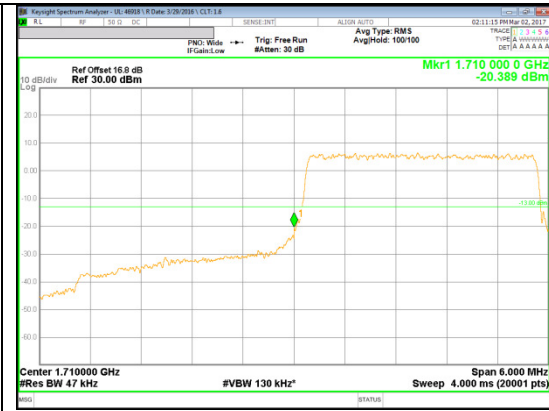
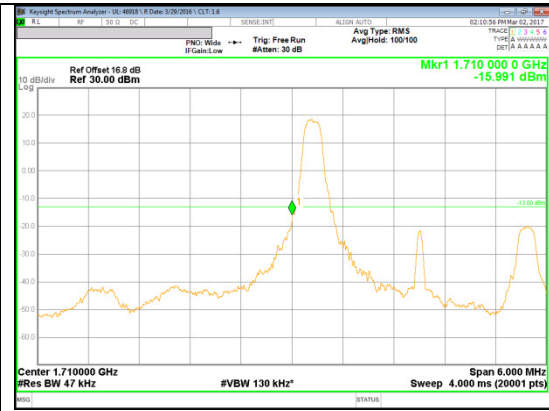


Band 4  
5MHz

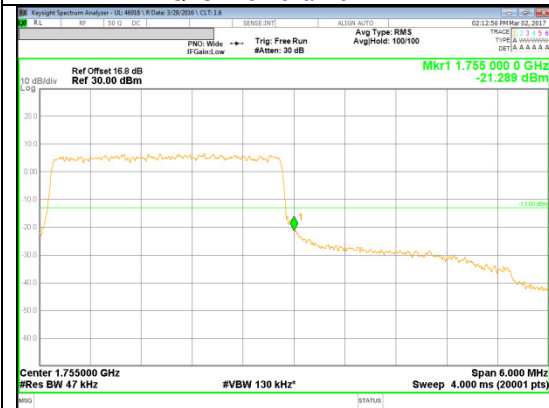
Band 4  
3MHz



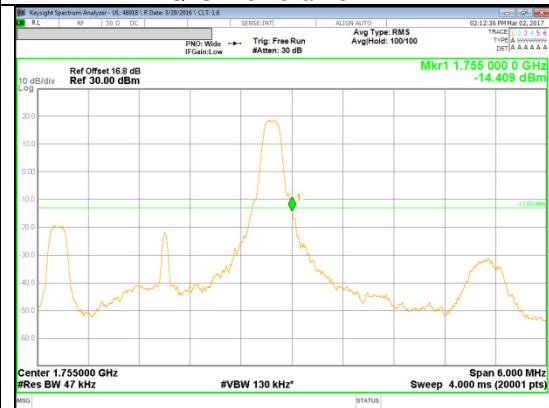
QPSK Low channel FRB



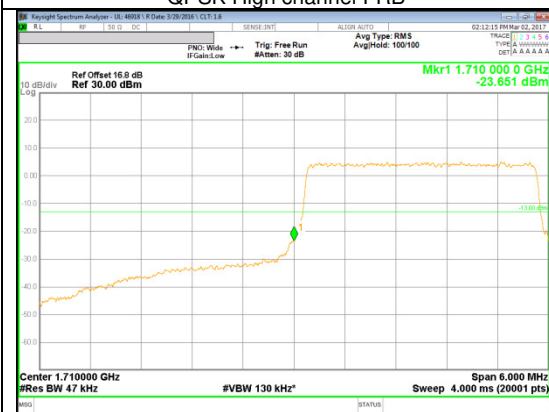
QPSK Low channel 1RB



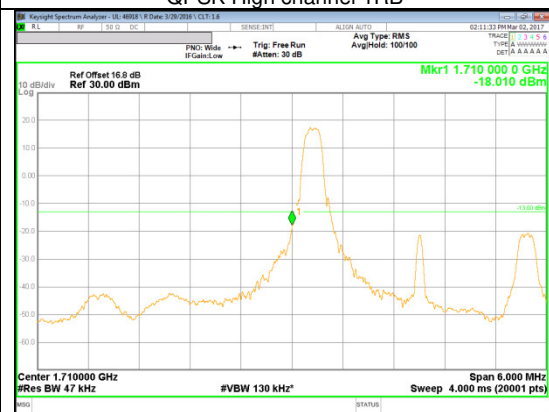
QPSK High channel FRB



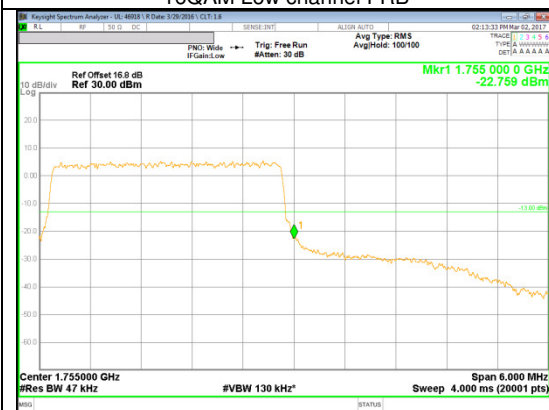
QPSK High channel 1RB



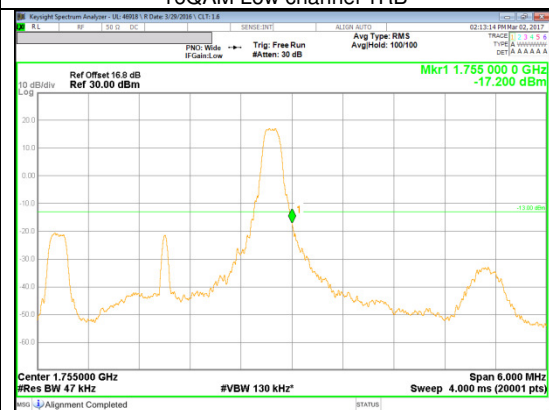
16QAM Low channel FRB



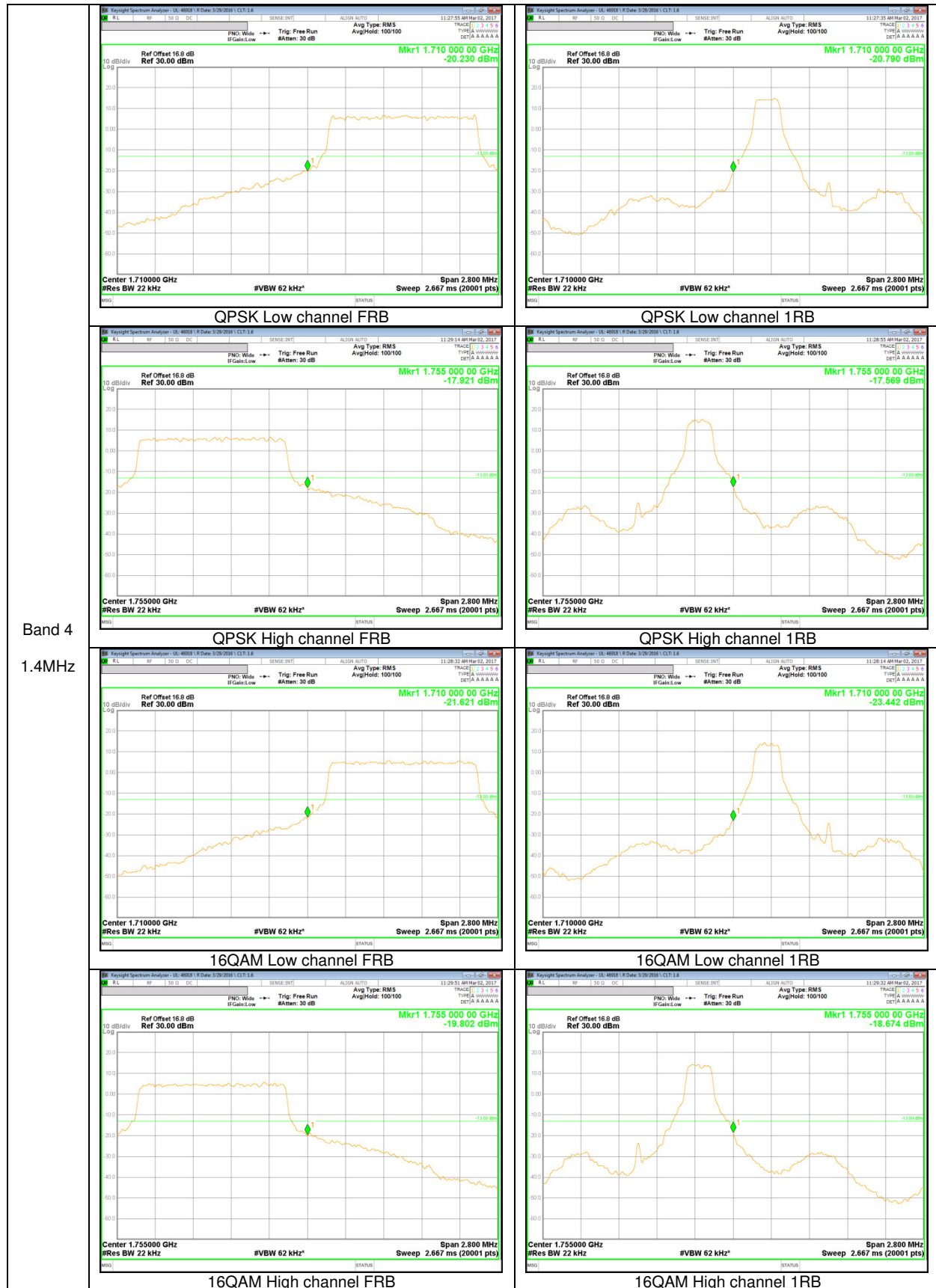
16QAM Low channel 1RB



16QAM High channel FRB

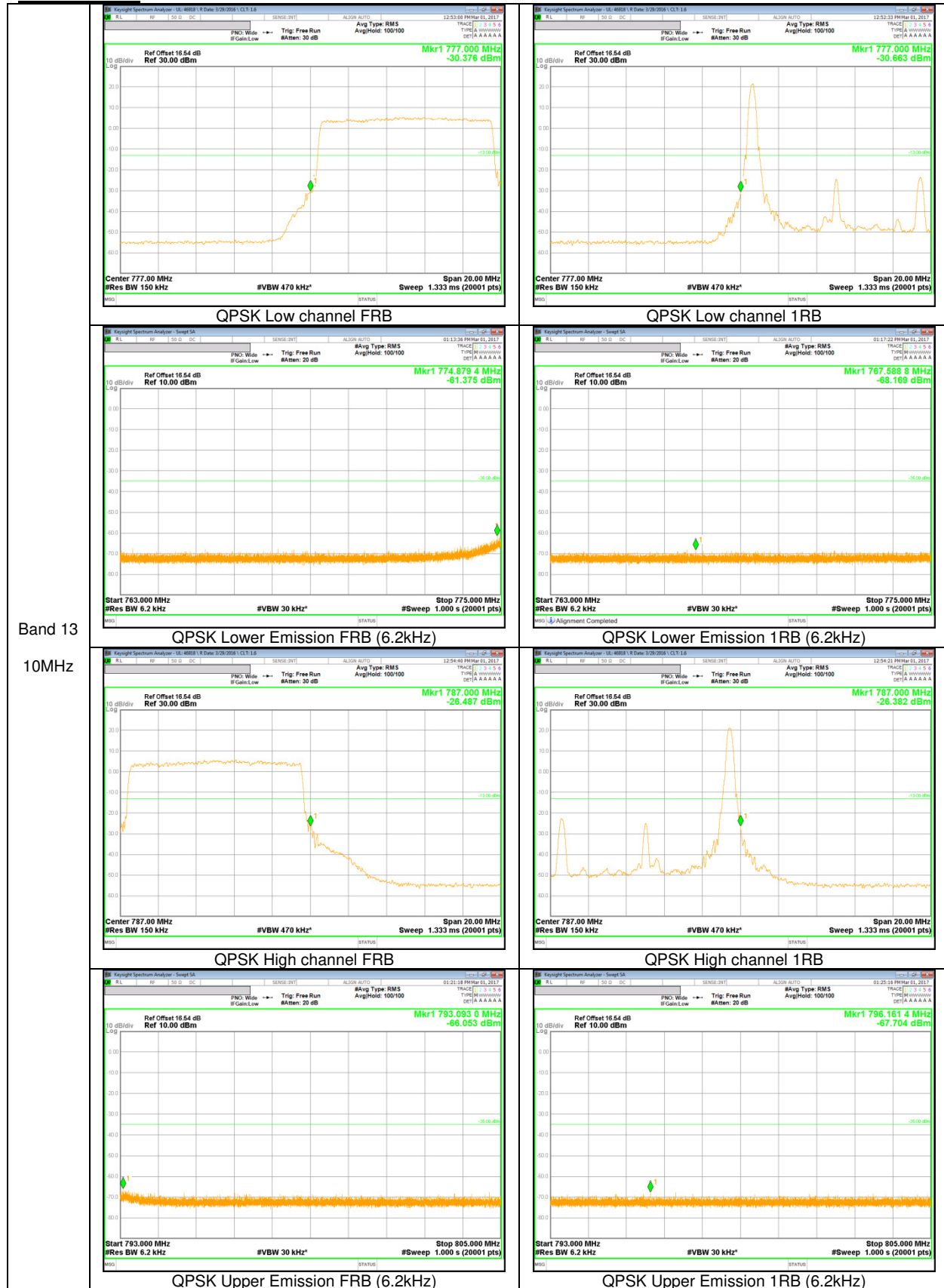


16QAM High channel 1RB

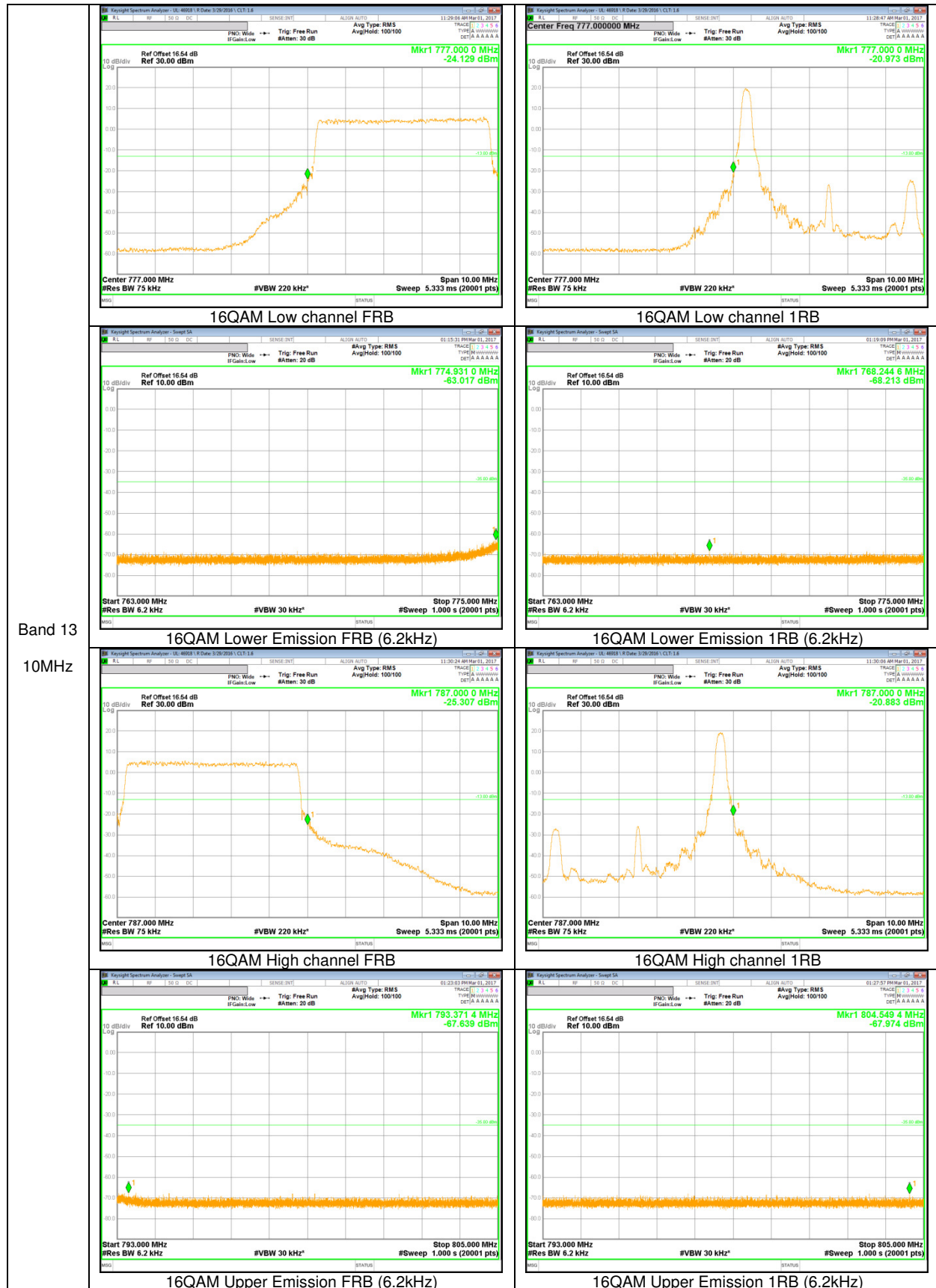


Band 4  
 1.4MHz

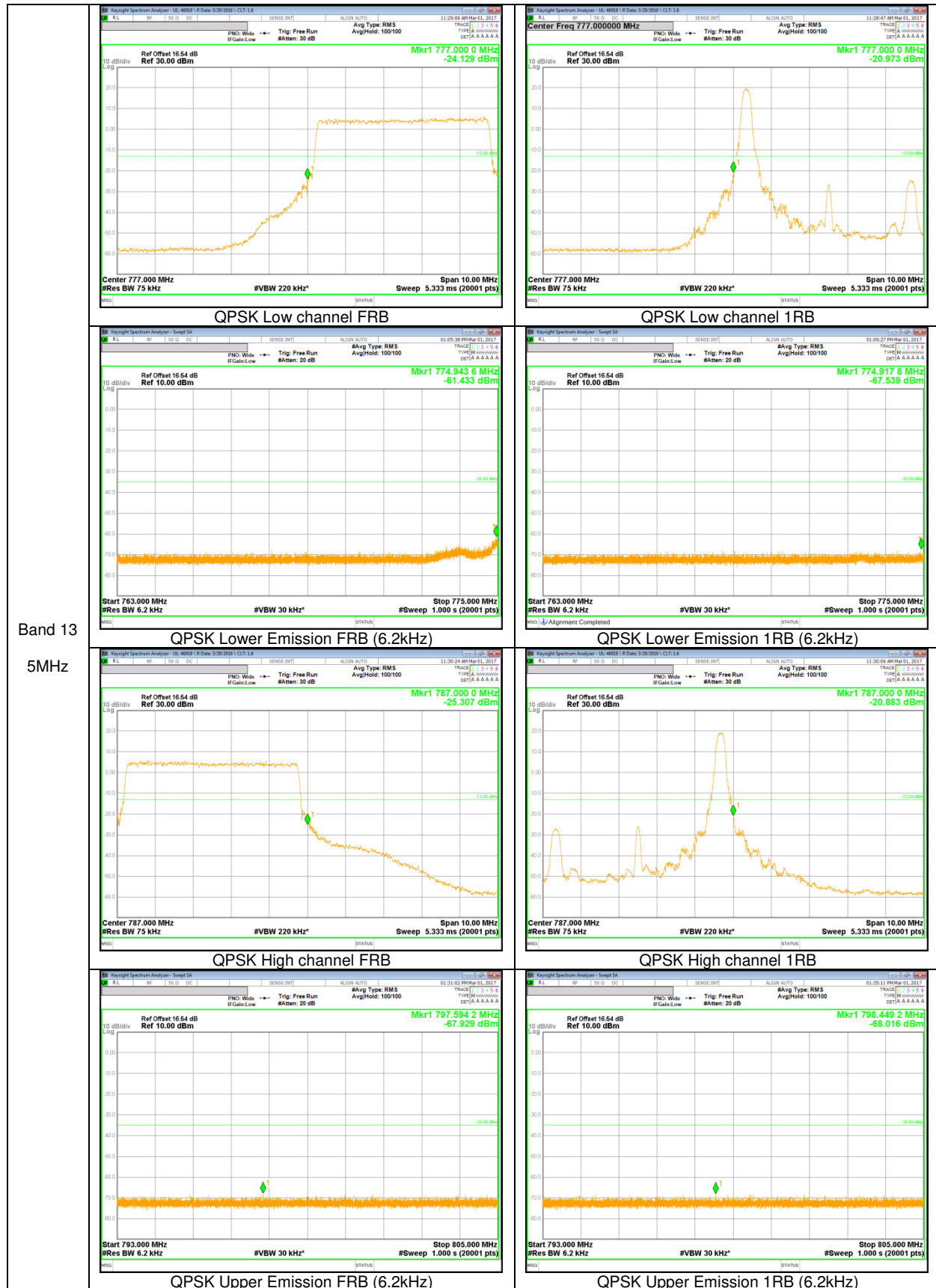
**LTE Band 13**



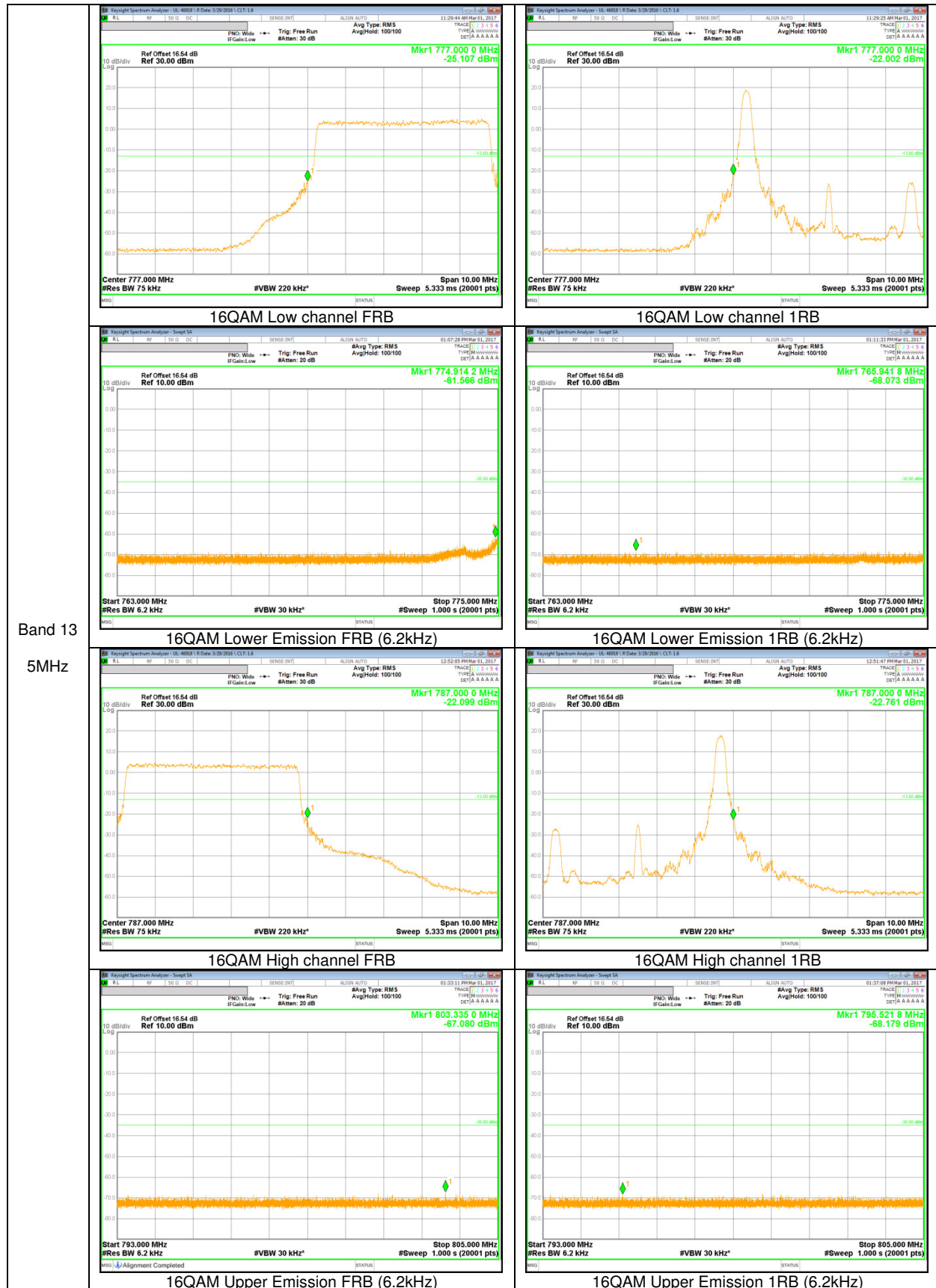
Band 13  
10MHz



Band 13  
10MHz



Band 13  
5MHz



Band 13  
 5MHz

### **10.3. OUT OF BAND EMISSIONS**

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

FCC: §2.1051, §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**

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

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.

- a) Set the RBW = 100KHz for emission below 1GHz and 1MHz for emissions above 1GHz  
(Tests were performed 1MHz[Worst case], to sweep 1 time for all frequency range)
- b) Set VBW  $\geq 3 \times$  RBW;
- c) Set span  $\geq 1.5$  times the OBW;
- d) Sweep time = auto couple;
- e) Detector = peak;
- f) Ensure that the number of measurement points = Max (40001);
- g) Trace mode = max hold;

#### **RESULTS**

**10.3.1. OUT OF BAND EMISSIONS RESULT**

**LTE 4**

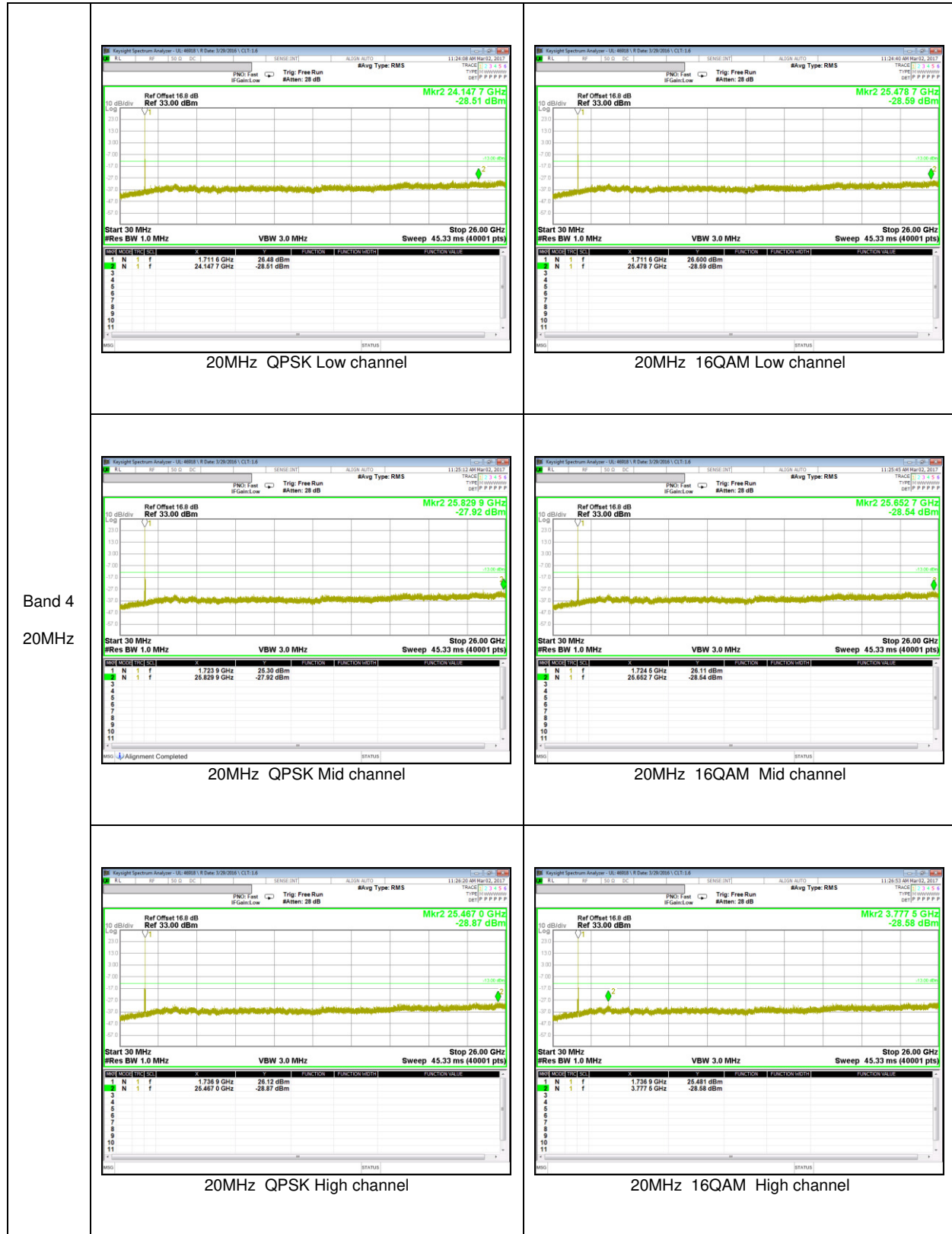
Bandwidth	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]
20 MHz	QPSK	1720.0	-28.51	-13.00
		1732.5	-27.92	
		1745.0	-28.87	
	16QAM	1720.0	-28.59	
		1732.5	-28.54	
		1745.0	-28.58	
15 MHz	QPSK	1717.5	-27.97	
		1732.5	-27.93	
		1747.5	-28.03	
	16QAM	1717.5	-28.56	
		1732.5	-27.71	
		1747.5	-28.41	
10 MHz	QPSK	1715.0	-28.03	
		1732.5	-28.43	
		1750.0	-28.27	
	16QAM	1715.0	-28.27	
		1732.5	-28.73	
		1750.0	-28.16	
5 MHz	QPSK	1712.5	-27.70	
		1732.5	-28.34	
		1752.5	-28.52	
	16QAM	1712.5	-28.91	
		1732.5	-29.08	
		1752.5	-28.46	
3 MHz	QPSK	1711.5	-28.32	
		1732.5	-28.78	
		1753.5	-28.49	
	16QAM	1711.5	-27.98	
		1732.5	-28.01	
		1753.5	-28.65	
1.4 MHz	QPSK	1710.7	-27.82	
		1732.5	-29.50	
		1754.3	-28.96	
	16QAM	1710.7	-29.46	
		1732.5	-28.66	
		1754.3	-28.45	

**LTE 13**

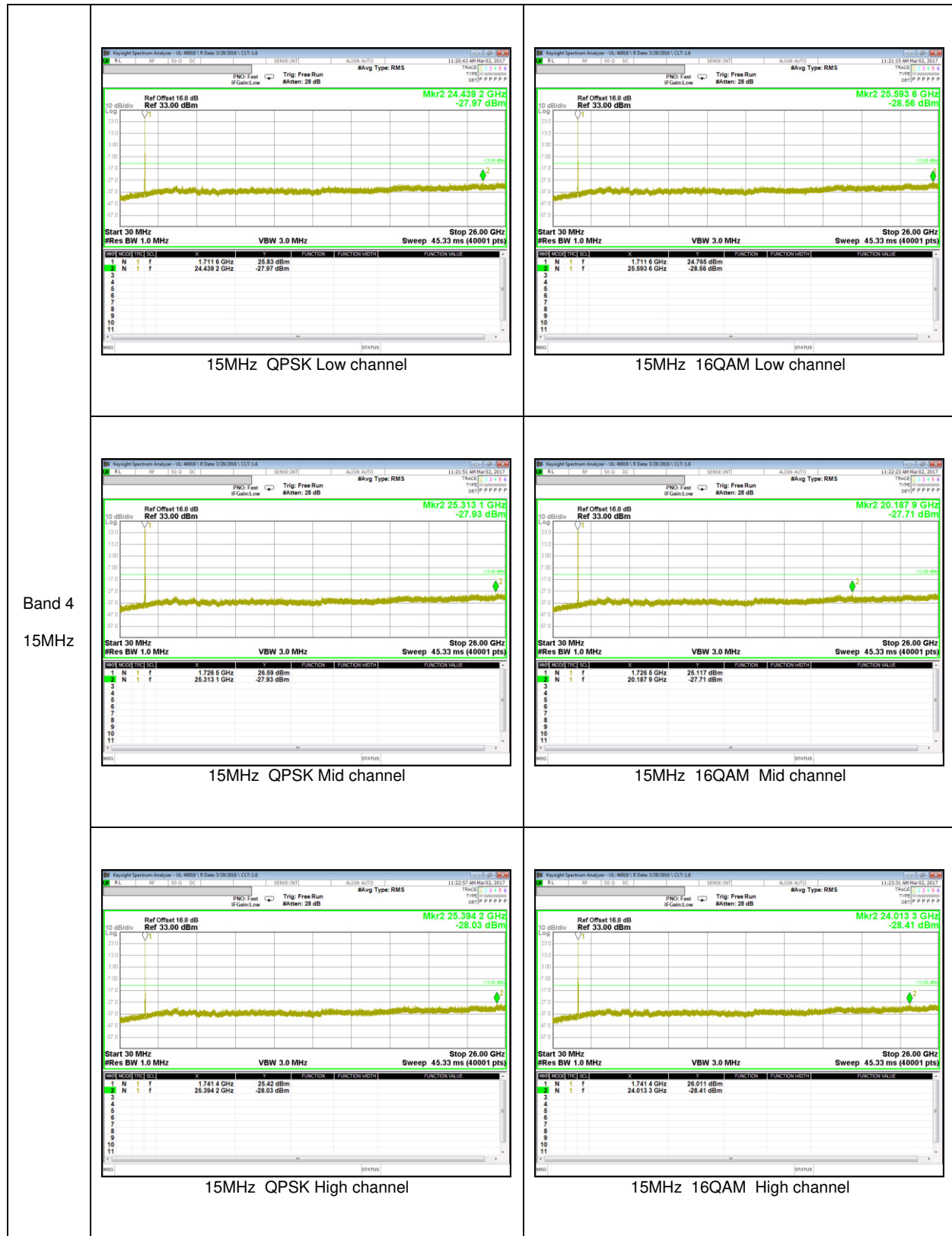
Bandwidth	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]
10 MHz	QPSK	782.0	-28.12	-13.00
	16QAM	782.0	-28.79	
5 MHz	QPSK	779.5	-29.29	
		782.0	-28.63	
		784.5	-28.68	
	16QAM	779.5	-29.46	
		782.0	-29.28	
		784.5	-28.46	

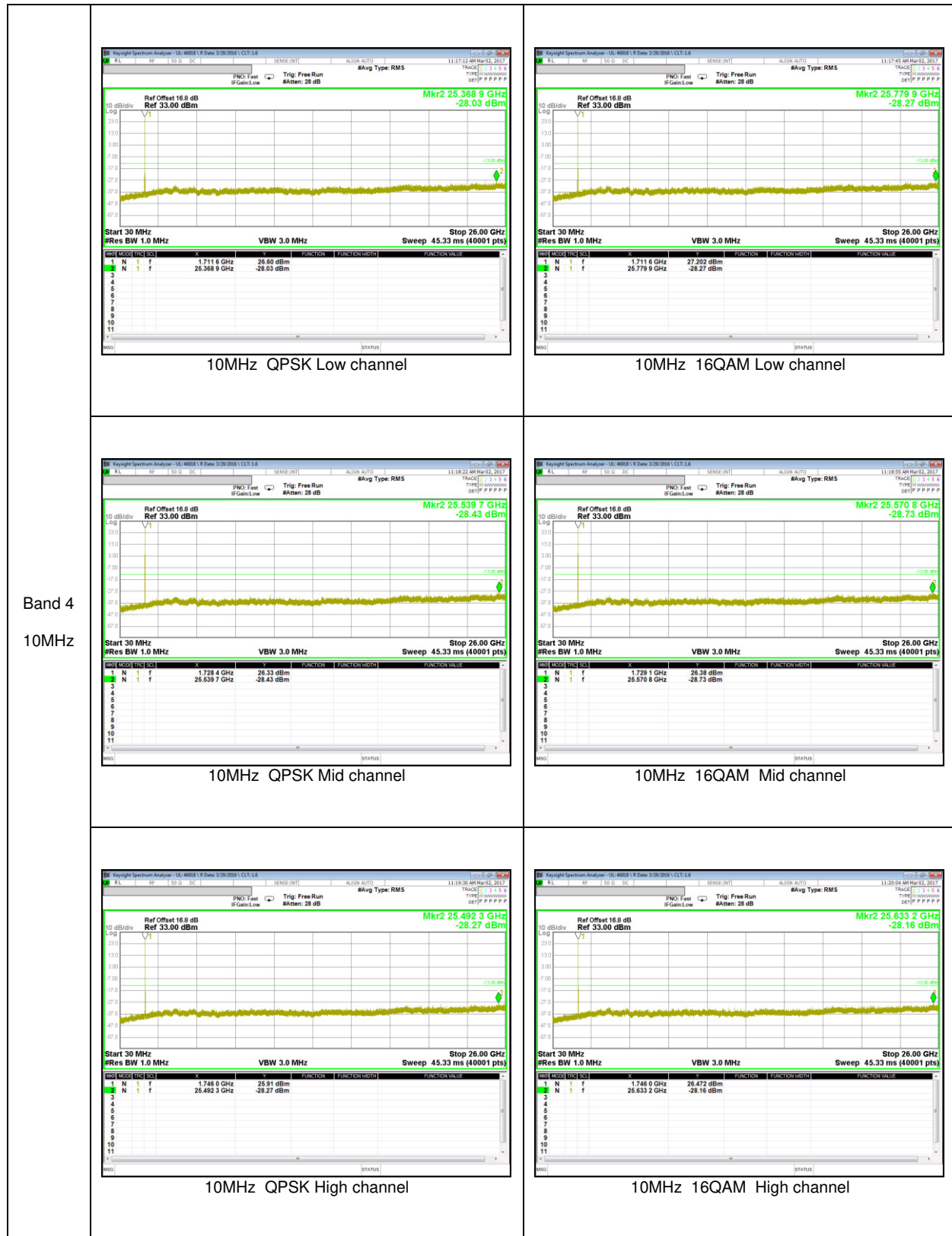
### 10.3.2. OUT OF BAND EMISSIONS PLOTS

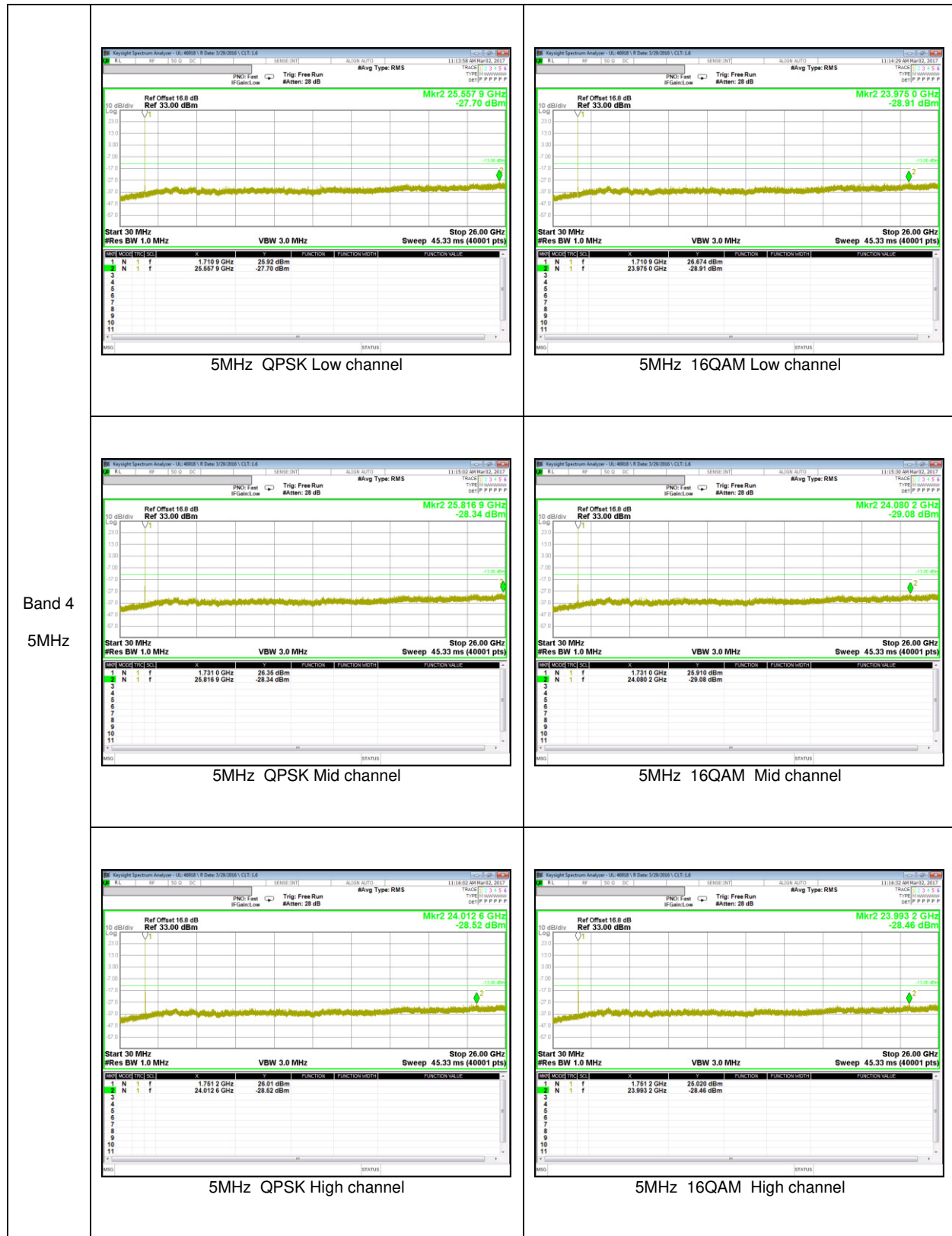
#### LTE Band 4

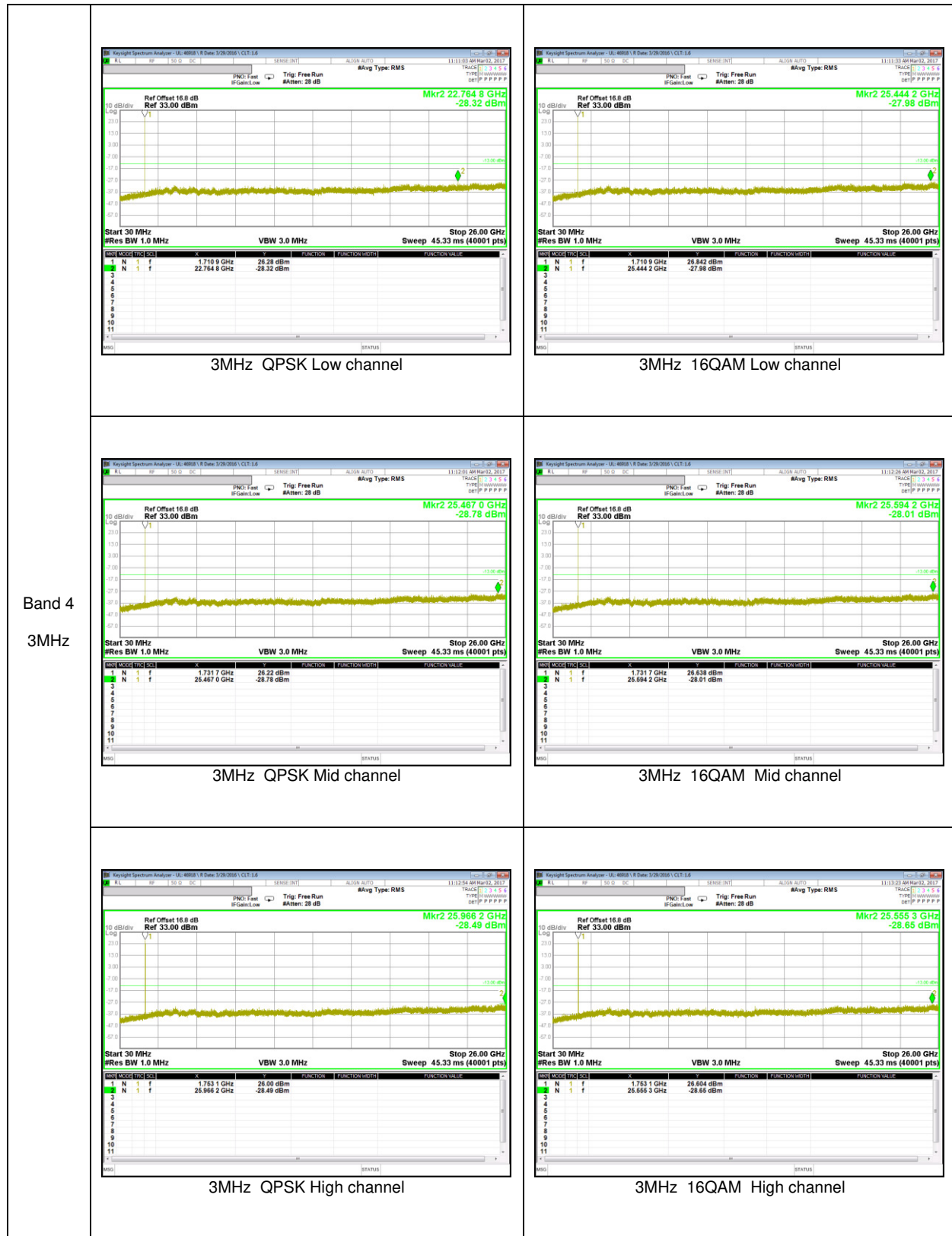


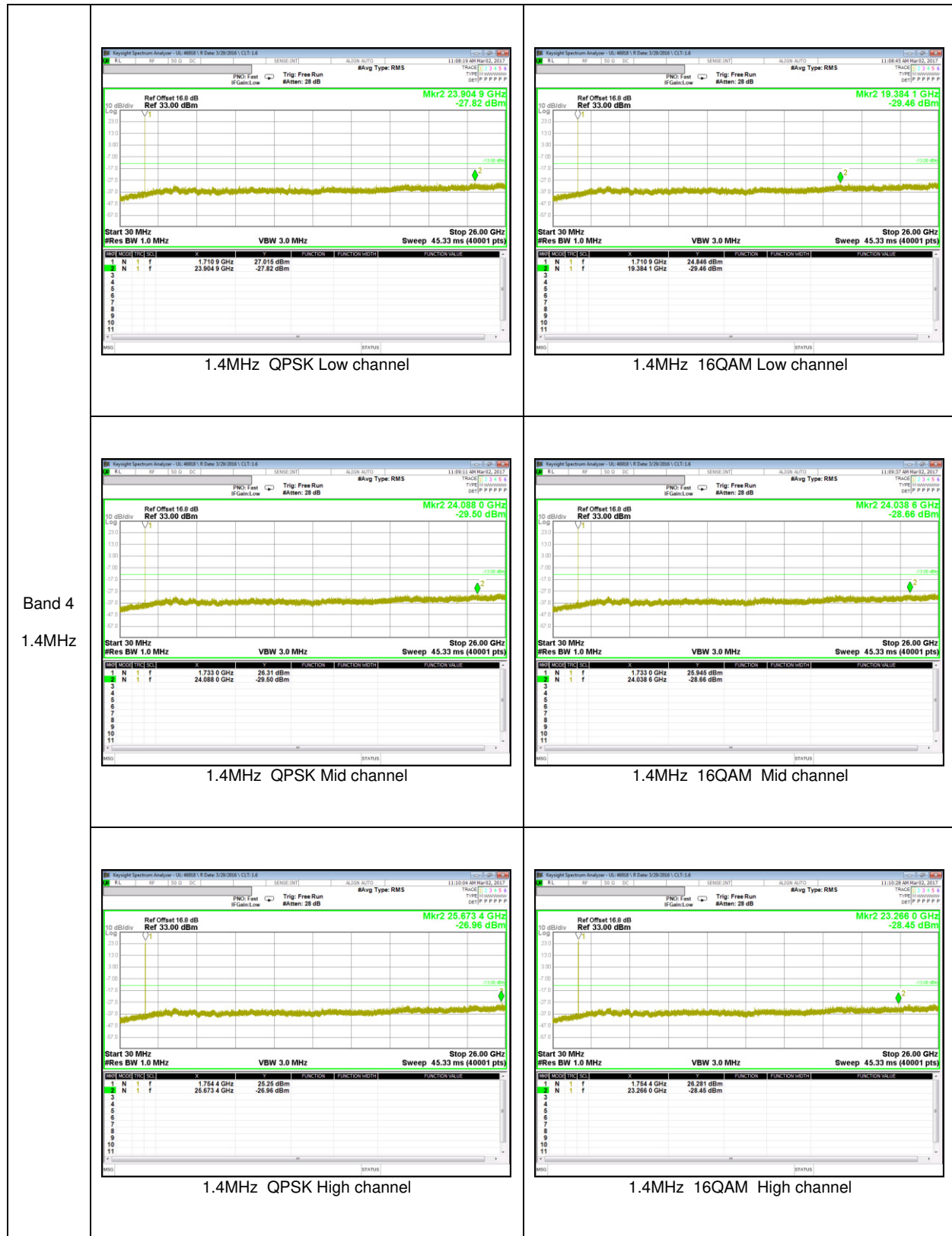
Band 4  
 20MHz



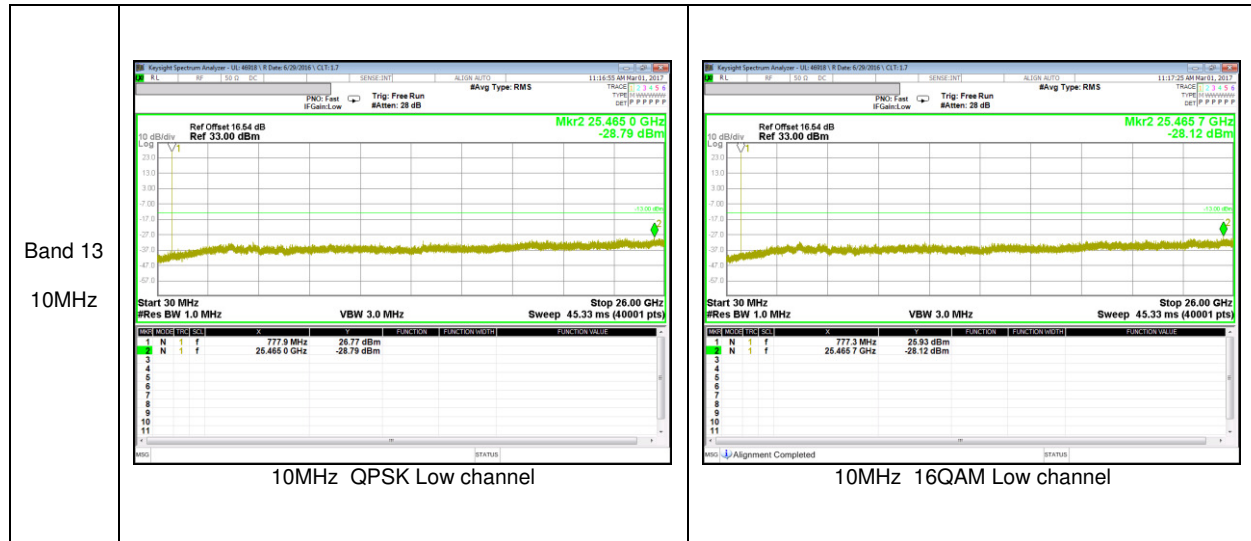


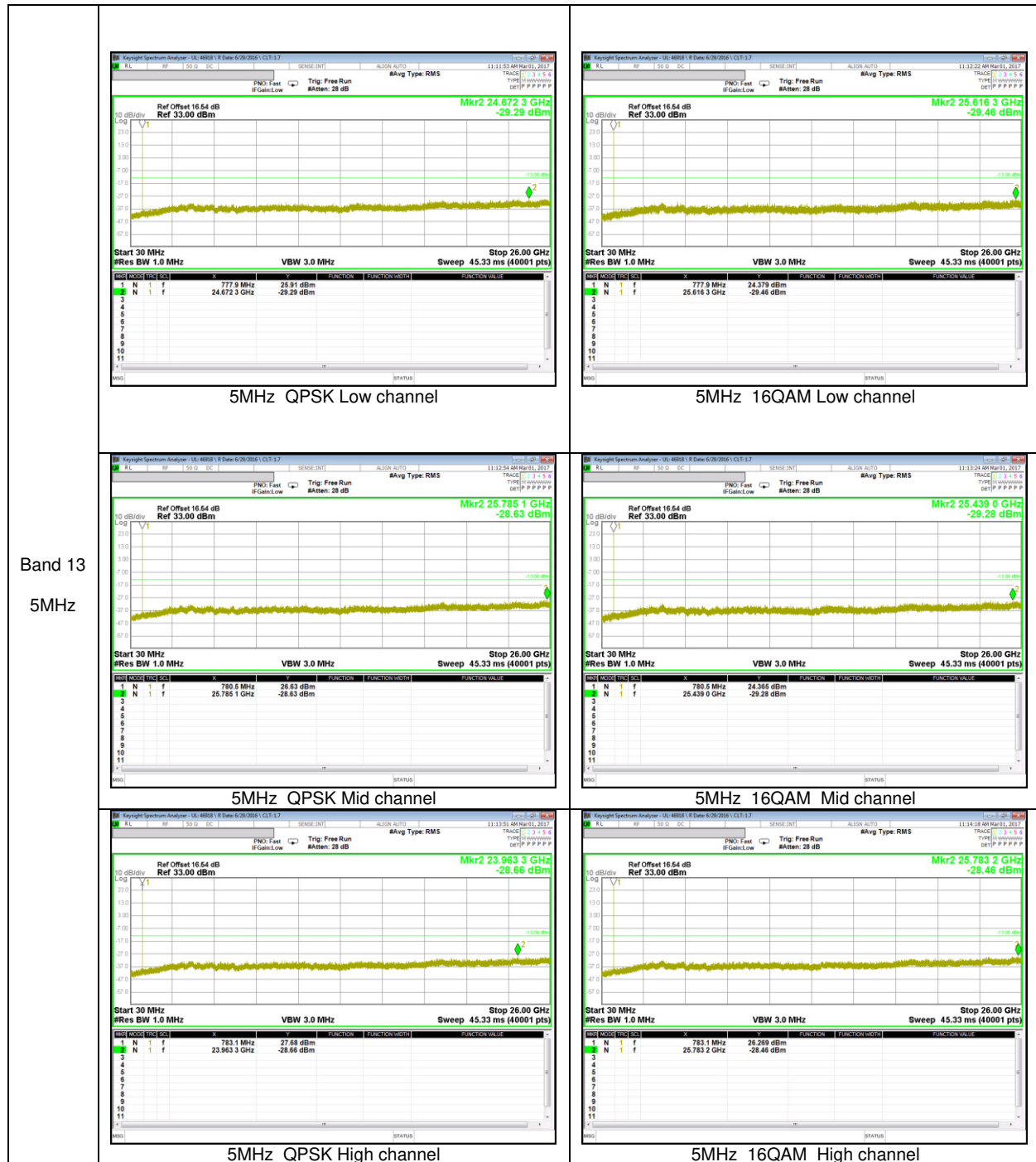






**LTE Band 13**





## **10.4. FREQUENCY STABILITY**

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

FCC: §2.1055, §27.54

### **LIMITS**

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

### **TEST PROCEDURE**

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

### **RESULTS**

See the following pages.

### 10.4.1. FREQUENCY STABILITY RESULTS

#### LTE Band 4, Channel 20174, Frequency 1732.5 MHz

Reference Frequency: LTE Band 4 Mid Channel 1732.5 MHz @ 20°C				
Limit: +- 2.5 ppm = 4331.250 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
3.85	50	1732.49997922	0.000	2.5
3.85	40	1732.49998047	-0.001	2.5
3.85	30	1732.49998160	-0.002	2.5
<b>3.85</b>	<b>20</b>	1732.49997861	<b>0</b>	<b>2.5</b>
3.85	10	1732.49998127	-0.002	2.5
3.85	0	1732.49998003	-0.001	2.5
3.85	-10	1732.49997960	-0.001	2.5
3.85	-20	1732.49998178	-0.002	2.5
3.85	-30	1732.49997969	-0.001	2.5

Reference Frequency: LTE Band 4 Mid Channel 1732.5 MHz @ 20°C				
Limit: +- 2.5 ppm = 4331.250 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
<b>3.85</b>	<b>20</b>	<b>1732.49997861</b>	<b>0</b>	<b>2.5</b>
4.20	20	1732.49998003	-0.001	2.5
3.60	20	1732.49998180	-0.002	2.5

**LTE Band 13, Channel 23230, Frequency 782.0 MHz**

Reference Frequency: LTE Band 13 Mid Channel 782 MHz @ 20°C				
Limit: +- 2.5 ppm = 1955.000 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
3.85	50	782.00001565	-0.003	2.5
3.85	40	782.00001379	-0.001	2.5
3.85	30	782.00001280	0.000	2.5
<b>3.85</b>	<b>20</b>	782.00001316	<b>0</b>	<b>2.5</b>
3.85	10	782.00001438	-0.002	2.5
3.85	0	782.00001566	-0.003	2.5
3.85	-10	782.00001348	0.000	2.5
3.85	-20	782.00001498	-0.002	2.5
3.85	-30	782.00001532	-0.003	2.5

Reference Frequency: LTE Band 13 Mid Channel 782 MHz @ 20°C				
Limit: +- 2.5 ppm = 1955.000 Hz				
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse		
		[MHz]	Delta [ppm]	Limit [ppm]
<b>3.85</b>	<b>20</b>	<b>782.00001316</b>	<b>0</b>	<b>2.5</b>
4.20	20	782.00001332	0.000	2.5
3.60	20	782.00001494	-0.002	2.5

## 11. RADIATED TEST RESULTS

### 11.1. RADIATED POWER (ERP & EIRP)

#### RULE PART(S)

FCC: §2.1046, §27.50

#### LIMITS

27.50(b) (10) - Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

27.50(d) (4) - Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13dB.

#### TEST PROCEDURE

ANSI / TIA / EIA 603D Clause 2.2.17; ESU40 setting reference to 971168 D01 v02r02

For peak power measurement with a ESU40:

a) Set the RBW  $\geq$  OBW; b) Set VBW  $\geq 3 \times$  RBW; c) Set span  $\geq 2 \times$  RBW; d) Sweep time = auto couple; e) Detector = peak; f) Ensure that the number of measurement points  $\geq$  span/RBW; g) Trace mode = max hold;

For average power measurement with a ESU40:

a) Set span to at least 1.5 times the OBW; b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz; c) Set VBW  $\geq 3 \times$  RBW; d) Set number of points in sweep  $\geq 2 \times$  span / RBW; e) Sweep time = auto-couple; f) Detector = RMS (power averaging); g) Use free run trigger If burst duty cycle  $\geq 98$ ; h) Use trigger to capture bursts If burst duty cycle  $< 98$ ; i) Trace average at least 100 traces in power averaging (*i.e.*, RMS) mode. j) Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function.

#### TEST RESULTS