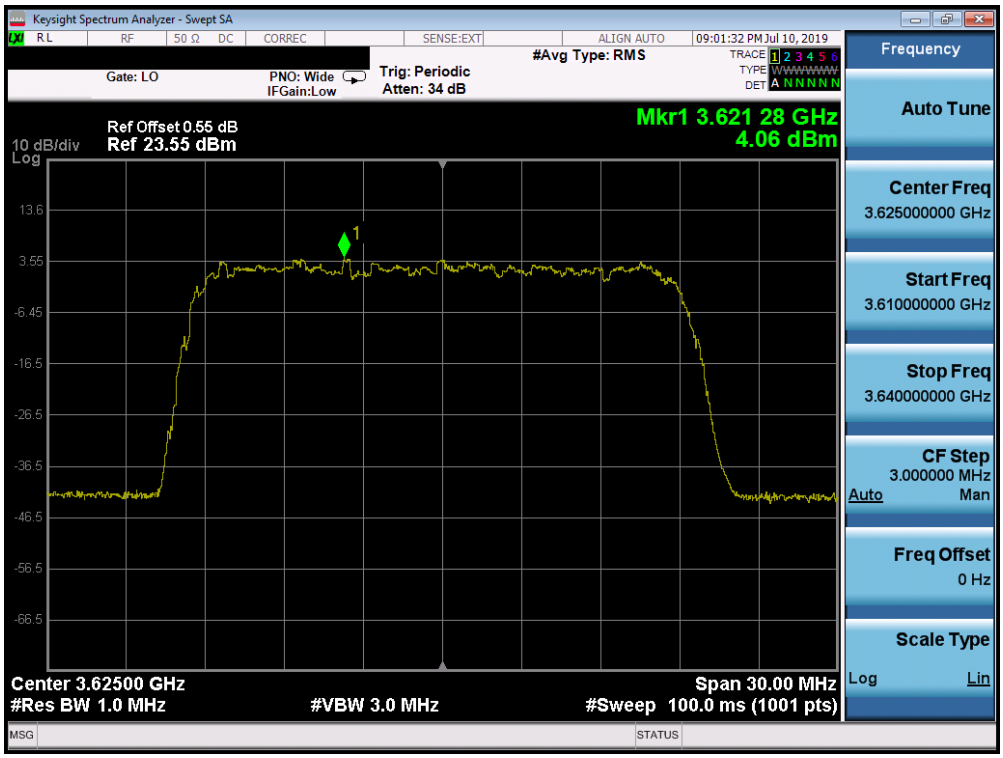
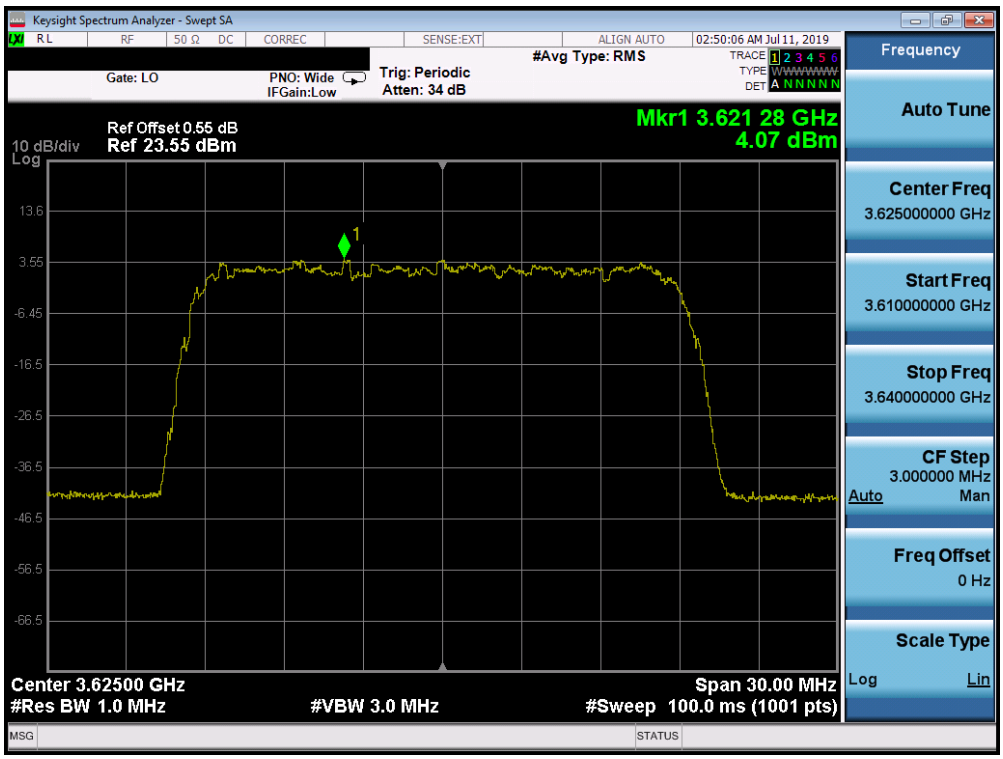
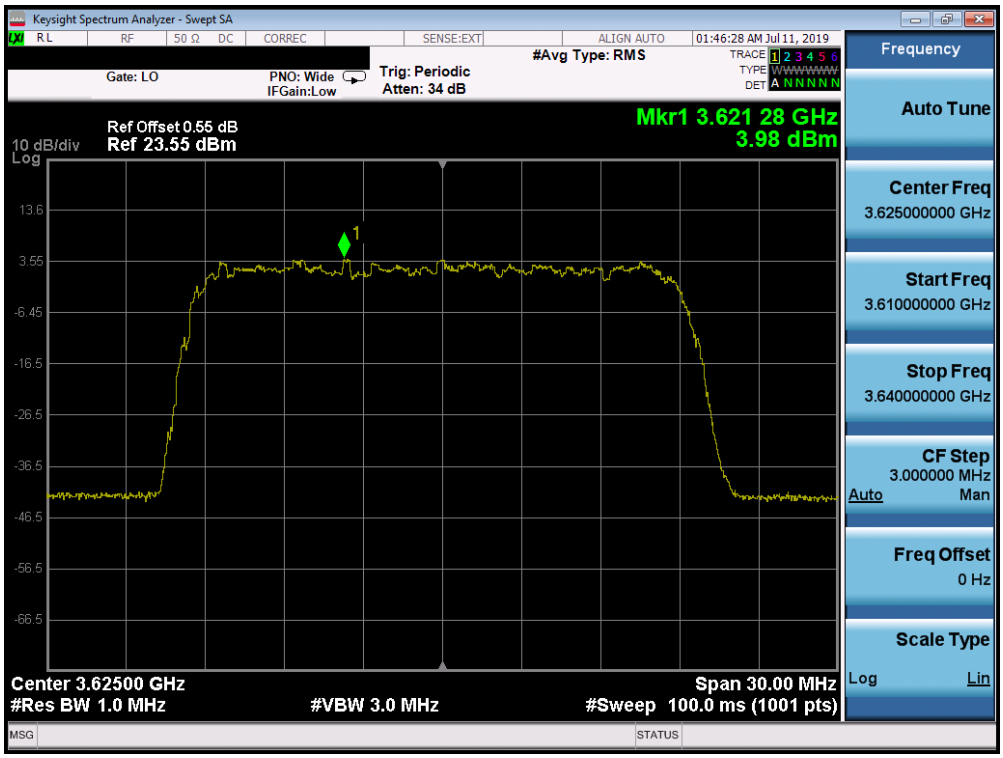


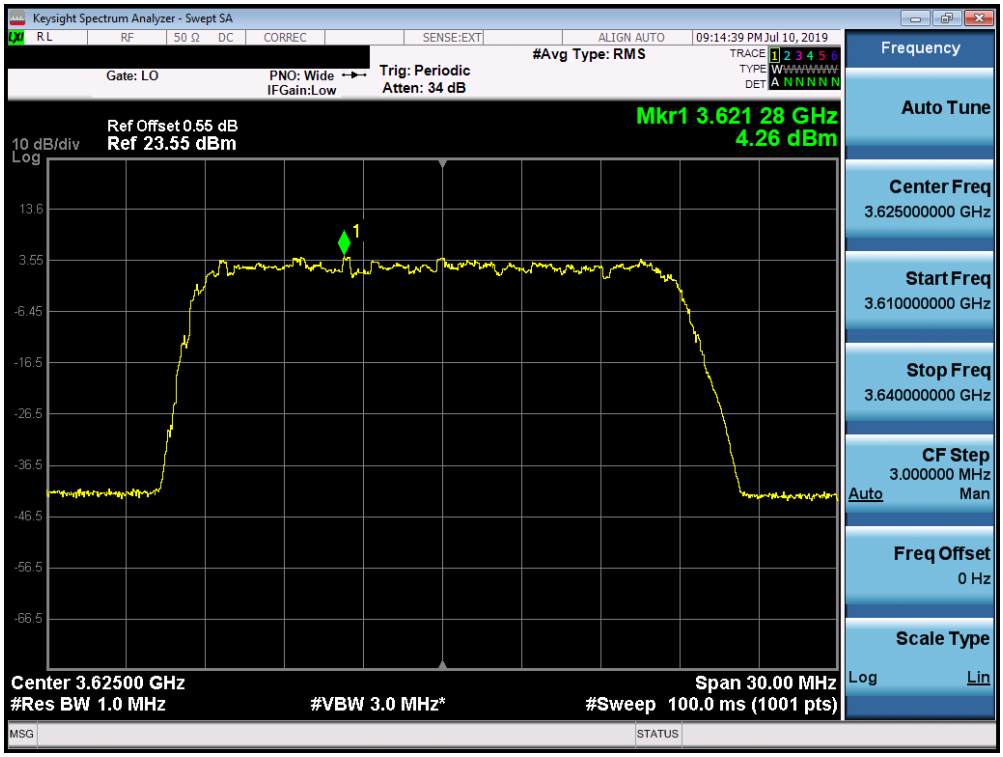
Plot 7-79. Peak Power Spectral Density Plot (1CC– 20.0MHz 16QAM- Mid Channel) Port 51



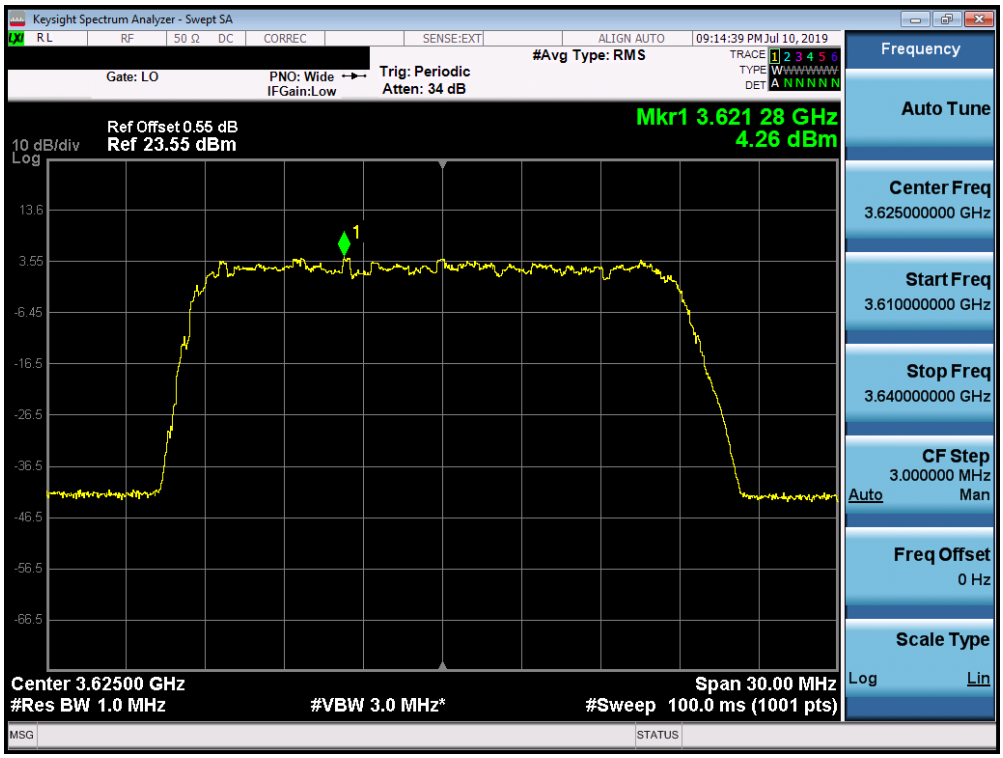
Plot 7-80. Peak Power Spectral Density Plot (1CC– 20.0MHz 16QAM- Mid Channel) Port 52



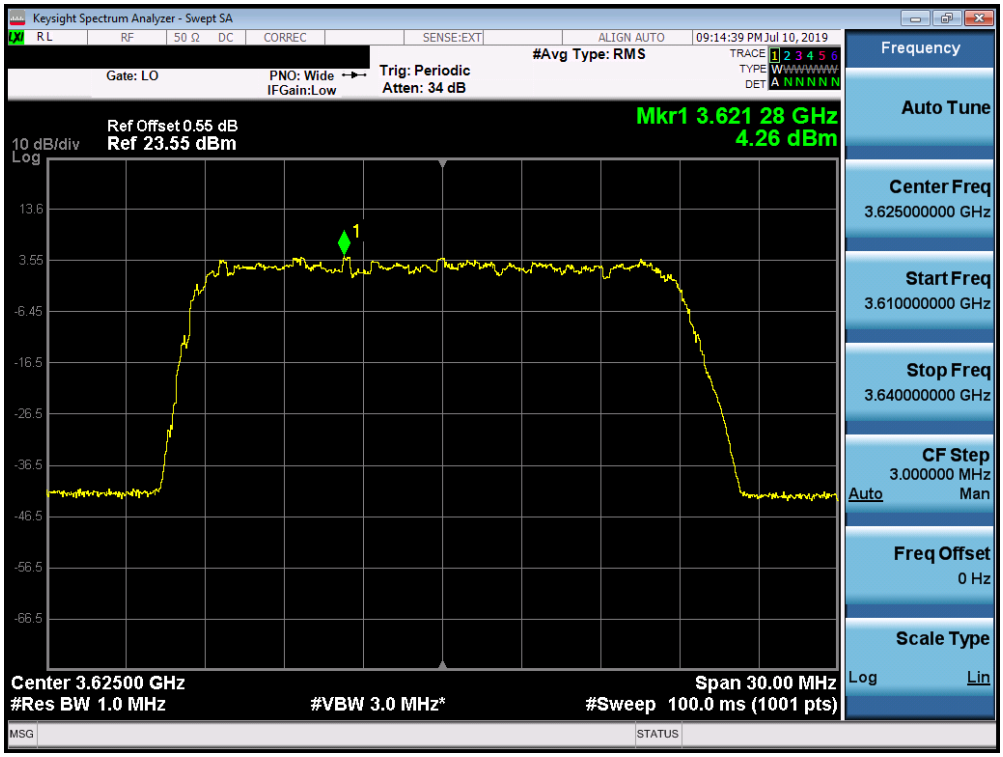
Plot 7-81. Peak Power Spectral Density Plot (1CC– 20.0MHz 16QAM- Mid Channel) Port 53



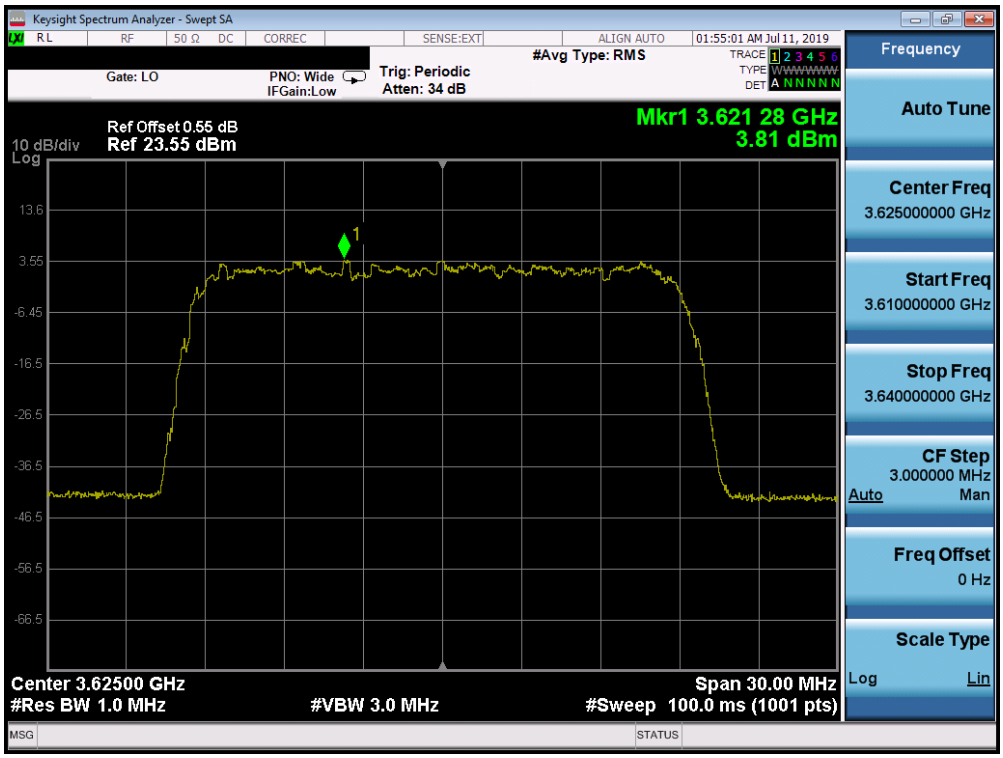
Plot 7-82. Peak Power Spectral Density Plot (1CC– 20.0MHz 16QAM- Mid Channel) Port 54



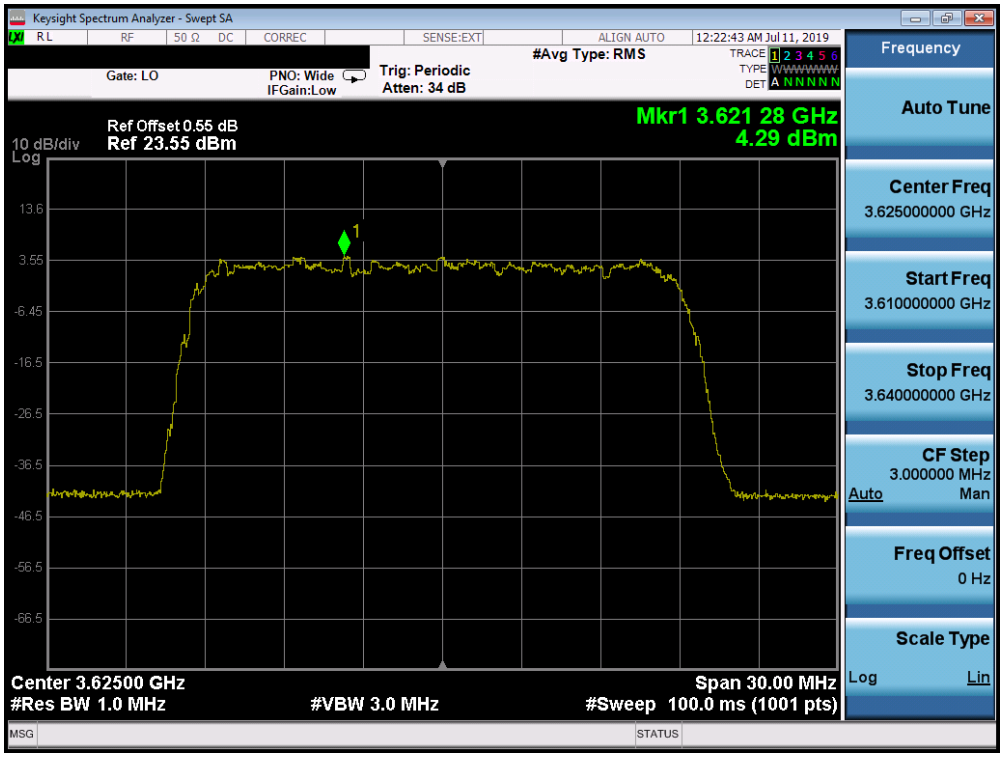
Plot 7-83. Peak Power Spectral Density Plot (1CC– 20.0MHz 16QAM- Mid Channel) Port 55



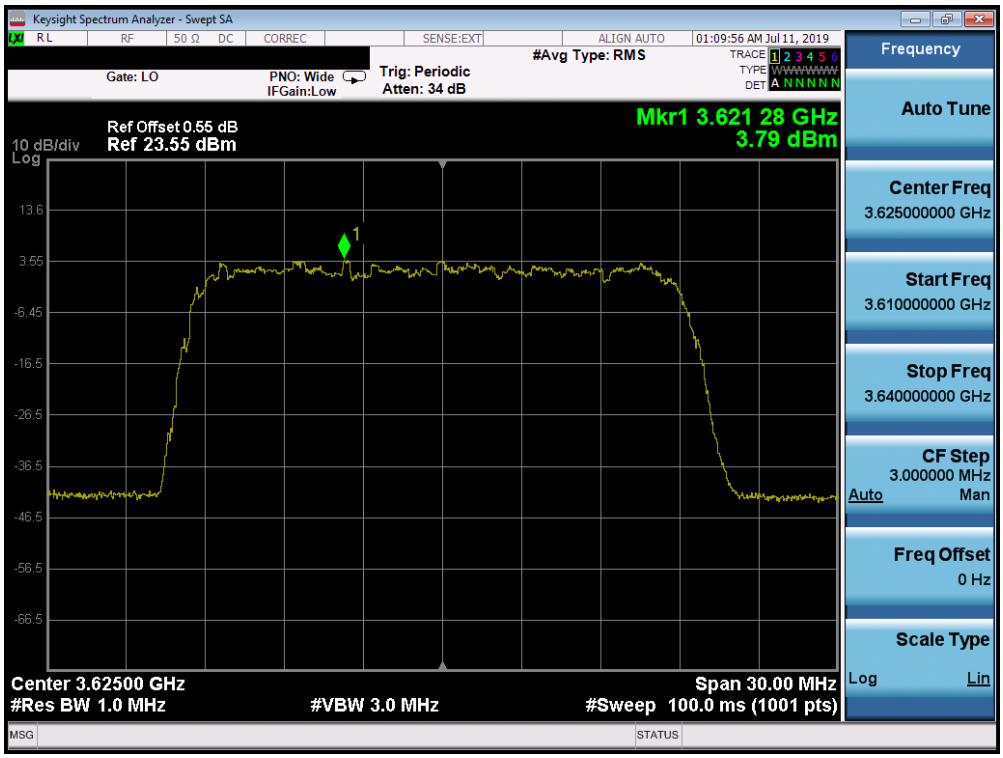
Plot 7-84. Peak Power Spectral Density Plot (1CC– 20.0MHz 16QAM- Mid Channel) Port 56



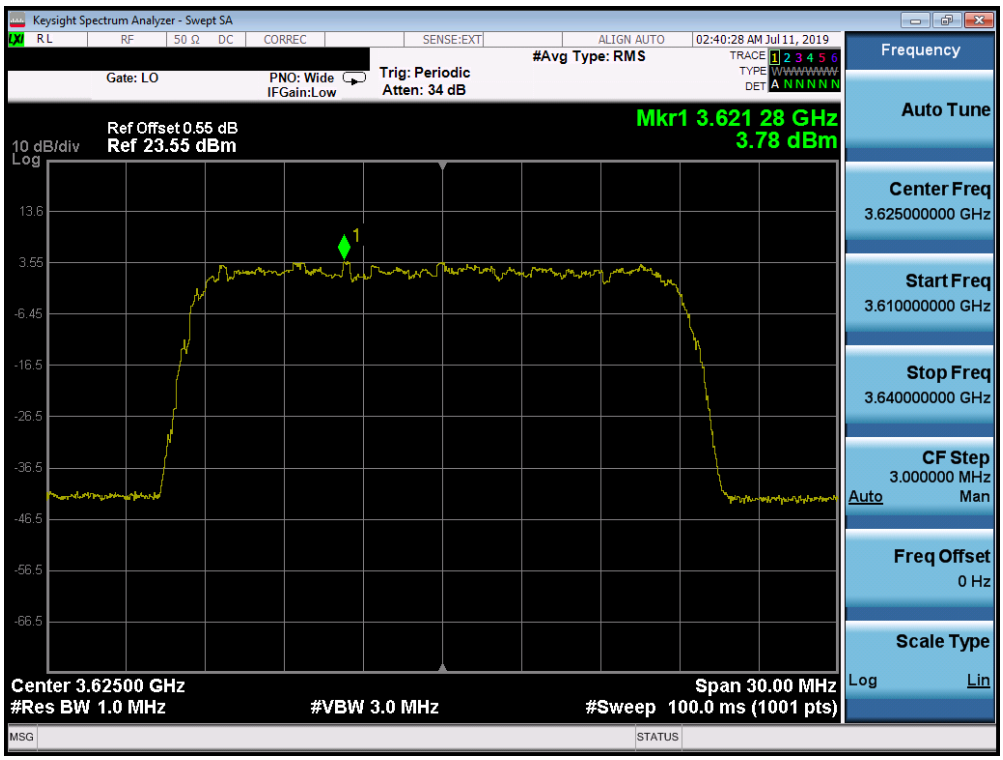
Plot 7-85. Peak Power Spectral Density Plot (1CC– 20.0MHz 16QAM- Mid Channel) Port 57



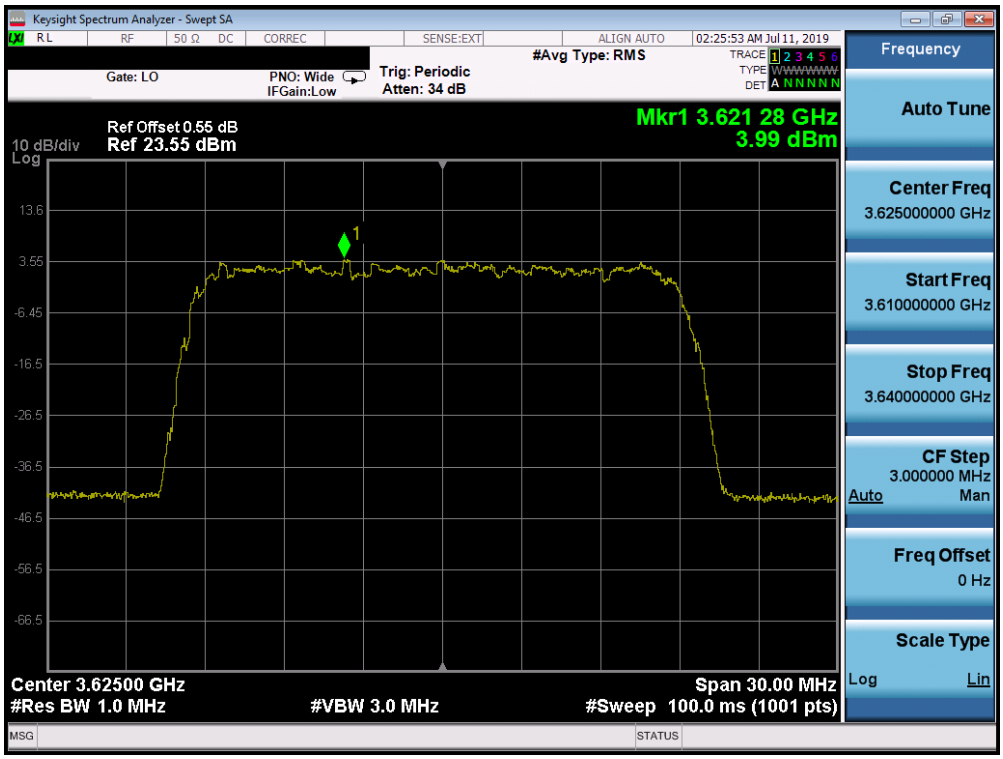
Plot 7-86. Peak Power Spectral Density Plot (1CC– 20.0MHz 16QAM- Mid Channel) Port 58



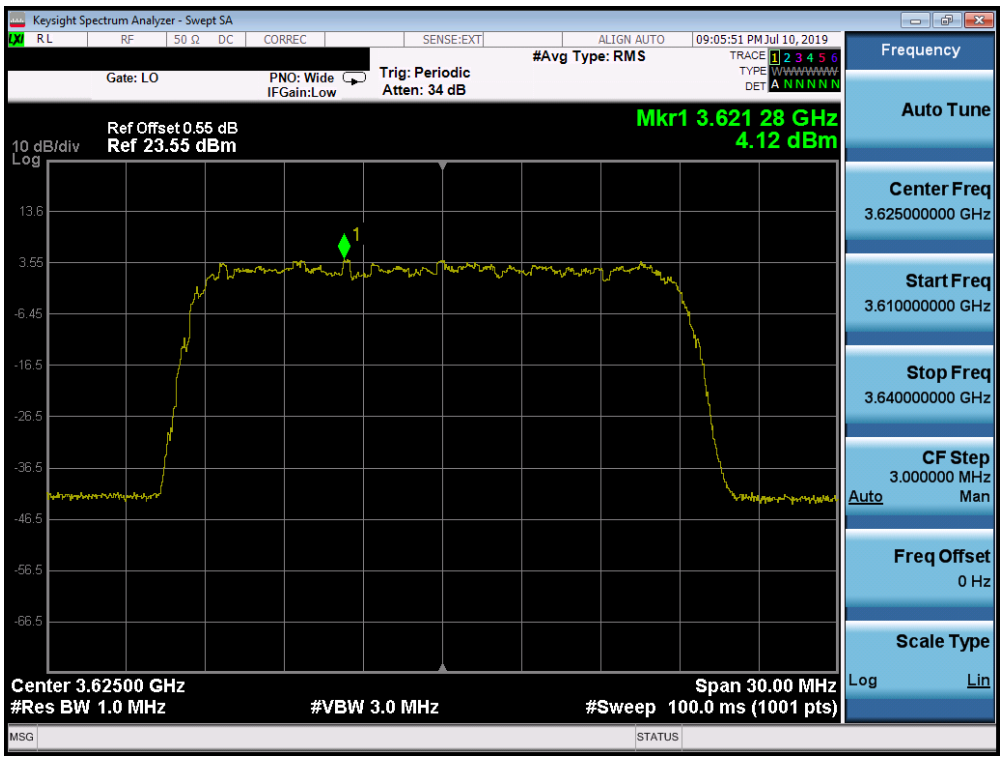
Plot 7-87. Peak Power Spectral Density Plot (1CC– 20.0MHz 16QAM- Mid Channel) Port 59



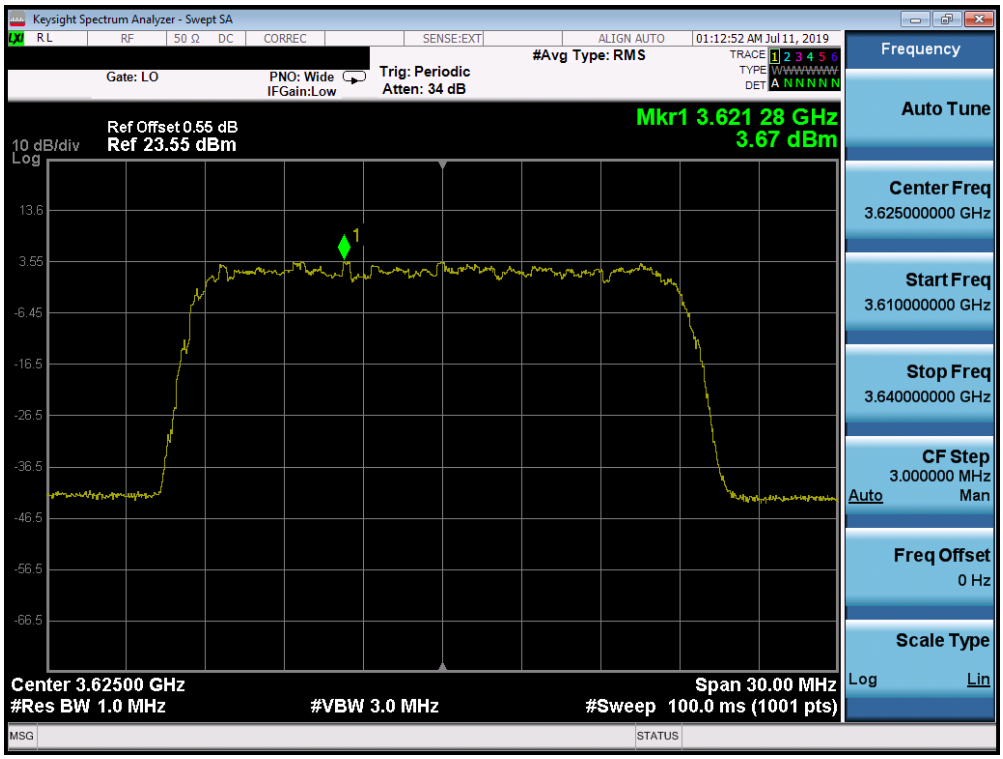
Plot 7-88. Peak Power Spectral Density Plot (1CC– 20.0MHz 16QAM- Mid Channel) Port 60



Plot 7-89. Peak Power Spectral Density Plot (1CC– 20.0MHz 16QAM- Mid Channel) Port 61



Plot 7-90. Peak Power Spectral Density Plot (1CC– 20.0MHz 16QAM- Mid Channel) Port 62



Plot 7-91. Peak Power Spectral Density Plot (1CC– 20.0MHz 16QAM- Mid Channel) Port 63

7.5 Peak-Average Ratio

§96.41(g)

Test Overview

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.7

Test Settings

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW ≥ OBW or specified reference bandwidth
4. The signal analyzer was set to collect two million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed.
6. An RF-Burst triggering method ensured measurement in the on time of the signal.

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

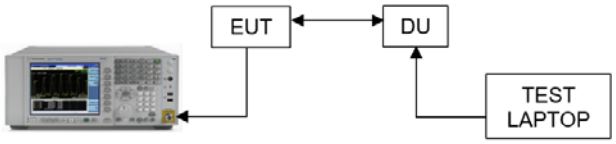
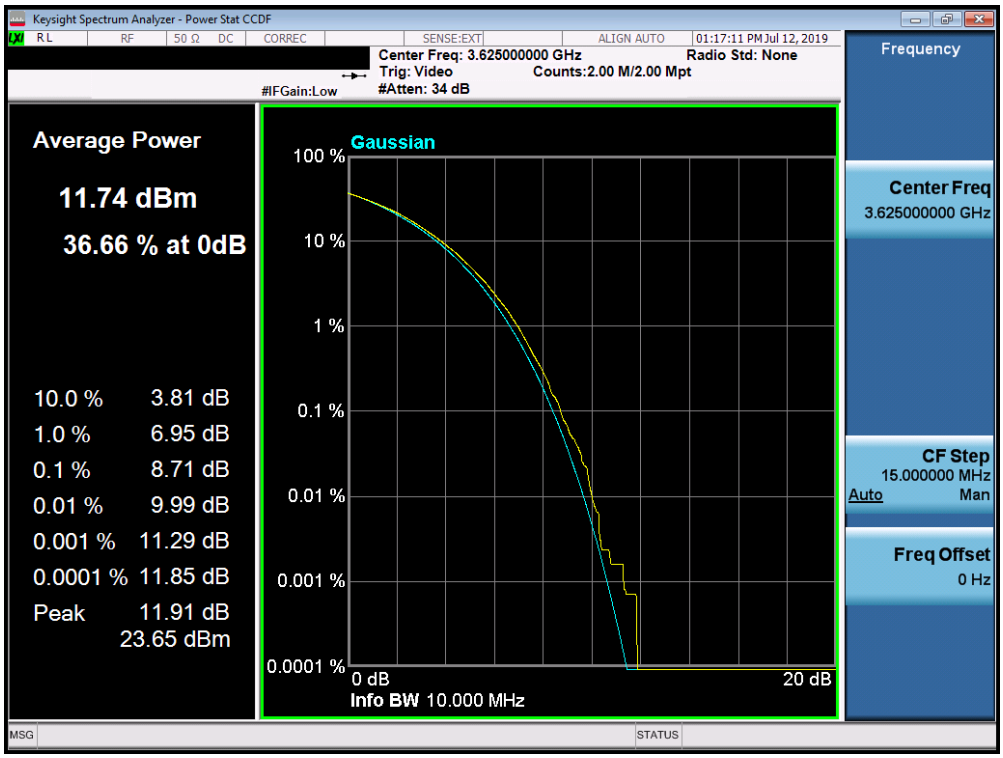


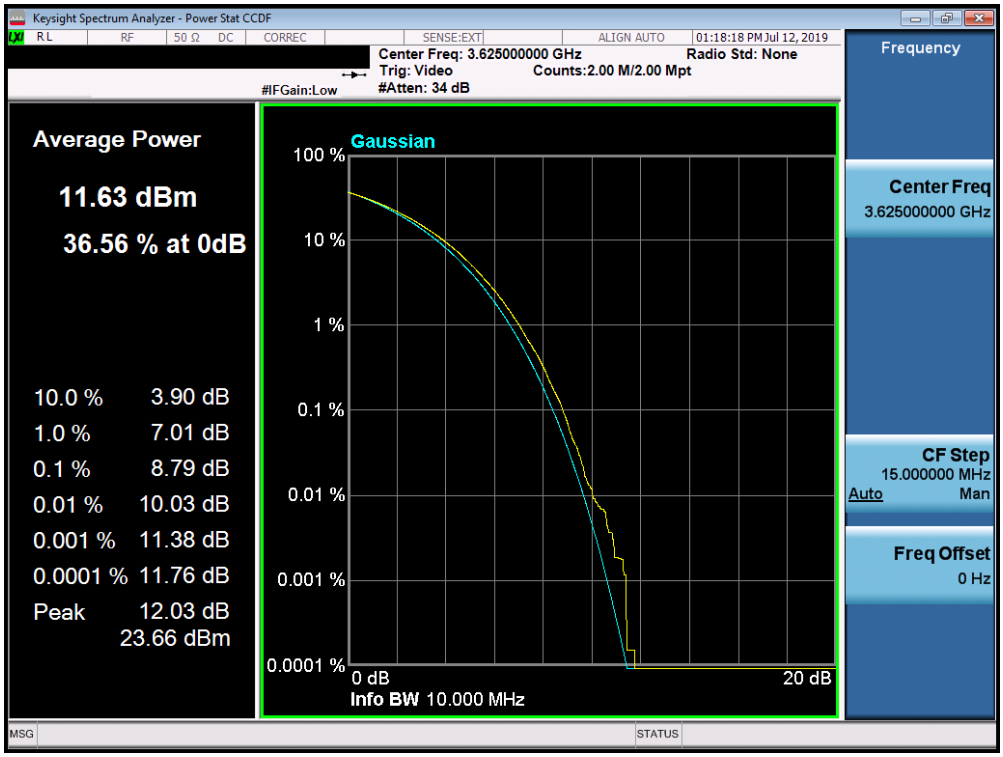
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

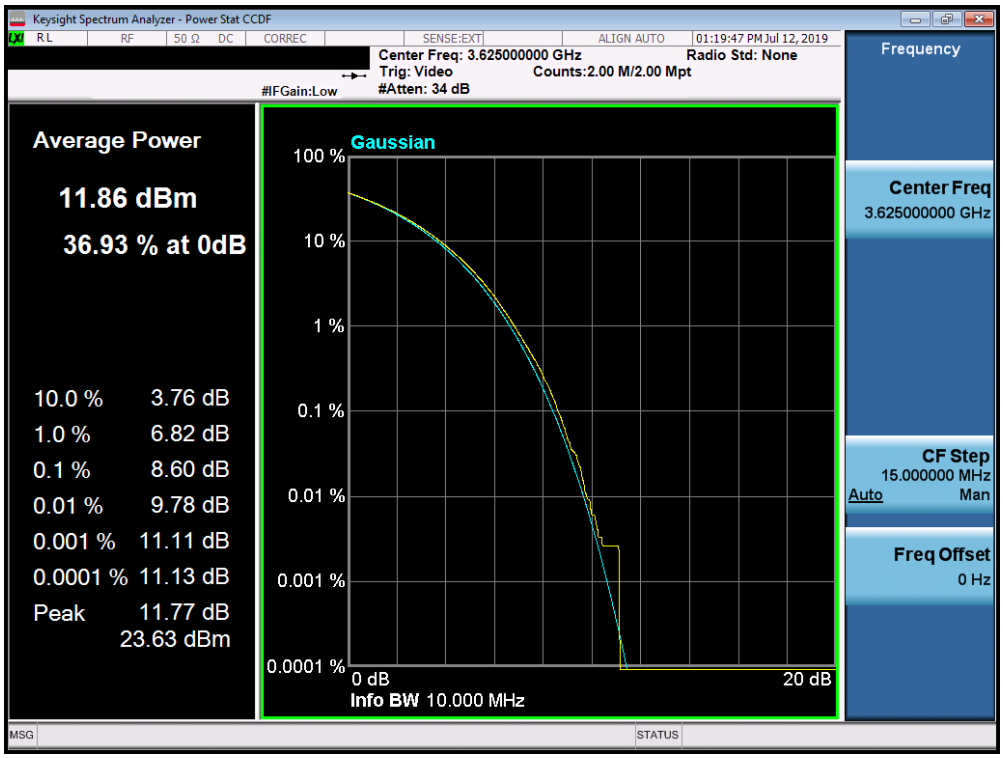
The PAR data is taken from the power with the highest output power on the mid channel.
The deviation between peak and average power was found to be higher in 1CC compared to 2CC.Thus, 1CC was determined to be the worst case for PAR.



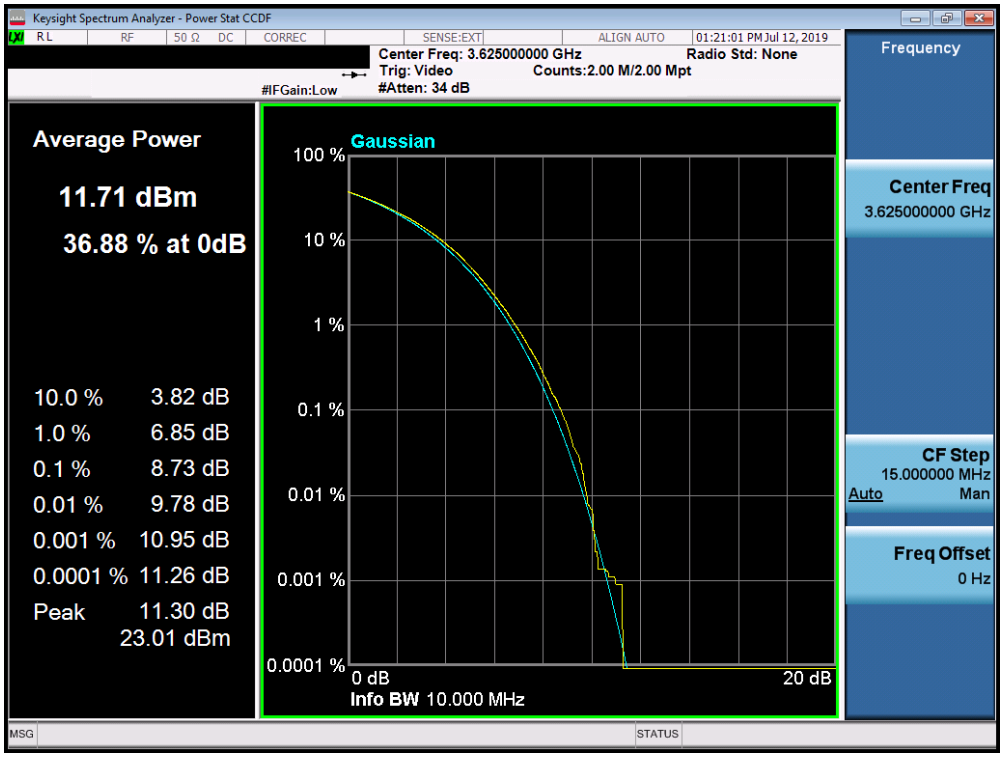
Plot 7-92. 16 User Beam PAR Plot (10.0MHz Total Bandwidth QPSK - Mid Channel-SISO)



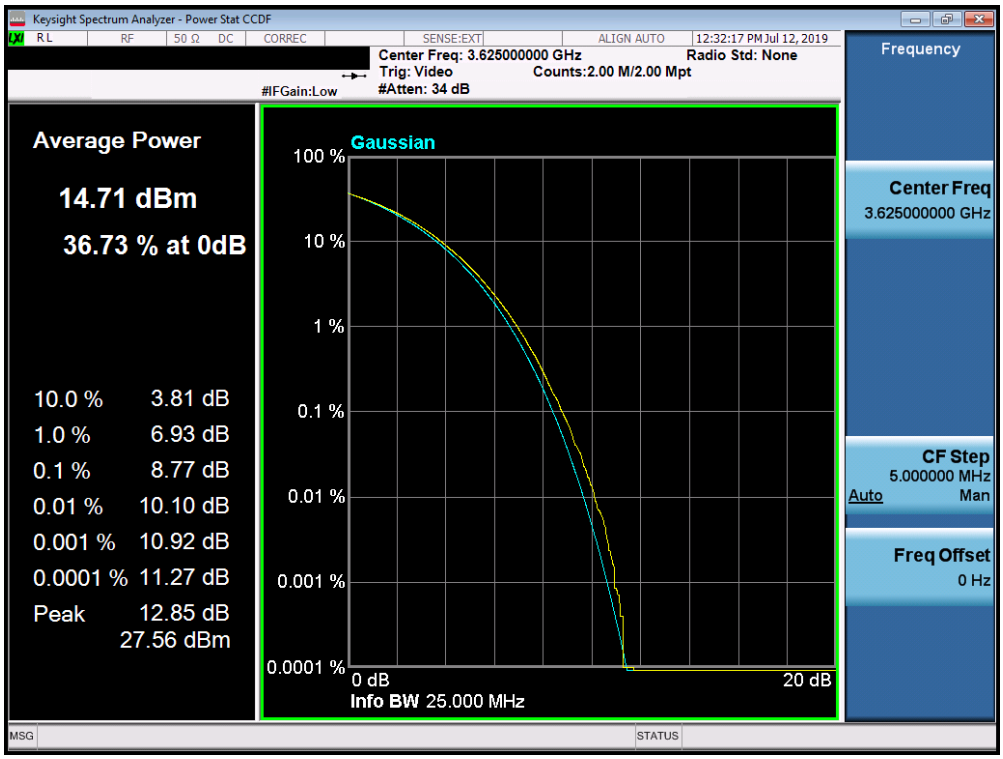
Plot 7-93. 16 User Beam PAR Plot (10.0MHz Total Bandwidth 16QAM - Mid Channel-SISO)



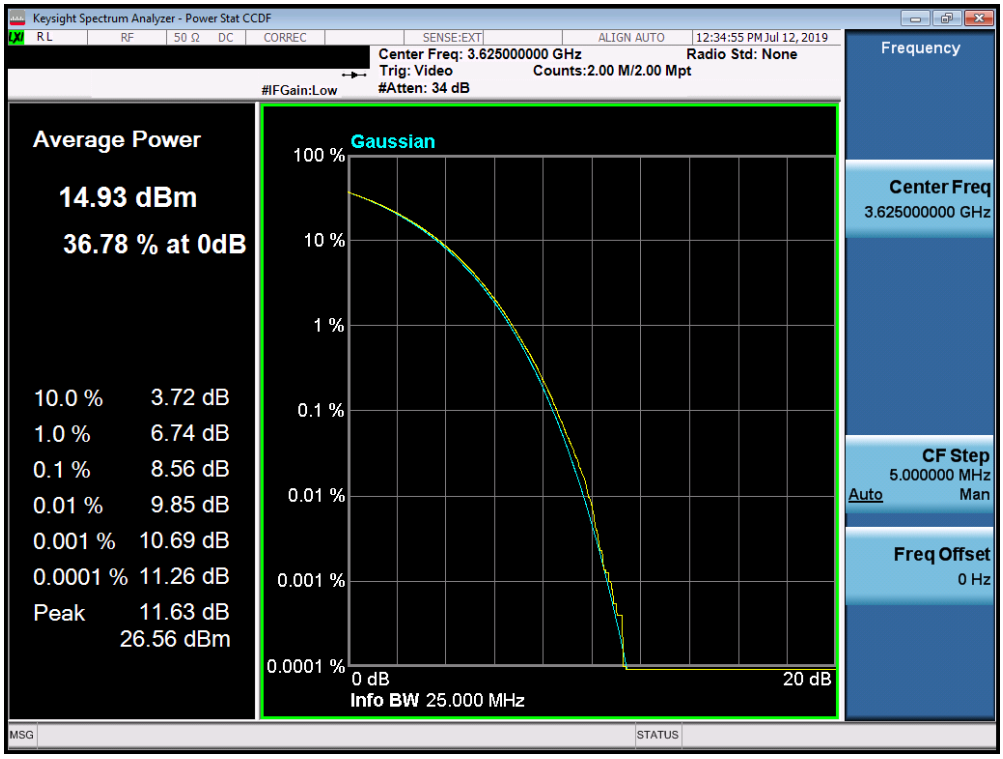
Plot 7-94. 16 User Beam PAR Plot (10.0MHz Total Bandwidth 64QAM - Mid Channel-SISO)



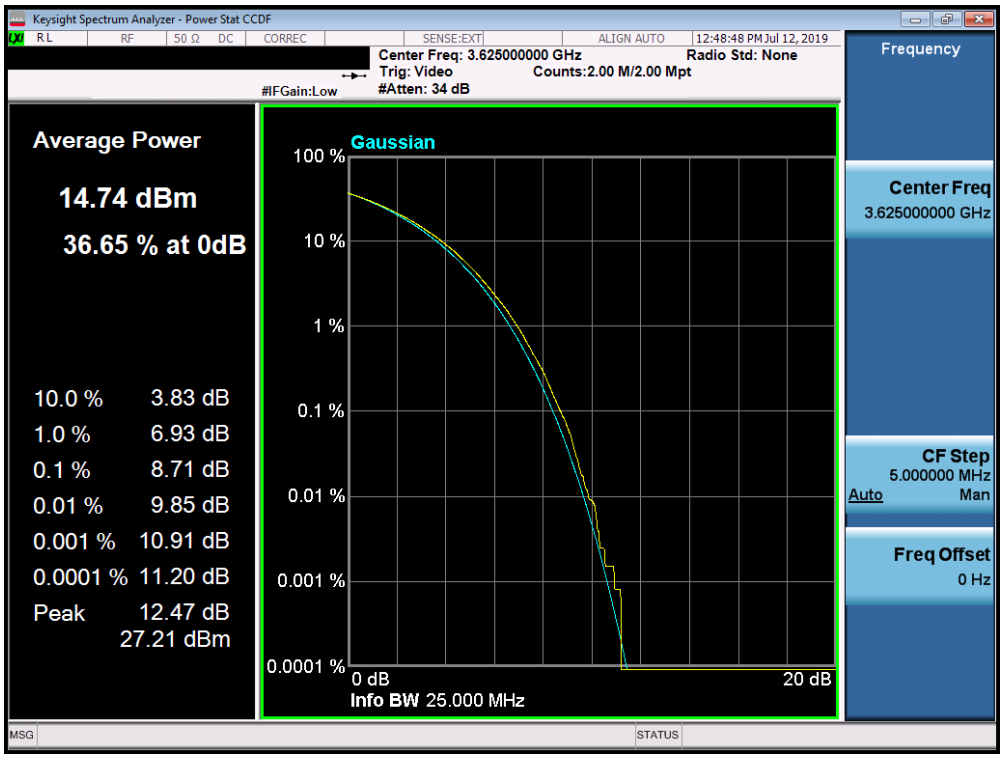
Plot 7-95. 16 User Beam PAR Plot (10.0MHz Total Bandwidth 256QAM - Mid Channel-SISO)



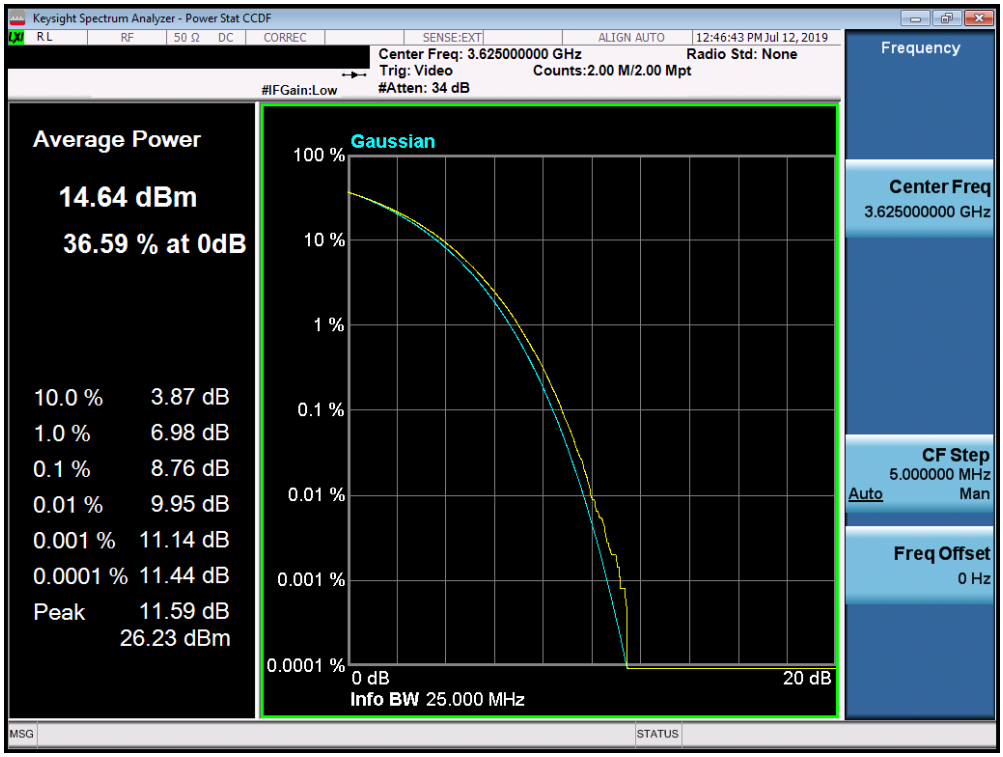
Plot 7-96. 16 User Beam PAR Plot (20.0MHz Total Bandwidth QPSK - Mid Channel-SISO)



Plot 7-97. 16 User Beam PAR Plot (20.0MHz Total Bandwidth 16QAM - Mid Channel-SISO)



Plot 7-98. 16 User Beam PAR Plot (20.0MHz Total Bandwidth 64QAM - Mid Channel-SISO)



Plot 7-99. 16 User Beam PAR Plot (20.0MHz Total Bandwidth 256QAM - Mid Channel-SISO)

Plot 7-100. 16 User Beam PAR Plot (30.0MHz Total Bandwidth QPSK - Mid Channel-SISO)

Plot 7-101. 16 User Beam PAR Plot (30.0MHz Total Bandwidth 16QAM - Mid Channel-SISO)

ACLRResults

14:43:53 17.07.2019

Plot 7-102. 16 User Beam PAR Plot (30.0MHz Total Bandwidth 64QAM - Mid Channel-SISO)

ACLRResults

14:47:41 17.07.2019

Plot 7-103. 16 User Beam PAR Plot (30.0MHz Total Bandwidth 256QAM - Mid Channel-SISO)

ACLRResults

18:57:21 17.07.2019

Plot 7-104. 16 User Beam PAR Plot (40.0MHz Total Bandwidth QPSK - Mid Channel-SISO)

ACLRResults

18:58:42 17.07.2019

Plot 7-105. 16 User Beam PAR Plot (40.0MHz Total Bandwidth 16QAM - Mid Channel-SISO)

19:00:43 17.07.2019

Plot 7-106. 16 User Beam PAR Plot (40.0MHz Total Bandwidth 64QAM - Mid Channel-SISO)

19:01:44 17.07.2019

Plot 7-107. 16 User Beam PAR Plot (40.0MHz Total Bandwidth 256QAM - Mid Channel-SISO)

Plot 7-108. 16 User Beam PAR Plot (50.0MHz Total Bandwidth QPSK - Mid Channel-SISO)

Plot 7-109. 16 User Beam PAR Plot (50.0MHz Total Bandwidth 16QAM - Mid Channel-SISO)

ACLRResults

19:20:49 17.07.2019

Plot 7-110. 16 User Beam PAR Plot (50.0MHz Total Bandwidth 64QAM - Mid Channel-SISO)

ACLRResults

19:22:18 17.07.2019

Plot 7-111. 16 User Beam PAR Plot (50.0MHz Total Bandwidth 256QAM - Mid Channel-SISO)

ACLRResults

15:22:23 17.07.2019

Plot 7-112. 16 User Beam PAR Plot (60.0MHz Total Bandwidth QPSK - Mid Channel-SISO)

ACLRResults

15:23:39 17.07.2019

Plot 7-113. 16 User Beam PAR Plot (60.0MHz Total Bandwidth 16QAM - Mid Channel-SISO)

ACLRResults

15:25:07 17.07.2019

Plot 7-114. 16 User Beam PAR Plot (60.0MHz Total Bandwidth 64QAM - Mid Channel-SISO)

ACLRResults

15:26:24 17.07.2019

Plot 7-115. 16 User Beam PAR Plot (60.0MHz Total Bandwidth 256QAM - Mid Channel-SISO)

7.6 Spurious and Harmonic Emissions at Antenna Terminal

§2.1051 §96.41(e)

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

The conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40 dBm/Mhz.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 6.0

KDB 662911 D01 v02r01 – Section E)3) Out-of-Band and Spurious Emission Measurements

a) Absolute Emission Limits

(iii) Measure and add 10 log(NANT) Db

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to at least 10 * the fundamental frequency (separated into at least two plots per channel)
1. Trace mode and Detector= RMS
2. Sweep time = auto couple
3. The trace was allowed to stabilize
4. Please see test notes below for RBW and VBW settings

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

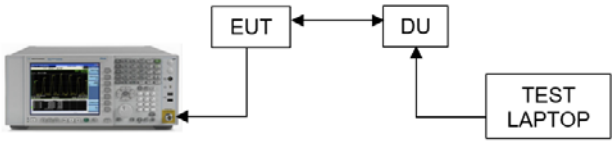


Figure 7-5. Test Instrument & Measurement Setup

Test Notes

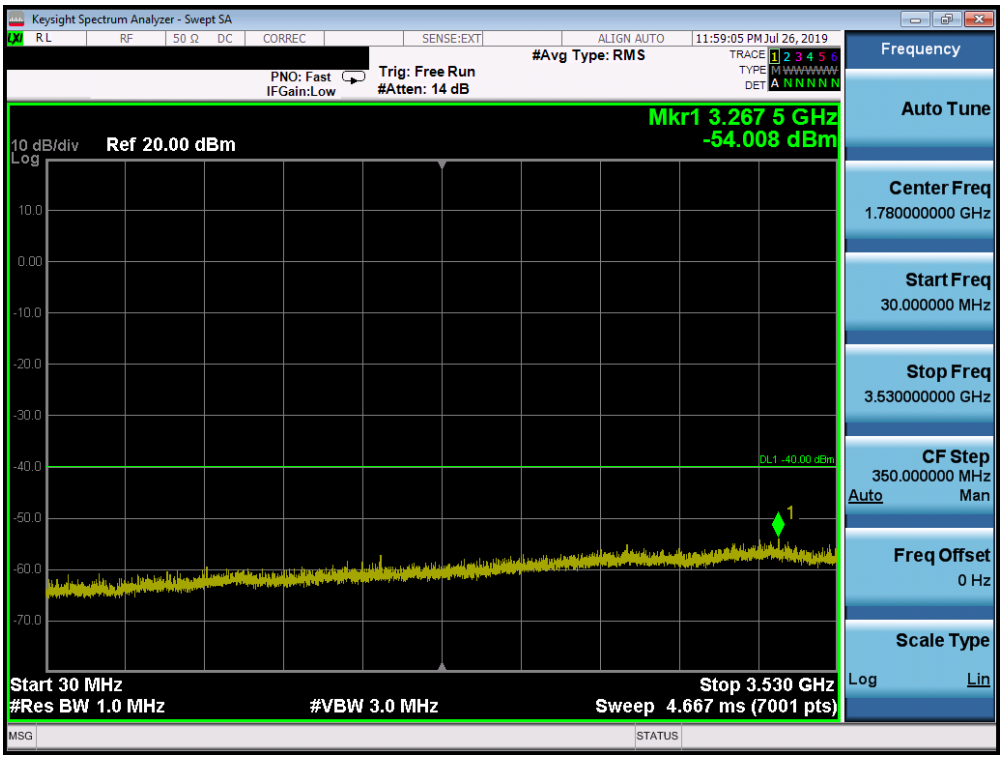
1. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. 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 emission are attenuated at least 26 dB below the transmitter power.

2. 16 user beam mode is the worst case mode and all conducted spurious emissions are measured in this mode.
3. The modulation 16QAM for single carrier is the worst case.
4. Mid Channel SISO and MIMO plots are measured.
    a. MIMO plots show the conducted spurious emissions with all 64 transmit ports combined.
    b. The offset calculation:

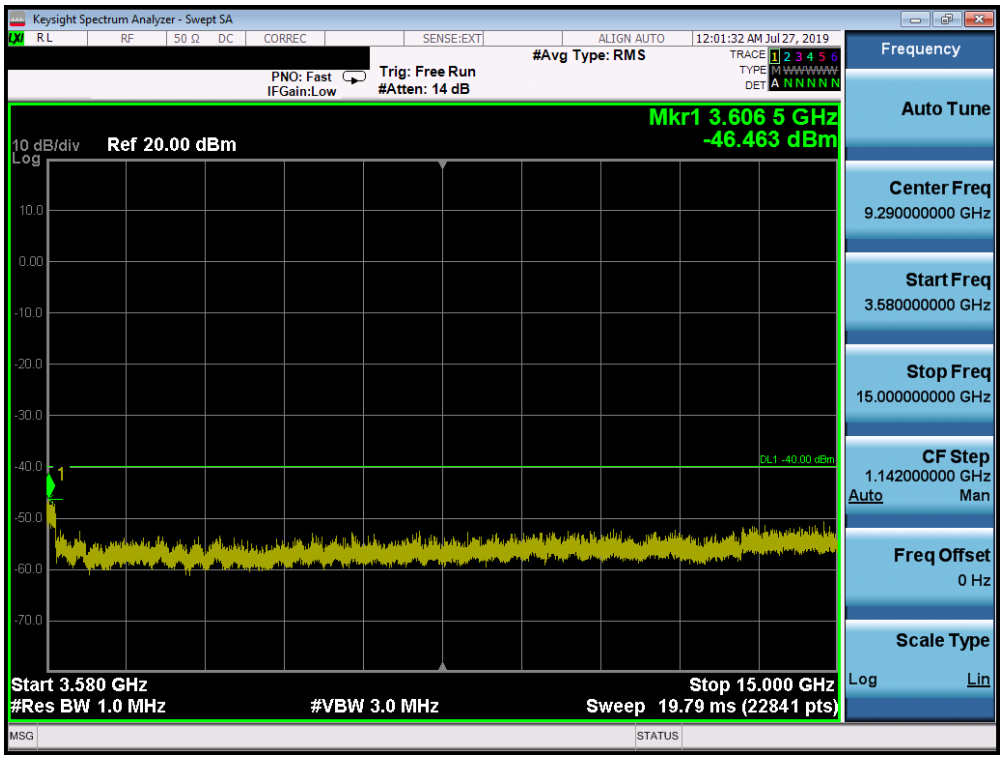
        10*log(64) = 18.06 dB

        This value has been added in the MIMO Plots.
        Refer KDB 662911 D01 v02r01 – Section E)2)c) for details.

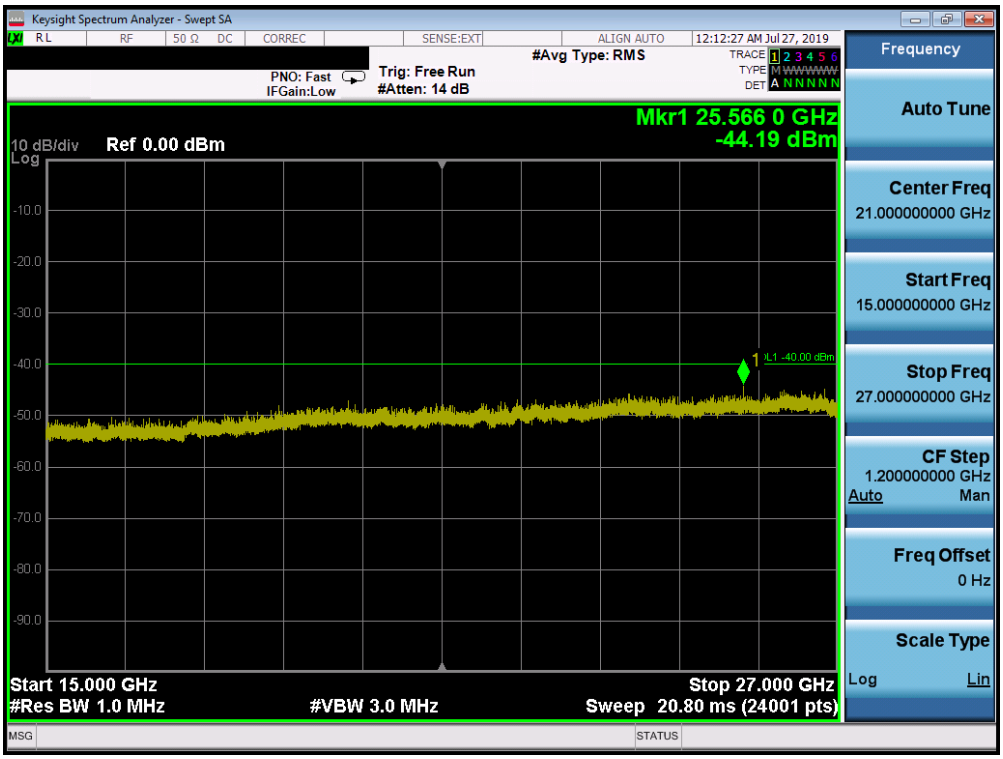
1CC Low Channel MIMO



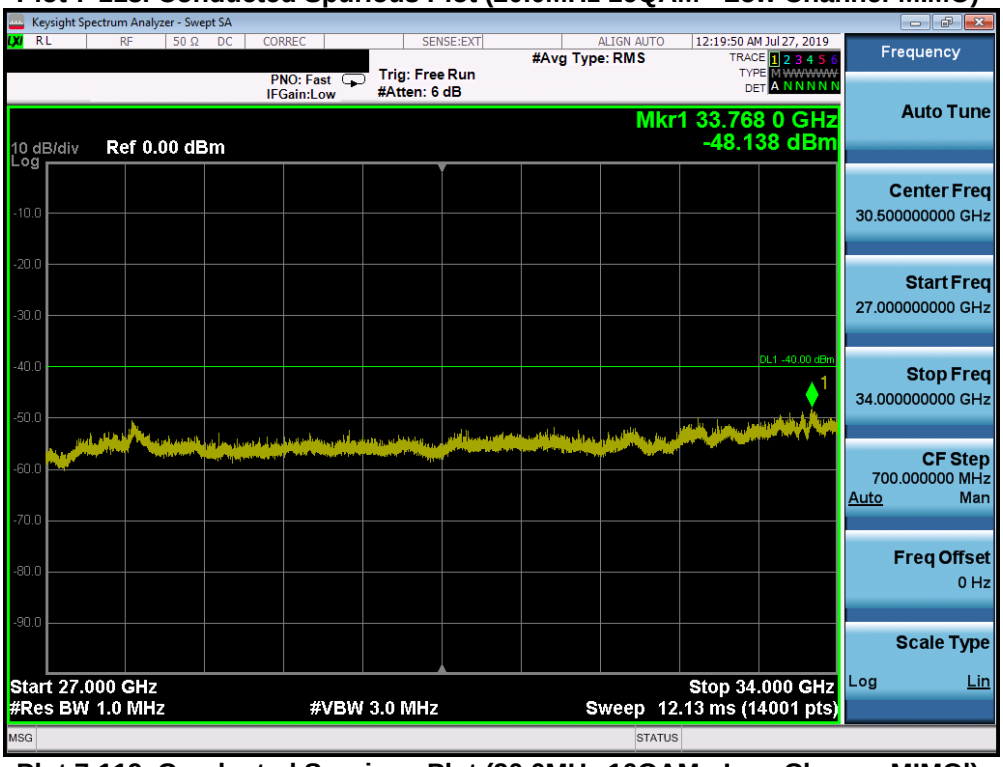
Plot 7-116. Conducted Spurious Plot (20.0MHz 16QAM - Low Channel-MIMO)



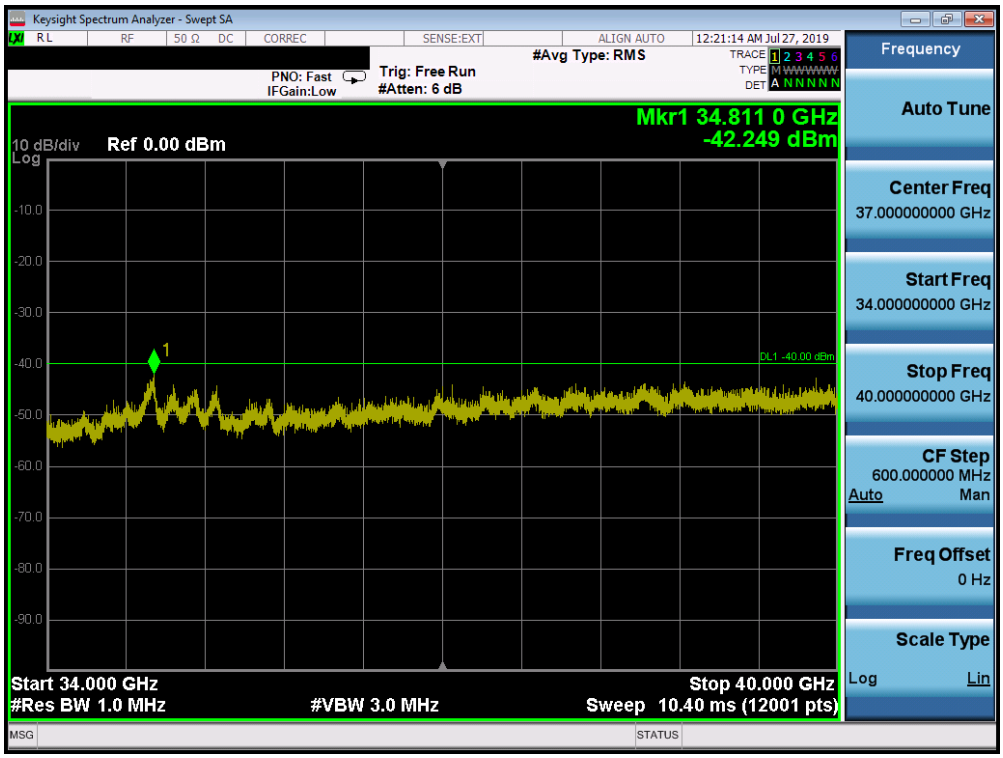
Plot 7-117. Conducted Spurious Plot (20.0MHz 16QAM - Low Channel-MIMO)



Plot 7-118. Conducted Spurious Plot (20.0MHz 16QAM - Low Channel-MIMO)

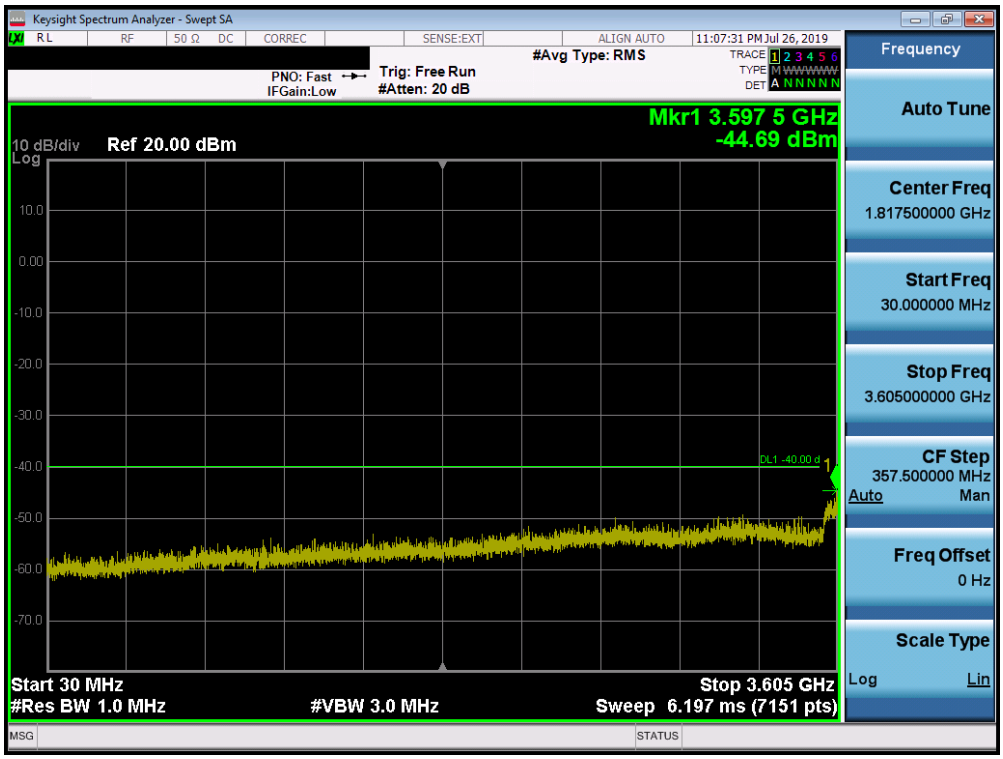


Plot 7-119. Conducted Spurious Plot (20.0MHz 16QAM - Low Channe-MIMOl)

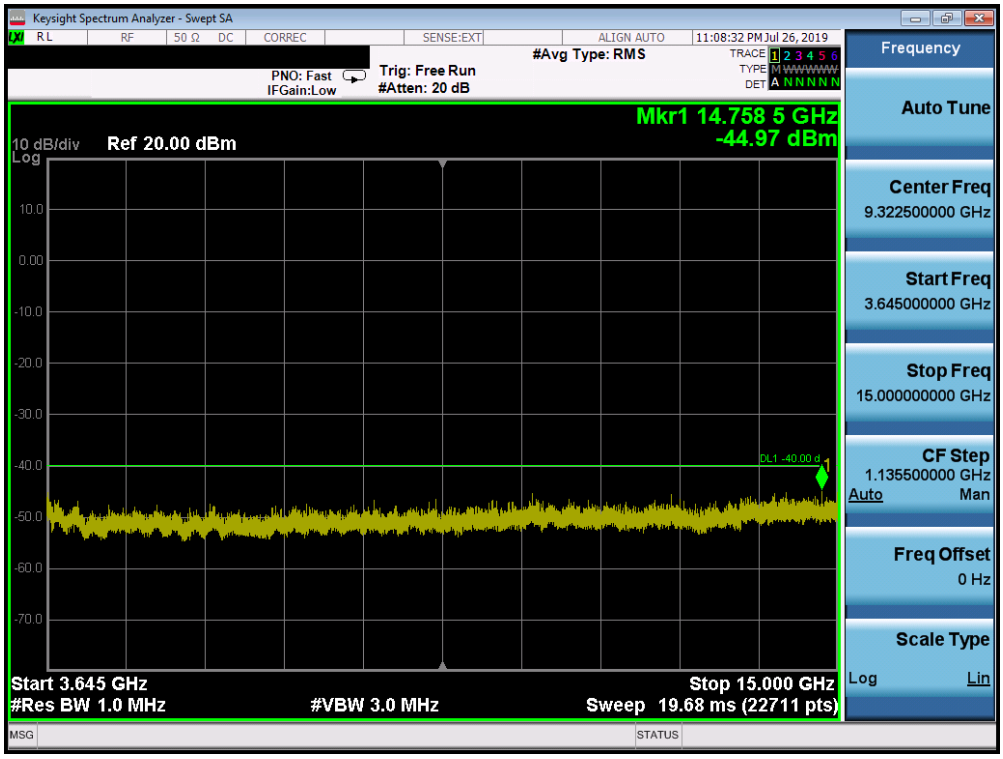


Plot 7-120. Conducted Spurious Plot (20.0MHz 16QAM - Low Channel-MIMO)

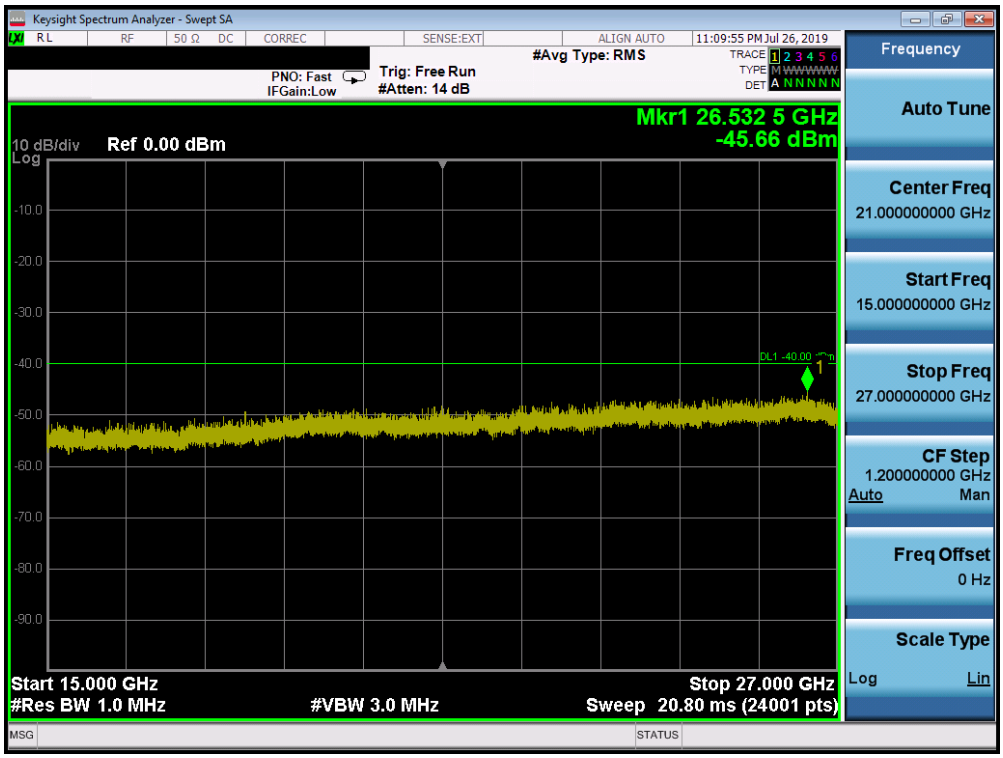
1CC Mid Channel MIMO



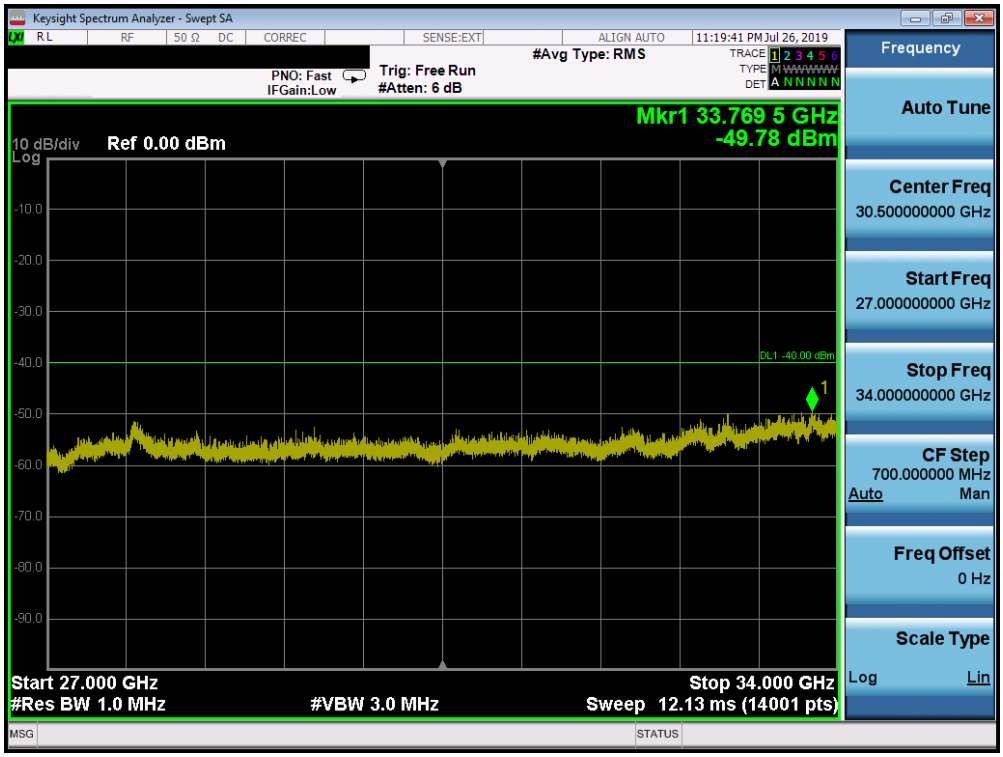
Plot 7-121. Conducted Spurious Plot (20.0MHz 16QAM - Mid Channel-MIMO)



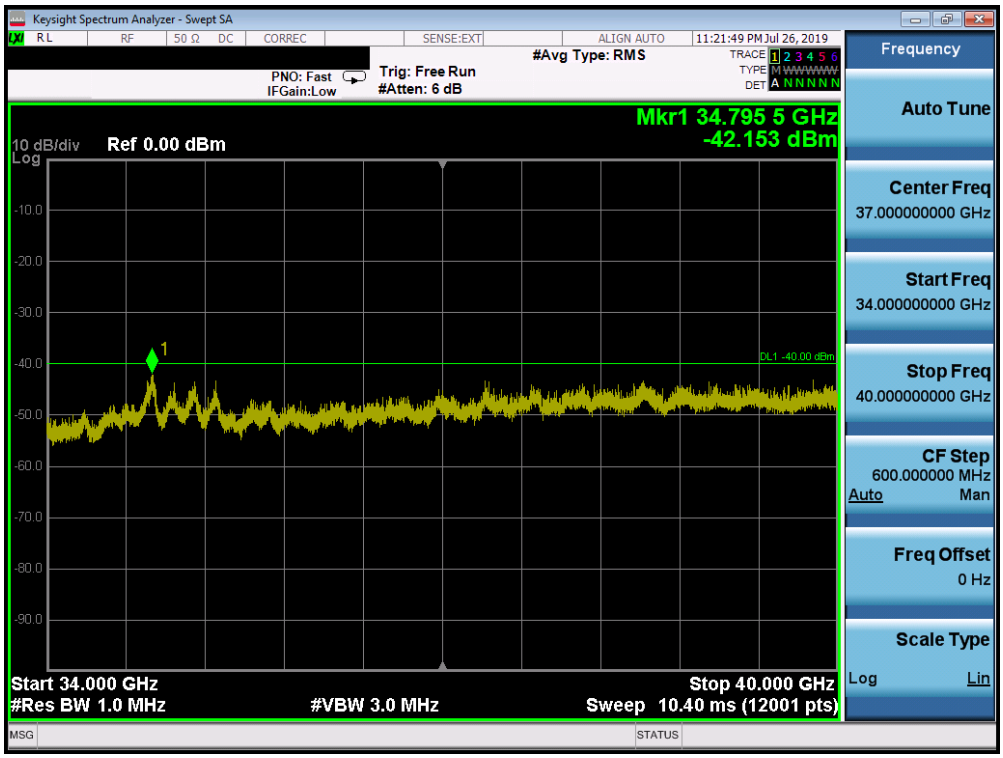
Plot 7-122. Conducted Spurious Plot (20.0MHz 16QAM - Mid Channel-MIMO)



Plot 7-123. Conducted Spurious Plot (20.0MHz 16QAM - Mid Channel-MIMO)

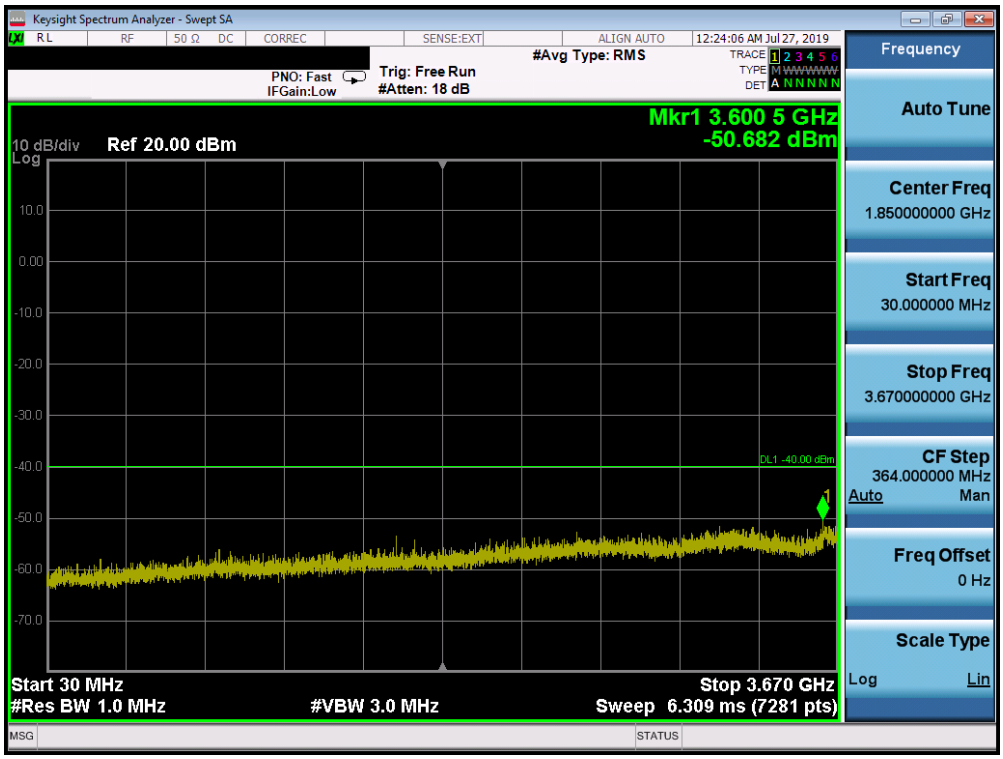


Plot 7-124. Conducted Spurious Plot (20.0MHz 16QAM - Mid Channel-MIMO)

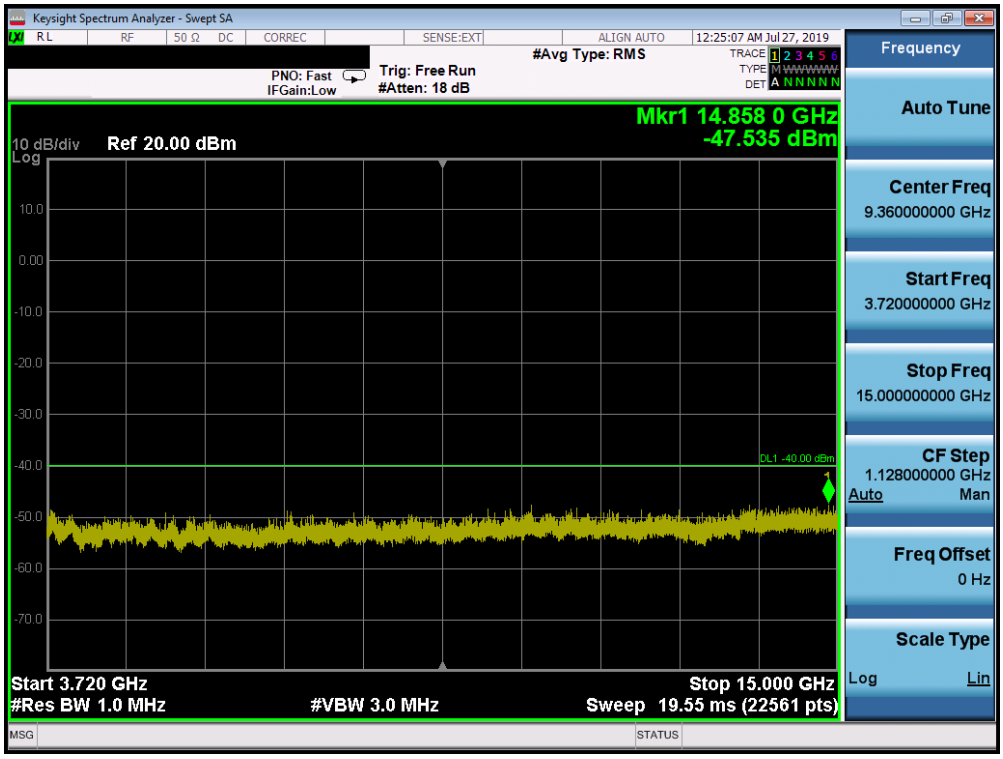


Plot 7-125. Conducted Spurious Plot (20.0MHz 16QAM - Mid Channel-MIMO)

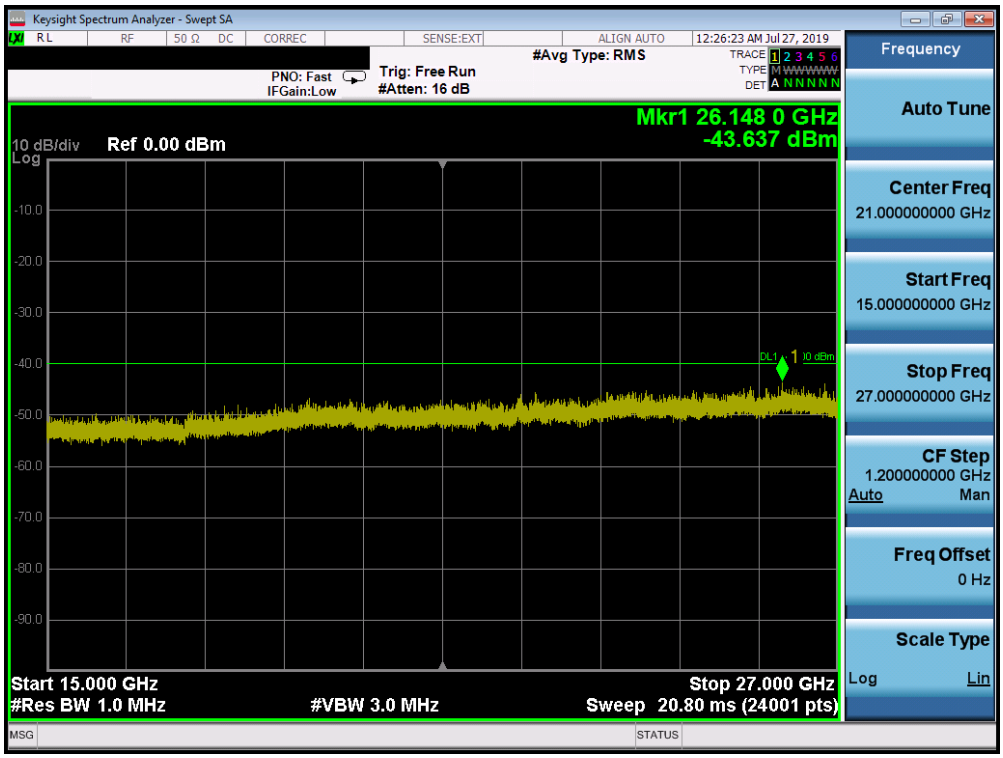
1CC High Channel MIMO



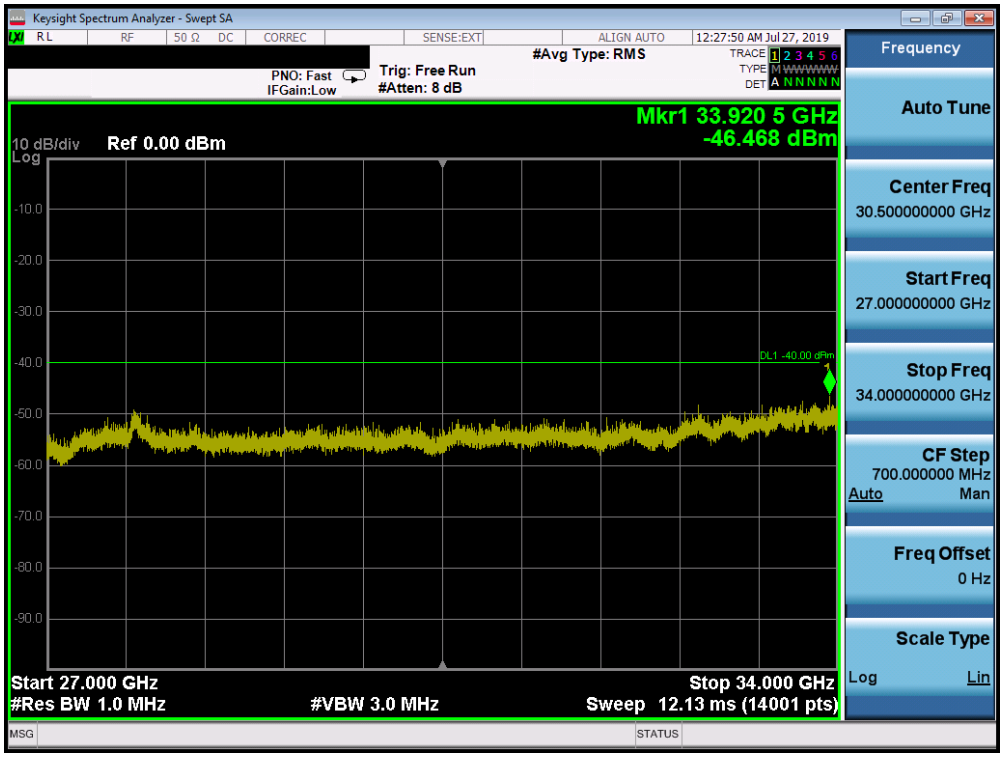
Plot 7-126. Conducted Spurious Plot (20.0MHz 16QAM - High Channel-MIMO)



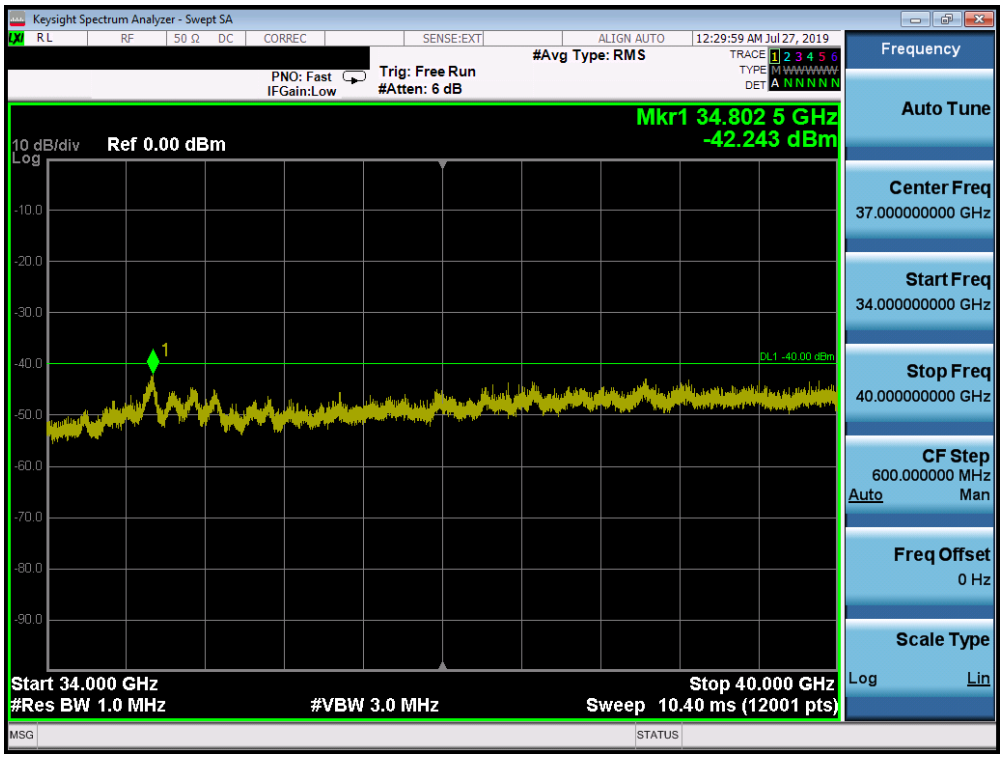
Plot 7-127. Conducted Spurious Plot (20.0MHz 16QAM - High Channel-MIMO)



Plot 7-128. Conducted Spurious Plot (20.0MHz 16QAM - High Channel-MIMO)



Plot 7-129. Conducted Spurious Plot (20.0MHz 16QAM - High Channel-MIMO)



Plot 7-130. Conducted Spurious Plot (20.0MHz 16QAM - High Channel-MIMO)

7.7 Case Radiated Spurious and Harmonic Emissions

§2.1053 §96.41(e)

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting. All antenna ports were terminated in 50Ω. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using dual polarized vivaldi antennas.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 6.0

KDB 662911 D01 v02r01 – Section E)3) Out-of-Band and Spurious Emission Measurements
b) Absolute Emission Limits
(iii) Measure and add 10 log(NANT) Db

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to at least 10 * the fundamental frequency (separated into at least two plots per channel)
2. Trace mode = Average
3. Detector = RMS
4. Each emission was triggered on the pulse
5. Sweep time = auto couple
6. The trace was allowed to stabilize
7. Please see test notes below for RBW and VBW settings

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

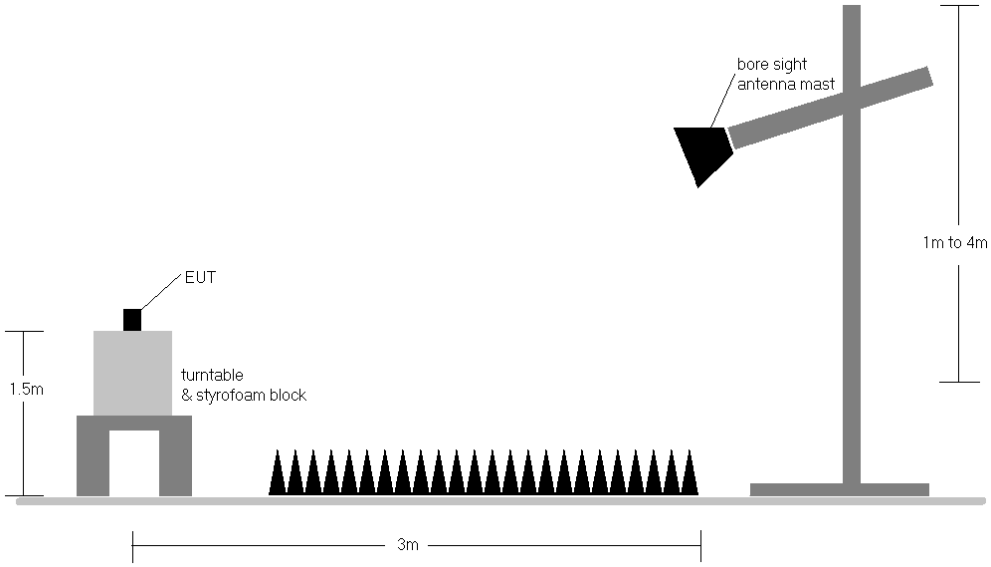


Figure 7-6. Radiated Test Setup >1GHz

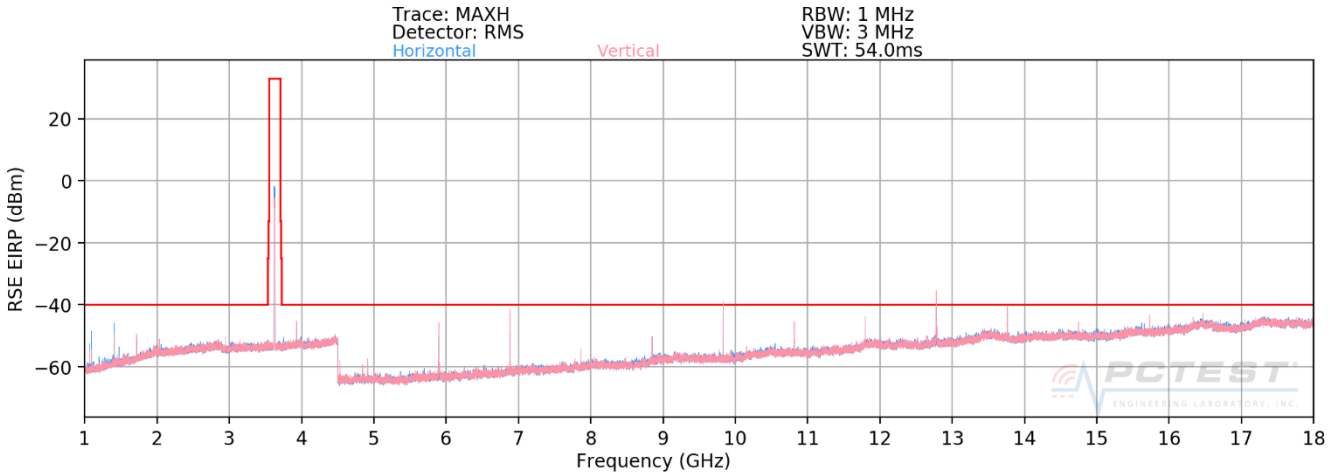
Test Notes

1. The EUT was tested in both horizontal and vertical antenna polarizations and in all possible test configurations and positioning. Multiple carriers were investigated with 1CC 20MHz bandwidth being found to be the worst case transmission mode.The worst case emissions are reported with the EUT positioning, modulations, channel bandwidth configurations shown in the tables below.
2. 16 user beam mode is the worst case mode and all radiated spurious emissions are measured in this mode.
3. This unit was tested while powered by a DC power source.
4. The modulation 16QAM for single carrier is the worst case.
5. The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter.

The worst-case emissions are reported.

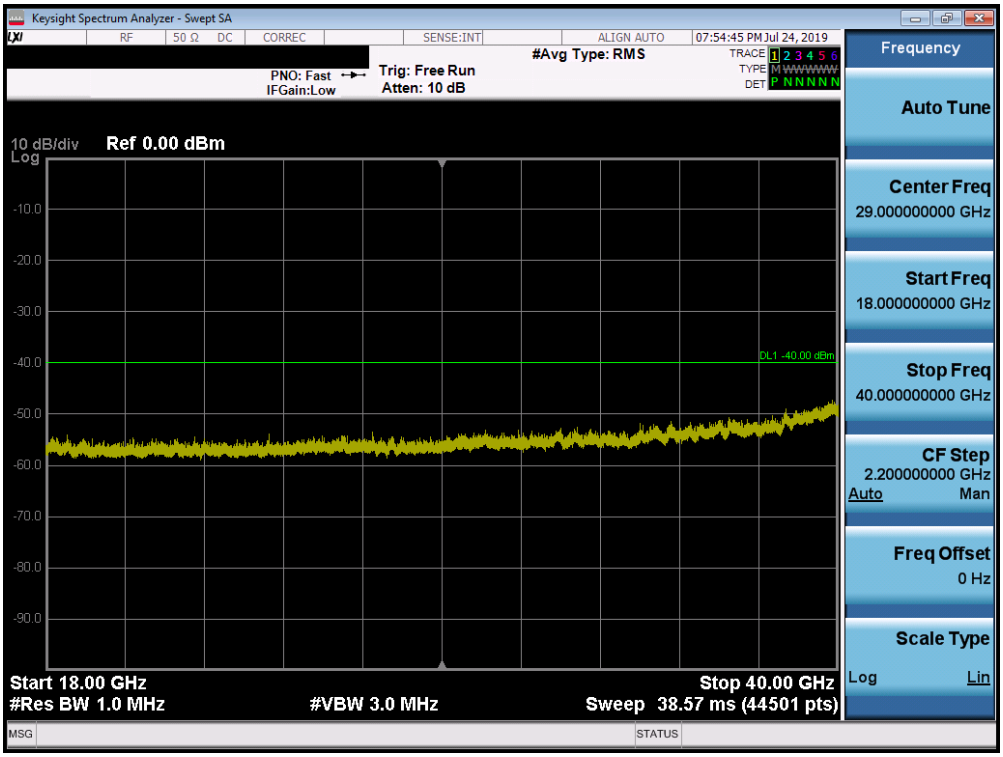
6. Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
7. The "-" shown in the following RSE tables are used to denote a noise floor measurement.

Radiated Spurious Emissions - 1CC 20MHz Bandwidth



Plot 7-131. Radiated Spurious Plot 1-18GHz (1CC-20.0MHz 16QAM- Mid Channel)

Note: Pre-scan measurements were taken with trace on maxhold. Pre-scan plots are used for emissions detection and identification. All final spurious emission measurements were taken by maximizing each emission separately using trace average with RMS detector, and triggering on the emission. Final emission levels are recorded in the data tables to follow.



Plot 7-132. Radiated Spurious Plot 18-40GHz (1CC-20.0MHz 16QAM - Mid Channel)

OPERATING FREQUENCY:	3560.00	MHz
MODULATION SIGNAL:	16QAM	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-40	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4840.00	V	269	309	-80.57	11.33	-69.24	-29.2
7120.00	H	-	-	-76.35	10.17	-66.17	-26.2
9830.00	H	176	123	-54.68	11.64	-43.04	-3.0
10680.00	V	-	-	-73.28	12.06	-61.22	-21.2
12780.00	V	103	194	-62.56	13.45	-49.11	-9.1
13762.60	V	109	202	-64.19	12.37	-51.82	-11.8
14240.00	H	-	-	-68.74	12.76	-55.98	-16.0
17800.00	H	-	-	-65.16	14.15	-51.01	-11.0

Plot 7-133. Radiated Spurious Emissions (1CC-20.0MHz 16QAM - Low Channel)

OPERATING FREQUENCY:	3625.00	MHz
MODULATION SIGNAL:	16QAM	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-40	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1406.20	H	182	4	-50.62	2.29	-48.33	-8.3
7250.00	H	-	-	-76.22	9.14	-67.08	-27.1
9830.50	V	101	224	-51.17	9.54	-41.62	-1.6
10813.46	H	140	140	-65.85	9.38	-56.47	-16.5
10875.00	H	-	-	-70.49	9.31	-61.18	-21.2
12779.40	V	115	206	-50.06	8.90	-41.16	-1.2
13762.40	V	138	208	-49.71	8.73	-40.98	-1.0
14500.00	H	-	-	-64.39	8.46	-55.94	-15.9

Plot 7-134. Radiated Spurious Emissions (1CC-20.0MHz 16QAM - Mid Channel)

OPERATING FREQUENCY:	3680.00	MHz
MODULATION SIGNAL:	16QAM	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-40	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
7360.00	H	-	-	-75.42	10.00	-65.42	-25.4
9830.00	H	172	238	-54.37	11.64	-42.73	-2.7
11040.00	H	-	-	-72.75	12.61	-60.14	-20.1
12780.00	V	189	203	-54.77	13.45	-41.32	-1.3
13762.60	V	109	205	-55.02	12.37	-42.65	-2.7
14720.00	H	-	-	-67.92	14.08	-53.84	-13.8

Plot 7-135. Radiated Spurious Emissions (1CC-20.0MHz 16QAM- High Channel)

7.8 Band Edge Emissions at Antenna Terminal

§2.1051 §96.41(e)

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

The conducted power of any emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed −13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any emission shall not exceed −25 dBm/MHz.

The conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40 dBm/Mhz.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 6.0

Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW ≥ 1% of the emission bandwidth
4. VBW ≥ 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 2 x Span/RBW
7. Trace mode = trace average
8. Sweep time = auto couple
9. The trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

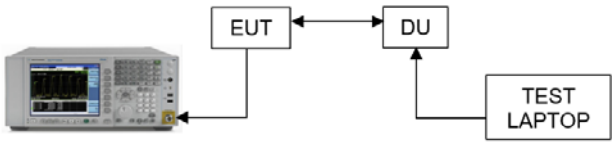


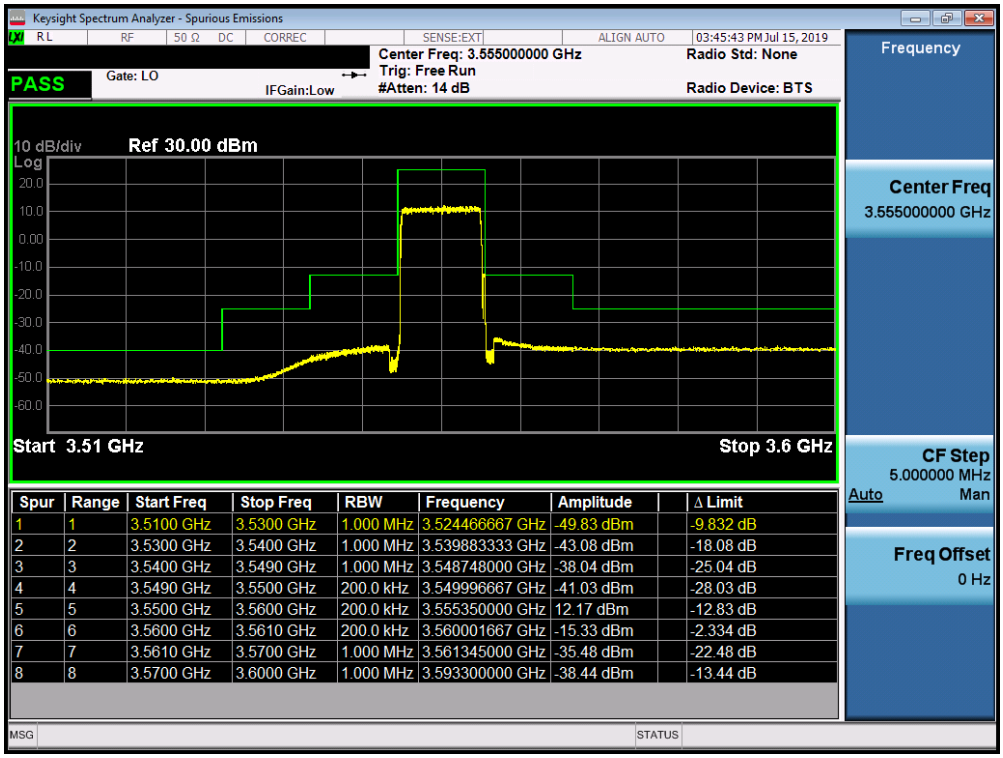
Figure 7-7. Test Instrument & Measurement Setup

Test Notes

1. The signal was gated with an approporiate sweep time, gate delay and length to capture the on time of the transmission.

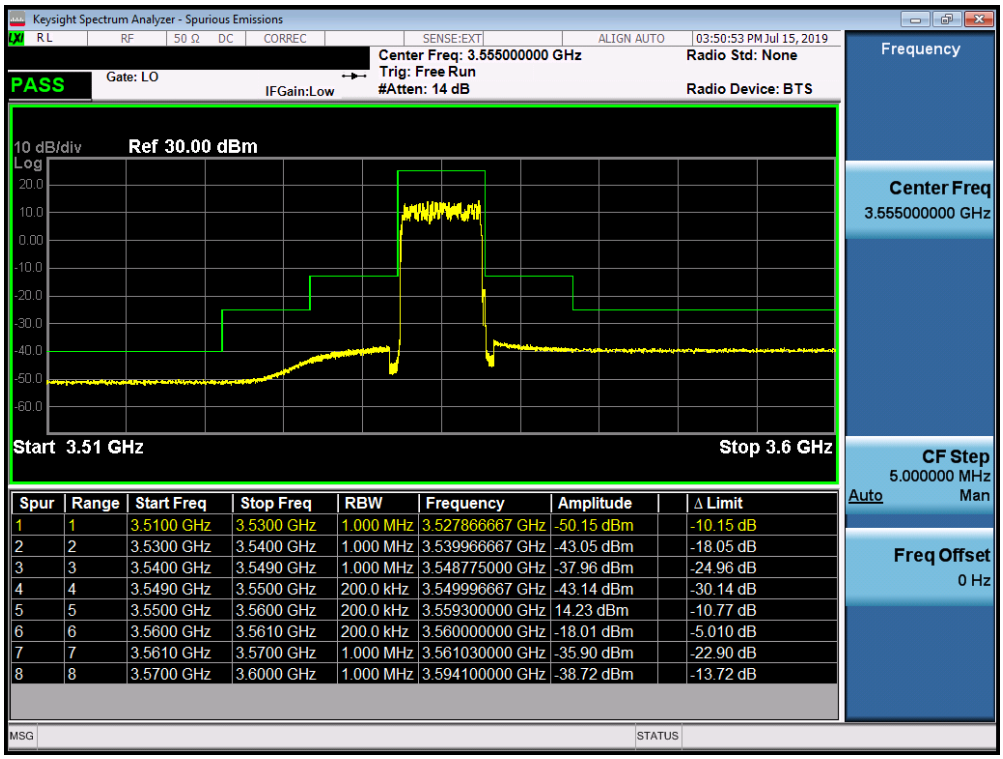
2. MIMO plots show band edge for 64 transmit ports combined. Refer to the following calculation:
   10*log(64) = 18.06 dB
   This offset has been added in the MIMO Plots.

Low Channel 10MHz Total Bandwidth Channel Edge



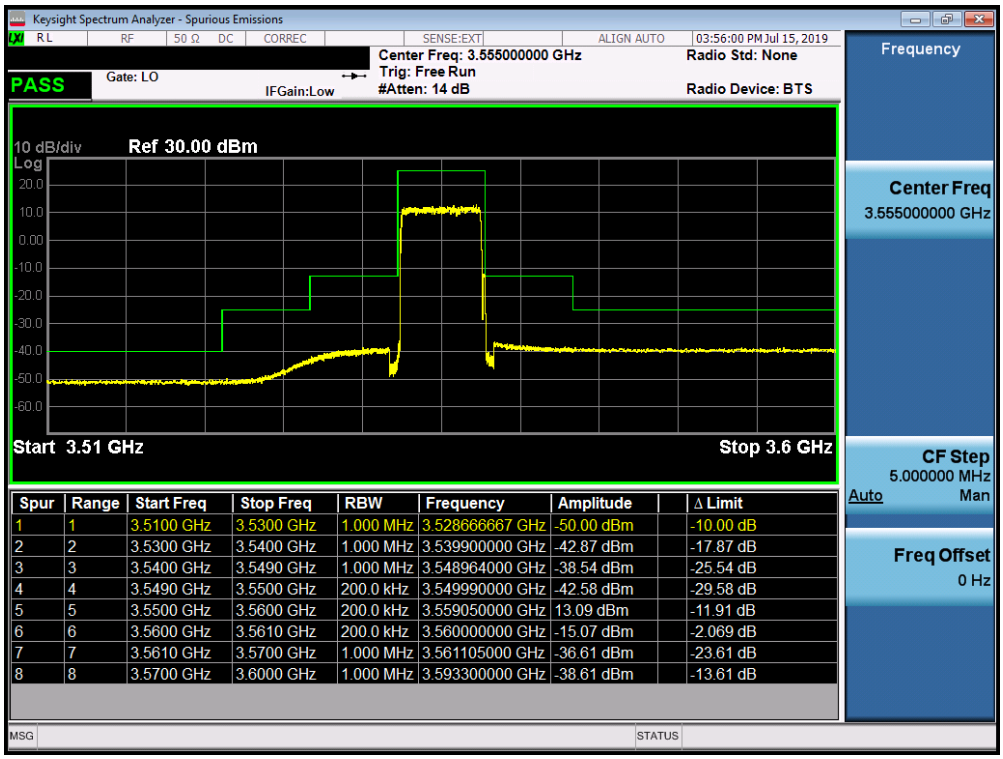
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.5100 GHz	3.5300 GHz	1.000 MHz	3.524466667 GHz	-49.83 dBm	-9.832 dB
2	2	3.5300 GHz	3.5400 GHz	1.000 MHz	3.539883333 GHz	-43.08 dBm	-18.08 dB
3	3	3.5400 GHz	3.5490 GHz	1.000 MHz	3.548748000 GHz	-38.04 dBm	-25.04 dB
4	4	3.5490 GHz	3.5500 GHz	200.0 kHz	3.549996667 GHz	-41.03 dBm	-28.03 dB
5	5	3.5500 GHz	3.5600 GHz	200.0 kHz	3.555350000 GHz	12.17 dBm	-12.83 dB
6	6	3.5600 GHz	3.5610 GHz	200.0 kHz	3.560001667 GHz	-15.33 dBm	-2.334 dB
7	7	3.5610 GHz	3.5700 GHz	1.000 MHz	3.561345000 GHz	-35.48 dBm	-22.48 dB
8	8	3.5700 GHz	3.6000 GHz	1.000 MHz	3.593300000 GHz	-38.44 dBm	-13.44 dB

Plot 7-136. Low Channel Edge Plot (10.0MHz Total Bandwidth QPSK)



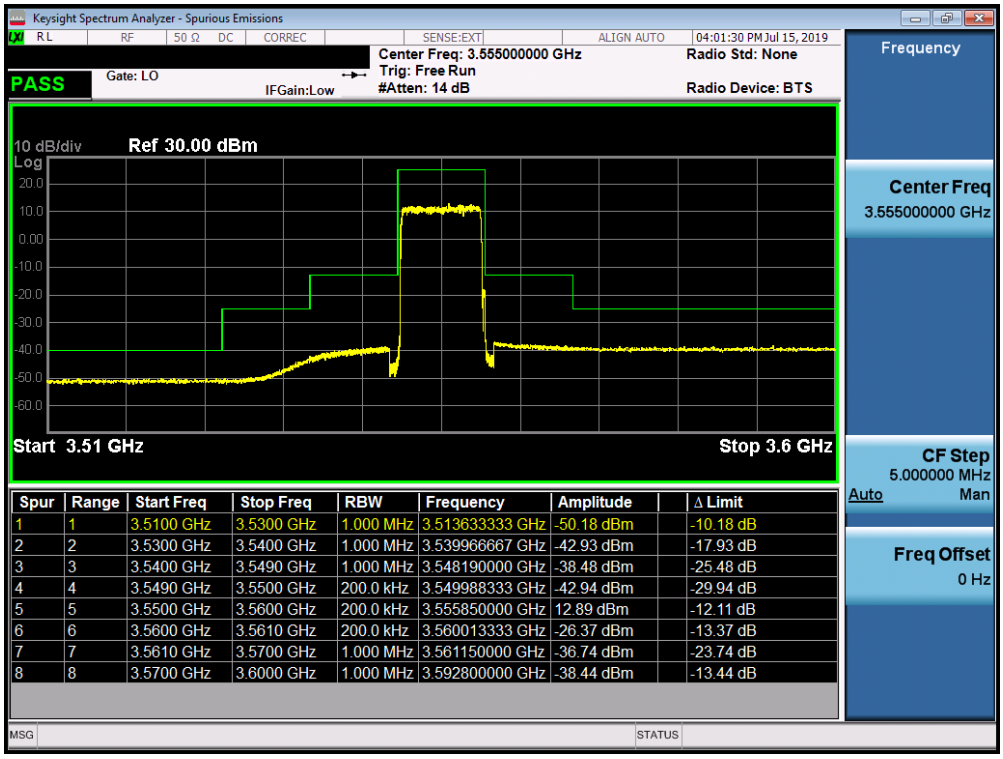
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.5100 GHz	3.5300 GHz	1.000 MHz	3.527866667 GHz	-50.15 dBm	-10.15 dB
2	2	3.5300 GHz	3.5400 GHz	1.000 MHz	3.539966667 GHz	-43.05 dBm	-18.05 dB
3	3	3.5400 GHz	3.5490 GHz	1.000 MHz	3.548775000 GHz	-37.96 dBm	-24.96 dB
4	4	3.5490 GHz	3.5500 GHz	200.0 kHz	3.549996667 GHz	-43.14 dBm	-30.14 dB
5	5	3.5500 GHz	3.5600 GHz	200.0 kHz	3.559300000 GHz	14.23 dBm	-10.77 dB
6	6	3.5600 GHz	3.5610 GHz	200.0 kHz	3.560000000 GHz	-18.01 dBm	-5.010 dB
7	7	3.5610 GHz	3.5700 GHz	1.000 MHz	3.561030000 GHz	-35.90 dBm	-22.90 dB
8	8	3.5700 GHz	3.6000 GHz	1.000 MHz	3.594100000 GHz	-38.72 dBm	-13.72 dB

Plot 7-137. Low Channel Edge Plot (10.0MHz Total Bandwidth 16QAM)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.5100 GHz	3.5300 GHz	1.000 MHz	3.528666667 GHz	-50.00 dBm	-10.00 dB
2	2	3.5300 GHz	3.5400 GHz	1.000 MHz	3.539900000 GHz	-42.87 dBm	-17.87 dB
3	3	3.5400 GHz	3.5490 GHz	1.000 MHz	3.548964000 GHz	-38.54 dBm	-25.54 dB
4	4	3.5490 GHz	3.5500 GHz	200.0 kHz	3.549990000 GHz	-42.58 dBm	-29.58 dB
5	5	3.5500 GHz	3.5600 GHz	200.0 kHz	3.559050000 GHz	13.09 dBm	-11.91 dB
6	6	3.5600 GHz	3.5610 GHz	200.0 kHz	3.560000000 GHz	-15.07 dBm	-2.069 dB
7	7	3.5610 GHz	3.5700 GHz	1.000 MHz	3.561105000 GHz	-36.61 dBm	-23.61 dB
8	8	3.5700 GHz	3.6000 GHz	1.000 MHz	3.593300000 GHz	-38.61 dBm	-13.61 dB

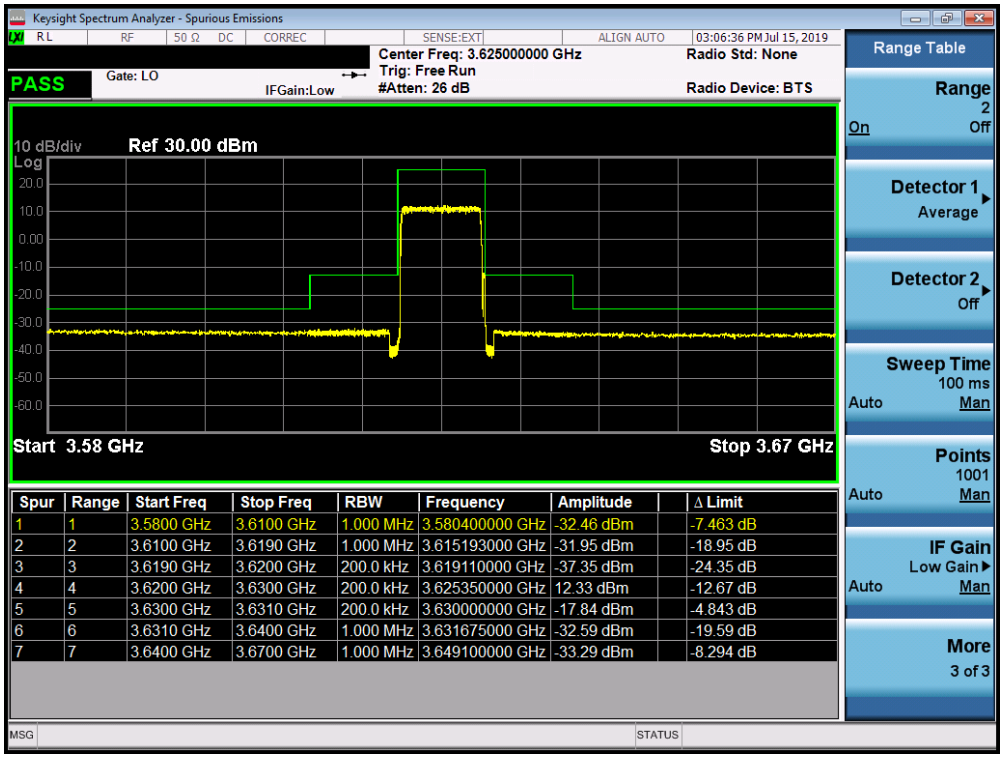
Plot 7-138. Low Channel Edge Plot (10.0MHz Total Bandwidth 64QAM)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.5100 GHz	3.5300 GHz	1.000 MHz	3.513633333 GHz	-50.18 dBm	-10.18 dB
2	2	3.5300 GHz	3.5400 GHz	1.000 MHz	3.539966667 GHz	-42.93 dBm	-17.93 dB
3	3	3.5400 GHz	3.5490 GHz	1.000 MHz	3.548190000 GHz	-38.48 dBm	-25.48 dB
4	4	3.5490 GHz	3.5500 GHz	200.0 kHz	3.549988333 GHz	-42.94 dBm	-29.94 dB
5	5	3.5500 GHz	3.5600 GHz	200.0 kHz	3.555850000 GHz	12.89 dBm	-12.11 dB
6	6	3.5600 GHz	3.5610 GHz	200.0 kHz	3.560013333 GHz	-26.37 dBm	-13.37 dB
7	7	3.5610 GHz	3.5700 GHz	1.000 MHz	3.561150000 GHz	-36.74 dBm	-23.74 dB
8	8	3.5700 GHz	3.6000 GHz	1.000 MHz	3.592800000 GHz	-38.44 dBm	-13.44 dB

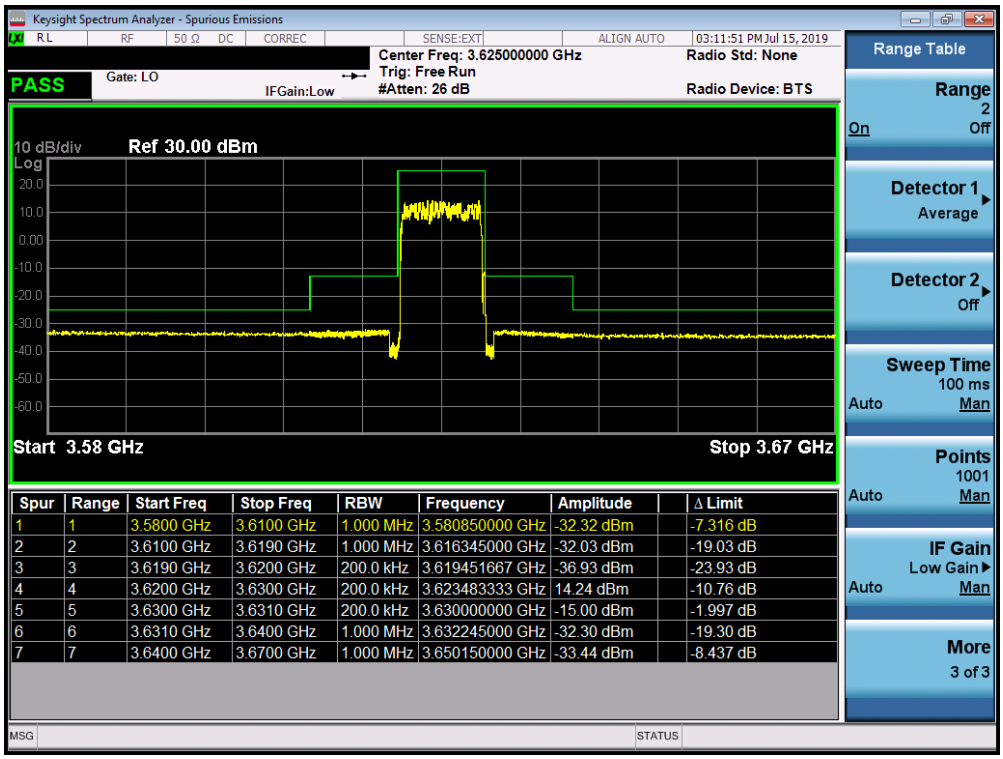
Plot 7-139. Low Channel Edge Plot (10.0MHz Total Bandwidth 256QAM)

Mid Channel 10MHz Total Bandwidth Channel Edge



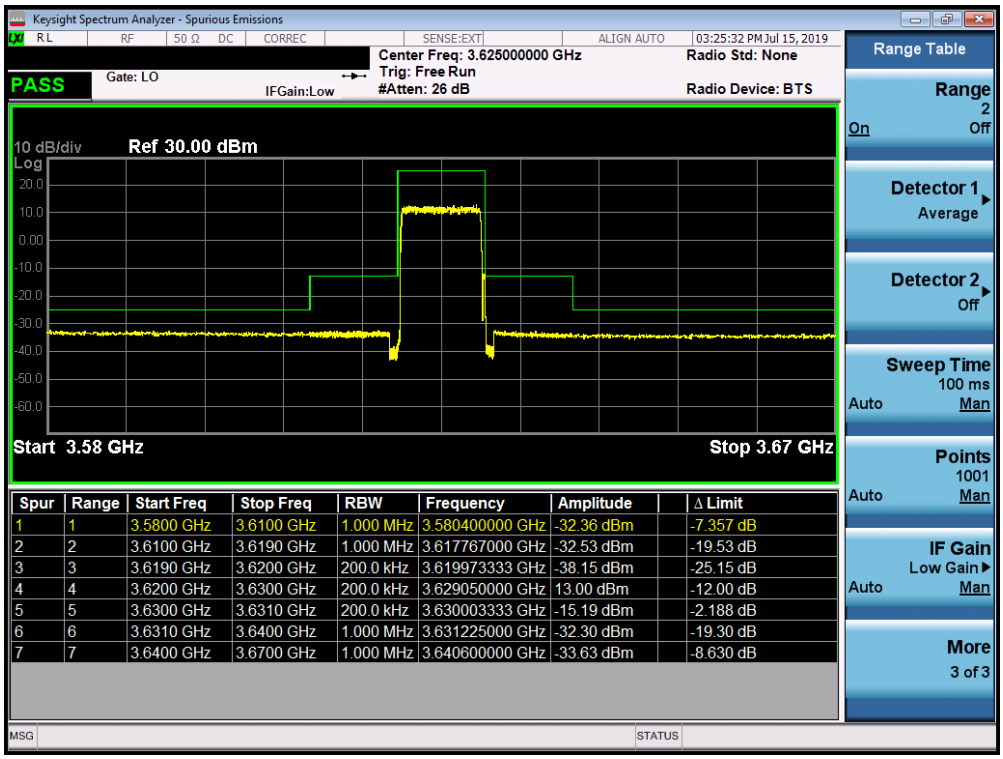
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.5800 GHz	3.6100 GHz	1.000 MHz	3.580400000 GHz	-32.46 dBm	-7.463 dB
2	2	3.6100 GHz	3.6190 GHz	1.000 MHz	3.615193000 GHz	-31.95 dBm	-18.95 dB
3	3	3.6190 GHz	3.6200 GHz	200.0 kHz	3.619110000 GHz	-37.35 dBm	-24.35 dB
4	4	3.6200 GHz	3.6300 GHz	200.0 kHz	3.625350000 GHz	12.33 dBm	-12.67 dB
5	5	3.6300 GHz	3.6310 GHz	200.0 kHz	3.630000000 GHz	-17.84 dBm	-4.843 dB
6	6	3.6310 GHz	3.6400 GHz	1.000 MHz	3.631675000 GHz	-32.59 dBm	-19.59 dB
7	7	3.6400 GHz	3.6700 GHz	1.000 MHz	3.649100000 GHz	-33.29 dBm	-8.294 dB

Plot 7-140. Mid Channel Edge Plot (10.0MHz Total Bandwidth QPSK)



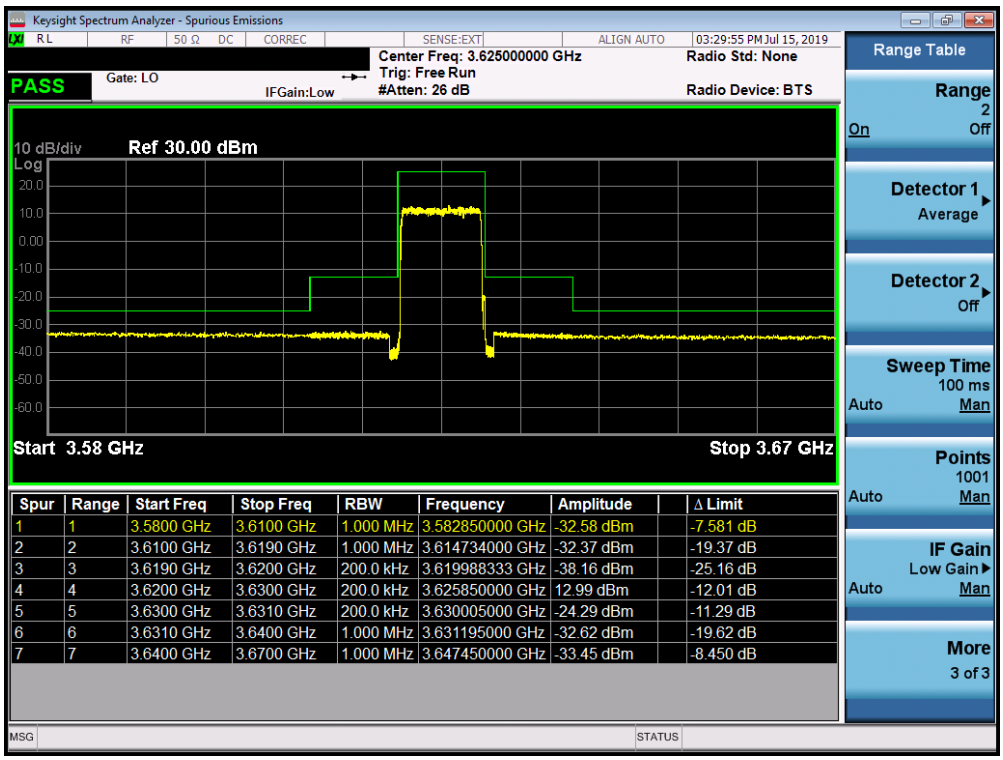
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.5800 GHz	3.6100 GHz	1.000 MHz	3.580850000 GHz	-32.32 dBm	-7.316 dB
2	2	3.6100 GHz	3.6190 GHz	1.000 MHz	3.616345000 GHz	-32.03 dBm	-19.03 dB
3	3	3.6190 GHz	3.6200 GHz	200.0 kHz	3.619451667 GHz	-36.93 dBm	-23.93 dB
4	4	3.6200 GHz	3.6300 GHz	200.0 kHz	3.623483333 GHz	14.24 dBm	-10.76 dB
5	5	3.6300 GHz	3.6310 GHz	200.0 kHz	3.630000000 GHz	-15.00 dBm	-1.997 dB
6	6	3.6310 GHz	3.6400 GHz	1.000 MHz	3.632245000 GHz	-32.30 dBm	-19.30 dB
7	7	3.6400 GHz	3.6700 GHz	1.000 MHz	3.650150000 GHz	-33.44 dBm	-8.437 dB

Plot 7-141. Mid Channel Edge Plot (10.0MHz Total Bandwidth 16QAM)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.5800 GHz	3.6100 GHz	1.000 MHz	3.580400000 GHz	-32.36 dBm	-7.357 dB
2	2	3.6100 GHz	3.6190 GHz	1.000 MHz	3.617767000 GHz	-32.53 dBm	-19.53 dB
3	3	3.6190 GHz	3.6200 GHz	200.0 kHz	3.619973333 GHz	-38.15 dBm	-25.15 dB
4	4	3.6200 GHz	3.6300 GHz	200.0 kHz	3.629050000 GHz	13.00 dBm	-12.00 dB
5	5	3.6300 GHz	3.6310 GHz	200.0 kHz	3.630003333 GHz	-15.19 dBm	-2.188 dB
6	6	3.6310 GHz	3.6400 GHz	1.000 MHz	3.631225000 GHz	-32.30 dBm	-19.30 dB
7	7	3.6400 GHz	3.6700 GHz	1.000 MHz	3.640600000 GHz	-33.63 dBm	-8.630 dB

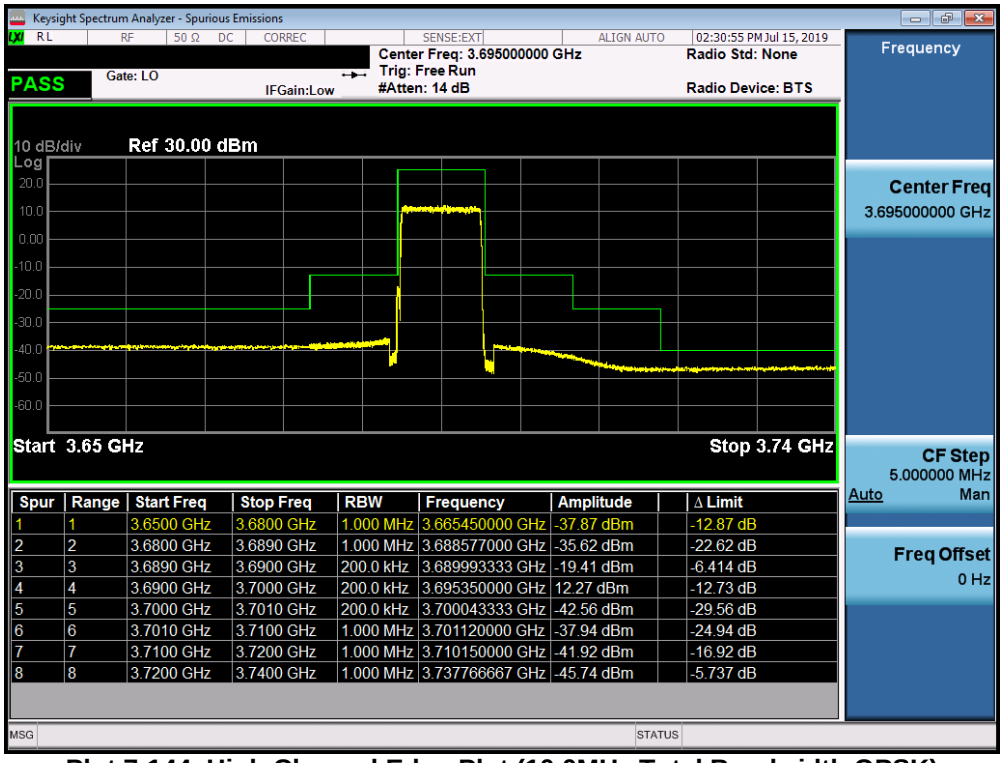
Plot 7-142. Mid Channel Edge Plot (10.0MHz Total Bandwidth 64QAM)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.5800 GHz	3.6100 GHz	1.000 MHz	3.582850000 GHz	-32.58 dBm	-7.581 dB
2	2	3.6100 GHz	3.6190 GHz	1.000 MHz	3.614734000 GHz	-32.37 dBm	-19.37 dB
3	3	3.6190 GHz	3.6200 GHz	200.0 kHz	3.619988333 GHz	-38.16 dBm	-25.16 dB
4	4	3.6200 GHz	3.6300 GHz	200.0 kHz	3.625850000 GHz	12.99 dBm	-12.01 dB
5	5	3.6300 GHz	3.6310 GHz	200.0 kHz	3.630005000 GHz	-24.29 dBm	-11.29 dB
6	6	3.6310 GHz	3.6400 GHz	1.000 MHz	3.631195000 GHz	-32.62 dBm	-19.62 dB
7	7	3.6400 GHz	3.6700 GHz	1.000 MHz	3.647450000 GHz	-33.45 dBm	-8.450 dB

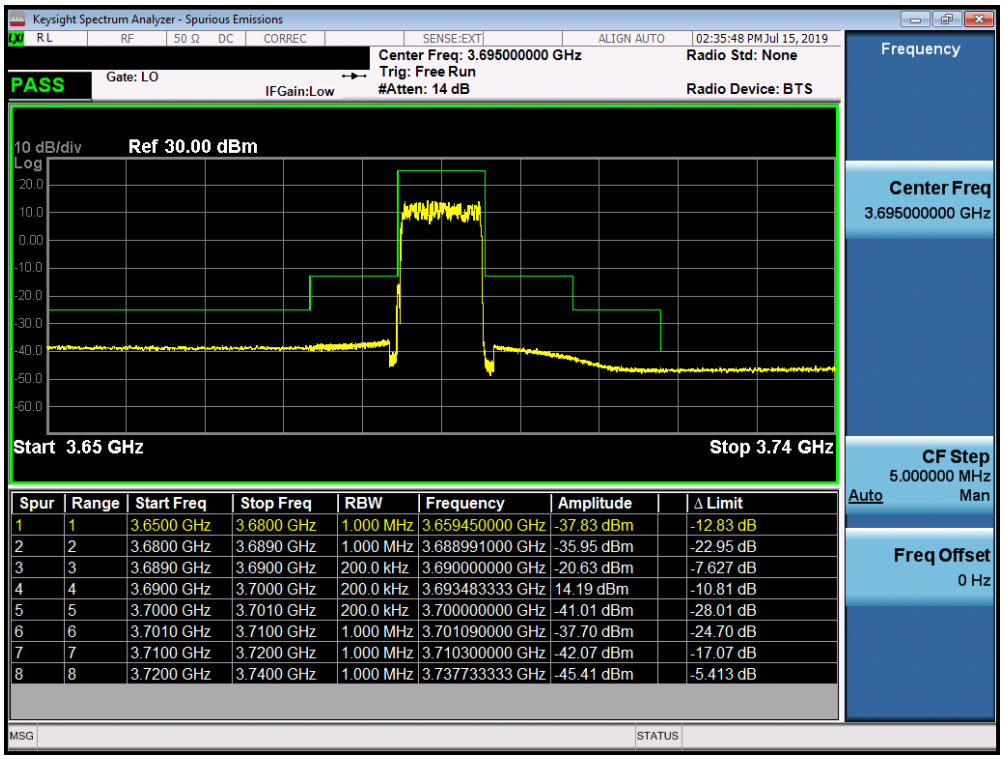
Plot 7-143. Mid Channel Edge Plot (10.0MHz Total Bandwidth 256QAM)

High Channel 10MHz Total Bandwidth Channel Edge



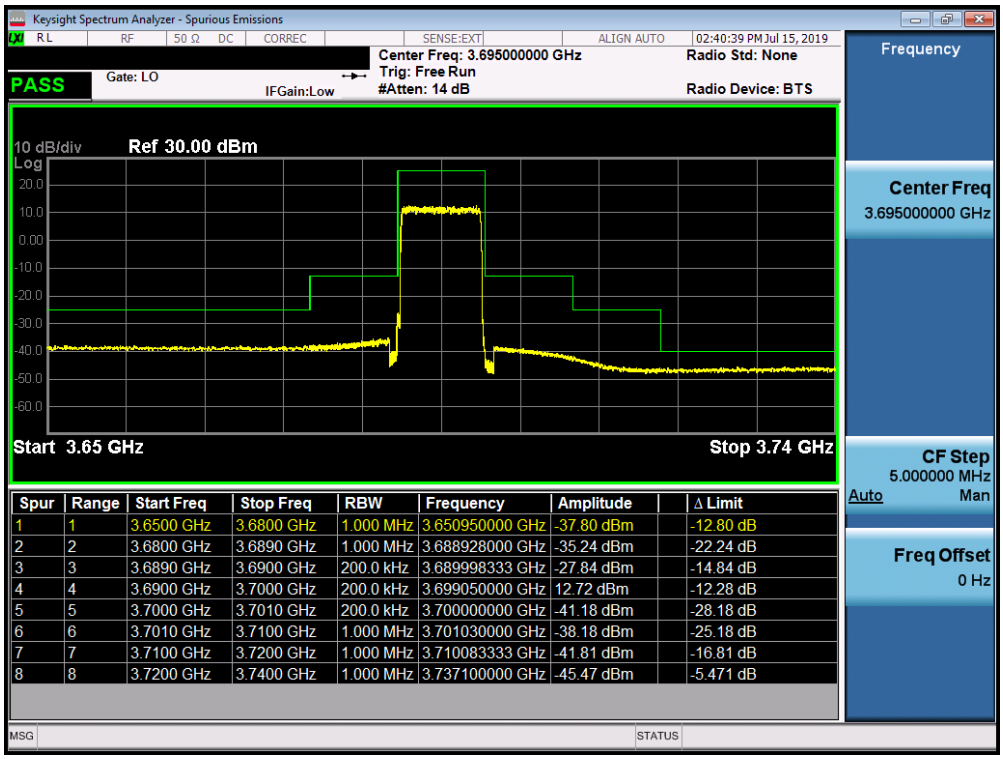
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.6500 GHz	3.6800 GHz	1.000 MHz	3.665450000 GHz	-37.87 dBm	-12.87 dB
2	2	3.6800 GHz	3.6890 GHz	1.000 MHz	3.688577000 GHz	-35.62 dBm	-22.62 dB
3	3	3.6890 GHz	3.6900 GHz	200.0 kHz	3.689993333 GHz	-19.41 dBm	-6.414 dB
4	4	3.6900 GHz	3.7000 GHz	200.0 kHz	3.695350000 GHz	12.27 dBm	-12.73 dB
5	5	3.7000 GHz	3.7010 GHz	200.0 kHz	3.700043333 GHz	-42.56 dBm	-29.56 dB
6	6	3.7010 GHz	3.7100 GHz	1.000 MHz	3.701120000 GHz	-37.94 dBm	-24.94 dB
7	7	3.7100 GHz	3.7200 GHz	1.000 MHz	3.710150000 GHz	-41.92 dBm	-16.92 dB
8	8	3.7200 GHz	3.7400 GHz	1.000 MHz	3.737766667 GHz	-45.74 dBm	-5.737 dB

Plot 7-144. High Channel Edge Plot (10.0MHz Total Bandwidth QPSK)



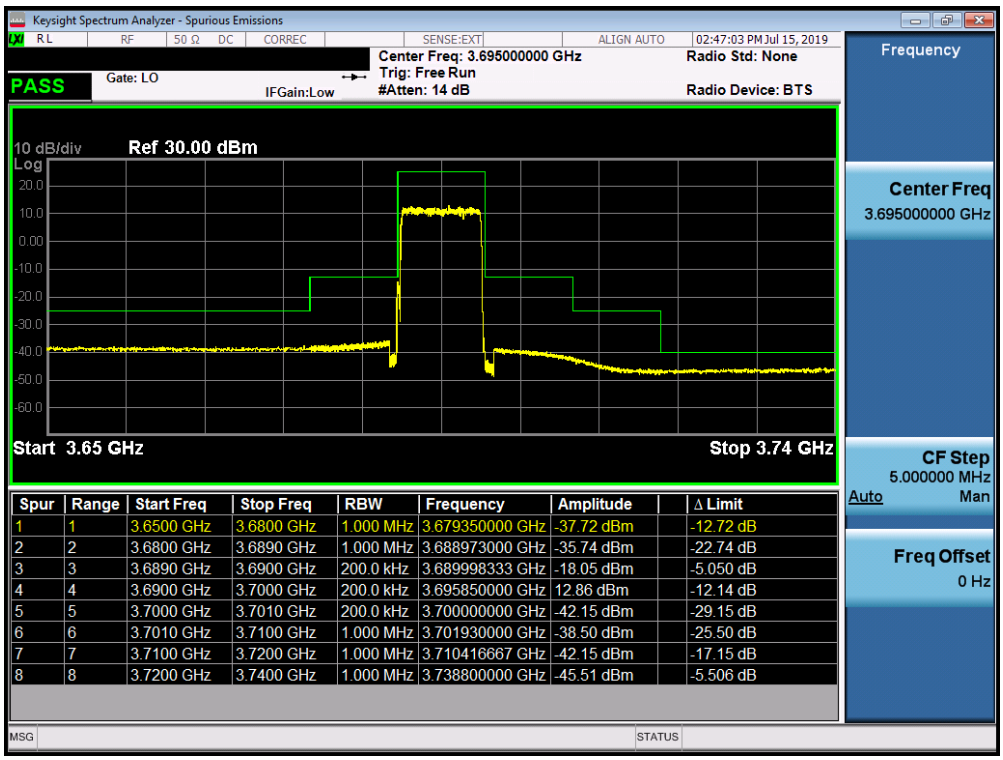
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.6500 GHz	3.6800 GHz	1.000 MHz	3.659450000 GHz	-37.83 dBm	-12.83 dB
2	2	3.6800 GHz	3.6890 GHz	1.000 MHz	3.688991000 GHz	-35.95 dBm	-22.95 dB
3	3	3.6890 GHz	3.6900 GHz	200.0 kHz	3.690000000 GHz	-20.63 dBm	-7.627 dB
4	4	3.6900 GHz	3.7000 GHz	200.0 kHz	3.693483333 GHz	14.19 dBm	-10.81 dB
5	5	3.7000 GHz	3.7010 GHz	200.0 kHz	3.700000000 GHz	-41.01 dBm	-28.01 dB
6	6	3.7010 GHz	3.7100 GHz	1.000 MHz	3.701090000 GHz	-37.70 dBm	-24.70 dB
7	7	3.7100 GHz	3.7200 GHz	1.000 MHz	3.710300000 GHz	-42.07 dBm	-17.07 dB
8	8	3.7200 GHz	3.7400 GHz	1.000 MHz	3.737733333 GHz	-45.41 dBm	-5.413 dB

Plot 7-145. High Channel Edge Plot (10.0MHz Total Bandwidth 16QAM)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.6500 GHz	3.6800 GHz	1.000 MHz	3.650950000 GHz	-37.80 dBm	-12.80 dB
2	2	3.6800 GHz	3.6890 GHz	1.000 MHz	3.688928000 GHz	-35.24 dBm	-22.24 dB
3	3	3.6890 GHz	3.6900 GHz	200.0 kHz	3.689998333 GHz	-27.84 dBm	-14.84 dB
4	4	3.6900 GHz	3.7000 GHz	200.0 kHz	3.699050000 GHz	12.72 dBm	-12.28 dB
5	5	3.7000 GHz	3.7010 GHz	200.0 kHz	3.700000000 GHz	-41.18 dBm	-28.18 dB
6	6	3.7010 GHz	3.7100 GHz	1.000 MHz	3.701030000 GHz	-38.18 dBm	-25.18 dB
7	7	3.7100 GHz	3.7200 GHz	1.000 MHz	3.710083333 GHz	-41.81 dBm	-16.81 dB
8	8	3.7200 GHz	3.7400 GHz	1.000 MHz	3.737100000 GHz	-45.47 dBm	-5.471 dB

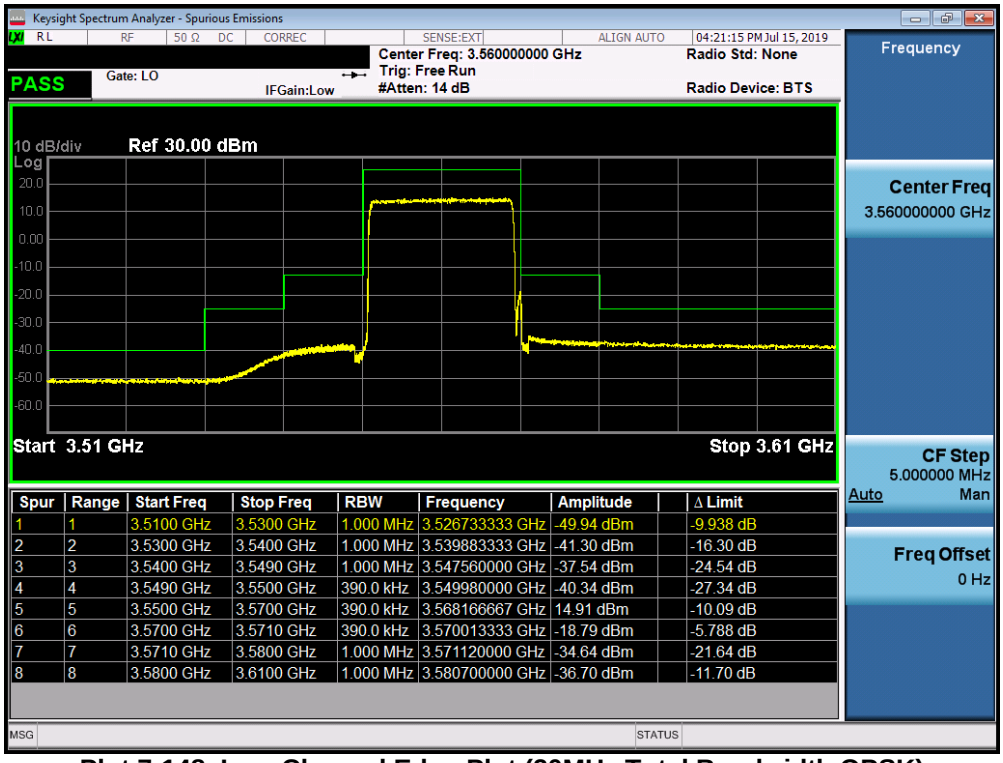
Plot 7-146. High Channel Edge Plot (10.0MHz Total Bandwidth 64QAM)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.6500 GHz	3.6800 GHz	1.000 MHz	3.679350000 GHz	-37.72 dBm	-12.72 dB
2	2	3.6800 GHz	3.6890 GHz	1.000 MHz	3.688973000 GHz	-35.74 dBm	-22.74 dB
3	3	3.6890 GHz	3.6900 GHz	200.0 kHz	3.689998333 GHz	-18.05 dBm	-5.050 dB
4	4	3.6900 GHz	3.7000 GHz	200.0 kHz	3.695850000 GHz	12.86 dBm	-12.14 dB
5	5	3.7000 GHz	3.7010 GHz	200.0 kHz	3.700000000 GHz	-42.15 dBm	-29.15 dB
6	6	3.7010 GHz	3.7100 GHz	1.000 MHz	3.701930000 GHz	-38.50 dBm	-25.50 dB
7	7	3.7100 GHz	3.7200 GHz	1.000 MHz	3.710416667 GHz	-42.15 dBm	-17.15 dB
8	8	3.7200 GHz	3.7400 GHz	1.000 MHz	3.738800000 GHz	-45.51 dBm	-5.506 dB

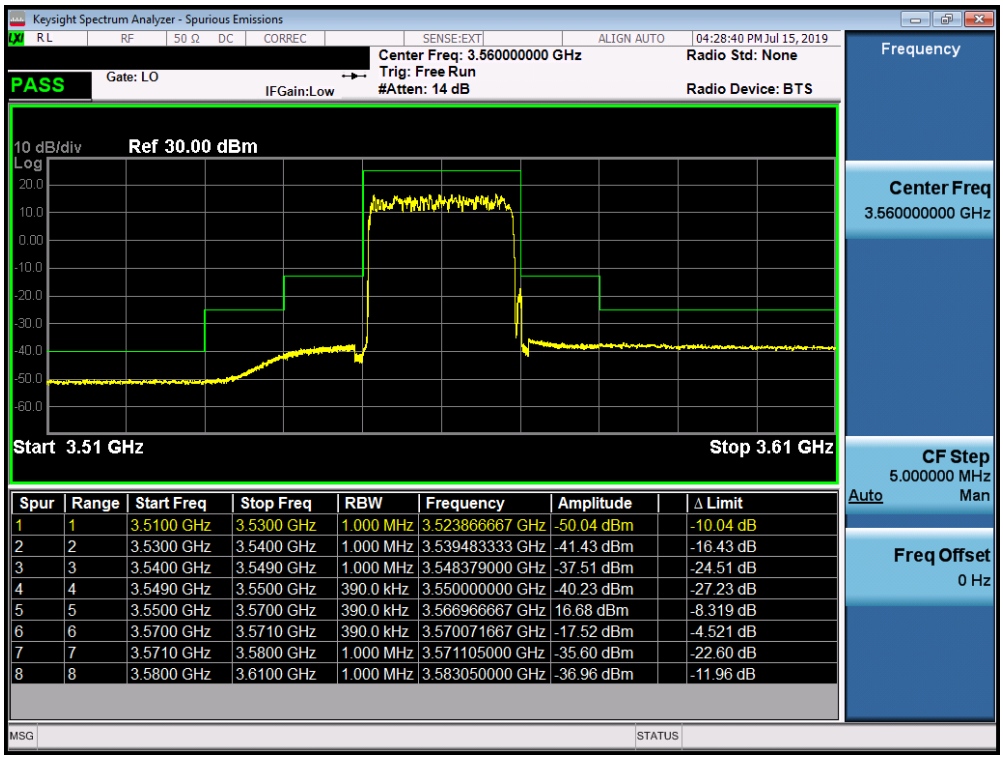
Plot 7-147. High Channel Edge Plot (10.0MHz Total Bandwidth 256QAM)

Low Channel 20MHz Total Bandwidth Channel Edge



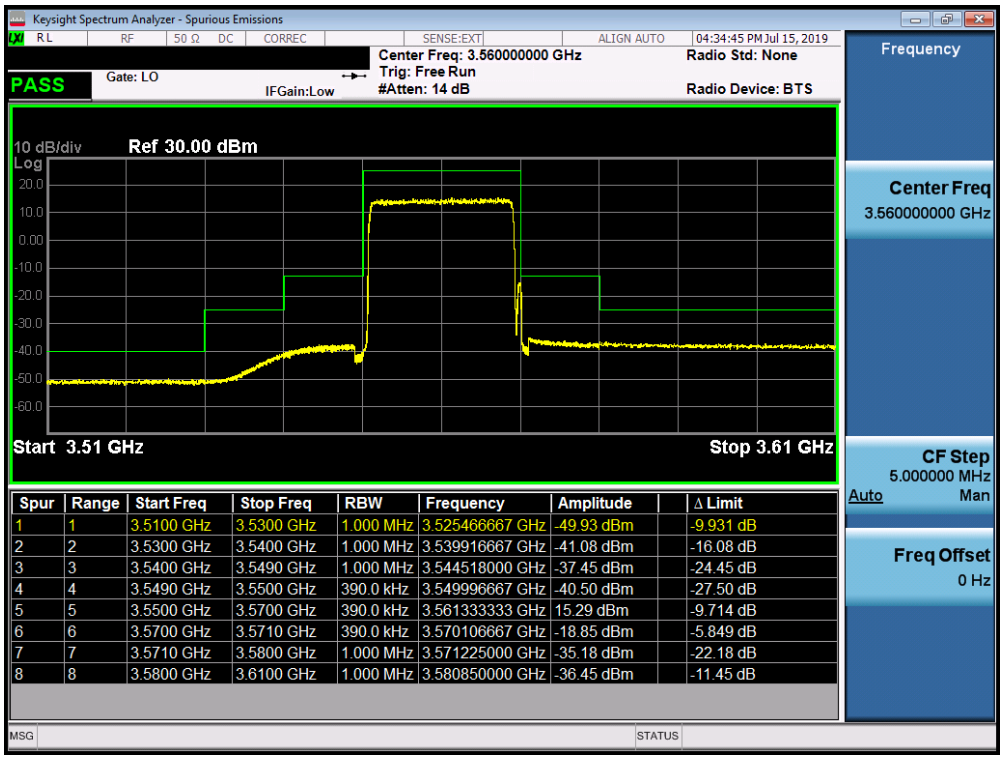
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.5100 GHz	3.5300 GHz	1.000 MHz	3.526733333 GHz	-49.94 dBm	-9.938 dB
2	2	3.5300 GHz	3.5400 GHz	1.000 MHz	3.539883333 GHz	-41.30 dBm	-16.30 dB
3	3	3.5400 GHz	3.5490 GHz	1.000 MHz	3.547560000 GHz	-37.54 dBm	-24.54 dB
4	4	3.5490 GHz	3.5500 GHz	390.0 kHz	3.549980000 GHz	-40.34 dBm	-27.34 dB
5	5	3.5500 GHz	3.5700 GHz	390.0 kHz	3.568166667 GHz	14.91 dBm	-10.09 dB
6	6	3.5700 GHz	3.5710 GHz	390.0 kHz	3.570013333 GHz	-18.79 dBm	-5.788 dB
7	7	3.5710 GHz	3.5800 GHz	1.000 MHz	3.571120000 GHz	-34.64 dBm	-21.64 dB
8	8	3.5800 GHz	3.6100 GHz	1.000 MHz	3.580700000 GHz	-36.70 dBm	-11.70 dB

Plot 7-148. Low Channel Edge Plot (20MHz Total Bandwidth QPSK)



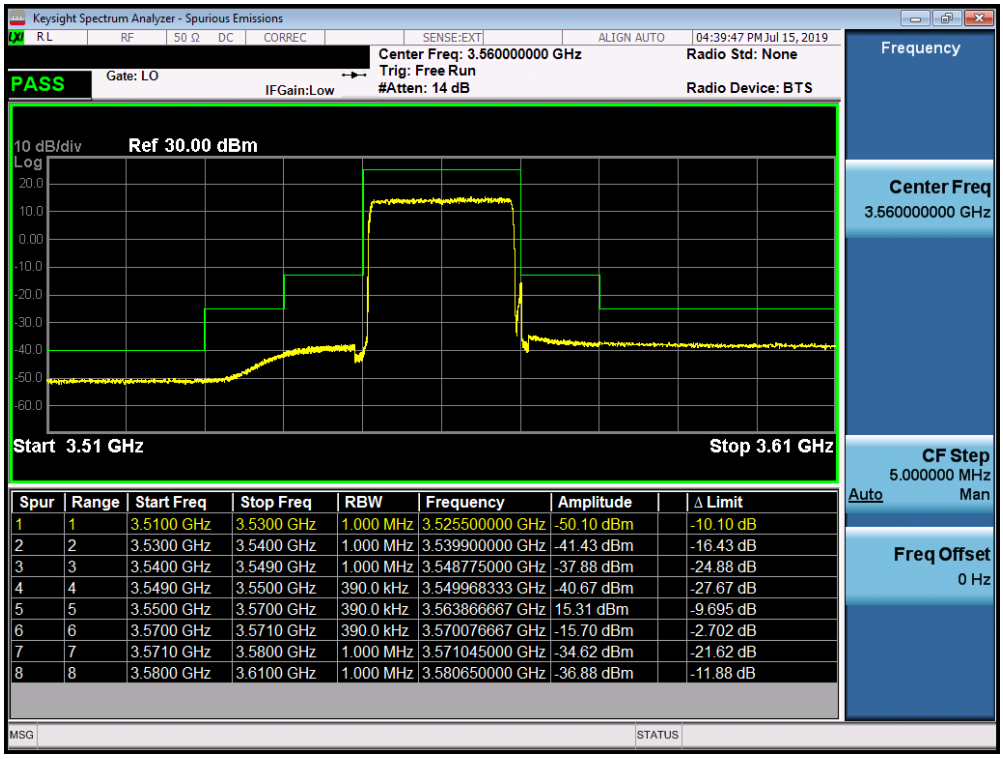
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.5100 GHz	3.5300 GHz	1.000 MHz	3.523866667 GHz	-50.04 dBm	-10.04 dB
2	2	3.5300 GHz	3.5400 GHz	1.000 MHz	3.539483333 GHz	-41.43 dBm	-16.43 dB
3	3	3.5400 GHz	3.5490 GHz	1.000 MHz	3.548379000 GHz	-37.51 dBm	-24.51 dB
4	4	3.5490 GHz	3.5500 GHz	390.0 kHz	3.550000000 GHz	-40.23 dBm	-27.23 dB
5	5	3.5500 GHz	3.5700 GHz	390.0 kHz	3.566966667 GHz	16.68 dBm	-8.319 dB
6	6	3.5700 GHz	3.5710 GHz	390.0 kHz	3.570071667 GHz	-17.52 dBm	-4.521 dB
7	7	3.5710 GHz	3.5800 GHz	1.000 MHz	3.571105000 GHz	-35.60 dBm	-22.60 dB
8	8	3.5800 GHz	3.6100 GHz	1.000 MHz	3.583050000 GHz	-36.96 dBm	-11.96 dB

Plot 7-149. Low Channel Edge Plot (20MHz Total Bandwidth 16QAM)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.5100 GHz	3.5300 GHz	1.000 MHz	3.525466667 GHz	-49.93 dBm	-9.931 dB
2	2	3.5300 GHz	3.5400 GHz	1.000 MHz	3.539916667 GHz	-41.08 dBm	-16.08 dB
3	3	3.5400 GHz	3.5490 GHz	1.000 MHz	3.544518000 GHz	-37.45 dBm	-24.45 dB
4	4	3.5490 GHz	3.5500 GHz	390.0 kHz	3.549996667 GHz	-40.50 dBm	-27.50 dB
5	5	3.5500 GHz	3.5700 GHz	390.0 kHz	3.561333333 GHz	15.29 dBm	-9.714 dB
6	6	3.5700 GHz	3.5710 GHz	390.0 kHz	3.570106667 GHz	-18.85 dBm	-5.849 dB
7	7	3.5710 GHz	3.5800 GHz	1.000 MHz	3.571225000 GHz	-35.18 dBm	-22.18 dB
8	8	3.5800 GHz	3.6100 GHz	1.000 MHz	3.580850000 GHz	-36.45 dBm	-11.45 dB

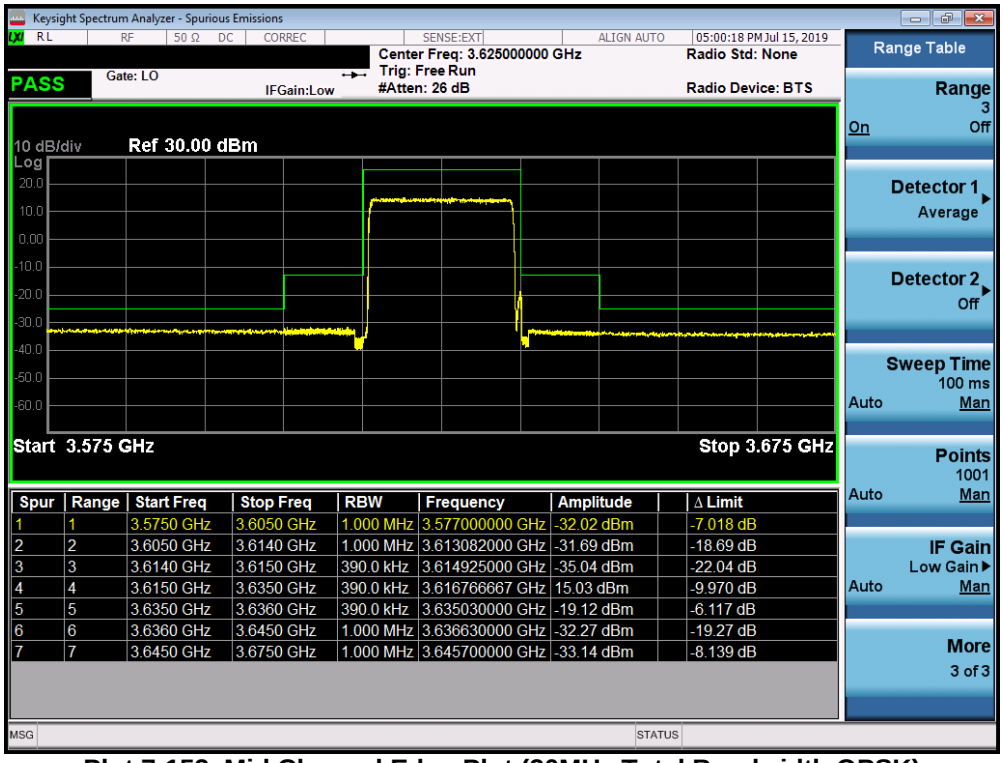
Plot 7-150. Low Channel Edge Plot (20MHz Total Bandwidth 64QAM)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.5100 GHz	3.5300 GHz	1.000 MHz	3.525500000 GHz	-50.10 dBm	-10.10 dB
2	2	3.5300 GHz	3.5400 GHz	1.000 MHz	3.539900000 GHz	-41.43 dBm	-16.43 dB
3	3	3.5400 GHz	3.5490 GHz	1.000 MHz	3.548775000 GHz	-37.88 dBm	-24.88 dB
4	4	3.5490 GHz	3.5500 GHz	390.0 kHz	3.549968333 GHz	-40.67 dBm	-27.67 dB
5	5	3.5500 GHz	3.5700 GHz	390.0 kHz	3.563866667 GHz	15.31 dBm	-9.695 dB
6	6	3.5700 GHz	3.5710 GHz	390.0 kHz	3.570076667 GHz	-15.70 dBm	-2.702 dB
7	7	3.5710 GHz	3.5800 GHz	1.000 MHz	3.571045000 GHz	-34.62 dBm	-21.62 dB
8	8	3.5800 GHz	3.6100 GHz	1.000 MHz	3.580650000 GHz	-36.88 dBm	-11.88 dB

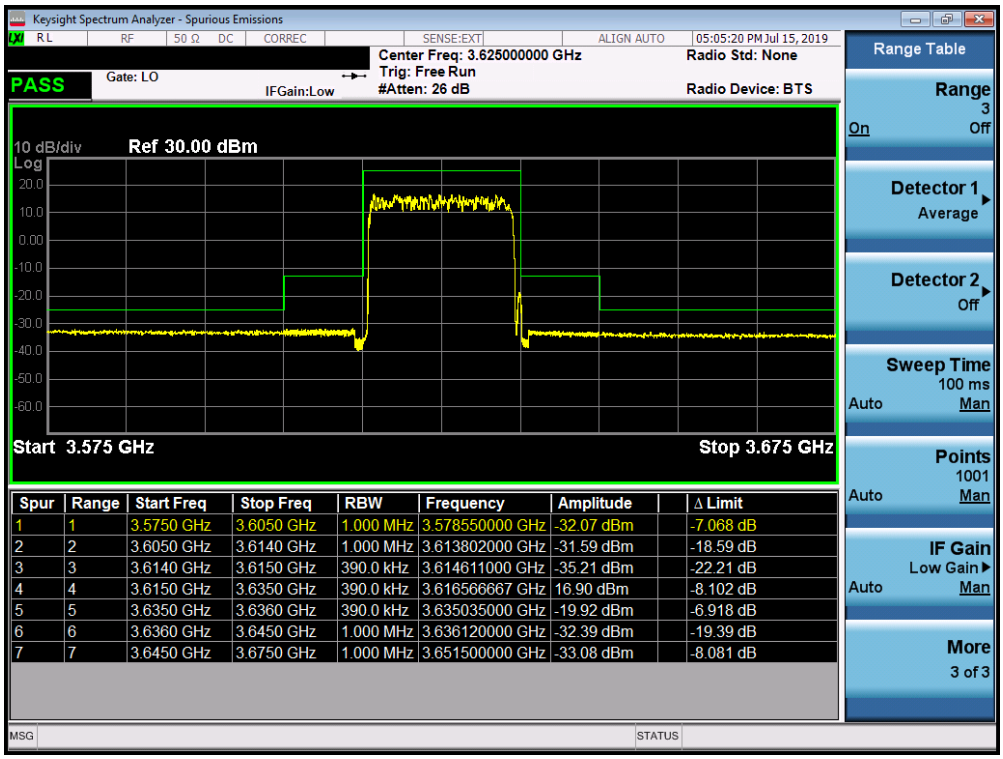
Plot 7-151. Low Channel Edge Plot (20MHz Total Bandwidth 256QAM)

Mid Channel 20MHz Total Bandwidth Channel Edge



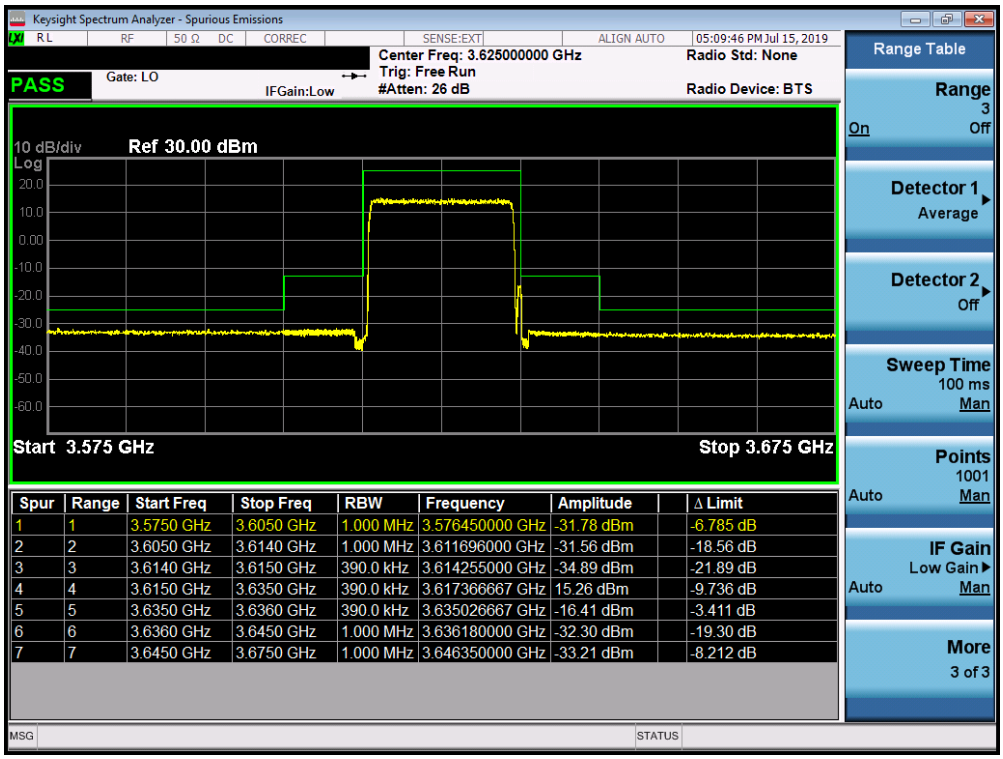
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.5750 GHz	3.6050 GHz	1.000 MHz	3.577000000 GHz	-32.02 dBm	-7.018 dB
2	2	3.6050 GHz	3.6140 GHz	1.000 MHz	3.613082000 GHz	-31.69 dBm	-18.69 dB
3	3	3.6140 GHz	3.6150 GHz	390.0 kHz	3.614925000 GHz	-35.04 dBm	-22.04 dB
4	4	3.6150 GHz	3.6350 GHz	390.0 kHz	3.616766667 GHz	15.03 dBm	-9.970 dB
5	5	3.6350 GHz	3.6360 GHz	390.0 kHz	3.635030000 GHz	-19.12 dBm	-6.117 dB
6	6	3.6360 GHz	3.6450 GHz	1.000 MHz	3.636630000 GHz	-32.27 dBm	-19.27 dB
7	7	3.6450 GHz	3.6750 GHz	1.000 MHz	3.645700000 GHz	-33.14 dBm	-8.139 dB

Plot 7-152. Mid Channel Edge Plot (20MHz Total Bandwidth QPSK)



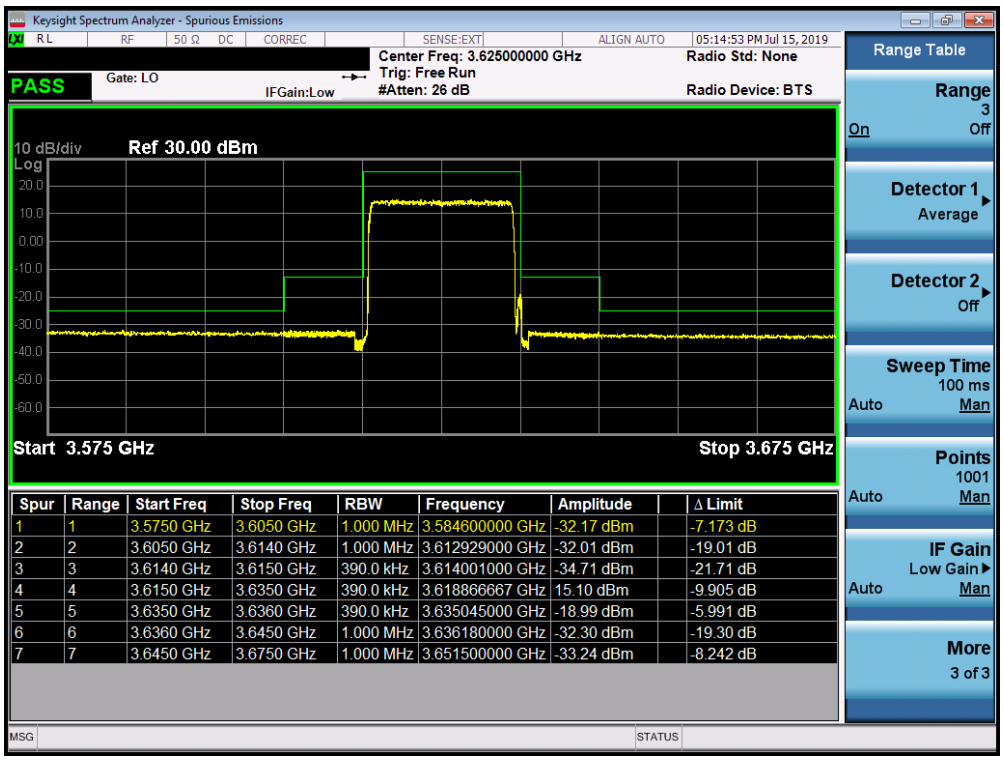
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.5750 GHz	3.6050 GHz	1.000 MHz	3.578550000 GHz	-32.07 dBm	-7.068 dB
2	2	3.6050 GHz	3.6140 GHz	1.000 MHz	3.613802000 GHz	-31.59 dBm	-18.59 dB
3	3	3.6140 GHz	3.6150 GHz	390.0 kHz	3.614611000 GHz	-35.21 dBm	-22.21 dB
4	4	3.6150 GHz	3.6350 GHz	390.0 kHz	3.616566667 GHz	16.90 dBm	-8.102 dB
5	5	3.6350 GHz	3.6360 GHz	390.0 kHz	3.635035000 GHz	-19.92 dBm	-6.918 dB
6	6	3.6360 GHz	3.6450 GHz	1.000 MHz	3.636120000 GHz	-32.39 dBm	-19.39 dB
7	7	3.6450 GHz	3.6750 GHz	1.000 MHz	3.651500000 GHz	-33.08 dBm	-8.081 dB

Plot 7-153. Mid Channel Edge Plot (20MHz Total Bandwidth 16QAM)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.5750 GHz	3.6050 GHz	1.000 MHz	3.576450000 GHz	-31.78 dBm	-6.785 dB
2	2	3.6050 GHz	3.6140 GHz	1.000 MHz	3.611696000 GHz	-31.56 dBm	-18.56 dB
3	3	3.6140 GHz	3.6150 GHz	390.0 kHz	3.614255000 GHz	-34.89 dBm	-21.89 dB
4	4	3.6150 GHz	3.6350 GHz	390.0 kHz	3.617366667 GHz	15.26 dBm	-9.736 dB
5	5	3.6350 GHz	3.6360 GHz	390.0 kHz	3.635026667 GHz	-16.41 dBm	-3.411 dB
6	6	3.6360 GHz	3.6450 GHz	1.000 MHz	3.636180000 GHz	-32.30 dBm	-19.30 dB
7	7	3.6450 GHz	3.6750 GHz	1.000 MHz	3.646350000 GHz	-33.21 dBm	-8.212 dB

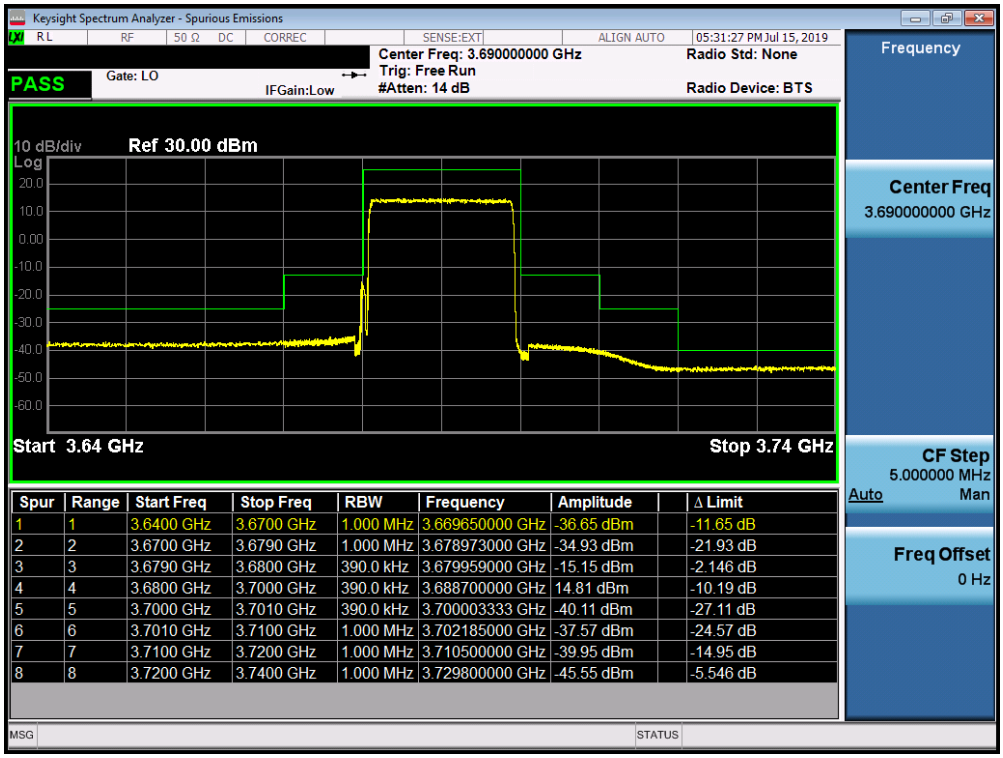
Plot 7-154. Mid Channel Edge Plot (20MHz Total Bandwidth 64QAM)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.5750 GHz	3.6050 GHz	1.000 MHz	3.584600000 GHz	-32.17 dBm	-7.173 dB
2	2	3.6050 GHz	3.6140 GHz	1.000 MHz	3.612929000 GHz	-32.01 dBm	-19.01 dB
3	3	3.6140 GHz	3.6150 GHz	390.0 kHz	3.614001000 GHz	-34.71 dBm	-21.71 dB
4	4	3.6150 GHz	3.6350 GHz	390.0 kHz	3.618866667 GHz	15.10 dBm	-9.905 dB
5	5	3.6350 GHz	3.6360 GHz	390.0 kHz	3.635045000 GHz	-18.99 dBm	-5.991 dB
6	6	3.6360 GHz	3.6450 GHz	1.000 MHz	3.636180000 GHz	-32.30 dBm	-19.30 dB
7	7	3.6450 GHz	3.6750 GHz	1.000 MHz	3.651500000 GHz	-33.24 dBm	-8.242 dB

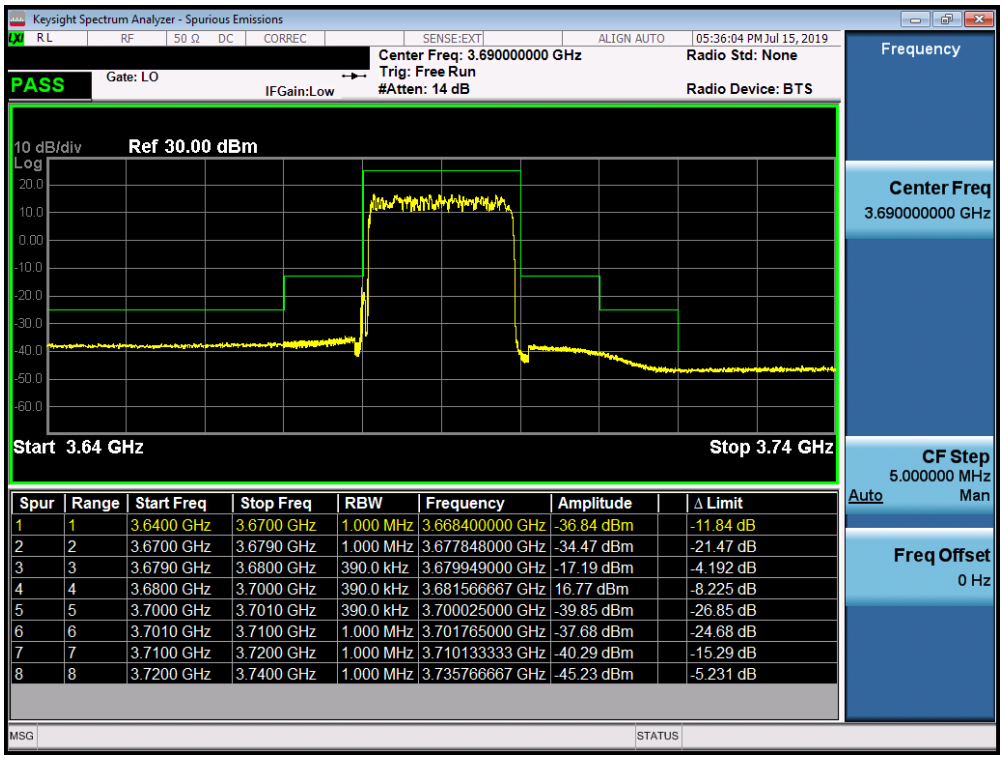
Plot 7-155. Mid Channel Edge Plot (20MHz Total Bandwidth 256QAM)

High Channel 20MHz Total Bandwidth Channel Edge



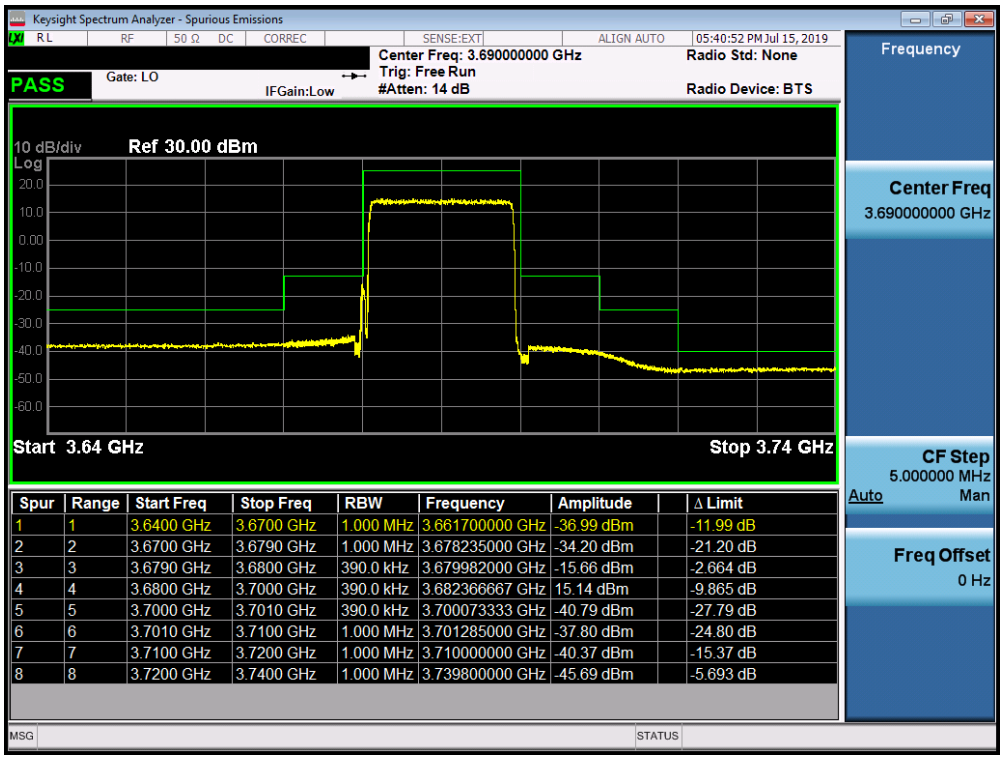
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.6400 GHz	3.6700 GHz	1.000 MHz	3.669650000 GHz	-36.65 dBm	-11.65 dB
2	2	3.6700 GHz	3.6790 GHz	1.000 MHz	3.678973000 GHz	-34.93 dBm	-21.93 dB
3	3	3.6790 GHz	3.6800 GHz	390.0 kHz	3.679959000 GHz	-15.15 dBm	-2.146 dB
4	4	3.6800 GHz	3.7000 GHz	390.0 kHz	3.688700000 GHz	14.81 dBm	-10.19 dB
5	5	3.7000 GHz	3.7010 GHz	390.0 kHz	3.700003333 GHz	-40.11 dBm	-27.11 dB
6	6	3.7010 GHz	3.7100 GHz	1.000 MHz	3.702185000 GHz	-37.57 dBm	-24.57 dB
7	7	3.7100 GHz	3.7200 GHz	1.000 MHz	3.710500000 GHz	-39.95 dBm	-14.95 dB
8	8	3.7200 GHz	3.7400 GHz	1.000 MHz	3.729800000 GHz	-45.55 dBm	-5.546 dB

Plot 7-156. High Channel Edge Plot (20MHz Total Bandwidth QPSK)



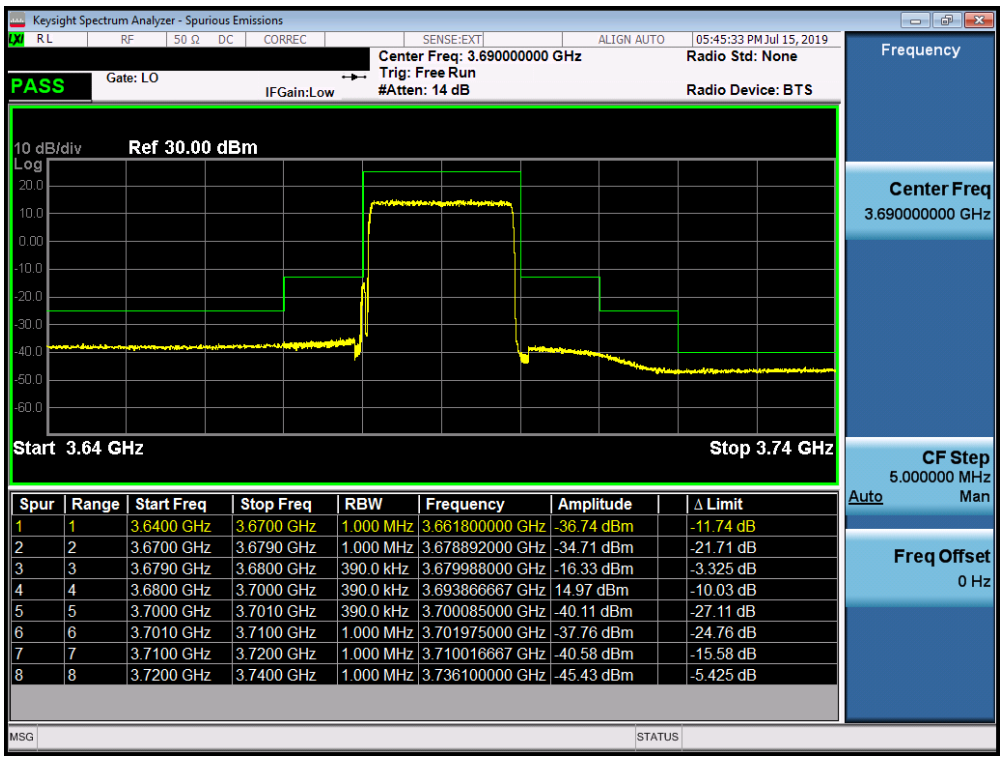
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.6400 GHz	3.6700 GHz	1.000 MHz	3.668400000 GHz	-36.84 dBm	-11.84 dB
2	2	3.6700 GHz	3.6790 GHz	1.000 MHz	3.677848000 GHz	-34.47 dBm	-21.47 dB
3	3	3.6790 GHz	3.6800 GHz	390.0 kHz	3.679949000 GHz	-17.19 dBm	-4.192 dB
4	4	3.6800 GHz	3.7000 GHz	390.0 kHz	3.681566667 GHz	16.77 dBm	-8.225 dB
5	5	3.7000 GHz	3.7010 GHz	390.0 kHz	3.700025000 GHz	-39.85 dBm	-26.85 dB
6	6	3.7010 GHz	3.7100 GHz	1.000 MHz	3.701765000 GHz	-37.68 dBm	-24.68 dB
7	7	3.7100 GHz	3.7200 GHz	1.000 MHz	3.710133333 GHz	-40.29 dBm	-15.29 dB
8	8	3.7200 GHz	3.7400 GHz	1.000 MHz	3.735766667 GHz	-45.23 dBm	-5.231 dB

Plot 7-157. High Channel Edge Plot (20MHz Total Bandwidth 16QAM)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.6400 GHz	3.6700 GHz	1.000 MHz	3.661700000 GHz	-36.99 dBm	-11.99 dB
2	2	3.6700 GHz	3.6790 GHz	1.000 MHz	3.678235000 GHz	-34.20 dBm	-21.20 dB
3	3	3.6790 GHz	3.6800 GHz	390.0 kHz	3.679982000 GHz	-15.66 dBm	-2.664 dB
4	4	3.6800 GHz	3.7000 GHz	390.0 kHz	3.682366667 GHz	15.14 dBm	-9.865 dB
5	5	3.7000 GHz	3.7010 GHz	390.0 kHz	3.700073333 GHz	-40.79 dBm	-27.79 dB
6	6	3.7010 GHz	3.7100 GHz	1.000 MHz	3.701285000 GHz	-37.80 dBm	-24.80 dB
7	7	3.7100 GHz	3.7200 GHz	1.000 MHz	3.710000000 GHz	-40.37 dBm	-15.37 dB
8	8	3.7200 GHz	3.7400 GHz	1.000 MHz	3.739800000 GHz	-45.69 dBm	-5.693 dB

Plot 7-158. High Channel Edge Plot (20MHz Total Bandwidth 64QAM)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	3.6400 GHz	3.6700 GHz	1.000 MHz	3.661800000 GHz	-36.74 dBm	-11.74 dB
2	2	3.6700 GHz	3.6790 GHz	1.000 MHz	3.678892000 GHz	-34.71 dBm	-21.71 dB
3	3	3.6790 GHz	3.6800 GHz	390.0 kHz	3.679988000 GHz	-16.33 dBm	-3.325 dB
4	4	3.6800 GHz	3.7000 GHz	390.0 kHz	3.693866667 GHz	14.97 dBm	-10.03 dB
5	5	3.7000 GHz	3.7010 GHz	390.0 kHz	3.700085000 GHz	-40.11 dBm	-27.11 dB
6	6	3.7010 GHz	3.7100 GHz	1.000 MHz	3.701975000 GHz	-37.76 dBm	-24.76 dB
7	7	3.7100 GHz	3.7200 GHz	1.000 MHz	3.710016667 GHz	-40.58 dBm	-15.58 dB
8	8	3.7200 GHz	3.7400 GHz	1.000 MHz	3.736100000 GHz	-45.43 dBm	-5.425 dB

Plot 7-159. High Channel Edge Plot (20MHz Total Bandwidth 256QAM)