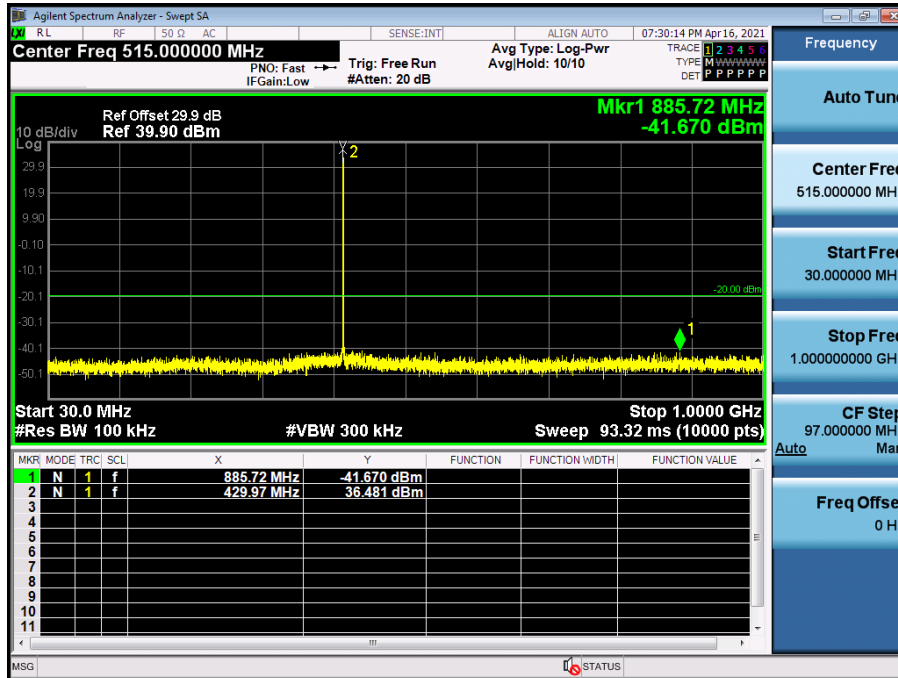
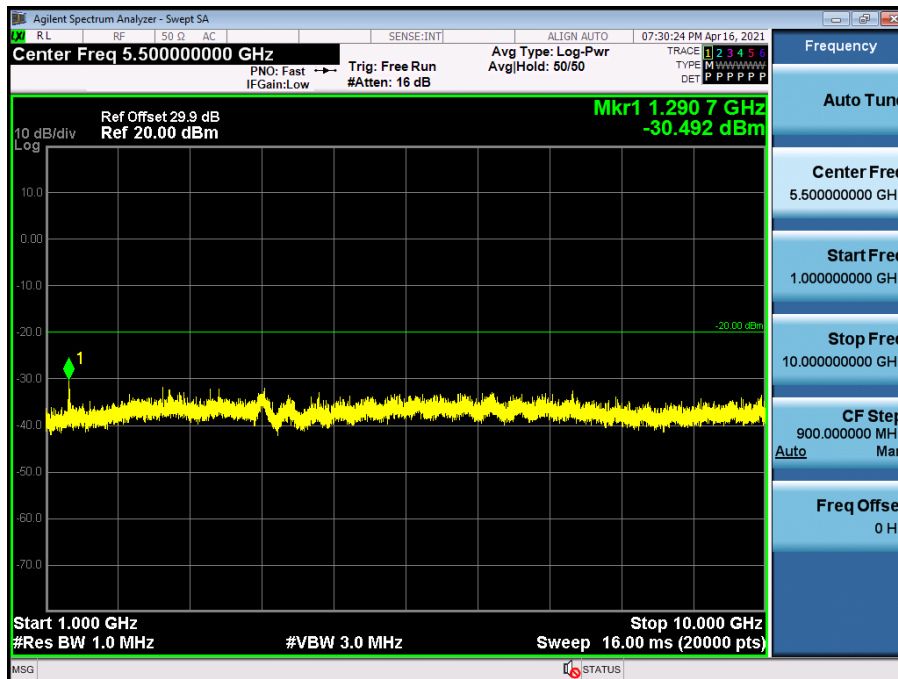


30 MHz~1 GHz



1 GHz~10 GHz

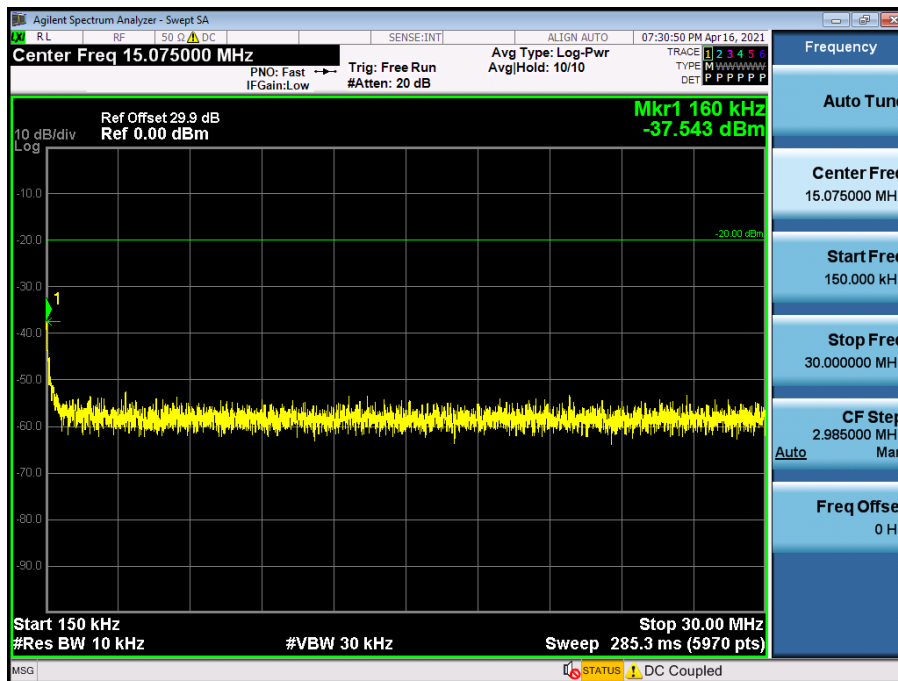


(469.95 MHz)_High

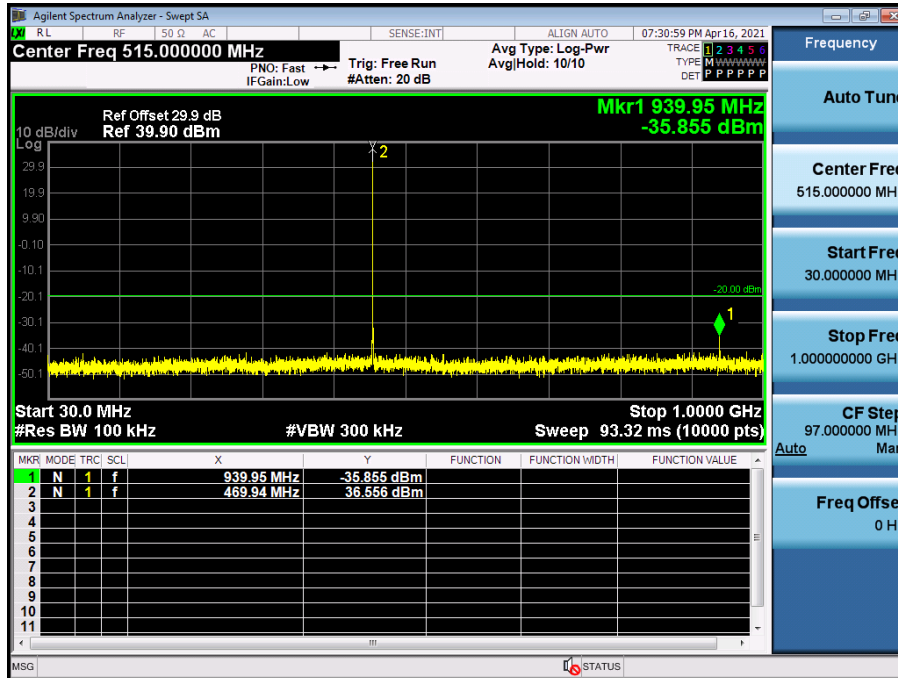
9 kHz~150 kHz



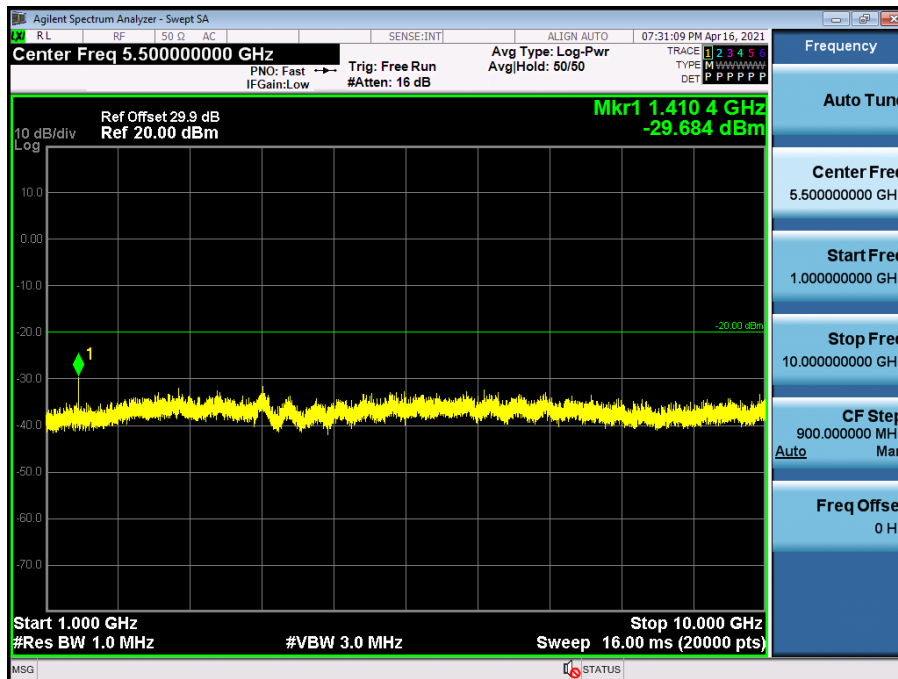
150 kHz~30 MHz



30 MHz~1 GHz



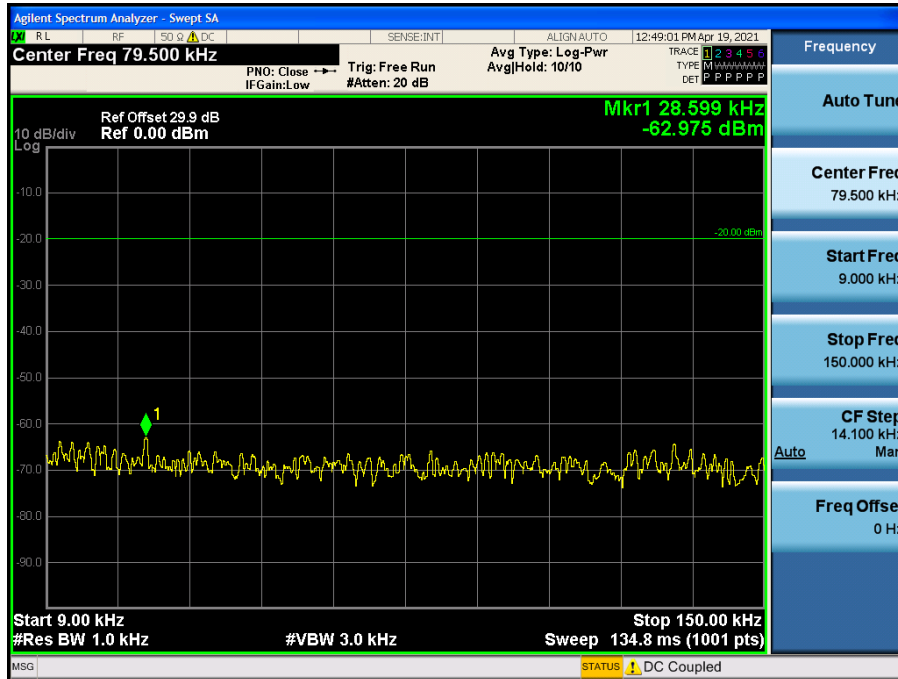
1 GHz~10 GHz



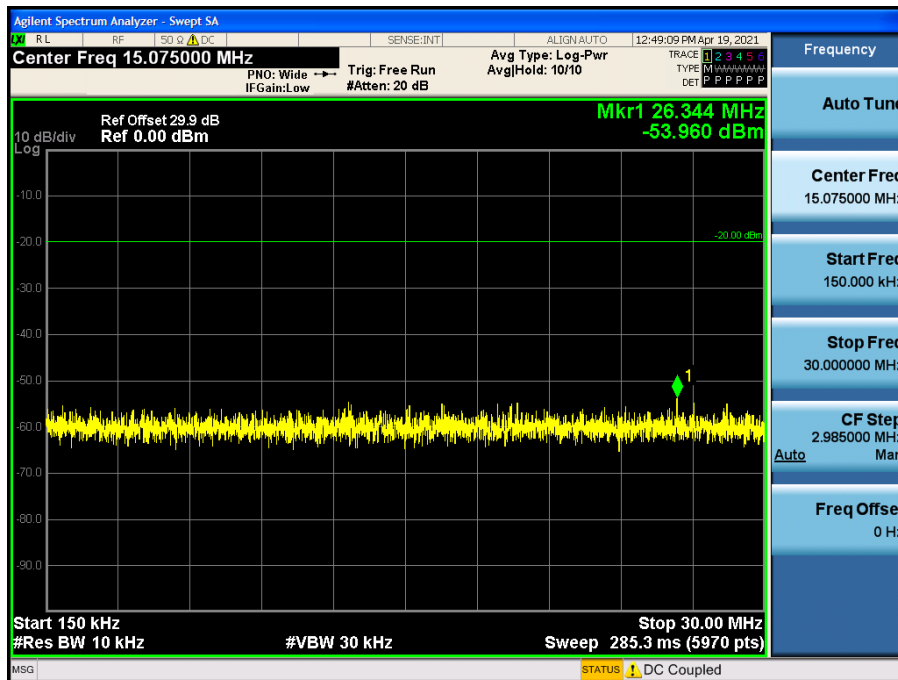
8K30F1E, 8K30F1D, 8K30F7W_FCC/ISED

(406.15 MHz)_High

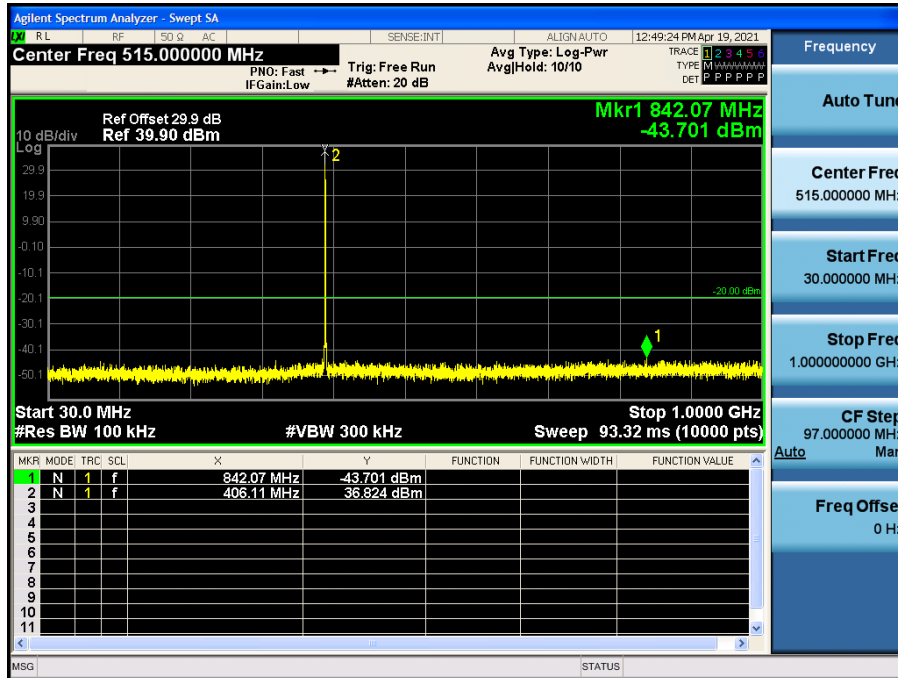
9 kHz~150 kHz



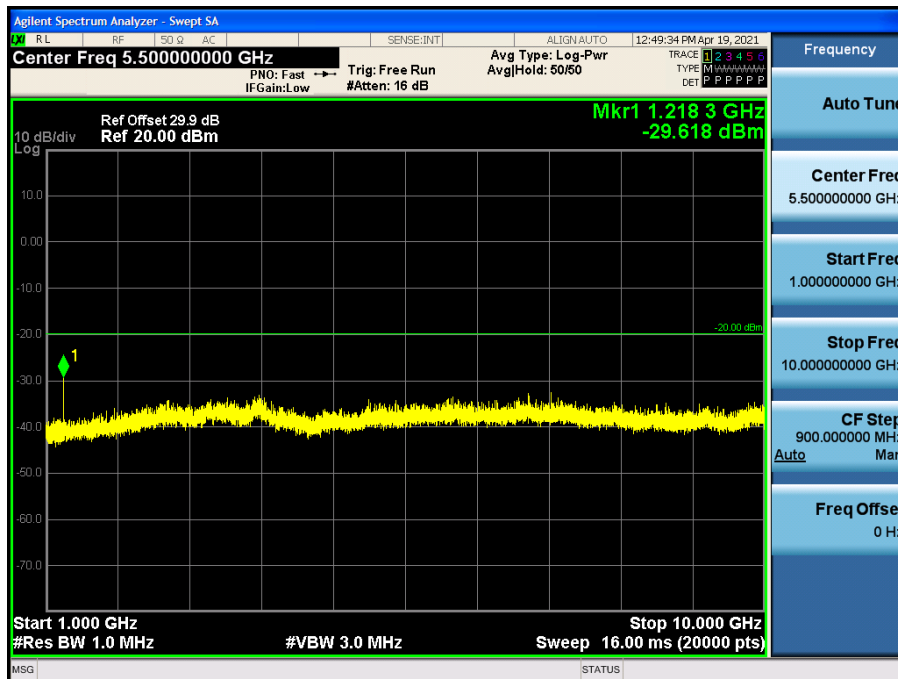
150 kHz~30 MHz



30 MHz~1 GHz

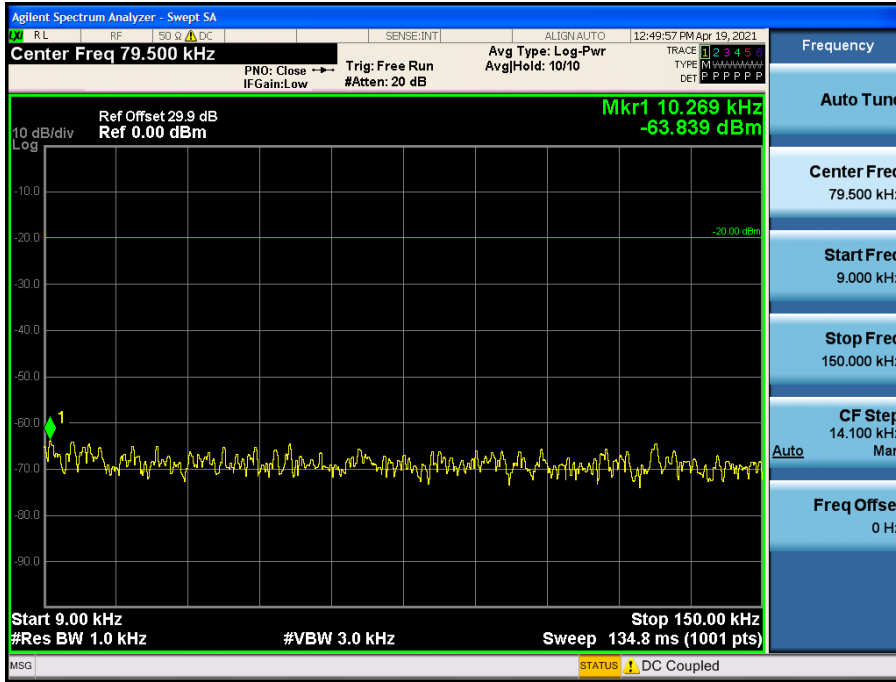


1 GHz~10 GHz

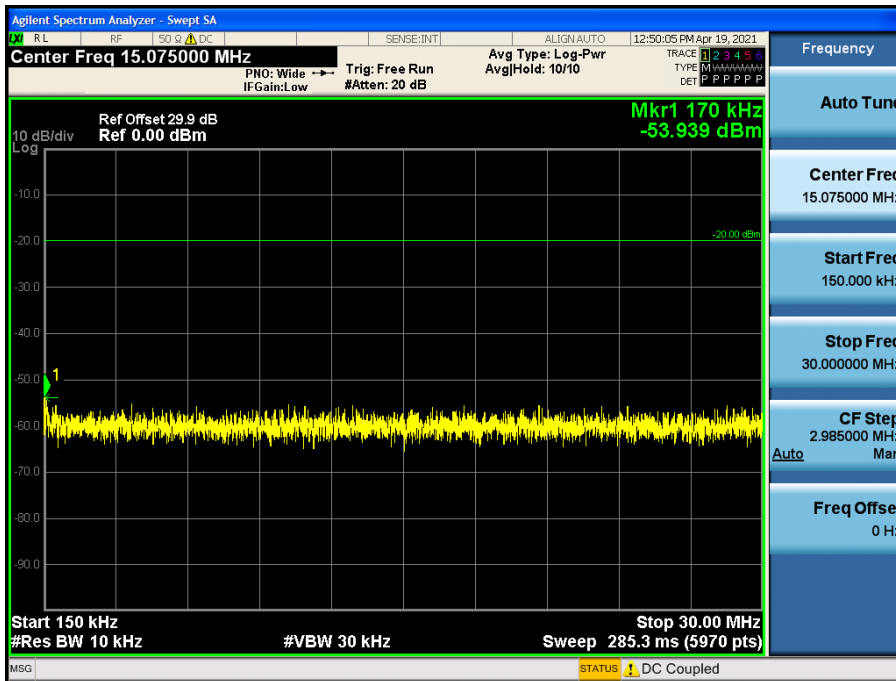


(429.95 MHz)_High

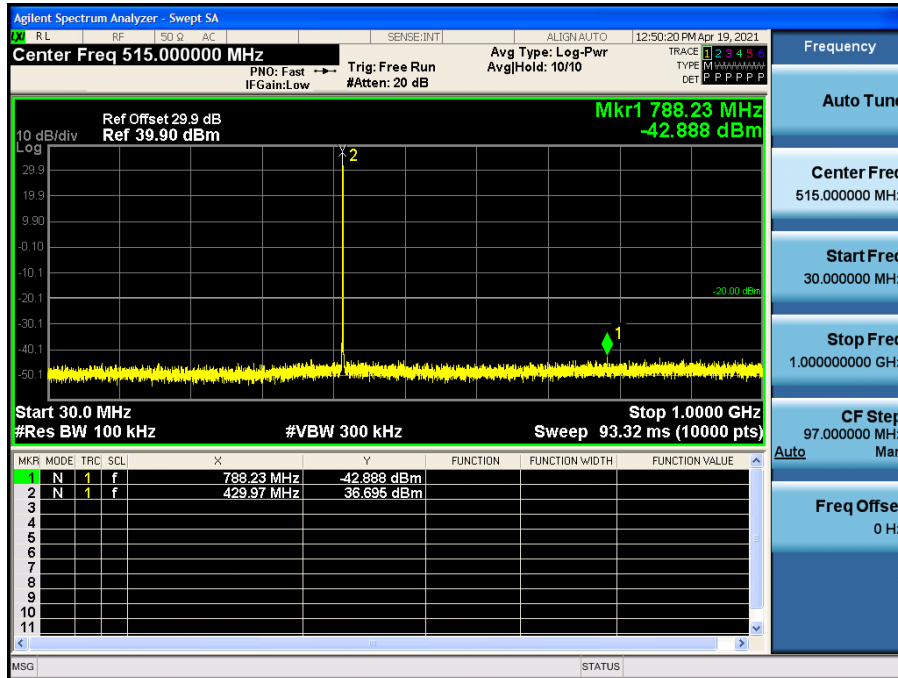
9 kHz~150 kHz



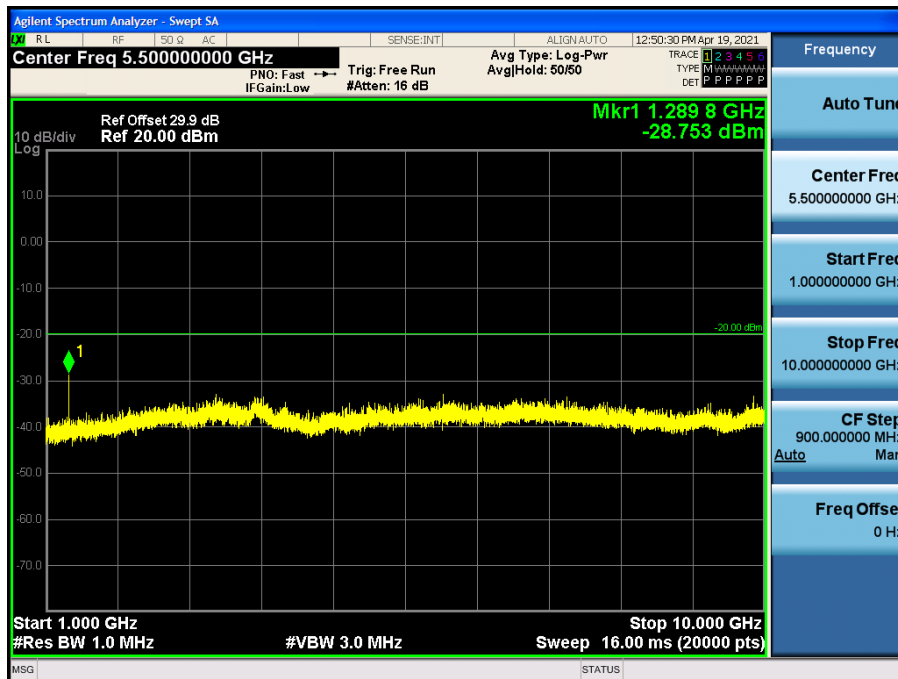
150 kHz~30 MHz



30 MHz~1 GHz

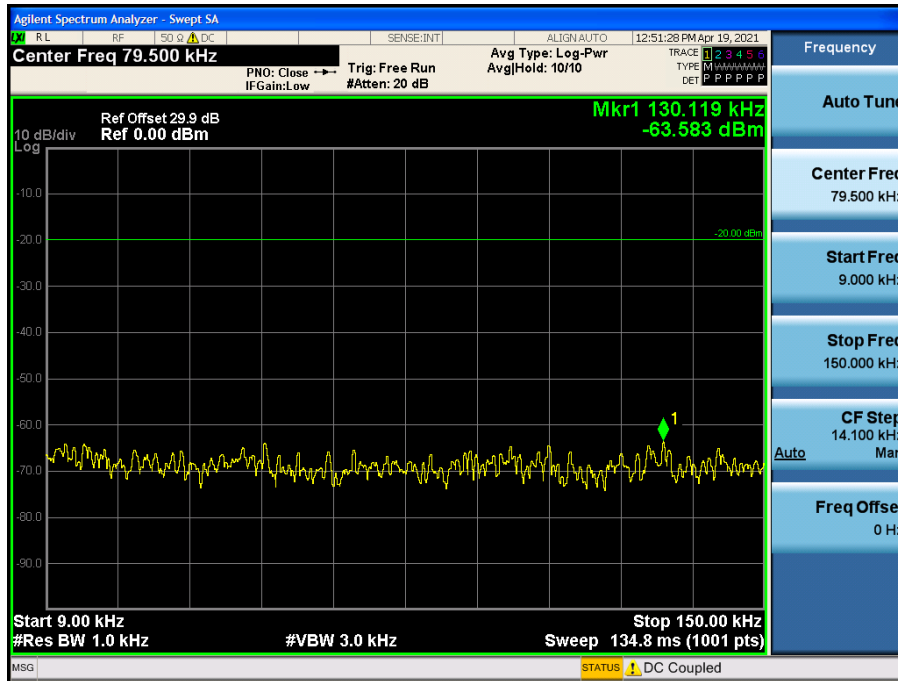


1 GHz~10 GHz

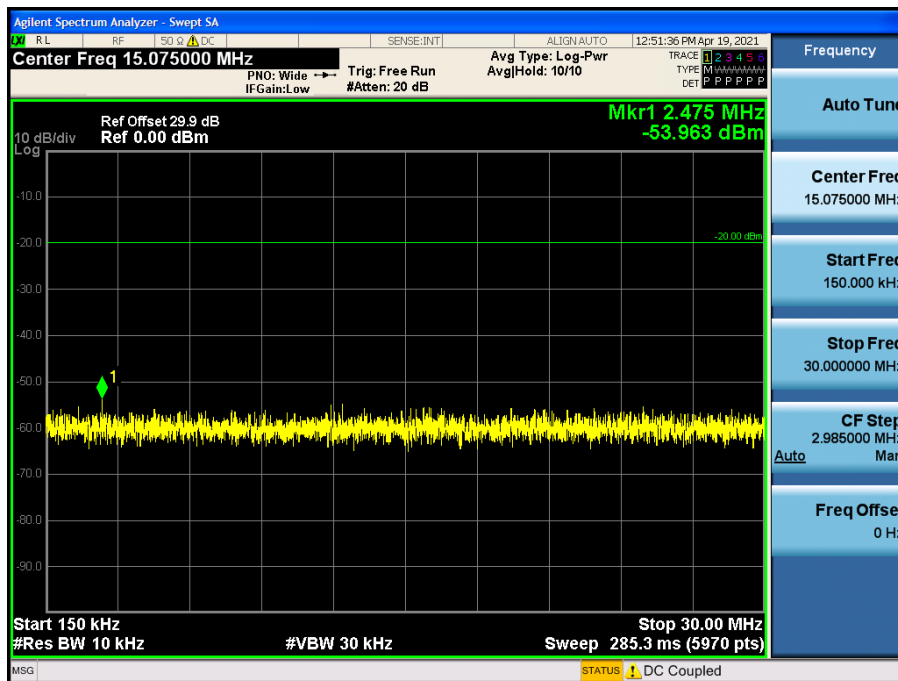


(469.95 MHz)_High

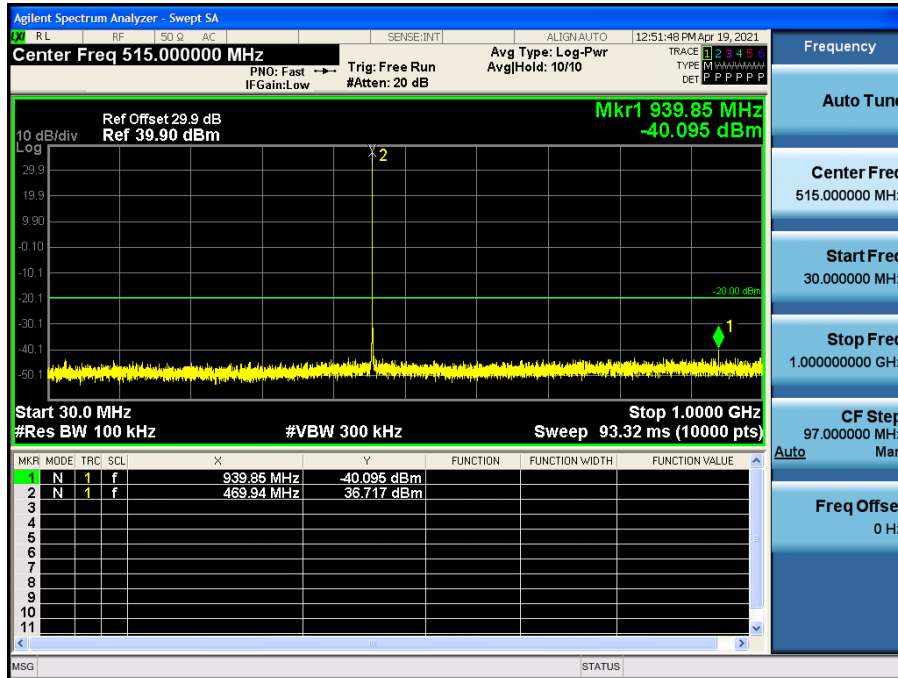
9 kHz~150 kHz



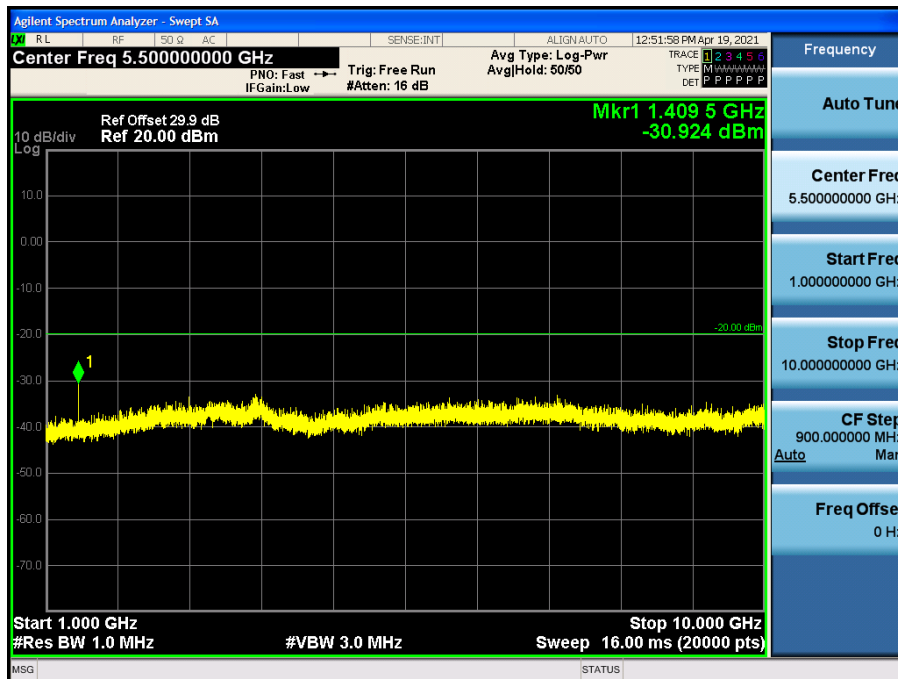
150 kHz~30 MHz



30 MHz~1 GHz



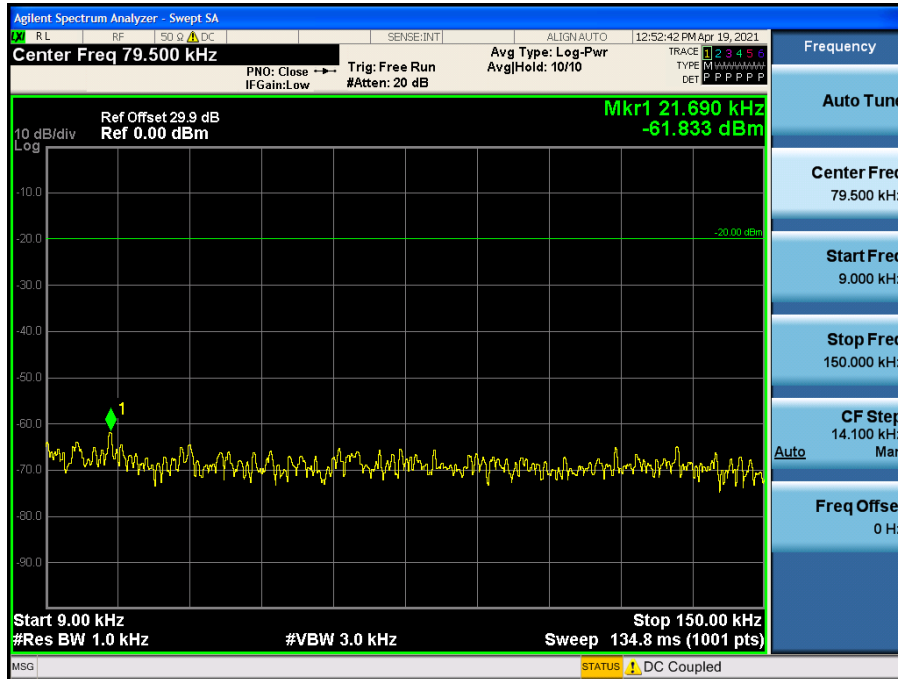
1 GHz~10 GHz



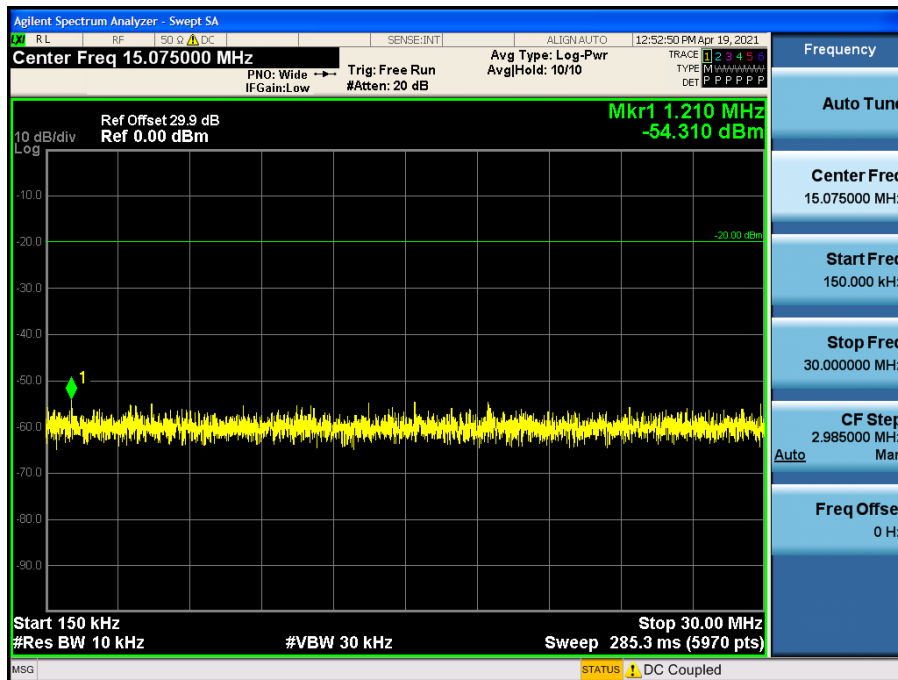
7K60FXD, 7K60FXE_FCC/ISED

(406.15 MHz)_High

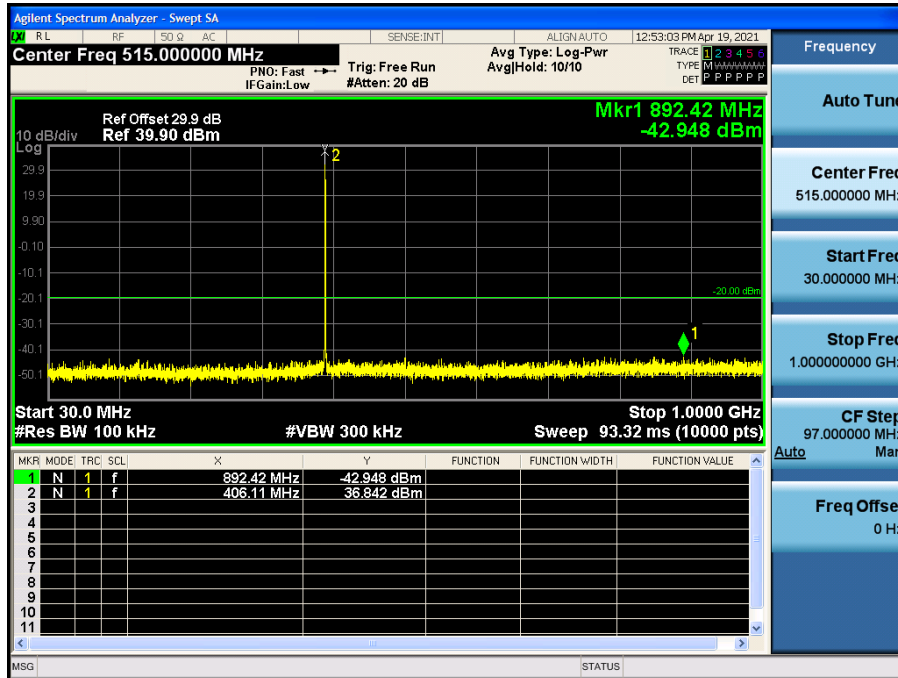
9 kHz~150 kHz



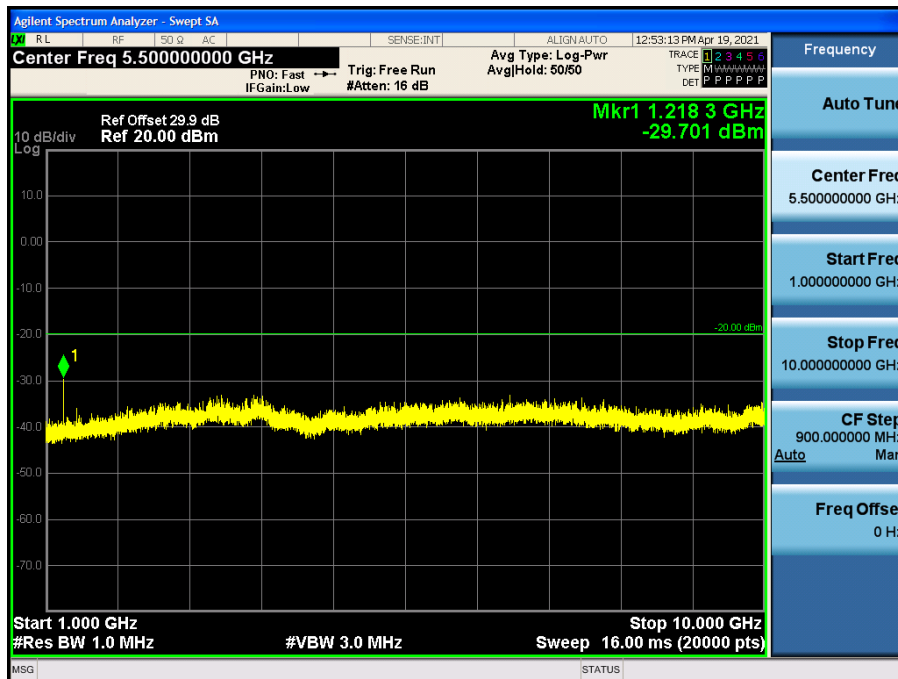
150 kHz~30 MHz



30 MHz~1 GHz

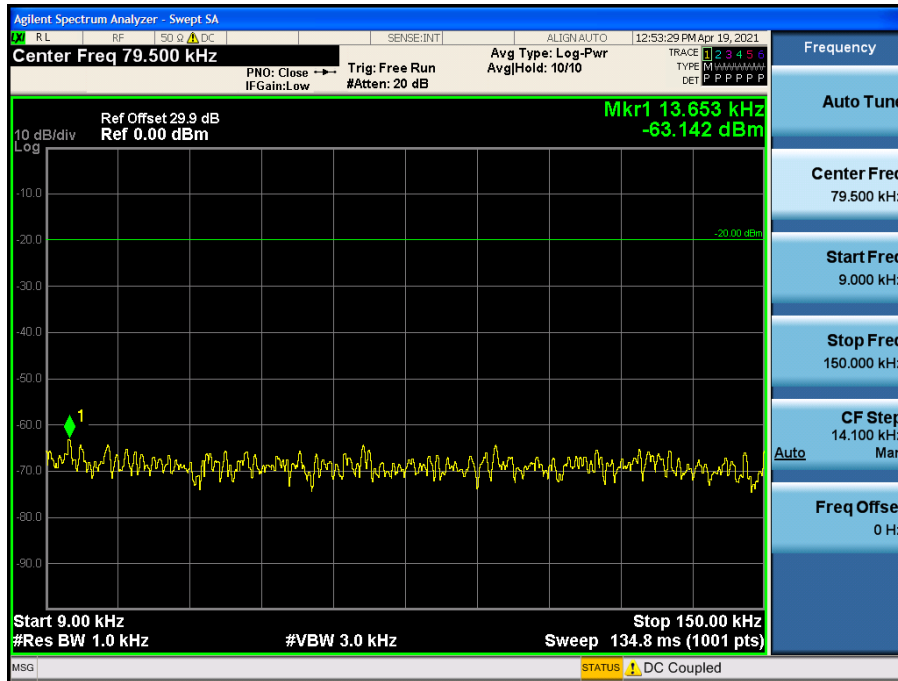


1 GHz~10 GHz

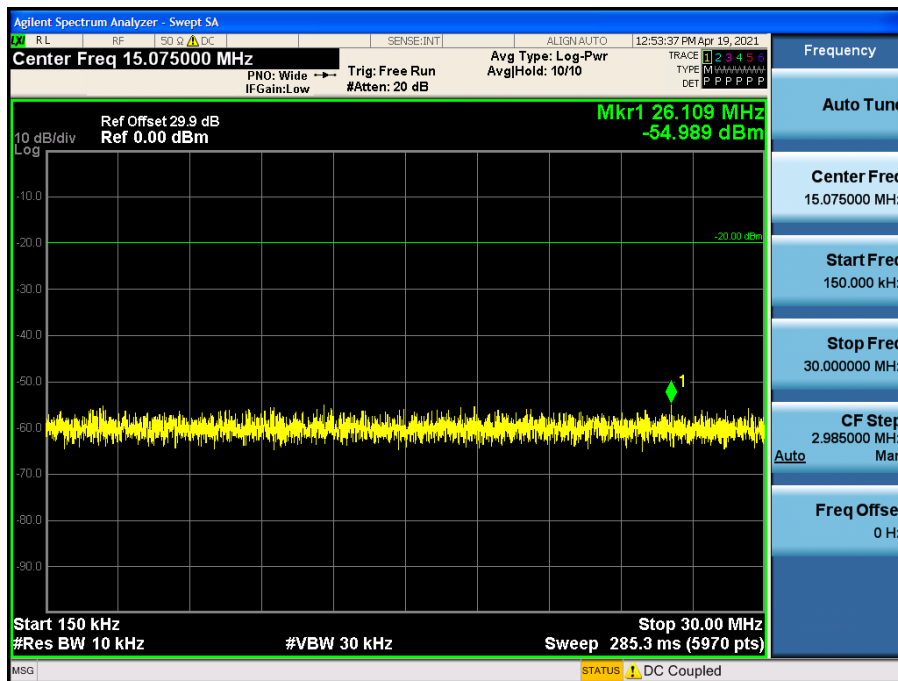


(429.95 MHz)_High

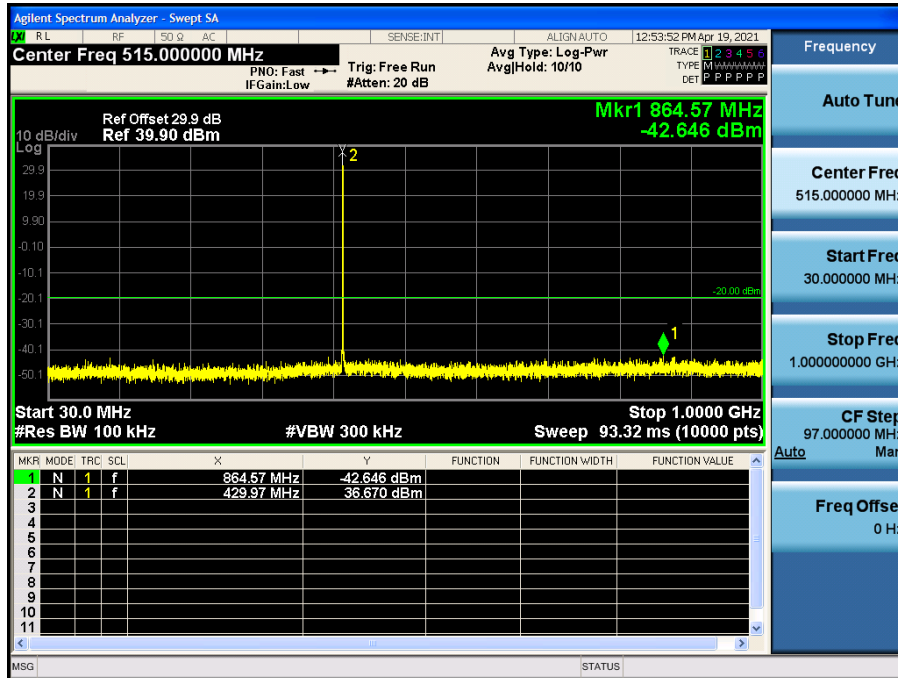
9 kHz~150 kHz



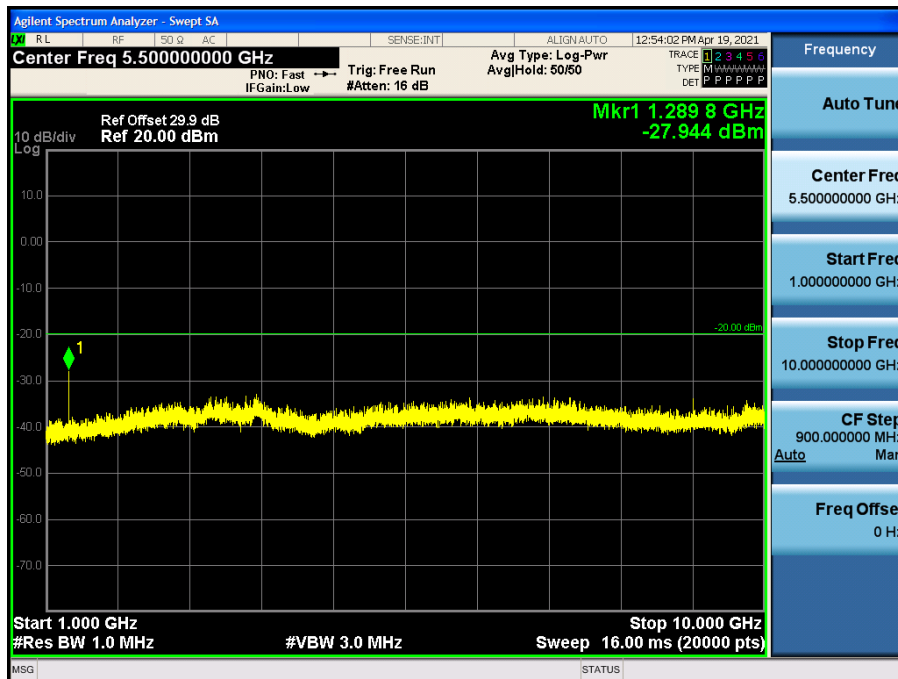
150 kHz~30 MHz



30 MHz~1 GHz

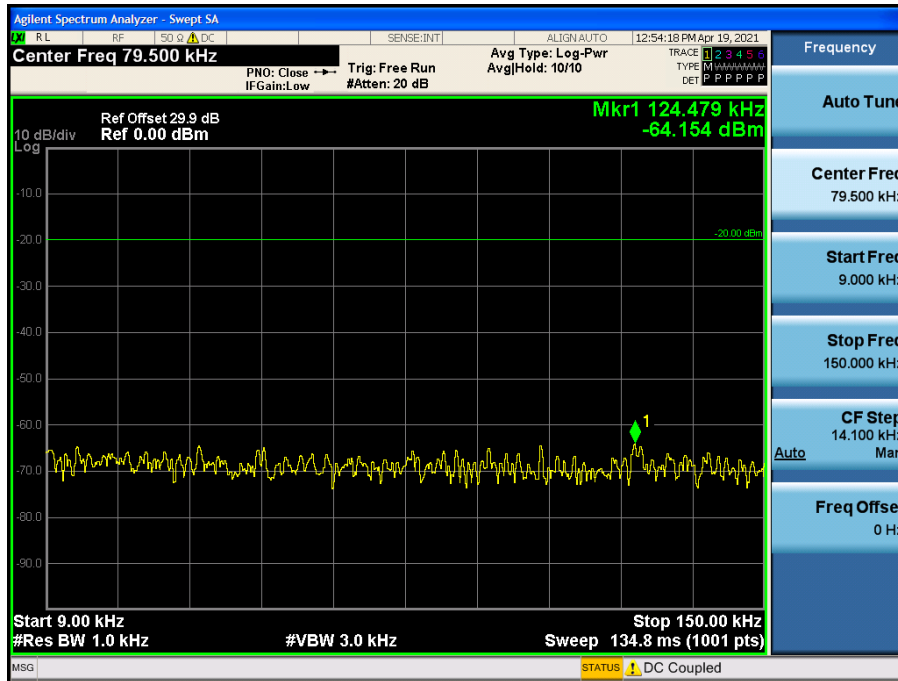


1 GHz~10 GHz

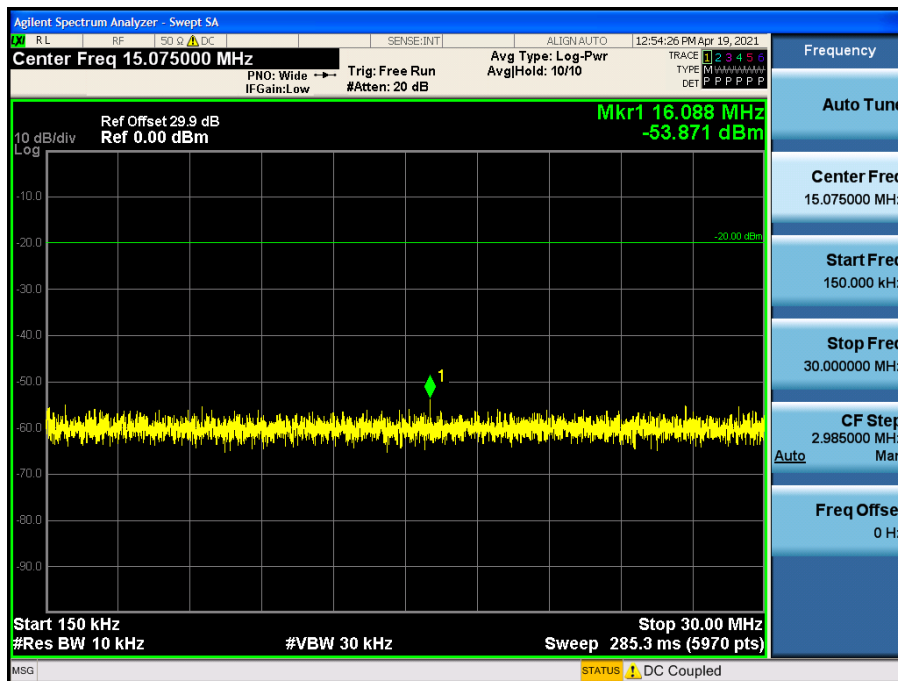


(469.95 MHz)_High

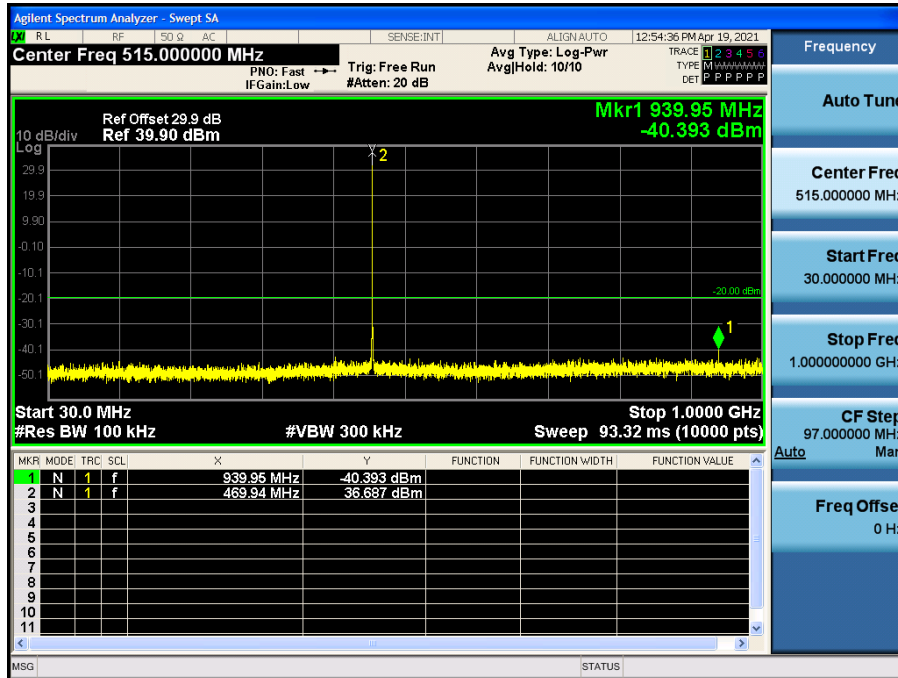
9 kHz~150 kHz



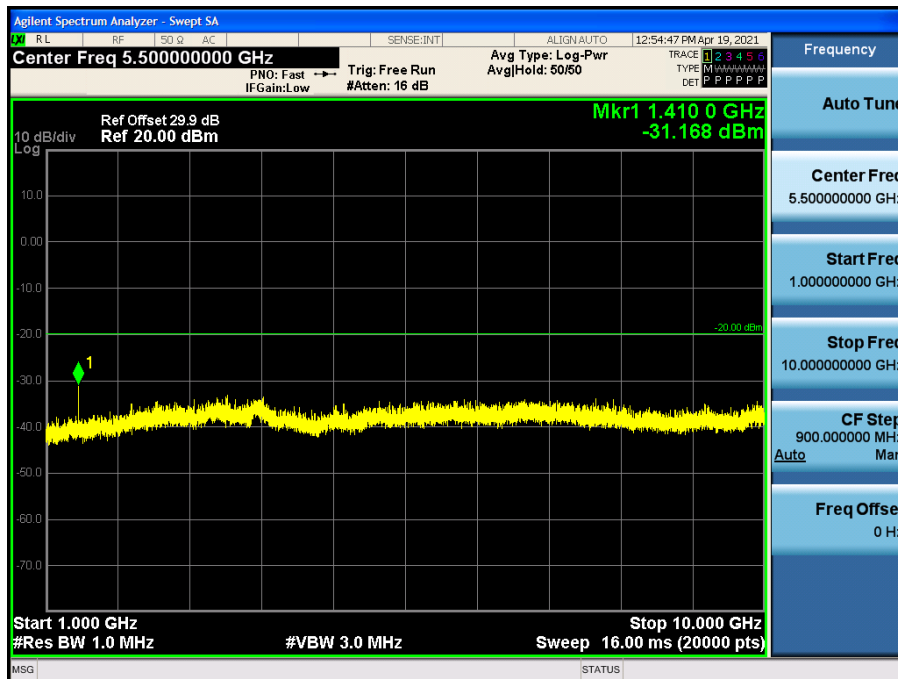
150 kHz~30 MHz



30 MHz~1 GHz



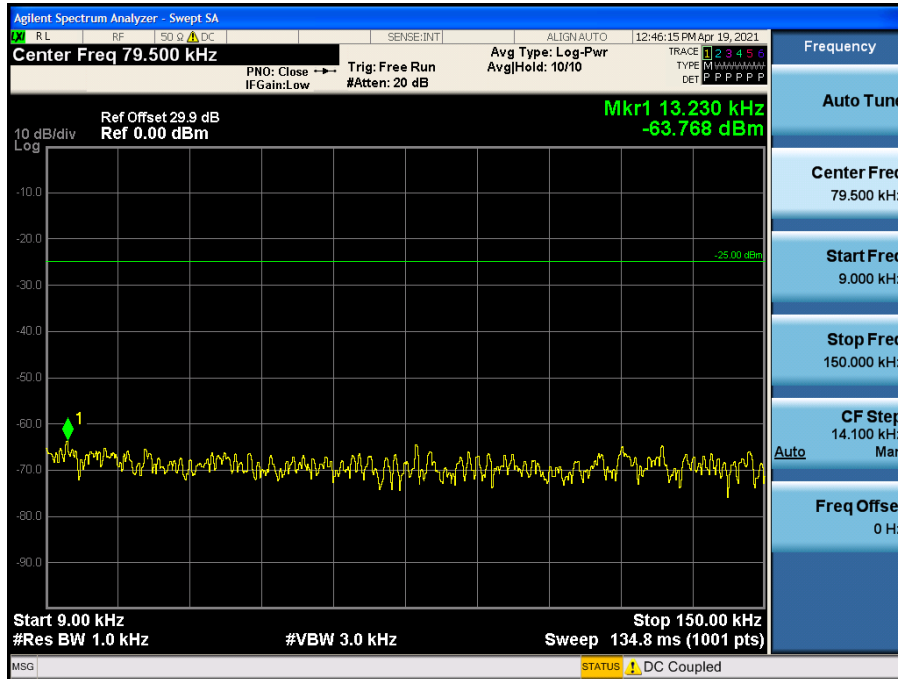
1 GHz~10 GHz



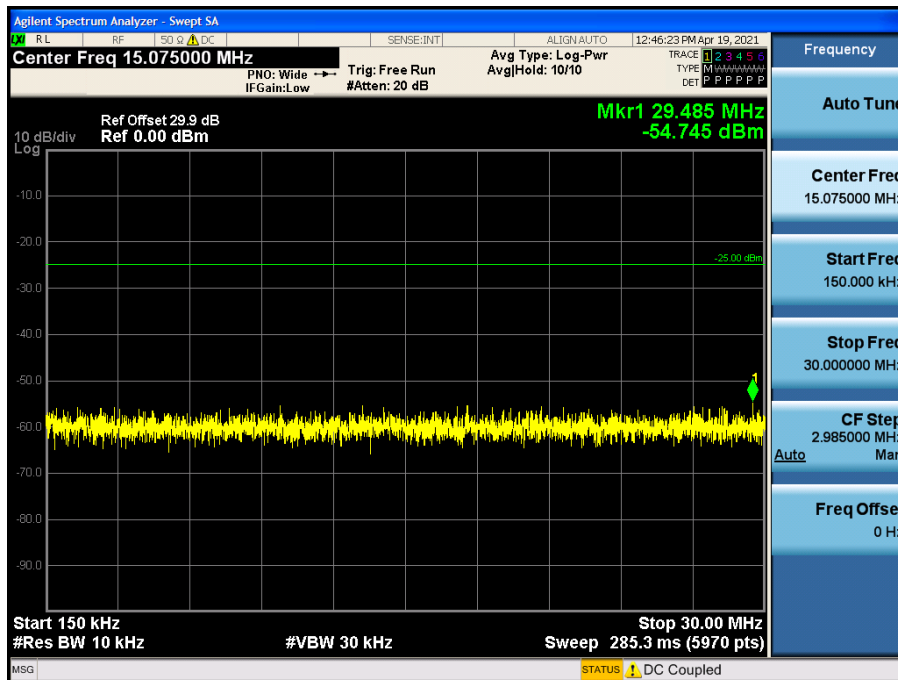
4K00F1E, 4K00F1D, 4K00F7W_FCC/ISED

(406.15 MHz)_High

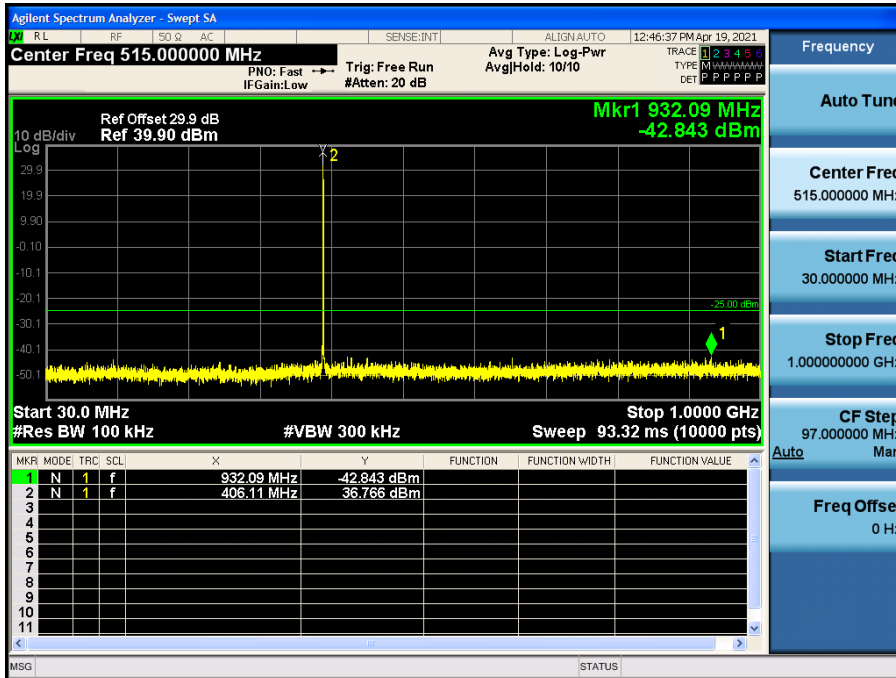
9 kHz~150 kHz



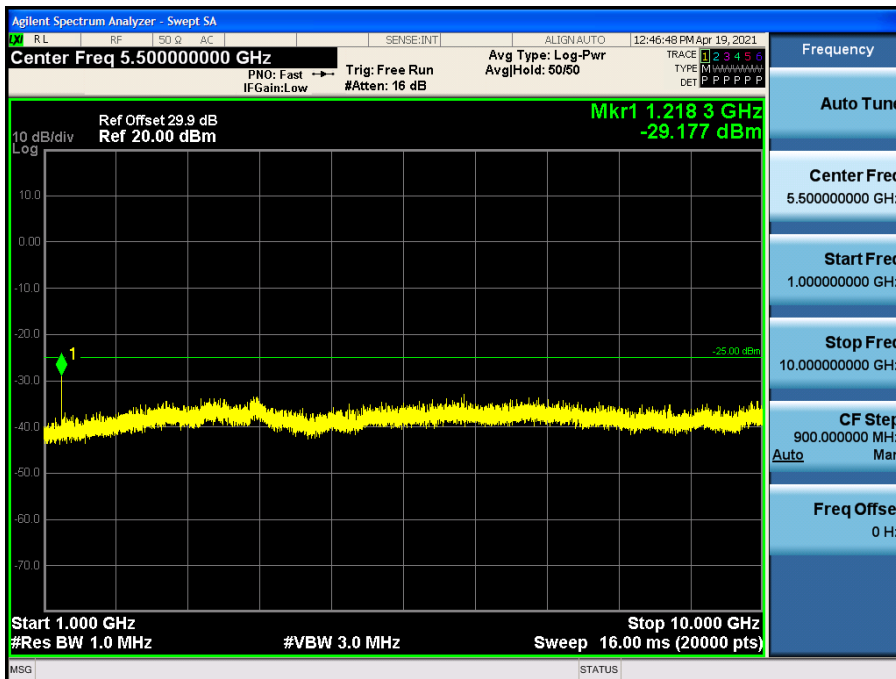
150 kHz~30 MHz



30 MHz~1 GHz

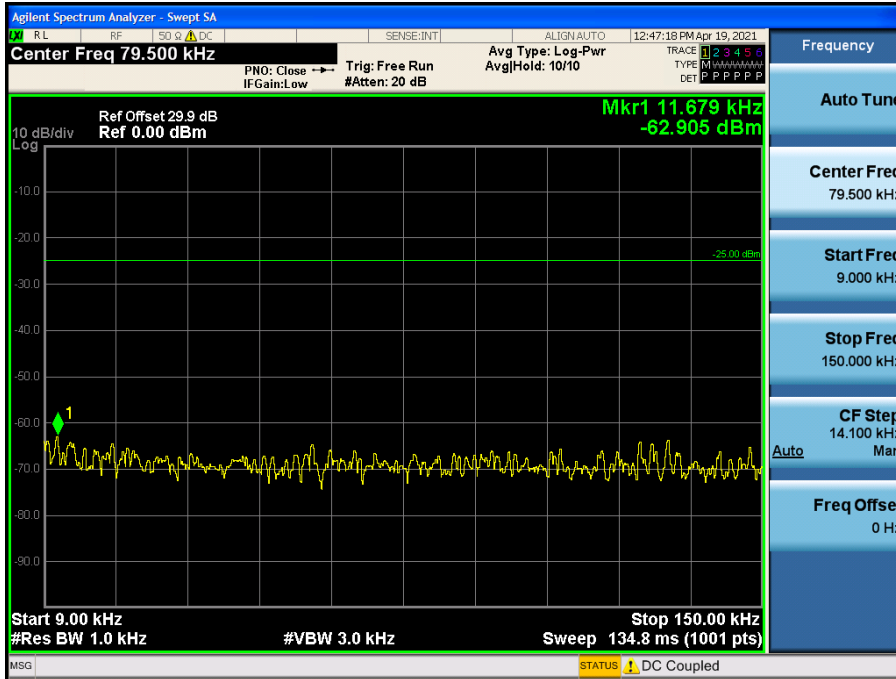


1 GHz~10 GHz

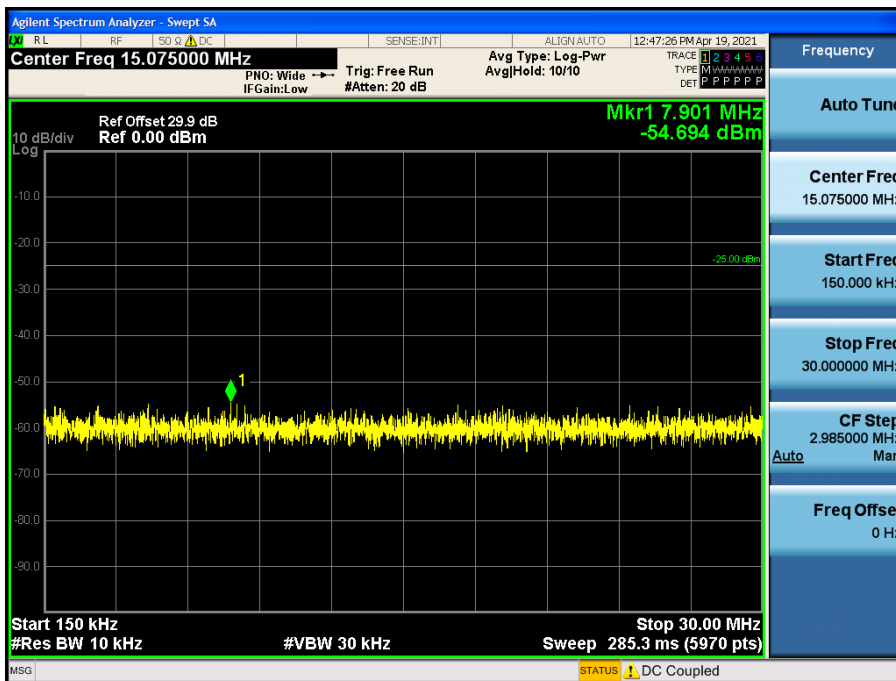


(429.95 MHz)_High

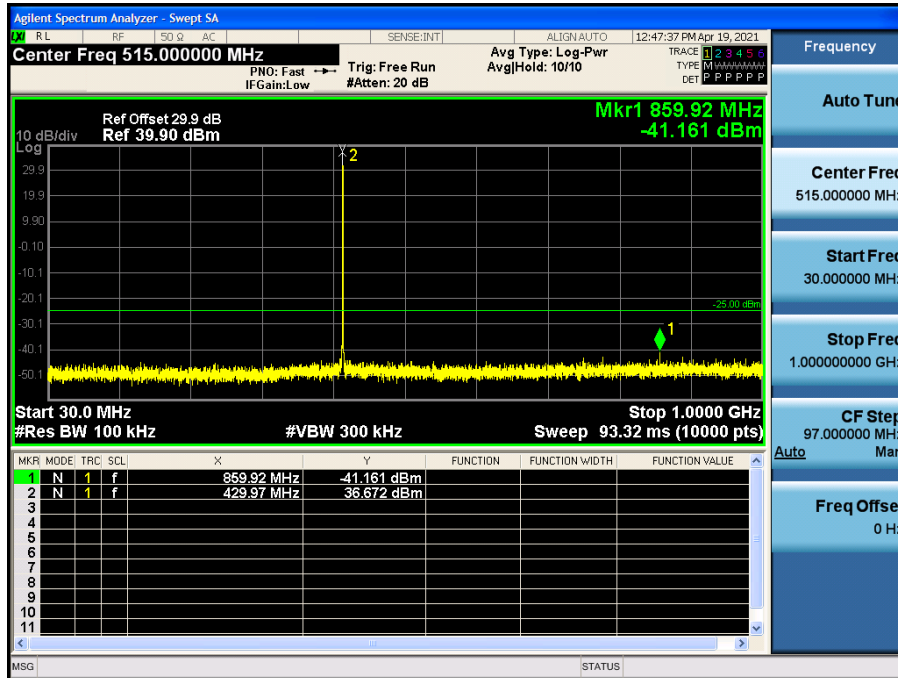
9 kHz~150 kHz



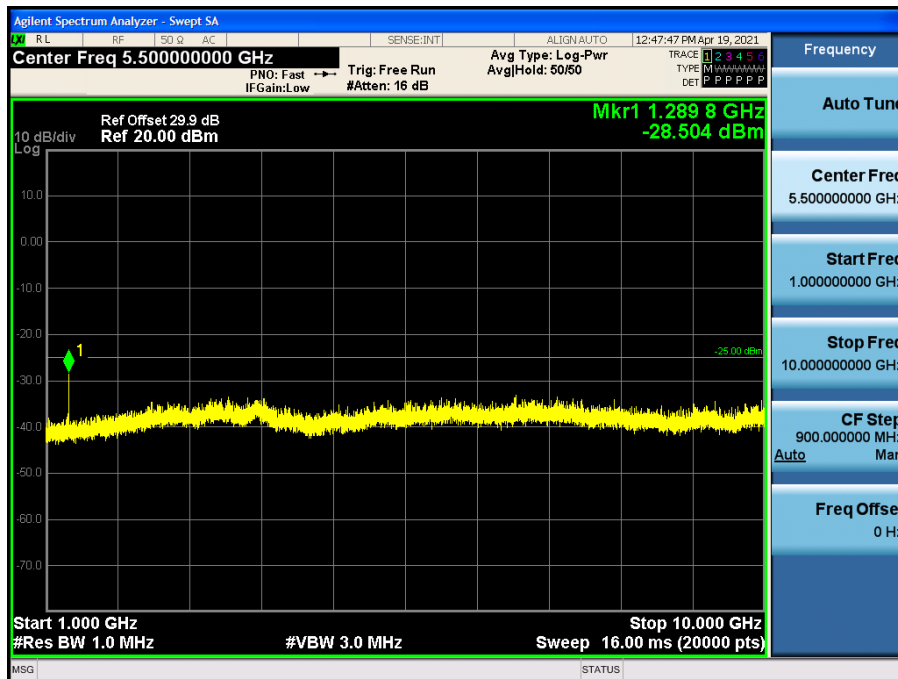
150 kHz~30 MHz



30 MHz~1 GHz

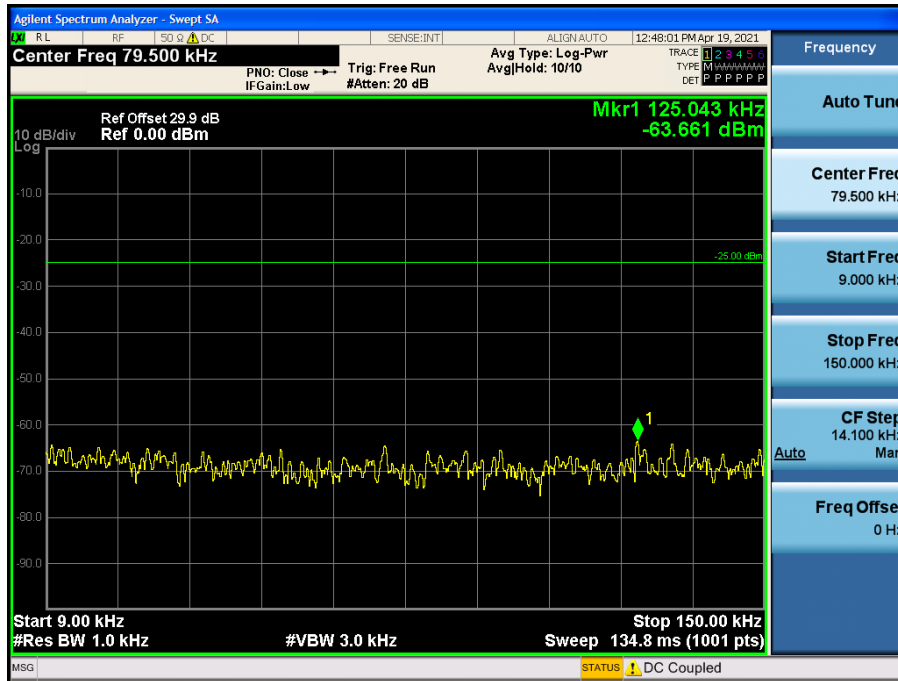


1 GHz~10 GHz

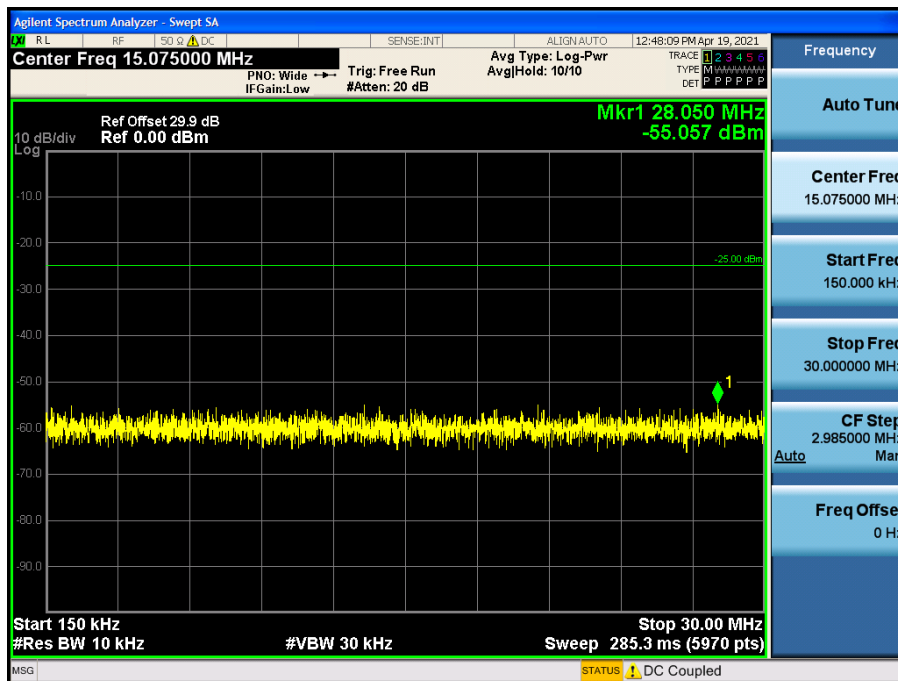


(469.95 MHz)_High

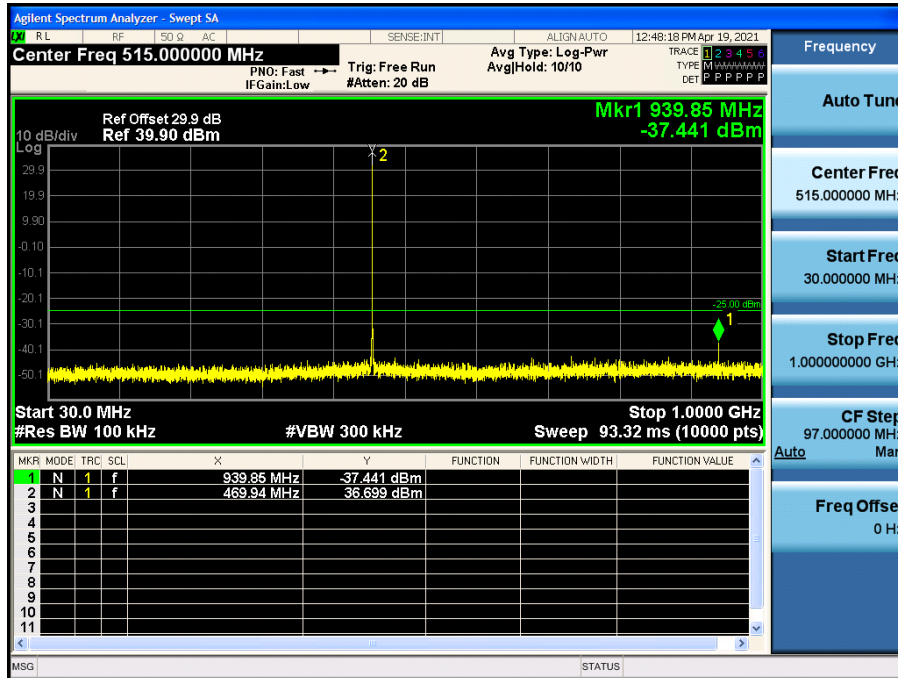
9 kHz~150 kHz



150 kHz~30 MHz



30 MHz~1 GHz



1 GHz~10 GHz



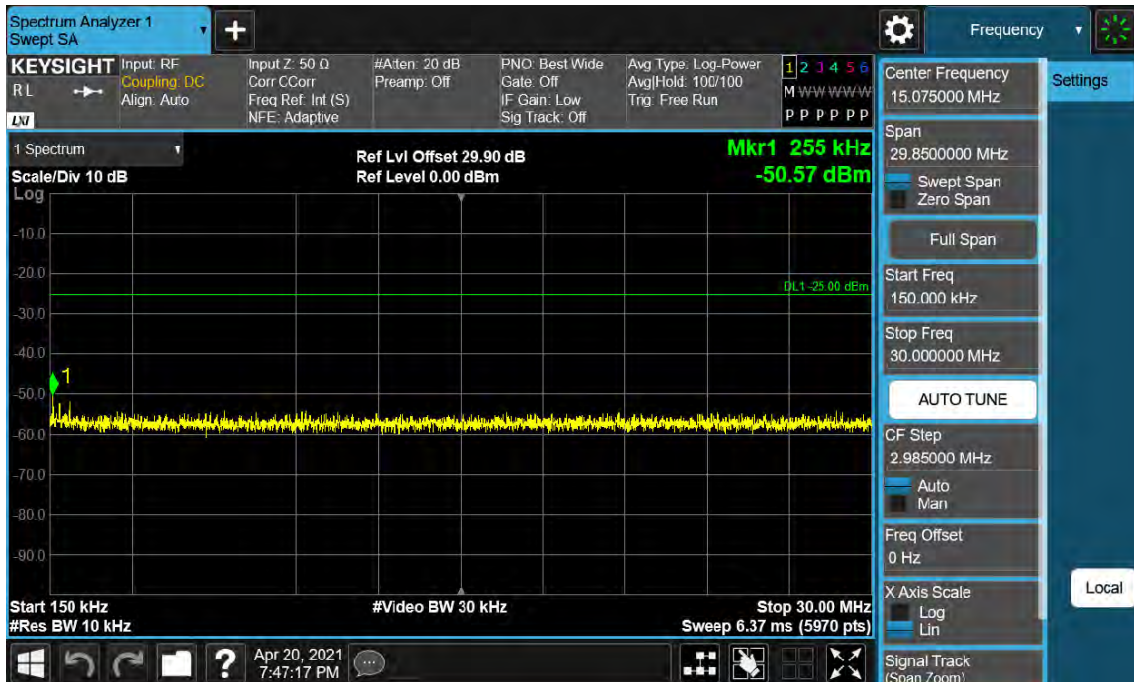
4K00F2D_FCC/ISED

(406.15 MHz)_High

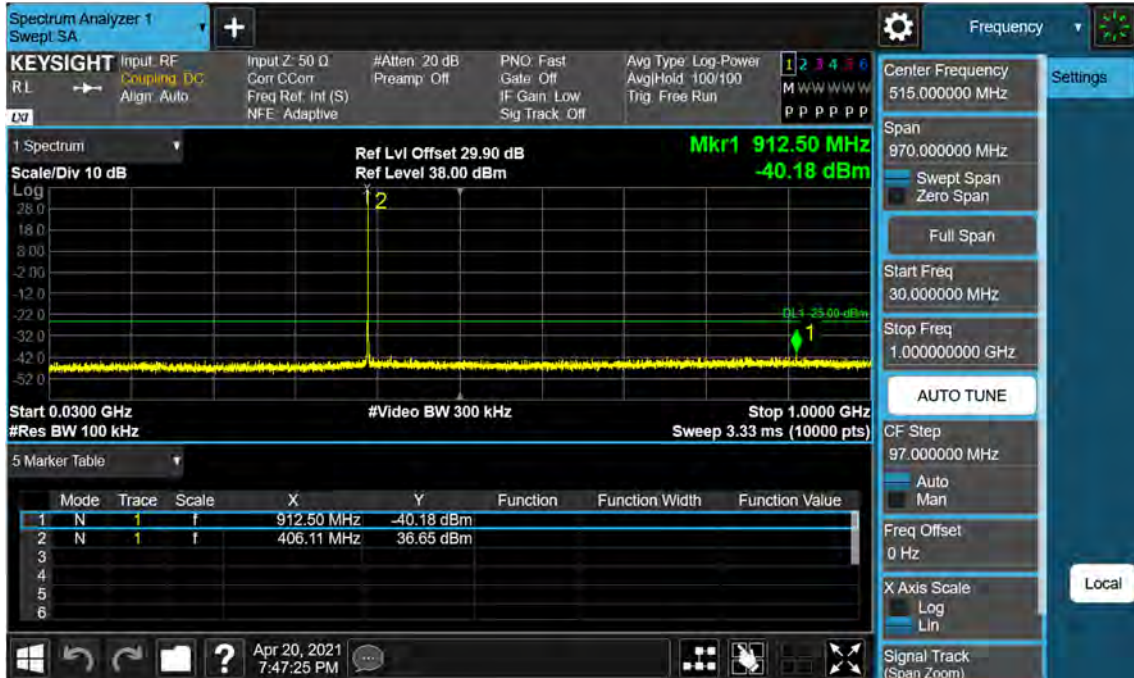
9 kHz~150 kHz



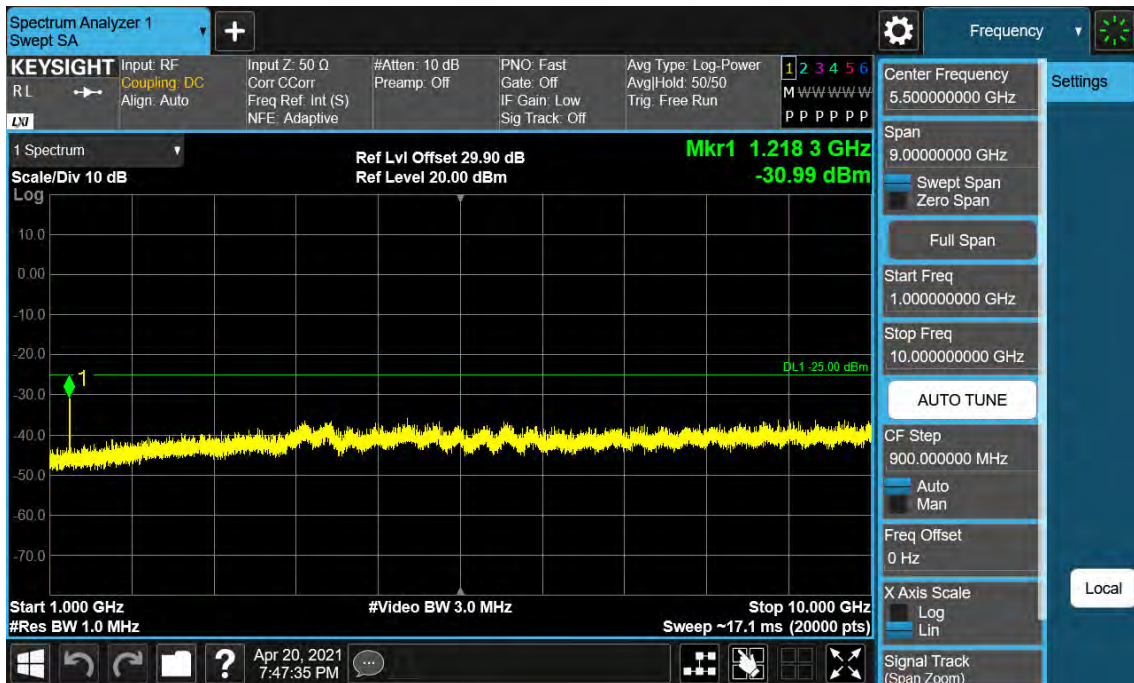
150 kHz~30 MHz



30 MHz~1 GHz

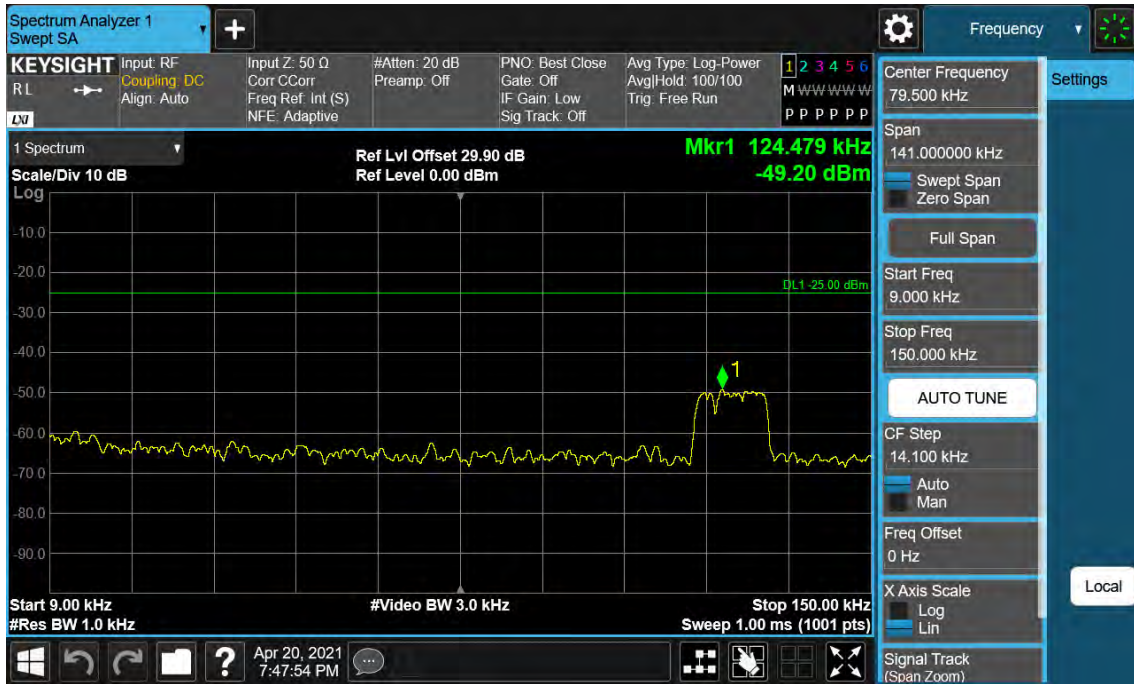


1 GHz~10 GHz

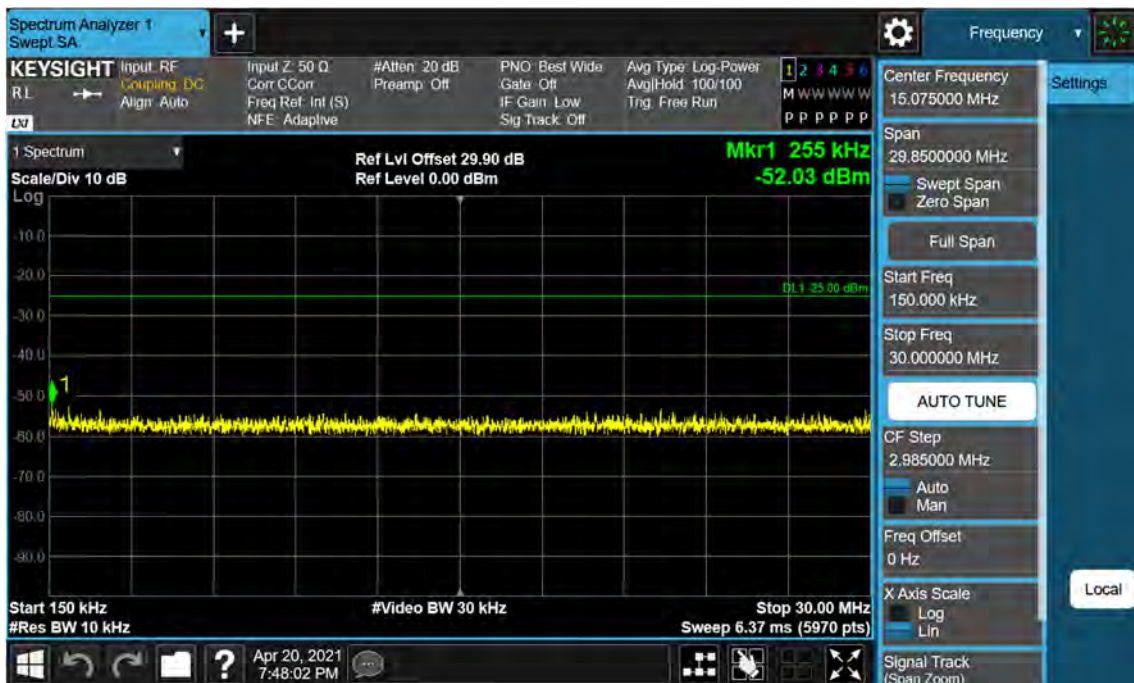


(429.95 MHz)_High

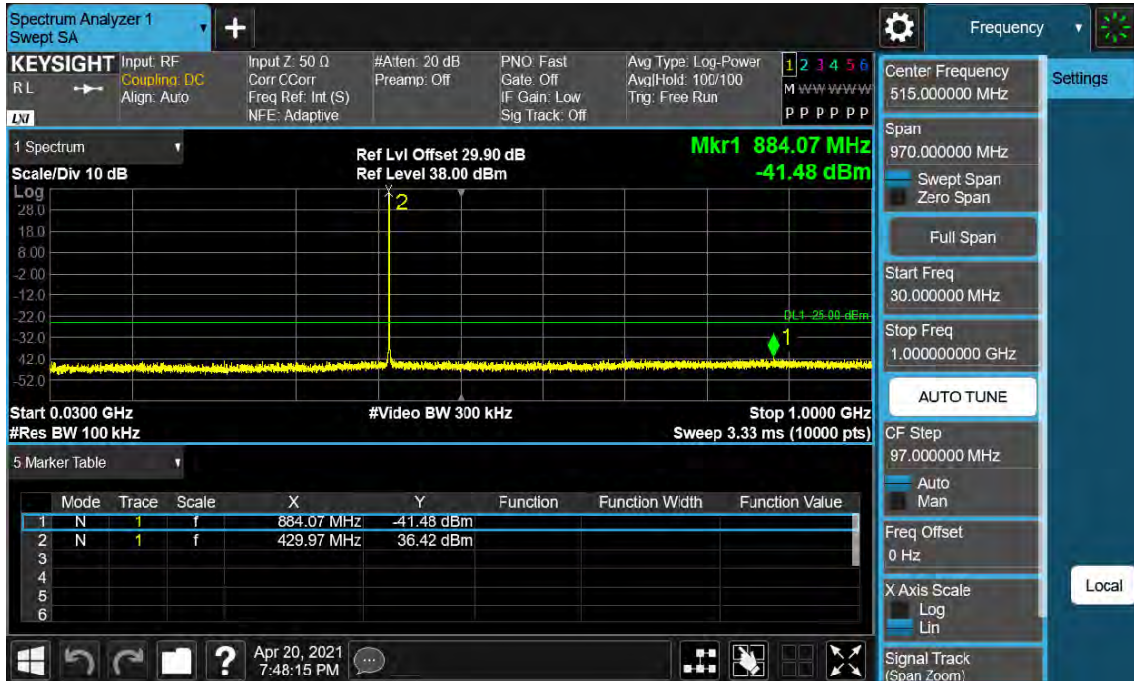
9 kHz~150 kHz



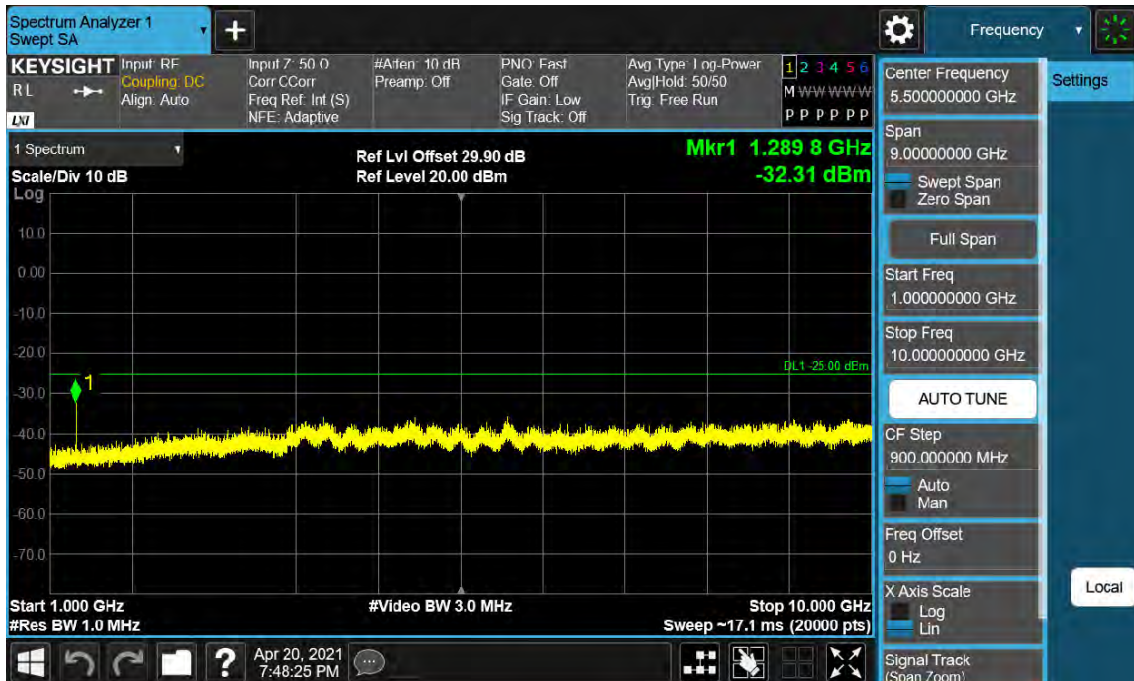
150 kHz~30 MHz



30 MHz~1 GHz



1 GHz~10 GHz

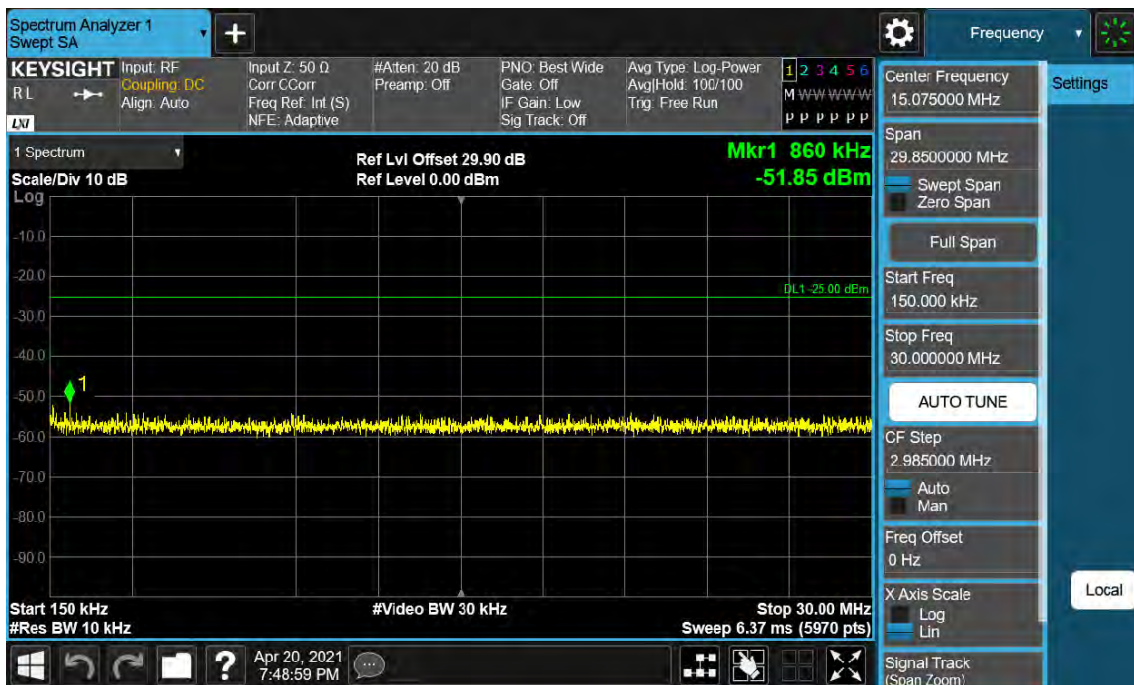


(469.95 MHz)_High

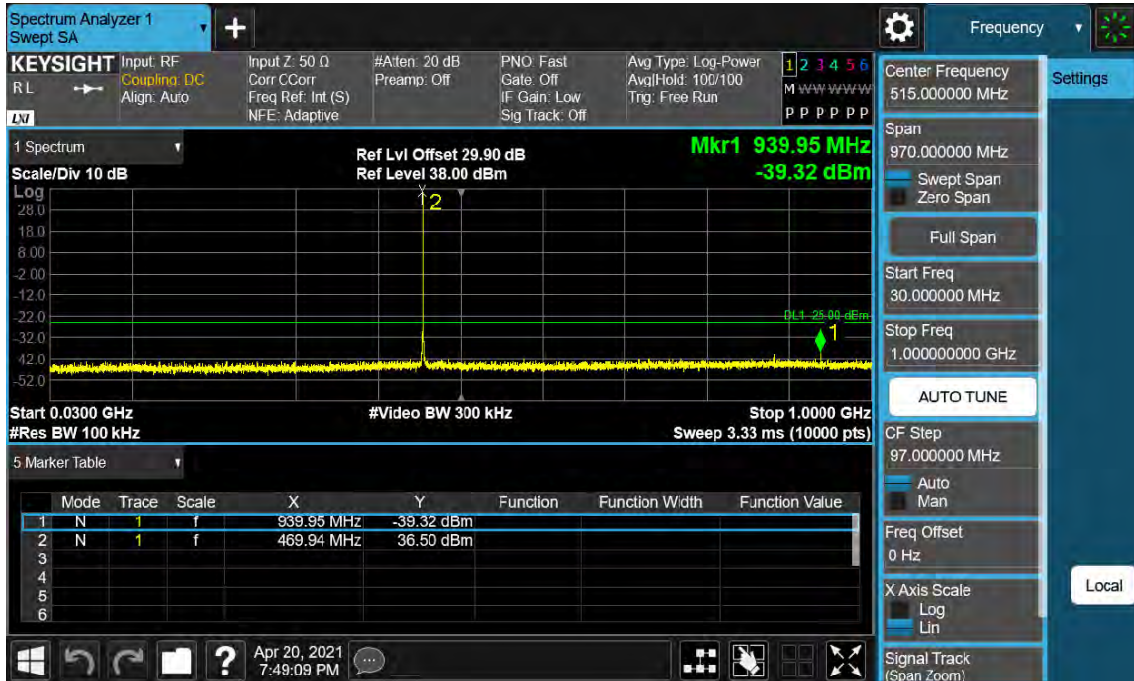
9 kHz~150 kHz



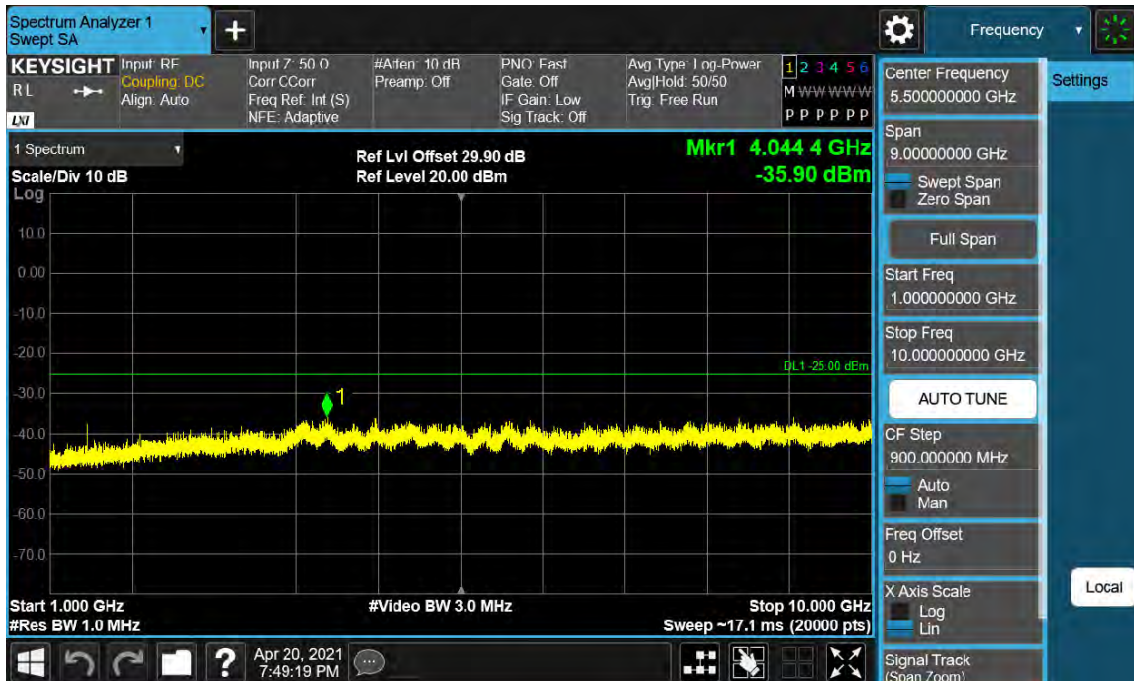
150 kHz~30 MHz



30 MHz~1 GHz



1 GHz~10 GHz



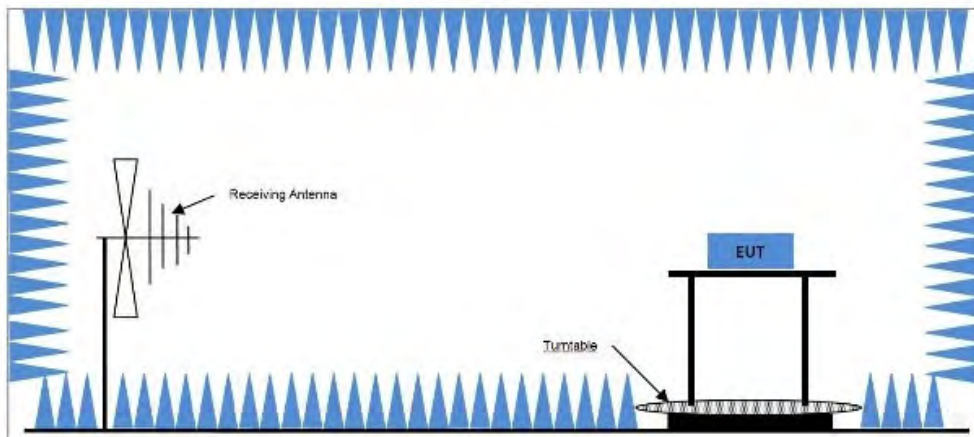
8.9 Unwanted Emissions : Radiated Spurious Emission

▣ Definition

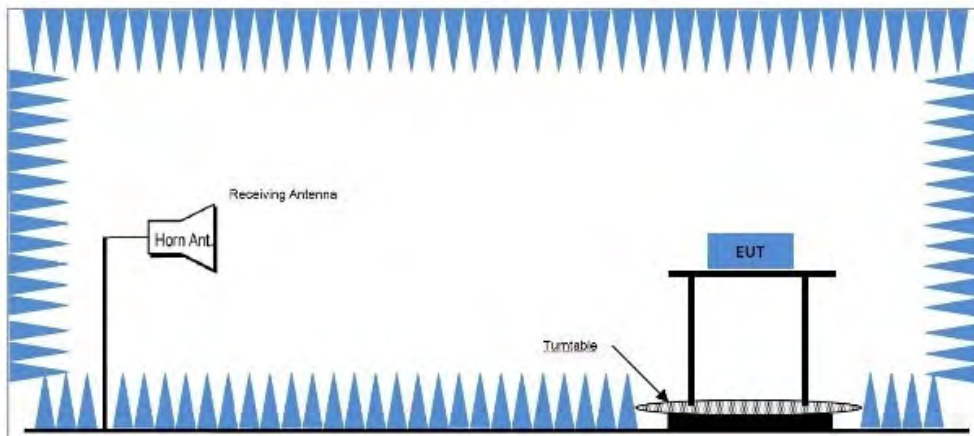
Radiated spurious emissions are emissions from the equipment when transmitting into a non-radiating load on a frequency or frequencies that are outside an occupied band sufficient to ensure transmission of information of required quality for the class of communications desired.

▣ 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 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 Factor value = Ref level of S.G + TX cables loss – Substituted Antenna Gain.
- 4) Result(dBm) = “Reading” + Factor

▣ TEST RESULTS

16K0F3E

Test Frequency (MHz)	Measured Frequency (MHz)	Pol	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)
406.15	812.30	H	-86.87	39.57	-47.31	-13.00	34.31
	1218.45	V	-69.97	34.38	-35.59	-13.00	22.59
	2030.75	V	-72.62	35.85	-36.77	-13.00	23.77

Test Frequency (MHz)	Measured Frequency (MHz)	Pol	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)
429.95	859.90	H	-86.42	39.63	-46.79	-13.00	33.79
	1289.85	V	-70.77	34.66	-36.11	-13.00	23.11
	2149.75	V	-74.28	37.90	-36.38	-13.00	23.38

Test Frequency (MHz)	Measured Frequency (MHz)	Pol	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)
469.95	939.90	H	-80.21	41.23	-38.98	-13.00	25.98
	1409.85	V	-68.06	34.67	-33.39	-13.00	20.39
	3289.65	V	-72.27	39.40	-32.87	-13.00	19.87
	4699.50	V	-71.93	43.65	-28.28	-13.00	15.28

7K60FXD, 7K60FXE

Test Frequency (MHz)	Measured Frequency (MHz)	Pol	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)
406.15	812.30	H	-86.57	39.57	-47.01	-20.00	27.01
	1218.45	V	-72.17	34.38	-37.79	-20.00	17.79
	2030.75	V	-69.97	35.85	-34.12	-20.00	14.12

Test Frequency (MHz)	Measured Frequency (MHz)	Pol	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)
429.95	859.90	H	-86.55	39.63	-46.92	-20.00	26.92
	1289.85	V	-69.94	34.66	-35.28	-20.00	15.28
	2149.75	V	-74.24	37.90	-36.34	-20.00	16.34
	2579.70	V	-74.60	37.74	-36.86	-20.00	16.86

Test Frequency (MHz)	Measured Frequency (MHz)	Pol	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)
469.95	939.90	H	-80.00	41.23	-38.77	-20.00	18.77
	1409.85	V	-68.07	34.67	-33.40	-20.00	13.40
	3289.65	V	-72.19	39.40	-32.79	-20.00	12.79
	4699.50	V	-72.11	43.65	-28.46	-20.00	8.46

4K00F1E, 4K00F1D, 4K00F7W

Test Frequency (MHz)	Measured Frequency (MHz)	Pol	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)
406.15	812.30	H	-86.76	39.57	-47.20	-25.00	22.20
	1218.45	V	-70.05	34.38	-35.67	-25.00	10.67
	2030.75	V	-72.79	35.85	-36.94	-25.00	11.94

Test Frequency (MHz)	Measured Frequency (MHz)	Pol	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)
429.95	859.90	H	-86.81	39.63	-47.18	-25.00	22.18
	1289.85	V	-70.56	34.66	-35.90	-25.00	10.90
	2149.75	V	-74.75	37.90	-36.85	-25.00	11.85

Test Frequency (MHz)	Measured Frequency (MHz)	Pol	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)
469.95	939.90	H	-80.00	41.23	-38.77	-25.00	13.77
	1409.85	V	-68.51	34.67	-33.85	-25.00	8.85
	3289.65	V	-72.18	39.40	-32.78	-25.00	7.78
	4699.50	V	-72.01	43.65	-28.36	-26.00	2.36

8.10 Unwanted Emissions : Receiver Radiated Spurious Emission

Test Settings

ISED Rule(s)	RSS-Gen(7.0)
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 ($\mu\text{V}/\text{m}$ at 3 meters)
30 – 88	100
88 - 216	150
216 – 960	200
Above 960	500

Test Result

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 $\mu\text{V}/\text{m}$	dB $\mu\text{V}/\text{m}$	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 $\mu\text{V}/\text{m}$	dB $\mu\text{V}/\text{m}$	dB

No Peak Found

8.11 Necessary Bandwidth Calculations

Modulation : 16K0F3E (Authorized Bandwidth 20 kHz)	
Maximum Modulation (M), kHz	3
Maximum Deviation (D), kHz	5
Constant Factor (K)	1
Necessary Bandwidth (BN), kHz	$(2 \times M) + (2 \times D \times K) = 16.0$

Modulation : 11K0F3E (Authorized Bandwidth 11.25 kHz)	
Maximum Modulation (M), kHz	3
Maximum Deviation (D), kHz	2.5
Constant Factor (K)	1
Necessary Bandwidth (BN), kHz	$(2 \times M) + (2 \times D \times K) = 11.0$

Modulation : 8K30F1E, 8K30F1D, 8K30F7W (4Level FSK / 9600bps, Authorized Bandwidth 11.25 kHz)	
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 : 4K00F1E, 4K00F1D, 4K00F7W (4Level FSK / 4800bps, Authorized Bandwidth 6 kHz)	
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 : 7K60FXD, 7K60FXE	
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 : 4K00F2D (CWID, Authorized Bandwidth 6 kHz)	
Maximum Modulation (M), kHz	0.8
Maximum Deviation (D), kHz	1.2
Numerical factor (K)	1
Necessary Bandwidth (BN), kHz	$(2 \times M) + (2 \times D \times K) = 4.0$

9. LIST OF TEST EQUIPMENT

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Calibration Due	Serial No.
Agilent	N9020A/ Signal Analyzer	2020-11-17	Annual	2021-11-17	MY50200093
Agilent	N9030B / Signal Analyzer	2020-06-04	Annual	2021-06-04	MY55480167
Hewlett Packard	E3632A / DC Power Supply	2020-06-12	Annual	2021-06-12	KR75303960
Agilent	N1911A/Power Meter	2021-04-08	Annual	2022-04-08	MY45100523
Agilent	N1921A /POWER SENSOR	2021-04-08	Annual	2022-04-08	MY57820067
TEKTRONIX	RSA3408A/SPECTRUM ANALYZER	2020-08-21	Annual	2021-08-21	B010198
Hewlett Packard	8903B/Audio Analyzer	2020-09-18	Annual	2021-09-18	3413A13913
Hewlett Packard	8901B/Modulation Analyzer	2020-09-16	Annual	2021-09-16	3438A05231
Weinschel Associates	WA93-30-33 /30 dB Attenuator	2020-04-01	Annual	2021-04-01	0138
Hewlett Packard	8493C/ATTENUATOR(20dB)	2020-06-04	Annual	2021-06-04	17280
EAGLE	230NFM/Tuneable Notch Filter	2020-10-12	Annual	2021-10-12	H00564-9
EAGLE	230NFM/Tuneable Notch Filter	2020-10-12	Annual	2021-10-12	H00564-10
ESPEC	SU-642 / Chamber	2021-03-15	Annual	2022-03-15	0093008124
CERNEX	CBLU1183540B-01/AMP	2020-06-04	Annual	2021-06-04	26822
Wainwright	WHKX10-900-1000-15000/H.P.F	2020-07-13	Annual	2021-07-13	5
Rohde & Schwarz	Loop Antenna	2020-05-18	Biennial	2022-05-18	1513-175
Schwarzbeck	VULB9160/ Bilog Antenna	2021-03-03	Biennial	2023-03-03	3150
Schwarzbeck	VULB9160/ Bilog Antenna	2020-08-19	Biennial	2022-08-19	9160-3368
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	2019-08-29	Biennial	2021-08-29	147
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	2019-09-25	Biennial	2021-09-25	9120D-1298
REOHDE&SCHWARZ	FSV40-N /Spectrum Analyzer	2020-09-22	Annual	2021-09-22	101068-SZ
Inn-co GmbH	DE 3260/Turn table	N/A	N/A	N/A	N/A
EMERSON&CUMING	10m×5m×5m/ Full anechoic chamber	N/A	N/A	N/A	N/A

10. ANNEX A_ TEST SETUP PHOTO

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

No.	Description
1	HCT-RF-2105-FI001-P