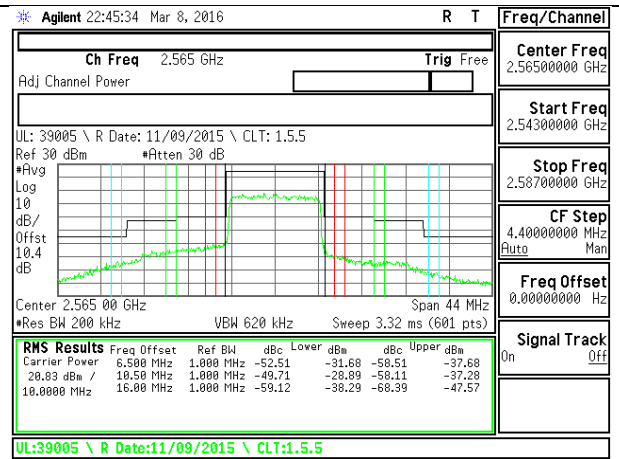
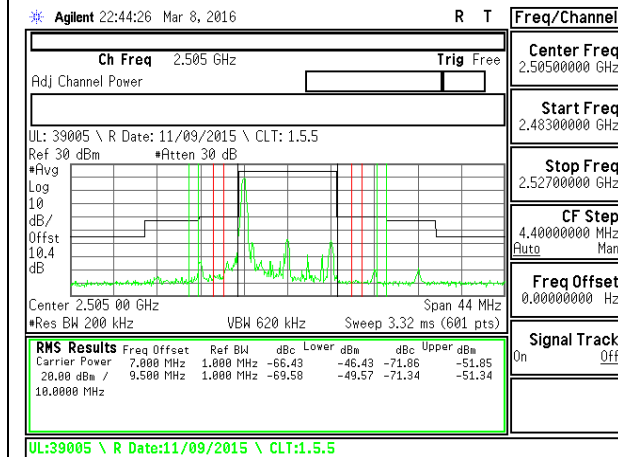


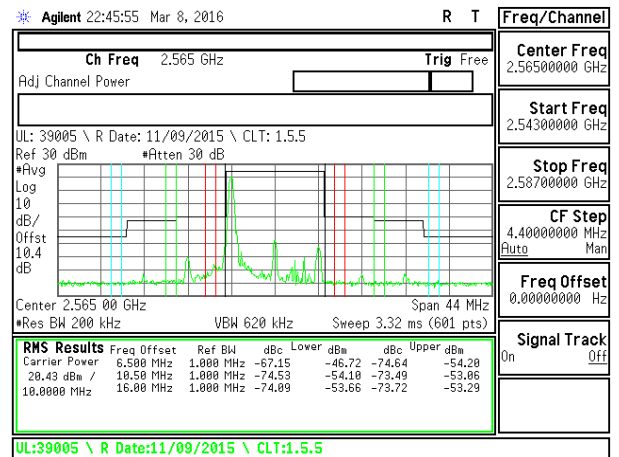
LTE B7 10MHz QPSK Low Channel FRB



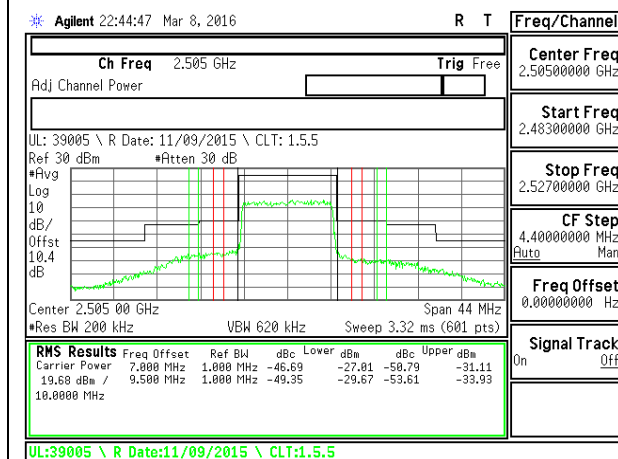
LTE B7 10MHz QPSK High Channel FRB



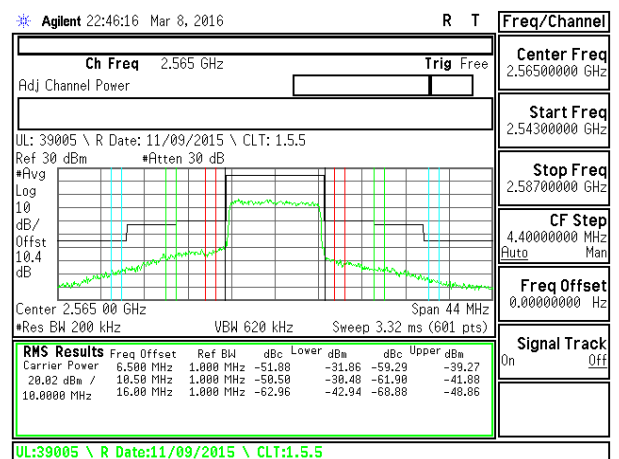
LTE B7 10MHz 16QAM Low Channel 1RB



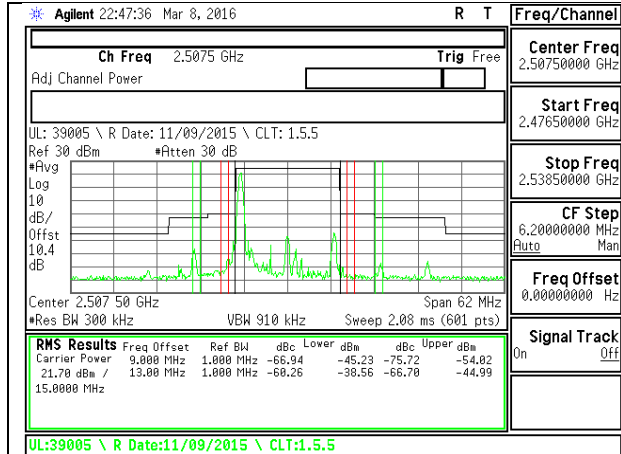
LTE B7 10MHz 16QAM High Channel 1RB



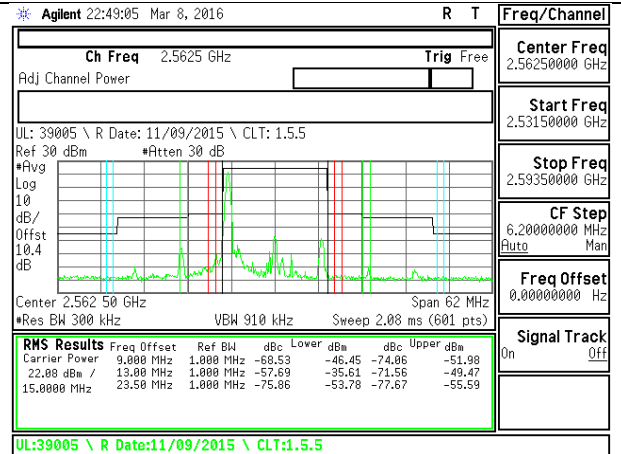
LTE B7 10MHz 16QAM Low Channel FRB



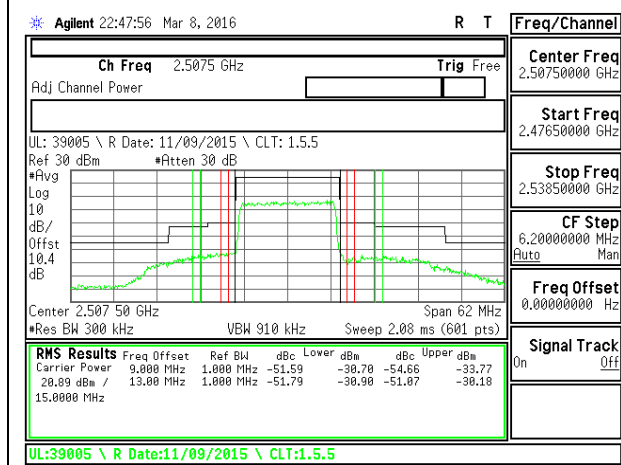
LTE B7 10MHz 16QAM High Channel FRB



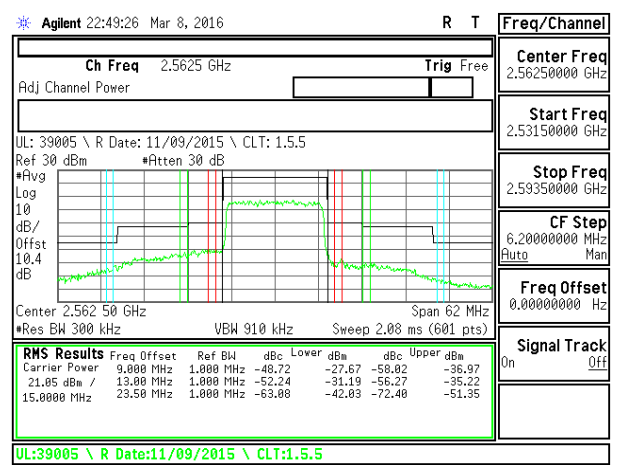
LTE B7 15MHz QPSK Low Channel 1RB



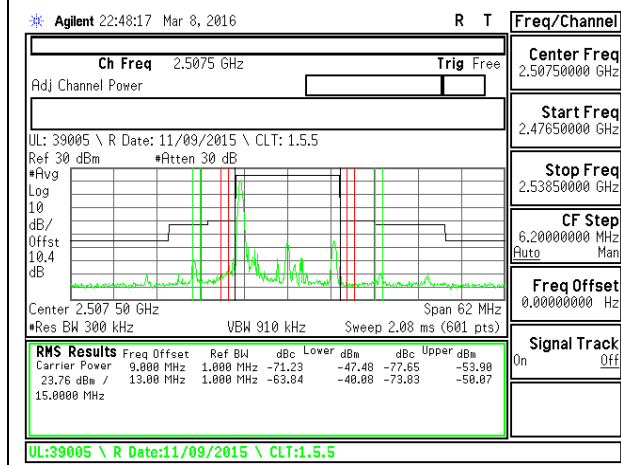
LTE B7 15MHz QPSK High Channel 1RB



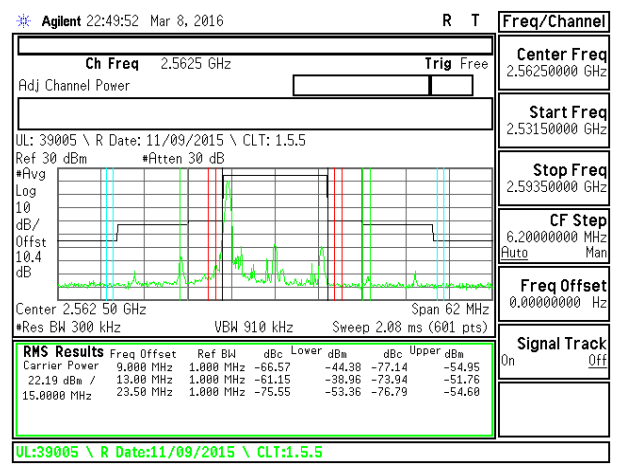
LTE B7 15MHz QPSK Low Channel FRB



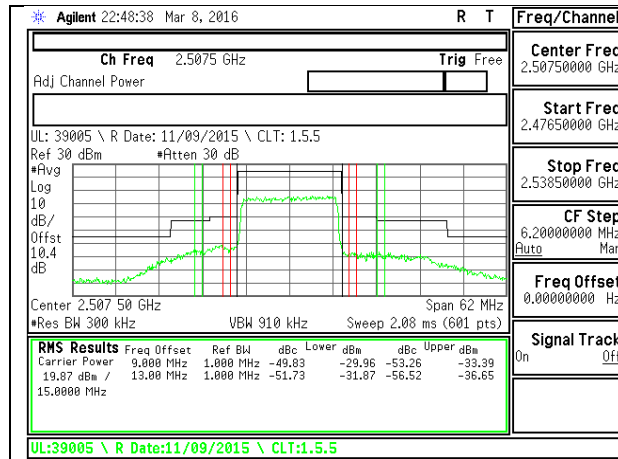
LTE B7 15MHz QPSK High Channel FRB



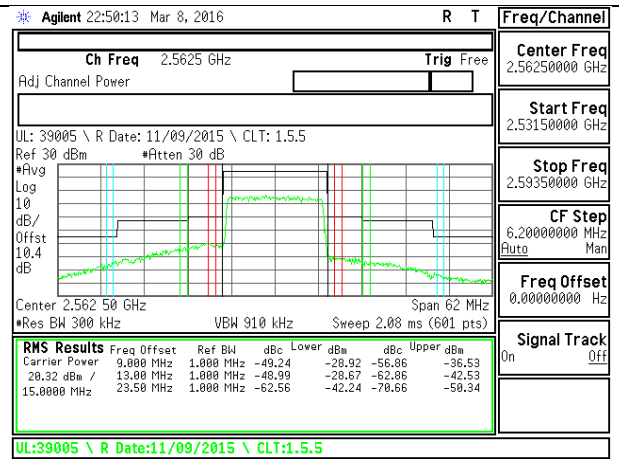
LTE B7 15MHz 16QAM Low Channel 1RB



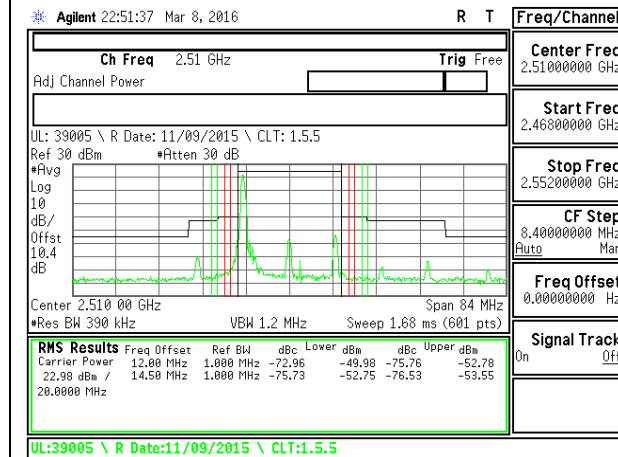
LTE B7 15MHz 16QAM High Channel 1RB



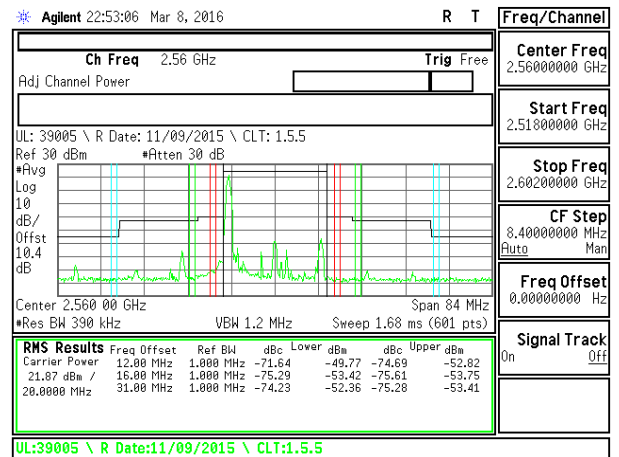
LTE B7 15MHz 16QAM Low Channel FRB



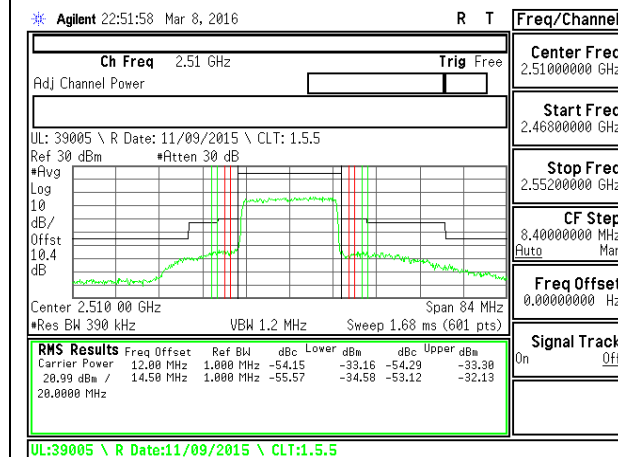
LTE B7 15MHz 16QAM High Channel FRB



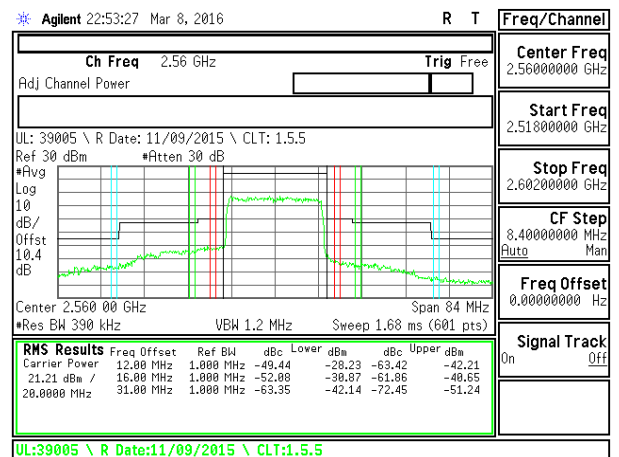
LTE B7 20MHz QPSK Low Channel 1RB



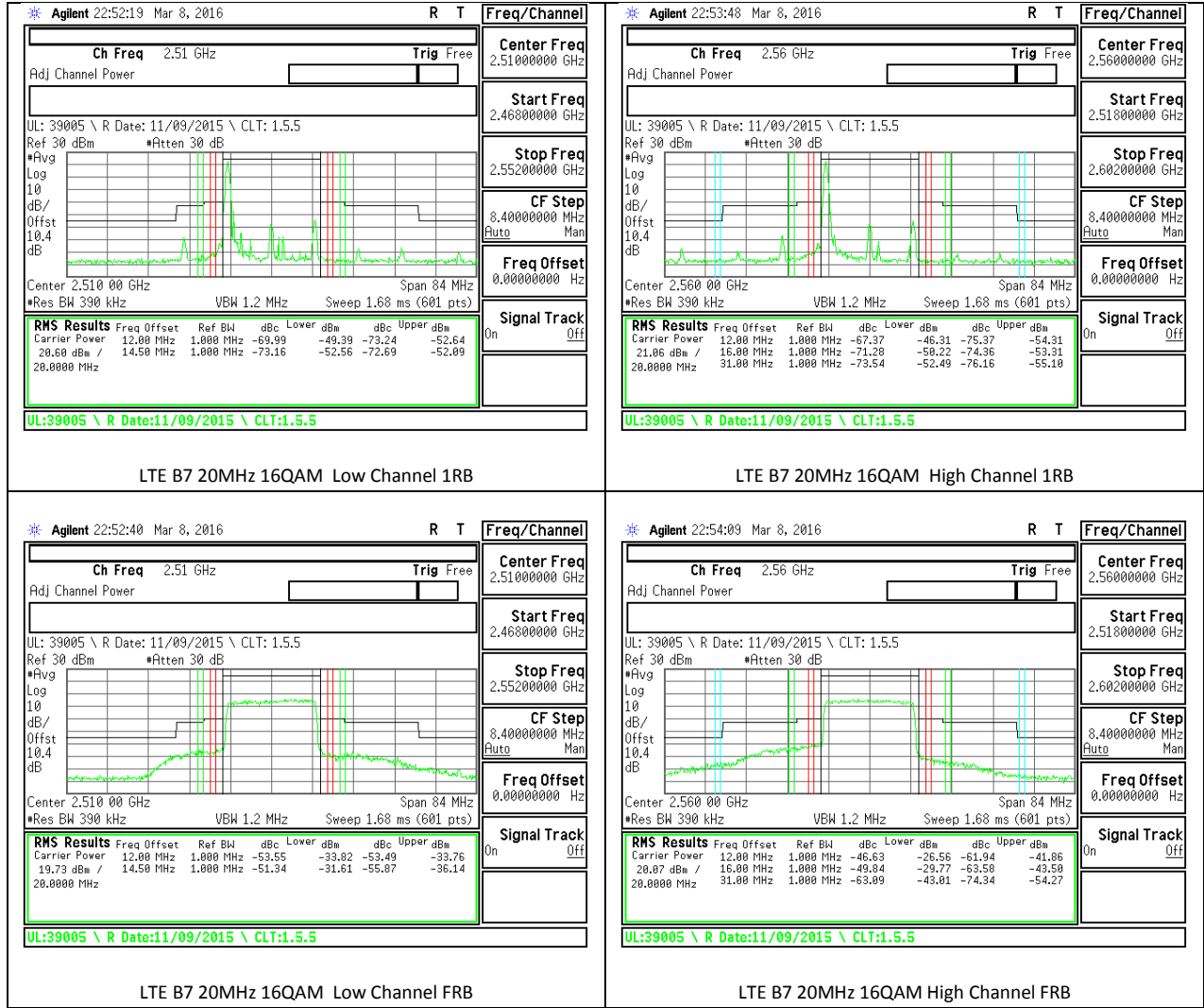
LTE B7 20MHz QPSK High Channel 1RB



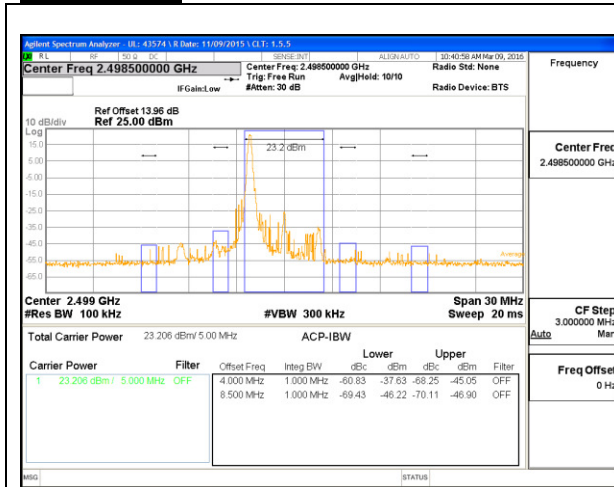
LTE B7 20MHz QPSK Low Channel FRB



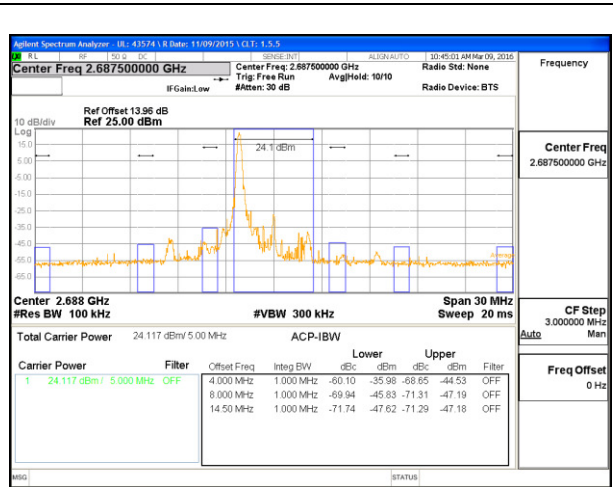
LTE B7 20MHz QPSK High Channel FRB



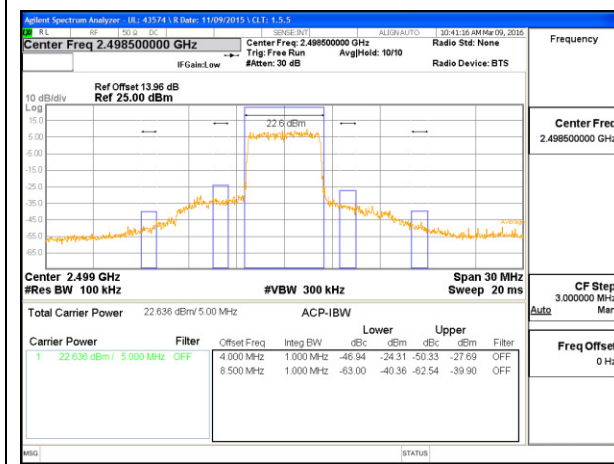
**LTE Band 41**



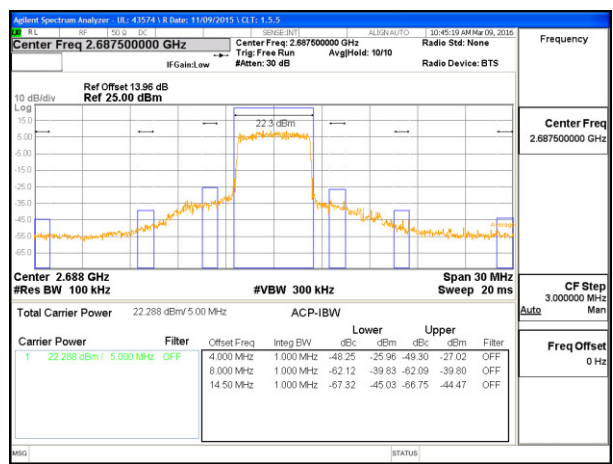
LTE B41 5MHz QPSK Low Channel 1RB



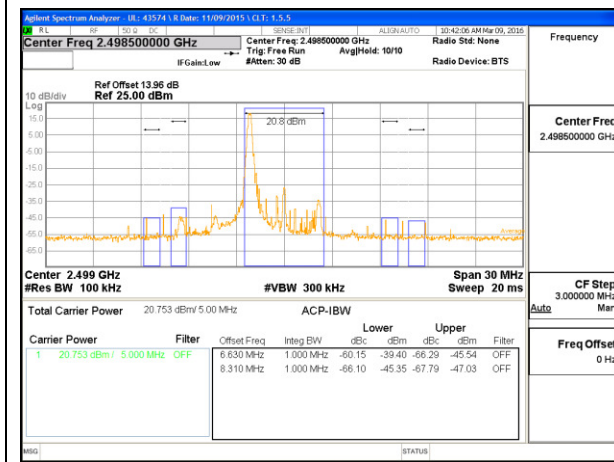
LTE B41 5MHz QPSK High Channel 1RB



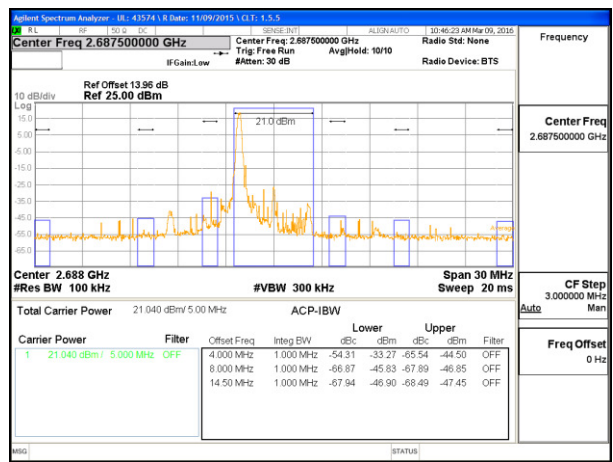
LTE B41 5MHz QPSK Low Channel FRB



LTE B41 5MHz QPSK High Channel FRB

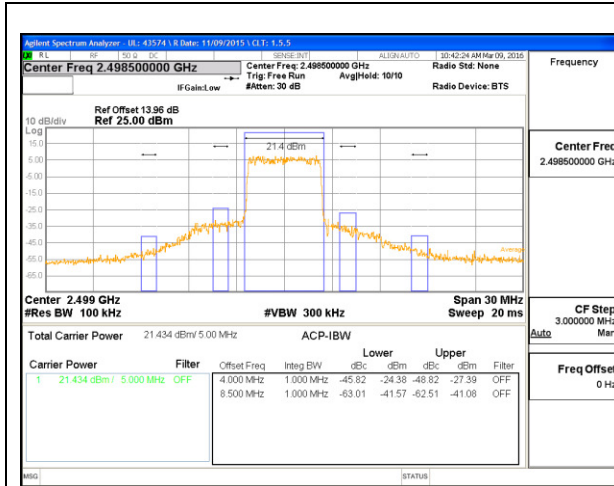


LTE B41 5MHz 16QAM Low Channel 1RB

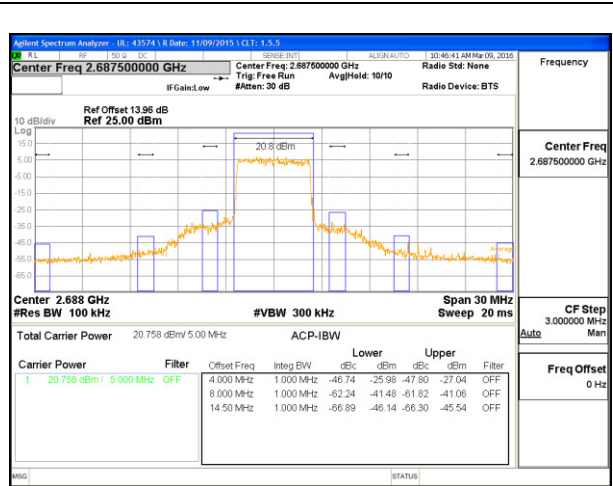


LTE B41 5MHz 16QAM High Channel 1RB

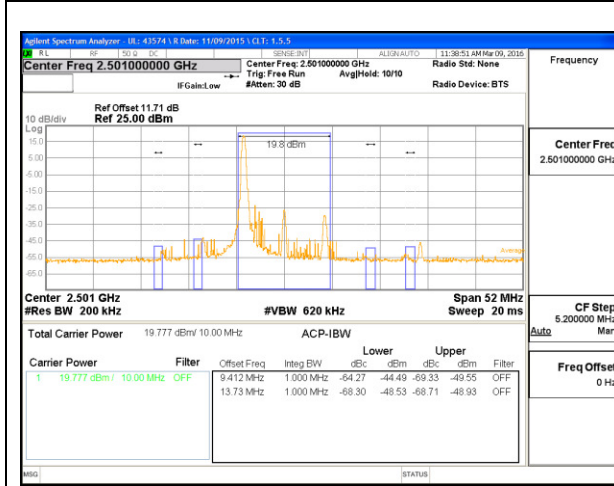




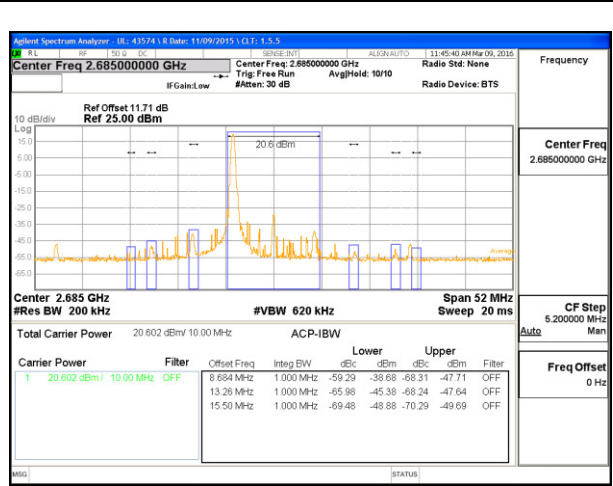
LTE B41 5MHz 16QAM Low Channel FRB



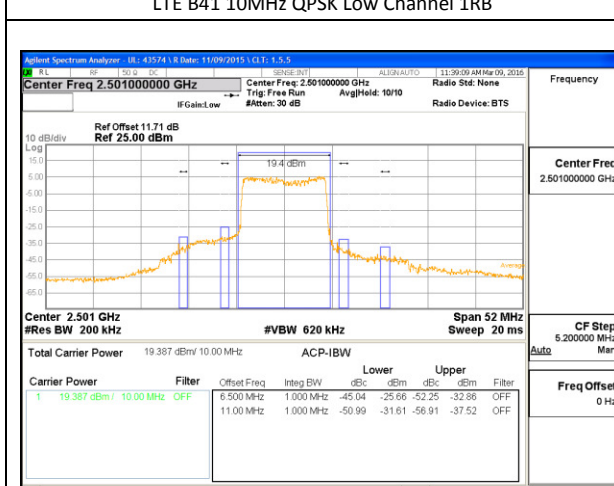
LTE B41 5MHz 16QAM High Channel FRB



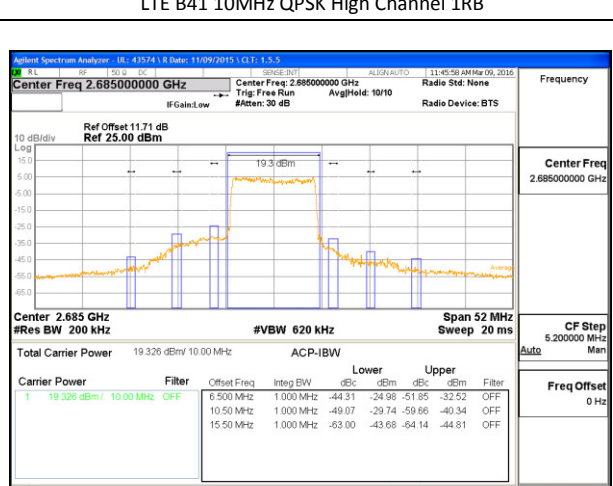
LTE B41 10MHz QPSK Low Channel 1RB



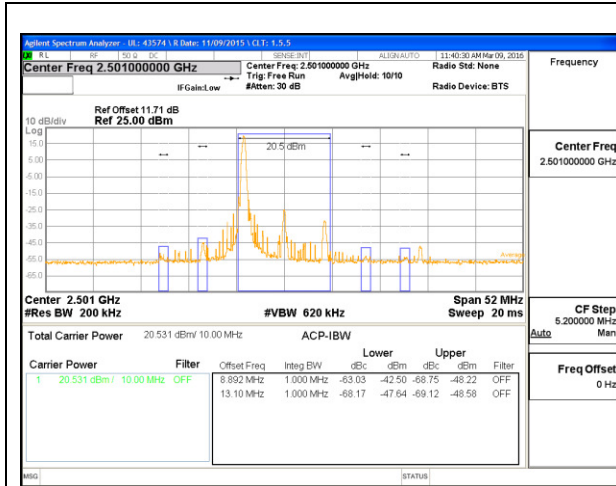
LTE B41 10MHz QPSK High Channel 1RB



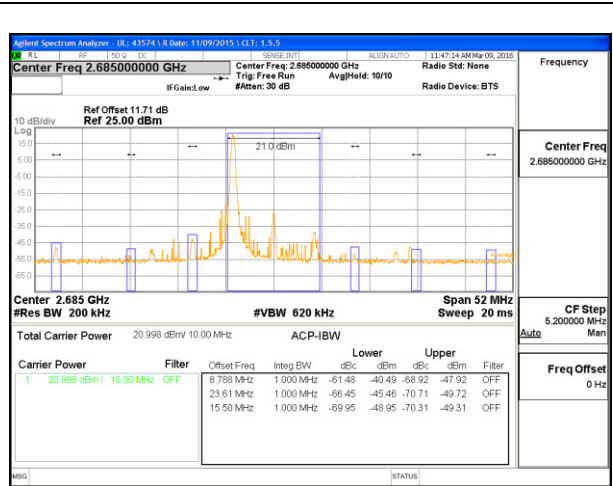
LTE B41 10MHz QPSK Low Channel FRB



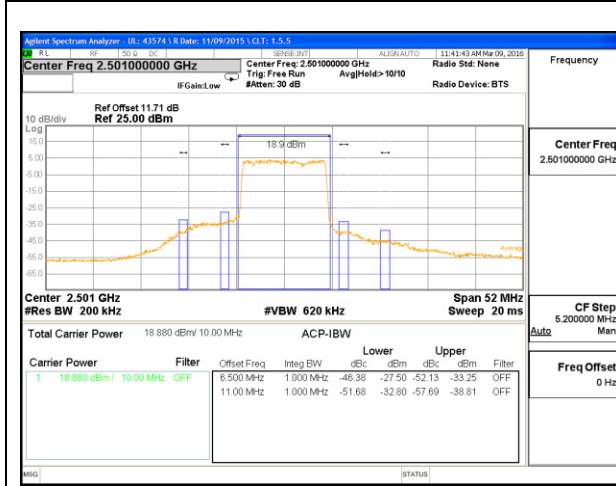
LTE B41 10MHz QPSK High Channel FRB



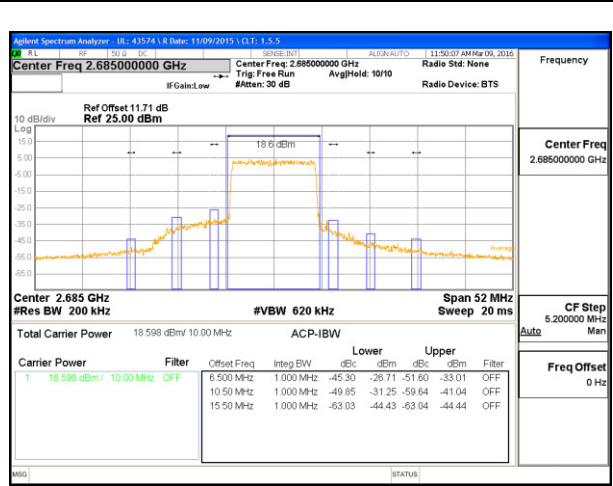
LTE B41 10MHz 16QAM Low Channel 1RB



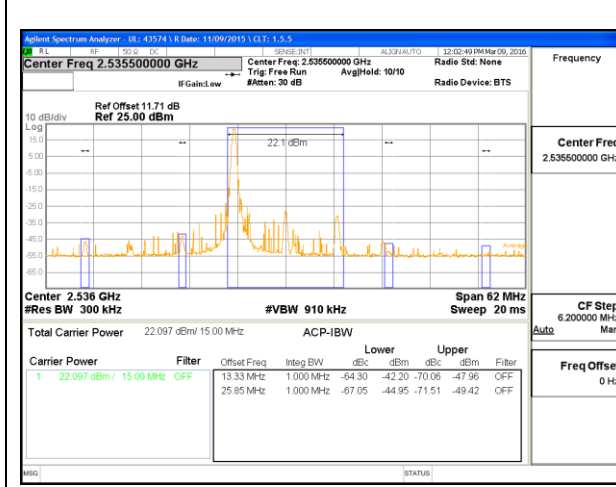
LTE B41 10MHz 16QAM High Channel 1RB



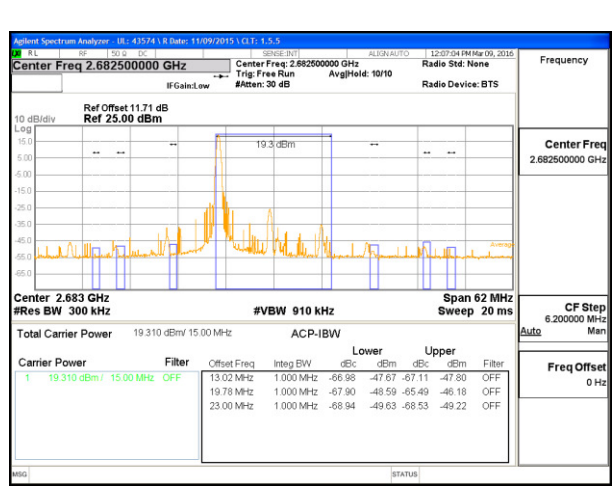
LTE B41 10MHz 16QAM Low Channel FRB



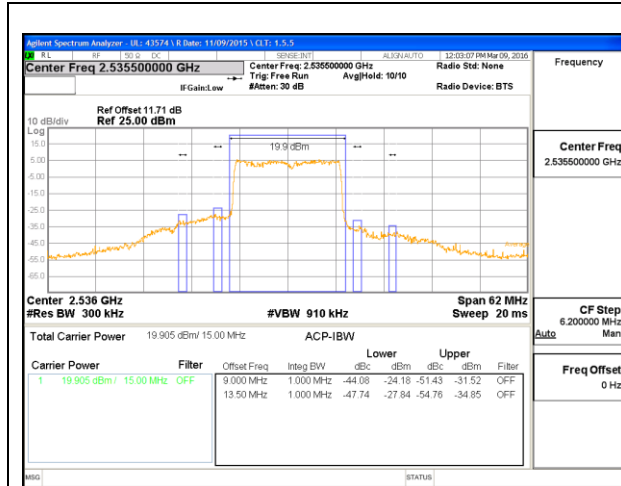
LTE B41 10MHz 16QAM High Channel FRB



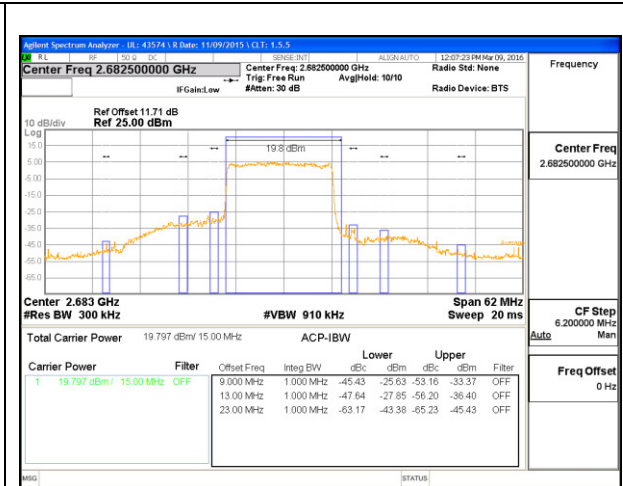
LTE B41 15MHz QPSK Low Channel 1RB



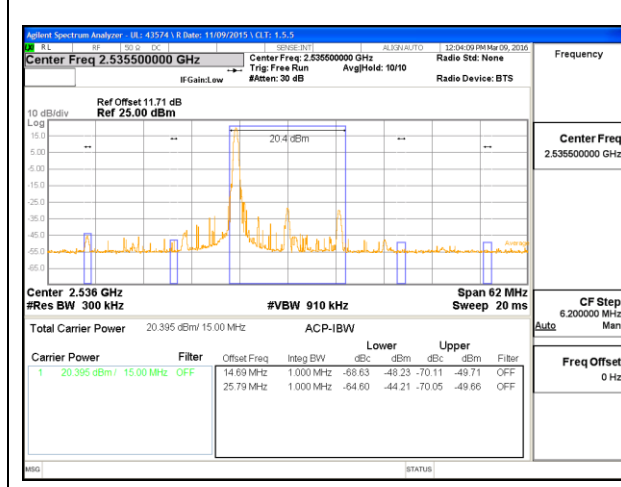
LTE B41 15MHz QPSK High Channel 1RB



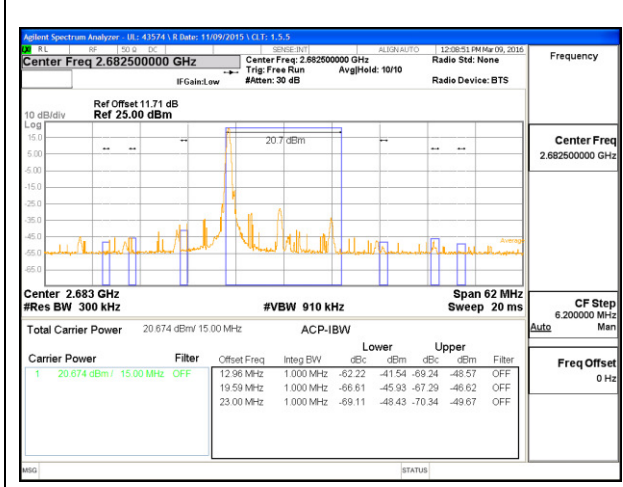
LTE B41 15MHz QPSK Low Channel FRB



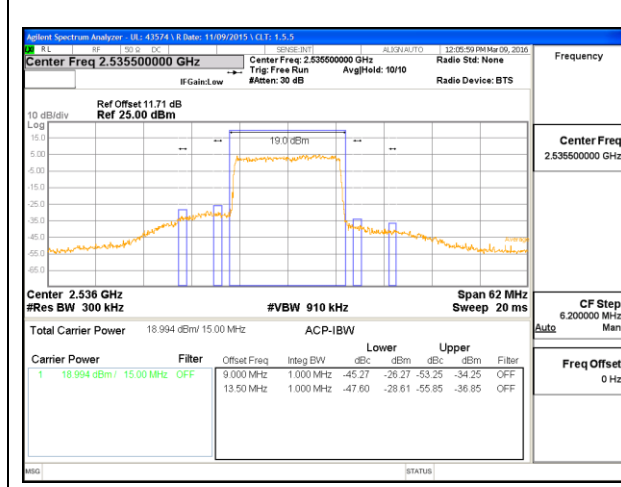
LTE B41 15MHz QPSK High Channel FRB



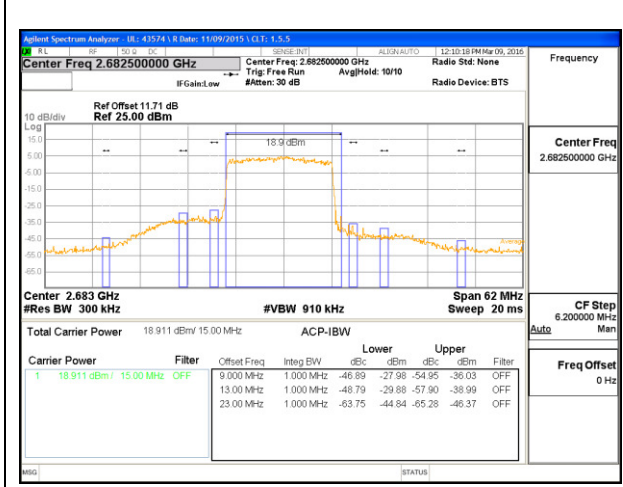
LTE B41 15MHz 16QAM Low Channel 1RB



LTE B41 15MHz 16QAM High Channel 1RB

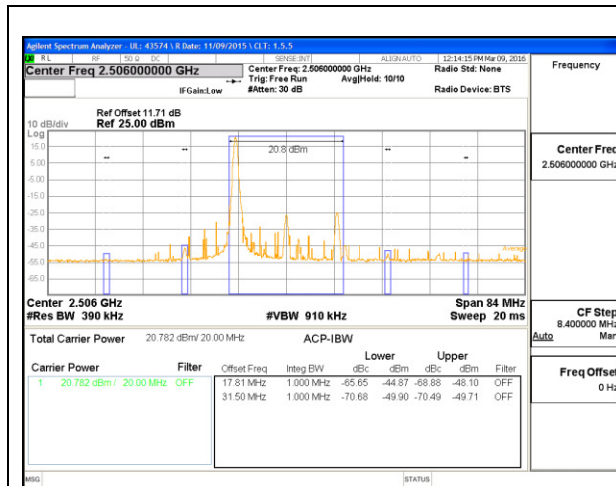


LTE B41 15MHz 16QAM Low Channel FRB

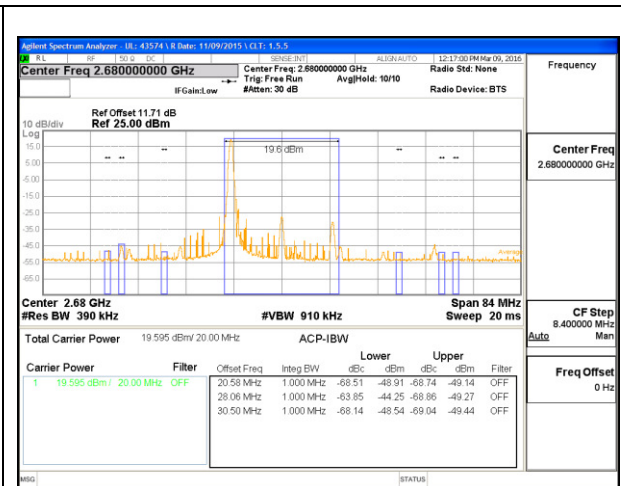


LTE B41 15MHz 16QAM High Channel FRB

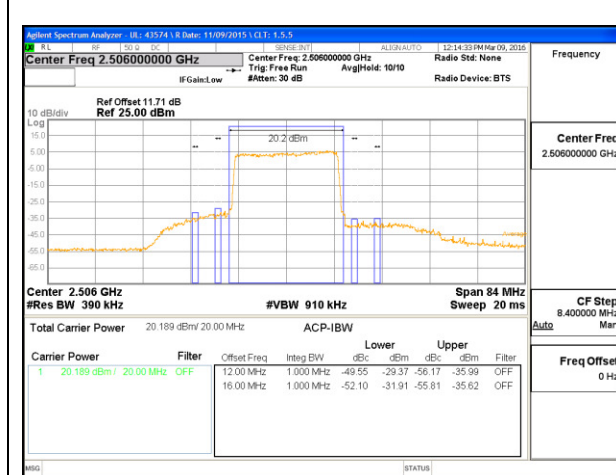




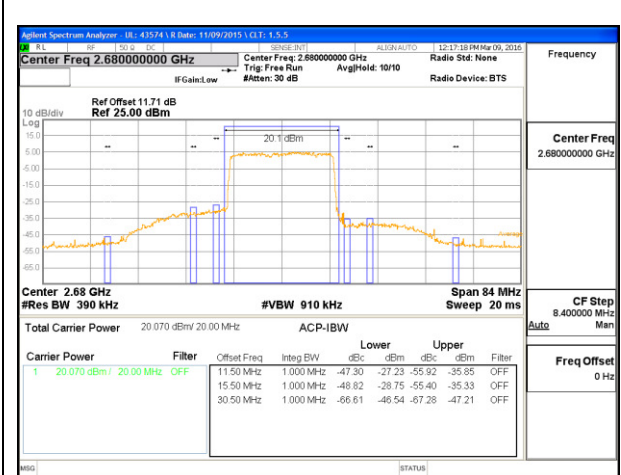
LTE B41 20MHz QPSK Low Channel 1RB



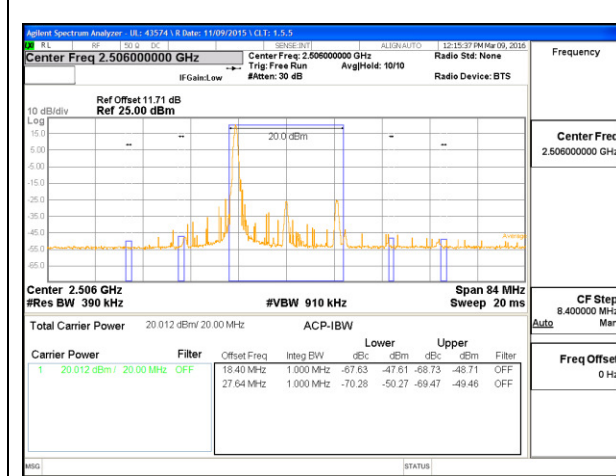
LTE B41 20MHz QPSK High Channel 1RB



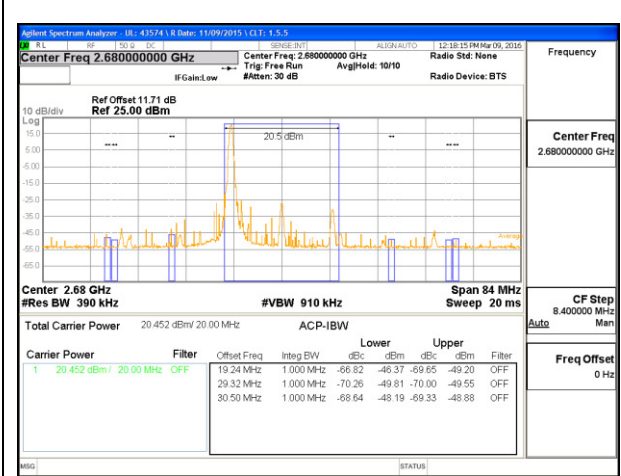
LTE B41 20MHz QPSK Low Channel FRB



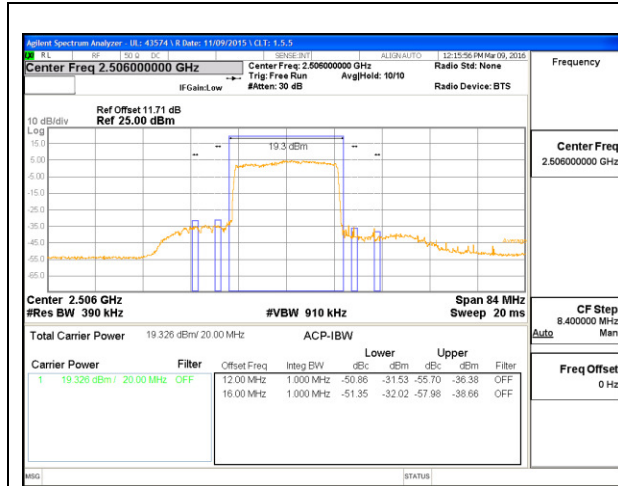
LTE B41 20MHz QPSK High Channel FRB



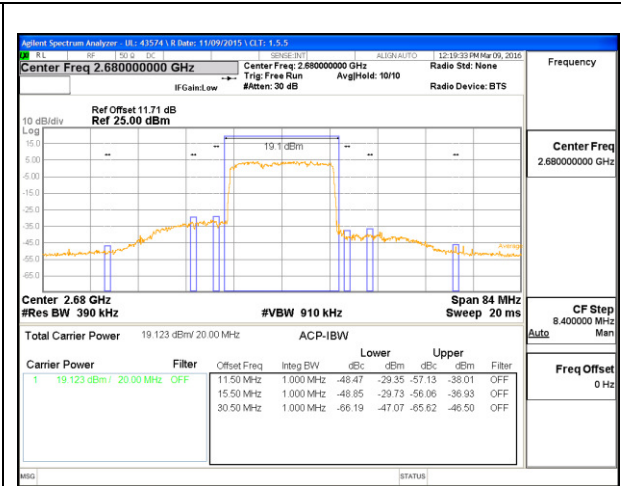
LTE B41 20MHz 16QAM Low Channel 1RB



LTE B41 20MHz 16QAM High Channel 1RB



LTE B41 20MHz 16QAM Low Channel FRB



LTE B41 20MHz 16QAM High Channel FRB

## 12. OUT OF BAND EMISSIONS

### RULE PART(S)

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

### LIMITS

Part 24.238(a) & Part 22.917(a) 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.

Part 27: (m)(4) (4) For mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log (P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log (P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log (P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than  $43 + 10 \log (P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log (P)$  dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

### TEST PROCEDURE

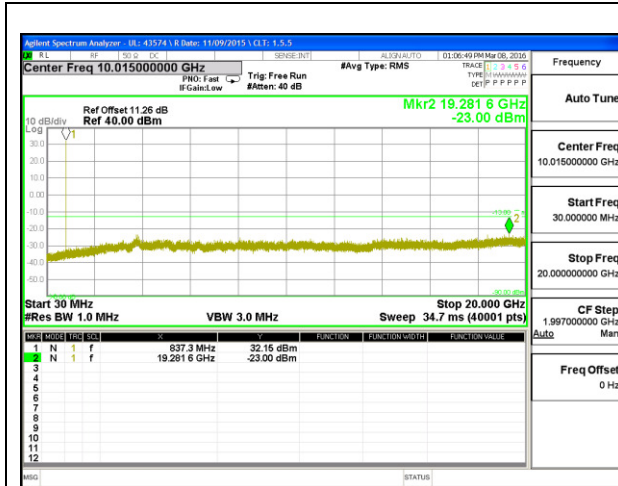
Per KDB 971168 D01 Power Meas License Digital Systems v02r02

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 a maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

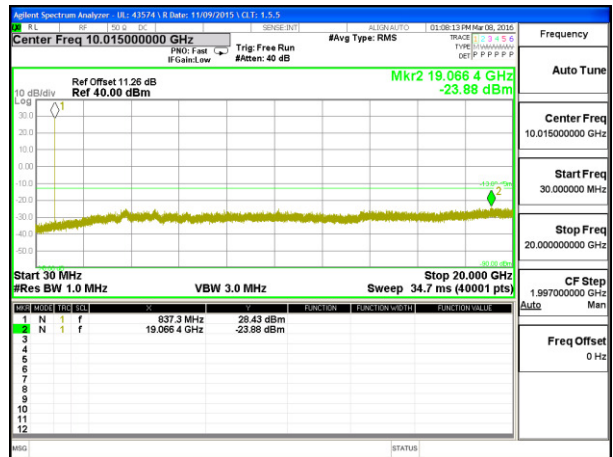
## 12.1. OUT OF BAND EMISSIONS RESULT AND PLOTS

### GSM

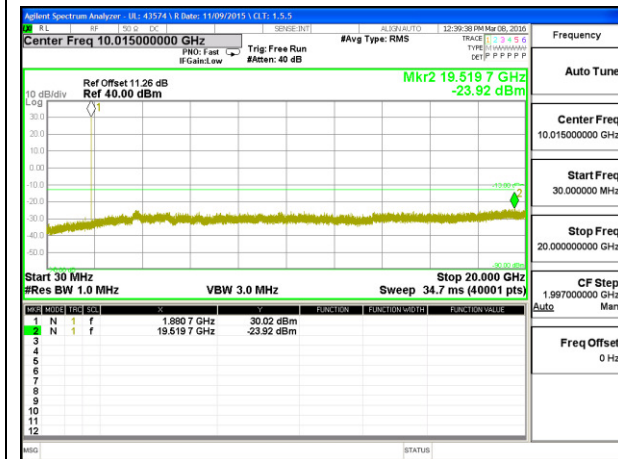
Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
GSM850	GPRS	824.2	-23.67	-13	-10.67
		836.6	-23.00	-13	-10.00
		848.8	-23.95	-13	-10.95
	EGPRS	824.2	-23.46	-13	-10.46
		836.6	-23.88	-13	-10.88
		848.8	-23.39	-13	-10.39
GSM1900	GPRS	1850.2	-23.68	-13	-10.68
		1880	-23.9	-13	-10.92
		1909.8	-24.03	-13	-11.03
	EGPRS	1850.2	-23.39	-13	-10.39
		1880	-24.35	-13	-11.35
		1909.8	-23.61	-13	-10.61



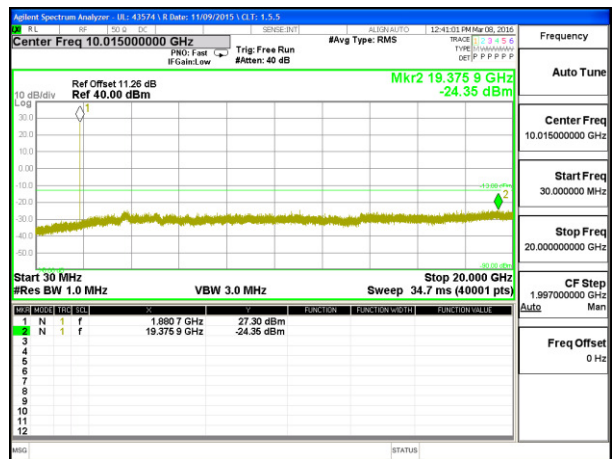
GSM850 GPRS Middle Channel



GSM850 EGPRS Middle Channel



GSM1900 GPRS Middle Channel

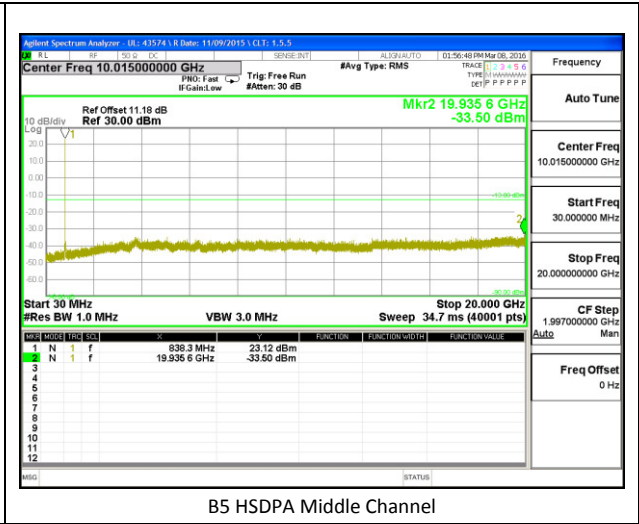
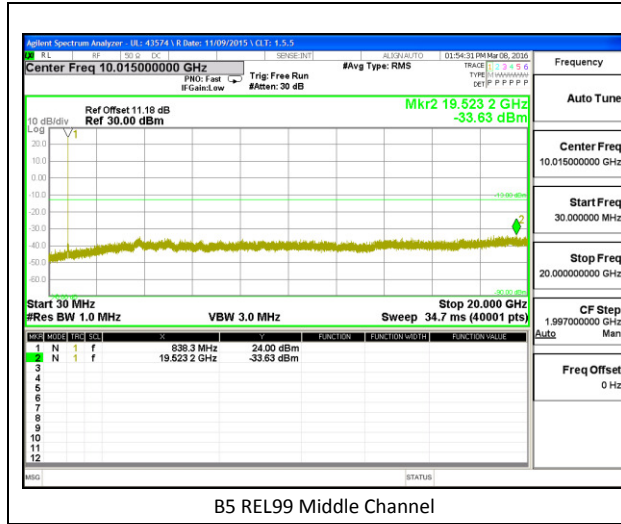


GSM1900 EGPRS Middle Channel



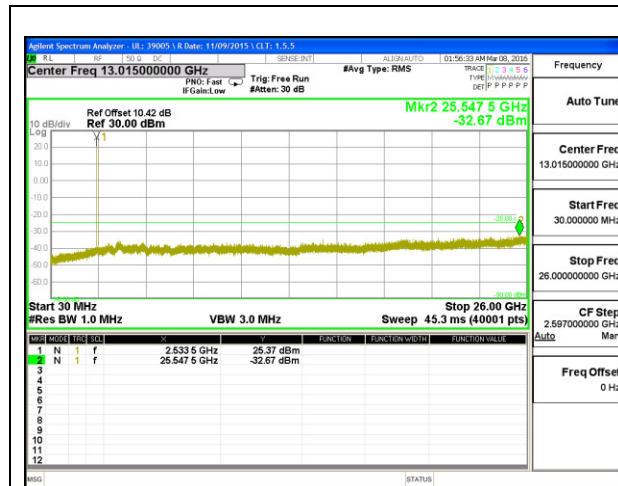
**WCDMA**

Band	Mode	f (MHz)	Spur (dBm)	99% BW (MHz)	Delta (dB)
Band 5	REL99	826.4	-33.236	-13	-20.236
		836.6	-33.629	-13	-20.629
		846.6	-33.684	-13	-20.684
	HSDPA	826.4	-33.694	-13	-20.694
		836.6	-33.504	-13	-20.504
		846.6	-34.128	-13	-21.128

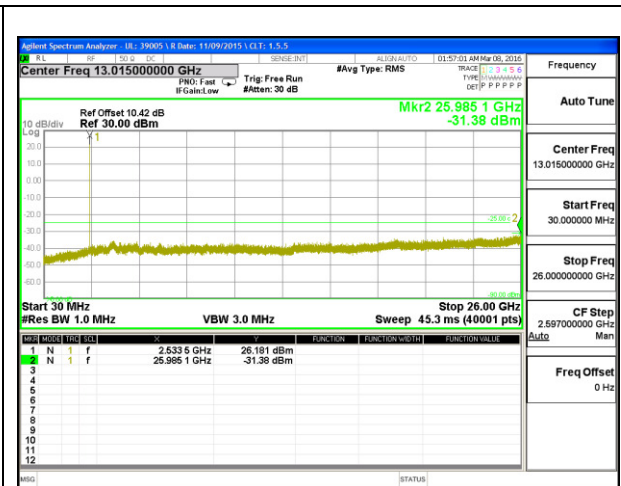


**LTE Band 7**

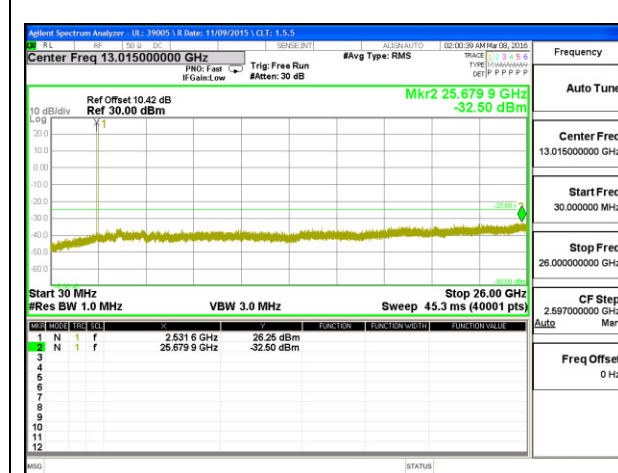
BW(MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
5	QPSK	2502.5	-32.649	-25	-7.649
		2535	-32.672	-25	-7.672
		2567.5	-32.213	-25	-7.213
	16QAM	2502.5	-27.101	-25	-2.101
		2535	-31.385	-25	-6.385
		2567.5	-31.225	-25	-6.225
10	QPSK	2505	-32.234	-25	-7.234
		2535	-32.500	-25	-7.5.00
		2565	-32.160	-25	-7.160
	16QAM	2505	-31.360	-25	-6.360
		2535	-32.476	-25	-7.476
		2565	-32.156	-25	-7.156
15	QPSK	2507.5	-32.139	-25	-7.139
		2535	-32.233	-25	-7.233
		2562.5	-31.565	-25	-6.565
	16QAM	2507.5	-31.971	-25	-6.971
		2535	-31.956	-25	-6.956
		2562.5	-31.538	-25	-6.538
20	QPSK	2510	-32.019	-25	-7.019
		2535	-31.439	-25	-6.439
		2560	-32.465	-25	-7.465
	16QAM	2510	-31.625	-25	-6.625
		2535	-31.687	-25	-6.687
		2560	-32.030	-25	-7.030



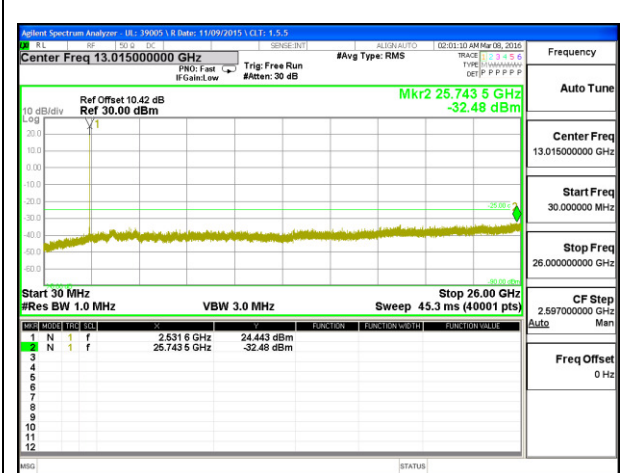
LTE B7 5MHz QPSK Middle Channel



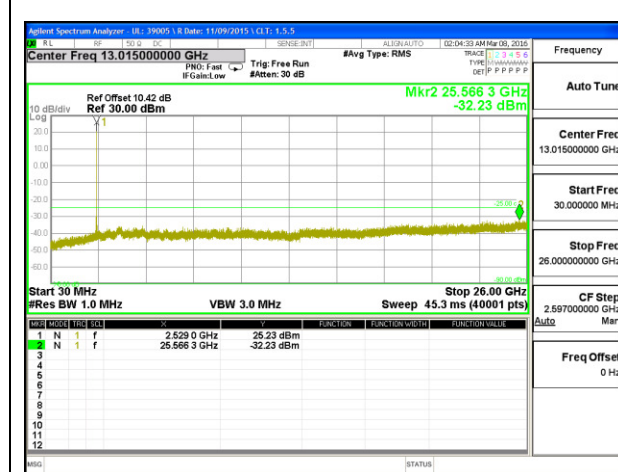
LTE B7 5MHz 16QAM Middle Channel



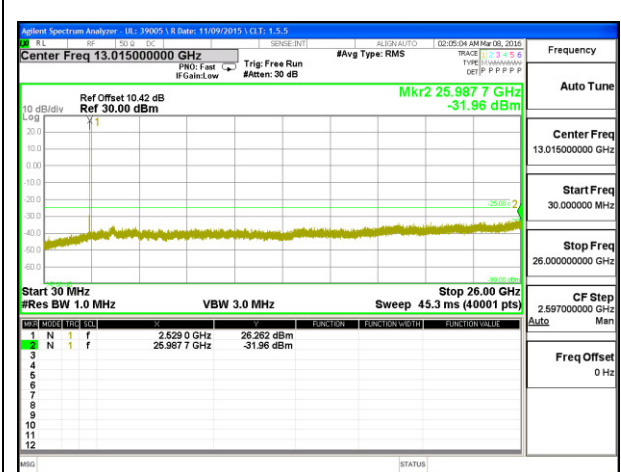
LTE B7 10MHz QPSK Middle Channel



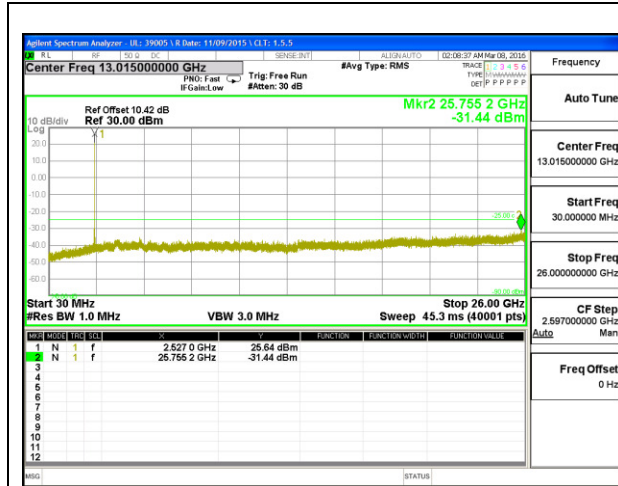
LTE B7 10MHz 16QAM Middle Channel



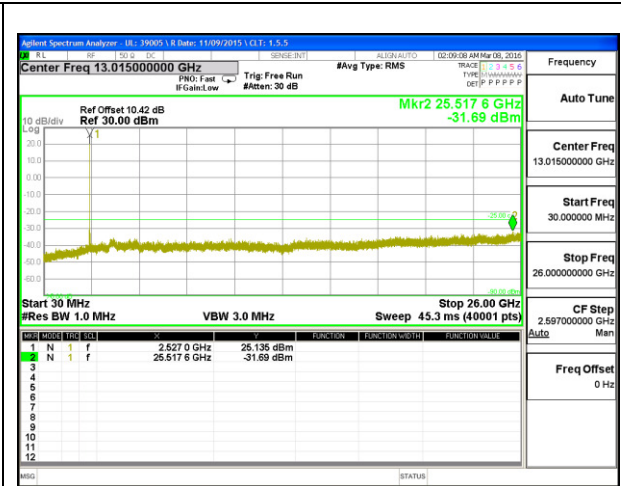
LTE B7 15MHz QPSK Middle Channel



LTE B7 15MHz 16QAM Middle Channel



LTE B7 20MHz QPSK Middle Channel

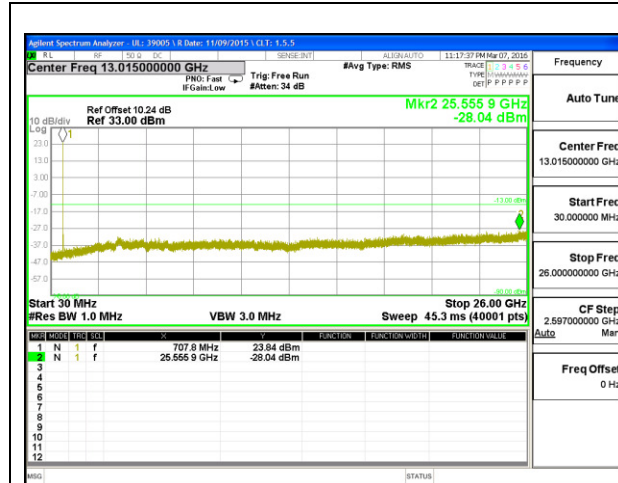


LTE B7 20MHz 16QAM Middle Channel

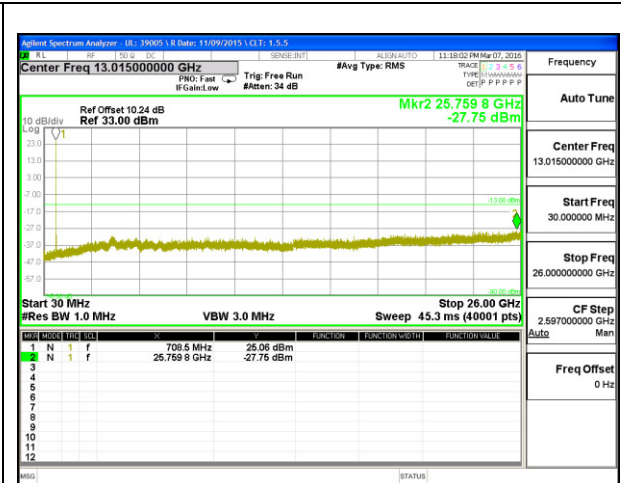


**LTE Band 12**

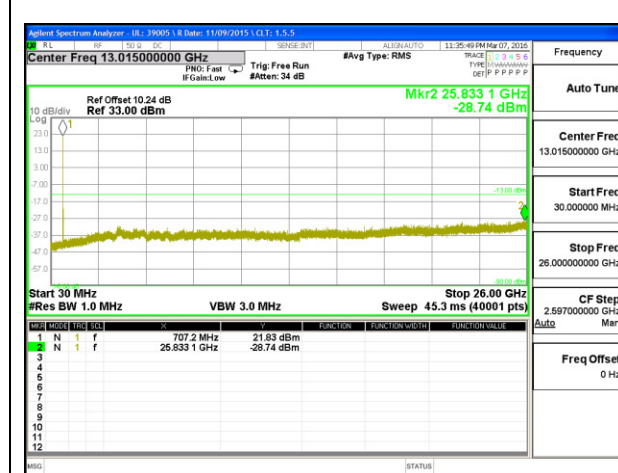
BW(MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
1.4	QPSK	699.7	-28.05	-13	-15.05
		707.5	-28.04	-13	-15.04
		715.3	-28.32	-13	-15.32
	16QAM	699.7	-27.70	-13	-14.7
		707.5	-27.75	-13	-14.75
		715.3	-26.80	-13	-13.8
3	QPSK	700.5	-26.96	-13	-13.96
		707.5	-28.74	-13	-15.74
		714.5	-28.35	-13	-15.35
	16QAM	700.5	-28.14	-13	-15.14
		707.5	-27.97	-13	-14.97
		714.5	-28.09	-13	-15.09
5	QPSK	701.5	-28.05	-13	-15.05
		707.5	-26.82	-13	-13.82
		713.5	-27.86	-13	-14.86
	16QAM	701.5	-27.97	-13	-14.97
		707.5	-28.28	-13	-15.28
		713.5	-27.21	-13	-14.21
10	QPSK	704	-28.51	-13	-15.51
		707.5	-28.39	-13	-15.39
		711	-27.88	-13	-14.88
	16QAM	704	-28.33	-13	-15.33
		707.5	-28.07	-13	-15.07
		711	-28.65	-13	-15.65



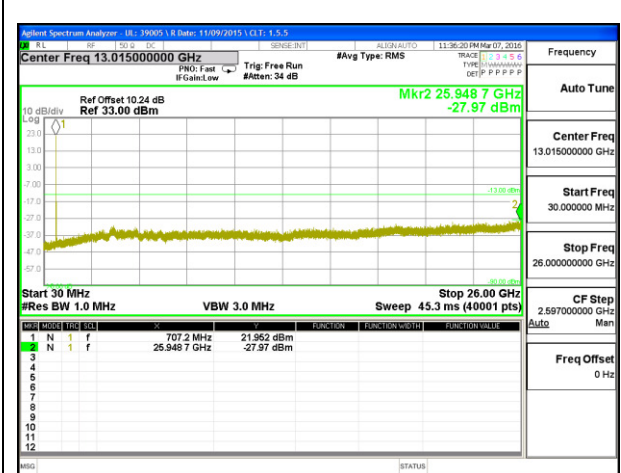
LTE B12 1.4MHz QPSK Middle Channel



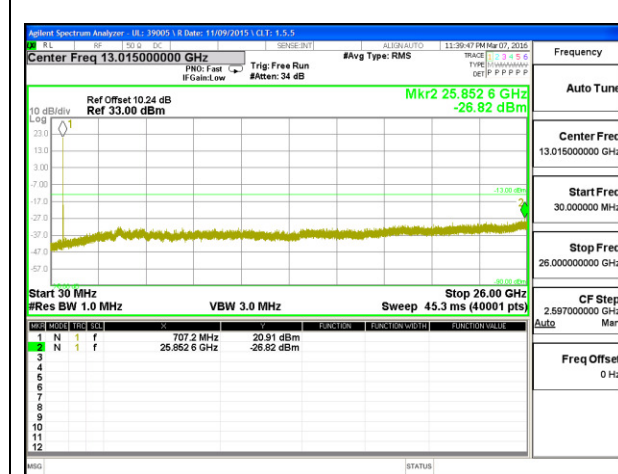
LTE B12 1.4MHz 16QAM Middle Channel



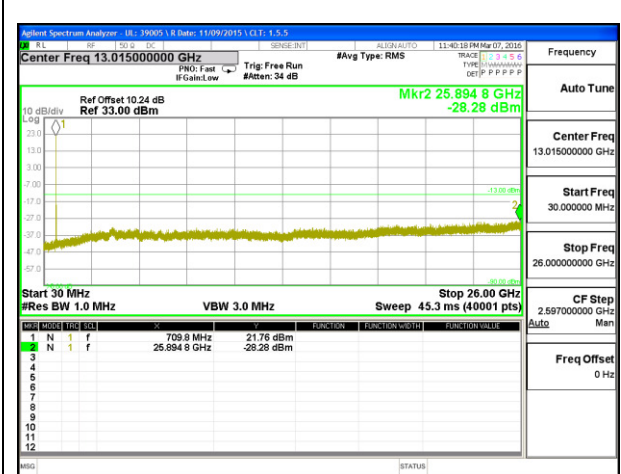
LTE B12 3MHz QPSK Middle Channel



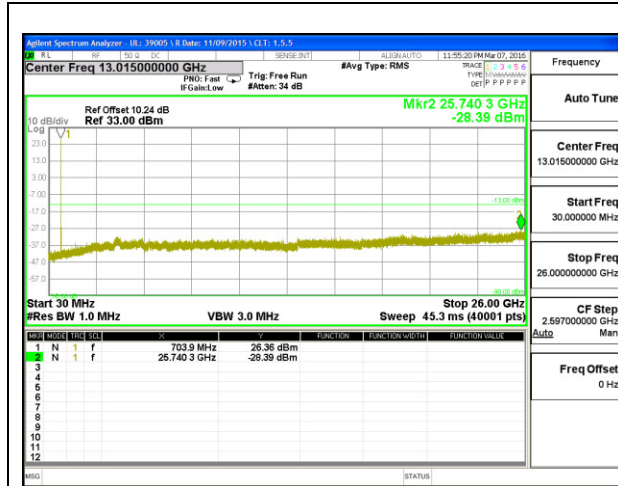
LTE B12 3MHz 16QAM Middle Channel



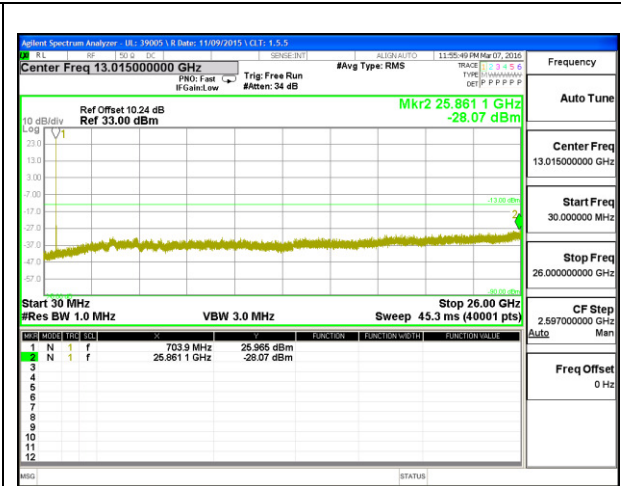
LTE B12 5MHz QPSK Middle Channel



LTE B12 5MHz 16QAM Middle Channel



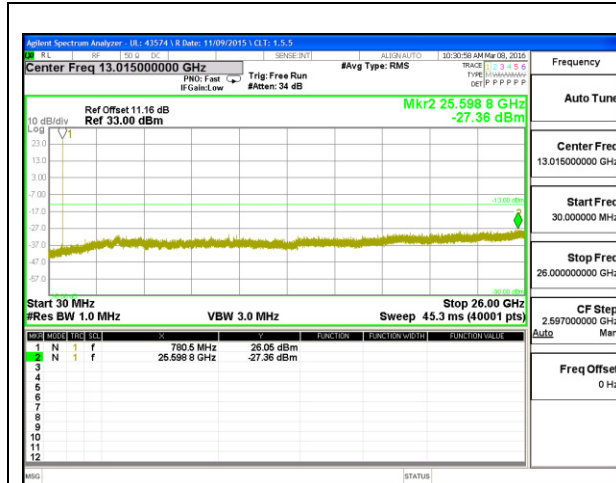
LTE B12 10MHz QPSK Middle Channel



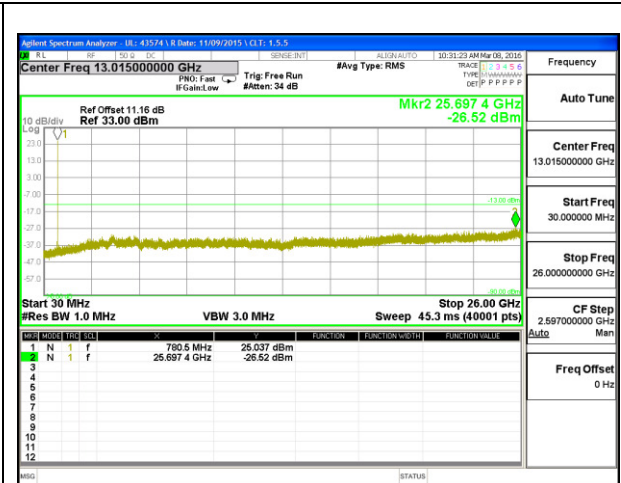
LTE B12 10MHz 16QAM Middle Channel

**LTE Band 13**

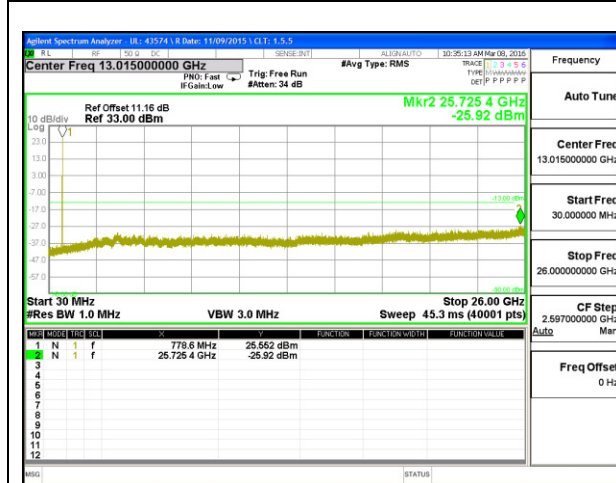
BW(MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
5	QPSK	779.5	-26.567	-13	-13.567
		782	-27.361	-13	-14.361
		784.5	-21.163	-13	-8.163
	16QAM	779.5	-27.268	-13	-14.268
		782	-26.515	-13	-13.515
		784.5	-27.207	-13	-14.207
10	QPSK				
		782	--25.921	-13	-12.921
	16QAM				
		782	-27.273	-13	-14.237



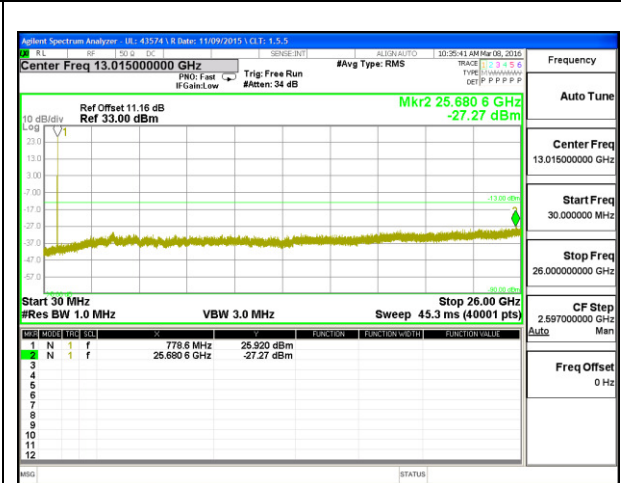
LTE B13 5MHz QPSK Middle Channel



LTE B13 5MHz 16QAM Middle Channel



LTE B13 10MHz QPSK Middle Channel

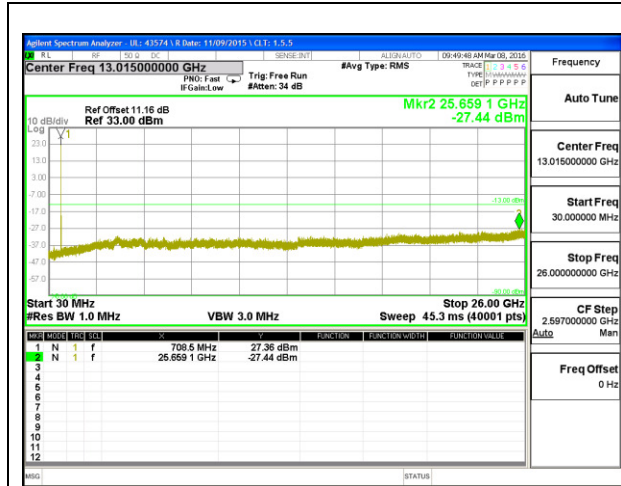


LTE B13 10MHz 16QAM Middle Channel

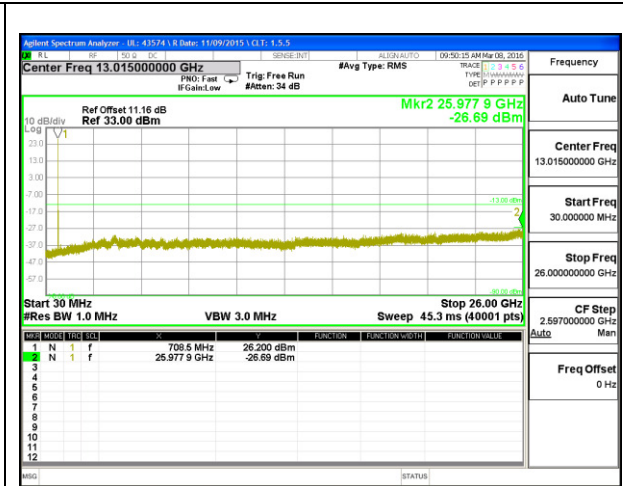


**LTE Band 17**

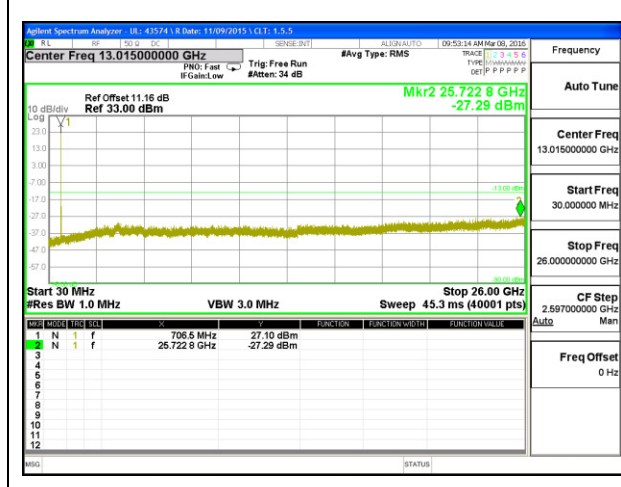
BW(MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
5	QPSK	706.5	-27.254	-13	-14.254
		710	-27.442	-13	-14.442
		713.5	-27.431	-13	-14.431
	16QAM	706.5	-27.602	-13	-14.602
		710	-26.691	-13	-13.691
		713.5	-27.656	-13	-14.656
10	QPSK	709	-27.252	-13	-14.252
		710	-27.291	-13	-14.291
		711	-26.626	-13	-13.626
	16QAM	709	-27.068	-13	-14.068
		710	-27.284	-13	-14.284
		711	-27.667	-13	-14.667



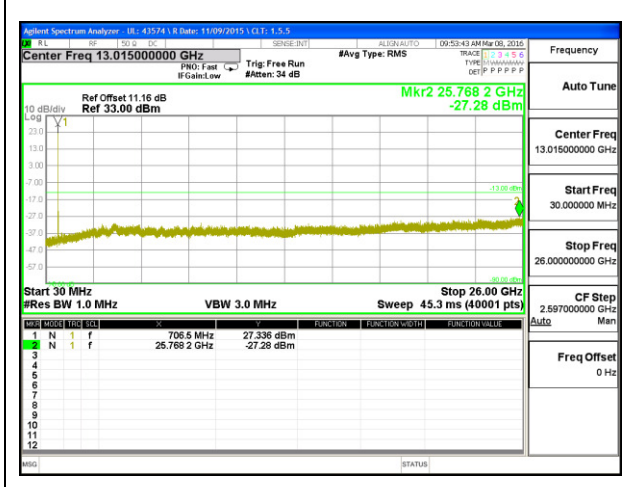
LTE B17 5MHz QPSK Middle Channel



LTE B17 5MHz 16QAM Middle Channel



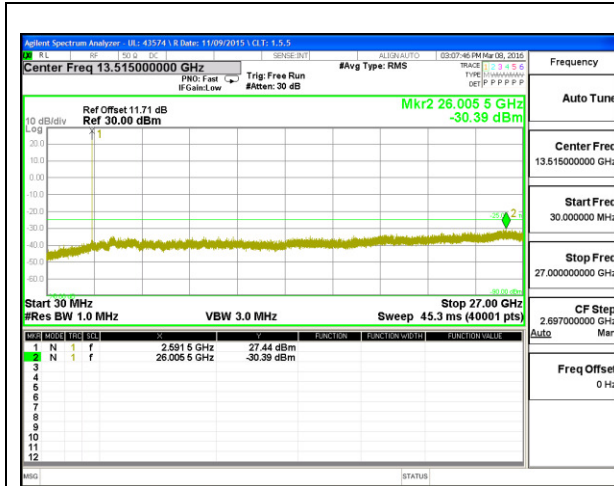
LTE B17 10MHz QPSK Middle Channel



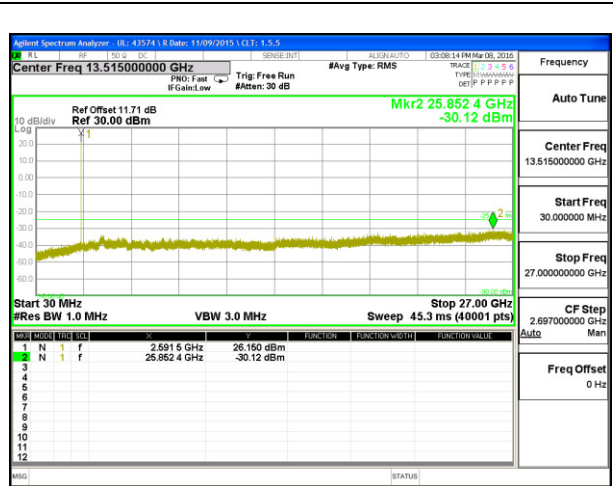
LTE B17 10MHz 16QAM Middle Channel

**LTE Band 41**

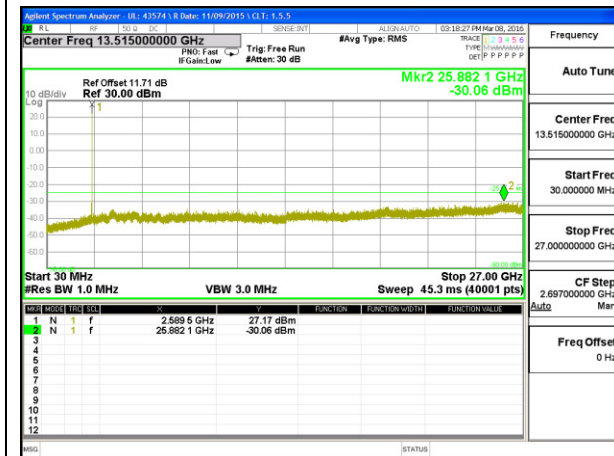
BW(MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
5	QPSK	2498.5	-30.168	-25	-5.168
		2593	-30.394	-25	-5.394
		2687.5	-30.094	-25	-5.094
	16QAM	2498.5	-30.811	-25	-5.811
		2593	-30.122	-25	-5.122
		2687.5	-28.129	-25	-3.129
10	QPSK	2501	-30.877	-25	-5.877
		2593	-30.060	-25	-5.060
		2685	-30.317	-25	-5.317
	16QAM	2501	-30.238	-25	-5.238
		2593	-30.060	-25	-5.060
		2685	-30.421	-25	-5.421
15	QPSK	2503.5	-30.511	-25	-5.511
		2593	-29.180	-25	-4.180
		2682.5	-30.590	-25	-5.590
	16QAM	2503.5	-29.584	-25	-4.584
		2593	-29.552	-25	-4.552
		2682.5	-30.722	-25	-5.722
20	QPSK	2506	-30.757	-25	-5.757
		2593	-29.222	-25	-4.222
		2680	-30.674	-25	-5.674
	16QAM	2506	-30.449	-25	-5.449
		2593	-30.349	-25	-5.349
		2680	-30.645	-25	-5.645



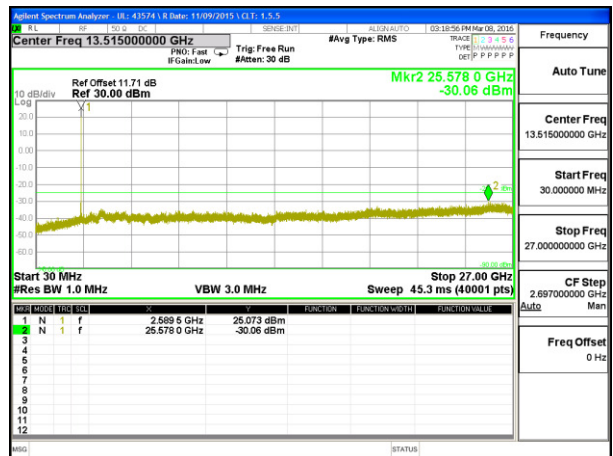
LTE B41 5MHz QPSK Middle Channel



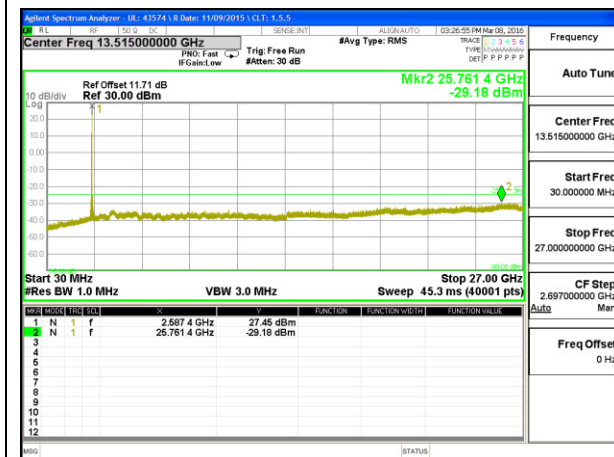
LTE B41 5MHz 16QAM Middle Channel



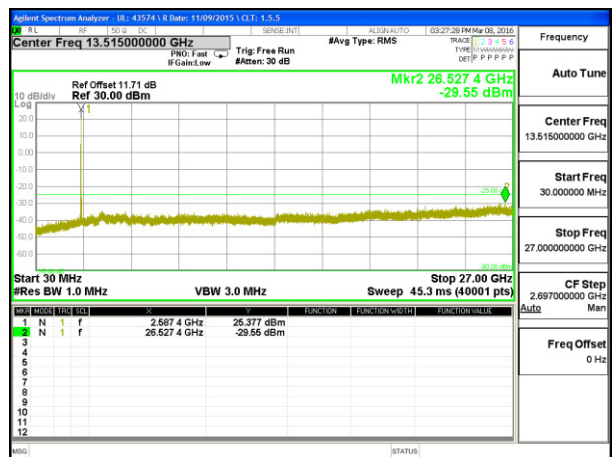
LTE B41 10MHz QPSK Middle Channel



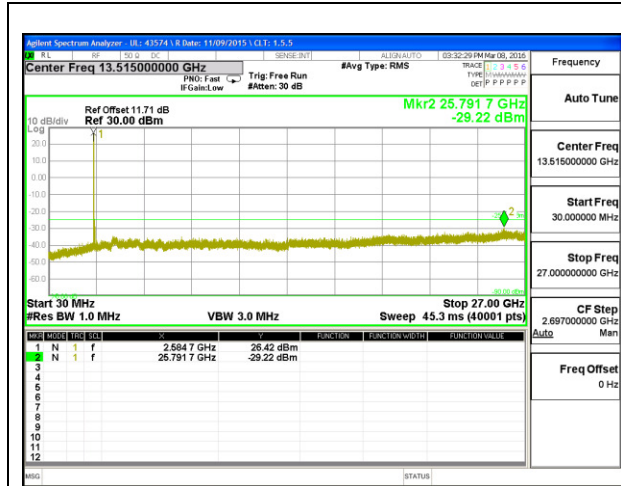
LTE B41 10MHz 16QAM Middle Channel



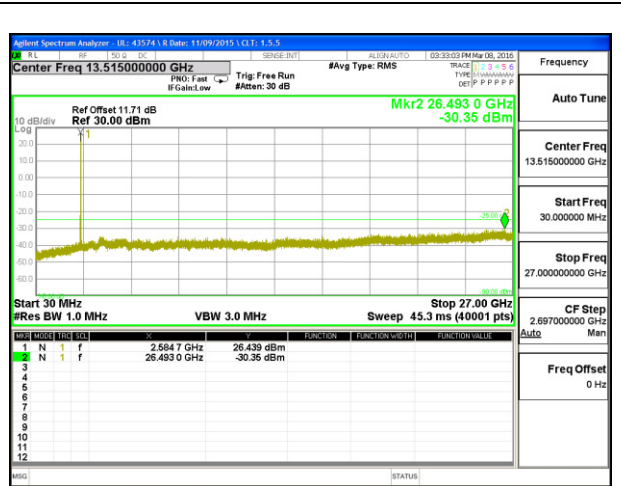
LTE B41 15MHz QPSK Middle Channel



LTE B41 15MHz 16QAM Middle Channel



LTE B41 20MHz QPSK Middle Channel



LTE B41 20MHz 16QAM Middle Channel

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## 13. FREQUENCY STABILITY

### RULE PART(S)

FCC: §2.1055, §22.355, §24.235 and §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 - The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

§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



### 13.1. FREQUENCY STABILITY RESULTS

**GSM 850**

Reference Frequency: Cellular Mid Channel		836.6	MHz @ 20°C	
Limit: to stay +/- 2.5 ppm =		2091.500	Hz	
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	836.600014	0.012	2.5
3.80	40	836.600019	0.005	2.5
3.80	30	836.600020	0.004	2.5
<b>3.80</b>	<b>20</b>	<b>836.600024</b>	<b>0</b>	<b>2.5</b>
3.80	10	836.600022	0.002	2.5
3.80	0	836.600027	-0.004	2.5
3.80	-10	836.600020	0.004	2.5
3.80	-20	836.600018	0.006	2.5
3.80	-30	836.600022	0.002	2.5

Reference Frequency: PCS Mid Channel		836.6	MHz @ 20°C	
Limit: to stay +/- 2.5 ppm =		2091.500	Hz	
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
<b>3.80</b>	<b>20</b>	<b>836.600024</b>	<b>0</b>	<b>2.5</b>
4.20	20	836.6000262	-0.003	2.5
3.6(End of Volt)	20	836.6000251	-0.002	2.5