FCC PART 90

TEST REPORT

For

Huawei Technologies Co., Ltd.

Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

FCC ID: QISEA360-135

Report Type:	Product Type:
Original Report	LTE CPE

Test Engineer:	Allen Qiao
Report Number:	RDG140714004-00A
Report Date:	2015-04-01
Reviewed By:	Jerry Zhang EMC Manager
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Huawei Technologies Co., Ltd.*'s product, model number: *eA360-135 (FCC ID: QISEA360-135)* or the "EUT" in this report was a *LTE CPE*, which was measured approximately: 25.5 cm (L) x 22.0 cm (W) x 6.6 cm (H), rated input voltage: DC 54V from adapter.

Adapter information:
Model: UE-PoE-35
Input: AC 100-240V, 50/60Hz, 1.0A Max
Output: DC 54V, 0.65A

** All measurement and test data in this report was gathered from production sample serial number: 140714004 (Assigned by BACL, Dongguan). The EUT was received on 2014-07-17*

Objective

This test report is prepared on behalf of *Huawei Technologies Co., Ltd.* in accordance with Part 2, and Part 90 of the Federal Communications Commission's rules.

Related Submittal(s)/Grant(s)

FCC Part 15C DTS submissions with FCC ID: QISEA360-135.

Test Methodology

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

Part 90 – Wireless Broadband Services in the 3650-3700 MHz Band

Applicable Standards: TIA 603-D and ANSI 63.4-2009.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Dongguan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 06, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a test mode which has been done in the factory.

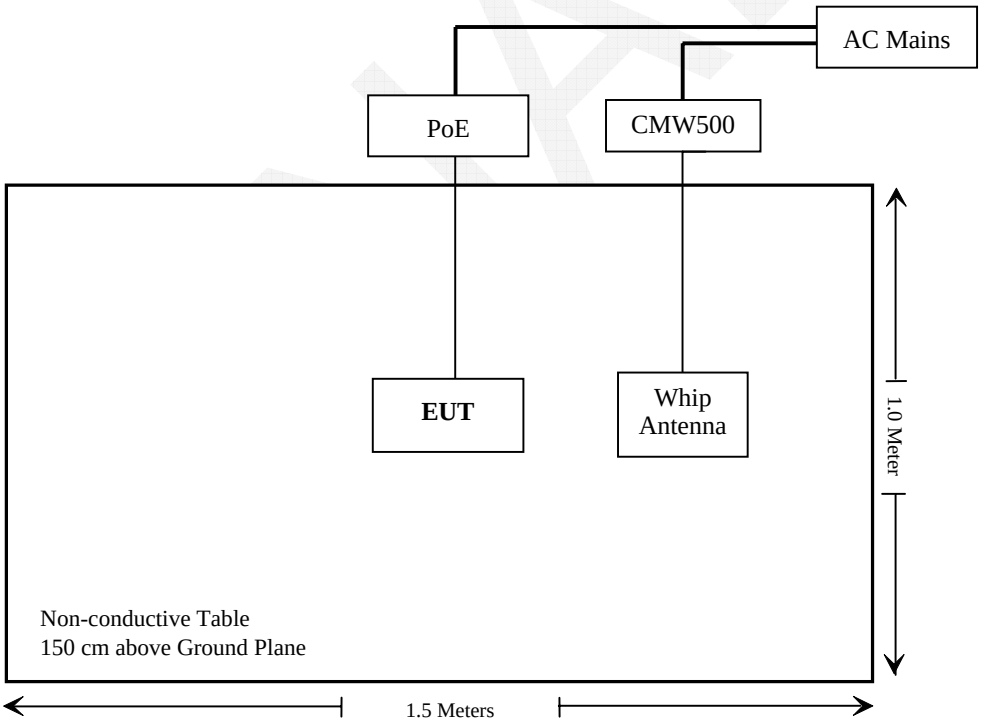
Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R & S	Wideband Radio Communication Tester	CMW500	114772

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§1.1307 (b)(1), §2.1091	Maximum Permissible Exposure (MPE)	Compliance
§2.1046; §90.1321(a)	RF Output Power	Compliance
§90.1321(a); §90.1321(a)	Peak Power Spectral Density	Compliance
§2.1049; §90.209	Occupied Bandwidth	Compliance
§2.1051; §90.1323(a)	Spurious Emission at Antenna Terminal	Compliance
§2.1053	Spurious Radiated Emissions	Compliance
§2.1055; §90.213	Frequency Stability	Compliance

FCC§1.1307 (b) (1) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

According to subpart 1.1307 (b)(1)and §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f^2)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:

Predication of MPE limit at a given distance
$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \le 1$$

Calculated Data:

Mode	**Frequency (MHz)**	**Antenna Gain**		**Conducted Power**		**Evaluation Distance (cm)**	**Power Density (mW/cm^2)**	**Limit (mW/cm^2)**
		(dBi)	**(numeric)**	**(dBm)**	**(mW)**			
Wi-Fi	2422	2.0	1.58	18.13	65.01	20	0.020	1.0
LTE	3662.5	16	39.81	18.89	77.45	20	0.613	1.0

Wi-Fi (2.4 G) and LTE can transmit at the same time, MPE evaluation is as below formula:

PD1/Limit1+PD2/Limit2+……＜1, PD (Power Density)

= 0.020/1+0.613/1=0.641＜1

Result: MPE evaluation of single and simultaneous transmission meet the requirement of standard.

FCC §2.1046, §90.1321(a) - RF OUTPUT POWER

Applicable Standard

FCC §2.1046 and §90.1321

Limit

According to FCC §90.1321:

(a) Base and fixed stations are limited to 25 watts/25 MHz equivalent isotropically radiated power (EIRP). In any event, the peak EIRP power density shall not exceed 1 Watt in any one-megahertz slice of spectrum.

(c) Mobile and portable stations are limited to 1 watt/25 MHz EIRP. In any event, the peak EIRP density shall not exceed 40 milliwatts in any one-megahertz slice of spectrum.

Test Procedure

The EUT was connected to a CMW500 through a attenuator,the EUT power was adjusted to produce maximum output power as specified in the owner's manual,measurements were performed at the low,mid and high channels for each of the EUT's bandwidths and modulations.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2013-11-15	2014-11-15
R & S	Wideband Radio Communication Tester	CMW500	114772	2014-11-15	2015-11-15

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	20.4℃-31.1 ℃
Relative Humidity:	29 %-69 %
ATM Pressure:	99.1kPa-102.3 kPa

The testing was performed by Allen Qiao on 2014-07-29 & 2015-02-11..

Test Mode: Transmitting

Test Result: Compliance. Please refer to following table.

LTE Band: 3650-3700MHz

Bandwidth	Modulation	Frequency (MHz)	Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)
5MHz	QPSK	3652.5	18.88	16	34.88	37.01
		3662.5	18.87	16	34.87	
		3697.5	18.69	16	34.69	
	16QAM	3652.5	18.71	16	34.71	
		3662.5	18.80	16	34.80	
		3697.5	18.56	16	34.56	
10MHz	QPSK	3655	18.84	16	34.84	40.02
		3662.5	18.65	16	34.65	
		3695	18.72	16	34.72	
	16QAM	3655	18.70	16	34.70	
		3662.5	18.76	16	34.76	
		3695	18.63	16	34.63	
15MHz	QPSK	3657.5	18.78	16	34.78	41.78
		3662.5	18.82	16	34.82	
		3692.5	18.59	16	34.59	
	16QAM	3657.5	18.73	16	34.73	
		3662.5	18.57	16	34.57	
		3692.5	18.32	16	34.32	
20MHz	QPSK	3660	18.74	16	34.74	43.03
		3662.5	18.84	16	34.84	
		3690	18.67	16	34.67	
	16QAM	3660	18.69	16	34.69	
		3662.5	18.89	16	34.89	
		3690	18.43	16	34.43	

Note: limit = 44dBm + 10Log (Bandwidth/25)
Eg: For 10 MHz Bandwidth, the limit = 44dBm + 10Log (10/25) = 40.02 dBm

FCC §90.1321 (a) - PEAK POWER SPECTRAL DENSITY

Applicable Standard

FCC §90.1321 (a); §90.1321 (a)

Limit

According to FCC §90.1321:

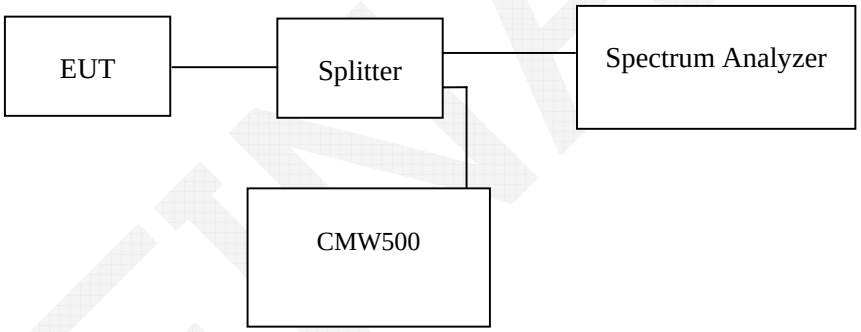
(a) Base and fixed stations are limited to 25 watts/25 MHz equivalent isotropically radiated power (EIRP). In any event, the peak EIRP power density shall not exceed 1 Watt in any one-megahertz slice of spectrum.

(c) Mobile and portable stations are limited to 1 watt/25 MHz EIRP. In any event, the peak EIRP density shall not exceed 40 milliwatts in any one-megahertz slice of spectrum.

Test Procedure

The EUT was connected to a CMW500 & spectrum analyzer through a splitterr,the EUT power was adjusted to produce maximum output power as specified in the owner's manual,measurements were performed at the low,mid and high channels for each of the EUT's bandwidths and modulations.

The resolution bandwidth of the spectrum analyzer was set at 1MHz.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2013-11-15	2014-11-15
R & S	Wideband Radio Communication Tester	CMW500	114772	2014-11-15	2015-11-15
R&S	Spectrum Analyzer	FSP 38	100478	2014-05-09	2015-05-09

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	20.4℃-31.1 ℃
Relative Humidity:	29%-74 %
ATM Pressure:	99.1kPa-102.3 kPa

The testing was performed by Allen Qiao on 2014-07-30 & 2015-04-01.

Test Mode: Transmitting

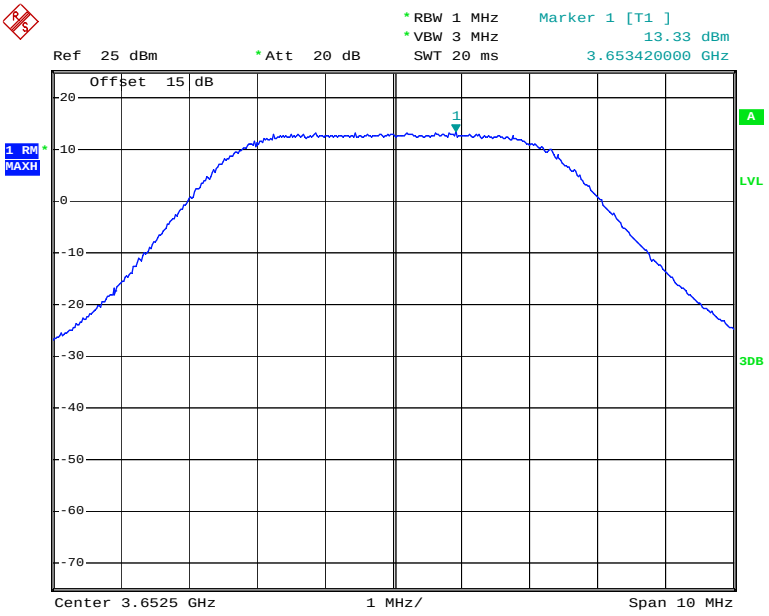
Result: Compliance.

LTE Band: 3650-3700MHz

Bandwidth	Modulation	Frequency (MHz)	Power Density (dBm/MHz)	Antenna Gain (dBi)	EIRP Power Density (dBm/MHz)	Limit (dBm/MHz)
5MHz	QPSK	3652.5	13.39	16	29.39	30
		3662.5	13.50	16	29.50	
		3697.5	13.78	16	29.78	
	16QAM	3652.5	13.33	16	29.33	
		3662.5	13.28	16	29.28	
		3697.5	13.75	16	29.75	
10MHz	QPSK	3655	12.57	16	28.57	
		3662.5	12.72	16	28.72	
		3695	12.11	16	28.11	
	16QAM	3655	12.55	16	28.55	
		3662.5	12.33	16	28.33	
		3695	12.11	16	28.11	
15MHz	QPSK	3657.5	10.72	16	26.72	
		3662.5	10.86	16	26.86	
		3692.5	10.10	16	26.10	
	16QAM	3657.5	10.66	16	26.66	
		3662.5	10.77	16	26.77	
		3692.5	10.20	16	26.20	
20MHz	QPSK	3660	9.57	16	25.57	
		3662.5	9.47	16	25.47	
		3690	9.81	16	25.81	
	16QAM	3660	9.22	16	25.22	
		3662.5	9.62	16	25.62	
		3690	9.69	16	25.69	

Please refer to the following plots

5MHz, 16QAM, Low Channel



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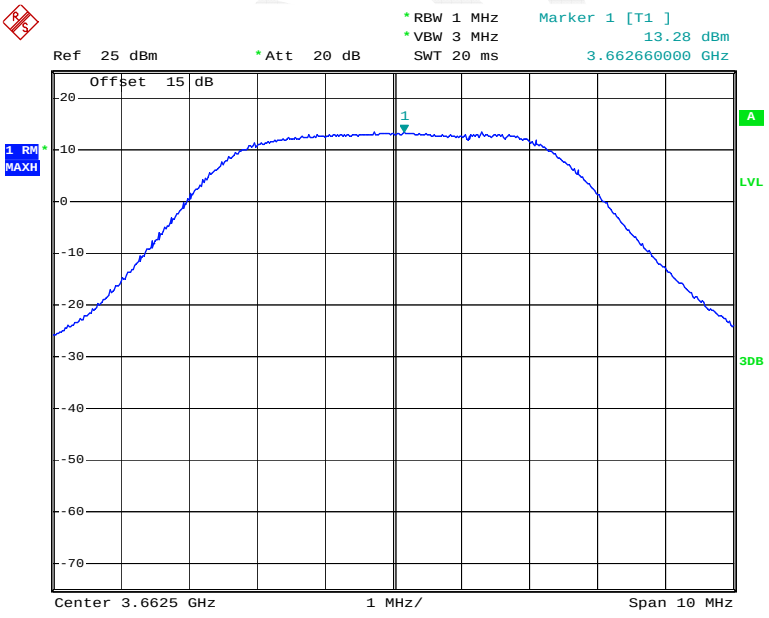
5MHz, 16QAM, Middle Channel



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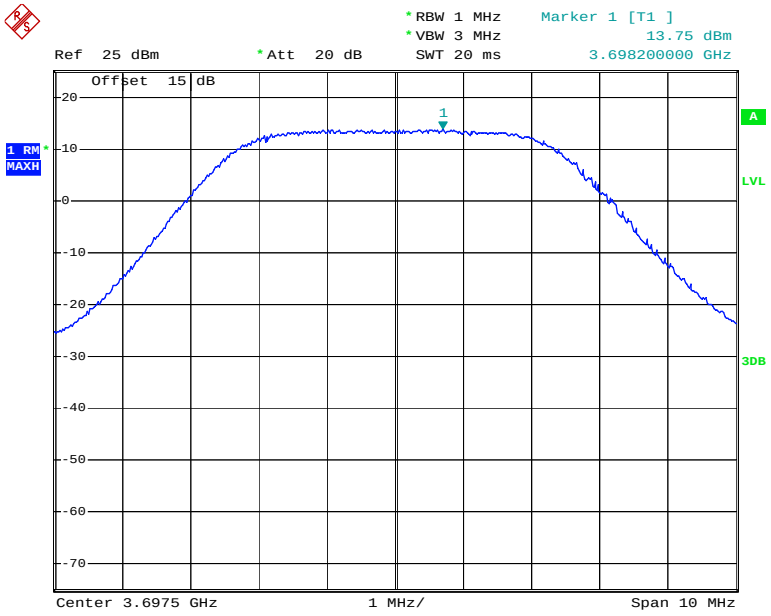
5MHz, 16QAM, High Channel



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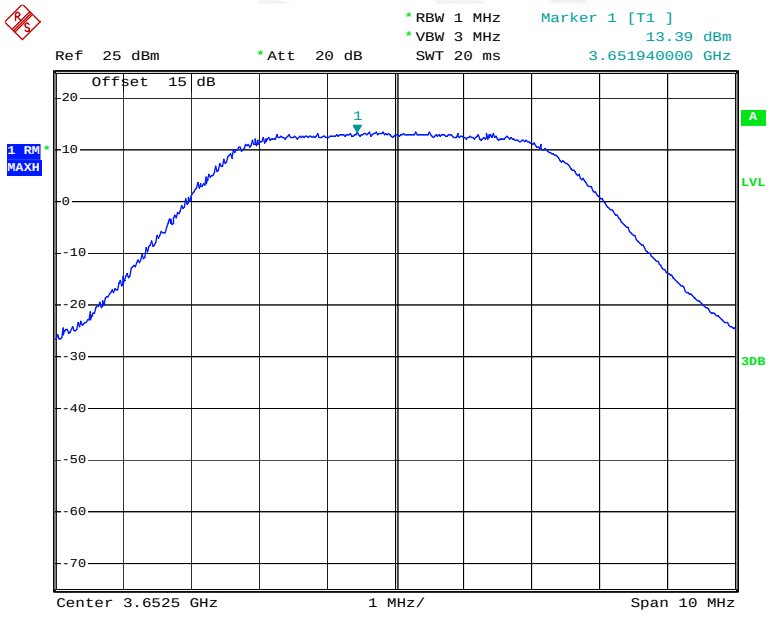
5MHz, QPSK, Low Channel



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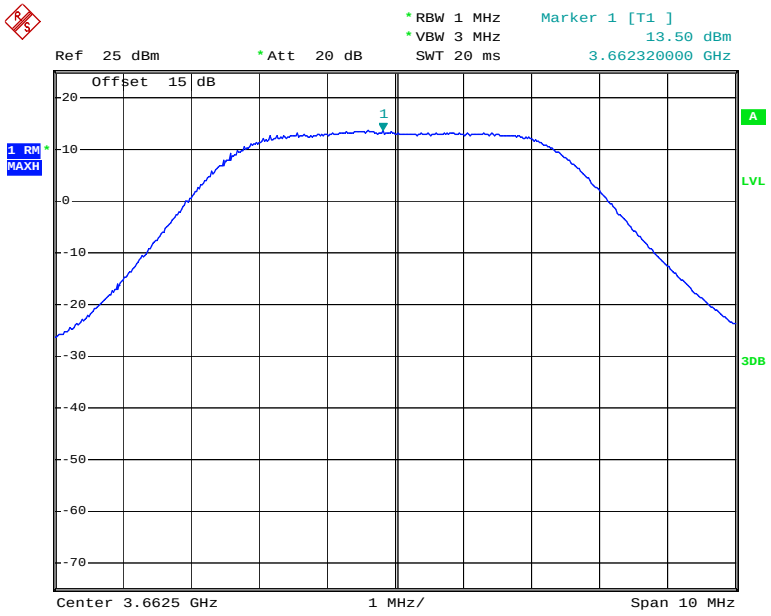
5MHz, QPSK, Middle Channel



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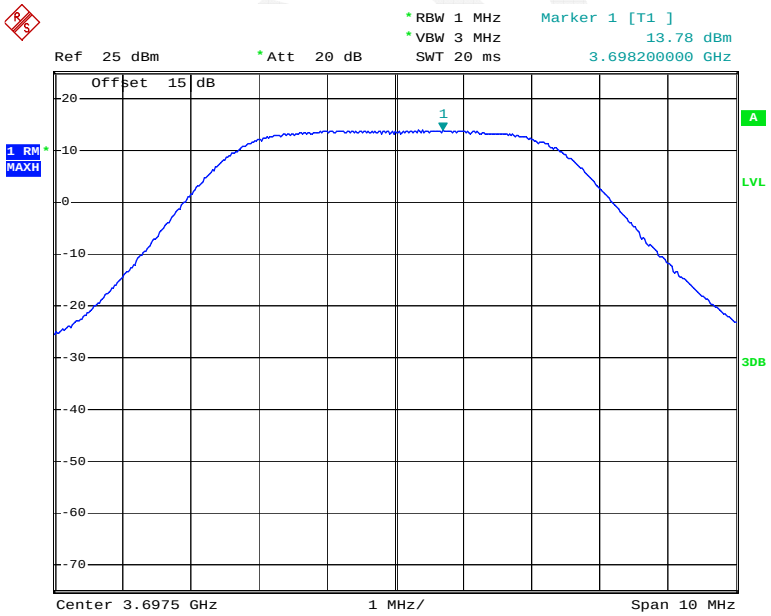
5MHz, QPSK, High Channel



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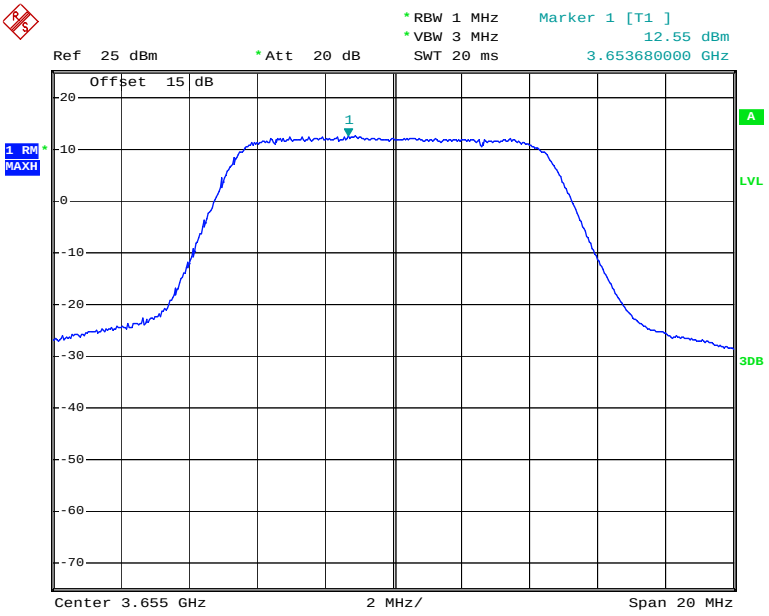
10MHz, 16QAM, Low Channel



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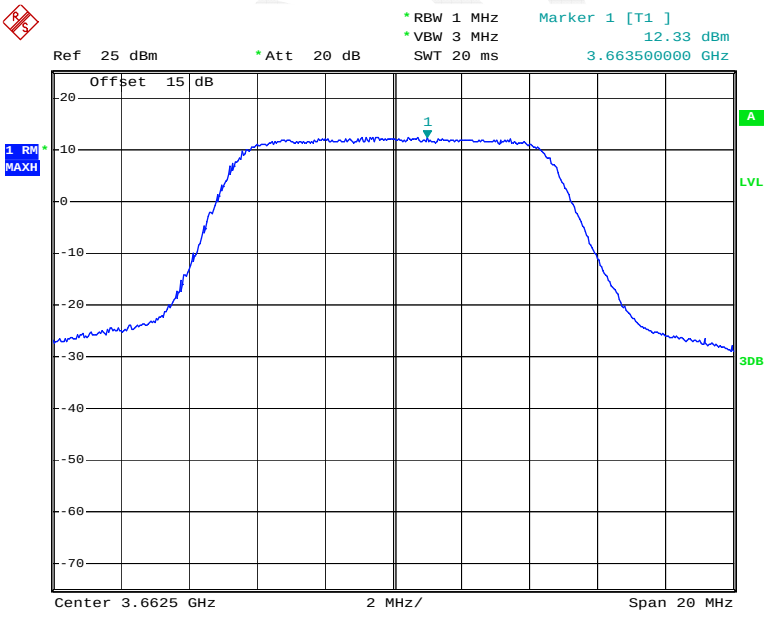
10MHz, 16QAM, Middle Channel



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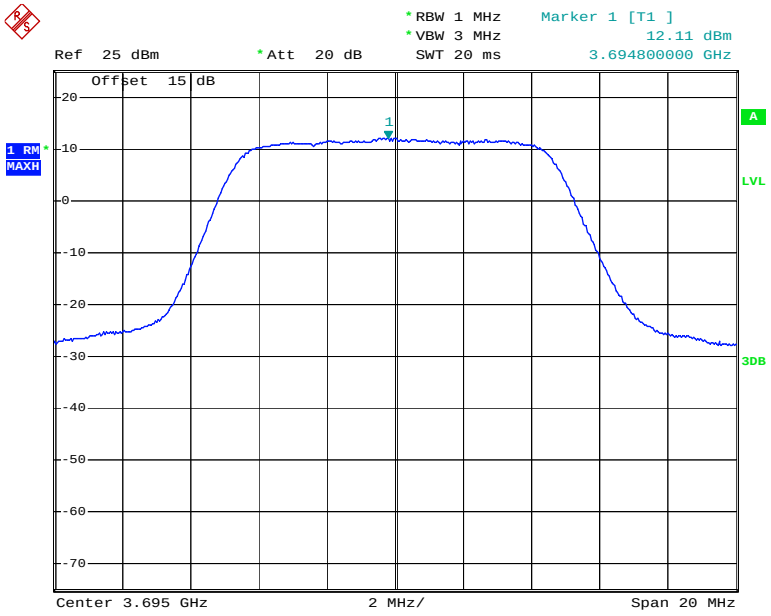
10MHz, 16QAM, High Channel



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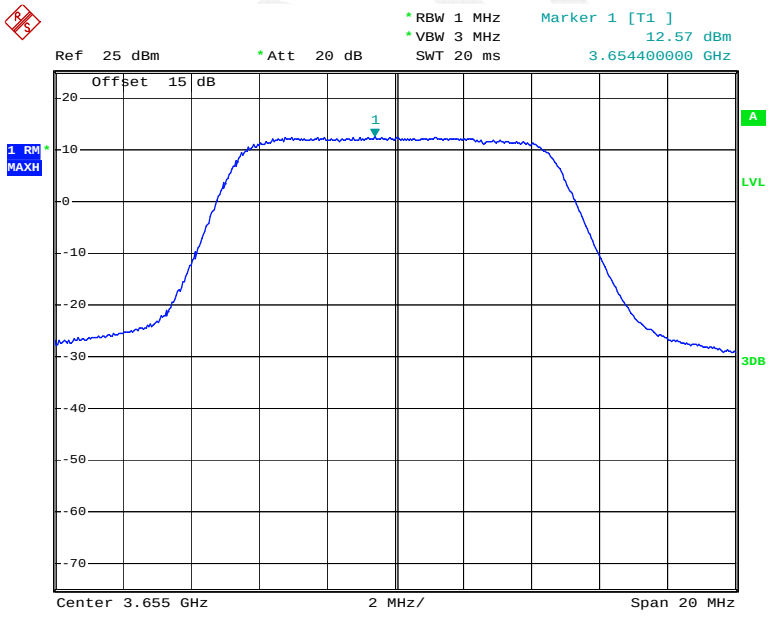
10MHz, QPSK, Low Channel



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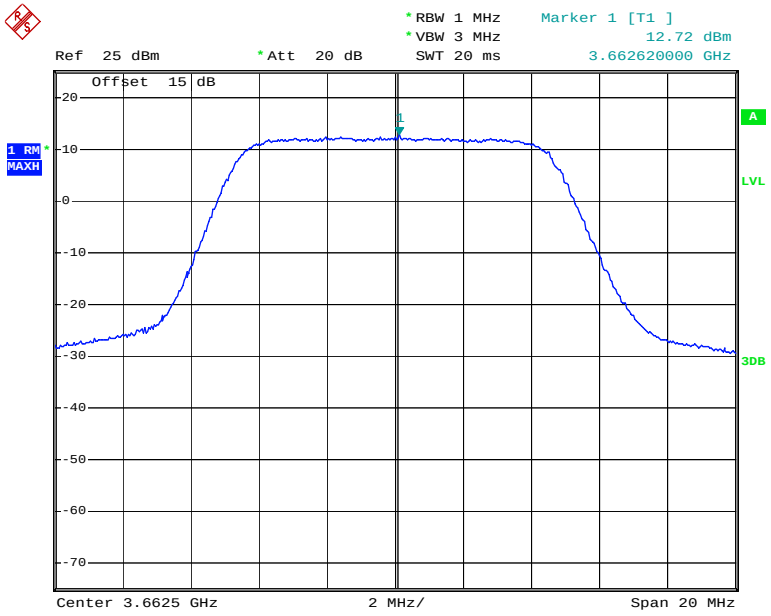
10MHz, QPSK, Middle Channel



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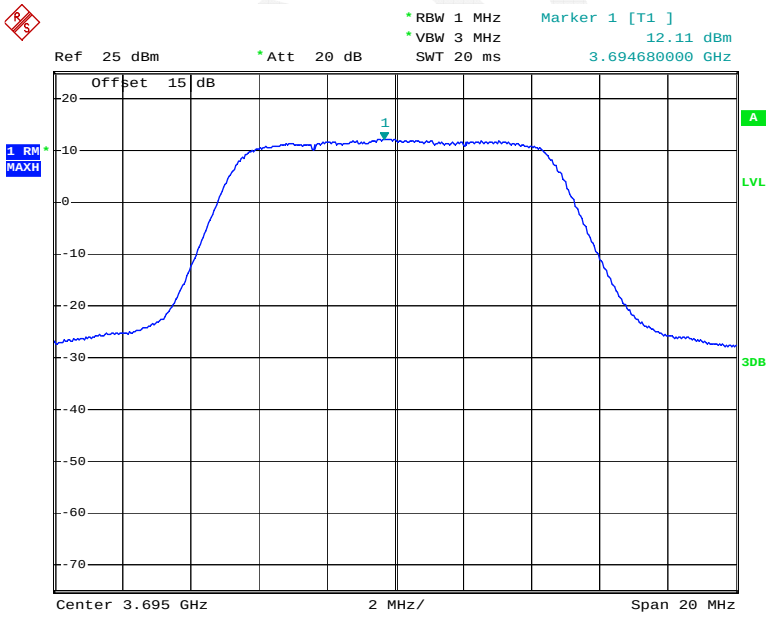
10MHz, QPSK, High Channel



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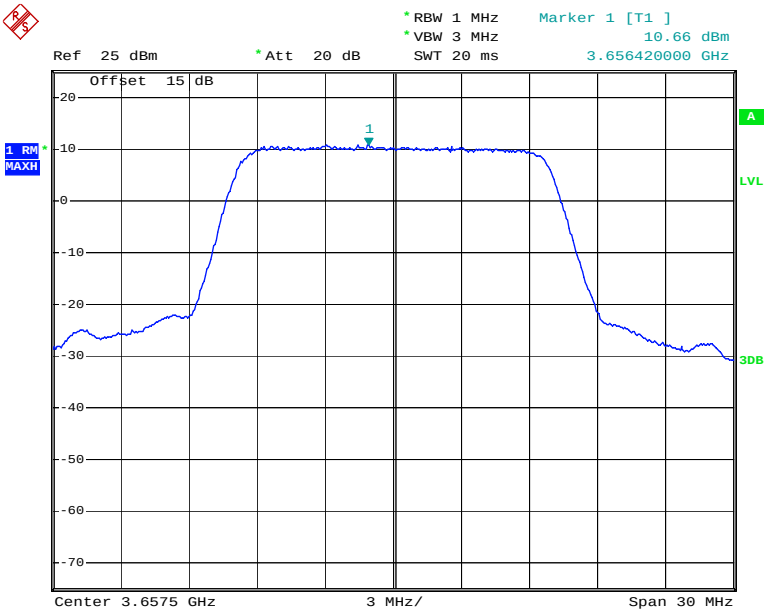
15MHz, 16QAM, Low Channel



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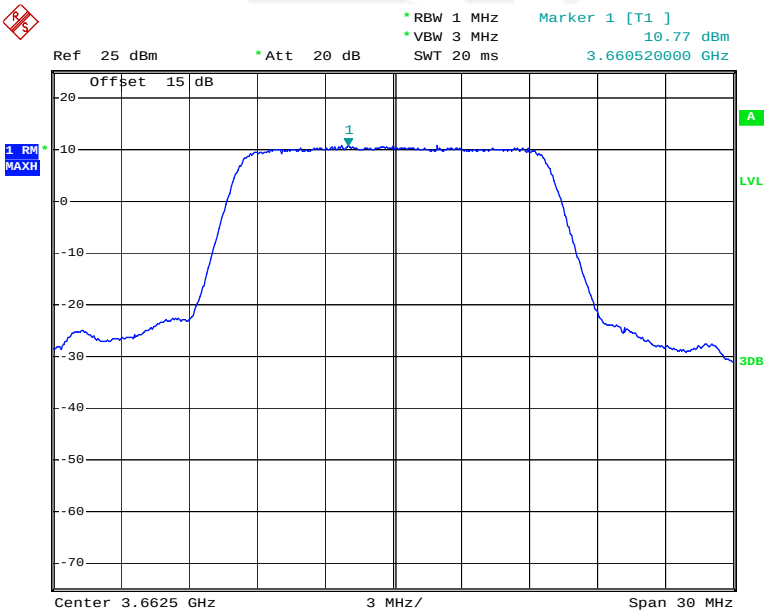
15MHz, 16QAM, Middle Channel



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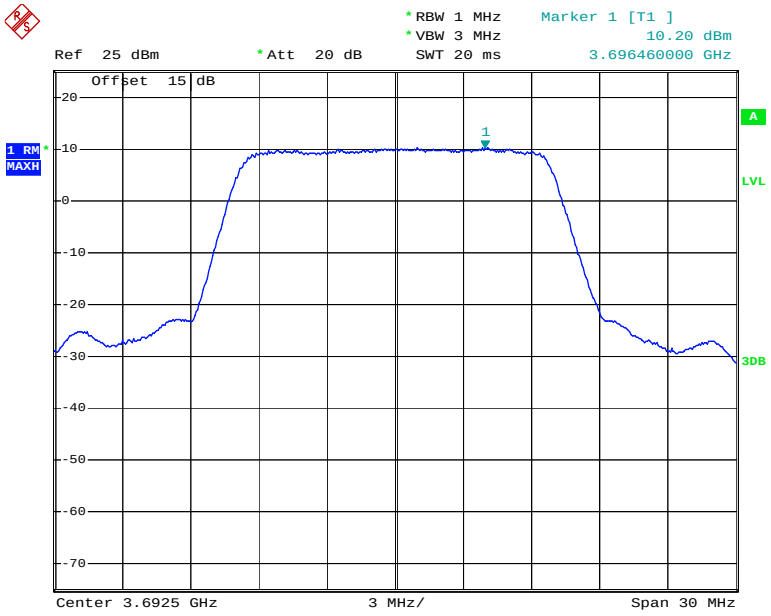
15MHz, 16QAM, High Channel



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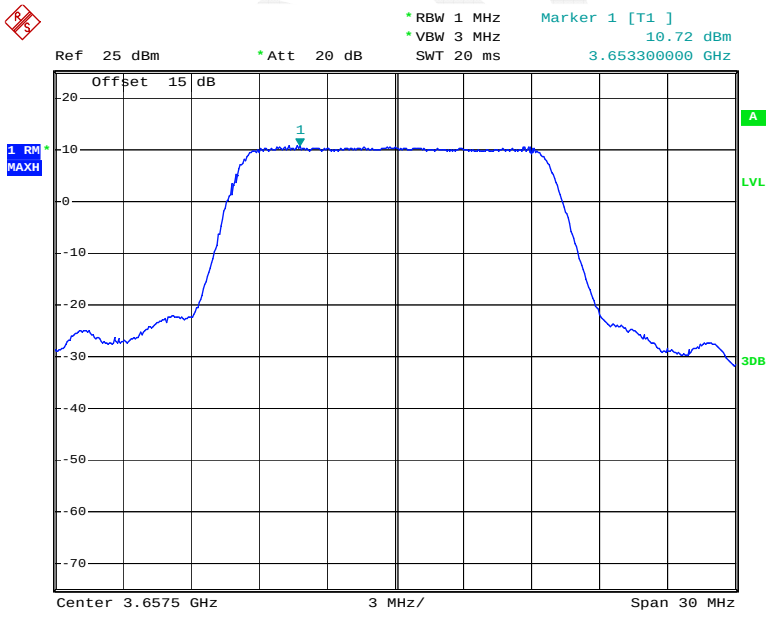
15MHz, QPSK, Low Channel



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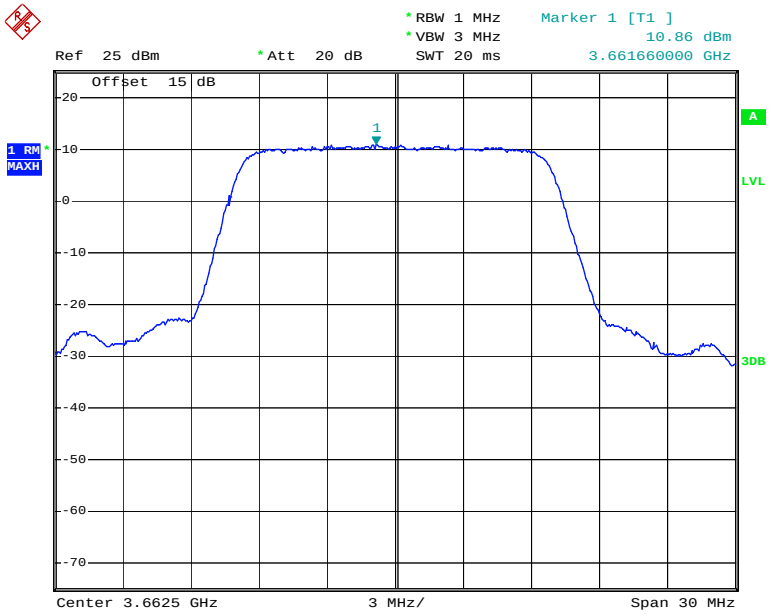
15MHz, QPSK, Middle Channel



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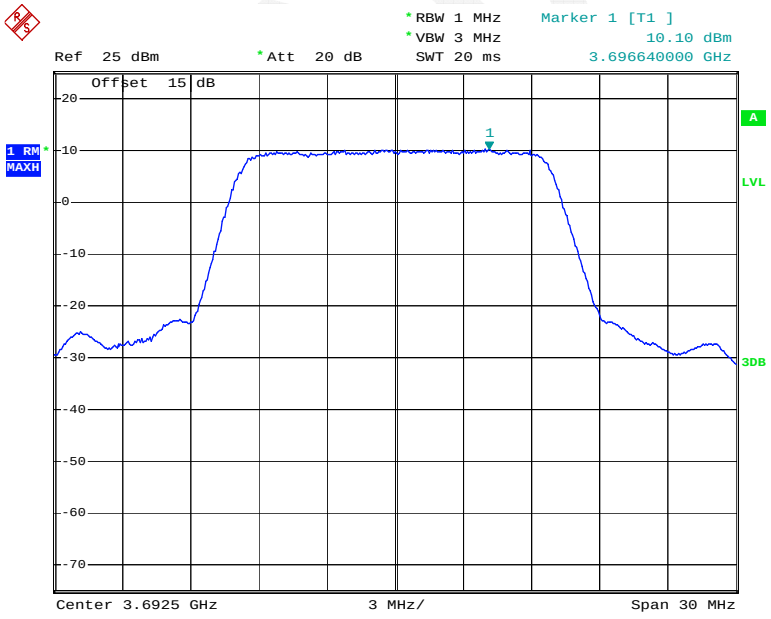
15MHz, QPSK, High Channel



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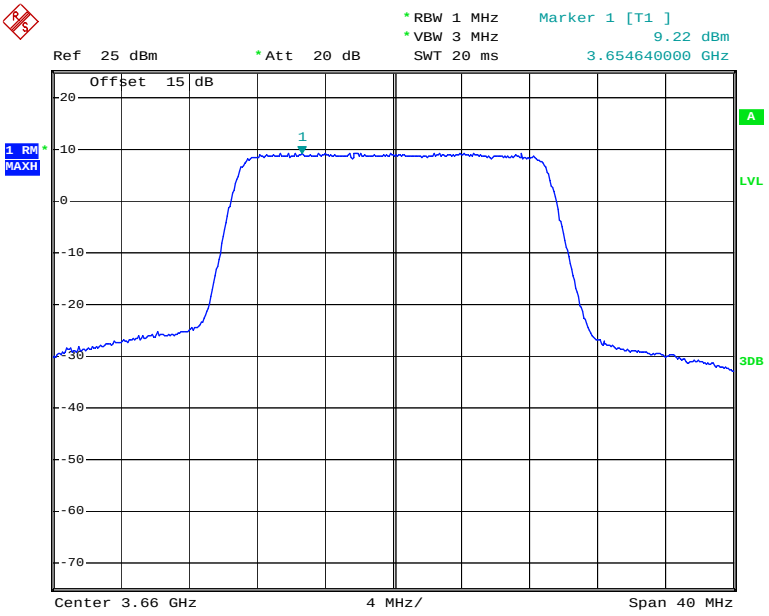
20MHz, 16QAM, Low Channel



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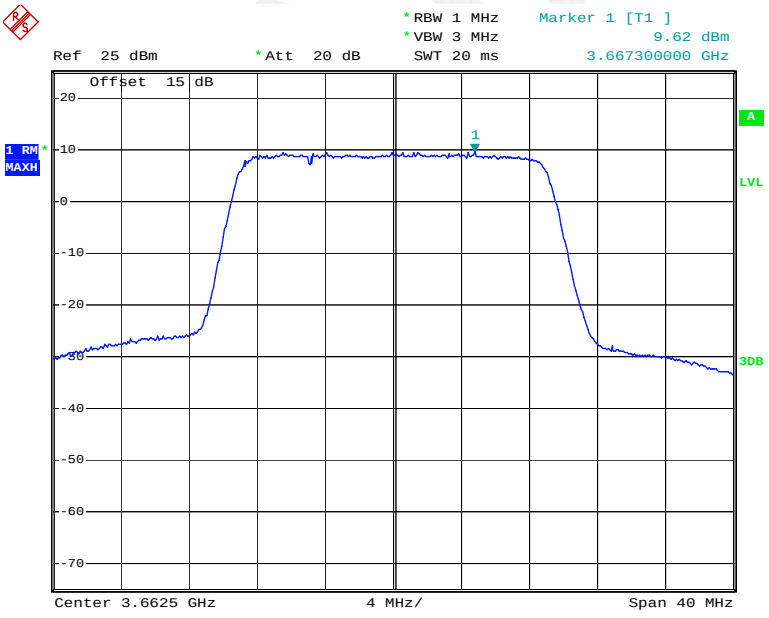
20MHz, 16QAM, Middle Channel



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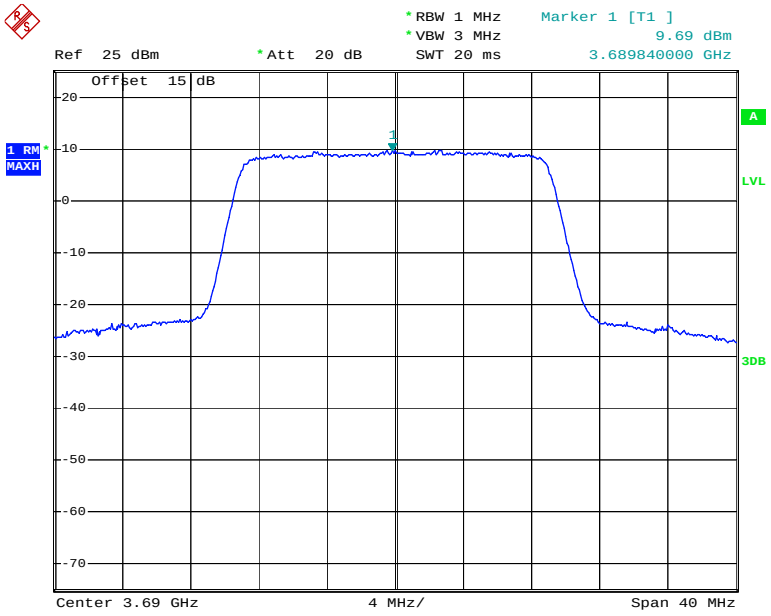

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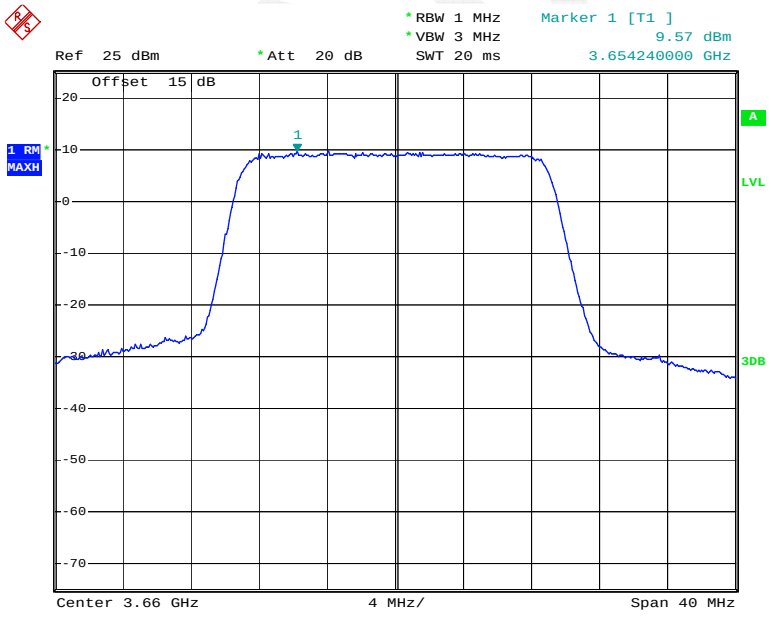

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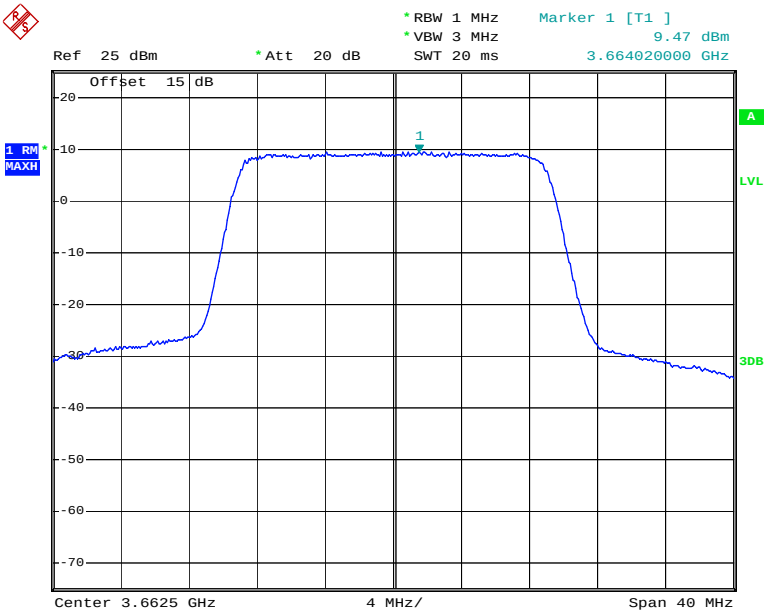
20MHz, QPSK, Middle Channel



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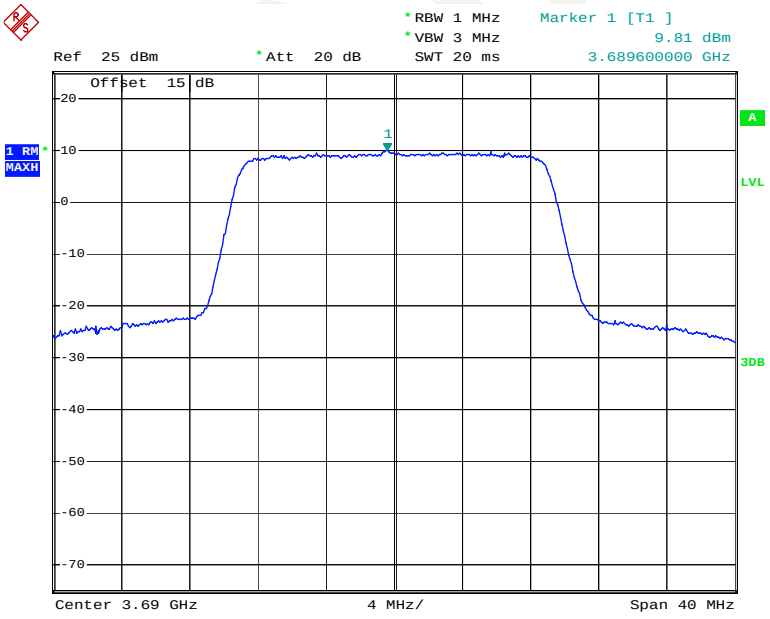
20MHz, QPSK, High Channel



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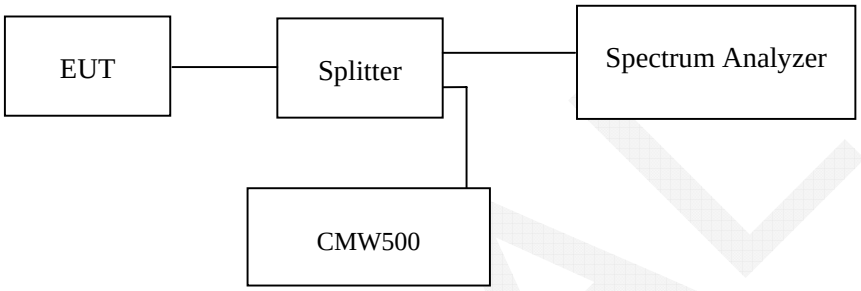
FCC §2.1049 & §90.209 – OCCUPIED BANDWIDTH

Applicable Standard

FCC §2.1049 and §90.209

Test Procedure

The EUT was connected to a CMW500 & spectrum analyzer through a splitterr,the EUT power was adjusted to produce maximum output power as specified in the owner's manual,measurements were performed at middle channel for each of the EUT's bandwidths and modulations.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2013-11-15	2014-11-15
R&S	Spectrum Analyzer	FSP 38	100478	2014-05-09	2015-05-09

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	29.2 ℃
Relative Humidity:	65 %
ATM Pressure:	100.1 kPa

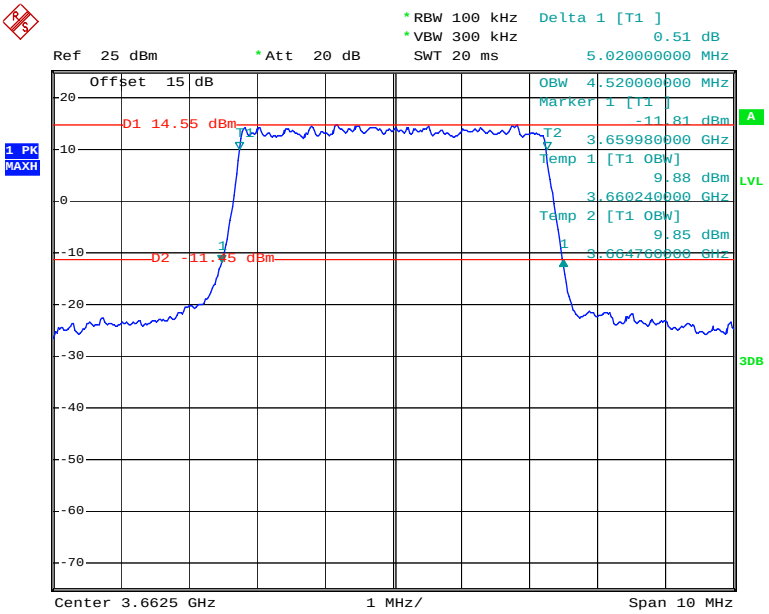
The testing was performed by Allen Qiao on 2014-07-27.

LTE Band: 3650-3700MHz

Bandwidth	Modulation	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
5MHz	QPSK	3662.5	4.52	4.98
	16QAM	3662.5	4.52	5.02
10MHz	QPSK	3662.5	9.00	9.84
	16QAM	3662.5	8.96	9.80
15MHz	QPSK	3662.5	13.56	15.20
	16QAM	3662.5	13.56	15.14
20MHz	QPSK	3662.5	18.00	19.68
	16QAM	3662.5	18.00	19.76

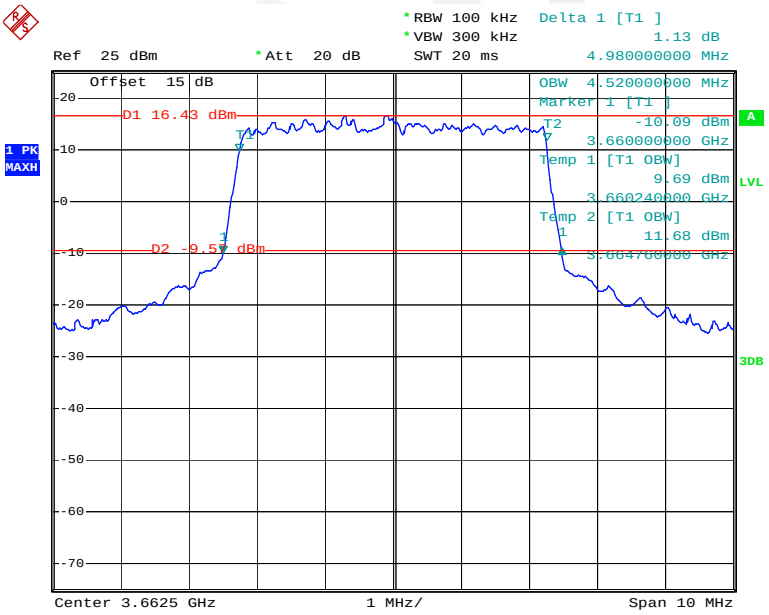
Please refer to the following plots:

5MHz, 16QAM



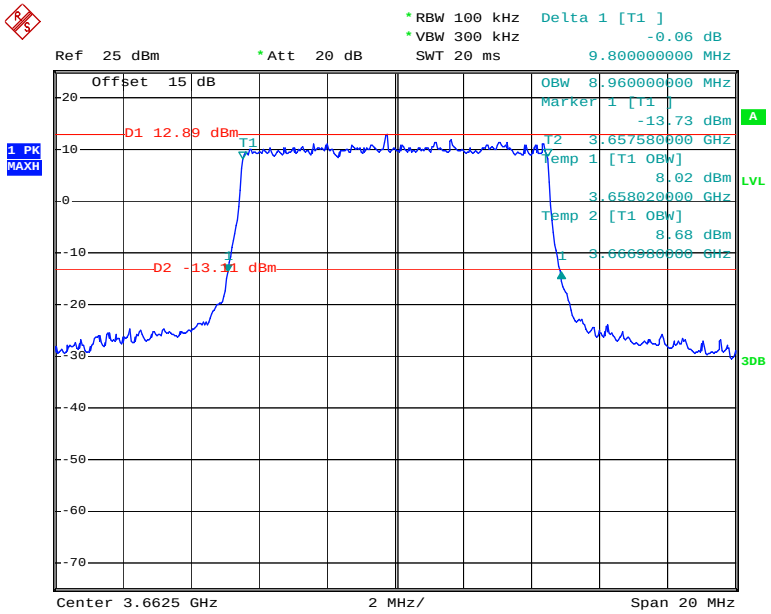
Date: 27.JUL.2014 15:19:45

5MHz, QPSK



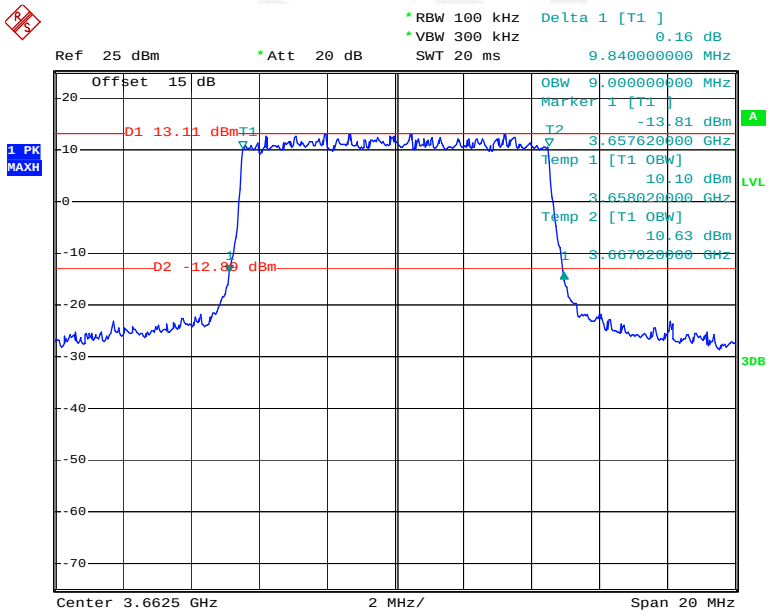
Date: 27.JUL.2014 15:17:50

10MHz, 16QAM



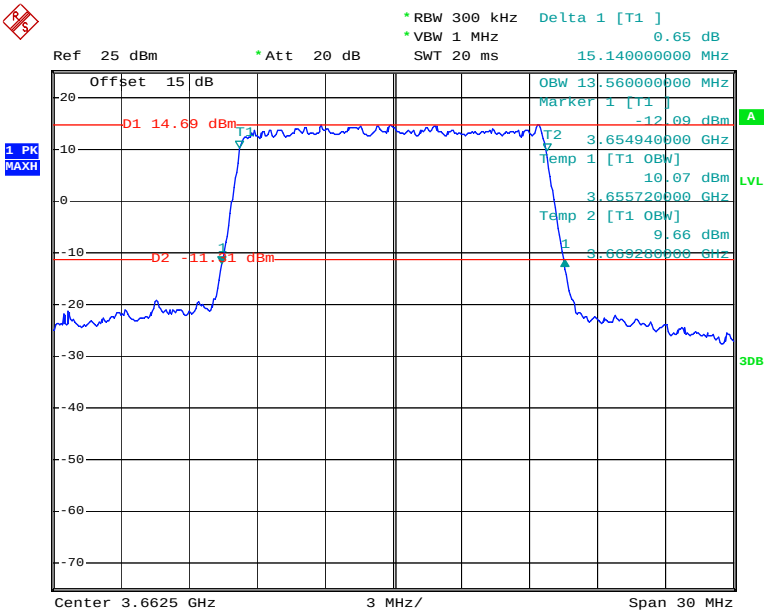
Date: 27.JUL.2014 16:10:46

10MHz, QPSK



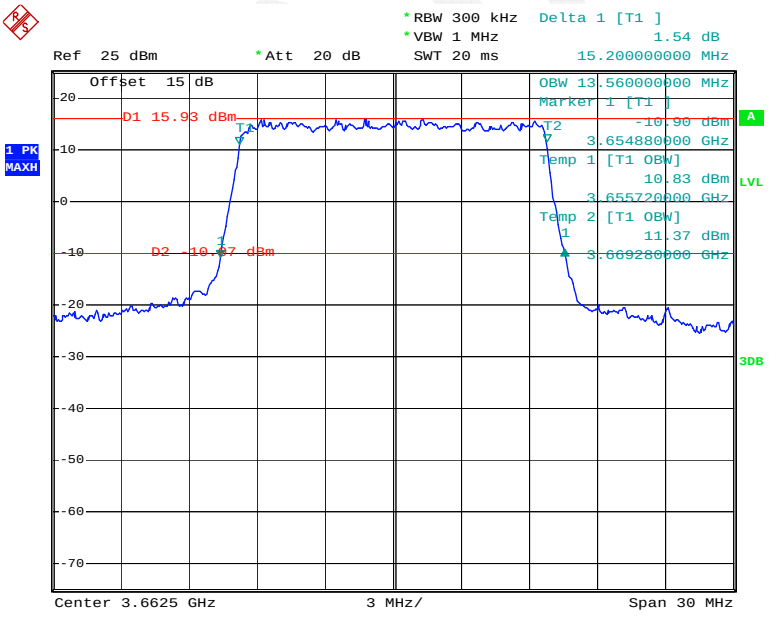
Date: 27.JUL.2014 16:09:56

15MHz, 16QAM



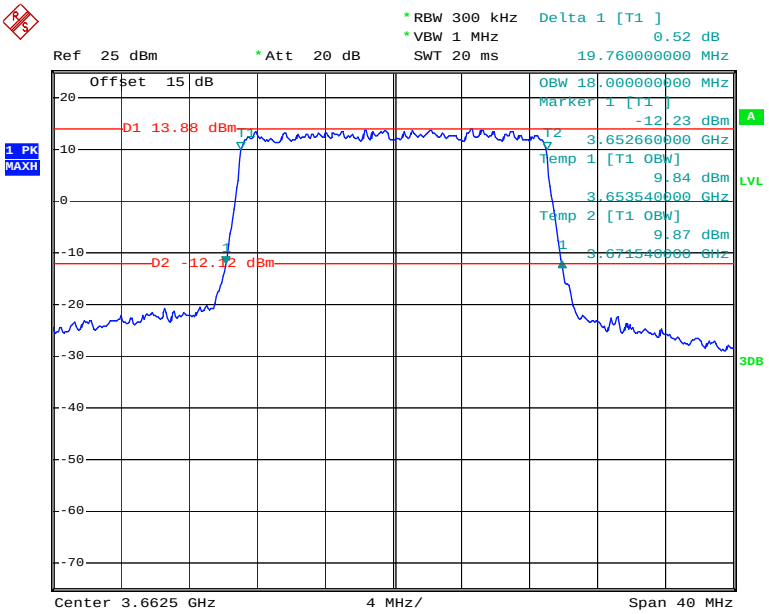
Date: 27.JUL.2014 15:32:13

15MHz, QPSK



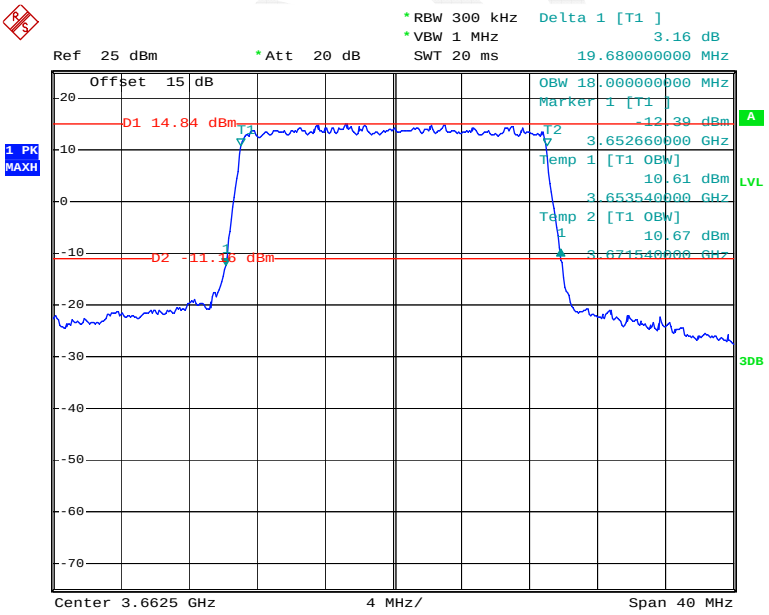
Date: 27.JUL.2014 15:32:49

20MHz, 16QAM



Date: 27.JUL.2014 15:40:20

20MHz, QPSK



Date: 27.JUL.2014 15:41:15

FCC §2.1051 & §90.1323(a) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standard

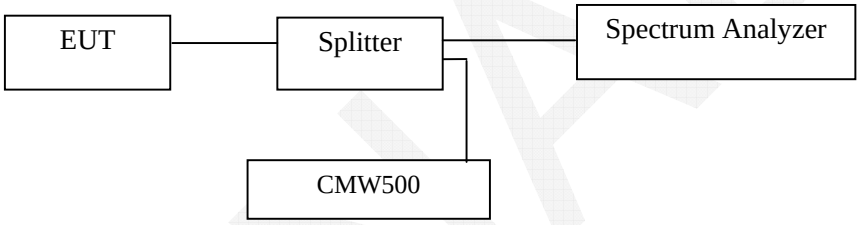
FCC §2.1051 and §90.1323(a)

Limit

According to FCC §90.1323(a), 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. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or less, but at least one percent of the emission bandwidth of the fundamental emission of the transmitter, provided the measured energy is integrated over a 1 MHz bandwidth.

Test Procedure

The EUT was connected to a CMW500 & spectrum analyzer through a splitterr, the EUT power was adjusted to produce maximum output power as specified in the owner's manual, measurements were performed at low, middle high channels for each of the EUT's bandwidths and modulations.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2013-11-15	2014-11-15
R & S	Wideband Radio Communication Tester	CMW500	114772	2014-11-15	2015-11-15
R&S	Spectrum Analyzer	FSP 38	100478	2014-05-09	2015-05-09

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

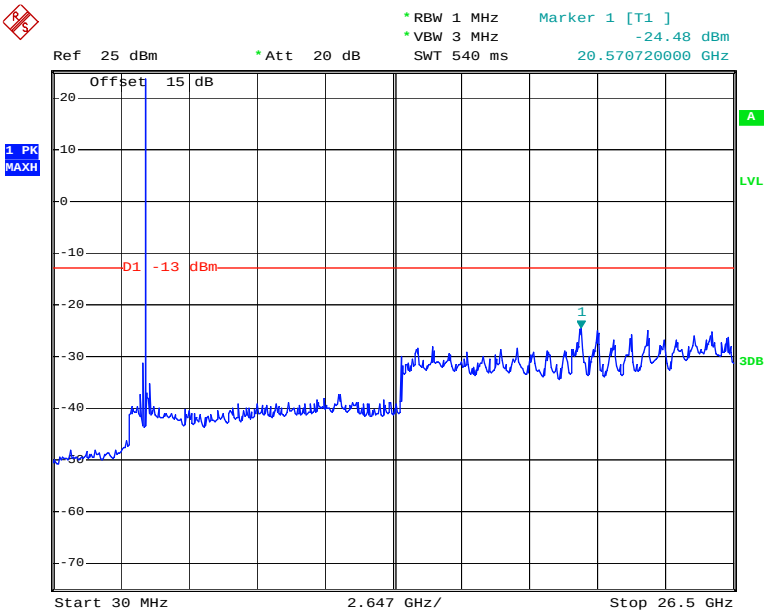
Environmental Conditions

Temperature:	20.4℃-31.5 ℃
Relative Humidity:	29 %-74 %
ATM Pressure:	99.1 kPa-102.3 kPa

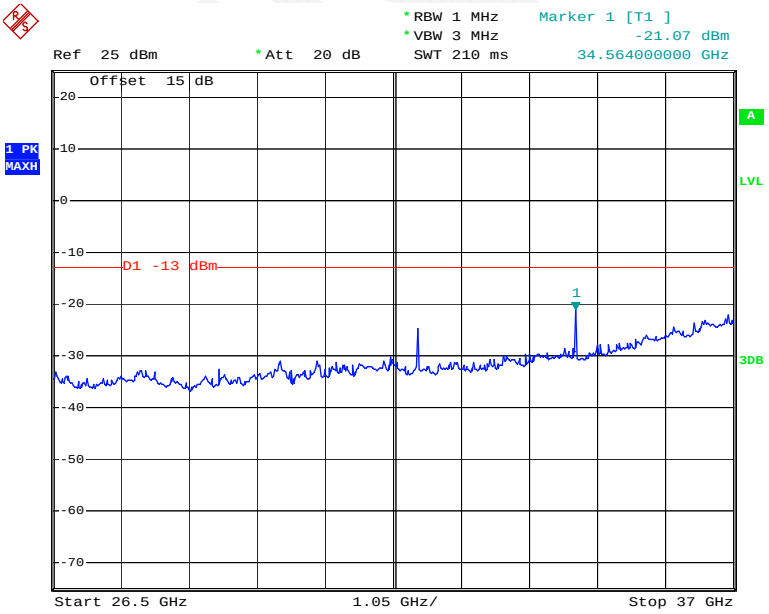
The testing was performed by Allen Qiao on 2014-07-27 & 2015-04-01.

Test Mode: Transmitting

5MHz, 16QAM

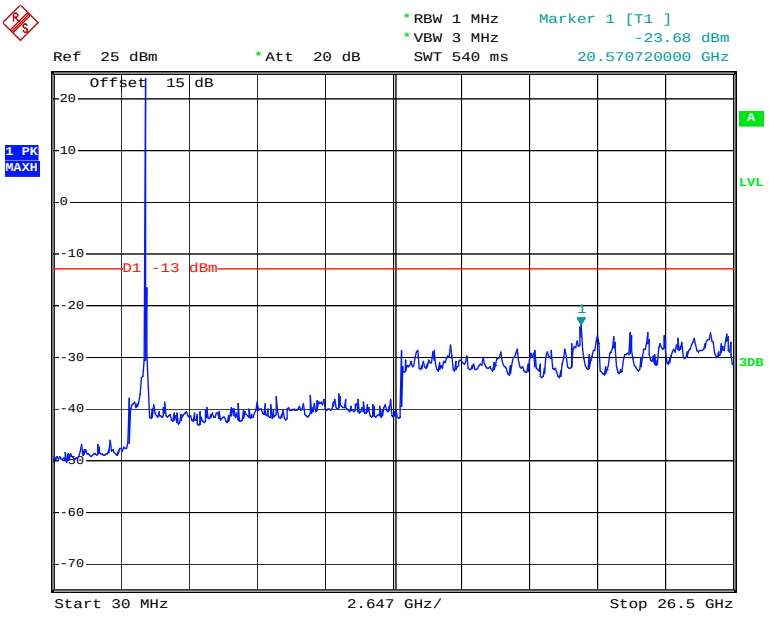


Date: 27.JUL.2014 16:58:44



Date: 27.JUL.2014 16:58:53

5MHz, QPSK



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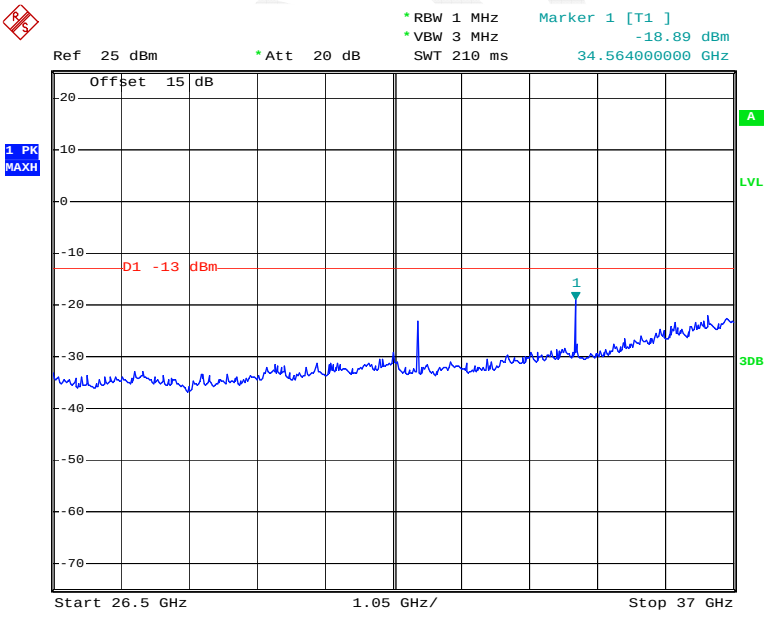
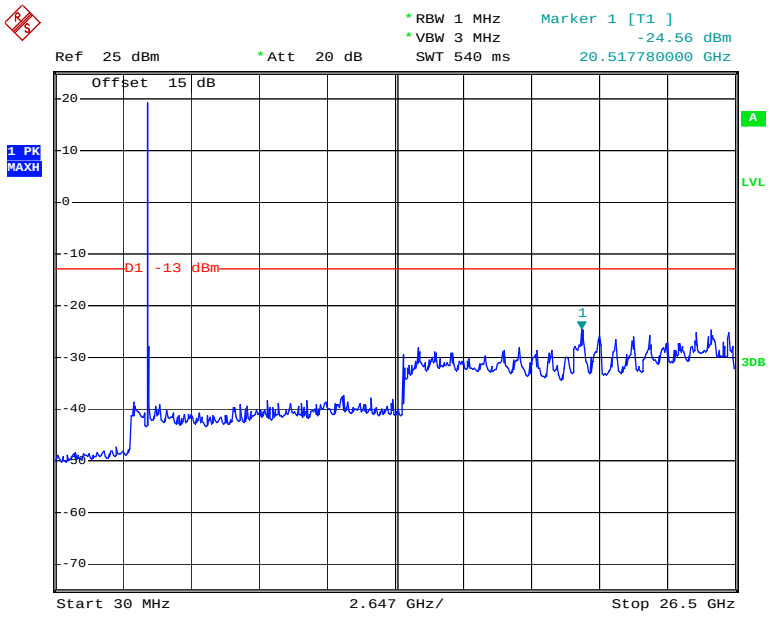


Date: 27.JUL.2014 16:58:03

10MHz, 16QAM



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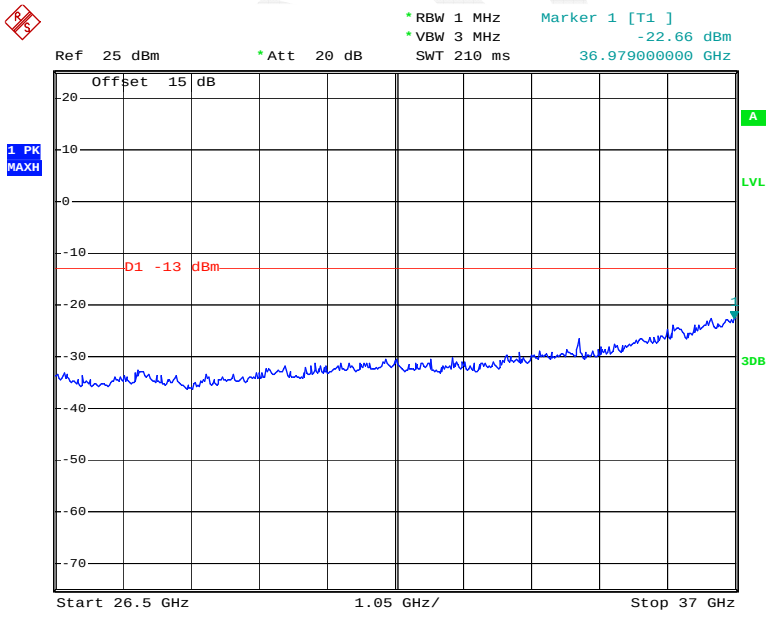
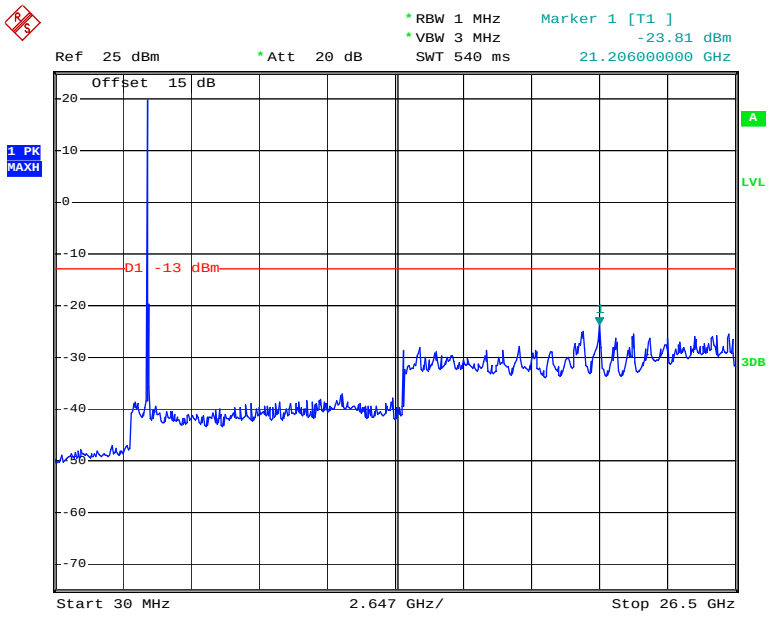


Date: 27.JUL.2014 17:00:41

10MHz, QPSK



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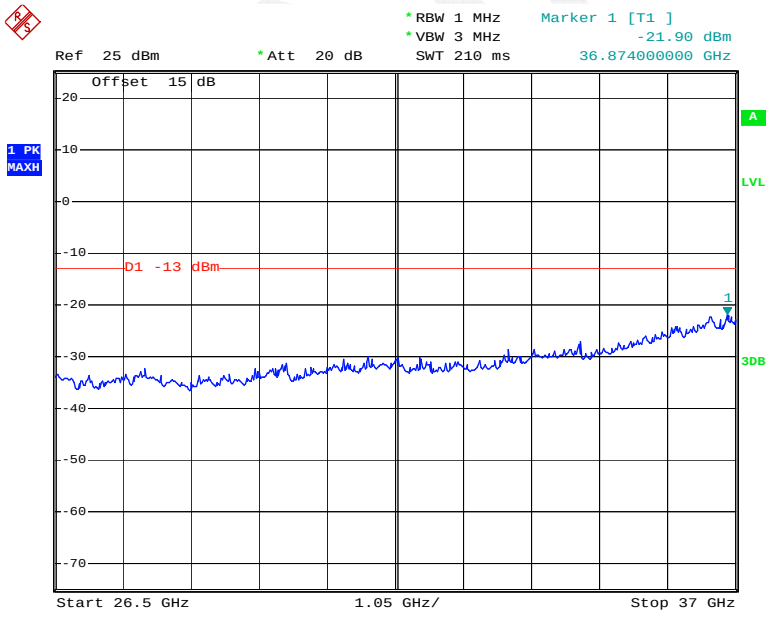

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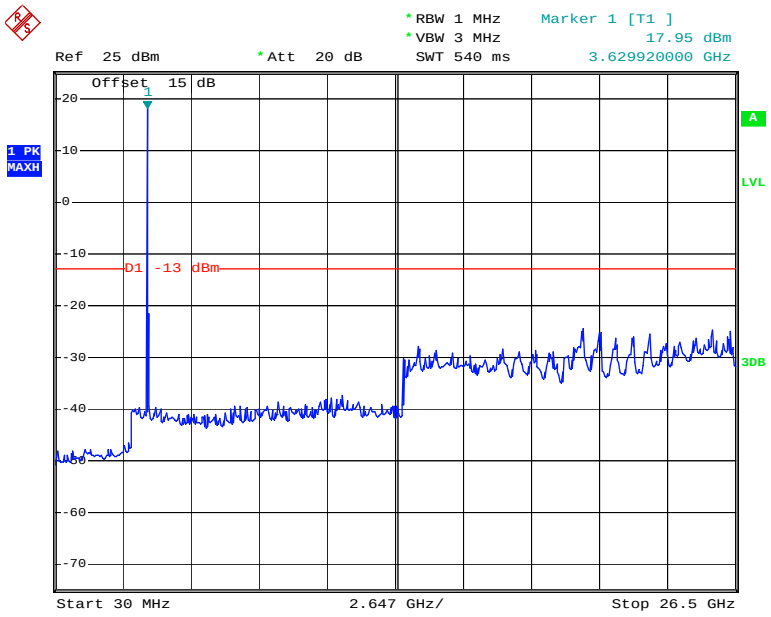
15MHz, 16QAM



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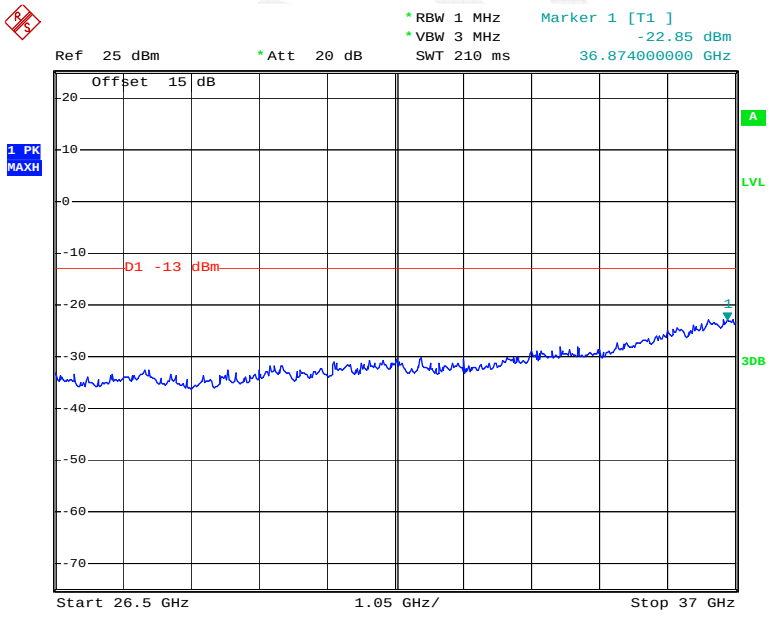
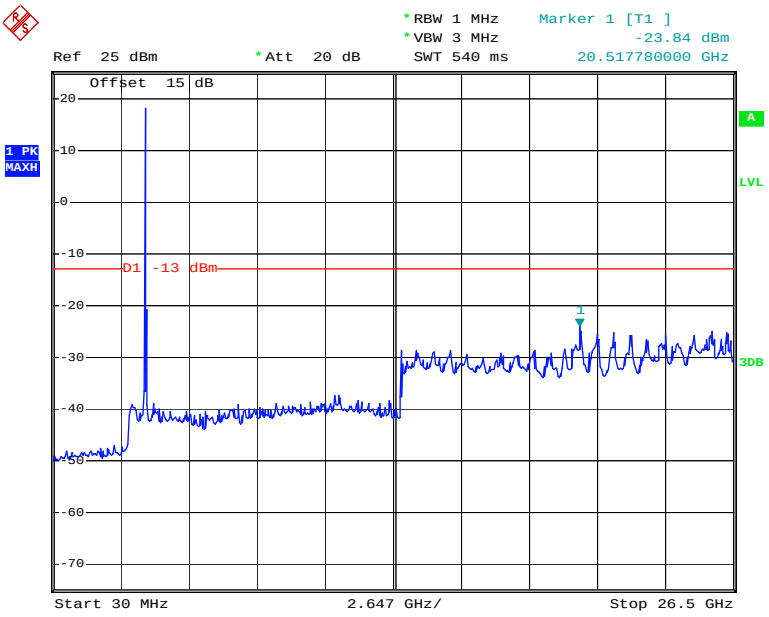


Date: 27.JUL.2014 17:02:43

15MHz, QPSK



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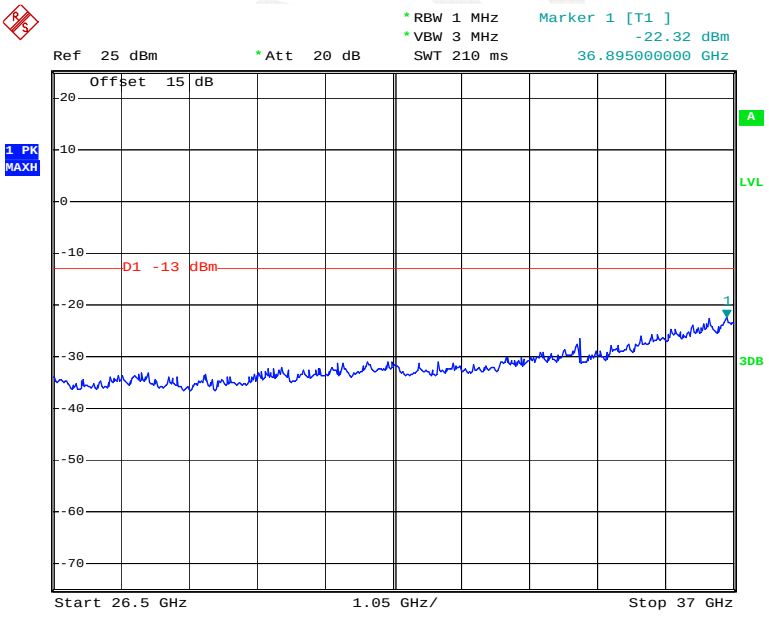
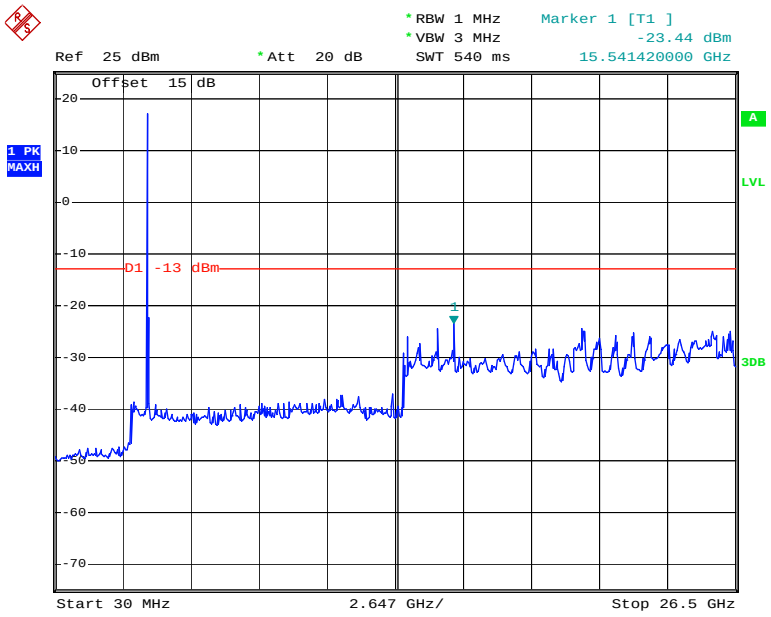


Date: 27.JUL.2014 17:01:56

20MHz, 16QAM



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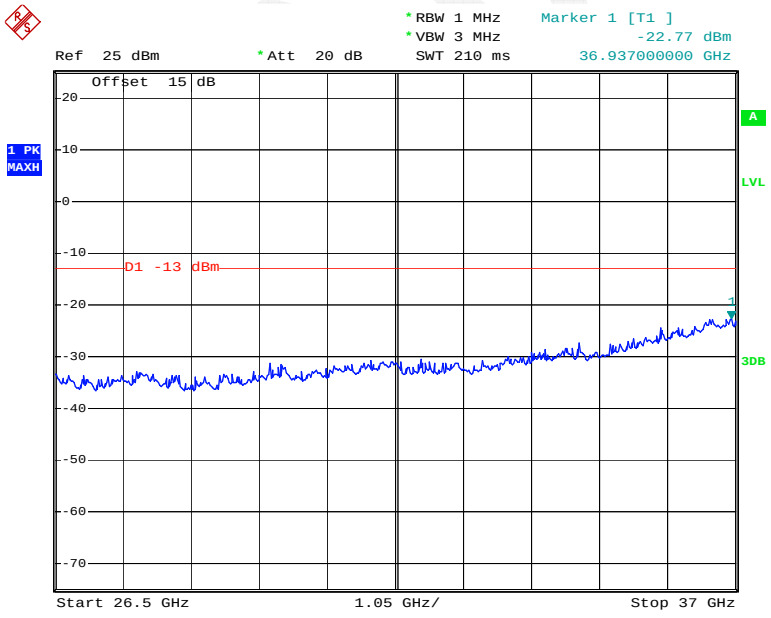
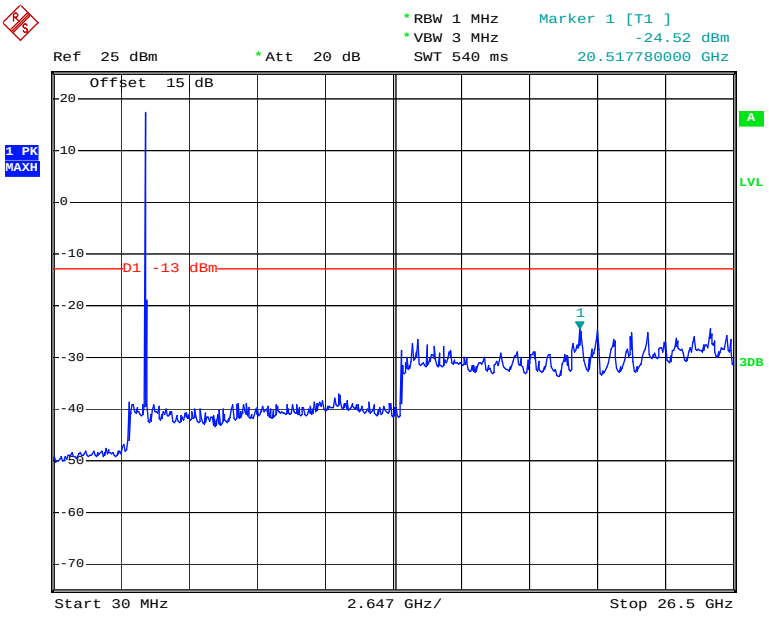
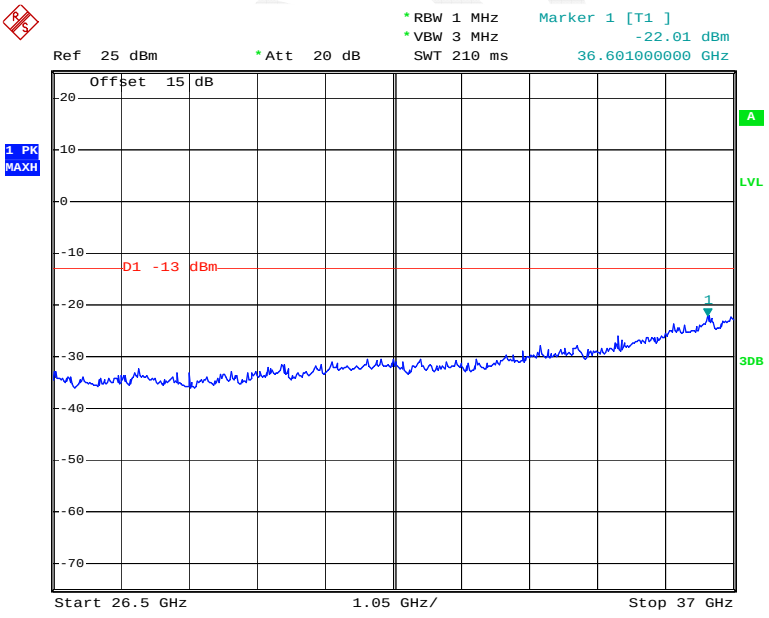


Date: 27.JUL.2014 17:04:48

20MHz, QPSK



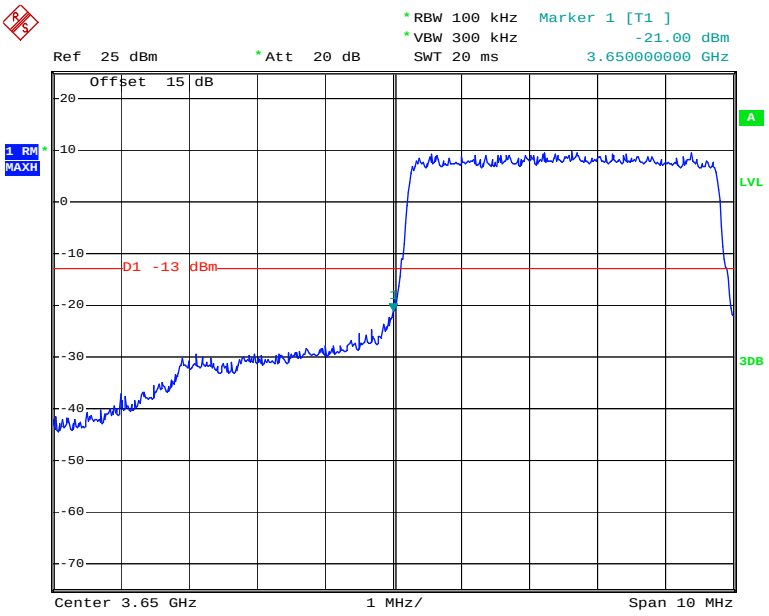
Date: 27.JUL.2014 17:04:07



Date: 27.JUL.2014 17:03:45

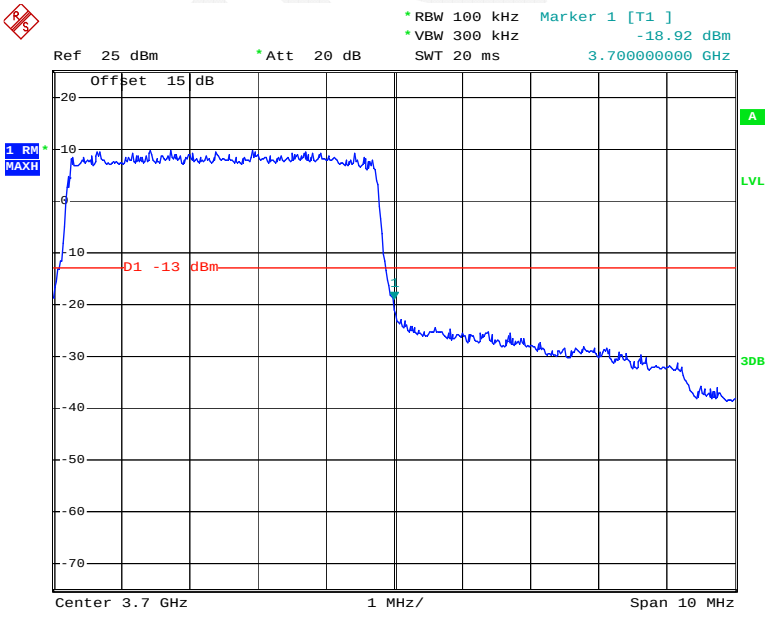
Band Ede:

5MHz, 16QAM, Left Side



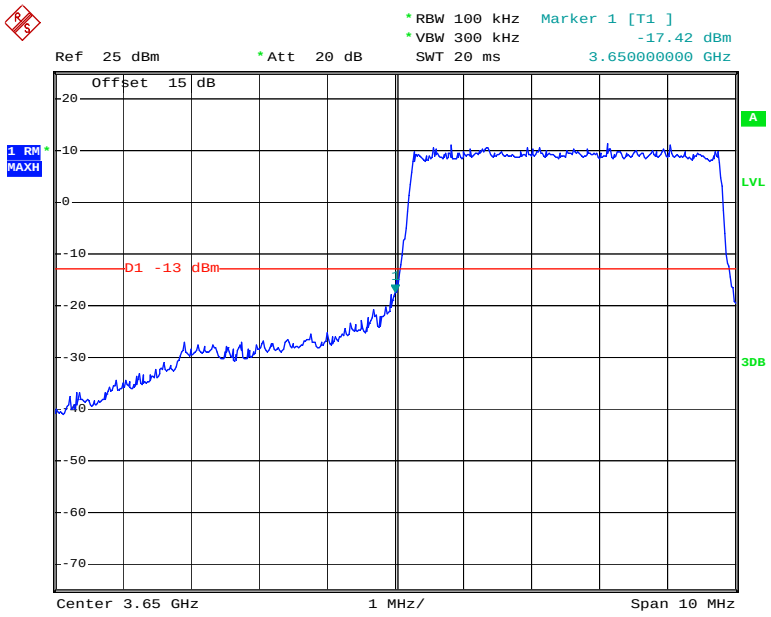
Date: 27.JUL.2014 15:54:34

5MHz, 16QAM, Right Side



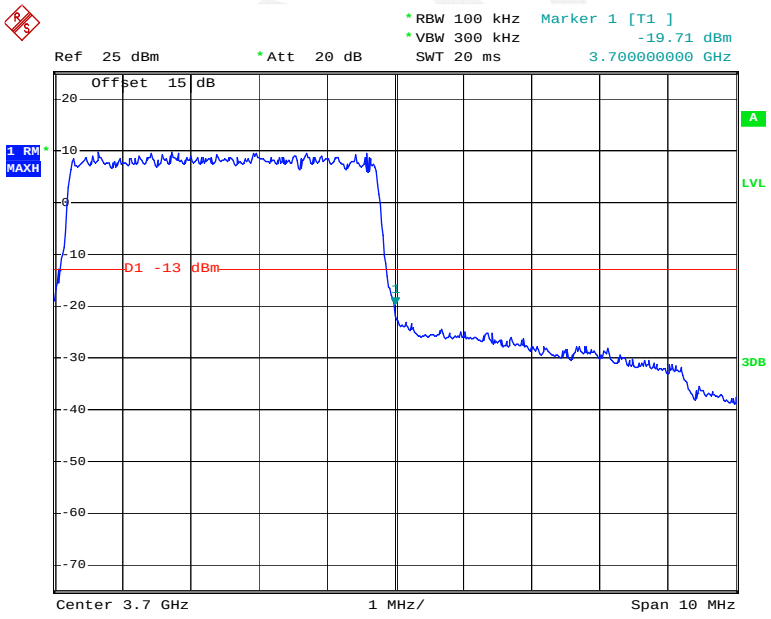
Date: 1.APR.2015 03:37:21

5MHz, QPSK, Left Side



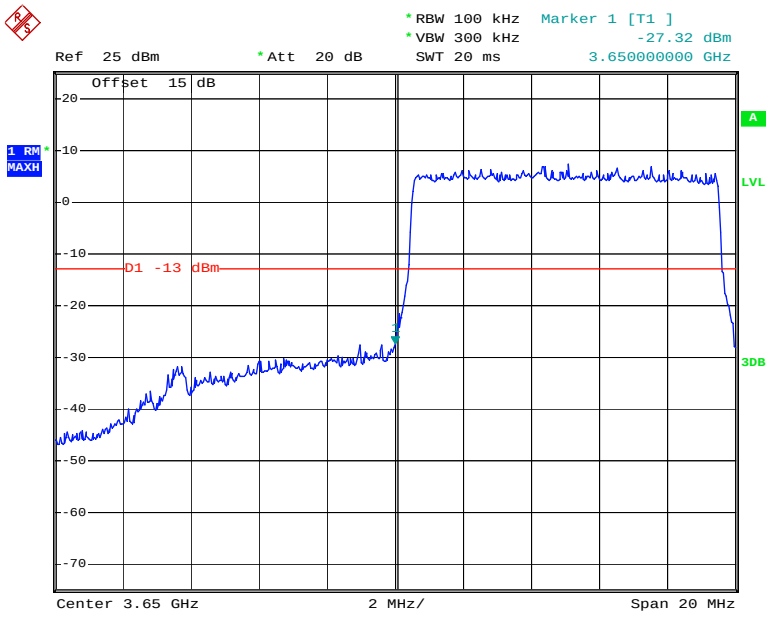
Date: 27.JUL.2014 15:55:05

5MHz, QPSK, Right Side



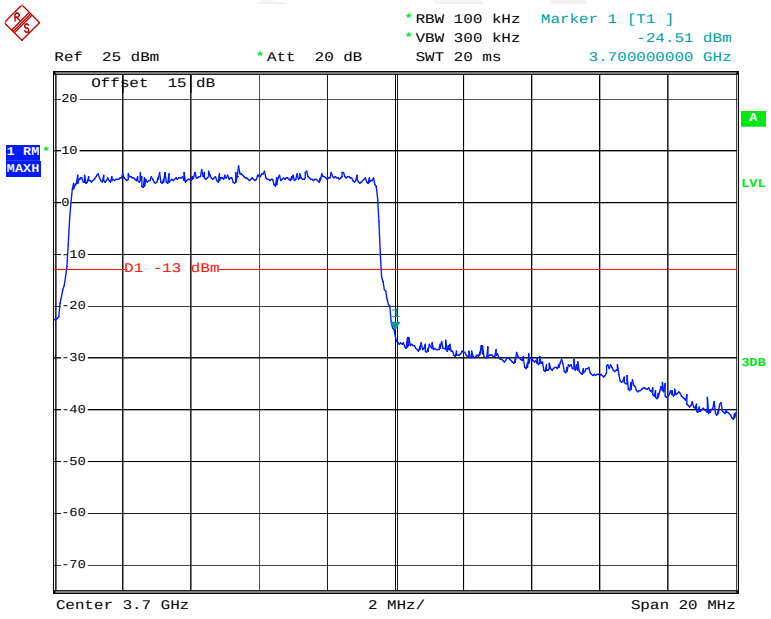
Date: 1.APR.2015 03:37:54

10MHz, 16QAM, Left Side



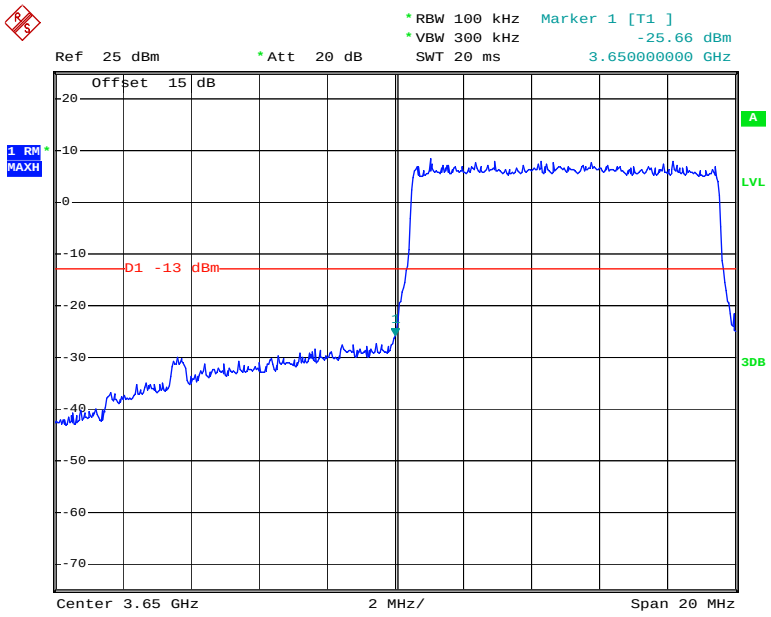
Date: 27.JUL.2014 16:03:45

10MHz, 16QAM, Right Side



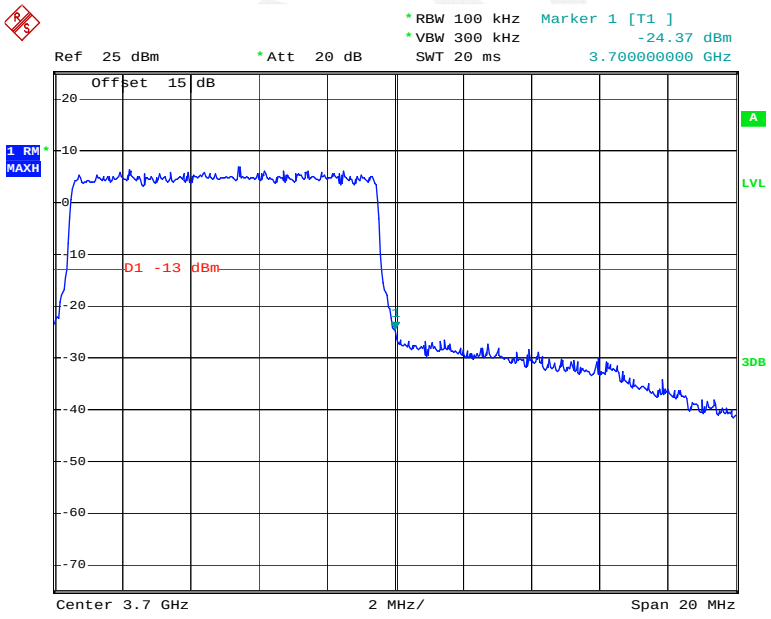
Date: 1.APR.2015 03:39:44

10MHz, QPSK, Left Side



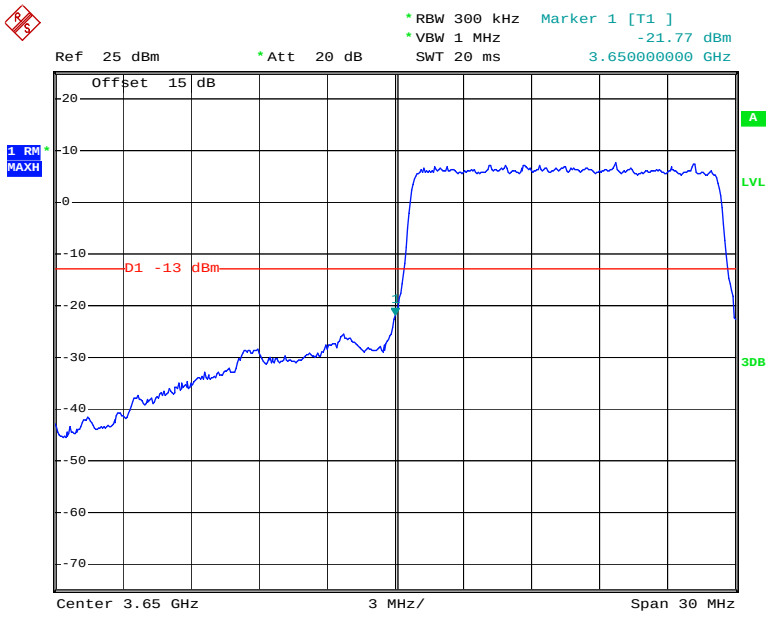
Date: 27.JUL.2014 16:04:30

10MHz, QPSK, Right Side



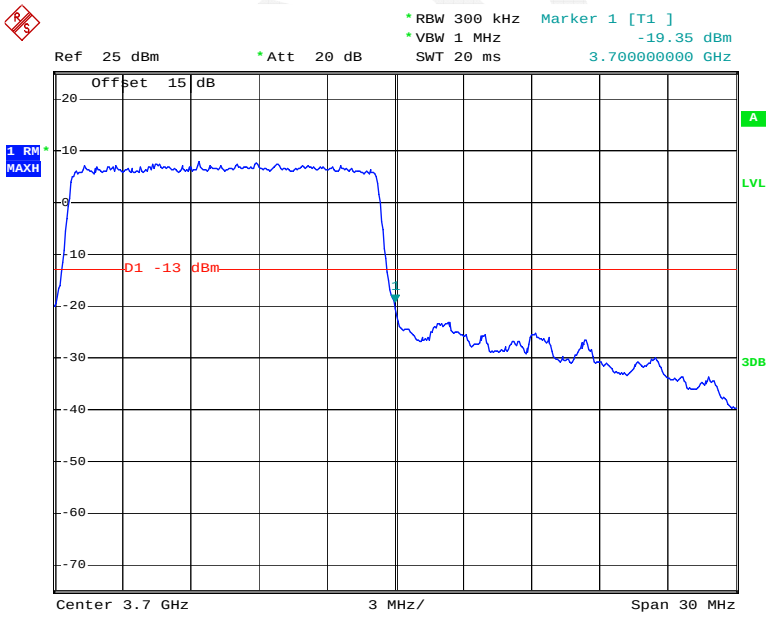
Date: 1.APR.2015 03:39:22

15MHz, 16QAM, Left Side



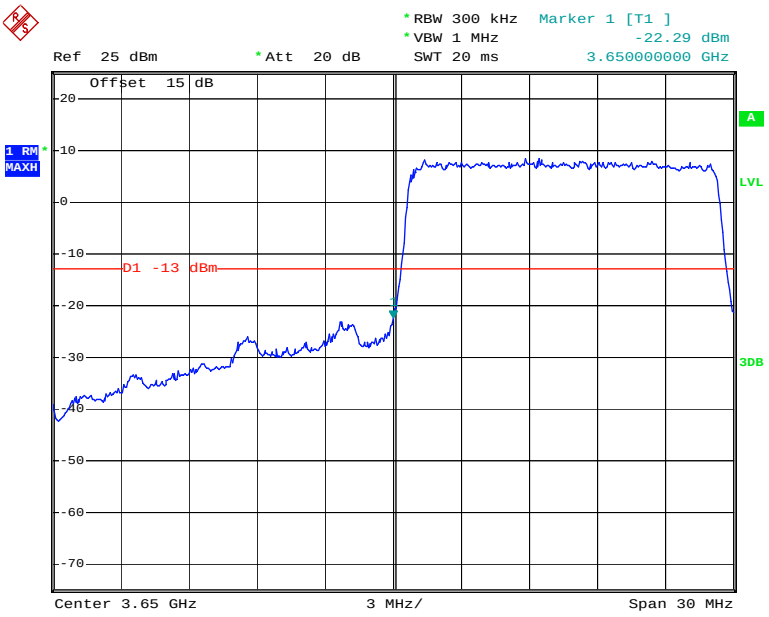
Date: 27.JUL.2014 16:13:28

15MHz, 16QAM, Right Side



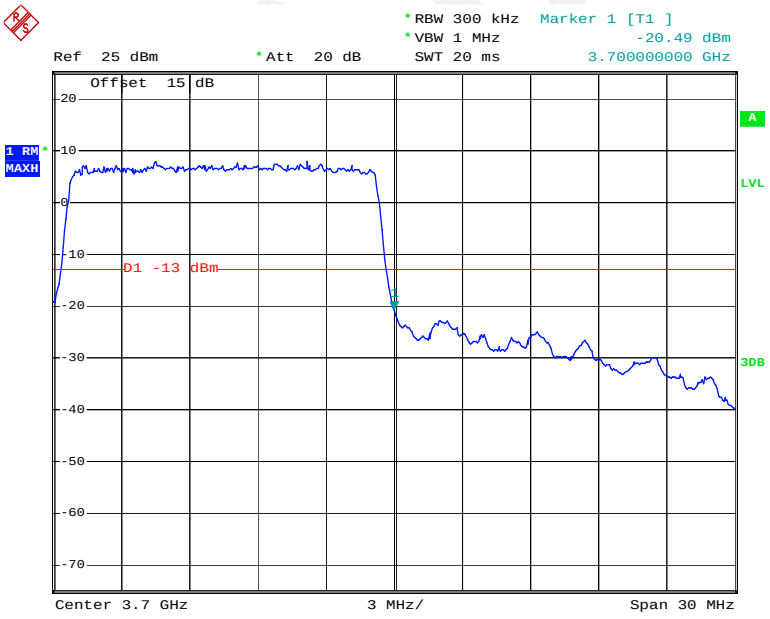
Date: 1.APR.2015 03:40:49

15MHz, QPSK, Left Side



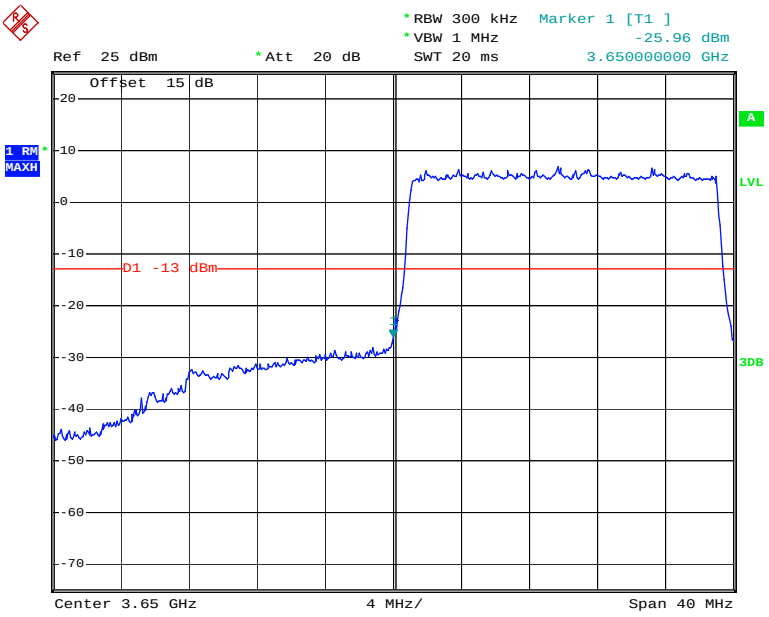
Date: 27.JUL.2014 16:12:27

15MHz, QPSK, Right Side



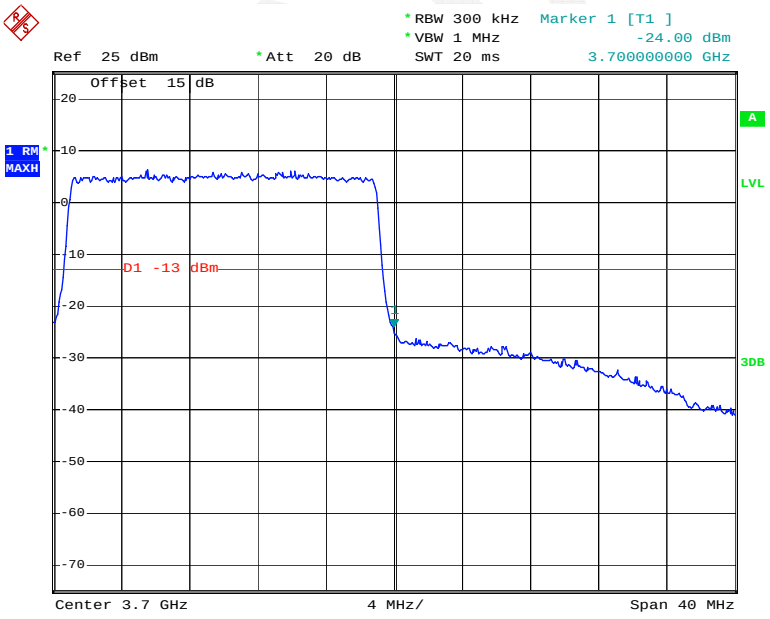
Date: 1.APR.2015 03:41:17

20MHz, 16QAM, Left Side



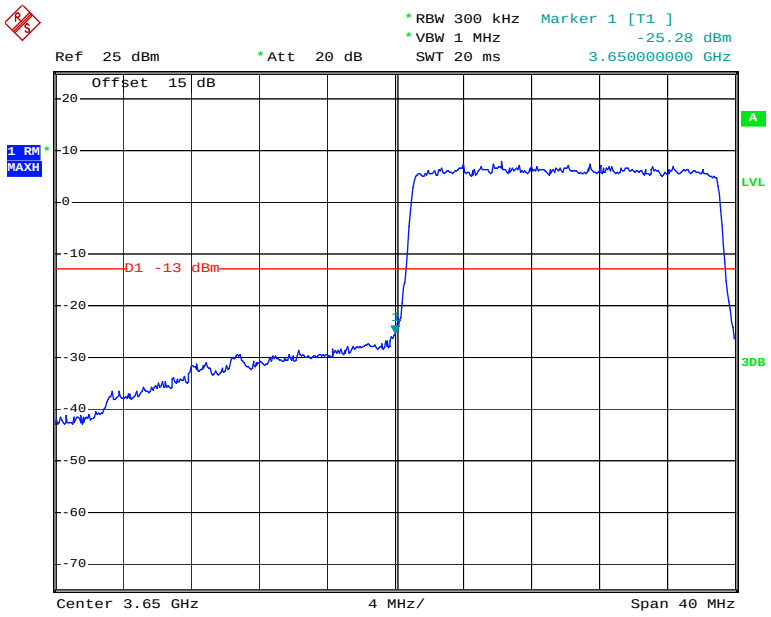
Date: 27.JUL.2014 15:51:06

20MHz, 16QAM, Right Side



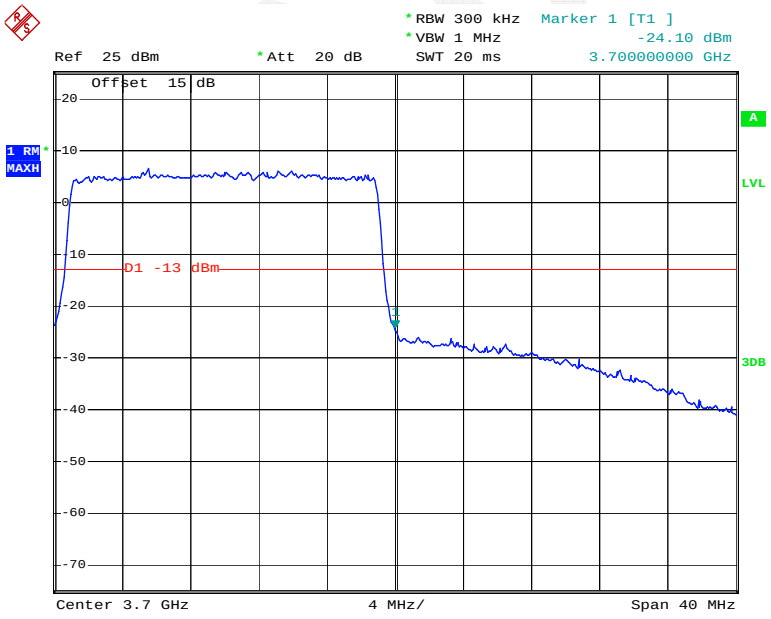
Date: 1.APR.2015 03:35:56

20MHz, QPSK, Left Side



Date: 27.JUL.2014 15:51:24

20MHz, QPSK, Right Side



Date: 1.APR.2015 03:35:28

FCC §2.1053 - RADIATED SPURIOUS EMISSIONS

Applicable Standard

FCC §2.1053

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT .The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to teeth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious attenuation limit in dB =43+10 Log_{10} (power out in Watts)

Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Due Date
HP	Signal Generator	8648A	3426A00831	2013-11-06	2014-11-06
Sunol Sciences	Antenna	JB3	A060611-3	2014-07-28	2017-07-27
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
HP	Amplifier	8447E	2434A02181	2013-09-01	2014-09-01
R&S	EMI Test Receiver	ESCI	100224	2014-05-09	2015-05-09
Agilent	Signal Generator	E8247C	MY43321350	2013-10-16	2014-10-16
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2014-02-19	2015-02-19
TDK RF	Horn Antenna	HRN-0118	130 084	2012-09-06	2015-09-06
ETS LINDGREN	Horn Antenna	3115	000 527 35	2012-09-06	2015-09-06
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09
Agilent	Signal Generator	E8247C	MY43321350	2013-10-16	2014-10-16
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-02 1304	2014-06-16	2017-06-15
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-01 1304	2014-06-16	2017-06-15
Ducommun Technolagies	Horn Antenna	ARH-2823-02	1007726-02 1302	2014-06-16	2017-06-15
Ducommun Technolagies	Horn Antenna	ARH-2823-02	1007726-01 1302	2014-06-16	2017-06-15
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2014-09-06	2015-09-06
R&S	Spectrum Analyzer	FSP 38	100478	2014-05-09	2015-05-09

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	26.1 ℃
Relative Humidity:	64 %
ATM Pressure:	99.8 kPa

The testing was performed by Allen Qiao on 2014-07-31.

Test Mode: Transmitting(prescan with low/middle/high channel,and worst case as below:)

5MHz:

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Frequency: 3662.500 MHz (QPSK)								
7325.000	H	38.26	-50	13.2	3.1	-39.9	-13.0	26.9
7325.000	V	36.55	-51.5	13.2	3.1	-41.4	-13.0	28.4
10987.500	H	30.38	-51.4	13.1	5.3	-43.6	-13.0	30.6
10987.500	V	29.58	-50.4	13.1	5.3	-42.6	-13.0	29.6
184.230	H	39.68	-68.9	0.0	0.5	-69.4	-13.0	56.4
184.230	V	42.91	-63.9	0.0	0.5	-64.4	-13.0	51.4
Frequency: 3662.500 MHz (16-QAM)								
7325.000	H	38.55	-49.8	13.2	3.1	-39.7	-13.0	26.7
7325.000	V	36.89	-51.1	13.2	3.1	-41.0	-13.0	28.0
10987.500	H	30.24	-51.5	13.1	5.3	-43.7	-13.0	30.7
10987.500	V	29.67	-50.3	13.1	5.3	-42.5	-13.0	29.5
184.230	H	39.59	-69	0.0	0.5	-69.5	-13.0	56.5
184.230	V	42.13	-64.7	0.0	0.5	-65.2	-13.0	52.2

10MHz:

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Frequency: 3662.500 MHz (QPSK)								
7325.000	H	38.81	-49.5	13.2	3.1	-39.4	-13.0	26.4
7325.000	V	36.67	-51.3	13.2	3.1	-41.2	-13.0	28.2
10987.500	H	30.18	-51.6	13.1	5.3	-43.8	-13.0	30.8
10987.500	V	29.63	-50.3	13.1	5.3	-42.5	-13.0	29.5
184.230	H	39.95	-68.6	0.0	0.5	-69.1	-13.0	56.1
184.230	V	42.76	-64.1	0.0	0.5	-64.6	-13.0	51.6
Frequency: 3662.500 MHz (16-QAM)								
7325.000	H	38.11	-50.2	13.2	3.1	-40.1	-13.0	27.1
7325.000	V	36.76	-51.2	13.2	3.1	-41.1	-13.0	28.1
10987.500	H	30.05	-51.7	13.1	5.3	-43.9	-13.0	30.9
10987.500	V	29.96	-50	13.1	5.3	-42.2	-13.0	29.2
184.230	H	39.83	-68.7	0.0	0.5	-69.2	-13.0	56.2
184.230	V	42.56	-64.3	0.0	0.5	-64.8	-13.0	51.8

15MHz:

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Frequency: 3662.500 MHz (QPSK)								
7325.000	H	38.32	-50	13.2	3.1	-39.9	-13.0	26.9
7325.000	V	36.47	-51.5	13.2	3.1	-41.4	-13.0	28.4
10987.500	H	30.29	-51.5	13.1	5.3	-43.7	-13.0	30.7
10987.500	V	29.61	-50.3	13.1	5.3	-42.5	-13.0	29.5
184.230	H	39.58	-69	0.0	0.5	-69.5	-13.0	56.5
184.230	V	42.83	-64	0.0	0.5	-64.5	-13.0	51.5
Frequency: 3662.500 MHz (16-QAM)								
7325.000	H	38.43	-49.9	13.2	3.1	-39.8	-13.0	26.8
7325.000	V	36.75	-51.3	13.2	3.1	-41.2	-13.0	28.2
10987.500	H	30.26	-51.5	13.1	5.3	-43.7	-13.0	30.7
10987.500	V	29.74	-50.2	13.1	5.3	-42.4	-13.0	29.4
184.230	H	39.63	-68.9	0.0	0.5	-69.4	-13.0	56.4
184.230	V	42.38	-64.4	0.0	0.5	-64.9	-13.0	51.9

20MHz:

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Frequency: 3662.500 MHz (QPSK)								
7325.000	H	38.39	-49.9	13.2	3.1	-39.8	-13.0	26.8
7325.000	V	36.61	-51.4	13.2	3.1	-41.3	-13.0	28.3
10987.500	H	30.32	-51.4	13.1	5.3	-43.6	-13.0	30.6
10987.500	V	29.67	-50.3	13.1	5.3	-42.5	-13.0	29.5
184.230	H	39.53	-69	0.0	0.5	-69.5	-13.0	56.5
184.230	V	42.83	-64	0.0	0.5	-64.5	-13.0	51.5
Frequency: 3662.500 MHz (16-QAM)								
7325.000	H	38.62	-49.7	13.2	3.1	-39.6	-13.0	26.6
7325.000	V	36.73	-51.3	13.2	3.1	-41.2	-13.0	28.2
10987.500	H	30.19	-51.6	13.1	5.3	-43.8	-13.0	30.8
10987.500	V	29.59	-50.4	13.1	5.3	-42.6	-13.0	29.6
184.230	H	39.68	-68.9	0.0	0.5	-69.4	-13.0	56.4
184.230	V	42.34	-64.5	0.0	0.5	-65.0	-13.0	52.0

Note:
Absolute Level = SG Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level

FCC §2.1055 & §90.213- FREQUENCY STABILITY

Applicable Standard

FCC §2.1055, §90.213

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external AC power supply and the RF output was connected to a frequency counter via feed-through attenuators. The EUT was placed inside the temperature chamber. The AC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the counter.

Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Due Date
R & S	Wideband Radio Communication Tester	CMW500	114772	2013-11-15	2014-11-15
Dongzhixu	High Temperature Test Chamber	DP1000	201105083-3	2013-08-01	2014-08-01

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	27.3 ℃
Relative Humidity:	62 %
ATM Pressure:	99.9 kPa

The testing was performed by Allen Qiao on 2014-07-26.

Test Mode: Transmitting

LTE band (3650-3700MHz) Middle Channel

Middle Channel			
Temerature (℃)	**Voltage**	**Frequency Error (Hz)**	**Frequency Error (ppm)**
-30	120	4.56	0.0012
-20		3.95	0.0011
-10		4.69	0.0013
0		5.17	0.0014
10		5.42	0.0015
20		4.99	0.0014
30		3.89	0.0011
40		5.66	0.0015
50		4.25	0.0012
25	102	4.51	0.0012
25	138	5.08	0.0014

******* END OF REPORT *******