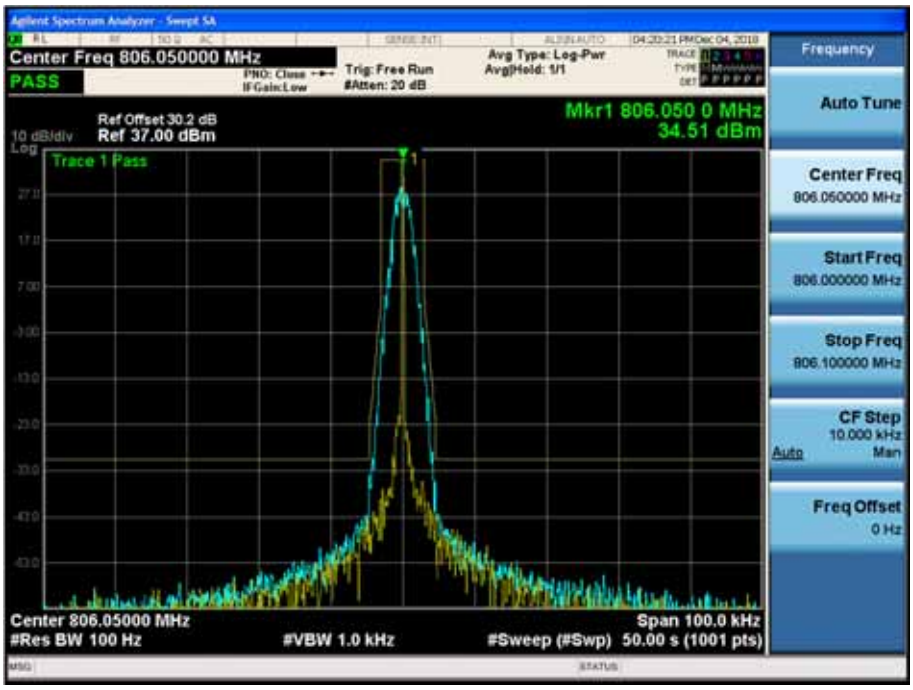
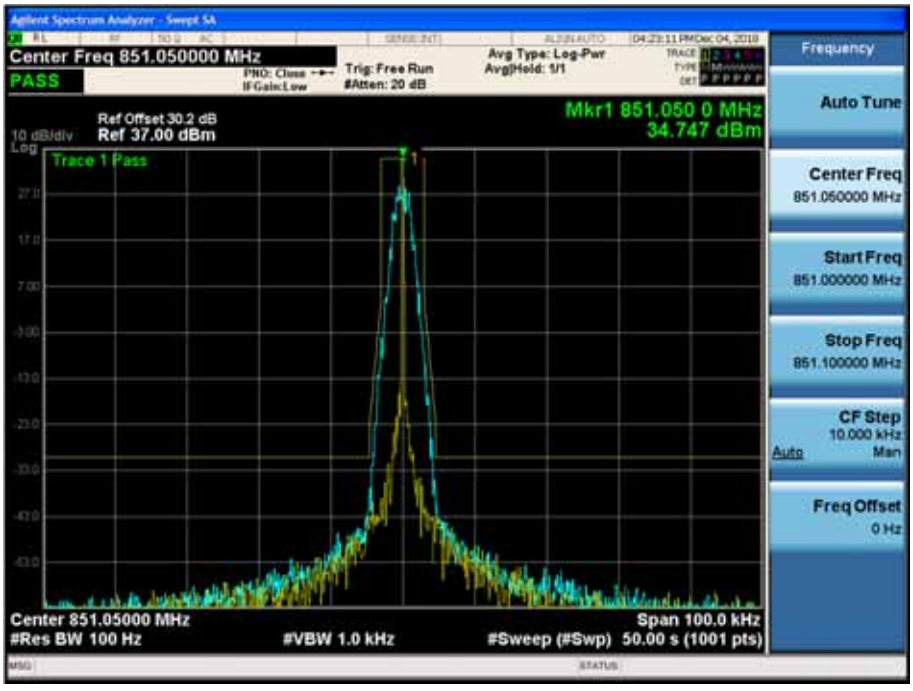
10.6.6 Emission Mask E

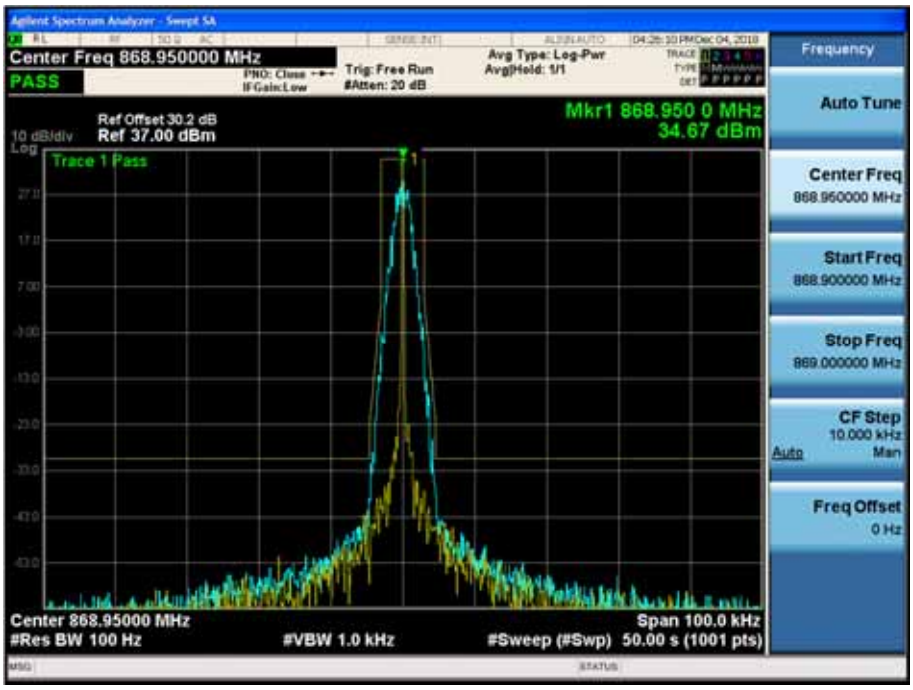
(4K00F1E, 4K00F1D, 4K00F7W _ 806.05 MHz)_High



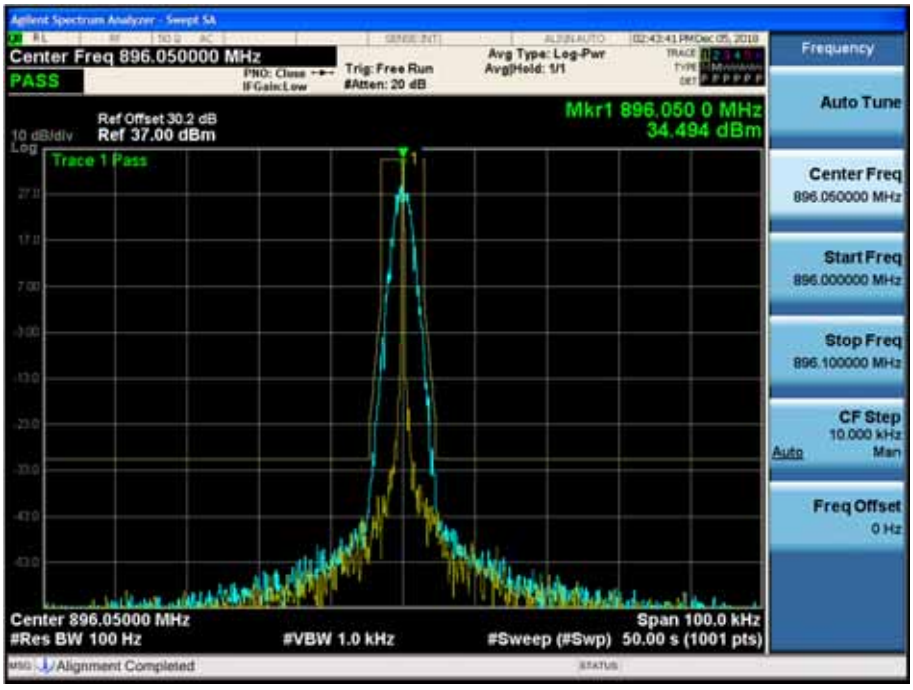
(4K00F1E, 4K00F1D, 4K00F7W _ 851.05 MHz)_High



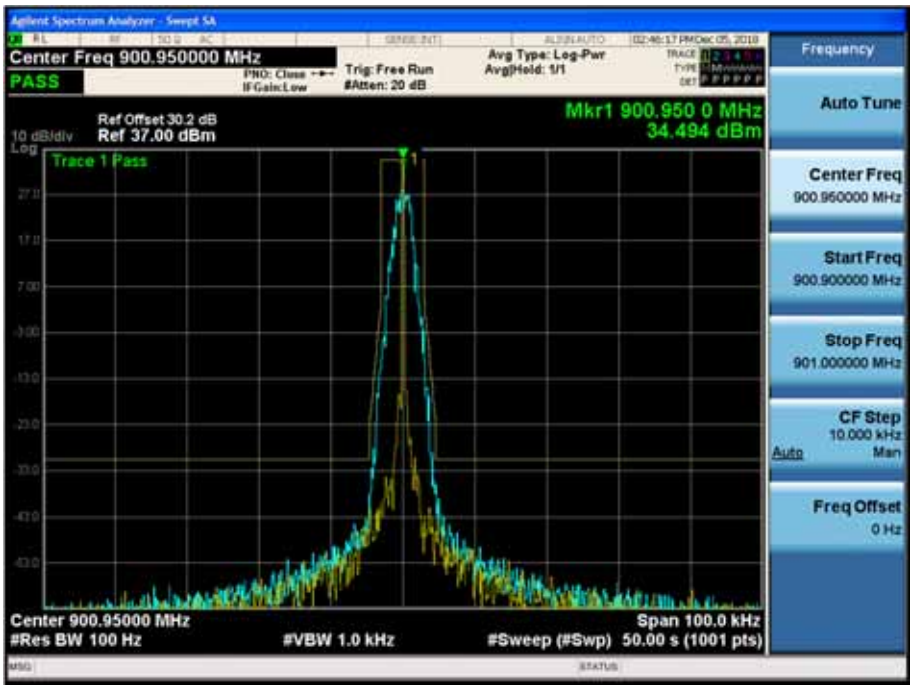
(4K00F1E, 4K00F1D, 4K00F7W _ 868.95 MHz)_High



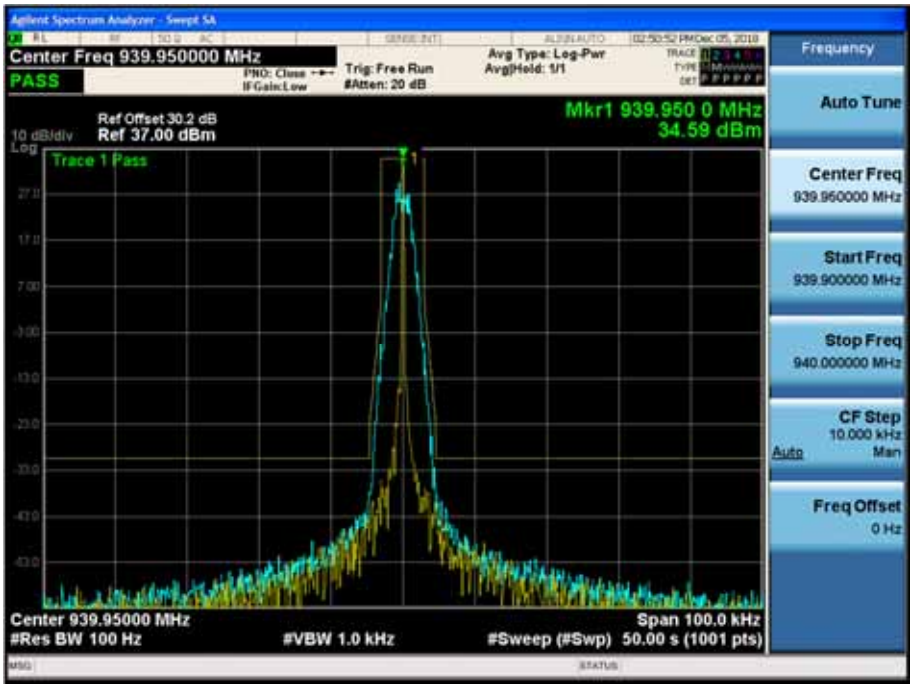
(4K00F1E, 4K00F1D, 4K00F7W _ 896.05 MHz)_ High



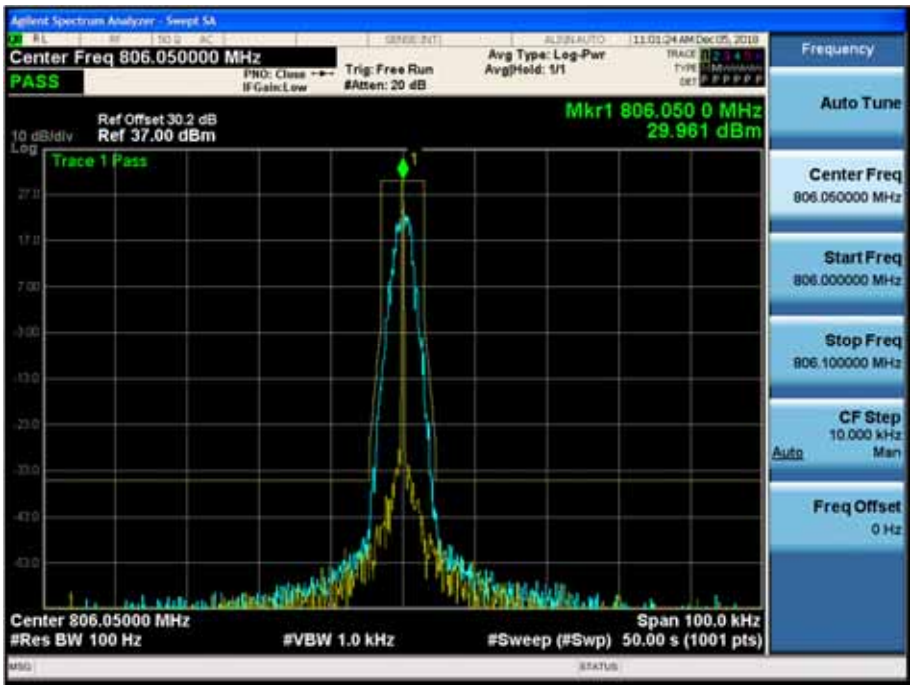
(4K00F1E, 4K00F1D, 4K00F7W _ 900.95 MHz)_ High



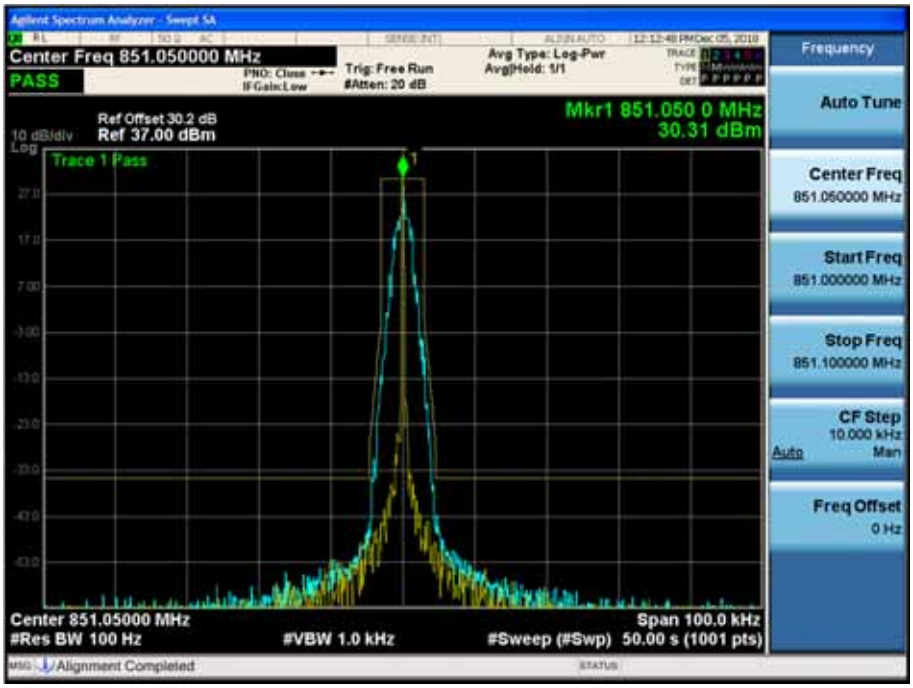
(4K00F1E, 4K00F1D, 4K00F7W _ 939.95 MHz)_ High



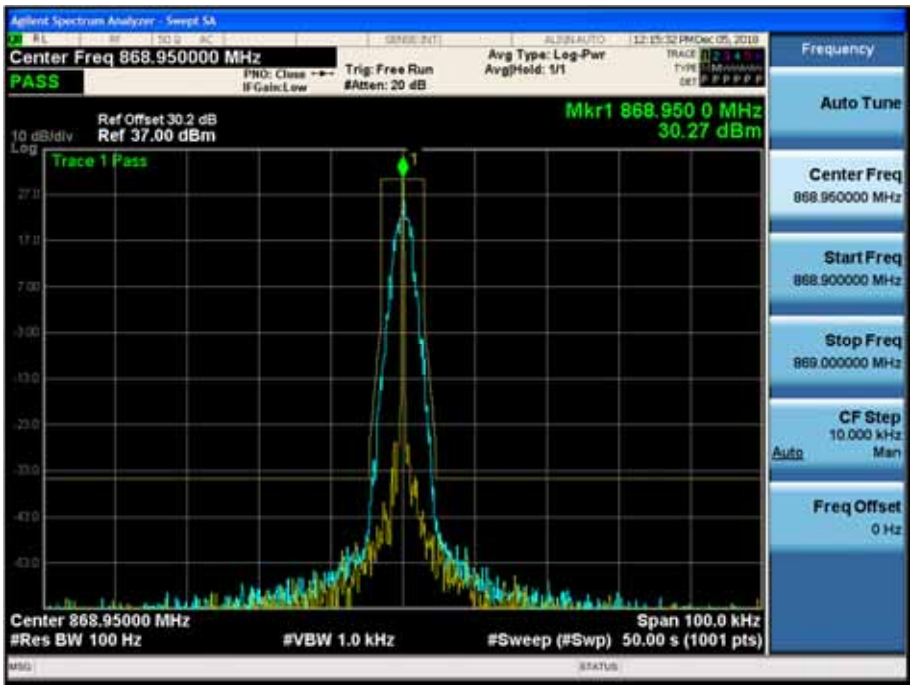
(4K00F1E, 4K00F1D, 4K00F7W _ 806.05 MHz)_ Low



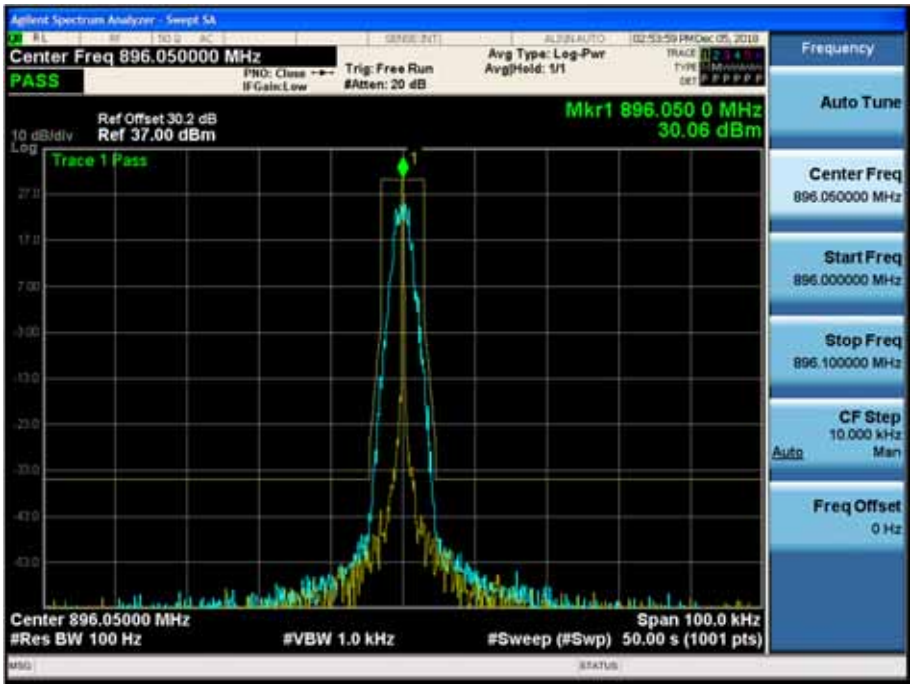
(4K00F1E, 4K00F1D, 4K00F7W _ 851.05 MHz)_ Low



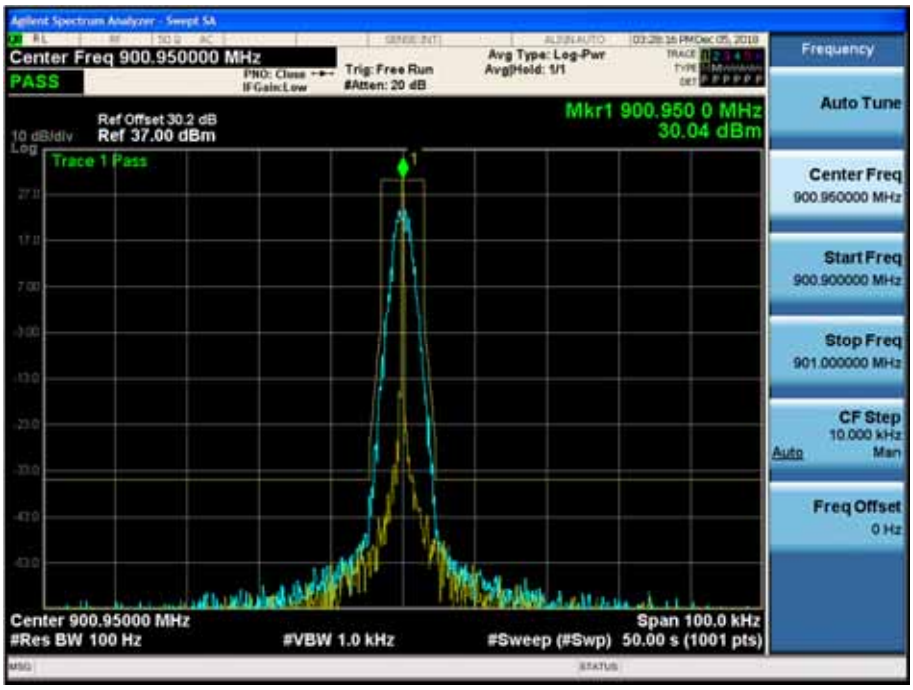
(4K00F1E, 4K00F1D, 4K00F7W _ 868.95 MHz)_ Low



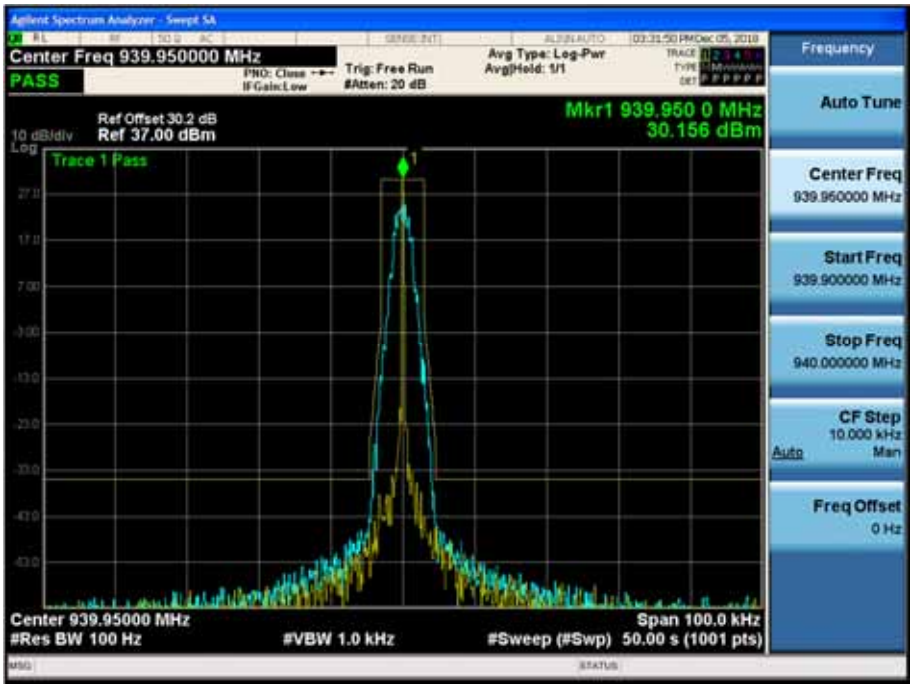
(4K00F1E, 4K00F1D, 4K00F7W _ 896.05 MHz)_Low



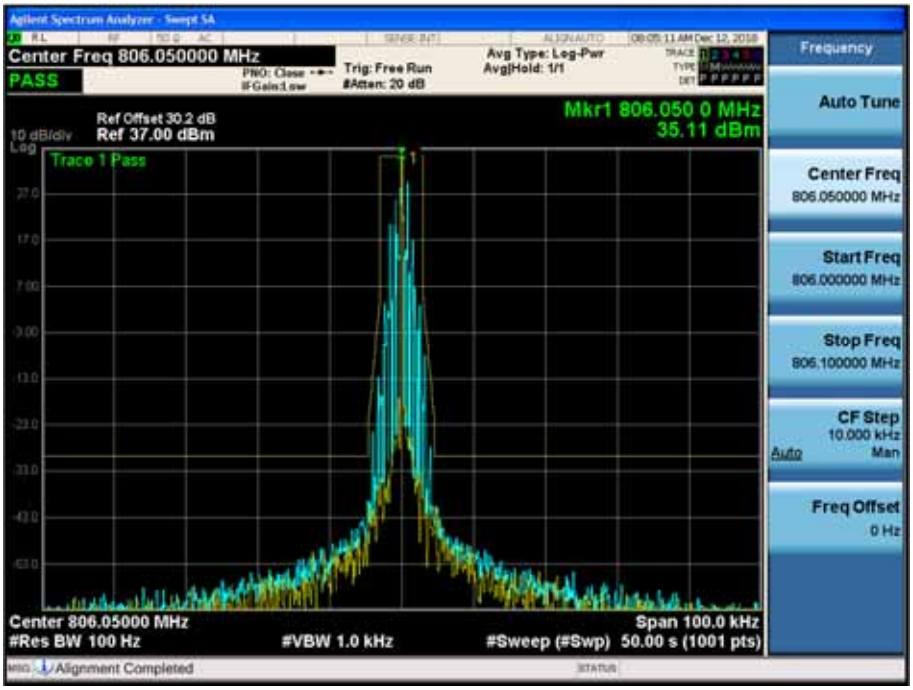
(4K00F1E, 4K00F1D, 4K00F7W _ 900.95 MHz)_Low



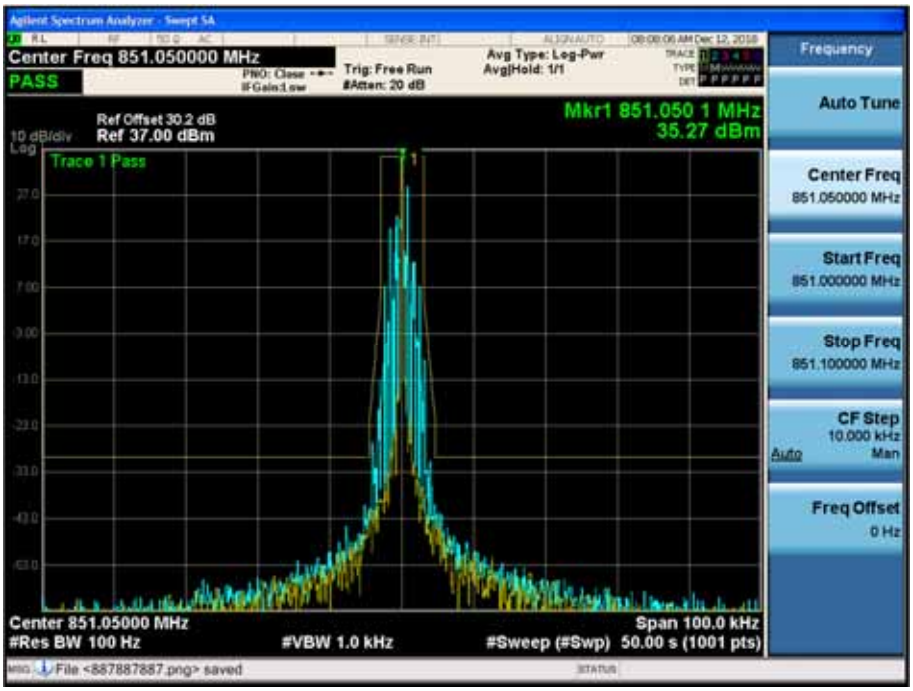
(4K00F1E, 4K00F1D, 4K00F7W _ 939.95 MHz)_Low



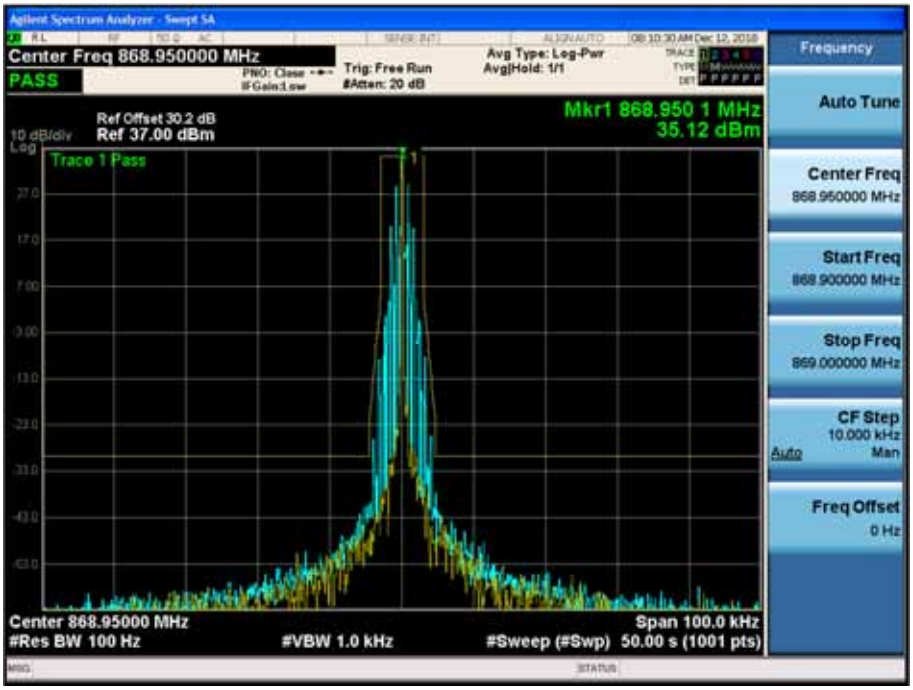
(4K00F2D _ 806.05 MHz)_ High



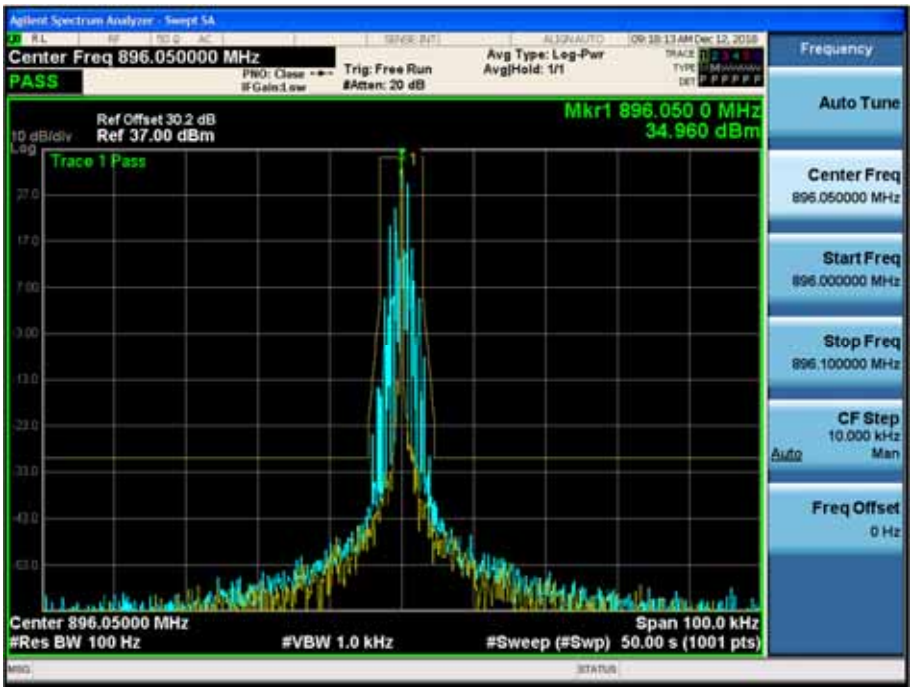
(4K00F2D _ 851.05 MHz)_ High



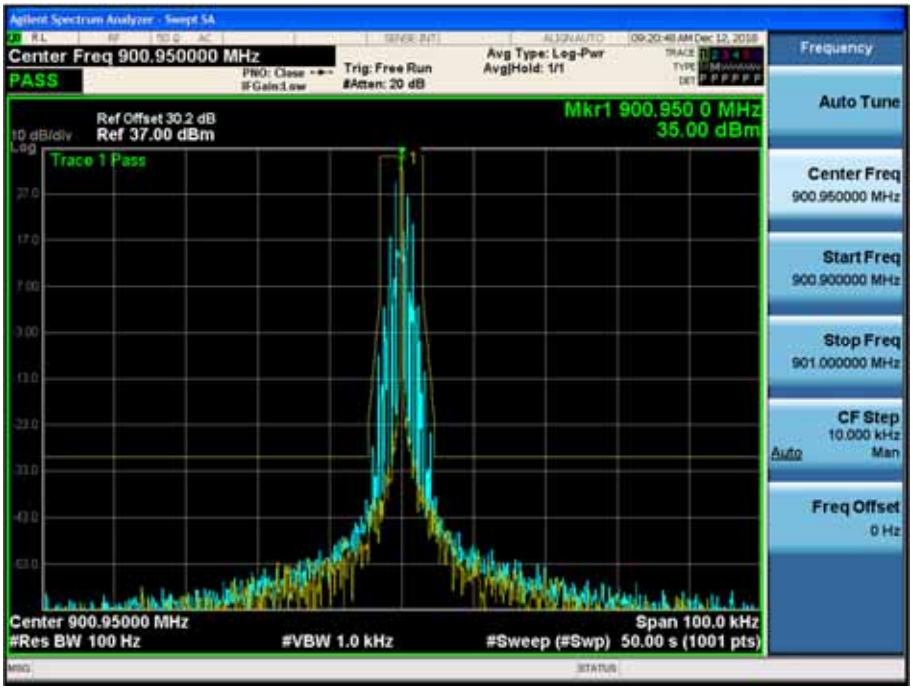
(4K00F2D _ 868.95 MHz)_ High



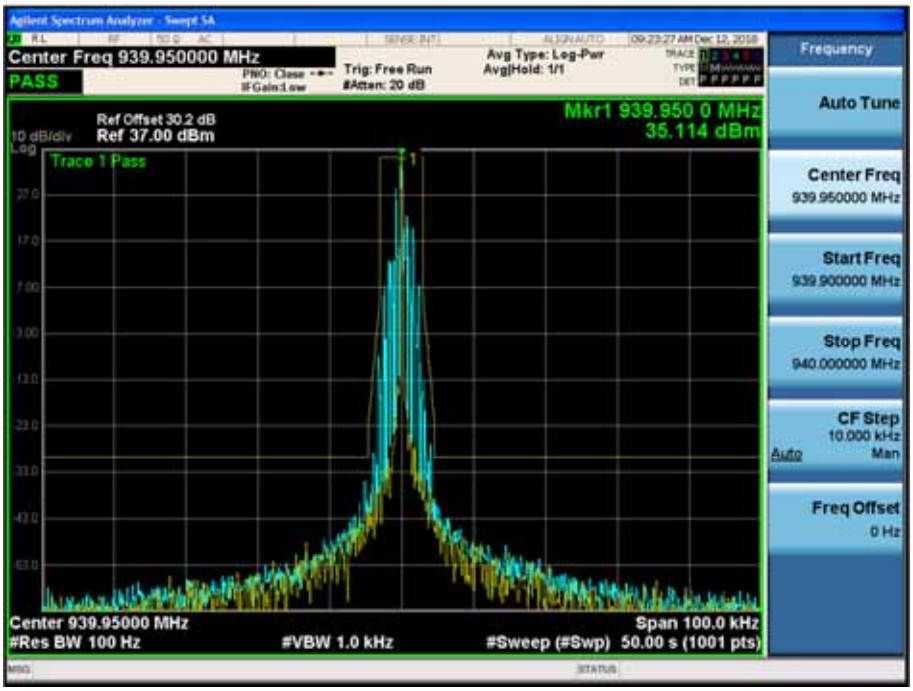
(4K00F2D _ 896.05 MHz)_ High



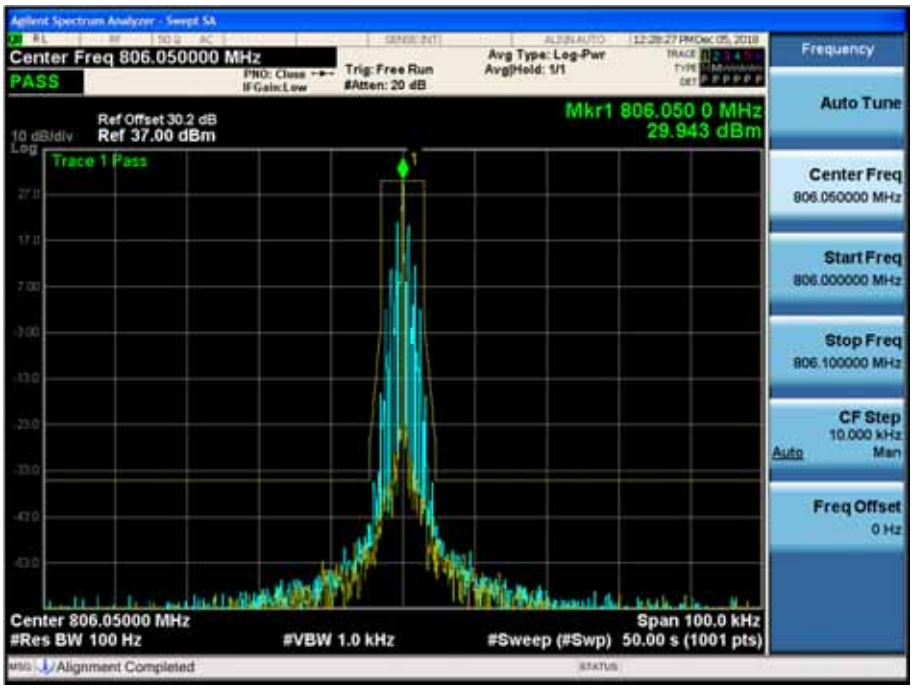
(4K00F2D _ 900.95 MHz)_ High



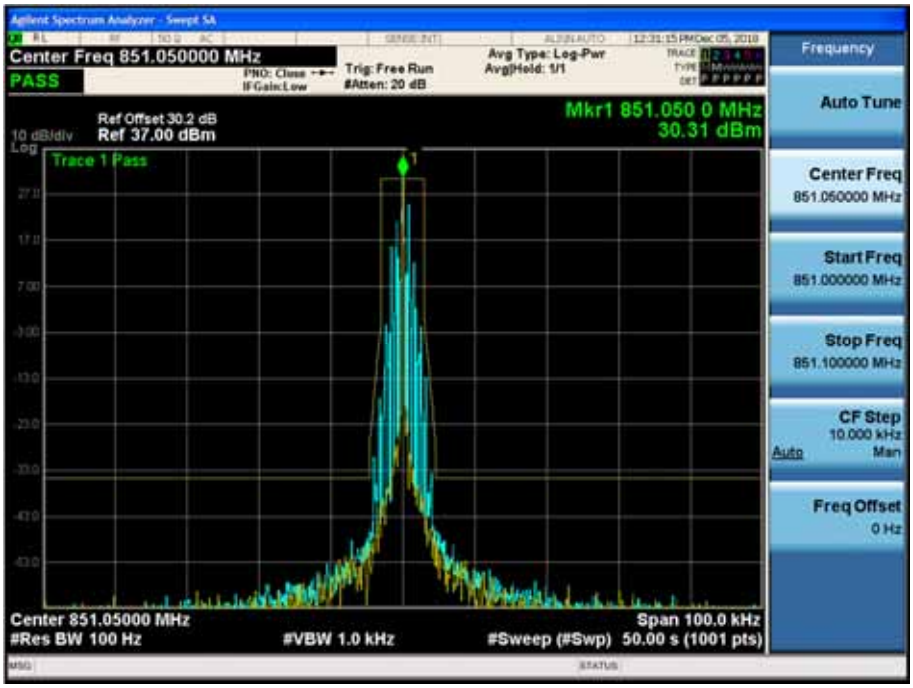
(4K00F2D _ 939.95 MHz)_ High



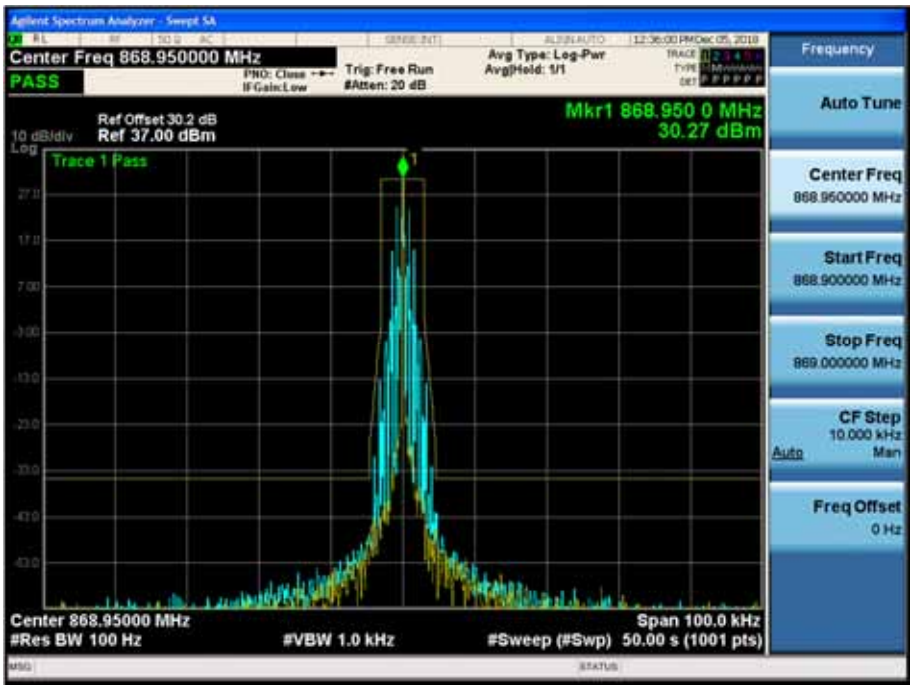
(4K00F2D _ 806.05 MHz)_ Low



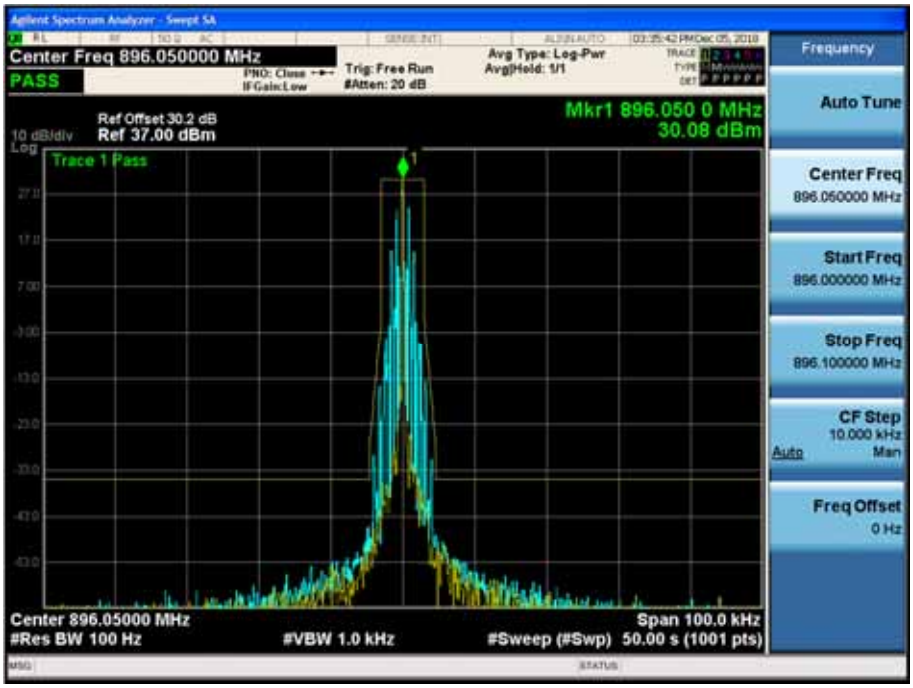
(4K00F2D _ 851.05 MHz)_ Low



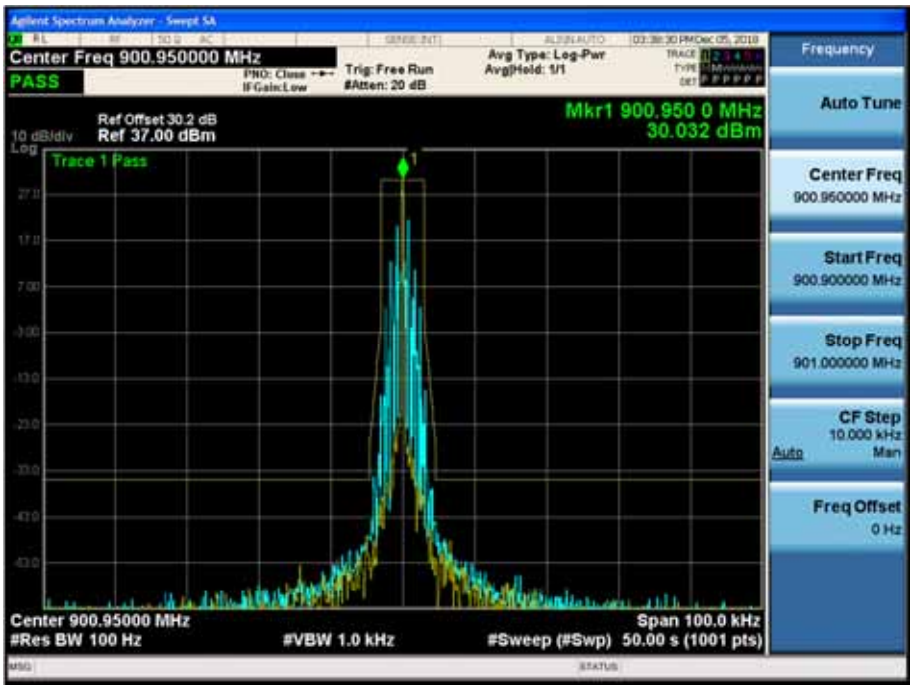
(4K00F2D _ 868.95 MHz)_ Low



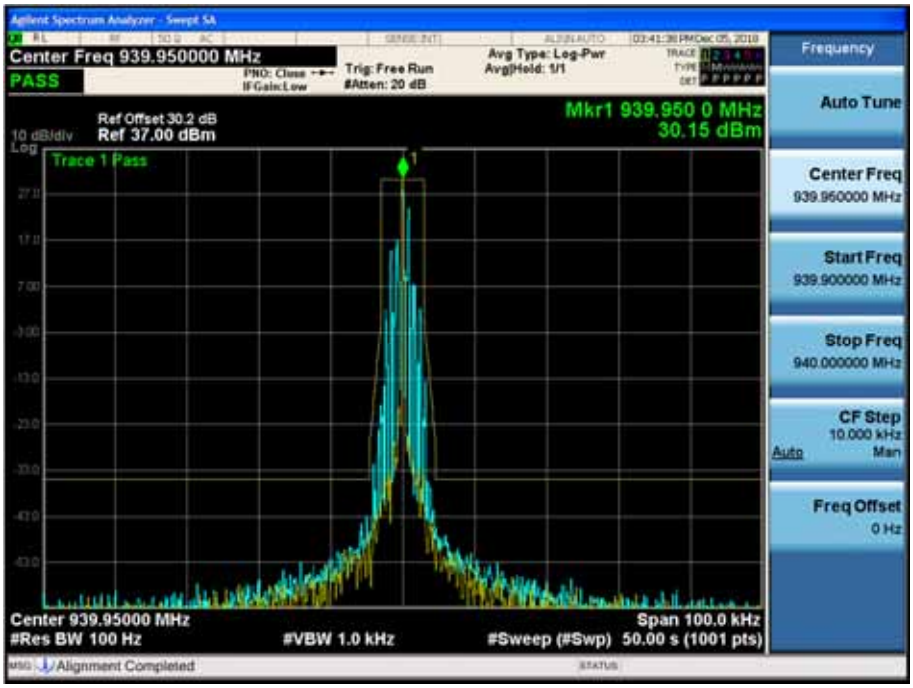
(4K00F2D _ 896.05 MHz)_Low



(4K00F2D _ 900.95 MHz)_ Low



(4K00F2D _ 939.95 MHz)_Low

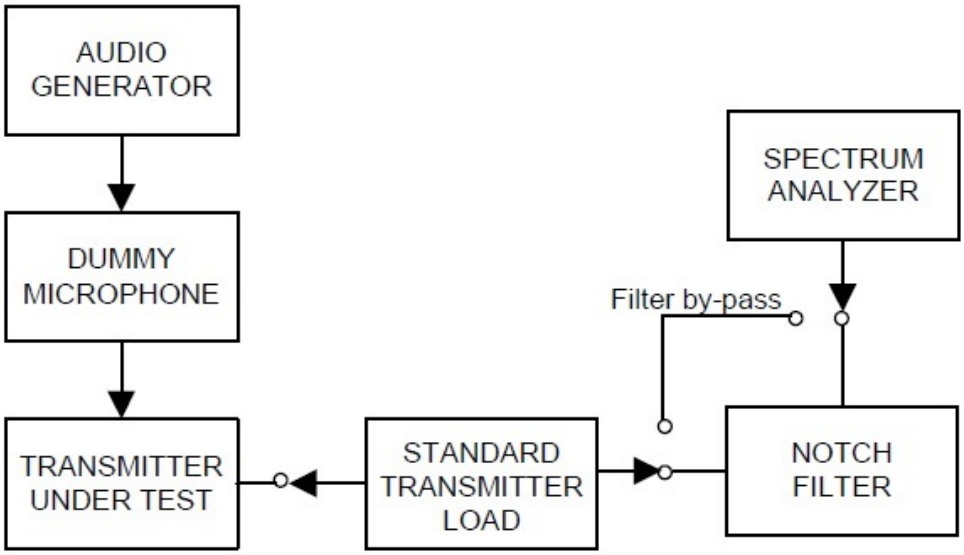


10.7 Unwanted Emissions : Conducted Spurious Emission

▣ Definition

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

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

According to 2.2.13 in TIA-603-E Standard.

e) Connect the equipment as illustrated, with the notch filter by-passed.

f) Set the center frequency of the spectrum analyzer to the assigned transmitter frequency, key the transmitter, and set the level of the carrier to the full scale reference line.

g) 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 modulation circuit.

h) Adjust the spectrum analyzer for the following settings:

1) Resolution Bandwidth = 100 kHz for spurious emissions below 1 GHz, and 1 MHz for spurious emissions above 1 GHz.

2) Video Bandwidth ≥3 times the resolution bandwidth.

3) Sweep Speed ≤2000 Hz per second.

4) Detector Mode = mean or average power.

e) Adjust the center frequency of the spectrum analyzer for incremental coverage of the range from:

1) The lowest radio frequency generated in the equipment to the carrier frequency minus the test bandwidth.

2) The carrier frequency plus the test bandwidth to a frequency less than 2 times the carrier frequency.

f) Record the frequencies and levels of spurious emissions from step e).

g) Unkey the transmitter. Replace the transmitter under test with the signal generator and adjust the signal level to reproduce the frequencies and levels of every spurious emission recorded in step f). Record the signal generator levels in dBm.

h) Insert the notch filter.

i) Adjust the spectrum analyzer for the following settings:

1) Resolution Bandwidth = 100 kHz for spurious emissions below 1 GHz, and 1 MHz for spurious emissions above 1 GHz.

2) Video Bandwidth ≥3 times the resolution bandwidth.

3) Sweep Speed ≤2000 Hz per second.

4) Detector Mode = mean or average power.

j) Key the transmitter. Adjust the center frequency of the spectrum analyzer for incremental coverage of the range from a frequency equal to 2 times the carrier frequency and to the tenth harmonic of the carrier frequency. (Measured Frequency Range : 9kHz – 10GHz)

▣ LIMIT

Frequency Band (MHz)	Channel bandwidth (kHz)	Limit (dB)
806 - 824 851 - 869	12.5	50+10Log(P)
	6.25	55+10Log(P)
	25.0	43+10Log(P)
896 - 901 935 - 940	12.5	43+10Log(P)
	6.25	43+10Log(P)
	25.0	43+10Log(P)
901 - 902 940 - 941	12.5	43+10Log(P)
	50	

Note

1. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13 dBm
2. Limit = P_{dBm}–(50+10 log (P_{watt})) = -20 dBm
3. Limit = P_{dBm}–(55+10 log (P_{watt})) = -25 dBm

▣ TEST RESULTS

11K0F3E

No.	Frequency (MHz)	Setting	Measured Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Margin (dB)
1	806.05	High Power	0.02	-62.310	-20.000	42.310
			26.18	-54.342	-20.000	34.342
			725.95	-40.426	-20.000	20.426
			1612.93	-30.616	-20.000	10.616
2	851.05		0.02	-62.849	-20.000	42.849
			17.46	-55.564	-20.000	35.564
			753.30	-38.797	-20.000	18.797
			1702.49	-31.755	-20.000	11.755
3	868.95		0.01	-62.776	-20.000	42.776
			1.09	-55.655	-20.000	35.655
			725.56	-39.324	-20.000	19.324
			1738.49	-31.979	-20.000	11.979
4	806.05	Low Power	0.03	-61.882	-20.000	41.882
			6.14	-54.233	-20.000	34.233
			693.16	-39.776	-20.000	19.776
			3668.18	-32.776	-20.000	12.776
5	851.05		0.12	-62.731	-20.000	42.731
			15.30	-54.884	-20.000	34.884
			746.90	-38.631	-20.000	18.631
			3558.83	-33.201	-20.000	13.201
6	868.95		0.02	-61.791	-20.000	41.791
			1.69	-54.709	-20.000	34.709
			168.72	-39.612	-20.000	19.612
			6071.30	-32.361	-20.000	12.361

11K0F3E

No.	Frequency (MHz)	Setting	Measured Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Margin (dB)
1	896.05	High Power	0.13	-62.660	-13.000	49.660
			6.68	-54.722	-13.000	41.722
			690.64	-38.360	-13.000	25.360
			1792.49	-32.680	-13.000	19.680
2	900.95		0.02	-62.315	-13.000	49.315
			18.61	-54.595	-13.000	41.595
			198.99	-38.906	-13.000	25.906
			1802.39	-31.422	-13.000	18.422
3	939.95		0.01	-62.831	-13.000	49.831
			22.19	-55.167	-13.000	42.167
			705.67	-37.767	-13.000	24.767
			1880.69	-32.309	-13.000	19.309
4	896.05	Low Power	0.12	-62.213	-13.000	49.213
			2.15	-55.064	-13.000	42.064
			195.21	-38.873	-13.000	25.873
			7042.00	-32.841	-13.000	19.841
5	900.95		0.05	-63.033	-13.000	50.033
			10.41	-55.466	-13.000	42.466
			177.75	-38.555	-13.000	25.555
			6926.35	-32.290	-13.000	19.290
6	939.95		0.13	-62.872	-13.000	49.872
			13.10	-55.305	-13.000	42.305
			705.67	-38.475	-13.000	25.475
			3684.83	-32.829	-13.000	19.829

11K0F3E

No.	Frequency (MHz)	Setting	Measured Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Margin (dB)
1	901.55	High Power	0.01	-63.052	-13.000	50.052
			26.32	-54.154	-13.000	41.154
			189.48	-39.281	-13.000	26.281
			1803.74	-31.603	-13.000	18.603
2	940.55		0.02	-60.841	-13.000	47.841
			14.89	-54.551	-13.000	41.551
			706.35	-37.402	-13.000	24.402
			1881.59	-32.689	-13.000	19.689
3	901.55	Low Power	0.13	-62.595	-13.000	49.595
			0.16	-52.621	-13.000	39.621
			195.01	-38.576	-13.000	25.576
			6891.69	-32.968	-13.000	19.968
4	940.55		0.02	-61.467	-13.000	48.467
			24.42	-55.053	-13.000	42.053
			711.40	-38.233	-13.000	25.233
			8674.68	-33.145	-13.000	20.145

14K0F3E

No.	Frequency (MHz)	Setting	Measured Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Margin (dB)
1	806.05	High Power	0.01	-62.451	-13.000	49.451
			11.08	-54.037	-13.000	41.037
			709.46	-40.639	-13.000	27.639
			1612.03	-30.543	-13.000	17.543
2	851.05		0.03	-62.129	-13.000	49.129
			21.25	-54.021	-13.000	41.021
			742.44	-38.393	-13.000	25.393
			1701.59	-31.474	-13.000	18.474
3	868.95		0.12	-63.125	-13.000	50.125
			28.68	-54.610	-13.000	41.610
			726.63	-38.508	-13.000	25.508
			1738.04	-31.715	-13.000	18.715
4	806.05	Low Power	0.12	-61.484	-13.000	48.484
			19.49	-54.691	-13.000	41.691
			128.66	-39.358	-13.000	26.358
			3154.26	-33.239	-13.000	20.239
5	851.05		0.13	-62.431	-13.000	49.431
			6.66	-55.187	-13.000	42.187
			765.43	-38.103	-13.000	25.103
			9924.40	-32.667	-13.000	19.667
6	868.95		0.01	-62.424	-13.000	49.424
			21.70	-53.898	-13.000	40.898
			786.87	-39.252	-13.000	26.252
			9341.62	-32.543	-13.000	19.543

16K0F3E

No.	Frequency (MHz)	Setting	Measured Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Margin (dB)
1	806.05	High Power	0.01	-61.987	-13.000	48.987
			15.22	-55.216	-13.000	42.216
			693.64	-40.675	-13.000	27.675
			3738.39	-29.339	-13.000	16.339
2	851.05		0.07	-63.144	-13.000	50.144
			13.38	-54.569	-13.000	41.569
			759.42	-39.456	-13.000	26.456
			7571.68	-29.123	-13.000	16.123
3	868.95		0.01	-61.977	-13.000	48.977
			16.06	-54.821	-13.000	41.821
			765.14	-38.754	-13.000	25.754
			9983.80	-29.496	-13.000	16.496
4	806.05	Low Power	0.01	-61.887	-13.000	48.887
			12.39	-54.738	-13.000	41.738
			707.71	-39.235	-13.000	26.235
			5565.93	-28.638	-13.000	15.638
5	851.05		0.01	-62.906	-13.000	49.906
			1.54	-54.689	-13.000	41.689
			717.02	-38.722	-13.000	25.722
			9243.96	-29.125	-13.000	16.125
6	868.95		0.12	-62.756	-13.000	49.756
			0.94	-54.996	-13.000	41.996
			775.52	-38.960	-13.000	25.960
			6145.56	-28.859	-13.000	15.859

8K30F1E, 8K30F1D, 8K30F7W

No.	Frequency (MHz)	Setting	Measured Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Margin (dB)
1	806.05	High Power	0.01	-63.745	-20.000	43.745
			13.93	-54.390	-20.000	34.390
			125.17	-41.388	-20.000	21.388
			1612.03	-30.371	-20.000	10.371
2	851.05		0.02	-62.080	-20.000	42.080
			28.67	-54.448	-20.000	34.448
			754.08	-38.977	-20.000	18.977
			1702.04	-30.594	-20.000	10.594
3	868.95		0.01	-61.438	-20.000	41.438
			1.94	-53.262	-20.000	33.262
			705.48	-38.151	-20.000	18.151
			1737.59	-31.354	-20.000	11.354
4	806.05	Low Power	0.02	-63.380	-20.000	43.380
			16.96	-54.302	-20.000	34.302
			697.23	-39.580	-20.000	19.580
			3606.98	-32.720	-20.000	12.720
5	851.05		0.01	-61.455	-20.000	41.455
			17.57	-54.973	-20.000	34.973
			758.45	-38.242	-20.000	18.242
			9227.76	-32.685	-20.000	12.685
6	868.95		0.05	-63.492	-20.000	43.492
			22.44	-54.922	-20.000	34.922
			725.75	-39.200	-20.000	19.200
			9892.89	-32.231	-20.000	12.231

8K30F1E, 8K30F1D, 8K30F7W

No.	Frequency (MHz)	Setting	Measured Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Margin (dB)
1	896.05	High Power	0.02	-62.654	-13.000	49.654
			17.50	-55.237	-13.000	42.237
			691.51	-37.831	-13.000	24.831
			1792.94	-32.175	-13.000	19.175
2	900.95		0.01	-63.337	-13.000	50.337
			24.53	-54.642	-13.000	41.642
			191.81	-37.635	-13.000	24.635
			1802.84	-31.662	-13.000	18.662
3	939.95		0.01	-62.594	-13.000	49.594
			23.10	-55.009	-13.000	42.009
			705.77	-37.763	-13.000	24.763
			1880.69	-31.684	-13.000	18.684
4	896.05	Low Power	0.02	-62.724	-13.000	49.724
			17.63	-55.356	-13.000	42.356
			180.46	-39.753	-13.000	26.753
			3636.23	-32.426	-13.000	19.426
5	900.95		0.01	-62.669	-13.000	49.669
			24.23	-53.945	-13.000	40.945
			181.34	-38.757	-13.000	25.757
			3607.88	-31.931	-13.000	18.931
6	939.95		0.13	-62.634	-13.000	49.634
			7.77	-55.246	-13.000	42.246
			723.81	-38.638	-13.000	25.638
			3128.61	-32.636	-13.000	19.636

8K30F1E, 8K30F1D, 8K30F7W

No.	Frequency (MHz)	Setting	Measured Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Margin (dB)
1	901.55	High Power	0.02	-62.213	-13.000	49.213
			0.80	-54.349	-13.000	41.349
			698.78	-38.832	-13.000	25.832
			1803.29	-32.307	-13.000	19.307
2	940.55		0.13	-62.716	-13.000	49.716
			18.02	-53.986	-13.000	40.986
			706.35	-37.799	-13.000	24.799
			1881.59	-32.255	-13.000	19.255
3	901.55	Low Power	0.13	-62.080	-13.000	49.080
			24.96	-54.868	-13.000	41.868
			180.66	-38.004	-13.000	25.004
			3704.64	-32.127	-13.000	19.127
4	940.55		0.13	-62.801	-13.000	49.801
			13.89	-55.191	-13.000	42.191
			706.35	-38.025	-13.000	25.025
			3639.83	-32.793	-13.000	19.793

7K60FXE, 7K60FXD

No.	Frequency (MHz)	Setting	Measured Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Margin (dB)
1	806.05	High Power	0.03	-61.156	-20.000	41.156
			1.63	-55.295	-20.000	35.295
			704.02	-41.390	-20.000	21.390
			1612.03	-30.790	-20.000	10.790
2	851.05		0.12	-62.407	-20.000	42.407
			13.59	-54.656	-20.000	34.656
			767.66	-38.858	-20.000	18.858
			1702.04	-30.111	-20.000	10.111
3	868.95		0.13	-62.451	-20.000	42.451
			0.22	-53.788	-20.000	33.788
			718.57	-39.163	-20.000	19.163
			1738.04	-31.100	-20.000	11.100
4	806.05	Low Power	0.01	-63.126	-20.000	43.126
			16.74	-54.875	-20.000	34.875
			713.05	-40.235	-20.000	20.235
			3633.98	-32.811	-20.000	12.811
5	851.05		0.04	-63.056	-20.000	43.056
			12.73	-54.428	-20.000	34.428
			757.57	-39.251	-20.000	19.251
			9270.06	-33.308	-20.000	13.308
6	868.95		0.12	-61.537	-20.000	41.537
			9.71	-54.740	-20.000	34.740
			177.07	-38.635	-20.000	18.635
			3643.88	-32.872	-20.000	12.872

7K60FXE, 7K60FXD

No.	Frequency (MHz)	Setting	Measured Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Margin (dB)
1	896.05	High Power	0.08	-62.910	-13.000	49.910
			22.19	-54.393	-13.000	41.393
			197.05	-39.368	-13.000	26.368
			1792.49	-32.065	-13.000	19.065
2	900.95		0.13	-62.838	-13.000	49.838
			4.78	-55.447	-13.000	42.447
			700.73	-38.245	-13.000	25.245
			3610.13	-32.274	-13.000	19.274
3	939.95		0.12	-61.700	-13.000	48.700
			7.48	-54.744	-13.000	41.744
			705.77	-36.030	-13.000	23.030
			1880.69	-32.419	-13.000	19.419
4	896.05	Low Power	0.01	-61.461	-13.000	48.461
			0.59	-55.506	-13.000	42.506
			163.00	-39.130	-13.000	26.130
			3647.48	-31.875	-13.000	18.875
5	900.95		0.02	-62.172	-13.000	49.172
			13.92	-53.774	-13.000	40.774
			708.29	-38.892	-13.000	25.892
			9862.29	-31.855	-13.000	18.855
6	939.95		0.03	-63.069	-13.000	50.069
			22.64	-55.040	-13.000	42.040
			705.67	-37.501	-13.000	24.501
			9905.05	-32.396	-13.000	19.396

7K60FXE, 7K60FXD

No.	Frequency (MHz)	Setting	Measured Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Margin (dB)
1	901.55	High Power	0.12	-62.107	-13.000	49.107
			11.76	-55.446	-13.000	42.446
			686.66	-38.764	-13.000	25.764
			3613.28	-32.235	-13.000	19.235
2	940.55		0.12	-60.544	-13.000	47.544
			4.13	-55.069	-13.000	42.069
			704.41	-38.320	-13.000	25.320
			1881.59	-31.769	-13.000	18.769
3	901.55	Low Power	0.12	-61.697	-13.000	48.697
			1.16	-54.363	-13.000	41.363
			188.32	-39.101	-13.000	26.101
			5945.30	-32.220	-13.000	19.220
4	940.55		0.01	-62.618	-13.000	49.618
			22.17	-54.433	-13.000	41.433
			845.08	-43.401	-13.000	30.401
			8734.54	-32.913	-13.000	19.913

4K00F1E, 4K00F1D, 4K00F7W

No.	Frequency (MHz)	Setting	Measured Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Margin (dB)
1	806.05	High Power	0.12	-60.860	-25.000	35.860
			24.89	-55.457	-25.000	30.457
			707.81	-40.668	-25.000	15.668
			1611.58	-30.383	-25.000	5.383
2	851.05		0.13	-62.952	-25.000	37.952
			16.25	-53.819	-25.000	28.819
			752.82	-38.768	-25.000	13.768
			1702.04	-31.273	-25.000	6.273
3	868.95		0.01	-61.425	-25.000	36.425
			27.87	-55.070	-25.000	30.070
			776.59	-39.024	-25.000	14.024
			1738.04	-31.599	-25.000	6.599
4	806.05	Low Power	0.13	-62.666	-25.000	37.666
			24.04	-55.181	-25.000	30.181
			693.45	-39.989	-25.000	14.989
			3225.81	-32.705	-25.000	7.705
5	851.05		0.01	-63.460	-25.000	38.460
			18.03	-53.458	-25.000	28.458
			741.66	-39.028	-25.000	14.028
			3016.10	-33.195	-25.000	8.195
6	868.95		0.02	-62.401	-25.000	37.401
			10.37	-55.299	-25.000	30.299
			719.16	-38.886	-25.000	13.886
			3192.51	-32.338	-25.000	7.338

4K00F1E, 4K00F1D, 4K00F7W

No.	Frequency (MHz)	Setting	Measured Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Margin (dB)
1	896.05	High Power	0.02	-63.354	-13.000	50.354
			7.47	-55.126	-13.000	42.126
			697.52	-38.220	-13.000	25.220
			1792.94	-32.156	-13.000	19.156
2	900.95		0.01	-63.206	-13.000	50.206
			0.48	-54.830	-13.000	41.830
			676.38	-38.199	-13.000	25.199
			1802.39	-32.376	-13.000	19.376
3	939.95		0.01	-62.393	-13.000	49.393
			29.33	-54.629	-13.000	41.629
			705.77	-38.367	-13.000	25.367
			3081.80	-32.999	-13.000	19.999
4	896.05	Low Power	0.01	-62.506	-13.000	49.506
			0.27	-54.852	-13.000	41.852
			182.40	-39.088	-13.000	26.088
			3597.53	-31.254	-13.000	18.254
5	900.95		0.01	-62.191	-13.000	49.191
			11.98	-55.055	-13.000	42.055
			184.92	-39.177	-13.000	26.177
			9934.30	-32.444	-13.000	19.444
6	939.95		0.13	-63.174	-13.000	50.174
			0.16	-53.202	-13.000	40.202
			705.77	-38.250	-13.000	25.250
			3165.96	-32.736	-13.000	19.736

4K00F1E, 4K00F1D, 4K00F7W

No.	Frequency (MHz)	Setting	Measured Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Margin (dB)
1	901.55	High Power	0.12	-61.398	-13.000	48.398
			24.00	-55.077	-13.000	42.077
			676.96	-38.403	-13.000	25.403
			3174.96	-32.970	-13.000	19.970
2	940.55		0.12	-62.529	-13.000	49.529
			18.00	-54.794	-13.000	41.794
			704.41	-37.274	-13.000	24.274
			9245.31	-32.811	-13.000	19.811
3	901.55	Low Power	0.12	-61.933	-13.000	48.933
			0.38	-54.333	-13.000	41.333
			179.30	-38.579	-13.000	25.579
			6794.94	-32.170	-13.000	19.170
4	940.55		0.13	-61.787	-13.000	48.787
			19.15	-54.982	-13.000	41.982
			708.19	-37.945	-13.000	24.945
			3606.98	-32.169	-13.000	19.169

4K00F2D

No.	Frequency (MHz)	Setting	Measured Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Margin (dB)
1	806.05	High Power	0.12	-61.824	-25.000	36.824
			23.03	-54.461	-25.000	29.461
			685.01	-40.757	-25.000	15.757
			1612.03	-30.624	-25.000	5.624
2	851.05		0.13	-62.287	-25.000	37.287
			0.24	-54.029	-25.000	29.029
			750.49	-38.873	-25.000	13.873
			1702.04	-30.492	-25.000	5.492
3	868.95		0.13	-62.736	-25.000	37.736
			24.34	-54.282	-25.000	29.282
			719.64	-38.399	-25.000	13.399
			1737.59	-30.437	-25.000	5.437
1	806.05	Low Power	0.01	-62.584	-25.000	37.584
			26.84	-55.058	-25.000	30.058
			924.53	-40.098	-25.000	15.098
			9864.54	-32.205	-25.000	7.205
2	851.05		0.03	-63.765	-25.000	38.765
			10.37	-54.264	-25.000	29.264
			745.54	-38.487	-25.000	13.487
			3669.08	-33.202	-25.000	8.202
3	868.95		0.12	-62.953	-25.000	37.953
			29.49	-54.979	-25.000	29.979
			777.65	-39.658	-25.000	14.658
			3661.43	-32.780	-25.000	7.780

4K00F2D

No.	Frequency (MHz)	Setting	Measured Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Margin (dB)
1	896.05	High Power	0.13	-61.732	-13.000	48.732
			0.29	-55.204	-13.000	42.204
			671.43	-38.487	-13.000	25.487
			1792.04	-31.618	-13.000	18.618
2	900.95		0.13	-61.839	-13.000	48.839
			16.21	-55.096	-13.000	42.096
			676.38	-38.230	-13.000	25.230
			1801.94	-31.887	-13.000	18.887
3	939.95		0.13	-62.409	-13.000	49.409
			15.42	-55.538	-13.000	42.538
			705.67	-37.516	-13.000	24.516
			9963.10	-31.766	-13.000	18.766
1	896.05	Low Power	0.13	-63.239	-13.000	50.239
			0.30	-54.126	-13.000	41.126
			186.19	-38.062	-13.000	25.062
			3027.80	-31.902	-13.000	18.902
2	900.95		0.13	-62.953	-13.000	49.953
			1.25	-55.720	-13.000	42.720
			184.54	-38.806	-13.000	25.806
			3146.16	-32.506	-13.000	19.506
3	939.95		0.01	-62.027	-13.000	49.027
			1.94	-55.499	-13.000	42.499
			705.77	-39.224	-13.000	26.224
			7608.13	-32.120	-13.000	19.120

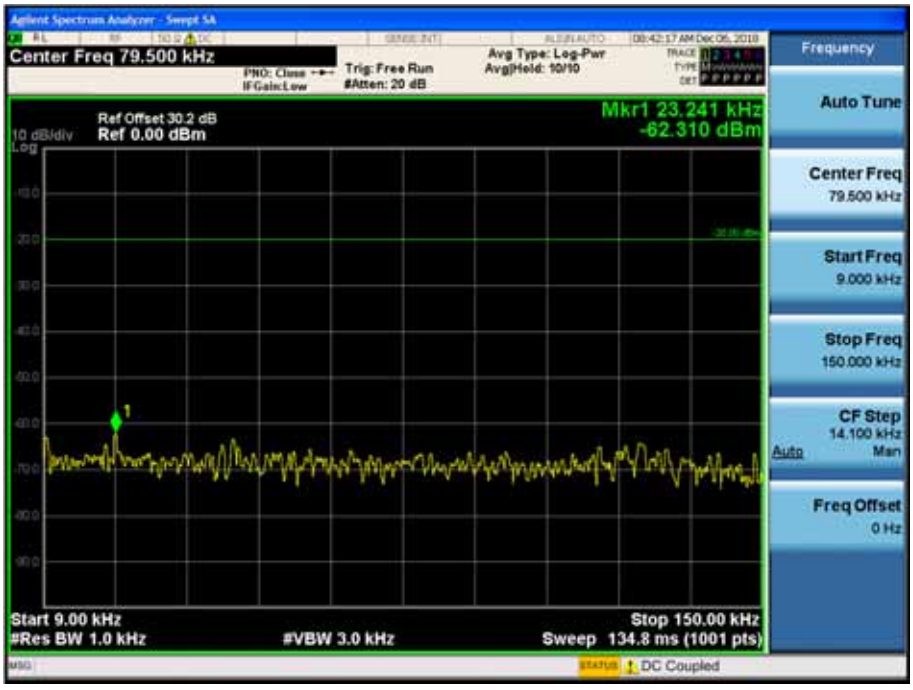
4K00F2D

No.	Frequency (MHz)	Setting	Measured Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Margin (dB)
1	901.55	High Power	0.13	-61.523	-13.000	48.523
			0.31	-55.523	-13.000	42.523
			671.88	-38.552	-13.000	25.552
			1789.32	-32.523	-13.000	19.523
2	940.55		0.13	-60.523	-13.000	47.523
			16.22	-56.231	-13.000	43.231
			675.23	-39.521	-13.000	26.521
			1801.66	-30.923	-13.000	17.923
1	901.55	Low Power	0.13	-61.085	-13.000	48.085
			6.41	-55.105	-13.000	42.105
			172.51	-38.097	-13.000	25.097
			9267.81	-31.924	-13.000	18.924
2	940.55		0.13	-62.553	-13.000	49.553
			27.85	-54.894	-13.000	41.894
			704.41	-37.627	-13.000	24.627
			7378.62	-32.469	-13.000	19.469

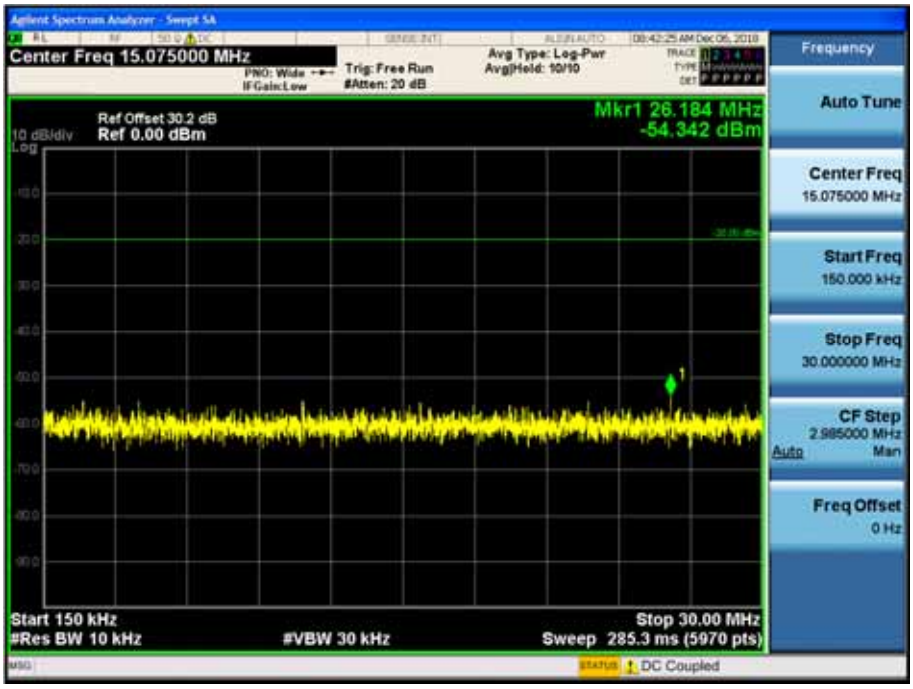
▣ **Plots of Unwanted Emissions**

11K0F3E _ 806.05 MHz_High

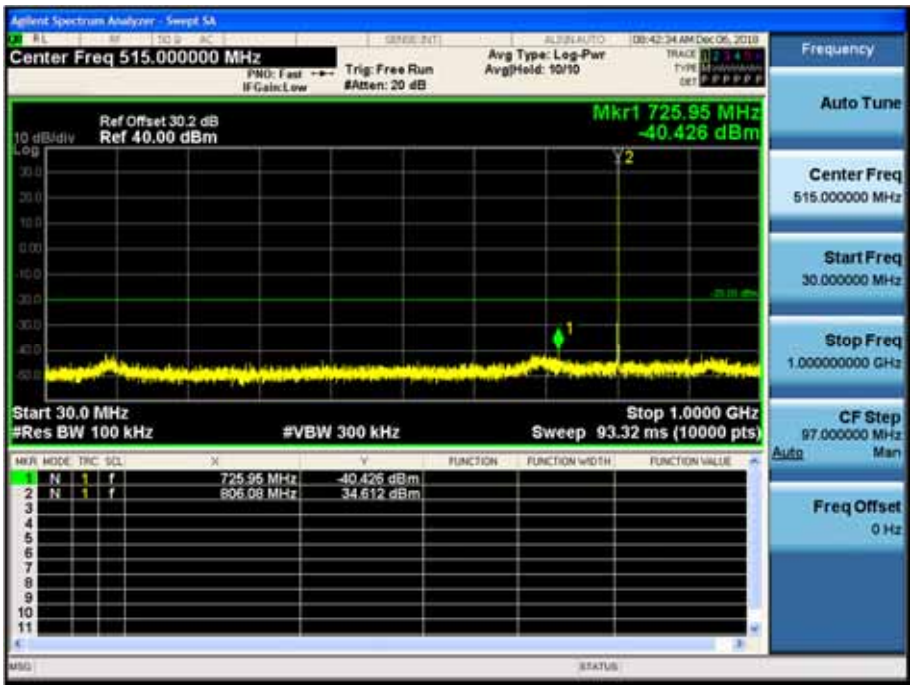
9 kHz~150 kHz



150 kHz~30 MHz



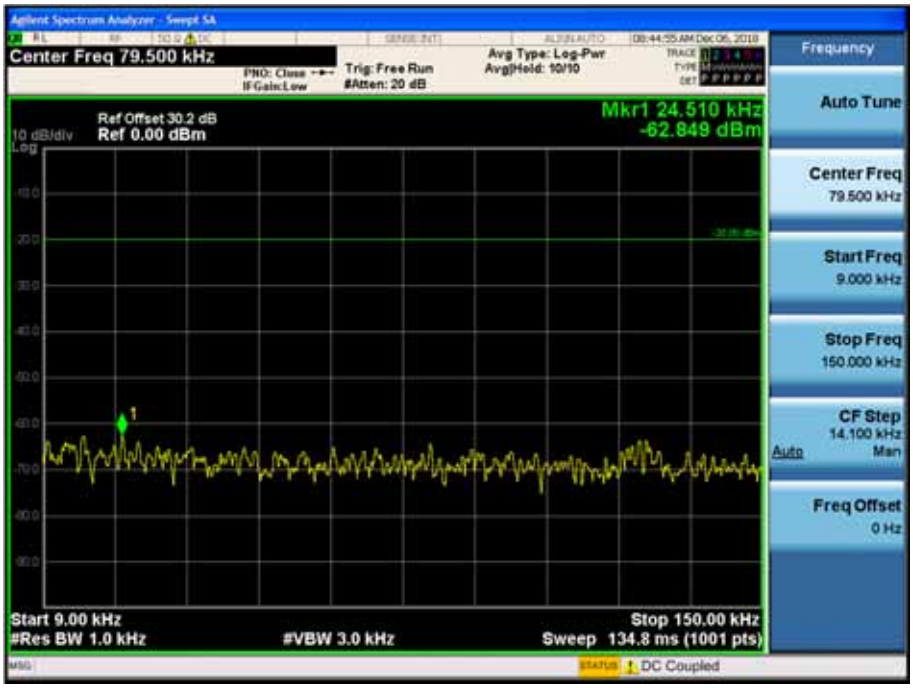
30 MHz~1 GHz



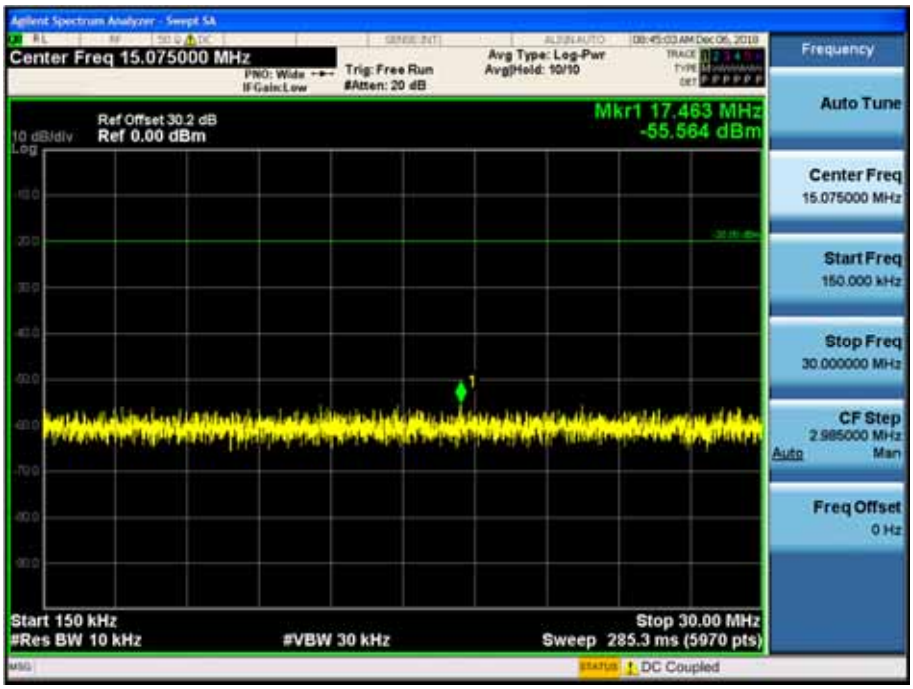
1 GHz~10 GHz

11K0F3E _ 851.05 MHz_High

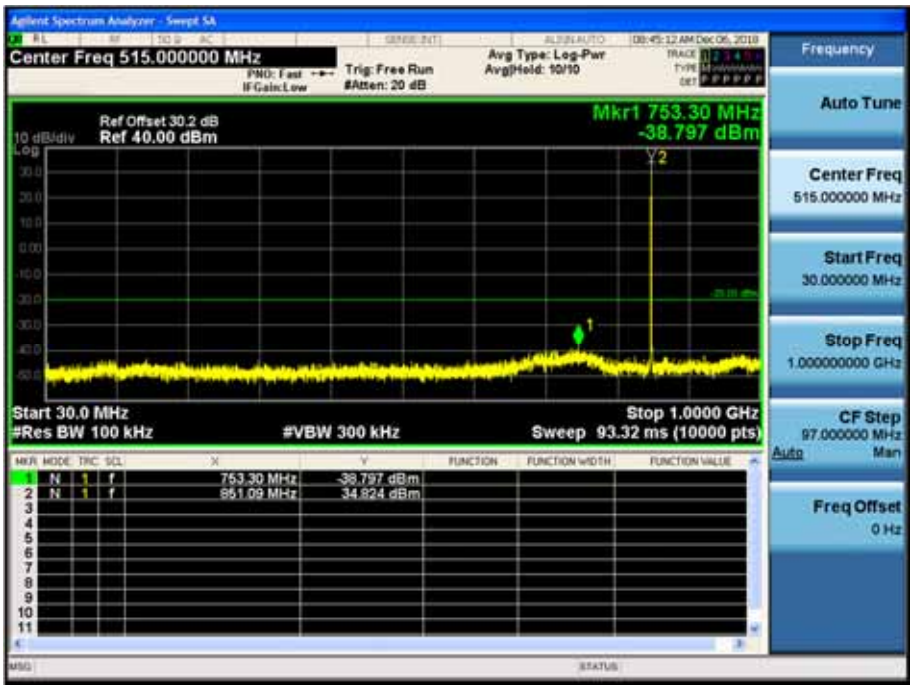
9 kHz~150 kHz



150 kHz~30 MHz



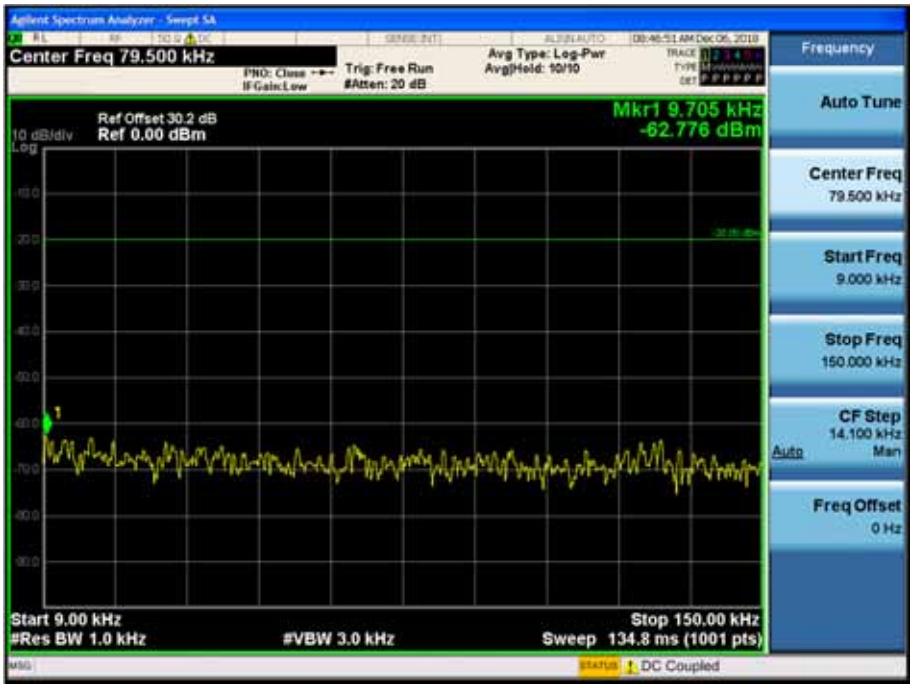
30 MHz~1 GHz



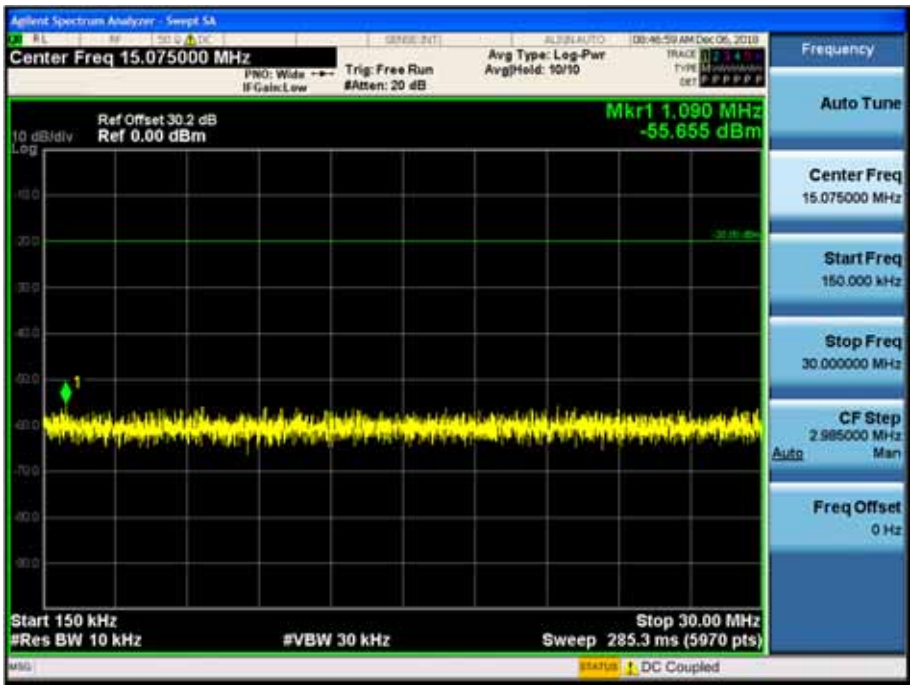
1 GHz~10 GHz

11K0F3E _ 868.95 MHz_High

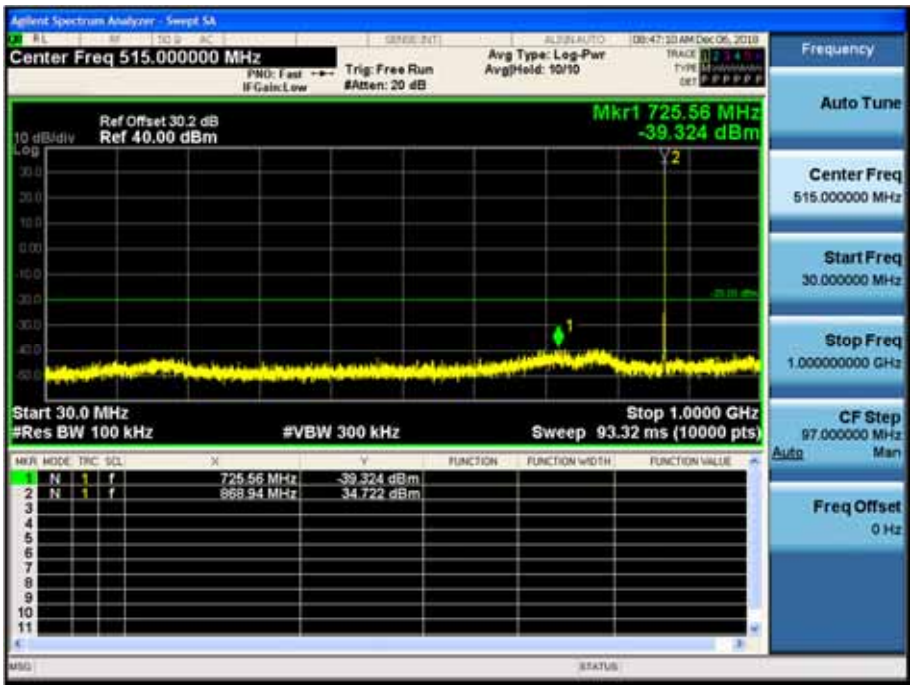
9 kHz~150 kHz



150 kHz~30 MHz



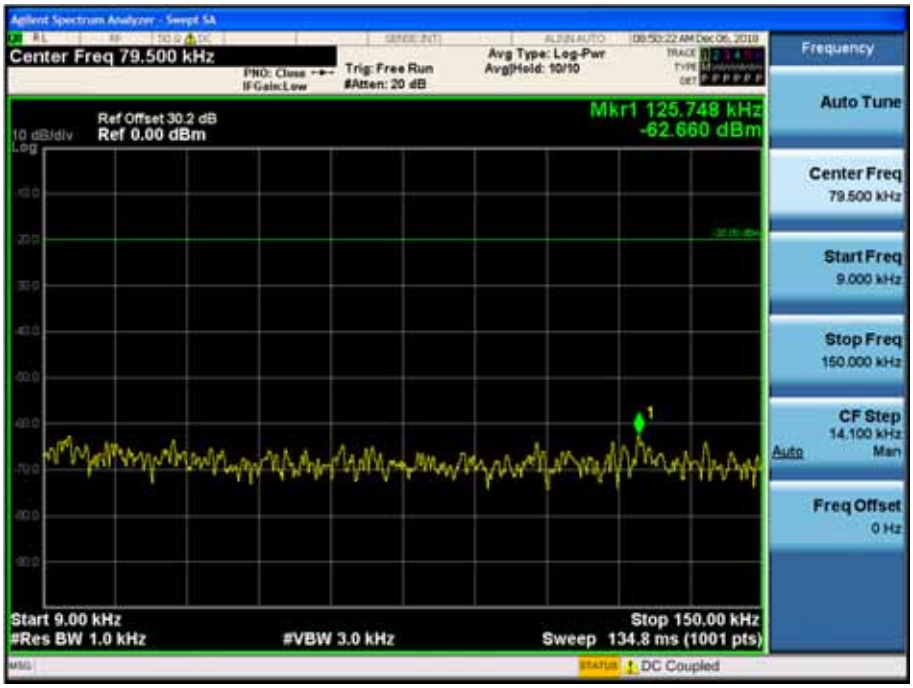
30 MHz~1 GHz



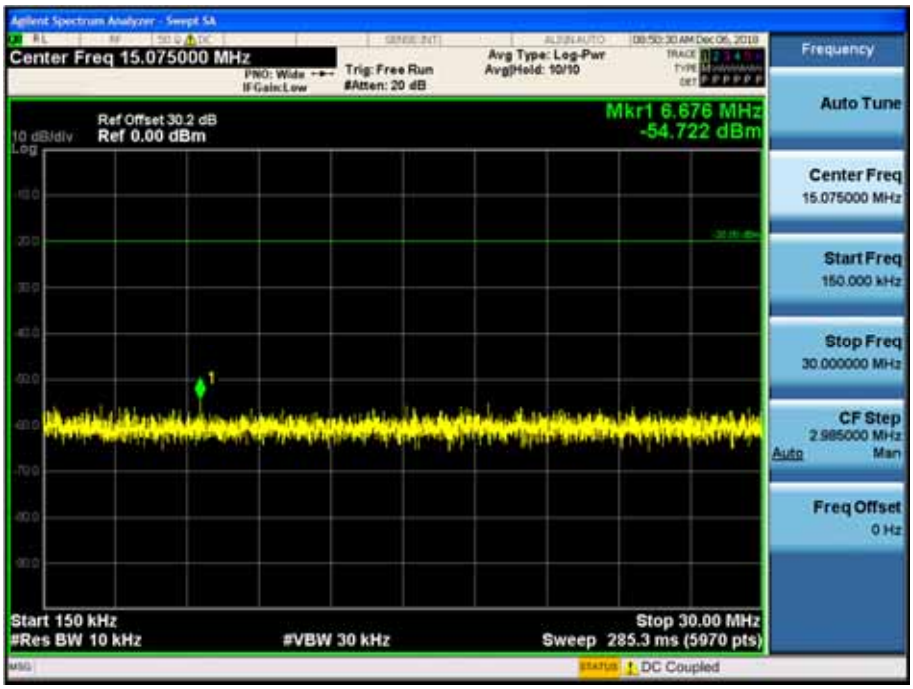
1 GHz~10 GHz

11K0F3E _896.05 MHz_High

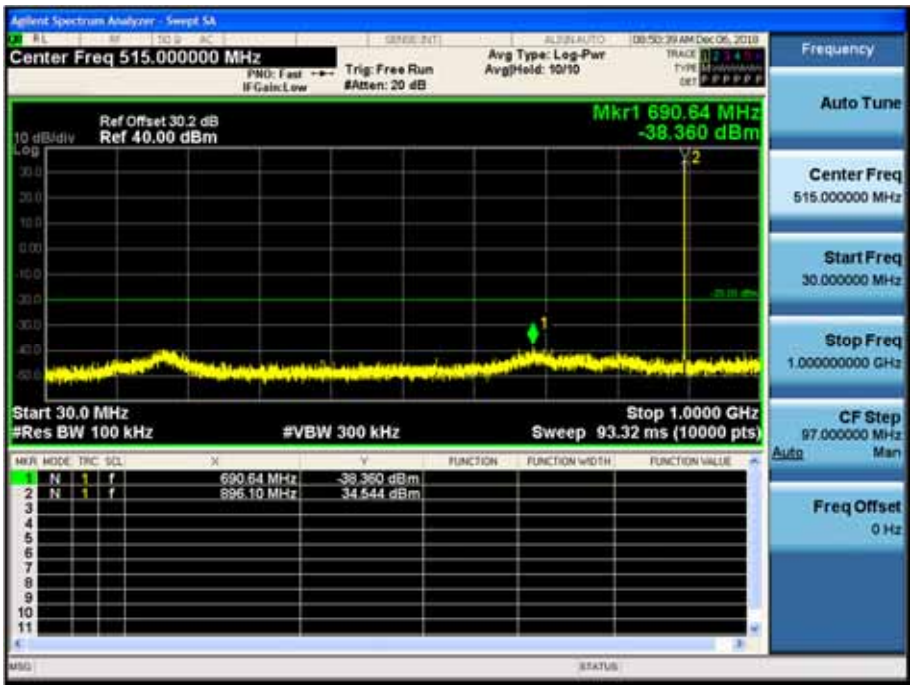
9 kHz~150 kHz



150 kHz~30 MHz



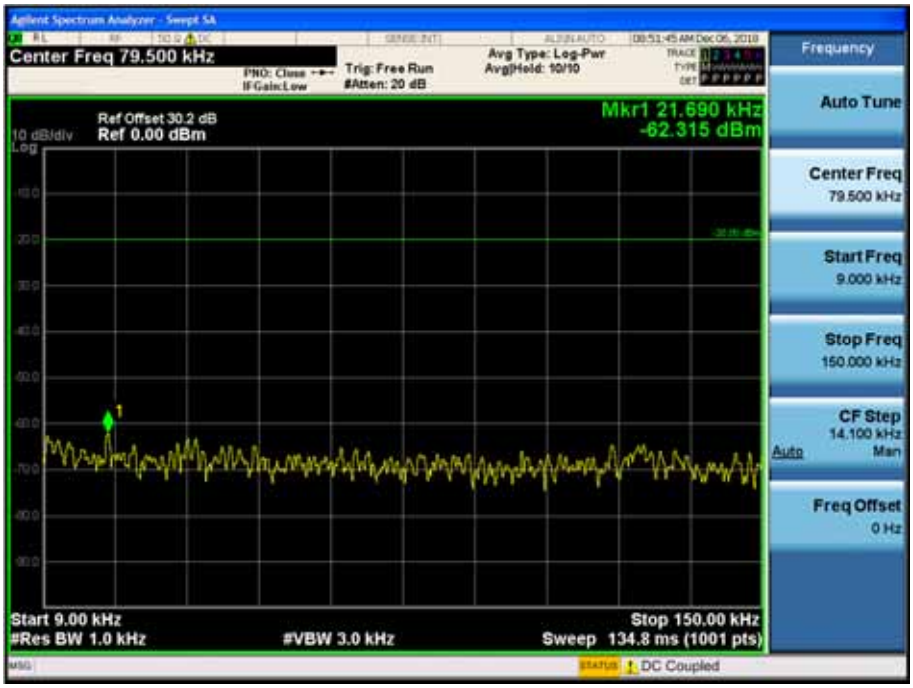
30 MHz~1 GHz



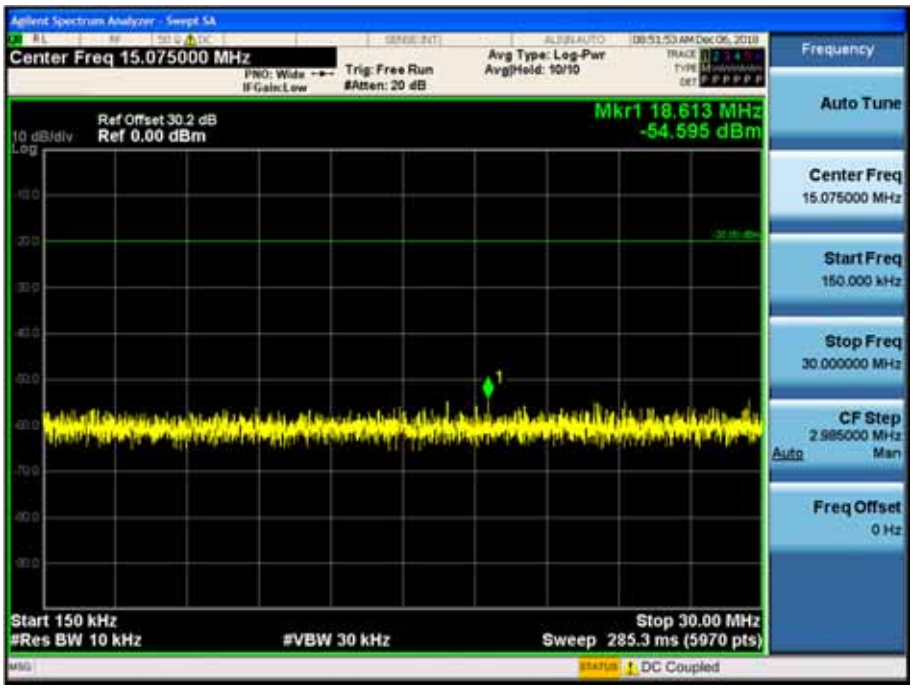
1 GHz~10 GHz

11K0F3E _ 900.95 MHz_High

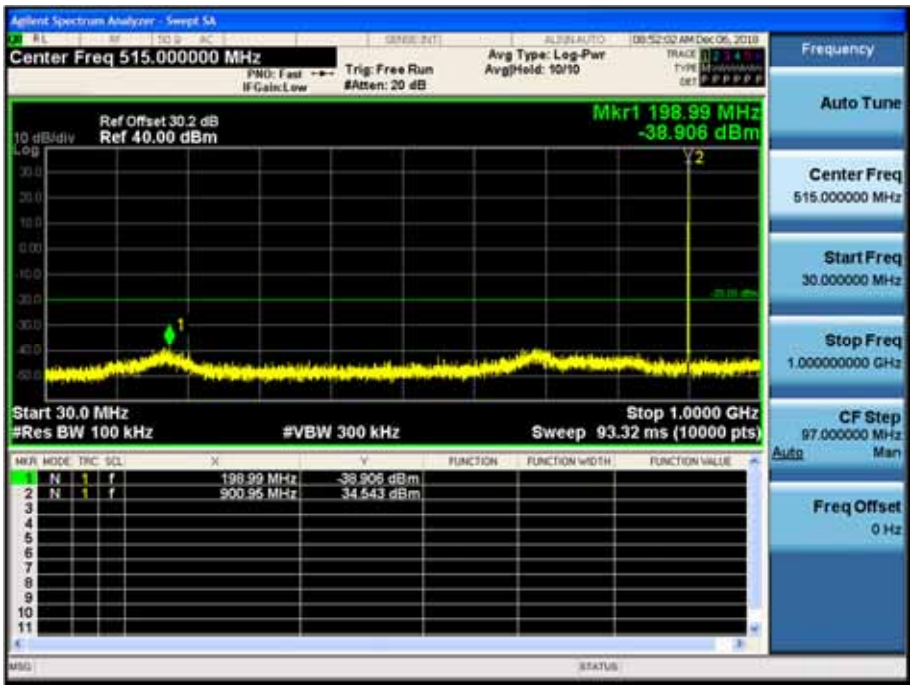
9 kHz~150 kHz



150 kHz~30 MHz



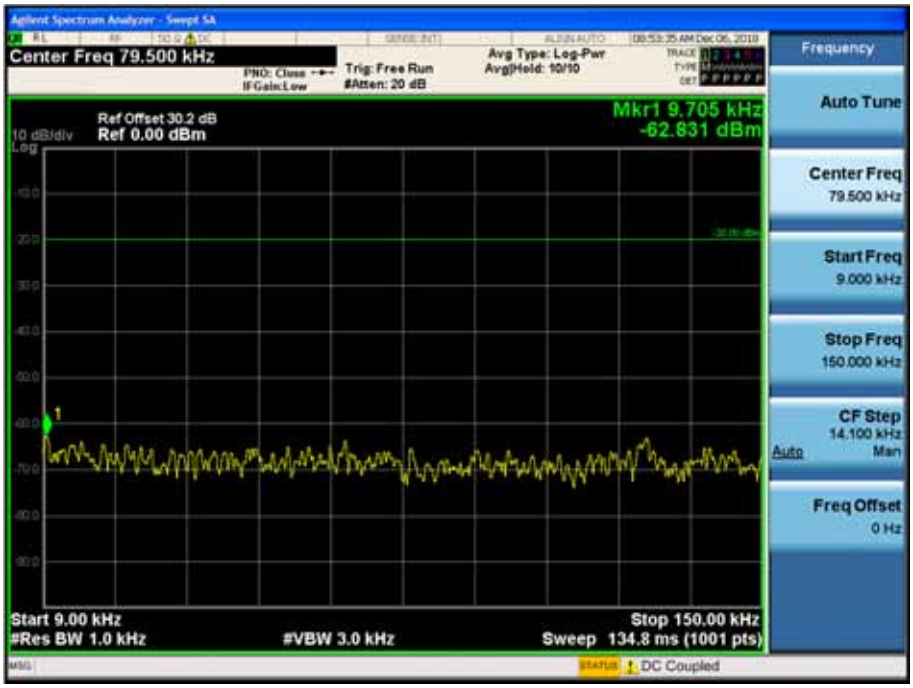
30 MHz~1 GHz



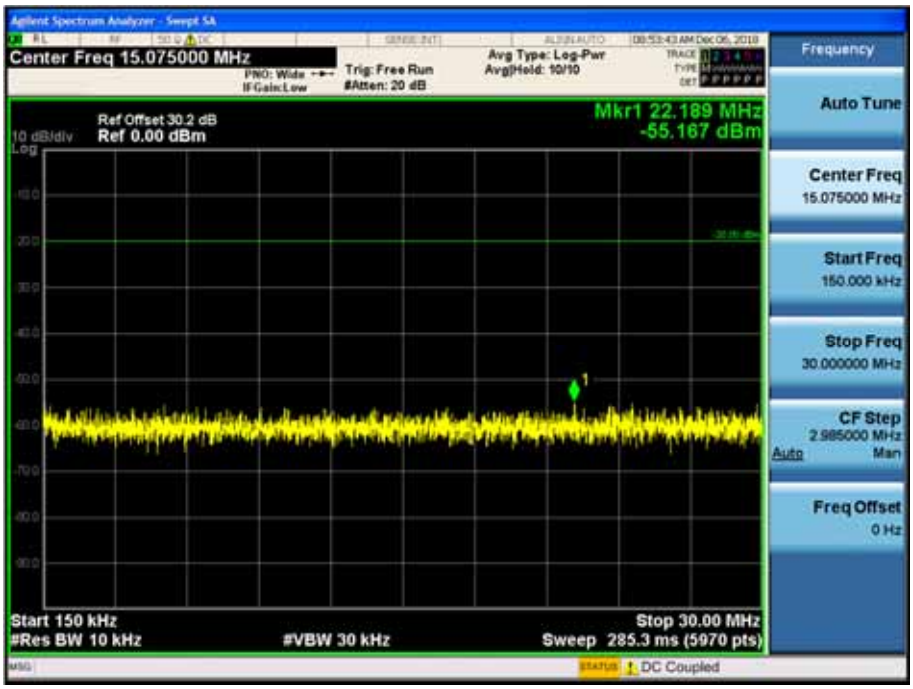
1 GHz~10 GHz

11K0F3E _939.95 MHz_High

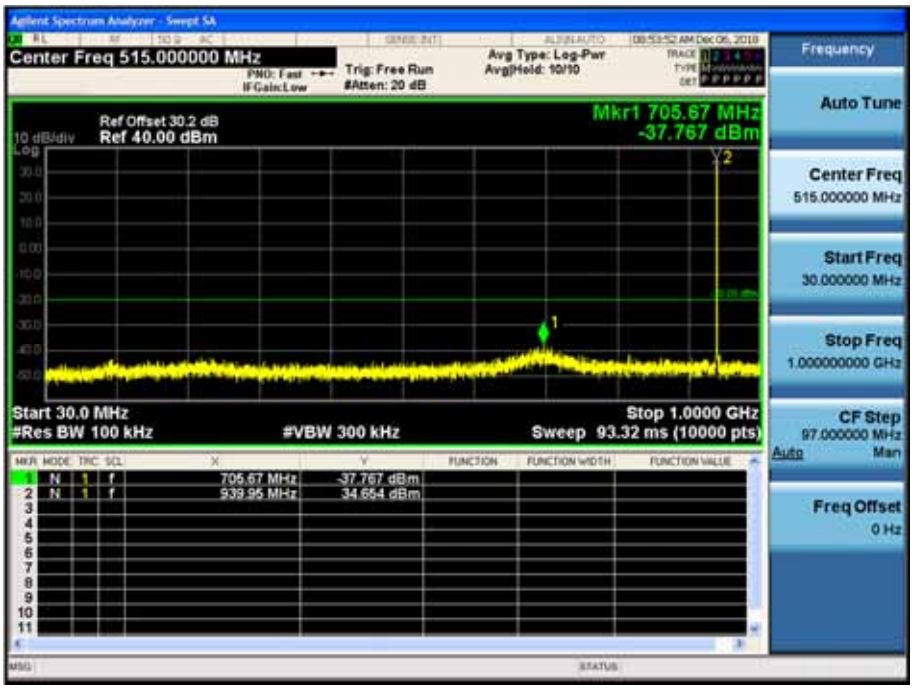
9 kHz~150 kHz



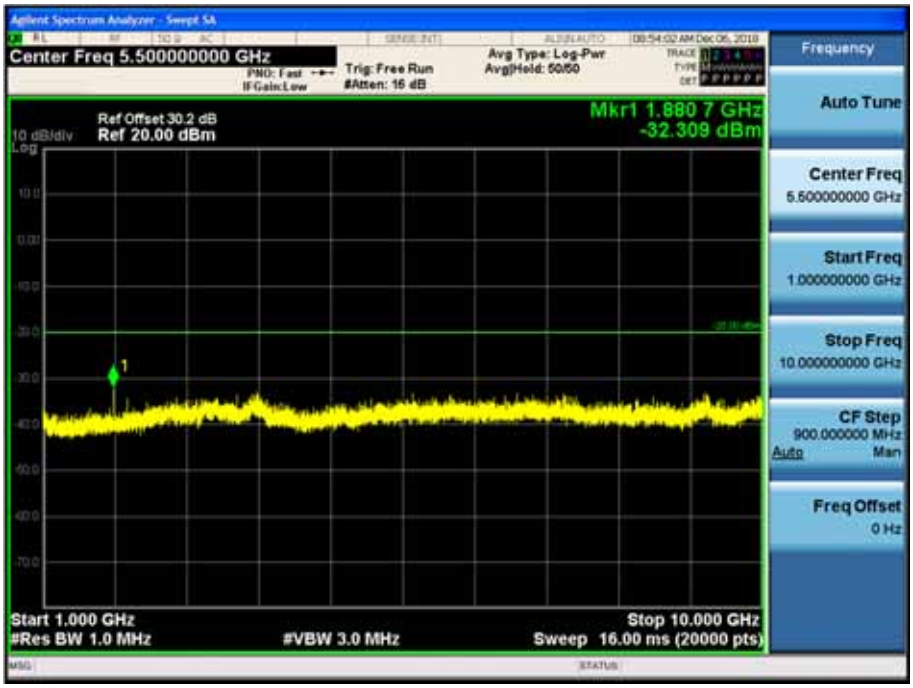
150 kHz~30 MHz



30 MHz~1 GHz

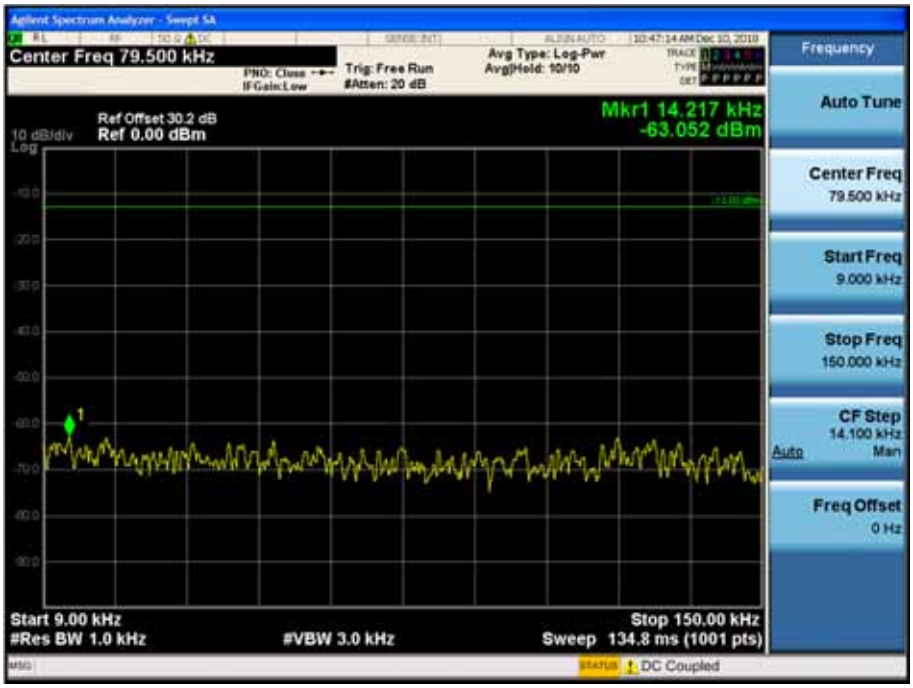


1 GHz~10 GHz

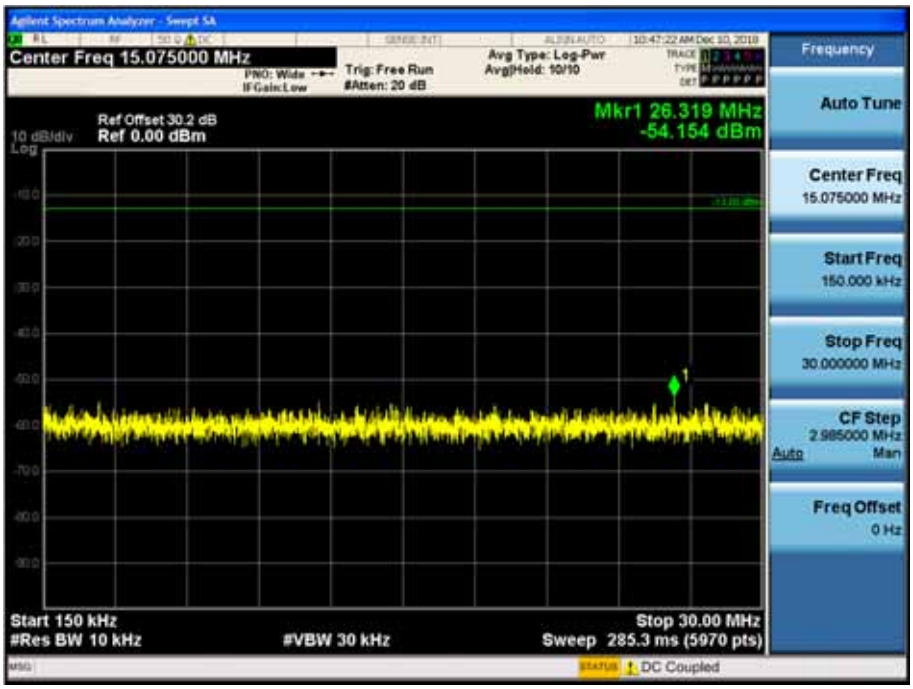


11K0F3E _ 901.55 MHz_High

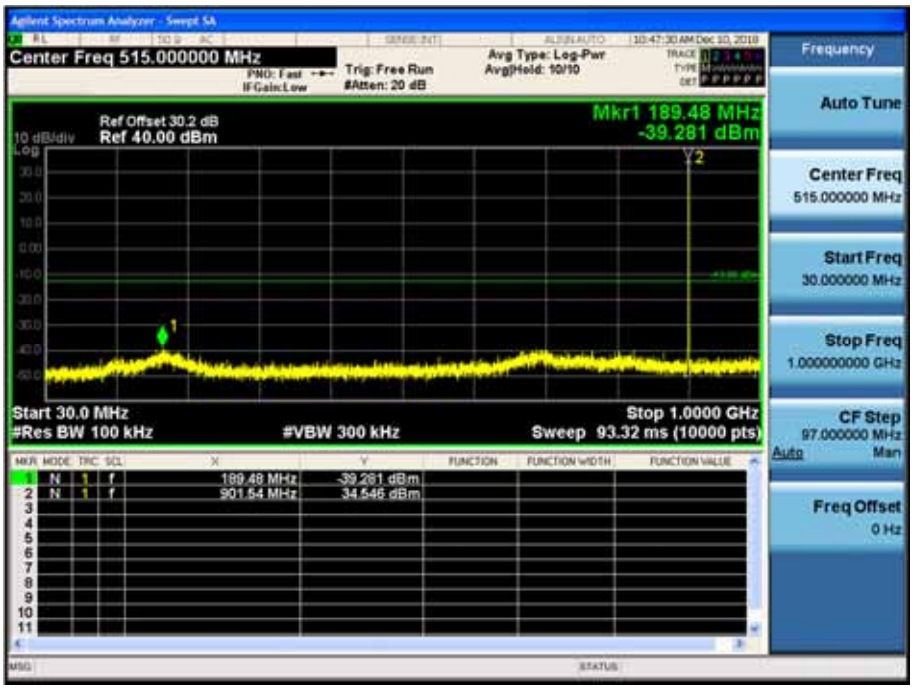
9 kHz~150 kHz



150 kHz~30 MHz



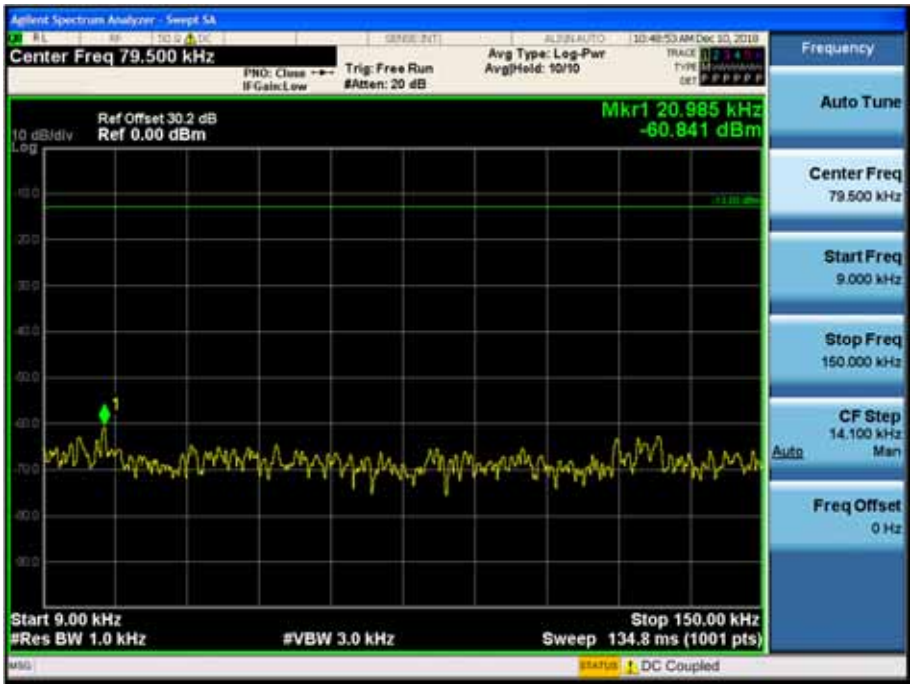
30 MHz~1 GHz



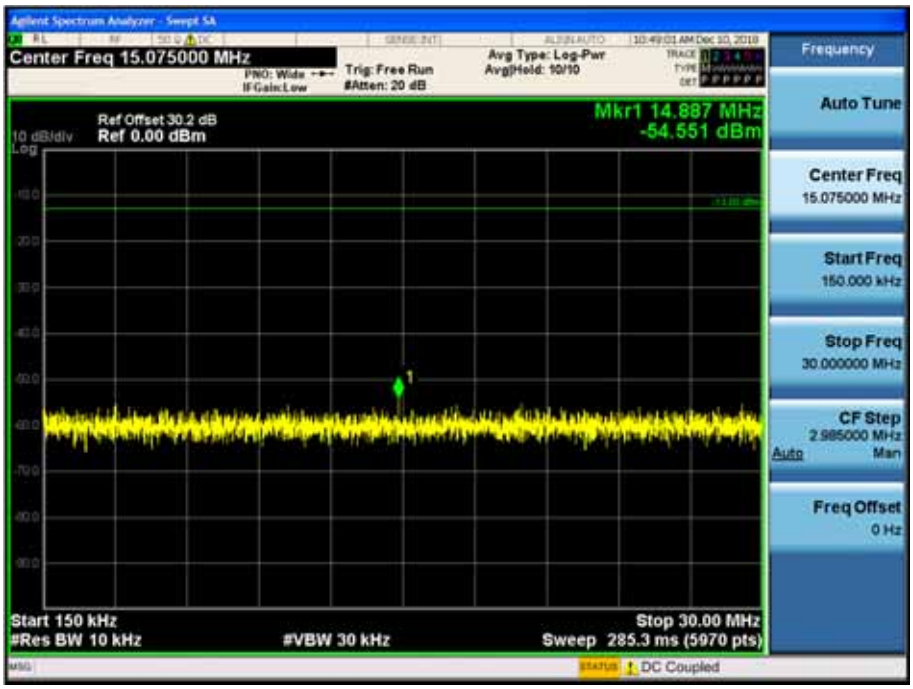
1 GHz~10 GHz

11K0F3E _ 940.55 MHz_High

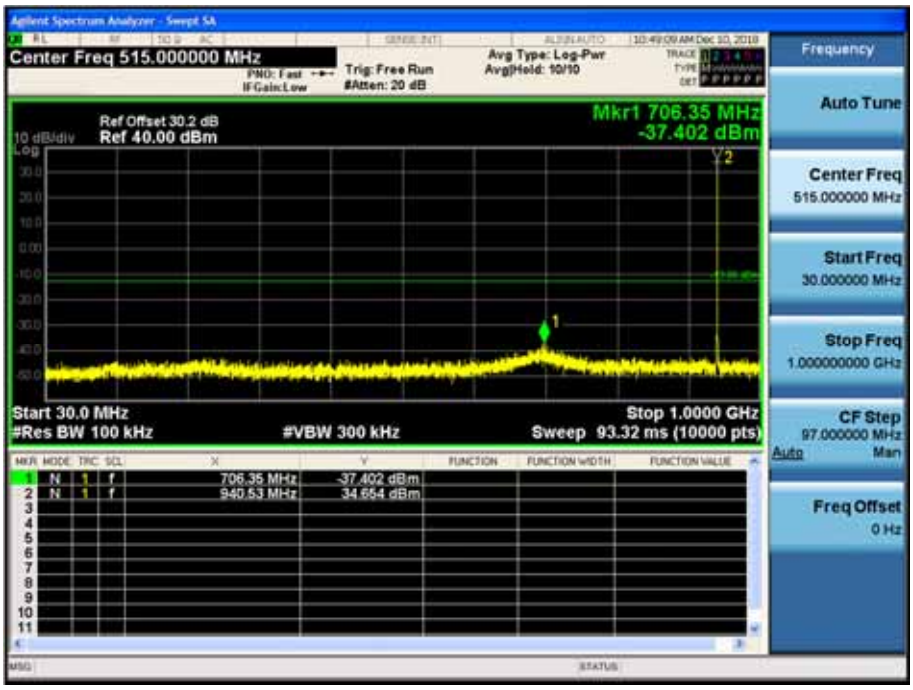
9 kHz~150 kHz



150 kHz~30 MHz



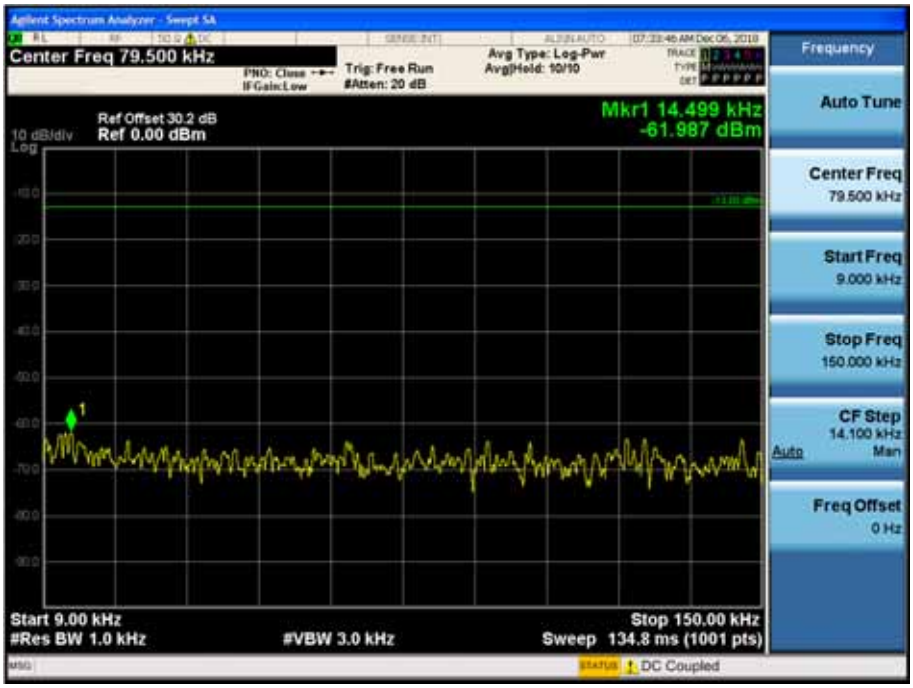
30 MHz~1 GHz



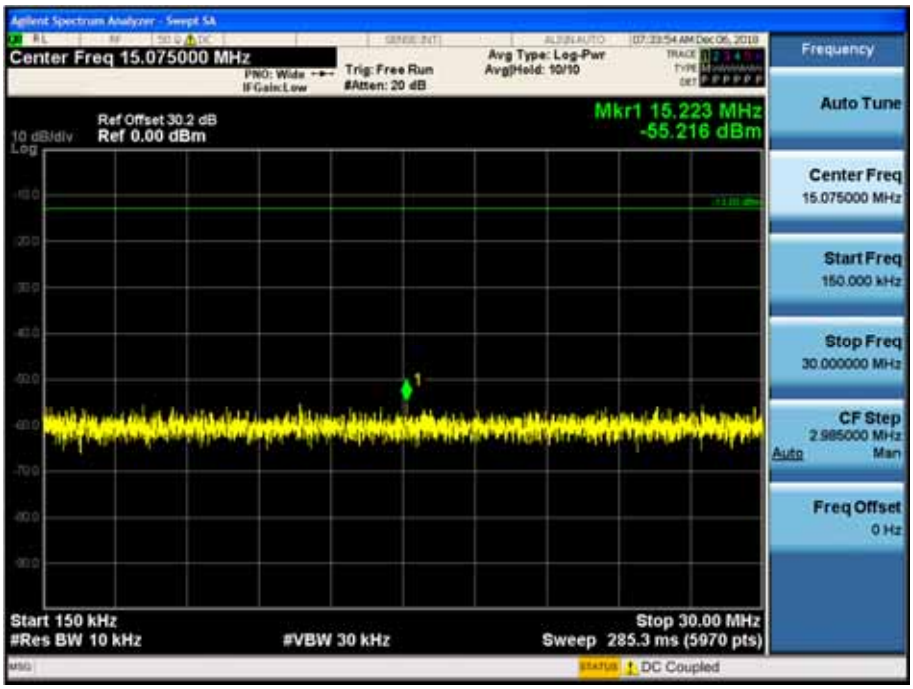
1 GHz~10 GHz

16K0F3E _ 806.05 MHz_High

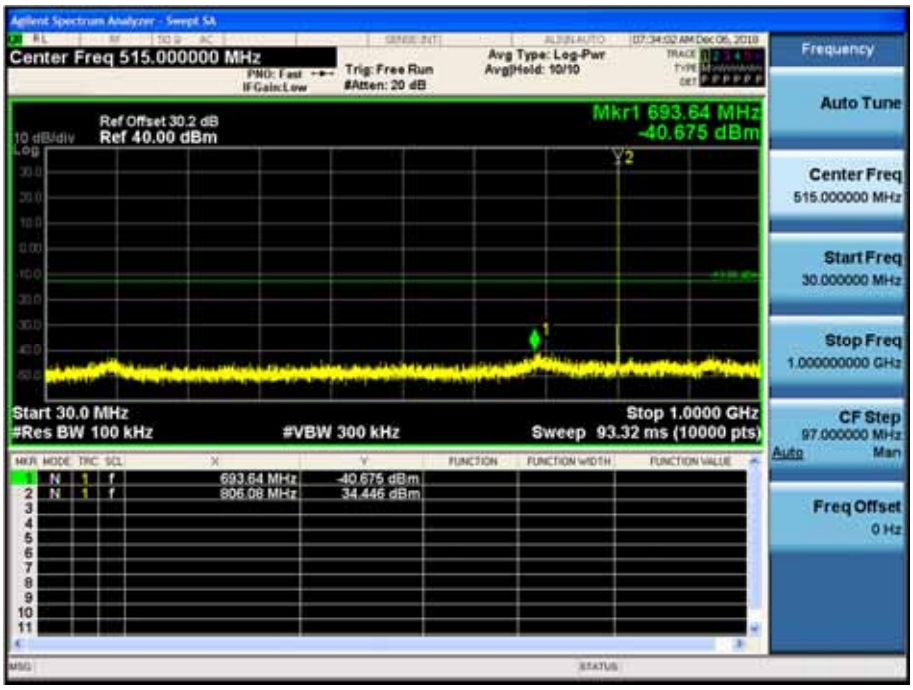
9 kHz~150 kHz



150 kHz~30 MHz



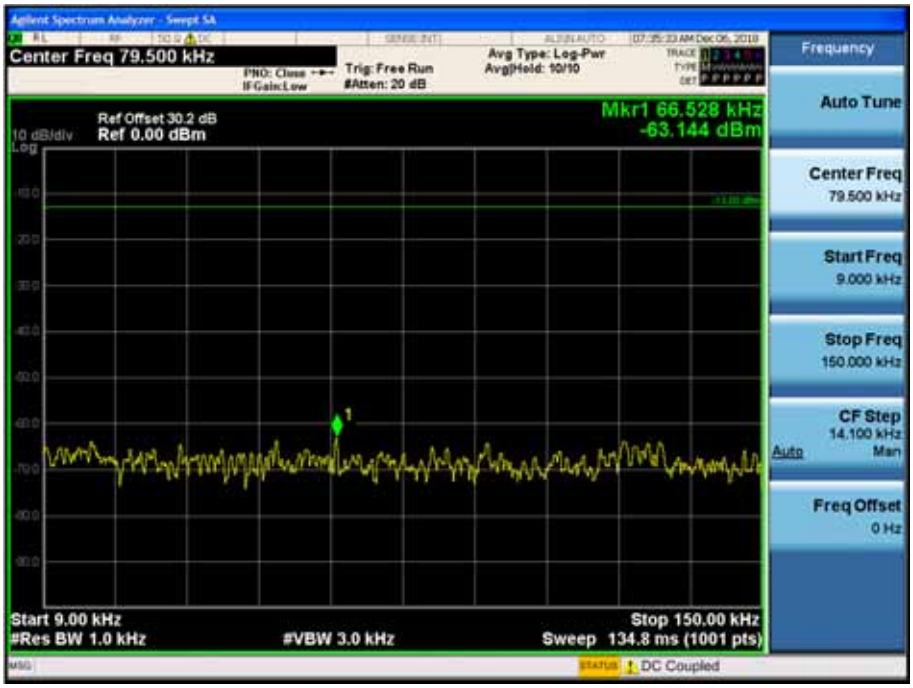
30 MHz~1 GHz



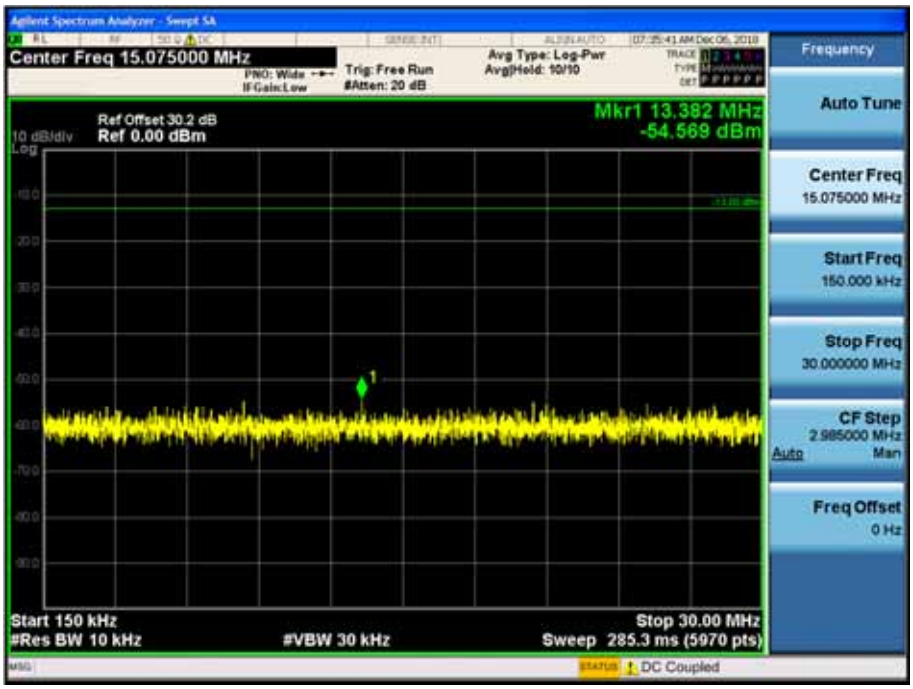
1 GHz~10 GHz

16K0F3E _ 851.05 MHz_High

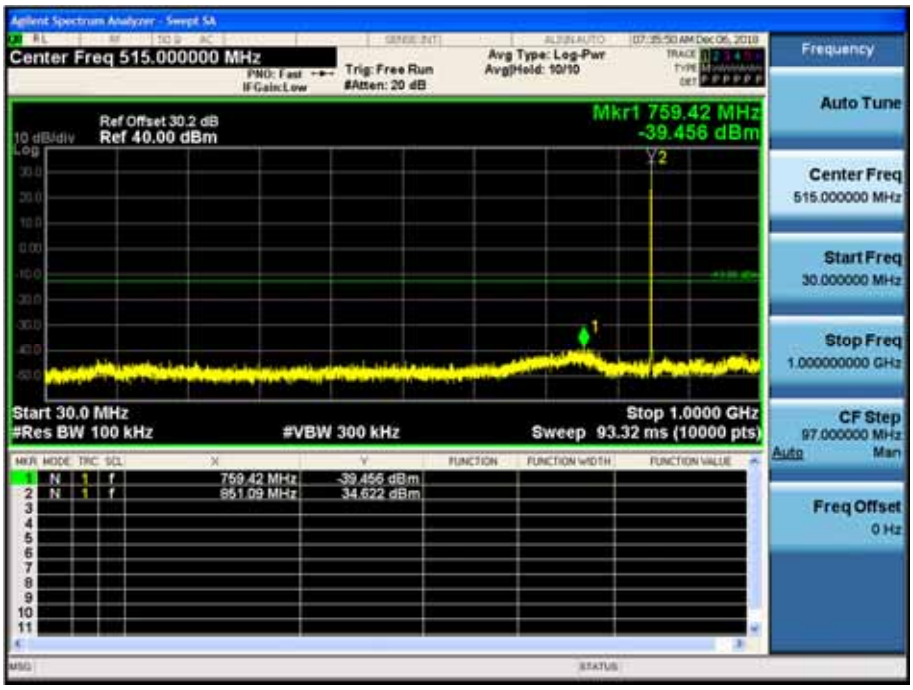
9 kHz~150 kHz



150 kHz~30 MHz



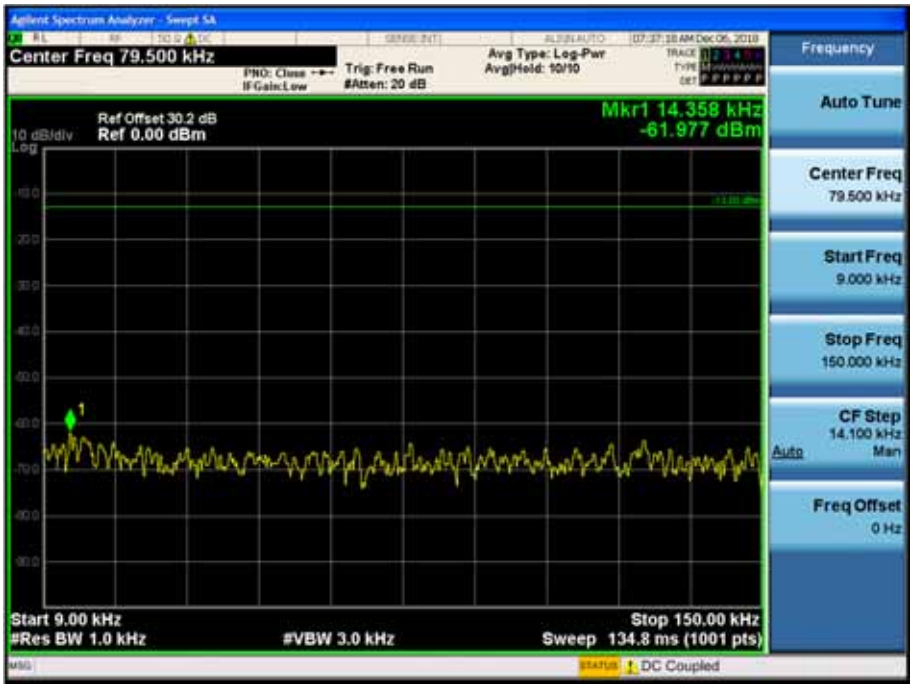
30 MHz~1 GHz



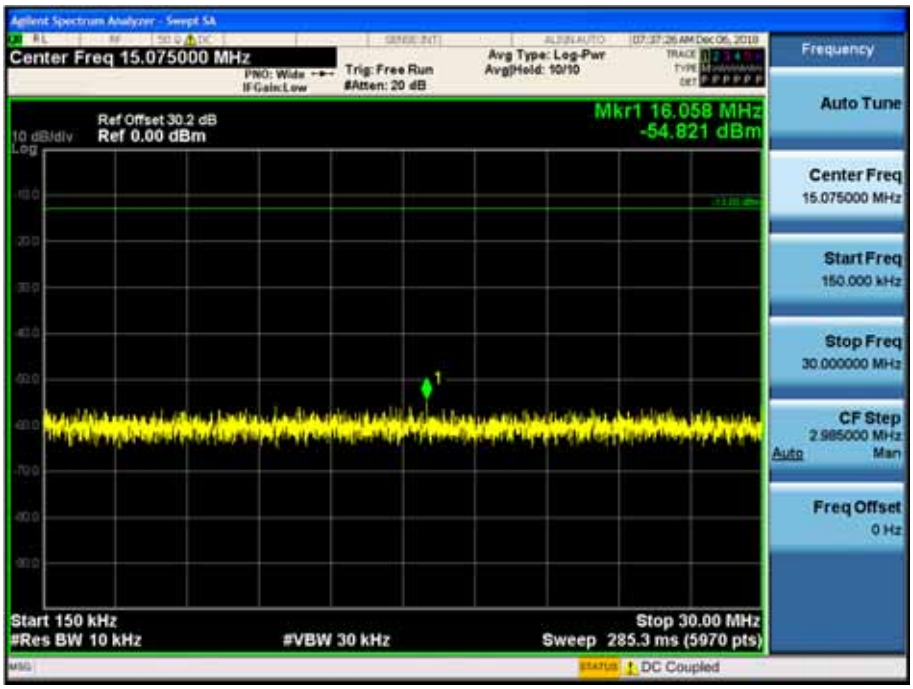
1 GHz~10 GHz

16K0F3E _ 868.95 MHz_High

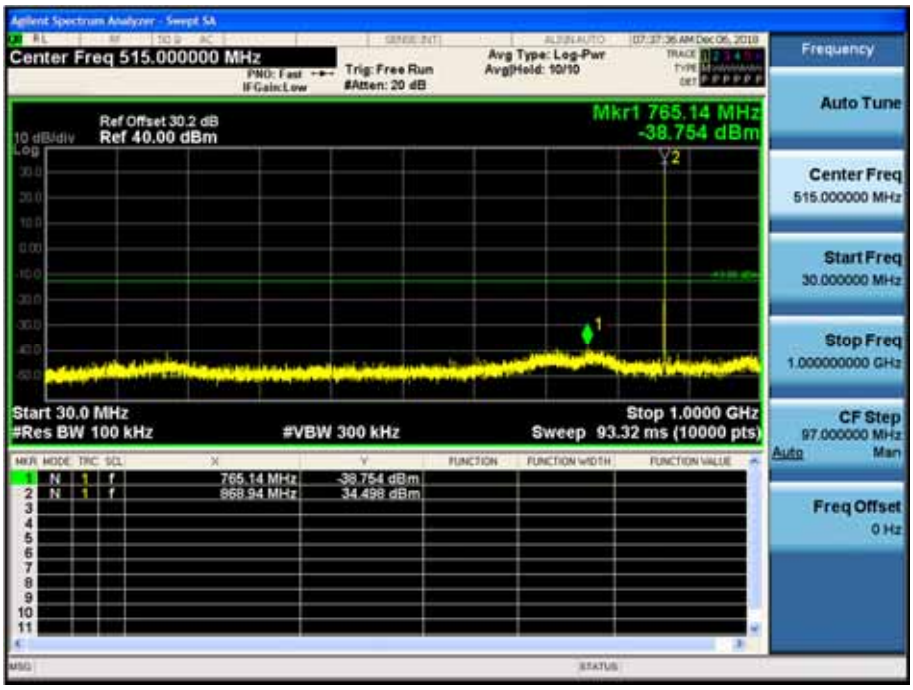
9 kHz~150 kHz



150 kHz~30 MHz



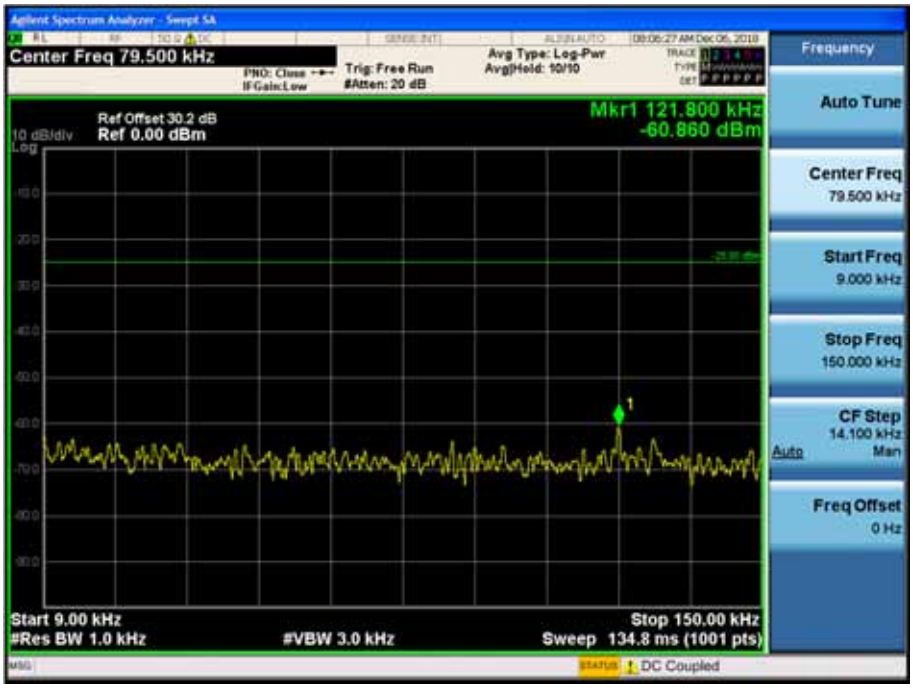
30 MHz~1 GHz



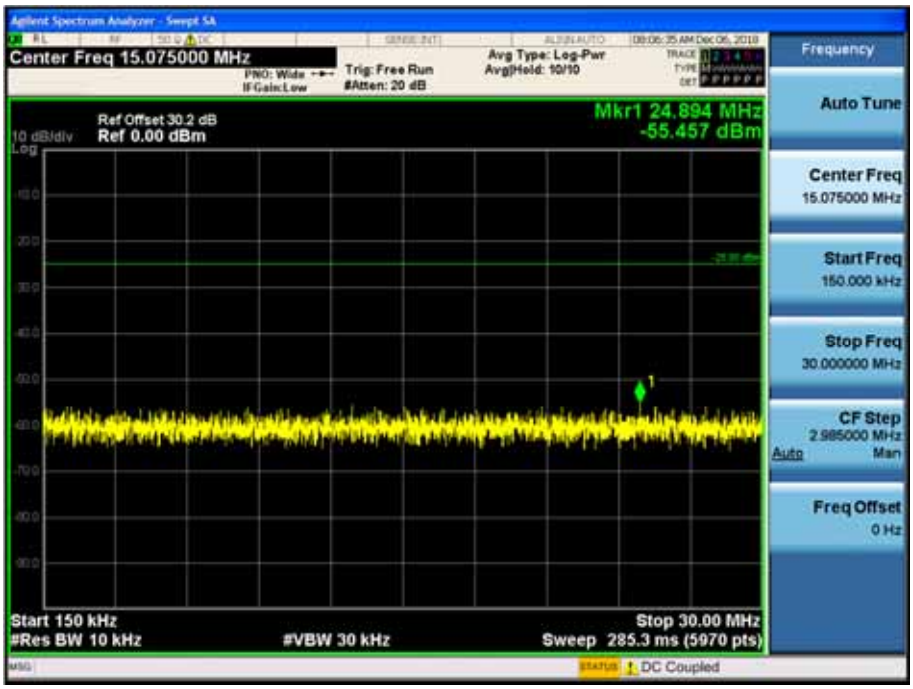
1 GHz~10 GHz

4K00F1E, 4K00F1D, 4K00F7W _ 806.05 MHz_High

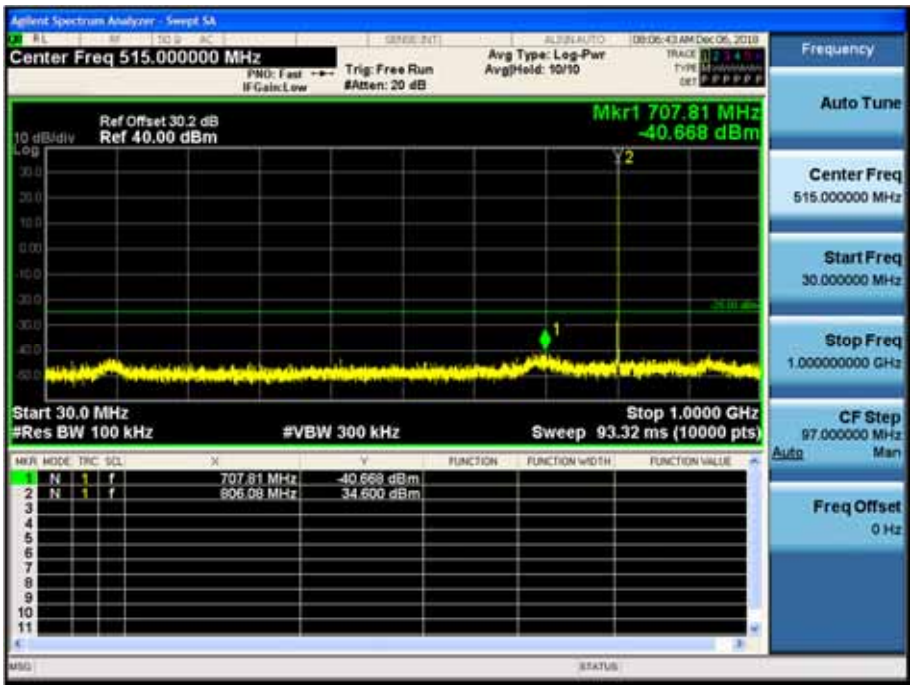
9 kHz~150 kHz



150 kHz~30 MHz



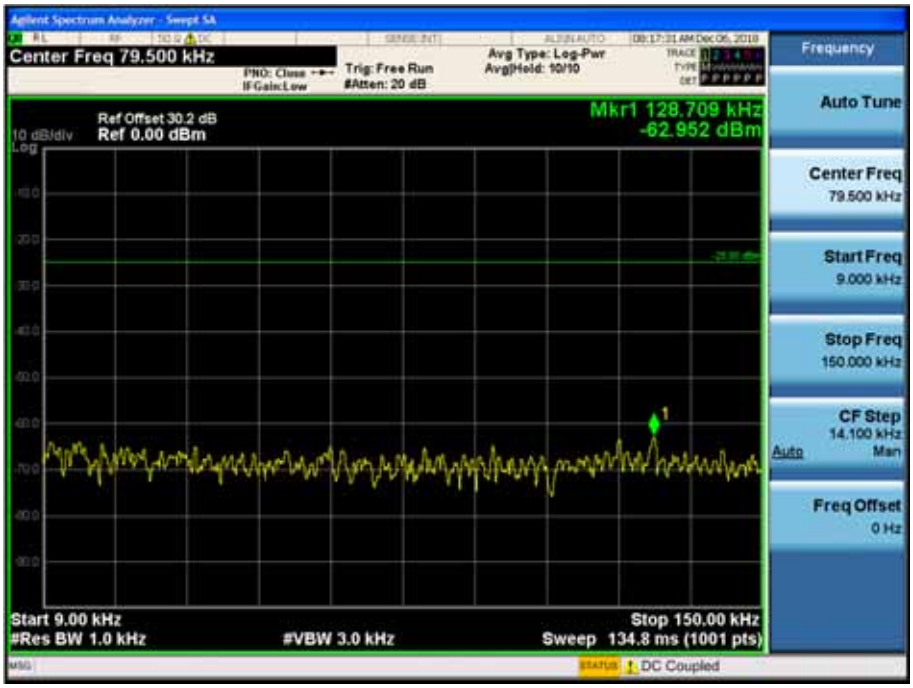
30 MHz~1 GHz



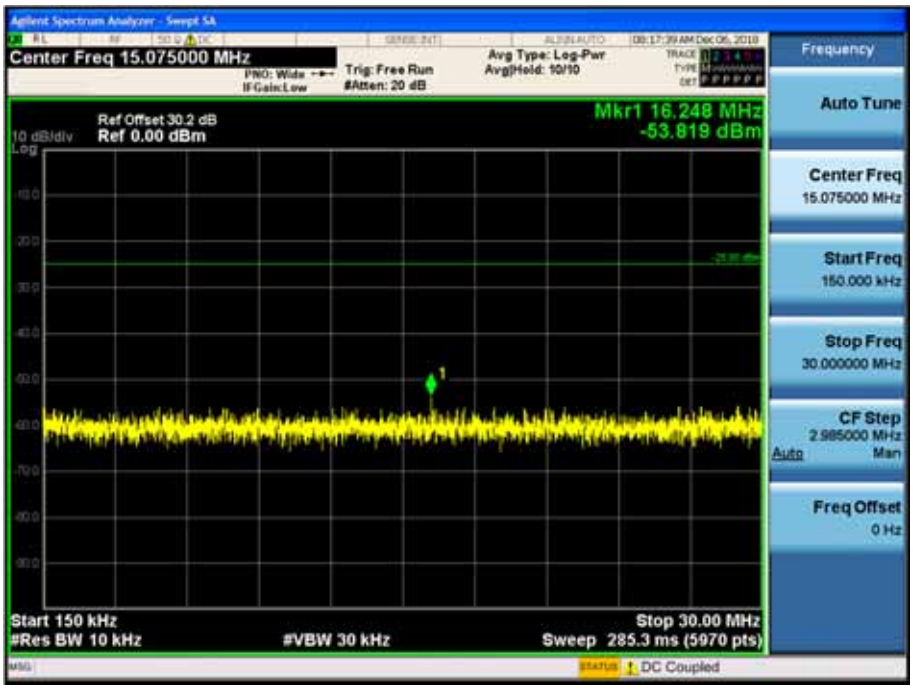
1 GHz~10 GHz

4K00F1E, 4K00F1D, 4K00F7W _ 851.05 MHz_High

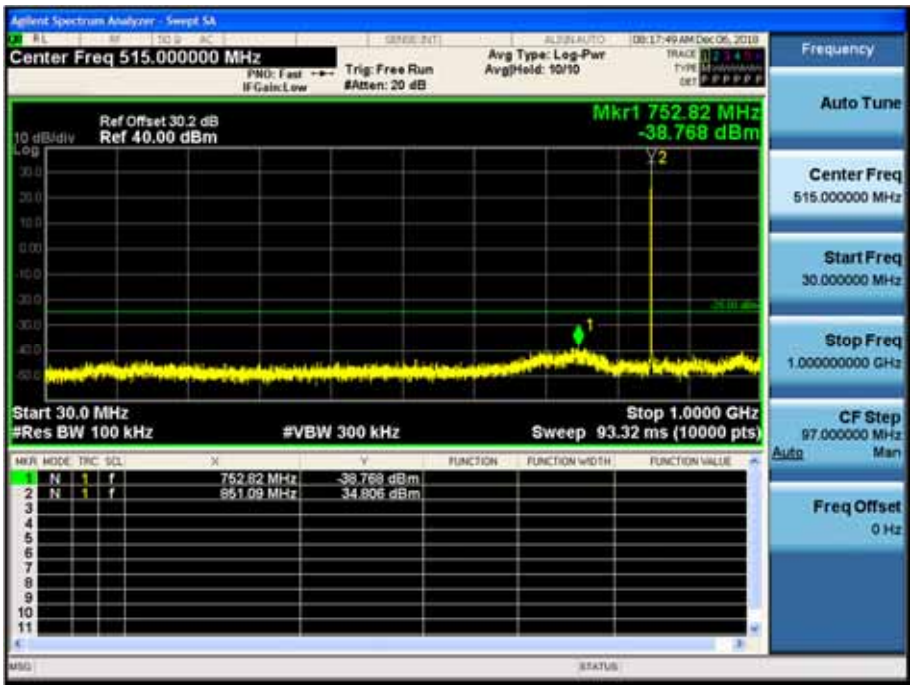
9 kHz~150 kHz



150 kHz~30 MHz



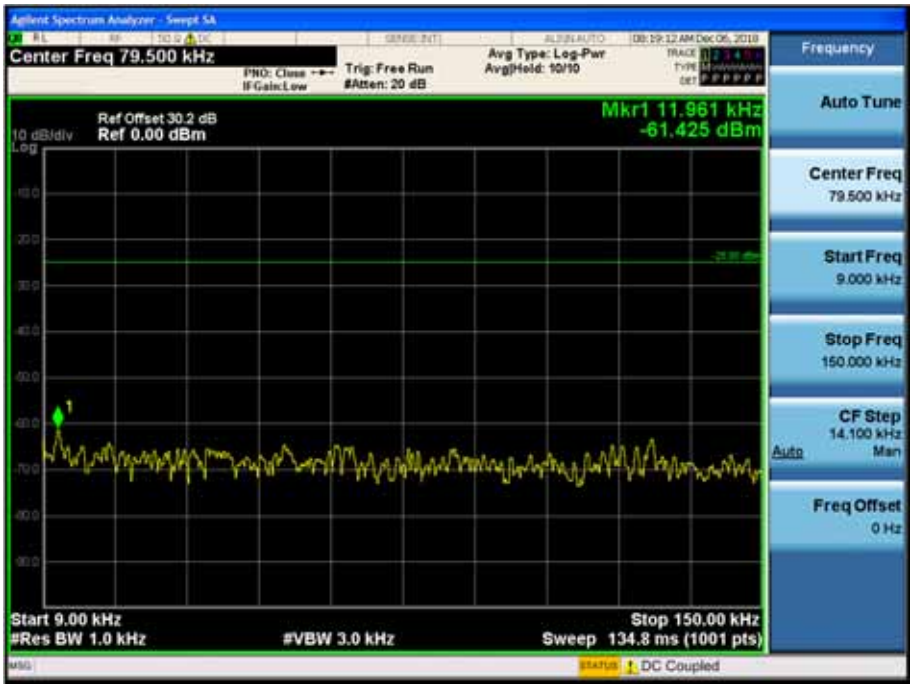
30 MHz~1 GHz



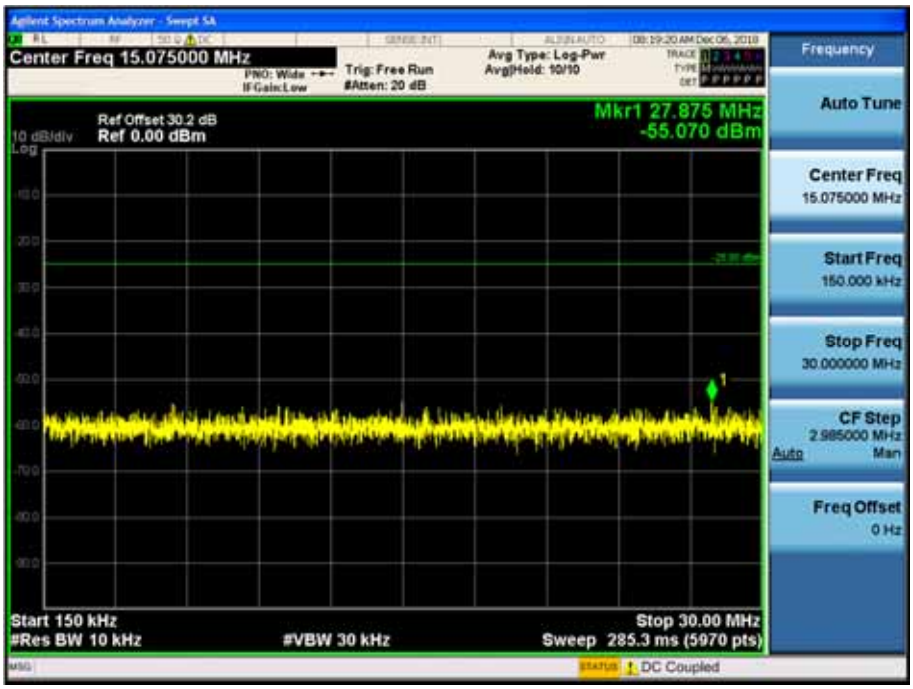
1 GHz~10 GHz

4K00F1E, 4K00F1D, 4K00F7W _ 868.95 MHz_High

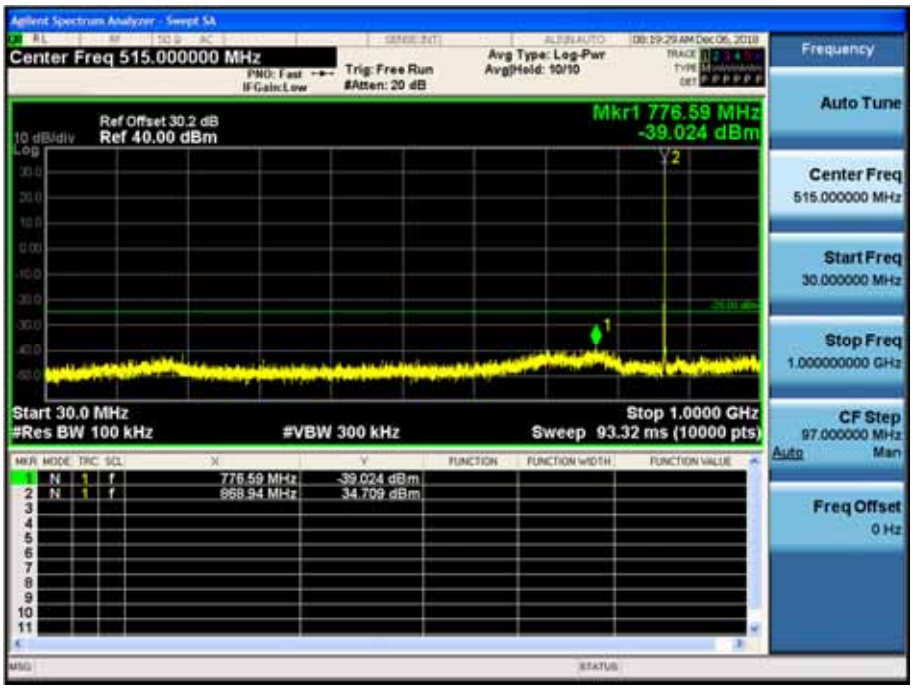
9 kHz~150 kHz



150 kHz~30 MHz



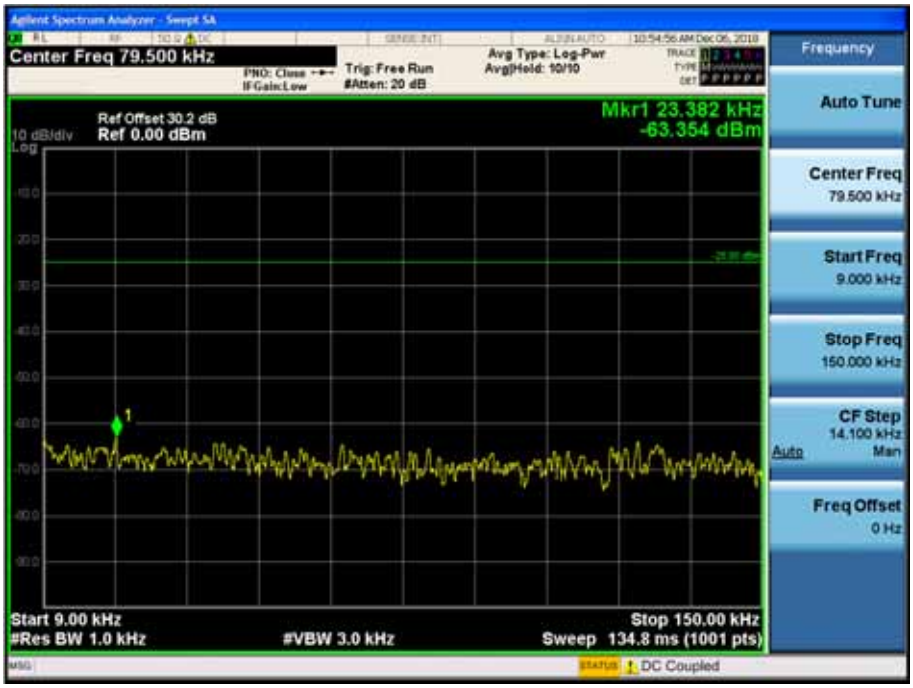
30 MHz~1 GHz



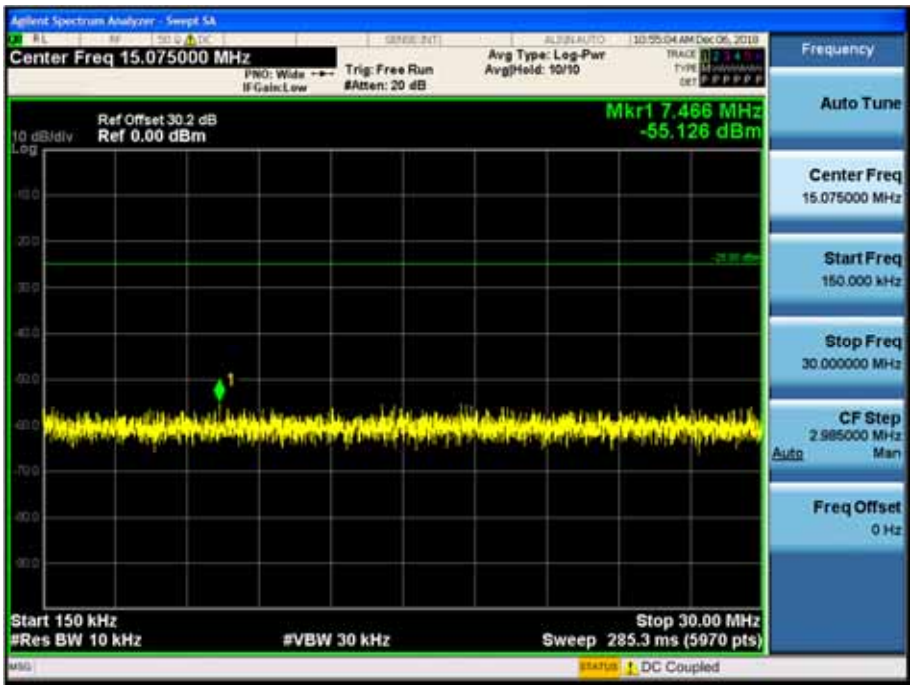
1 GHz~10 GHz

4K00F1E, 4K00F1D, 4K00F7W _ 896.05 MHz_High

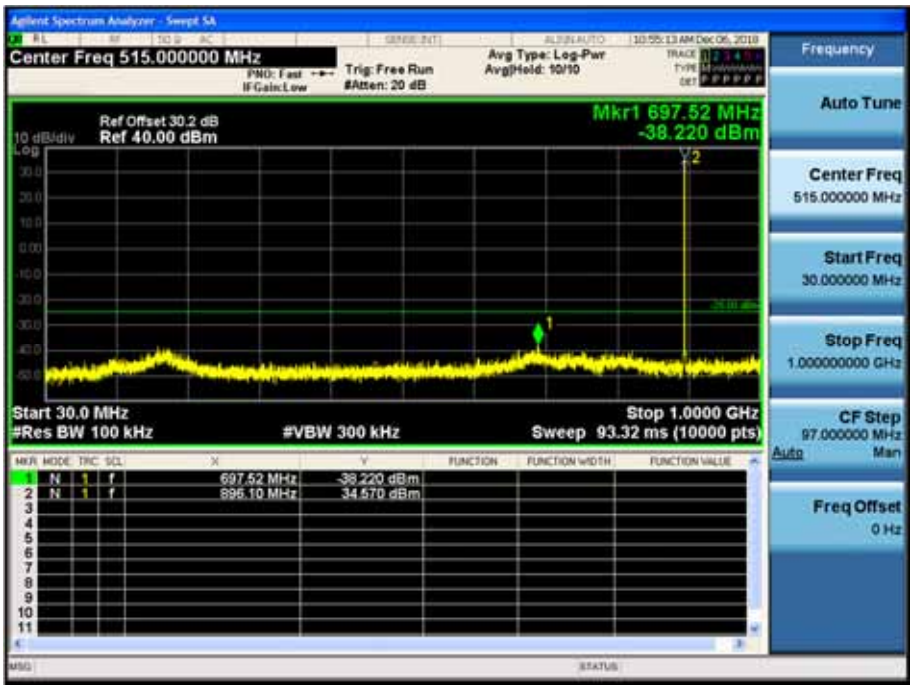
9 kHz~150 kHz



150 kHz~30 MHz



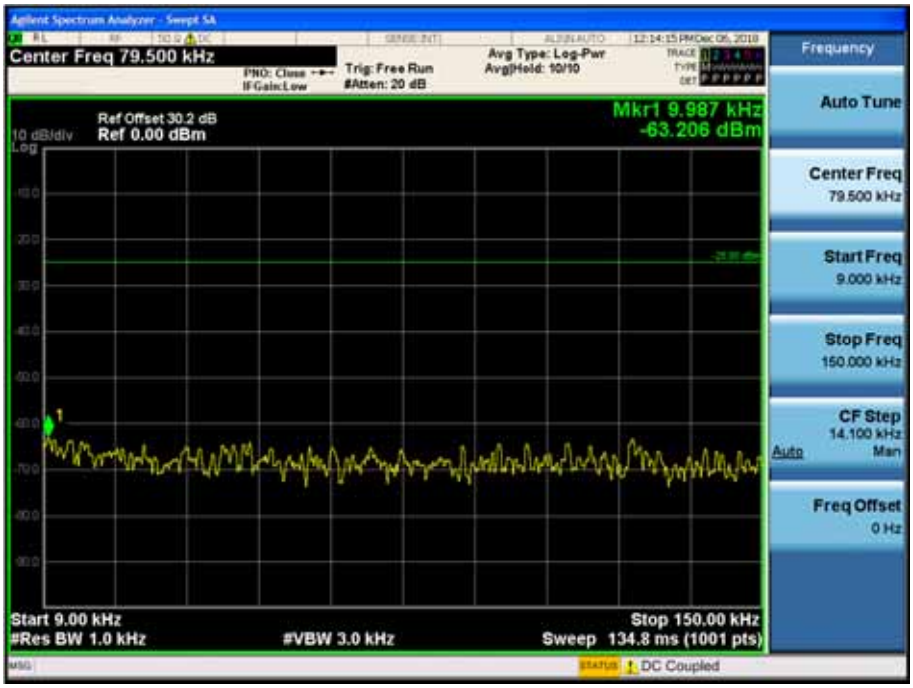
30 MHz~1 GHz



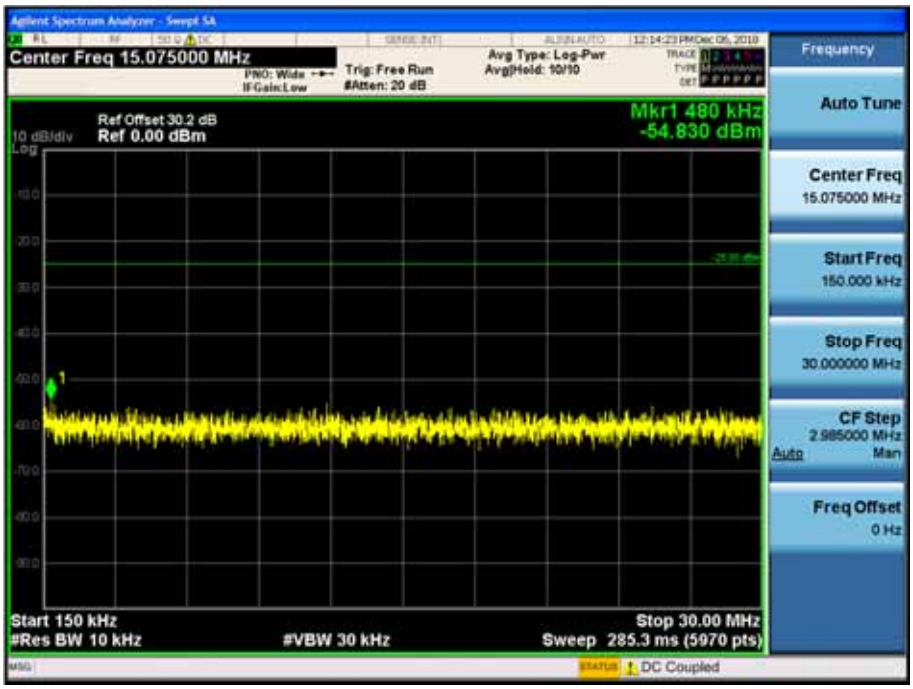
1 GHz~10 GHz

4K00F1E, 4K00F1D, 4K00F7W _ 900.95 MHz_High

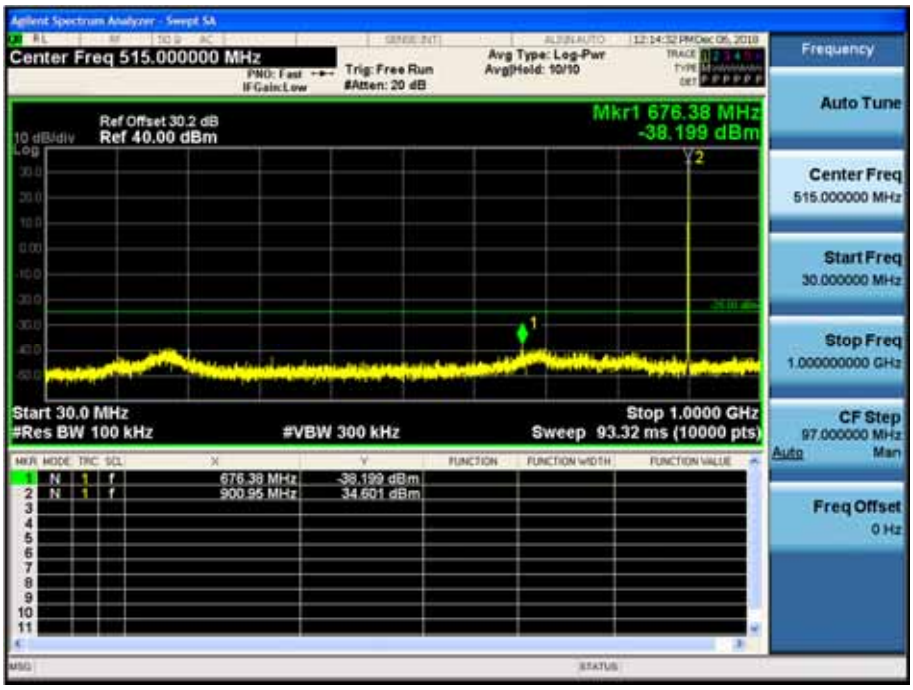
9 kHz~150 kHz



150 kHz~30 MHz



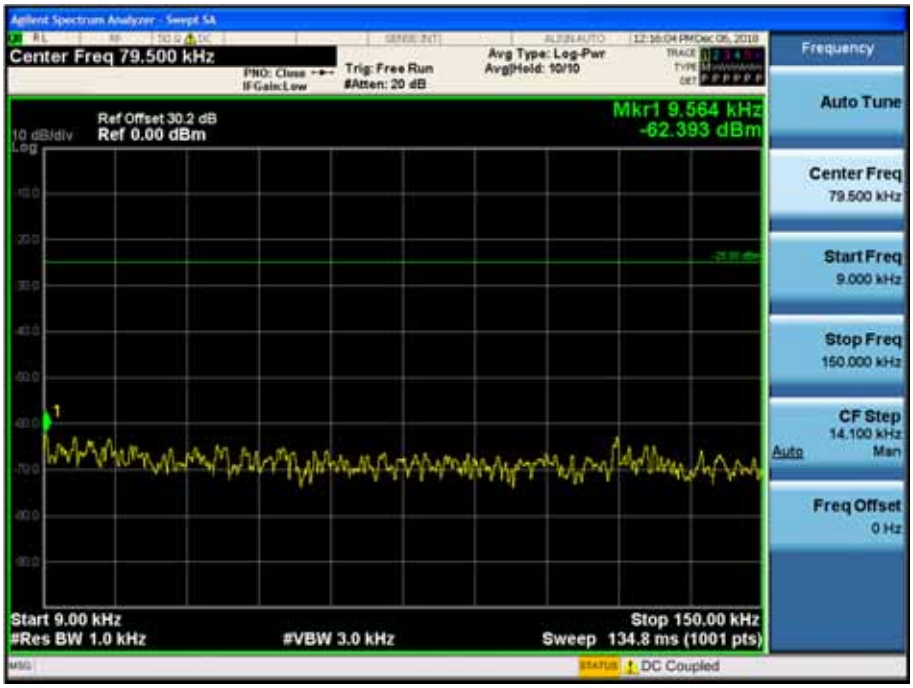
30 MHz~1 GHz



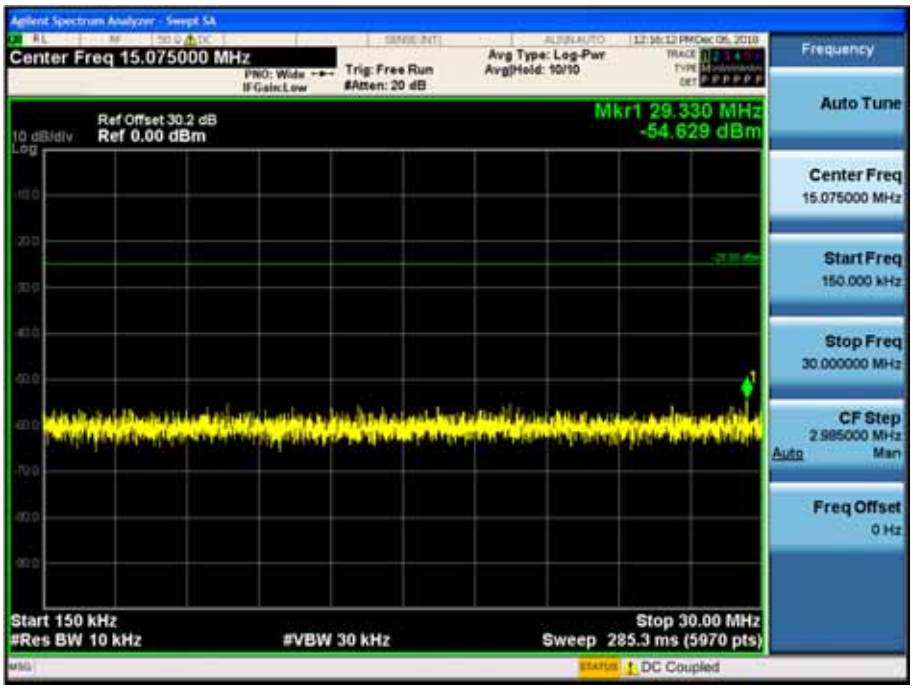
1 GHz~10 GHz

4K00F1E, 4K00F1D, 4K00F7W _ 939.95 MHz_High

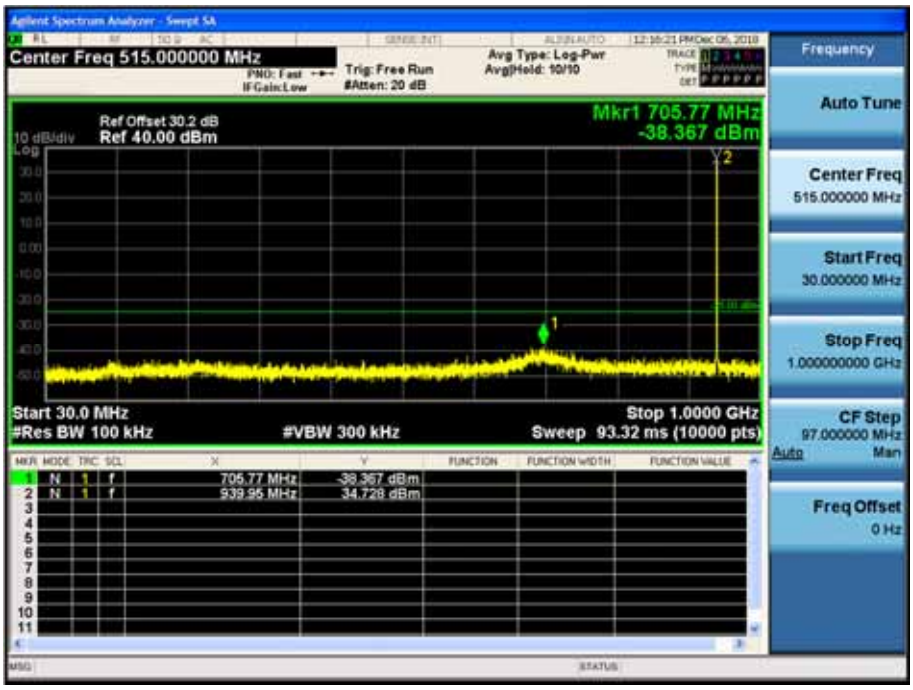
9 kHz~150 kHz



150 kHz~30 MHz



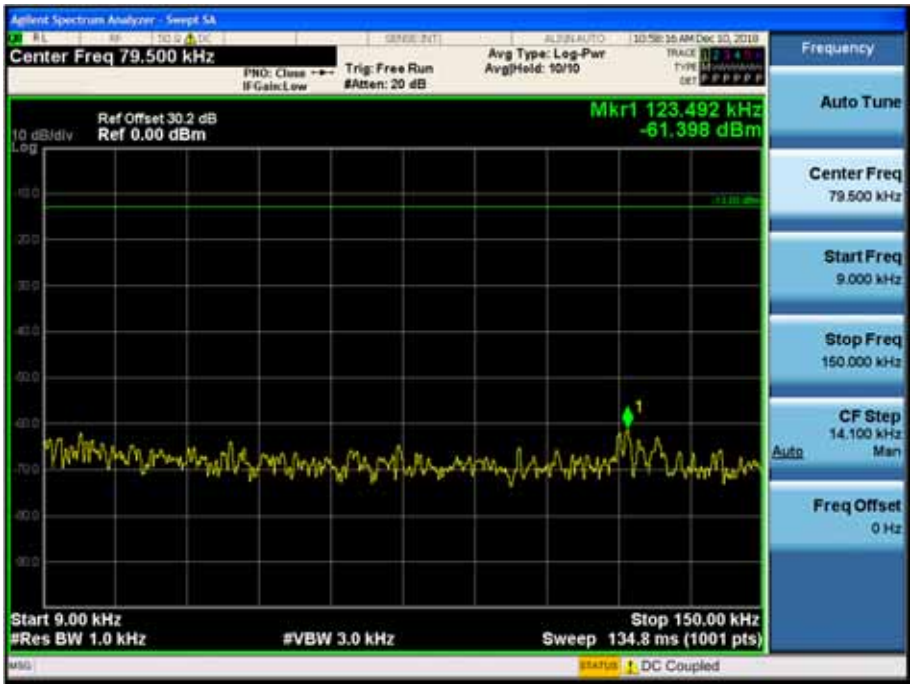
30 MHz~1 GHz



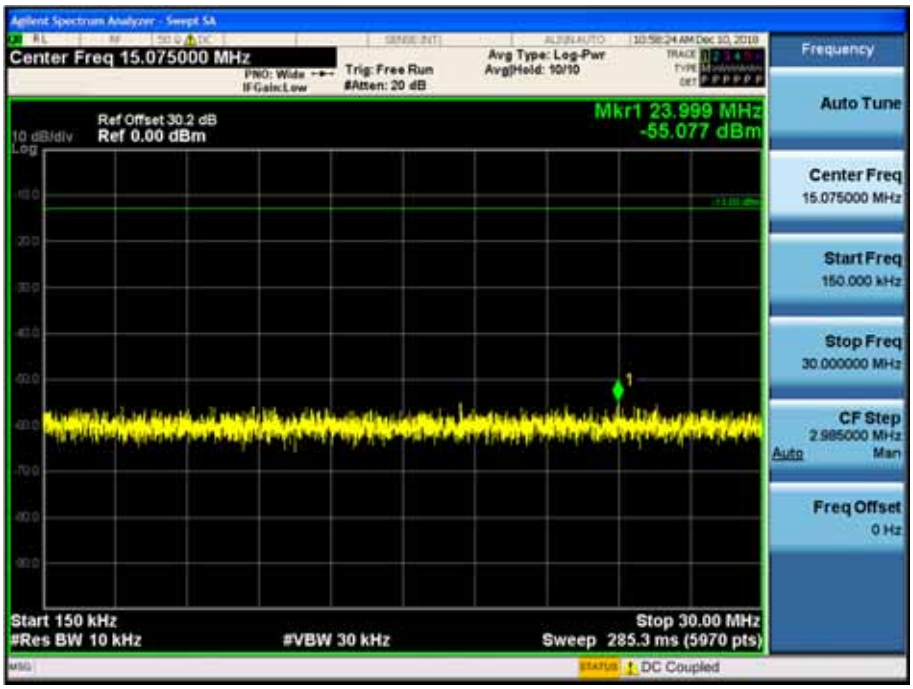
1 GHz~10 GHz

4K00F1E, 4K00F1D, 4K00F7W _ 901.55 MHz_High

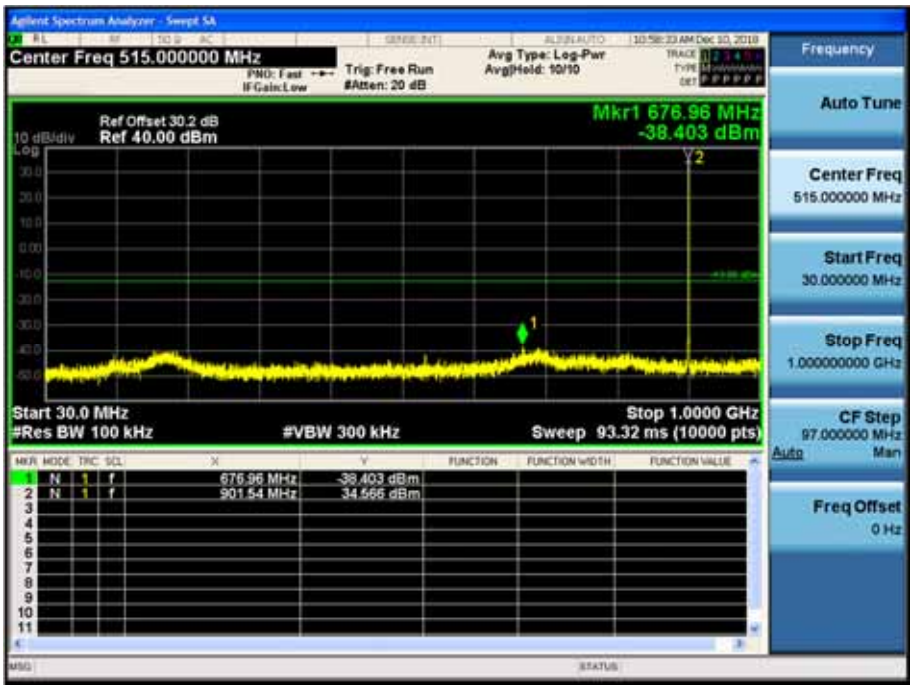
9 kHz~150 kHz



150 kHz~30 MHz



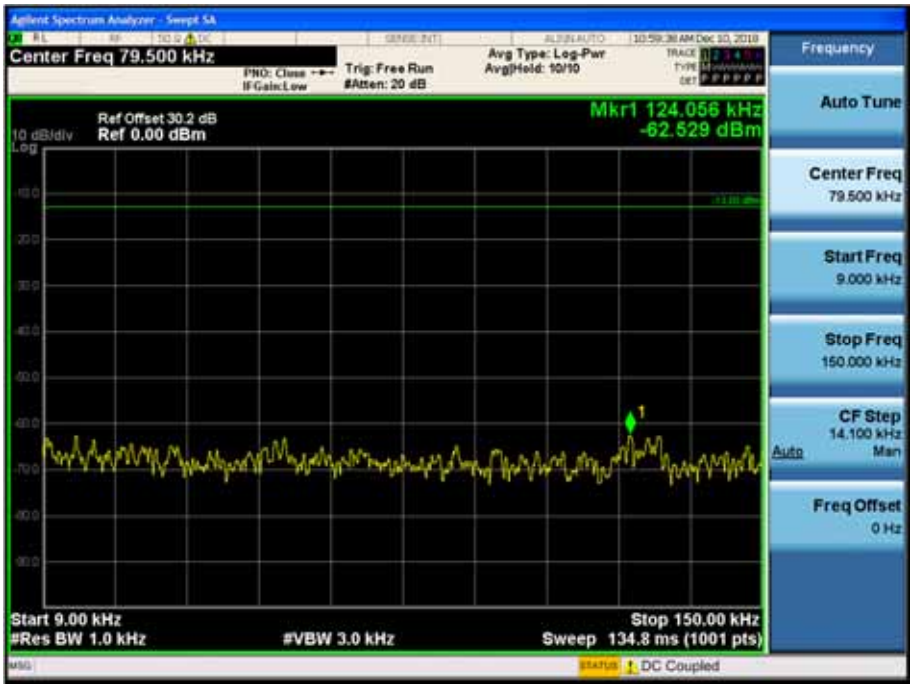
30 MHz~1 GHz



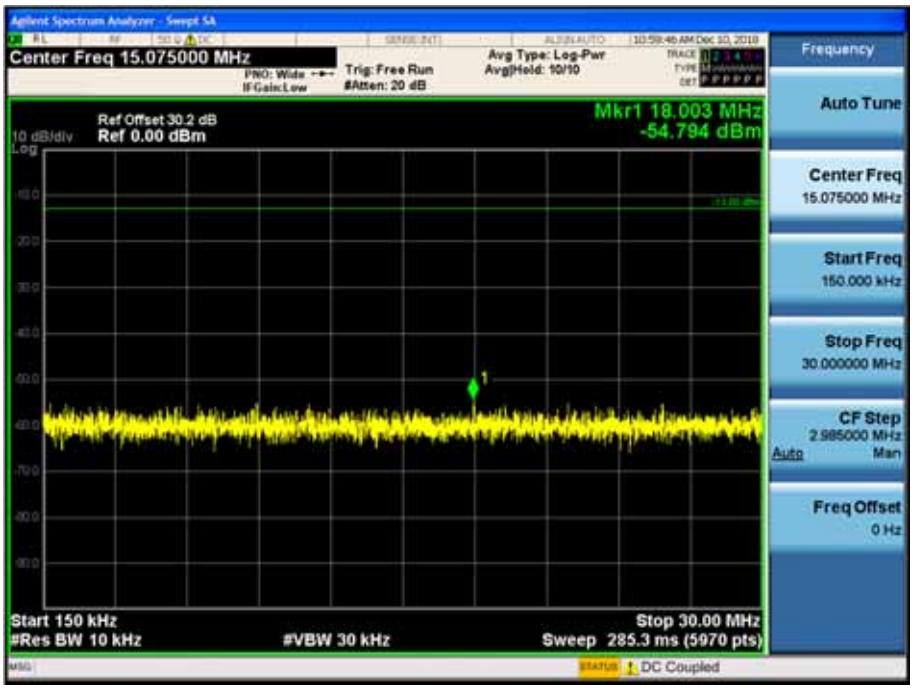
1 GHz~10 GHz

4K00F1E, 4K00F1D, 4K00F7W _ 940.55 MHz_High

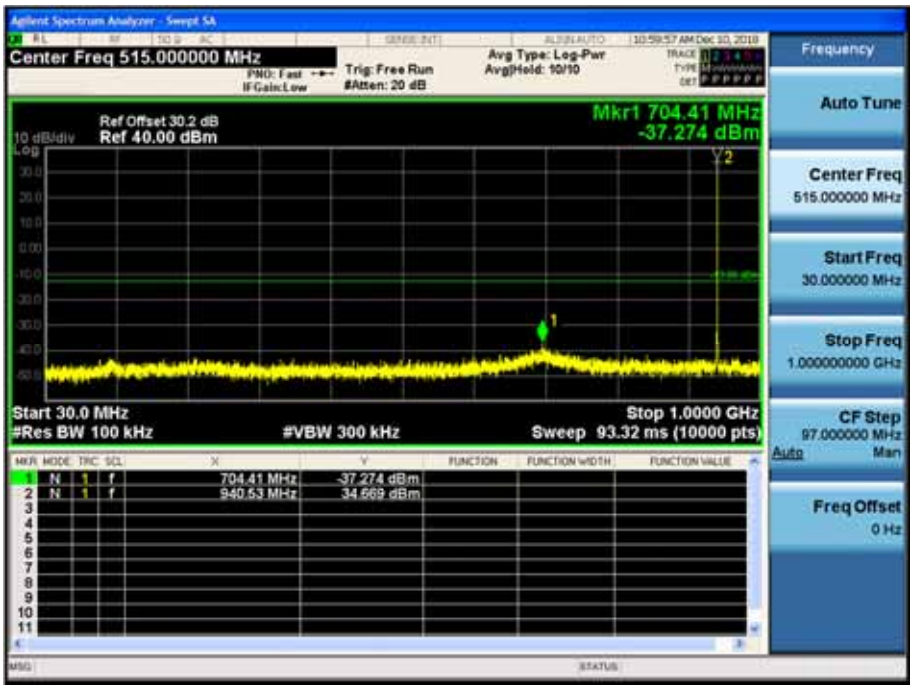
9 kHz~150 kHz



150 kHz~30 MHz



30 MHz~1 GHz



1 GHz~10 GHz

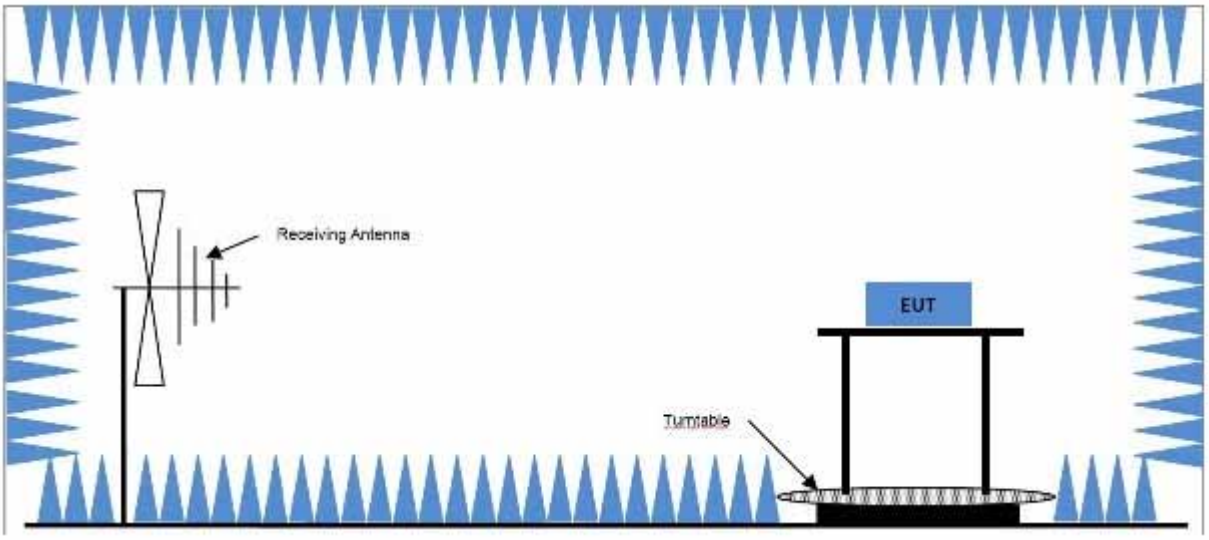
10.8 Unwanted Emissions : Radiated Spurious Emission

▣ Definition

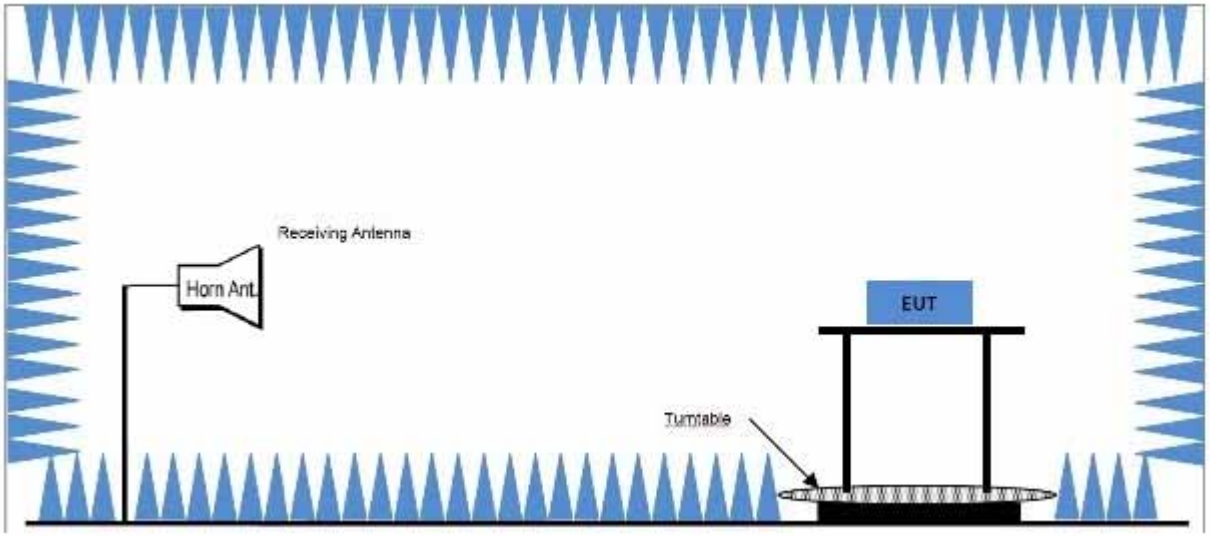
Radiated spurious emissions are emissions from the equipment when transmitting into a non-radiating load on a frequency or frequencies that are outside an occupied band sufficient to ensure transmission of information of required quality for the class of communications desired.

▣ TEST CONFIGURATION

Below 30 MHz



Above 1 GHz



▣ TEST PROCEDURE USED

Radiated tests are performed in the Fully-anechoic chamber.
Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA-603E-2016.

a) The Resolution Bandwidth for scanning Radiated Emission below 1 GHz is 100 kHz with Video Bandwidth = 300 kHz and Resolution Bandwidth for above 1 GHz is 1 MHz with Video Bandwidth = 3 MHz.
b) Detector mode is positive peak.
c) In the fully-anechoic chamber, setup as illustrated above the DUT placed on the 2.5m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization.
The “Read Value” is the spectrum reading the maximum power value.
d) 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 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.
4) Result = “Reading” + Measured substitution value.

▣ LIMIT

Frequency Band (MHz)	Channel bandwidth (kHz)	Limit (dB)
806 - 824 851 - 869	12.5	50+10Log(P)
	6.25	55+10Log(P)
	25.0	43+10Log(P)
896 - 901 935 - 940	12.5	43+10Log(P)
	6.25	43+10Log(P)
	25.0	43+10Log(P)
901 - 902 940 - 941	12.5	43+10Log(P)
	50	

Note

1. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13 dBm
2. Limit = P_{dBm}–(50+10 log (P_{watt})) = -20 dBm
3. Limit = P_{dBm}–(55+10 log (P_{watt})) = -25 dBm

▣ TEST NOTE

1. 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.
2. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.

▣ TEST RESULTS

Type of Emission : 16K0F3E

Test Frequency(MHz): 806.05
Emission Type : 16K0F3E
Battery : KNB-79LC
Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1612.10	-38.78	-2.652	V	-41.43	-13.00	28.43
2418.15	-27.81	0.763	H	-27.05	-13.00	14.05
3224.20	-49.05	2.950	V	-46.10	-13.00	33.10
4030.25	-53.46	4.672	V	-48.79	-13.00	35.79
4836.30	-58.10	7.566	H	-50.53	-13.00	37.53
6448.40	-51.83	12.128	H	-39.70	-13.00	26.70
7254.45	-53.85	13.842	H	-40.01	-13.00	27.01

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 851.05
Emission Type : 16K0F3E
Battery : KNB-79LC
Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1702.10	-40.52	-2.547	H	-43.07	-13.00	30.07
2553.15	-36.80	1.404	H	-35.40	-13.00	22.40
3404.20	-50.23	2.617	V	-47.61	-13.00	34.61
6808.40	-51.59	12.463	H	-39.13	-13.00	26.13
7659.45	-54.70	13.868	H	-40.83	-13.00	27.83

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 868.95

Emission Type : 16K0F3E

Battery : KNB-79LC

Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1737.90	-43.48	-2.435	H	-45.92	-13.00	32.92
2606.85	-45.33	1.516	H	-43.81	-13.00	30.81
3475.80	-52.29	3.224	V	-49.07	-13.00	36.07
6082.65	-53.33	13.346	H	-39.98	-13.00	26.98
6951.60	-49.80	12.906	H	-36.89	-13.00	23.89

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Type of Emission : 14K0F3E

Test Frequency(MHz): 806.05
Emission Type : 14K0F3E
Battery : KNB-79LC
Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1612.10	-38.76	-2.652	V	-41.41	-13.00	28.41
2418.15	-29.23	0.763	H	-28.47	-13.00	15.47
3224.20	-49.17	2.950	V	-46.22	-13.00	33.22
4030.25	-52.98	4.672	V	-48.31	-13.00	35.31
4836.30	-58.49	7.566	H	-50.92	-13.00	37.92
6448.40	-51.68	12.128	V	-39.55	-13.00	26.55
7254.45	-54.50	13.842	H	-40.66	-13.00	27.66

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 851.05
Emission Type : 14K0F3E
Battery : KNB-79LC
Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1702.10	-40.72	-2.547	H	-43.27	-13.00	30.27
2553.15	-36.45	1.404	H	-35.05	-13.00	22.05
3404.20	-50.19	2.617	V	-47.57	-13.00	34.57
6808.40	-51.33	12.463	H	-38.87	-13.00	25.87
7659.45	-54.62	13.868	H	-40.75	-13.00	27.75

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 868.95

Emission Type : 14K0F3E

Battery : KNB-79LC

Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1737.90	-44.02	-2.435	H	-46.46	-13.00	33.46
2606.85	-44.98	1.516	H	-43.46	-13.00	30.46
3475.80	-52.33	3.224	V	-49.11	-13.00	36.11
6082.65	-53.26	13.346	H	-39.91	-13.00	26.91
6951.60	-49.15	12.906	H	-36.24	-13.00	23.24

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Type of Emission : 11K0F3E

Test Frequency(MHz): 806.05
Emission Type : 11K0F3E
Battery : KNB-79LC
Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1612.10	-31.64	-2.652	H	-34.29	-20.00	14.29
2418.15	-24.77	0.763	H	-24.01	-20.00	4.01
3224.20	-46.01	2.950	H	-43.06	-20.00	23.06
4030.25	-53.18	4.672	V	-48.51	-20.00	28.51
4836.30	-56.27	7.566	H	-48.70	-20.00	28.70
6448.40	-49.29	12.128	V	-37.16	-20.00	17.16
7254.45	-51.72	13.842	V	-37.88	-20.00	17.88

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit(IC) = P_{dBm}–(50+10 log (P_{watt})) = -20dBm
   Limit(FCC) = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 868.95
Emission Type : 11K0F3E
Battery : KNB-79LC
Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1737.90	-43.32	-2.435	H	-45.76	-20.00	25.76
2606.85	-43.40	1.516	H	-41.88	-20.00	21.88
3475.80	-51.11	3.224	H	-47.89	-20.00	27.89
6082.65	-54.97	13.346	H	-41.62	-20.00	21.62
6951.60	-52.73	12.906	H	-39.82	-20.00	19.82
7820.55	-58.94	14.603	H	-44.34	-20.00	24.34

Note:

1. Result = “Reading” + “Measured substitution value”

2. Limit(IC) = P_{dBm}–(50+10 log (P_{watt})) = -20dBm

Limit(FCC) = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 901.55

Emission Type : 11K0F3E

Battery : KNB-79LC

Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1803.10	-34.60	-2.370	H	-36.97	-13.00	23.97
2704.65	-40.34	2.113	V	-38.23	-13.00	25.23
3606.20	-51.90	3.240	H	-48.66	-13.00	35.66
6310.85	-48.92	12.371	V	-36.55	-13.00	23.55
7212.40	-52.21	13.629	H	-38.58	-13.00	25.58

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 939.95

Emission Type : 11K0F3E

Battery : KNB-79LC

Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1879.90	-34.67	-1.867	H	-36.54	-13.00	23.54
2819.85	-44.31	2.259	H	-42.05	-13.00	29.05
3759.80	-53.76	3.961	V	-49.80	-13.00	36.80
5639.70	-57.50	10.389	V	-47.11	-13.00	34.11
6579.65	-44.96	12.209	V	-32.75	-13.00	19.75
7519.60	-46.17	14.166	H	-32.00	-13.00	19.00

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 940.55

Emission Type : 11K0F3E

Battery : KNB-79LC

Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1881.10	-32.59	-1.867	H	-34.46	-13.00	21.46
2821.65	-40.50	2.153	V	-38.35	-13.00	25.35
3762.20	-52.89	3.961	H	-48.93	-13.00	35.93
4702.75	-56.38	6.788	V	-49.59	-13.00	36.59
5643.30	-57.33	10.249	H	-47.08	-13.00	34.08
6583.85	-45.24	12.398	V	-32.84	-13.00	19.84
7524.40	-44.27	13.920	H	-30.35	-13.00	17.35

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Type of Emission : 8K30F1E, 8K30F1D, 8K30F7W

Test Frequency(MHz): 806.05
Emission Type : 8K30F1E/8K30F1D/8K30F7W
Battery : KNB-79LC
Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1612.10	-38.00	-2.652	V	-40.65	-20.00	20.65
2418.15	-27.64	0.763	H	-26.88	-20.00	6.88
3224.20	-49.43	2.950	V	-46.48	-20.00	26.48
4030.25	-53.78	4.672	V	-49.11	-20.00	29.11
4836.30	-58.33	7.566	H	-50.76	-20.00	30.76
6448.40	-50.61	12.128	H	-38.48	-20.00	18.48
7254.45	-53.18	13.842	H	-39.34	-20.00	19.34

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit(IC) = P_{dBm}–(50+10 log (P_{watt})) = -20dBm
   Limit(FCC) = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 868.95
Emission Type : 8K30F1E/8K30F1D/8K30F7W
Battery : KNB-79LC
Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1737.90	-42.82	-2.435	H	-45.26	-20.00	25.26
2606.85	-44.20	1.516	H	-42.68	-20.00	22.68
3475.80	-52.31	3.224	V	-49.09	-20.00	29.09
6082.65	-52.75	13.346	H	-39.40	-20.00	19.40
6951.60	-49.69	12.906	H	-36.78	-20.00	16.78

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit(IC) = P_{dBm}–(50+10 log (P_{watt})) = -20dBm
   Limit(FCC) = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 901.55

Emission Type : 8K30F1E/8K30F1D/8K30F7W

Battery : KNB-79LC

Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1803.10	-36.10	-2.370	V	-38.47	-13.00	25.47
2704.65	-43.18	2.113	H	-41.07	-13.00	28.07
3606.20	-51.81	3.240	V	-48.57	-13.00	35.57
6310.85	-48.60	12.371	V	-36.23	-13.00	23.23
7212.40	-54.03	13.629	V	-40.40	-13.00	27.40

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 939.95

Emission Type : 8K30F1E/8K30F1D/8K30F7W

Battery : KNB-79LC

Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1879.90	-32.12	-1.867	H	-33.99	-13.00	20.99
2819.85	-43.08	2.259	H	-40.82	-13.00	27.82
3759.80	-52.83	3.961	V	-48.87	-13.00	35.87
6579.65	-46.37	12.209	V	-34.16	-13.00	21.16
7519.60	-48.19	14.166	H	-34.02	-13.00	21.02

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 940.55

Emission Type : 8K30F1E/8K30F1D/8K30F7W

Battery : KNB-79LC

Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1881.10	-32.81	-1.867	H	-34.68	-13.00	21.68
2821.65	-37.03	2.153	H	-34.88	-13.00	21.88
3762.20	-52.43	3.961	V	-48.47	-13.00	35.47
6583.85	-46.00	12.398	H	-33.60	-13.00	20.60
7524.40	-48.28	13.920	H	-34.36	-13.00	21.36

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Type of Emission : 7K60FXE, 7K60FXD

Test Frequency(MHz): 806.05

Emission Type : 7K60FXE/7K60FXD

Battery : KNB-79LC

Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1612.10	-37.94	-2.652	V	-40.59	-20.00	20.59
2418.15	-28.25	0.763	H	-27.49	-20.00	7.49
3224.20	-49.12	2.950	V	-46.17	-20.00	26.17
4030.25	-53.65	4.672	V	-48.98	-20.00	28.98
4836.30	-58.28	7.566	H	-50.71	-20.00	30.71
6448.40	-50.36	12.128	V	-38.23	-20.00	18.23
7254.45	-53.90	13.842	H	-40.06	-20.00	20.06

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit(IC) = P_{dBm}–(50+10 log (P_{watt})) = -20dBm

   Limit(FCC) = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 868.95

Emission Type : 7K60FXE/7K60FXD

Battery : KNB-79LC

Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1737.90	-43.54	-2.435	H	-45.98	-20.00	25.98
2606.85	-41.05	1.516	H	-39.53	-20.00	19.53
3475.80	-52.26	3.224	V	-49.04	-20.00	29.04
6082.65	-53.39	13.346	H	-40.04	-20.00	20.04
6951.60	-50.23	12.906	H	-37.32	-20.00	17.32

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit(IC) = P_{dBm}–(50+10 log (P_{watt})) = -20dBm

   Limit(FCC) = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 901.55

Emission Type : 7K60FXE/7K60FXD

Battery : KNB-79LC

Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1803.10	-36.30	-2.370	V	-38.67	-13.00	25.67
2704.65	-43.23	2.113	H	-41.12	-13.00	28.12
3606.20	-52.21	3.240	V	-48.97	-13.00	35.97
6310.85	-48.27	12.371	V	-35.90	-13.00	22.90
7212.40	-53.50	13.629	V	-39.87	-13.00	26.87

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 939.95

Emission Type : 7K60FXE/7K60FXD

Battery : KNB-79LC

Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1879.90	-31.88	-1.867	H	-33.75	-13.00	20.75
2819.85	-36.39	2.259	H	-34.13	-13.00	21.13
3759.80	-52.99	3.961	V	-49.03	-13.00	36.03
6579.65	-45.74	12.209	V	-33.53	-13.00	20.53
7519.60	-48.51	14.166	H	-34.34	-13.00	21.34

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 940.55

Emission Type : 7K60FXE/7K60FXD

Battery : KNB-79LC

Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1881.10	-32.95	-1.867	H	-34.82	-13.00	21.82
2821.65	-43.84	2.153	H	-41.69	-13.00	28.69
3762.20	-51.54	3.961	V	-47.58	-13.00	34.58
6583.85	-45.88	12.398	H	-33.48	-13.00	20.48
7524.40	-48.16	13.920	H	-34.24	-13.00	21.24

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Type of Emission : 4K00F1E, 4K00F1D, 4K00F7W

Test Frequency(MHz): 806.05
Emission Type : 4K00F1E/4K00F1D/4K00F7W
Battery : KNB-79LC
Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1612.10	-38.52	-2.652	V	-41.17	-25.00	16.17
2418.15	-29.05	0.763	H	-28.29	-25.00	3.29
3224.20	-48.88	2.950	V	-45.93	-25.00	20.93
4030.25	-53.67	4.672	V	-49.00	-25.00	24.00
5642.35	-52.01	10.249	V	-41.76	-25.00	16.76
6448.40	-53.06	12.128	H	-40.93	-25.00	15.93

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit(IC) = P_{dBm}–(50+10 log (P_{watt})) = -25dBm
   Limit(FCC) = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 868.95
Emission Type : 4K00F1E/4K00F1D/4K00F7W
Battery : KNB-79LC
Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1737.90	-42.89	-2.435	H	-45.33	-25.00	20.33
2606.85	-39.10	1.516	H	-37.58	-25.00	12.58
3475.80	-51.53	3.224	V	-48.31	-25.00	23.31
6082.65	-53.13	13.346	V	-39.78	-25.00	14.78
6951.60	-49.59	12.906	H	-36.68	-25.00	11.68

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit(IC) = P_{dBm}–(50+10 log (P_{watt})) = -25dBm
   Limit(FCC) = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 901.55

Emission Type : 4K00F1E/4K00F1D/4K00F7W

Battery : KNB-79LC

Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1803.10	-36.17	-2.370	V	-38.54	-13.00	25.54
2704.65	-43.61	2.113	H	-41.50	-13.00	28.50
3606.20	-52.01	3.240	V	-48.77	-13.00	35.77
6310.85	-48.11	12.371	V	-35.74	-13.00	22.74
7212.40	-54.65	13.629	V	-41.02	-13.00	28.02

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 939.95

Emission Type : 4K00F1E/4K00F1D/4K00F7W

Battery : KNB-79LC

Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1879.90	-32.40	-1.867	H	-34.27	-13.00	21.27
2819.85	-43.32	2.259	H	-41.06	-13.00	28.06
3759.80	-52.09	3.961	V	-48.13	-13.00	35.13
6579.65	-46.27	12.209	V	-34.06	-13.00	21.06
7519.60	-47.71	14.166	H	-33.54	-13.00	20.54

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 940.55

Emission Type : 4K00F1E/4K00F1D/4K00F7W

Battery : KNB-79LC

Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1881.10	-33.01	-1.867	H	-34.88	-13.00	21.88
2821.65	-43.41	2.153	H	-41.26	-13.00	28.26
3762.20	-52.56	3.961	V	-48.60	-13.00	35.60
6583.85	-46.13	12.398	V	-33.73	-13.00	20.73
7524.40	-48.56	13.920	H	-34.64	-13.00	21.64

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Type of Emission : 4K00F2D

Test Frequency(MHz): 806.05
Emission Type : 4K00F2D
Battery : KNB-79LC
Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1612.10	-38.87	-2.652	V	-41.52	-25.00	16.52
2418.15	-28.77	0.763	H	-28.01	-25.00	3.01
3224.20	-48.68	2.950	V	-45.73	-25.00	20.73
4030.25	-53.62	4.672	V	-48.95	-25.00	23.95
4836.30	-59.55	7.566	H	-51.98	-25.00	26.98
6448.40	-51.61	12.128	V	-39.48	-25.00	14.48
7254.45	-53.29	13.842	H	-39.45	-25.00	14.45

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit(IC) = P_{dBm}–(50+10 log (P_{watt})) = -25dBm
   Limit(FCC) = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 868.95
Emission Type : 4K00F2D
Battery : KNB-79LC
Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1737.90	-43.53	-2.435	H	-45.97	-25.00	20.97
2606.85	-44.37	1.516	H	-42.85	-25.00	17.85
3475.80	-51.84	3.224	V	-48.62	-25.00	23.62
6082.65	-53.37	13.346	V	-40.02	-25.00	15.02
6951.60	-50.32	12.906	H	-37.41	-25.00	12.41

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit(IC) = P_{dBm}–(50+10 log (P_{watt})) = -25dBm
   Limit(FCC) = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 901.55
Emission Type : 4K00F2D
Battery : KNB-79LC
Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1803.10	-35.39	-2.370	V	-37.76	-13.00	24.76
2704.65	-37.29	2.113	H	-35.18	-13.00	22.18
3606.20	-50.46	3.240	V	-47.22	-13.00	34.22
6310.85	-49.21	12.371	V	-36.84	-13.00	23.84
7212.40	-53.02	13.629	V	-39.39	-13.00	26.39

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 939.95
Emission Type : 4K00F2D
Battery : KNB-79LC
Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1879.90	-32.60	-1.867	H	-34.47	-13.00	21.47
2819.85	-43.39	2.259	H	-41.13	-13.00	28.13
3759.80	-52.70	3.961	V	-48.74	-13.00	35.74
6579.65	-45.46	12.209	H	-33.25	-13.00	20.25
7519.60	-48.27	14.166	H	-34.10	-13.00	21.10

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

Test Frequency(MHz): 940.55

Emission Type : 4K00F2D

Battery : KNB-79LC

Mode High Power

Frequency (MHz)	Reading (dBm)	Substitution value (dB)	Pol.	Result (dBm)	Limit (dBm)	Margin (dB)
1881.10	-32.86	-1.867	H	-34.73	-13.00	21.73
2821.65	-34.93	2.153	H	-32.78	-13.00	19.78
3762.20	-52.79	3.961	V	-48.83	-13.00	35.83
6583.85	-46.14	12.398	H	-33.74	-13.00	20.74
7524.40	-47.92	13.920	H	-34.00	-13.00	21.00

Note:

1. Result = “Reading” + “Measured substitution value”
2. Limit = P_{dBm}–(43+10 log (P_{watt})) = -13dBm

10.9 Unwanted Emissions : Receiver Radiated Spurious Emission

Test Settings

ISED Rule(s)	RSS-Gen
Chamber	Semi Anechoic Chamber
Operating conditions:	Under normal test conditions
Operation Mode:	Receive
Method of testing:	Radiated
S/A. Settings:	F < 1 GHz: RBW: 120 kHz, VBW: 300 kHz (Quasi-Peak) F > 1 GHz: RBW: 1 MHz, VBW: 1 MHz (Average)
Mode of operation:	Receive

Test Limit

Frequency (MHz)	**Field Strength (μv/m at 3 meters)**
30 – 88	100
88 - 216	150
216 – 960	200
Above 960	500

▣ **TEST RESULTS**

Type of Emission : 16K0F3E

Frequency Range : 30 MHz ~ 1 GHz

Frequency	Reading	Ant. factor+Cable loss- Amp Gain	Ant. POL	Total	Limit	Margin
MHz	dB μV	dB /m	(H/V)	dB μV/m	dB μV/m	dB
No Peak Found						

Frequency Range : Above 1 GHz

Frequency	Reading	Ant. factor+Cable loss- Amp Gain	Ant. POL	Total	Limit	Margin
MHz	dB μV	dB /m	(H/V)	dB μV/m	dB μV/m	dB
No Peak Found						

Type of Emission : 14K0F3E

Frequency Range : 30 MHz ~ 1 GHz

Frequency	Reading	Ant. factor+Cable loss- Amp Gain	Ant. POL	Total	Limit	Margin
MHz	dB μV	dB /m	(H/V)	dB μV/m	dB μV/m	dB
No Peak Found						

Frequency Range : Above 1 GHz

Frequency	Reading	Ant. factor+Cable loss- Amp Gain	Ant. POL	Total	Limit	Margin
MHz	dB μV	dB /m	(H/V)	dB μV/m	dB μV/m	dB
No Peak Found						

Type of Emission : 11K0F3E

Frequency Range : 30 MHz ~ 1 GHz

Frequency	Reading	Ant. factor+Cable loss- Amp Gain	Ant. POL	Total	Limit	Margin
MHz	dB μV	dB /m	(H/V)	dB μV/m	dB μV/m	dB
No Peak Found						

Frequency Range : Above 1 GHz

Frequency	Reading	Ant. factor+Cable loss- Amp Gain	Ant. POL	Total	Limit	Margin
MHz	dB μV	dB /m	(H/V)	dB μV/m	dB μV/m	dB
No Peak Found						

Type of Emission : 8K30F1E, 8K30F1D, 8K30F7W

Frequency Range : 30 MHz ~ 1 GHz

Frequency	Reading	Ant. factor+Cable loss- Amp Gain	Ant. POL	Total	Limit	Margin
MHz	dB μV	dB /m	(H/V)	dB μV/m	dB μV/m	dB
No Peak Found						

Frequency Range : Above 1 GHz

Frequency	Reading	Ant. factor+Cable loss- Amp Gain	Ant. POL	Total	Limit	Margin
MHz	dB μV	dB /m	(H/V)	dB μV/m	dB μV/m	dB
No Peak Found						

Type of Emission : 7K60FXE, 7K60FXD

Frequency Range : 30 MHz ~ 1 GHz

Frequency	Reading	Ant. factor+Cable loss- Amp Gain	Ant. POL	Total	Limit	Margin
MHz	dB μV	dB /m	(H/V)	dB μV/m	dB μV/m	dB
No Peak Found						

Frequency Range : Above 1 GHz

Frequency	Reading	Ant. factor+Cable loss- Amp Gain	Ant. POL	Total	Limit	Margin
MHz	dB μV	dB /m	(H/V)	dB μV/m	dB μV/m	dB
No Peak Found						

Type of Emission : 4K00F1E, 4K00F1D, 4K00F7W

Frequency Range : 30 MHz ~ 1 GHz

Frequency	Reading	Ant. factor+Cable loss- Amp Gain	Ant. POL	Total	Limit	Margin
MHz	dB μV	dB /m	(H/V)	dB μV/m	dB μV/m	dB
No Peak Found						

Frequency Range : Above 1 GHz

Frequency	Reading	Ant. factor+Cable loss- Amp Gain	Ant. POL	Total	Limit	Margin
MHz	dB μV	dB /m	(H/V)	dB μV/m	dB μV/m	dB
No Peak Found						

Type of Emission : 4K00F2D

Frequency Range : 30 MHz ~ 1 GHz

Frequency	Reading	Ant. factor+Cable loss- Amp Gain	Ant. POL	Total	Limit	Margin
MHz	dB μV	dB /m	(H/V)	dB μV/m	dB μV/m	dB
No Peak Found						

Frequency Range : Above 1 GHz

Frequency	Reading	Ant. factor+Cable loss- Amp Gain	Ant. POL	Total	Limit	Margin
MHz	dB μV	dB /m	(H/V)	dB μV/m	dB μV/m	dB
No Peak Found						

10.10 Necessary Bandwidth Calculations

Modulation : 16K0F3E	
Maximum Modulation (M), kHz	3
Maximum Deviation (D), kHz	5
Constant Factor (K)	1
Necessary Bandwidth (BN), kHz	(2xM)+(2xDxK) = 16.0

Modulation : 14K0F3E	
Maximum Modulation (M), kHz	3
Maximum Deviation (D), kHz	4
Constant Factor (K)	1
Necessary Bandwidth (BN), kHz	(2xM)+(2xDxK) = 14.0

Modulation : 11K0F3E	
Maximum Modulation (M), kHz	3
Maximum Deviation (D), kHz	2.5
Constant Factor (K)	1
Necessary Bandwidth (BN), kHz	(2xM)+(2xDxK) = 11.0

Modulation : 8K30F1E, 8K30F1D, 8K30F7W	
Digital information rate (R), bps	9600
Maximum Deviation (D), kHz	3.391
Signaling States (S)	4
Numerical factor (K)	0.516
Necessary Bandwidth (BN), kHz	$(R/\log_2 S)+2DK = 8.3$

Modulation : 7K60FXE, 7K60FXD	
Digital information rate (R), bps	9600
Maximum Deviation (D), kHz	3.024
Signaling States (S)	4
Numerical factor (K)	0.463
Necessary Bandwidth (BN), kHz	$(R/\log_2 S)+2DK = 7.6$

Modulation : 4K00F1E, 4K00F1D, 4K00F7W	
Digital information rate (R), bps	4800
Maximum Deviation (D), kHz	1.55
Signaling States (S)	4
Numerical factor (K)	0.516
Necessary Bandwidth (BN), kHz	$(R/\log_2 S)+2DK = 4.0$

Modulation : 4K00F2D (CWID)	
Maximum Modulation (M), kHz	0.8
Maximum Deviation (D), kHz	1.2
Numerical factor (K)	1
Necessary Bandwidth (BN), kHz	(2xM)+(2xDxK) = 4.0

11. LIST OF TEST EQUIPMENT

Conducted Test

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
ESPAC	SU-642 /Temperature Chamber	03/30/2018	Annual	0093008124
Agilent	N9020A / Signal Analyzer	06/08/2018	Annual	MY52090906
Agilent	N9030A / Signal Analyzer	11/20/2018	Annual	MY49431210
Agilent	N1911A / Power Meter	04/16/2018	Annual	MY45100523
Agilent	N1921A / Power Sensor	04/16/2018	Annual	MY52260025
Hewlett Packard	E3632A / DC Power Supply	06/26/2018	Annual	KR75303960
Agilent	8493C / Attenuator(10 dB)	07/10/2018	Annual	07560
Agilent	8498A/30 dB Attenuator	09/03/2018	Annual	51161
Hewlett Packard	8903B/Audio Analyzer	10/15/2018	Annual	3413A13913
Hewlett Packard	8901B/Modulation Analyzer	10/11/2018	Annual	3438A05231

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

Radiated Test

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Innco system	CO3000 / Controller(Antenna mast)	N/A	N/A	CO3000-4p
Innco system	MA4640/800-XP-EP / Antenna Position Tower	N/A	N/A	N/A
Audix	EM1000 / Controller	N/A	N/A	060520
Audix	Turn Table	N/A	N/A	N/A
Rohde & Schwarz	Loop Antenna	04/19/2017	Biennial	1513-175
Schwarzbeck	VULB 9168 / Hybrid Antenna	04/06/2017	Biennial	760
Schwarzbeck	VULB 9168 / Hybrid Antenna	08/09/2018	Annual	3368
Schwarzbeck	BBHA 9120D / Horn Antenna	06/30/2017	Biennial	1300
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	12/04/2017	Biennial	BBHA9170541
Rohde & Schwarz	FSP(9 kHz ~ 40 GHz) / Spectrum Analyzer	07/24/2018	Annual	100843
Wainwright Instruments	WHK1.2/15G-10EF / High Pass Filter	04/04/2018	Annual	4
Rohde & Schwarz	FSV40 / Spectrum Analyzer	10/22/2018	Annual	100931
H+S	5930-SMA-50-010 / Attenuator(30 dB)	10/10/2018	Annua	NONE
H+S	5910-N-50-010 / Attenuator(10 dB)	11/08/2018	Annual	NONE
CERNEX	CBLU1183540B-01 / Power Amplifier	12/26/2017	Annual	25540
CERNEX	CBL06185030 / Power Amplifier	03/28/2018	Annual	28550
CERNEX	CBL18265035 / Power Amplifier	01/10/2018	Annual	22966
CERNEX	CBL26405040 / Power Amplifier	06/29/2018	Annual	25956
Rohde & Schwarz	SCU 18 / Power Amplifier	04/17/2018	Annual	10094
Inn-co GmbH	DE 3260/Turn table	N/A	N/A	N/A
EMERSON&CUMING	10m×5m×5m/ Full anechoic chamber	N/A	N/A	N/A

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

12. ANNEX A_ TEST SETUP PHOTO

Please refer to test setup photo file no. as follows;

No.	Description
1	HCT-R-1812-FI001-P
2	HCT-R-1812-FI002-P
3	HCT-R-1812-FI003-P