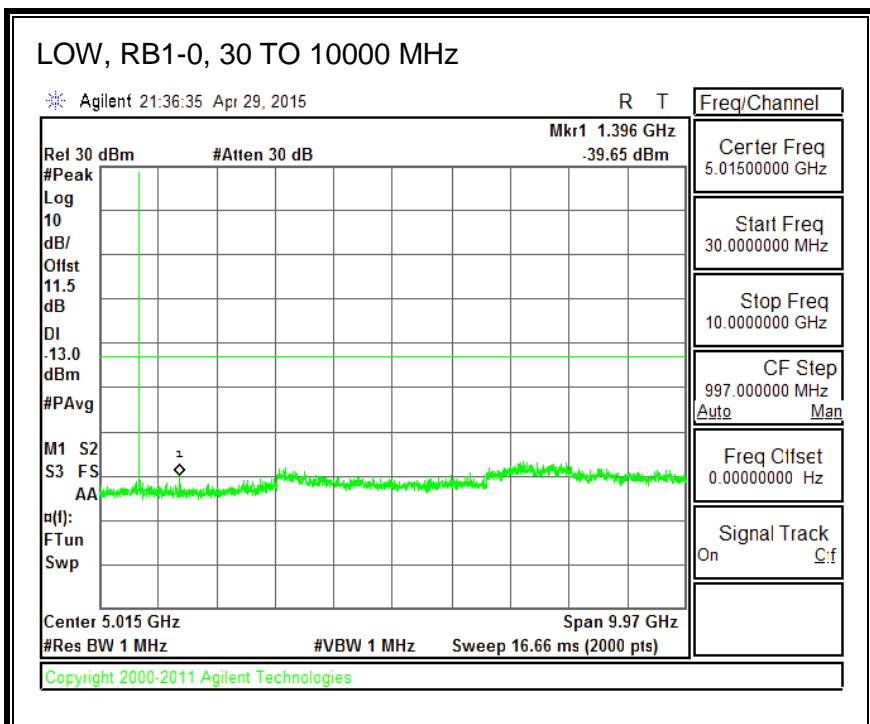
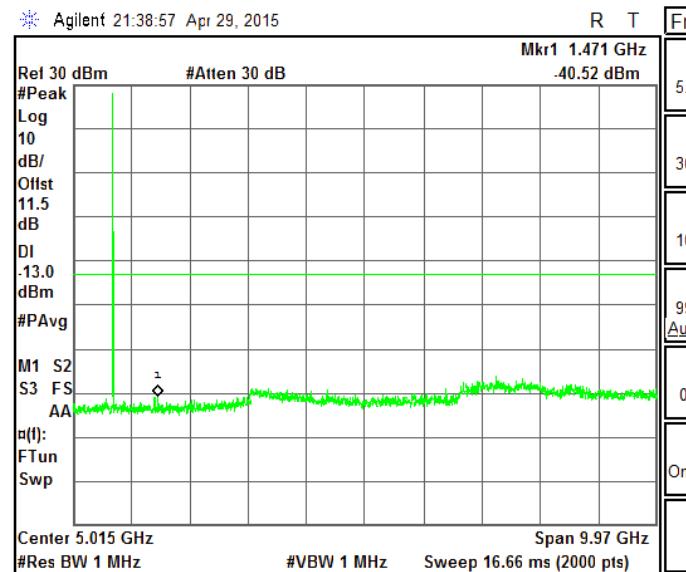


### 16QAM, (1.4 MHz BAND WIDTH)



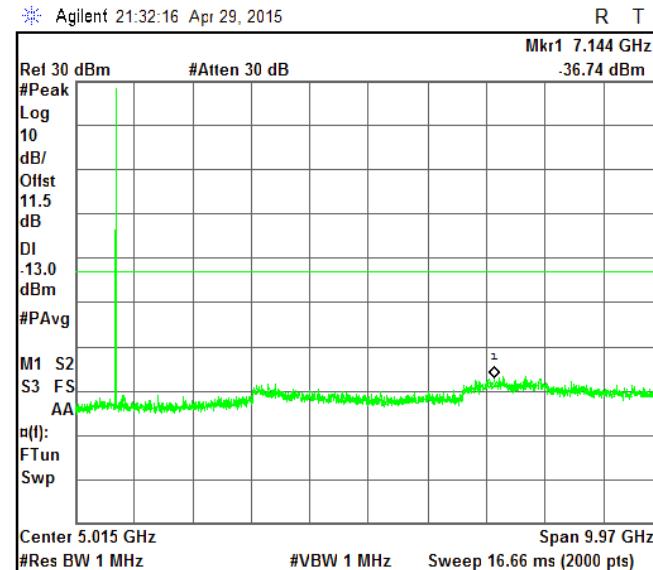
## MID, RB1-0, 30 TO 10000 MHz



## Freq/Channel

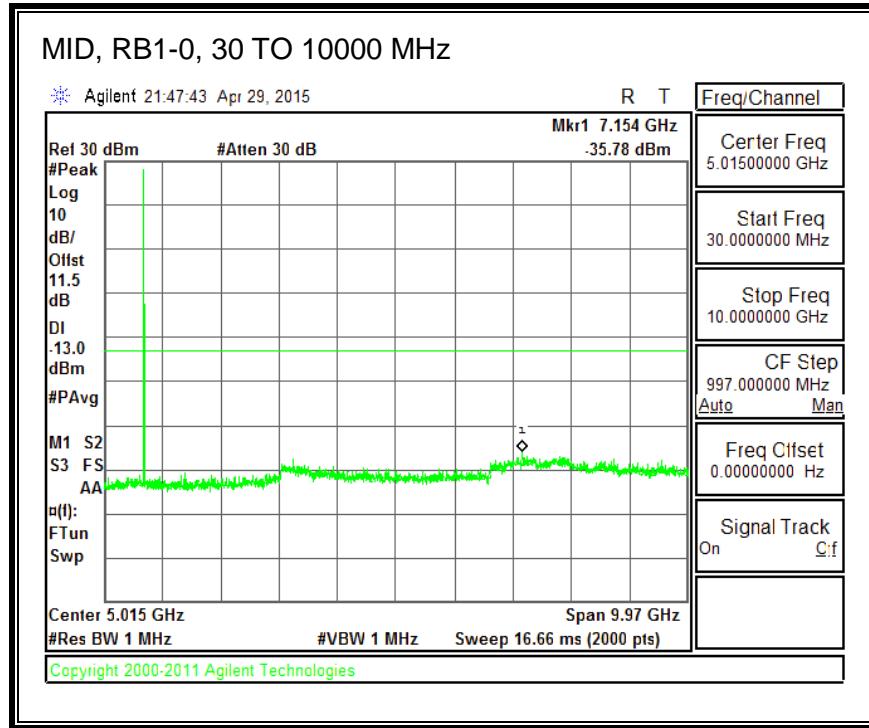
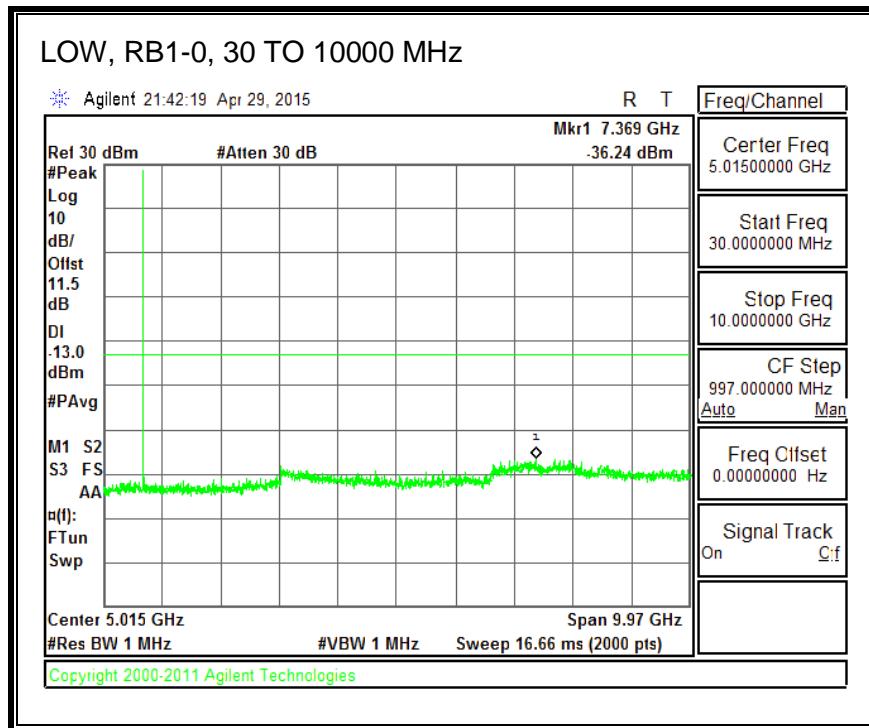
Center Freq  
5.0150000 GHzStart Freq  
30.0000000 MHzStop Freq  
10.0000000 GHzCF Step  
997.000000 MHz  
Auto ManFreq Clfset  
0.0000000 HzSignal Track  
On Clf

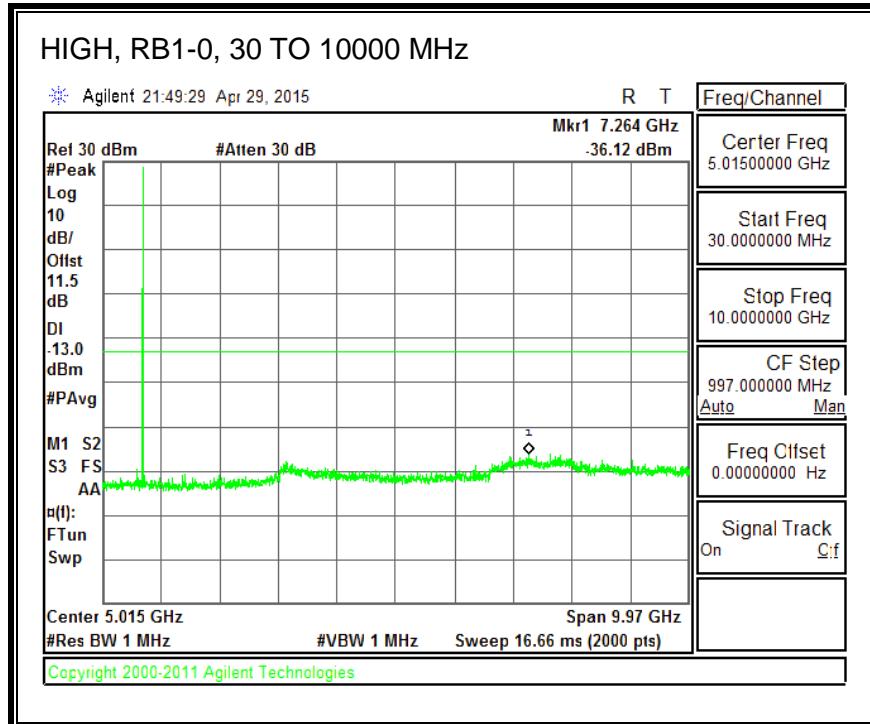
## HIGH, RB1-0, 30 TO 10000 MHz



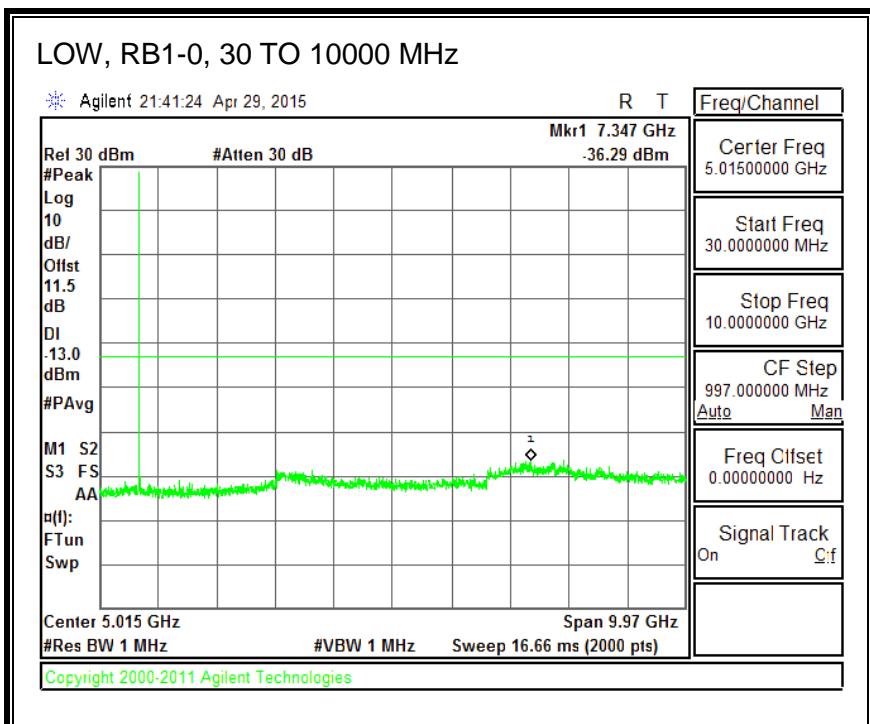
## Freq/Channel

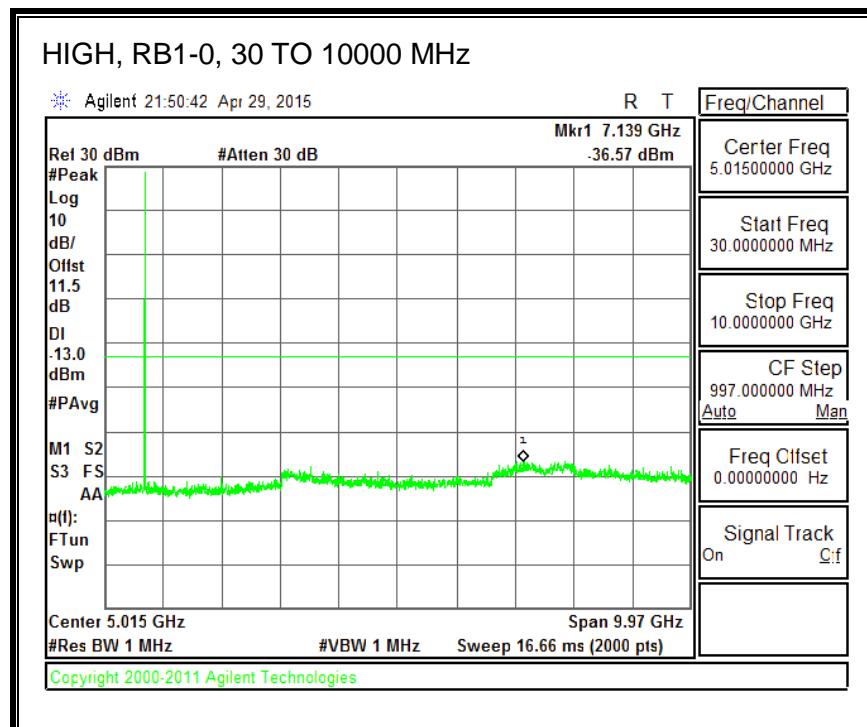
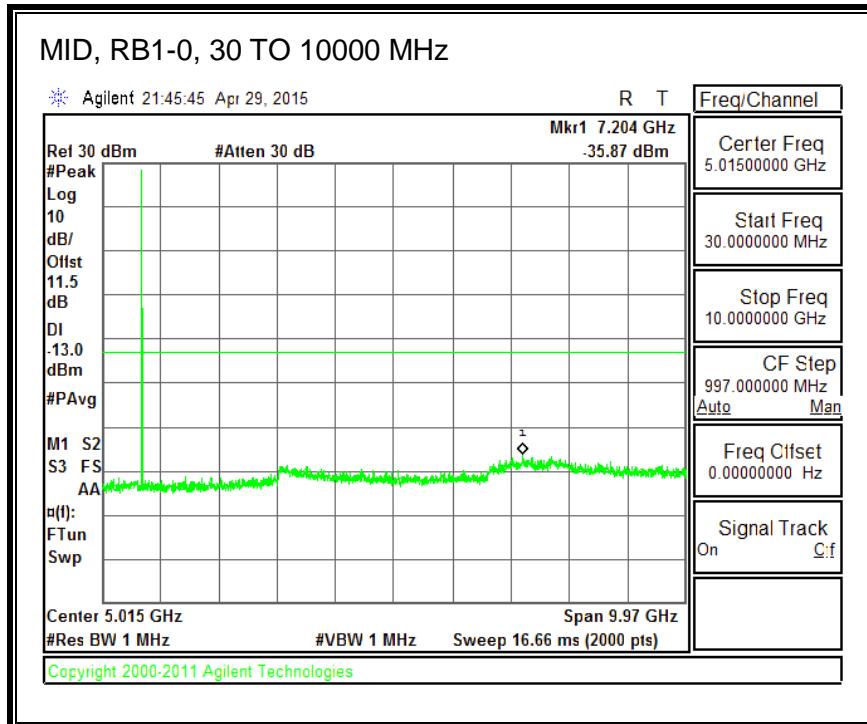
Center Freq  
5.0150000 GHzStart Freq  
30.0000000 MHzStop Freq  
10.0000000 GHzCF Step  
997.000000 MHz  
Auto ManFreq Clfset  
0.0000000 HzSignal Track  
On Clf

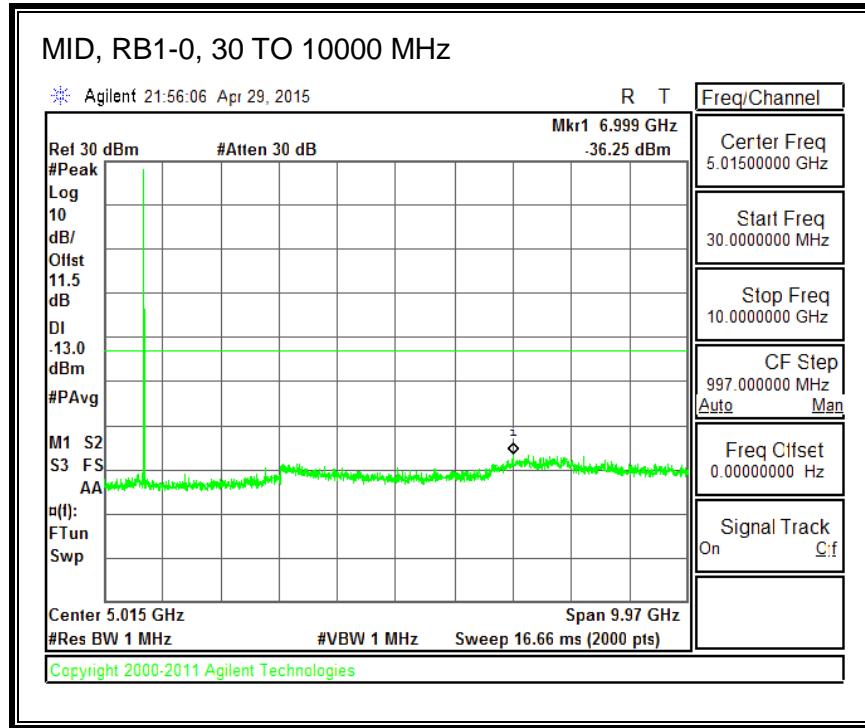
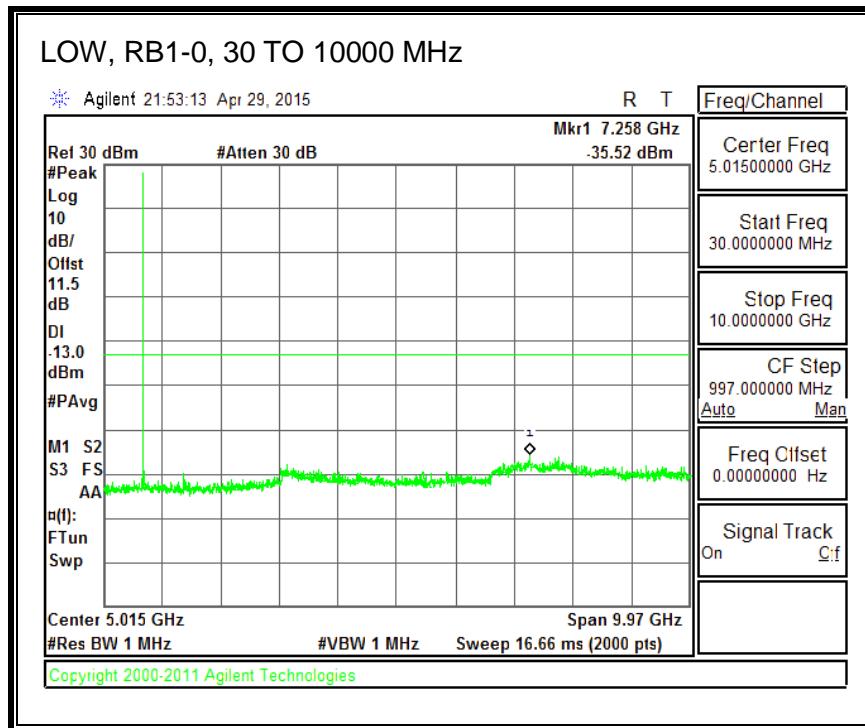
**QPSK, (3.0 MHz BAND WIDTH)**

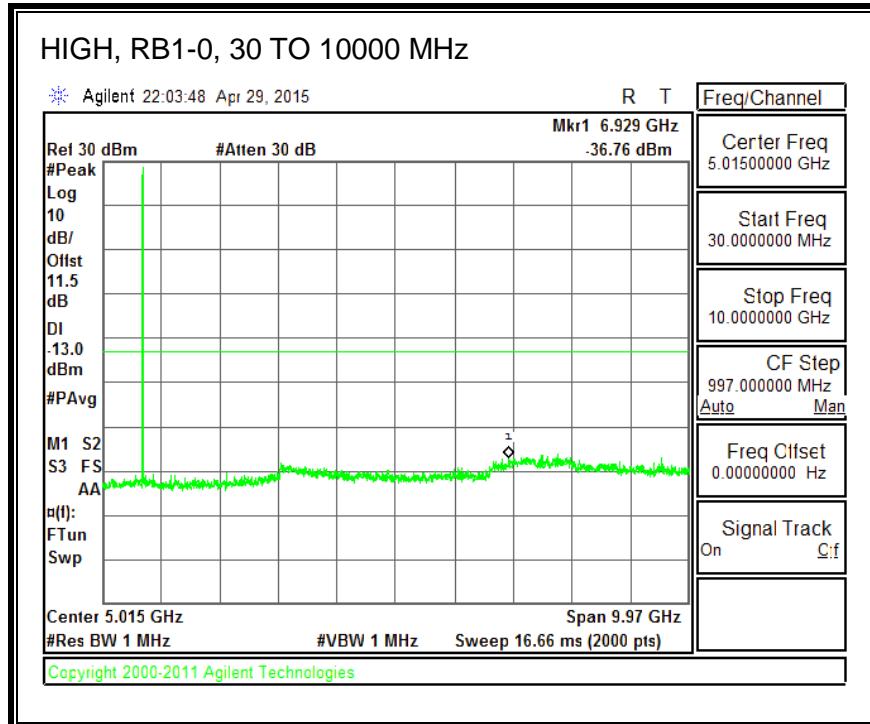


### 16QAM, (3.0 MHz BAND WIDTH)

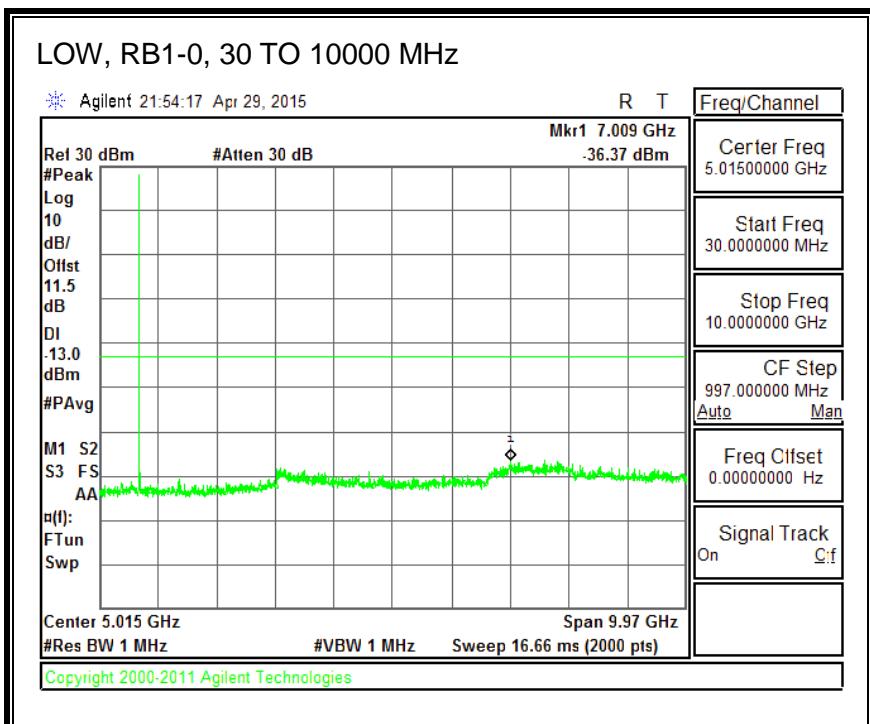


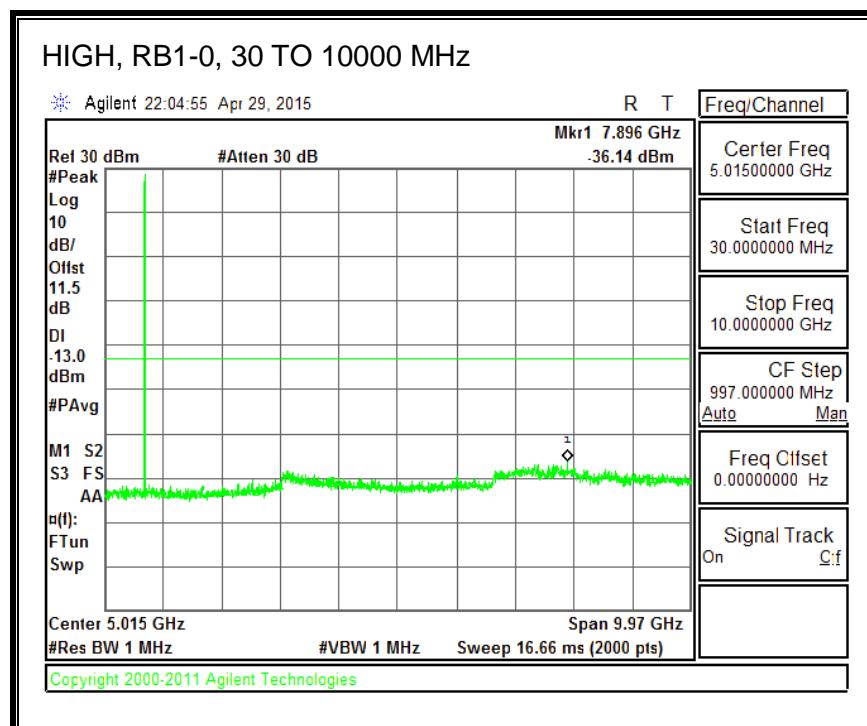
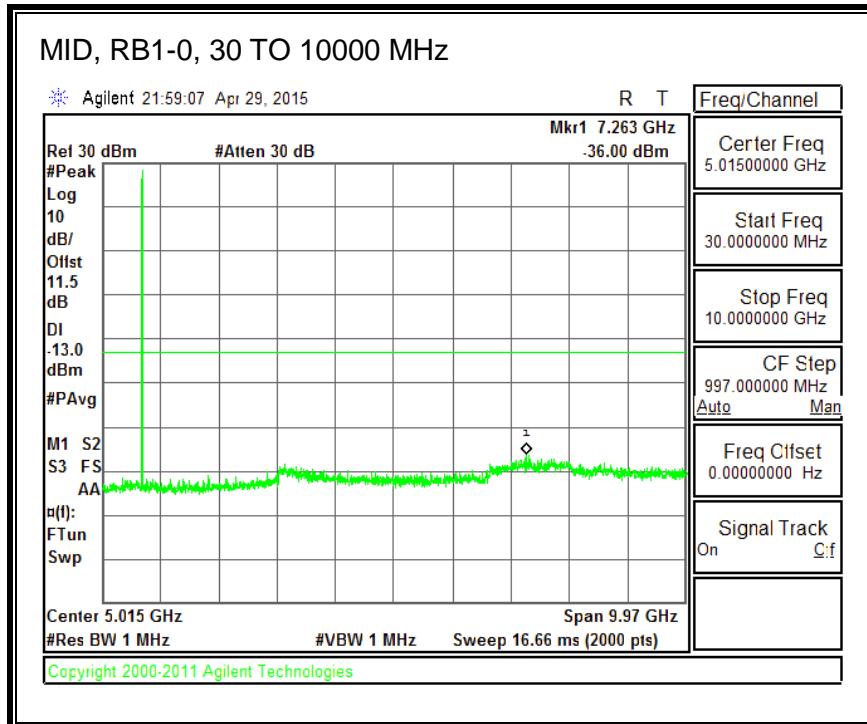


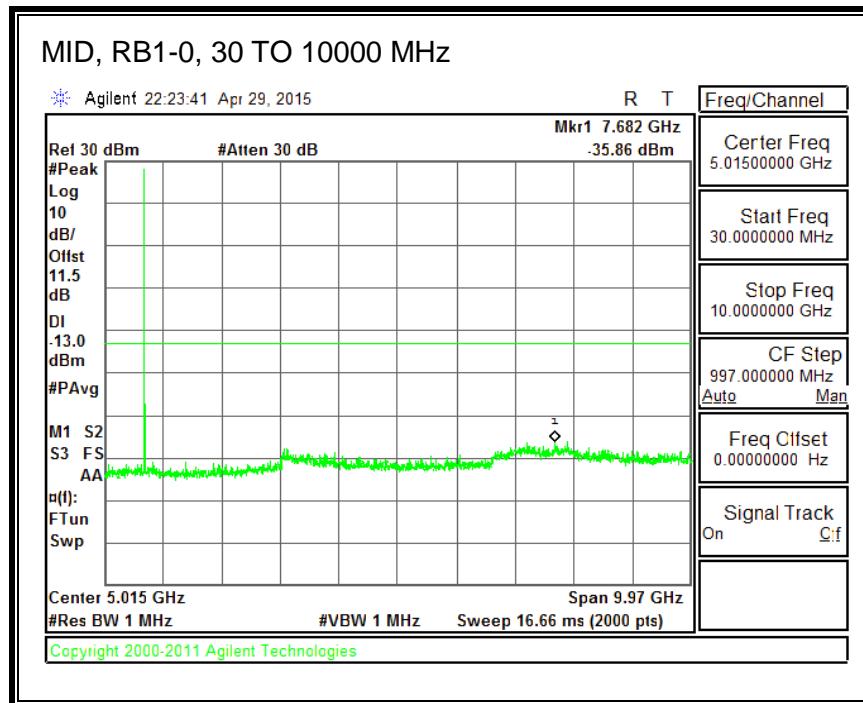
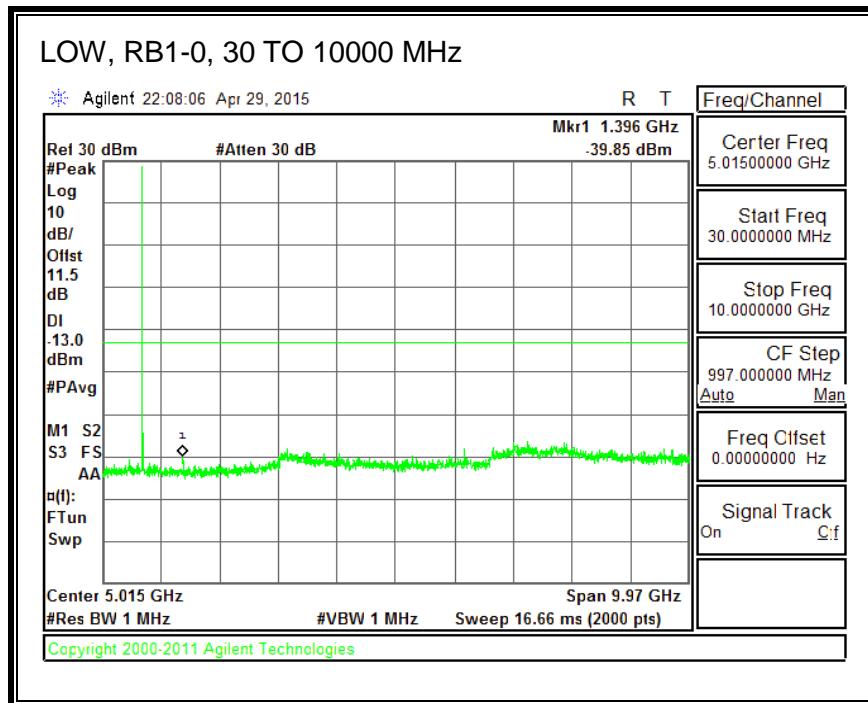
**QPSK, (5.0 MHz BAND WIDTH)**

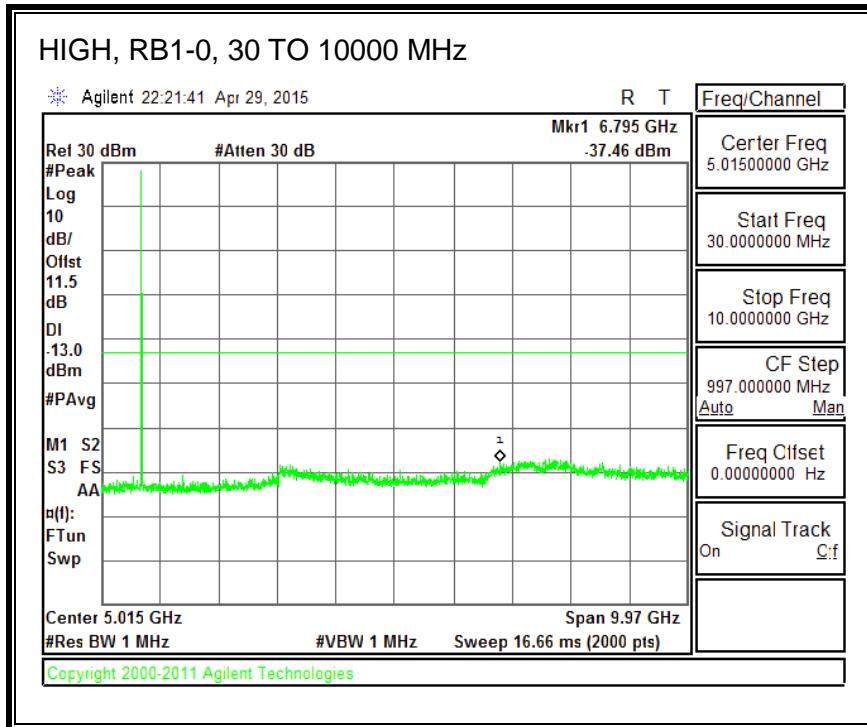


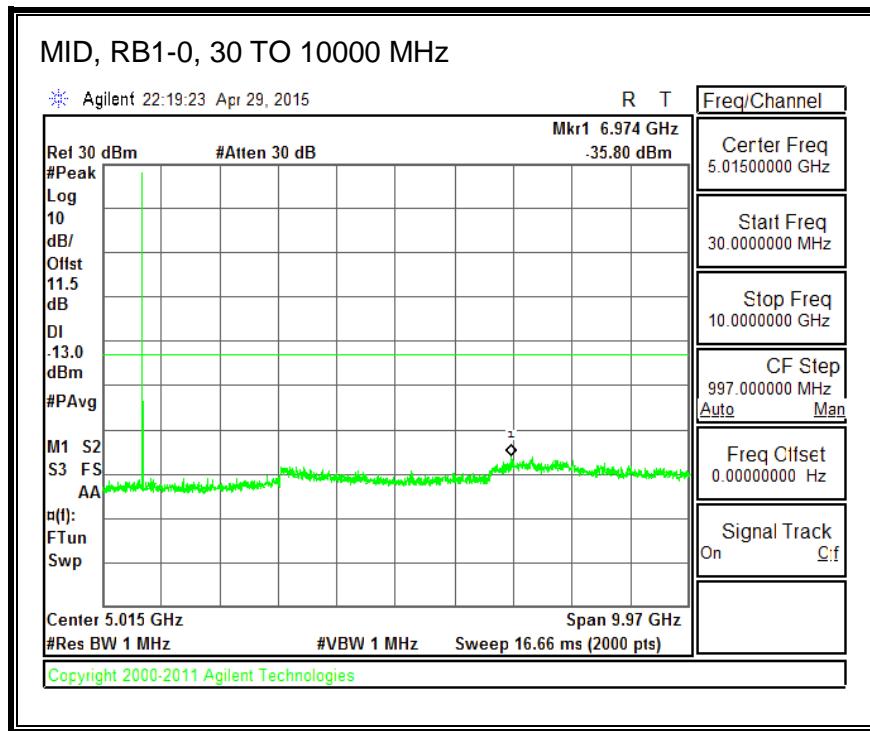
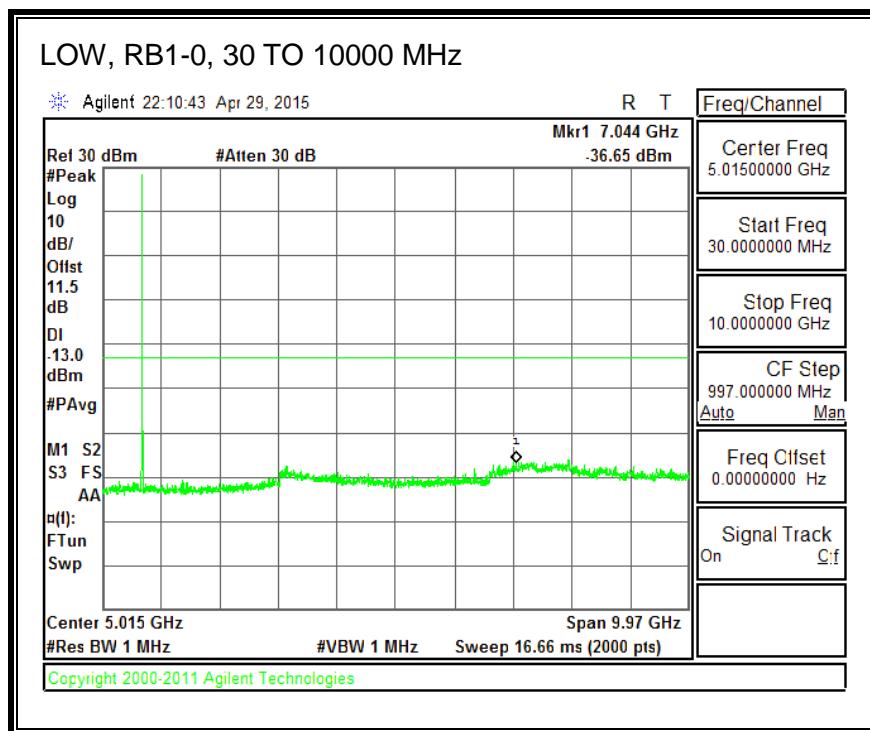
### 16QAM, (5.0 MHz BAND WIDTH)

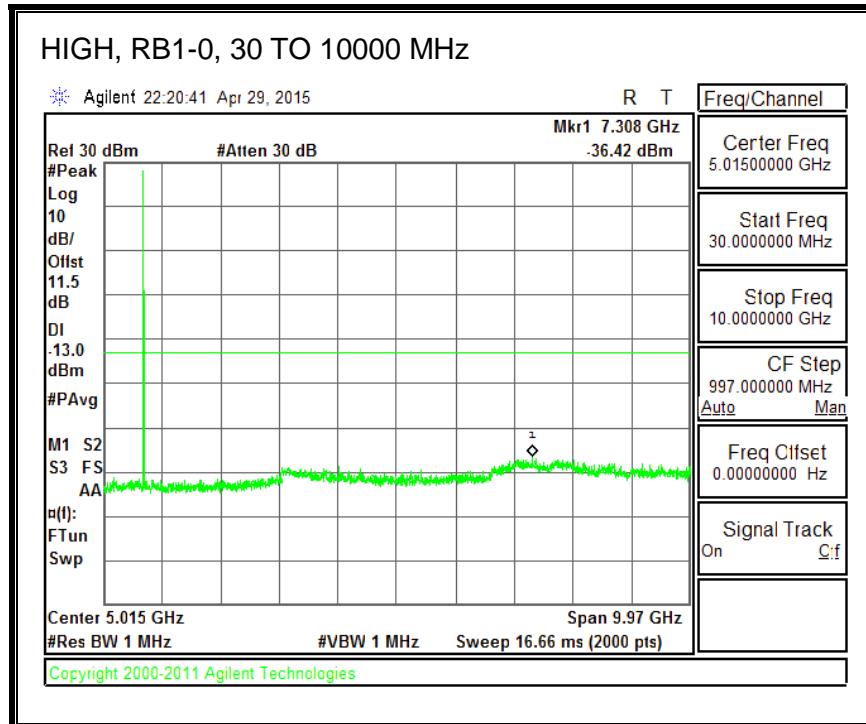


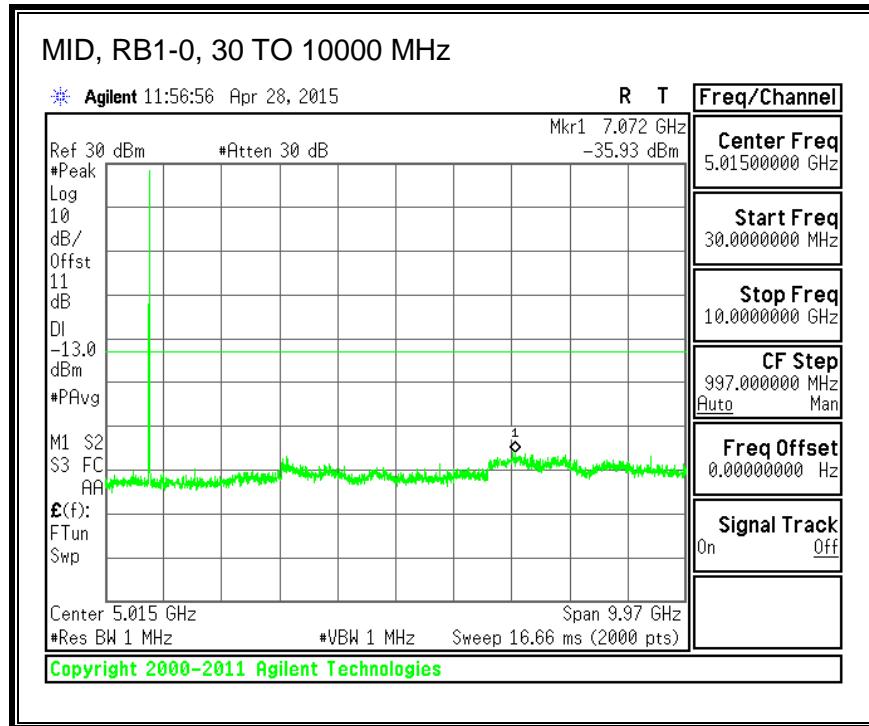
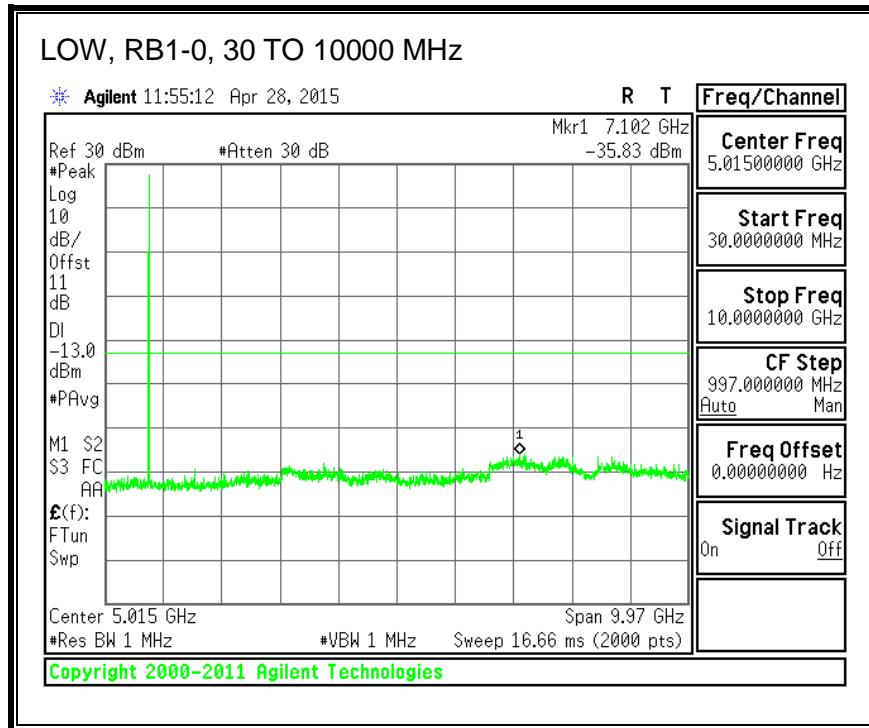


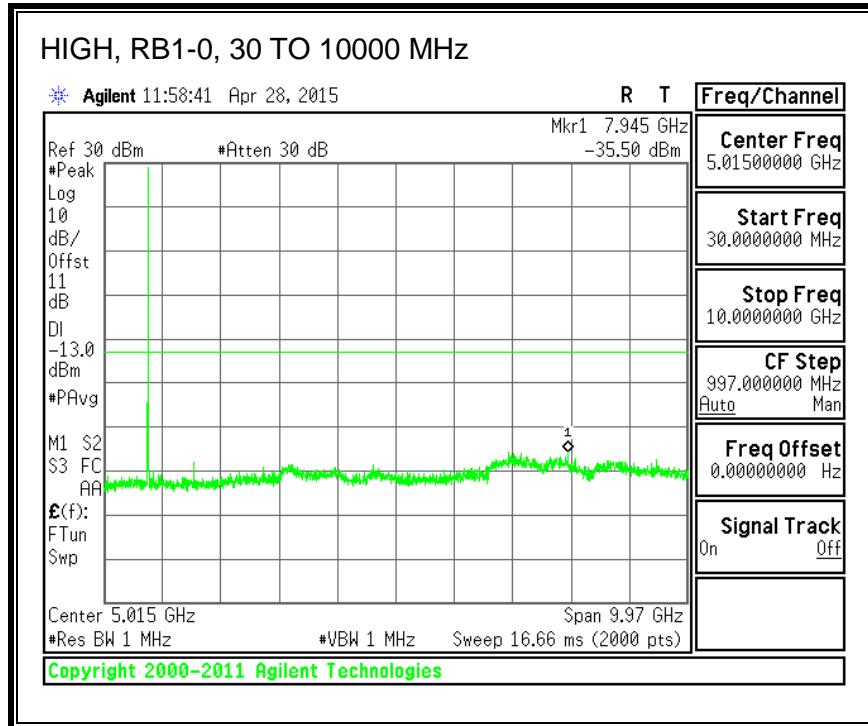
**QPSK, (10.0 MHz BAND WIDTH)**



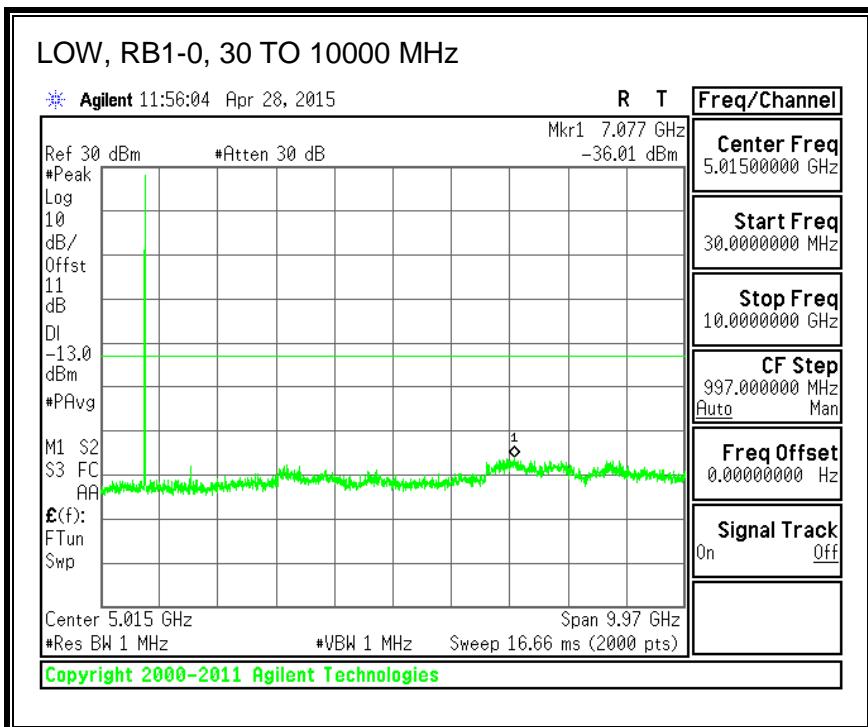
**16QAM, (10.0 MHz BAND WIDTH)**



**8.5.6. LTE BAND 13****QPSK, (5.0 MHz BAND WIDTH)**

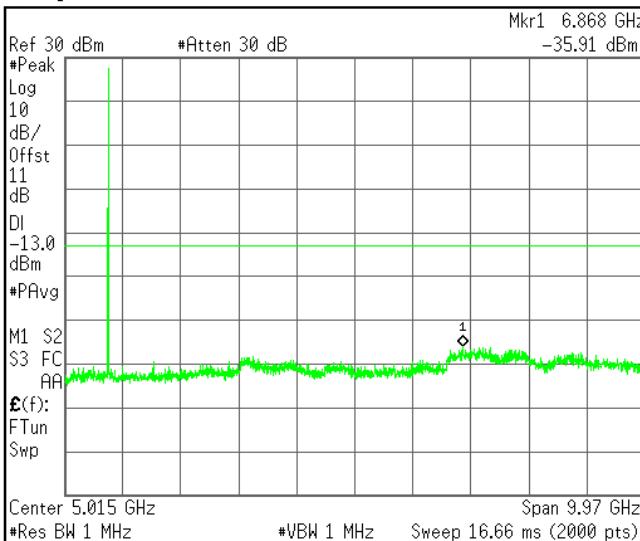


### 16QAM, (5.0 MHz BAND WIDTH)



## MID, RB1-0, 30 TO 10000 MHz

Agilent 11:57:48 Apr 28, 2015



R T Freq/Channel

Center Freq 5.01500000 GHz

Start Freq 30.00000000 MHz

Stop Freq 10.00000000 GHz

CF Step 997.0000000 MHz

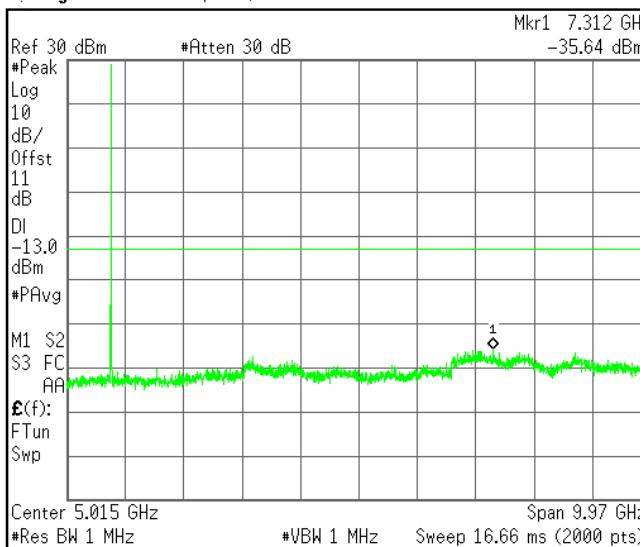
Freq Offset 0.00000000 Hz

Signal Track On/Off

Copyright 2000-2011 Agilent Technologies

## HIGH, RB1-0, 30 TO 10000 MHz

Agilent 11:59:34 Apr 28, 2015



R T Freq/Channel

Center Freq 5.01500000 GHz

Start Freq 30.00000000 MHz

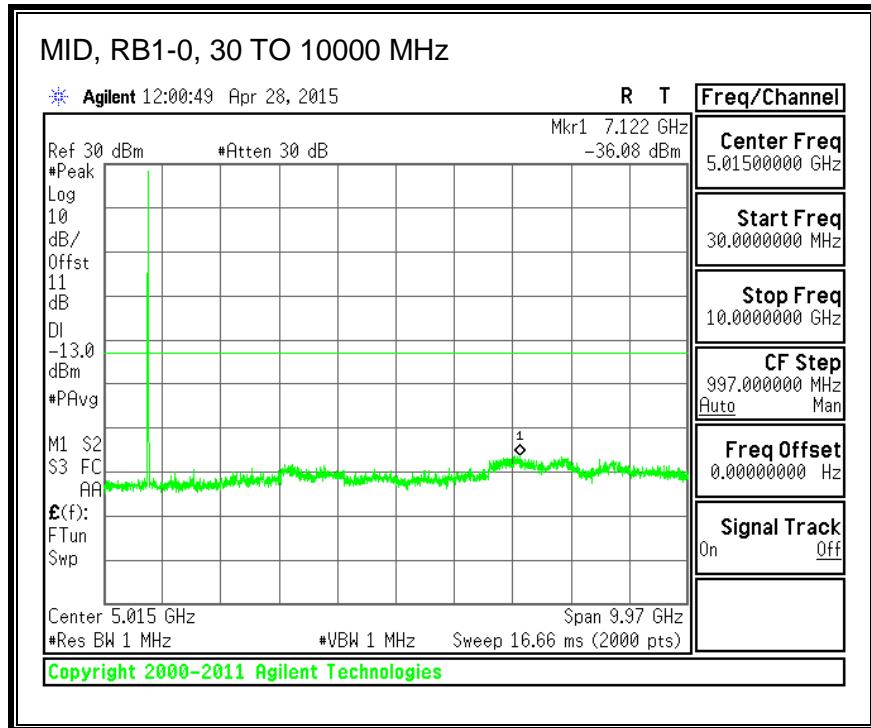
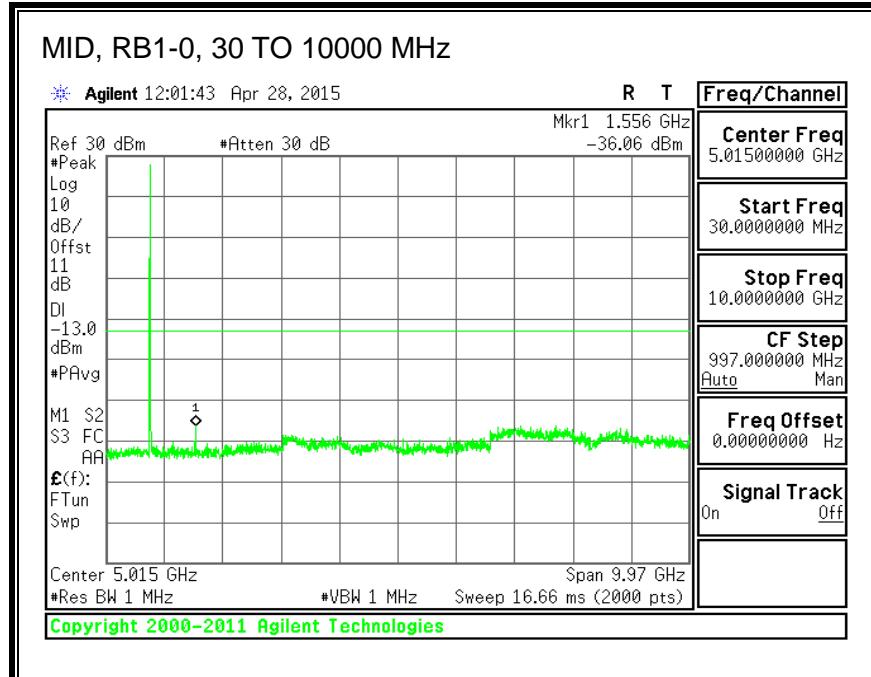
Stop Freq 10.00000000 GHz

CF Step 997.0000000 MHz

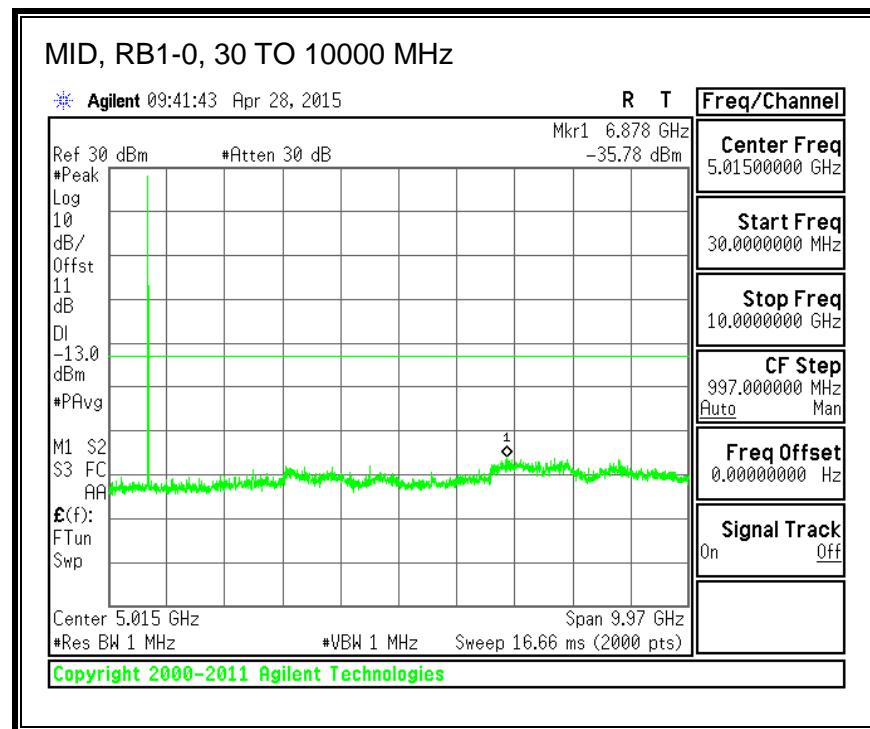
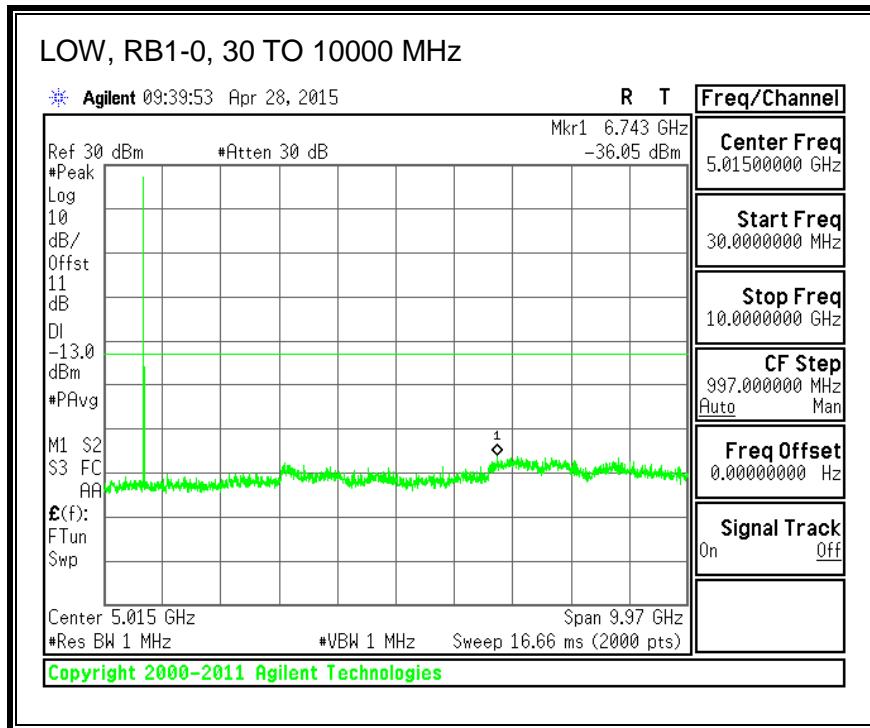
Freq Offset 0.00000000 Hz

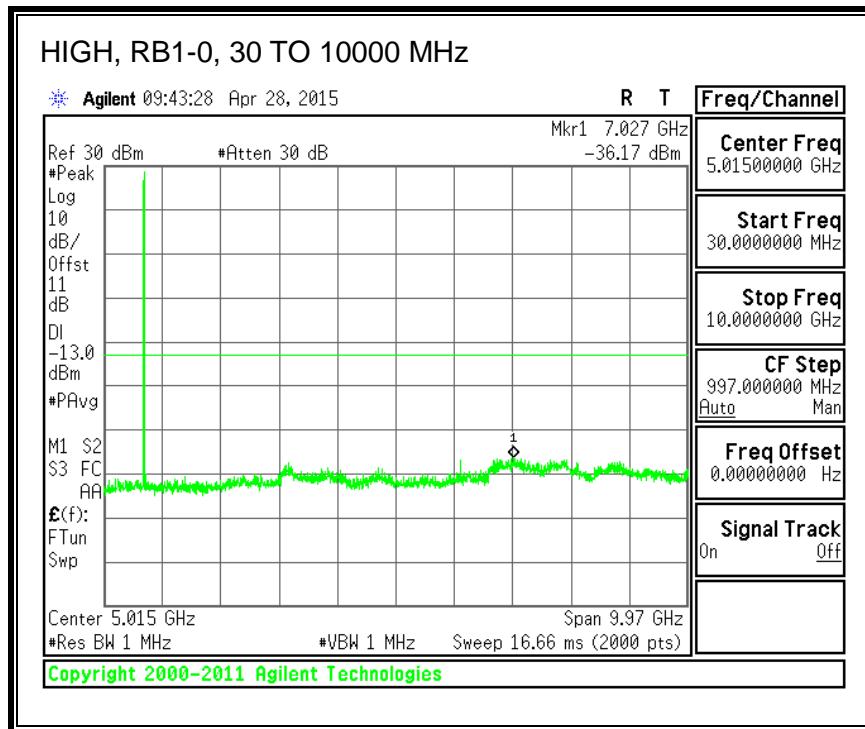
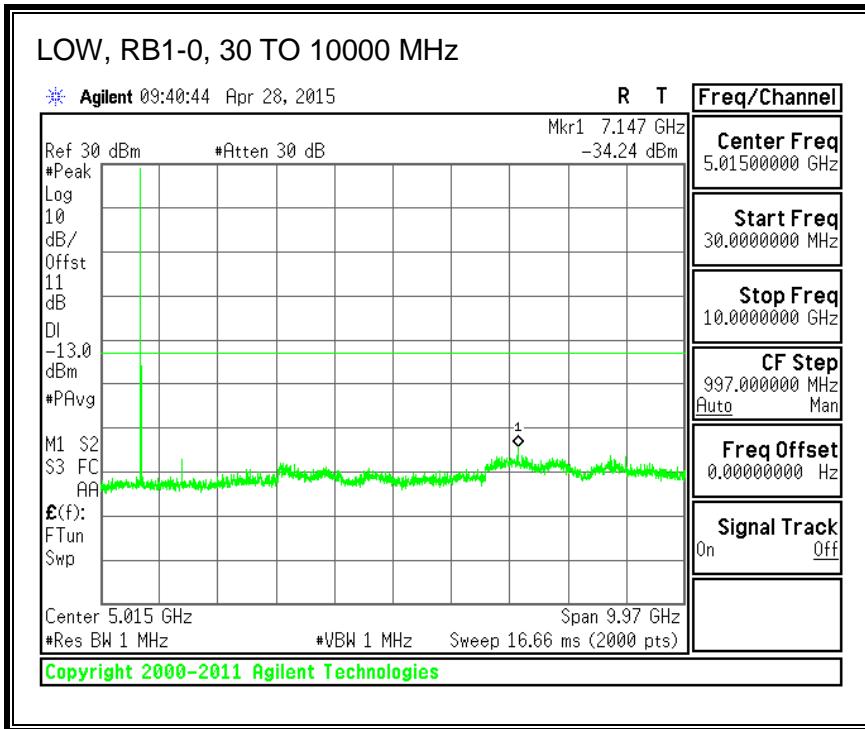
Signal Track On/Off

Copyright 2000-2011 Agilent Technologies

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

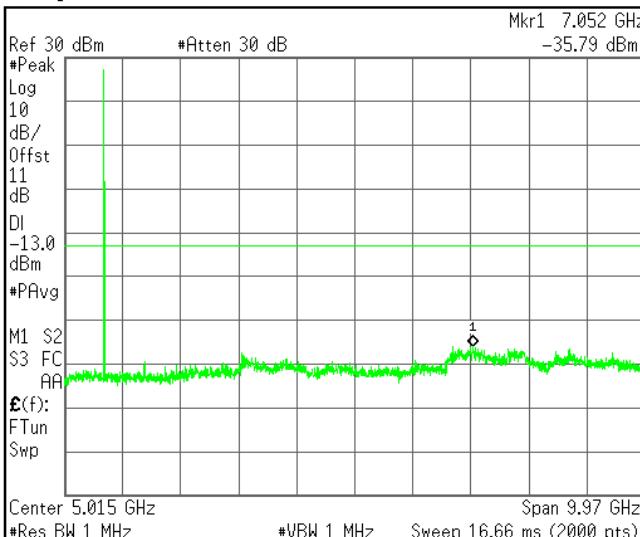
## 8.5.7. LTE BAND 17

QPSK, (5.0 MHz BAND WIDTH)

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

## MID, RB1-0, 30 TO 10000 MHz

\* Agilent 09:42:35 Apr 28, 2015



R T

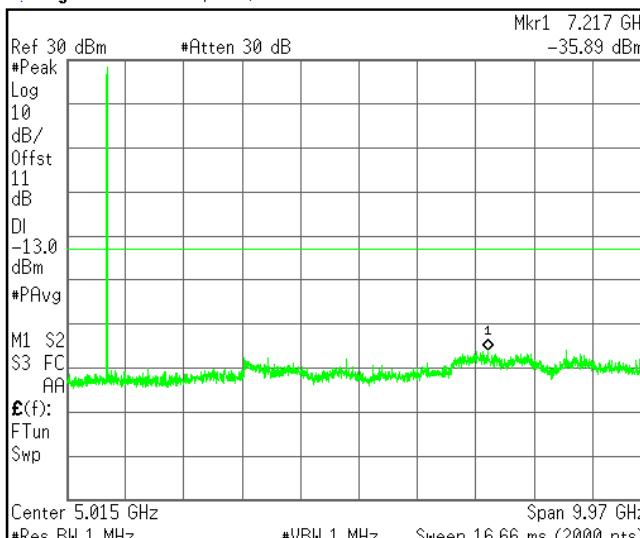
## Freq/Channel

Center Freq  
5.01500000 GHzStart Freq  
30.0000000 MHzStop Freq  
10.0000000 GHzCF Step  
997.0000000 MHz  
Auto      ManFreq Offset  
0.00000000 HzSignal Track  
On      Off

Copyright 2000-2011 Agilent Technologies

## HIGH, RB1-0, 30 TO 10000 MHz

\* Agilent 09:44:20 Apr 28, 2015

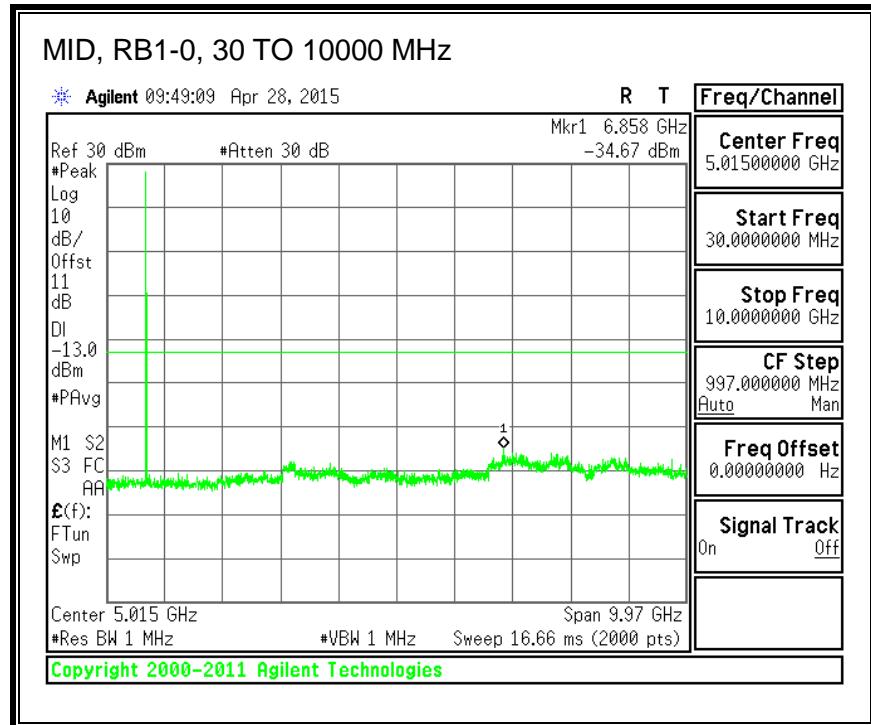
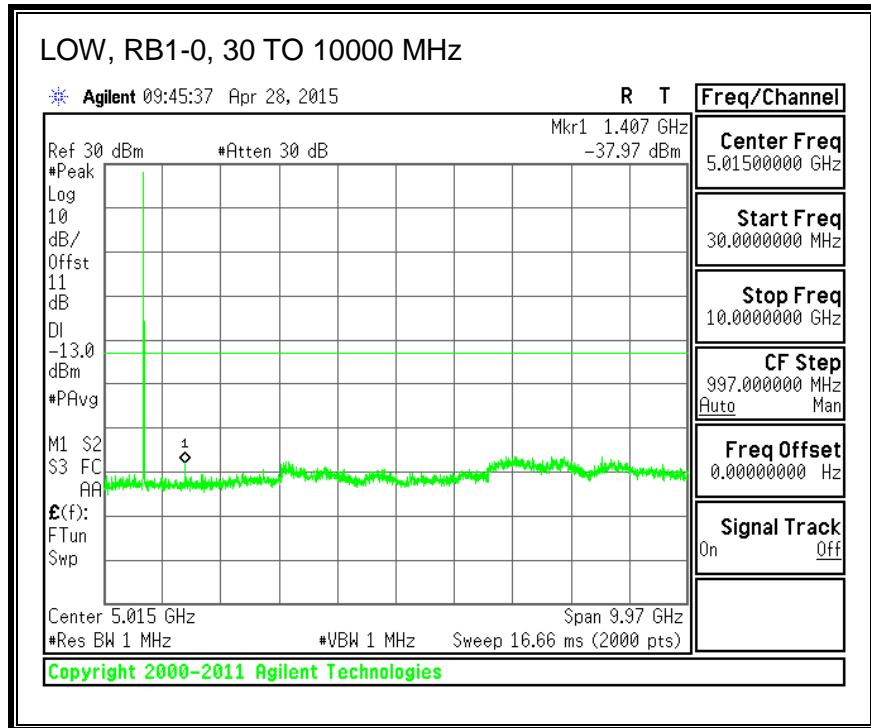


R T

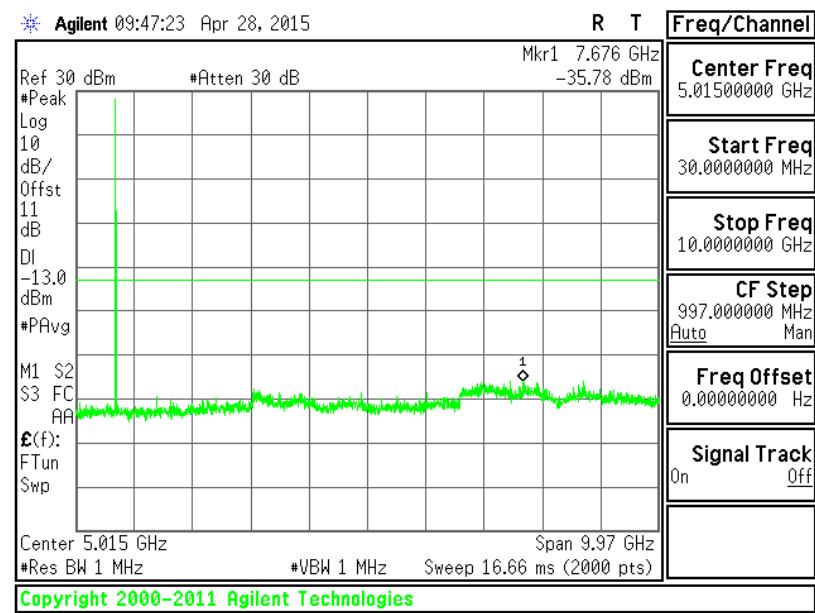
## Freq/Channel

Center Freq  
5.01500000 GHzStart Freq  
30.0000000 MHzStop Freq  
10.0000000 GHzCF Step  
997.0000000 MHz  
Auto      ManFreq Offset  
0.00000000 HzSignal Track  
On      Off

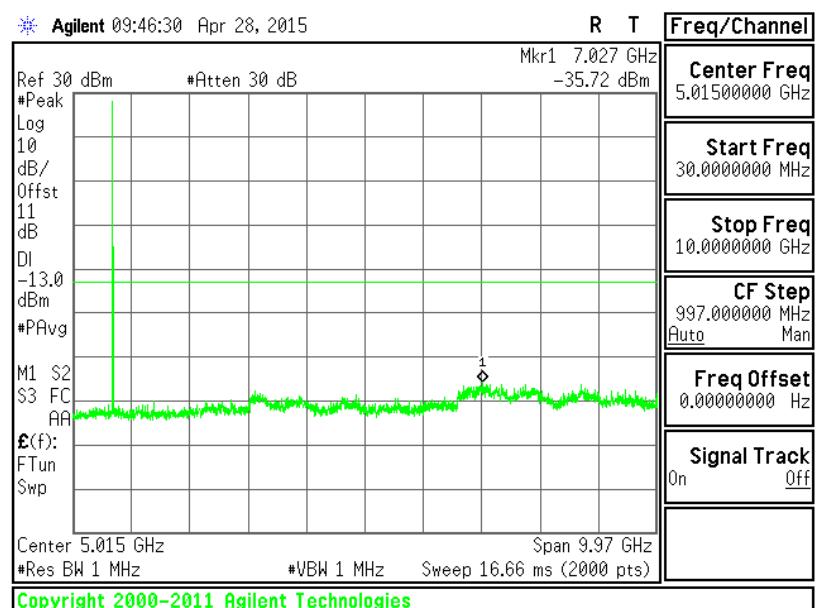
Copyright 2000-2011 Agilent Technologies

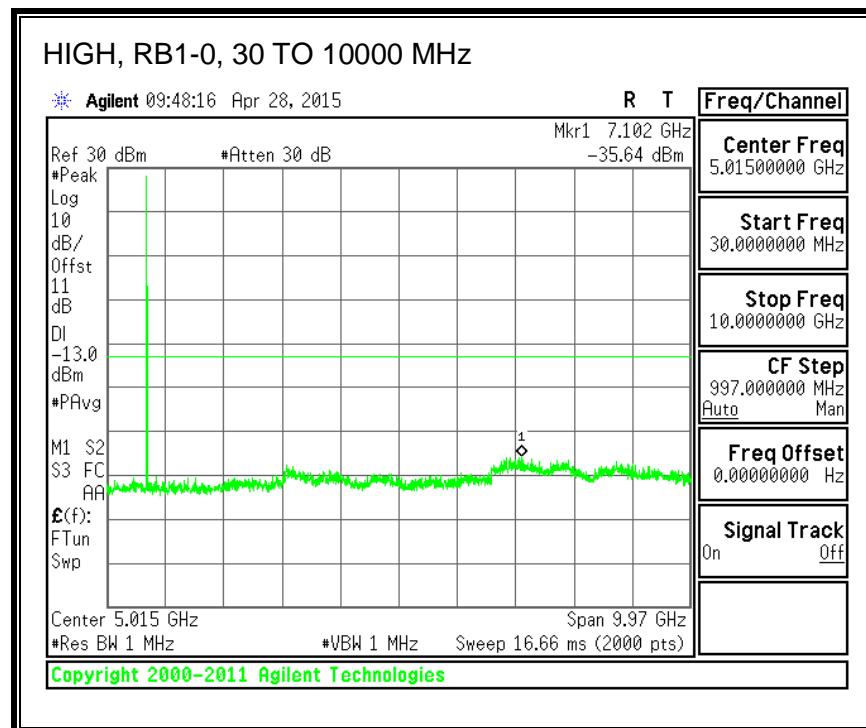
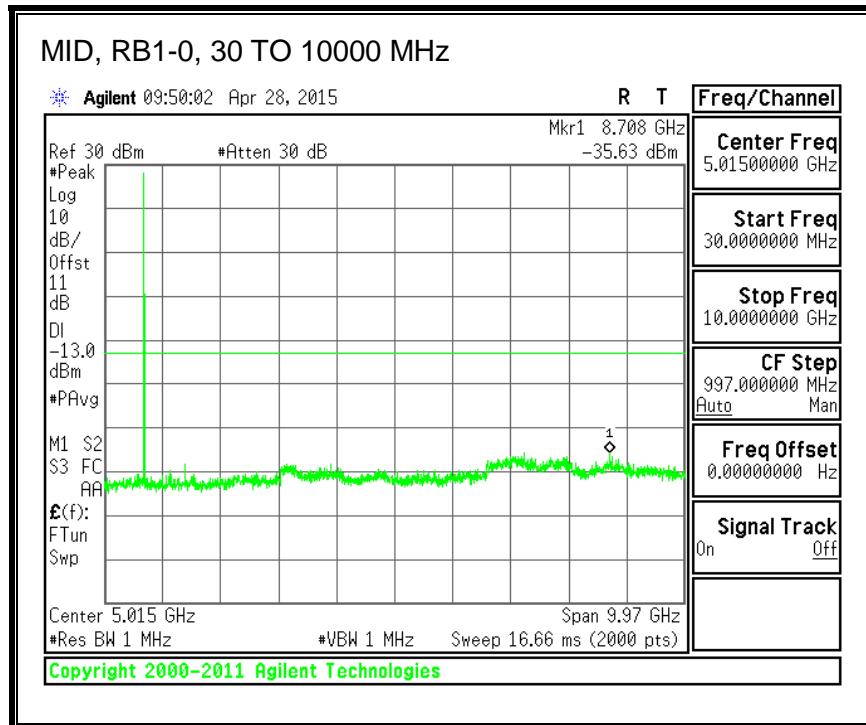
**QPSK, (10.0 MHz BAND WIDTH)**

## HIGH, RB1-0, 30 TO 10000 MHz

16QAM, (10.0 MHz BAND WIDTH)

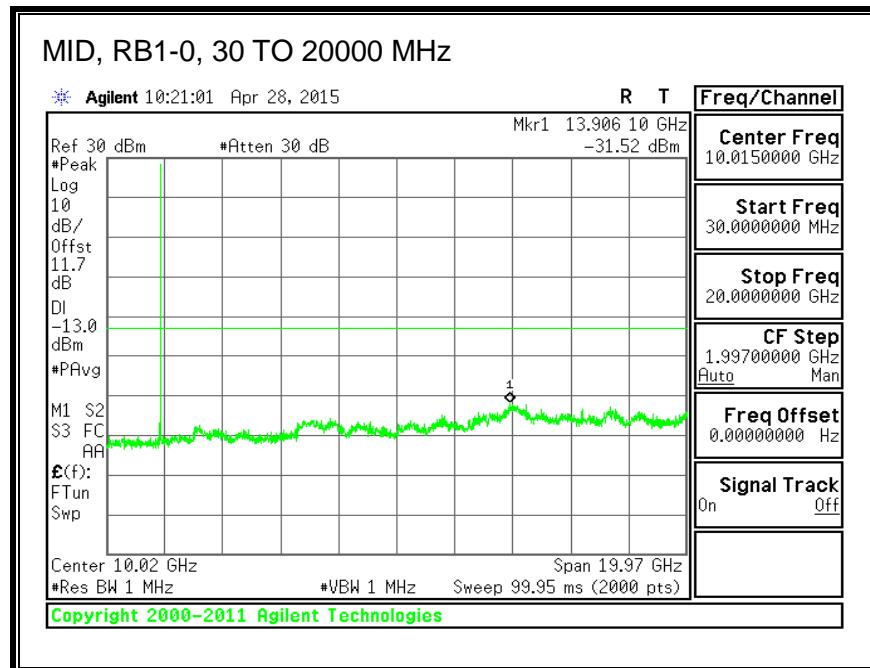
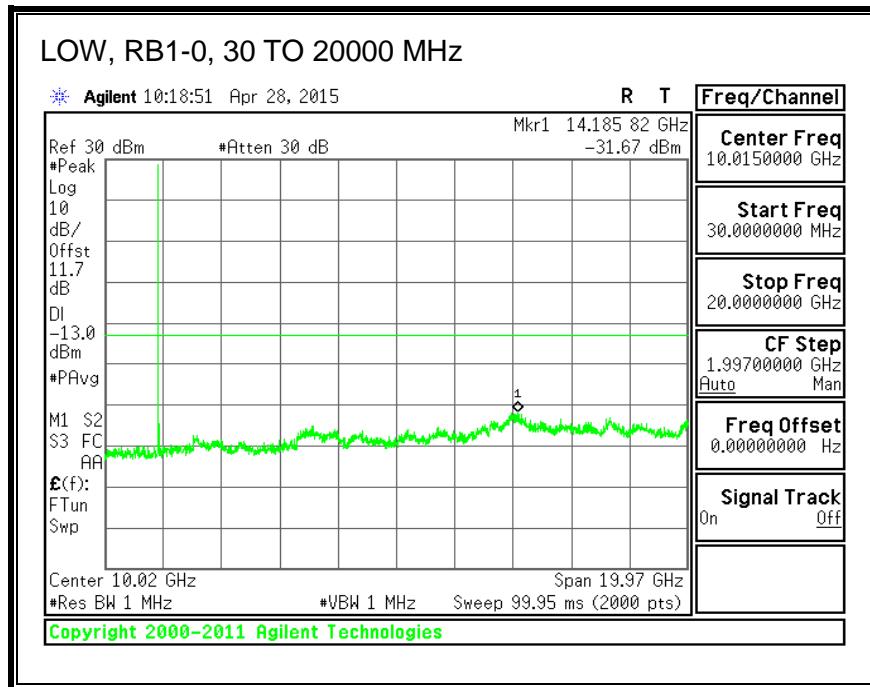
## LOW, RB1-0, 30 TO 10000 MHz

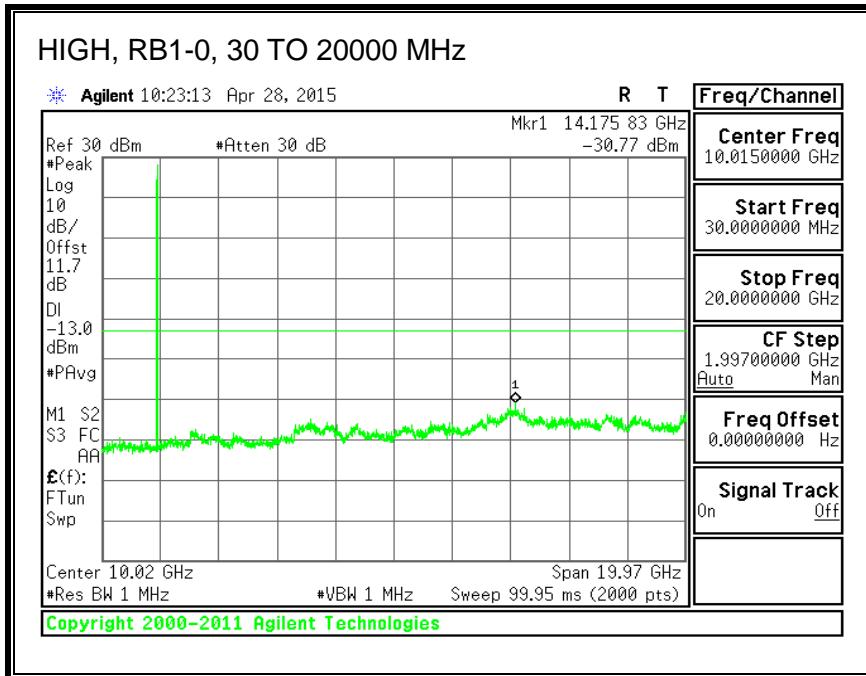




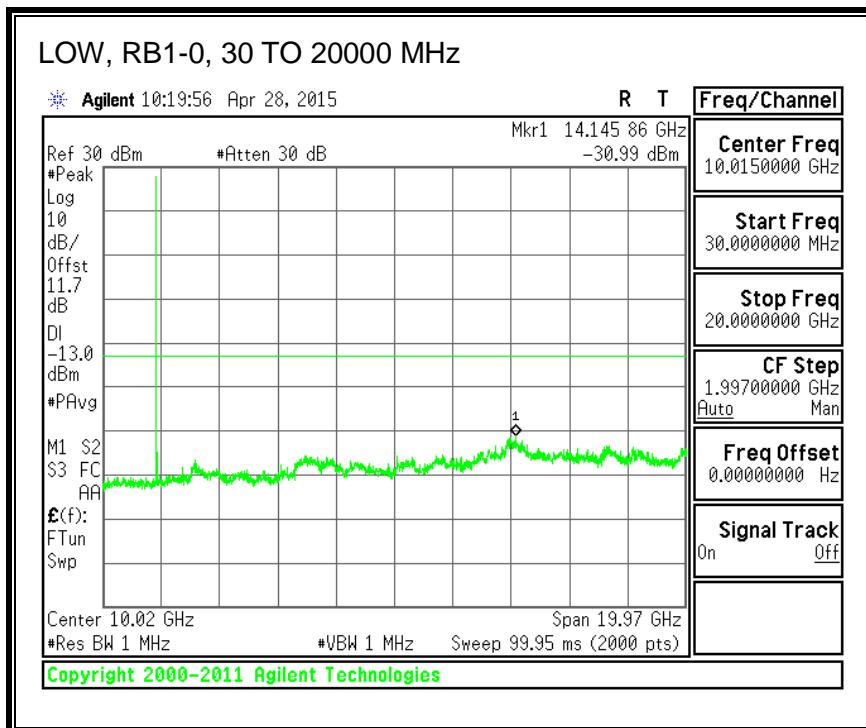
### 8.5.8. LTE BAND 25

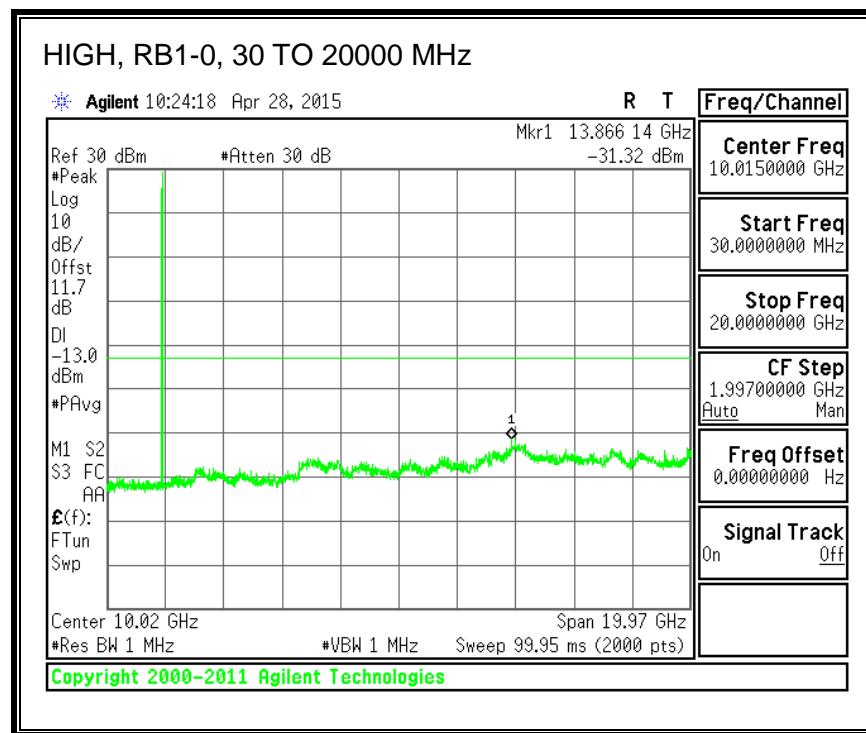
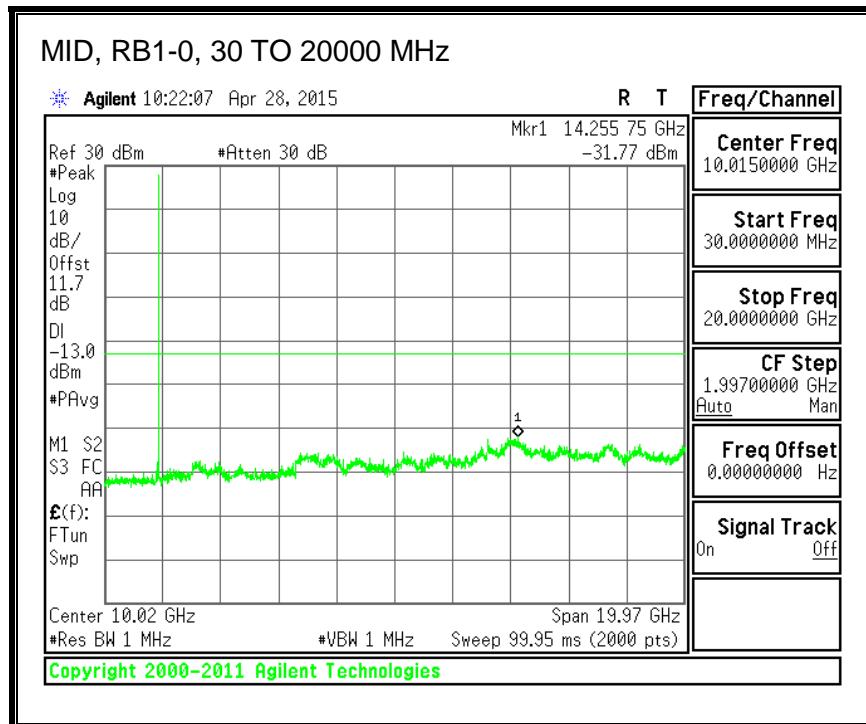
#### QPSK, (1.4 MHz BAND WIDTH)

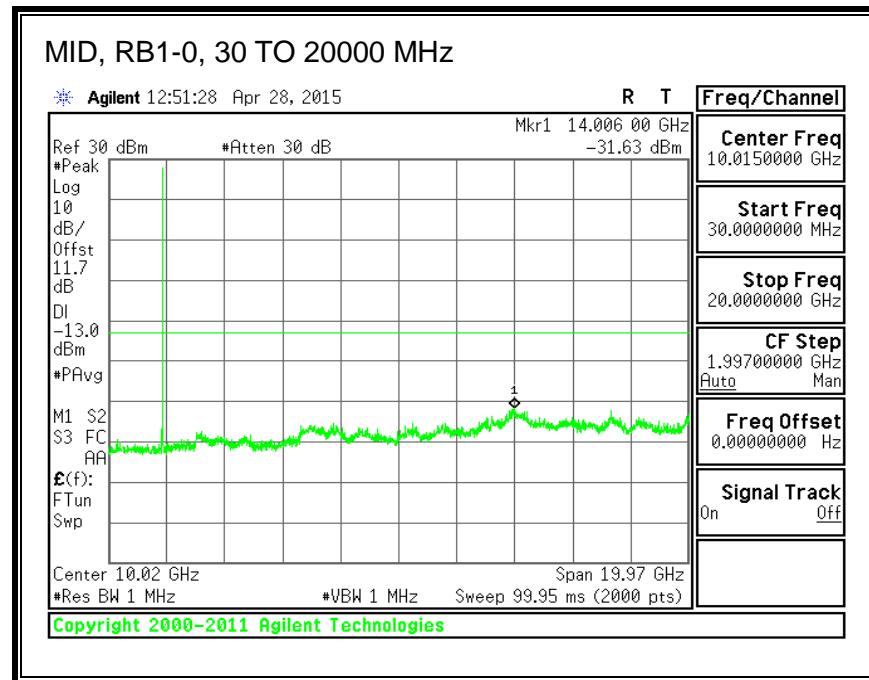
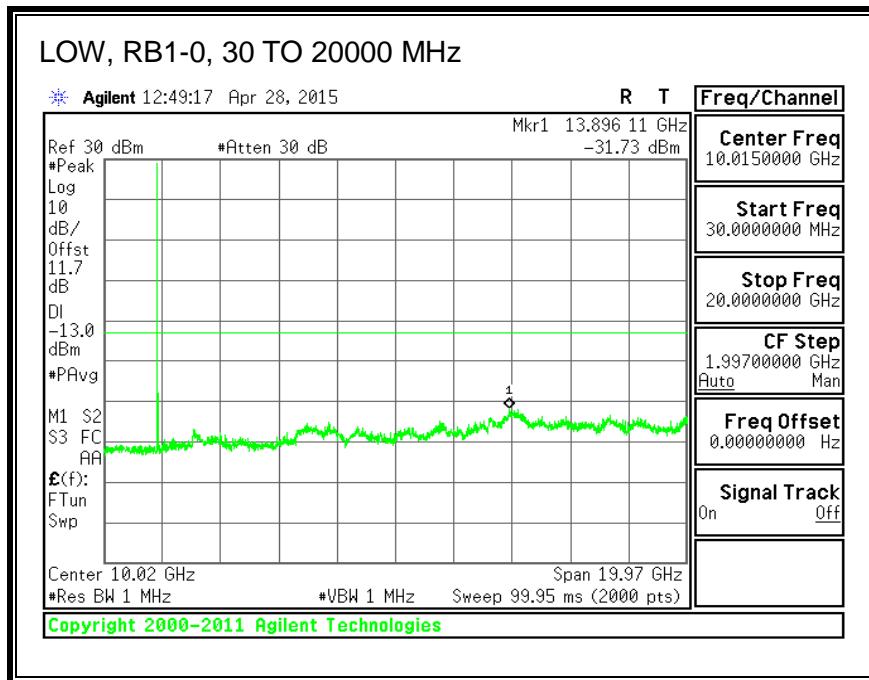


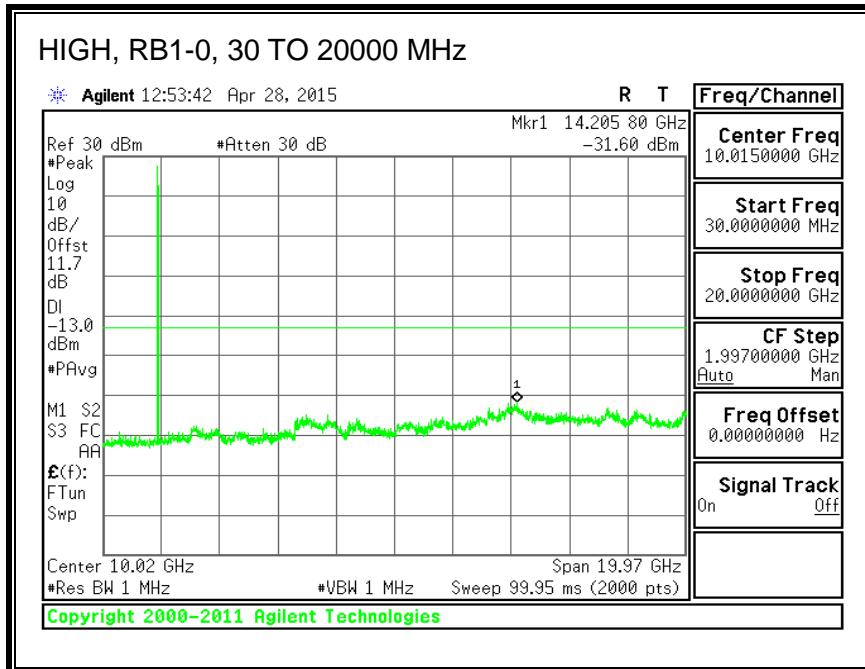


### 16QAM, (1.4 MHz BAND WIDTH)

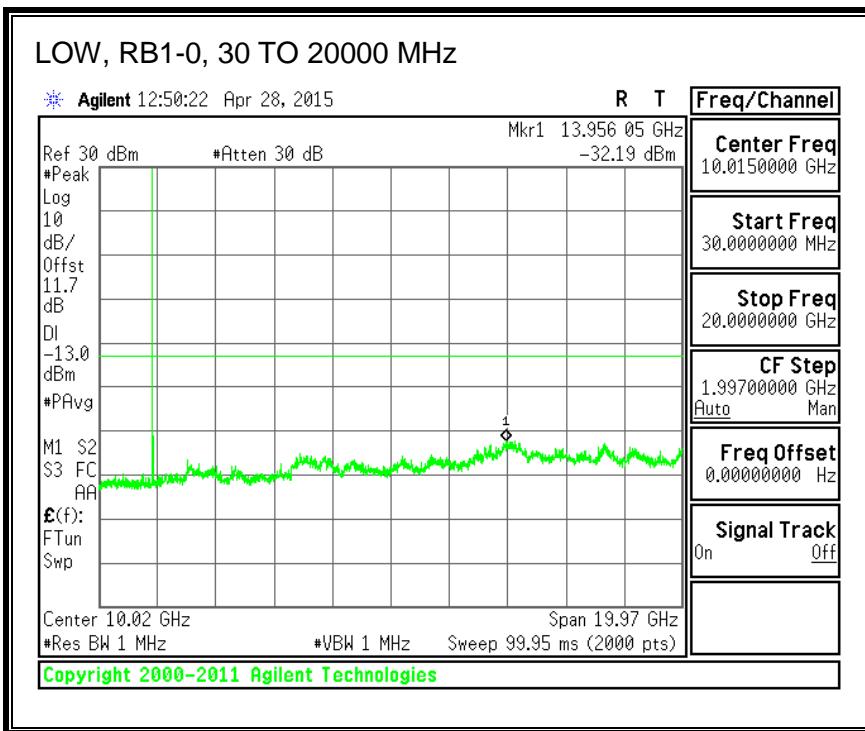




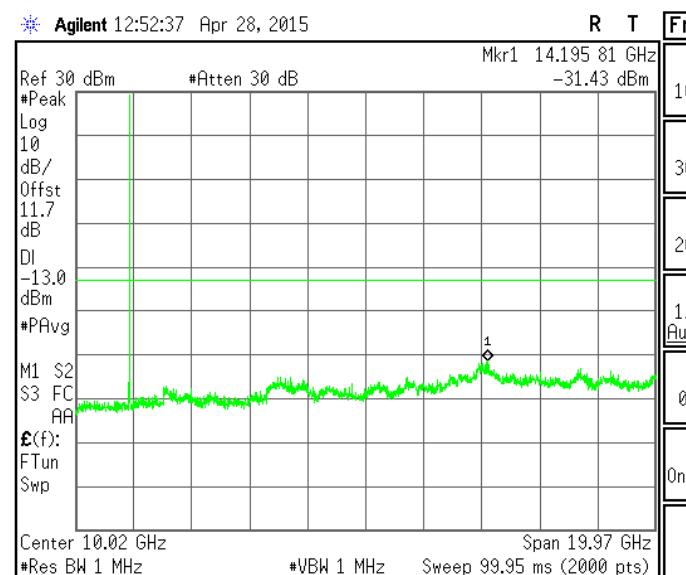
**QPSK, (3.0 MHz BAND WIDTH)**



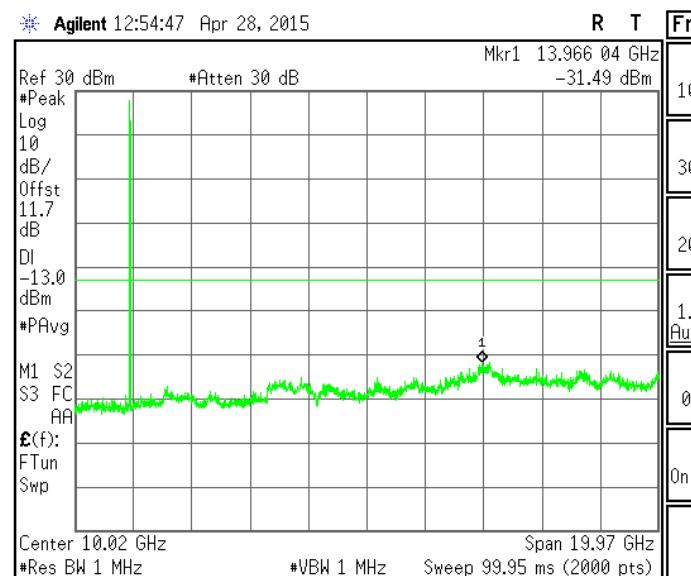
### 16QAM, (3.0 MHz BAND WIDTH)

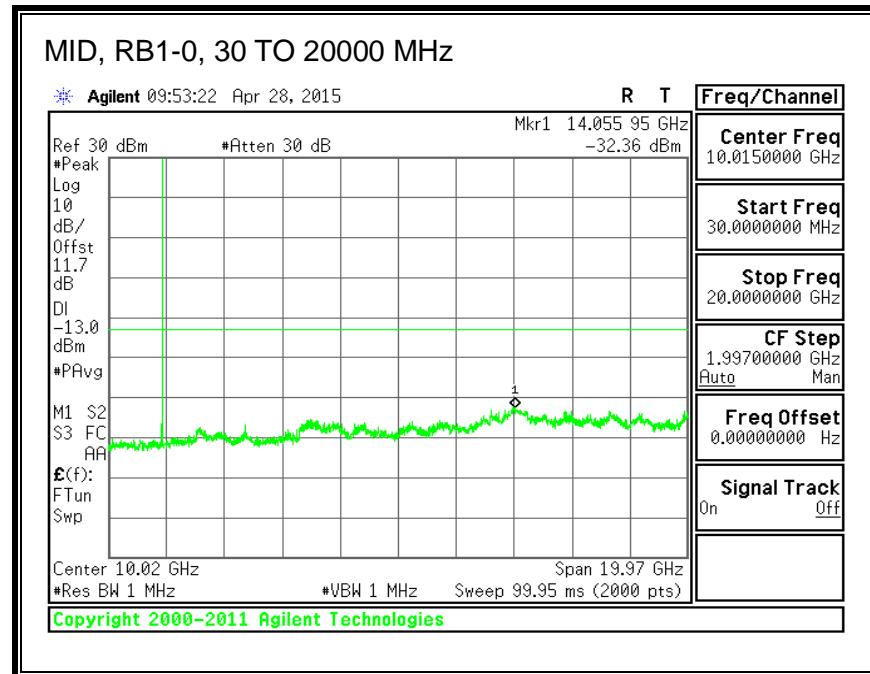
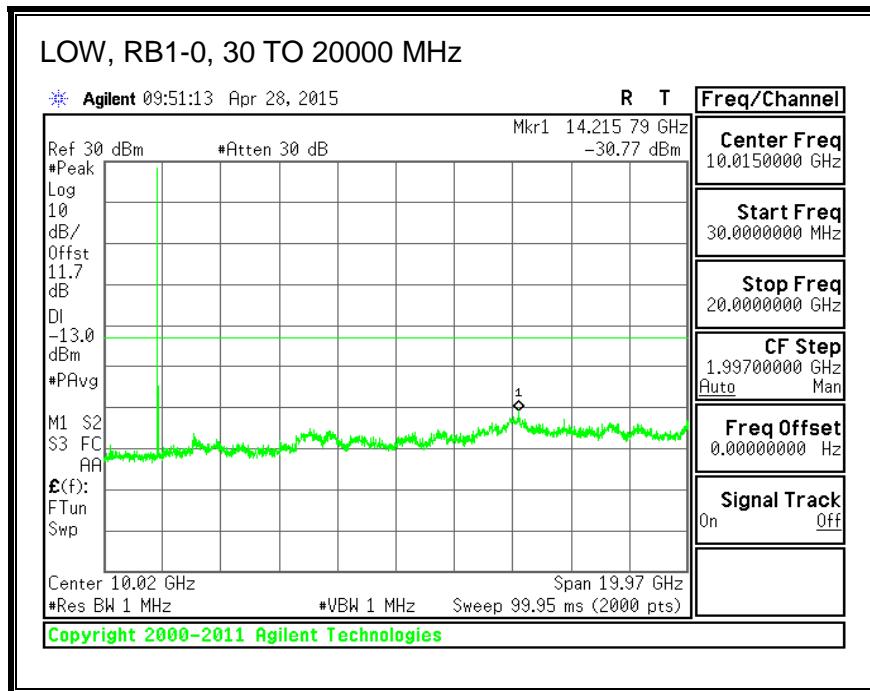


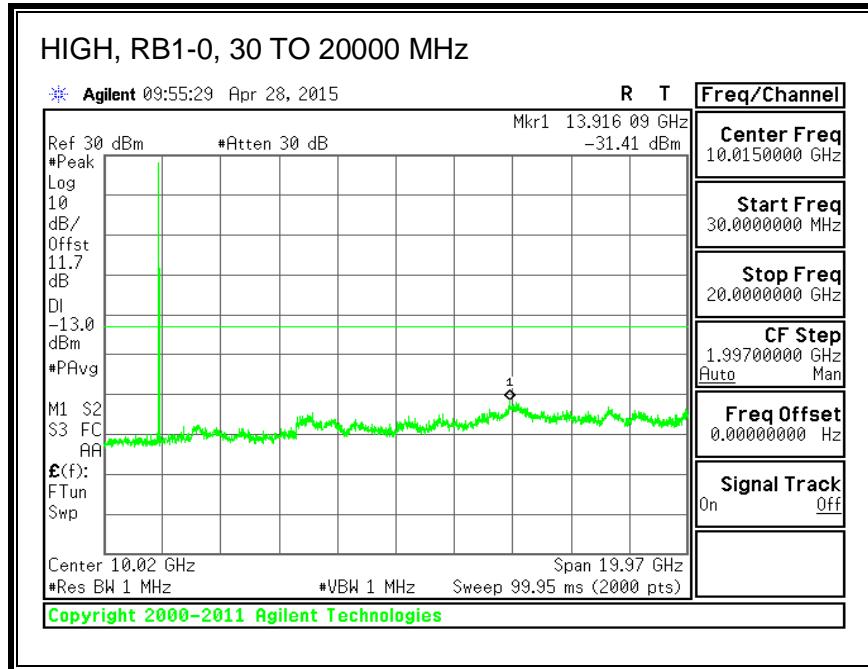
## MID, RB1-0, 30 TO 20000 MHz



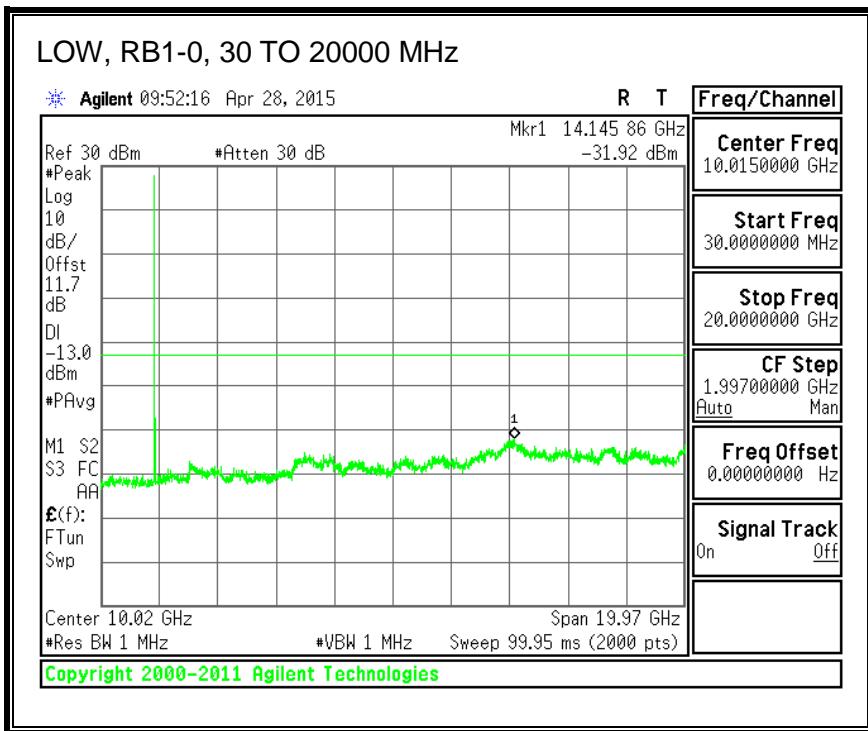
## HIGH, RB1-0, 30 TO 20000 MHz

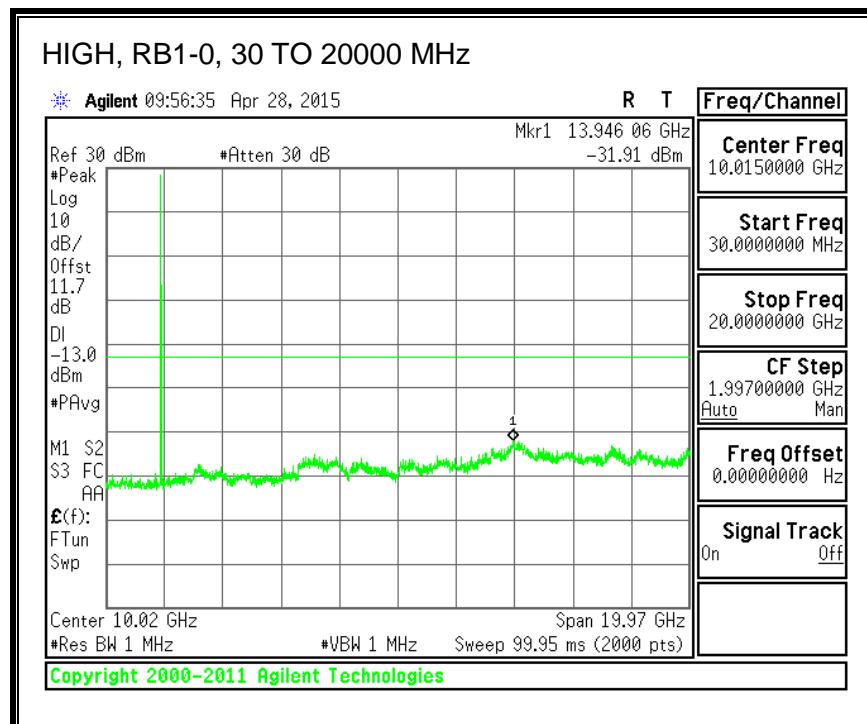
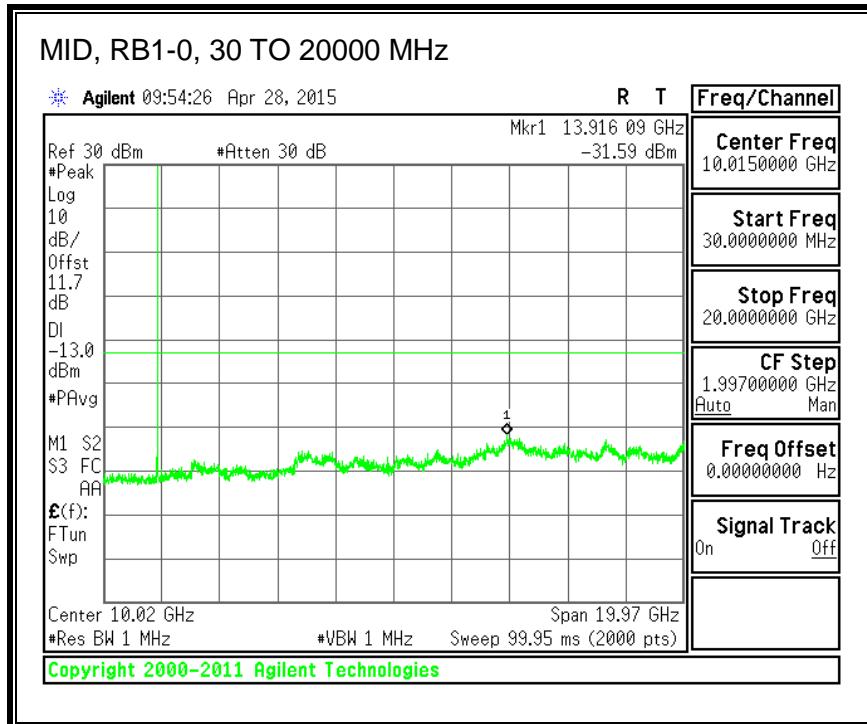


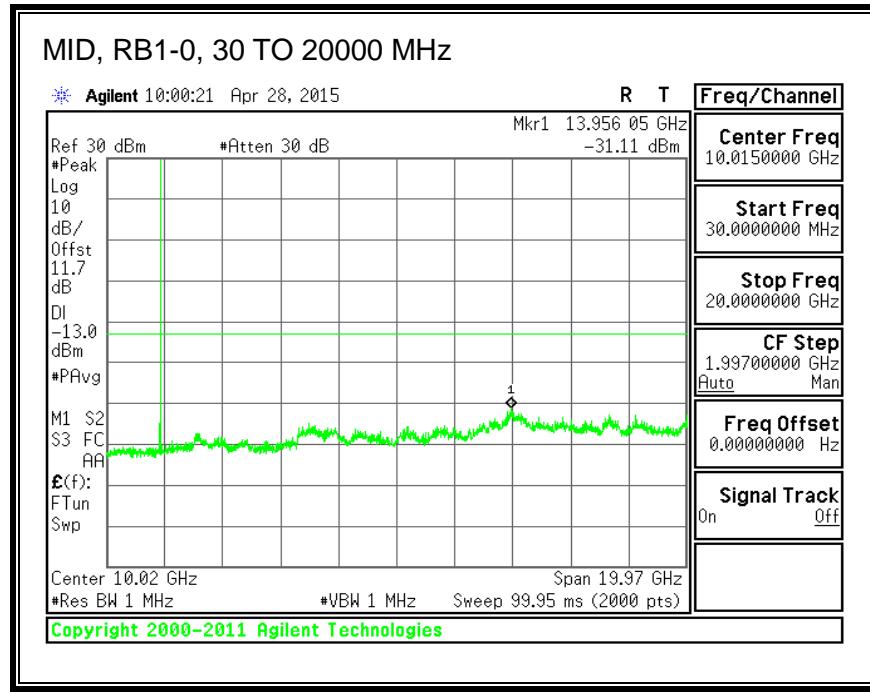
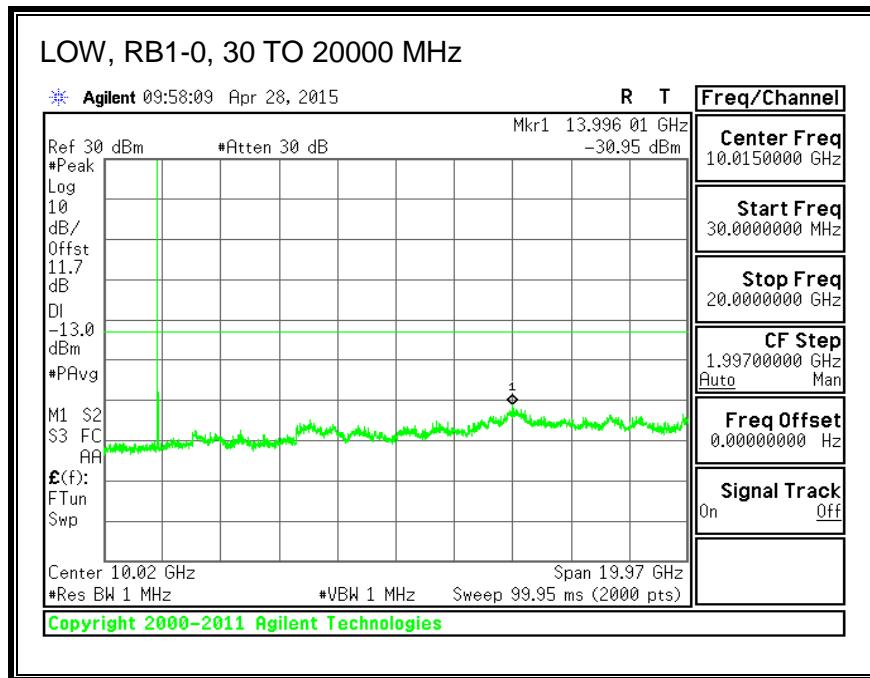
**QPSK, (5.0 MHz BAND WIDTH)**



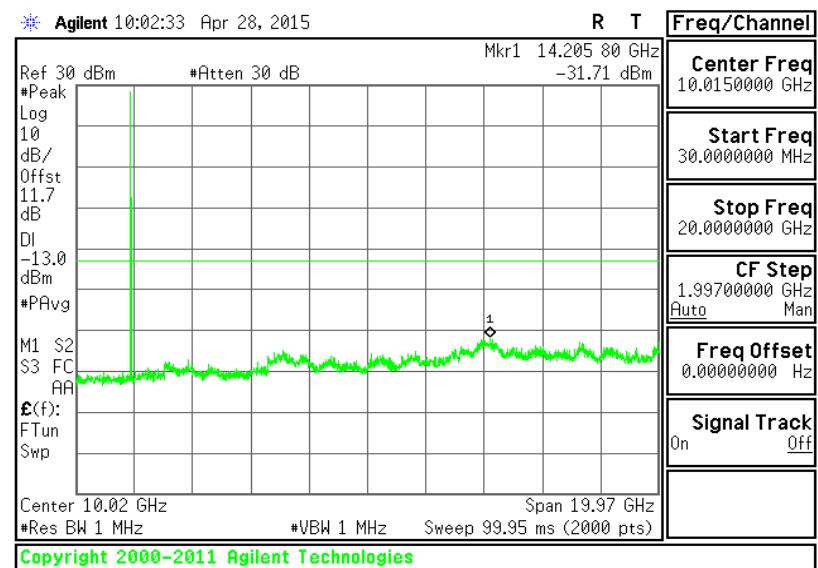
### 16QAM, (5.0 MHz BAND WIDTH)



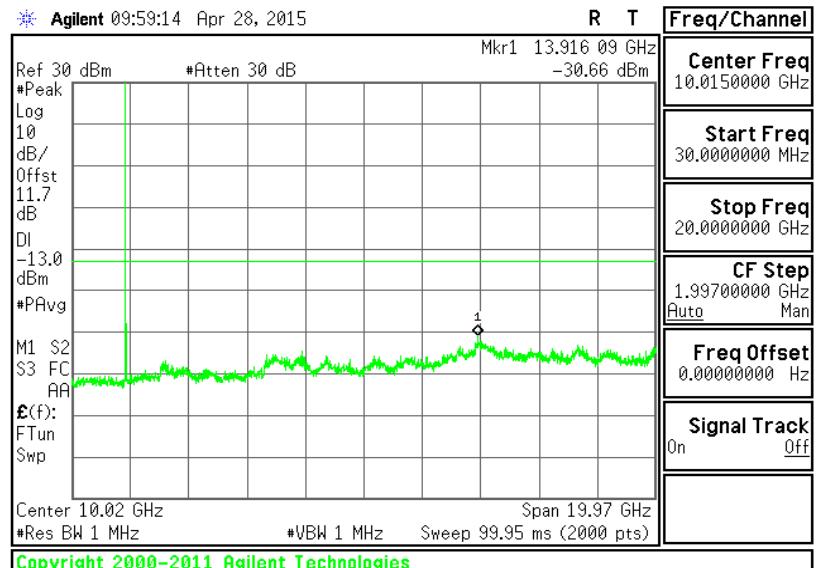


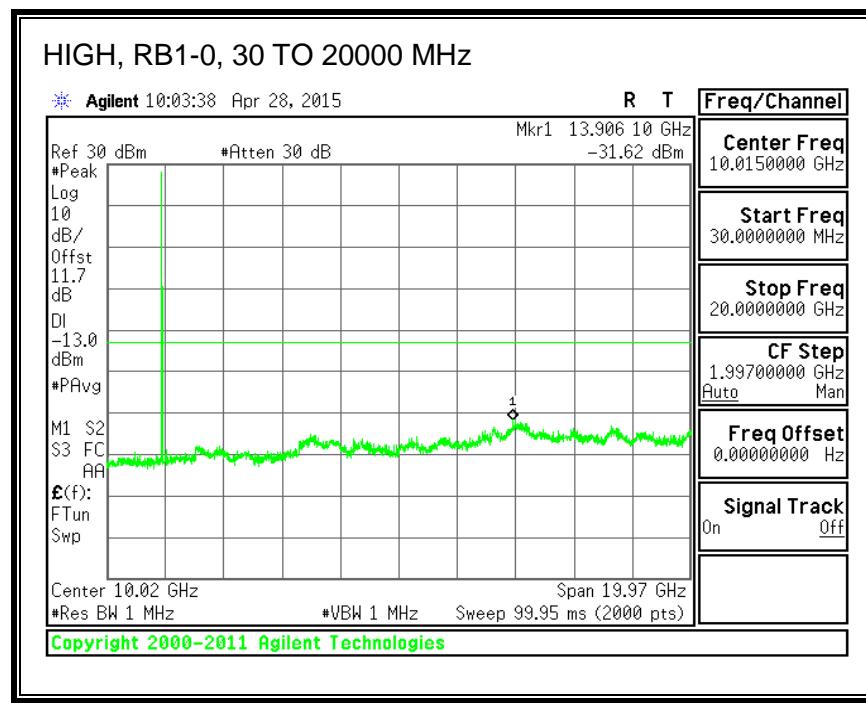
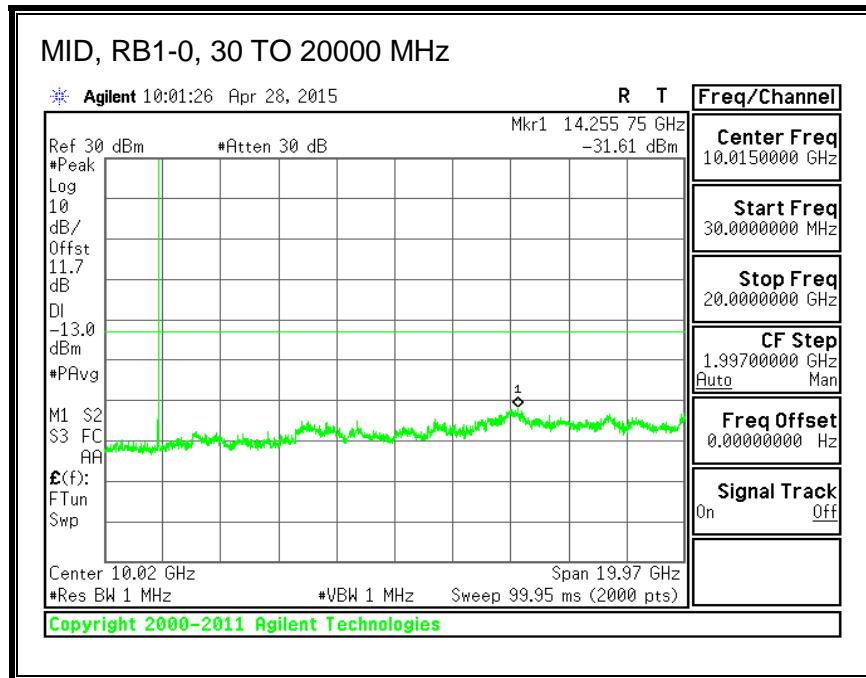
**QPSK, (10.0 MHz BAND WIDTH)**

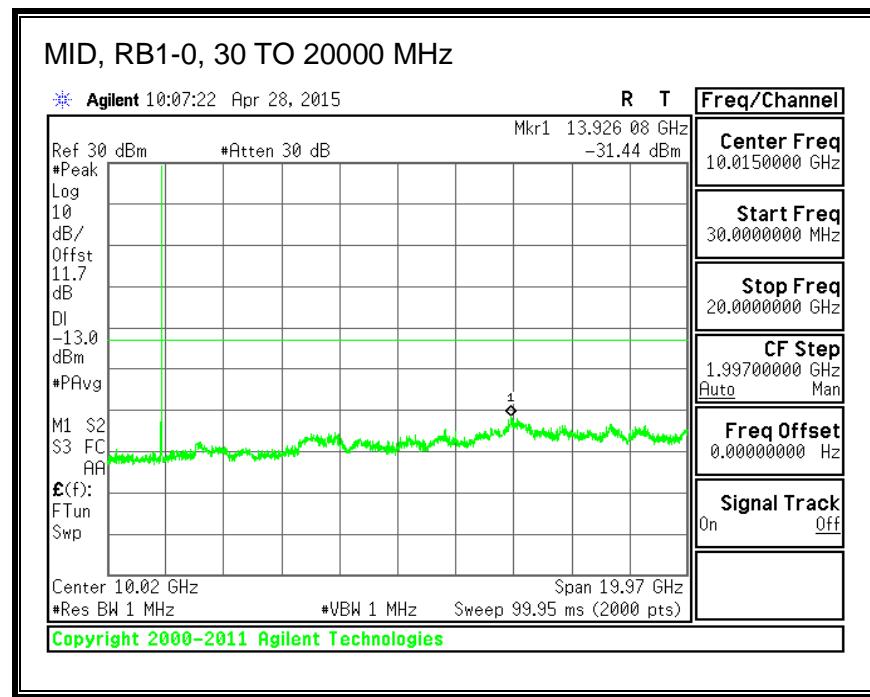
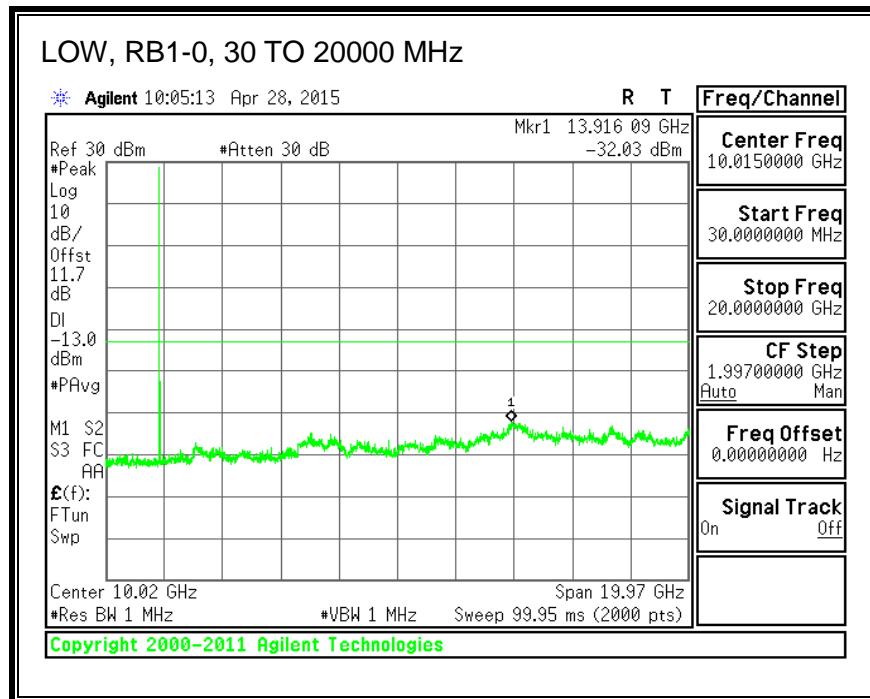
## HIGH, RB1-0, 30 TO 20000 MHz

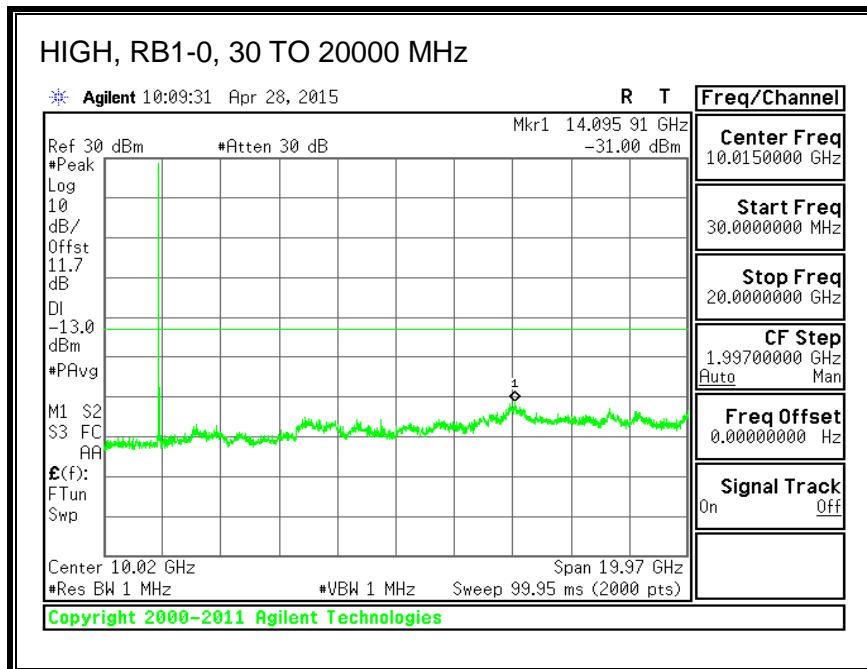
16QAM, (10.0 MHz BAND WIDTH)

## LOW, RB1-0, 30 TO 20000 MHz

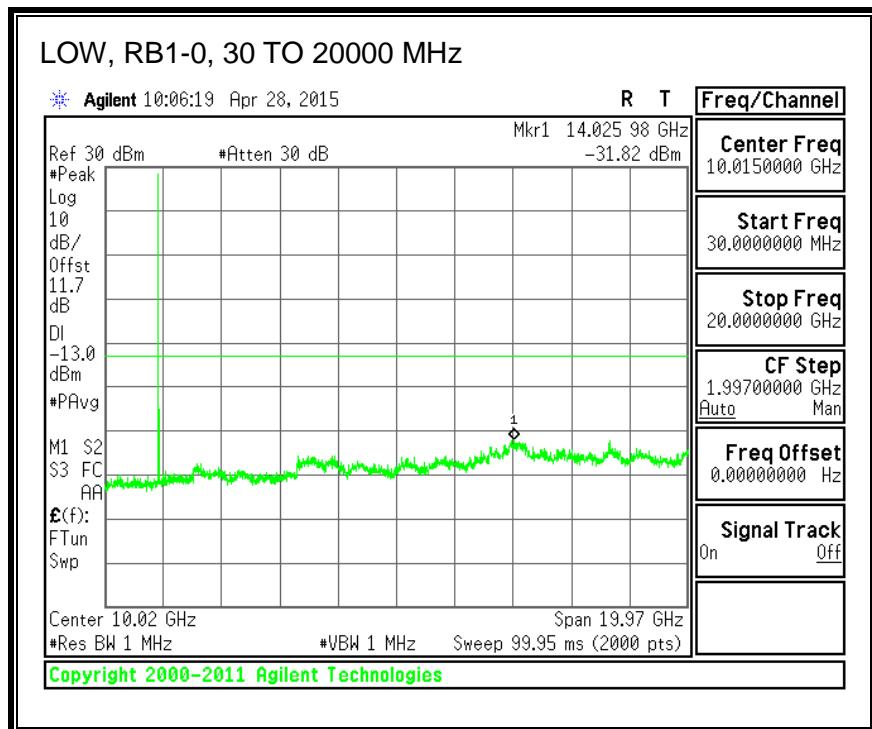


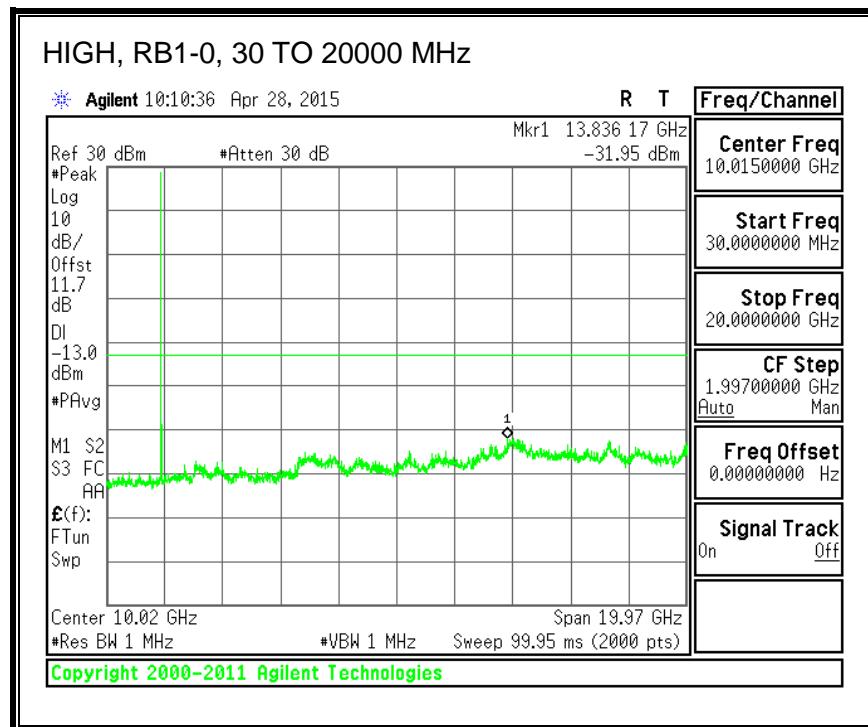
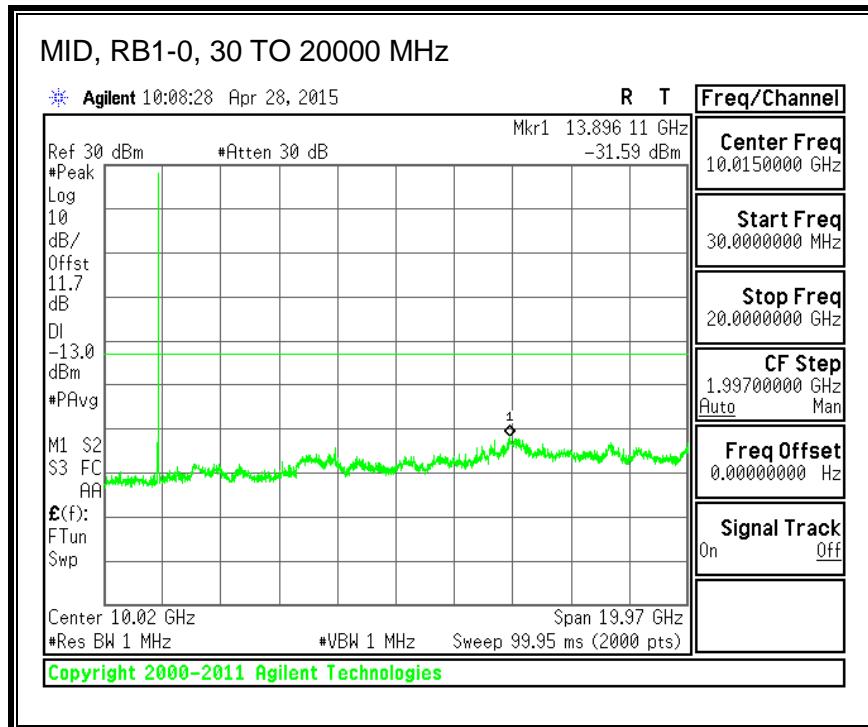


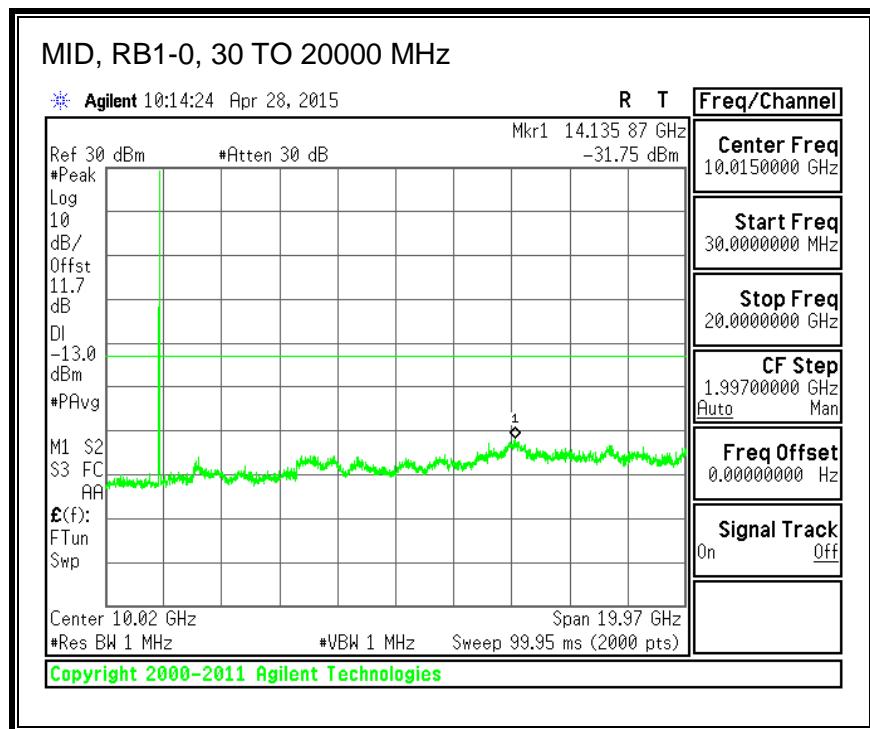
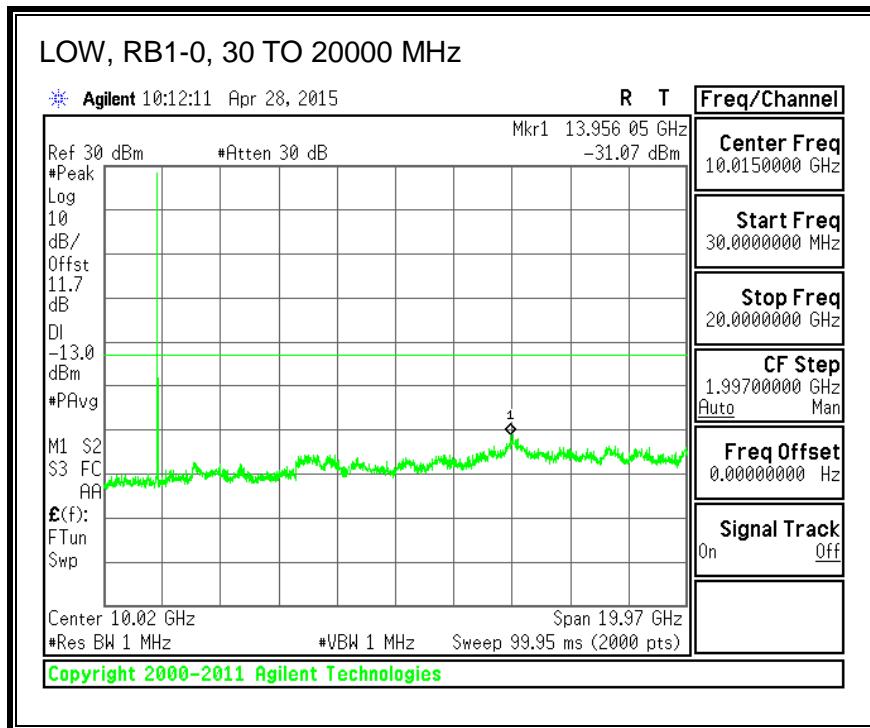
**QPSK, (15.0 MHz BAND WIDTH)**

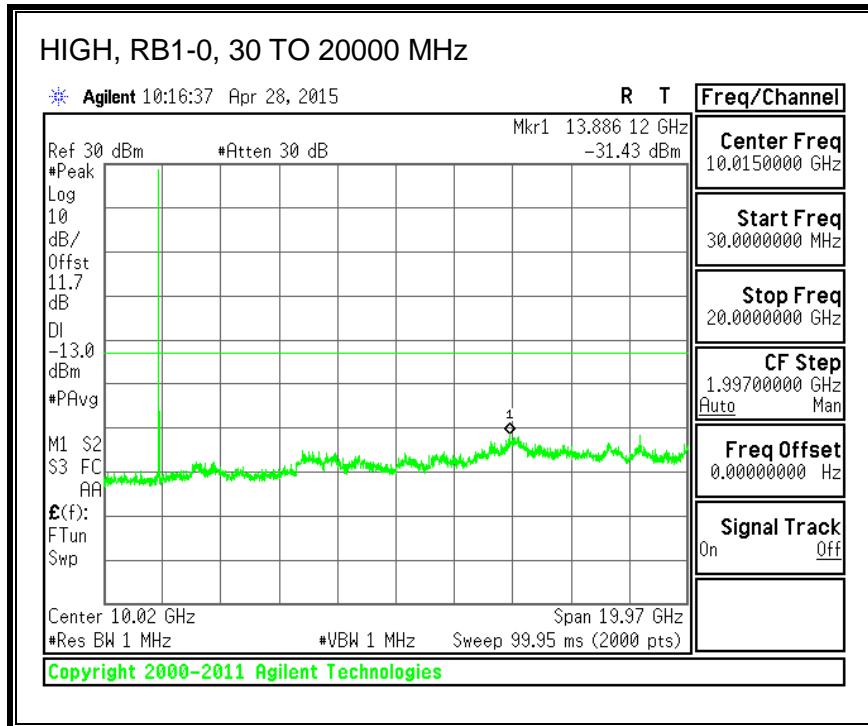


### 16QAM, (15.0 MHz BAND WIDTH)

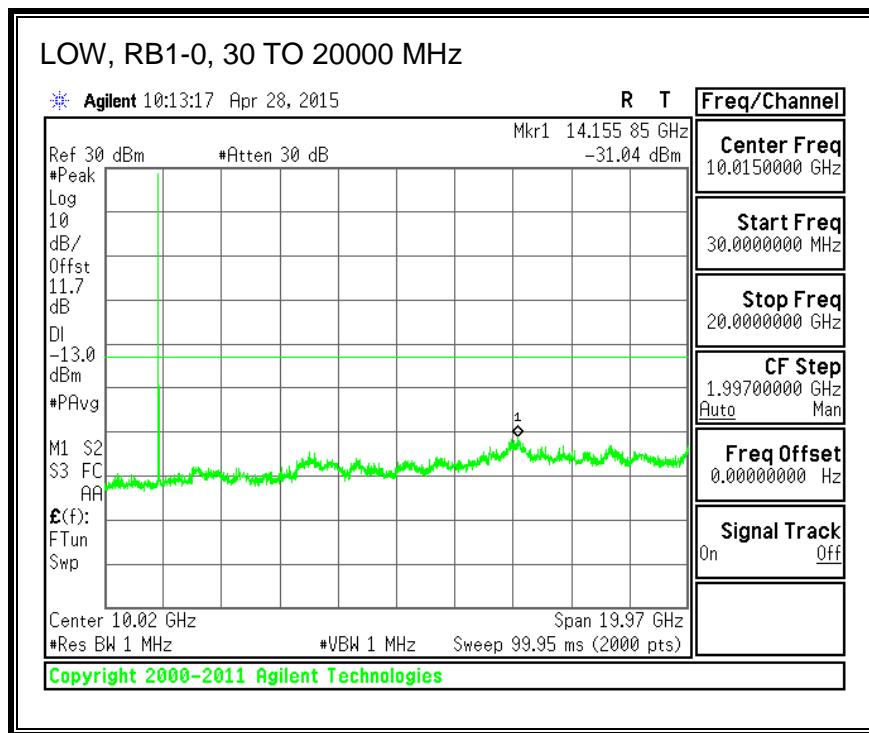


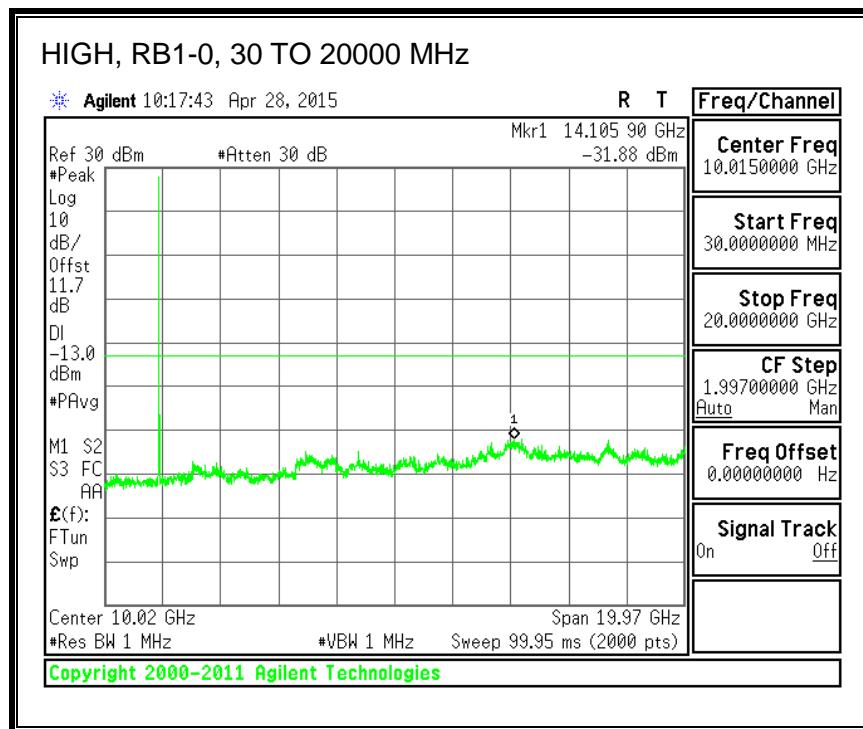
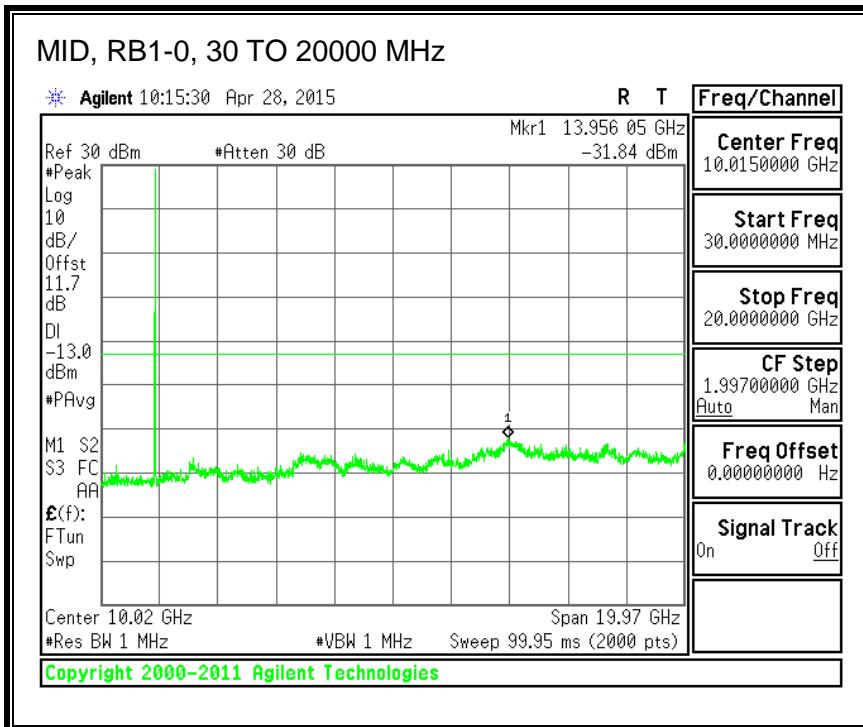


**QPSK, (20.0 MHz BAND WIDTH)**

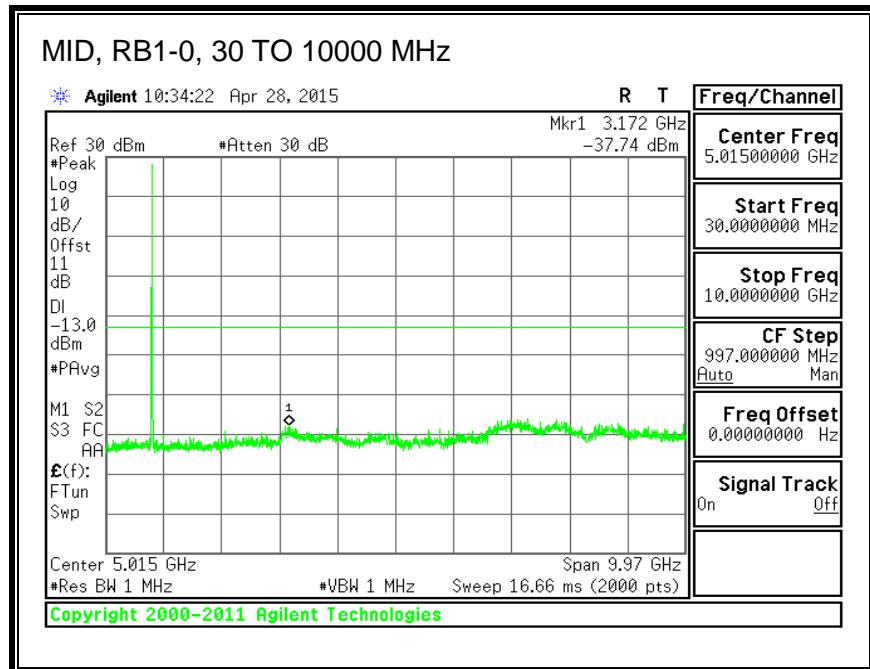
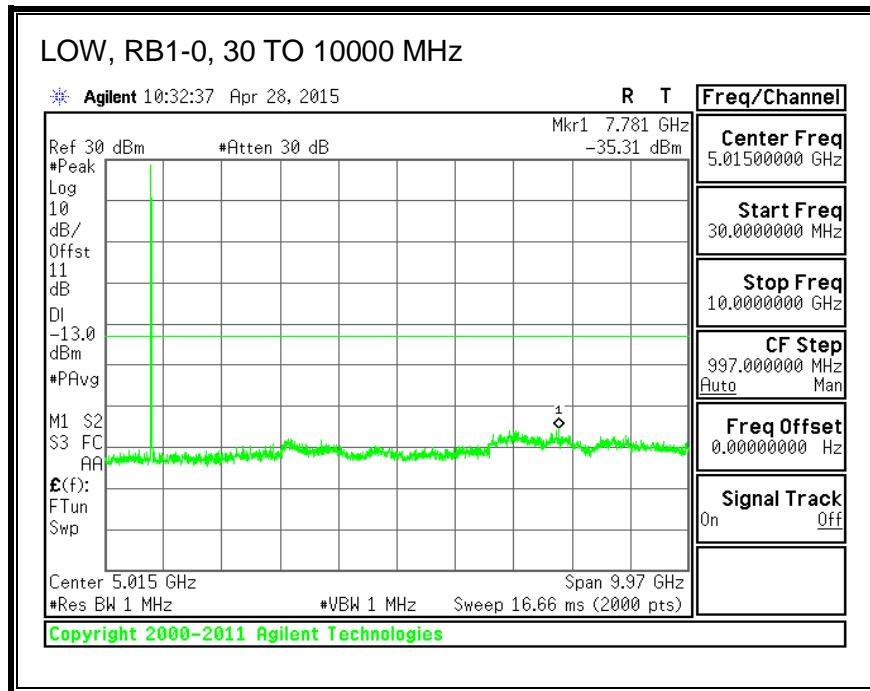


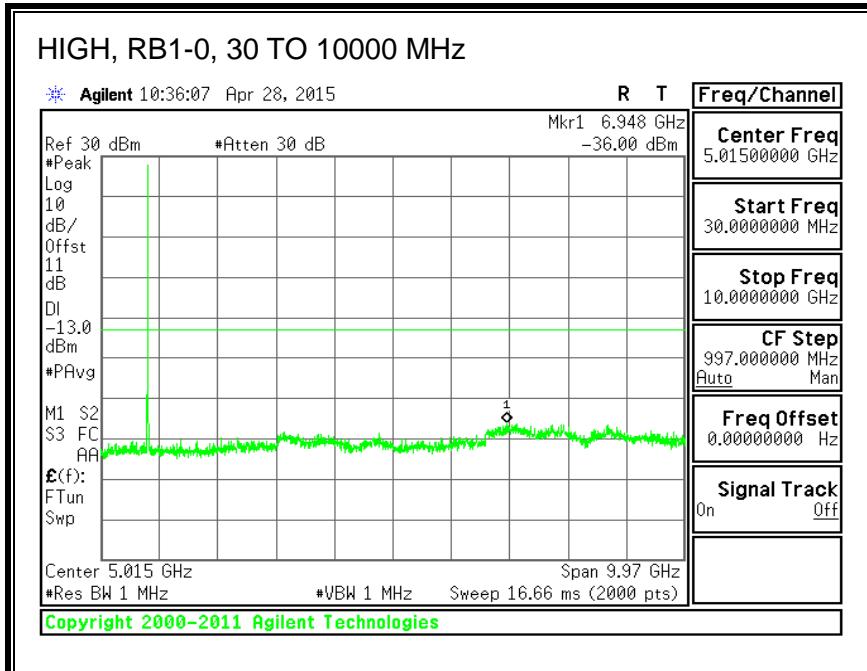
### 16QAM, (20.0 MHz BAND WIDTH)



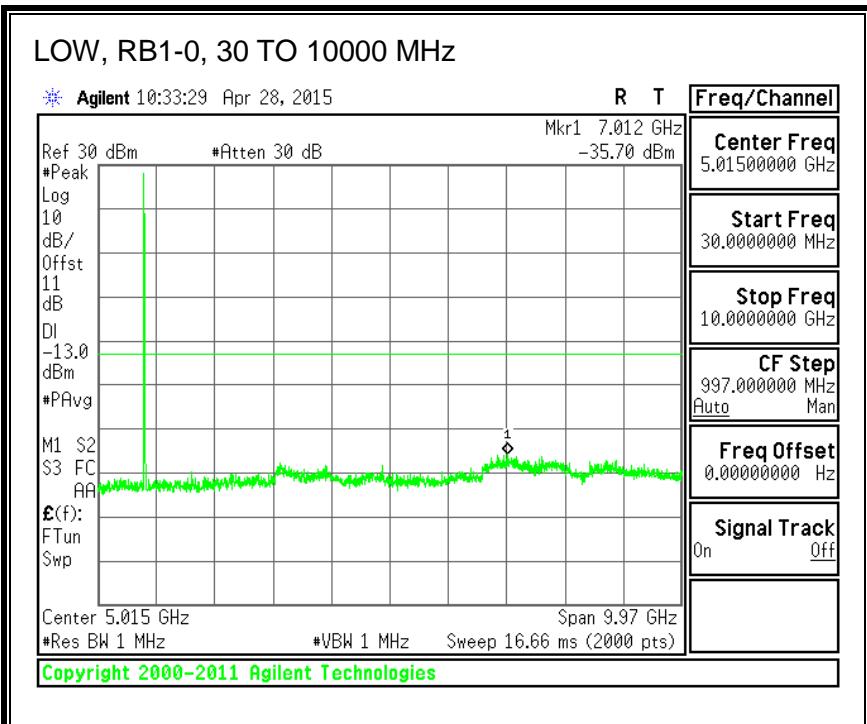


## 8.5.9. LTE BAND 26

QPSK, (1.4 MHz BAND WIDTH)

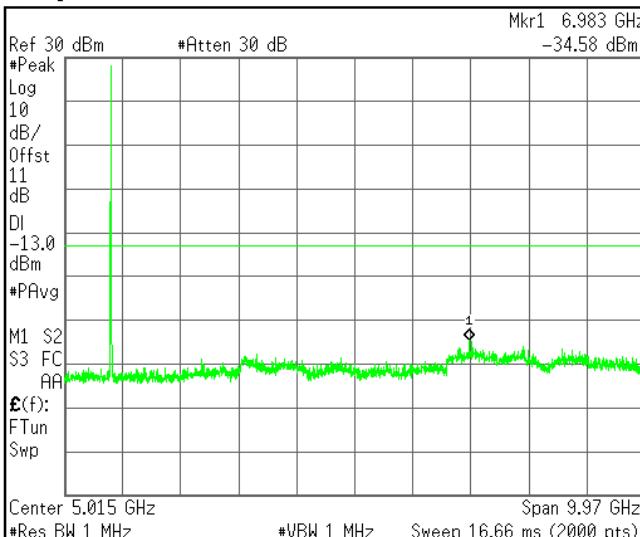


### 16QAM, (1.4 MHz BAND WIDTH)



## MID, RB1-0, 30 TO 10000 MHz

Agilent 10:35:14 Apr 28, 2015



R T Freq/Channel

Center Freq 5.01500000 GHz

Start Freq 30.00000000 MHz

Stop Freq 10.00000000 GHz

CF Step 997.0000000 MHz  
Auto Man

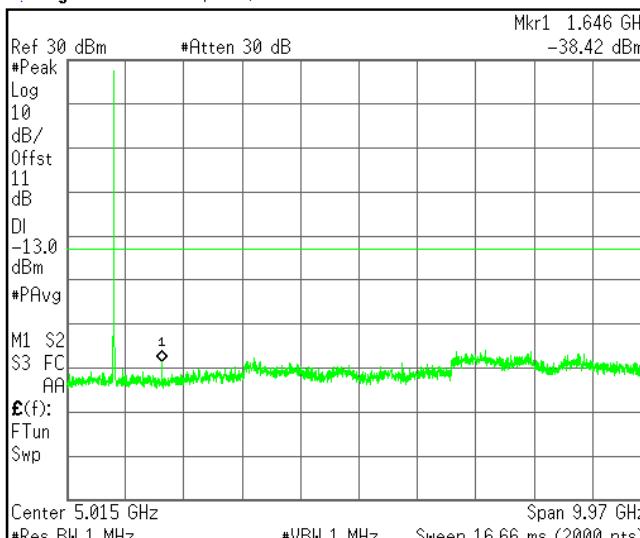
Freq Offset 0.00000000 Hz

Signal Track On Off

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## HIGH, RB1-0, 30 TO 10000 MHz

Agilent 10:37:00 Apr 28, 2015



R T Freq/Channel

Center Freq 5.01500000 GHz

Start Freq 30.00000000 MHz

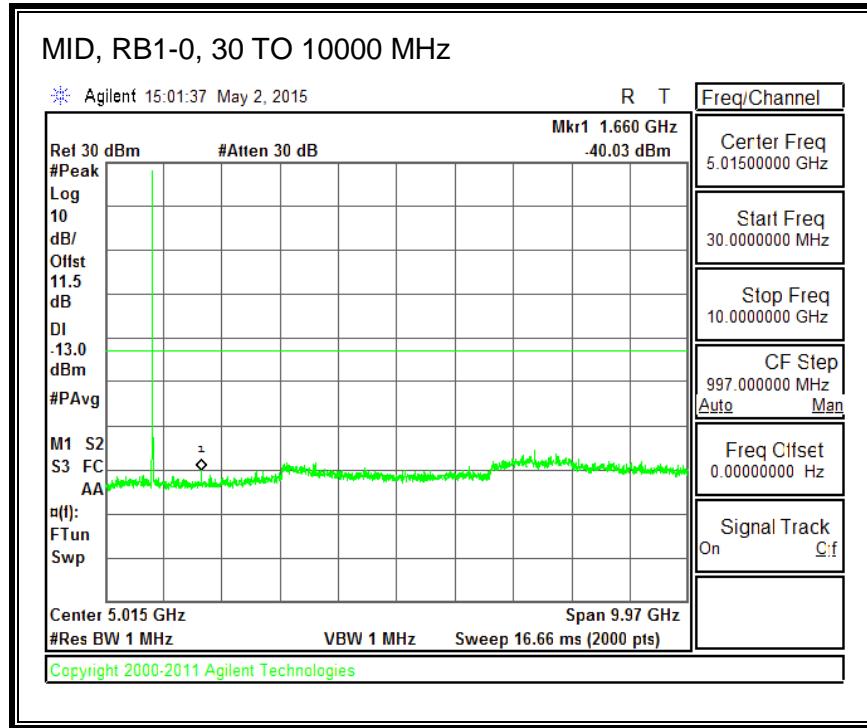
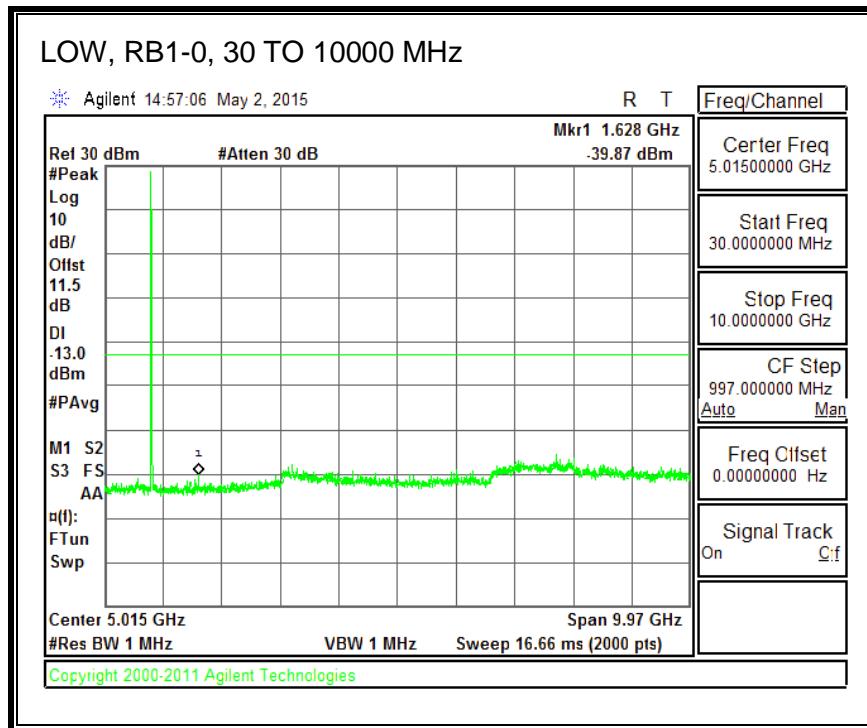
Stop Freq 10.00000000 GHz

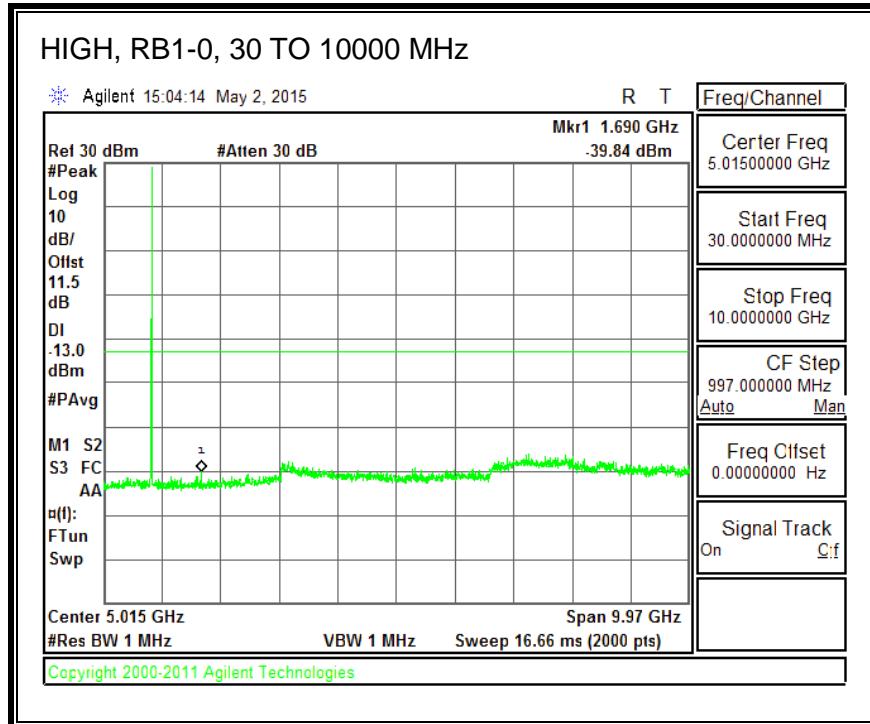
CF Step 997.0000000 MHz  
Auto Man

Freq Offset 0.00000000 Hz

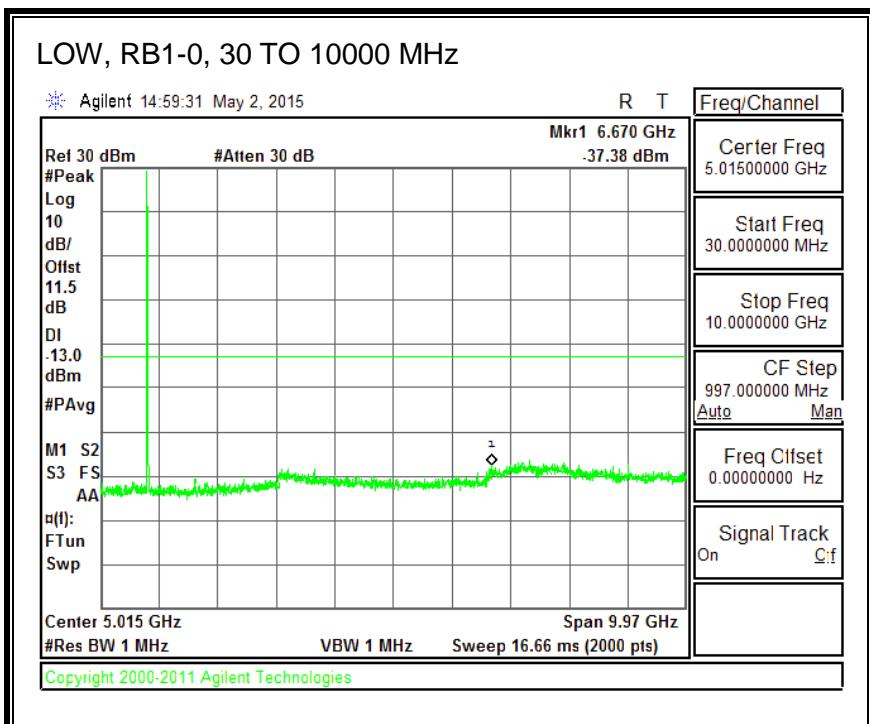
Signal Track On Off

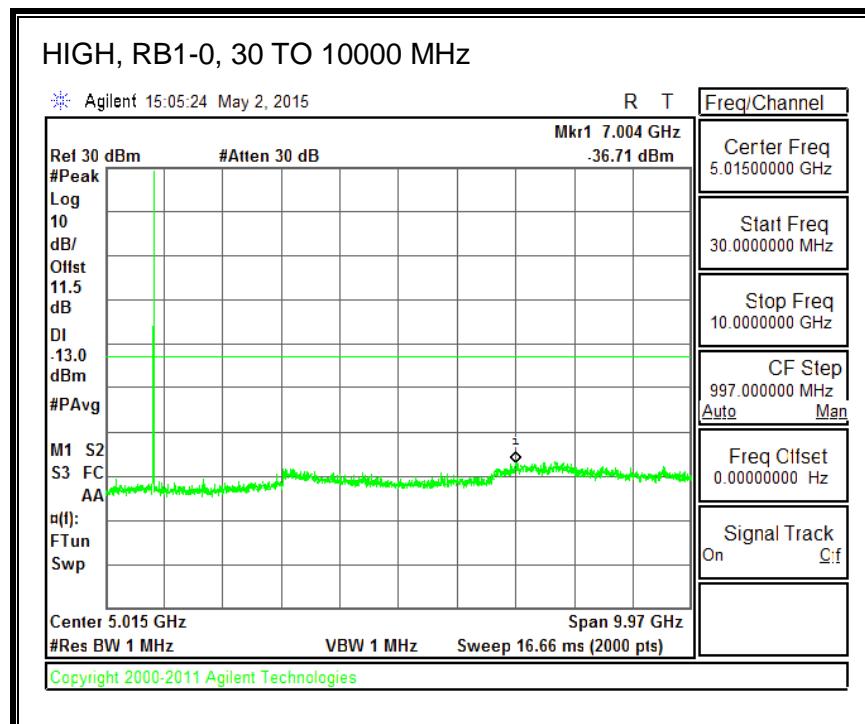
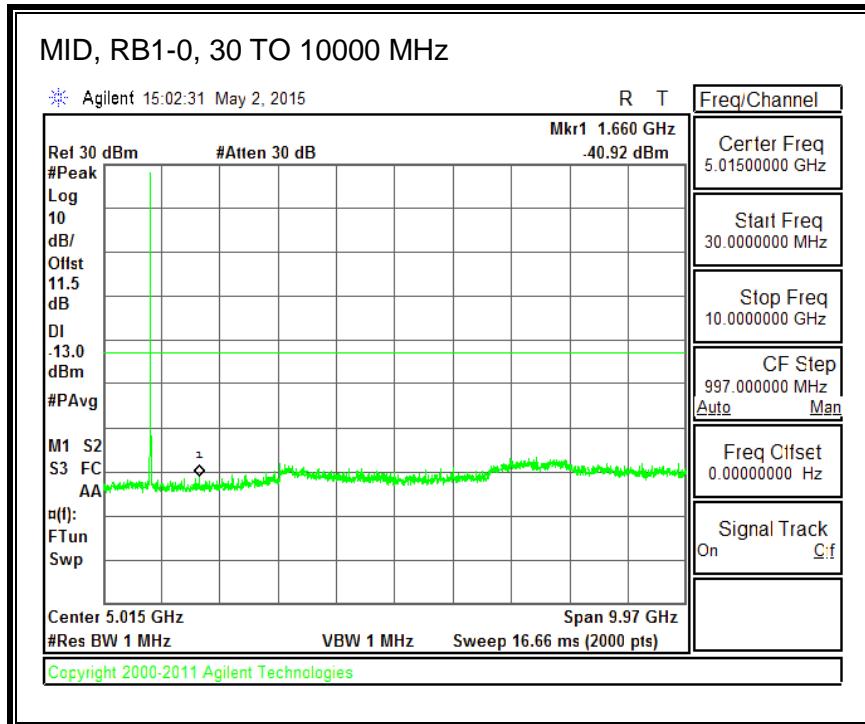
Copyright 2000-2011 Agilent Technologies

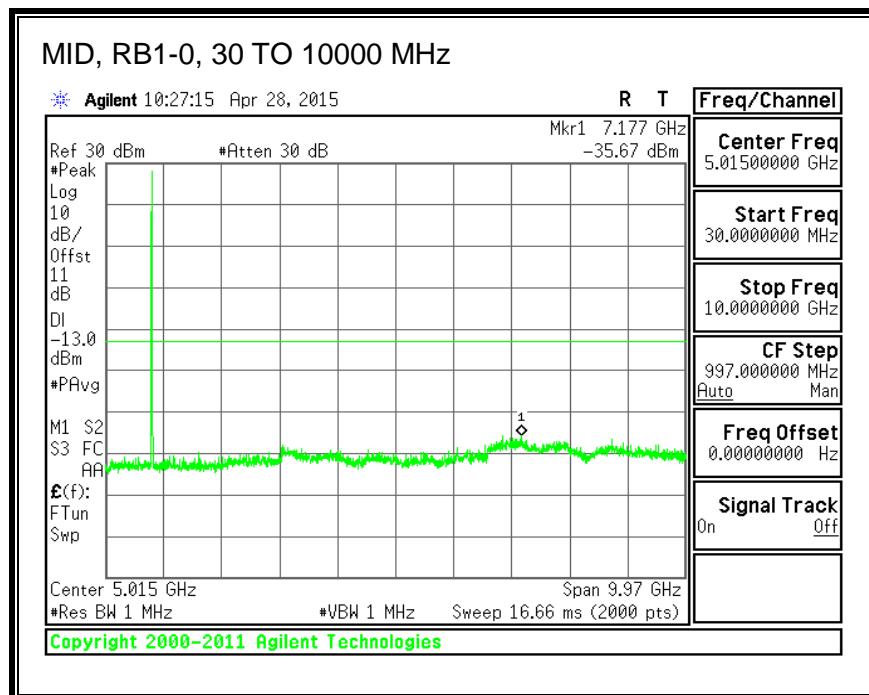
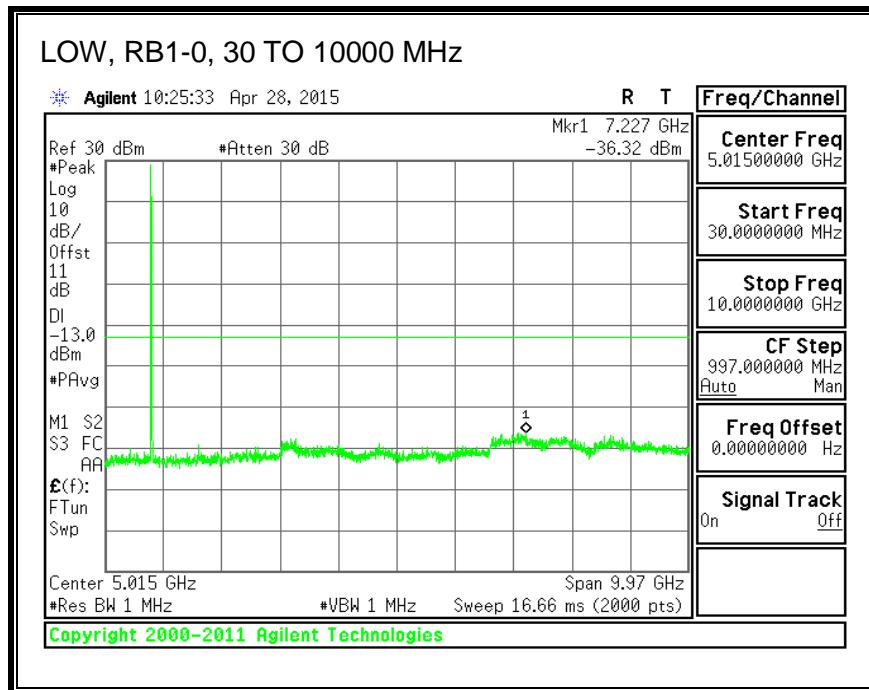
**QPSK, (3.0 MHz BAND WIDTH)**

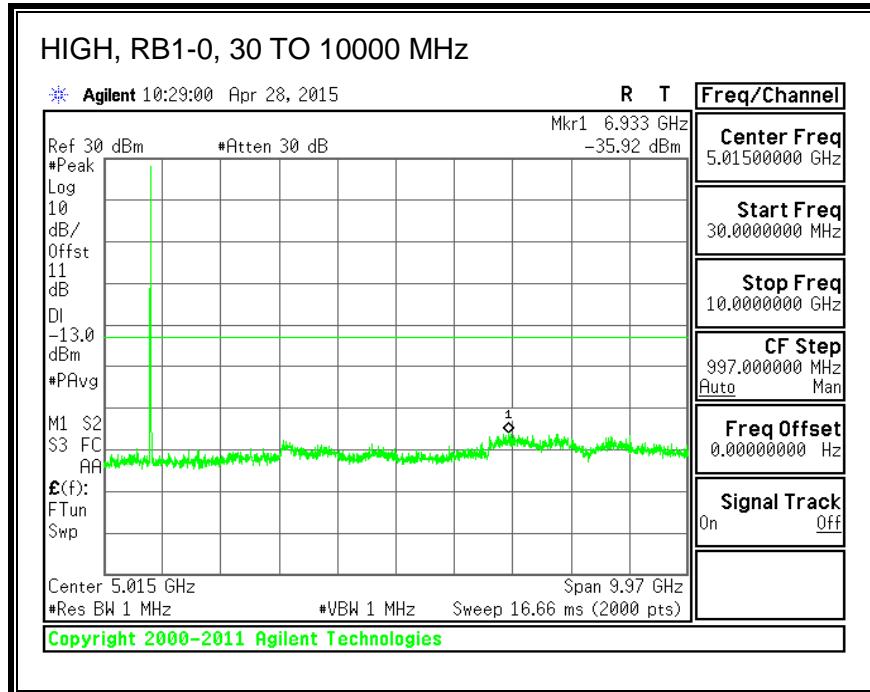


### 16QAM, (3.0 MHz BAND WIDTH)

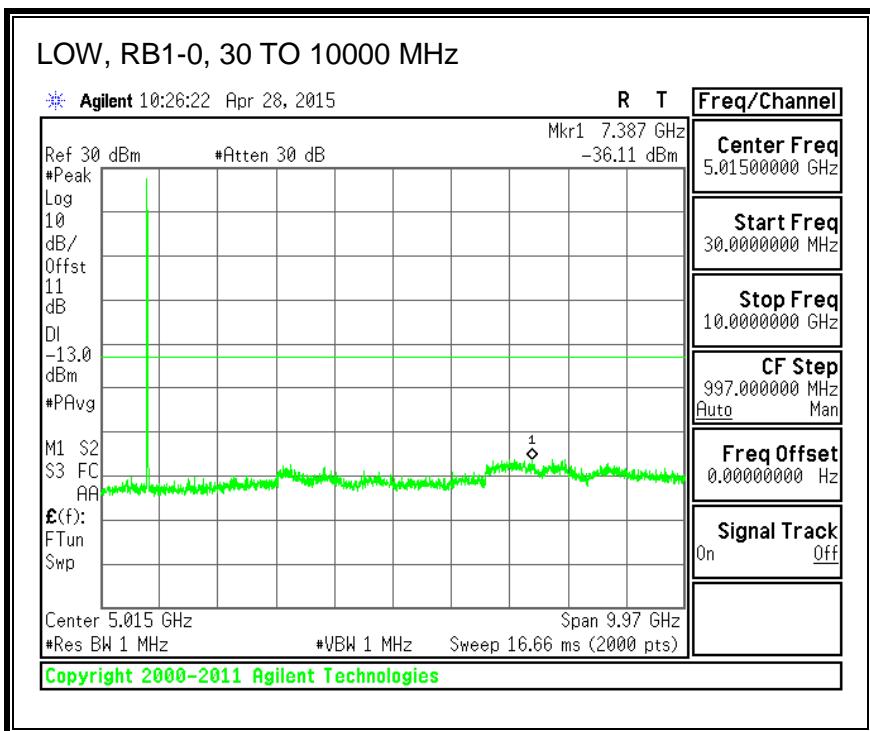




**QPSK, (5.0 MHz BAND WIDTH)**

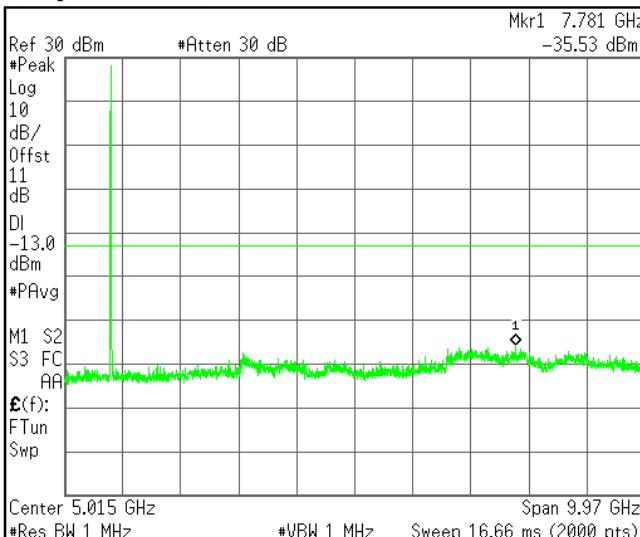


### 16QAM, (5.0 MHz BAND WIDTH)



## MID, RB1-0, 30 TO 10000 MHz

Agilent 10:28:08 Apr 28, 2015



R T Freq/Channel

Center Freq 5.01500000 GHz

Start Freq 30.00000000 MHz

Stop Freq 10.00000000 GHz

CF Step 997.0000000 MHz  
Auto Man

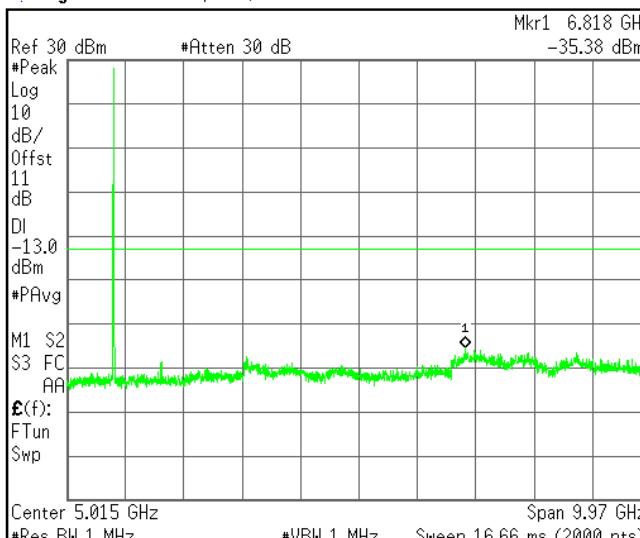
Freq Offset 0.00000000 Hz

Signal Track On Off

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## HIGH, RB1-0, 30 TO 10000 MHz

Agilent 10:29:53 Apr 28, 2015



R T Freq/Channel

Center Freq 5.01500000 GHz

Start Freq 30.00000000 MHz

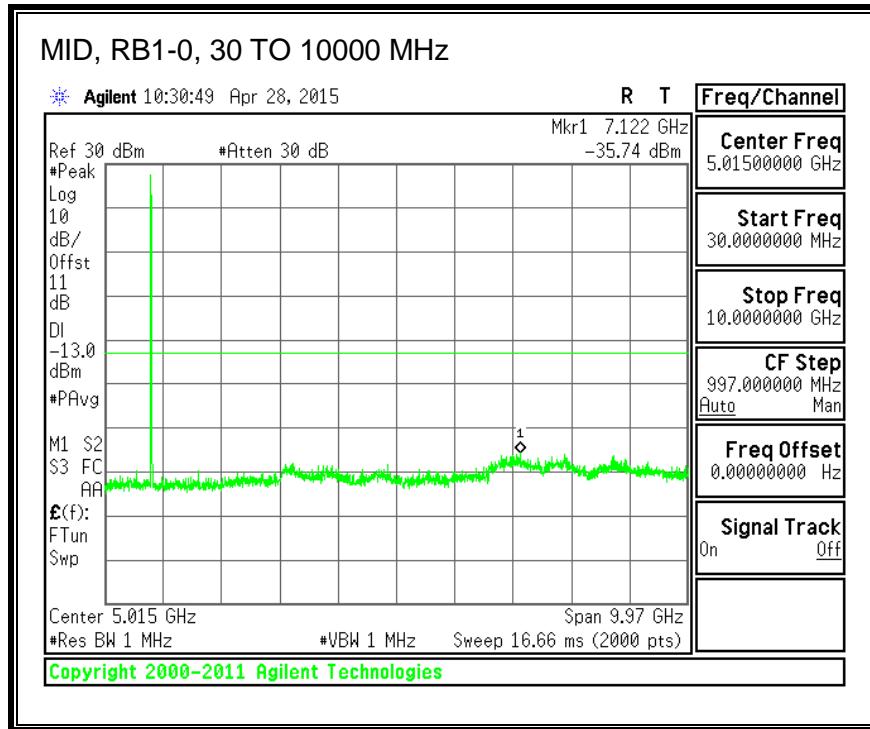
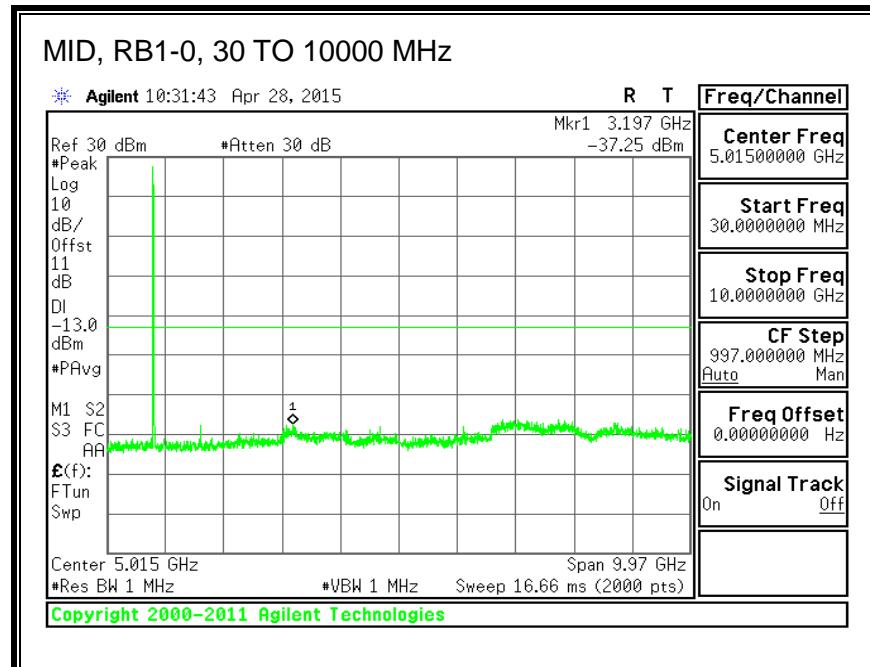
Stop Freq 10.00000000 GHz

CF Step 997.0000000 MHz  
Auto Man

Freq Offset 0.00000000 Hz

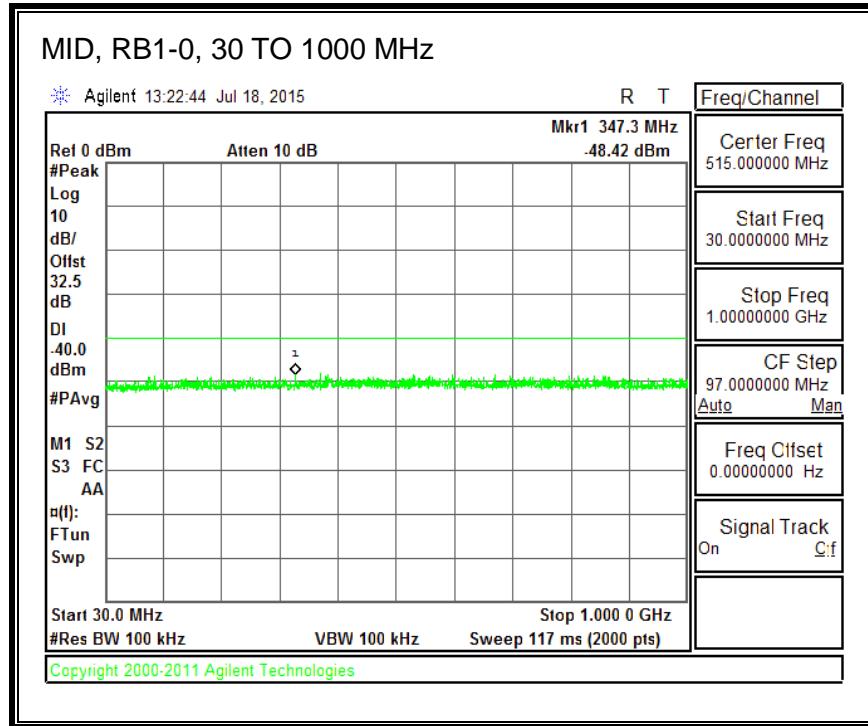
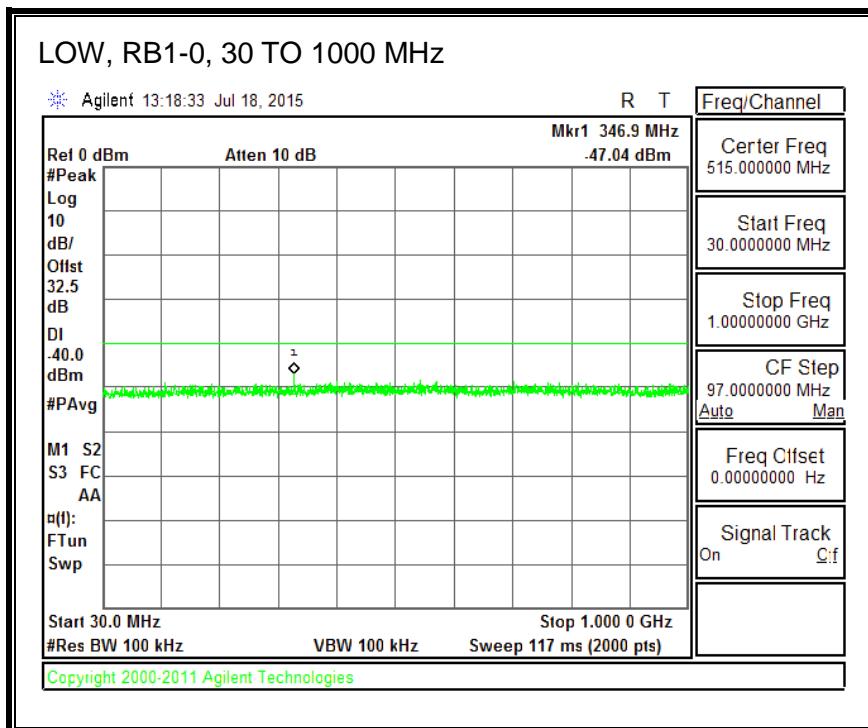
Signal Track On Off

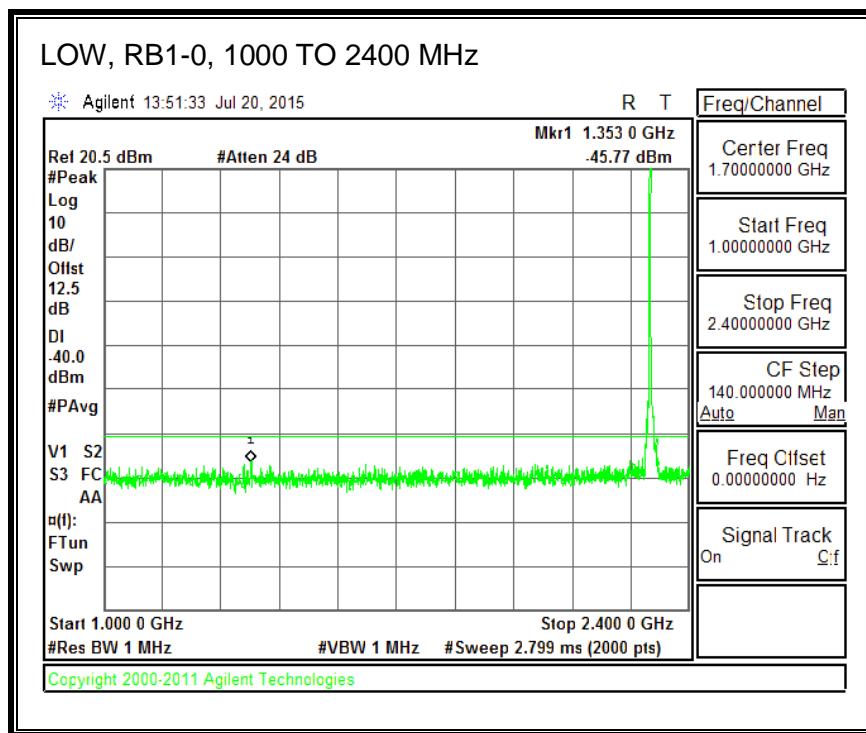
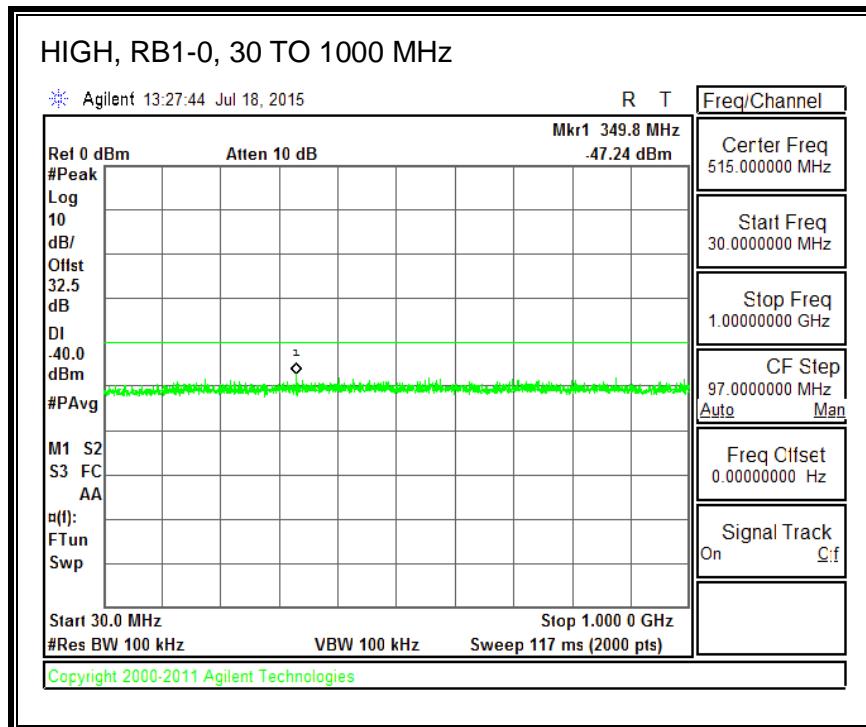
Copyright 2000-2011 Agilent Technologies

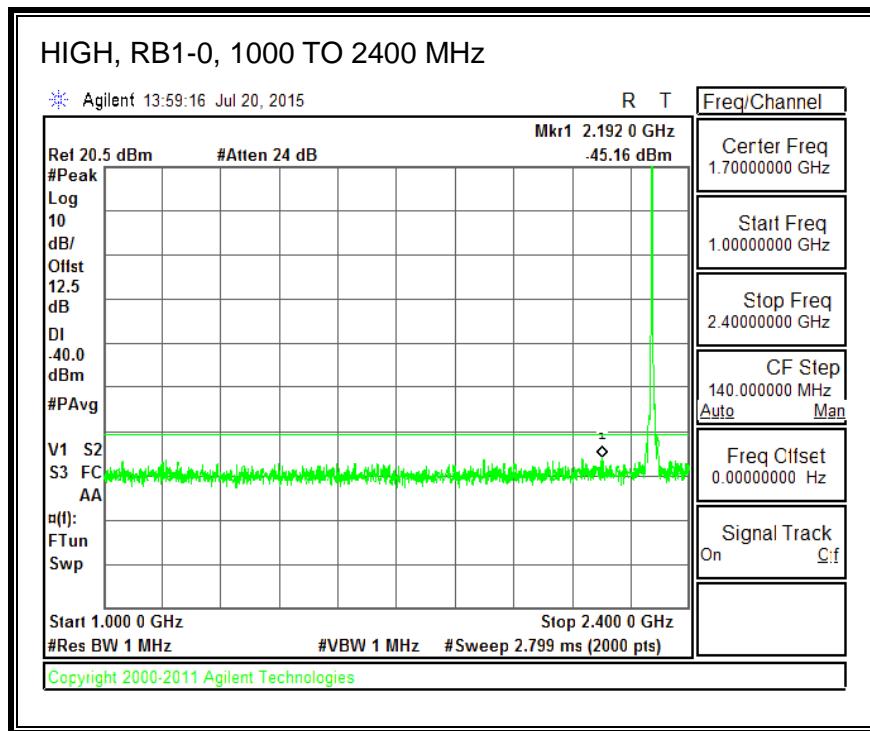
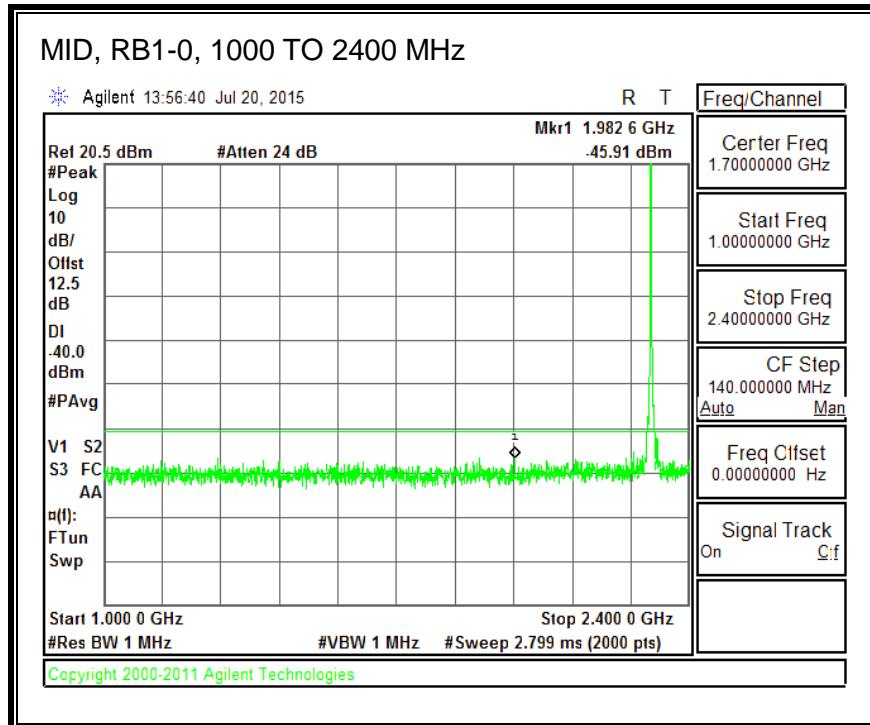
**QPSK, (10.0 MHz BAND WIDTH)****16QAM, (10.0 MHz BAND WIDTH)**

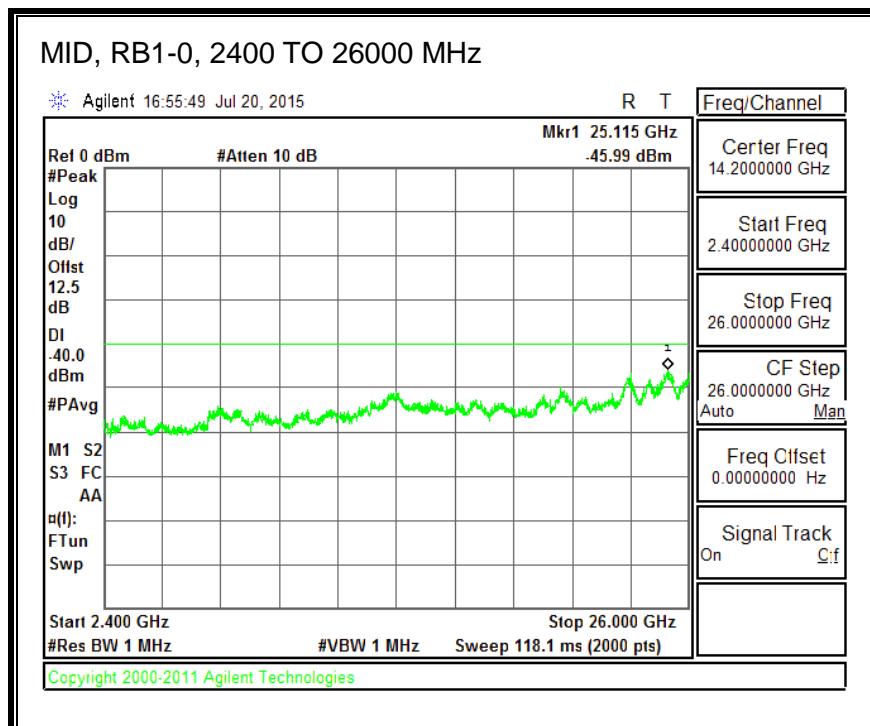
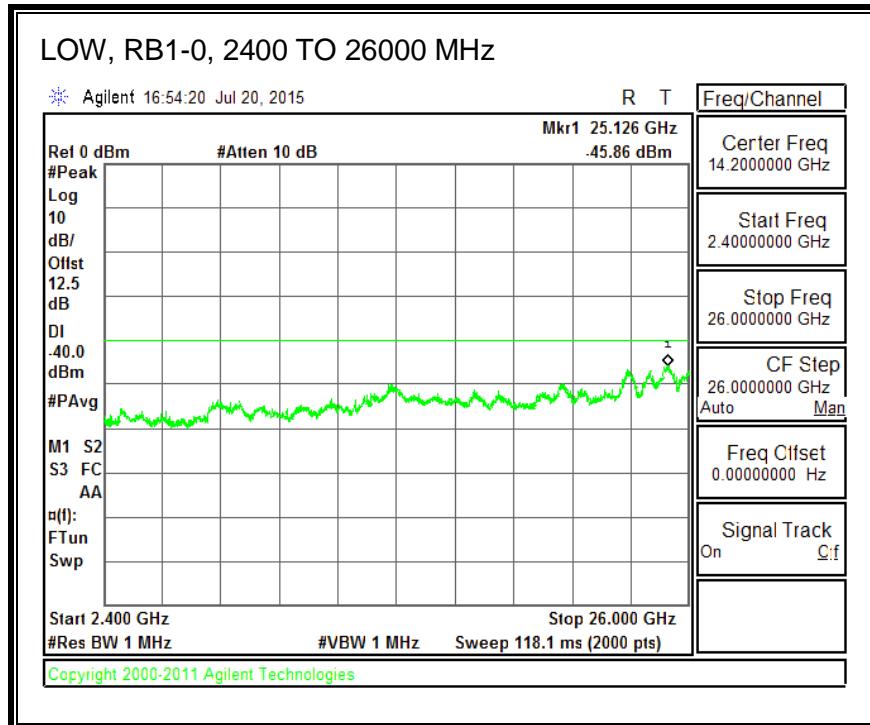
### 8.5.10. LTE BAND 30

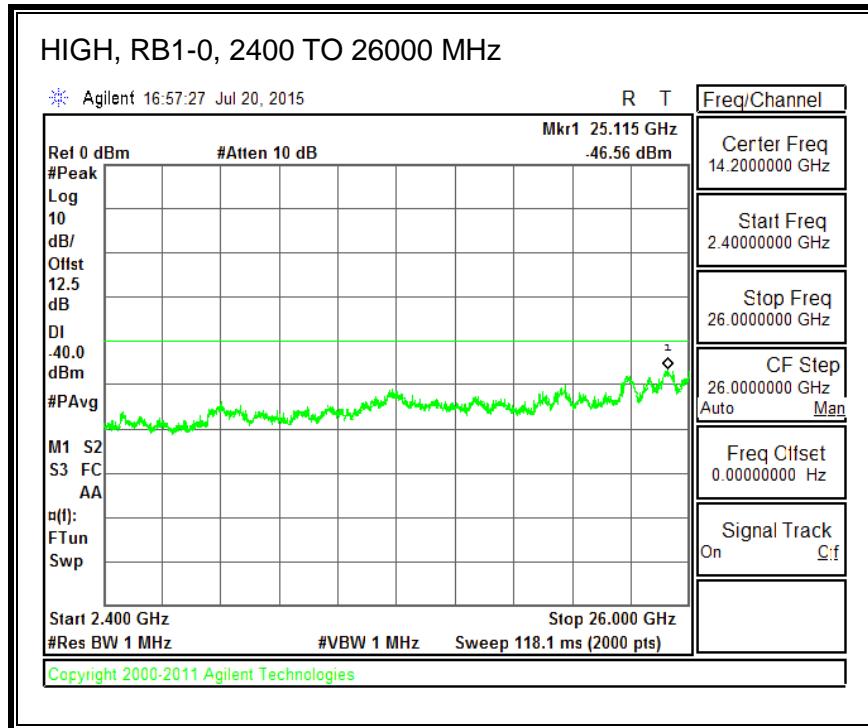
#### QPSK, (5.0 MHz BAND WIDTH)

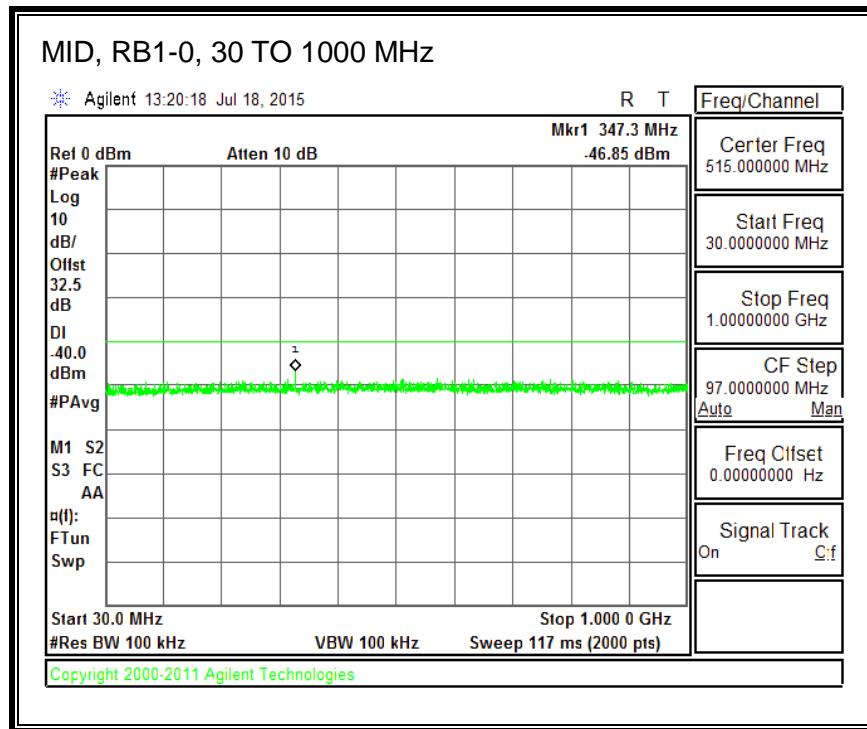
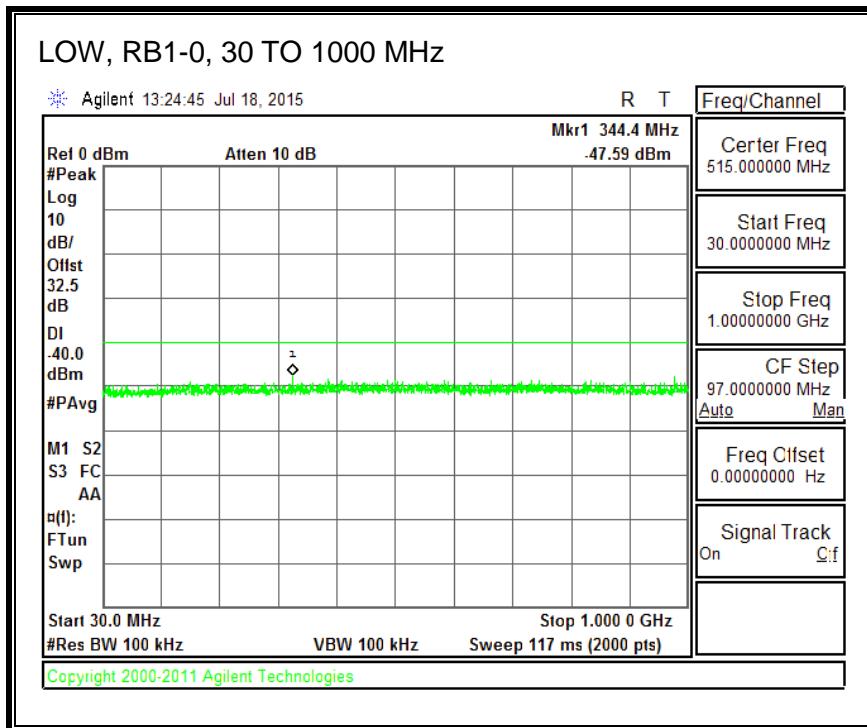


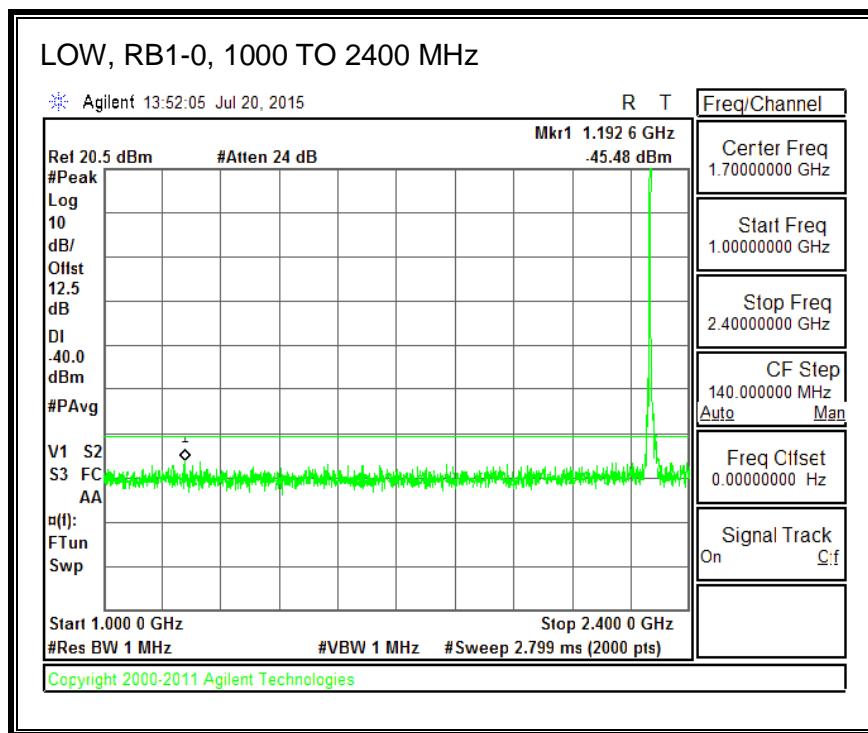
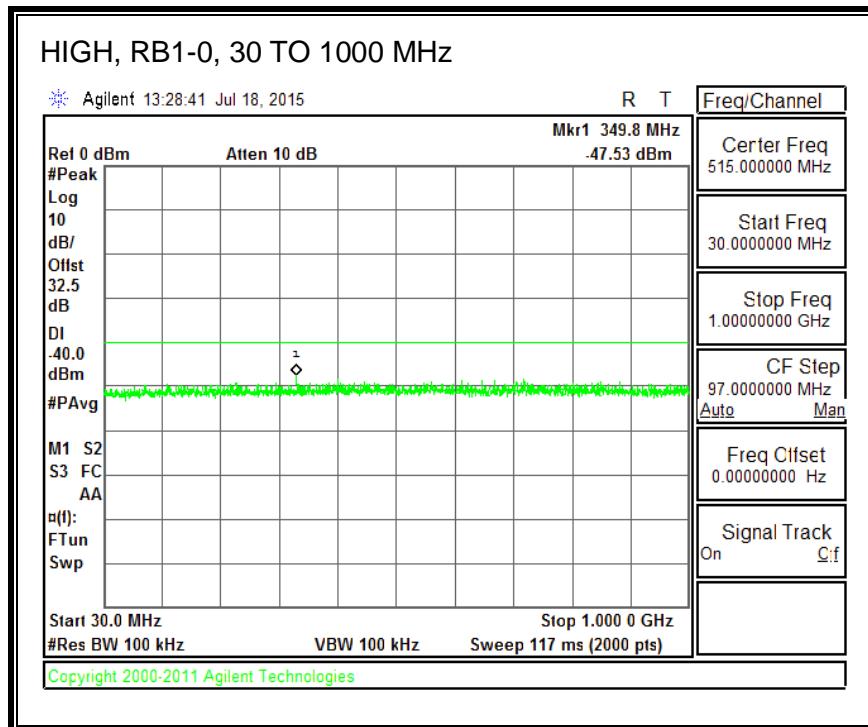


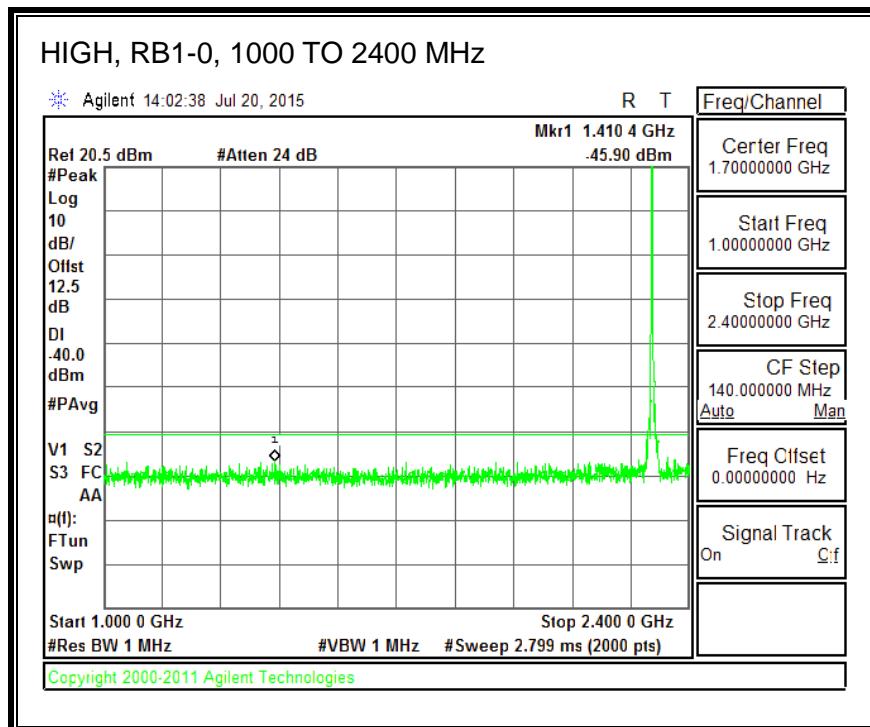
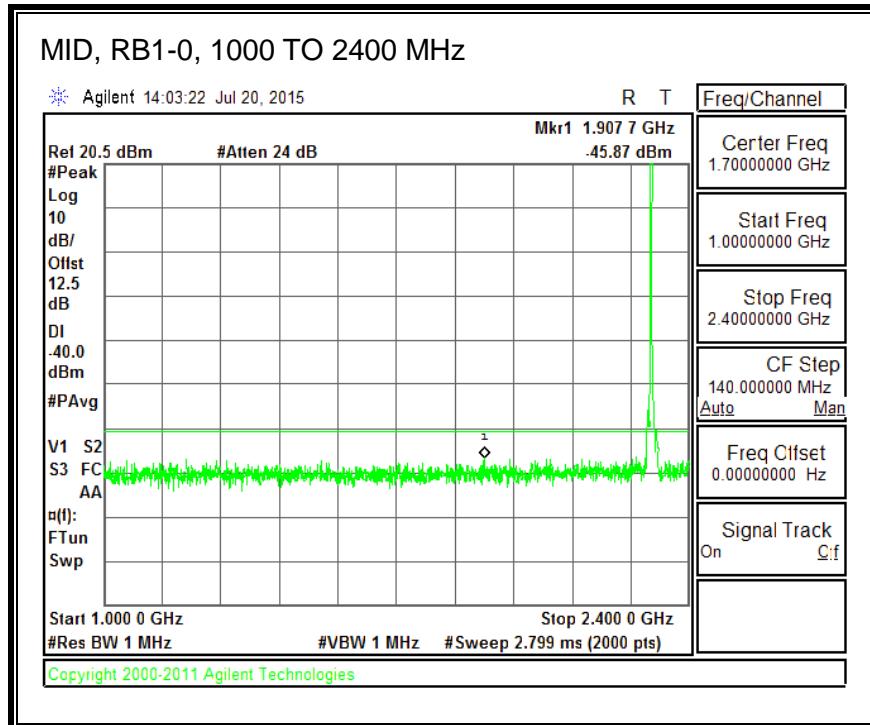


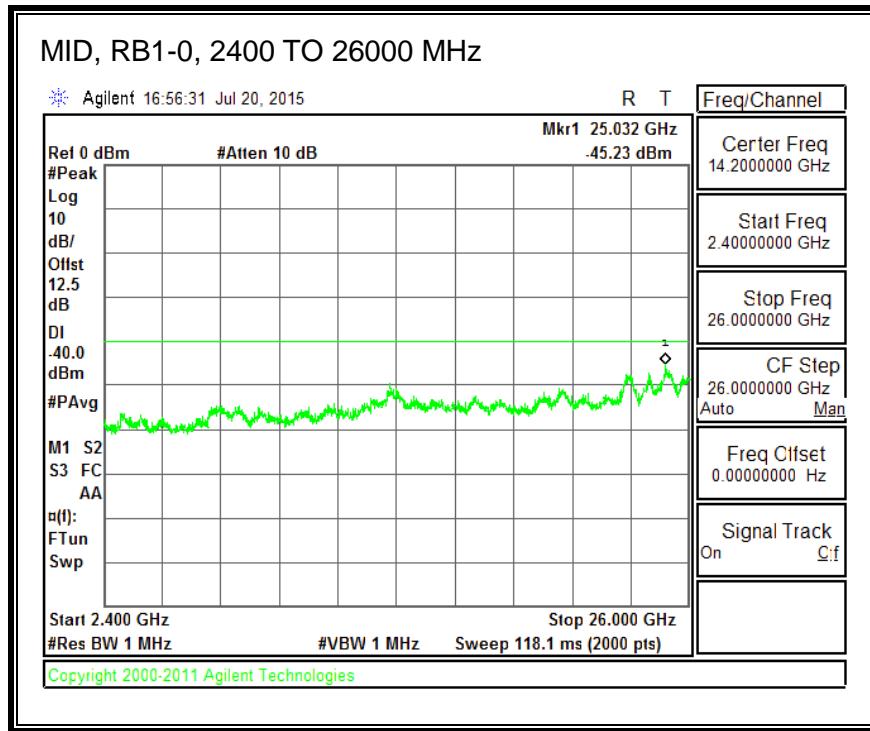
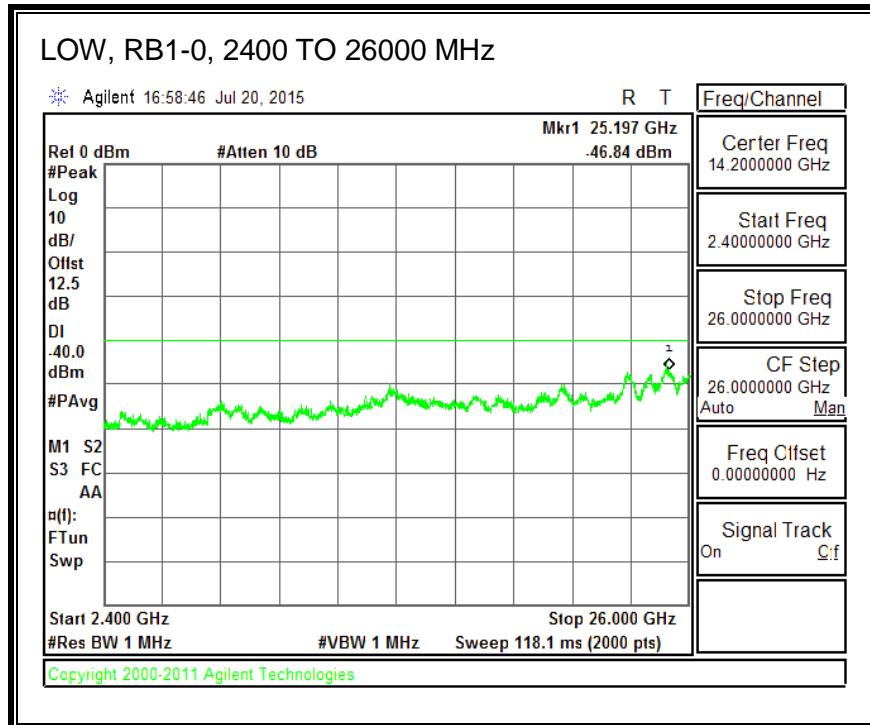


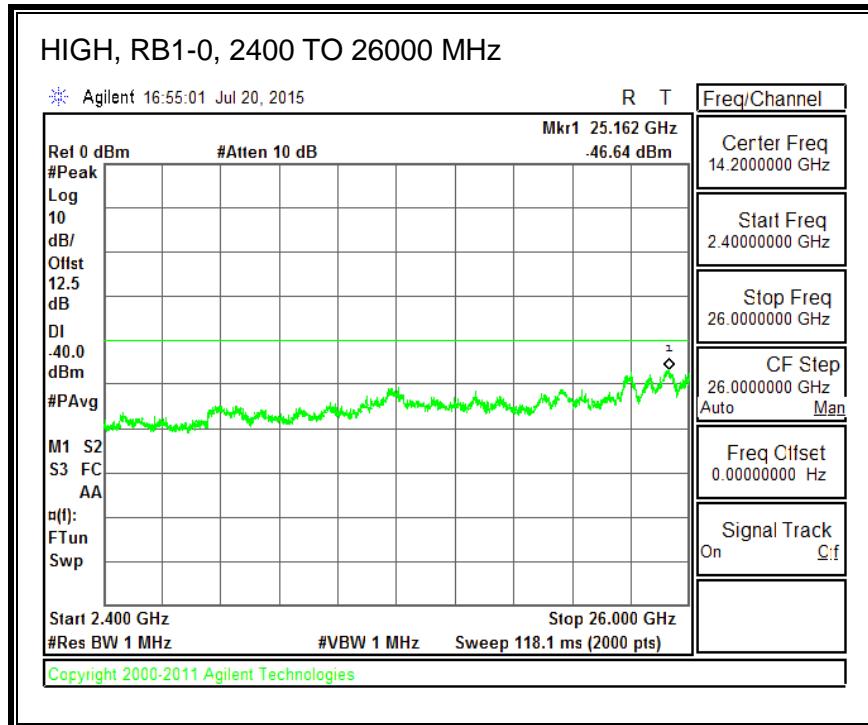


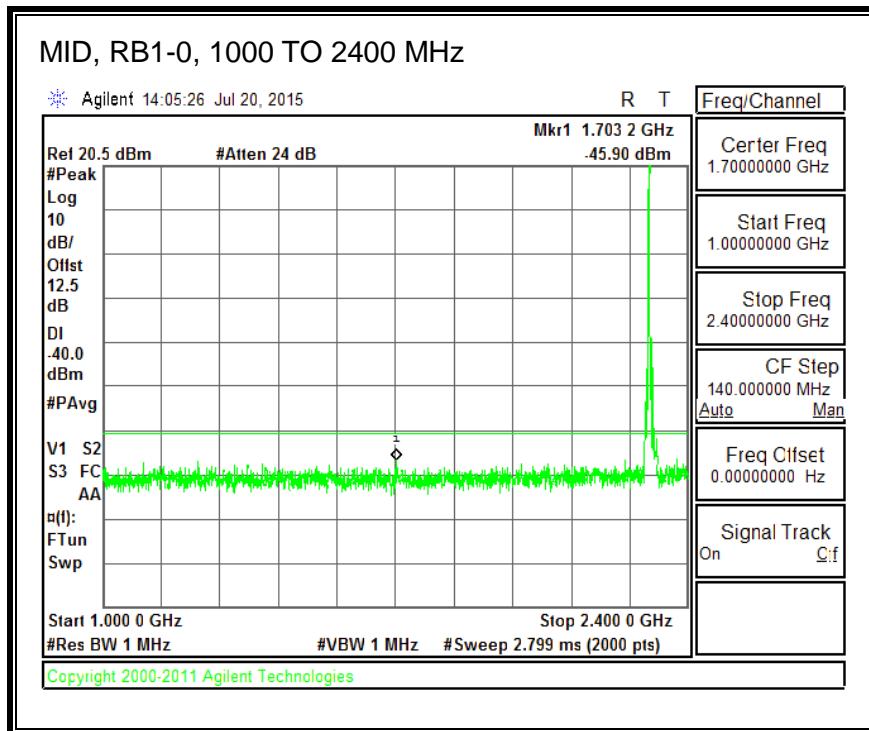
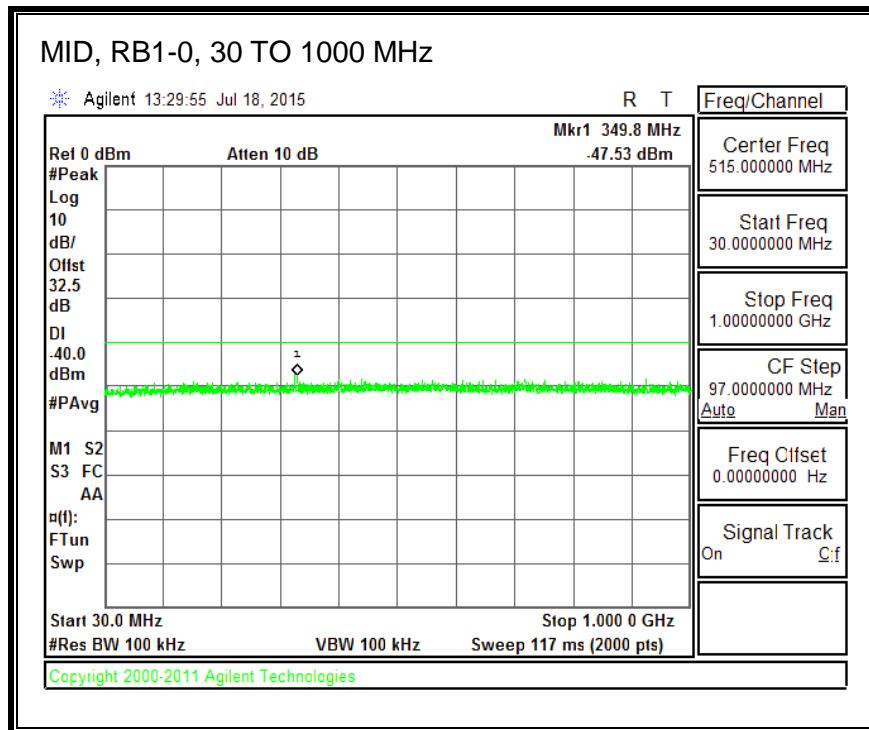
**16QAM, (5.0 MHz BAND WIDTH)**

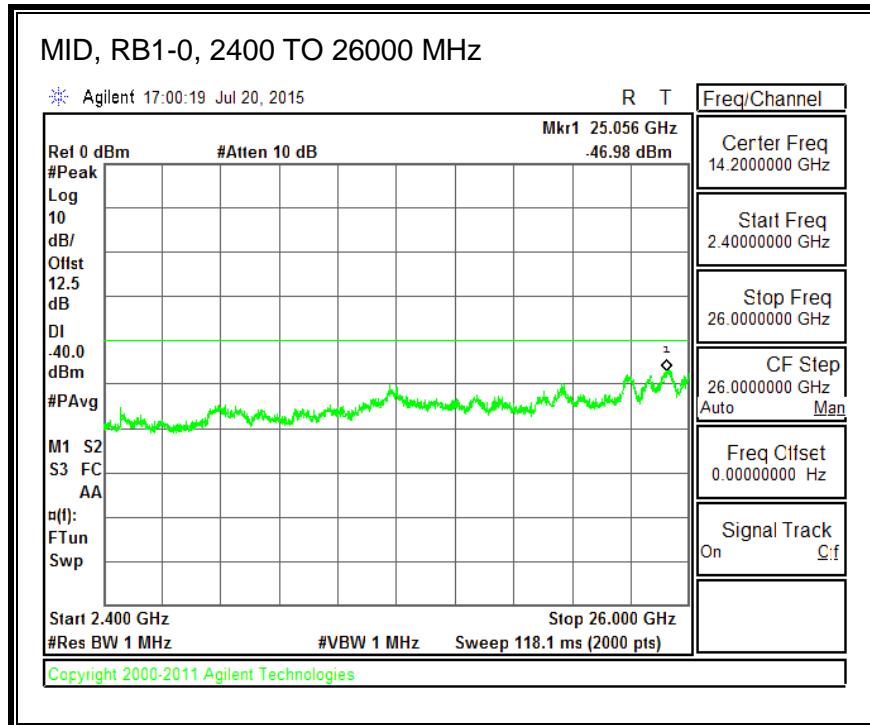




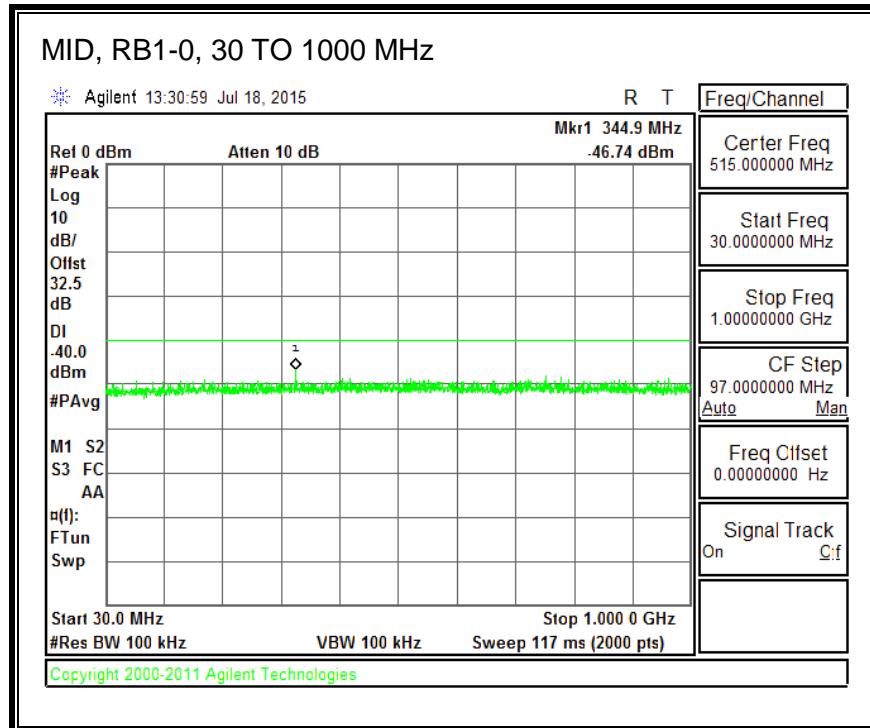


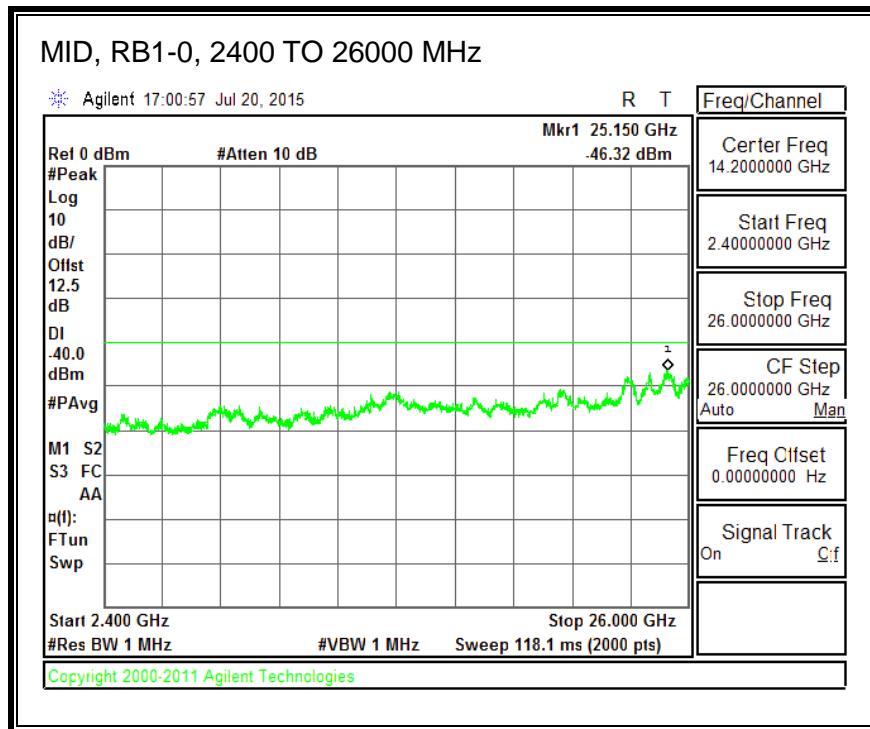
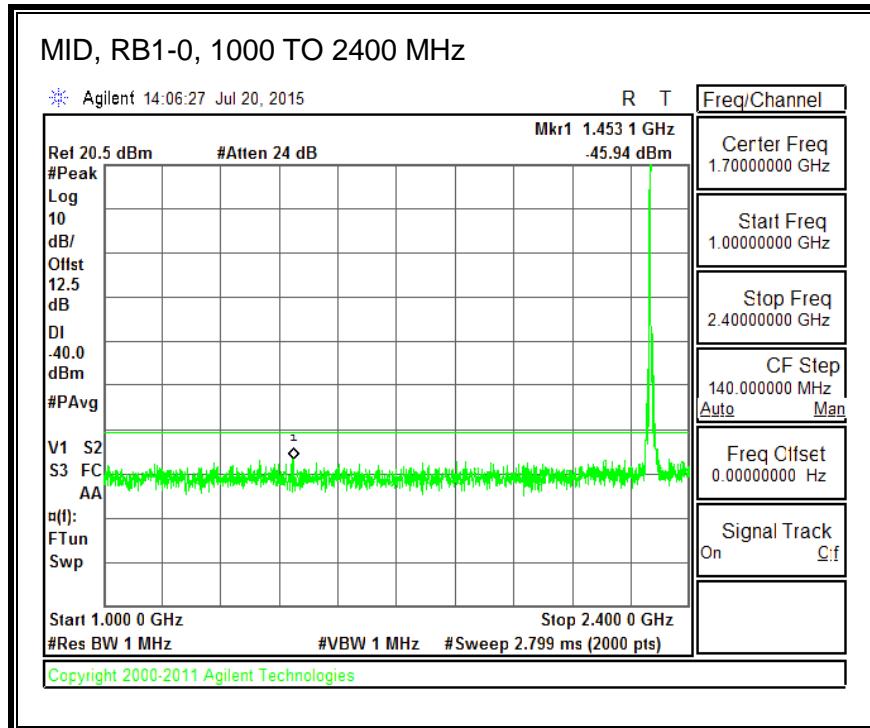


**QPSK, (10.0 MHz BAND WIDTH)**

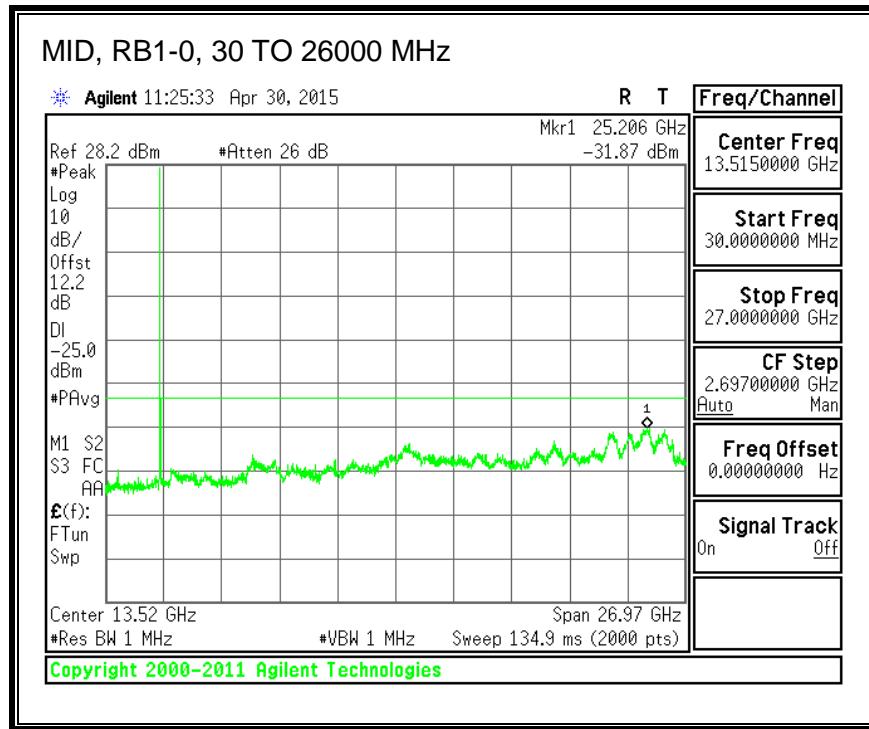
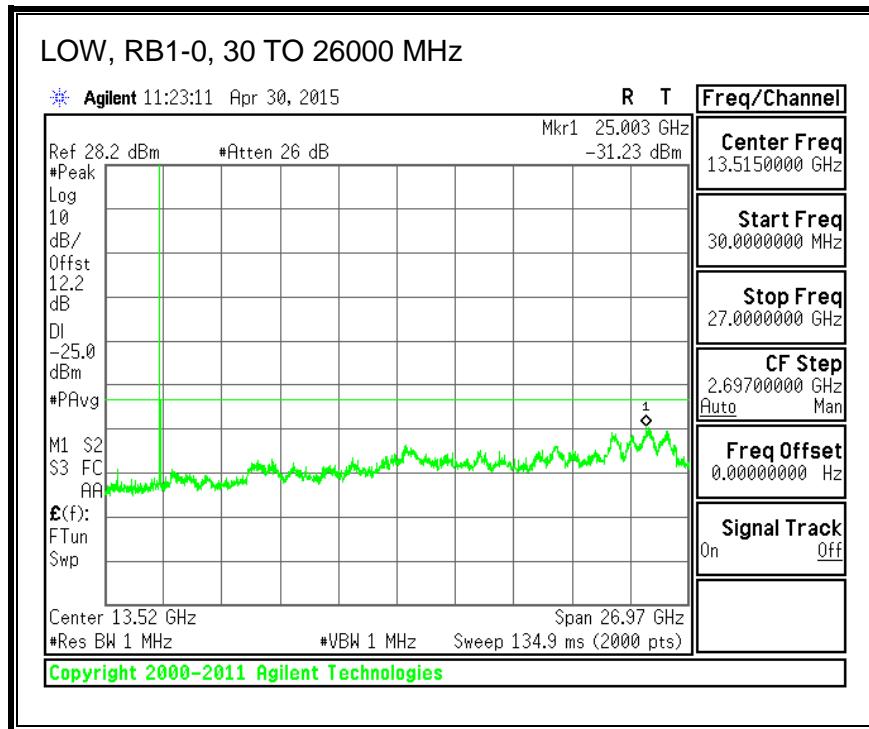


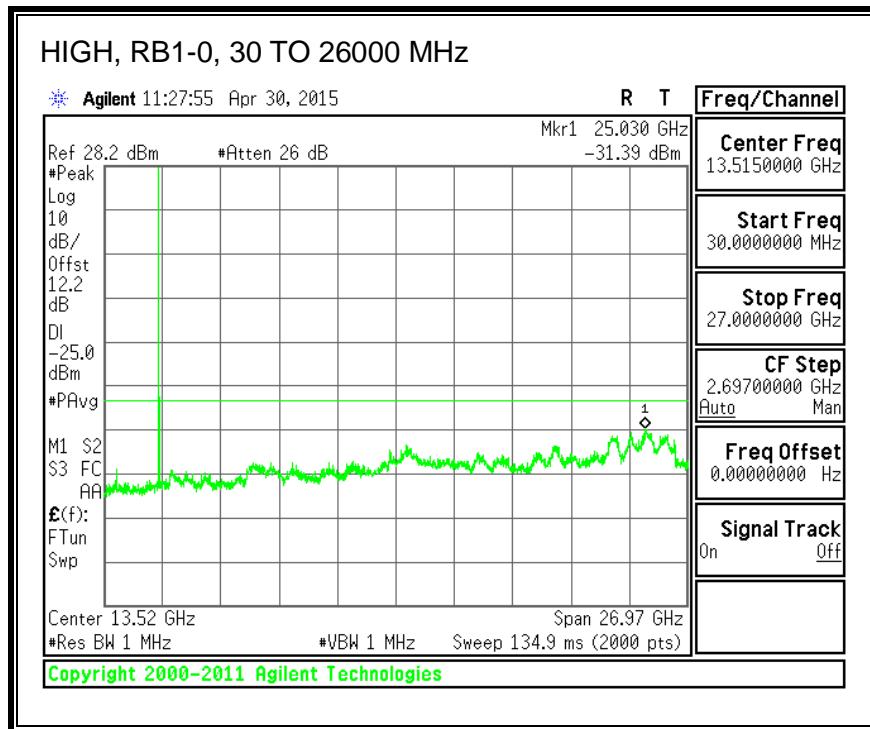
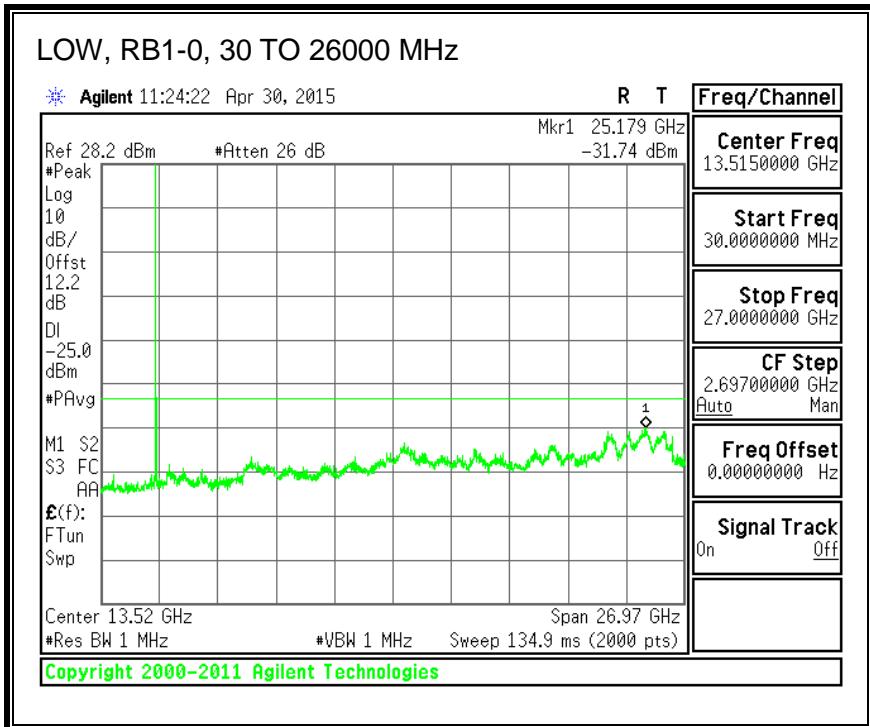
### 16QAM, (10.0 MHz BAND WIDTH)



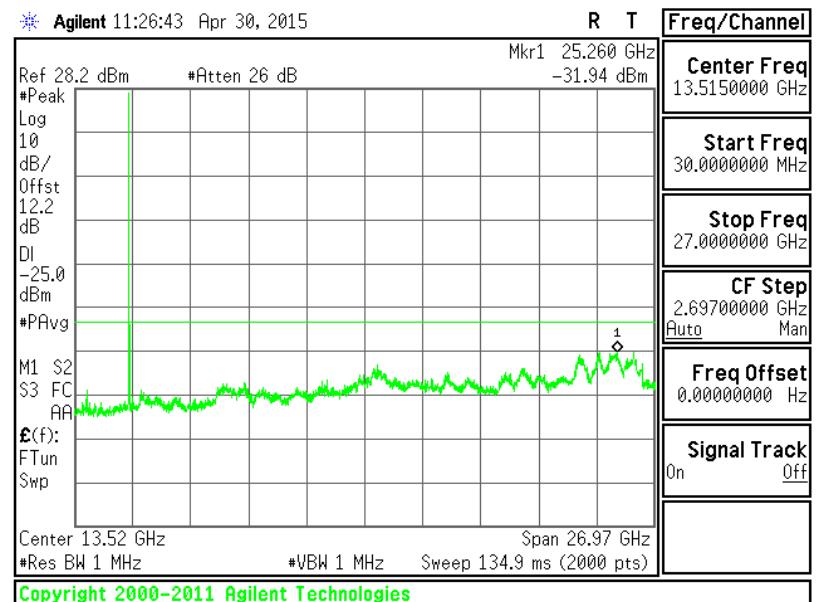


## 8.5.11. LTE BAND 41

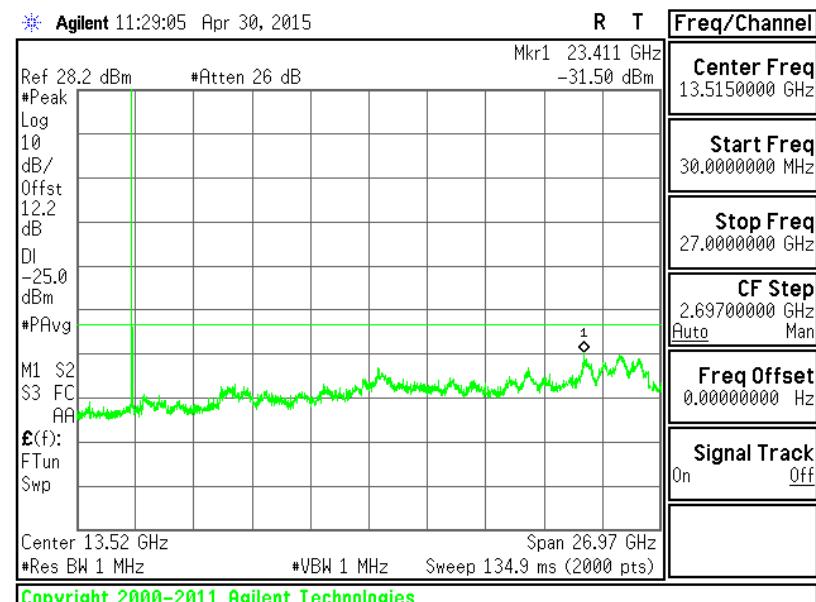
QPSK, (5.0 MHz BAND WIDTH)

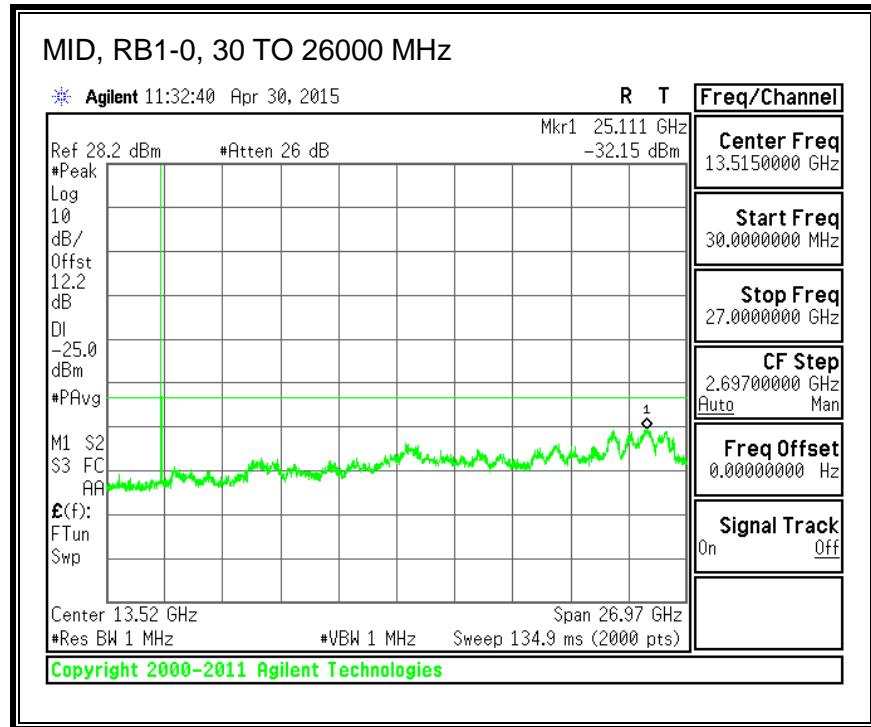
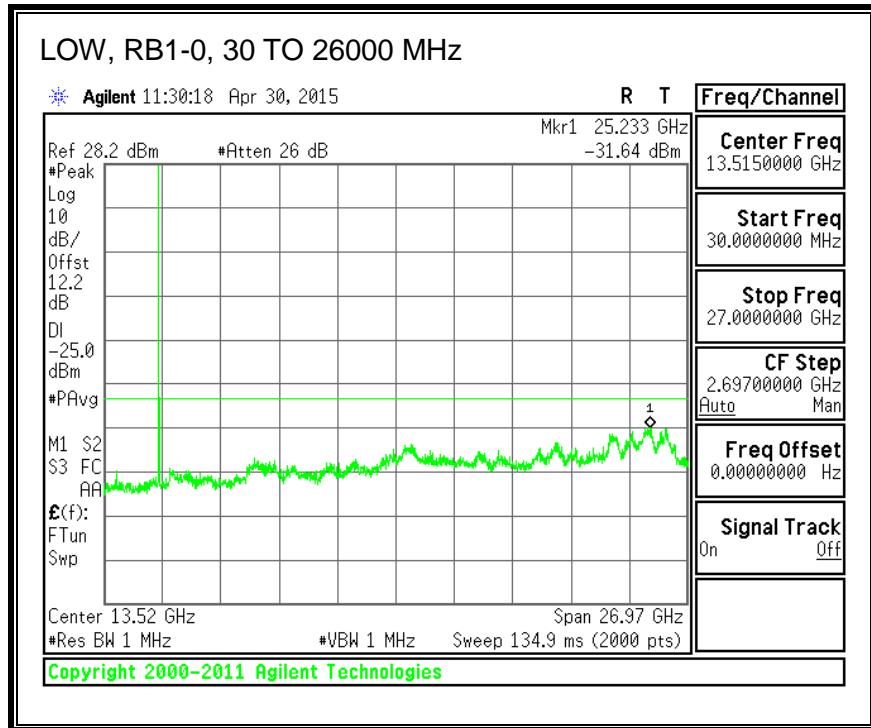
**16QAM, (5.0 MHz BAND WIDTH)**

## MID, RB1-0, 30 TO 26000 MHz

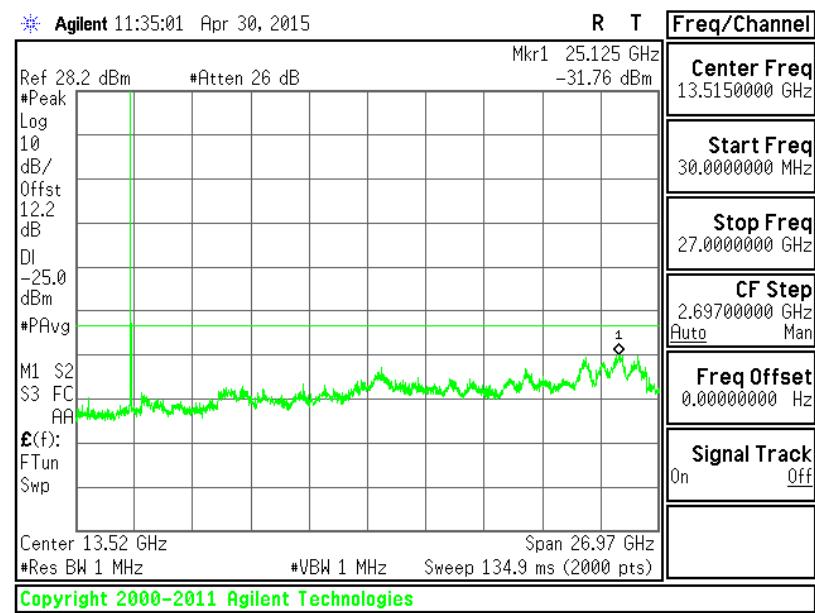


## HIGH, RB1-0, 30 TO 26000 MHz

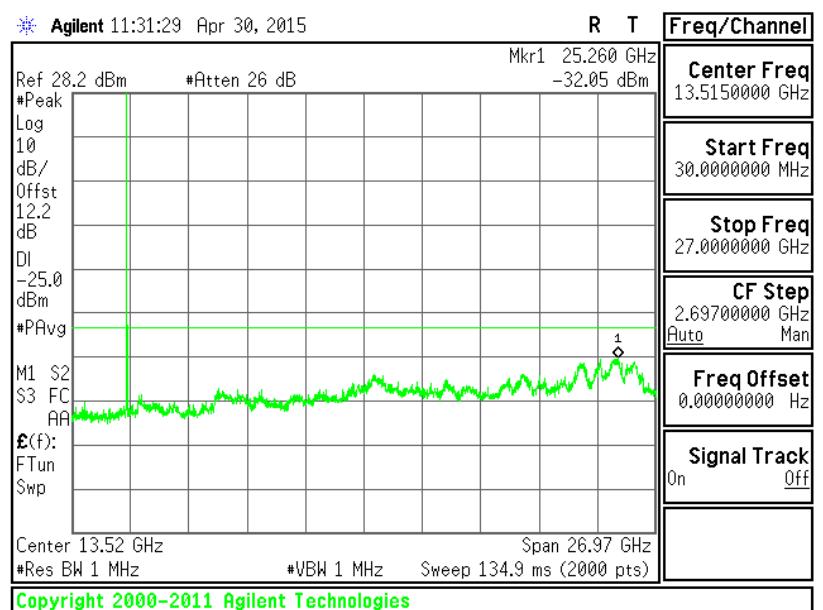


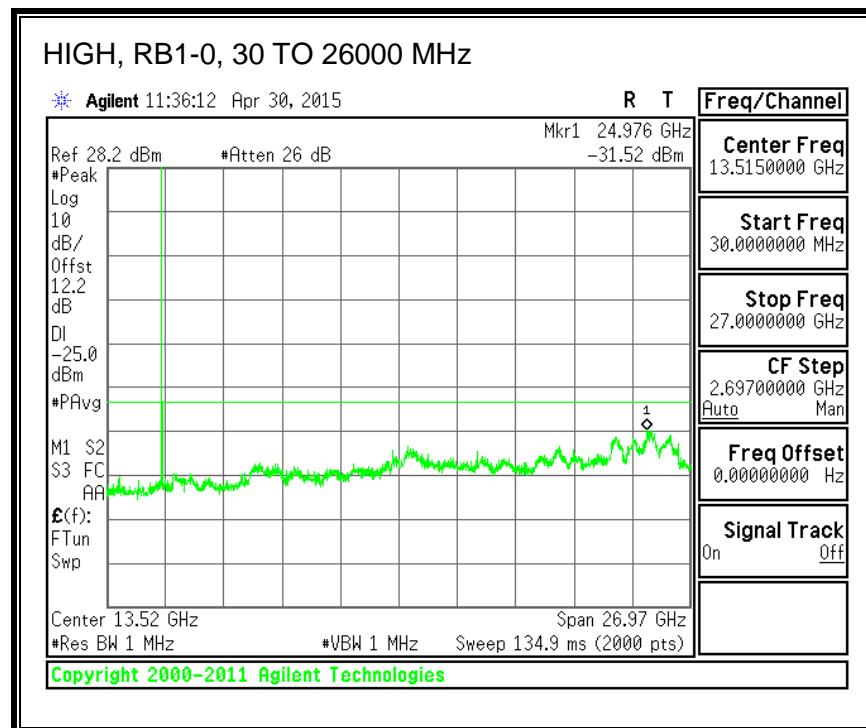
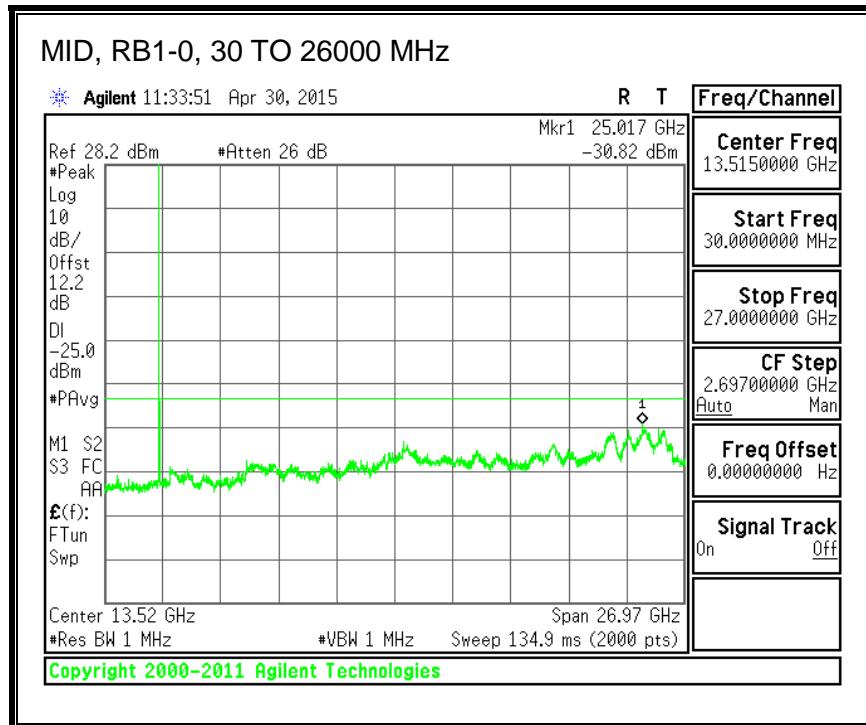
**QPSK, (10.0 MHz BAND WIDTH)**

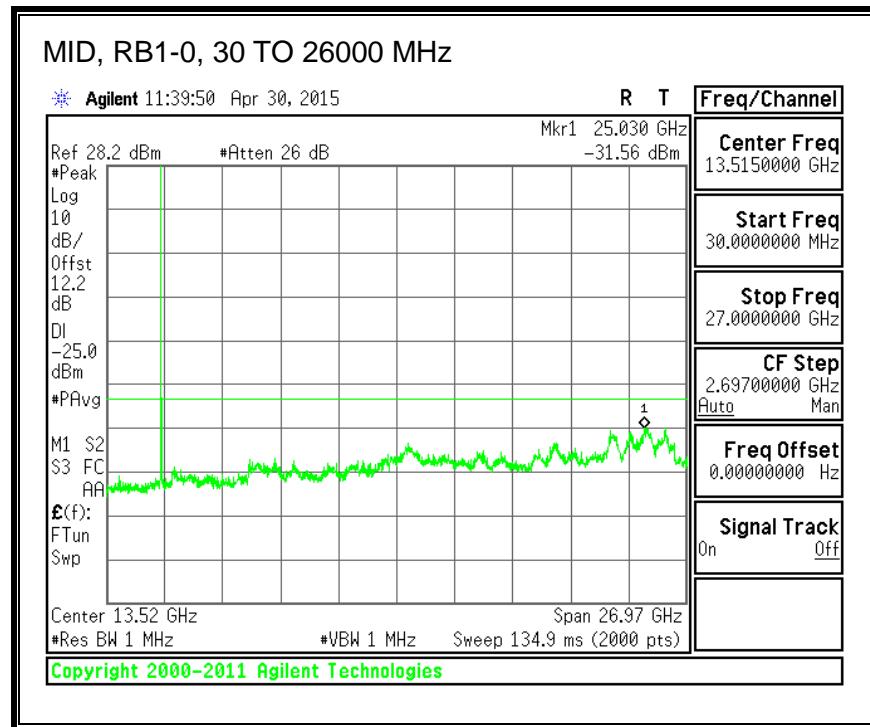
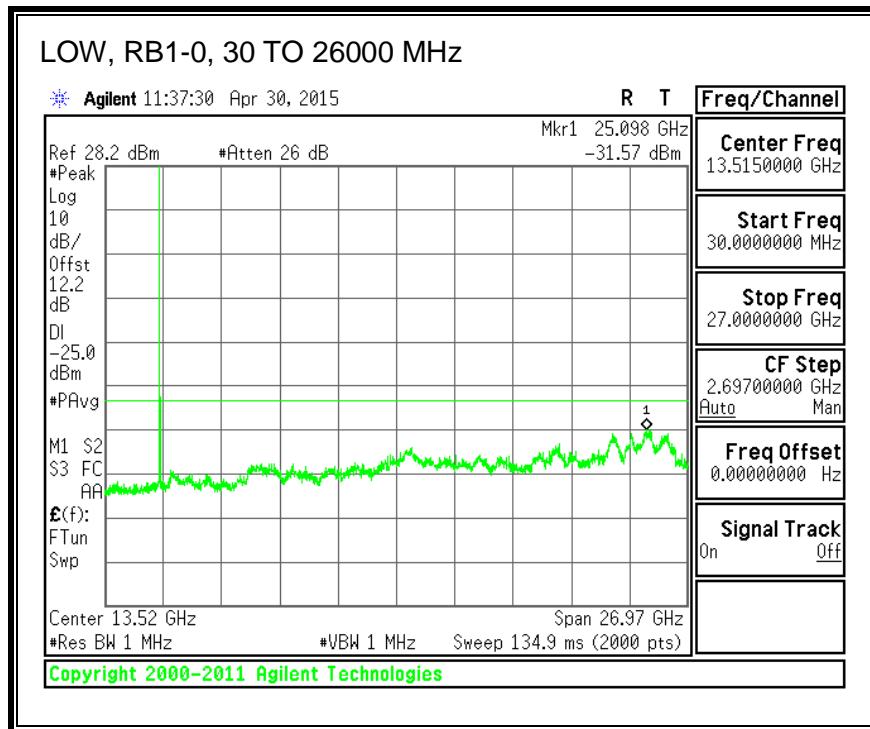
## HIGH, RB1-0, 30 TO 26000 MHz

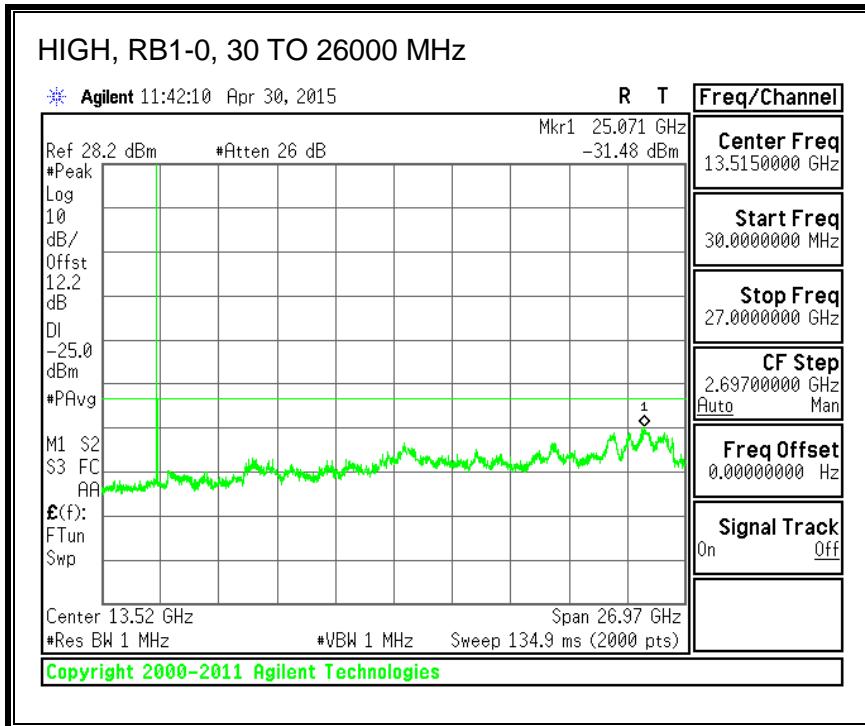
16QAM, (10.0 MHz BAND WIDTH)

## LOW, RB1-0, 30 TO 26000 MHz

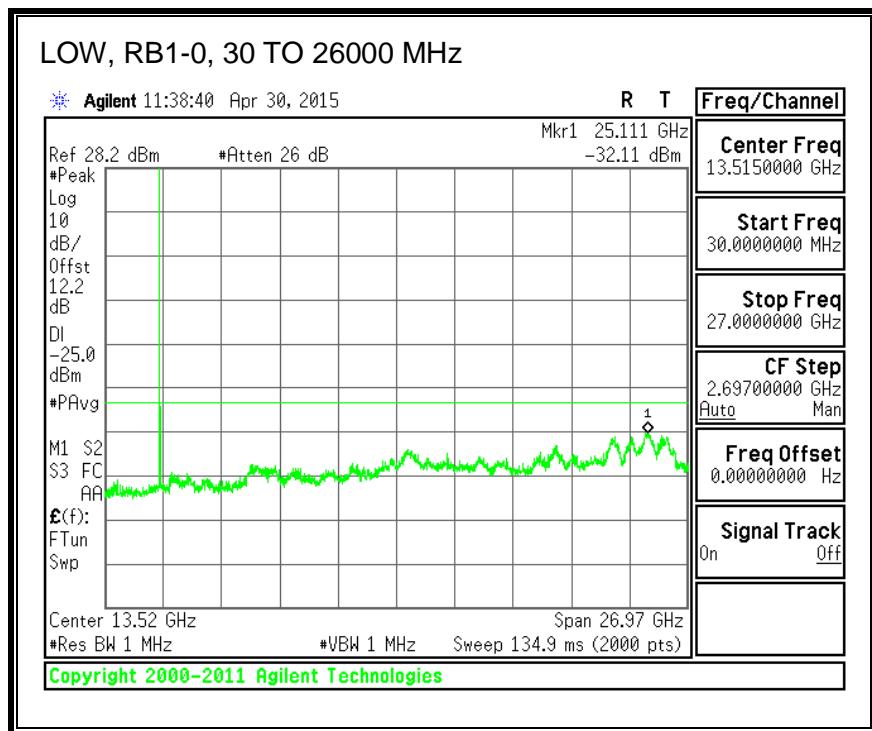


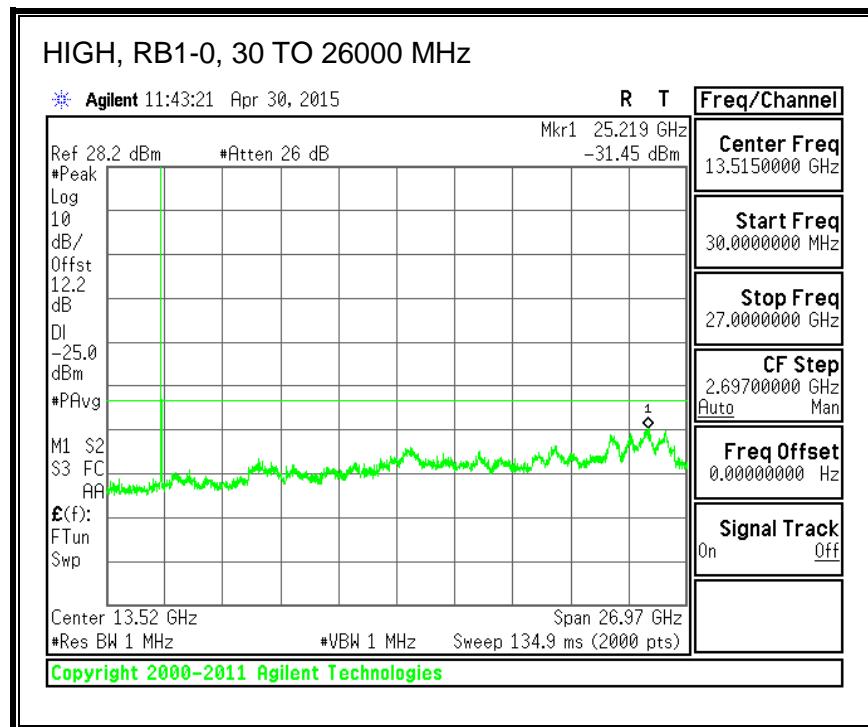
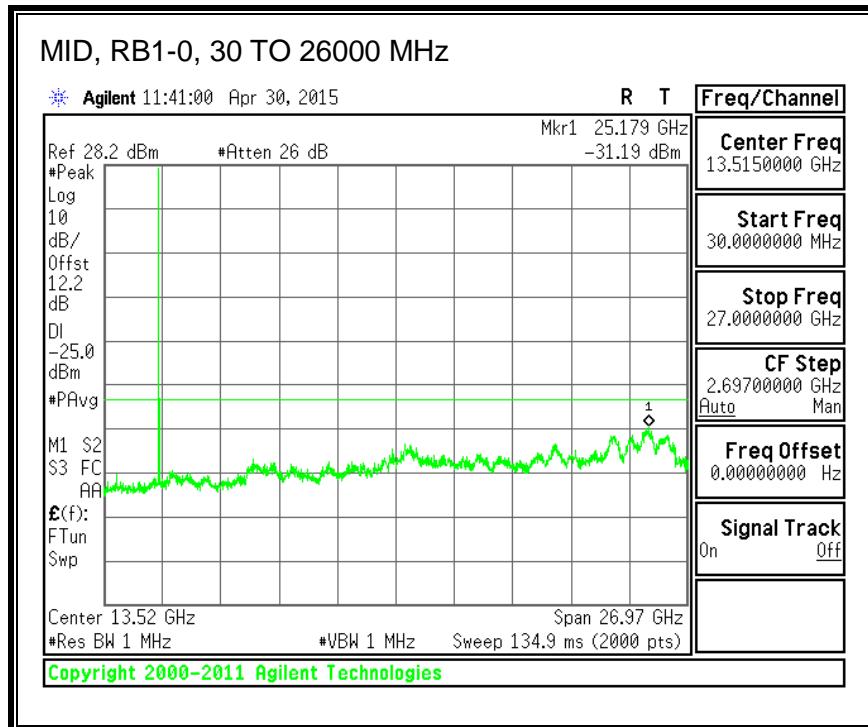


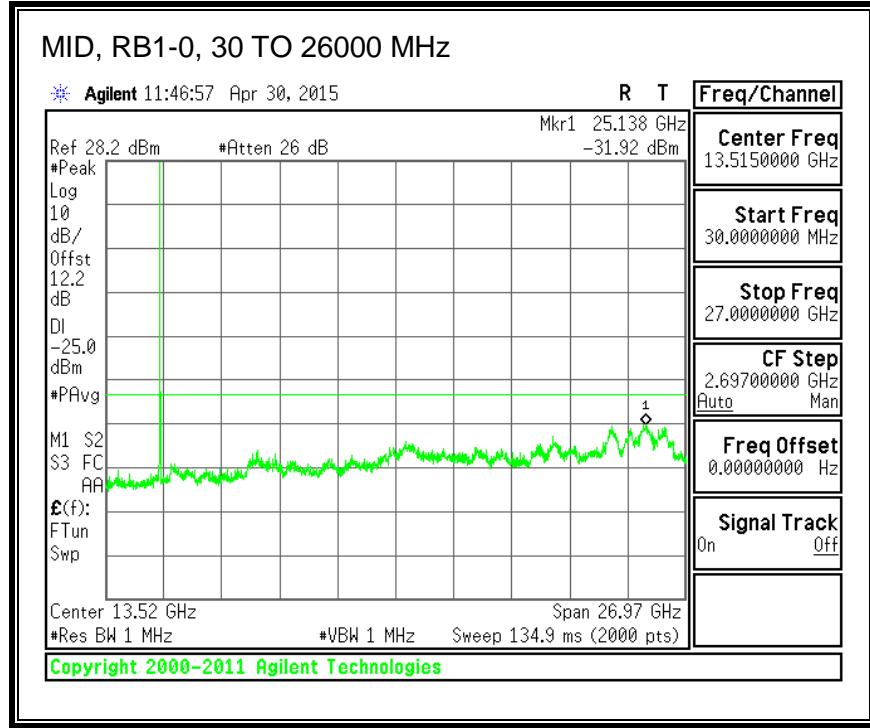
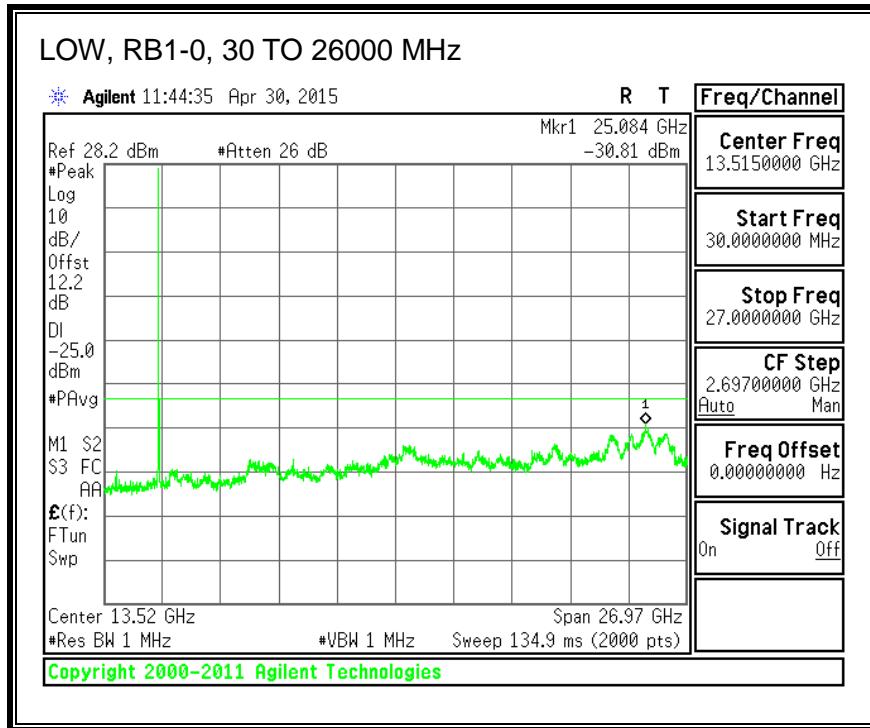
**QPSK, (15.0 MHz BAND WIDTH)**

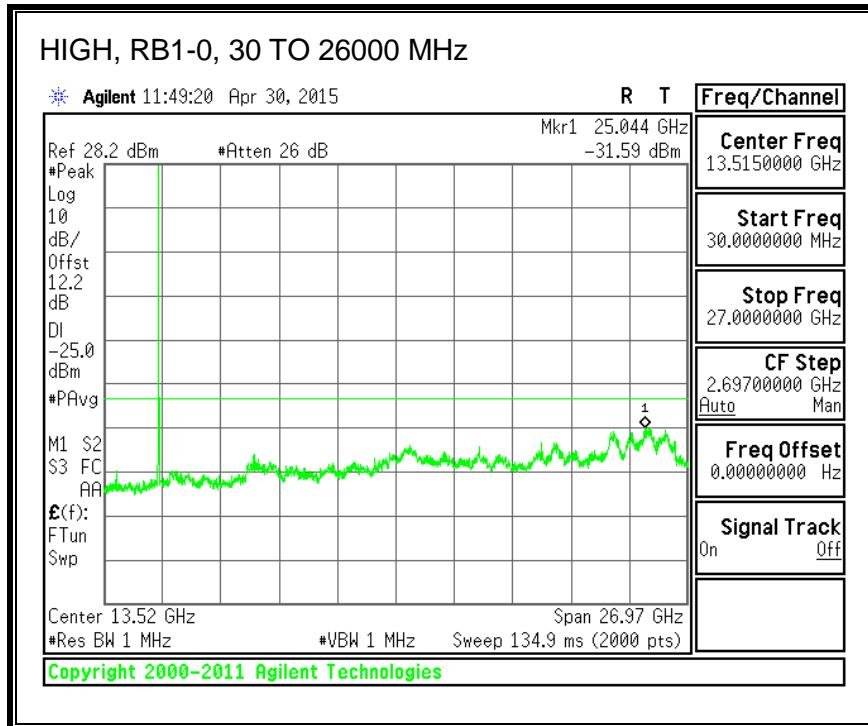


### 16QAM, (15.0 MHz BAND WIDTH)

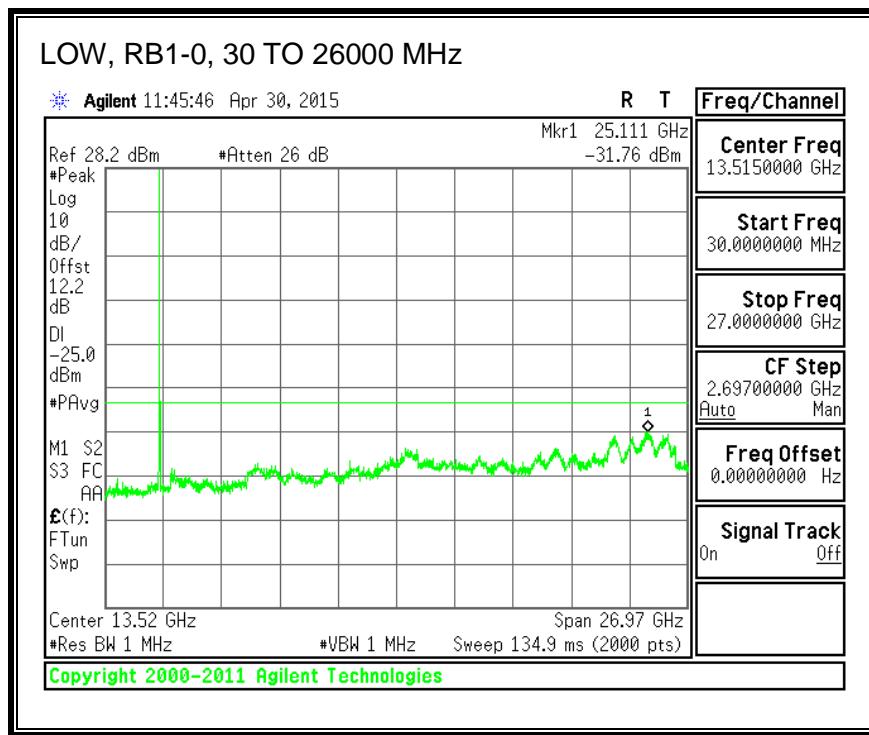


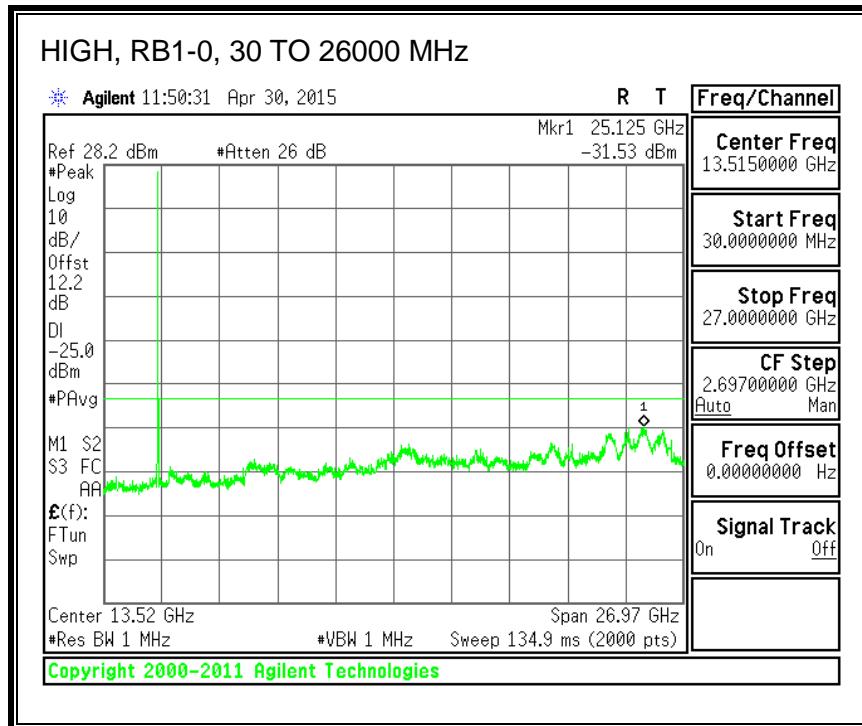
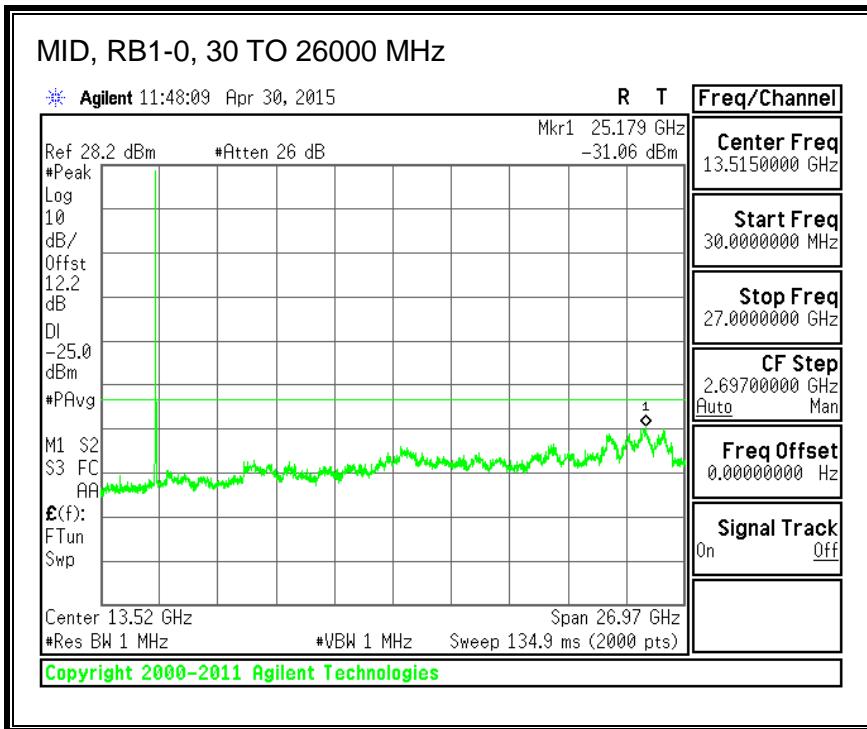


**QPSK, (20.0 MHz BAND WIDTH)**



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





## 8.6. OUT OF BAND EMISSIONS (MODEL: A1688)

### RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238 and §27.53

### LIMITS

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.

### TEST PROCEDURE

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

For each out of band emissions measurement:

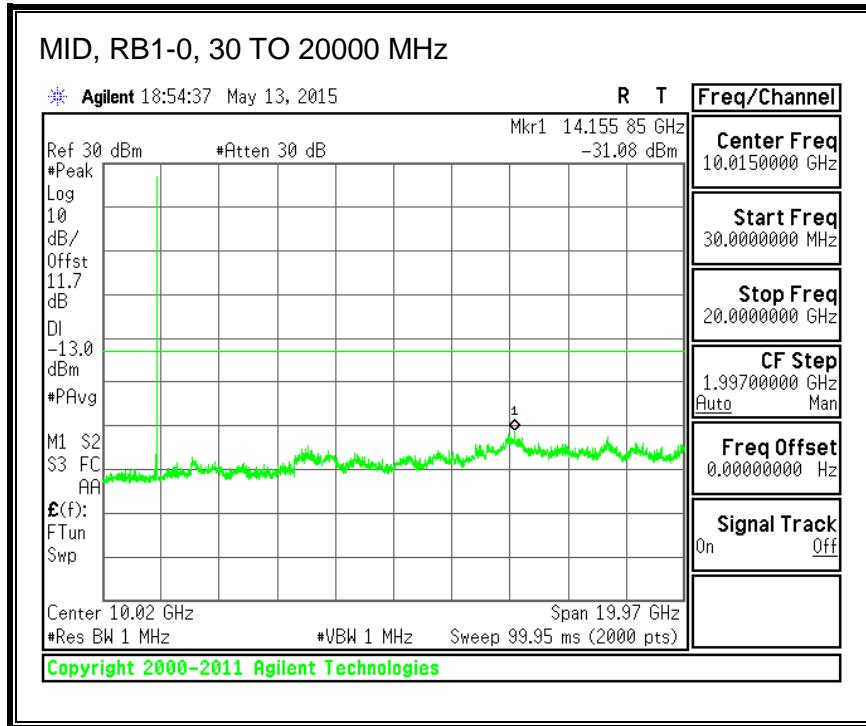
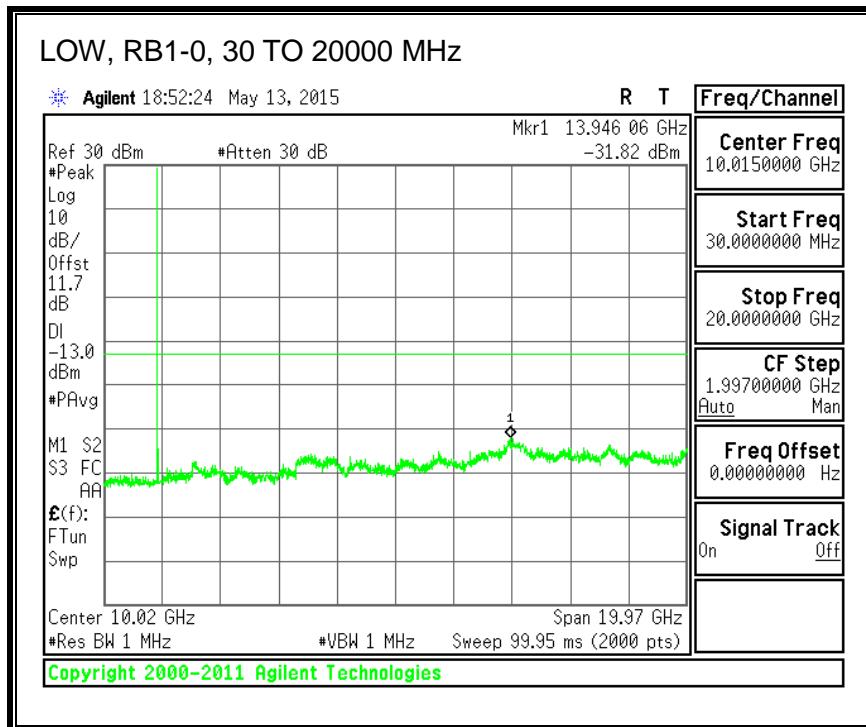
- Set display line at -13 dBm
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

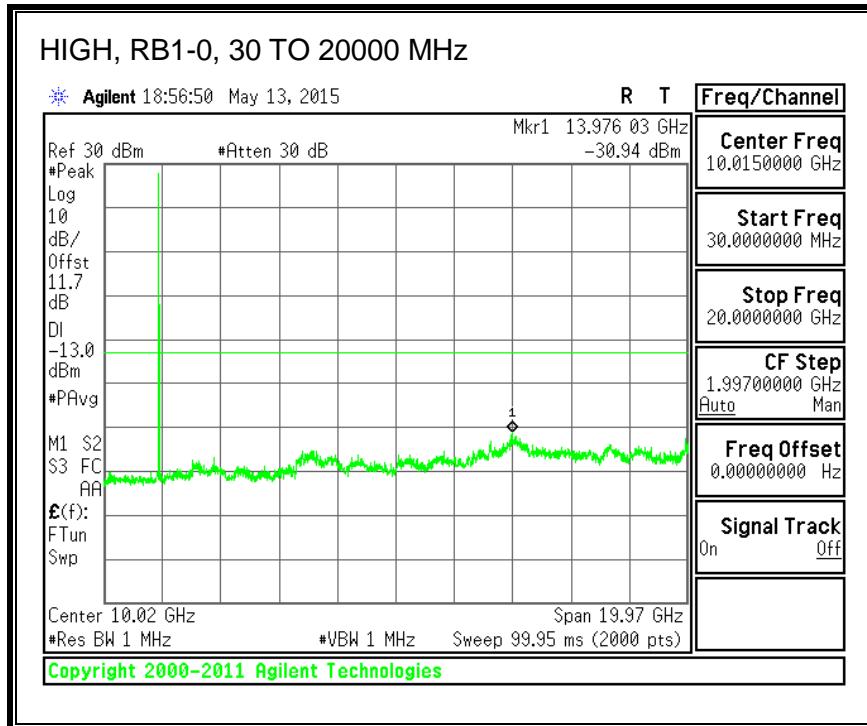
### MODES TESTED

- 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 41

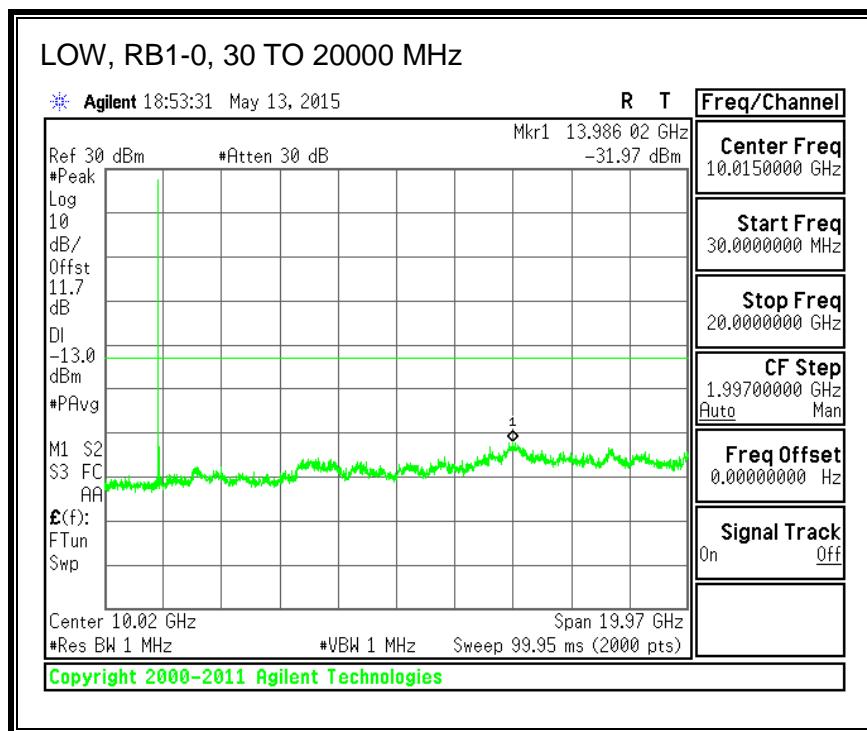
### 8.6.1. LTE BAND 2

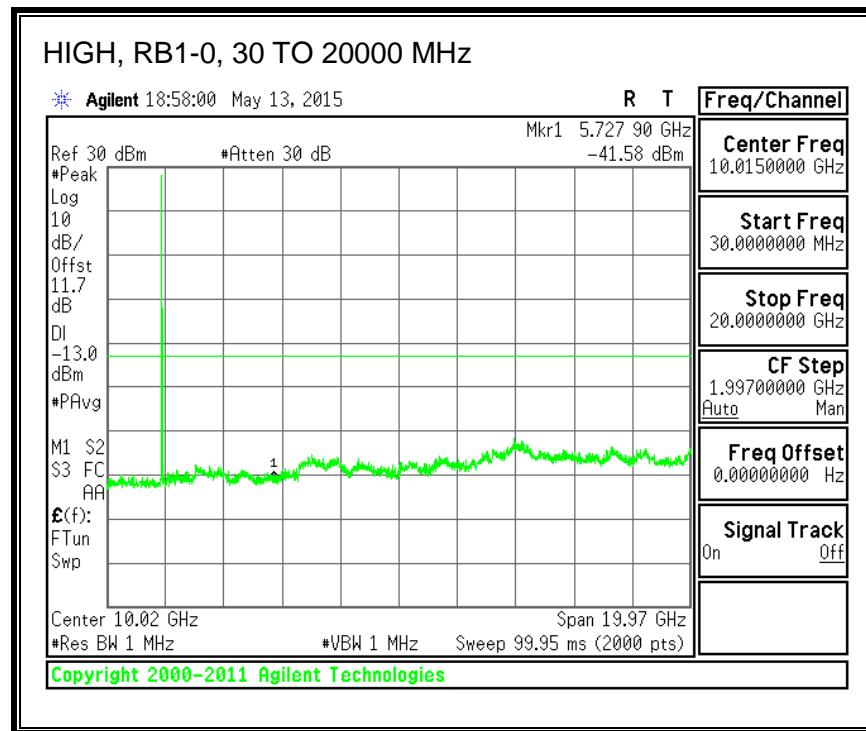
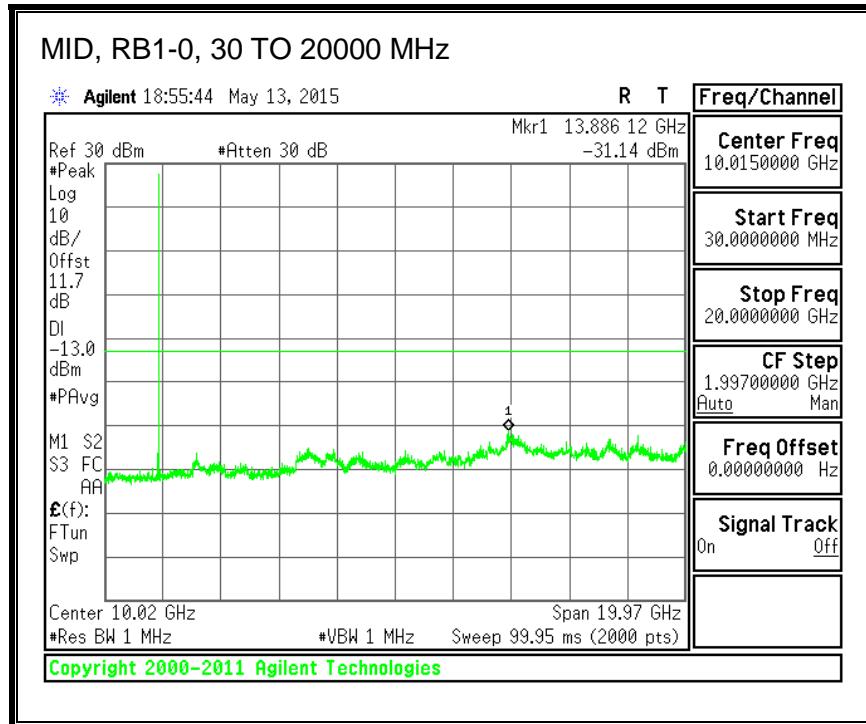
#### QPSK, (1.4 MHz BAND WIDTH)

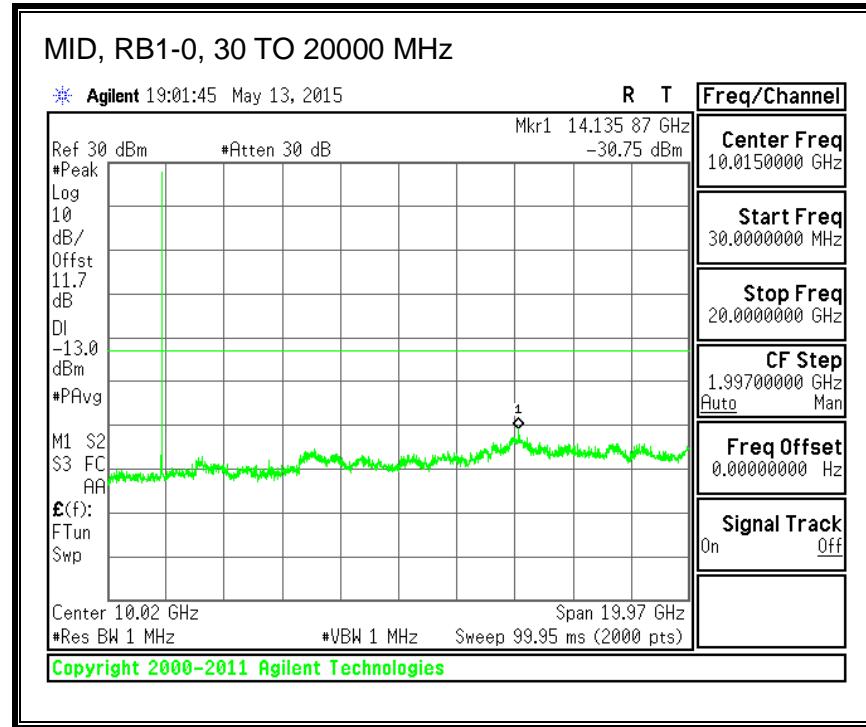
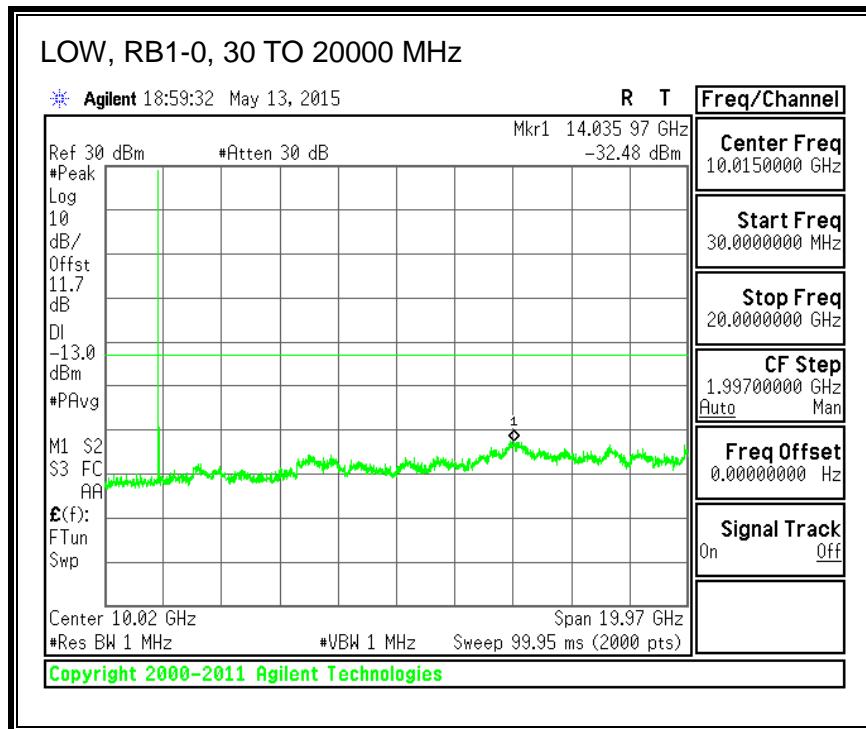


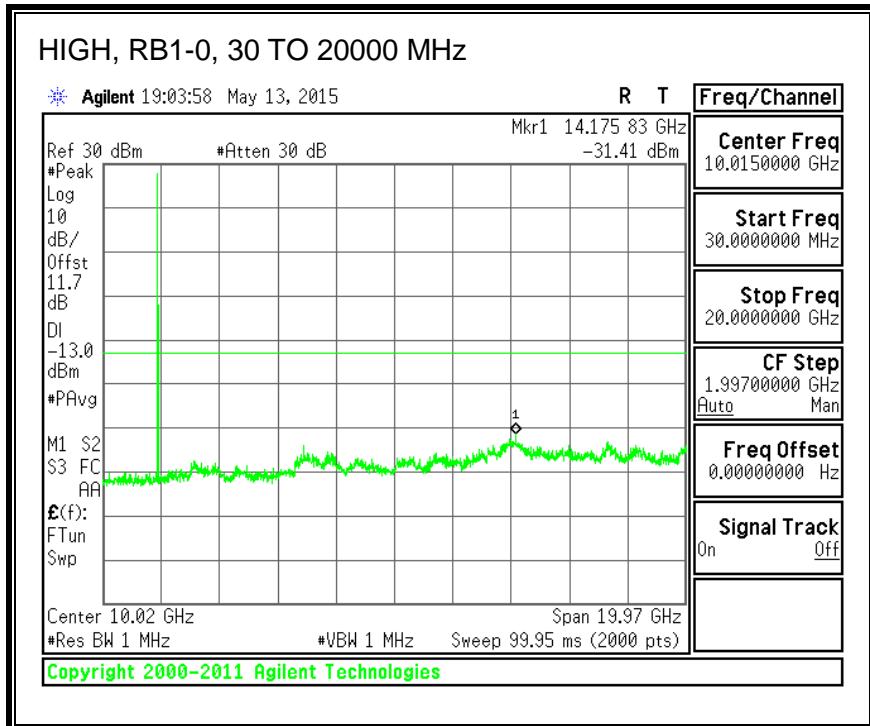


### 16QAM, (1.4 MHz BAND WIDTH)

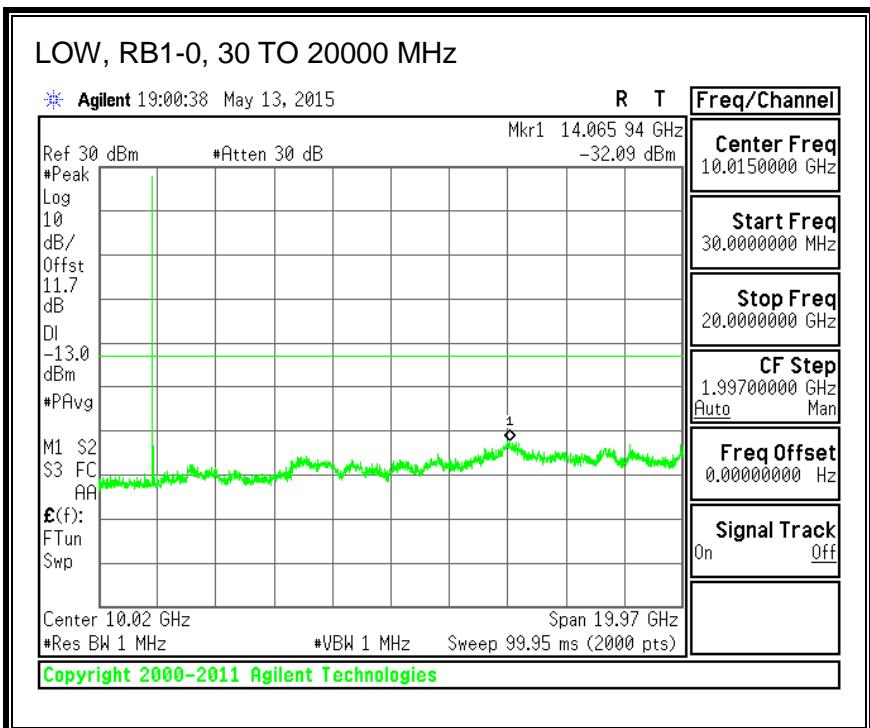


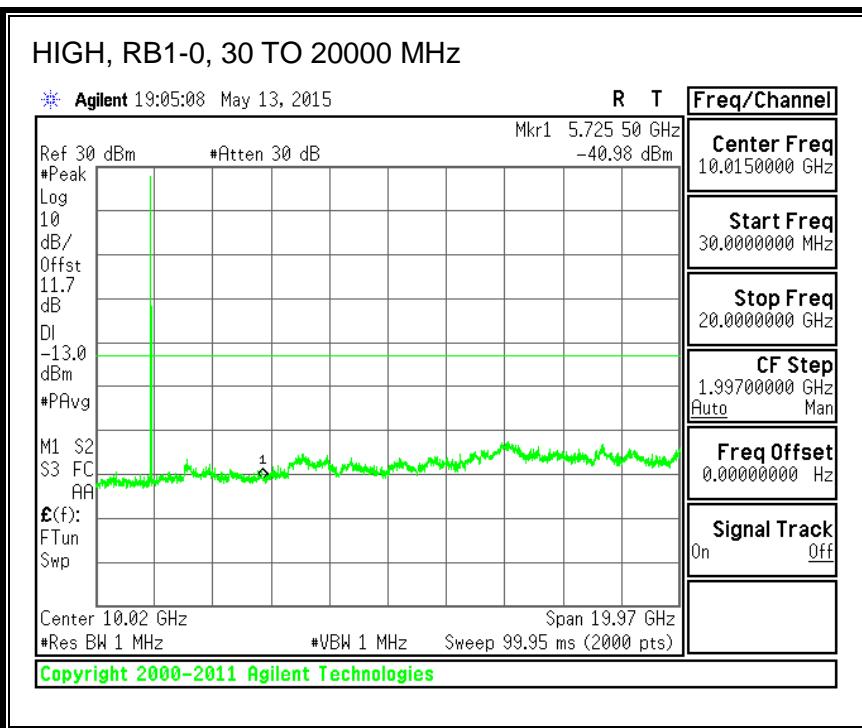
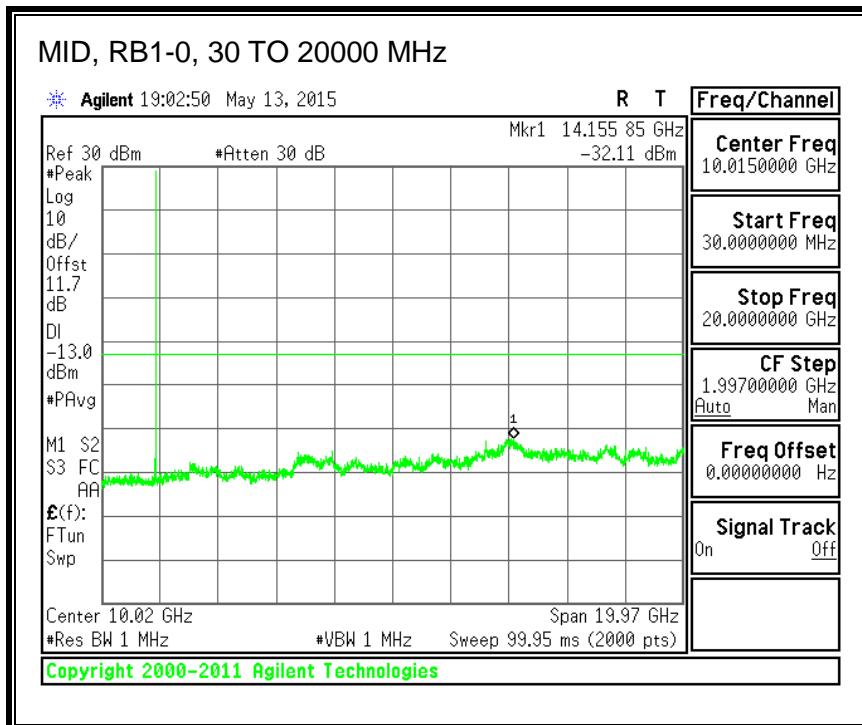


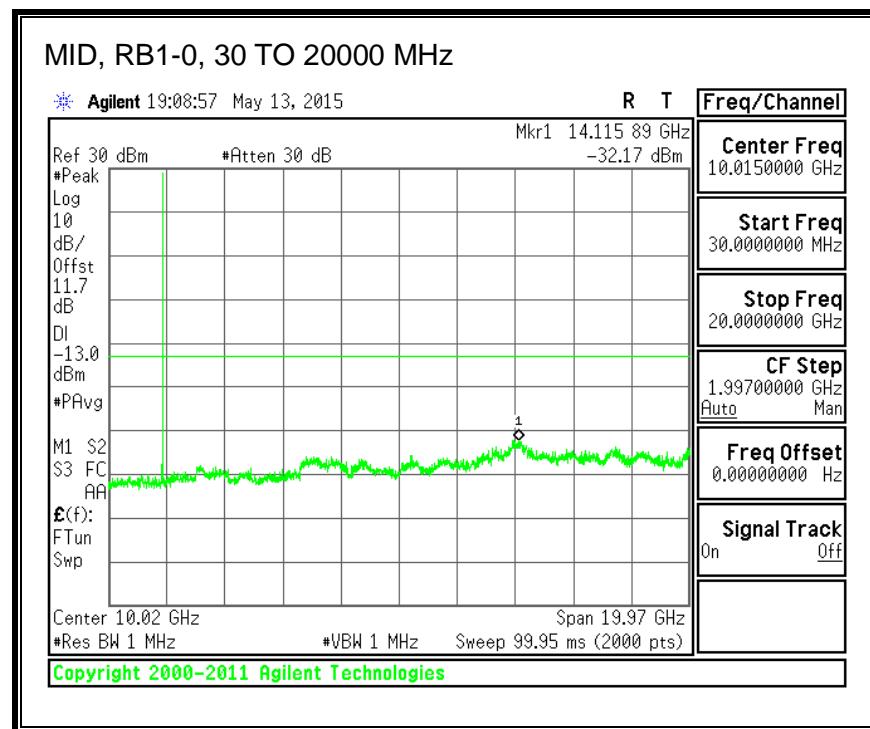
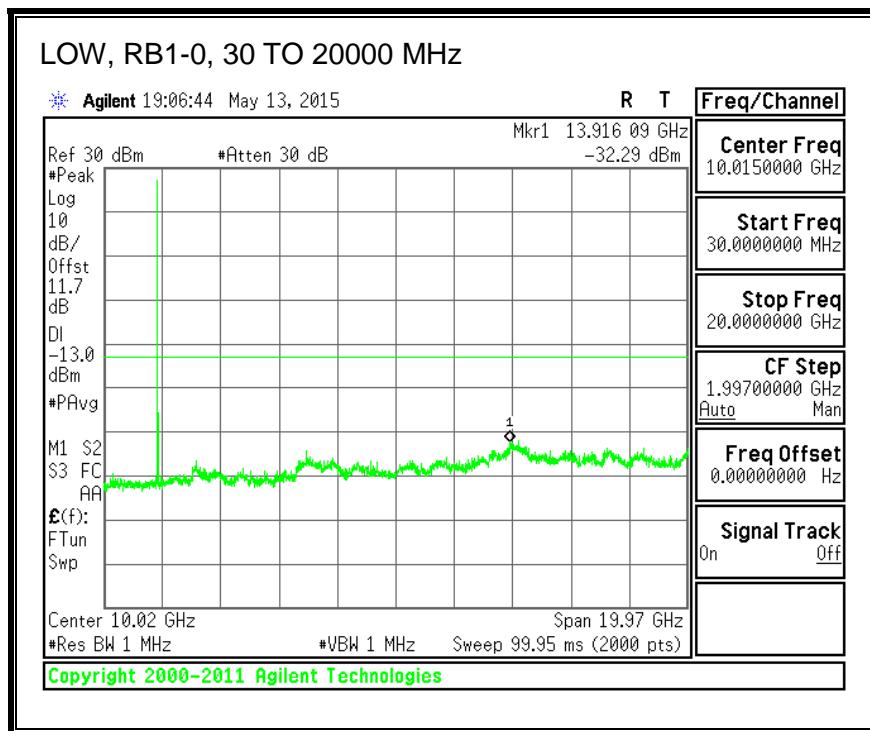
**QPSK, (3.0 MHz BAND WIDTH)**

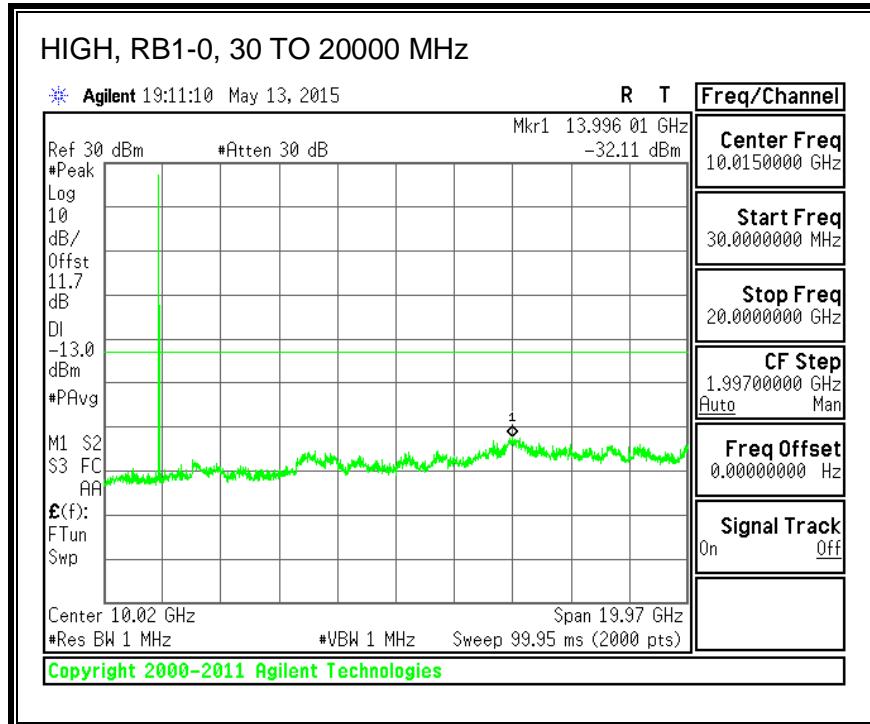


### 16QAM, (3.0 MHz BAND WIDTH)

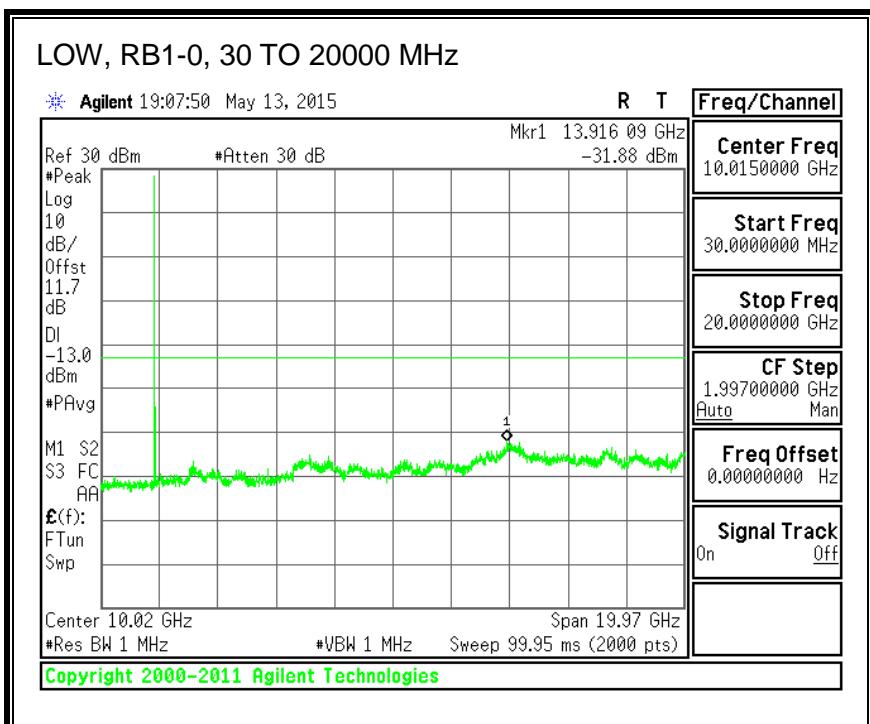


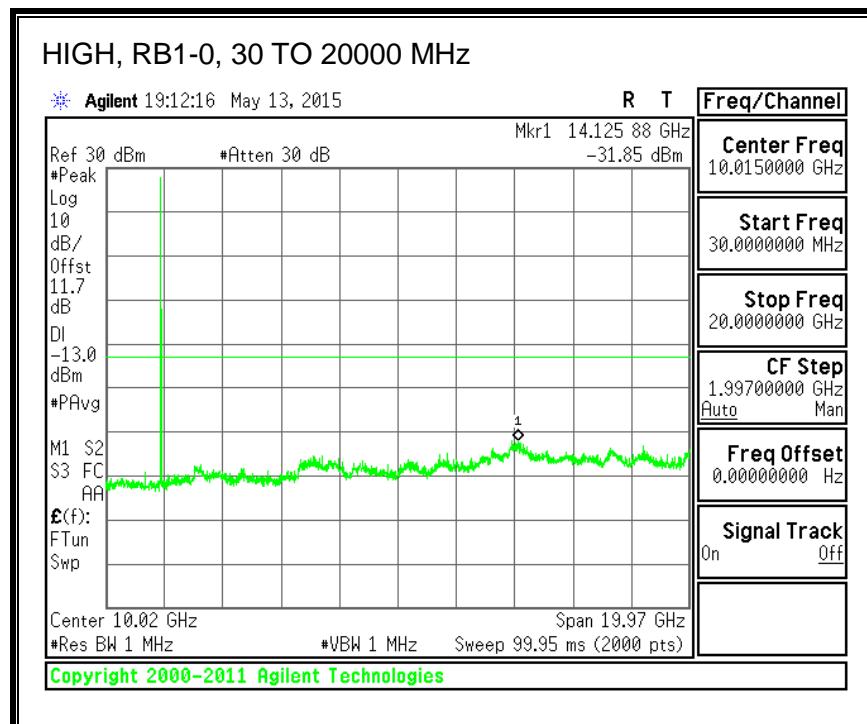
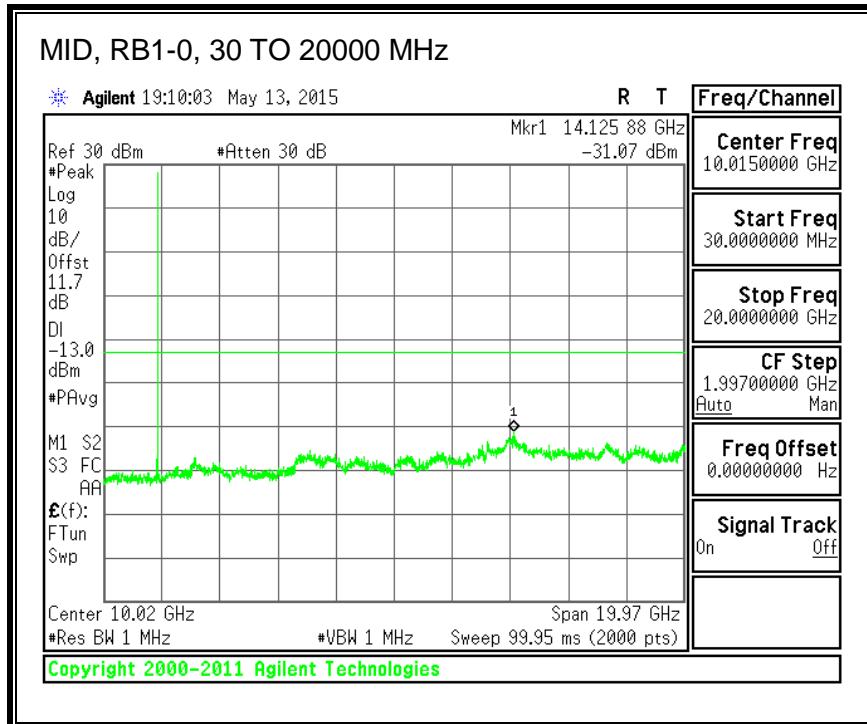


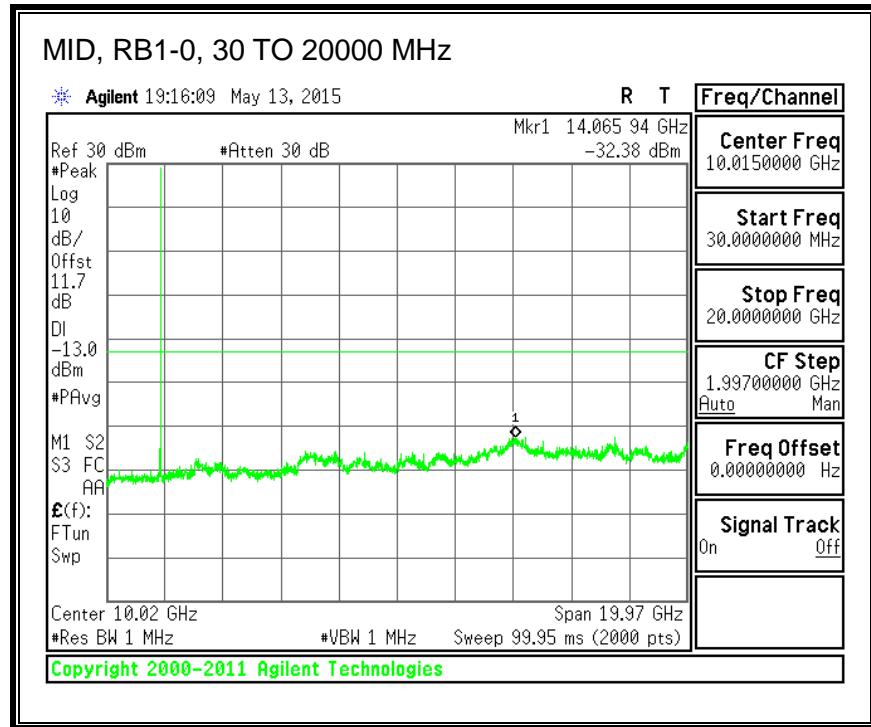
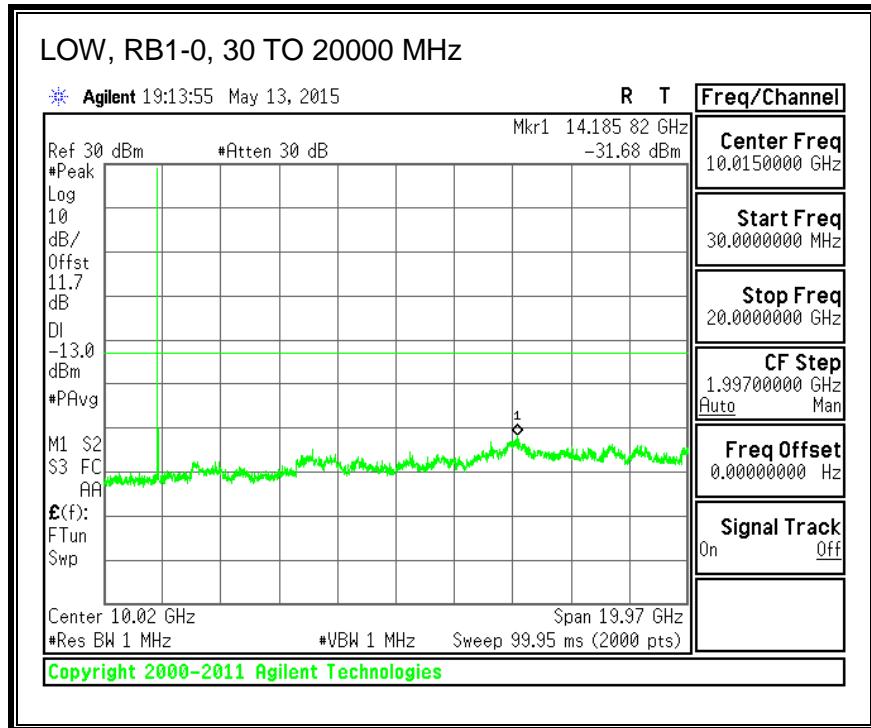
**QPSK, (5.0 MHz BAND WIDTH)**



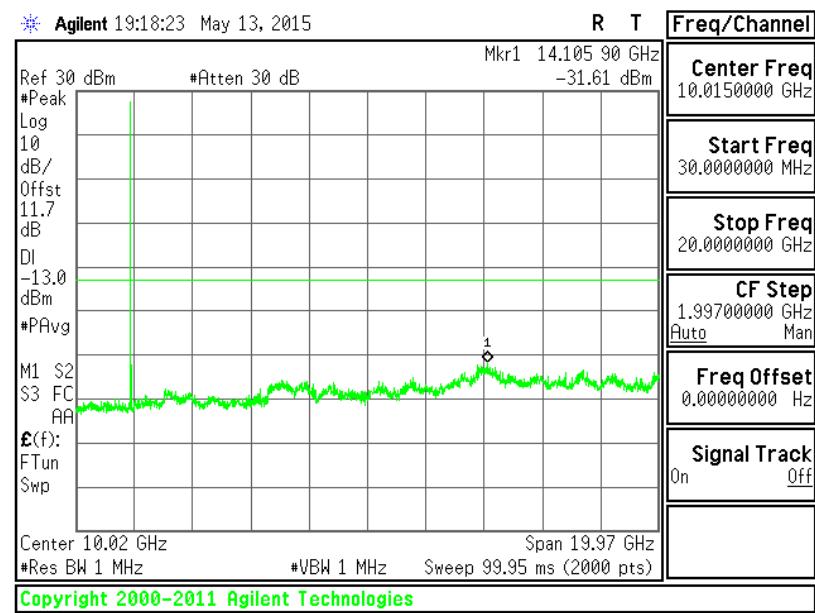
### 16QAM, (5.0 MHz BAND WIDTH)



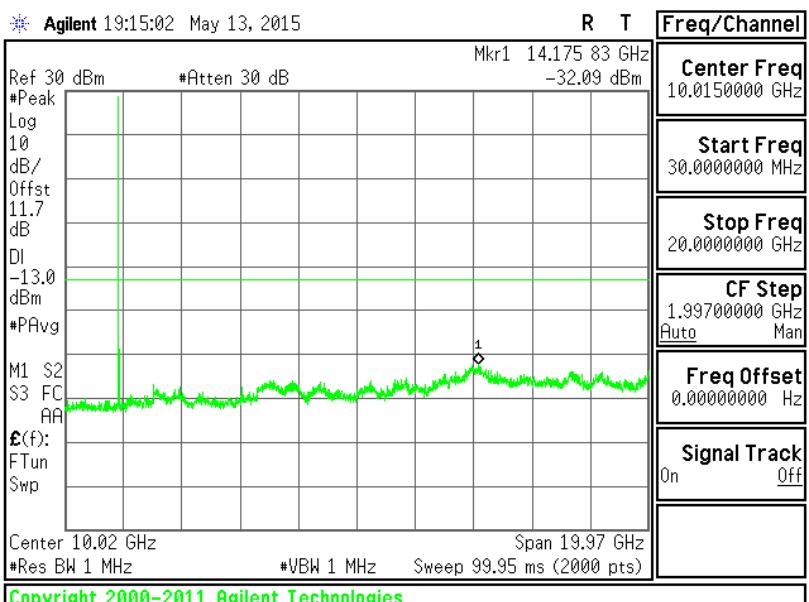


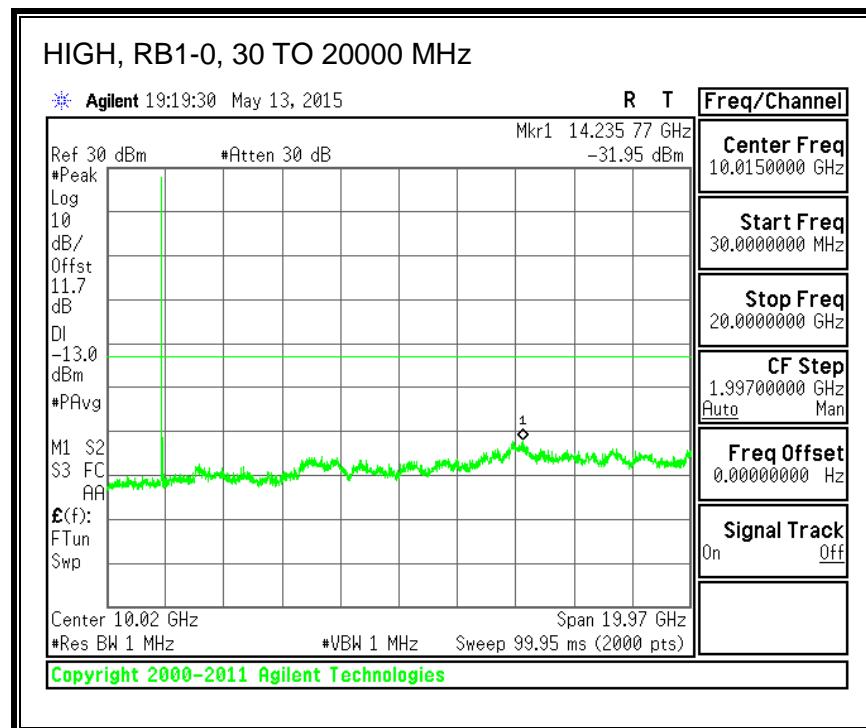
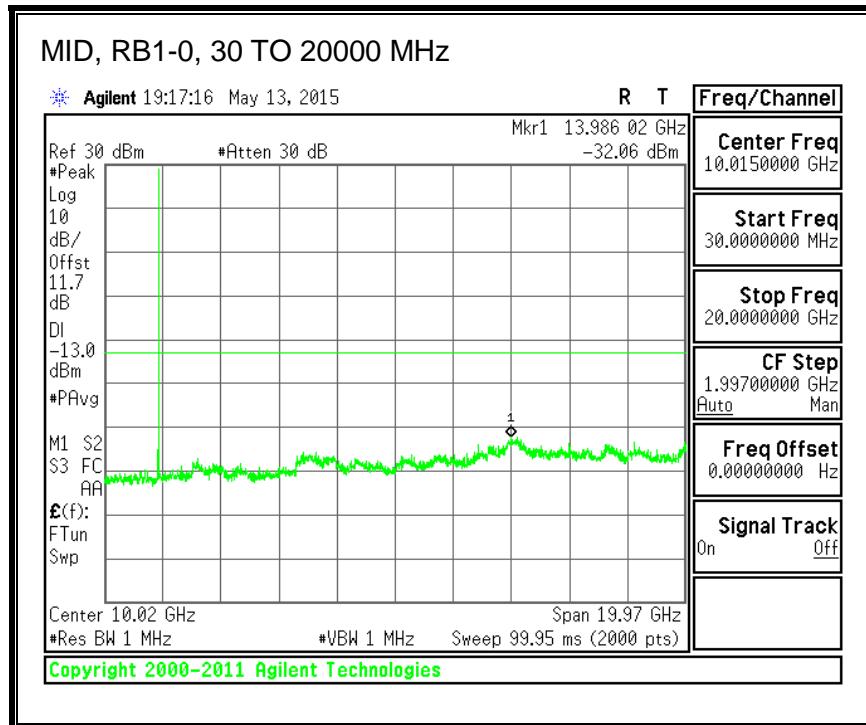
**QPSK, (10.0 MHz BAND WIDTH)**

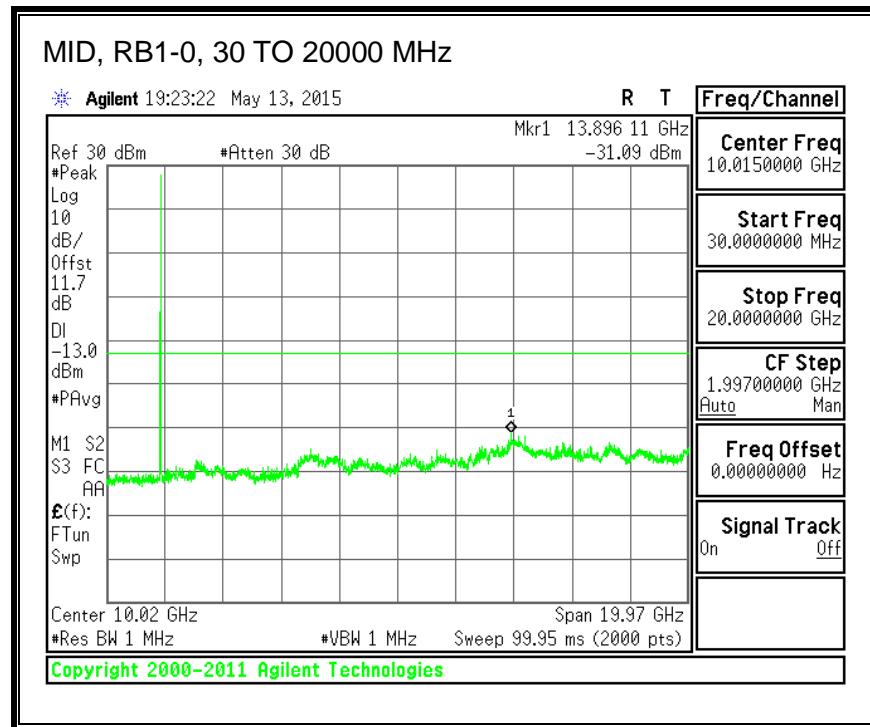
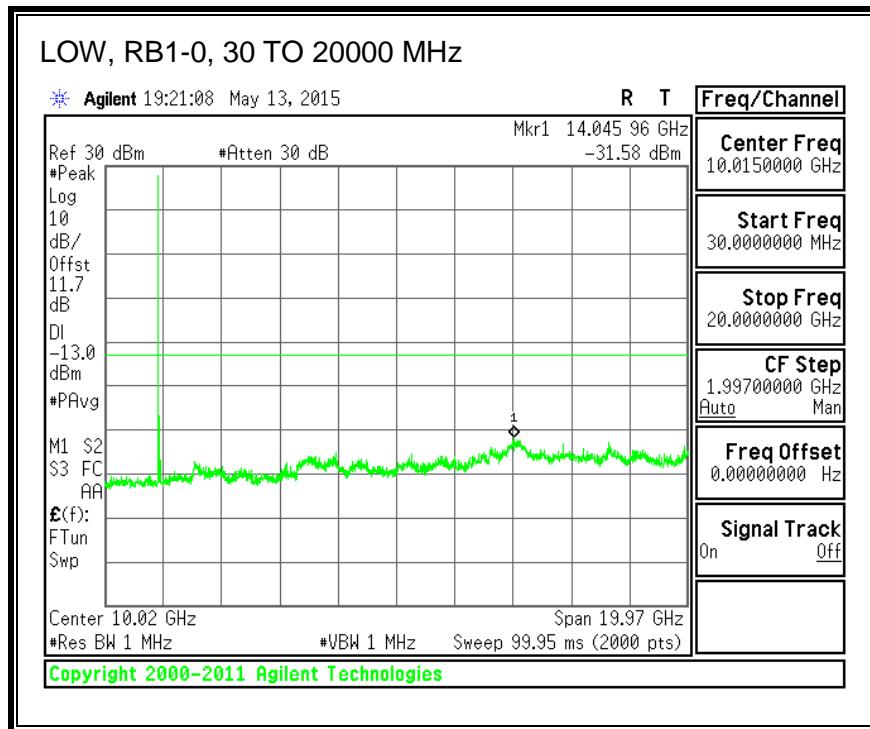
## HIGH, RB1-0, 30 TO 20000 MHz

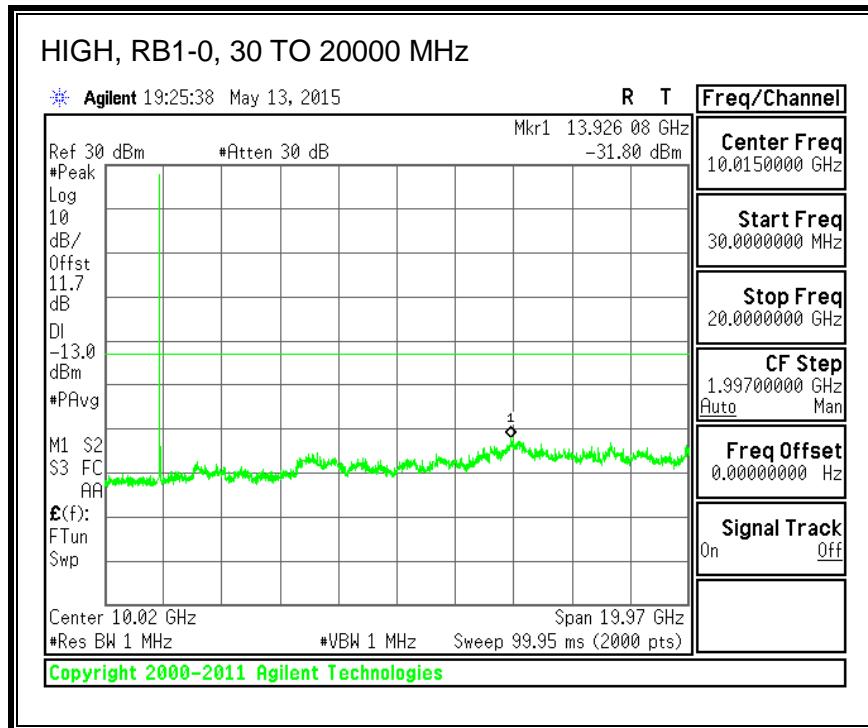
16QAM, (10.0 MHz BAND WIDTH)

## LOW, RB1-0, 30 TO 20000 MHz

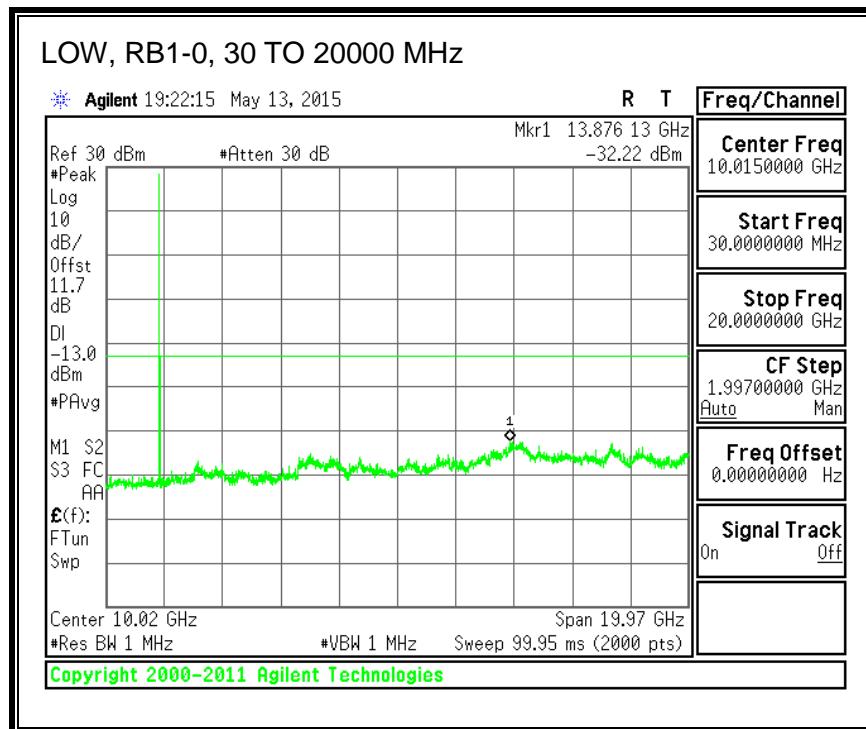


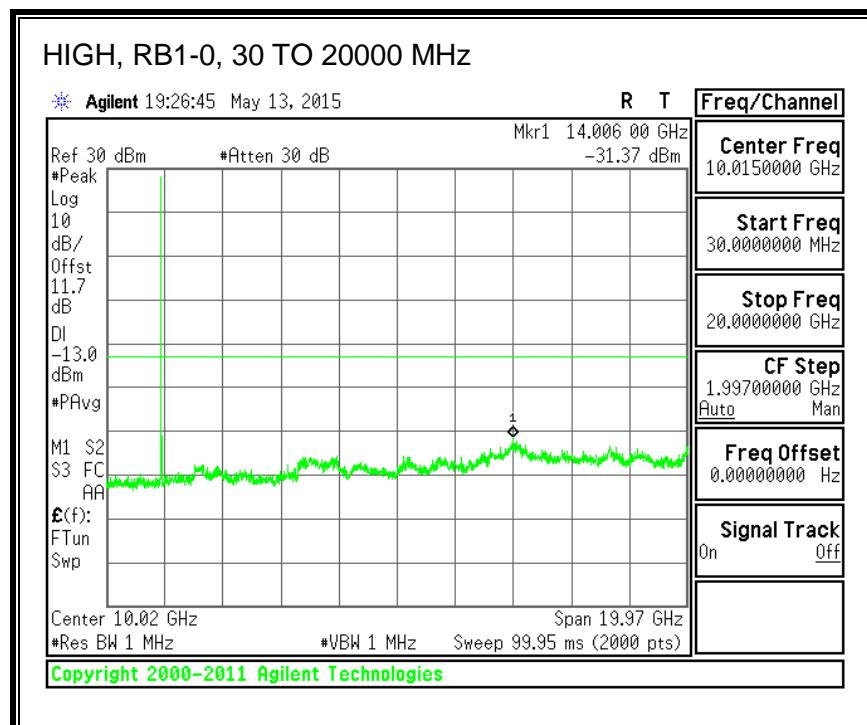
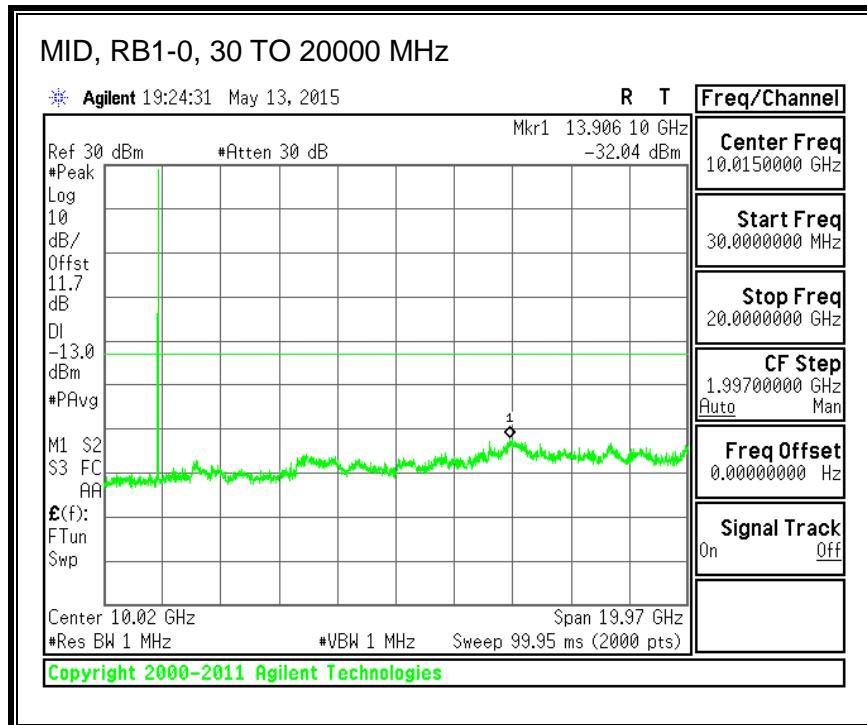


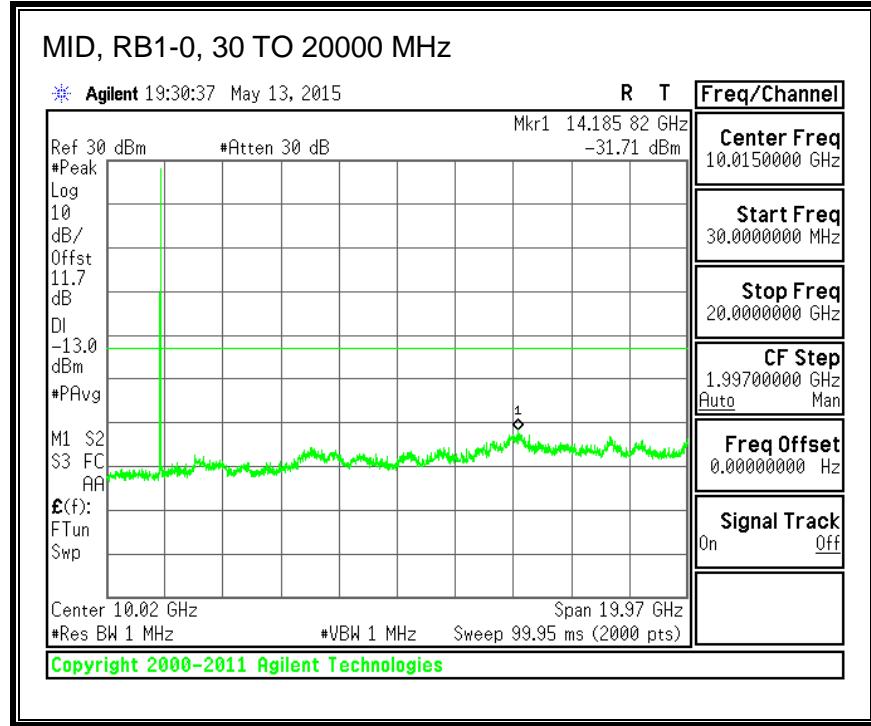
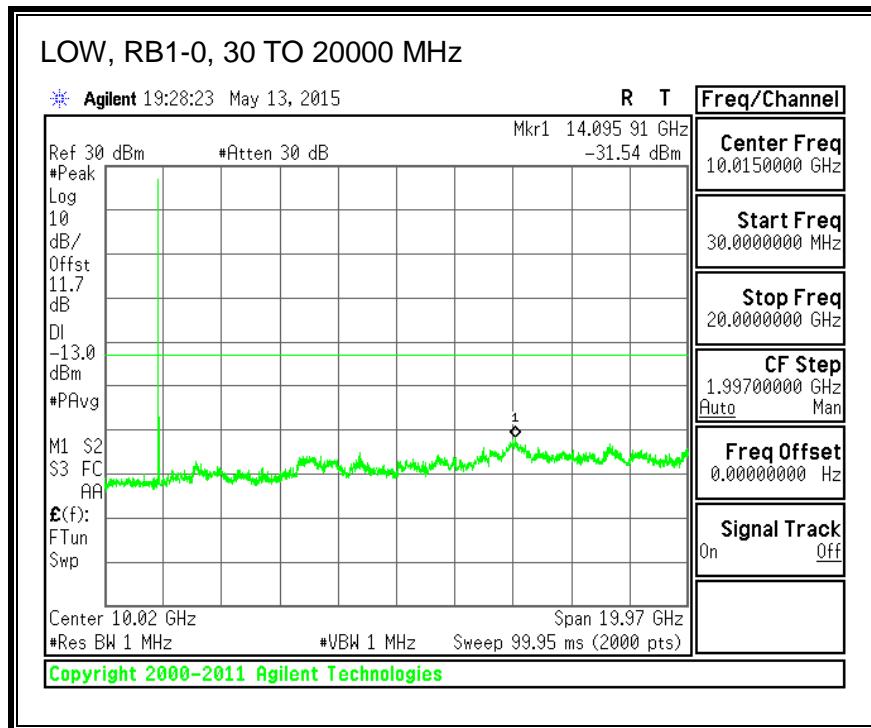
**QPSK, (15.0 MHz BAND WIDTH)**

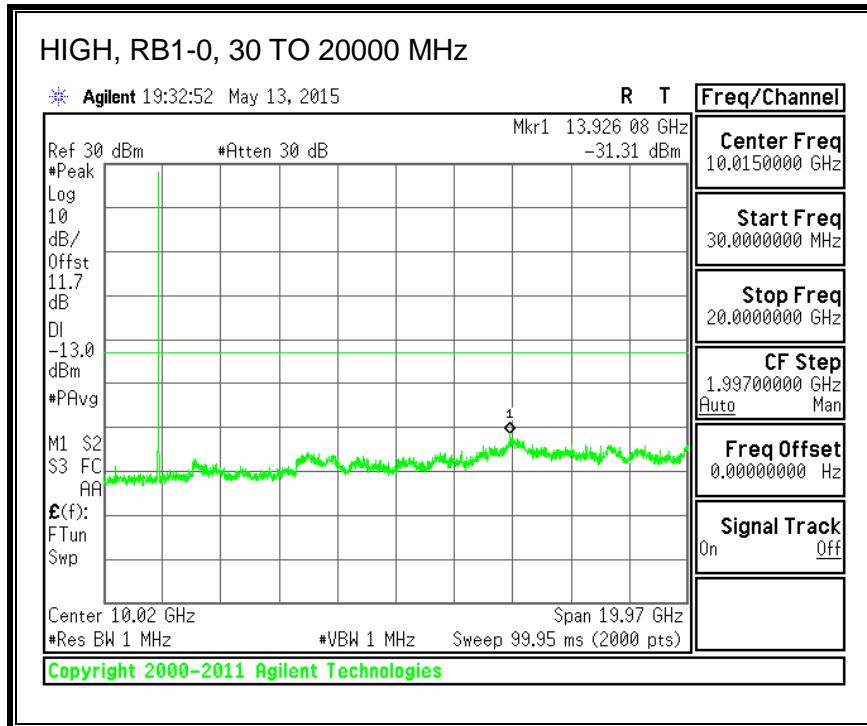


### 16QAM, (15.0 MHz BAND WIDTH)

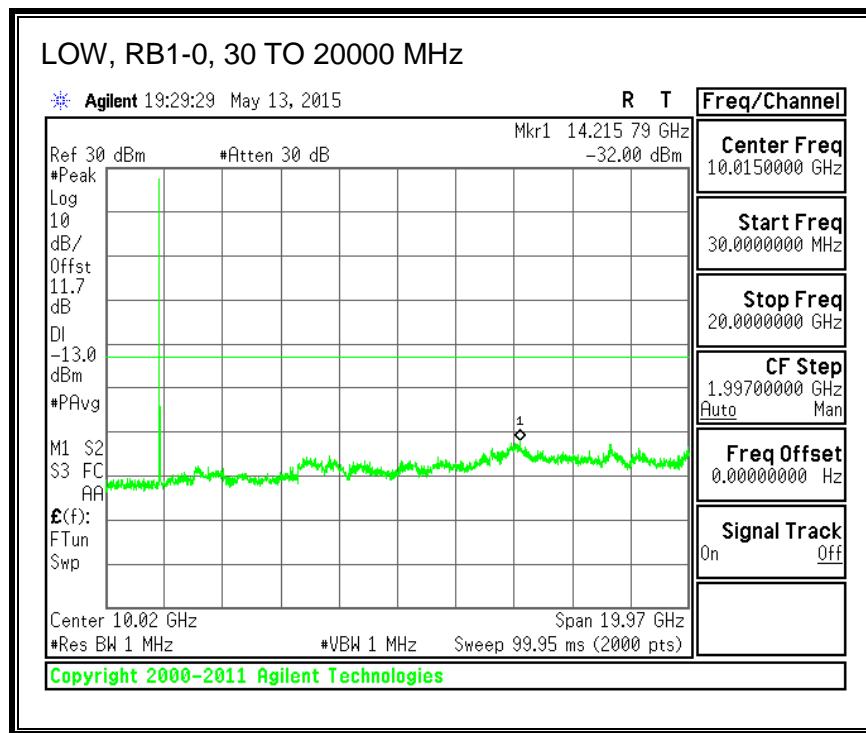


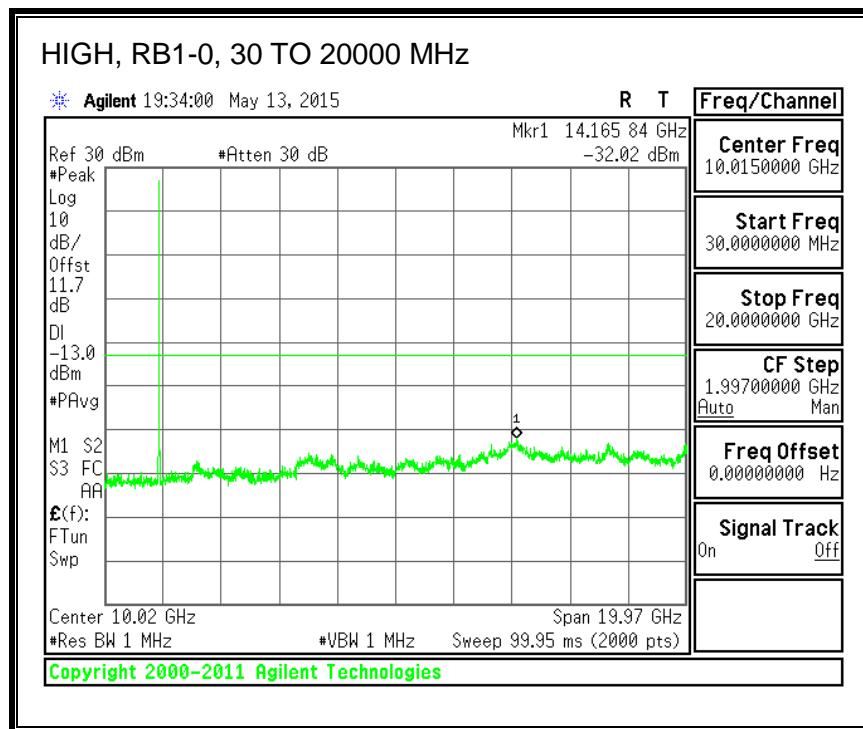
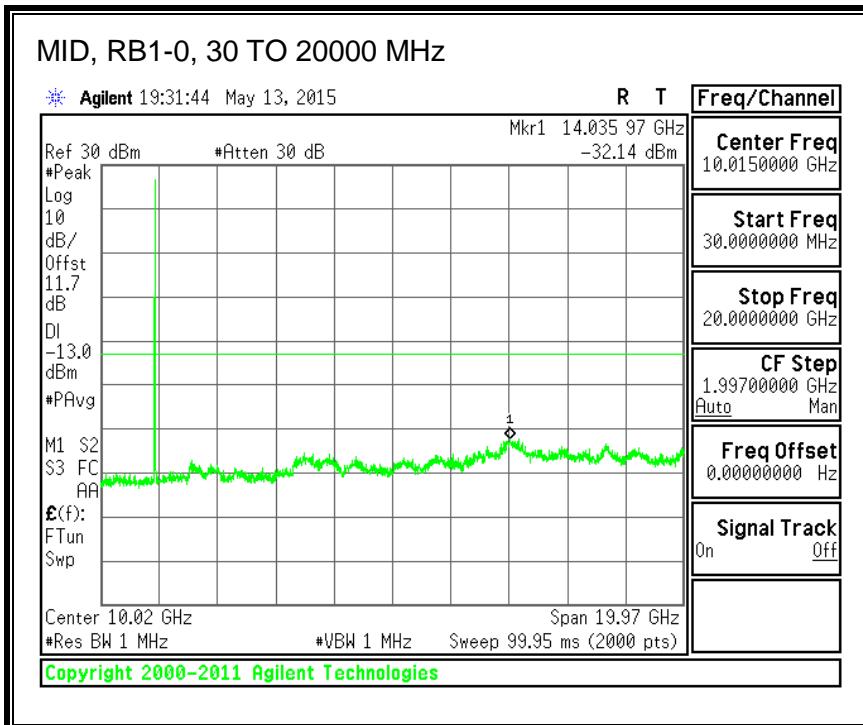


**QPSK, (20.0 MHz BAND WIDTH)**



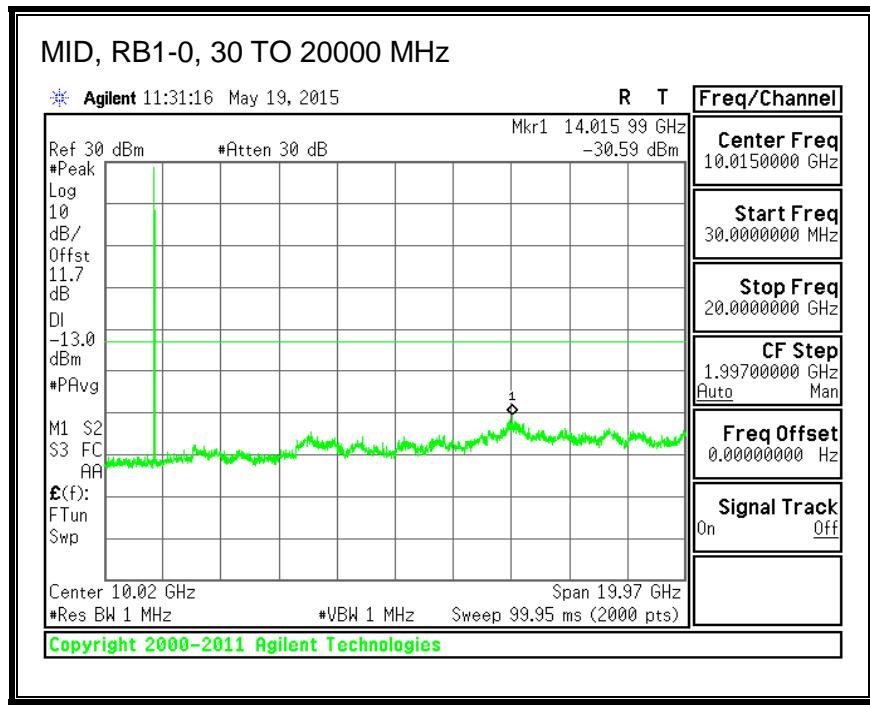
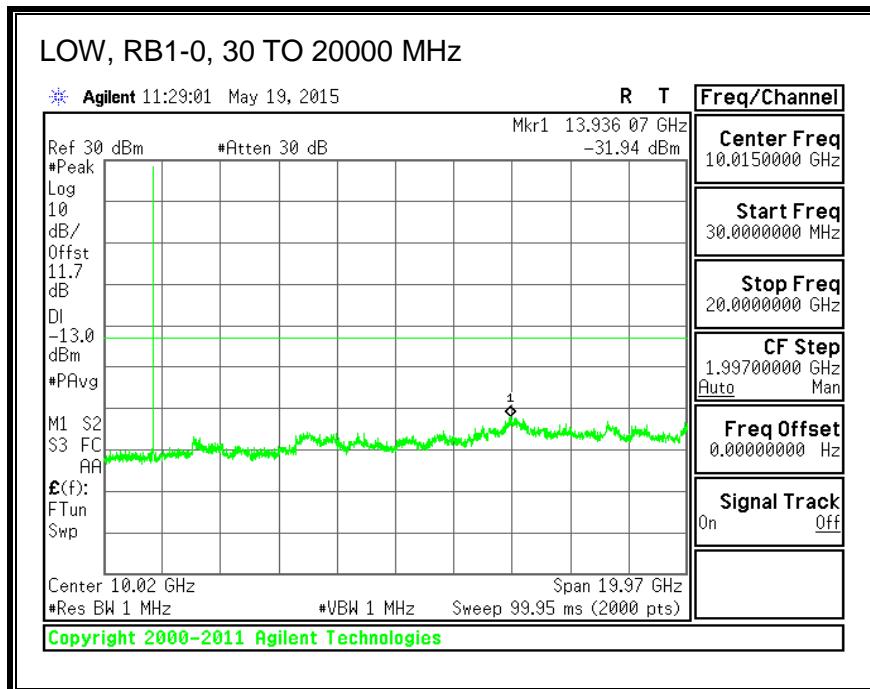
### 16QAM, (20.0 MHz BAND WIDTH)

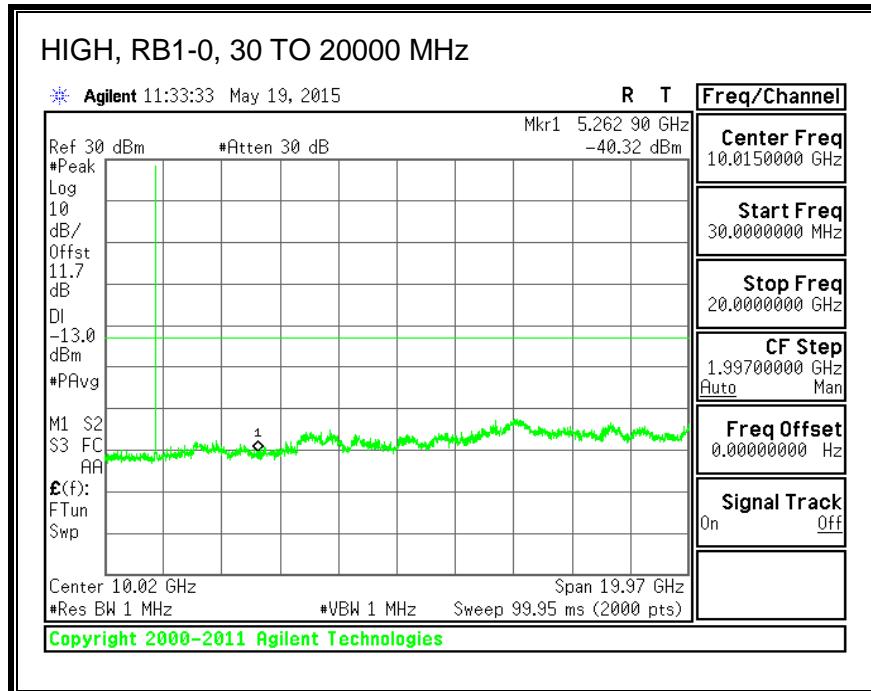




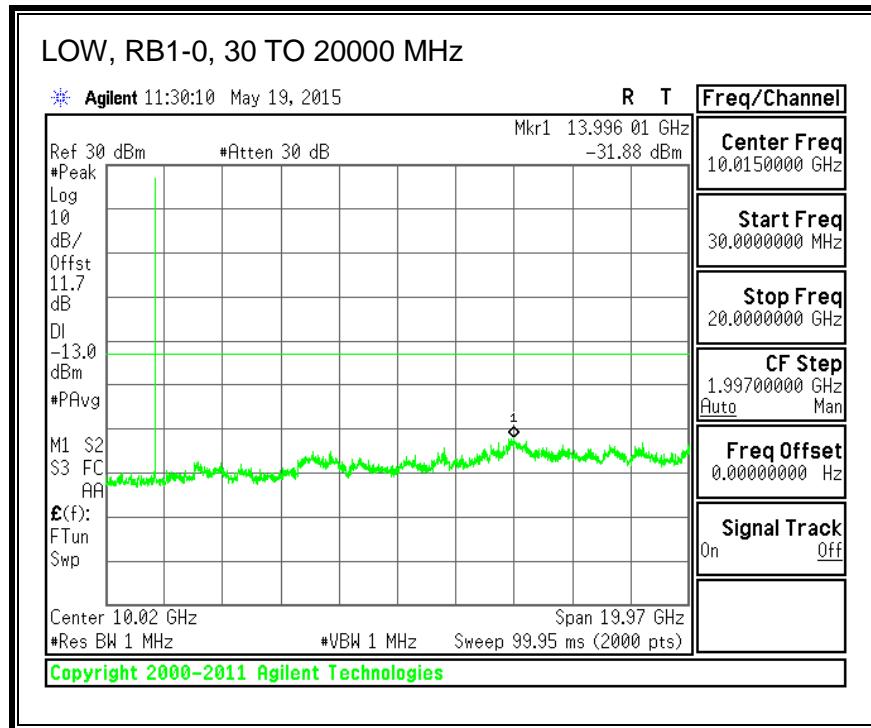
### 8.6.2. LTE BAND 4

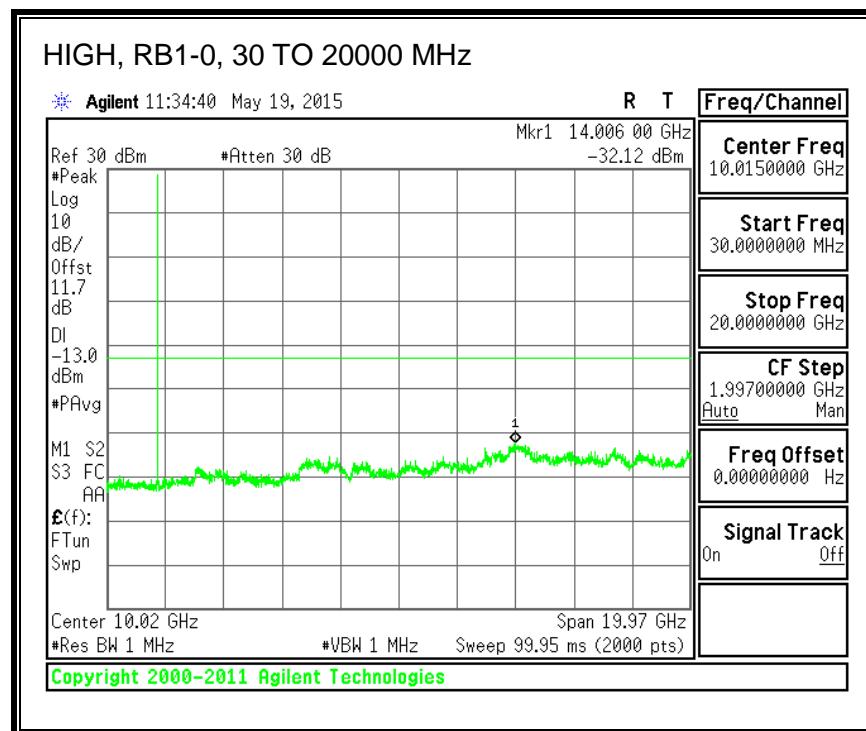
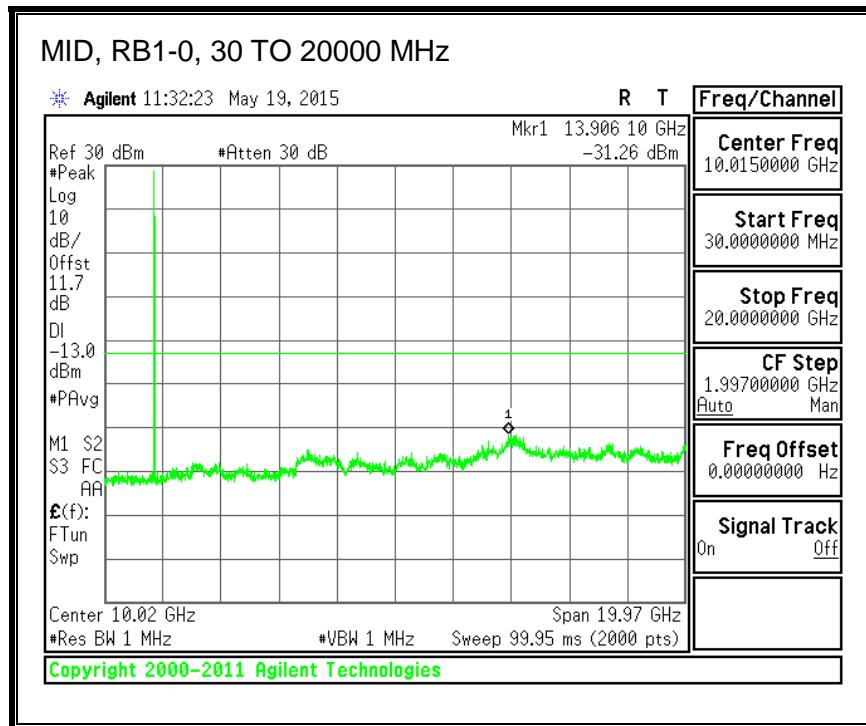
#### QPSK, (1.4 MHz BAND WIDTH)

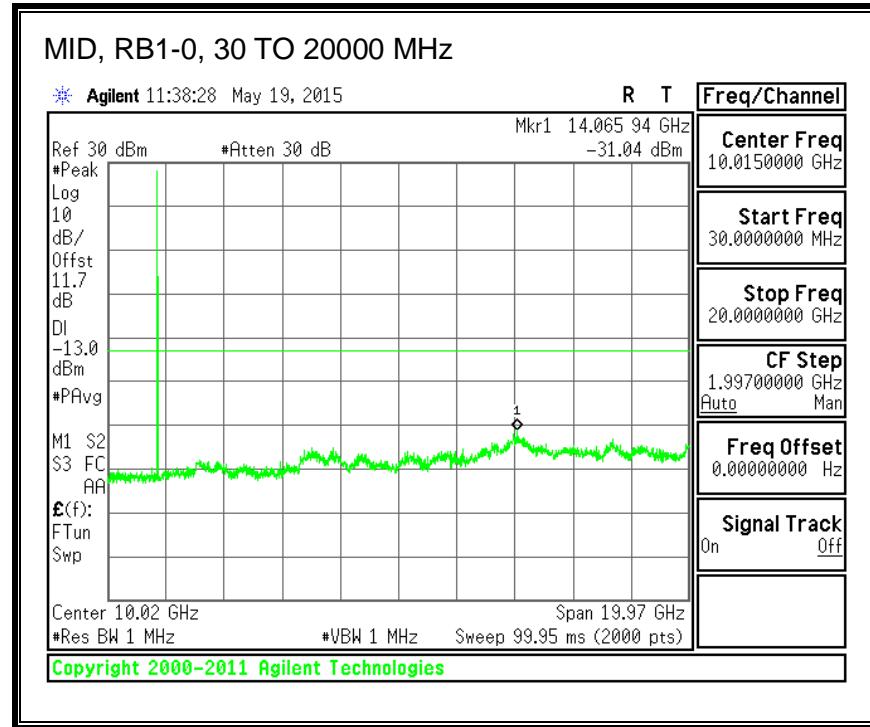
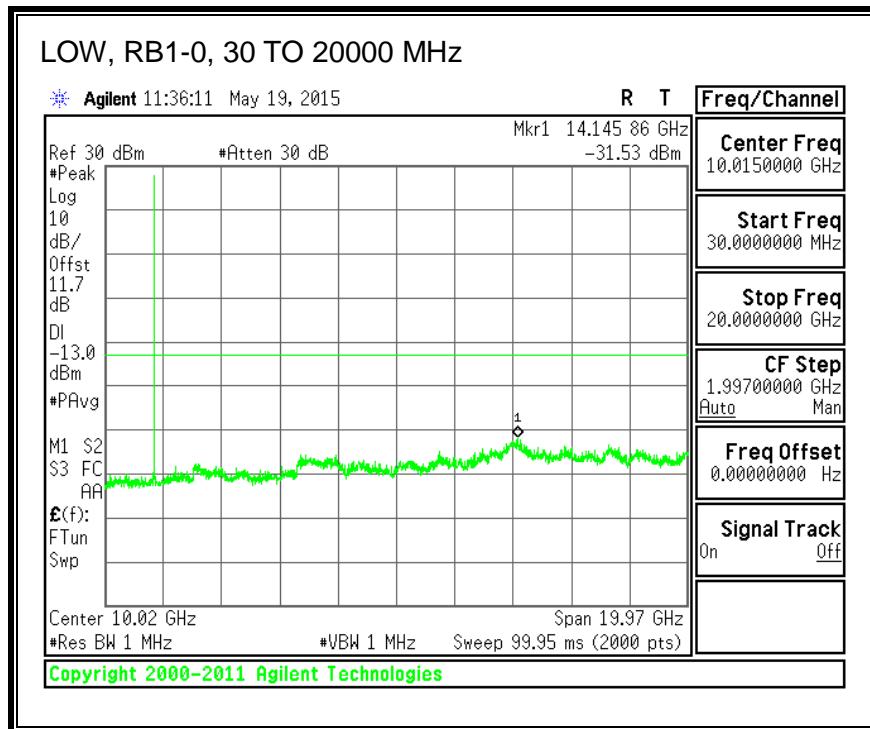


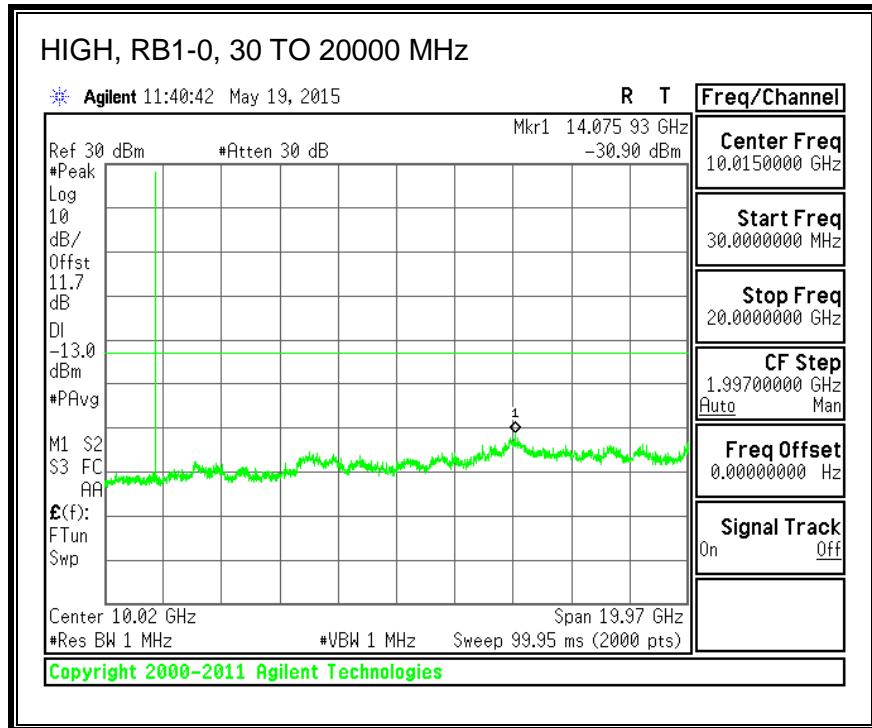


### 16QAM, (1.4 MHz BAND WIDTH)

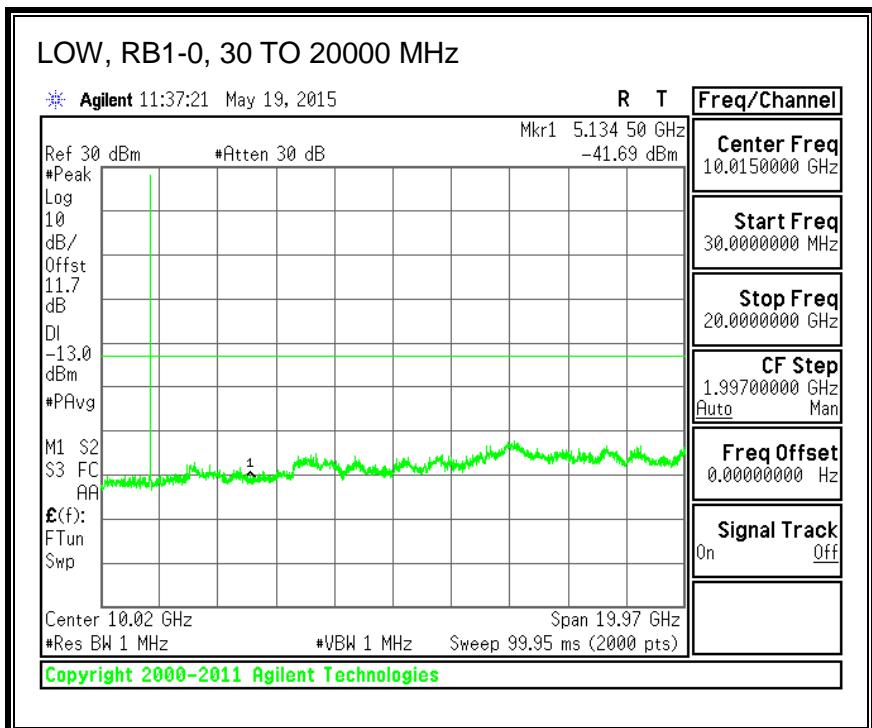


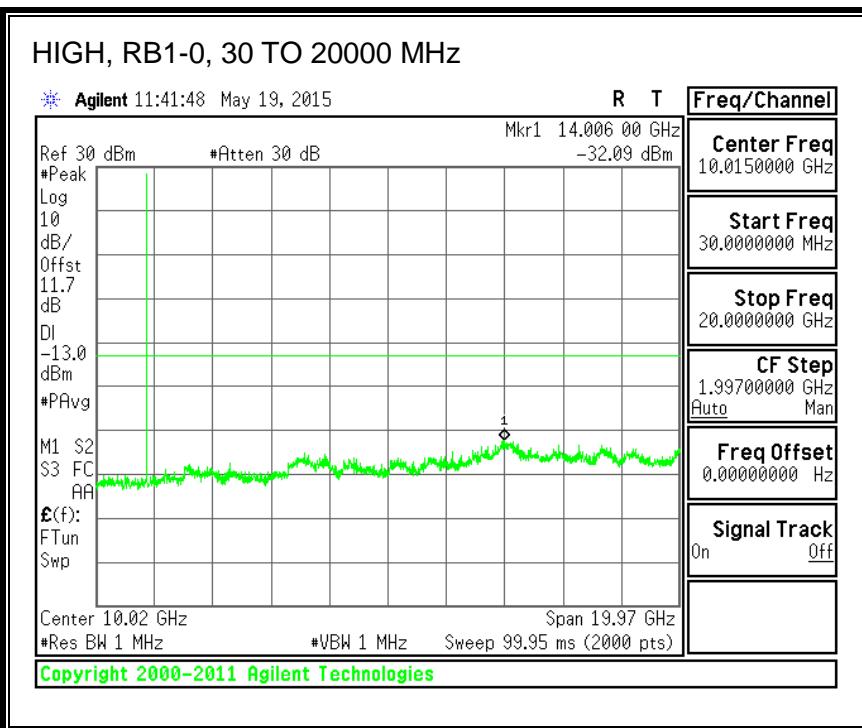
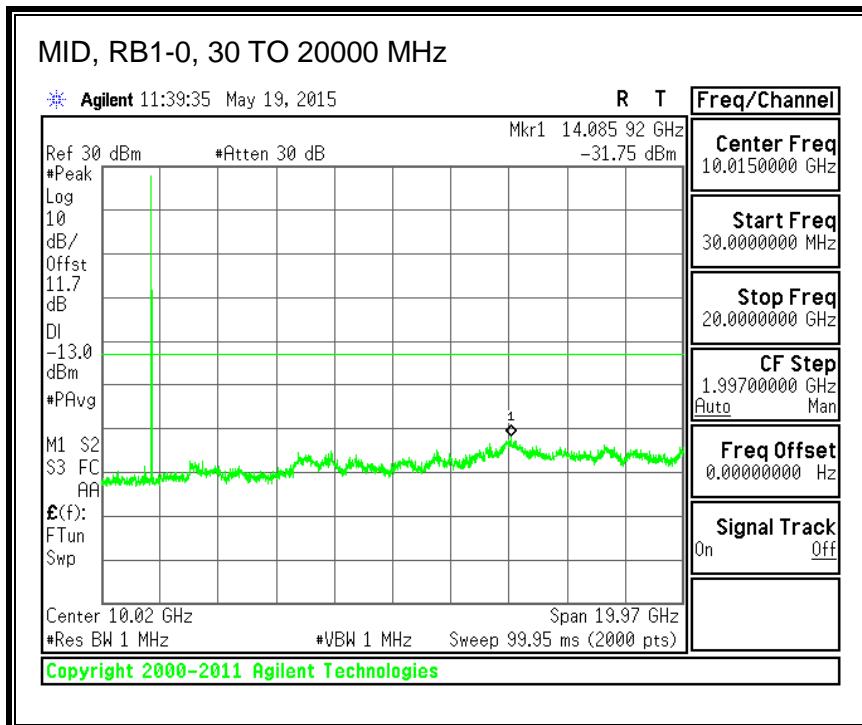


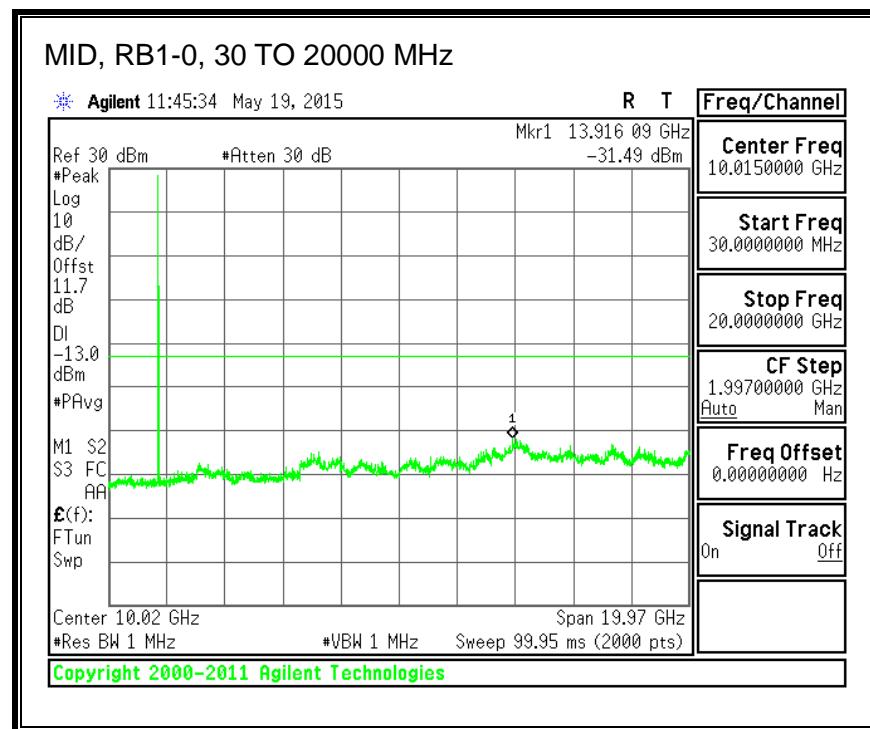
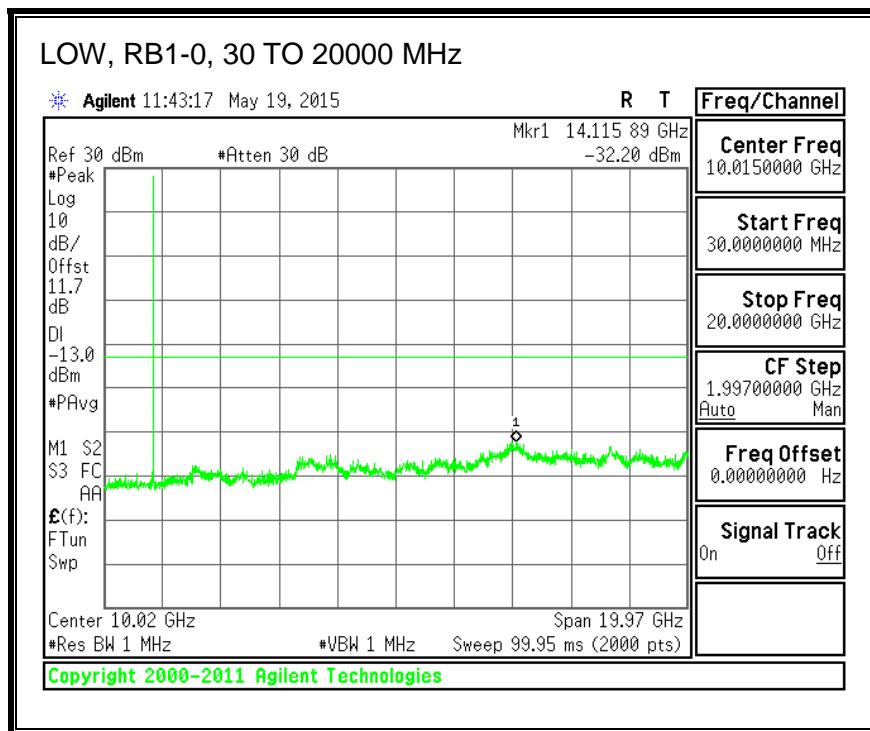
**QPSK, (3.0 MHz BAND WIDTH)**

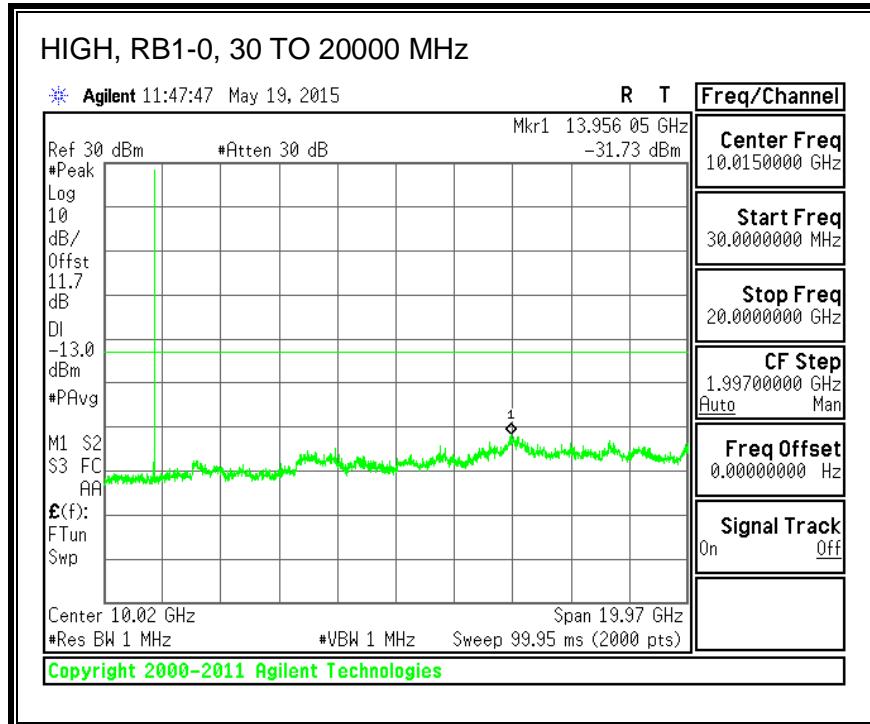


### 16QAM, (3.0 MHz BAND WIDTH)

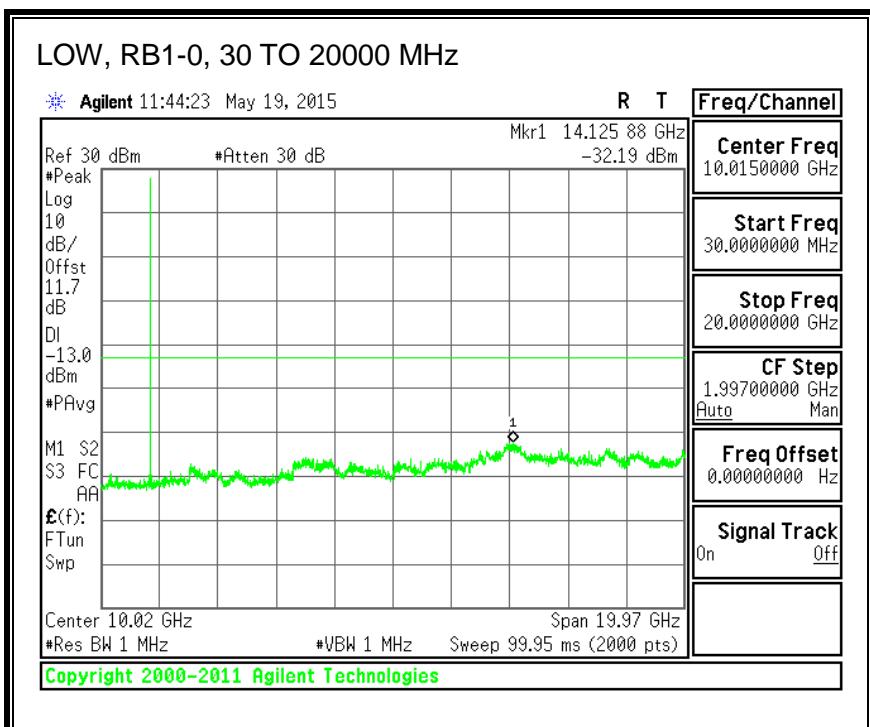


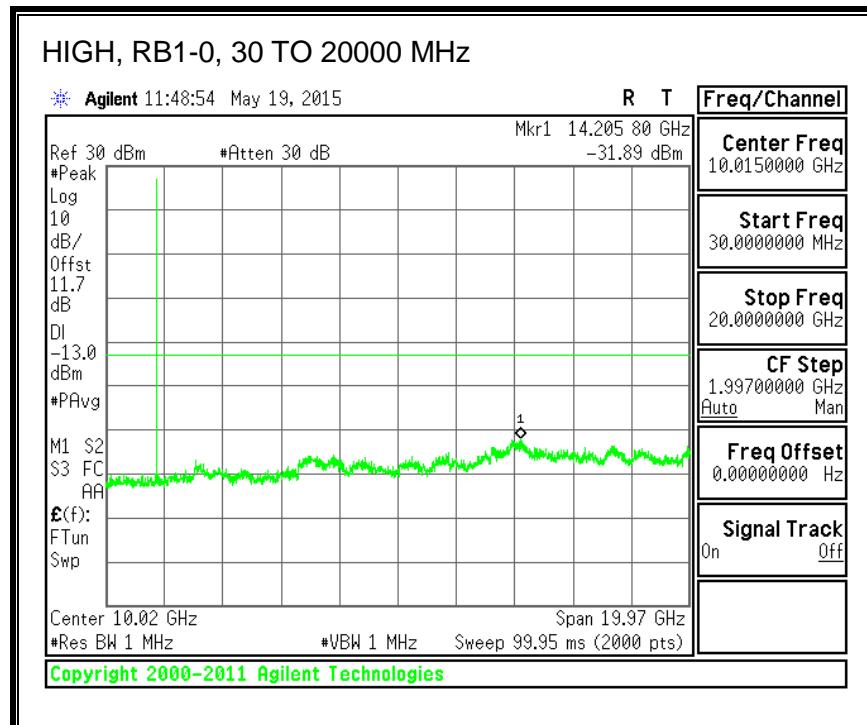
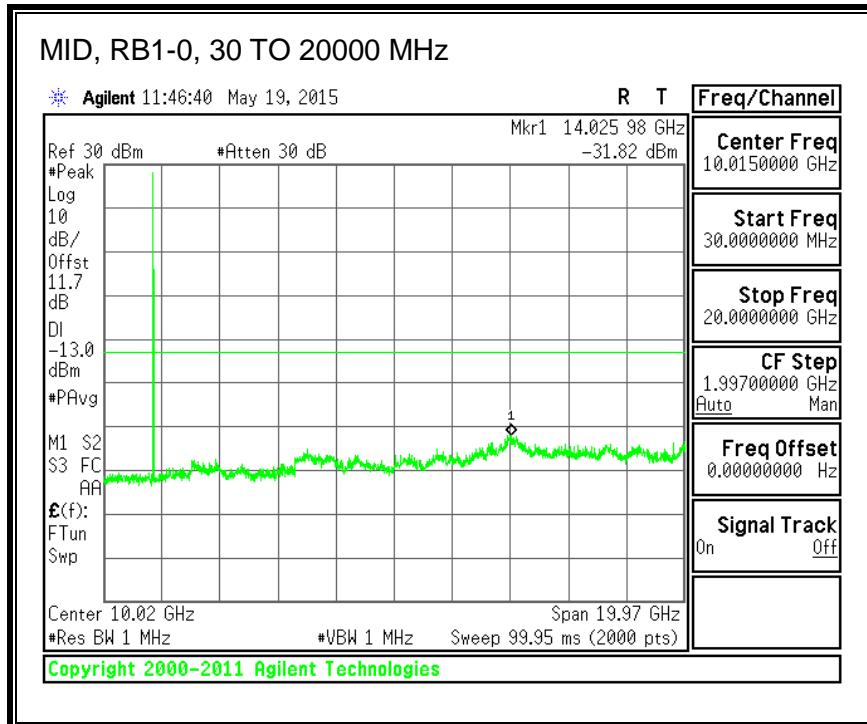


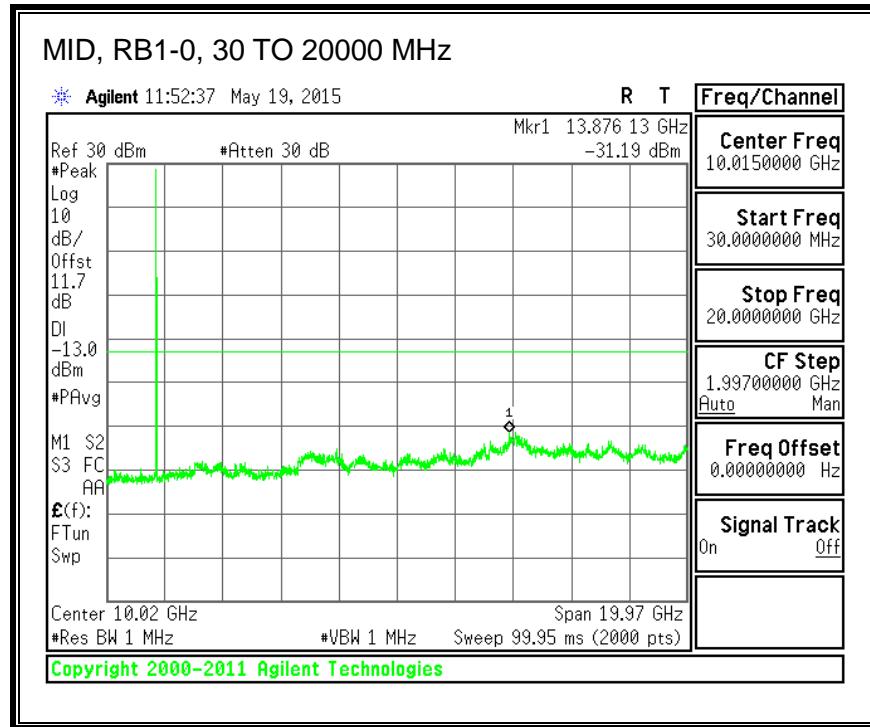
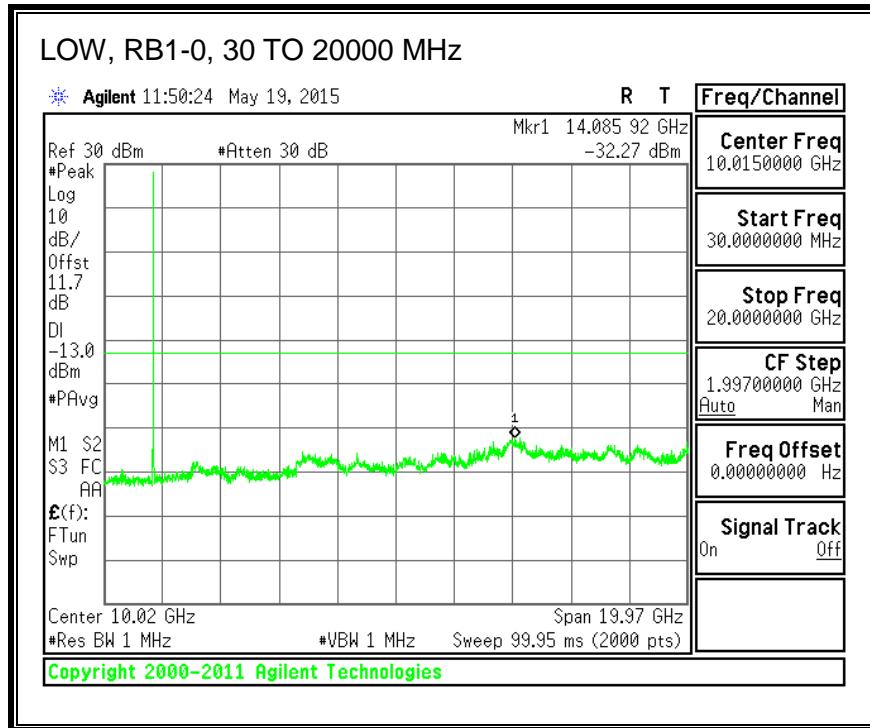
**QPSK, (5.0 MHz BAND WIDTH)**



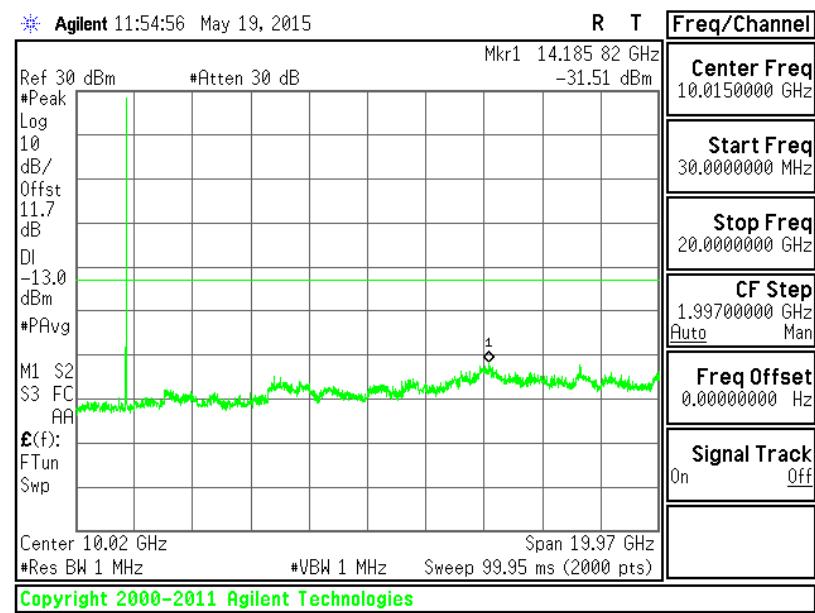
### 16QAM, (5.0 MHz BAND WIDTH)



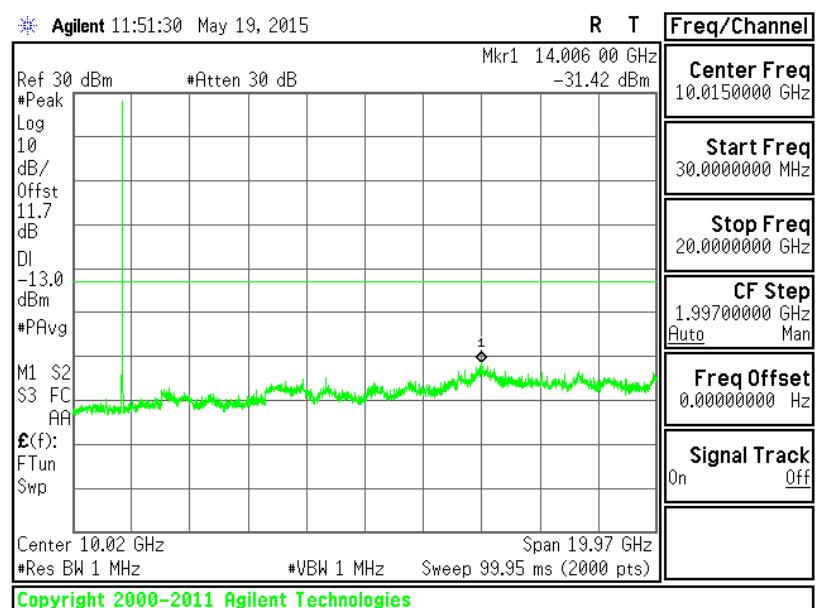


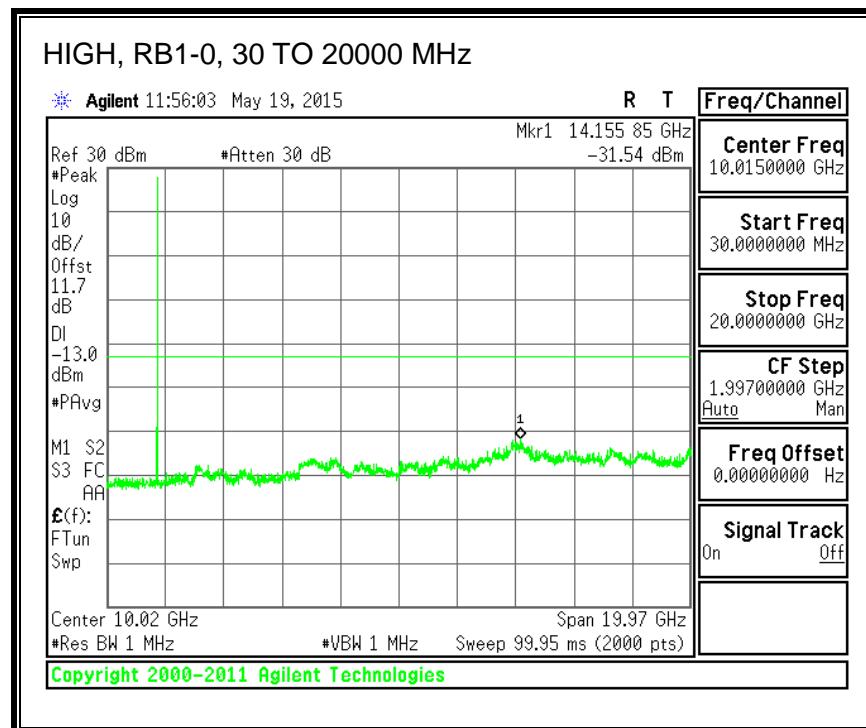
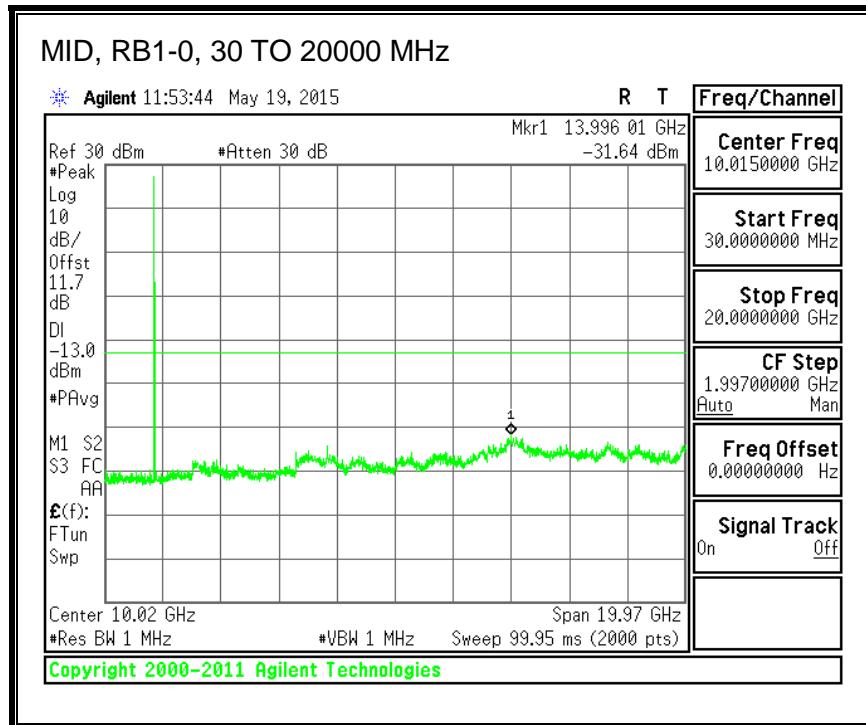
**QPSK, (10.0 MHz BAND WIDTH)**

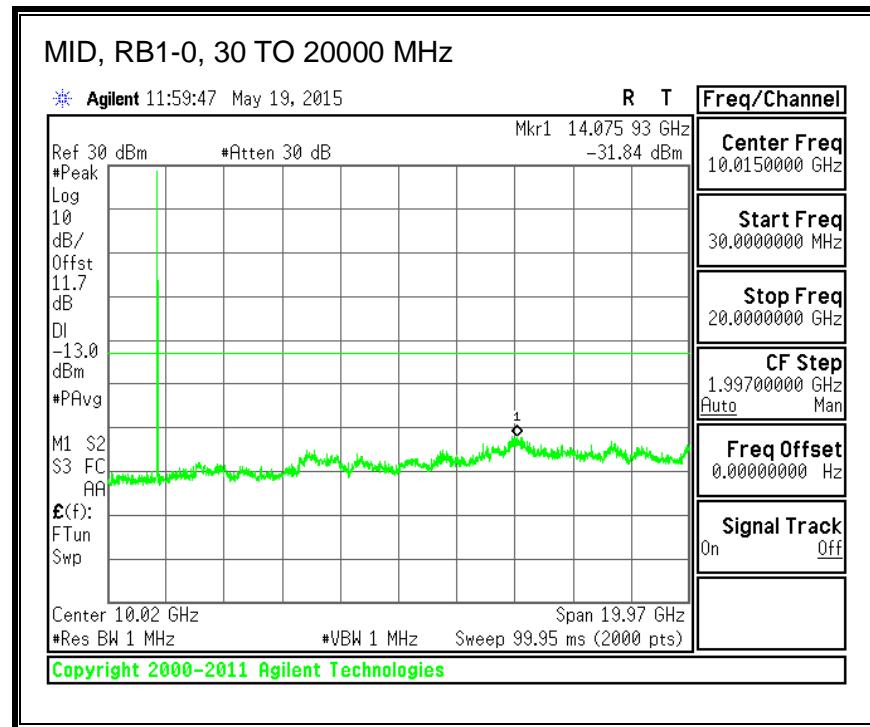
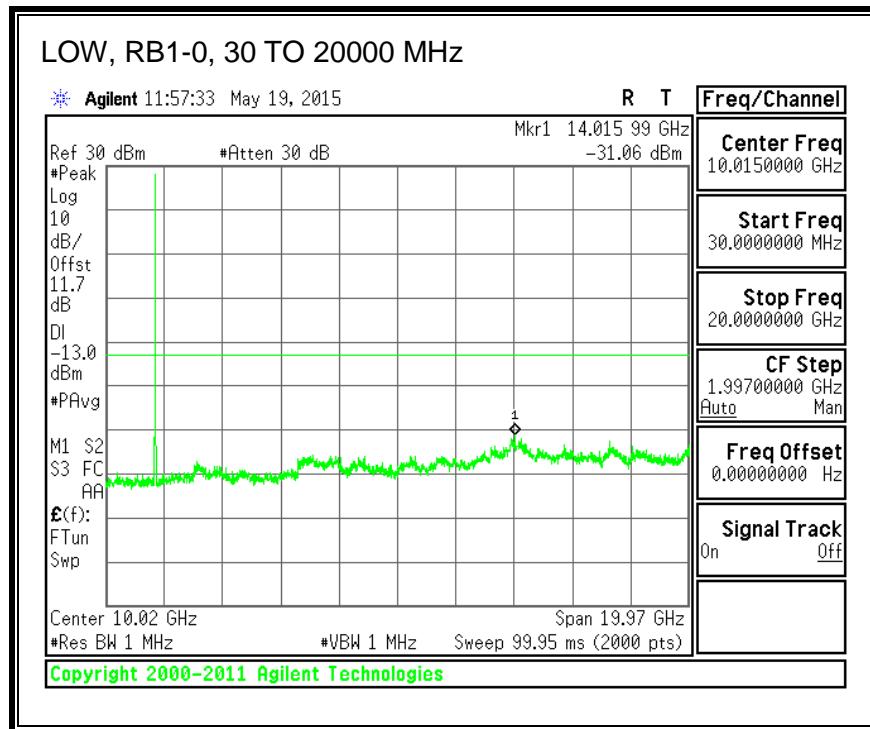
## HIGH, RB1-0, 30 TO 20000 MHz

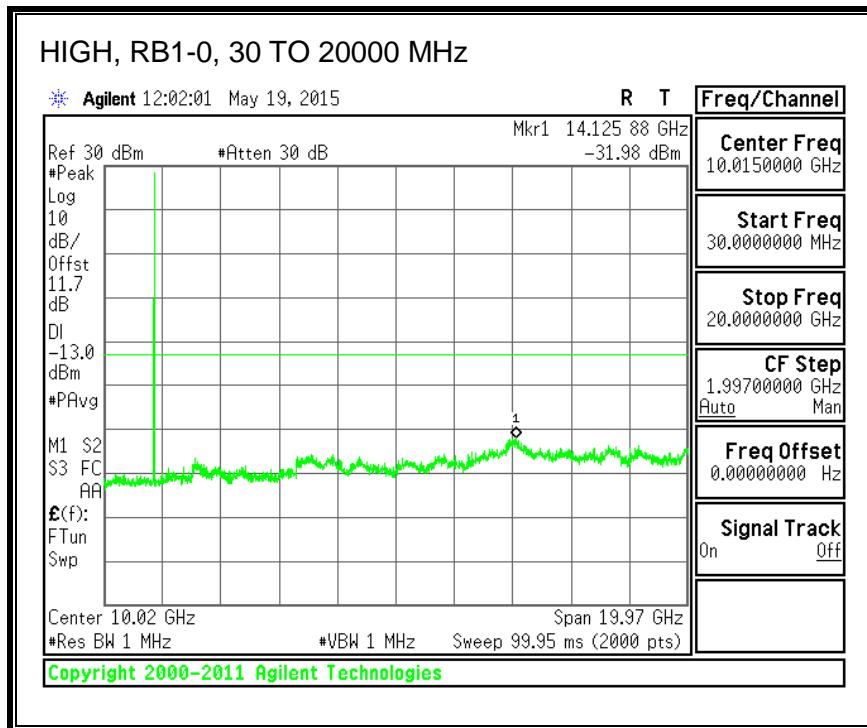
16QAM, (10.0 MHz BAND WIDTH)

## LOW, RB1-0, 30 TO 20000 MHz

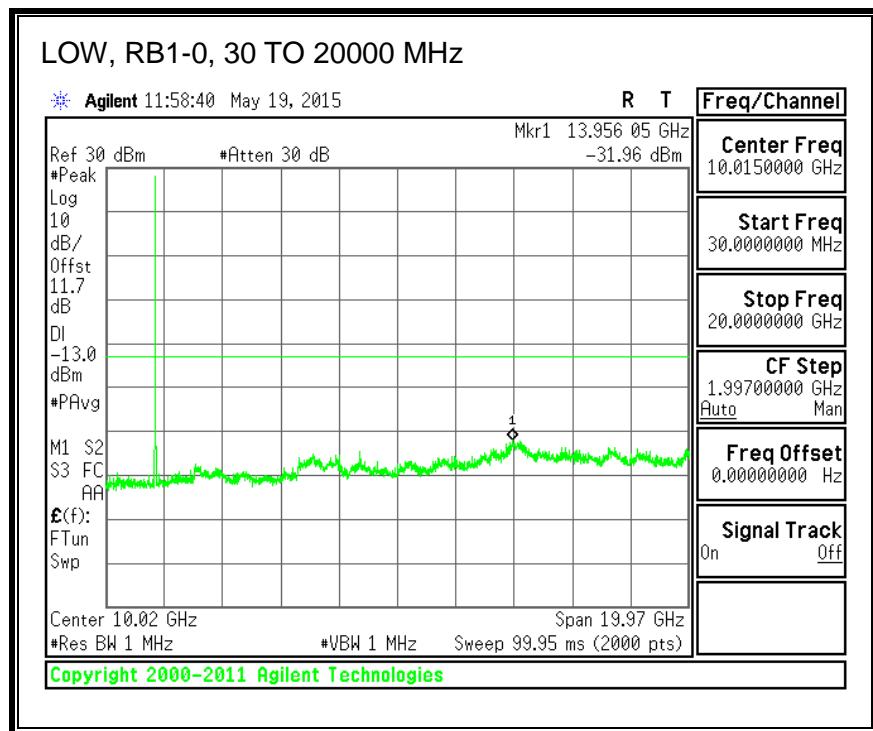


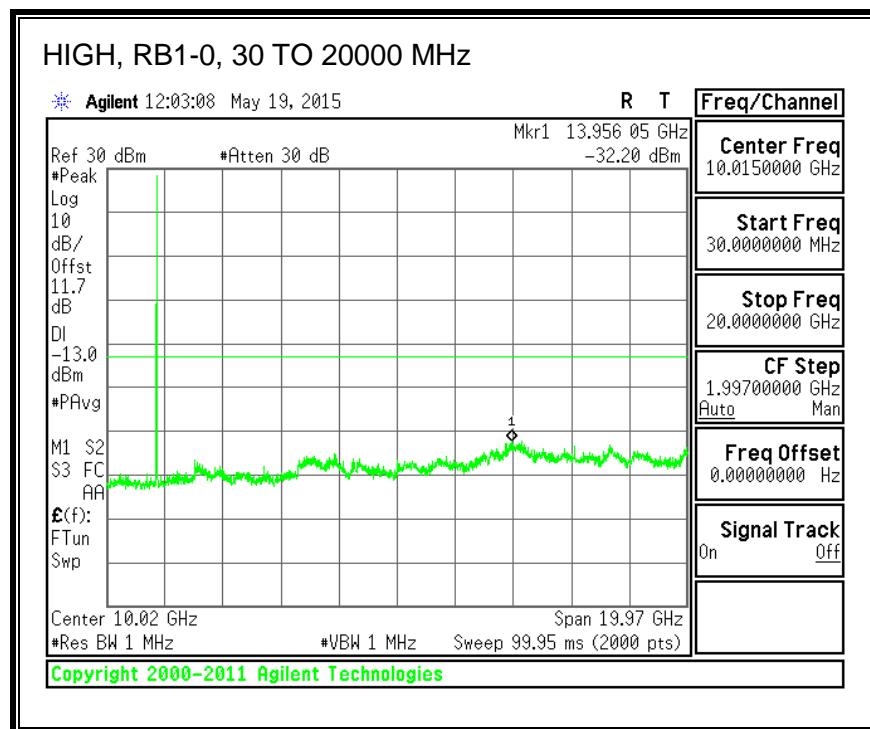
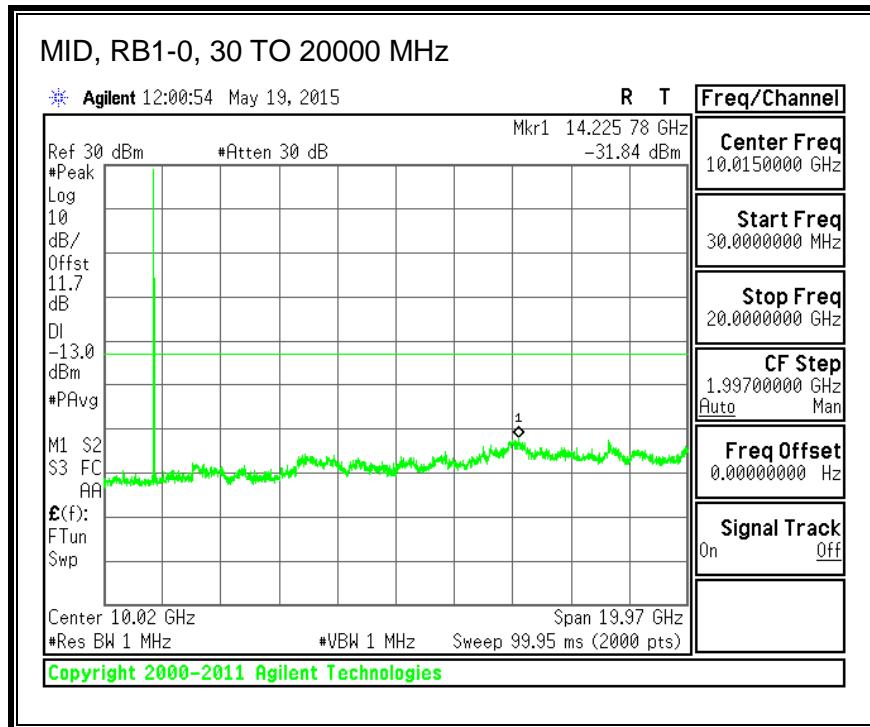


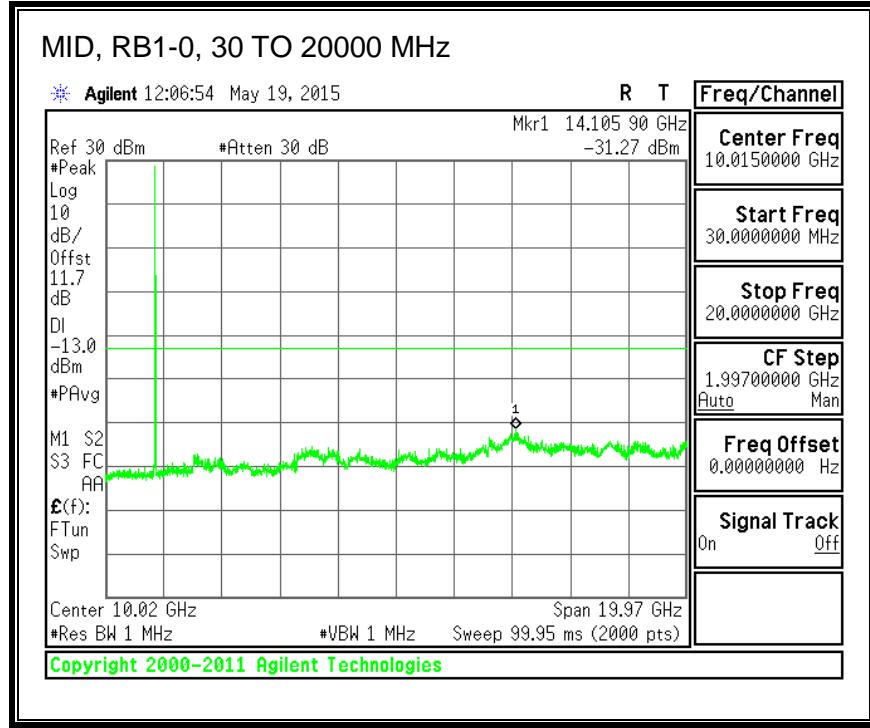
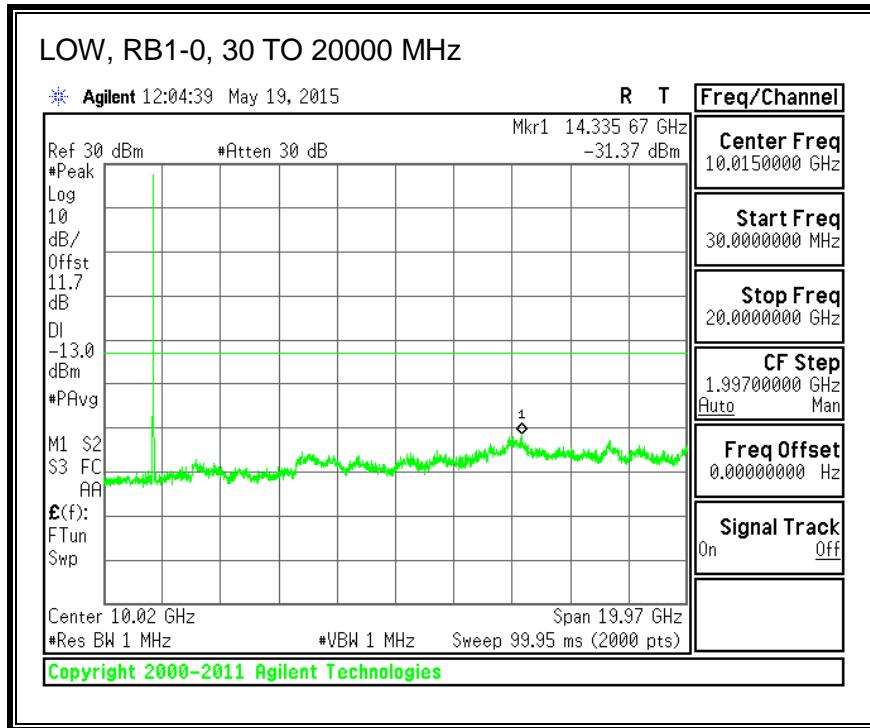
**QPSK, (15.0 MHz BAND WIDTH)**

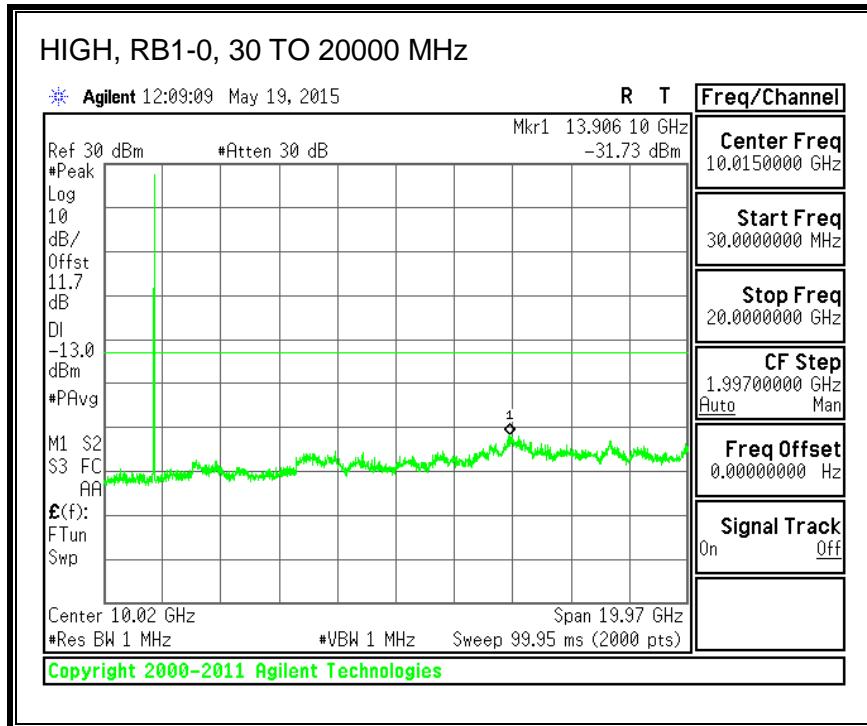


### 16QAM, (15.0 MHz BAND WIDTH)

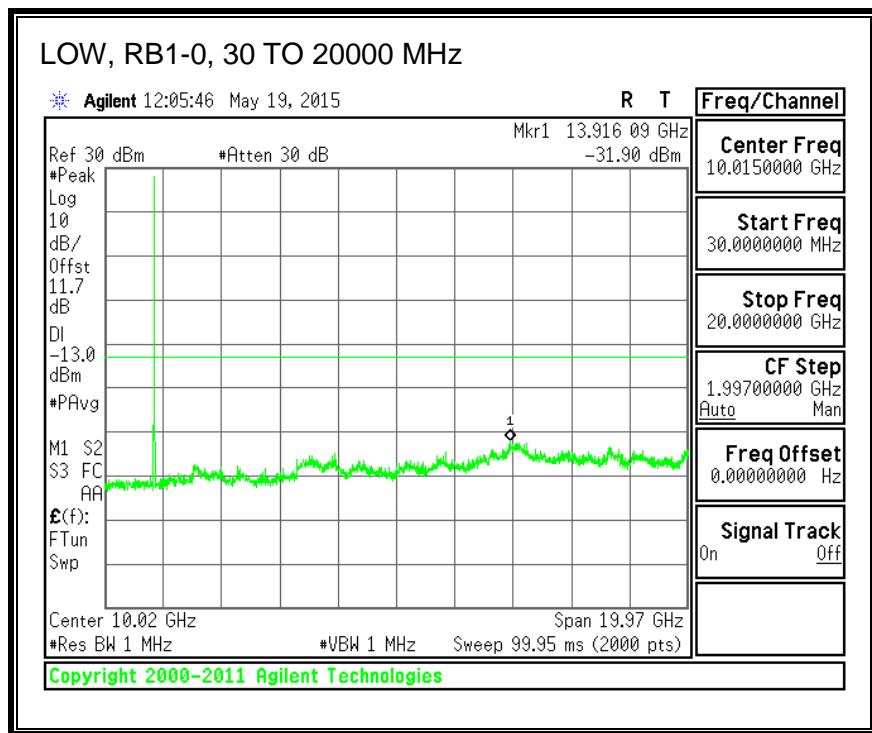


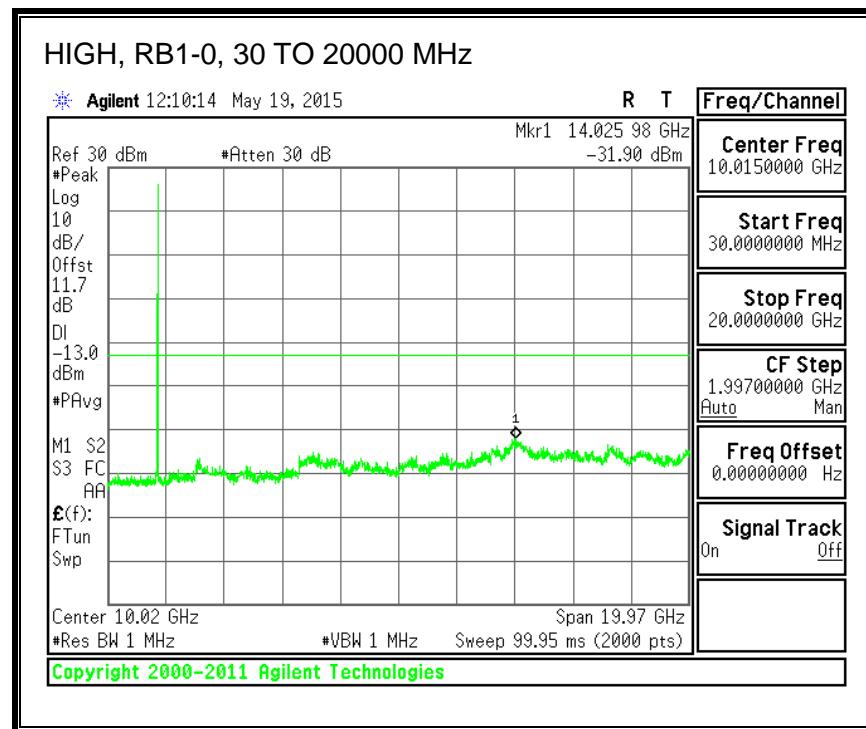
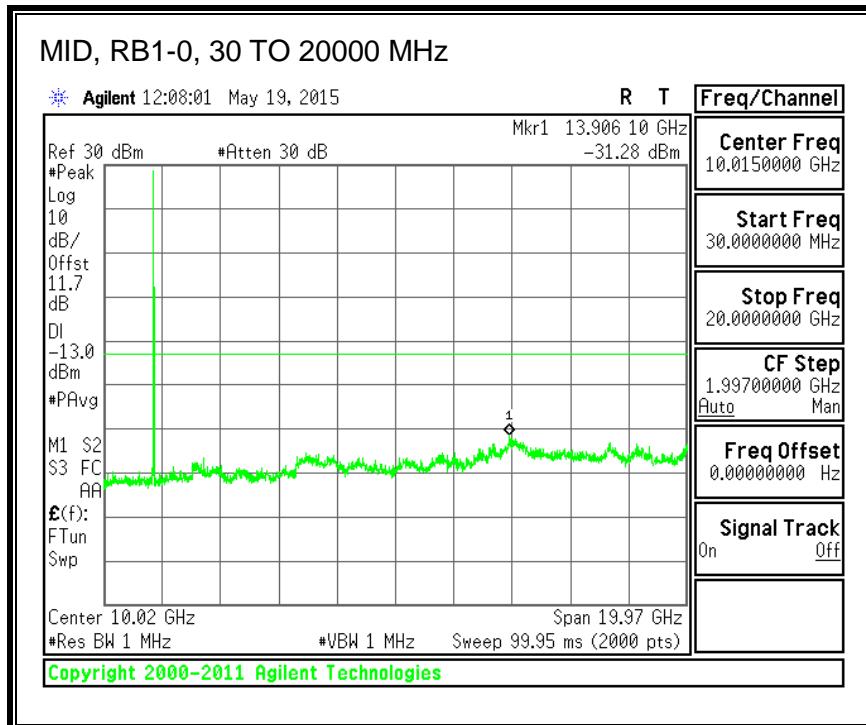


**QPSK, (20.0 MHz BAND WIDTH)**



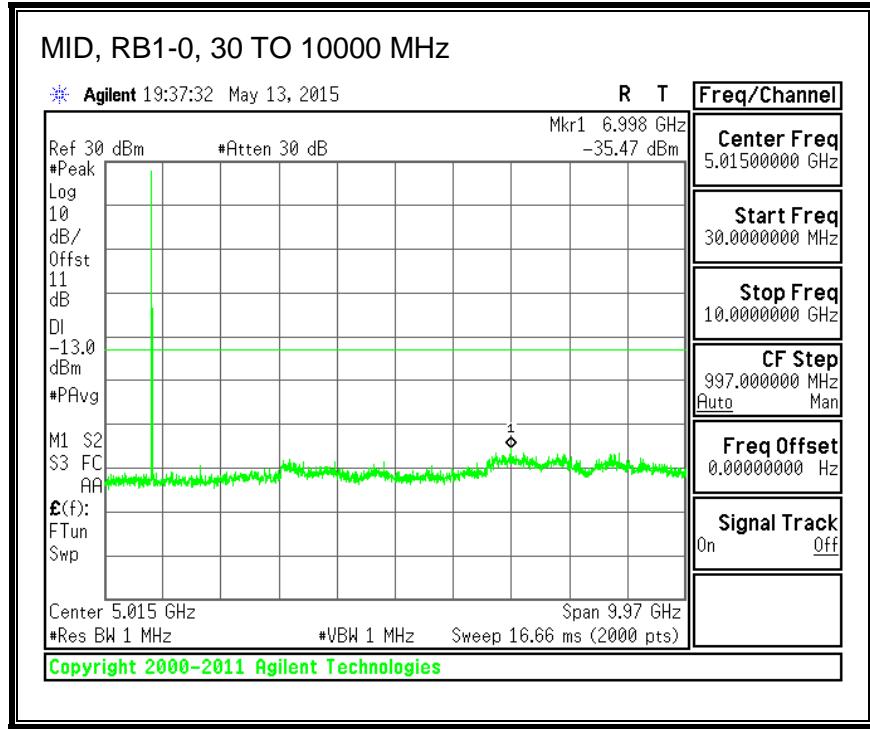
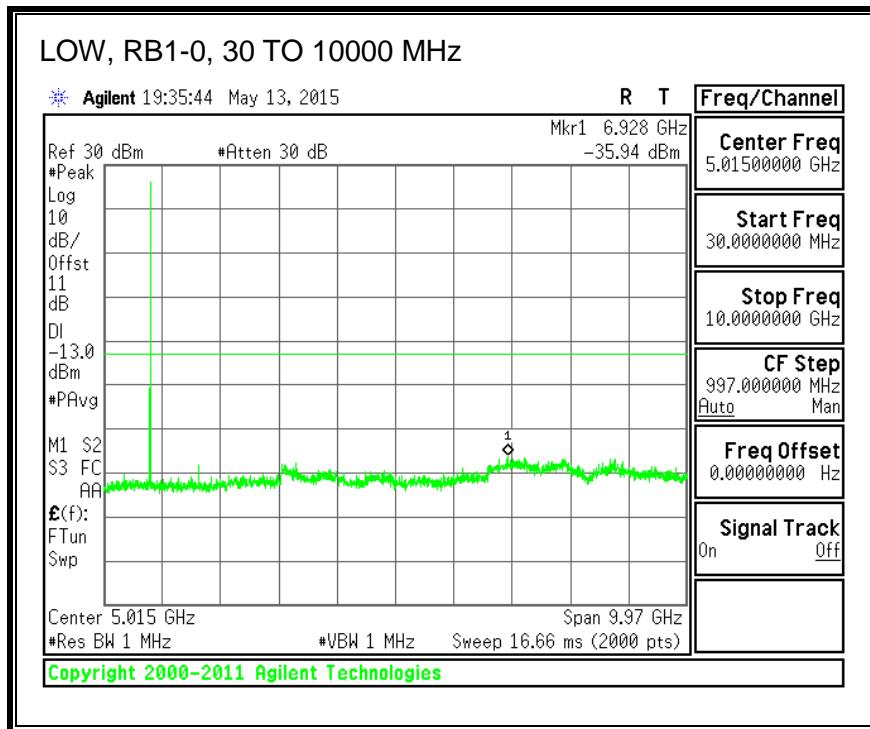
### 16QAM, (20.0 MHz BAND WIDTH)

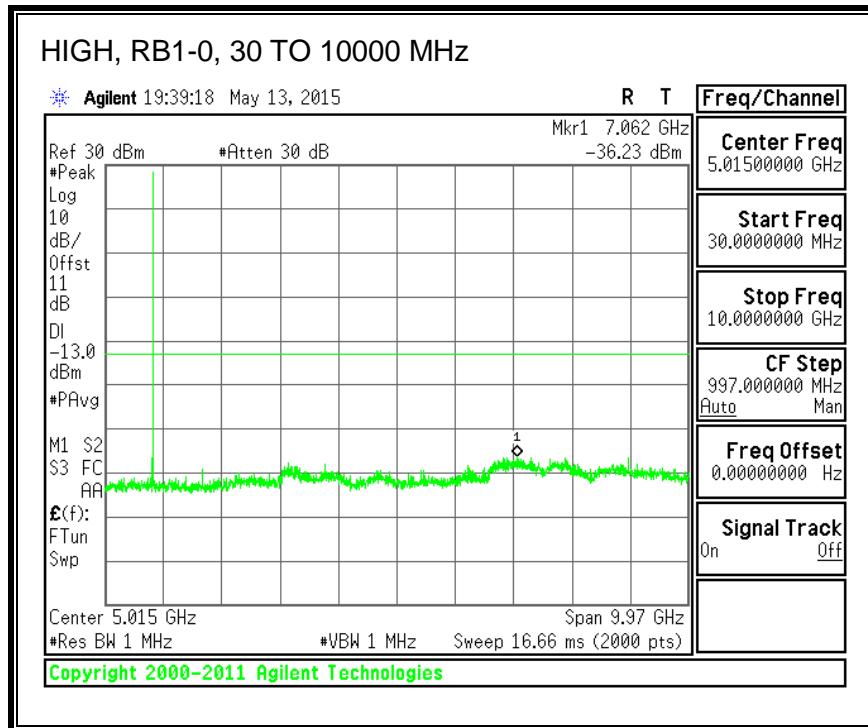




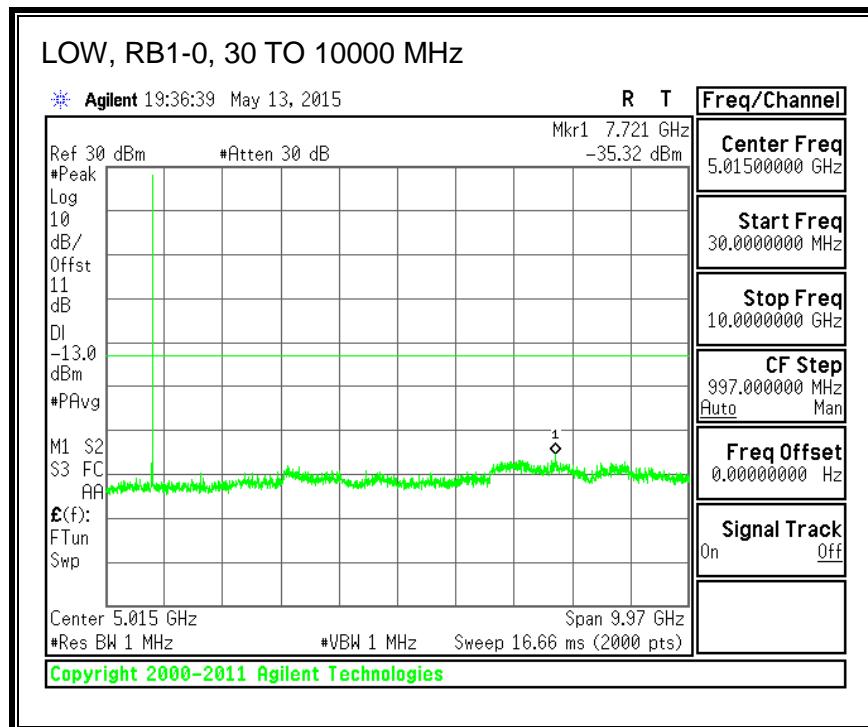
### 8.6.3. LTE BAND 5

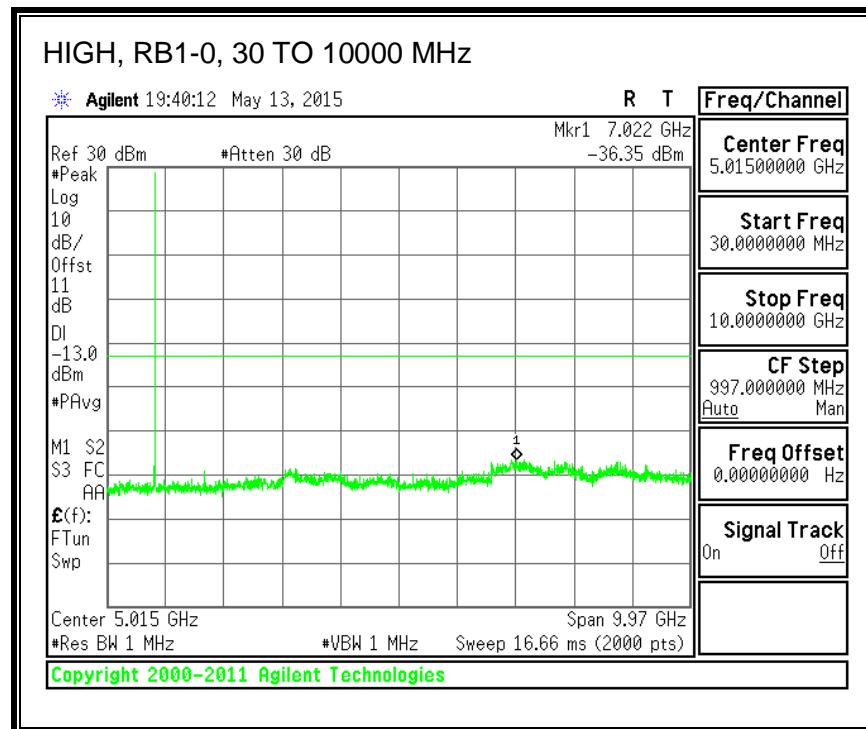
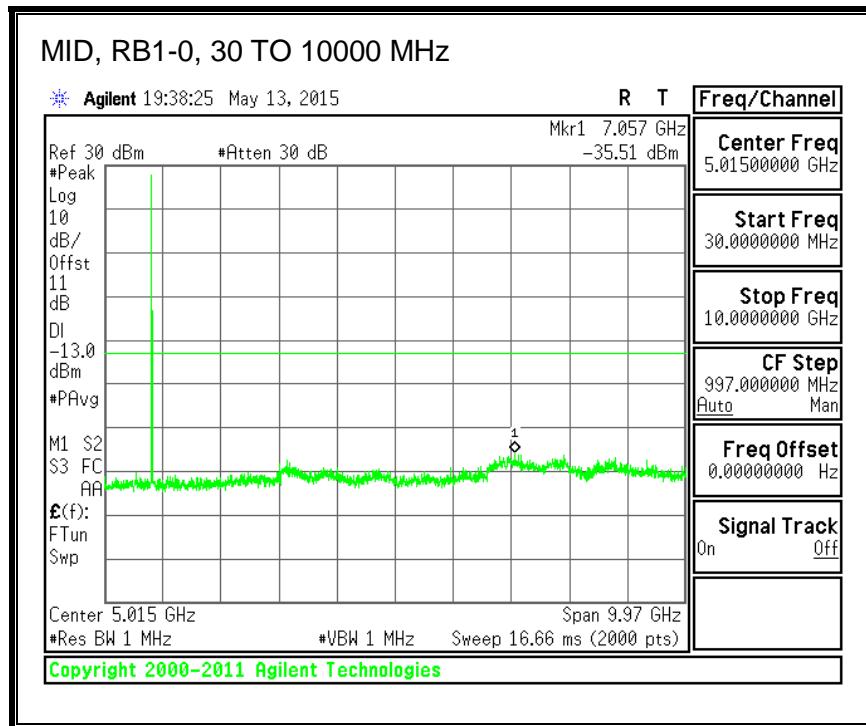
#### QPSK, (1.4 MHz BAND WIDTH)

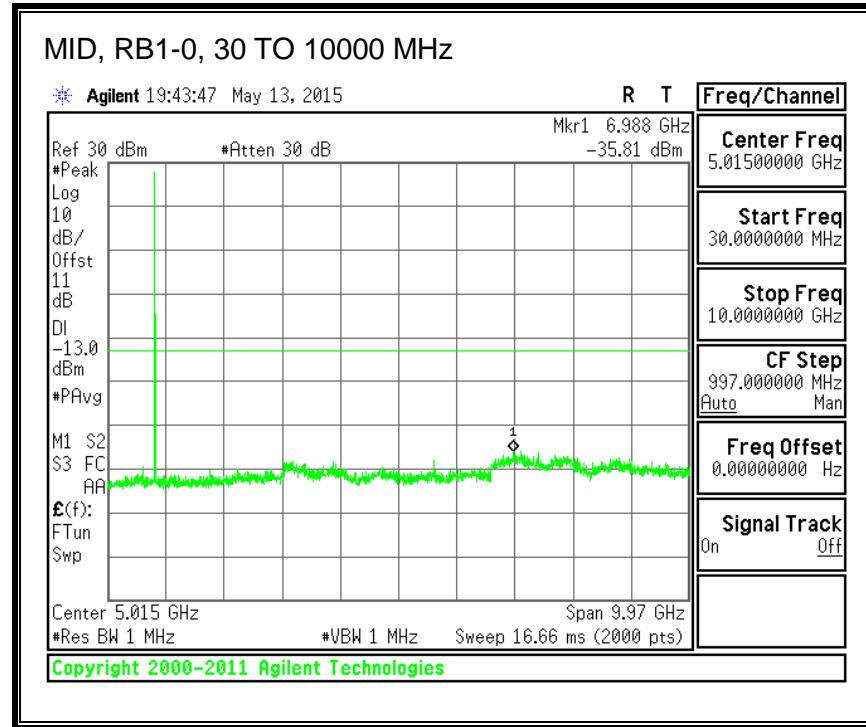
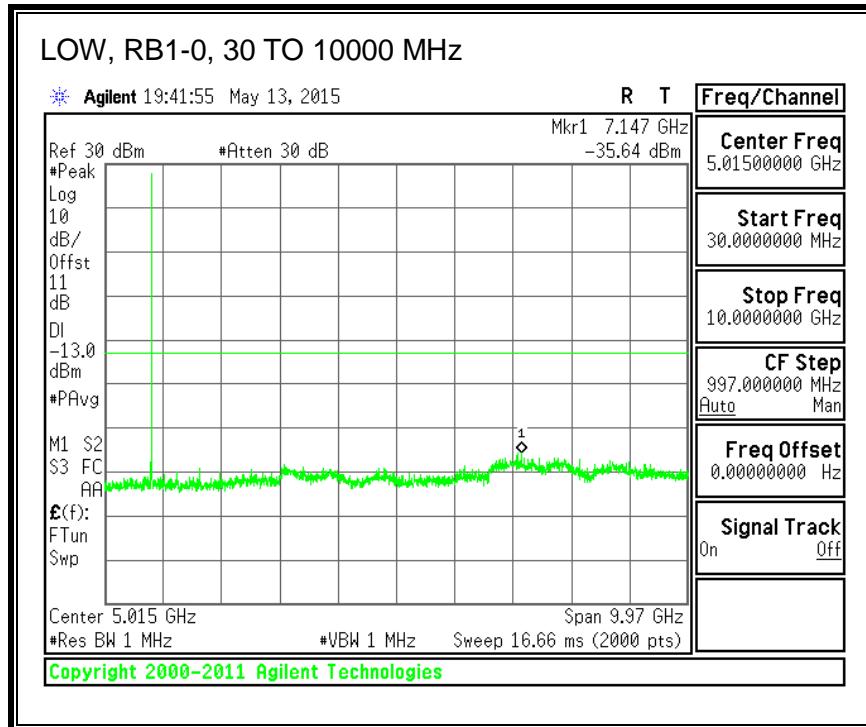


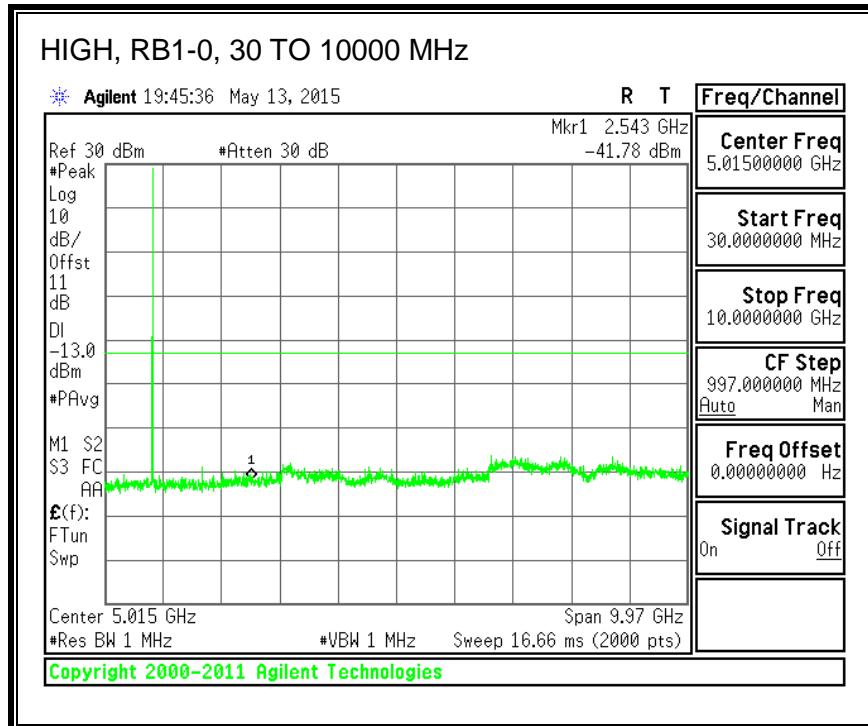


### 16QAM, (1.4 MHz BAND WIDTH)

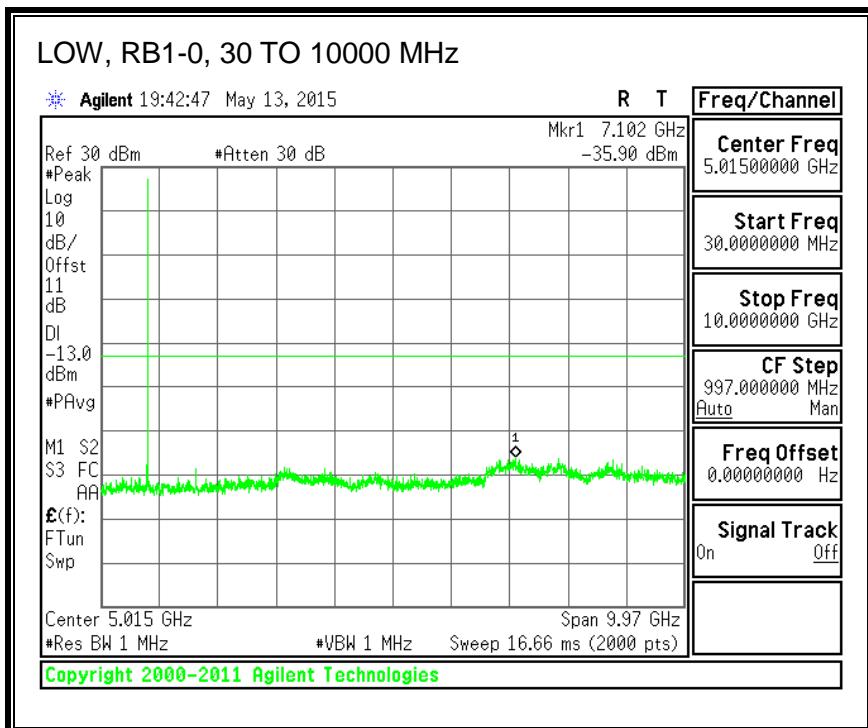


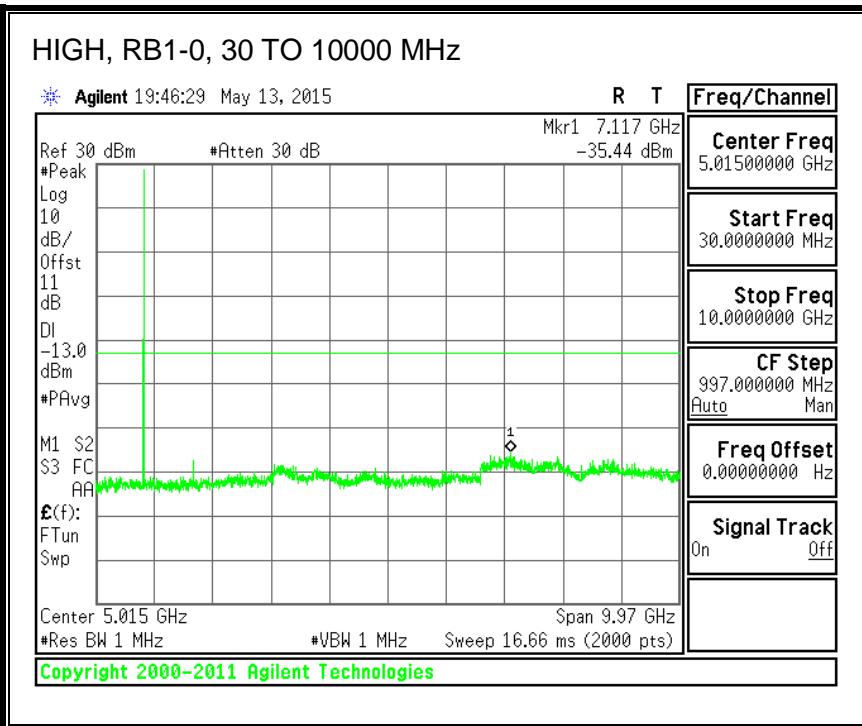
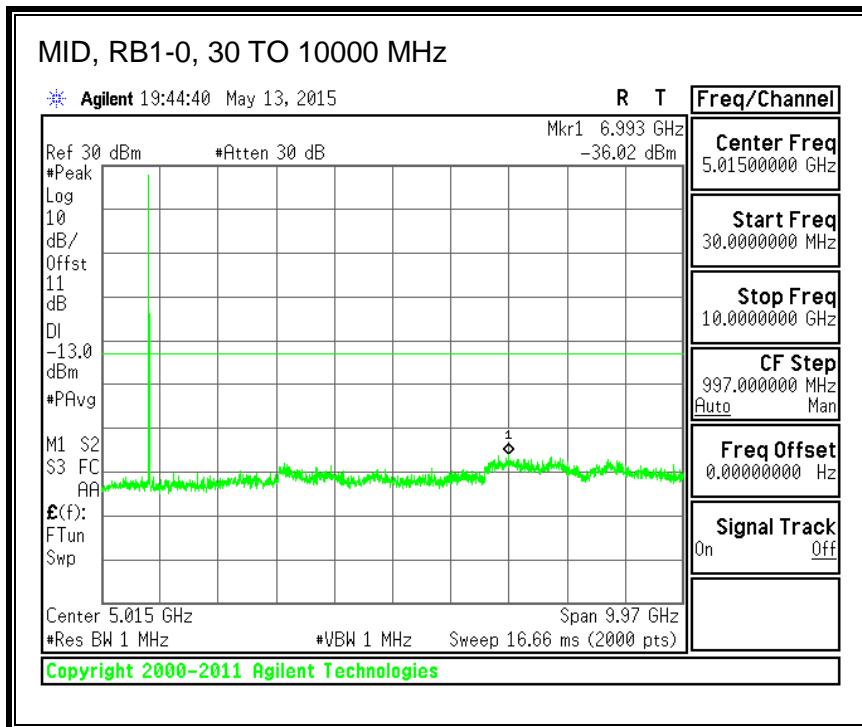


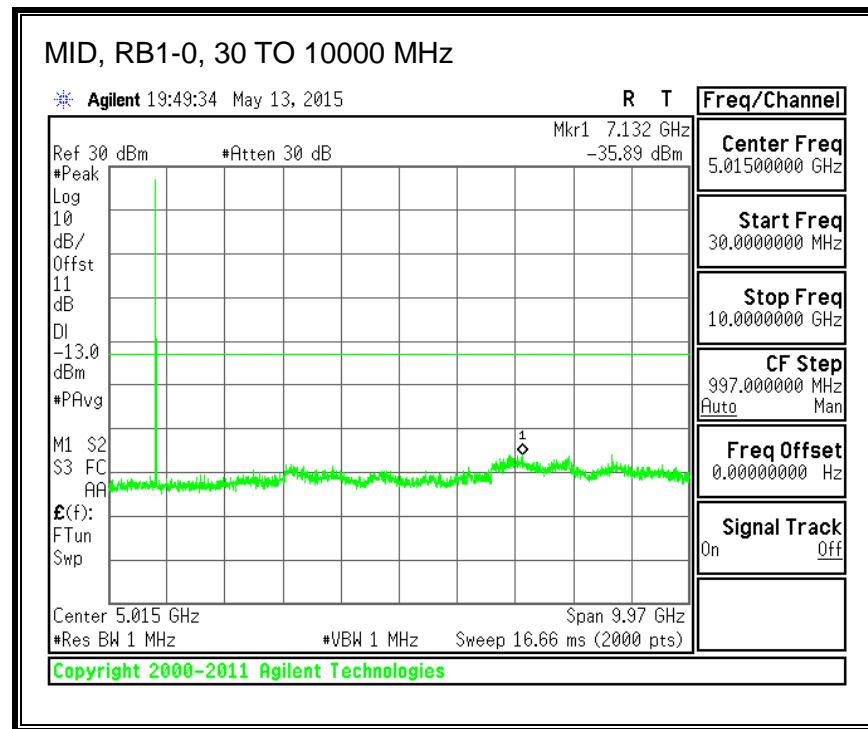
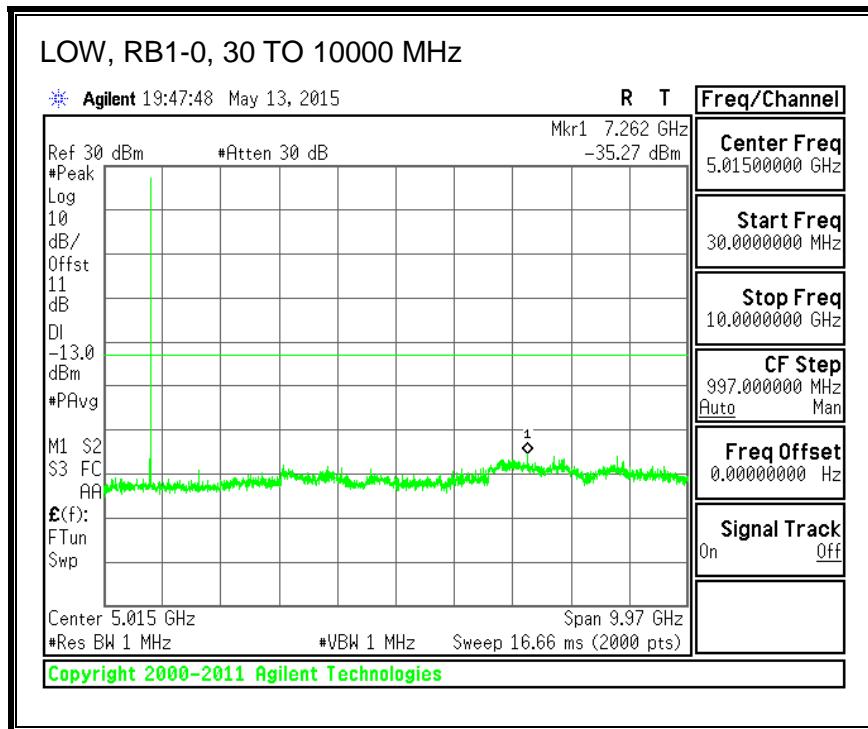
**QPSK, (3.0 MHz BAND WIDTH)**

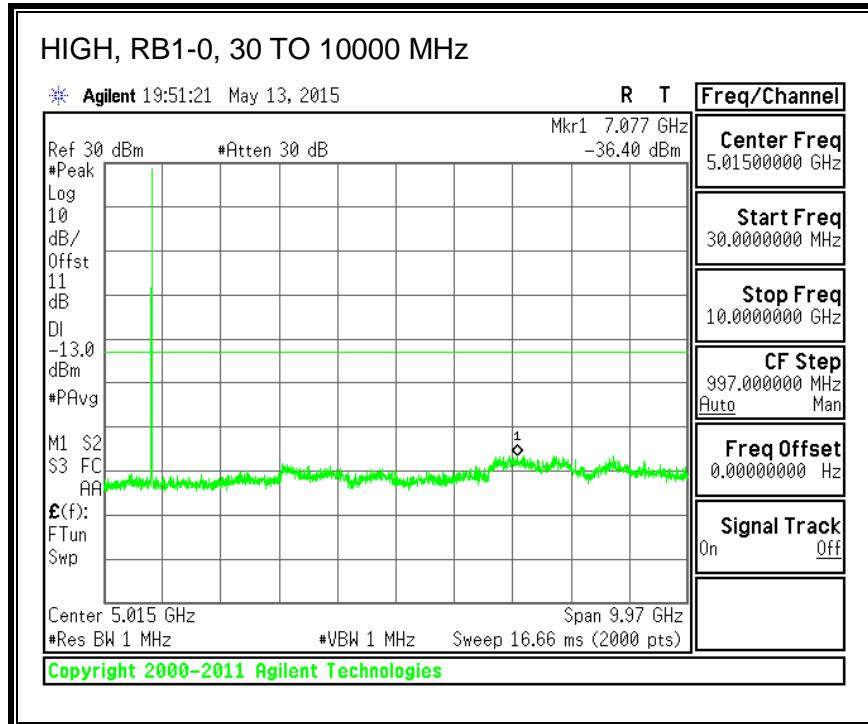


### 16QAM, (3.0 MHz BAND WIDTH)

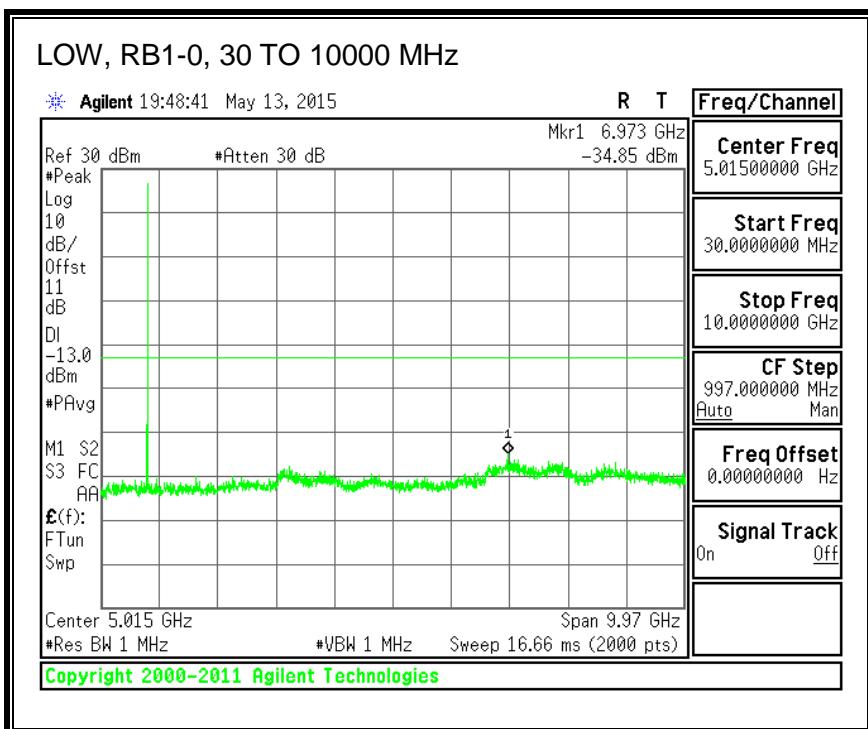




**QPSK, (5.0 MHz BAND WIDTH)**

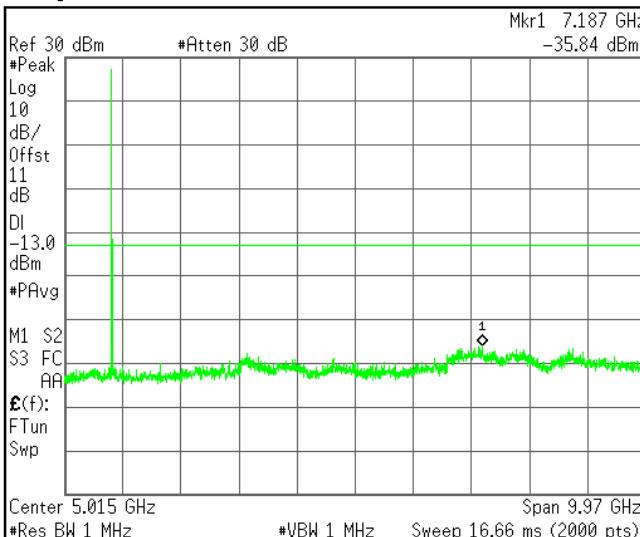


### 16QAM, (5.0 MHz BAND WIDTH)



## MID, RB1-0, 30 TO 10000 MHz

\* Agilent 19:50:27 May 13, 2015



R T

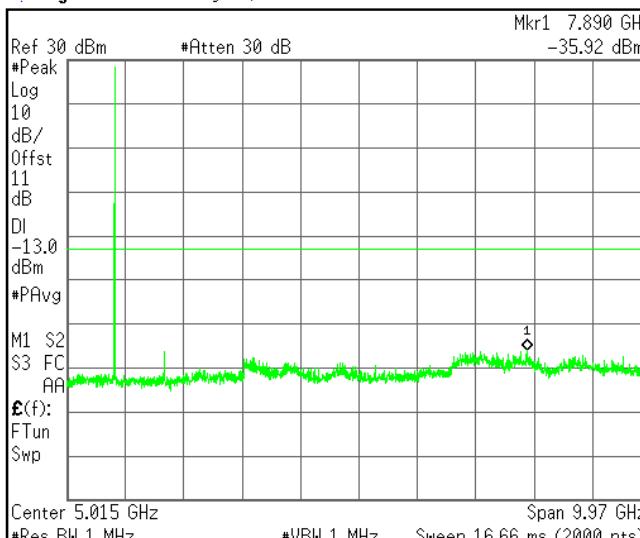
## Freq/Channel

Center Freq  
5.01500000 GHzStart Freq  
30.0000000 MHzStop Freq  
10.0000000 GHzCF Step  
997.000000 MHz  
Auto ManFreq Offset  
0.0000000 HzSignal Track  
On Off

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## HIGH, RB1-0, 30 TO 10000 MHz

\* Agilent 19:52:14 May 13, 2015

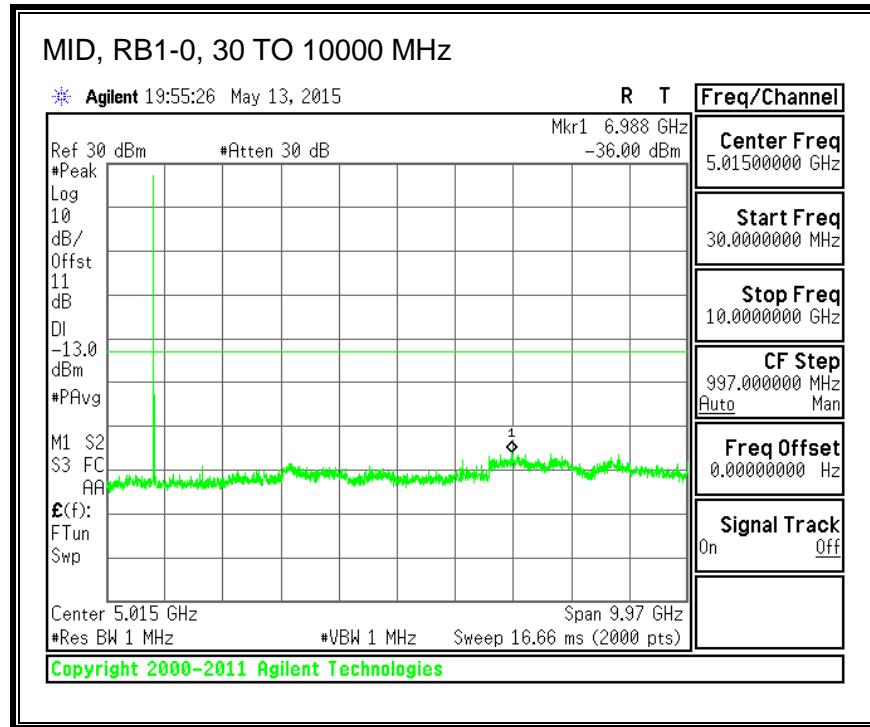
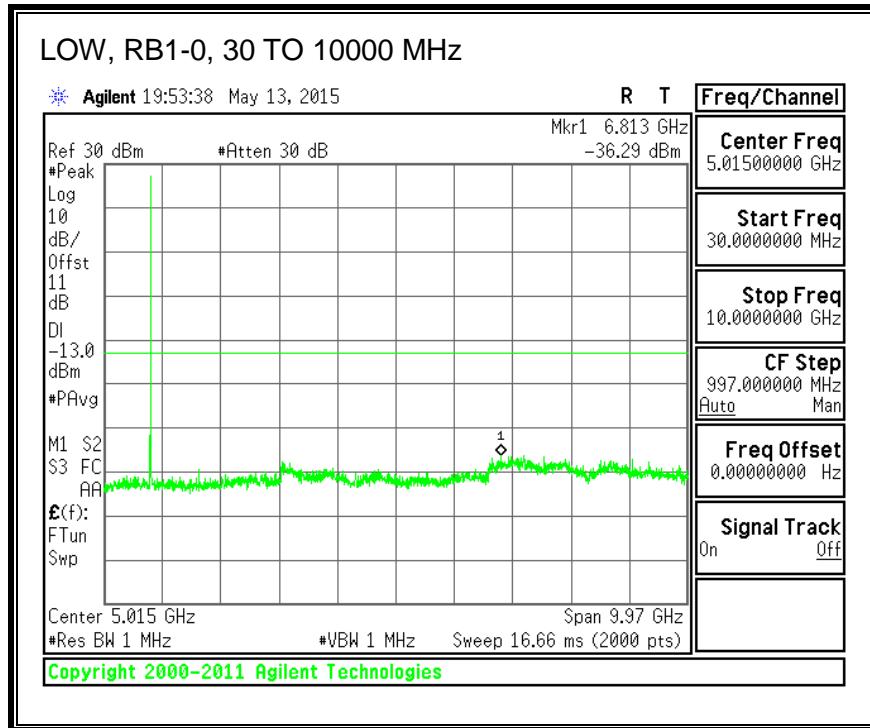


R T

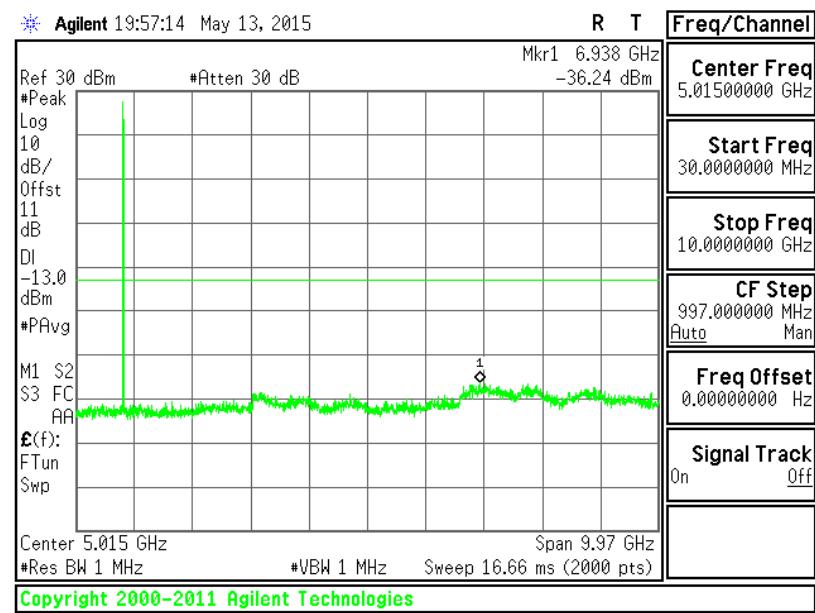
## Freq/Channel

Center Freq  
5.01500000 GHzStart Freq  
30.0000000 MHzStop Freq  
10.0000000 GHzCF Step  
997.000000 MHz  
Auto ManFreq Offset  
0.0000000 HzSignal Track  
On Off

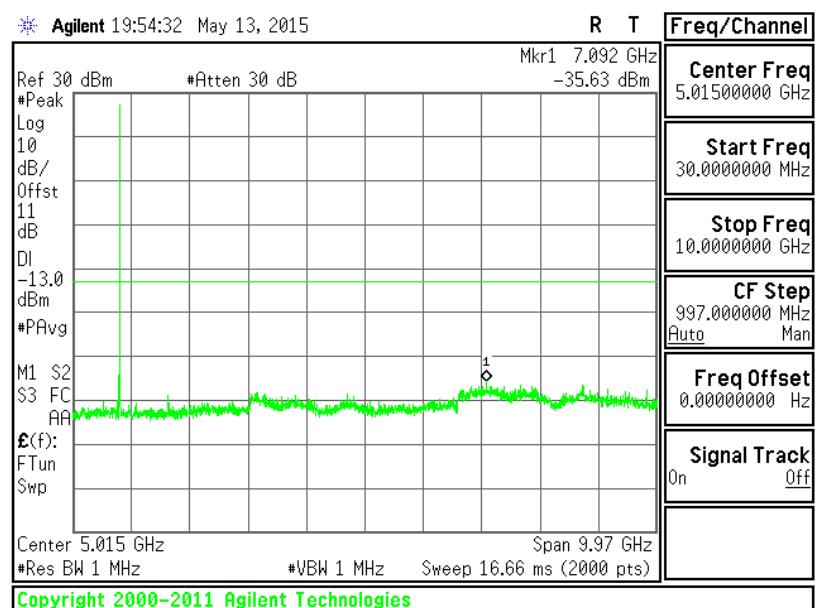
Copyright 2000-2011 Agilent Technologies

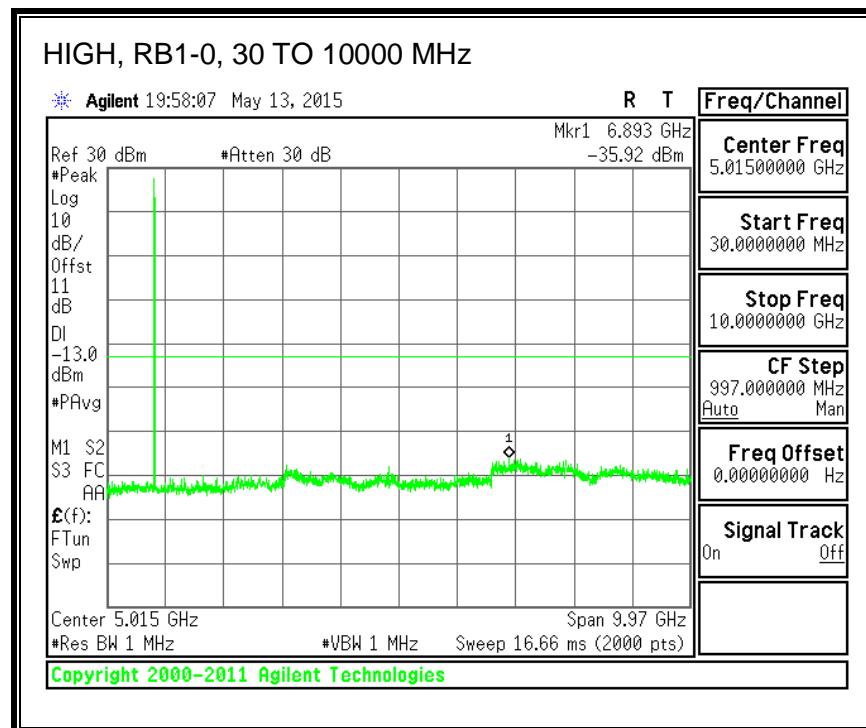
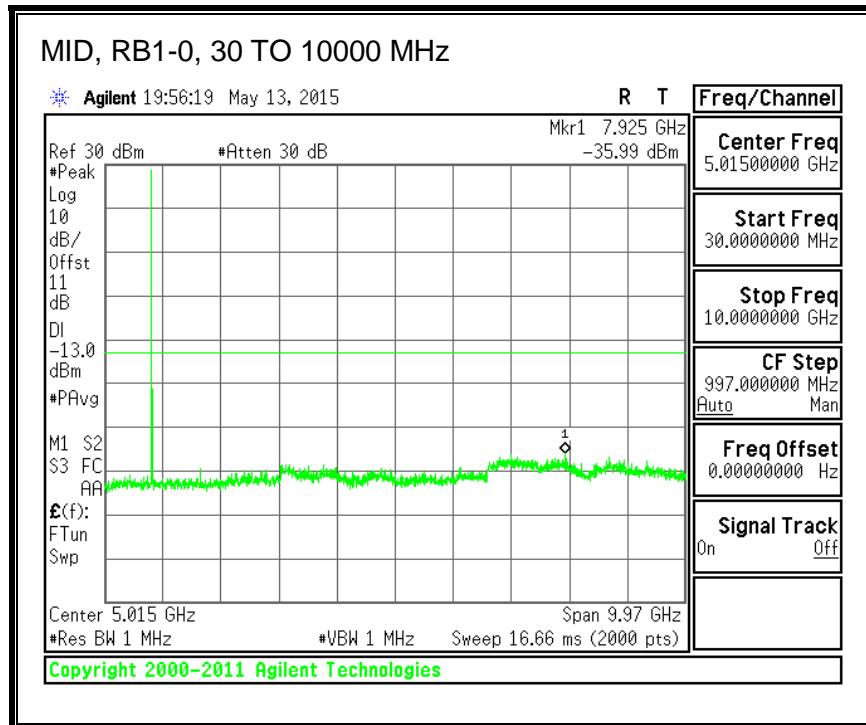
**QPSK, (10.0 MHz BAND WIDTH)**

## HIGH, RB1-0, 30 TO 10000 MHz

16QAM, (10.0 MHz BAND WIDTH)

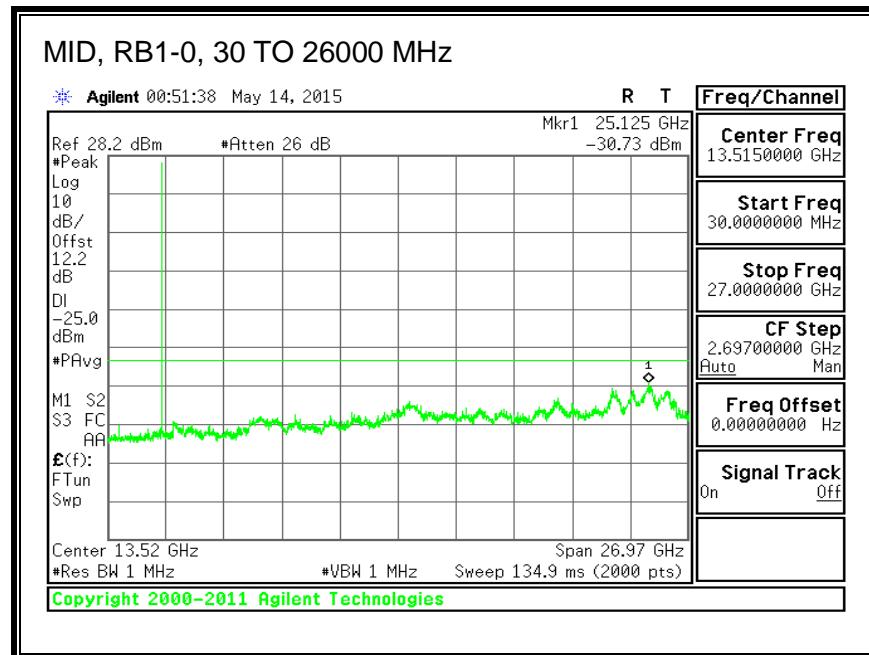
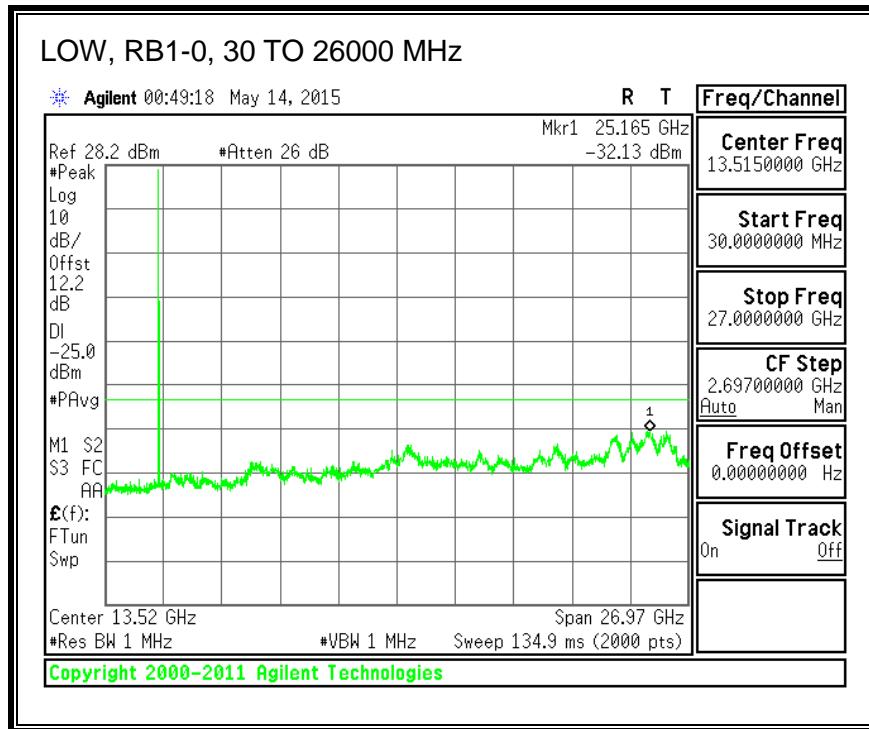
## LOW, RB1-0, 30 TO 10000 MHz

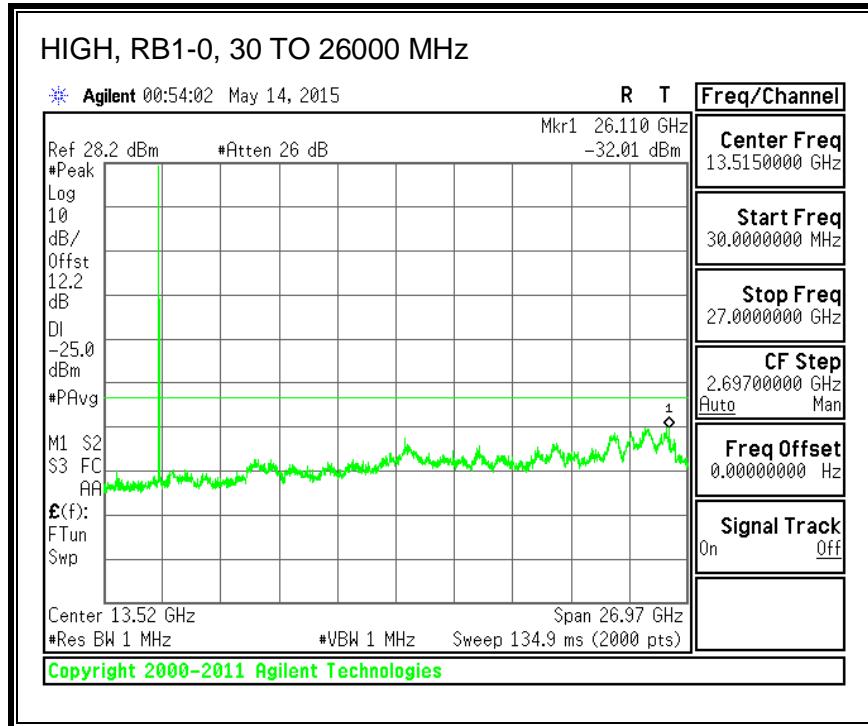




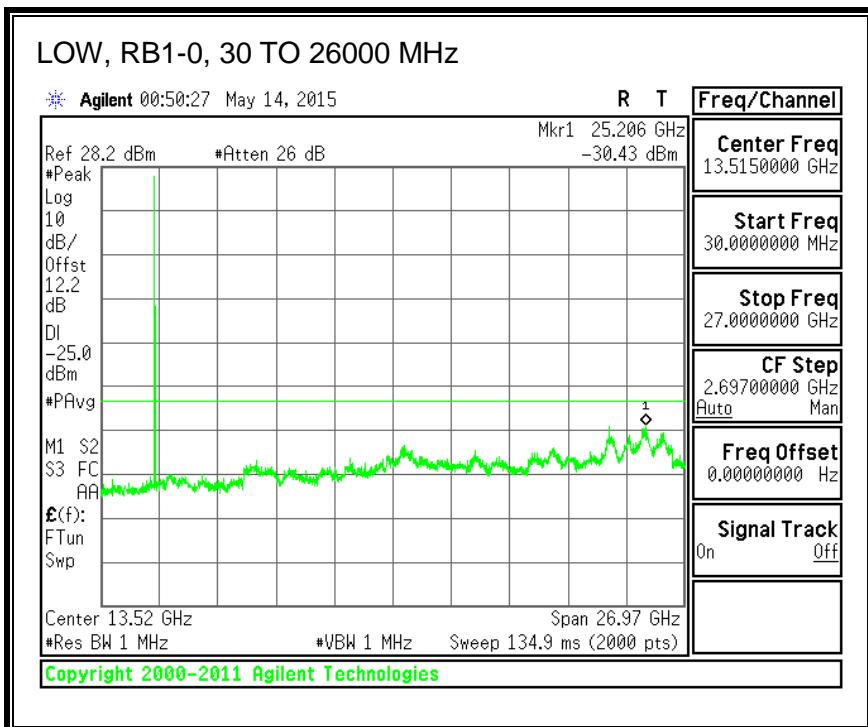
### 8.6.4. LTE BAND 7

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



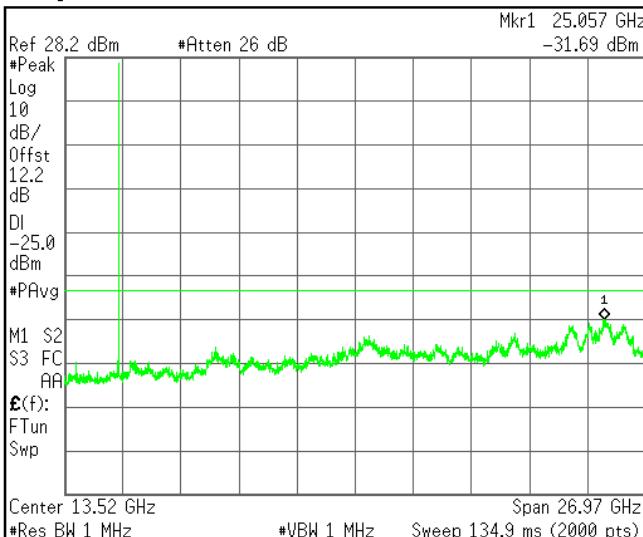


### 16QAM, (5.0 MHz BAND WIDTH)



## MID, RB1-0, 30 TO 26000 MHz

\* Agilent 00:52:50 May 14, 2015



R T

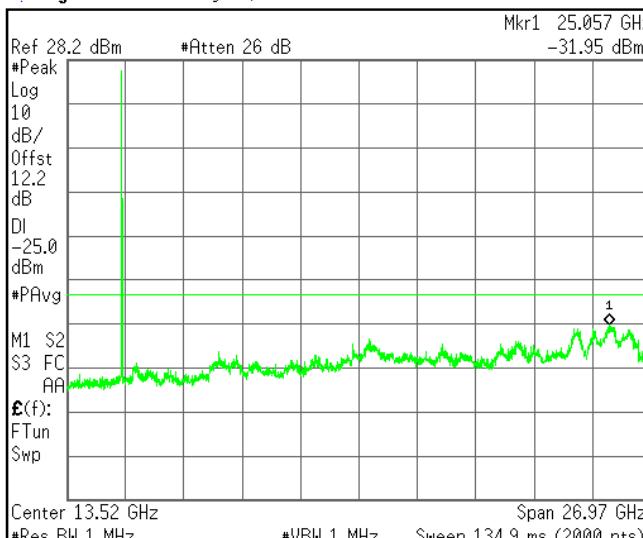
## Freq/Channel

Center Freq  
13.5150000 GHzStart Freq  
30.0000000 MHzStop Freq  
27.0000000 GHzCF Step  
2.69700000 GHz  
Auto      ManFreq Offset  
0.00000000 HzSignal Track  
On      Off

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## HIGH, RB1-0, 30 TO 26000 MHz

\* Agilent 00:55:11 May 14, 2015

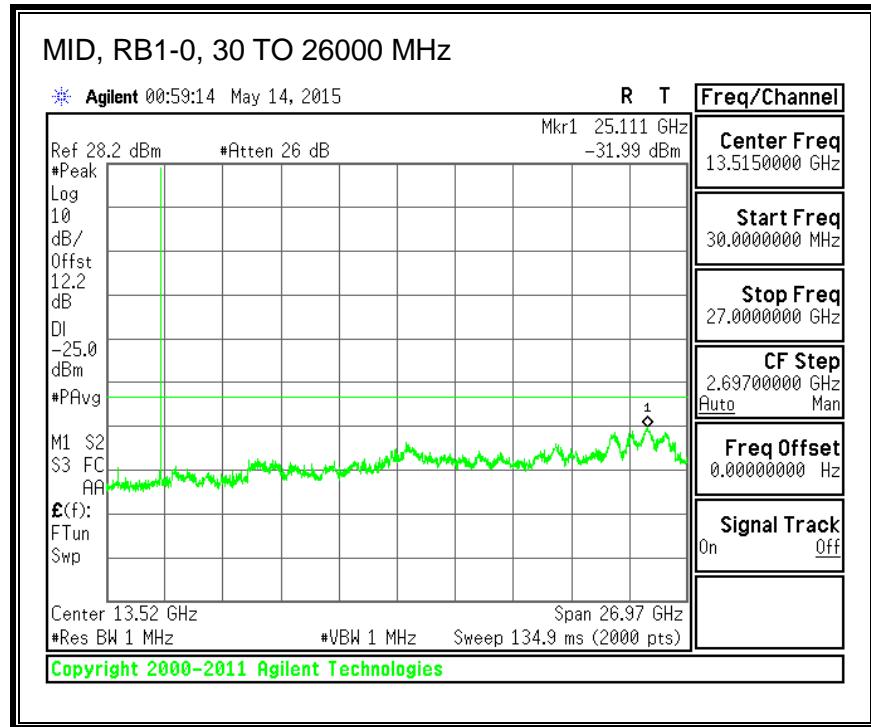
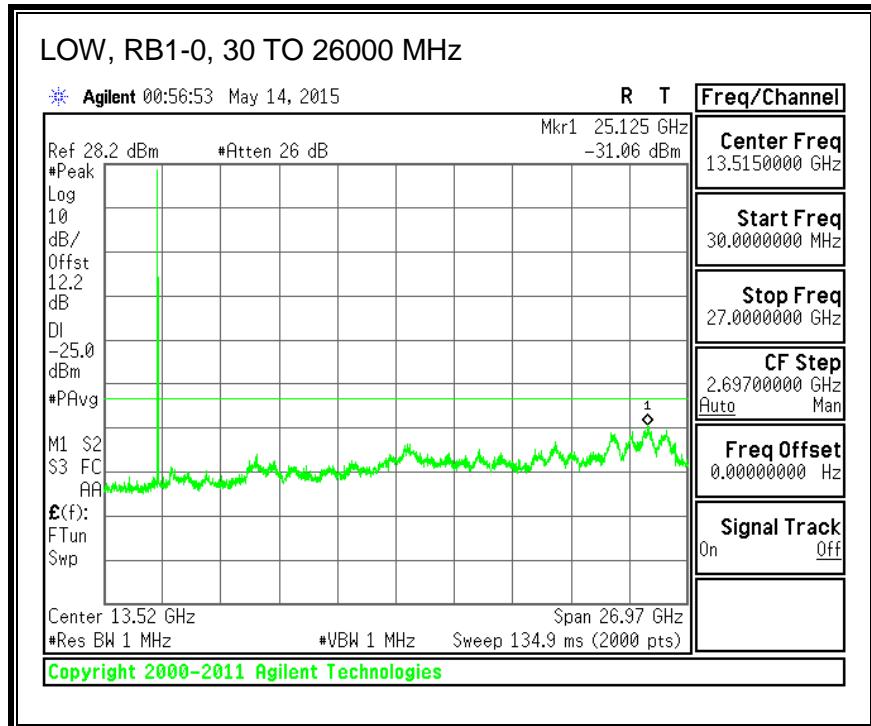


R T

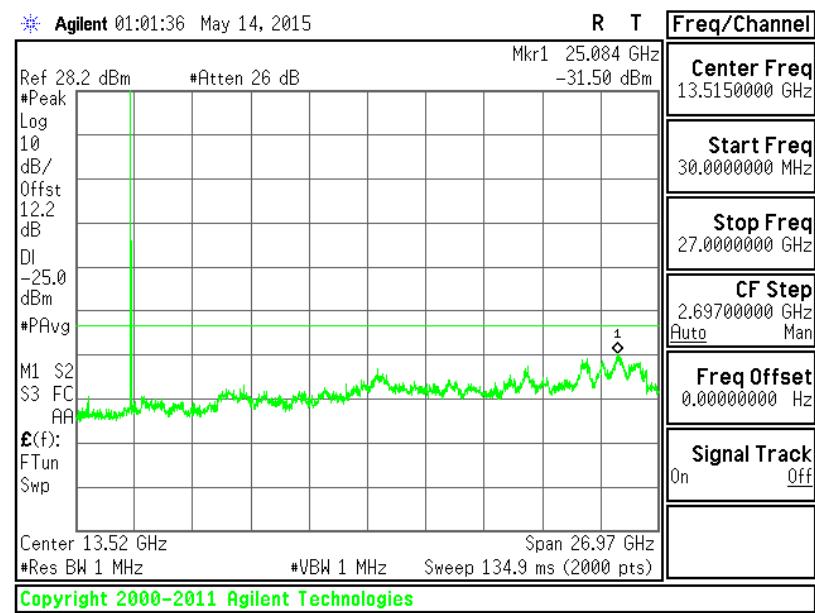
## Freq/Channel

Center Freq  
13.5150000 GHzStart Freq  
30.0000000 MHzStop Freq  
27.0000000 GHzCF Step  
2.69700000 GHz  
Auto      ManFreq Offset  
0.00000000 HzSignal Track  
On      Off

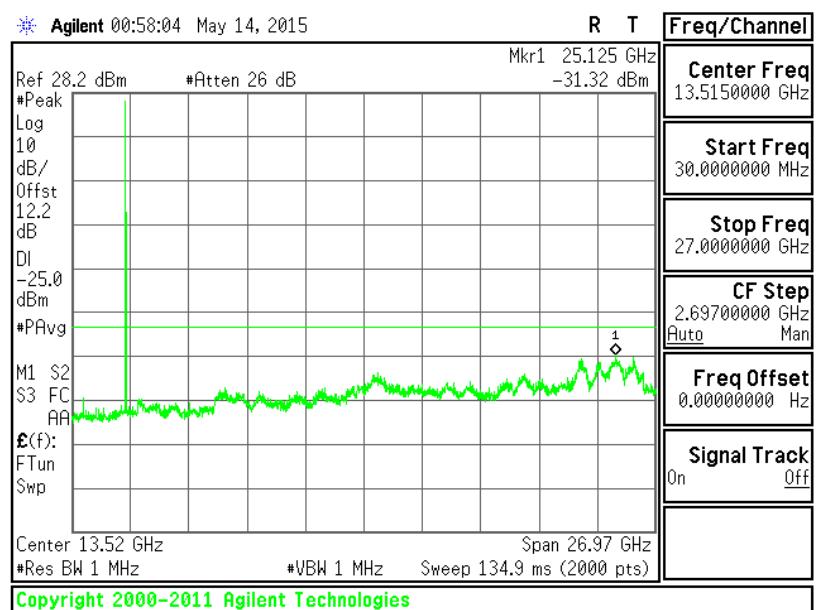
Copyright 2000-2011 Agilent Technologies

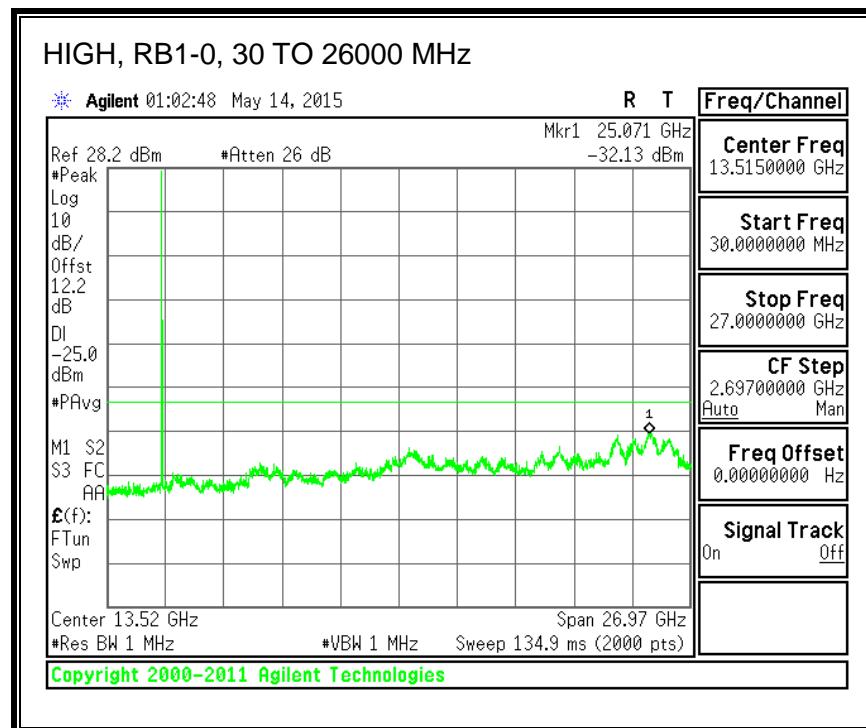
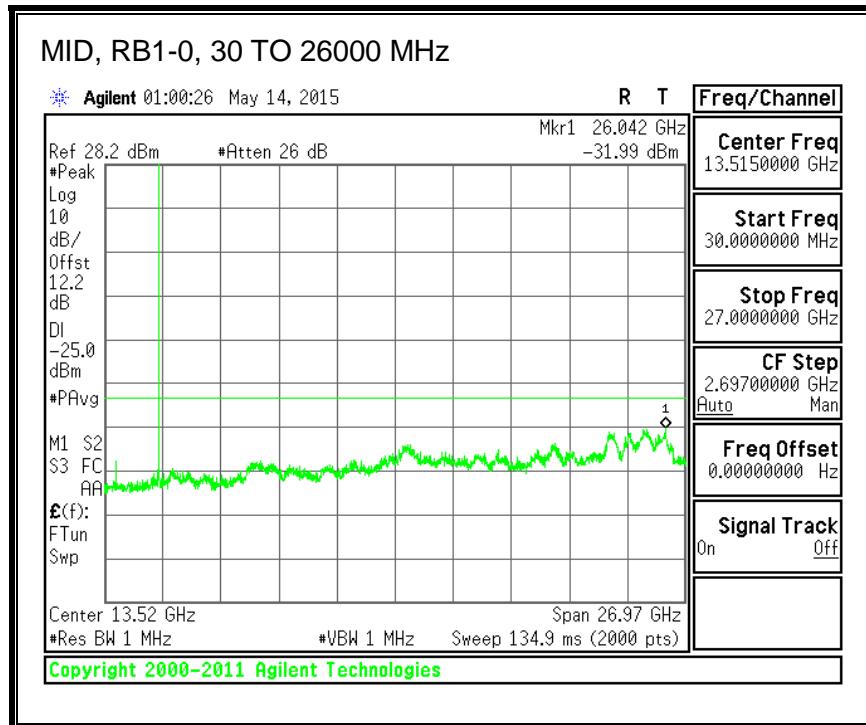
**QPSK, (10.0 MHz BAND WIDTH)**

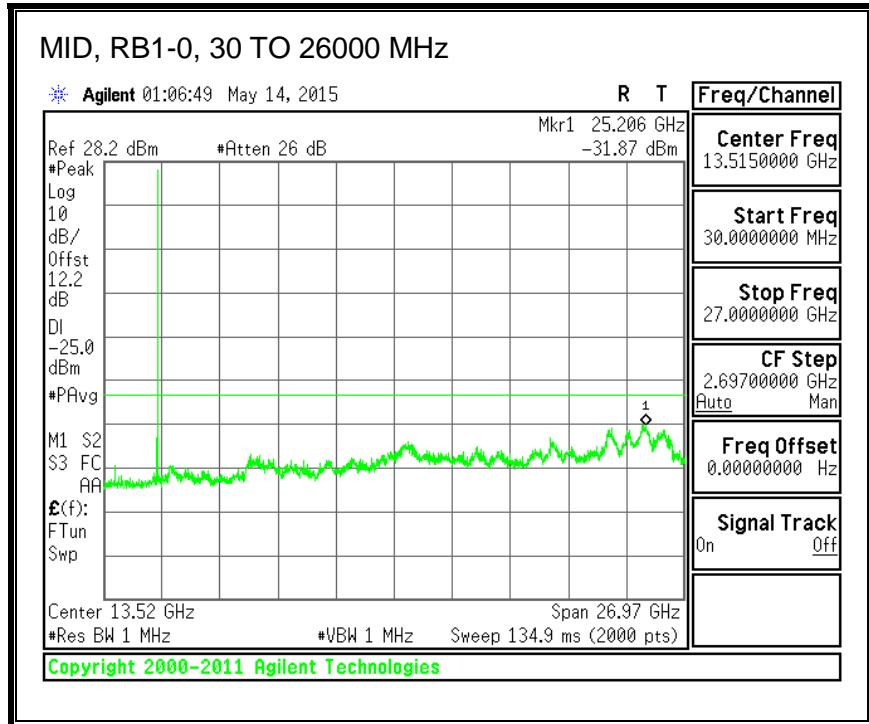
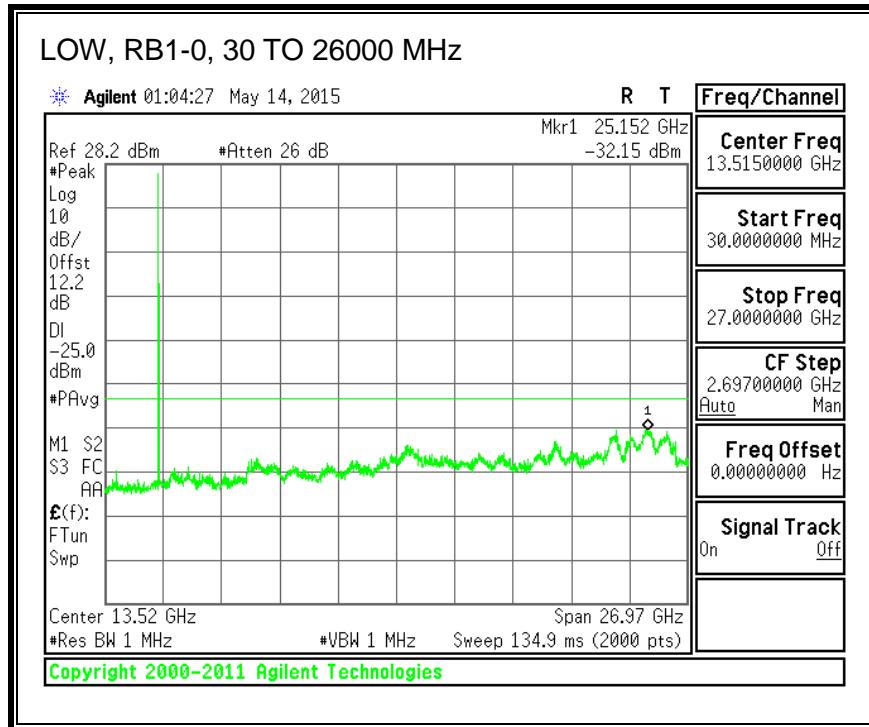
## HIGH, RB1-0, 30 TO 26000 MHz

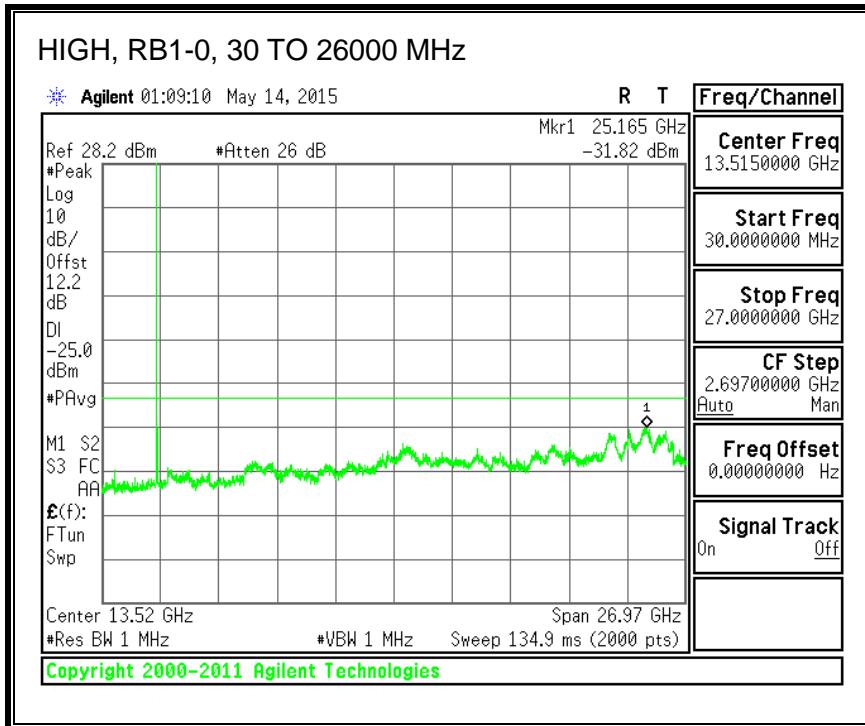
16QAM, (10.0 MHz BAND WIDTH)

## LOW, RB1-0, 30 TO 26000 MHz

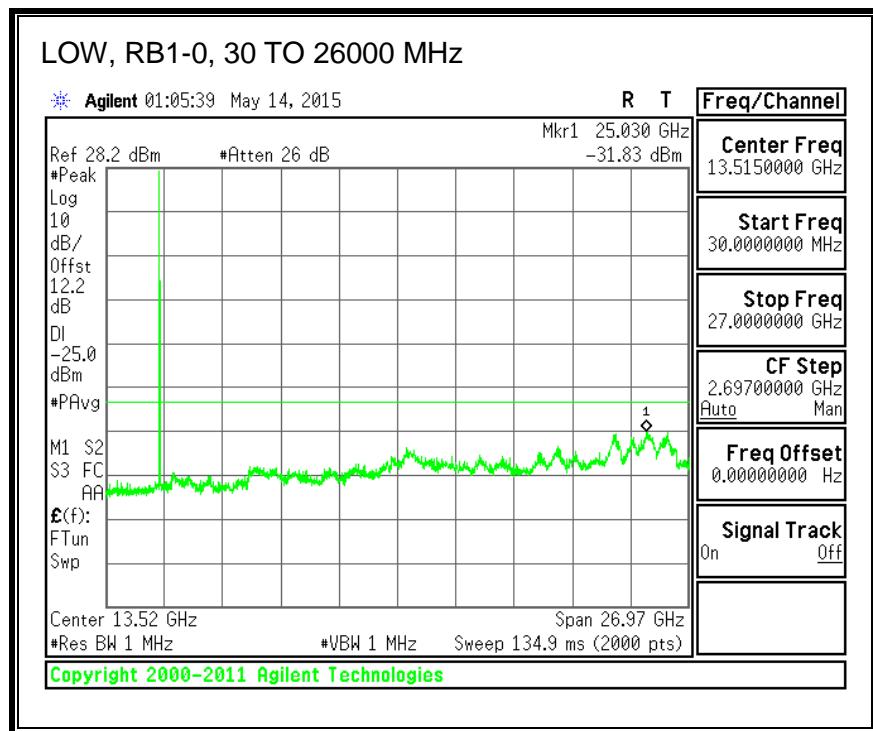


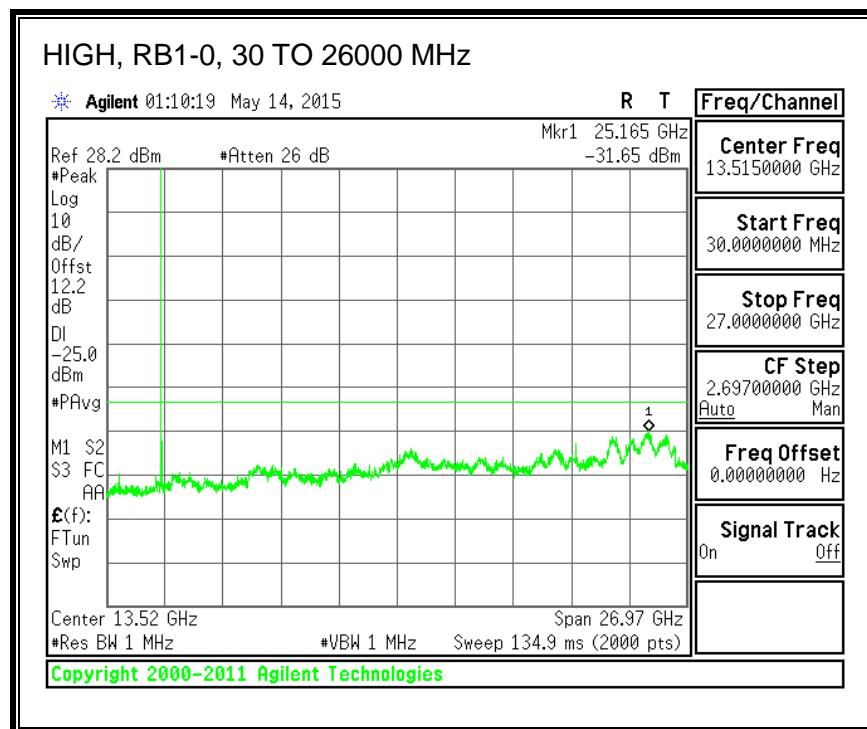
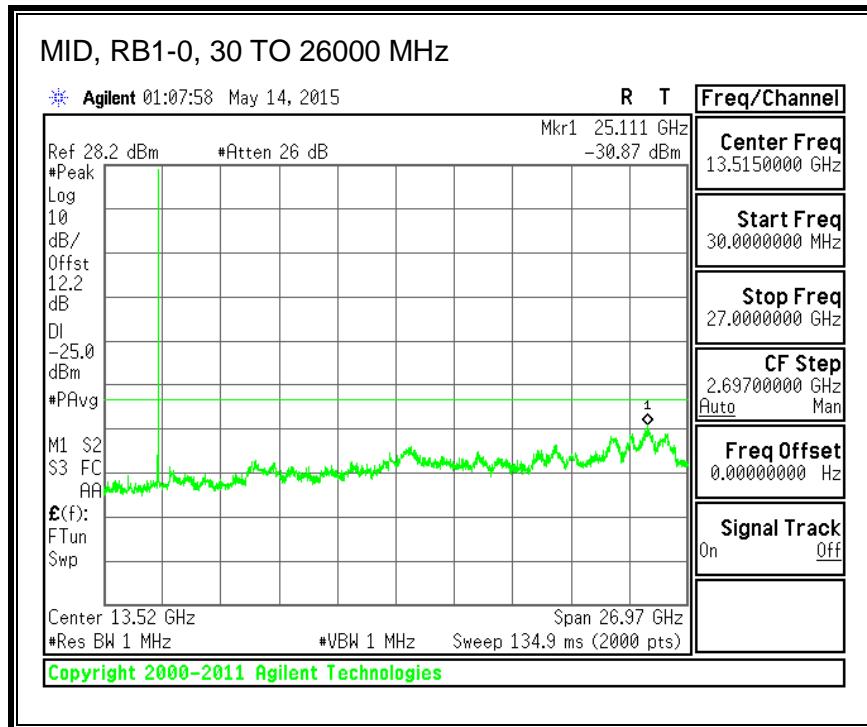


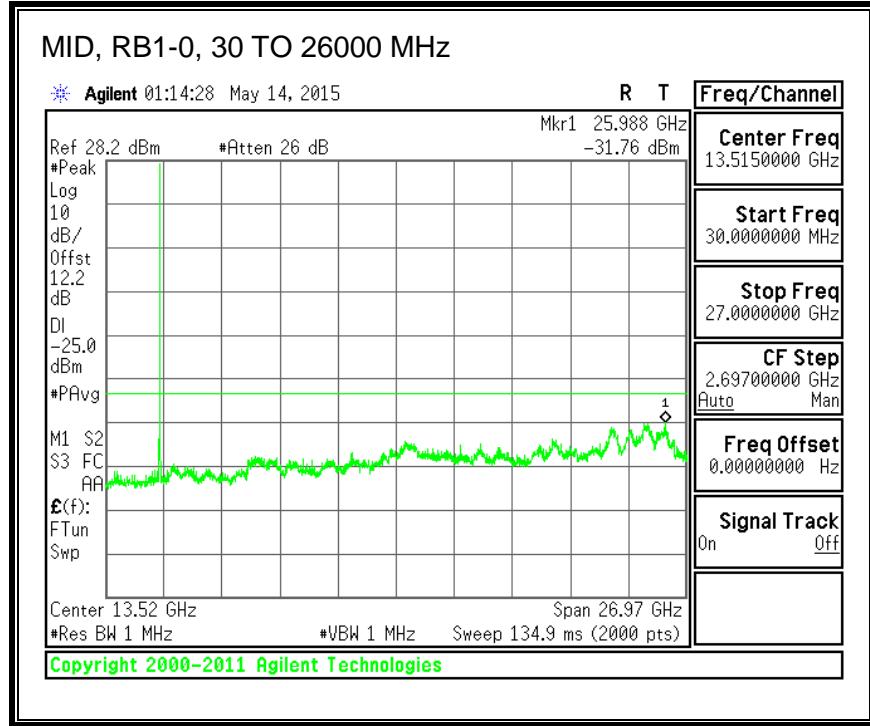
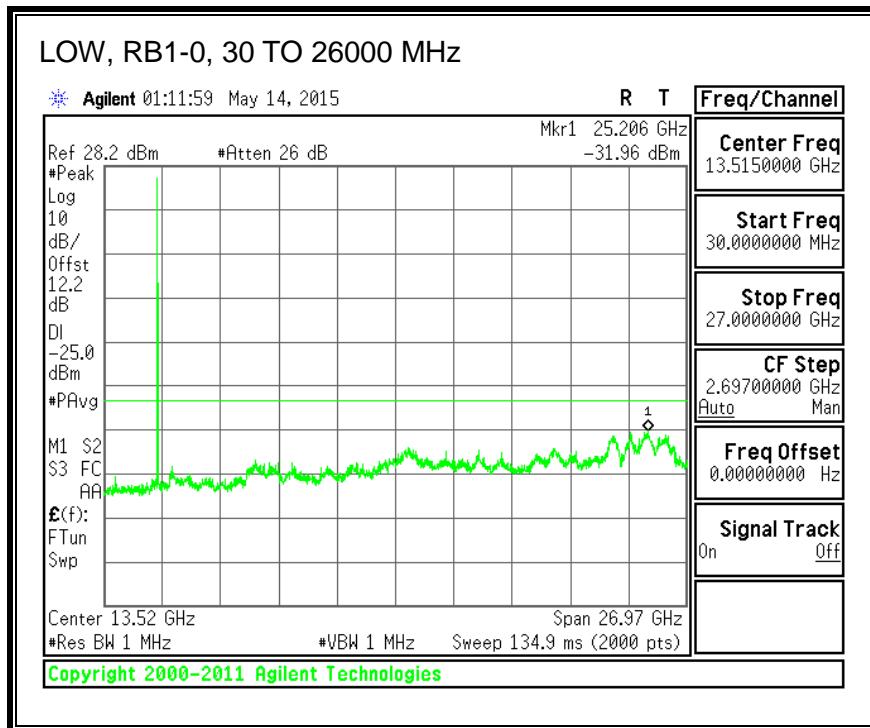
**QPSK, (15.0 MHz BAND WIDTH)**

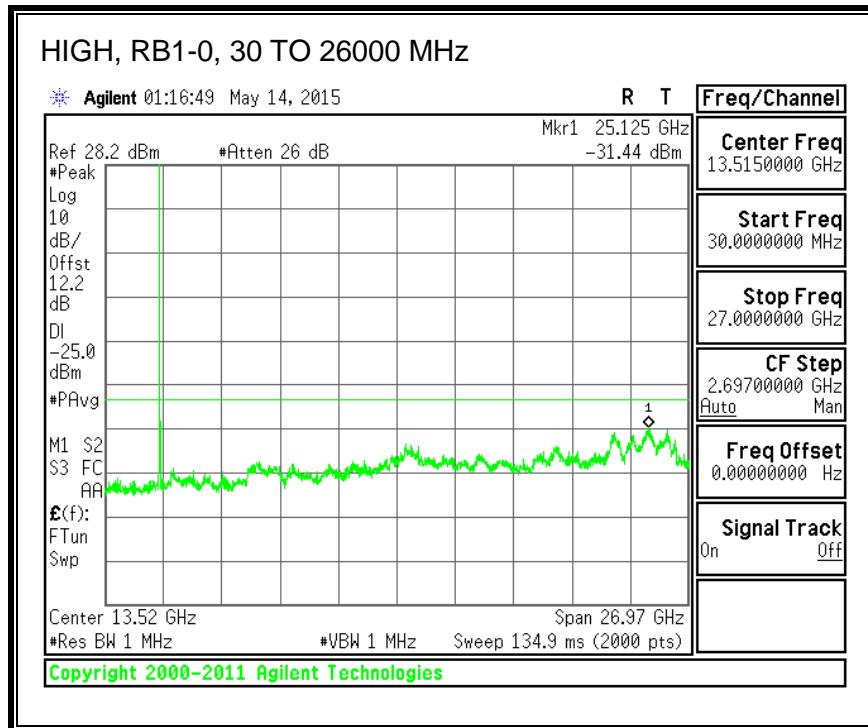


### 16QAM, (15.0 MHz BAND WIDTH)

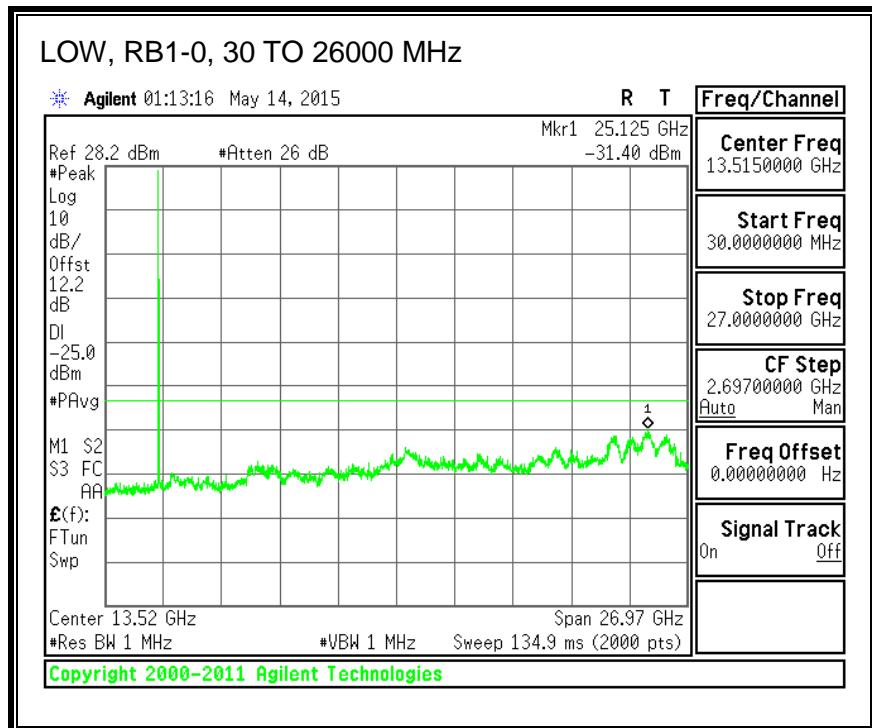


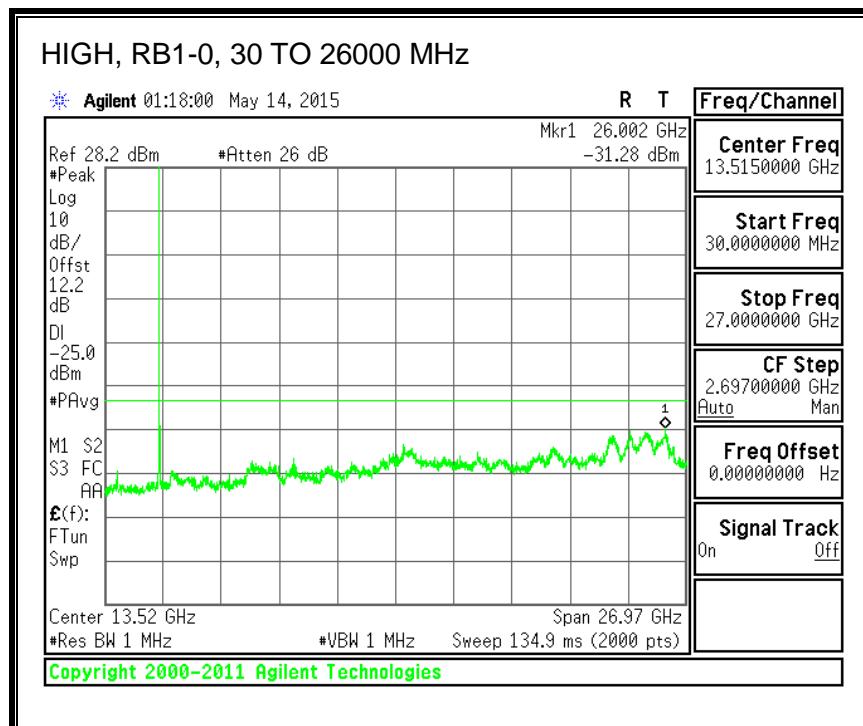
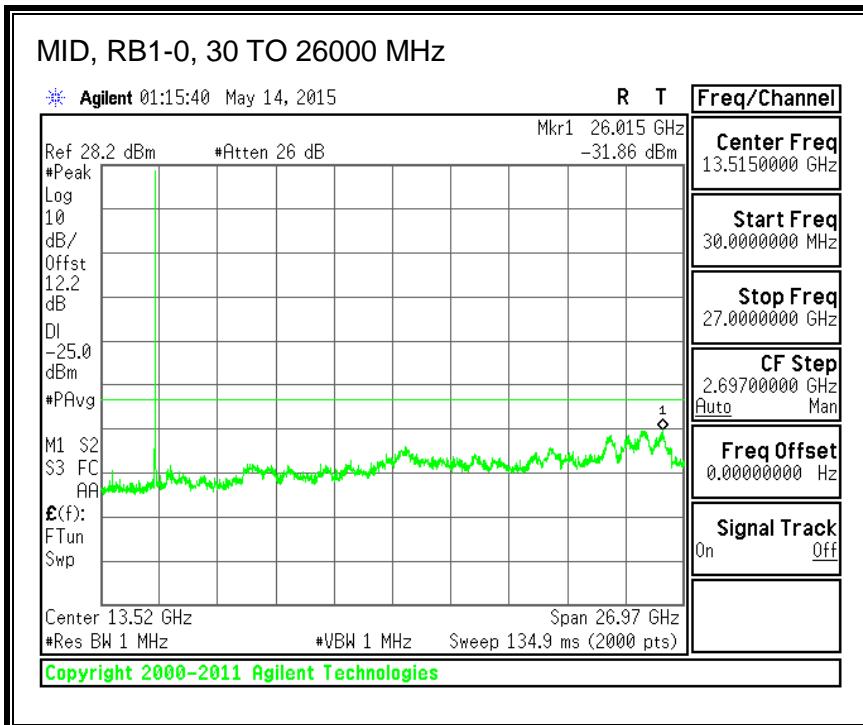


**QPSK, (20.0 MHz BAND WIDTH)**



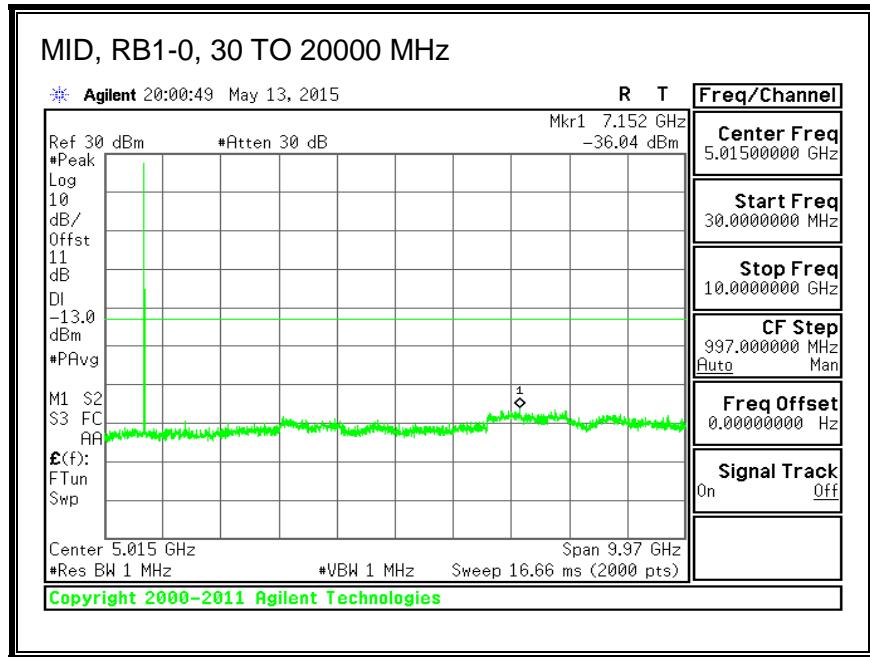
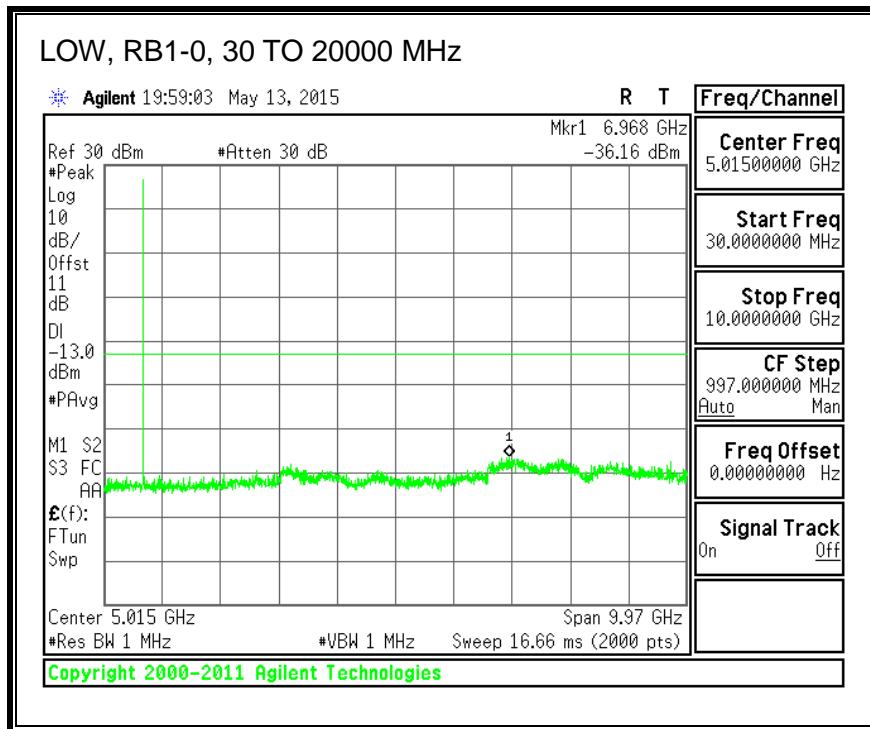
### 16QAM, (20.0 MHz BAND WIDTH)

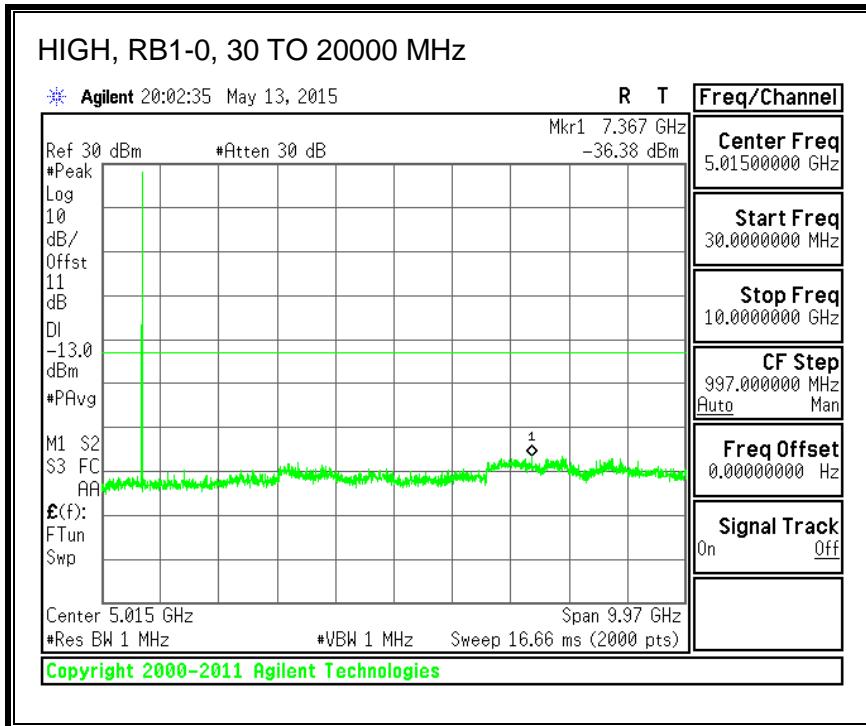
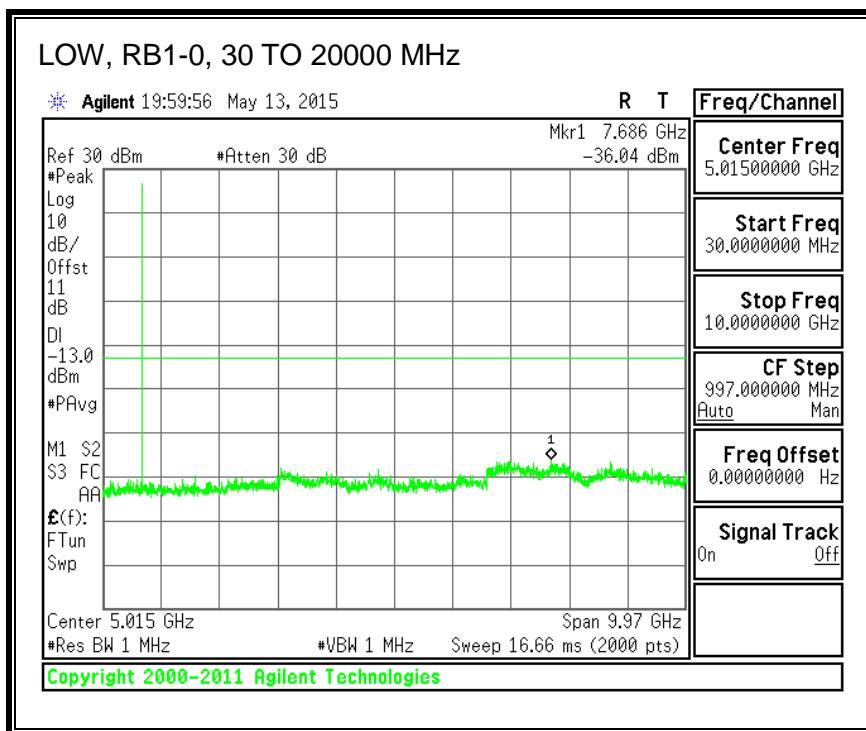


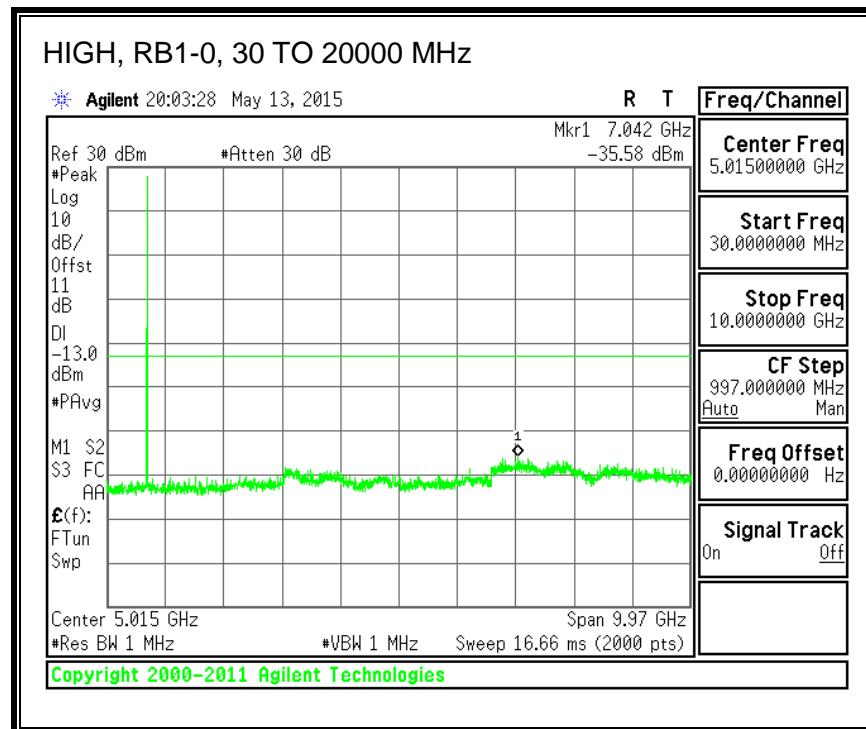
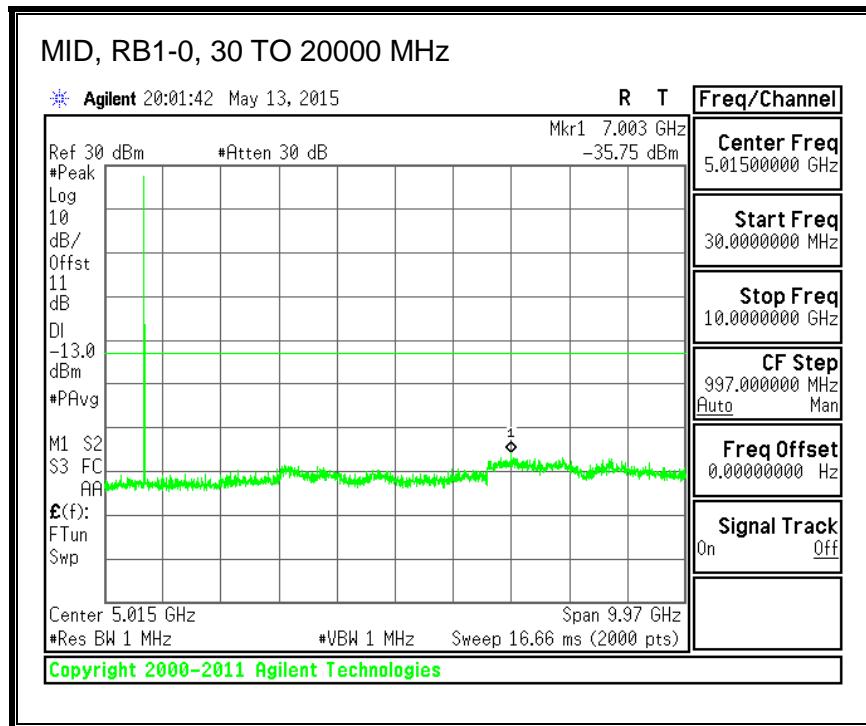


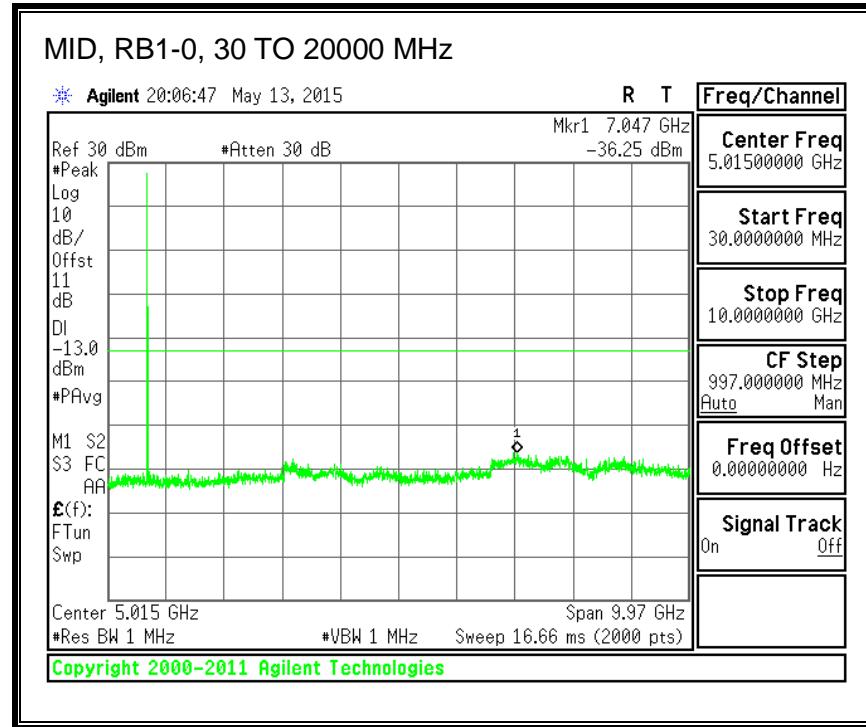
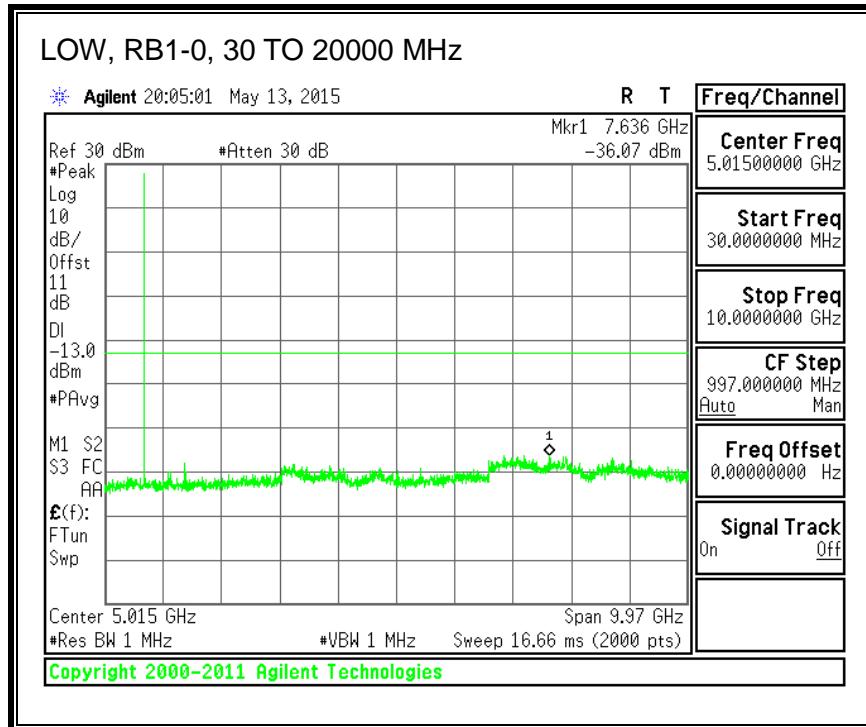
### 8.6.5. LTE BAND 12

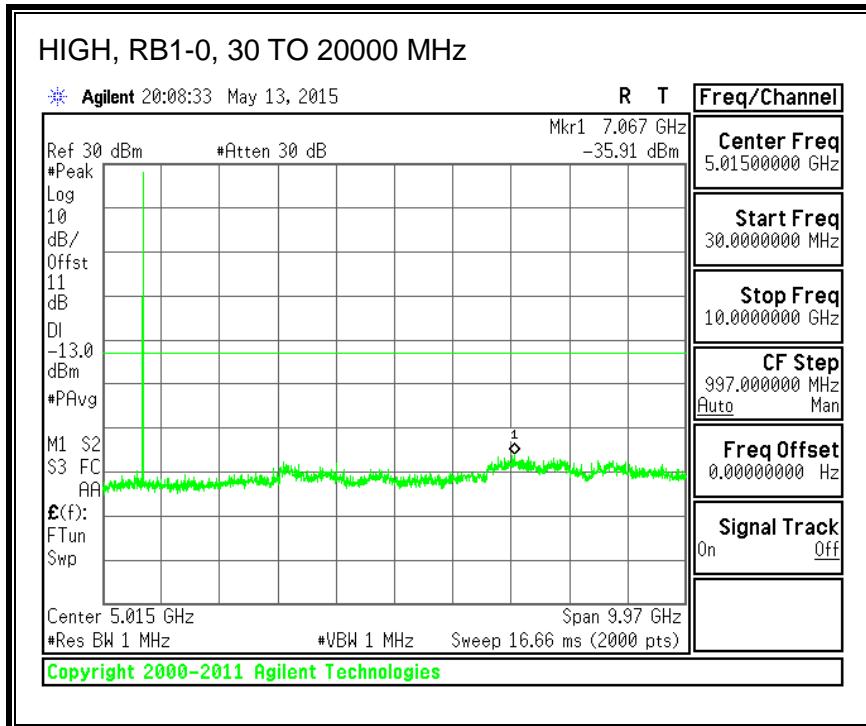
#### QPSK, (1.4 MHz BAND WIDTH)



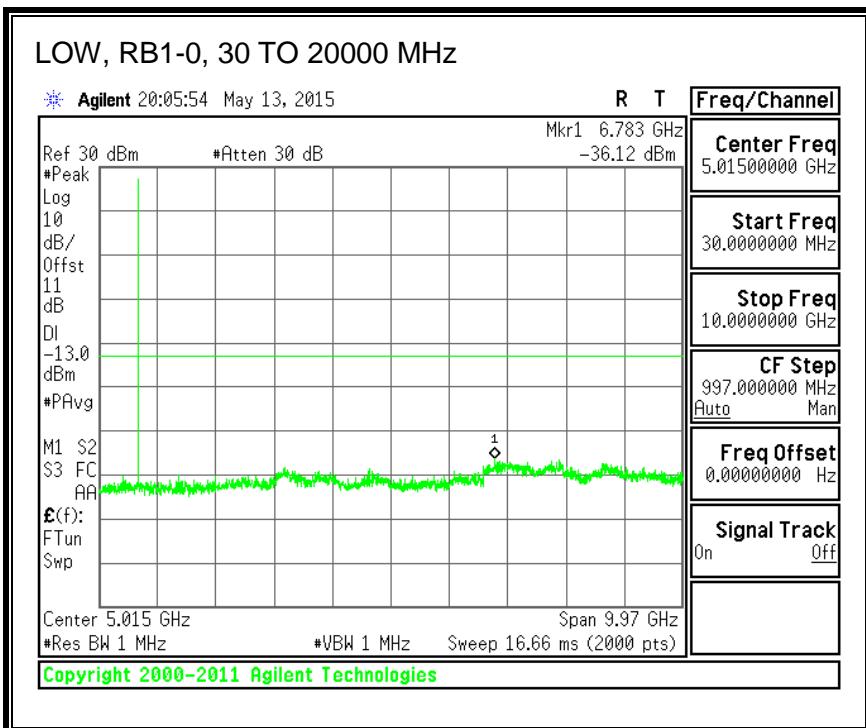
**16QAM, (1.4 MHz BAND WIDTH)**

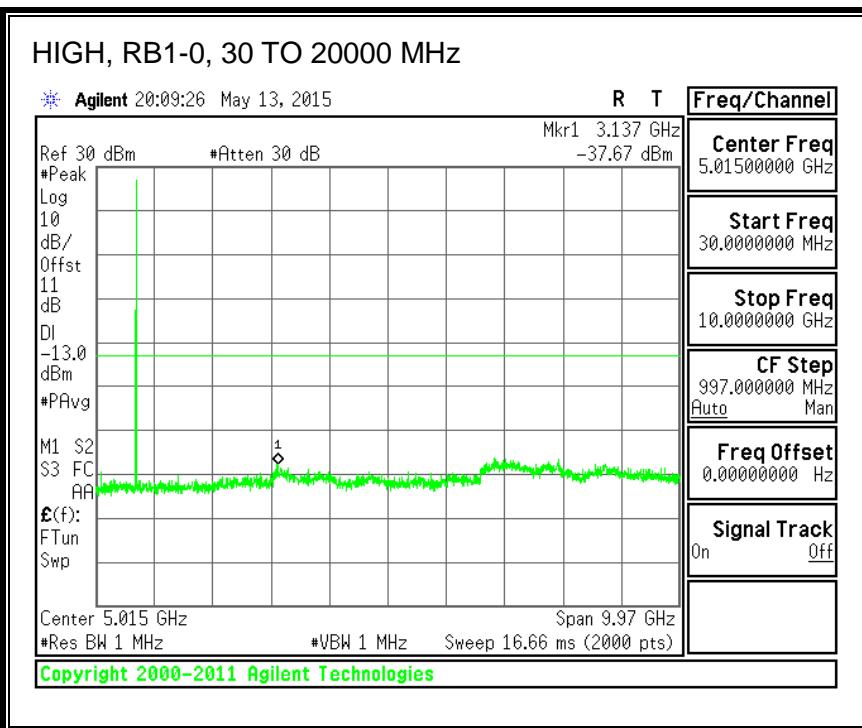
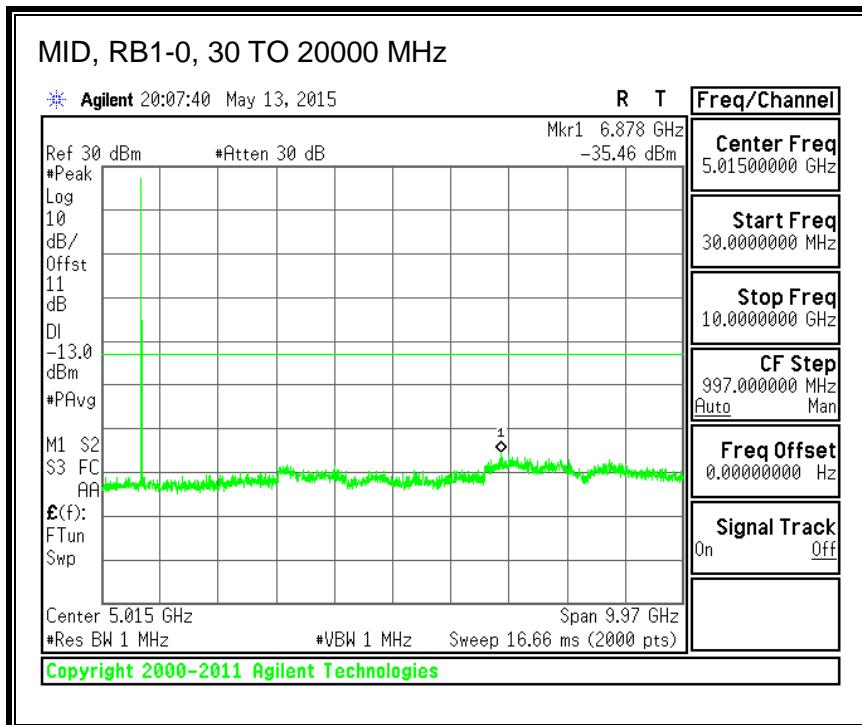


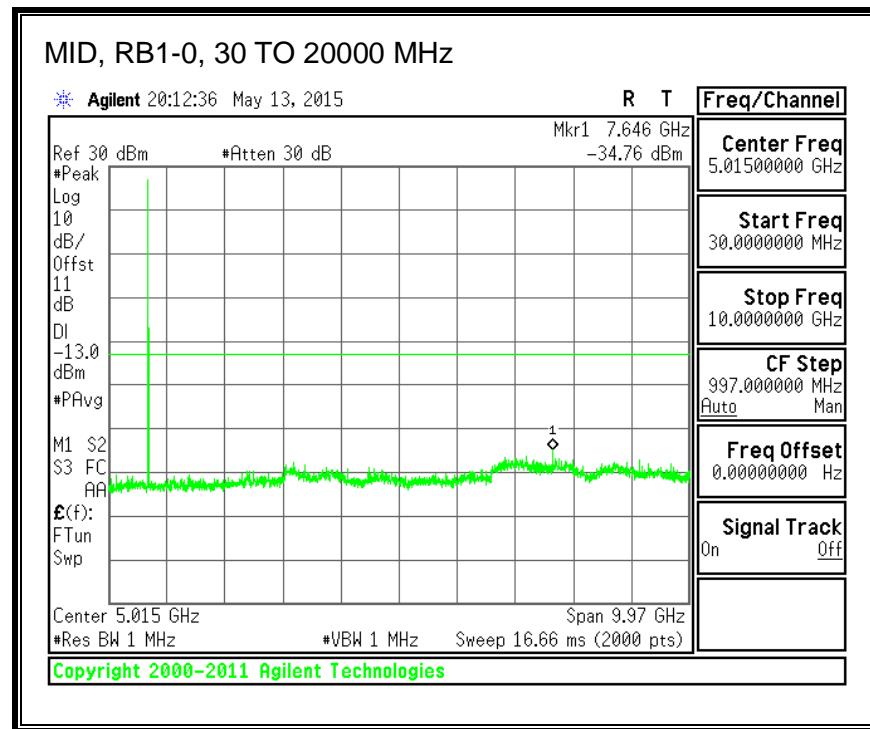
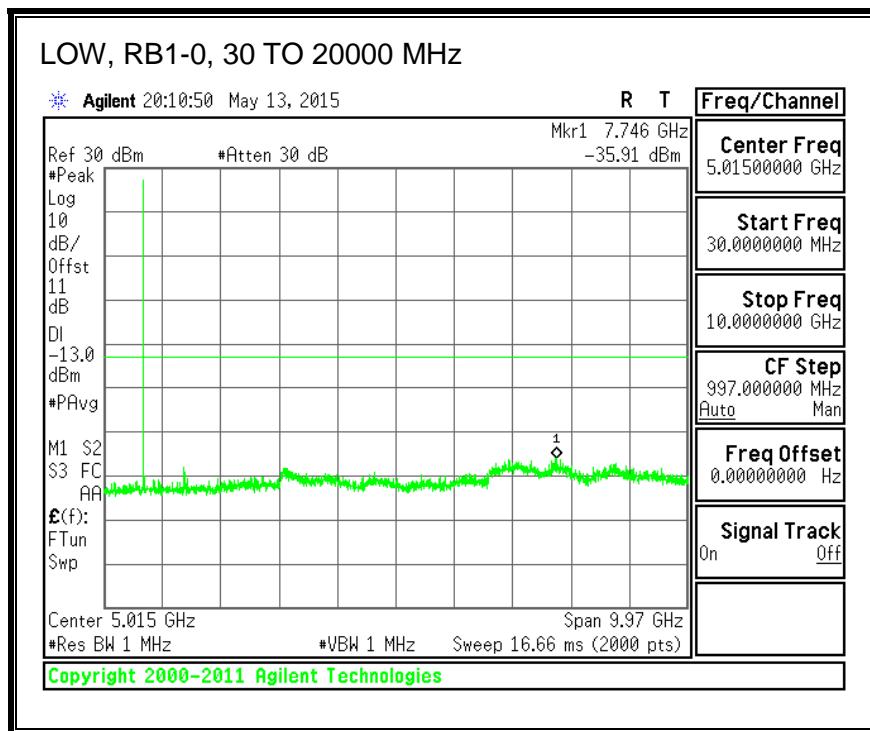
**QPSK, (3.0 MHz BAND WIDTH)**

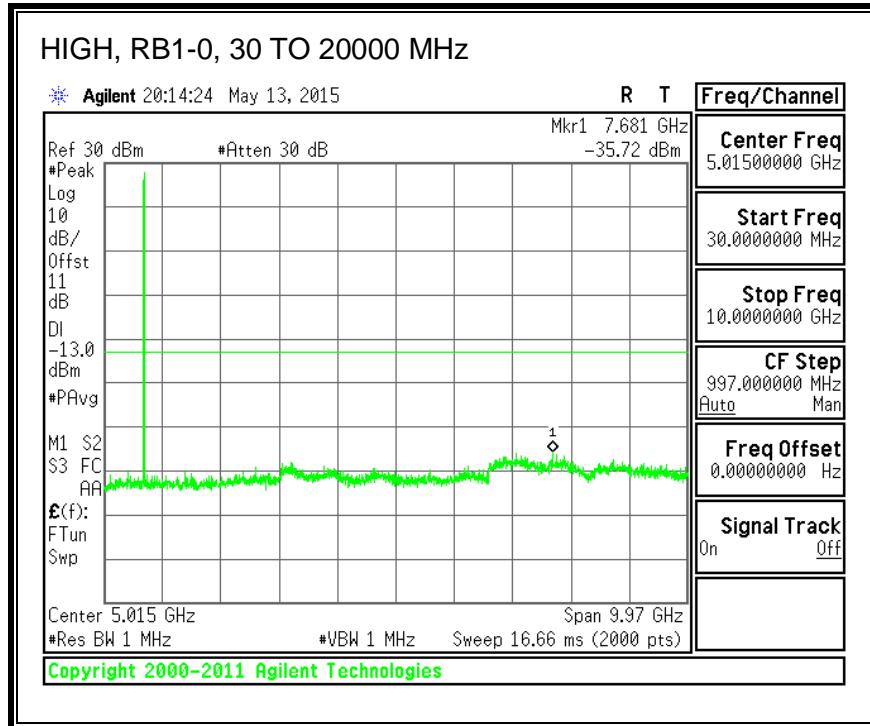


### 16QAM, (3.0 MHz BAND WIDTH)

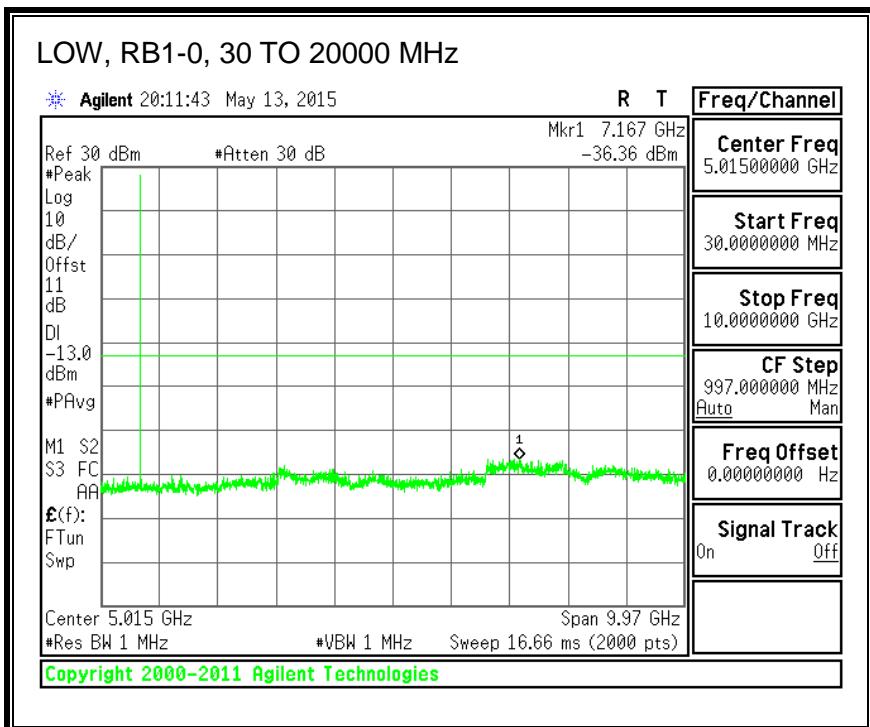




**QPSK, (5.0 MHz BAND WIDTH)**

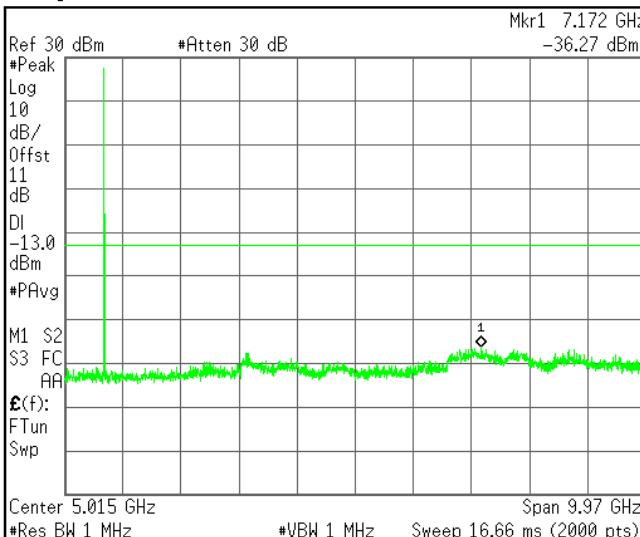


### 16QAM, (5.0 MHz BAND WIDTH)



## MID, RB1-0, 30 TO 20000 MHz

\* Agilent 20:13:31 May 13, 2015



R T

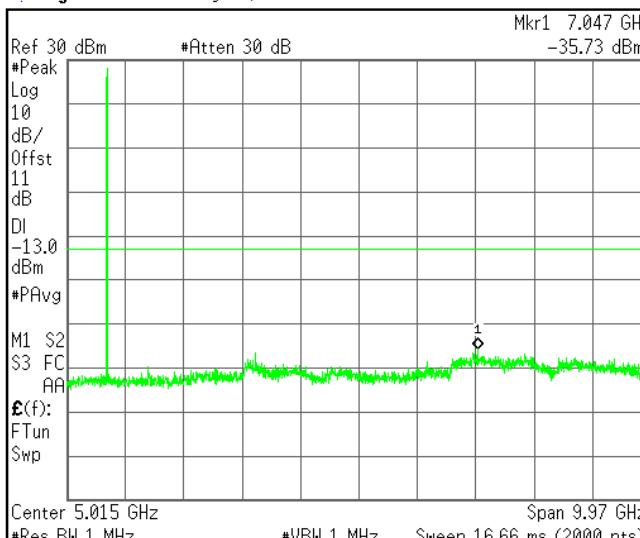
## Freq/Channel

Center Freq  
5.01500000 GHzStart Freq  
30.0000000 MHzStop Freq  
10.0000000 GHzCF Step  
997.000000 MHz  
Auto ManFreq Offset  
0.0000000 HzSignal Track  
On Off

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## HIGH, RB1-0, 30 TO 20000 MHz

\* Agilent 20:15:17 May 13, 2015

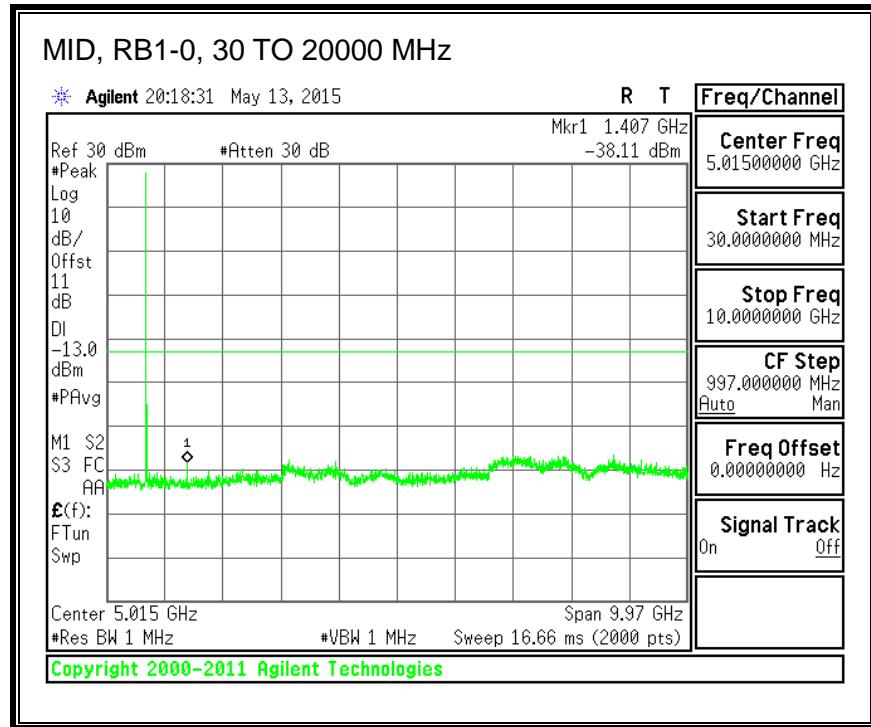
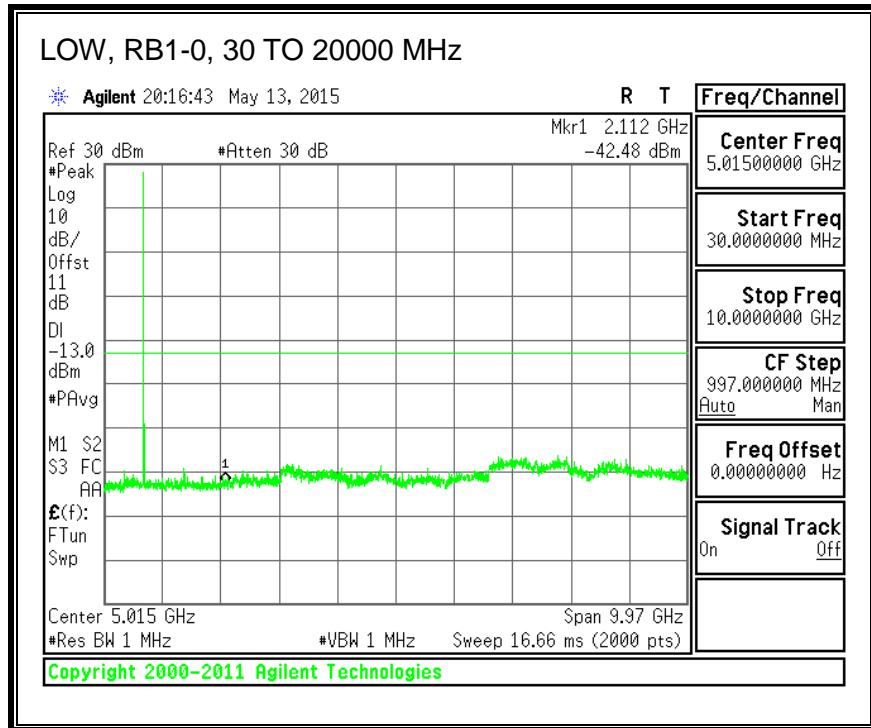


R T

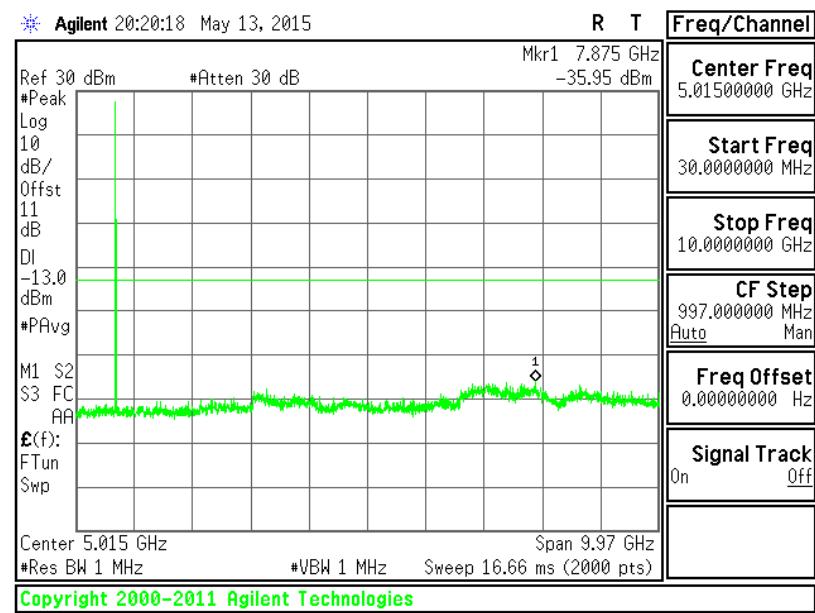
## Freq/Channel

Center Freq  
5.01500000 GHzStart Freq  
30.0000000 MHzStop Freq  
10.0000000 GHzCF Step  
997.000000 MHz  
Auto ManFreq Offset  
0.0000000 HzSignal Track  
On Off

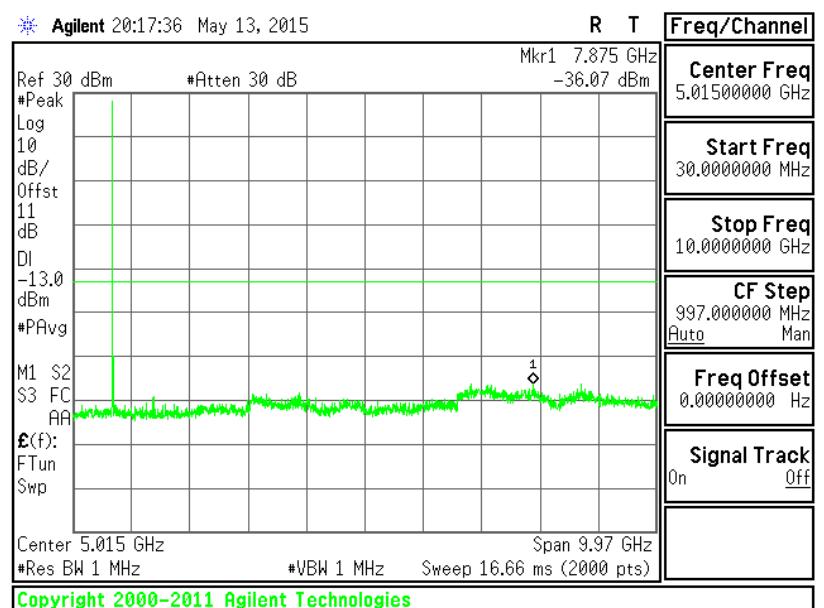
Copyright 2000-2011 Agilent Technologies

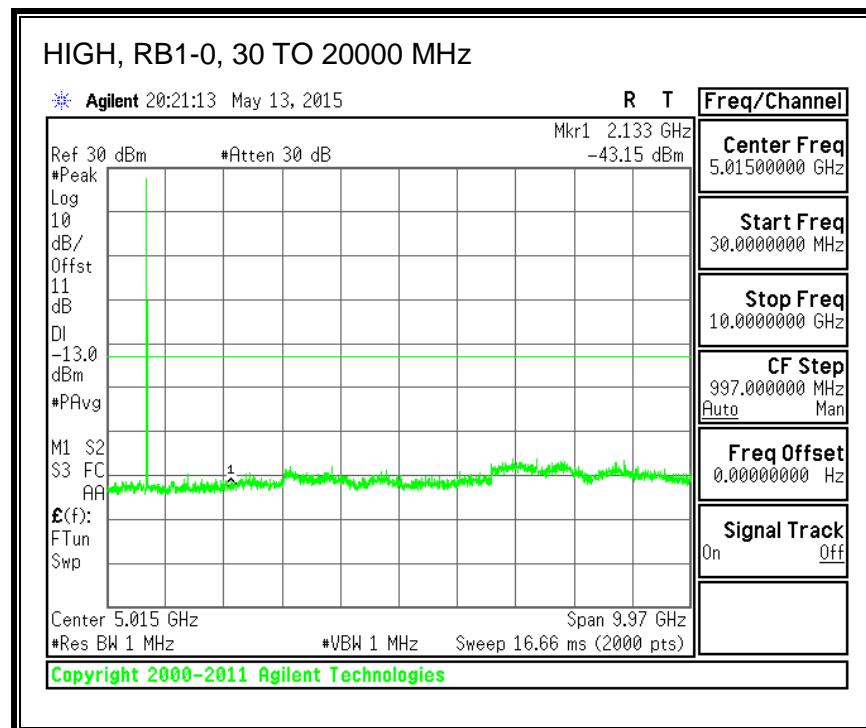
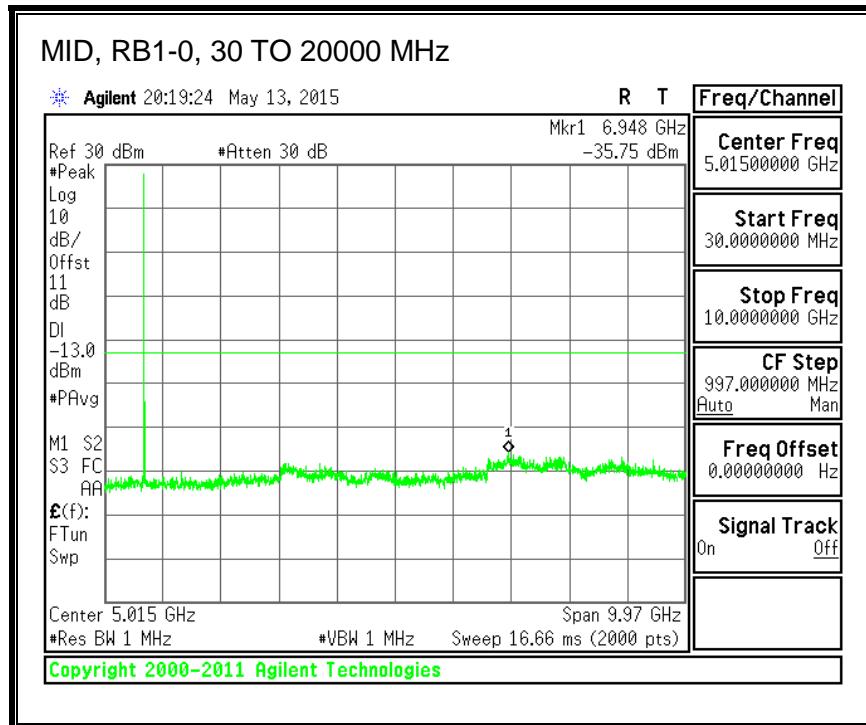
**QPSK, (10.0 MHz BAND WIDTH)**

## HIGH, RB1-0, 30 TO 20000 MHz

16QAM, (10.0 MHz BAND WIDTH)

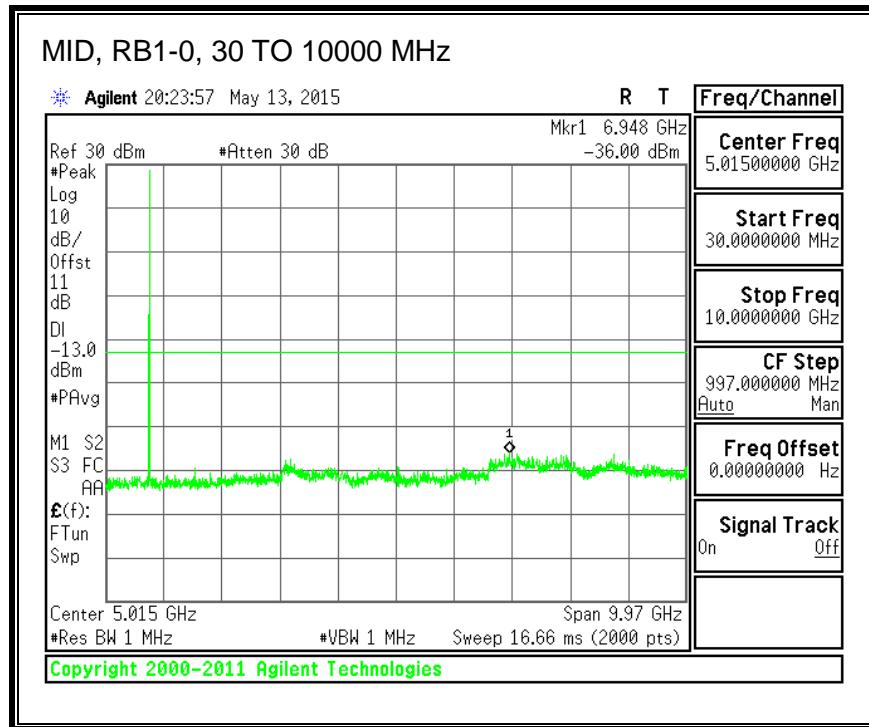
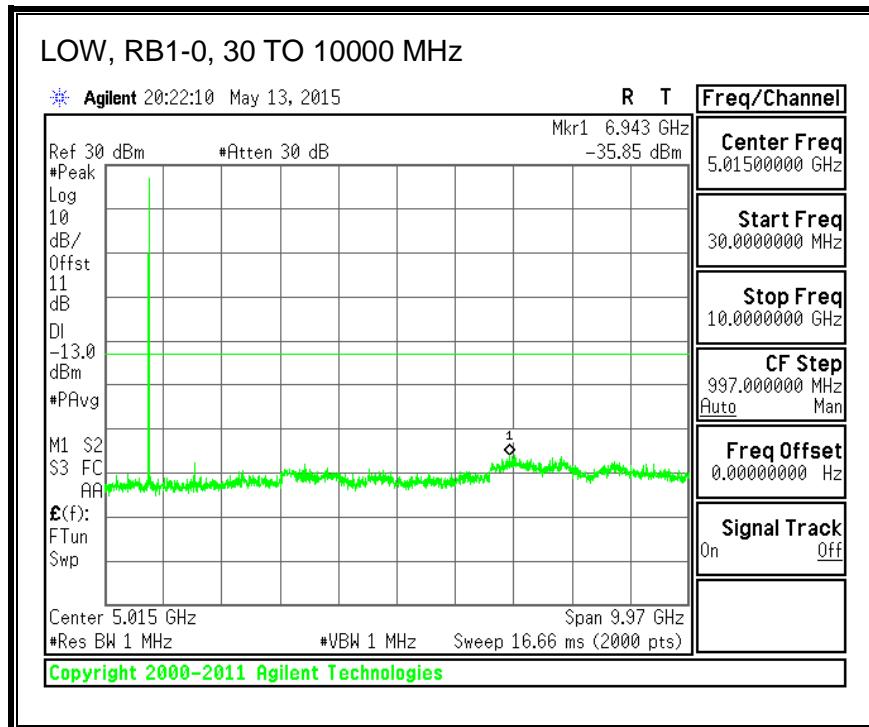
## LOW, RB1-0, 30 TO 20000 MHz

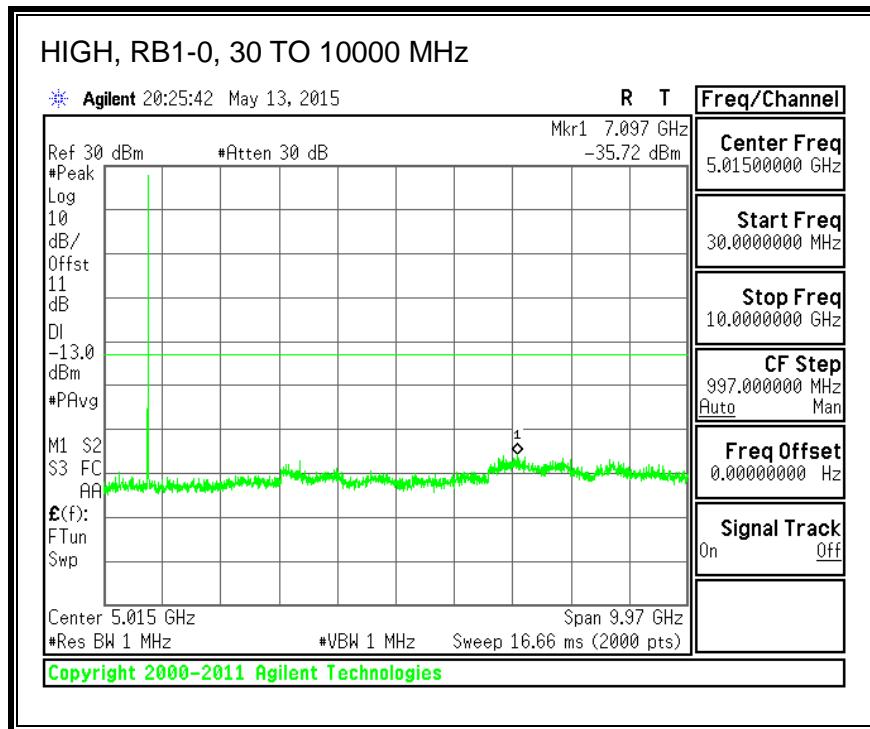
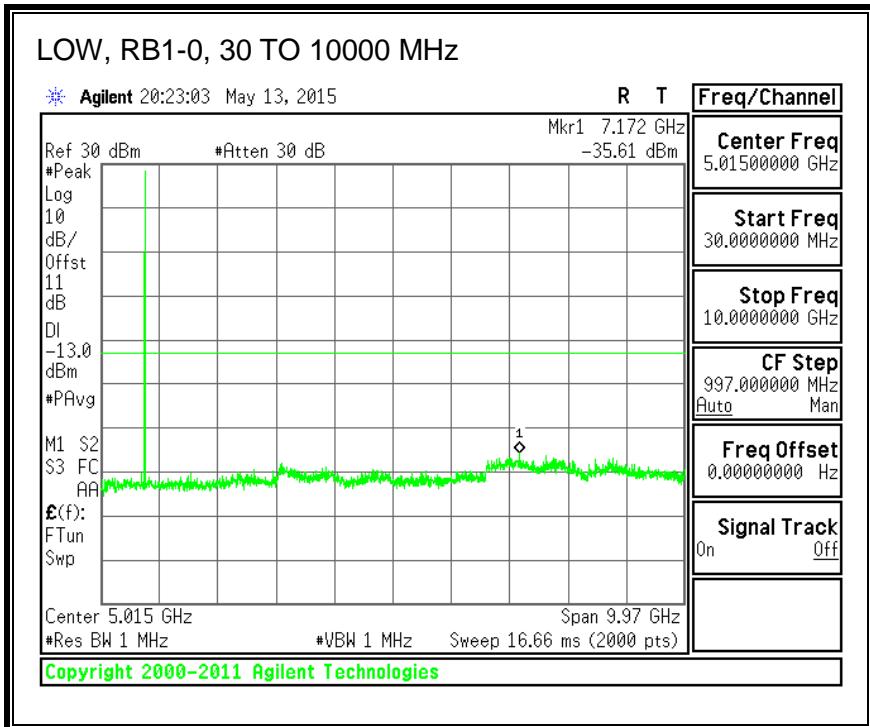




### 8.6.6. LTE BAND 13

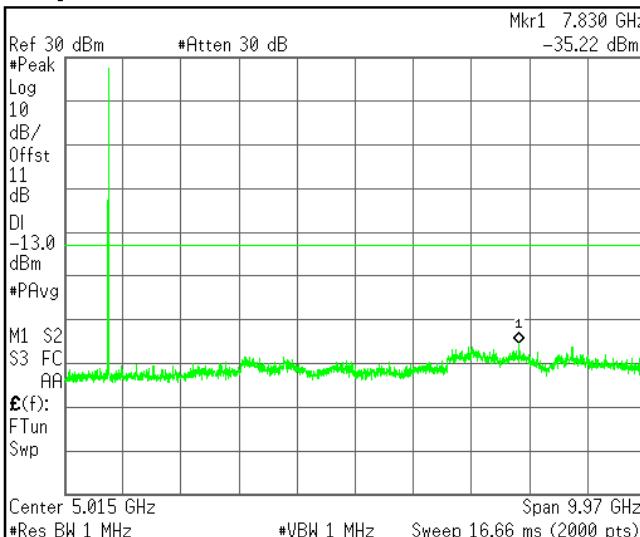
#### QPSK, (5.0 MHz BAND WIDTH)



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

## MID, RB1-0, 30 TO 10000 MHz

Agilent 20:24:49 May 13, 2015



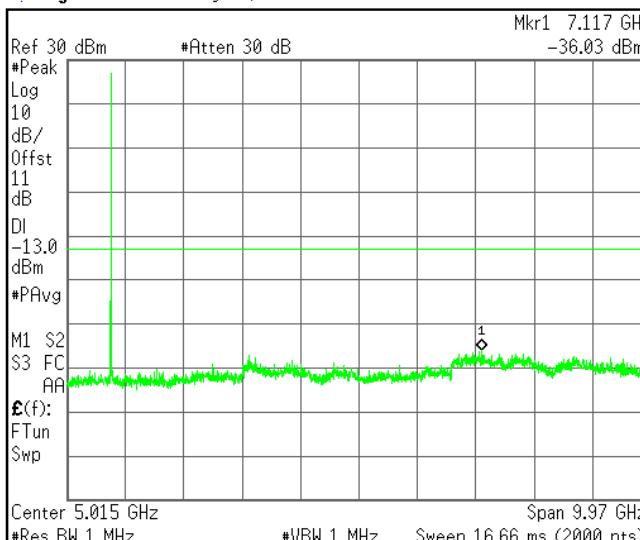
R T Freq/Channel

Center Freq  
5.01500000 GHzStart Freq  
30.0000000 MHzStop Freq  
10.0000000 GHzCF Step  
997.000000 MHz  
Auto ManFreq Offset  
0.0000000 HzSignal Track  
On Off

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## HIGH, RB1-0, 30 TO 10000 MHz

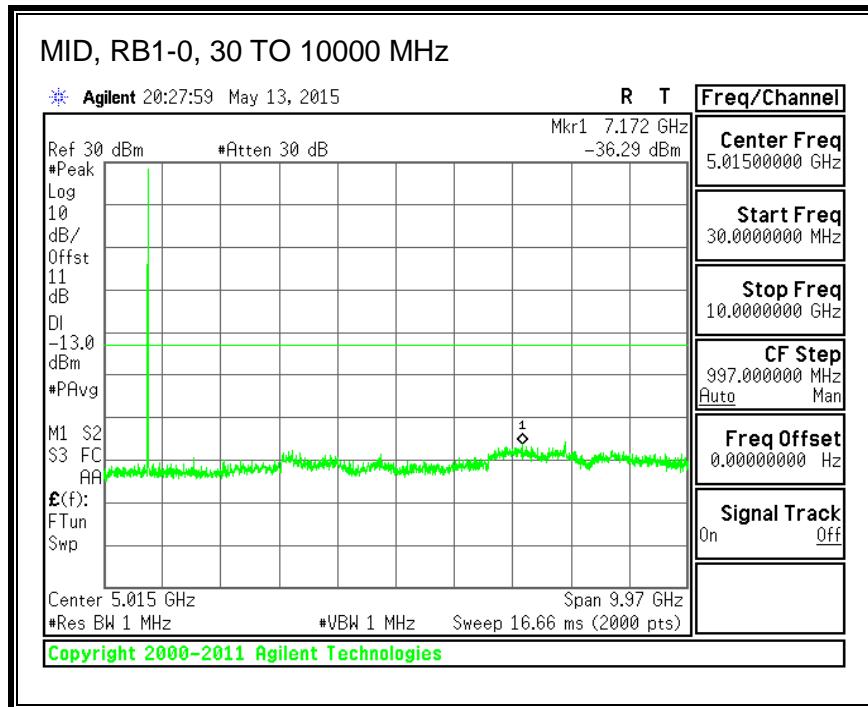
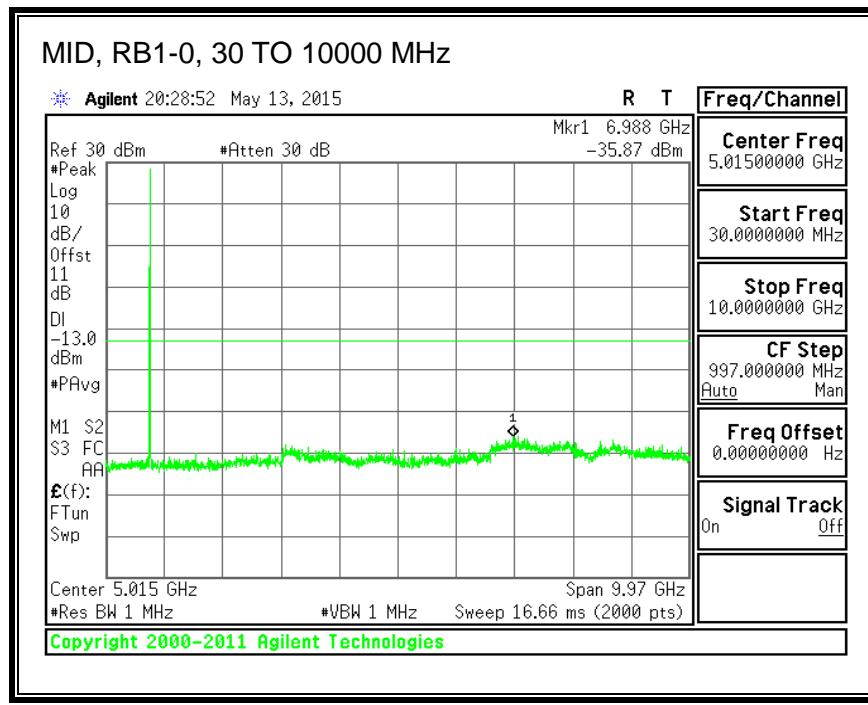
Agilent 20:26:35 May 13, 2015



R T Freq/Channel

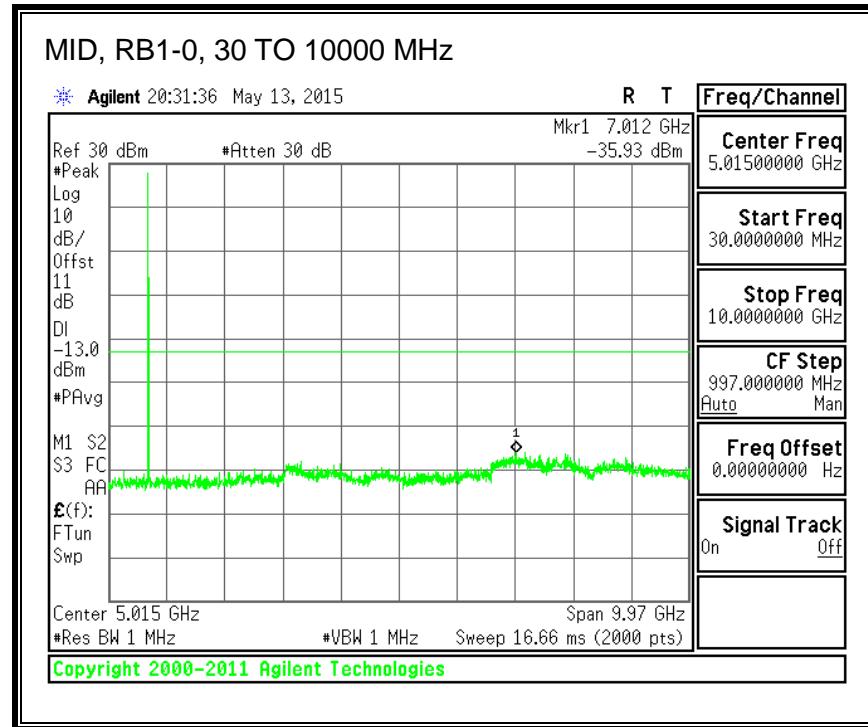
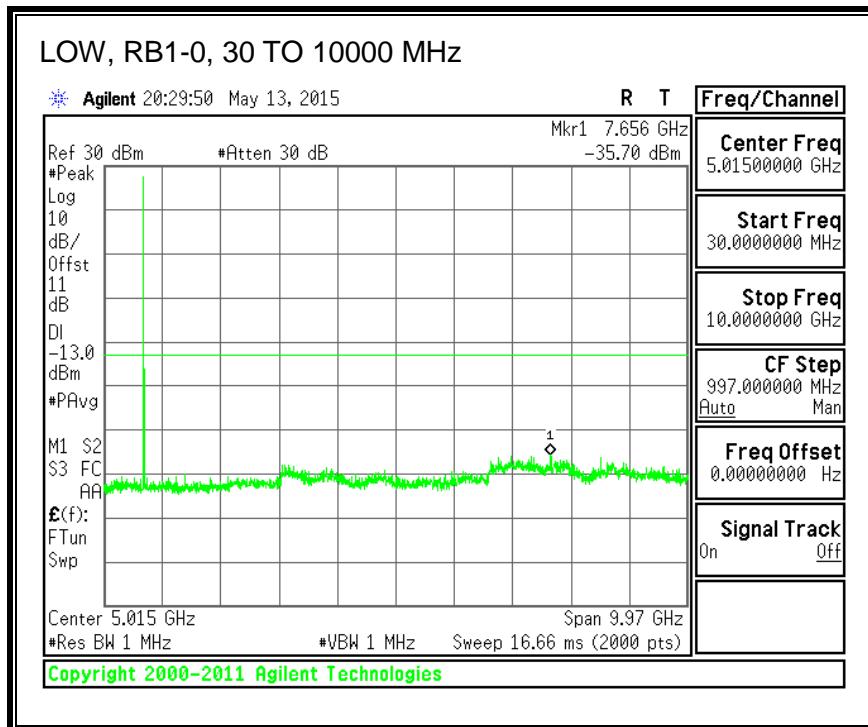
Center Freq  
5.01500000 GHzStart Freq  
30.0000000 MHzStop Freq  
10.0000000 GHzCF Step  
997.000000 MHz  
Auto ManFreq Offset  
0.0000000 HzSignal Track  
On Off

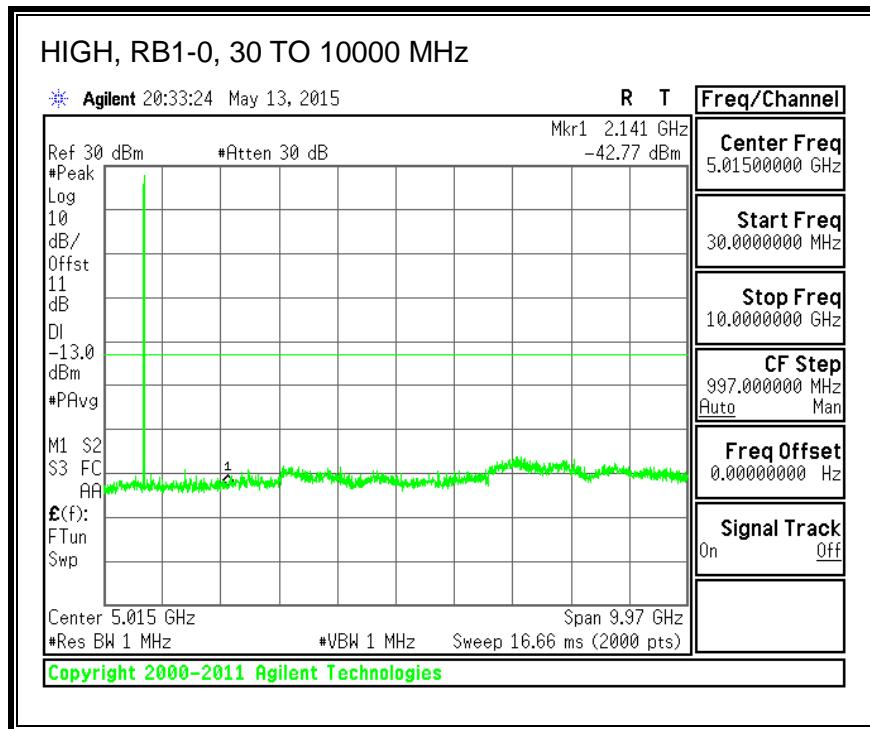
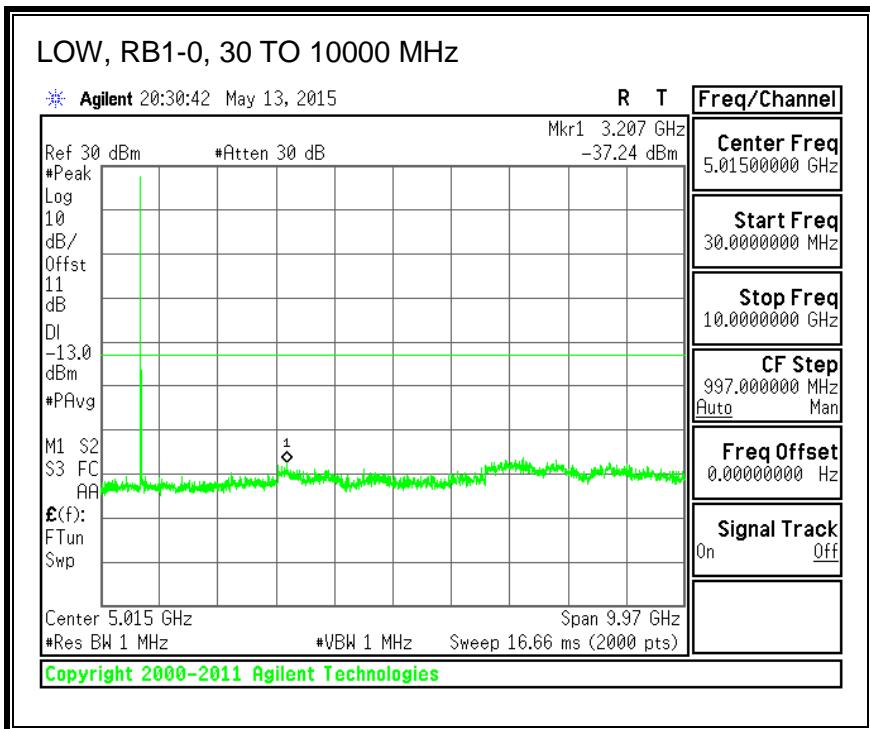
Copyright 2000-2011 Agilent Technologies

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

### 8.6.7. LTE BAND 17

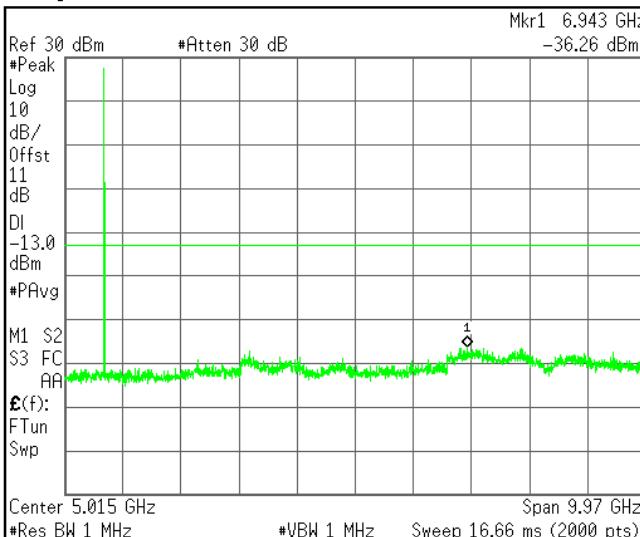
#### QPSK, (5.0 MHz BAND WIDTH)



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

## MID, RB1-0, 30 TO 10000 MHz

\* Agilent 20:32:29 May 13, 2015



R T

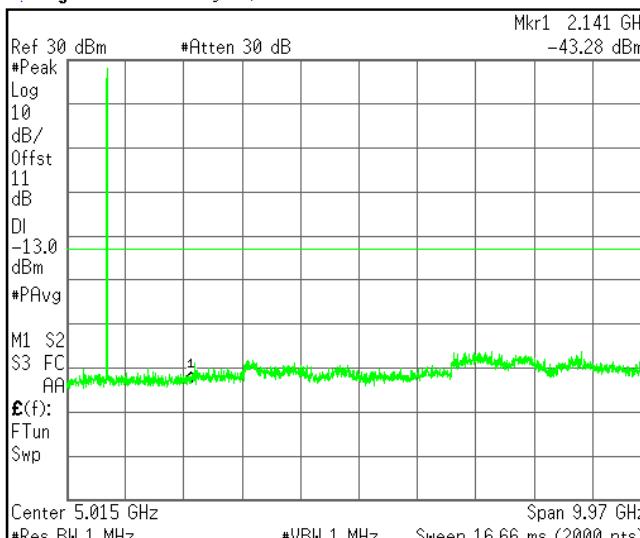
Freq/Channel

Center Freq  
5.01500000 GHzStart Freq  
30.0000000 MHzStop Freq  
10.0000000 GHzCF Step  
997.000000 MHz  
Auto ManFreq Offset  
0.00000000 HzSignal Track  
On Off

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## HIGH, RB1-0, 30 TO 10000 MHz

\* Agilent 20:34:19 May 13, 2015

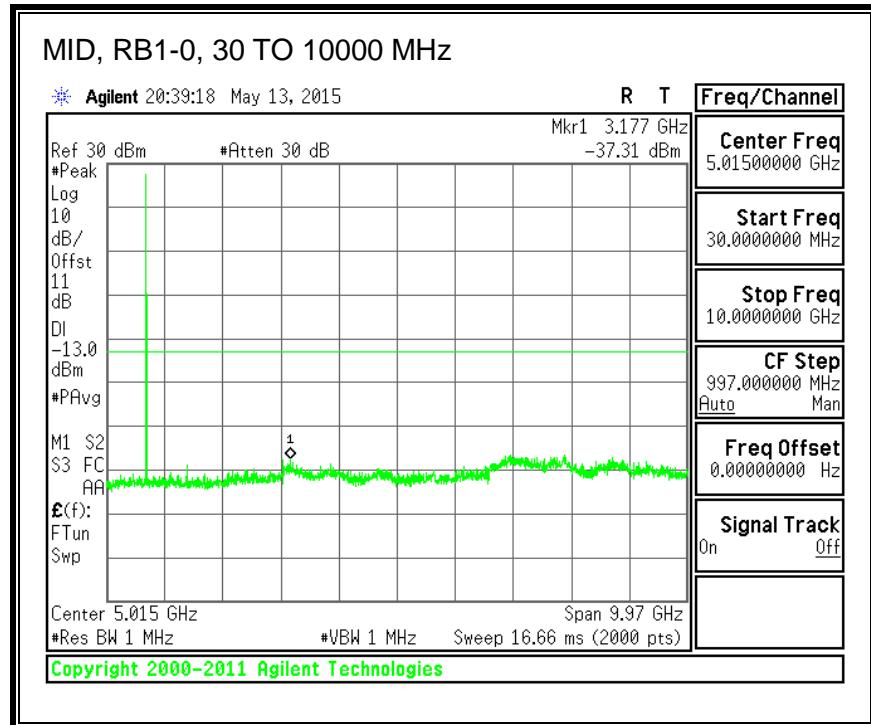
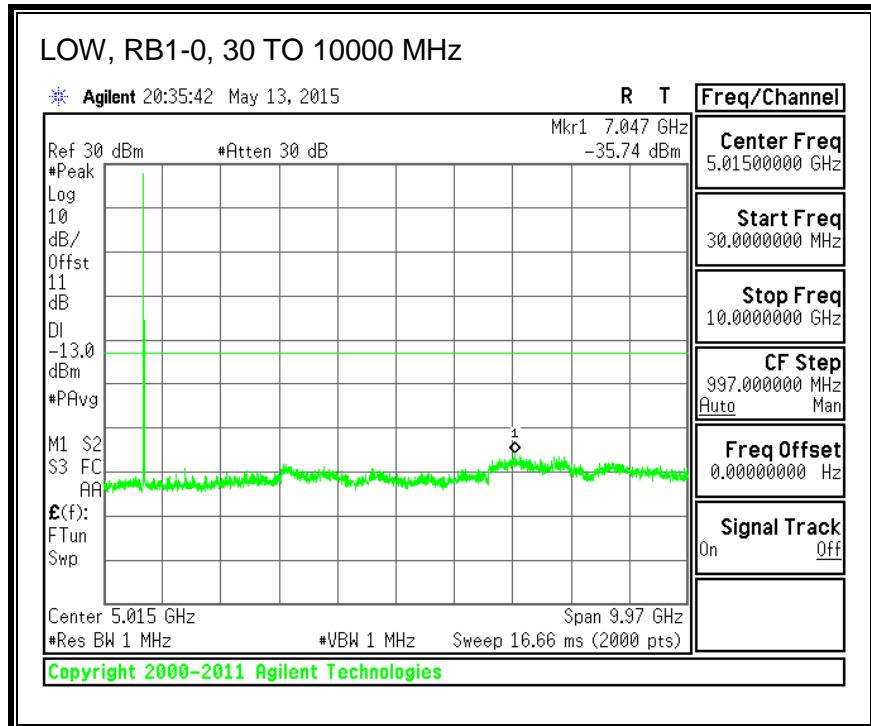


R T

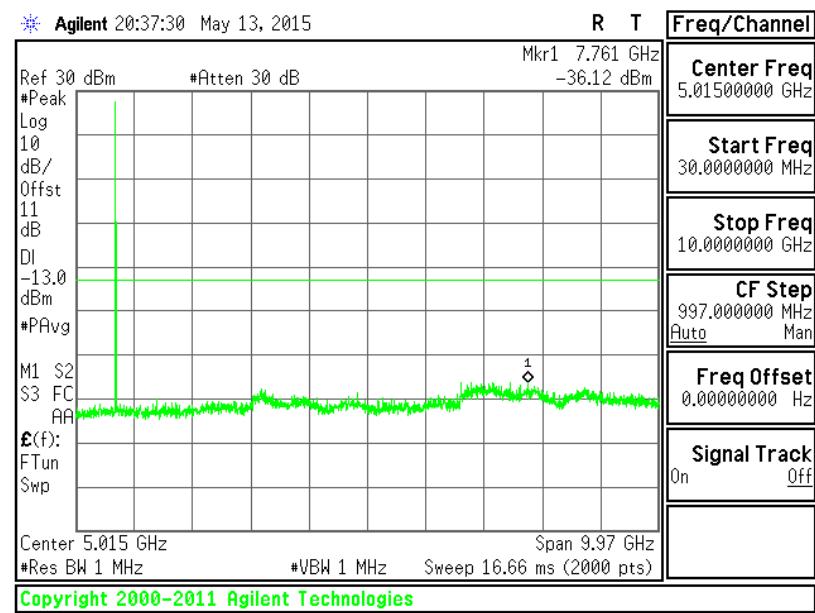
Freq/Channel

Center Freq  
5.01500000 GHzStart Freq  
30.0000000 MHzStop Freq  
10.0000000 GHzCF Step  
997.000000 MHz  
Auto ManFreq Offset  
0.00000000 HzSignal Track  
On Off

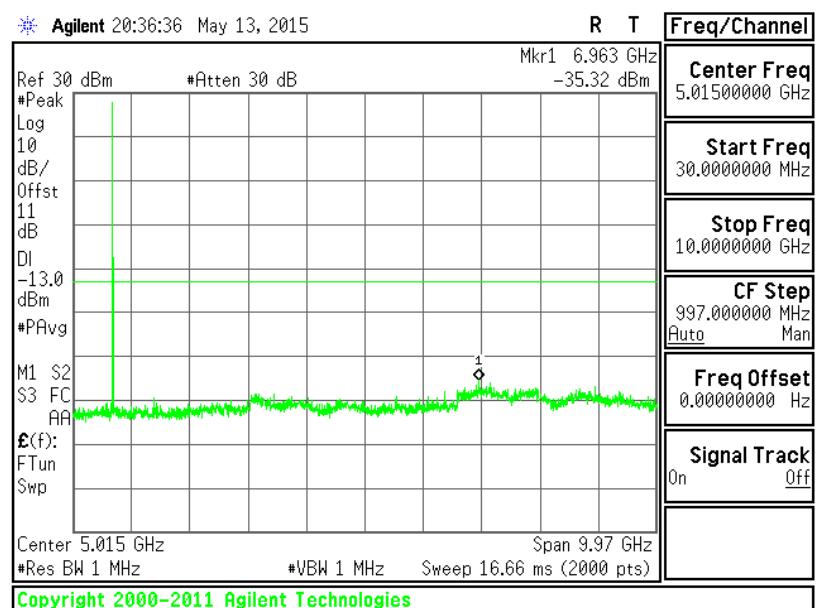
Copyright 2000-2011 Agilent Technologies

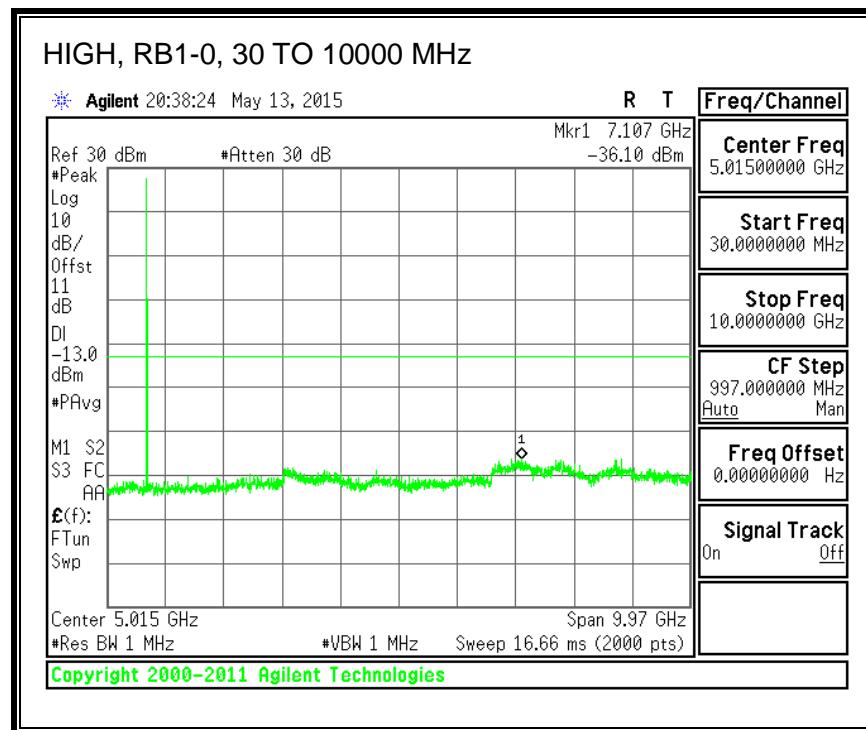
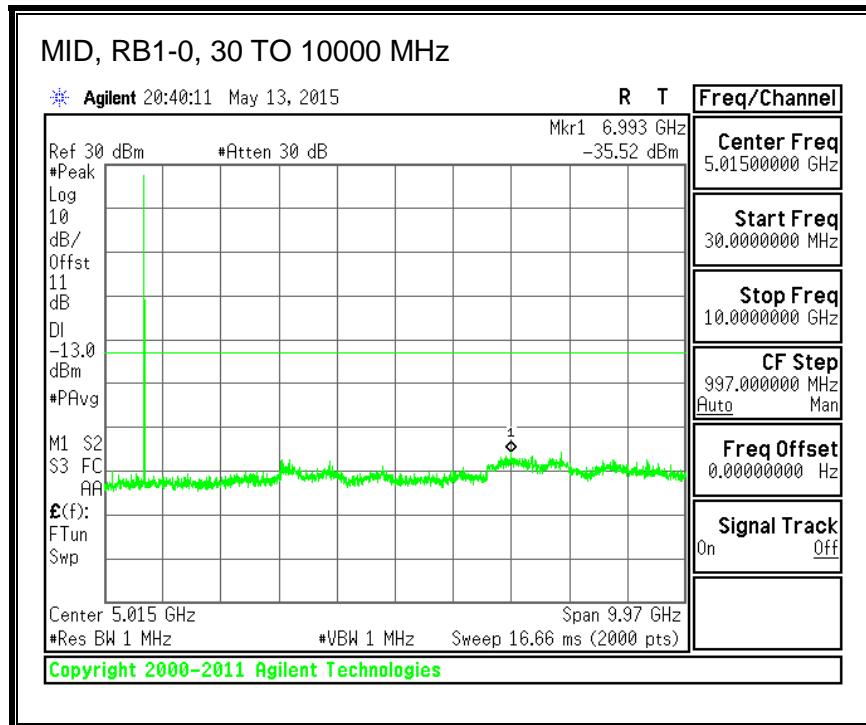
**QPSK, (10.0 MHz BAND WIDTH)**

## HIGH, RB1-0, 30 TO 10000 MHz

16QAM, (10.0 MHz BAND WIDTH)

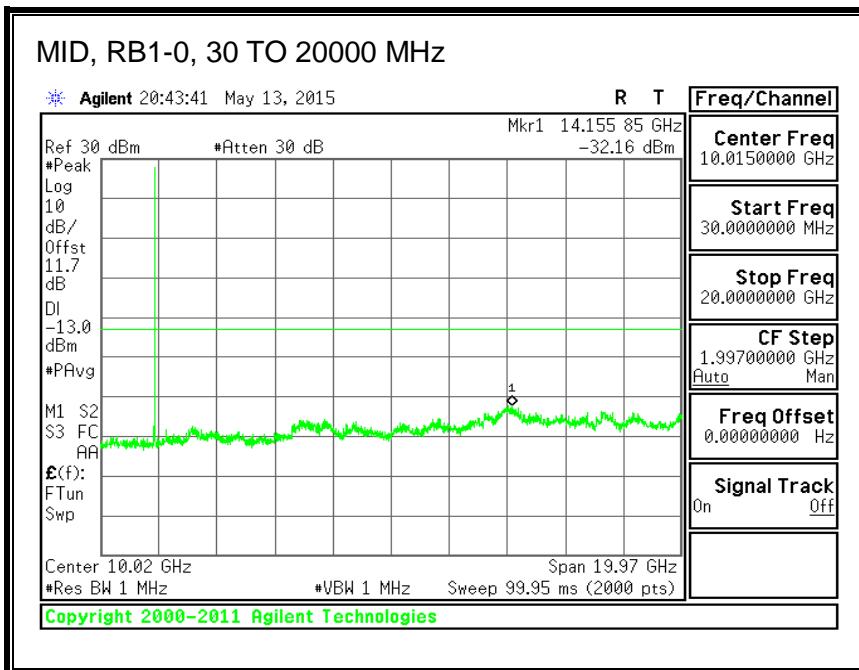
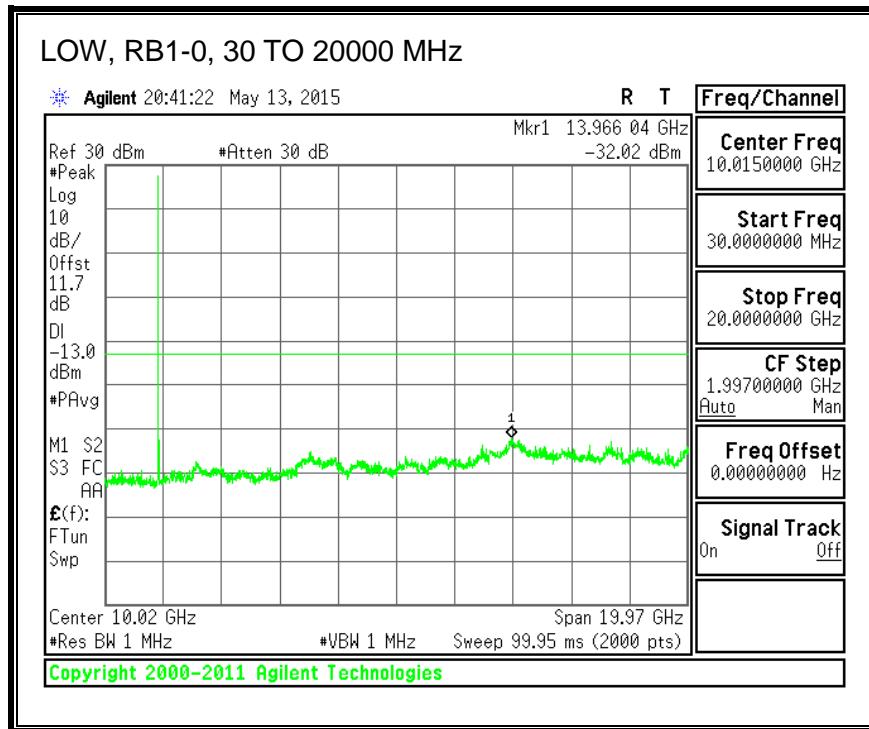
## LOW, RB1-0, 30 TO 10000 MHz

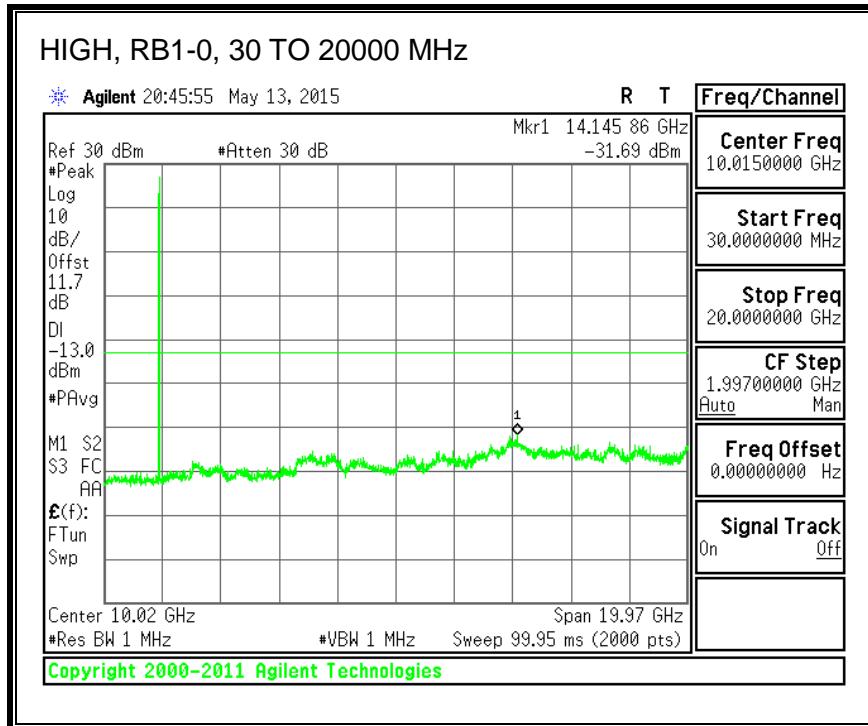




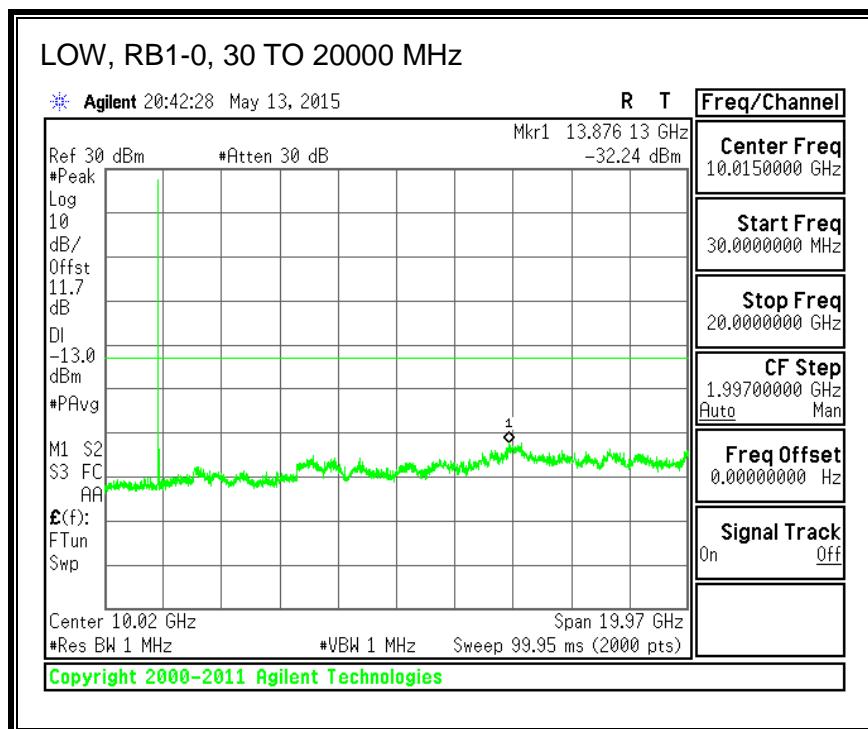
### 8.6.8. LTE BAND 25

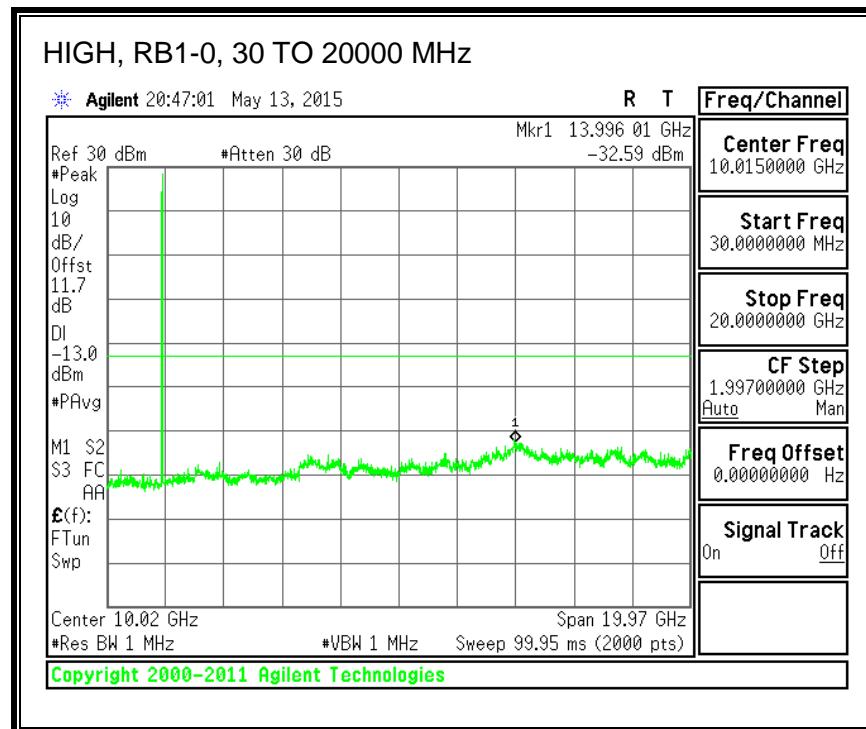
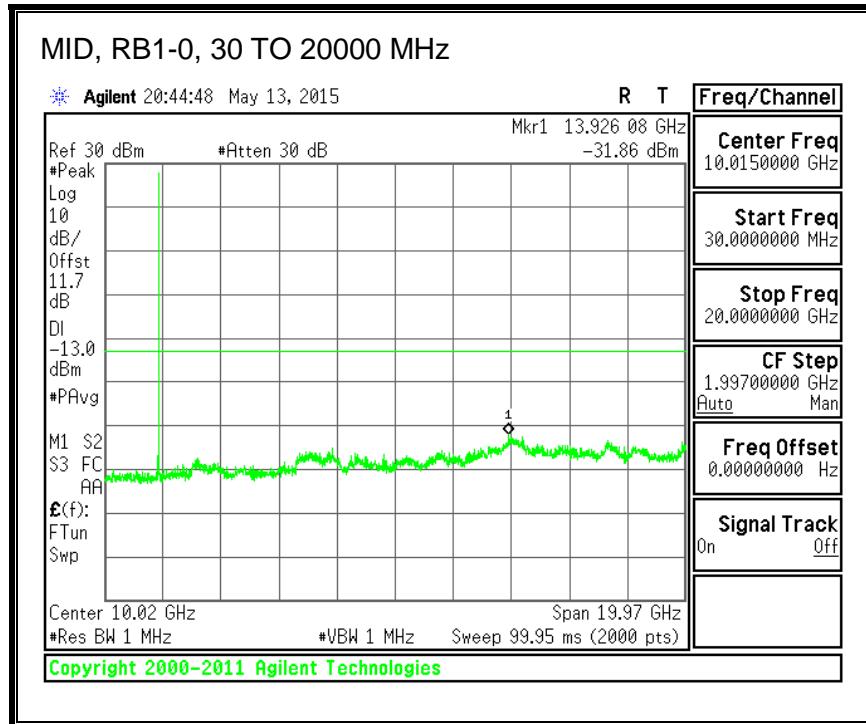
#### QPSK, (1.4 MHz BAND WIDTH)

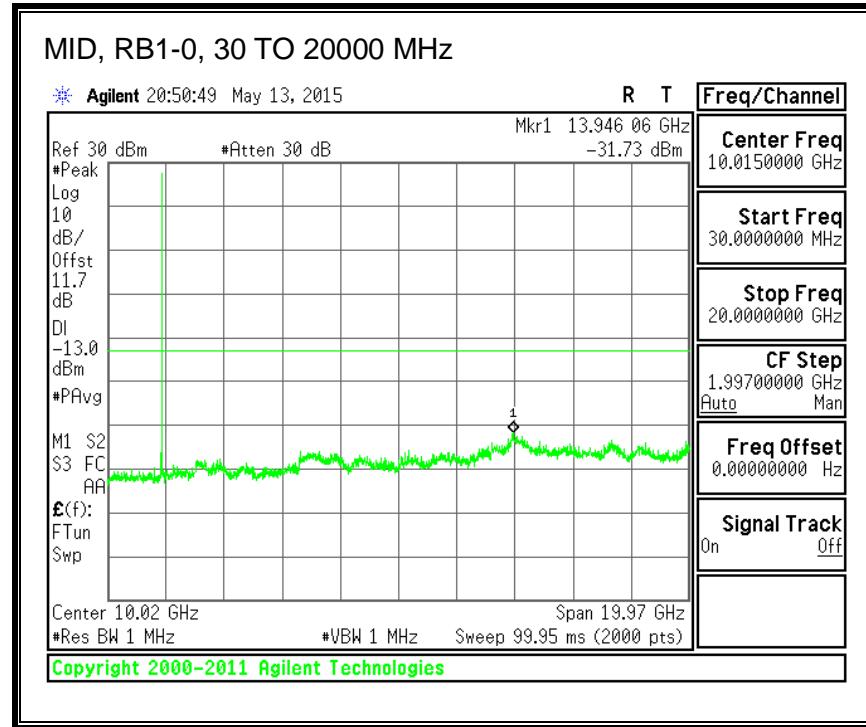
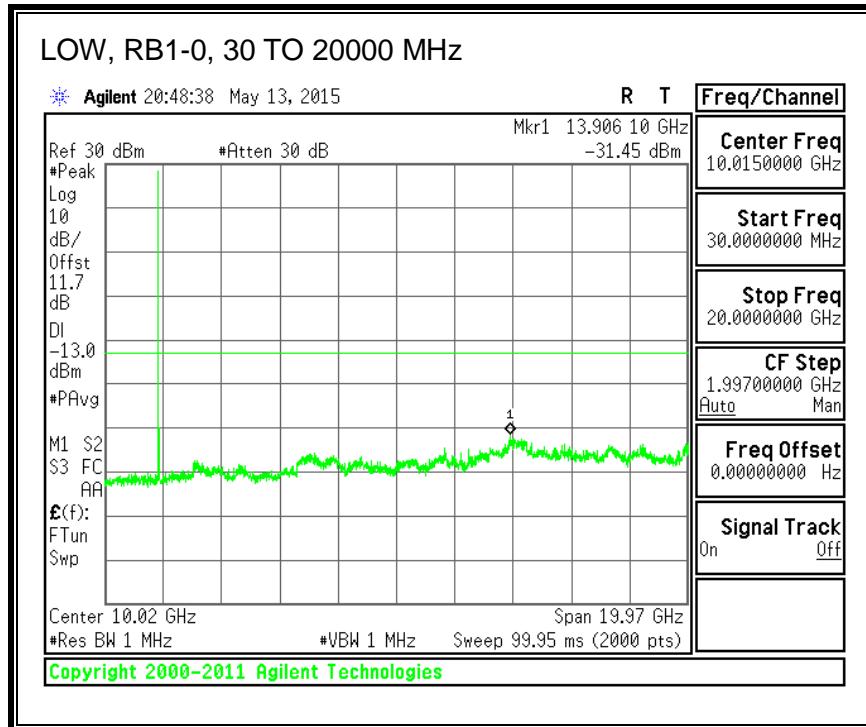


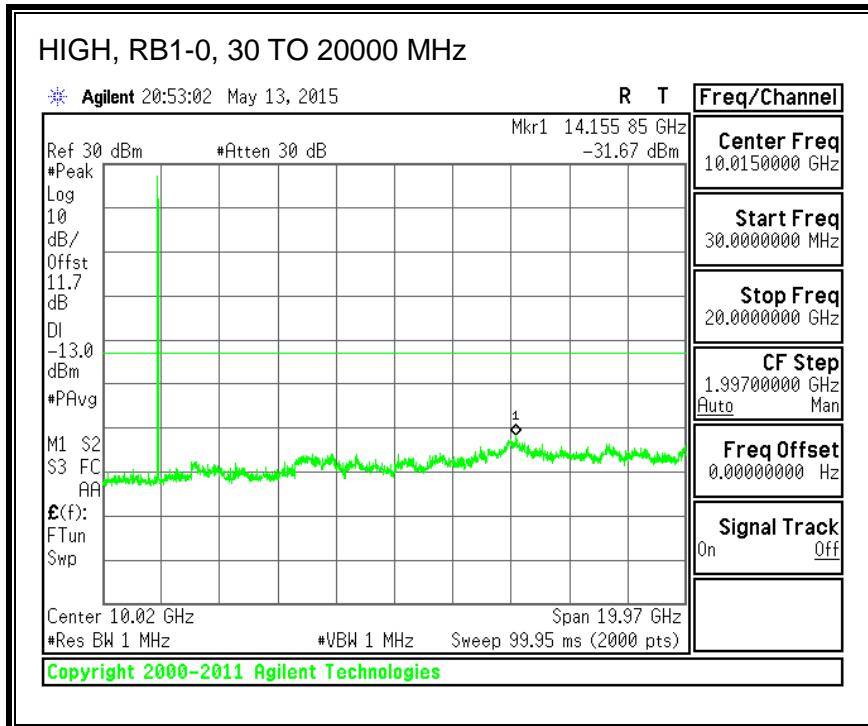


### 16QAM, (1.4 MHz BAND WIDTH)

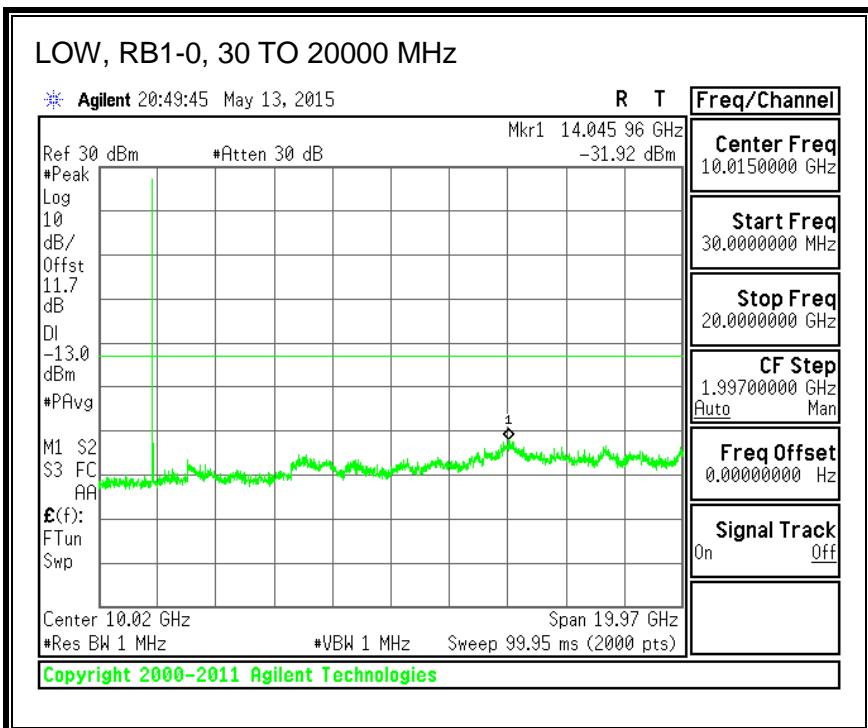


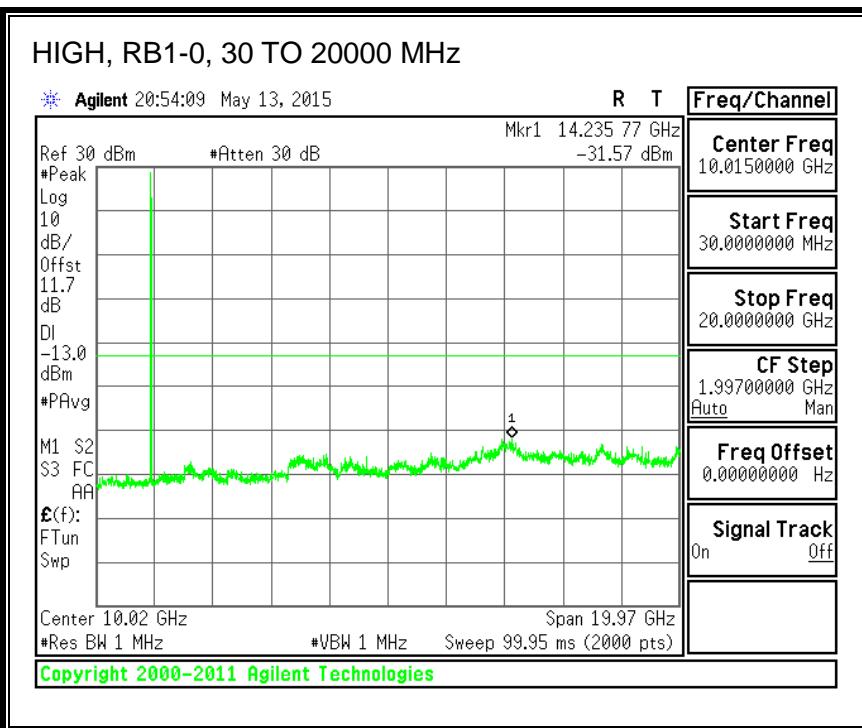
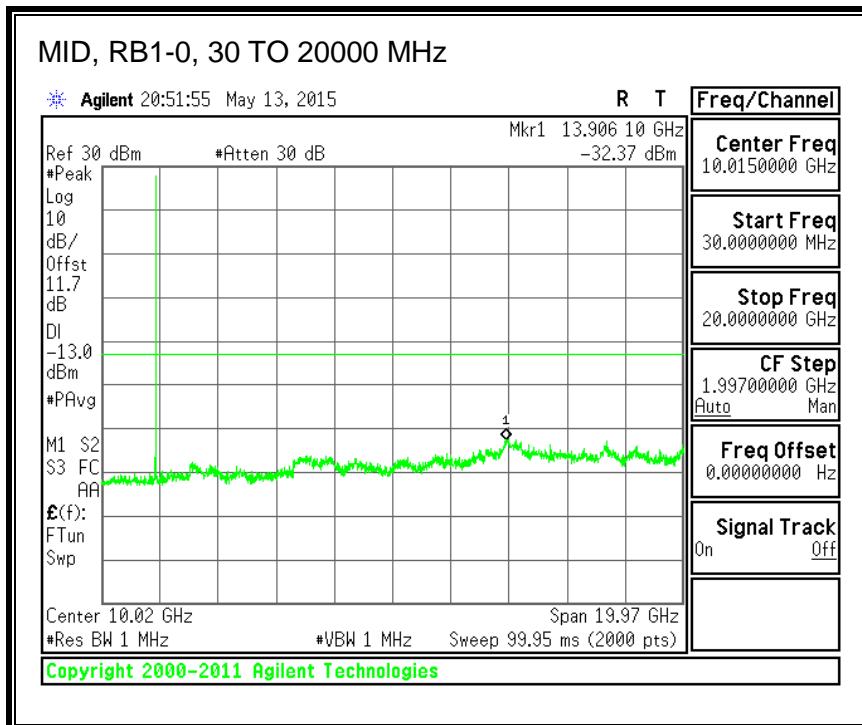


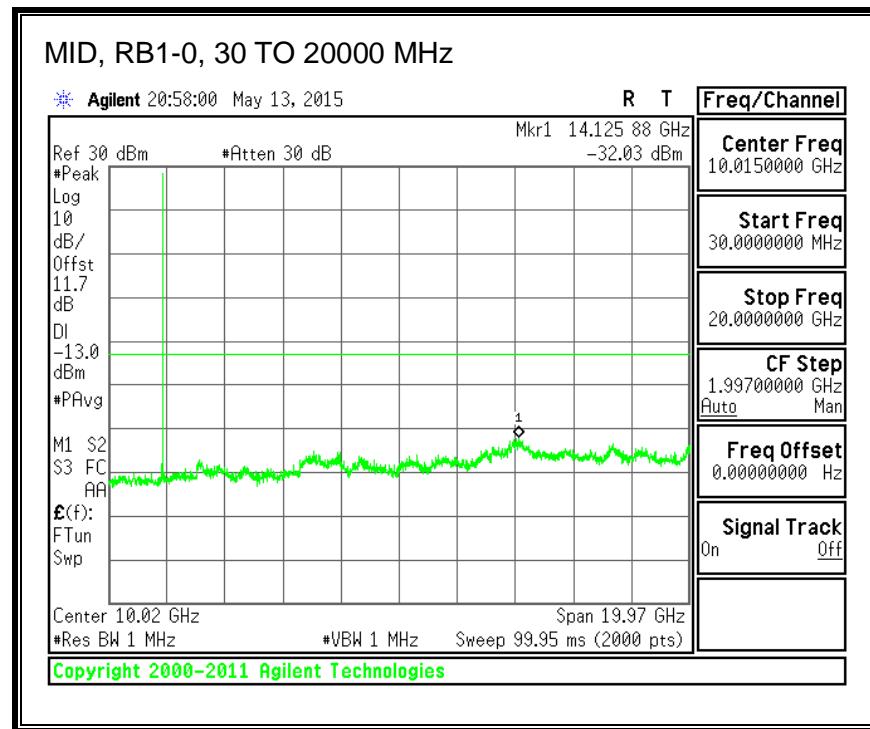
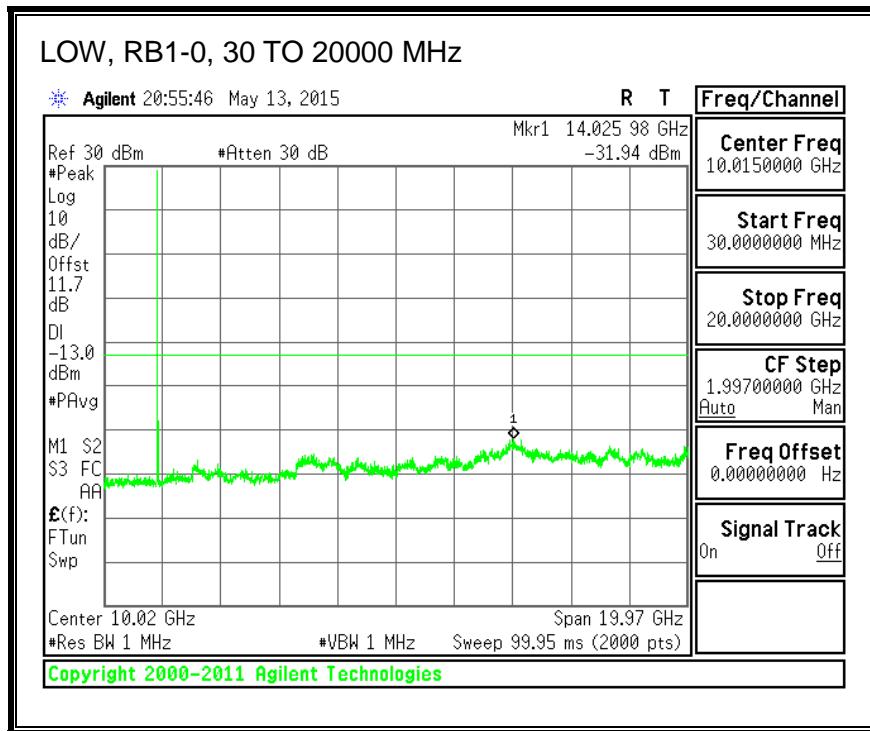
**QPSK, (3.0 MHz BAND WIDTH)**

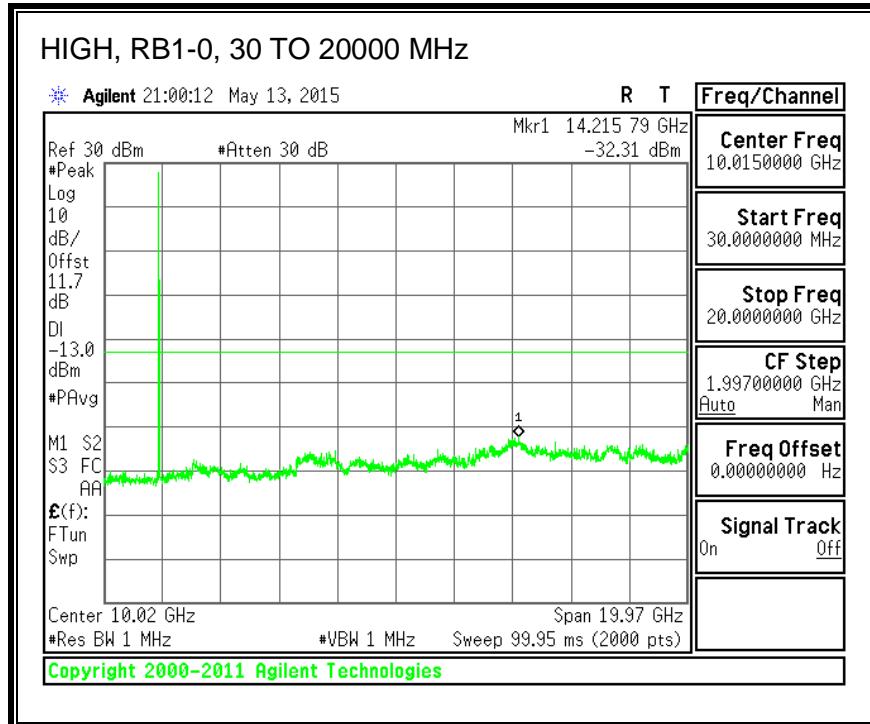


### 16QAM, (3.0 MHz BAND WIDTH)

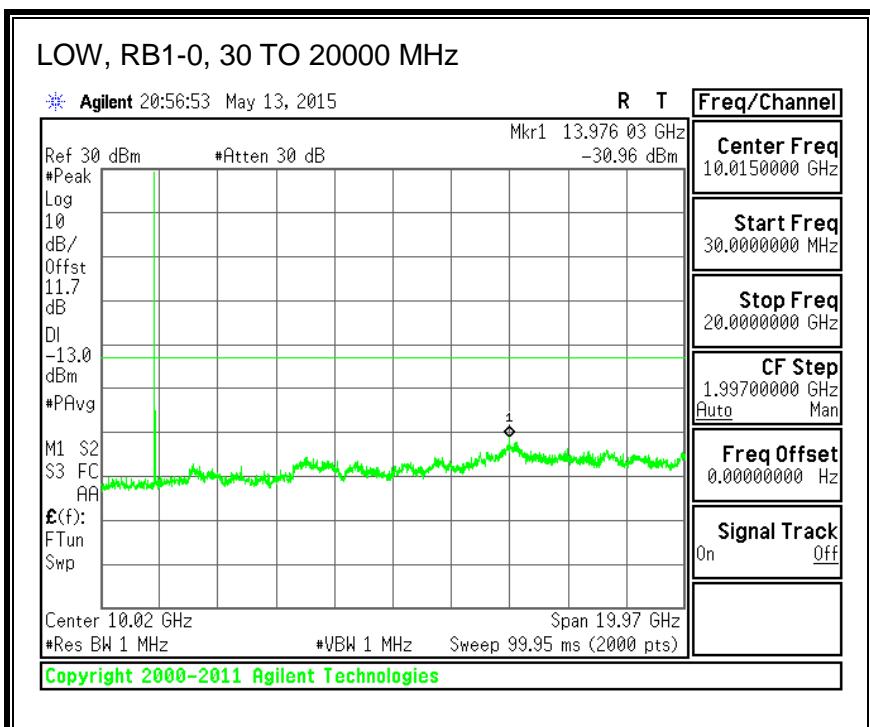


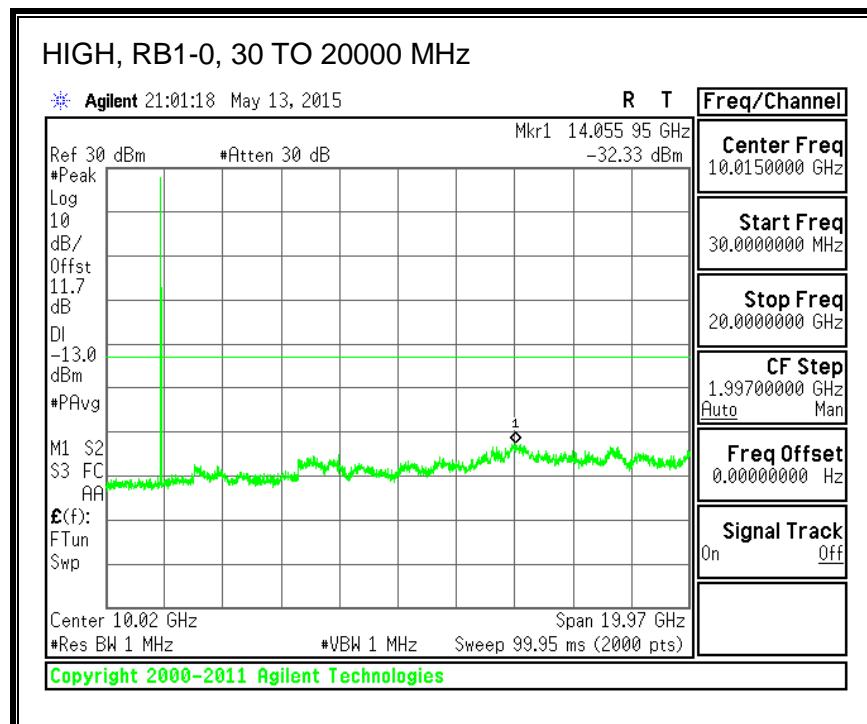
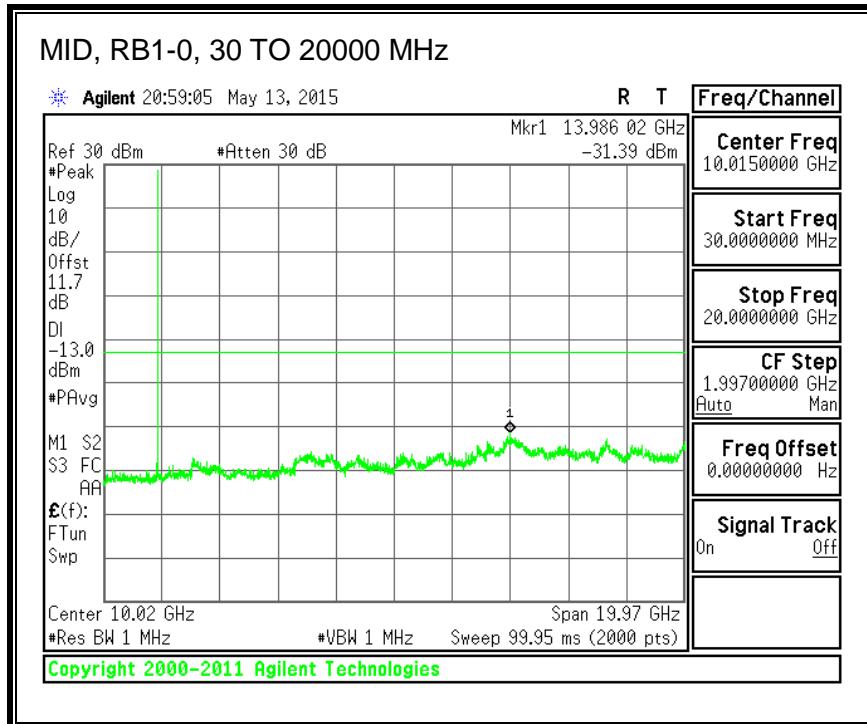


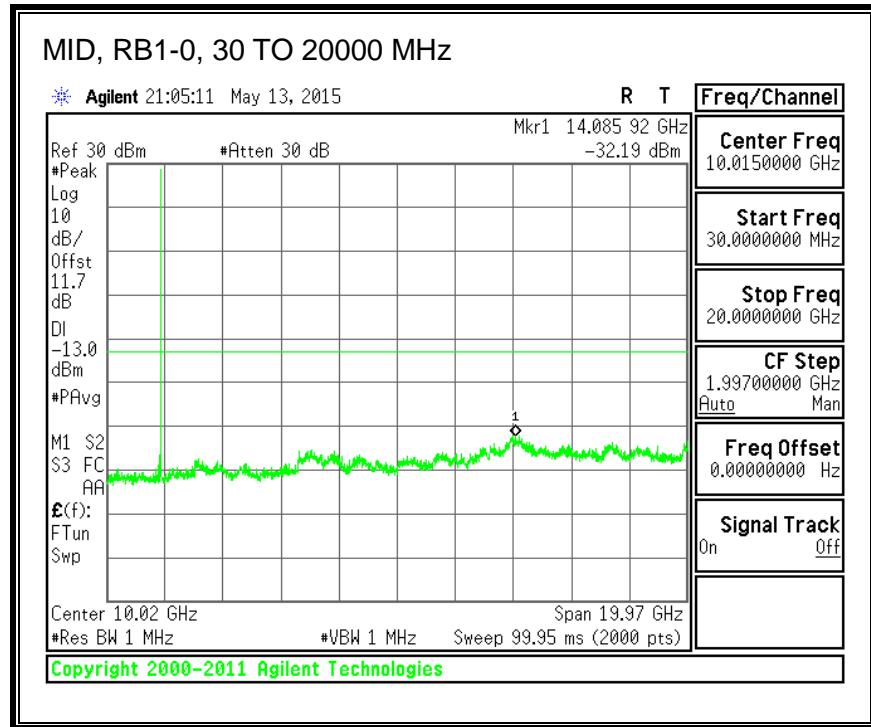
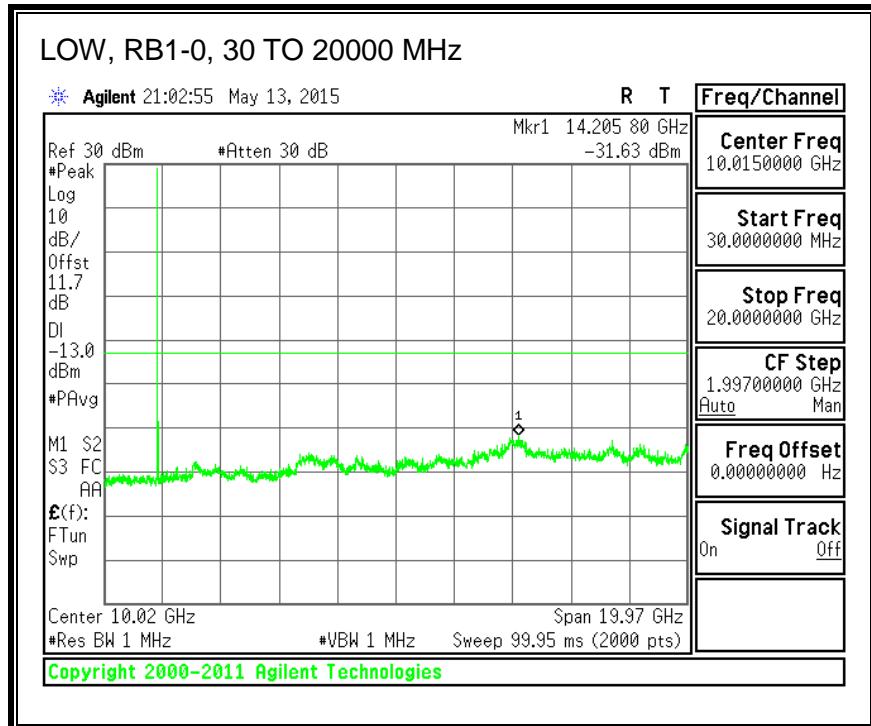
**QPSK, (5.0 MHz BAND WIDTH)**



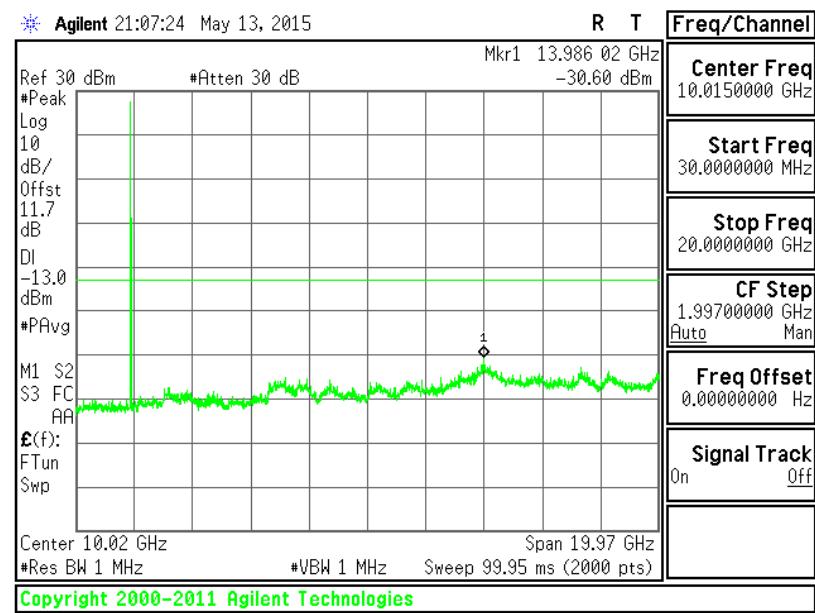
### 16QAM, (5.0 MHz BAND WIDTH)



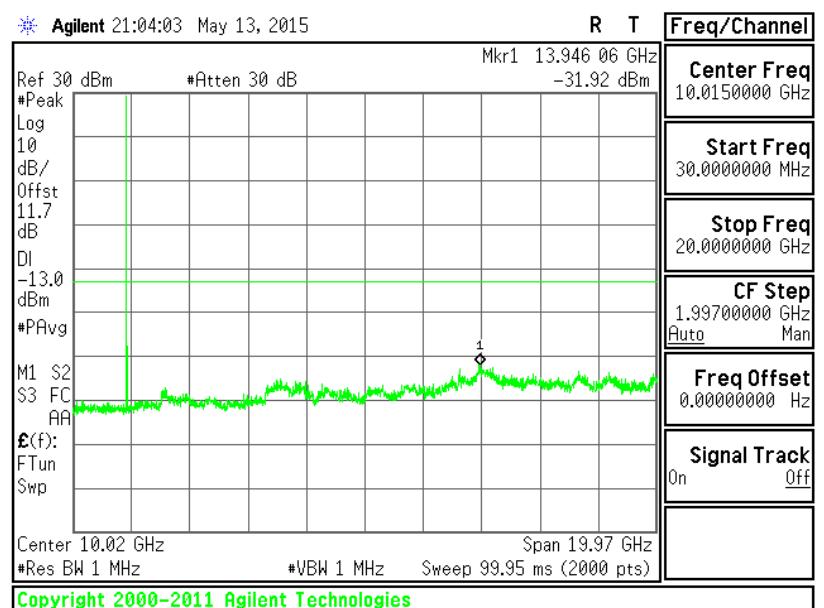


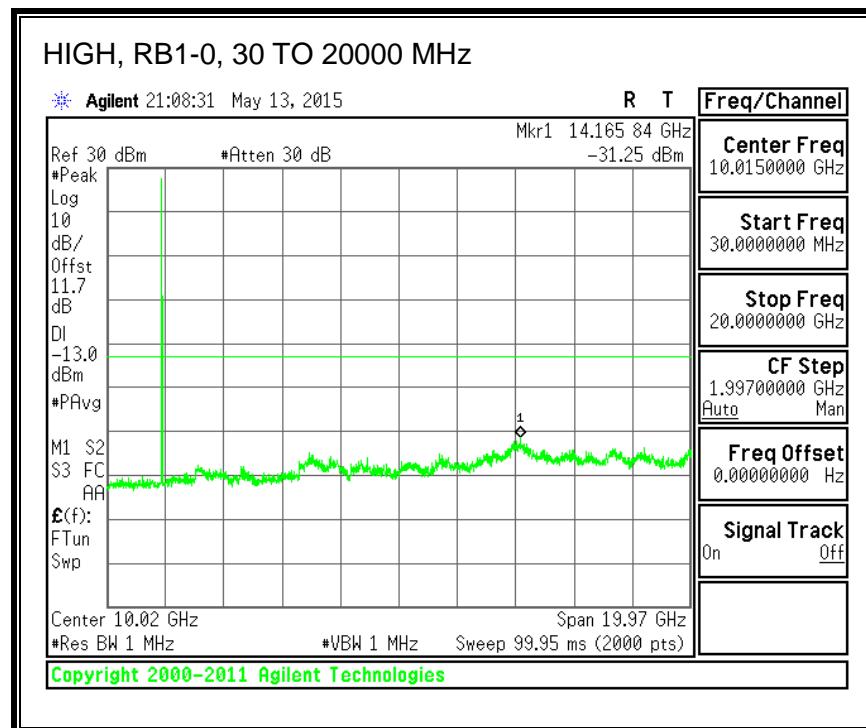
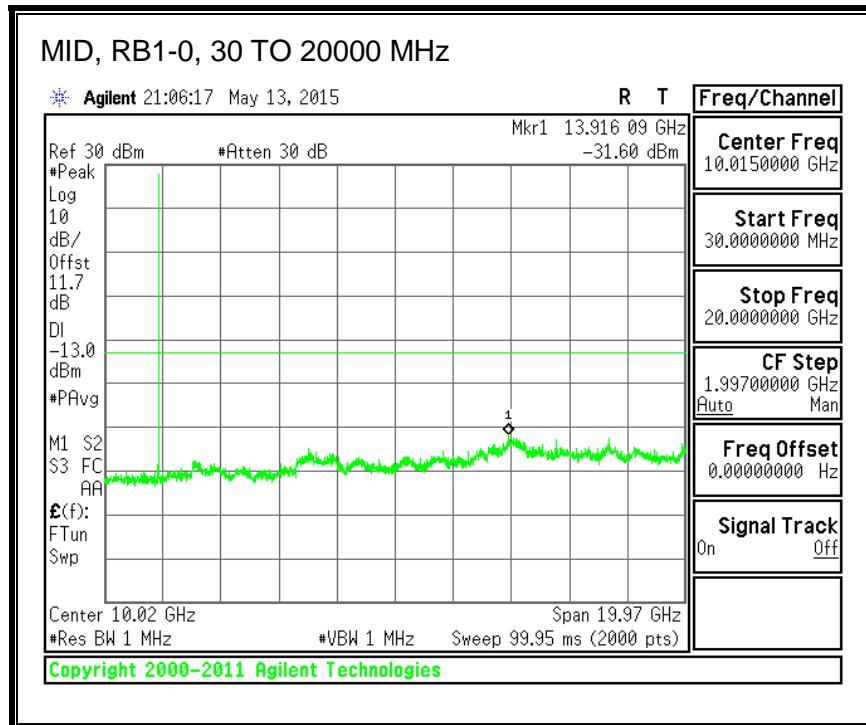
**QPSK, (10.0 MHz BAND WIDTH)**

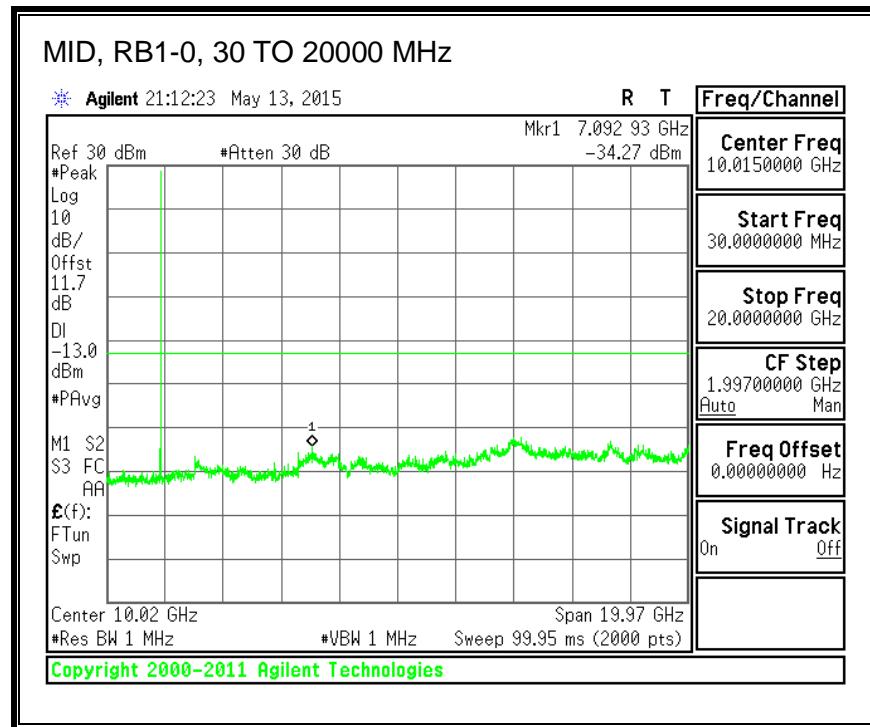
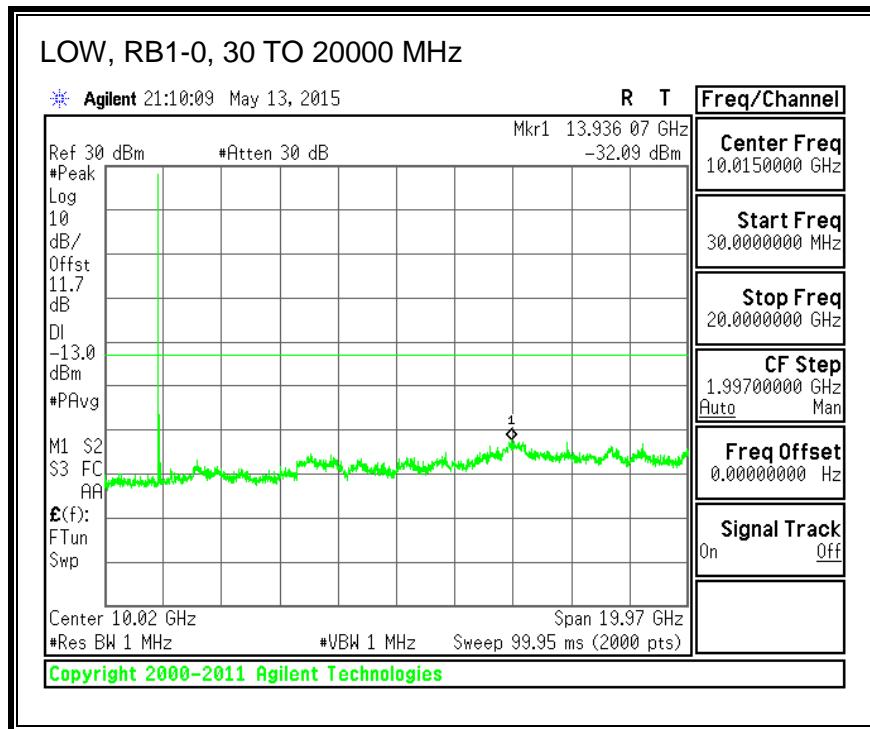
## HIGH, RB1-0, 30 TO 20000 MHz

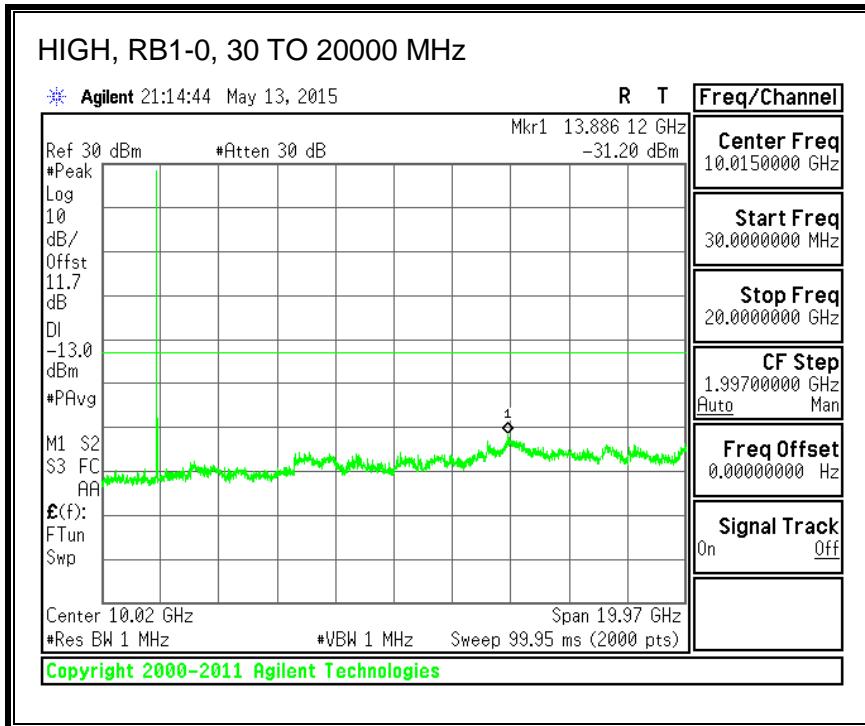
16QAM, (10.0 MHz BAND WIDTH)

## LOW, RB1-0, 30 TO 20000 MHz

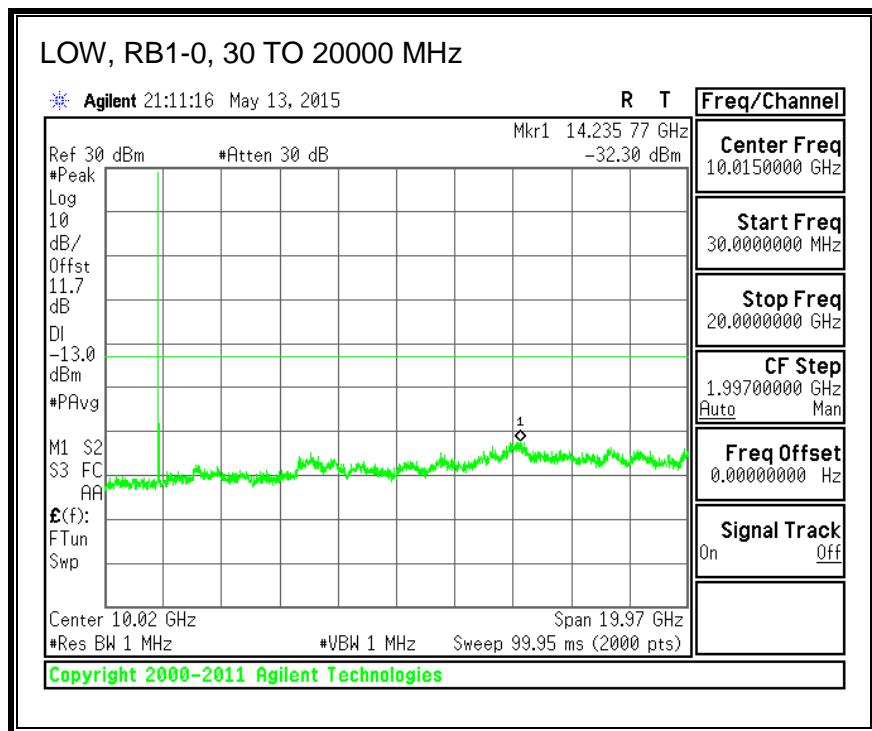


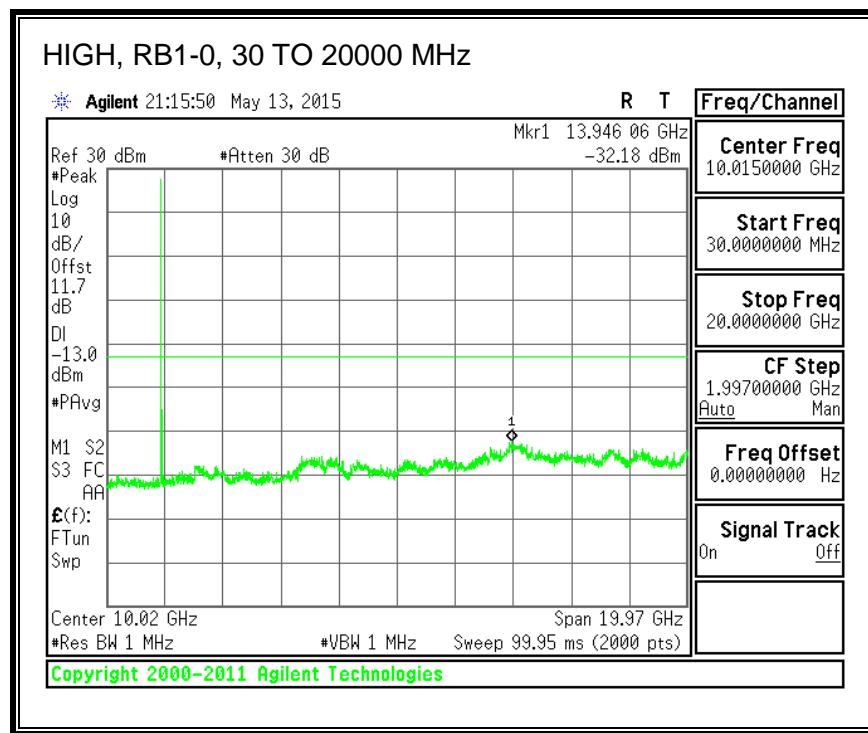
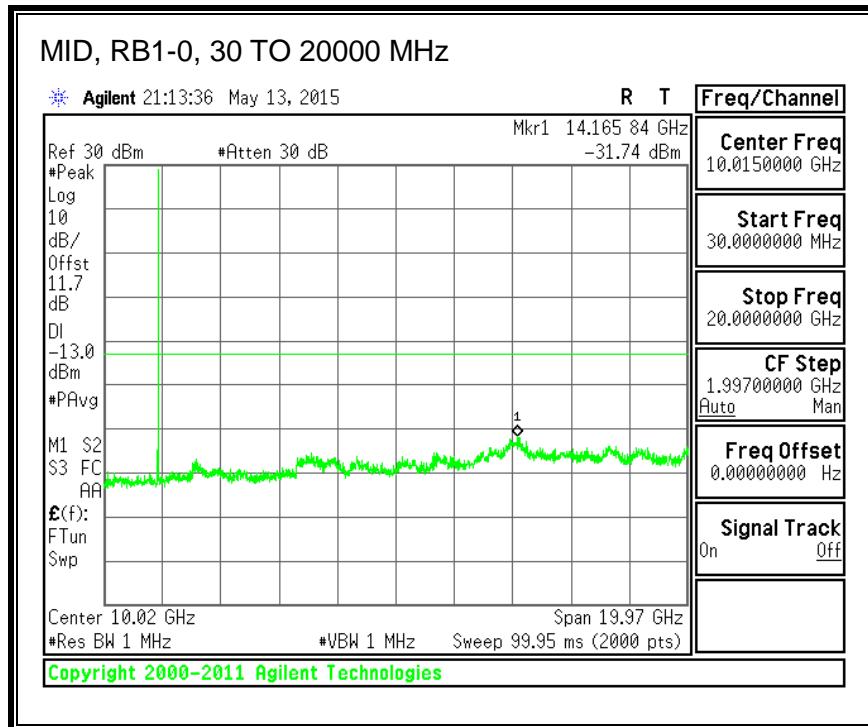


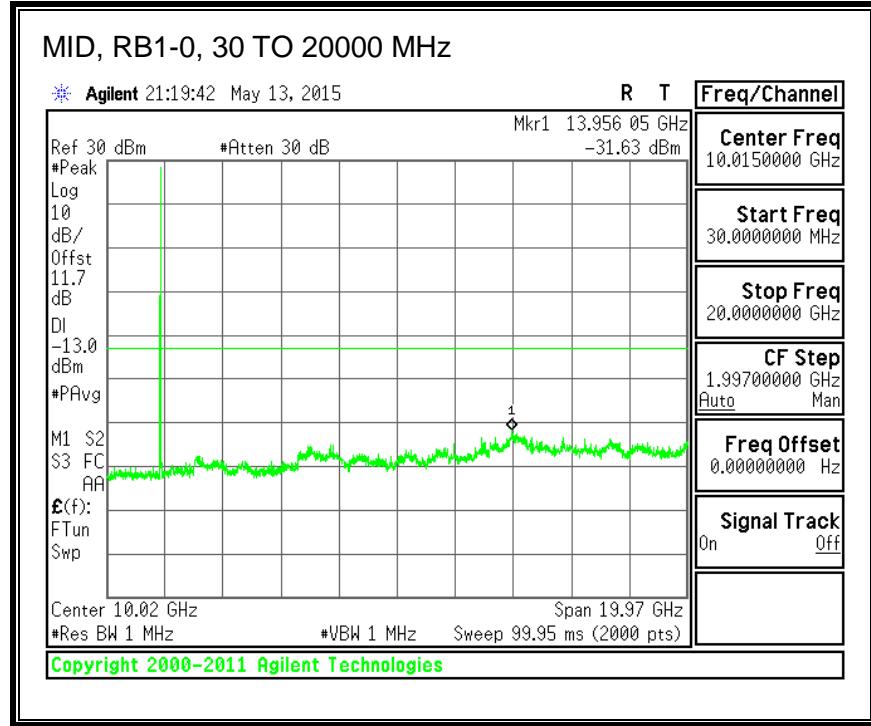
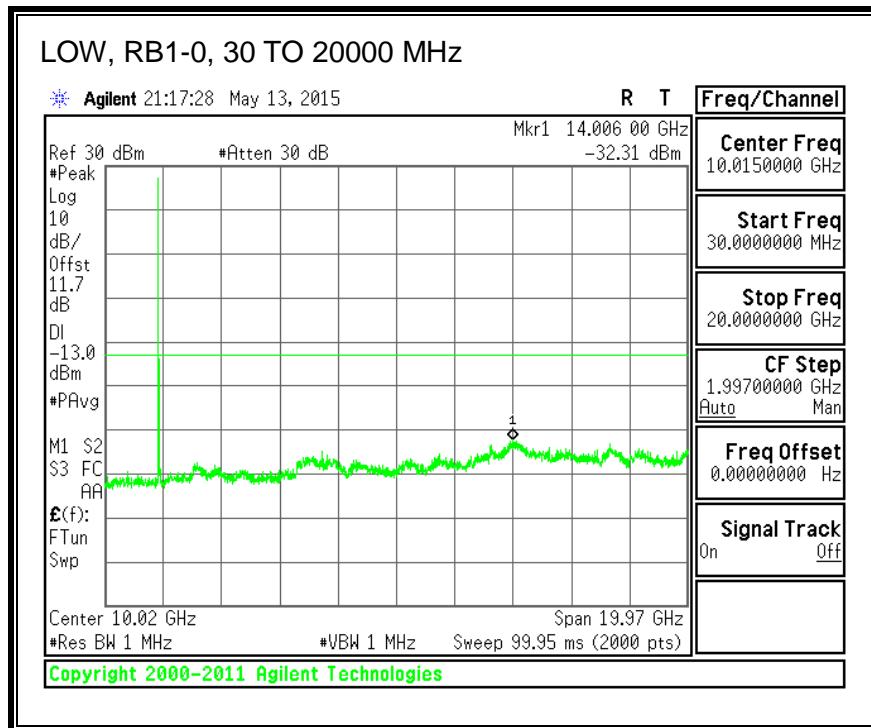
**QPSK, (15.0 MHz BAND WIDTH)**

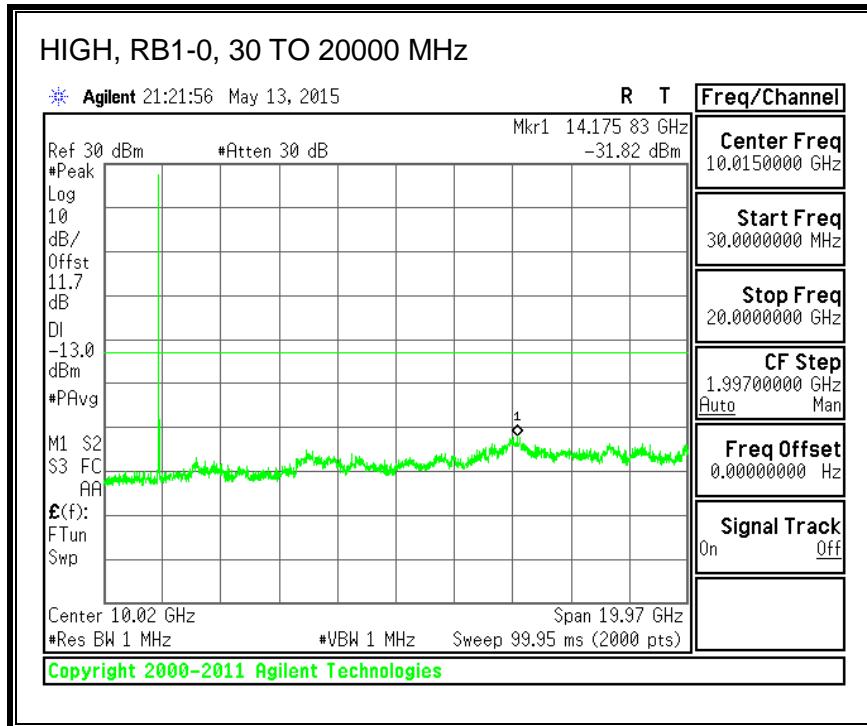


### 16QAM, (15.0 MHz BAND WIDTH)

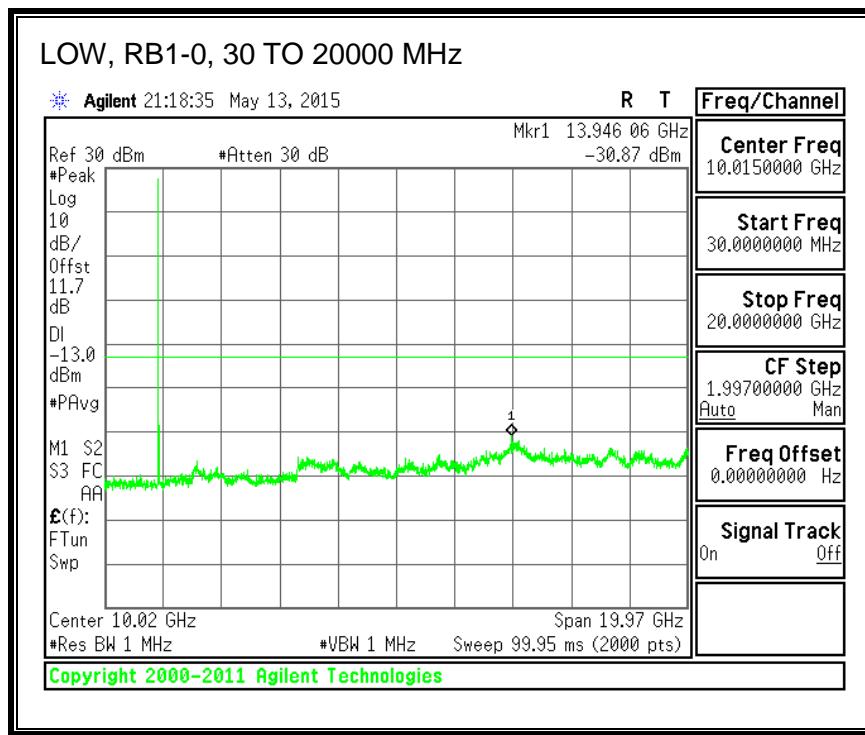


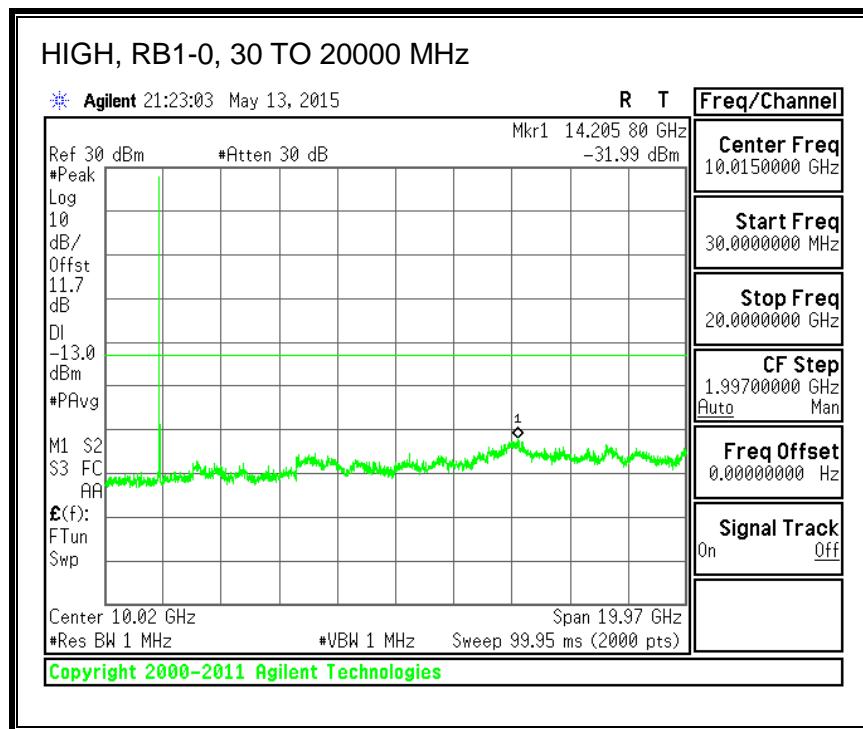
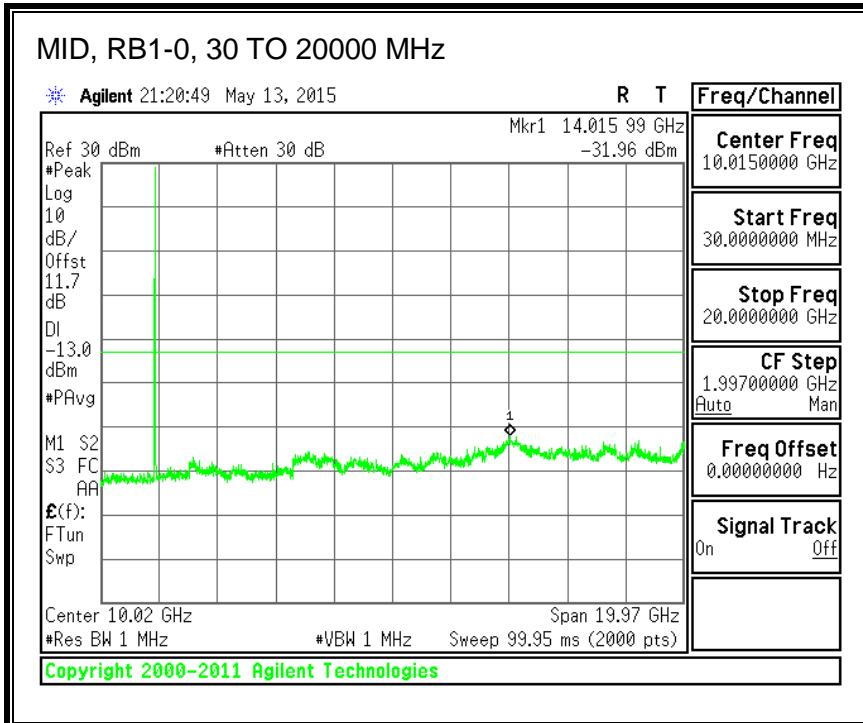


**QPSK, (20.0 MHz BAND WIDTH)**



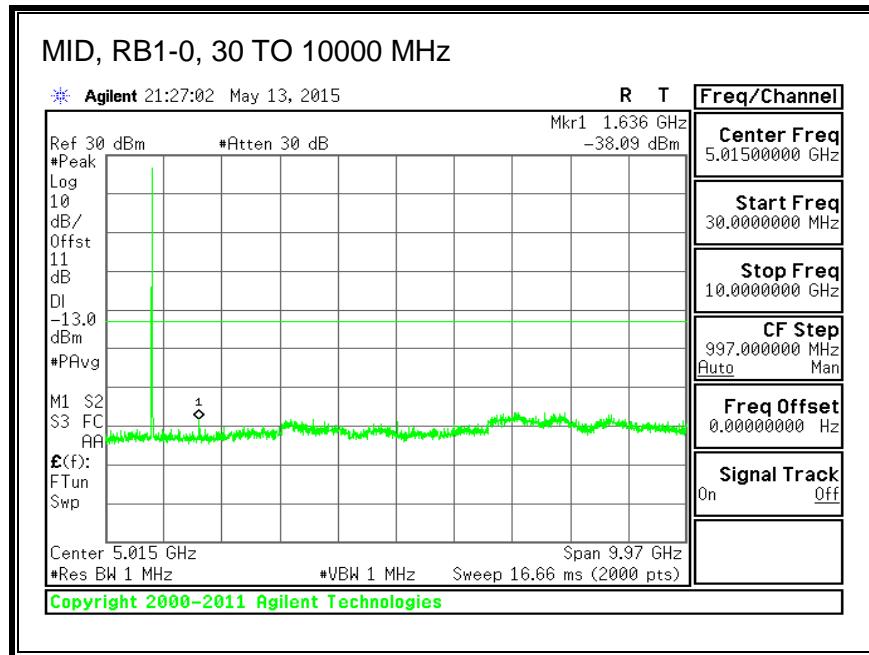
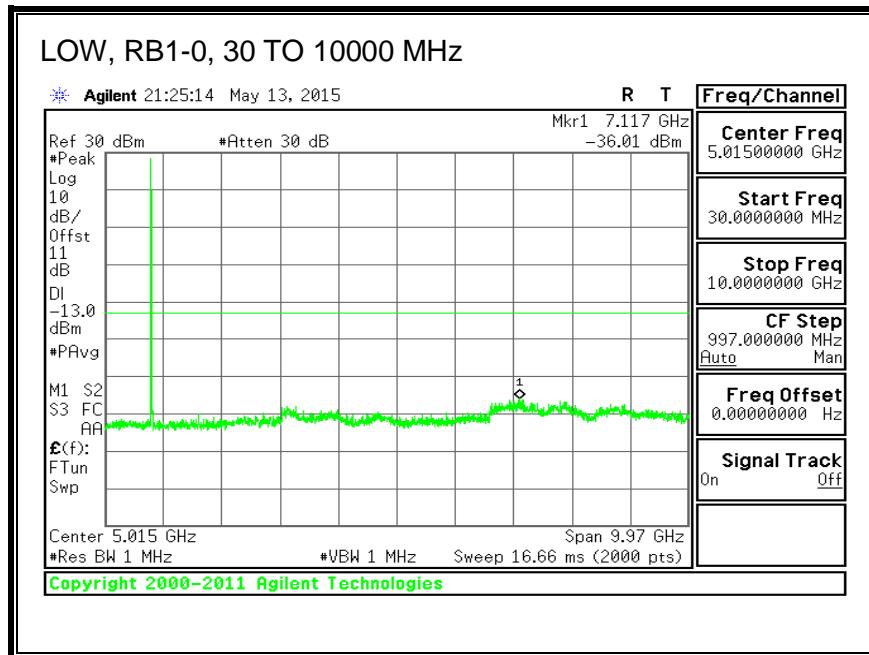
### 16QAM, (20.0 MHz BAND WIDTH)

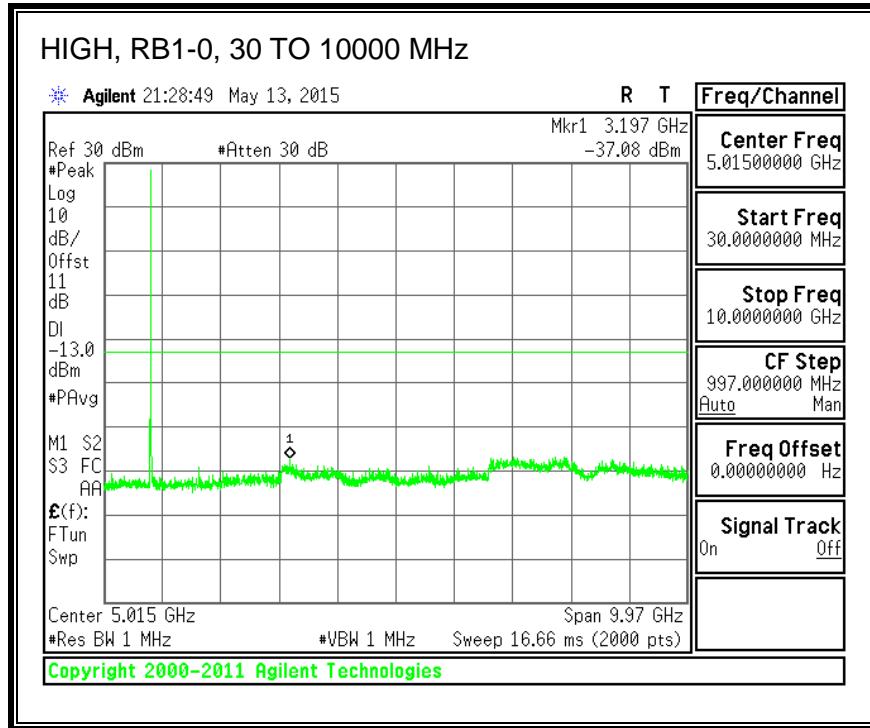




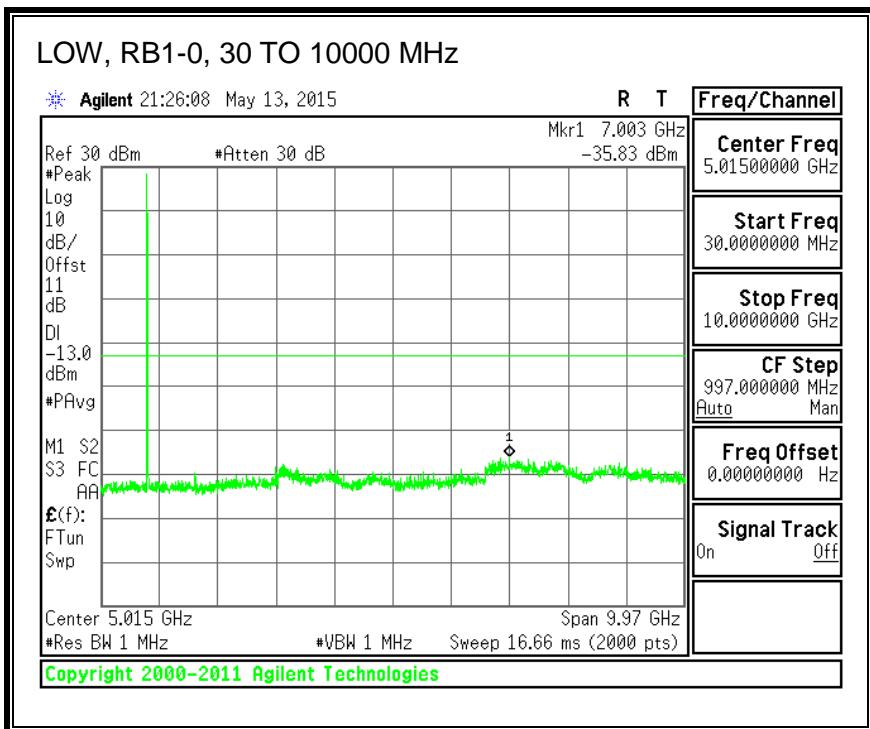
### 8.6.9. LTE BAND 26

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



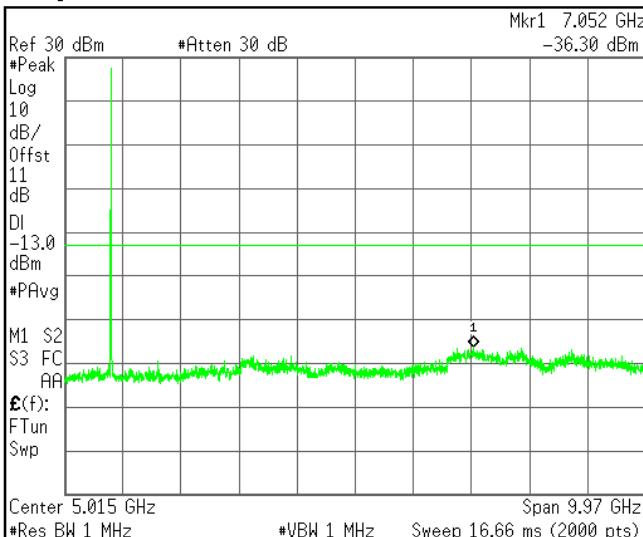


### 16QAM, (1.4 MHz BAND WIDTH)



## MID, RB1-0, 30 TO 10000 MHz

\* Agilent 21:27:54 May 13, 2015



R T

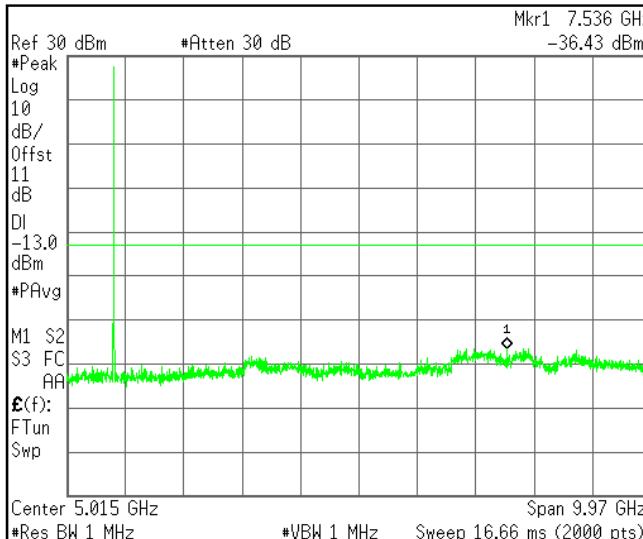
## Freq/Channel

Center Freq  
5.01500000 GHzStart Freq  
30.0000000 MHzStop Freq  
10.0000000 GHzCF Step  
997.000000 MHz  
Auto ManFreq Offset  
0.0000000 HzSignal Track  
On Off

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## HIGH, RB1-0, 30 TO 10000 MHz

\* Agilent 21:29:42 May 13, 2015

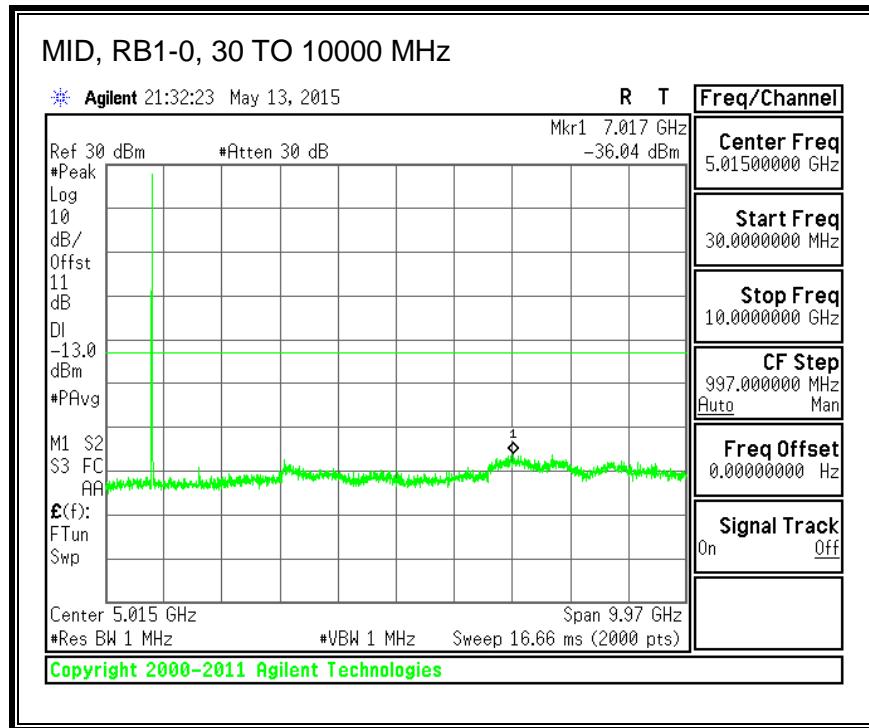
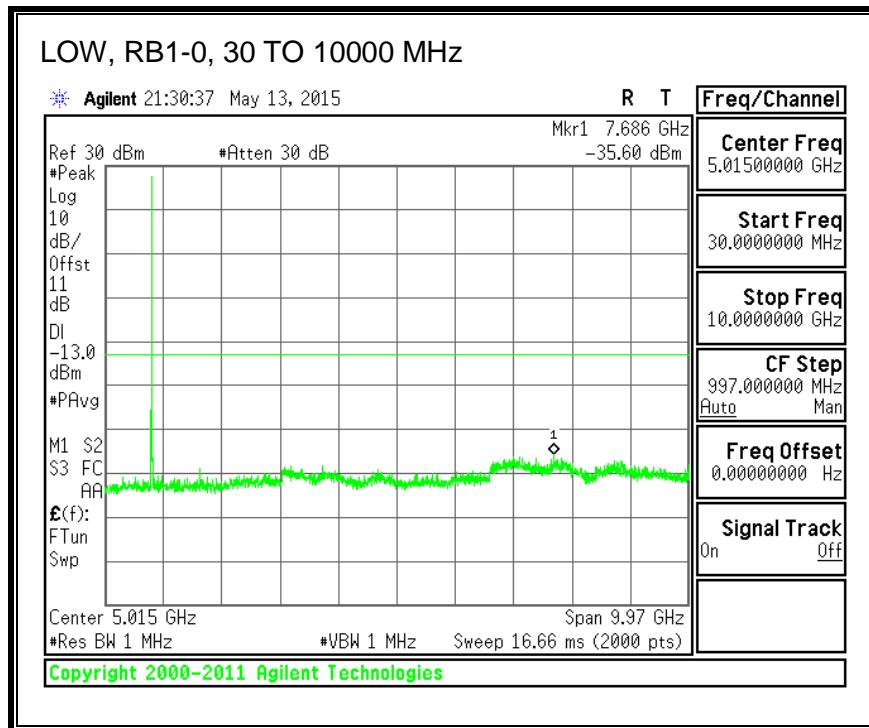


R T

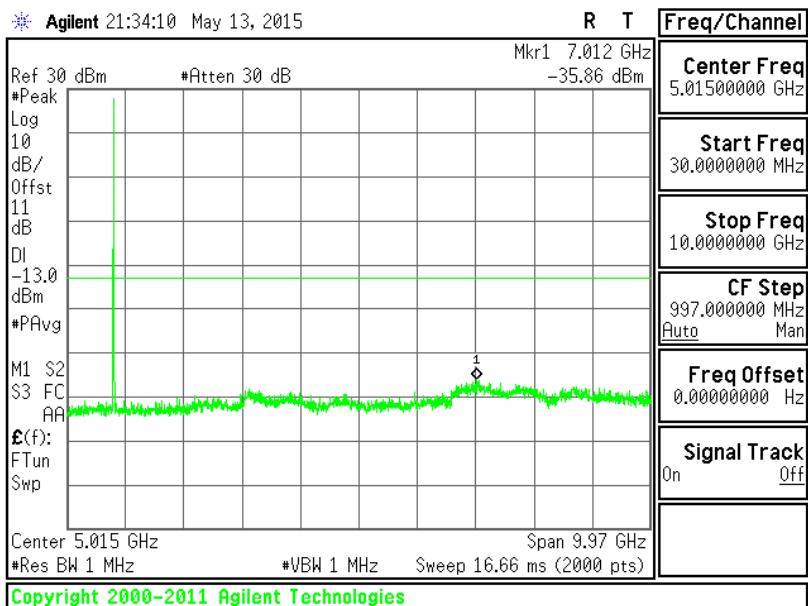
## Freq/Channel

Center Freq  
5.01500000 GHzStart Freq  
30.0000000 MHzStop Freq  
10.0000000 GHzCF Step  
997.000000 MHz  
Auto ManFreq Offset  
0.0000000 HzSignal Track  
On Off

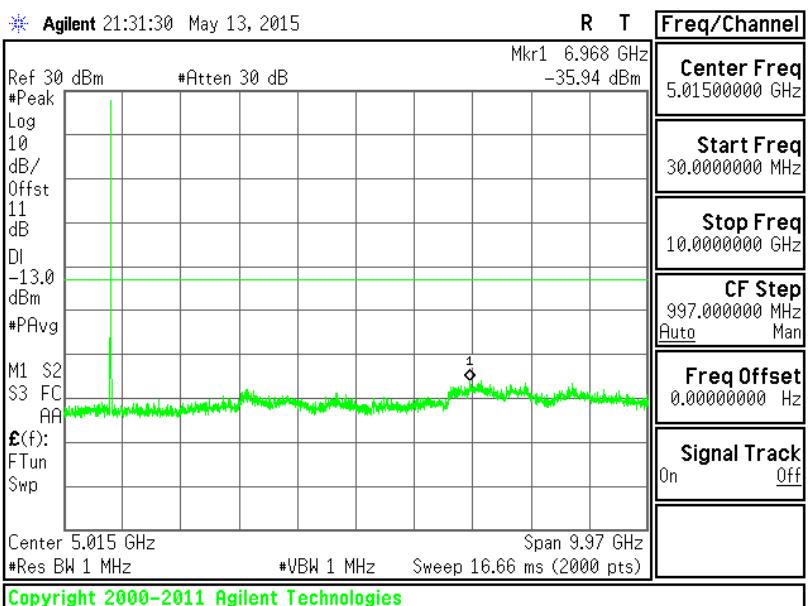
Copyright 2000-2011 Agilent Technologies

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

## HIGH, RB1-0, 30 TO 10000 MHz

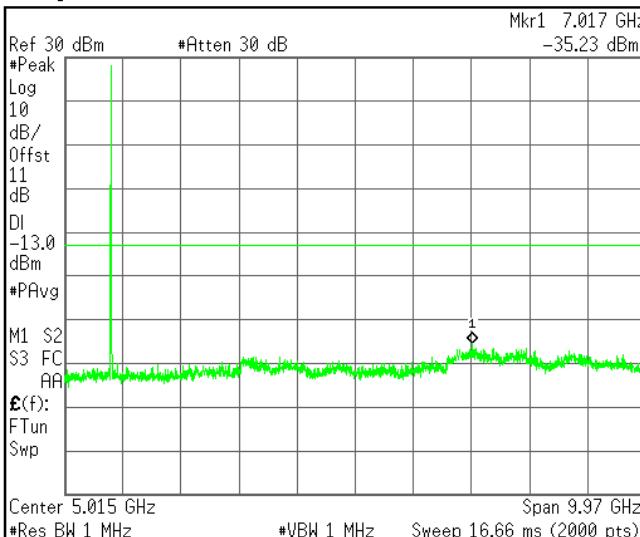
16QAM, (3.0 MHz BAND WIDTH)

## LOW, RB1-0, 30 TO 10000 MHz



## MID, RB1-0, 30 TO 10000 MHz

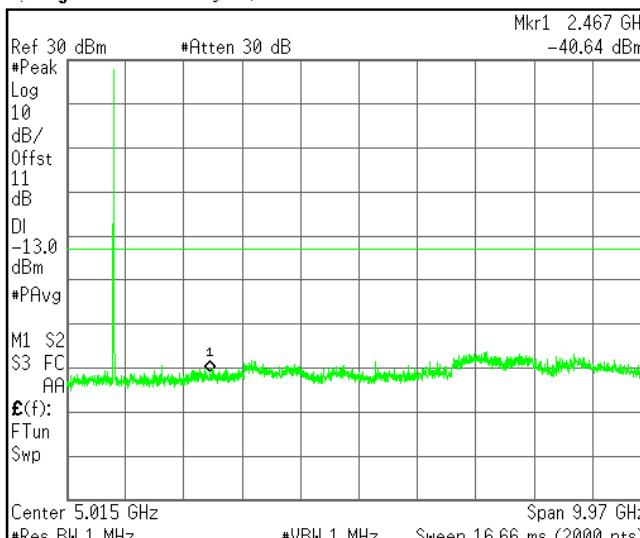
\* Agilent 21:33:16 May 13, 2015



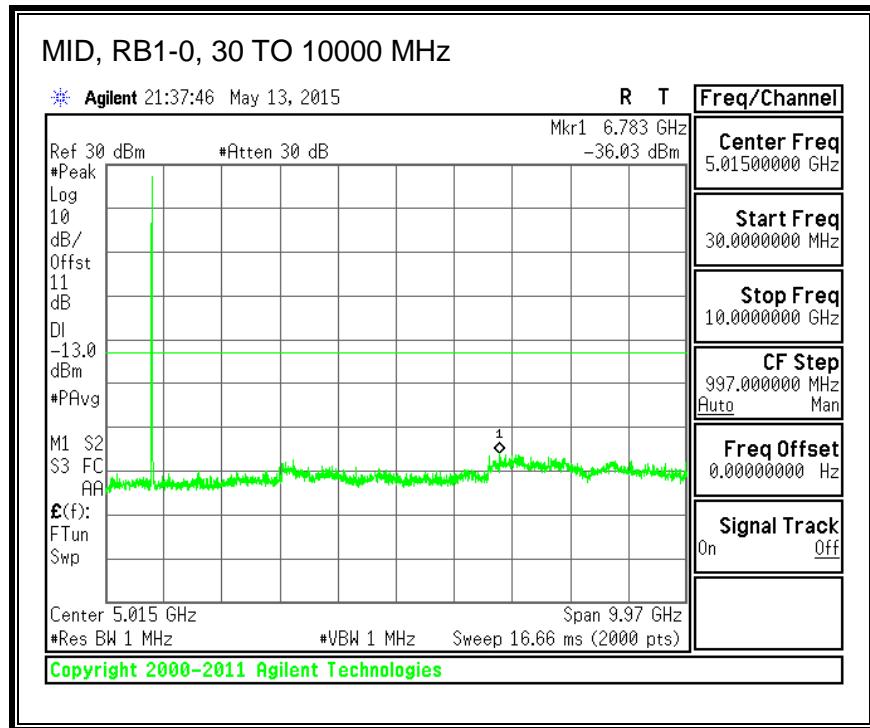
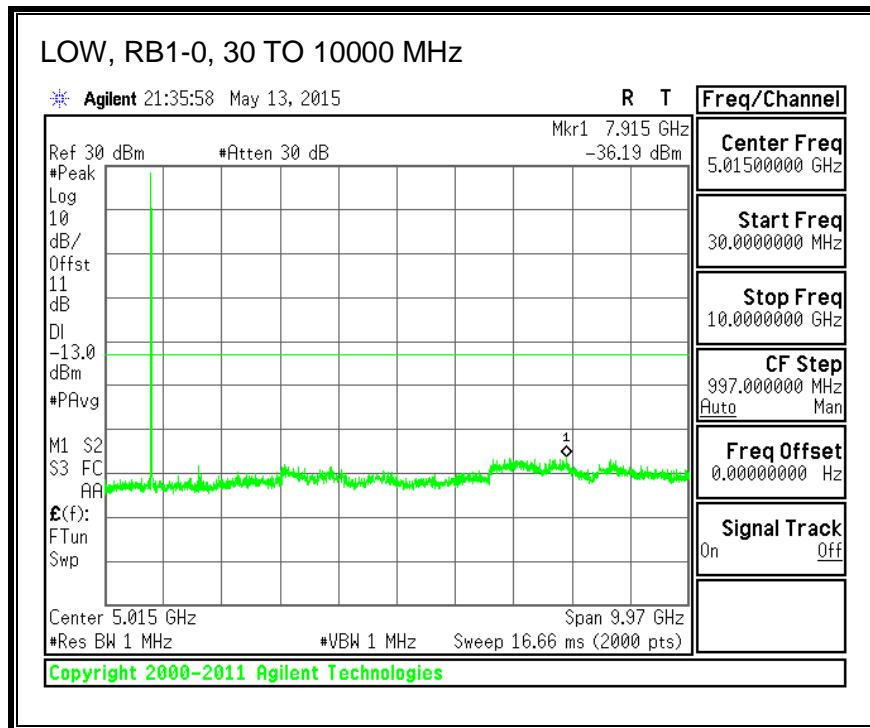
Copyright 2000-2011 Agilent Technologies

## HIGH, RB1-0, 30 TO 10000 MHz

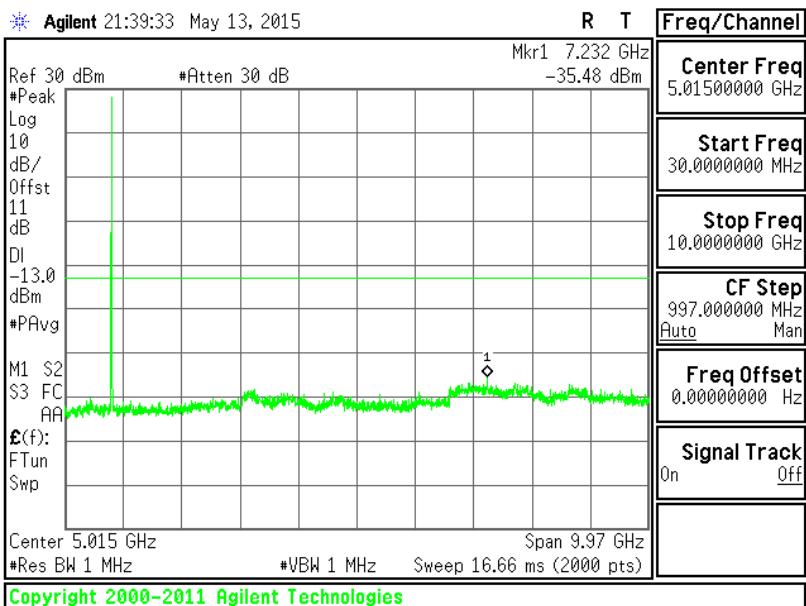
\* Agilent 21:35:04 May 13, 2015



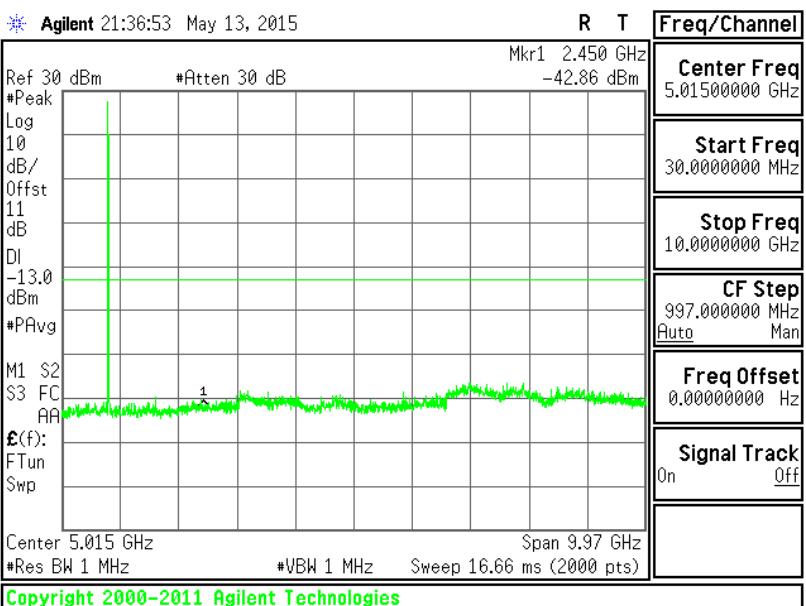
Copyright 2000-2011 Agilent Technologies

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

## HIGH, RB1-0, 30 TO 10000 MHz

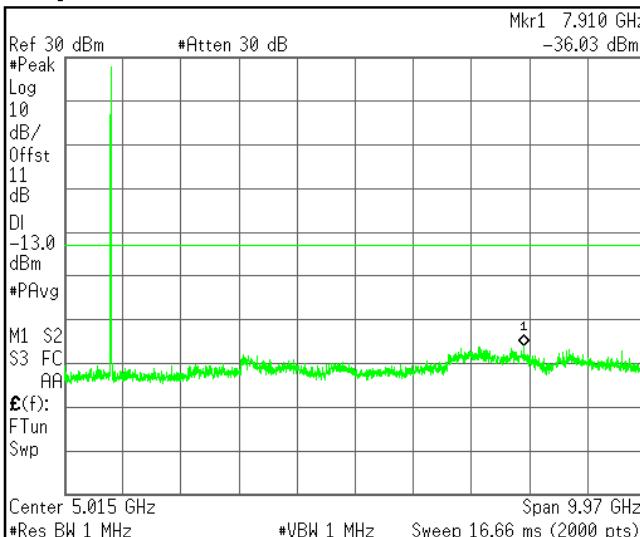
16QAM, (5.0 MHz BAND WIDTH)

## LOW, RB1-0, 30 TO 10000 MHz



## MID, RB1-0, 30 TO 10000 MHz

Agilent 21:38:39 May 13, 2015



R T

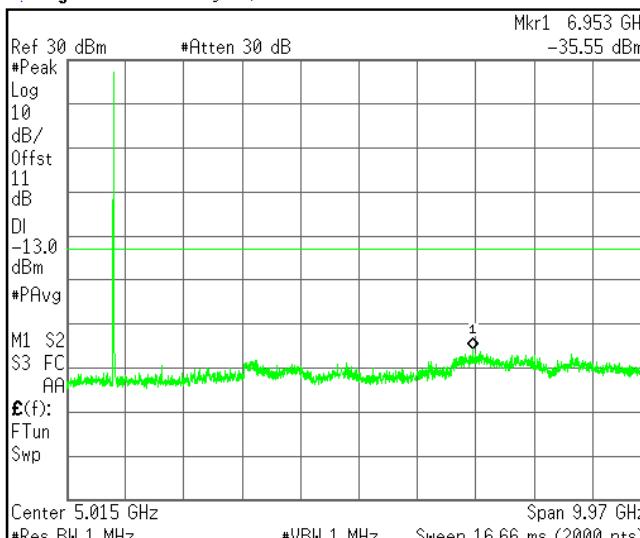
## Freq/Channel

Center Freq  
5.01500000 GHzStart Freq  
30.0000000 MHzStop Freq  
10.0000000 GHzCF Step  
997.000000 MHz  
Auto ManFreq Offset  
0.00000000 HzSignal Track  
On Off

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## HIGH, RB1-0, 30 TO 10000 MHz

Agilent 21:40:25 May 13, 2015

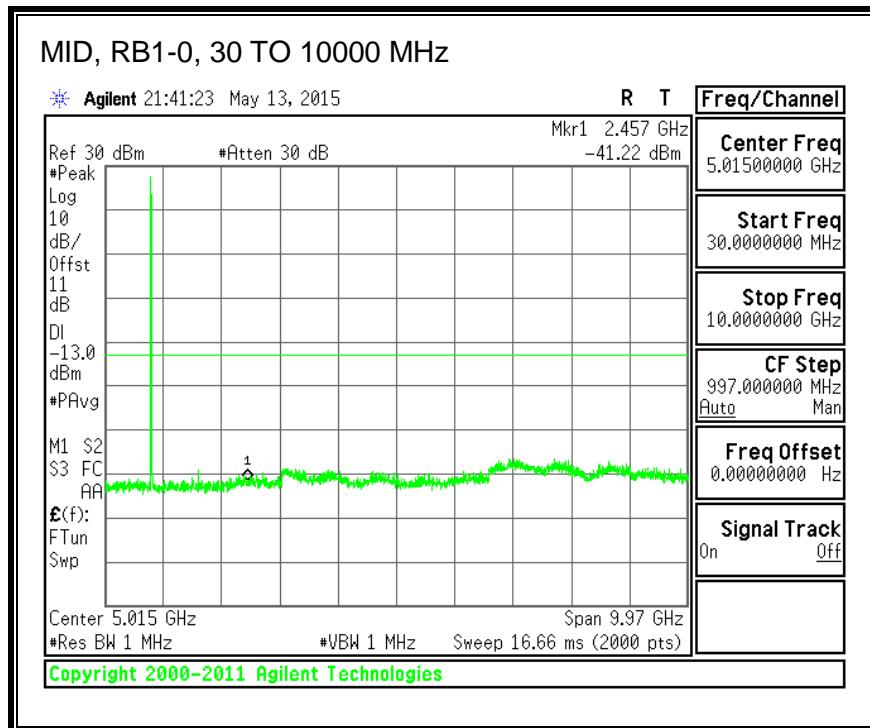
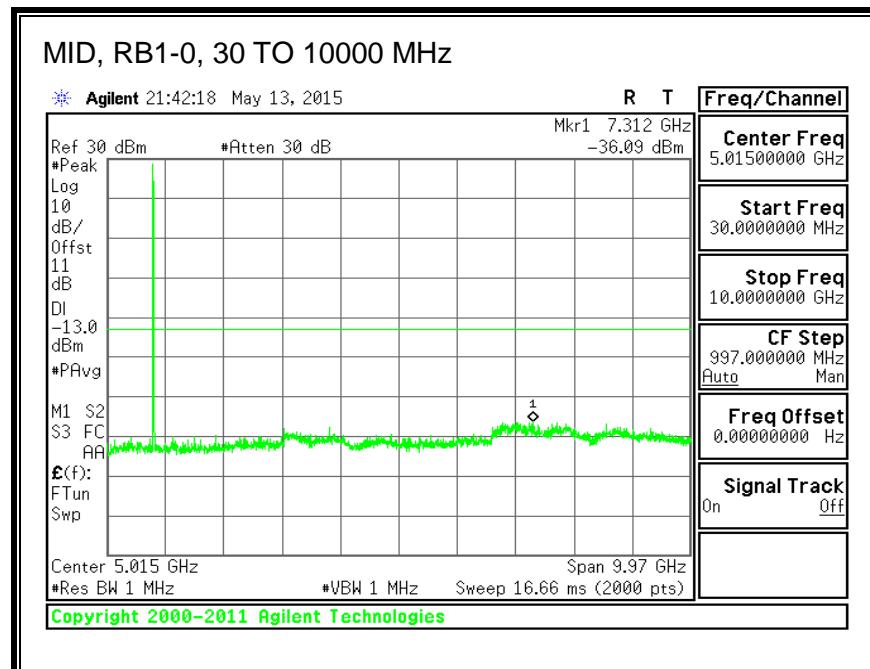


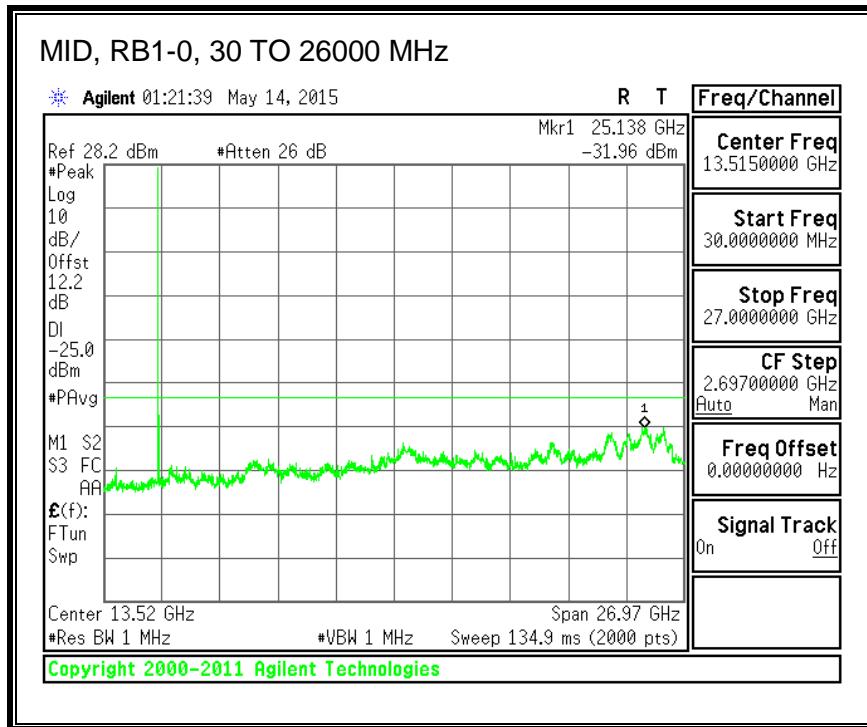
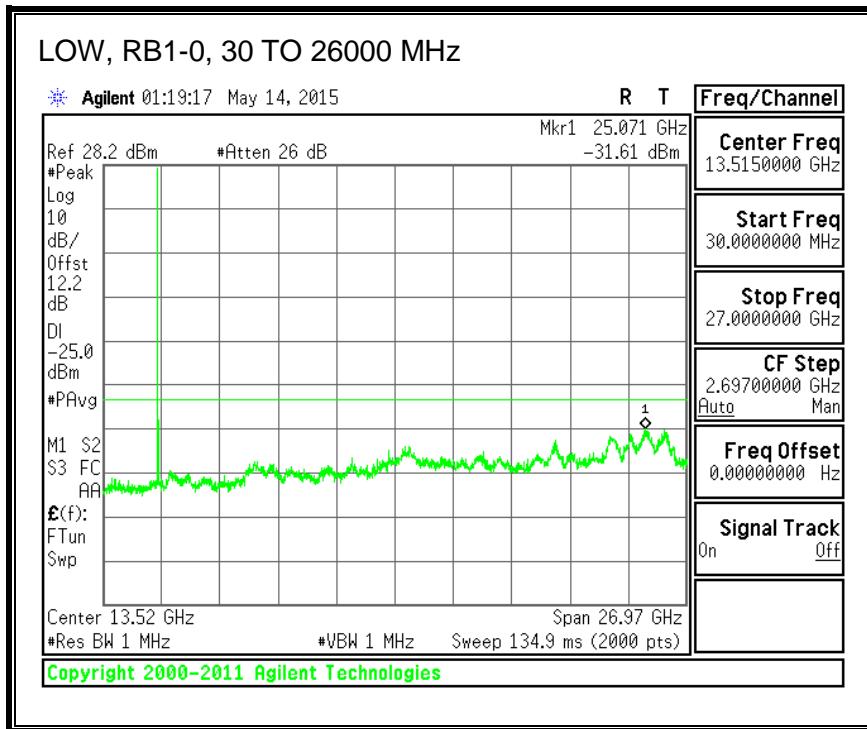
R T

## Freq/Channel

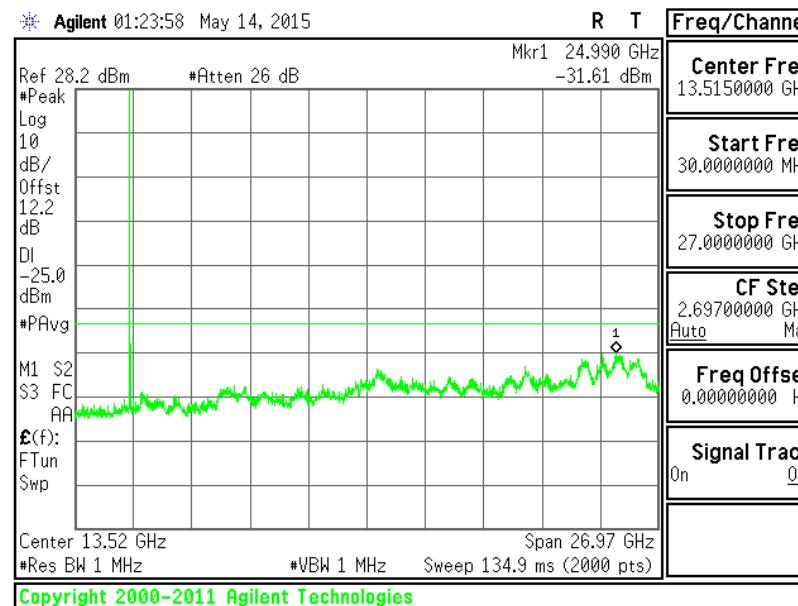
Center Freq  
5.01500000 GHzStart Freq  
30.0000000 MHzStop Freq  
10.0000000 GHzCF Step  
997.000000 MHz  
Auto ManFreq Offset  
0.00000000 HzSignal Track  
On Off

Copyright 2000-2011 Agilent Technologies

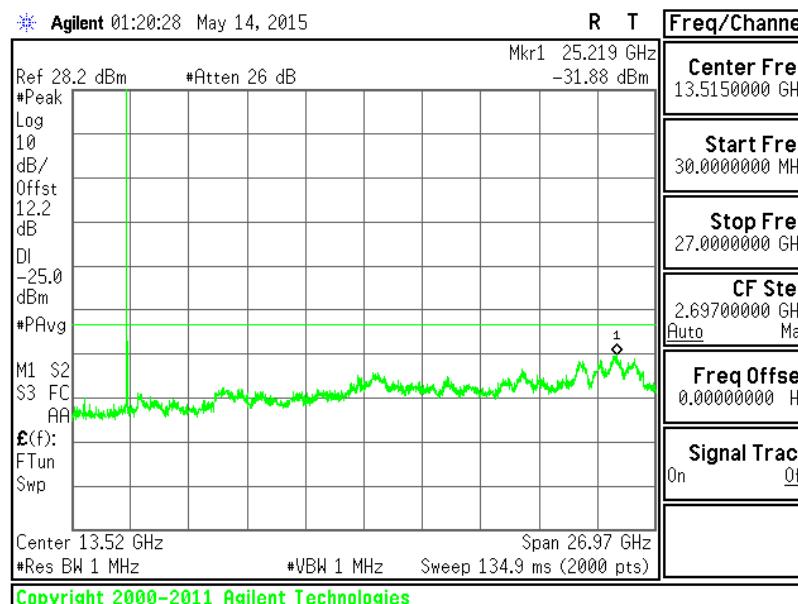
**QPSK, (10.0 MHz BAND WIDTH)****16QAM, (10.0 MHz BAND WIDTH)**

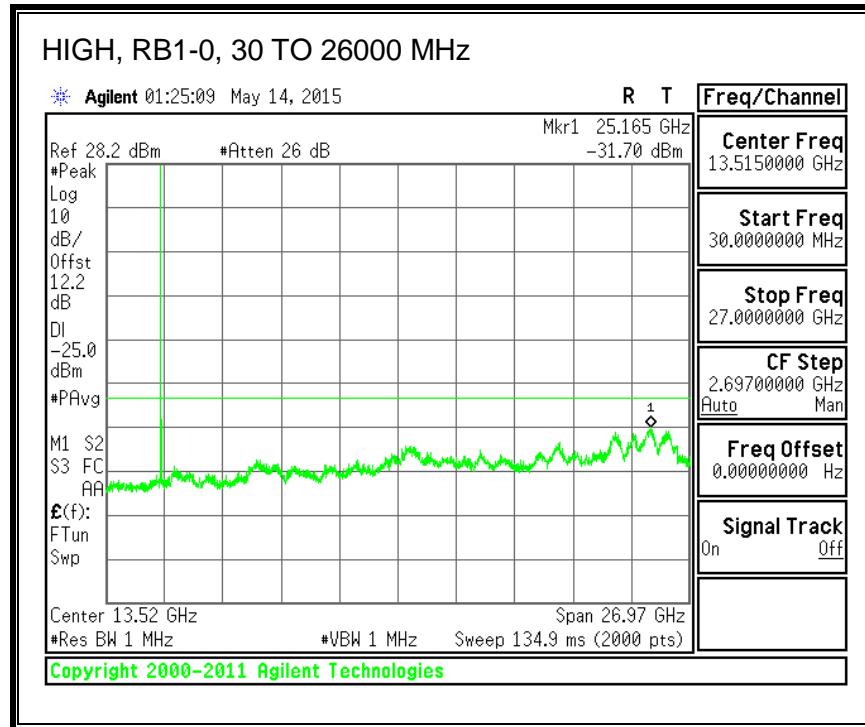
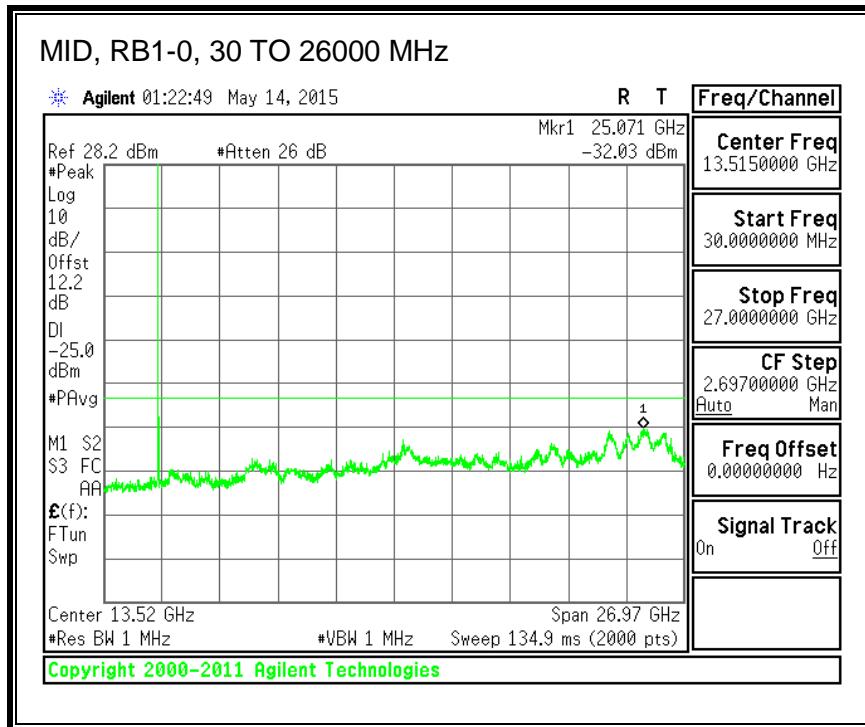
**8.6.10. LTE BAND 41****QPSK, (5.0 MHz BAND WIDTH)**

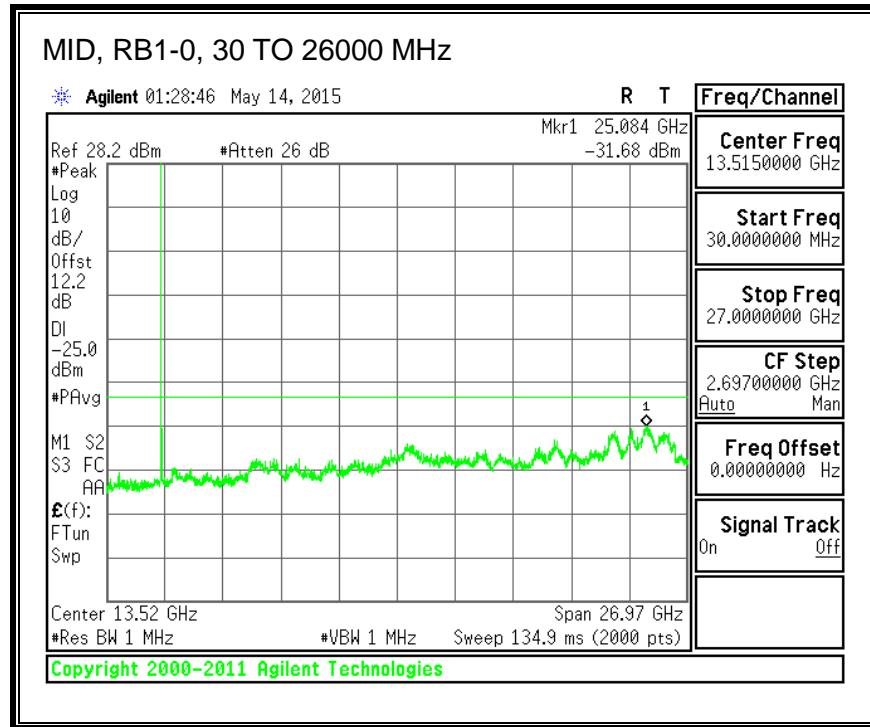
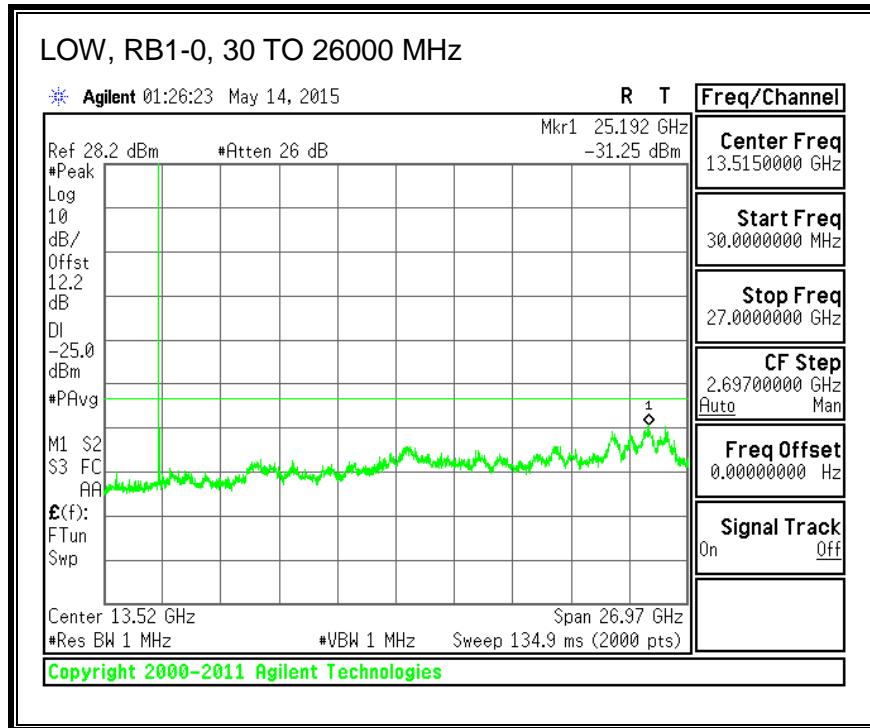
## HIGH, RB1-0, 30 TO 26000 MHz

16QAM, (5.0 MHz BAND WIDTH)

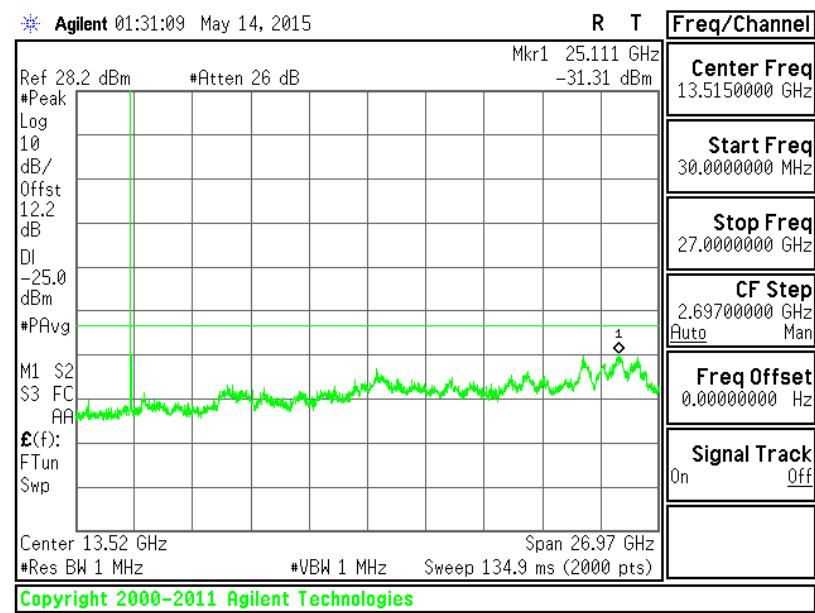
## LOW, RB1-0, 30 TO 26000 MHz



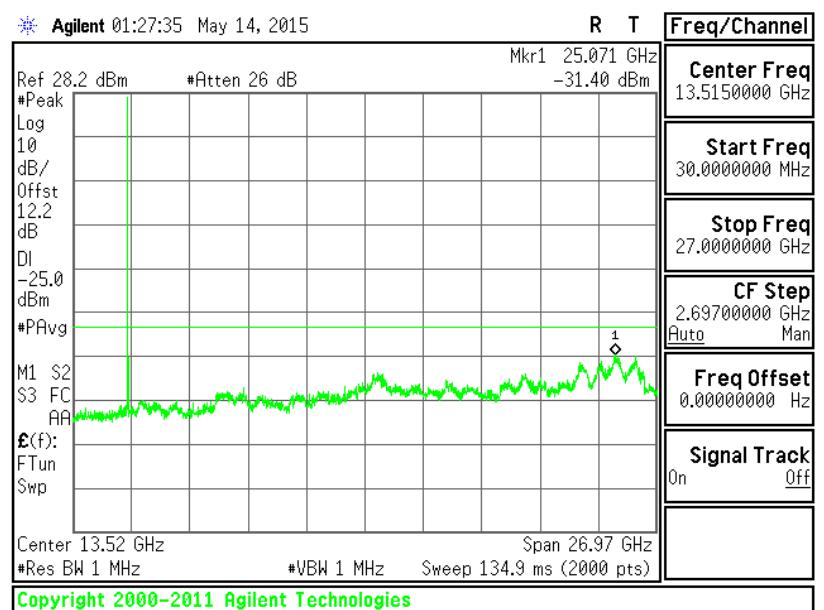


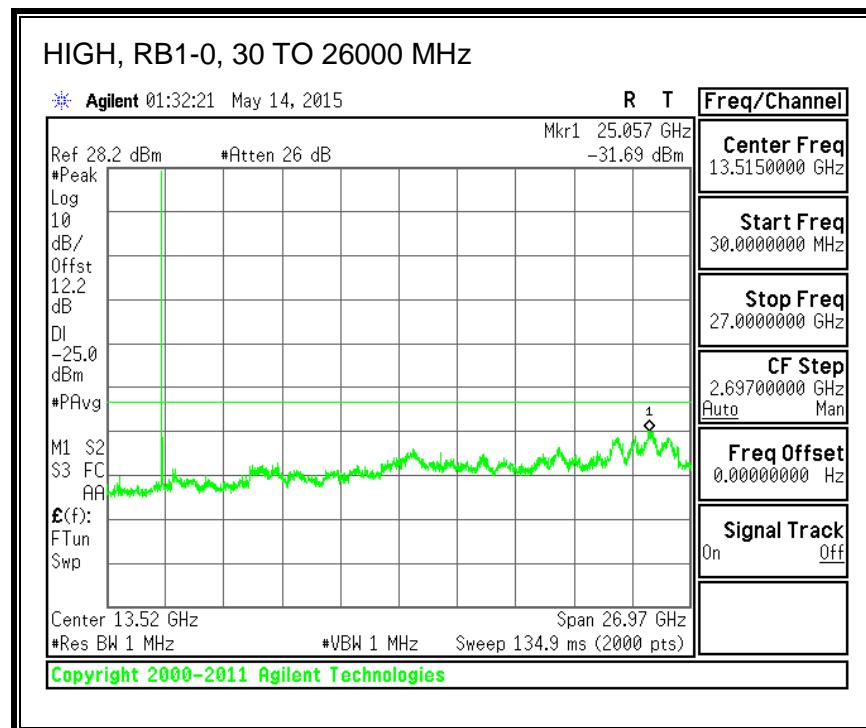
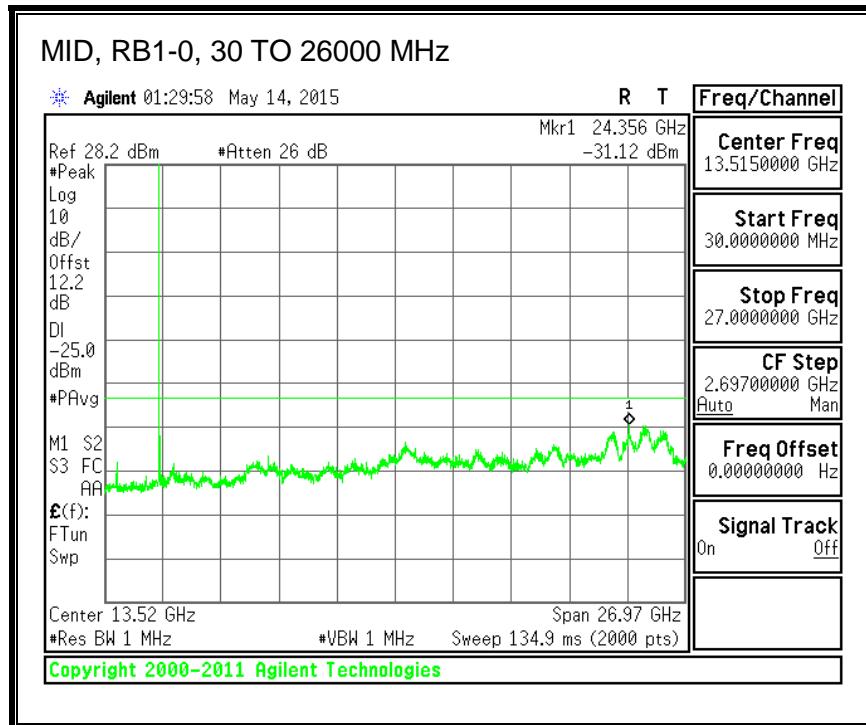
**QPSK, (10.0 MHz BAND WIDTH)**

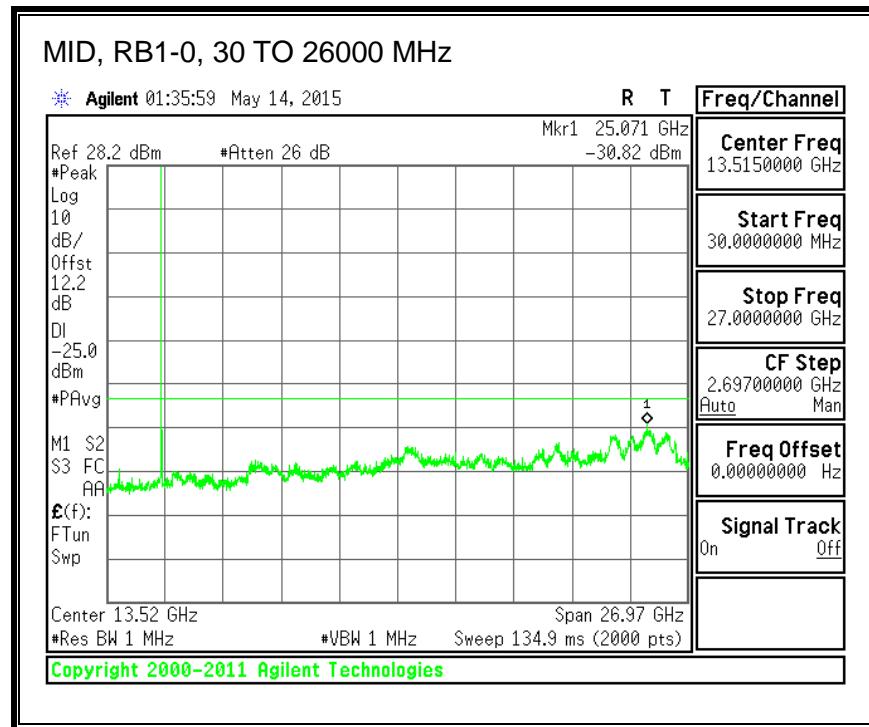
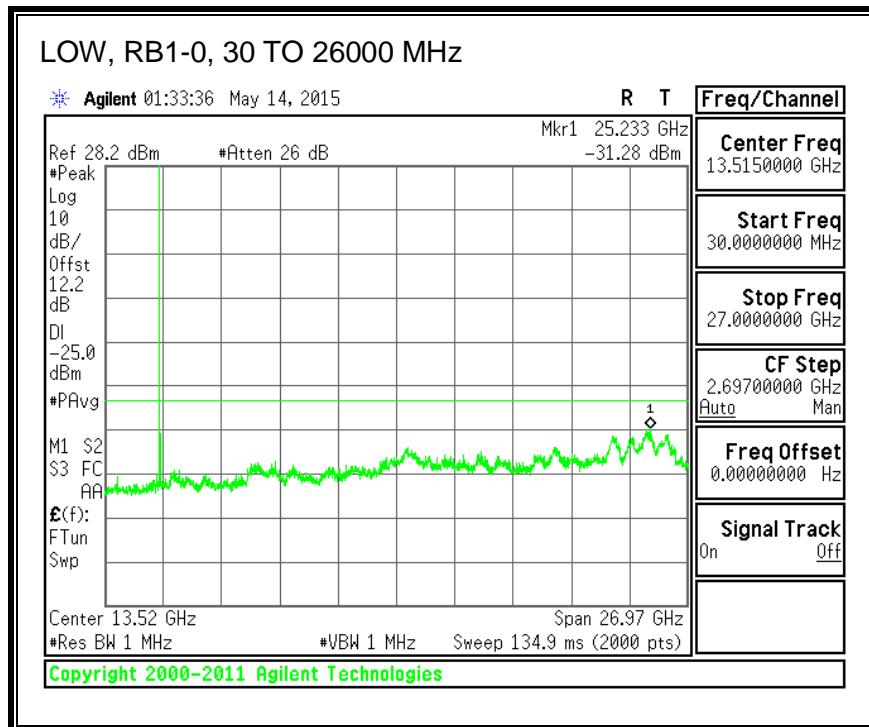
## HIGH, RB1-0, 30 TO 26000 MHz

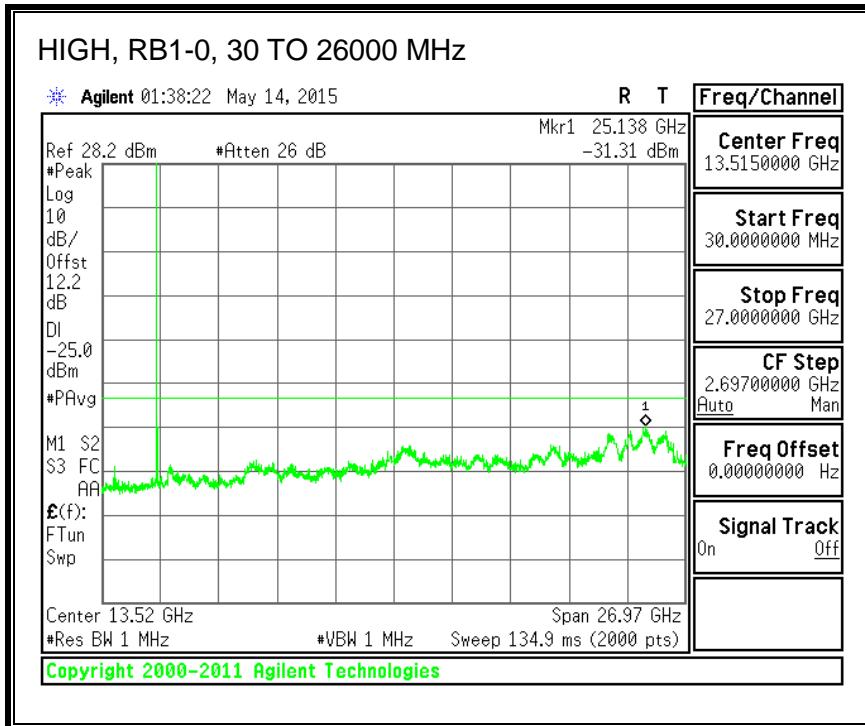
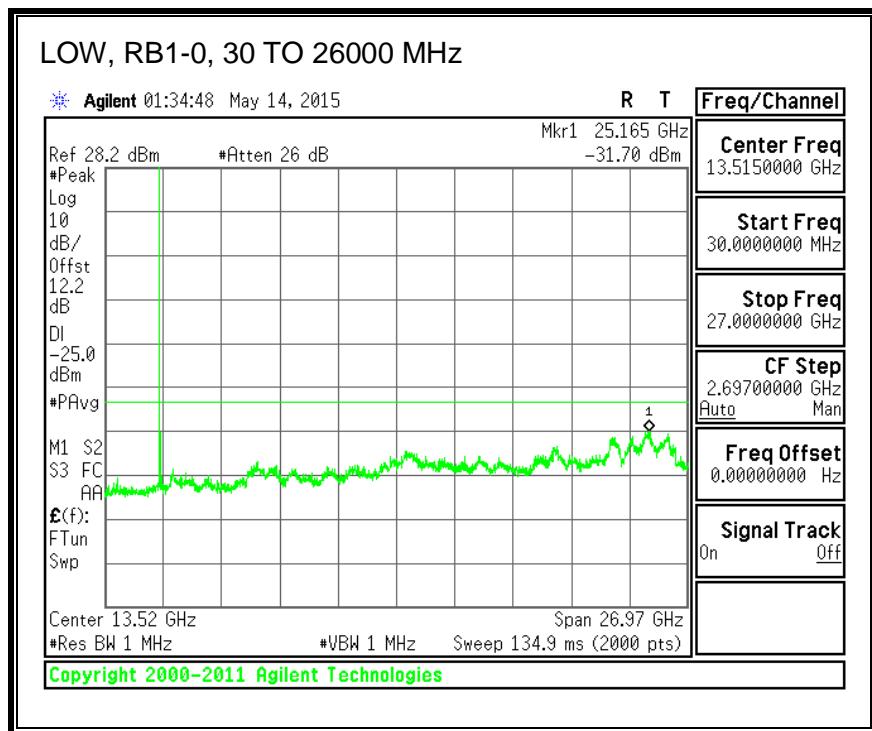
16QAM, (10.0 MHz BAND WIDTH)

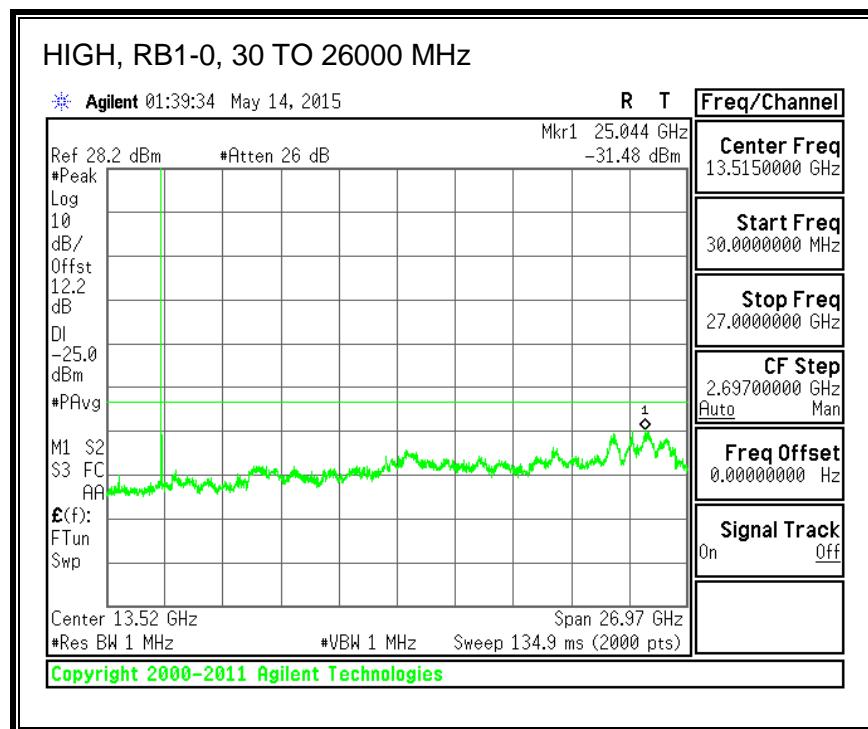
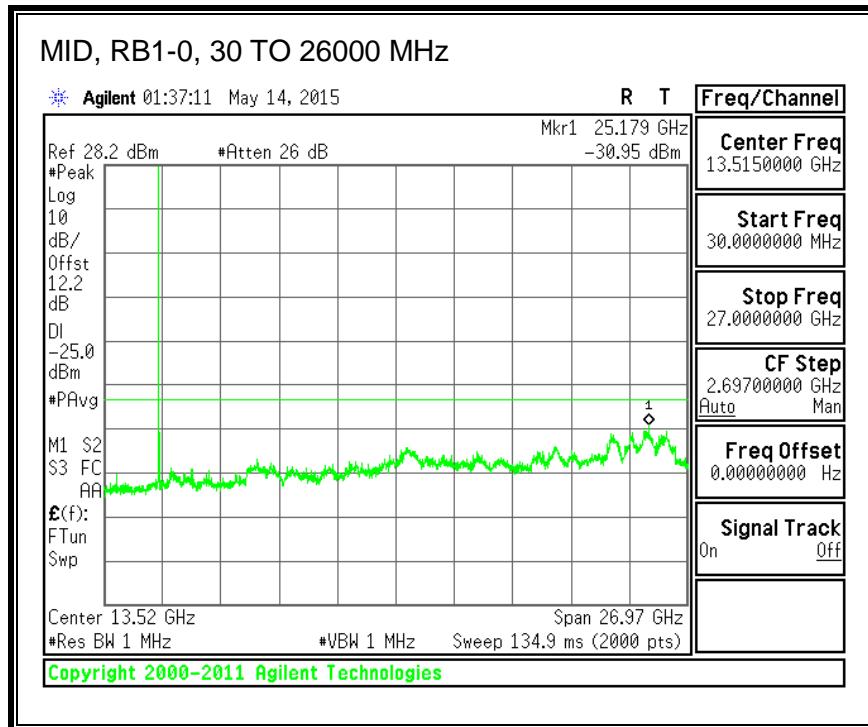
## LOW, RB1-0, 30 TO 26000 MHz

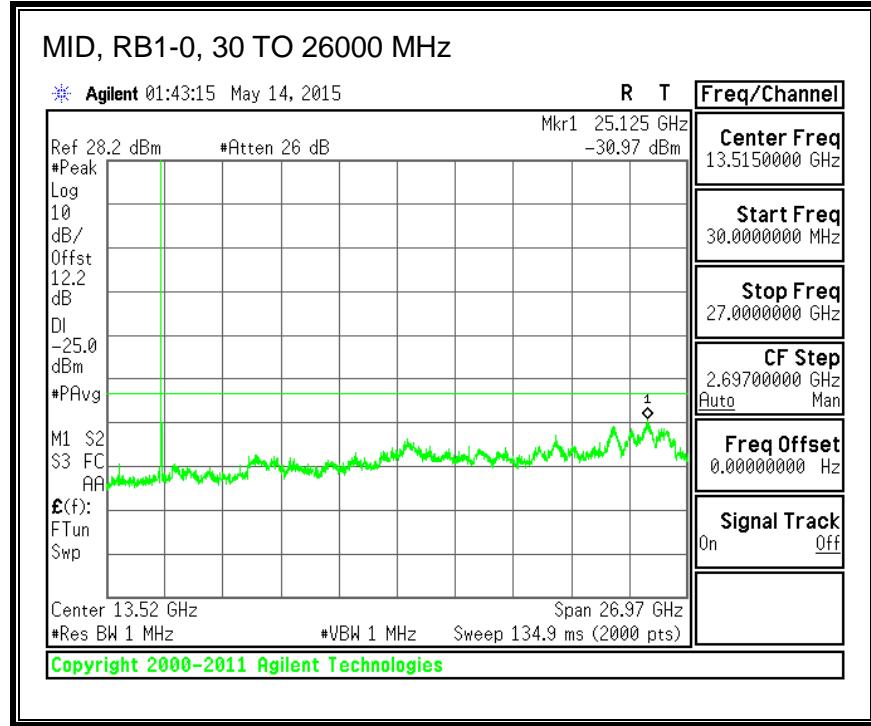
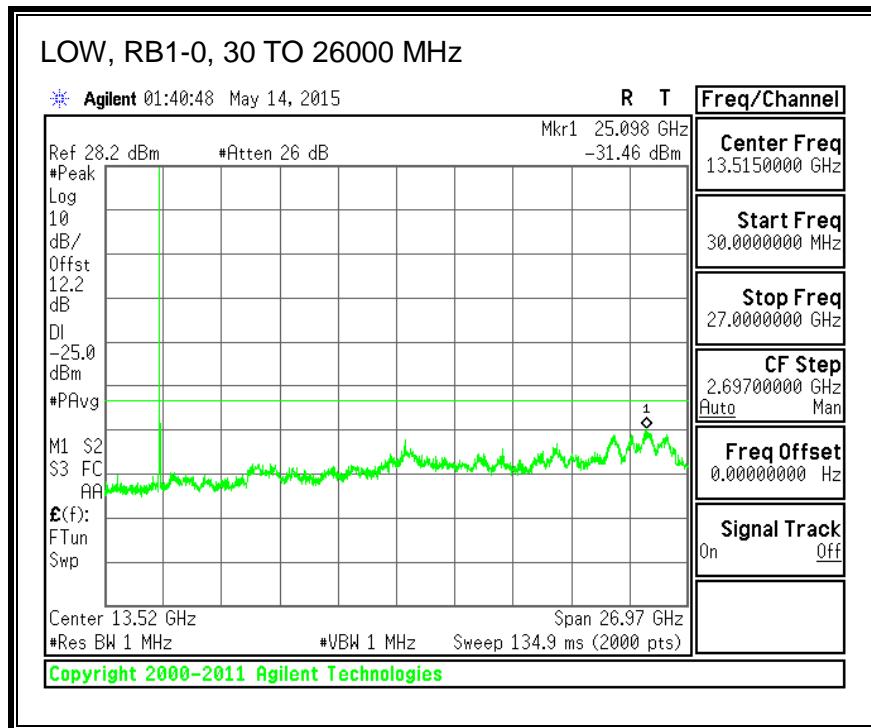


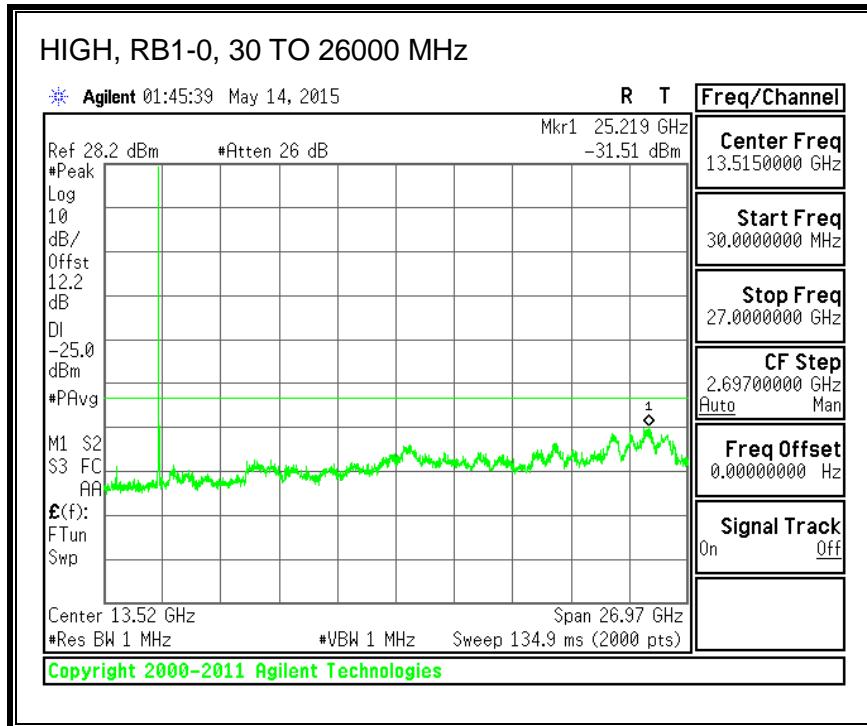
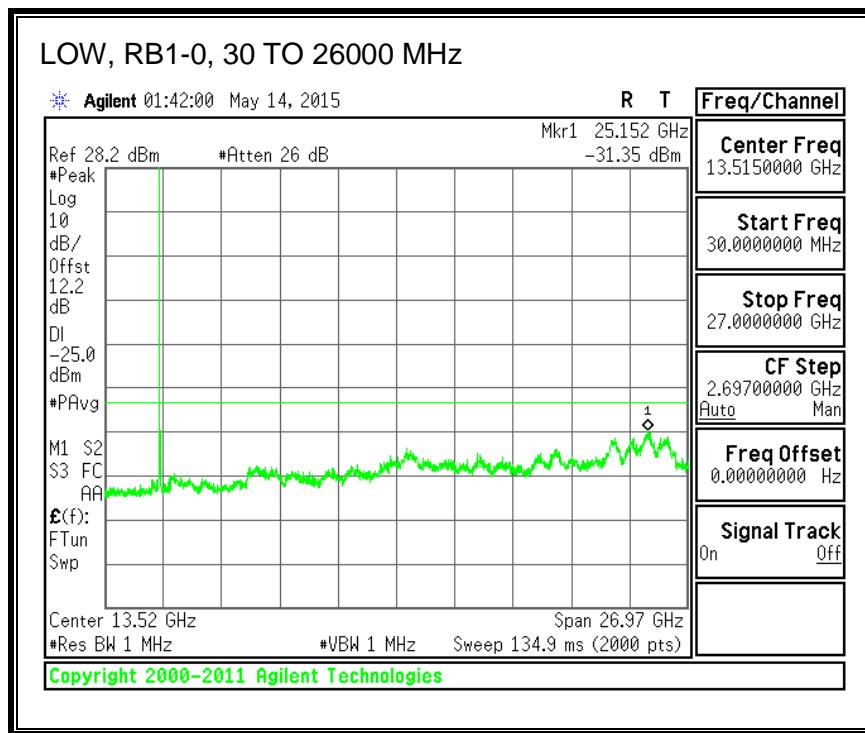


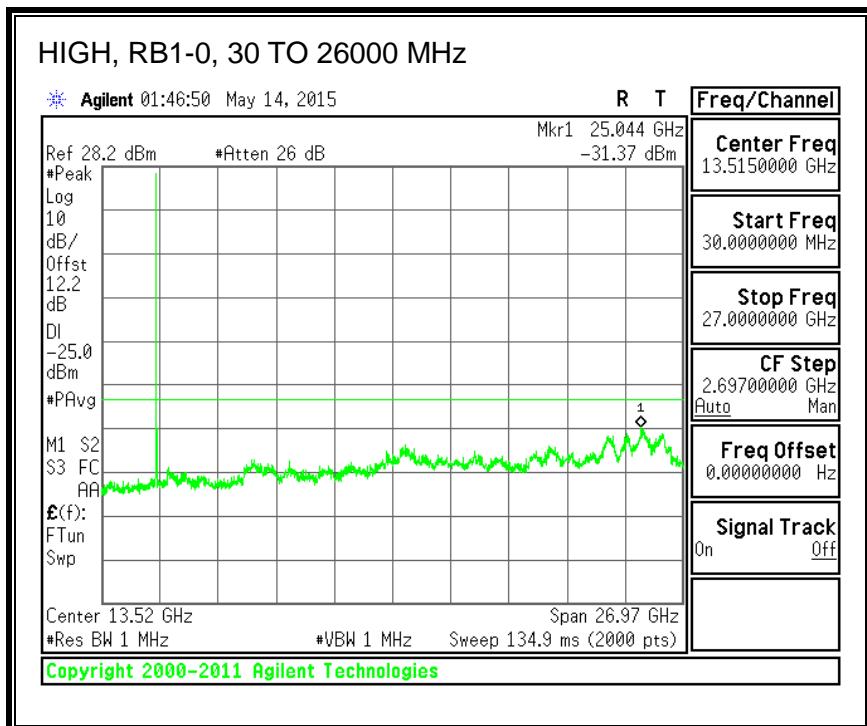
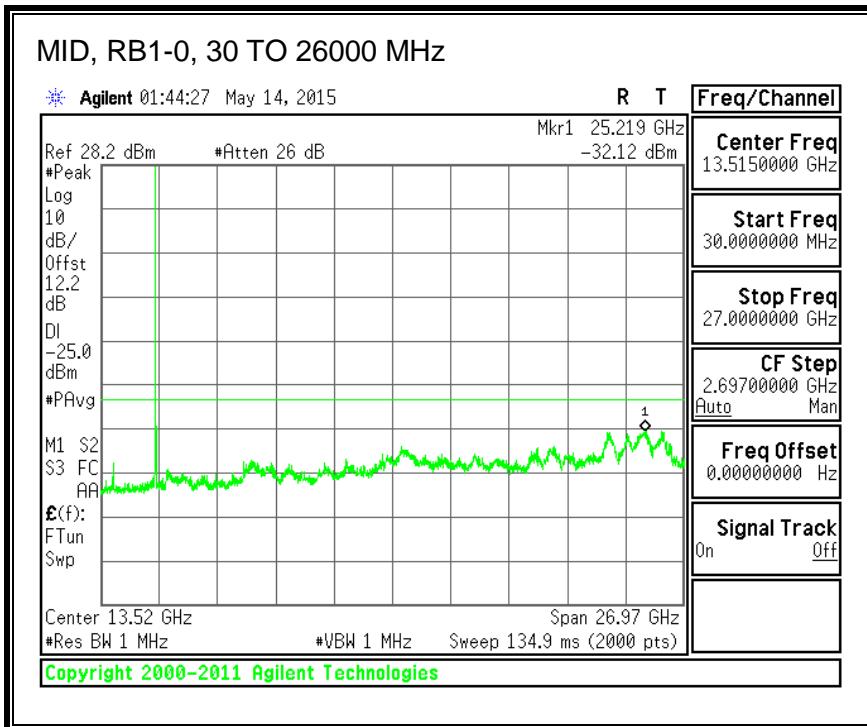
**QPSK, (15.0 MHz BAND WIDTH)**

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



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

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



## 9. FREQUENCY STABILITY

FCC: §2.1055, §22.355, §24.235, §27.54

### LIMITS

§22.355

The carrier frequency shall not depart from the reference frequency in excess of  $\pm 2.5$  ppm for mobile stations.

§24.235 & §27.54

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

### TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. =  $-30^{\circ}$  to  $+50^{\circ}\text{C}$
- Voltage =low voltage, 3.4VDC, Normal, 3.8VDC and High voltage, 4.3VDC.

#### **Frequency Stability vs Temperature:**

The EUT is place inside a temperature chamber. The temperature is set to  $20^{\circ}\text{C}$  and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until  $+50^{\circ}\text{C}$  is reached.

#### **Frequency Stability vs Voltage:**

The peak frequency error is recorded (worst-case).

### 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

### RESULTS

## 9.1. MODEL: A1633

### 9.1.1. LTE BAND 2

#### QPSK, (20MHz BANDWIDTH)

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	1851.0205	1908.9979		
Extreme (50C)		1851.0205	1908.9979	0.7	0.000
Extreme (40C)		1851.0205	1908.9979	-7.5	-0.004
Extreme (30C)		1851.0205	1908.9979	-4.0	-0.002
Extreme (10C)		1851.0205	1908.9979	-3.1	-0.002
Extreme (0C)		1851.0205	1908.9979	-1.5	-0.001
Extreme (-10C)		1851.0205	1908.9979	0.9	0.000
Extreme (-20C)		1851.0205	1908.9979	0.9	0.001
Extreme (-30C)		1851.0205	1908.9979	-4.7	-0.002
25C	10%	1851.0205	1908.9979	-2.8	-0.001
	-10%	1851.0205	1908.9979	-3.1	-0.002
	End Point	1851.0205	1908.9979	-3.2	-0.002

#### 16QAM, (20MHz BANDWIDTH)

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	1851.0163	1908.9878		
Extreme (50C)		1851.0163	1908.9878	0.9	0.000
Extreme (40C)		1851.0163	1908.9878	-7.2	-0.004
Extreme (30C)		1851.0163	1908.9878	-3.2	-0.002
Extreme (10C)		1851.0163	1908.9878	-2.9	-0.002
Extreme (0C)		1851.0163	1908.9878	-2.6	-0.001
Extreme (-10C)		1851.0163	1908.9878	-0.1	0.000
Extreme (-20C)		1851.0163	1908.9878	0.0	0.000
Extreme (-30C)		1851.0163	1908.9878	-5.8	-0.003
25C	10%	1851.0163	1908.9878	-3.6	-0.002
	-10%	1851.0163	1908.9878	-4.2	-0.002
	End Point	1851.0163	1908.9878	-4.1	-0.002