



MOBILE DEVICES BUSINESS

PRODUCT SAFETY AND COMPLIANCE

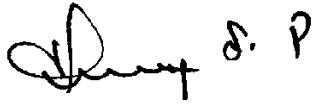
EMC LABORATORY

EMC TEST REPORT

TEST REPORT NUMBER – 25340-1 LTE

The test results and statements contained herein relate only to the model(s) identified and tested. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics.

As the responsible EMC Engineer, I hereby declare that the equipment tested as specified in this report conforms to the requirements indicated.

Signature: 

Name: Danny Palaniswami

Title: EMC Engineer

Date: May 6, 2013

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Test Report Details

Tests Performed By:	ADR Testing Service
	Location Code: ADR LV
	Motorola Mobility LLC
	Product Safety and Compliance Group
	600 North US Hwy 45
	Libertyville, IL 60048
	FCC Registration Number: 316588
	Industry Canada Number: 109O-1
Tests Requested By:	Motorola Mobility LLC
	600 North US Hwy 45
	Libertyville, IL 60048
Product Type :	Portable Cellular Phone
Signaling Capability:	GSM 850/1900, Edge 850/1900, WCDMA 850/1900, LTE Band 2/ 4/5/17, aGPS, NFC, Bluetooth Class 2 Version 4.0 LE+EDR, 802.11 b/g/n/a/ac
FCC ID:	IHDP56PA1
IC ID:	109O-T56PA1
Serial Numbers:	LXAA1W0033, LXAA1W0024, LXAA1W0028, LXAA1W0009, LXAB140001
Testing Complete Date:	April 26, 2013

Applicable Standards

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

 X Part 22
 X Part 24
 X Part 27

Applicable Standards: ANSI 63.4 2003, ANSI/TIA-603-C-2004, RSS-Gen Issue 3, RSS-132 Issue 3, RSS-133 Issue 6, RSS-139 Issue 2.

Note on Non-Industry Canada data:

This report contains measurement results for LTE Band 17 that are immaterial for Industry Canada equipment approval. These results are clearly identified within this report, and should be disregarded for the purposes of Industry Canada regulatory review.

Summary of Testing

Test #	Test Name	Pass/Fail
1	RF Power Output	NA
2	ERP (Effective Radiated Power)	Pass
3	Occupied Bandwidth	Pass
4	Band Edge	Pass
5	Spurious Emissions at Antenna Terminal	Pass
6	Field Strength of Spurious Emissions	Pass
7	Frequency Stability	Pass

The margin with respect to the limit is the minimum margin for all modes and bands.

General and Special Conditions

This product utilizes an internal battery that is not removable. When applicable, EMC testing was performed with the internal battery fully charged. Where the internal battery could not be used due to the need for a controlled variation of input voltage, an external power supply was utilized.

All testing was done in an indoor controlled environment. The temperature and the relative humidity were maintained within the ANSI C63.4 2003 Standard requirements during the entire duration of testing.

Equipment List

Manufacturer	Equipment Type	Model No.	Serial Number	Calibration Due Date
Rohde & Schwarz	Receiver	ESIB40	100226	5/15/13
Hewlett Packard	EMC Analyzer	E7405	US40240219	7/30/13
Agilent	MXA Signal Analyzer	N9020A	US46470586	1/20/14
Agilent	Signal Generator	83712A	3429A00286	3/26/13
Agilent	Signal Generator	83623B	3844A00935	5/11/14
ETS-Lindgren	Horn Antenna	3115	6222	7/26/13
A. H. Systems	Horn Antenna	SAS 200/571	365	9/4/13
ETS	Log-Periodic Antenna	3148	1188	9/6/13
ETS	Biconical Antenna	3110B	3369	9/5/13
TDK RF Solutions	Precision Log Periodic	PLP 3003C	130387	2/25/14
Rohde & Schwarz	Wideband Communication Tester	CMW500	126211	7/27/13
Attenuator	Weinschel	AS-6	6675	NCR
Attenuator	Weinschel	AS-6	6677	NCR
Thermotron	Environmental Chamber	S-4	31580	11/15/13
Agilent	Power Meter	E4416A	GB41293258	7/15/13
Agilent	Power Sensor	E9323A	US40412067	8/29/13
Rohde & Schwarz	Amplifier	TS-PR18	100073	9/5/13

All equipment is on a one-year calibration cycle. All testing was performed using equipment that was within calibration at the time that the test was performed. No equipment listed in the table above was used after the specified calibration due date. If, during the course of product testing, a piece of equipment went out of calibration, a similar piece of calibrated equipment was substituted. If a substitution was made, that new piece of equipment would be listed in the above table along with the piece that was removed from service.

Measurement Procedures and Data**RF POWER OUTPUT****Measurement Procedure**

The RF output port of the Equipment Under Test, EUT, is directly coupled to the input of a Wideband Communication Tester through a 20dB passive attenuator, adaptor (if needed), and specialized RF connector. The average output power is measured.

Measurement Results

LTE Band 2			Conducted power (dBm) for LTE modes						
			QPSK, Start RB: 0, RB Alloc: 1	QPSK, Start RB: 50, RB Alloc: 1	QPSK, Start RB: 99, RB Alloc: 1	QPSK, Start RB: 0, RB Alloc: 50	QPSK, Start RB: 25, RB Alloc: 50	QPSK, Start RB: 50, RB Alloc: 50	QPSK, Start RB: 0, RB Alloc: 100
Channel BW	Frequency	Channel							
20 MHz	1860.0 MHz	18700	22.763	23.858	23.75	22.918	22.817	22.686	22.79
20 MHz	1880.0 MHz	18900	23.746	23.811	23.749	22.906	22.681	22.672	22.749
20 MHz	1900.0 MHz	19100	23.717	23.434	23.599	22.464	22.461	22.536	22.519

LTE Band 2			Conducted power (dBm) for LTE modes						
			QPSK, Start RB: 0, RB Alloc: 1	QPSK, Start RB: 37, RB Alloc: 1	QPSK, Start RB: 74, RB Alloc: 1	QPSK, Start RB: 0, RB Alloc: 36	QPSK, Start RB: 19, RB Alloc: 36	QPSK, Start RB: 39, RB Alloc: 36	QPSK, Start RB: 0, RB Alloc: 75
Channel BW	Frequency	Channel							
15 MHz	1857.5 MHz	18675	22.733	23.75	23.703	22.818	22.911	22.745	22.785
15 MHz	1880.0 MHz	18900	23.733	23.699	23.719	22.709	22.756	22.724	22.765
15 MHz	1902.5 MHz	19125	23.621	23.507	23.497	22.444	22.454	22.564	22.422

LTE Band 2			Conducted power (dBm) for LTE modes						
			QPSK, Start RB: 0, RB Alloc: 1	QPSK, Start RB: 25, RB Alloc: 1	QPSK, Start RB: 49, RB Alloc: 1	QPSK, Start RB: 0, RB Alloc: 25	QPSK, Start RB: 12, RB Alloc: 25	QPSK, Start RB: 25, RB Alloc: 25	QPSK, Start RB: 0, RB Alloc: 50
Channel BW	Frequency	Channel							
10 MHz	1855.0 MHz	18650	21.84	23.862	23.938	22.858	22.834	22.878	22.796
10 MHz	1880.0 MHz	18900	23.724	23.698	23.684	22.787	22.714	22.853	22.752
10 MHz	1905.0 MHz	19150	23.309	23.48	23.355	22.478	22.423	22.606	22.475

LTE Band 2			Conducted power (dBm) for LTE modes						
			QPSK, Start RB: 0, RB Alloc: 1	QPSK, Start RB: 12, RB Alloc: 1	QPSK, Start RB: 24, RB Alloc: 1	QPSK, Start RB: 0, RB Alloc: 12	QPSK, Start RB: 6, RB Alloc: 12	QPSK, Start RB: 13, RB Alloc: 12	QPSK, Start RB: 0, RB Alloc: 25
Channel BW	Frequency	Channel							
5 MHz	1852.5 MHz	18625	23.847	23.831	23.867	22.811	22.818	22.812	22.864
5 MHz	1880.0 MHz	18900	23.802	23.771	23.711	22.737	22.824	22.774	22.763
5 MHz	1907.5 MHz	19175	23.609	23.606	23.38	22.502	22.554	22.559	22.595

LTE Band 2			Conducted power (dBm) for LTE modes						
			QPSK, Start RB: 0, RB Alloc: 1	QPSK, Start RB: 7, RB Alloc: 1	QPSK, Start RB: 14, RB Alloc: 1	QPSK, Start RB: 0, RB Alloc: 8	QPSK, Start RB: 3, RB Alloc: 8	QPSK, Start RB: 7, RB Alloc: 8	QPSK, Start RB: 0, RB Alloc: 15
Channel BW	Frequency	Channel							
3 MHz	1851.5 MHz	18615	22.852	23.845	23.909	22.784	22.758	22.864	22.794
3 MHz	1880.0 MHz	18900	23.718	23.742	23.634	22.818	22.781	22.84	22.832
3 MHz	1908.5 MHz	19185	23.527	23.419	23.268	22.579	22.539	22.49	22.57

LTE Band 2			Conducted power (dBm) for LTE modes						
			QPSK, Start RB: 0, RB Alloc: 1	QPSK, Start RB: 3, RB Alloc: 1	QPSK, Start RB: 5, RB Alloc: 1	QPSK, Start RB: 0, RB Alloc: 3	QPSK, Start RB: 1, RB Alloc: 3	QPSK, Start RB: 3, RB Alloc: 3	QPSK, Start RB: 0, RB Alloc: 6
Channel BW	Frequency	Channel							
1.4 MHz	1850.6 MHz	18606	22.74	23.747	23.799	23.765	23.786	23.807	22.822
1.4 MHz	1880.0 MHz	18900	23.779	23.794	23.819	23.744	23.756	23.804	22.778
1.4 MHz	1909.4 MHz	19194	23.484	23.435	23.327	23.456	23.407	23.3	22.462

LTE Band 2			Conducted power (dBm) for LTE modes						
			16-QAM, Start RB: 0, RB Alloc: 1	16-QAM, Start RB: 50, RB Alloc: 1	16-QAM, Start RB: 99, RB Alloc: 1	16-QAM, Start RB: 0, RB Alloc: 50	16-QAM, Start RB: 25, RB Alloc: 50	16-QAM, Start RB: 50, RB Alloc: 50	16-QAM, Start RB: 0, RB Alloc: 100
Channel BW	Frequency	Channel							
20 MHz	1860.0 MHz	18700	22.331	22.437	22.426	22.024	21.911	21.846	21.933
20 MHz	1880.0 MHz	18900	22.61	22.675	22.65	21.877	21.905	21.853	21.819
20 MHz	1900.0 MHz	19100	22.75	22.624	22.721	21.473	21.501	21.54	21.556

LTE Band 2			Conducted power (dBm) for LTE modes						
			16-QAM, Start RB: 0, RB Alloc: 1	16-QAM, Start RB: 37, RB Alloc: 1	16-QAM, Start RB: 74, RB Alloc: 1	16-QAM, Start RB: 0, RB Alloc: 36	16-QAM, Start RB: 19, RB Alloc: 36	16-QAM, Start RB: 39, RB Alloc: 36	16-QAM, Start RB: 0, RB Alloc: 75
Channel BW	Frequency	Channel							
15 MHz	1857.5 MHz	18675	22.799	22.799	22.721	21.774	21.859	21.775	21.833
15 MHz	1880.0 MHz	18900	22.381	22.356	22.293	21.757	21.865	21.78	21.755
15 MHz	1902.5 MHz	19125	22.678	22.632	22.625	21.585	21.533	21.623	21.457

LTE Band 2			Conducted power (dBm) for LTE modes						
			16-QAM, Start RB: 0, RB Alloc: 1	16-QAM, Start RB: 25, RB Alloc: 1	16-QAM, Start RB: 49, RB Alloc: 1	16-QAM, Start RB: 0, RB Alloc: 25	16-QAM, Start RB: 12, RB Alloc: 25	16-QAM, Start RB: 25, RB Alloc: 25	16-QAM, Start RB: 0, RB Alloc: 50
Channel BW	Frequency	Channel							
10 MHz	1855.0 MHz	18650	22.869	22.953	23.033	21.913	21.928	21.974	21.873
10 MHz	1880.0 MHz	18900	22.384	22.366	22.329	21.815	21.862	21.952	21.883
10 MHz	1905.0 MHz	19150	22.066	22.151	22.06	21.502	21.485	21.669	21.407

LTE Band 2			Conducted power (dBm) for LTE modes						
			16-QAM, Start RB: 0, RB Alloc: 1	16-QAM, Start RB: 12, RB Alloc: 1	16-QAM, Start RB: 24, RB Alloc: 1	16-QAM, Start RB: 0, RB Alloc: 12	16-QAM, Start RB: 6, RB Alloc: 12	16-QAM, Start RB: 13, RB Alloc: 12	16-QAM, Start RB: 0, RB Alloc: 25
Channel BW	Frequency	Channel							
5 MHz	1852.5 MHz	18625	23.078	23.111	23.176	21.846	21.88	21.894	21.759
5 MHz	1880.0 MHz	18900	22.403	22.328	22.327	21.812	21.829	21.858	21.895
5 MHz	1907.5 MHz	19175	22.683	22.746	22.558	21.589	21.648	21.692	21.619

LTE Band 2			Conducted power (dBm) for LTE modes						
			16-QAM, Start RB: 0, RB Alloc: 1	16-QAM, Start RB: 7, RB Alloc: 1	16-QAM, Start RB: 14, RB Alloc: 1	16-QAM, Start RB: 0, RB Alloc: 8	16-QAM, Start RB: 3, RB Alloc: 8	16-QAM, Start RB: 7, RB Alloc: 8	16-QAM, Start RB: 0, RB Alloc: 15
Channel BW	Frequency	Channel							
3 MHz	1851.5 MHz	18615	22.935	22.944	23.016	21.822	21.794	21.812	21.893
3 MHz	1880.0 MHz	18900	22.3	22.319	22.304	21.776	21.868	21.816	21.81
3 MHz	1908.5 MHz	19185	22.581	22.664	22.546	21.559	21.52	21.498	21.597

LTE Band 2			Conducted power (dBm) for LTE modes						
			16-QAM, Start RB: 0, RB Alloc: 1	16-QAM, Start RB: 3, RB Alloc: 1	16-QAM, Start RB: 5, RB Alloc: 1	16-QAM, Start RB: 0, RB Alloc: 3	16-QAM, Start RB: 1, RB Alloc: 3	16-QAM, Start RB: 3, RB Alloc: 3	16-QAM, Start RB: 0, RB Alloc: 6
Channel BW	Frequency	Channel							
1.4 MHz	1850.6 MHz	18606	22.308	22.343	22.345	22.901	22.889	22.919	21.937
1.4 MHz	1880.0 MHz	18900	22.568	22.564	22.617	22.786	22.781	22.753	21.929
1.4 MHz	1909.4 MHz	19194	22.701	22.622	22.571	22.469	22.432	22.328	21.347

LTE Band 4			Conducted power (dBm) for LTE modes						
			QPSK, Start RB: 0, RB Alloc: 1	QPSK, Start RB: 50, RB Alloc: 1	QPSK, Start RB: 99, RB Alloc: 1	QPSK, Start RB: 0, RB Alloc: 50	QPSK, Start RB: 25, RB Alloc: 50	QPSK, Start RB: 50, RB Alloc: 50	QPSK, Start RB: 0, RB Alloc: 100
Channel BW	Frequency	Channel							
20 MHz	1720 MHz	20050	23.747	23.551	23.608	22.608	22.527	22.466	22.566
20 MHz	1732.5 MHz	20175	23.472	23.701	23.877	22.604	22.632	22.696	22.619
20 MHz	1745 MHz	20300	23.864	23.943	24.1	22.865	22.911	22.868	22.909

LTE Band 4			Conducted power (dBm) for LTE modes						
			QPSK, Start RB: 0, RB Alloc: 1	QPSK, Start RB: 37, RB Alloc: 1	QPSK, Start RB: 74, RB Alloc: 1	QPSK, Start RB: 0, RB Alloc: 36	QPSK, Start RB: 19, RB Alloc: 36	QPSK, Start RB: 39, RB Alloc: 36	QPSK, Start RB: 0, RB Alloc: 75
Channel BW	Frequency	Channel							
15 MHz	1717.5 MHz	20025	22.477	23.481	23.411	22.593	22.534	22.485	22.412
15 MHz	1732.5 MHz	20175	23.57	23.749	23.84	22.517	22.625	22.637	22.57
15 MHz	1747.5 MHz	20325	23.753	23.766	24.016	22.866	22.841	22.915	22.775

LTE Band 4			Conducted power (dBm) for LTE modes						
			QPSK, Start RB: 0, RB Alloc: 1	QPSK, Start RB: 25, RB Alloc: 1	QPSK, Start RB: 49, RB Alloc: 1	QPSK, Start RB: 0, RB Alloc: 25	QPSK, Start RB: 12, RB Alloc: 25	QPSK, Start RB: 25, RB Alloc: 25	QPSK, Start RB: 0, RB Alloc: 50
Channel BW	Frequency	Channel							
10 MHz	1715.0 MHz	20000	22.49	23.492	23.586	22.631	22.587	22.487	22.562
10 MHz	1732.5 MHz	20175	23.591	23.664	23.776	22.546	22.594	22.57	22.534
10 MHz	1750.0 MHz	20350	23.737	23.781	23.819	22.796	22.852	22.896	22.781

LTE Band 4			Conducted power (dBm) for LTE modes						
			QPSK, Start RB: 0, RB Alloc: 1	QPSK, Start RB: 12, RB Alloc: 1	QPSK, Start RB: 24, RB Alloc: 1	QPSK, Start RB: 0, RB Alloc: 12	QPSK, Start RB: 6, RB Alloc: 12	QPSK, Start RB: 13, RB Alloc: 12	QPSK, Start RB: 0, RB Alloc: 25
Channel BW	Frequency	Channel							
5 MHz	1712.5 MHz	19975	23.666	23.67	23.596	22.506	22.452	22.559	22.502
5 MHz	1732.5 MHz	20175	23.579	23.631	23.665	22.487	22.51	22.55	22.503
5 MHz	1752.5 MHz	20375	23.927	23.851	23.95	22.936	22.861	22.923	22.843

LTE Band 4			Conducted power (dBm) for LTE modes						
			QPSK, Start RB: 0, RB Alloc: 1	QPSK, Start RB: 7, RB Alloc: 1	QPSK, Start RB: 14, RB Alloc: 1	QPSK, Start RB: 0, RB Alloc: 8	QPSK, Start RB: 3, RB Alloc: 8	QPSK, Start RB: 7, RB Alloc: 8	QPSK, Start RB: 0, RB Alloc: 15
Channel BW	Frequency	Channel							
3 MHz	1711.5 MHz	19965	22.538	23.565	23.665	22.71	22.513	22.571	22.536
3 MHz	1732.5 MHz	20175	23.483	23.543	23.572	22.501	22.533	22.55	22.584
3 MHz	1753.5 MHz	20385	23.781	23.9	23.871	22.873	22.966	22.969	22.968

LTE Band 4			Conducted power (dBm) for LTE modes						
			QPSK, Start RB: 0, RB Alloc: 1	QPSK, Start RB: 3, RB Alloc: 1	QPSK, Start RB: 5, RB Alloc: 1	QPSK, Start RB: 0, RB Alloc: 3	QPSK, Start RB: 1, RB Alloc: 3	QPSK, Start RB: 3, RB Alloc: 3	QPSK, Start RB: 0, RB Alloc: 6
Channel BW	Frequency	Channel							
1.4 MHz	1710.6 MHz	19956	22.537	23.706	23.677	23.674	23.595	23.579	22.615
1.4 MHz	1732.5 MHz	20175	23.424	23.531	23.54	23.468	23.645	23.624	22.606
1.4 MHz	1754.4 MHz	20394	23.955	23.873	23.887	23.911	23.919	23.915	22.929

LTE Band 4			Conducted power (dBm) for LTE modes						
			16-QAM, Start RB: 0, RB Alloc: 1	16-QAM, Start RB: 50, RB Alloc: 1	16-QAM, Start RB: 99, RB Alloc: 1	16-QAM, Start RB: 0, RB Alloc: 50	16-QAM, Start RB: 25, RB Alloc: 50	16-QAM, Start RB: 50, RB Alloc: 50	16-QAM, Start RB: 0, RB Alloc: 100
Channel BW	Frequency	Channel							
20 MHz	1720 MHz	20050	22.2	22.143	22.127	21.692	21.622	21.512	21.555
20 MHz	1732.5 MHz	20175	22.304	22.457	22.647	21.582	21.696	21.755	21.662
20 MHz	1745 MHz	20300	22.893	23.13	23.161	21.845	21.872	21.882	21.839

LTE Band 4			Conducted power (dBm) for LTE modes						
			16-QAM, Start RB: 0, RB Alloc: 1	16-QAM, Start RB: 37, RB Alloc: 1	16-QAM, Start RB: 74, RB Alloc: 1	16-QAM, Start RB: 0, RB Alloc: 36	16-QAM, Start RB: 19, RB Alloc: 36	16-QAM, Start RB: 39, RB Alloc: 36	16-QAM, Start RB: 0, RB Alloc: 75
Channel BW	Frequency	Channel							
15 MHz	1717.5 MHz	20025	22.208	22.05	22.012	21.649	21.565	21.484	21.499
15 MHz	1732.5 MHz	20175	22.555	22.787	22.935	21.612	21.699	21.731	21.603
15 MHz	1747.5 MHz	20325	22.887	22.817	23.152	21.793	21.752	21.828	21.708

LTE Band 4			Conducted power (dBm) for LTE modes						
			16-QAM, Start RB: 0, RB Alloc: 1	16-QAM, Start RB: 25, RB Alloc: 1	16-QAM, Start RB: 49, RB Alloc: 1	16-QAM, Start RB: 0, RB Alloc: 25	16-QAM, Start RB: 12, RB Alloc: 25	16-QAM, Start RB: 25, RB Alloc: 25	16-QAM, Start RB: 0, RB Alloc: 50
Channel BW	Frequency	Channel							
10 MHz	1715.0 MHz	20000	22.179	22.047	22.13	21.634	21.598	21.494	21.602
10 MHz	1732.5 MHz	20175	22.69	22.756	22.84	21.557	21.684	21.654	21.6
10 MHz	1750.0 MHz	20350	22.37	22.441	22.502	21.853	21.916	21.9	21.834

LTE Band 4			Conducted power (dBm) for LTE modes						
			16-QAM, Start RB: 0, RB Alloc: 1	16-QAM, Start RB: 12, RB Alloc: 1	16-QAM, Start RB: 24, RB Alloc: 1	16-QAM, Start RB: 0, RB Alloc: 12	16-QAM, Start RB: 6, RB Alloc: 12	16-QAM, Start RB: 13, RB Alloc: 12	16-QAM, Start RB: 0, RB Alloc: 25
Channel BW	Frequency	Channel							
5 MHz	1712.5 MHz	19975	22.946	22.887	22.841	21.547	21.58	21.602	21.455
5 MHz	1732.5 MHz	20175	22.033	22.165	22.162	21.478	21.592	21.585	21.692
5 MHz	1752.5 MHz	20375	23.053	22.982	23.094	21.937	21.887	21.964	21.881

LTE Band 4			Conducted power (dBm) for LTE modes						
			16-QAM, Start RB: 0, RB Alloc: 1	16-QAM, Start RB: 7, RB Alloc: 1	16-QAM, Start RB: 14, RB Alloc: 1	16-QAM, Start RB: 0, RB Alloc: 8	16-QAM, Start RB: 3, RB Alloc: 8	16-QAM, Start RB: 7, RB Alloc: 8	16-QAM, Start RB: 0, RB Alloc: 15
Channel BW	Frequency	Channel							
3 MHz	1711.5 MHz	19965	22.776	22.666	22.76	21.604	21.458	21.528	21.573
3 MHz	1732.5 MHz	20175	22.095	22.151	22.094	21.505	21.565	21.563	21.587
3 MHz	1753.5 MHz	20385	22.921	23.107	23.082	21.76	21.859	21.903	21.969

LTE Band 4			Conducted power (dBm) for LTE modes						
			16-QAM, Start RB: 0, RB Alloc: 1	16-QAM, Start RB: 3, RB Alloc: 1	16-QAM, Start RB: 5, RB Alloc: 1	16-QAM, Start RB: 0, RB Alloc: 3	16-QAM, Start RB: 1, RB Alloc: 3	16-QAM, Start RB: 3, RB Alloc: 3	16-QAM, Start RB: 0, RB Alloc: 6
Channel BW	Frequency	Channel							
1.4 MHz	1710.6 MHz	19956	22.776	22.777	22.771	22.573	22.584	22.547	21.453
1.4 MHz	1732.5 MHz	20175	22.007	22.096	22.136	22.626	22.733	22.701	21.773
1.4 MHz	1754.4 MHz	20394	22.805	22.777	22.785	22.985	22.933	22.913	21.993

LTE Band 5			Conducted power (dBm) for LTE modes						
			QPSK, Start RB: 0, RB Alloc: 1	QPSK, Start RB: 25, RB Alloc: 1	QPSK, Start RB: 49, RB Alloc: 1	QPSK, Start RB: 0, RB Alloc: 25	QPSK, Start RB: 12, RB Alloc: 25	QPSK, Start RB: 25, RB Alloc: 25	QPSK, Start RB: 0, RB Alloc: 50
Channel BW	Frequency	Channel							
10 MHz	829 MHz	20450	24.154	23.957	23.818	23.177	23.097	22.994	22.95
10 MHz	836.5 MHz	20525	23.801	23.953	24.277	22.958	23.045	23.219	23.003
10 MHz	844 MHz	20600	24.213	24.24	23.742	23.37	23.29	23.188	23.206

LTE Band 5			Conducted power (dBm) for LTE modes						
			QPSK, Start RB: 0, RB Alloc: 1	QPSK, Start RB: 12, RB Alloc: 1	QPSK, Start RB: 24, RB Alloc: 1	QPSK, Start RB: 0, RB Alloc: 12	QPSK, Start RB: 6, RB Alloc: 12	QPSK, Start RB: 13, RB Alloc: 12	QPSK, Start RB: 0, RB Alloc: 25
Channel BW	Frequency	Channel							
5 MHz	826.5 MHz	20425	22.09	24.232	24.13	23.219	23.254	23.132	23.193
5 MHz	836.5 MHz	20525	23.989	23.969	24.158	23.025	23.128	23.125	23.045
5 MHz	846.5 MHz	20625	24.182	24.171	23.657	23.334	23.196	23.024	23.104

LTE Band 5			Conducted power (dBm) for LTE modes						
			QPSK, Start RB: 0, RB Alloc: 1	QPSK, Start RB: 7, RB Alloc: 1	QPSK, Start RB: 14, RB Alloc: 1	QPSK, Start RB: 0, RB Alloc: 8	QPSK, Start RB: 3, RB Alloc: 8	QPSK, Start RB: 7, RB Alloc: 8	QPSK, Start RB: 0, RB Alloc: 15
Channel BW	Frequency	Channel							
3 MHz	825.5 MHz	20415	22.219	24.167	24.145	23.249	23.216	23.209	23.259
3 MHz	836.5 MHz	20525	23.934	23.973	23.956	22.987	23.112	23.076	23.069
3 MHz	847.5 MHz	20635	24.292	24.06	23.653	23.185	23.042	22.842	23.032

LTE Band 5			Conducted power (dBm) for LTE modes						
			QPSK, Start RB: 0, RB Alloc: 1	QPSK, Start RB: 3, RB Alloc: 1	QPSK, Start RB: 5, RB Alloc: 1	QPSK, Start RB: 0, RB Alloc: 3	QPSK, Start RB: 1, RB Alloc: 3	QPSK, Start RB: 3, RB Alloc: 3	QPSK, Start RB: 0, RB Alloc: 6
Channel BW	Frequency	Channel							
1.4 MHz	824.6 MHz	20406	24.26	24.301	24.248	24.149	24.166	24.144	23.185
1.4 MHz	836.5 MHz	20525	23.891	23.989	23.991	23.928	24.028	24.039	23.042
1.4 MHz	848.4 MHz	20644	22.972	23.926	23.77	23.917	23.795	23.737	22.955

LTE Band 5			Conducted power (dBm) for LTE modes						
			16-QAM, Start RB: 0, RB Alloc: 1	16-QAM, Start RB: 25, RB Alloc: 1	16-QAM, Start RB: 49, RB Alloc: 1	16-QAM, Start RB: 0, RB Alloc: 25	16-QAM, Start RB: 12, RB Alloc: 25	16-QAM, Start RB: 25, RB Alloc: 25	16-QAM, Start RB: 0, RB Alloc: 50
Channel BW	Frequency	Channel							
10 MHz	829 MHz	20450	22.75	22.529	22.445	22.22	22.139	22.109	22.103
10 MHz	836.5 MHz	20525	22.479	22.596	22.901	22.046	22.065	22.297	22.03
10 MHz	844 MHz	20600	23.371	23.418	22.954	22.445	22.376	22.169	22.259

LTE Band 5			Conducted power (dBm) for LTE modes						
			16-QAM, Start RB: 0, RB Alloc: 1	16-QAM, Start RB: 12, RB Alloc: 1	16-QAM, Start RB: 24, RB Alloc: 1	16-QAM, Start RB: 0, RB Alloc: 12	16-QAM, Start RB: 6, RB Alloc: 12	16-QAM, Start RB: 13, RB Alloc: 12	16-QAM, Start RB: 0, RB Alloc: 25
Channel BW	Frequency	Channel							
5 MHz	826.5 MHz	20425	23.62	23.558	23.426	22.208	22.216	22.151	22.107
5 MHz	836.5 MHz	20525	22.625	22.6	22.786	22.063	22.159	22.143	22.152
5 MHz	846.5 MHz	20625	23.364	23.448	22.954	22.354	22.304	22.126	22.154

LTE Band 5			Conducted power (dBm) for LTE modes						
			16-QAM, Start RB: 0, RB Alloc: 1	16-QAM, Start RB: 7, RB Alloc: 1	16-QAM, Start RB: 14, RB Alloc: 1	16-QAM, Start RB: 0, RB Alloc: 8	16-QAM, Start RB: 3, RB Alloc: 8	16-QAM, Start RB: 7, RB Alloc: 8	16-QAM, Start RB: 0, RB Alloc: 15
Channel BW	Frequency	Channel							
3 MHz	825.5 MHz	20415	22.823	22.737	22.74	22.225	22.212	22.206	22.178
3 MHz	836.5 MHz	20525	22.113	23.269	23.244	21.933	22.133	22.074	22.096
3 MHz	847.5 MHz	20635	22.834	22.573	22.192	22.176	22.022	21.93	21.925

LTE Band 5			Conducted power (dBm) for LTE modes						
			16-QAM, Start RB: 0, RB Alloc: 1	16-QAM, Start RB: 3, RB Alloc: 1	16-QAM, Start RB: 5, RB Alloc: 1	16-QAM, Start RB: 0, RB Alloc: 3	16-QAM, Start RB: 1, RB Alloc: 3	16-QAM, Start RB: 3, RB Alloc: 3	16-QAM, Start RB: 0, RB Alloc: 6
Channel BW	Frequency	Channel							
1.4 MHz	824.6 MHz	20406	22.832	22.83	22.826	23.408	23.424	23.399	22.402
1.4 MHz	836.5 MHz	20525	23.342	23.31	23.284	23.052	23.092	23.064	22.065
1.4 MHz	848.4 MHz	20644	22.822	22.623	22.541	22.907	22.837	22.776	21.978

LTE Band 17			Conducted power (dBm) for LTE modes						
			QPSK, Start RB: 0, RB Alloc: 1	QPSK, Start RB: 25, RB Alloc: 1	QPSK, Start RB: 49, RB Alloc: 1	QPSK, Start RB: 0, RB Alloc: 25	QPSK, Start RB: 12, RB Alloc: 25	QPSK, Start RB: 25, RB Alloc: 25	QPSK, Start RB: 0, RB Alloc: 50
Channel BW	Frequency	Channel							
10 MHz	710.0 MHz	23790	23.964	23.929	24.194	22.833	22.851	23.017	22.83

LTE Band 17			Conducted power (dBm) for LTE modes						
			QPSK, Start RB: 0, RB Alloc: 1	QPSK, Start RB: 12, RB Alloc: 1	QPSK, Start RB: 24, RB Alloc: 1	QPSK, Start RB: 0, RB Alloc: 12	QPSK, Start RB: 6, RB Alloc: 12	QPSK, Start RB: 13, RB Alloc: 12	QPSK, Start RB: 0, RB Alloc: 25
Channel BW	Frequency	Channel							
5 MHz	706.5 MHz	23755	21.962	23.922	23.837	22.867	22.979	22.907	22.929
5 MHz	710.0 MHz	23790	23.943	23.958	23.963	22.833	22.933	22.839	22.781
5 MHz	713.5 MHz	23825	23.816	23.885	23.925	22.941	23.063	23.153	23.085

LTE Band 17			Conducted power (dBm) for LTE modes						
			16-QAM, Start RB: 0, RB Alloc: 1	16-QAM, Start RB: 25, RB Alloc: 1	16-QAM, Start RB: 49, RB Alloc: 1	16-QAM, Start RB: 0, RB Alloc: 25	16-QAM, Start RB: 12, RB Alloc: 25	16-QAM, Start RB: 25, RB Alloc: 25	16-QAM, Start RB: 0, RB Alloc: 50
Channel BW	Frequency	Channel							
10 MHz	710.0 MHz	23790	23.083	23.036	23.392	21.943	21.943	22.033	21.851

LTE Band 17			Conducted power (dBm) for LTE modes						
			16-QAM, Start RB: 0, RB Alloc: 1	16-QAM, Start RB: 12, RB Alloc: 1	16-QAM, Start RB: 24, RB Alloc: 1	16-QAM, Start RB: 0, RB Alloc: 12	16-QAM, Start RB: 6, RB Alloc: 12	16-QAM, Start RB: 13, RB Alloc: 12	16-QAM, Start RB: 0, RB Alloc: 25
Channel BW	Frequency	Channel							
5 MHz	706.5 MHz	23755	22.848	23.092	22.99	21.954	22.026	22.013	21.921
5 MHz	710.0 MHz	23790	23.223	23.257	23.353	21.853	21.933	21.895	21.821
5 MHz	713.5 MHz	23825	22.415	22.474	22.527	21.909	22.102	22.106	22.099

RADIATED POWER

§22.913 (a)(2) , §24.232 (c), §27.50 (c) (10), §27.50 (d) (4)

Measurement Procedure

The equipment under test is placed inside the semi-anechoic chamber on a wooden table at the turntable center 3 meters from the receive antenna. The antenna mast is raised and lowered from 1 to 4 meters and the turntable is rotated 360 degrees to obtain a maximum reading on the spectrum analyzer. This is repeated for both horizontal and vertical polarizations of the receive antenna.

The equipment under test is then replaced with a substitution antenna fed by a signal generator. With the signal generator tuned to a particular frequency, the antenna mast is raised and lowered from 1 to 4 meters to obtain the same maximum reading at the spectrum analyzer. The output of the signal generator is then adjusted until a reading identical to that obtained with the actual transmitter is achieved.

The power in dBm of each emission is calculated by correcting the signal generator level for cable loss and gain of the substitution antenna referenced to a dipole. A fully charged battery was used for the supply voltage.

A peak detector was used for measurements in the Band 5 and 17 and an RMS detector was used in the Band 2 and 4.

The EUT was tested in all configurations and the highest power level is reported.

The settings of the receiver were as follows:

Units	dBm
Divisions	5 dB
Resolution Bandwidth	1 MHz
Video Bandwidth (AVG)	3 MHz
Sweep Time	Auto

The EUT was tested under all configurations and modulations with the worst cases reported in the plots below.

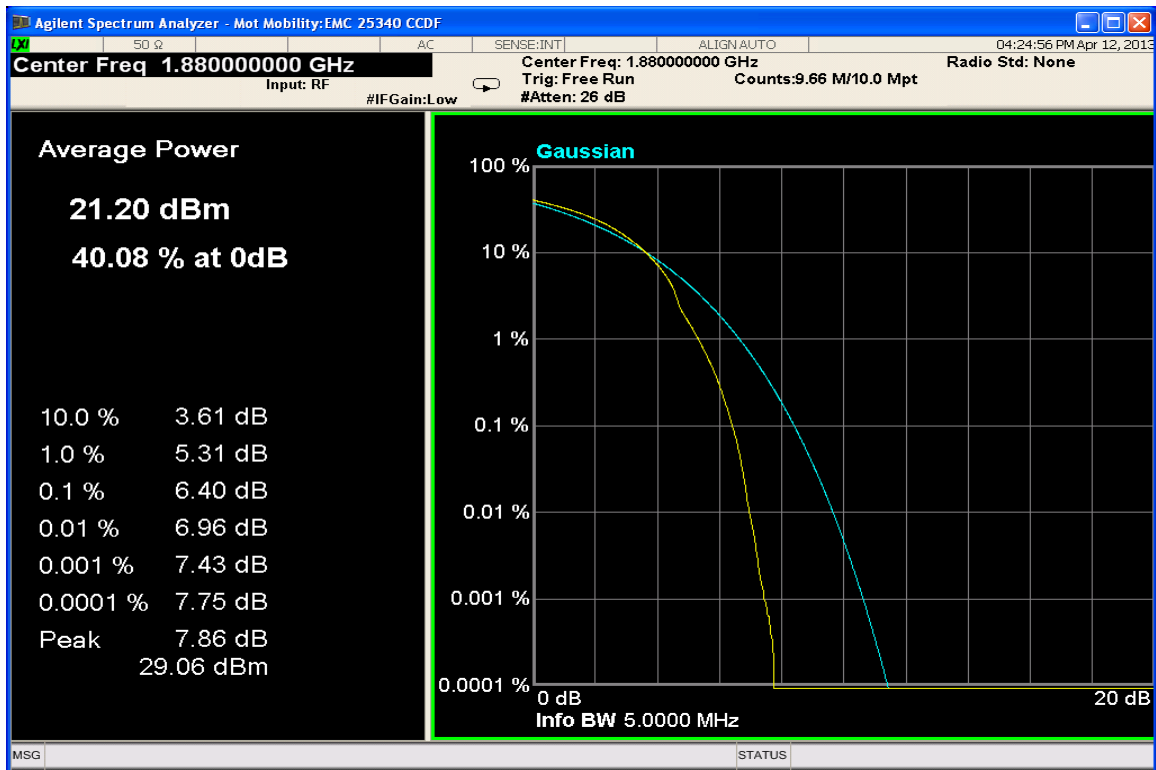
Measurement Results

Band	BW	Modulation	RB Size/Offset	EIRP dBm	ERP dBm
Band 2	20	QPSK	1/50	28.65	26.5
	15	QPSK	1/37	29.47	27.32
	10	QPSK	1/25	28.79	26.64
	5	QPSK	1/12	28.82	26.67
	3	QPSK	1/7	29.14	26.99
	1.4	QPSK	1/3	28.43	26.28
	20	16 QAM	1/50	27.30	25.15
	15	16 QAM	1/37	27.04	24.89
	10	16 QAM	1/25	27.29	25.14
	5	16 QAM	1/12	27.70	25.55
	3	16 QAM	1/7	26.90	24.75
	1.4	16 QAM	1/3	27.39	25.24

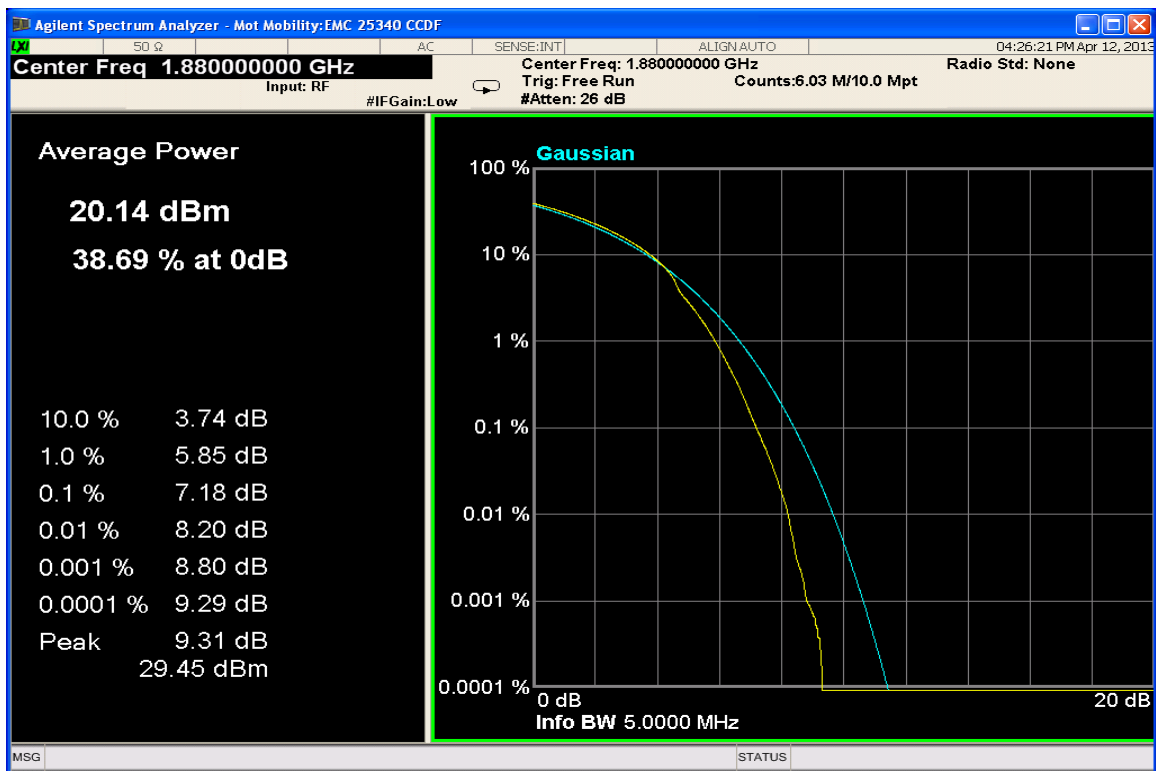
Band	BW	Modulation	RB Size/Offset	EIRP dBm	ERP dBm
Band 4	20	QPSK	1/50	27.16	25.01
	15	QPSK	1/37	27.49	25.34
	10	QPSK	1/25	27.61	25.46
	5	QPSK	1/12	27.85	25.7
	3	QPSK	1/7	28.27	26.12
	1.4	QPSK	1/3	27.39	25.24
	20	16 QAM	1/50	25.27	23.12
	15	16 QAM	1/37	25.19	23.04
	10	16 QAM	1/25	25.01	22.86
	5	16 QAM	1/12	25.40	23.25
	3	16 QAM	1/7	25.11	22.96
	1.4	16 QAM	1/3	25.45	23.3

Band	BW	Modulation	RB Size/Offset	EIRP dBm	ERP dBm
Band 5	10	QPSK	1/25	26.11	23.96
	5	QPSK	1/12	26.48	24.33
	3	QPSK	1/7	26.23	24.08
	1.4	QPSK	1/3	27.27	25.12
	10	16 QAM	1/25	25.08	22.93
	5	16 QAM	1/12	25.68	23.53
	3	16 QAM	1/7	25.22	23.07
	1.4	16 QAM	1/3	26.97	24.82

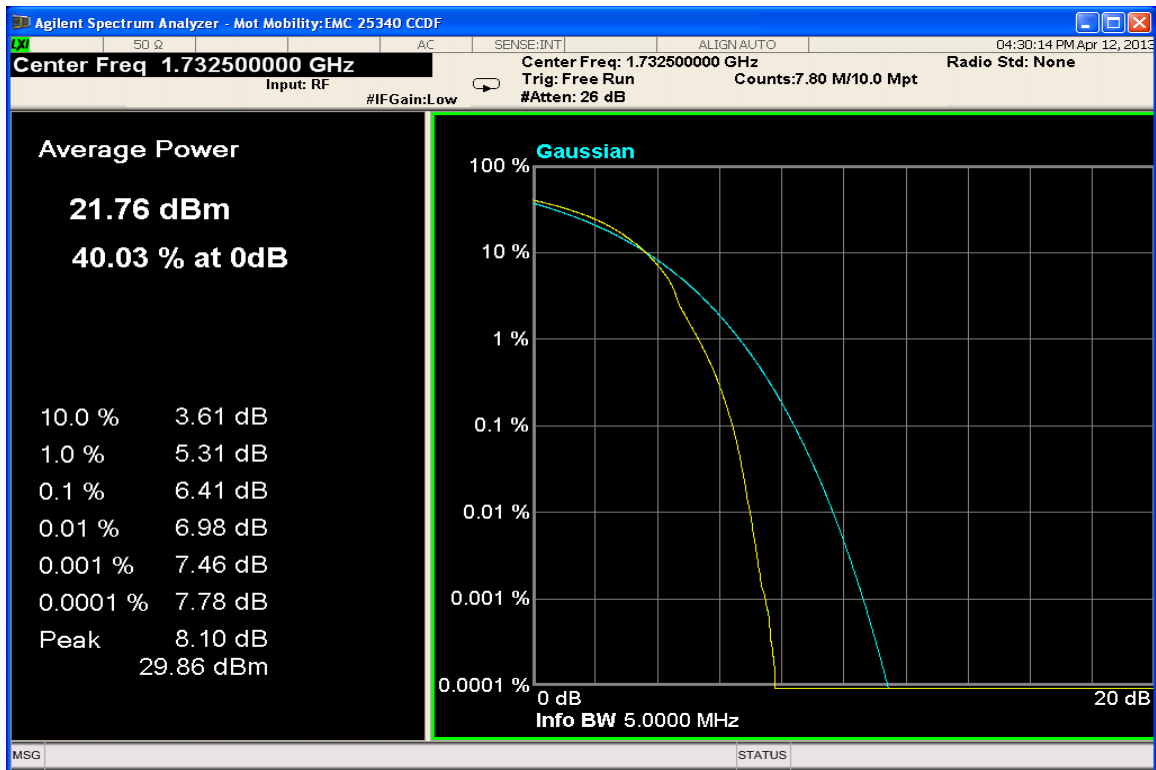
Band	BW	Modulation	RB Size/Offset	EIRP dBm	ERP dBm
Band 17	10	QPSK	1/25	25.89	23.74
	5	QPSK	1/12	26.35	24.20
	10	16 QAM	1/25	26.65	24.50
	5	16 QAM	1/12	26.53	24.38



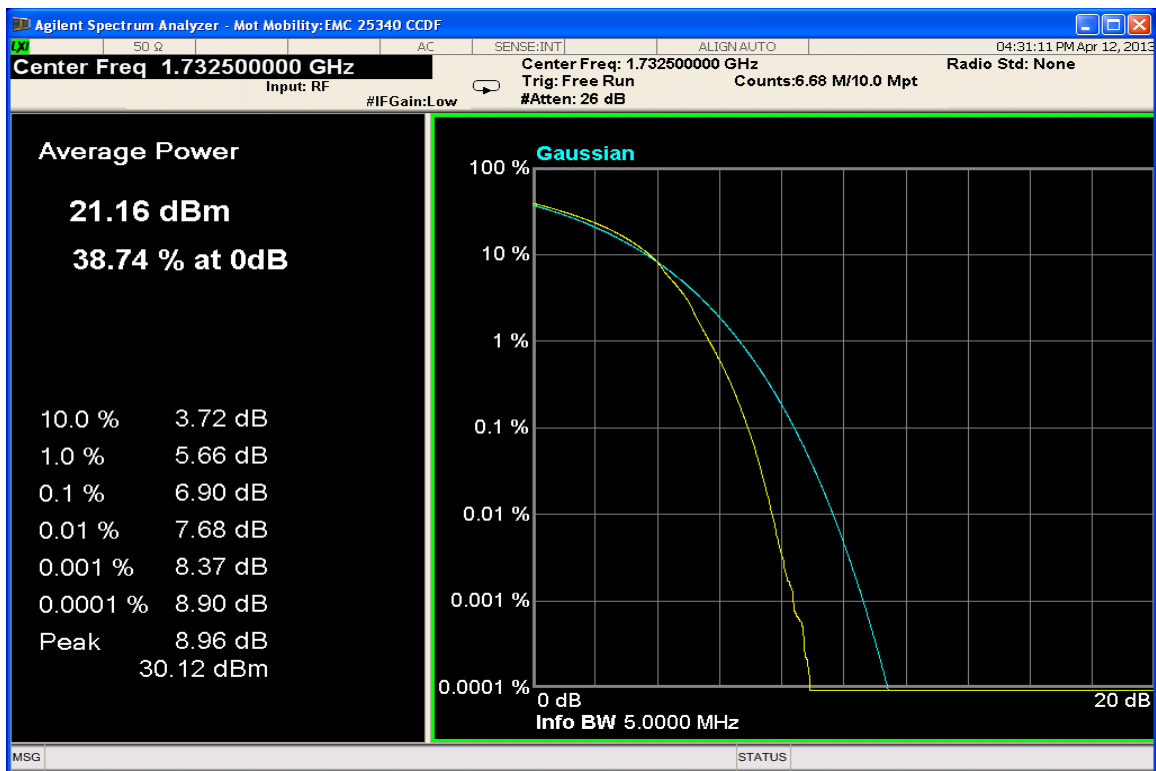
LTE Band 2 PAR Plot - 20 MHz BW, QPSK RB Size = 100 RB Start 0



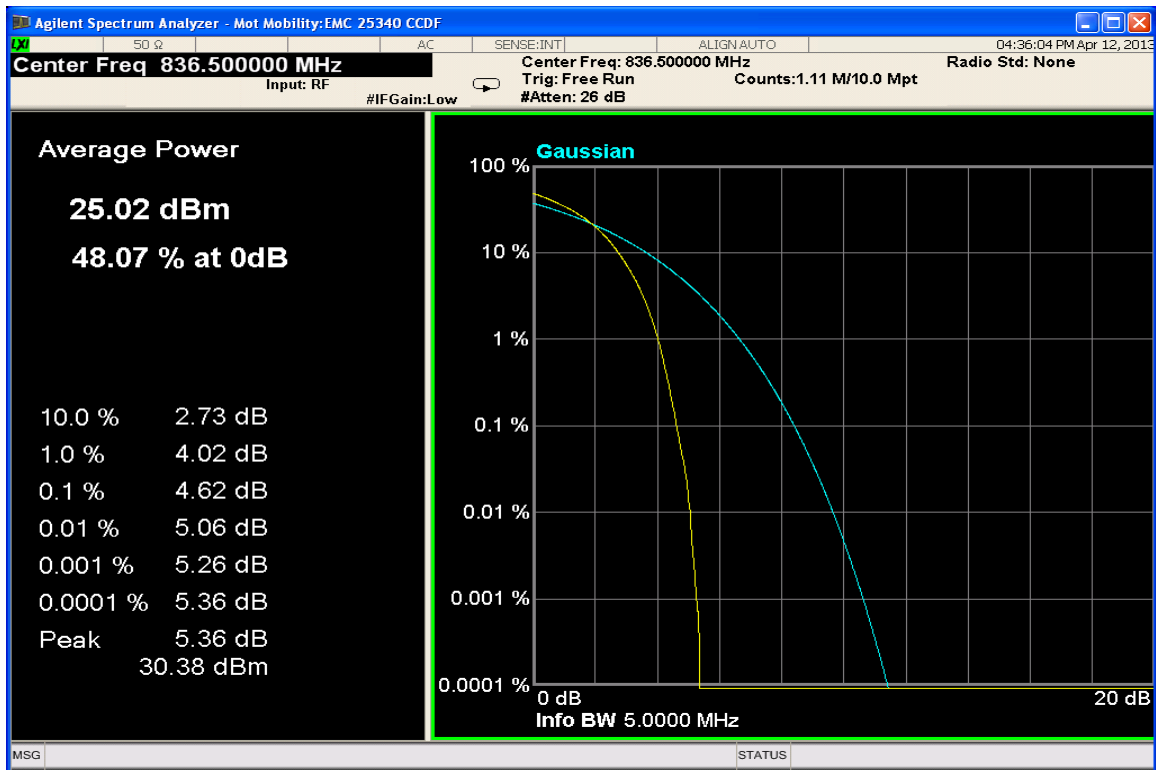
LTE Band 2 PAR Plot - 20 MHz BW, 16-QAM RB Size = 100 RB Start 0



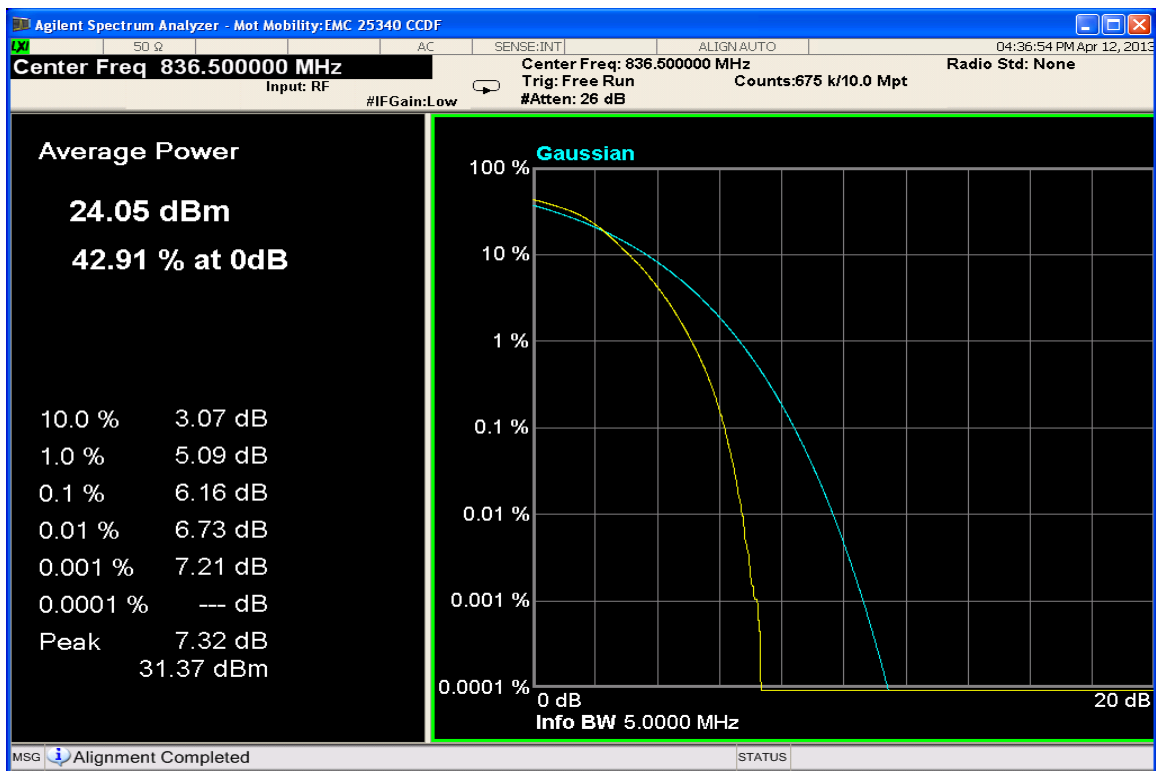
LTE Band 4 PAR Plot - 20 MHz BW, QPSK RB Size = 100 RB Start 0



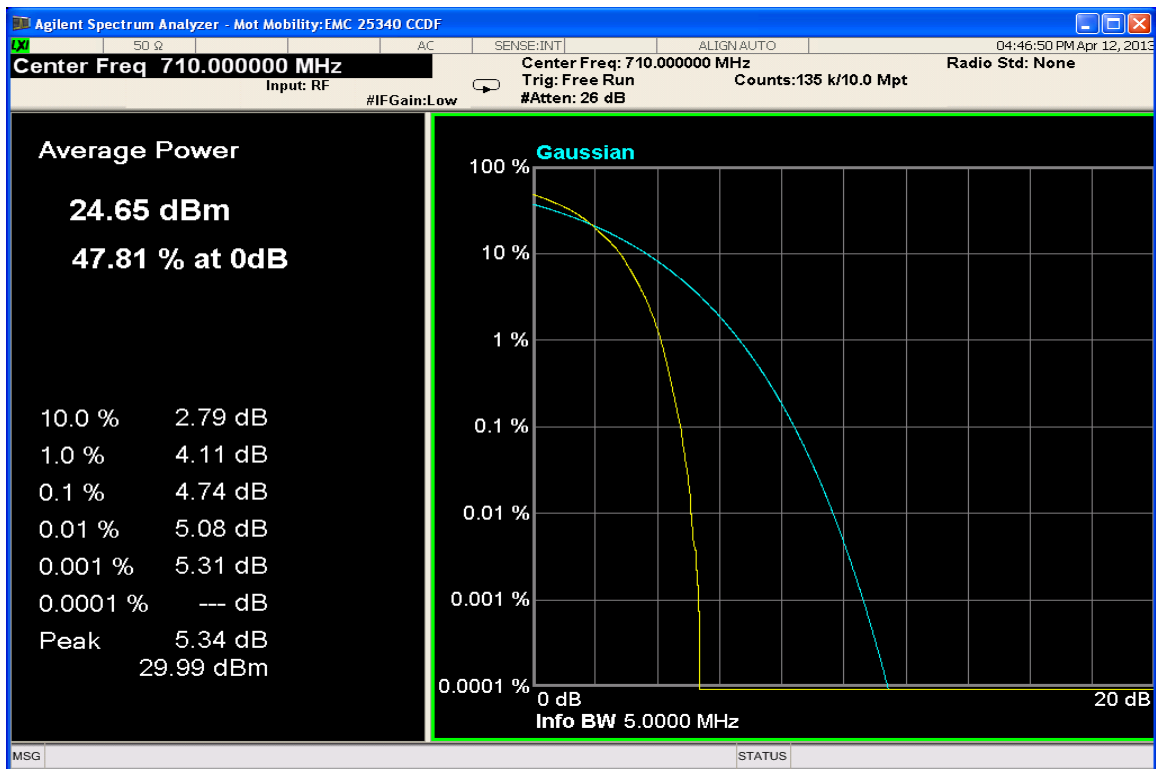
LTE Band 4 PAR Plot - 20 MHz BW, 16-QAM RB Size = 100 RB Start 0



LTE Band 5 PAR Plot - 10 MHz BW, QPSK RB Size = 50 RB Start 0



LTE Band 5 PAR Plot - 10 MHz BW, 16-QAM RB Size = 50 RB Start 0

**LTE Band 17 PAR Plot - 10 MHz BW, QPSK RB Size = 50 RB Start 0****LTE Band 17 PAR Plot - 10 MHz BW, 16-QAM RB Size = 50 RB Start 0**

OCCUPIED BANDWIDTH

§ 2.1049

Measurement Procedure

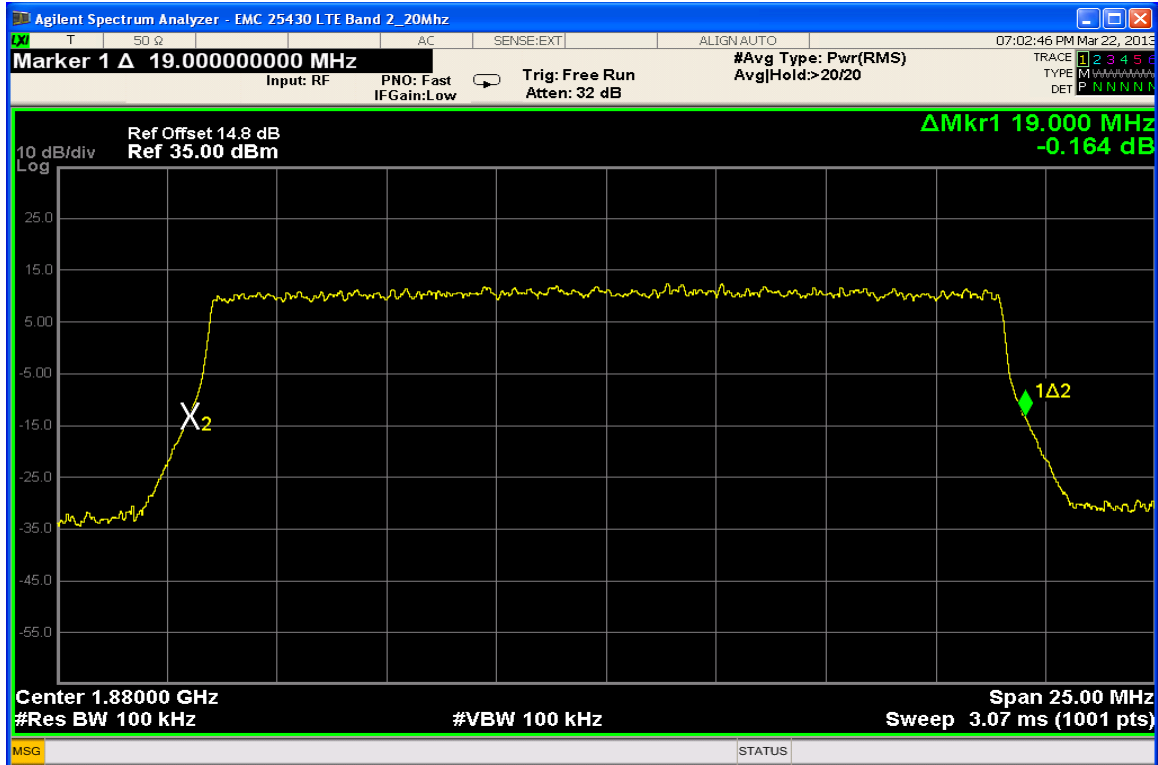
The RF output port of the EUT is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. The amplitude of the spectrum analyzer is corrected for the attenuator and any other applicable losses. The analyzer is set for Peak Detector and each trace is set for Max Hold. The fully charged internal battery was used for the supply voltage.

The EUT was tested under all configurations and modulations.

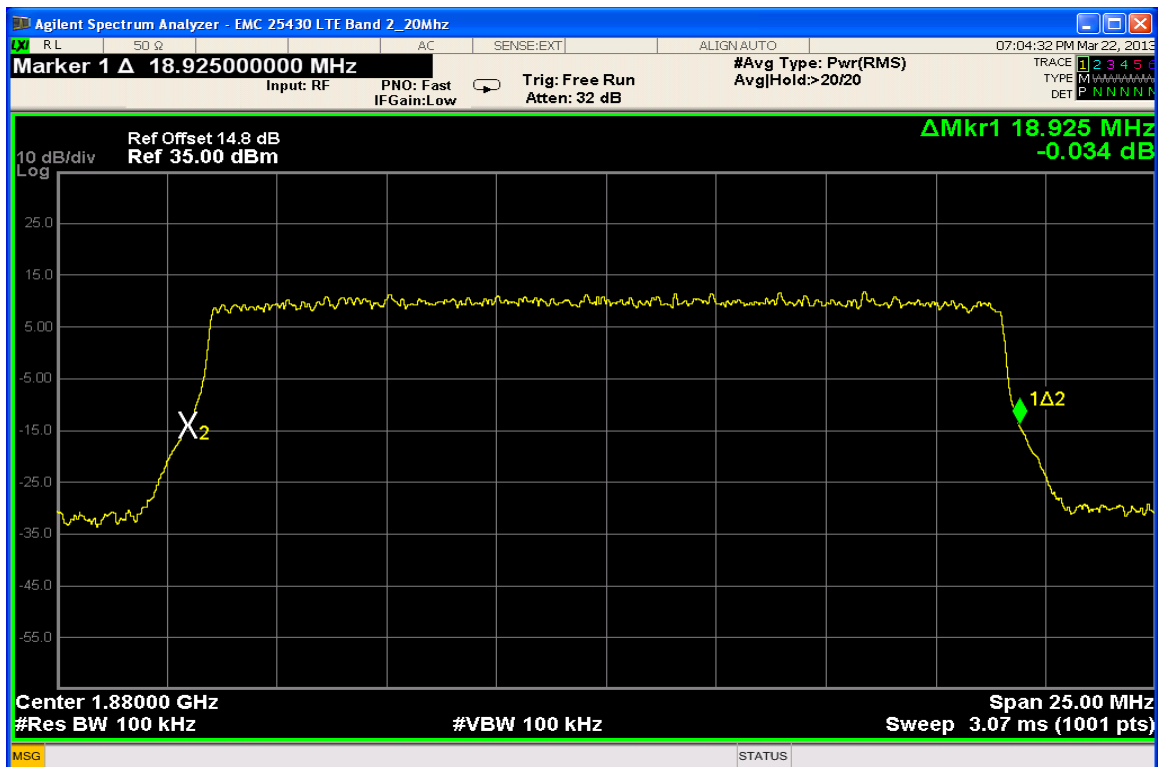
Measurement Results

Attached

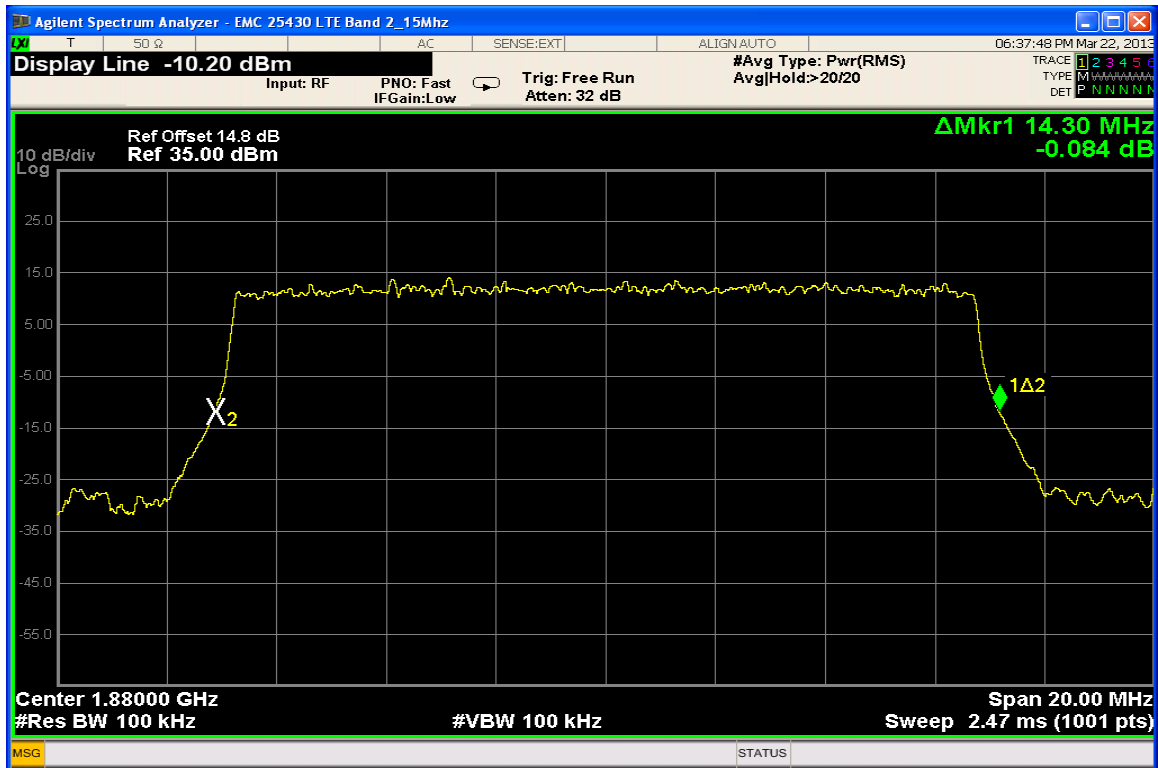
Measurement Results: LTE Band 2 QPSK & 16-QAM Occupied Bandwidth



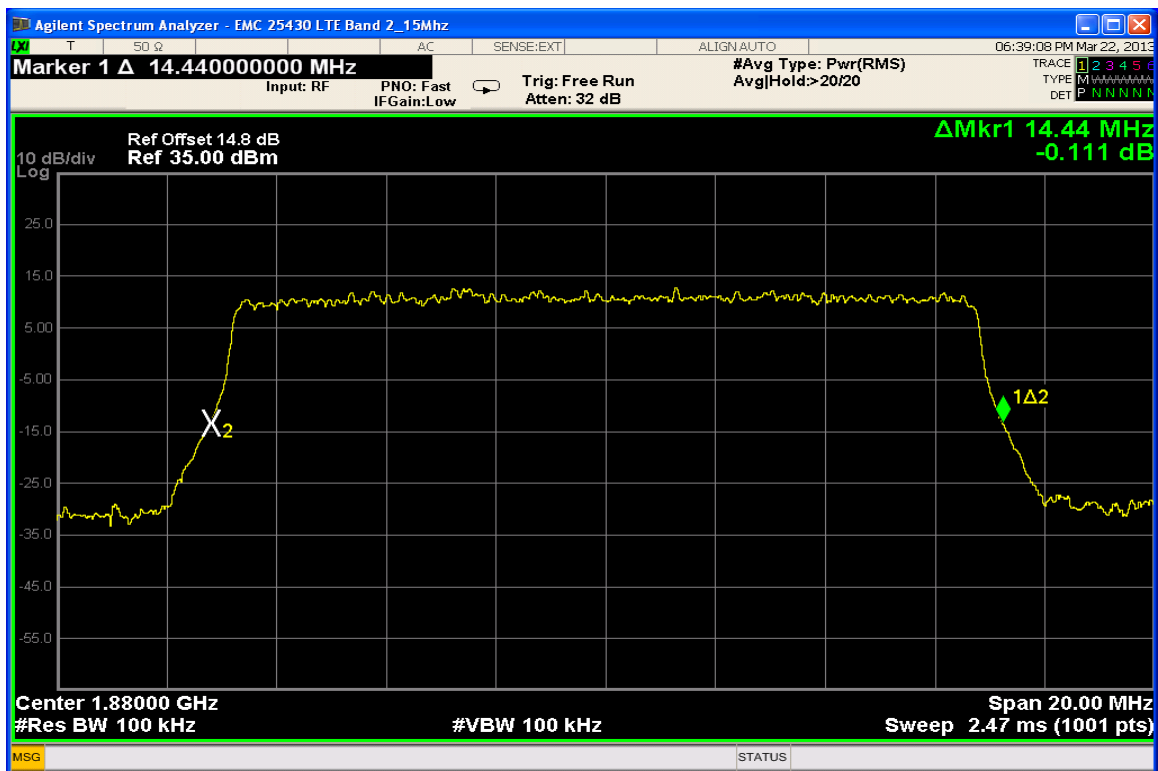
Band 2 LTE – 20 MHz BW, QPSK RB Size = 100 RB Start 0



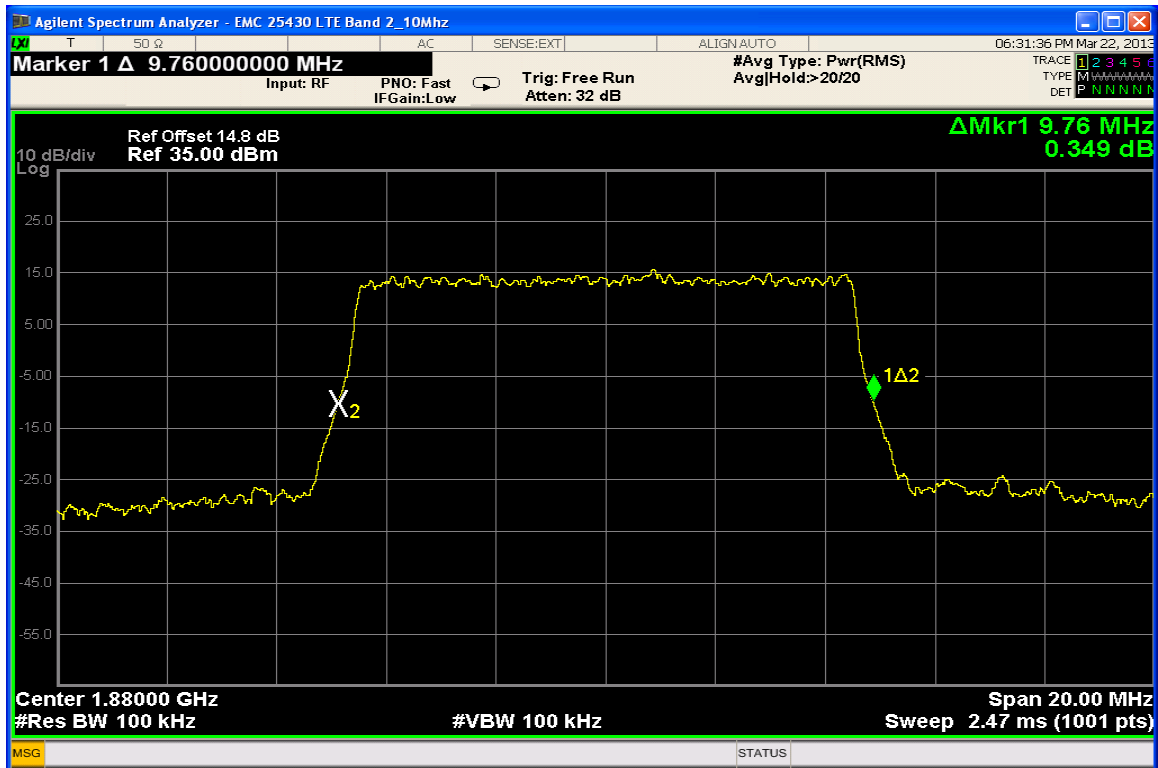
Band 2 LTE – 20 MHz BW, 16-QAM RB Size = 100 RB Start 0



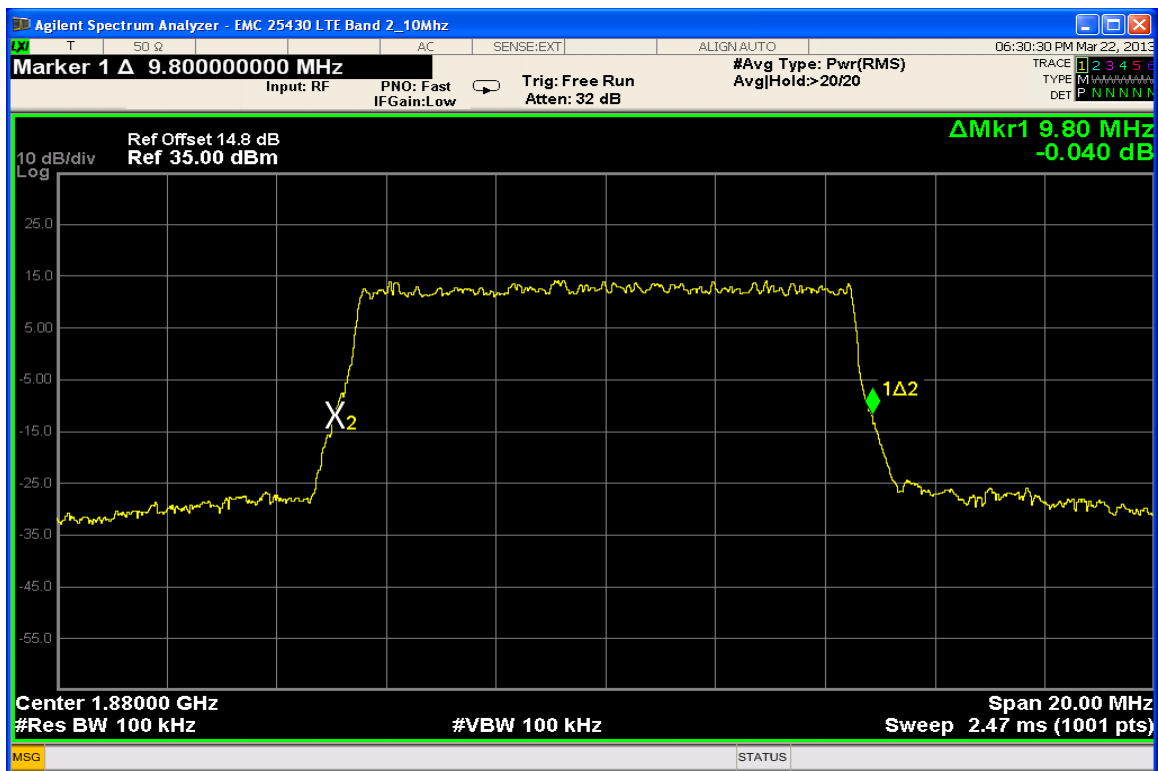
Band 2 LTE – 15 MHz BW, QPSK RB Size = 75 RB Start 0



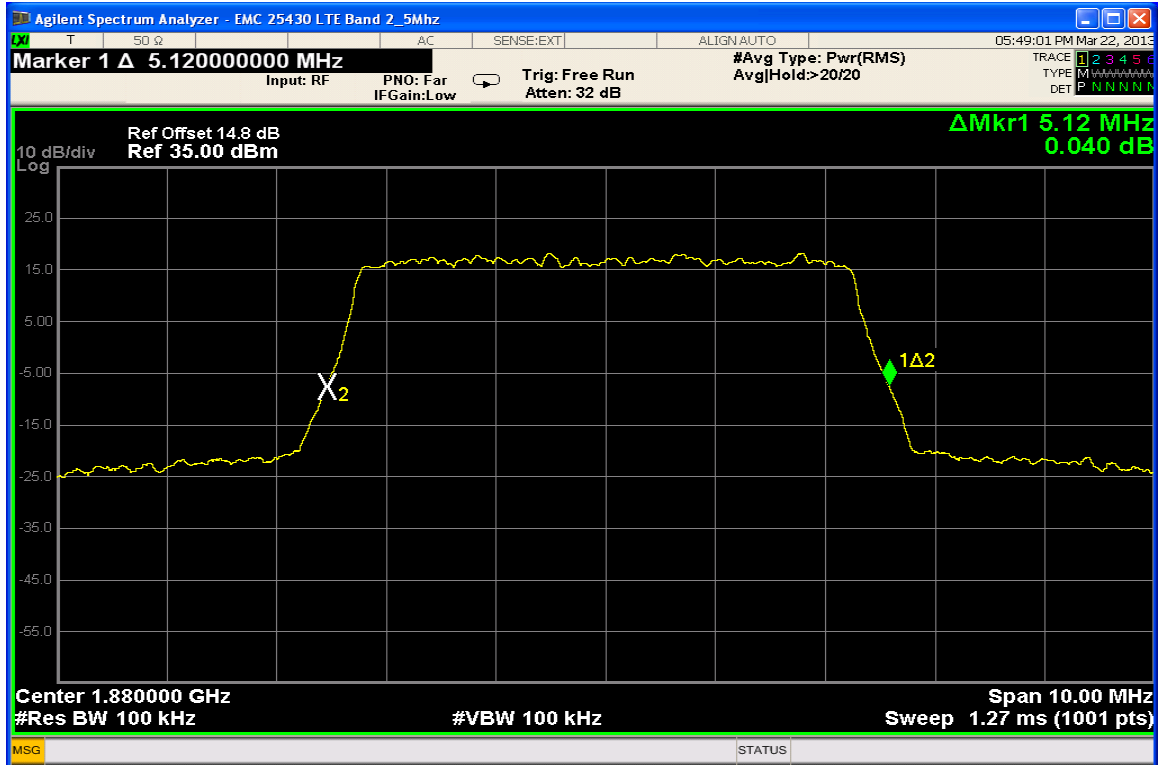
Band 2 LTE – 15 MHz BW, 16QAM RB Size = 75 RB Start 0



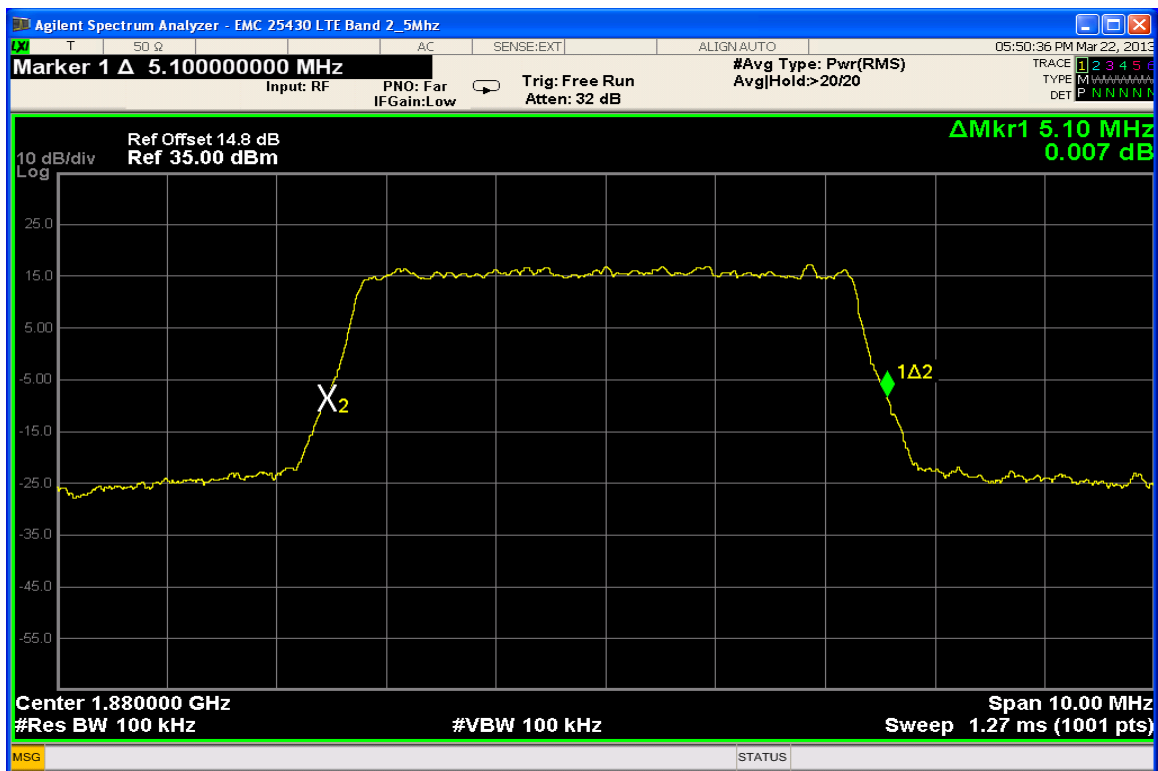
Band 2 LTE – 10 MHz BW, QPSK RB Size = 50 RB Start 0



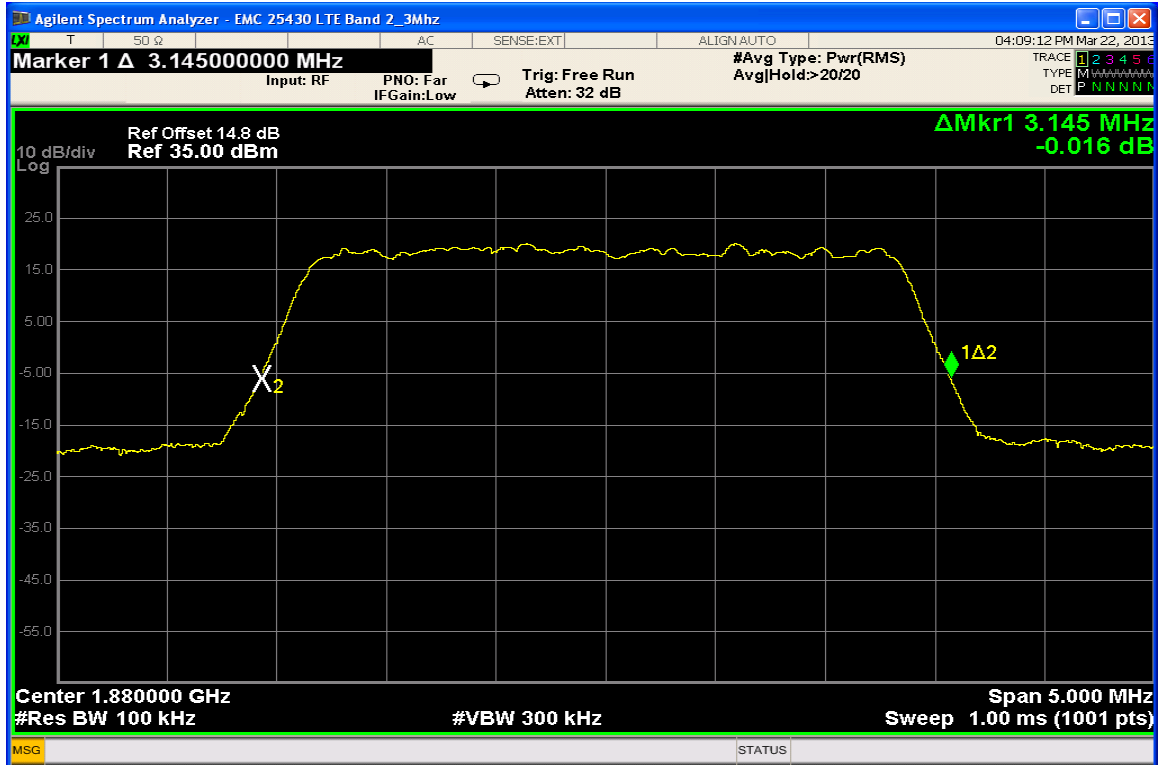
Band 2 LTE – 10 MHz BW, 16QAM RB Size = 50 RB Start 0



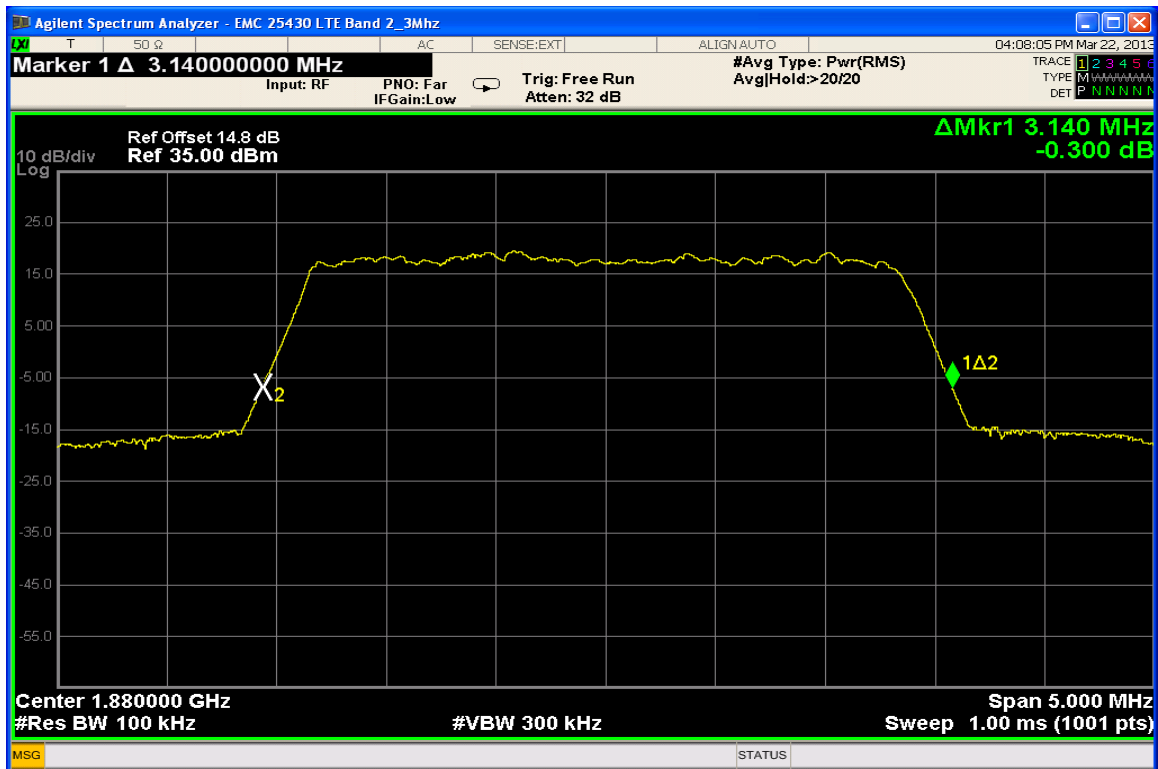
Band 2 LTE – 5 MHz BW, QPSK RB Size = 25 RB Start 0



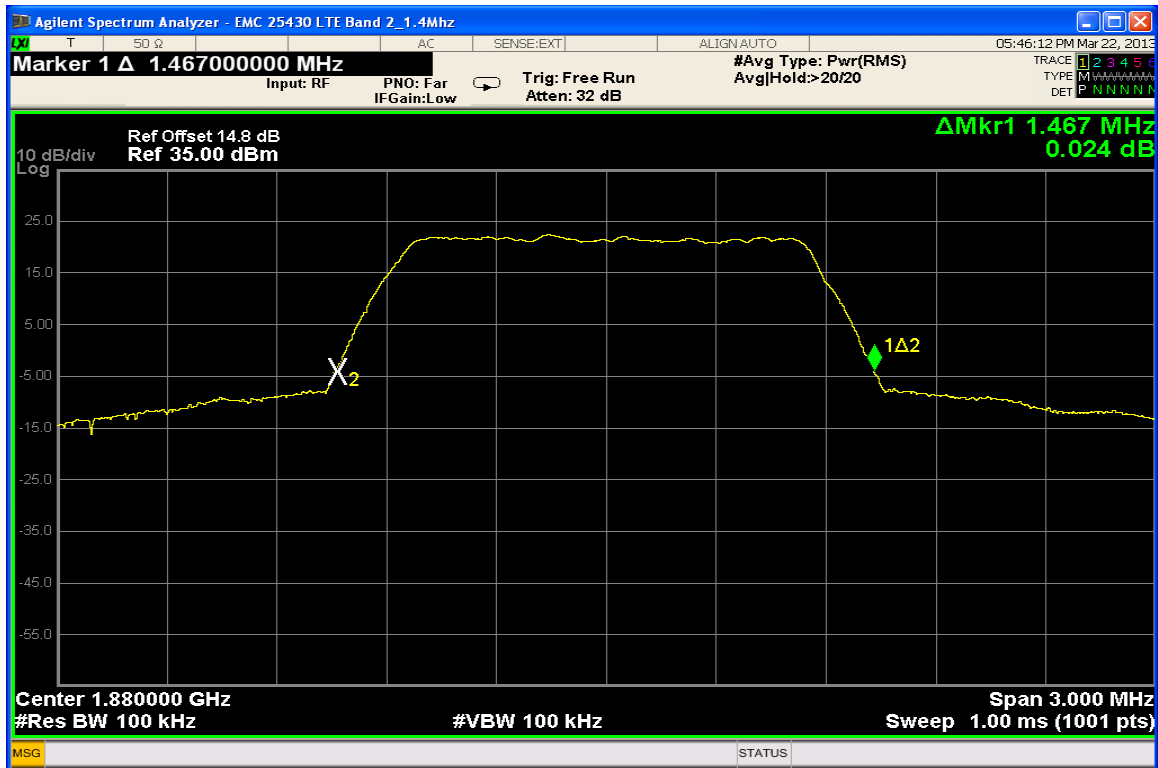
Band 2 LTE – 5 MHz BW, 16QAM RB Size = 25 RB Start 0



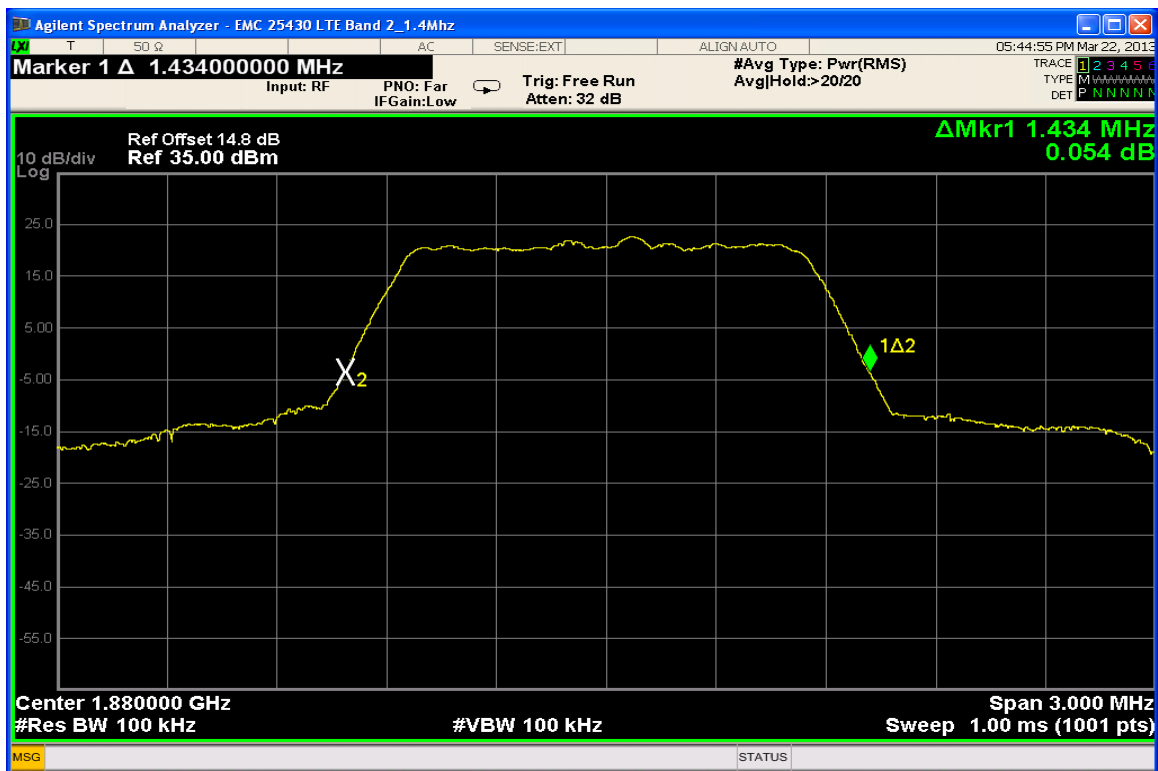
Band 2 LTE – 3 MHz BW, QPSK RB Size = 15 RB Start 0



Band 2 LTE – 3 MHz BW, 16QAM RB Size = 15 RB Start 0

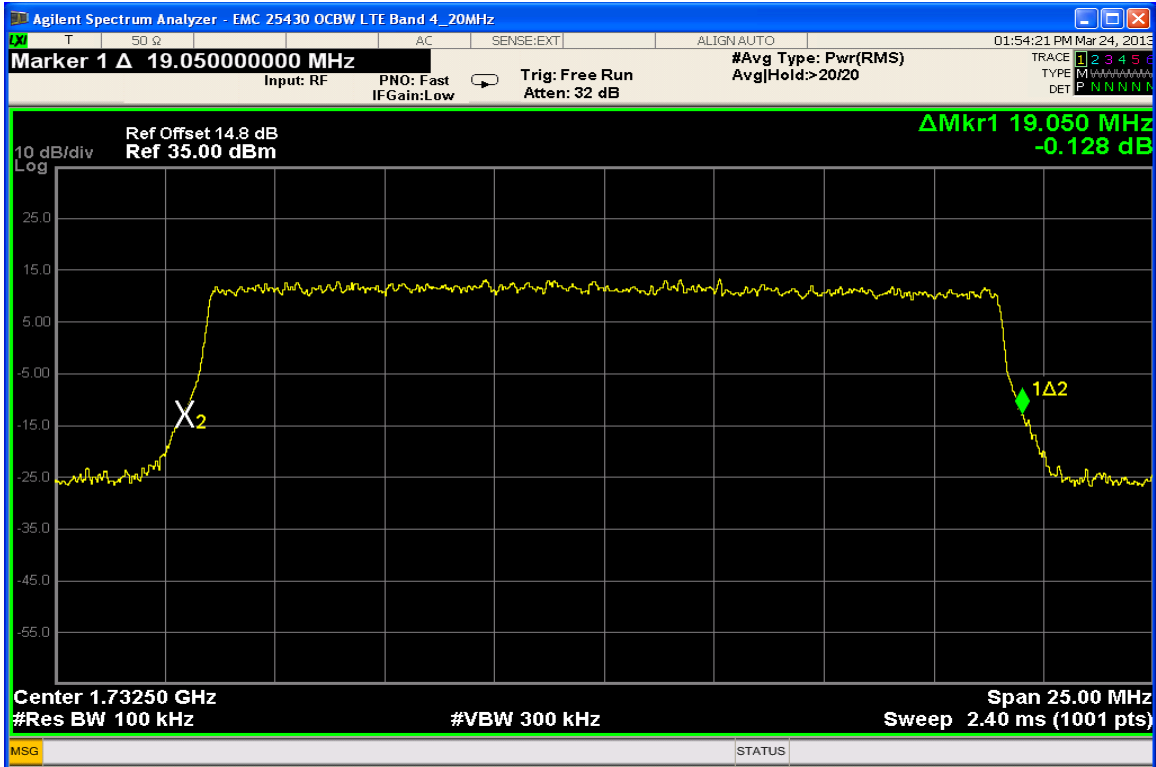


Band 2 LTE – 1.4 MHz BW, QPSK RB Size = 6 RB Start 0

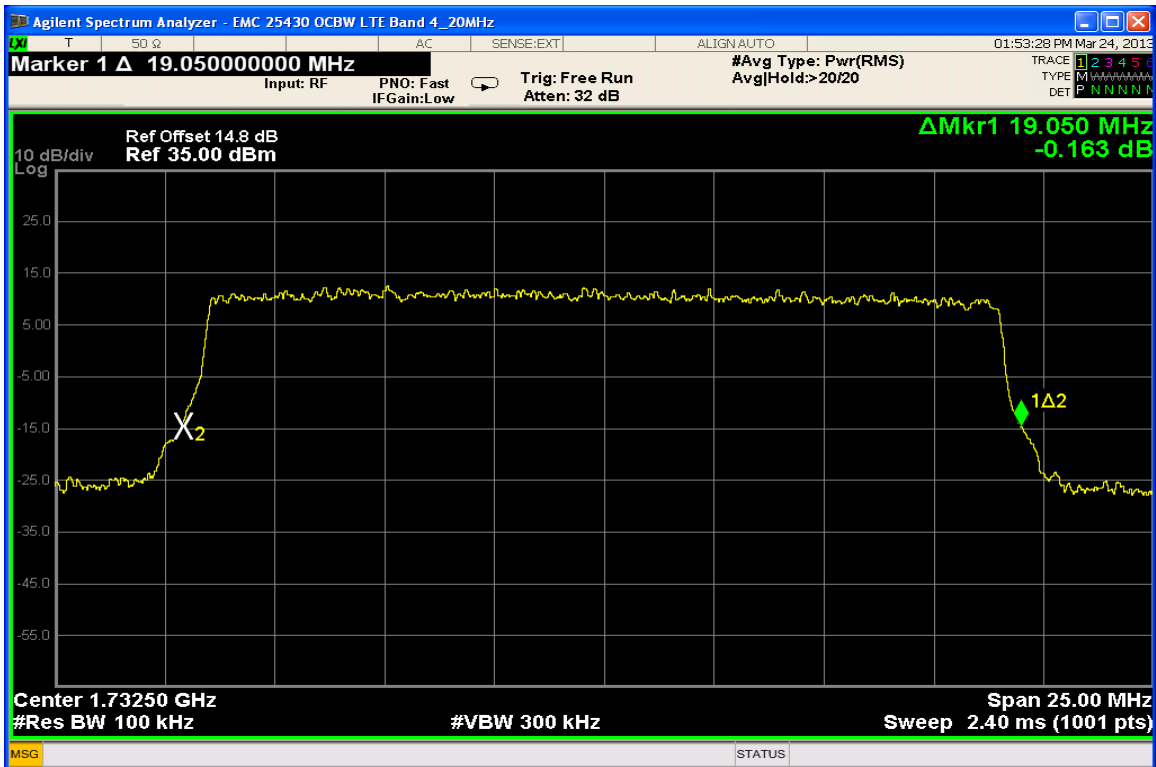


Band 2 LTE – 1.4 MHz BW, 16QAM RB Size = 6 RB Start 0

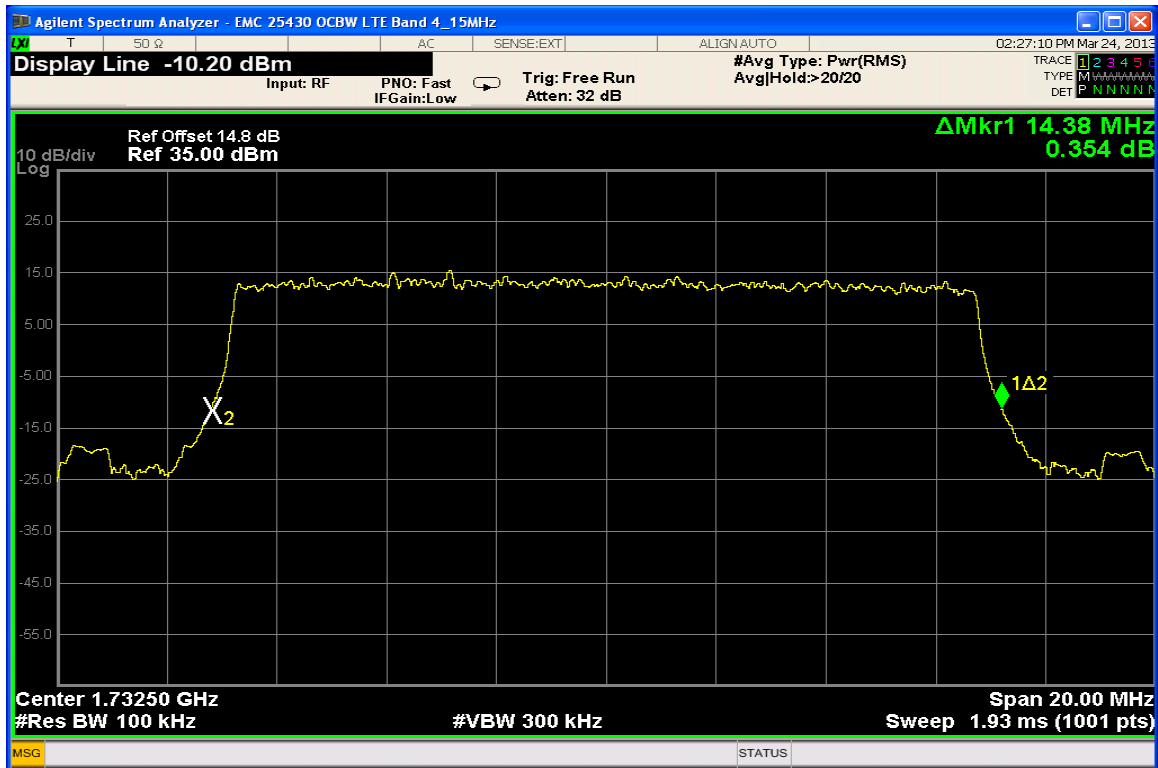
Measurement Results: LTE Band 4 QPSK & 16-QAM Occupied Bandwidth



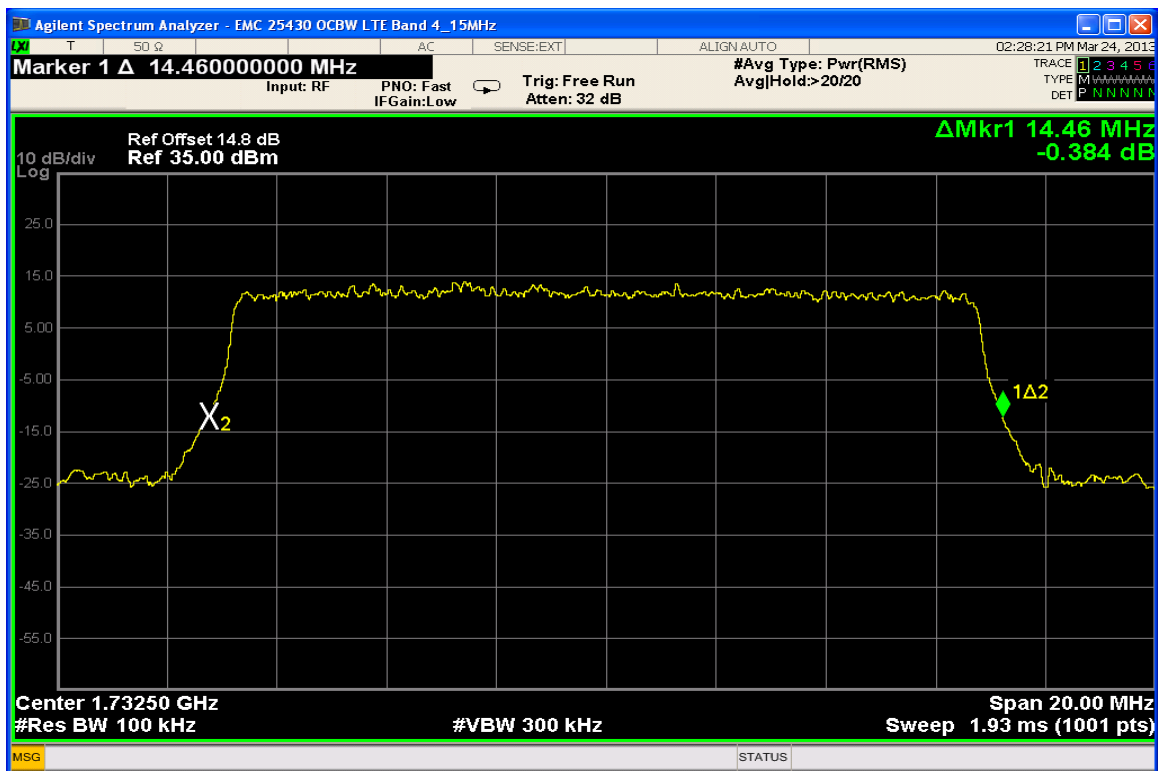
Band 4 LTE – 20 MHz BW, QPSK RB Size = 100 RB Start 0



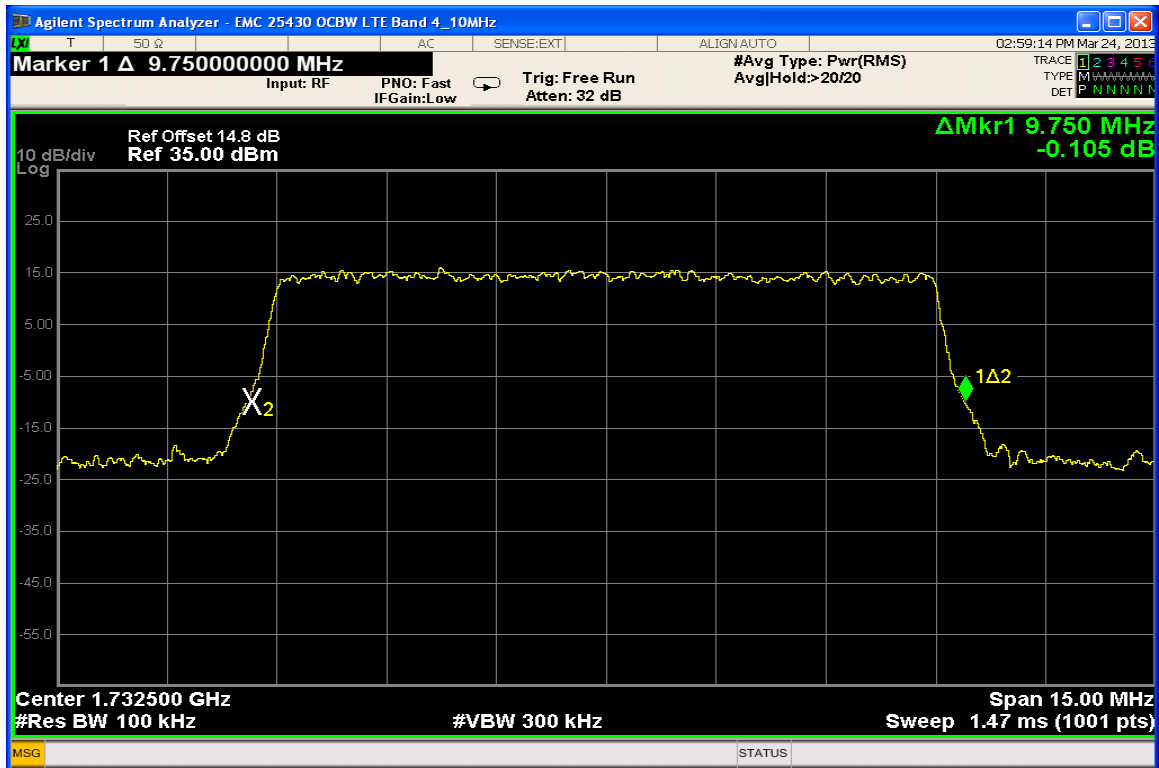
Band 4 LTE – 20 MHz BW, 16-QAM RB Size = 100 RB Start 0



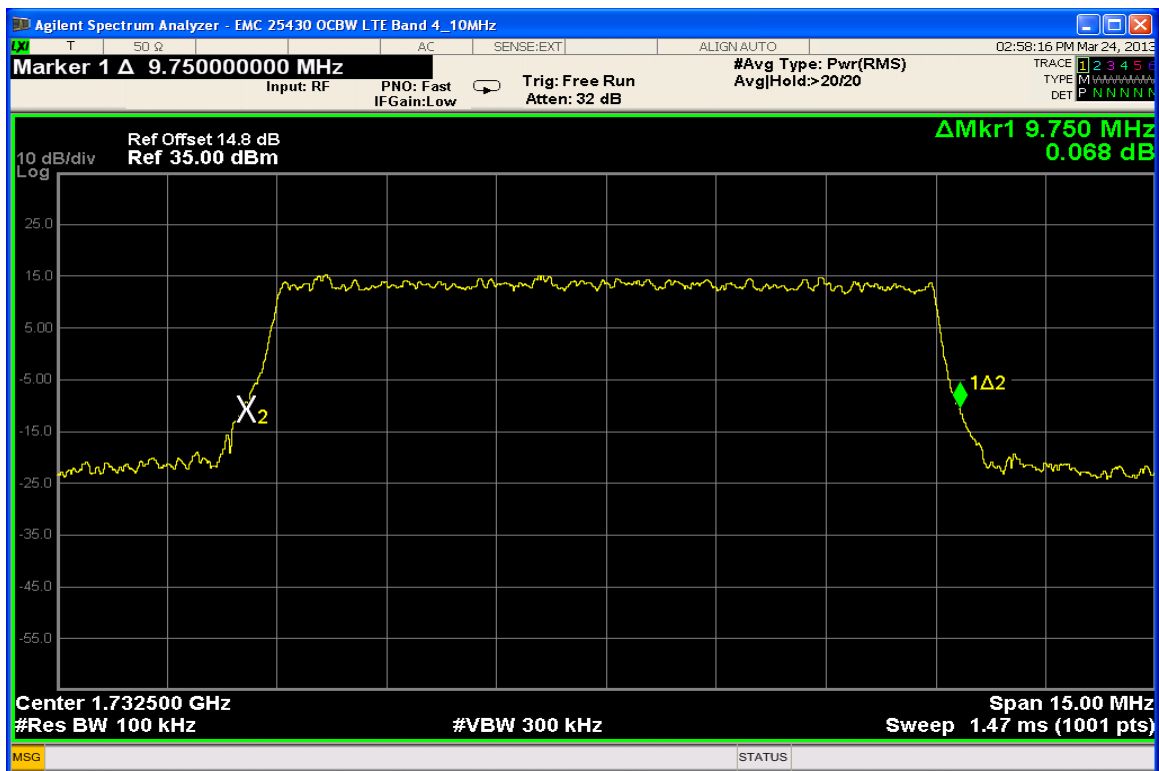
Band 4 LTE – 15 MHz BW, QPSK RB Size = 75 RB Start 0



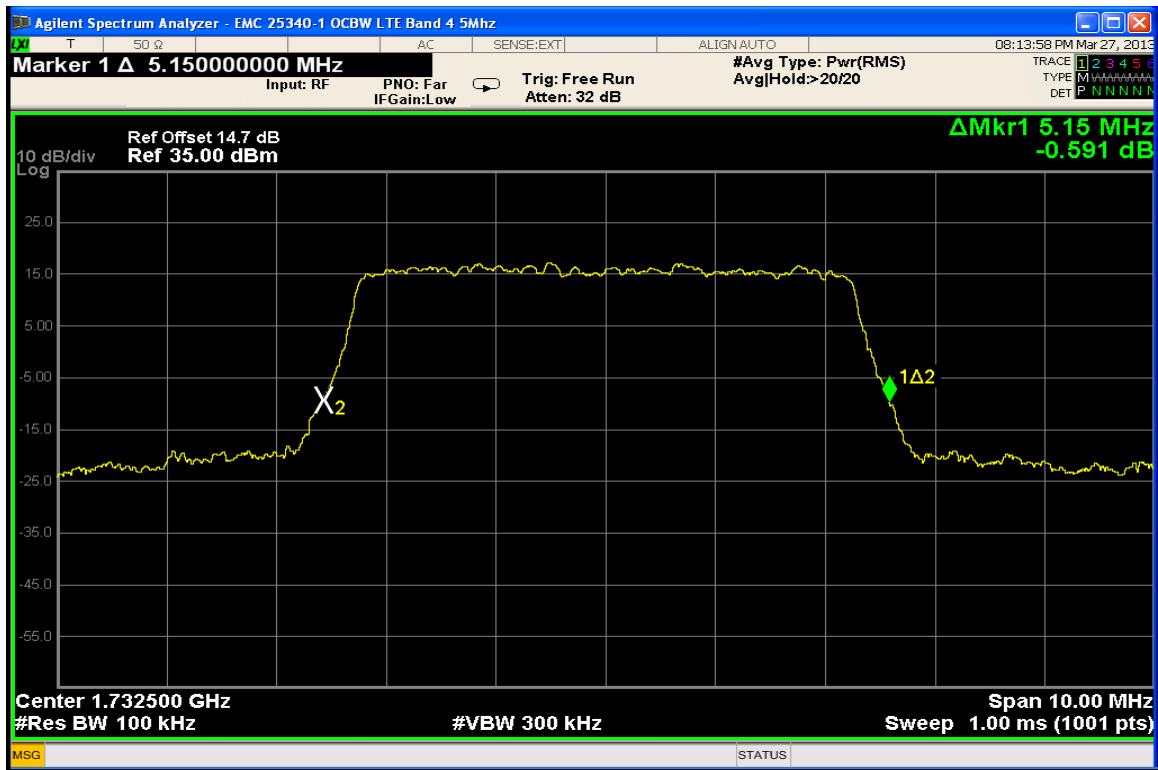
Band 4 LTE – 15 MHz BW, 16QAM RB Size = 75 RB Start 0



Band 4 LTE – 10 MHz BW, QPSK RB Size = 50 RB Start 0



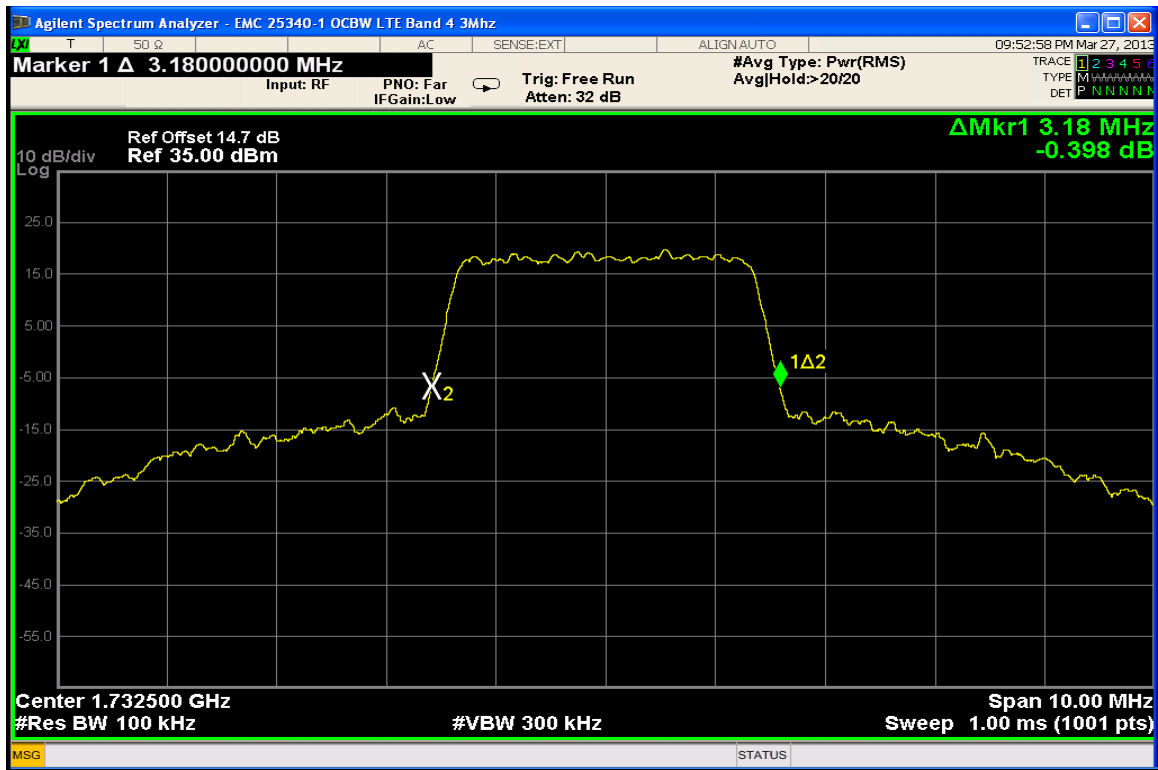
Band 4 LTE – 10 MHz BW, 16QAM RB Size = 50 RB Start 0



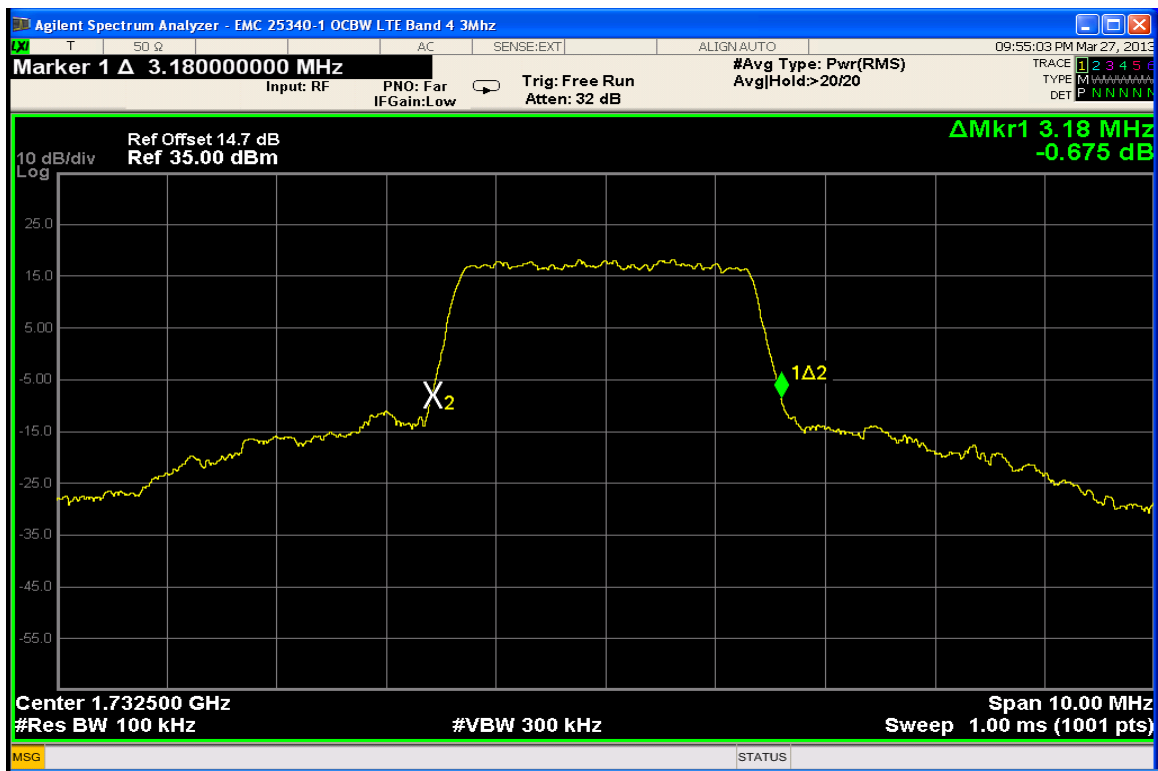
Band 4 LTE – 5 MHz BW, QPSK RB Size = 25 RB Start 0



Band 4 LTE – 5 MHz BW, 16QAM RB Size = 25 RB Start 0



Band 4 LTE – 3 MHz BW, QPSK RB Size = 15 RB Start 0



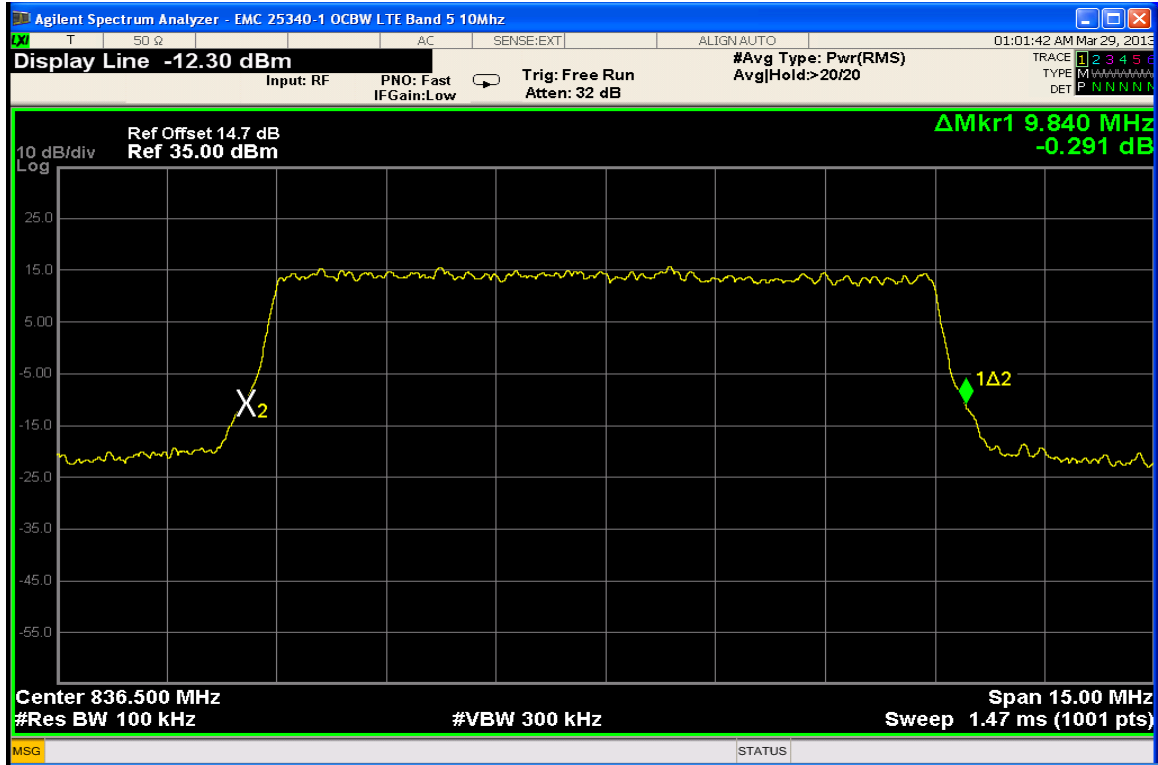
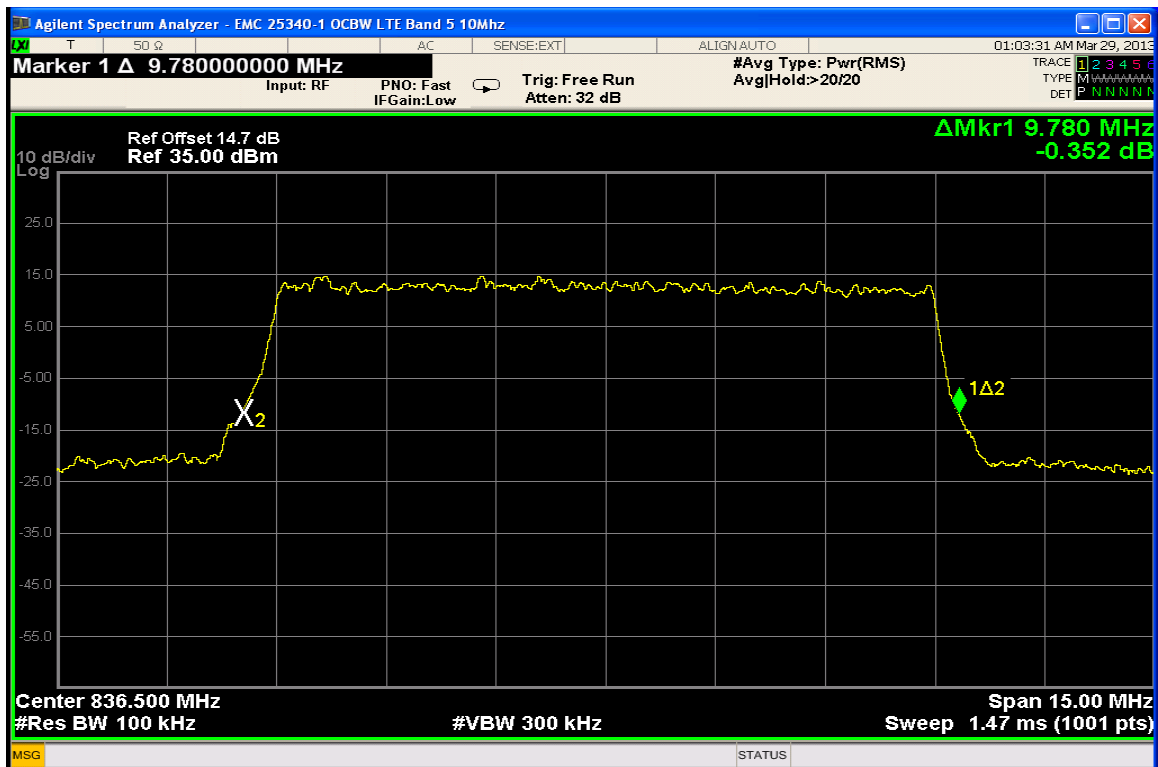
Band 4 LTE – 3 MHz BW, 16QAM RB Size = 15 RB Start 0

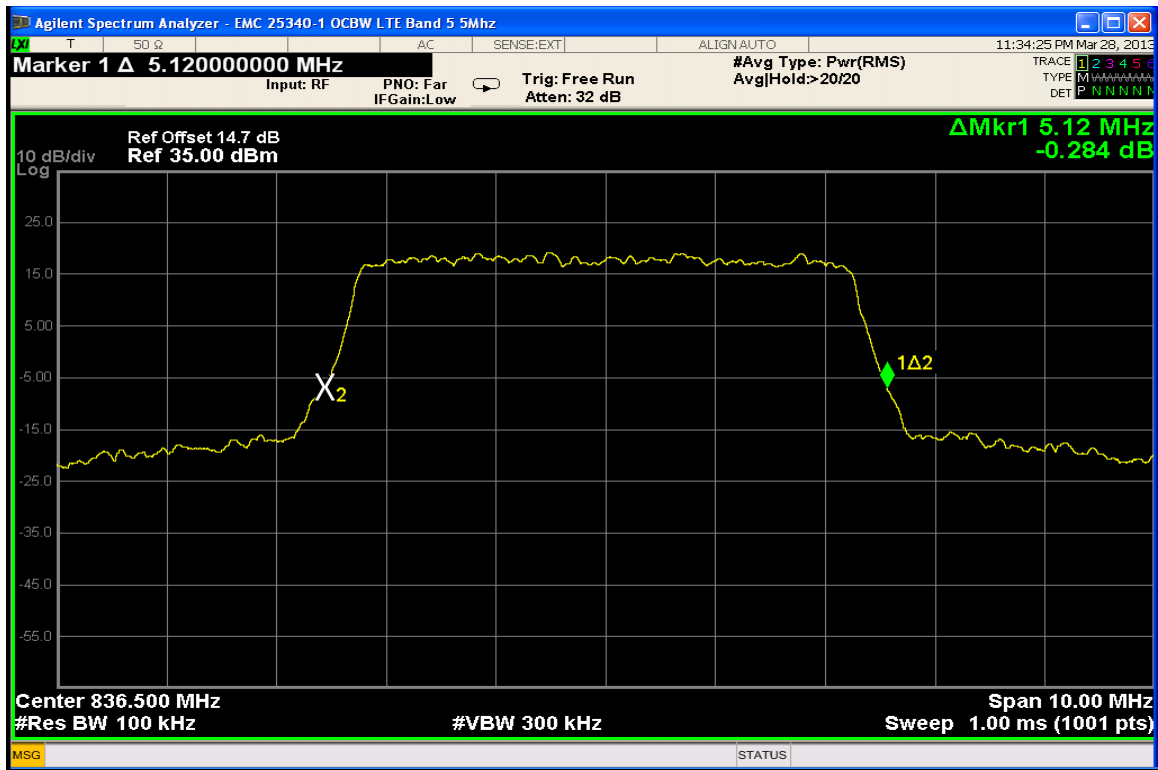


Band 4 LTE – 1.4 MHz BW, QPSK RB Size = 6 RB Start 0

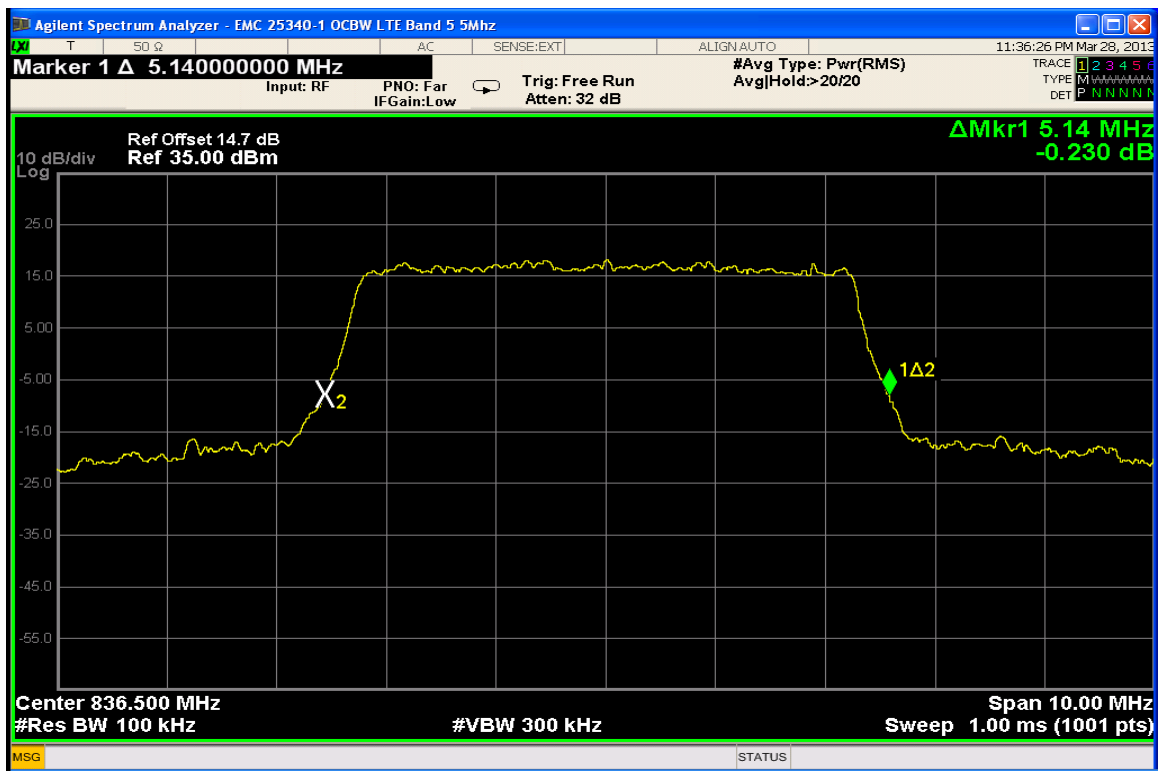


Band 4 LTE – 1.4 MHz BW, 16QAM RB Size = 6 RB Start 0

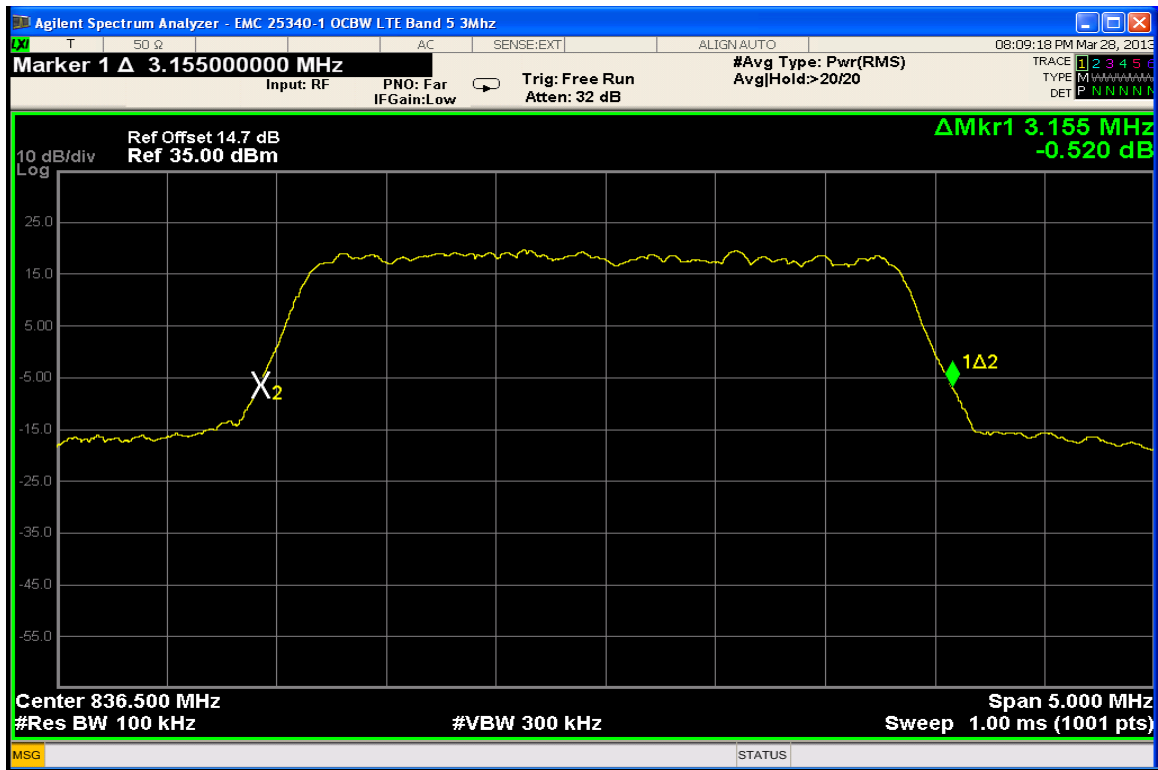
Measurement Results: LTE Band 5 QPSK & 16-QAM Occupied Bandwidth**Band 5 LTE – 10 MHz BW, QPSK RB Size = 50 RB Start 0****Band 5 LTE – 10 MHz BW, 16QAM RB Size = 50 RB Start 0**



Band 5 LTE – 5 MHz BW, QPSK RB Size = 25 RB Start 0



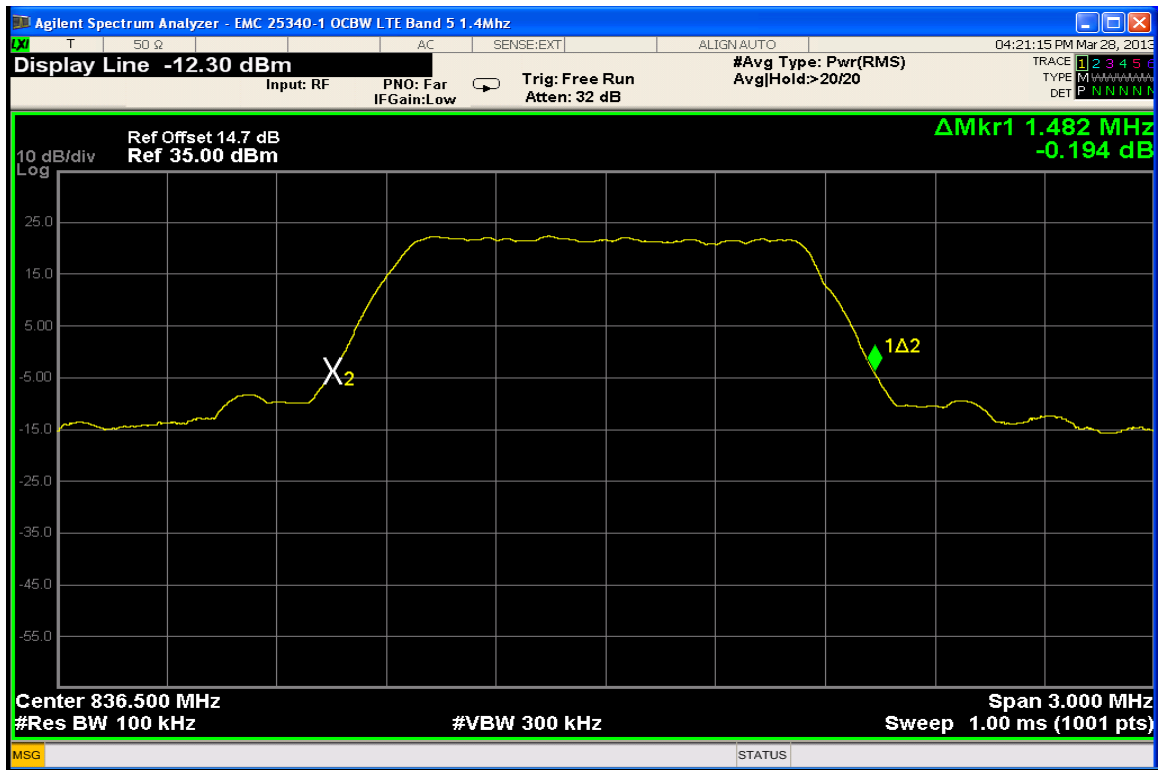
Band 5 LTE – 5 MHz BW, 16QAM RB Size = 25 RB Start 0



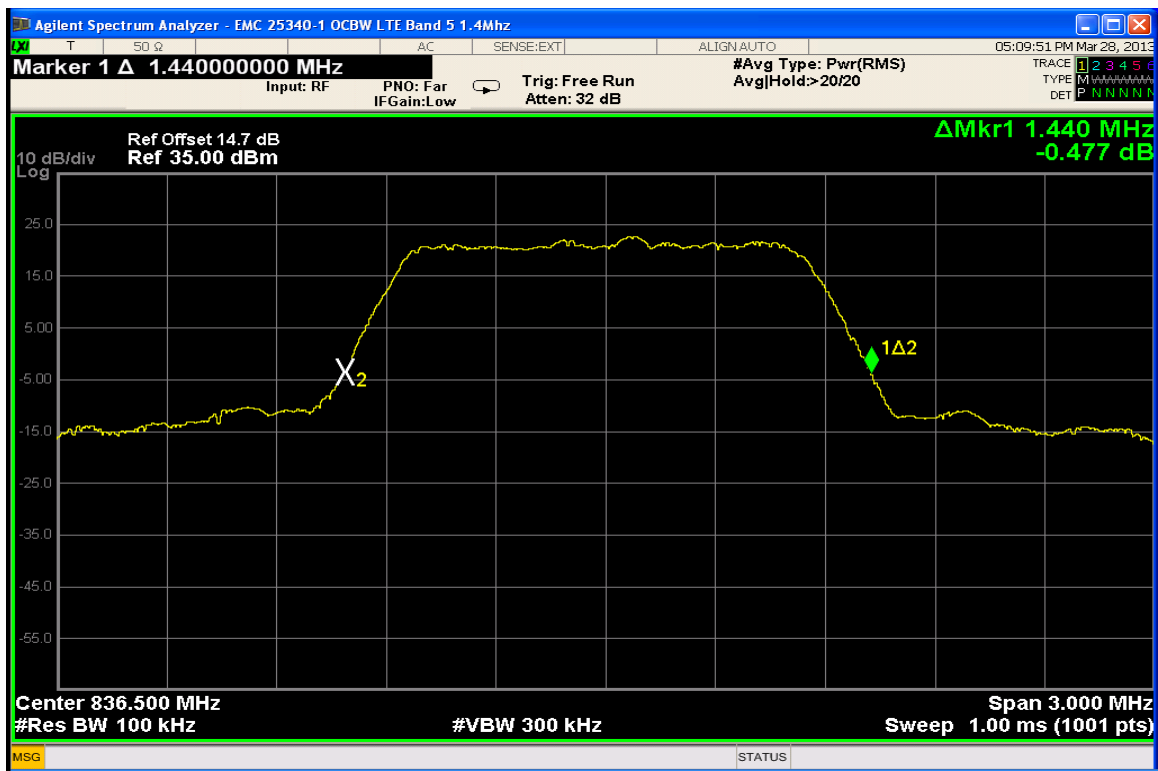
Band 5 LTE – 3 MHz BW, QPSK RB Size = 15 RB Start 0



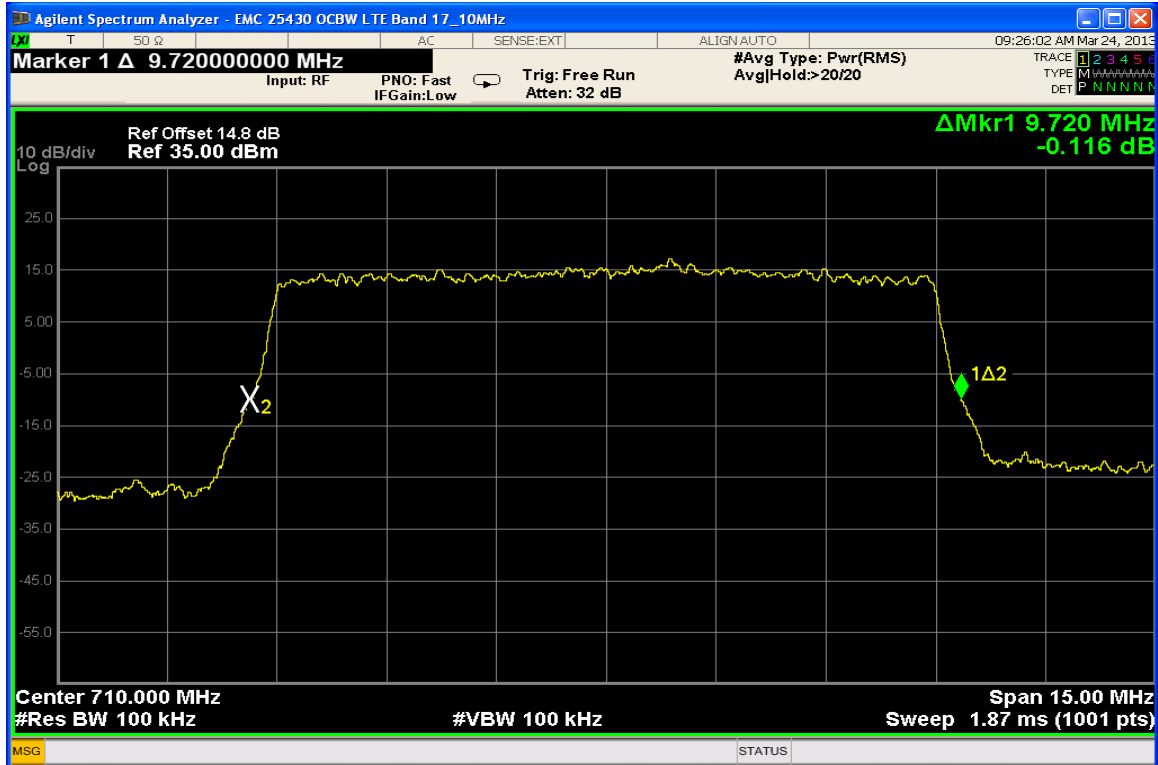
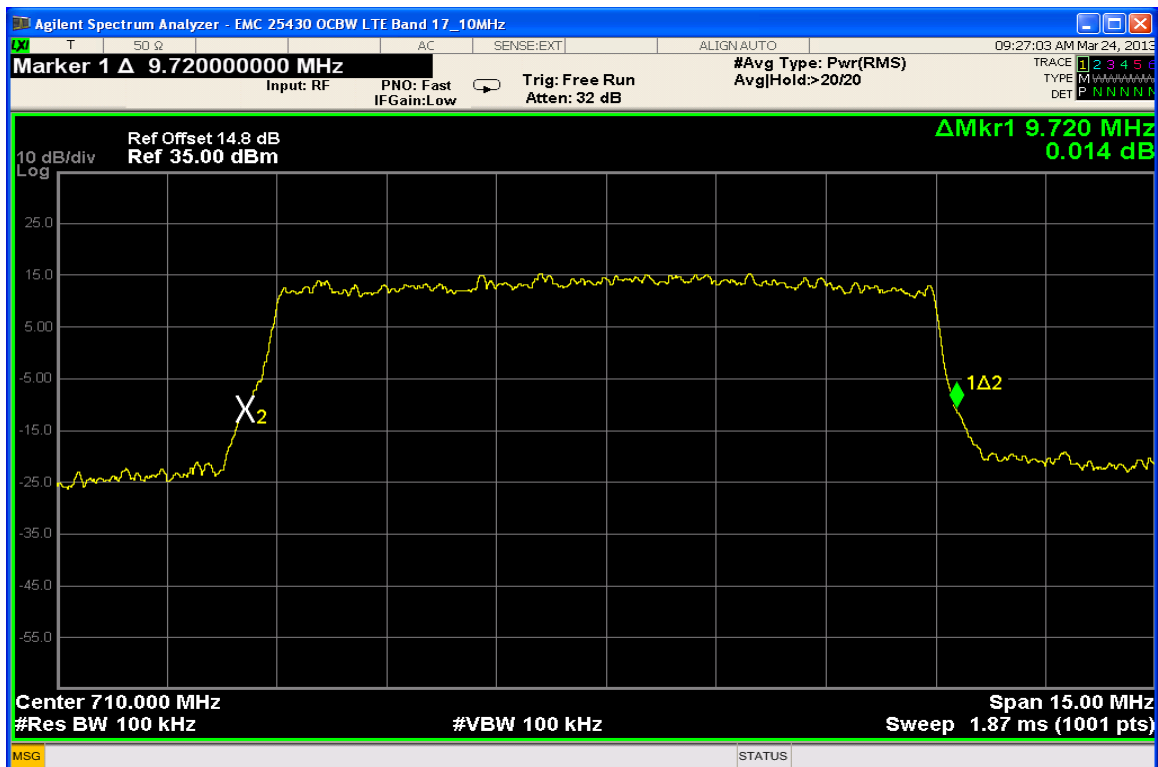
Band 5 LTE – 3 MHz BW, 16QAM RB Size = 15 RB Start 0

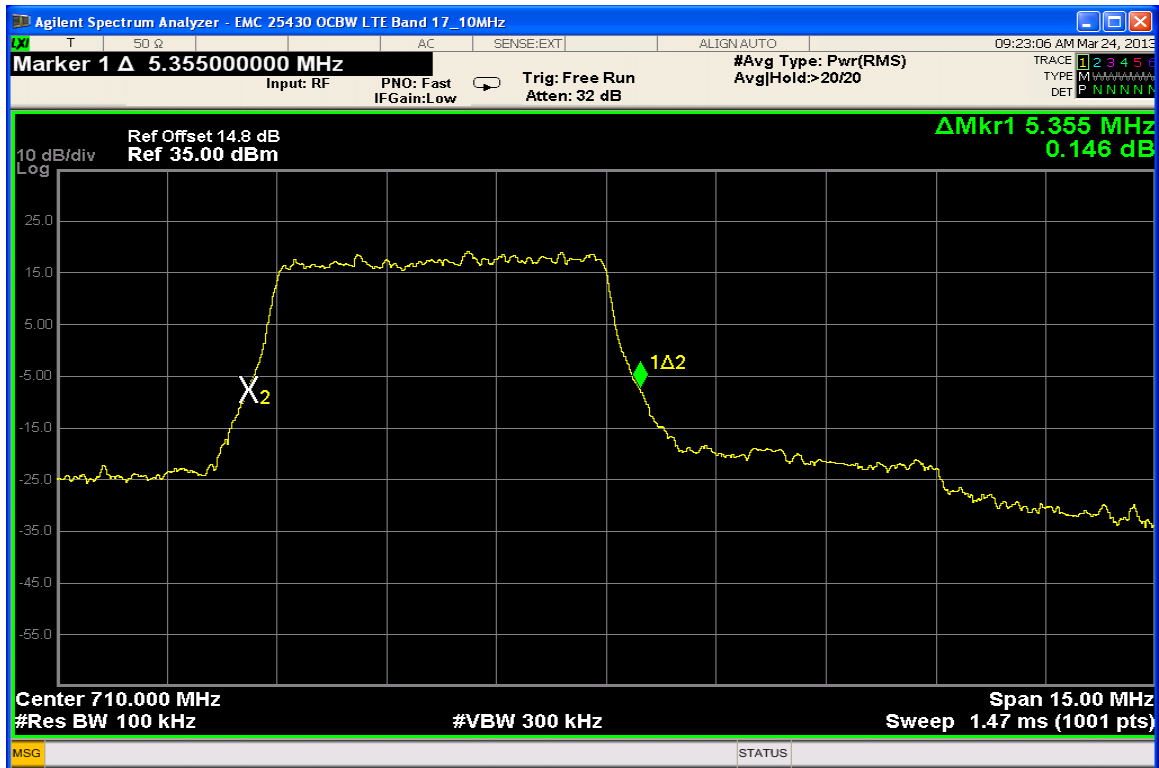


Band 5 LTE – 1.4 MHz BW, QPSK RB Size = 6 RB Start 0



Band 5 LTE – 1.4 MHz BW, 16QAM RB Size = 6 RB Start 0

Measurement Results: LTE Band 17 QPSK & 16-QAM Occupied Bandwidth**Band 17 LTE – 10 MHz BW, QPSK RB Size = 50 RB Start 0****Band 17 LTE – 10 MHz BW, 16QAM RB Size = 50 RB Start 0**



Band 17 LTE – 5 MHz BW, QPSK RB Size = 25 RB Start 0



Band 17 LTE – 5 MHz BW, 16QAM RB Size = 25 RB Start 0

BAND EDGE MEASUREMENTS

§22.917 (a), §24.238 (a), §27.53 (g), §27.53 (h)

Measurement Procedure

The RF output port of the EUT is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. The amplitude of the spectrum analyzer is corrected for the attenuator and any other applicable losses. The analyzer is set for Average Detector and each trace is set for Max Hold. The fully charged internal battery was used for the supply voltage.

§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.

§24.238 (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.

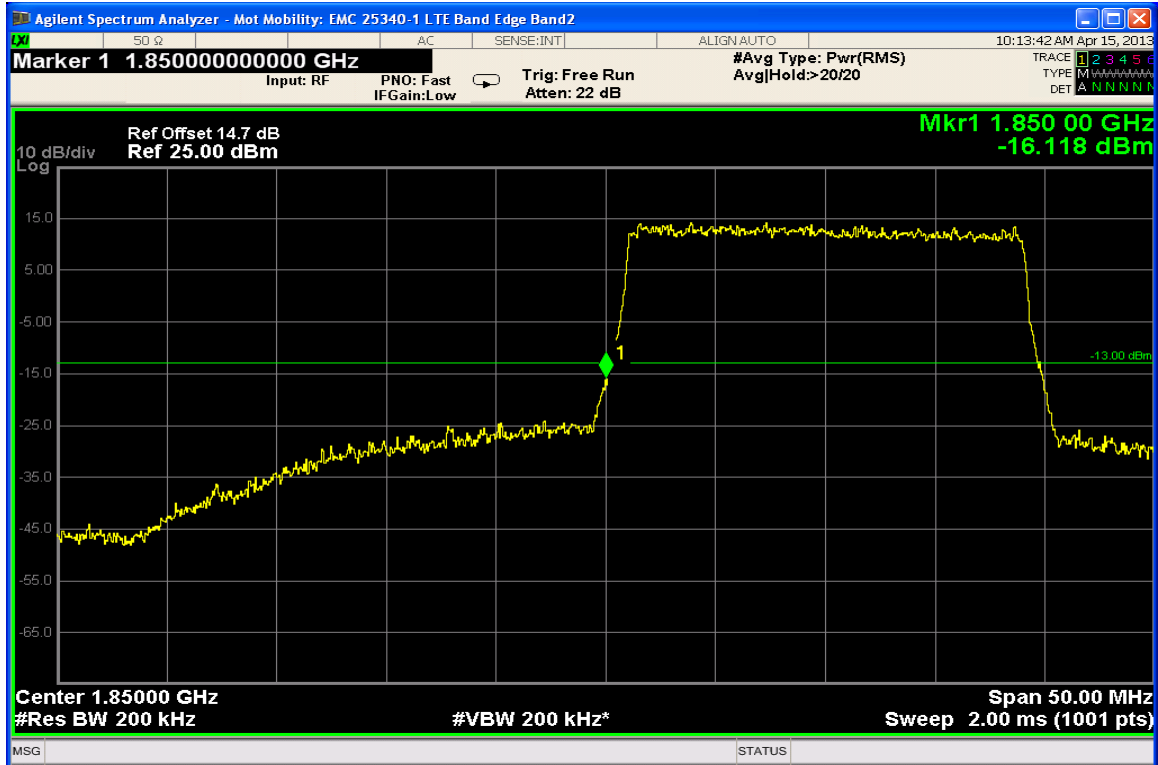
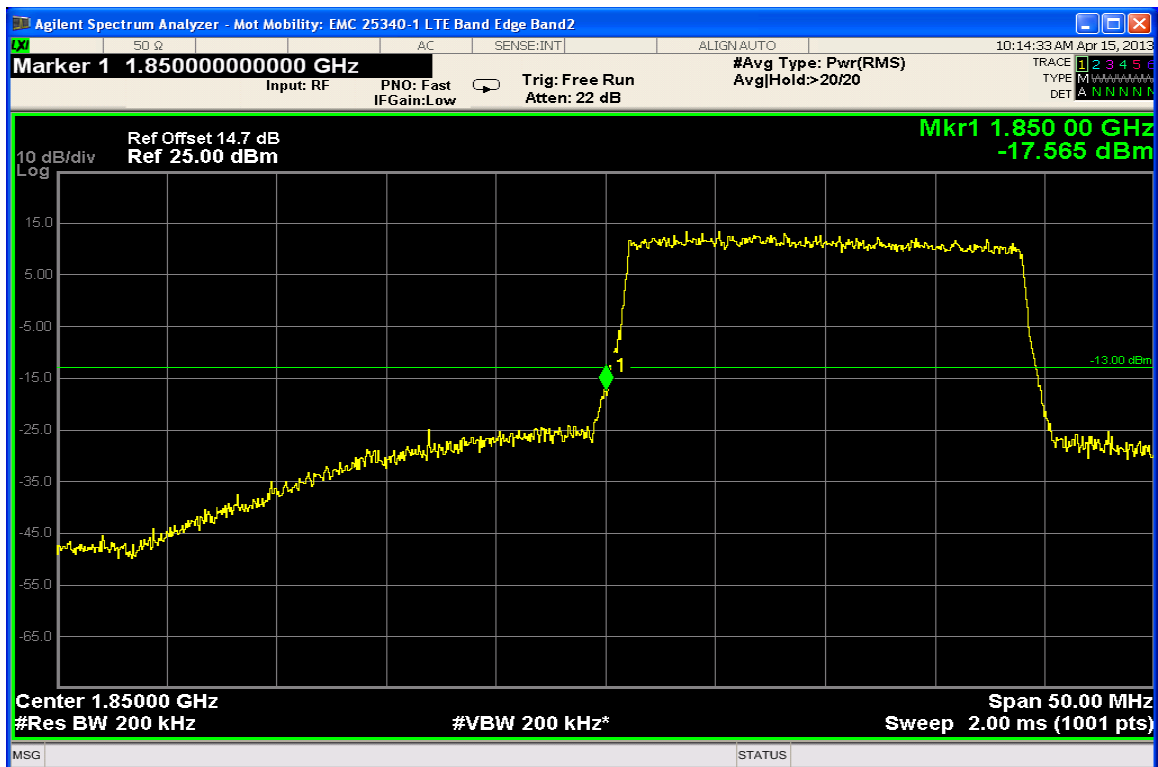
(g) For operations in the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB.

(h) For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB.

The EUT was tested in the all bandwidths and both modulations in each band and the worst case plots are reported below.

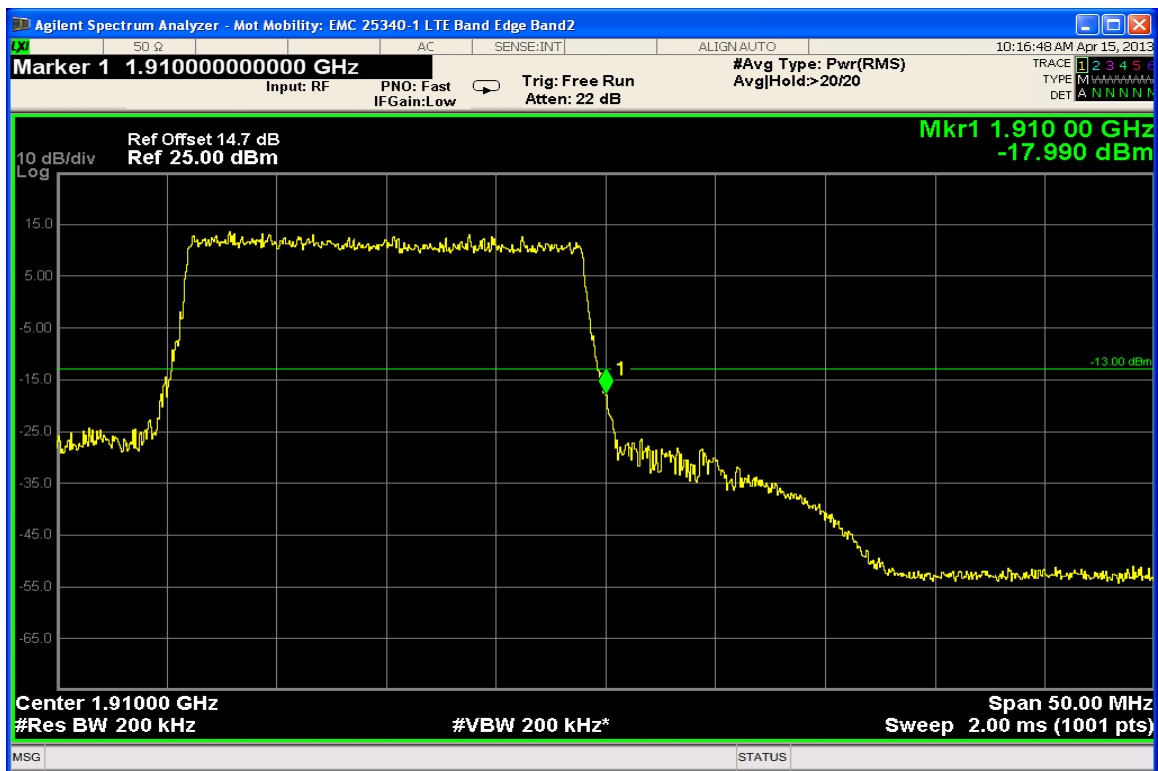
Measurement Results

Attached

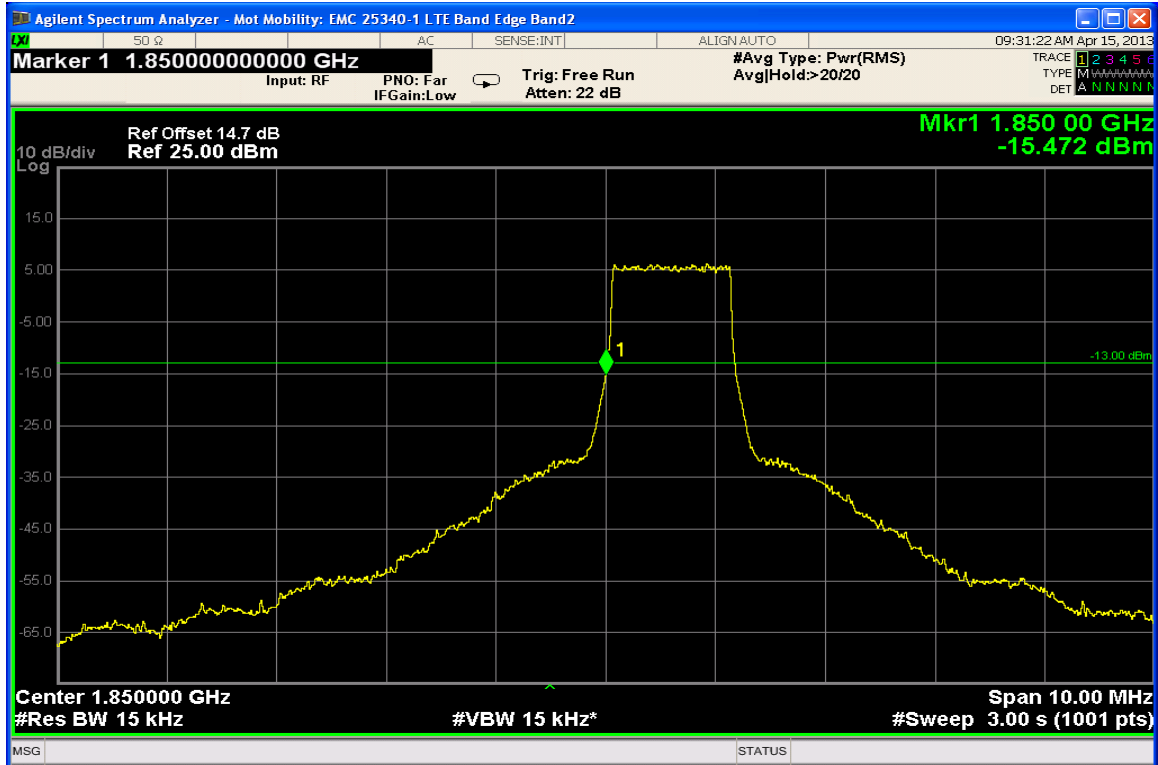
Measurement Results: Band 2 Low and High Band Edge**Band 2 LTE – 20 MHz BW, QPSK RB Size = 100 RB Start 0****Band 2 LTE – 20 MHz BW, 16-QAM RB Size = 100 RB Start 0**



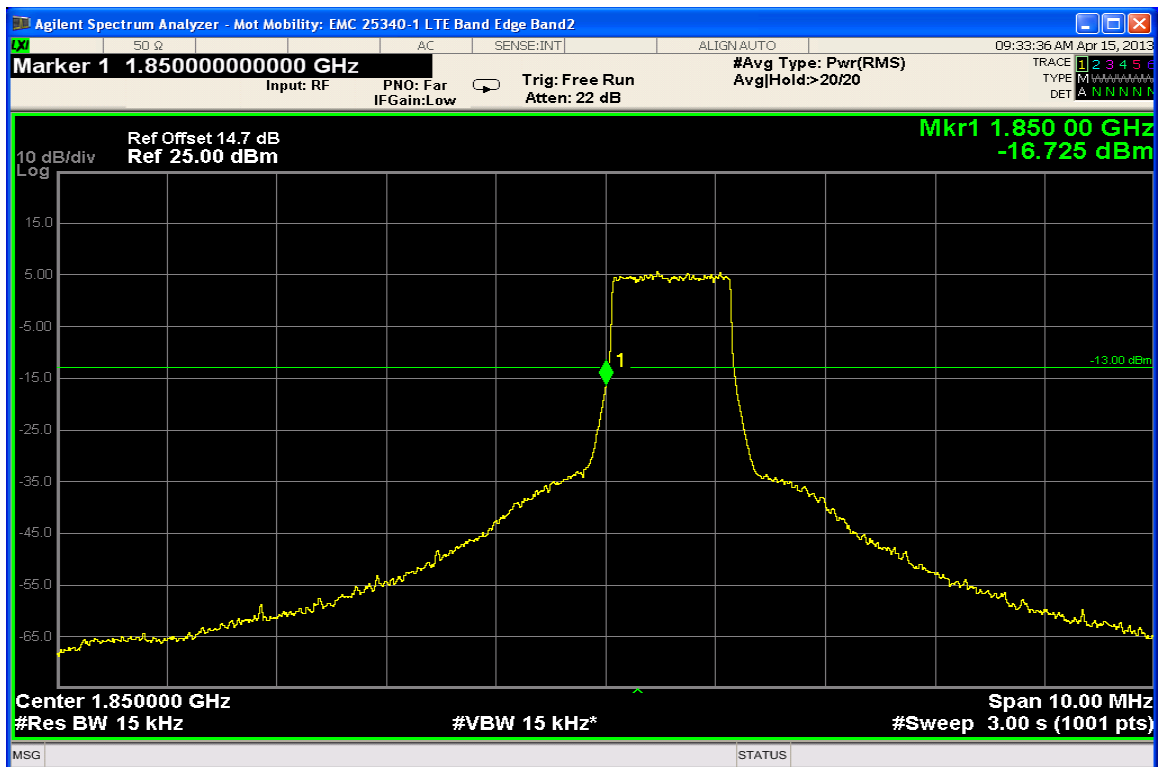
Band 2 LTE – 20 MHz BW, QPSK RB Size = 100 RB Start 0



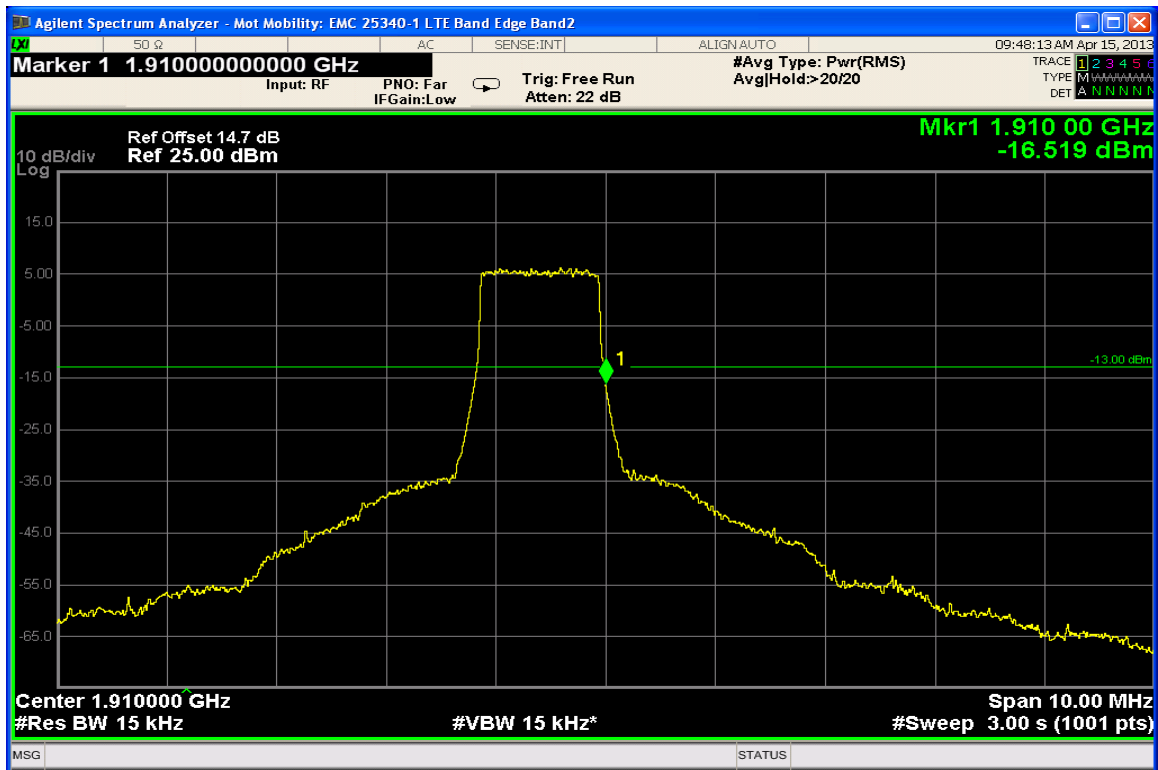
Band 2 LTE – 20 MHz BW, 16-QAM RB Size = 100 RB Start 0



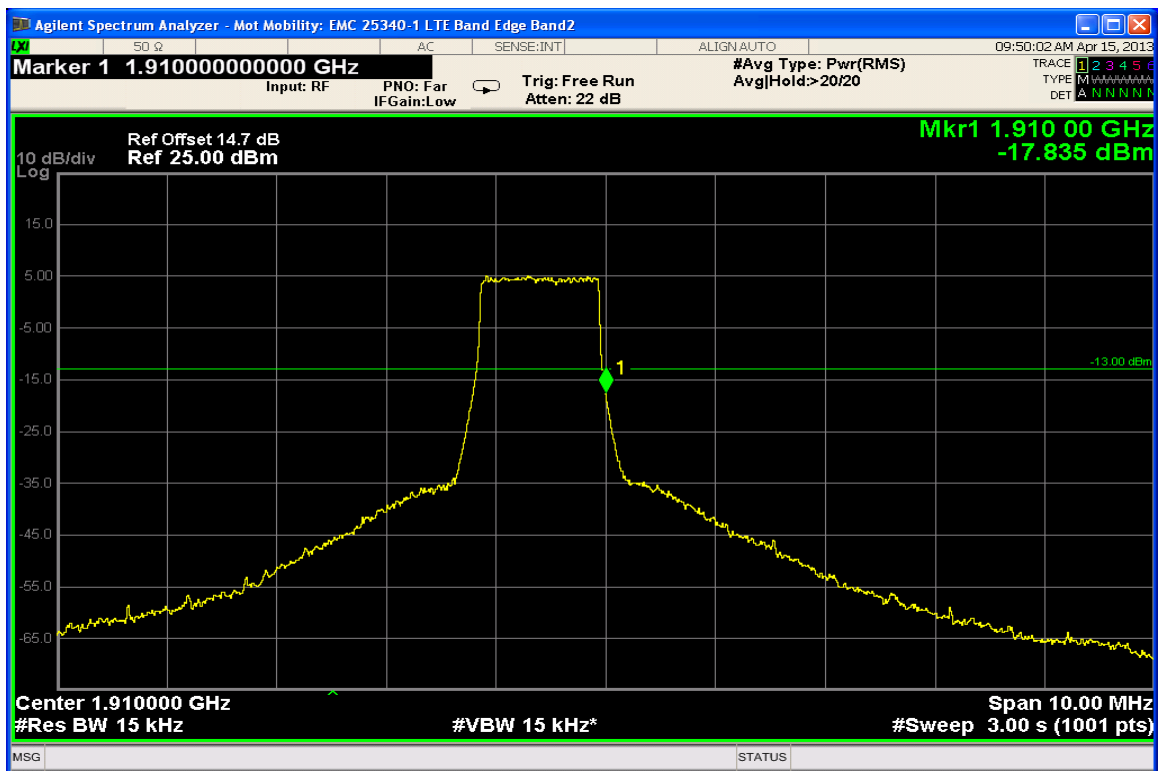
Band 2 LTE – 1.4 MHz BW, QPSK RB Size = 6 RB Start 0



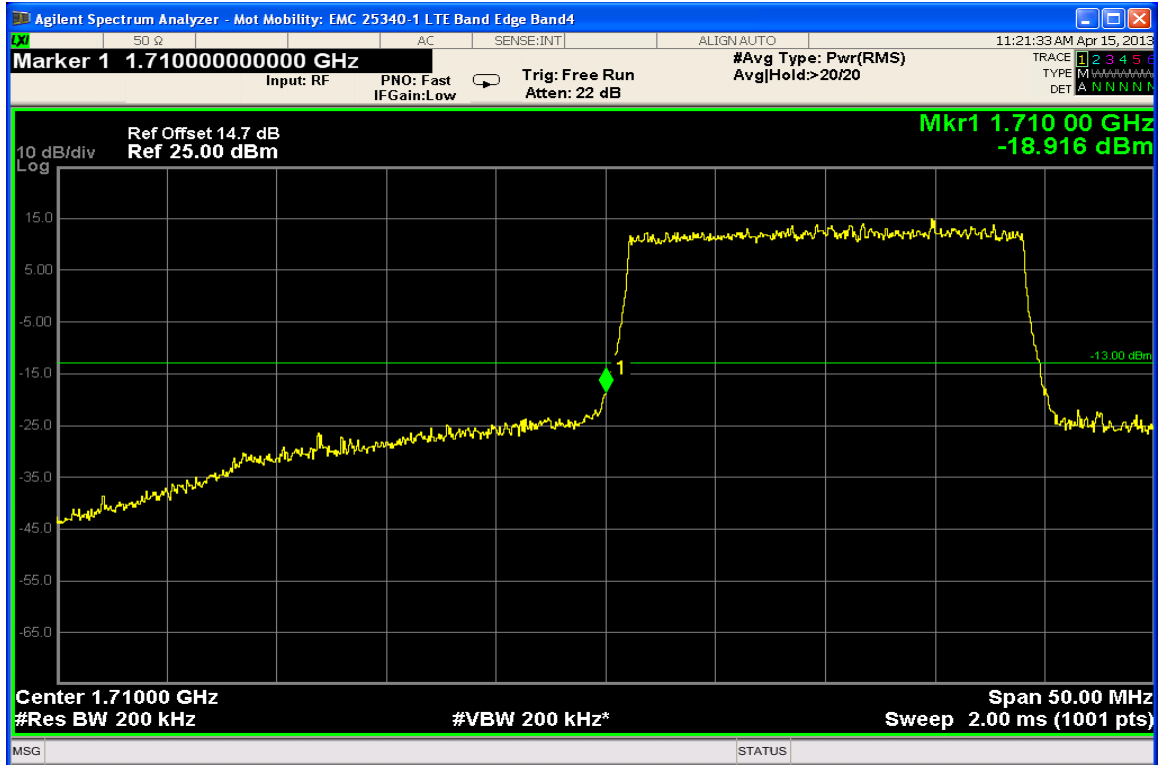
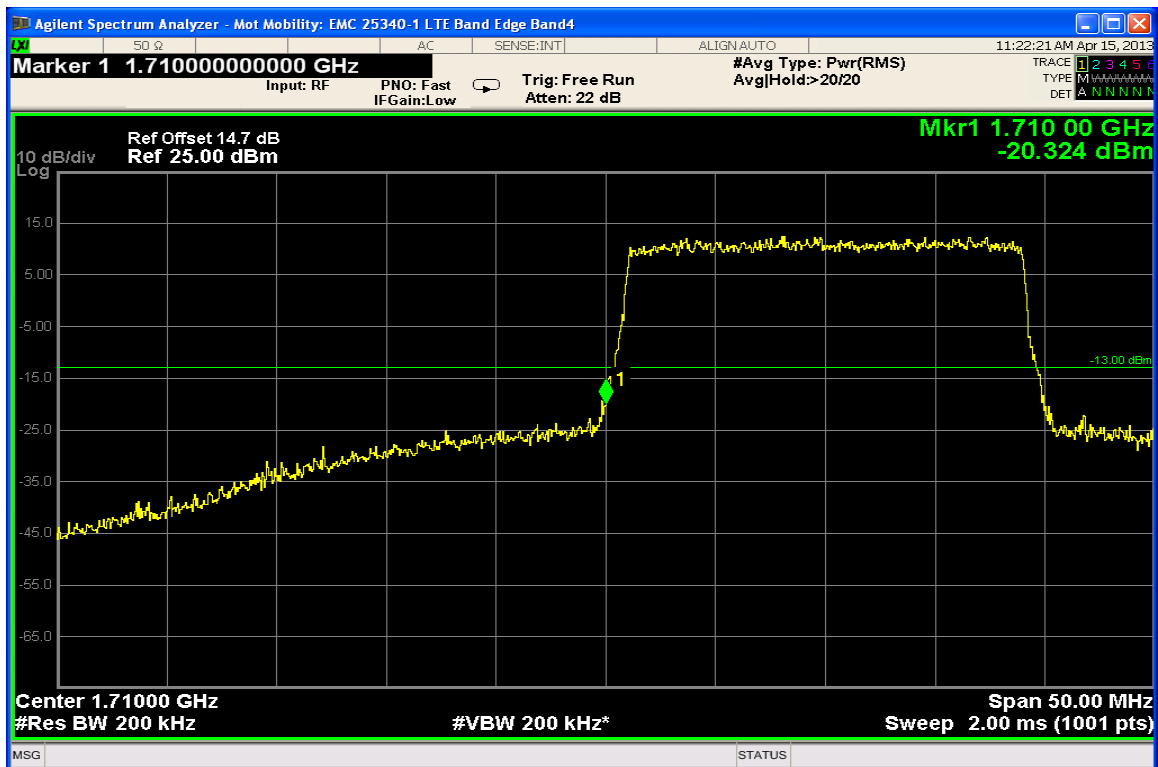
Band 2 LTE – 1.4 MHz BW, 16-QAM RB Size = 6 RB Start 0



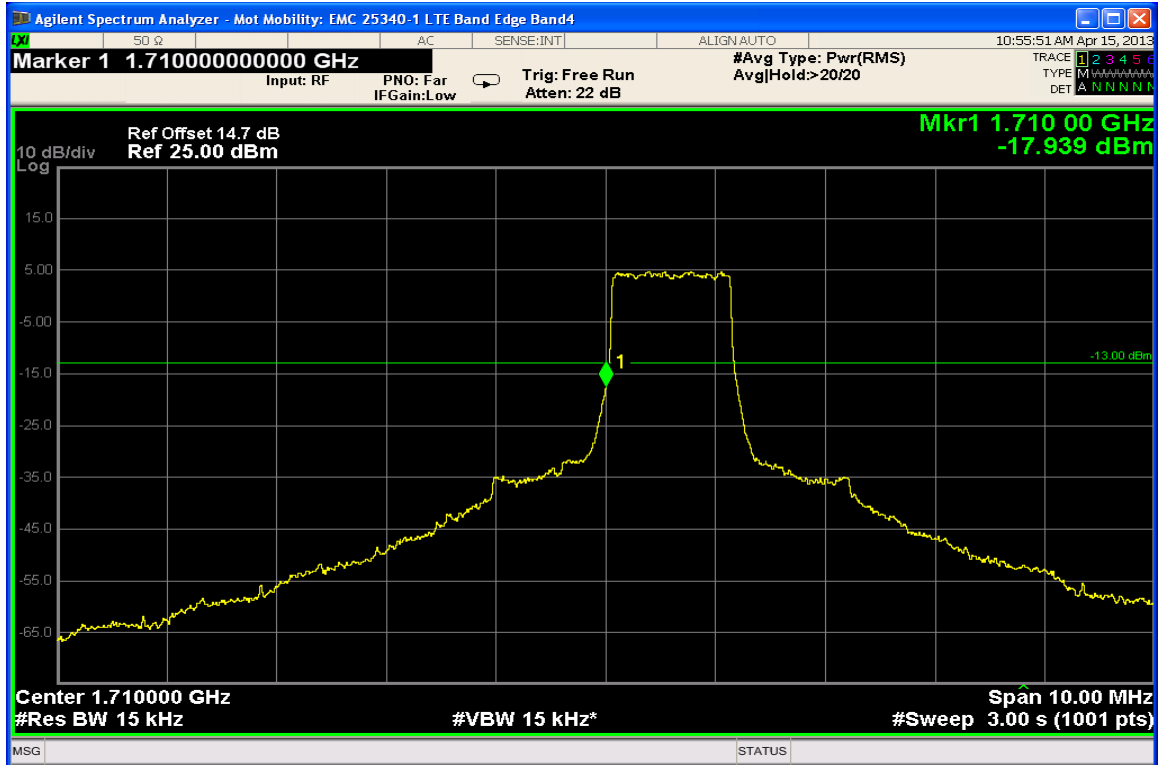
Band 2 LTE – 1.4 MHz BW, QPSK RB Size = 6 RB Start 0



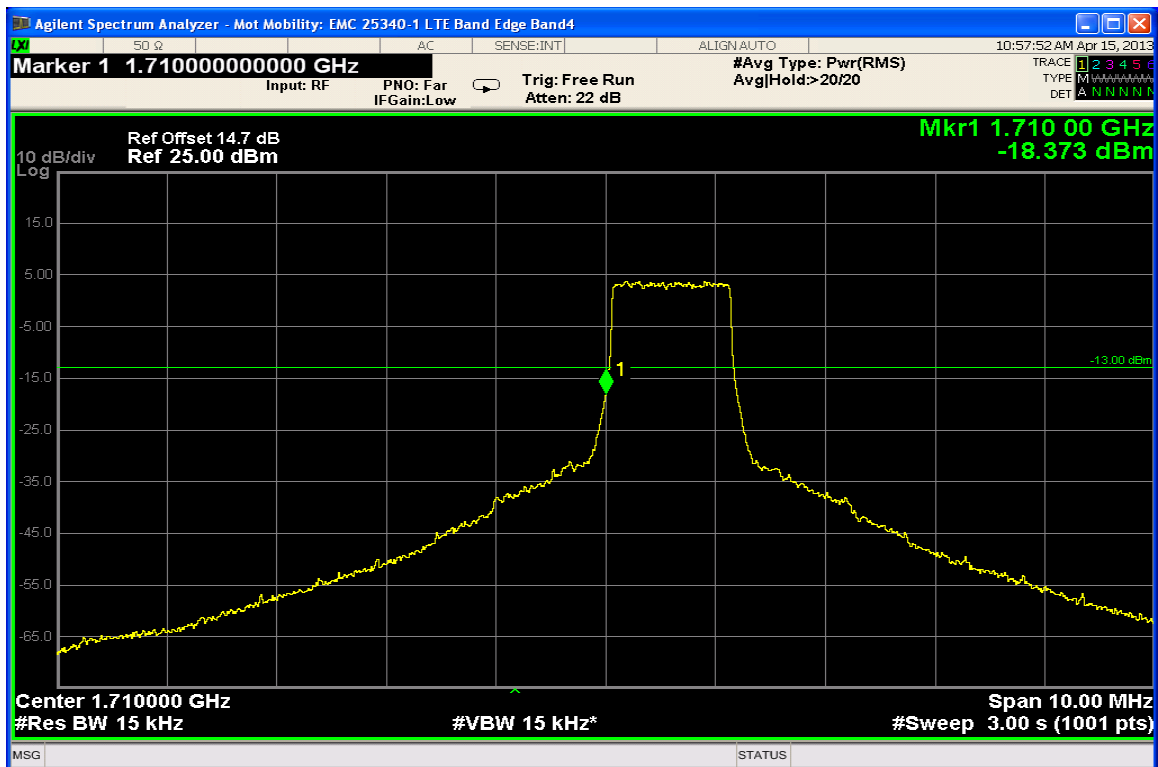
Band 2 LTE – 1.4 MHz BW, 16-QAM RB Size = 6 RB Start 0

Measurement Results: Band 4 Low and High Band Edge**Band 4 LTE – 20 MHz BW, QPSK RB Size = 100 RB Start 0****Band 4 LTE – 20 MHz BW, 16-QAM RB Size = 100 RB Start 0**

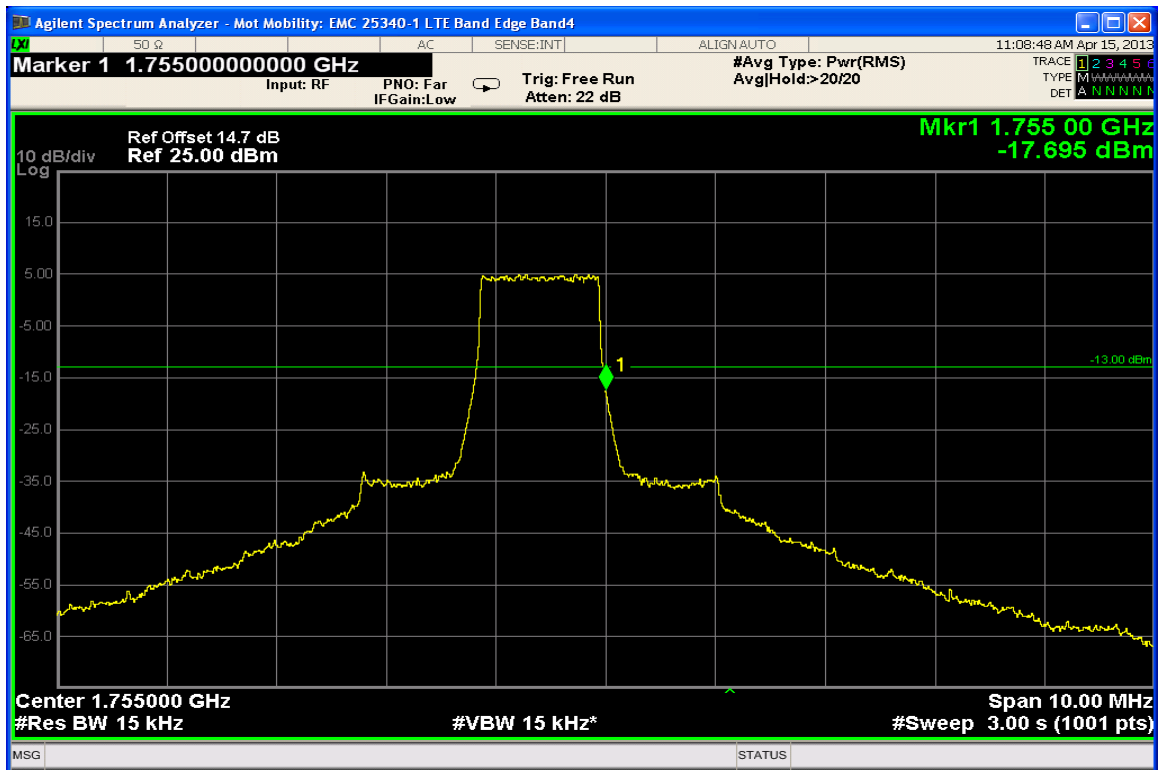
**Band 4 LTE – 20 MHz BW, QPSK RB Size = 100 RB Start 0****Band 4 LTE – 20 MHz BW, 16-QAM RB Size = 100 RB Start 0**



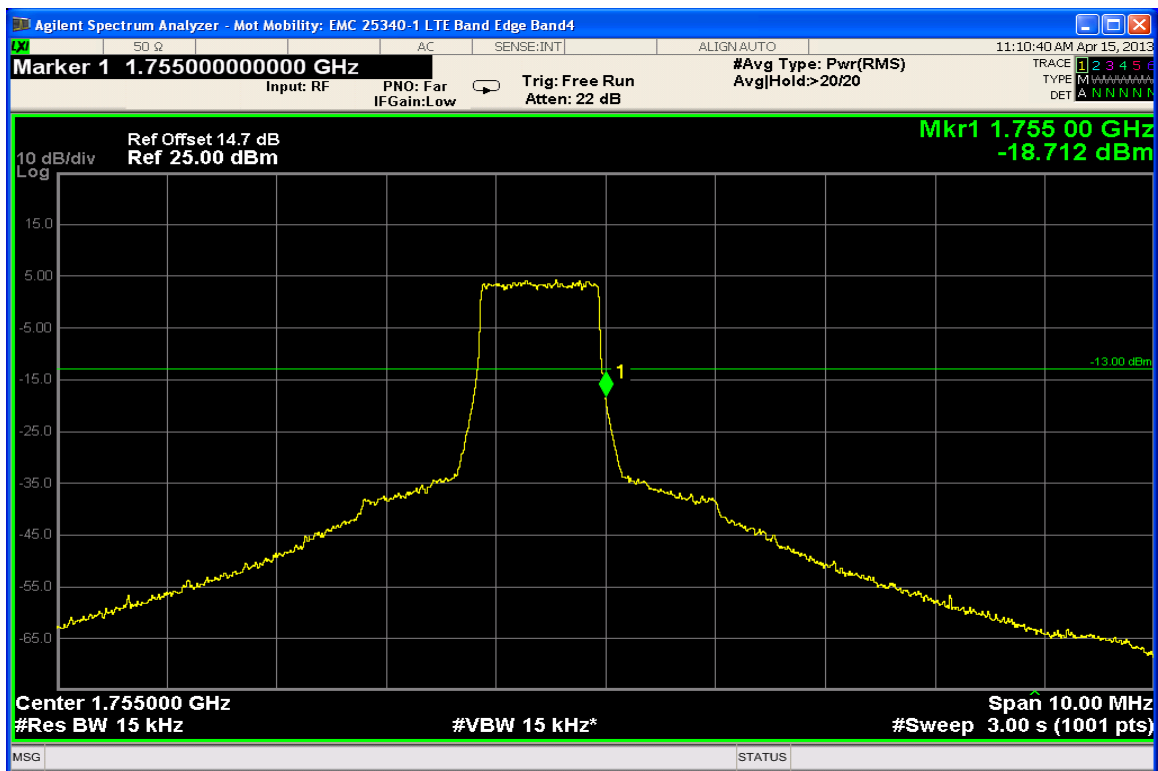
Band 4 LTE – 1.4 MHz BW, QPSK RB Size = 6 RB Start 0



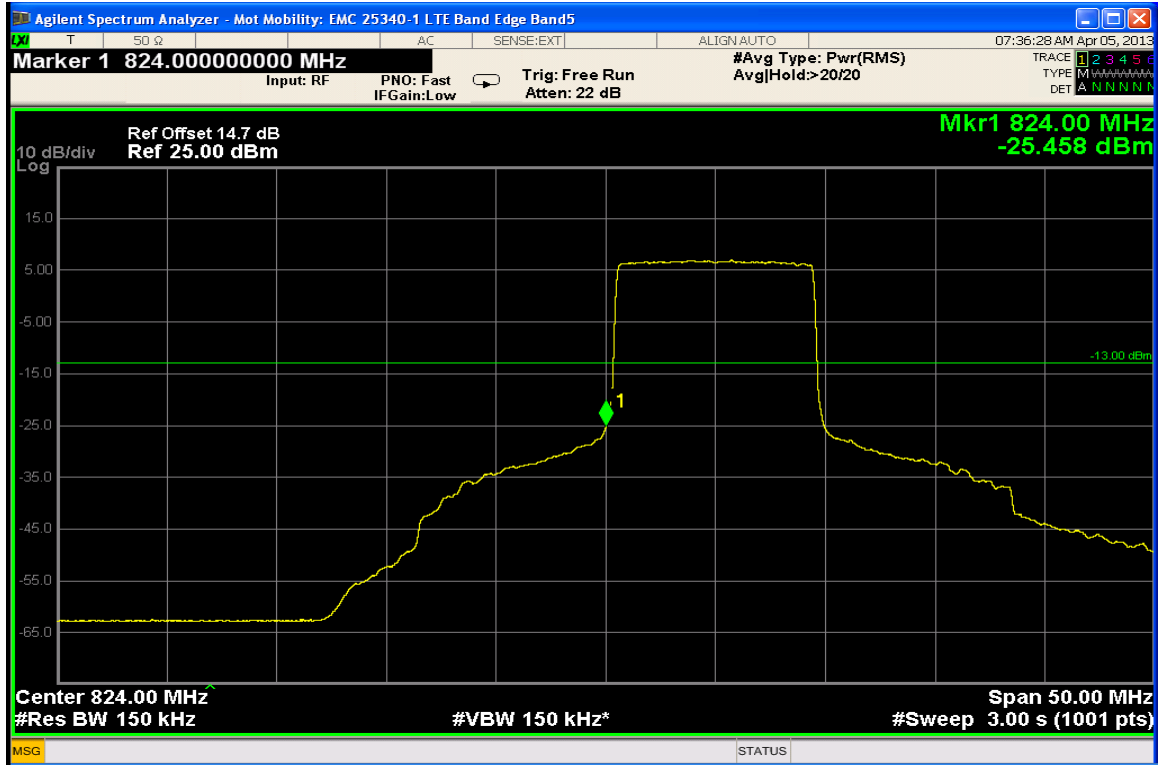
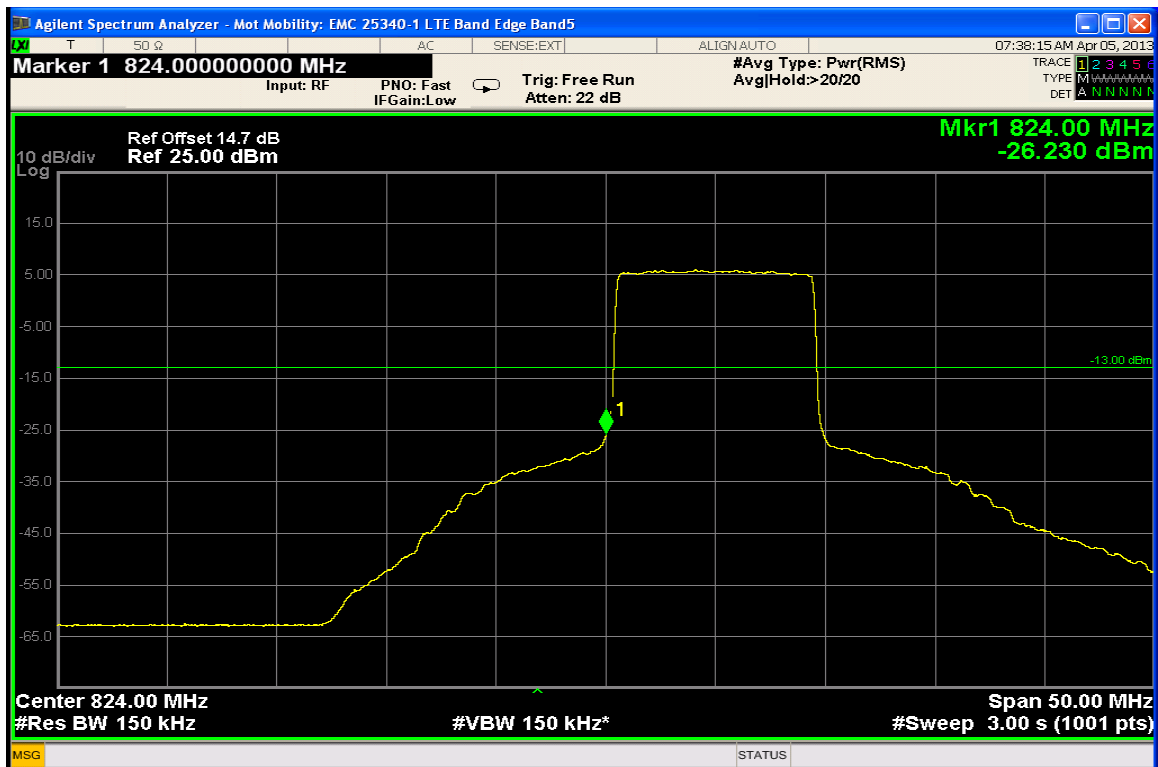
Band 4 LTE – 1.4 MHz BW, 16-QAM RB Size = 6 RB Start 0



Band 4 LTE – 1.4 MHz BW, QPSK RB Size = 6 RB Start 0

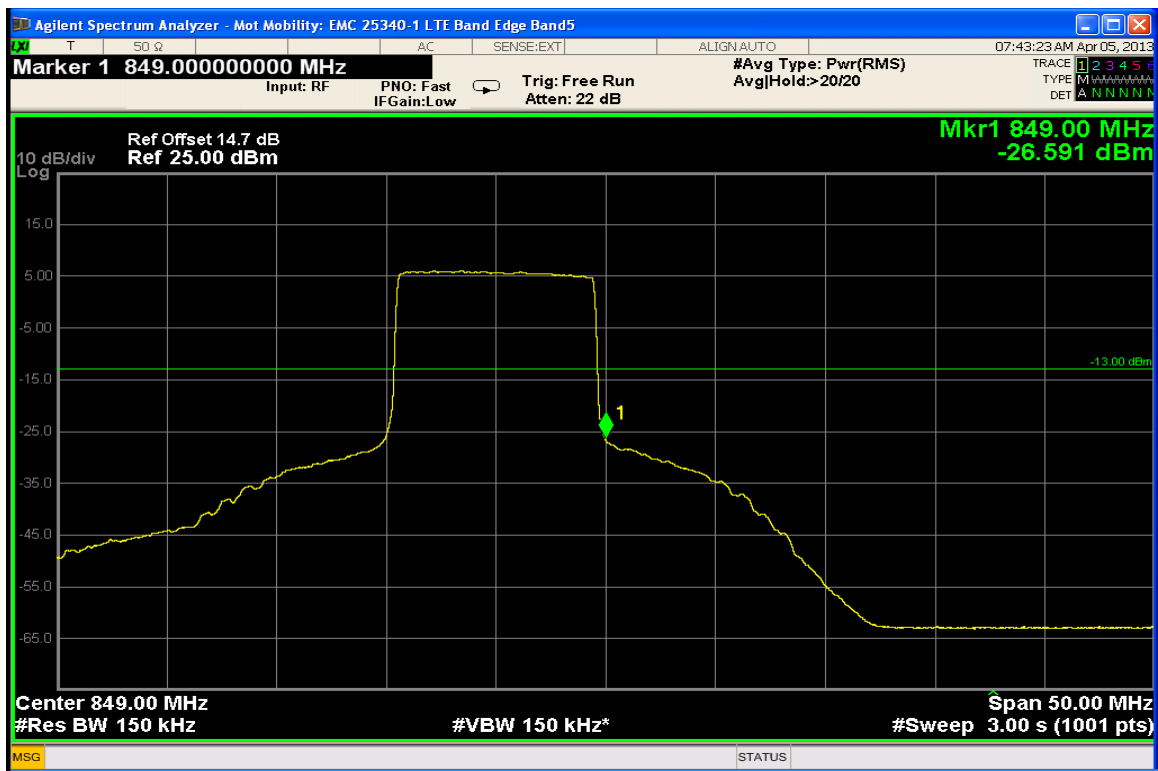


Band 4 LTE – 1.4 MHz BW, 16-QAM RB Size = 6 RB Start 0

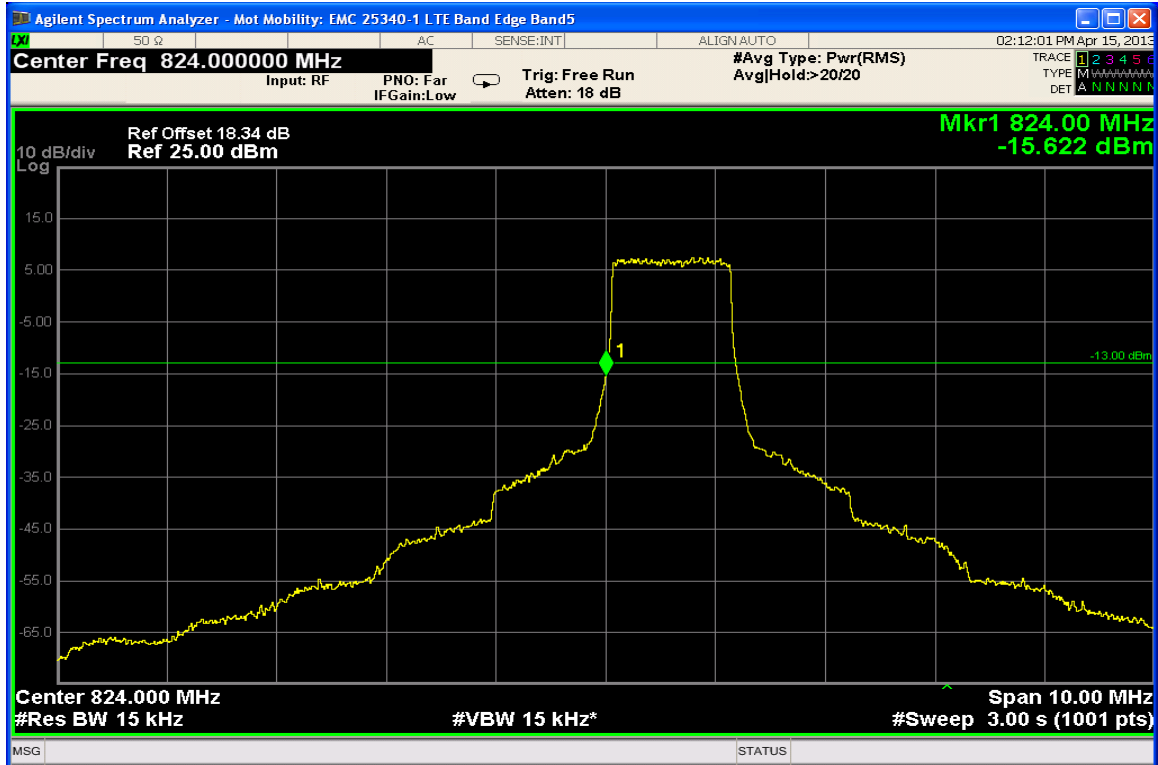
Measurement Results: Band 5 Low and High Band Edge**Band 5 LTE – 10 MHz BW, QPSK RB Size = 50 RB Start 0****Band 5 LTE – 10 MHz BW, 16-QAM RB Size = 50 RB Start 0**



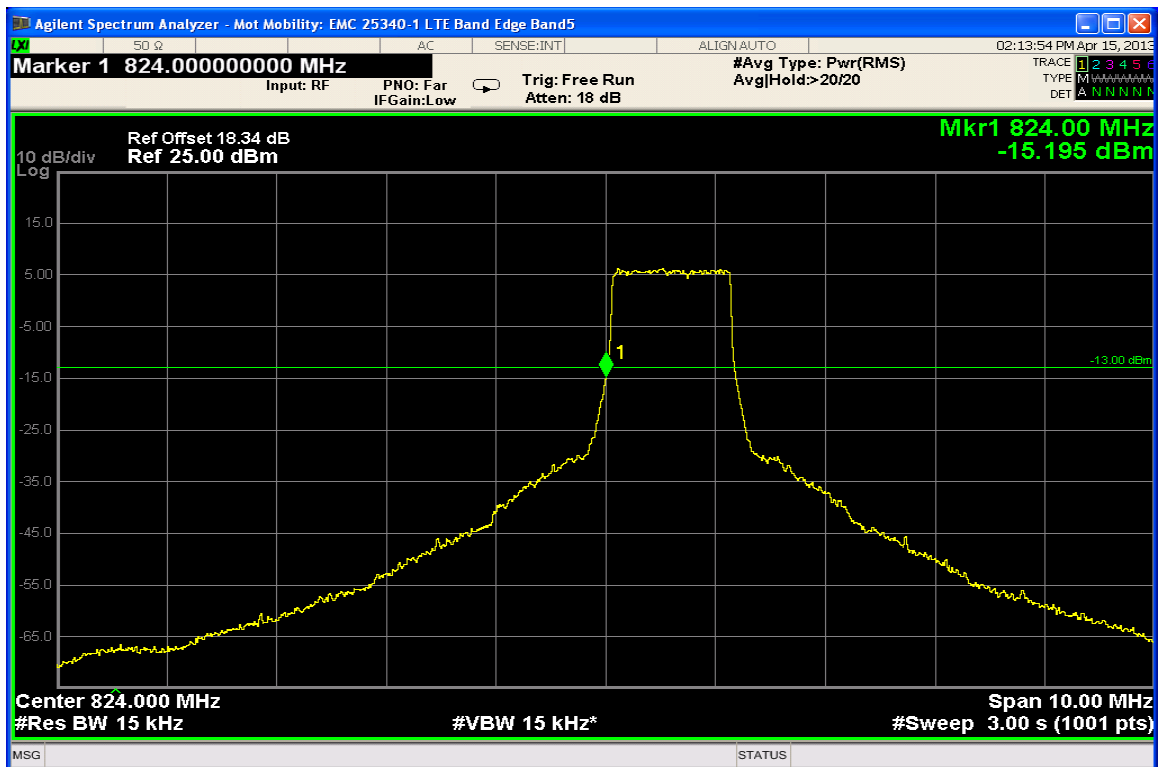
Band 5 LTE – 10 MHz BW, QPSK RB Size = 50 RB Start 0



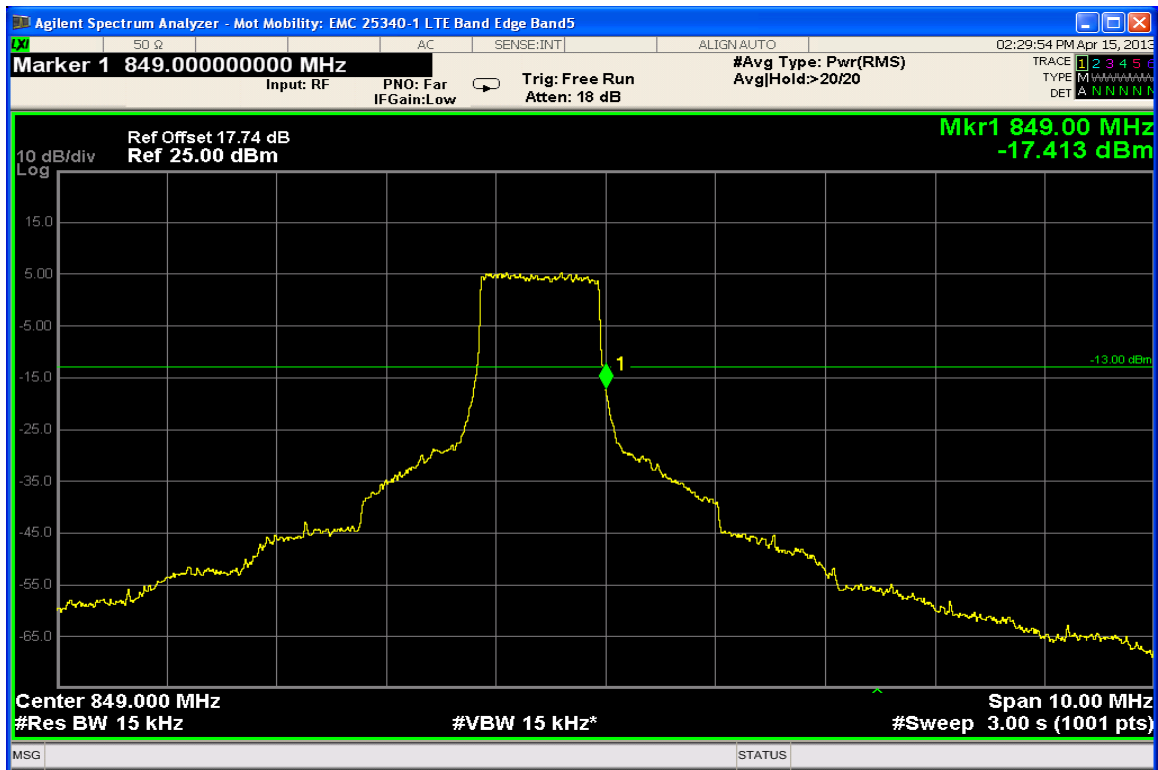
Band 5 LTE – 10 MHz BW, 16-QAM RB Size = 50 RB Start 0



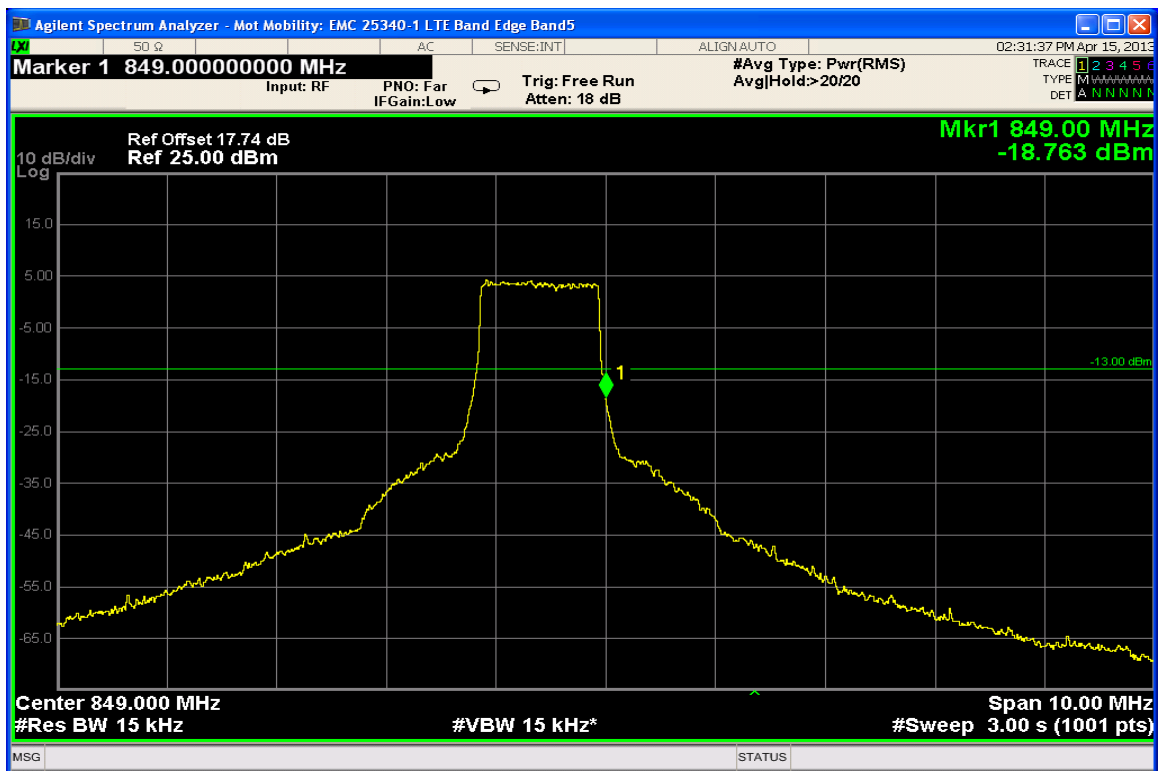
Band 5 LTE – 1.4 MHz BW, QPSK RB Size = 6 RB Start 0



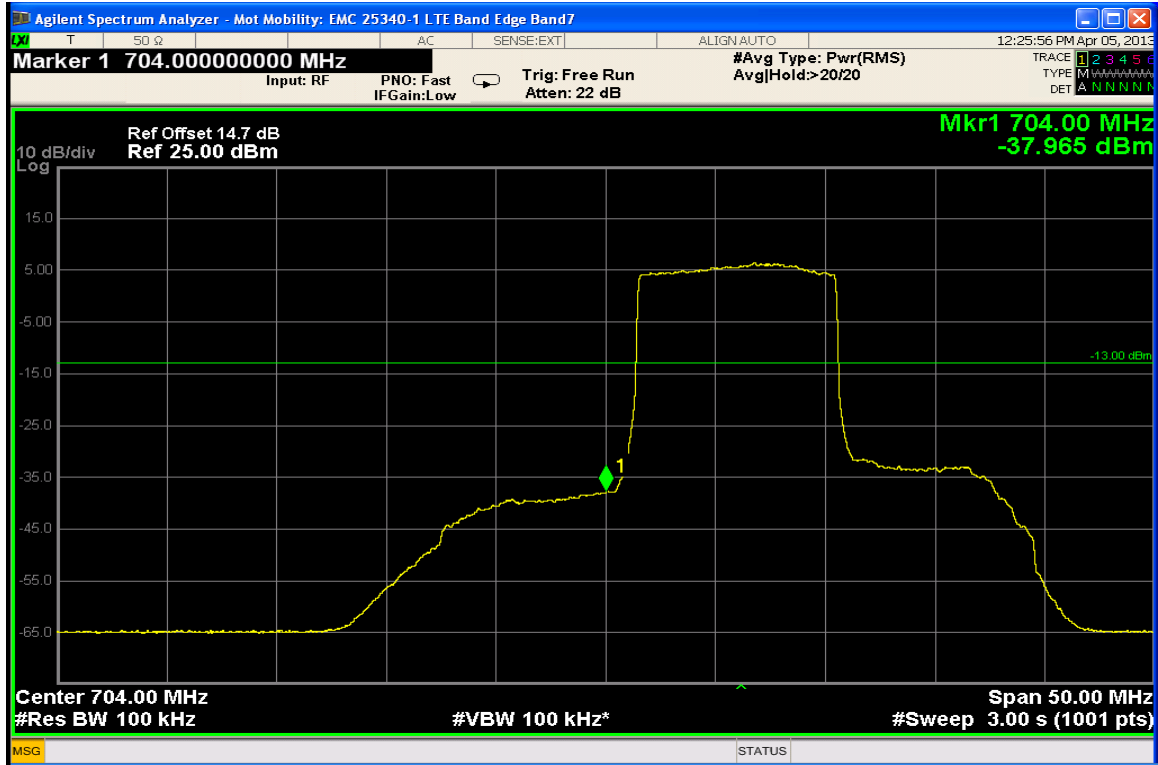
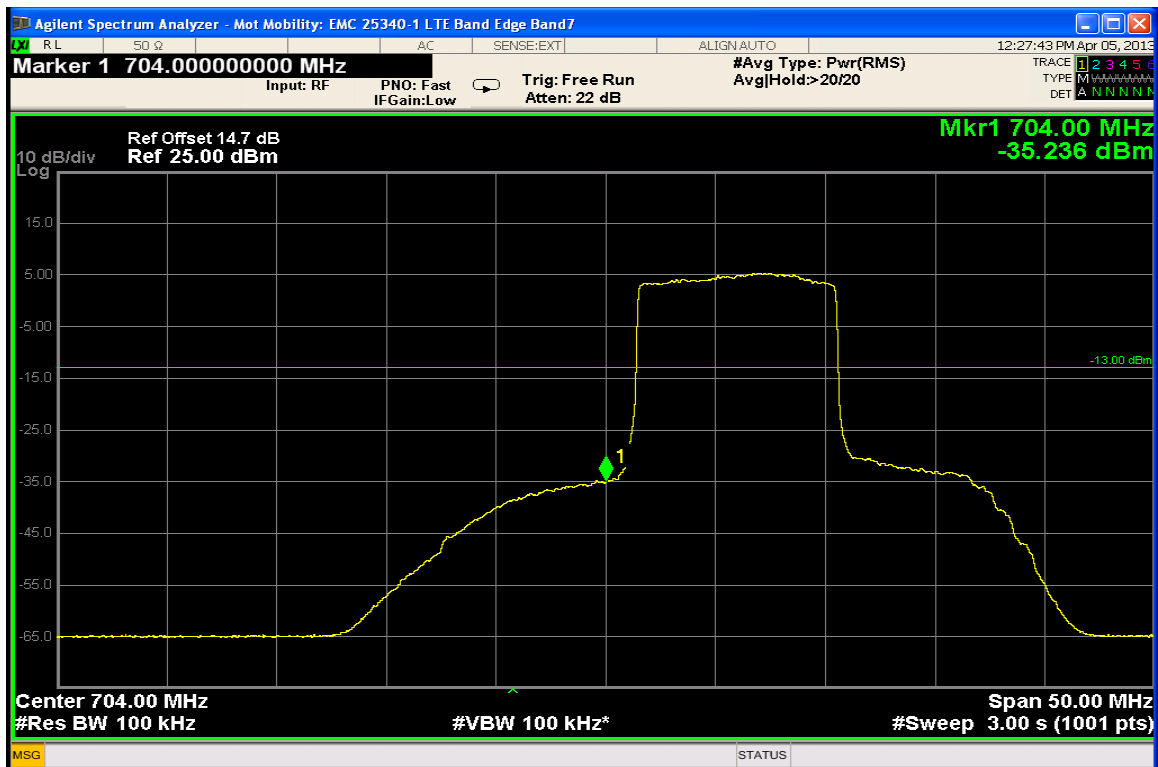
Band 5 LTE – 1.4 MHz BW, 16-QAM RB Size = 6 RB Start 0

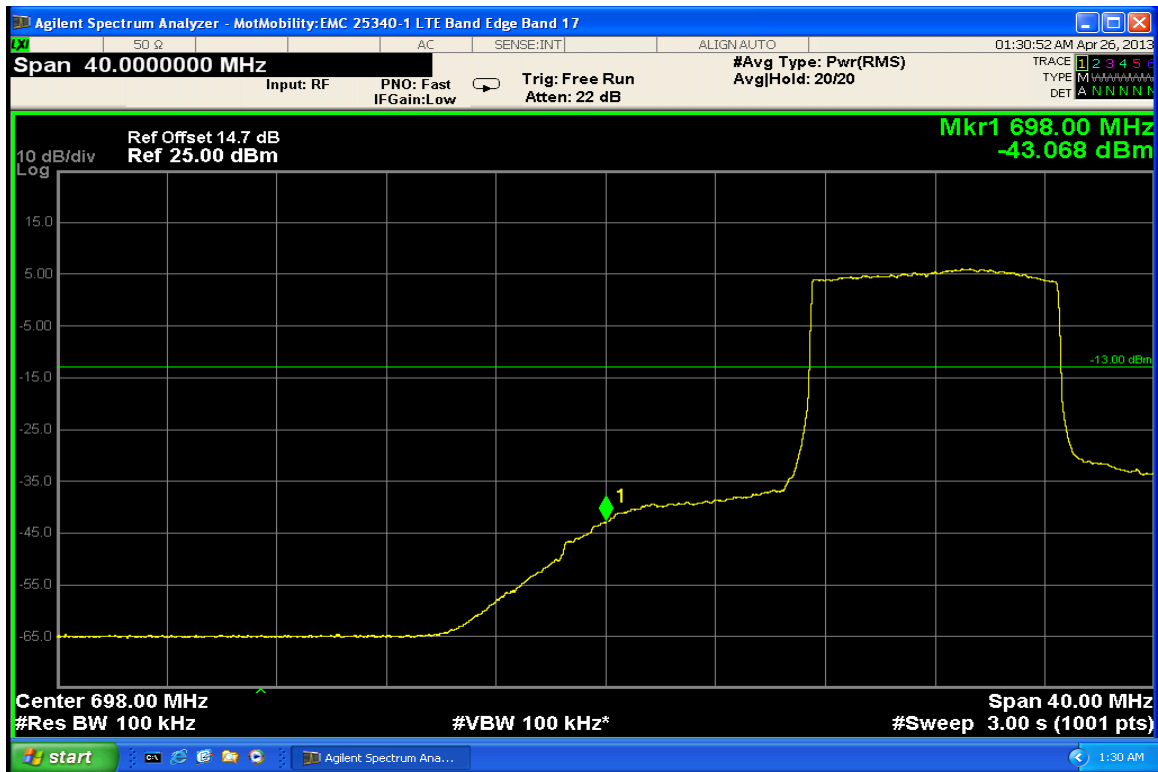
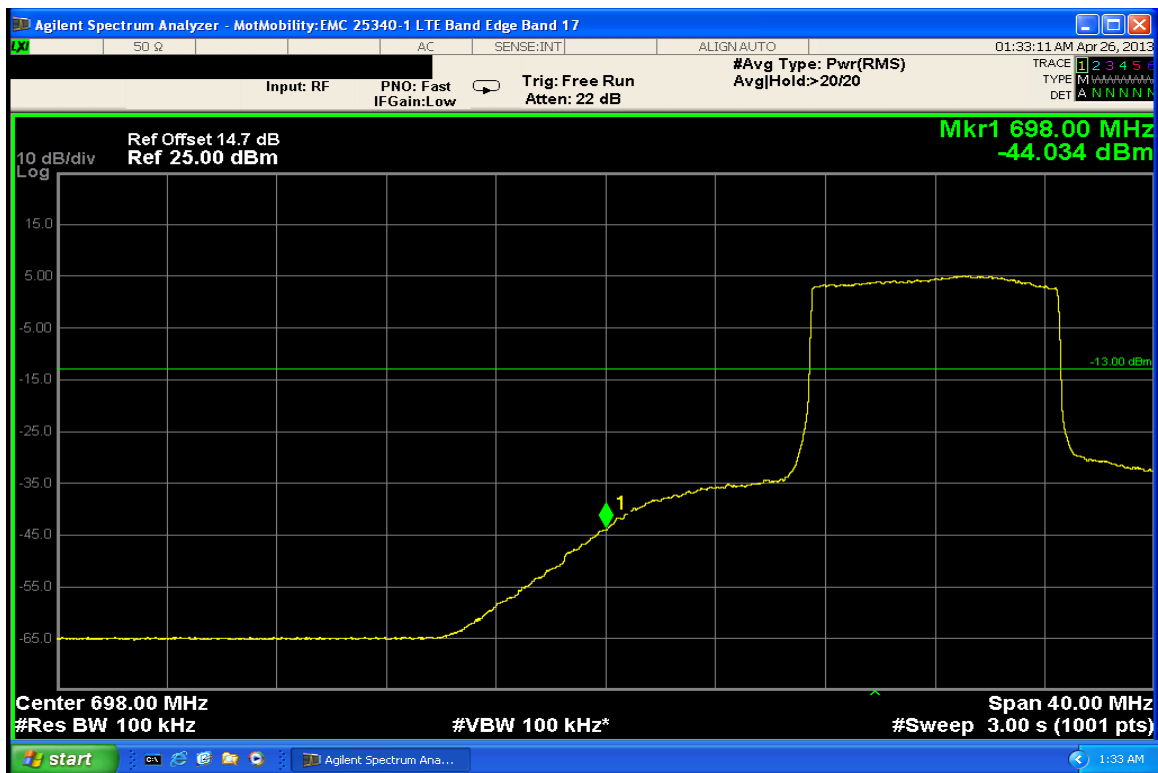


Band 5 LTE – 1.4 MHz BW, QPSK RB Size = 6 RB Start 0



Band 5 LTE – 1.4 MHz BW, 16-QAM RB Size = 6 RB Start 0

Measurement Results: Band 17 Low and High Band Edge**Band 17 LTE – 10 MHz BW, QPSK RB Size = 50 RB Start 0****Band 17 LTE – 10 MHz BW, 16-QAM RB Size = 50 RB Start 0**

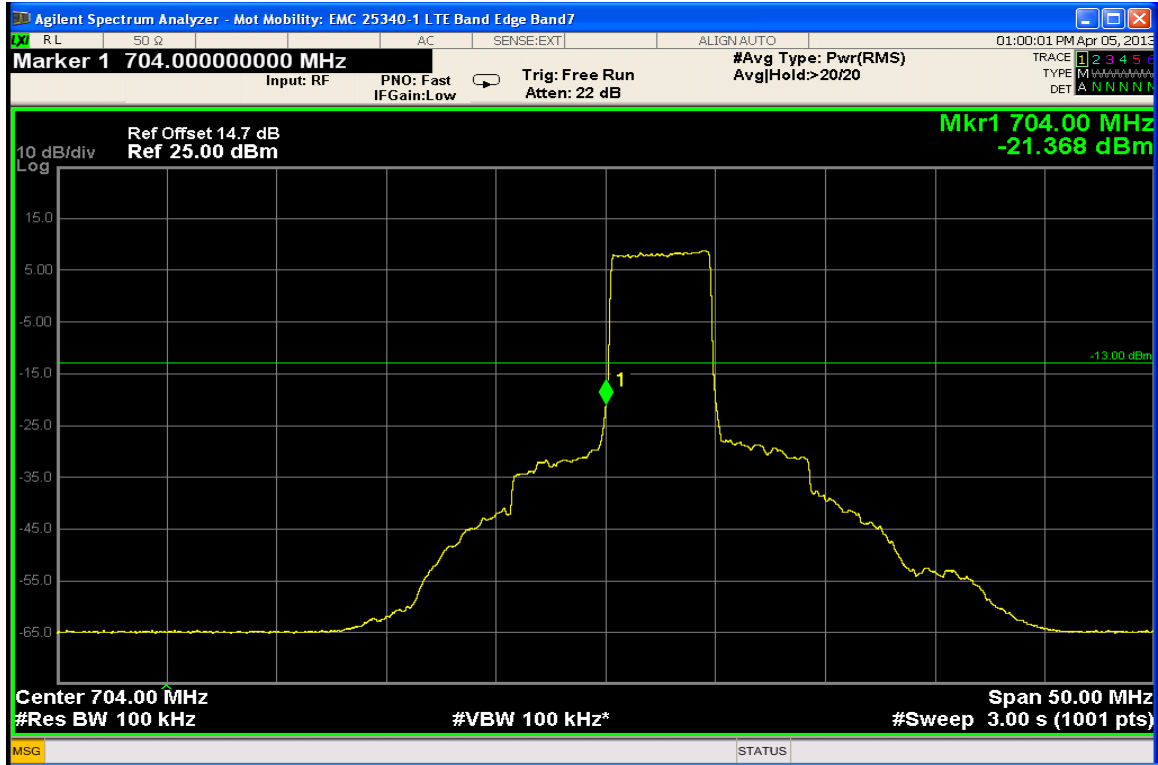
**Band 17 LTE – 10 MHz BW, QPSK RB Size = 50 RB Start 0****Band 17 LTE – 10 MHz BW, 16-QAM RB Size = 50 RB Start 0**



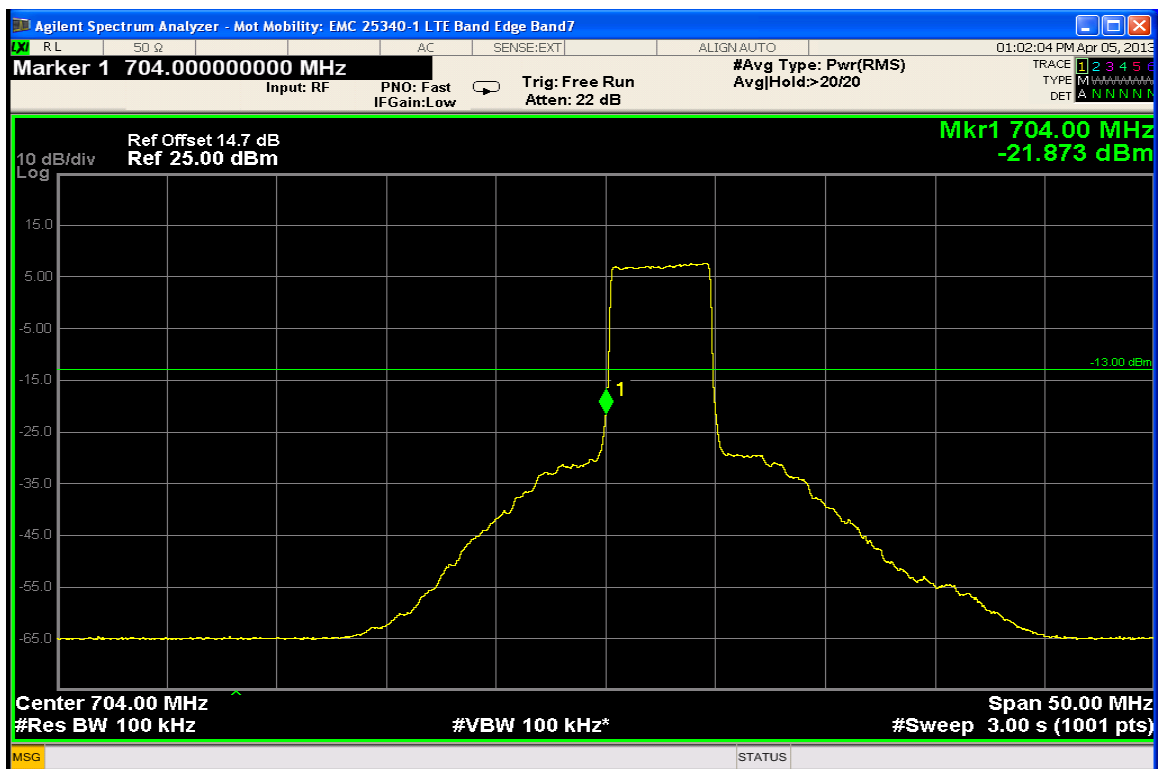
Band 17 LTE – 10 MHz BW, QPSK RB Size = 50 RB Start 0



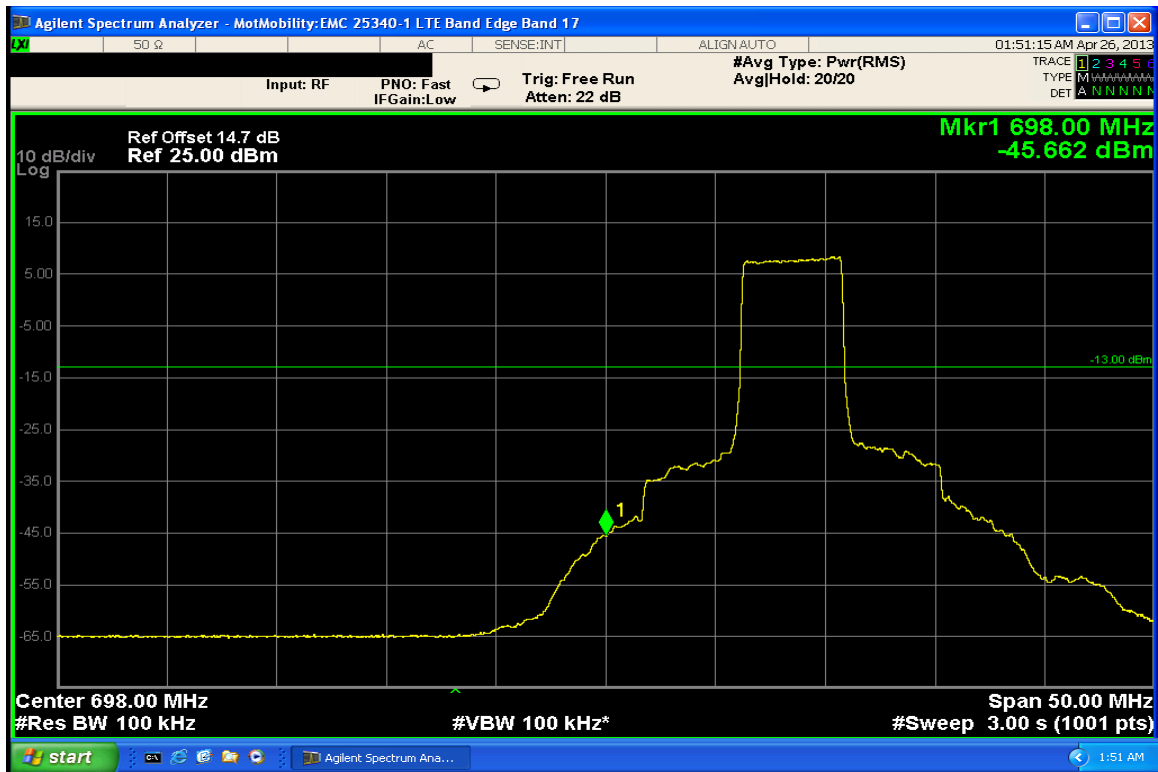
Band 17 LTE – 10 MHz BW, 16-QAM RB Size = 50 RB Start 0



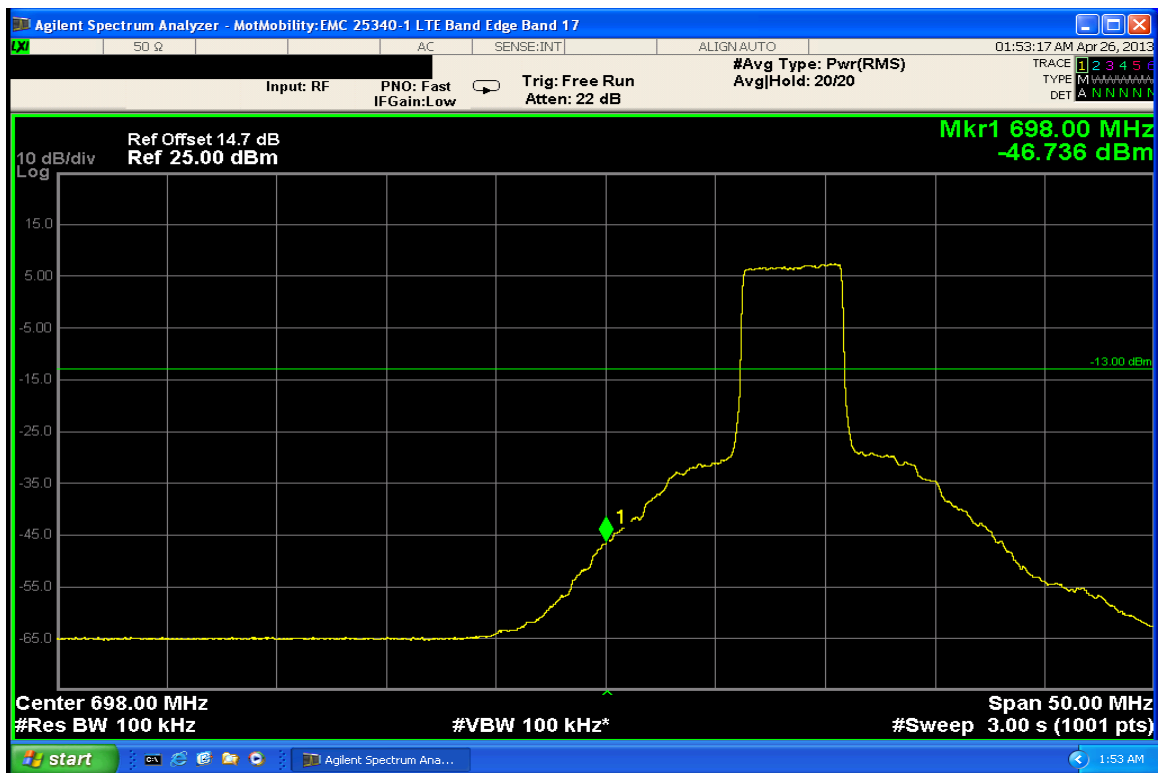
Band 17 LTE – 5 MHz BW, QPSK RB Size = 25 RB Start 0



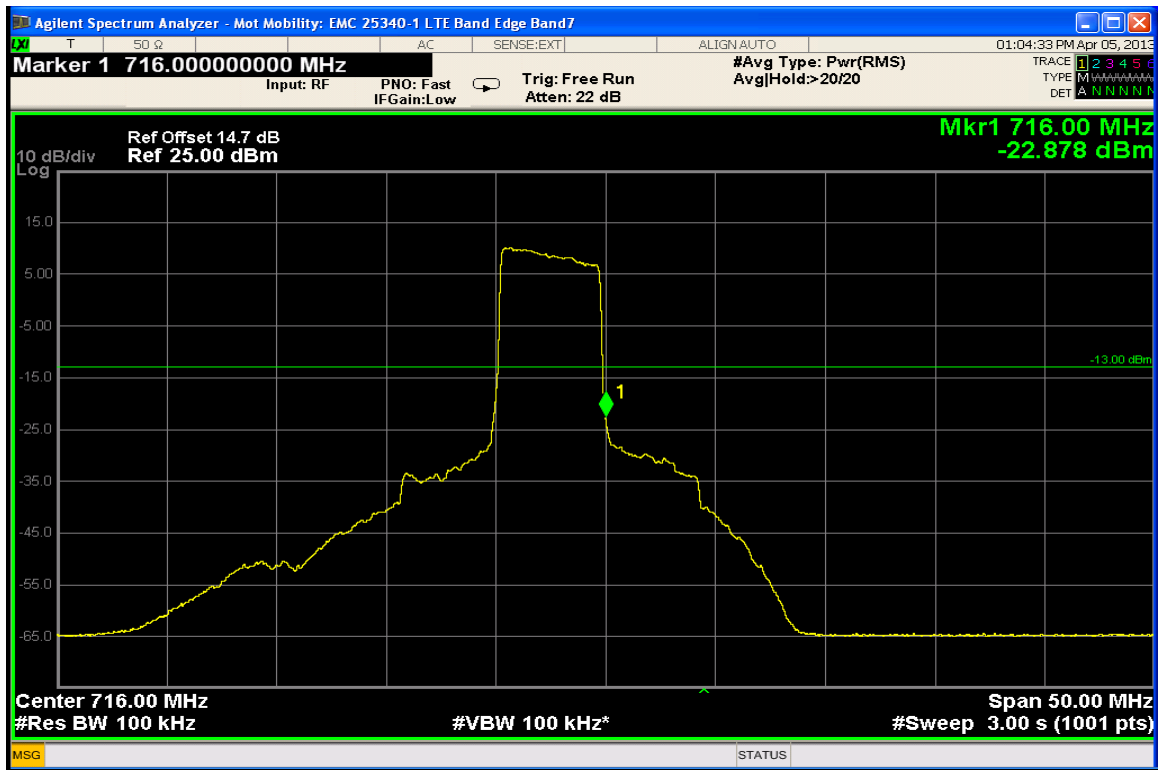
Band 17 LTE – 5 MHz BW, 16-QAM RB Size = 25 RB Start 0



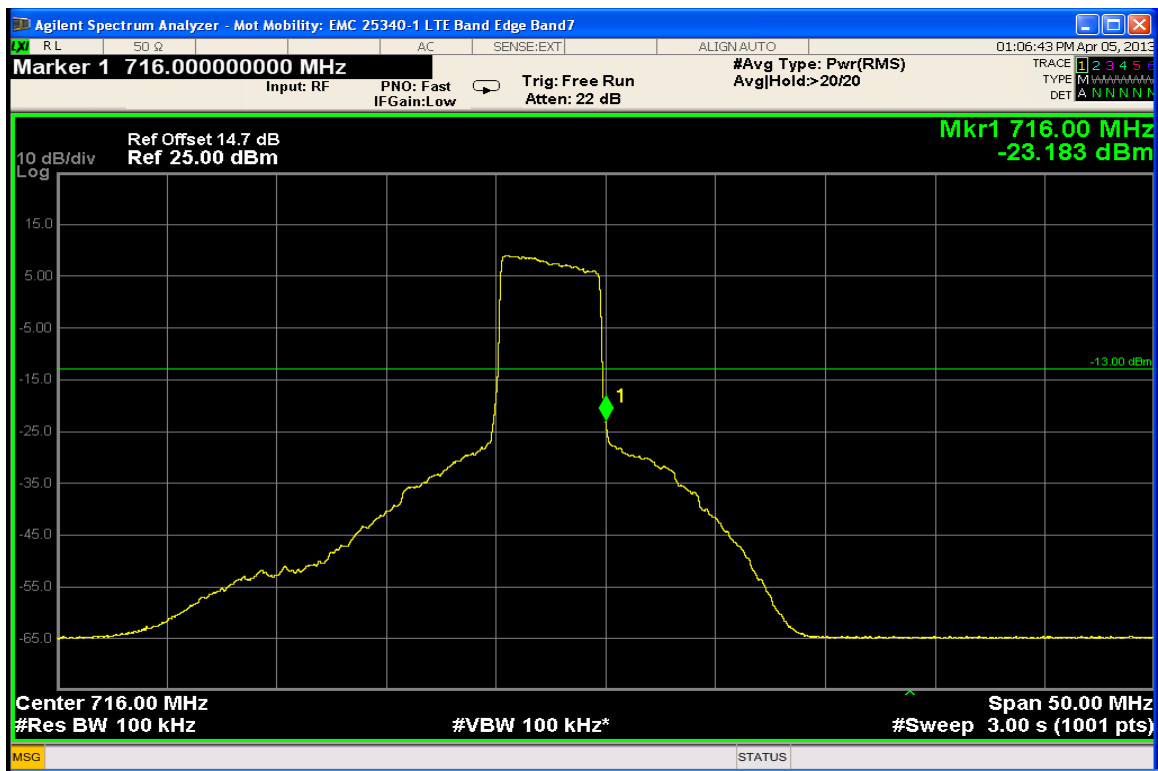
Band 17 LTE – 5 MHz BW, QPSK RB Size = 25 RB Start 0



Band 17 LTE – 5 MHz BW, 16-QAM RB Size = 25 RB Start 0



Band 17 LTE – 5 MHz BW, QPSK RB Size = 25 RB Start 0



Band 17 LTE – 5 MHz BW, 16-QAM RB Size = 25 RB Start 0

SPURIOUS EMISSIONS AT ANTENNA TERMINALS

§22.917 (a), §24.238 (a), §27.53 (g), §27.53 (h)

Measurement Procedure

The RF output port of the EUT is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. The fully charged internal battery was used for the supply voltage.

The spectrum was investigated from the lowest frequency signal generated, without going below 9 kHz, up to at least the tenth harmonic of the fundamental or 40 GHz, whichever is lower.

§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.

§24.238 (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.

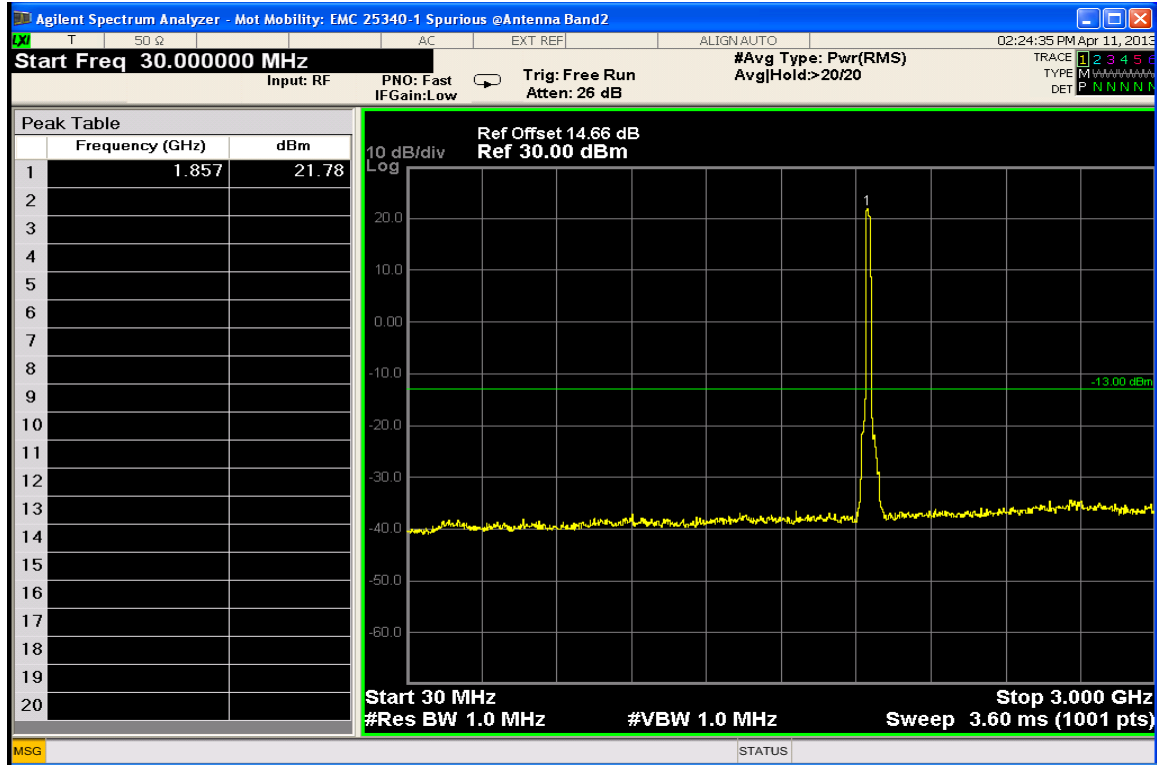
§27.53 (g) For operations in the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB.

§27.53 (h) For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB.

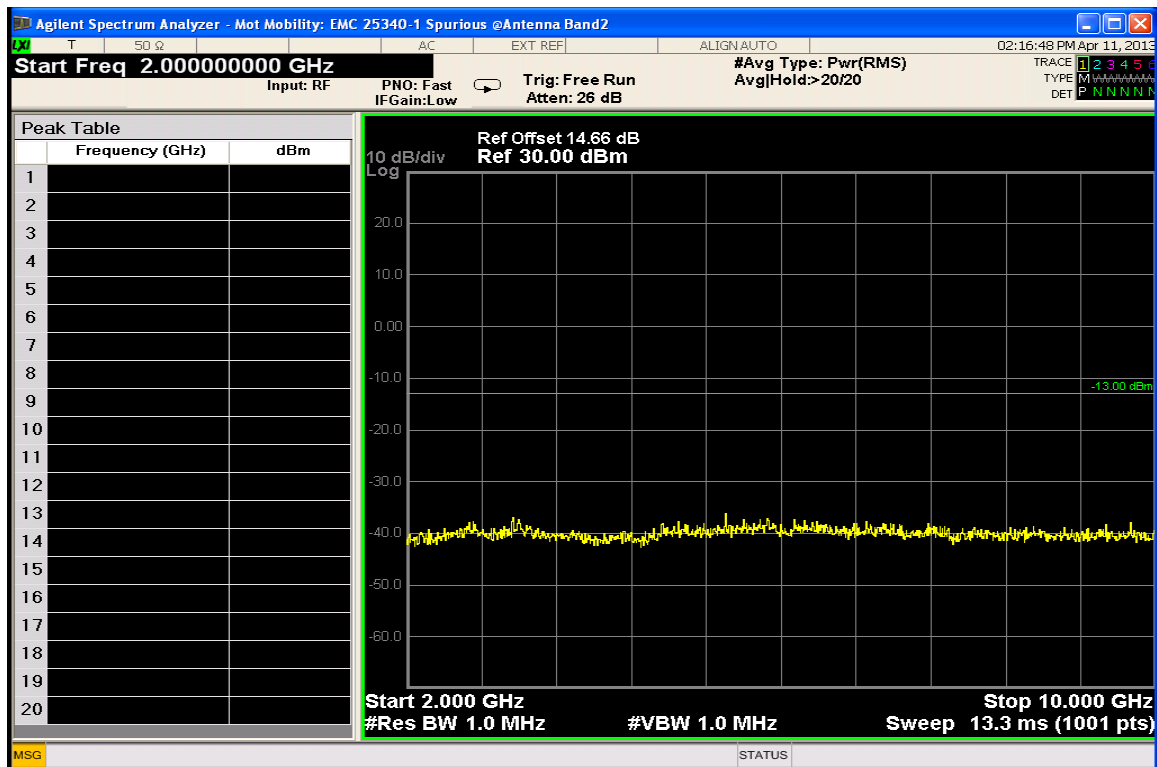
The spectrum analyzer settings were as follows:

Units	dBm
Divisions	10 dB
Detector	Peak Detector
Resolution Bandwidth	1MHz
Video Bandwidth (AVG)	Auto
Sweep Time	Auto

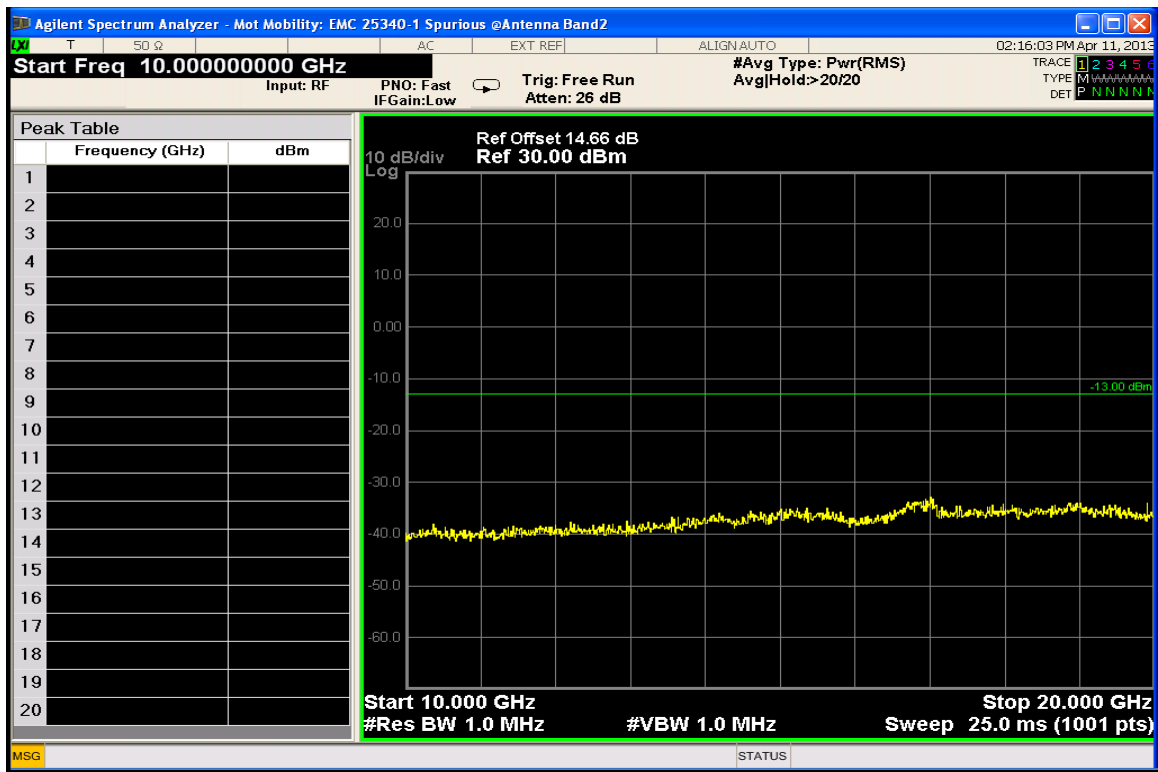
The EUT was tested in the highest bandwidth and both modulations in each band and the plots are reported below.

Measurement Results: LTE Band 2 QPSK Conducted Spurious Emissions

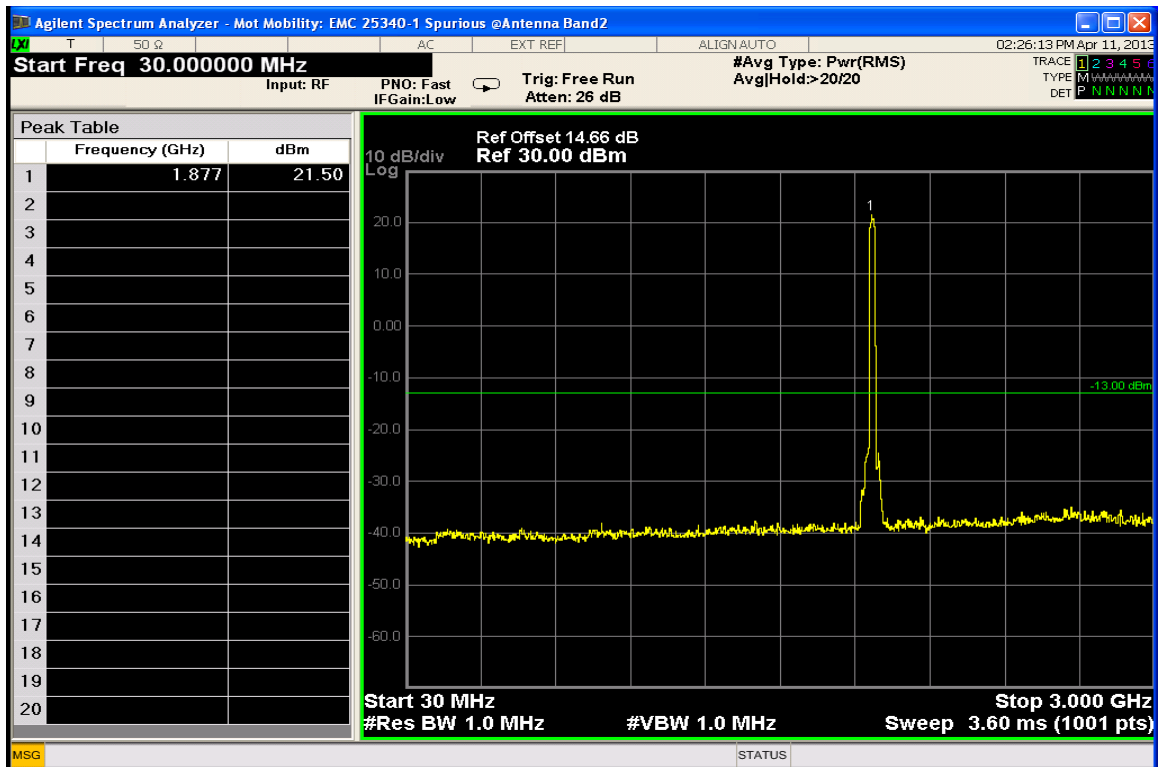
20 MHz BW, QPSK RB Size = 100RB Start 0, Low Channel



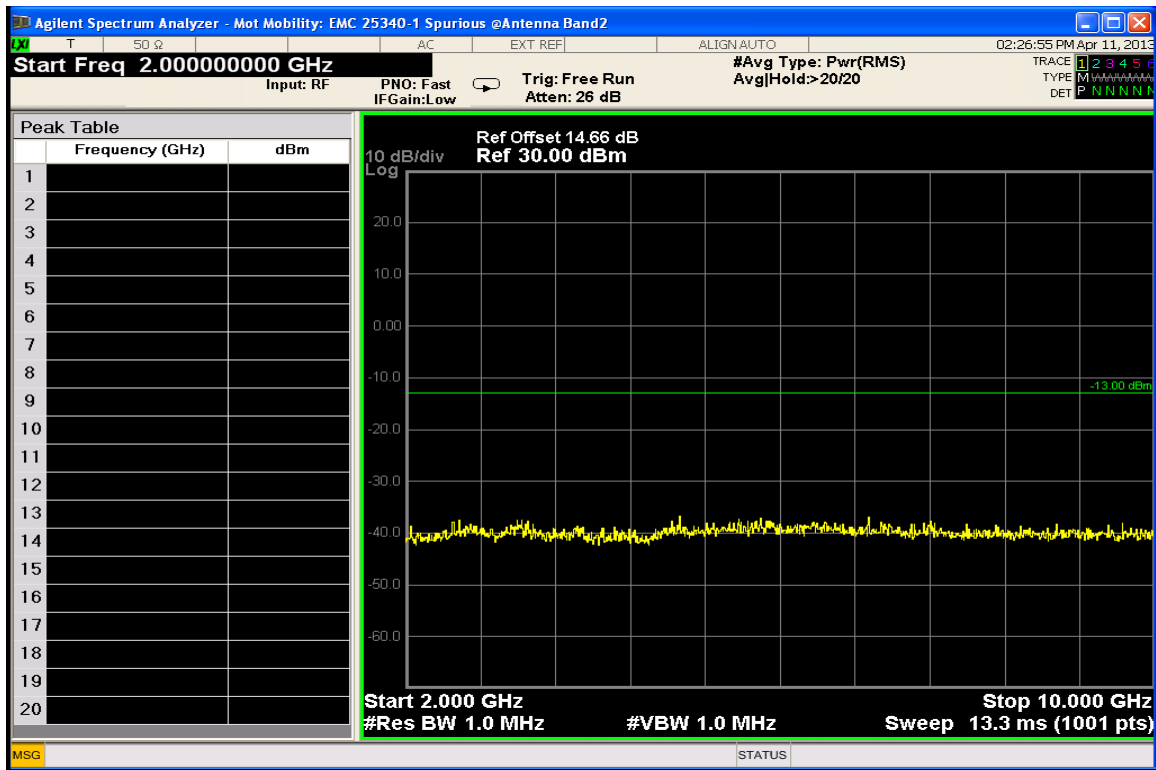
20 MHz BW, QPSK RB Size = 100RB Start 0, Low Channel



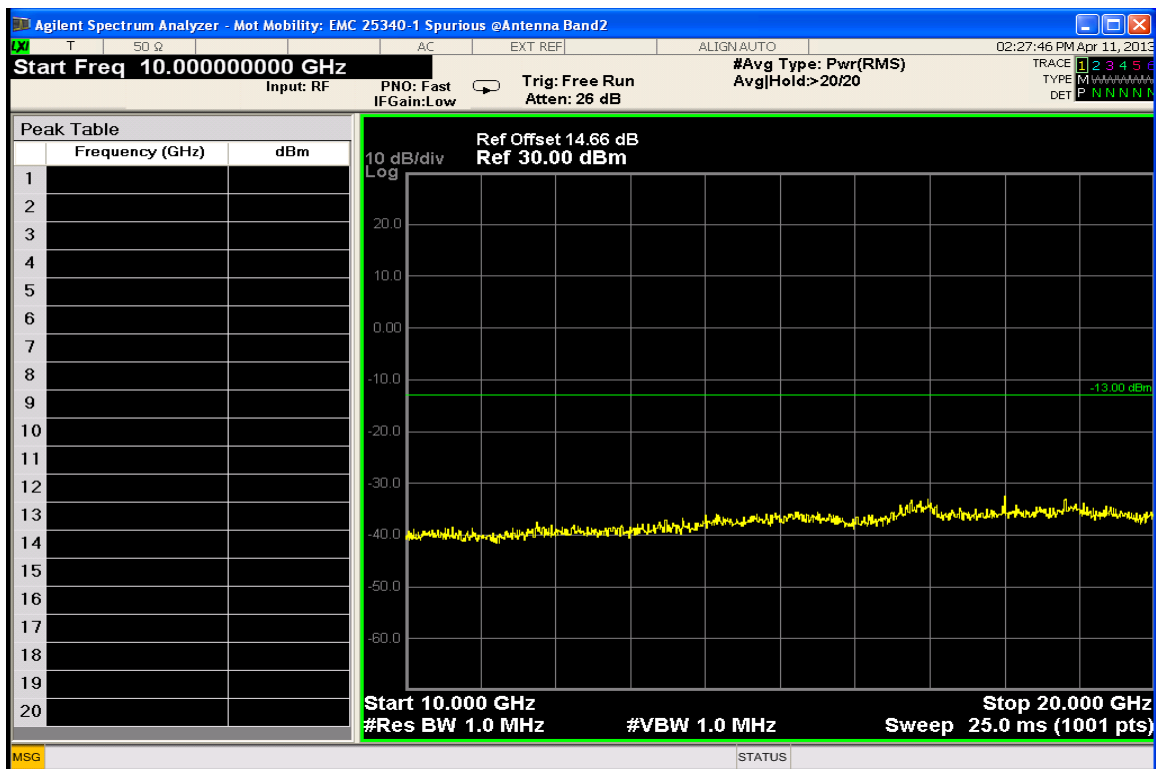
20 MHz BW, QPSK RB Size = 100RB Start 0, Low Channel



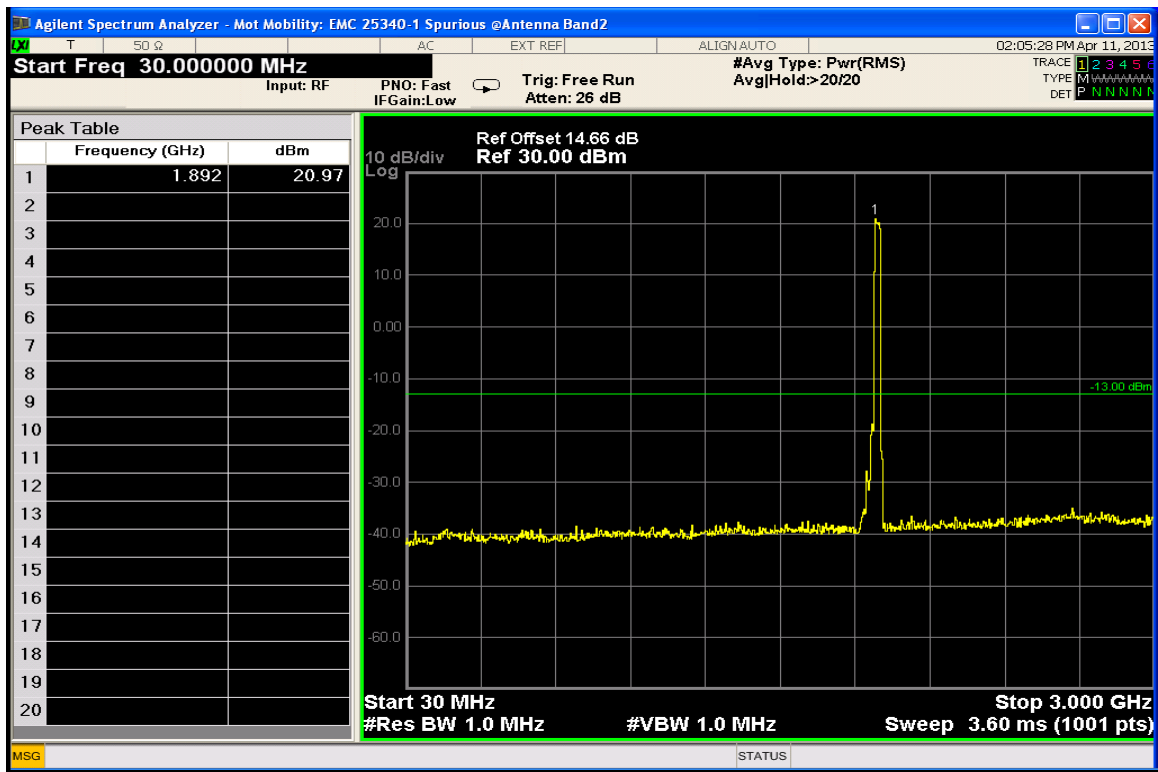
20 MHz BW, QPSK RB Size = 100RB Start 0, Mid Channel



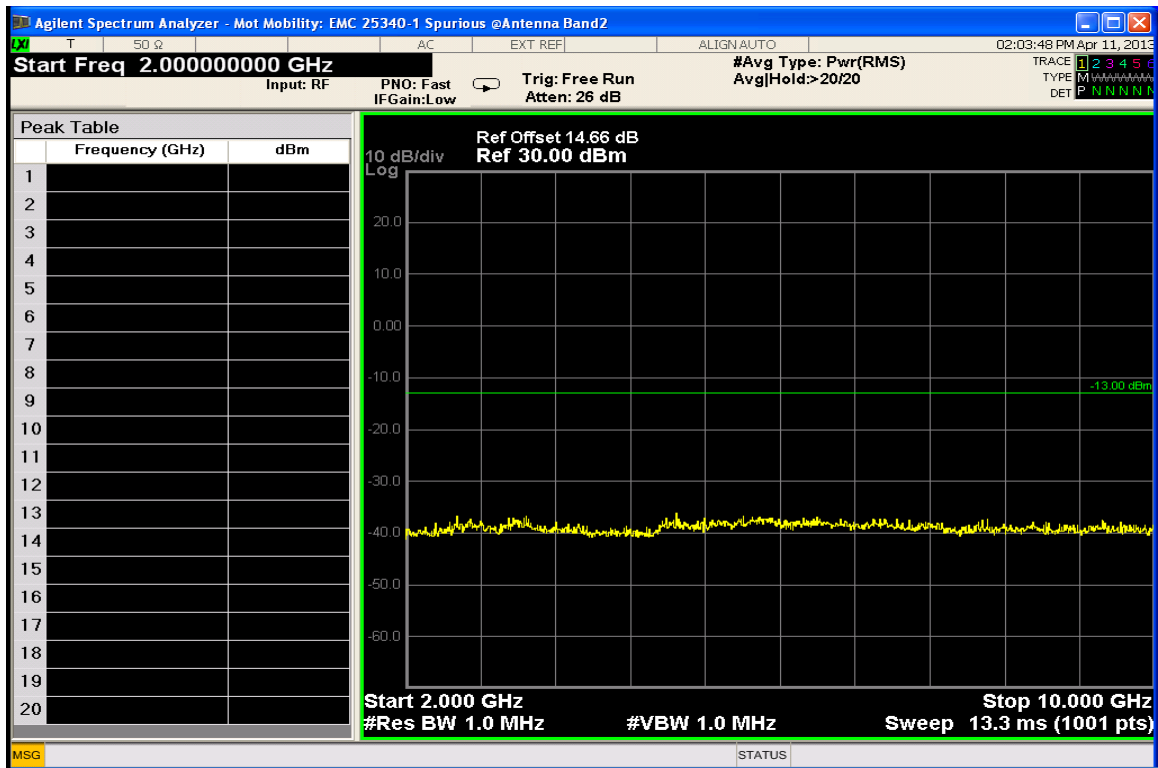
20 MHz BW, QPSK RB Size = 100RB Start 0, Mid Channel



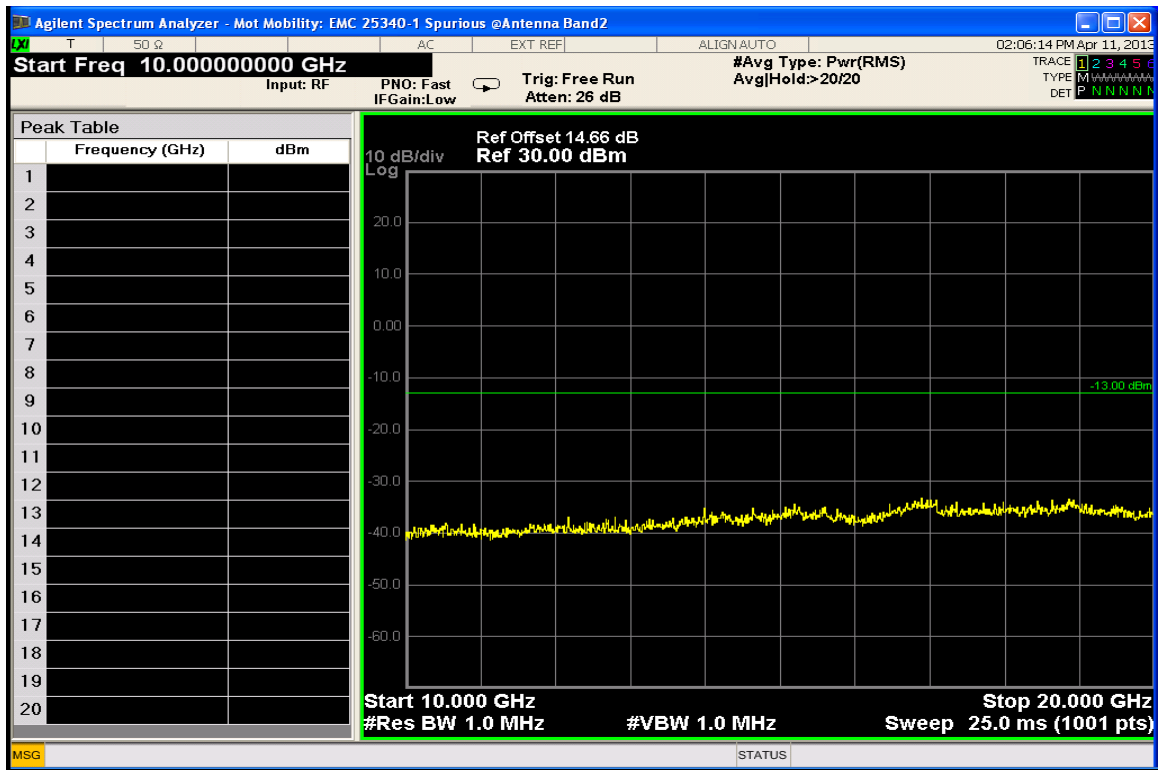
20 MHz BW, QPSK RB Size = 100RB Start 0, Mid Channel



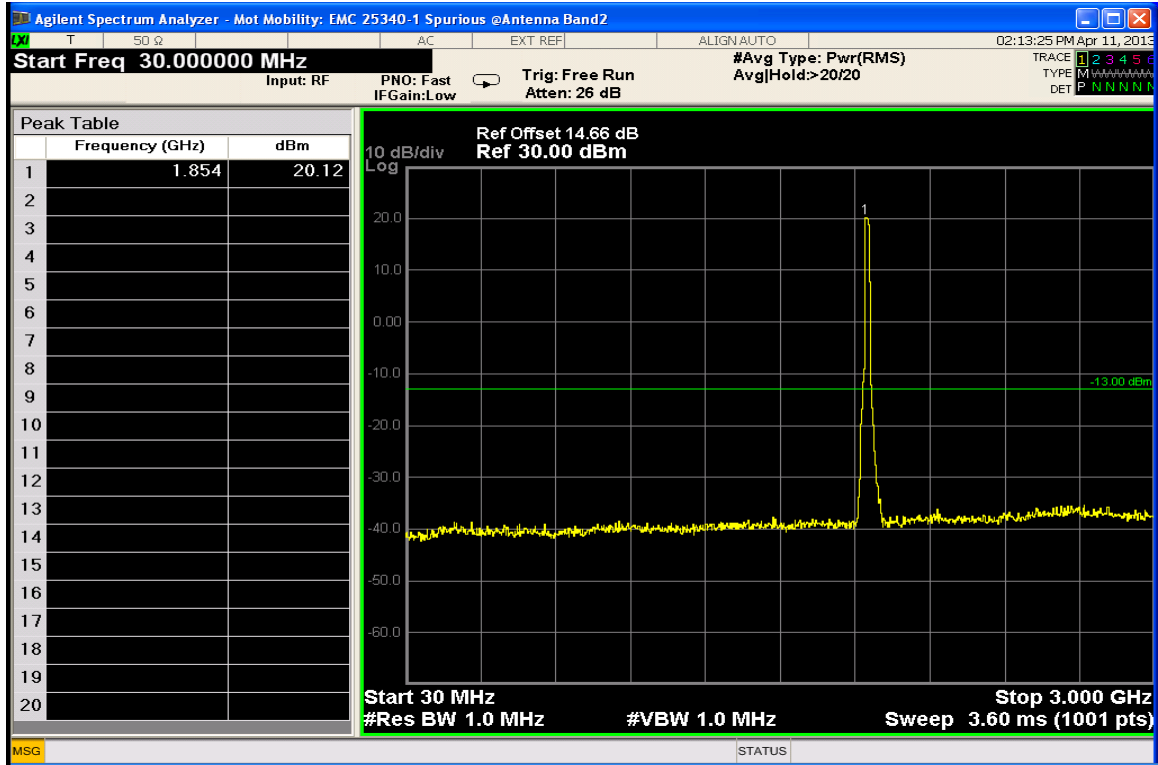
20 MHz BW, QPSK RB Size = 100RB Start 0, High Channel



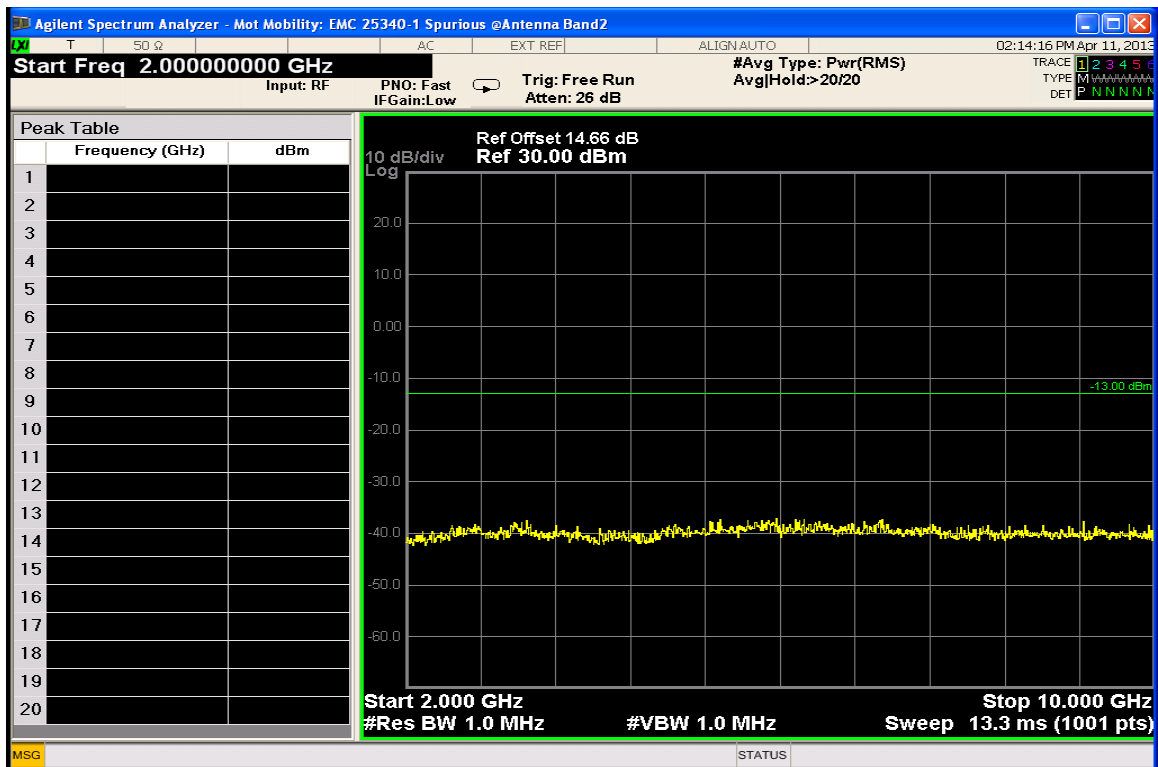
20 MHz BW, QPSK RB Size = 100RB Start 0, High Channel



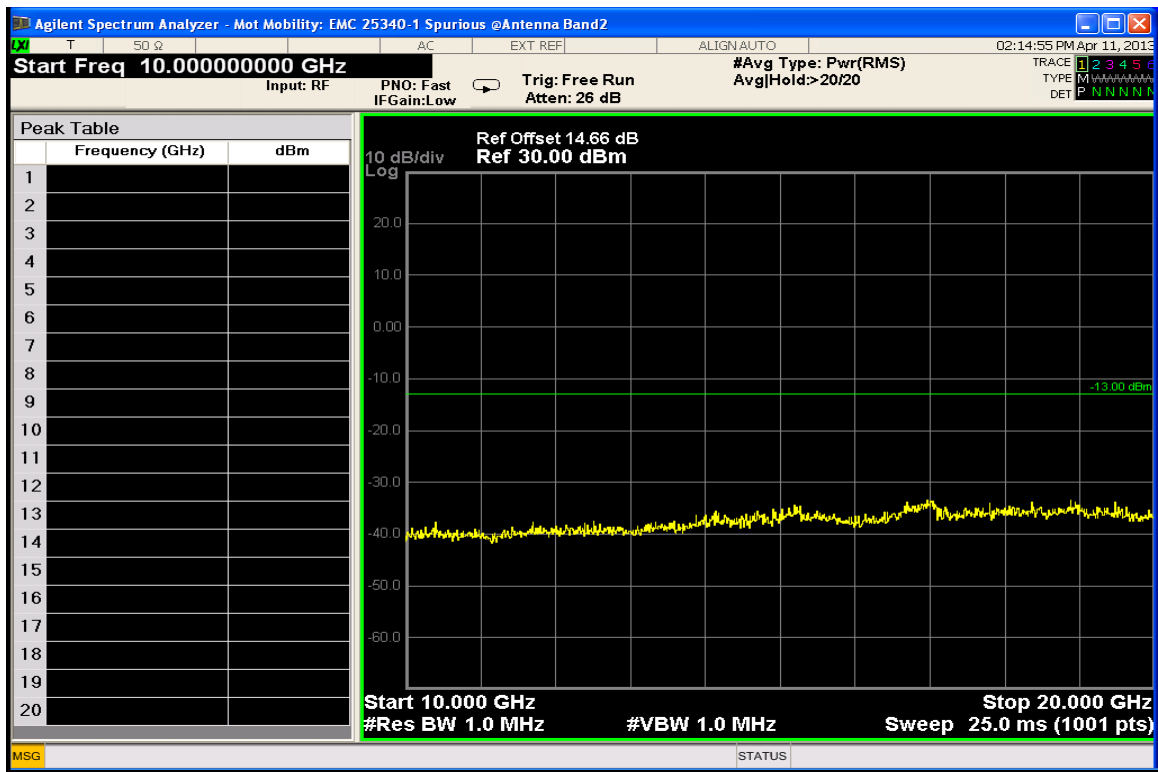
20 MHz BW, QPSK RB Size = 100RB Start 0, High Channel

Measurement Results: LTE Band 2 16-QAM Conducted Spurious Emissions

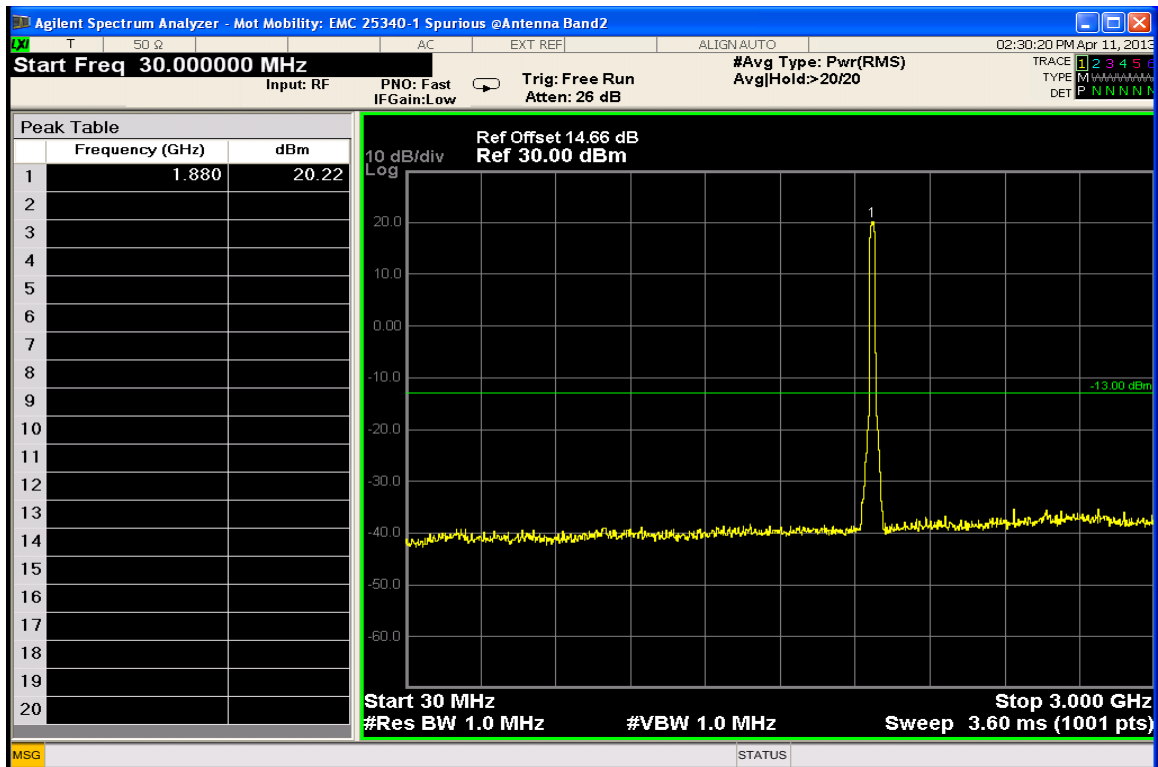
20 MHz BW, 16-QAM RB Size = 100RB Start 0, Low Channel



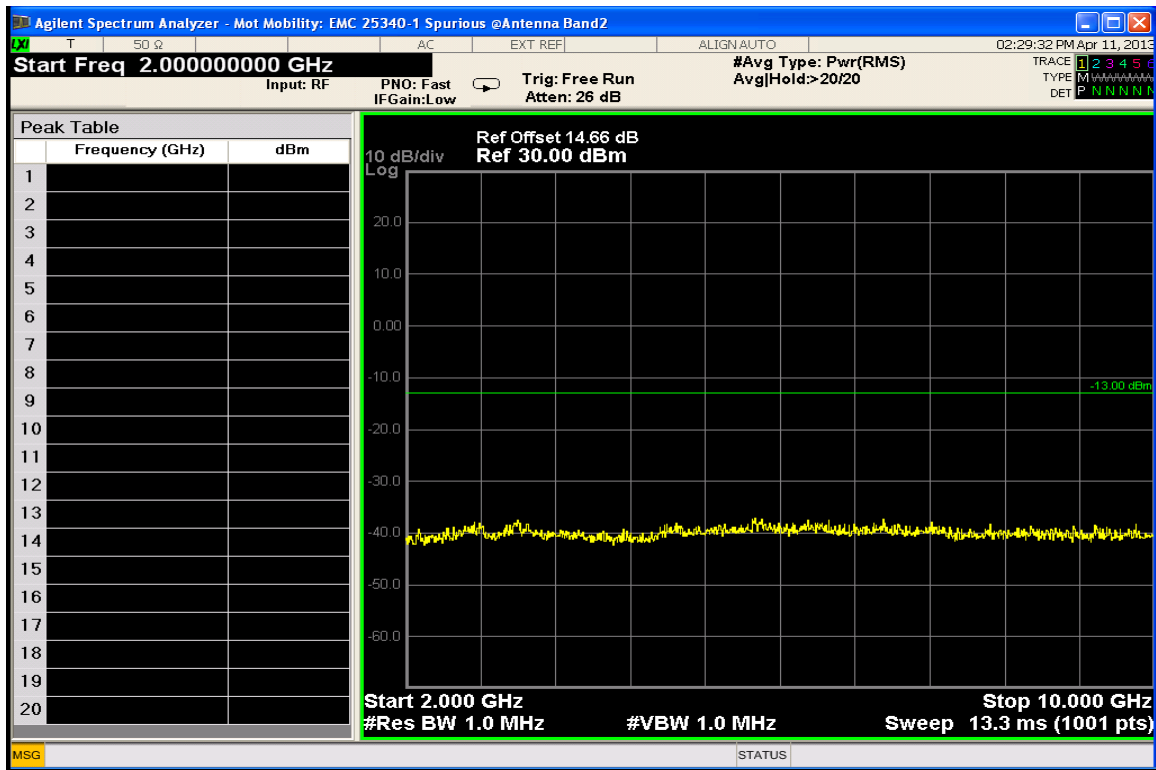
20 MHz BW, 16-QAM RB Size = 100RB Start 0, Low Channel



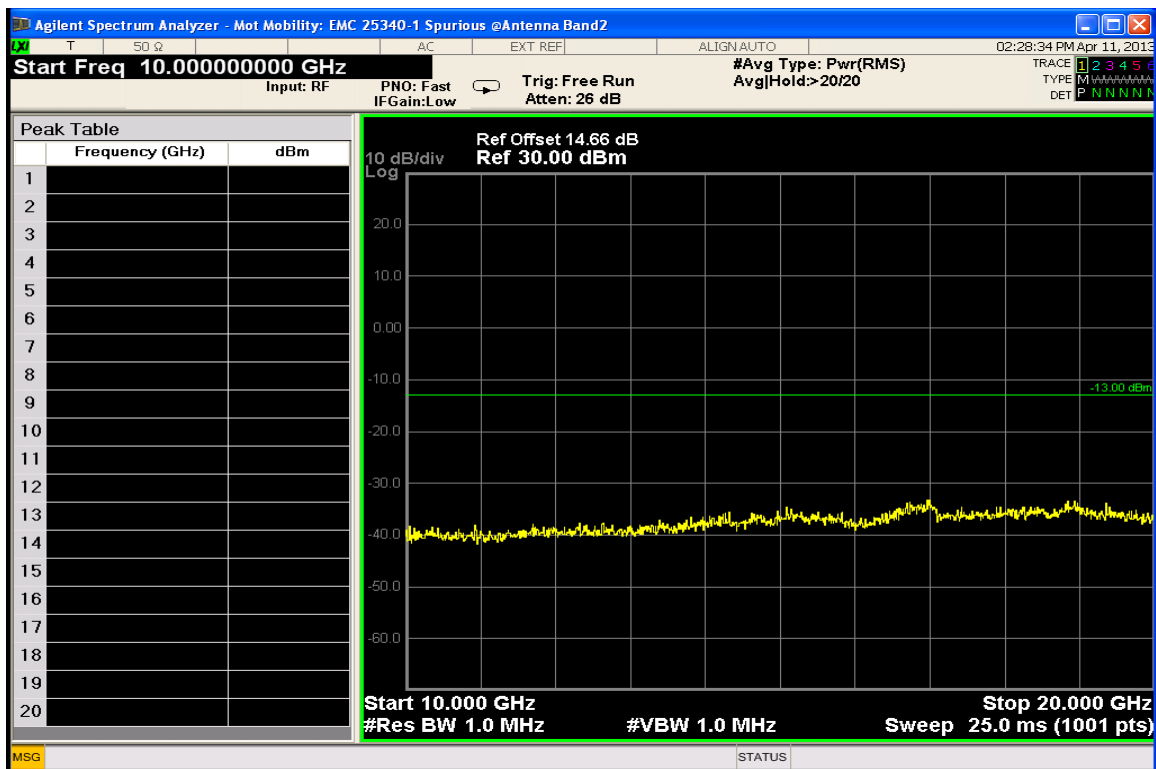
20 MHz BW, 16-QAM RB Size = 100RB Start 0, Low Channel



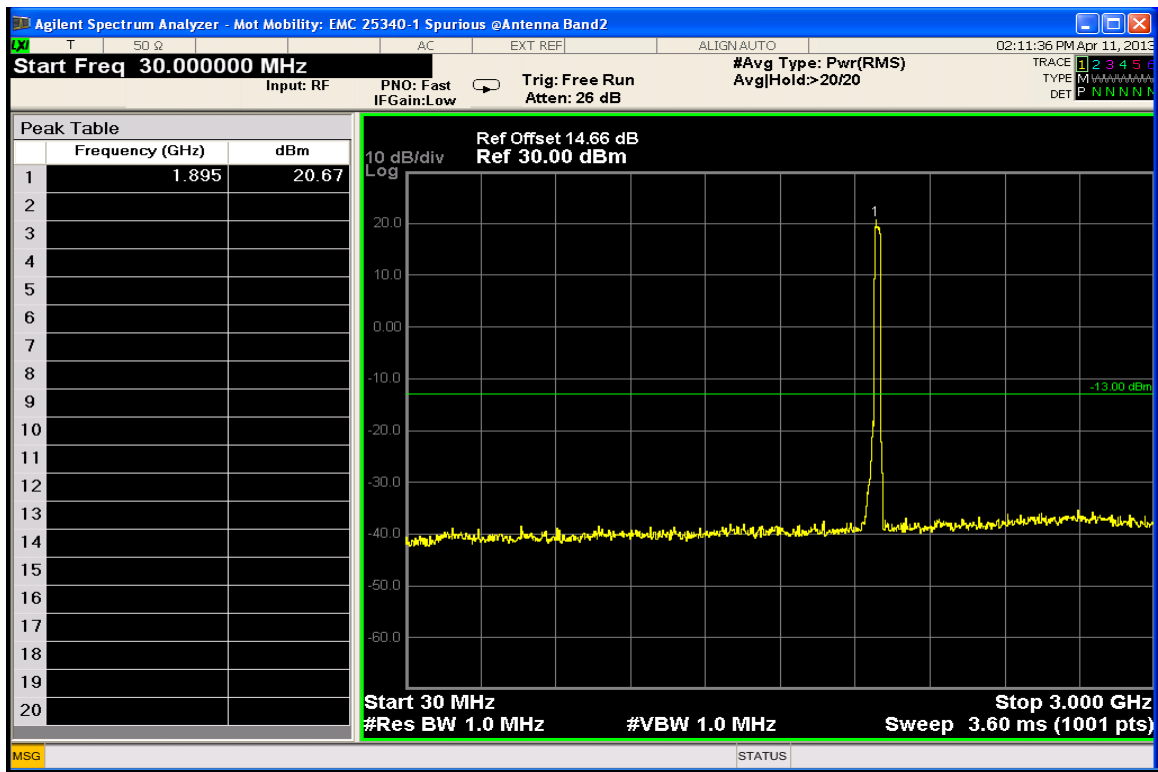
20 MHz BW, 16-QAM RB Size = 100RB Start 0, Mid Channel



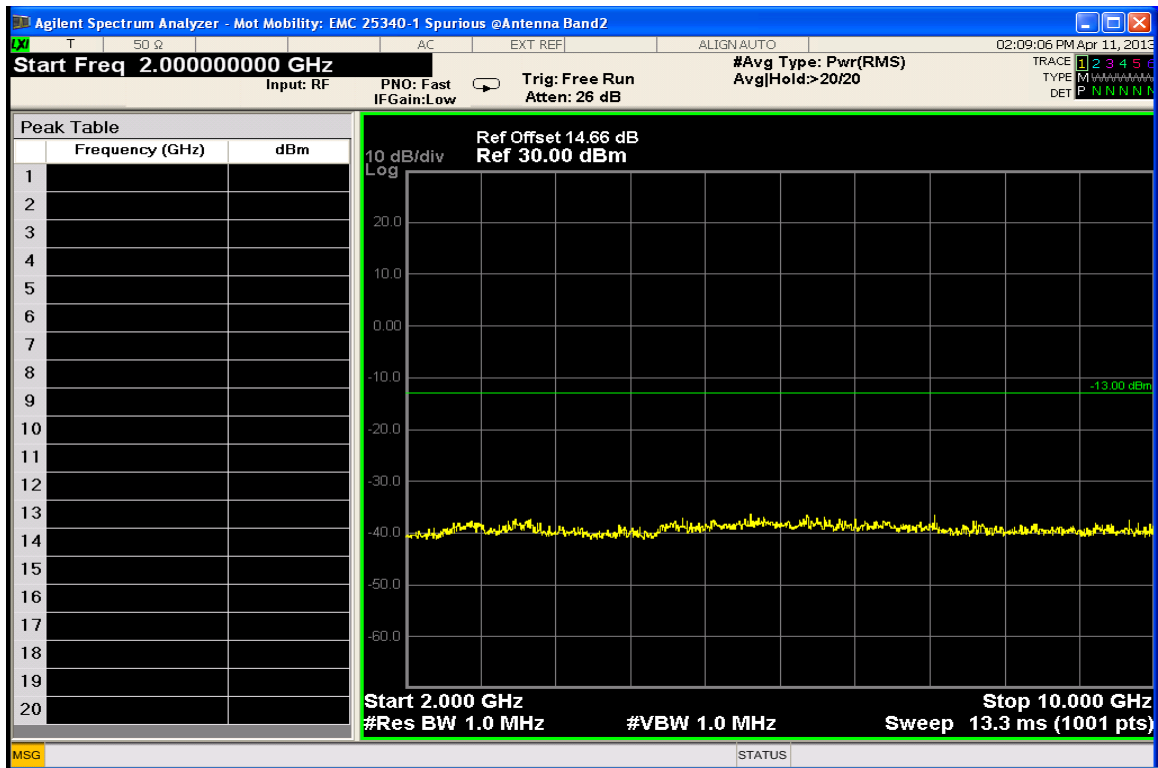
20 MHz BW, 16-QAM RB Size = 100RB Start 0, Mid Channel



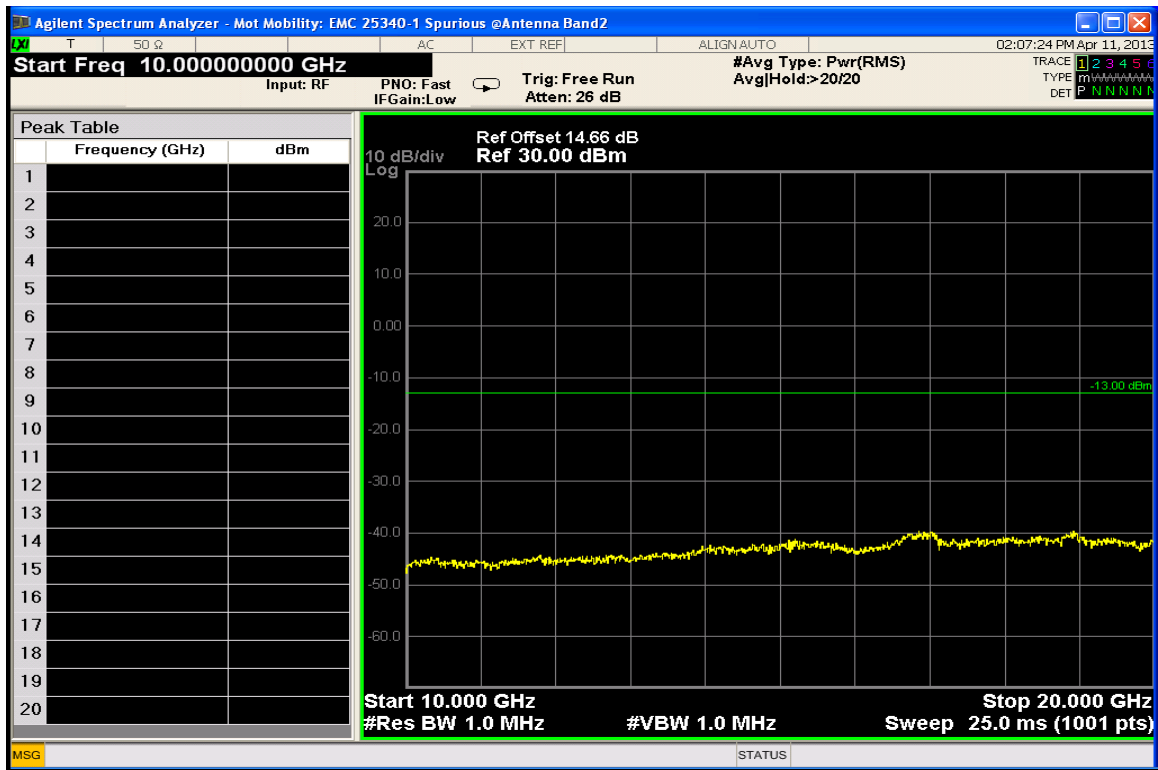
20 MHz BW, 16-QAM RB Size = 100RB Start 0, Mid Channel



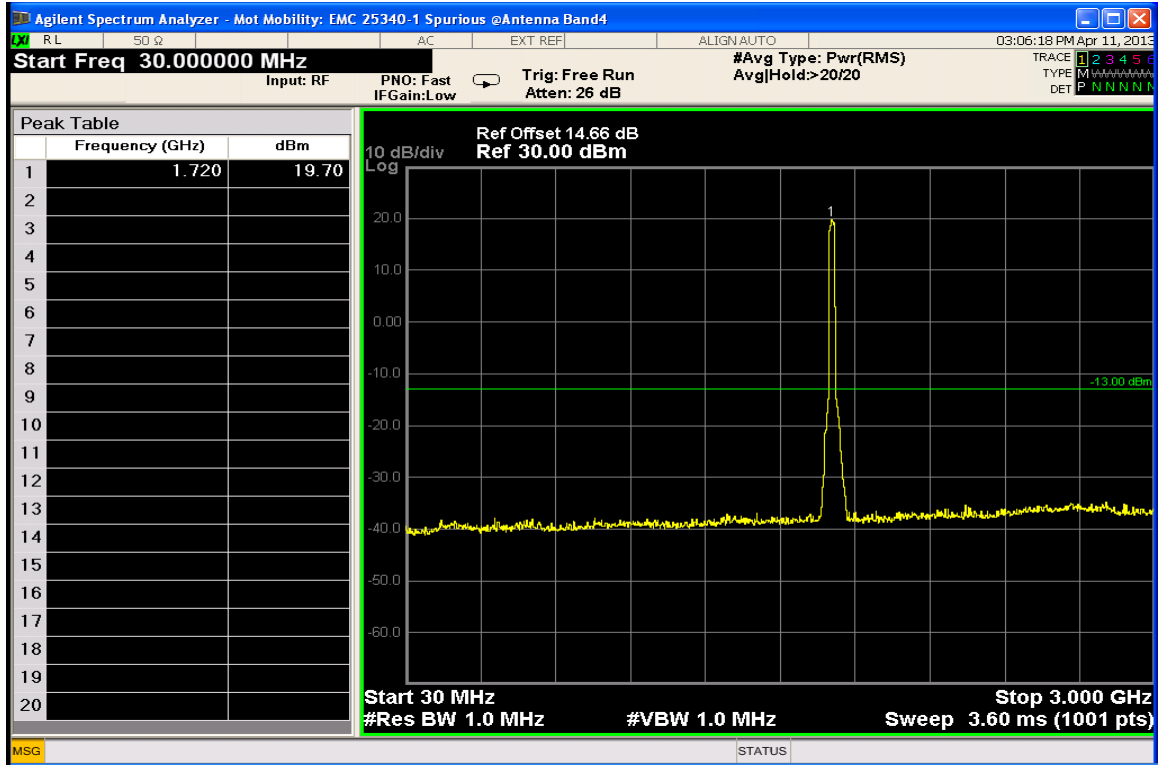
20 MHz BW, 16-QAM RB Size = 100RB Start 0, High Channel



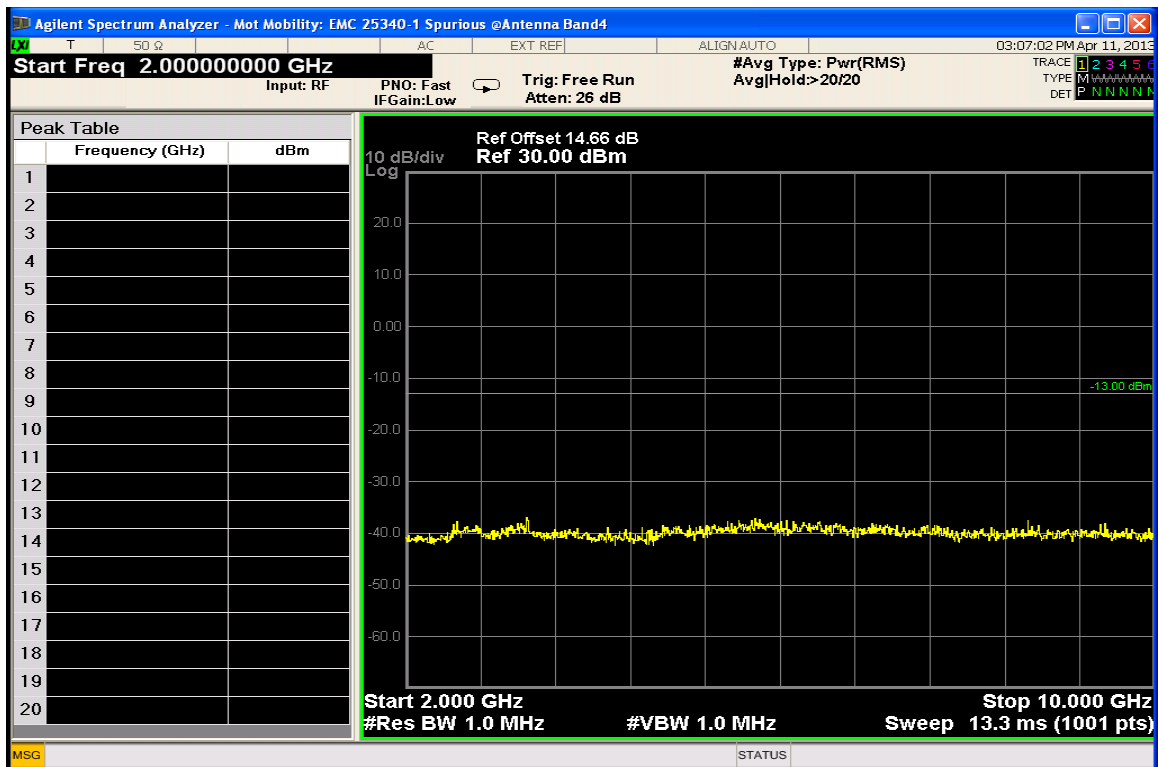
20 MHz BW, 16-QAM RB Size = 100RB Start 0, High Channel



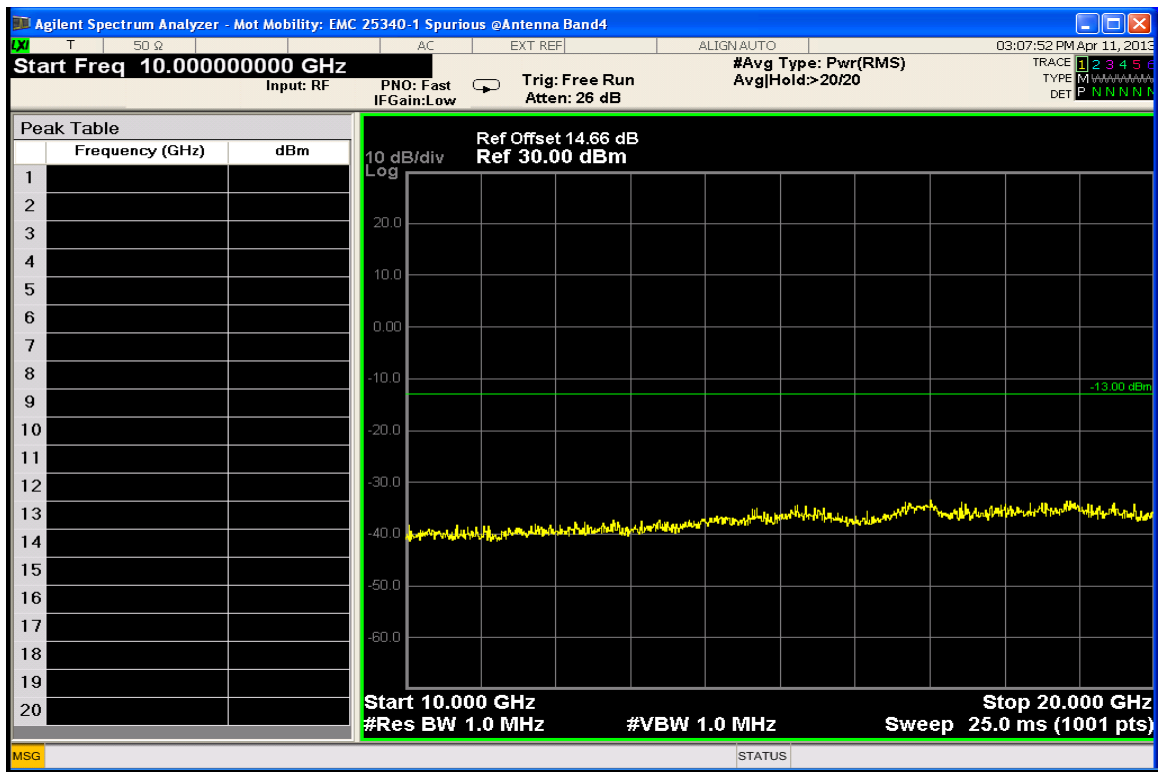
20 MHz BW, 16-QAM RB Size = 100RB Start 0, High Channel

Measurement Results: LTE Band 4 QPSK Conducted Spurious Emissions

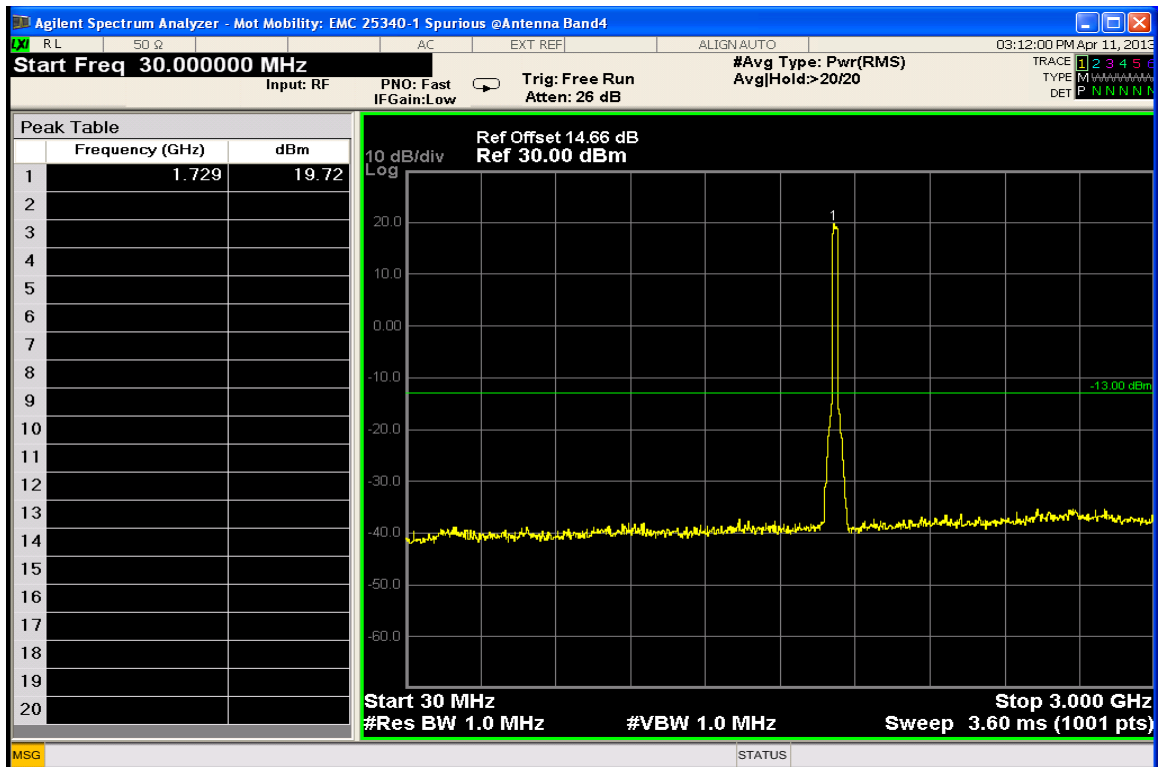
20 MHz BW, QPSK RB Size = 100RB Start 0, Low Channel



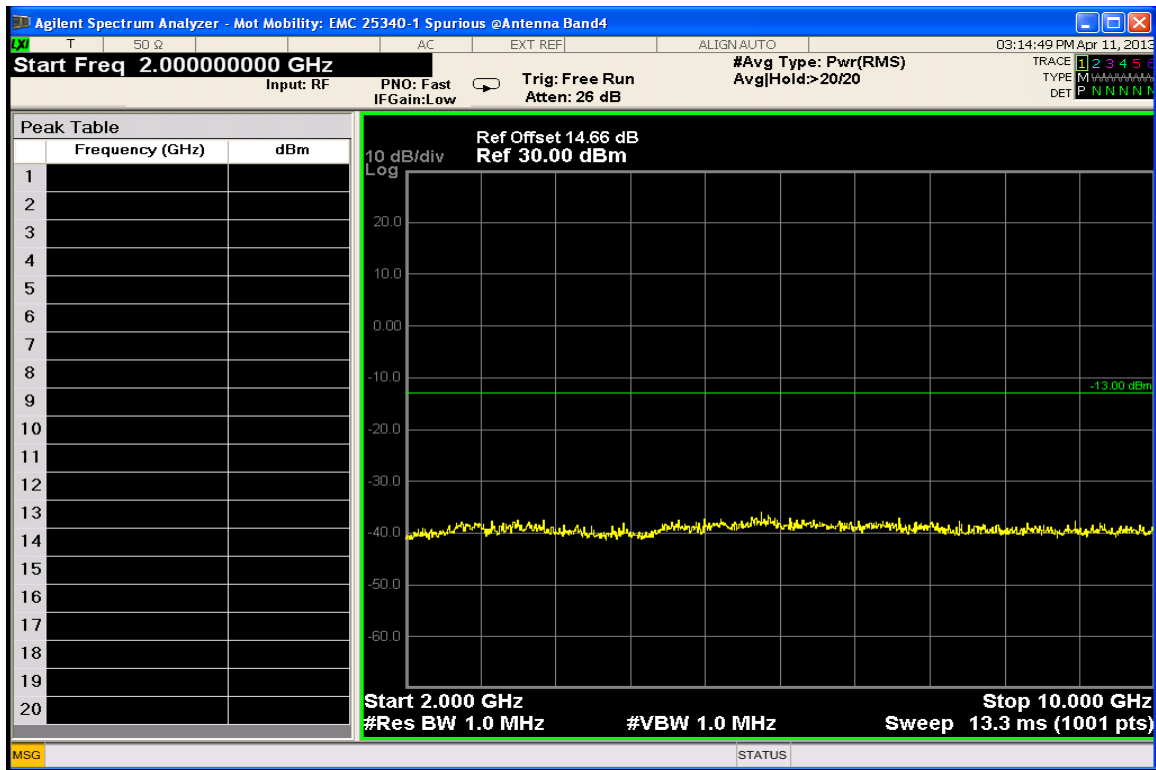
20 MHz BW, QPSK RB Size = 100RB Start 0, Low Channel



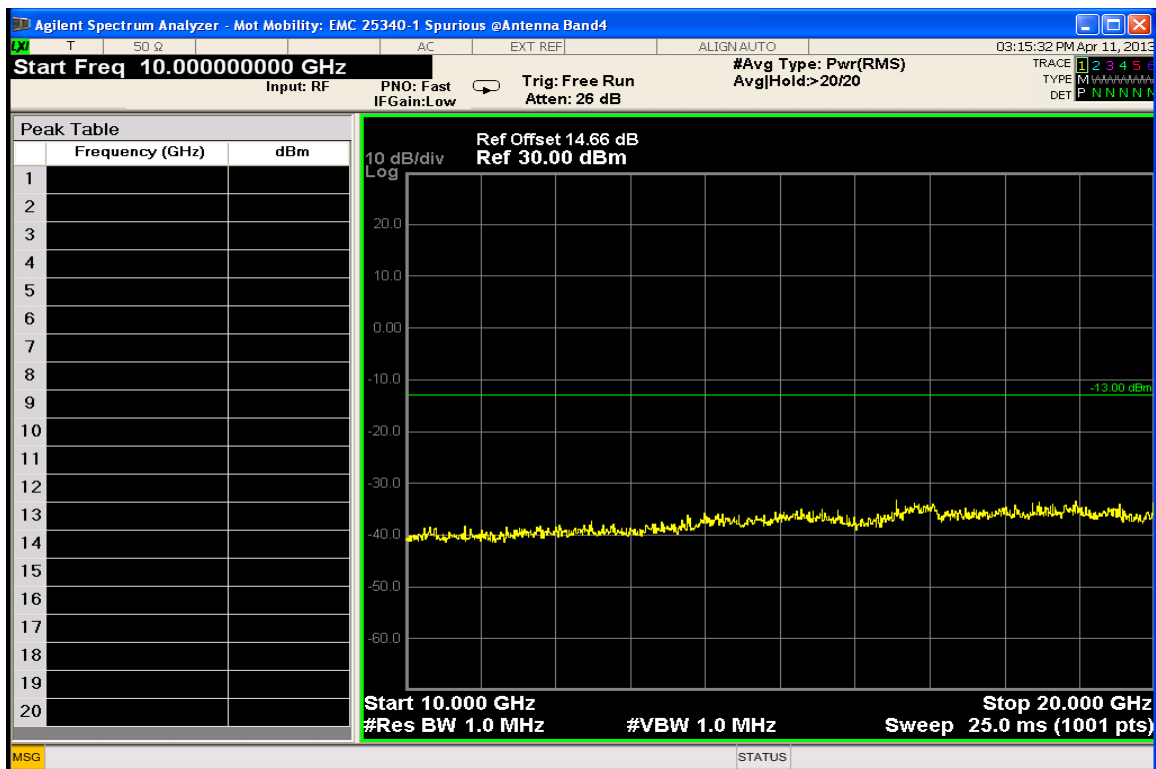
20 MHz BW, QPSK RB Size = 100RB Start 0, Low Channel



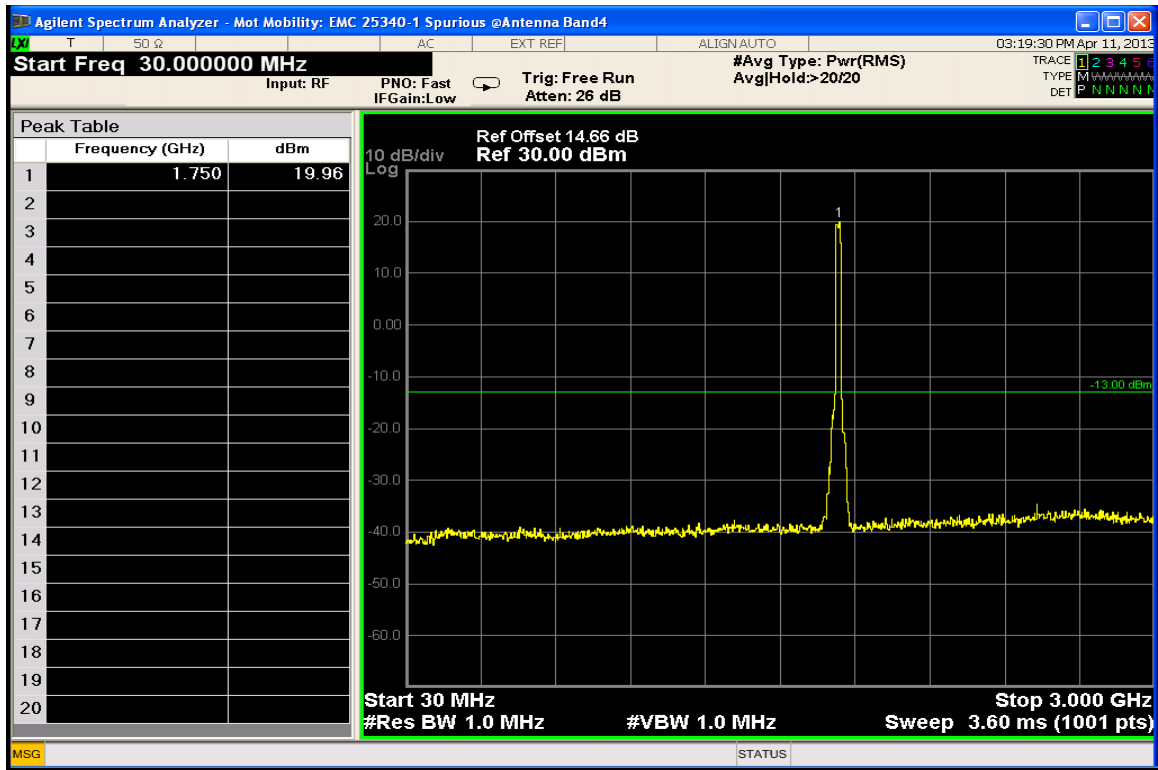
20 MHz BW, QPSK RB Size = 100RB Start 0, Mid Channel



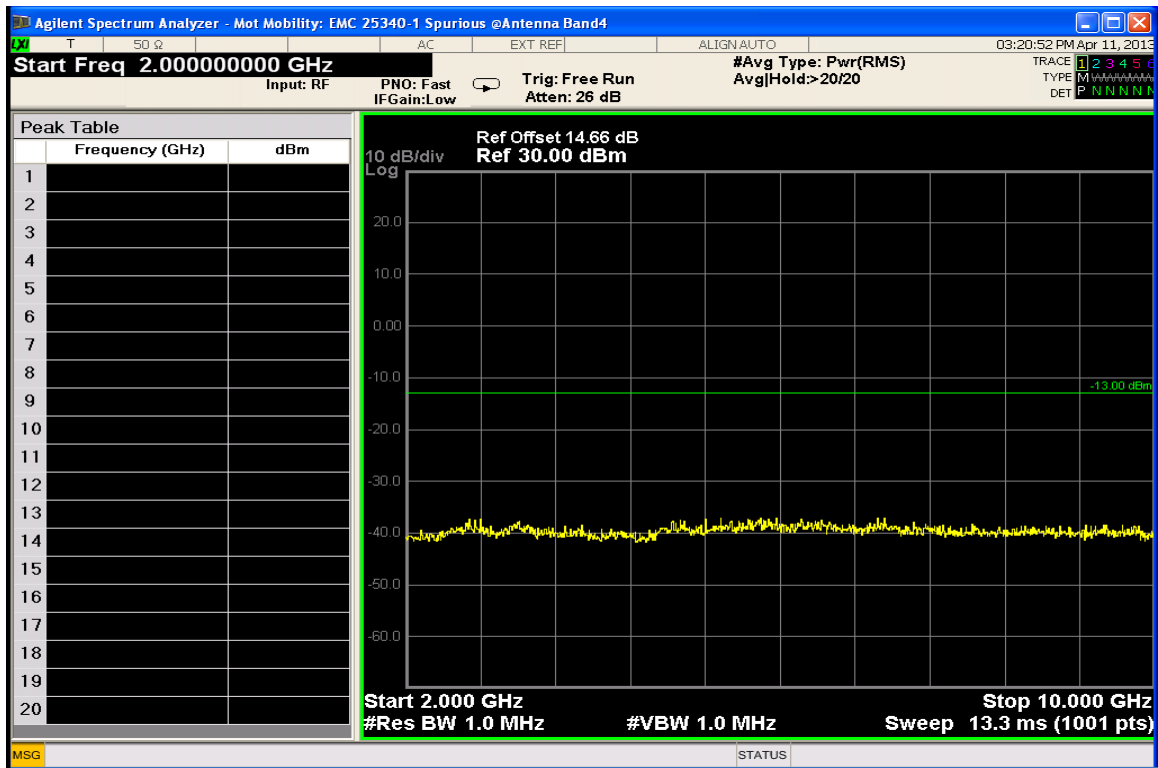
20 MHz BW, QPSK RB Size = 100RB Start 0, Mid Channel



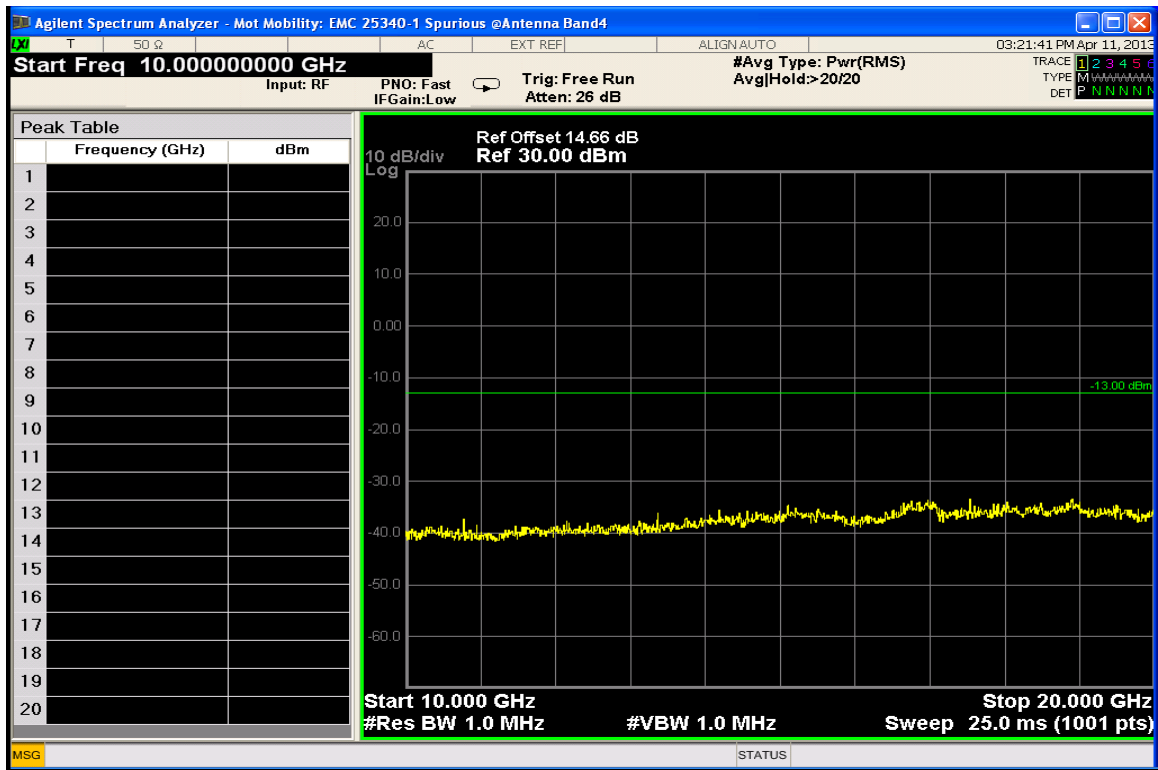
20 MHz BW, QPSK RB Size = 100RB Start 0, Mid Channel



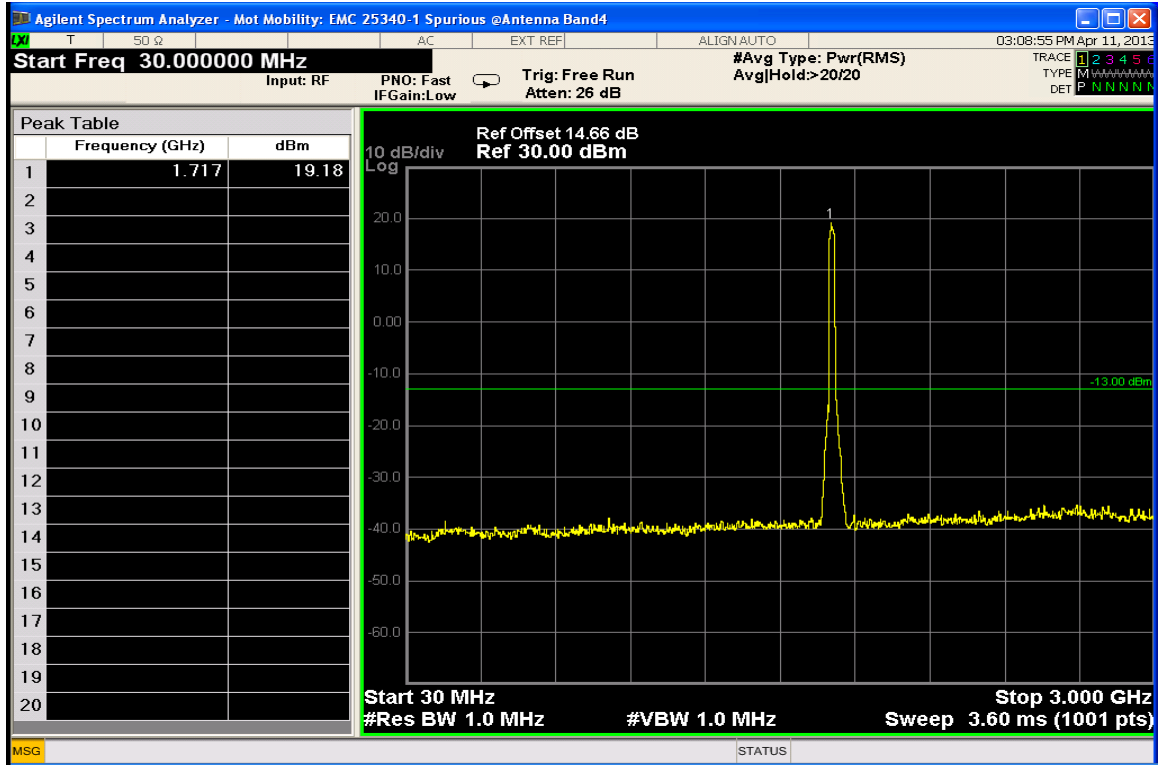
20 MHz BW, QPSK RB Size = 100RB Start 0, High Channel



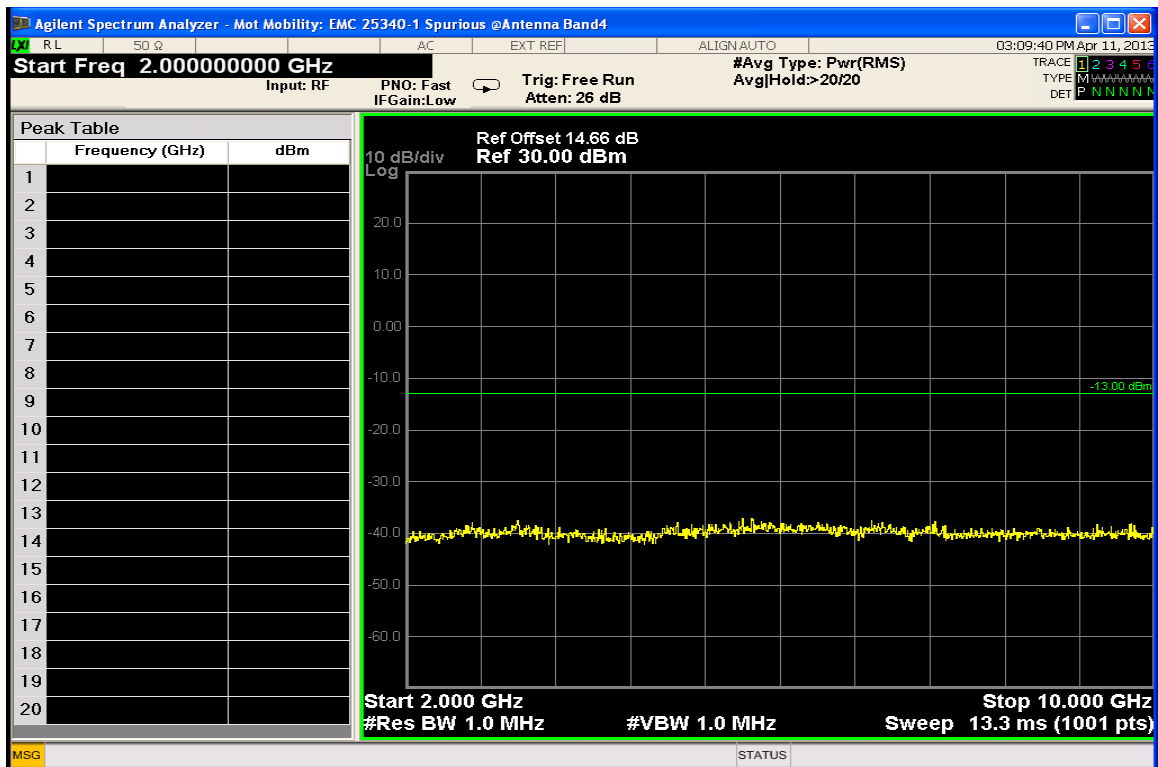
20 MHz BW, QPSK RB Size = 100RB Start 0, High Channel



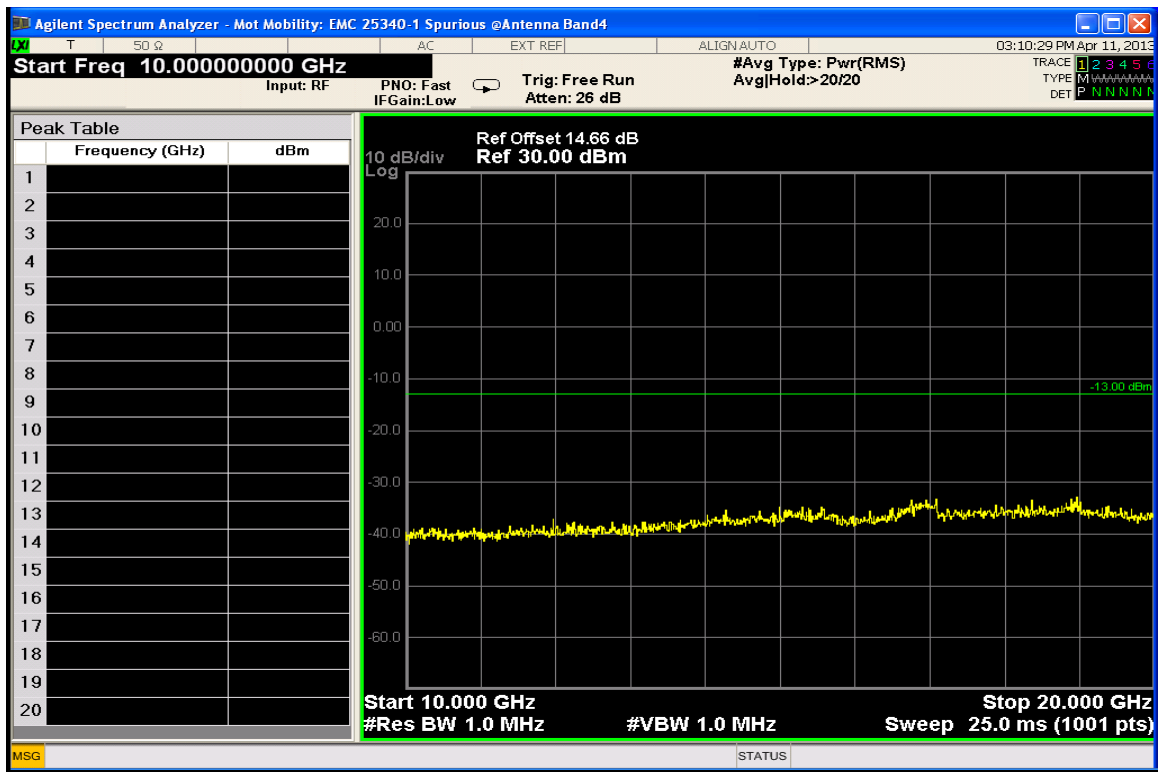
20 MHz BW, QPSK RB Size = 100RB Start 0, High Channel

Measurement Results: LTE Band 4 16-QAM Conducted Spurious Emissions

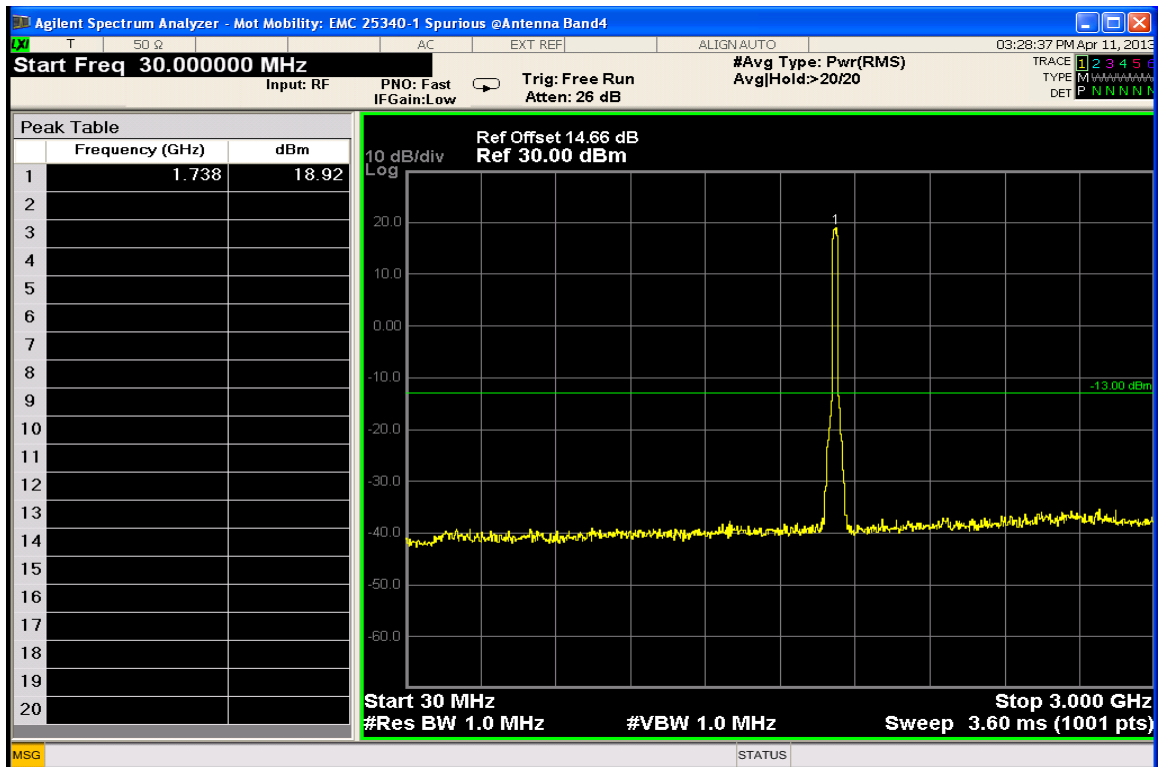
20 MHz BW, 16-QAM RB Size = 100RB Start 0, Low Channel



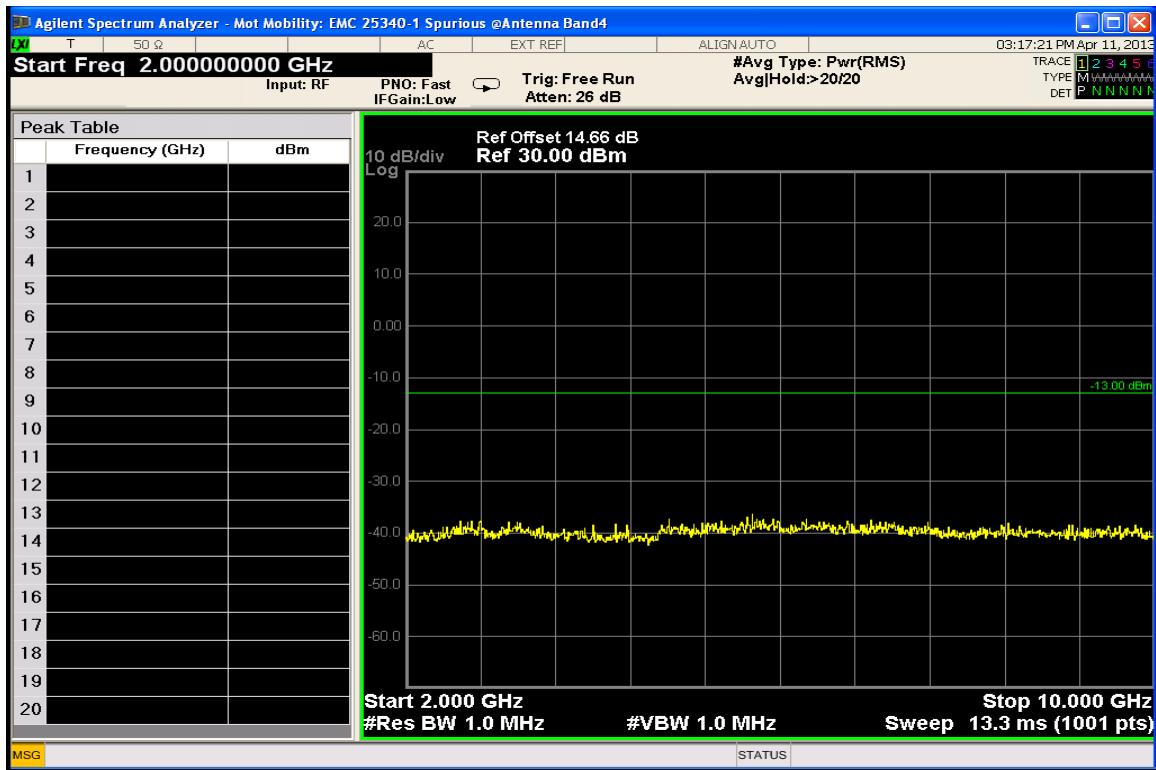
20 MHz BW, 16-QAM RB Size = 100RB Start 0, Low Channel



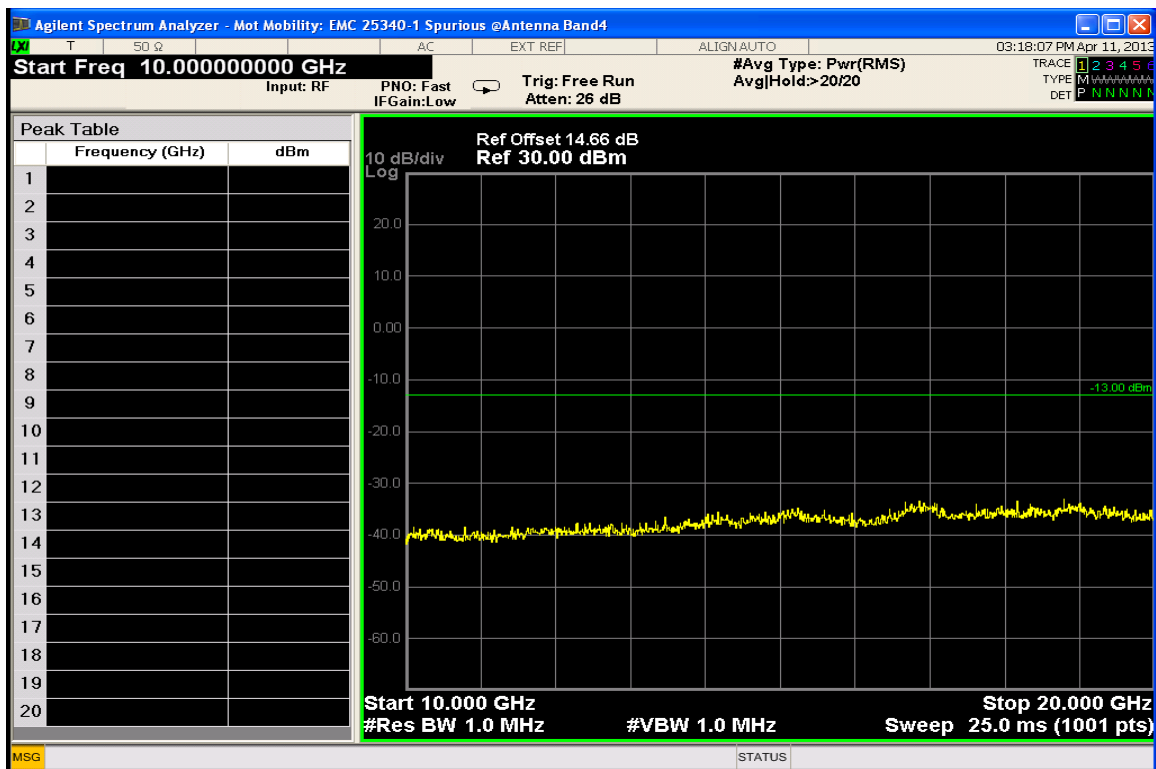
20 MHz BW, 16-QAM RB Size = 100RB Start 0, Low Channel



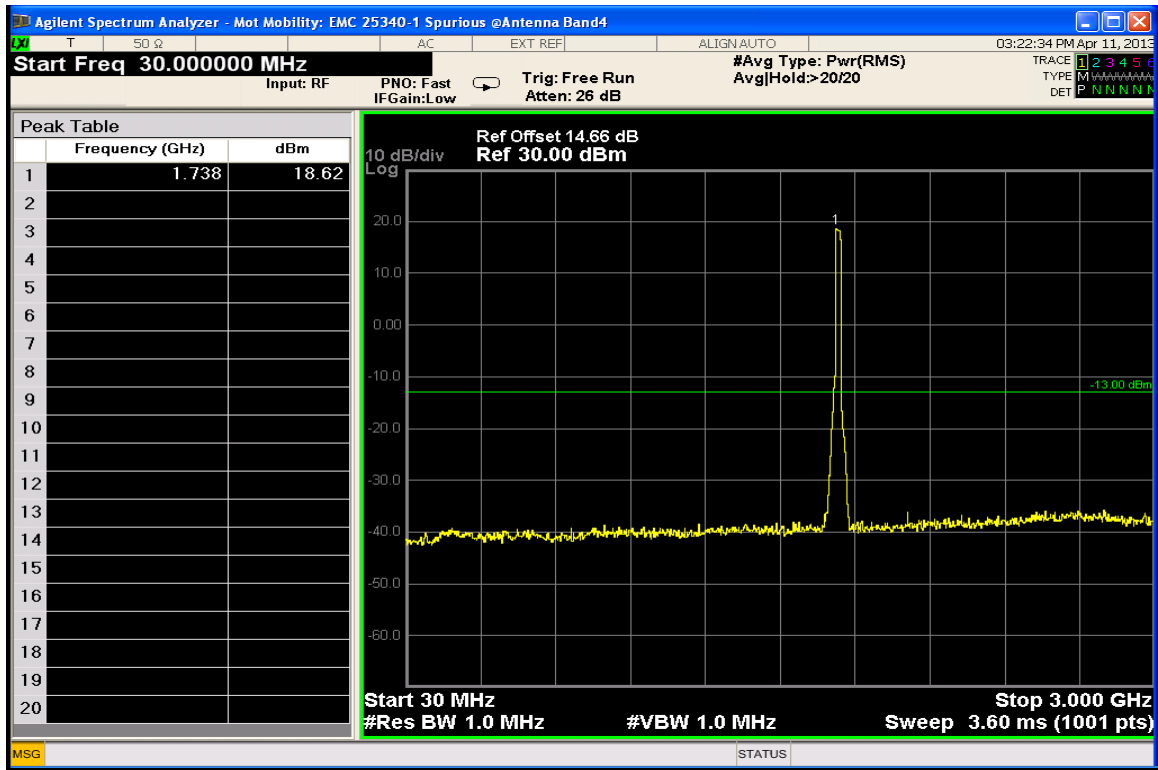
20 MHz BW, 16-QAM RB Size = 100RB Start 0, Mid Channel



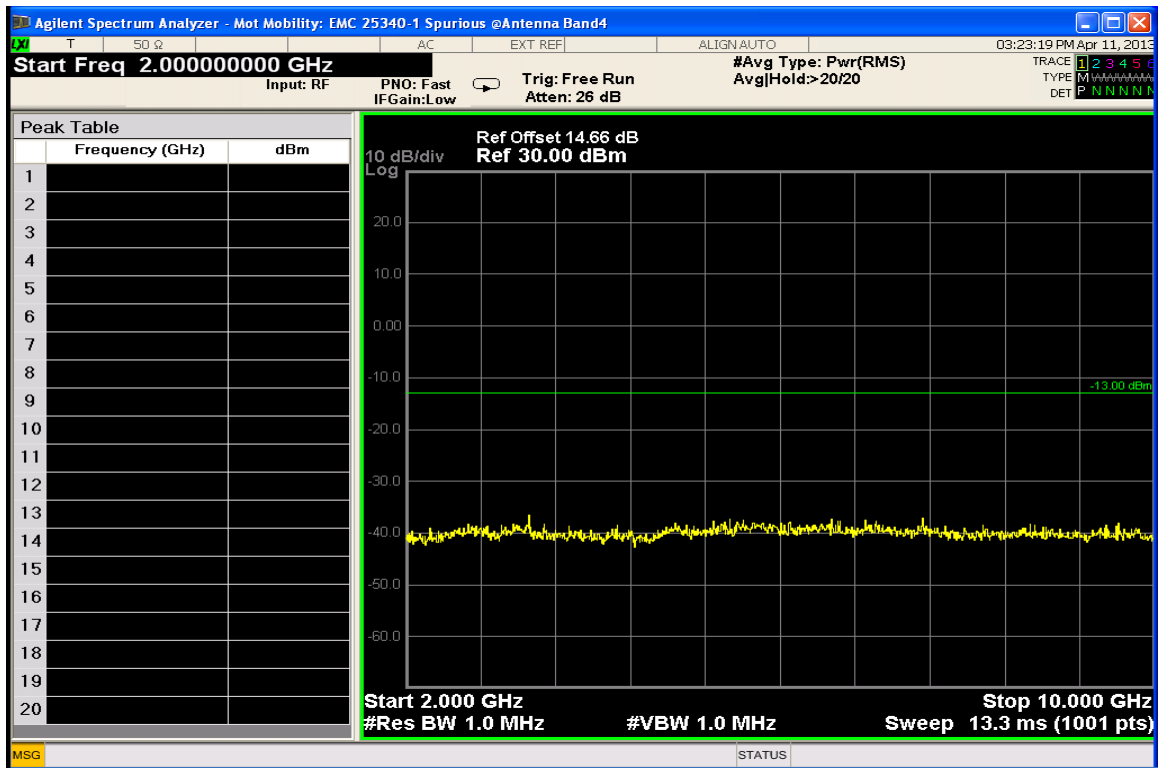
20 MHz BW, 16-QAM RB Size = 100RB Start 0, Mid Channel



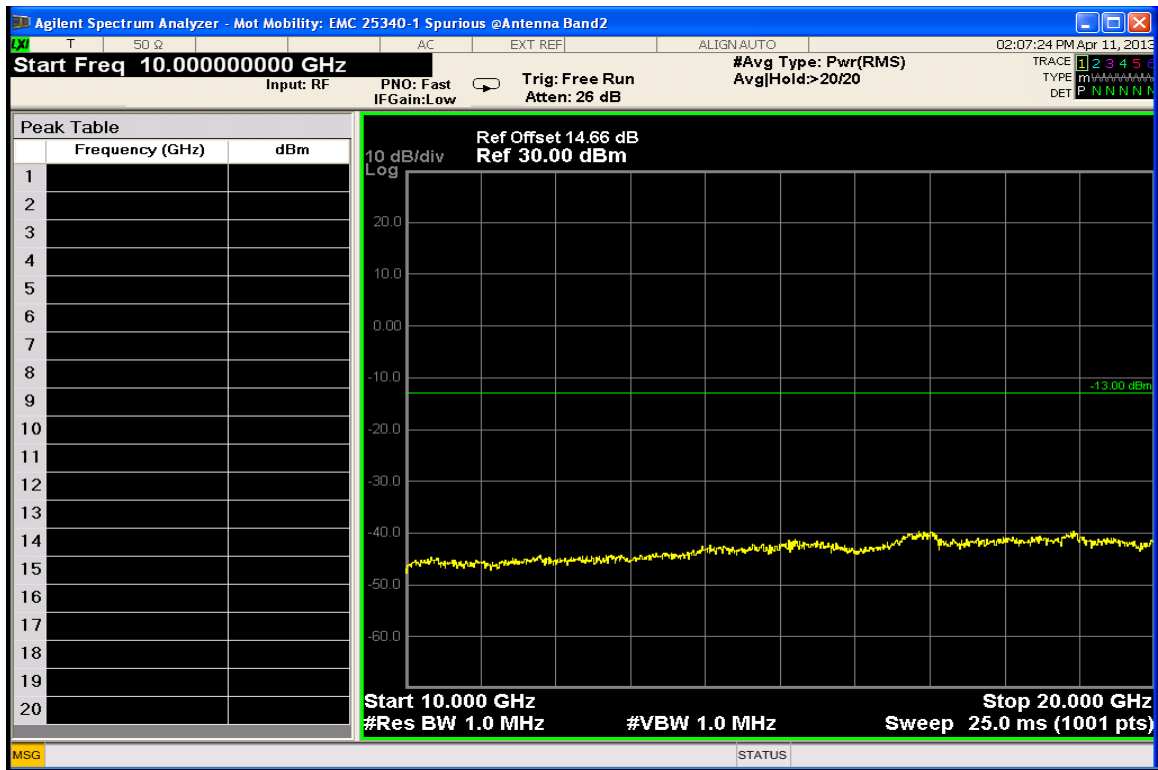
20 MHz BW, 16-QAM RB Size = 100RB Start 0, Mid Channel



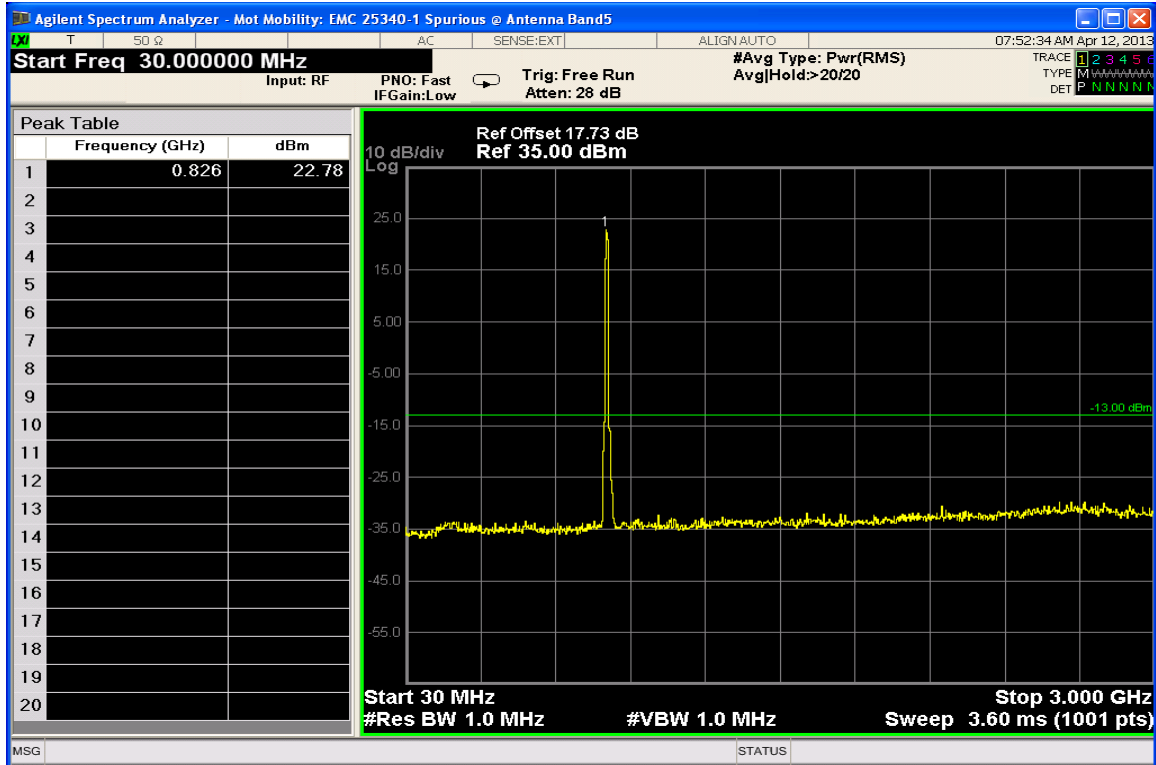
20 MHz BW, 16-QAM RB Size = 100RB Start 0, High Channel



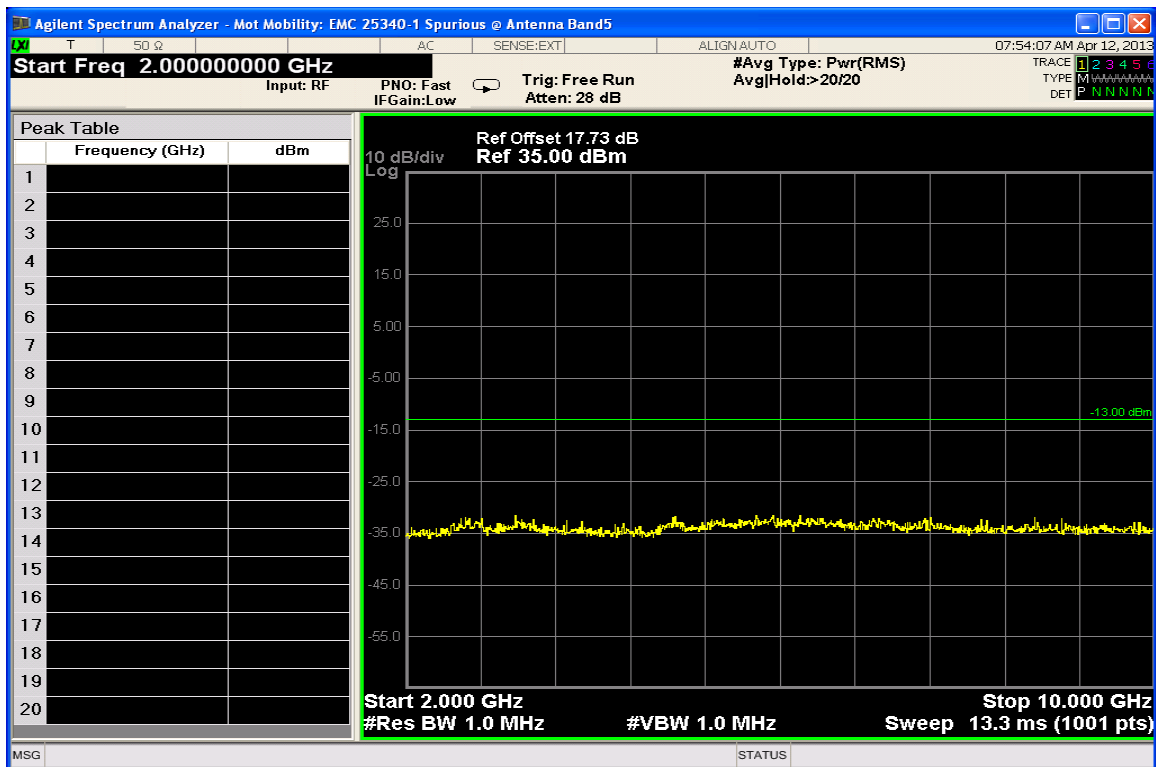
20 MHz BW, 16-QAM RB Size = 100RB Start 0, High Channel



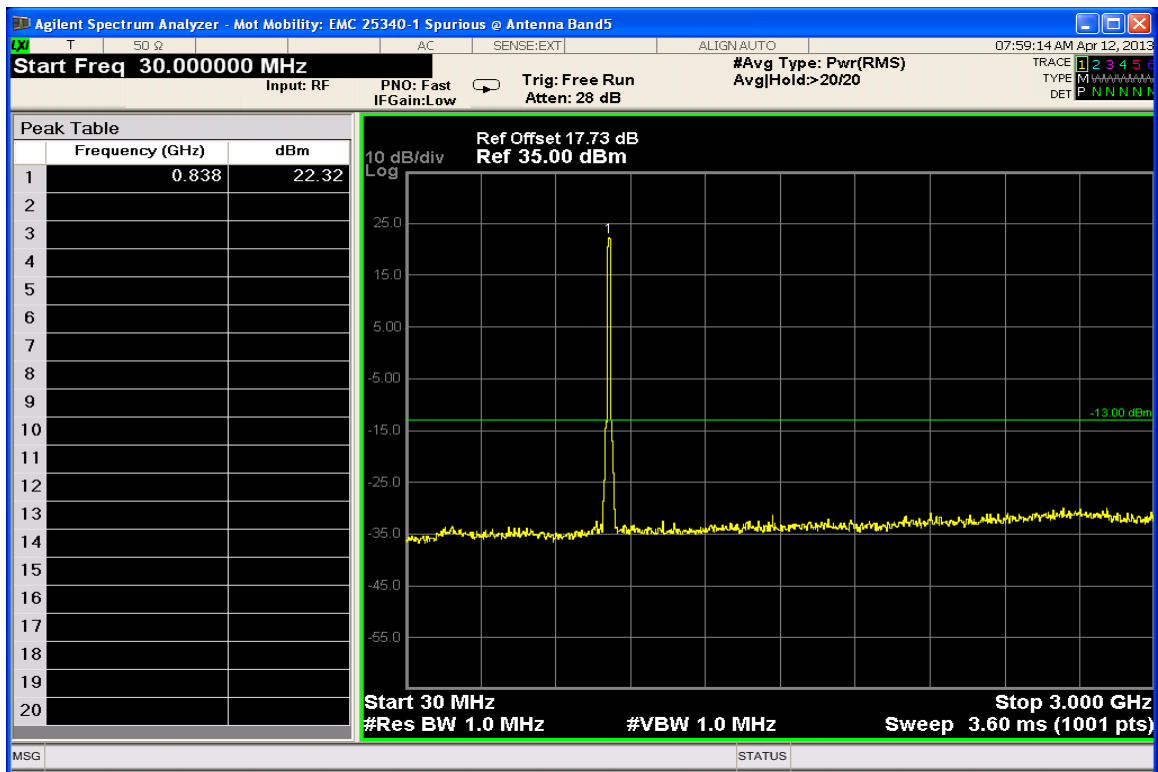
20 MHz BW, 16-QAM RB Size = 100RB Start 0, High Channel

Measurement Results: LTE Band 5 QPSK Conducted Spurious Emissions

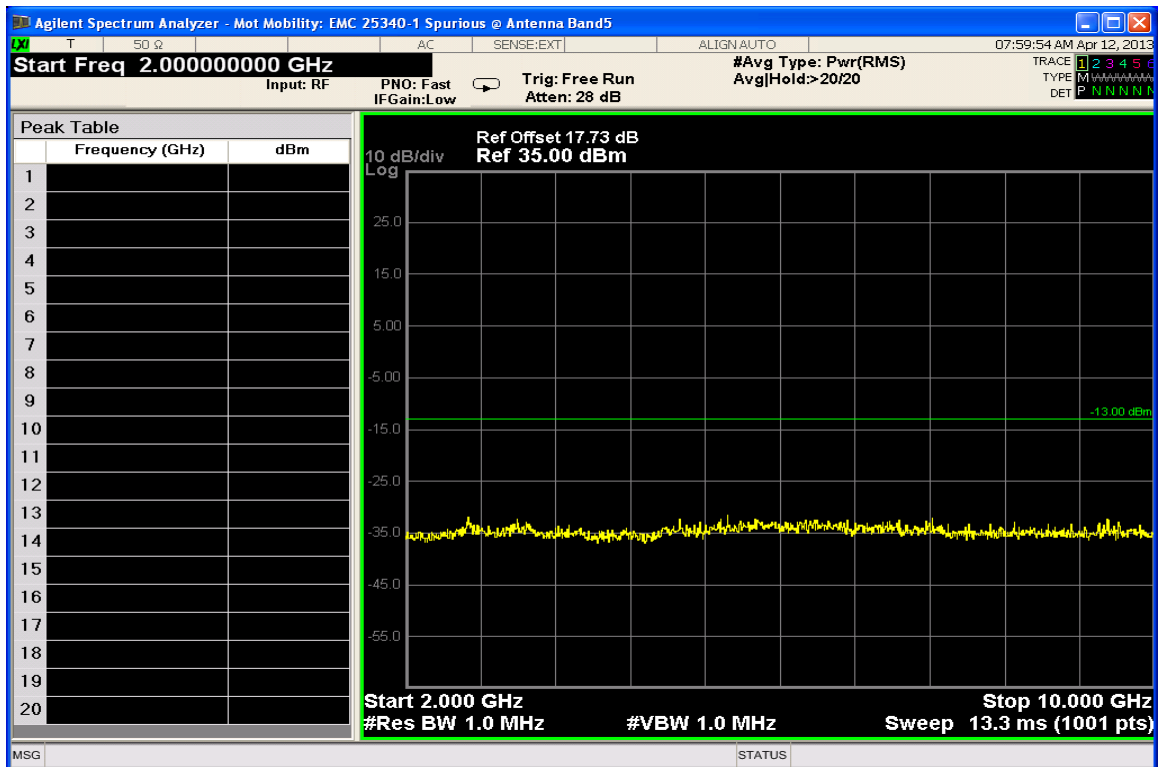
10 MHz BW, QPSK RB Size = 50RB Start 0, Low Channel



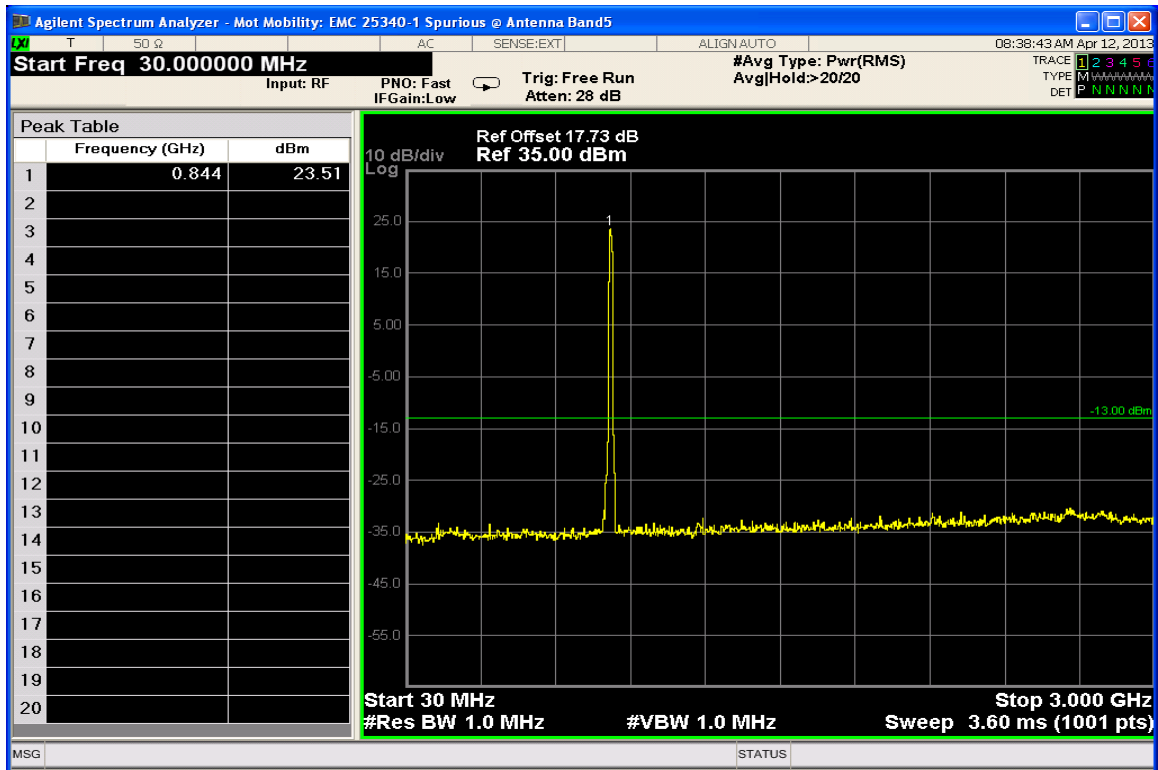
10 MHz BW, QPSK RB Size = 50RB Start 0, Low Channel



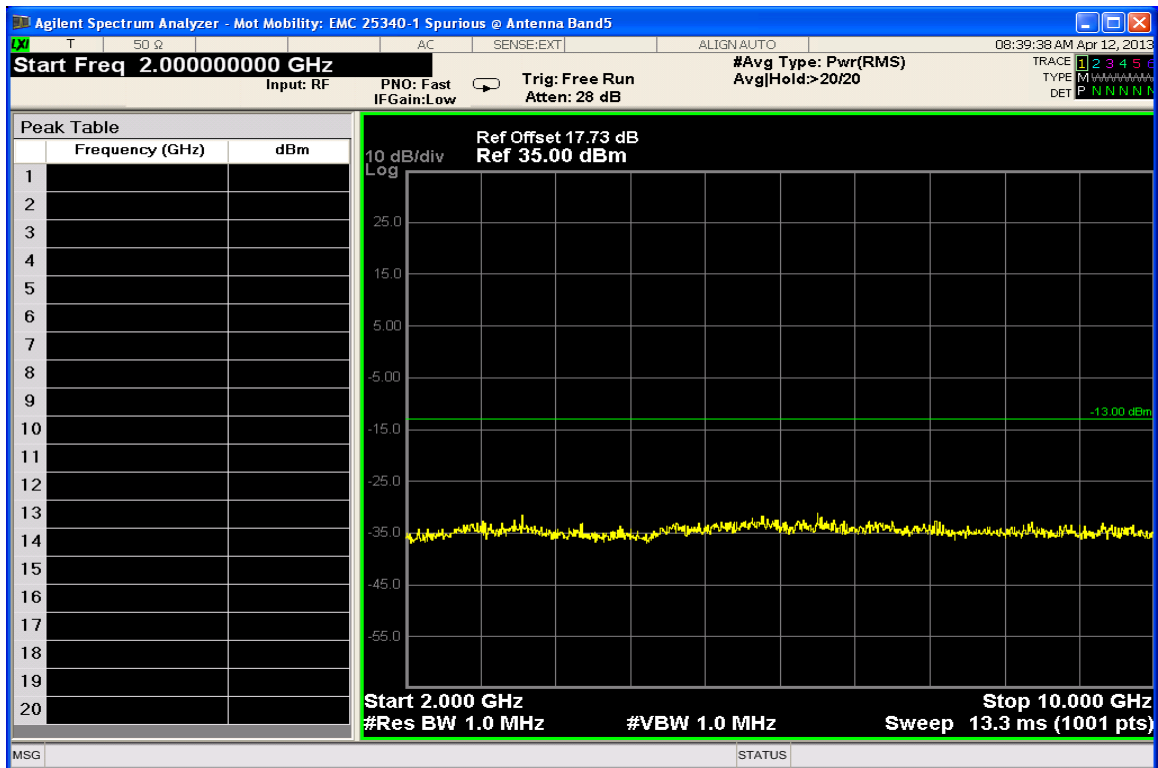
10 MHz BW, QPSK RB Size = 50RB Start 0, Mid Channel



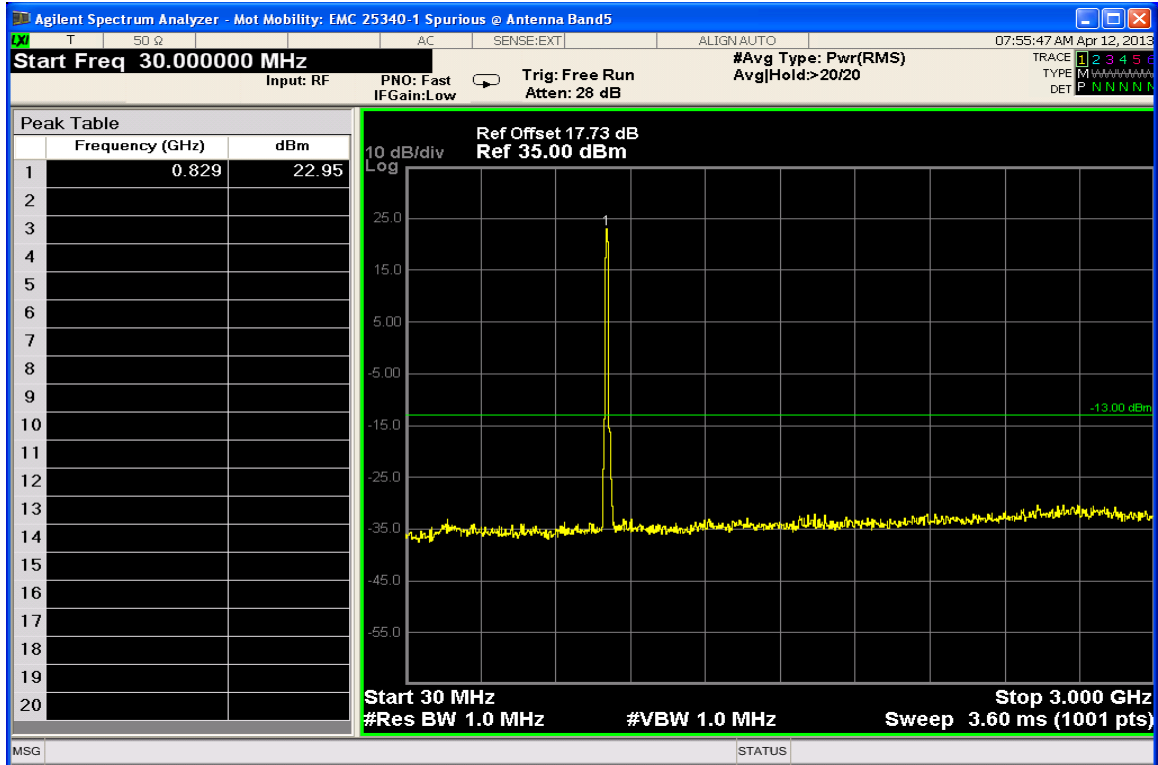
10 MHz BW, QPSK RB Size = 50RB Start 0, Mid Channel



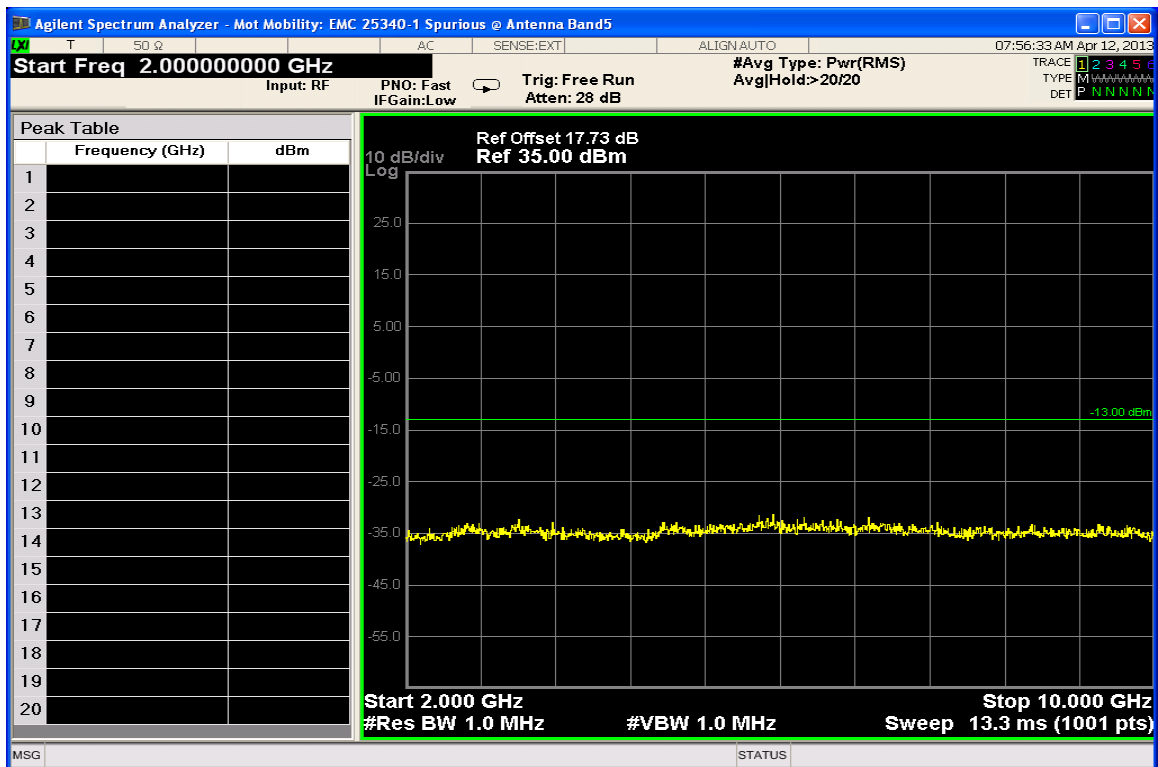
10 MHz BW, QPSK RB Size = 50RB Start 0, High Channel



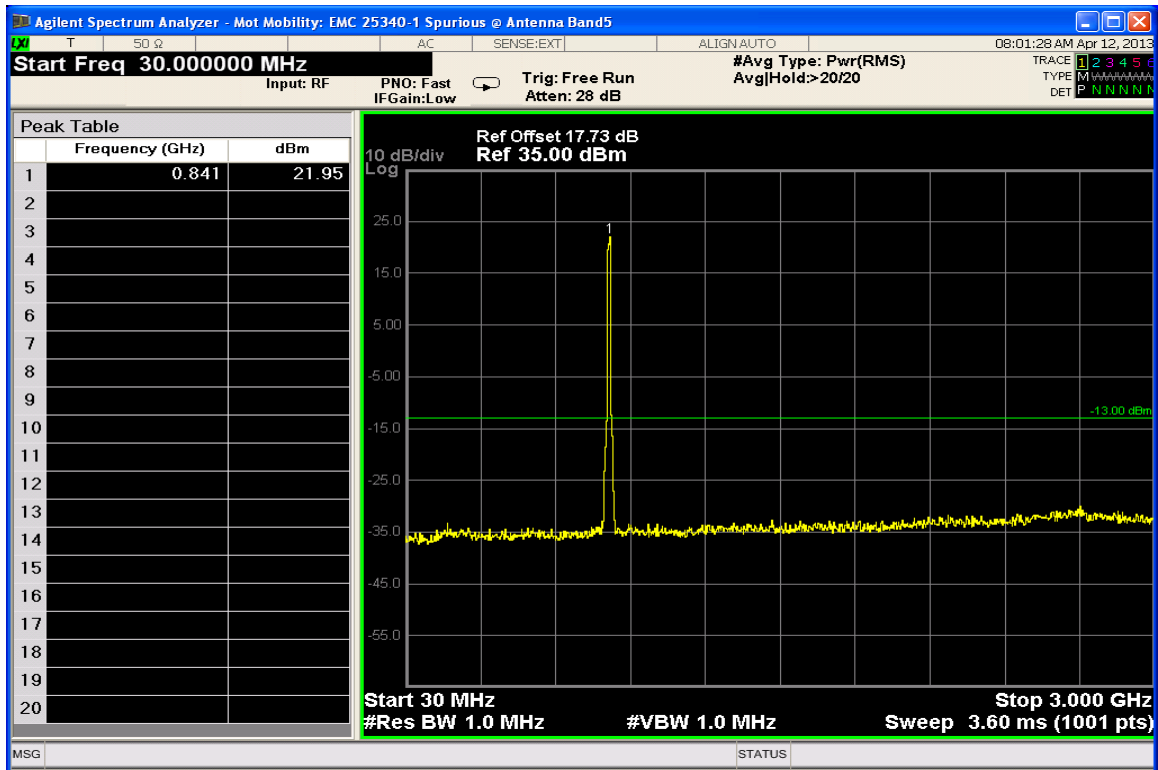
10 MHz BW, QPSK RB Size = 50RB Start 0, High Channel

Measurement Results: LTE Band 5 16-QAM Conducted Spurious Emissions

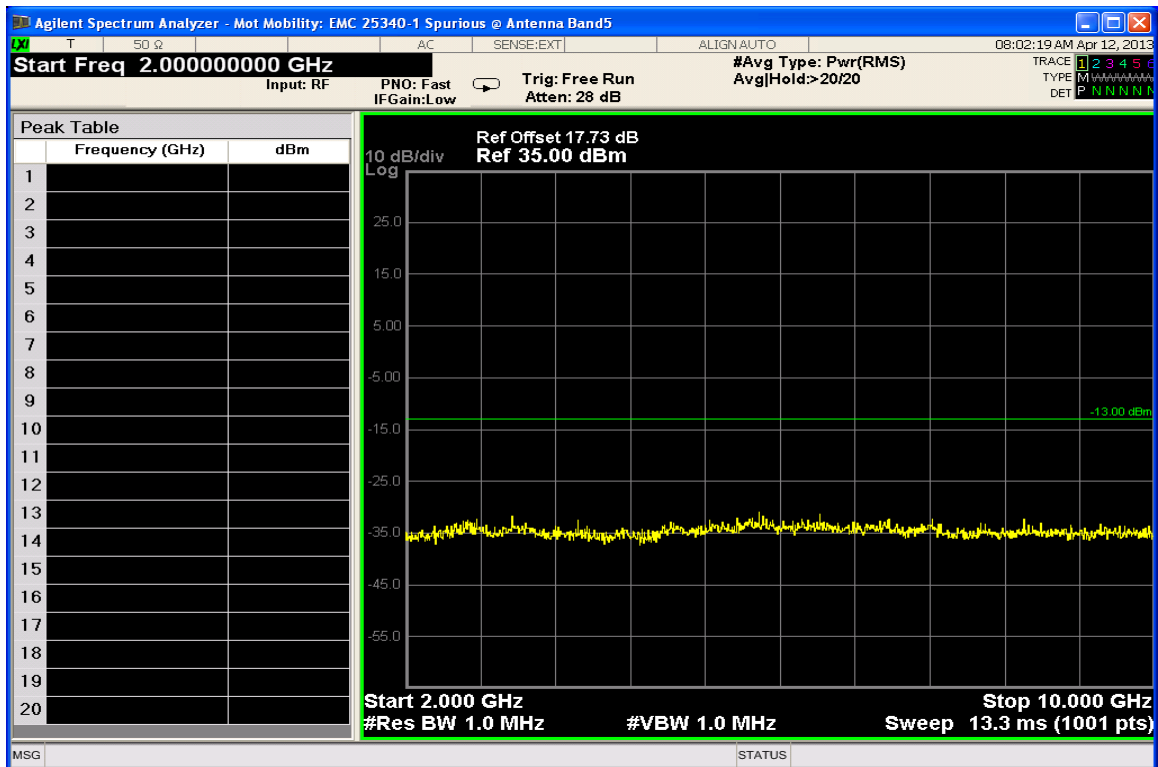
10 MHz BW, 16-QAM RB Size = 50RB Start 0, Low Channel



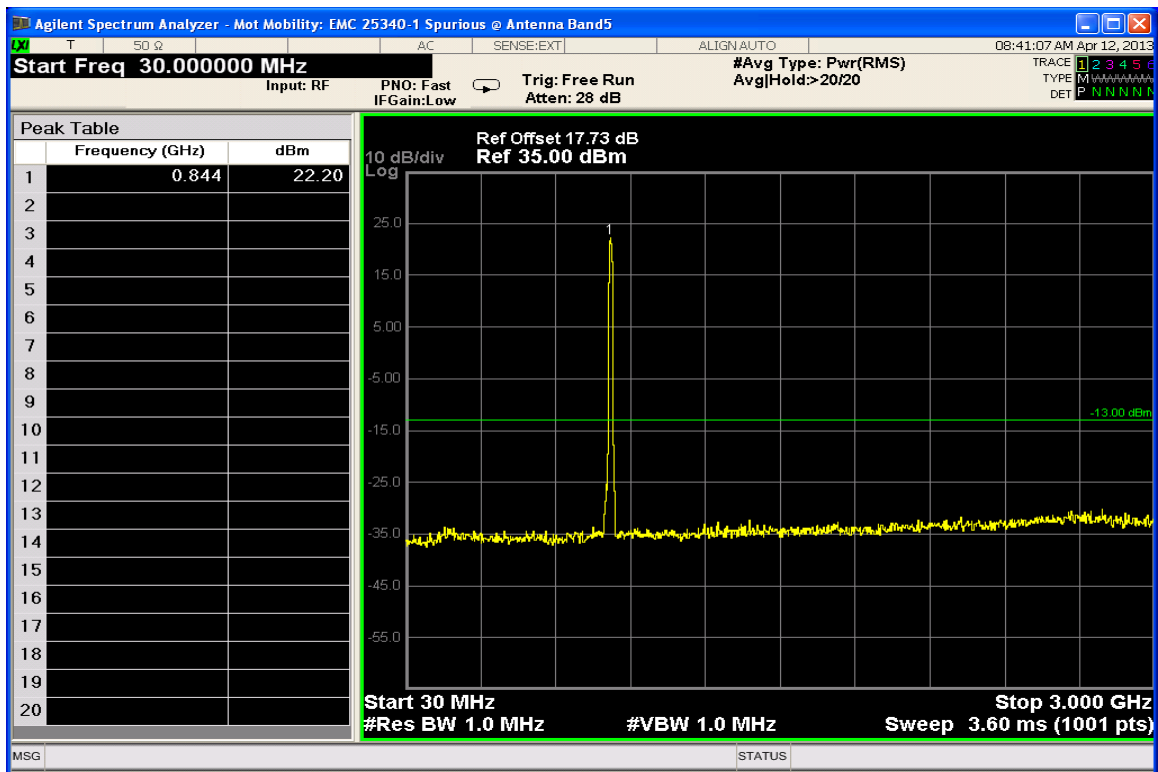
10 MHz BW, 16-QAM RB Size = 50RB Start 0, Low Channel



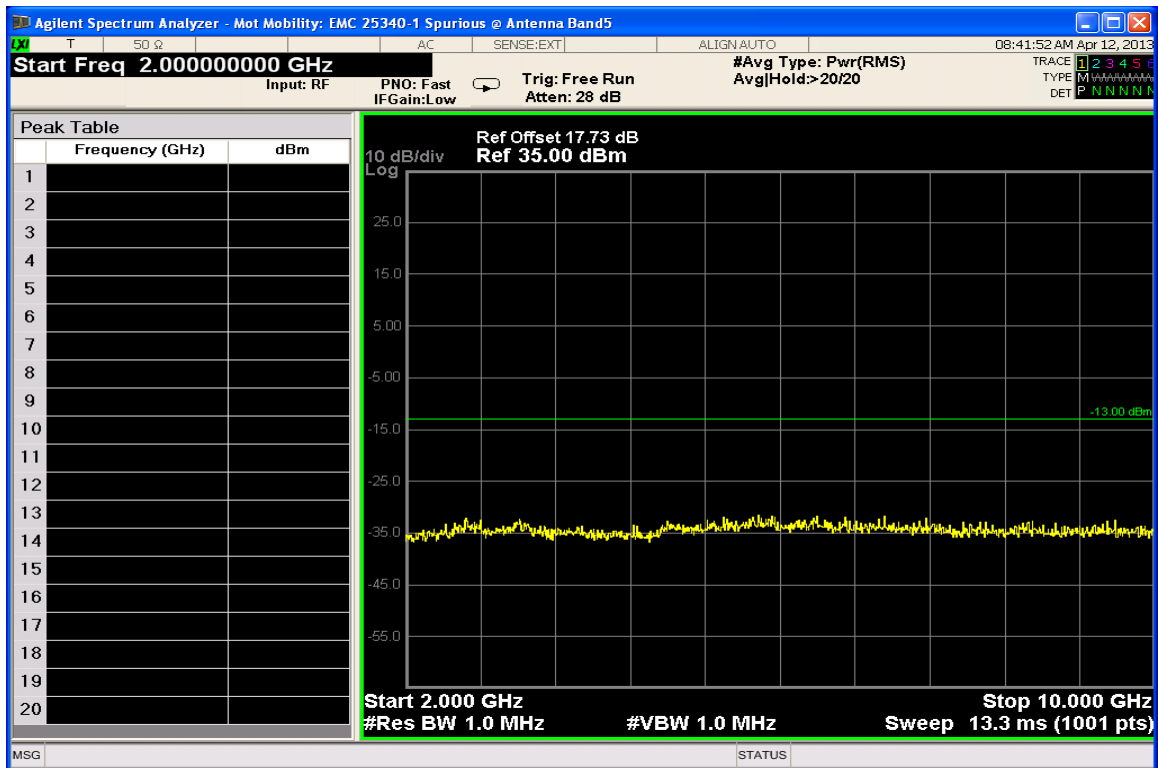
10 MHz BW, 16-QAM RB Size = 50RB Start 0, Mid Channel



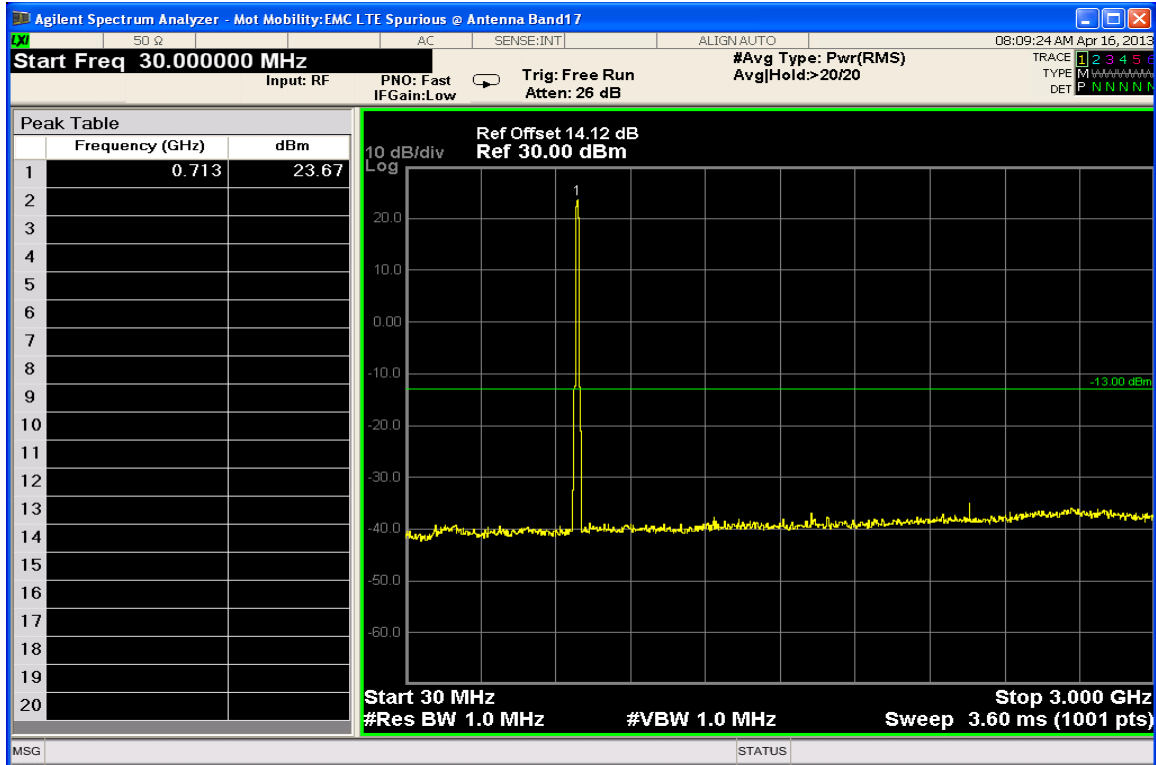
10 MHz BW, 16-QAM RB Size = 50RB Start 0, Mid Channel



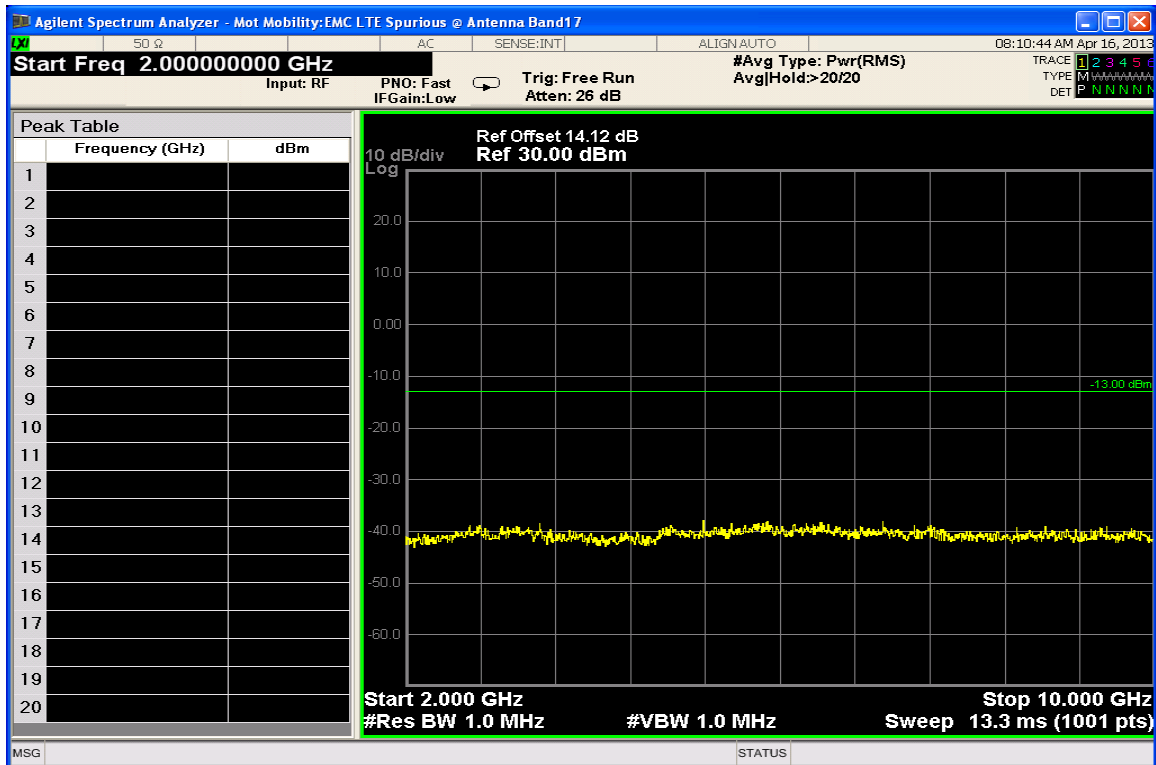
10 MHz BW, 16-QAM RB Size = 50RB Start 0, High Channel



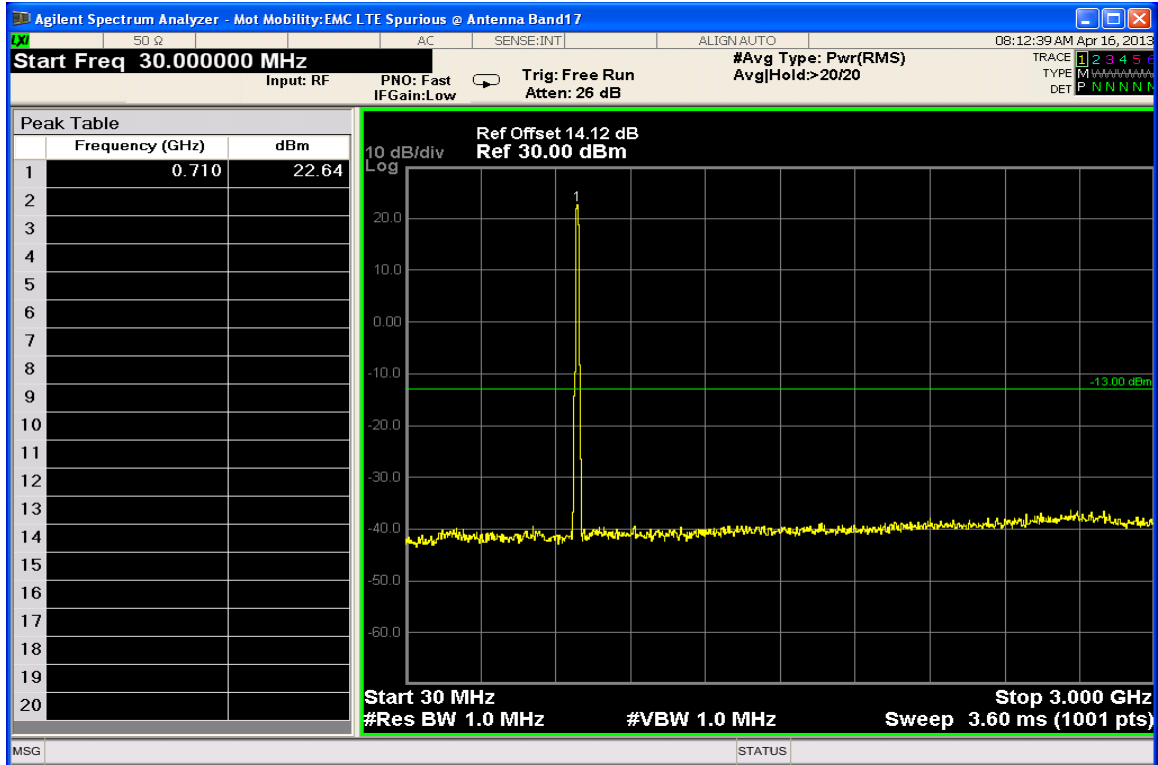
10 MHz BW, 16-QAM RB Size = 50RB Start 0, High Channel

Measurement Results: LTE Band 17 QPSK Conducted Spurious Emissions

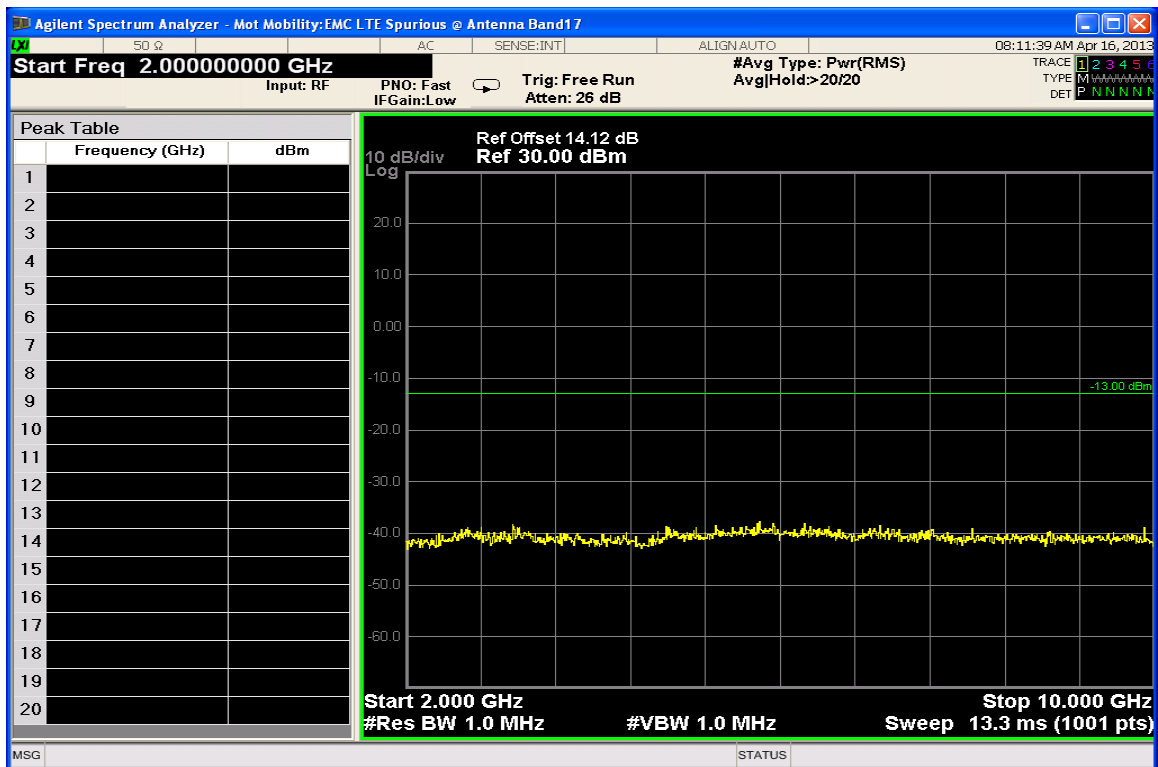
10 MHz BW, QPSK RB Size = 50RB Start 0, Low Channel



10 MHz BW, QPSK RB Size = 50RB Start 0, Low Channel

Measurement Results: LTE Band 17 16-QAM Conducted Spurious Emissions

10 MHz BW, 16-QAM RB Size = 50RB Start 0, Low Channel



10 MHz BW, 16-QAM RB Size = 50RB Start 0, Low Channel

FIELD STRENGTH OF SPURIOUS EMISSIONS

§22.917 (a), §24.238 (a), §27.53 (g), §27.53 (h)

Measurement Procedure

The EUT is placed inside the semi-anechoic chamber on a wooden table at the turntable center. For each spurious frequency, the antenna mast is raised and lowered from 1 to 4 meters and the turntable is rotated 360 degrees to obtain a maximum reading on the spectrum analyzer. This is repeated for both horizontal and vertical polarizations of the receive antenna.

The EUT is then replaced with a substitution antenna fed by a signal generator. With the signal generator tuned to a particular spurious frequency, the antenna mast is raised and lowered from 1 to 4 meters to obtain a maximum reading at the spectrum analyzer. The output of the signal generator is then adjusted until a reading identical to that obtained with the actual transmitter is achieved.

The power in dBm of each spurious emission is calculated by correcting the signal generator level for cable loss and gain of the substitution antenna referenced to a dipole. A fully charged battery was used for the supply voltage. Testing was performed in three orthogonal planes where the X plane is with the EUT orientated vertically, the Y plane is with the EUT orientated on its side and the Z plane with the EUT laying flat on the table.

The settings of the receiver were as follows:

Units	dBm
Divisions	5 dB
Detector	Peak Detector
Resolution Bandwidth	1 MHz
Video Bandwidth (AVG)	3 MHz
Sweep Time	Auto

The EUT was tested under all configurations and modulations in the largest BW available in multiple RB configurations. The worst cases data is reported in the plots below.

Measurement Results

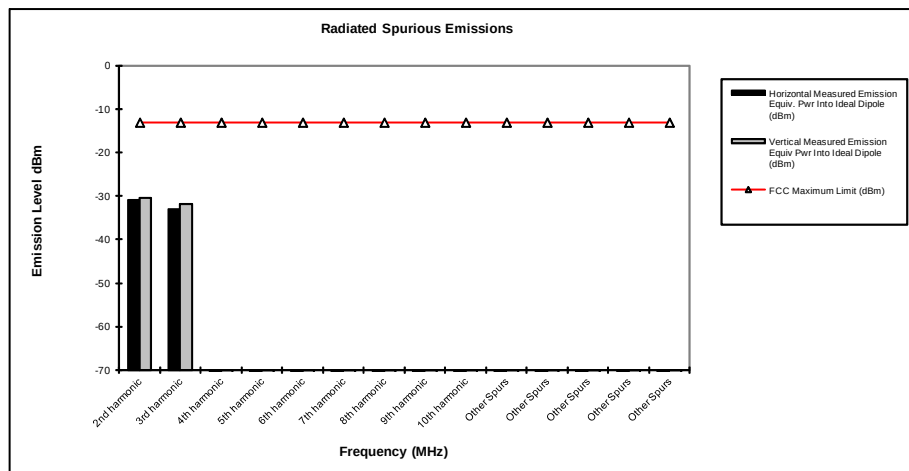
Band: LTE Band 2

Modulation: QPSK.

Channel: All Channels

Radiated Spurious and Harmonic Emissions
Submission # 25340-1 LTE Band 2 20MHz BW QPSK

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
2nd harmonic	-13	-30.8	-30.4
3rd harmonic	-13	-33.0	-31.8
4th harmonic	-13	*	*
5th harmonic	-13	*	*
6th harmonic	-13	*	*
7th harmonic	-13	*	*
8th harmonic	-13	*	*
9th harmonic	-13	*	*
10th harmonic	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*



Notes:

- * Indicates the spurious emission could not be detected due to noise limitations or ambients or the emissions are lower than -33 dBm.
- Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
- The Spectrum was investigated from 30 MHz to the tenth harmonic of the fundamental.

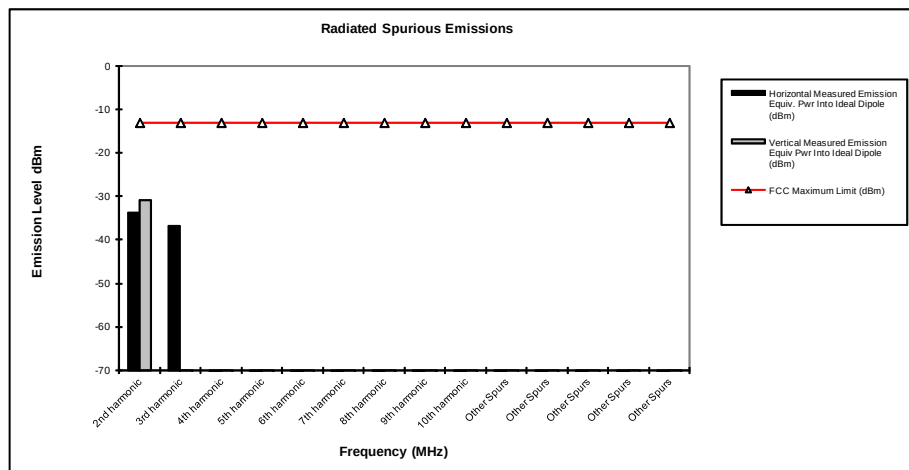
The margin with respect to the limit is the minimum margin for all modes and bands.

Band: LTE Band 2**Modulation: 16-QAM.****Channel: All Channels****Radiated Spurious and Harmonic Emissions**

Submission # 25340-1

LTE Band 2 20MHz BW 16-QAM

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
2nd harmonic	-13	-33.8	-30.9
3rd harmonic	-13	-36.9	*
4th harmonic	-13	*	*
5th harmonic	-13	*	*
6th harmonic	-13	*	*
7th harmonic	-13	*	*
8th harmonic	-13	*	*
9th harmonic	-13	*	*
10th harmonic	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*

**Notes:**

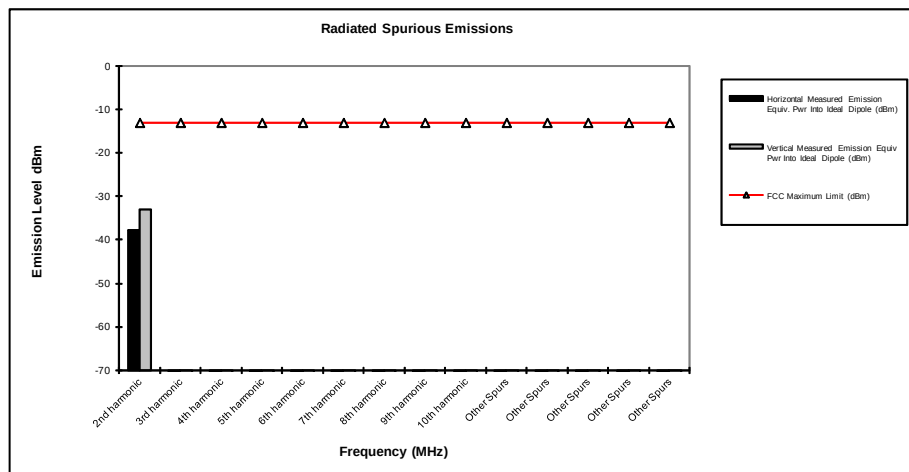
- * Indicates the spurious emission could not be detected due to noise limitations or ambients or the emissions are lower than -33 dBm.
- Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
- The Spectrum was investigated from 30 MHz to the tenth harmonic of the fundamental.

The margin with respect to the limit is the minimum margin for all modes and bands.

Band: LTE Band 4
Modulation: QPSK.
Channel: All Channels

Radiated Spurious and Harmonic Emissions
 Submission # 25340-1 LTE Band 4 20MHz BW QPSK

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
2nd harmonic	-13	-37.8	-33.1
3rd harmonic	-13	*	*
4th harmonic	-13	*	*
5th harmonic	-13	*	*
6th harmonic	-13	*	*
7th harmonic	-13	*	*
8th harmonic	-13	*	*
9th harmonic	-13	*	*
10th harmonic	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*



Notes:

1. * Indicates the spurious emission could not be detected due to noise limitations or ambients or the emissions are lower than -33 dBm.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 30 MHz to the tenth harmonic of the fundamental.

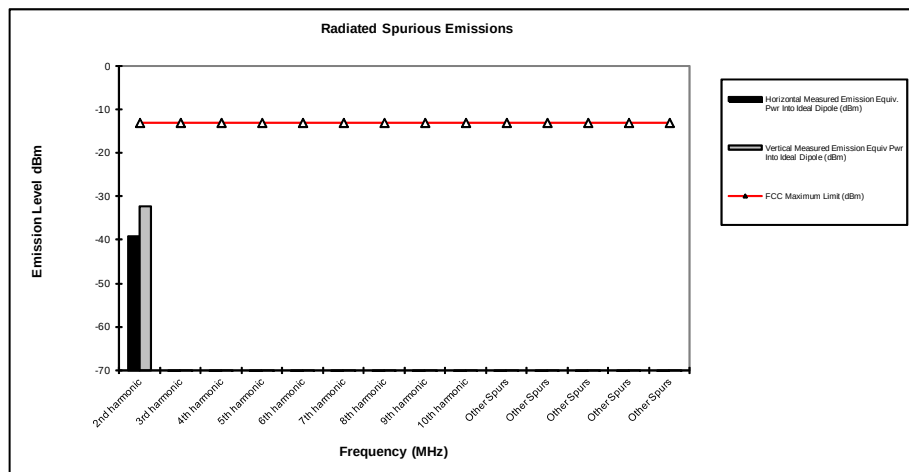
The margin with respect to the limit is the minimum margin for all modes and bands.

Band: LTE Band 4**Modulation: 16-QAM.****Channel: All Channels****Radiated Spurious and Harmonic Emissions**

Submission # 25340-1

LTE Band 4 20 MHz BW 16 QAM

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
2nd harmonic	-13	-39.2	-32.3
3rd harmonic	-13	*	*
4th harmonic	-13	*	*
5th harmonic	-13	*	*
6th harmonic	-13	*	*
7th harmonic	-13	*	*
8th harmonic	-13	*	*
9th harmonic	-13	*	*
10th harmonic	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*

**Notes:**

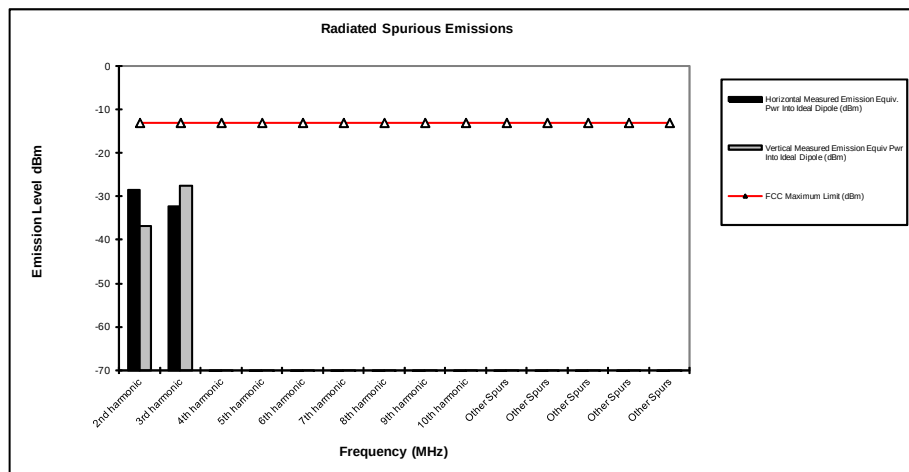
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients or the emissions are lower than -33 dBm.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 30 MHz to the tenth harmonic of the fundamental.

The margin with respect to the limit is the minimum margin for all modes and bands.

Band: LTE Band 5
Modulation: QPSK.
Channel: All Channels

Radiated Spurious and Harmonic Emissions
Submission # 25340-1 **LTE Band 5 5MHz BW QPSK**

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
2nd harmonic	-13	-28.4	-36.9
3rd harmonic	-13	-32.3	-27.6
4th harmonic	-13	*	*
5th harmonic	-13	*	*
6th harmonic	-13	*	*
7th harmonic	-13	*	*
8th harmonic	-13	*	*
9th harmonic	-13	*	*
10th harmonic	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*



Notes:

1. * Indicates the spurious emission could not be detected due to noise limitations or ambients or the emissions are lower than -33 dBm.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 30 MHz to the tenth harmonic of the fundamental.

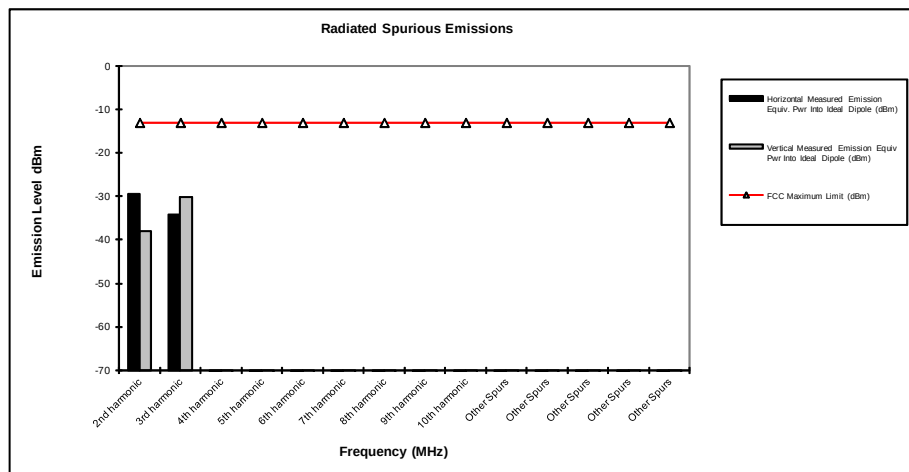
The margin with respect to the limit is the minimum margin for all modes and bands.

Band: LTE Band 5**Modulation: 16-QAM.****Channel: All Channels****Radiated Spurious and Harmonic Emissions**

Submission # 25340-1

LTE band 5 5MHz BW 16QAM

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
2nd harmonic	-13	-29.4	-37.9
3rd harmonic	-13	-34.3	-30.3
4th harmonic	-13	*	*
5th harmonic	-13	*	*
6th harmonic	-13	*	*
7th harmonic	-13	*	*
8th harmonic	-13	*	*
9th harmonic	-13	*	*
10th harmonic	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*

**Notes:**

- * Indicates the spurious emission could not be detected due to noise limitations or ambients or the emissions are lower than -33 dBm.
- Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
- The Spectrum was investigated from 30 MHz to the tenth harmonic of the fundamental.

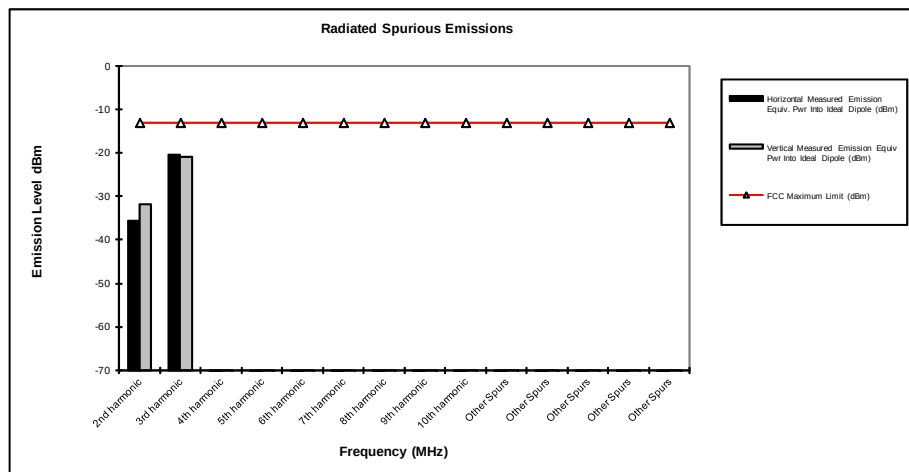
The margin with respect to the limit is the minimum margin for all modes and bands.

Band: LTE Band 17**Modulation: QPSK.****Channel: All Channels****Radiated Spurious and Harmonic Emissions**

Submission # 25340-1

LTE Band 17 10 MHz BW QPSK

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
2nd harmonic	-13	-35.7	-31.8
3rd harmonic	-13	-20.4	-21.0
4th harmonic	-13	*	*
5th harmonic	-13	*	*
6th harmonic	-13	*	*
7th harmonic	-13	*	*
8th harmonic	-13	*	*
9th harmonic	-13	*	*
10th harmonic	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*

**Notes:**

1. * Indicates the spurious emission could not be detected due to noise limitations or ambients or the emissions are lower than -33 dBm.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 30 MHz to the tenth harmonic of the fundamental.

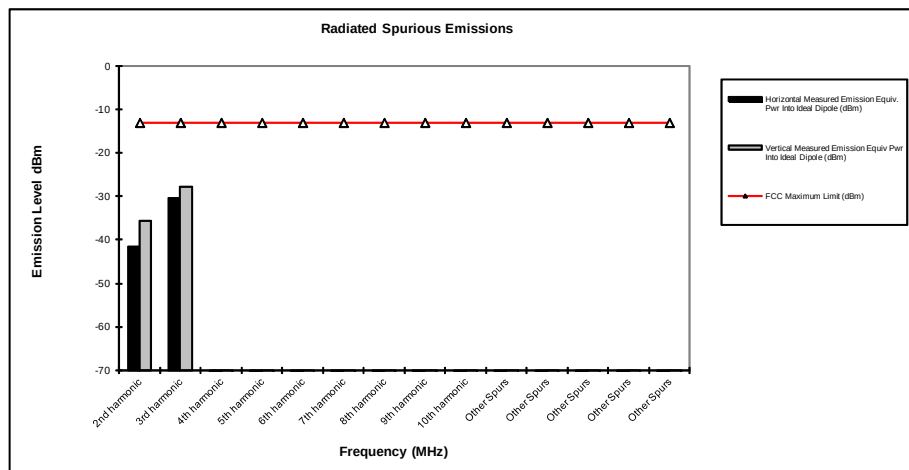
The margin with respect to the limit is the minimum margin for all modes and bands.

Band: LTE Band 17**Modulation: 16-QAM.****Channel: All Channels****Radiated Spurious and Harmonic Emissions**

Submission # 25340-1

LTE Band 17 10 MHz BW 16 QAM

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
2nd harmonic	-13	-41.7	-35.7
3rd harmonic	-13	-30.3	-27.8
4th harmonic	-13	*	*
5th harmonic	-13	*	*
6th harmonic	-13	*	*
7th harmonic	-13	*	*
8th harmonic	-13	*	*
9th harmonic	-13	*	*
10th harmonic	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*

**Notes:**

- * Indicates the spurious emission could not be detected due to noise limitations or ambients or the emissions are lower than -33 dBm.
- Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
- The Spectrum was investigated from 30 MHz to the tenth harmonic of the fundamental.

The margin with respect to the limit is the minimum margin for all modes and bands.

FREQUENCY STABILITY

§Part 2.1055 (a), §Part 2.1055 (d), §Part 22.355, §Part 24.235, §Part 27.54

Measurement Procedure

The EUT is placed in an environmental chamber. The antenna port of the EUT is directly coupled to the input of the measurement equipment through a specialized RF connector. A power supply is attached as the primary voltage supply.

Frequency measurements are made at the extremes of the temperature range -30° C to +60° C and at intervals of 10° C with the primary supply voltage set to the nominal battery operating voltage. A period of time sufficient to stabilize all components of the equipment is allowed at each frequency measurement. The maximum variation of frequency is measured.

At room temperature, the primary supply voltage is reduced to the battery operating endpoint of the equipment under test. The maximum variation of frequency is measured. A power supply was used for the input supply voltage.

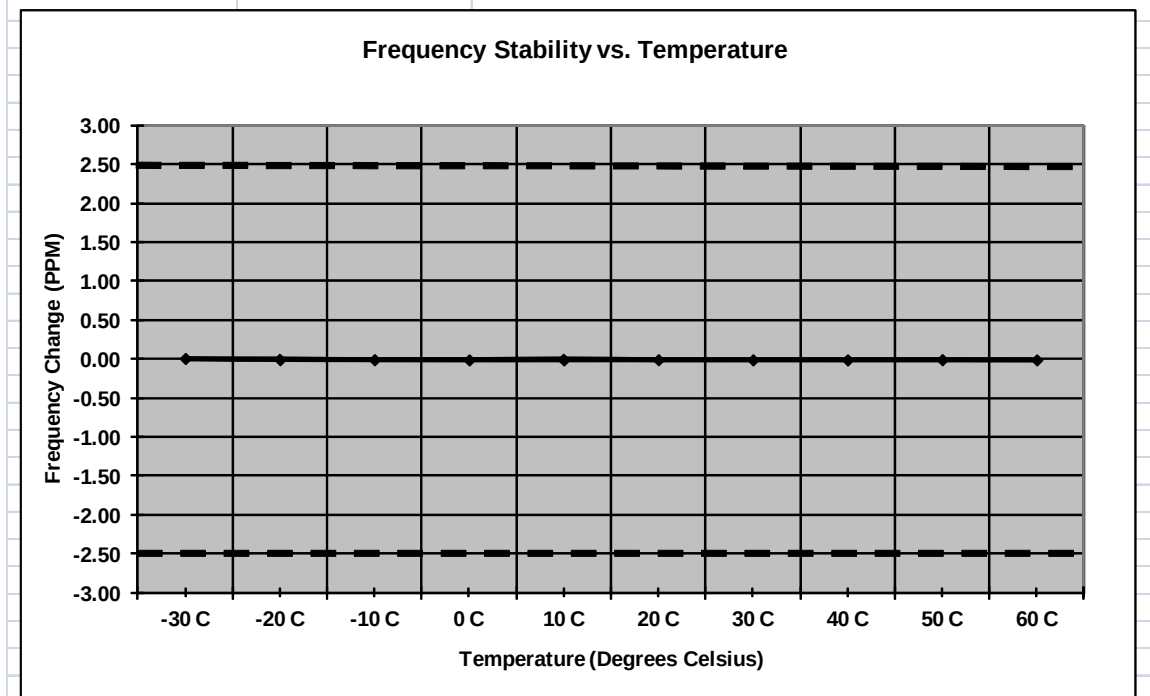
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

The EUT was tested in the highest bandwidth and both modulations in each band and the plots are reported below.

Measurement Results**Modulation: LTE Band 2 QPSK 20 MHz BW****Mode:** LTE Band 2-20 MHz **Operating Frequency:** 1860 MHz**Channel:** 18700 **Deviation Limit (PPM):** 2.5 ppm

100 RB QPSK

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	Hz	(PPM)	(%)	(VDC)
-30 C	16.42	0.009	100%	3.80
-20 C	-15.52	-0.008	100%	3.80
-10 C	-15.25	-0.008	100%	3.80
0 C	-19.15	-0.010	100%	3.80
10 C	-18.17	-0.010	100%	3.80
20 C	-15.76	-0.008	100%	3.80
30 C	-17.92	-0.010	100%	3.80
40 C	-18.68	-0.010	100%	3.80
50 C	-14.42	-0.008	100%	3.80
60 C	-18.83	-0.010	100%	3.80
20 C	-17.12	-0.009	Battery Endpoint	3.20



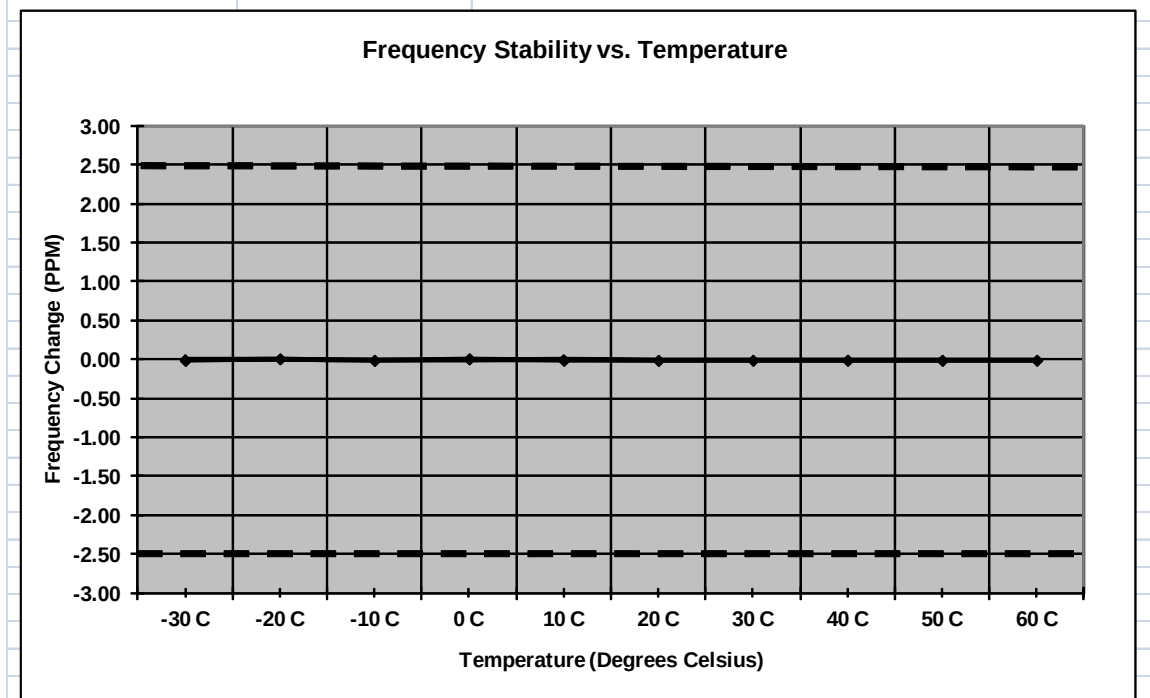
Modulation: LTE Band 2 16-QAM 20MHz BW

Mode: LTE Band 2-20 MHz Operating Frequency: 1860 MHz

Channel: 18700 Deviation Limit (PPM): 2.5 ppm

100 RB 16 QAM

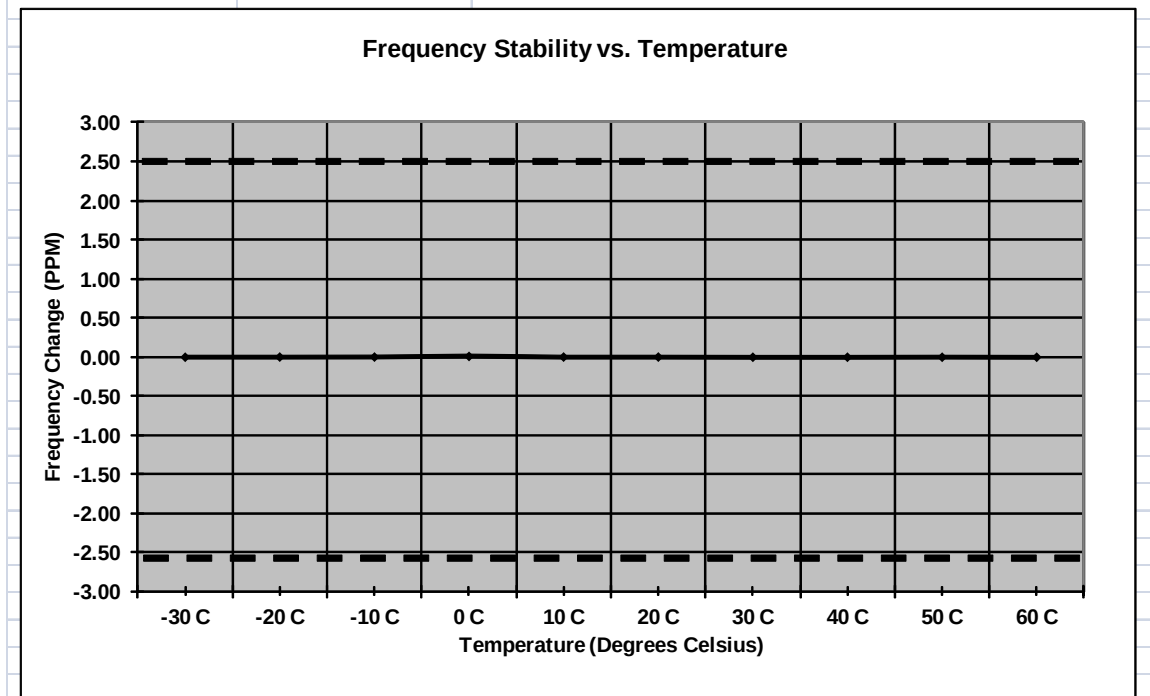
Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	Hz	(PPM)	(%)	(VDC)
-30 C	-21.24	-0.011	100%	3.80
-20 C	17.41	0.009	100%	3.80
-10 C	-20.50	-0.011	100%	3.80
0 C	17.12	0.009	100%	3.80
10 C	-18.54	-0.010	100%	3.80
20 C	-20.54	-0.011	100%	3.80
30 C	-19.21	-0.010	100%	3.80
40 C	-17.47	-0.009	100%	3.80
50 C	-20.84	-0.011	100%	3.80
60 C	-17.87	-0.010	100%	3.80
20 C	-20.37	-0.011	Battery Endpoint	3.20



Modulation: LTE Band 4 QPSK 20 MHz BW**Mode:** LTE Band 4-20 MHz **Operating Frequency:** 1720 MHz**Channel:** 20050 **Deviation Limit (PPM):** 2.5 ppm

100 RB QPSK

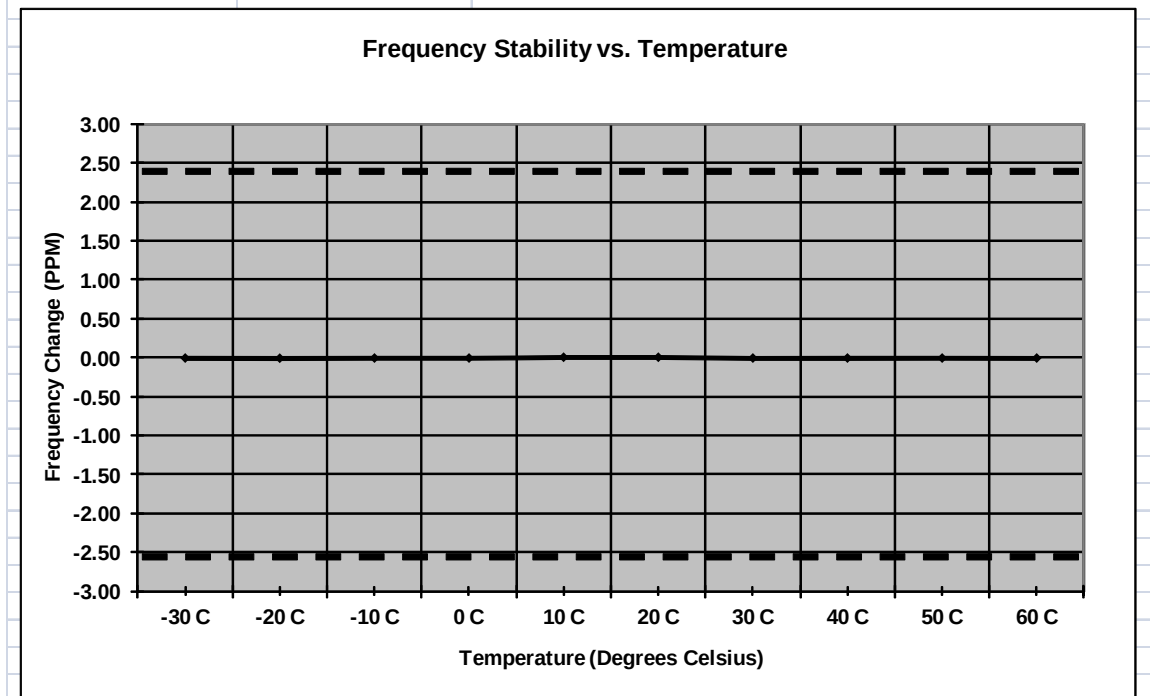
Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	Hz	(PPM)	(%)	(VDC)
-30 C	-8.40	-0.005	100%	3.80
-20 C	-7.51	-0.004	100%	3.80
-10 C	-6.44	-0.004	100%	3.80
0 C	8.04	0.005	100%	3.80
10 C	-7.58	-0.004	100%	3.80
20 C	-7.55	-0.004	100%	3.80
30 C	-9.47	-0.006	100%	3.80
40 C	-10.31	-0.006	100%	3.80
50 C	-8.28	-0.005	100%	3.80
60 C	-9.86	-0.006	100%	3.80
20 C	-10.43	-0.006	Battery Endpoint	3.20



Modulation: LTE Band 4 16-QAM 20 MHz BW**Mode:** LTE Band 4-20 MHz **Operating Frequency:** 1720 MHz**Channel:** 20050 **Deviation Limit (PPM):** 2.5 ppm

100 RB 16 QAM

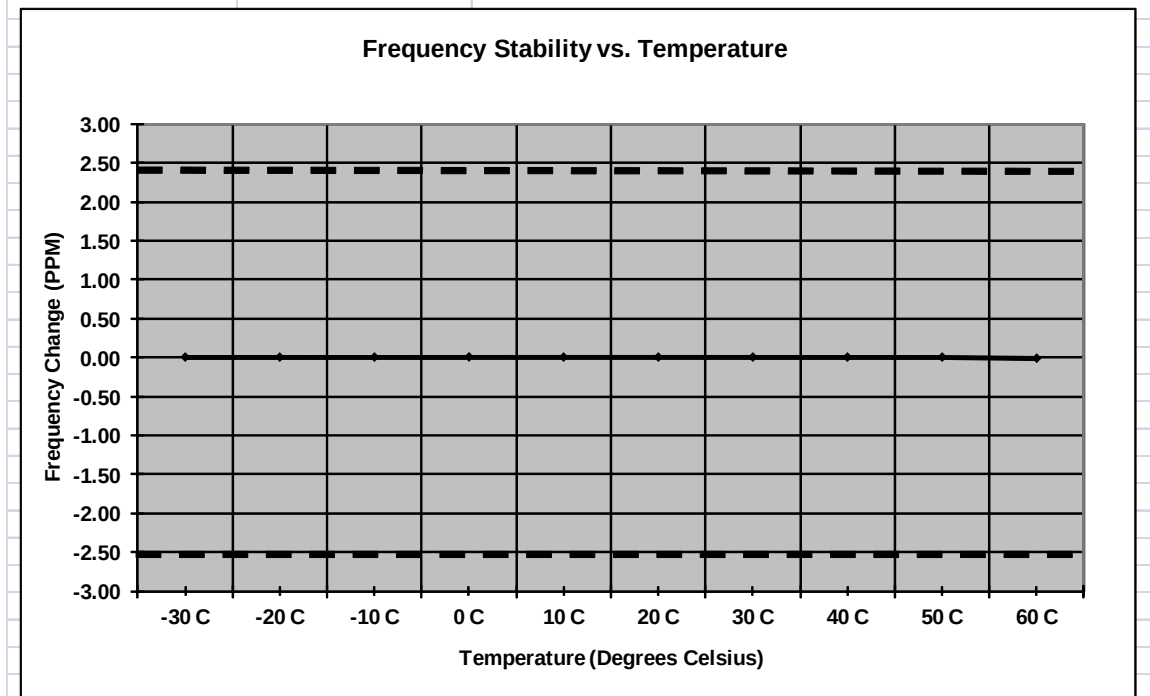
Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	Hz	(PPM)	(%)	(VDC)
-30 C	-8.77	-0.005	100%	3.80
-20 C	-11.49	-0.007	100%	3.80
-10 C	-7.77	-0.005	100%	3.80
0 C	-7.60	-0.004	100%	3.80
10 C	8.33	0.005	100%	3.80
20 C	8.00	0.005	100%	3.80
30 C	-9.34	-0.005	100%	3.80
40 C	-8.73	-0.005	100%	3.80
50 C	-7.81	-0.005	100%	3.80
60 C	-10.19	-0.006	100%	3.80
20 C	-7.90	-0.005	Battery Endpoint	3.20



Modulation: LTE Band 5 QPSK 10 MHz BW**Mode:** LTE Band 5-10 MHz **Operating Frequency:** 829 MHz**Channel:** 20450 **Deviation Limit (PPM):** 2.5 ppm

50 RB QPSK

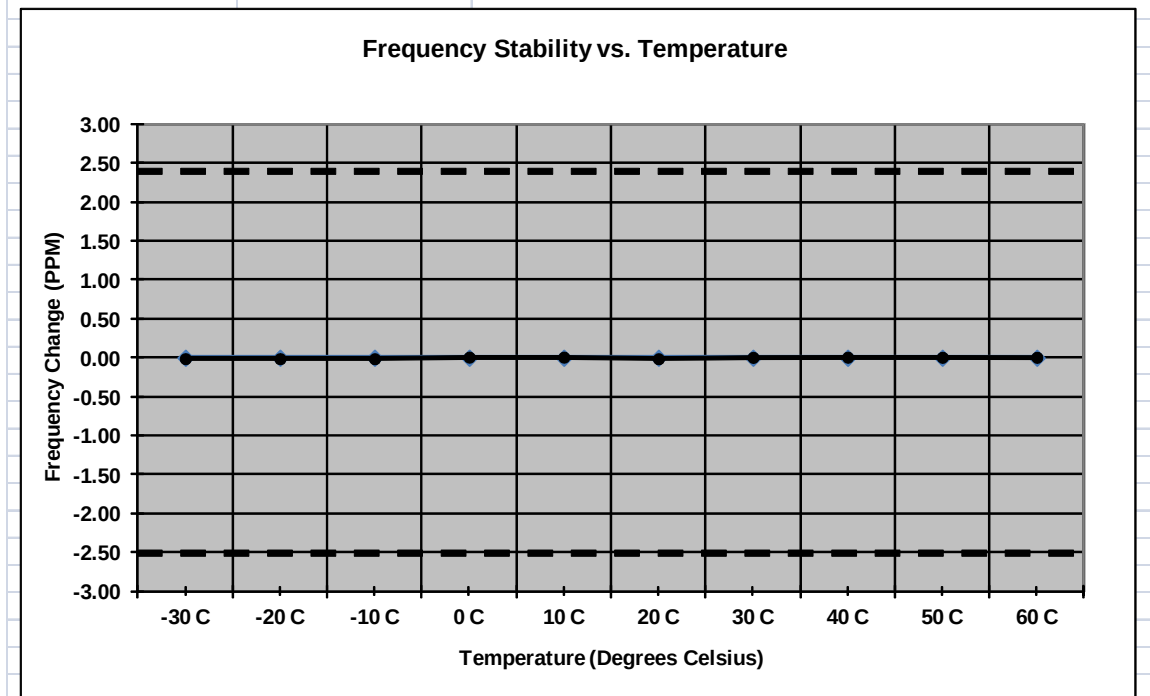
Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	Hz	(PPM)	(%)	(VDC)
-30 C	5.94	0.007	100%	3.80
-20 C	5.82	0.007	100%	3.80
-10 C	6.08	0.007	100%	3.80
0 C	6.48	0.008	100%	3.80
10 C	5.78	0.007	100%	3.80
20 C	5.45	0.007	100%	3.80
30 C	4.81	0.006	100%	3.80
40 C	6.42	0.008	100%	3.80
50 C	4.94	0.006	100%	3.80
60 C	-5.56	-0.007	100%	3.80
20 C	6.51	0.008	Battery Endpoint	3.20



Modulation: LTE Band 5 16-QAM 10 MHz BW**Mode:** LTE Band 5-10 MHz **Operating Frequency:** 829 MHz**Channel:** 20450 **Deviation Limit (PPM):** 2.5 ppm

50 RB 16 QAM

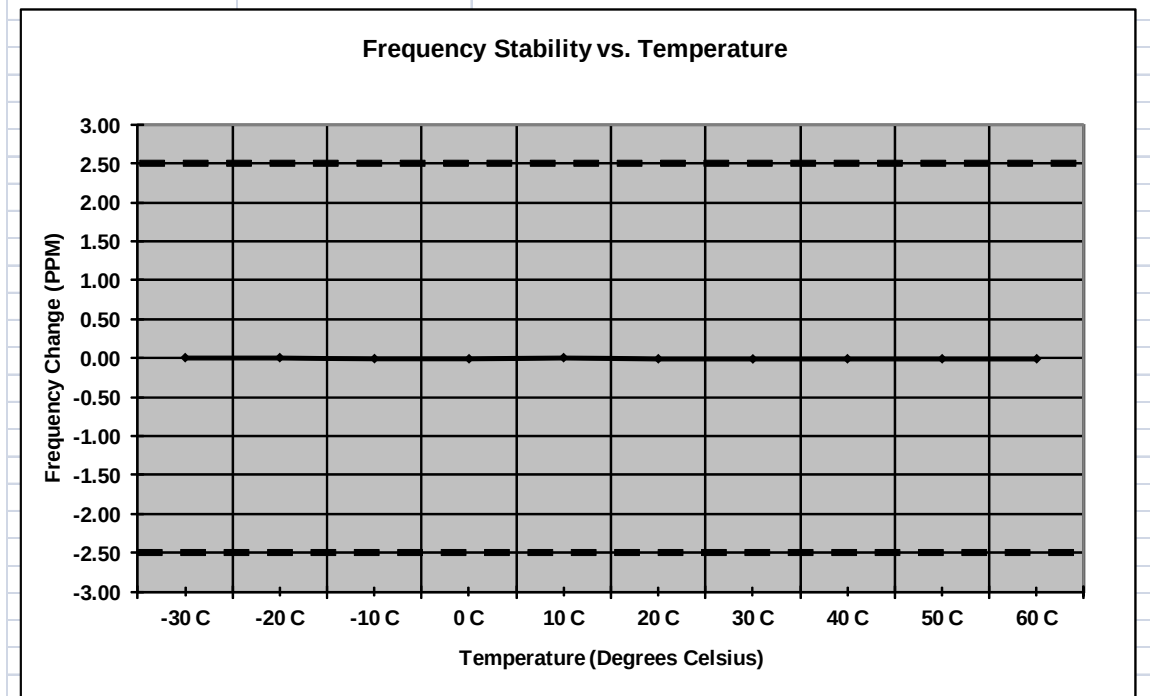
Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	Hz	(PPM)	(%)	(VDC)
-30 C	-9.68	-0.012	100%	3.80
-20 C	-10.01	-0.012	100%	3.80
-10 C	-10.13	-0.012	100%	3.80
0 C	6.67	0.008	100%	3.80
10 C	6.61	0.008	100%	3.80
20 C	-10.23	-0.012	100%	3.80
30 C	4.19	0.005	100%	3.80
40 C	5.95	0.007	100%	3.80
50 C	5.44	0.007	100%	3.80
60 C	5.12	0.006	100%	3.80
20 C	-10.54	-0.013	Battery Endpoint	3.20



Modulation: LTE Band 17 QPSK 10 MHz BW**Mode:** LTE Band 17-10 MHz **Operating Frequency:** 710.0 Mhz**Channel:** 23790 **Deviation Limit (PPM):** 2.5 ppm

50 RB QPSK

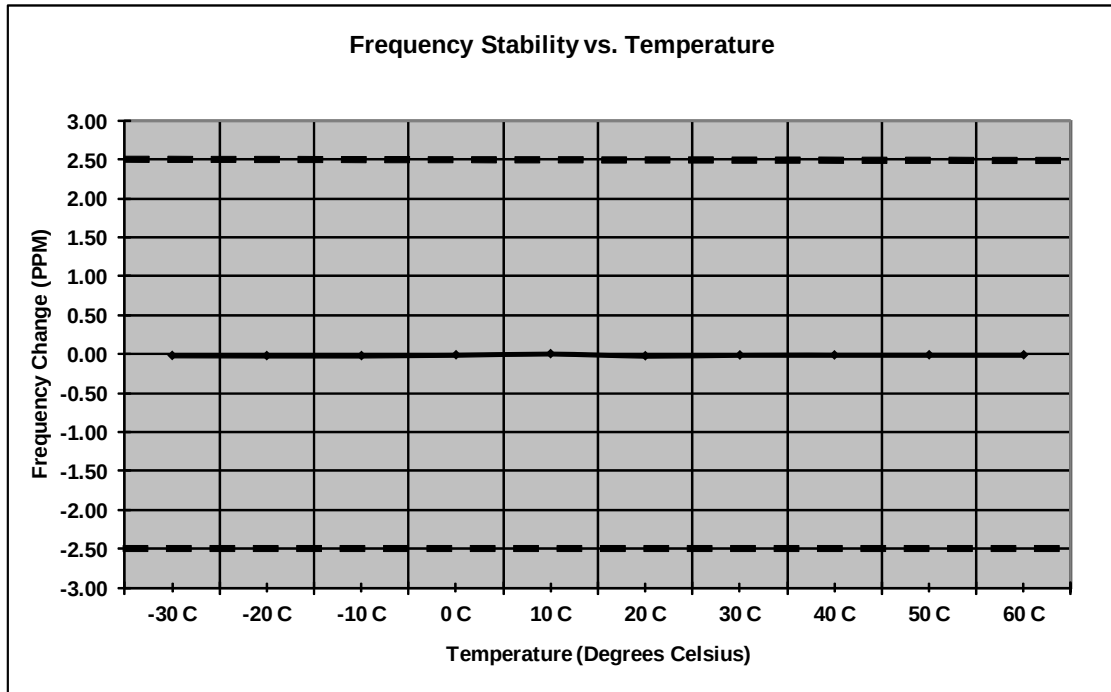
Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	Hz	(PPM)	(%)	(VDC)
-30 C	4.96	0.007	100%	3.80
-20 C	5.06	0.007	100%	3.80
-10 C	-4.29	-0.006	100%	3.80
0 C	-4.61	-0.006	100%	3.80
10 C	5.54	0.008	100%	3.80
20 C	-5.48	-0.008	100%	3.80
30 C	-6.02	-0.008	100%	3.80
40 C	-5.19	-0.007	100%	3.80
50 C	-5.72	-0.008	100%	3.80
60 C	-5.76	-0.008	100%	3.80
20 C	-5.38	-0.008	Battery Endpoint	3.42



Modulation: LTE Band 17 16-QAM 10 MHz BW

Mode: LTE Band 17-10 MHz
Channel: 23790
 50 RB 16 QAM
Operating Frequency: 710.0 Mhz
Deviation Limit (PPM): 2.5 ppm

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	Hz	(PPM)	(%)	(VDC)
-30 C	-11.40	-0.016	100%	3.80
-20 C	-11.77	-0.017	100%	3.80
-10 C	-11.82	-0.017	100%	3.80
0 C	-5.38	-0.008	100%	3.80
10 C	5.16	0.007	100%	3.80
20 C	-13.10	-0.018	100%	3.80
30 C	-5.81	-0.008	100%	3.80
40 C	-6.24	-0.009	100%	3.80
50 C	-5.62	-0.008	100%	3.80
60 C	-5.14	-0.007	100%	3.80
20 C	-12.82	-0.018	Battery Endpoint	3.42



End of Test Report