

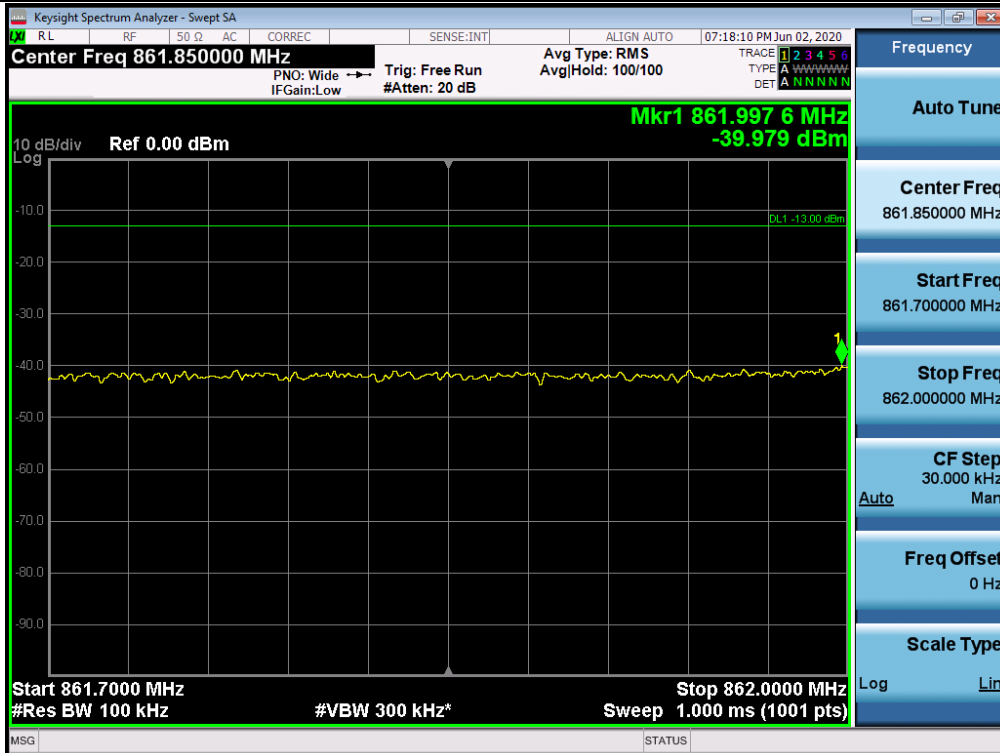
+3 dB above Out-of-band (single test signals) / ESMR / Downlink / CDMA / Lower



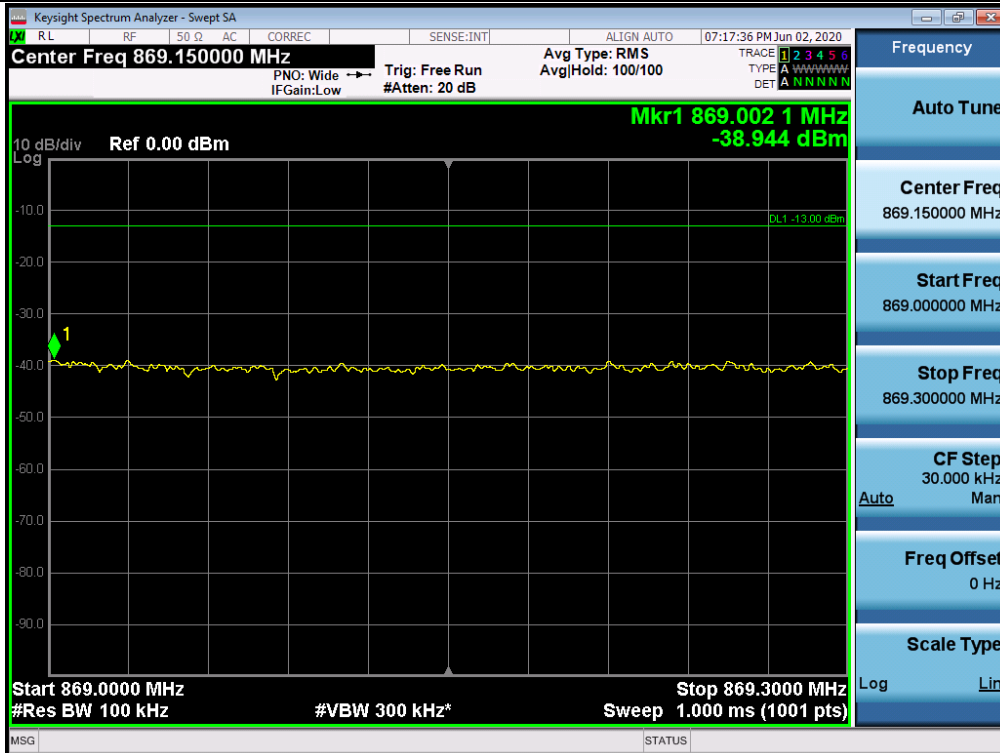
+3 dB above Out-of-band (single test signals) / ESMR / Downlink / CDMA / Upper



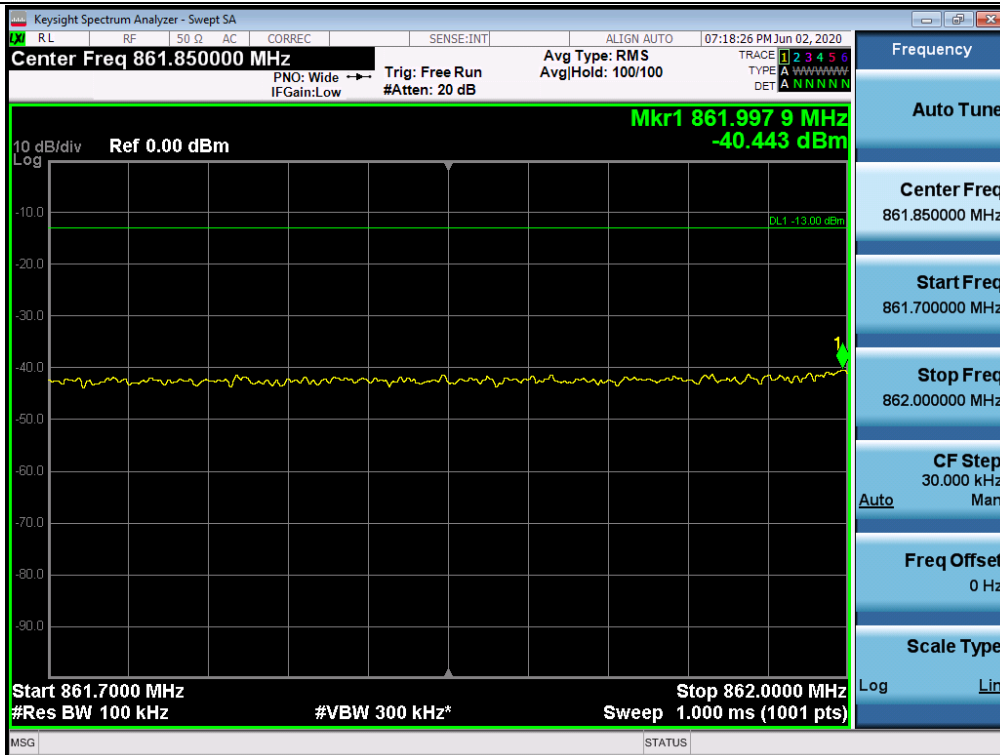
Out-of-band (single test signals) / ESMR / Downlink / WCDMA / Lower



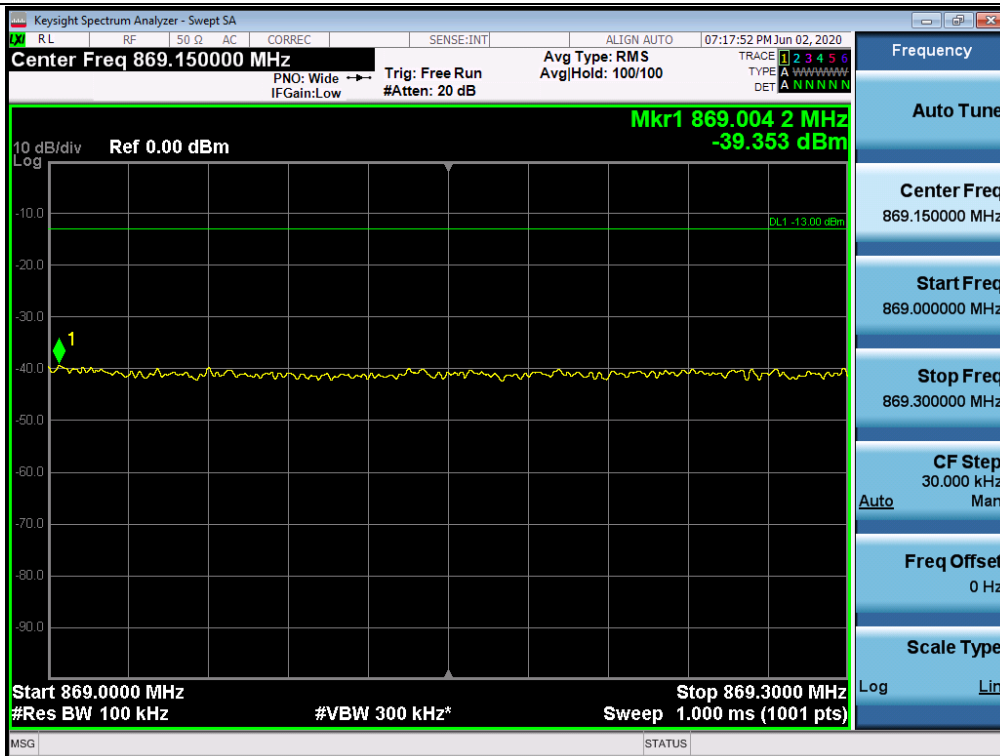
Out-of-band (single test signals) / ESMR / Downlink / WCDMA / Upper



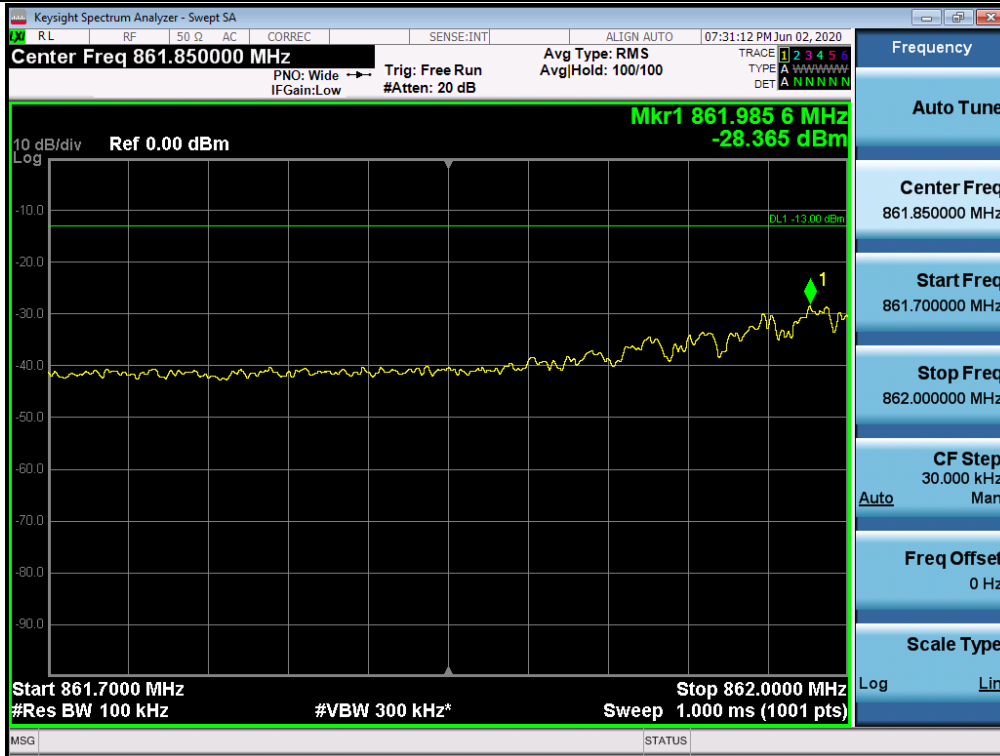
+3 dB above Out-of-band (single test signals) / ESMR / Downlink / WCDMA / Lower



+3 dB above Out-of-band (single test signals) / ESMR / Downlink / WCDMA / Upper



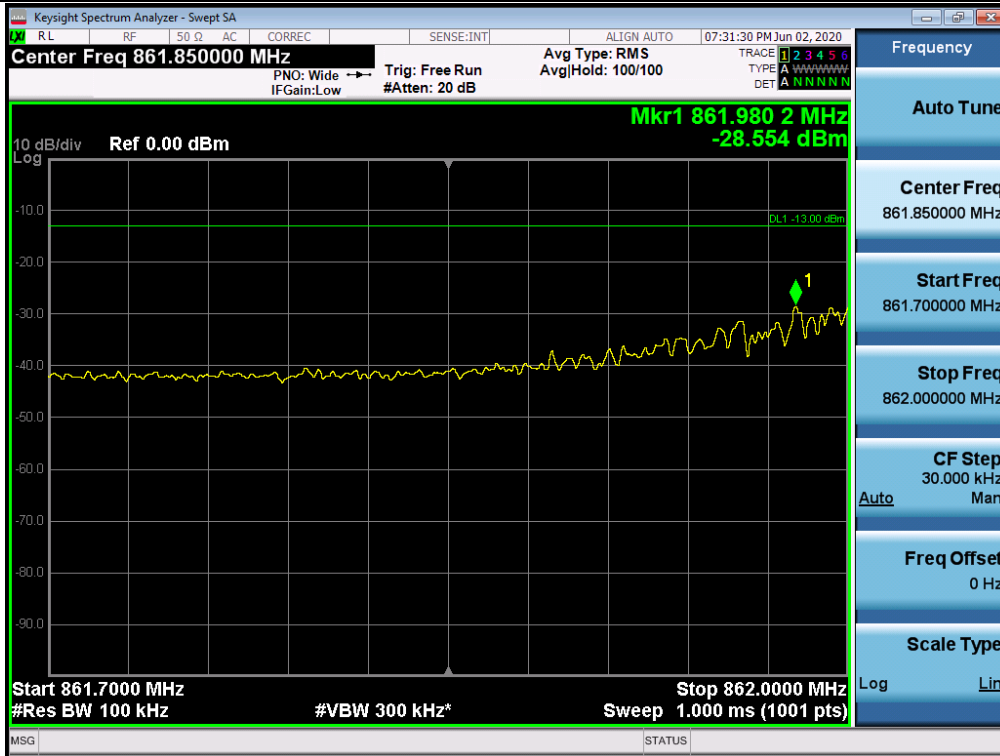
Out-of-band (single test signals) / ESMR / Downlink / LTE 5 MHz / Lower



Out-of-band (single test signals) / ESMR / Downlink / LTE 5 MHz / Upper



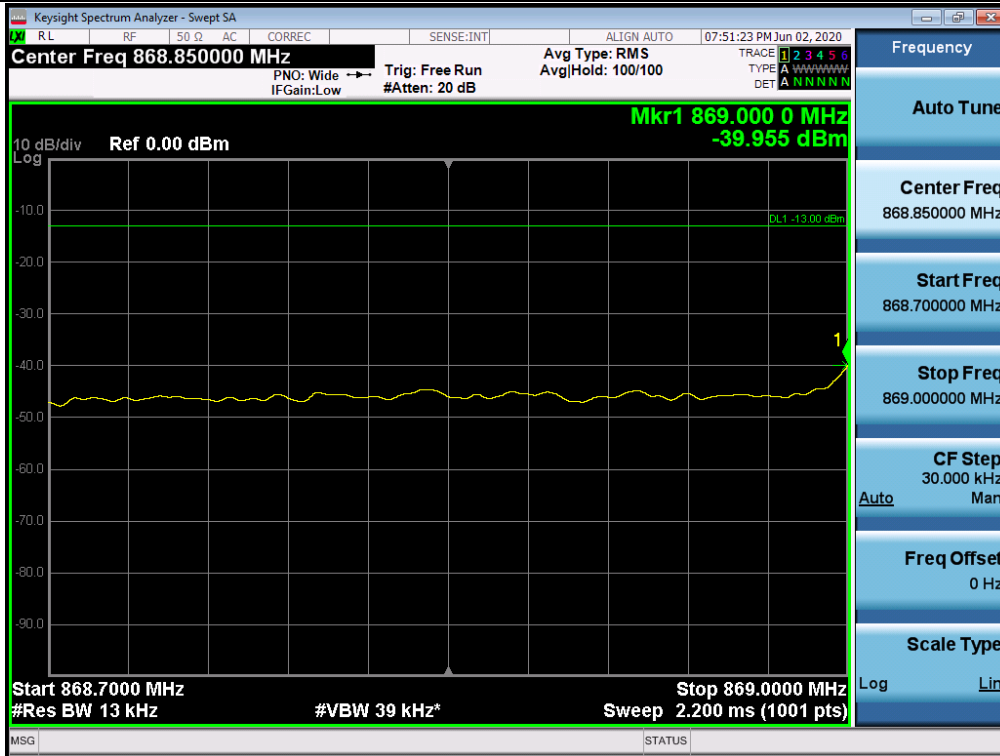
+3 dB above Out-of-band (single test signals) / ESMR / Downlink / LTE 5 MHz / Lower



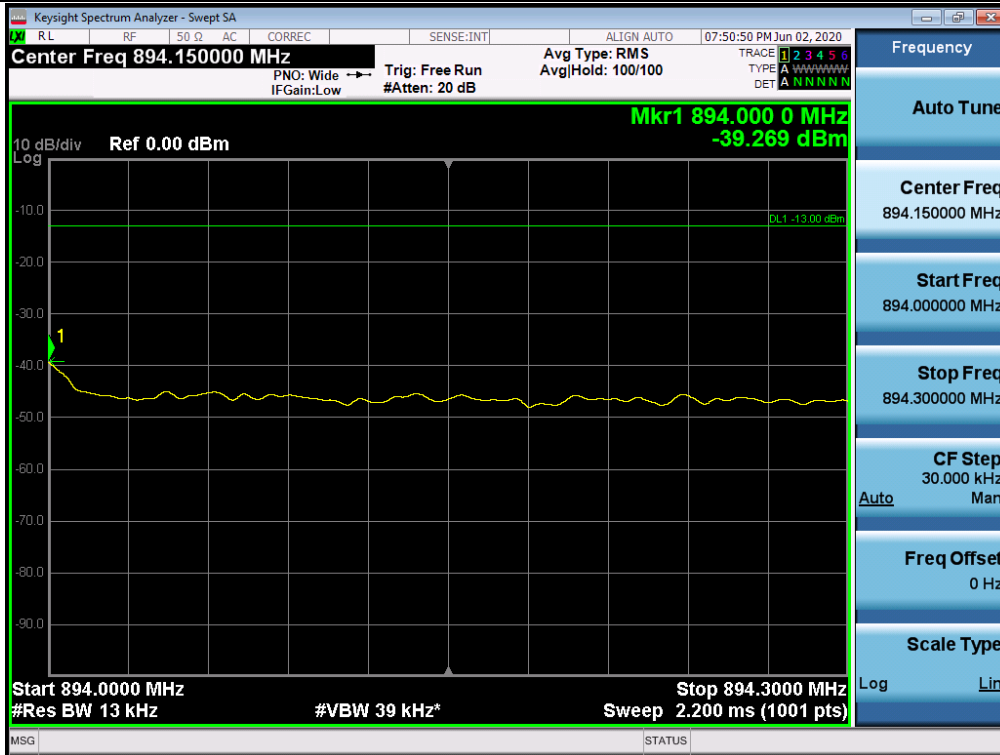
+3 dB above Out-of-band (single test signals) / ESMR / Downlink / LTE 5 MHz / Upper



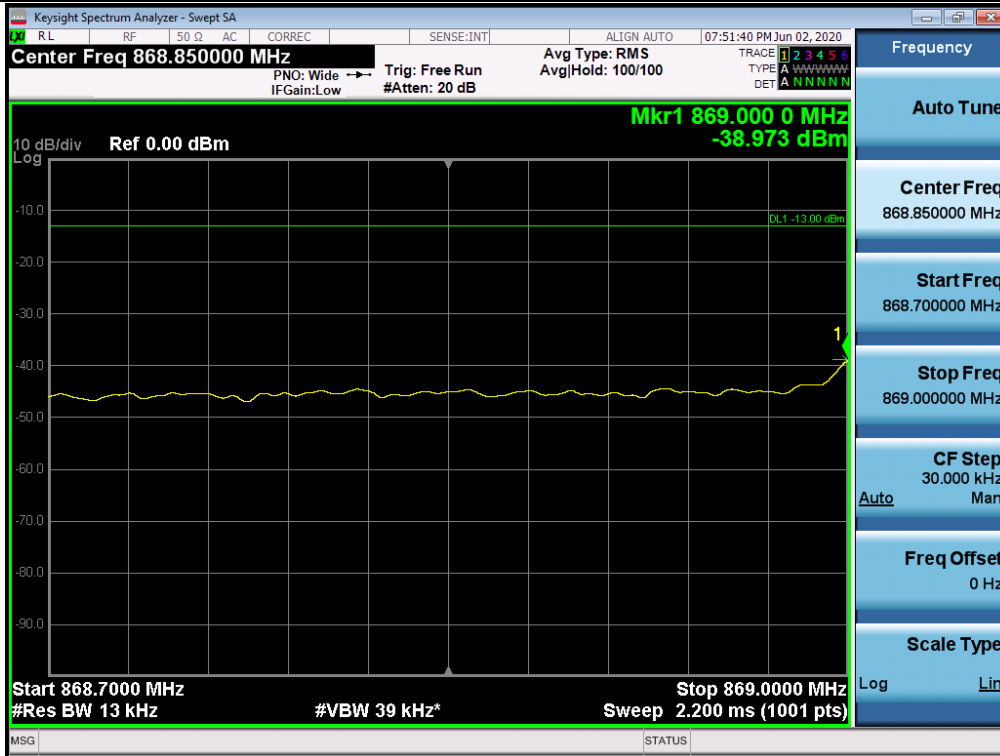
Out-of-band (single test signals) / Cellular / Downlink / CDMA / Lower



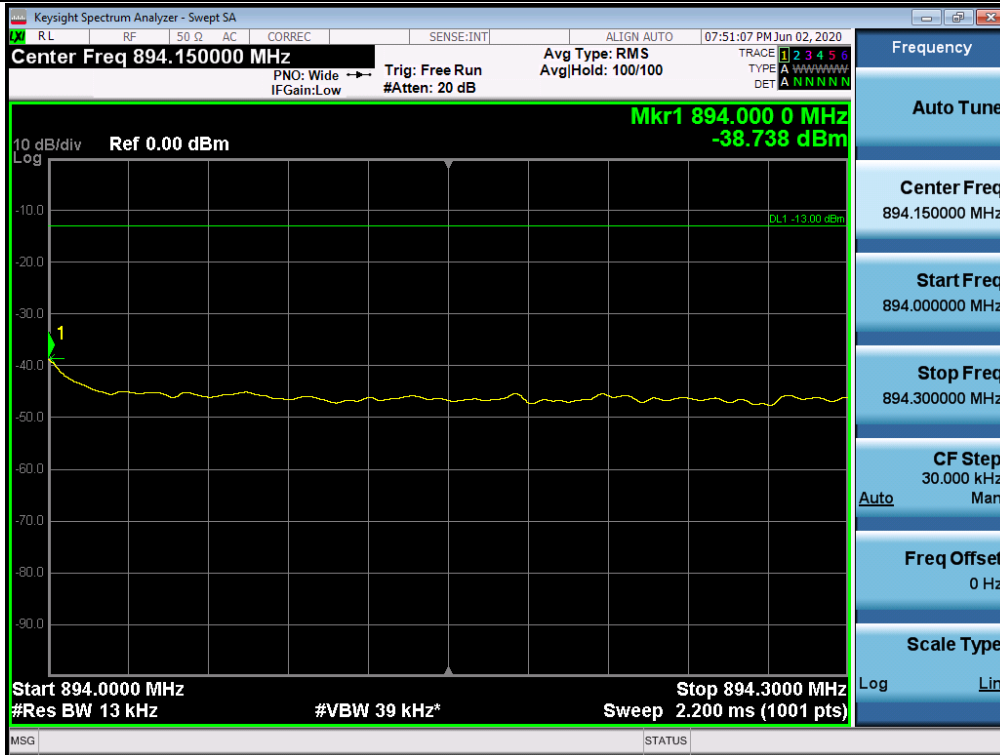
Out-of-band (single test signals) / Cellular / Downlink / CDMA / Upper



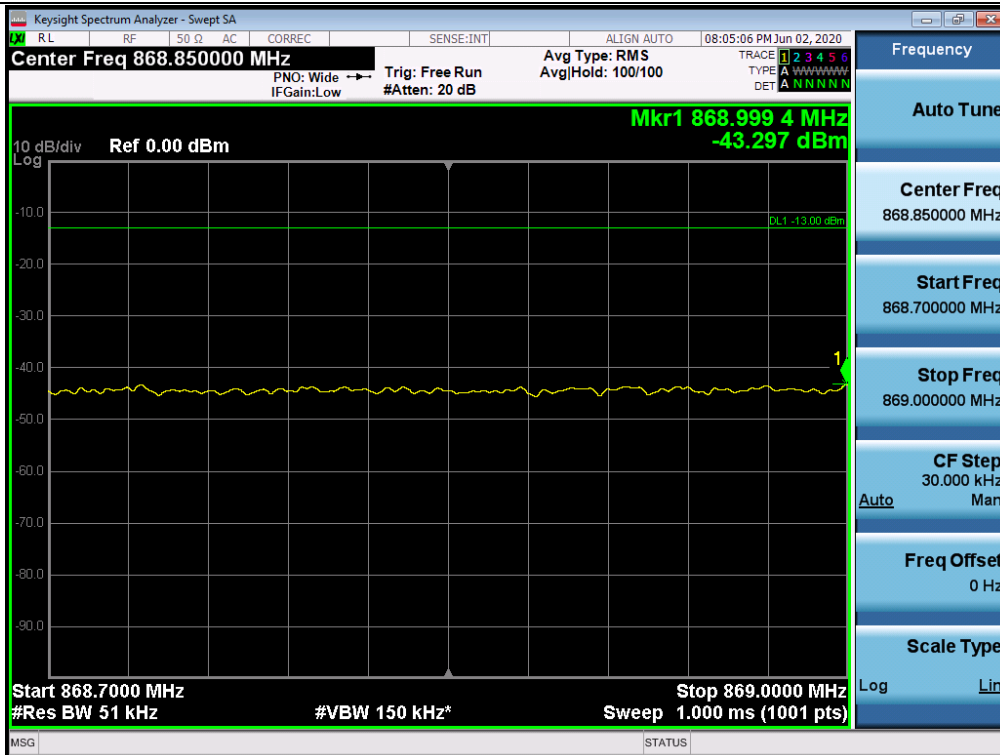
+3 dB above Out-of-band (single test signals) / Cellular / Downlink / CDMA / Lower



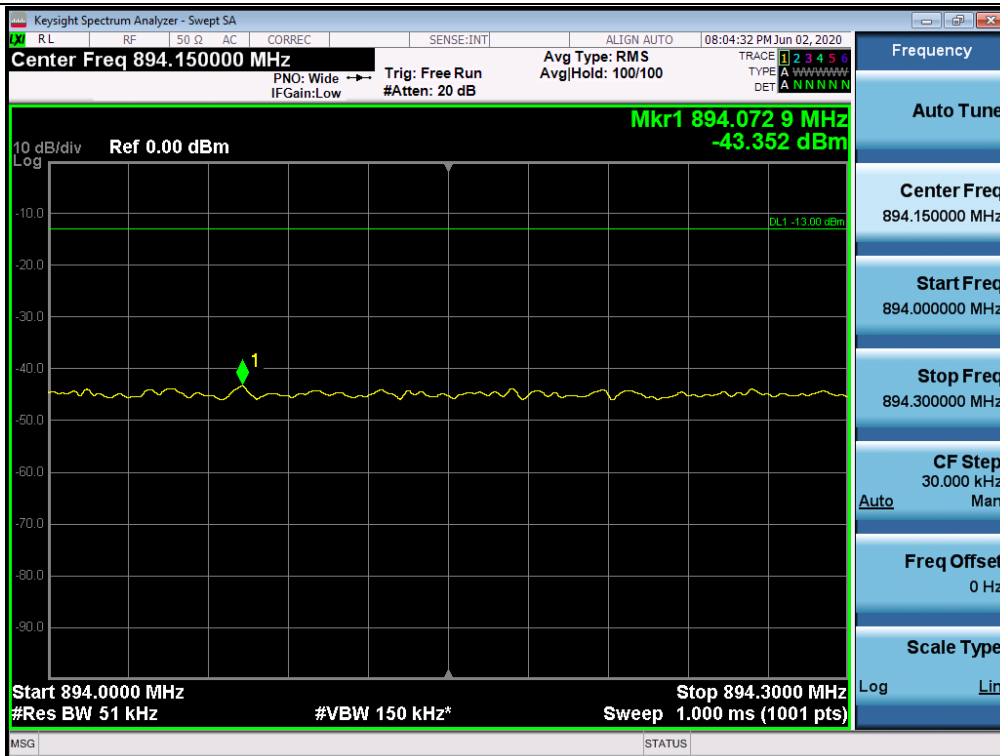
+3 dB above Out-of-band (single test signals) / Cellular / Downlink / CDMA / Upper



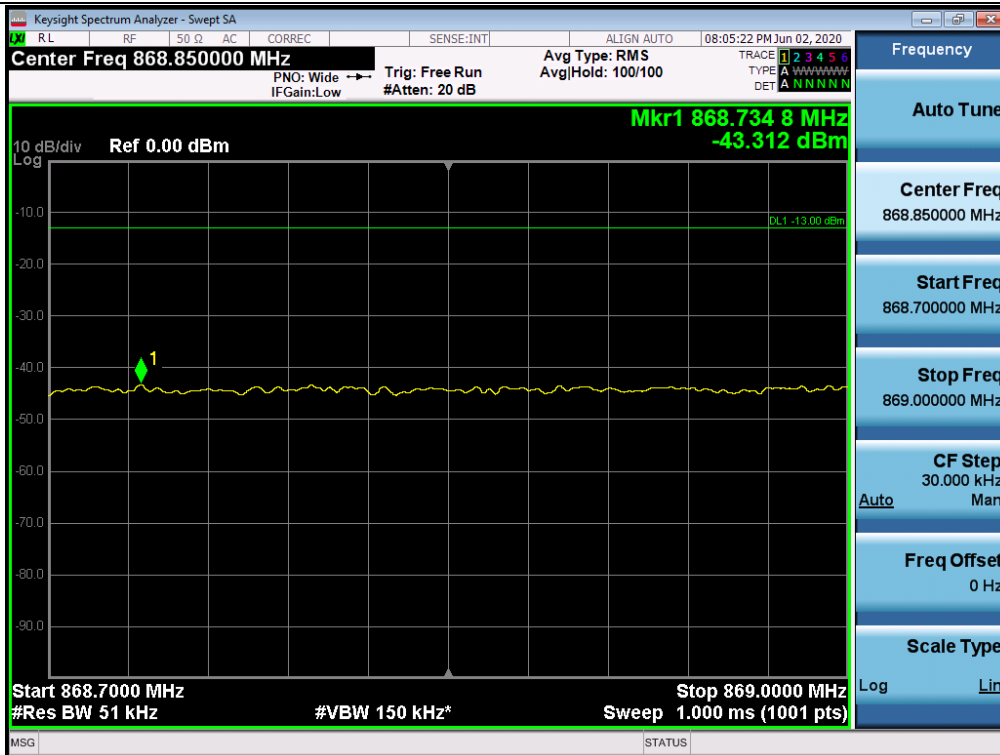
Out-of-band (single test signals) / Cellular / Downlink / WCDMA / Lower



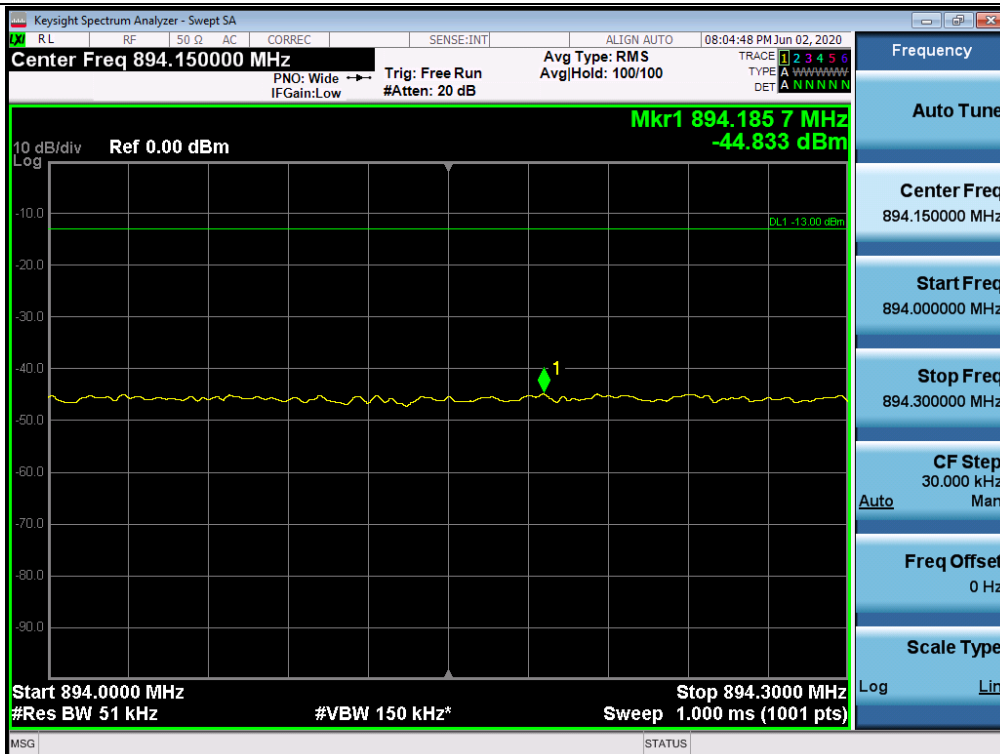
Out-of-band (single test signals) / Cellular / Downlink / WCDMA / Upper



+3 dB above Out-of-band (single test signals) / Cellular / Downlink / WCDMA / Lower



+3 dB above Out-of-band (single test signals) / Cellular / Downlink / WCDMA / Upper



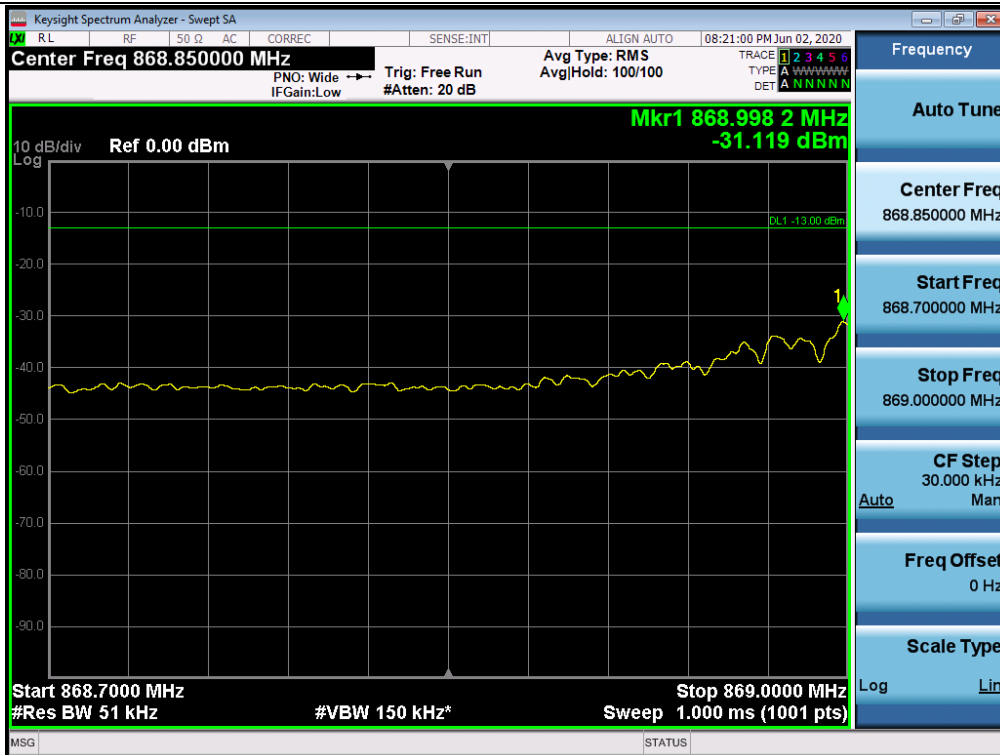
Out-of-band (single test signals) / Cellular / Downlink / LTE 5 MHz / Lower



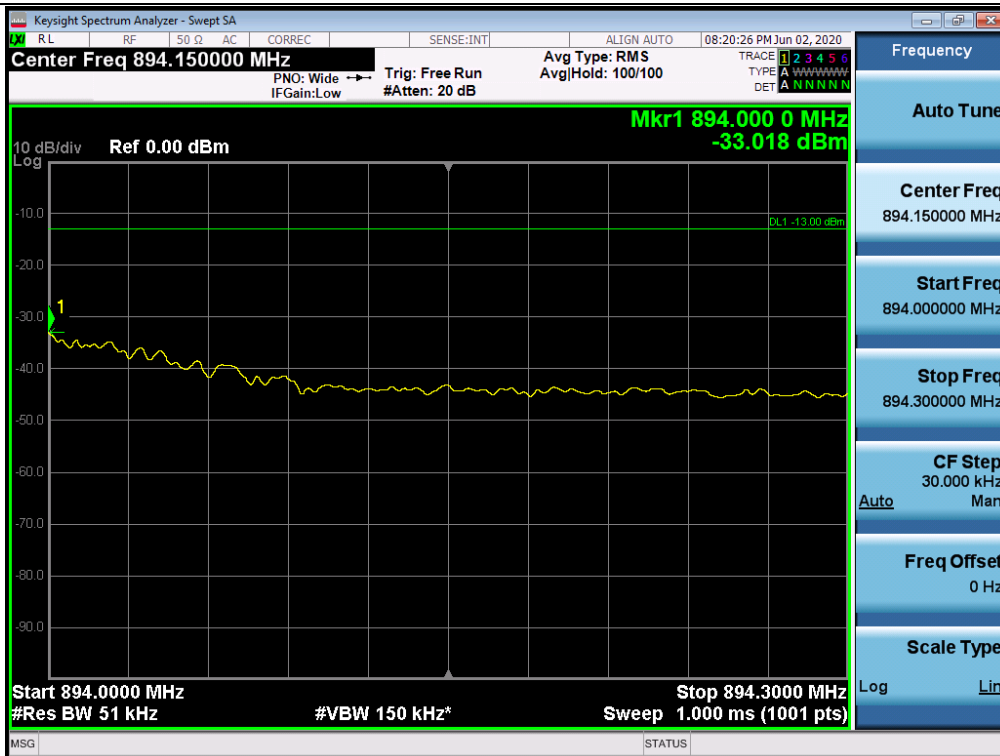
Out-of-band (single test signals) / Cellular / Downlink / LTE 5 MHz / Upper



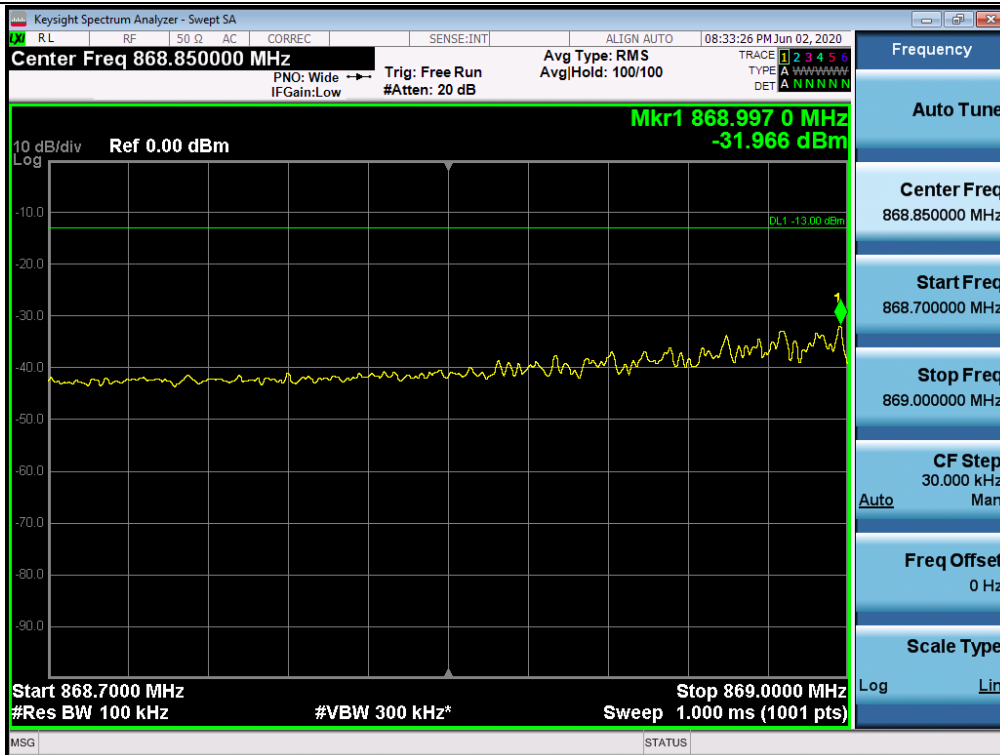
+3 dB above Out-of-band (single test signals) / Cellular / Downlink / LTE 5 MHz / Lower



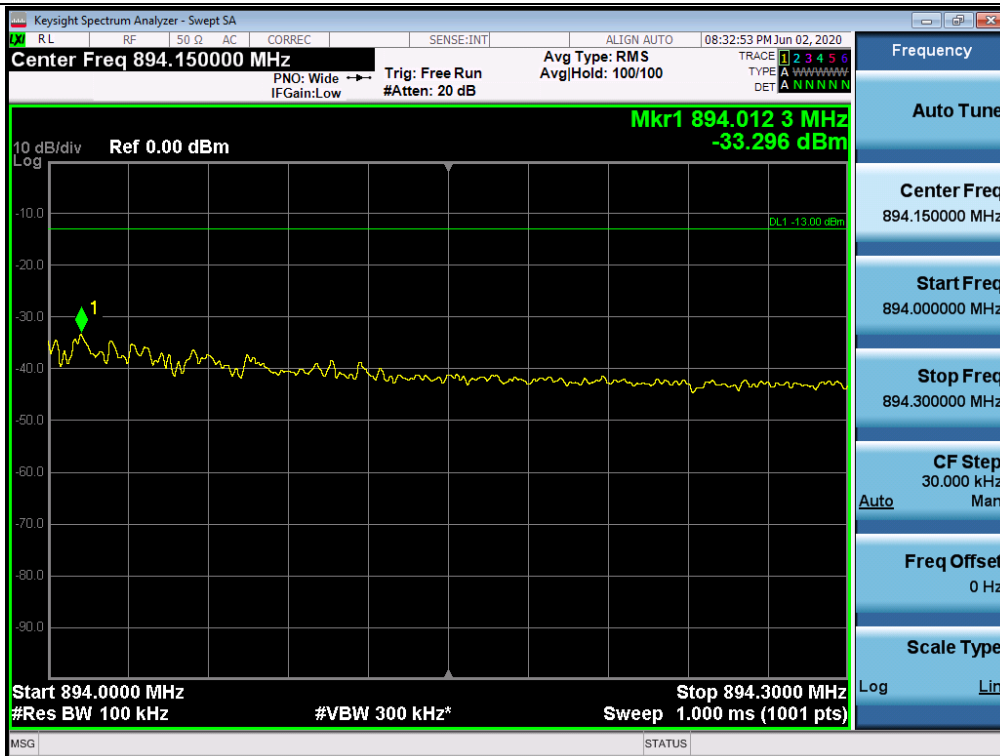
+3 dB above Out-of-band (single test signals) / Cellular / Downlink / LTE 5 MHz / Upper



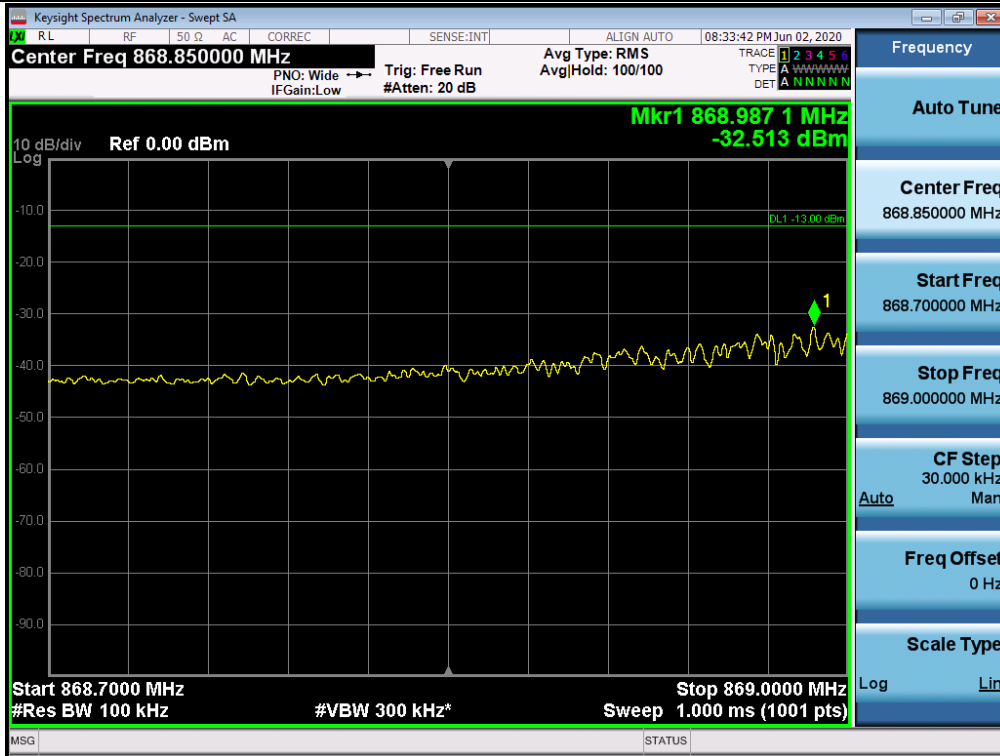
Out-of-band (single test signals) / Cellular / Downlink / LTE 10 MHz / Lower



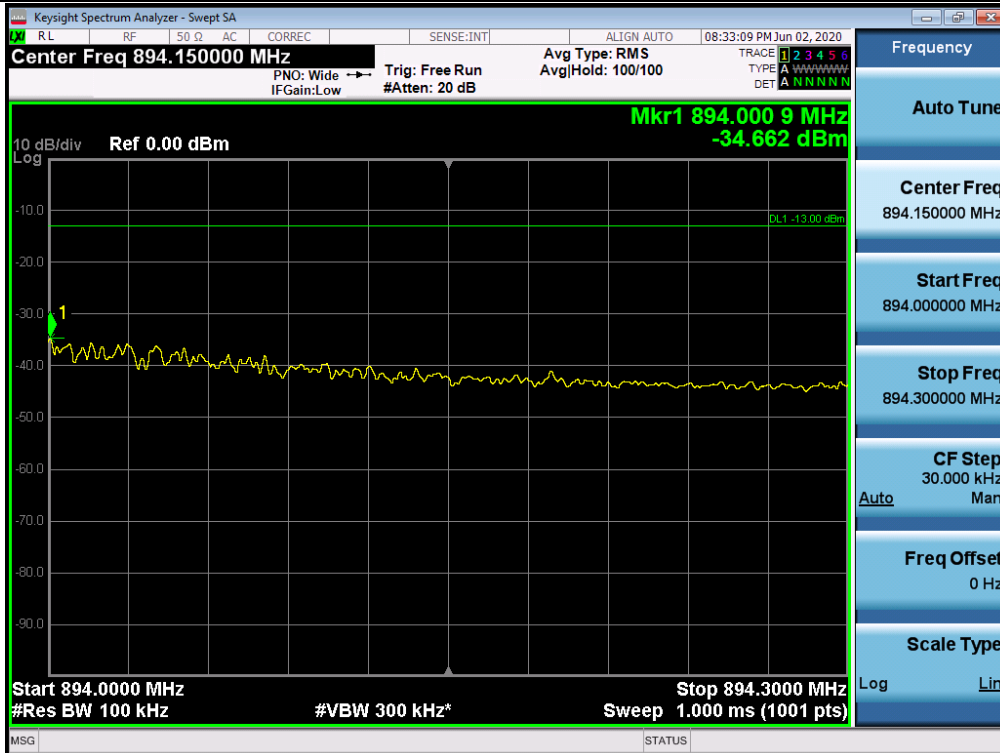
Out-of-band (single test signals) / Cellular / Downlink / LTE 10 MHz / Upper



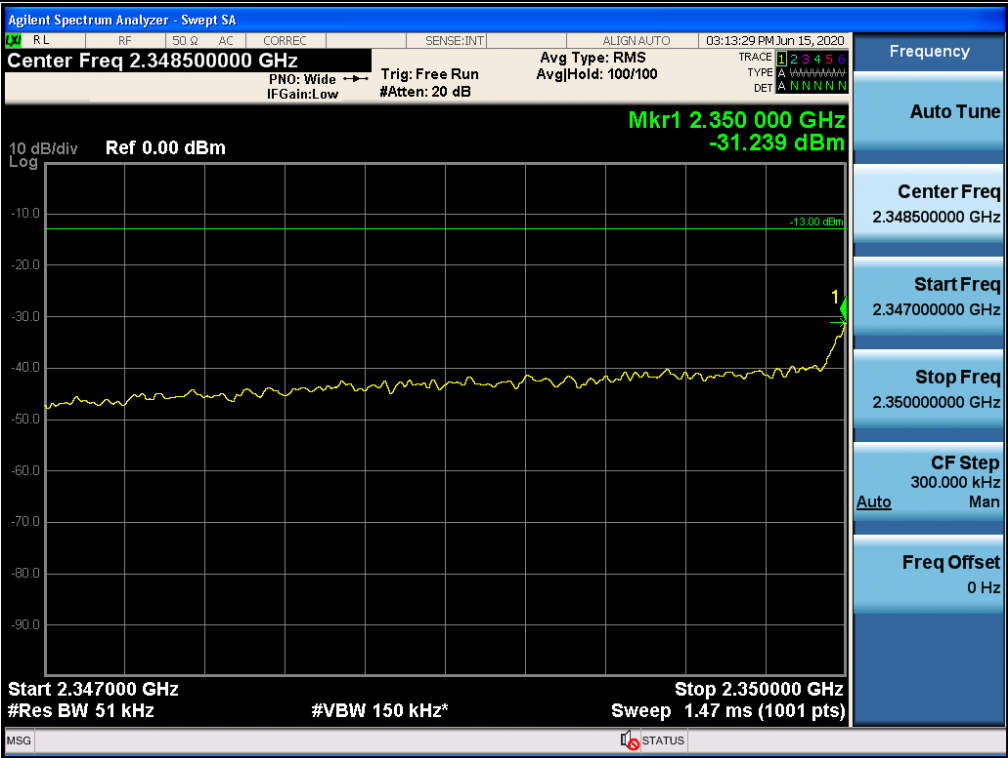
+3 dB above Out-of-band (single test signals) / Cellular / Downlink / LTE 10 MHz / Lower



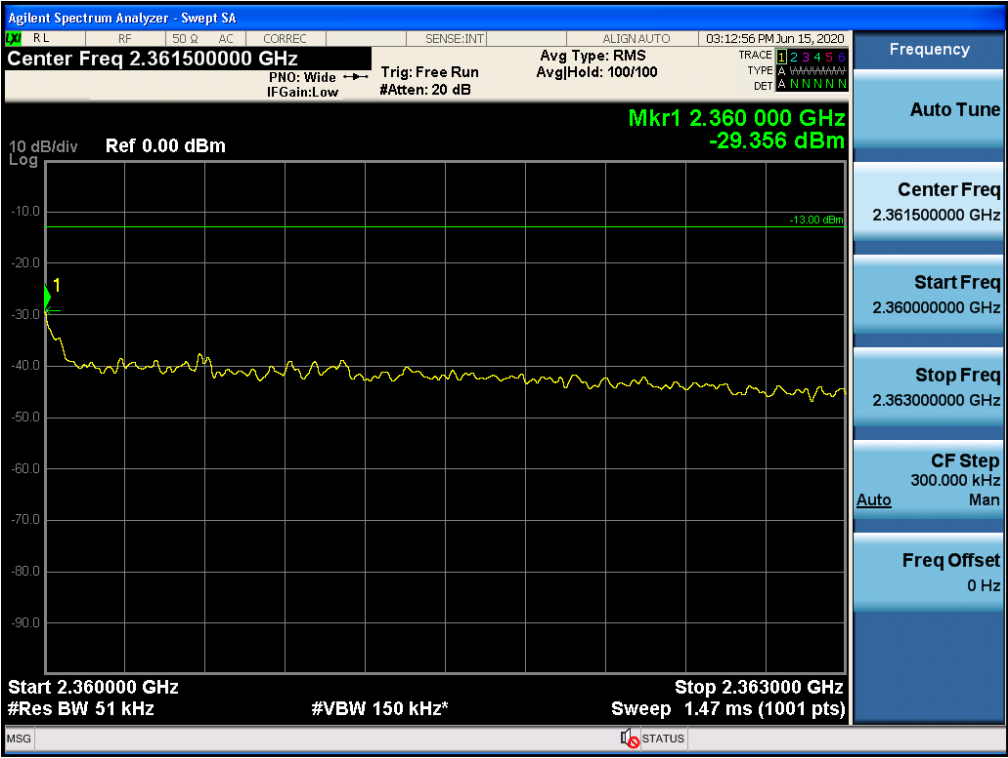
+3 dB above Out-of-band (single test signals) / Cellular / Downlink / LTE 10 MHz / Upper



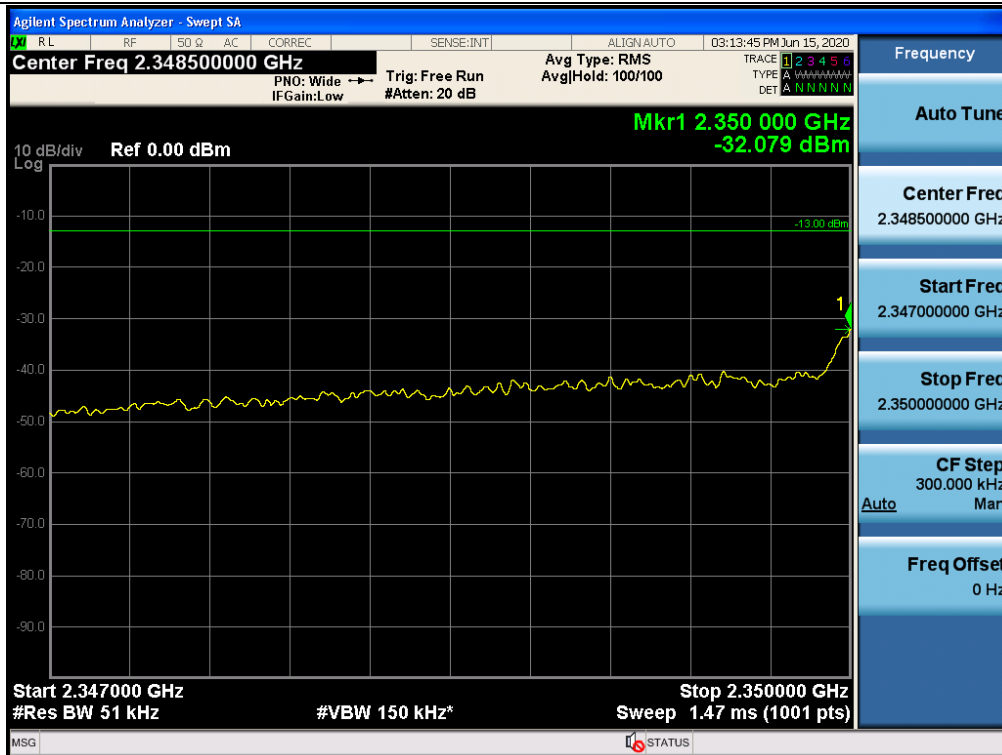
Out-of-band (single test signals) / WCS / Downlink / LTE 5 MHz / Lower



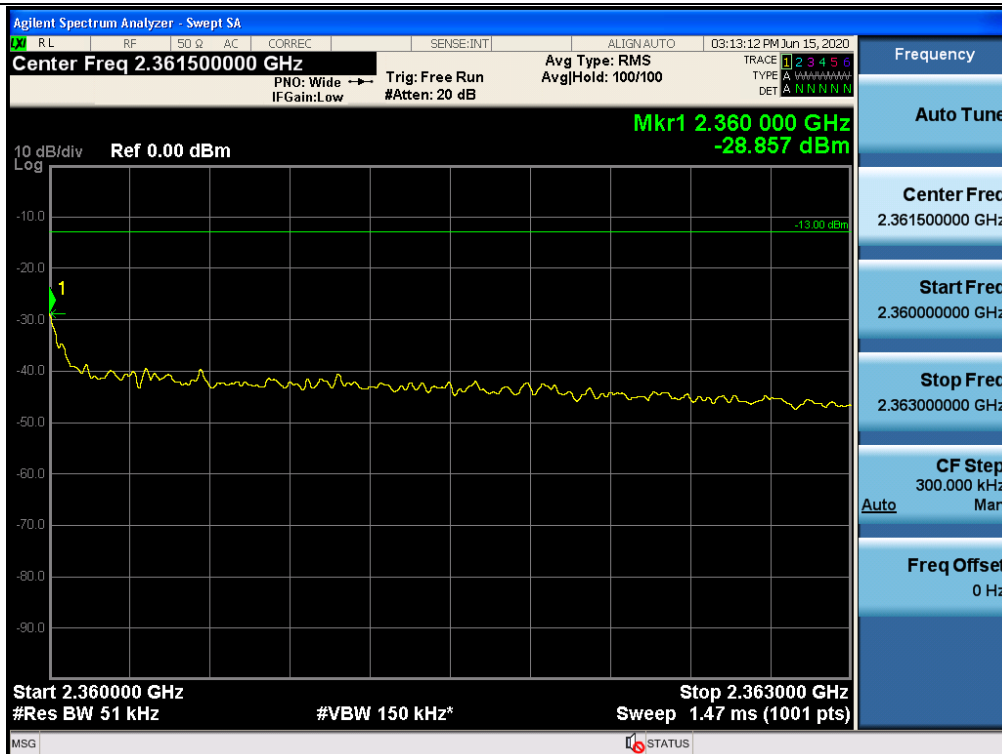
Out-of-band (single test signals) / WCS / Downlink / LTE 5 MHz / Upper



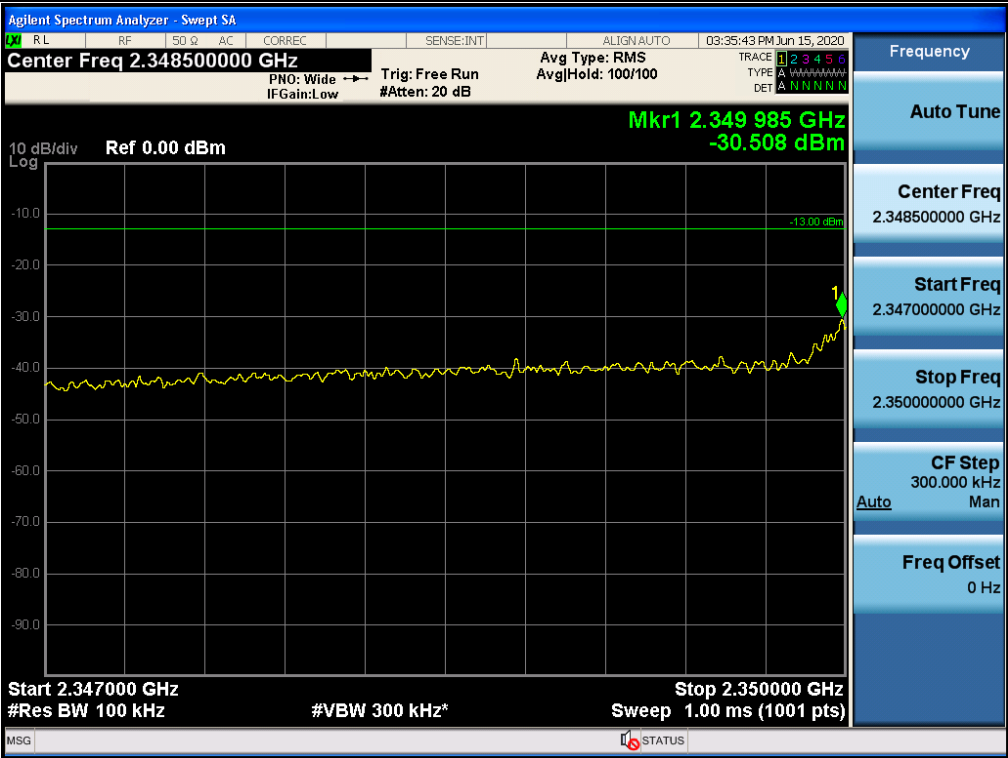
+3 dB above Out-of-band (single test signals) / WCS / Downlink / LTE 5 MHz / Lower



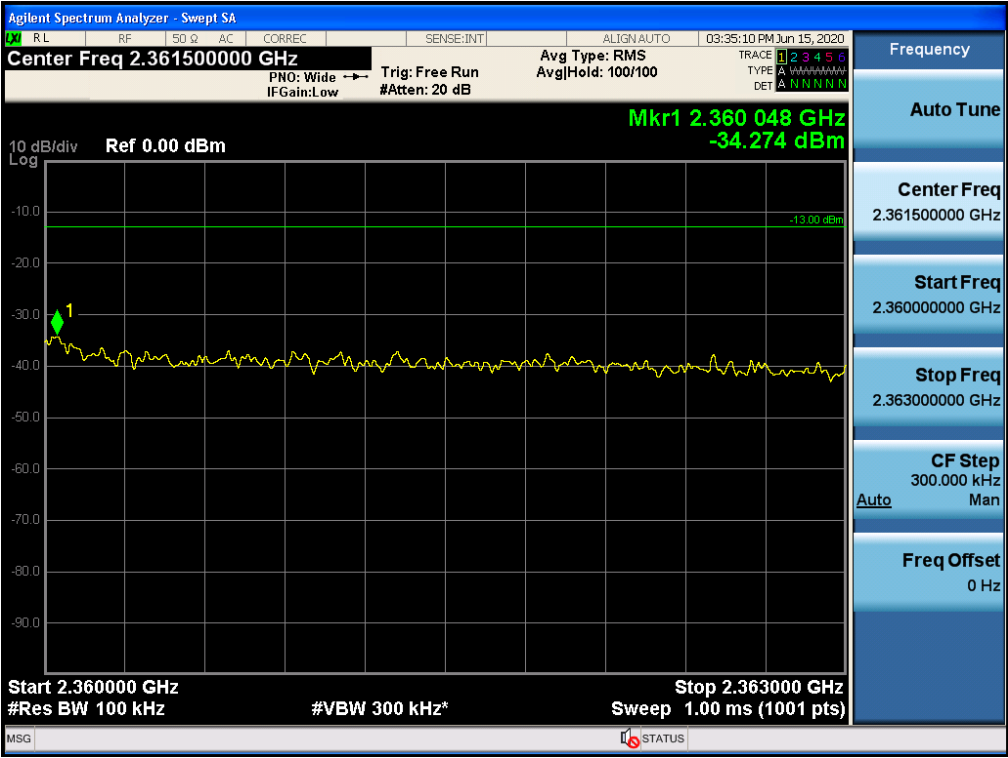
+3 dB above Out-of-band (single test signals) / WCS / Downlink / LTE 5 MHz / Upper



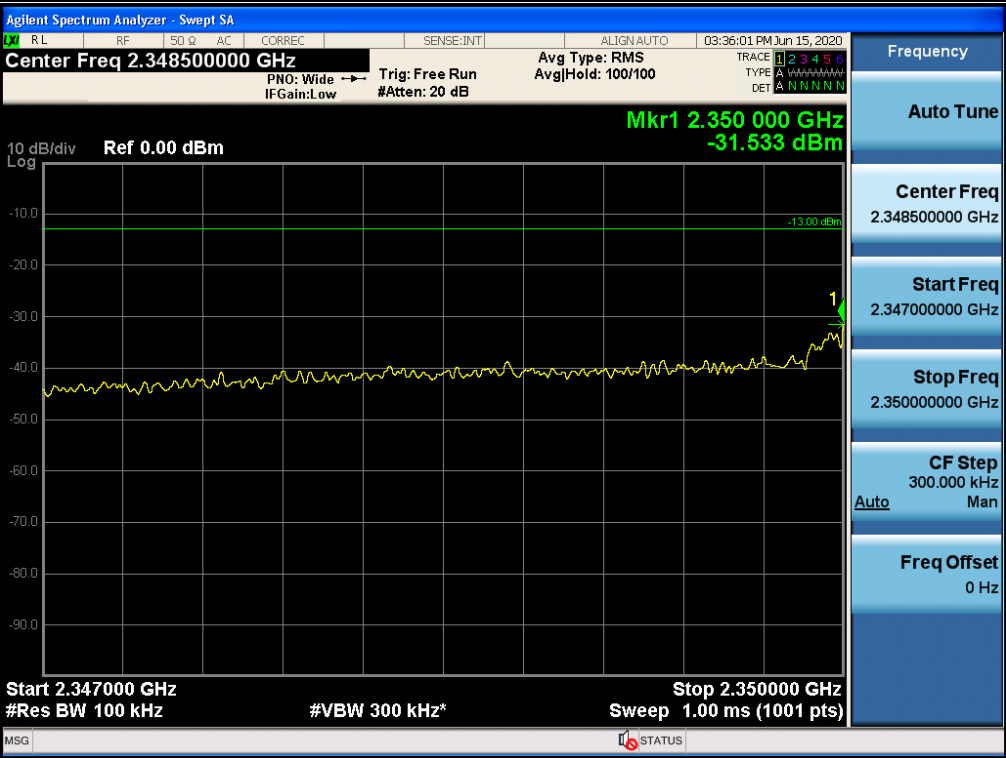
Out-of-band (single test signals) / WCS / Downlink / LTE 10 MHz / Lower



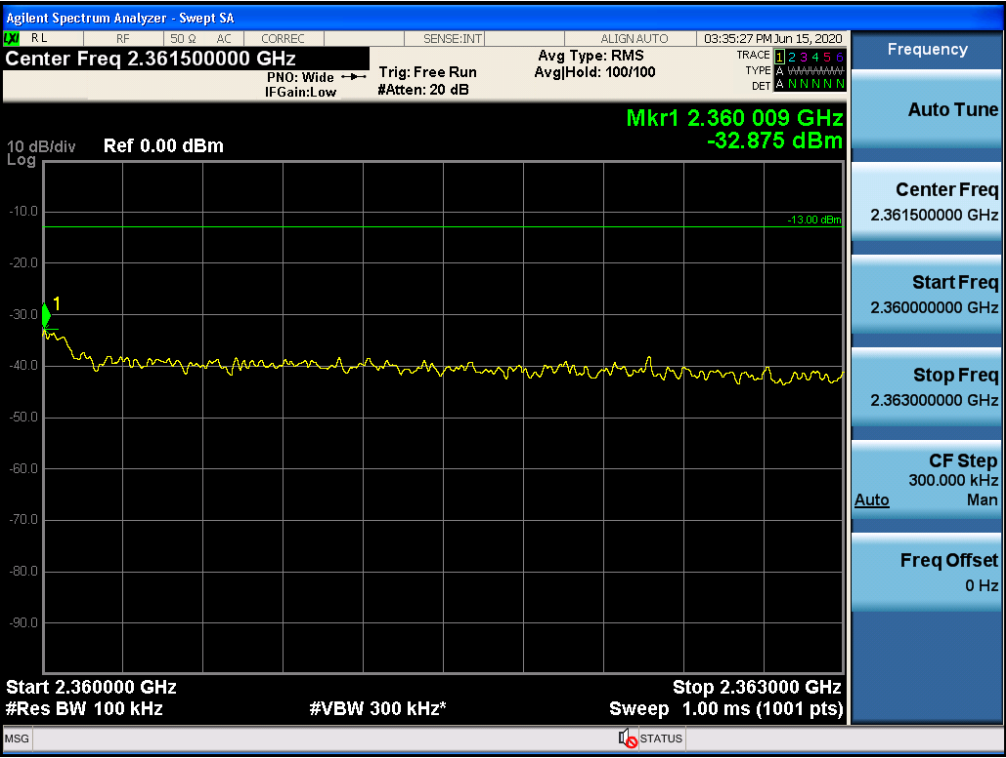
Out-of-band (single test signals) / WCS / Downlink / LTE 10 MHz / Upper



+3 dB above Out-of-band (single test signals) / WCS / Downlink / LTE 10 MHz / Lower



+3 dB above Out-of-band (single test signals) / WCS / Downlink / LTE 10 MHz / Upper

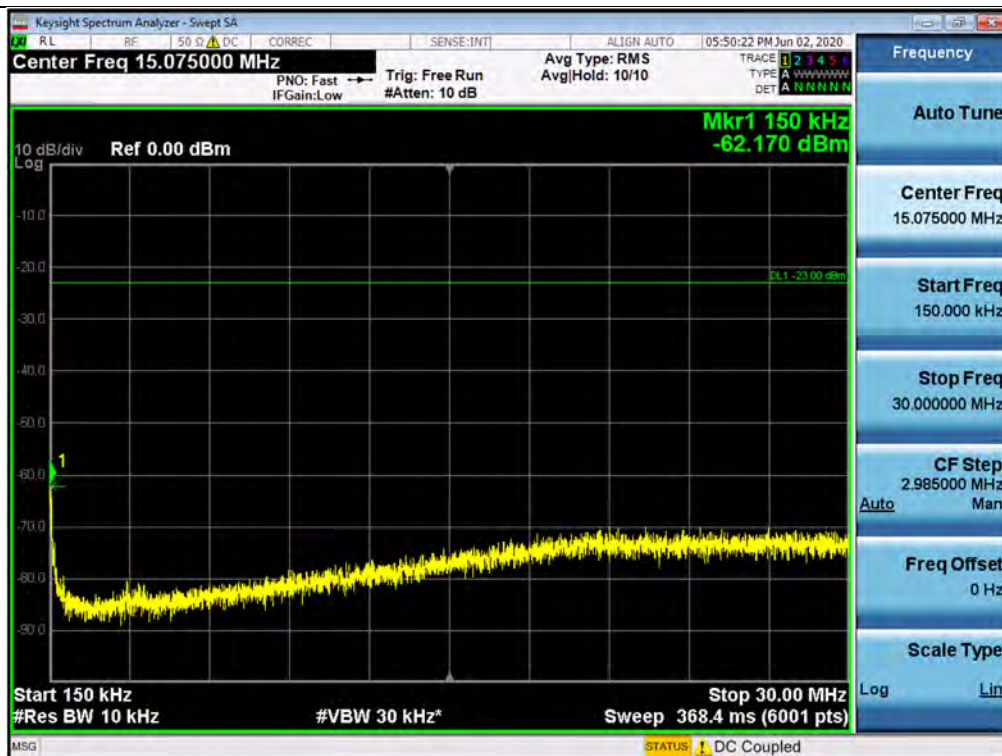


Plot data of Spurious Emissions

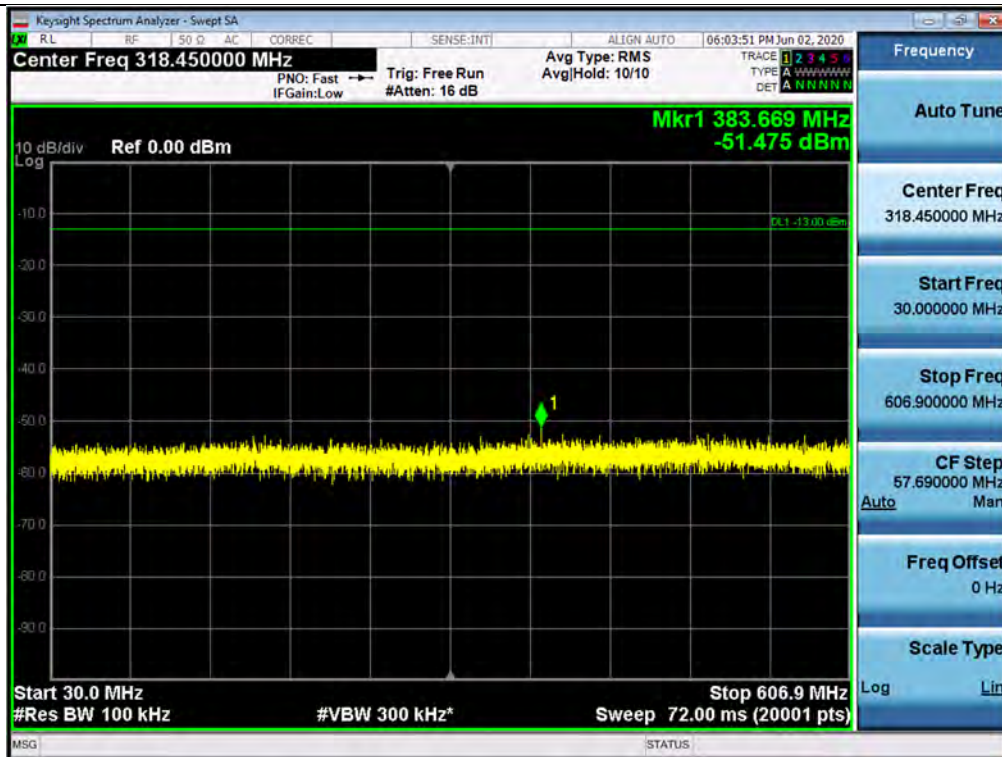
Spurious / 600 MHz / Downlink / LTE 20 MHz / Low / 9 kHz ~ 150 kHz



Spurious / 600 MHz / Downlink / LTE 10 MHz / Middle / 150 kHz ~ 30 MHz



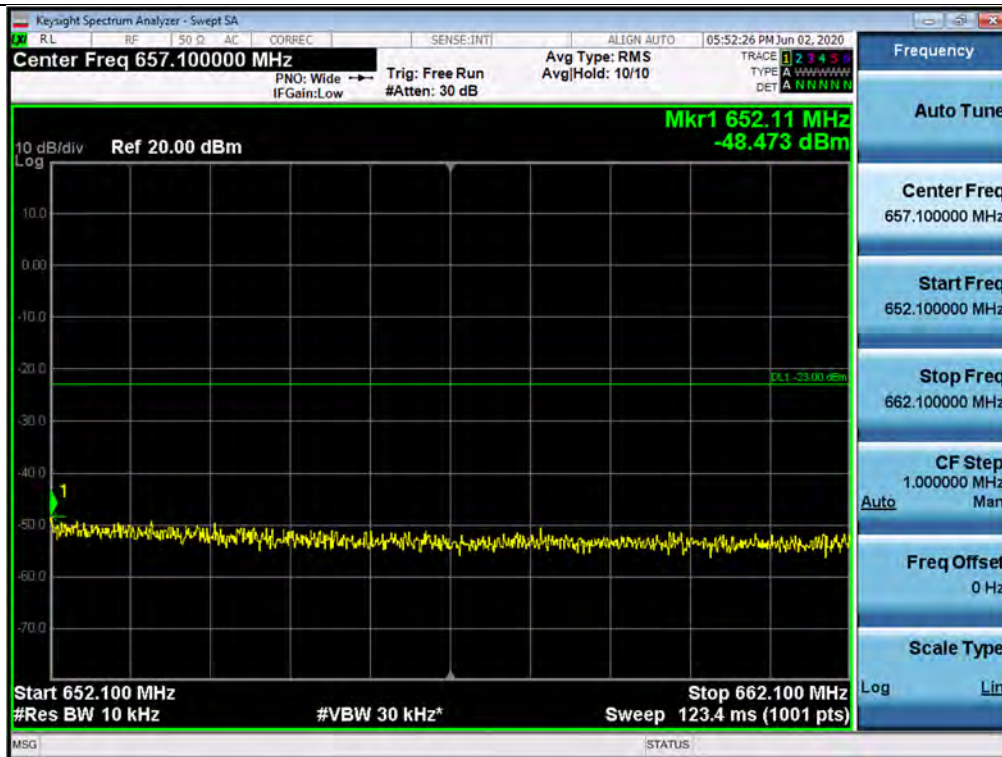
Spurious / 600 MHz / Downlink / LTE 20 MHz / Low / 30 MHz ~ Low Edge - 10.1 MHz



Spurious / 600 MHz / Downlink / LTE 10 MHz / Low / Low Edge-10.1 MHz ~ Low Edge - 100 kHz



Spurious / 600 MHz / Downlink / LTE 10 MHz / High / High Edge + 100 kHz ~ High Edge + 10.1 MHz



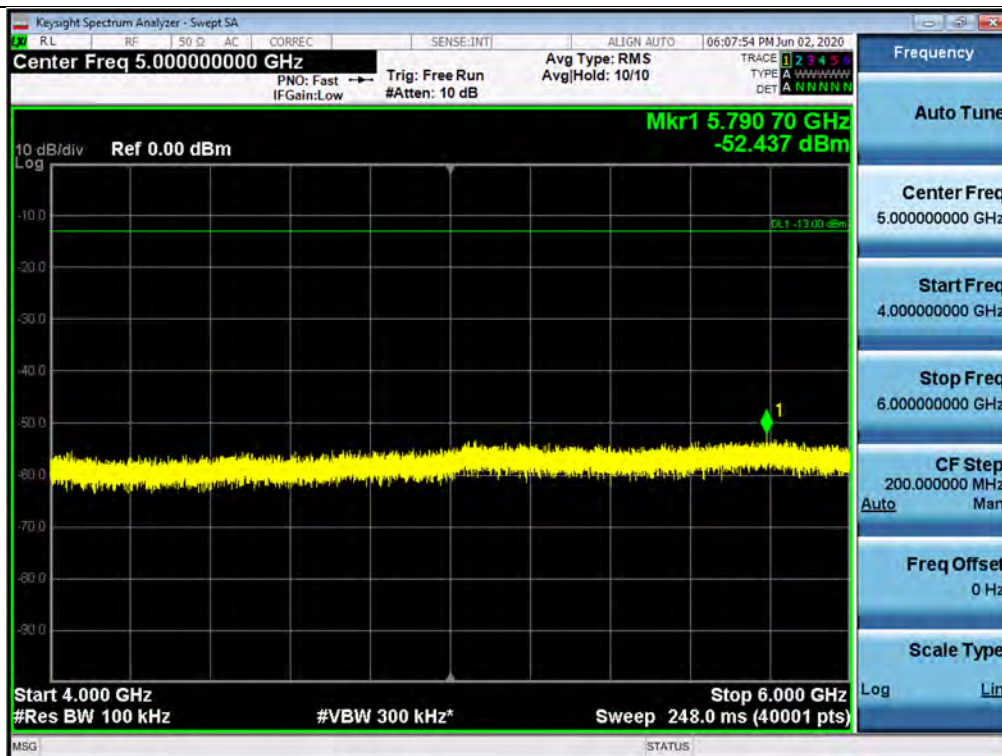
Spurious / 600 MHz / Downlink / LTE 20 MHz / Middle / High Edge + 10.1 MHz ~ 2 GHz



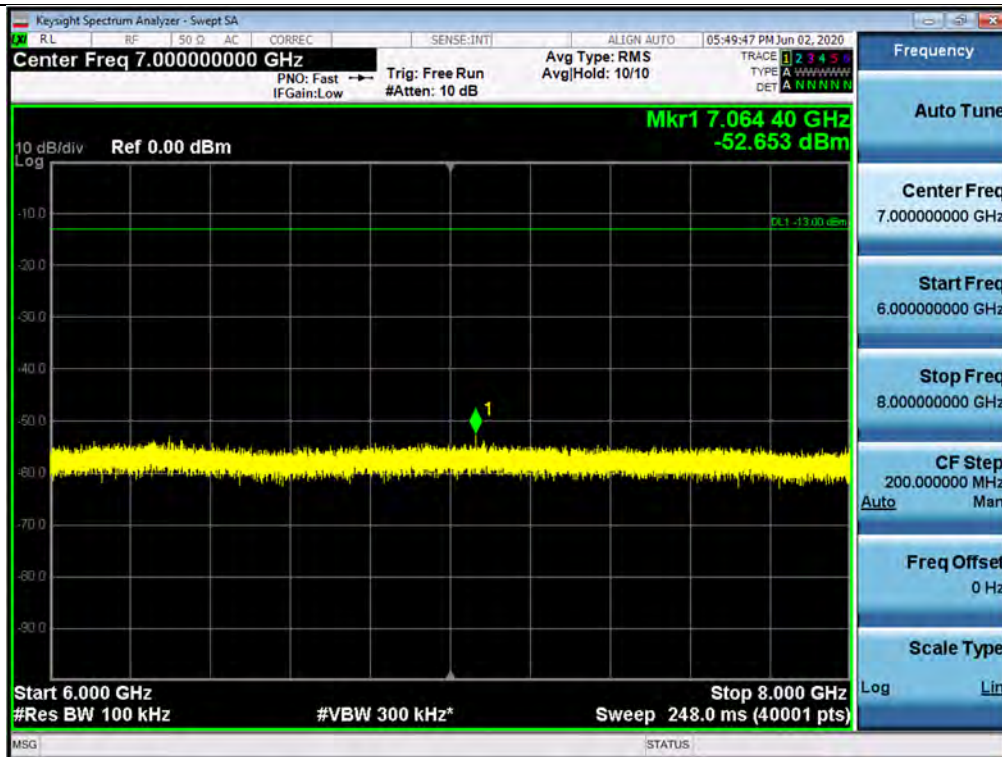
Spurious / 600 MHz / Downlink / LTE 5 MHz / High / 2 GHz ~ 4 GHz



Spurious / 600 MHz / Downlink / LTE 20 MHz / High / 4 GHz ~ 6 GHz



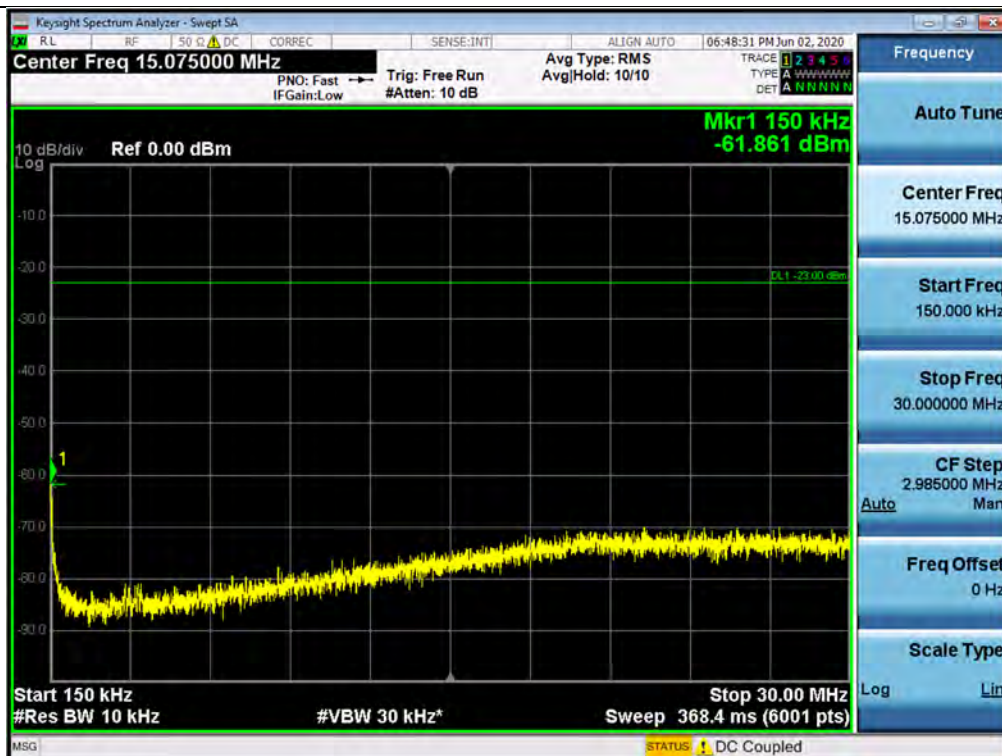
Spurious / 600 MHz / Downlink / LTE 10 MHz / Low / 6 GHz ~ 8 GHz



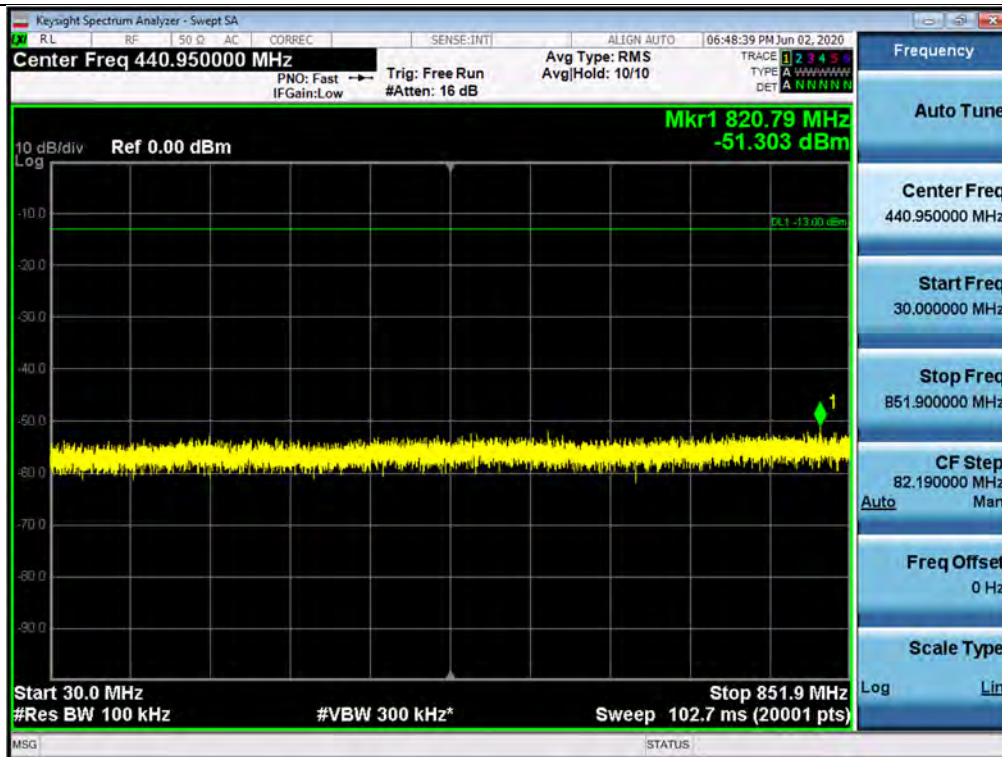
Spurious / ESMR / Downlink / LTE 5 MHz / High / 9 kHz ~ 150 kHz



Spurious / ESMR / Downlink / CDMA / High / 150 kHz ~ 30 MHz



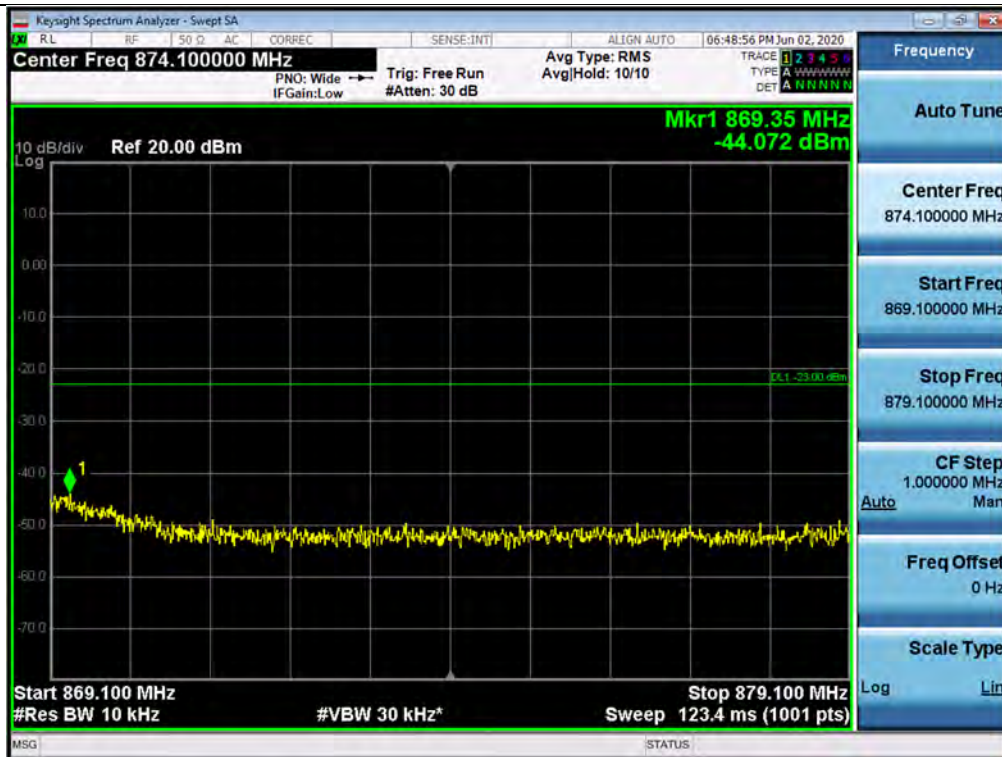
Spurious / ESMR / Downlink / CDMA / High / 30 MHz ~ Low Edge -10.1 MHz



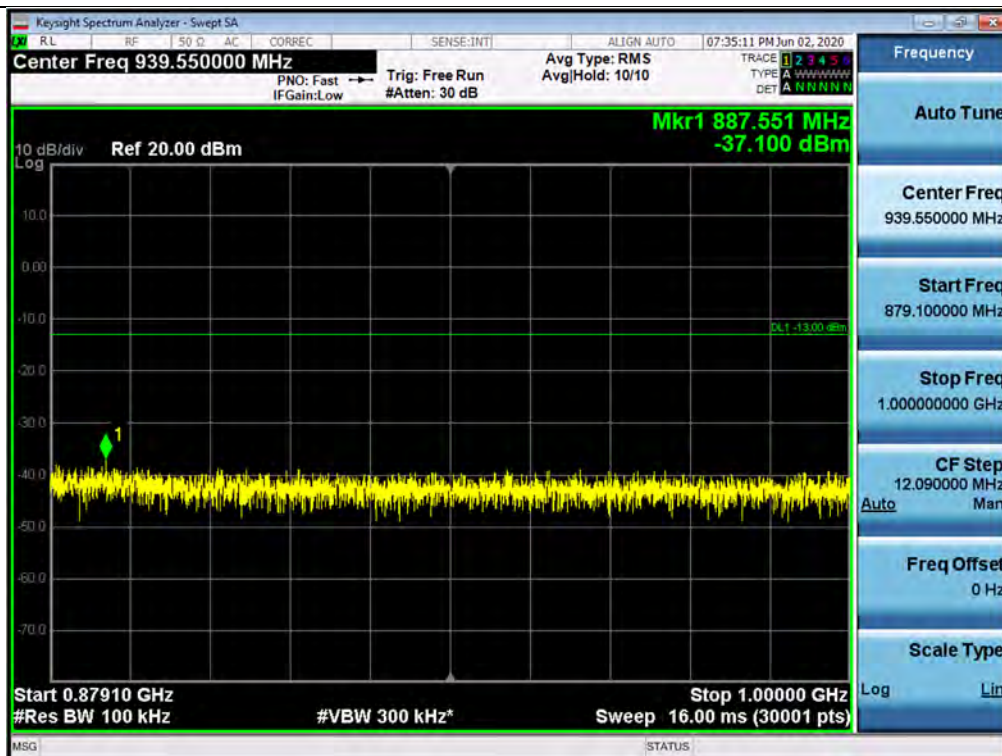
Spurious / ESMR / Downlink / CDMA / Low / Low Edge - 10.1 MHz ~ Low Edge - 100 kHz



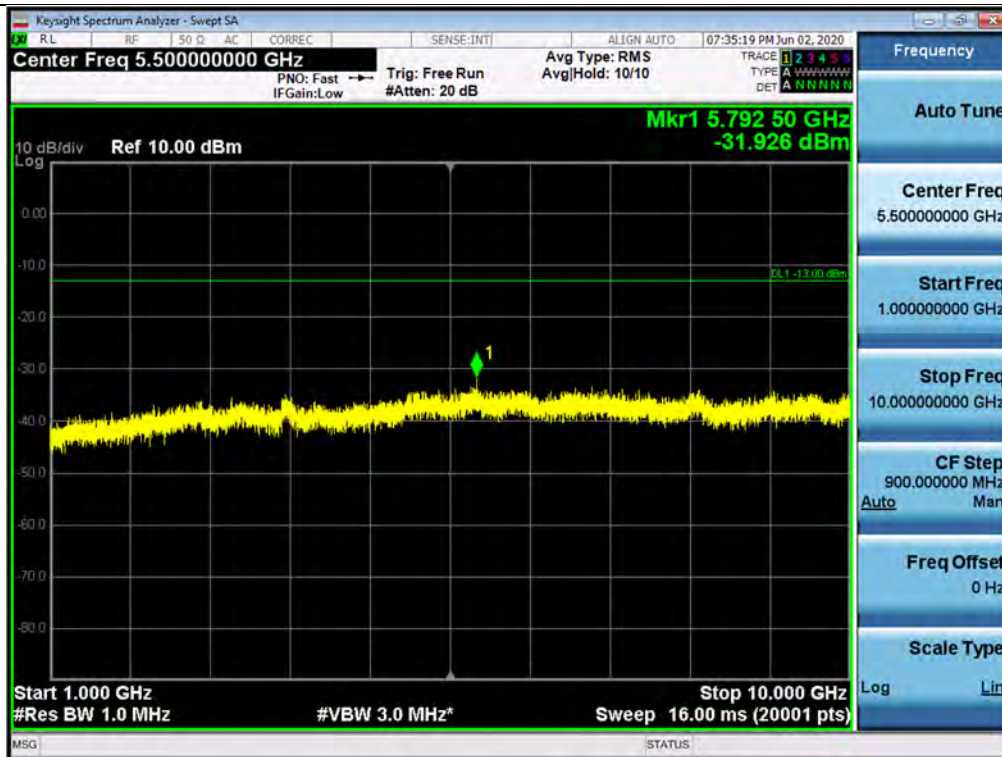
Spurious / ESMR / Downlink / CDMA / High / High Edge + 100 kHz ~ High Edge + 10.1 MHz



Spurious / ESMR / Downlink / LTE 5 MHz / High / High Edge + 10.1 MHz ~ 1 GHz



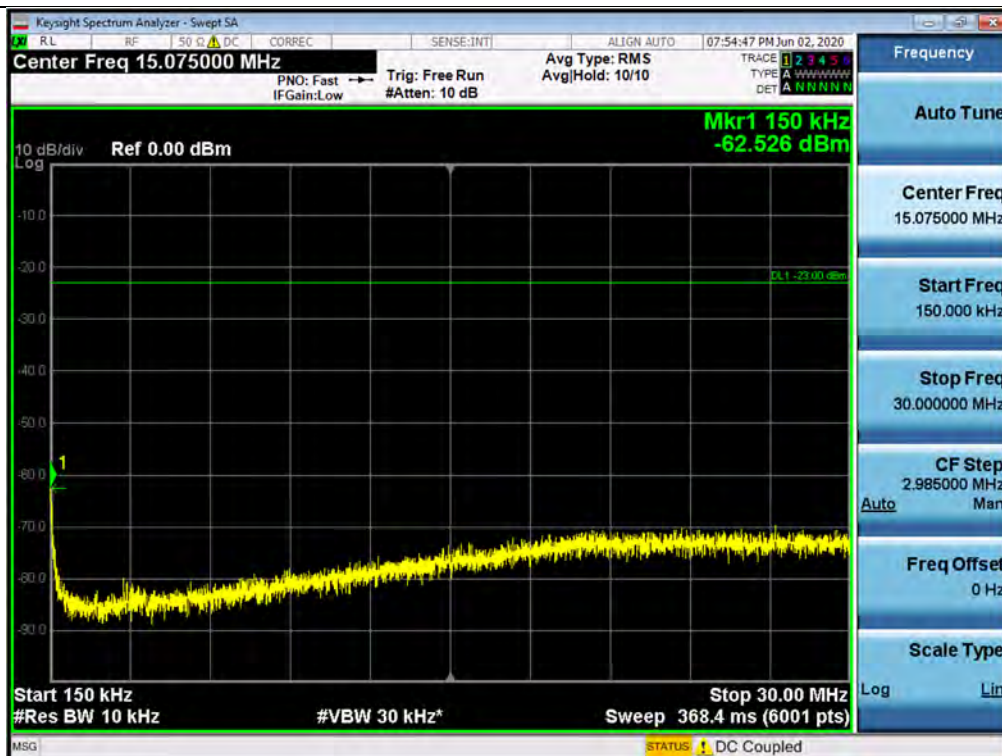
Spurious / ESMR / Downlink / LTE 5 MHz / High / 1 GHz ~ 10 GHz



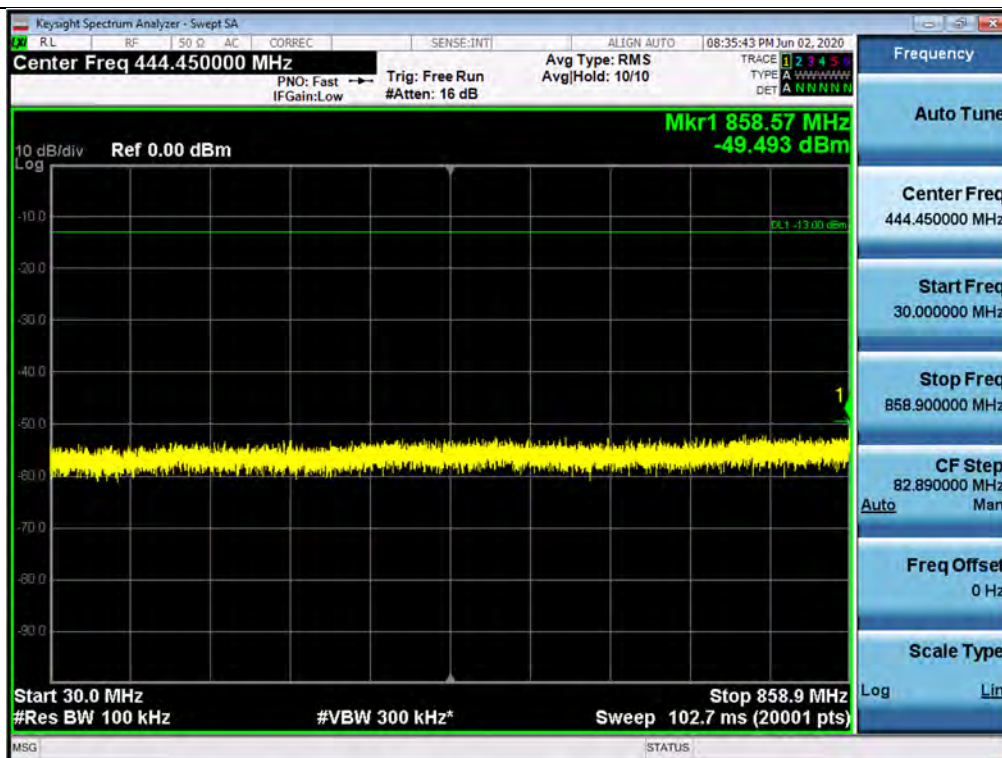
Spurious / Cellular / Downlink / WCDMA / High / 9 kHz ~ 150 kHz



Spurious / Cellular / Downlink / CDMA / High / 150 kHz ~ 30 MHz



Spurious / Cellular / Downlink / LTE 10 MHz / Middle / 30 MHz ~ Low Edge -10.1 MHz



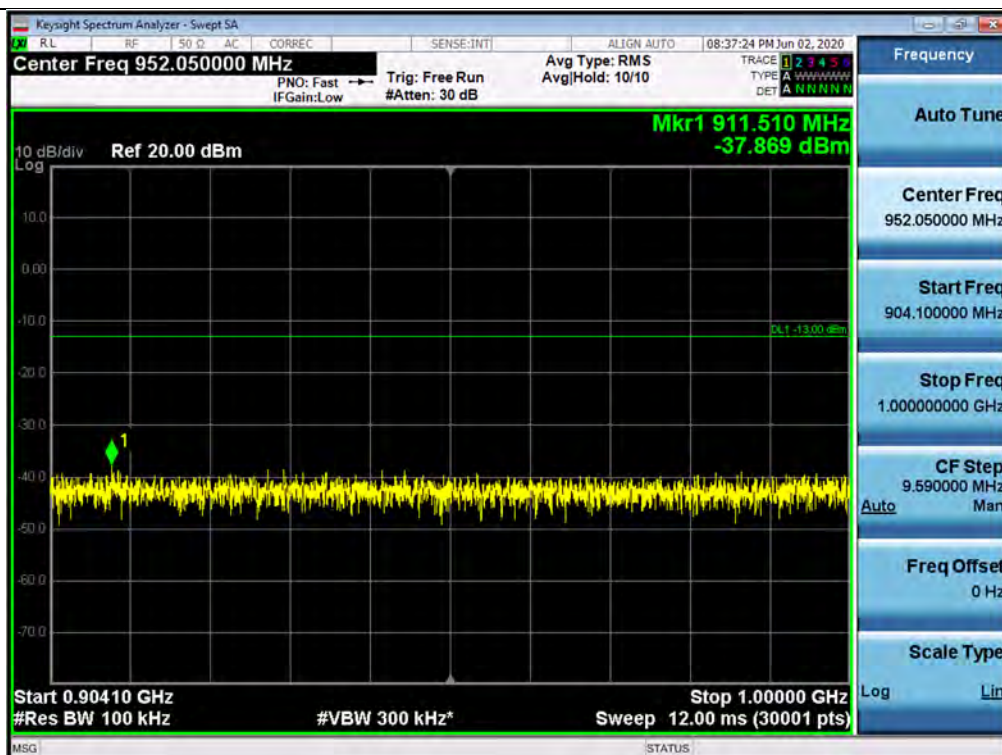
Spurious / Cellular / Downlink / CDMA / Low / Low Edge - 10.1 MHz ~ Low Edge - 100 kHz



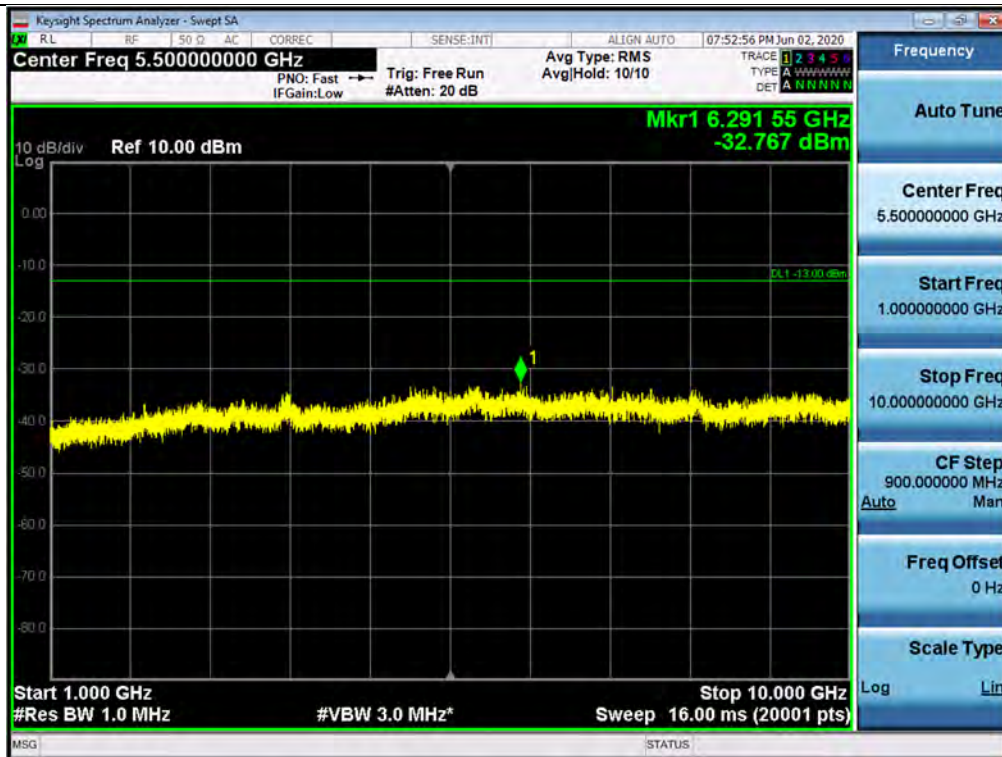
Spurious / Cellular / Downlink / CDMA / High / High Edge + 100 kHz ~ High Edge + 10.1 MHz



Spurious / Cellular / Downlink / LTE 10 MHz / High / High Edge + 10.1 MHz ~ 1 GHz



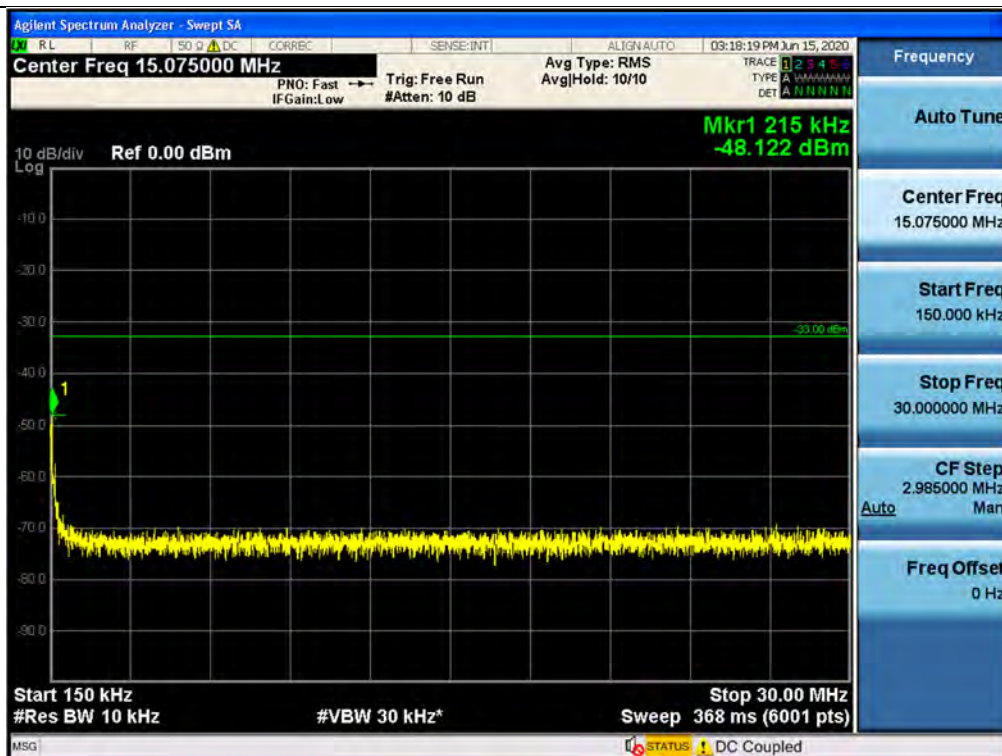
Spurious / Cellular / Downlink / CDMA / Low / 1 GHz ~ 10 GHz



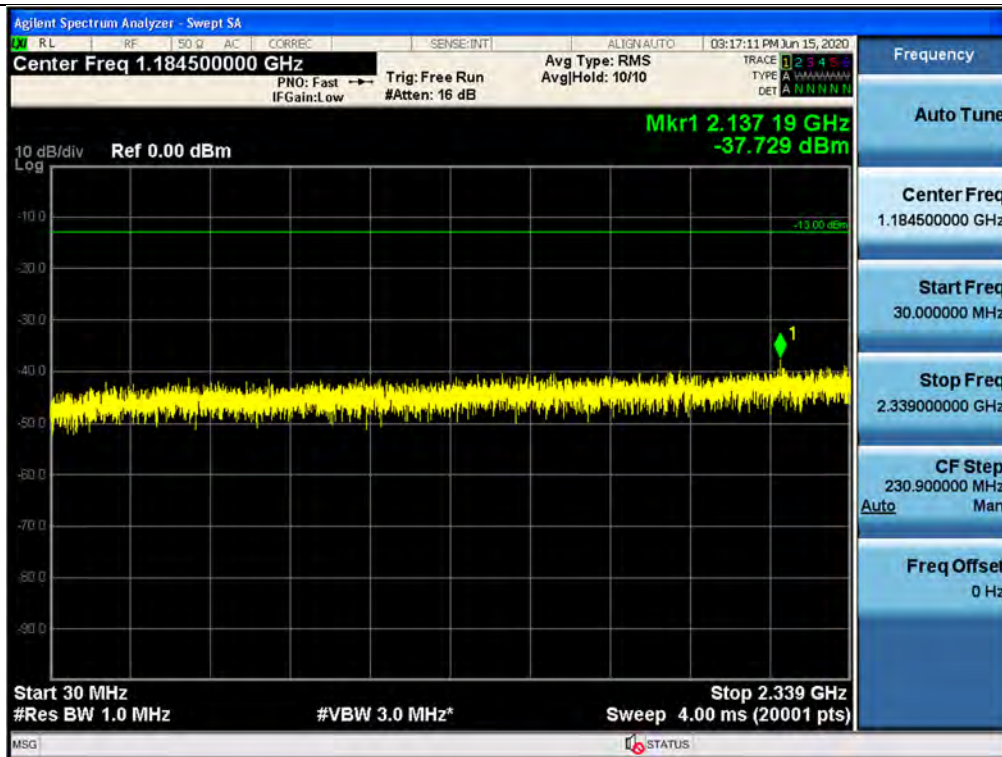
Spurious / WCS / Downlink / LTE 10 MHz/ Middle / 9 kHz ~ 150 kHz



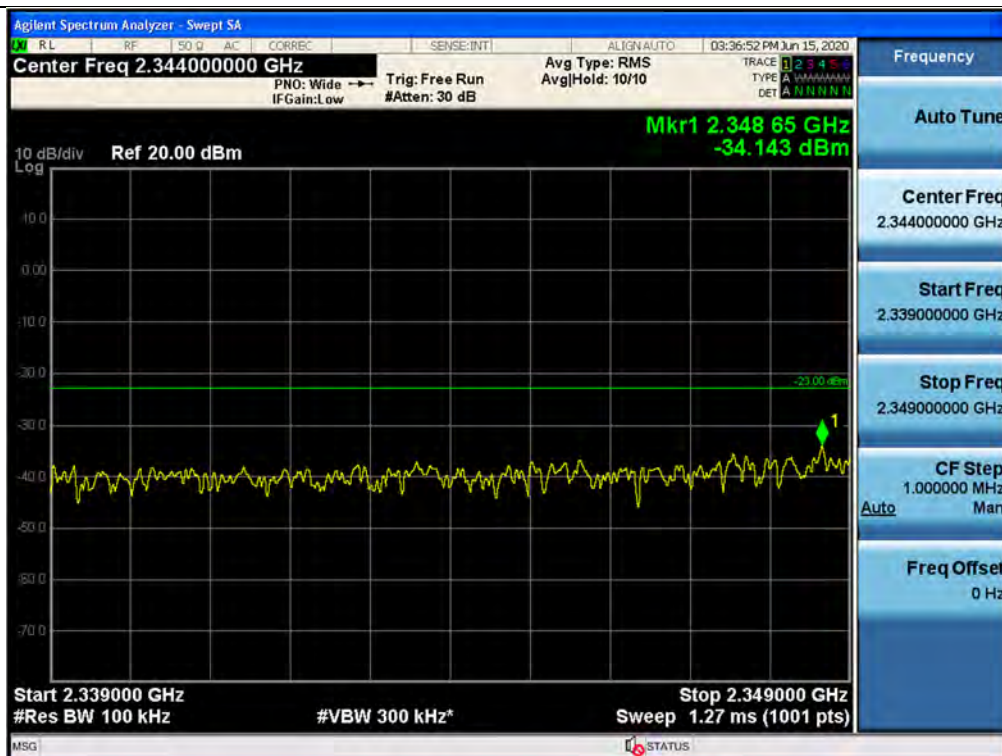
Spurious / WCS / Downlink / LTE 5 MHz/ High / 150 kHz ~ 30 MHz



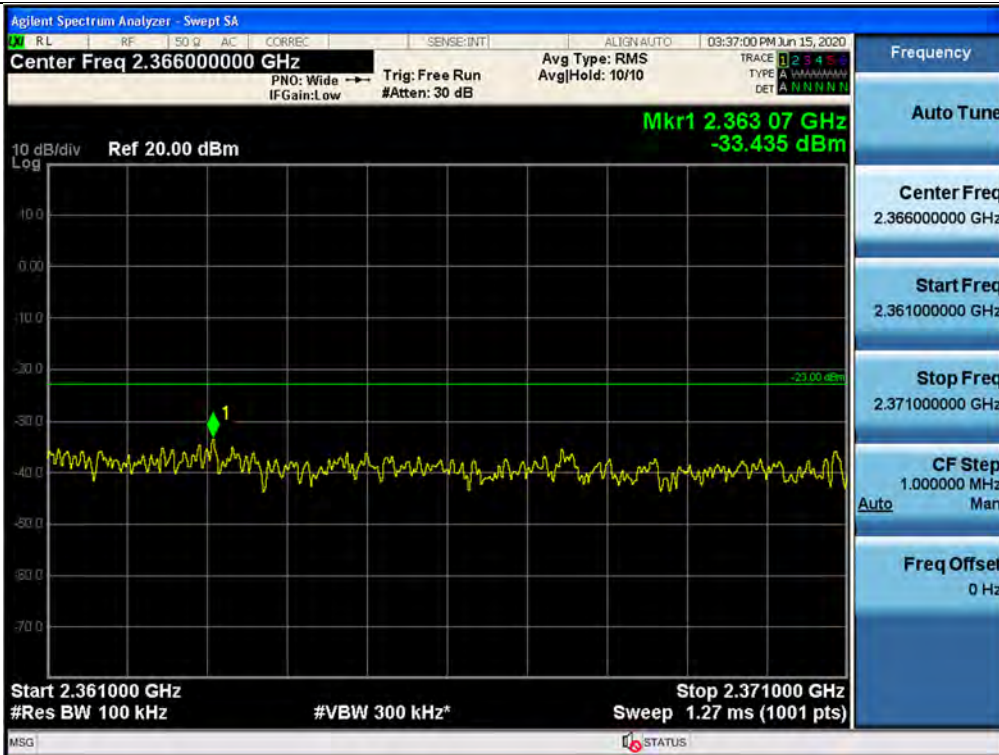
Spurious / WCS / Downlink / LTE 5 MHz/ Middle / 30 MHz ~ Low Edge - 11 MHz



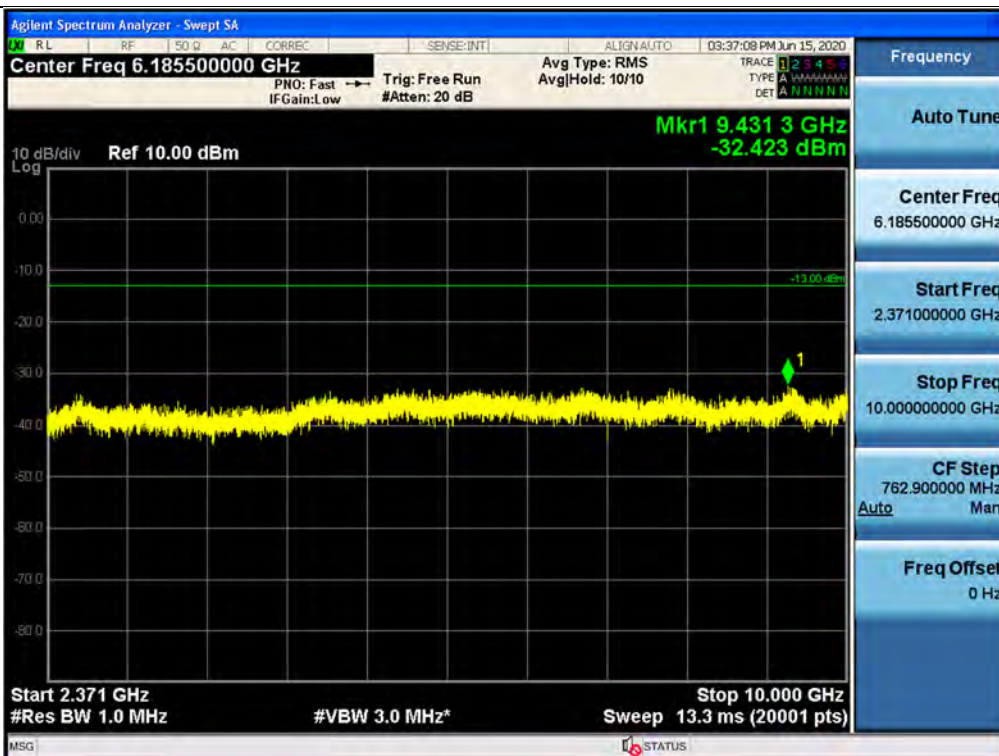
Spurious / WCS / Downlink / LTE 10 MHz/ Middle / Low Edge - 11 MHz ~ Low Edge - 1 MHz



Spurious / WCS / Downlink / LTE 10 MHz/ Middle / High Edge + 1 MHz ~ High Edge + 11 MHz



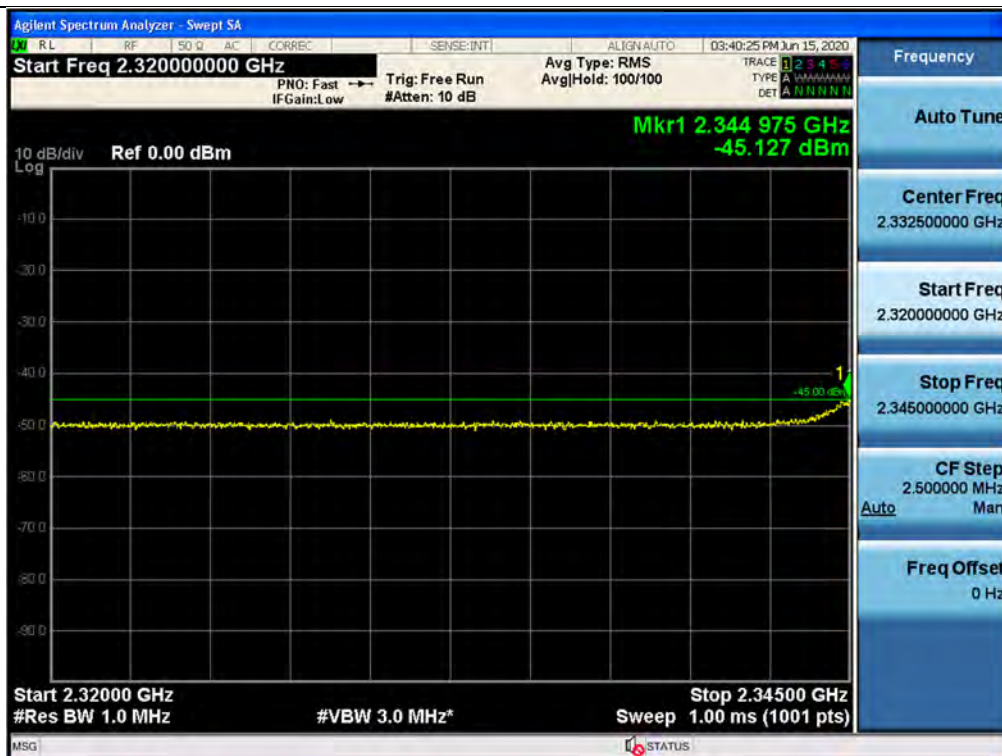
Spurious / WCS / Downlink / LTE 10 MHz/ Middle / High Edge + 11 MHz ~ 10 GHz



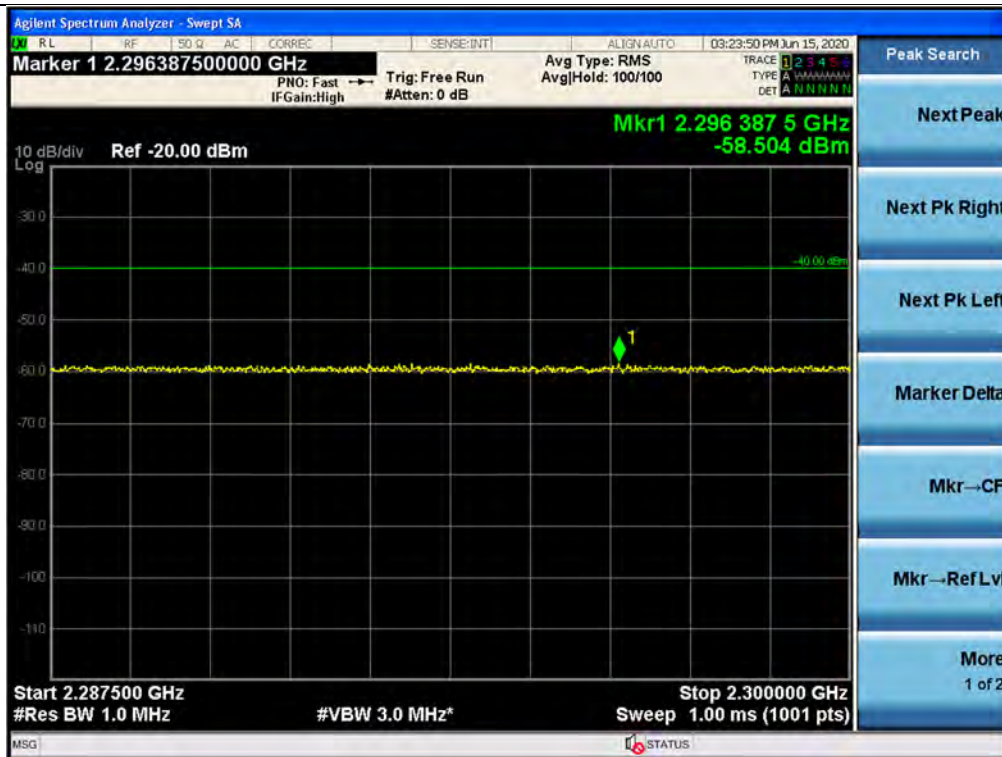
Spurious / WCS / Downlink / LTE 5 MHz/ Low / 10 GHz ~ 26.5 GHz



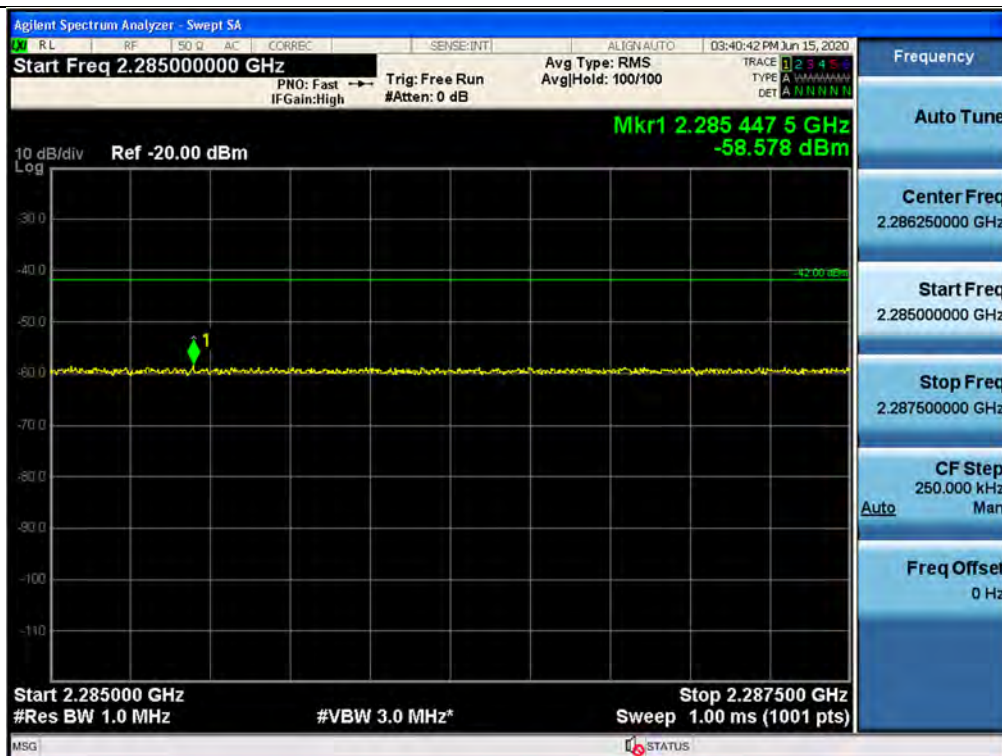
Spurious / WCS / Downlink / LTE 10 MHz/ Middle / Additional Band 1



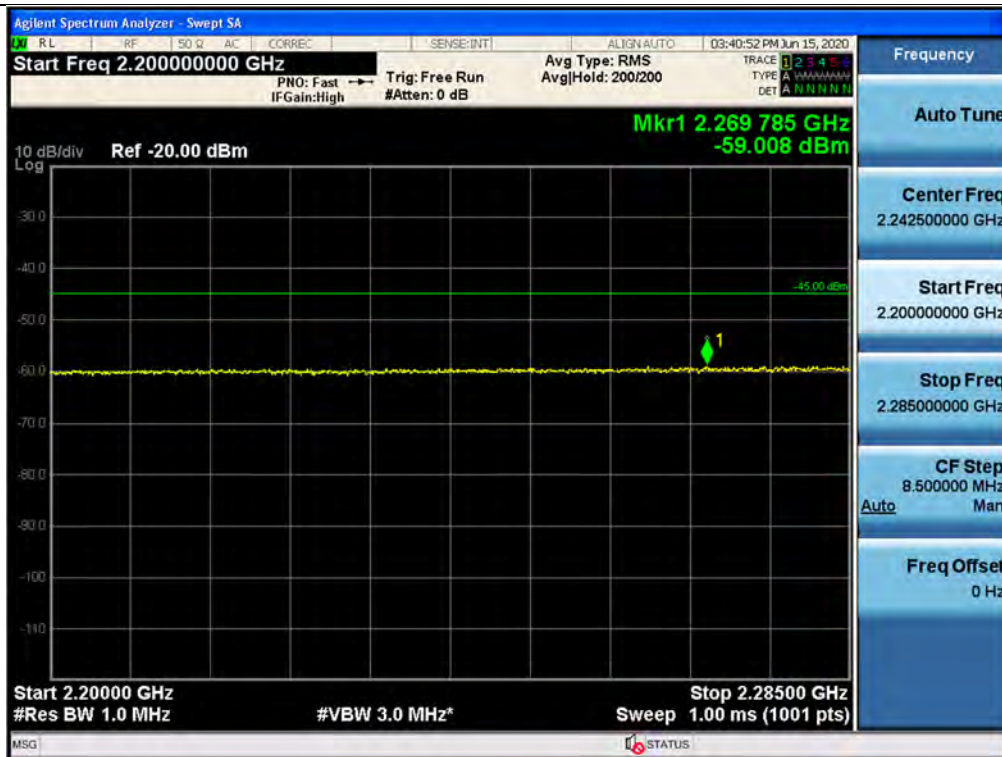
Spurious / WCS / Downlink / LTE 5 MHz/ Middle / Additional Band 2



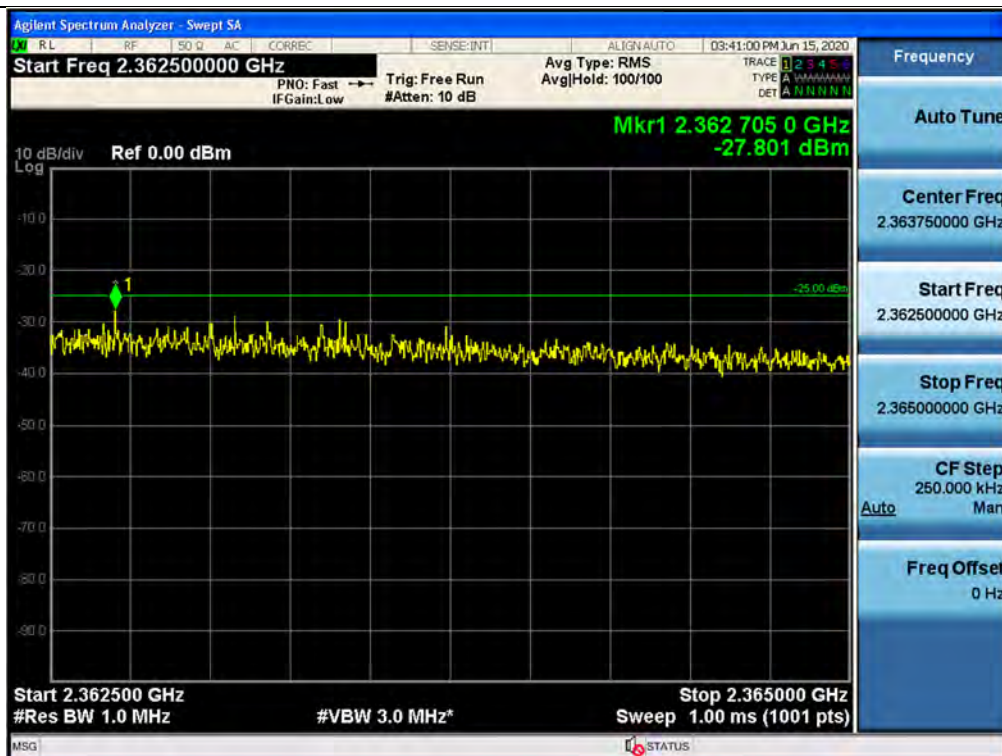
Spurious / WCS / Downlink / LTE 10 MHz/ Middle / Additional Band 3



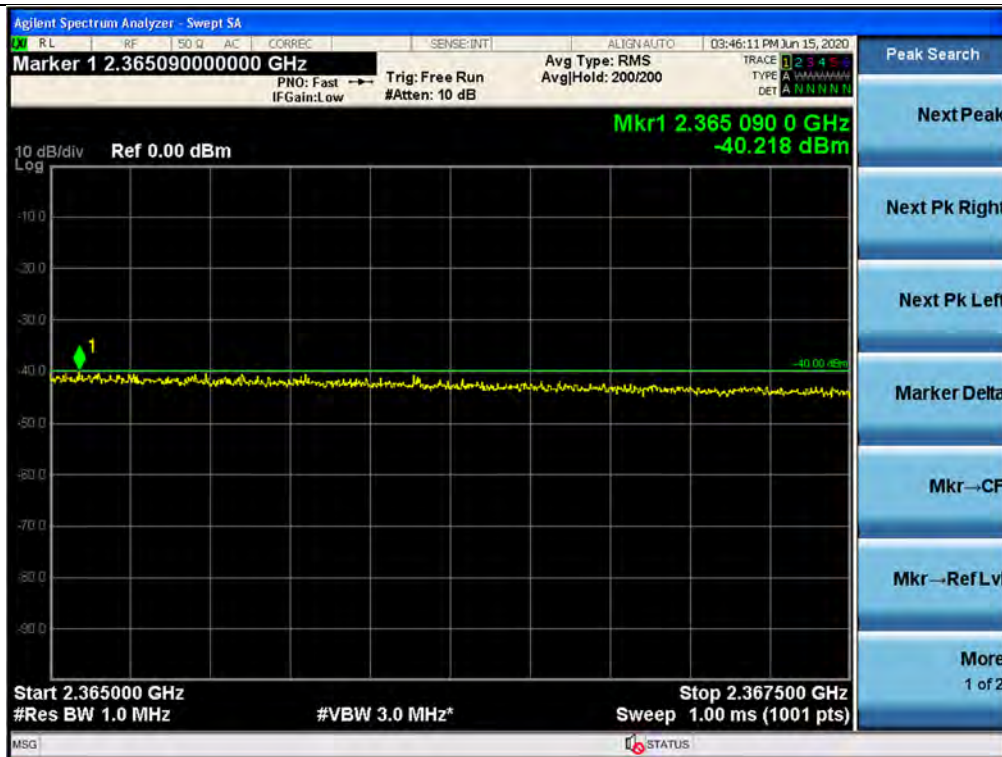
Spurious / WCS / Downlink / LTE 10 MHz/ Middle / Additional Band 4



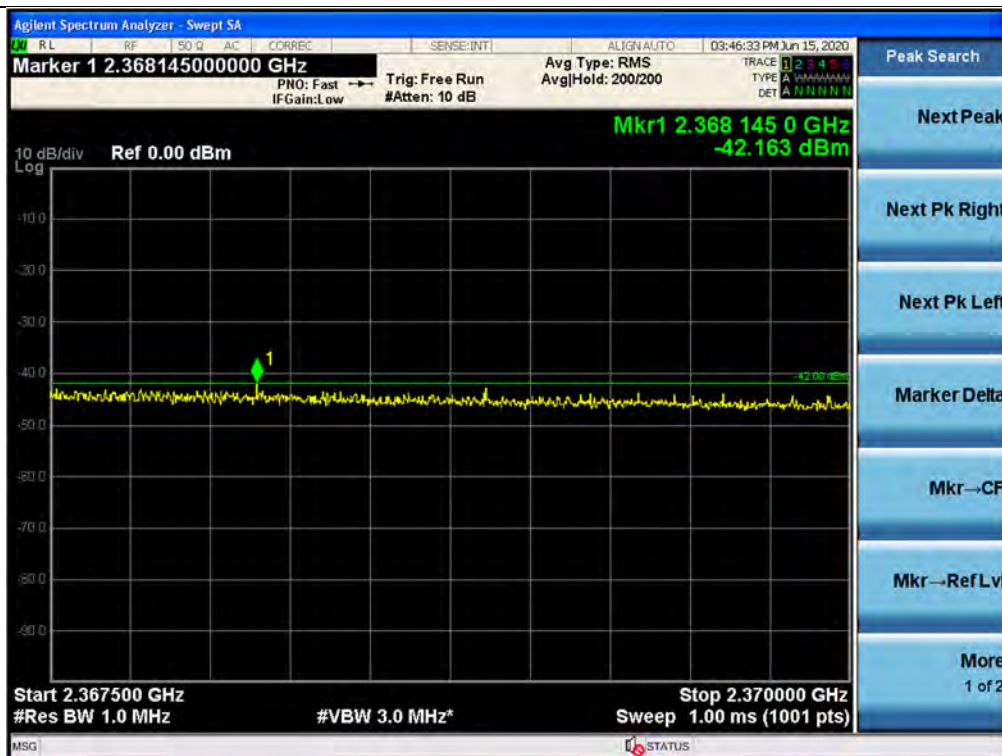
Spurious / WCS / Downlink / LTE 10 MHz/ Middle / Additional Band 5



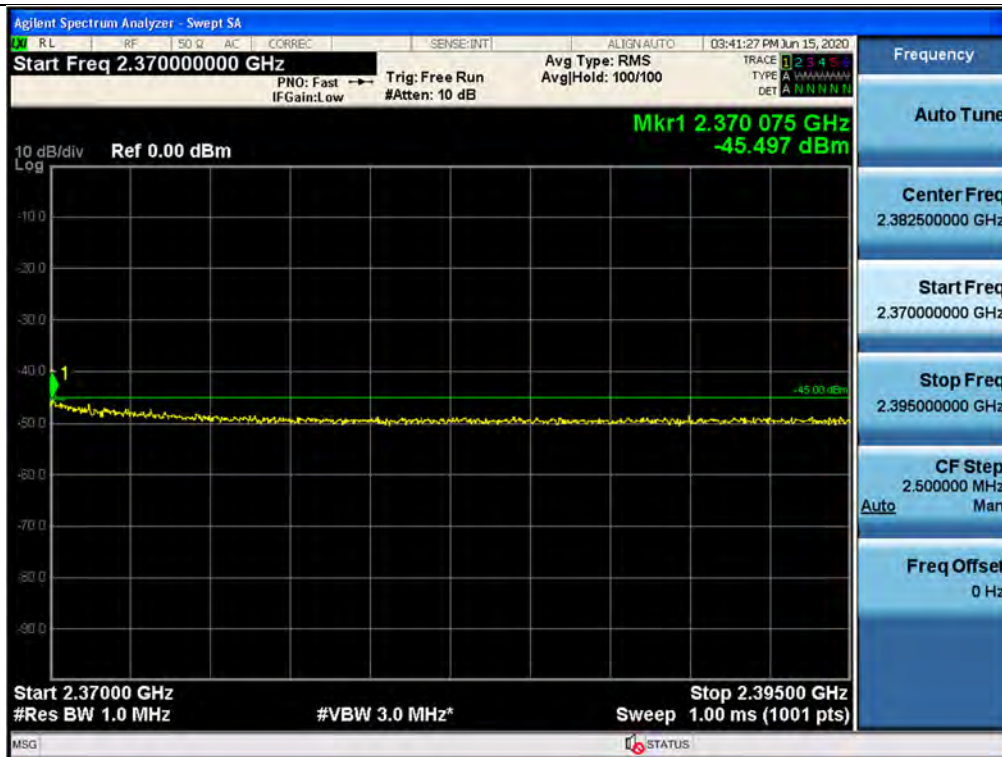
Spurious / WCS / Downlink / LTE 10 MHz/ Middle / Additional Band 6



Spurious / WCS / Downlink / LTE 10 MHz/ Middle / Additional Band 7



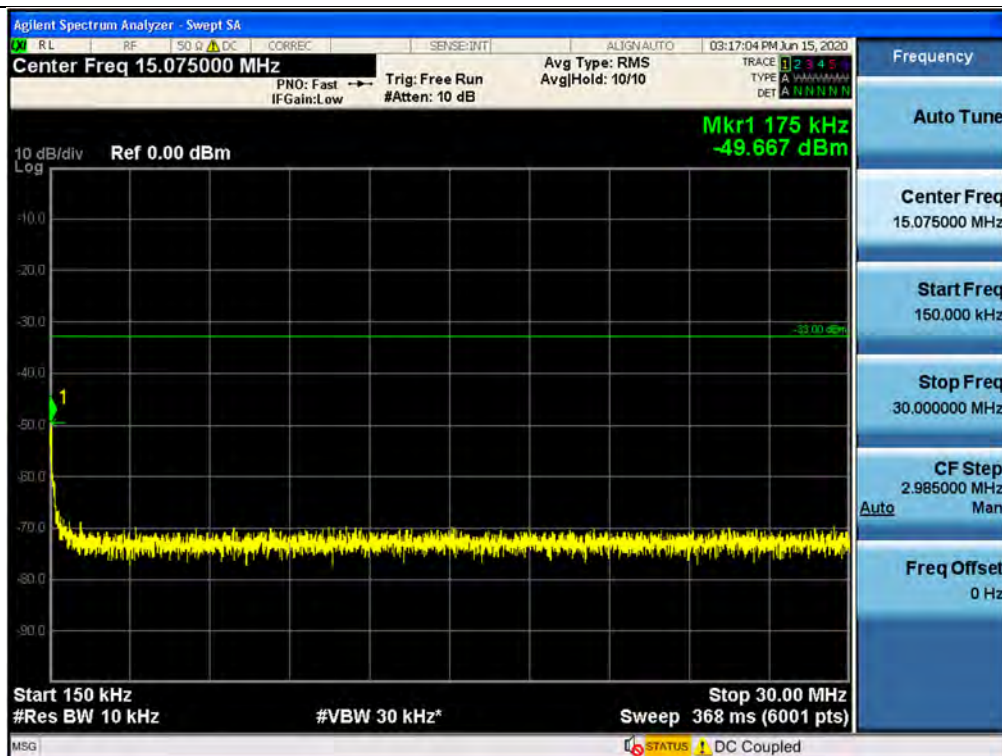
Spurious / WCS / Downlink / LTE 10 MHz/ Middle / Additional Band 8



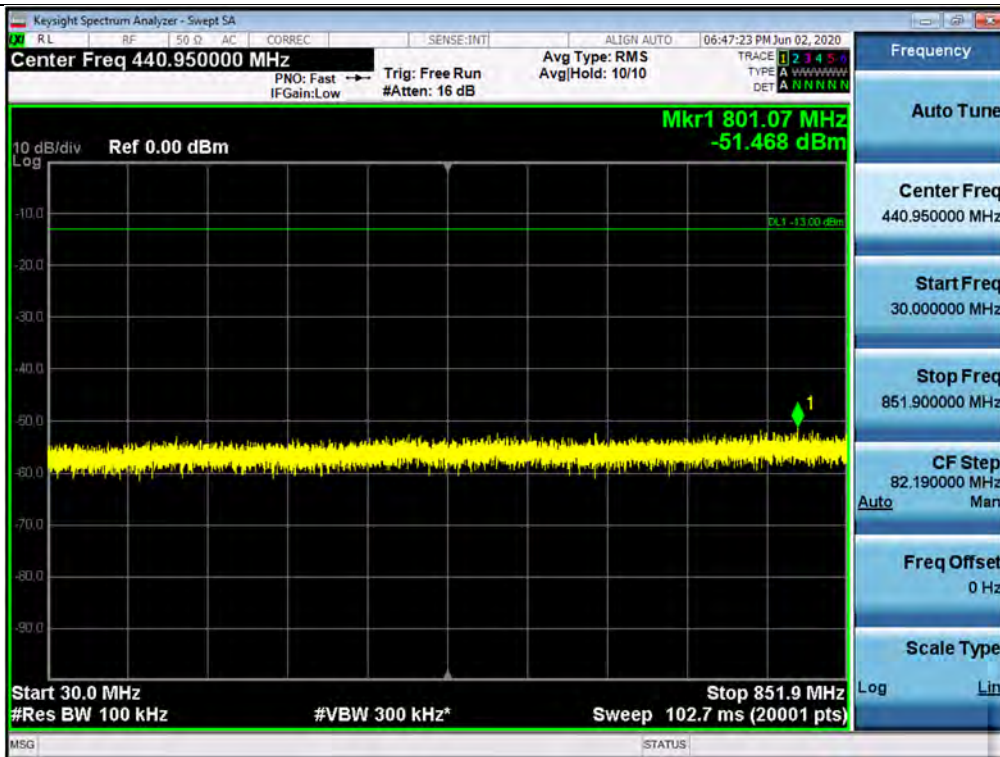
Spurious / Simultaneous / Ant 1 / Downlink / Low / 9 kHz ~ 150 kHz



Spurious / Simultaneous / Ant 1 / Downlink / Middle / 150 kHz ~ 30 MHz



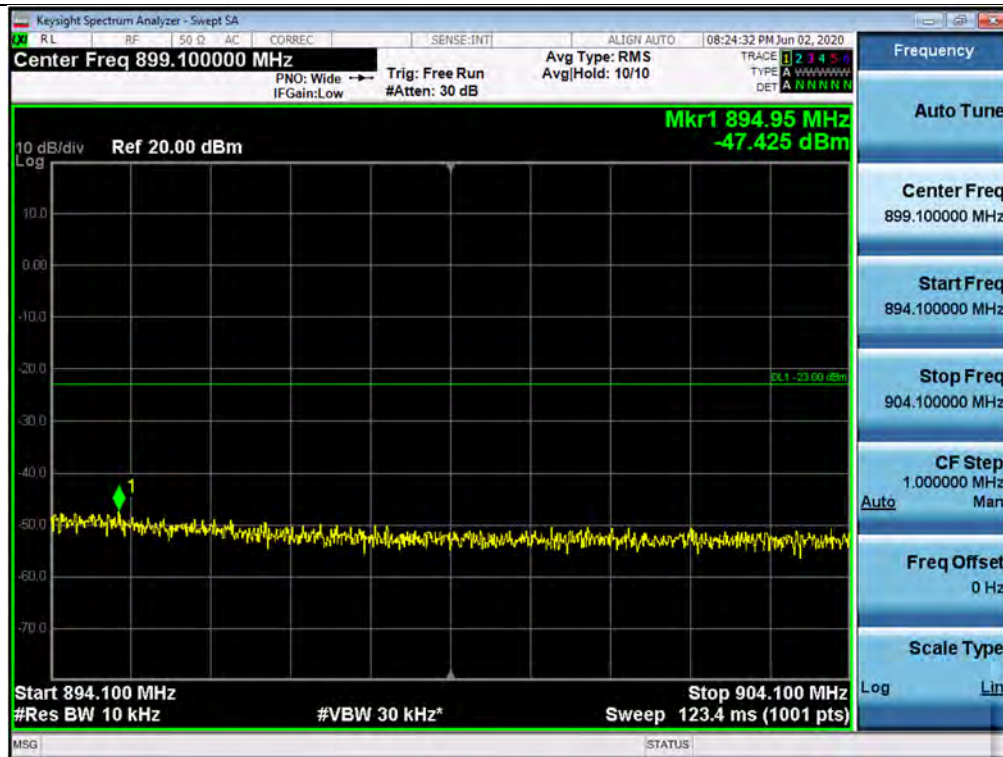
Spurious / Simultaneous / Ant 1 / Downlink / Middle / 30 MHz ~ ESMR Low Edge - 10.1 MHz



Spurious / Simultaneous / Ant 1 / Downlink / Middle / ESMR Low Edge - 10.1 MHz ~ ESMR Low Edge - 100 kHz



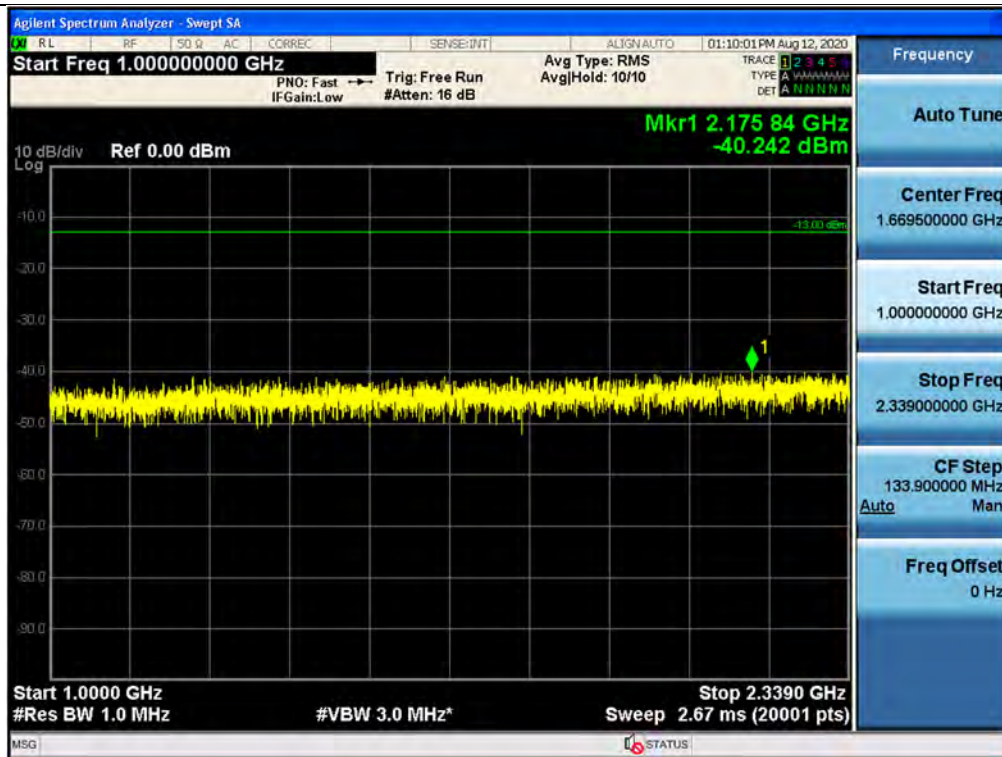
Spurious / Simultaneous / Ant 1 / Downlink / High / Cellular High Edge + 100 kHz ~ Cellular High Edge + 10.1 MHz



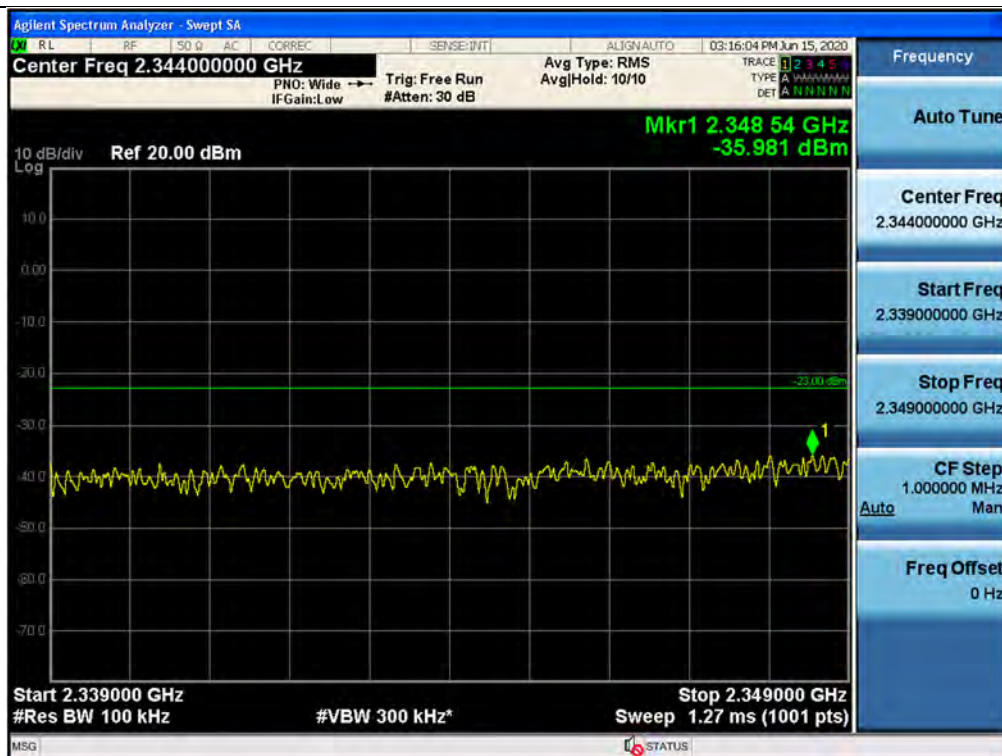
Spurious / Simultaneous / Ant 1 / Downlink / Low / Cellular High Edge + 10.1 MHz ~ 1 GHz



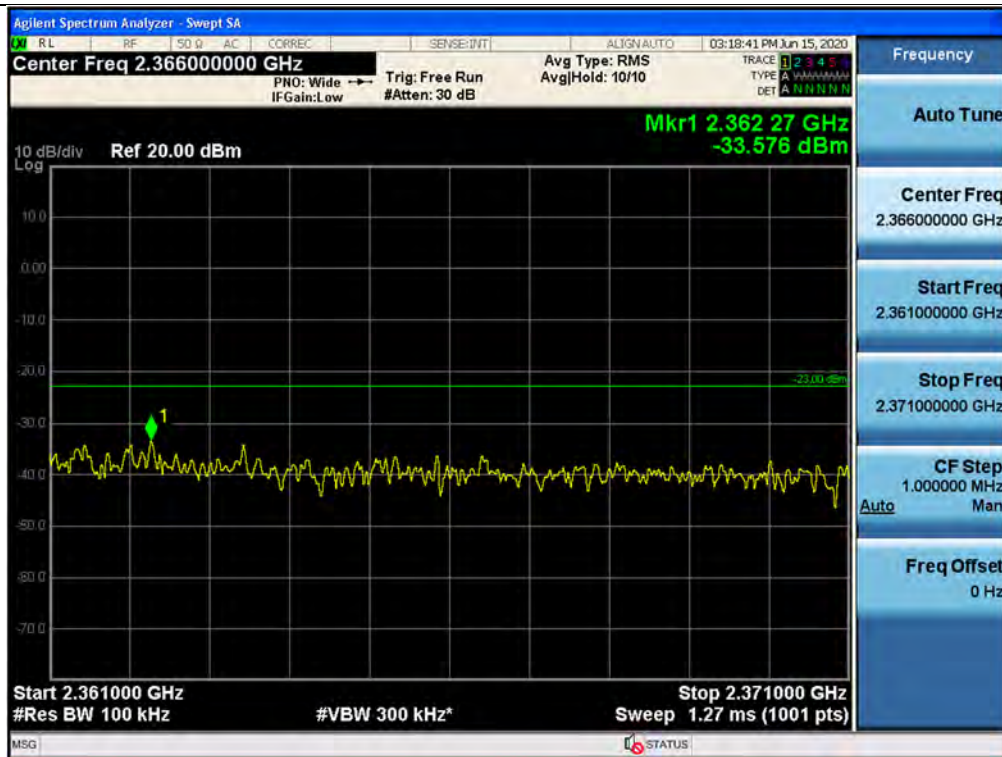
Spurious / Simultaneous / Ant 1 / Downlink / High / 1 GHz ~ WCS Low Edge - 11 MHz



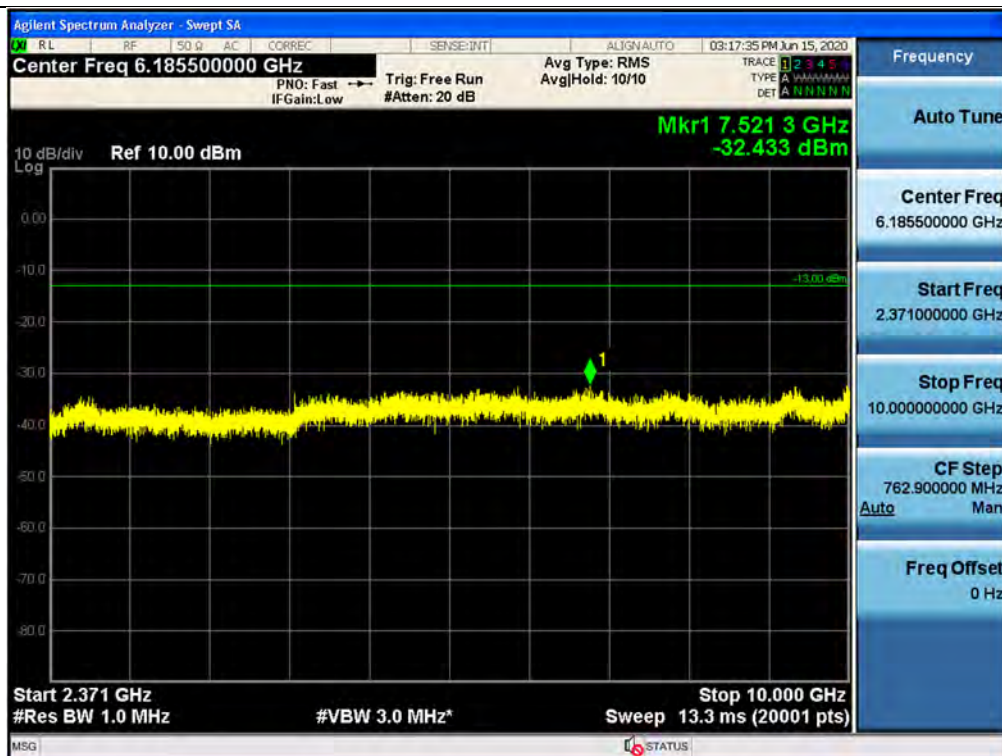
Spurious / Simultaneous / Ant 1 / Downlink / Low / WCS Low Edge - 11 MHz ~ WCS Low Edge - 1 MHz



Spurious / Simultaneous / Ant 1 / Downlink / High / WCS Low Edge + 1 MHz ~ WCS Low Edge + 11 MHz



Spurious / Simultaneous / Ant 1 / Downlink / Middle / WCS High Edge + 11 MHz ~ 10 GHz



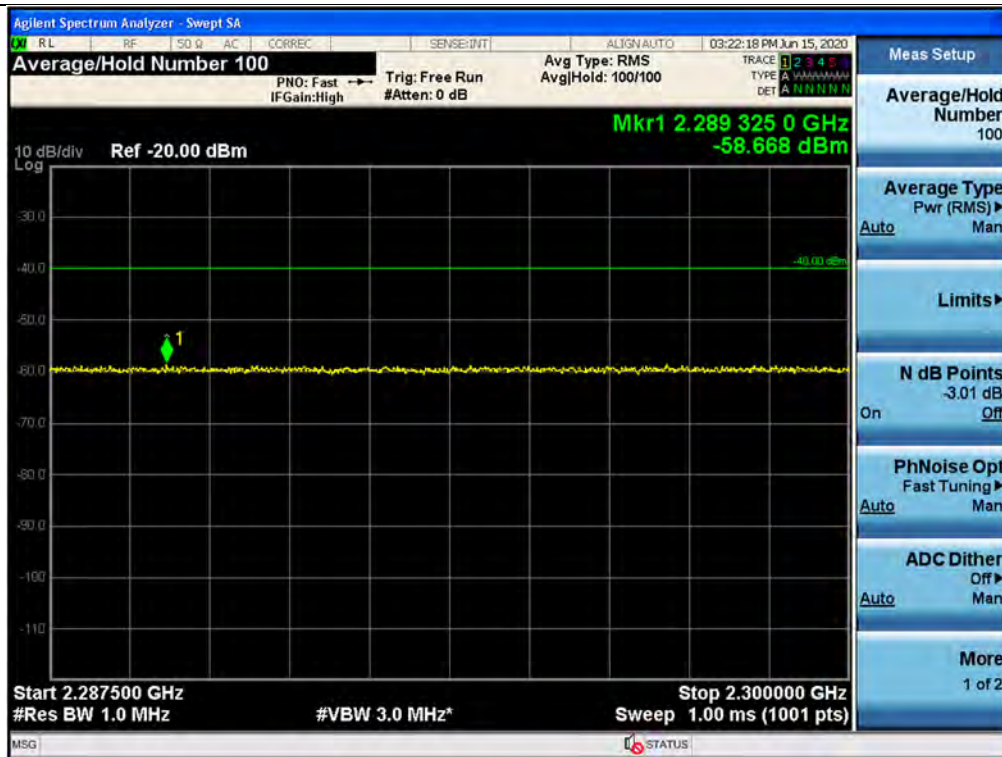
Spurious / Simultaneous / Ant 1 / Downlink / Middle / 10 GHz ~ 26.5 GHz



Spurious / Simultaneous / Ant 1 / Downlink / Low / Additional Band 1



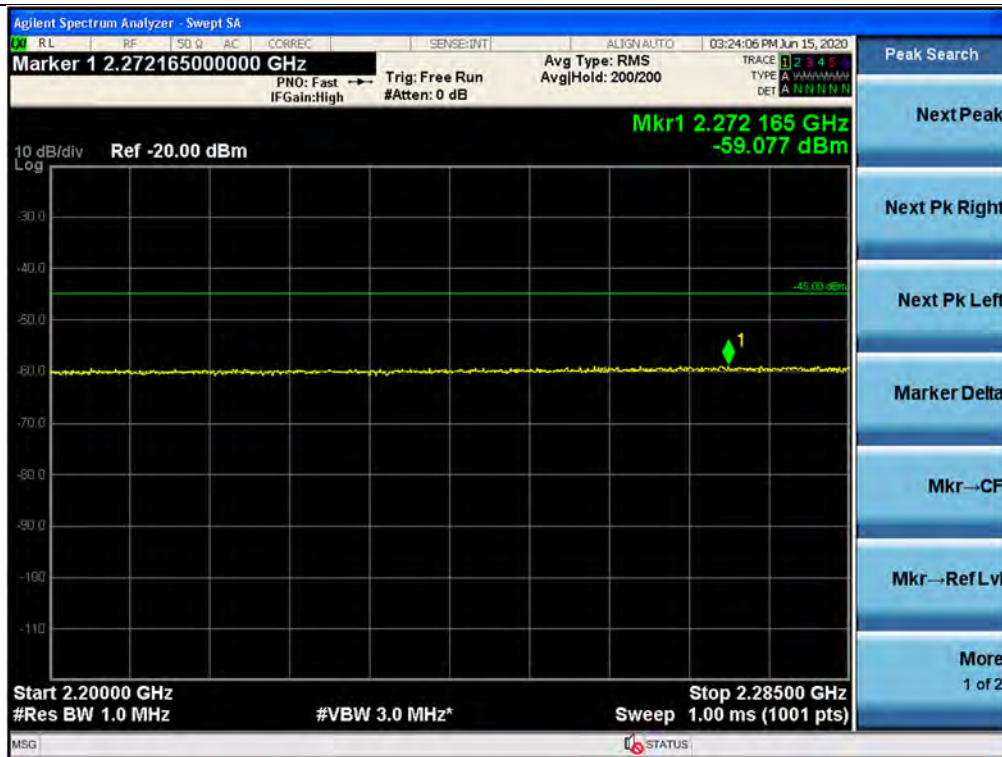
Spurious / Simultaneous / Ant 1 / Downlink / Low / Additional Band 2



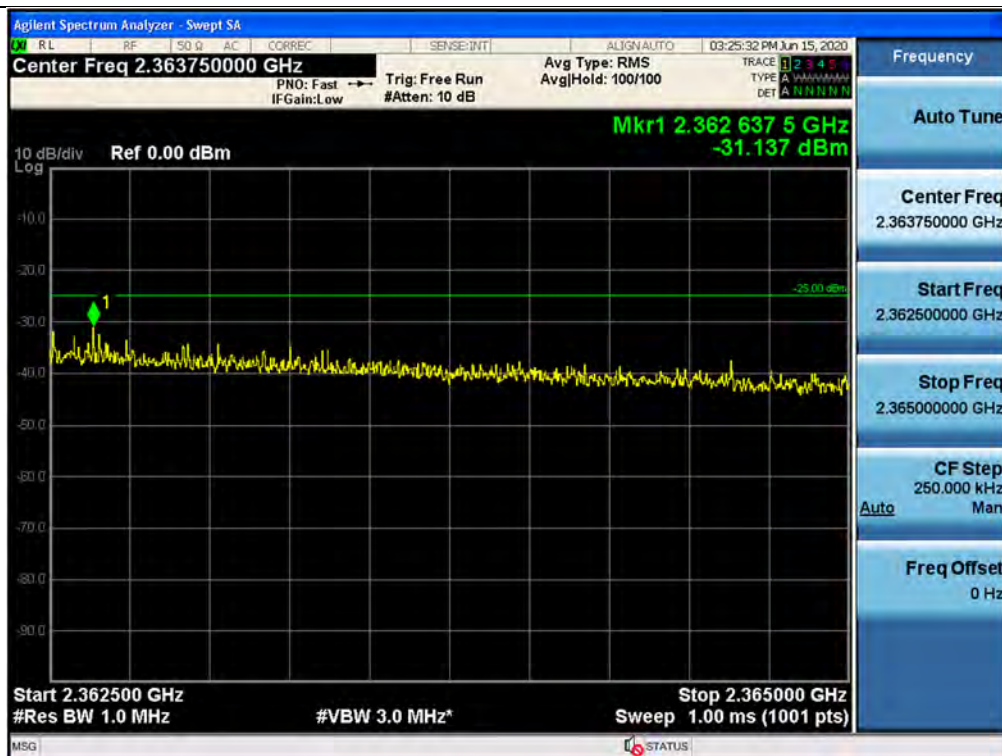
Spurious / Simultaneous / Ant 1 / Downlink / Low / Additional Band 3



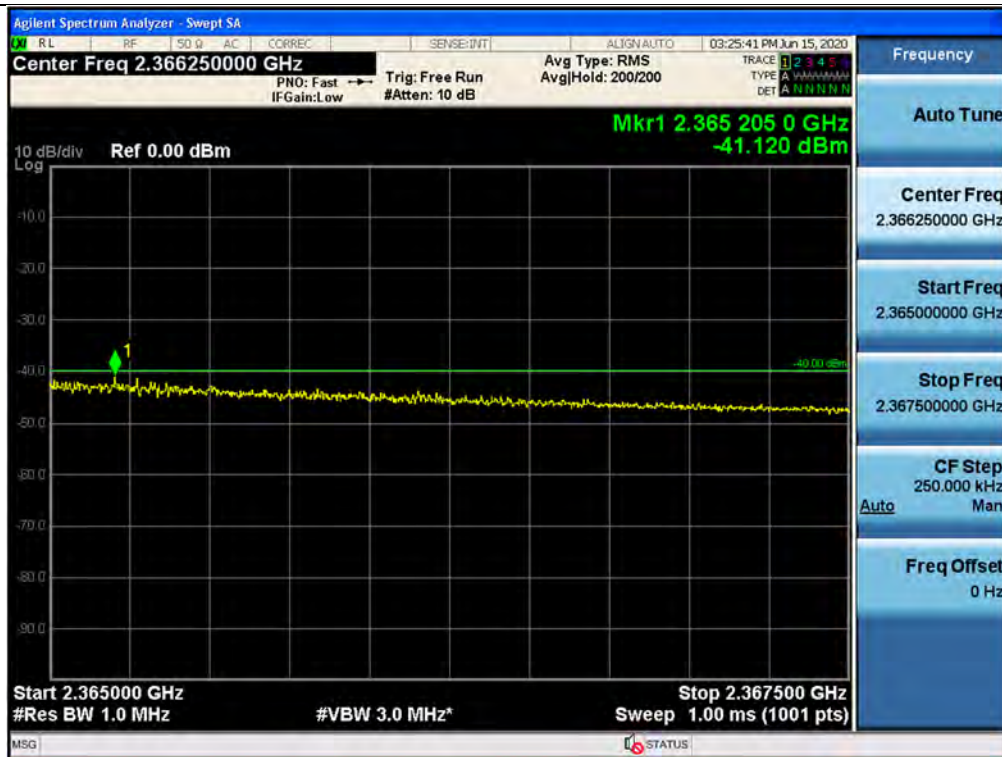
Spurious / Simultaneous / Ant 1 / Downlink / Middle / Additional Band 4



Spurious / Simultaneous / Ant 1 / Downlink / High / Additional Band 5



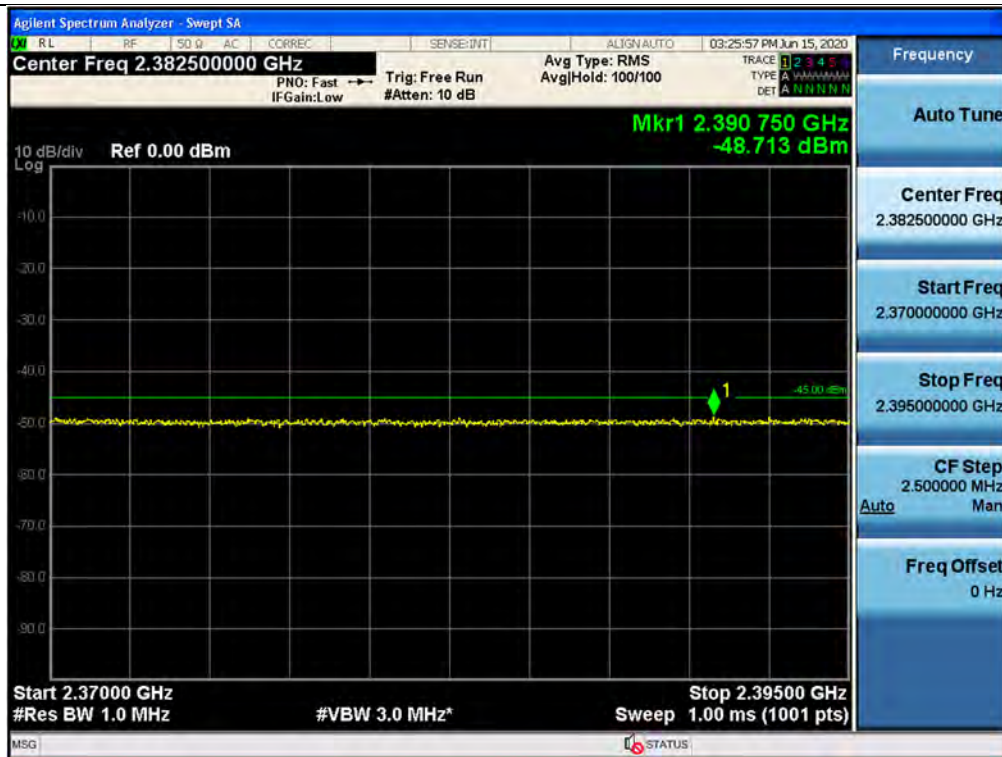
Spurious / Simultaneous / Ant 1 / Downlink / High / Additional Band 6



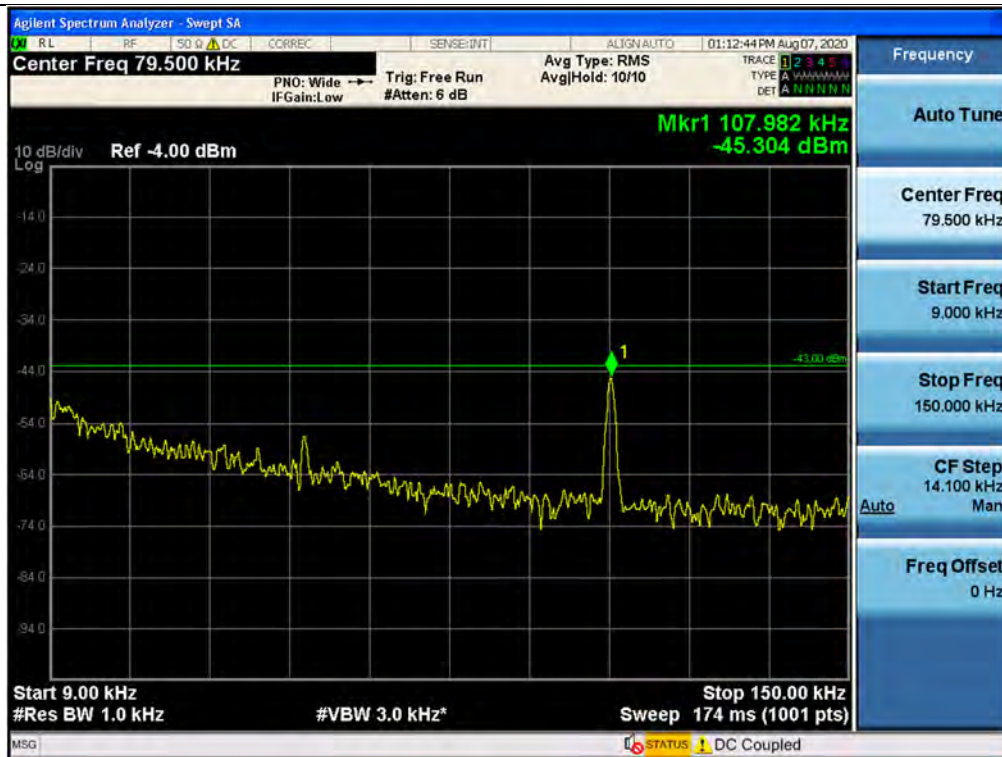
Spurious / Simultaneous / Ant 1 / Downlink / High / Additional Band 7



Spurious / Simultaneous / Ant 1 / Downlink / High / Additional Band 8



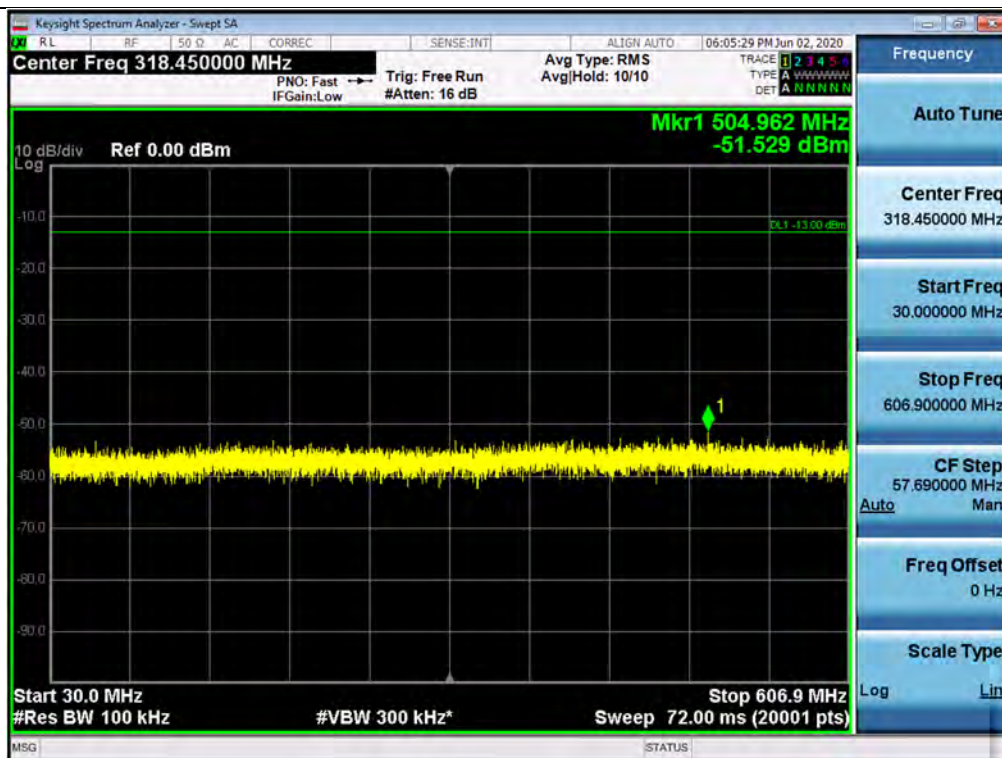
Spurious / Simultaneous / Ant 2 / Downlink / High / 9 kHz ~ 150 kHz



Spurious / Simultaneous / Ant 2 / Downlink / Middle / 150 kHz ~ 30 MHz



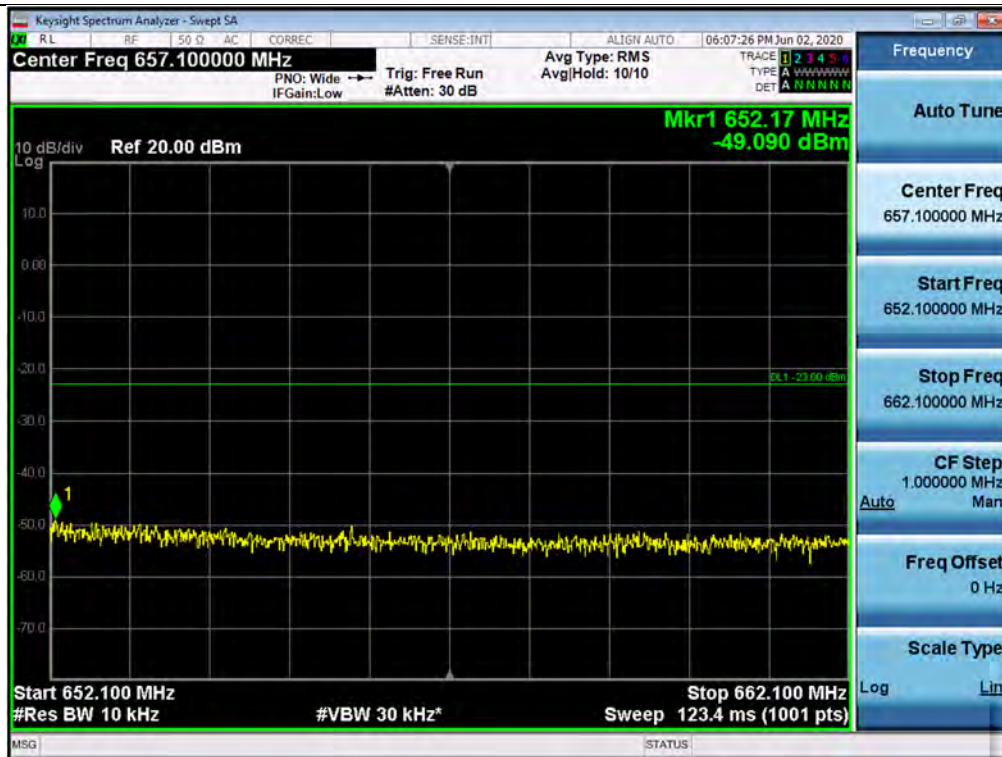
Spurious / Simultaneous / Ant 2 / Downlink / Middle / 30 MHz ~ 600 MHz band Low Edge – 10.1 MHz



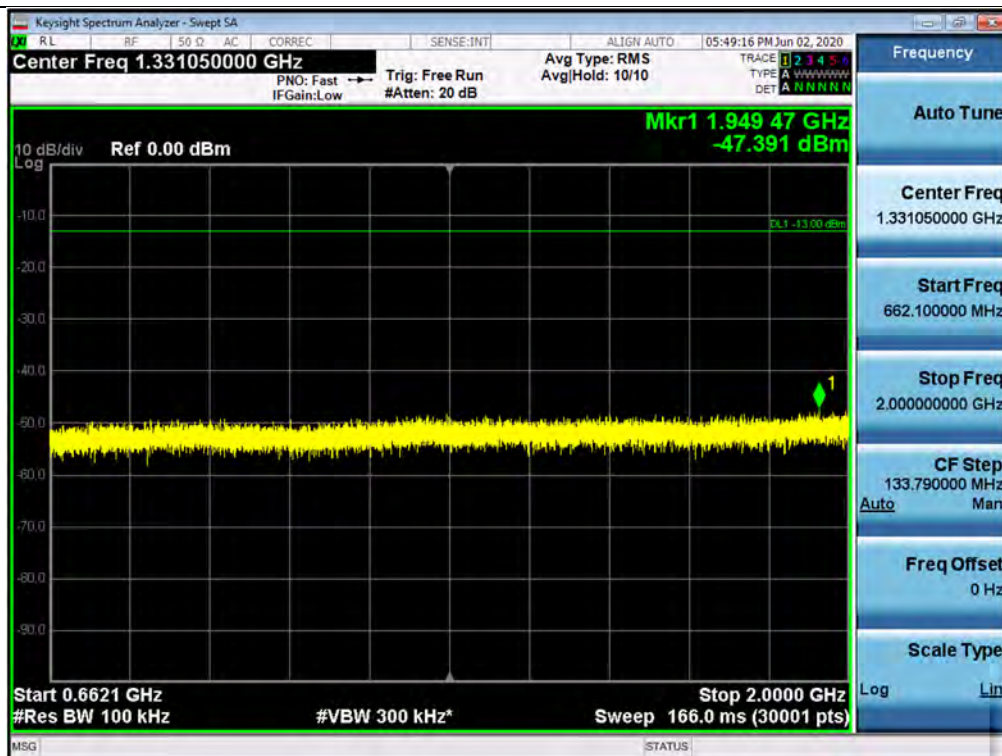
Spurious / Simultaneous / Ant 2 / Downlink / Low / 600 MHz Low Edge – 10.1 MHz ~ 600 MHz Low Edge - 100 kHz



Spurious / Simultaneous / Ant 2 / Downlink / High / 600 MHz High Edge + 100 kHz ~ 600 MHz High Edge + 10.1 MHz



Spurious / Simultaneous / Ant 2 / Downlink / Low / 600 MHz High Edge + 10.1 MHz ~ 2 GHz



Spurious / Simultaneous / Ant 2 / Downlink / Middle / 10 GHz ~ 26.5 GHz



5.6. RADIATED SPURIOUS EMISSIONS

Test Requirements:

§ 2.1053 Measurements required: Field strength of spurious radiation.

(a) Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data shall be supplied showing the magnitude of each harmonic and other spurious emission. For this test, single sideband, independent sideband, and controlled carrier transmitters shall be modulated under the conditions specified in paragraph (c) of § 2.1049, as appropriate. For equipment operating on frequencies below 890 MHz, an open field test is normally required, with the measuring instrument antenna located in the far-field at all test frequencies. In the event it is either impractical or impossible to make open field measurements (e.g. a broadcast transmitter installed in a building) measurements will be accepted of the equipment as installed. Such measurements must be accompanied by a description of the site where the measurements were made showing the location of any possible source of reflections which might distort the field strength measurements. Information submitted shall include the relative radiated power of each spurious emission with reference to the rated power output of the transmitter, assuming all emissions are radiated from halfwave dipole antennas.

(b) The measurements specified in paragraph (a) of this section shall be made for the following equipment:

- (1) Those in which the spurious emissions are required to be 60 dB or more below the mean power of the transmitter.
- (2) All equipment operating on frequencies higher than 25 MHz.
- (3) All equipment where the antenna is an integral part of, and attached directly to the transmitter.
- (4) Other types of equipment as required, when deemed necessary by the Commission.

Test Procedures:

Because KDB 935210 D05 procedure does not provide this requirement, measurements were in accordance with the test methods section 5.5 of ANSI C63.26-2015

- a) Place the EUT in the center of the turntable. The EUT shall be configured to transmit into the standard non-radiating load (for measuring radiated spurious emissions), connected with cables of minimal length unless specified otherwise. If the EUT uses an adjustable antenna, the antenna shall be positioned to the length that produces the worst case emission at the fundamental operating frequency.
- b) Each emission under consideration shall be evaluated:
 - 1) Raise and lower the measurement antenna in accordance 5.5.2, as necessary to enable detection of the maximum emission amplitude relative to measurement antenna height.
 - 2) Rotate the EUT through 360° to determine the maximum emission level relative to the axial position.
 - 3) Return the turntable to the azimuth where the highest emission amplitude level was observed.
 - 4) Vary the measurement antenna height again through 1 m to 4 m again to find the height associated with the maximum emission amplitude.



- 5) Record the measured emission amplitude level and frequency using the appropriate RBW.
- c) Repeat step b) for each emission frequency with the measurement antenna oriented in both the horizontal and vertical polarizations to determine the orientation that gives the maximum emissions amplitude.

Test Result:

617~652MHz_LTE 5 MHz

Frequency (MHz)	Measured Level (dBuV)	Ant. Factor (dB/m)	C.L (dB)	A.G. + H.P.F. (dB)	Pol.	Measured Power (dBm)	Result (dBm/m)
4,623.89	49.53	30.950	9.24	38.91	V	-45.67	-42.430

617~652MHz_LTE 10 MHz

Frequency (MHz)	Measured Level (dBuV)	Ant. Factor (dB/m)	C.L (dB)	A.G. + H.P.F. (dB)	Pol.	Measured Power (dBm)	Result (dBm/m)
4,623.89	48.76	30.950	9.24	38.91	V	-46.44	-43.200

617~652MHz_LTE 20 MHz

Frequency (MHz)	Measured Level (dBuV)	Ant. Factor (dB/m)	C.L (dB)	A.G. + H.P.F. (dB)	Pol.	Measured Power (dBm)	Result (dBm/m)
4,623.89	49.39	30.950	9.24	38.91	V	-45.81	-42.570

* C.L.: Cable Loss / A.G.: Amp. Gain / H.P.F.: High Pass Filter

Note1. We have done horizontal and vertical polarization in detecting antenna.

Note2. The amplitude of the spurious domain emission attenuated by more than 20 dB over the permissible value was not recorded according to ANSI C63.26, clause 5.1.1., c).

Note3. Test data were only the worst case.

Note4. Among the data of simultaneous and single band emission conditions, the single emission condition is the worst.

862~894MHz_LTE 5 MHz

Frequency (MHz)	Measured Level (dBuV)	Ant. Factor (dB/m)	C.L (dB)	A.G. + H.P.F. (dB)	Pol.	Measured Power (dBm)	Result (dBm/m)
4,623.89	49.99	30.950	9.24	38.91	V	-45.21	-41.970

862~894MHz_LTE 10 MHz

Frequency (MHz)	Measured Level (dBuV)	Ant. Factor (dB/m)	C.L (dB)	A.G. + H.P.F. (dB)	Pol.	Measured Power (dBm)	Result (dBm/m)
4,623.89	49.64	30.950	9.24	38.91	V	-45.56	-42.320

862~894MHz_CDMA

Frequency (MHz)	Measured Level (dBuV)	Ant. Factor (dB/m)	C.L (dB)	A.G. + H.P.F. (dB)	Pol.	Measured Power (dBm)	Result (dBm/m)
4,623.89	50.38	30.950	9.24	38.91	V	-44.82	-41.580

862~894MHz_WCDMA

Frequency (MHz)	Measured Level (dBuV)	Ant. Factor (dB/m)	C.L (dB)	A.G. + H.P.F. (dB)	Pol.	Measured Power (dBm)	Result (dBm/m)
4,623.89	49.81	30.950	9.24	38.91	V	-45.39	-42.150

* C.L.: Cable Loss / A.G.: Amp. Gain / H.P.F.: High Pass Filter

Note1. We have done horizontal and vertical polarization in detecting antenna.

Note2. The amplitude of the spurious domain emission attenuated by more than 20 dB over the permissible value was not recorded according to ANSI C63.26, clause 5.1.1., c).

Note3. Test data were only the worst case.

Note4. Among the data of simultaneous and single band emission conditions, the single emission condition is the worst.

2350~2360MHz_LTE 5 MHz

Frequency (MHz)	Measured Level (dBuV)	Ant. Factor (dB/m)	C.L (dB)	A.G. + H.P.F. (dB)	Pol.	Measured Power (dBm)	Result (dBm/m)
4,623.89	48.15	30.950	9.24	38.20	V	-47.05	-43.100

2350~2360MHz_LTE 10 MHz

Frequency (MHz)	Measured Level (dBuV)	Ant. Factor (dB/m)	C.L (dB)	A.G. + H.P.F. (dB)	Pol.	Measured Power (dBm)	Result (dBm/m)
4,623.89	49.38	30.950	9.24	38.20	V	-45.82	-41.870

* C.L.: Cable Loss / A.G.: Amp. Gain / H.P.F.: High Pass Filter

Note1. We have done horizontal and vertical polarization in detecting antenna.

Note2. The amplitude of the spurious domain emission attenuated by more than 20 dB over the permissible value was not recorded according to ANSI C63.26, clause 5.1.1., c).

Note3. Test data were only the worst case.

Note4. Among the data of simultaneous and single band emission conditions, the single emission condition is the worst.

3550~3700MHz_LTE 10 MHz

Frequency (MHz)	Measured Level (dBuV)	Ant. Factor (dB/m)	C.L (dB)	A.G. + H.P.F. (dB)	Pol.	Measured Power (dBm)	Result (dBm/m)
8,042.95	47.15	37.090	12.44	49.09	V	-48.05	-45.650

3550~3700MHz_LTE 20 MHz

Frequency (MHz)	Measured Level (dBuV)	Ant. Factor (dB/m)	C.L (dB)	A.G. + H.P.F. (dB)	Pol.	Measured Power (dBm)	Result (dBm/m)
7,889.32	47.12	36.680	12.29	49.50	V	-48.08	-46.650

3550~3700MHz_5G NR 20 MHz

Frequency (MHz)	Measured Level (dBuV)	Ant. Factor (dB/m)	C.L (dB)	A.G. + H.P.F. (dB)	Pol.	Measured Power (dBm)	Result (dBm/m)
8,141.58	47.18	37.010	12.48	49.11	H	-48.02	-45.680

3550~3700MHz_5G NR 40 MHz

Frequency (MHz)	Measured Level (dBuV)	Ant. Factor (dB/m)	C.L (dB)	A.G. + H.P.F. (dB)	Pol.	Measured Power (dBm)	Result (dBm/m)
7,534.03	47.39	36.300	11.99	48.78	H	-47.81	-46.340

3550~3700MHz_5G NR 60 MHz

Frequency (MHz)	Measured Level (dBuV)	Ant. Factor (dB/m)	C.L (dB)	A.G. + H.P.F. (dB)	Pol.	Measured Power (dBm)	Result (dBm/m)
7,623.86	46.80	36.130	12.05	48.95	V	-48.40	-47.210

3550~3700MHz_5G NR 80 MHz

Frequency (MHz)	Measured Level (dBuV)	Ant. Factor (dB/m)	C.L (dB)	A.G. + H.P.F. (dB)	Pol.	Measured Power (dBm)	Result (dBm/m)
7,704.89	46.80	36.000	12.10	49.52	V	-48.40	-47.860

3550~3700MHz_5G NR 100 MHz

Frequency (MHz)	Measured Level (dBuV)	Ant. Factor (dB/m)	C.L (dB)	A.G. + H.P.F. (dB)	Pol.	Measured Power (dBm)	Result (dBm/m)
7,994.55	47.40	36.990	12.41	49.01	V	-47.80	-45.450

* C.L.: Cable Loss / A.G.: Amp. Gain / H.P.F.: High Pass Filter

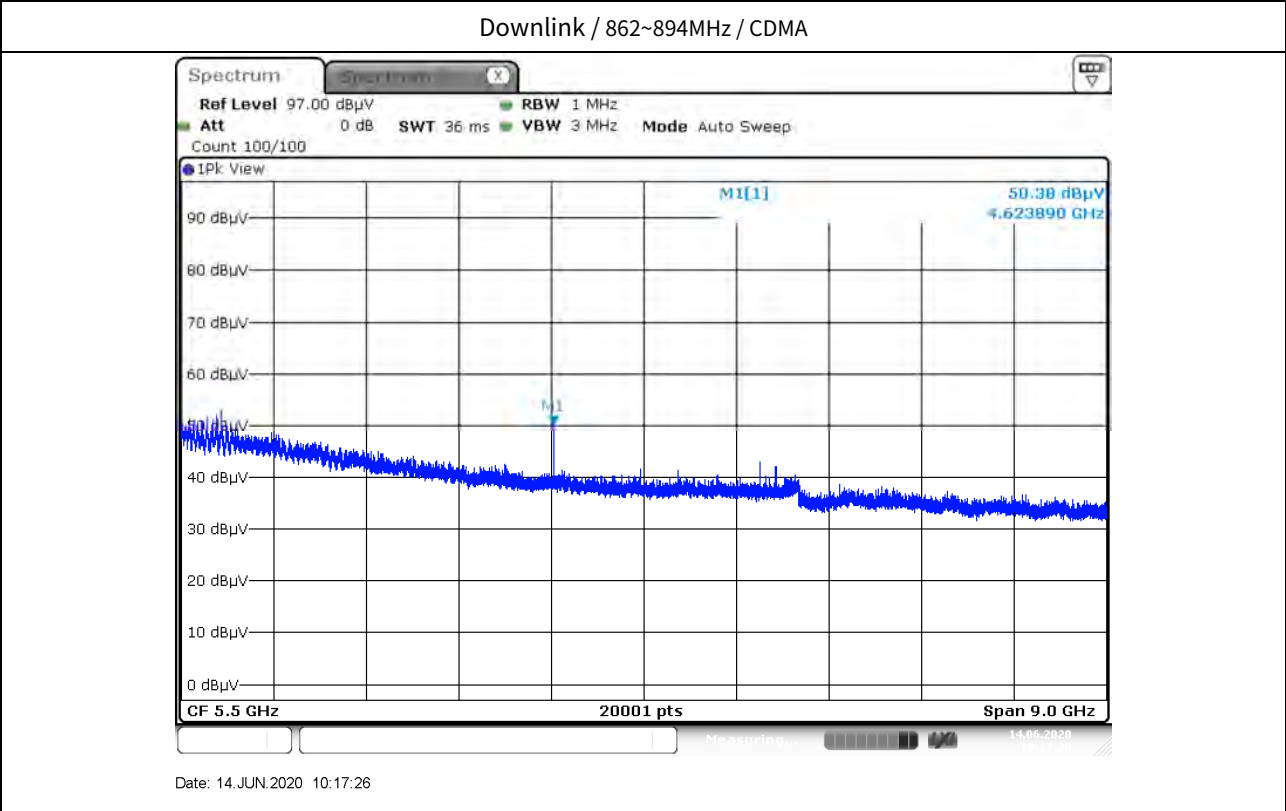
Note1. We have done horizontal and vertical polarization in detecting antenna.

Note2. The amplitude of the spurious domain emission attenuated by more than 20 dB over the permissible value was not recorded according to ANSI C63.26, clause 5.1.1., c).

Note3. Test data were only the worst case.

Note4. Among the data of simultaneous and single band emission conditions, the single emission condition is the worst.

Plot data of radiated spurious emissions



Note : Only the worst case plots for Radiated Spurious Emissions.



6. Annex A_EUT AND TEST SETUP PHOTO

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

No.	Description
1	HCT-RF-2006-FC028-P