

n78, Channel Bandwidth 60MHz

Channel 648668  
(3730.02MHz)

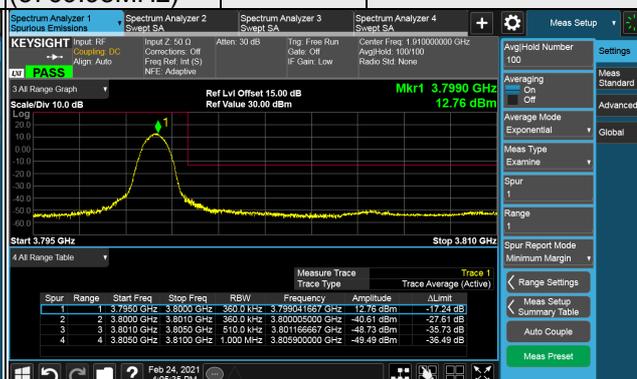
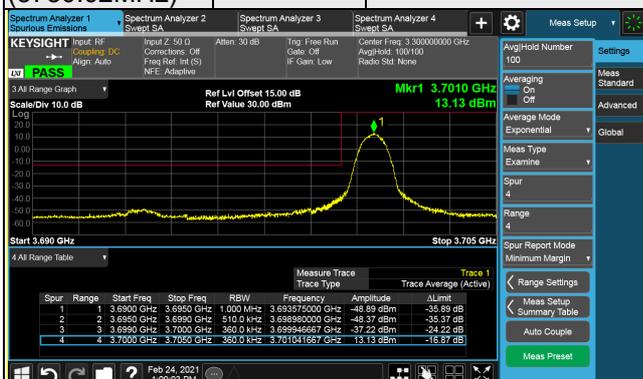
$\pi/2$  BPSK

1 RB / 0 RB Offset

Channel 651332  
(3769.98MHz)

$\pi/2$  BPSK

1 RB / 161 RB Offset



Channel 648668  
(3730.02MHz)

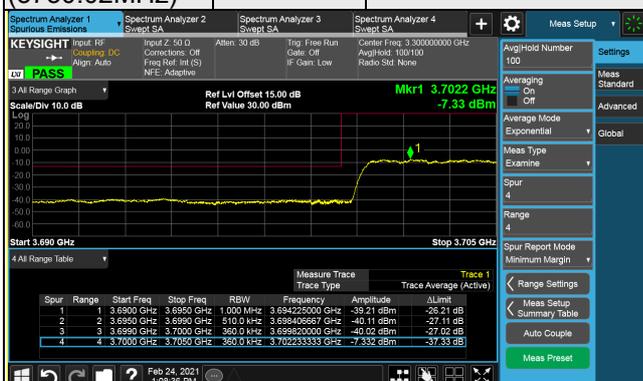
$\pi/2$  BPSK

162 RB / 0 RB Offset

Channel 651332  
(3769.98MHz)

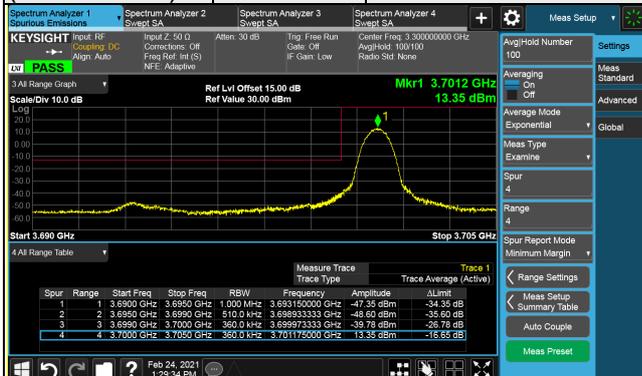
$\pi/2$  BPSK

162 RB / 0 RB Offset



### n78, Channel Bandwidth 70MHz

<b>Channel 649000</b> (3735.00MHz)	<b>QPSK</b>	<b>1 RB / 0 RB Offset</b>	<b>Channel 651000</b> (3765.00MHz)	<b>QPSK</b>	<b>1 RB / 188 RB Offset</b>
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**Channel 649000 (3735.00MHz) QPSK 1 RB / 0 RB Offset**

Scale/Div 10.0 dB, Ref Lvl Offset 15.00 dB, Ref Value 30.00 dBm, Mkr1 3.7012 GHz, 13.35 dBm

Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	ΔLimit
1	1	3.6900 GHz	3.6950 GHz	1.000 MHz	3.693150000 GHz	-47.35 dBm	-34.35 dB
2	2	3.6950 GHz	3.6990 GHz	510.0 kHz	3.698997333 GHz	-46.60 dBm	-35.60 dB
3	3	3.6990 GHz	3.7000 GHz	360.0 kHz	3.699773333 GHz	-39.78 dBm	-26.78 dB
4	4	3.7000 GHz	3.7050 GHz	360.0 kHz	3.701175000 GHz	13.35 dBm	-16.65 dB

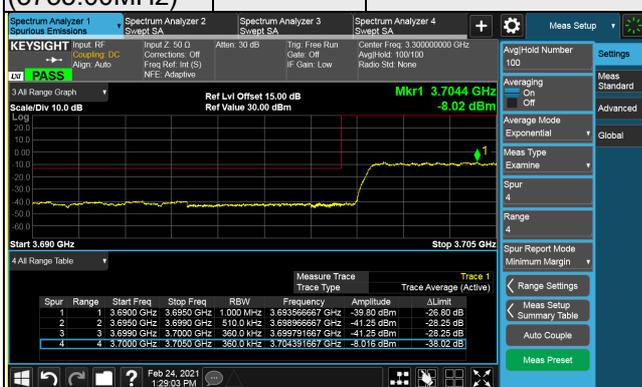


**Channel 651000 (3765.00MHz) QPSK 1 RB / 188 RB Offset**

Scale/Div 10.0 dB, Ref Lvl Offset 15.00 dB, Ref Value 30.00 dBm, Mkr1 3.7988 GHz, 14.07 dBm

Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	ΔLimit
1	1	3.7950 GHz	3.8000 GHz	360.0 kHz	3.798833333 GHz	14.07 dBm	-15.93 dB
2	2	3.8000 GHz	3.8050 GHz	360.0 kHz	3.800400000 GHz	-40.51 dBm	-27.51 dB
3	3	3.8010 GHz	3.8050 GHz	510.0 kHz	3.801073333 GHz	-47.56 dBm	-34.66 dB
4	4	3.8050 GHz	3.8100 GHz	1.000 MHz	3.806058333 GHz	-48.60 dBm	-35.60 dB

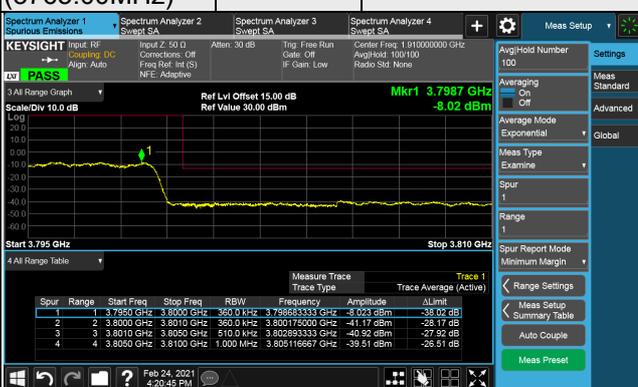
<b>Channel 649000</b> (3735.00MHz)	<b>QPSK</b>	<b>189 RB / 0 RB Offset</b>	<b>Channel 651000</b> (3765.00MHz)	<b>QPSK</b>	<b>189 RB / 0 RB Offset</b>
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**Channel 649000 (3735.00MHz) QPSK 189 RB / 0 RB Offset**

Scale/Div 10.0 dB, Ref Lvl Offset 15.00 dB, Ref Value 30.00 dBm, Mkr1 3.7044 GHz, -8.02 dBm

Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	ΔLimit
1	1	3.6900 GHz	3.6950 GHz	1.000 MHz	3.692566667 GHz	-39.80 dBm	-26.80 dB
2	2	3.6950 GHz	3.6990 GHz	510.0 kHz	3.698966667 GHz	-41.25 dBm	-28.25 dB
3	3	3.6990 GHz	3.7000 GHz	360.0 kHz	3.699716667 GHz	-41.25 dBm	-28.25 dB
4	4	3.7000 GHz	3.7050 GHz	360.0 kHz	3.704391667 GHz	-8.02 dBm	-38.02 dB



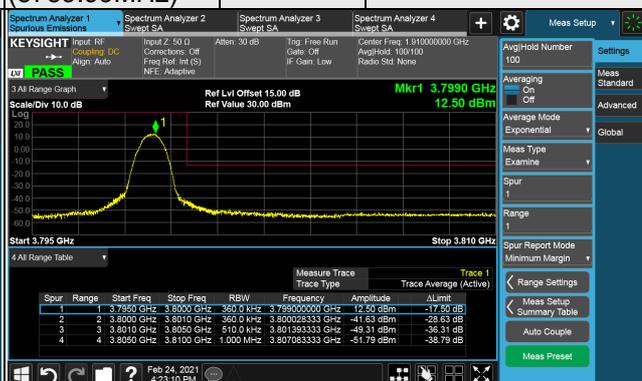
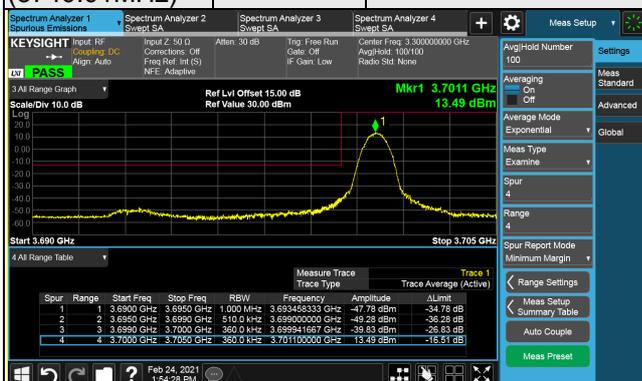
**Channel 651000 (3765.00MHz) QPSK 189 RB / 0 RB Offset**

Scale/Div 10.0 dB, Ref Lvl Offset 15.00 dB, Ref Value 30.00 dBm, Mkr1 3.7987 GHz, -8.02 dBm

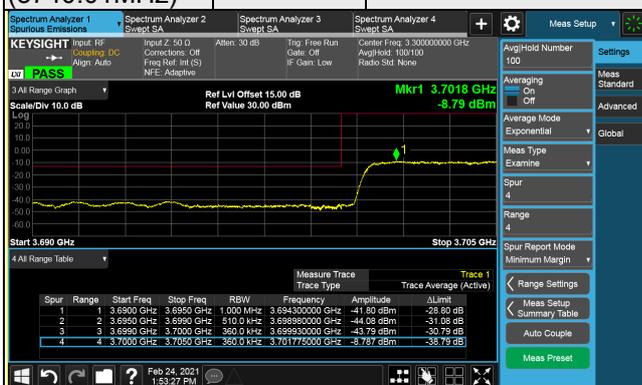
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	ΔLimit
1	1	3.7950 GHz	3.8000 GHz	360.0 kHz	3.798833333 GHz	-8.02 dBm	-38.02 dB
2	2	3.8000 GHz	3.8050 GHz	360.0 kHz	3.800720000 GHz	-41.17 dBm	-28.17 dB
3	3	3.8010 GHz	3.8050 GHz	510.0 kHz	3.802833333 GHz	-40.92 dBm	-27.92 dB
4	4	3.8050 GHz	3.8100 GHz	1.000 MHz	3.806116667 GHz	-39.61 dBm	-26.61 dB

n78, Channel Bandwidth 80MHz

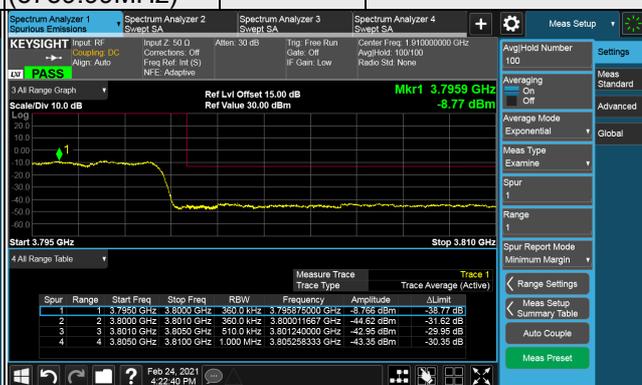
Channel 649334 (3740.01MHz) QPSK 1 RB / 0 RB Offset Channel 650666 (3759.99MHz) QPSK 1 RB / 216 RB Offset



Channel 649334 (3740.01MHz) QPSK 217 RB / 0 RB Offset



Channel 650666 (3759.99MHz) QPSK 217 RB / 0 RB Offset



n78, Channel Bandwidth 90MHz

Channel 649668  
(3745.02MHz)

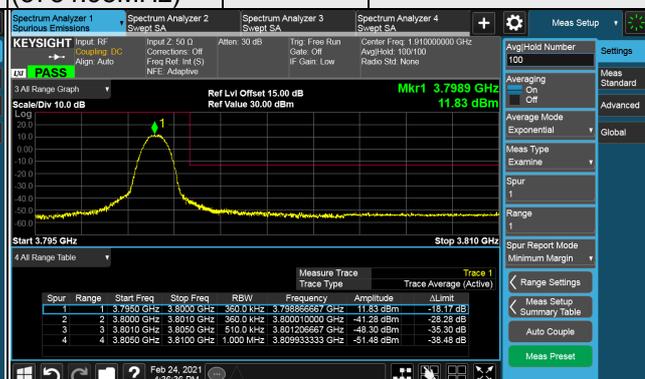
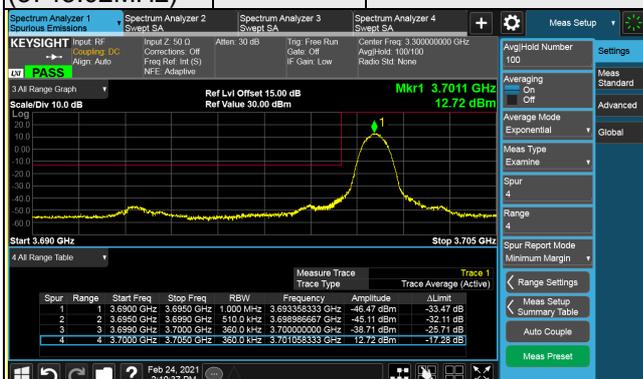
$\pi/2$  BPSK

1 RB / 0 RB Offset

Channel 650332  
(3754.98MHz)

$\pi/2$  BPSK

1 RB / 244 RB Offset



Channel 649668  
(3745.02MHz)

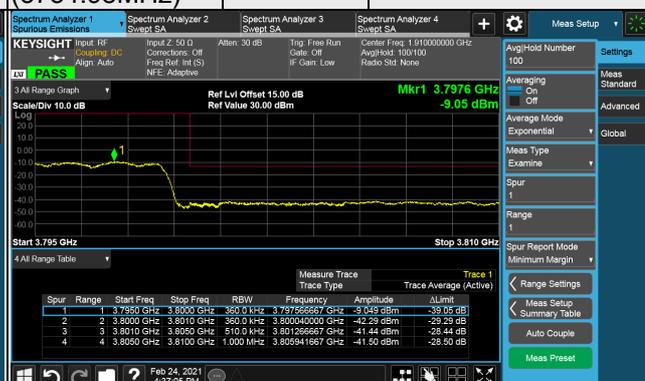
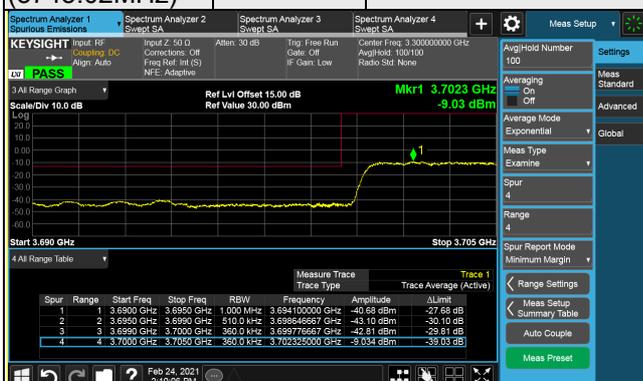
$\pi/2$  BPSK

245 RB / 0 RB Offset

Channel 650332  
(3754.98MHz)

$\pi/2$  BPSK

245 RB / 0 RB Offset



### n78, Channel Bandwidth 100MHz

Channel 650000 (3750.00MHz)	QPSK	1 RB / 0 RB Offset	Channel 662000 (3930.00MHz)	QPSK	1 RB / 272 RB Offset
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Channel 650000 (3750.00MHz)	QPSK	273 RB / 0 RB Offset	Channel 650000 (3750.00MHz)	QPSK	273 RB / 0 RB Offset
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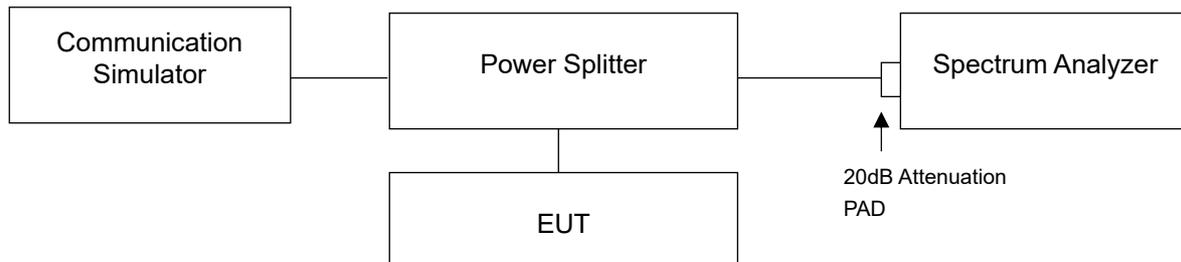


## 4.6 Peak to Average Ratio

### 4.6.1 Limits of Peak to Average Ratio Measurement

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

### 4.6.2 Test Setup



### 4.6.3 Test Procedures

- Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth;
- Set the number of counts to a value that stabilizes the measured CCDF curve;
- Record the maximum PAPR level associated with a probability of 0.1%.

#### 4.6.4 Test Results

n78

n78, Channel Bandwidth 20MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
647334	3710.01	4.01	6.45	6.46	6.84	8.49
650000	3750.00	4.07	6.76	6.76	7.22	8.55
652666	3789.99	4.43	7.34	7.34	7.77	8.58
n78, Channel Bandwidth 30MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
647668	3715.02	4.01	6.36	6.49	6.93	8.21
650000	3750.00	3.86	6.48	6.47	6.88	8.52
652332	3784.98	3.99	6.55	6.48	6.91	8.49
n78, Channel Bandwidth 40MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
648000	3720.00	4.03	6.60	6.59	7.01	8.68
650000	3750.00	3.94	6.88	6.89	7.40	8.57
652000	3780.00	4.06	7.14	7.15	7.61	8.65
n78, Channel Bandwidth 50MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
648334	3725.01	4.10	6.57	6.54	7.06	8.83
650000	3750.00	4.26	7.01	6.84	7.41	8.61
651666	3774.99	4.63	7.56	7.52	8.05	8.68
n78, Channel Bandwidth 60MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
648668	3730.02	4.23	7.06	7.06	7.44	8.63
650000	3750.00	4.36	7.35	7.35	7.87	8.61
651332	3769.98	4.14	7.02	7.06	7.46	8.64

n78, Channel Bandwidth 70MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
649000	3735.00	4.37	6.53	6.64	7.05	8.12
650000	3750.00	4.27	7.58	7.61	7.83	8.48
651000	3765.00	4.10	6.65	6.72	7.05	8.57
n78, Channel Bandwidth 80MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
649334	3740.01	4.59	7.32	7.28	7.77	8.60
650000	3750.00	4.62	7.39	7.40	7.89	8.58
650666	3759.99	4.85	7.65	7.68	8.11	8.63
n78, Channel Bandwidth 90MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
649668	3745.02	4.28	6.61	6.62	7.03	8.58
650000	3750.00	4.39	7.45	7.49	7.79	8.89
650332	3754.98	4.41	6.90	6.84	7.34	8.60
n78, Channel Bandwidth 100MHz						
Channel	Frequency (MHz)	Peak To Average Ratio (dB)				
		$\pi/2$ BPSK	QPSK	16QAM	64QAM	256QAM
650000	3750.00	4.90	7.61	7.45	7.69	8.58

### Spectrum Plot of Worst Value

#### 20MHz / 256QAM



#### 30MHz / 256QAM



#### 40MHz / 256QAM



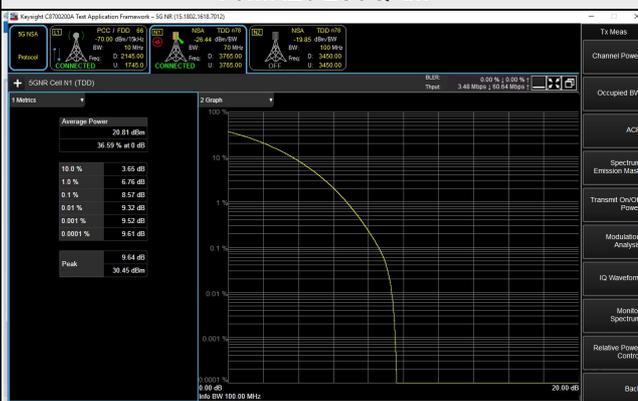
#### 50MHz / 256QAM



#### 60MHz / 256QAM



#### 70MHz / 256QAM

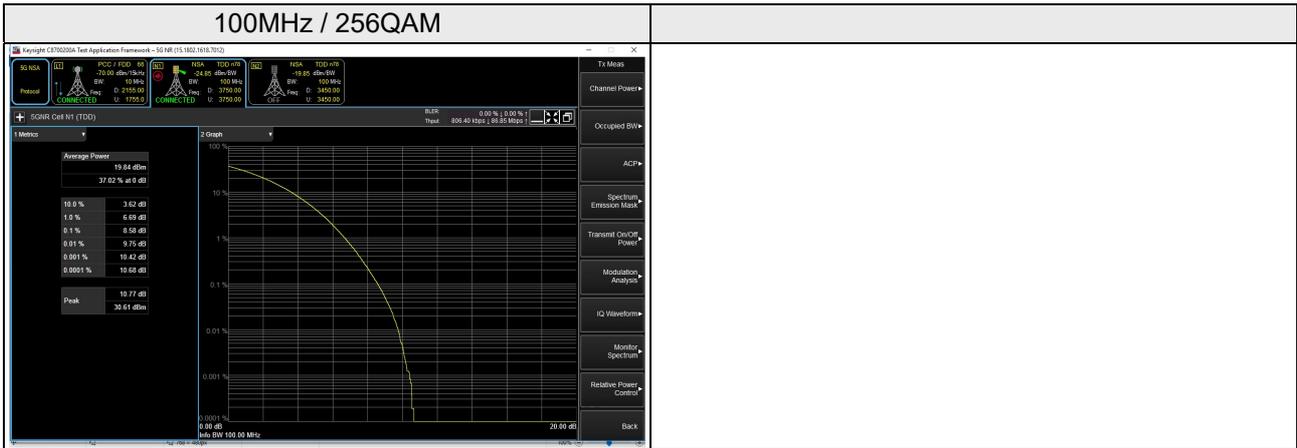


#### 80MHz / 256QAM



#### 90MHz / 256QAM



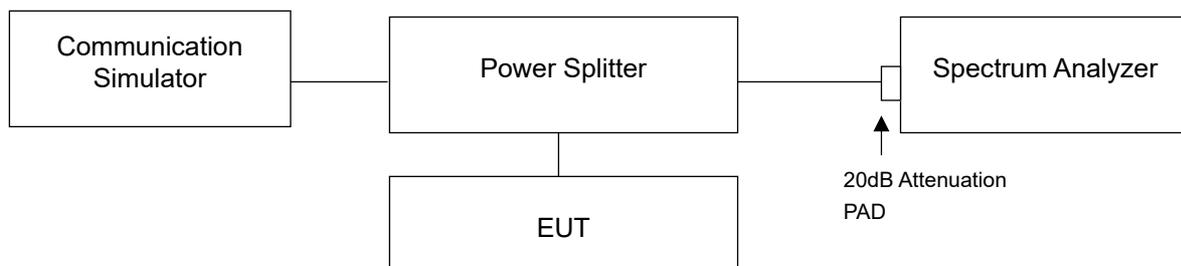


## 4.7 Conducted Spurious Emissions

### 4.7.1 Limits of Conducted Spurious Emissions Measurement

According to FCC 27.53(l) for mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed  $-13$  dBm/MHz. Compliance with this paragraph (l)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be either one percent of the emission bandwidth of the fundamental emission of the transmitter or 350 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

### 4.7.2 Test Setup



### 4.7.3 Test Procedure

- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 9kHz to 40GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

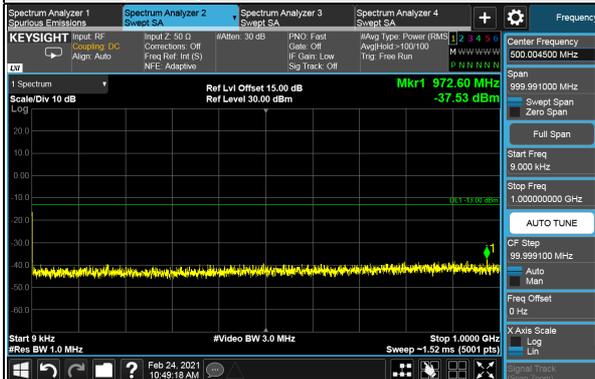
### 4.7.4 Test Results

n78

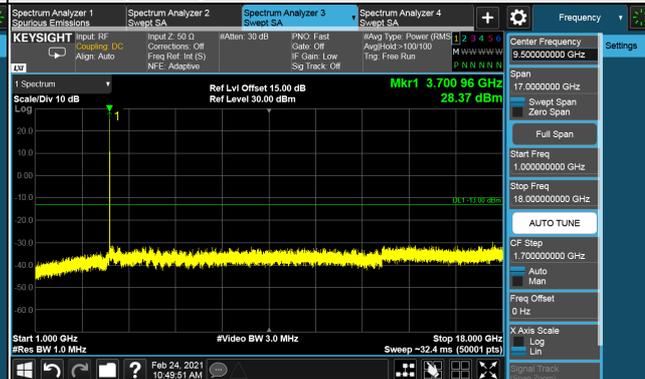
n78, Channel Bandwidth 20MHz

Channel 647334 (3710.01MHz)

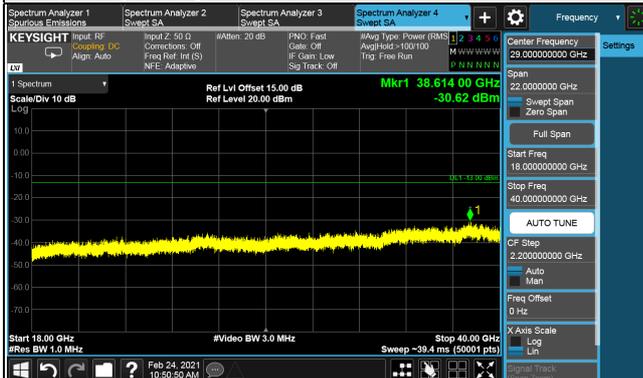
Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 18GHz



Frequency Range : 18GHz ~ 40GHz

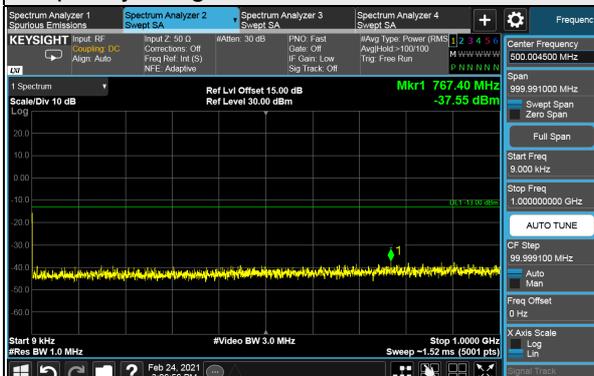


\*The 9kHz signal over the limit is from Spectrum.

n78, Channel Bandwidth 20MHz

Channel 650000 (3750.00MHz)

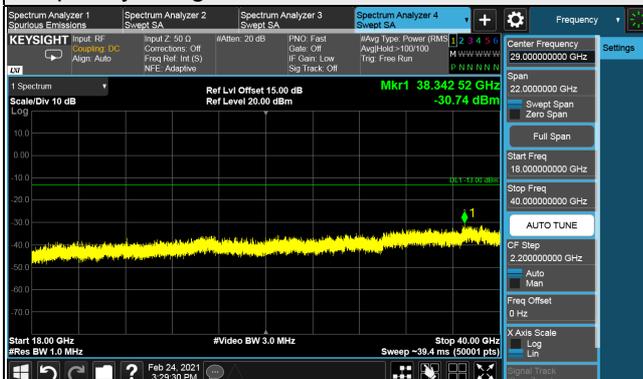
Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 18GHz



Frequency Range : 18GHz ~ 40GHz

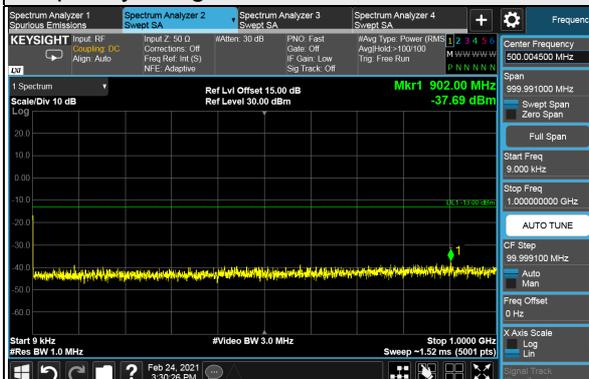


\*The 9kHz signal over the limit is from Spectrum.

n78, Channel Bandwidth 20MHz

Channel 652666 (3789.99MHz)

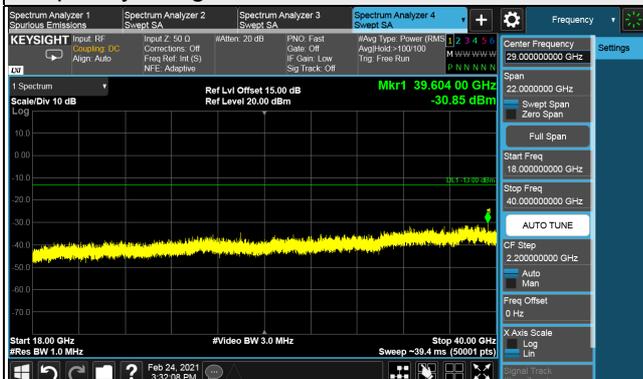
Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 18GHz



Frequency Range : 18GHz ~ 40GHz

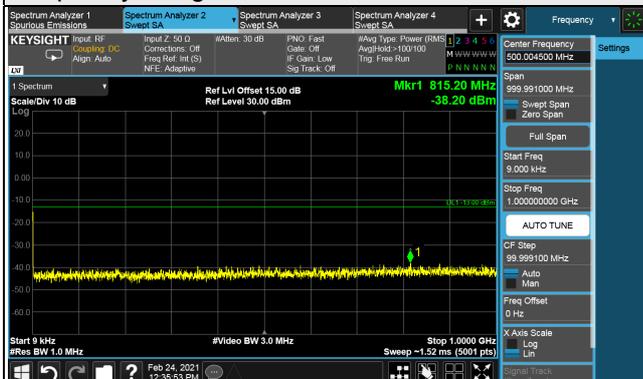


\*The 9kHz signal over the limit is from Spectrum.

n78, Channel Bandwidth 30MHz

Channel 647668 (3715.02MHz)

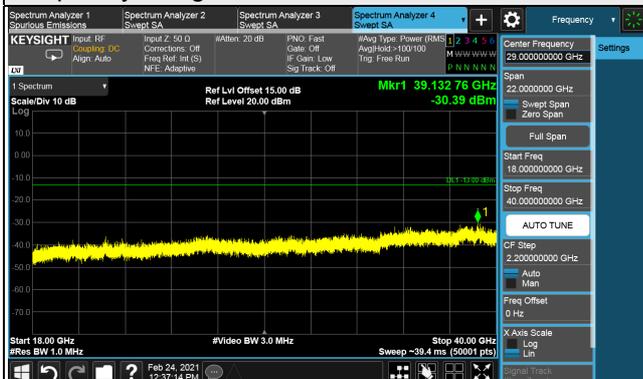
Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 18GHz



Frequency Range : 18GHz ~ 40GHz



\*The 9kHz signal over the limit is from Spectrum.