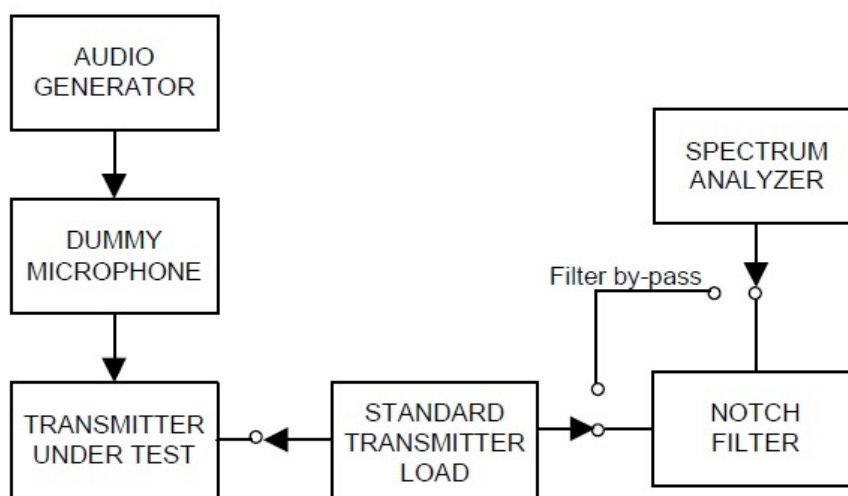


8.8 Unwanted Emissions : Conducted Spurious Emission

▣ 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 = 10 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 (see 1.3.4.4).

- 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 = 10 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.

▣ TEST RESULTS

Type of Emission	Power	Test Frequency (MHz)	Measured Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)
16K0F3E	High Power (2W)	450.05	0.139	-63.952	-13.000	50.952
			22.369	-54.701	-13.000	41.701
			900.080	-39.011	-13.000	26.011
			3648.382	-33.170	-13.000	20.170
		481.05	0.022	-63.512	-13.000	50.512
			27.130	-54.997	-13.000	41.997
			962.069	-41.270	-13.000	28.270
			3278.464	-32.090	-13.000	19.090
		511.95	0.009	-64.333	-13.000	51.333
			12.367	-54.742	-13.000	41.742
			873.984	-42.699	-13.000	29.699
			7002.400	-33.125	-13.000	20.125

Type of Emission	Power	Test Frequency (MHz)	Measured Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)
16K0F3E	High Power (5W)	470.05	0.010	-62.759	-13.000	49.759
			1.855	-54.803	-13.000	41.803
			863.313	-41.616	-13.000	28.616
			6109.105	-32.906	-13.000	19.906
		491.05	0.017	-63.572	-13.000	50.572
			22.654	-55.010	-13.000	42.010
			958.383	-42.528	-13.000	29.528
			3640.282	-32.406	-13.000	19.406
		511.95	0.015	-61.512	-13.000	48.512
			20.383	-54.186	-13.000	41.186
			908.423	-43.358	-13.000	30.358
			6030.802	-32.790	-13.000	19.790

Type of Emission	Power	Test Frequency (MHz)	Measured Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)
11K0F3E	High Power (5W)	450.05	0.062	-63.626	-20.000	43.626
			10.172	-54.586	-20.000	34.586
			900.080	-40.795	-20.000	20.795
			7057.753	-32.440	-20.000	12.440
		481.05	0.132	-64.208	-20.000	44.208
			29.495	-55.155	-20.000	35.155
			898.043	-43.091	-20.000	23.091
			3623.181	-32.443	-20.000	12.443
		511.95	0.011	-63.698	-20.000	43.698
			16.578	-54.823	-20.000	34.823
			931.996	-43.461	-20.000	23.461
			3655.583	-32.313	-20.000	12.313

Type of Emission	Power	Test Frequency (MHz)	Measured Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)
8K30F1E, 8K30F1D, 8K30F7W	High Power (5W)	450.05	0.013	-64.168	-20.000	44.168
			24.279	-54.827	-20.000	34.827
			900.080	-41.130	-20.000	21.130
			3623.181	-32.318	-20.000	12.318
		481.05	0.018	-64.466	-20.000	44.466
			4.451	-54.495	-20.000	34.495
			952.077	-43.138	-20.000	23.138
			7247.662	-32.988	-20.000	12.988
		511.95	0.038	-63.402	-20.000	43.402
			6.866	-54.602	-20.000	34.602
			956.831	-41.849	-20.000	21.849
			3663.233	-33.183	-20.000	13.183

Type of Emission	Power	Test Frequency (MHz)	Measured Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)
7K60FXD, 7K60FXE	High Power (5W)	450.05	0.128	-62.790	-20.000	42.790
			4.576	-54.430	-20.000	34.430
			900.080	-41.022	-20.000	21.022
			3575.929	-33.259	-20.000	13.259
		481.05	0.011	-62.928	-20.000	42.928
			17.358	-54.952	-20.000	34.952
			338.200	-43.779	-20.000	23.779
			3081.354	-33.021	-20.000	13.021
		511.95	0.024	-64.060	-20.000	44.060
			16.458	-55.218	-20.000	35.218
			907.453	-42.506	-20.000	22.506
			7211.211	-33.413	-20.000	13.413

Type of Emission	Power	Test Frequency (MHz)	Measured Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)
4K00F1E, 4K00F1D, 4K00F7W	High Power (5W)	450.05	0.033	-63.526	-25.000	38.526
			16.143	-54.540	-25.000	29.540
			900.080	-40.602	-25.000	15.602
			6952.898	-31.968	-25.000	6.968
		481.05	0.122	-62.835	-25.000	37.835
			12.087	-54.640	-25.000	29.640
			755.342	-42.870	-25.000	17.870
			7487.074	-33.132	-25.000	8.132
		511.95	0.125	-63.343	-25.000	38.343
			6.756	-54.535	-25.000	29.535
			544.442	-43.380	-25.000	18.380
			6787.739	-33.189	-25.000	8.189

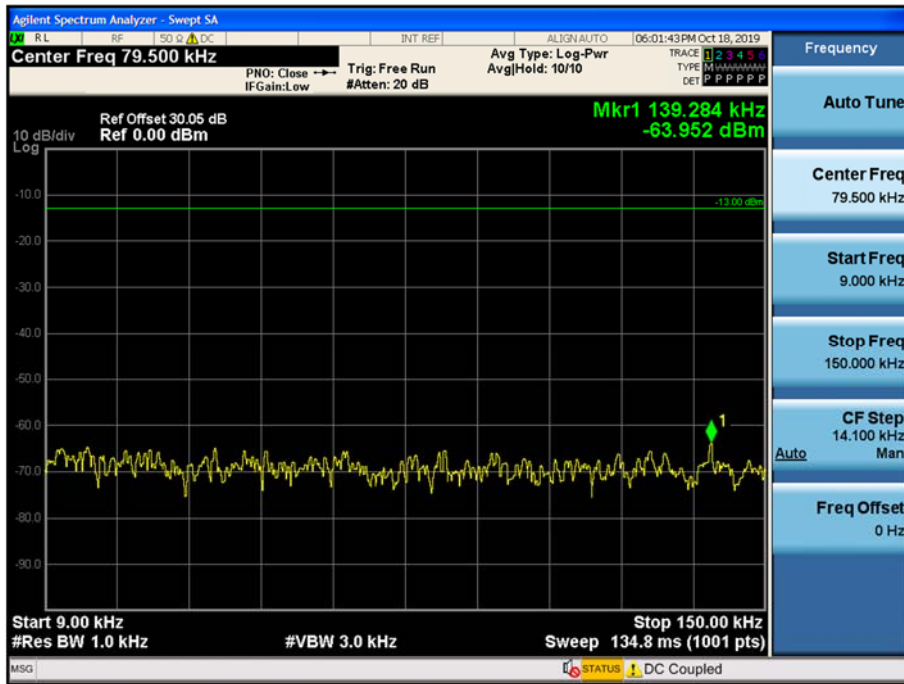
Type of Emission	Power	Test Frequency (MHz)	Measured Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)
4K00F2D	High Power (5W)	450.05	0.131	-64.136	-25.000	39.136
			11.532	-55.243	-25.000	30.243
			900.080	-41.100	-25.000	16.100
			6639.232	-32.621	-25.000	7.621
		481.05	0.125	-63.572	-25.000	38.572
			26.054	-54.729	-25.000	29.729
			920.452	-43.304	-25.000	18.304
			3734.337	-33.088	-25.000	8.088
		511.95	0.012	-61.995	-25.000	36.995
			0.205	-55.187	-25.000	30.187
			889.118	-42.763	-25.000	17.763
			3608.780	-32.525	-25.000	7.525

Plots of Unwanted Emissions : Conducted Spurious Emission

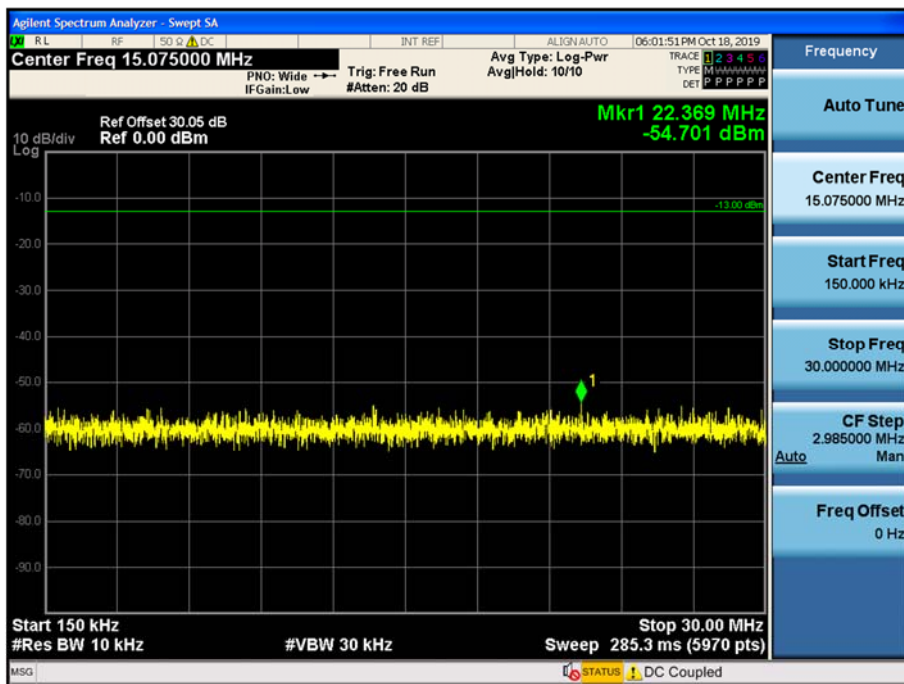
16K0F3E_FCC

(450.05 MHz)_High_2W

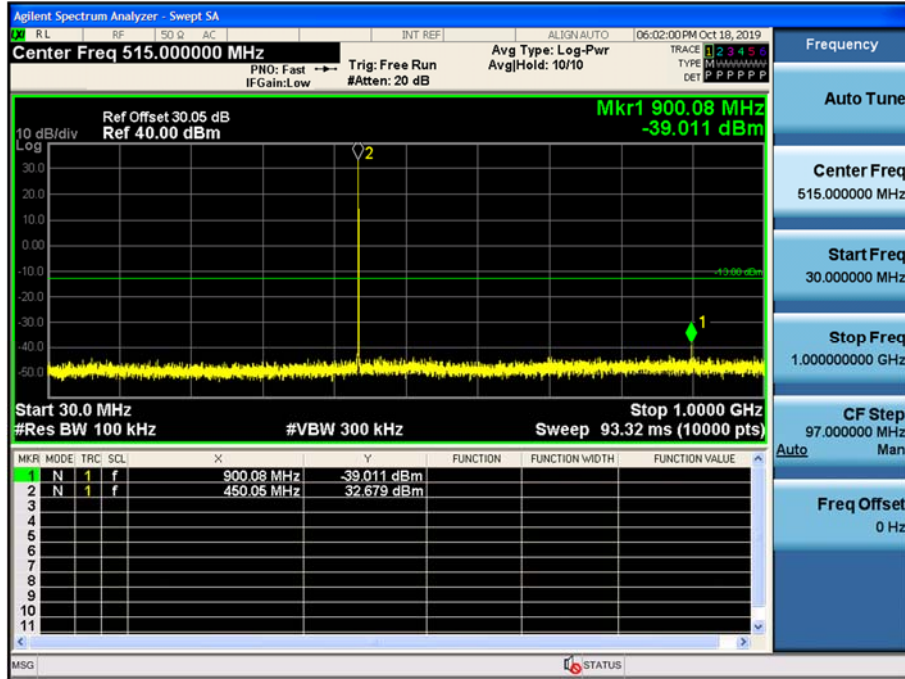
9 kHz~150 kHz



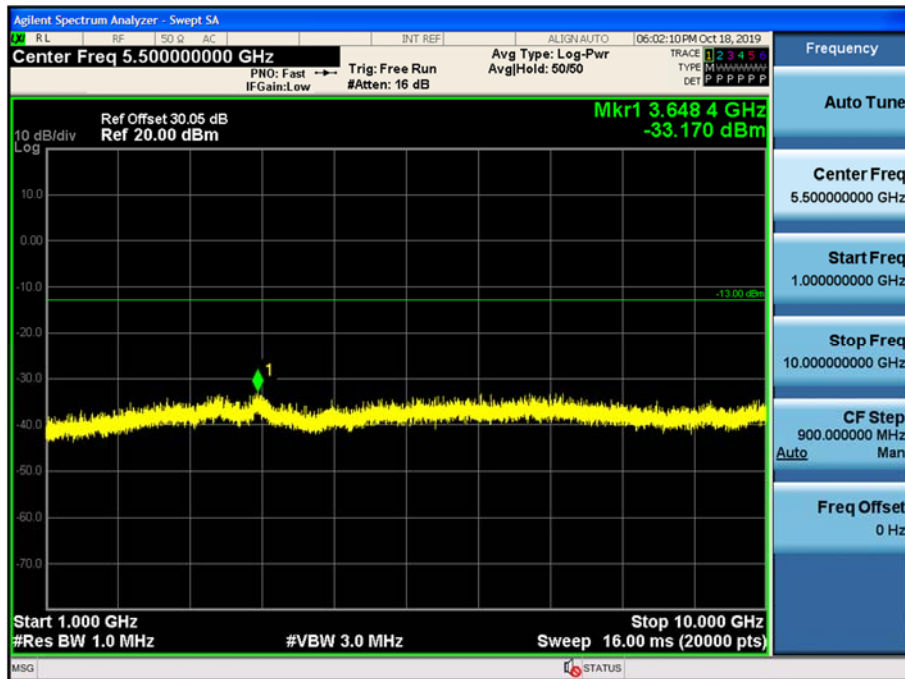
150 kHz~30 MHz



30 MHz~1 GHz

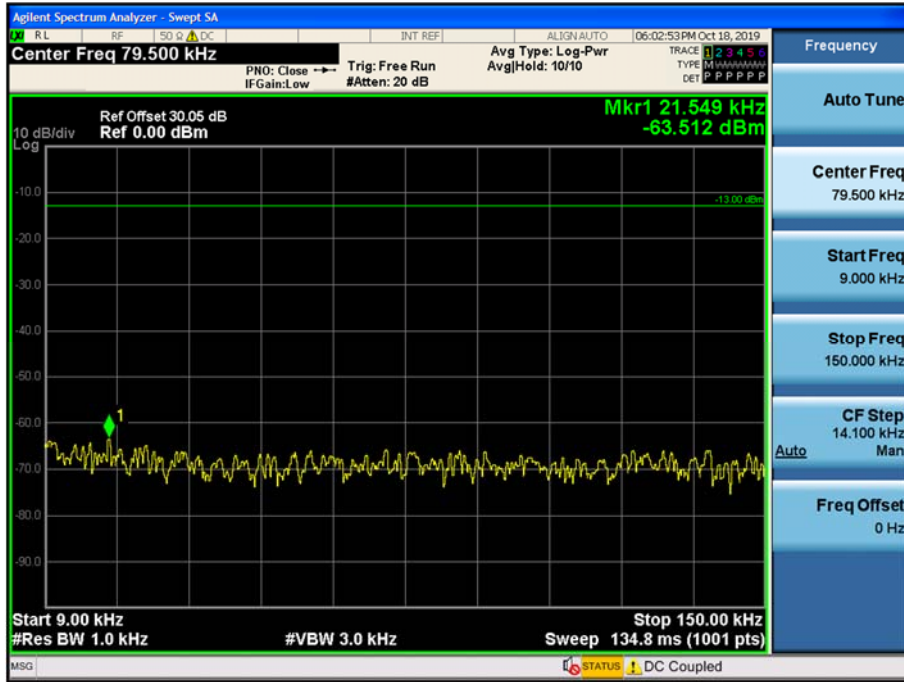


1 GHz~10 GHz

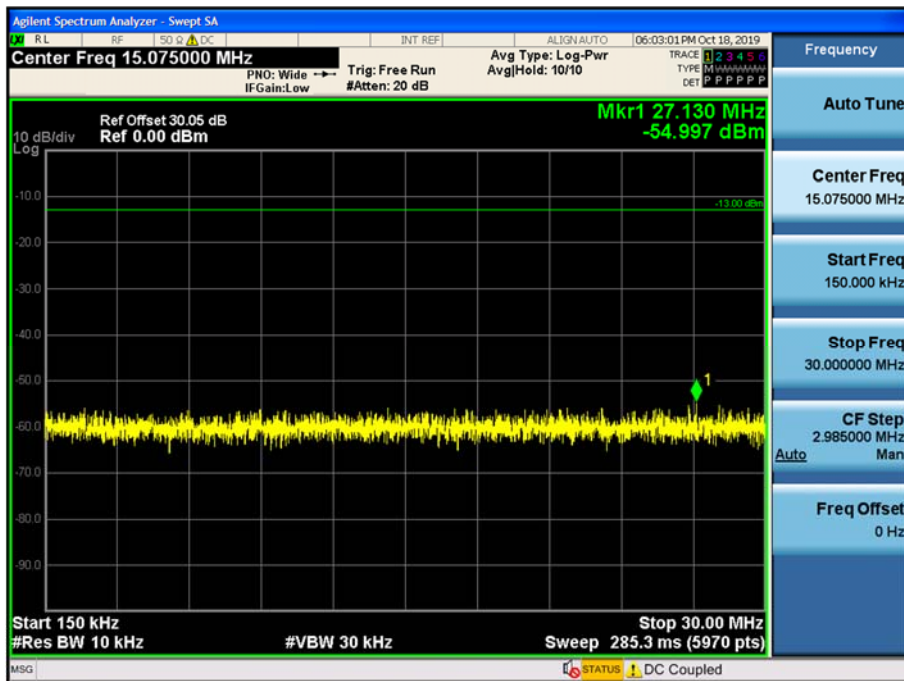


(481.05 MHz)_High_2W

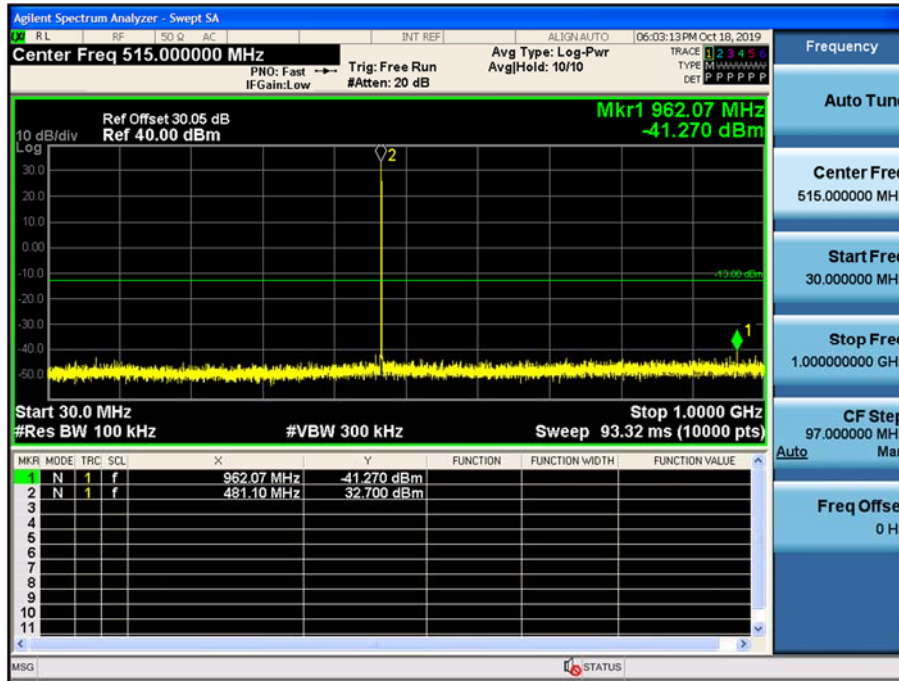
9 kHz~150 kHz



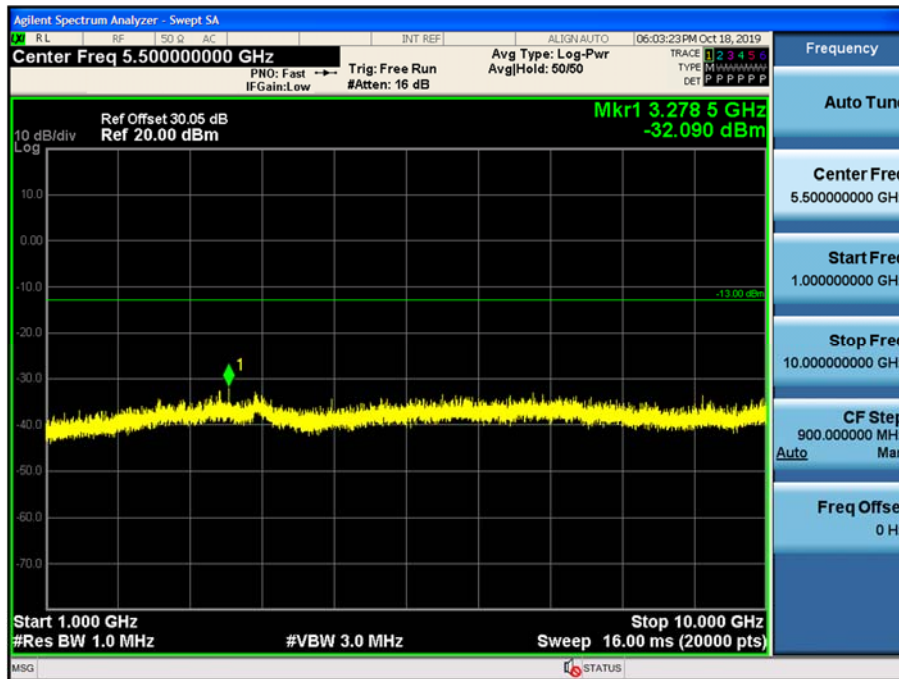
150 kHz~30 MHz



30 MHz~1 GHz

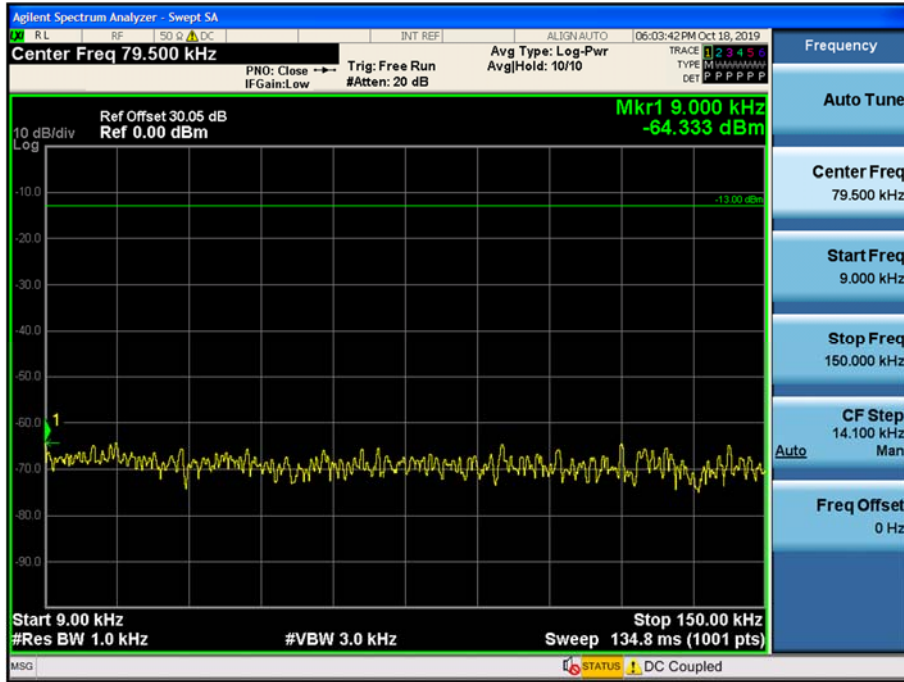


1 GHz~10 GHz

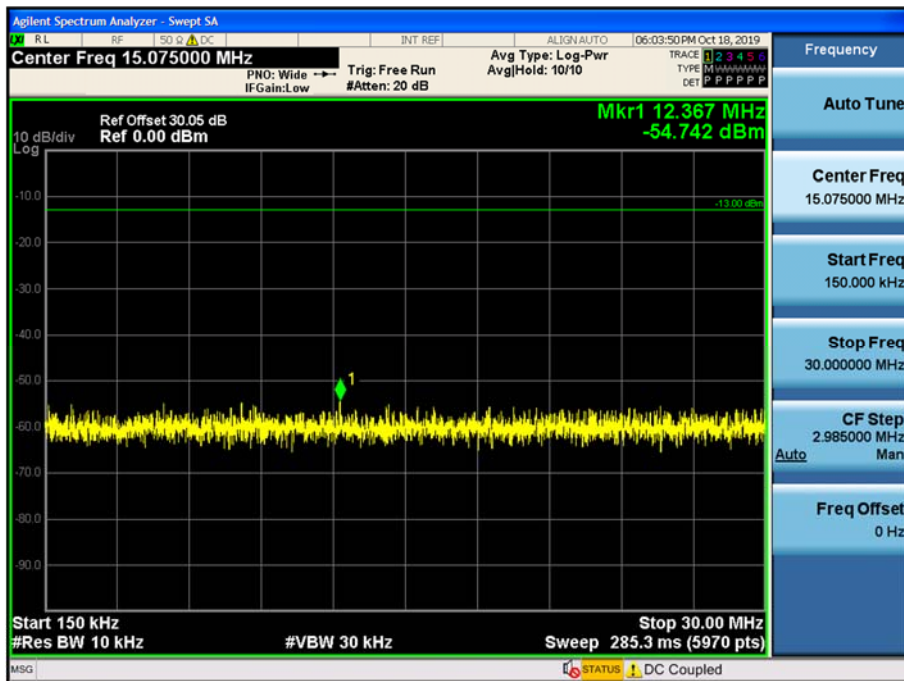


(511.95 MHz)_High_2W

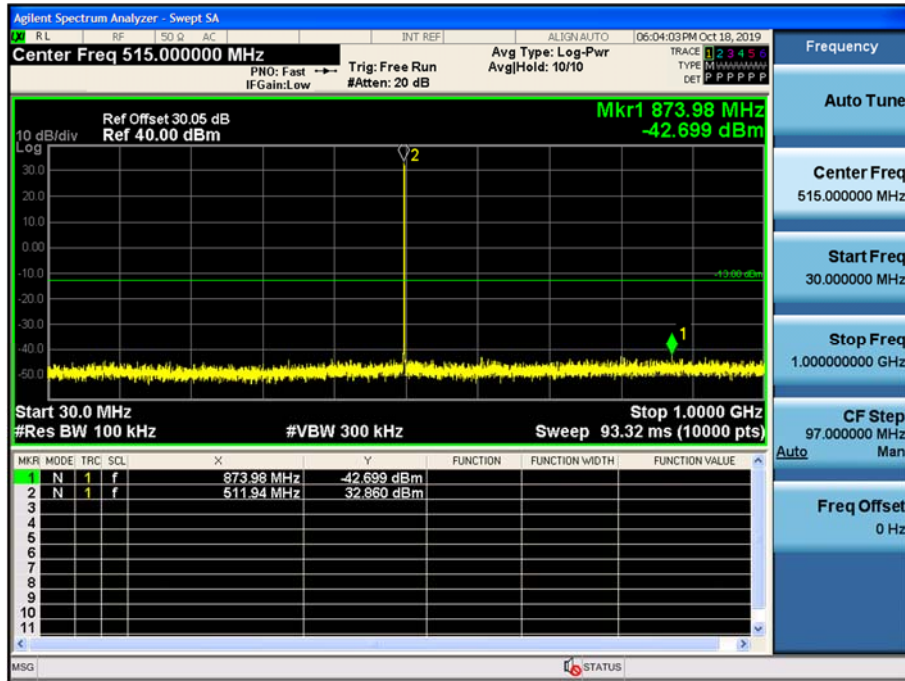
9 kHz~150 kHz



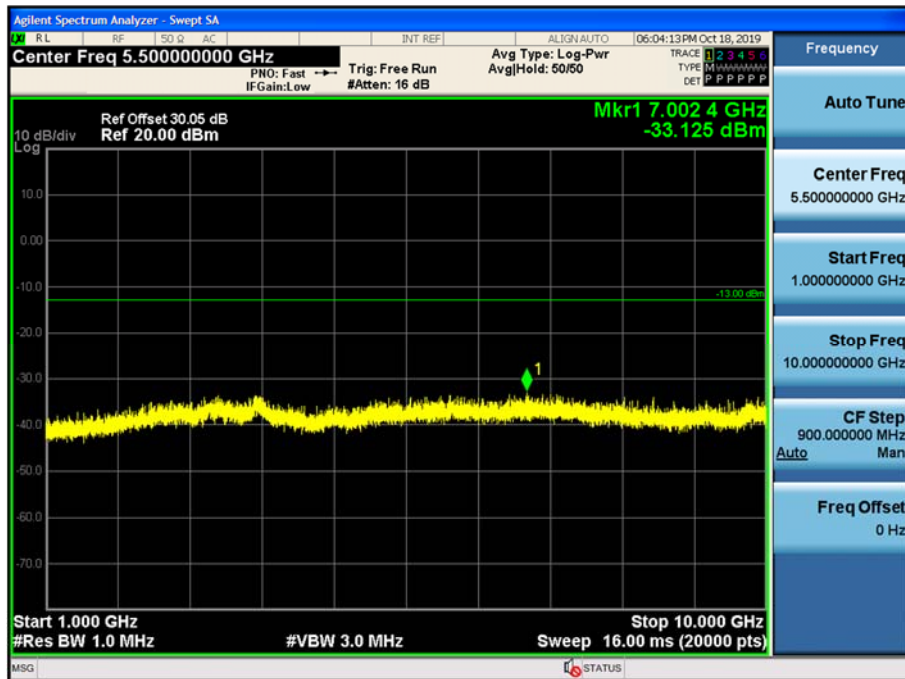
150 kHz~30 MHz



30 MHz~1 GHz

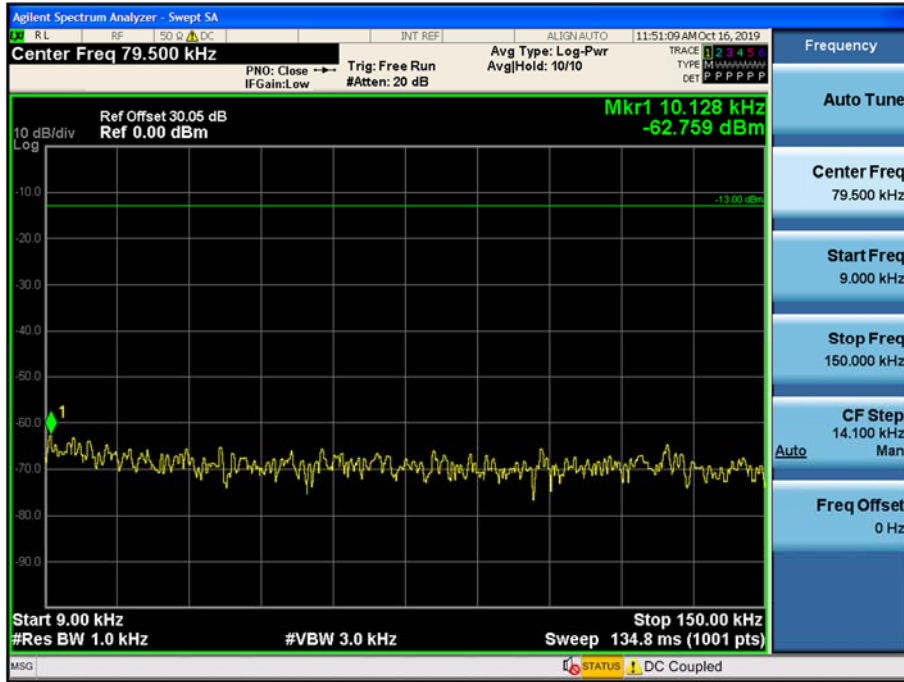


1 GHz~10 GHz

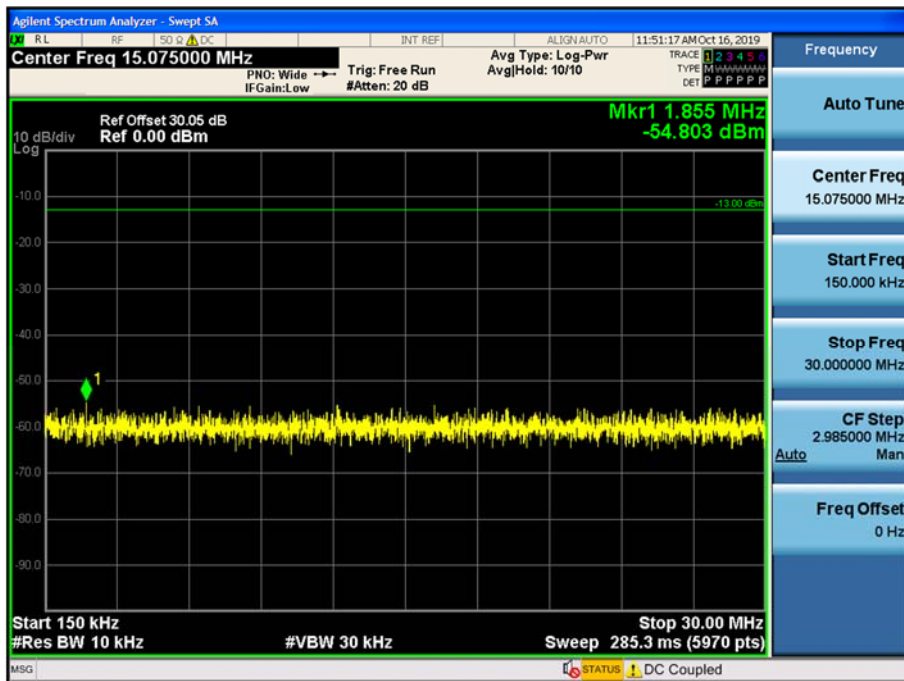


(470.05 MHz)_High_5W

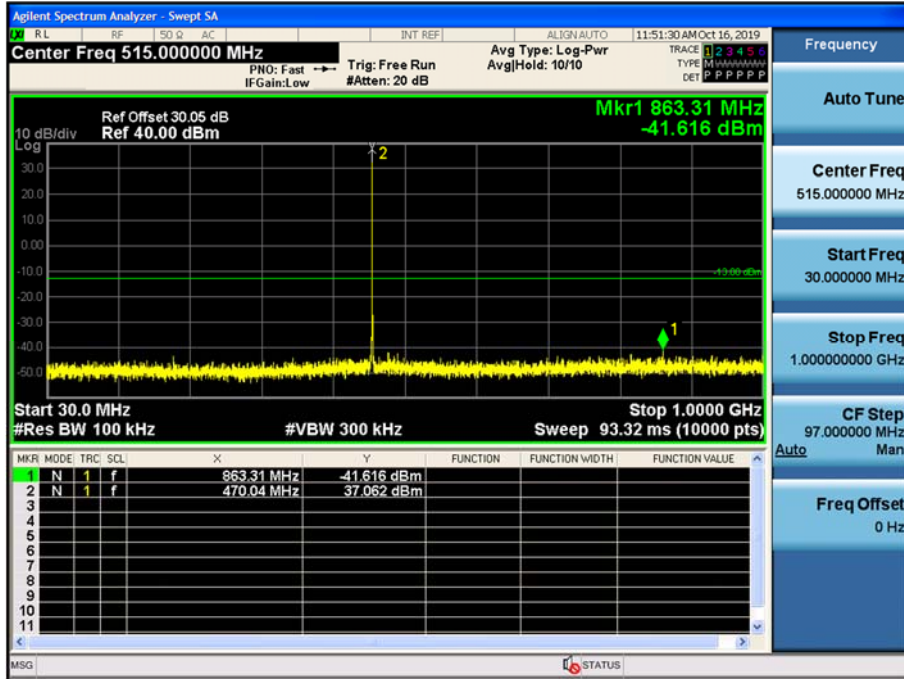
9 kHz~150 kHz



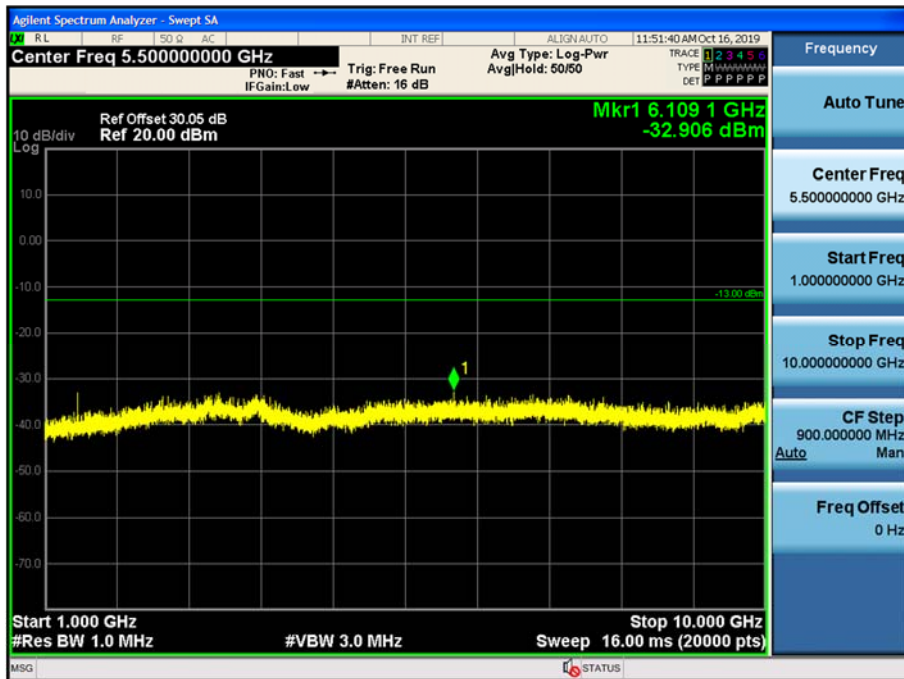
150 kHz~30 MHz



30 MHz~1 GHz

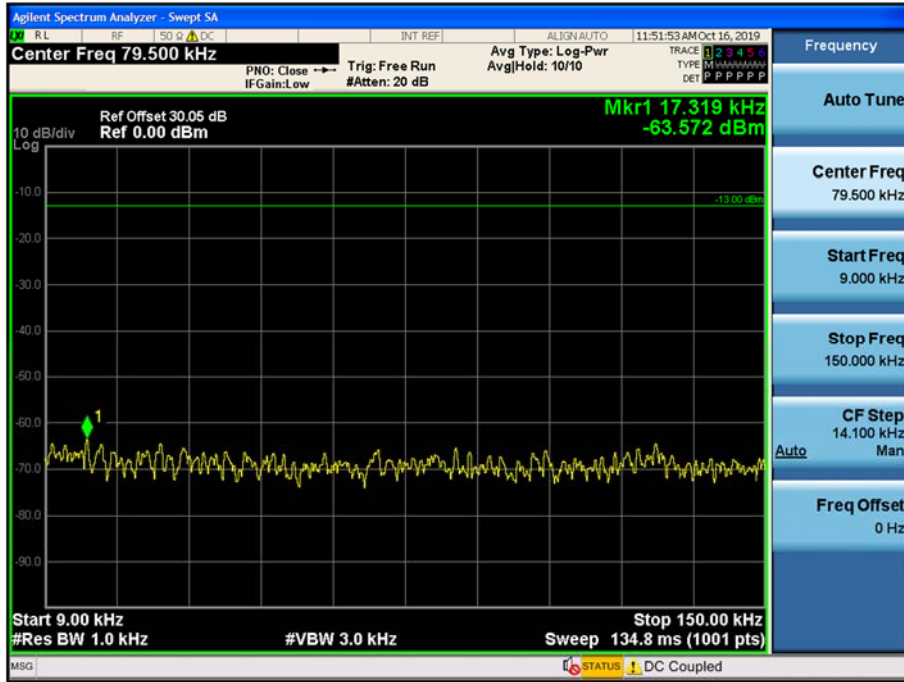


1 GHz~10 GHz

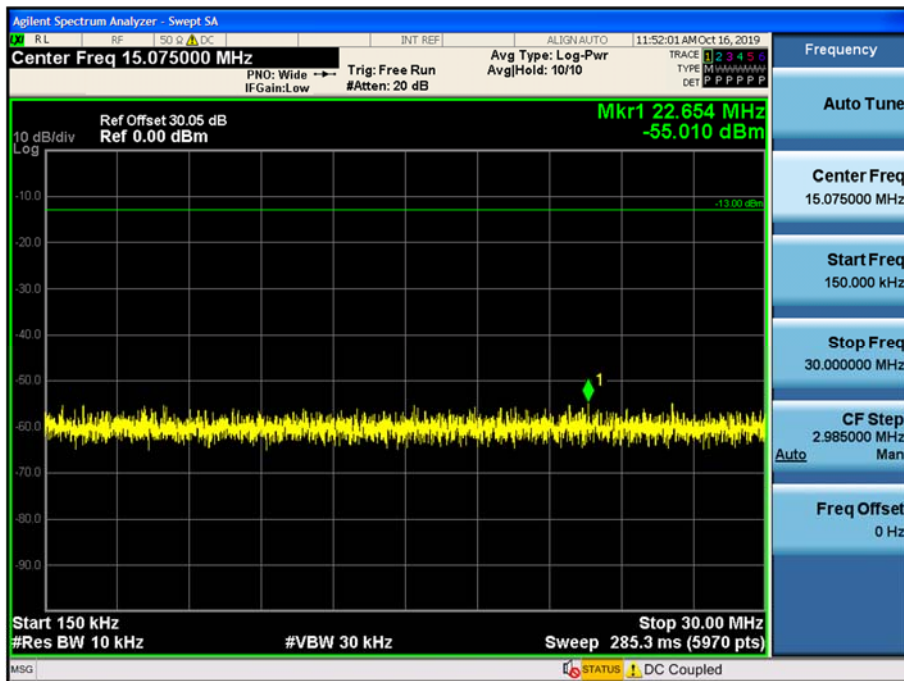


(491.05 MHz)_High_5W

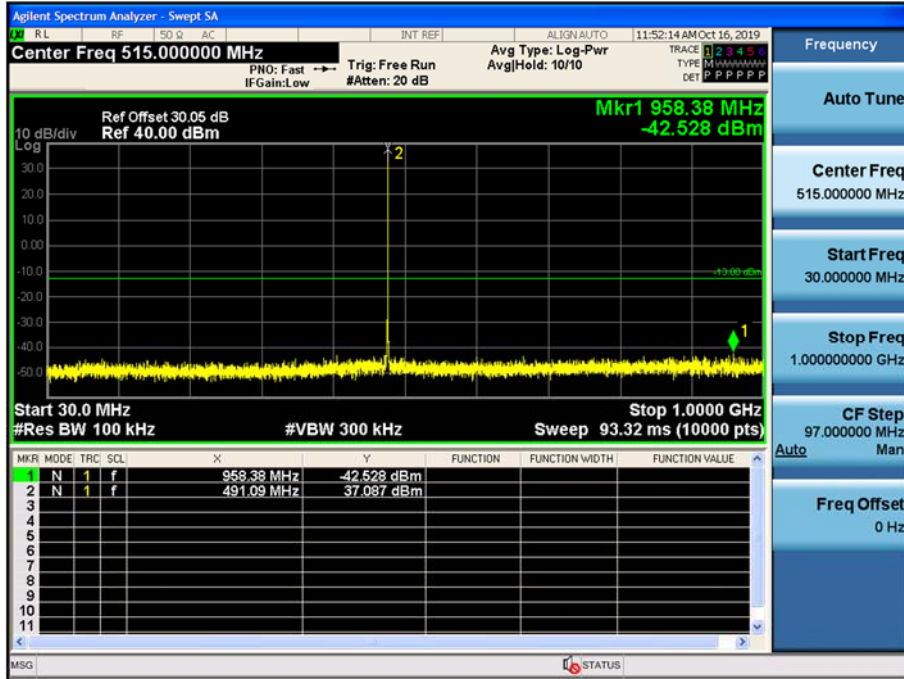
9 kHz~150 kHz



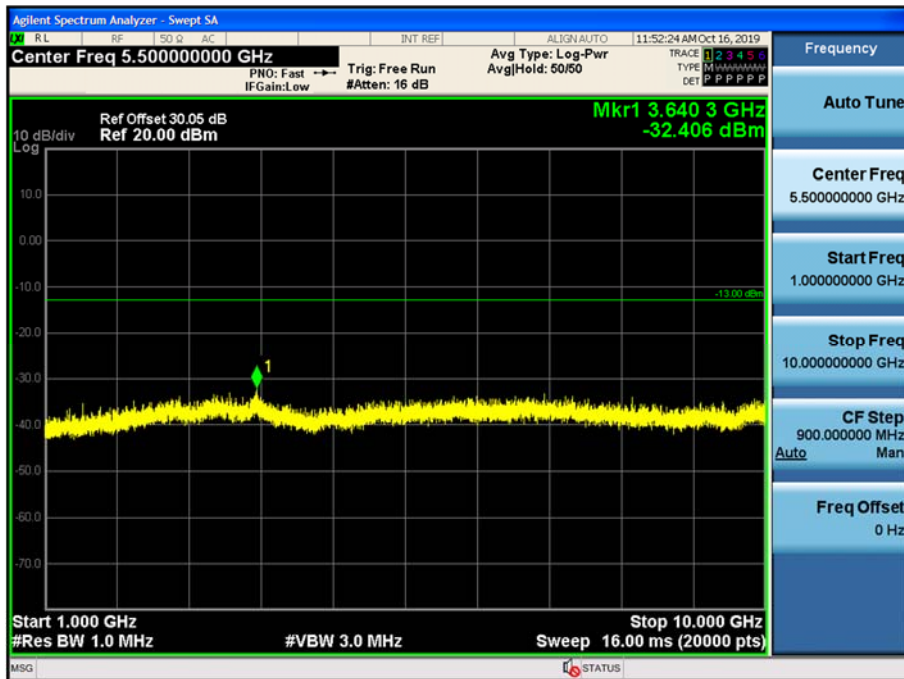
150 kHz~30 MHz



30 MHz~1 GHz

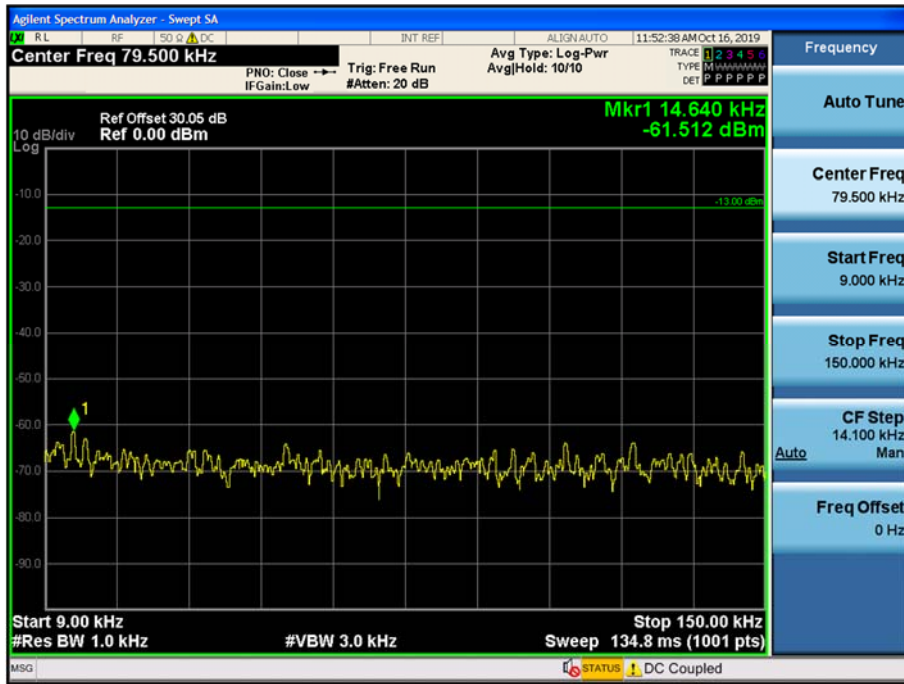


1 GHz~10 GHz

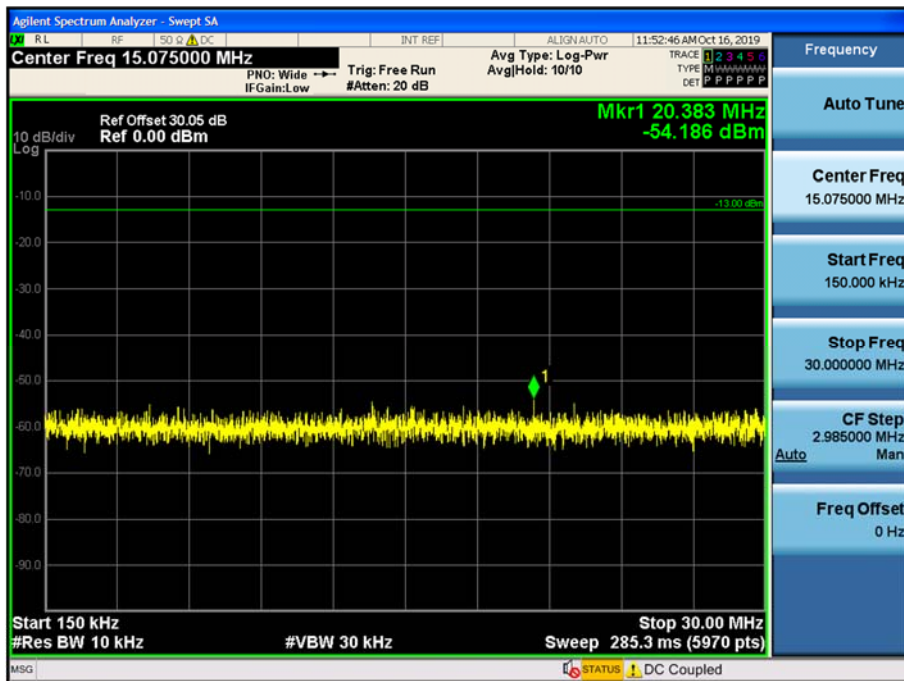


(511.95 MHz)_High_5W

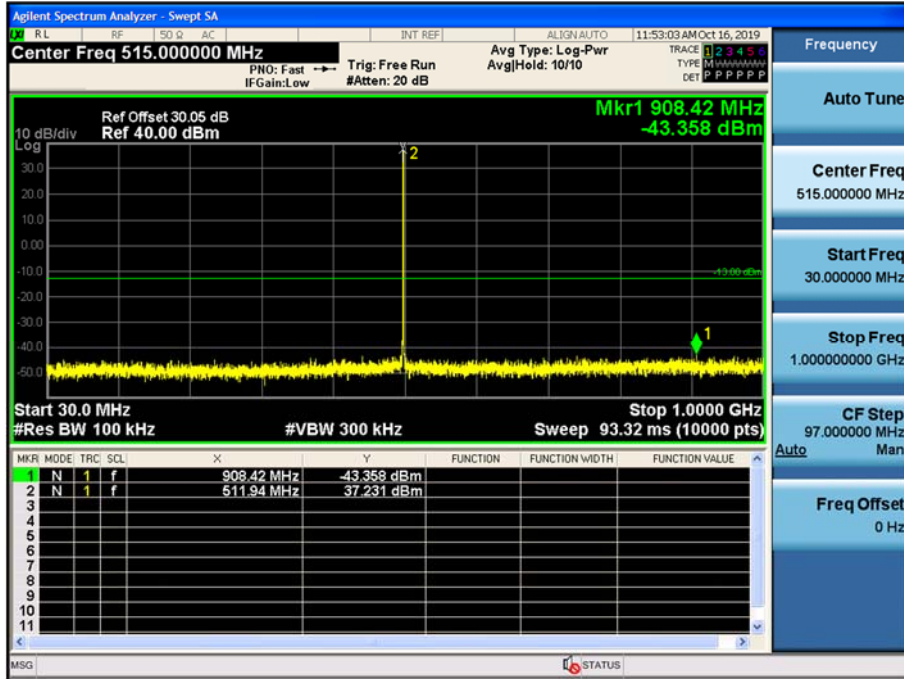
9 kHz~150 kHz



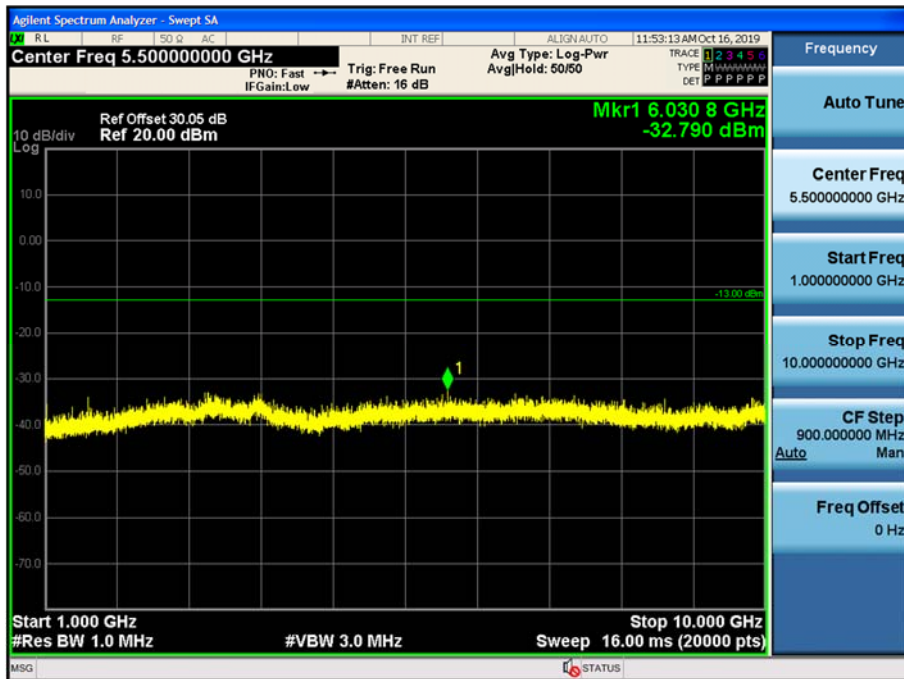
150 kHz~30 MHz



30 MHz~1 GHz

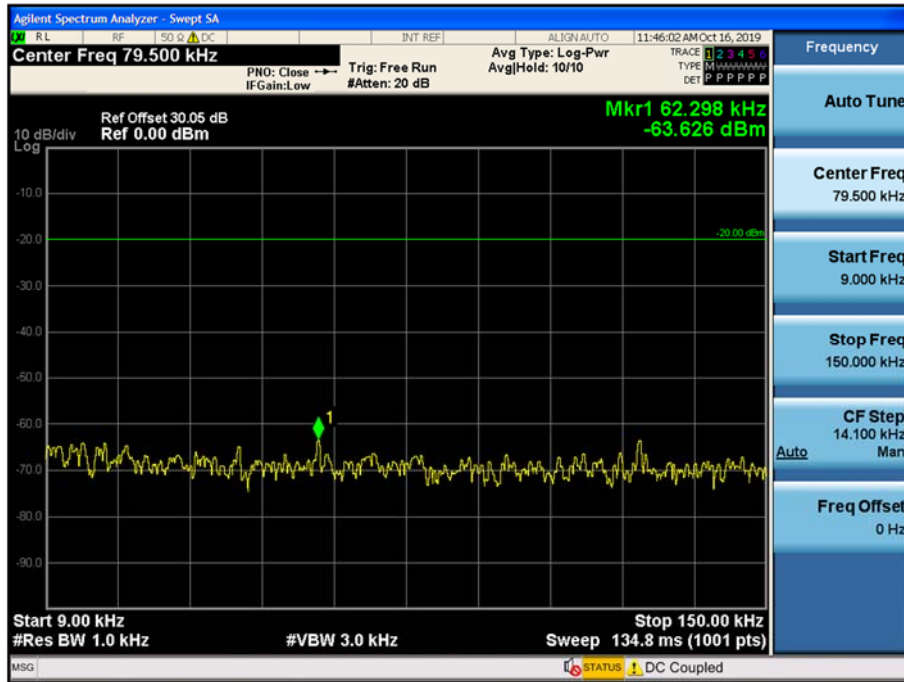


1 GHz~10 GHz

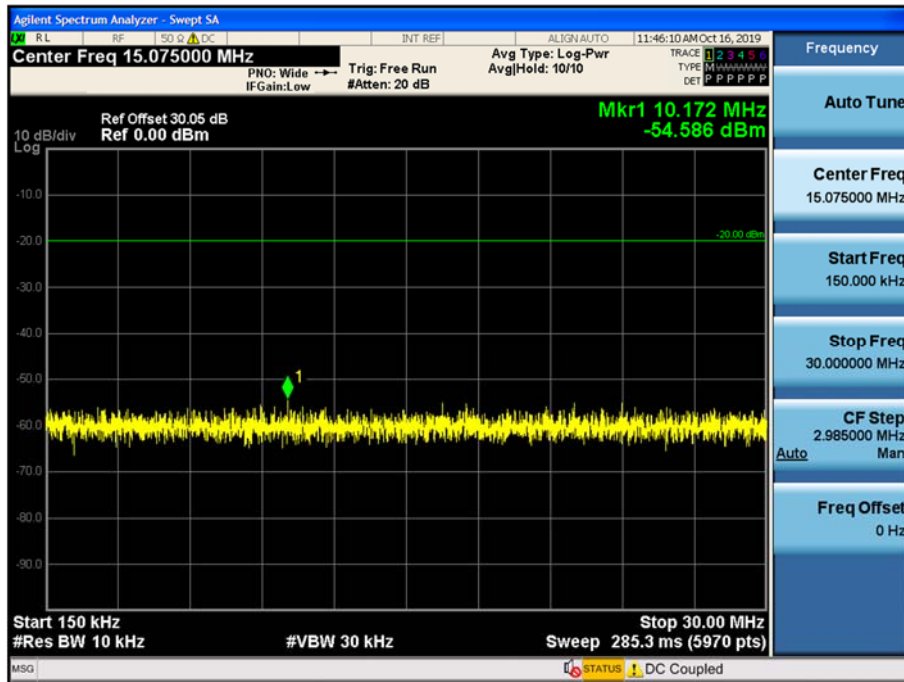


11K0F3E_FCC

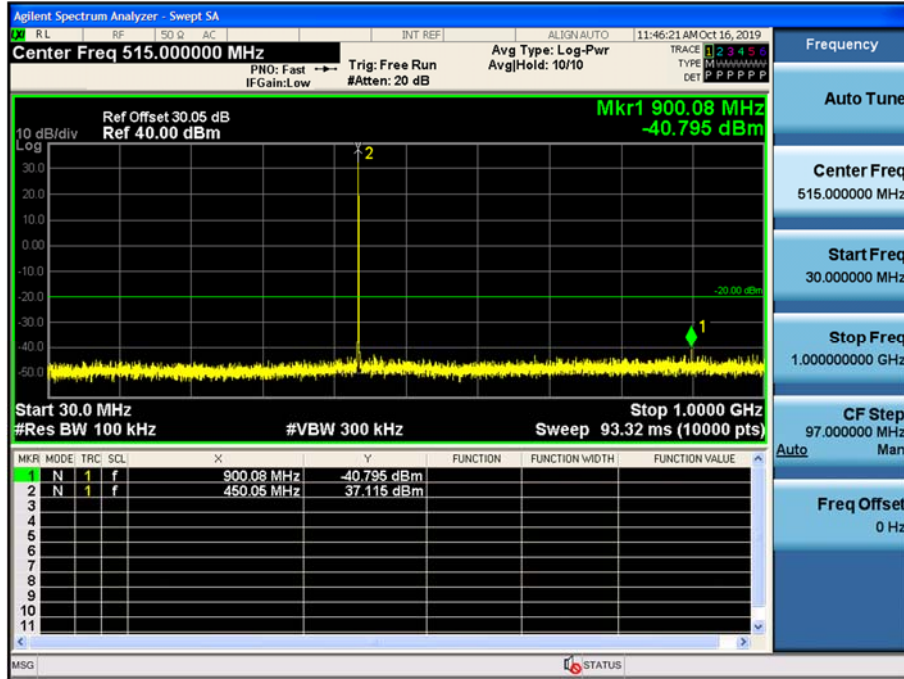
(450.05 MHz)_High
9 kHz~150 kHz



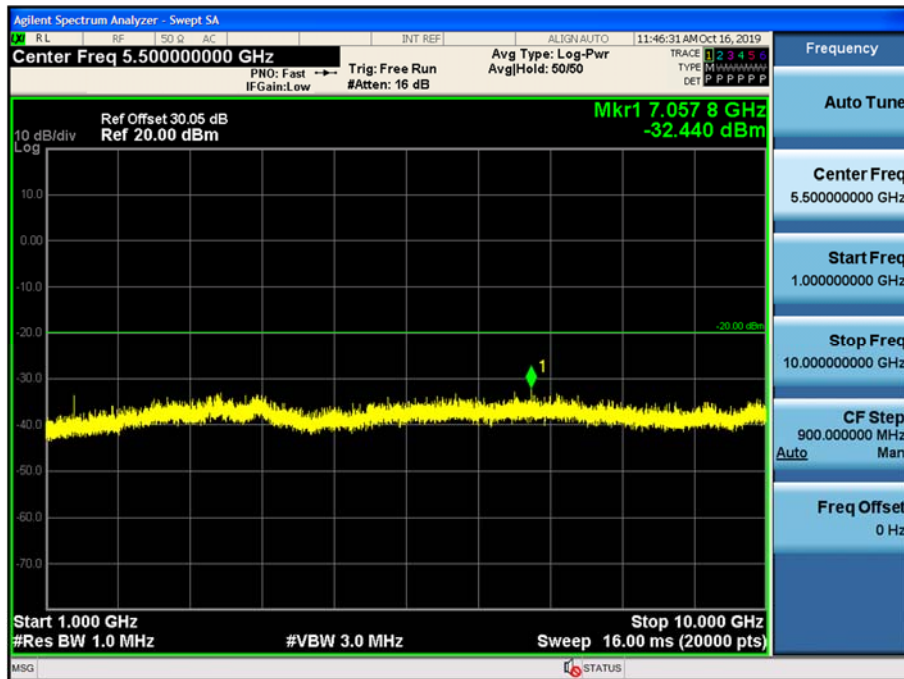
150 kHz~30 MHz



30 MHz~1 GHz

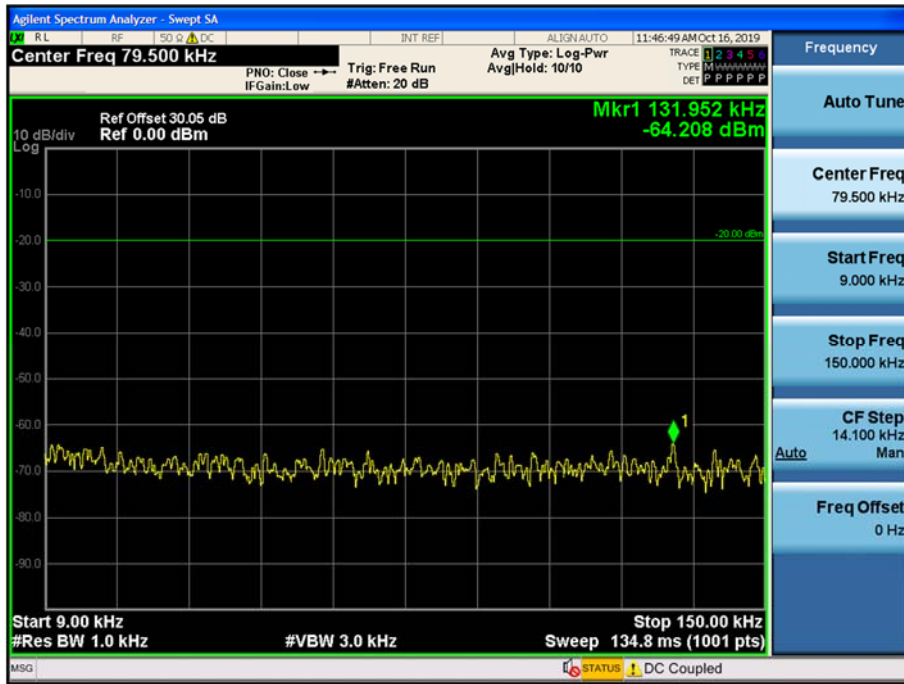


1 GHz~10 GHz

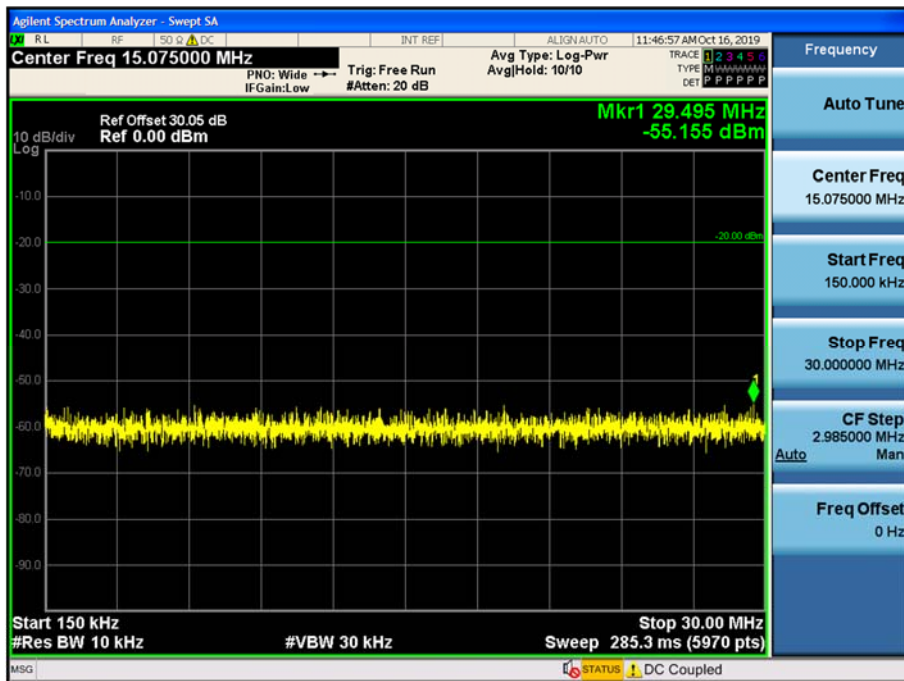


(481.05 MHz)_High

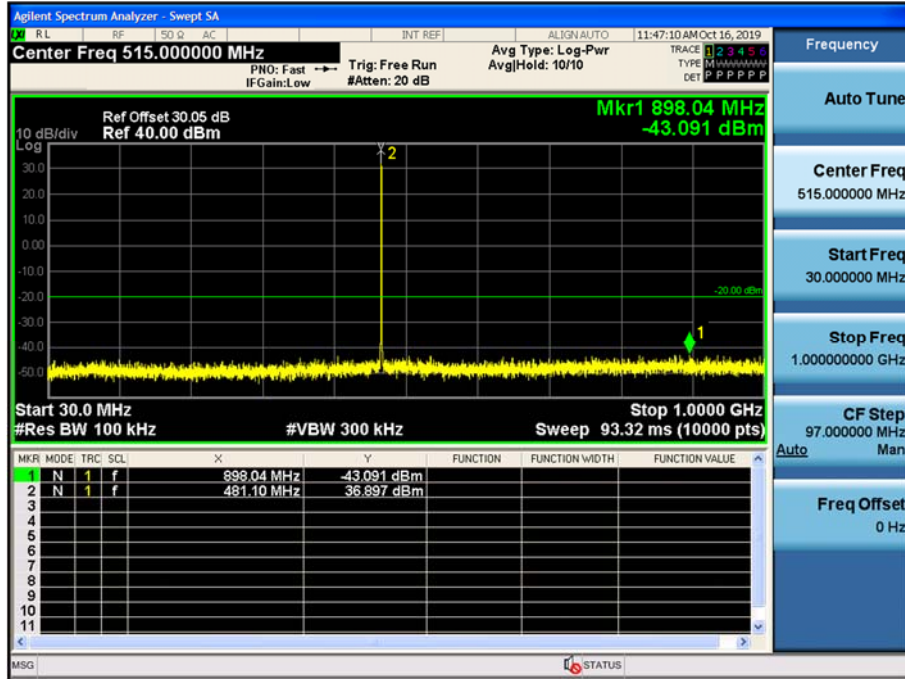
9 kHz~150 kHz



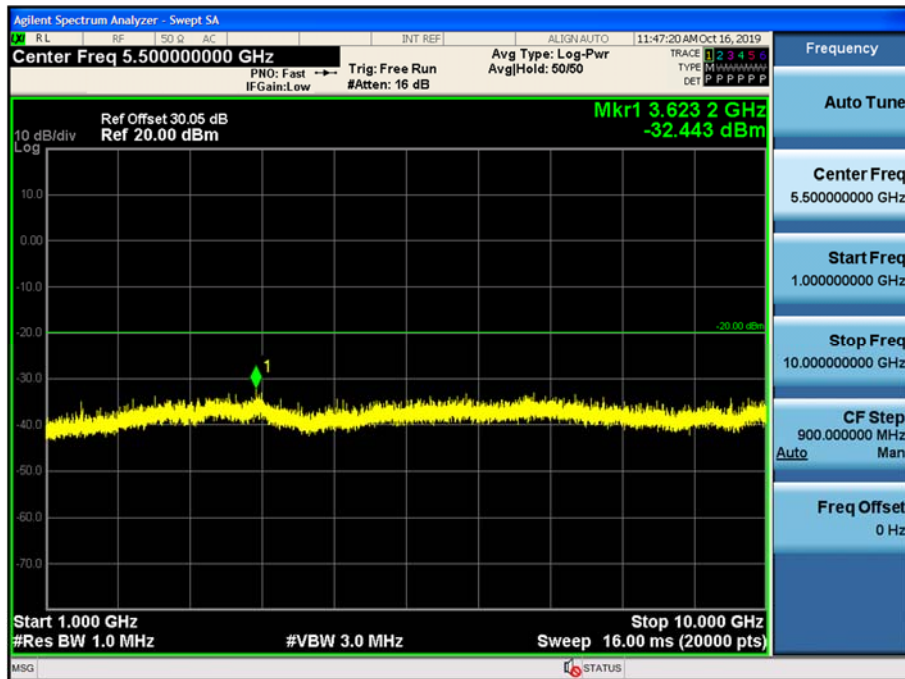
150 kHz~30 MHz



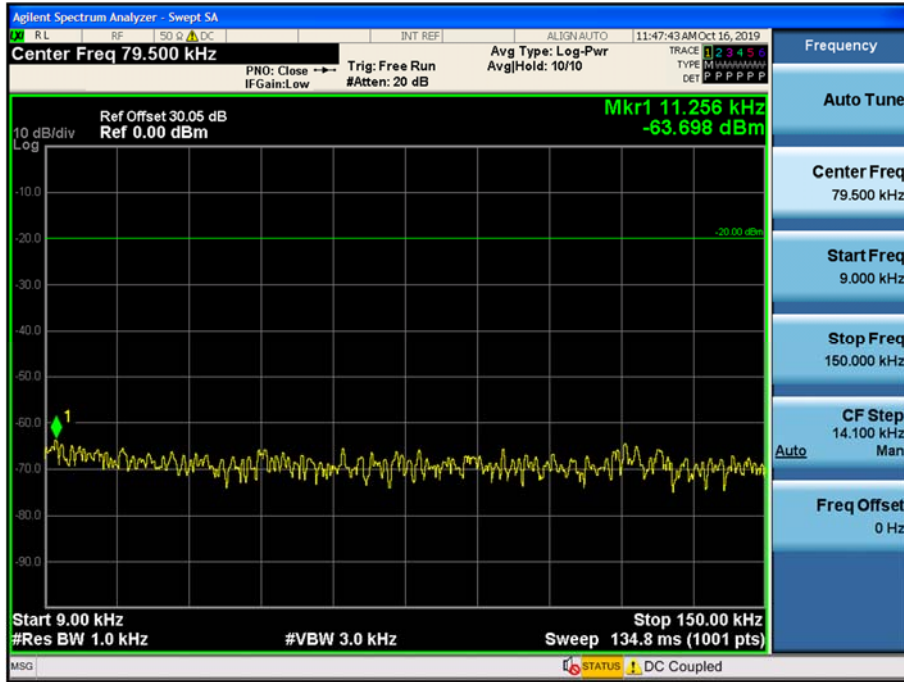
30 MHz~1 GHz



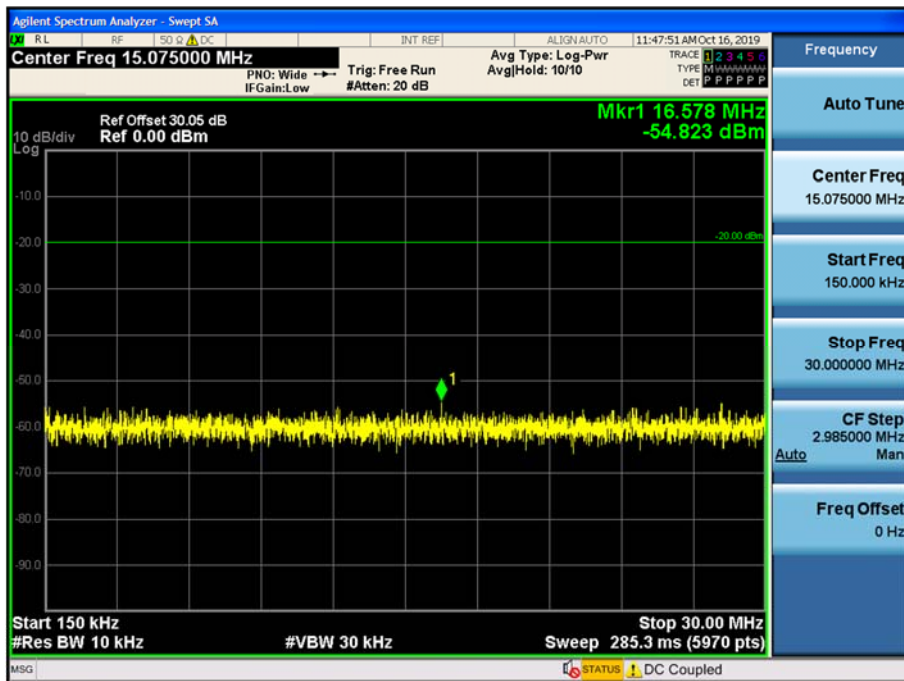
1 GHz~10 GHz



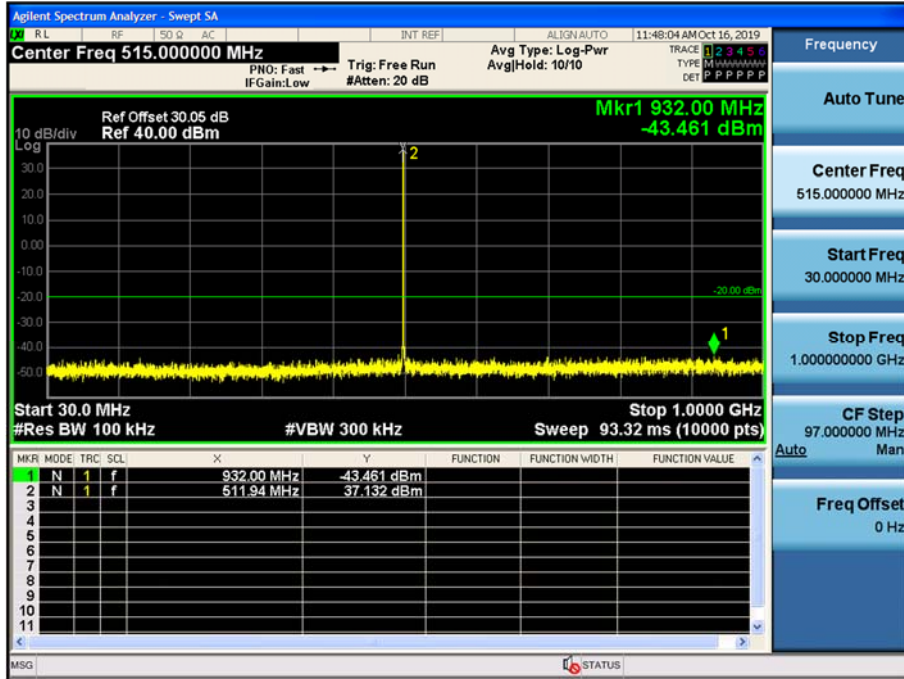
(511.95 MHz)_High
9 kHz~150 kHz



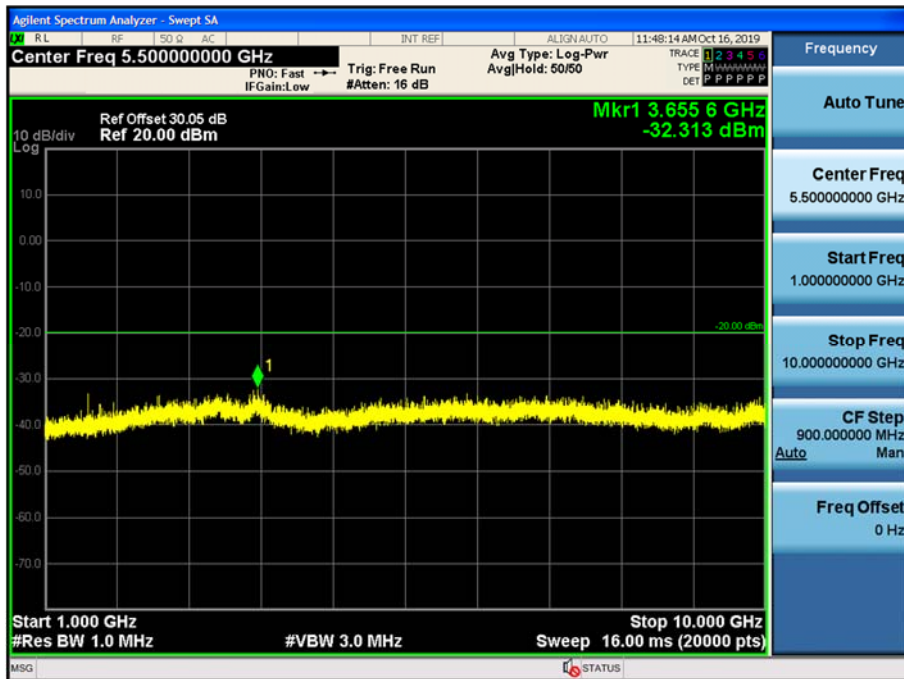
150 kHz~30 MHz



30 MHz~1 GHz



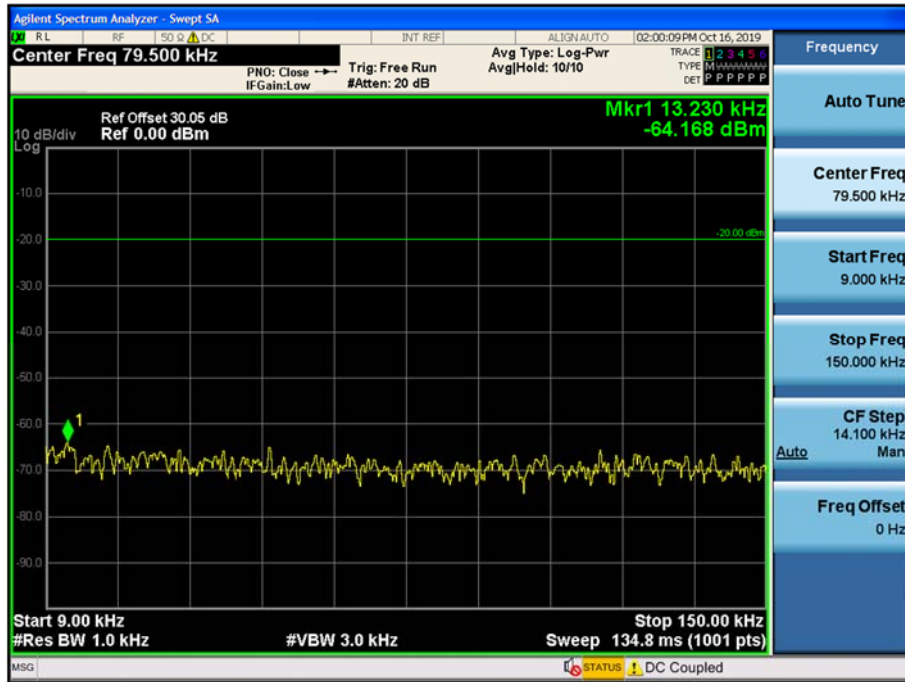
1 GHz~10 GHz



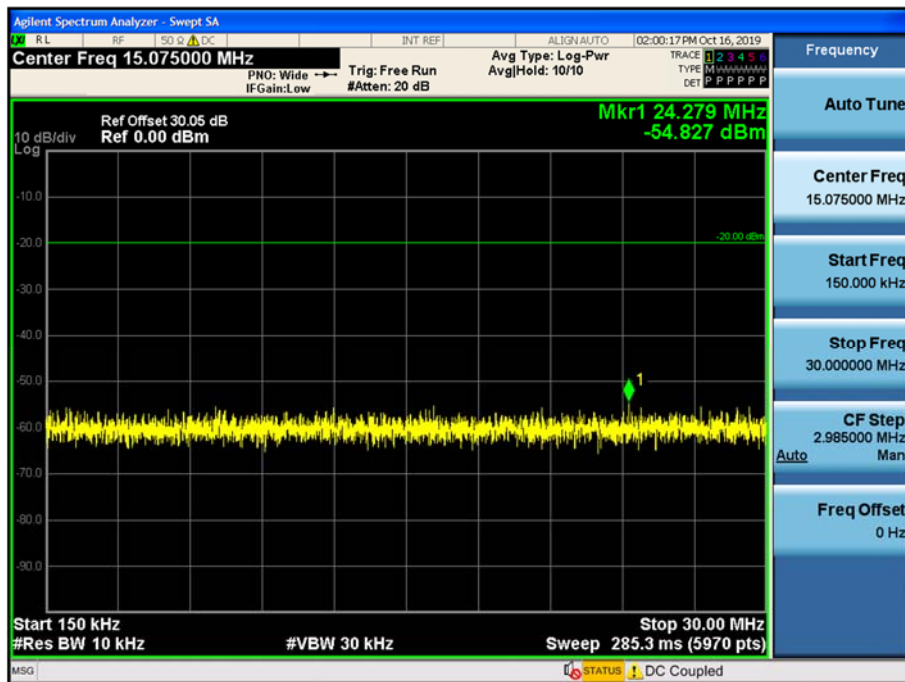
8K30F1E, 8K30F1D, 8K30F7W_FCC

(450.05 MHz)_High

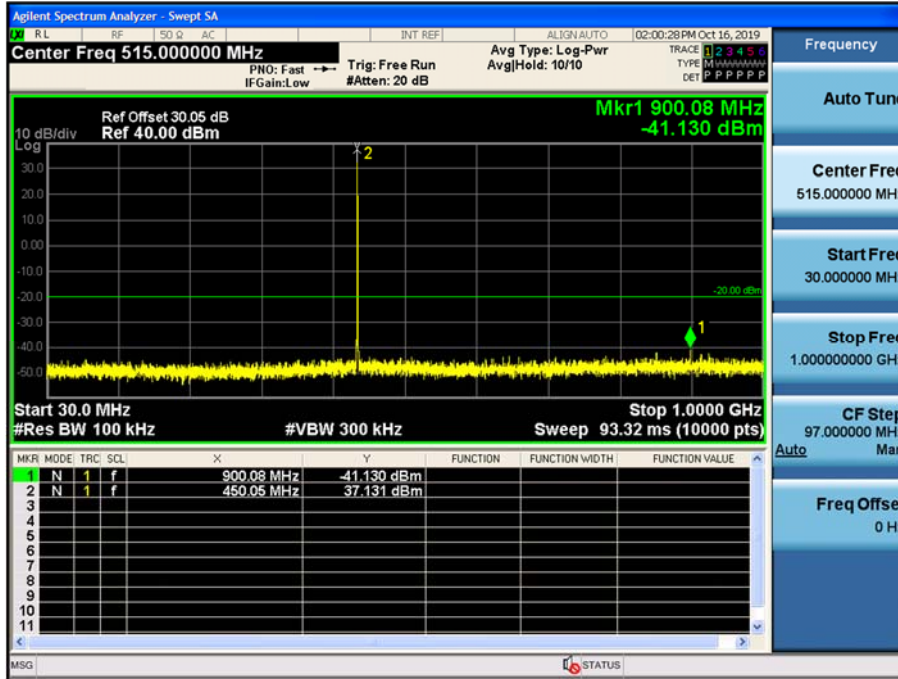
9 kHz~150 kHz



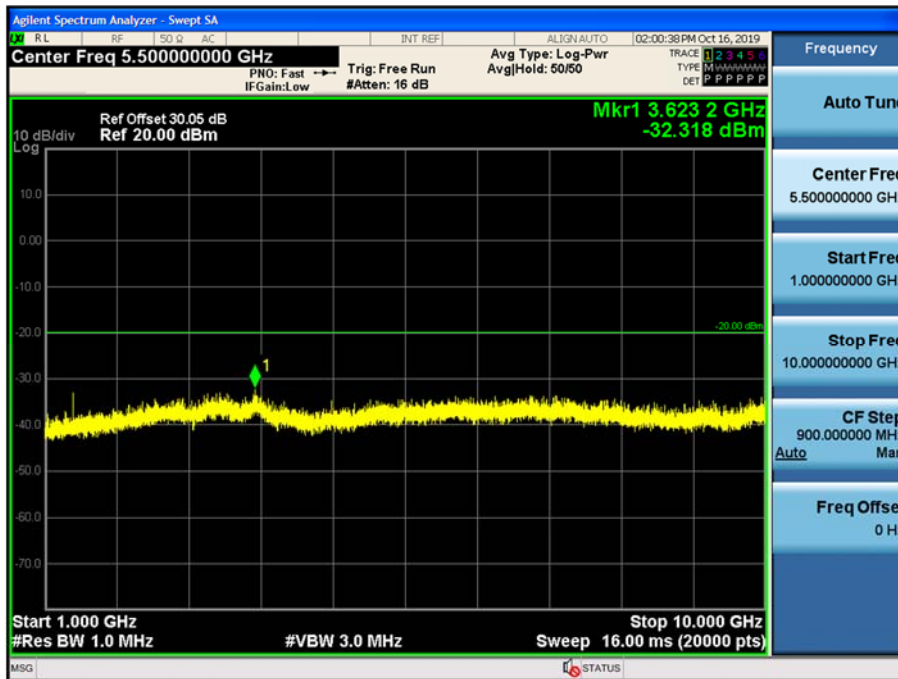
150 kHz~30 MHz



30 MHz~1 GHz

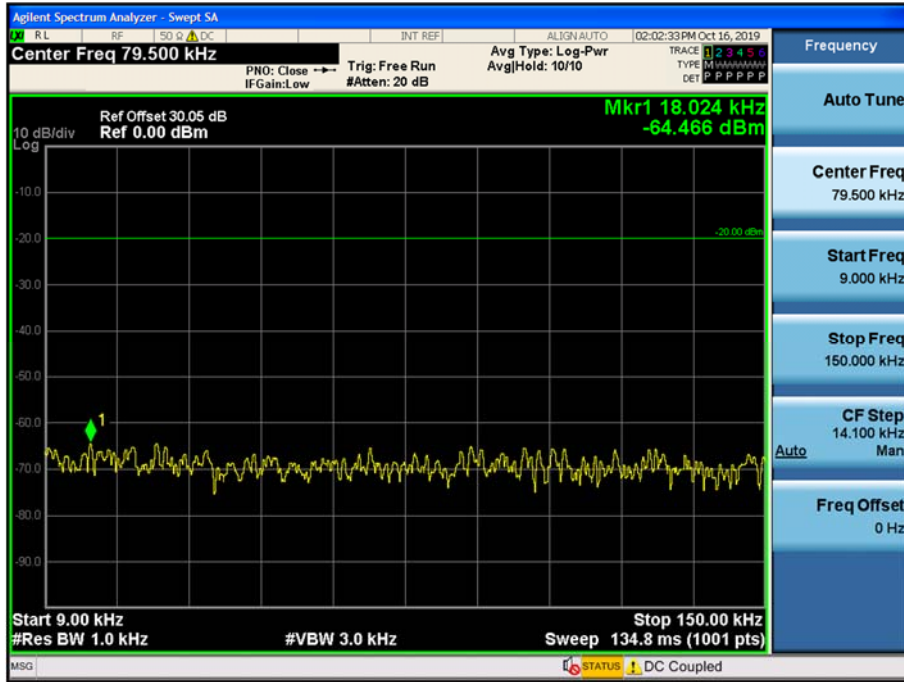


1 GHz~10 GHz



(481.05 MHz)_High

9 kHz~150 kHz



150 kHz~30 MHz

