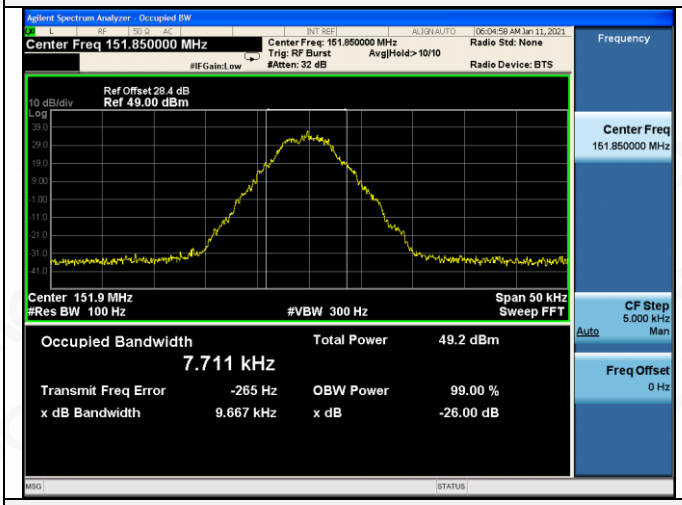
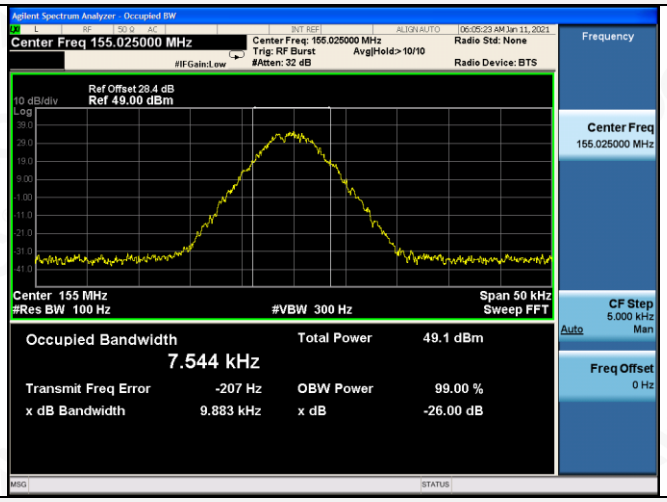
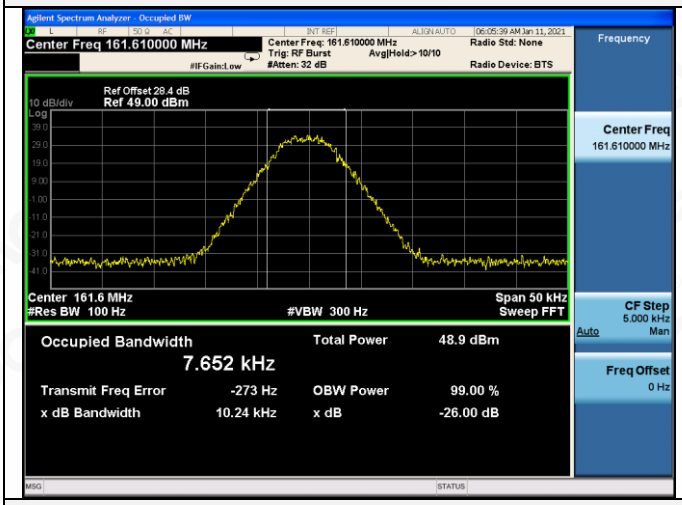
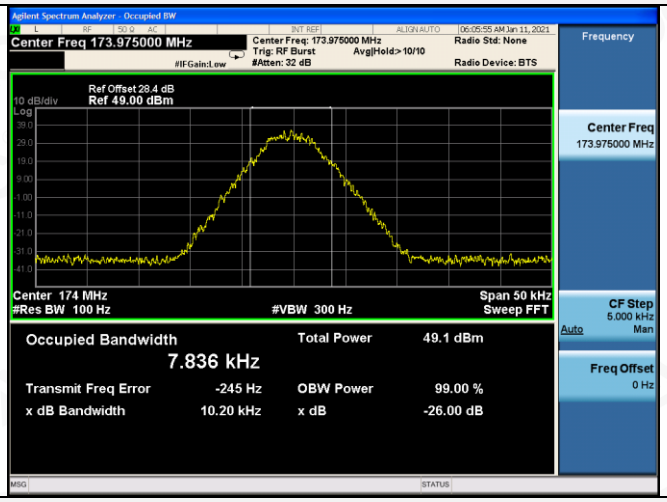
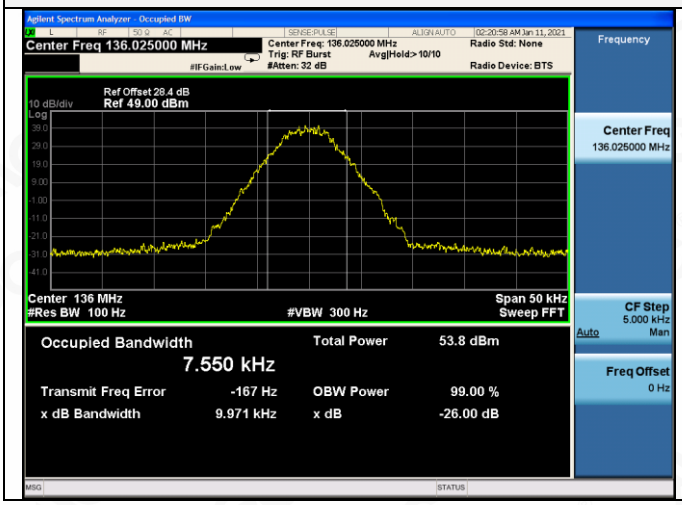
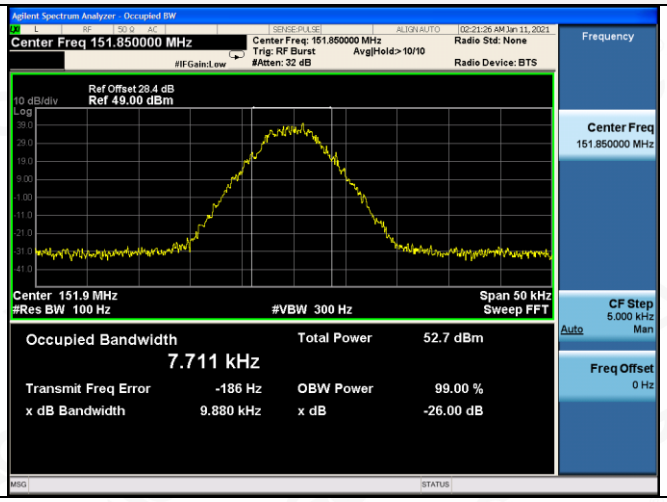
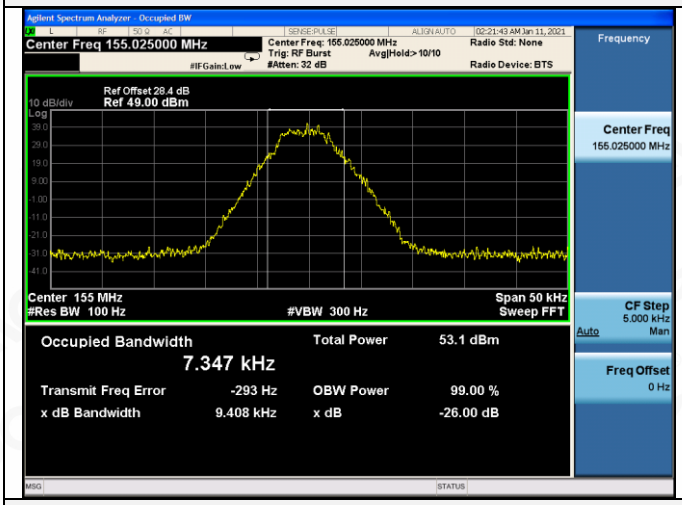
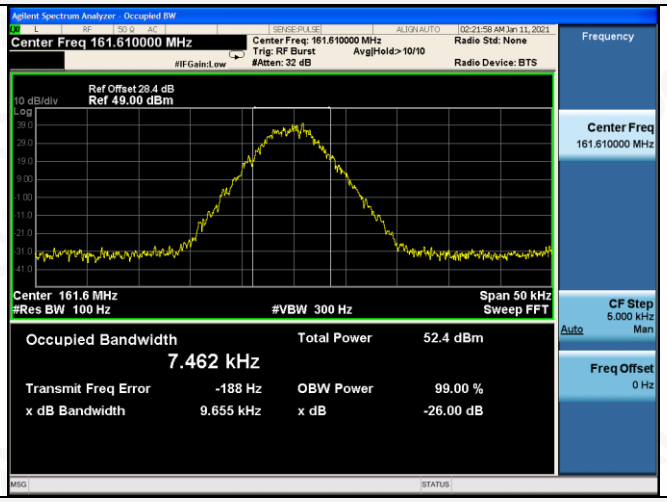
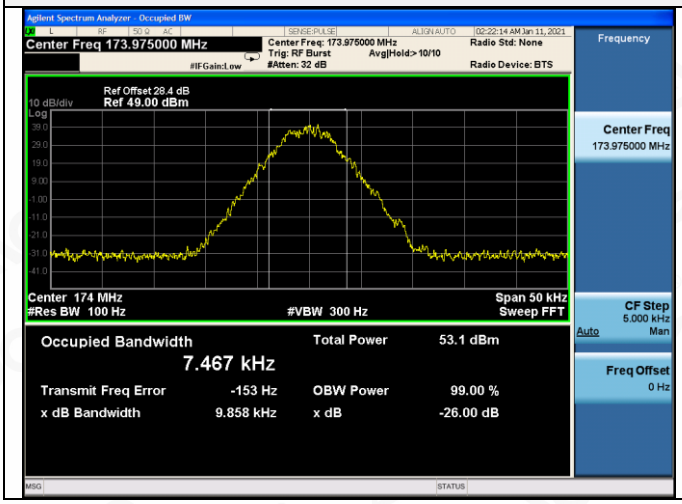
12.5kHz, 4FSK Modulation:151.850MHz-25W	12.5kHz, 4FSK Modulation:155.025MHz-25W
	
12.5kHz, 4FSK Modulation:161.610MHz-25W	12.5kHz, 4FSK Modulation:173.975MHz-25W
	
12.5kHz, 4FSK Modulation:136.250MHz-55W	12.5kHz, 4FSK Modulation:151.850MHz-55W
	

12.5kHz, 4FSK Modulation:155.025MHz-55W	12.5kHz, 4FSK Modulation:161.610MHz-55W
	
12.5kHz, 4FSK Modulation:173.975MHz-55W	
	

8. SPURIOUS RATIATED EMISSION

8.1 PROVISIONS APPLICABLE

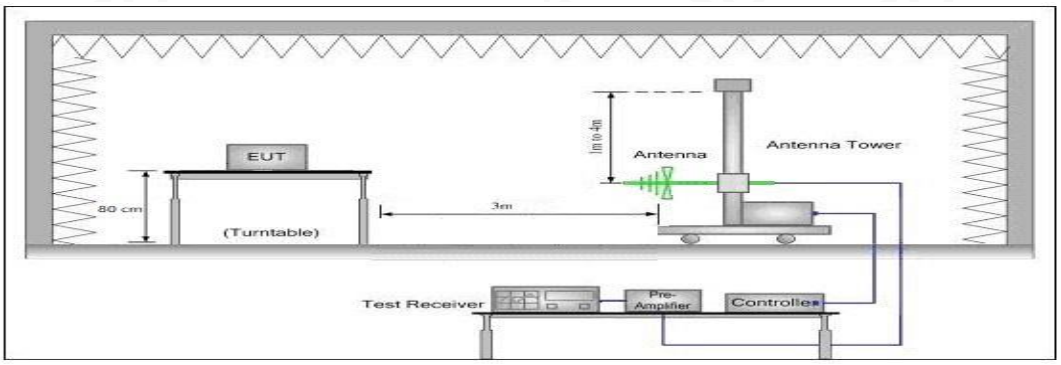
According to FCC §2.1053 §22.359 and §90.210, the power of each unwanted emission shall be less than Transmitted Power as specified below for transmitters designed to operate with each channel separation.
Emission Mask D -for 12.5 kHz Channel Separation:
(1) On any frequency removed from the center of the authorized bandwidth fo to 5.625 kHz removed from fo: Zero dB.
(2) On any frequency removed from the center of the authorized bandwidth by a displacement Frequency (fd in kHz) fo of more than 5.625 kHz but no more than 12.5 kHz: At least 7.27(fd-2.88 kHz) dB
(3) On any frequency removed from the center of the authorized bandwidth by a displacement Frequency (fd in kHz)fo of more than 12.5 kHz: At least 50+10 log(P) dB or 70 dB, whichever is lesser attenuation.
According to FCC §22.359:
(a) *Out of band emissions.* The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

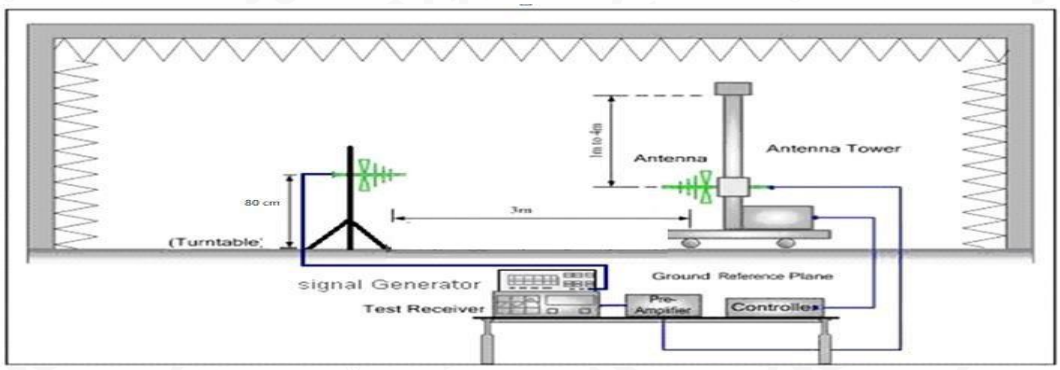
8.2 MEASUREMENT PROCEDURE

(1) On a test site, the EUT shall be placed on a turntable, and in the position closest to the normal use as declared by the user.
(2) The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.
(3) The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
(4) The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
(5) The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.
(6) The transmitter shall than be rotated through 360°in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
(7) The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.
(8) The maximum signal level detected by the measuring receiver shall be noted.
(9) The measurement shall be repeated with the test antenna set to horizontal polarization.
(10) Replace the antenna with a proper Antenna (substitution antenna).
(11) The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.
(12) The substitution antenna shall be connected to a calibrated signal generator.
(13) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
(14) The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
(15) The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
(16) The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
(17) The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

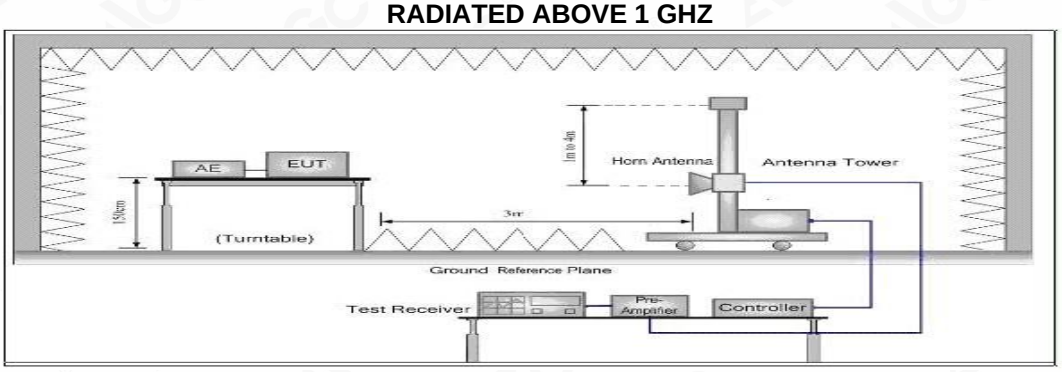
8.3 MEASUREMENT SETUP

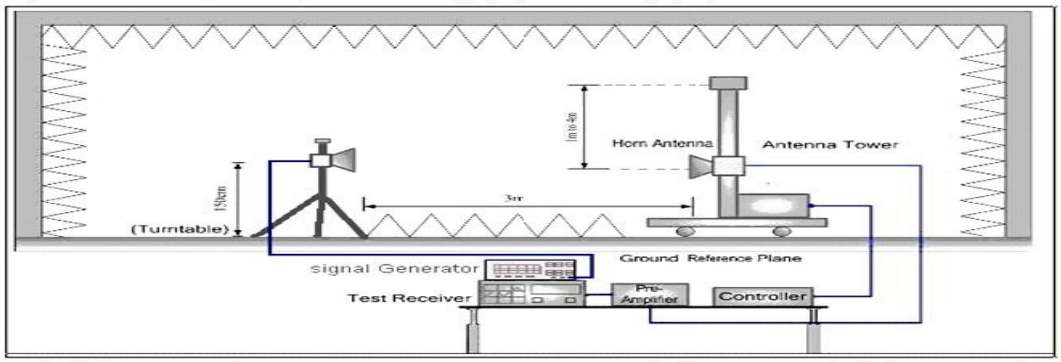
RADIATED BELOW1GHZ





RADIATED ABOVE 1 GHZ





8.4 MEASUREMENT RESULTS

The RF output of the EUT was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz for below 1GHz, and 1MHz for above 1GHz. Sufficient scans were taken to show any out of band emissions up to 10 harmonic.

In the semi-anechoic chamber, setup as illustrated above the DUT placed on the 0.8m height of Turn Table, rotated the table 45 degree each interval to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power for each degree interval. The “Read Value” is the spectrum reading of maximum power value.

The substitution antenna is substituted for DUT at the same position and signals generator (S.G) export the CW signal to the substitution antenna via a TX cable. The receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum radiation power. Record the power level of maximum radiation power from spectrum. So, the Measured substitution value = Ref level of S.G + TX cables loss – Substituted Antenna Gain.

EIRP = “Read Value” + Measured substitution value + 2.15.

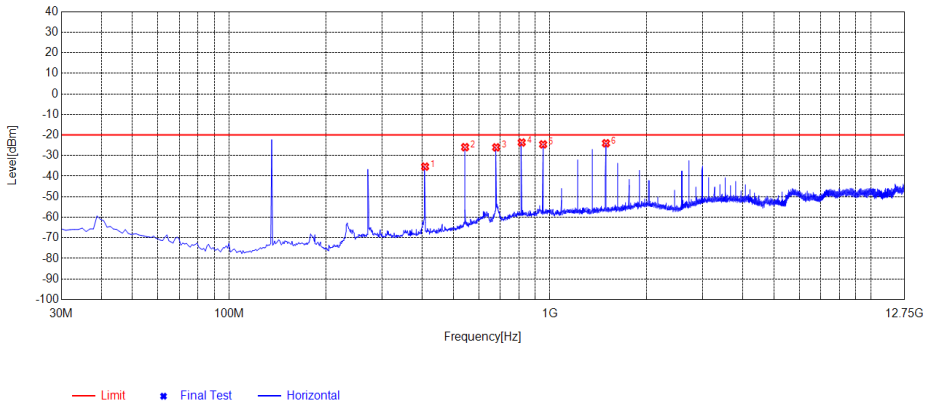
Test limit calculation:

Preliminary calculation	Final Result
At least 50+10 log (P) =50+10log (5) =56.99 (dB)	Limit=P- Preliminary calculation=36.99-56.99=-20 dBm
At least 50+10 log (P) =50+10log (25) =63.98 (dB)	Limit=P- Preliminary calculation=43.98-63.98=-20 dBm
At least 50+10 log (P) =50+10log (55) =67.40 (dB)	Limit=P- Preliminary calculation=47.40-67.40=-20 dBm
At least 43+10 log (P) =43+10log (5) =49.99 (dB)	Limit=P- Preliminary calculation=36.99-49.99=-13 dBm
At least 43+10 log (P) =43+10log (25) =56.98 (dB)	Limit=P- Preliminary calculation=43.98-56.98=-13 dBm
At least 43+10 log (P) =43+10log (55) =60.40 (dB)	Limit=P- Preliminary calculation=47.40-60.40=-13 dBm

Note：

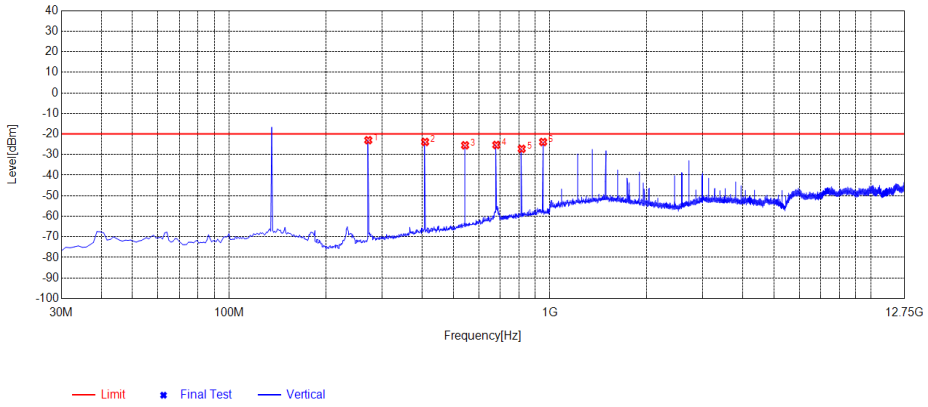
1. In this case, Part 22 (-13 dBm) is less than the limit of Part 90 (-20 dBm), so we do not need to test Part 22, which meets the spurious limits of PART 90+22.
2. The spurious emissions only reflect the highest power level analog modulation as the worst data, which is recorded in the report.

Test Mode:	Freq. 136.025MHz-55W- Analog	Polarity:	Horizontal



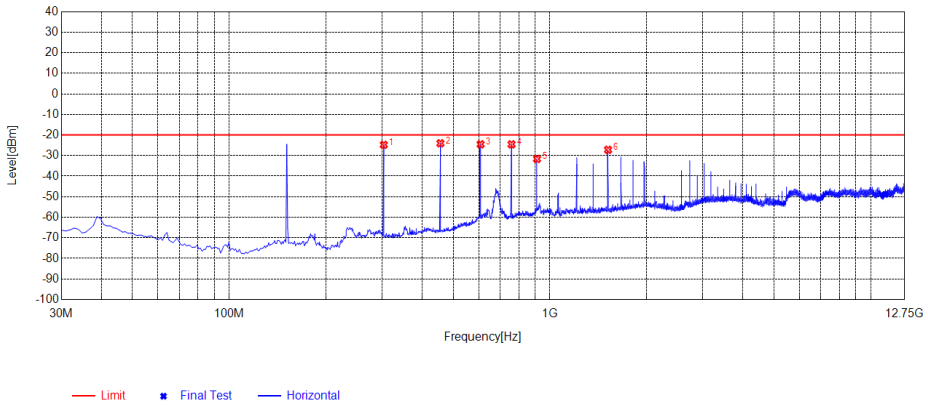
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	408.3000	-69.96	-35.38	-20.00	15.38	34.58	272	Horizontal
2	544.1000	-63.80	-25.92	-20.00	5.92	37.88	122	Horizontal
3	679.9000	-66.09	-26.02	-20.00	6.02	40.07	46	Horizontal
4	816.6700	-66.99	-23.65	-20.00	3.65	43.34	328	Horizontal
5	952.4700	-68.64	-24.56	-20.00	4.56	44.08	206	Horizontal
6	1495.8996	-20.80	-24.02	-20.00	4.02	-3.22	65	Horizontal

Test Mode:	Freq. 136.025MHz-55W- Analog	Polarity:	Vertical



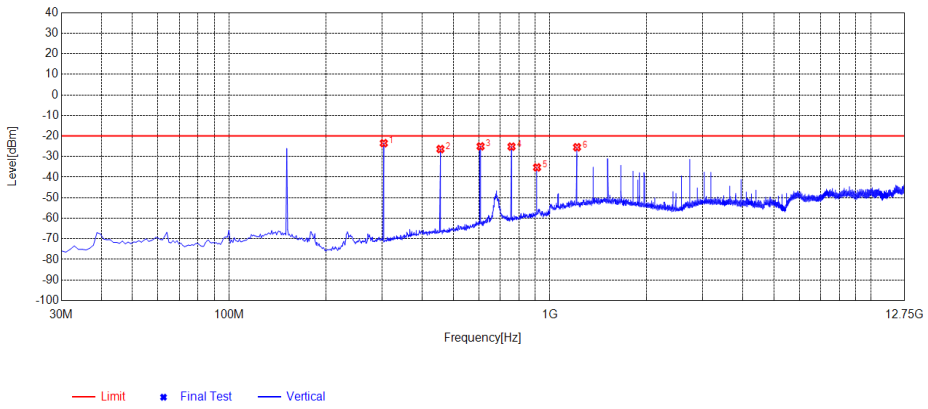
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	271.5300	-53.18	-23.00	-20.00	3.00	30.18	294	Vertical
2	408.3000	-58.97	-23.86	-20.00	3.86	35.11	60	Vertical
3	544.1000	-62.90	-25.49	-20.00	5.49	37.41	144	Vertical
4	680.8700	-65.45	-25.32	-20.00	5.32	40.13	98	Vertical
5	816.6700	-69.75	-27.22	-20.00	7.22	42.53	313	Vertical
6	952.4700	-67.73	-23.88	-20.00	3.88	43.85	182	Vertical

Test Mode:	Freq. 151.850MHz-55W- Analog	Polarity:	Horizontal



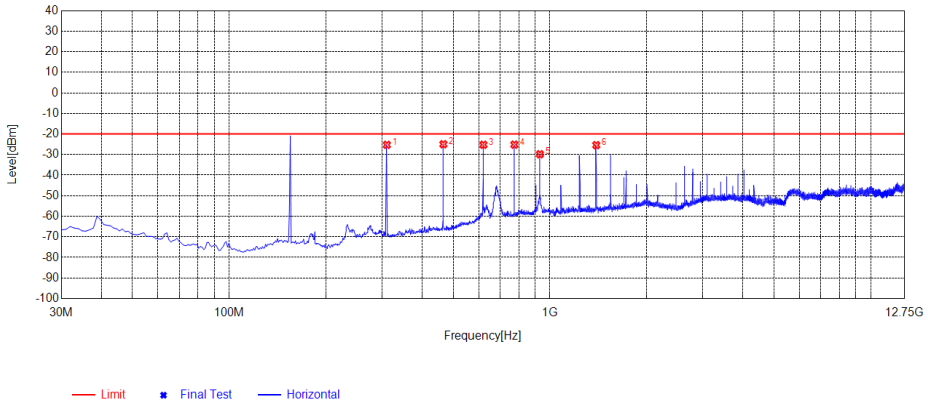
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	303.5400	-56.82	-24.77	-20.00	4.77	32.05	186	Horizontal
2	455.8300	-59.52	-24.03	-20.00	4.03	35.49	360	Horizontal
3	608.1200	-64.39	-24.52	-20.00	4.52	39.87	37	Horizontal
4	759.4400	-66.61	-24.53	-20.00	4.53	42.08	215	Horizontal
5	911.7300	-74.83	-31.64	-20.00	11.64	43.19	206	Horizontal
6	1518.2268	-24.13	-27.20	-20.00	7.20	-3.07	56	Horizontal

Test Mode:	Freq. 151.850MHz-55W- Analog	Polarity:	Vertical



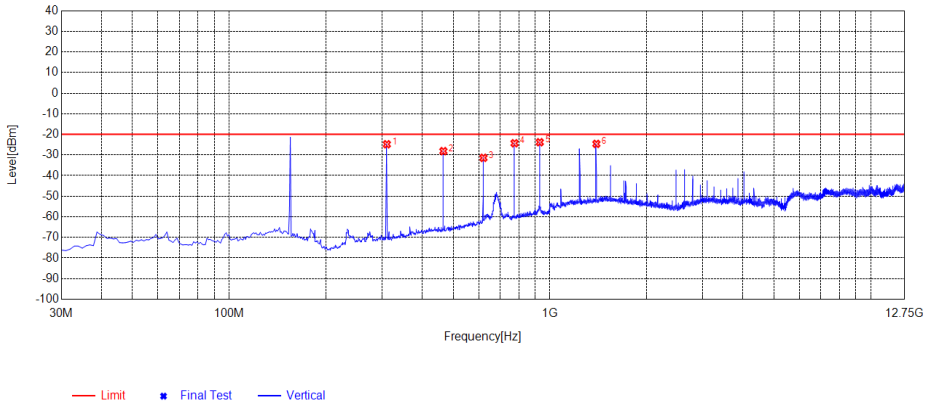
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	303.5400	-54.56	-23.49	-20.00	3.49	31.07	42	Vertical
2	455.8300	-62.13	-26.36	-20.00	6.36	35.77	14	Vertical
3	608.1200	-63.89	-25.04	-20.00	5.04	38.85	286	Vertical
4	759.4400	-66.77	-25.17	-20.00	5.17	41.60	42	Vertical
5	911.7300	-78.70	-35.27	-20.00	15.27	43.43	314	Vertical
6	1215.0465	-25.74	-25.47	-20.00	5.47	0.27	333	Vertical

Test Mode:	Freq. 155.025MHz-55W- Analog	Polarity:	Horizontal



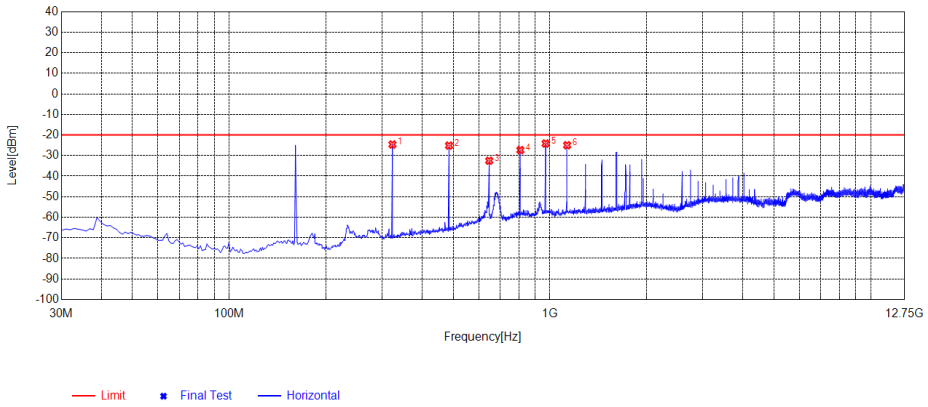
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	310.3300	-57.48	-25.27	-20.00	5.27	32.21	186	Horizontal
2	465.5300	-60.65	-24.98	-20.00	4.98	35.67	318	Horizontal
3	620.7300	-65.14	-25.23	-20.00	5.23	39.91	35	Horizontal
4	774.9600	-67.75	-25.16	-20.00	5.16	42.59	205	Horizontal
5	931.1300	-73.45	-29.83	-20.00	9.83	43.62	205	Horizontal
6	1394.8395	-21.99	-25.42	-20.00	5.42	-3.43	64	Horizontal

Test Mode:	Freq. 155.025MHz-55W- Analog	Polarity:	Vertical



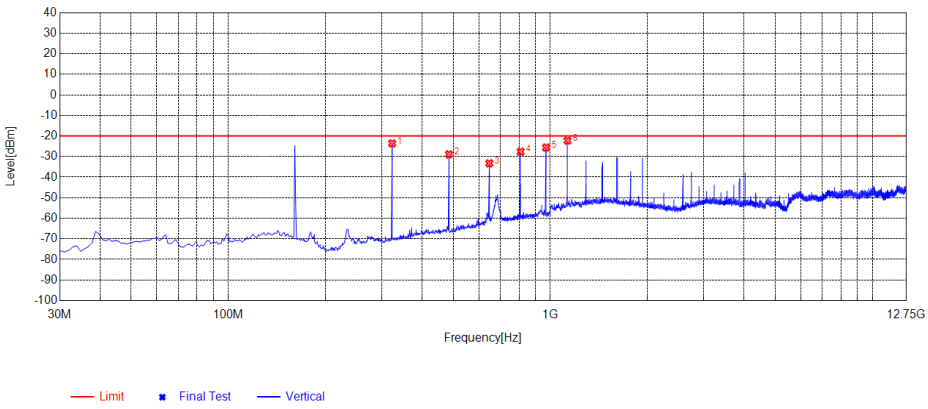
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	310.3300	-56.16	-24.81	-20.00	4.81	31.35	42	Vertical
2	465.5300	-64.06	-28.15	-20.00	8.15	35.91	14	Vertical
3	620.7300	-70.47	-31.40	-20.00	11.40	39.07	33	Vertical
4	775.9300	-66.22	-24.31	-20.00	4.31	41.91	351	Vertical
5	930.1600	-67.44	-23.82	-20.00	3.82	43.62	351	Vertical
6	1396.0146	-26.10	-24.63	-20.00	4.63	1.47	99	Vertical

Test Mode:	Freq. 161.610MHz-55W- Analog	Polarity:	Horizontal



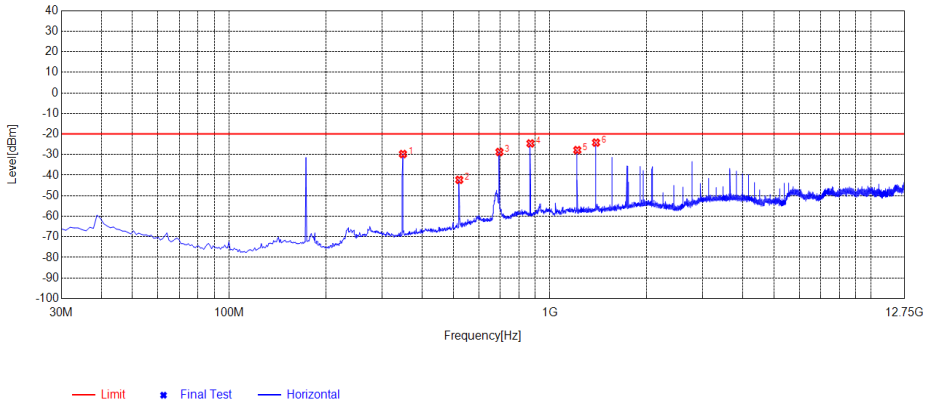
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	322.9400	-57.12	-24.60	-20.00	4.60	32.52	360	Horizontal
2	484.9300	-61.18	-25.14	-20.00	5.14	36.04	308	Horizontal
3	646.9200	-72.48	-32.50	-20.00	12.50	39.98	19	Horizontal
4	808.9100	-70.72	-27.34	-20.00	7.34	43.38	326	Horizontal
5	969.9300	-68.59	-24.13	-20.00	4.13	44.46	47	Horizontal
6	1131.6132	-20.99	-24.97	-20.00	4.97	-3.98	28	Horizontal

Test Mode:	Freq. 161.610MHz-55W- Analog	Polarity:	Vertical



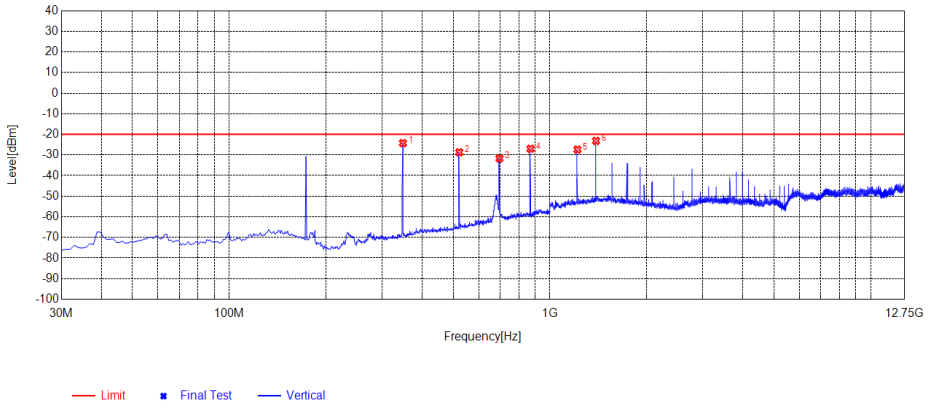
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	322.9400	-55.48	-23.62	-20.00	3.62	31.86	41	Vertical
2	484.9300	-65.09	-28.91	-20.00	8.91	36.18	0	Vertical
3	646.9200	-72.82	-33.28	-20.00	13.28	39.54	117	Vertical
4	808.9100	-70.09	-27.64	-20.00	7.64	42.45	313	Vertical
5	969.9300	-69.62	-25.60	-20.00	5.60	44.02	182	Vertical
6	1131.6132	-21.95	-22.24	-20.00	2.24	-0.29	0	Vertical

Test Mode:	Freq. 173.975MHz-55W- Analog	Polarity:	Horizontal



NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	348.1600	-62.88	-29.74	-20.00	9.74	33.14	129	Horizontal
2	521.7900	-79.39	-42.29	-20.00	22.29	37.10	73	Horizontal
3	696.3900	-68.85	-28.74	-20.00	8.74	40.11	45	Horizontal
4	870.0200	-67.66	-24.58	-20.00	4.58	43.08	324	Horizontal
5	1217.3967	-24.03	-27.83	-20.00	7.83	-3.80	26	Horizontal
6	1392.4892	-20.75	-24.19	-20.00	4.19	-3.44	63	Horizontal

Test Mode:	Freq. 173.975MHz-55W- Analog	Polarity:	Vertical



NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	348.1600	-57.13	-24.24	-20.00	4.24	32.89	41	Vertical
2	521.7900	-65.60	-28.70	-20.00	8.70	36.90	136	Vertical
3	696.3900	-72.09	-31.68	-20.00	11.68	40.41	60	Vertical
4	870.0200	-70.03	-27.00	-20.00	7.00	43.03	323	Vertical
5	1218.5719	-27.68	-27.39	-20.00	7.39	0.29	126	Vertical
6	1392.4892	-24.62	-23.17	-20.00	3.17	1.45	98	Vertical

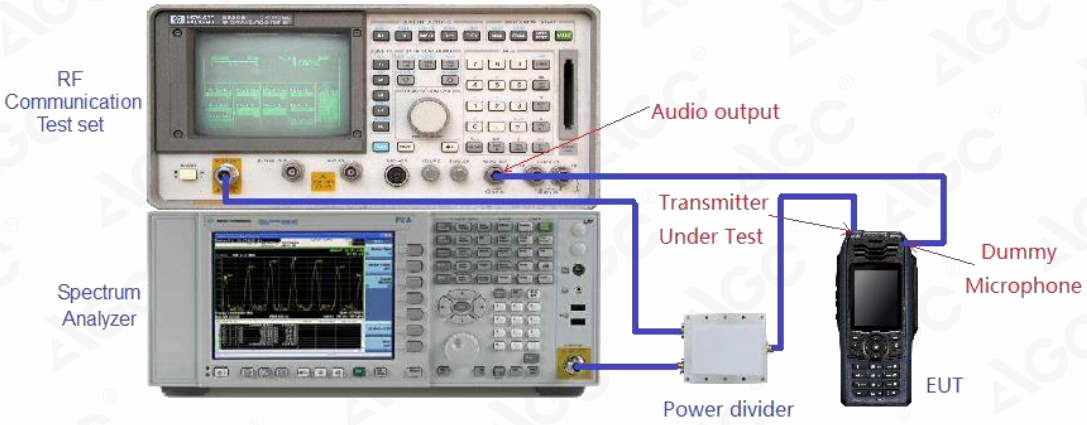
8.5 EMISSION MASK PLOT

The detailed procedure employed for Emission Mask measurements are specified as following:

-Connect the equipment as illustrated.

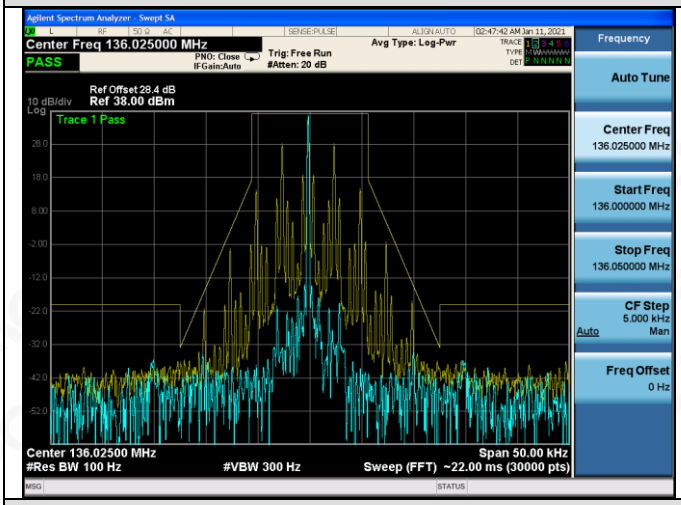
-Spectrum set as follow:

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

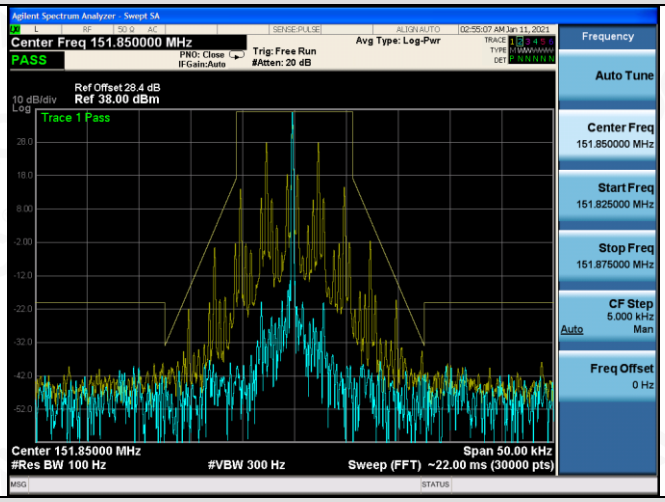


Test plot as follows:

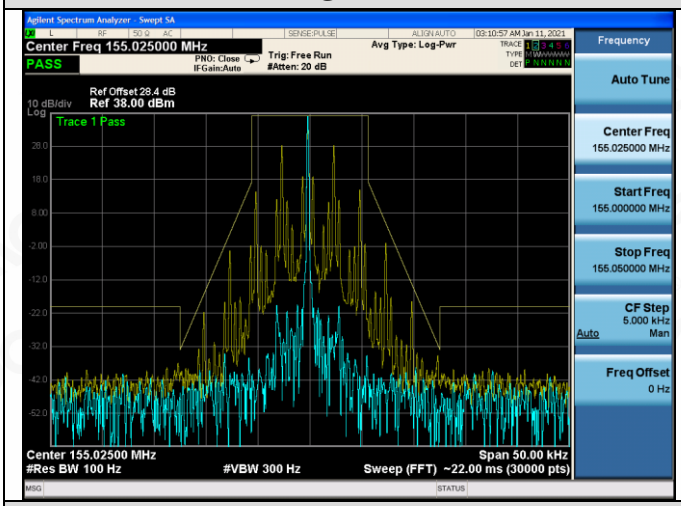
Emission Mask D@136.025MHz-5W-FM



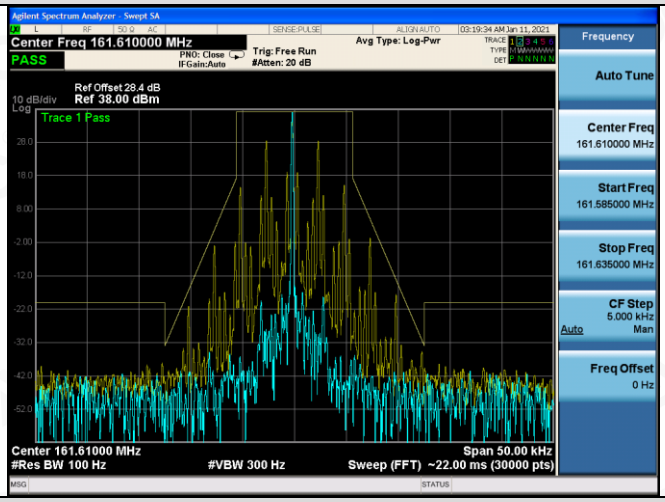
Emission Mask D@151.850MHz-5W-FM



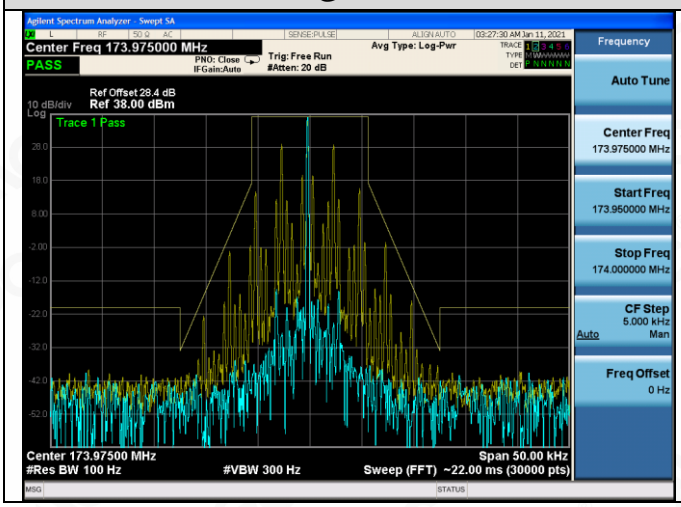
Emission Mask D@155.025MHz-5W-FM



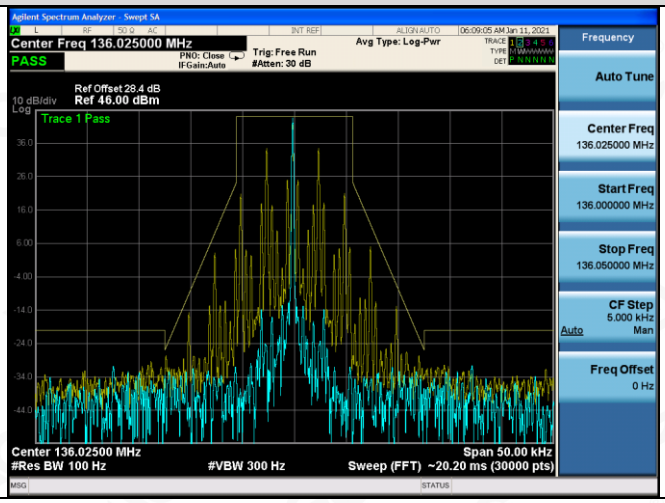
Emission Mask D@161.610MHz-5W-FM



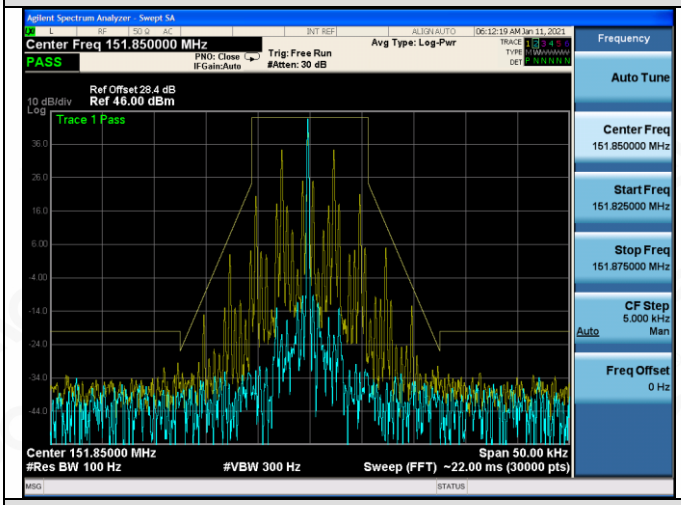
Emission Mask D@173.975MHz-5W-FM



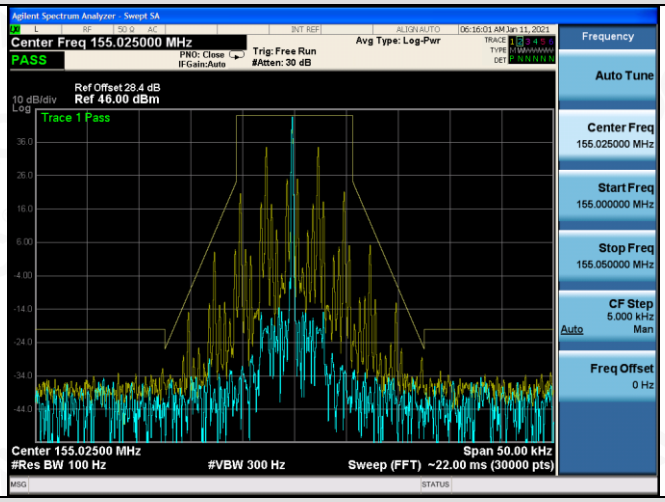
Emission Mask D@136.025MHz-25W-FM



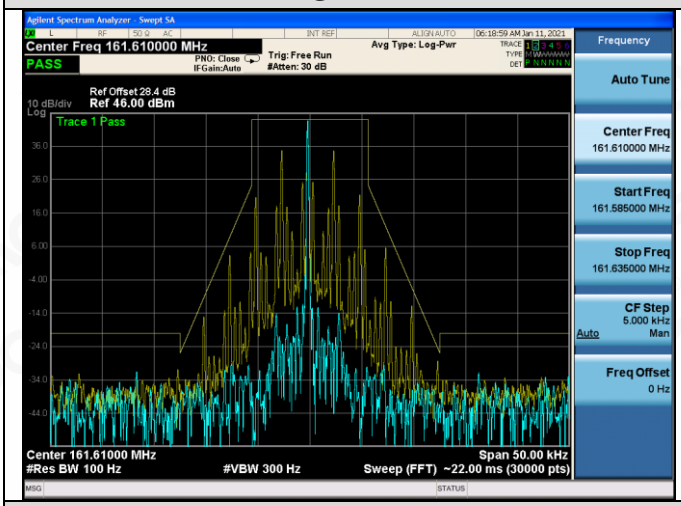
Emission Mask D@151.850MHz-25W-FM



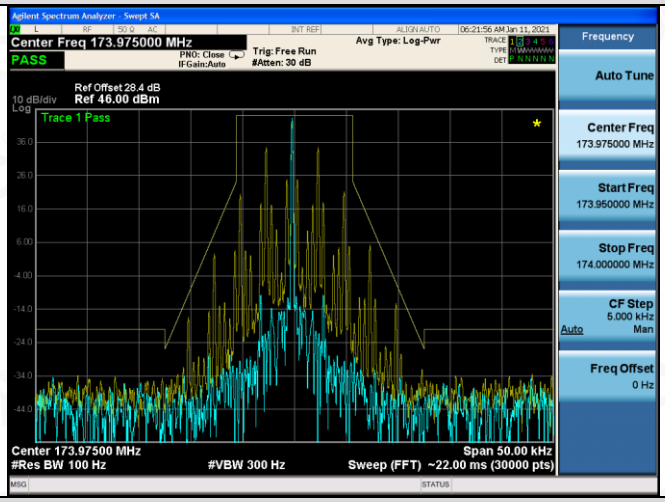
Emission Mask D@155.025MHz-25W-FM



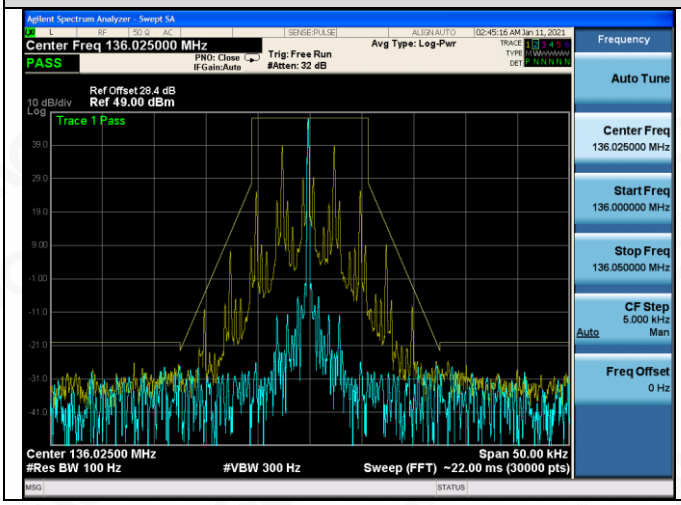
Emission Mask D@161.610MHz-25W-FM



Emission Mask D@173.975MHz-25W-FM



Emission Mask D@136.025MHz-55W-FM



Emission Mask D@151.850MHz-55W-FM