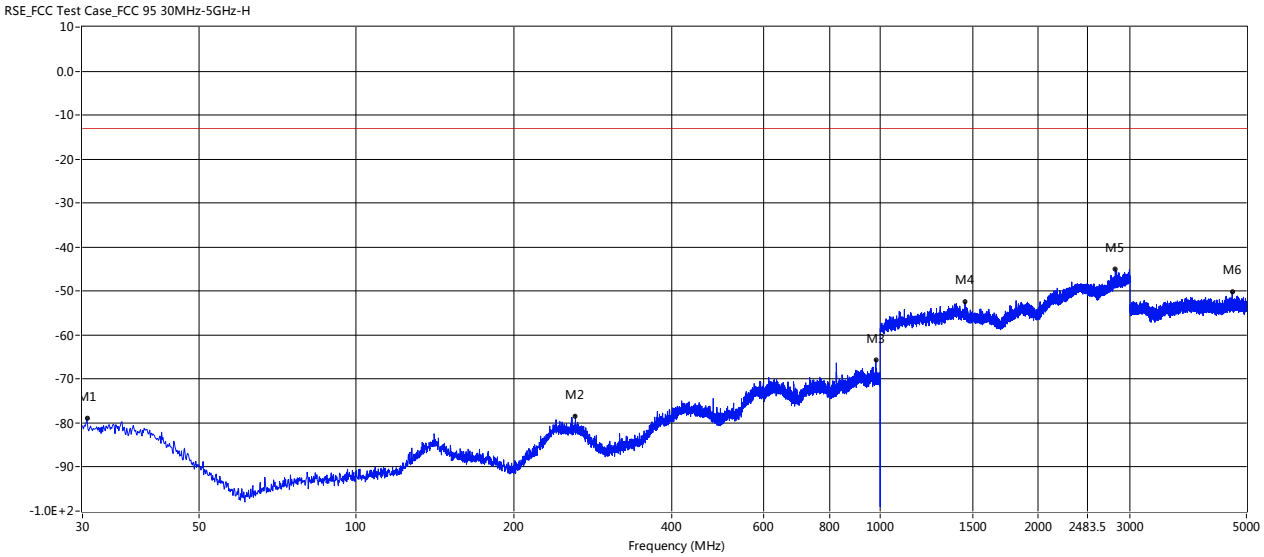
Frequency (MHz)	Result (dBm)	Factor (dB)	PK Limit (dBm)	Over Limit (dB)	Table (o)	ANT	EUT	Verdict
32.910	-79.95	-1.89	-13.0	-66.95	230.70	Horizontal	Vertical	Pass
252.736	-80.51	-1.25	-13.0	-67.51	331.30	Horizontal	Vertical	Pass
961.079	-66.94	9.61	-13.0	-53.94	0.30	Horizontal	Vertical	Pass
1894.000	-51.94	14.56	-13.0	-38.94	34.30	Horizontal	Vertical	Pass
2888.500	-46.00	20.66	-13.0	-33.00	192.50	Horizontal	Vertical	Pass
4461.250	-50.99	4.05	-13.0	-37.99	250.70	Horizontal	Vertical	Pass

Temperature:	23.4 ℃	Relative Humidity:	60%
Test Mode:	Mode 2	Phase:	Vertical



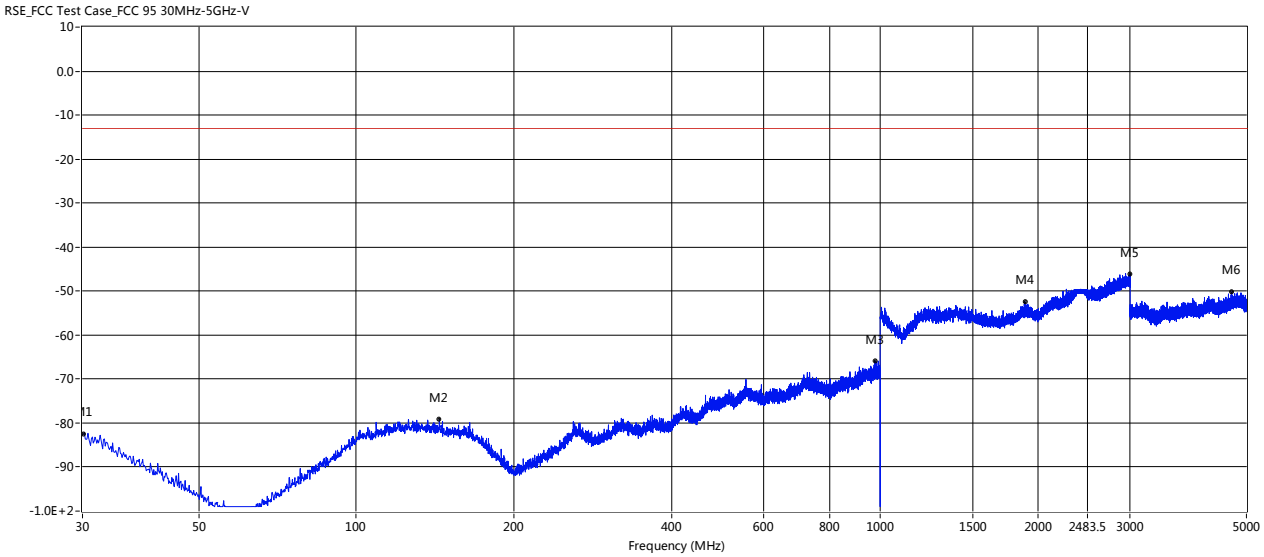
Frequency (MHz)	Result (dBm)	Factor (dB)	PK Limit (dBm)	Over Limit (dB)	Table (o)	ANT	EUT	Verdict
30.242	-82.56	-3.83	-13.0	-69.56	182.60	Horizontal	Vertical	Pass
140.216	-78.30	-1.15	-13.0	-65.30	273.10	Horizontal	Vertical	Pass
941.921	-66.78	10.16	-13.0	-53.78	13.00	Horizontal	Vertical	Pass
1406.750	-52.73	13.77	-13.0	-39.73	236.20	Horizontal	Vertical	Pass
2919.000	-45.74	20.28	-13.0	-32.74	45.10	Horizontal	Vertical	Pass
4886.000	-50.06	5.67	-13.0	-37.06	195.60	Horizontal	Vertical	Pass

Temperature:	23.4 ℃	Relative Humidity:	60%
Test Mode:	Mode 3	Phase :	Horizontal



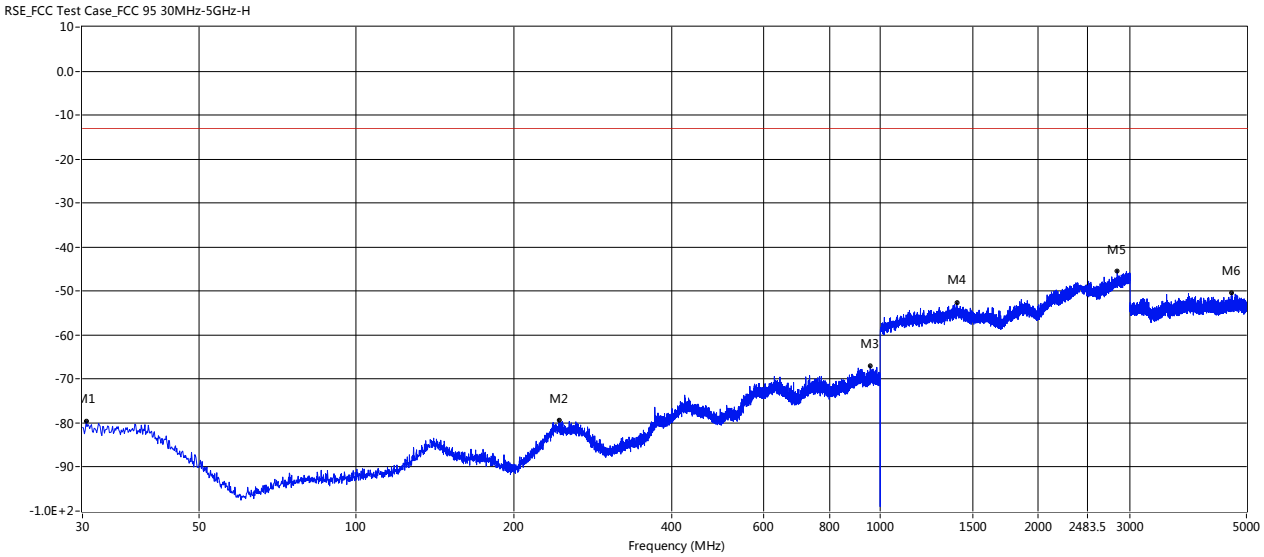
Frequency (MHz)	Result (dBm)	Factor (dB)	PK Limit (dBm)	Over Limit (dB)	Table (o)	ANT	EUT	Verdict
30.000	-80.62	-1.91	-13.0	-67.62	342.80	Horizontal	Vertical	Pass
261.951	-78.44	-1.81	-13.0	-65.44	214.50	Horizontal	Vertical	Pass
980.721	-65.67	9.01	-13.0	-52.67	295.30	Horizontal	Vertical	Pass
1452.000	-52.48	13.40	-13.0	-39.48	80.10	Horizontal	Vertical	Pass
2811.500	-45.11	20.47	-13.0	-32.11	194.60	Horizontal	Vertical	Pass
4698.000	-50.22	4.63	-13.0	-37.22	231.80	Horizontal	Vertical	Pass

Temperature:	23.4 ℃	Relative Humidity:	60%
Test Mode:	Mode 3	Phase:	Vertical



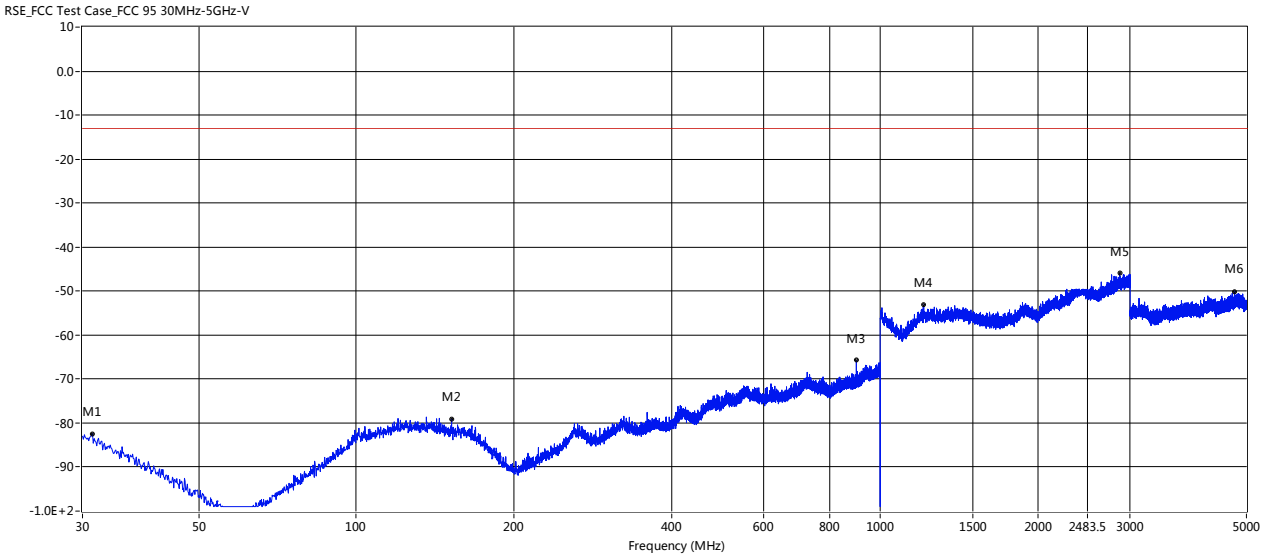
Frequency (MHz)	Result (dBm)	Factor (dB)	PK Limit (dBm)	Over Limit (dB)	Table (o)	ANT	EUT	Verdict
30.000	-82.64	-3.68	-13.0	-69.64	7.80	Vertical	Vertical	Pass
143.975	-79.18	-1.32	-13.0	-66.18	204.80	Vertical	Vertical	Pass
977.447	-65.85	10.36	-13.0	-52.85	207.90	Vertical	Vertical	Pass
1889.000	-52.38	14.18	-13.0	-39.38	303.70	Vertical	Vertical	Pass
2993.500	-46.19	20.38	-13.0	-33.19	1.10	Vertical	Vertical	Pass
4687.500	-50.21	5.08	-13.0	-37.21	186.90	Vertical	Vertical	Pass

Temperature:	23.4 ℃	Relative Humidity:	60%
Test Mode:	Mode 4	Phase :	Horizontal



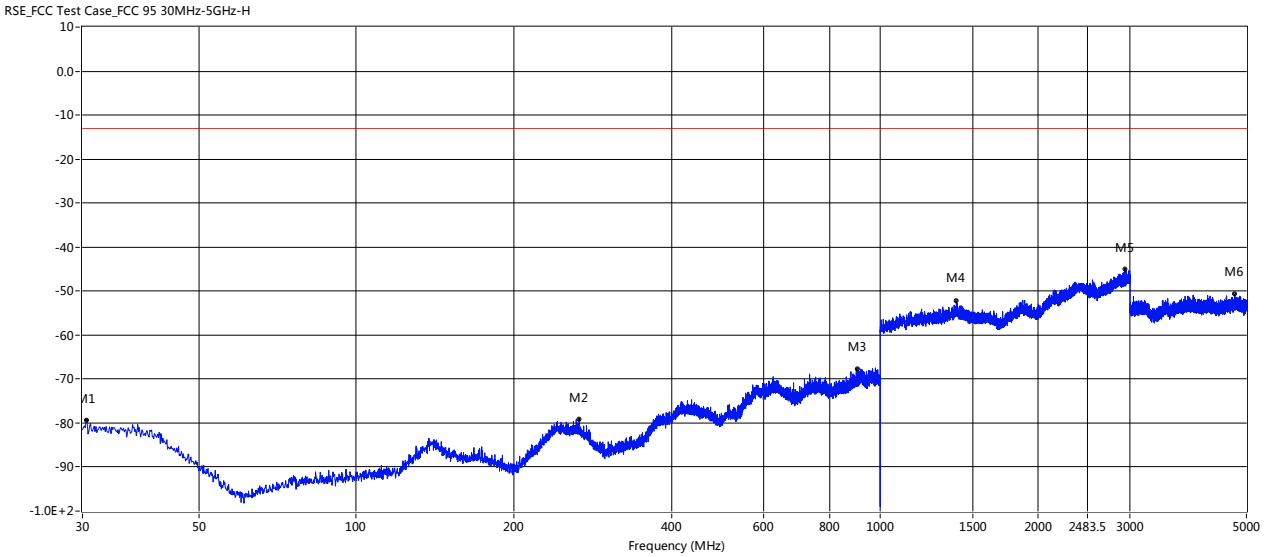
Frequency (MHz)	Result (dBm)	Factor (dB)	PK Limit (dBm)	Over Limit (dB)	Table (o)	ANT	EUT	Verdict
30.485	-79.59	-1.91	-13.0	-66.59	217.20	Horizontal	Vertical	Pass
243.521	-79.37	-0.90	-13.0	-66.37	55.10	Horizontal	Vertical	Pass
957.078	-67.04	9.43	-13.0	-54.04	205.20	Horizontal	Vertical	Pass
1400.500	-52.53	14.15	-13.0	-39.53	2.60	Horizontal	Vertical	Pass
2834.000	-45.39	20.60	-13.0	-32.39	175.30	Horizontal	Vertical	Pass
4690.250	-50.37	4.63	-13.0	-37.37	159.50	Horizontal	Vertical	Pass

Temperature:	23.4 ℃	Relative Humidity:	60%
Test Mode:	Mode 4	Phase:	Vertical



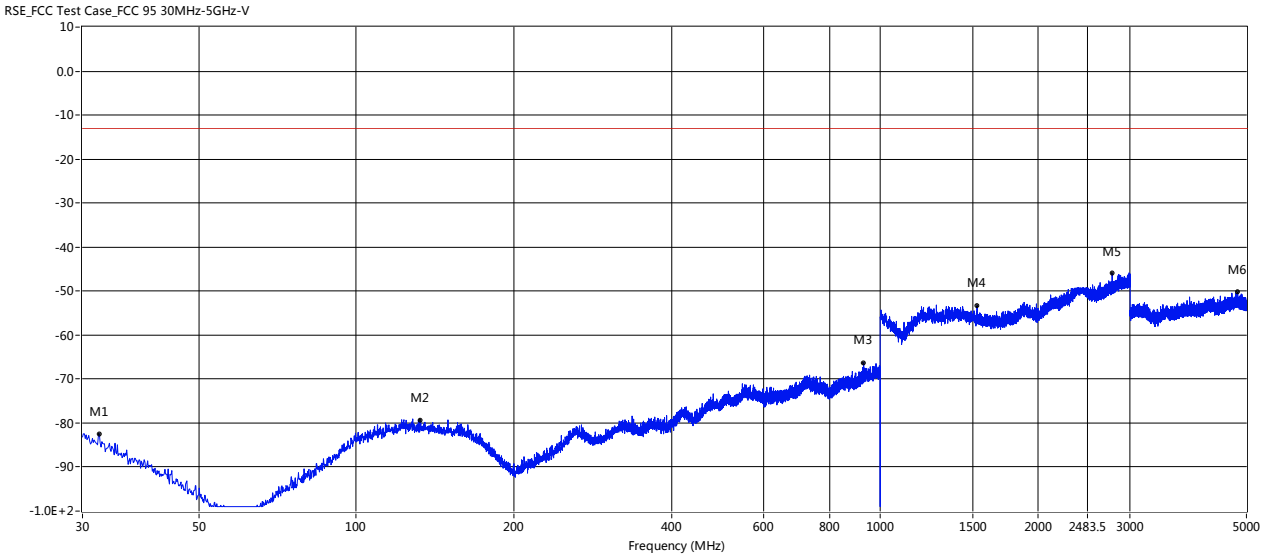
Frequency (MHz)	Result (dBm)	Factor (dB)	PK Limit (dBm)	Over Limit (dB)	Table (o)	ANT	EUT	Verdict
31.334	-82.42	-4.53	-13.0	-69.42	277.50	Vertical	Vertical	Pass
151.977	-79.06	-1.68	-13.0	-66.06	44.80	Vertical	Vertical	Pass
900.333	-65.76	8.20	-13.0	-52.76	262.70	Vertical	Vertical	Pass
1211.000	-53.12	13.60	-13.0	-40.12	33.10	Vertical	Vertical	Pass
2864.750	-45.93	20.09	-13.0	-32.93	0.60	Vertical	Vertical	Pass
4748.500	-50.14	5.29	-13.0	-37.14	355.60	Vertical	Vertical	Pass

Temperature:	23.4 ℃	Relative Humidity:	60%
Test Mode:	Mode 5	Phase :	Horizontal



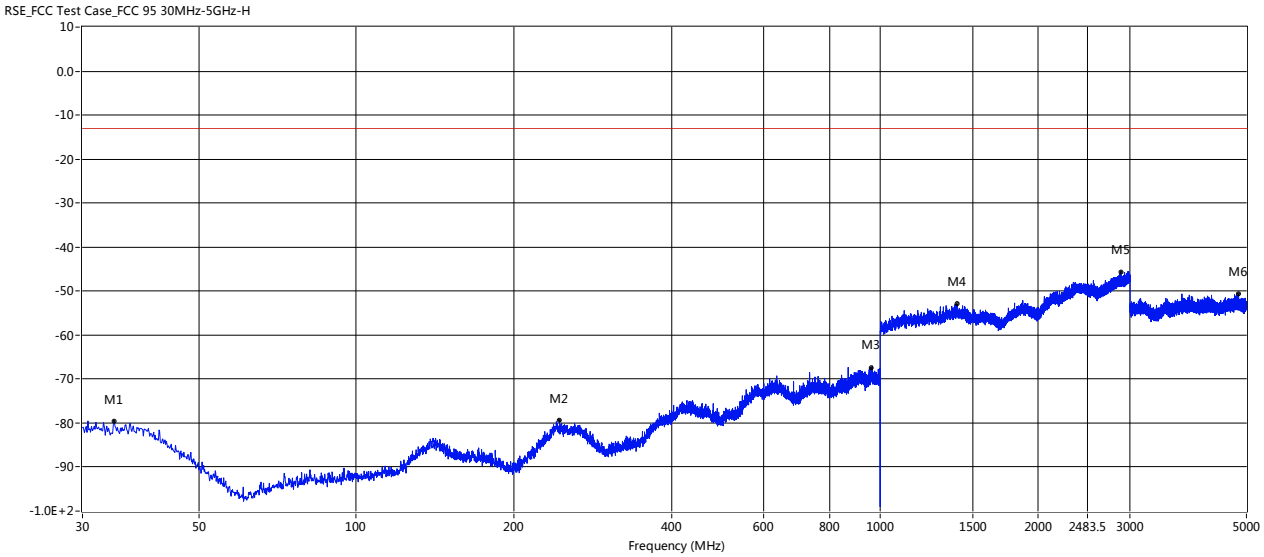
Frequency (MHz)	Result (dBm)	Factor (dB)	PK Limit (dBm)	Over Limit (dB)	Table (o)	ANT	EUT	Verdict
30.364	-81.08	-1.91	-13.0	-68.08	291.60	Horizontal	Vertical	Pass
266.195	-79.14	-2.43	-13.0	-66.14	115.00	Horizontal	Vertical	Pass
905.546	-67.68	9.04	-13.0	-54.68	141.80	Horizontal	Vertical	Pass
1397.750	-52.29	14.13	-13.0	-39.29	79.70	Horizontal	Vertical	Pass
2929.250	-45.05	20.85	-13.0	-32.05	191.10	Horizontal	Vertical	Pass
4744.500	-50.70	4.68	-13.0	-37.70	317.60	Horizontal	Vertical	Pass

Temperature:	23.4 ℃	Relative Humidity:	60%
Test Mode:	Mode 5	Phase:	Vertical



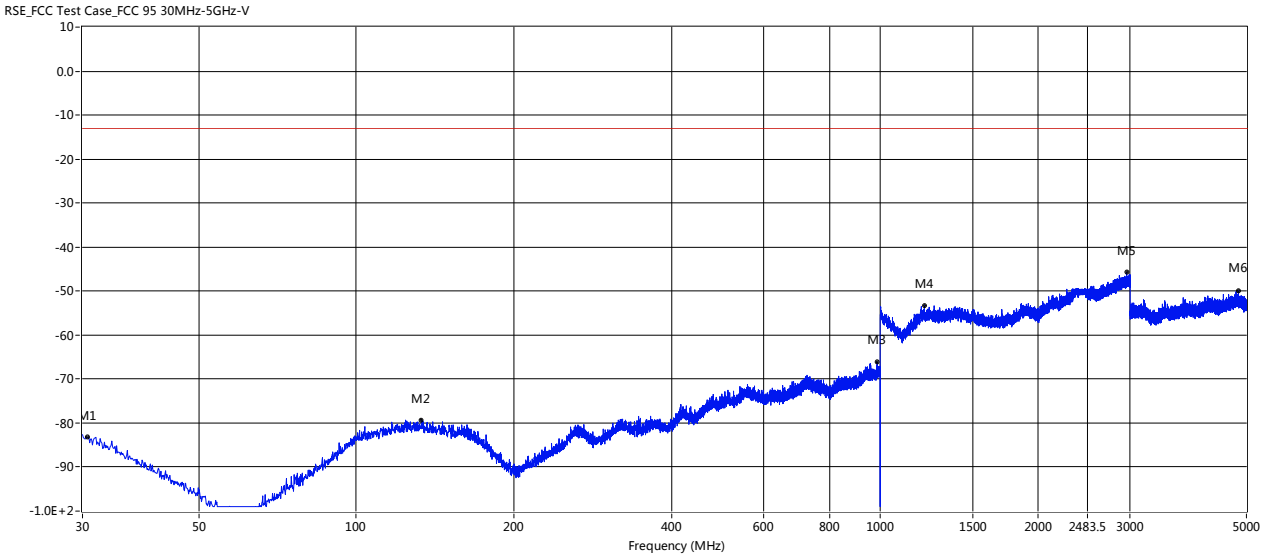
Frequency (MHz)	Result (dBm)	Factor (dB)	PK Limit (dBm)	Over Limit (dB)	Table (o)	ANT	EUT	Verdict
32.304	-82.40	-5.16	-13.0	-69.40	277.90	Vertical	Vertical	Pass
132.335	-79.28	-1.43	-13.0	-66.28	286.90	Vertical	Vertical	Pass
929.918	-66.25	9.55	-13.0	-53.25	301.70	Vertical	Vertical	Pass
1530.750	-53.25	12.61	-13.0	-40.25	251.80	Vertical	Vertical	Pass
2773.000	-45.97	19.29	-13.0	-32.97	185.40	Vertical	Vertical	Pass
4812.500	-50.20	5.50	-13.0	-37.20	298.70	Vertical	Vertical	Pass

Temperature:	23.4 ℃	Relative Humidity:	60%
Test Mode:	Mode 6	Phase :	Horizontal



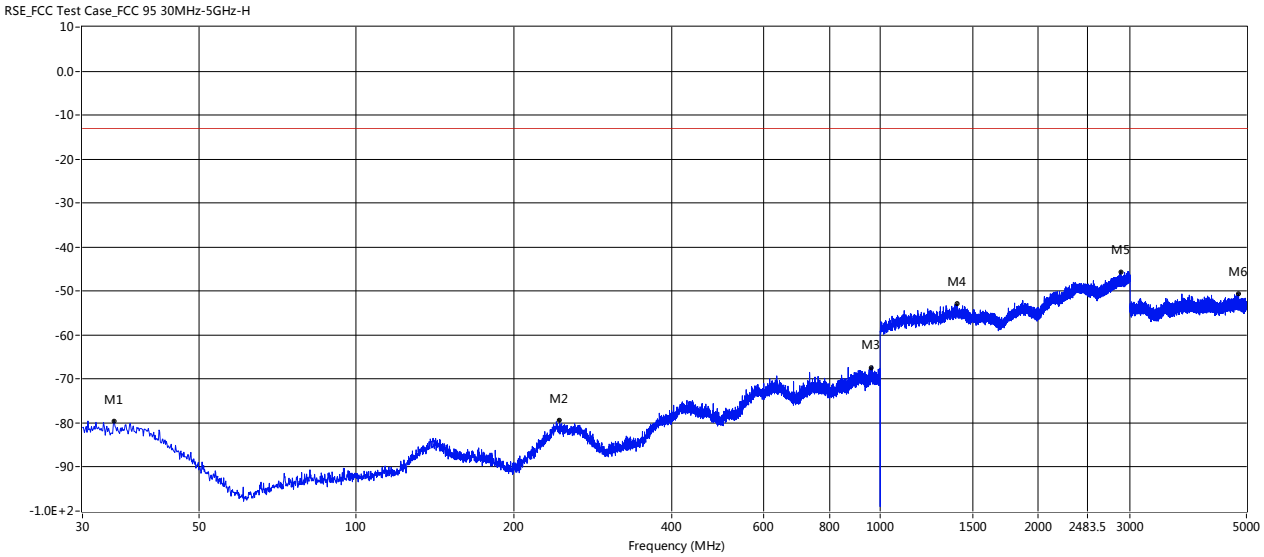
Frequency (MHz)	Result (dBm)	Factor (dB)	PK Limit (dBm)	Over Limit (dB)	Table (o)	ANT	EUT	Verdict
34.486	-79.65	-1.88	-13.0	-66.65	259.80	Horizontal	Vertical	Pass
244.249	-79.42	-0.93	-13.0	-66.42	66.10	Horizontal	Vertical	Pass
962.898	-67.39	9.55	-13.0	-54.39	45.10	Horizontal	Vertical	Pass
1401.750	-52.94	14.13	-13.0	-39.94	80.70	Horizontal	Vertical	Pass
2878.000	-45.57	20.67	-13.0	-32.57	347.20	Horizontal	Vertical	Pass
4832.250	-50.55	4.77	-13.0	-37.55	303.80	Horizontal	Vertical	Pass

Temperature:	23.4 ℃	Relative Humidity:	60%
Test Mode:	Mode 6	Phase:	Vertical



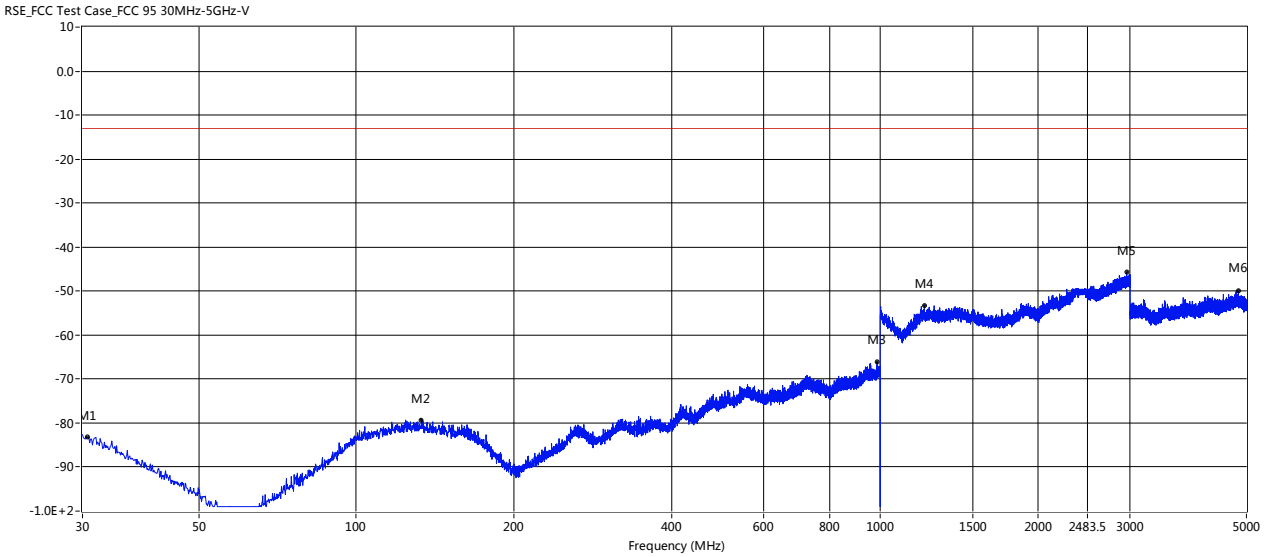
Frequency (MHz)	Result (dBm)	Factor (dB)	PK Limit (dBm)	Over Limit (dB)	Table (o)	ANT	EUT	Verdict
30.606	-83.20	-4.06	-13.0	-70.20	327.80	Vertical	Vertical	Pass
133.062	-79.24	-1.40	-13.0	-66.24	300.90	Vertical	Vertical	Pass
986.662	-66.12	10.49	-13.0	-53.12	232.00	Vertical	Vertical	Pass
1214.250	-53.25	13.59	-13.0	-40.25	219.40	Vertical	Vertical	Pass
2955.250	-45.73	20.35	-13.0	-32.73	307.10	Vertical	Vertical	Pass
4829.750	-49.86	5.54	-13.0	-36.86	37.50	Vertical	Vertical	Pass

Temperature:	23.4 ℃	Relative Humidity:	60%
Test Mode:	Mode 7	Phase :	Horizontal



Frequency (MHz)	Result (dBm)	Factor (dB)	PK Limit (dBm)	Over Limit (dB)	Table (o)	ANT	EUT	Verdict
34.486	-79.65	-1.88	-13.0	-66.65	259.80	Horizontal	Vertical	Pass
244.249	-79.42	-0.93	-13.0	-66.42	66.10	Horizontal	Vertical	Pass
962.898	-67.39	9.55	-13.0	-54.39	45.10	Horizontal	Vertical	Pass
1401.750	-52.94	14.13	-13.0	-39.94	80.70	Horizontal	Vertical	Pass
2878.000	-45.57	20.67	-13.0	-32.57	347.20	Horizontal	Vertical	Pass
4832.250	-50.55	4.77	-13.0	-37.55	303.80	Horizontal	Vertical	Pass

Temperature:	23.4 ℃	Relative Humidity:	60%
Test Mode:	Mode 7	Phase:	Vertical



Frequency (MHz)	Result (dBm)	Factor (dB)	PK Limit (dBm)	Over Limit (dB)	Table (o)	ANT	EUT	Verdict
30.606	-83.20	-4.06	-13.0	-70.20	327.80	Vertical	Vertical	Pass
133.062	-79.24	-1.40	-13.0	-66.24	300.90	Vertical	Vertical	Pass
986.662	-66.12	10.49	-13.0	-53.12	232.00	Vertical	Vertical	Pass
1214.250	-53.25	13.59	-13.0	-40.25	219.40	Vertical	Vertical	Pass
2955.250	-45.73	20.35	-13.0	-32.73	307.10	Vertical	Vertical	Pass
4829.750	-49.86	5.54	-13.0	-36.86	37.50	Vertical	Vertical	Pass

4. SPURIOUS EMISSION ON ANTENNA PORT

4.1 LIMIT

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

4.2 TEST PROCEDURE

1. The EUT was connected to the spectrum analyzer through sufficent attenuation.
2. 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 EUT as digital data mode.
4. Set RBW 30kHz, VBW 100 kHz in the frequency band 30MHz to 1GHz,while set RBW=1MHz. VBW=3MHz from the 1GHz to 10th Harmonic.

4.3 TEST SETUP

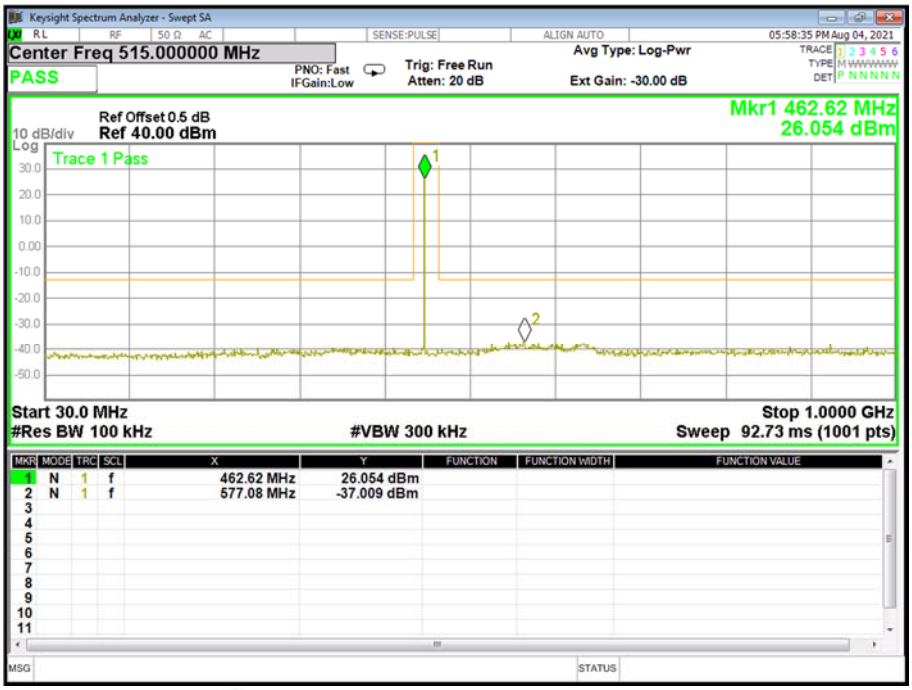
4.4 EUT OPERATION CONDITIONS

TX mode.

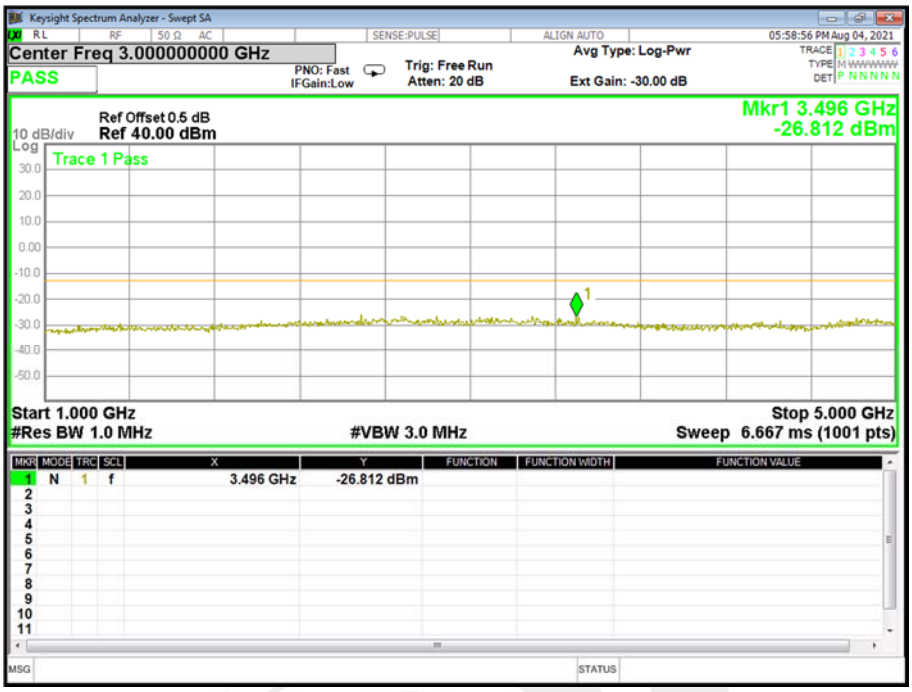
4.5 TEST RESULT

Mode 1

(30MHz-1GHz)

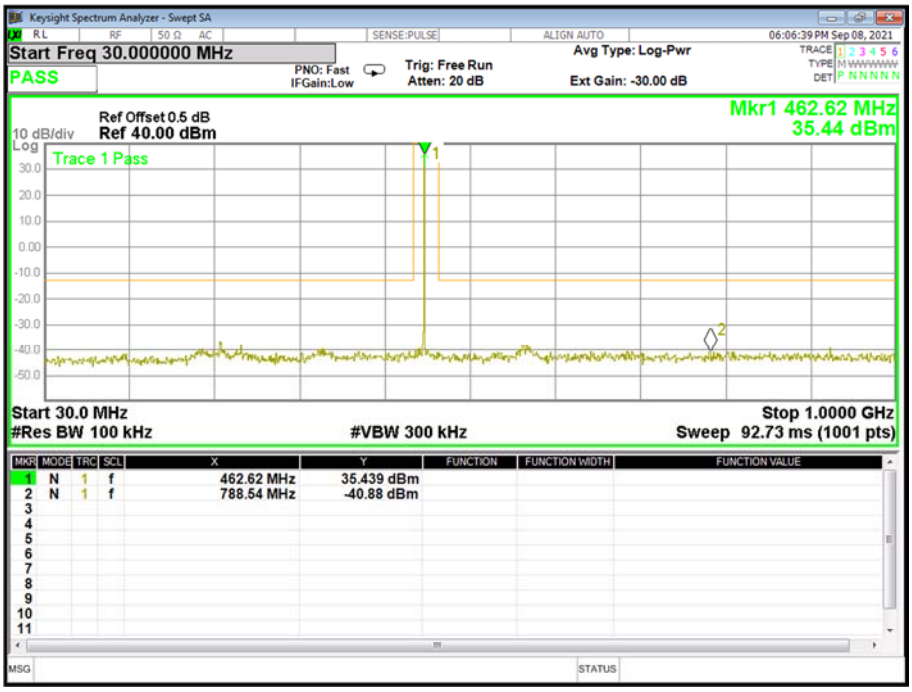


(1GHz-5GHz)

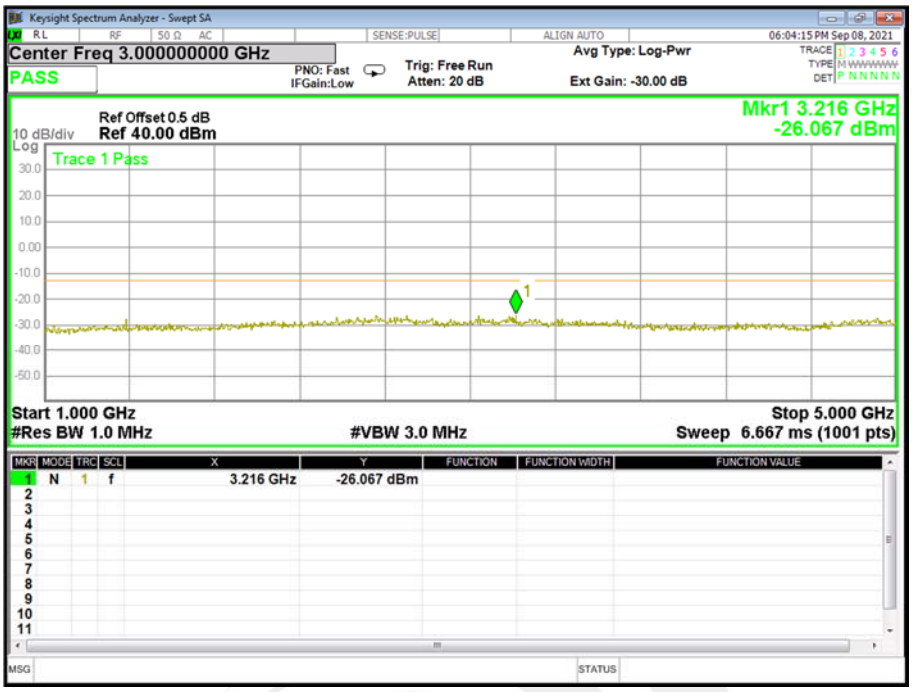


Mode 2

(30MHz-1GHz)

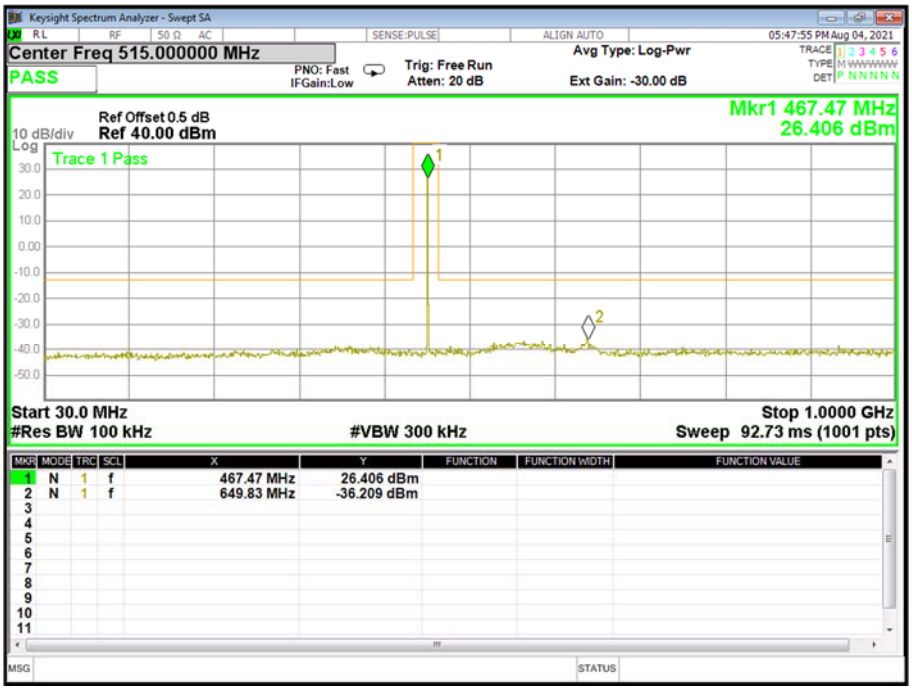


Mid channel(1GHz-5GHz)

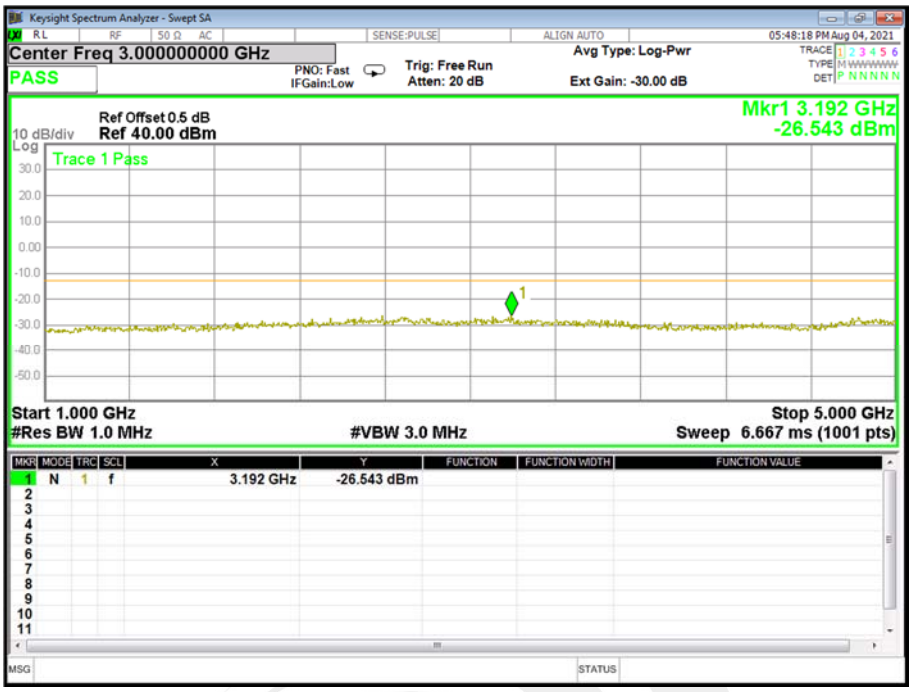


Mode 3

(30MHz-1GHz)



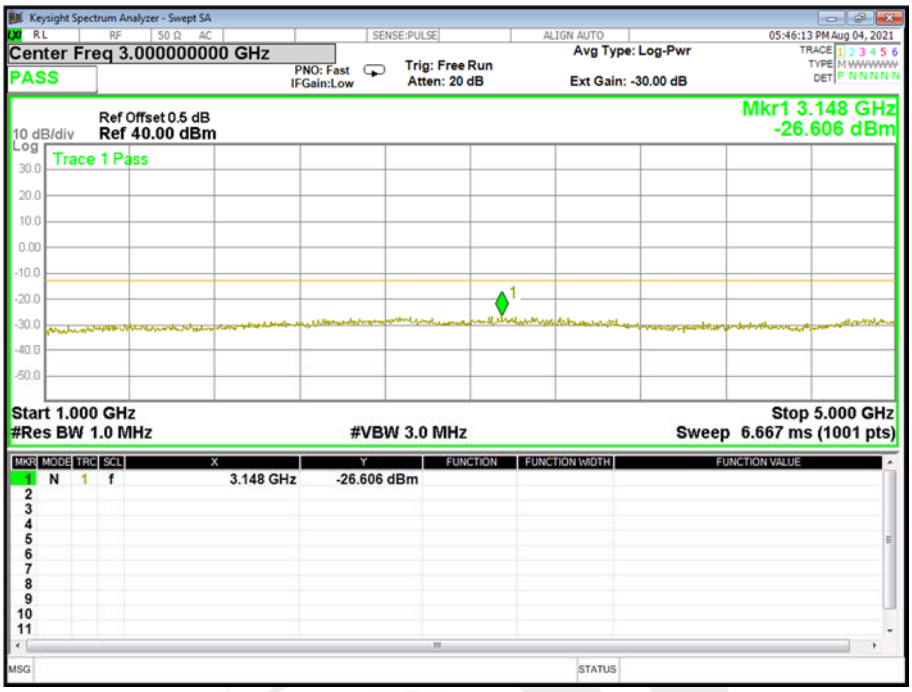
(1GHz-5GHz)



Mode 4

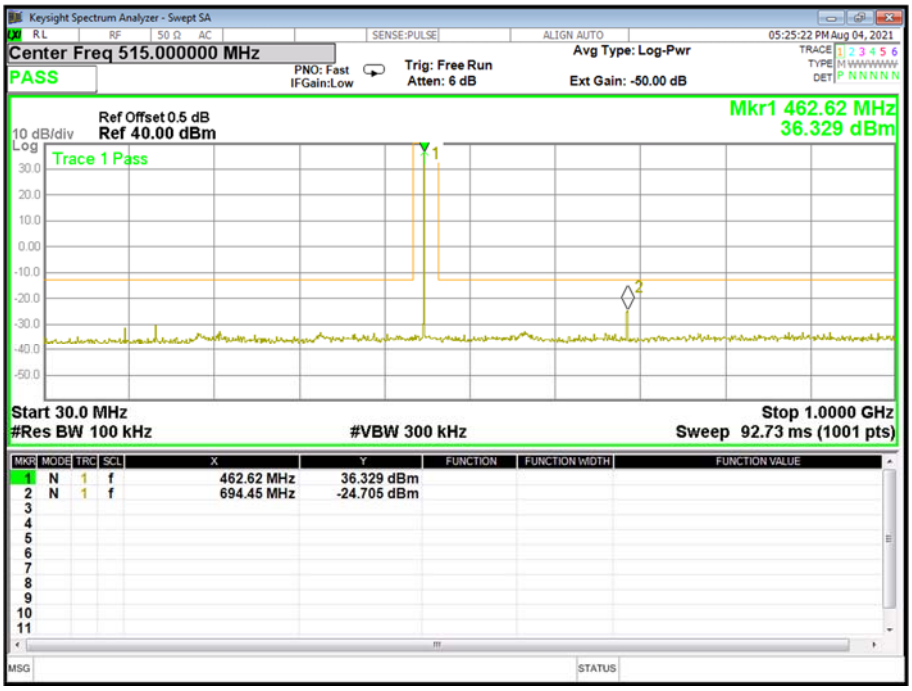
(30MHz-1GHz)

(1GHz-5GHz)

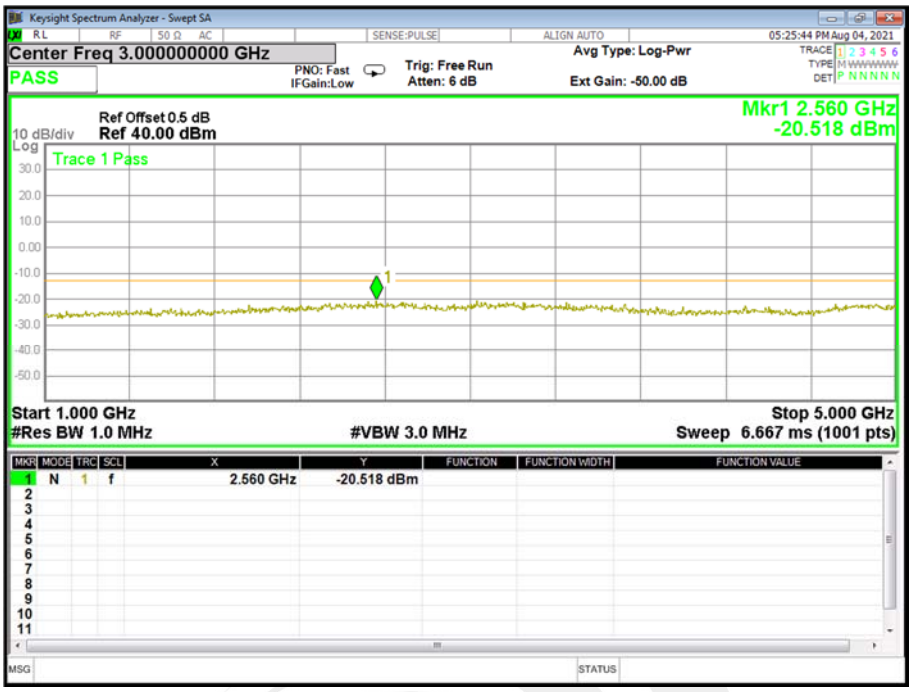


Mode 5

(30MHz-1GHz)

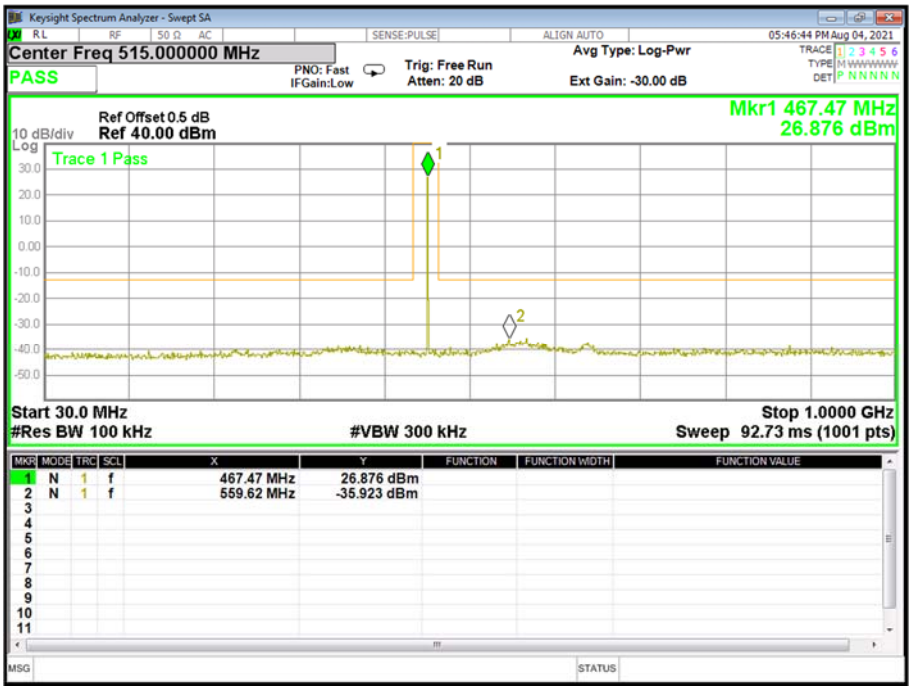


(1GHz-5GHz)

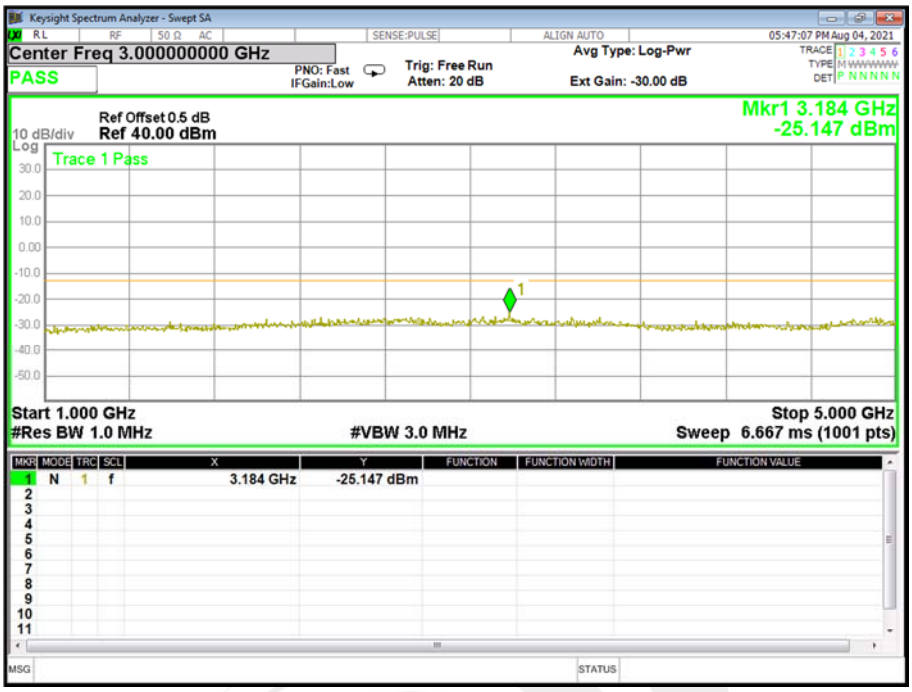


Mode 6

(30MHz-1GHz)

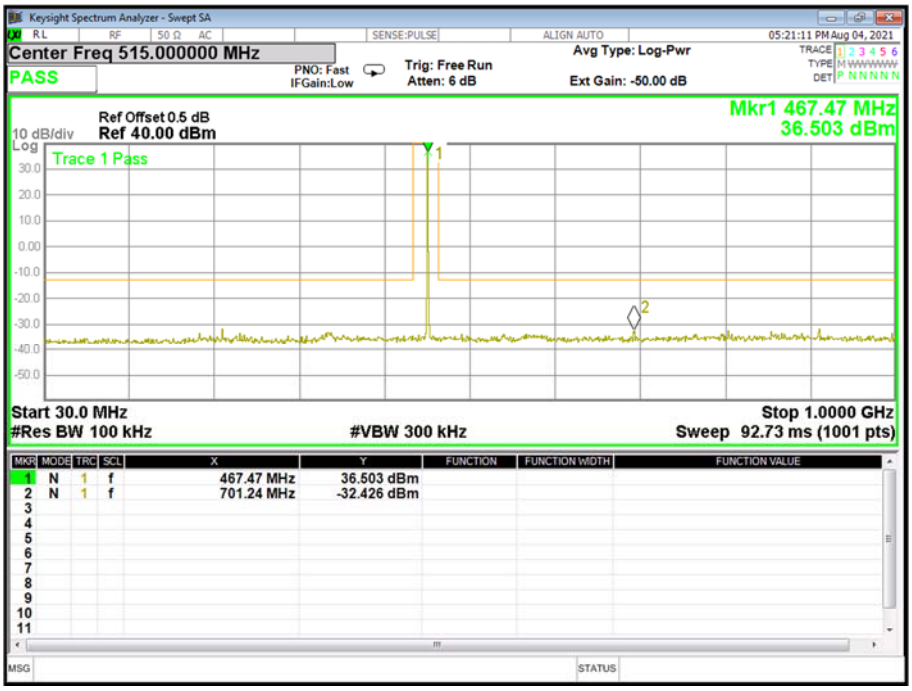


(1GHz-5GHz)

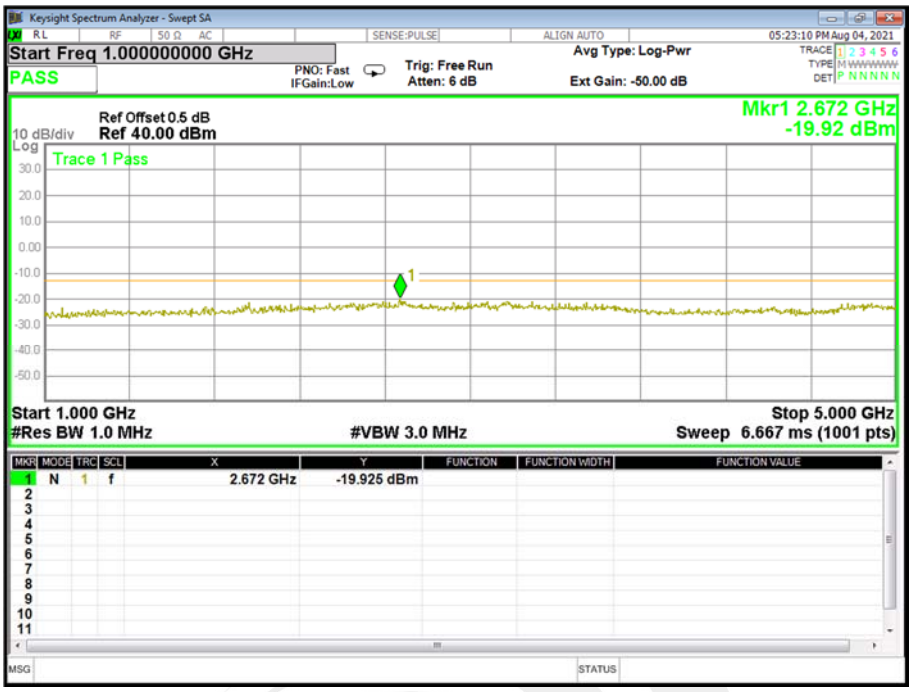


Mode 7

(30MHz-1GHz)



(1GHz-5GHz)


Keysight Spectrum Analyzer - Swept SA
Start Freq 1.000000000 GHz
PASS
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 6 dB
Avg Type: Log-Pwr
Ext Gain: -50.00 dB
05:23:10 PM Aug 04, 2021
Ref Offset 0.5 dB
10 dB/div
Ref 40.00 dBm
Log
Mkr1 2.672 GHz
-19.92 dBm
Trace 1 Pass
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.000 GHz
Sweep 6.667 ms (1001 pts)
1 N 1 f 2.672 GHz -19.925 dBm

5. BANDWIDTH TEST

5.1 LIMIT

GMRS:

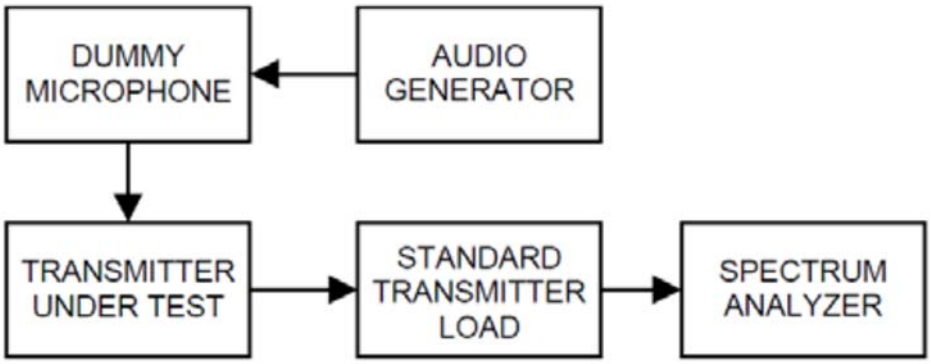
(a) Main channels. The authorized bandwidth is 20 kHz for GMRS transmitters operating on any of the 462 MHz main channels or any of the 467 MHz main channels.

(b) Interstitial channels. The authorized bandwidth is 20 kHz for GMRS transmitters operating on any of the 462 MHz interstitial channels and is 12.5 kHz for GMRS transmitters operating on any of the 467 MHz interstitial channels.

5.2 TEST PROCEDURE

1. The EUT was connected to the spectrum analyzer through sufficent attenuation.
2. Set EUT as digital data mode.
3. Set SPA Center Frequency=fundamental frequency, RBW=100Hz, VBW=1KHz, span =15KHz.
4. Set SPA Max hold. Mark peak, Set 99% Occupied Bandwidth.

5.3 TEST SETUP



5.4 EUT OPERATION CONDITIONS

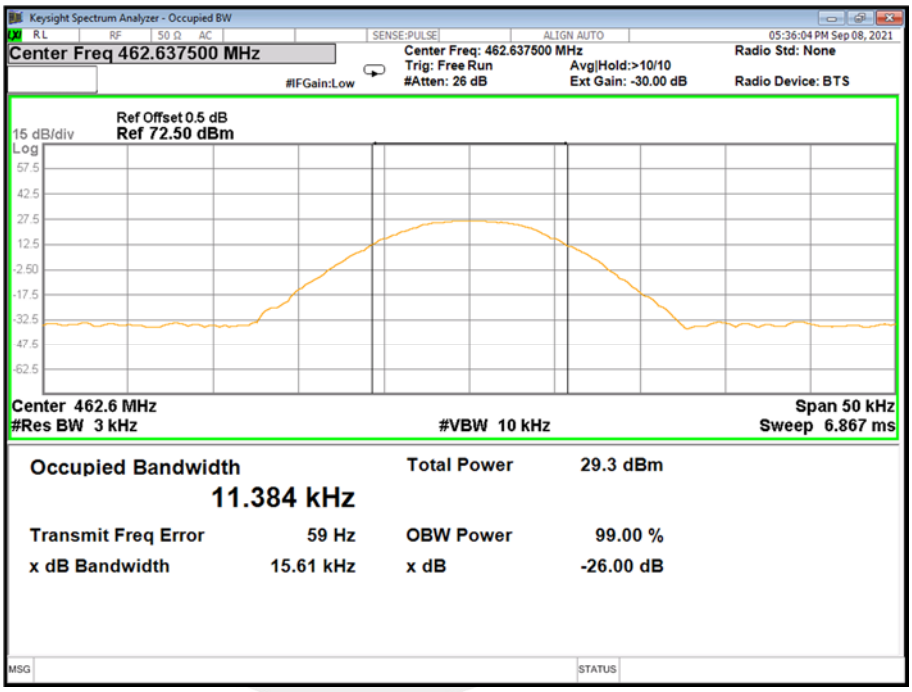
TX mode.

5.5 TEST RESULTS

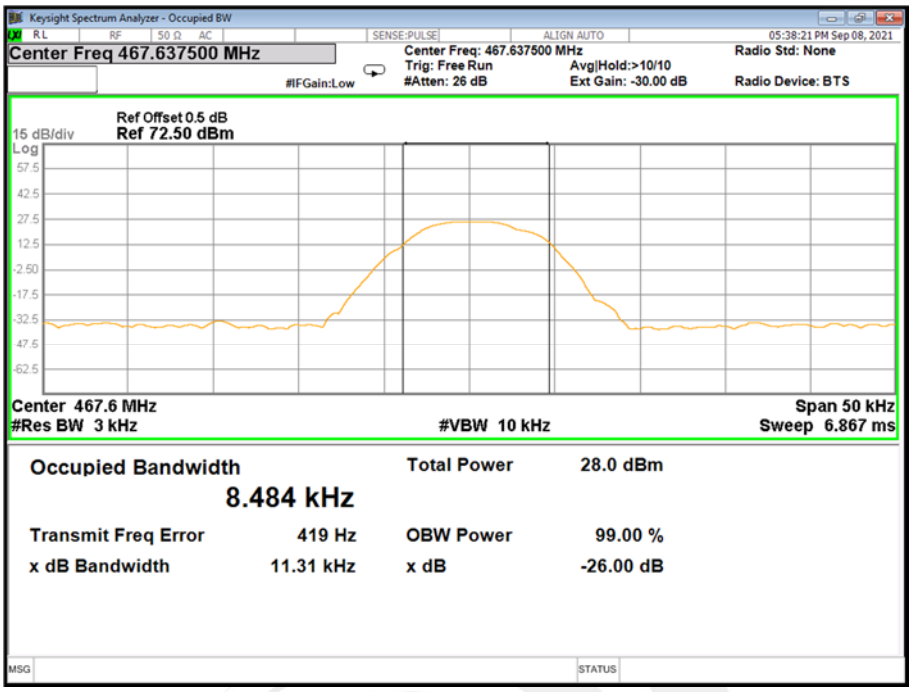
Low Power

Operation Mode	Test Channel	Test Frequency(MHz)	99% Occupied Bandwidth(KHz)	26dB Bandwidth (KHz)	Limits（KHz）	Result
GMRS	4	462.6375	11.384	15.61	20	Pass
	11	467.6375	8.484	11.31	12.5	Pass
	19	462.6500	14.091	19.7	20	Pass
	27	467.6500	15.068	19.41	20	Pass

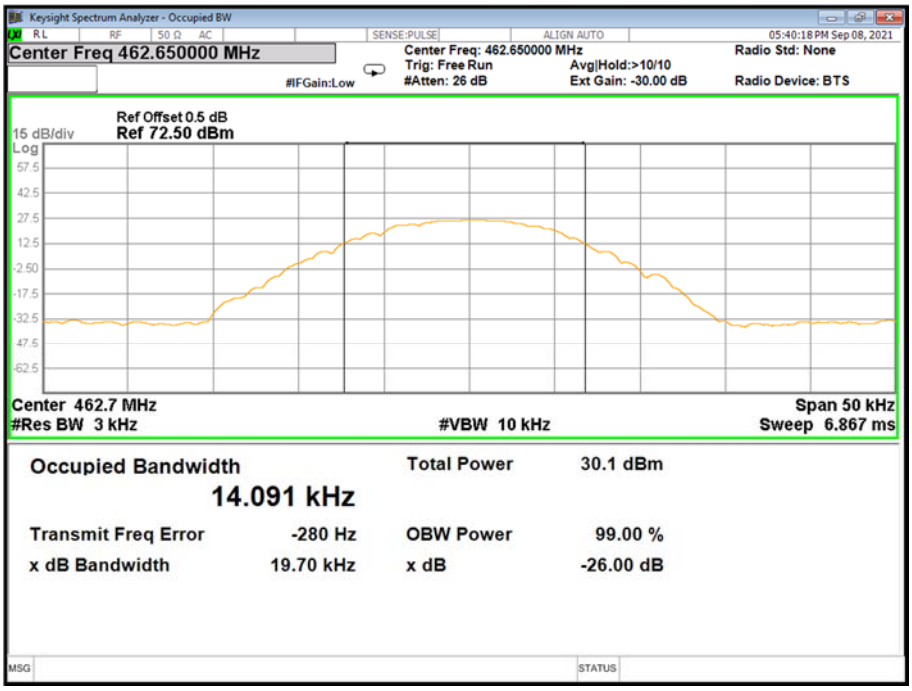
CH4



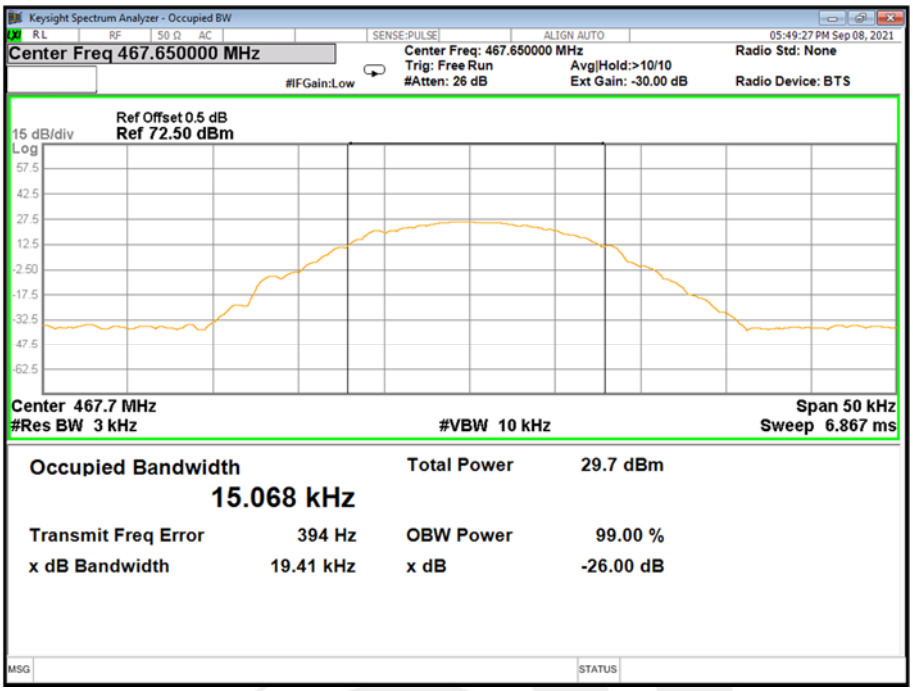
CH11


Keysight Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:PULSE
ALIGN AUTO
05:38:21 PM Sep 08, 2021
Center Freq 467.637500 MHz
Center Freq: 467.637500 MHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 26 dB
Ext Gain: -30.00 dB
Radio Std: None
Radio Device: BTS
Ref Offset 0.5 dB
15 dB/div
Ref 72.50 dBm
Log
57.5
42.5
27.5
12.5
2.50
-17.5
-32.5
-47.5
-62.5
Center 467.6 MHz
#Res BW 3 kHz
#VBW 10 kHz
Span 50 kHz
Sweep 6.867 ms
Occupied Bandwidth
8.484 kHz
Total Power 28.0 dBm
Transmit Freq Error 419 Hz
OBW Power 99.00 %
x dB Bandwidth 11.31 kHz
x dB -26.00 dB
MSG
STATUS

CH19


Keysight Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:PULSE
ALIGN AUTO
05:40:18 PM Sep 08, 2021
Center Freq 462.650000 MHz
Center Freq: 462.650000 MHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 26 dB
Ext Gain: -30.00 dB
Radio Std: None
Radio Device: BTS
Ref Offset 0.5 dB
15 dB/div
Ref 72.50 dBm
Log
57.5
42.5
27.5
12.5
2.50
-17.5
-32.5
-47.5
-62.5
Center 462.7 MHz
#Res BW 3 kHz
#VBW 10 kHz
Span 50 kHz
Sweep 6.867 ms
Occupied Bandwidth
14.091 kHz
Total Power 30.1 dBm
Transmit Freq Error -280 Hz
OBW Power 99.00 %
x dB Bandwidth 19.70 kHz
x dB -26.00 dB
MSG
STATUS

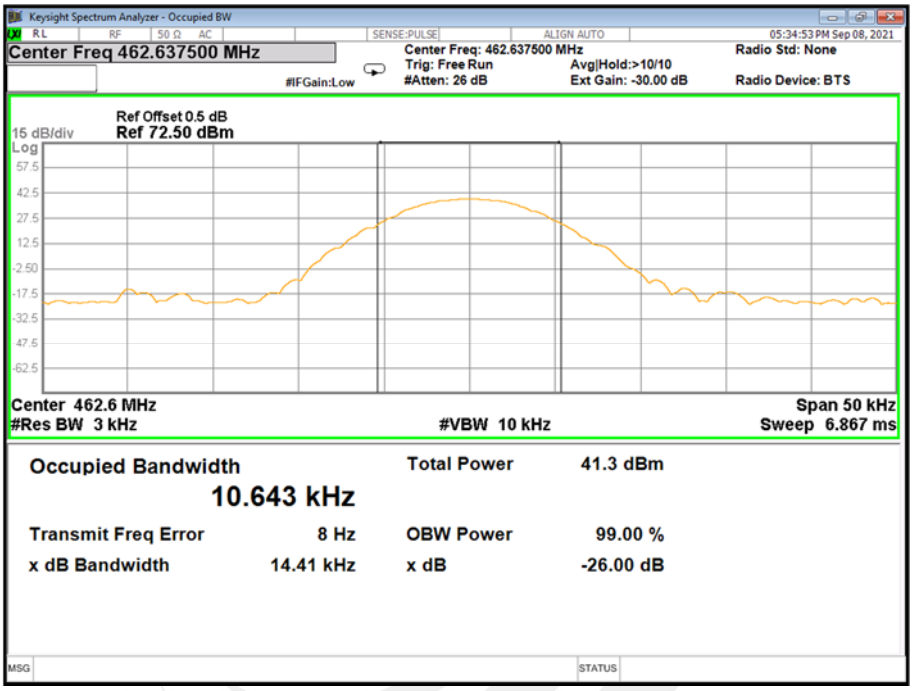
CH27


Keysight Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:PULSE
ALIGN AUTO
05:49:27 PM Sep 08, 2021
Center Freq 467.650000 MHz
#IFGain:Low
Center Freq: 467.650000 MHz
Trig: Free Run
#Atten: 26 dB
Avg|Hold:>10/10
Ext Gain: -30.00 dB
Radio Std: None
Radio Device: BTS
Ref Offset 0.5 dB
15 dB/div
Ref 72.50 dBm
Log
57.5
42.5
27.5
12.5
-2.50
-17.5
-32.5
-47.5
-62.5
Center 467.7 MHz
#Res BW 3 kHz
#VBW 10 kHz
Span 50 kHz
Sweep 6.867 ms
Occupied Bandwidth
15.068 kHz
Total Power 29.7 dBm
Transmit Freq Error 394 Hz
OBW Power 99.00 %
x dB Bandwidth 19.41 kHz
x dB -26.00 dB
MSG
STATUS

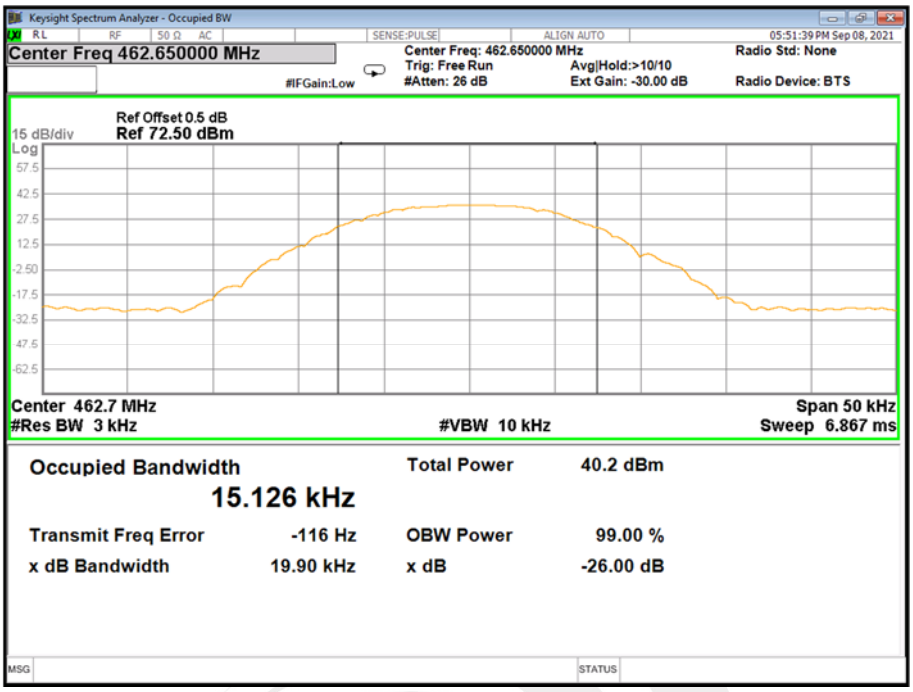
High Power

Operation Mode	Test Channel	Test Frequency(MHz)	99% Occupied Bandwidth(KHz)	26dB Bandwidth (KHz)	Limits（KHz）	Result
GMRS	4	462.6375	10.643	14.41	20	Pass
	19	462.6500	15.126	19.9	20	Pass
	27	467.6500	14.811	19.97	20	Pass

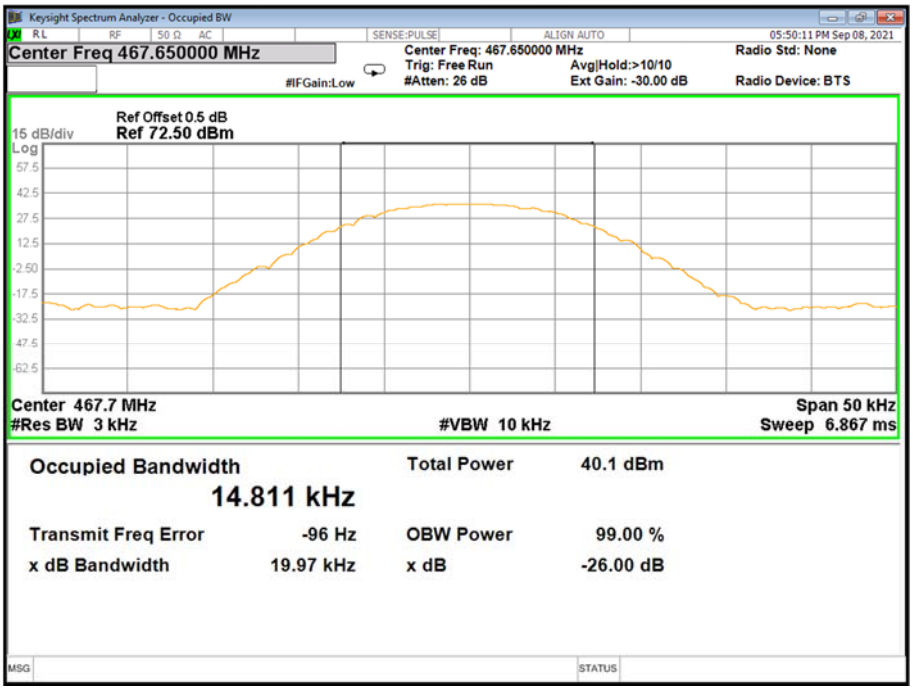
CH4



CH19


Keysight Spectrum Analyzer - Occupied BW
Center Freq 462.650000 MHz
Center Freq: 462.650000 MHz
Trig: Free Run
#Atten: 26 dB
Avg|Hold:>10/10
Ext Gain: -30.00 dB
Radio Std: None
Radio Device: BTS
05:51:39 PM Sep 08, 2021
#IFGain:Low
Ref Offset 0.5 dB
15 dB/div
Ref 72.50 dBm
Log
Center 462.7 MHz
#Res BW 3 kHz
#VBW 10 kHz
Span 50 kHz
Sweep 6.867 ms
Occupied Bandwidth
15.126 kHz
Total Power 40.2 dBm
Transmit Freq Error -116 Hz
OBW Power 99.00 %
x dB Bandwidth 19.90 kHz
x dB -26.00 dB
MSG
STATUS

CH27


Keysight Spectrum Analyzer - Occupied BW
Center Freq 467.650000 MHz
Center Freq: 467.650000 MHz
Trig: Free Run
#Atten: 26 dB
Avg|Hold:>10/10
Ext Gain: -30.00 dB
Radio Std: None
Radio Device: BTS
05:50:11 PM Sep 08, 2021
#IFGain:Low
Ref Offset 0.5 dB
15 dB/div
Ref 72.50 dBm
Log
Center 467.7 MHz
#Res BW 3 kHz
#VBW 10 kHz
Span 50 kHz
Sweep 6.867 ms
Occupied Bandwidth
14.811 kHz
Total Power 40.1 dBm
Transmit Freq Error -96 Hz
OBW Power 99.00 %
x dB Bandwidth 19.97 kHz
x dB -26.00 dB
MSG
STATUS

6. TRANSMITTER OUTPUT POWER AND EFFECTIVE RADIATED POWER (E.R.P)

6.1 LIMIT

GMRS:

(a) 462/467 MHz main channels. The limits in this paragraph apply to stations transmitting on any of the 462 MHz main channels or any of the 467 MHz main channels. Each GMRS transmitter type must be capable of operating within the allowable power range. GMRS licensees are responsible for ensuring that their GMRS stations operate in compliance with these limits.
(1) The transmitter output power of mobile, repeater and base stations must not exceed 50 Watts.
(2) The transmitter output power of fixed stations must not exceed 15 Watts.
(b) 462 MHz interstitial channels. The effective radiated power (ERP) of mobile, hand-held portable and base stations transmitting on the 462 MHz interstitial channels must not exceed 5 Watts.
(c) 467 MHz interstitial channels. The effective radiated power (ERP) of hand-held portable units transmitting on the 467 MHz interstitial channels must not exceed 0.5 Watt. Each GMRS transmitter type capable of transmitting on these channels must be designed such that the ERP does not exceed 0.5 Watt.

6.2 TEST PROCEDURE

The procedure of conducted power is as follows:
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. The EUT connect to the Spectrum Analyzer through 30 dB attenuator.

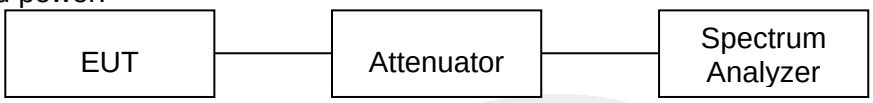
The procedure of effective radiated power is as follows:

1. EUT was placed on a 1.5 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 three 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 BW=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 (P_{Mea}) is applied to the input of thesubstitution 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 (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

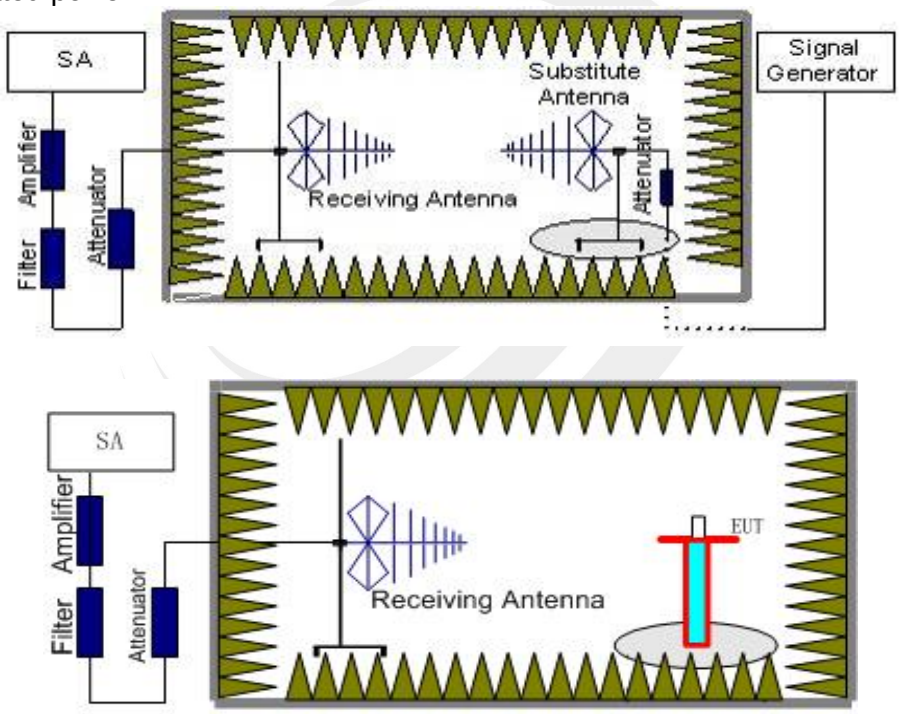
5. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test. The measurement results are obtained as described below:
   Power(EIRP)=P_{Mea}- P_{Ag} - P_{cl} + G_a
   We used 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)=P_{Mea}- P_{cl} +G_a
6. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power
7. ERP can be calculated from EIRP by subtracting the gain of the dipole,
   ERP=Reading - Cable loss + Antenna Gain - 2.15

6.3 TEST SETUP

Conducted power:



Effective radiated power:



6.4 TEST RESULTS

Effective radiated power:

Low Power:

Operation Mode	Test Channel	Test Frequency(MHz)	Output Power (dBm)	Ant Gain(dBi)	ERP (dBm)	ERP (W)	Limit (W)	Polarization	Result
GMRS	1	462.5625	26.81	1.80	26.46	0.44	5	V	Pass
			26.38	1.80	26.03	0.40	5	H	Pass
	4	462.6375	27.10	1.80	26.75	0.47	5	V	Pass
			26.21	1.80	25.86	0.39	5	H	Pass
	7	462.7125	26.50	1.80	26.15	0.41	5	V	Pass
			25.98	1.80	25.63	0.37	5	H	Pass
	8	467.5625	26.47	1.80	26.12	0.41	0.5	V	Pass
			26.26	1.80	25.91	0.39	0.5	H	Pass
	11	467.6375	27.02	1.80	26.67	0.46	0.5	V	Pass
			25.92	1.80	25.57	0.36	0.5	H	Pass
	14	467.7125	26.42	1.80	26.07	0.40	0.5	V	Pass
			26.04	1.80	25.69	0.37	0.5	H	Pass
	15	462.5500	26.54	1.80	26.19	0.42	15	V	Pass
			26.29	1.80	25.94	0.39	15	H	Pass
	19	462.6500	27.11	1.80	26.76	0.47	15	V	Pass
			26.54	1.80	26.19	0.42	15	H	Pass
	22	462.7250	26.20	1.80	25.85	0.38	15	V	Pass
			25.91	1.80	25.56	0.36	15	H	Pass
	23	467.5500	26.79	1.80	26.44	0.44	15	V	Pass
			26.13	1.80	25.78	0.38	15	H	Pass
	27	467.6500	27.30	1.80	26.95	0.50	15	V	Pass
			26.77	1.80	26.42	0.44	15	H	Pass
	30	467.7250	26.12	1.80	25.77	0.38	15	V	Pass
			25.48	1.80	25.13	0.33	15	H	Pass

High Power:

Operation Mode	Test Channel	Test Frequency(MHz)	Output Power (dBm)	Ant Gain(dBi)	ERP (dBm)	ERP (W)	Limit (W)	Polarization	Result
GMRS	1	462.5625	35.96	1.80	35.61	3.64	5	V	Pass
			35.49	1.80	35.14	3.27	5	H	Pass
	4	462.6375	35.91	1.80	35.56	3.60	5	V	Pass
			35.33	1.80	34.98	3.15	5	H	Pass
	7	462.7125	35.80	1.80	35.45	3.51	5	V	Pass
			35.42	1.80	35.07	3.21	5	H	Pass
	15	462.5500	36.86	1.80	36.51	4.48	15	V	Pass
			36.75	1.80	36.40	4.37	15	H	Pass
	19	462.6500	36.87	1.80	36.52	4.49	15	V	Pass
			36.98	1.80	36.63	4.60	15	H	Pass
	22	462.7250	36.85	1.80	36.50	4.47	15	V	Pass
			36.79	1.80	36.44	4.41	15	H	Pass
	23	467.5500	36.84	1.80	36.49	4.46	15	V	Pass
			36.90	1.80	36.55	4.52	15	H	Pass
	27	467.6500	36.94	1.80	36.59	4.56	15	V	Pass
			36.14	1.80	35.79	3.79	15	H	Pass
	30	467.7250	36.96	1.80	36.61	4.58	15	V	Pass
			36.97	1.80	36.62	4.59	15	H	Pass
Note:Output Power = ERP - Ant Gain +2.15									

7. EMISSION MASK

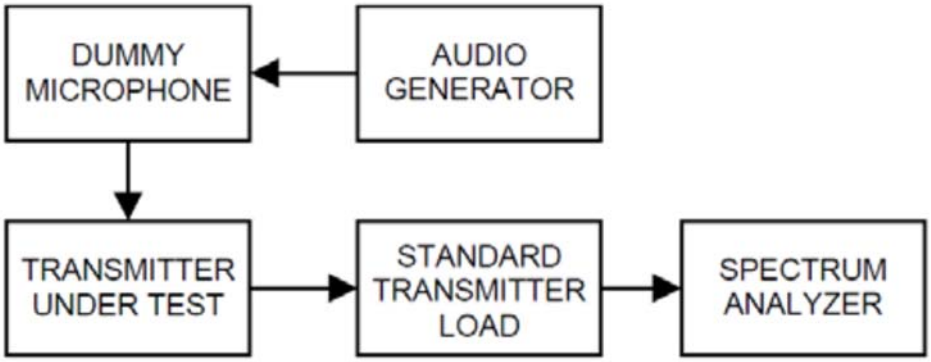
7.1 LIMIT

GMRS:
a. 25 dB (decibels) on any frequency removed from the center of the authorized bandwidth by more than 50% up to and including 100% of the authorized bandwidth.
b. 35 dB on any frequency removed from the center of the authorized bandwidth by more than 100% up to and including 250% of the authorized bandwidth.
c. 43 + 10 log (P) dB on any frequency removed from the center of the authorized bandwidth by more than 250%.

7.2 TEST PROCEDURE

1. The EUT was connected to the spectrum analyzer through sufficent attenuation.
2. Set EUT as digital data mode.
3. Set SPA Center Frequency=fundamental frequency, RBW=300Hz, VBW=3KHz, span =120KHz.

7.3 TEST SETUP

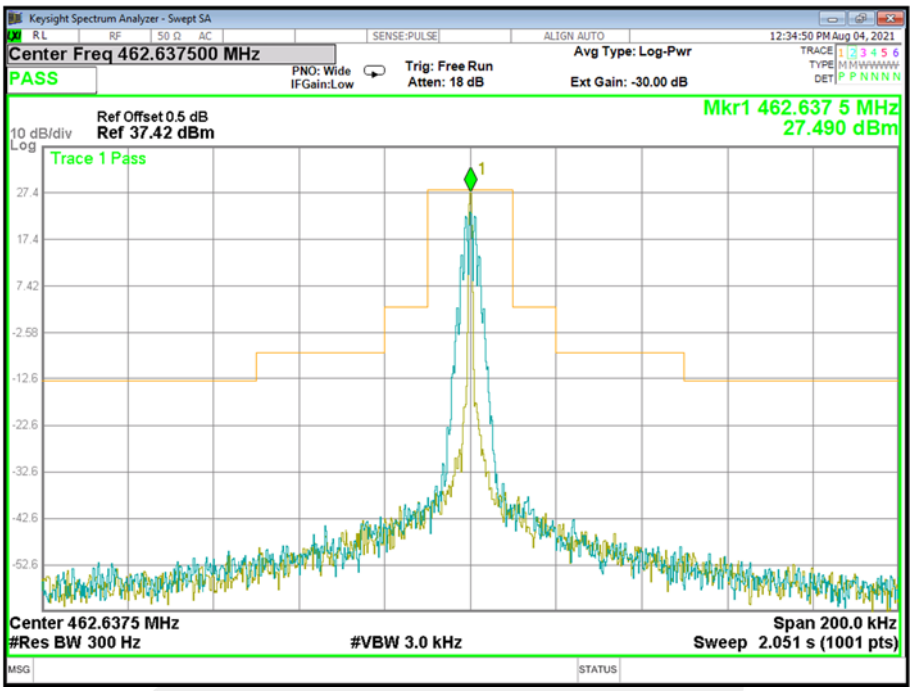


7.4 EUT OPERATION CONDITIONS

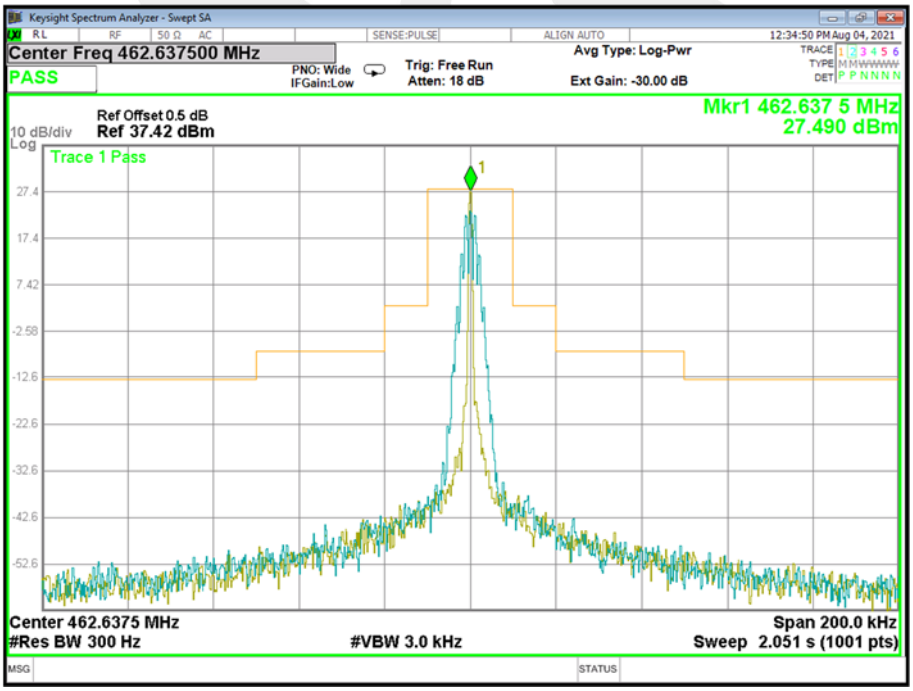
TX mode.

7.5 TEST RESULT

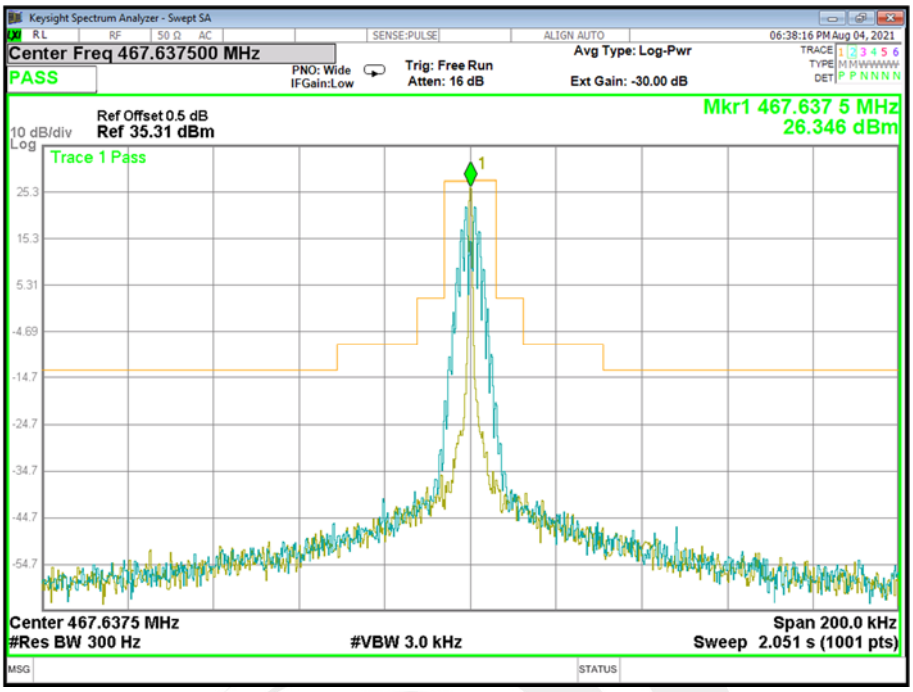
Mode 1



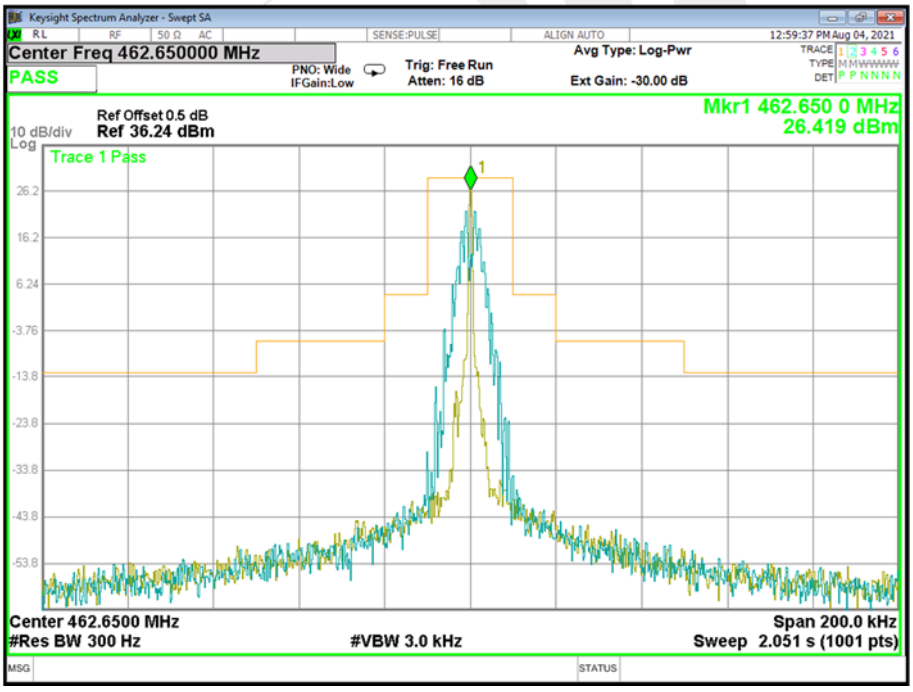
Mode 2



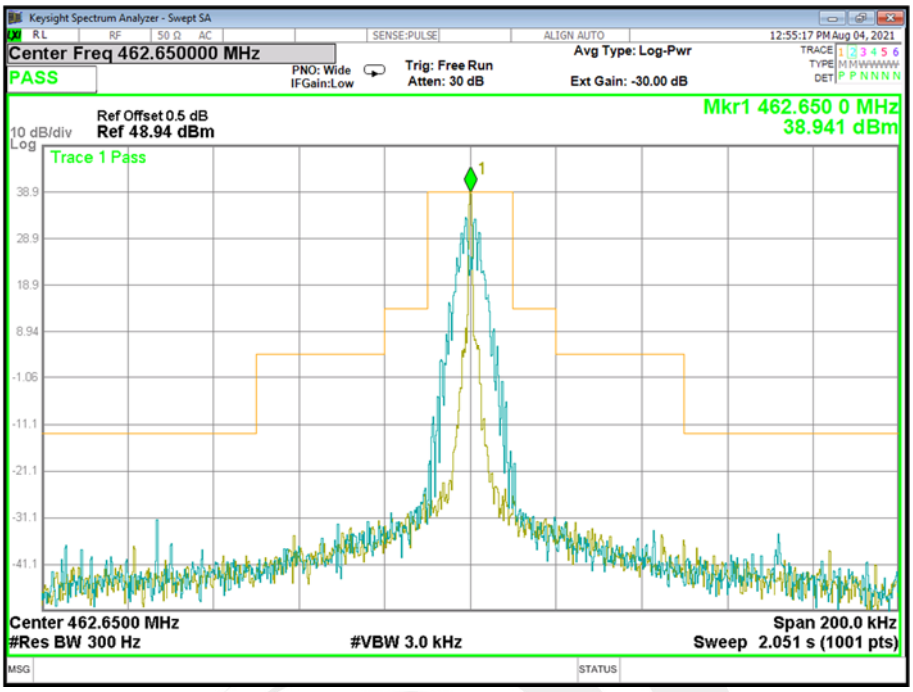
Mode 3


Keysight Spectrum Analyzer - Swept SA
Center Freq 467.637500 MHz
PASS
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 16 dB
Avg Type: Log-Pwr
Ext Gain: -30.00 dB
06:38:16 PM Aug 04, 2021
Ref Offset 0.5 dB
10 dB/div
Log
Ref 35.31 dBm
Mkr1 467.637 5 MHz
26.346 dBm
Trace 1 Pass
25.3
15.3
5.31
-4.69
-14.7
-24.7
-34.7
-44.7
-54.7
Center 467.6375 MHz
#Res BW 300 Hz
#VBW 3.0 kHz
Span 200.0 kHz
Sweep 2.051 s (1001 pts)

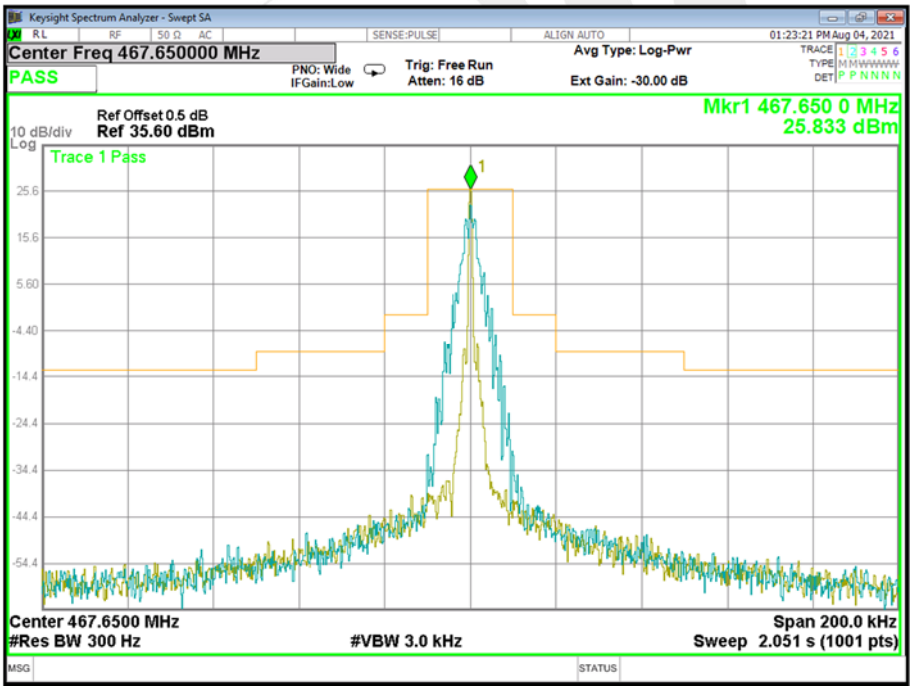
Mode 4


Keysight Spectrum Analyzer - Swept SA
Center Freq 462.650000 MHz
PASS
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 16 dB
Avg Type: Log-Pwr
Ext Gain: -30.00 dB
12:59:37 PM Aug 04, 2021
Ref Offset 0.5 dB
10 dB/div
Log
Ref 36.24 dBm
Mkr1 462.650 0 MHz
26.419 dBm
Trace 1 Pass
26.2
16.2
6.24
-3.76
-13.8
-23.8
-33.8
-43.8
-53.8
Center 462.6500 MHz
#Res BW 300 Hz
#VBW 3.0 kHz
Span 200.0 kHz
Sweep 2.051 s (1001 pts)

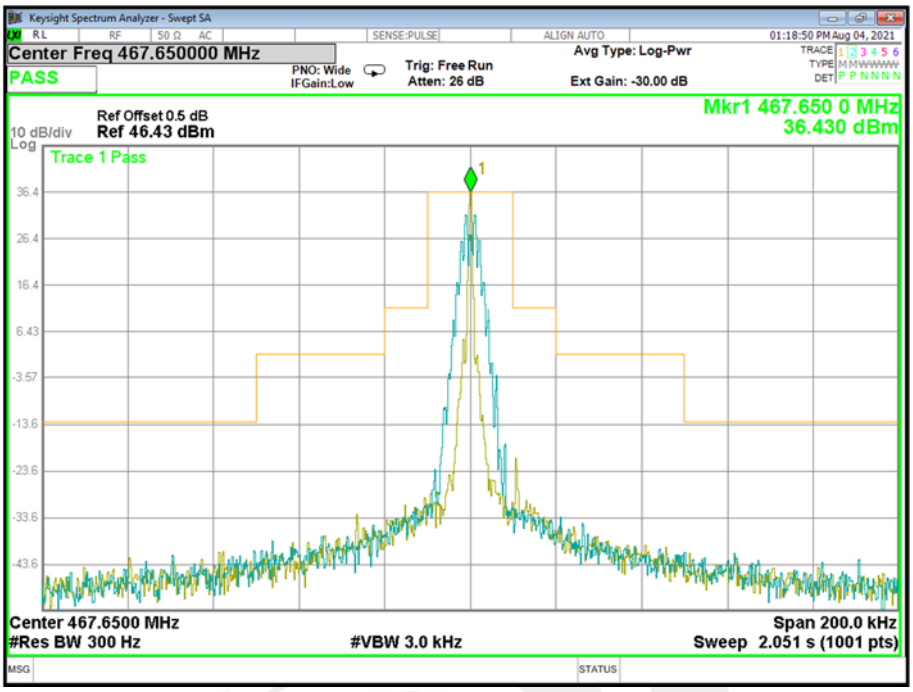
Mode 5


Keysight Spectrum Analyzer - Swept SA
Center Freq 462.650000 MHz
PASS
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Ext Gain: -30.00 dB
12:55:17 PM Aug 04, 2021
Ref Offset 0.5 dB
10 dB/div
Log
Ref 48.94 dBm
Mkr1 462.650 0 MHz
38.941 dBm
Trace 1 Pass
38.9
28.9
18.9
8.94
-1.06
-11.1
-21.1
-31.1
-41.1
Center 462.6500 MHz
#Res BW 300 Hz
#VBW 3.0 kHz
Span 200.0 kHz
Sweep 2.051 s (1001 pts)

Mode 6


Keysight Spectrum Analyzer - Swept SA
Center Freq 467.650000 MHz
PASS
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 16 dB
Avg Type: Log-Pwr
Ext Gain: -30.00 dB
01:23:21 PM Aug 04, 2021
Ref Offset 0.5 dB
10 dB/div
Log
Ref 35.60 dBm
Mkr1 467.650 0 MHz
25.833 dBm
Trace 1 Pass
25.6
15.6
5.60
-4.40
-14.4
-24.4
-34.4
-44.4
-54.4
Center 467.6500 MHz
#Res BW 300 Hz
#VBW 3.0 kHz
Span 200.0 kHz
Sweep 2.051 s (1001 pts)

Mode 7


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:PULSE
ALIGN AUTO
01:18:50 PM Aug 04, 2021
Center Freq 467.650000 MHz
PASS
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 26 dB
Avg Type: Log-Pwr
Ext Gain: -30.00 dB
TRACE 1 2 3 4 5 6
TYPE M M W W W W
DET P P N N N N
Ref Offset 0.5 dB
10 dB/div
Log
Ref 46.43 dBm
Mkr1 467.650 0 MHz
36.430 dBm
Trace 1 Pass
36.4
26.4
16.4
6.43
-3.57
-13.6
-23.6
-33.6
-43.6
Center 467.6500 MHz
#Res BW 300 Hz
#VBW 3.0 kHz
Span 200.0 kHz
Sweep 2.051 s (1001 pts)
MSG
STATUS

8. FREQUENCY STABILITY

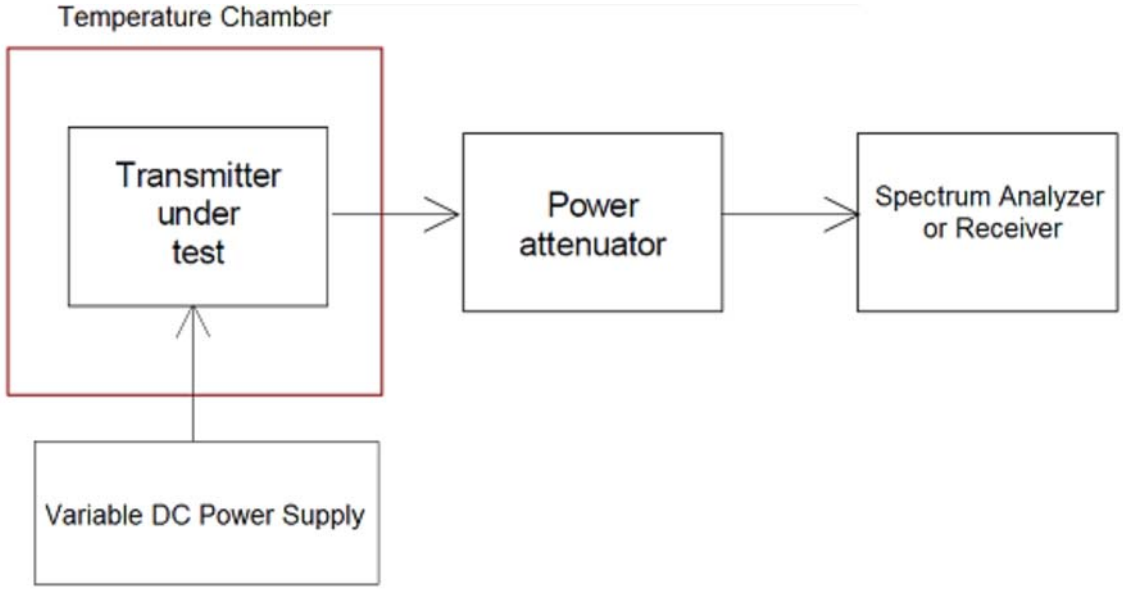
8.1 LIMIT

(a) The carrier frequency of each GMRS transmitter transmitting an emission with an occupied bandwidth greater than 12.5 kHz must remain within 5 parts-per-million (ppm) of the channel center frequencies listed in under normal operating conditions.
(b) The carrier frequency of each GMRS transmitter transmitting an emission with an occupied bandwidth of 12.5 kHz or less must remain within 2.5 ppm of the channel center frequencies listed in under normal operating conditions.

8.2 TEST PROCEDURE

1. The frequency stability shall be measured with variation of ambient temperature from -30℃ to +50℃
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 3.15V to 4.26V.
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

8.3 TEST SETUP



8.4 EUT OPERATION CONDITIONS

TX mode.

8.5 TEST RESULT

Low Power

GMRS_Channl 4(462.6375MHz)						
Voltage	Temperature (°C)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency error (ppm)	Limit	Result
Normal Voltage	-30	462.6375	462.6375	0.0000	±5ppm	Pass
	-20	462.6375	462.6380	1.0808		
	-10	462.6375	462.6379	0.8646		
	0	462.6375	462.6378	0.6485		
	10	462.6375	462.6379	0.8646		
	20	462.6375	462.6381	1.2969		
	30	462.6375	462.6377	0.4323		
	40	462.6375	462.6378	0.6485		
	50	462.6375	462.6381	1.2969		
Maximum Voltage	20	462.6375	462.6380	1.0808		
BEP	20	462.6375	462.6377	0.4323		

GMRS_Channl 11(467.6375MHz)						
Voltage	Temperature (°C)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency error (ppm)	Limit	Result
Normal Voltage	-30	467.6375	467.6378	0.6415	±2.5ppm	Pass
	-20	467.6375	467.6375	0.0000		
	-10	467.6375	467.6378	0.6415		
	0	467.6375	467.6380	1.0692		
	10	467.6375	467.6379	0.8554		
	20	467.6375	467.6380	1.0692		
	30	467.6375	467.6376	0.2138		
	40	467.6375	467.6376	0.2138		
	50	467.6375	467.6376	0.2138		
Maximum Voltage	20	467.6375	467.6380	1.0692		
BEP	20	467.6375	467.6377	0.4277		

GMRS_Channl 19(462.6500MHz)						
Voltage	Temperature (°C)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency error (ppm)	Limit	Result
Normal Voltage	-30	462.6500	462.6501	0.2161	±5ppm	Pass
	-20	462.6500	462.6500	0.0000		
	-10	462.6500	462.6501	0.2161		
	0	462.6500	462.6502	0.4323		
	10	462.6500	462.6500	0.0000		
	20	462.6500	462.6502	0.4323		
	30	462.6500	462.6505	1.0807		
	40	462.6500	462.6501	0.2161		
	50	462.6500	462.6502	0.4323		
Maximum Voltage	20	462.6500	462.6504	0.8646		
BEP	20	462.6500	462.6501	0.2161		

GMRS_Channl 27(467.6500MHz)						
Voltage	Temperature (°C)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency error (ppm)	Limit	Result
Normal Voltage	-30	467.6500	467.6501	0.2138	±5ppm	Pass
	-20	467.6500	467.6501	0.2138		
	-10	467.6500	467.6503	0.6415		
	0	467.6500	467.6506	1.2830		
	10	467.6500	467.6502	0.4277		
	20	467.6500	467.6501	0.2138		
	30	467.6500	467.6505	1.0692		
	40	467.6500	467.6503	0.6415		
	50	467.6500	467.6501	0.2138		
Maximum Voltage	20	467.6500	467.6504	0.8553		
BEP	20	467.6500	467.6504	0.8553		

High Power

GMRS_Channl 4(462.6375MHz)						
Voltage	Temperature (°C)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency error (ppm)	Limit	Result
Normal Voltage	-30	462.6375	462.6376	0.2162	±5ppm	Pass
	-20	462.6375	462.6378	0.6485		
	-10	462.6375	462.6378	0.6485		
	0	462.6375	462.6381	1.2969		
	10	462.6375	462.6374	-0.2162		
	20	462.6375	462.6375	0.0000		
	30	462.6375	462.6372	-0.6485		
	40	462.6375	462.638	1.0808		
	50	462.6375	462.6381	1.2969		
Maximum Voltage	20	462.6375	462.6372	-0.6485		
BEP	20	462.6375	462.6375	0.0000		

GMRS_Channl 19(462.6500MHz)						
Voltage	Temperature (°C)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency error (ppm)	Limit	Result
Normal Voltage	-30	462.6500	462.6500	0.0000	±5ppm	Pass
	-20	462.6500	462.6503	0.6484		
	-10	462.6500	462.6501	0.2161		
	0	462.6500	462.6505	1.0807		
	10	462.6500	462.6501	0.2161		
	20	462.6500	462.6503	0.6484		
	30	462.6500	462.6501	0.2161		
	40	462.6500	462.6505	1.0807		
	50	462.6500	462.6504	0.8646		
Maximum Voltage	20	462.6500	462.6502	0.4323		
BEP	20	462.6500	462.6502	0.4323		

GMRS_Channl 27(467.6500MHz)						
Voltage	Temperature (°C)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency error (ppm)	Limit	Result
Normal Voltage	-30	467.6500	467.6501	0.2138	±5ppm	Pass
	-20	467.6500	467.6502	0.4277		
	-10	467.6500	467.6500	0.0000		
	0	467.6500	467.6504	0.8553		
	10	467.6500	467.6503	0.6415		
	20	467.6500	467.6500	0.0000		
	30	467.6500	467.6501	0.2138		
	40	467.6500	467.6506	1.2830		
	50	467.6500	467.6506	1.2830		
Maximum Voltage	20	467.6500	467.6505	1.0692		
BEP	20	467.6500	467.6500	0.0000		

9. MODULATION LIMIT

9.1 LIMIT

GMRS:

(a) Main channels. The peak frequency deviation for emissions to be transmitted on the main channels must not exceed ± 5 kHz.

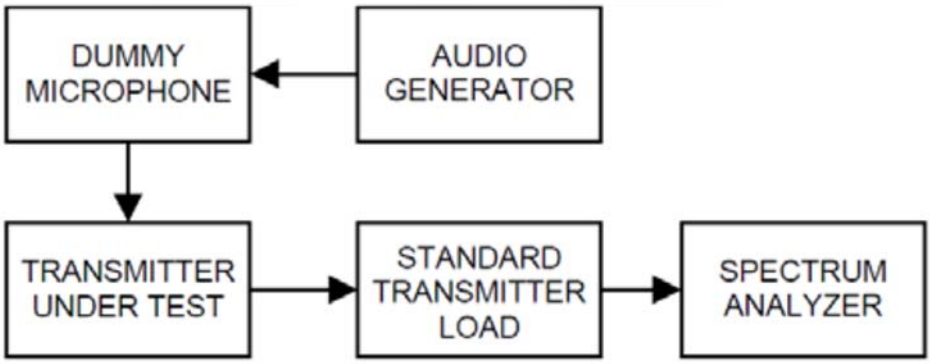
(b) 462 MHz interstitial channels. The peak frequency deviation for emissions to be transmitted on the 462 MHz interstitial channels must not exceed ± 5 kHz.

(c) 467 MHz interstitial channels. The peak frequency deviation for emissions to be transmitted on the 467 MHz interstitial channels must not exceed ± 2.5 kHz, and the highest audio frequency contributing substantially to modulation must not exceed 3.125 kHz.

9.2 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 lev el 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.

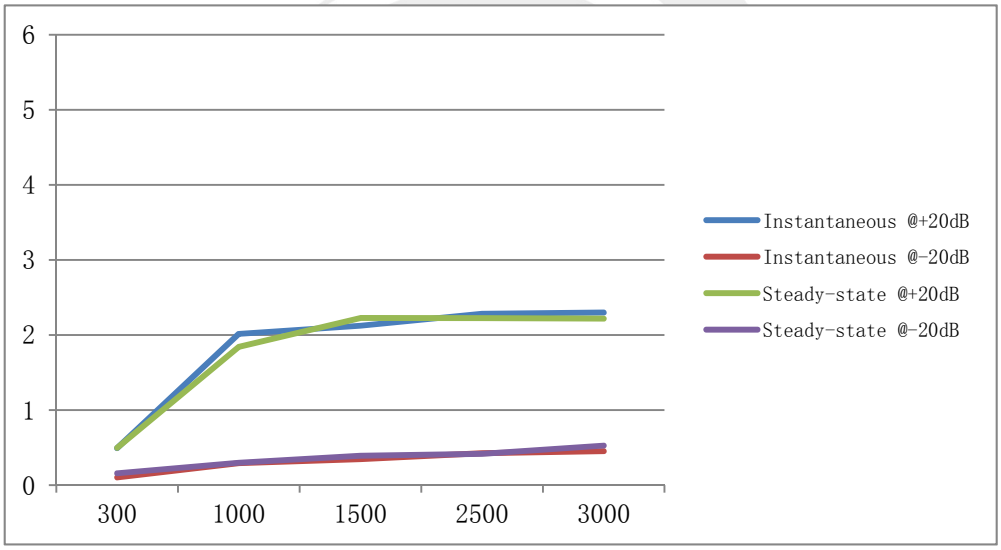
9.3 TEST SETUP



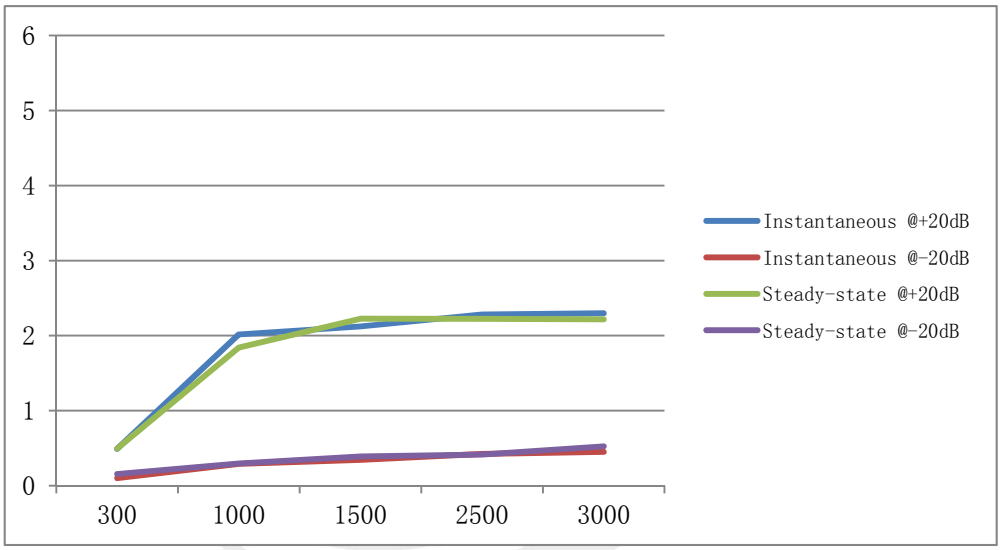
9.4 TEST RESULT

Low Power

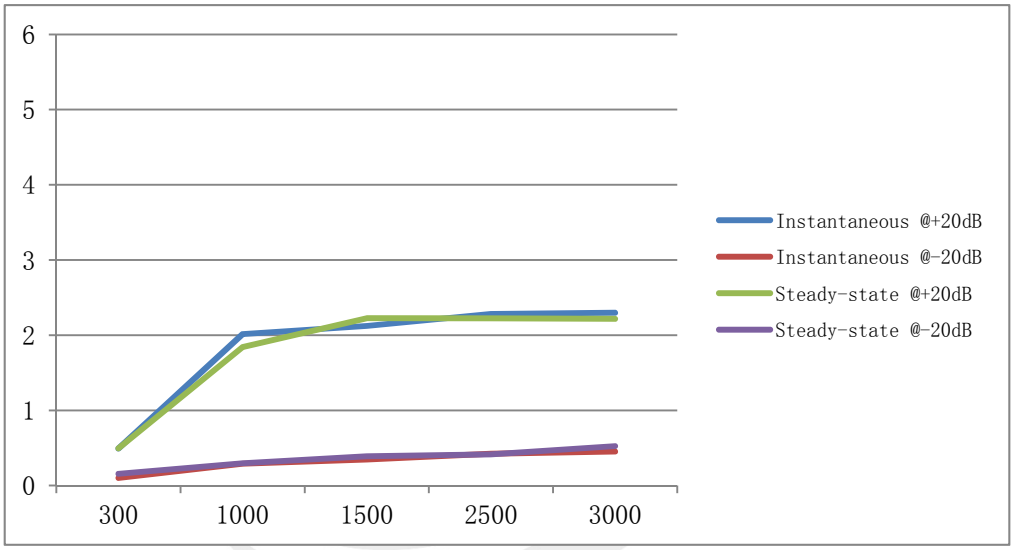
GMRS_Channl 4(462.6375MHz)						
Audio Frequency (Hz)	Instantaneous		Steady-state		Limit (kHz)	Result
	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)		
300	0.498	0.091	0.475	0.124	±5	Pass
1000	1.953	0.303	1.804	0.259		
1500	2.196	0.349	2.251	0.375		
2500	2.231	0.406	2.201	0.403		
3000	2.294	0.466	2.244	0.5		



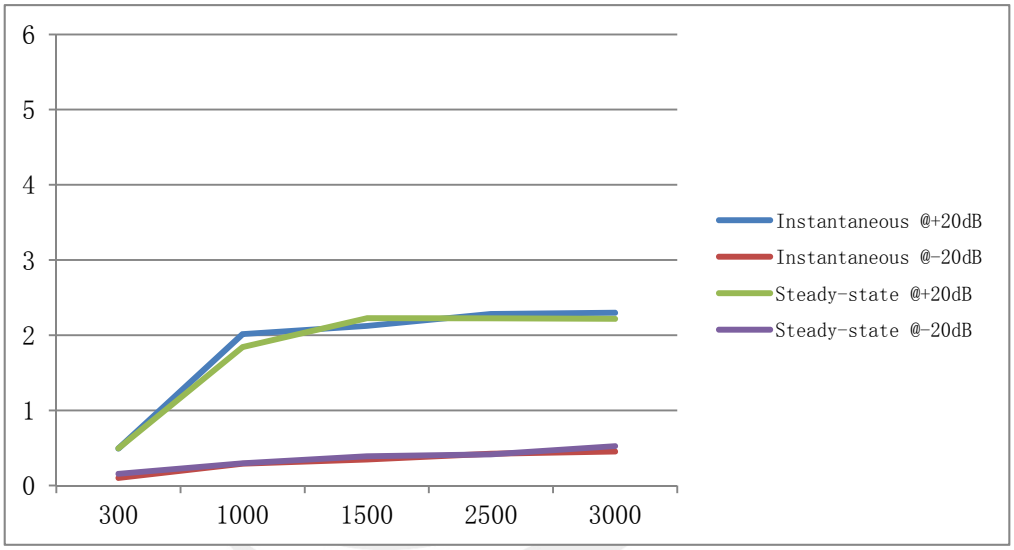
GMRS_Channl 11(467.6375MHz)						
Audio Frequency (Hz)	Instantaneous		Steady-state		Limit (kHz)	Result
	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)		
300	0.492	0.101	0.495	0.156	±2.5	Pass
1000	2.015	0.291	1.841	0.297		
1500	2.122	0.345	2.225	0.389		
2500	2.282	0.423	2.223	0.414		
3000	2.298	0.451	2.216	0.525		



GMRS_Channl 19(462.6500MHz)						
Audio Frequency (Hz)	Instantaneous		Steady-state		Limit (kHz)	Result
	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)		
300	0.561	0.158	0.61	0.086	±5	Pass
1000	1.886	0.203	1.929	0.191		
1500	2.151	0.375	2.038	0.396		
2500	2.17	0.387	2.121	0.404		
3000	2.16	0.415	2.132	0.408		

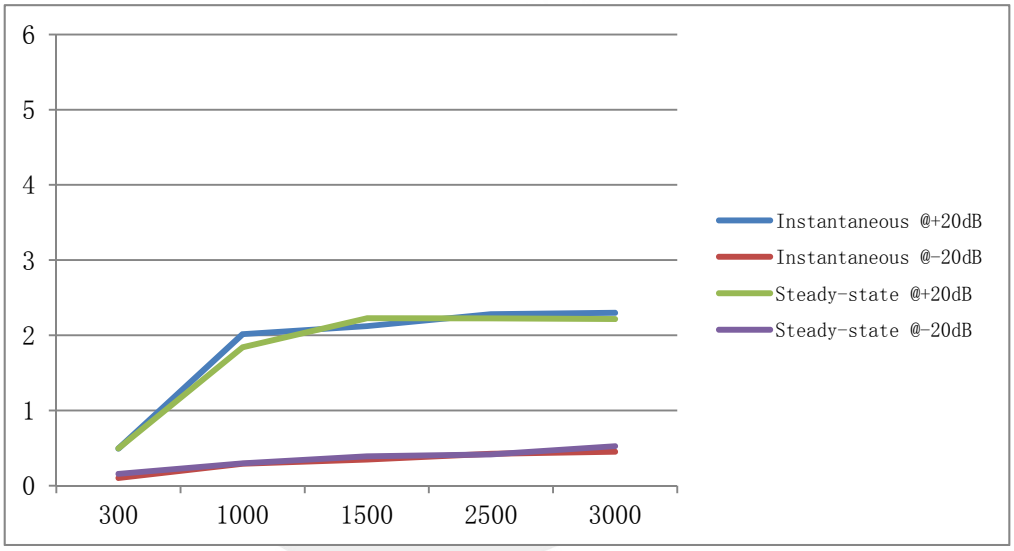


GMRS_Channl 27(467.6500MHz)						
Audio Frequency (Hz)	Instantaneous		Steady-state		Limit (kHz)	Result
	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)		
300	0.556	0.134	0.598	0.122	±5	Pass
1000	1.863	0.231	1.902	0.243		
1500	2.145	0.357	2.016	0.365		
2500	2.135	0.365	2.093	0.396		
3000	2.199	0.438	2.091	0.437		

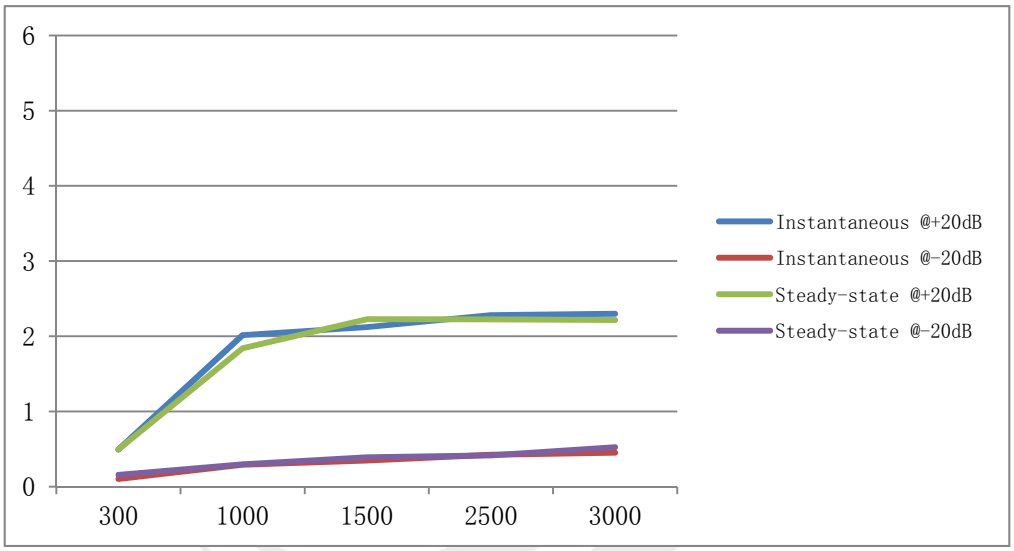


High Power

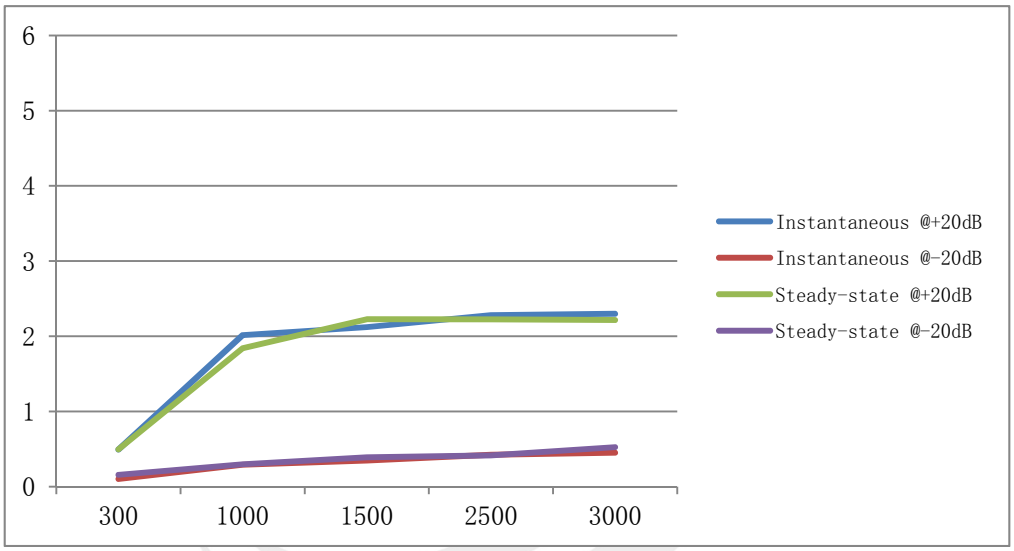
GMRS_Channl 4(462.6375MHz)						
Audio Frequency (Hz)	Instantaneous		Steady-state		Limit (kHz)	Result
	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)		
300	0.494	0.127	0.508	0.044	±5	Pass
1000	2.021	0.191	1.82	0.469		
1500	2.158	0.391	2.145	0.426		
2500	2.175	0.488	2.023	0.421		
3000	2.279	0.418	2.261	0.424		



GMRS_Channl 19(462.6500MHz)						
Audio Frequency (Hz)	Instantaneous		Steady-state		Limit (kHz)	Result
	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)		
300	0.57	0.116	0.594	0.102	±5	Pass
1000	1.868	0.238	1.896	0.193		
1500	2.167	0.323	2.014	0.383		
2500	2.181	0.357	2.133	0.402		
3000	2.186	0.434	2.117	0.403		



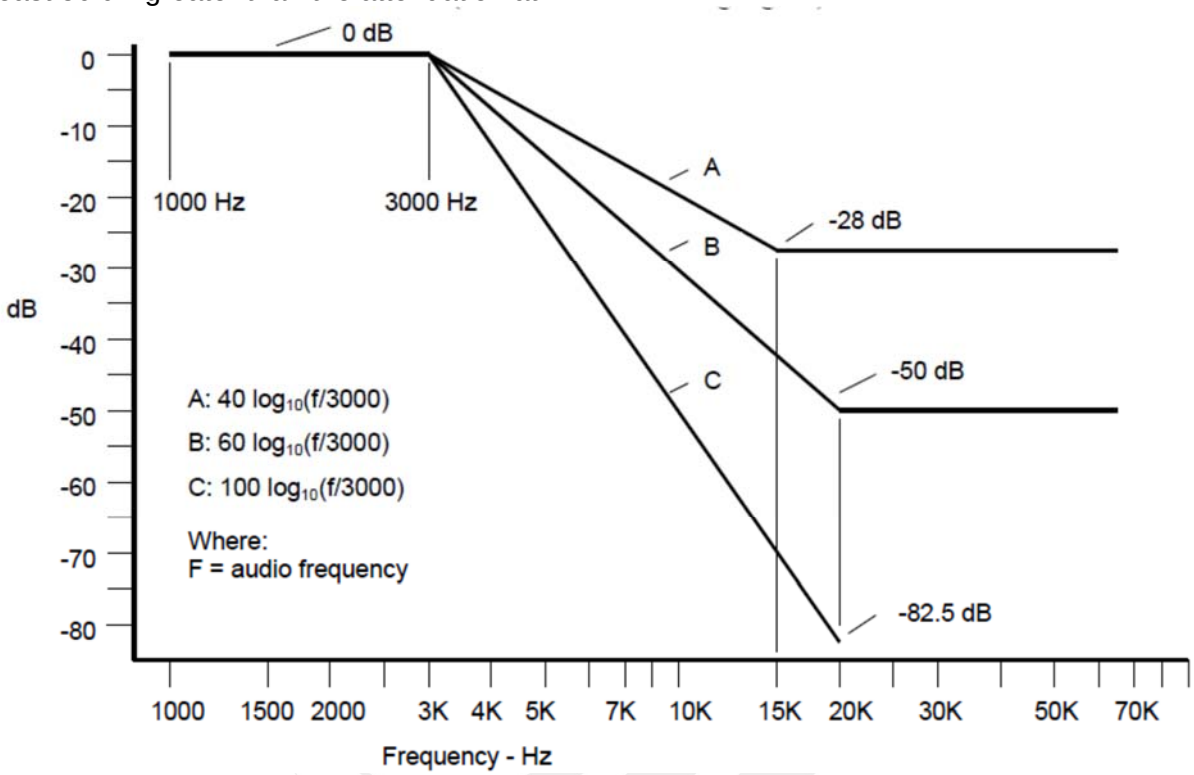
GMRS_Channl 27(467.6500MHz)						
Audio Frequency (Hz)	Instantaneous		Steady-state		Limit (kHz)	Result
	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)	Deviation (@+20dB) (kHz)	Deviation (@-20dB) (kHz)		
300	0.556	0.141	0.612	0.084	±5	Pass
1000	1.832	0.21	1.923	0.231		
1500	2.137	0.32	2.056	0.368		
2500	2.191	0.352	2.11	0.422		
3000	2.166	0.372	2.131	0.428		



10. AUDIO LOW PASS FILTER RESPONSE

10.1 LIMIT

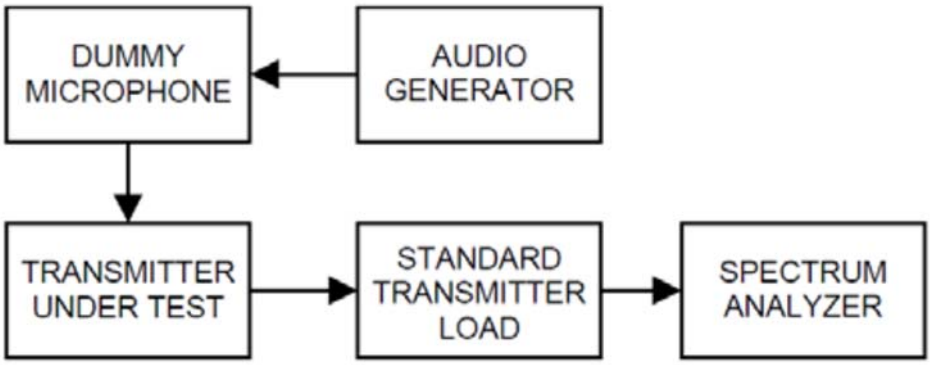
The filter must be between the modulation limiter and the modulated stage of the transmitter. At any frequency (f in kHz) between 3 and 20 kHz, the filter must have an attenuation of at least 60 log10 (f/3) dB greater than the attenuation at 1 kHz. Above 20 kHz, it must have an attenuation of at least 50 dB greater than the attenuation at 1 kHz



10.2 TEST PROCEDURE

1. Configure the EUT as shown in figure
2. Apply a 1000 Hz tone from the audio signal generator and adjust the level per manufacturer's specifications. Record the dB level of the 1000 Hz tone as LEV_{REF}.
3. Set the audio signal generator to the desired test frequency between 3000 Hz and the upper low pass filter limit. Record the dB level at the test frequency as LEV_{FREQ}
4. Calculate the audio frequency response at the test frequency as:
low pass filter response = LEV_{FREQ} - LEV_{REF}

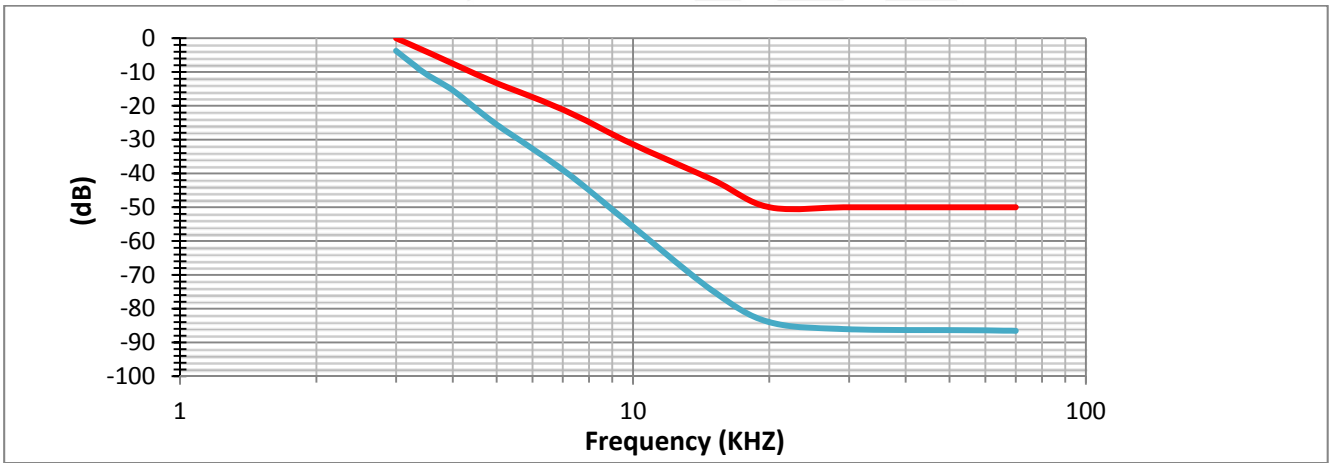
10.3 TEST SETUP



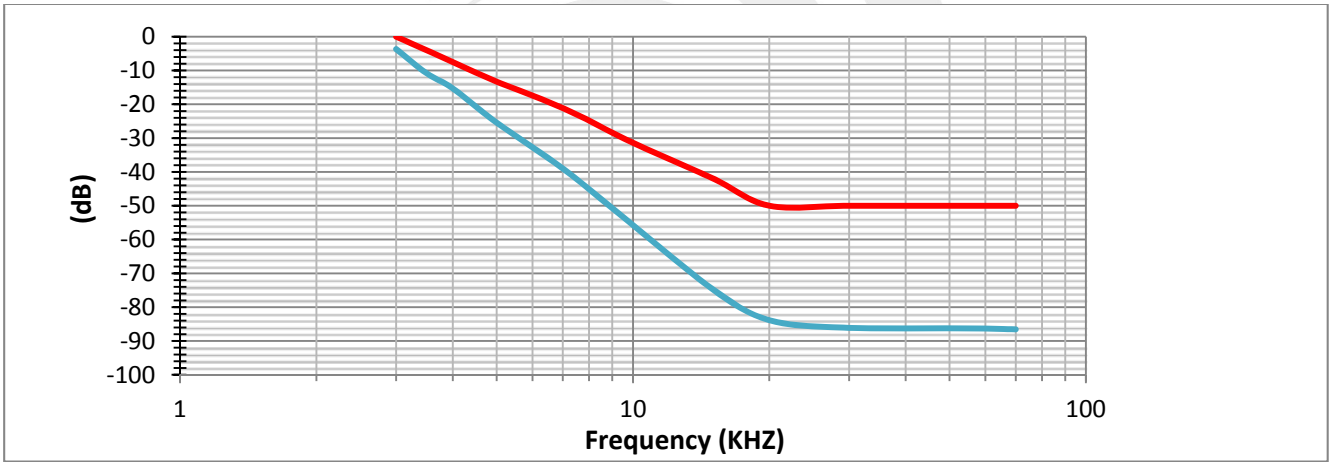
10.4 TEST RESULT

Low Power

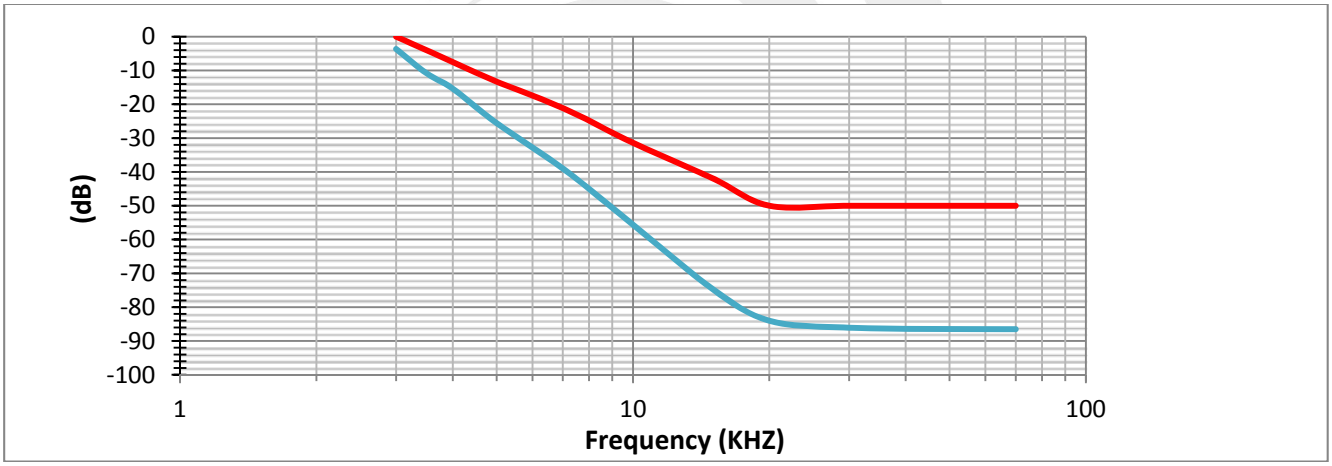
GMRS_CH 4(462.6375MHz)			
Audio Frequency(KHz)	Limit	Response Attenuation(dB)	Result
3	0	-3.77	PASS
3.5	-4	-10.67	
4	-7.5	-15.40	
5	-13.3	-25.54	
7	-21.1	-38.93	
10	-31.4	-55.72	
15	-41.9	-74.73	
20	-50	-83.99	
30	-50	-86.10	
50	-50	-86.35	
70	-50	-86.55	



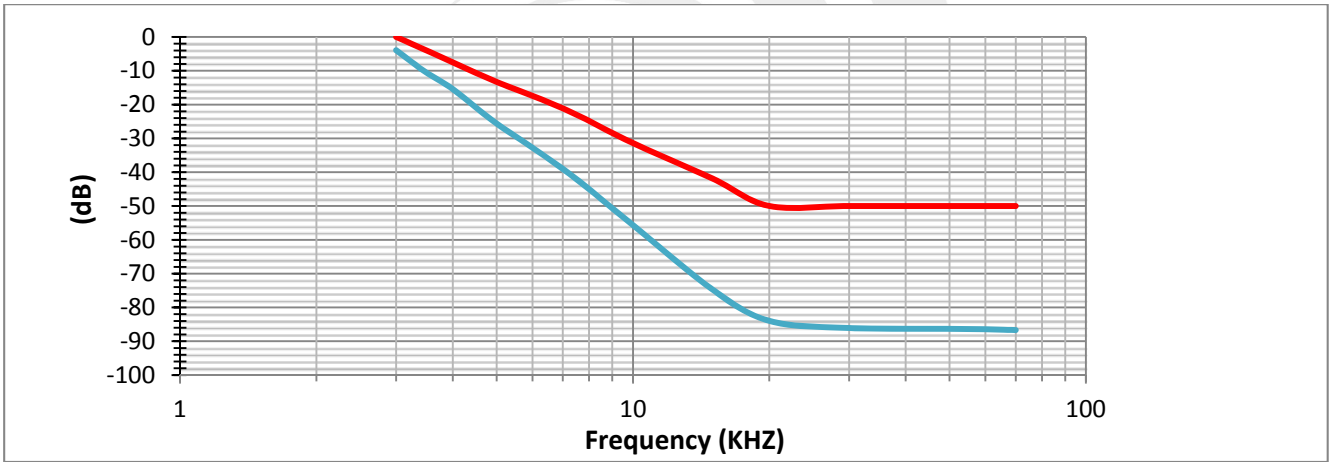
GMRS_CH 11(467.6375MHz)			
Audio Frequency(KHz)	Limit	Response Attenuation(dB)	Result
3	0	-3.66	PASS
3.5	-4	-10.80	
4	-7.5	-15.28	
5	-13.3	-25.43	
7	-21.1	-39.00	
10	-31.4	-55.73	
15	-41.9	-74.67	
20	-50	-83.85	
30	-50	-86.12	
50	-50	-86.23	
70	-50	-86.55	



GMRS_CH 19(462.6500MHz)			
Audio Frequency(KHz)	Limit	Response Attenuation(dB)	Result
3	0	-3.65	PASS
3.5	-4	-10.82	
4	-7.5	-15.36	
5	-13.3	-25.57	
7	-21.1	-38.99	
10	-31.4	-55.59	
15	-41.9	-74.65	
20	-50	-84.01	
30	-50	-86.07	
50	-50	-86.47	
70	-50	-86.51	

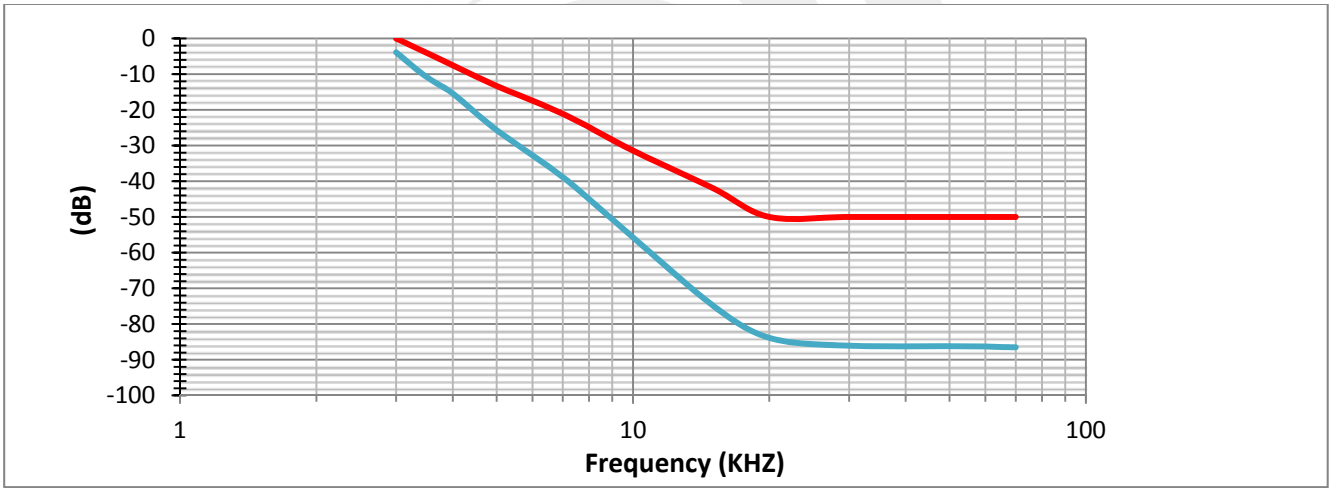


GMRS_CH 27(467.6500MHz)			
Audio Frequency(KHz)	Limit	Response Attenuation(dB)	Result
3	0	-3.94	PASS
3.5	-4	-10.55	
4	-7.5	-15.41	
5	-13.3	-25.61	
7	-21.1	-38.98	
10	-31.4	-55.66	
15	-41.9	-74.74	
20	-50	-83.97	
30	-50	-86.09	
50	-50	-86.31	
70	-50	-86.67	

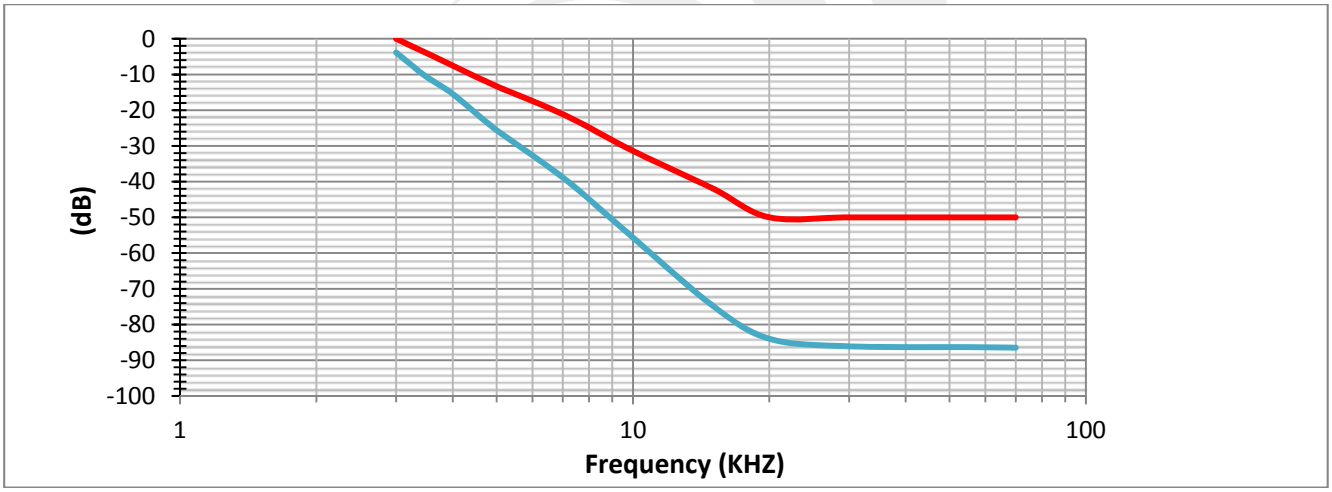


High Power

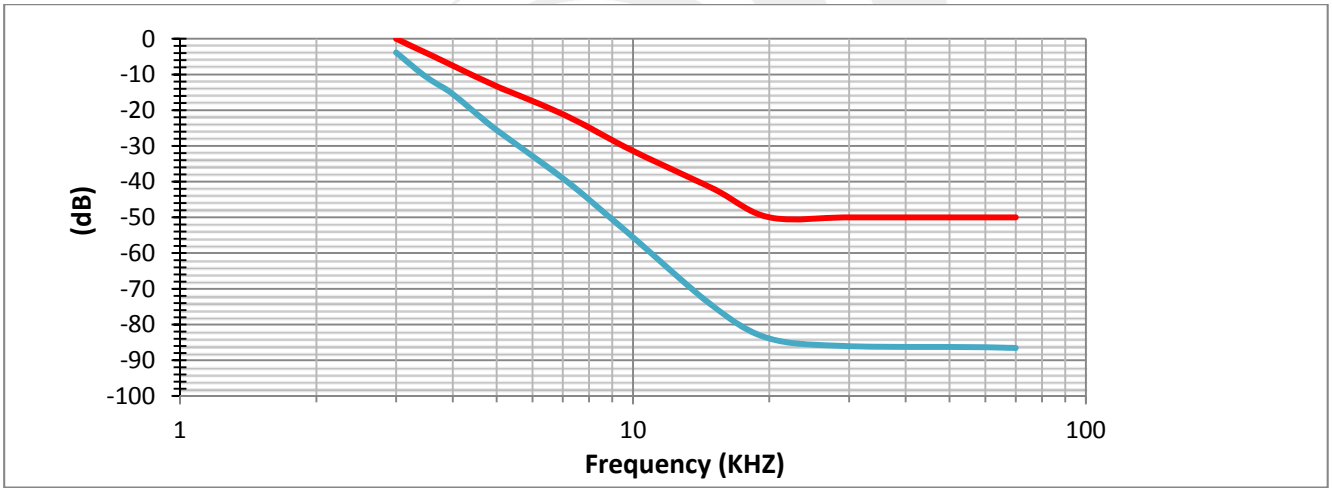
GMRS_CH 4(462.6375MHz)			
Audio Frequency(KHz)	Limit	Response Attenuation(dB)	Result
3	0	-3.89	PASS
3.5	-4	-10.78	
4	-7.5	-15.40	
5	-13.3	-25.66	
7	-21.1	-38.85	
10	-31.4	-55.72	
15	-41.9	-74.75	
20	-50	-83.86	
30	-50	-86.08	
50	-50	-86.19	
70	-50	-86.52	



GMRS_CH 19(462.6500MHz)			
Audio Frequency(KHz)	Limit	Response Attenuation(dB)	Result
3	0	-3.86	PASS
3.5	-4	-10.64	
4	-7.5	-15.43	
5	-13.3	-25.58	
7	-21.1	-38.82	
10	-31.4	-55.68	
15	-41.9	-74.74	
20	-50	-83.99	
30	-50	-86.12	
50	-50	-86.33	
70	-50	-86.48	



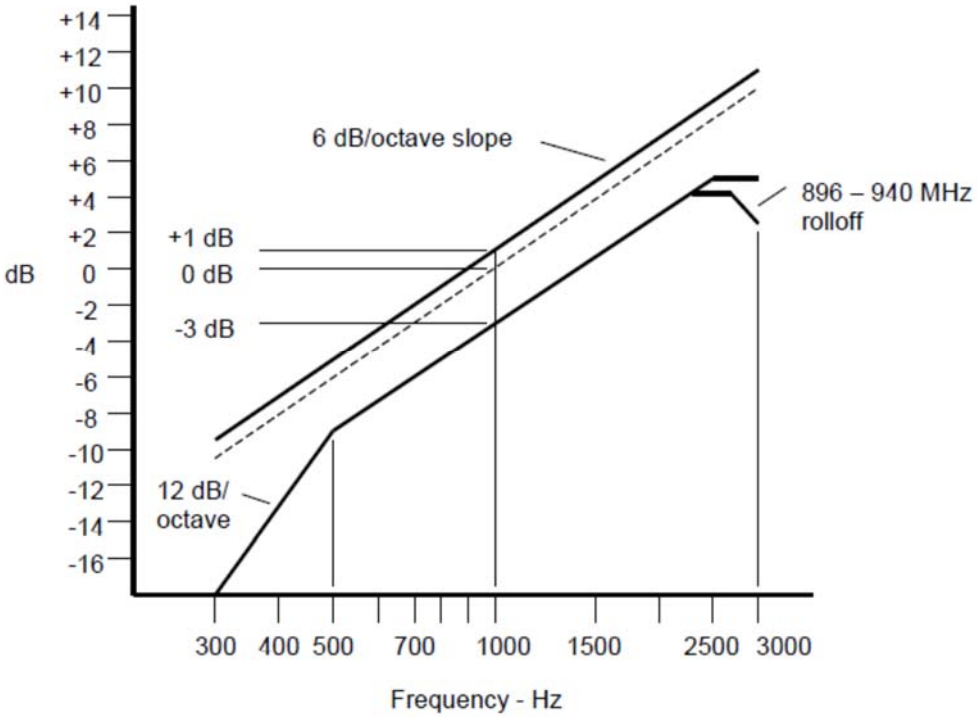
GMRS_CH 27(467.6500MHz)			
Audio Frequency(KHz)	Limit	Response Attenuation(dB)	Result
3	0	-3.86	PASS
3.5	-4	-10.75	
4	-7.5	-15.47	
5	-13.3	-25.56	
7	-21.1	-39.05	
10	-31.4	-55.57	
15	-41.9	-74.79	
20	-50	-83.92	
30	-50	-86.07	
50	-50	-86.28	
70	-50	-86.56	



11. AUDIO FREQUENCY RESPONSE

11.1 LIMIT

FCC Part 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.

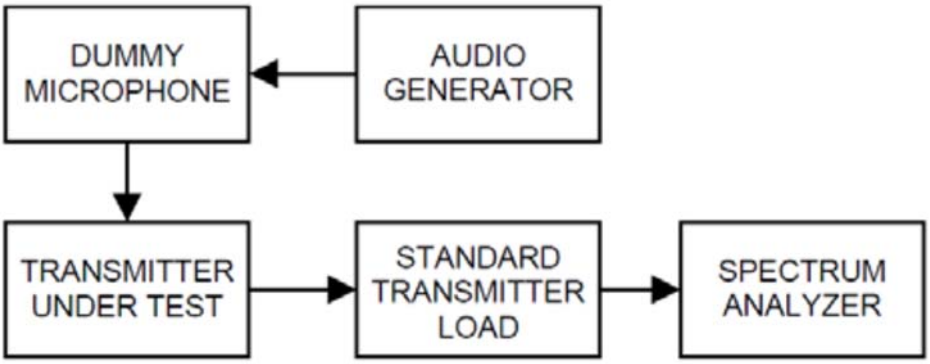


An additional 6 dB per octave attenuation is allowed from 2500 Hz to 3000 Hz in equipment operating in the 25 MHz to 869 MHz range

11.2 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 =20log10 (VFREQ/VREF).

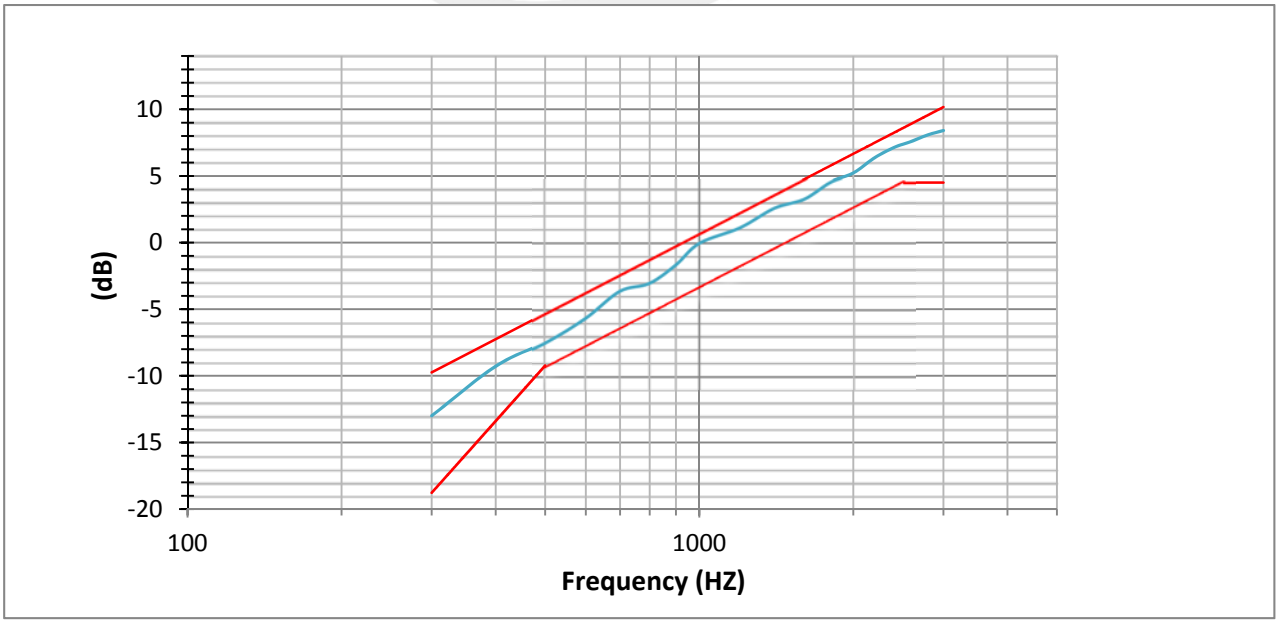
11.3 TEST SETUP



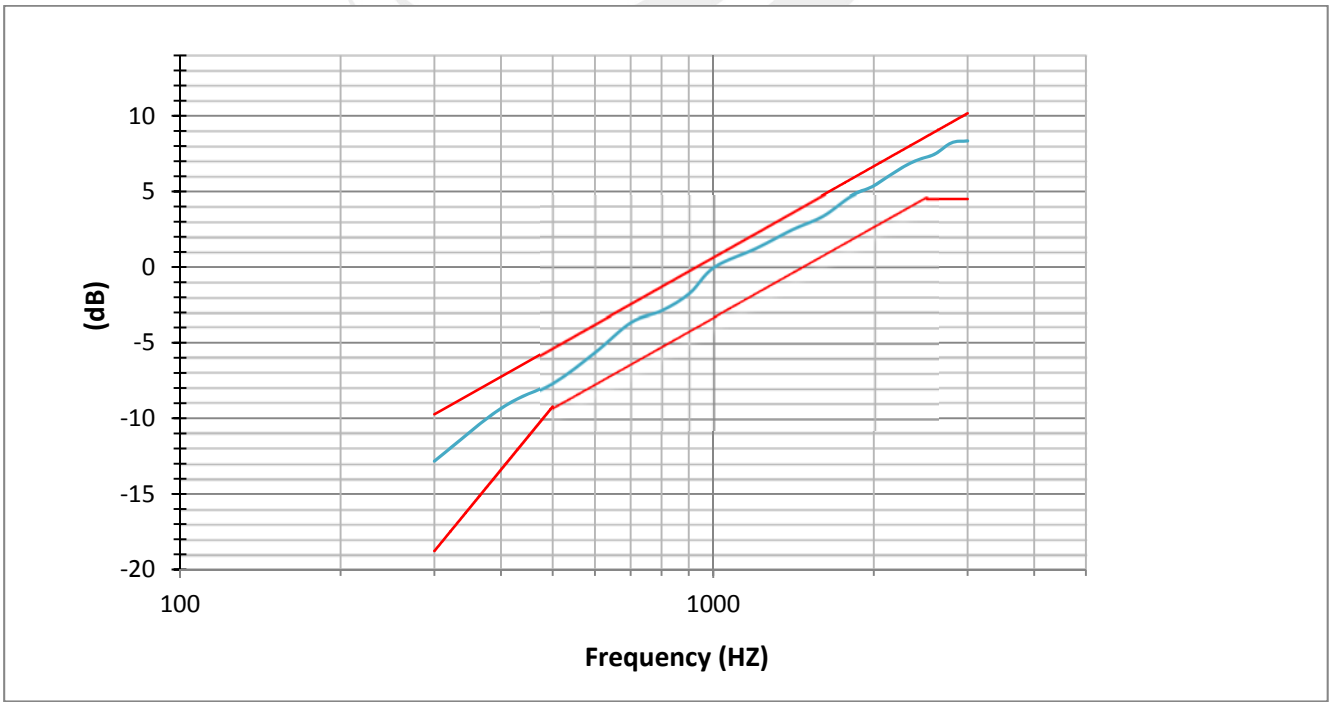
11.4 TEST RESULT

Low Power

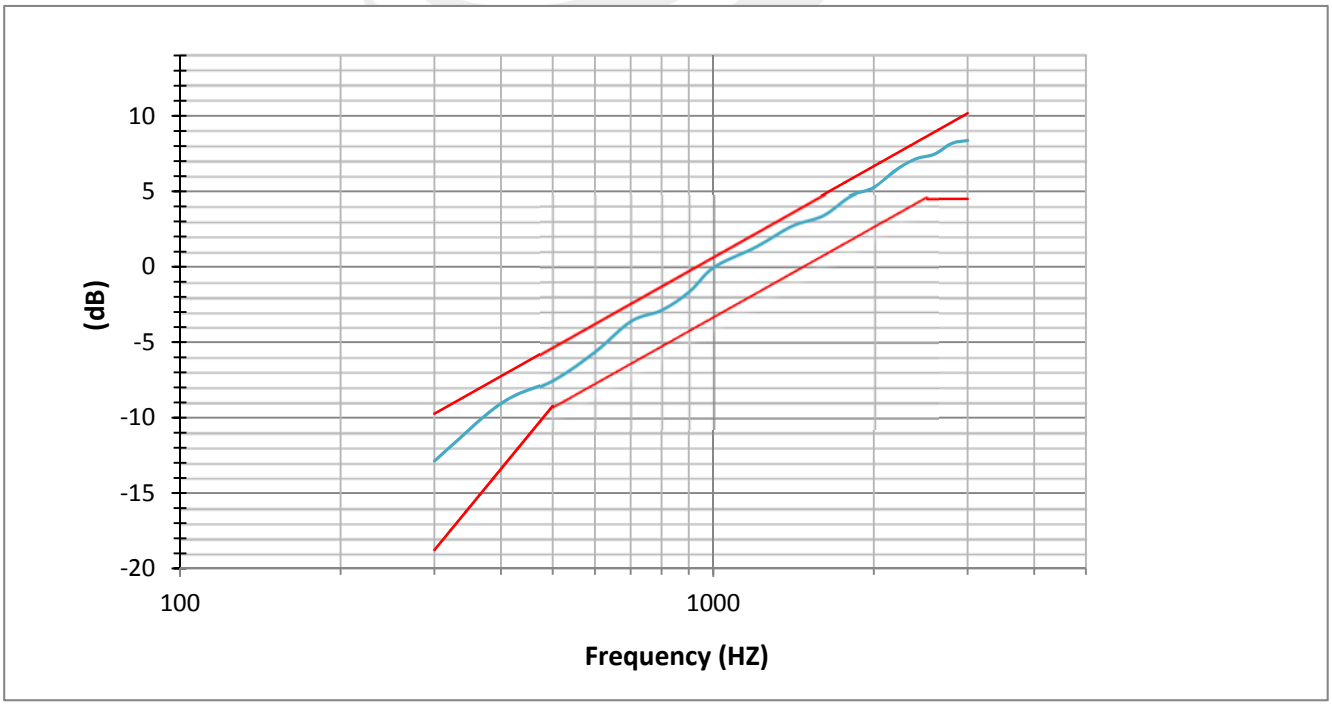
GMRS_CH 4(462.6375MHz)		
Audio Frequency(Hz)	Audio Frequency Response(dB)	Result
300	-13.00	PASS
400	-9.28	
500	-7.48	
600	-5.62	
700	-3.59	
800	-2.99	
900	-1.62	
1000	0.00	
1200	1.16	
1400	2.62	
1600	3.29	
1800	4.55	
2000	5.23	
2200	6.36	
2400	7.13	
2600	7.6	
2800	8.09	
3000	8.41	



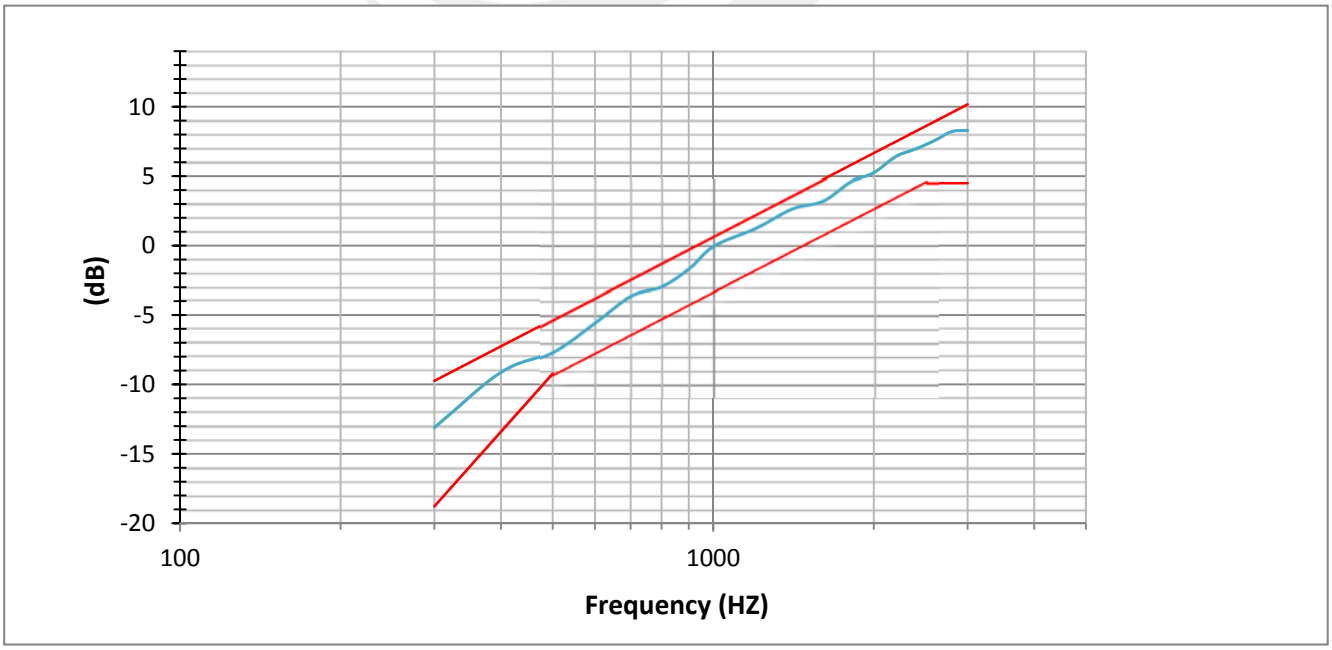
GMRS_CH 11(467.6375MHz)		
Audio Frequency(Hz)	Audio Frequency Response(dB)	Result
300	-12.83	PASS
400	-9.34	
500	-7.63	
600	-5.57	
700	-3.60	
800	-2.84	
900	-1.71	
1000	0.00	
1200	1.26	
1400	2.48	
1600	3.38	
1800	4.66	
2000	5.37	
2200	6.33	
2400	7.04	
2600	7.46	
2800	8.22	
3000	8.34	



GMRS_Channl 19(462.6500MHz)		
Audio Frequency(Hz)	Audio Frequency Response(dB)	Result
300	-12.87	PASS
400	-9.06	
500	-7.51	
600	-5.59	
700	-3.57	
800	-2.83	
900	-1.61	
1000	0.00	
1200	1.35	
1400	2.72	
1600	3.40	
1800	4.68	
2000	5.25	
2200	6.41	
2400	7.15	
2600	7.46	
2800	8.17	
3000	8.37	

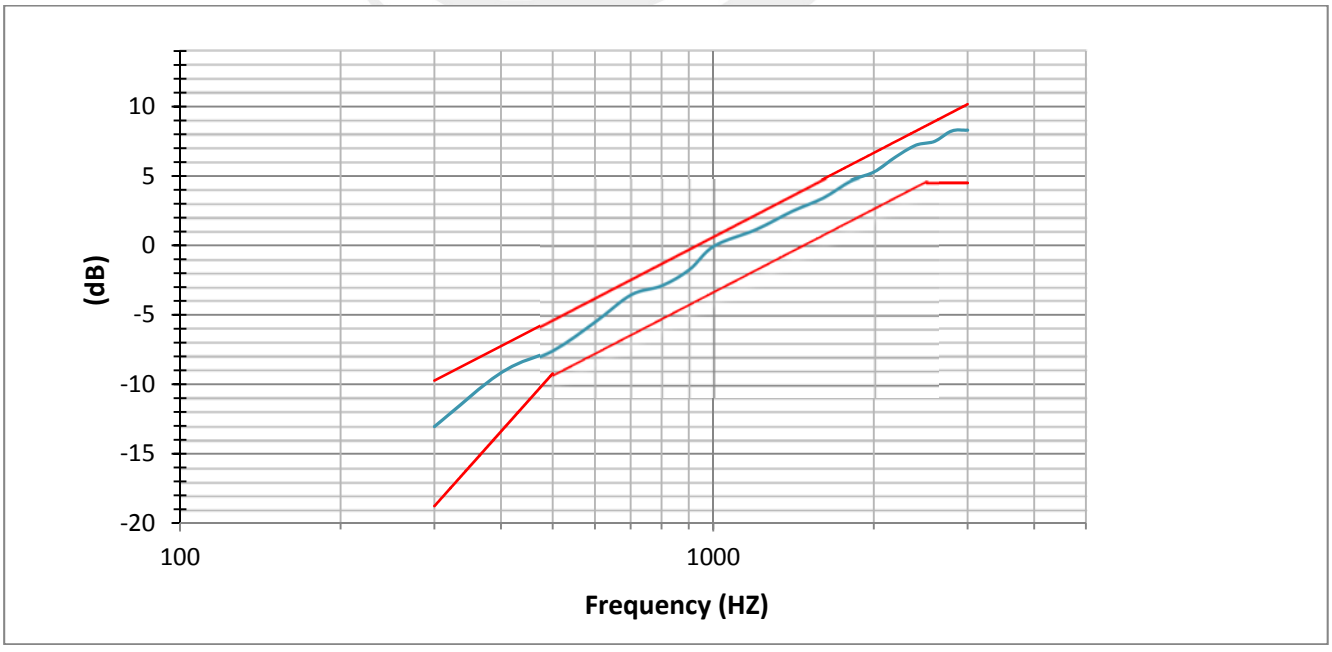


GMRS_Channl 27(467.6500MHz)		
Audio Frequency(Hz)	Audio Frequency Response(dB)	Result
300	-13.10	PASS
400	-9.12	
500	-7.63	
600	-5.49	
700	-3.57	
800	-2.91	
900	-1.61	
1000	0.00	
1200	1.29	
1400	2.67	
1600	3.23	
1800	4.60	
2000	5.25	
2200	6.42	
2400	6.97	
2600	7.56	
2800	8.21	
3000	8.29	

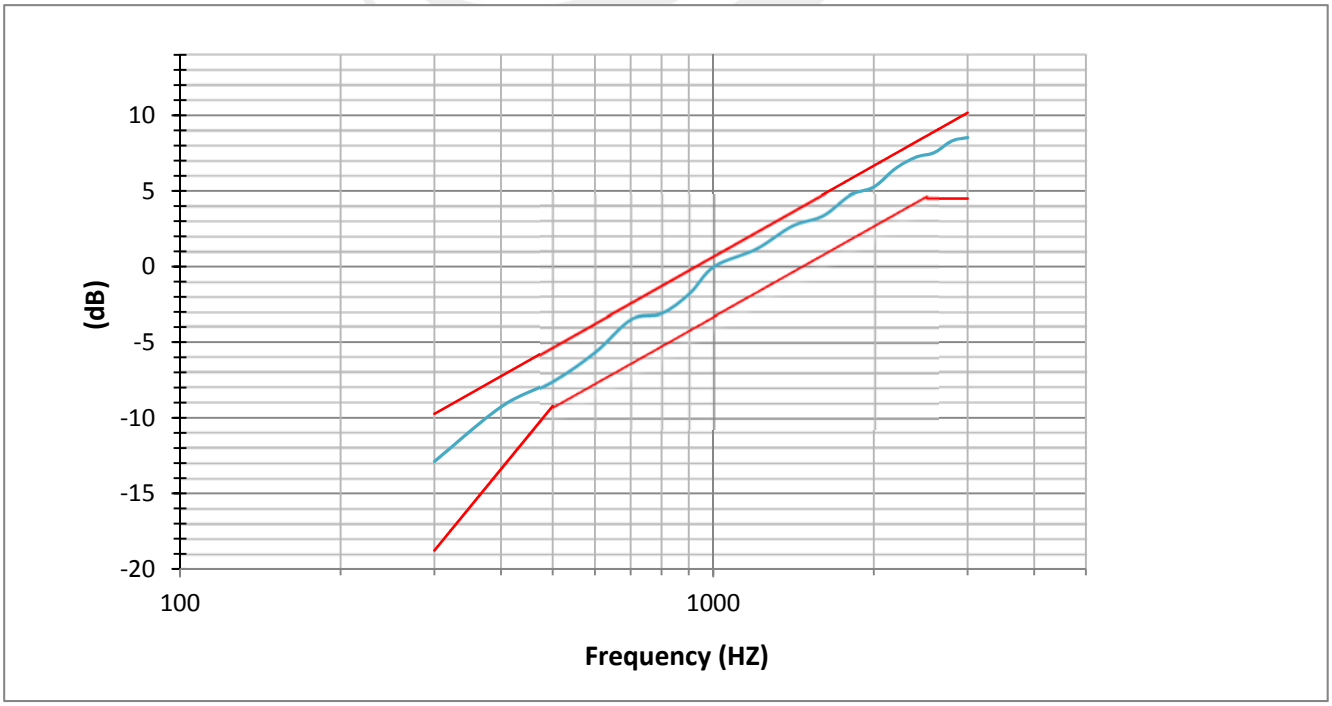


High Power

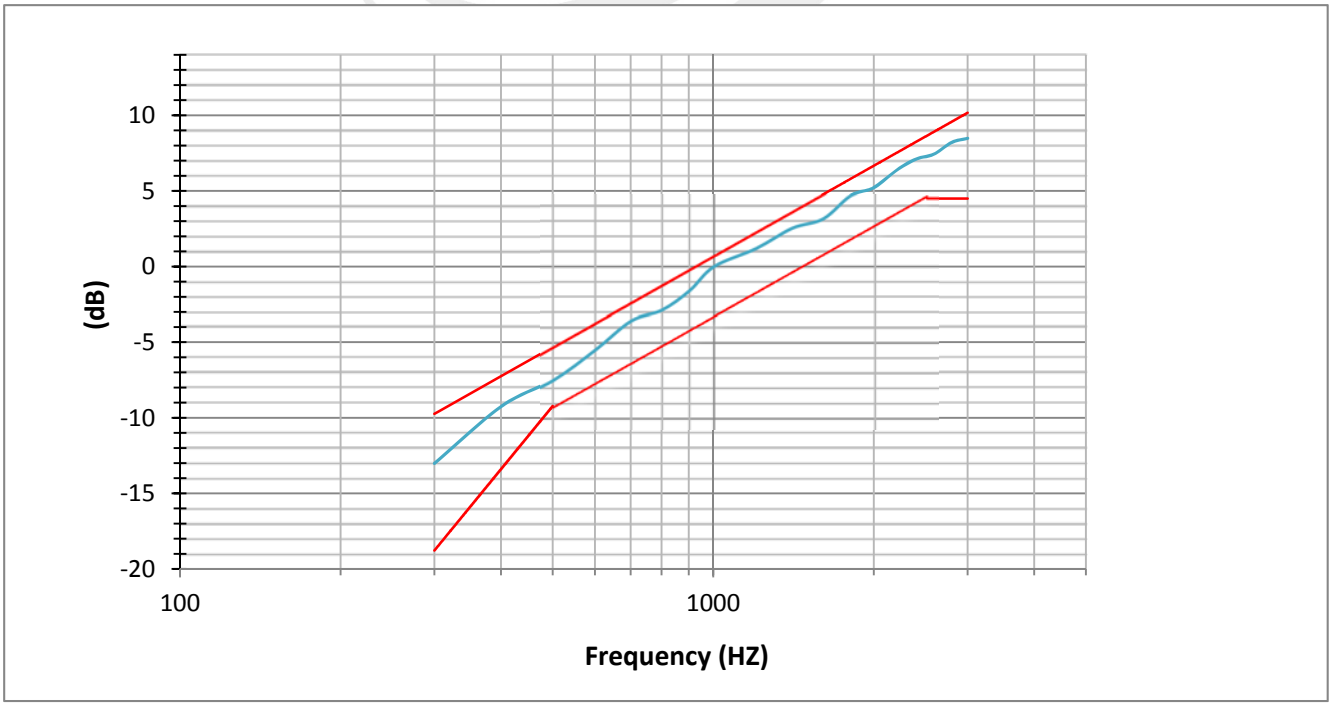
GMRS_CH 4(462.6375MHz)		
Audio Frequency(Hz)	Audio Frequency Response(dB)	Result
300	-13.05	PASS
400	-9.17	
500	-7.50	
600	-5.43	
700	-3.49	
800	-2.83	
900	-1.68	
1000	0.00	
1200	1.19	
1400	2.49	
1600	3.44	
1800	4.64	
2000	5.28	
2200	6.38	
2400	7.22	
2600	7.49	
2800	8.24	
3000	8.3	



GMRS_Channl 19(462.6500MHz)		
Audio Frequency(Hz)	Audio Frequency Response(dB)	Result
300	-12.89	PASS
400	-9.28	
500	-7.56	
600	-5.62	
700	-3.46	
800	-3.07	
900	-1.78	
1000	0.00	
1200	1.16	
1400	2.67	
1600	3.35	
1800	4.72	
2000	5.26	
2200	6.5	
2400	7.23	
2600	7.54	
2800	8.3	
3000	8.53	



GMRS_Channl 27(467.6500MHz)		
Audio Frequency(Hz)	Audio Frequency Response(dB)	Result
300	-13.02	PASS
400	-9.26	
500	-7.49	
600	-5.47	
700	-3.56	
800	-2.86	
900	-1.59	
1000	0.00	
1200	1.20	
1400	2.53	
1600	3.15	
1800	4.67	
2000	5.21	
2200	6.34	
2400	7.1	
2600	7.45	
2800	8.21	
3000	8.48	



12. CONDUCTED EMISSION MEASUREMENT

12.1 POWER LINE CONDUCTED EMISSION LIMITS

The radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table.

FREQUENCY (MHz)	Conducted Emissionlimit (dBuV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

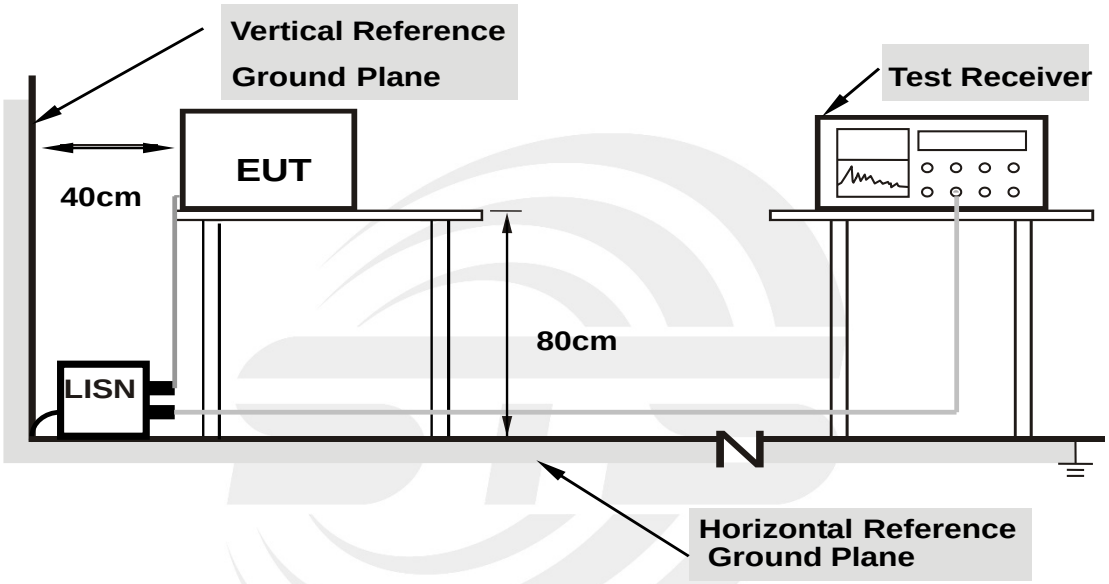
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

12.2 TEST PROCEDURE

a. The EUT is 0.8 m from the horizontal ground plane and 0.4 m from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments are powered from additional LISN(s). The LISN provides 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN is at least 80 cm from the nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

12.3 TEST SETUP



Note: 1. Support units were connected to second LISN.

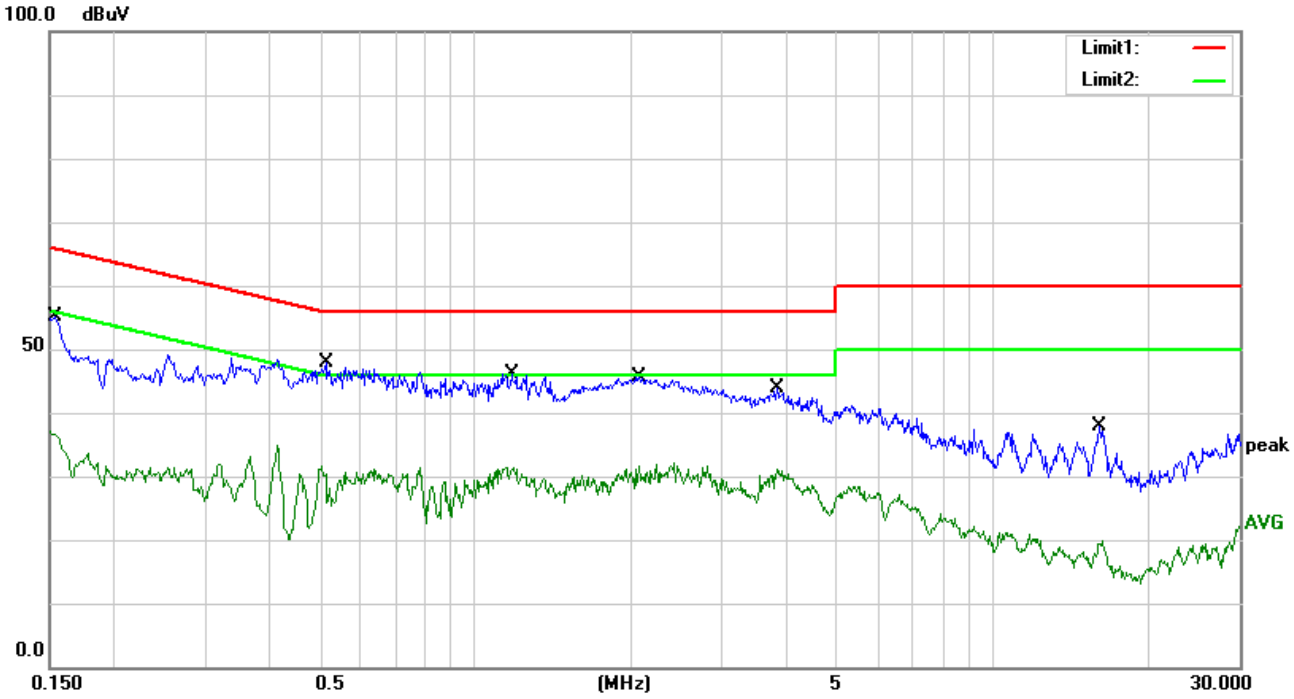
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes support units.

12.4 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

12.5 TEST RESULT

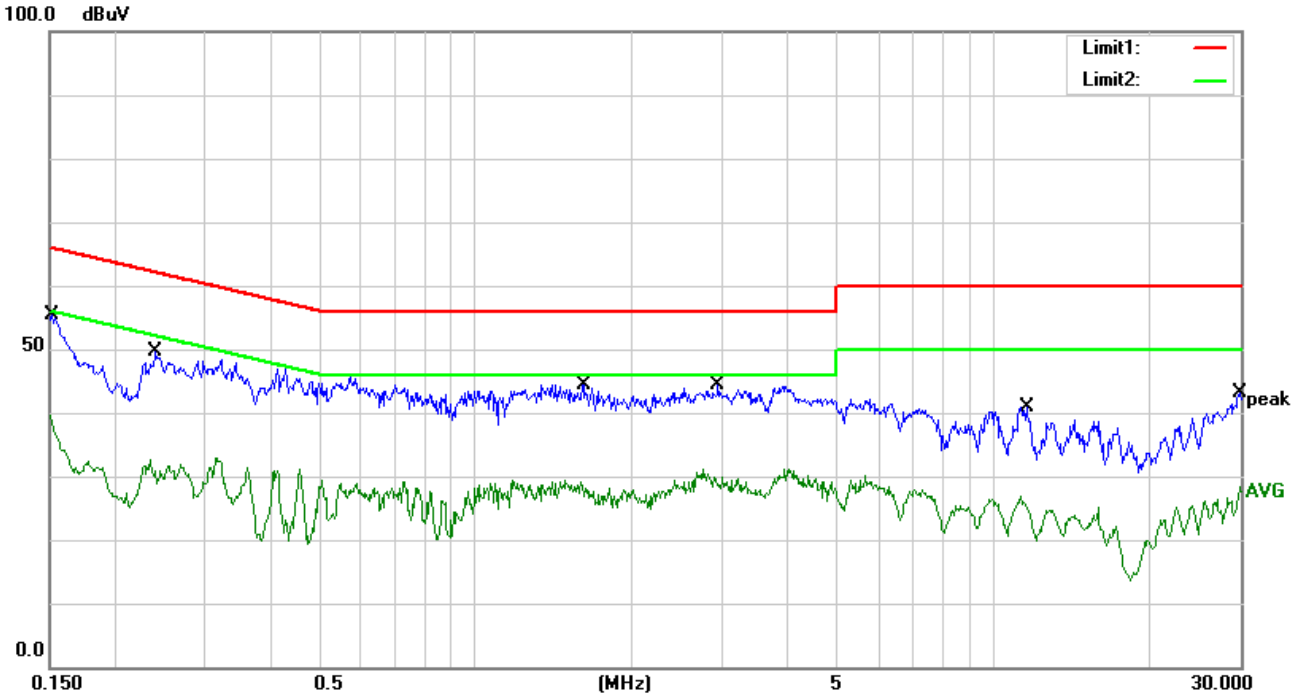
Temperature:	26.3℃	Relative Humidity:	62%
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode:	Mode 1/2/3/4/5/6/7(Mode 5 worst mode)		



Remark:
1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result =Reading + Factor)–Limit
3. Factor=LISN factor+Cable loss+Limiter (10dB)

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1540	34.87	20.33	55.20	65.78	-10.58	QP
2	0.1540	16.86	20.33	37.19	55.78	-18.59	AVG
3	0.5140	27.32	20.53	47.85	56.00	-8.15	QP
4	0.5140	14.23	20.53	34.76	46.00	-11.24	AVG
5	1.1780	25.92	20.30	46.22	56.00	-9.78	QP
6	1.1780	11.13	20.30	31.43	46.00	-14.57	AVG
7	2.0700	25.40	20.30	45.70	56.00	-10.30	QP
8	2.0700	11.27	20.30	31.57	46.00	-14.43	AVG
9	3.8340	23.48	20.40	43.88	56.00	-12.12	QP
10	3.8340	10.65	20.40	31.05	46.00	-14.95	AVG
11	16.1300	15.97	21.99	37.96	60.00	-22.04	QP
12	16.1300	-2.05	21.99	19.94	50.00	-30.06	AVG

Temperature:	26.3℃	Relative Humidity:	62%
Test Voltage:	AC 120V/60Hz	Phase:	N
Test Mode:	Mode 1/2/3/4/5/6/7(Mode 5 worst mode)		



Remark:
1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result =Reading + Factor)–Limit
3. Factor=LISN factor+Cable loss+Limiter (10dB)

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1516	35.00	20.33	55.33	65.91	-10.58	QP
2	0.1516	19.17	20.33	39.50	55.91	-16.41	AVG
3	0.2404	29.02	20.49	49.51	62.08	-12.57	QP
4	0.2404	12.05	20.49	32.54	52.08	-19.54	AVG
5	1.6180	24.18	20.30	44.48	56.00	-11.52	QP
6	1.6180	8.92	20.30	29.22	46.00	-16.78	AVG
7	2.9460	23.95	20.35	44.30	56.00	-11.70	QP
8	2.9460	9.40	20.35	29.75	46.00	-16.25	AVG
9	11.5660	19.50	21.37	40.87	60.00	-19.13	QP
10	11.5660	5.47	21.37	26.84	50.00	-23.16	AVG
11	29.9900	20.25	22.94	43.19	60.00	-16.81	QP
12	29.9900	5.41	22.94	28.35	50.00	-21.65	AVG

APPENDIX 1- PHOTOS OF TEST SETUP

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

※※※※※END OF THE REPORT※※※※※