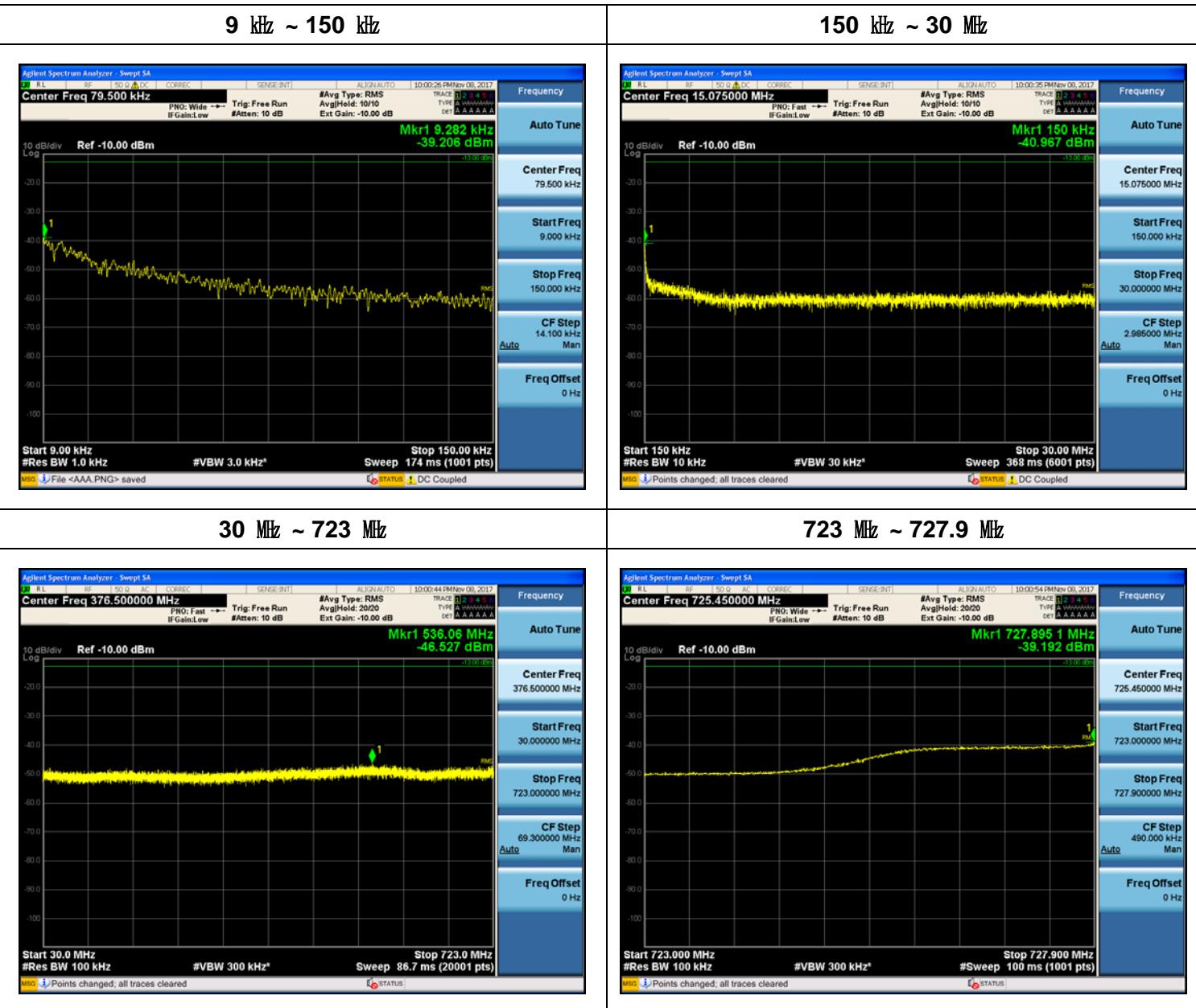


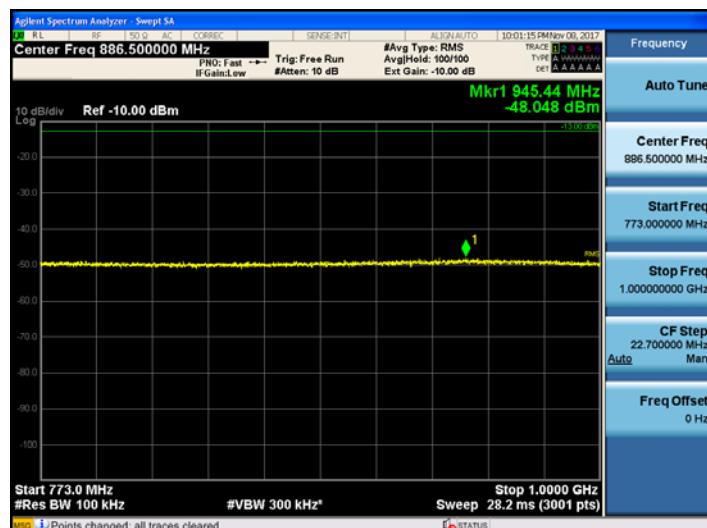
## [Downlink\_High]



**768.1 MHz ~ 773 MHz**



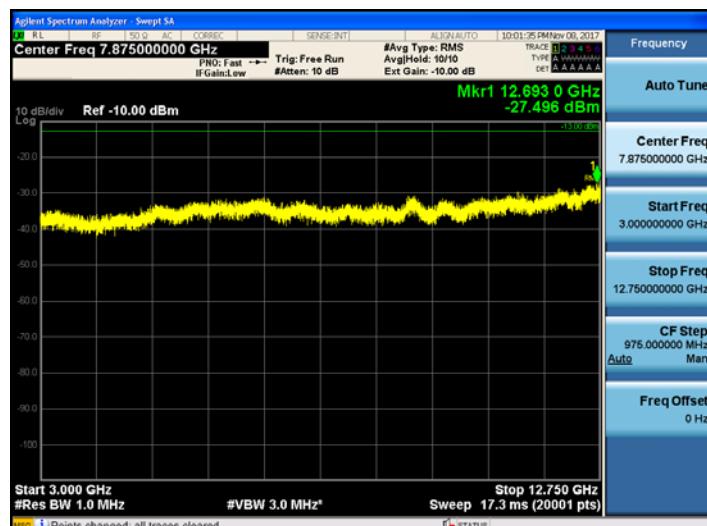
**773 MHz ~ 1 GHz**



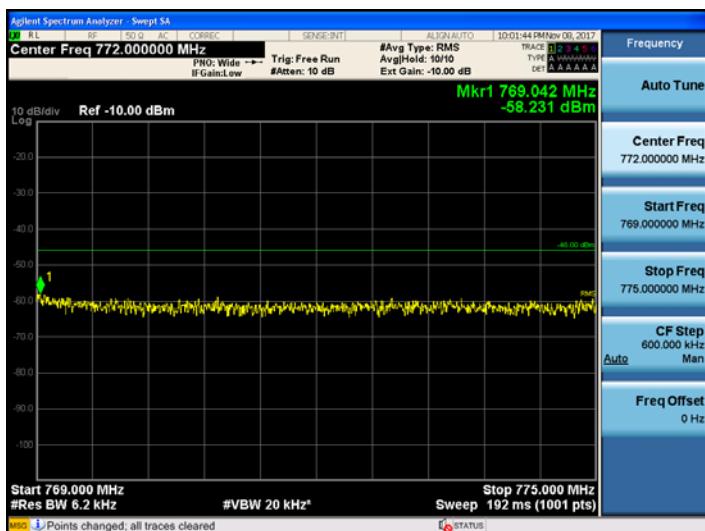
**1 GHz ~ 3 GHz**



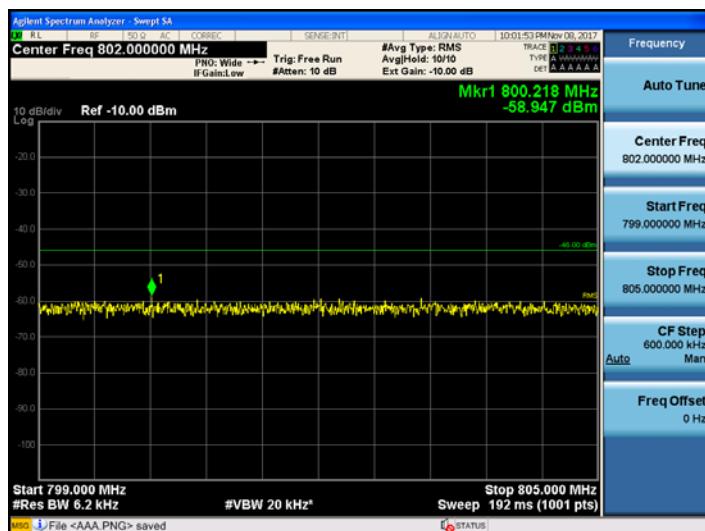
**3 GHz ~ 12.75 GHz**



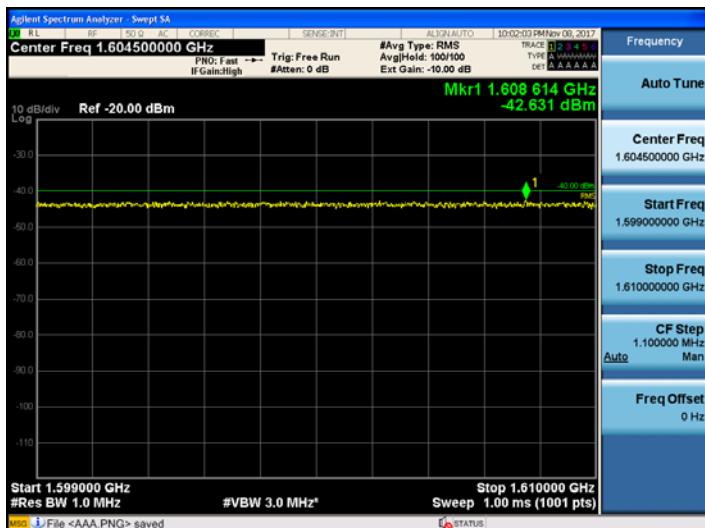
769 MHz ~ 775 MHz



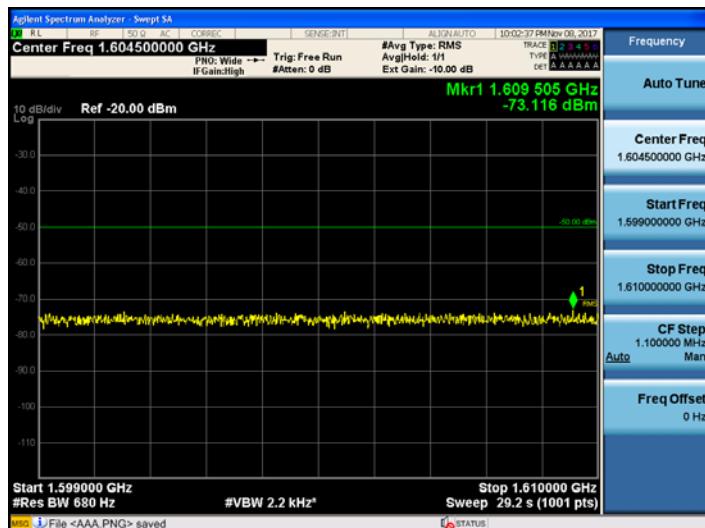
799 MHz ~ 805 MHz



1 599 MHz ~ 1 610 MHz (1)



1 599 MHz ~ 1 610 MHz (2)

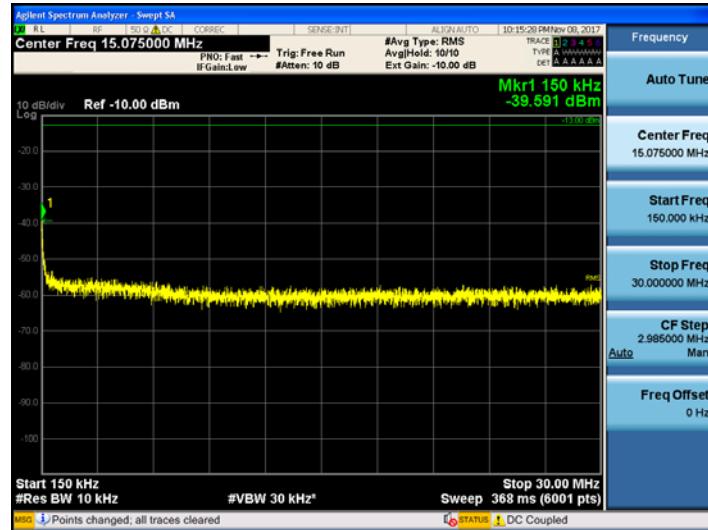


## 700 LTE BAND LTE 10 MHz\_DL

## [Downlink\_Low]

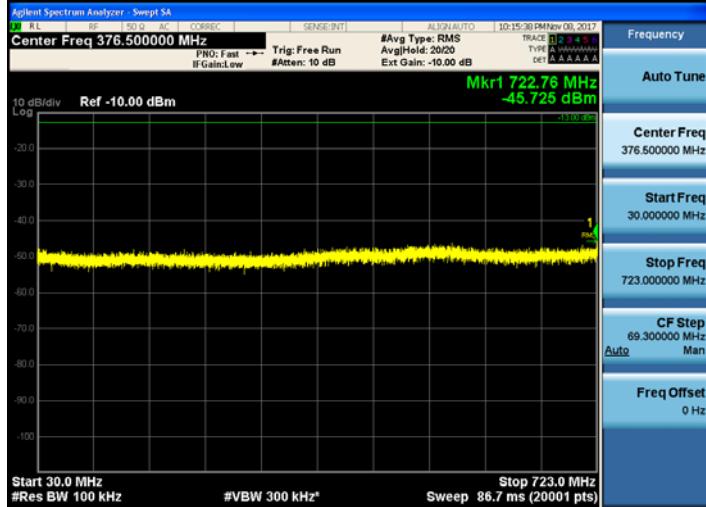
9 kHz ~ 150 kHz

150 kHz ~ 30 MHz

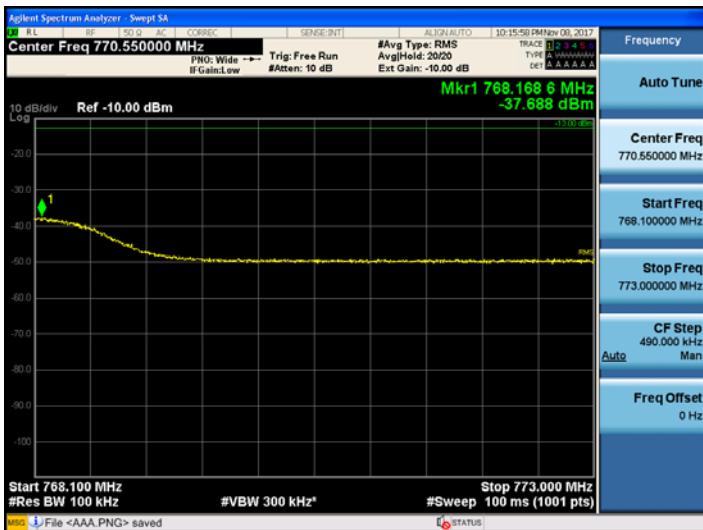


30 MHz ~ 723 MHz

723 MHz ~ 727.9 MHz



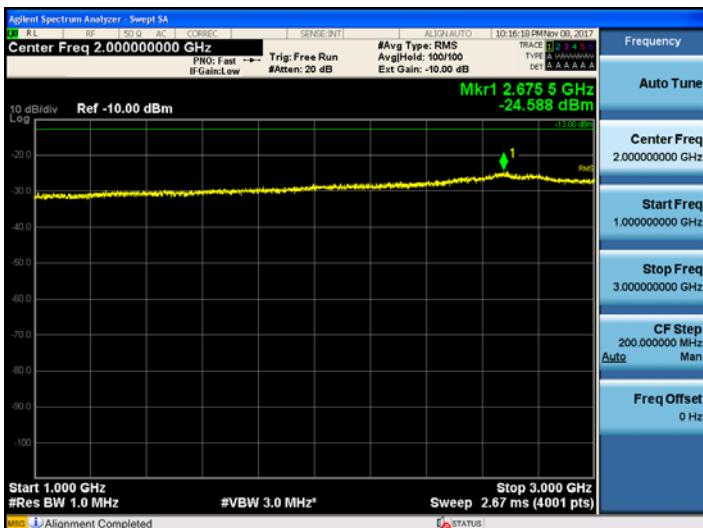
768.1 MHz ~ 773 MHz



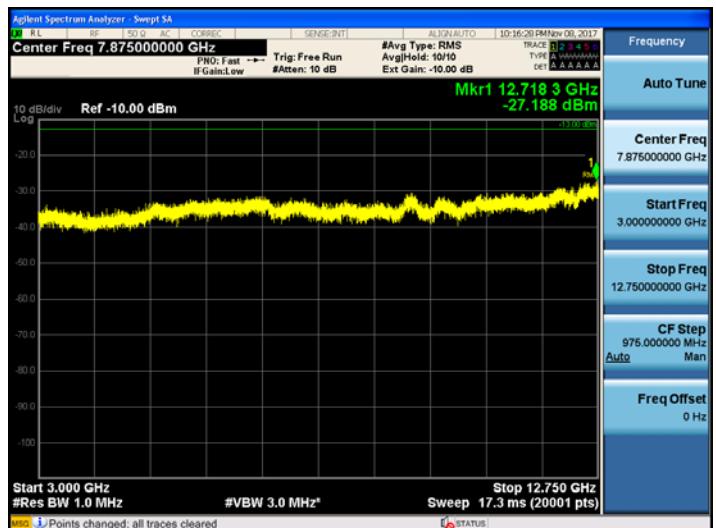
773 MHz ~ 1 GHz



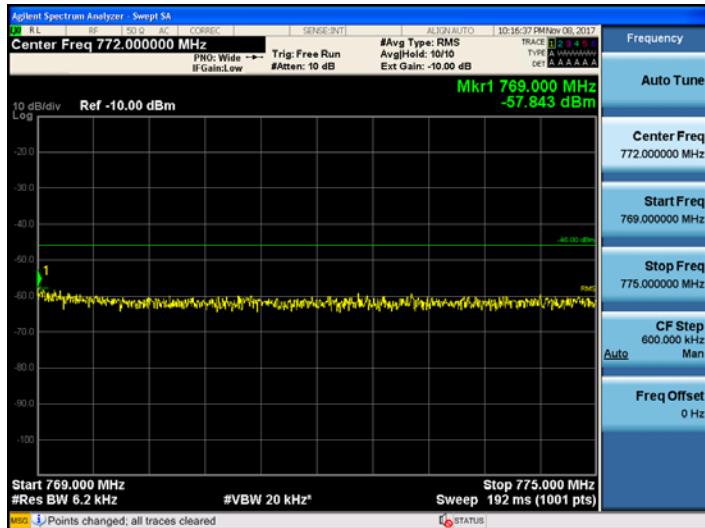
1 GHz ~ 3 GHz



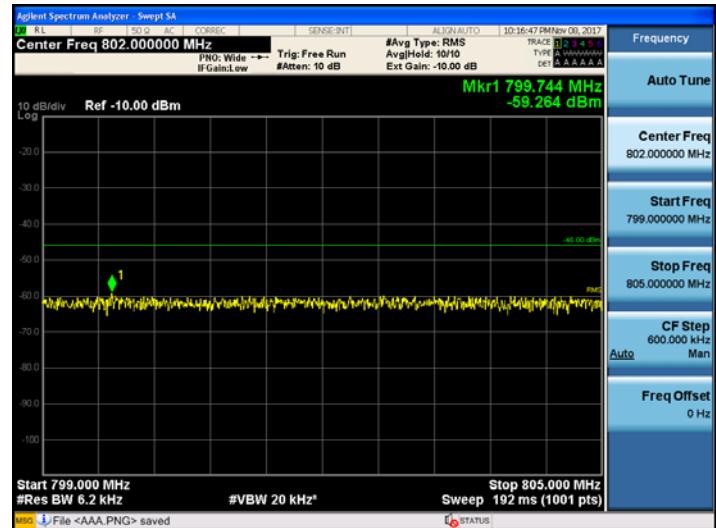
3 GHz ~ 12.75 GHz



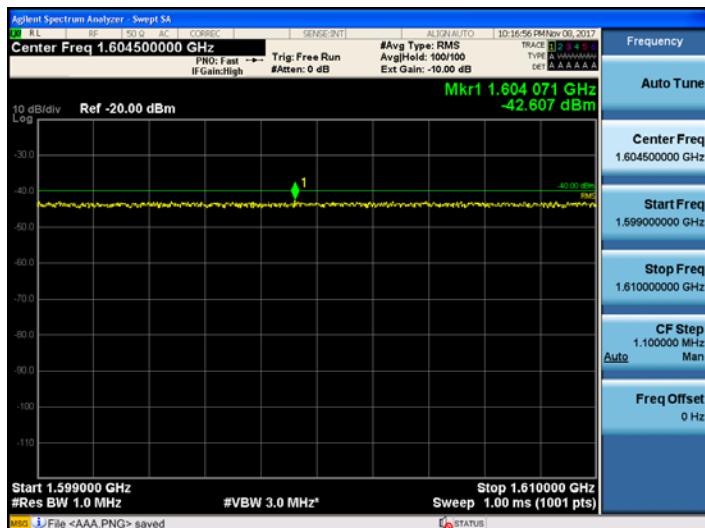
769 MHz ~ 775 MHz



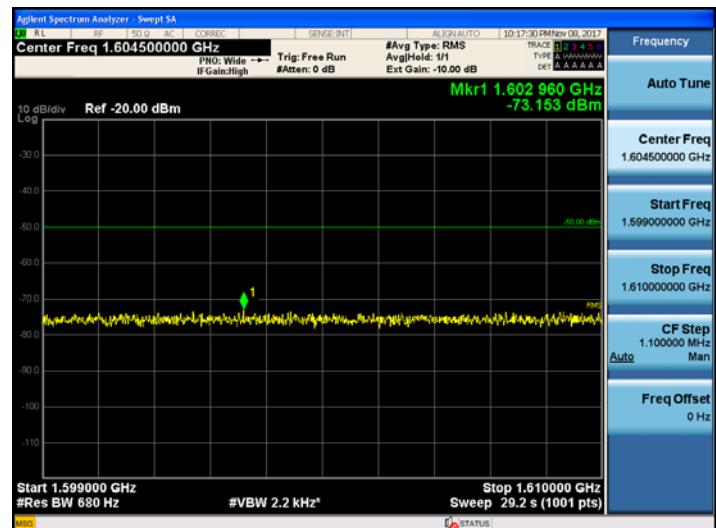
799 MHz ~ 805 MHz



1 599 MHz ~ 1 610 MHz (1)



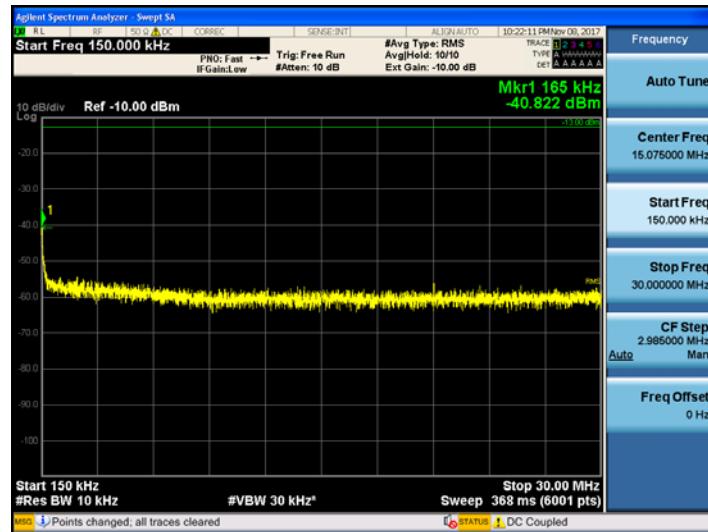
1 599 MHz ~ 1 610 MHz (2)



## [Downlink\_Middle]

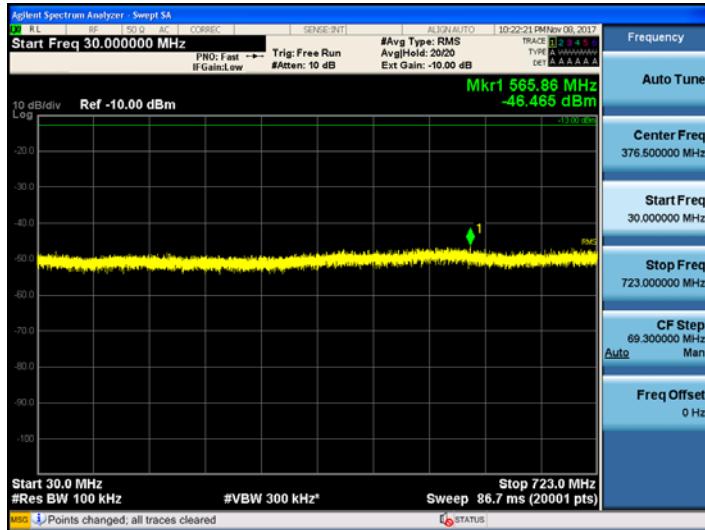
9 kHz ~ 150 kHz

150 kHz ~ 30 MHz



30 MHz ~ 723 MHz

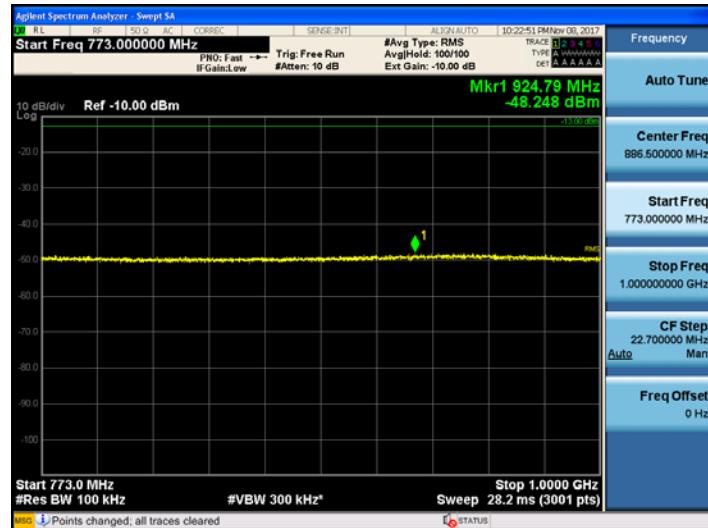
723 MHz ~ 727.9 MHz



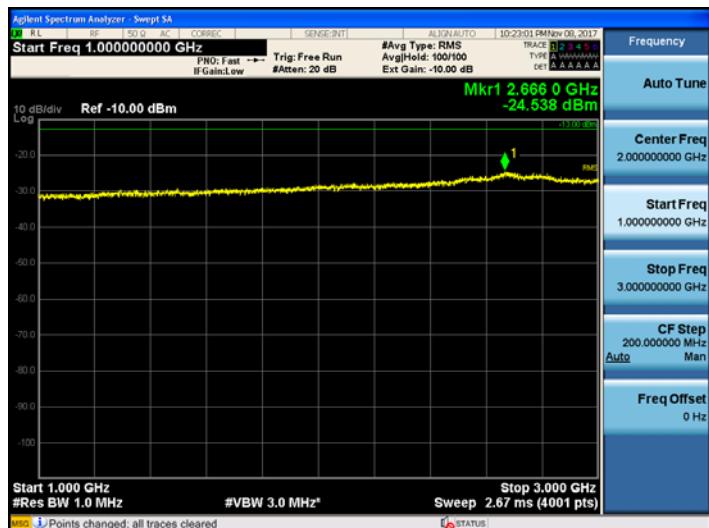
768.1 MHz ~ 773 MHz



773 MHz ~ 1 GHz



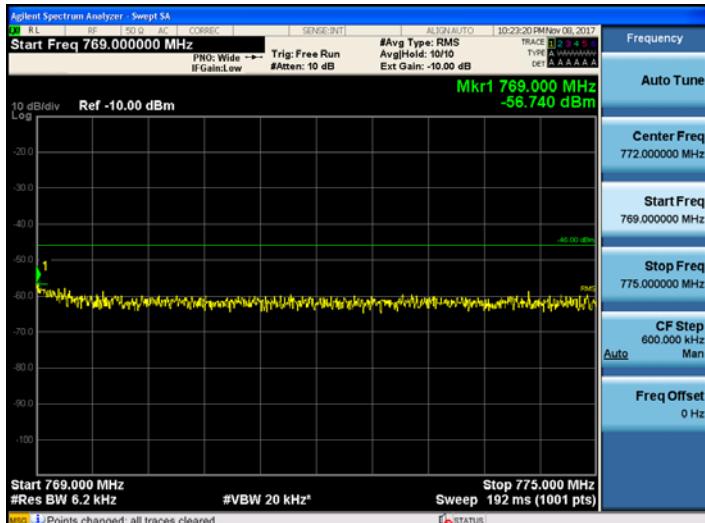
1 GHz ~ 3 GHz



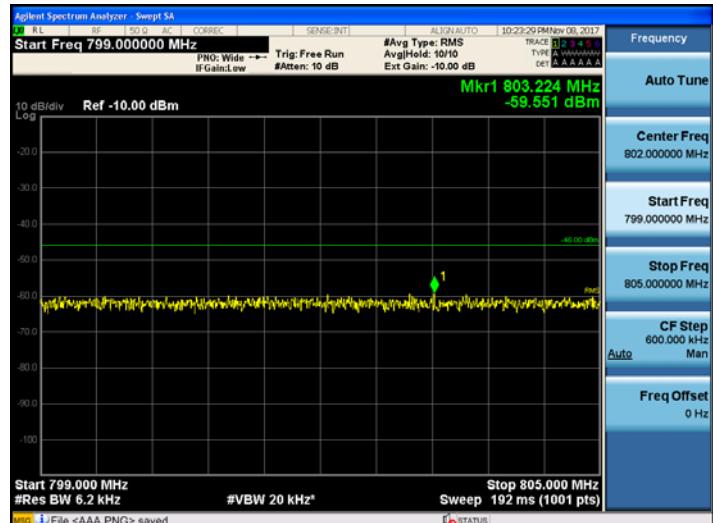
3 GHz ~ 12.75 GHz



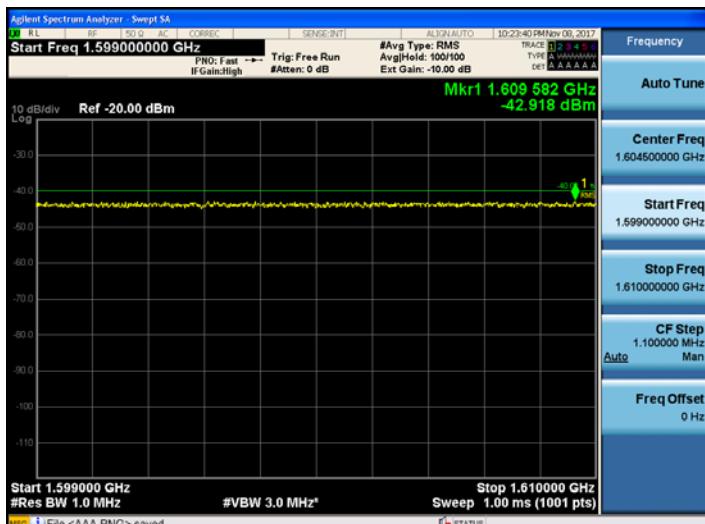
769 MHz ~ 775 MHz



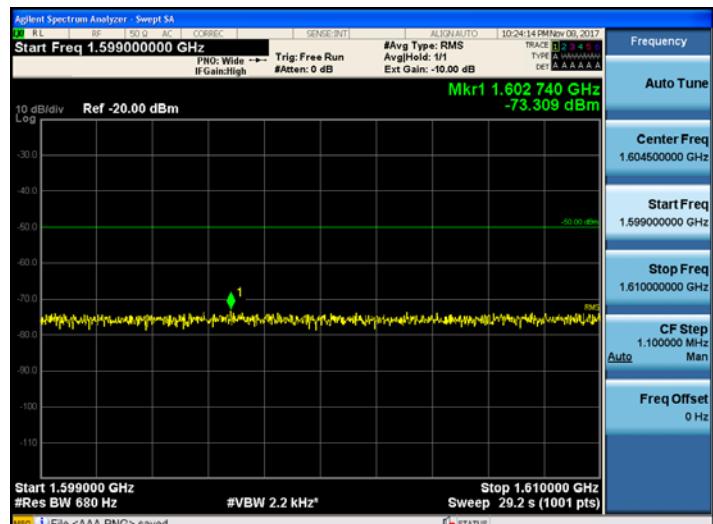
799 MHz ~ 805 MHz



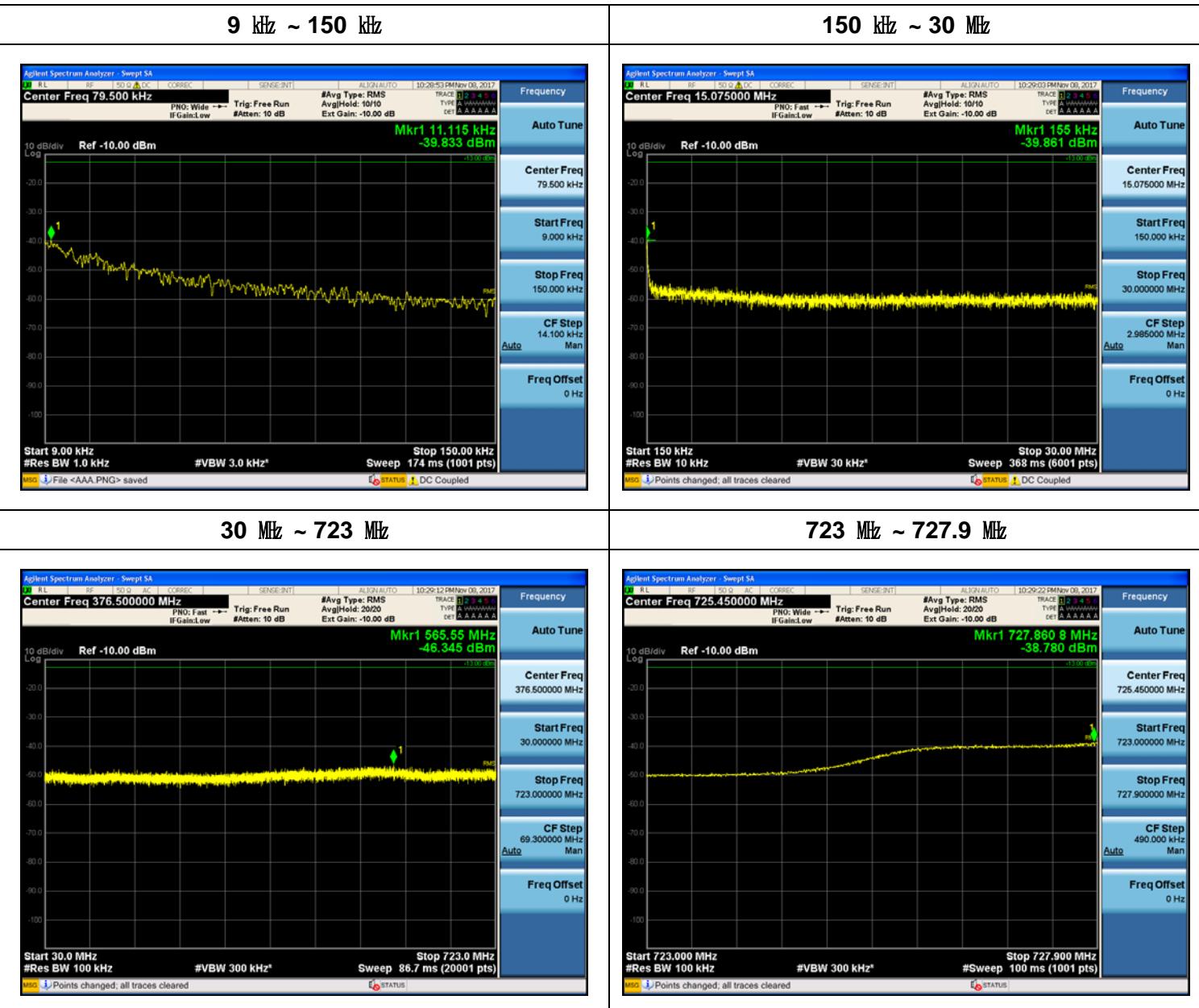
1 599 MHz ~ 1 610 MHz (1)



1 599 MHz ~ 1 610 MHz (2)



## [Downlink\_High]



768.1 MHz ~ 773 MHz



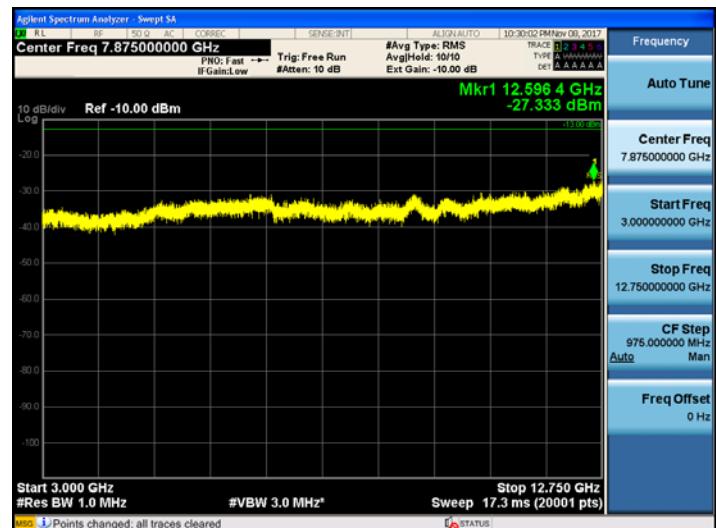
773 MHz ~ 1 GHz

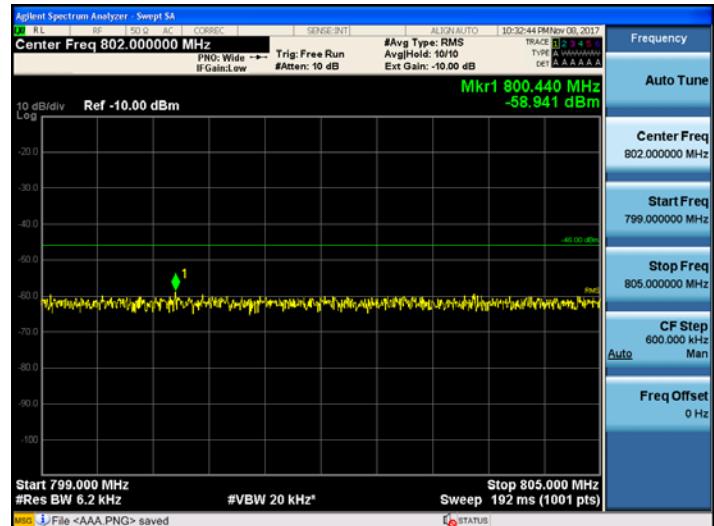
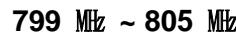
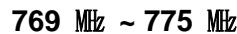


1 GHz ~ 3 GHz



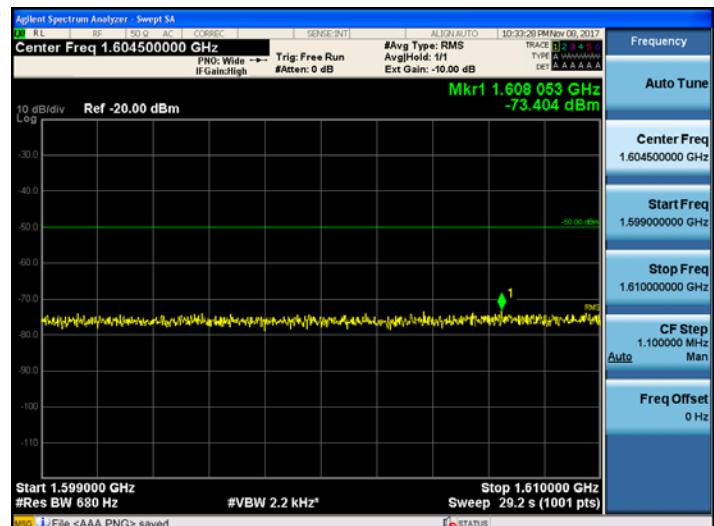
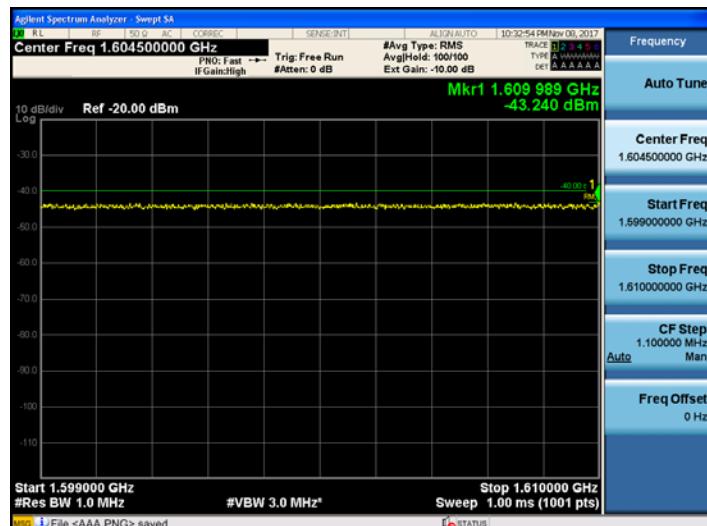
3 GHz ~ 12.75 GHz





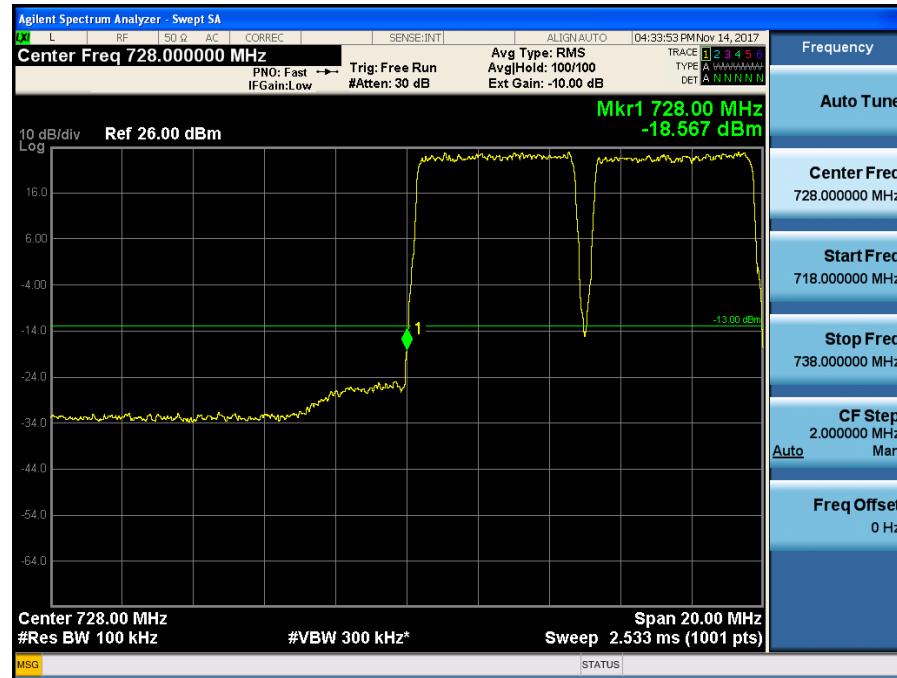
**1 599 MHz ~ 1 610 MHz (1)**

**1 599 MHz ~ 1 610 MHz (2)**

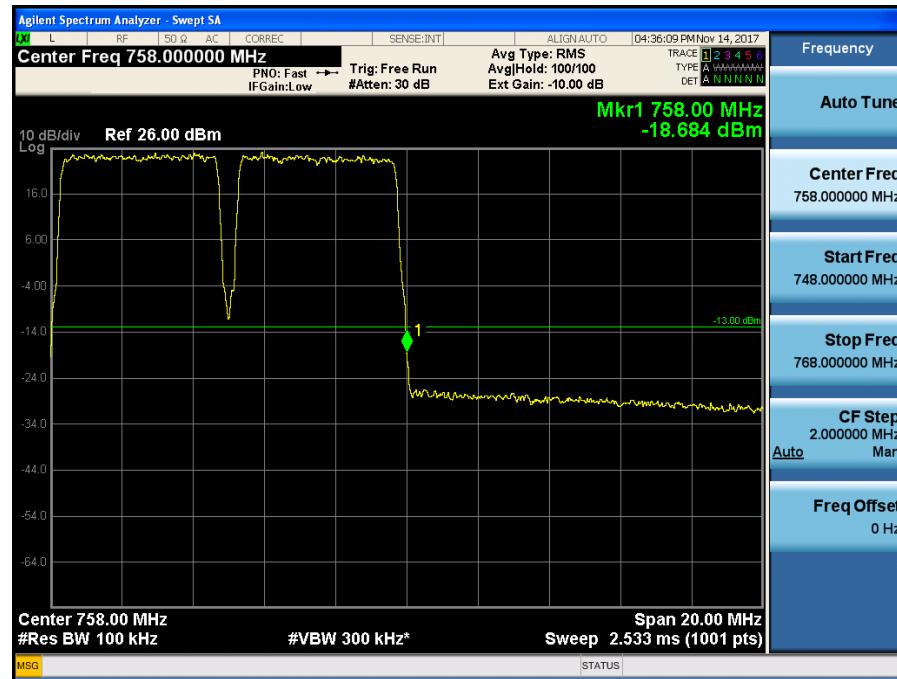


## Intermodulation Spurious Emissions for 700 LTE BAND LTE 5 MHz

### [Downlink Low]

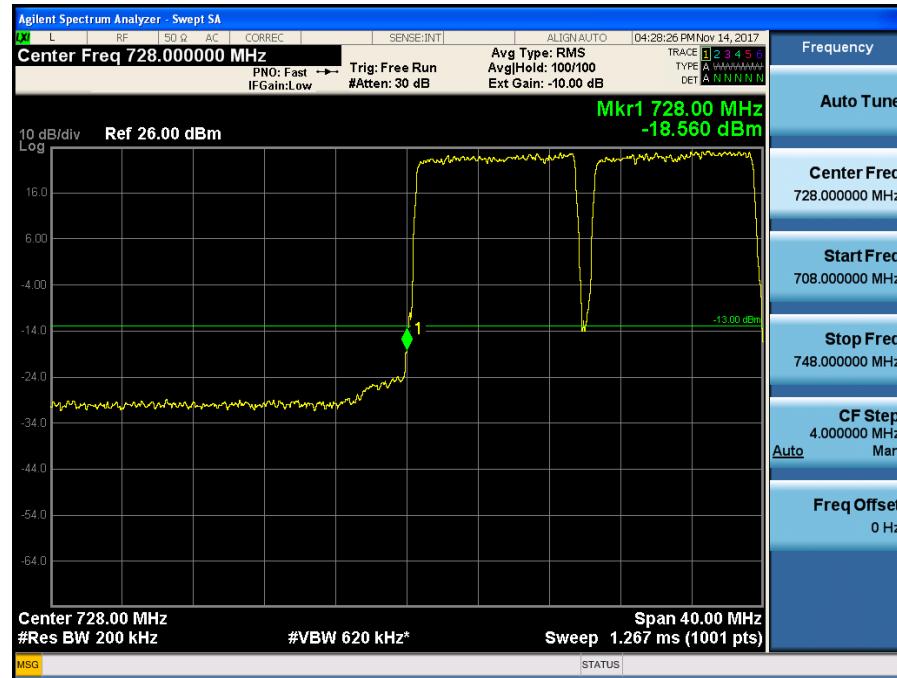


### [Downlink High]

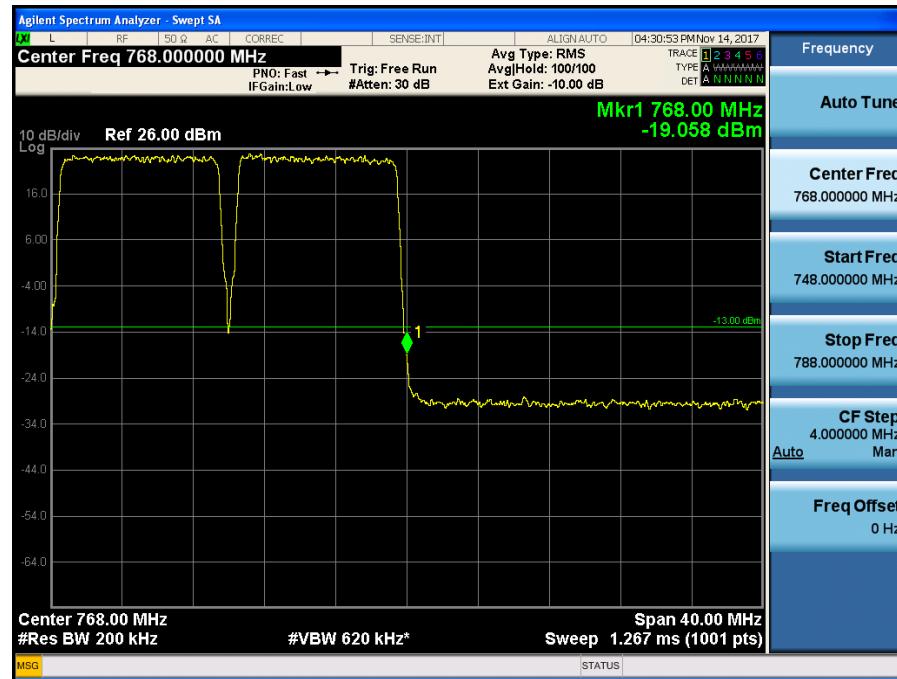


## Intermodulation Spurious Emissions for 700 LTE BAND LTE 10 MHz

### [Downlink Low]



### [Downlink High]



## Single channel Enhancer Band Edge\_700 LTE BAND LTE 5 MHz

### [Downlink Low]



### [Downlink High]



## Single channel Enhancer Band Edge\_700 LTE BAND LTE 10 MHz

### [Downlink Low]



### [Downlink High]



## 10. RADIATED SPURIOUS EMISSIONS

### FCC Rules

#### 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:

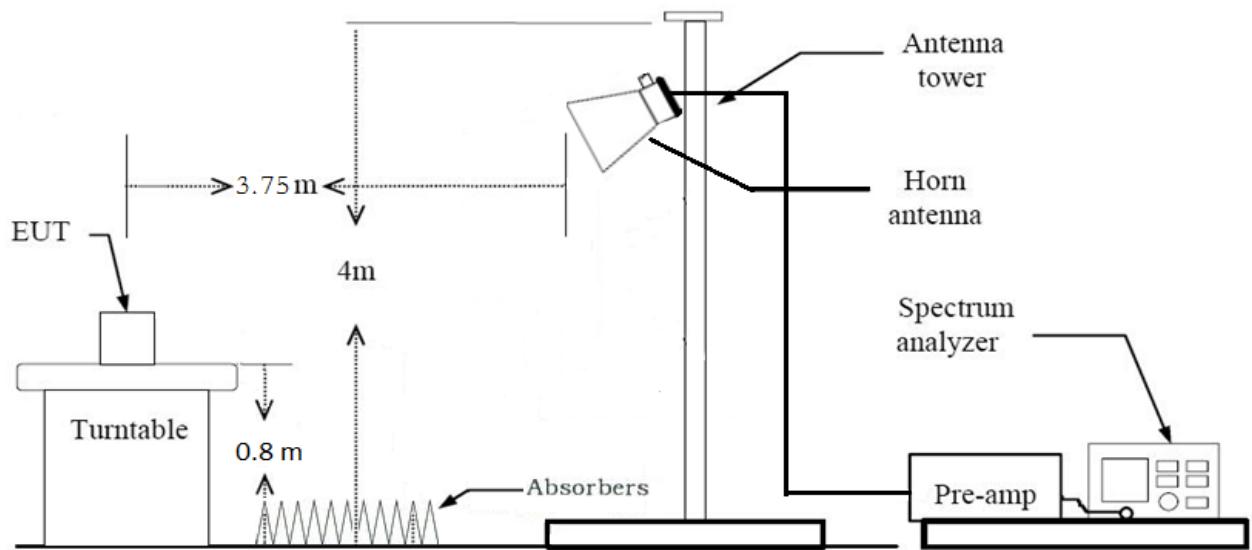
As required by 47 CFR 2.1053, *field strength of radiated spurious measurements* were made in accordance with the procedures of ANSI/TIA-603-E-2016 "Land Mobile FM or PM Communications Equipment Measurement and Performance Standards".

Radiated emission measurements were performed inside a 3 meter semi-anechoic chamber.

The EUT was set at a distance of 3m from the receiving antenna. The EUT's RF ports were terminated to 50ohm load. The EUT was set to transmit at the low, mid and high channels of the transmitter frequency range at its maximum power level. The EUT was rotated about 360° and the receiving antenna scanned from 1-3m in order to capture the maximum emission. A calibrated

antenna source was positioned in place of the EUT and the previously recorded signal was duplicated. The maximum EIRP of the emission was calculated by adding the forward power to the calibrated source plus its appropriate gain value. These steps were carried out with the receiving antenna in both vertical and horizontal polarization. Harmonic emissions up to the 10th or 40GHz, whichever was the lesser, were investigated.

### Radiated Spurious Emissions Test Setup



#### Note :

1. According to SVSWR requirement in ANSI 63.4-2014, We performed the radiated test at 3.75 m distance from center of turn table. So, we applied the distance factor( reference distance : 3 m).
2. Distance extrapolation factor =  $20 \log (\text{test distance} / \text{specific distance})$  (dB)

**Radiated Spurious Emissions Test Result:**

Test results are only attached worst cases.

Harmonics were not found.

**[Downlink]**

Ch.	Freq.(MHz)	Measured Level [dBuV/m]	Measured Power [dBm]	Ant. Factor [dB/m]	C.L. [dB]	A.G. [dB]	D.F. [dB]	Pol.	Result [dBm]
No Critical Peaks Found									

\* C.L.: Cable Loss / A.G.: Ant. Gain / D.F.: Distance Factor (3.75 m)

**Notes:**

1. Test datas were only the worst case.
2. We have done horizontal and vertical polarization in detecting antenna.

## 11. FREQUENCY STABILITY OVER TEMPERATURE AND VOLTAGE VARIATIONS

### FCC Rules

#### Test Requirements:

##### § 2.1055 Measurements required: Frequency stability.

(a) The frequency stability shall be measured with variation of ambient temperature as follows:

- (1) From  $-30^{\circ}$  to  $+50^{\circ}$  centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section.

##### § 27.54 Frequency stability.

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

#### Test Procedures:

As required by 47 CFR 2.1055, *Frequency Stability measurements* were made at the RF output terminals using a Spectrum Analyzer.

The EUT was placed in the Environmental Chamber.

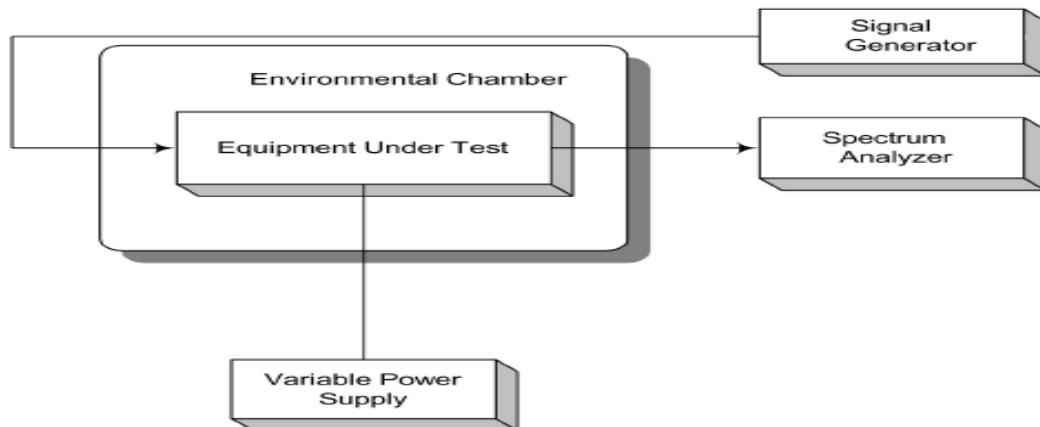
A CW signal was injected into the EUT at the appropriate RF level. The frequency counter option on the Spectrum Analyzer was used to measure frequency deviations.

The frequency drift was investigated for every  $10^{\circ}\text{C}$  increment until the unit is stabilized then recorded the reading in tabular format with the temperature range of  $-30$  to  $50^{\circ}\text{C}$ .

Voltage supplied to EUT is 110 Vac reference temperature was done at  $20^{\circ}\text{C}$ .

The voltage was varied by  $\pm 15\%$  of nominal

#### Test Setup:



\* Note: This EUT is supported power supply both of AC and DC. Test results are only attached worst cases.

**Test Results:****Frequency Stability and Voltage Test Results****[Downlink]****Reference:** 120 Vac at 20°C    **Freq.** = 748.0 MHz

Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (Hz)	ppm
100%	+20(Ref)	748 000 001	0.647	0.000	0.00000
	-30	747 999 999	-0.505	-1.152	-0.00154
	-20	747 999 999	-0.665	-1.312	-0.00175
	-10	748 000 001	0.987	0.340	0.00045
	0	748 000 001	0.535	-0.112	-0.00015
	+10	748 000 000	0.417	-0.230	-0.00031
	+30	748 000 000	-0.429	-1.077	-0.00144
	+40	748 000 000	0.287	-0.360	-0.00048
	+50	748 000 000	-0.380	-1.027	-0.00137
High	+20	748 000 001	0.987	0.339	0.00045
Low	+20	748 000 001	0.950	0.302	0.00040