

TEST REPORT

FCC/ISED Test for NX-1200-K3

APPLICANT
JVCKENWOOD Corporation

REPORT NO.
HCT-RF-2105-FI004

DATE OF ISSUE
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Tested by
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TEST REPORT FCC/ISED Test for NX-1200-K3	REPORT NO. HCT-RF-XXXX-FCXXX
	DATE OF ISSUE May 20, 2021
	Additional Model(s) NX-1200-K, NX-1200-K2, NX-1202-K

Applicant	JVCKENWOOD Corporation 1-16-2 Hakusan Midori-ku Yokohama-shi Kanagawa 226-8525 Japan
Product Name	VHF TRANSCEIVER
Model(s)	NX-1200-K3
FCC ID IC	K44501001 282F-501001
Test Standard Used	Part 2, 22, 74, 90 / RSS- Gen Issue 5, RSS-119 Issue 12
Frequency Range	FCC: 150 MHz - 174 MHz ISED: 138 MHz - 144 MHz, 148 MHz - 174 MHz

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.
This test results were applied only to the test methods required by the standard.

REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	May 20, 2021	Initial Release

The measurements shown in this report were made in accordance with the procedures specified in § 2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998, 21 U.S. C. 853(a)

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1. GENERAL INFORMATION

Manufacturer:	JVCKENWOOD Corporation
Address:	1-16-2 Hakusan Midori-ku Yokohama-shi Kanagawa 226-8525 Japan
FCC ID:	K44501001
IC:	282F-501001
EUT Type:	VHF TRANSCEIVER
Model(s):	NX-1200-K3
Additional Model(s):	NX-1200-K, NX-1200-K2, NX-1202-K
Date(s) of Tests:	April 16, 2021 ~ May 12, 2021
Place of Tests:	HCT Co., Ltd. 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA

2. EUT DESCRIPTION

Power Supply Voltage	DC 7.5V \pm 20%
Output Power(FCC)	- 5 W (Power output continuously variable to 1 W) (Max : 5.2 W) - 16K0F3E : 2 W (Power output continuously variable to 1 W)
Output Power(ISED)	- 5 W (Power output continuously variable to 1 W) (Max : 5.2 W)
Battery type	KNB-45L Li-Ion Battery Pack (1480mA) KNB-53N Ni-MH Battery Pack (1400mA) KNB-29N Ni-MH Battery Pack (1500mA) KNB-69L Li-ion Battery Pack (2450mA) KNB-82LC Li-ion Battery Pack KNB-84L Li-ion Battery Pack (2,000mA)
Antenna	KRA-22M VHF Low Profile Helical Antenna (146-162 MHz) KRA-22M2 VHF Low Profile Helical Antenna (162-174 MHz) KRA-22M3 VHF Low Profile Helical Antenna (135-150 MHz) KRA-26M VHF Helical Antenna (146-162 MHz) KRA-26M2 VHF Helical Antenna (162-174 MHz) KRA-26M3 VHF Helical Antenna (135-150MHz) KRA-41M VHF Stubby antenna (146-162 MHz) KRA-41M2 VHF Stubby antenna (162-174 MHz) KRA-41M3 VHF Stubby antenna (136-150 MHz)
Peak Antenna gain	KRA-22M VHF Low Profile Helical Antenna: 0 dBd KRA-22M2 VHF Low Profile Helical Antenna: 0 dBd KRA-22M3 VHF Low Profile Helical Antenna: 0 dBd KRA-26M VHF Helical Antenna: 0 dBd KRA-26M2 VHF Helical Antenna: 0 dBd KRA-26M3 VHF Helical Antenna: 0 dBd KRA-41M VHF Stubby antenna: 0 dBd KRA-41M2 VHF Stubby antenna: 0 dBd KRA-41M3 VHF Stubby antenna: 0 dBd
Type of Emission	16K0F3E: Analogue 11K0F3E: Analogue 8K30F1E, 8K30F1D, 8K30F7W: NXDN 7K60FXE, 7K60FXD: DMR 4K00F1E, 4K00F1D, 4K00F7W: NXDN 4K00F2D: CWID
Channel Bandwidth	25 kHz / 6.25 kHz / 12.5 kHz
Operating Temperature	-30 °C ~ +60 °C
Frequency Range	150 MHz - 174 MHz (FCC) 138 MHz - 144 MHz, 148 MHz - 174 MHz (ISED)
Test Frequency	138.05 MHz / 150.05 MHz / 162.05 MHz / 173.95 MHz

Maximum deviation	16K0F3E: ± 5 kHz 11K0F3E: ± 2.5 kHz
Frequency Stability	± 2.0 ppm
PMN	NX-1200-K, NX-1200-K2, NX-1200-K3
HVIN	NX-1200-K-21, NX-1200-K2-21, NX-1200-K3-21
FVIN	N/A
HMN	N/A

3. TEST METHODOLOGY

TIA-603-E dated March 2016 entitled “Land Mobile FM or PM Communications Equipment Measurement and Performance Standards” were used in the measurement.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the FCC Rules Part 2, 22, 74 and Part 90.

3.3 GENERAL TEST PROCEDURES

Radiated Emissions

Radiated emission measurements are performed in the Fully-anechoic chamber. The equipment under test is placed on a non-conductive table 3-meters away from the receive antenna in accordance with ANSI/TIA-603-E-2016. The turntable is rotated through 360 degrees, and the receiving antenna scans in order to determine the level of the maximized emission. The level and position of the maximized emission is recorded with the spectrum analyzer using a positive peak detector.

A half wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.

The power is calculated by the following formula;

$$P_{d(dBm)} = P_{g(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dB)}$$

Where: P_d is the dipole equivalent power and P_g is the generator output power into the substitution antenna.

The maximum EIRP is calculated by adding the forward power to the calibrated source plus its appropriate gain value. These steps are repeated with the receiving antenna in both vertical and horizontal polarization. the difference between the gain of the horn and an isotropic antenna are taken into consideration

3.4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting is programmed.

4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards.

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

The Fully-anechoic chamber and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements. Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6. WORST CASE CONFIGURATION AND MODE

Radiated test

1. NX-1200-K3 & Additional Models were tested and the worst case results are reported.
(Worst case : NX-1200-K3)
2. All modes of operation were investigated and the worst case configuration results are reported.
 - Mode : Stand alone + Microphone (High Power/ Low Power)
Stand alone + Accessories (High Power/ Low Power)
Stand alone + Microphone + Accessories (High Power/ Low Power)
 - Worstcase : Stand alone + Microphone (High Power)
3. All type of battery were investigated and the worst case configuration results are reported.
 - Battery type : KNB-45L, KNB-53N, KNB-29N, KNB-69L, KNB-82LC
 - Worstcase : KNB-69L
4. All Antenna were investigated and the worst case configuration results are reported.
 - Antenna type : KRA-22M, KRA-22M2, KRA-22M3, KRA-26M, KRA-26M2, KRA-26M3,
KRA-41M, KRA-41M2, KRA-41M3
 - Worstcase : KRA-26M, KRA-26M2, KRA-26M3
5. Measurements value show only up to 8 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

Conducted test

1. NX-1200-K3 & Additional Models were tested and the worst case results are reported.
(Worst case : NX-1200-K3)
2. Conducted Spurious Emission :
All Power of operation were investigated and the worst case configuration results are reported.
 - Power : High Power/ Low Power
 - Worstcase : High Power
3. Frequency Stability :
All Type of Emission were investigated and the worst case Type results are reported.
 - Worstcase : 16K0F3E, 11K0F3E, 4K00F2D
4. Transient Frequency Behavior :
All Type of Emission were investigated and the worst case Type results are reported.
 - Worstcase : 16K0F3E, 11K0F3E, 4K00F1E/4K00F1D/4K00F7W

7. SUMMARY TEST OF RESULTS

Test Description	FCC Part Section(s)	ISED Part Section(s)	Test Condition	Test Result	
Carrier RF Output Power	§ 2.1046, § 22.565, § 74.461, § 90.205	RSS119 (5.4)	CONDUCTED	PASS	
Unwanted Emissions	§ 2.1051 § 22.359, § 74.462, § 74.535, § 90.210	RSS119 (5.8)	CONDUCTED	PASS	
99% Bandwidth(ISED)	NA	RSS119 (5.5)		PASS	
Carrier Frequency Stability	§ 2.1055, § 22.355, § 74.464, § 90.213(a)	RSS119 (5.3)		PASS	
Audio Frequency Response	§ 2.1047(a)	-		PASS	
Audio Low Pass Filter	§ 2.1047(a)	-		PASS	
Modulation Limiting	§ 2.1047(b)	-		PASS	
Transient Frequency Behavior	§ 74.462, § 90.214	RSS119 (5.9)		PASS	
Emission Mask	§ 2.1049, § 22.359, § 74.462, § 74.535, § 90.210	RSS119 (5.8)		PASS	
Field Strength of Spurious Radiation	§ 2.1053 § 22.359, § 74.462, § 74.535, § 90.210	RSS119 (5.8)		RADIATED	PASS
Receiver Spurious Emissions	NA	RSS-Gen(7)			PASS
Necessary Bandwidth	§ 2.202(g)	-	-	-	

Test Description	Test Limit(FCC)	Test Limit(ISED)
Carrier RF Output Power	Varies	60W
Unwanted Emissions	6.25 kHz: 55+ 10 log (P)dB 12.5 kHz: 50 + 10 log (P)dB 25 kHz: 43 + 10 log (P)dB	6.25 kHz: 55+ 10 log (P)dB 12.5 kHz: 50 + 10 log (P)dB 25 kHz: 43 + 10 log (P)dB
99% Bandwidth(ISED)	N/A	6.25 kHz: 6 kHz 12.5 kHz: 11.25kHz 25 kHz: 20 kHz
Carrier Frequency Stability	6.25 kHz = 1 ppm 12.5 kHz = 2.5 ppm 25 kHz = 5 ppm	6.25 kHz = 1 ppm 12.5 kHz = 2.5 ppm 25 kHz = 5 ppm
Audio Frequency Response	Varies	N/A
Audio Low Pass Filter		
Modulation Limiting	25 kHz = 5 kHz 12.5 kHz = 2.5 kHz	N/A
Transient Frequency Behavior	<u>See Note3</u>	<u>See Note3</u>
Emission Mask	<u>See Note2</u>	<u>See Note2</u>
Field Strength of Spurious Radiation	6.25 kHz: 55+ 10 log (P)dB 12.5 kHz: 50 + 10 log (P)dB 25 kHz: 43 + 10 log (P)dB	6.25 kHz: 55+ 10 log (P)dB 12.5 kHz: 50 + 10 log (P)dB 25 kHz: 43 + 10 log (P)dB
Receiver Spurious Emissions	N/A	<u>See Note1</u>

Note:

1. Receiver Spurious Emissions Limit :

Frequency (MHz)	Field Strength ($\mu\text{v/m}$ at 3 meters)
30 – 88	100
88 - 216	150
216 – 960	200
Above 960	500

2. Emission Mask Limit :

Channel Bandwidth: 25kHz

Displacement Frequency (% of Authorized Bandwidth)	Minimum Attenuation (dB)
50 to 100	25 dB
100 to 250	35 dB
>250	$43 + 10 \log_{10}(COP)$

Channel Bandwidth: 12.5kHz

Channel Spacing (kHz)	Displacement Frequency Range	Minimum Attenuation (dB)
12.5 & 15	>5.625 kHz to 12.5 kHz	$7.27(f_d - 2.88)$
	>12.5 kHz	Whichever is less attenuation; 70 or $50 + 10 \log_{10}(COP)$

Channel Bandwidth: 6.25kHz

Channel Spacing (kHz)	Displacement Frequency Range	Minimum Attenuation (dB)
6.25 & 7.5	>3.0 kHz to 4.6 kHz	Whichever is less attenuation; 65 or $30 + 16.67(f_d - 3)$ or $55 + 10 \log_{10}(COP)$
	Greater than 4.6 kHz	Whichever is less attenuation; 65 or $55 + 10 \log_{10}(COP)$

3. Transient Frequency Behavior Limit :

Channel Bandwidth (kHz)	Time Intervals (Notes 1, 2)	Maximum Frequency Difference (kHz)	Transient Duration Limit (ms)	
			138-174 MHz	406.1-512 MHz
25	t ₁	±25	5	10
	t ₂	±12.5	20	25
	t ₃	±25	5	10
12.5	t ₁	±12.5	5	10
	t ₂	±6.25	20	25
	t ₃	±12.5	5	10
6.25	t ₁	±6.25	5	10
	t ₂	±3.125	20	25
	t ₃	±6.25	5	10

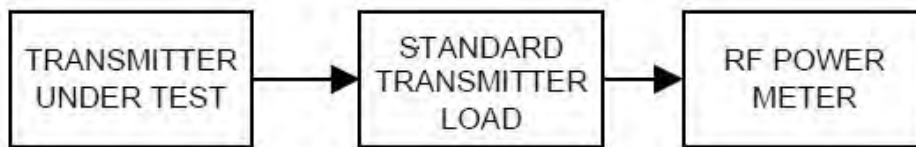
8. TEST RESULT

8.1 Carrier Output Power

▣ Definition

The conducted carrier power output rating for a transmitter is the power available at the output terminals of the transmitter when the output terminals are connected to the standard transmitter load.

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

According to 2.2.1 in TIA-603-E Standard.

- a) Connect the equipment as illustrated.
- b) Measure the transmitter output power during the defined duty cycle(see 1.3.2).
Correct for all losses in the RF path.
- c) The value recorded in step b) is the conducted carrier output power rating.

▣ TEST RESULTS(Carrier Output Power)

Certification	Type of Emission	Channel Bandwidth (kHz)	Test Frequency (MHz)	Carrier Output Power			
				High Power		Low Power	
				dBm	W	dBm	W
FCC	16K0F3E	25	150.05	33.388	2.182	28.373	0.688
			162.05	33.547	2.263	28.499	0.708
			173.95	33.946	2.481	29.484	0.888
ISED	16K0F3E	25	138.05	36.961	4.967	30.015	1.003
			150.05	36.680	4.656	30.248	1.059
			162.05	36.611	4.582	30.146	1.034
			173.95	36.896	4.893	30.522	1.128
FCC/ISED	11K0F3E	12.5	138.05	36.885	4.881	29.790	0.953
			150.05	36.654	4.628	29.955	0.990
			162.05	36.507	4.474	29.915	0.981
			173.95	36.788	4.773	30.444	1.108
FCC/ISED	8K30F1E, 8K30F1D, 8K30F7W	12.5	138.05	37.009	5.022	29.867	0.970
			150.05	36.709	4.687	30.132	1.031
			162.05	36.589	4.559	30.013	1.003
			173.95	36.918	4.918	30.716	1.179
FCC/ISED	7K60FXD, 7K60FXE	12.5	138.05	36.933	4.935	29.796	0.954
			150.05	36.663	4.638	30.270	1.064
			162.05	36.526	4.494	30.080	1.019
			173.95	37.112	5.143	30.762	1.192
FCC/ISED	4K00F1E, 4K00F1D, 4K00F7W	6.25	138.05	36.999	5.011	29.800	0.955
			150.05	36.680	4.656	30.317	1.076
			162.05	36.505	4.472	30.164	1.038
			173.95	36.981	4.990	30.780	1.197
FCC/ISED	4K00F2D	6.25	138.05	36.707	4.685	29.795	0.954
			150.05	36.377	4.342	29.180	0.828
			162.05	36.750	4.732	29.422	0.875
			173.95	36.524	4.492	30.275	1.065

▣ TEST RESULTS(ERP)

Certification	Type of Emission	Channel Bandwidth (kHz)	Test Frequency (MHz)	ERP			
				High Power		Low Power	
				dBm	W	dBm	W
FCC	16K0F3E	25	150.05	33.388	2.182	28.373	0.688
			162.05	33.547	2.263	28.499	0.708
			173.95	33.946	2.481	29.484	0.888
ISED	16K0F3E	25	138.05	36.961	4.967	30.015	1.003
			150.05	36.680	4.656	30.248	1.059
			162.05	36.611	4.582	30.146	1.034
			173.95	36.896	4.893	30.522	1.128
FCC/ISED	11K0F3E	12.5	138.05	36.885	4.881	29.790	0.953
			150.05	36.654	4.628	29.955	0.990
			162.05	36.507	4.474	29.915	0.981
			173.95	36.788	4.773	30.444	1.108
FCC/ISED	8K30F1E, 8K30F1D, 8K30F7W	12.5	138.05	37.009	5.022	29.867	0.970
			150.05	36.709	4.687	30.132	1.031
			162.05	36.589	4.559	30.013	1.003
			173.95	36.918	4.918	30.716	1.179
FCC/ISED	7K60FXD, 7K60FXE	12.5	138.05	36.933	4.935	29.796	0.954
			150.05	36.663	4.638	30.270	1.064
			162.05	36.526	4.494	30.080	1.019
			173.95	37.112	5.143	30.762	1.192
FCC/ISED	4K00F1E, 4K00F1D, 4K00F7W	6.25	138.05	36.999	5.011	29.800	0.955
			150.05	36.680	4.656	30.317	1.076
			162.05	36.505	4.472	30.164	1.038
			173.95	36.981	4.990	30.780	1.197
FCC/ISED	4K00F2D	6.25	138.05	36.707	4.685	29.795	0.954
			150.05	36.377	4.342	29.180	0.828
			162.05	36.750	4.732	29.422	0.875
			173.95	36.524	4.492	30.275	1.065

Note:

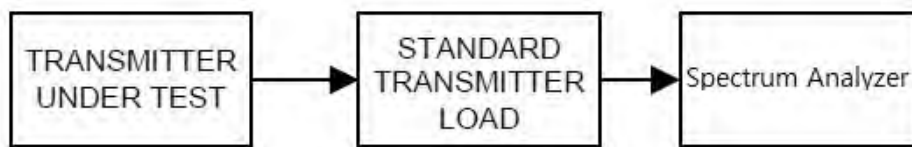
1. ERP = Carrier Output Power + Peak Antenna gain(0 dBd)

8.2 Carrier Frequency Stability

▣ Definition

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

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

According to 2.2.2 in TIA-603-E Standard.

- a) Connect the equipment as illustrated.
- b) Operate the equipment in standby conditions for 15 minutes before proceeding.
- c) Record the carrier frequency of the transmitter as MCF_{MHz}
- d) Calculate the ppm frequency error by the following:

$$\text{ppm error} = ((MCF_{MHz} / ACF_{MHz}) - 1) * 10^6$$

where

MCF_{MHz} is the Measured Carrier Frequency in MHz

ACF_{MHz} is the Assigned Carrier Frequency in MHz

- e) The value recorded in step d) is the carrier frequency stability.

▣ TEST RESULTS

(1) Frequency Stability (Temperature Variation)

150.05 MHz

Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
16K0F3E	High Power	+20(Ref)	150.049987553	0.0000000	0.0000	2.0
		-30	150.049992227	0.0000047	0.0311	
		-20	150.050006726	0.0000192	0.1278	
		-10	150.049959401	-0.0000282	-0.1876	
		0	150.049994020	0.0000065	0.0431	
		+10	150.049987553	0.0000000	0.0000	
		+30	150.049986635	-0.0000009	-0.0061	
		+40	150.049969545	-0.0000180	-0.1200	
		+50	150.049966190	-0.0000214	-0.1424	
	Low Power	+20(Ref)	150.049989819	0.0000000	0.0000	
		-30	150.049992119	0.0000023	0.0153	
		-20	150.049972150	-0.0000177	-0.1178	
		-10	150.049978627	-0.0000112	-0.0746	
		0	150.050013157	0.0000233	0.1555	
		+10	150.049989819	0.0000000	0.0000	
		+30	150.049963087	-0.0000267	-0.1782	
		+40	150.049971534	-0.0000183	-0.1219	
		+50	150.050018175	0.0000284	0.1890	

162.05 MHz

Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
16K0F3E	High Power	+20(Ref)	162.049984742	0.0000000	0.0000	2.0
		-30	162.050002125	0.0000174	0.1073	
		-20	162.049958956	-0.0000258	-0.1591	
		-10	162.049973861	-0.0000109	-0.0671	
		0	162.049964422	-0.0000203	-0.1254	
		+10	162.049984742	0.0000000	0.0000	
		+30	162.049978849	-0.0000059	-0.0364	
		+40	162.049958549	-0.0000262	-0.1616	
		+50	162.049989687	0.0000049	0.0305	
	Low Power	+20(Ref)	162.049986909	0.0000000	0.0000	
		-30	162.049958626	-0.0000283	-0.1745	
		-20	162.049990920	0.0000040	0.0248	
		-10	162.049999394	0.0000125	0.0770	
		0	162.049997001	0.0000101	0.0623	
		+10	162.049986909	0.0000000	0.0000	
		+30	162.050014366	0.0000275	0.1694	
		+40	162.049957342	-0.0000296	-0.1825	
		+50	162.049963134	-0.0000238	-0.1467	

173.95 MHz

Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
16K0F3E	High Power	+20(Ref)	173.949984650	0.0000000	0.0000	2.0
		-30	173.949960732	-0.0000239	-0.1375	
		-20	173.949997095	0.0000124	0.0715	
		-10	173.949983147	-0.0000015	-0.0086	
		0	173.950012340	0.0000277	0.1592	
		+10	173.949984650	0.0000000	0.0000	
		+30	173.949984400	-0.0000003	-0.0014	
		+40	173.950014146	0.0000295	0.1696	
		+50	173.949962925	-0.0000217	-0.1249	
	Low Power	+20(Ref)	173.949986004	0.0000000	0.0000	
		-30	173.949995324	0.0000093	0.0536	
		-20	173.949959132	-0.0000269	-0.1545	
		-10	173.949963513	-0.0000225	-0.1293	
		0	173.949971911	-0.0000141	-0.0810	
		+10	173.949986004	0.0000000	0.0000	
		+30	173.949963484	-0.0000225	-0.1295	
		+40	173.949980572	-0.0000054	-0.0312	
		+50	173.949999900	0.0000139	0.0799	

138.05 MHz

Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
16K0F3E	High Power	+20(Ref)	138.049998935	0.0000000	0.0000	2.0
		-30	138.049999202	0.0000003	0.0019	
		-20	138.049987582	-0.0000114	-0.0822	
		-10	138.050005965	0.0000070	0.0509	
		0	138.050005215	0.0000063	0.0455	
		+10	138.049998935	0.0000000	0.0000	
		+30	138.049990837	-0.0000081	-0.0587	
		+40	138.049971256	-0.0000277	-0.2005	
		+50	138.049981393	-0.0000175	-0.1271	
	Low Power	+20(Ref)	138.050002582	0.0000000	0.0000	
		-30	138.049998133	-0.0000044	-0.0322	
		-20	138.049983898	-0.0000187	-0.1353	
		-10	138.050016287	0.0000137	0.0993	
		0	138.049995214	-0.0000074	-0.0534	
		+10	138.050002582	0.0000000	0.0000	
		+30	138.049984727	-0.0000179	-0.1293	
		+40	138.050014856	0.0000123	0.0889	
		+50	138.049978379	-0.0000242	-0.1753	

150.05 MHz

Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
16K0F3E	High Power	+20(Ref)	150.050005551	0.0000000	0.0000	2.0
		-30	150.050034432	0.0000289	0.1925	
		-20	150.050010534	0.0000050	0.0332	
		-10	150.050014923	0.0000094	0.0625	
		0	150.050029340	0.0000238	0.1585	
		+10	150.050005551	0.0000000	0.0000	
		+30	150.050027711	0.0000222	0.1477	
		+40	150.050018743	0.0000132	0.0879	
		+50	150.050010904	0.0000054	0.0357	
	Low Power	+20(Ref)	150.050005547	0.0000000	0.0000	
		-30	150.049988528	-0.0000170	-0.1134	
		-20	150.049983339	-0.0000222	-0.1480	
		-10	150.050019419	0.0000139	0.0925	
		0	150.049998893	-0.0000067	-0.0443	
		+10	150.050005547	0.0000000	0.0000	
		+30	150.049998695	-0.0000069	-0.0457	
		+40	150.049977075	-0.0000285	-0.1897	
		+50	150.050027038	0.0000215	0.1432	

162.05 MHz

Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
16K0F3E	High Power	+20(Ref)	162.050005920	0.0000000	0.0000	2.0
		-30	162.050005373	-0.0000005	-0.0034	
		-20	162.050026142	0.0000202	0.1248	
		-10	162.049977933	-0.0000280	-0.1727	
		0	162.050005806	-0.0000001	-0.0007	
		+10	162.050005920	0.0000000	0.0000	
		+30	162.050024422	0.0000185	0.1142	
		+40	162.050026737	0.0000208	0.1285	
		+50	162.050026174	0.0000203	0.1250	
	Low Power	+20(Ref)	162.050005211	0.0000000	0.0000	
		-30	162.049983662	-0.0000215	-0.1330	
		-20	162.050013435	0.0000082	0.0507	
		-10	162.049997446	-0.0000078	-0.0479	
		0	162.049996767	-0.0000084	-0.0521	
		+10	162.050005211	0.0000000	0.0000	
		+30	162.049985468	-0.0000197	-0.1218	
		+40	162.050016489	0.0000113	0.0696	
		+50	162.050005086	-0.0000001	-0.0008	

173.95 MHz

Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
16K0F3E	High Power	+20(Ref)	173.950008926	0.0000000	0.0000	2.0
		-30	173.949994802	-0.0000141	-0.0812	
		-20	173.949983997	-0.0000249	-0.1433	
		-10	173.949989392	-0.0000195	-0.1123	
		0	173.950002280	-0.0000066	-0.0382	
		+10	173.950008926	0.0000000	0.0000	
		+30	173.949997780	-0.0000111	-0.0641	
		+40	173.949998345	-0.0000106	-0.0608	
		+50	173.949999338	-0.0000096	-0.0551	
	Low Power	+20(Ref)	173.950010204	0.0000000	0.0000	
		-30	173.949986672	-0.0000235	-0.1353	
		-20	173.950029910	0.0000197	0.1133	
		-10	173.950026389	0.0000162	0.0930	
		0	173.949990521	-0.0000197	-0.1132	
		+10	173.950010204	0.0000000	0.0000	
		+30	173.950004351	-0.0000059	-0.0337	
		+40	173.949997789	-0.0000124	-0.0714	
		+50	173.949999302	-0.0000109	-0.0627	

138.05 MHz

Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
11K0F3E	High Power	+20(Ref)	138.050125803	0.0000000	0.0000	2.0
		-30	138.050130366	0.0000046	0.0330	
		-20	138.050096765	-0.0000290	-0.2103	
		-10	138.050141037	0.0000152	0.1104	
		0	138.050115895	-0.0000099	-0.0718	
		+10	138.050125803	0.0000000	0.0000	
		+30	138.050142971	0.0000172	0.1244	
		+40	138.050112412	-0.0000134	-0.0970	
	Low Power	+50	138.050133078	0.0000073	0.0527	
		+20(Ref)	138.050127675	0.0000000	0.0000	
		-30	138.050154814	0.0000271	0.1966	
		-20	138.050126117	-0.0000016	-0.0113	
		-10	138.050122728	-0.0000049	-0.0358	
		0	138.050115787	-0.0000119	-0.0861	
		+10	138.050127675	0.0000000	0.0000	
		+30	138.050134077	0.0000064	0.0464	
+40	138.050115520	-0.0000122	-0.0881			
+50	138.050103415	-0.0000243	-0.1757			

150.05 MHz

Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
11K0F3E	High Power	+20(Ref)	150.050149292	0.0000000	0.0000	2.0
		-30	150.050175816	0.0000265	0.1768	
		-20	150.050134372	-0.0000149	-0.0994	
		-10	150.050146223	-0.0000031	-0.0205	
		0	150.050146513	-0.0000028	-0.0185	
		+10	150.050149292	0.0000000	0.0000	
		+30	150.050120876	-0.0000284	-0.1894	
		+40	150.050165298	0.0000160	0.1067	
		+50	150.050135929	-0.0000134	-0.0891	
	Low Power	+20(Ref)	150.050142452	0.0000000	0.0000	
		-30	150.050112530	-0.0000299	-0.1994	
		-20	150.050156296	0.0000138	0.0923	
		-10	150.050127326	-0.0000151	-0.1008	
		0	150.050154765	0.0000123	0.0821	
		+10	150.050142452	0.0000000	0.0000	
		+30	150.050117109	-0.0000253	-0.1689	
		+40	150.050154950	0.0000125	0.0833	
		+50	150.050119865	-0.0000226	-0.1505	

162.05 MHz

Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
11K0F3E	High Power	+20(Ref)	162.050156885	0.0000000	0.0000	2.0
		-30	162.050140646	-0.0000162	-0.1002	
		-20	162.050143418	-0.0000135	-0.0831	
		-10	162.050186768	0.0000299	0.1844	
		0	162.050157673	0.0000008	0.0049	
		+10	162.050156885	0.0000000	0.0000	
		+30	162.050157286	0.0000004	0.0025	
		+40	162.050163739	0.0000069	0.0423	
		+50	162.050185346	0.0000285	0.1756	
	Low Power	+20(Ref)	162.050152754	0.0000000	0.0000	
		-30	162.050123638	-0.0000291	-0.1797	
		-20	162.050149145	-0.0000036	-0.0223	
		-10	162.050166349	0.0000136	0.0839	
		0	162.050129509	-0.0000232	-0.1434	
		+10	162.050152754	0.0000000	0.0000	
		+30	162.050165168	0.0000124	0.0766	
		+40	162.050153077	0.0000003	0.0020	
		+50	162.050154150	0.0000014	0.0086	

173.95 MHz

Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
11K0F3E	High Power	+20(Ref)	173.950165190	0.0000000	0.0000	2.0
		-30	173.950152163	-0.0000130	-0.0749	
		-20	173.950173710	0.0000085	0.0490	
		-10	173.950147724	-0.0000175	-0.1004	
		0	173.950155152	-0.0000100	-0.0577	
		+10	173.950165190	0.0000000	0.0000	
		+30	173.950155722	-0.0000095	-0.0544	
		+40	173.950149994	-0.0000152	-0.0874	
		+50	173.950137677	-0.0000275	-0.1582	
	Low Power	+20(Ref)	173.950159250	0.0000000	0.0000	
		-30	173.950165901	0.0000067	0.0382	
		-20	173.950161145	0.0000019	0.0109	
		-10	173.950185227	0.0000260	0.1493	
		0	173.950135087	-0.0000242	-0.1389	
		+10	173.950159250	0.0000000	0.0000	
		+30	173.950187823	0.0000286	0.1643	
		+40	173.950167069	0.0000078	0.0449	
		+50	173.950181503	0.0000223	0.1279	

138.05 MHz

Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
4K00F2D	High Power	+20(Ref)	138.049982843	0.0000000	0.0000	1.0
		-30	138.049977022	-0.0000058	-0.0422	
		-20	138.049957567	-0.0000253	-0.1831	
		-10	138.049995220	0.0000124	0.0897	
		0	138.049983097	0.0000003	0.0018	
		+10	138.049982843	0.0000000	0.0000	
		+30	138.050002550	0.0000197	0.1428	
		+40	138.049972451	-0.0000104	-0.0753	
		+50	138.049975986	-0.0000069	-0.0497	
	Low Power	+20(Ref)	138.049992696	0.0000000	0.0000	
		-30	138.050021893	0.0000292	0.2115	
		-20	138.050002141	0.0000094	0.0684	
		-10	138.050009992	0.0000173	0.1253	
		0	138.050009862	0.0000172	0.1243	
		+10	138.049992696	0.0000000	0.0000	
		+30	138.049996595	0.0000039	0.0282	
		+40	138.049963058	-0.0000296	-0.2147	
		+50	138.049993184	0.0000005	0.0035	

150.05 MHz

Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
4K00F2D	High Power	+20(Ref)	150.049981971	0.0000000	0.0000	1.0
		-30	150.049982849	0.0000009	0.0059	
		-20	150.049965310	-0.0000167	-0.1110	
		-10	150.049995303	0.0000133	0.0889	
		0	150.049991357	0.0000094	0.0626	
		+10	150.049981971	0.0000000	0.0000	
		+30	150.049961455	-0.0000205	-0.1367	
		+40	150.049995237	0.0000133	0.0884	
		+50	150.049968640	-0.0000133	-0.0888	
	Low Power	+20(Ref)	150.049998955	0.0000000	0.0000	
		-30	150.050022869	0.0000239	0.1594	
		-20	150.050015684	0.0000167	0.1115	
		-10	150.050024667	0.0000257	0.1714	
		0	150.049993797	-0.0000052	-0.0344	
		+10	150.049998955	0.0000000	0.0000	
		+30	150.050005255	0.0000063	0.0420	
		+40	150.049996140	-0.0000028	-0.0188	
		+50	150.049985989	-0.0000130	-0.0864	

162.05 MHz

Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
4K00F2D	High Power	+20(Ref)	162.049978524	0.0000000	0.0000	1.0
		-30	162.049959976	-0.0000185	-0.1145	
		-20	162.049978398	-0.0000001	-0.0008	
		-10	162.050004705	0.0000262	0.1616	
		0	162.049957214	-0.0000213	-0.1315	
		+10	162.049978524	0.0000000	0.0000	
		+30	162.049979497	0.0000010	0.0060	
		+40	162.049993173	0.0000146	0.0904	
		+50	162.049974844	-0.0000037	-0.0227	
	Low Power	+20(Ref)	162.050000089	0.0000000	0.0000	
		-30	162.049981575	-0.0000185	-0.1142	
		-20	162.049979289	-0.0000208	-0.1284	
		-10	162.050028451	0.0000284	0.1750	
		0	162.049987063	-0.0000130	-0.0804	
		+10	162.050000089	0.0000000	0.0000	
		+30	162.050023551	0.0000235	0.1448	
		+40	162.049999926	-0.0000002	-0.0010	
		+50	162.050019508	0.0000194	0.1198	

173.95 MHz

Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
4K00F2D	High Power	+20(Ref)	173.949980111	0.0000000	0.0000	1.0
		-30	173.949990572	0.0000105	0.0601	
		-20	173.949978097	-0.0000020	-0.0116	
		-10	173.949962380	-0.0000177	-0.1019	
		0	173.949987866	0.0000078	0.0446	
		+10	173.949980111	0.0000000	0.0000	
		+30	173.949963159	-0.0000170	-0.0975	
		+40	173.949976087	-0.0000040	-0.0231	
		+50	173.949992651	0.0000125	0.0721	
	Low Power	+20(Ref)	173.949991422	0.0000000	0.0000	
		-30	173.950009554	0.0000181	0.1042	
		-20	173.950006150	0.0000147	0.0847	
		-10	173.950013602	0.0000222	0.1275	
		0	173.950007591	0.0000162	0.0930	
		+10	173.949991422	0.0000000	0.0000	
		+30	173.949995085	0.0000037	0.0211	
		+40	173.949963982	-0.0000274	-0.1577	
		+50	173.950001260	0.0000098	0.0566	

(2) Frequency Stability (Voltage Variation)

150.05 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
16K0F3E	High Power	85	6.38	150.049987221	-0.0852	2.0
		100	7.50	150.049987006	-0.0866	
		115	8.63	150.049987019	-0.0865	
	Low Power	85	6.38	150.049989286	-0.0714	
		100	7.50	150.049988391	-0.0774	
		115	8.63	150.049988852	-0.0743	

162.05 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
16K0F3E	High Power	85	6.38	162.049984111	-0.0981	2.0
		100	7.50	162.049984630	-0.0948	
		115	8.63	162.049984207	-0.0975	
	Low Power	85	6.38	162.049985948	-0.0867	
		100	7.50	162.049985862	-0.0872	
		115	8.63	162.049986461	-0.0836	

173.95 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
16K0F3E	High Power	85	6.38	173.949984566	-0.0887	2.0
		100	7.50	173.949984682	-0.0881	
		115	8.63	173.949984944	-0.0866	
	Low Power	85	6.38	173.949986000	-0.0805	
		100	7.50	173.949986192	-0.0794	
		115	8.63	173.949985857	-0.0813	

138.05 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
16K0F3E	High Power	85	6.38	138.049999877	-0.0009	2.0
		100	7.50	138.049999933	-0.0005	
		115	8.63	138.049998974	-0.0074	
	Low Power	85	6.38	138.050001343	0.0097	
		100	7.50	138.050002468	0.0179	
		115	8.63	138.050002029	0.0147	

150.05 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
16K0F3E	High Power	85	6.38	150.050004870	0.0325	2.0
		100	7.50	150.050005100	0.0340	
		115	8.63	150.050004500	0.0300	
	Low Power	85	6.38	150.050006338	0.0422	
		100	7.50	150.050006424	0.0428	
		115	8.63	150.050005961	0.0397	

162.05 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
16K0F3E	High Power	85	6.38	162.050005960	0.0368	2.0
		100	7.50	162.050005619	0.0347	
		115	8.63	162.050005283	0.0326	
	Low Power	85	6.38	162.050005253	0.0324	
		100	7.50	162.050005420	0.0334	
		115	8.63	162.050005283	0.0326	

173.95 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
16K0F3E	High Power	85	6.38	173.950008734	0.0502	2.0
		100	7.50	173.950008494	0.0488	
		115	8.63	173.950008467	0.0487	
	Low Power	85	6.38	173.950009635	0.0554	
		100	7.50	173.950009701	0.0558	
		115	8.63	173.950009571	0.0550	

138.05 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
11K0F3E	High Power	85	6.38	138.050125401	0.9084	2.0
		100	7.50	138.050125495	0.9091	
		115	8.63	138.050126351	0.9153	
	Low Power	85	6.38	138.050127460	0.9233	
		100	7.50	138.050127579	0.9242	
		115	8.63	138.050127936	0.9267	

150.05 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
11K0F3E	High Power	85	6.38	150.050148445	0.9893	2.0
		100	7.50	150.050148418	0.9891	
		115	8.63	150.050148331	0.9885	
	Low Power	85	6.38	150.050142075	0.9469	
		100	7.50	150.050142324	0.9485	
		115	8.63	150.050142226	0.9479	

162.05 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
11K0F3E	High Power	85	6.38	162.050156759	0.9673	2.0
		100	7.50	162.050157244	0.9703	
		115	8.63	162.050156905	0.9683	
	Low Power	85	6.38	162.050152975	0.9440	
		100	7.50	162.050153388	0.9465	
		115	8.63	162.050153207	0.9454	

173.95 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
11K0F3E	High Power	85	6.38	173.950164322	0.9446	2.0
		100	7.50	173.950164512	0.9457	
		115	8.63	173.950164739	0.9470	
	Low Power	85	6.38	173.950159101	0.9146	
		100	7.50	173.950159307	0.9158	
		115	8.63	173.950159195	0.9152	

138.05 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
4K00F2D	High Power	85	6.38	138.049995988	-0.0291	1.0
		100	7.50	138.049984130	-0.1150	
		115	8.63	138.049983352	-0.1206	
	Low Power	85	6.38	138.049991947	-0.0583	
		100	7.50	138.049992706	-0.0528	
		115	8.63	138.049991867	-0.0589	

150.05 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
4K00F2D	High Power	85	6.38	150.049982795	-0.1147	1.0
		100	7.50	150.049983061	-0.1129	
		115	8.63	150.049982890	-0.1140	
	Low Power	85	6.38	150.049999483	-0.0034	
		100	7.50	150.049999640	-0.0024	
		115	8.63	150.049999369	-0.0042	

162.05 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
4K00F2D	High Power	85	6.38	162.049978059	-0.1354	1.0
		100	7.50	162.049978556	-0.1323	
		115	8.63	162.049977947	-0.1361	
	Low Power	85	6.38	162.050000126	0.0008	
		100	7.50	162.050000116	0.0007	
		115	8.63	162.050000037	0.0002	

173.95 MHz

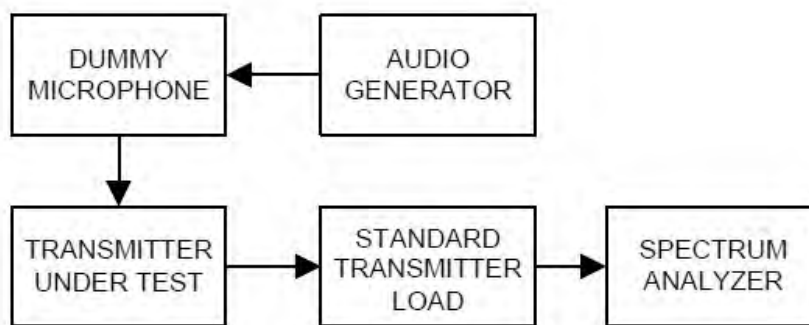
Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
4K00F2D	High Power	85	6.38	173.949980112	-0.1143	1.0
		100	7.50	173.949980227	-0.1137	
		115	8.63	173.949980341	-0.1130	
	Low Power	85	6.38	173.949990844	-0.0526	
		100	7.50	173.949991430	-0.0493	
		115	8.63	173.949990655	-0.0537	

8.3 Occupied Bandwidth

▣ Definition

The transmitter sideband spectrum denotes the sideband power produced at a discrete frequency separation from the carrier up to the test bandwidth (see TIA-603-E Section 1.3.4.4) due to all sources of unwanted noise within the transmitter in a modulated condition.

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

According to TIA-603-E Section 2.2.11.2 / RSS-119 Section 5.5

- a) For EUT supporting audio modulation, the audio signal generator was adjusted to the frequency of maximum response and with output level set for +/- 2.5 kHz deviation (or 50 % modulation). (FM modulation).
- b) With level constant, the signal level was increased 16 dB.
- c) For EUT supporting digital modulation, the digital modulation mode was operated to its maximum extent.
- d) Adjust the spectrum analyzer for the following setting:
 - 1) RBW : 100Hz (Authorized Band 6 kHz),
100Hz (Authorized Band 11.25 kHz),
300Hz (Authorized Band 20 kHz)
 - 2) VBW : Video Bandwidth at least 10 times the resolution bandwidth.
 - 4) Sweep Speed : Sweep Speed slow enough to maintain measurement calibration.
 - 5) Sampling Time : 10 times
 - 6) Detector Mode = Positive Peak.
- e) The occupied Bandwidth was measured with the Spectrum Analyzer controls set as shown on the test results.

▣ TEST RESULTS

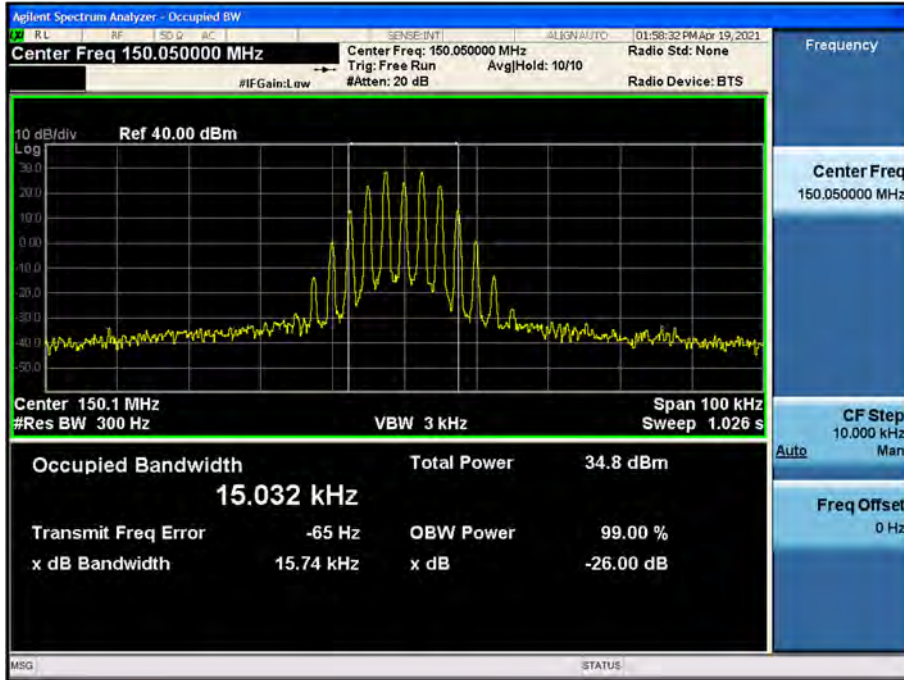
Certification	Type of Emission	Channel Bandwidth (kHz)	Power	Test Frequency (MHz)	Measured 99% OBW at Maximum Freq. Deviation(kHz)	Limit (kHz)
FCC	16K0F3E	25	High Power	150.05	15.032	20.00
				162.05	15.063	
				173.95	15.034	
			Low Power	150.05	15.035	
				162.05	15.071	
				173.95	15.038	
ISED	16K0F3E	25	High Power	138.05	14.804	
				150.05	14.780	
				162.05	14.809	
			Low Power	173.95	14.800	
				138.05	14.773	
				150.05	14.763	
FCC/ISED	11K0F3E	12.5	High Power	162.05	14.802	
				173.95	14.796	
				138.05	9.896	
			Low Power	150.05	9.917	
				162.05	9.930	
				173.95	9.935	
FCC/ISED	8K30F1E, 8K30F1D, 8K30F7W	12.5	High Power	138.05	9.905	
				150.05	9.916	
				162.05	9.929	
			Low Power	173.95	9.934	
				138.05	7.659	
				150.05	7.630	
FCC/ISED	7K60FXD, 7K60FXE	12.5	High Power	162.05	7.596	
				173.95	7.596	
				138.05	7.564	
			Low Power	150.05	7.563	
				162.05	7.589	
				173.95	7.595	
FCC/ISED	7K60FXD, 7K60FXE	12.5	High Power	138.05	7.454	
				150.05	7.424	
				162.05	7.444	
			Low Power	173.95	7.517	
				138.05	7.371	
				150.05	7.509	
				162.05	7.572	
				173.95	7.465	

FCC/ISED	4K00F1E, 4K00F1D, 4K00F7W	6.25	High Power	138.05	3.462	6.00
				150.05	3.472	
				162.05	3.445	
				173.95	3.499	
			Low Power	138.05	3.429	
				150.05	3.538	
				162.05	3.497	
				173.95	3.488	
FCC/ISED	4K00F2D	6.25	High Power	138.05	4.053	6.00
				150.05	4.055	
				162.05	4.051	
				173.95	4.046	
			Low Power	138.05	4.025	
				150.05	4.023	
				162.05	4.023	
				173.95	4.022	

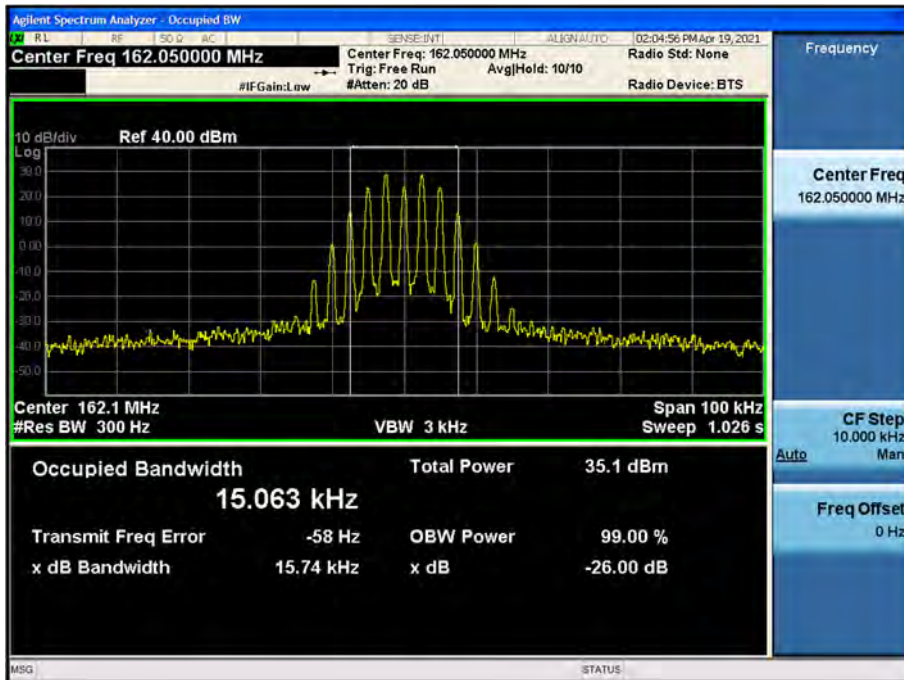
Plots of 99% Bandwidth

16K0F3E_FCC

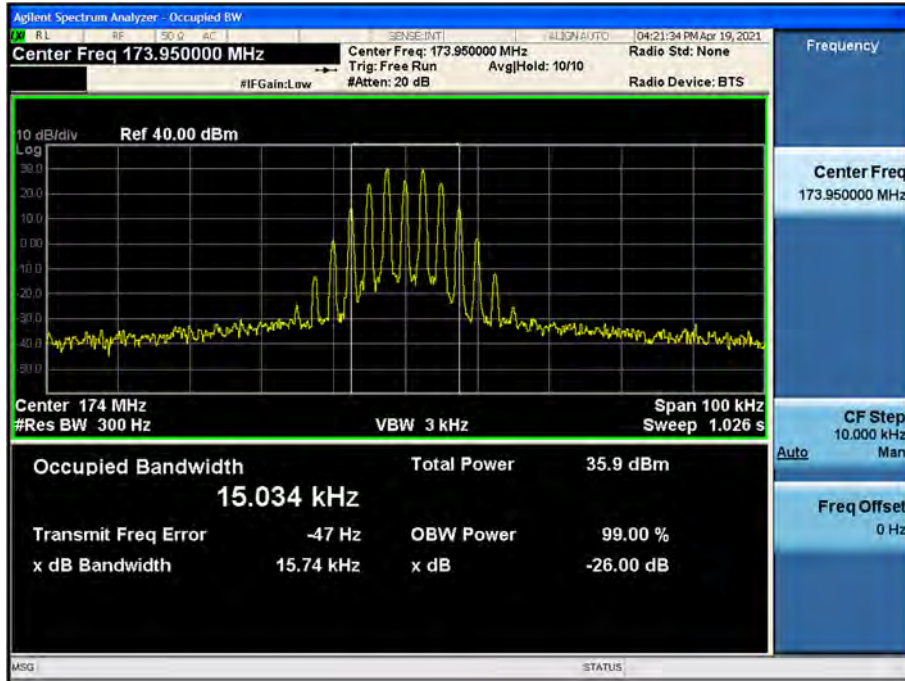
(150.05 MHz)_High



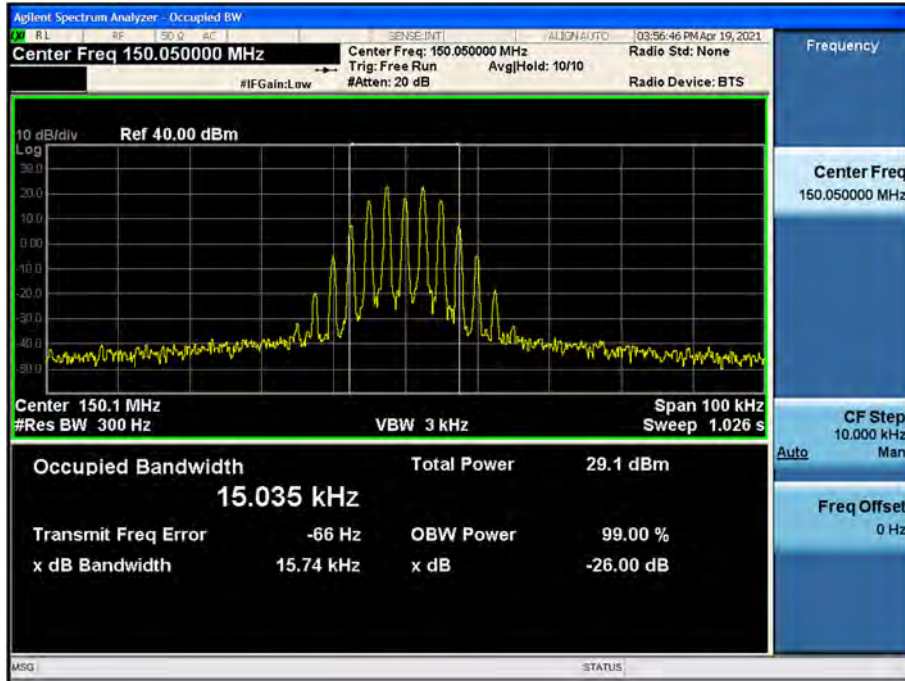
(162.05 MHz)_High



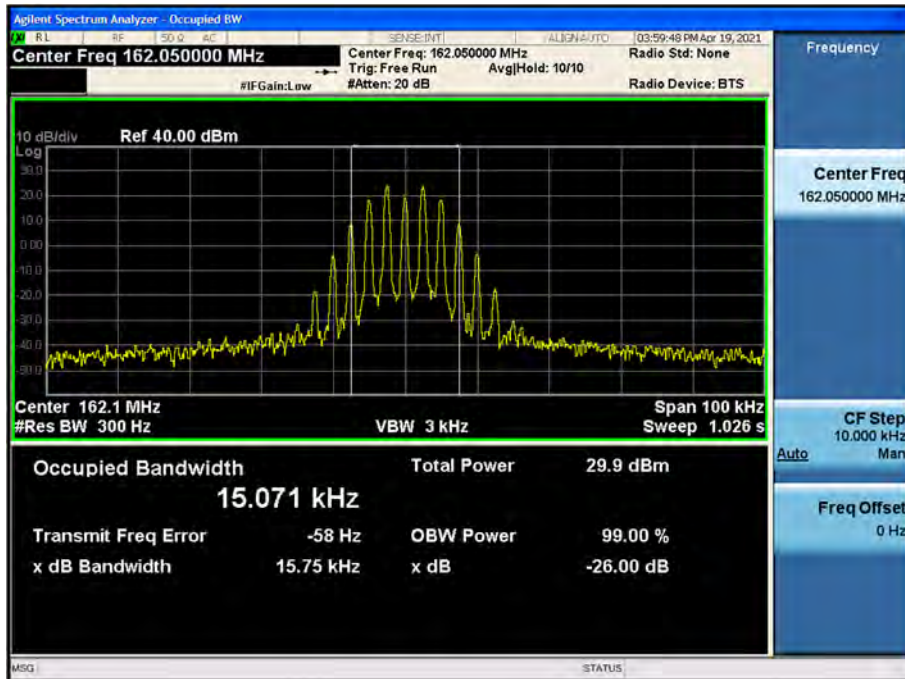
(173.95 MHz)_High



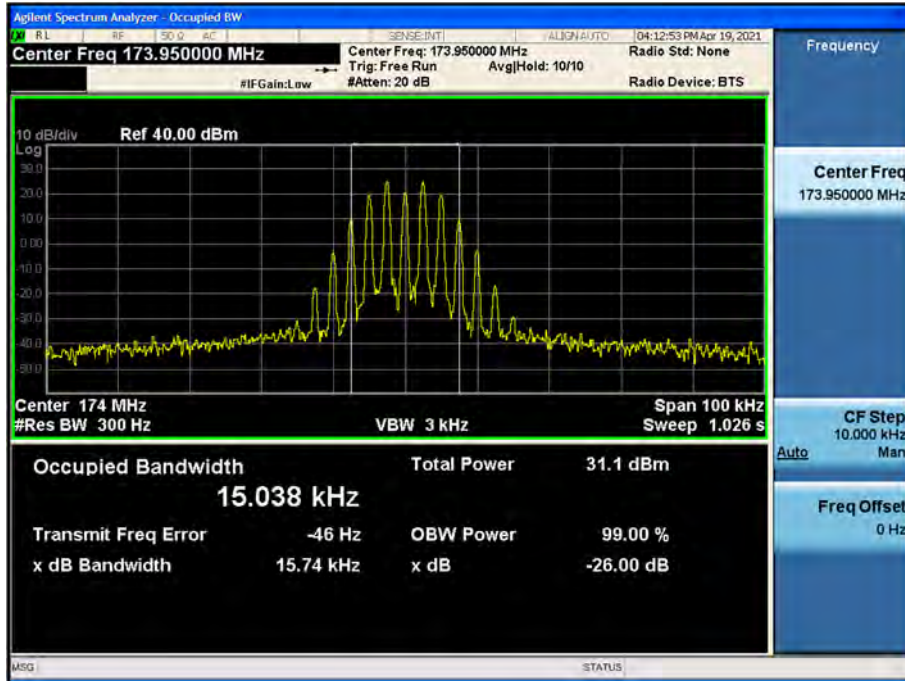
(150.05 MHz)_Low



(162.05 MHz)_Low

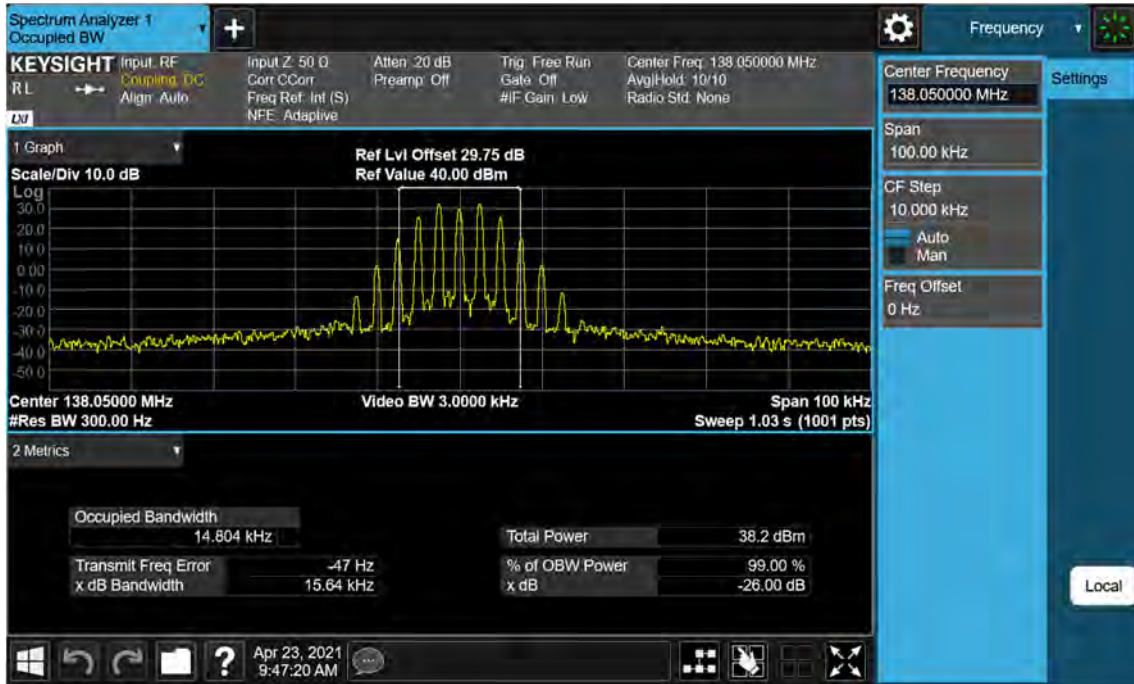


(173.95 MHz)_ Low

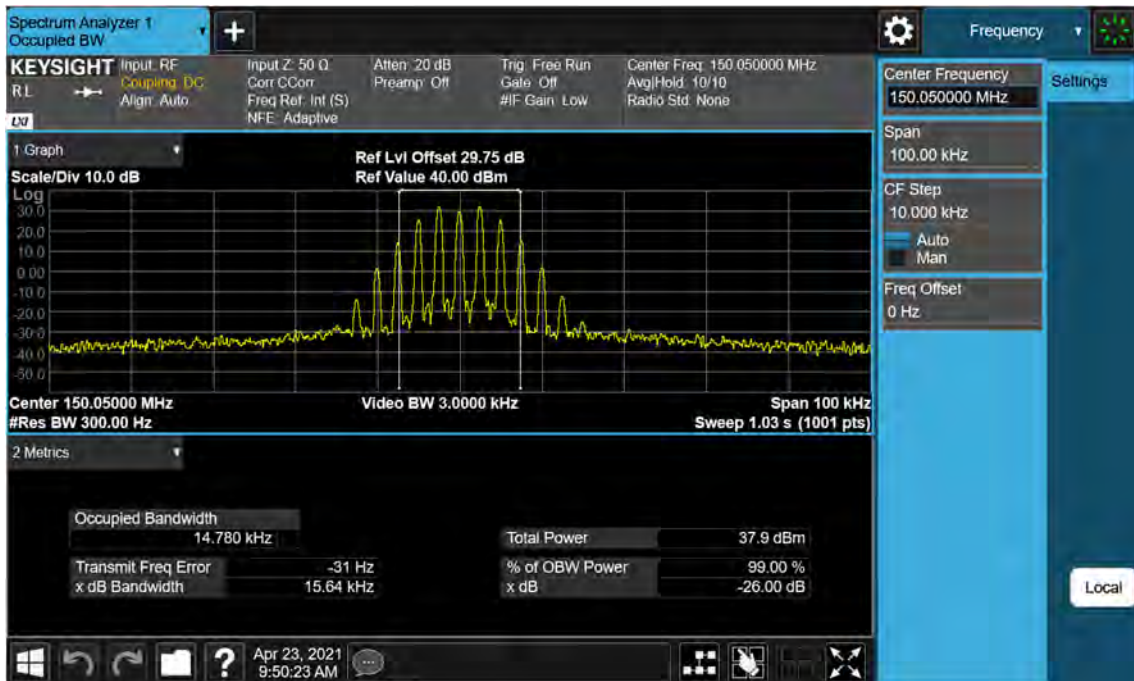


16K0F3E_ISED

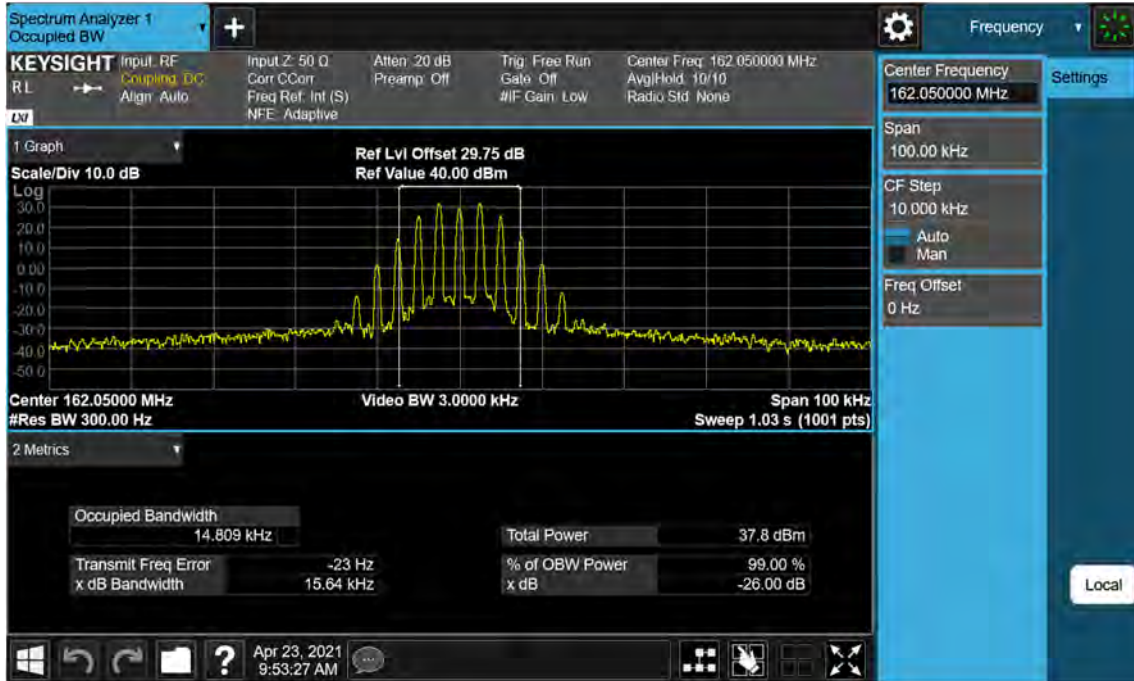
(138.05 MHz)_High



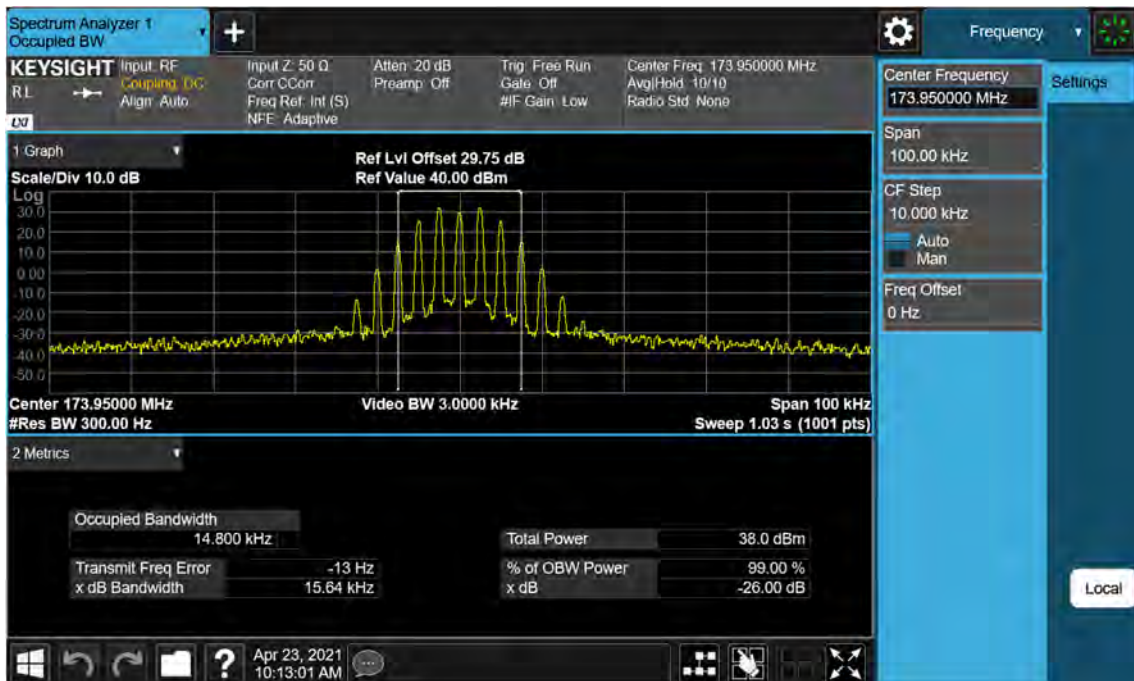
(150.05 MHz)_High



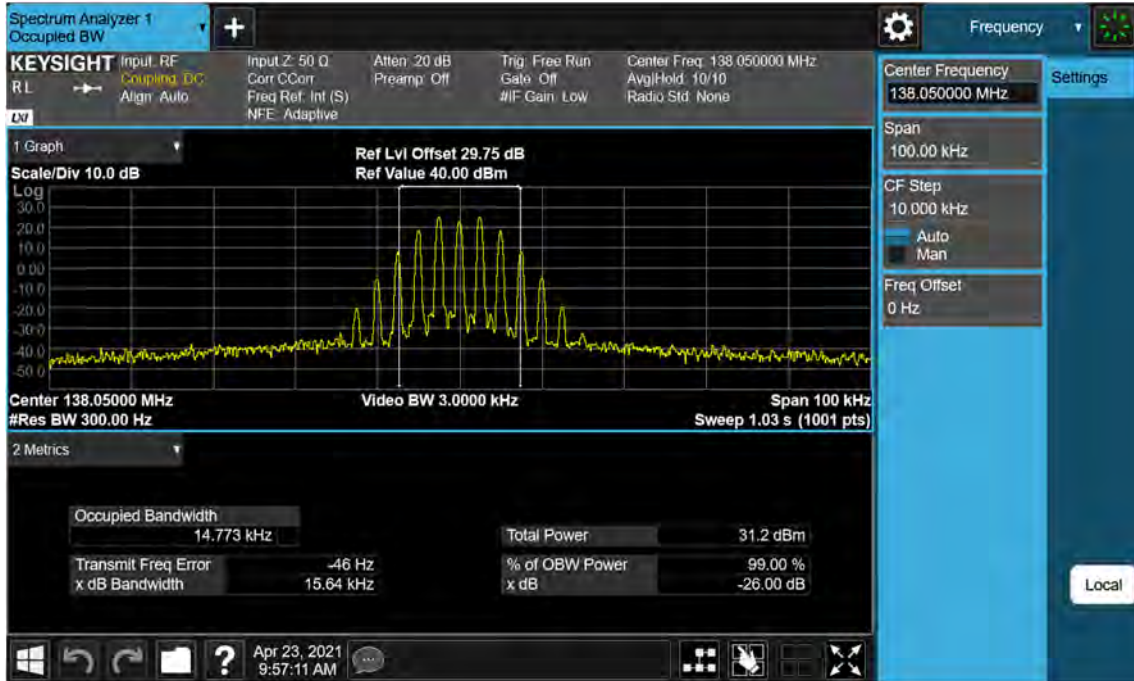
(162.05 MHz)_High



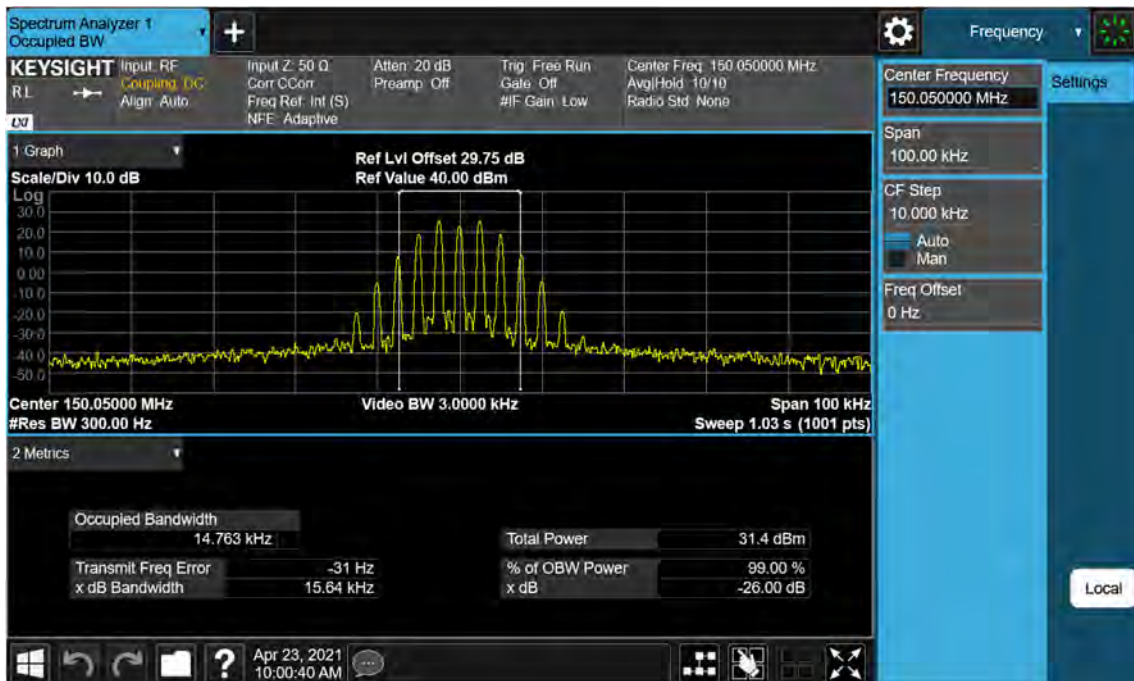
(173.95 MHz)_High



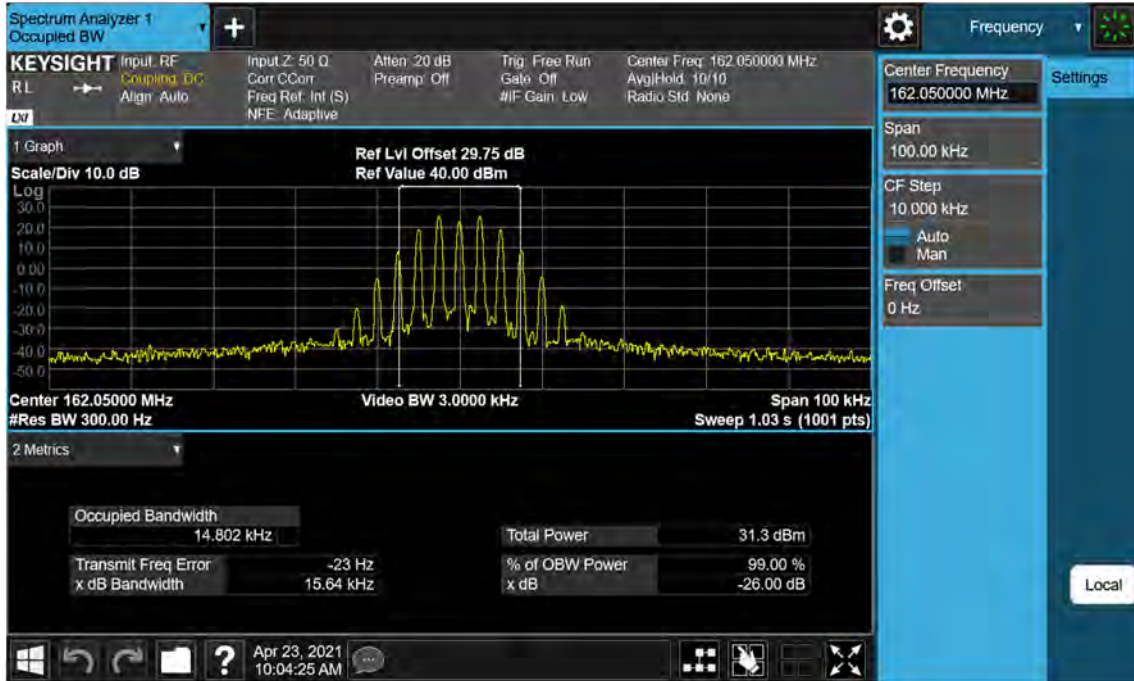
(138.05 MHz)_Low



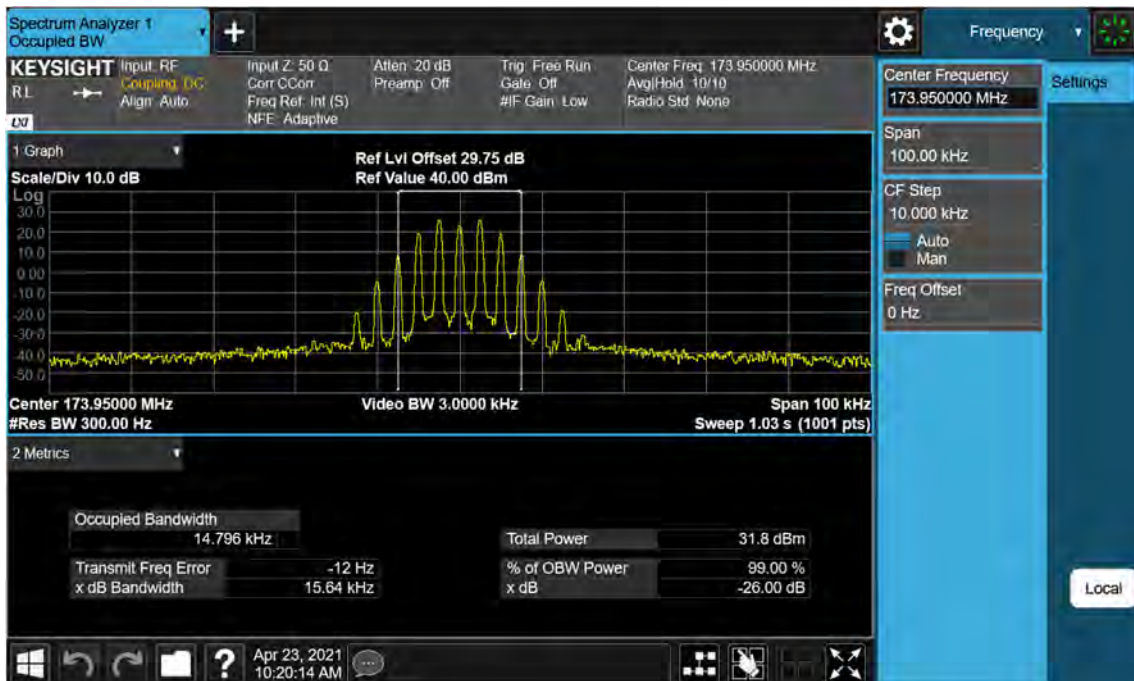
(150.05 MHz)_Low



(162.05 MHz)_ Low

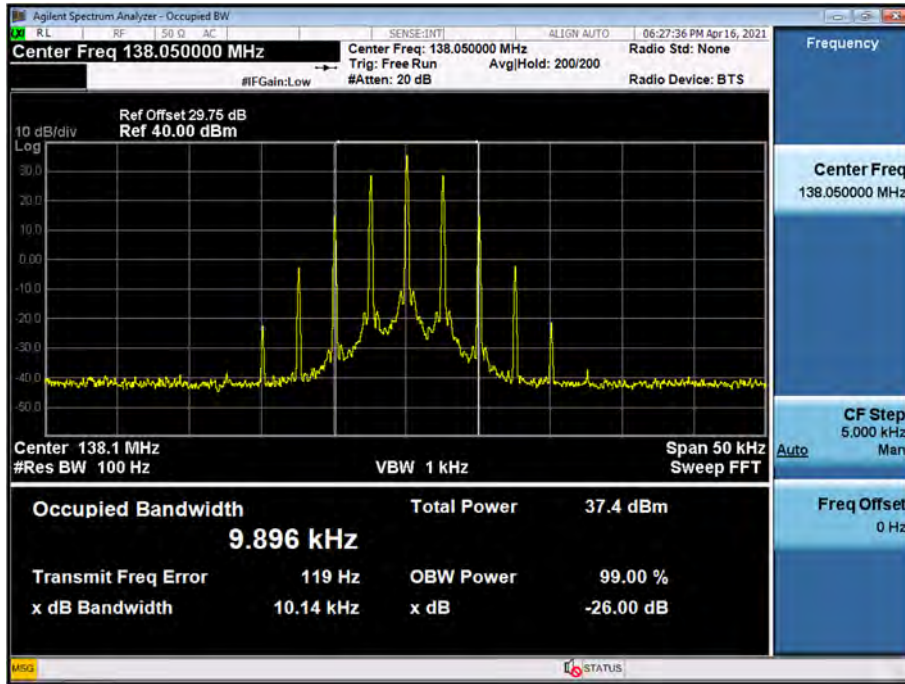


(173.95 MHz)_ Low

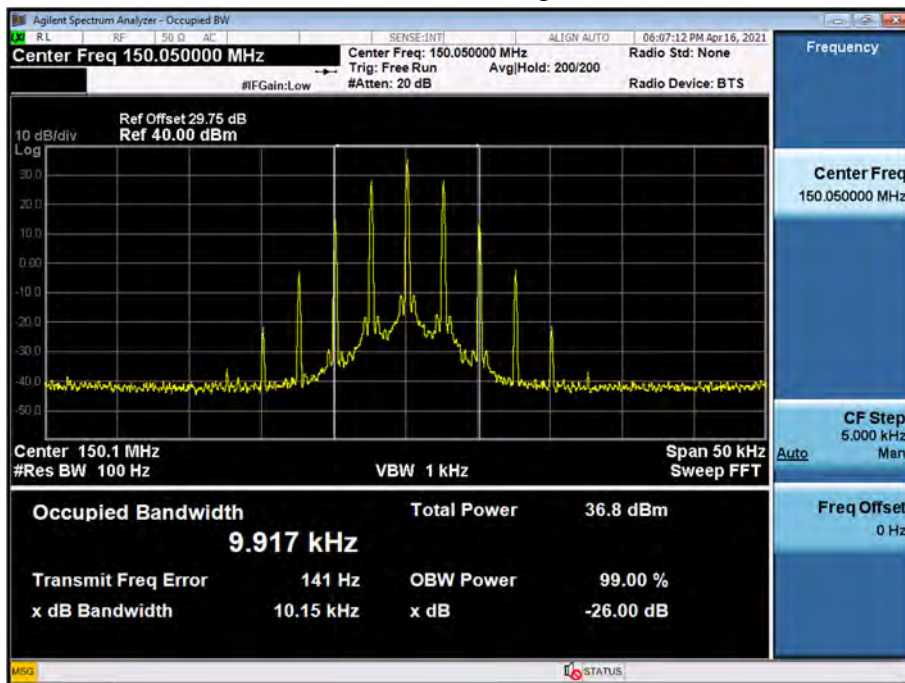


11K0F3E_FCC/ISED

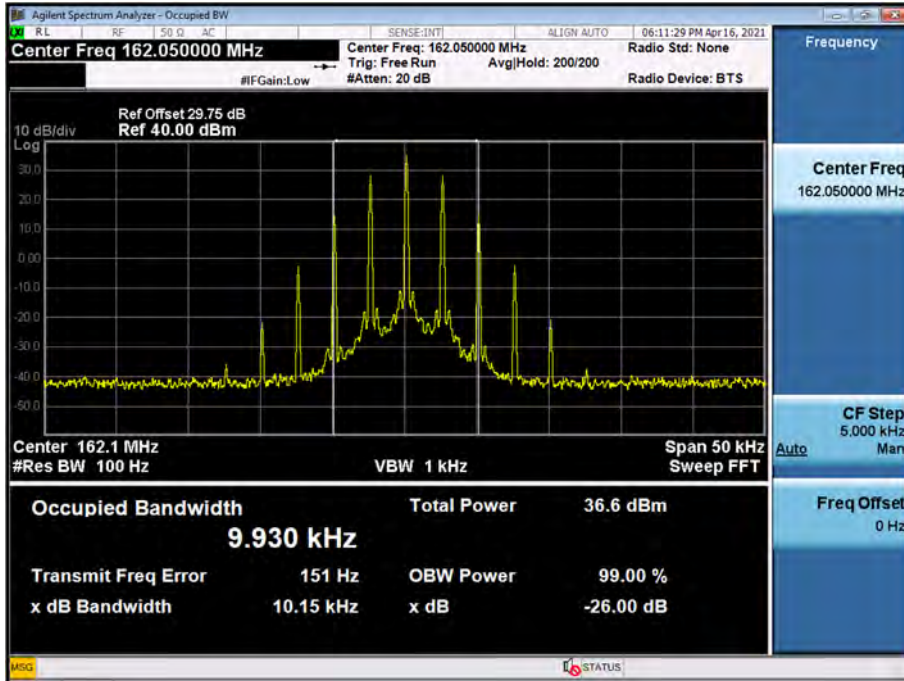
(138.05 MHz)_High



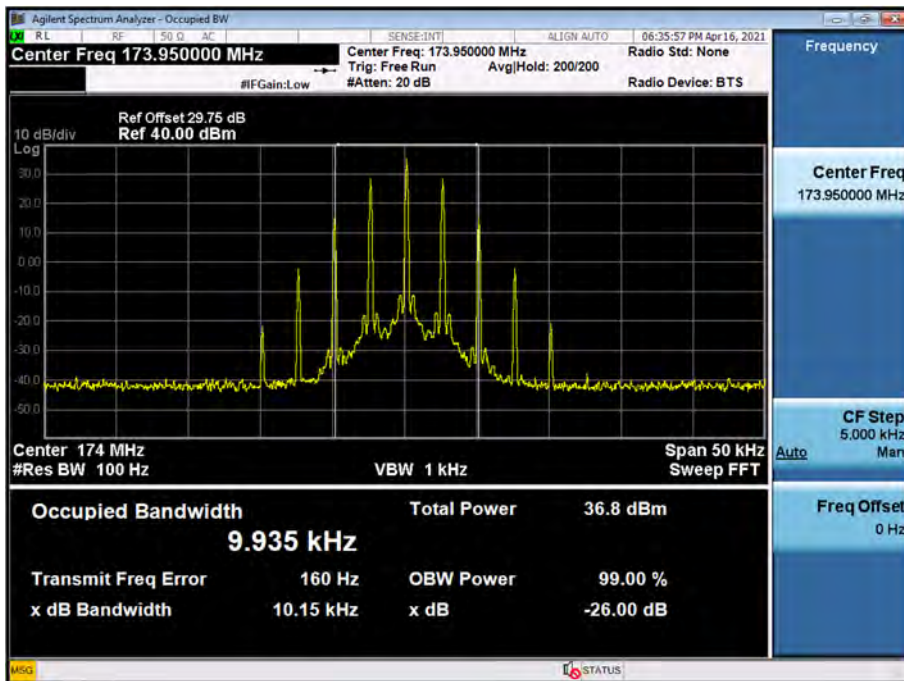
(150.05 MHz)_High



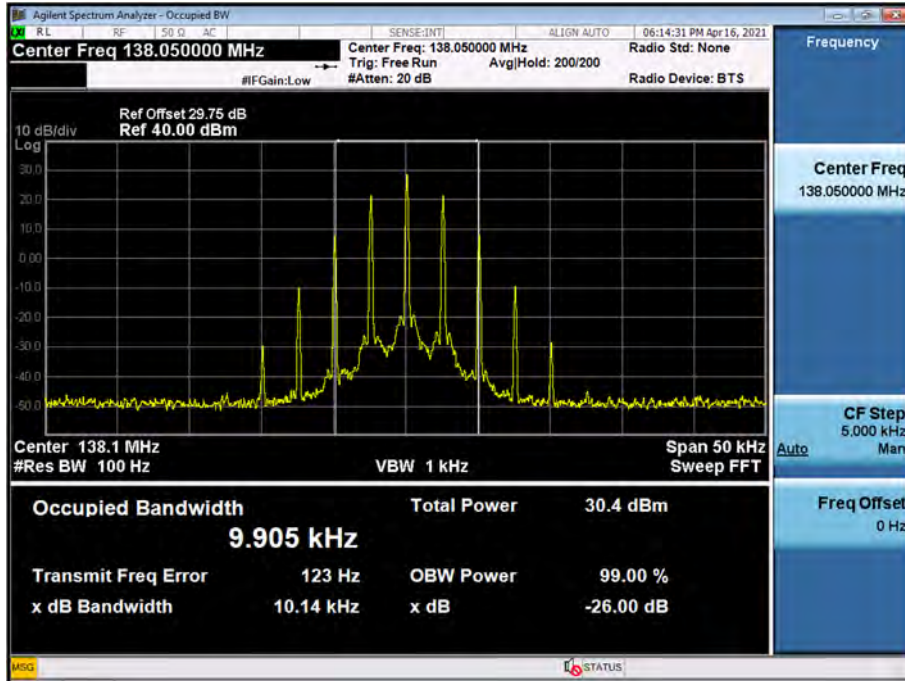
(162.05 MHz)_High



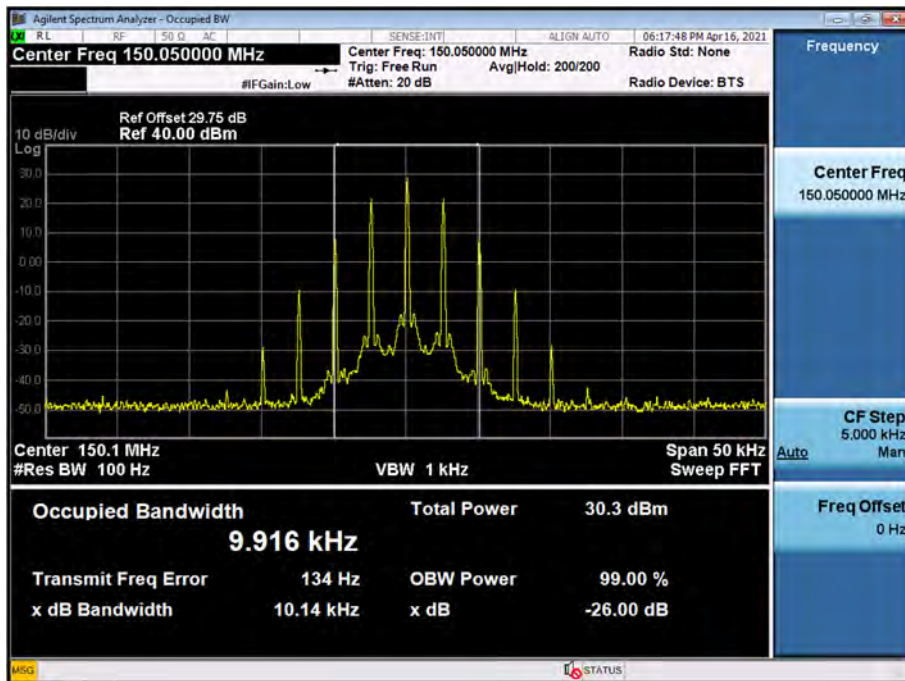
(173.95MHz)_High



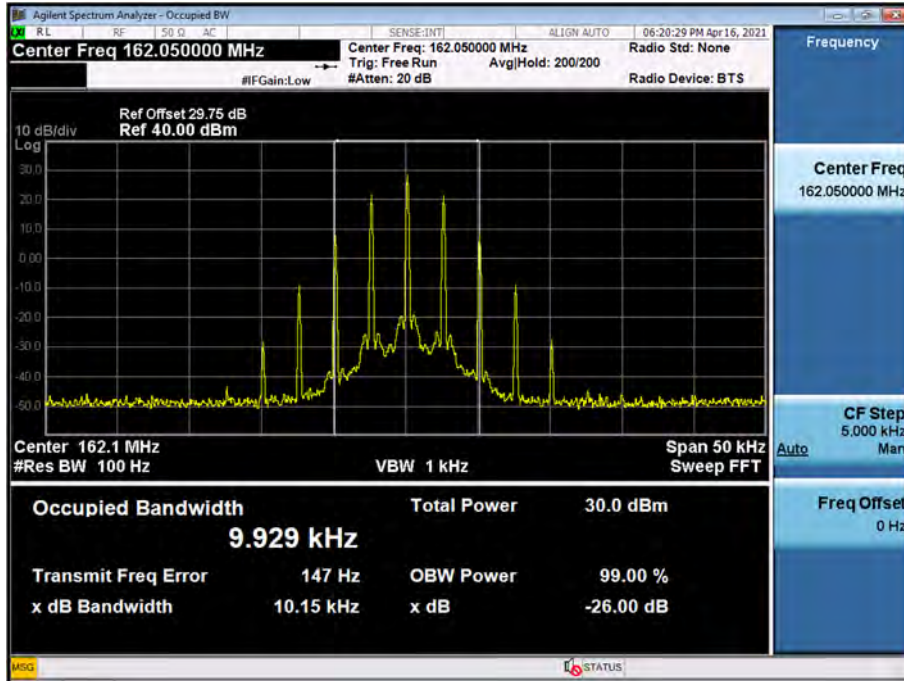
(138.05 MHz)_ Low



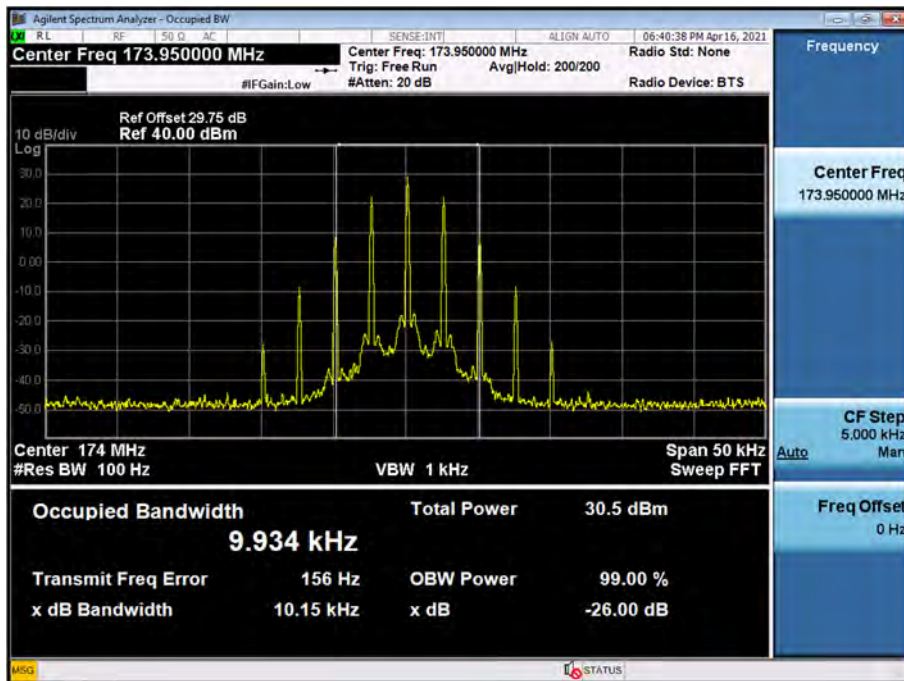
(150.05 MHz)_ Low



(162.05 MHz)_Low

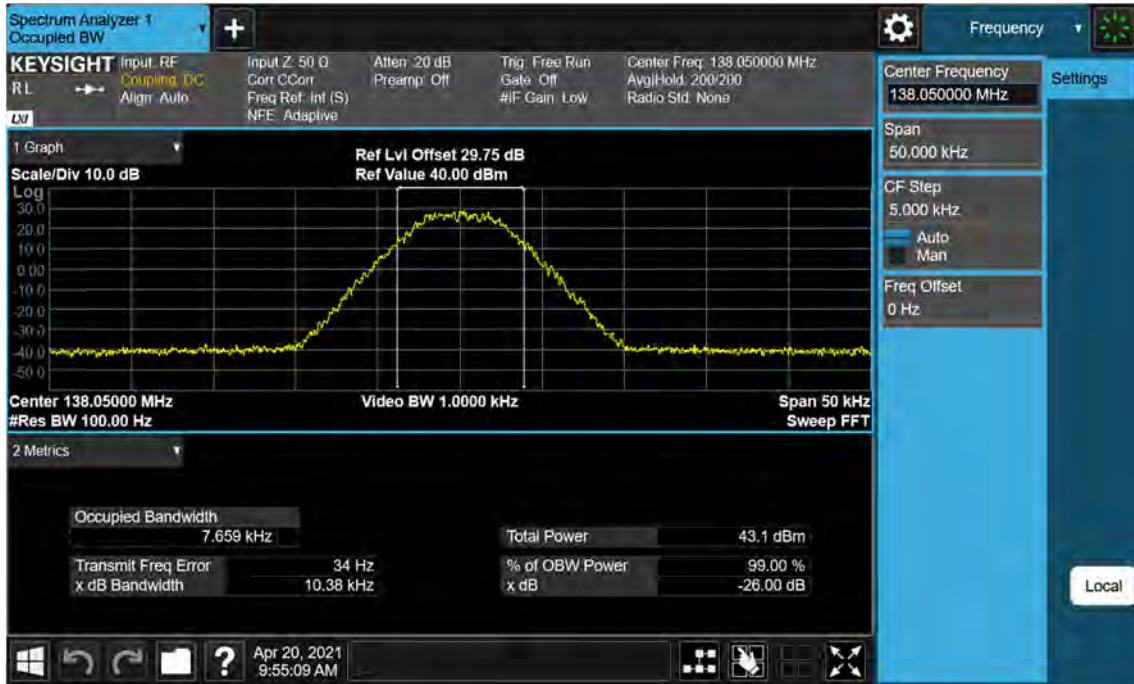


(173.95MHz)_Low

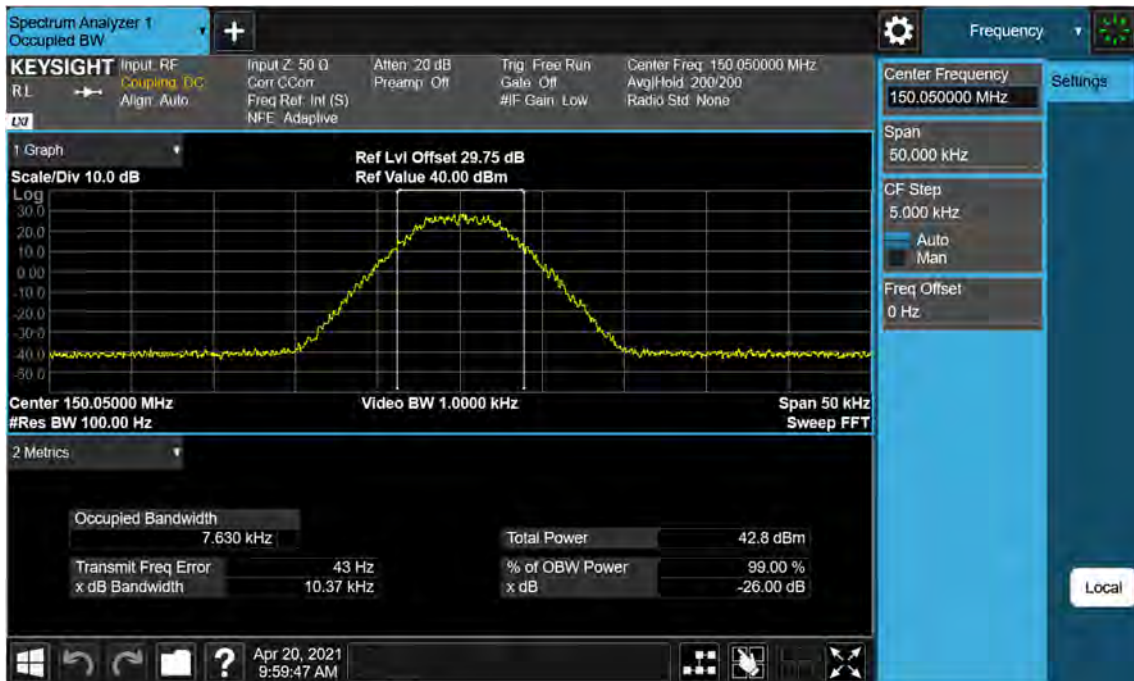


8K30F1E, 8K30F1D, 8K30F7W_FCC/ISED

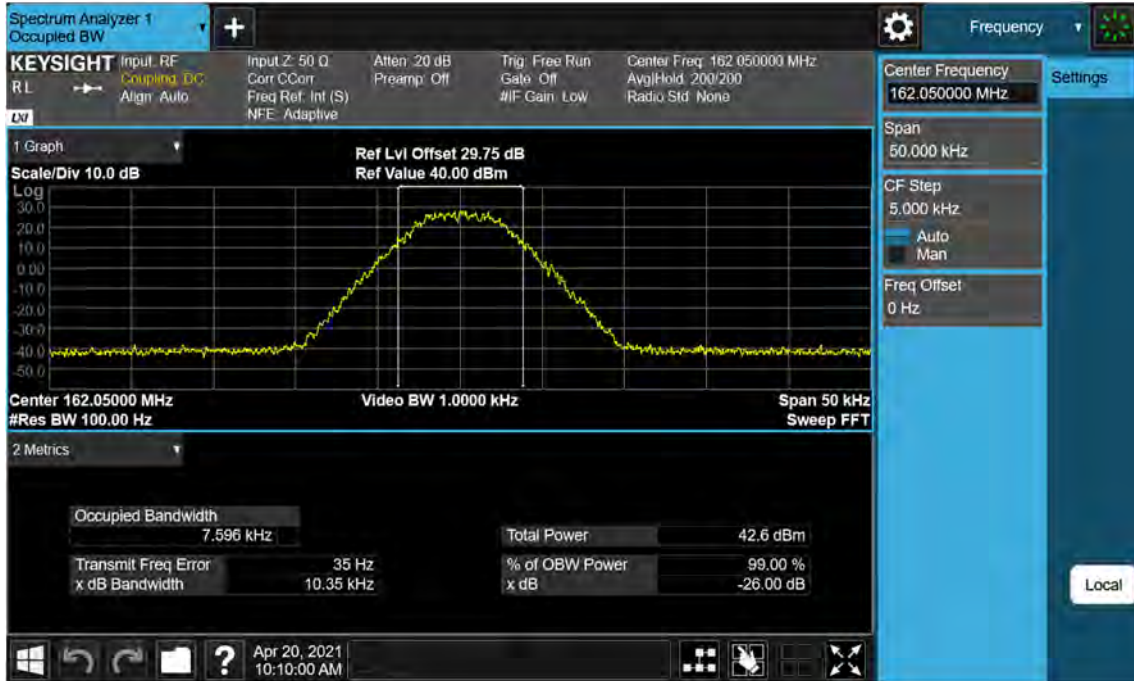
(138.05 MHz)_High



(150.05 MHz)_High



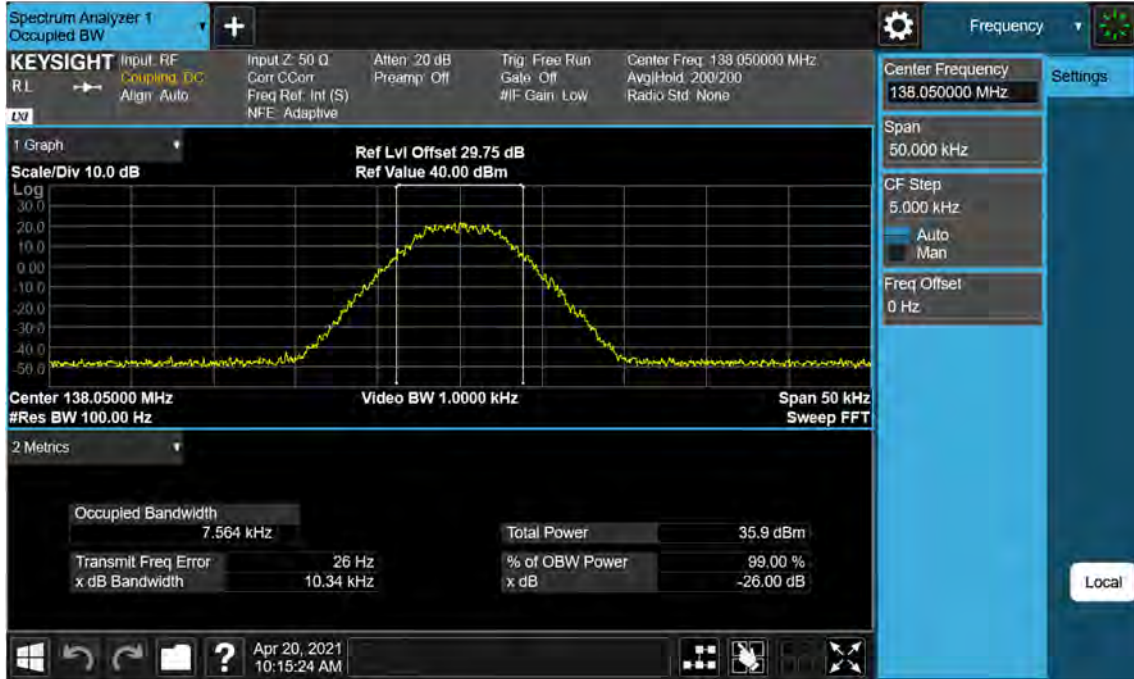
(162.05 MHz)_High



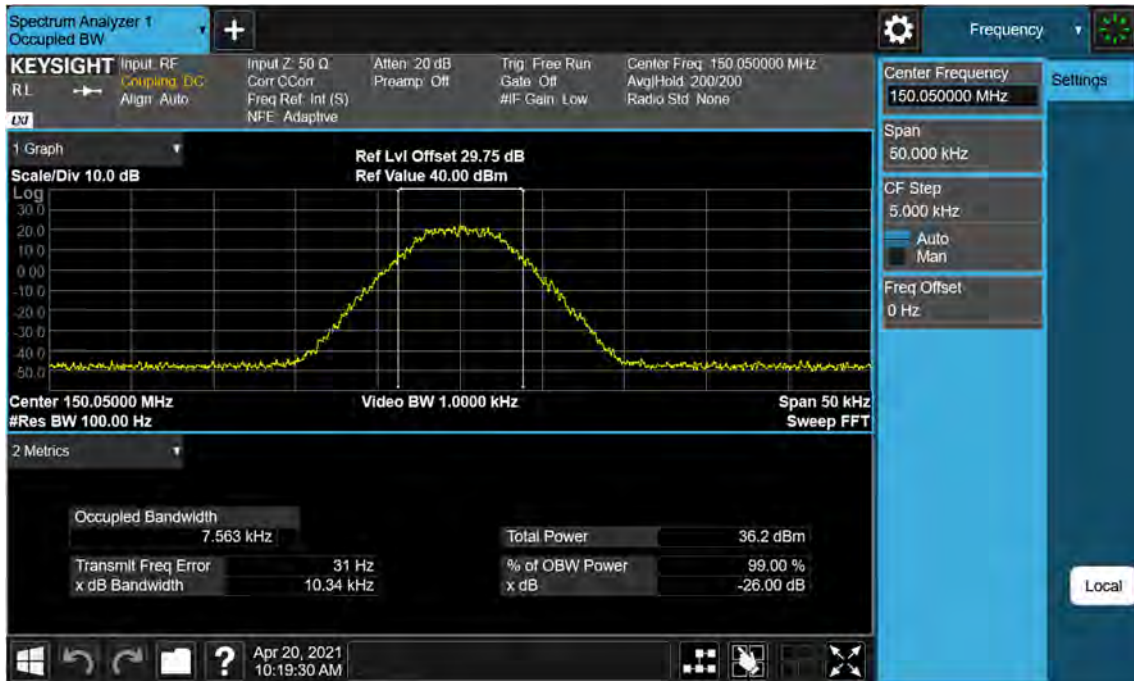
(173.95 MHz)_High



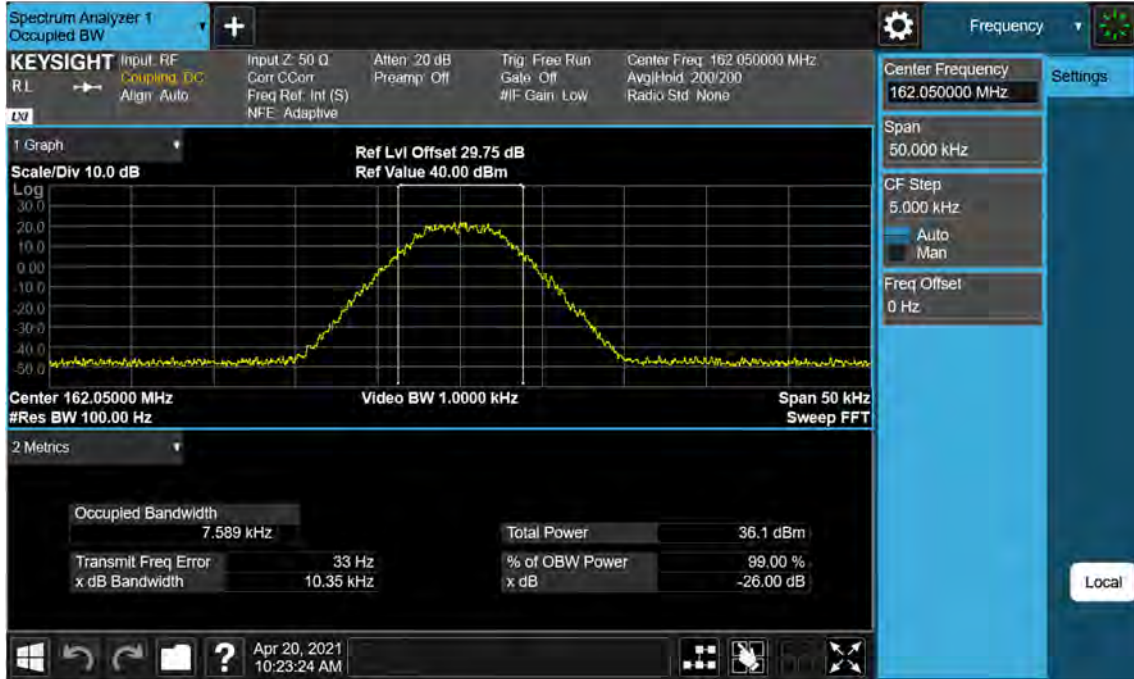
(138.05 MHz)_ Low



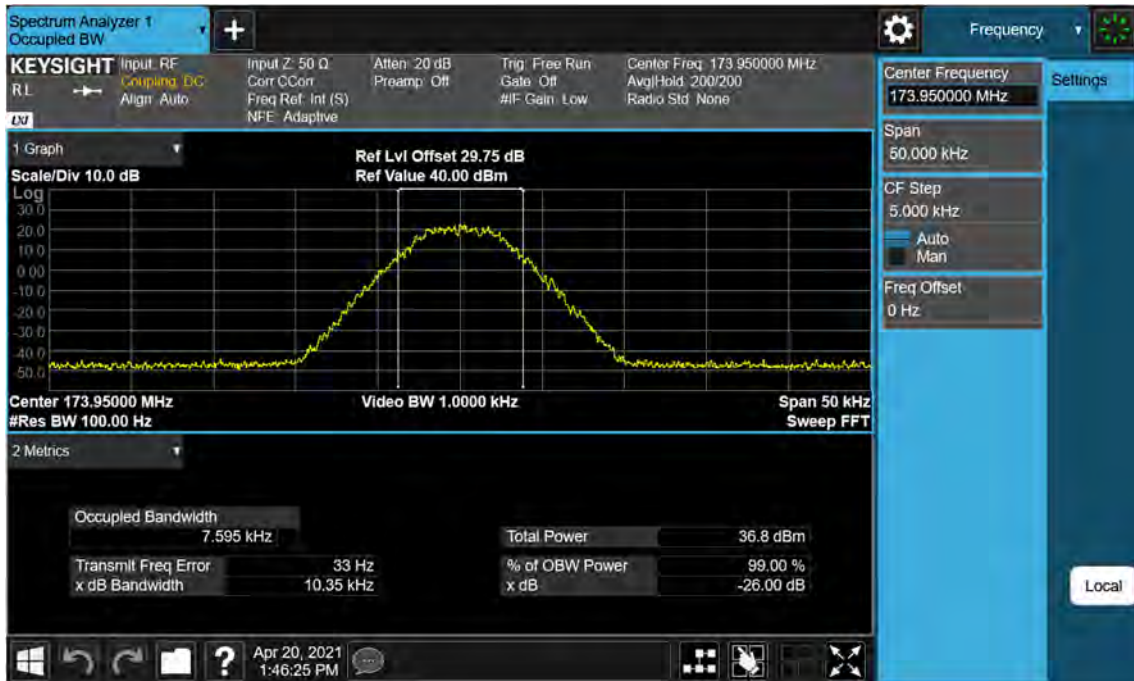
(150.05 MHz)_ Low



(162.05 MHz)_Low

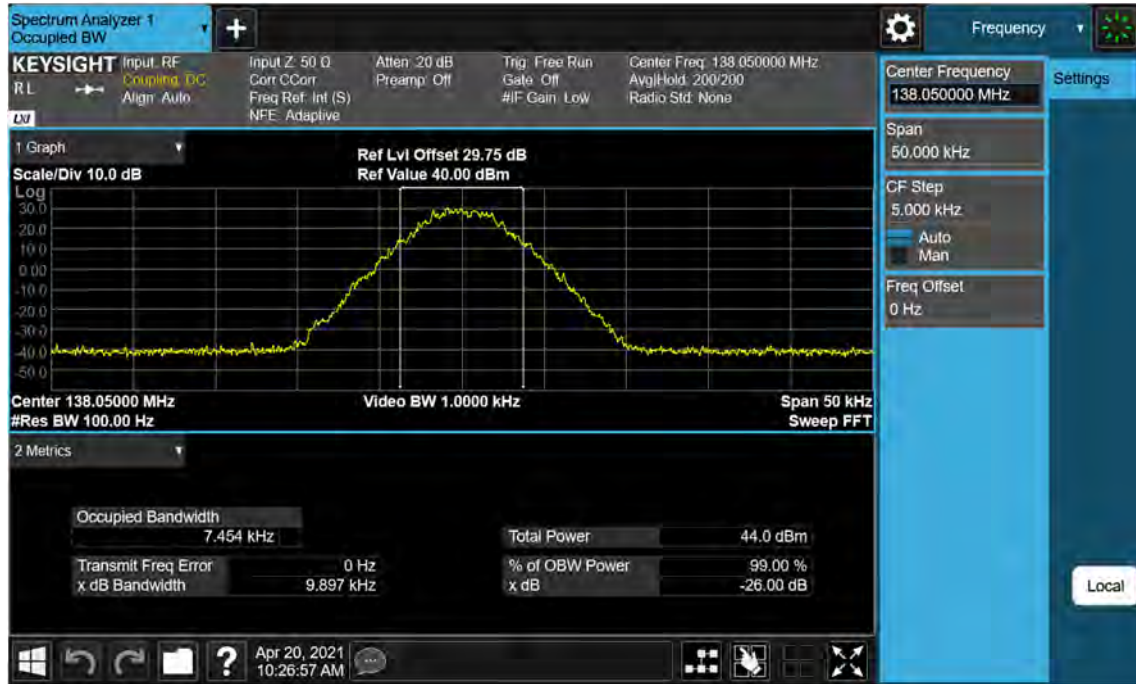


(173.95 MHz)_Low

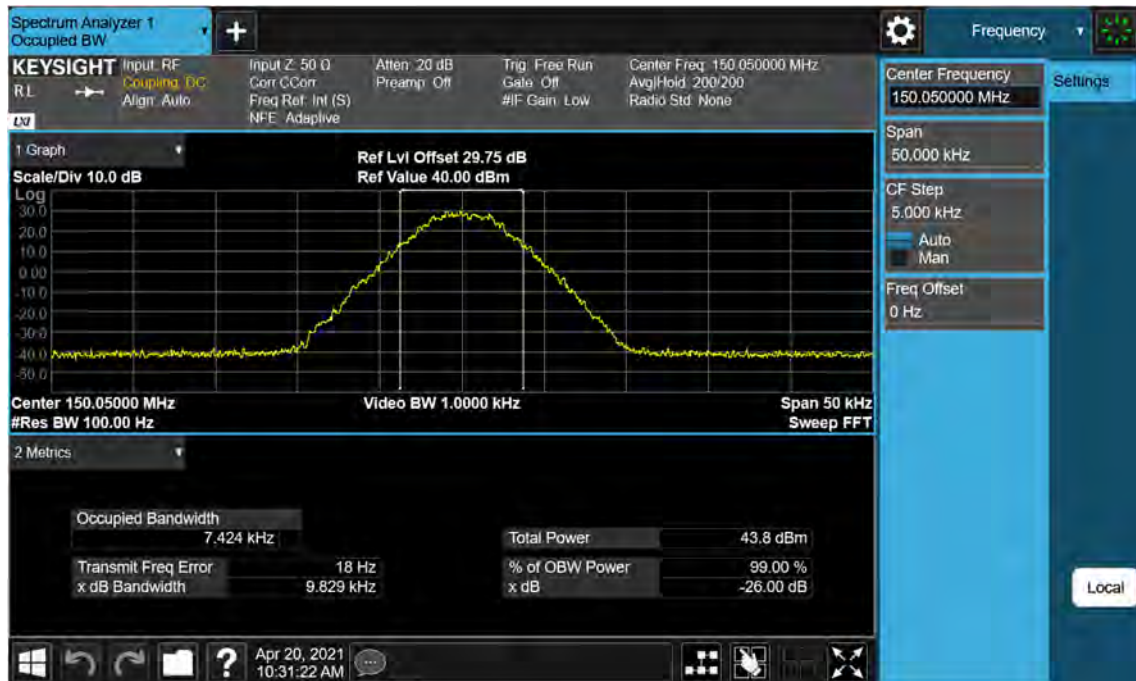


7K60FXD, 7K60FXE_FCC/ISED

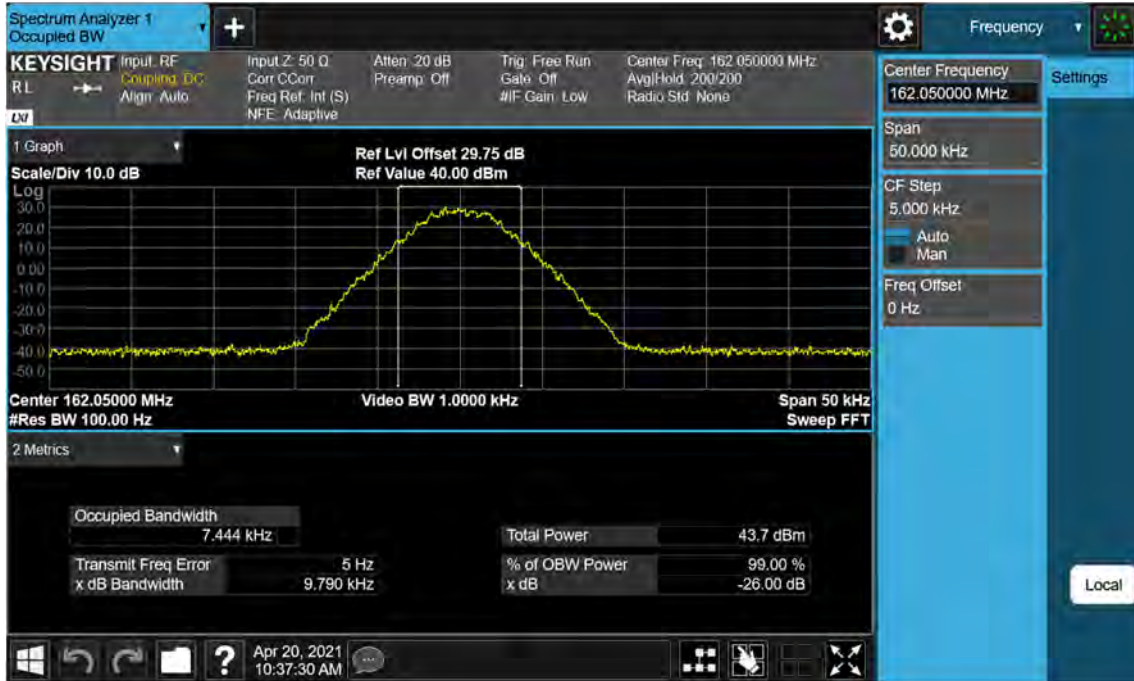
(138.05 MHz)_High



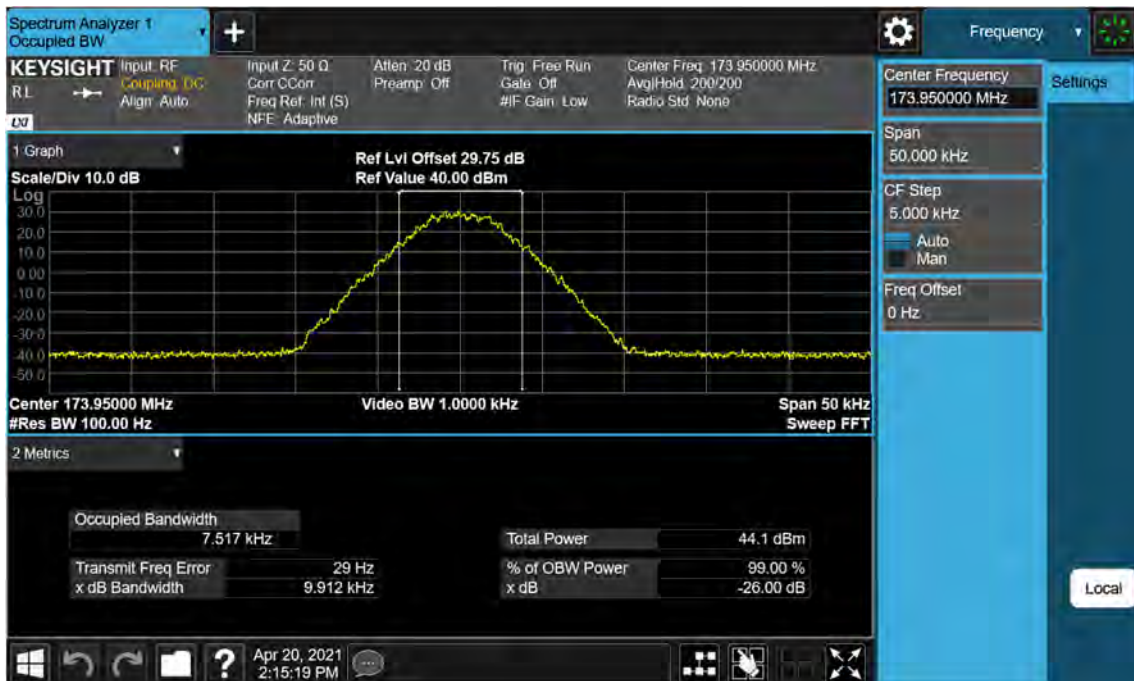
(150.05 MHz)_High



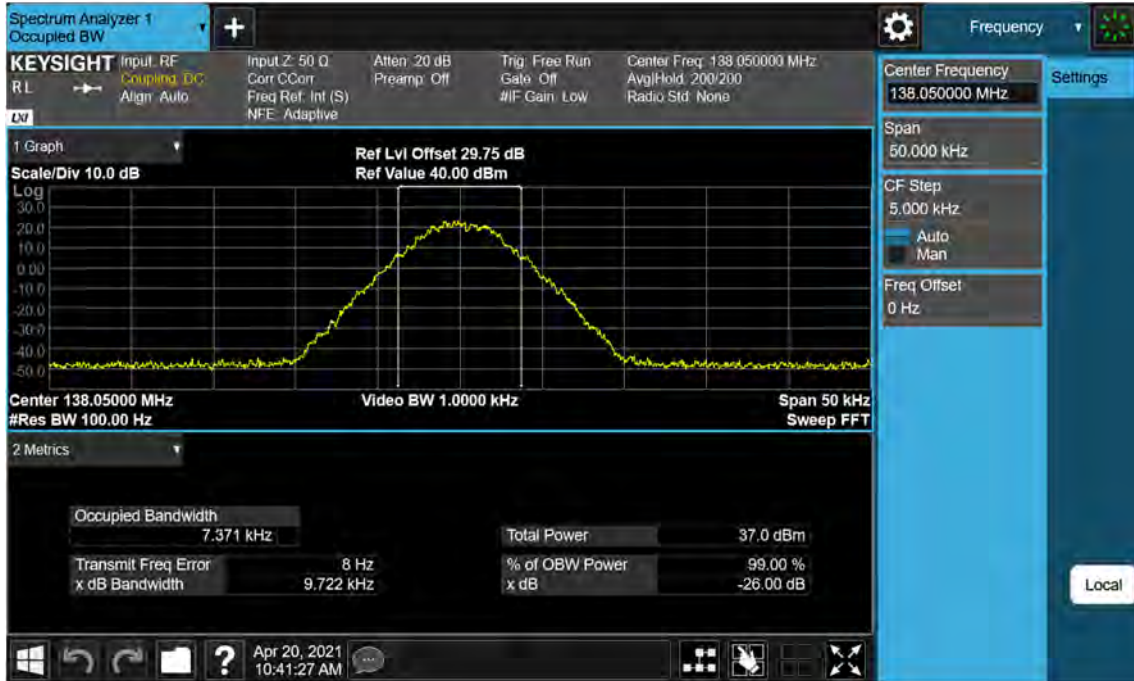
(162.05 MHz)_High



(173.95 MHz)_High



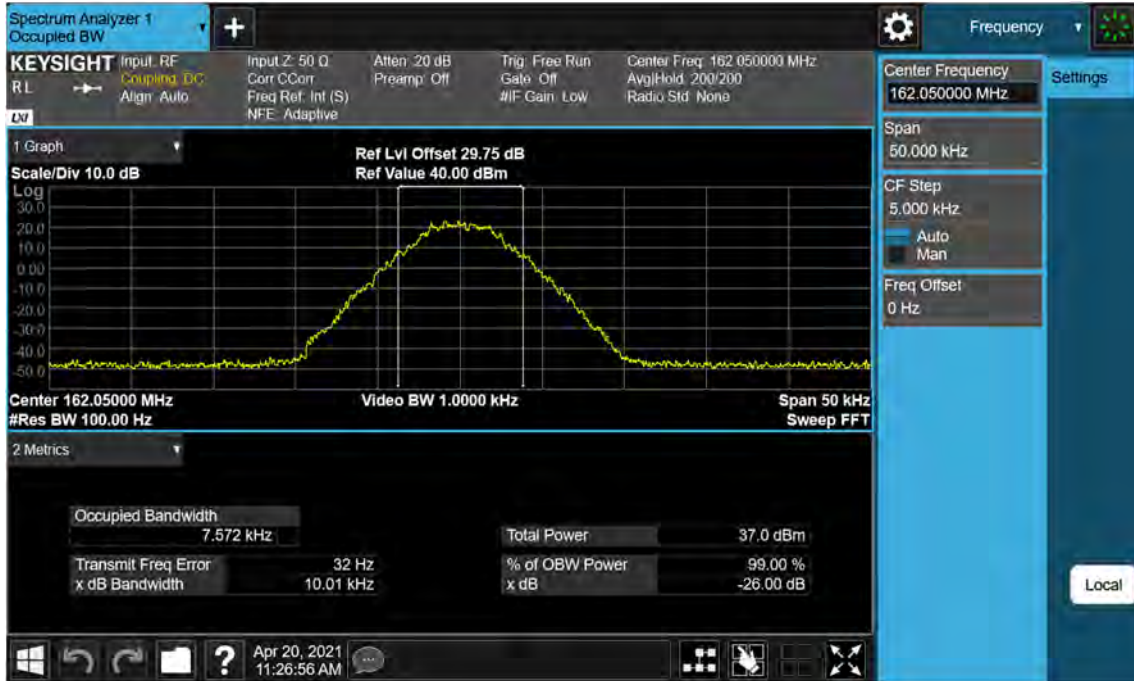
(138.05 MHz)_ Low



(150.05 MHz)_ Low



(162.05 MHz)_Low

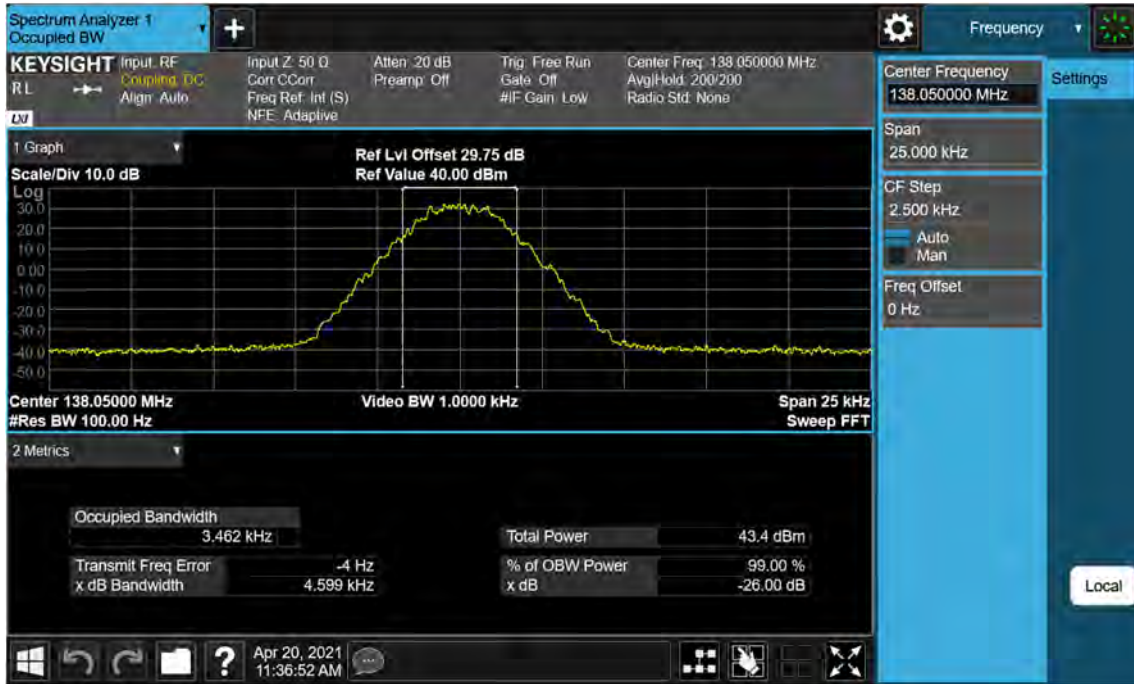


(173.95 MHz)_Low

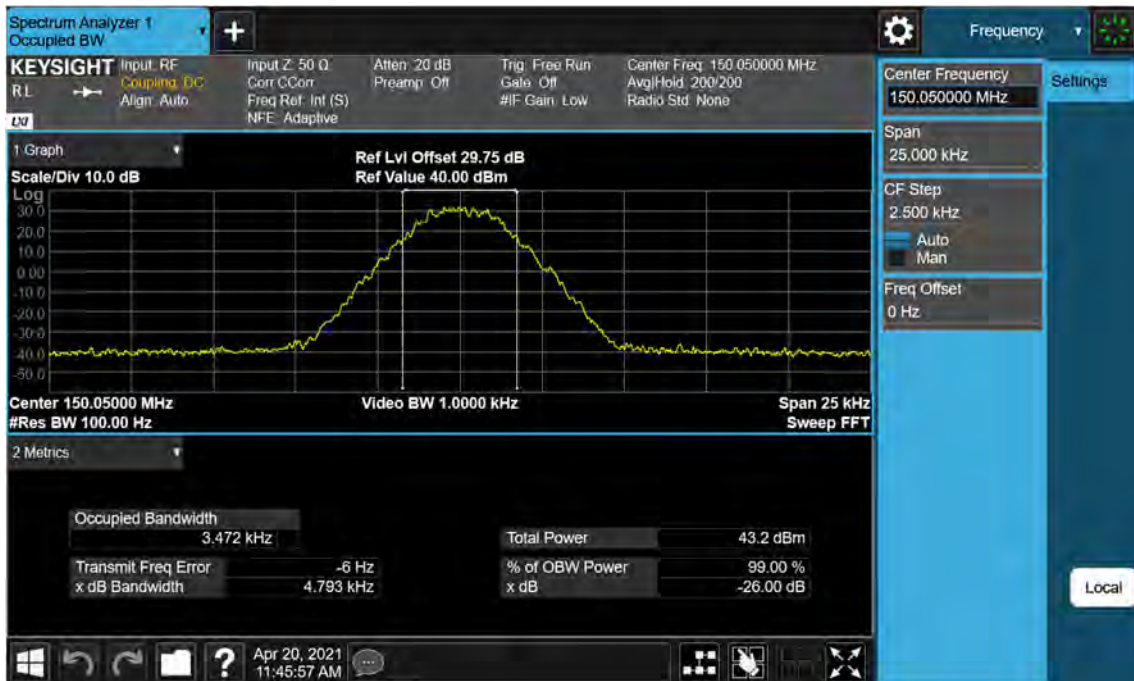


4K00F1E, 4K00F1D, 4K00F7W_FCC/ISED

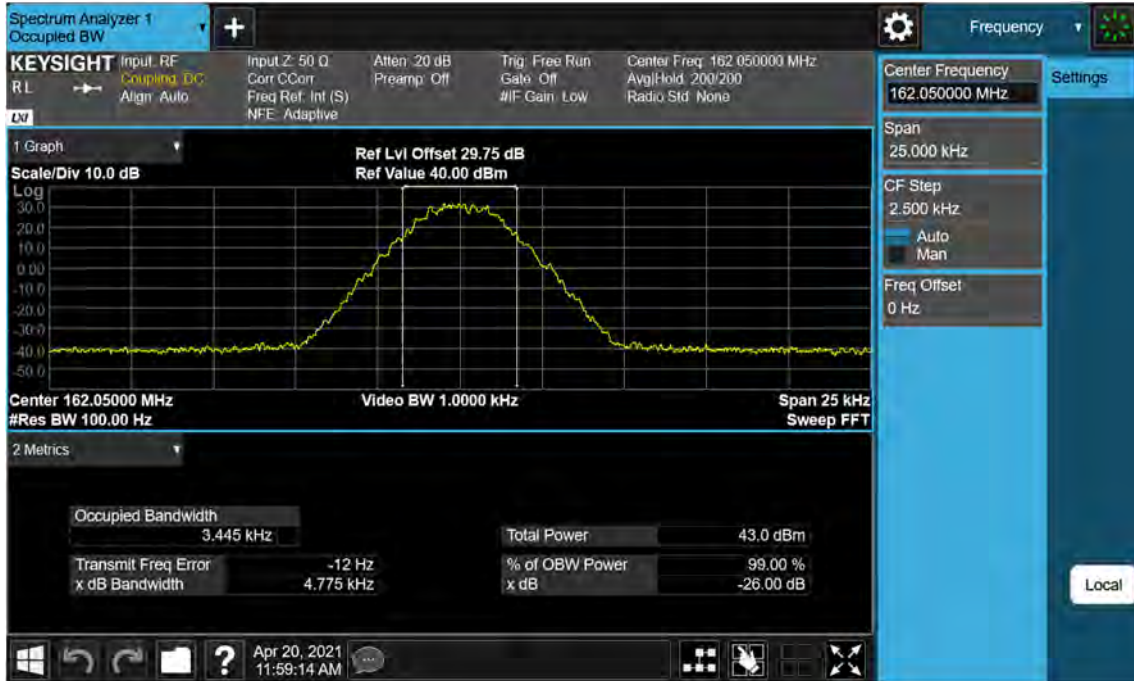
(138.05 MHz)_High



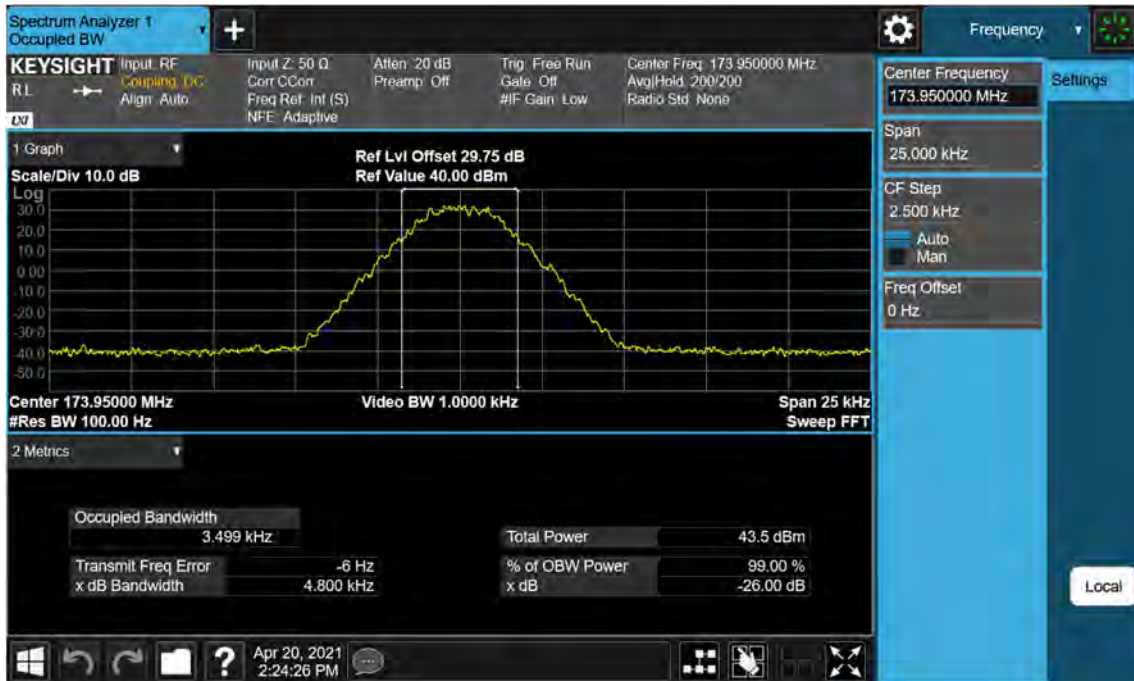
(150.05 MHz)_High



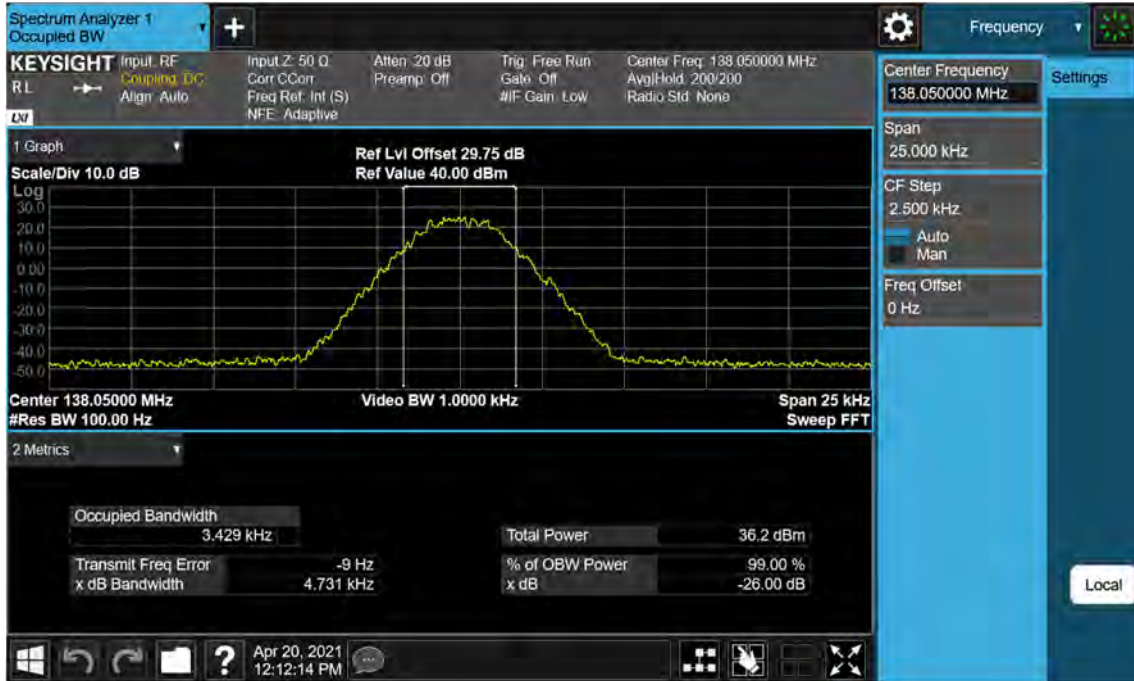
(162.05 MHz)_High



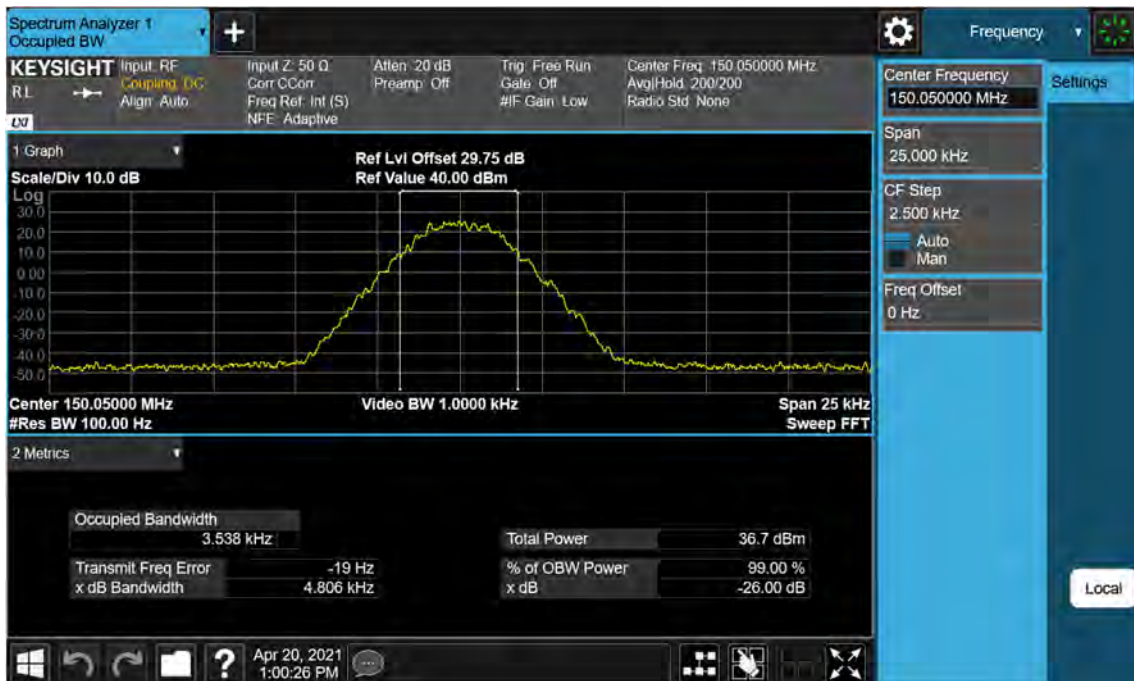
(173.95 MHz)_High



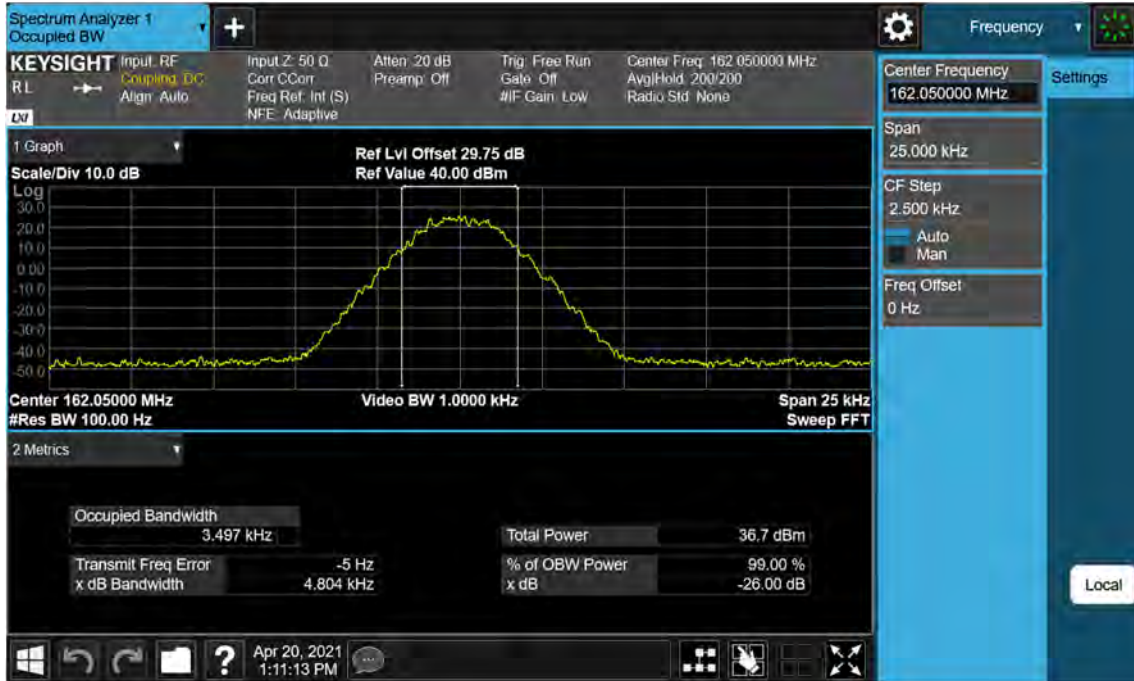
(138.05 MHz)_ Low



(150.05 MHz)_ Low



(162.05 MHz)_Low

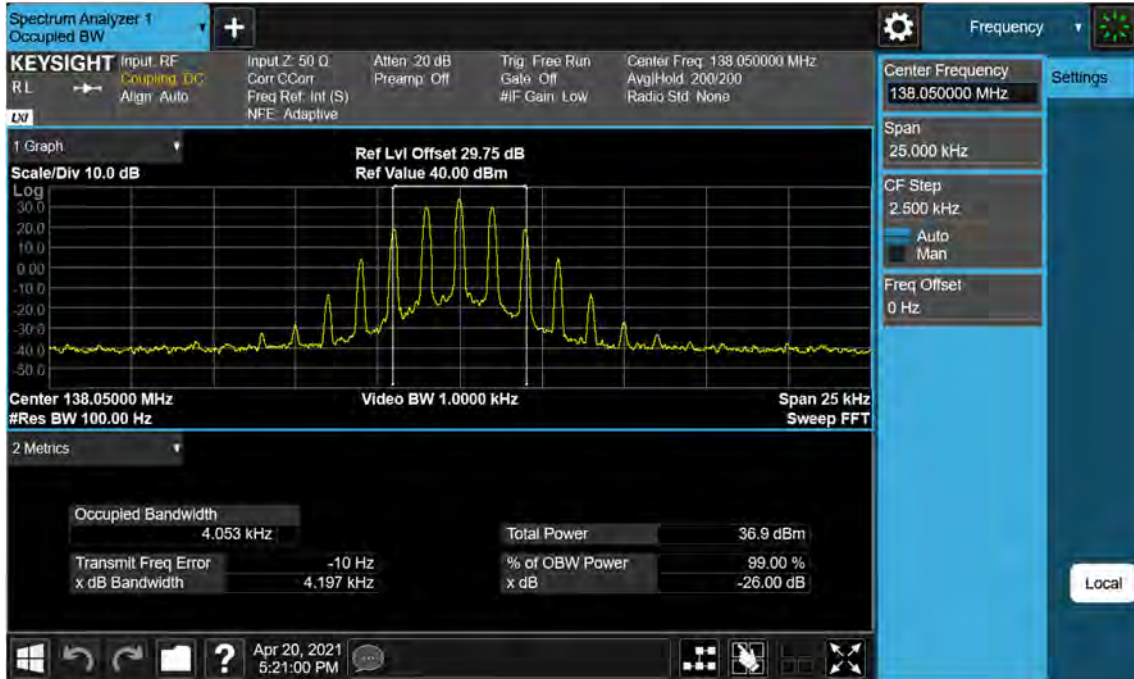


(173.95 MHz)_Low

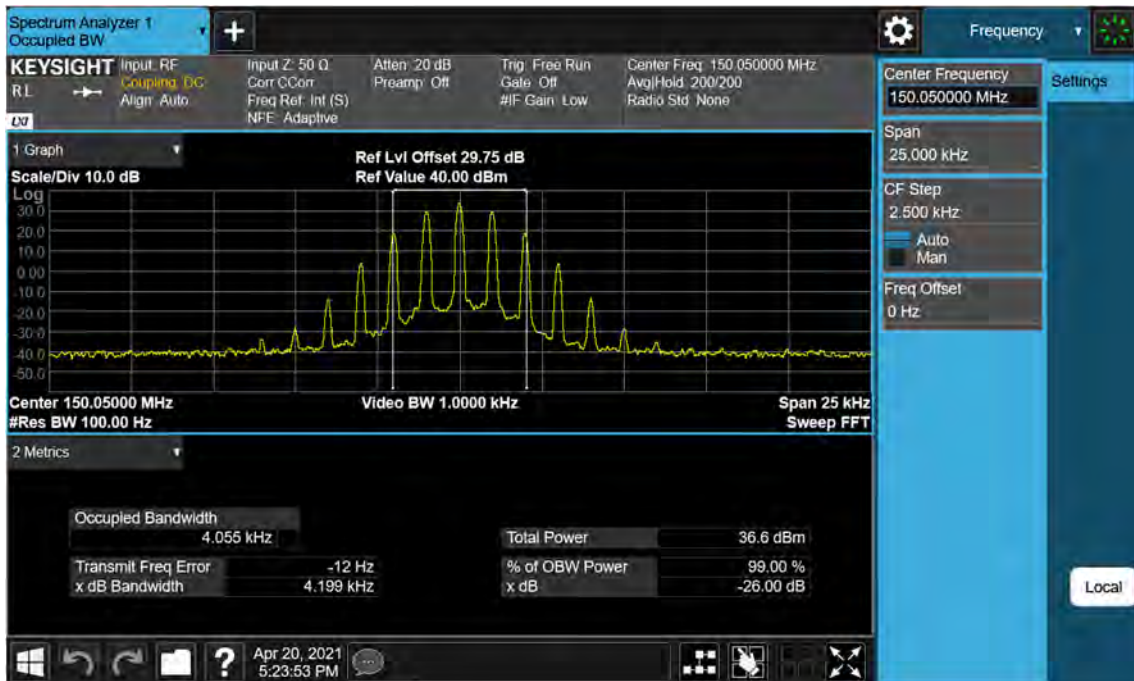


4K00F2D_FCC/ISED

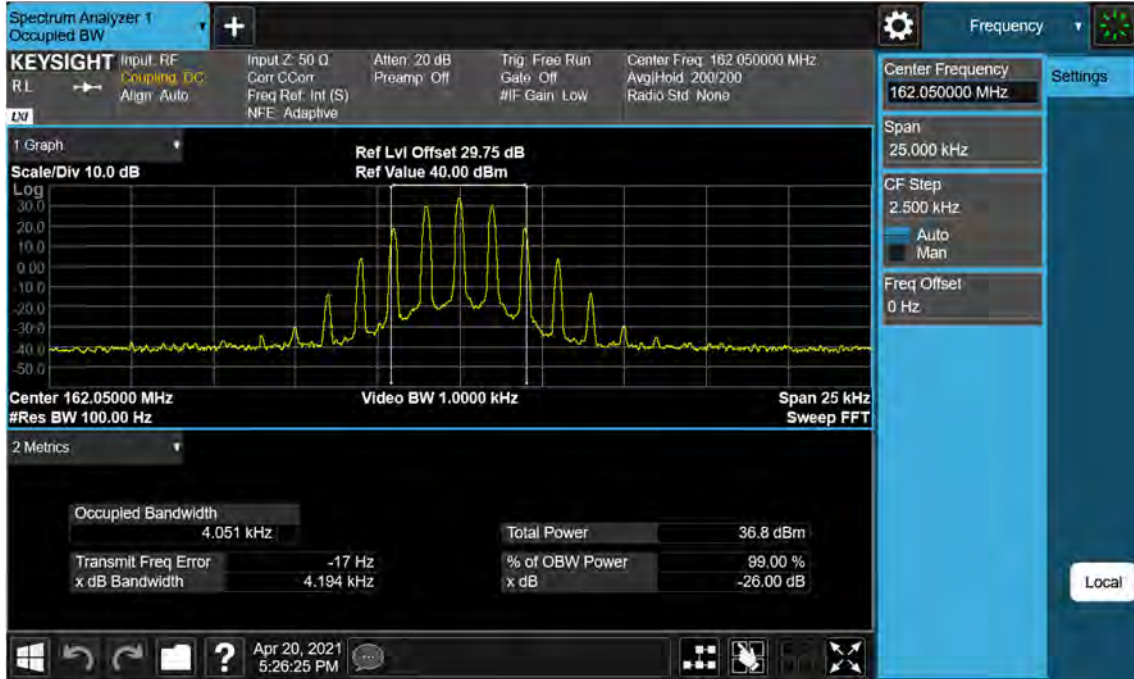
(138.05 MHz)_High



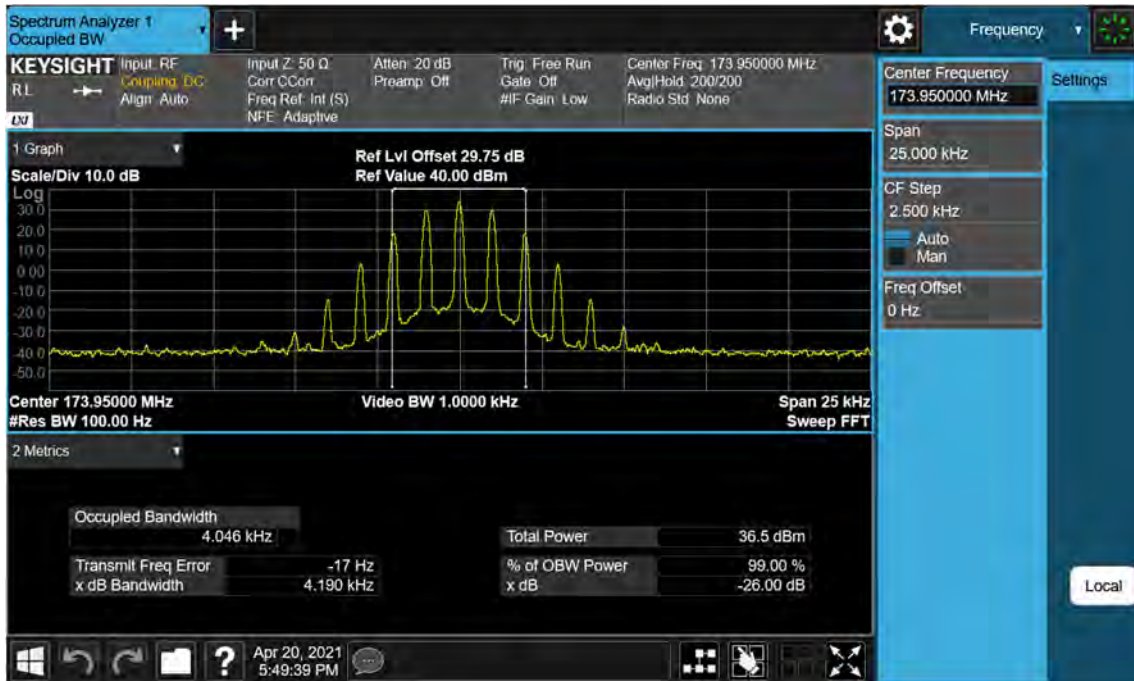
(150.05 MHz)_High



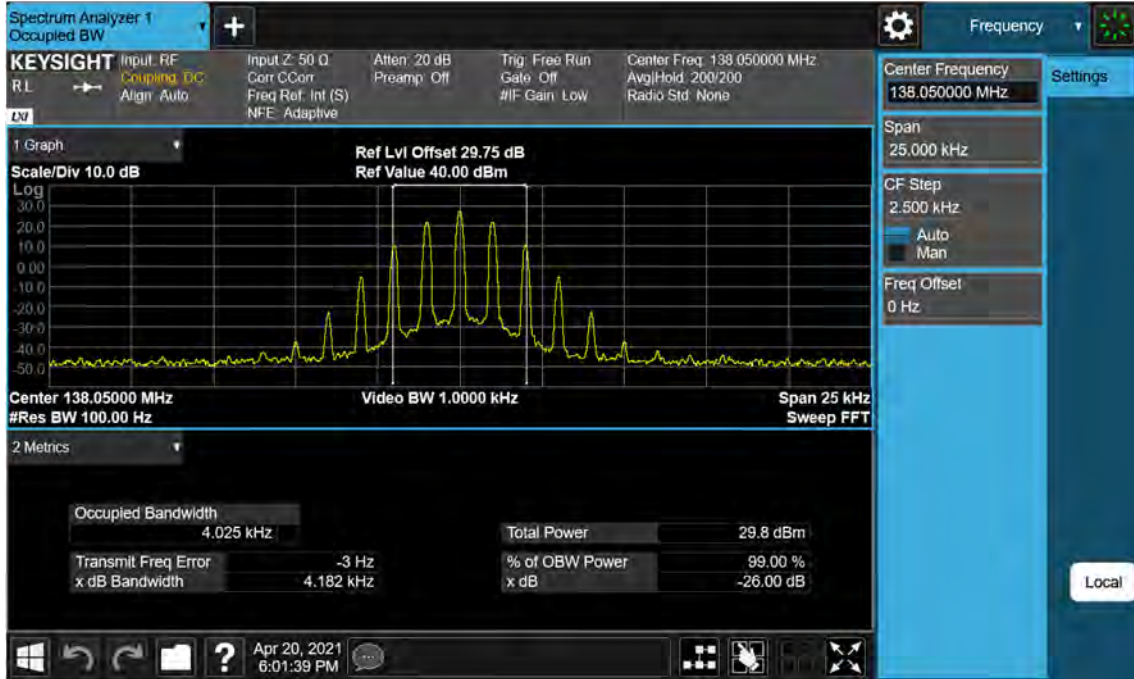
(162.05 MHz)_High



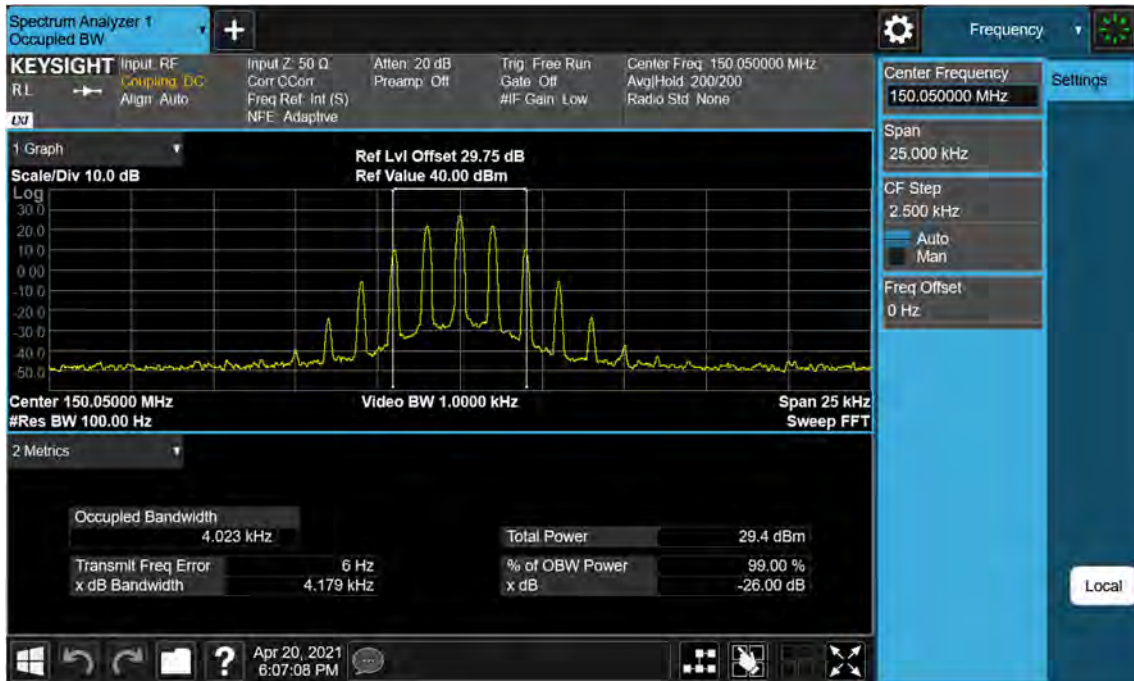
(173.95 MHz)_High



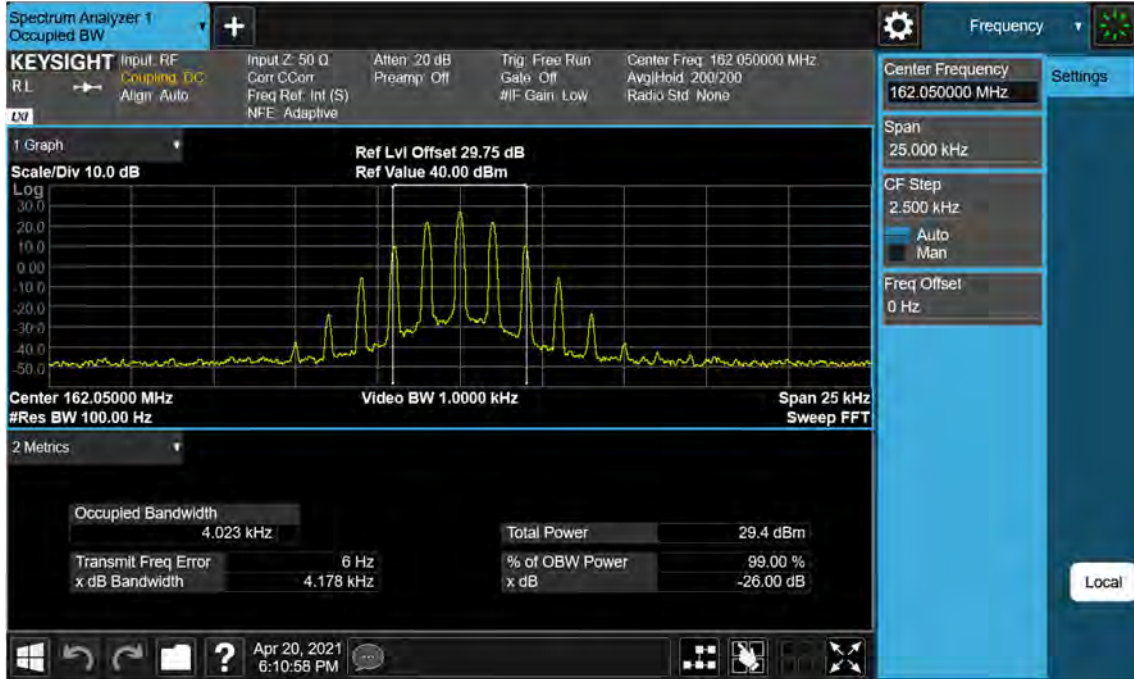
(138.05 MHz)_ Low



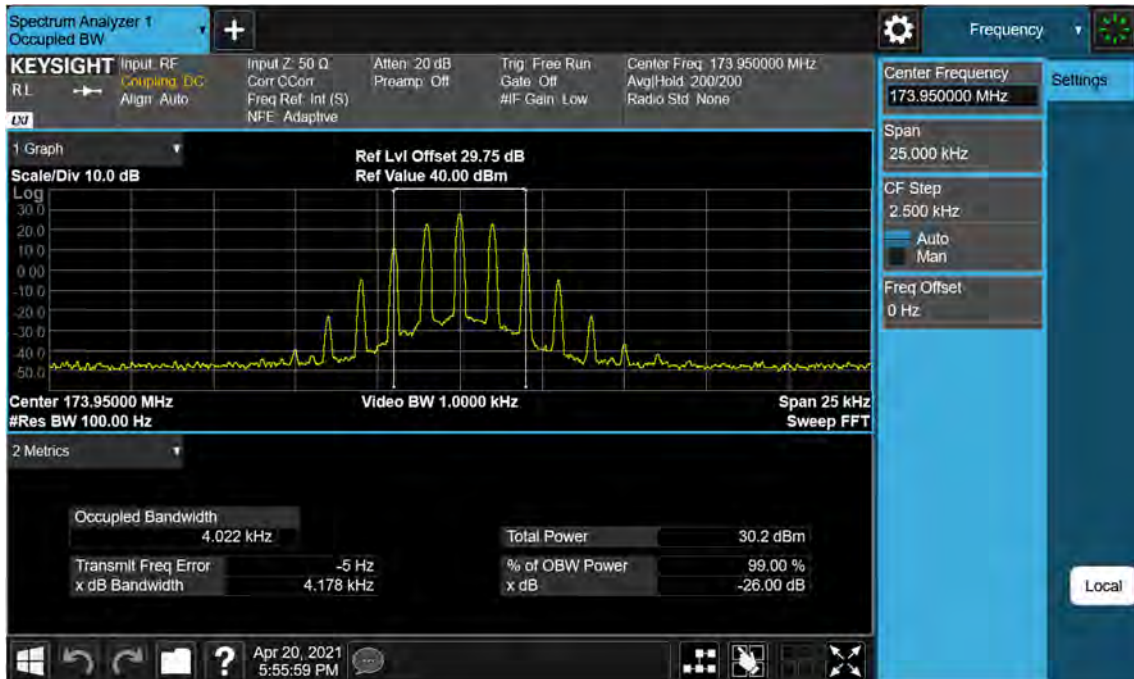
(150.05 MHz)_ Low



(162.05 MHz)_Low



(173.95 MHz)_Low

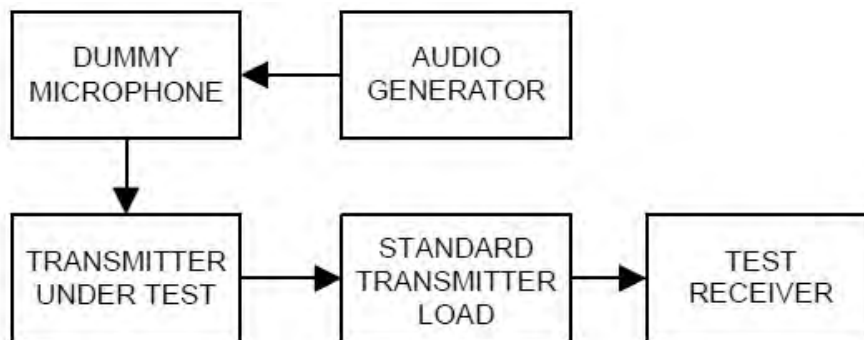


8.4 Modulation Limiting

▣ Definition

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

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

According to 2.2.3 in TIA-603-E Standard.

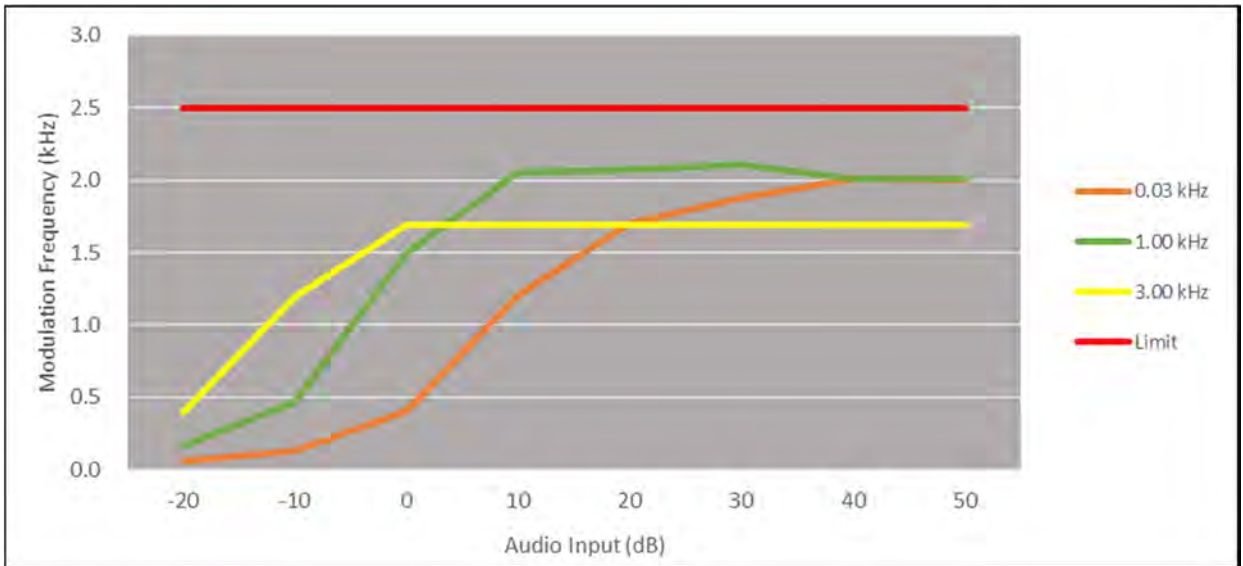
- a) Connect the equipment as illustrated.
- b) Adjust the transmitter per the manufacturer's procedure for full rated system deviation.
- c) Set the test receiver to measure peak positive deviation.
Set the audio bandwidth for ≤ 0.25 Hz to $\geq 15,000$ Hz.
Turn the de-emphasis function off.
- d) Apply a 1000 Hz modulating signal to the transmitter from the audio frequency generator, and adjust the level obtain 60% of full rated system deviation.
- e) Increase the level form the audio frequency generator by 20 dB in one step(rise time between the 10% and 90% points shall be 0.1 second maximum).
- f) Measure both the instantaneous and steady-state deviation at and after the time of increasing the audio input level.
- g) With the level from the audio frequency generator held constant at the level obtained in step e), Slowly vary the audio frequency from 300 Hz to 3000 Hz and observe the steady-state deviation. Record the maximum deviation.
- h) Set the test receiver to measure peak negative deviation and repeat steps d) through g).
- i) The values recorded in steps g) and h) are the modulation limiting.

▣ TEST RESULTS (11K0F3E)

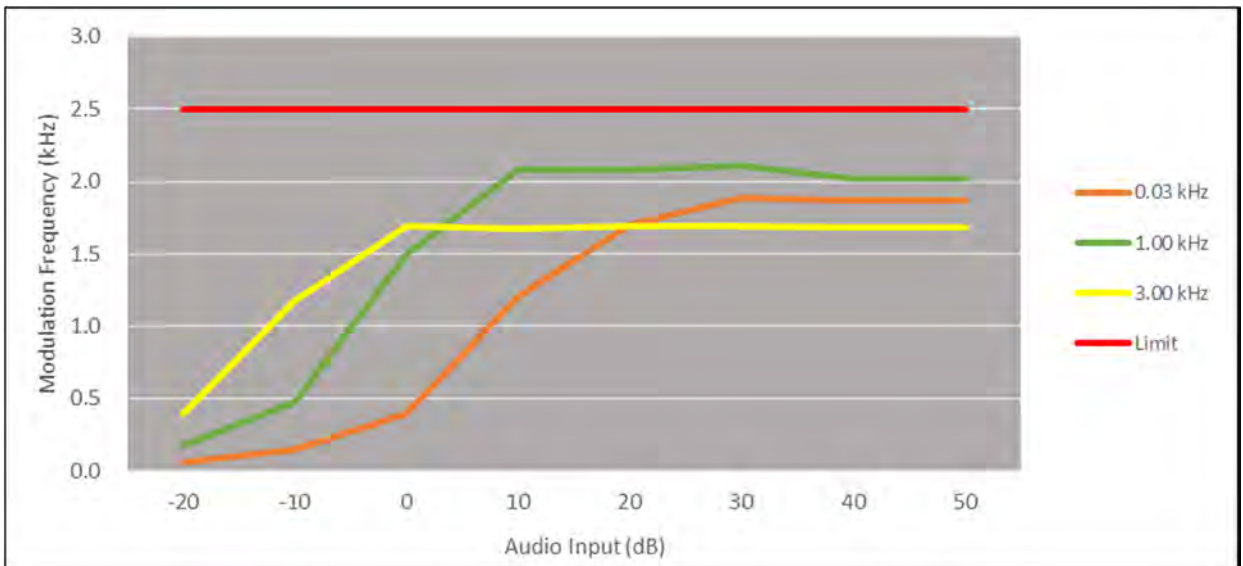
Positive Peaks

HIGH POWER

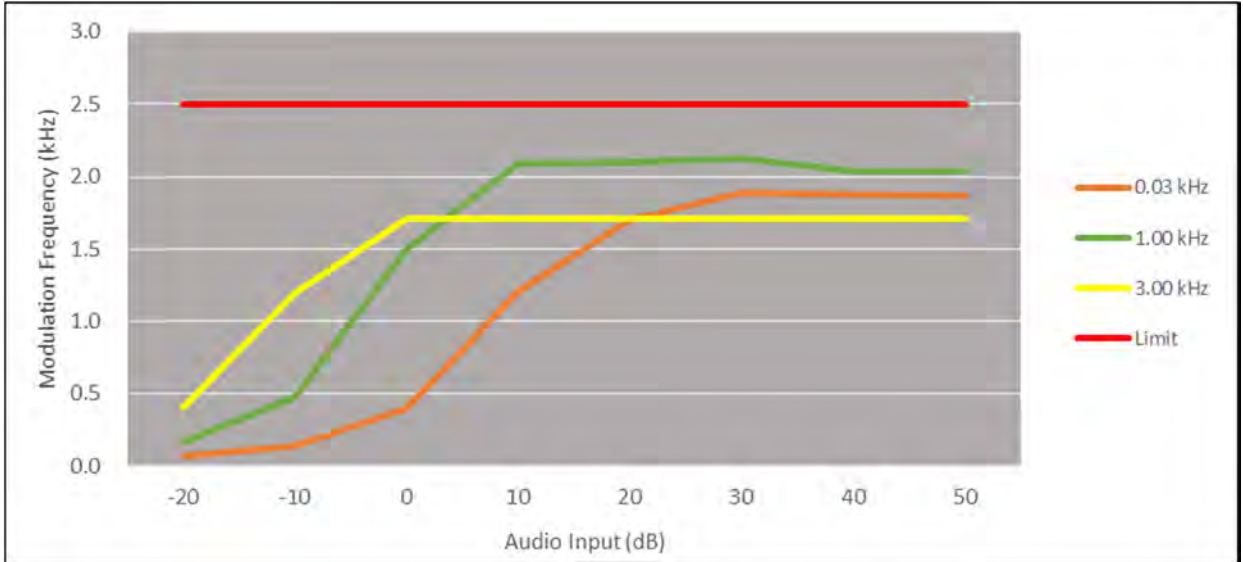
138.05 MHz



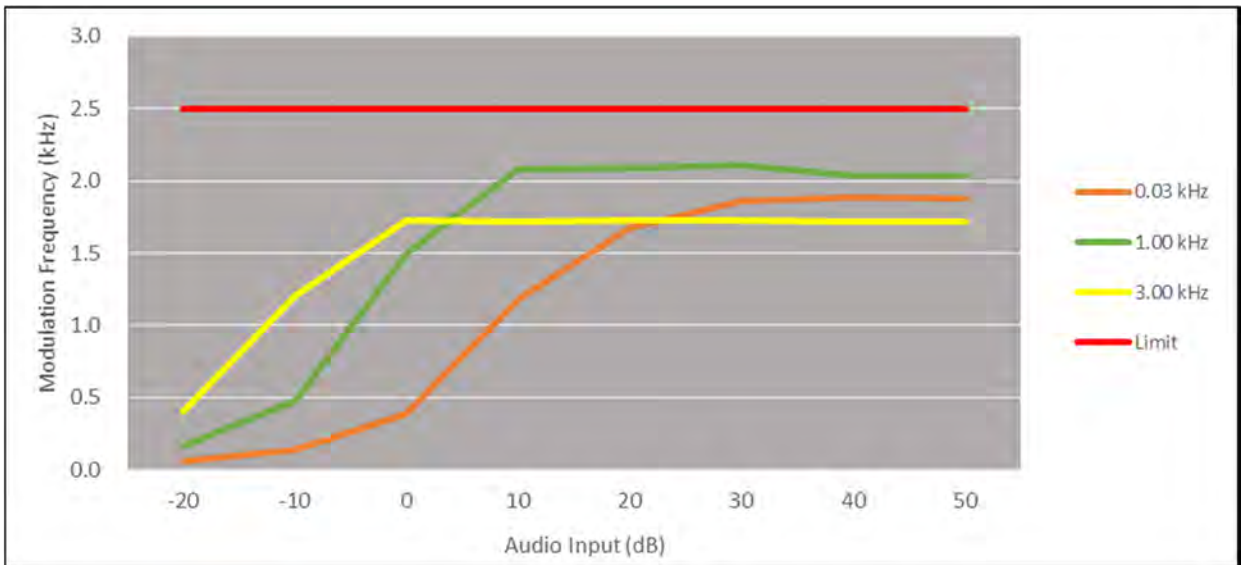
150.05 MHz



162.05 MHz

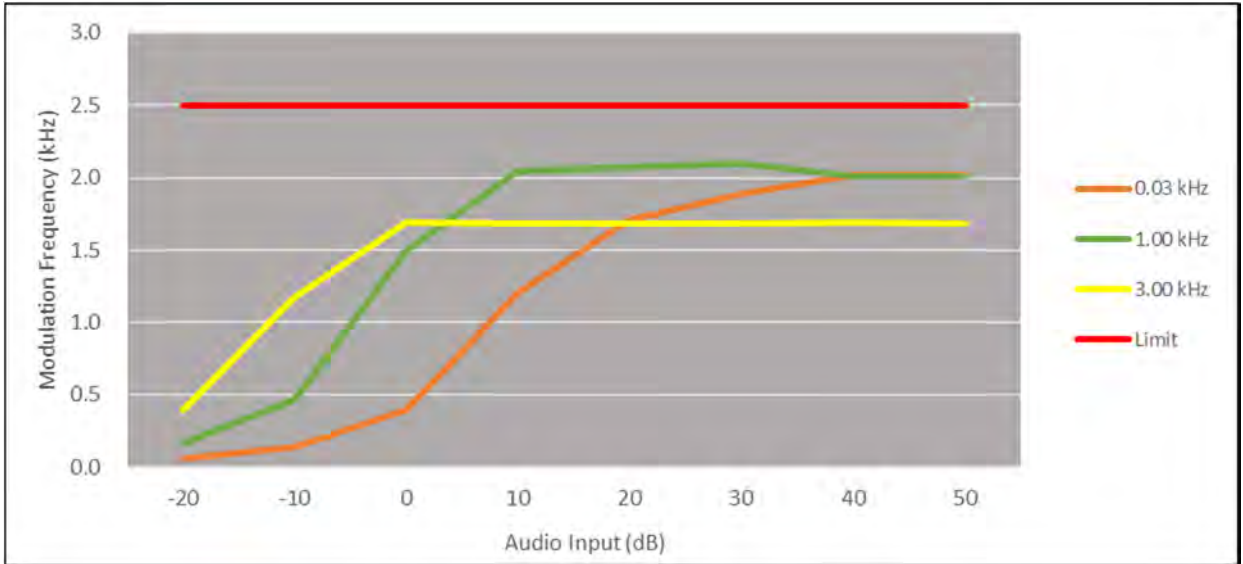


173.95 MHz

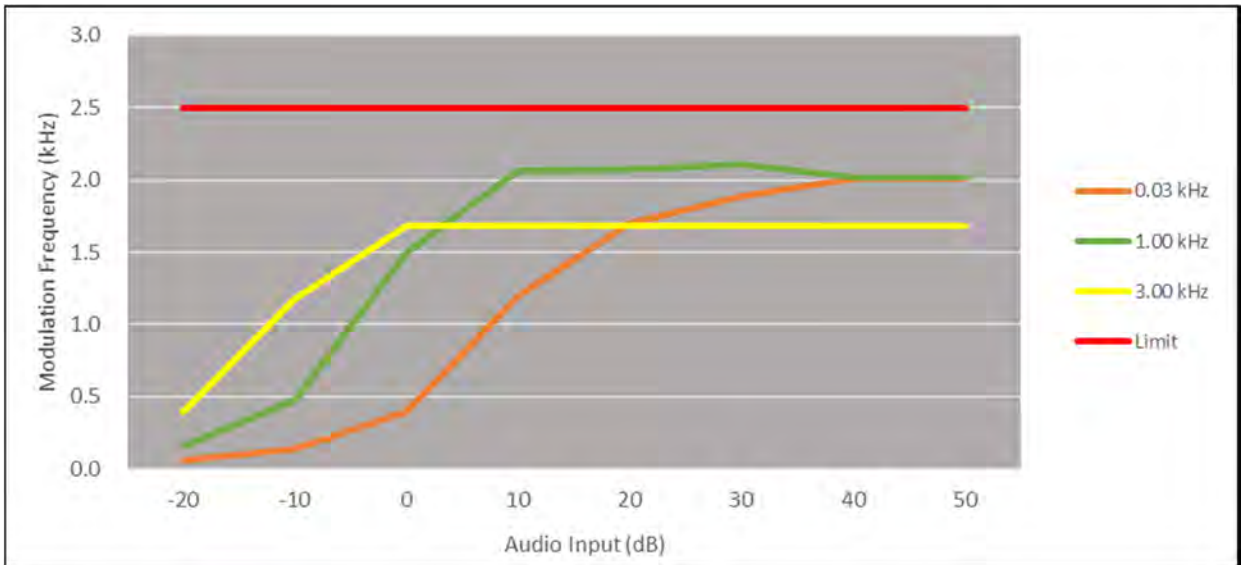


LOW POWER

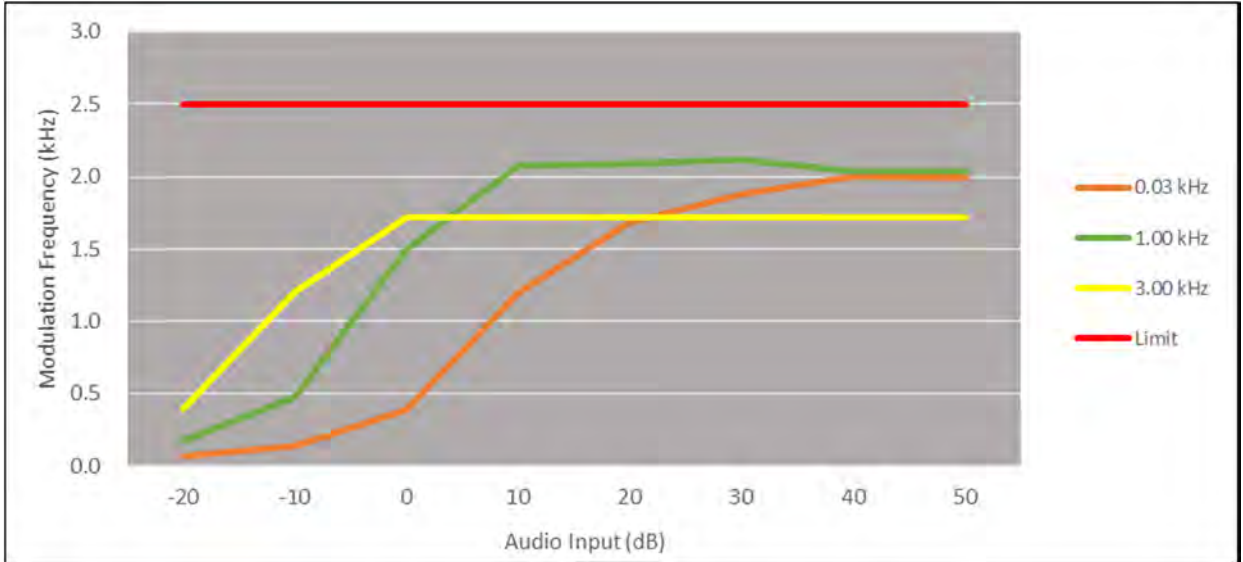
138.05 MHz



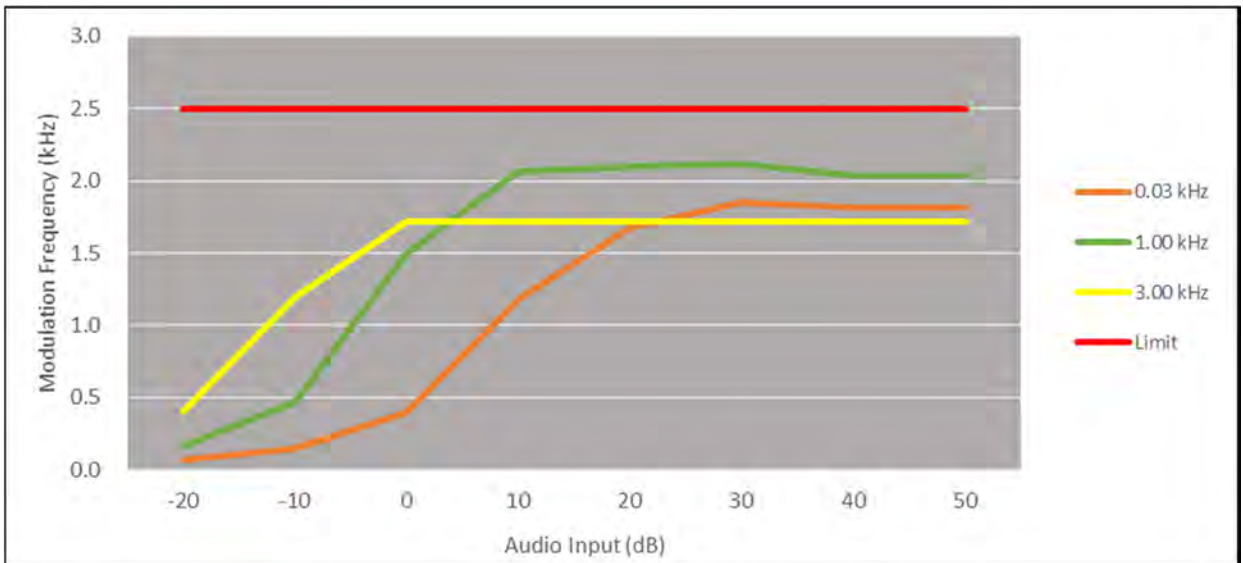
150.05 MHz



162.05 MHz



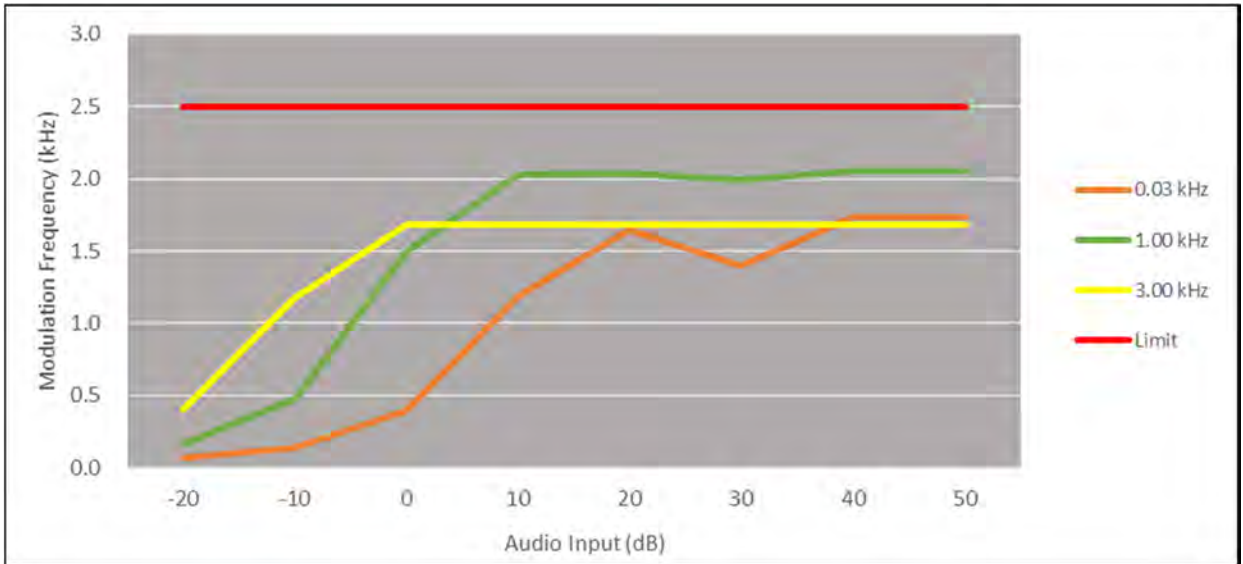
173.95 MHz



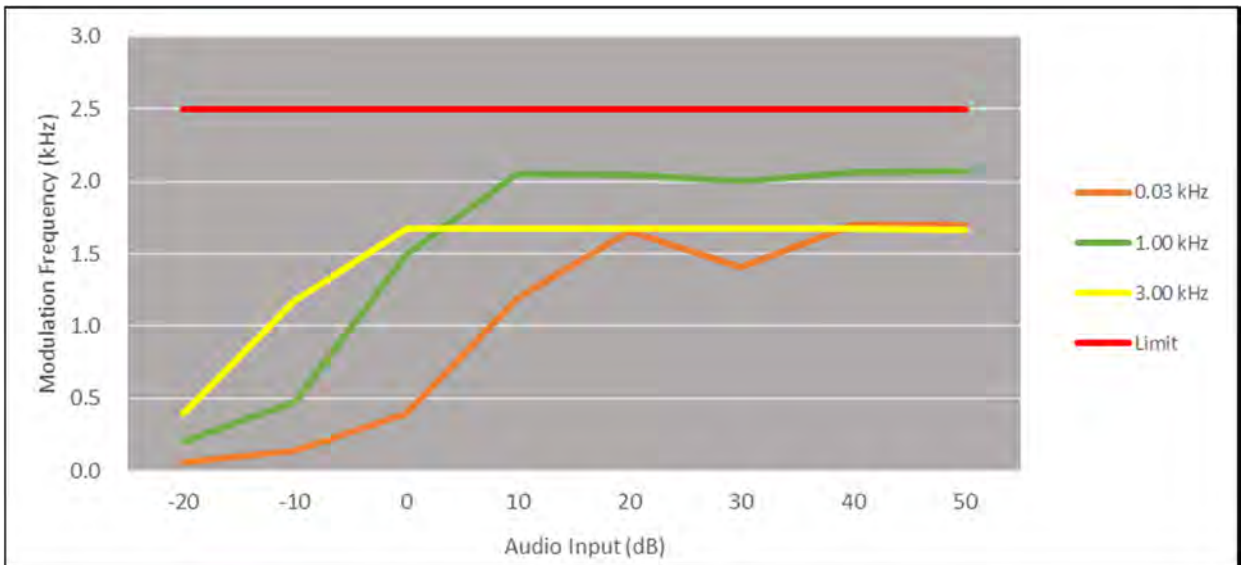
Negative Peaks

HIGH POWER

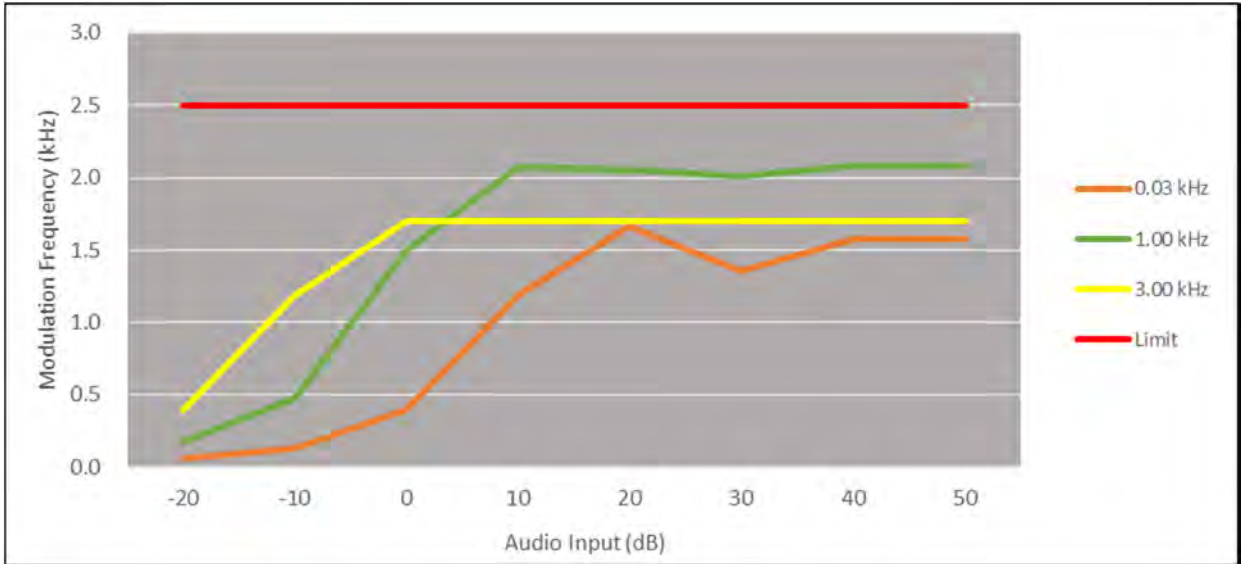
138.05 MHz



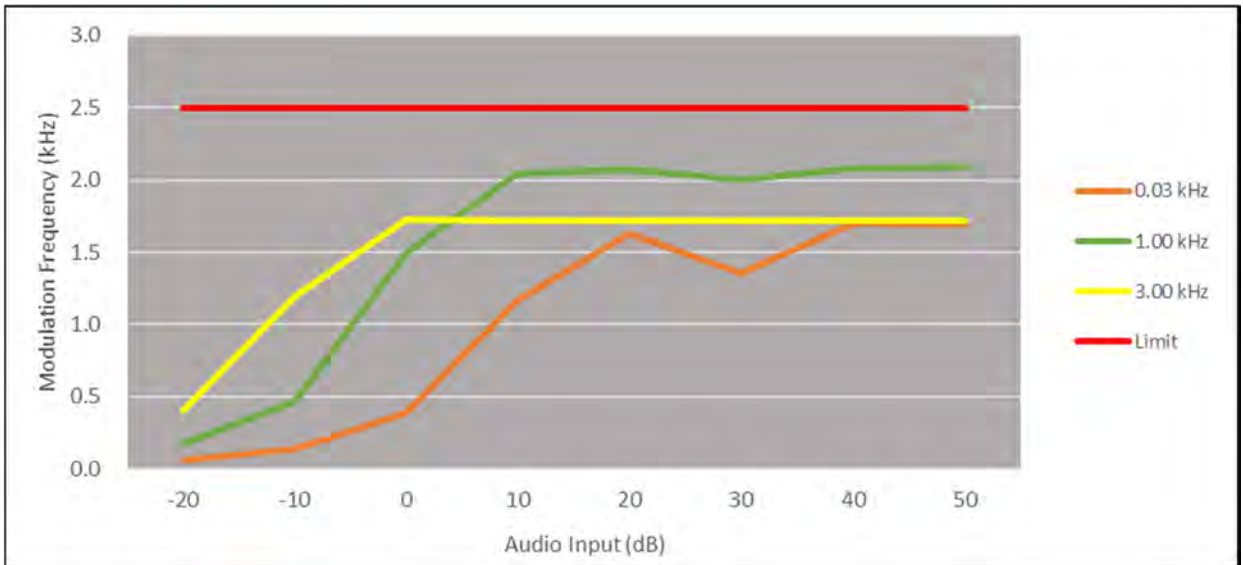
150.05 MHz



162.05 MHz

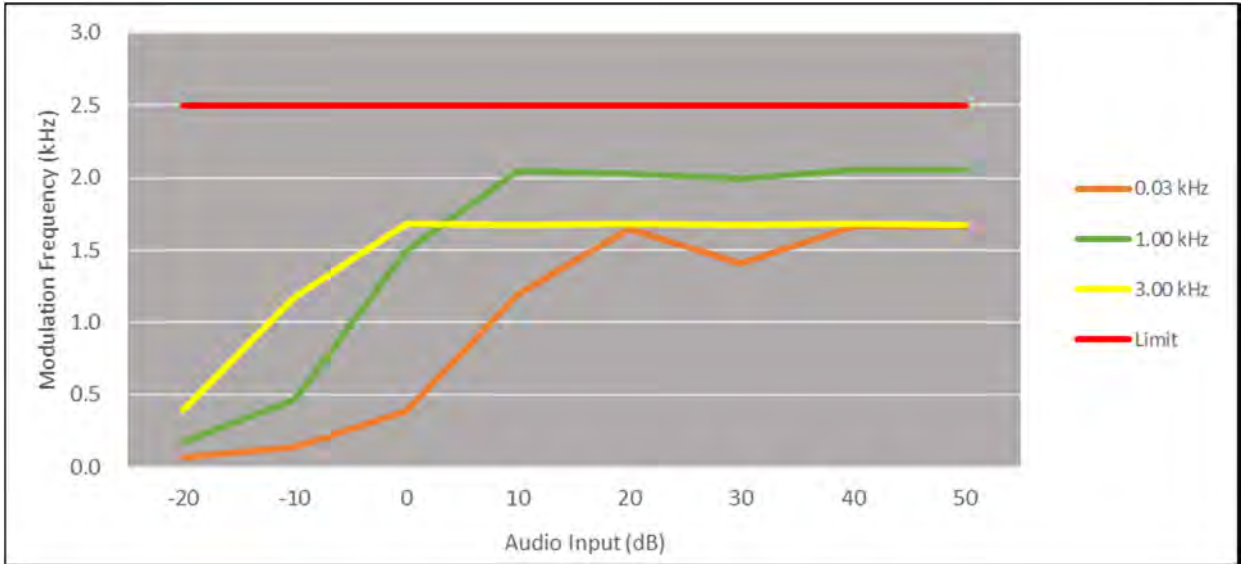


173.95 MHz

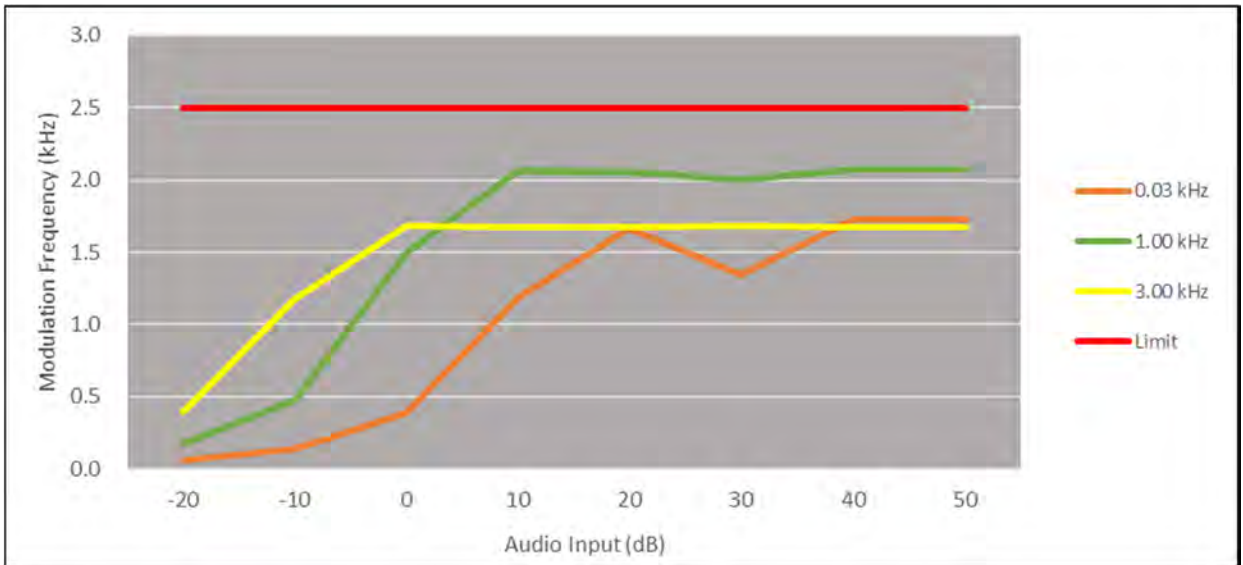


LOW POWER

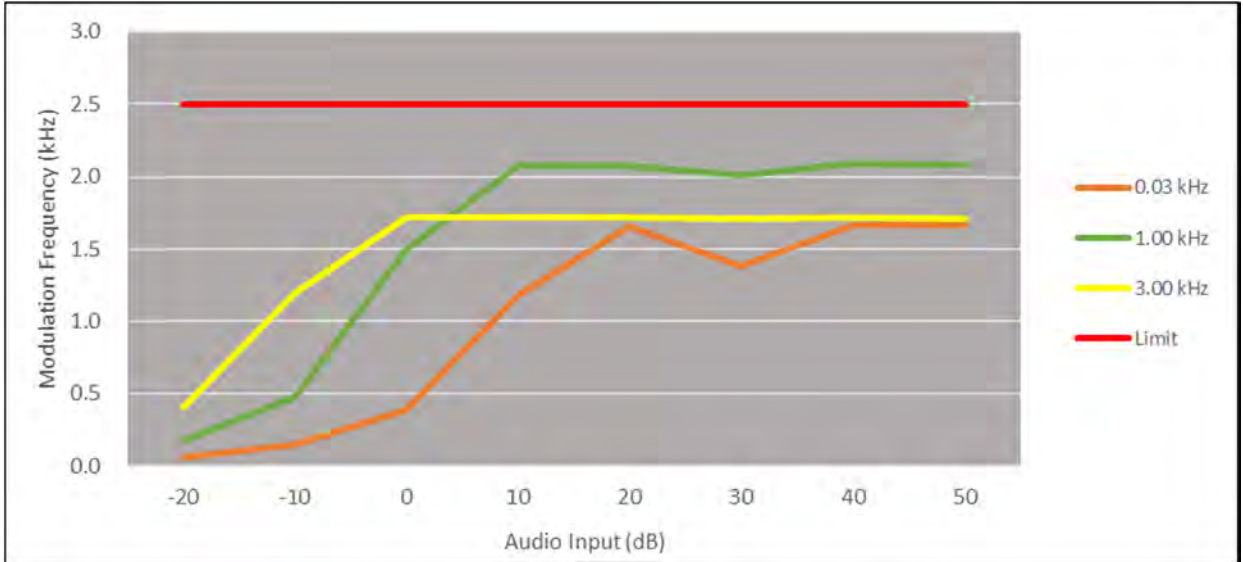
138.05 MHz



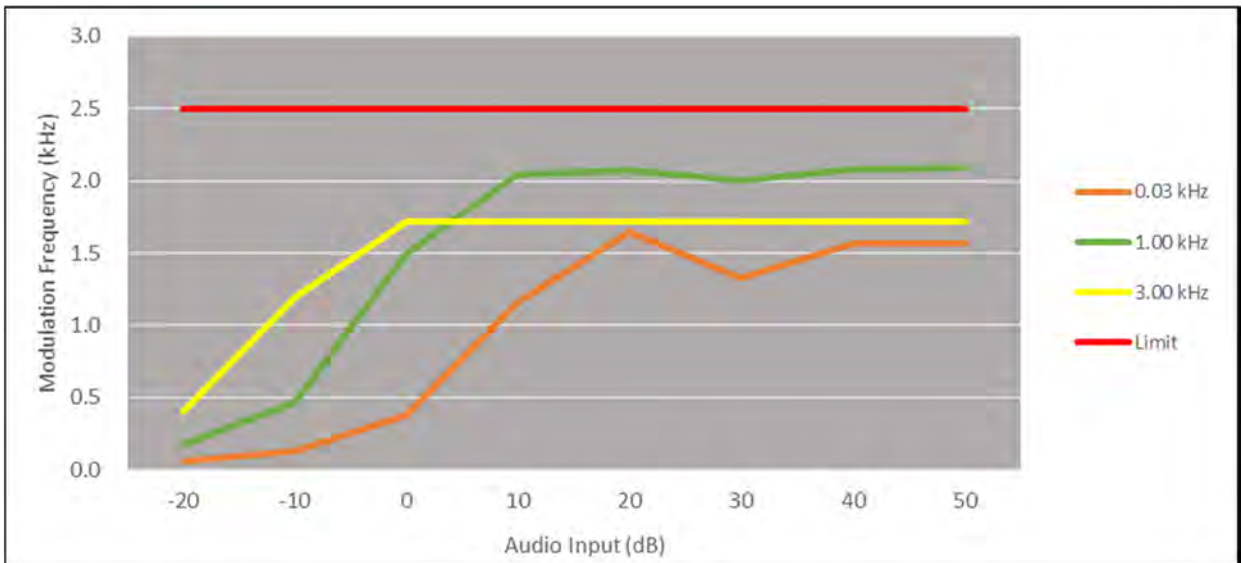
150.05 MHz



162.05 MHz



173.95 MHz

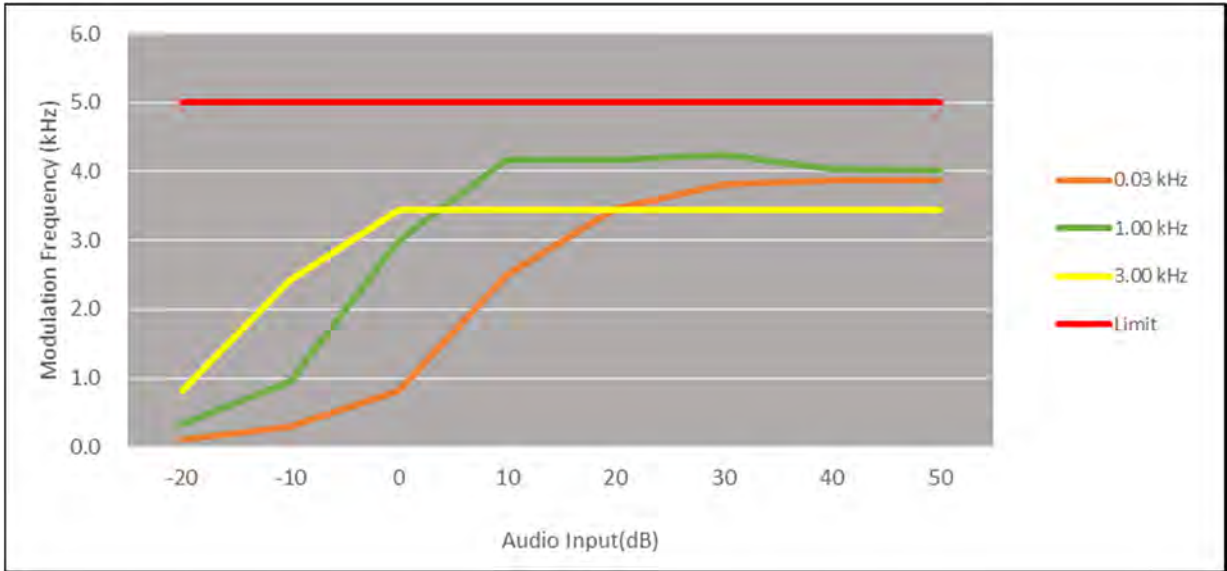


▣ TEST RESULTS(16K0F3E)_FCC

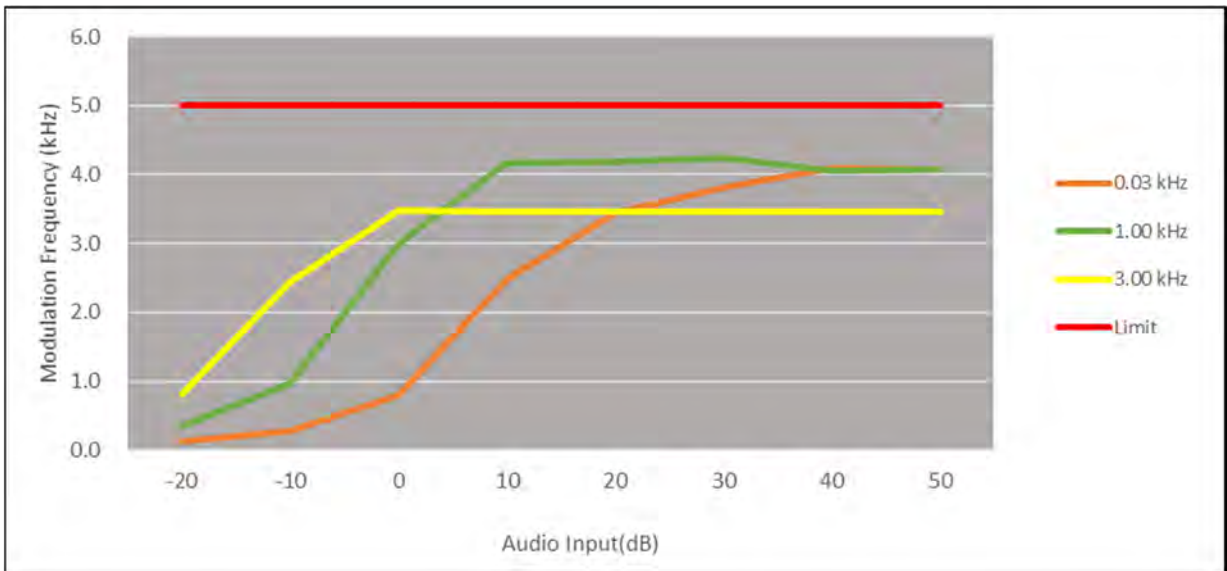
Positive Peaks

HIGH POWER

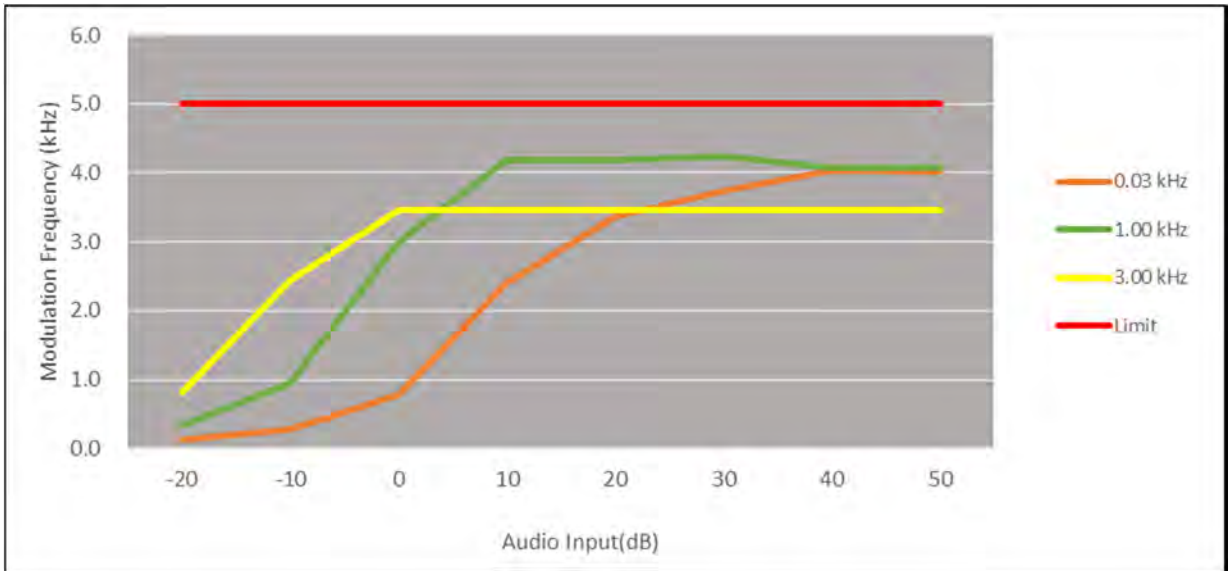
150.05 MHz



162.05 MHz

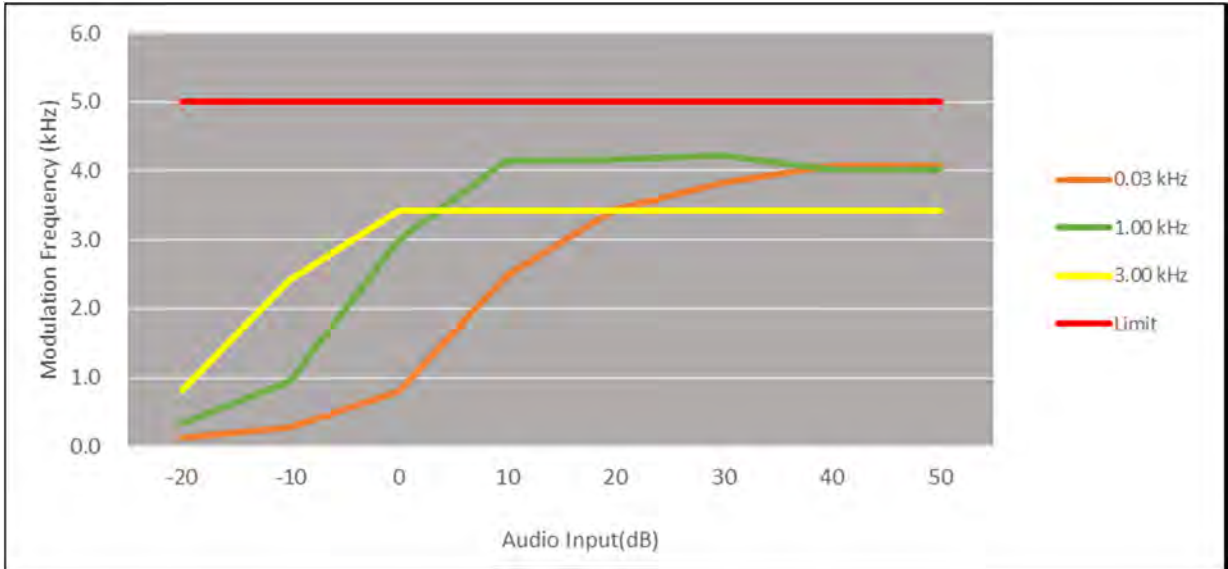


173.95 MHz

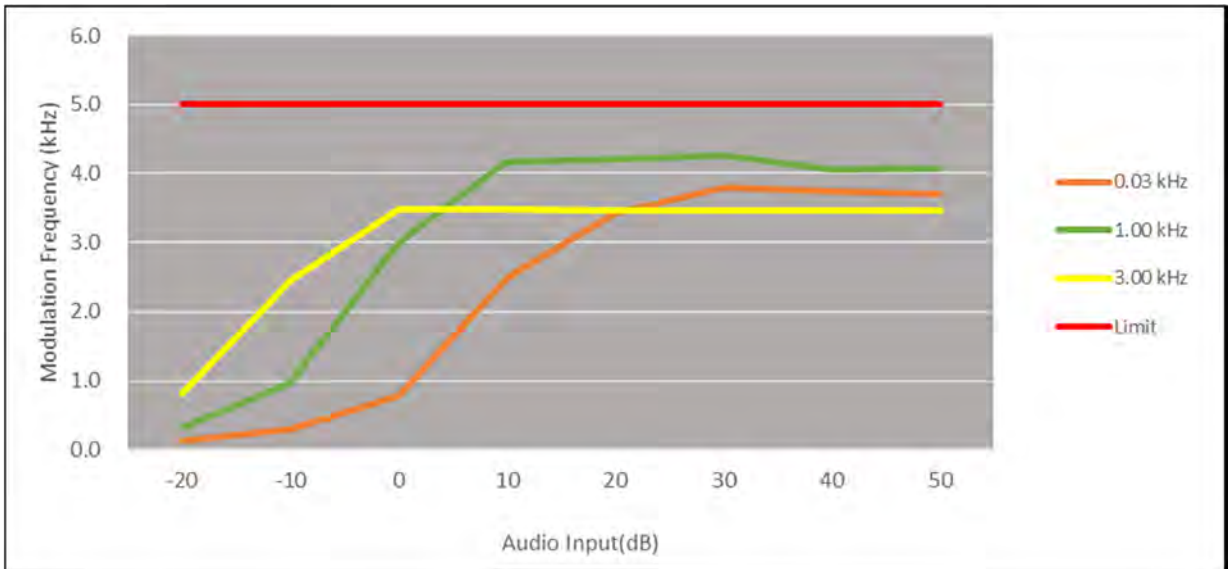


LOW POWER

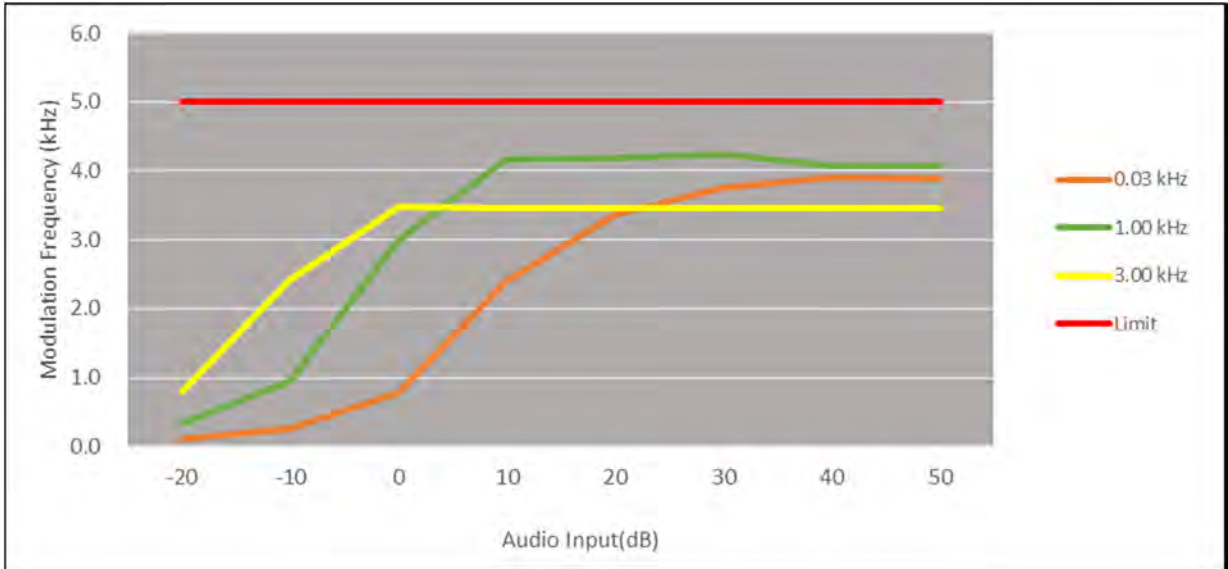
150.05 MHz



162.05 MHz



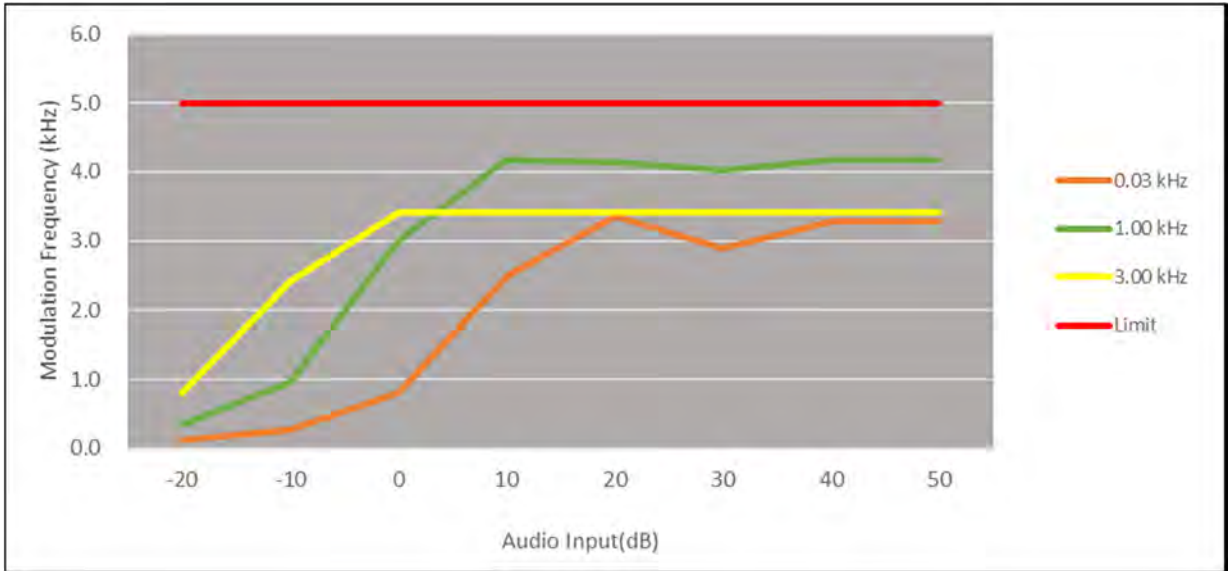
173.95 MHz



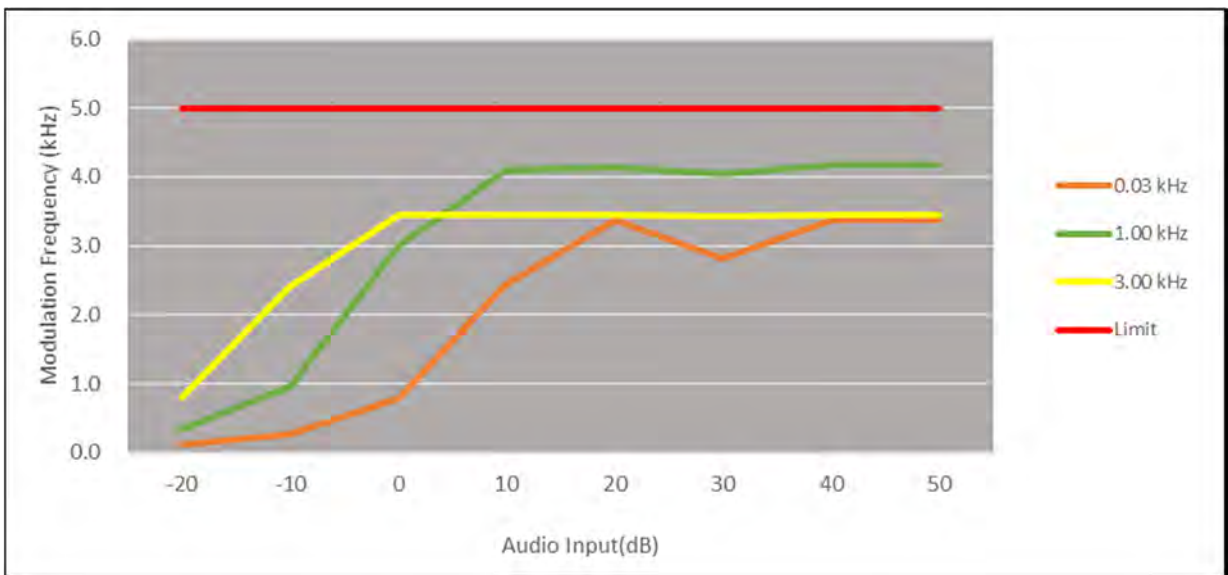
Negative Peaks

HIGH POWER

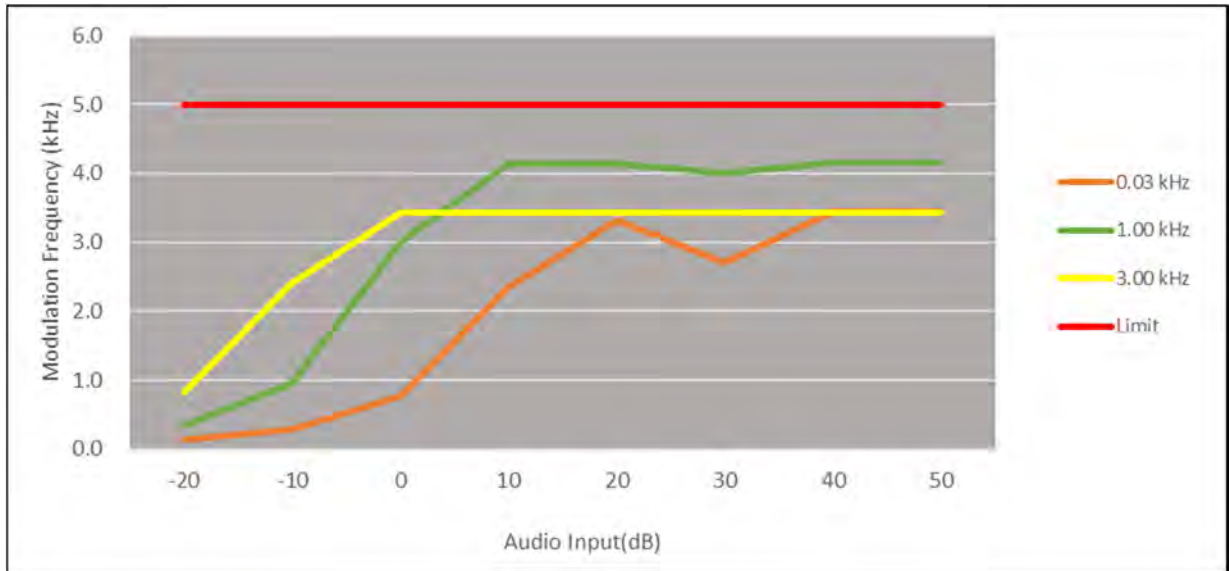
150.05 MHz



162.05 MHz

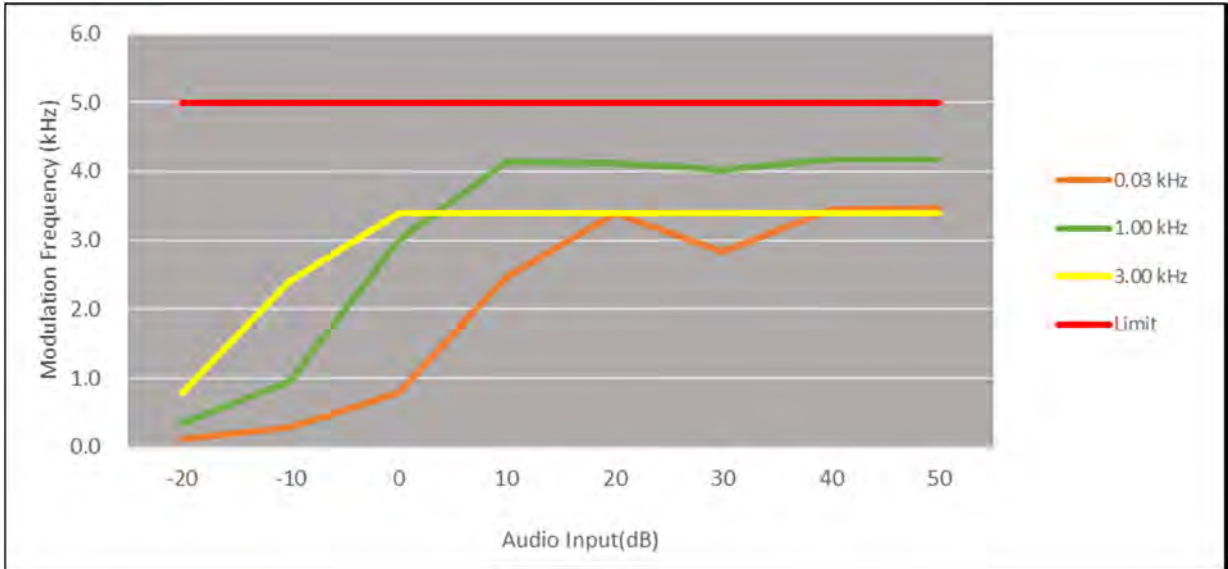


173.95 MHz

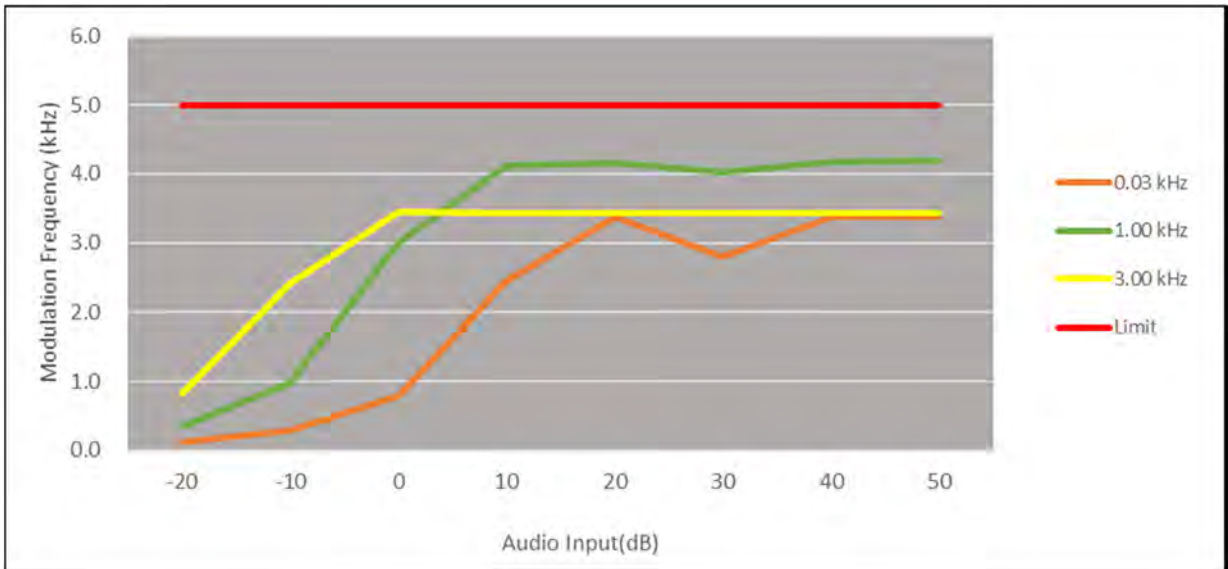


LOW POWER

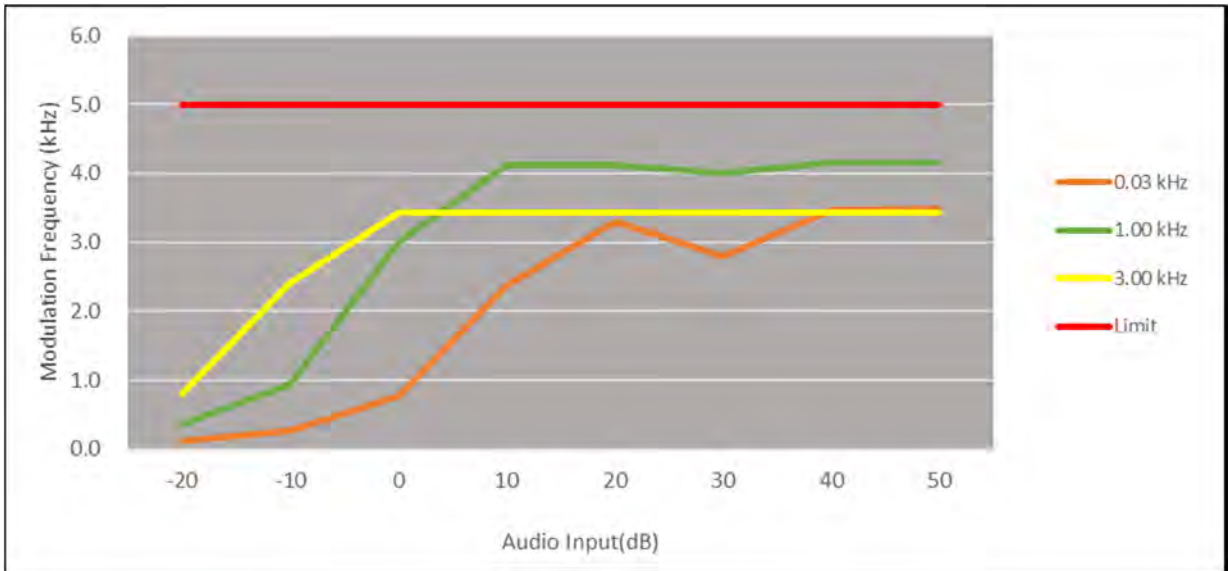
150.05 MHz



162.05 MHz



173.95 MHz

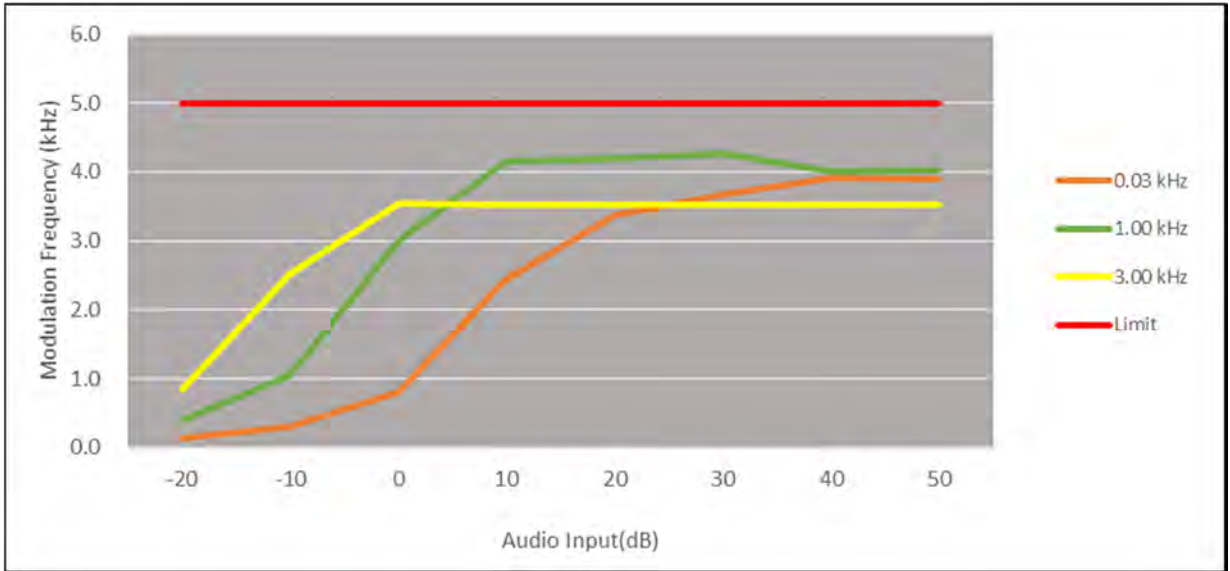


▣ TEST RESULTS(16K0F3E)_ISED

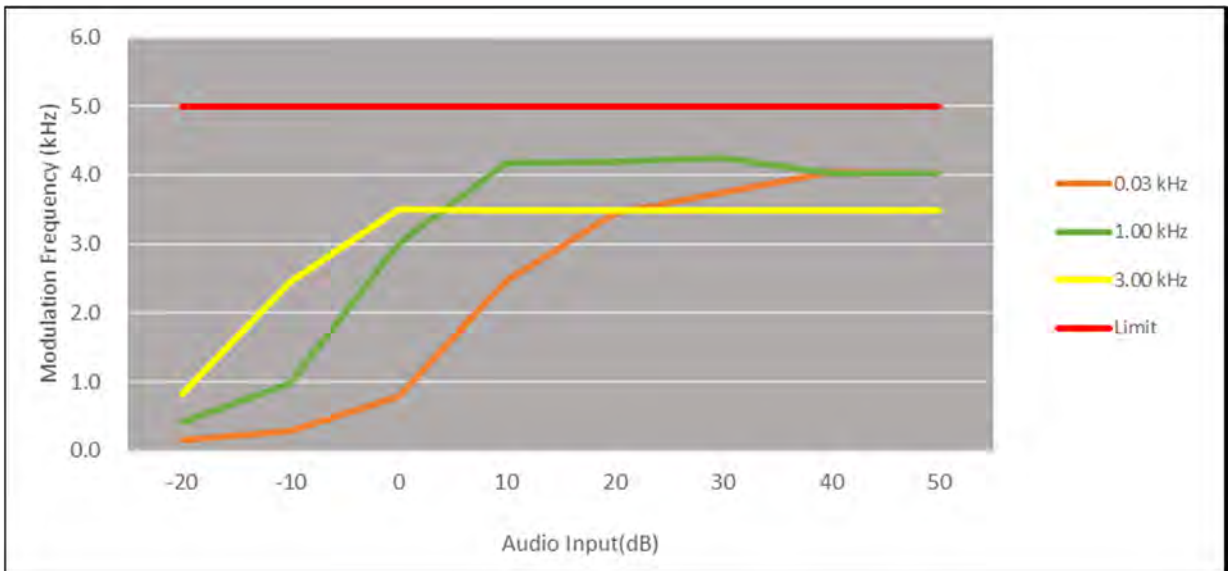
Positive Peaks

HIGH POWER

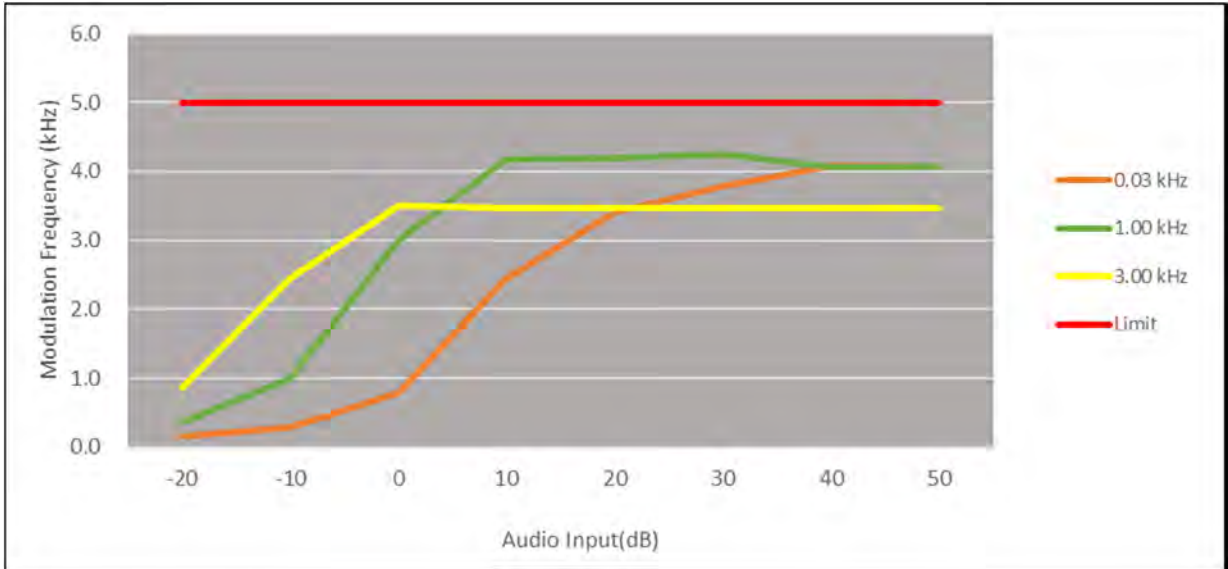
138.05 MHz



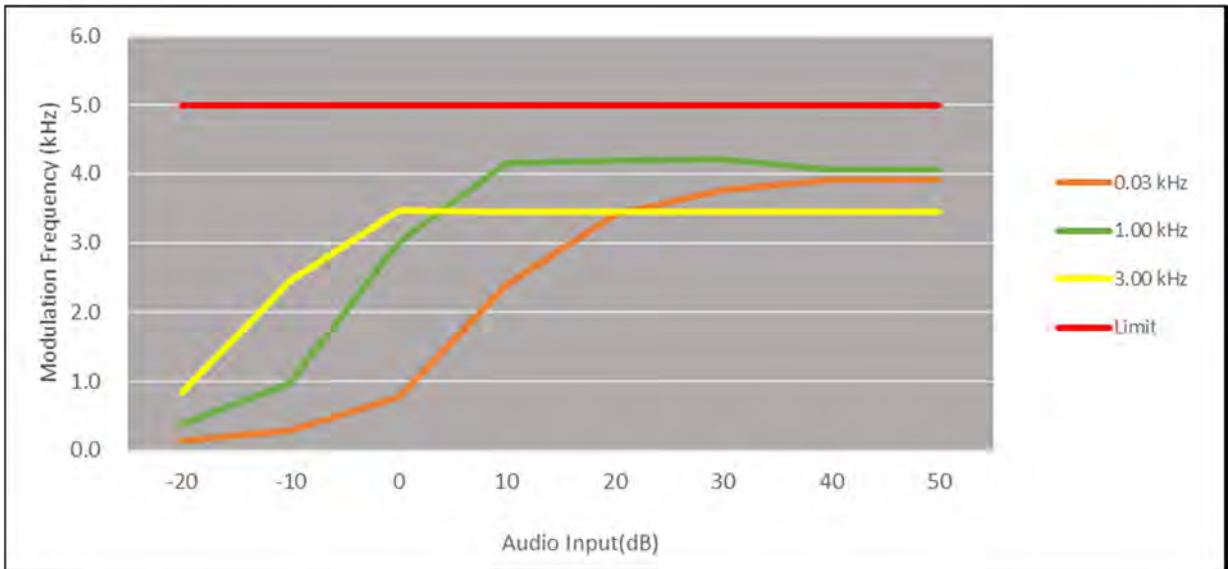
150.05 MHz



162.05 MHz

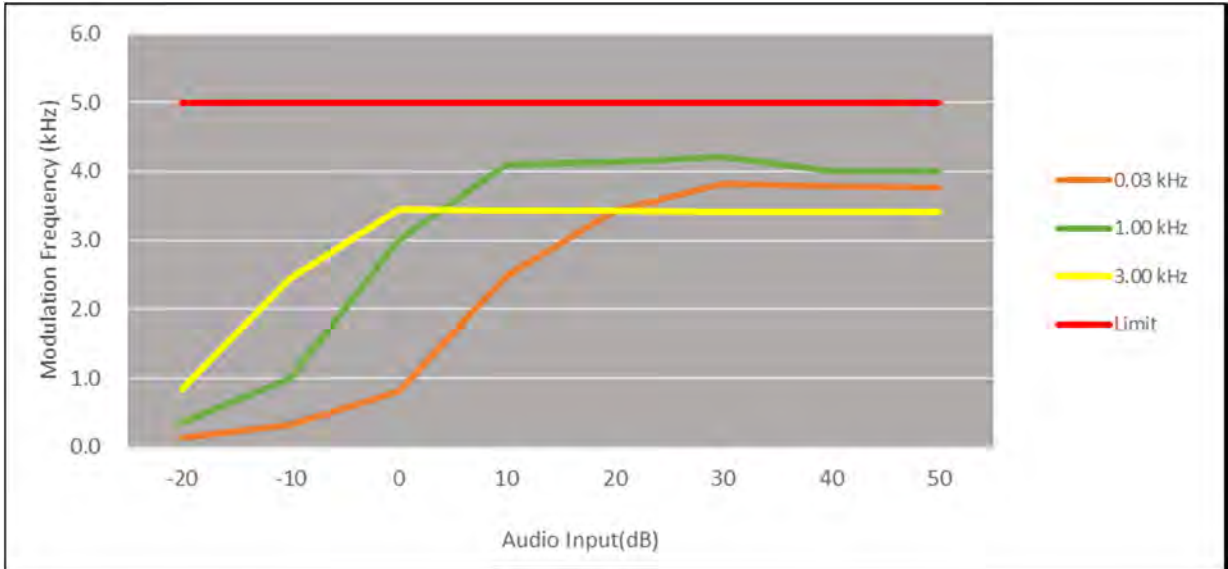


173.95 MHz

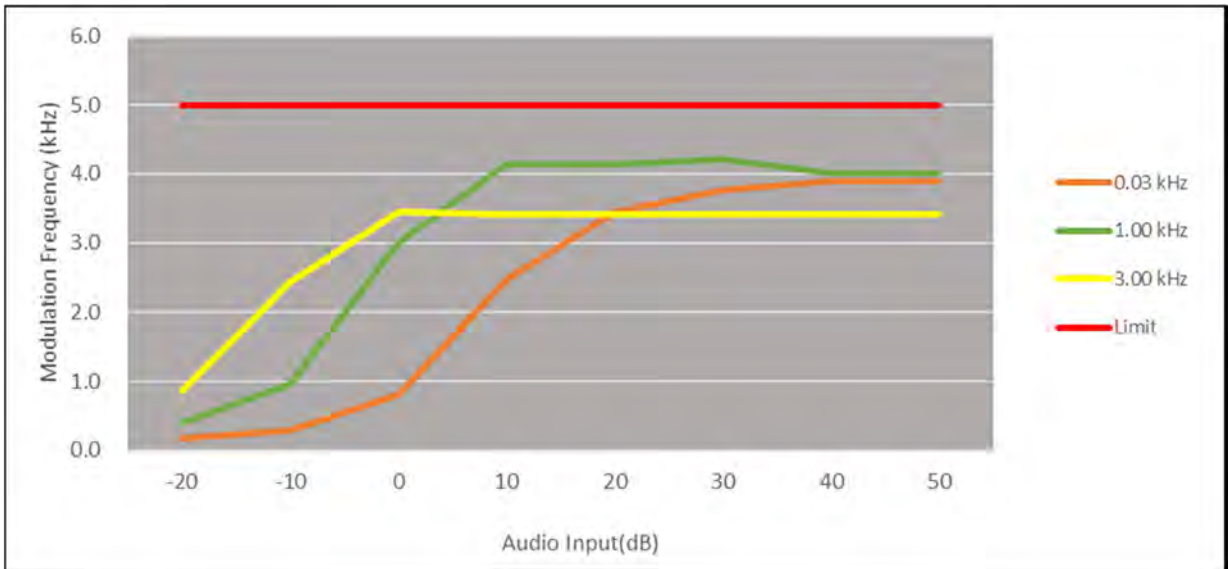


LOW POWER

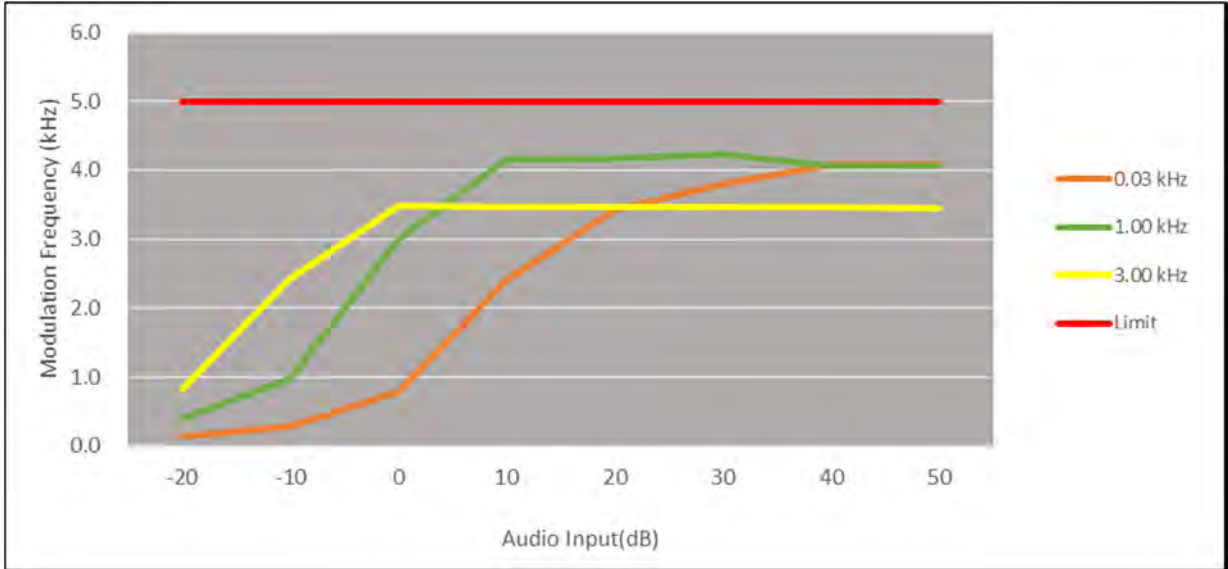
138.05 MHz



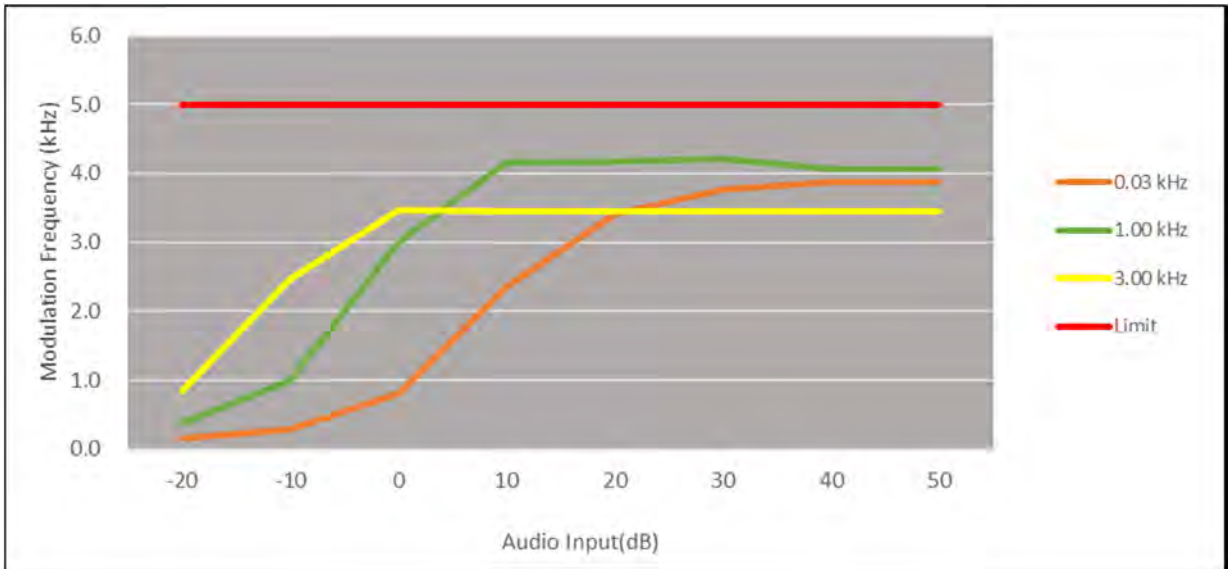
150.05 MHz



162.05 MHz



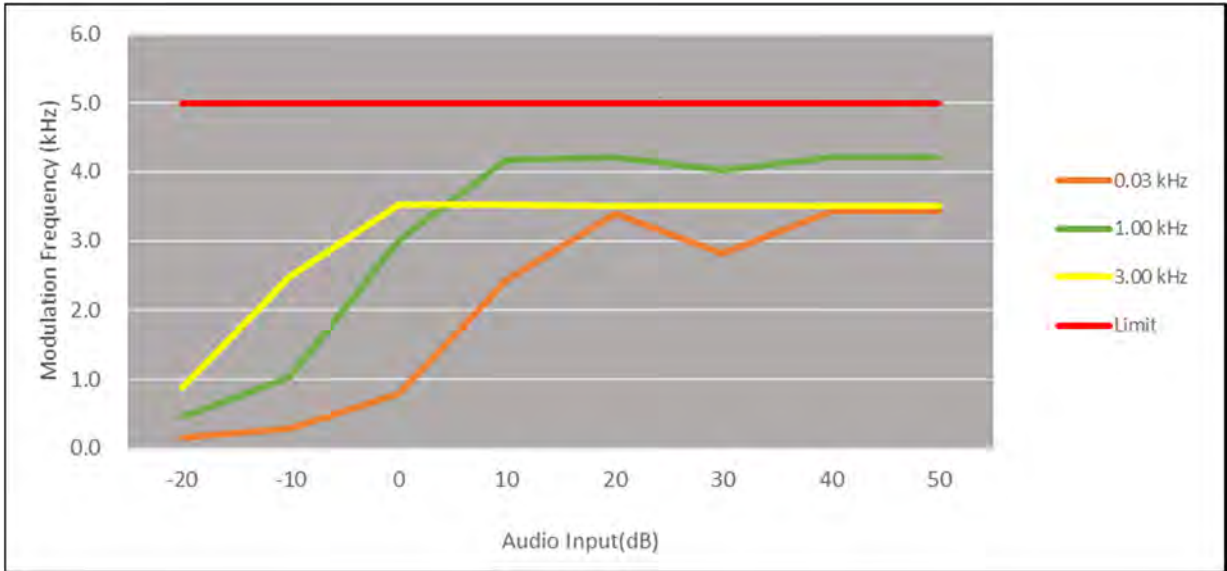
173.95 MHz



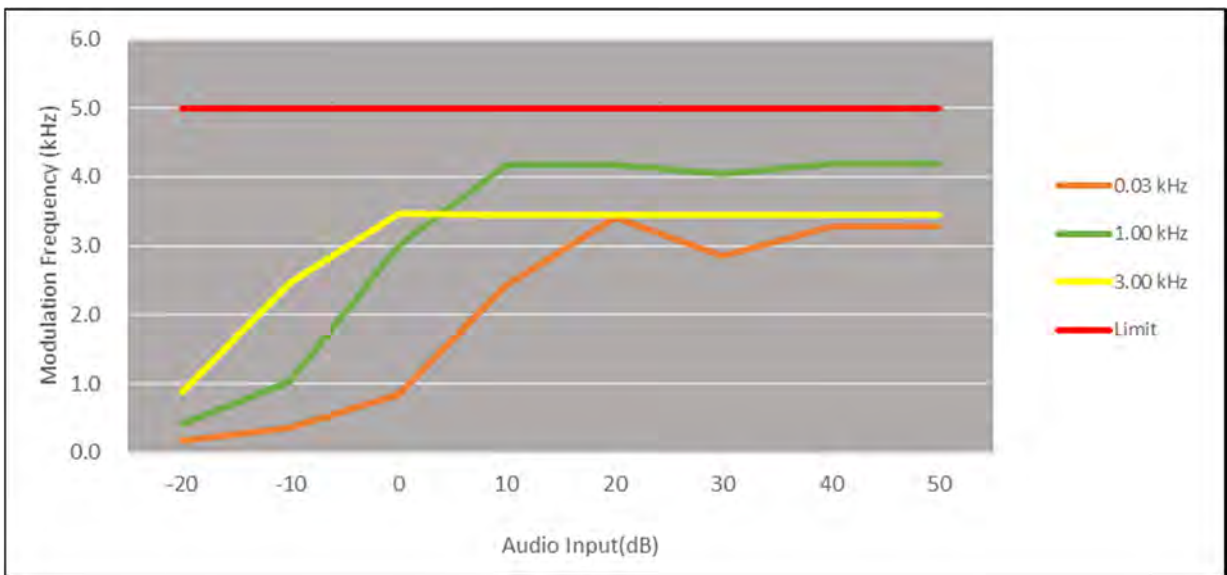
Negative Peaks

HIGH POWER

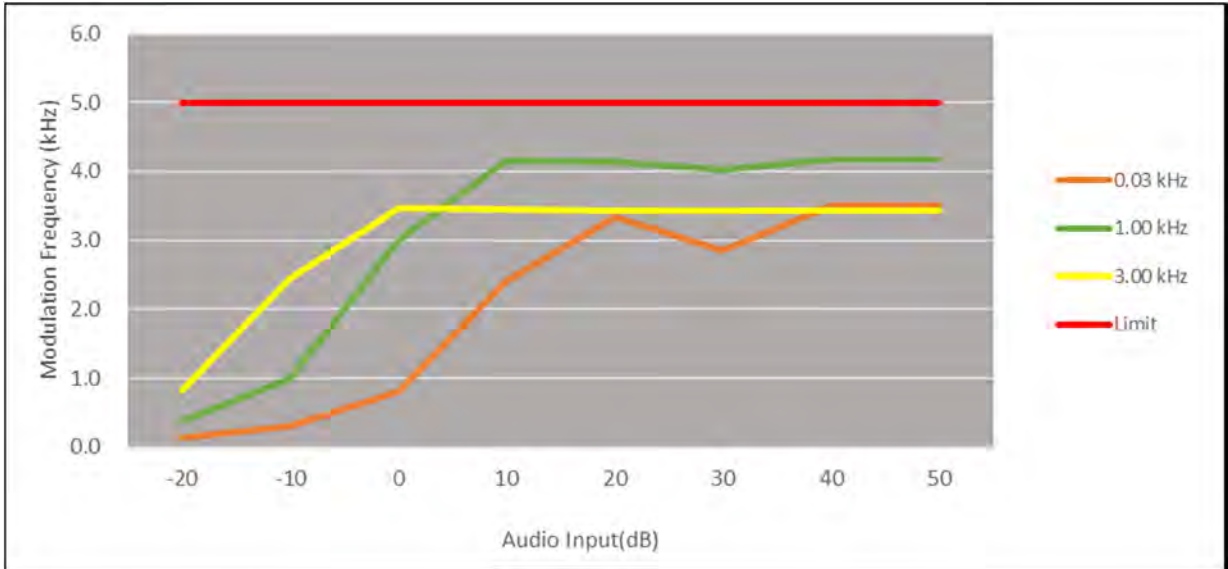
138.05 MHz



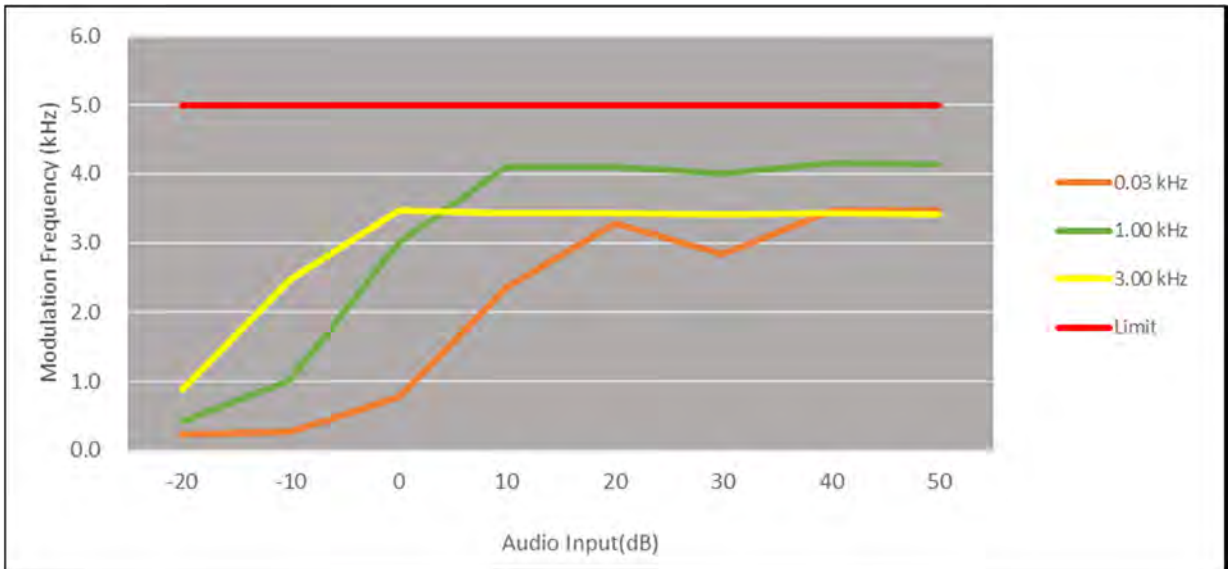
150.05 MHz



162.05 MHz

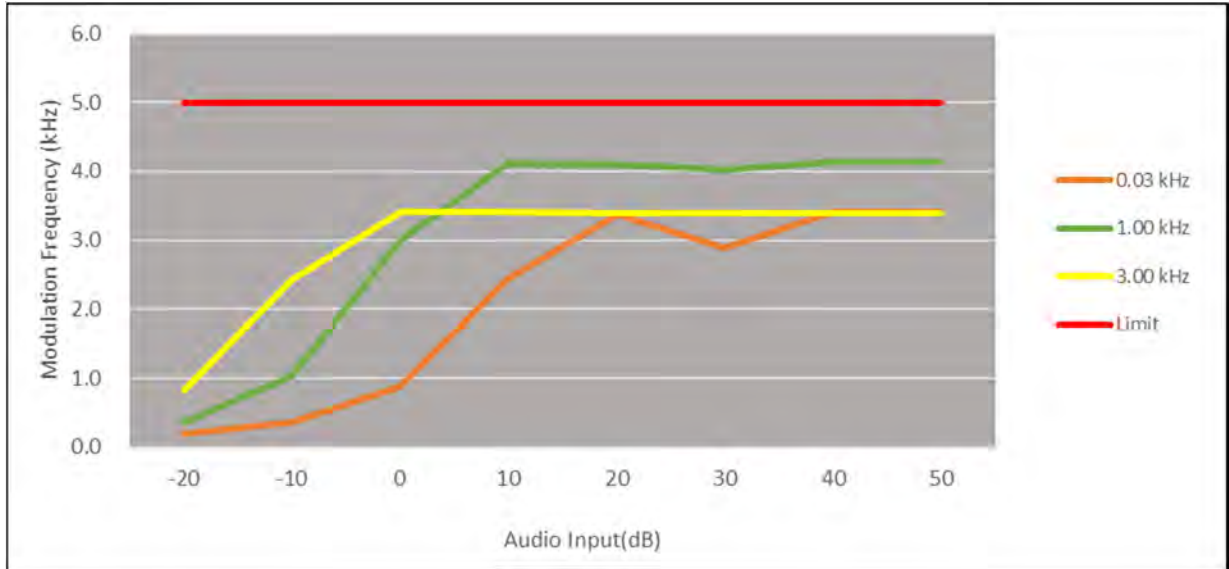


173.95 MHz

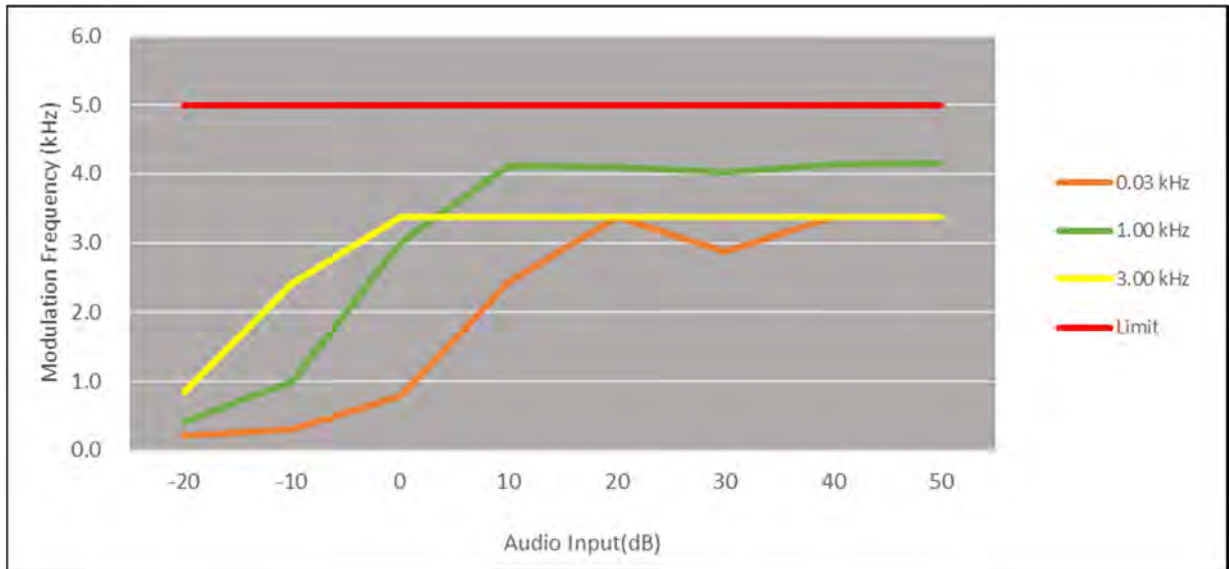


LOW POWER

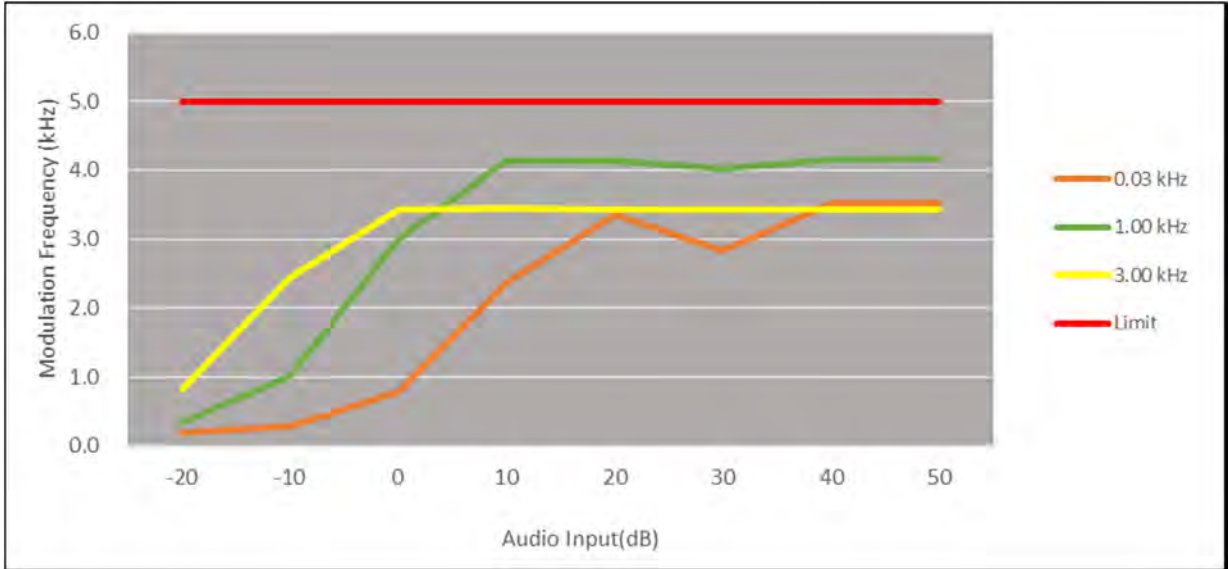
138.05 MHz



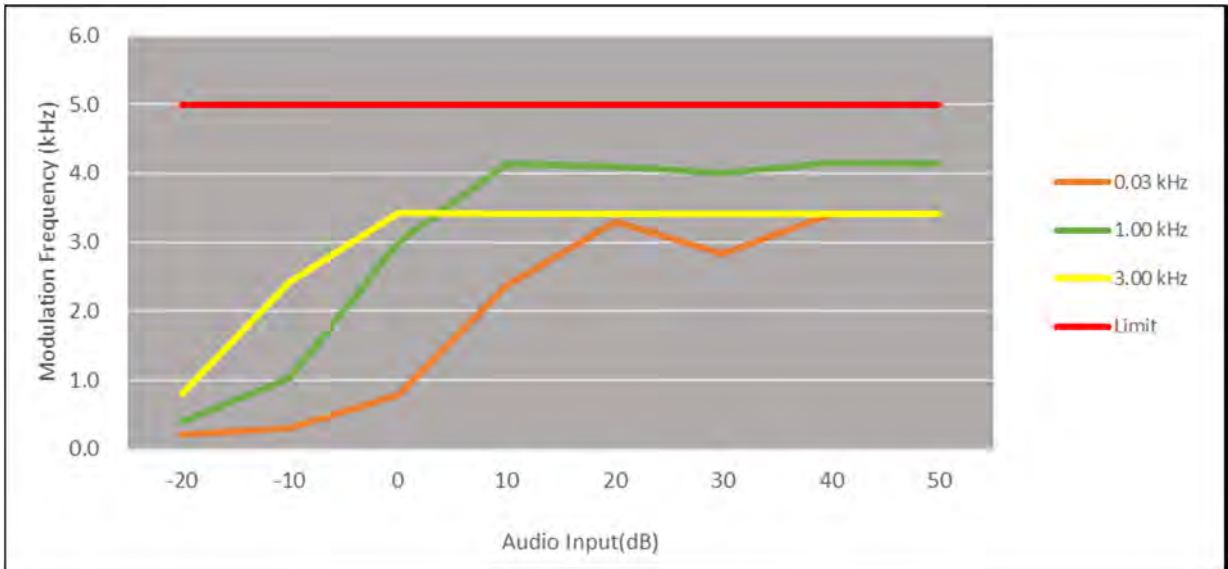
150.05 MHz



162.05 MHz



173.95 MHz

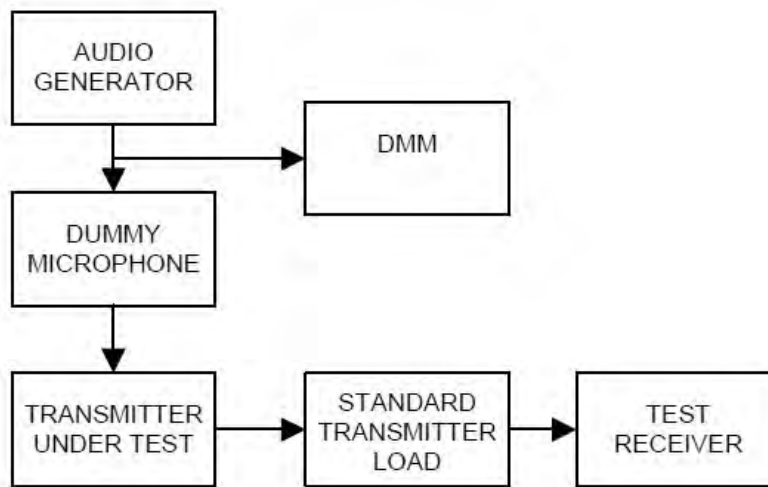


8.5 Audio Frequency Response / Audio Low Pass Filter Response

▣ Definition

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

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

According to 2.2.6 in TIA-603-E Standard.

- a) Connect the equipment as illustrated.
- b) Set the test receiver to measure peak positive deviation. Set the audio bandwidth for ≤ 50 Hz to $\geq 15,000$ Hz. Turn the de-emphasis function off.
- c) Set the DMM to measure rms voltage.
- d) Adjust the transmitter per the manufacturer's procedure for full rated system deviation.
- e) Apply a 1000 Hz tone and adjust the audio frequency generator to produce 20% of the rated system deviation.
- f) Set the test receiver to measure rms deviation and record the deviation reading.
- g) Record the DMM reading as V_{REF} .
- h) Set the audio frequency generator to the desired test frequency between 300 Hz and 3000 Hz.
- i) Vary the audio frequency generator output level until the deviation reading that was recorded in step f) is obtained.
- j) Record the DMM reading as V_{FREQ} .
- k) Calculate the audio frequency response at the present frequency as:
 audio frequency response = $20 * \log_{10}(V_{FREQ}/V_{REF})$
- l) Repeat steps h) through k) for all the desired test frequencies.

Note

Audio Filter of the above result is substituted with the same structure as Audio Frequency Response.

On the transmission condition below 3kHz, Transceiver shows pre-emphasis condition of transmission function.

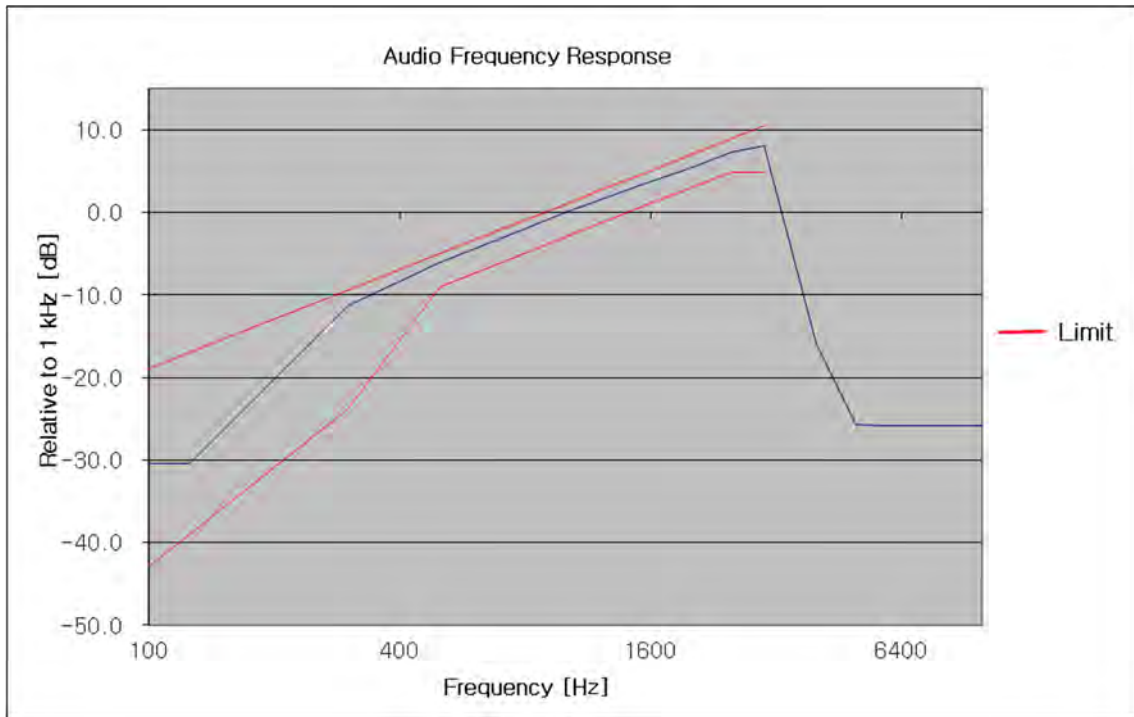
On the transmission condition above 3kHz, Transceiver shows Audio Low Pass Filter.

▣ TEST RESULTS (11K0F3E)

HIGH POWER

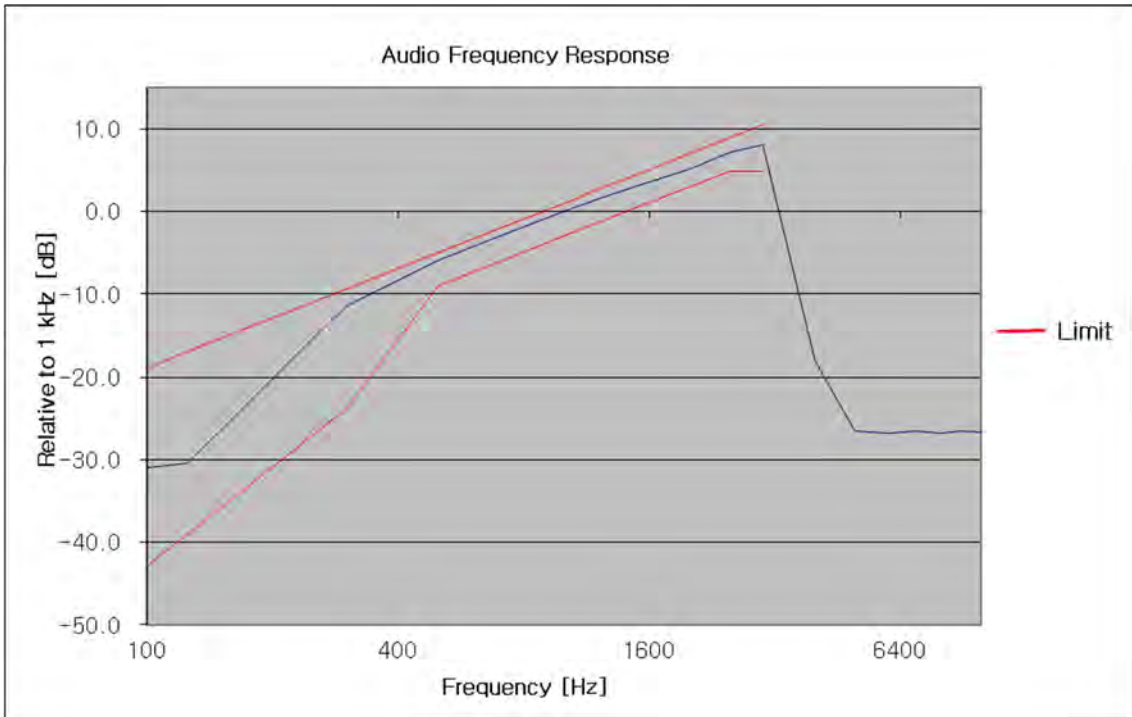
138.05 MHz

Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-30.37	-18.93	-42.86
125	-30.45	-17.00	-39.00
300	-11.32	-9.42	-23.84
500	-6.04	-5.00	-9.00
750	-2.55	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.75	2.93	-1.07
1500	3.22	4.51	0.51
2000	5.42	7.00	3.00
2500	7.23	8.93	4.93
3000	8.07	10.51	4.93
4000	-15.88	-	-
5000	-25.67	-	-
6000	-25.82	-	-
7000	-25.77	-	-
8000	-25.81	-	-
9000	-25.77	-	-
10000	-25.89	-	-
20000	-25.92	-	-
30000	-25.92	-	-
40000	-25.90	-	-



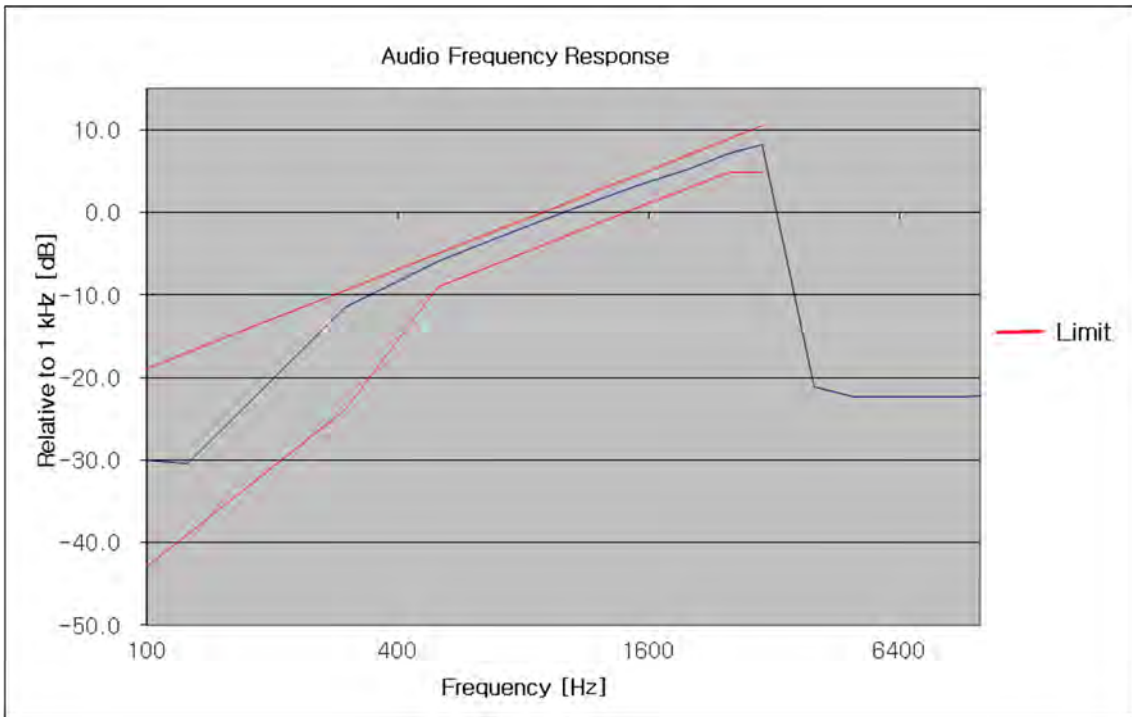
150.05 MHz

Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-30.93	-18.93	-42.86
125	-30.43	-17.00	-39.00
300	-11.37	-9.42	-23.84
500	-5.94	-5.00	-9.00
750	-2.36	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.76	2.93	-1.07
1500	3.14	4.51	0.51
2000	5.18	7.00	3.00
2500	7.11	8.93	4.93
3000	8.11	10.51	4.93
4000	-18.03	-	-
5000	-26.52	-	-
6000	-26.75	-	-
7000	-26.52	-	-
8000	-26.80	-	-
9000	-26.52	-	-
10000	-26.69	-	-
20000	-26.69	-	-
30000	-26.41	-	-
40000	-26.58	-	-



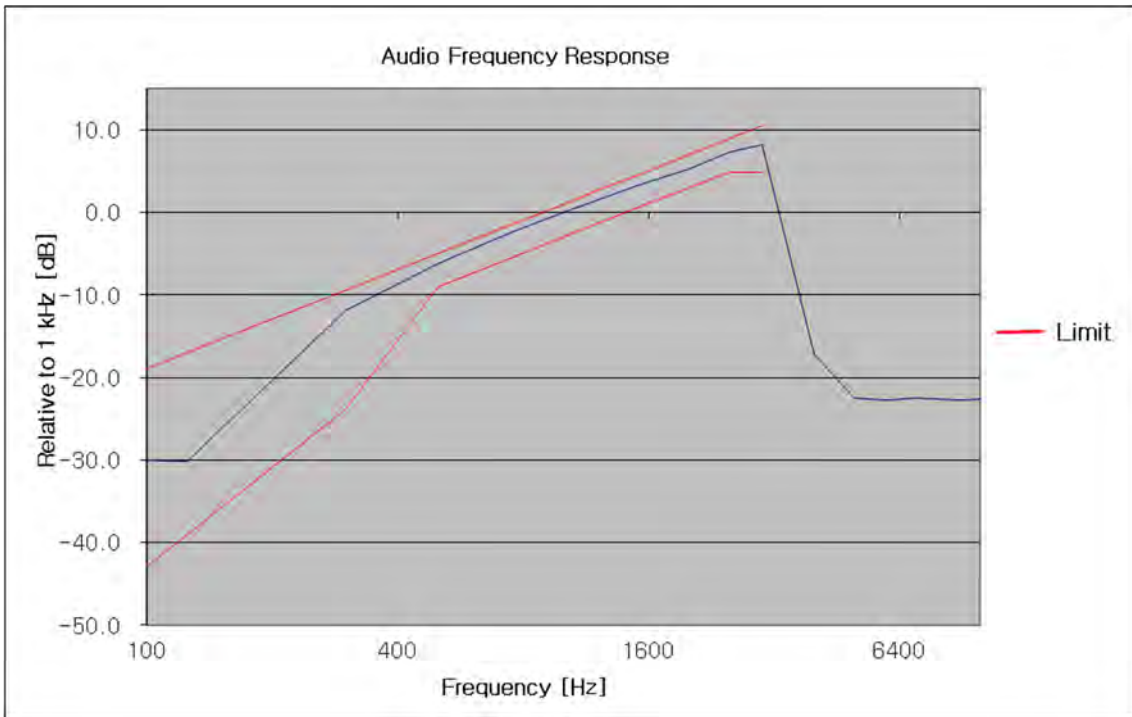
162.05 MHz

Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-30.03	-18.93	-42.86
125	-30.37	-17.00	-39.00
300	-11.41	-9.42	-23.84
500	-5.95	-5.00	-9.00
750	-2.37	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.79	2.93	-1.07
1500	3.21	4.51	0.51
2000	5.23	7.00	3.00
2500	7.16	8.93	4.93
3000	8.18	10.51	4.93
4000	-21.11	-	-
5000	-22.35	-	-
6000	-22.38	-	-
7000	-22.35	-	-
8000	-22.28	-	-
9000	-22.28	-	-
10000	-22.21	-	-
20000	-22.28	-	-
30000	-22.21	-	-
40000	-22.31	-	-



173.95 MHz

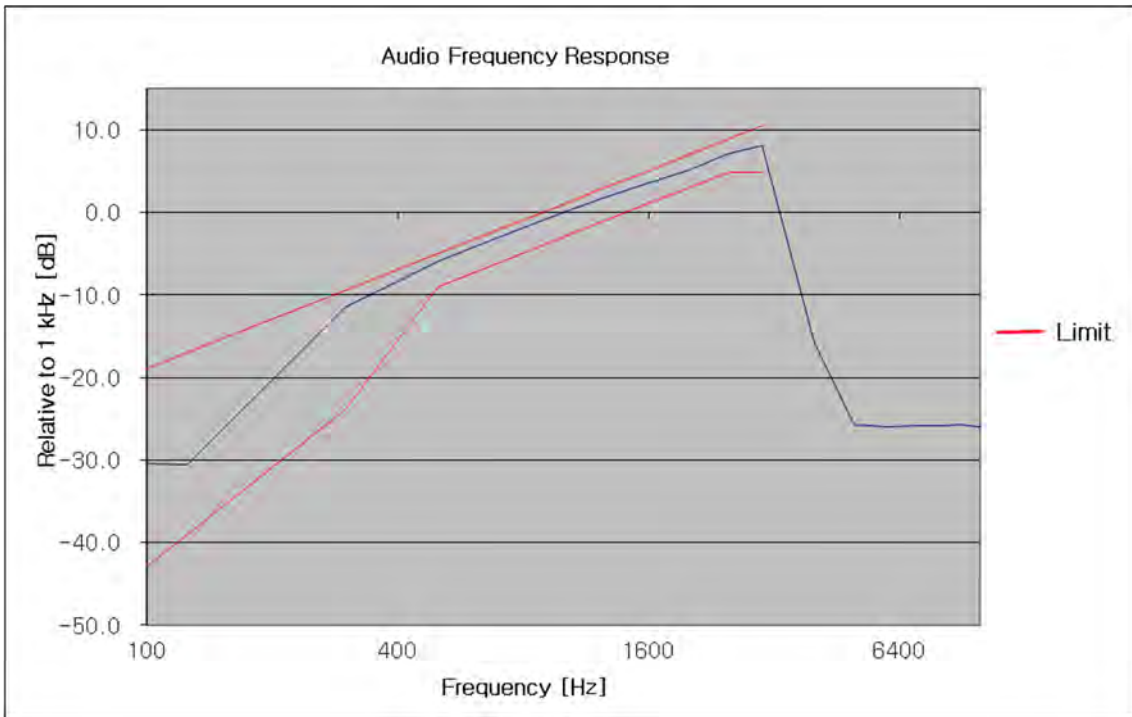
Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-30.03	-18.93	-42.86
125	-30.20	-17.00	-39.00
300	-11.80	-9.42	-23.84
500	-6.17	-5.00	-9.00
750	-2.43	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.80	2.93	-1.07
1500	3.22	4.51	0.51
2000	5.28	7.00	3.00
2500	7.23	8.93	4.93
3000	8.22	10.51	4.93
4000	-17.23	-	-
5000	-22.52	-	-
6000	-22.70	-	-
7000	-22.47	-	-
8000	-22.66	-	-
9000	-22.70	-	-
10000	-22.59	-	-
20000	-22.59	-	-
30000	-22.66	-	-
40000	-22.63	-	-



LOW POWER

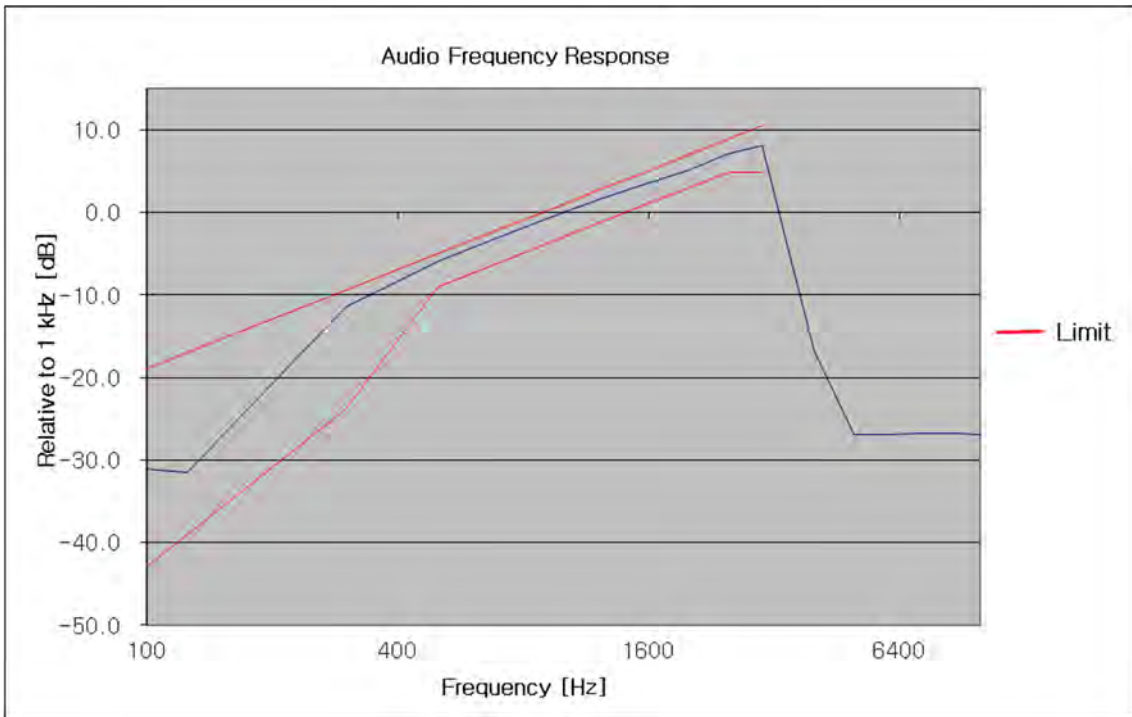
138.05 MHz

Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-30.45	-18.93	-42.86
125	-30.54	-17.00	-39.00
300	-11.37	-9.42	-23.84
500	-5.96	-5.00	-9.00
750	-2.35	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.72	2.93	-1.07
1500	3.18	4.51	0.51
2000	5.17	7.00	3.00
2500	7.10	8.93	4.93
3000	8.10	10.51	4.93
4000	-15.80	-	-
5000	-25.73	-	-
6000	-25.98	-	-
7000	-25.78	-	-
8000	-25.83	-	-
9000	-25.73	-	-
10000	-25.98	-	-
20000	-25.98	-	-
30000	-25.93	-	-
40000	-25.88	-	-



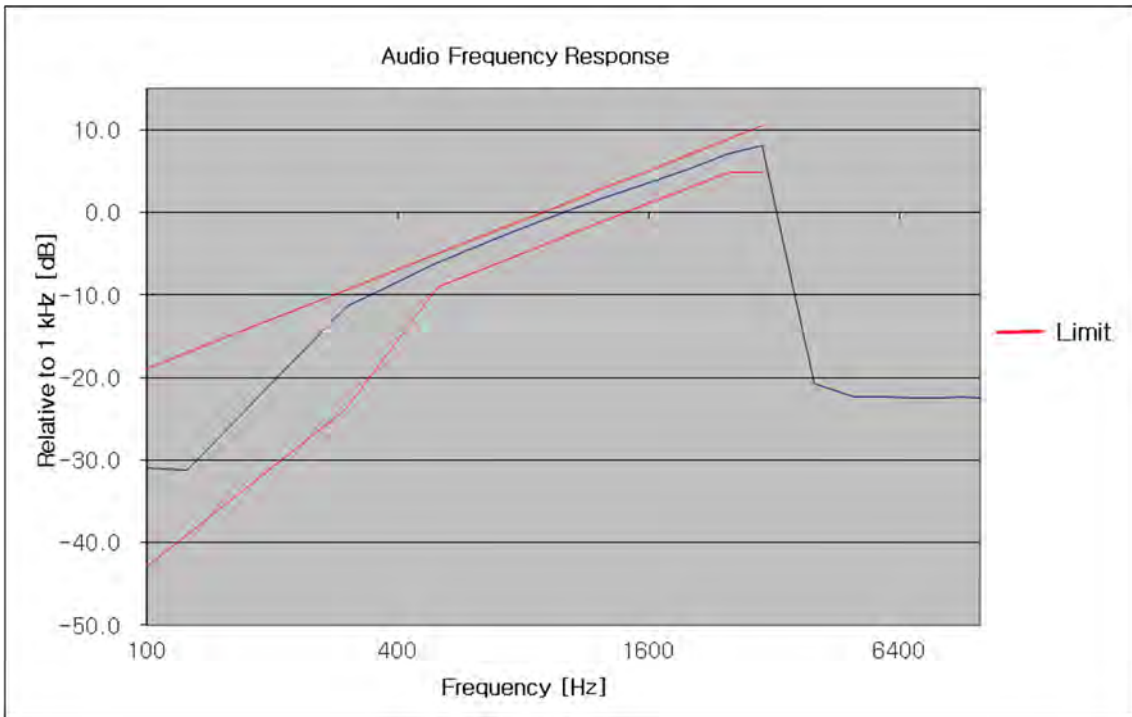
150.05 MHz

Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-31.15	-18.93	-42.86
125	-31.53	-17.00	-39.00
300	-11.41	-9.42	-23.84
500	-5.91	-5.00	-9.00
750	-2.35	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.75	2.93	-1.07
1500	3.17	4.51	0.51
2000	5.17	7.00	3.00
2500	7.09	8.93	4.93
3000	8.09	10.51	4.93
4000	-16.76	-	-
5000	-26.95	-	-
6000	-26.90	-	-
7000	-26.84	-	-
8000	-26.84	-	-
9000	-26.78	-	-
10000	-26.95	-	-
20000	-27.01	-	-
30000	-26.73	-	-
40000	-27.13	-	-



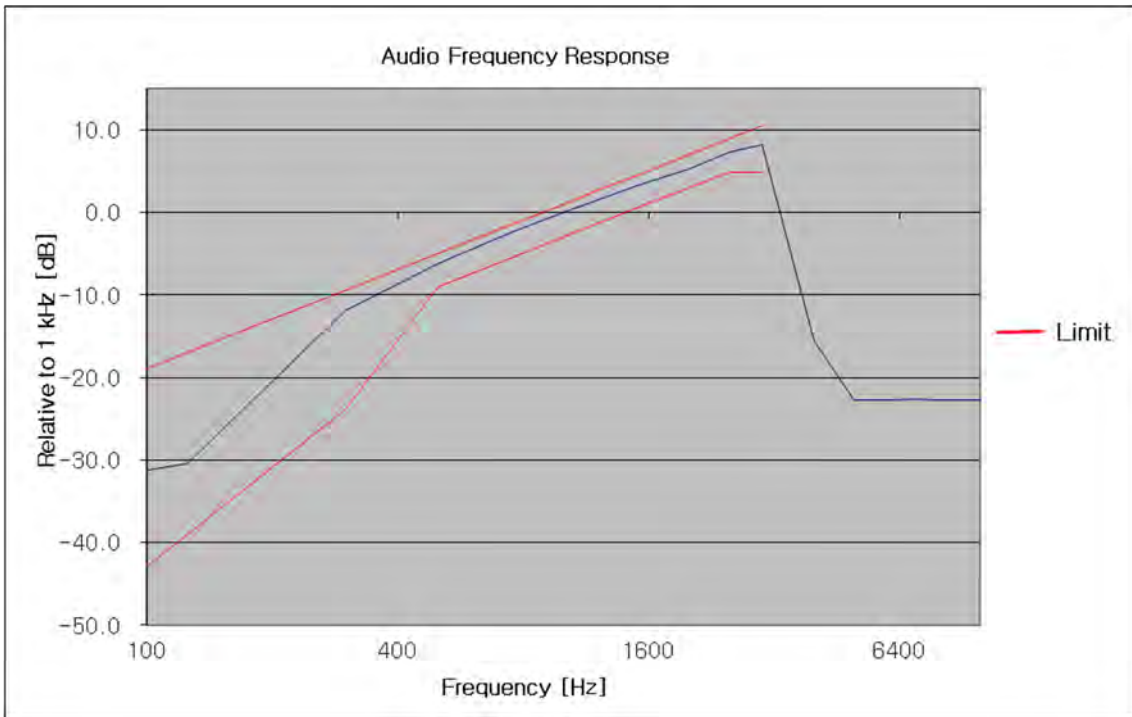
162.05 MHz

Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-30.99	-18.93	-42.86
125	-31.18	-17.00	-39.00
300	-11.44	-9.42	-23.84
500	-6.01	-5.00	-9.00
750	-2.36	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.74	2.93	-1.07
1500	3.18	4.51	0.51
2000	5.22	7.00	3.00
2500	7.15	8.93	4.93
3000	8.15	10.51	4.93
4000	-20.73	-	-
5000	-22.38	-	-
6000	-22.35	-	-
7000	-22.42	-	-
8000	-22.42	-	-
9000	-22.38	-	-
10000	-22.42	-	-
20000	-22.38	-	-
30000	-22.42	-	-
40000	-22.35	-	-



173.95 MHz

Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-31.18	-18.93	-42.86
125	-30.45	-17.00	-39.00
300	-11.83	-9.42	-23.84
500	-6.18	-5.00	-9.00
750	-2.44	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.76	2.93	-1.07
1500	3.22	4.51	0.51
2000	5.26	7.00	3.00
2500	7.23	8.93	4.93
3000	8.23	10.51	4.93
4000	-15.62	-	-
5000	-22.73	-	-
6000	-22.73	-	-
7000	-22.63	-	-
8000	-22.70	-	-
9000	-22.70	-	-
10000	-22.70	-	-
20000	-22.66	-	-
30000	-22.70	-	-
40000	-22.66	-	-

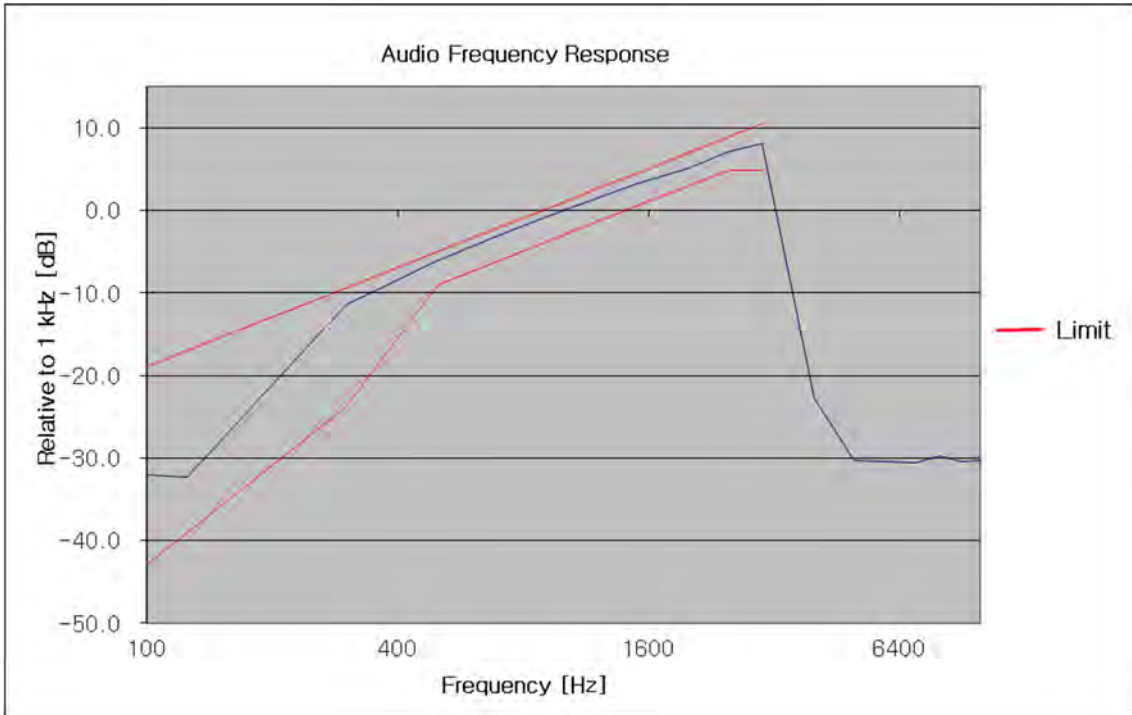


▣ TEST RESULTS (16K0F3E)_FCC

HIGH POWER

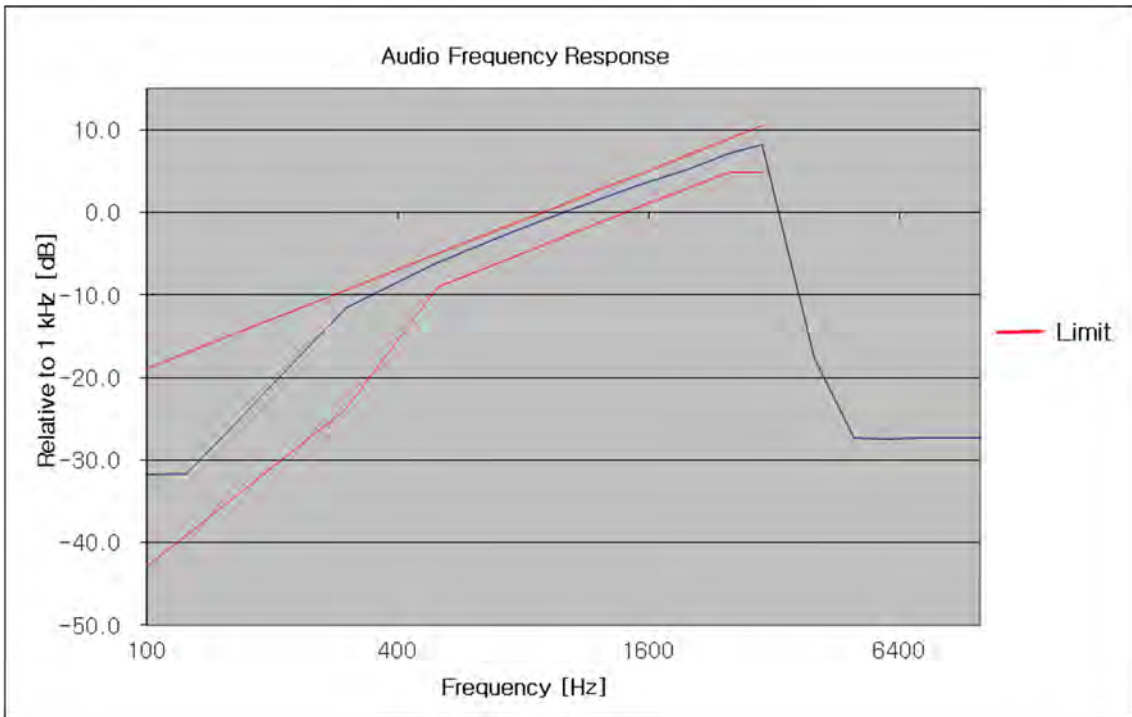
150.05 MHz

Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-32.04	-18.93	-42.86
125	-32.25	-17.00	-39.00
300	-11.39	-9.42	-23.84
500	-5.98	-5.00	-9.00
750	-2.37	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.73	2.93	-1.07
1500	3.19	4.51	0.51
2000	5.16	7.00	3.00
2500	7.11	8.93	4.93
3000	8.10	10.51	4.93
4000	-22.73	-	-
5000	-30.28	-	-
6000	-30.45	-	-
7000	-30.51	-	-
8000	-29.68	-	-
9000	-30.43	-	-
10000	-30.34	-	-
20000	-30.75	-	-
30000	-30.69	-	-
40000	-30.37	-	-



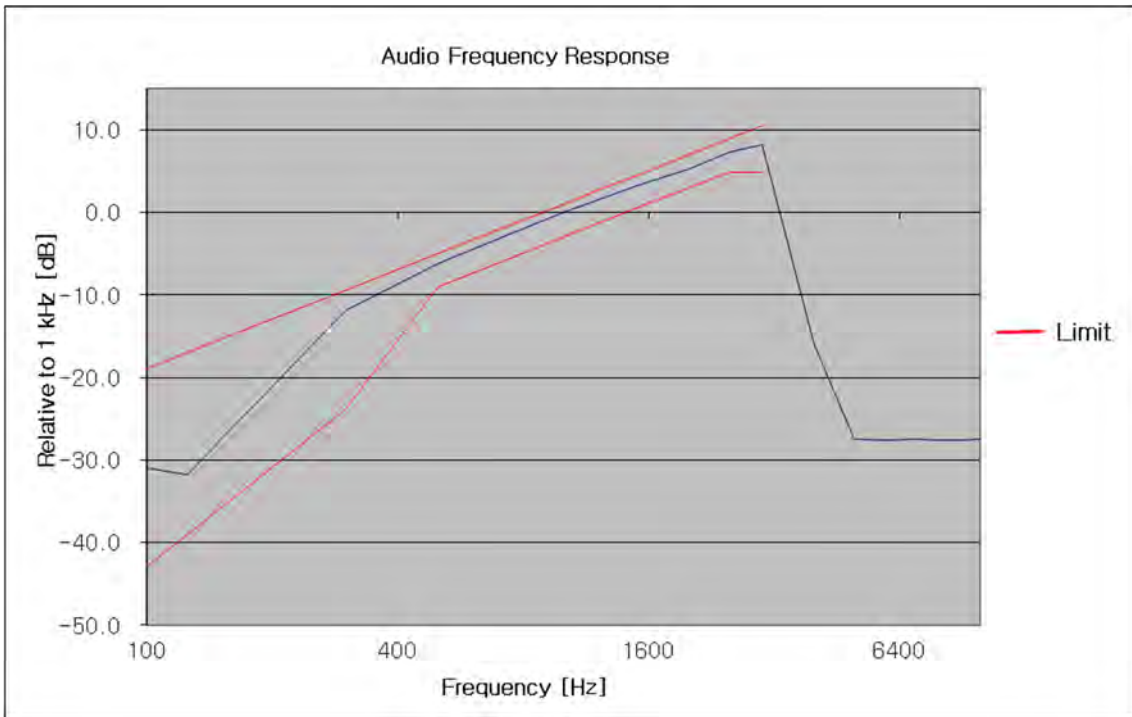
162.05 MHz

Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-31.77	-18.93	-42.86
125	-31.63	-17.00	-39.00
300	-11.52	-9.42	-23.84
500	-6.04	-5.00	-9.00
750	-2.39	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.79	2.93	-1.07
1500	3.19	4.51	0.51
2000	5.26	7.00	3.00
2500	7.20	8.93	4.93
3000	8.20	10.51	4.93
4000	-17.61	-	-
5000	-27.33	-	-
6000	-27.39	-	-
7000	-27.27	-	-
8000	-27.33	-	-
9000	-27.31	-	-
10000	-27.33	-	-
20000	-27.39	-	-
30000	-27.27	-	-
40000	-27.33	-	-



173.95 MHz

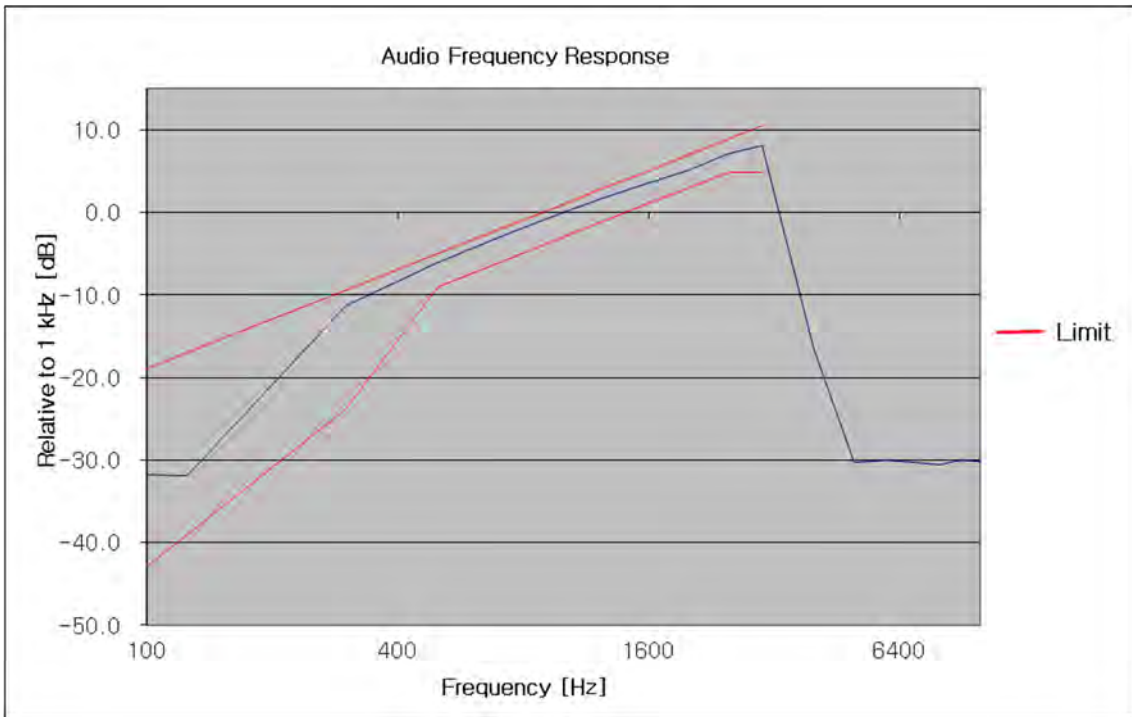
Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-30.99	-18.93	-42.86
125	-31.73	-17.00	-39.00
300	-11.86	-9.42	-23.84
500	-6.21	-5.00	-9.00
750	-2.49	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.79	2.93	-1.07
1500	3.23	4.51	0.51
2000	5.30	7.00	3.00
2500	7.25	8.93	4.93
3000	8.26	10.51	4.93
4000	-16.02	-	-
5000	-27.47	-	-
6000	-27.53	-	-
7000	-27.45	-	-
8000	-27.59	-	-
9000	-27.58	-	-
10000	-27.45	-	-
20000	-27.39	-	-
30000	-27.47	-	-
40000	-27.58	-	-



LOW POWER

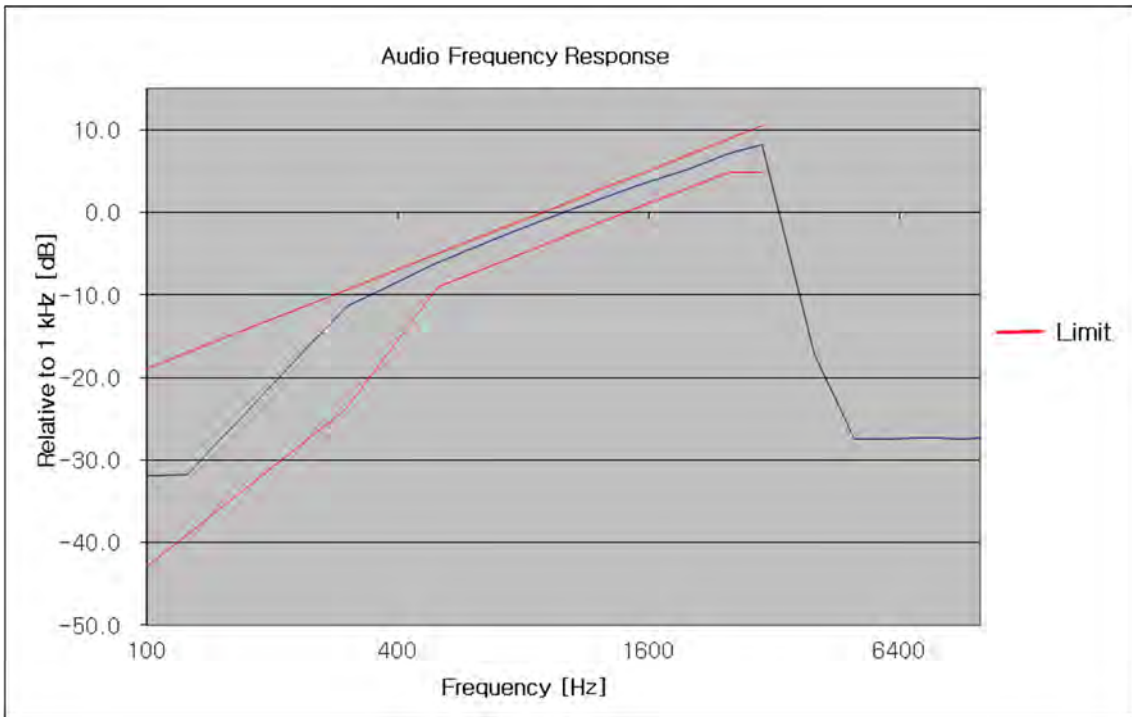
150.05 MHz

Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-31.73	-18.93	-42.86
125	-31.94	-17.00	-39.00
300	-11.35	-9.42	-23.84
500	-5.98	-5.00	-9.00
750	-2.37	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.76	2.93	-1.07
1500	3.17	4.51	0.51
2000	5.17	7.00	3.00
2500	7.11	8.93	4.93
3000	8.11	10.51	4.93
4000	-16.69	-	-
5000	-30.34	-	-
6000	-30.06	-	-
7000	-30.31	-	-
8000	-30.57	-	-
9000	-30.00	-	-
10000	-30.17	-	-
20000	-30.49	-	-
30000	-30.31	-	-
40000	-30.34	-	-



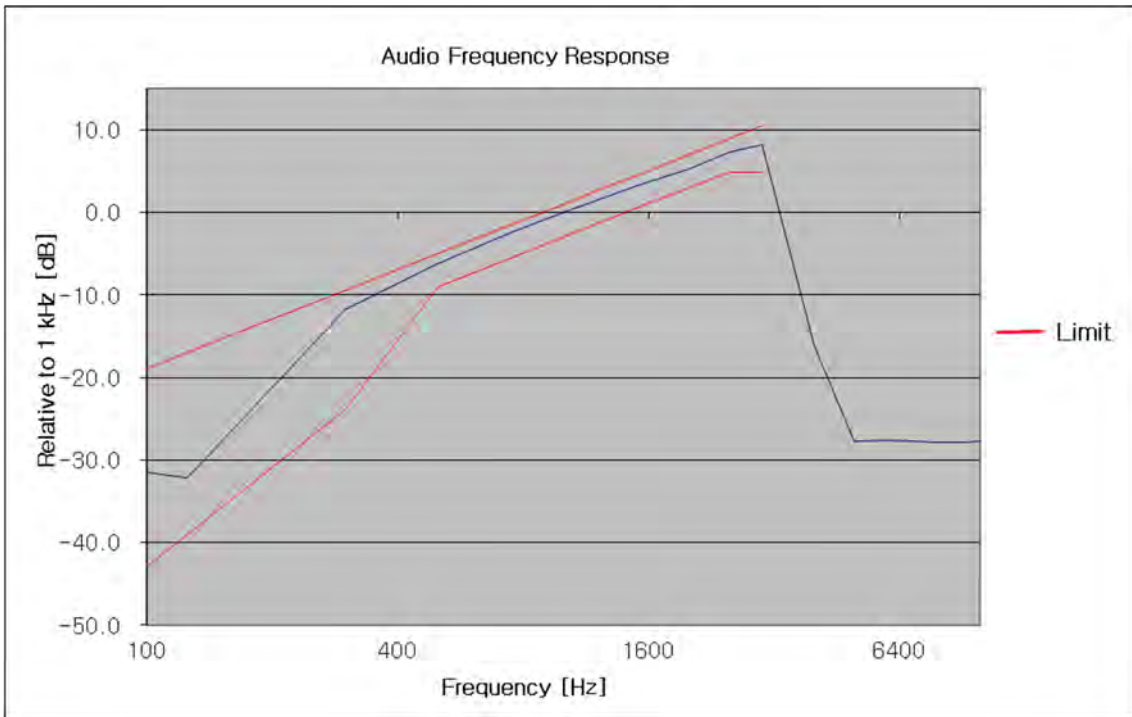
162.05 MHz

Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-31.83	-18.93	-42.86
125	-31.73	-17.00	-39.00
300	-11.48	-9.42	-23.84
500	-6.07	-5.00	-9.00
750	-2.42	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.75	2.93	-1.07
1500	3.21	4.51	0.51
2000	5.24	7.00	3.00
2500	7.20	8.93	4.93
3000	8.19	10.51	4.93
4000	-17.07	-	-
5000	-27.43	-	-
6000	-27.41	-	-
7000	-27.35	-	-
8000	-27.27	-	-
9000	-27.41	-	-
10000	-27.35	-	-
20000	-27.47	-	-
30000	-27.33	-	-
40000	-27.35	-	-



173.95 MHz

Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-31.50	-18.93	-42.86
125	-32.22	-17.00	-39.00
300	-11.74	-9.42	-23.84
500	-6.23	-5.00	-9.00
750	-2.47	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.80	2.93	-1.07
1500	3.23	4.51	0.51
2000	5.32	7.00	3.00
2500	7.25	8.93	4.93
3000	8.29	10.51	4.93
4000	-16.08	-	-
5000	-27.72	-	-
6000	-27.59	-	-
7000	-27.72	-	-
8000	-27.81	-	-
9000	-27.79	-	-
10000	-27.68	-	-
20000	-27.49	-	-
30000	-27.62	-	-
40000	-27.62	-	-

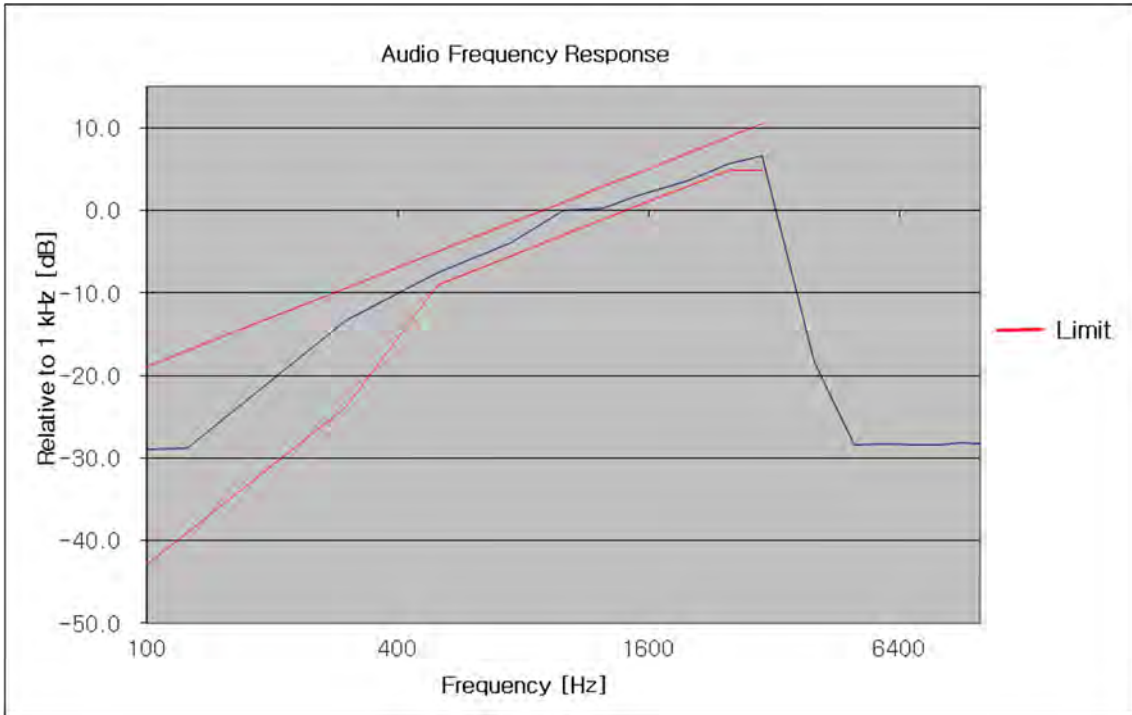


▣ TEST RESULTS (16K0F3E)_ISED

HIGH POWER

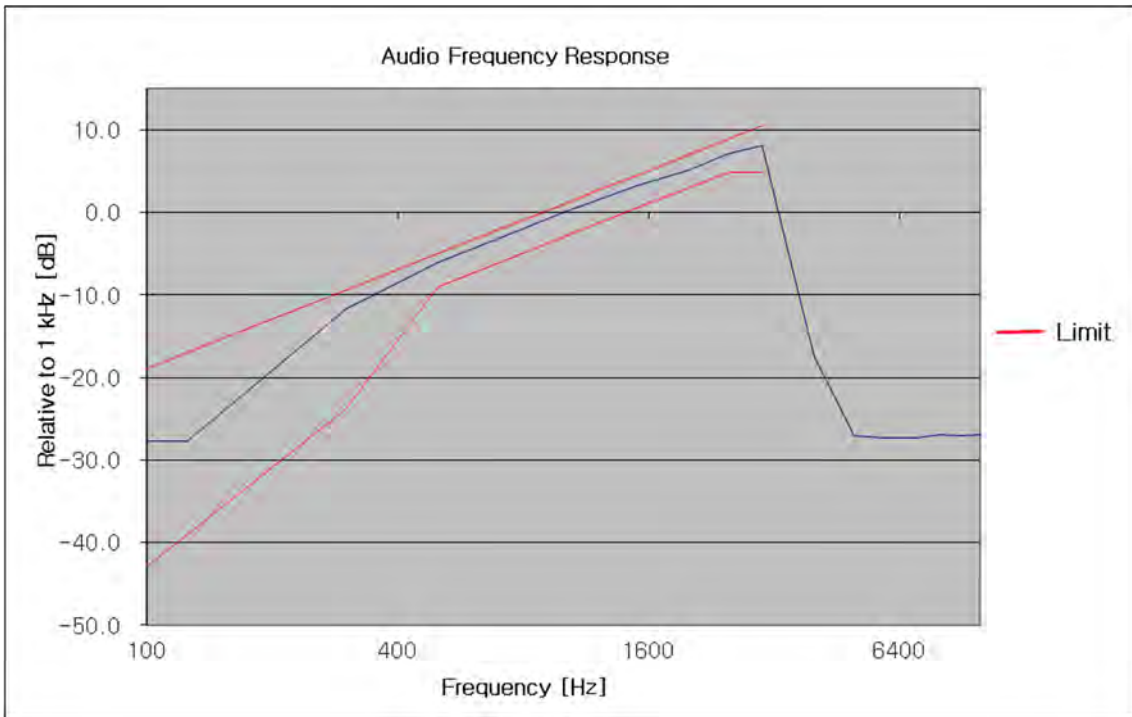
138.05 MHz

Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-28.92	-18.93	-42.86
125	-28.80	-17.00	-39.00
300	-13.27	-9.42	-23.84
500	-7.53	-5.00	-9.00
750	-3.86	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	0.28	2.93	-1.07
1500	1.71	4.51	0.51
2000	3.72	7.00	3.00
2500	5.65	8.93	4.93
3000	6.67	10.51	4.93
4000	-18.25	-	-
5000	-28.40	-	-
6000	-28.20	-	-
7000	-28.45	-	-
8000	-28.36	-	-
9000	-28.13	-	-
10000	-28.20	-	-
20000	-28.33	-	-
30000	-28.40	-	-
40000	-28.20	-	-



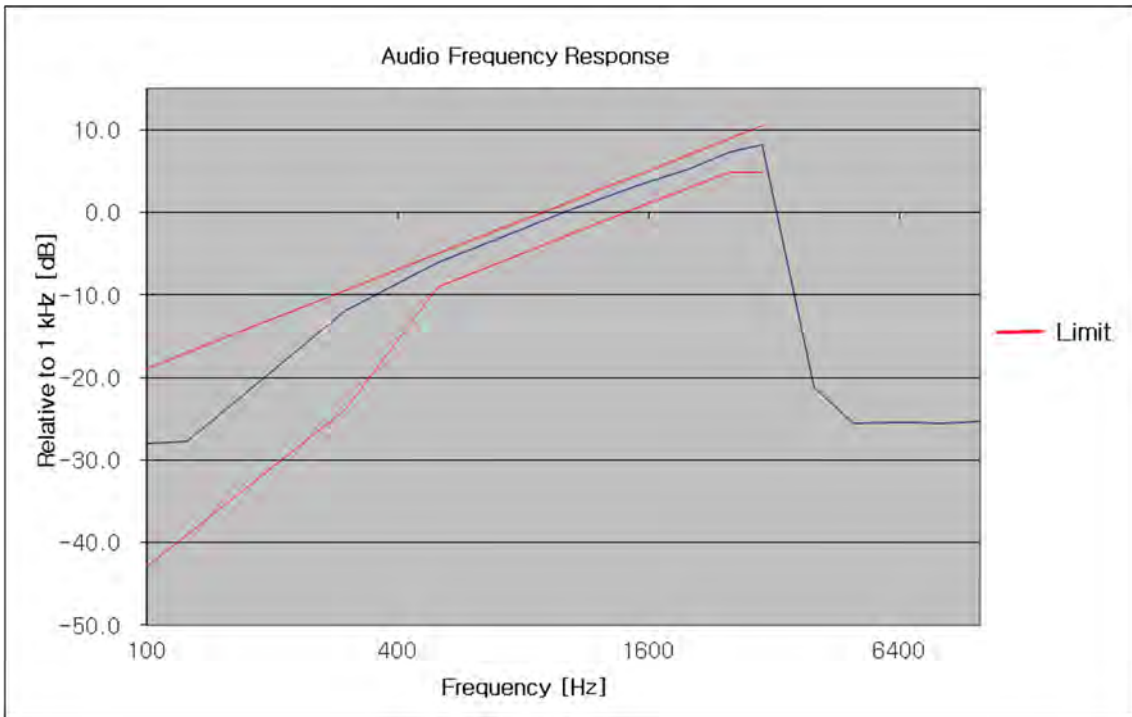
150.05 MHz

Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-27.68	-18.93	-42.86
125	-27.72	-17.00	-39.00
300	-11.68	-9.42	-23.84
500	-6.00	-5.00	-9.00
750	-2.58	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.75	2.93	-1.07
1500	3.19	4.51	0.51
2000	5.16	7.00	3.00
2500	7.10	8.93	4.93
3000	8.09	10.51	4.93
4000	-17.55	-	-
5000	-27.09	-	-
6000	-27.25	-	-
7000	-27.25	-	-
8000	-26.95	-	-
9000	-27.03	-	-
10000	-26.86	-	-
20000	-27.07	-	-
30000	-26.80	-	-
40000	-27.21	-	-



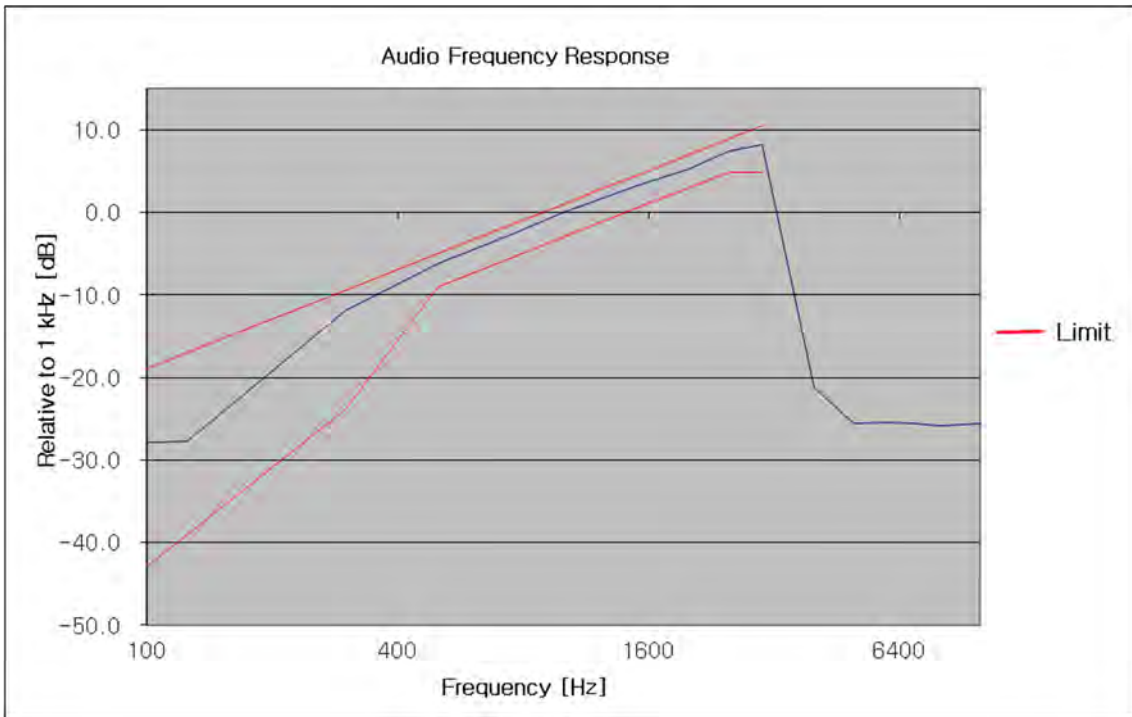
162.05 MHz

Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-27.96	-18.93	-42.86
125	-27.68	-17.00	-39.00
300	-11.81	-9.42	-23.84
500	-6.07	-5.00	-9.00
750	-2.58	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.79	2.93	-1.07
1500	3.23	4.51	0.51
2000	5.28	7.00	3.00
2500	7.23	8.93	4.93
3000	8.23	10.51	4.93
4000	-21.23	-	-
5000	-25.51	-	-
6000	-25.38	-	-
7000	-25.48	-	-
8000	-25.63	-	-
9000	-25.43	-	-
10000	-25.35	-	-
20000	-25.51	-	-
30000	-25.30	-	-
40000	-25.38	-	-



173.95 MHz

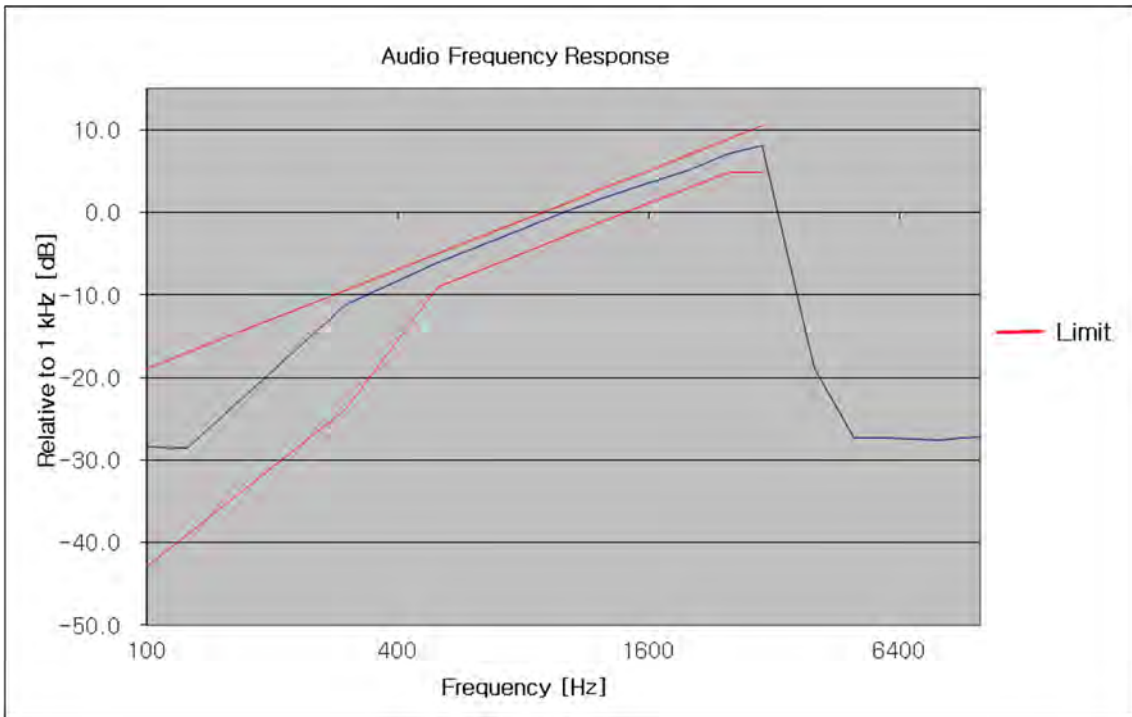
Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-27.92	-18.93	-42.86
125	-27.77	-17.00	-39.00
300	-11.83	-9.42	-23.84
500	-6.12	-5.00	-9.00
750	-2.66	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.83	2.93	-1.07
1500	3.22	4.51	0.51
2000	5.31	7.00	3.00
2500	7.44	8.93	4.93
3000	8.23	10.51	4.93
4000	-21.25	-	-
5000	-25.53	-	-
6000	-25.44	-	-
7000	-25.52	-	-
8000	-25.77	-	-
9000	-25.67	-	-
10000	-25.52	-	-
20000	-25.32	-	-
30000	-25.42	-	-
40000	-25.39	-	-



LOW POWER

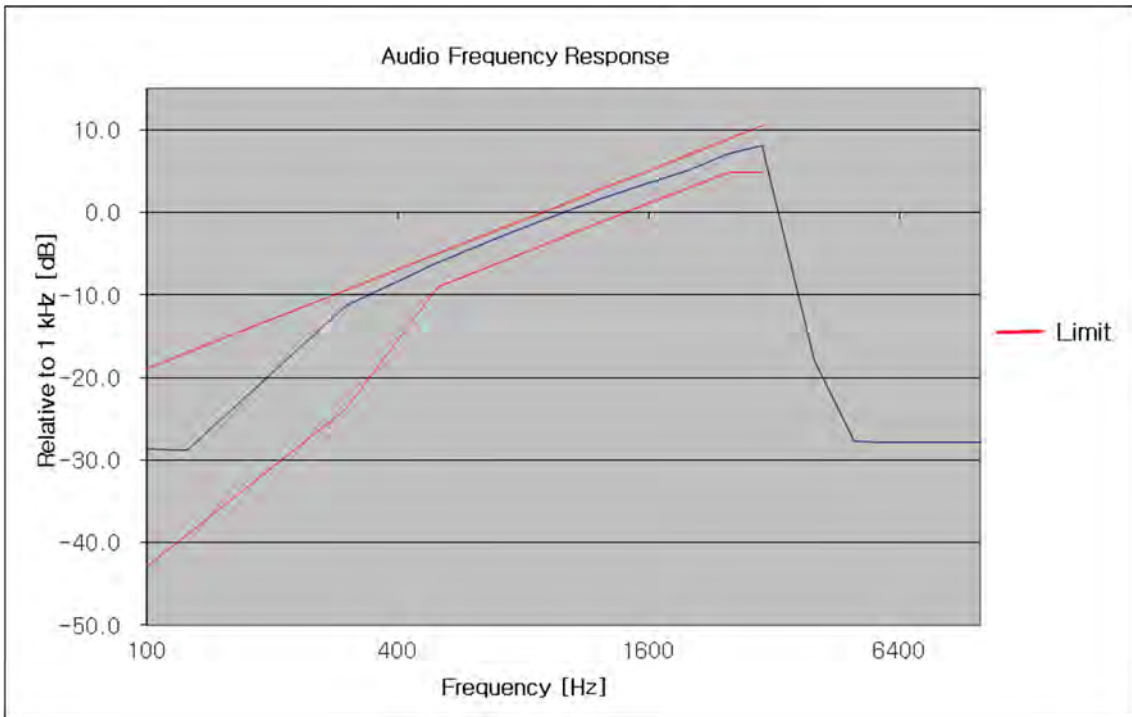
138.05 MHz

Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-28.40	-18.93	-42.86
125	-28.52	-17.00	-39.00
300	-11.21	-9.42	-23.84
500	-6.04	-5.00	-9.00
750	-2.49	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.79	2.93	-1.07
1500	3.15	4.51	0.51
2000	5.17	7.00	3.00
2500	7.09	8.93	4.93
3000	8.10	10.51	4.93
4000	-18.83	-	-
5000	-27.37	-	-
6000	-27.37	-	-
7000	-27.39	-	-
8000	-27.58	-	-
9000	-27.27	-	-
10000	-27.15	-	-
20000	-27.51	-	-
30000	-27.21	-	-
40000	-27.49	-	-



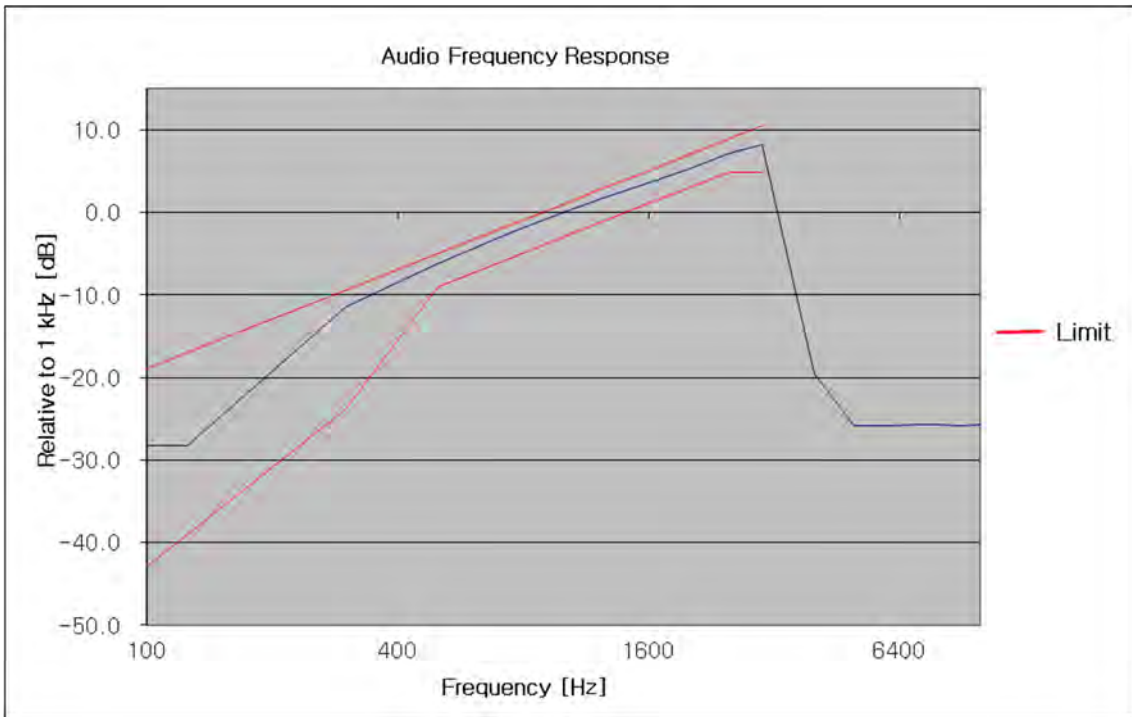
150.05 MHz

Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-28.68	-18.93	-42.86
125	-28.82	-17.00	-39.00
300	-11.35	-9.42	-23.84
500	-5.98	-5.00	-9.00
750	-2.35	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.75	2.93	-1.07
1500	3.16	4.51	0.51
2000	5.15	7.00	3.00
2500	7.10	8.93	4.93
3000	8.11	10.51	4.93
4000	-17.93	-	-
5000	-27.76	-	-
6000	-27.89	-	-
7000	-27.83	-	-
8000	-27.87	-	-
9000	-27.87	-	-
10000	-27.83	-	-
20000	-27.81	-	-
30000	-27.93	-	-
40000	-27.81	-	-



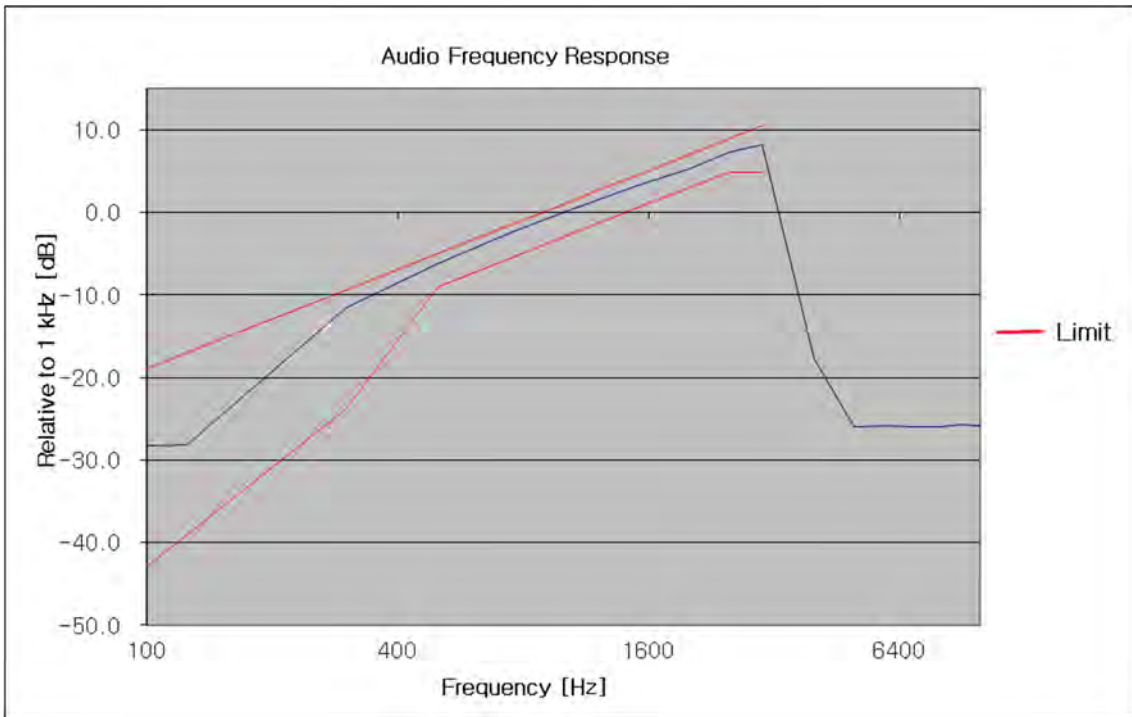
162.05 MHz

Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-28.29	-18.93	-42.86
125	-28.24	-17.00	-39.00
300	-11.48	-9.42	-23.84
500	-6.16	-5.00	-9.00
750	-2.44	-1.49	-5.49
1000	0.00	1.00	-3.00
1250	1.80	2.93	-1.07
1500	3.15	4.51	0.51
2000	5.23	7.00	3.00
2500	7.18	8.93	4.93
3000	8.18	10.51	4.93
4000	-19.57	-	-
5000	-25.86	-	-
6000	-25.78	-	-
7000	-25.68	-	-
8000	-25.71	-	-
9000	-25.86	-	-
10000	-25.76	-	-
20000	-25.66	-	-
30000	-25.66	-	-
40000	-25.68	-	-



173.95 MHz

Frequency (Hz)	Attenuation Rel. to 1kHz (dB)	Upper limit (dB)	Lower limit (dB)
100	-28.20	-18.93	-42.86
125	-28.11	-17.00	-39.00
300	-11.58	-9.42	-23.84
500	-6.21	-5.00	-9.00
750	-2.46	-1.49	-5.49
1000	-0.02	1.00	-3.00
1250	1.78	2.93	-1.07
1500	3.25	4.51	0.51
2000	5.30	7.00	3.00
2500	7.25	8.93	4.93
3000	8.26	10.51	4.93
4000	-17.71	-	-
5000	-25.92	-	-
6000	-25.88	-	-
7000	-26.02	-	-
8000	-25.98	-	-
9000	-25.73	-	-
10000	-25.88	-	-
20000	-25.93	-	-
30000	-25.92	-	-
40000	-26.05	-	-

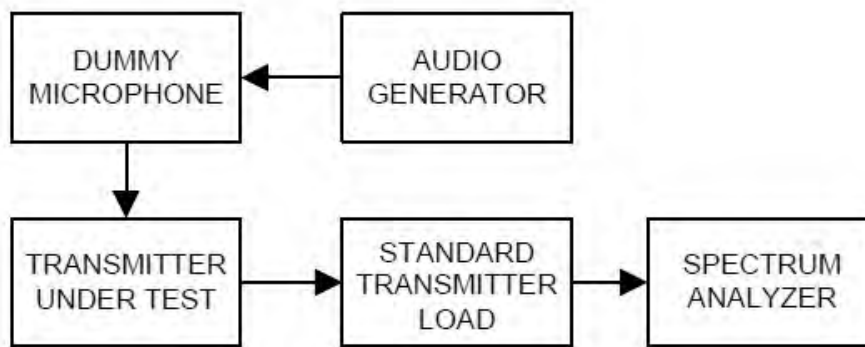


8.6 Emission Mask

▣ Definition

The transmitter sideband spectrum denotes the sideband power produced at a discrete frequency separation from the carrier up to the test bandwidth (see 1.3.4.4) due to all sources of unwanted noise within the transmitter in a modulated condition.

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

According to 2.2.11 in TIA-603-E Standard.

- a) Connect the equipment as illustrated. Use the table to determine the spectrum analyzer resolution bandwidth:

Spectrum Analyzer Resolution Bandwidth

Frequency Band (MHz)	Mask for Equipment with Audio Low Pass Filter	Mask for Equipment without Low Pass Filter	Spectrum Analyzer Resolution Bandwidth (Hz)
25-50	B	C	300
72-76	B	C	300
138-174	NTIA	NTIA	300
150-174	B	C	300
150-174	D or E	D or E	100
406-420	NTIA	NTIA	300
421-512	B	C	300
421-512	D or E	D or E	100
806-821/851-866	B or EA	G or EA	300
821-824/866-869	B	H	300
896-901/935-940	I	J	300

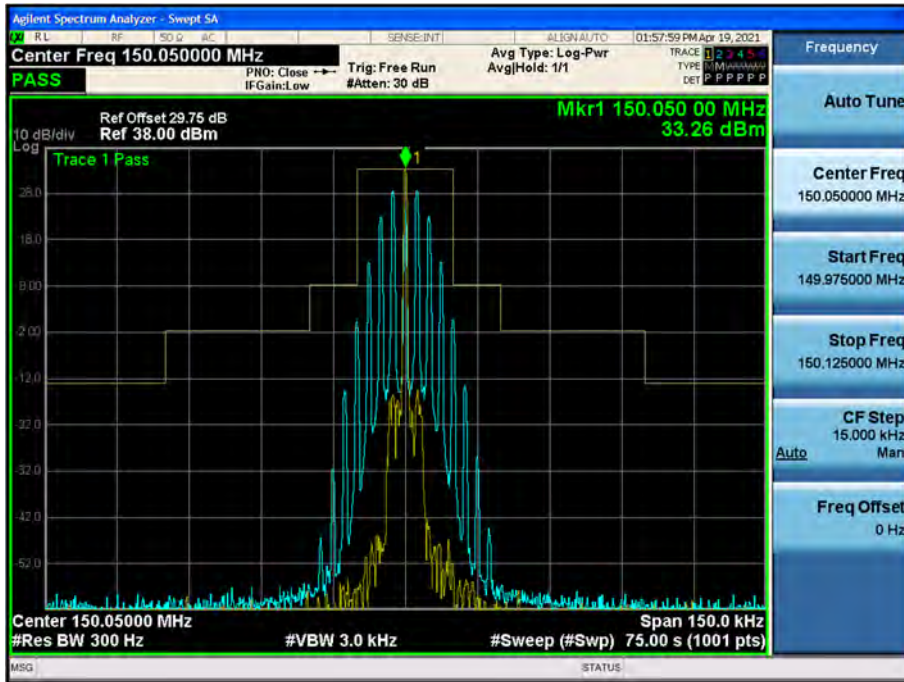
- b) Adjust the spectrum analyzer for the following settings:
 - 1) Resolution Bandwidth per the above table

- 2) Video Bandwidth at least 10 times the resolution bandwidth.
 - 3) Sweep Speed slow enough to maintain measurement calibration.
 - 4) Detector Mode = Positive Peak.
 - 5) Span that will allow proper viewing of the test bandwidth (see 1.3.4.4).
- c) Set the center frequency of the spectrum analyzer to the assigned transmitter frequency. Key the transmitter, and set the level of the unmodulated carrier to a full scale reference line. This is the 0 dB reference for the measurement.
 - d) 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. Transmitters employing digital modulation techniques that bypass the limiter and the audio low-pass filter shall be modulated as specified by the manufacturer.
 - e) Record the resulting spectrum analyzer presentation of the emission level with an on-line recording device or in a photograph. It is recommended that the emission limit (as given in 3.2.11) be drawn on the plotted graph or photograph. The spectrum analyzer presentation is the sideband spectrum.

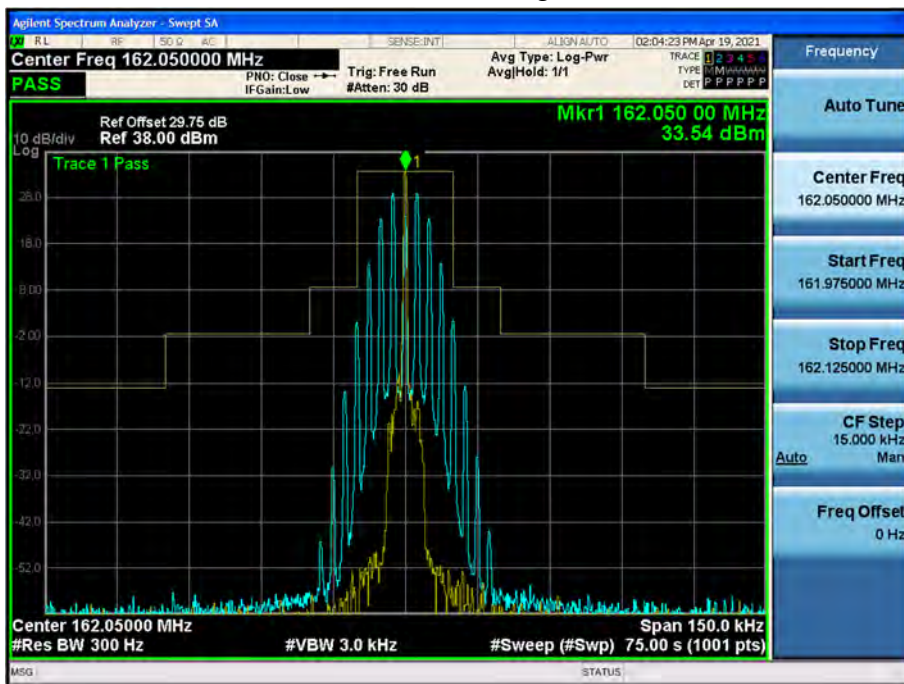
Plots of Emission Mask

16K0F3E_FCC

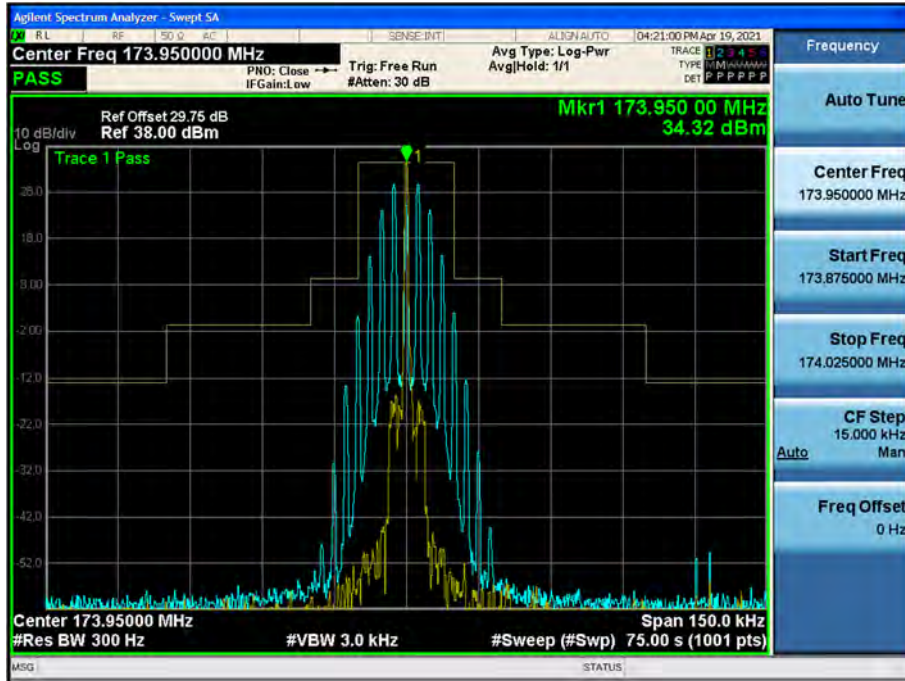
(150.05 MHz)_High



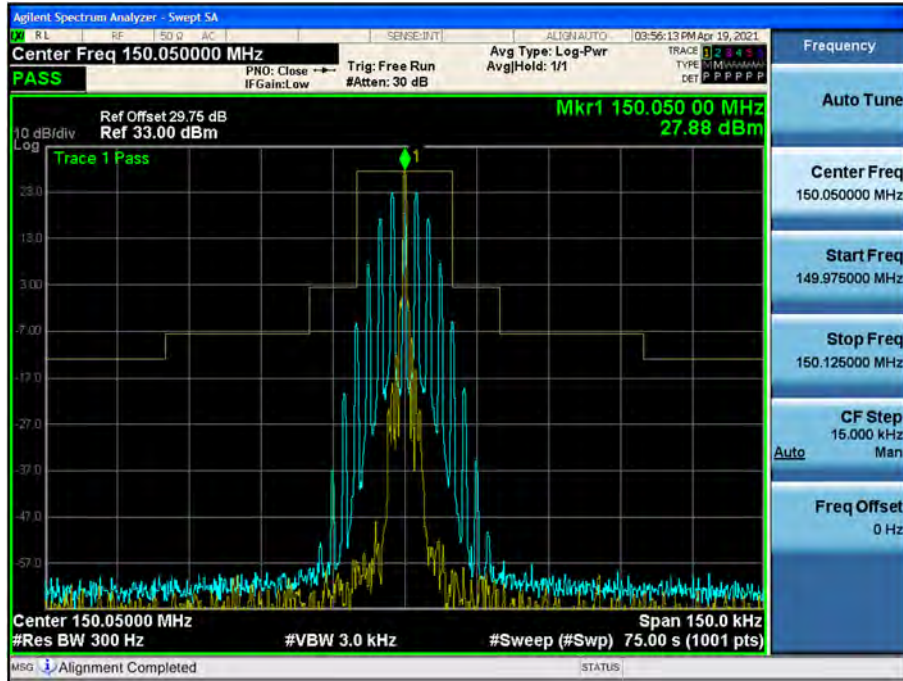
(162.05 MHz)_High



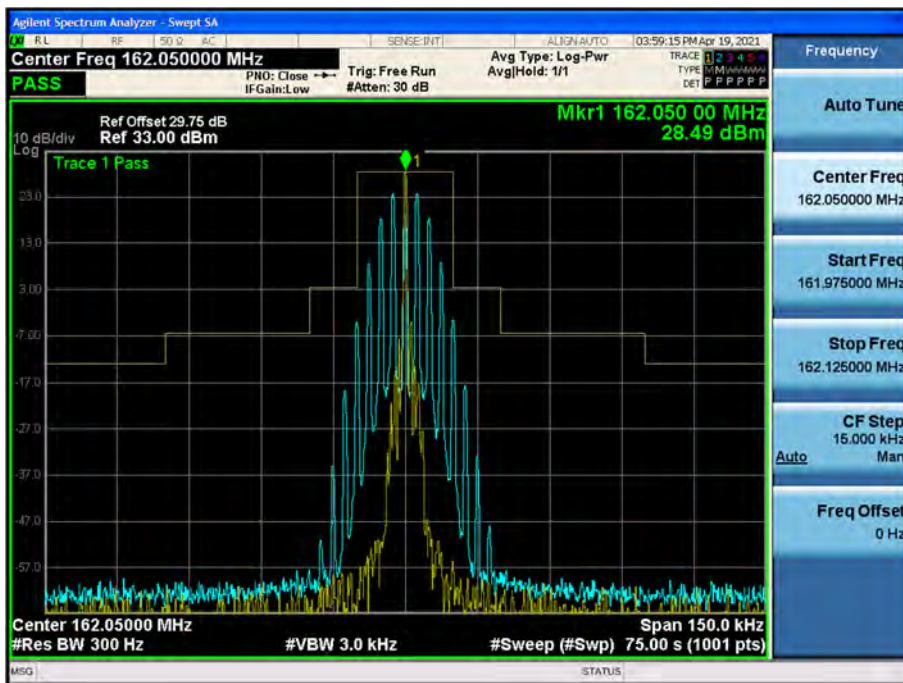
(173.95 MHz)_High



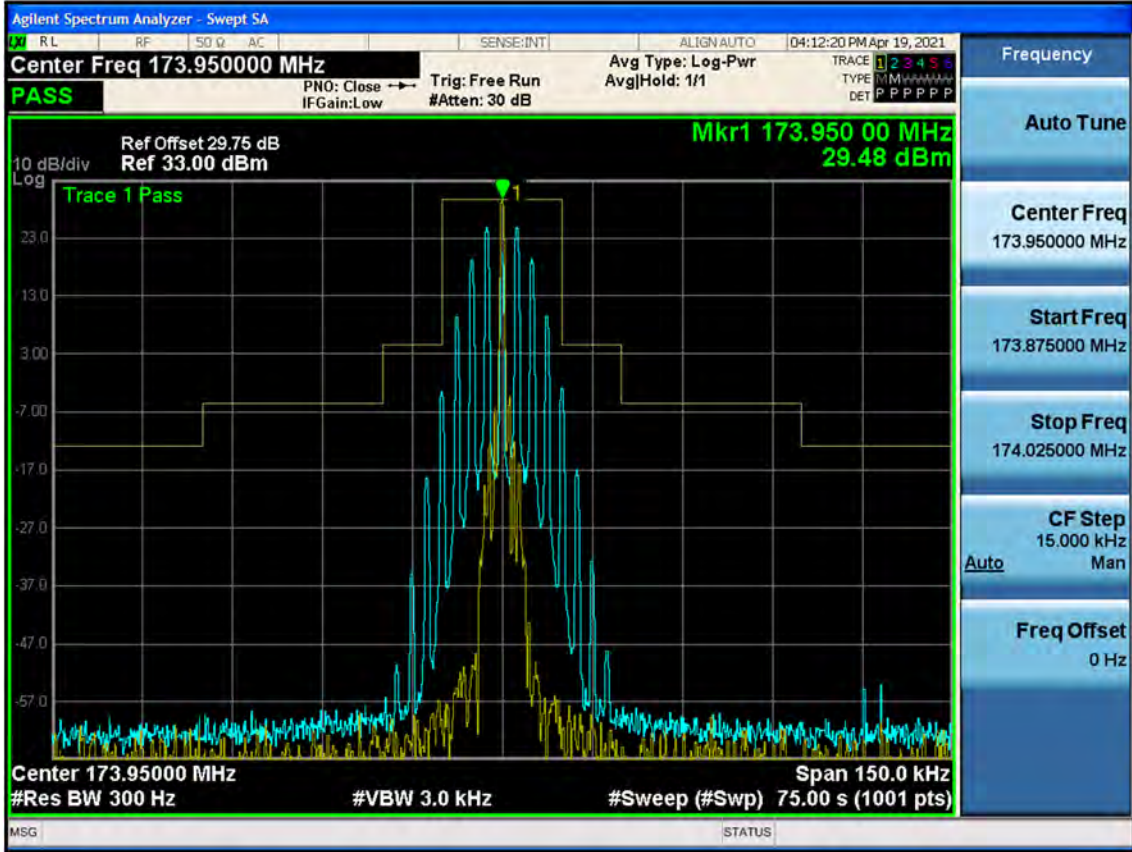
(150.05 MHz)_ Low



(162.05 MHz)_ Low

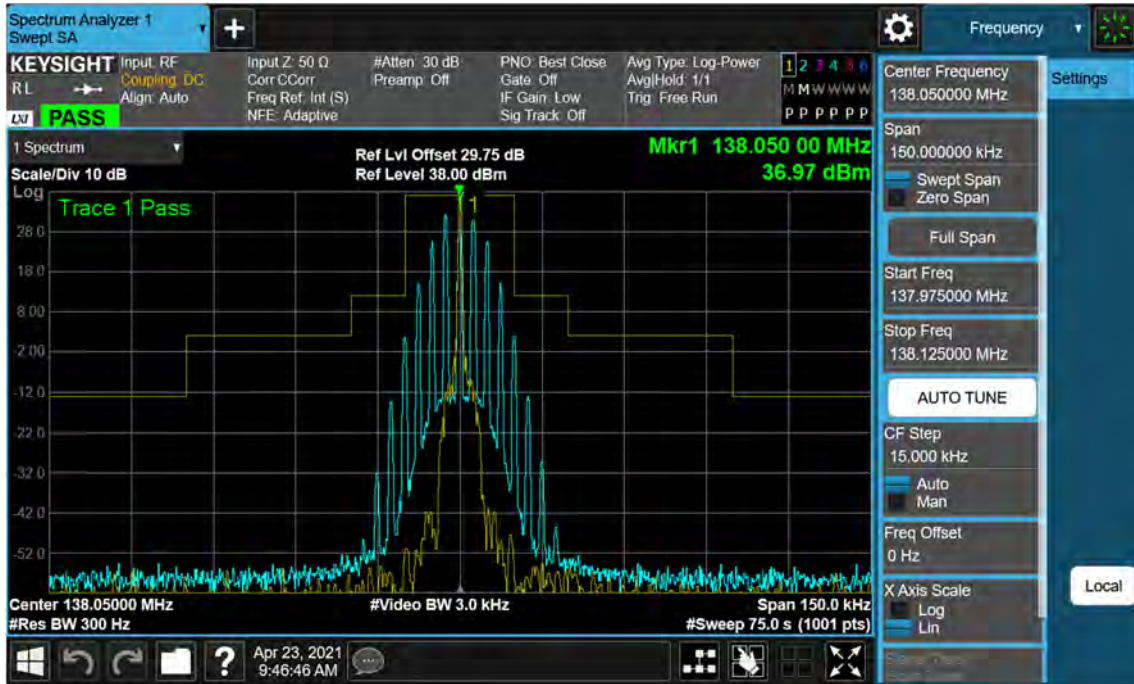


(173.95 MHz)_Low

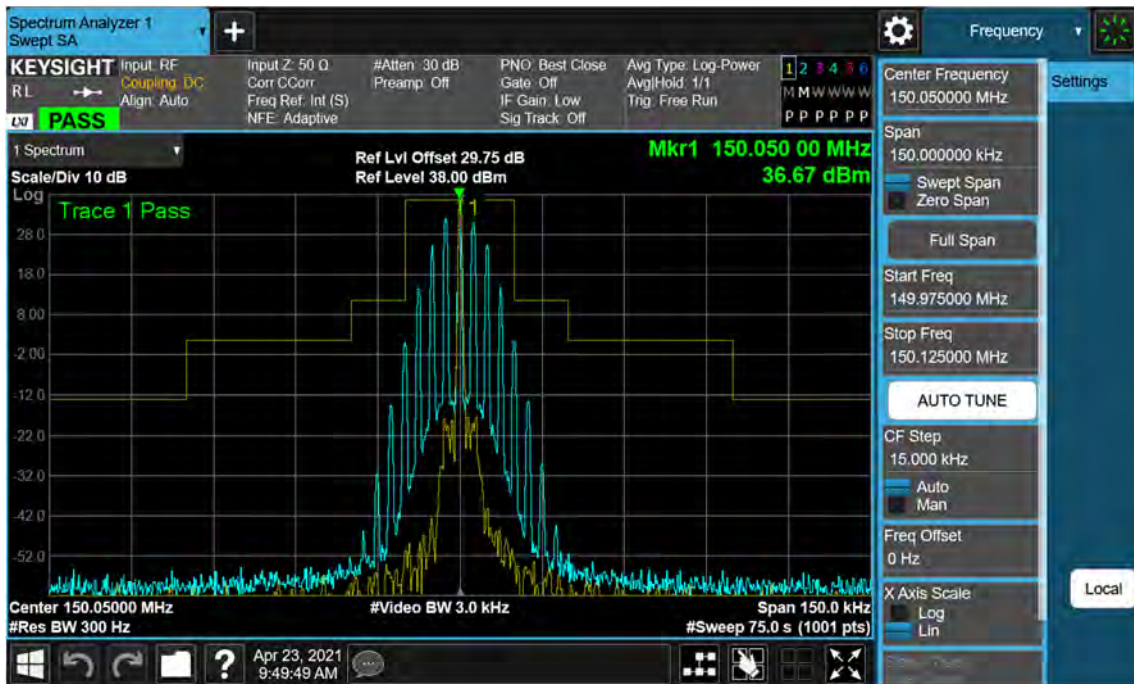


16K0F3E_ISED

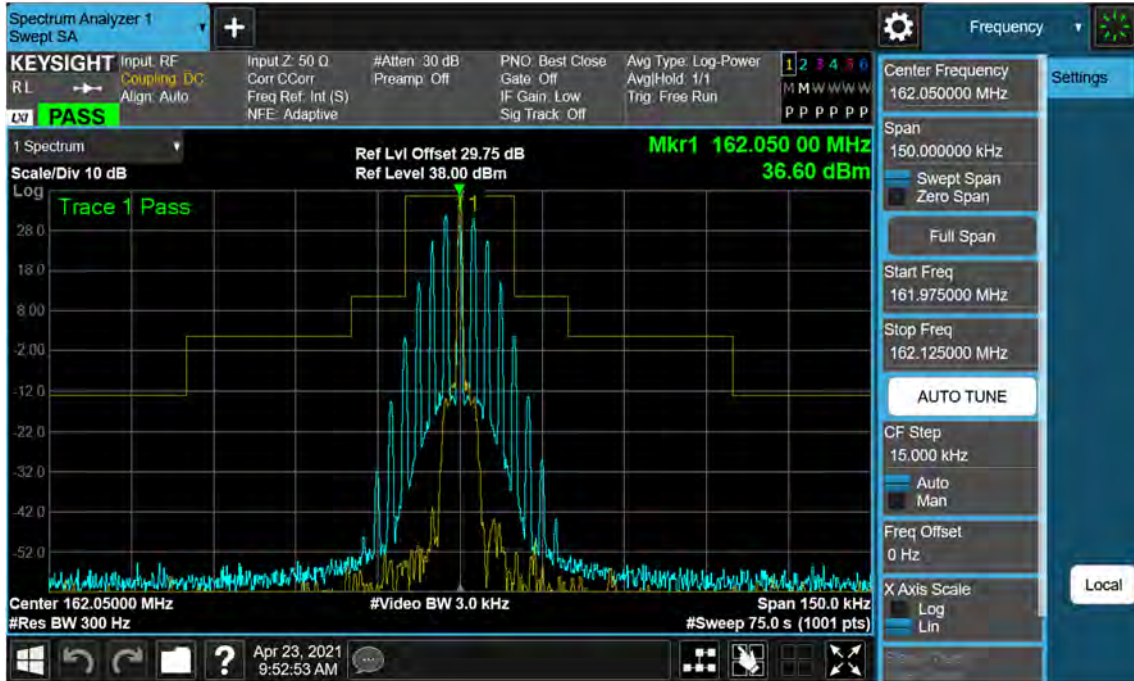
(138.05 MHz)_Low



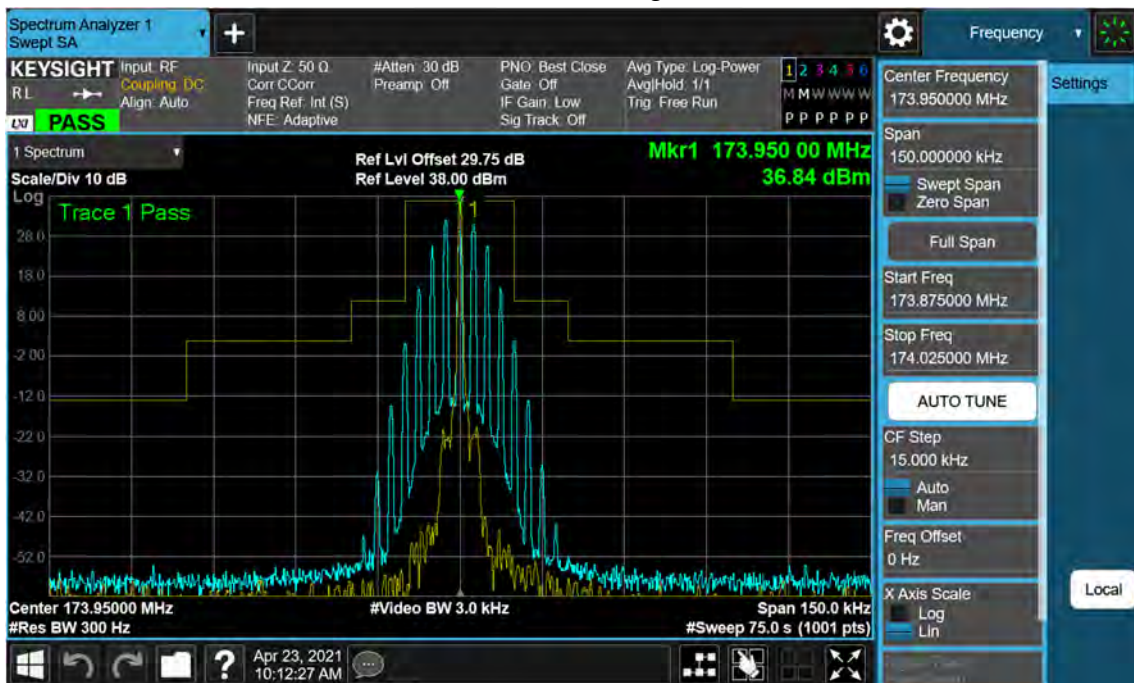
(150.05 MHz)_High



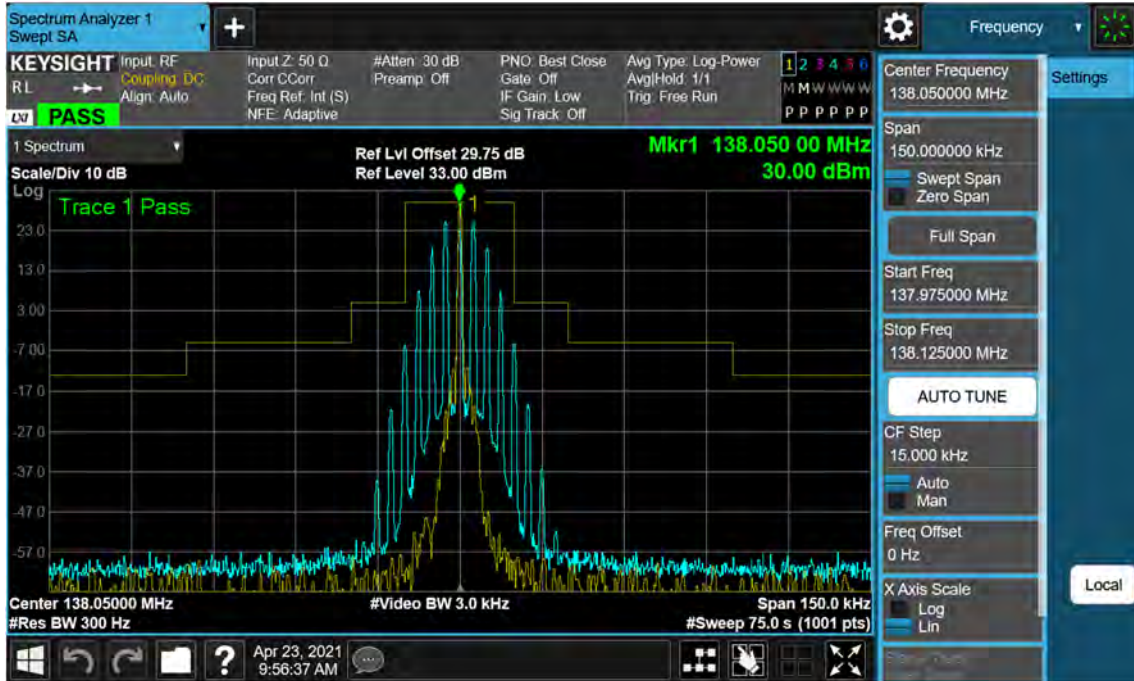
(162.05 MHz)_High



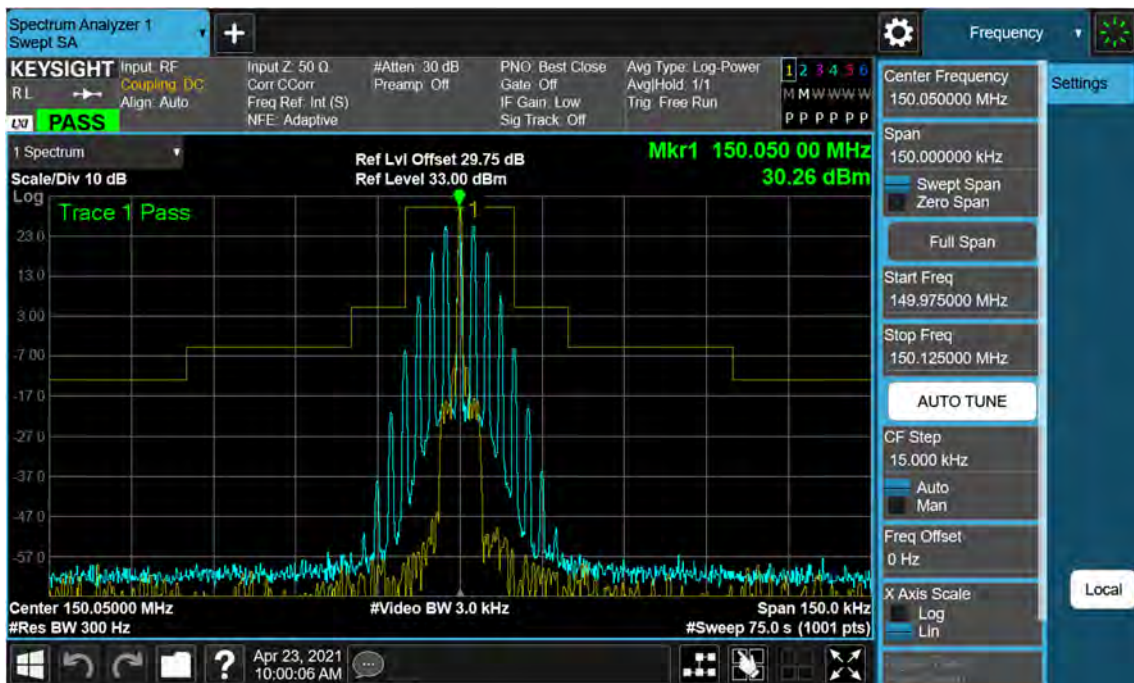
(173.95 MHz)_High



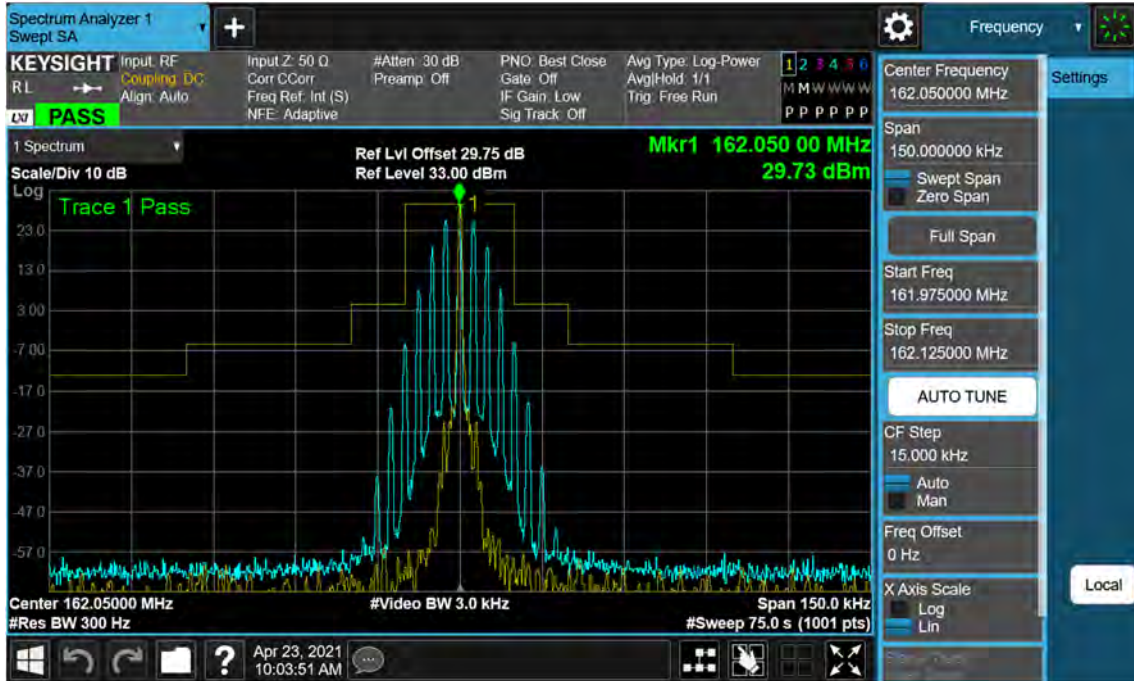
(138.05 MHz)_Low



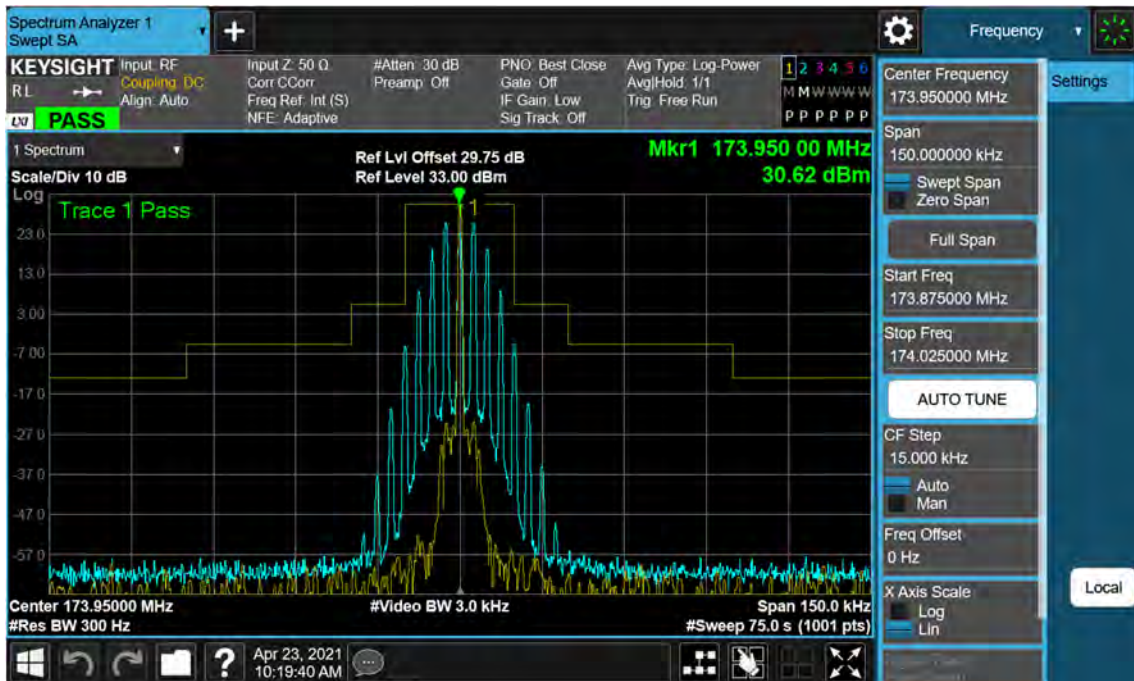
(150.05 MHz)_Low



(162.05 MHz)_ Low

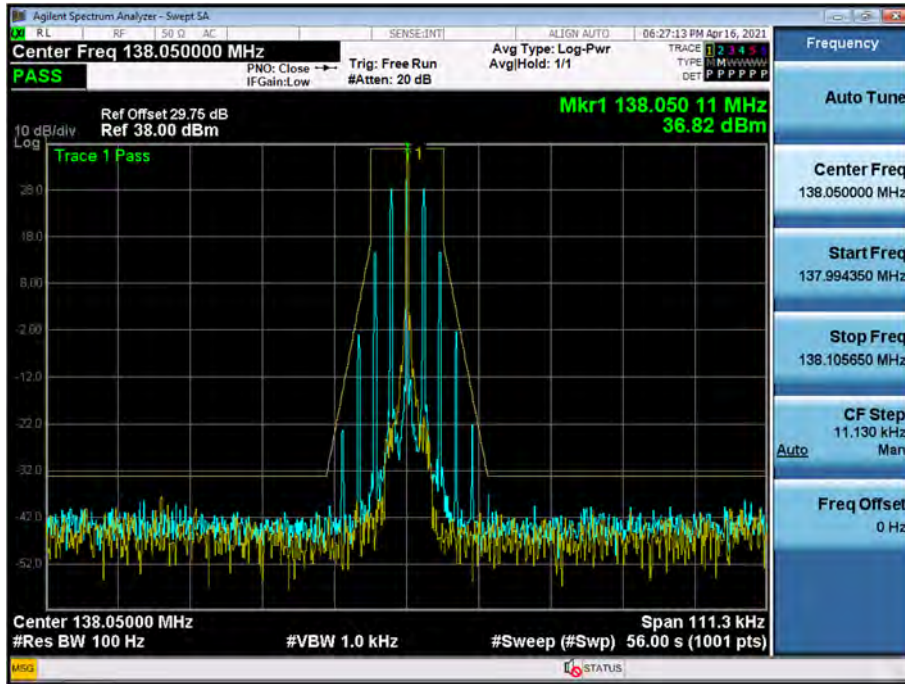


(173.95 MHz)_ Low

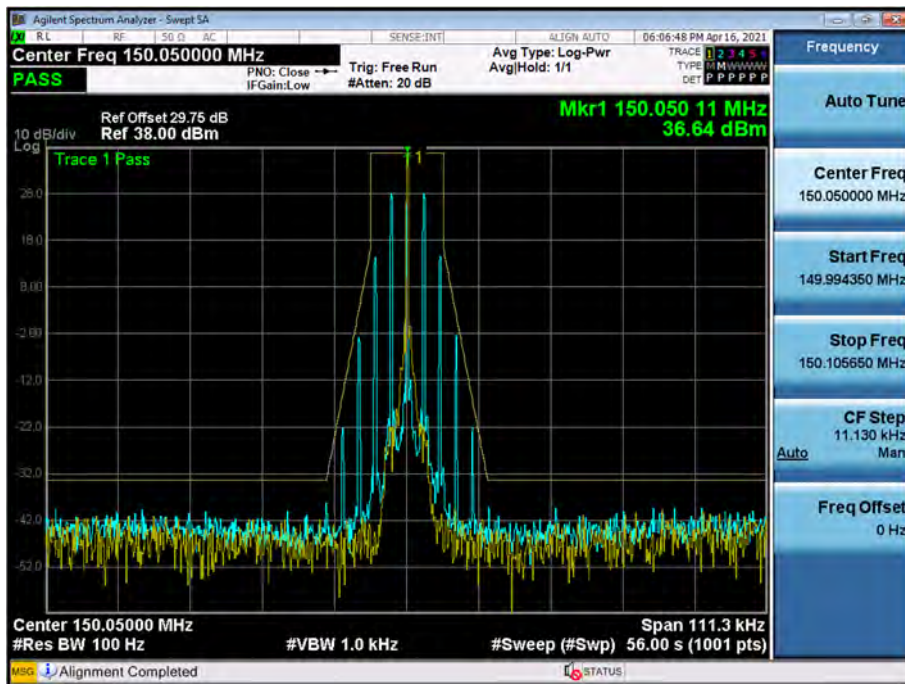


11K0F3E_FCC/ISED

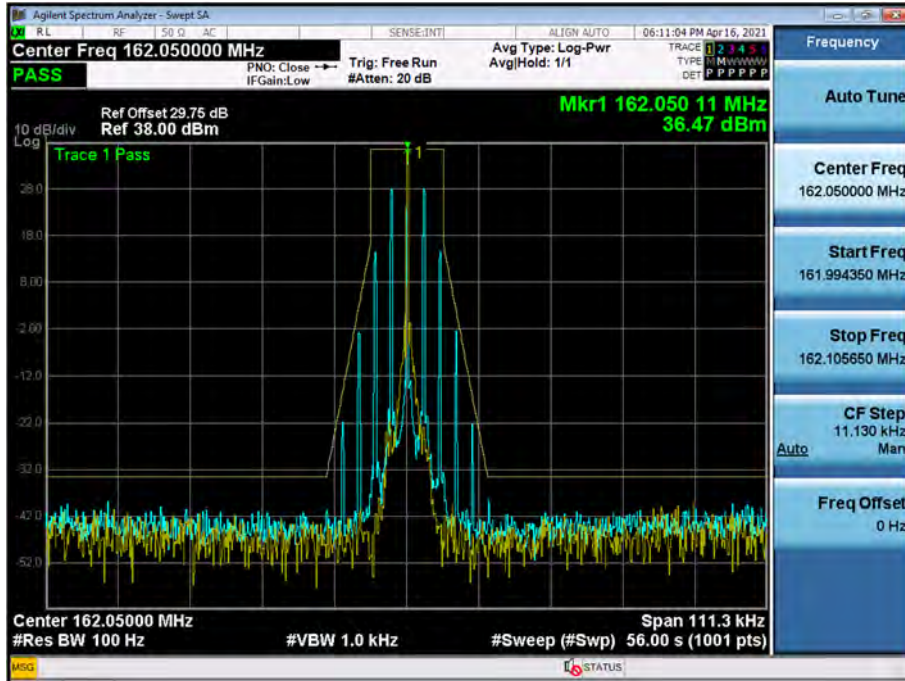
(138.05 MHz)_High



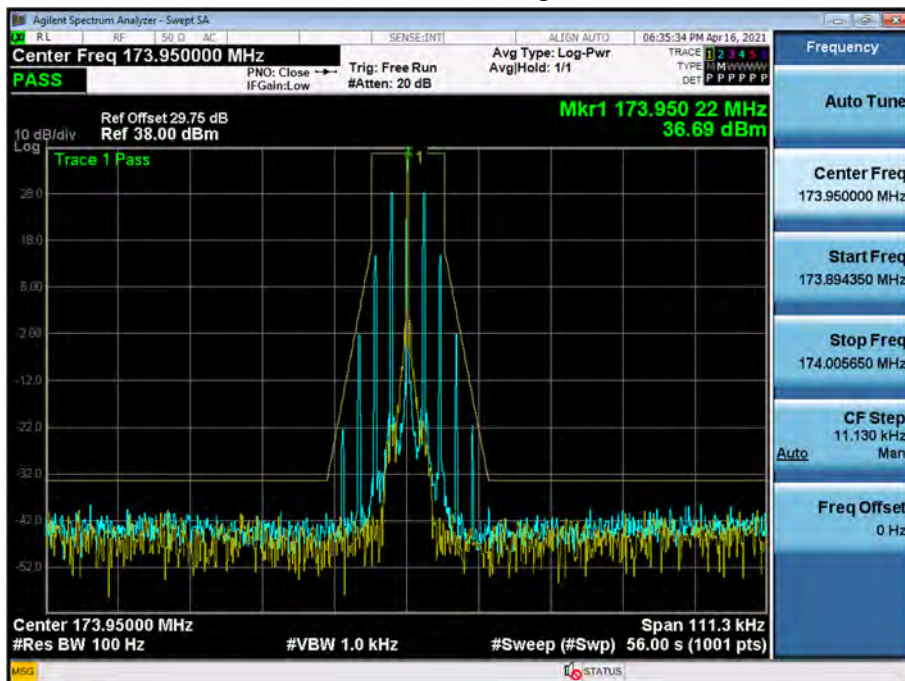
(150.05 MHz)_High



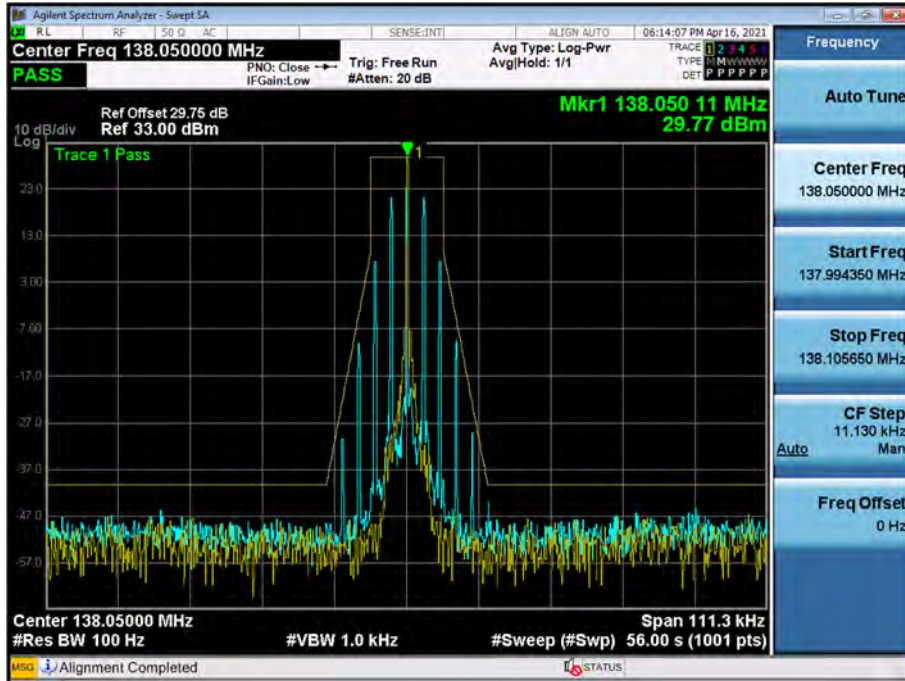
(162.05 MHz)_High



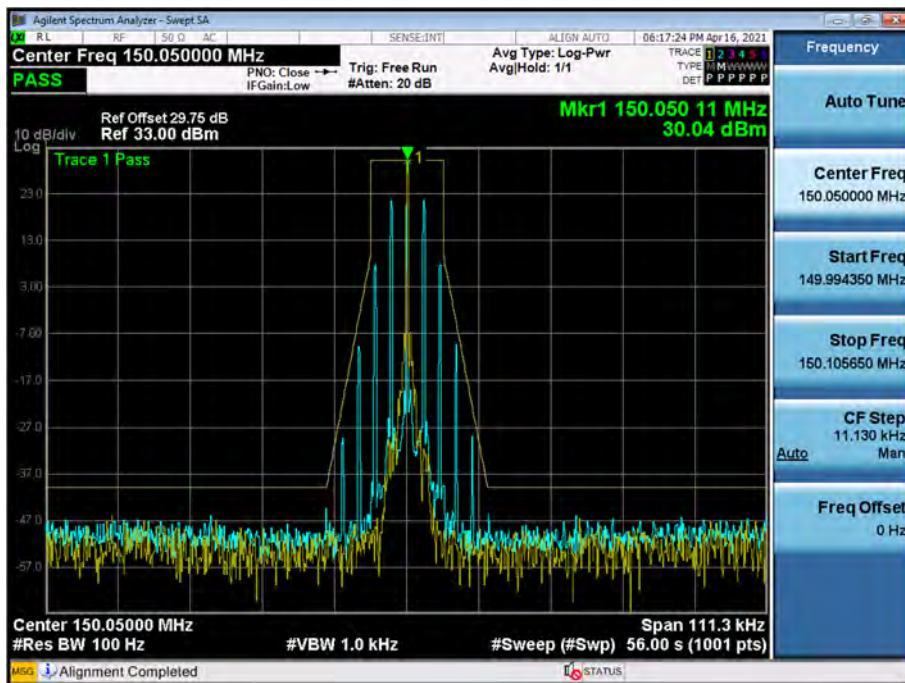
(173.95 MHz)_High



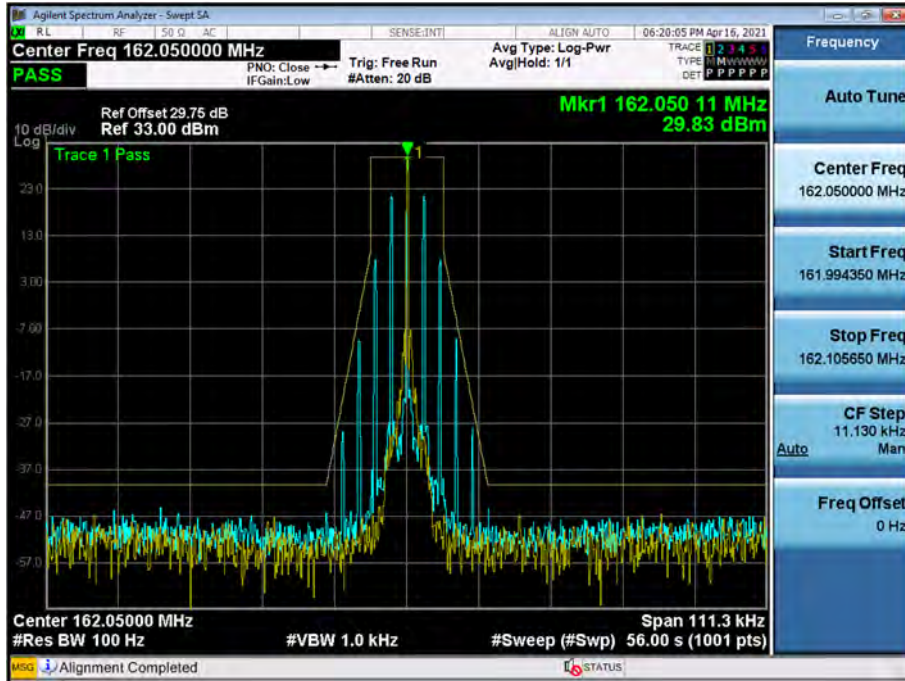
(138.05 MHz)_Low



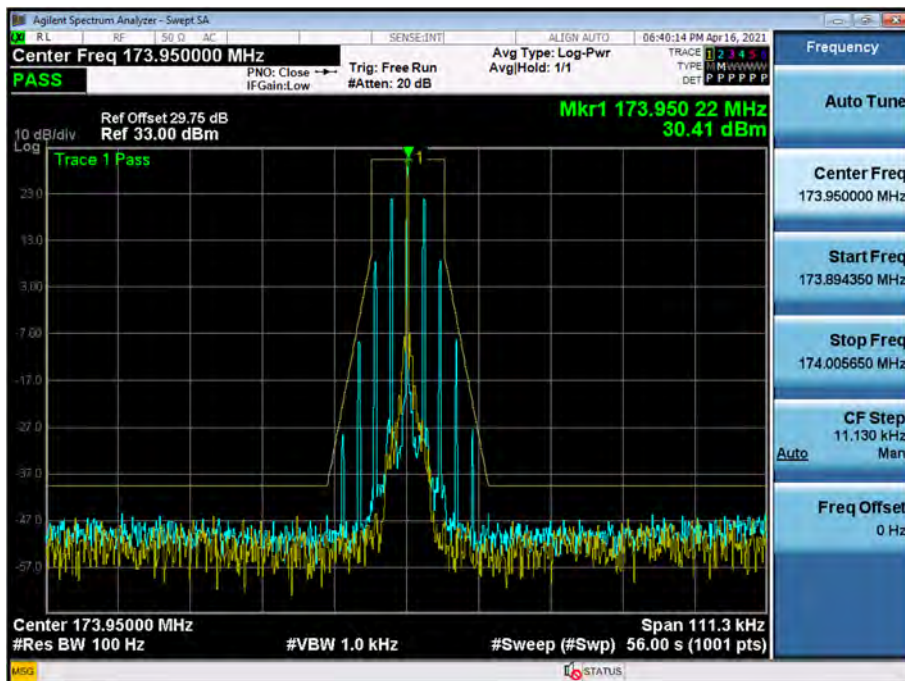
(150.05 MHz)_Low



(162.05 MHz)_ Low

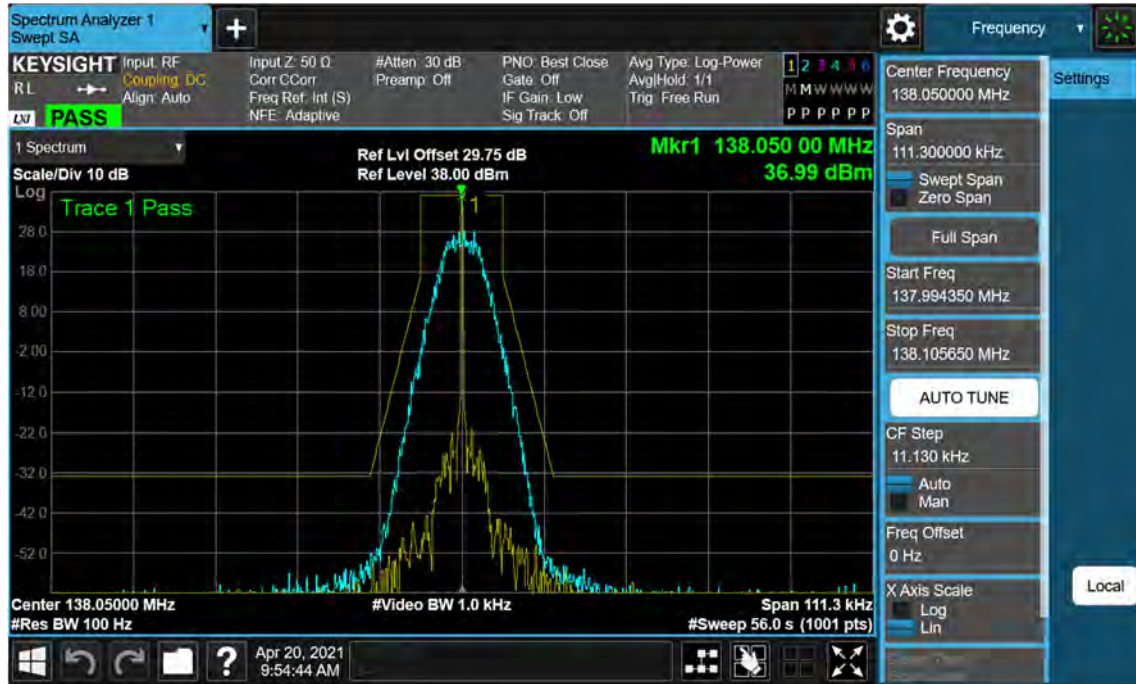


(173.95 MHz)_ Low

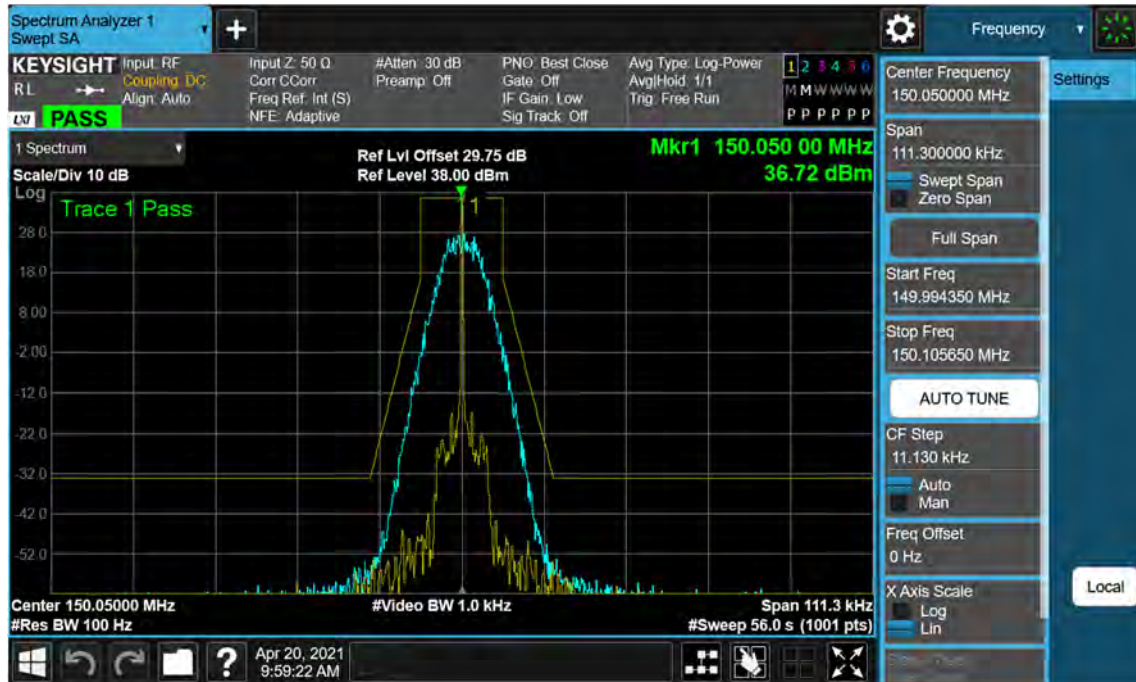


8K30F1E, 8K30F1D, 8K30F7W_FCC/ISED

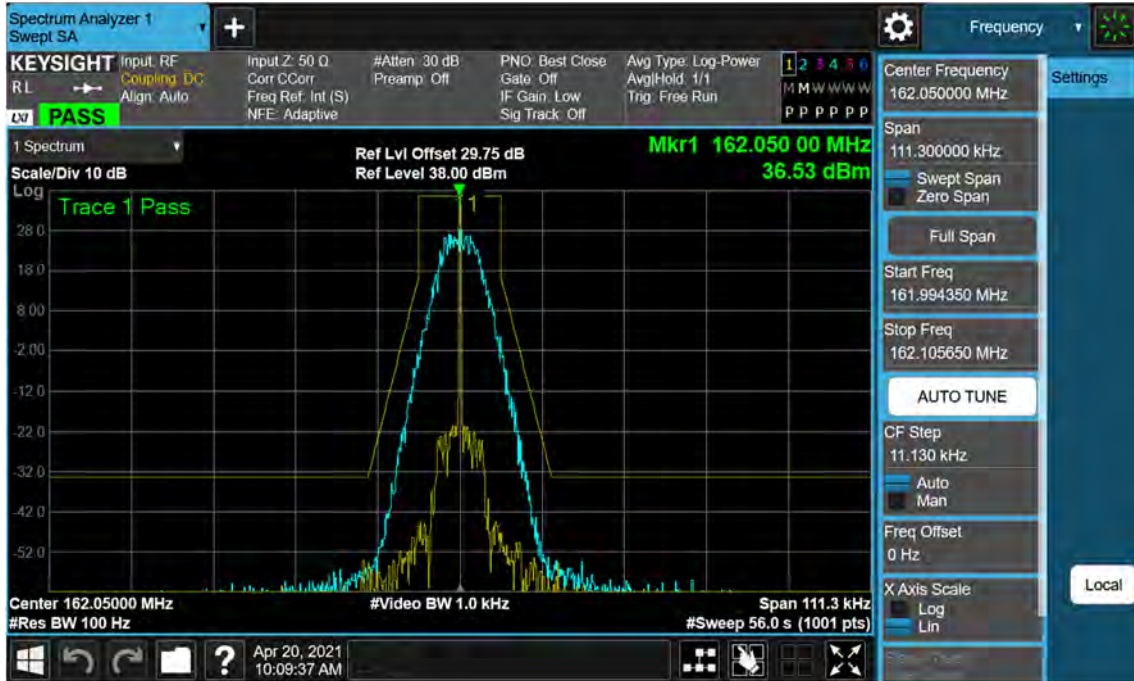
(138.05 MHz)_High



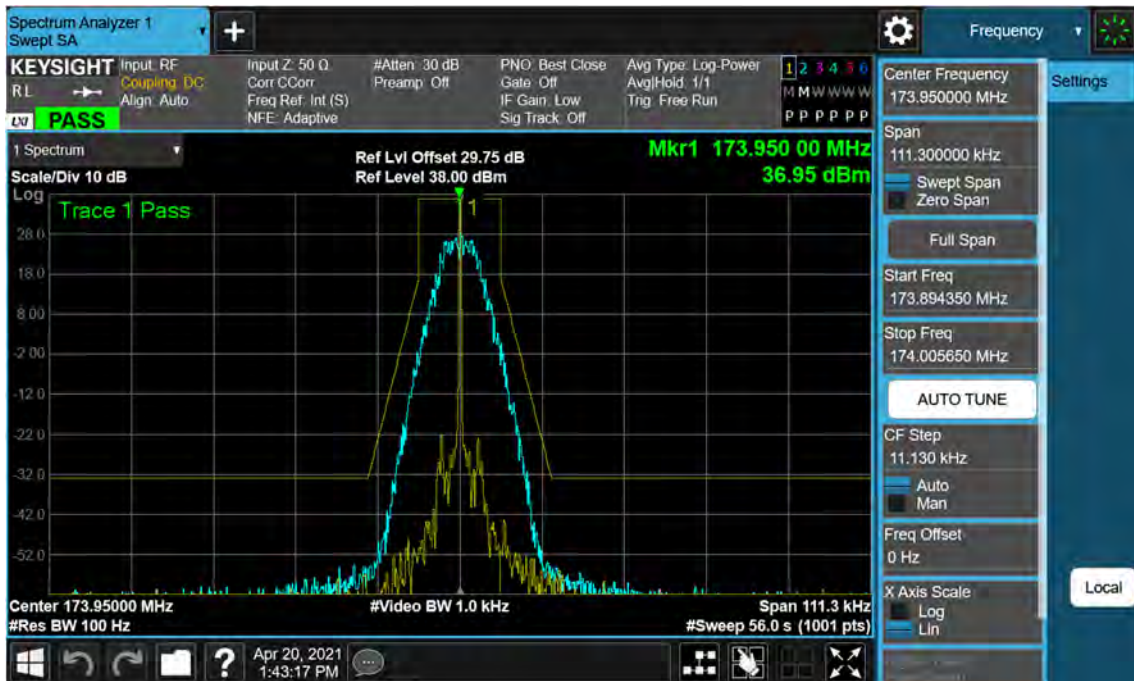
(150.05 MHz)_High



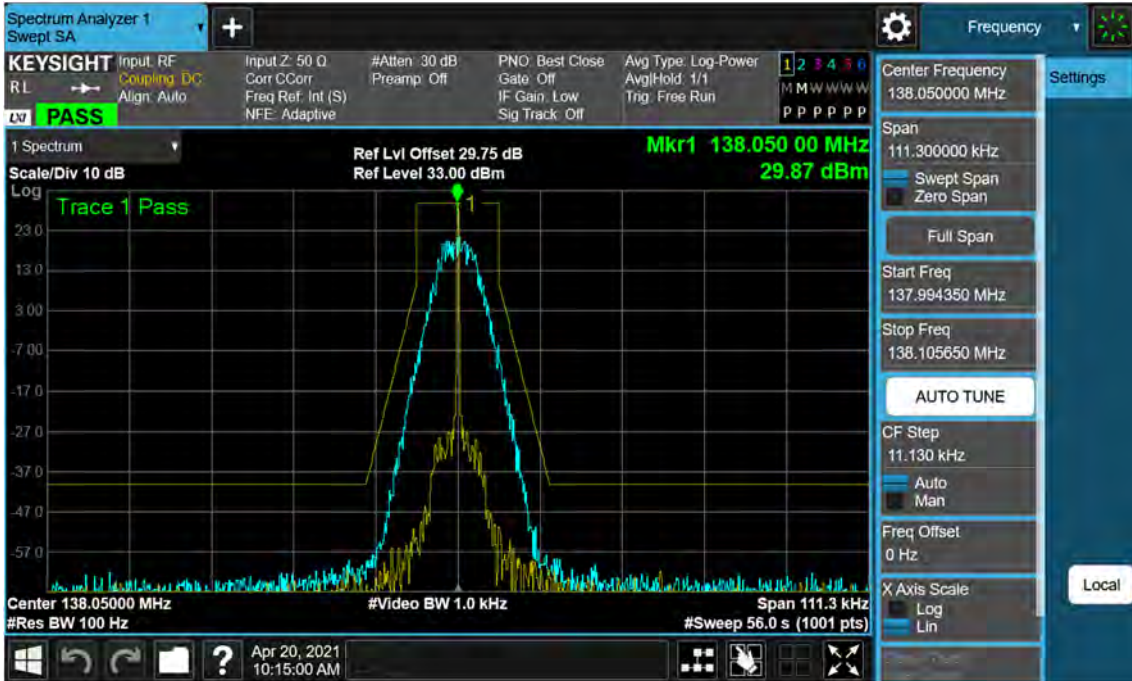
(162.05 MHz)_High



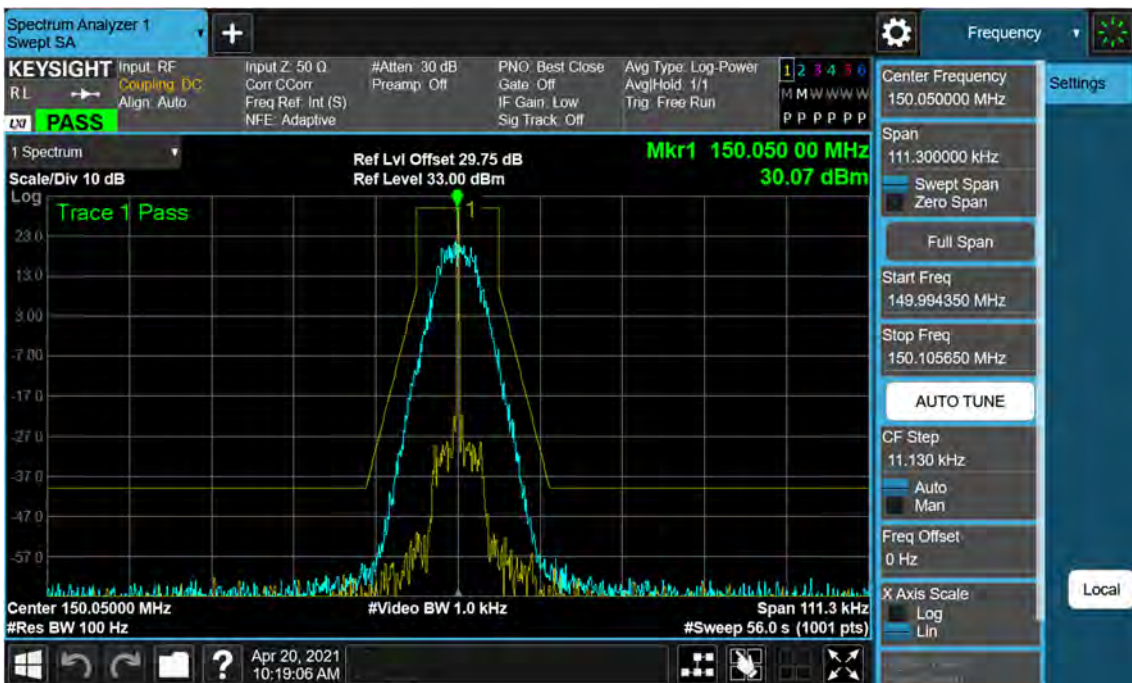
(173.95 MHz)_High



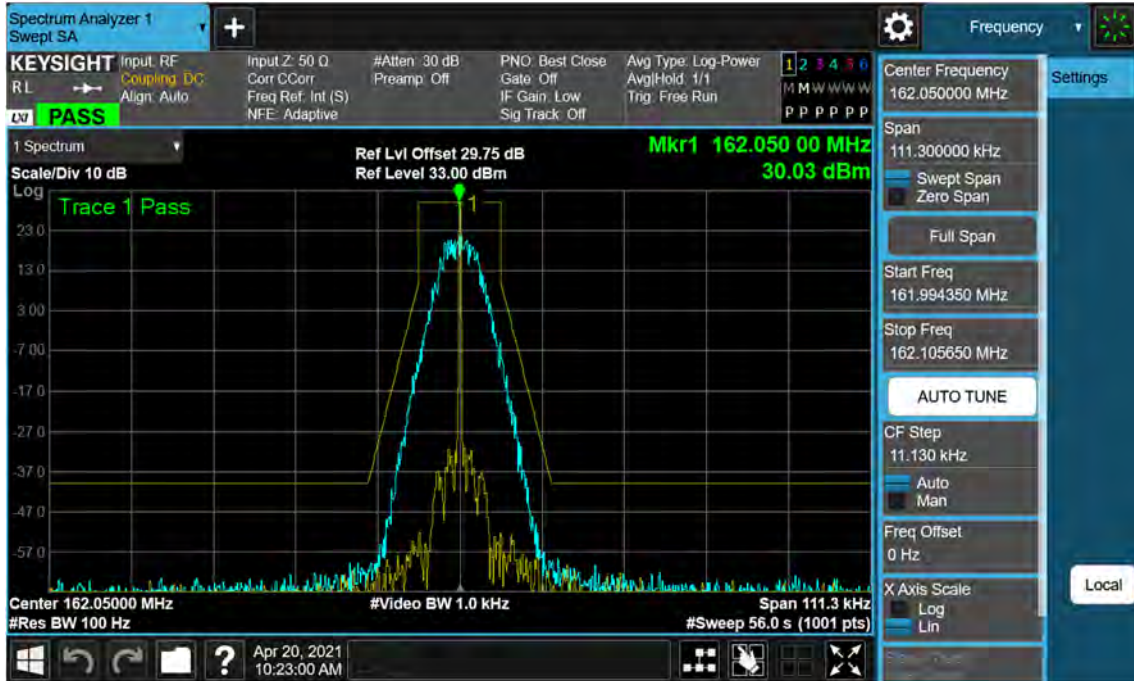
(138.05 MHz)_Low



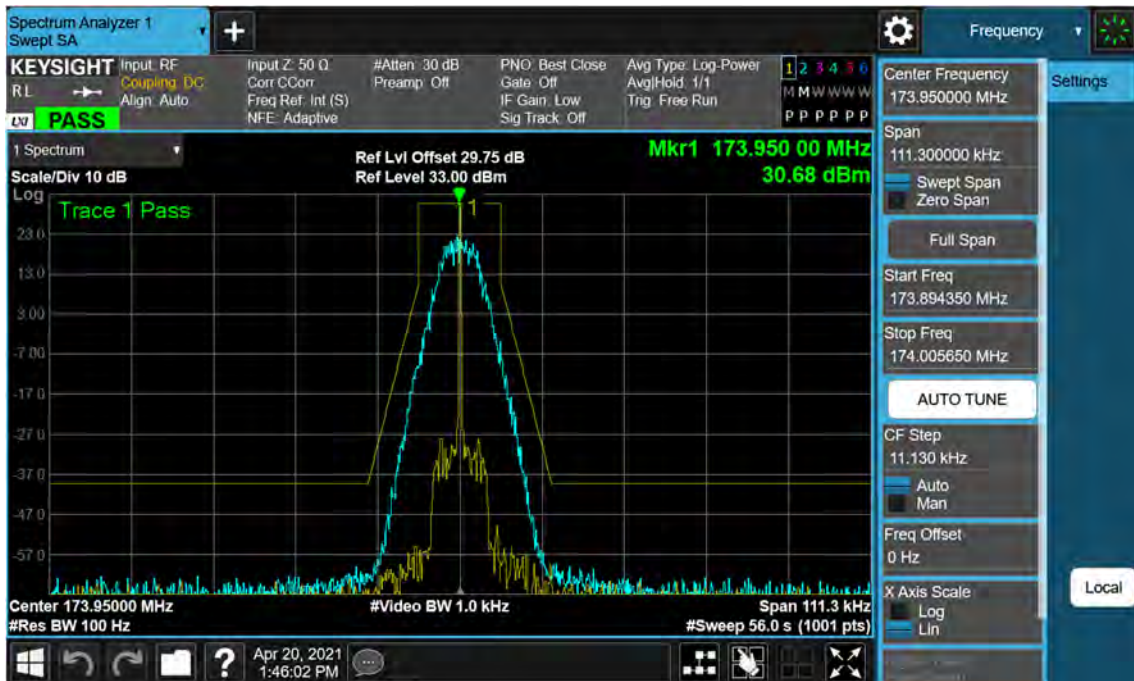
(150.05 MHz)_Low



(162.05 MHz)_ Low

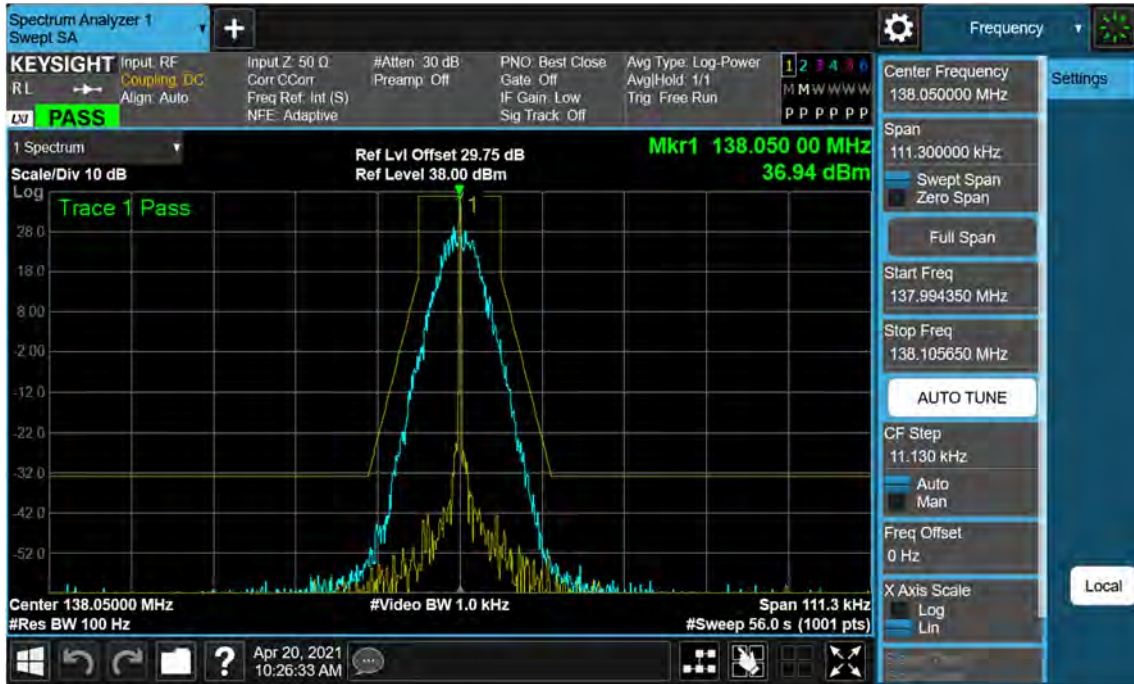


(173.95 MHz)_ Low

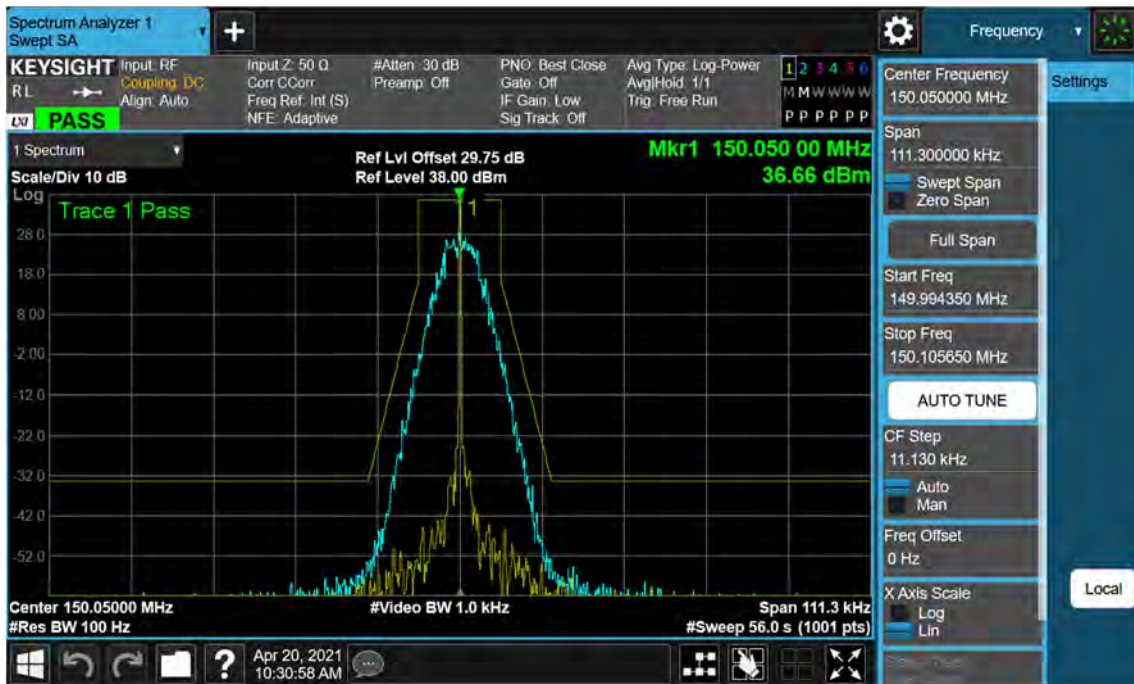


7K60FXD, 7K60FXE_FCC/ISED

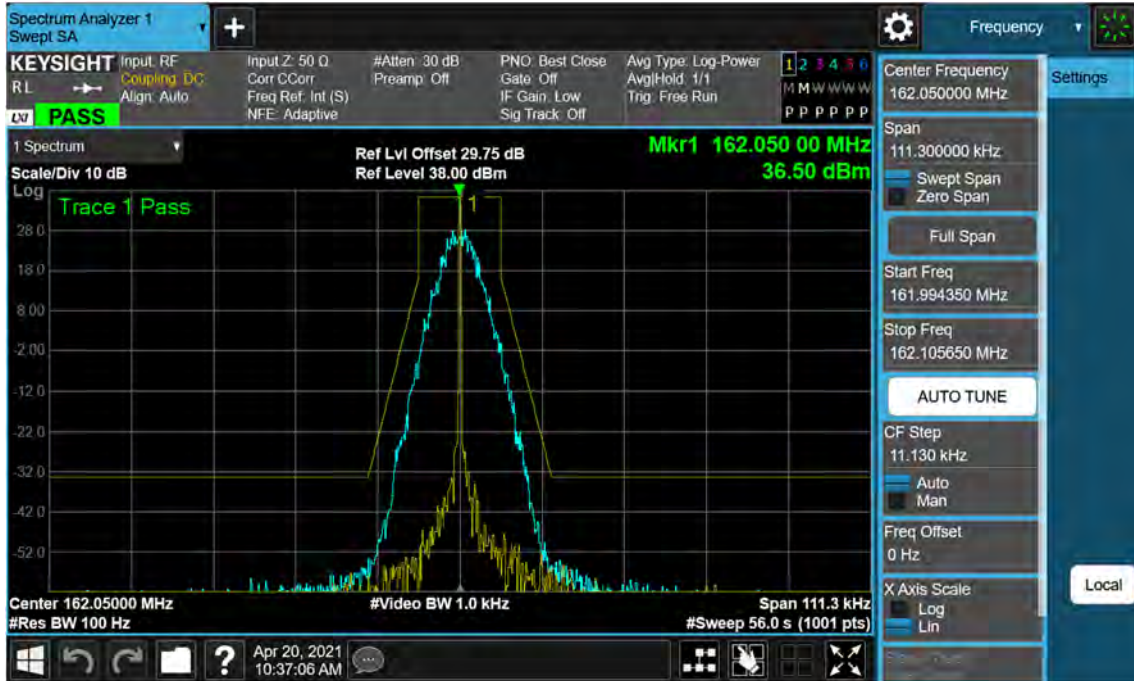
(138.05 MHz)_High



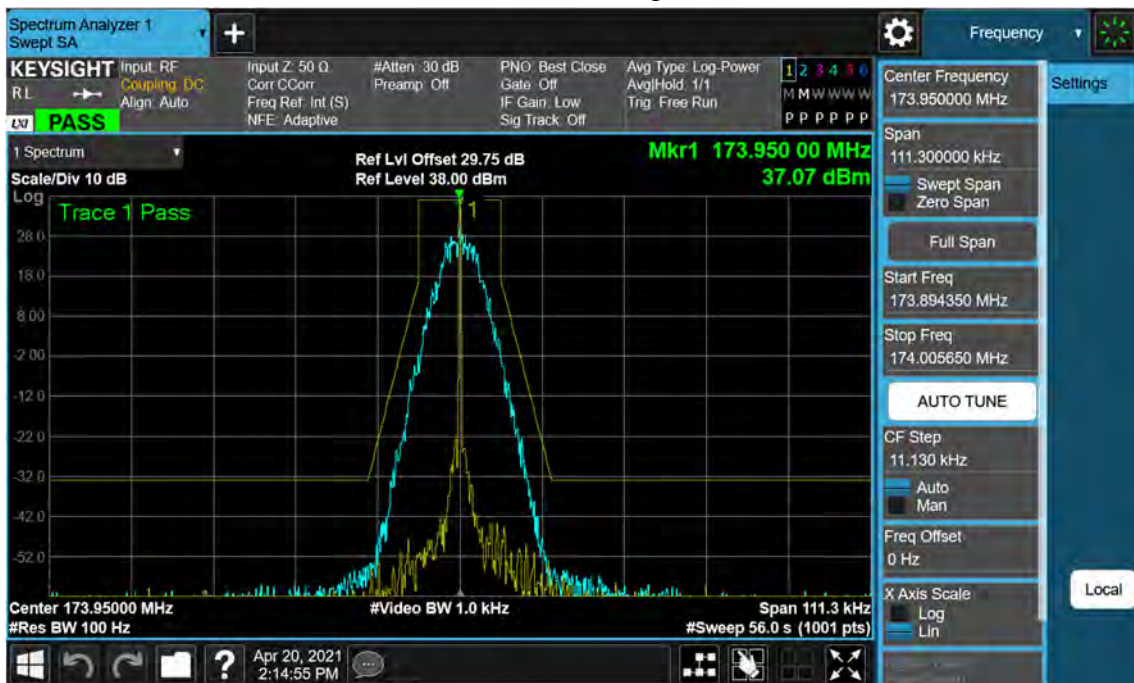
(150.05 MHz)_High



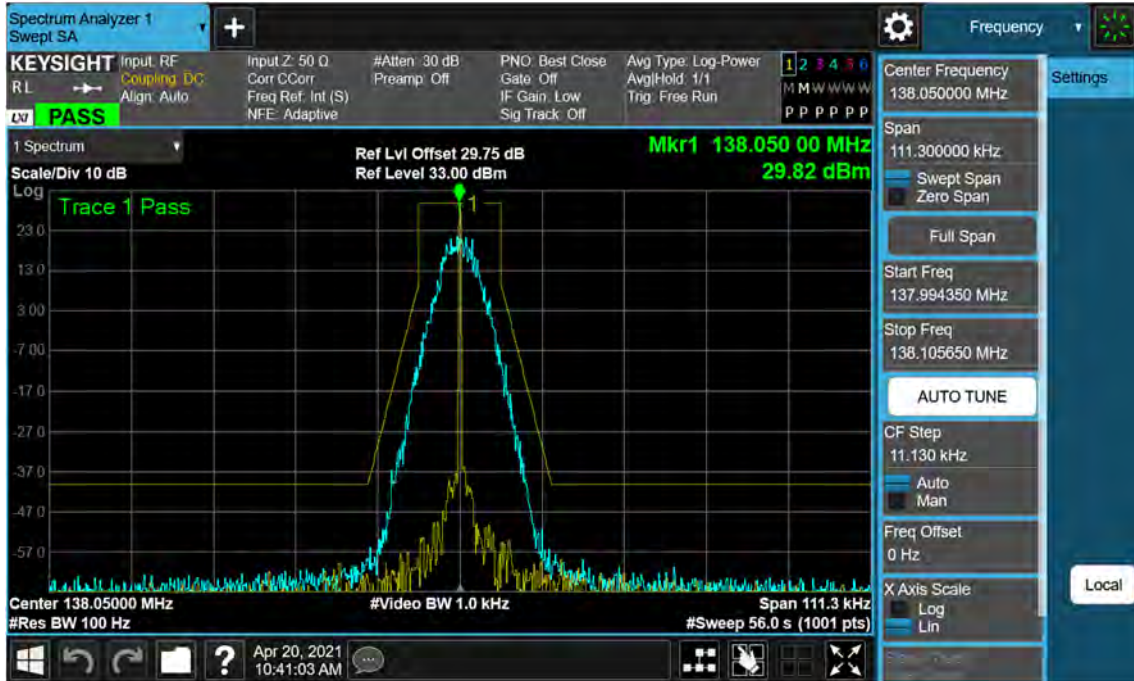
(162.05 MHz)_High



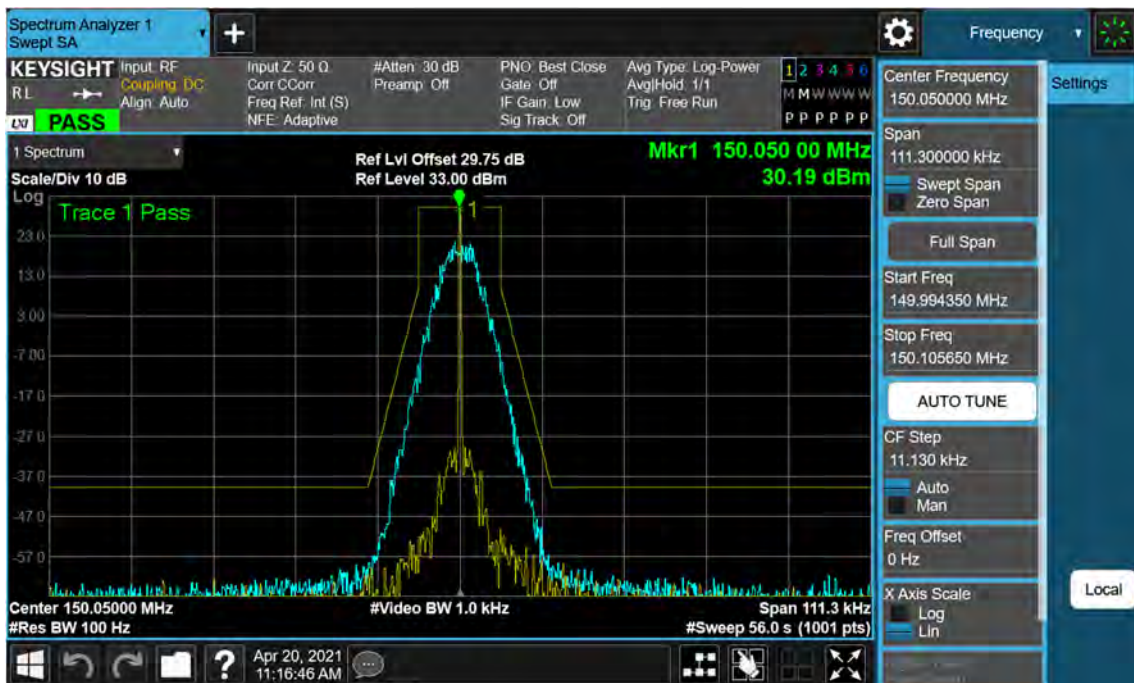
(173.95 MHz)_High



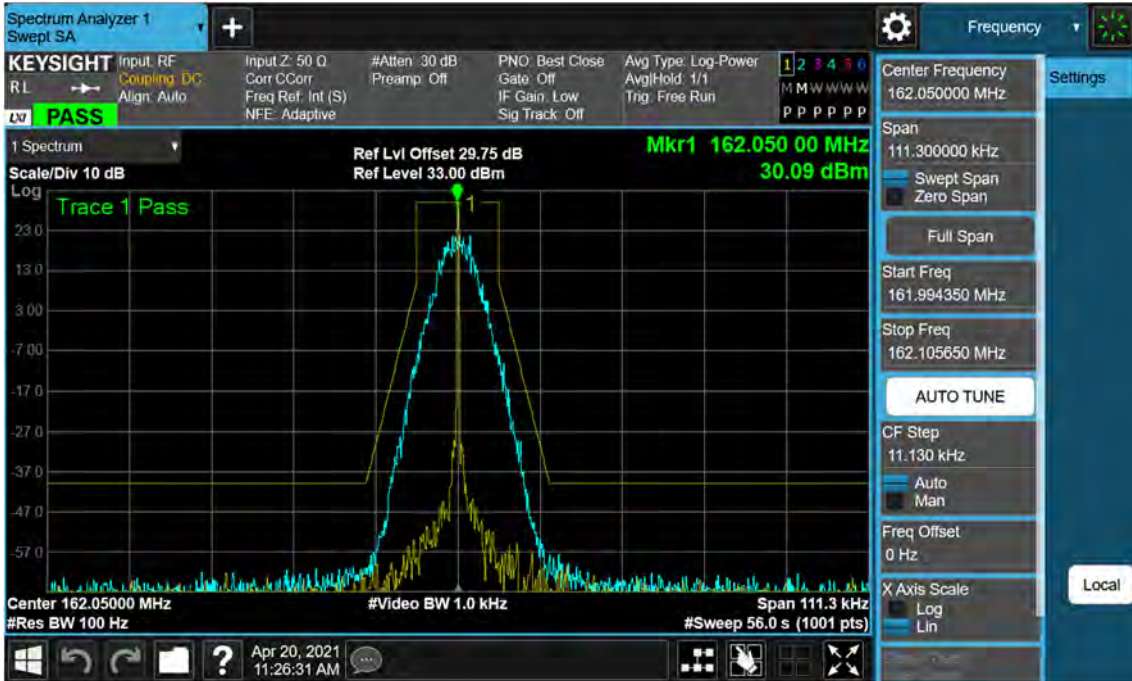
(138.05 MHz)_Low



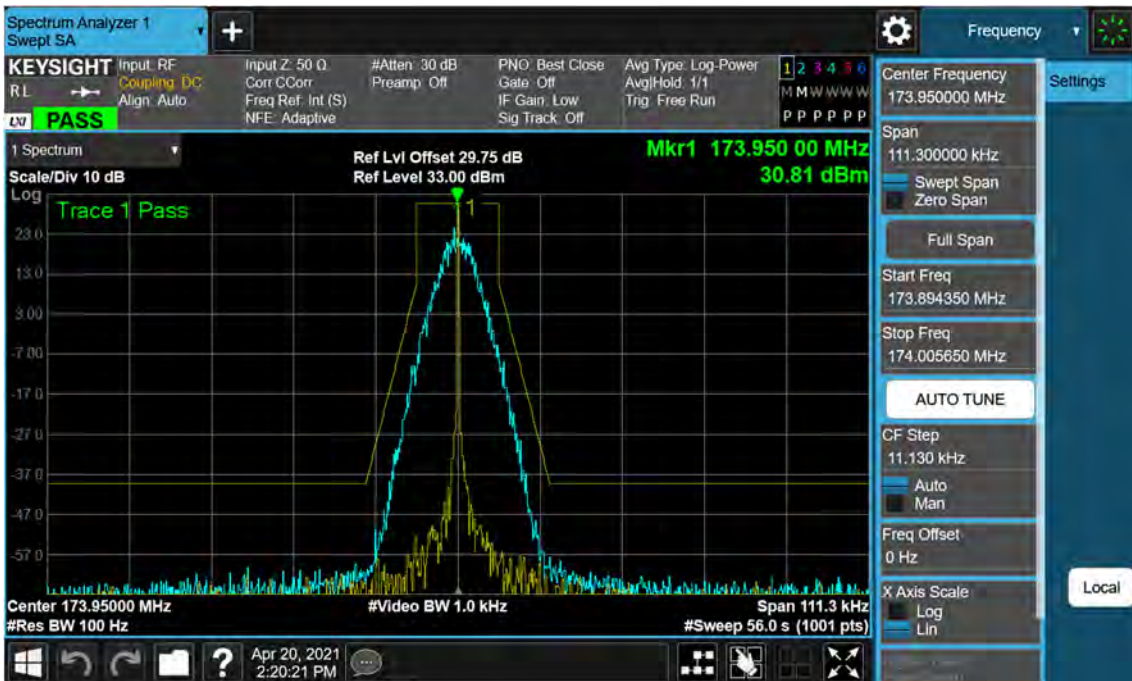
(150.05 MHz)_Low



(162.05 MHz)_ Low

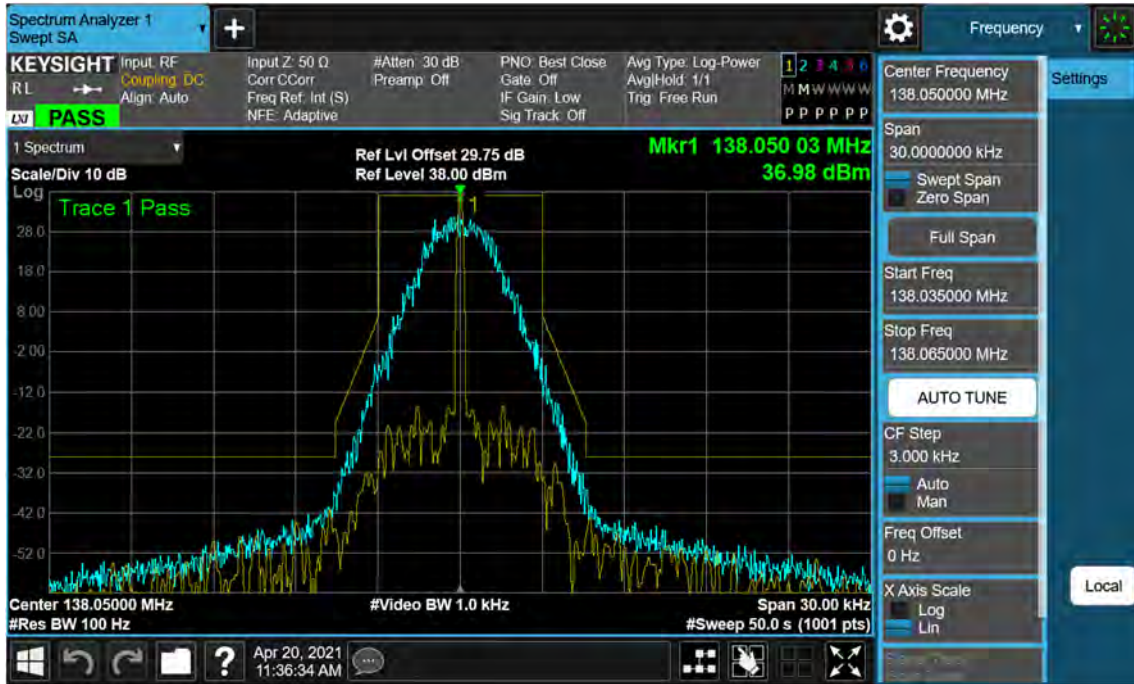


(173.95 MHz)_ Low

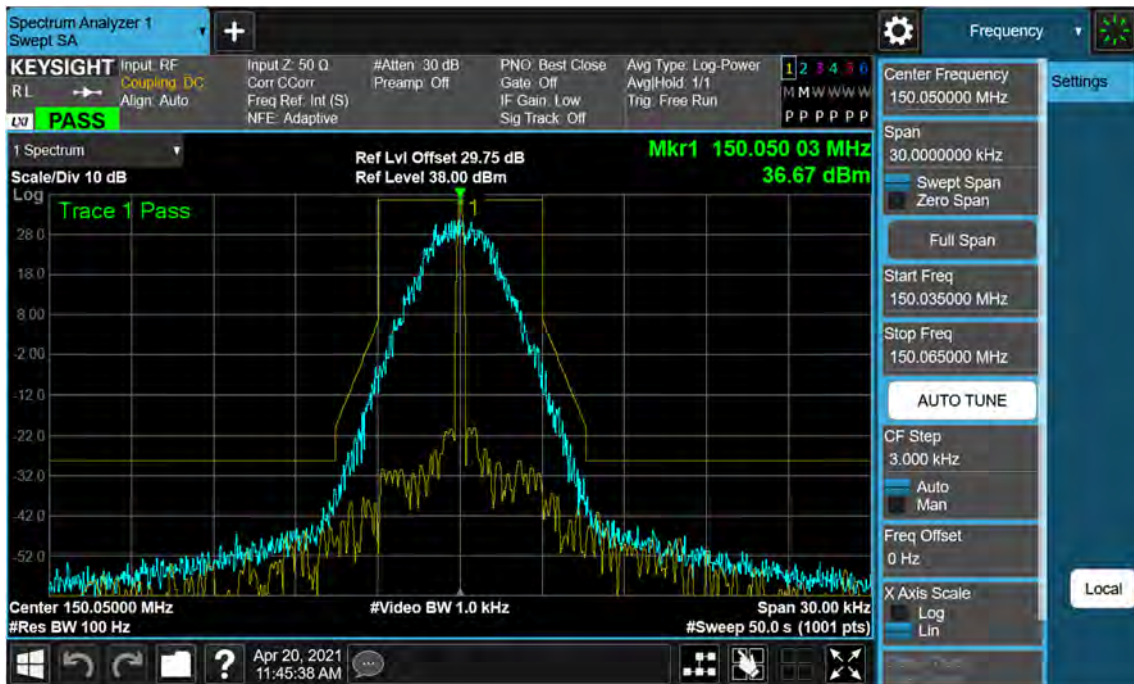


4K00F1E, 4K00F1D, 4K00F7W_FCC/ISED

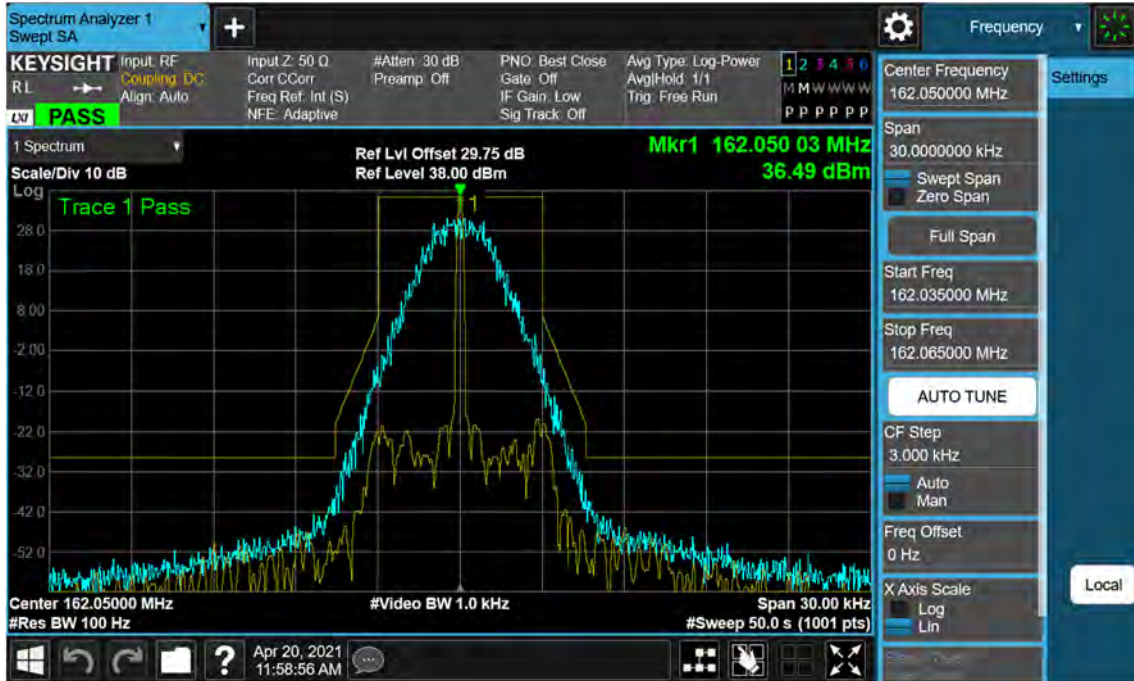
(138.05 MHz)_High



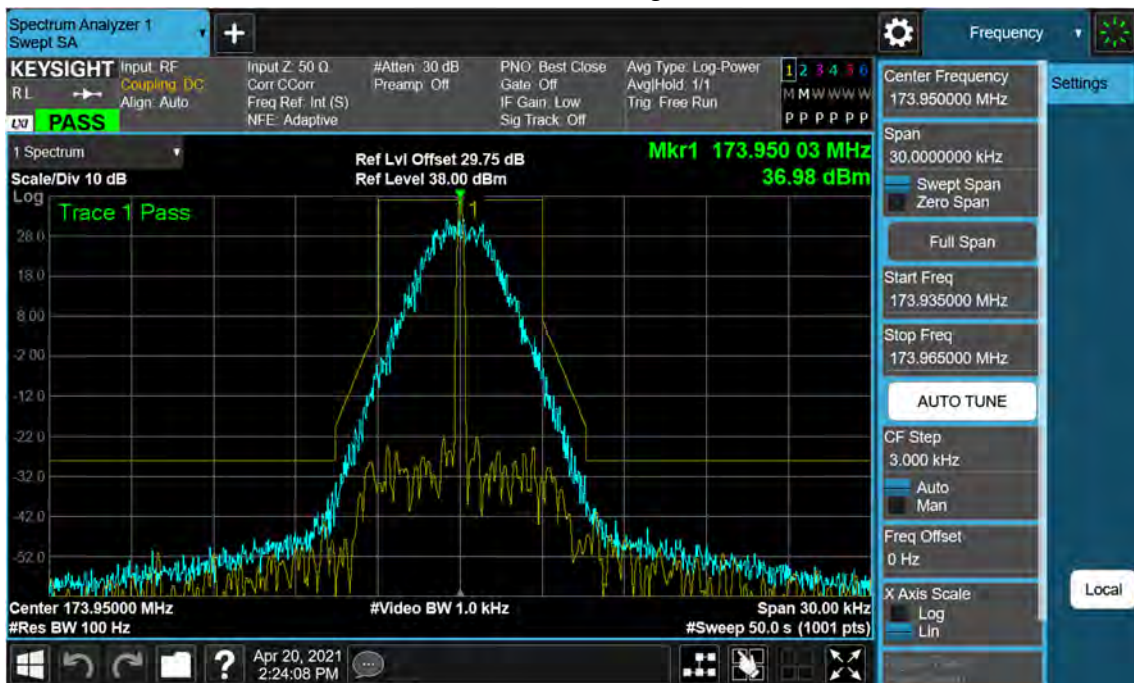
(150.05 MHz)_High



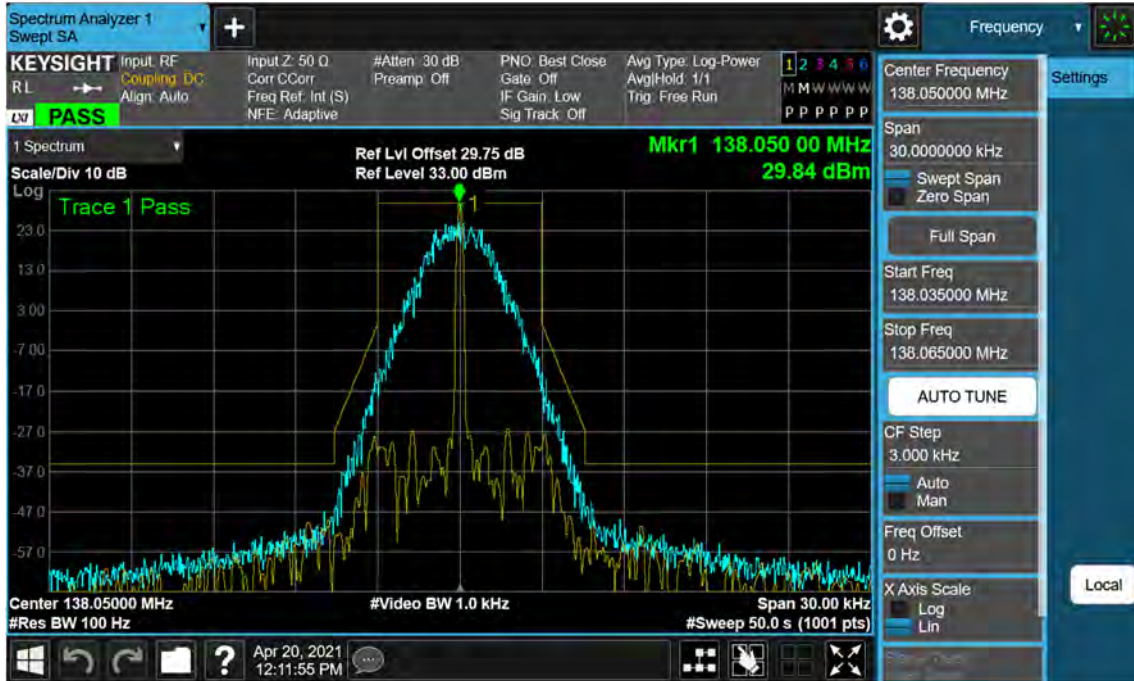
(162.05 MHz)_High



(173.95 MHz)_High



(138.05 MHz)_Low



(150.05 MHz)_Low

