

## **8. CONDUCTED TEST RESULTS**

### **8.1. OCCUPIED BANDWIDTH**

#### **RULE PART(S)**

FCC: §2.1049

#### **LIMITS**

For reporting purposes only

#### **TEST PROCEDURE**

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the middle channel in each band. The -26dB bandwidth was also measured and recorded.

#### **MODES TESTED**

- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 13
- LTE Band 17
- LTE Band 25
- LTE Band 26
- LTE Band 30
- LTE Band 41
- LTE Band 66

#### **RESULTS**

There is no limit required and power is the same for low, middle and high channel; therefore, only middle channel was tested.

## LTE BAND 2

BAND	MODE	RB SIZE/RB OFFSET	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 2	1.4 MHz, QPSK	6/0	1880.0	1.0859	1.231
	1.4 MHz,16QAM			1.0955	1.238
	1.4 MHz,64QAM			1.0781	1.209
	3 MHz, QPSK	15/0		2.6921	3.007
	3 MHz, 16QAM			2.7015	3.008
	3 MHz, 64QAM			2.6808	2.945
	5 MHz, QPSK	25/0		4.4911	4.973
	5 MHz, 16QAM			4.4957	4.944
	5 MHz, 64QAM			4.4721	4.842
	10 MHz, QPSK	50/0		8.9695	9.848
	10 MHz, 16QAM			8.9776	9.777
	10 MHz, 64QAM			8.8980	9.568
	15 MHz, QPSK	75/0		13.431	14.55
	15 MHz, 16QAM			13.450	14.6
	15 MHz, 64QAM			13.3384	14.336
	20 MHz, QPSK	100/0		17.907	19.37
	20 MHz, 16QAM			17.893	19.26
	20 MHz, 64QAM			17.7921	19.020

## LTE BAND 4

BAND	MODE	RB SIZE/RB OFFSET	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 4	1.4 MHz, QPSK	6/0	1732.5	1.0880	1.243
	1.4 MHz, 16QAM			1.0930	1.242
	1.4 MHz, 64QAM			1.0783	1.195
	3 MHz, QPSK	15/0		2.6929	3.011
	3 MHz, 16QAM			2.6927	3.006
	3 MHz, 64QAM			2.6895	2.954

#### LTE BAND 5

BAND	MODE	RB SIZE/RB OFFSET	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 5	1.4 MHz, QPSK	6/0	836.5	1.0882	1.235
	1.4 MHz, 16QAM			1.0930	1.239
	1.4 MHz, 64QAM			1.0770	1.229
	3 MHz, QPSK	15/0		2.6945	2.981
	3 MHz, 16QAM			2.7011	2.993
	3 MHz, 64QAM			2.6739	2.938
	5 MHz, QPSK	25/0		4.5176	4.921
	5 MHz, 16QAM			4.5004	4.951
	5 MHz, 64QAM			4.4686	4.867
	10 MHz, QPSK	50/0		8.9697	9.858
	10 MHz, 16QAM			8.9679	9.759
	10 MHz, 64QAM			8.9287	9.601

#### LTE BAND 7

BAND	MODE	RB SIZE/RB OFFSET	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 7	5 MHz, QPSK	25/0	2535.0	4.5021	4.908
	5 MHz, 16QAM			4.4849	4.907
	5 MHz, 64QAM			4.4630	4.863
	10 MHz, QPSK	50/0		8.9895	9.746
	10 MHz, 16QAM			8.9629	9.754
	10 MHz, 64QAM			8.9186	9.651
	15 MHz, QPSK	75/0		13.420	14.56
	15 MHz, 16QAM			13.433	14.52
	15 MHz, 64QAM			13.3881	14.391
	20 MHz, QPSK	100/0		17.862	19.41
	20 MHz, 16QAM			17.889	19.31
	20 MHz, 64QAM			17.8175	18.822

**LTE BAND 12**

BAND	MODE	RB SIZE/RB OFFSET	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 12	1.4 MHz, QPSK	6/0	707.5	1.0825	1.218
	1.4 MHz, 16QAM			1.0799	1.218
	1.4 MHz, 64QAM			1.0777	1.205
	3 MHz, QPSK	15/0		2.6878	2.976
	3 MHz, 16QAM			2.6879	2.966
	3 MHz, 64QAM			2.6814	2.967
	5 MHz, QPSK	25/0		4.4990	4.951
	5 MHz, 16QAM			4.4949	4.873
	5 MHz, 64QAM			4.4792	4.869
	10 MHz, QPSK	50/0		8.9439	9.627
	10 MHz, 16QAM			8.9325	9.650
	10 MHz, 64QAM			8.9428	9.665

**LTE BAND 13**

BAND	MODE	RB SIZE/RB OFFSET	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 13	5 MHz, QPSK	25/0	782.0	4.5021	4.931
	5 MHz, 16QAM			4.4974	4.963
	5 MHz, 64QAM			4.4664	4.917
	10 MHz, QPSK	50/0		8.9300	9.754
	10 MHz, 16QAM			8.9440	9.713
	10 MHz, 64QAM			8.9058	9.607

**LTE BAND 17**

BAND	MODE	RB SIZE/RB OFFSET	f(MHz)	99% BW (MHz)	-26dB BW (MHz)	
LTE BAND 17	5 MHz, QPSK	25/0	710.0	4.5111	4.946	
	5 MHz, 16QAM			4.4989	4.966	
	5 MHz, 64QAM			4.4697	4.850	
	10 MHz, QPSK	50/0		8.9566	9.783	
	10 MHz, 16QAM			8.9651	9.784	
	10 MHz, 64QAM			8.9227	9.361	

**LTE BAND 25**

BAND	MODE	RB SIZE/RB OFFSET	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 25	1.4 MHz, QPSK	6/0	1882.5	1.0826	1.225
	1.4 MHz, 16QAM			1.0863	1.236
	1.4 MHz, 64QAM			1.0827	1.224
	3 MHz, QPSK	15/0		2.6903	2.988
	3 MHz, 16QAM			2.6931	2.967
	3 MHz, 64QAM			2.6773	2.963
	5 MHz, QPSK	25/0		4.4864	4.944
	5 MHz, 16QAM			4.4998	4.878
	5 MHz, 64QAM			4.4601	4.854
	10 MHz, QPSK	50/0		8.9738	9.722
	10 MHz, 16QAM			8.9543	9.674
	10 MHz, 64QAM			8.9533	9.623
	15 MHz, QPSK	75/0		13.4128	14.416
	15 MHz, 16QAM			13.4134	14.443
	15 MHz, 64QAM			13.3640	14.281
	20 MHz, QPSK	100/0		17.9134	19.402
	20 MHz, 16QAM			17.8335	19.281
	20 MHz, 64QAM			17.8495	19.115

**LTE BAND 26**

BAND	MODE	RB SIZE/RB OFFSET	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 26	1.4 MHz, QPSK	1/0	819.0	0.20527	0.2986
	1.4 MHz, 16QAM			0.20490	0.2941
	1.4 MHz, QPSK	6/0		1.0811	1.218
	1.4 MHz, 16QAM			1.0891	1.230
	1.4 MHz, 64QAM			1.0760	1.193
	3 MHz, QPSK	1/0		0.20515	0.3341
	3 MHz, 16QAM			0.20455	0.324
	3 MHz, QPSK	15/0		2.6798	2.963
	3 MHz, 16QAM			2.6890	2.949
	3 MHz, 64QAM			2.6775	2.935
	5 MHz, QPSK	1/0		0.22072	0.3623
	5 MHz, 16QAM			0.22001	0.3632
	5 MHz, QPSK	25/0		4.4966	4.903
	5 MHz, 16QAM			4.5094	4.880
	5 MHz, 64QAM			4.4583	4.906
	10 MHz, QPSK	1/0		0.23125	0.3409
	10 MHz, 16QAM			0.23223	0.4068
	10 MHz, QPSK	50/0		8.9466	9.762
	10 MHz, 16QAM			8.9607	9.642
	10 MHz, 64QAM			8.9392	9.701

**LTE BAND 30**

BAND	MODE	RB SIZE/RB OFFSET	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 30	5 MHz, QPSK	25/0	2310.0	4.4968	4.862
	5 MHz, 16QAM			4.4987	4.893
	5 MHz, 64QAM			4.4678	4.913
	10 MHz, QPSK	50/0		8.9773	9.597
	10 MHz, 16QAM			8.9802	9.808
	10 MHz, 64QAM			8.9014	9.595

**LTE BAND 41**

BAND	MODE	RB SIZE/RB OFFSET	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 41	5 MHz, QPSK	25/0	2593.0	4.5152	4.923
	5 MHz, 16QAM			4.5091	4.931
	5 MHz, 64QAM			4.4581	4.895
	10 MHz, QPSK	50/0		8.9539	9.548
	10 MHz, 16QAM			8.9144	9.545
	10 MHz, 64QAM			8.9159	9.629
	15 MHz, QPSK	75/0		13.4387	14.125
	15 MHz, 16QAM			13.3900	14.126
	15 MHz, 64QAM			13.3797	14.237
	20 MHz, QPSK	100/0		17.8965	18.785
	20 MHz, 16QAM			17.8073	19.349
	20 MHz, 64QAM			17.8360	19.214

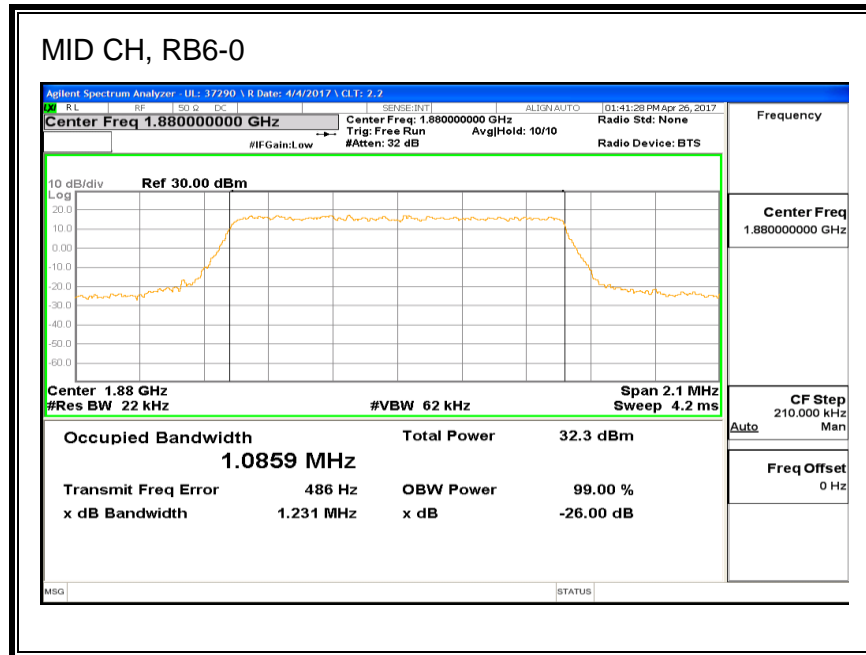
**LTE BAND 66**

BAND	MODE	RB SIZE/RB OFFSET	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 66	5 MHz, QPSK	25/0	1745.0	4.5027	4.973
	5 MHz, 16QAM			4.4959	4.933
	5 MHz, 64QAM			4.4704	4.888
	10 MHz, QPSK	50/0		8.9632	9.711
	10 MHz, 16QAM			8.9479	9.673
	10 MHz, 64QAM			8.9259	9.703
	15 MHz, QPSK	75/0		13.4108	14.430
	15 MHz, 16QAM			13.4338	14.254
	15 MHz, 64QAM			13.3882	14.347
	20 MHz, QPSK	100/0		17.8625	19.080
	20 MHz, 16QAM			17.8569	19.081
	20 MHz, 64QAM			17.8886	19.122

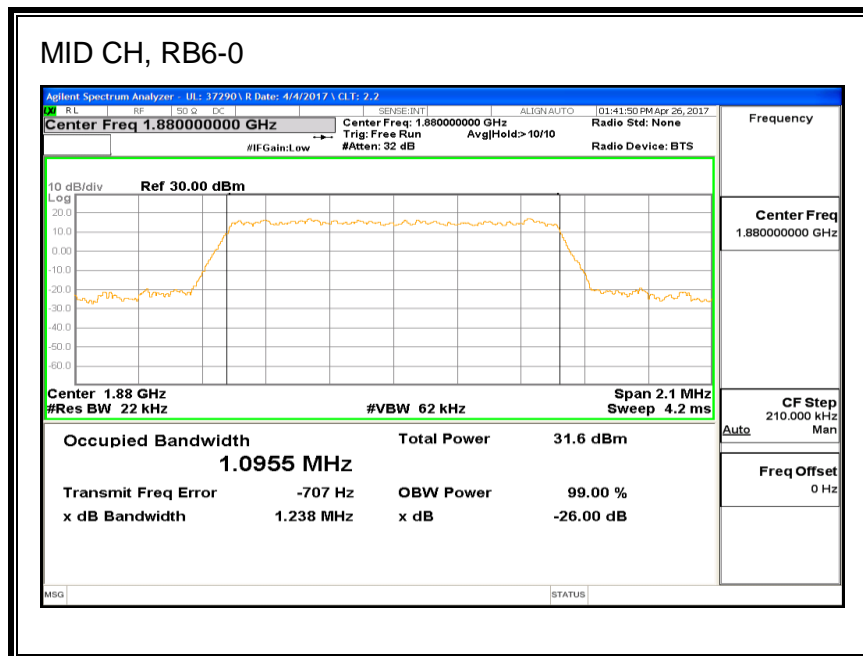
### 8.1.1. LTE BAND 2

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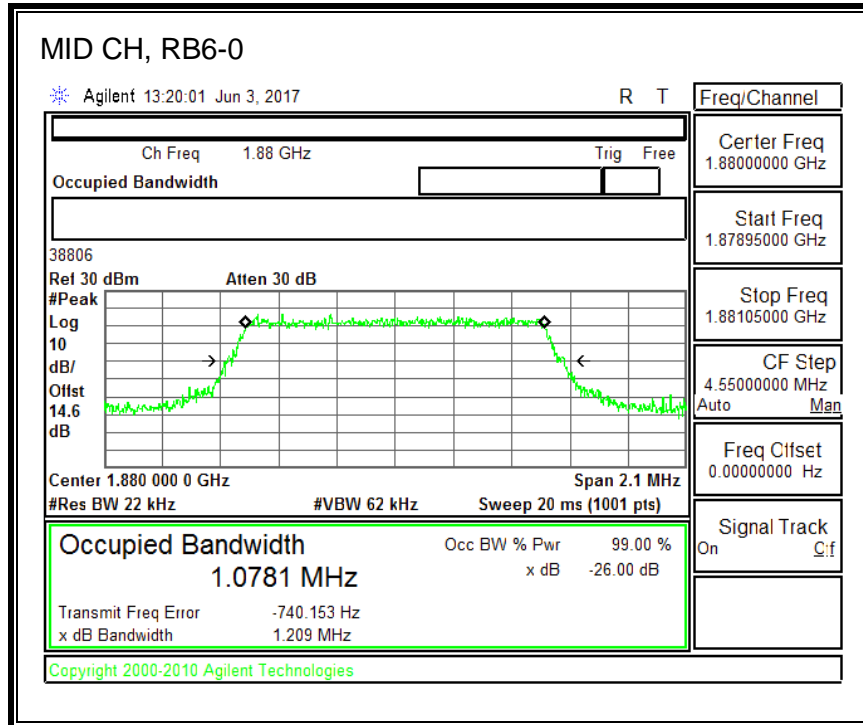
#### QPSK, (1.4 MHz BAND WIDTH)



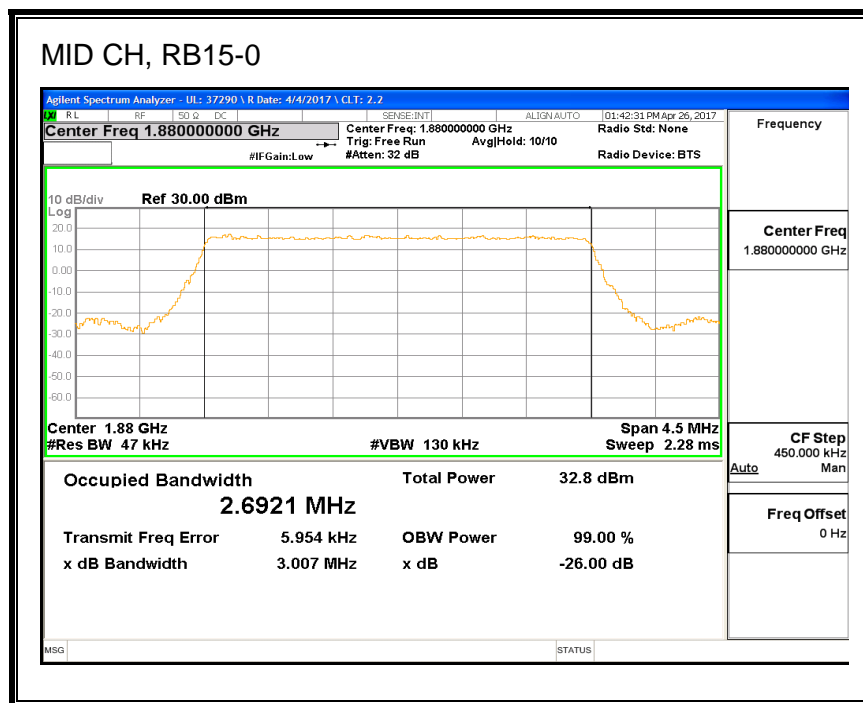
#### 16QAM, (1.4 MHz BAND WIDTH)



**64QAM, (1.4 MHz BAND WIDTH)**

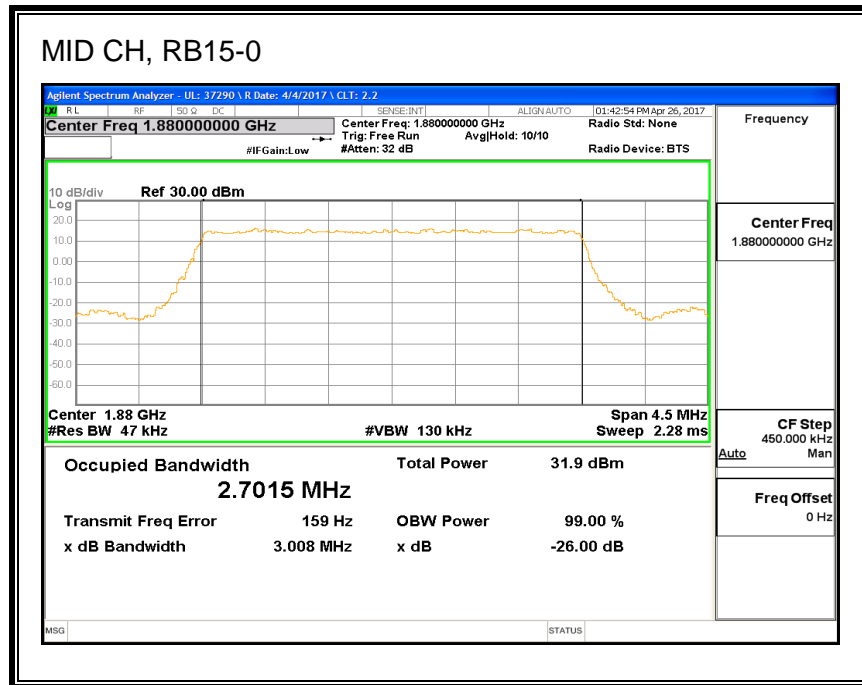


**QPSK, (3.0 MHz BAND WIDTH)**

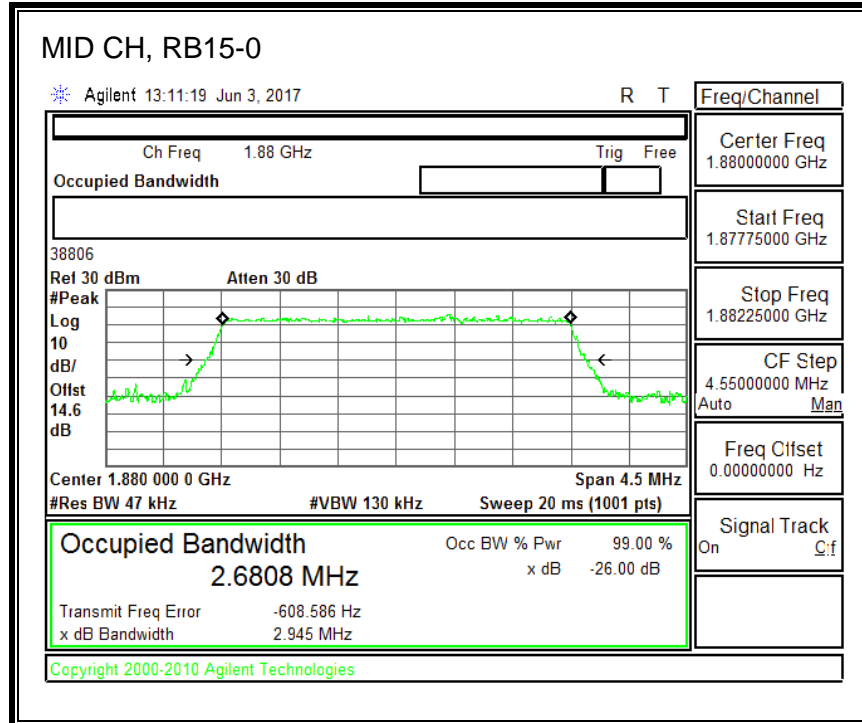




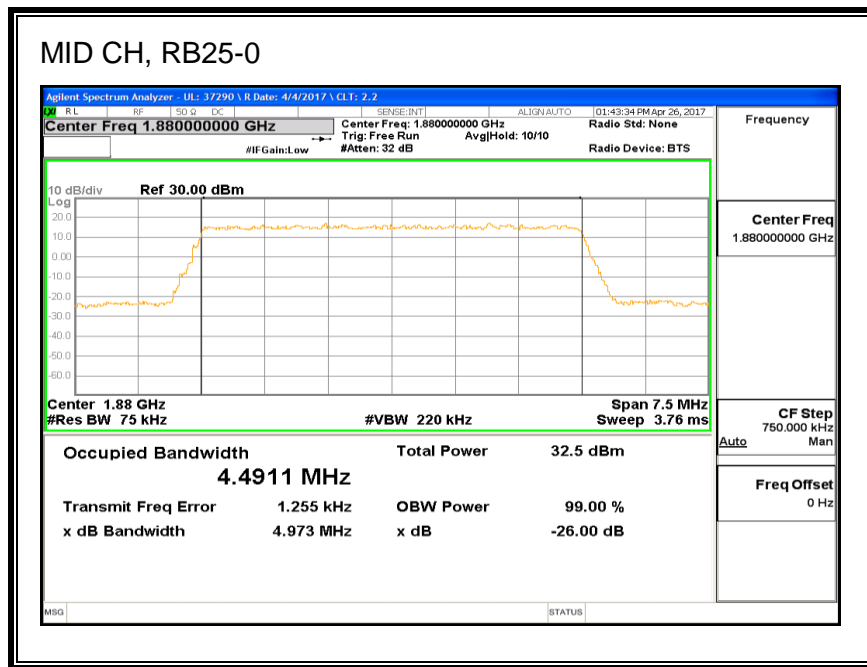
**16QAM, (3.0 MHz BAND WIDTH)**



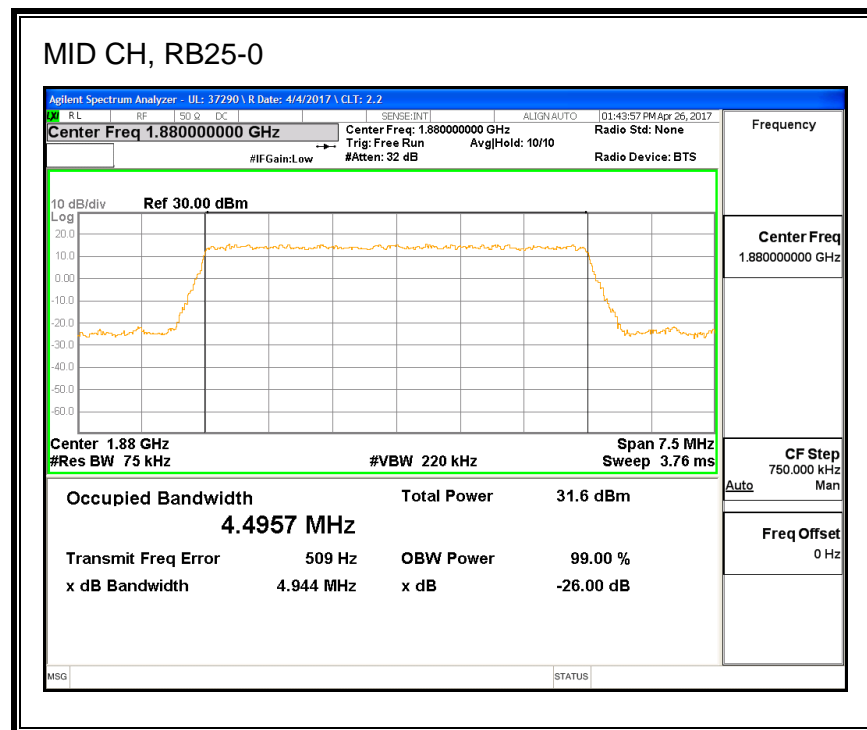
**64QAM, (3.0 MHz BAND WIDTH)**



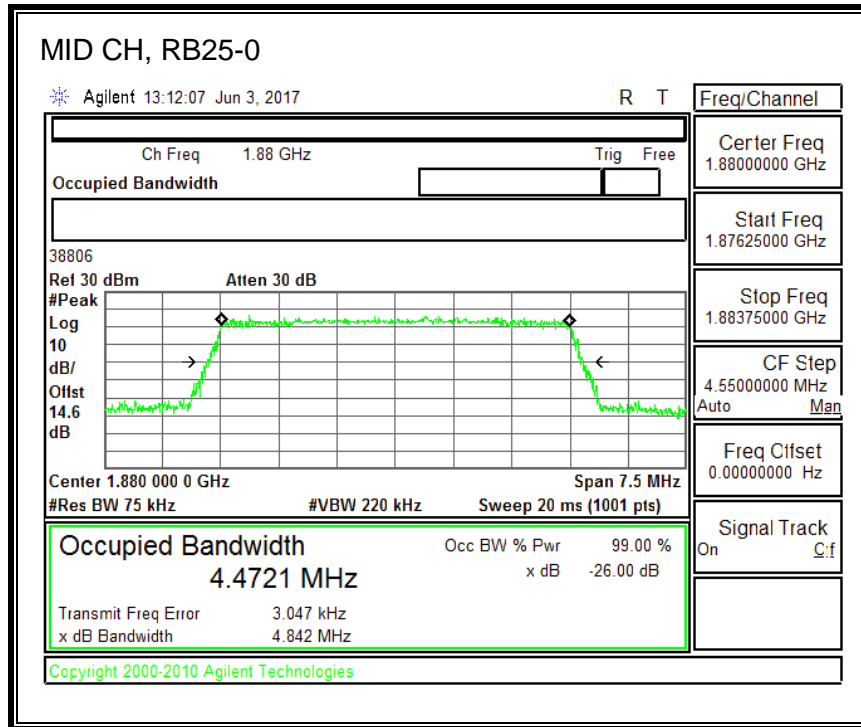
**QPSK, (5.0 MHz BAND WIDTH)**



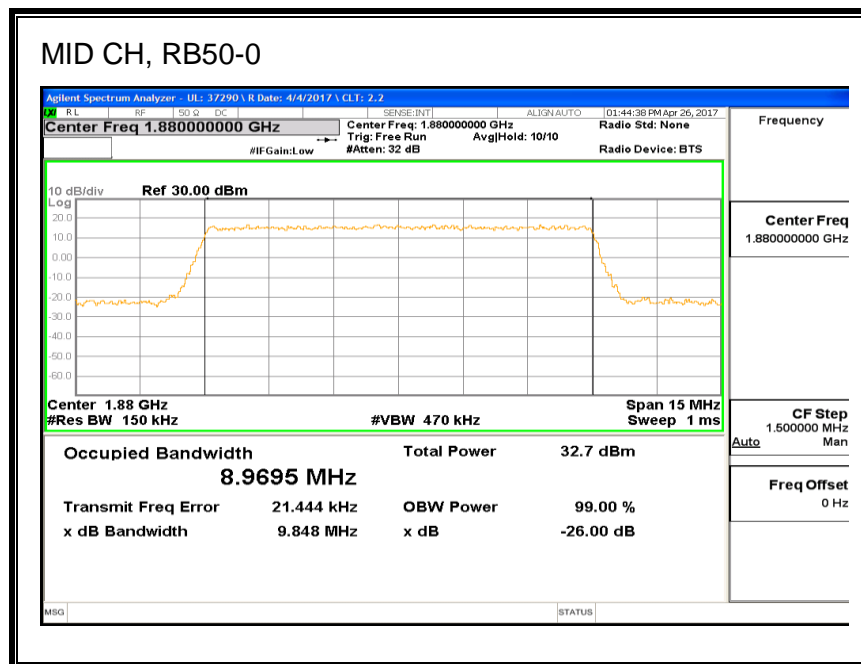
**16QAM, (5.0 MHz BAND WIDTH)**



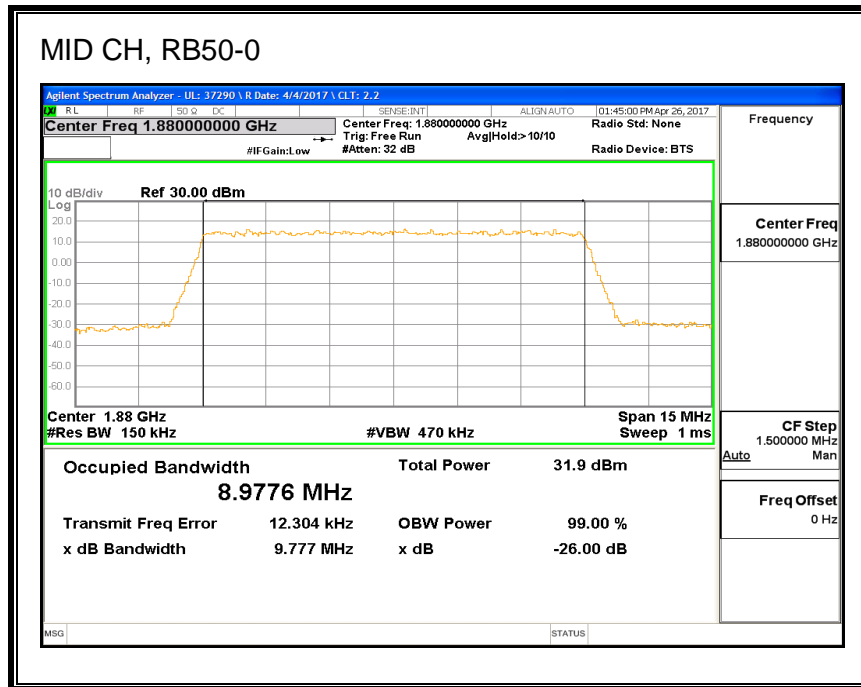
**64QAM, (5.0 MHz BAND WIDTH)**



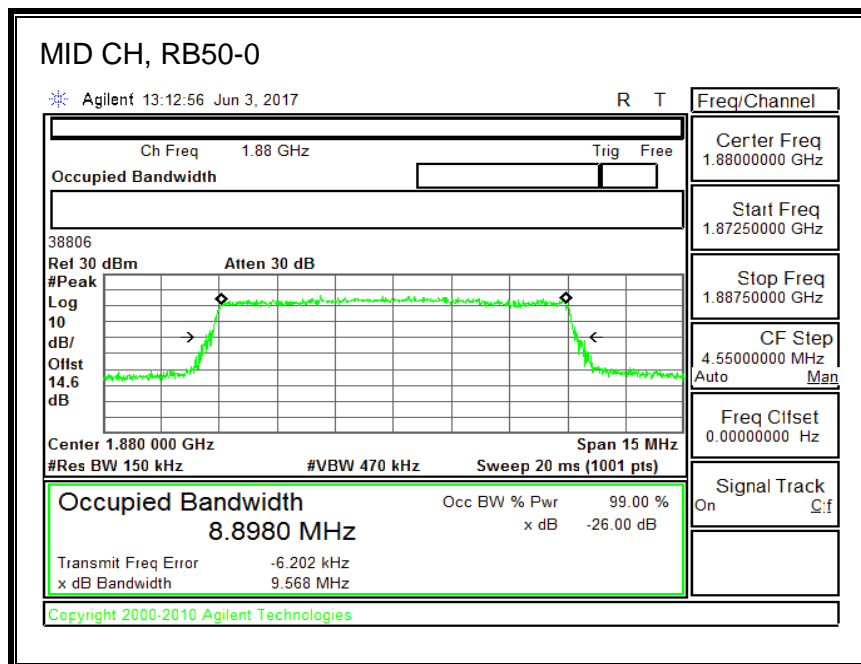
**QPSK, (10.0 MHz BAND WIDTH)**



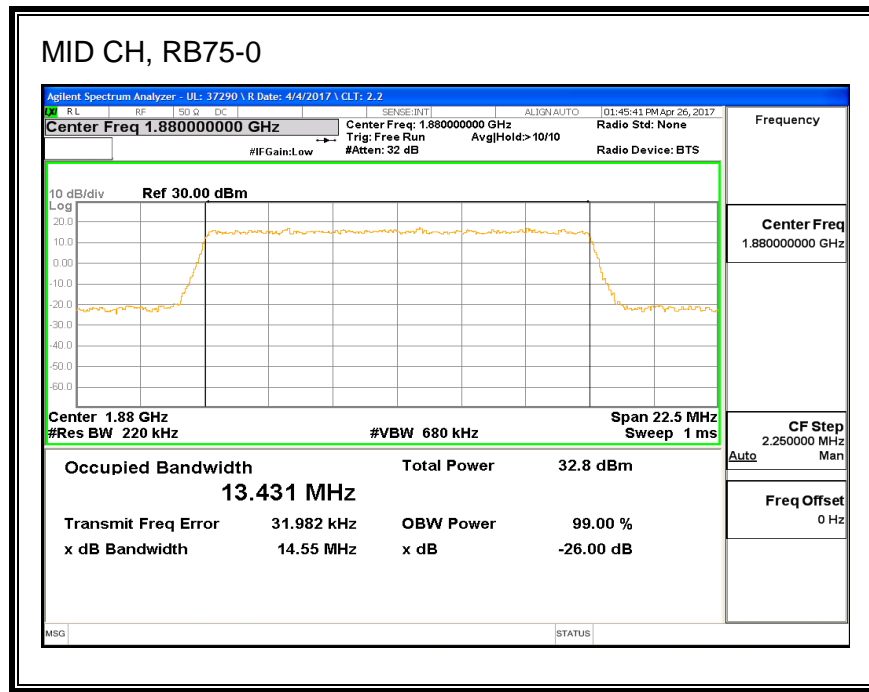
**16QAM, (10.0 MHz BAND WIDTH)**



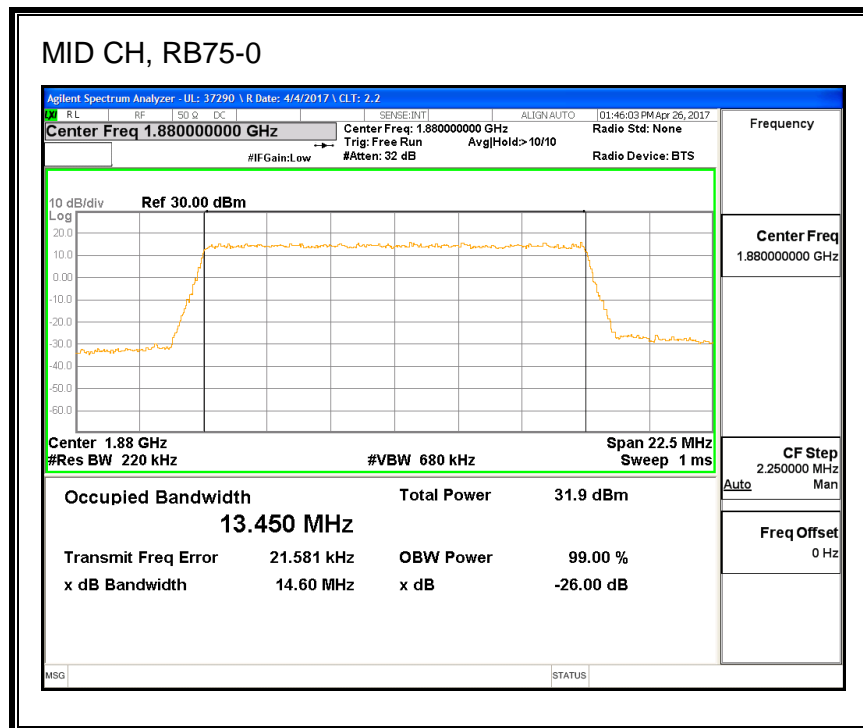
**64QAM, (10.0 MHz BAND WIDTH)**



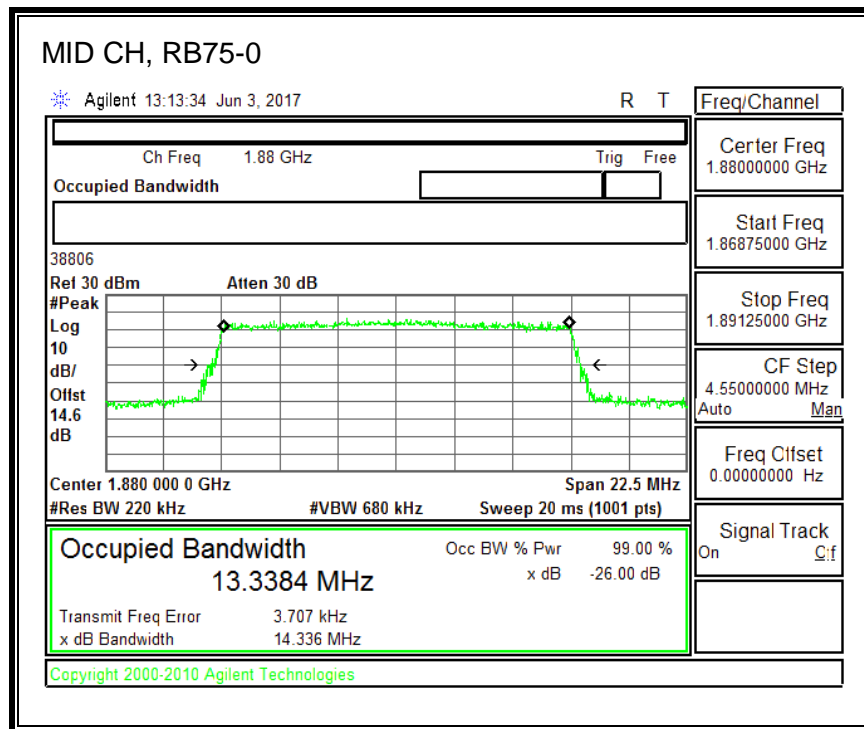
**QPSK, (15.0 MHz BAND WIDTH)**



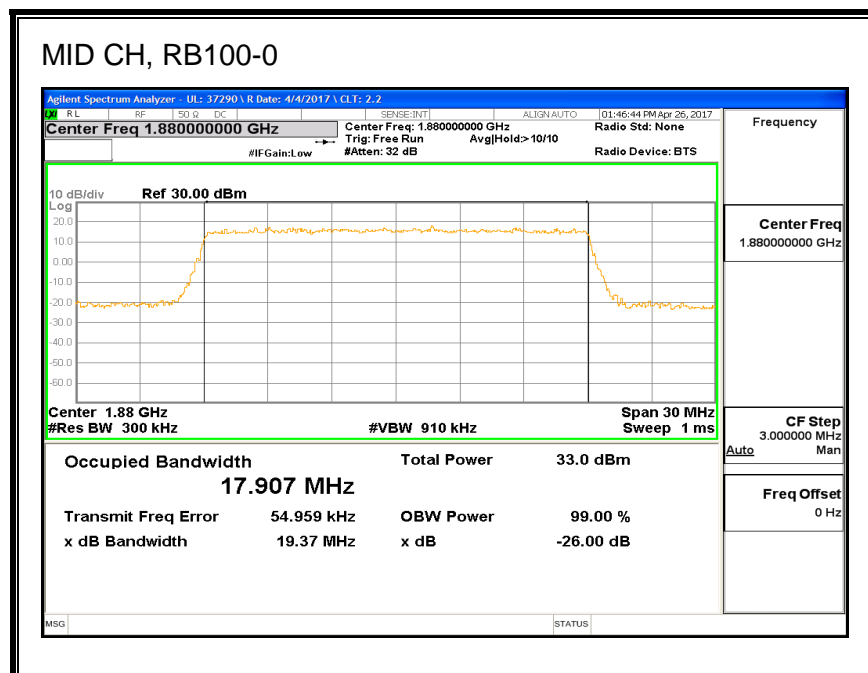
**16QAM, (15.0 MHz BAND WIDTH)**



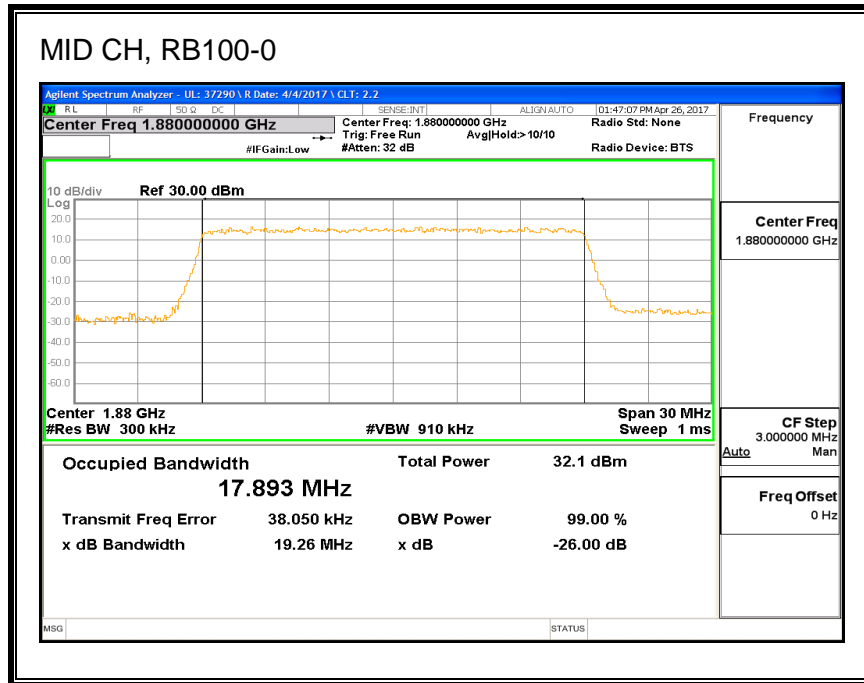
**64QAM, (15.0 MHz BAND WIDTH)**



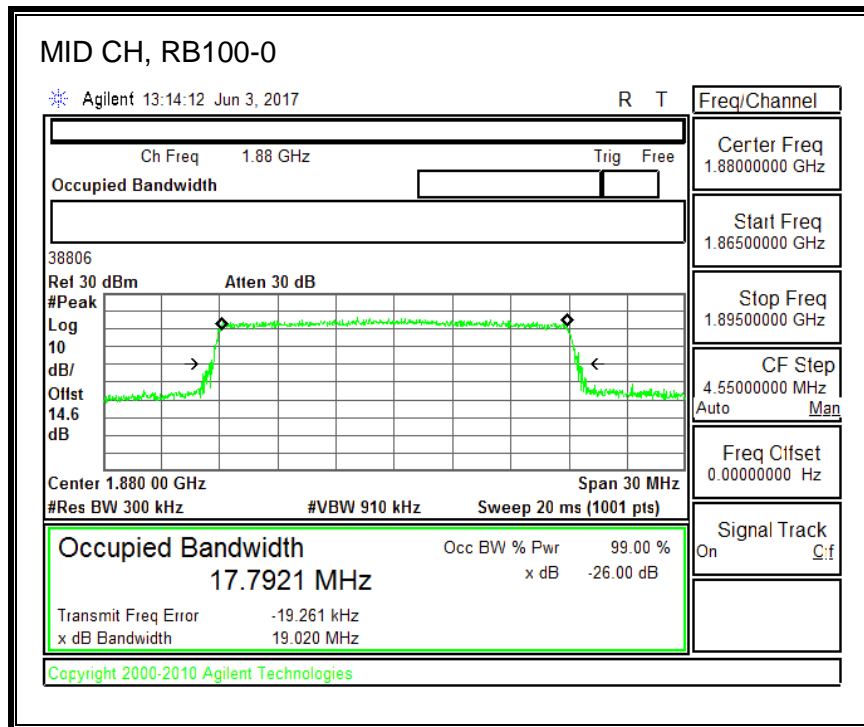
**QPSK, (20.0 MHz BAND WIDTH)**



**16QAM, (20.0 MHz BAND WIDTH)**

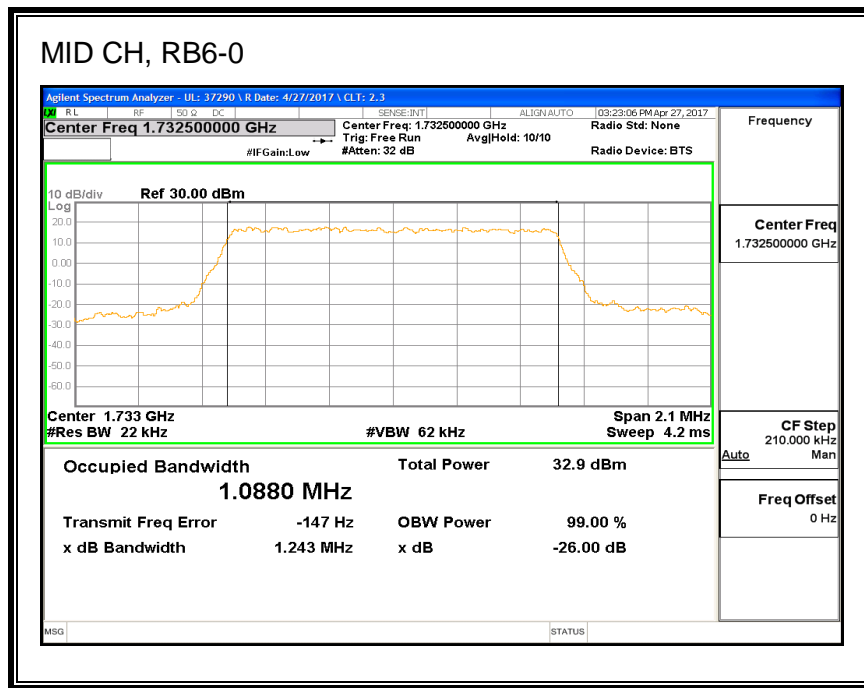


**64QAM, (20.0 MHz BAND WIDTH)**

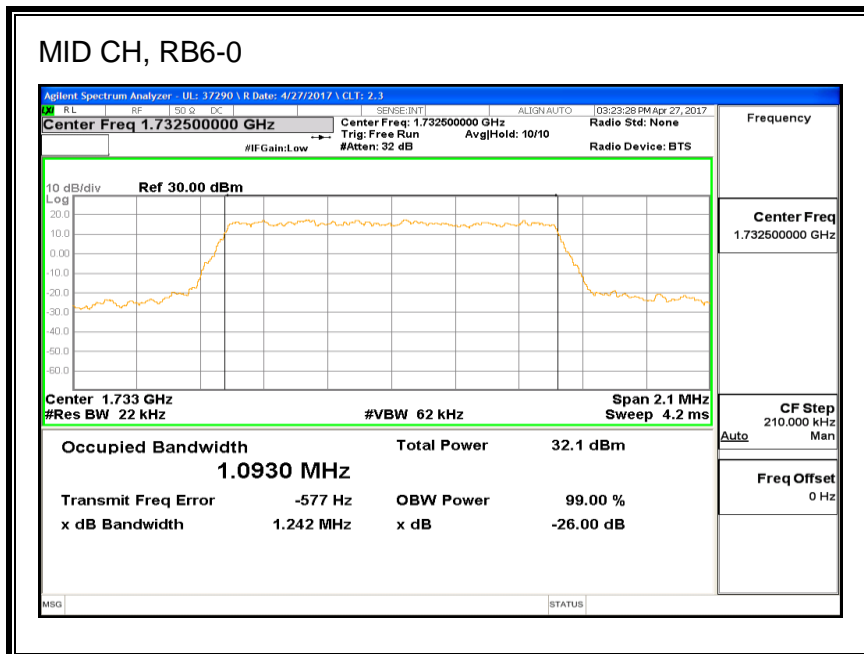


## 8.1.2. LTE BAND 4

### QPSK, (1.4 MHz BAND WIDTH)

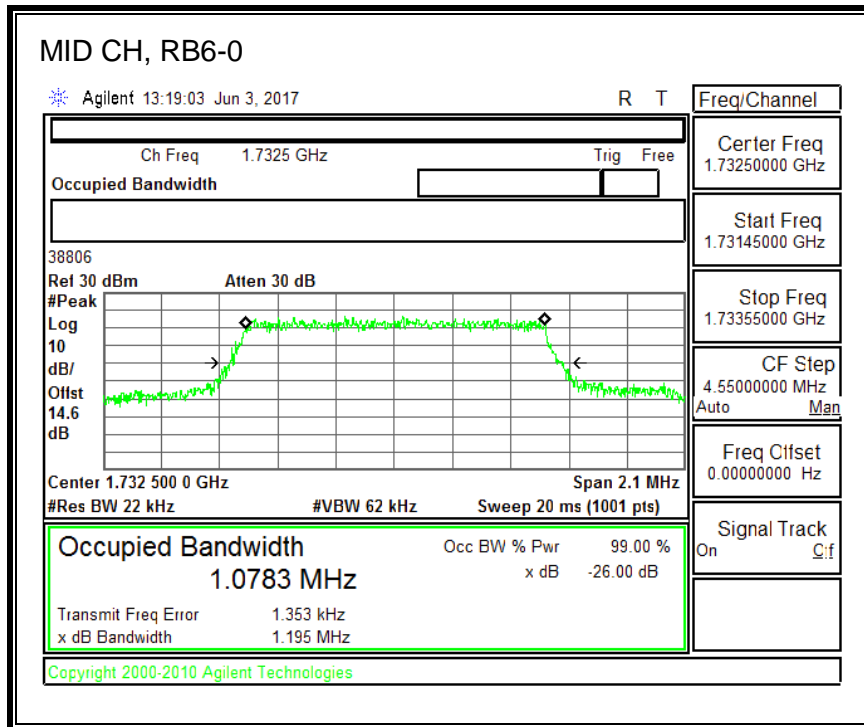


### 16QAM, (1.4 MHz BAND WIDTH)

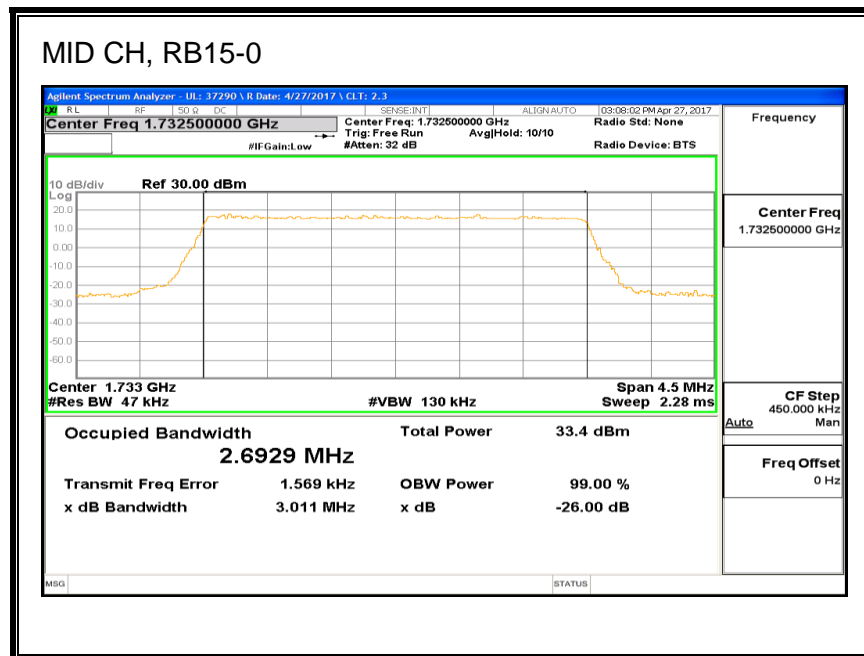




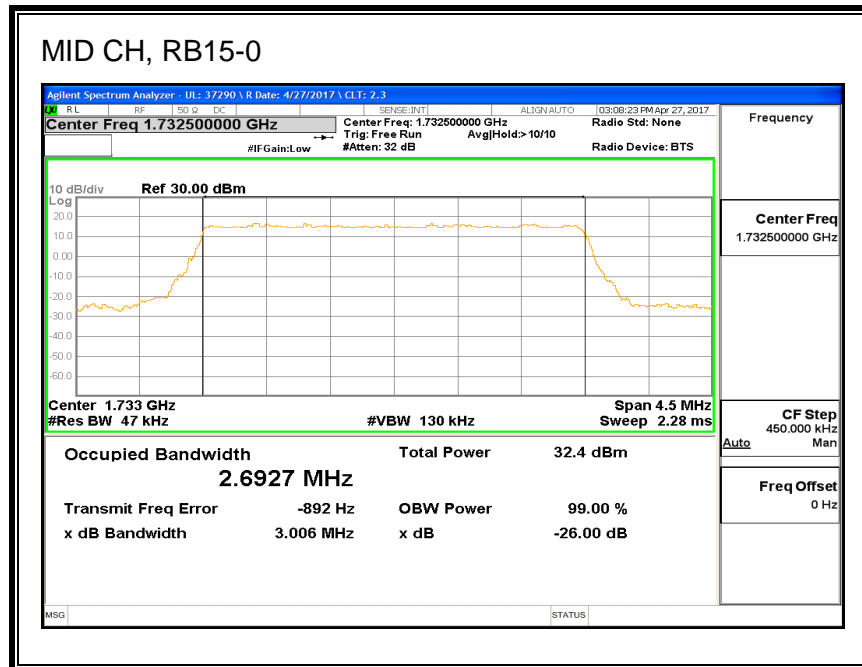
**64QAM, (1.4 MHz BAND WIDTH)**



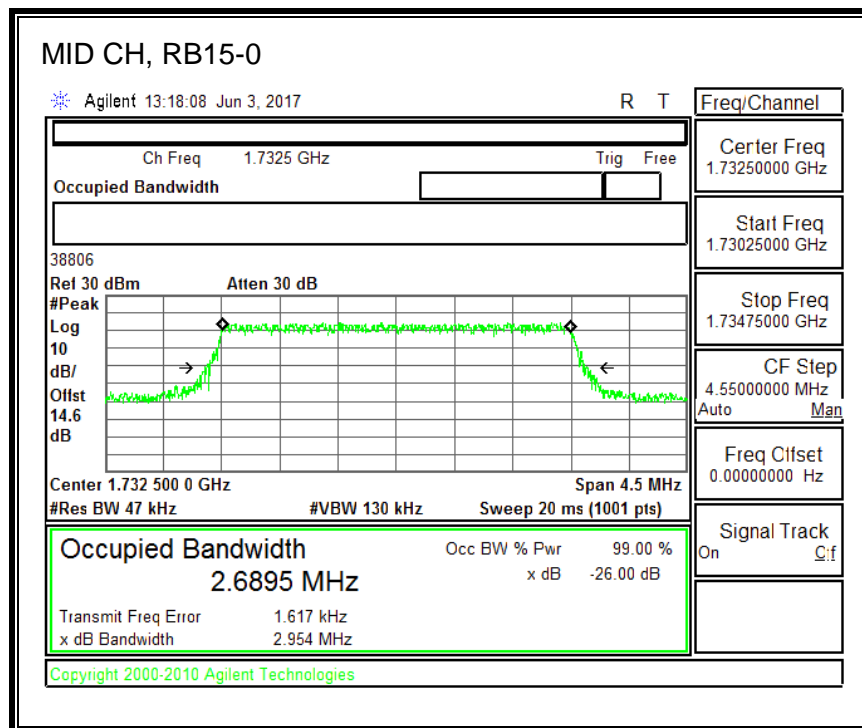
**QPSK, (3.0 MHz BAND WIDTH)**



**16QAM, (3.0 MHz BAND WIDTH)**

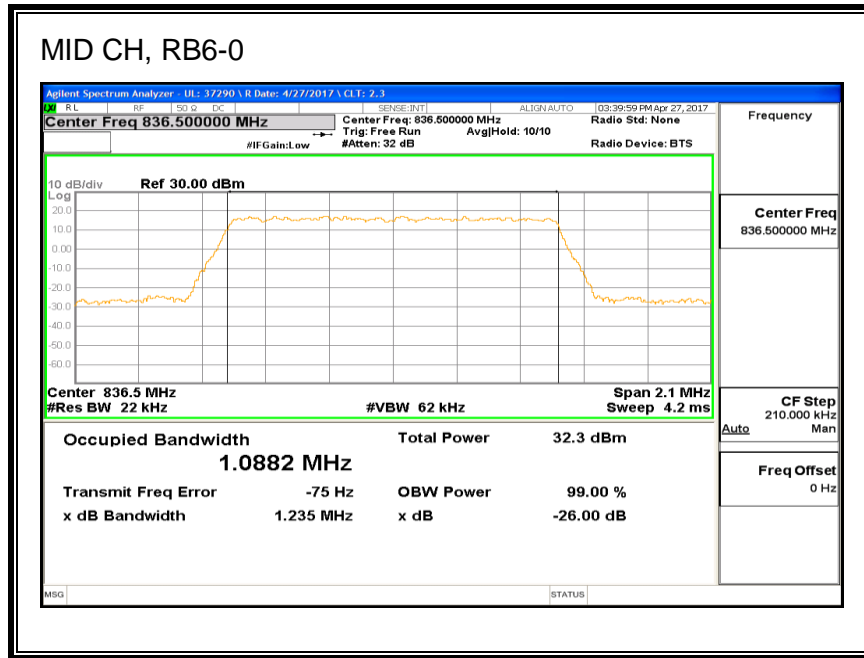


**64QAM, (3.0 MHz BAND WIDTH)**

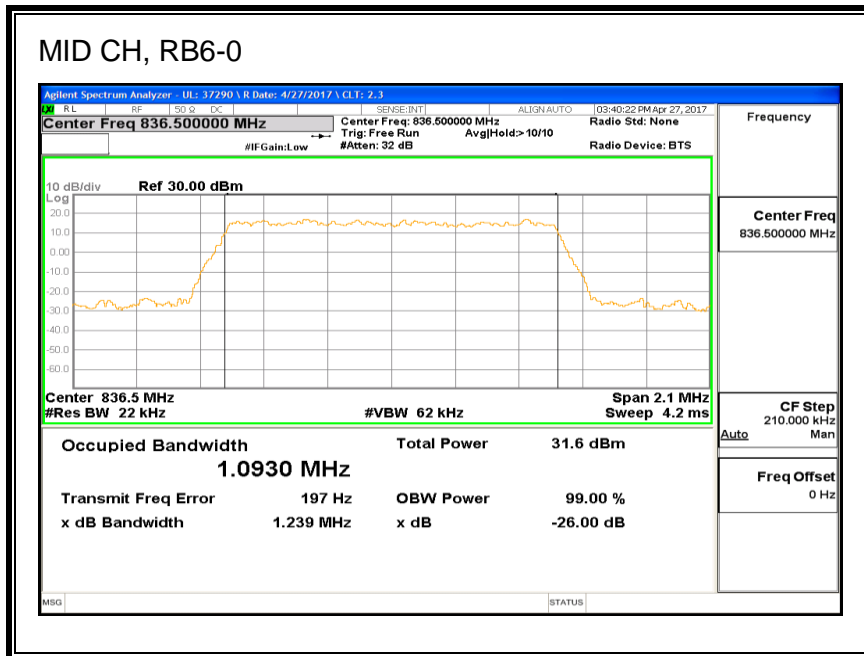


### 8.1.3. LTE BAND 5

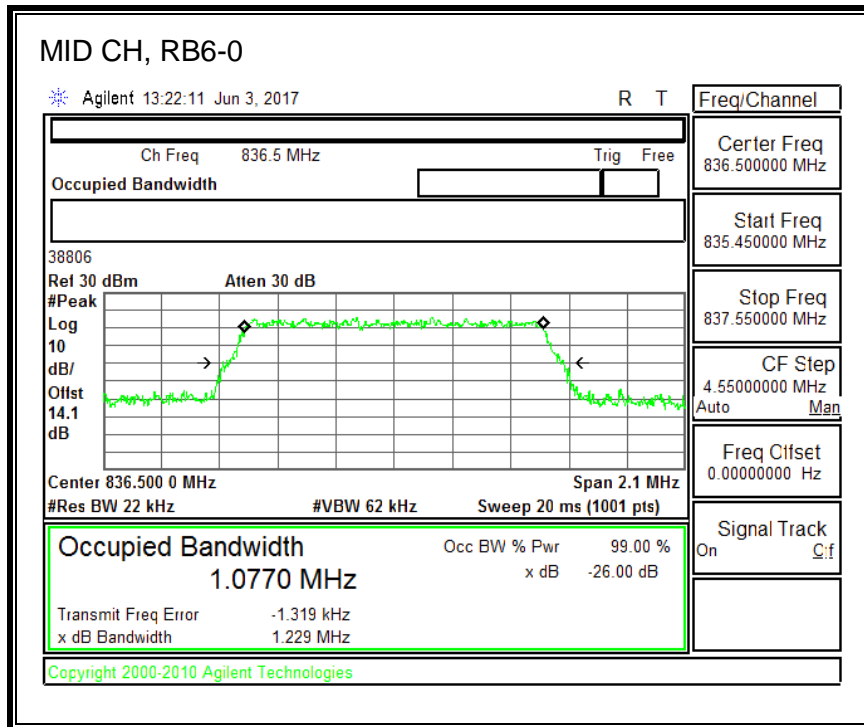
#### QPSK, (1.4 MHz BAND WIDTH)



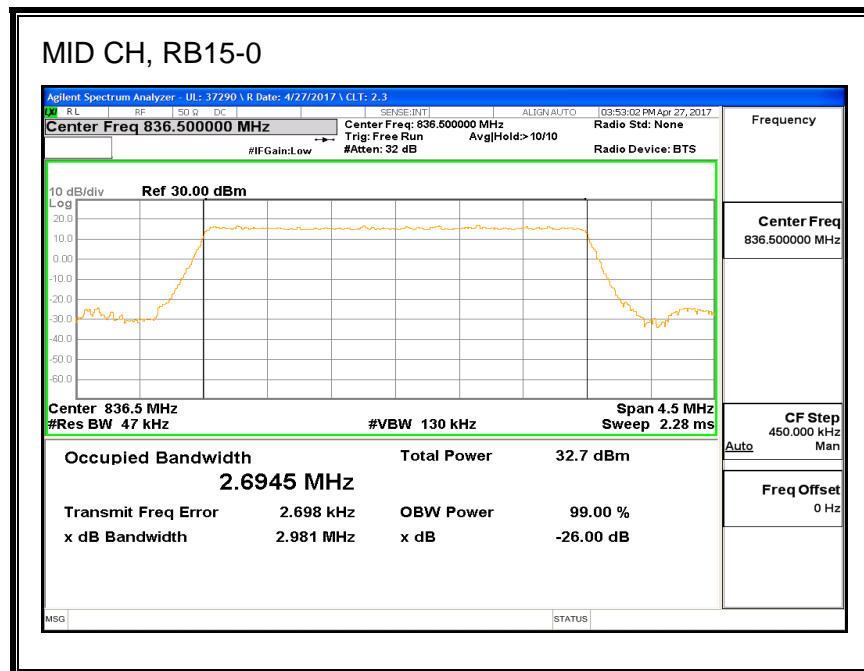
#### 16QAM, (1.4 MHz BAND WIDTH)



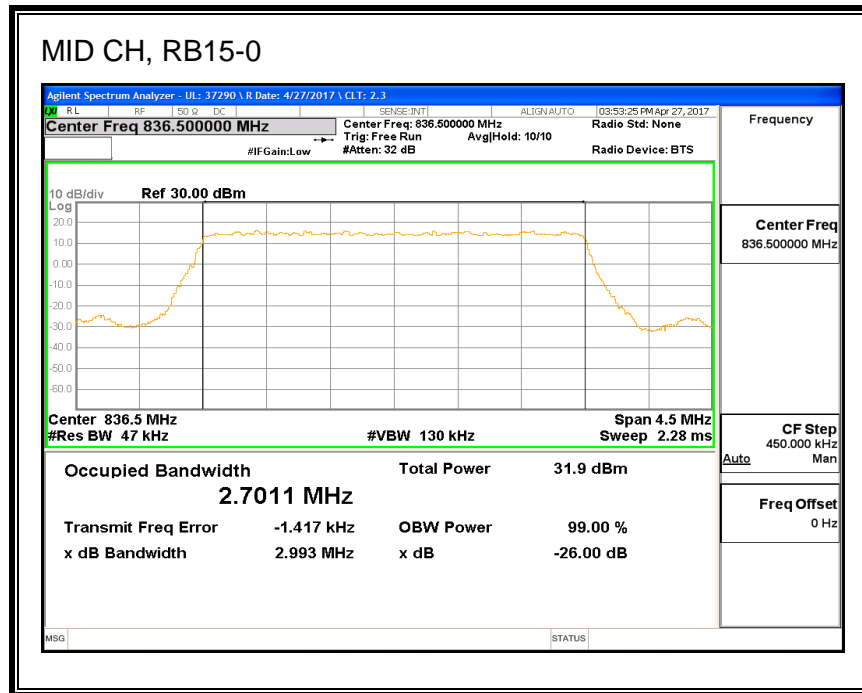
**64QAM, (1.4 MHz BAND WIDTH)**



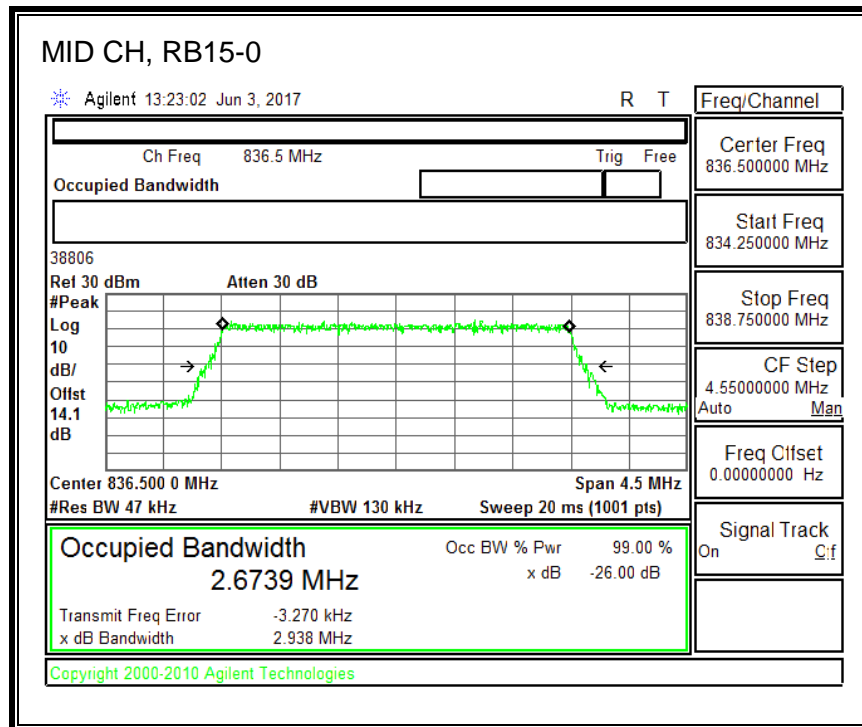
**QPSK, (3.0 MHz BAND WIDTH)**



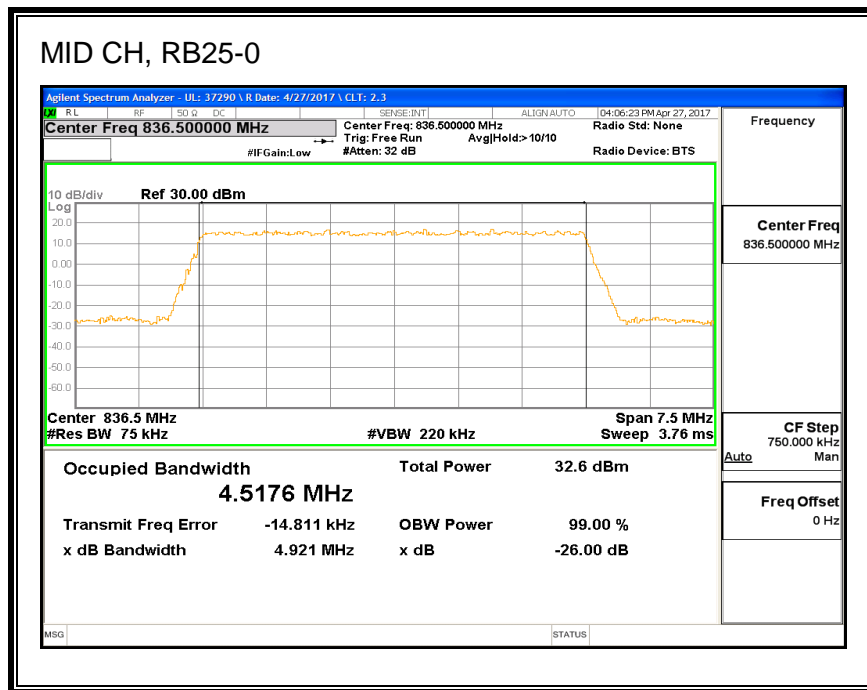
**16QAM, (3.0 MHz BAND WIDTH)**



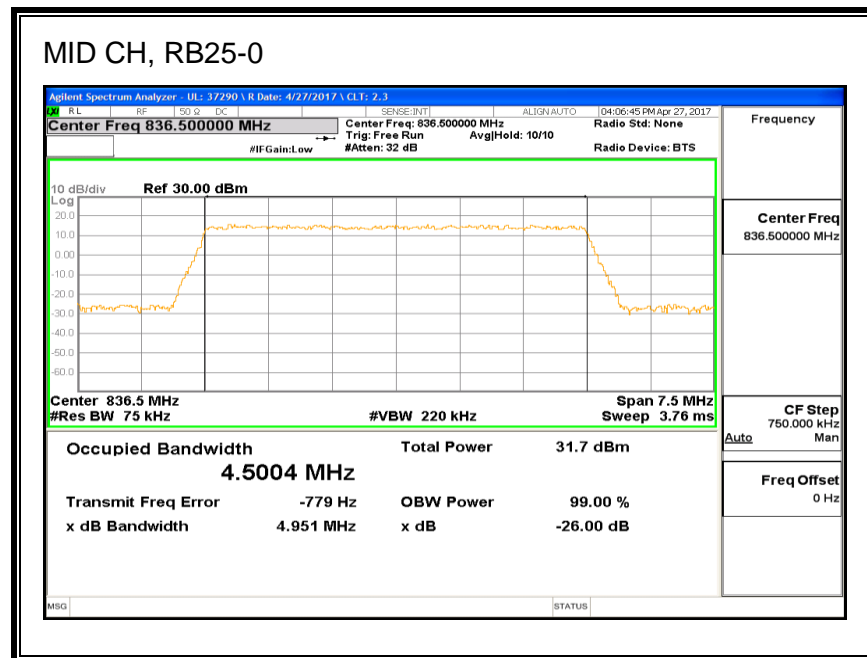
**64QAM, (3.0 MHz BAND WIDTH)**



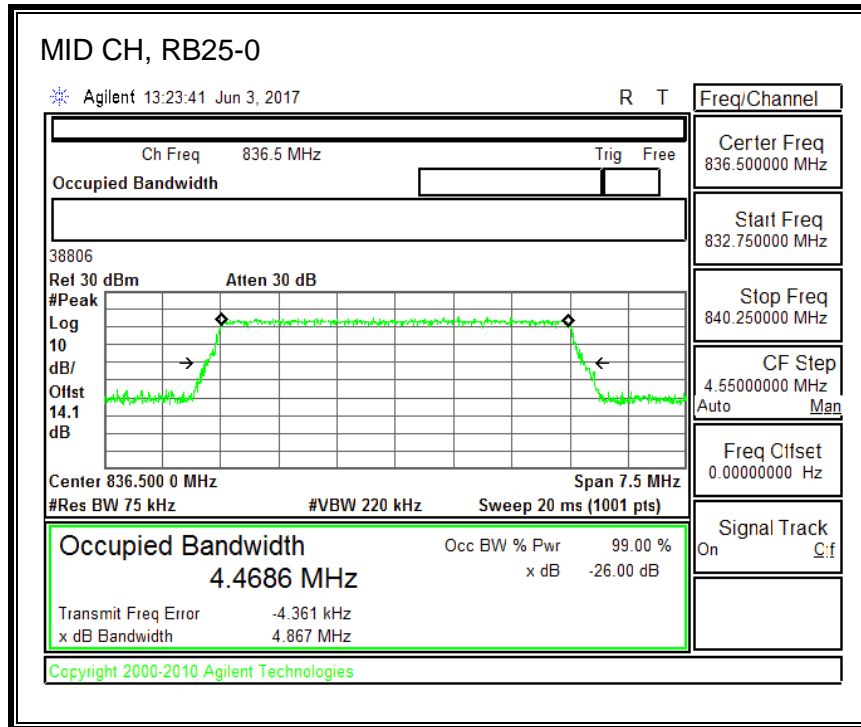
**QPSK, (5.0 MHz BAND WIDTH)**



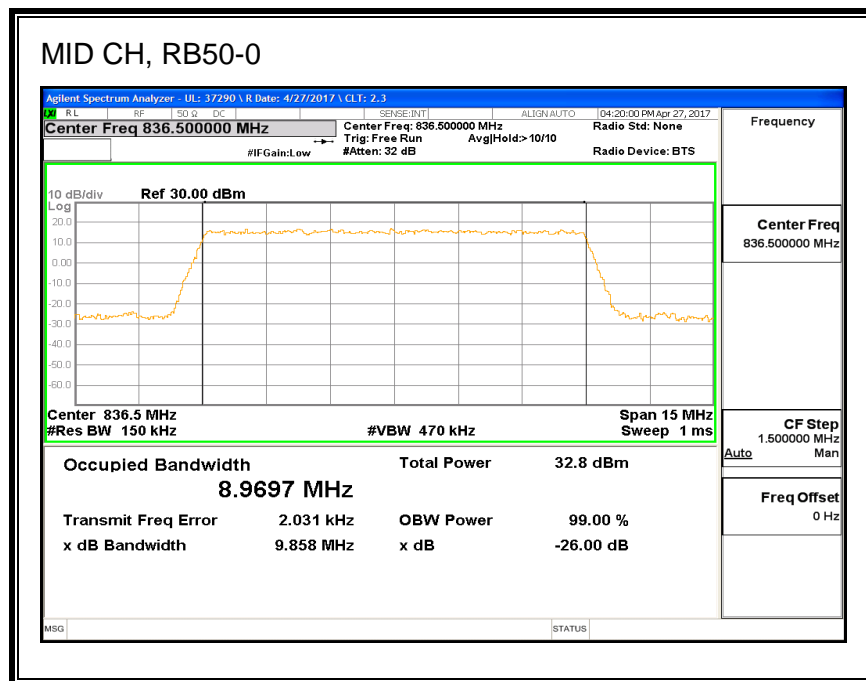
**16QAM, (5.0 MHz BAND WIDTH)**



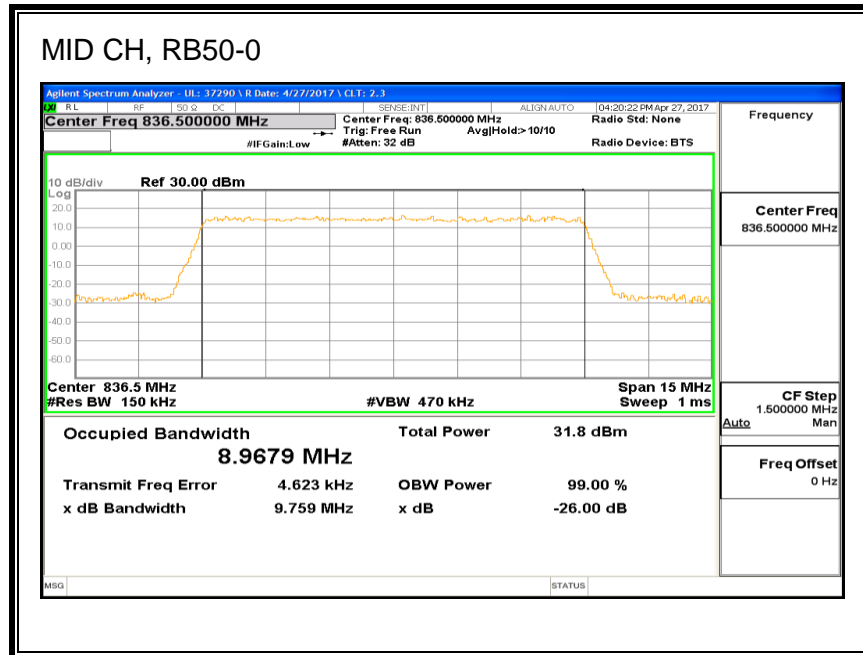
**64QAM, (5.0 MHz BAND WIDTH)**



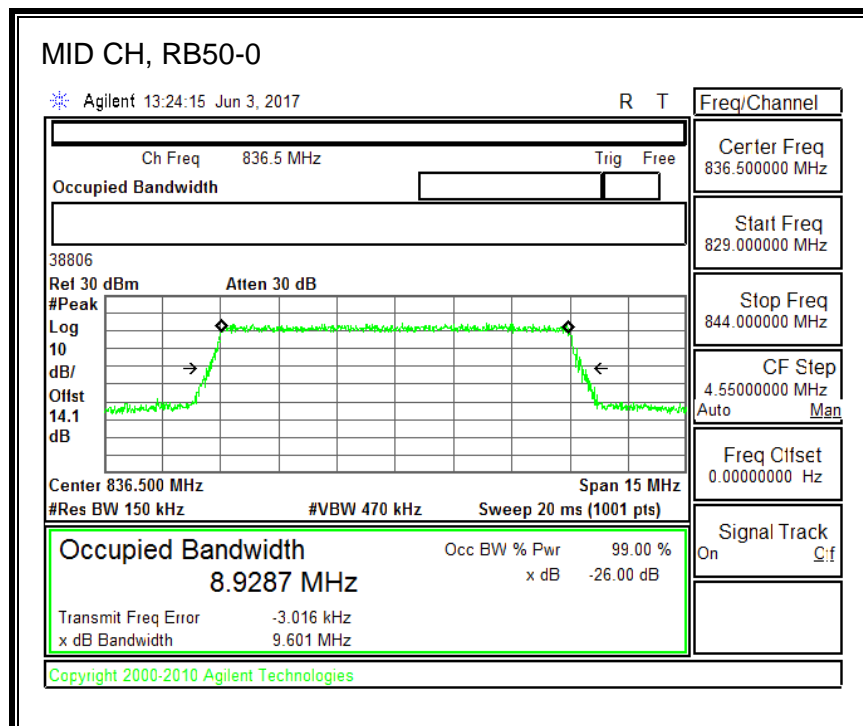
**QPSK, (10.0 MHz BAND WIDTH)**



**16QAM, (10.0 MHz BAND WIDTH)**



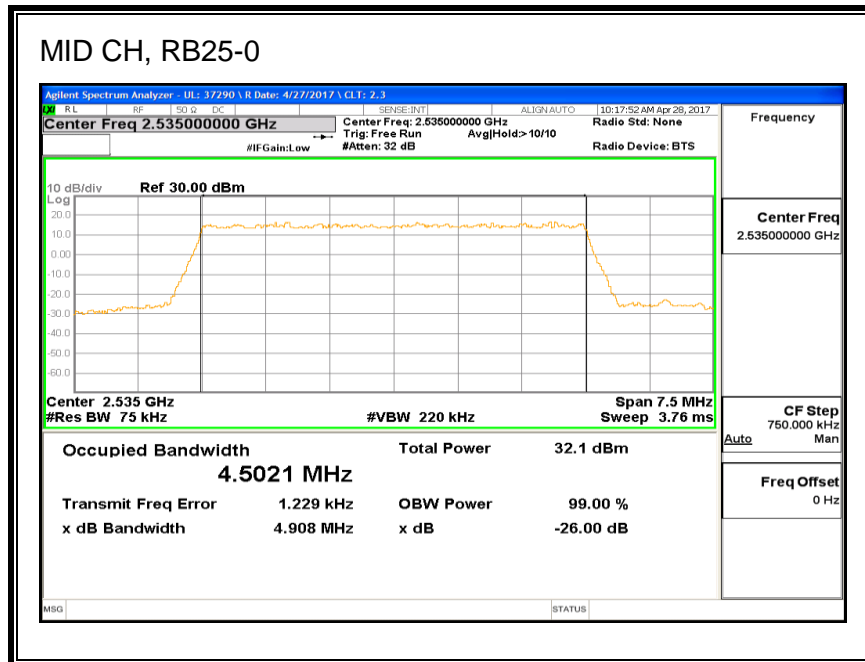
**64QAM, (10.0 MHz BAND WIDTH)**



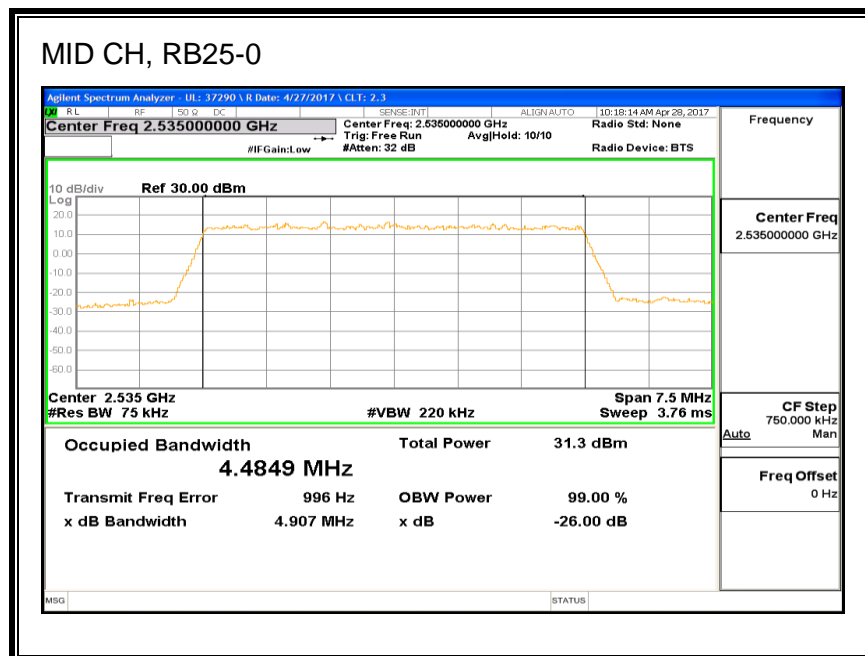


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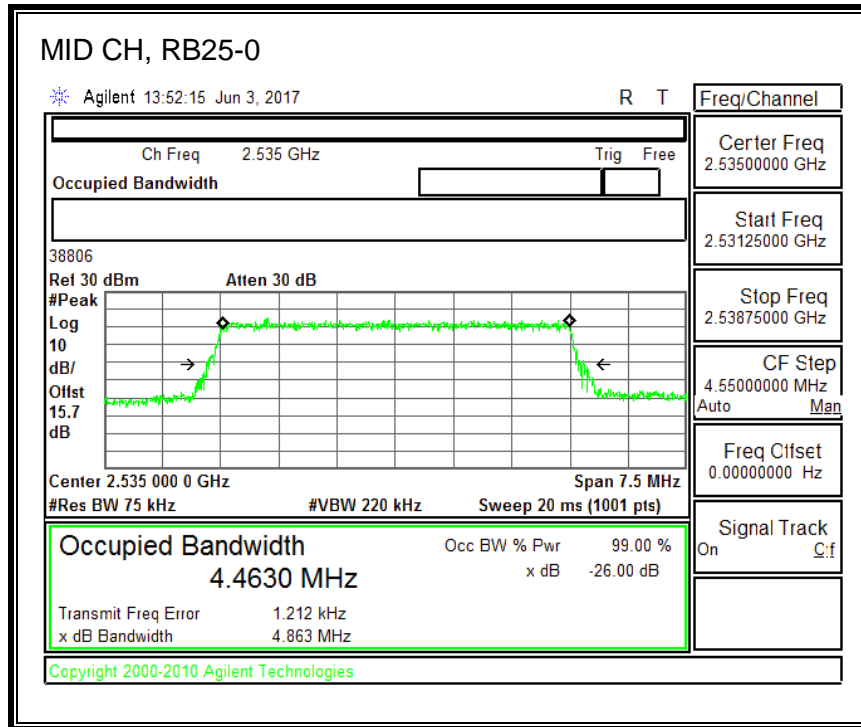
##### QPSK, (5.0 MHz BAND WIDTH)



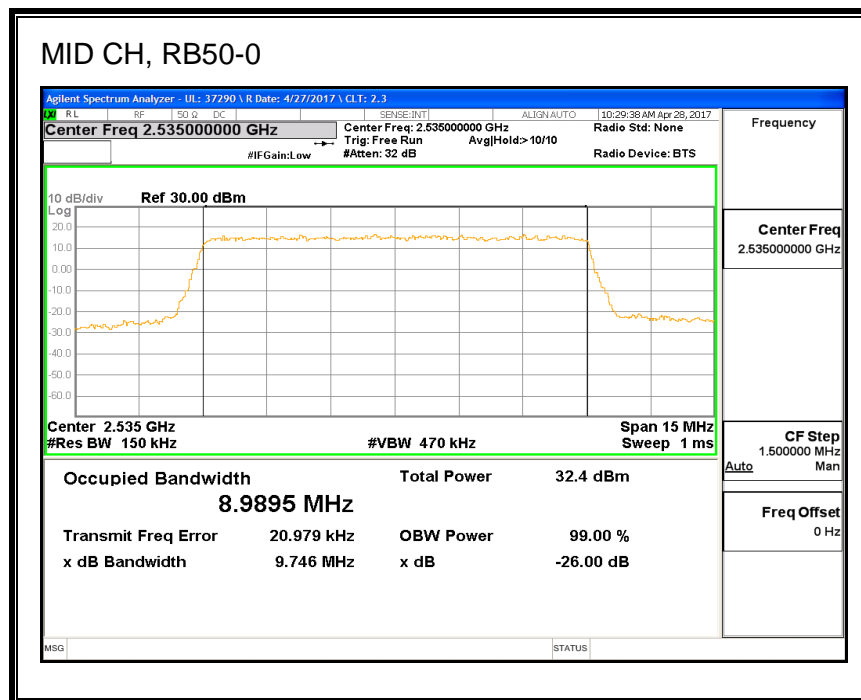
##### 16QAM, (5.0 MHz BAND WIDTH)



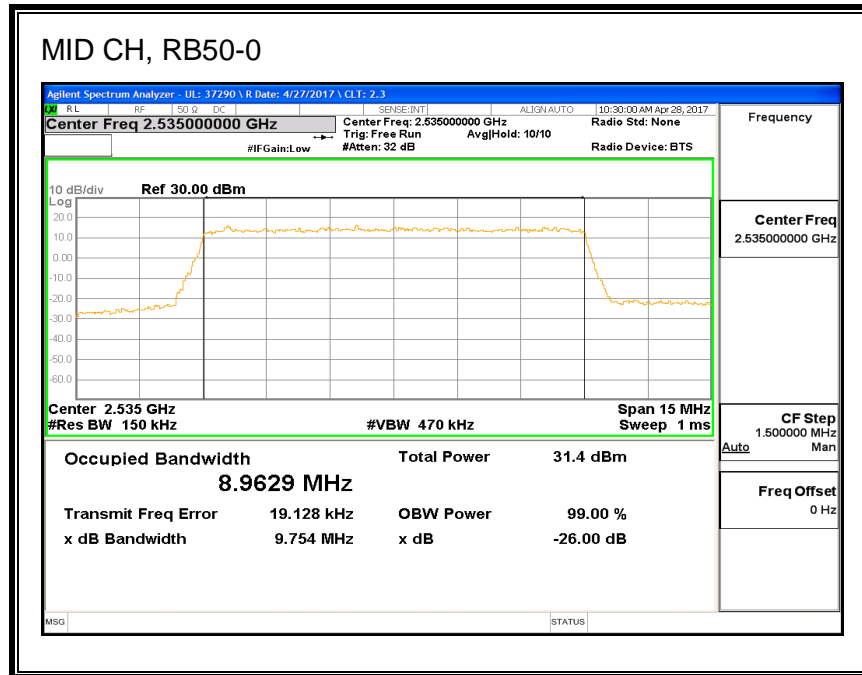
**64QAM, (5.0 MHz BAND WIDTH)**



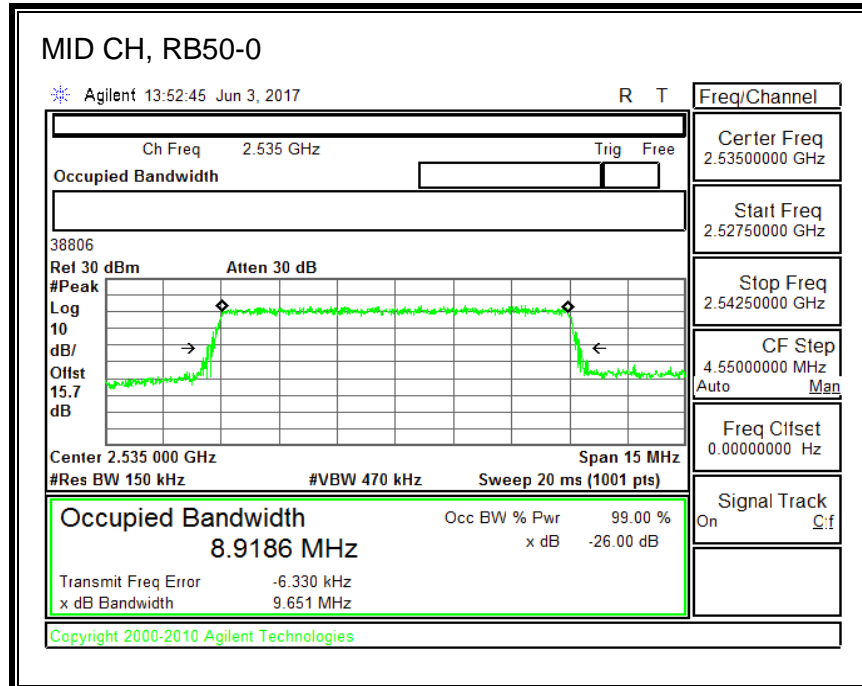
**QPSK, (10.0 MHz BAND WIDTH)**



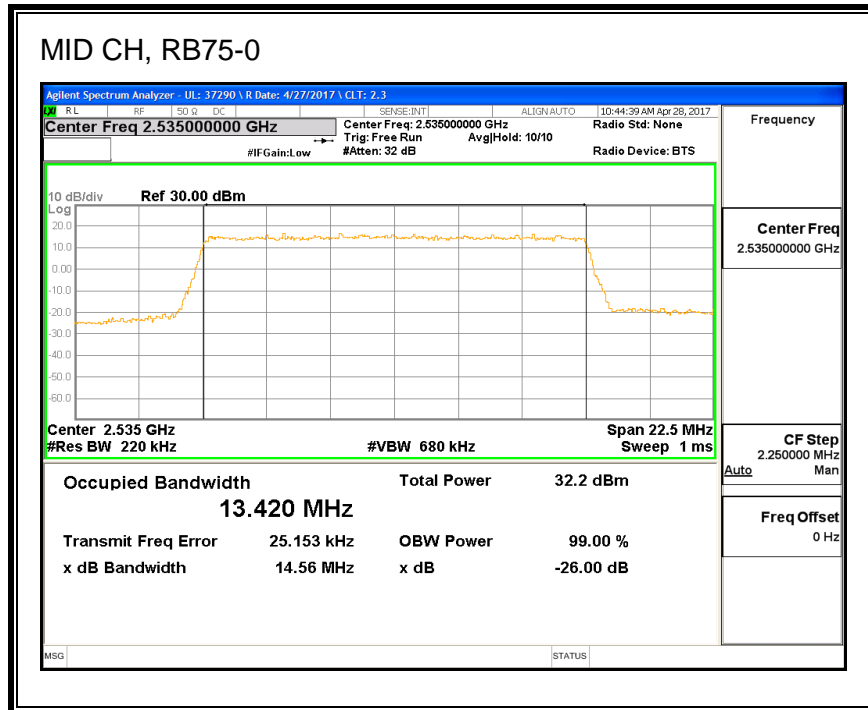
**16QAM, (10.0 MHz BAND WIDTH)**



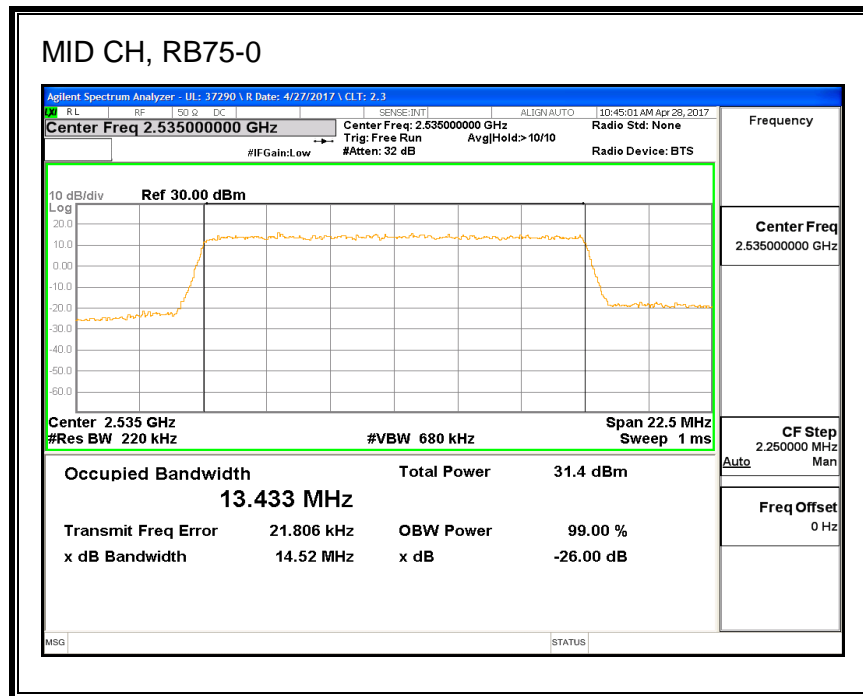
**64QAM, (10.0 MHz BAND WIDTH)**



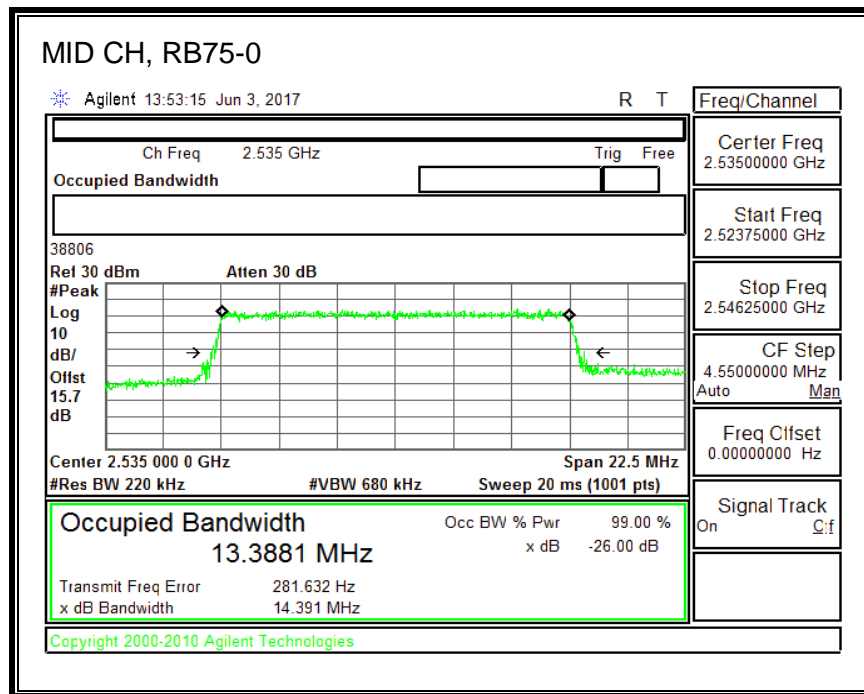
**QPSK, (15.0 MHz BAND WIDTH)**



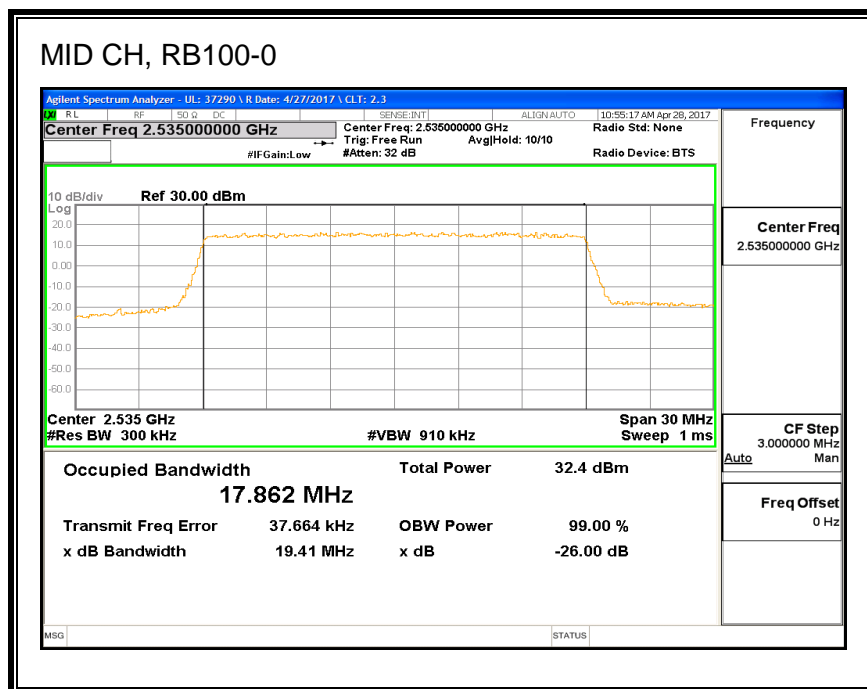
**16QAM, (15.0 MHz BAND WIDTH)**



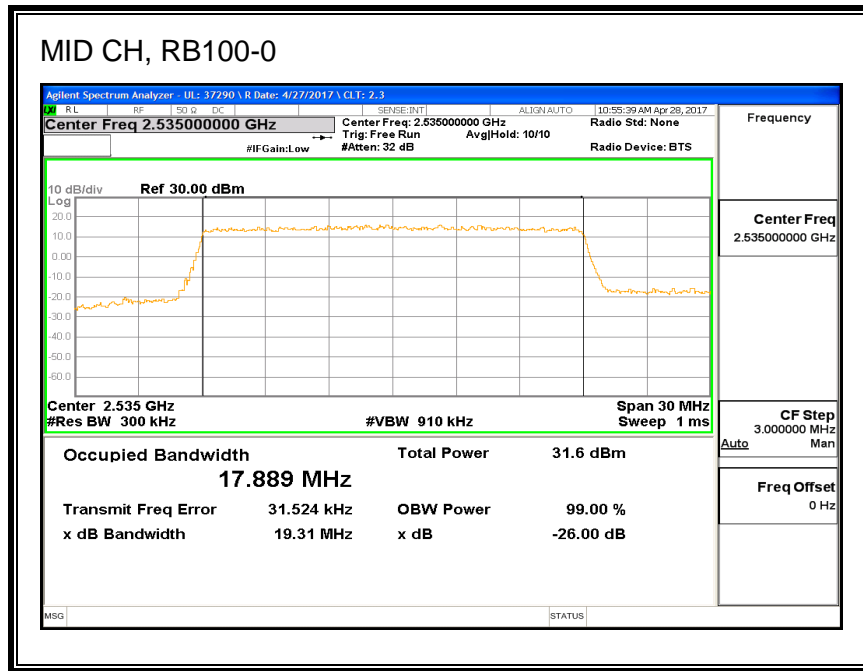
**64QAM, (15.0 MHz BAND WIDTH)**



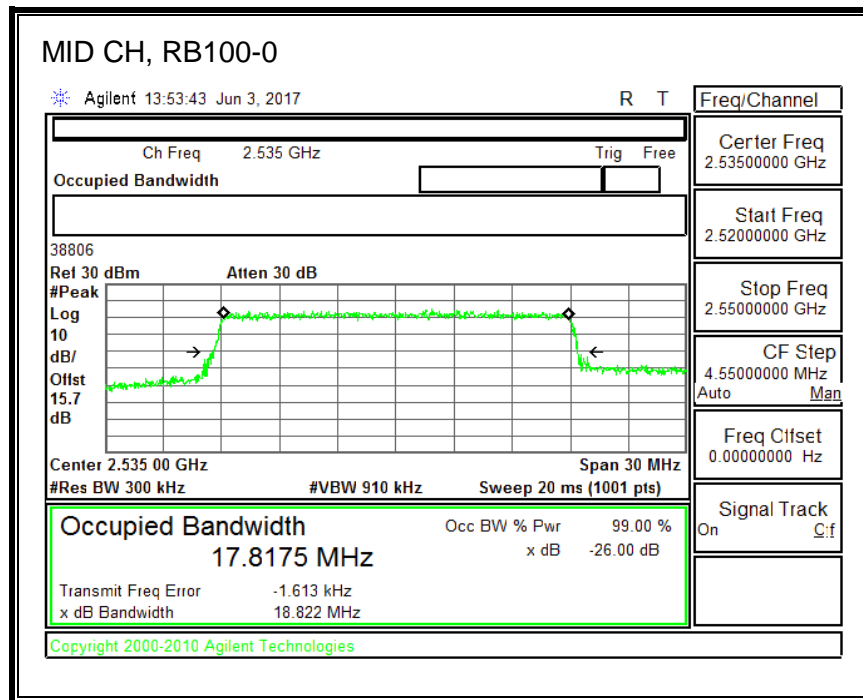
**QPSK, (20.0 MHz BAND WIDTH)**



**16QAM, (20.0 MHz BAND WIDTH)**

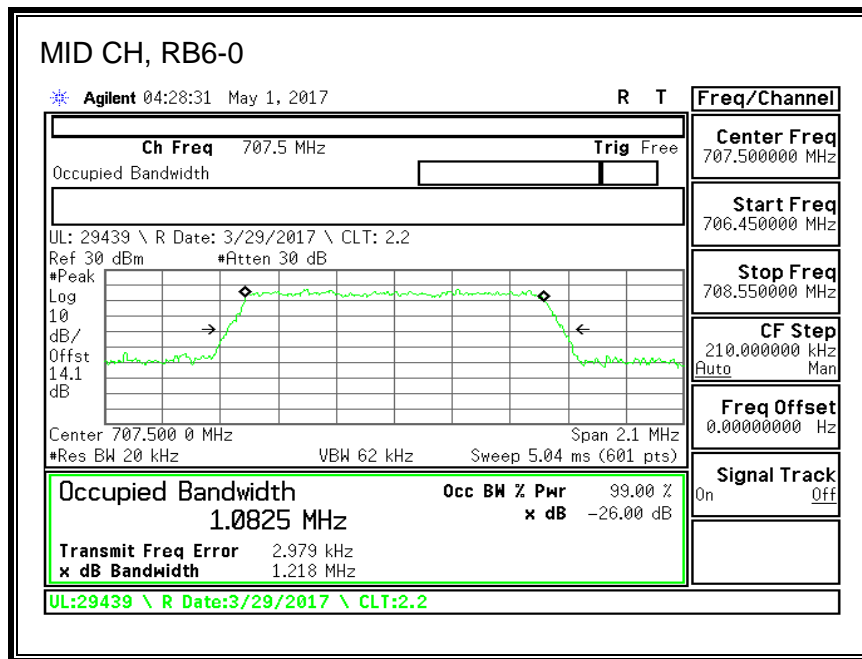


**64QAM, (20.0 MHz BAND WIDTH)**

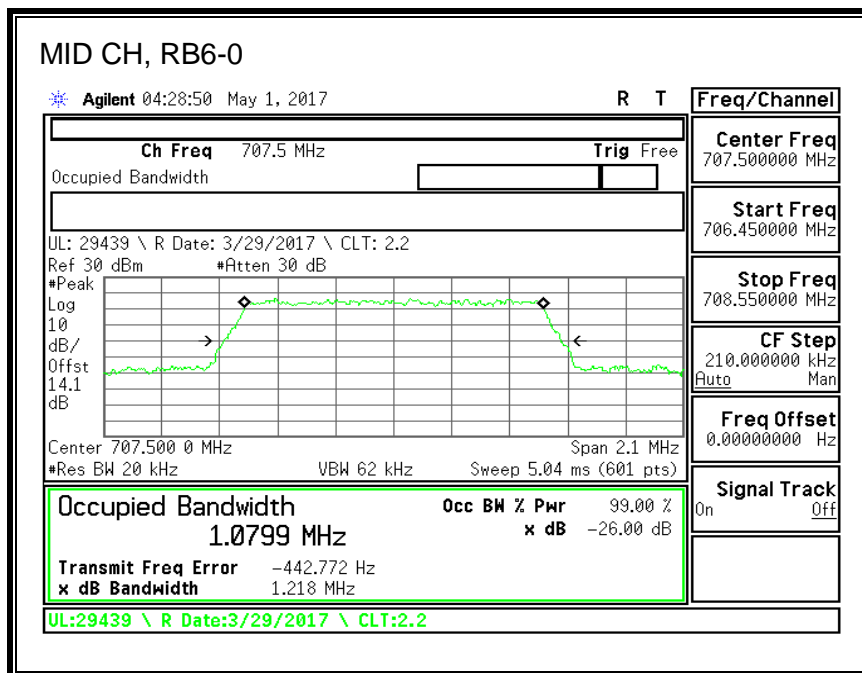


## 8.1.5. LTE BAND 12

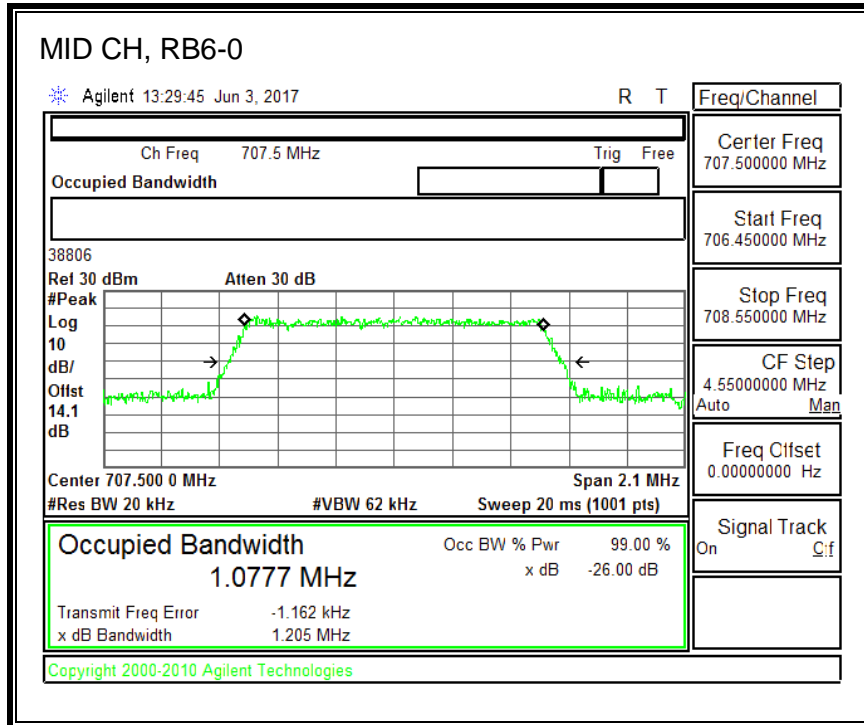
### QPSK, (1.4 MHz BAND WIDTH)



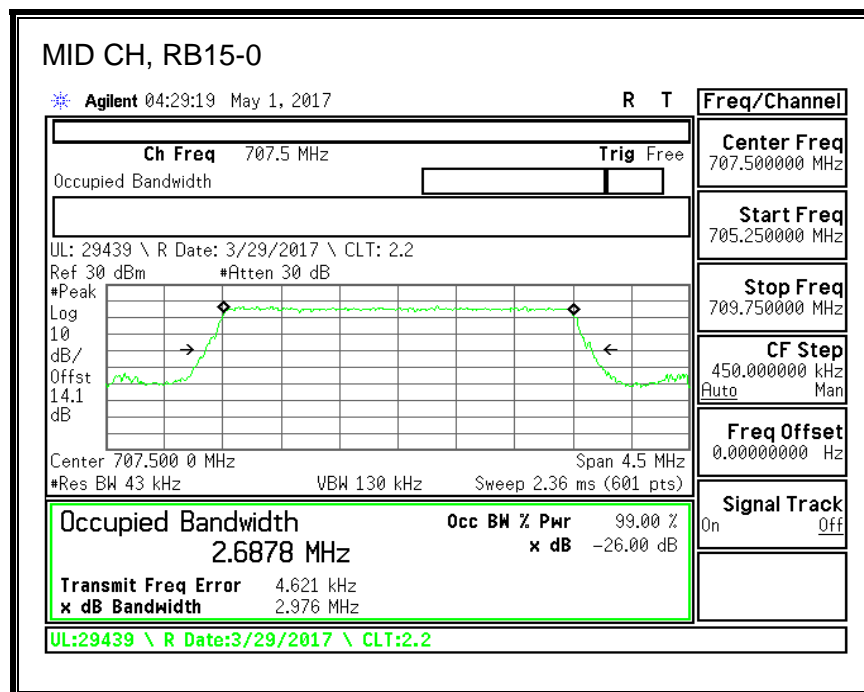
### 16QAM, (1.4 MHz BAND WIDTH)



**64QAM, (1.4 MHz BAND WIDTH)**

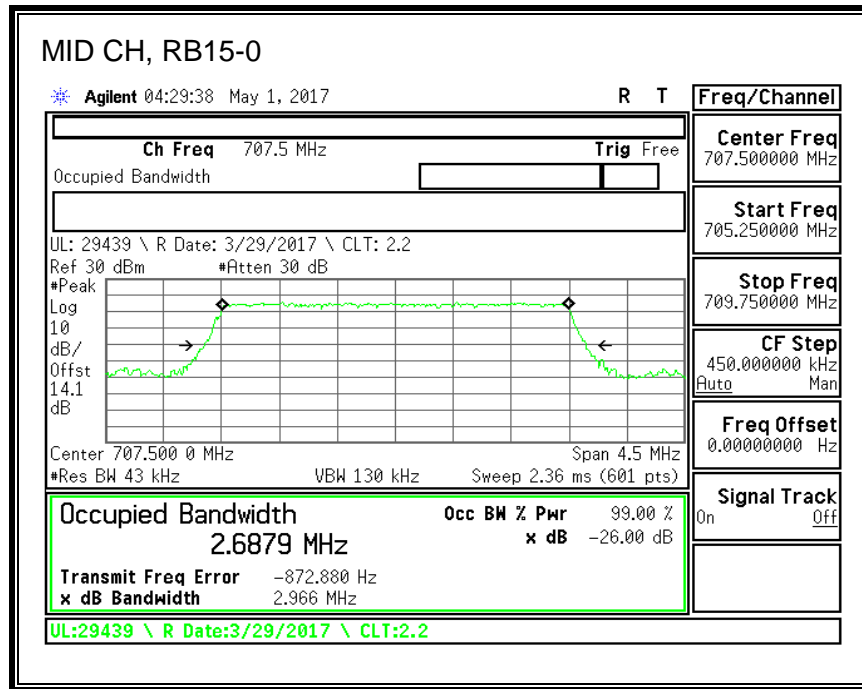


**QPSK, (3.0 MHz BAND WIDTH)**

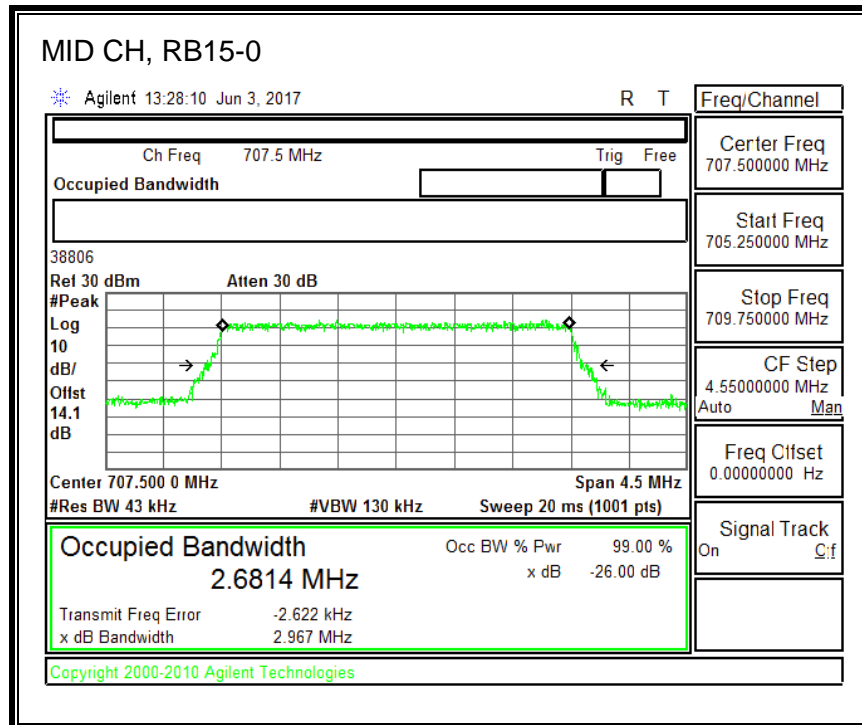




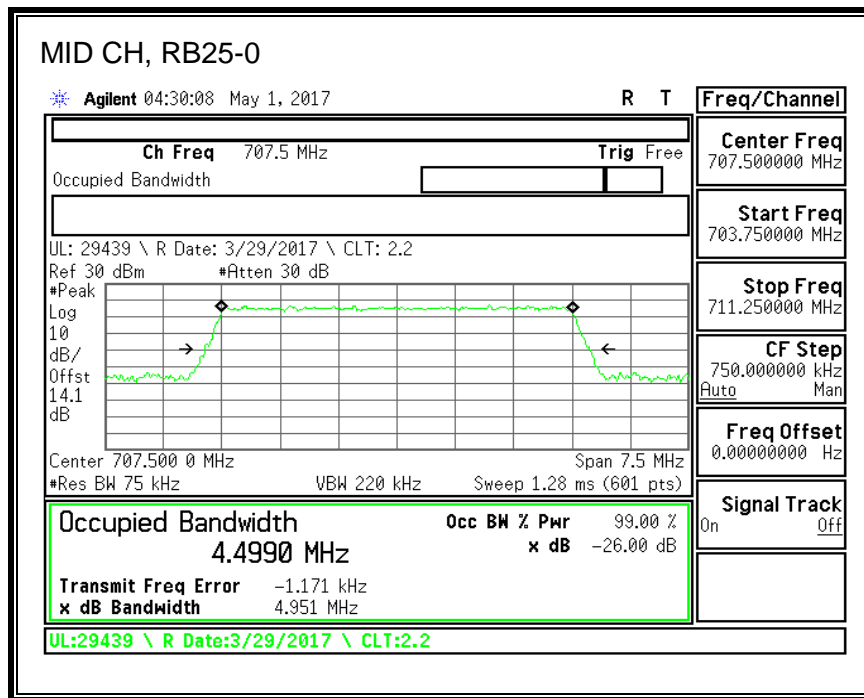
**16QAM, (3.0 MHz BAND WIDTH)**



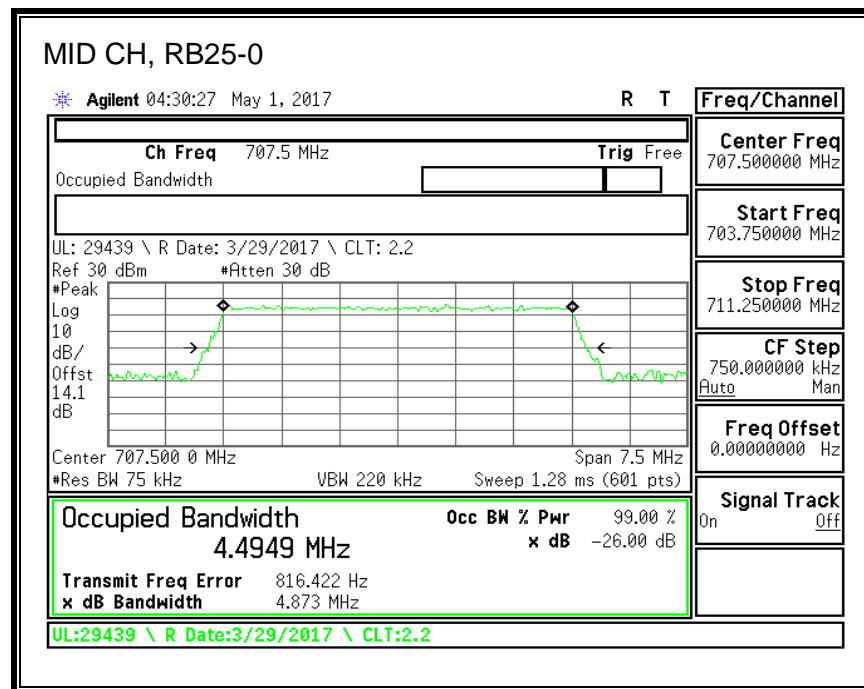
**64QAM, (3.0 MHz BAND WIDTH)**



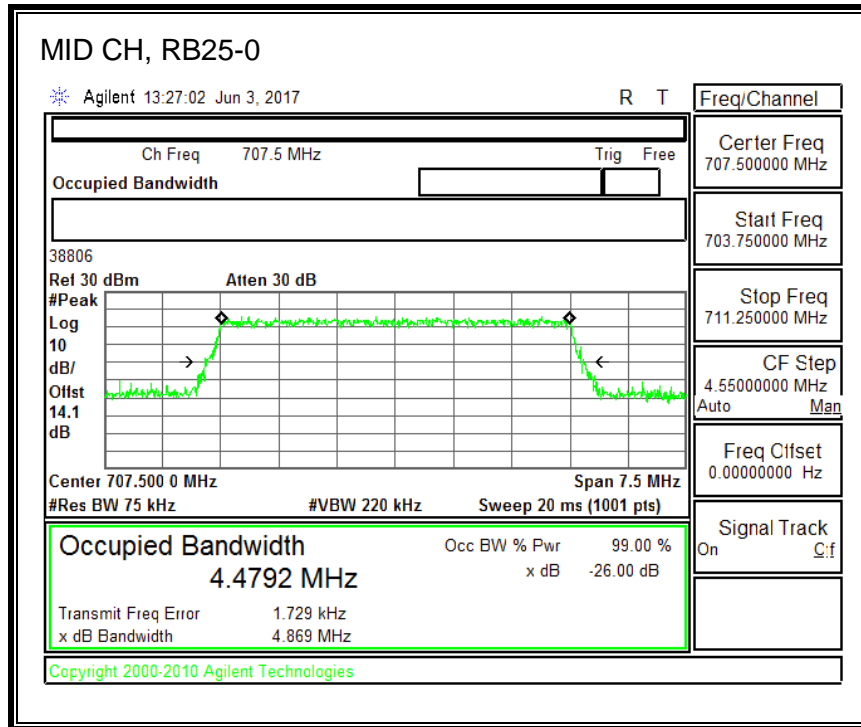
**QPSK, (5.0 MHz BAND WIDTH)**



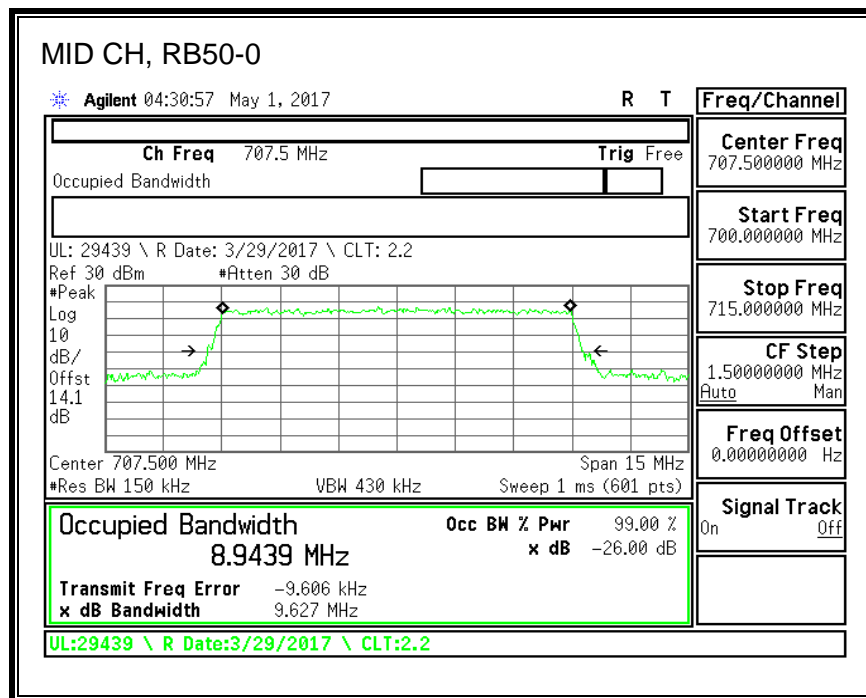
**16QAM, (5.0 MHz BAND WIDTH)**



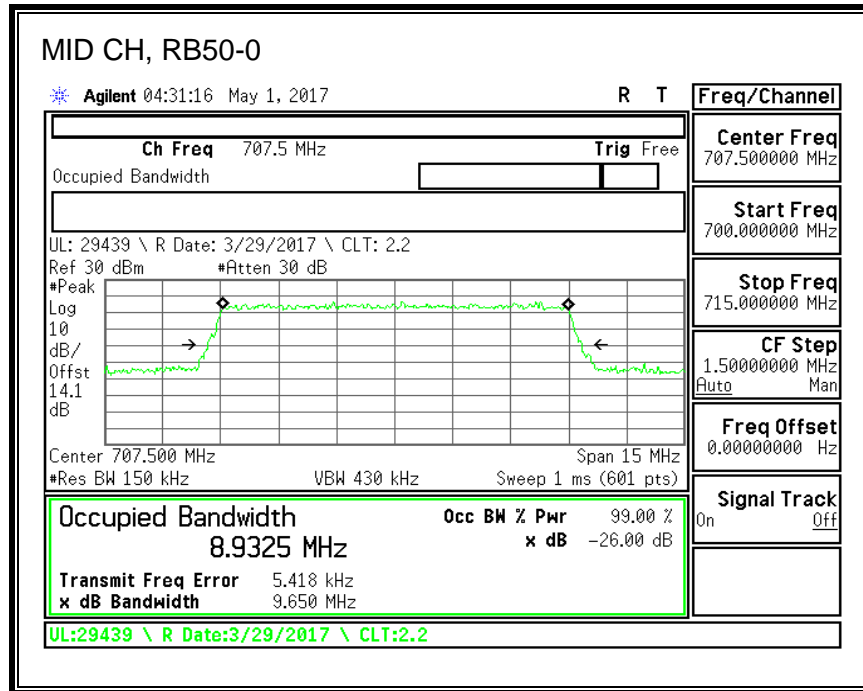
**64QAM, (5.0 MHz BAND WIDTH)**



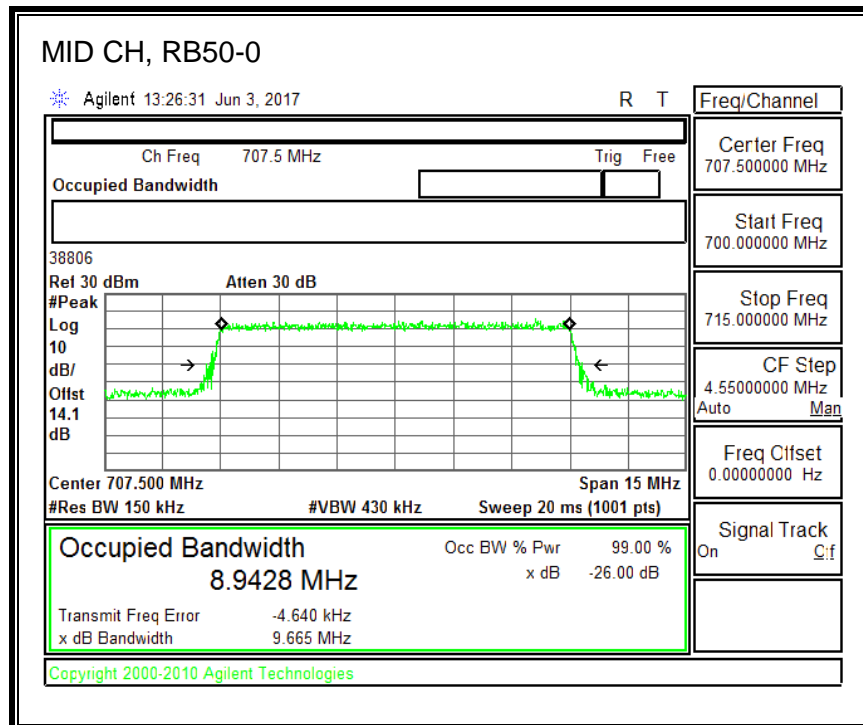
**QPSK, (10.0 MHz BAND WIDTH)**



**16QAM, (10.0 MHz BAND WIDTH)**

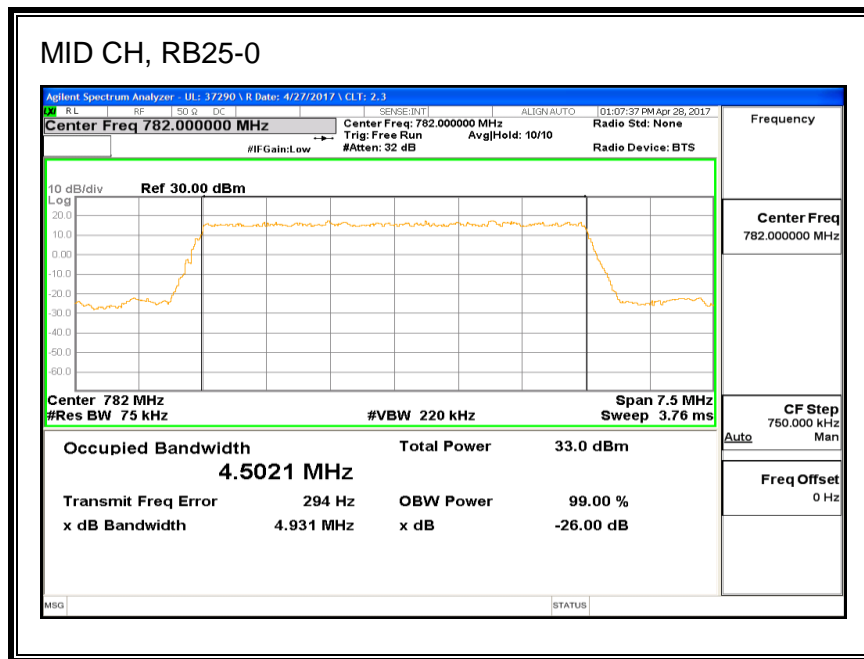


**64QAM, (10.0 MHz BAND WIDTH)**

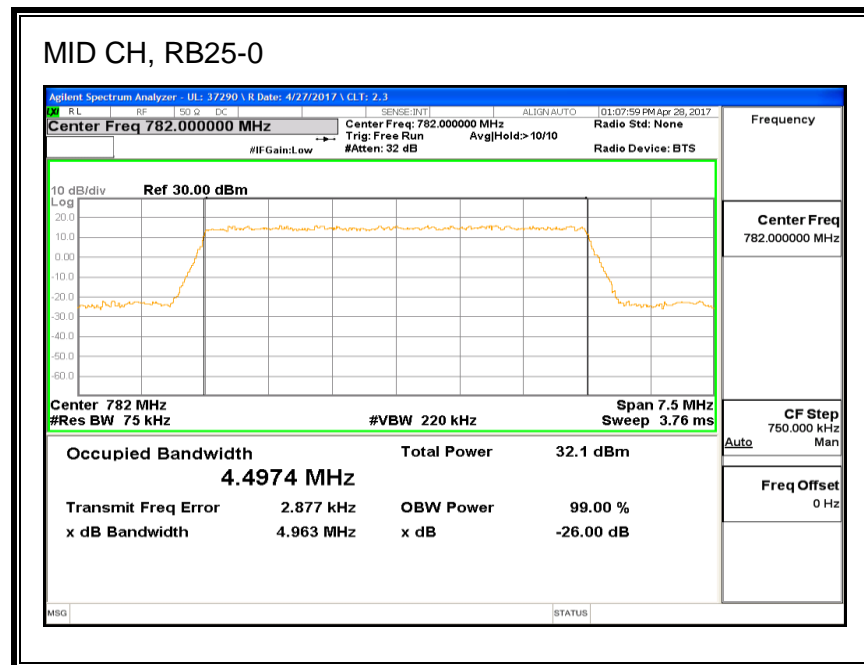


## 8.1.6. LTE BAND 13

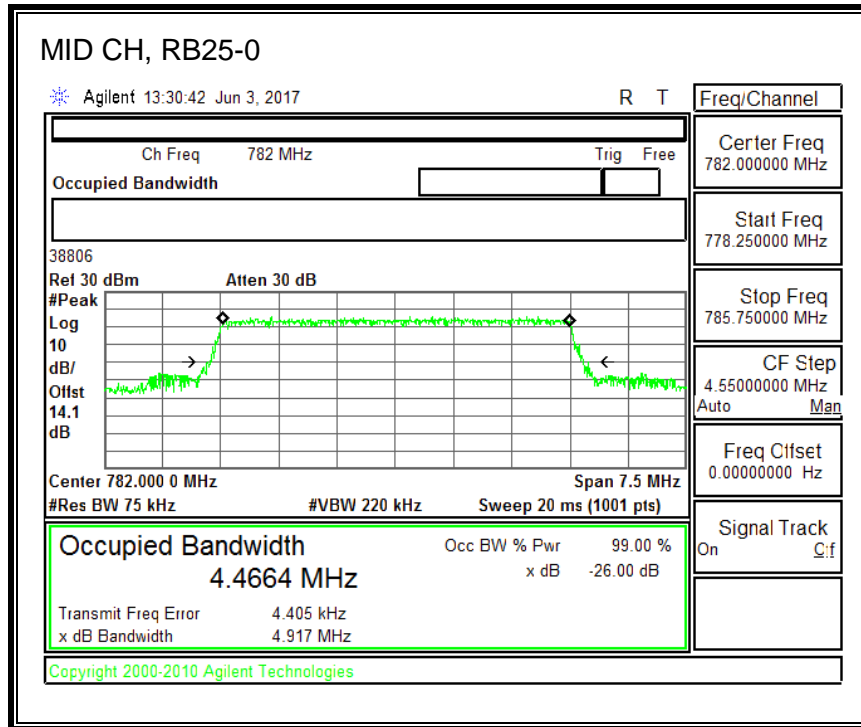
### QPSK, (5.0 MHz BAND WIDTH)



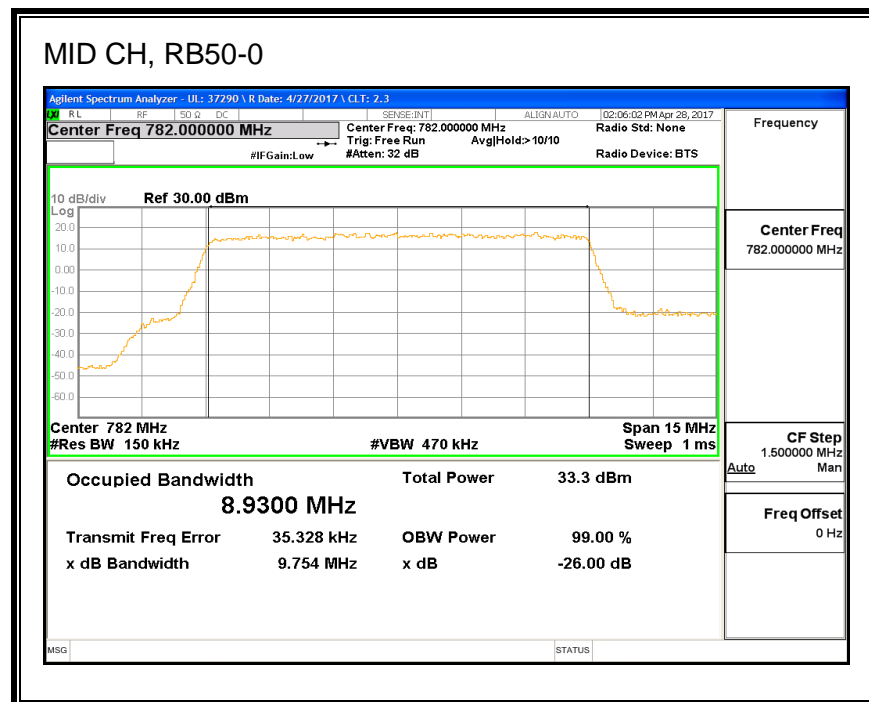
### 16QAM, (5.0 MHz BAND WIDTH)



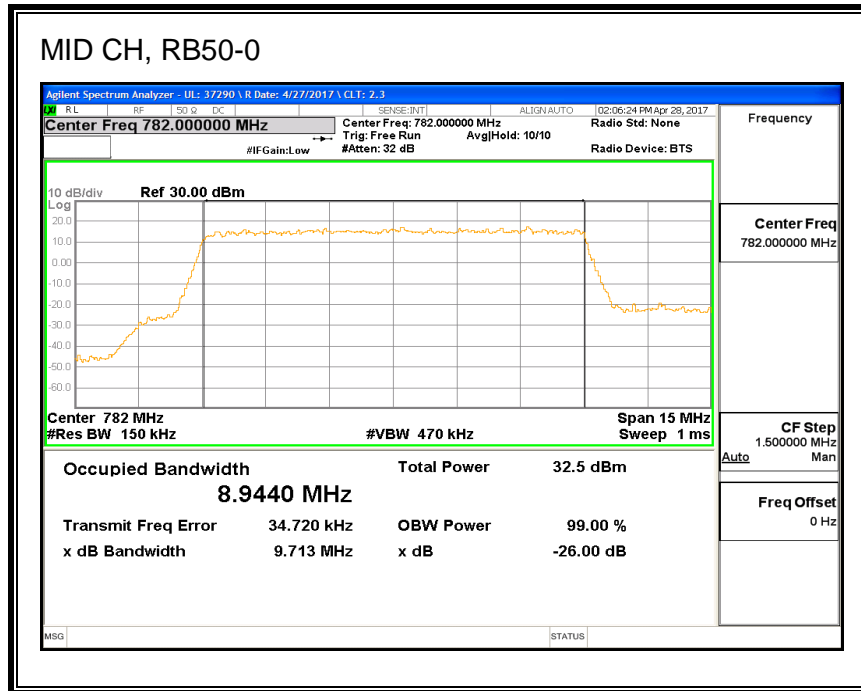
**64QAM, (5.0 MHz BAND WIDTH)**



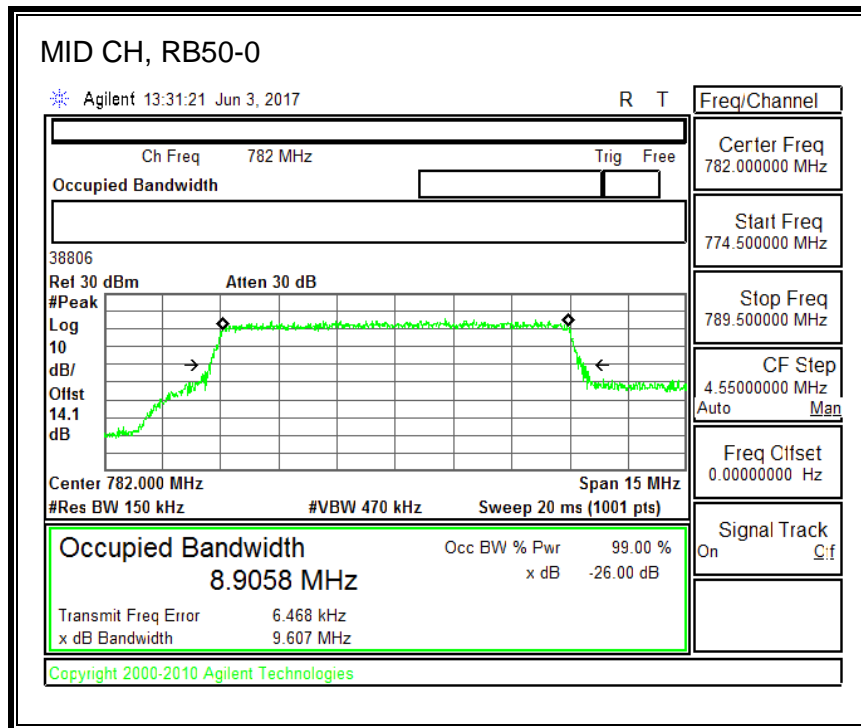
**QPSK, (10.0 MHz BAND WIDTH)**



**16QAM, (10.0 MHz BAND WIDTH)**

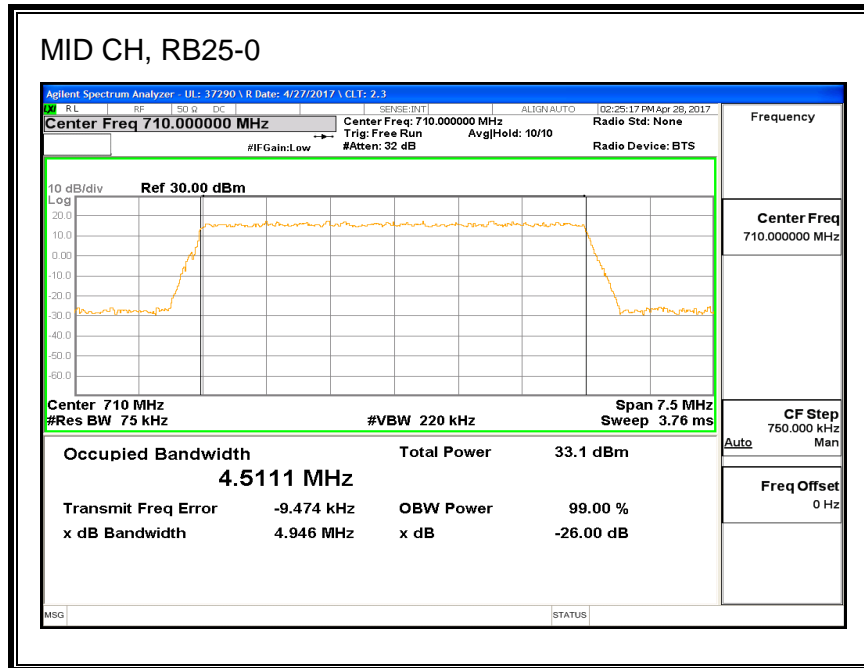


**64QAM, (10.0 MHz BAND WIDTH)**

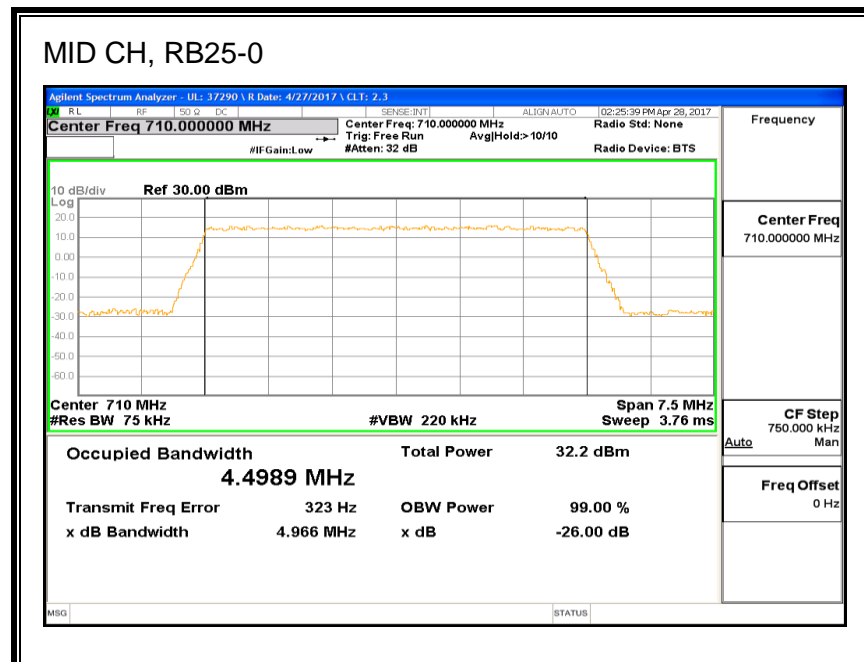


## 8.1.7. LTE BAND 17

### QPSK, (5.0 MHz BAND WIDTH)

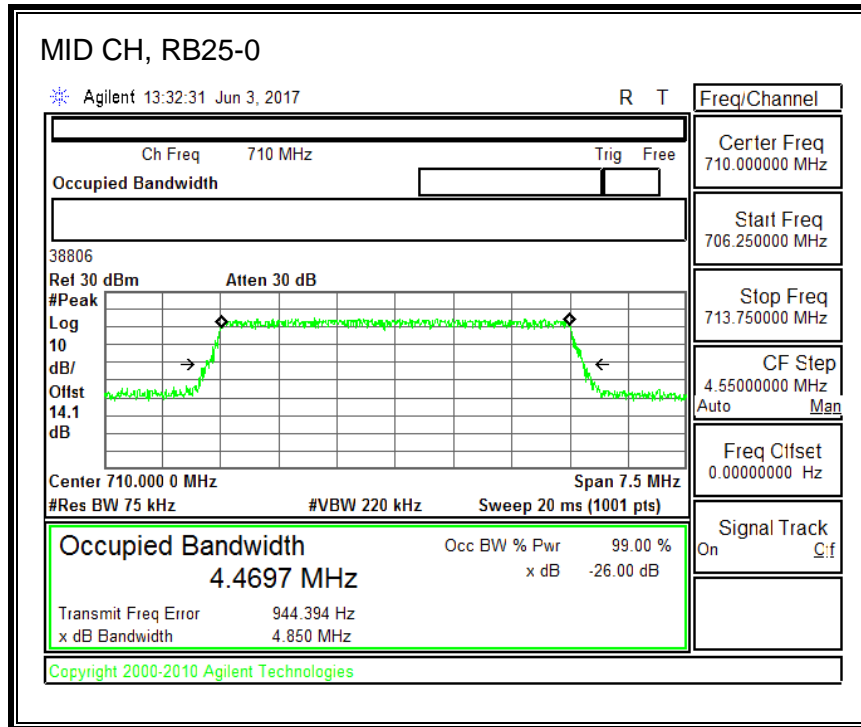


### 16QAM, (5.0 MHz BAND WIDTH)

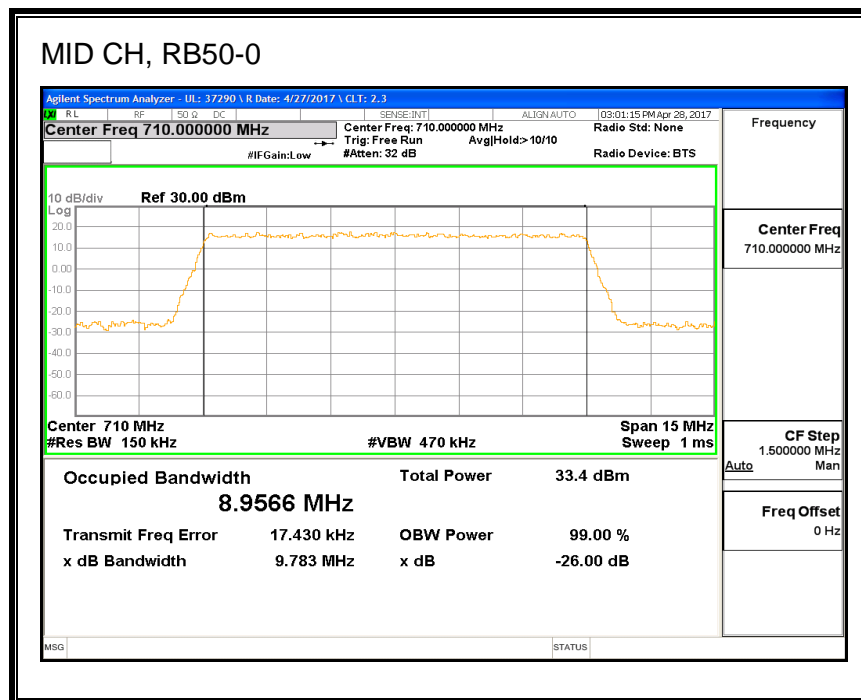




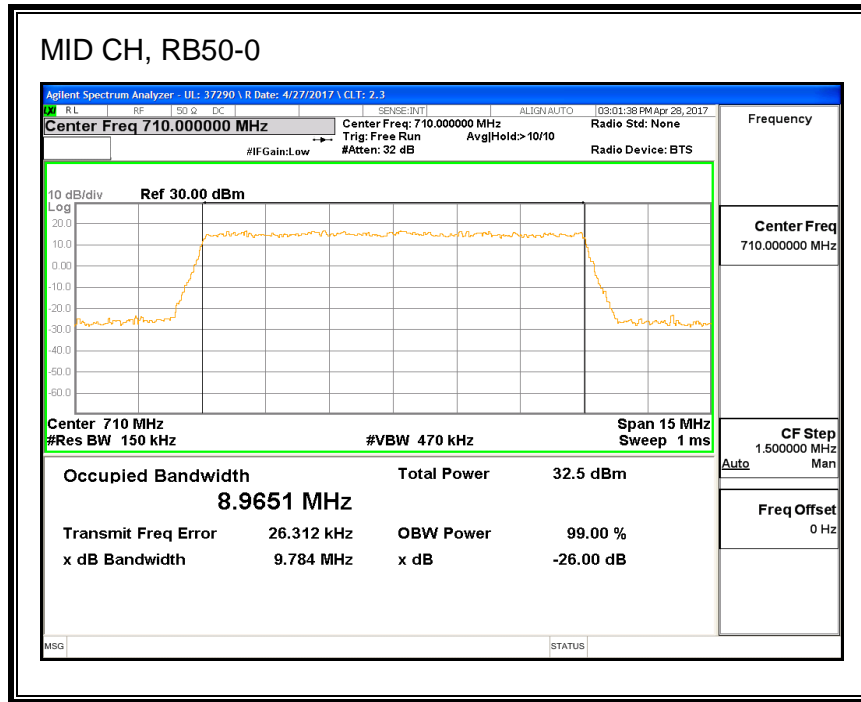
**64QAM, (5.0 MHz BAND WIDTH)**



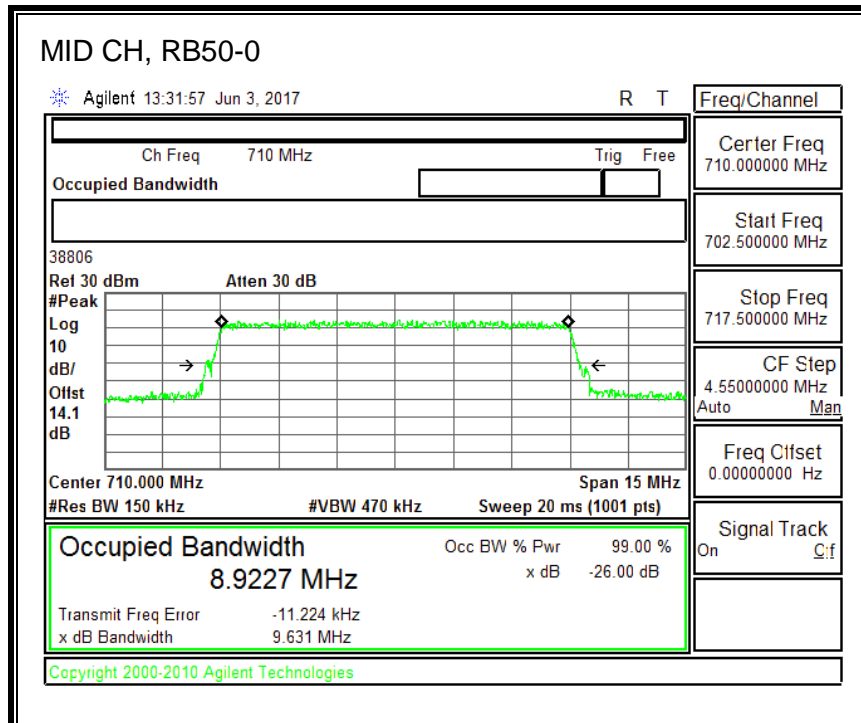
**QPSK, (10.0 MHz BAND WIDTH)**



**16QAM, (10.0 MHz BAND WIDTH)**

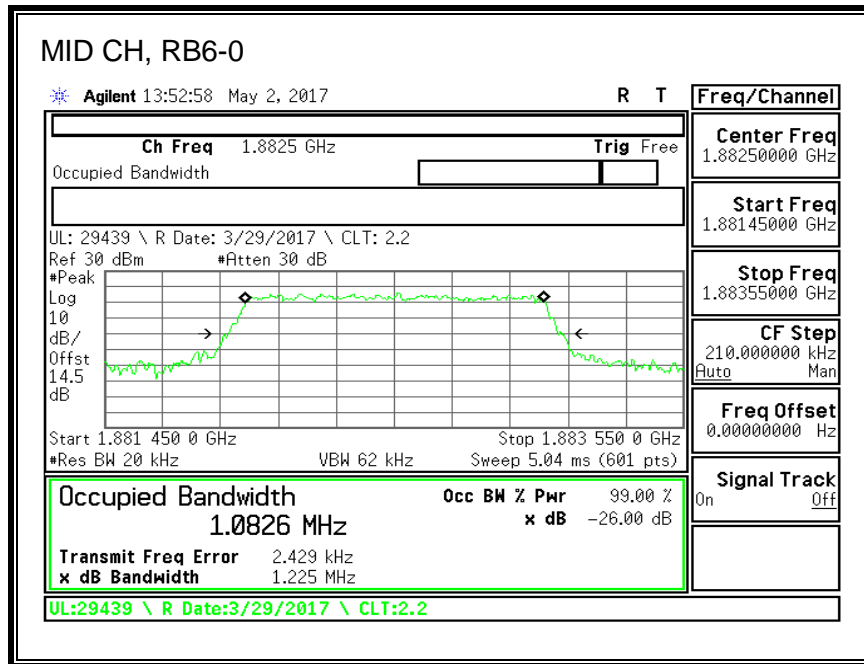


**64QAM, (10.0 MHz BAND WIDTH)**

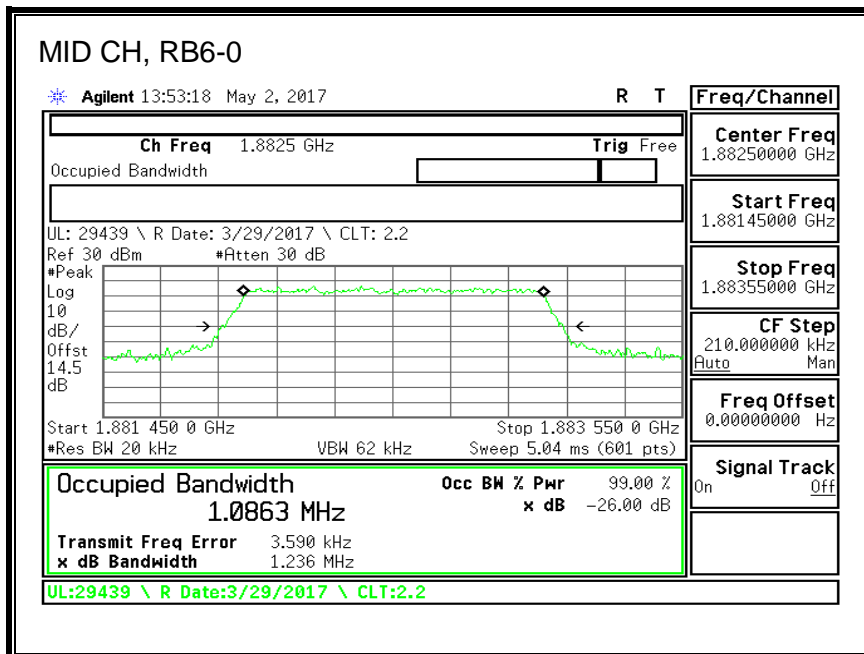


## 8.1.8. LTE BAND 25

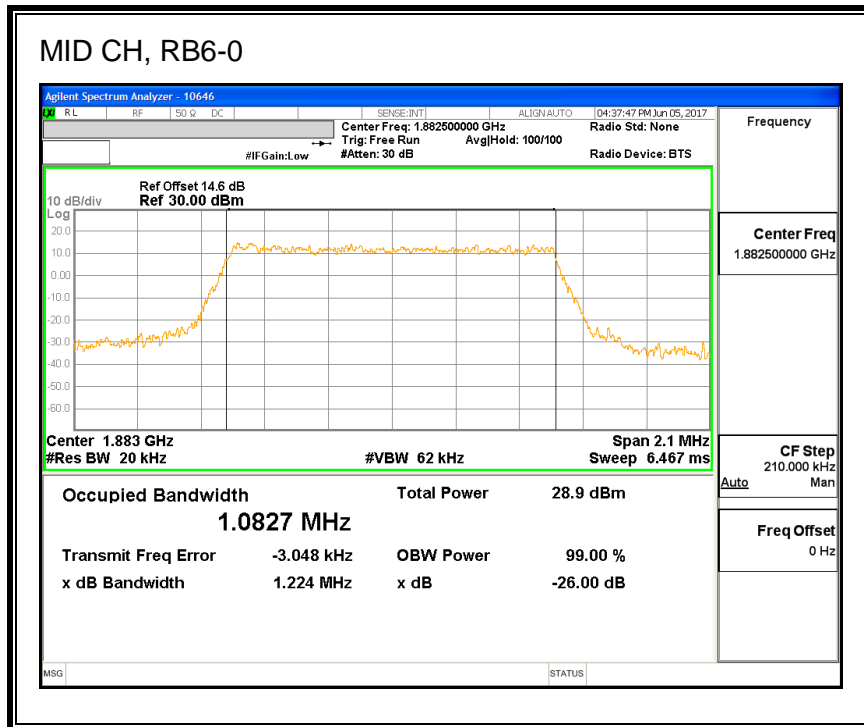
### QPSK, (1.4 MHz BAND WIDTH)



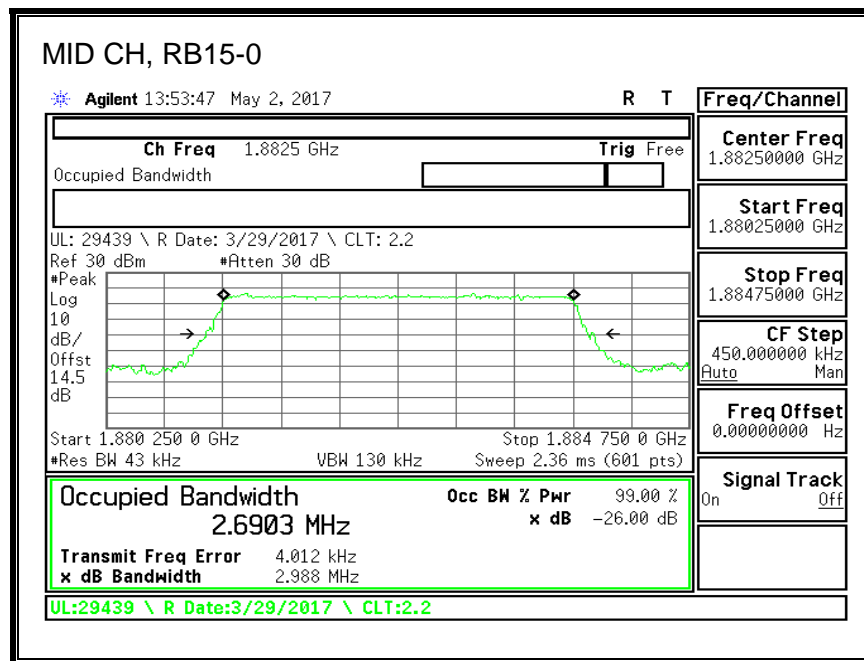
### 16QAM, (1.4 MHz BAND WIDTH)



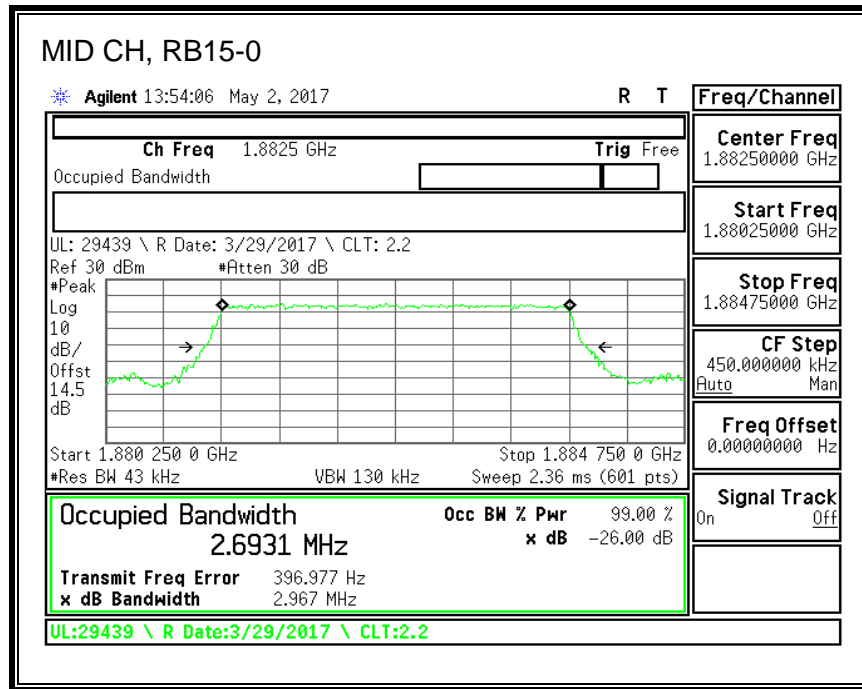
**64QAM, (1.4 MHz BAND WIDTH)**



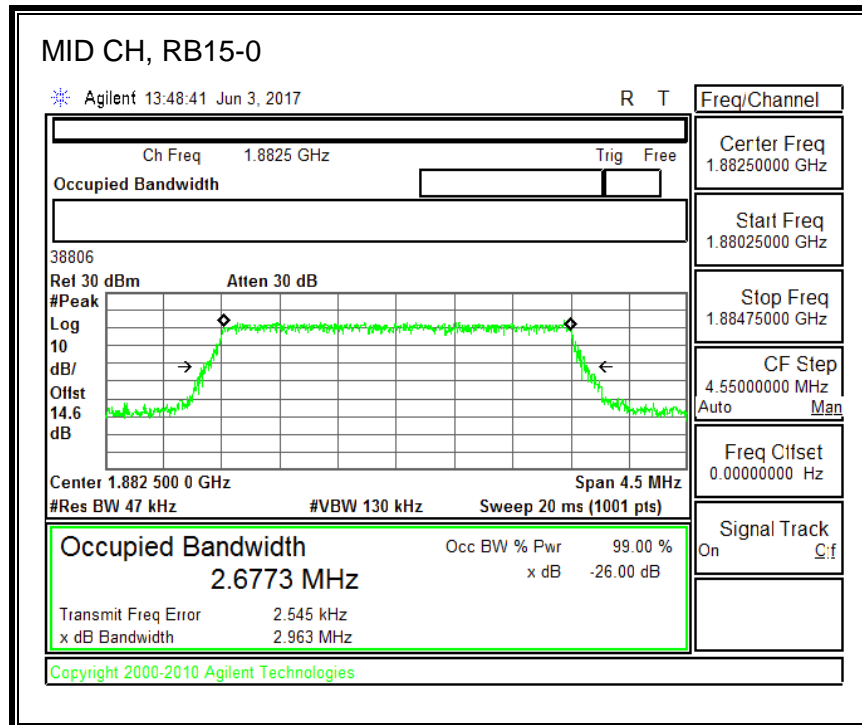
**QPSK, (3.0 MHz BAND WIDTH)**



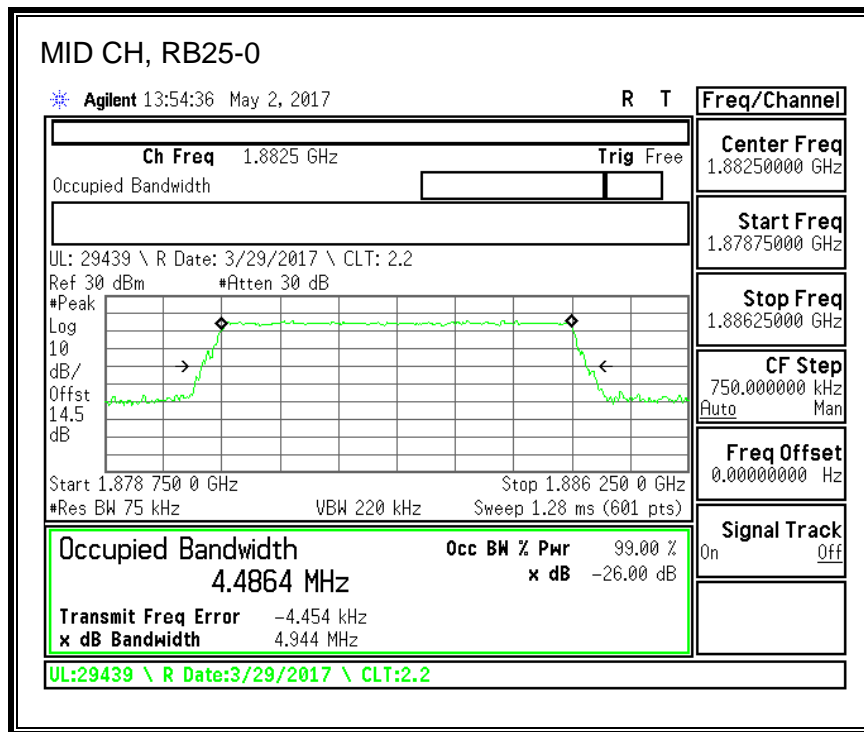
**16QAM, (3.0 MHz BAND WIDTH)**



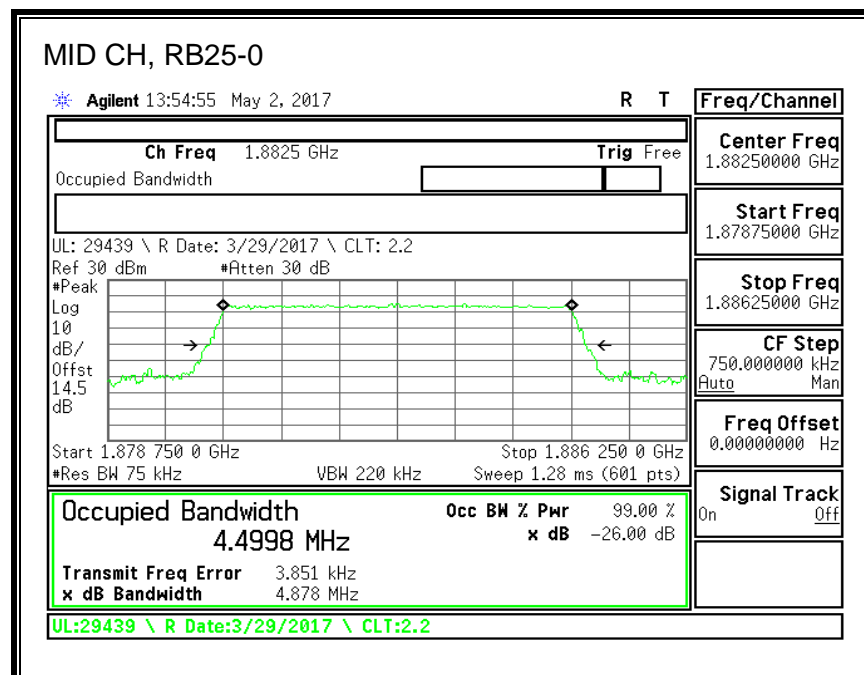
**64QAM, (3.0 MHz BAND WIDTH)**



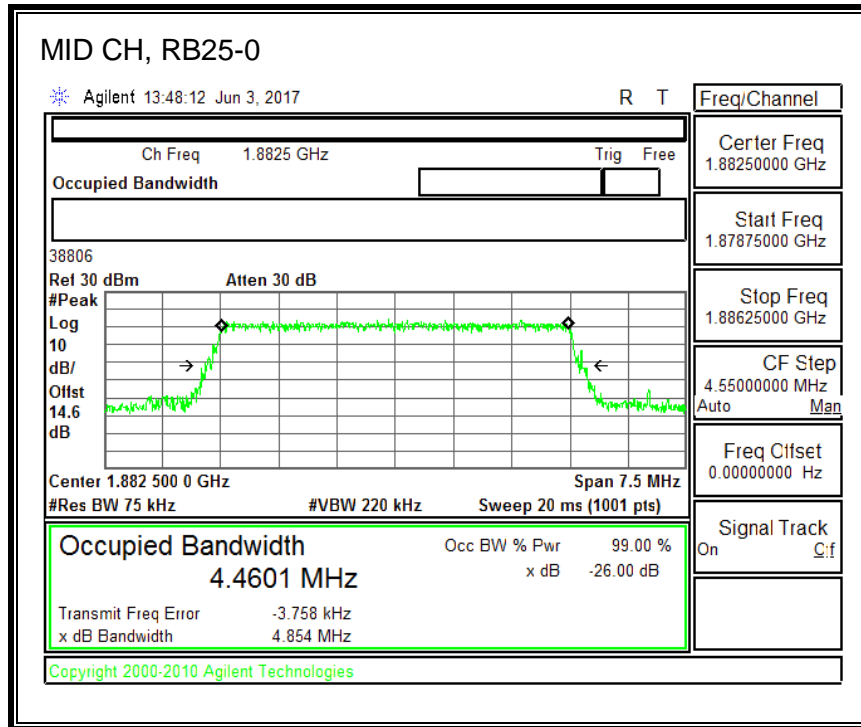
**QPSK, (5.0 MHz BAND WIDTH)**



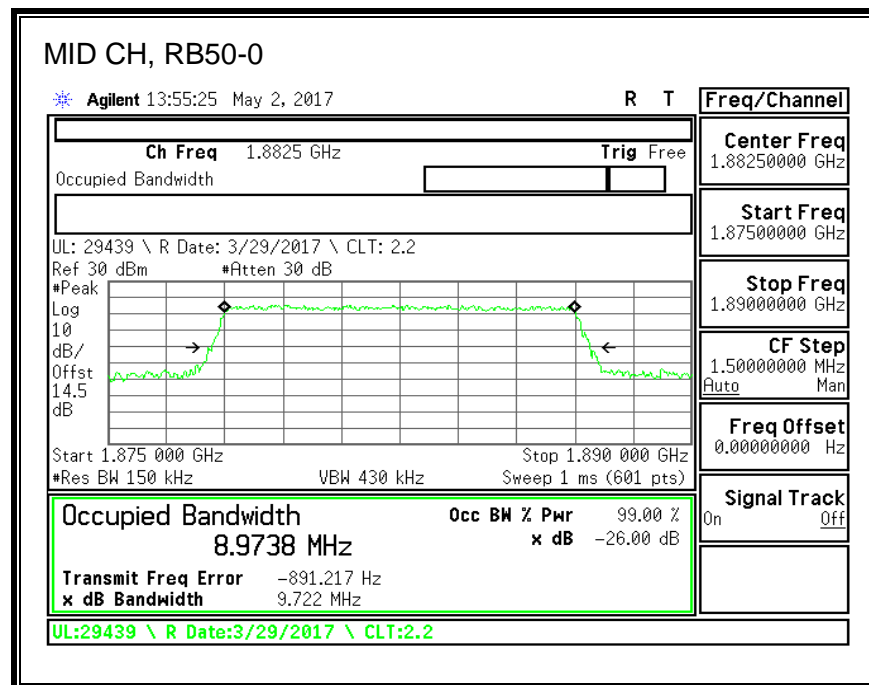
**16QAM, (5.0 MHz BAND WIDTH)**



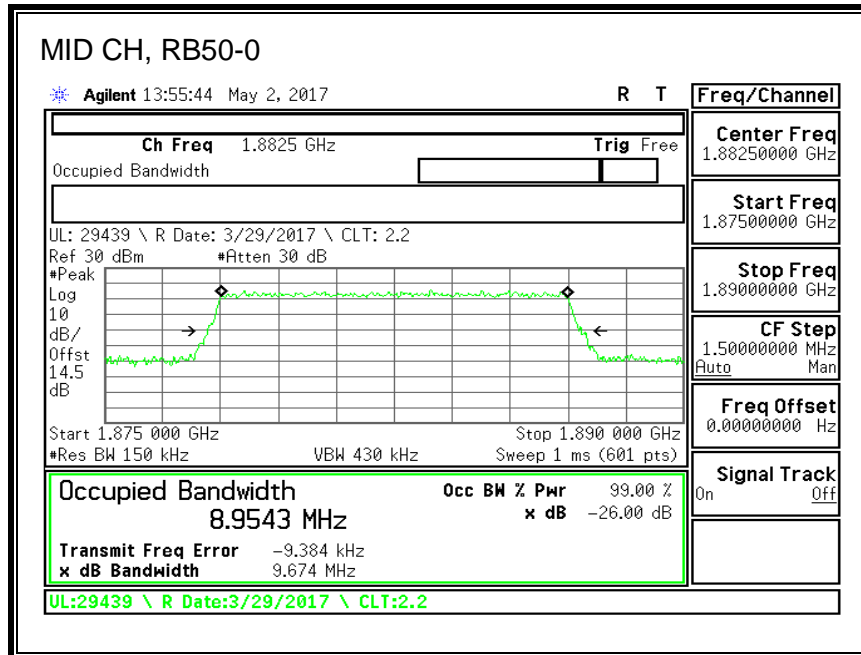
**64QAM, (5.0 MHz BAND WIDTH)**



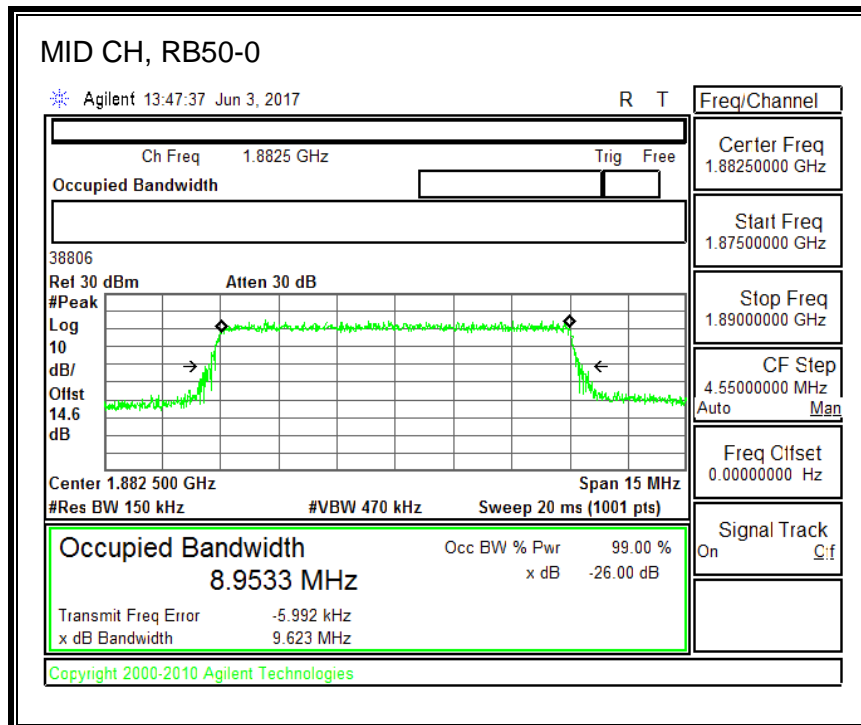
**QPSK, (10.0 MHz BAND WIDTH)**



**16QAM, (10.0 MHz BAND WIDTH)**

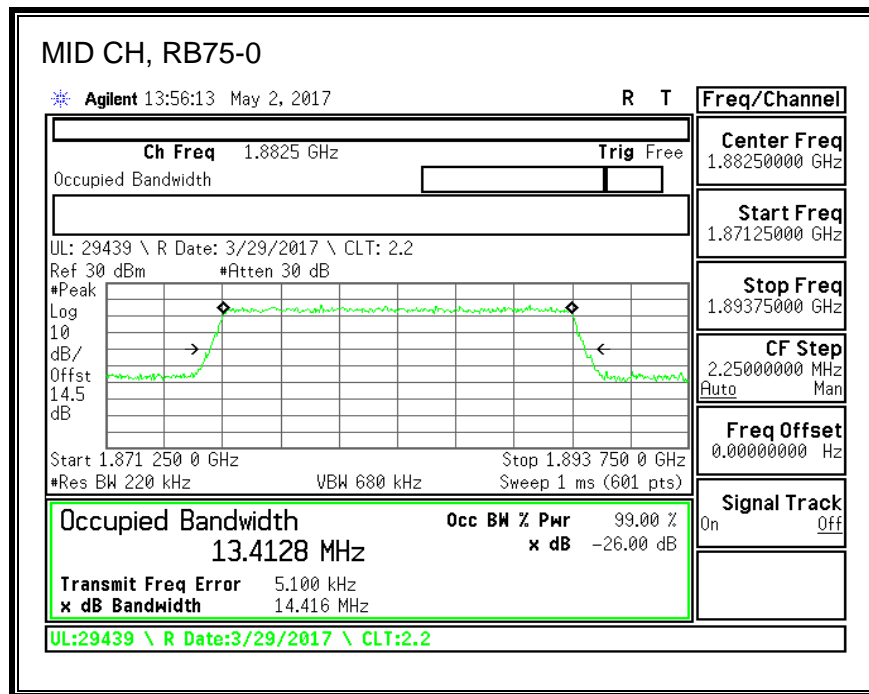


**64QAM, (10.0 MHz BAND WIDTH)**

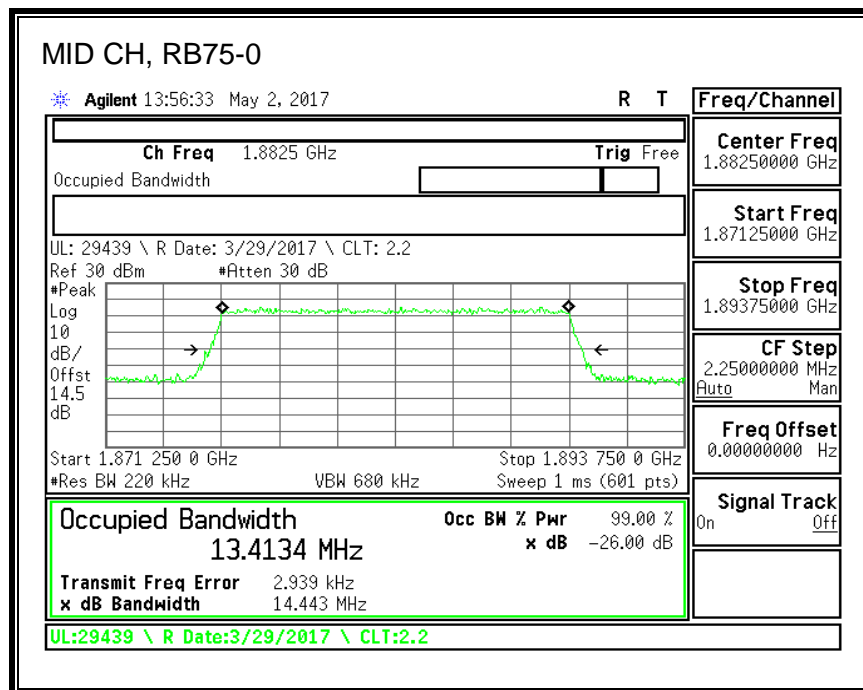




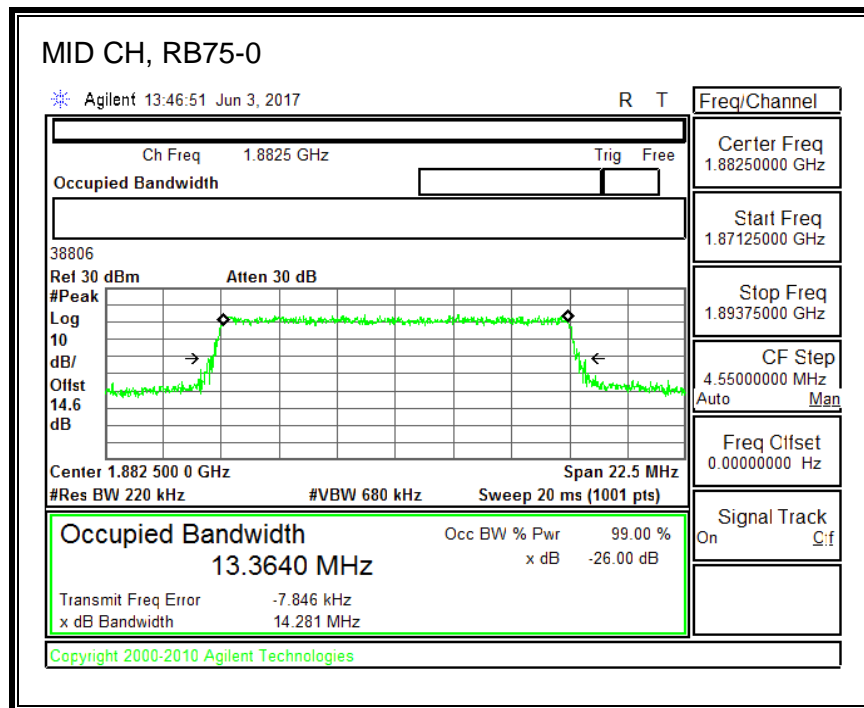
**QPSK, (15.0 MHz BAND WIDTH)**



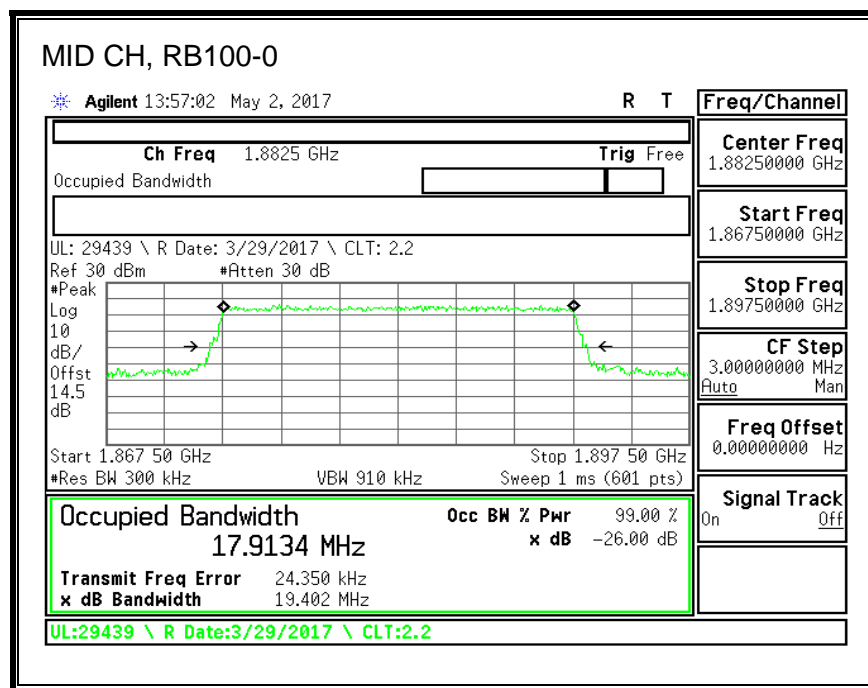
**16QAM, (15.0 MHz BAND WIDTH)**



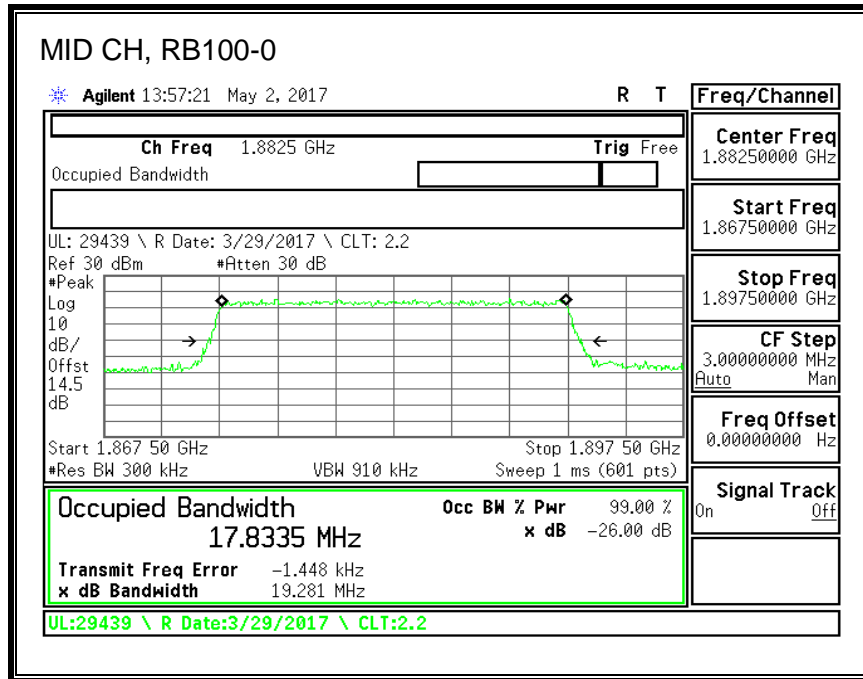
**64QAM, (15.0 MHz BAND WIDTH)**



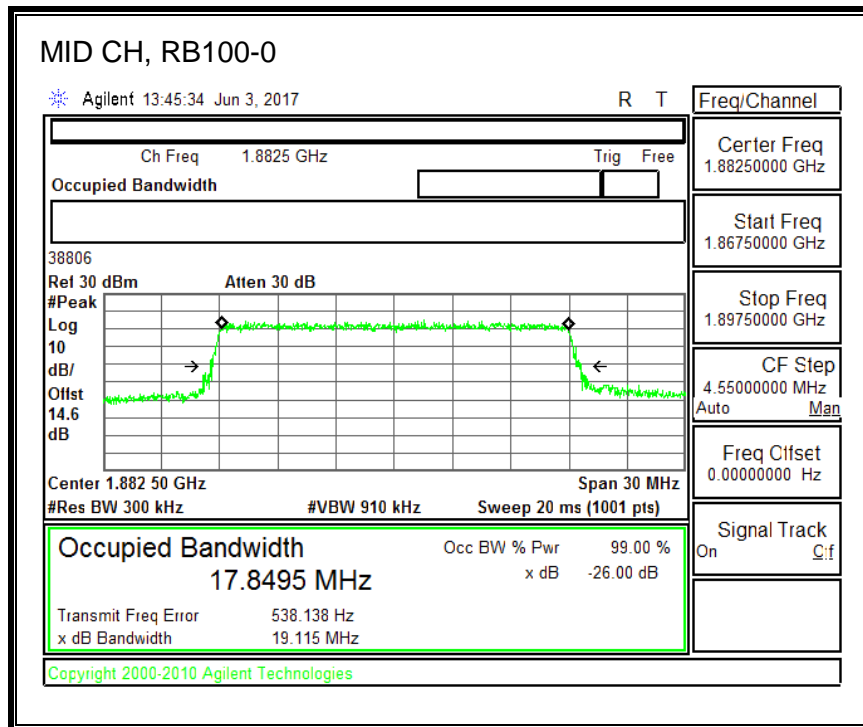
**QPSK, (20.0 MHz BAND WIDTH)**



**16QAM, (20.0 MHz BAND WIDTH)**

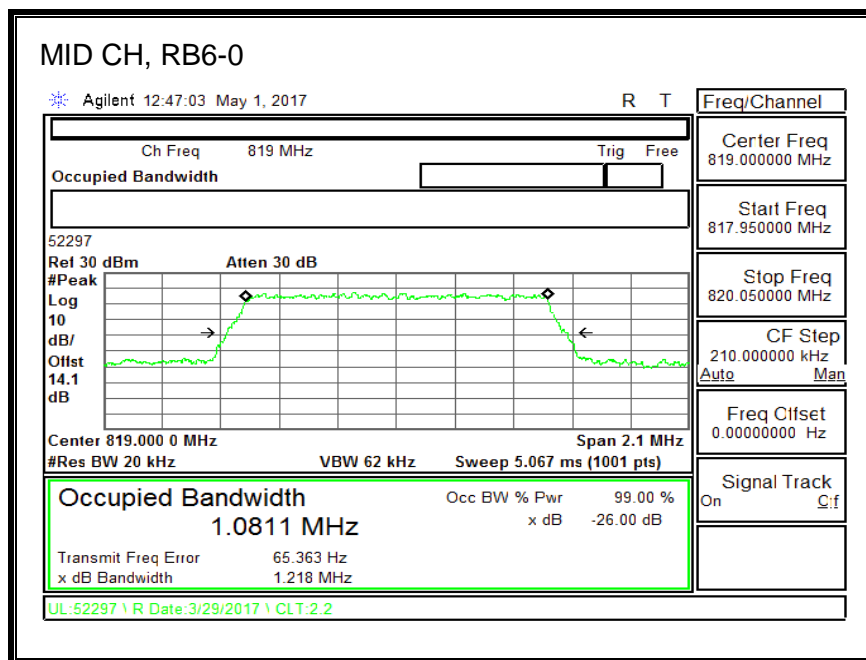
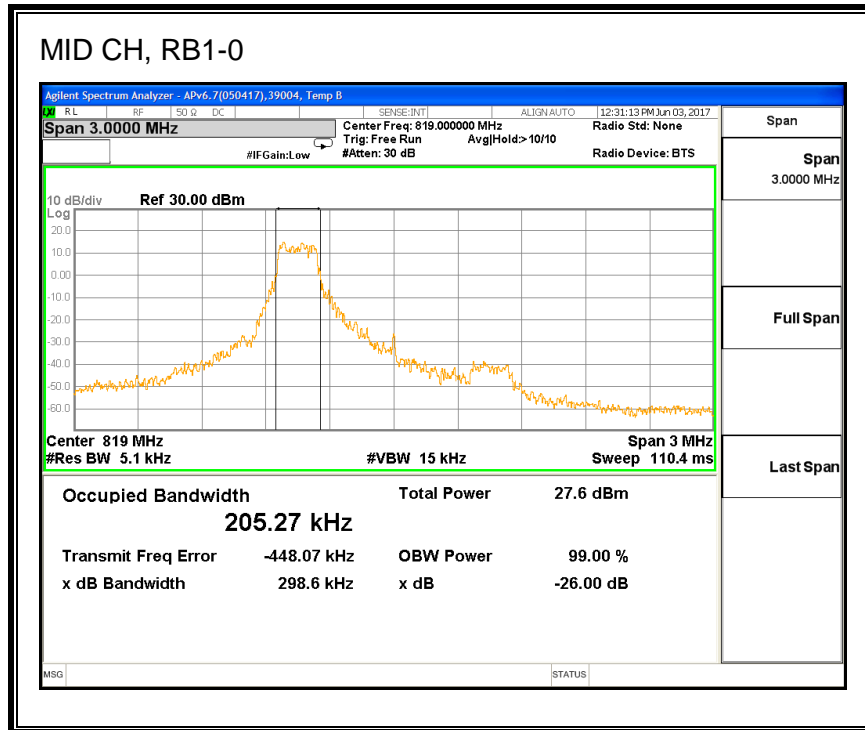


**64QAM, (20.0 MHz BAND WIDTH)**

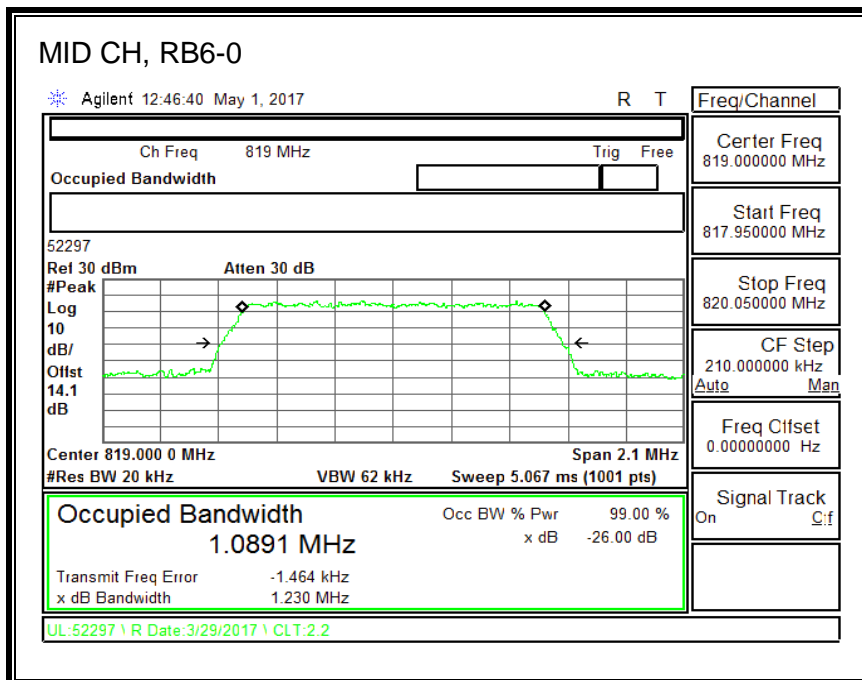
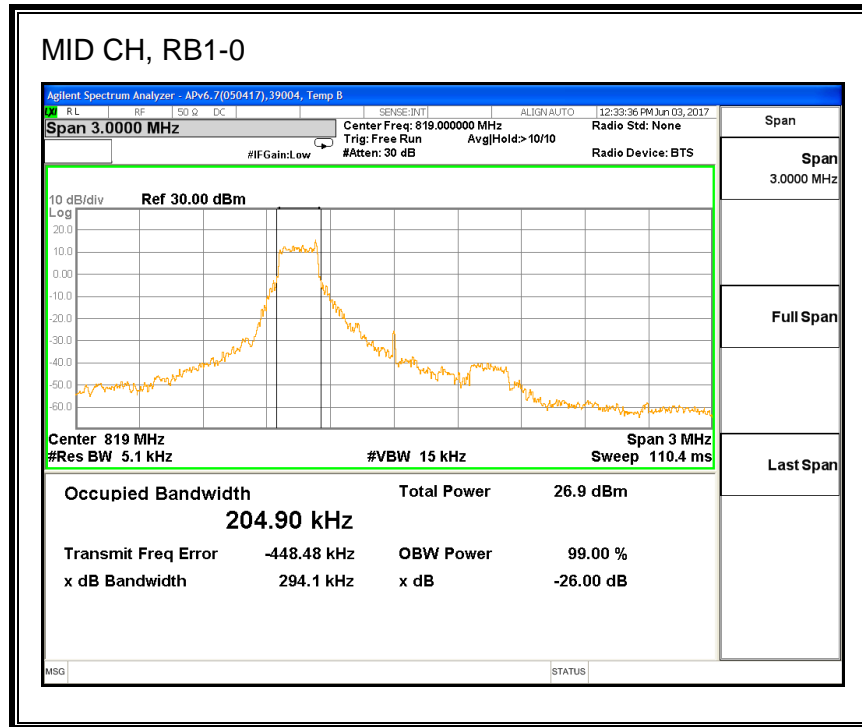


## 8.1.9. LTE BAND 26

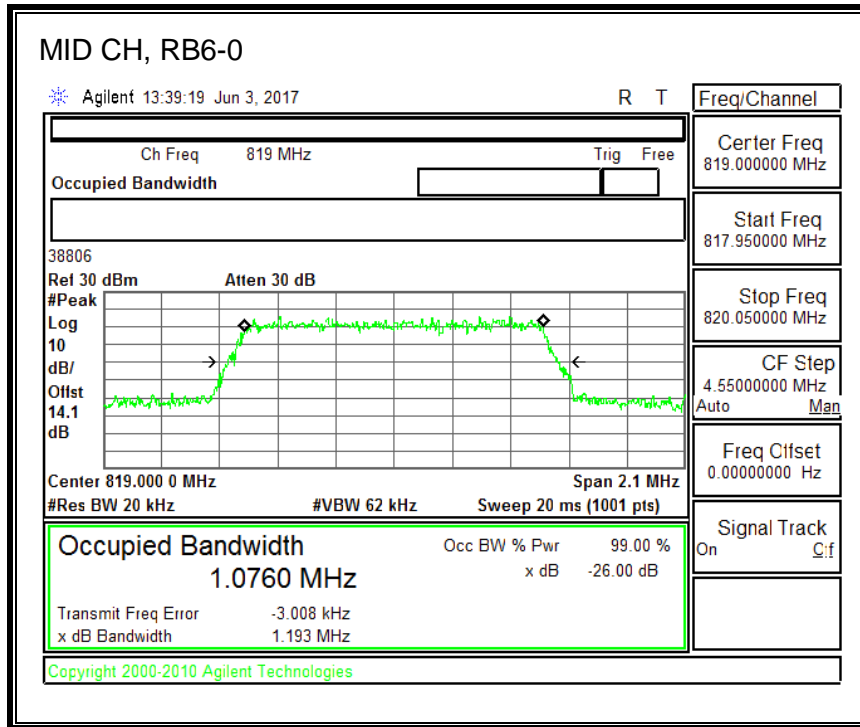
### QPSK, (1.4 MHz BAND WIDTH)



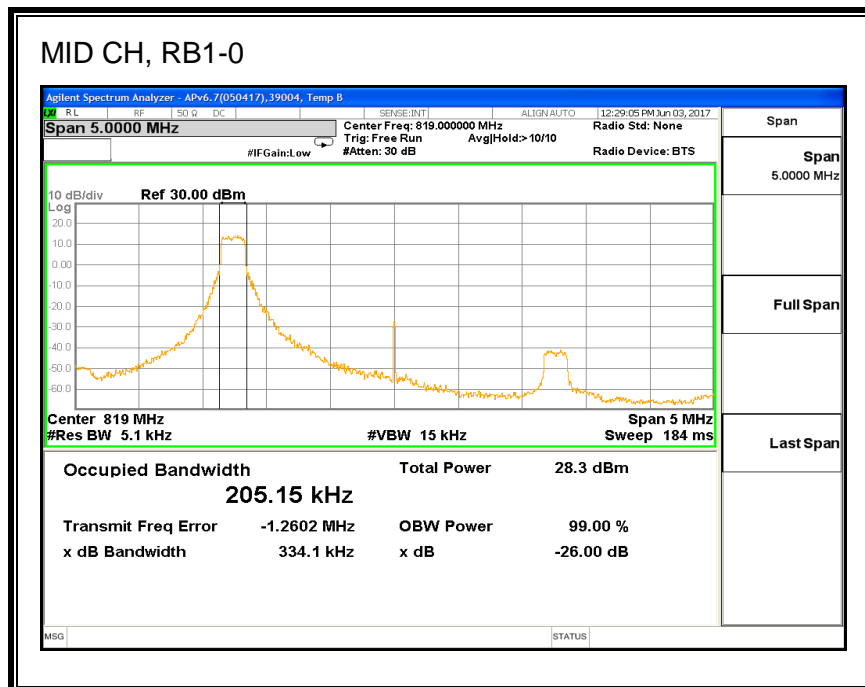
**16QAM, (1.4 MHz BAND WIDTH)**

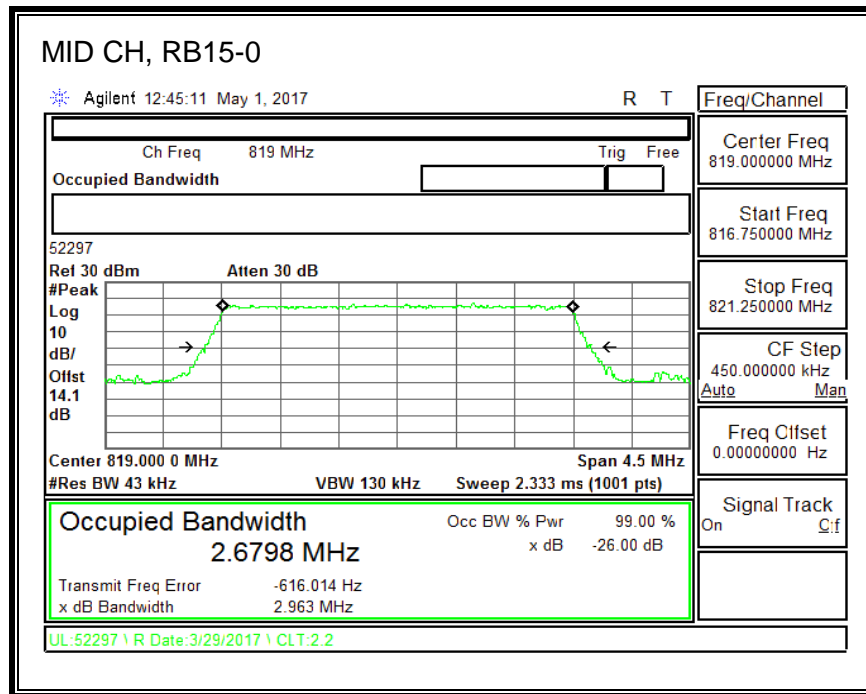


**64QAM, (1.4 MHz BAND WIDTH)**

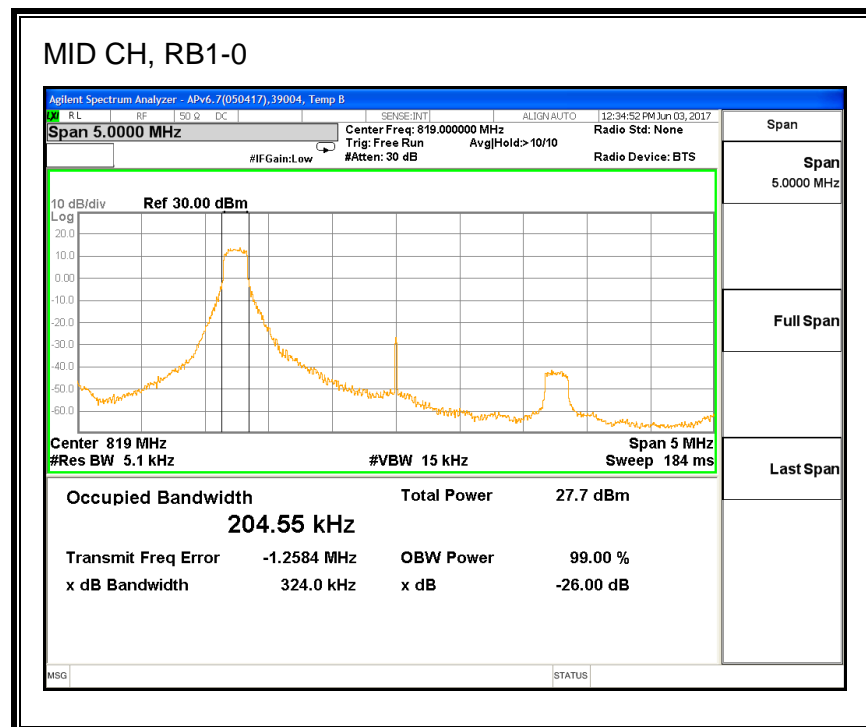


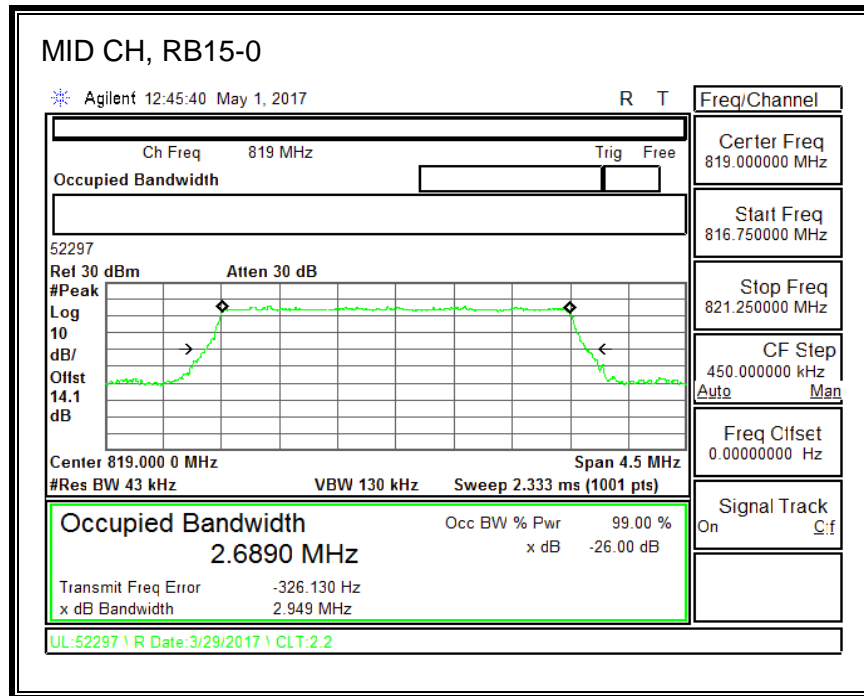
**QPSK, (3.0 MHz BAND WIDTH)**



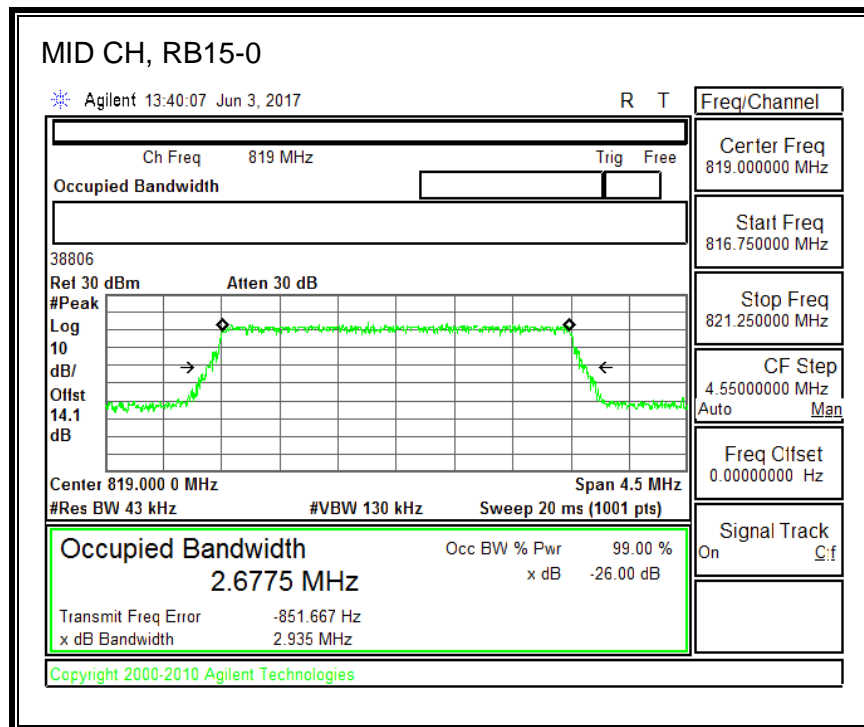


**16QAM, (3.0 MHz BAND WIDTH)**



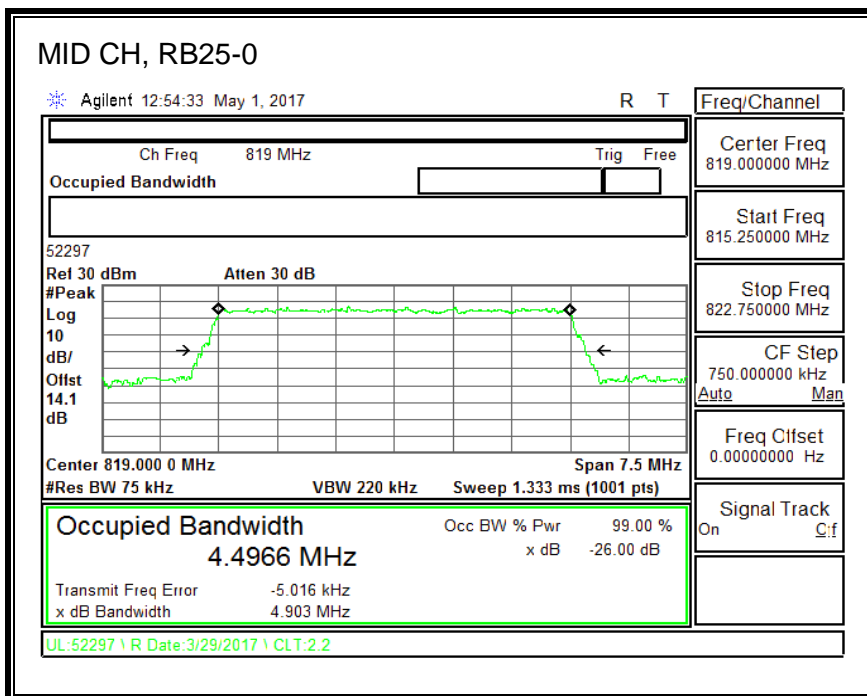
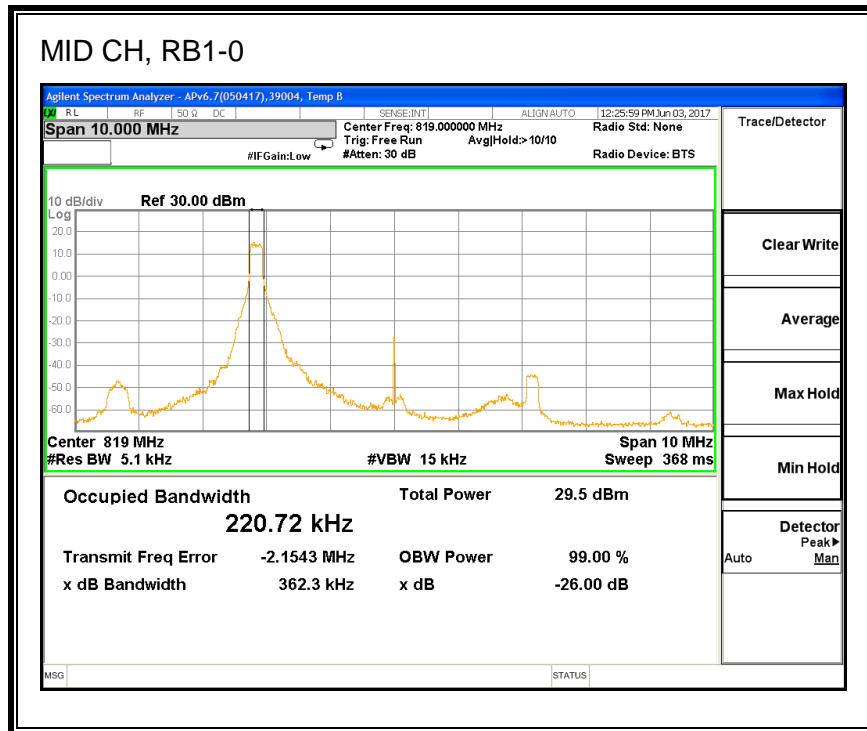


**64QAM, (3.0 MHz BAND WIDTH)**

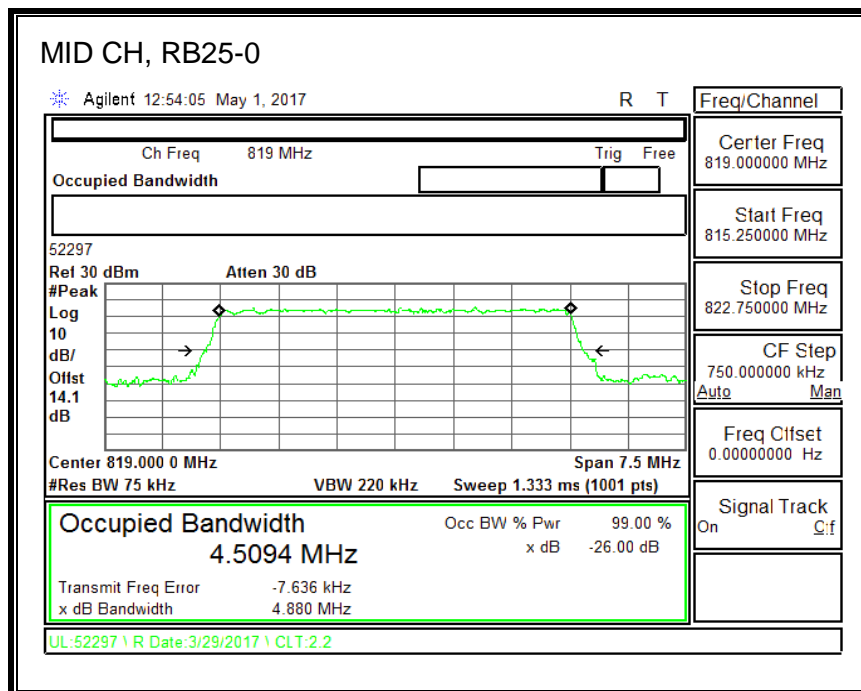
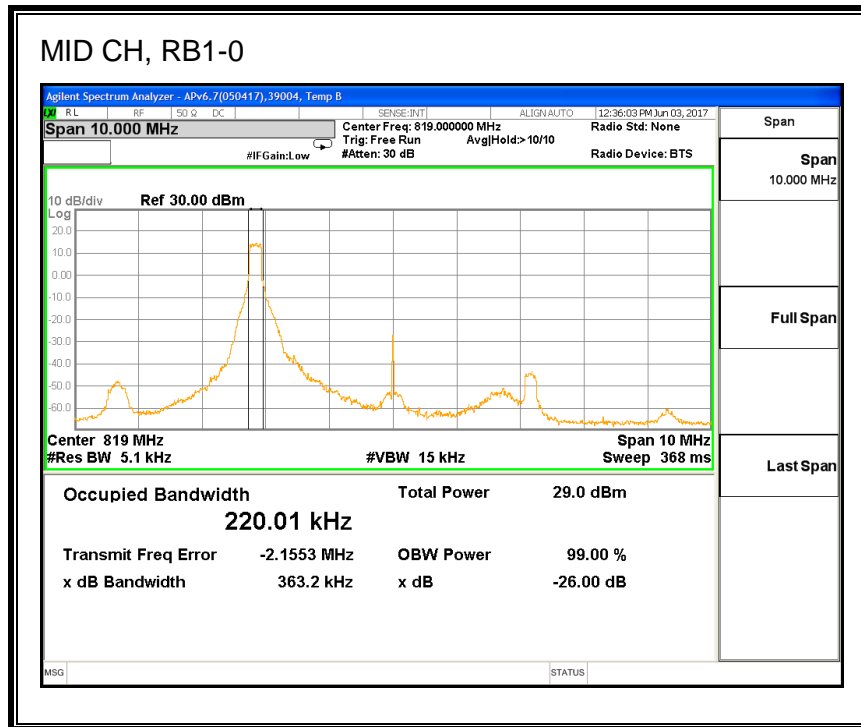




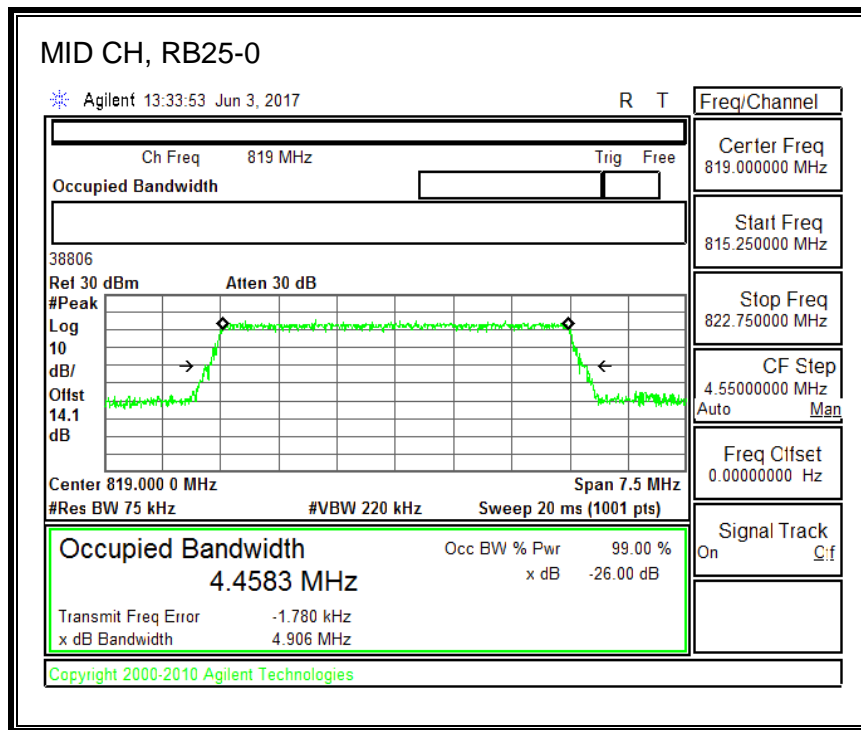
**QPSK, (5.0 MHz BAND WIDTH)**



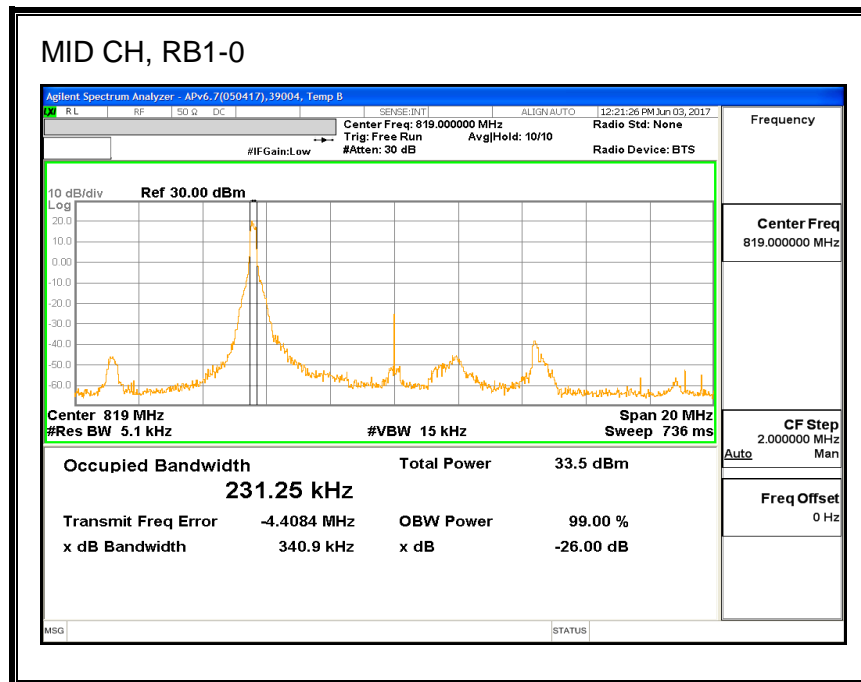
**16QAM, (5.0 MHz BAND WIDTH)**

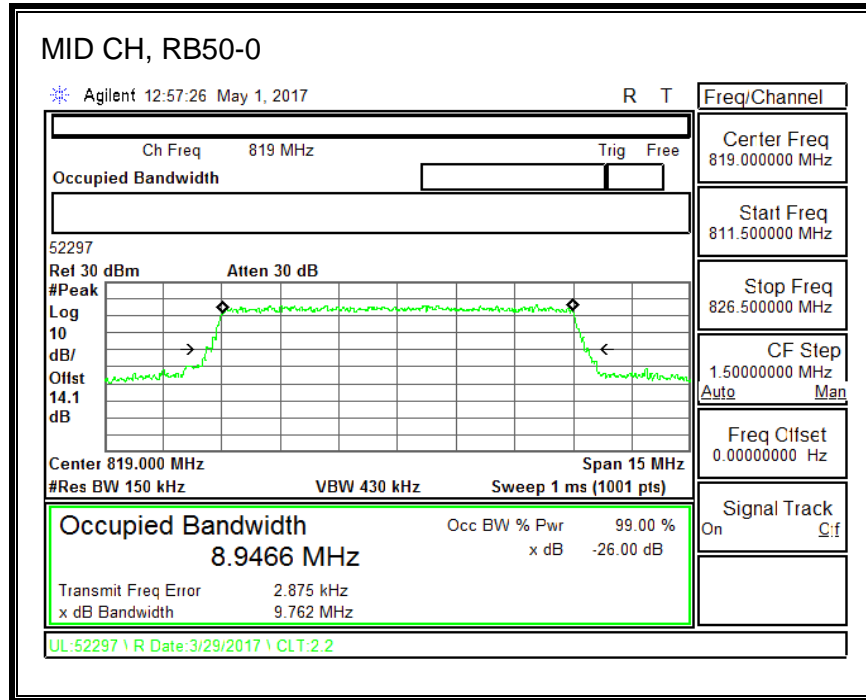


**64QAM, (5.0 MHz BAND WIDTH)**

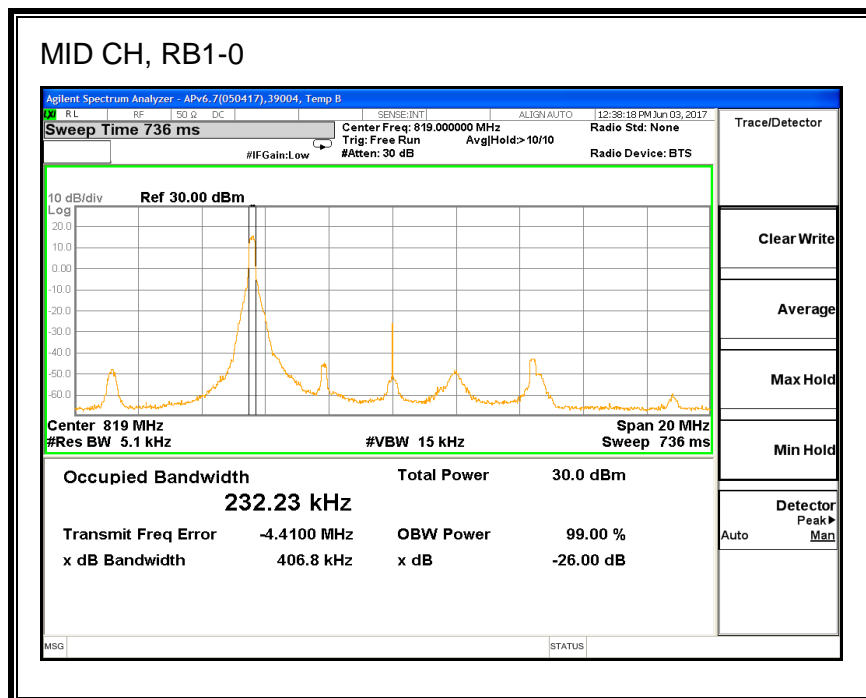


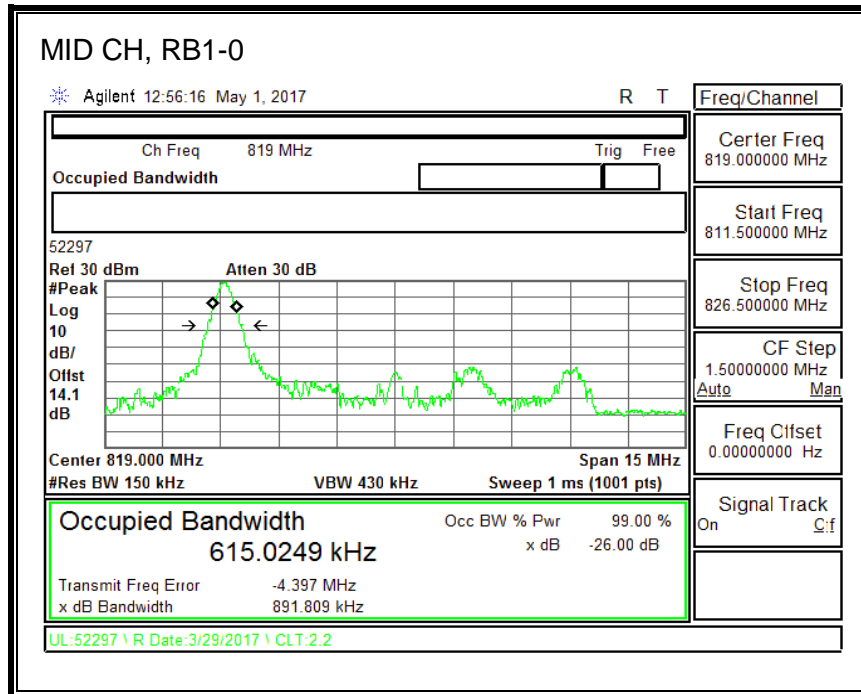
**QPSK, (10.0 MHz BAND WIDTH)**



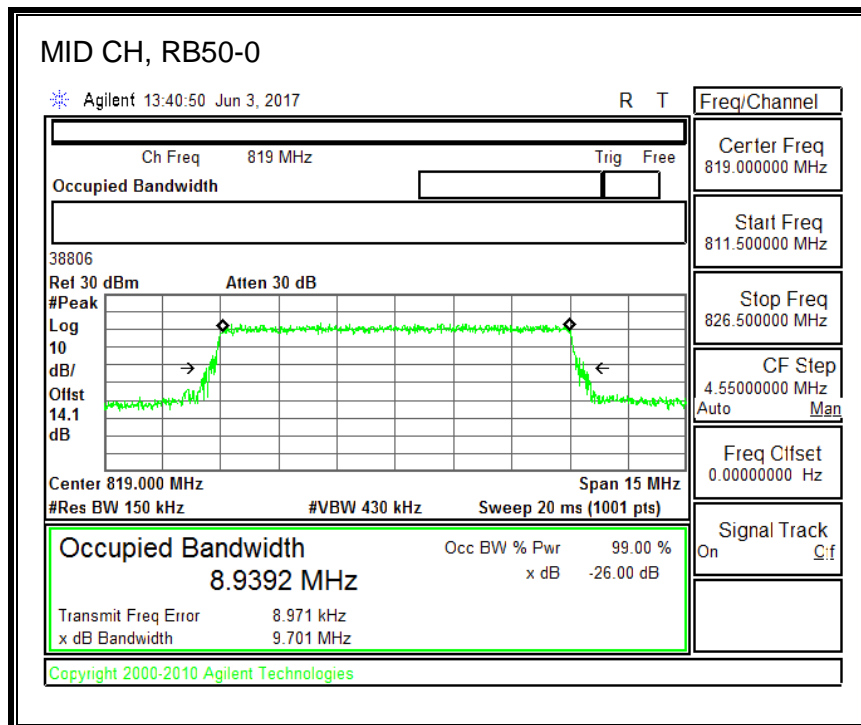


**16QAM, (10.0 MHz BAND WIDTH)**



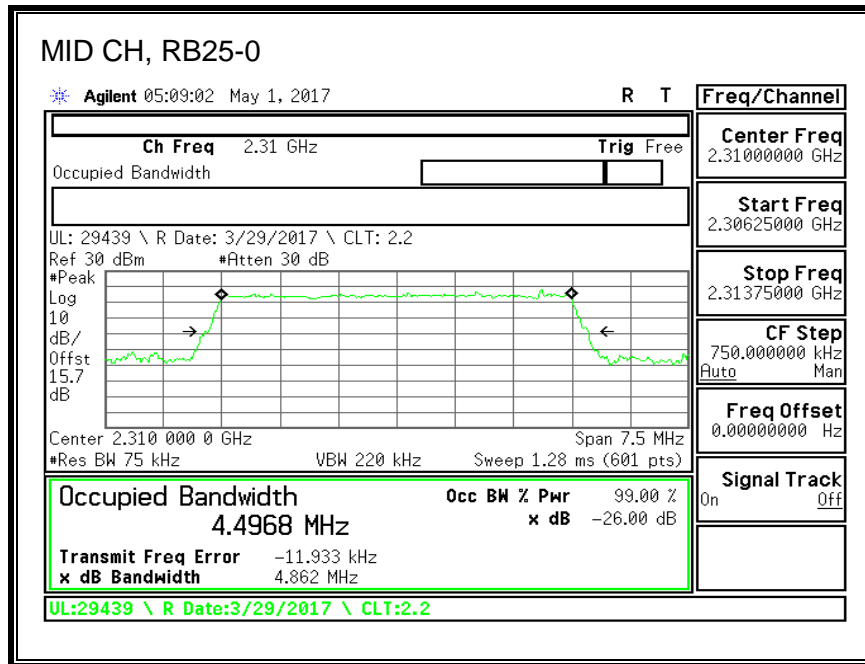


**64QAM, (10.0 MHz BAND WIDTH)**

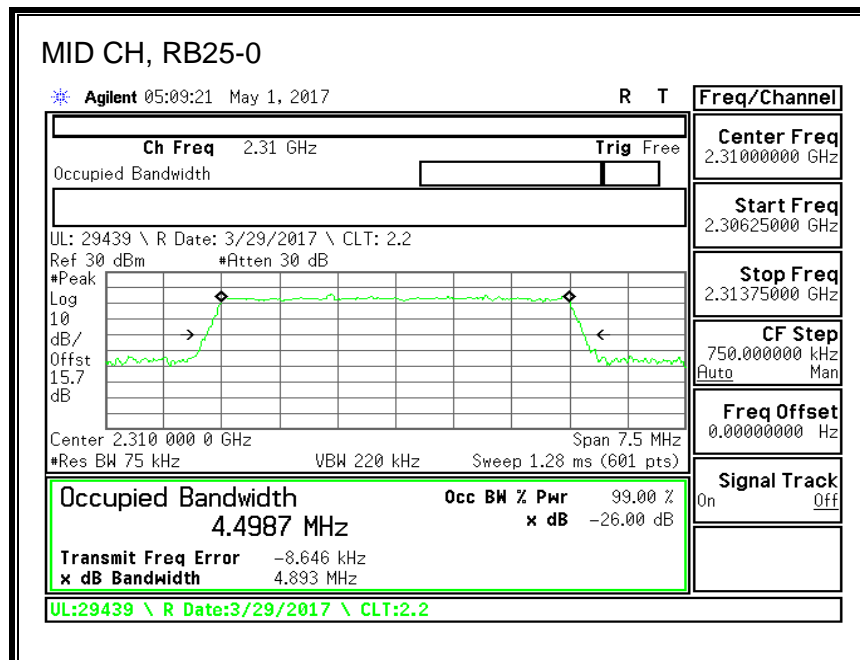


## 8.1.10. LTE BAND 30

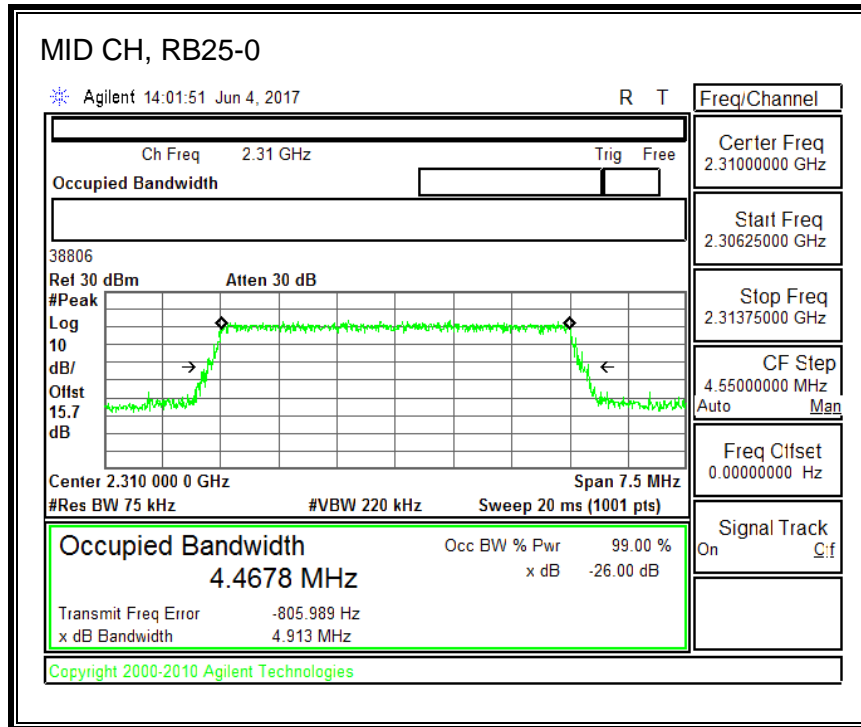
### QPSK, (5.0 MHz BAND WIDTH)



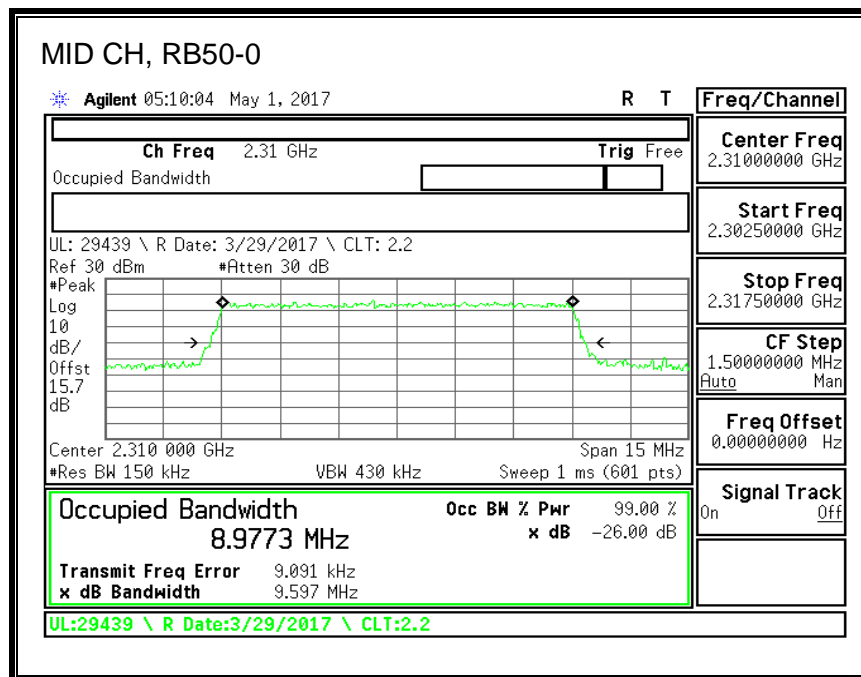
### 16QAM, (5.0 MHz BAND WIDTH)



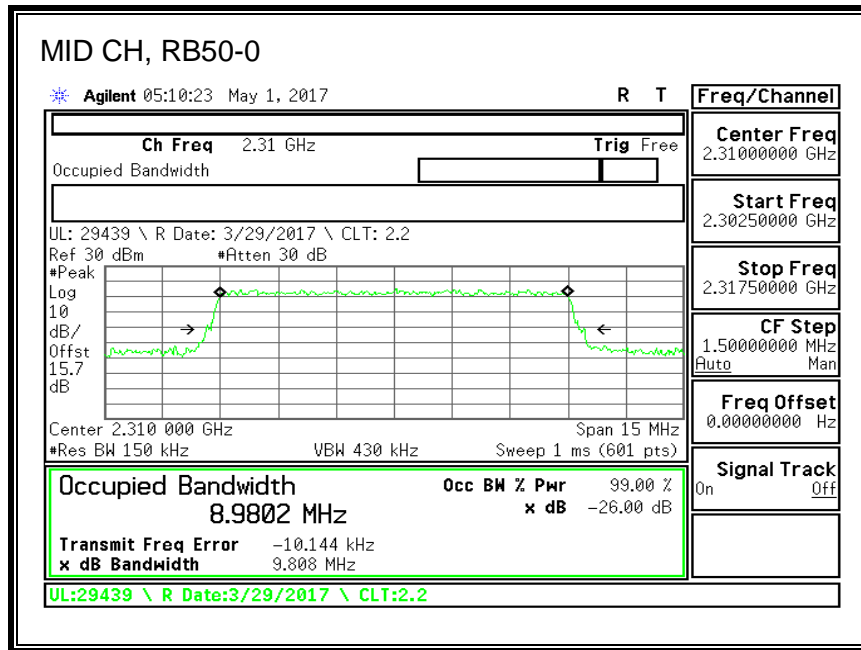
**64QAM, (5.0 MHz BAND WIDTH)**



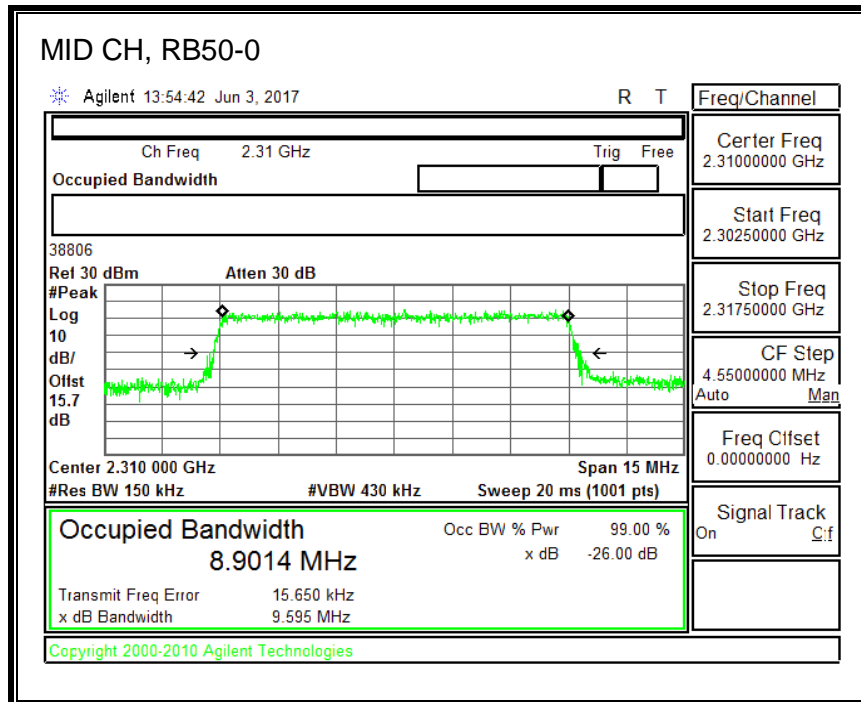
**QPSK, (10.0 MHz BAND WIDTH)**



**16QAM, (10.0 MHz BAND WIDTH)**



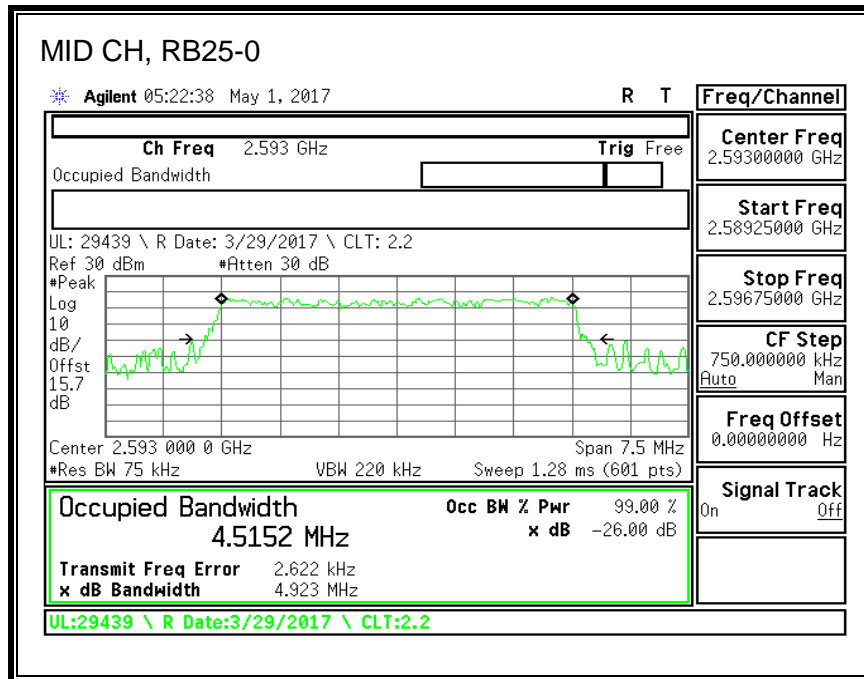
**64QAM, (10.0 MHz BAND WIDTH)**



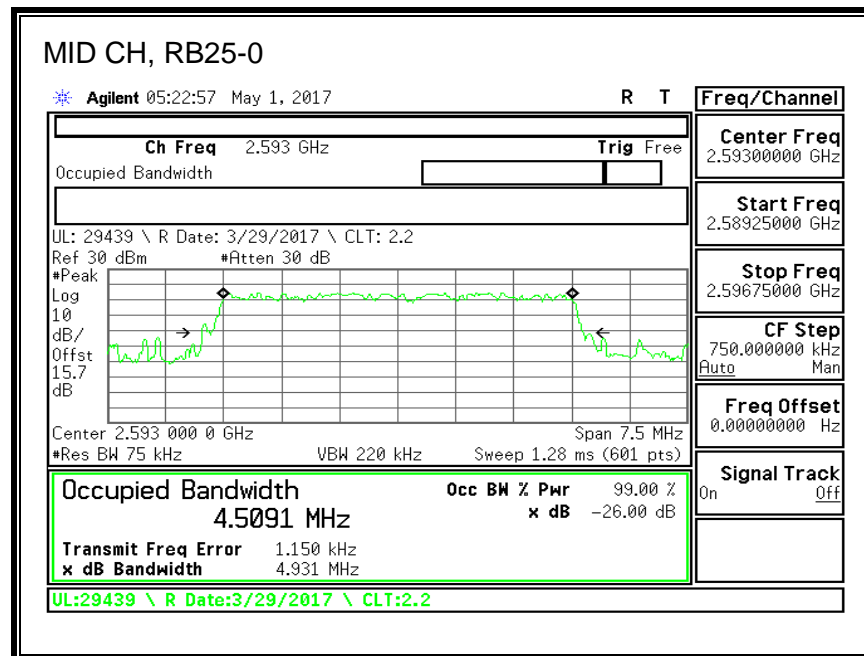


### 8.1.11. LTE BAND 41

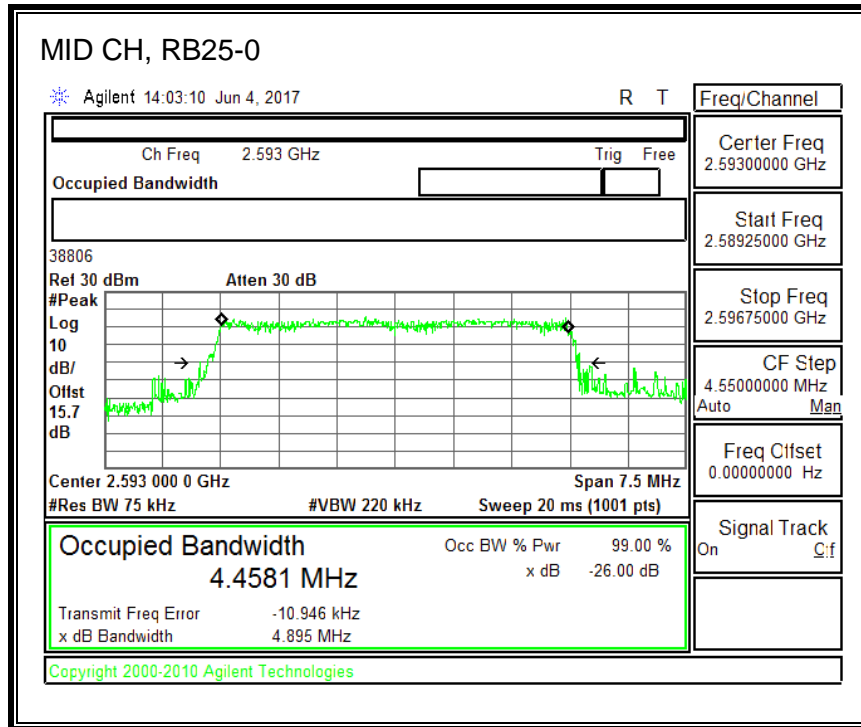
#### QPSK, (5.0 MHz BAND WIDTH)



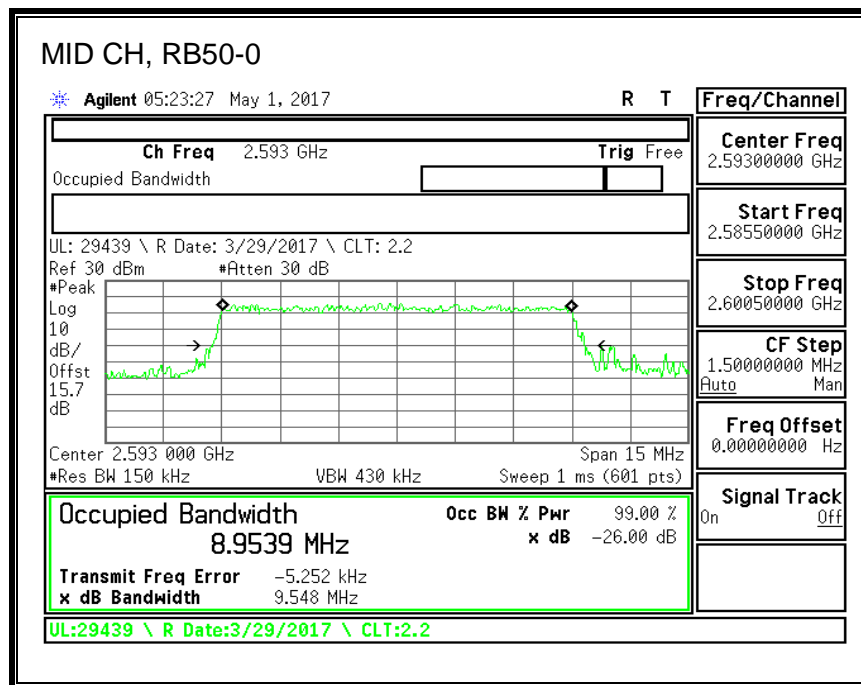
#### 16QAM, (5.0 MHz BAND WIDTH)



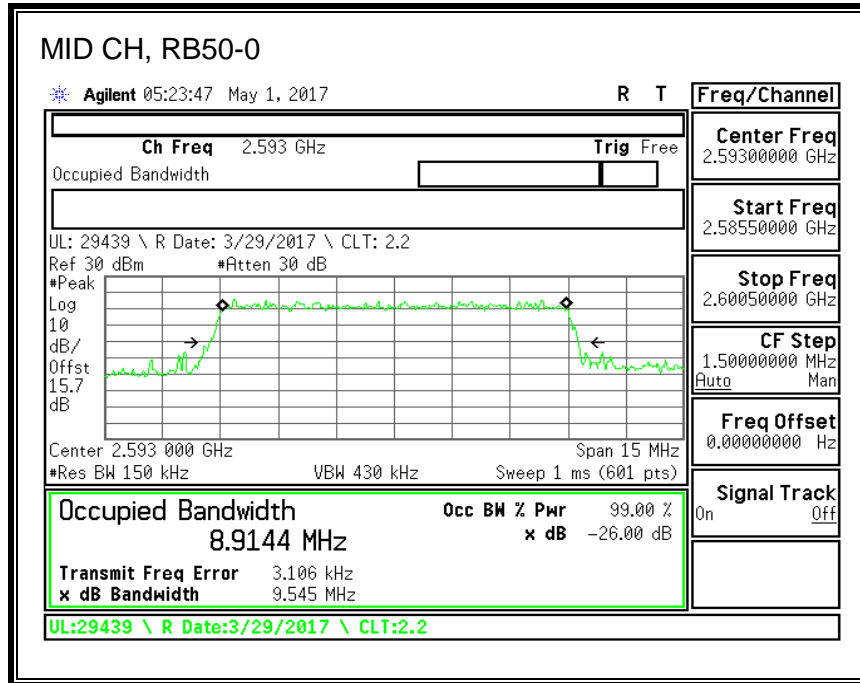
**64QAM, (5.0 MHz BAND WIDTH)**



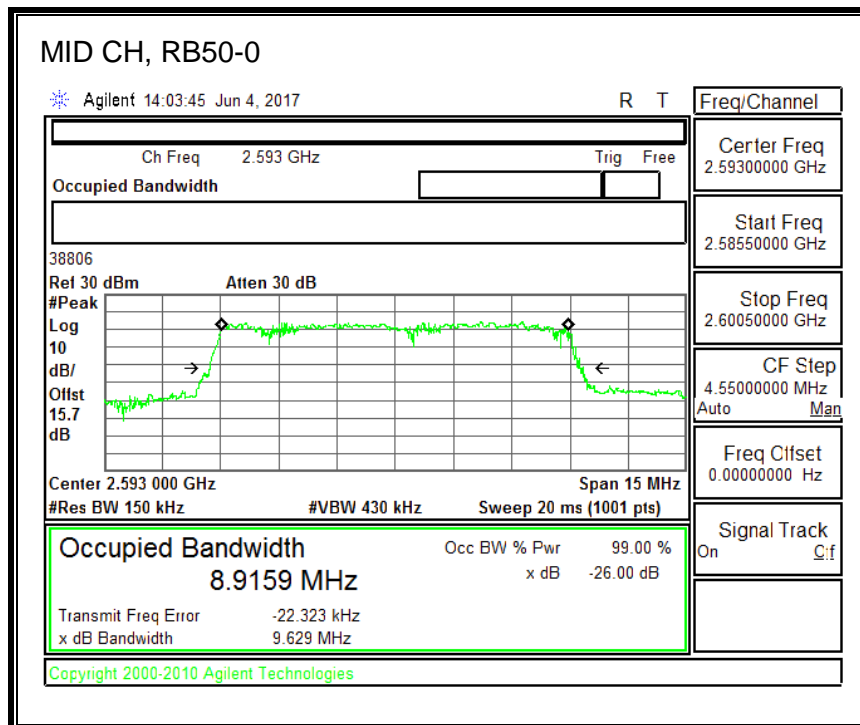
**QPSK, (10.0 MHz BAND WIDTH)**



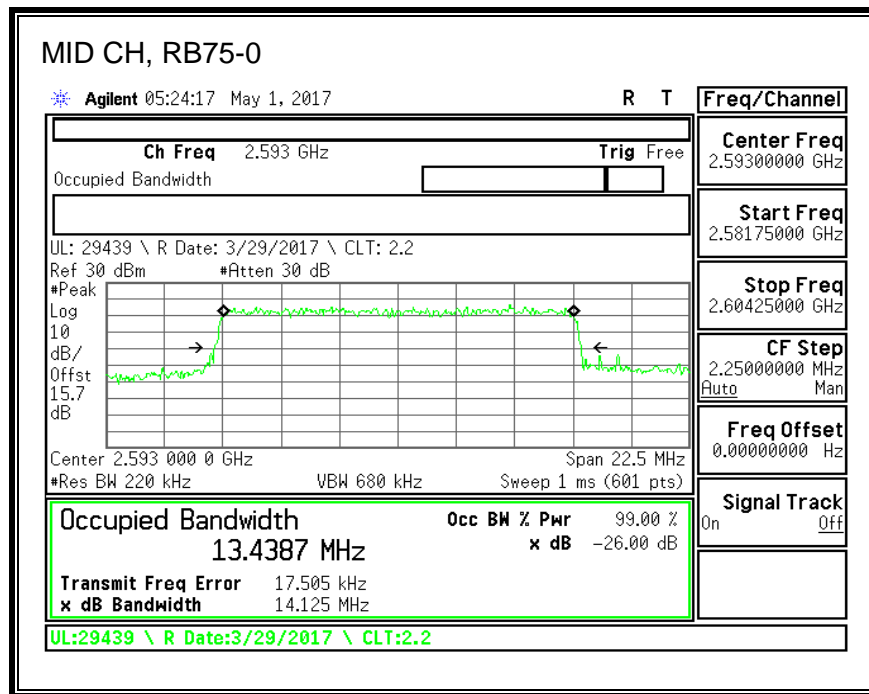
**16QAM, (10.0 MHz BAND WIDTH)**



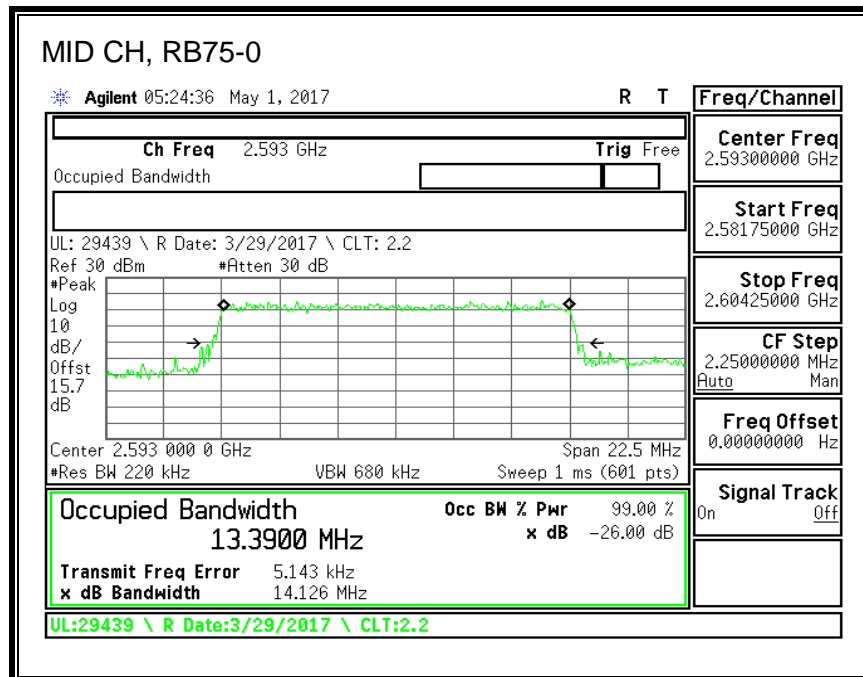
**64QAM, (10.0 MHz BAND WIDTH)**



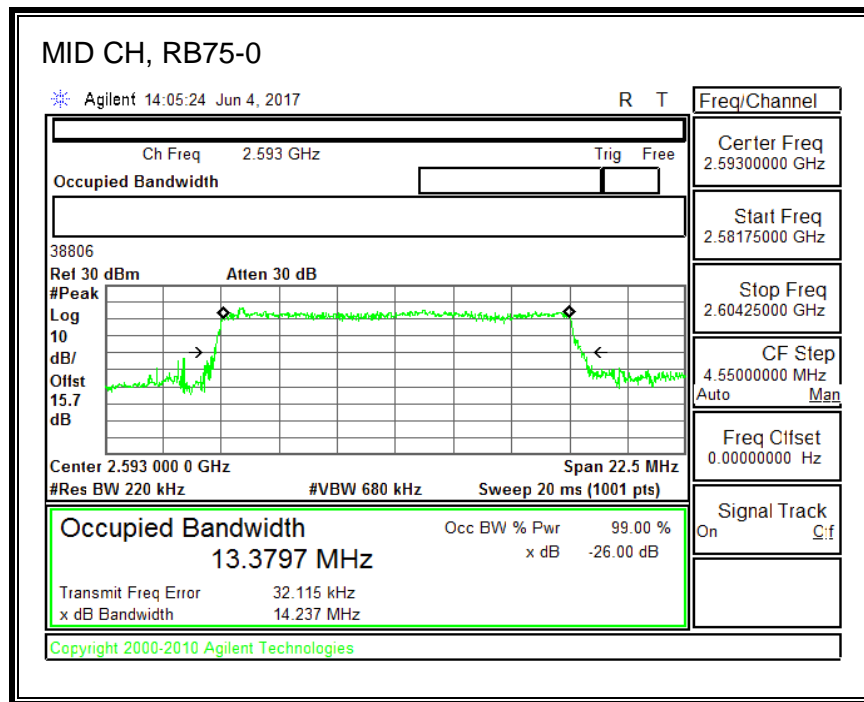
**QPSK, (15.0 MHz BAND WIDTH)**



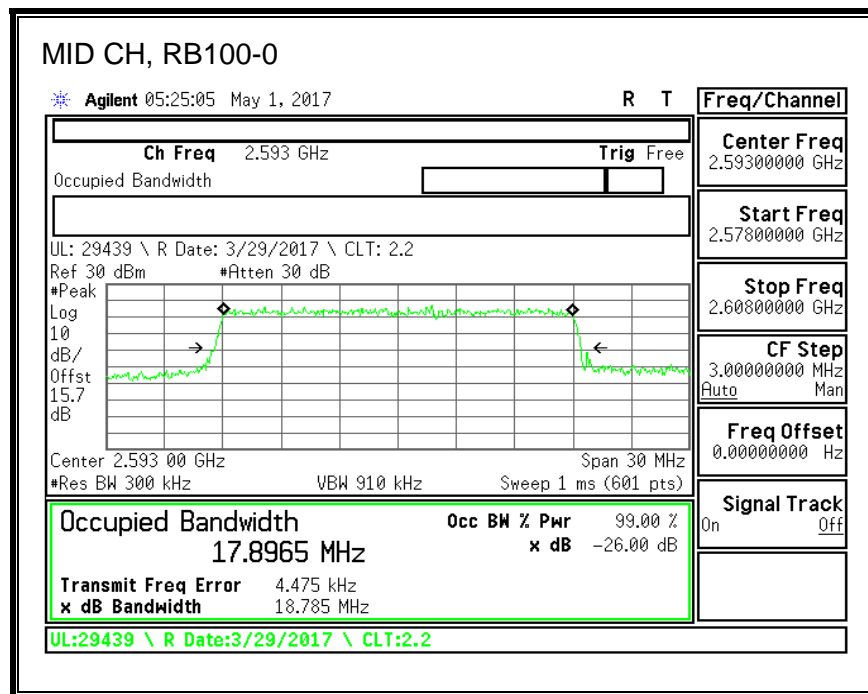
**16QAM, (15.0 MHz BAND WIDTH)**



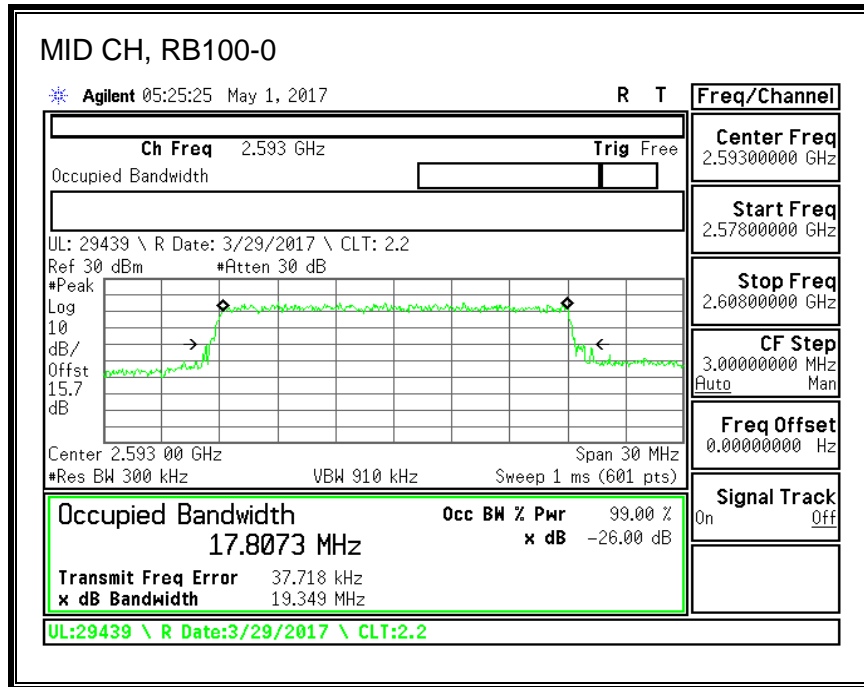
**64QAM, (15.0 MHz BAND WIDTH)**



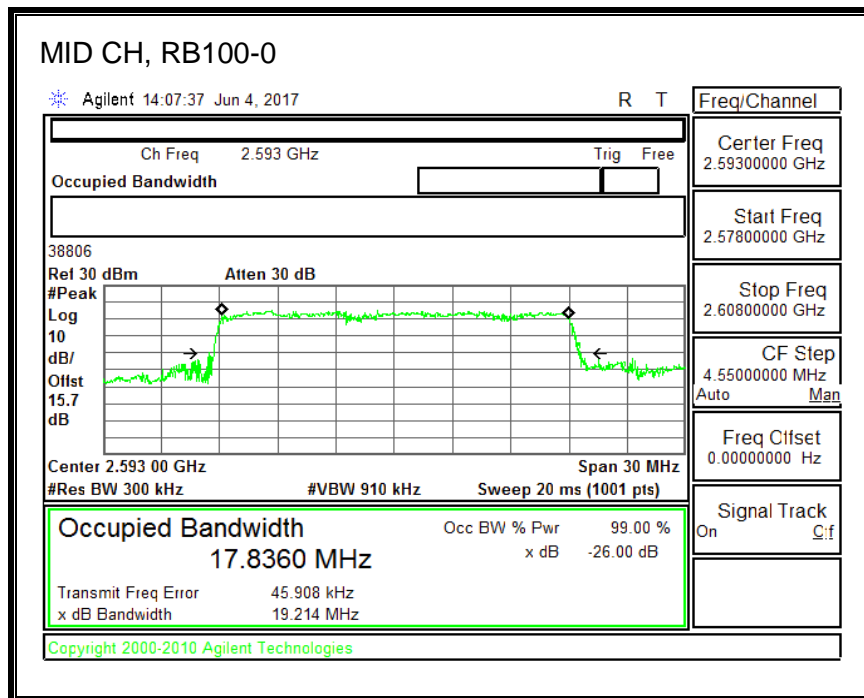
**QPSK, (20.0 MHz BAND WIDTH)**



**16QAM, (20.0 MHz BAND WIDTH)**

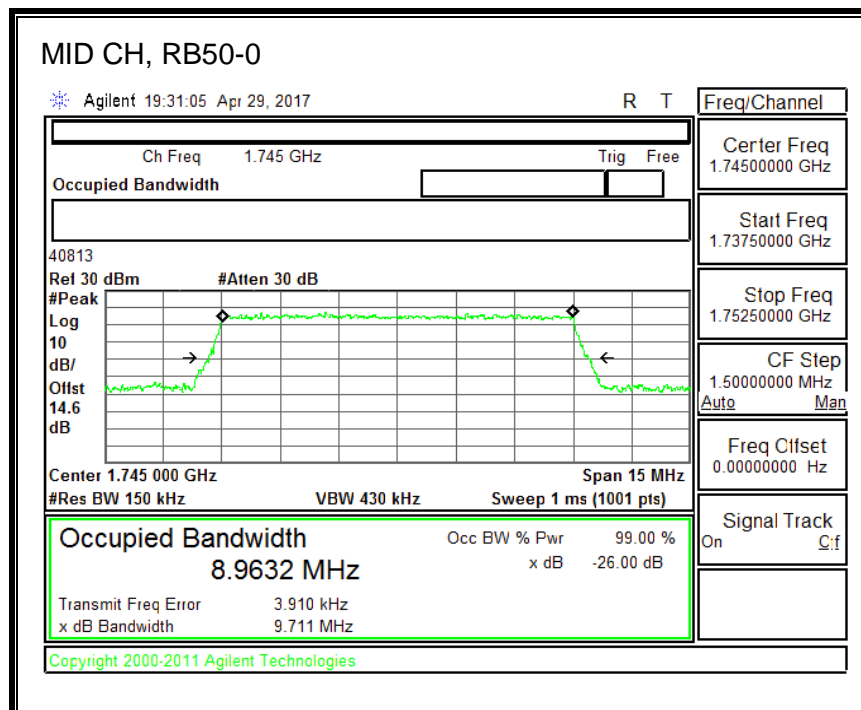
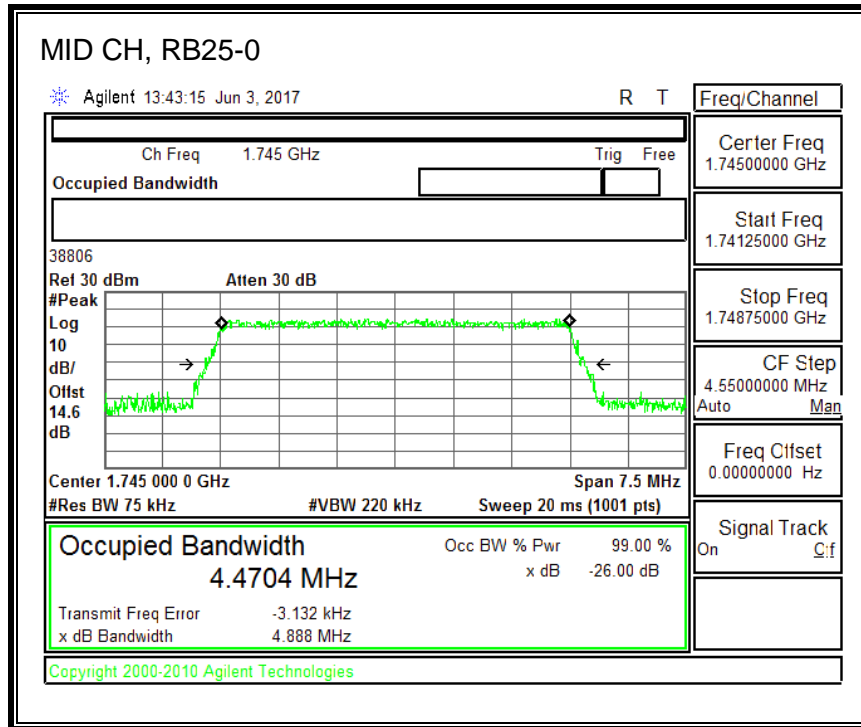


**64QAM, (20.0 MHz BAND WIDTH)**



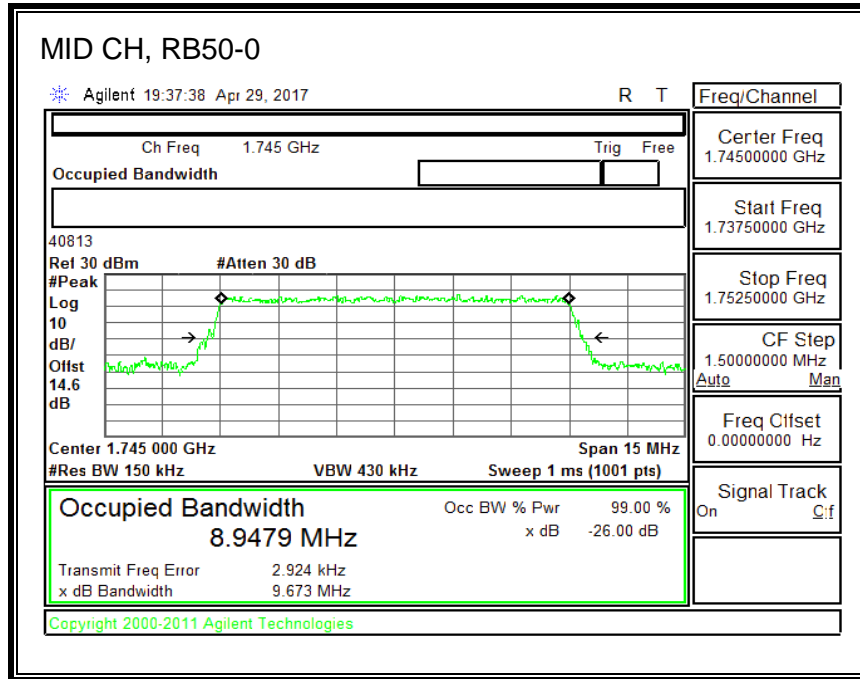
**QPSK, (5.0 MHz BAND WIDTH)**



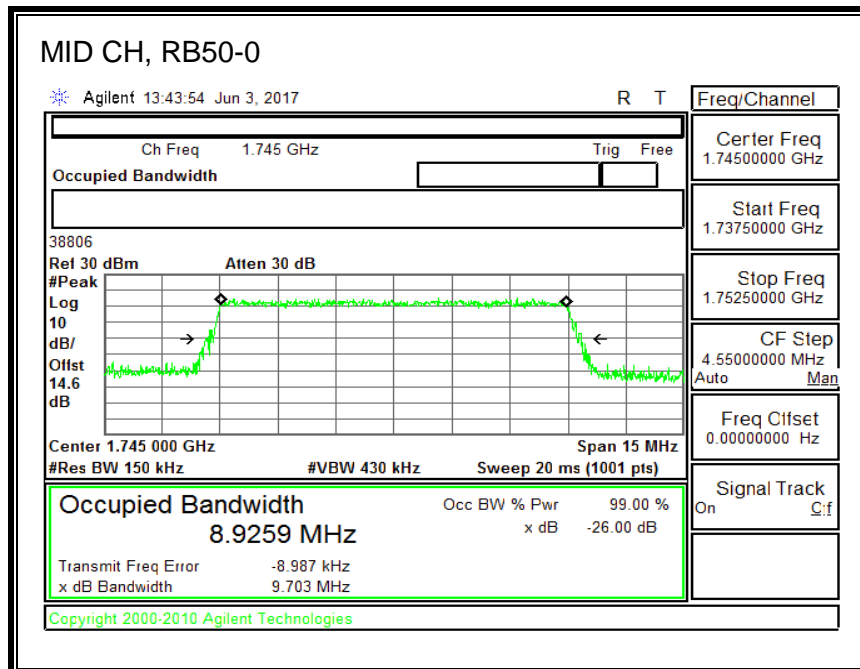




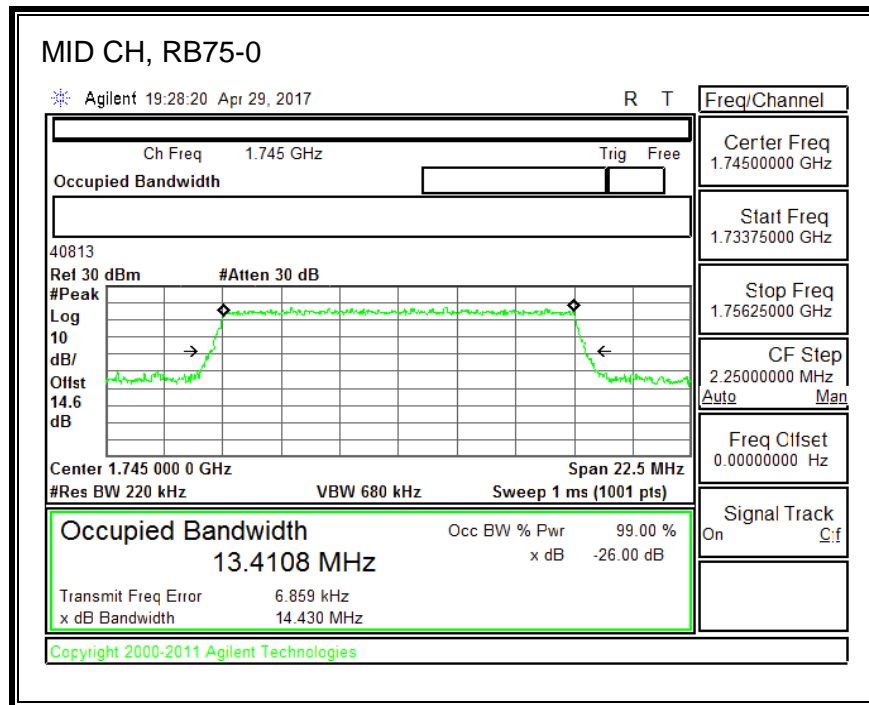
**16QAM, (10.0 MHz BAND WIDTH)**



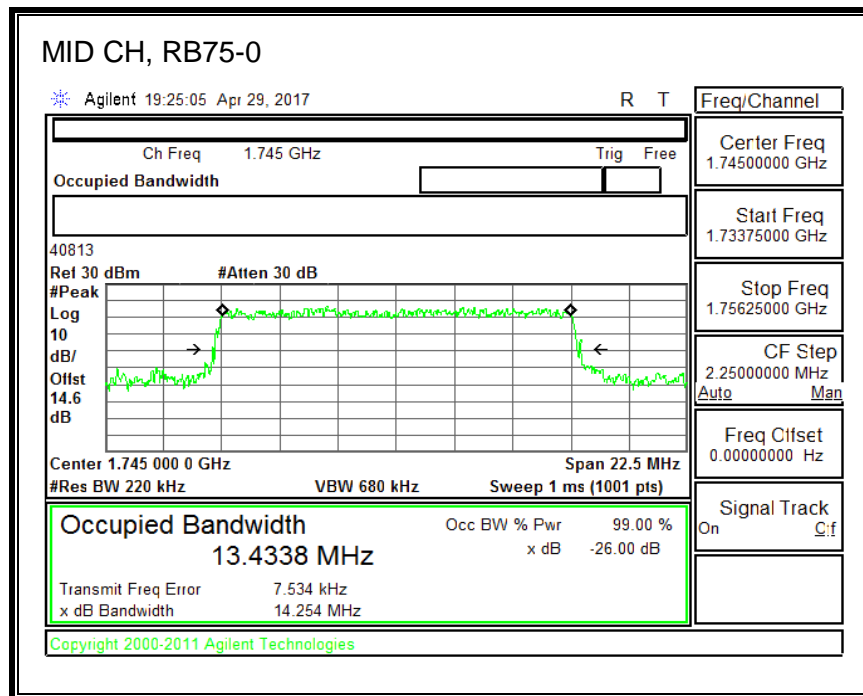
**64QAM, (10.0 MHz BAND WIDTH)**



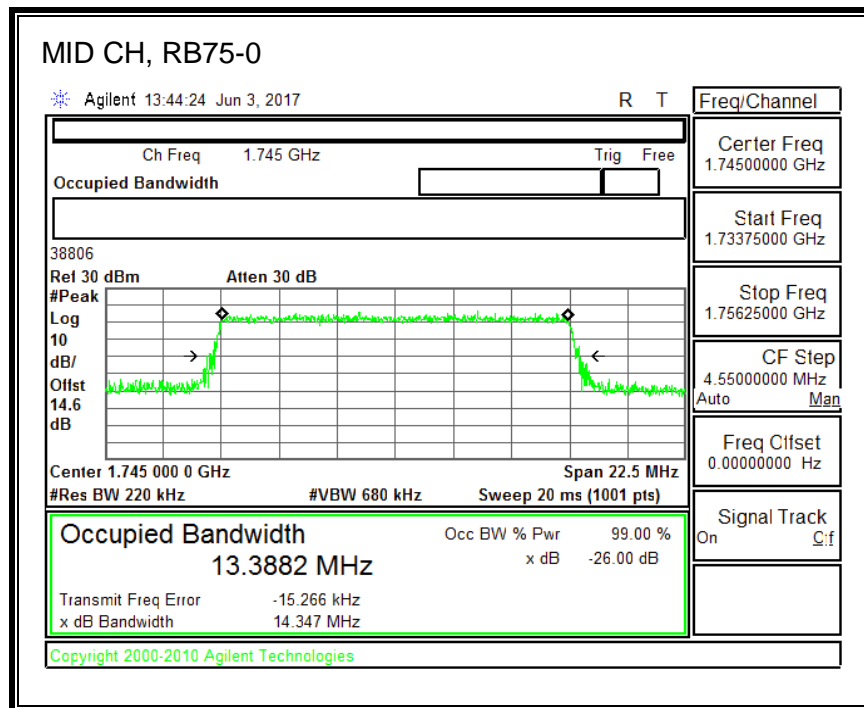
**QPSK, (15.0 MHz BAND WIDTH)**



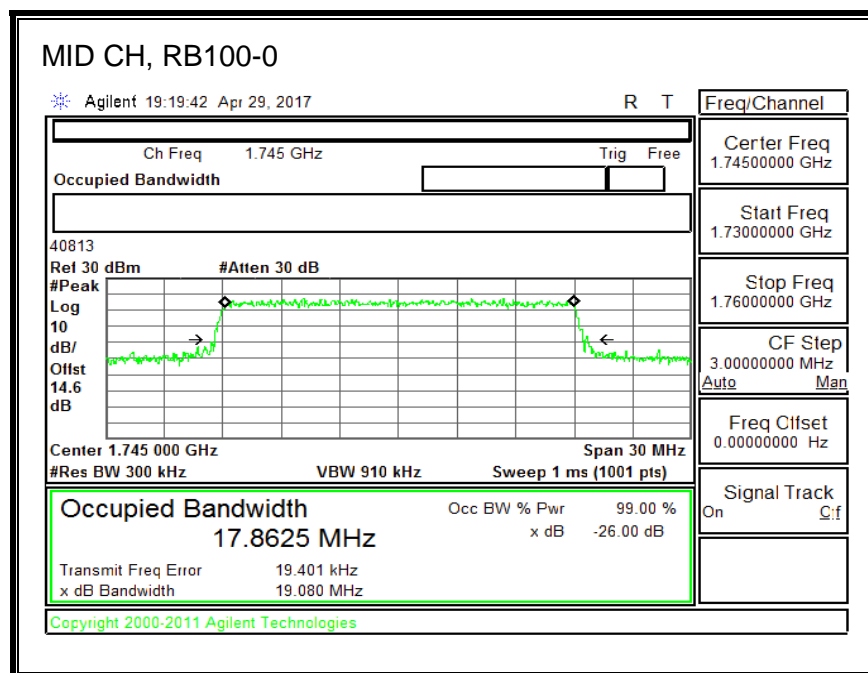
**16QAM, (15.0 MHz BAND WIDTH)**



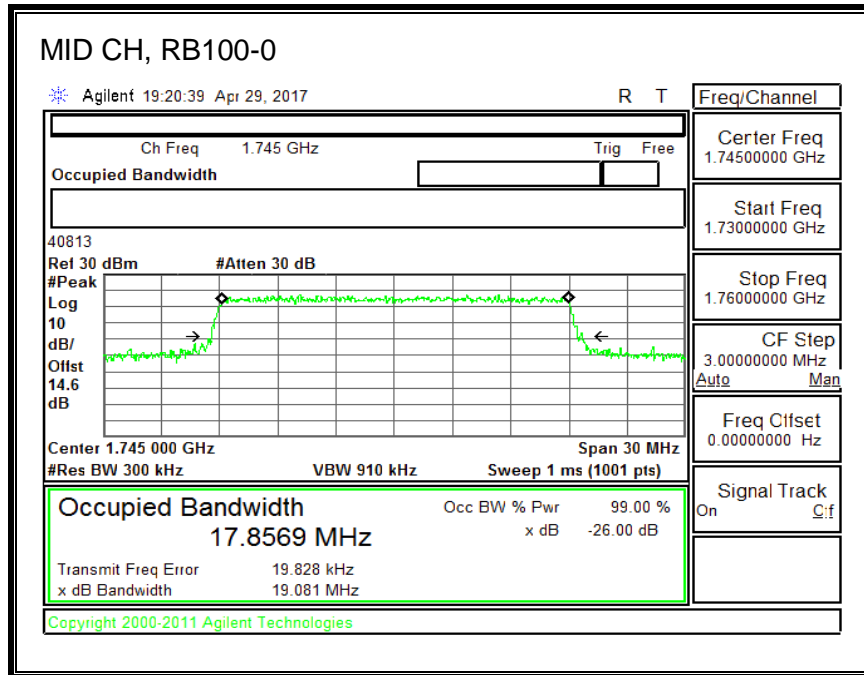
**64QAM, (15.0 MHz BAND WIDTH)**



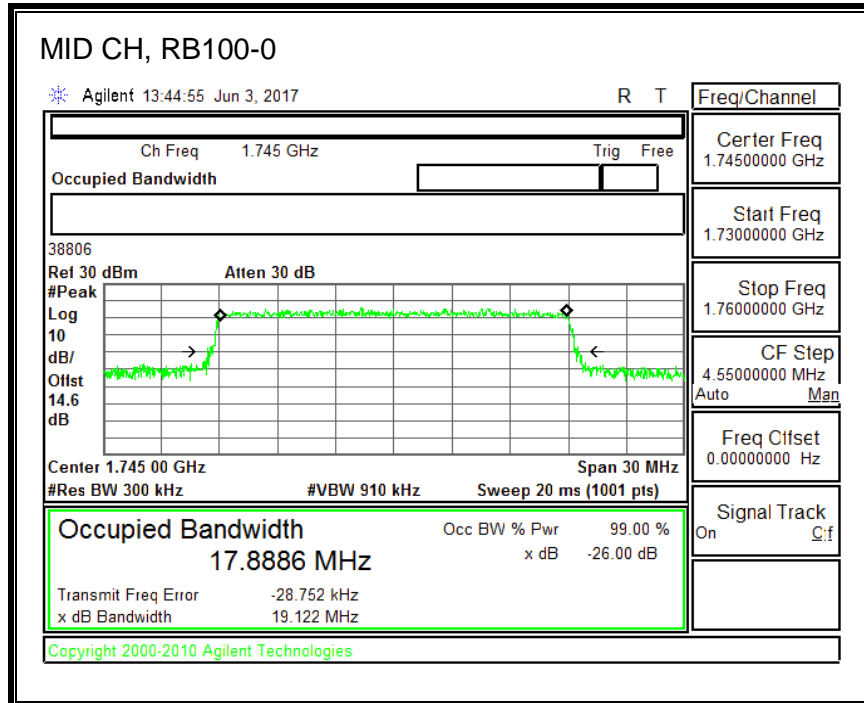
**QPSK, (20.0 MHz BAND WIDTH)**



**16QAM, (20.0 MHz BAND WIDTH)**



**64QAM, (20.0 MHz BAND WIDTH)**



## 8.2. BANEDGE AND EMISSION MASK

### RULE PART(S)

FCC: §2.1051, §22.359, §22.917, §24.238, §27.53, §90.691

### LIMITS

FCC: §22.359, §22.917, §24.238, §27.53

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

FCC: §90.210, and §90.691 (LTE BAND 26)

(a)(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $116 \log_{10}(f/6.1)$  decibels or  $50 + 10 \log_{10}(P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(a)(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

FCC: §27.53

(c) For operations in the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB;

(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than  $65 + 10 \log (P)$  dB in a 6.25 kHz band segment, for mobile and portable stations;

(5) Compliance with the provisions of paragraphs (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

(6) Compliance with the provisions of paragraphs (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

FCC: §27.53 (LTE BAND 41)

(m)(6) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. 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; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495-2496 MHz). 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. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

(m)(4) For mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log (P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log (P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log (P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than  $43 + 10 \log (P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log (P)$  dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. Show citation box.

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### **TEST PROCEDURE**

The transmitter output was connected to a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

1. Set the spectrum analyzer span to include the block edge frequency.
2. Set a marker to point the corresponding band edge frequency in each test case.
3. Set display line at -13 dBm
4. Set resolution bandwidth to at least 1% of emission bandwidth.

### **MODES TESTED**

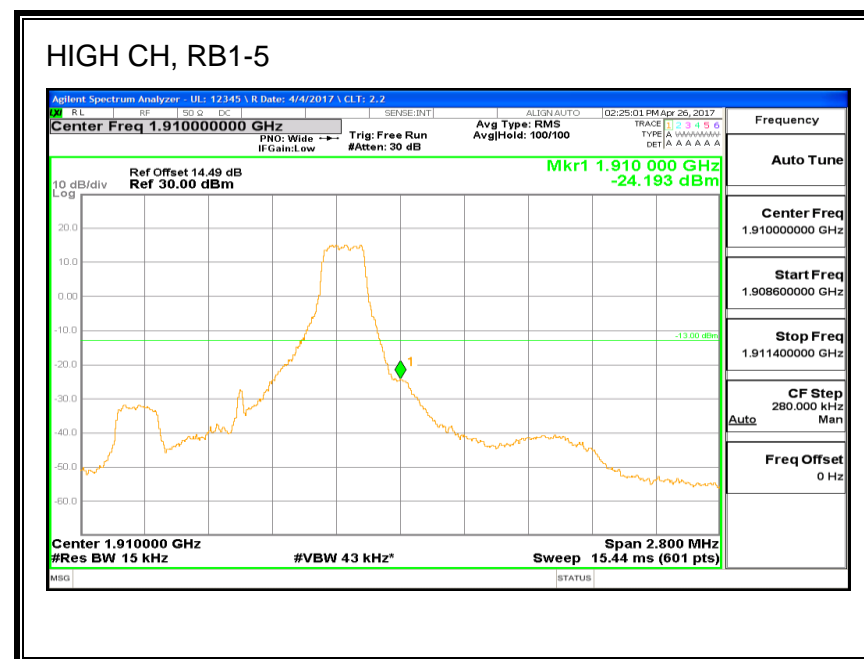
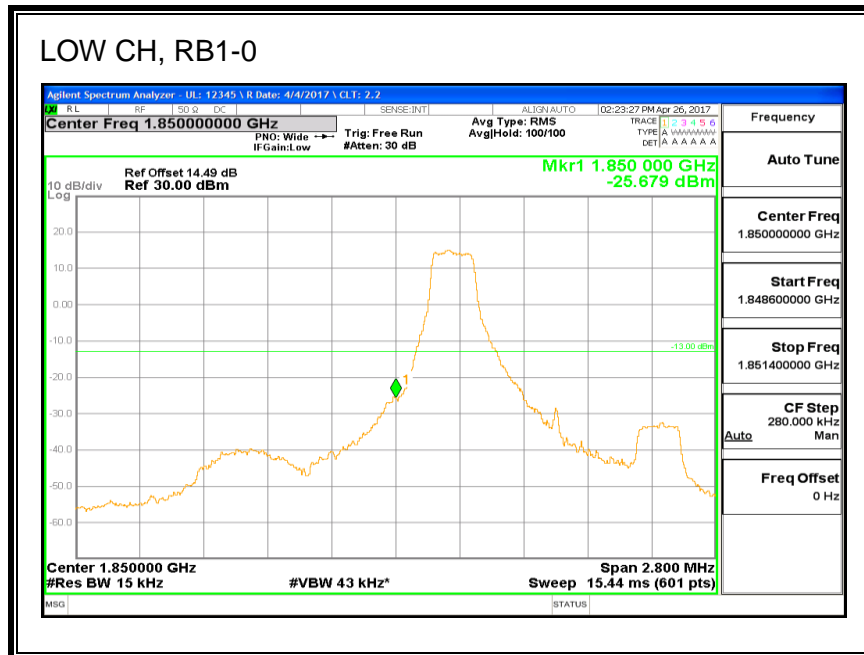
- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 13
- LTE Band 17
- LTE Band 25
- LTE Band 26
- LTE Band 30
- LTE Band 41
- LTE Band 66

### **RESULTS**

## 8.2.1. LTE BAND 2 BANDEDGE

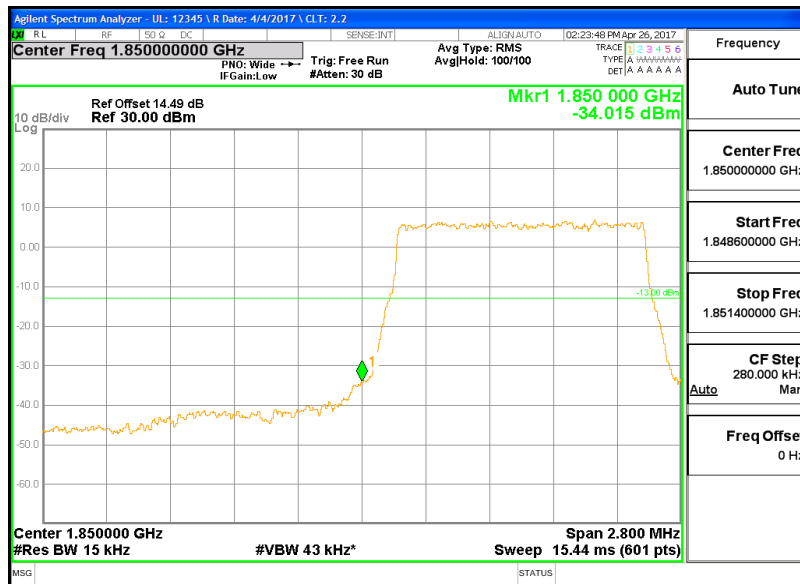
ID:	37290	Date:	4/26/17
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### QPSK, (1.4 MHz BAND WIDTH)

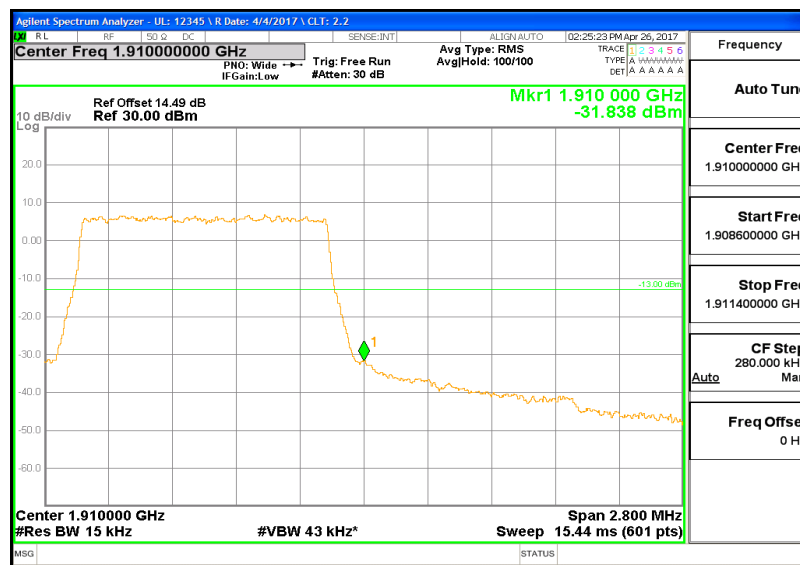




### LOW CH, RB6-0

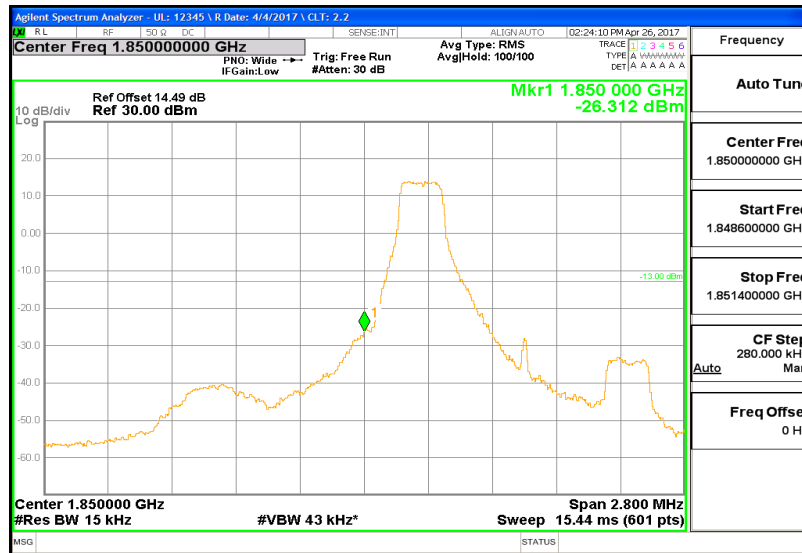


### HIGH CH, RB6-0

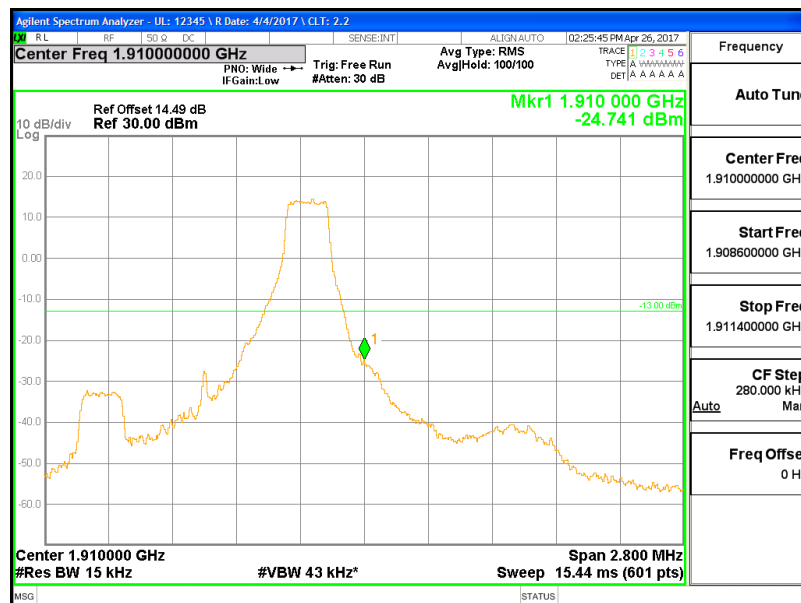


**16QAM, (1.4 MHz BAND WIDTH)**

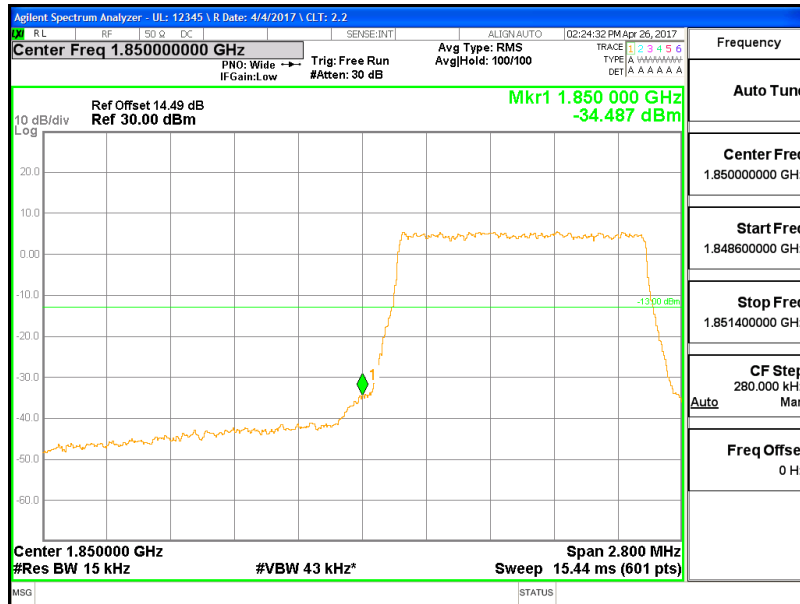
**LOW CH, RB1-0**



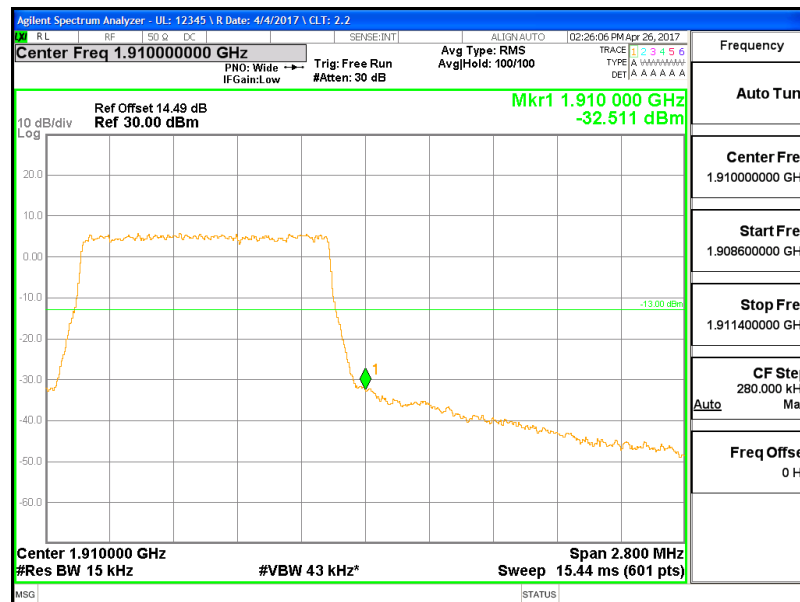
**HIGH CH, RB1-5**



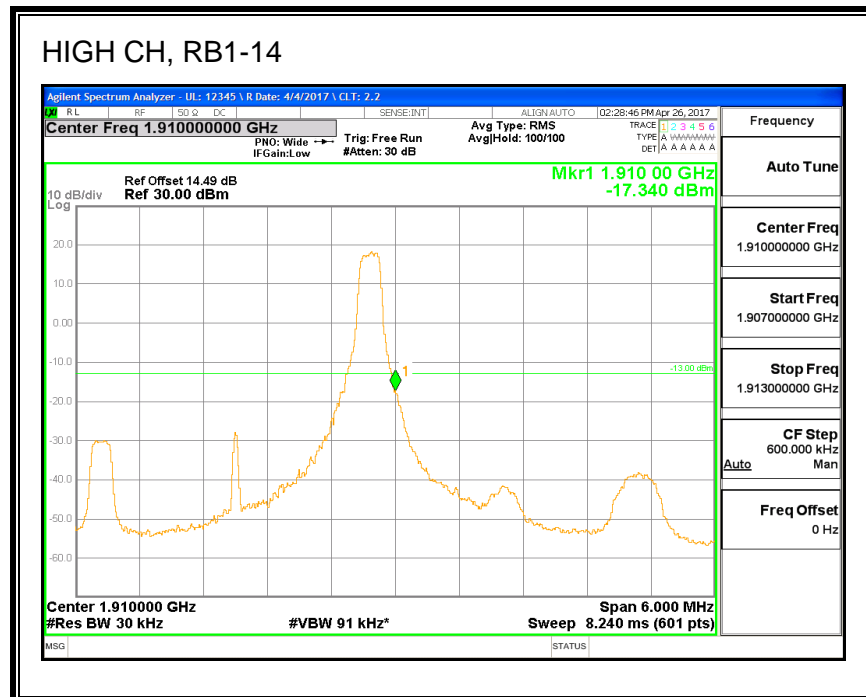
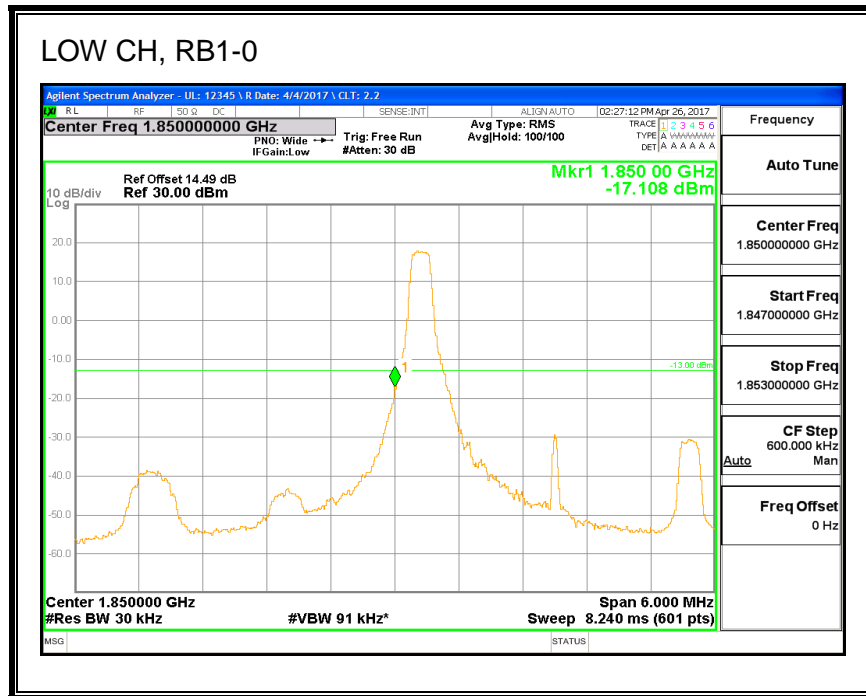
### LOW CH, RB6-0



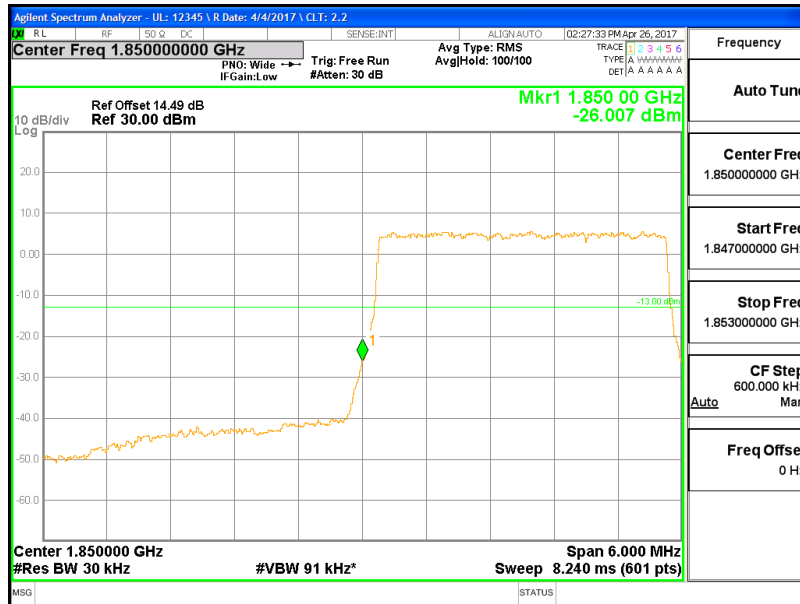
### HIGH CH, RB6-0



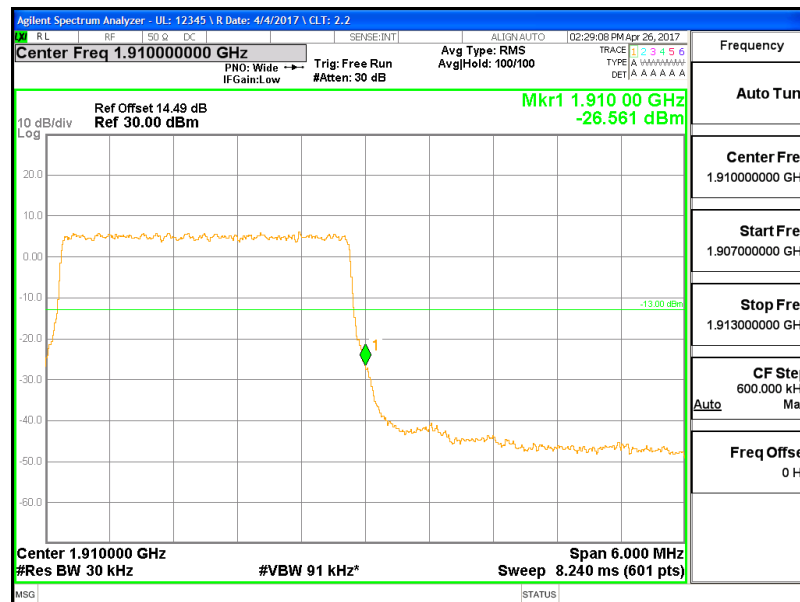
**QPSK, (3.0 MHz BAND WIDTH)**



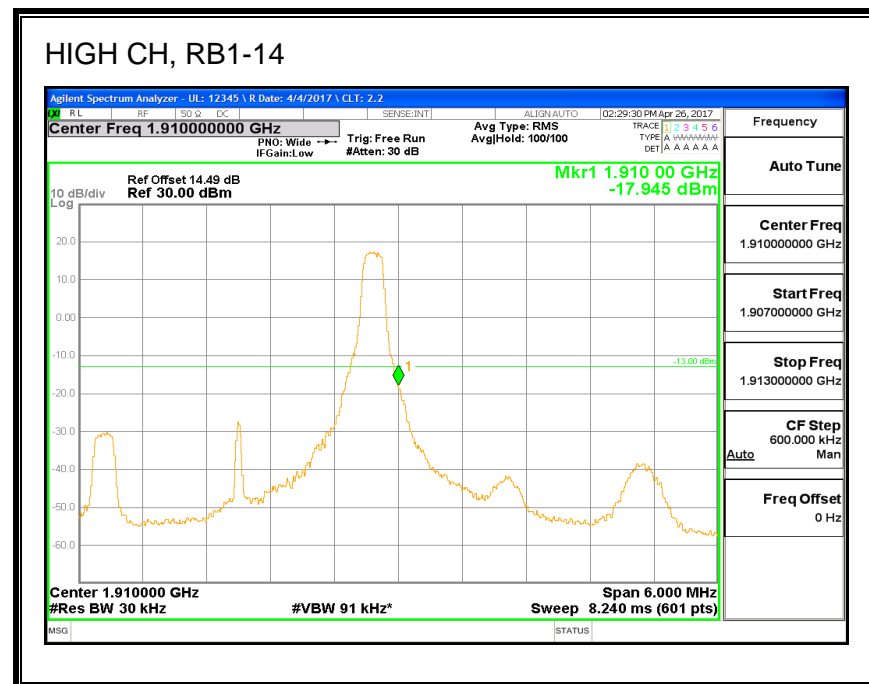
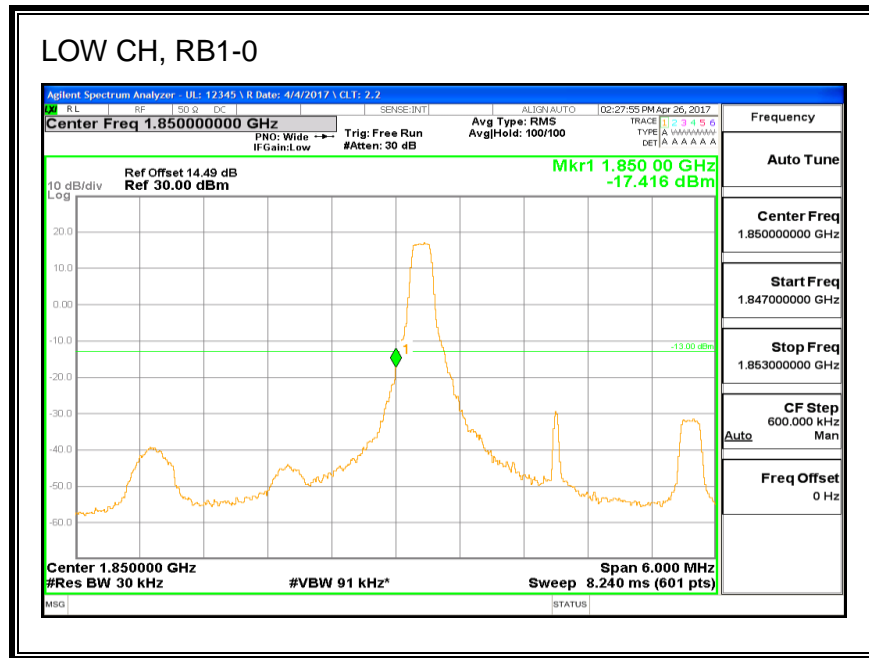
### LOW CH, RB15-0



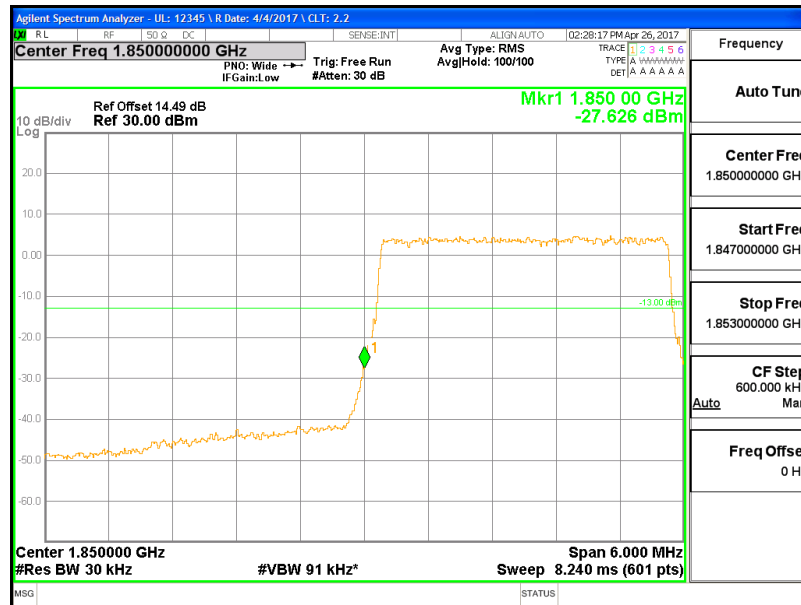
### HIGH CH, RB15-0



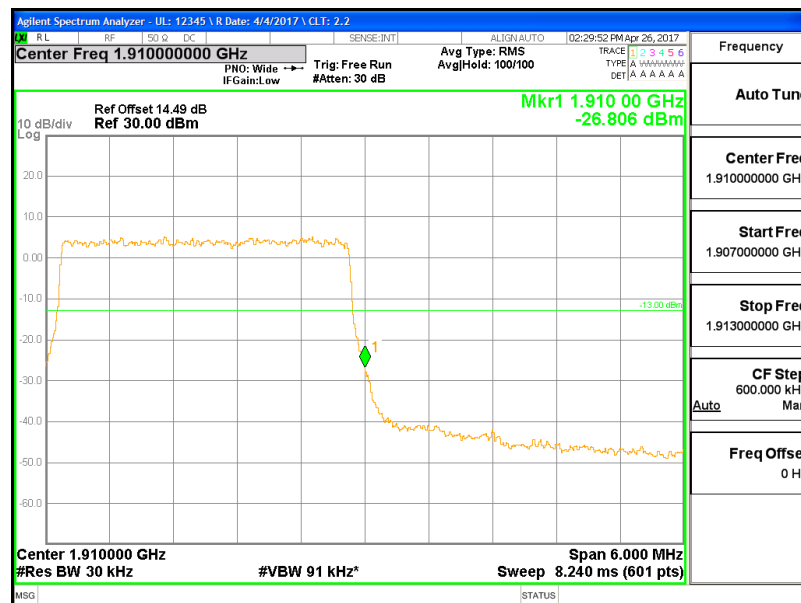
**16QAM, (3.0 MHz BAND WIDTH)**



### LOW CH, RB15-0

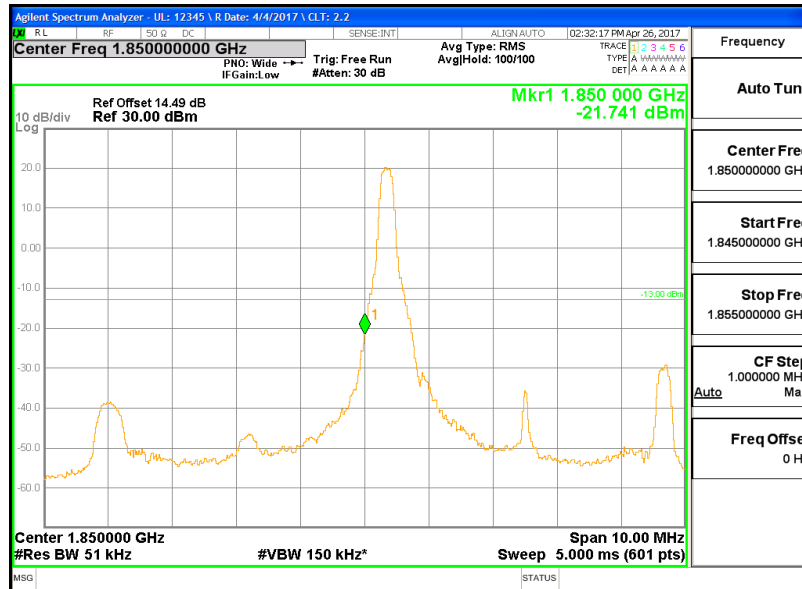


### HIGH CH, RB15-0

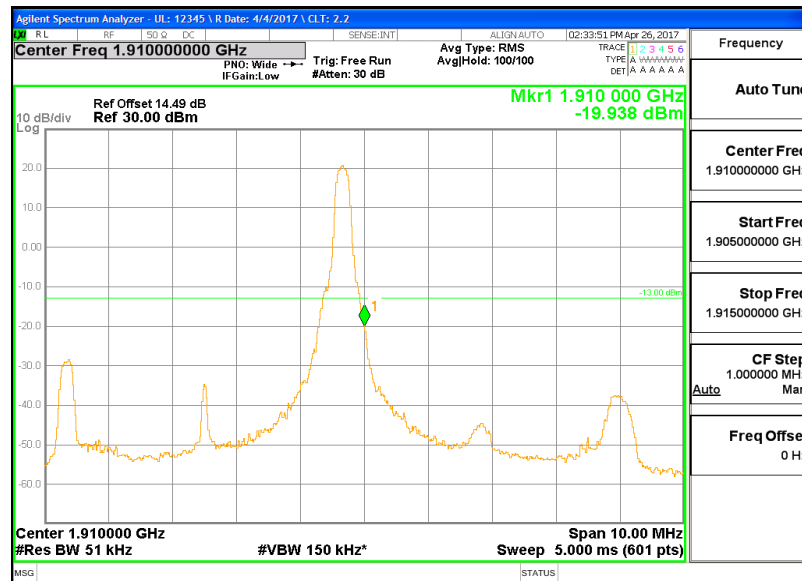


**QPSK, (5.0 MHz BAND WIDTH)**

**LOW CH, RB1-0**

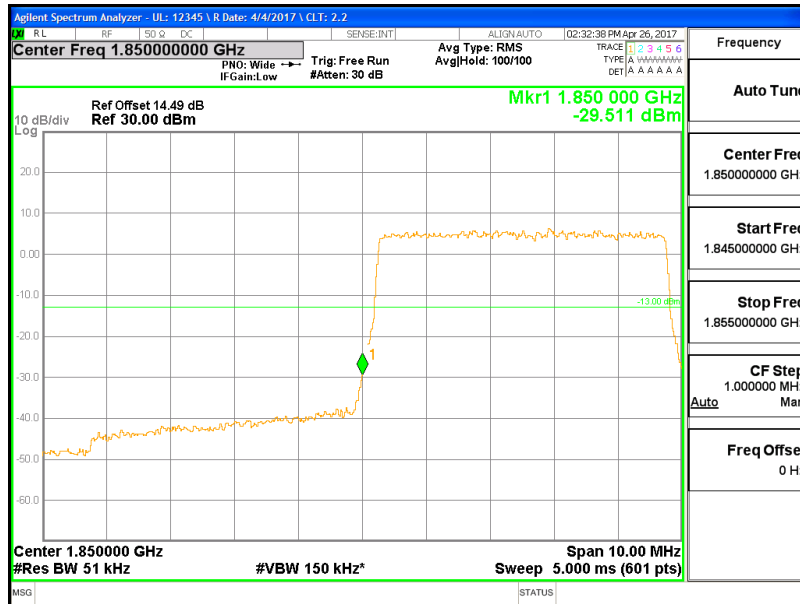


**HIGH CH, RB1-24**

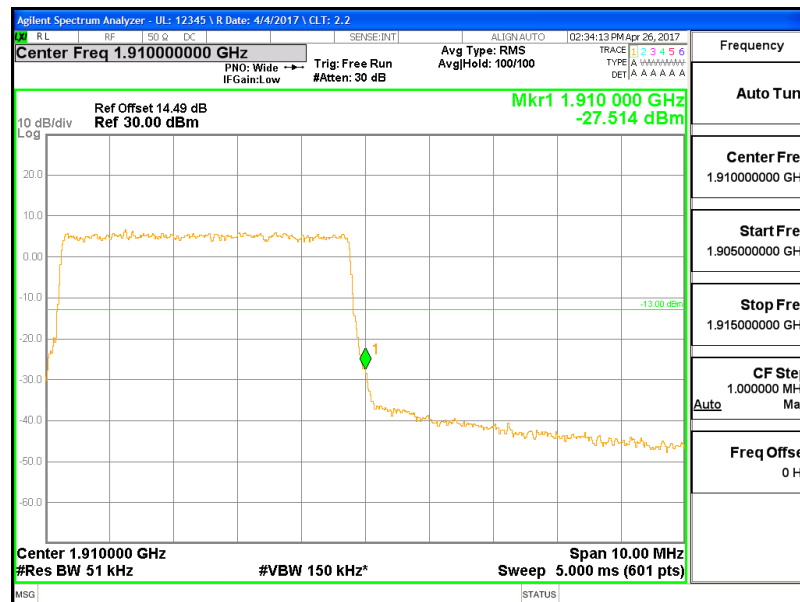




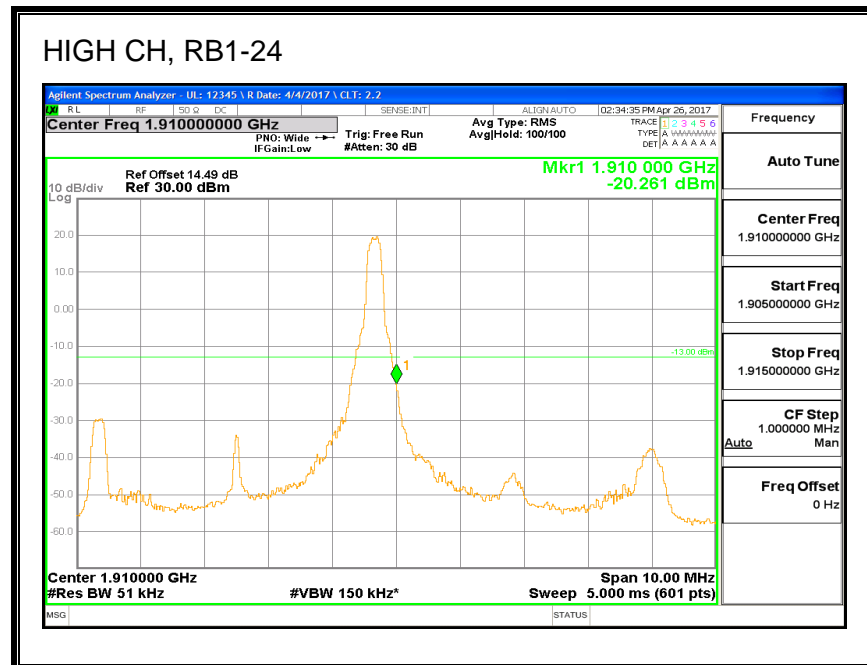
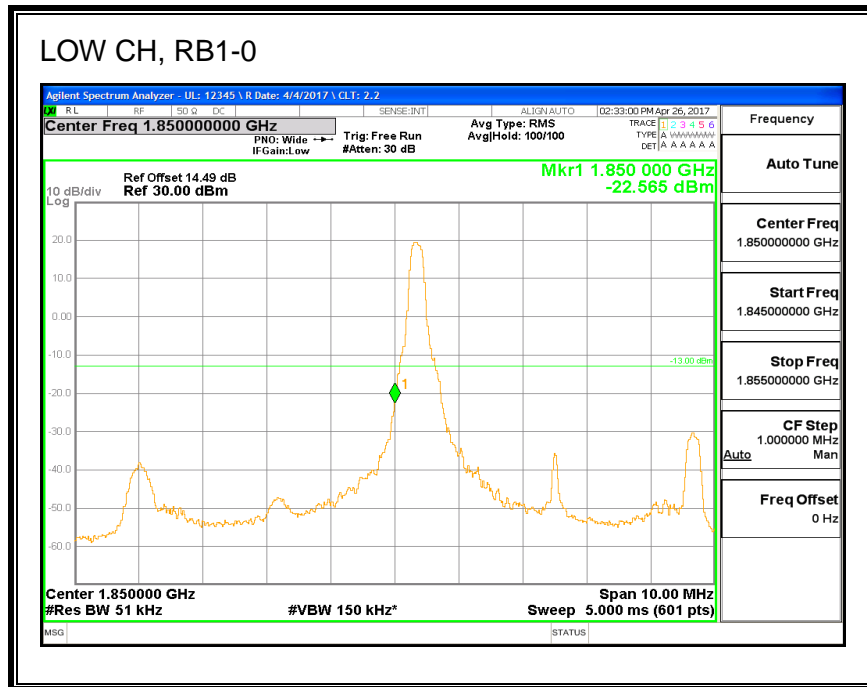
### LOW CH, RB25-0



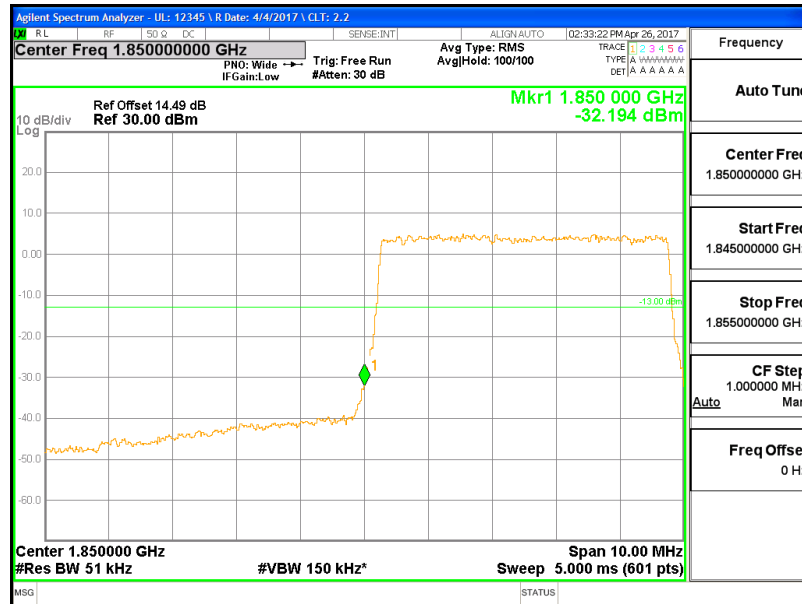
### HIGH CH, RB25-0



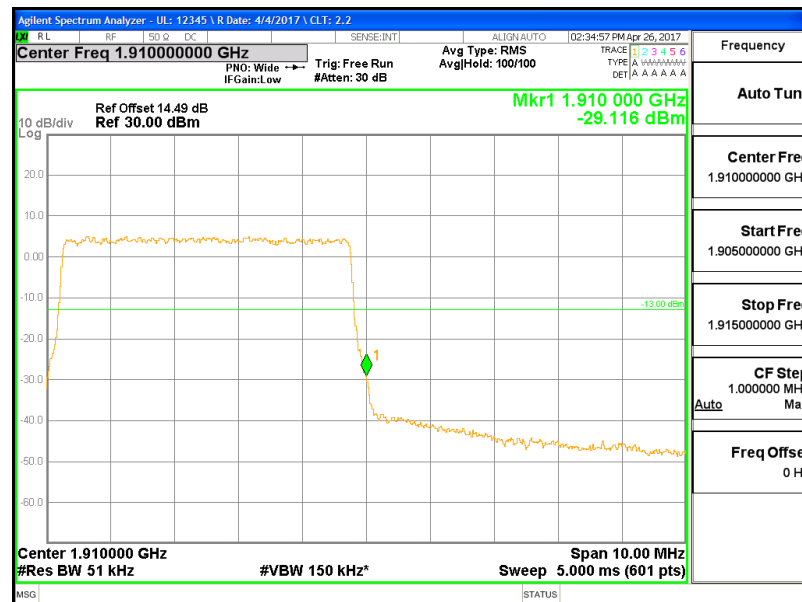
**16QAM, (5.0 MHz BAND WIDTH)**



### LOW CH, RB25-0

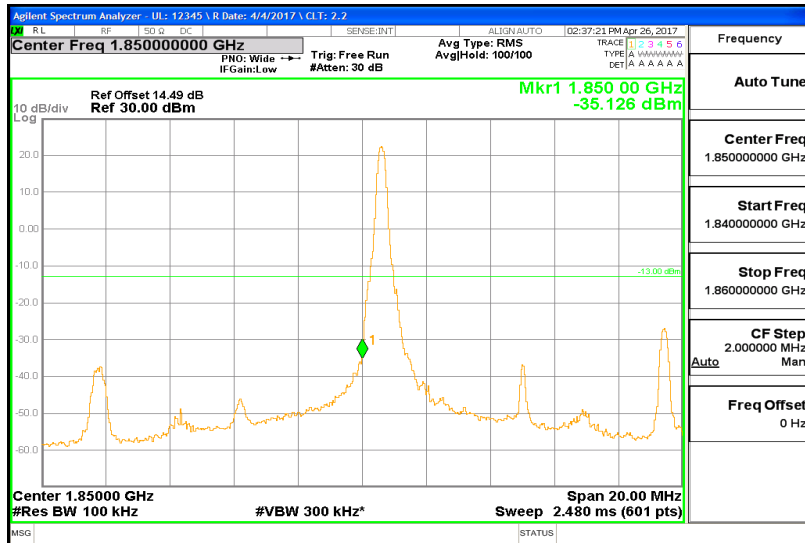


### HIGH CH, RB25-0

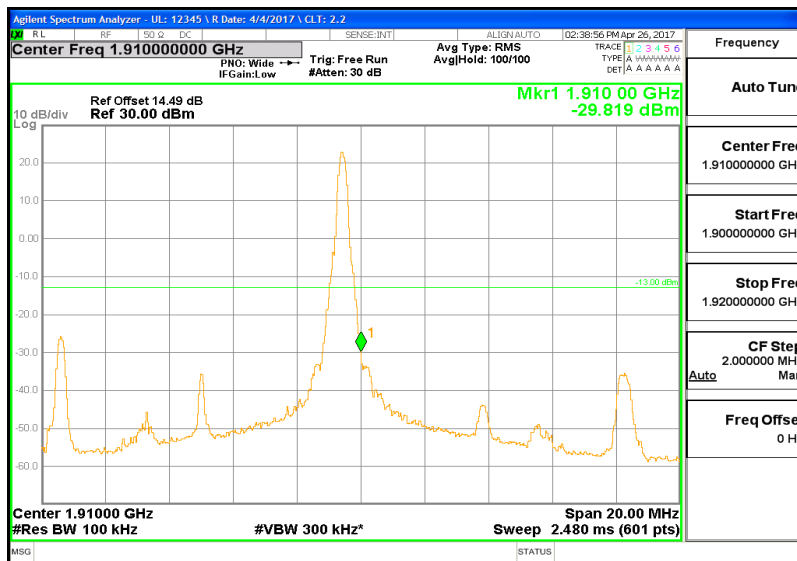


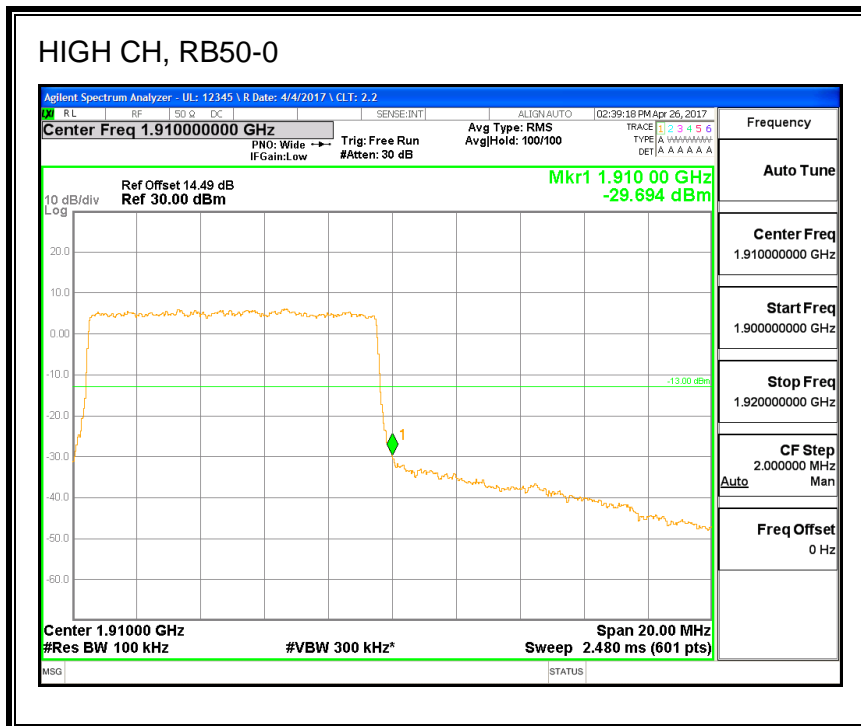
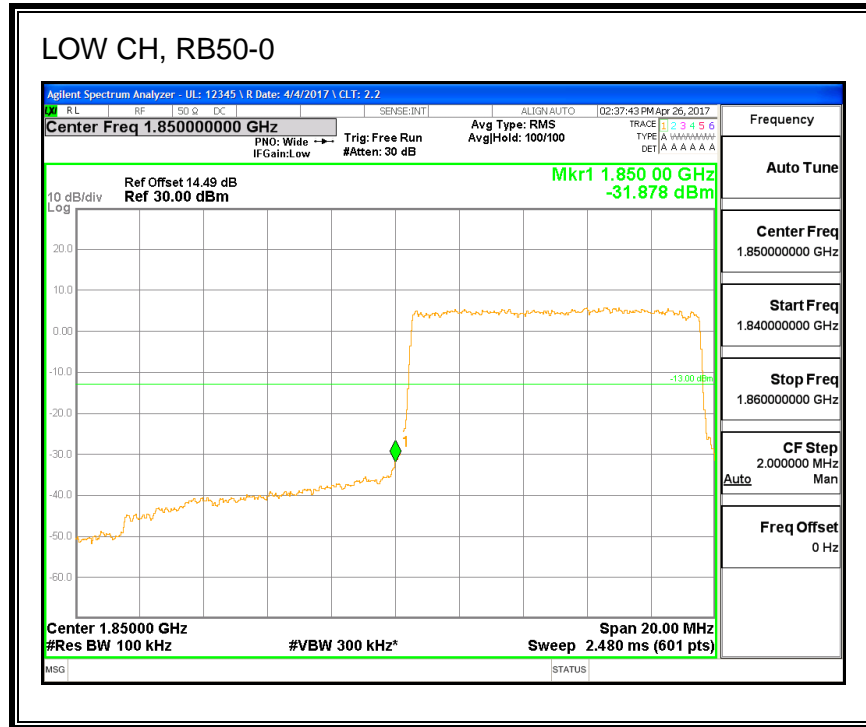
**QPSK, (10.0 MHz BAND WIDTH)**

**LOW CH, RB1-0**

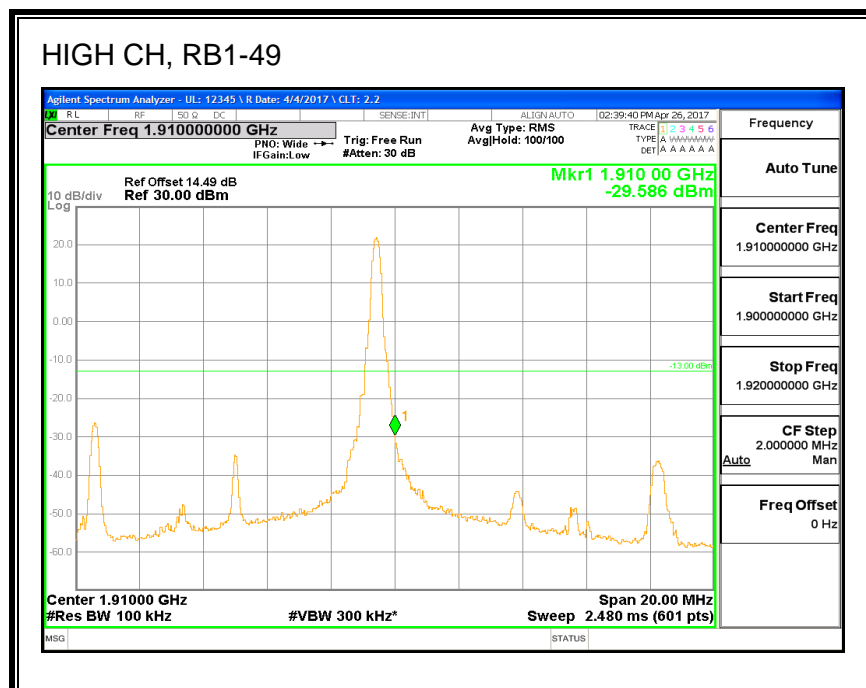
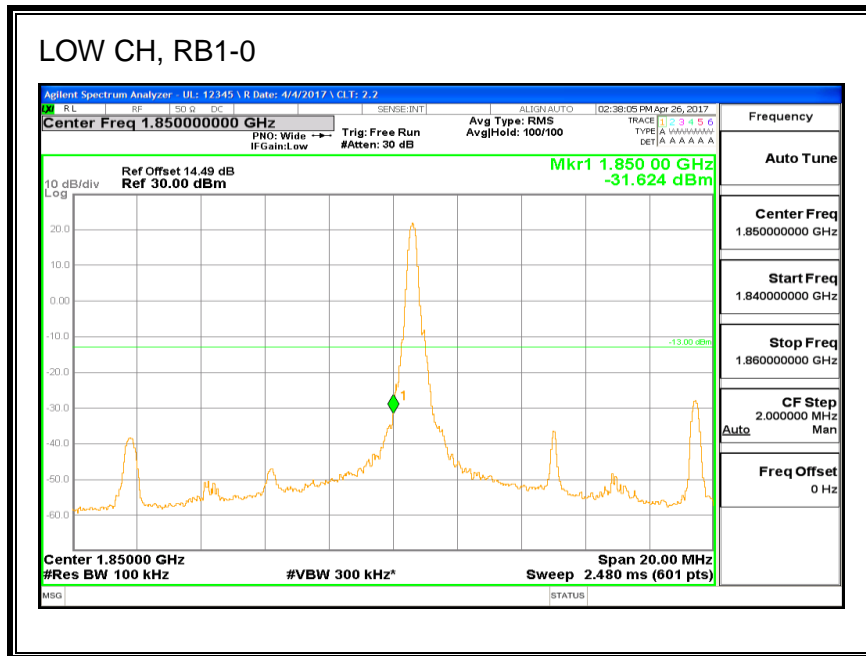


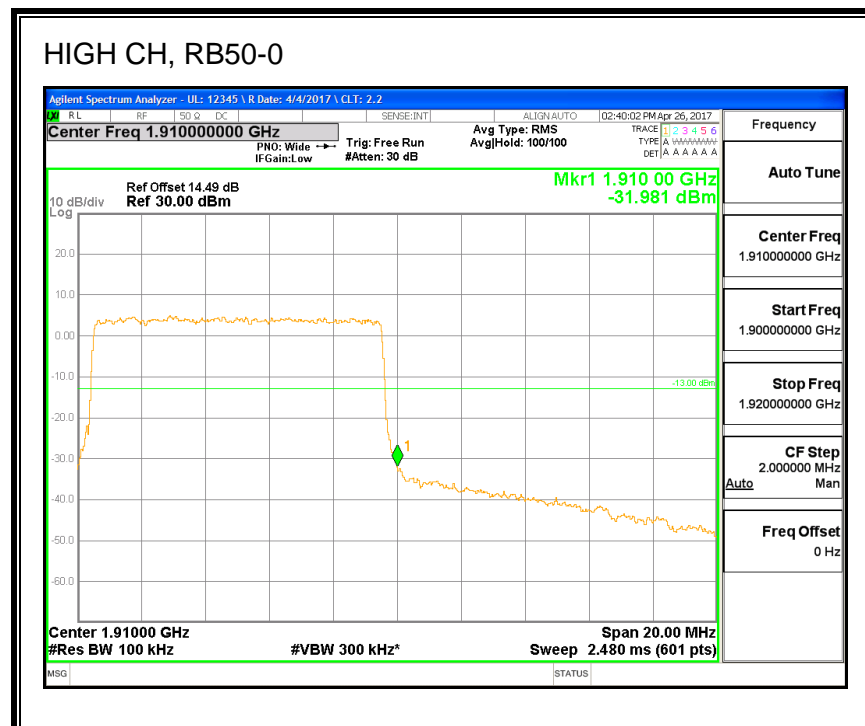
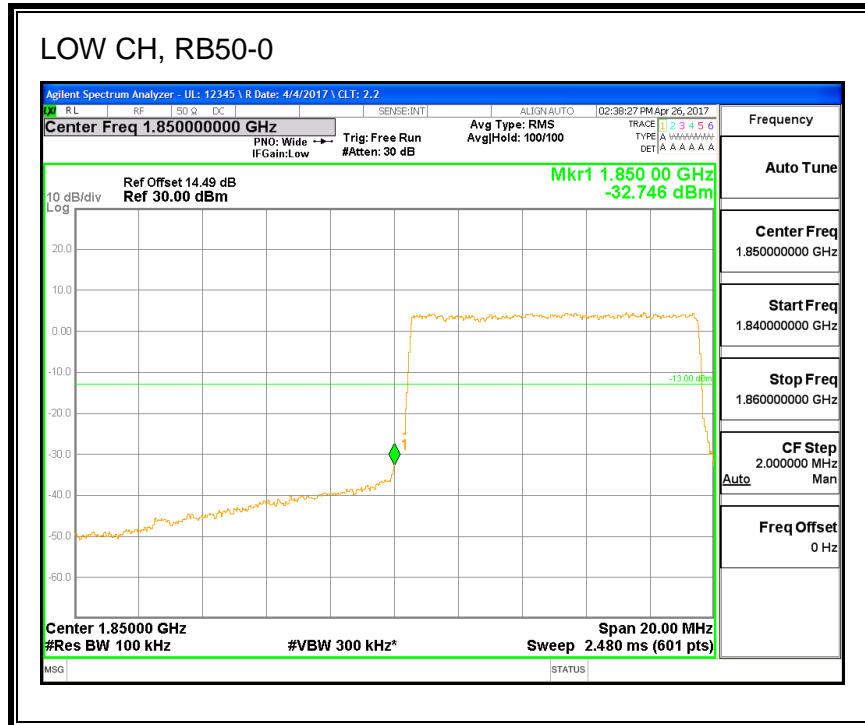
**HIGH CH, RB1-49**





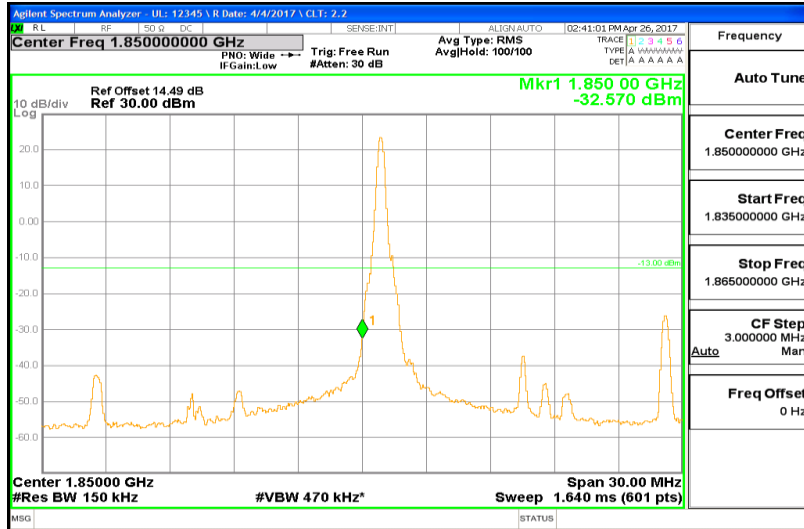
**16QAM, (10.0 MHz BAND WIDTH)**



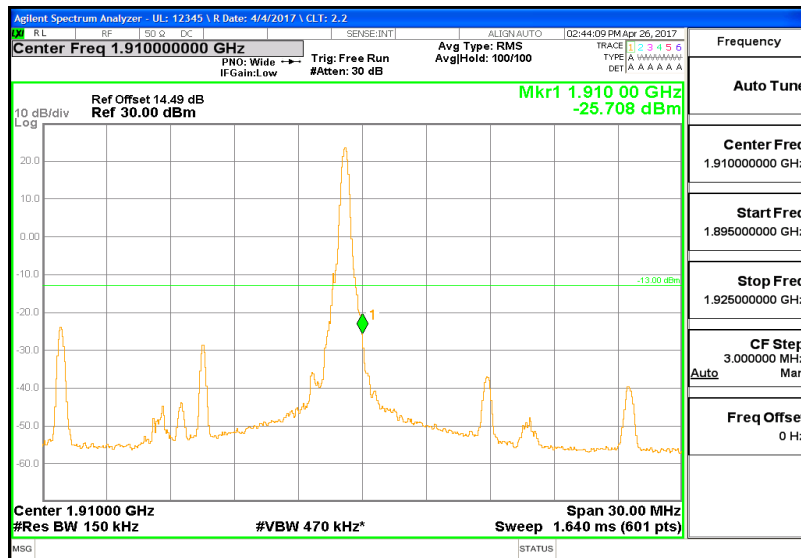


**QPSK, (15.0 MHz BAND WIDTH)**

**LOW CH, RB1-0**

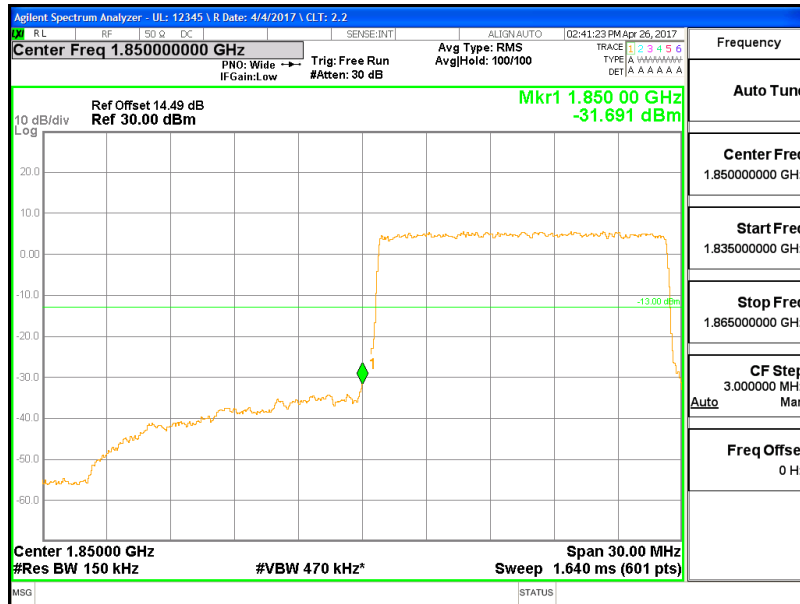


**HIGH CH, RB1-74**

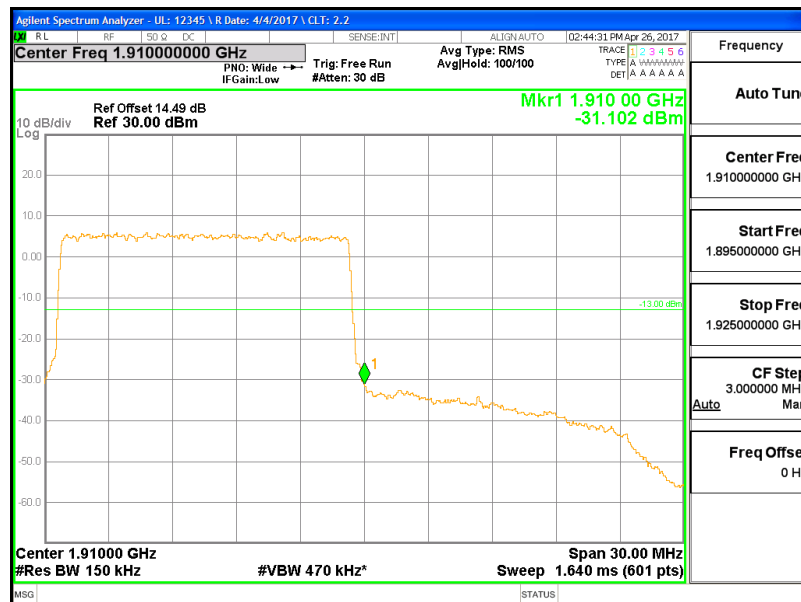




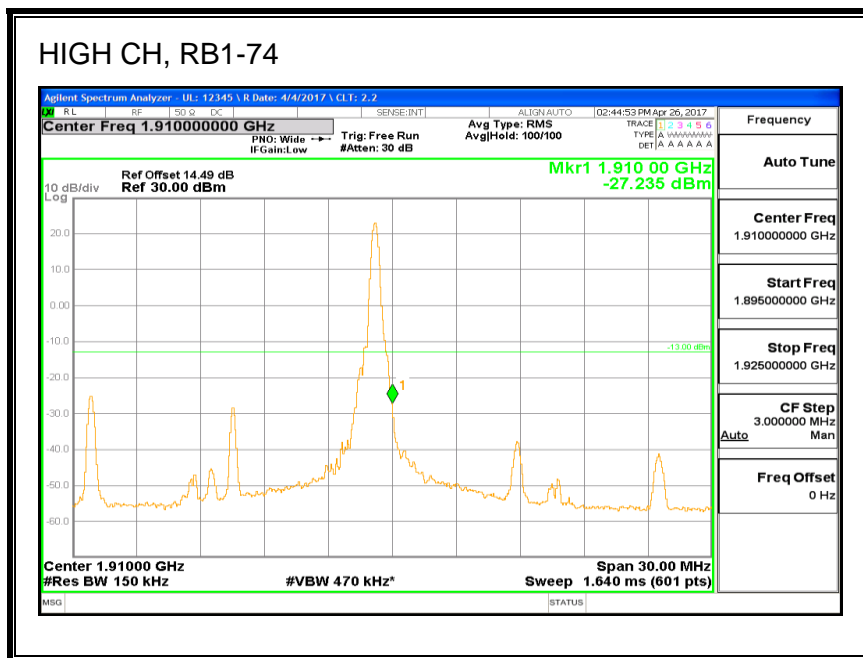
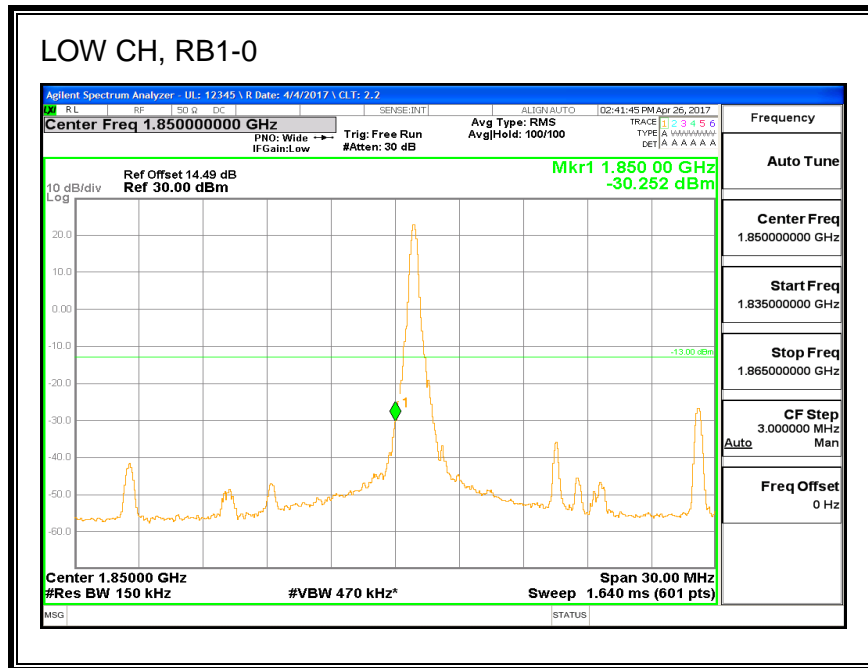
### LOW CH, RB75-0



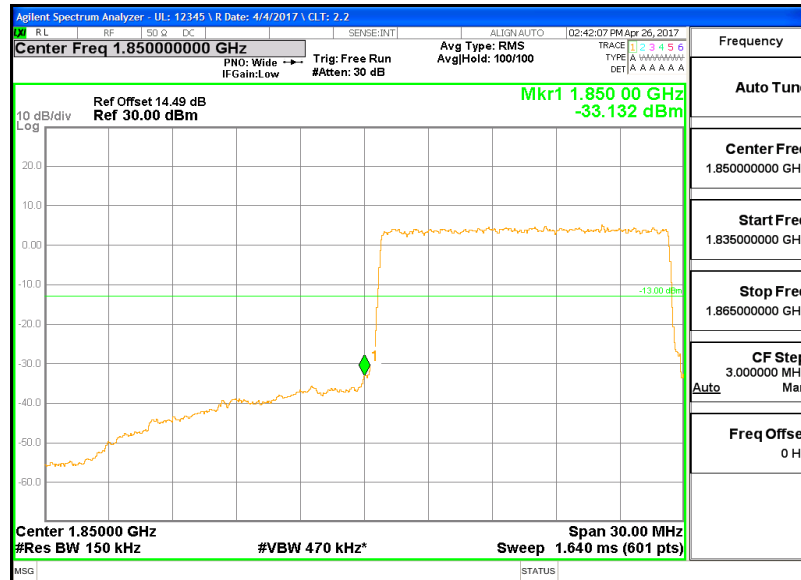
### HIGH CH, RB75-0



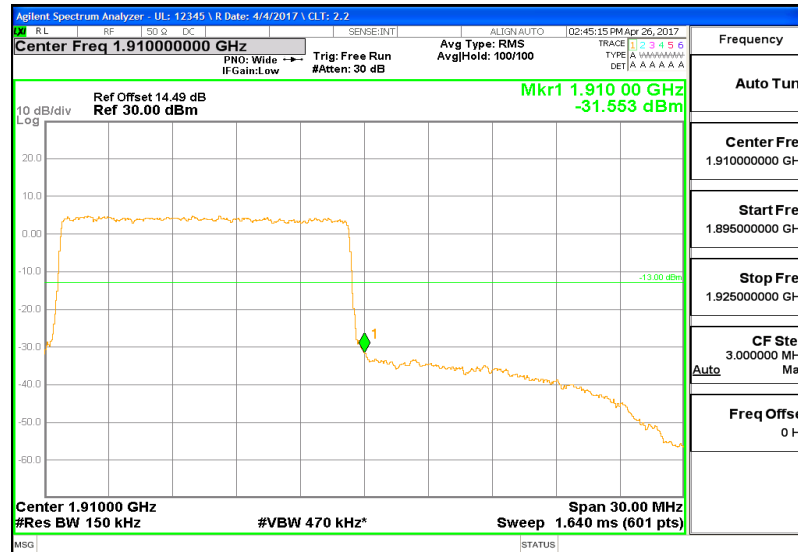
**16QAM, (15.0 MHz BAND WIDTH)**



### LOW CH, RB75-0



### HIGH CH, RB75-0



**QPSK, (20.0 MHz BAND WIDTH)**

